

CETECOM ICT Services GmbH

Radio Satellite Communication

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RSC11

issue test report consist of 143 Pages

Page 1 (143)

Recognized by the
Federal Communications Commission
Anechoic chamber registration no.: 90462 (FCC)
Anechoic chamber registration no.: 3463 (IC)
TCB ID: DE 0001



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.: 4_0902-11-02/03

FCC Part 24/22/15

B2003A

FCC ID: M9H95MYX2A

CETECOM – ICT Services GmbH

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Table of Contents

1 General information

- 1.1 Notes
- 1.2 Testing laboratory
- 1.3 Details of applicant
- 1.4 Application details
- 1.5 Test item
- 1.6 Test standards

2 Technical test

- 2.1 Summary of test results
- 2.2 Test report

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 : info@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)

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CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 3 (143)

1.3 Details of applicant

Name : SAGEM SA
Street : 2-4, rue du Petit Albi
City : F-95800 Cergy Saint-Christophe
Country : France
Telephone : +33 1 30 73 37 37
Telefax : +33 1 34 25 74 16
Contact : Mr. Jean Marquet
Telephone : +33 1 30 73 37 37
e-mail : Jean.marquet@sagem.com

1.4 Application details

Date of receipt of application : 2003-07-31
Date of receipt of test item : 2003-07-31
Date of test : 2003-07-31 –2003-08-05

1.5 Test item

Type of equipment : **Dual Band PCS Mobile Phone (PCS 850/1900 MHz)**
Type designation : B2003A
Manufacturer : Sagem SA
Street :
City :
Country :
Serial numbers : IMEI : 351816950002080, Ser.Nr.: 2232036568
IMEI : 351816950001275 for conducted measurement

Additional information: :

Frequency : 1850.2 – 1909.8 MHz and 824.2 – 848.8 MHz
Type of modulation : 300KGXW / 300KG7W
Number of channels : 300 (PCS1900) and 125 (PCS850)
Antenna : Integral antenna
Power supply : 3,8V DC Li-ion Battery
Output power GSM 850 : cond.: 33.30 dBm Peak , ERP: 24.20 dBm (Burst);
EIRP: 26.30 dBm (Burst)
Output power GSM 1900 : cond : 30.4 dBm Peak , ERP: 27.61 dBm (Burst);
EIRP: 29.71 dBm (Burst)
Type of equipment : Temperature range : -30°C - +60°C
FCC – ID : M9H95MYX2A
IC :
Hardware : V0x
Software : J 3,EE

1.6 Test standards: **FCC Part 24, 22**
FCC Part 15

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03 Issue Date: 2003-08-07 Page 4 (143)

2 Technical test

For Part 24/22 we use the substitution method (TIA/EIA 603).

All measurements in this report are done in GSM mode. Device is able to transmit data in GPRS mode also. But because the current measurements are performed in PEAK mode no other results from GPRS mode are possible. The only different is the modulation average power, which is 3 dB higher (by using 2 timeslots in the Up-link).

Remarks:

For AC-conducted measurements we used three different AC chargers, (TA3651-US, 18805593-9 and DTC3515 045E040E).

We also tested the phone with a headset (23812517-0), with a cigar lighter adapter (23811253-7) combined with a data cable (23810787-0) .

Test setups :

Radiated measurements : Car kit A17-BA10-010 and Mobile (IMEI: 351816950002080)

Conducted measurements: Mobile (IMEI : 351816950001275) with every charger

EIRP : Mobile (IMEI: 351816950002080)

Part15: Mobile (IMEI: 351816950002080) with each part of the ancillary equipment.

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 :

2003-08-07 RSC 8414 Ames H.

Date

Section

Name

Signature



Technical responsibility for area of testing :

2003-08-07 RSC8412 Hausknecht D.

Date

Section

Name

Signature



2.2 Test report

TEST REPORT

Test report no. : 4_0902-11-02/03

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03 Issue Date: 2003-08-07 Page 6 (143)

TEST REPORT REFERENCE

LIST OF MEASUREMENTS

PARAMETER TO BE MEASURED	PAGE
<u>Part PCS 1900</u>	
POWER OUTPUT SUBCLAUSE § 24.232	7
FREQUENCY STABILITY SUBCLAUSE § 24.235	9
AFC FREQ ERROR vs. VOLTAGE	10
AFC FREQ ERROR vs. TEMPERATURE	10
EMISSIONS LIMITS §24.238	12
CONDUCTED SPURIOUS EMISSIONS	26
BLOCK EDGE COMPLIANCE FOR BLOCK A, B, C, D, E AND F	35
OCCUPIED BANDWIDTH §2.989	37
CONDUCTED EMISSIONS § 15.107/207	44
<u>PART PCS850</u>	
POWER OUTPUT SUBCLAUSE § 24.232	58
FREQUENCY STABILITY SUBCLAUSE § 24.235	60
AFC FREQ ERROR vs. VOLTAGE	61
AFC FREQ ERROR vs. TEMPERATURE	61
EMISSIONS LIMITS §24.238	63
CONDUCTED SPURIOUS EMISSIONS	77
BLOCK EDGE REQUIREMENTS FOR BLOCK 1 TO BLOCK 4	87
OCCUPIED BANDWIDTH §2.989	89
EMISSION LIMITATIONS FOR CELLULAR §22.917(F)	96
ADDITIONAL MEASUREMENTS FOR ANCILLARY EQUIPMENT PART 15.109	104
TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS	118
Test site	120
Photographs of the equipment	123

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 7 (143)

POWER OUTPUT

SUBCLAUSE § 24.232

Summary:

This paragraph contains both average , peak output powers and EIRP measurements for the mobile station.

In all cases, the peak output power is within the required mask (this mask is specified in the JTC standards, TIA PN3389 Vol. 1 Chap 7, and is no FCC requirement).

Method of Measurements:

The mobile was set up for the max. output power with pseudo random data modulation.

The power was measured with R&S Signal Analyzer FSIQ 26 (peak and average)

This measurements were done at 3 frequencies, 1850,2 MHz, 1880,0 MHz and 1909,8 MHz (bottom, middle and top of operational frequency range)

Limits:

Power Step	Nominal Peak Output Power (dBm)	Tolerance (dB)
0	+30	± 2

Power Measurements:

Conducted:

Frequency (MHz)	Power Step	Peak Output Power (dBm)	Average Output Power (dBm)
1850.2	0	30.30	30.20
1880.0	0	30.40	30.30
1909.8	0	30.00	29.90
Measurement uncertainty		± 0.5 dB	

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

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 8 (143)

EIRP Measurements

Description: This is the test for the maximum radiated power from the phone.

Rule Part 24.232(b) specifies that "Mobile/portable stations are limited to 2 watts e.i.r.p. peak power..." and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Method of Measurement:

1. In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference center of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (P_{in}) is applied to the input of the dipole, and the power received (P_r) at the chamber's probe antenna is recorded.
2. A "reference path loss" is established as $P_{in} + 2.1 - P_r$.
3. The EUT is substituted for the dipole at the reference centre of the chamber. The EUT is put into CW test mode and a scan is performed to obtain the radiation pattern.
4. From the radiation pattern, the co-ordinates where the maximum antenna gain occurs is identified.
5. The EUT is then put into pulse mode at its maximum power level (Power Step 0).
6. "Gated mode" power measurements are performed with the receiving antenna placed at the co-ordinates determined in Step 3 to determine the output power as defined in FCC Rule 24.232 (b) and (c). The "reference path loss" from Step 1 is added to this result.
7. This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.1 dBi) and known input power (P_{in}).
8. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.1\text{dBi}$.

Limits:

Power Step	Burst PEAK EIRP (dBm)
0	<33

Power Measurements (Radiated)

Frequency (MHz)	Power Step	BURST PEAK (dBm)		MODULATION AVERAGE (dBm)	
		EIRP	ERP	EIRP	ERP
1850.2	0	29.60	27.50	23.60	21.40
1880.0	0	29.71	27.61	23.71	21.61
1909.8	0	29.11	27.01	23.11	21.01
Measurement uncertainty		± 3 dB			

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

FREQUENCY STABILITY

SUBCLAUSE § 24.235

Method of Measurement:

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the mobile station in a “call mode”. This is accomplished with the use of a R&S CMU 200 DIGITAL RADIOCOMMUNICATION TESTER..

1. Measure the carrier frequency at room temperature.
2. Subject the mobile station to overnight soak at -30 C.
3. With the mobile station, powered with 3.6 Volts, connected to the CMU 200 and in a simulated call on channel 661 (centre channel), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the mobile station, to prevent significant self warming.
4. Repeat the above measurements at 10 C increments from -30 C to +60 C. Allow at least 1 1/2 hours at each temperature, un-powered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal 3.8 Volts. Vary supply voltage from minimum 3.3 Volts to maximum 4.4 Volts, in 12 steps re-measuring carrier frequency at each voltage. Pause at 3.8 V dc Volts for 1 1/2 hours un-powered, to allow any self heating to stabilize, before continuing.
6. Subject the mobile station to overnight soak at +60 C.
7. With the mobile station, powered with 3.8 Volts, connected to the CMU 200 and in a simulated call on channel 661(center channel), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the mobile station, to prevent significant self warming.
8. Repeat the above measurements at 10 C increments from +60 C to -30 C. Allow at least 1 1/2 hours at each temperature, un-powered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5 C during the measurement procedure.

Measurement Limit:

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.. This transceiver is specified to operate with an input voltage of between 3.3 V dc and 4.4 V dc, with a nominal voltage of 3.8 V dc.

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 10 (143)

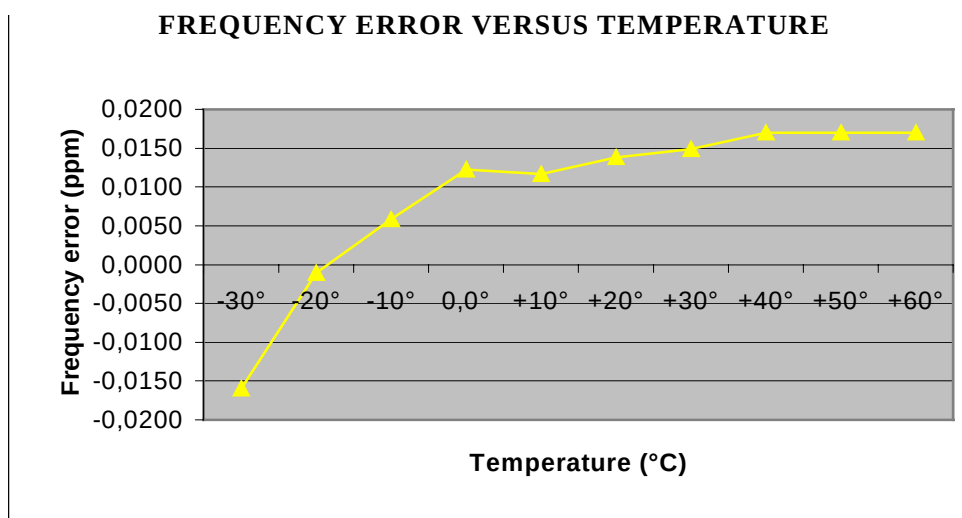
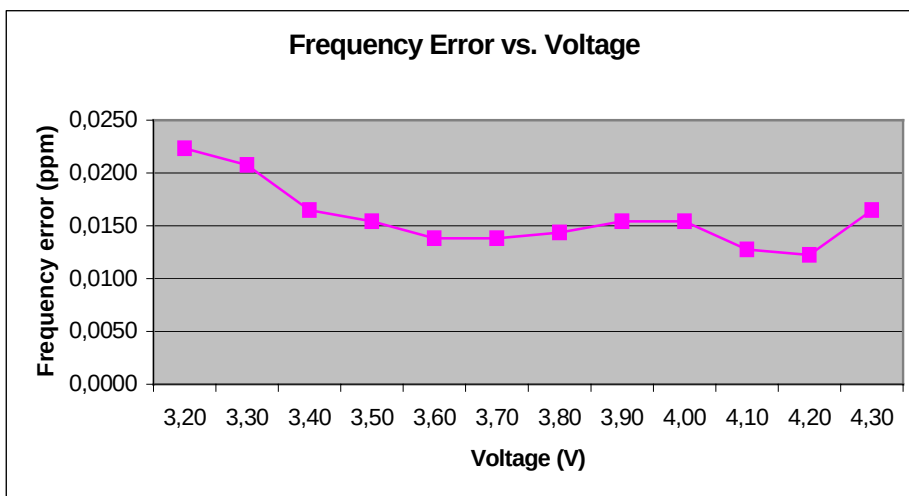
AFC FREQ ERROR vs. VOLTAGE

Voltage (V)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
3.3	42	0,00000223	0,0223
3.4	39	0,00000207	0,0207
3.5	31	0,00000165	0,0165
3.6	29	0,00000154	0,0154
3.7	26	0,00000138	0,0138
3.8	26	0,00000138	0,0138
3.9	27	0,00000144	0,0144
4.0	29	0,00000154	0,0154
4.1	29	0,00000154	0,0154
4.2	24	0,00000128	0,0128
4.3	23	0,00000122	0,0122
4.4	31	0,00000165	0,0165

AFC FREQ ERROR vs. TEMPERATURE

TEMPERATURE (°C)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
-30	-30	0,00000223	0,0223
-20	-2	0,00000207	0,0207
-10	11	0,00000165	0,0165
±0.0	23	0,00000154	0,0154
+10	22	0,00000138	0,0138
+20	26	0,00000138	0,0138
+30	28	0,00000144	0,0144
+40	32	0,00000154	0,0154
+50	32	0,00000154	0,0154
+60	32	0,00000128	0,0128

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



CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 12 (143)

EMISSIONS LIMITS

§24.238

Measurement Procedure:

The following steps outline the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4 – 1992 requirements and is recognised by the FCC to be in compliance for a 3 and a 10 meter site. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 1910 MHz. This was rounded up to 20 GHz. The resolution bandwidth is set as outlined in Part 24.238. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the USPCS band.

The final open field emission (here 10m semi-anechoic chamber listed by FCC) test procedure is as follows:

- a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
- b) The antenna output was terminated in a 50 ohm load.
- c) A double ridged waveguide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
- d) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization. The maximum meter reading was recorded. The radiated emission measurements of the harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and 1 MHz bandwidth. If the harmonic could not be detected above the noise floor, the ambient level was recorded.
- e) Now each detected emissions were substituted by the Substitution method, in accordance with the TIA/EIA 603.

Measurement Limit:

Sec. 24.238 Emission Limits.

(a) On any frequency outside a licensee' s frequency block (e.g. A, D, B, etc.) within 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. The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

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

17 – 24; 64

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 13 (143)

Measurement Results:

Radiated emissions measurements were made only at the upper, center, and lower carrier frequencies of the USPCS band (1850.2 MHz, 1879.8 MHz and 1909.8 MHz). It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the USPCS band into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

RESULTS OF OPEN FIELD RADIATED TEST FOR FCC-24:

The final open field radiated levels are presented on the next pages.

All measurements were done in horizontal and vertical polarization, the plots show the worst case.
As can be seen from this data, the emissions from the test item were within the specification limit.

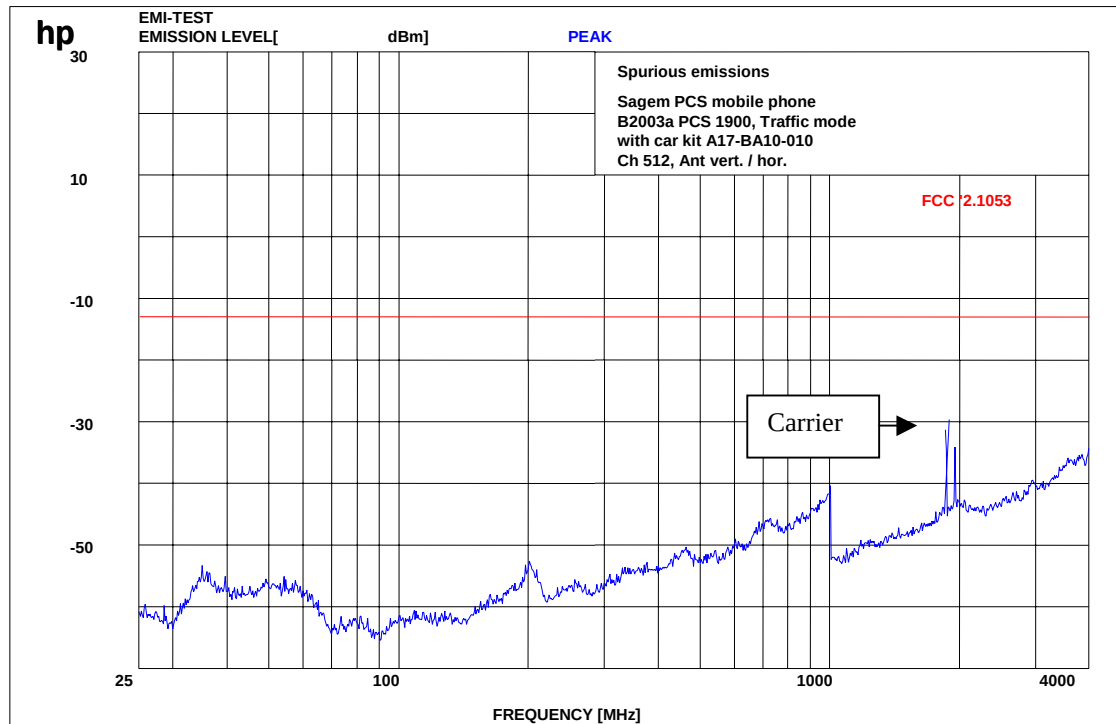
RESULTS OF OPEN FIELD RADIATED TEST FOR FCC-24:

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBm)	limit max. allowed emission power (dBm)	actual attenuation below frequency of operation (dBc)	results
CH 512					
1850.2		29.60	-13.0 (42.60 dBc)		carrier
CH 661					
1880.0		29.71	-13.0 (42.71 dBc)		carrier
CH 810					
1909.8		29.11	-13.0 (42.11 dBc)		carrier
9556.0		-34.3		63.41	complies
Measurement uncertainty		± 0.5dB			

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

17 – 24; 64

Channel 512 (up to 4 GHz)



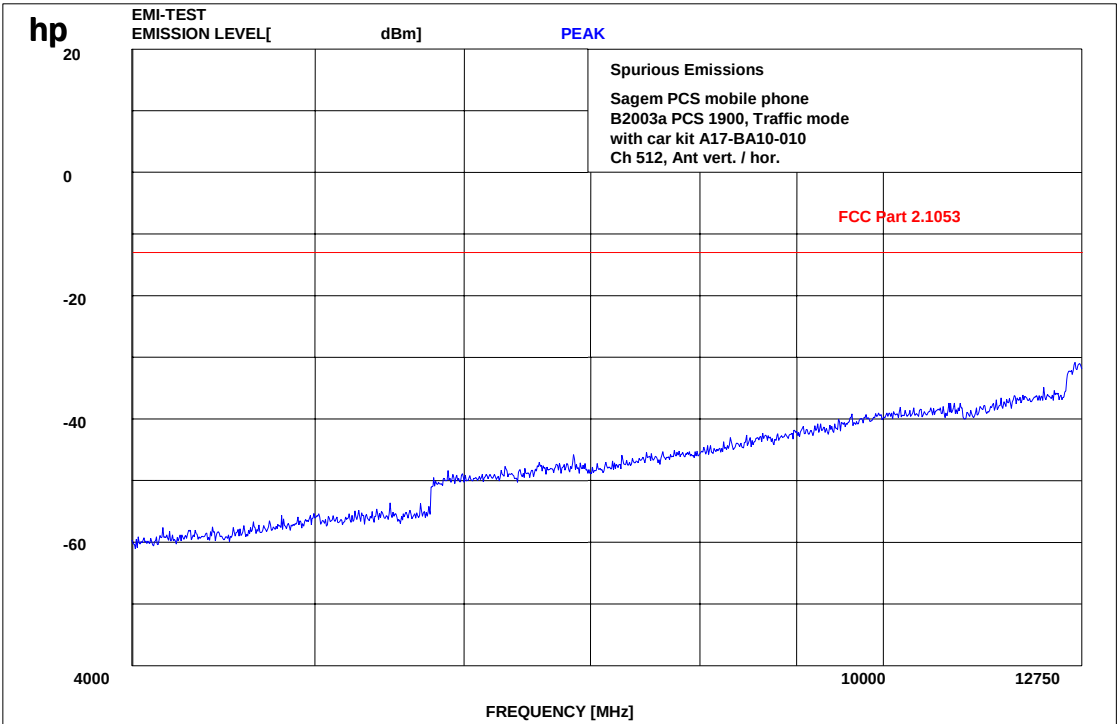
$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW / VBW 1 MHz

Carrier suppressed with a rejection filter

The second peak at the right side of the carrier is the signal from the base station simulator.

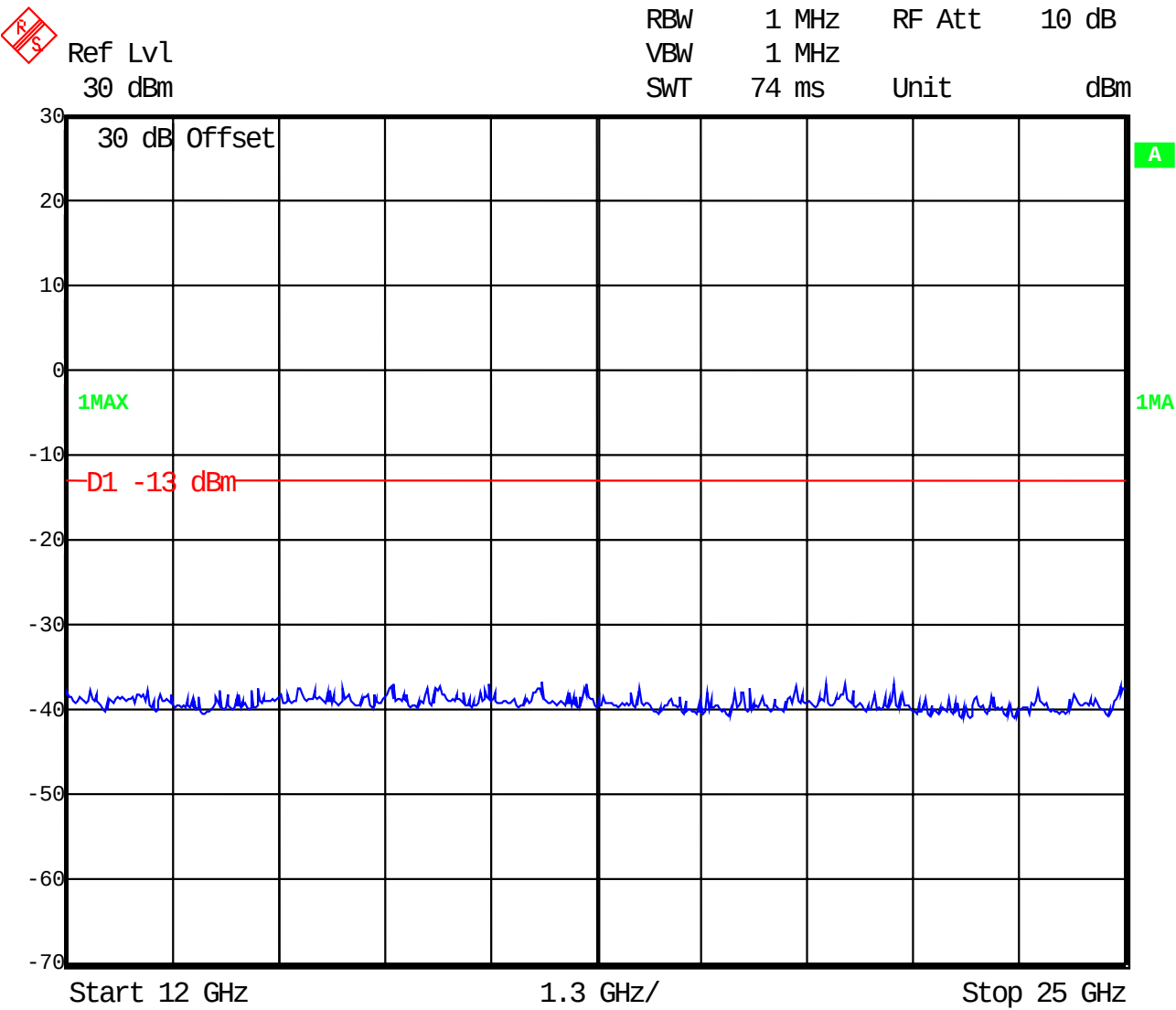
Channel 512 (up to 12 GHz)



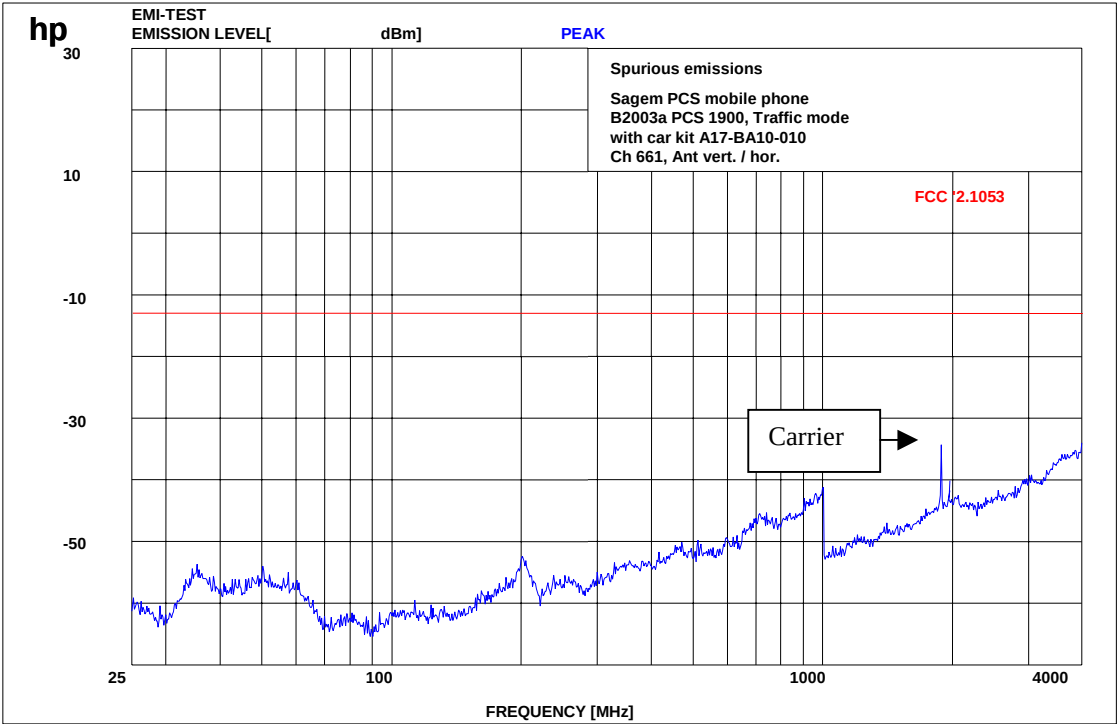
$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW / VBW 1 MHz

Channel 512 :- 25 GHz



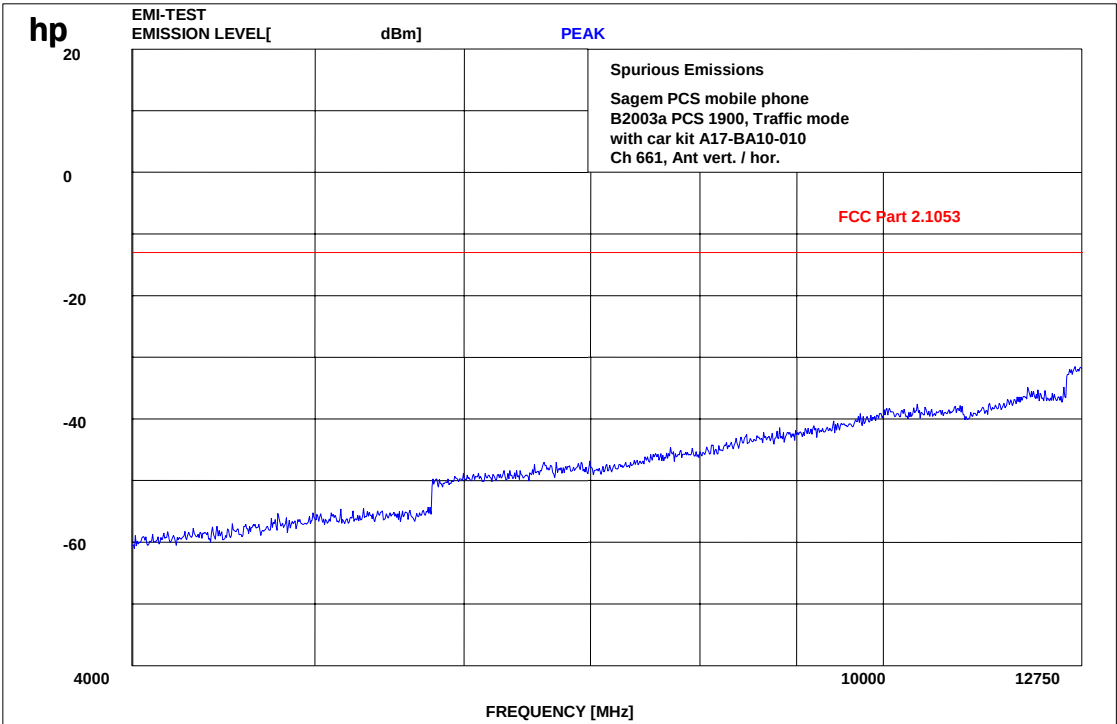
Channel 661 (up to 4 GHz)



$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz $f \geq 1 \text{ GHz}$: RBW / VBW 1 MHz

Carrier suppressed with a rejection filter.
The second peak at the right side of the carrier is the signal from the base station simulator.

Channel 661 (up to 12 GHz)



f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW / VBW 1 MHz

Ref Lvl 30 dBm

RBW 1 MHz

VBW 1 MHz

SWT 74 ms

RF Att 10 dB

Unit dBm

30 dB Offset

1MAX

D1 -13 dBm

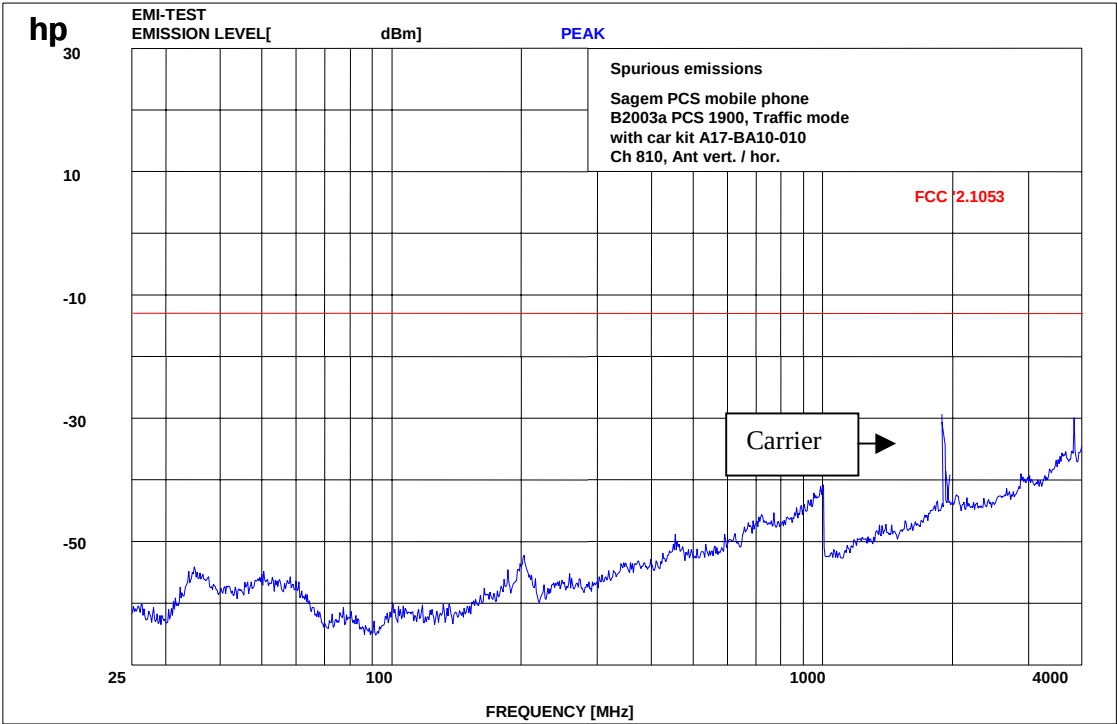
Start 12 GHz

1.3 GHz/

Stop 25 GHz

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

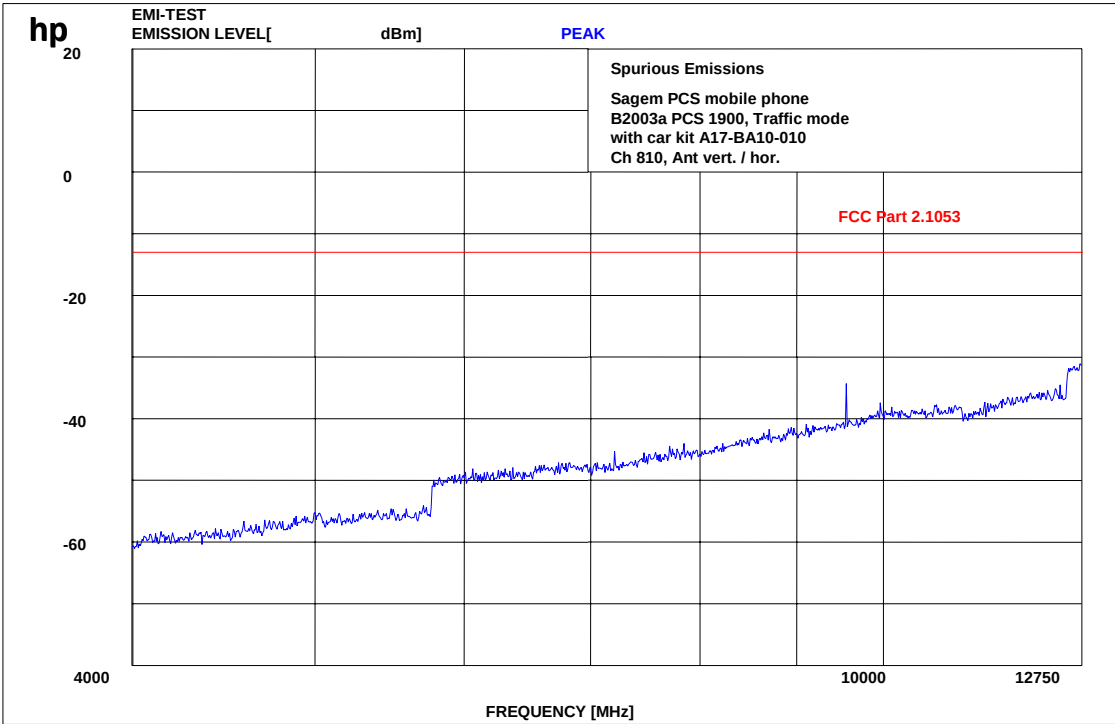
Channel 810 up to 4 GHz



$f < 1\text{ GHz}$: RBW/VBW: 100 kHz $f \geq 1\text{ GHz}$: RBW / VBW 1 MHz

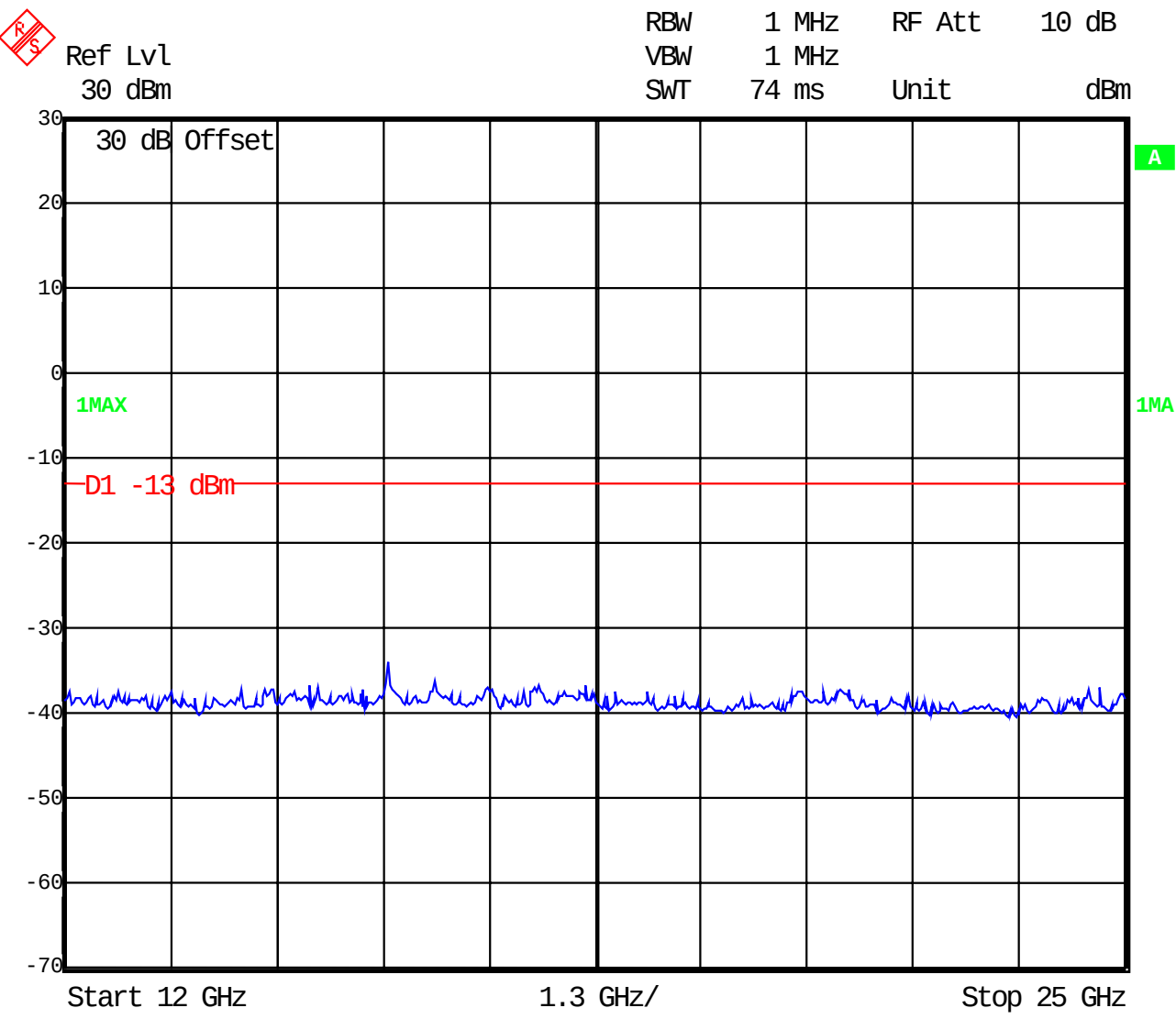
Carrier suppressed with a rejection filter

Channel 810 up to 12 GHz



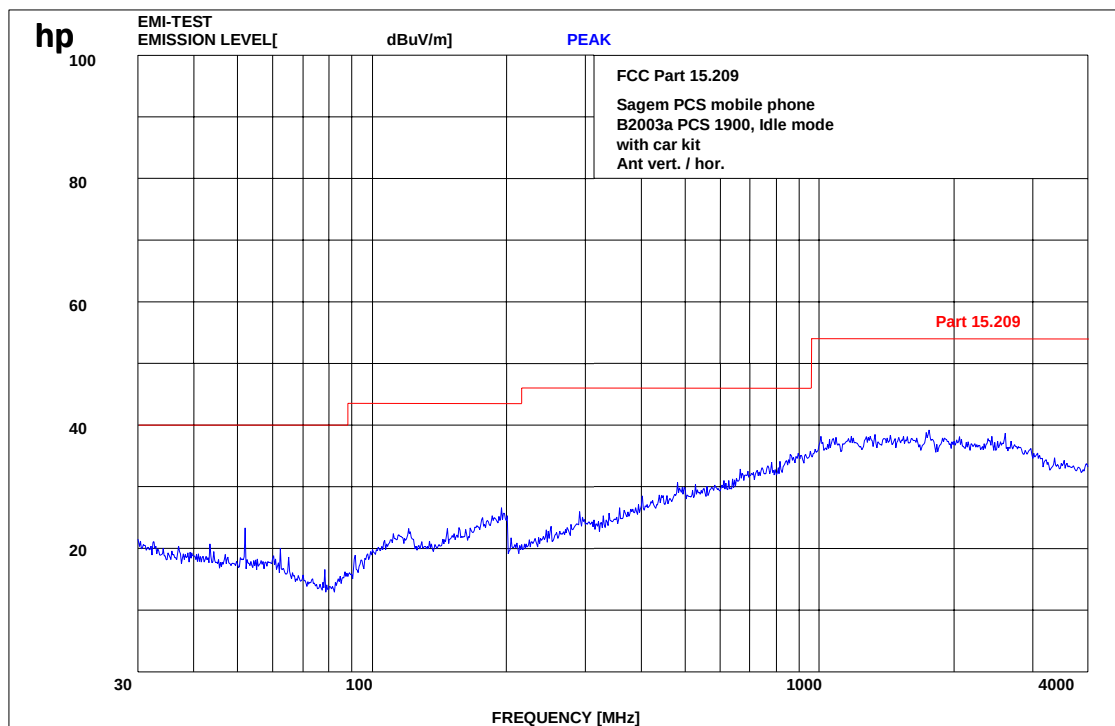
f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW/VBW 1 MHz

Channel 810 : -25 GHz



Idle-Mode (this is valid for all 3 channels and up to 4 GHz)

no peak found



$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

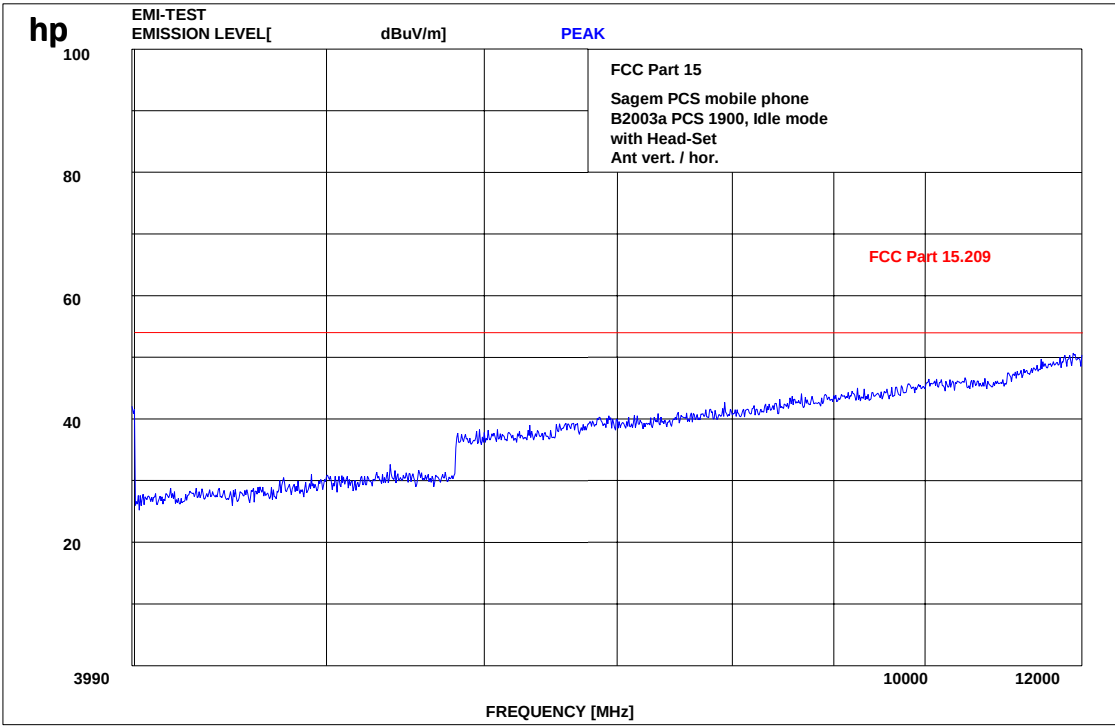
$f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24, 64

Idle-Mode (this is valid for all 3 channels and up to 12 GHz)



$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz

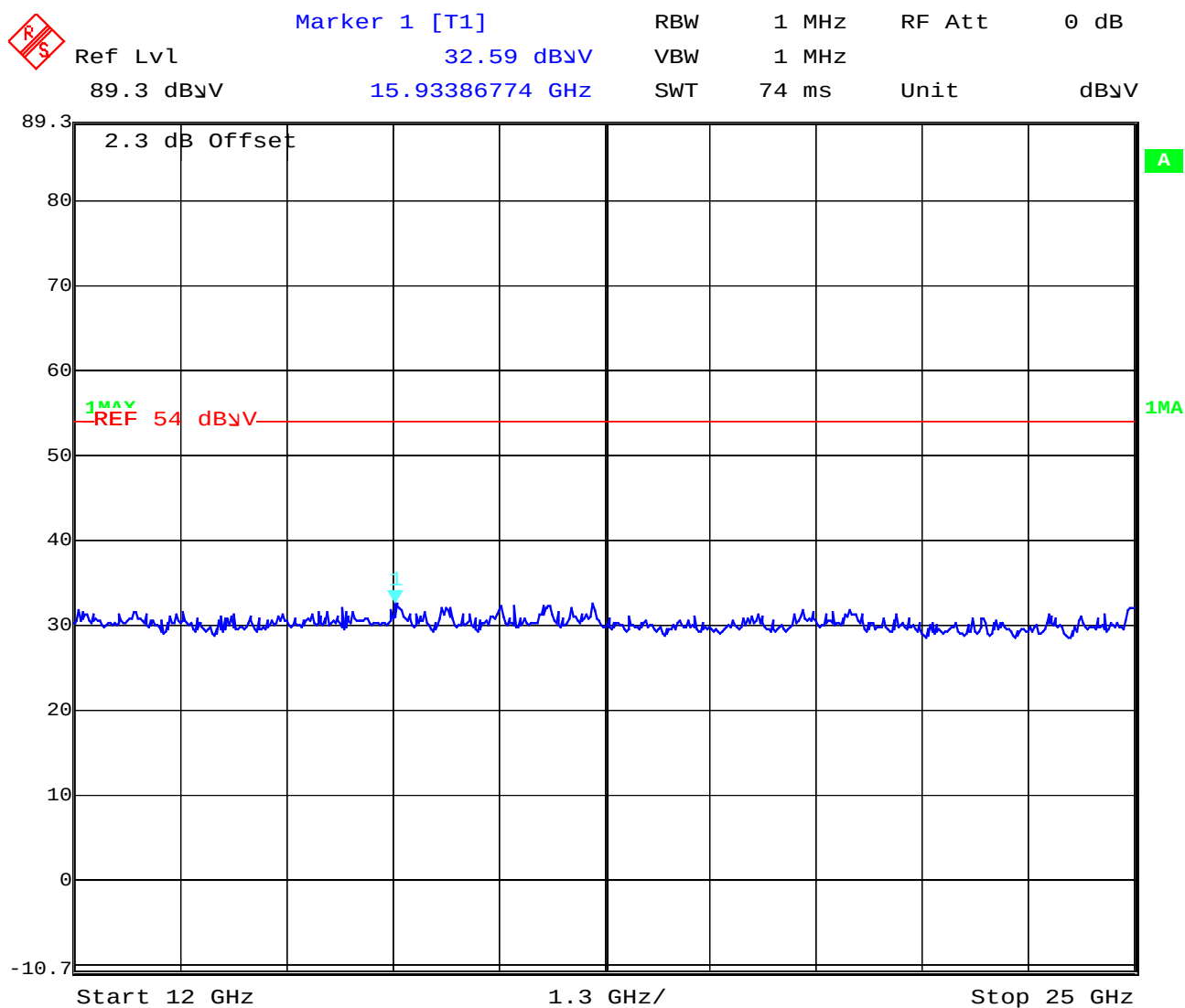
CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 25 (143)

Idle-Mode (this is valid for all 3 channels and up to 25 GHz)



Date: 31. JUL. 2003 09:59:41

For this measurement we used a special wideband horn antenna and a low noise preamp.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24, 64

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 26 (143)

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.

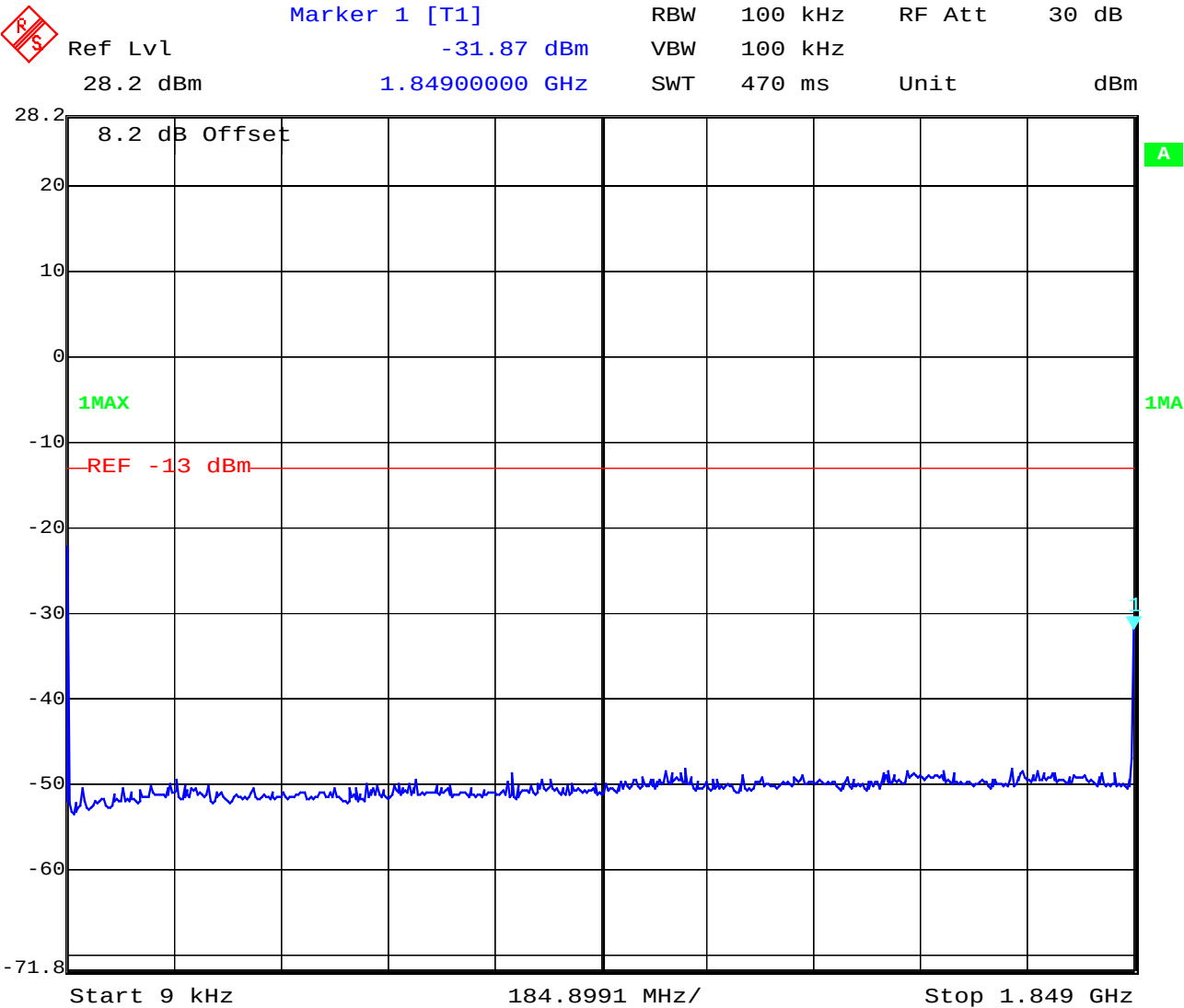
(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least $43+10\log(P)$ dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBm)	limit max. allowed emission power (dBm)	actual attenuation below frequency of operation (dBc)	results
CH 512					
1850.2		29.45	-13.0 (42.45 dBc)		carrier
1849.00		-31.87		61.32	complies
1949.99		-14.26		43.71	complies
9233.0		-32.17		61.62	complies
CH 661					
1880.0		29.25	-13.0 (42.25 dBc)		carrier
1879.0		-31.71		60.96	complies
CH 810					
			-13.0 (41.67 dBc)		
1909.8		28.67			carrier
1908.80		-29.24		57.91	complies
1910.00		-13.56		42.23	complies
9545.0		-35.14		63.81	complies
Measurement uncertainty		± 0.5dB			

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

Measurements:

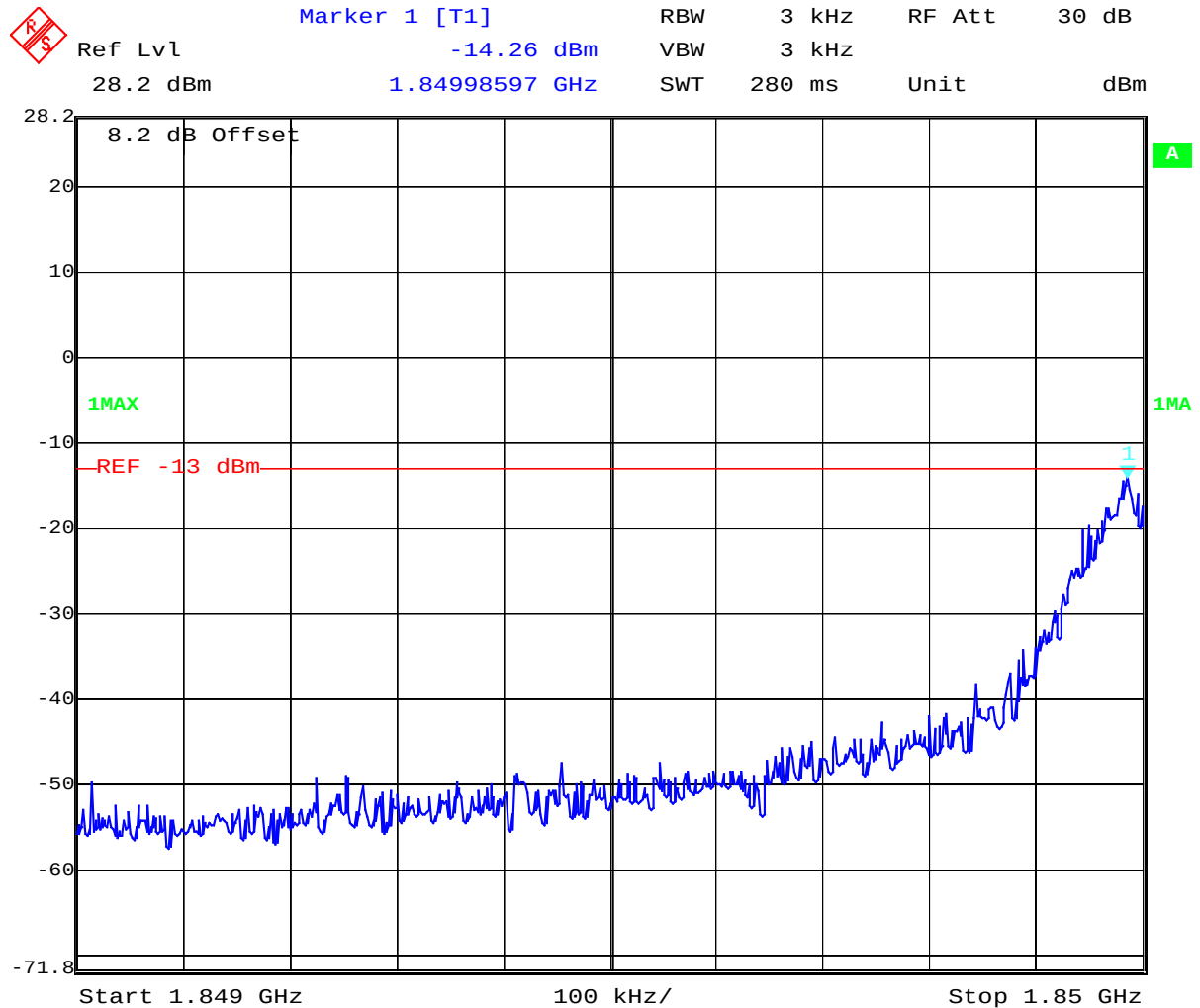
Channel: 512



Date: 31.JUL.2003 10:04:17

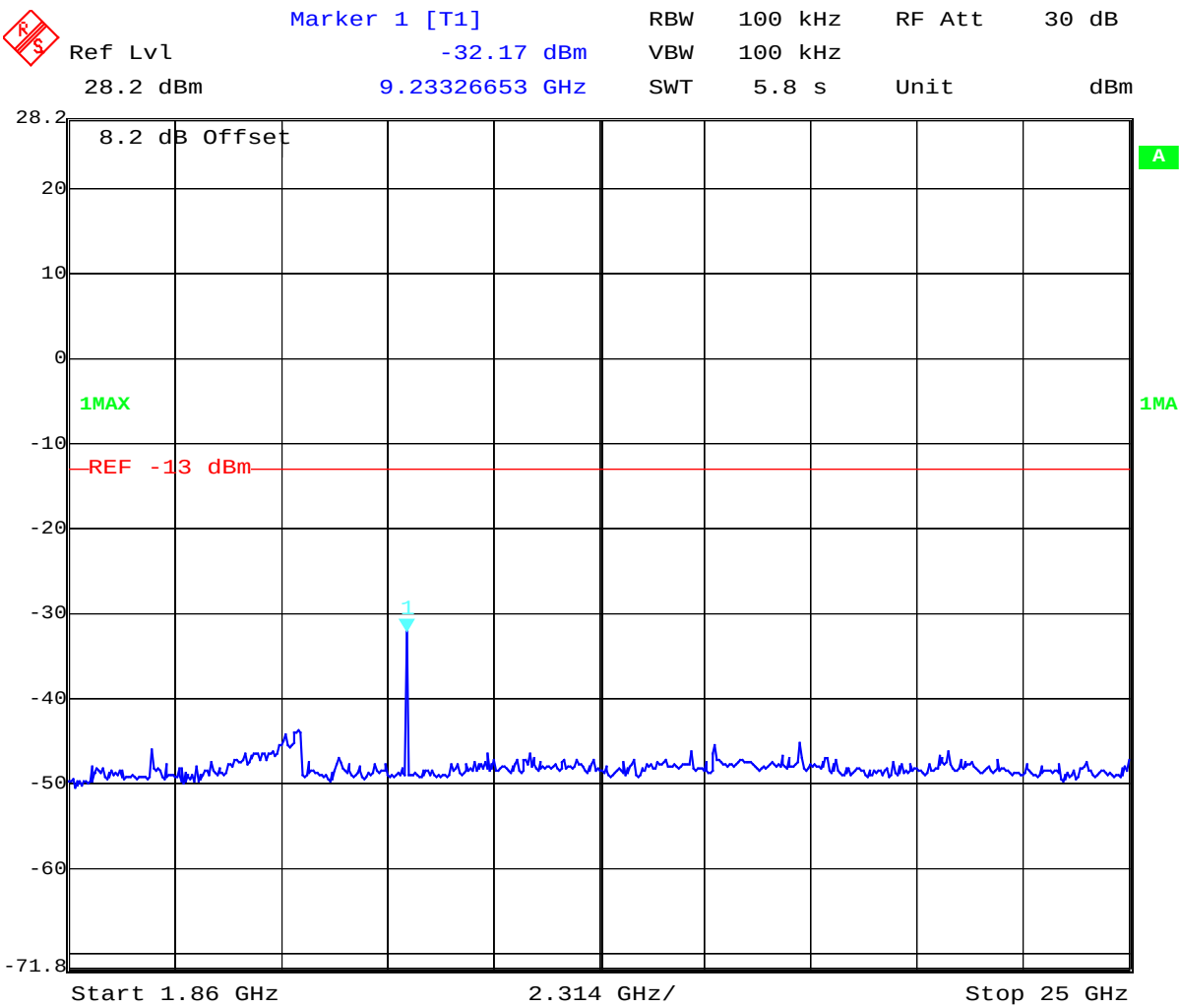
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Channel 512



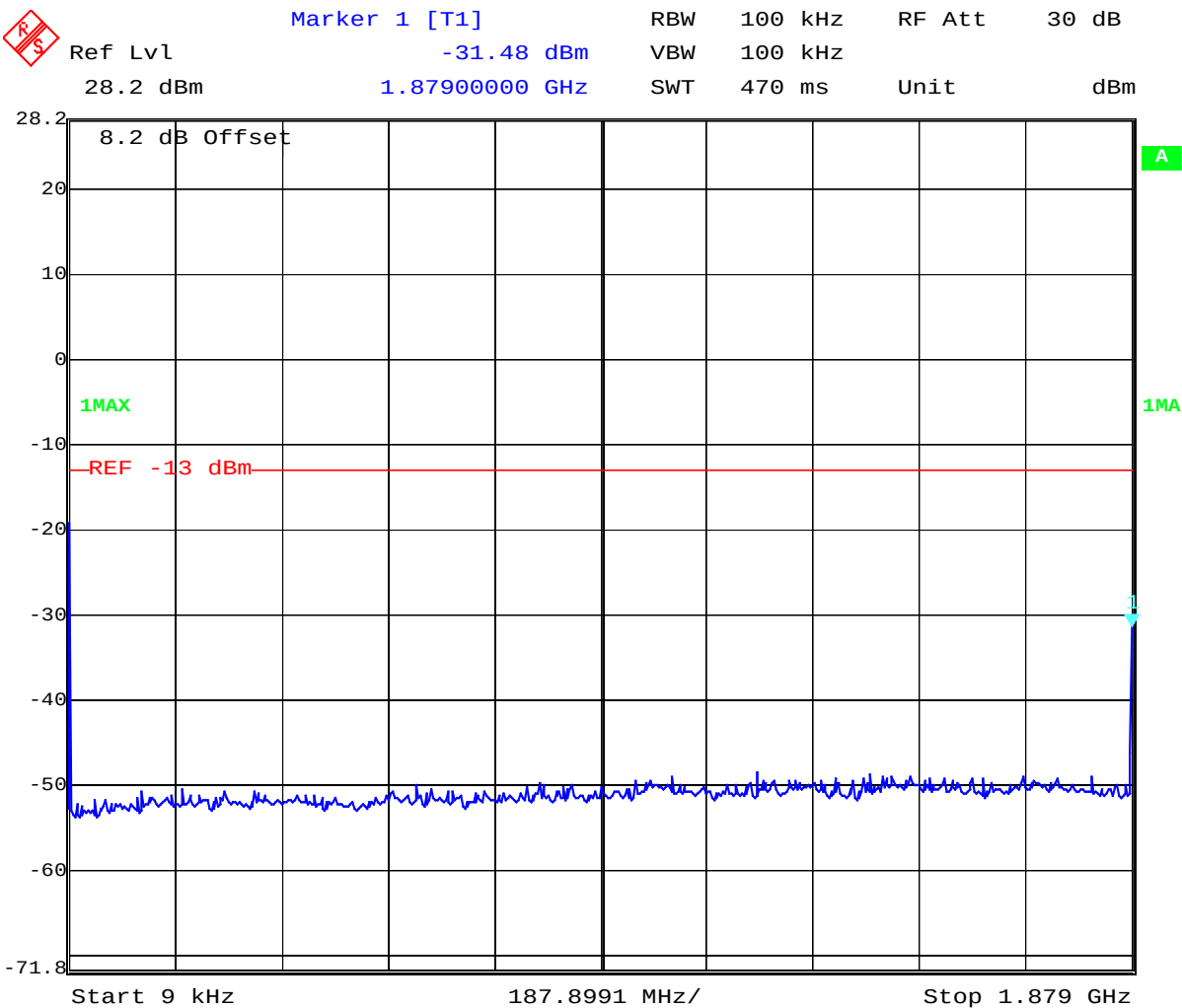
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Channel 512



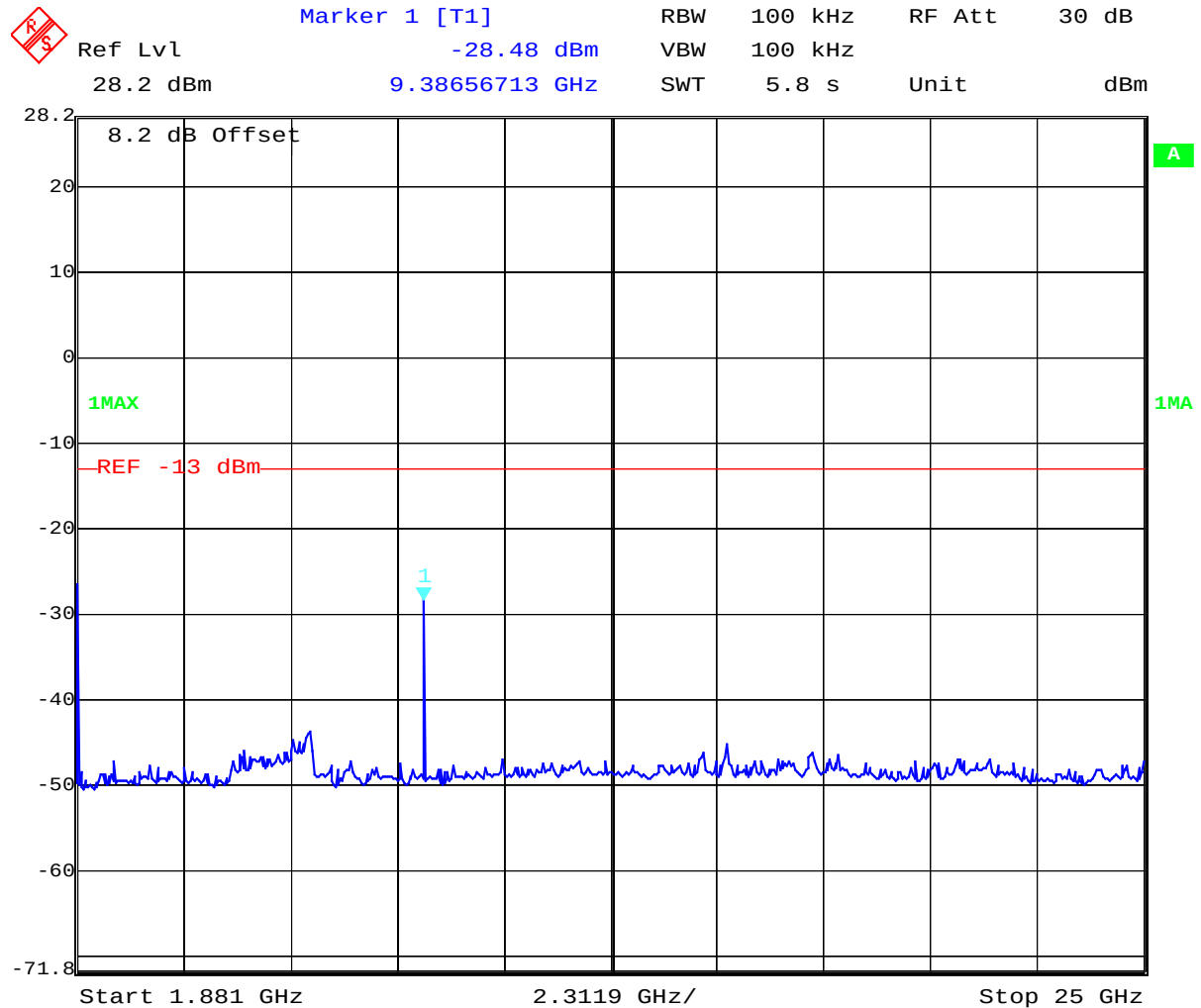
Date: 31.JUL.2003 10:07:48

Channel 661



Date: 31.JUL.2003 10:10:06

Channel 661

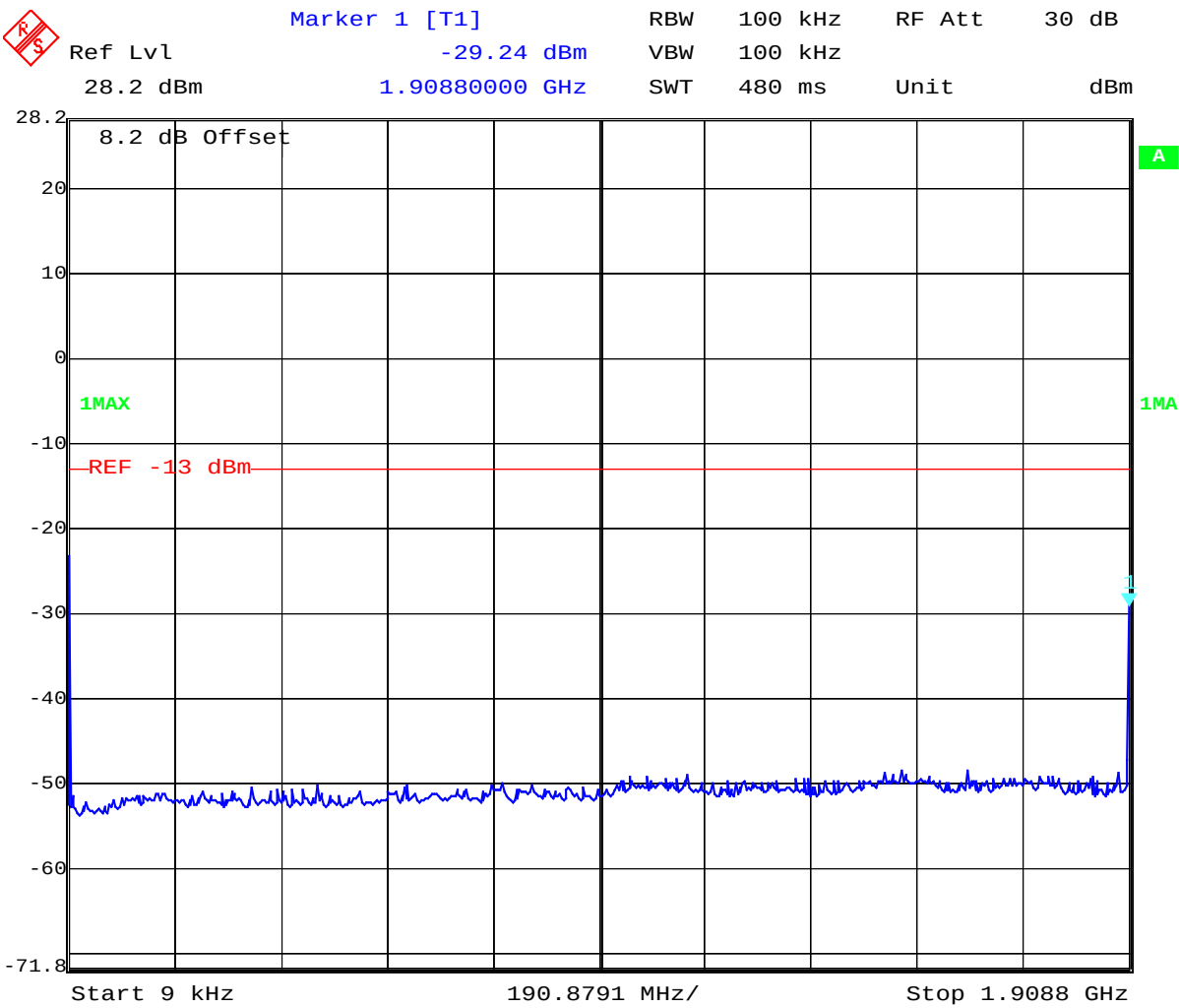


Date: 31.JUL.2003 10:09:32

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

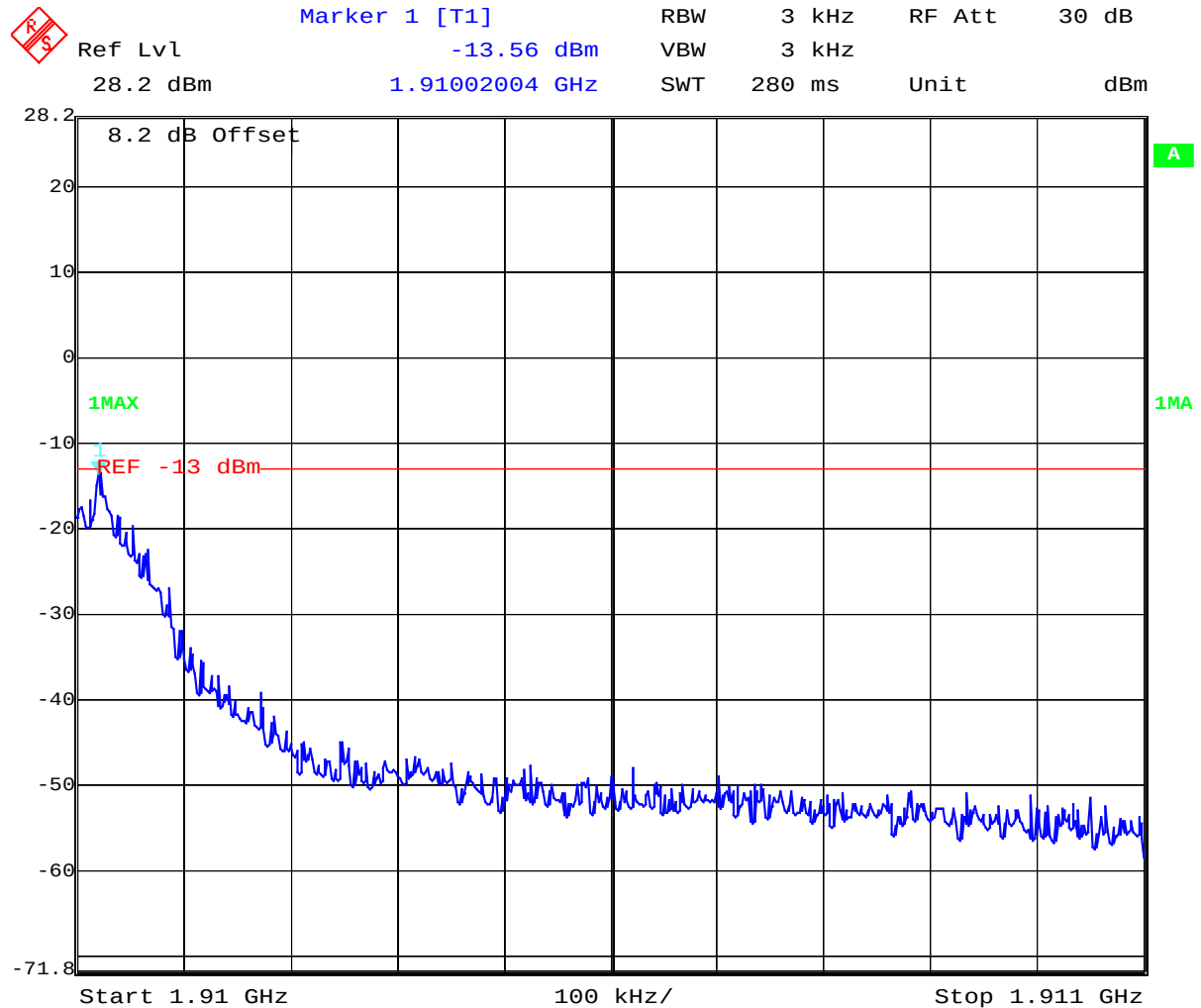
(for reference numbers see test equipment listing)

Channel 810



Date: 31.JUL.2003 10:11:06

Channel 810



Date: 31.JUL.2003 10:12:05

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

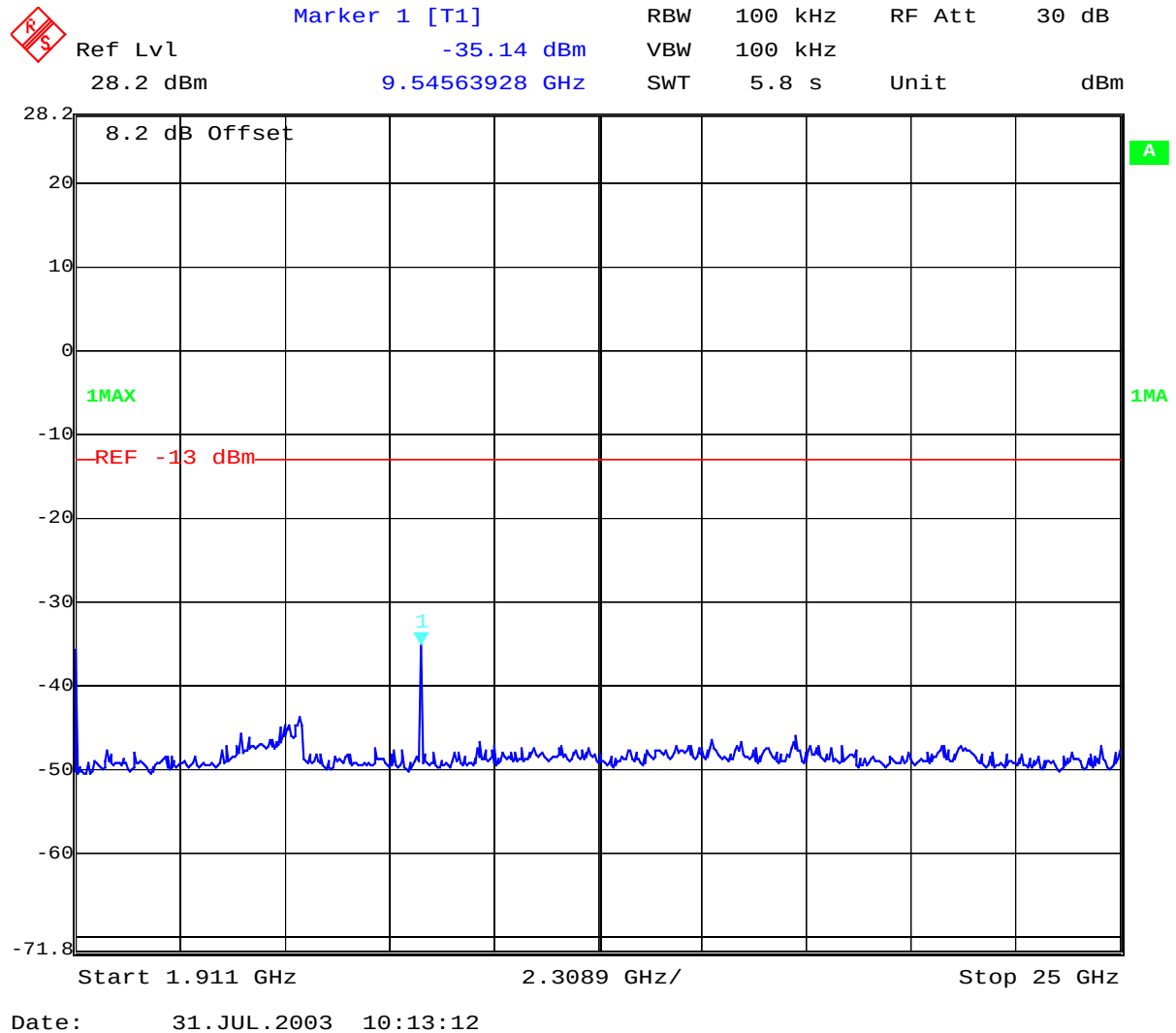
CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 34 (143)

Channel 810



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

BLOCK EDGE COMPLIANCE FOR BLOCK A, B, C, D, E AND F

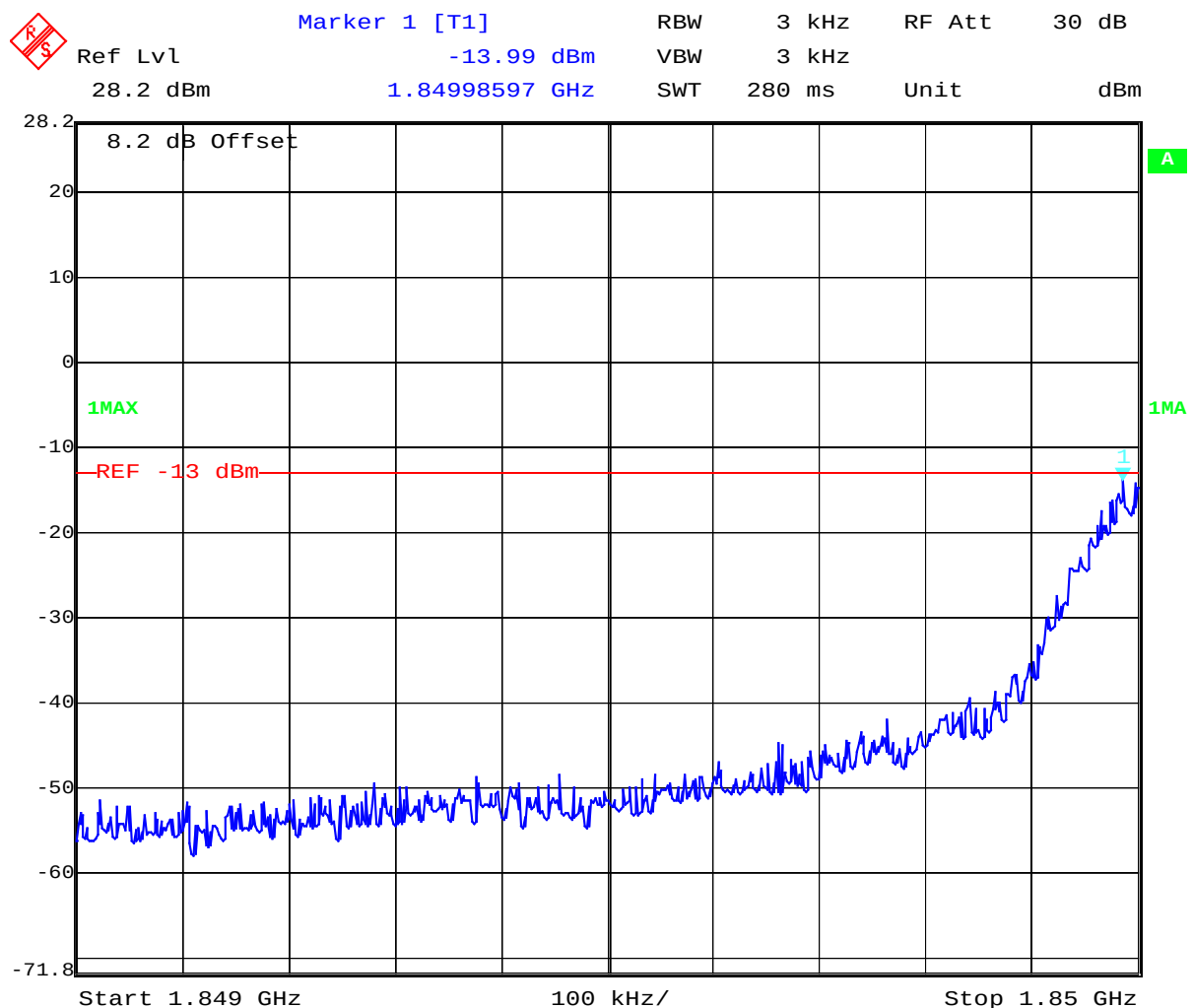
Measurement Limit:

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

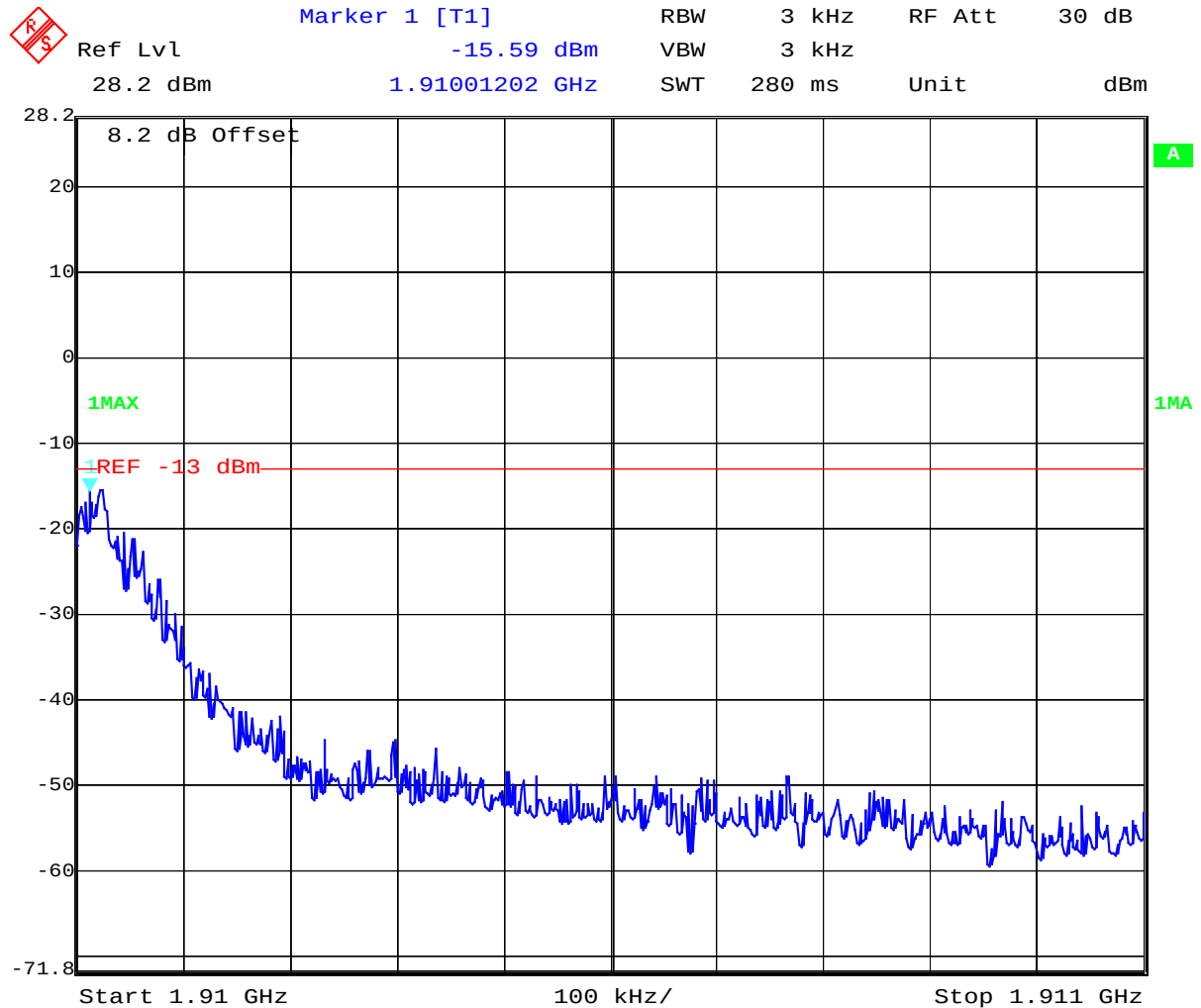


Date: 31.JUL.2003 10:15:06

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Block C Channel 810



Date: 31.JUL.2003 10:19:40

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

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 37 (143)

OCCUPIED BANDWIDTH

§2.989

Occupied Bandwidth Results

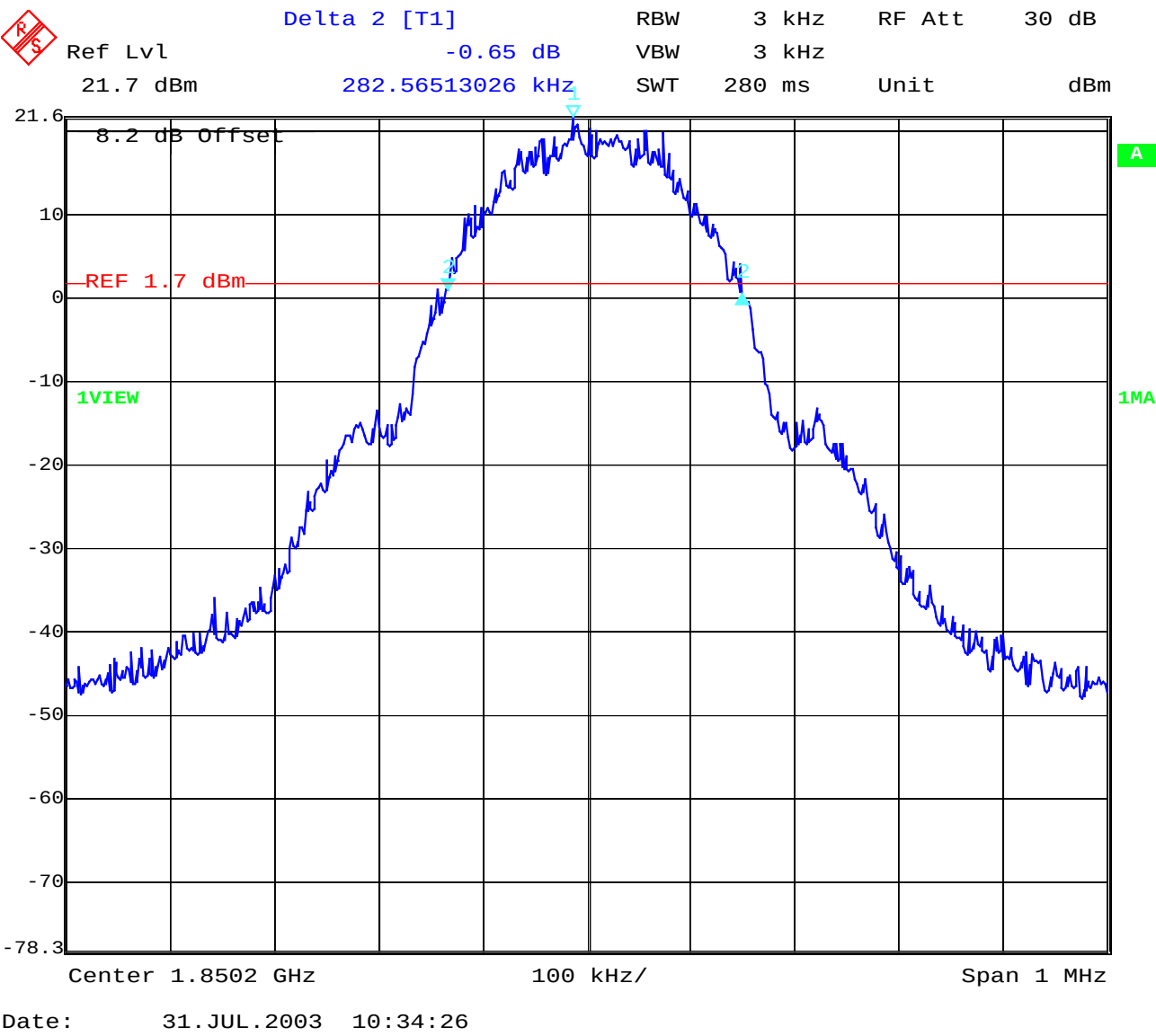
Similar to conducted emissions, occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the USPCS frequency band. Table 8.2 below lists the measured 99% power and -26dBC occupied bandwidths. Spectrum analyzer plots are included on the following pages.

Frequency	99% Occupied Bandwidth	-26 dBc Bandwidth
1850.2 MHz	282.565	314.629
1880.0 MHz	280.561	316.633
1909.8 MHz	272.545	314.629

Part 24.238 (a) requires a measurement bandwidth of at least 1% of the occupied bandwidth. For ca. 281 kHz, this equates to a resolution bandwidth of at least 3.0 kHz. For this testing, a resolution bandwidth 3.0 kHz was used.

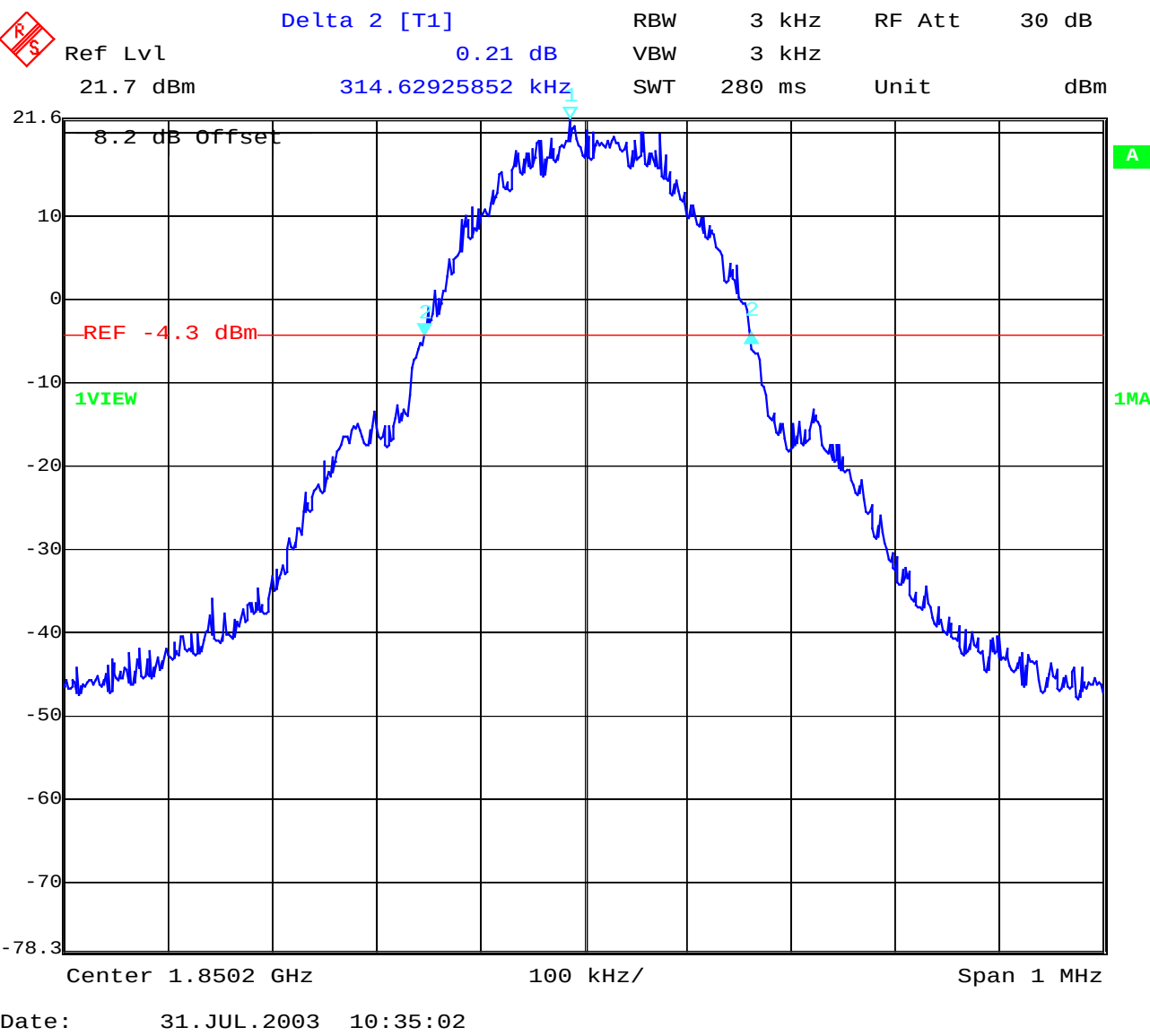
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Channel 512
99% Occupied Bandwidth



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

Channel 512
-26 dBc Bandwidth



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

CETECOM ICT Services GmbH

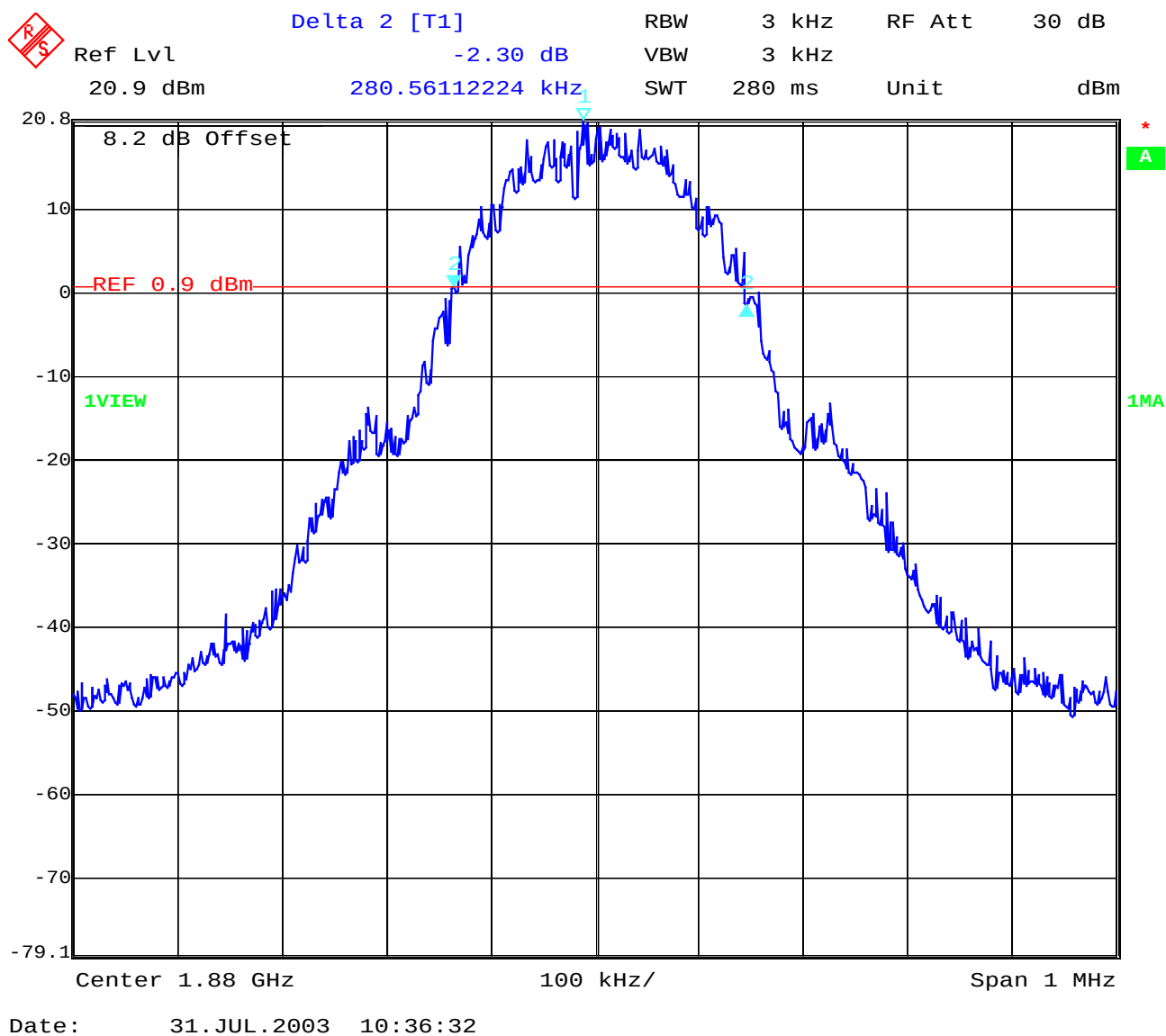
Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 40 (143)

Channel 661

99% Occupied Bandwidth



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

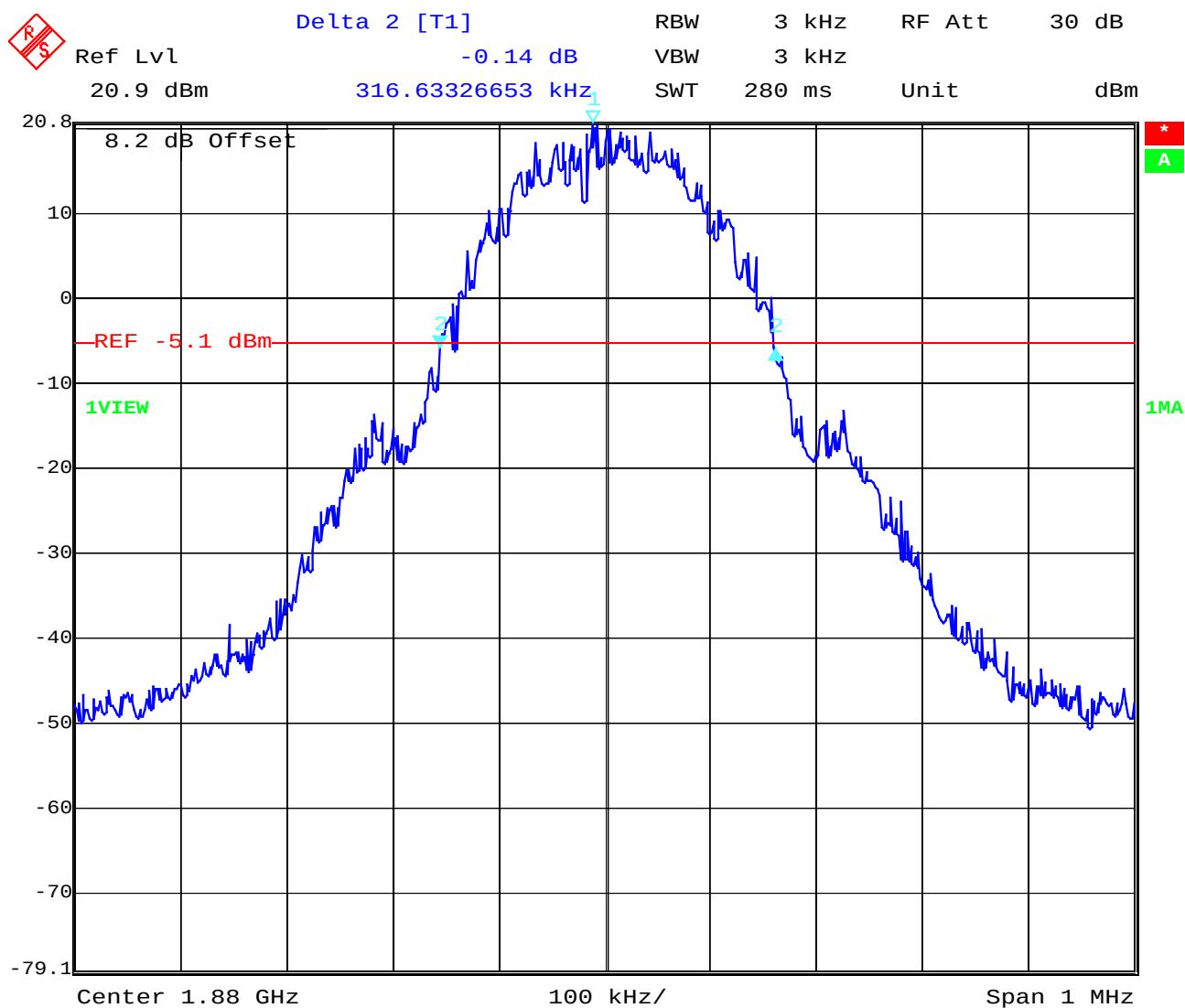
CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 41 (143)

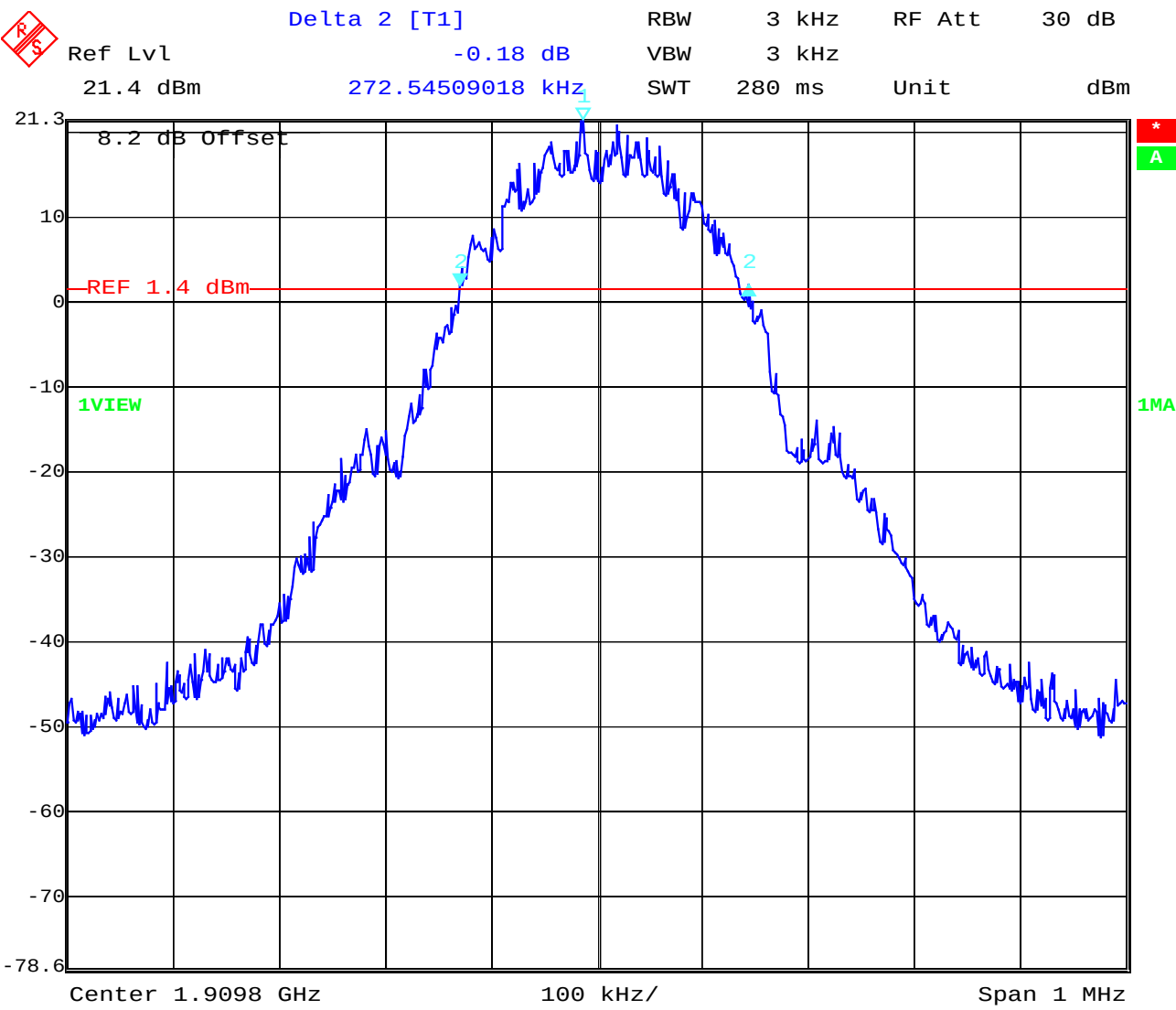
Channel 661 -26 dBc Bandwidth



Date: 31. JUL. 2003 10:37:11

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

Channel 810
99% Occupied Bandwidth



Date: 31. JUL. 2003 10:38:36

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

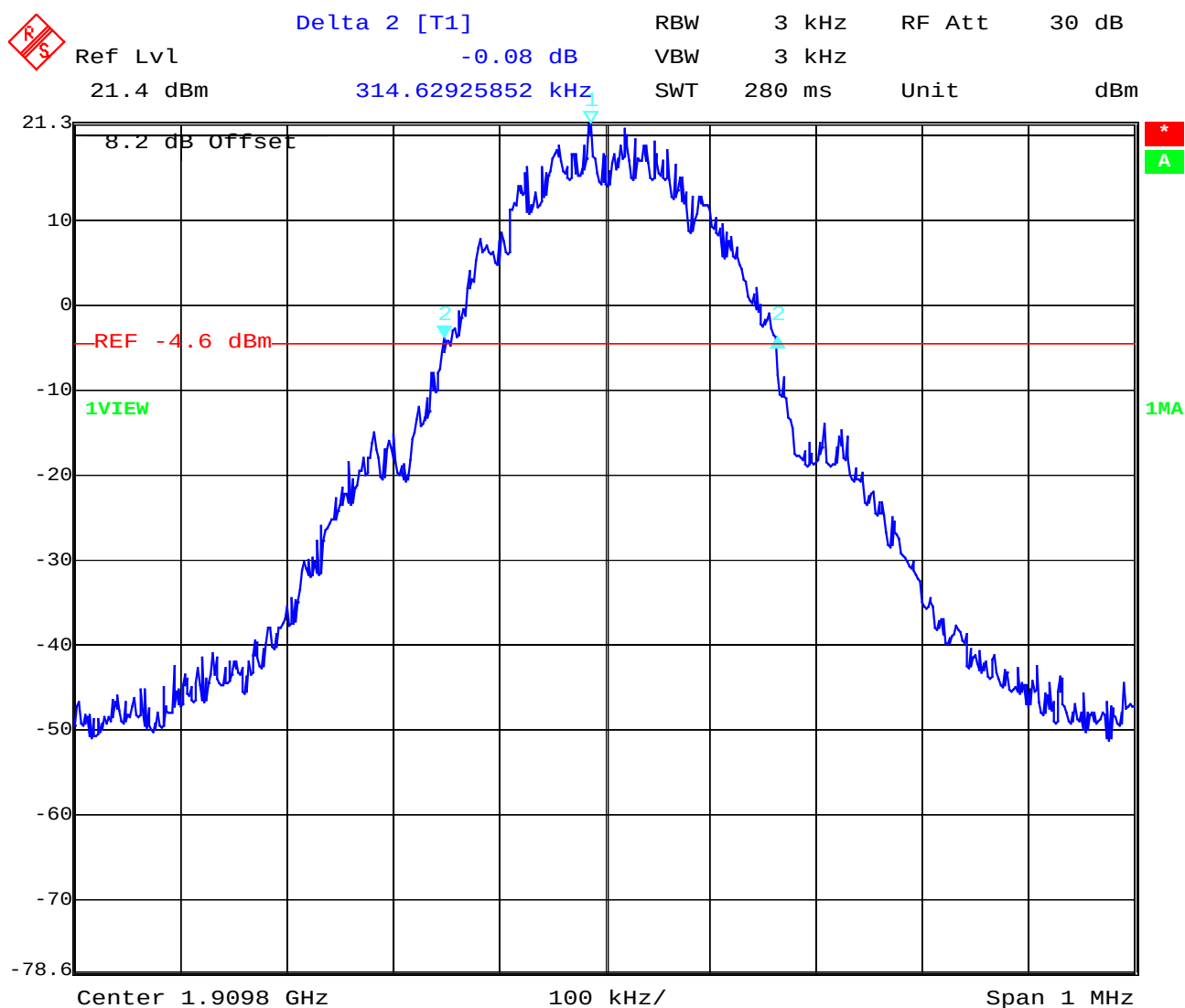
CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 43 (143)

Channel 810 -26 dBc Bandwidth



Date: 31. JUL. 2003 10:39:30

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

CONDUCTED EMISSIONS

§ 15.107/207

With charger TA3651-US, idle mode (Valid for PCS 850 and PCS1900)

CISPR 22

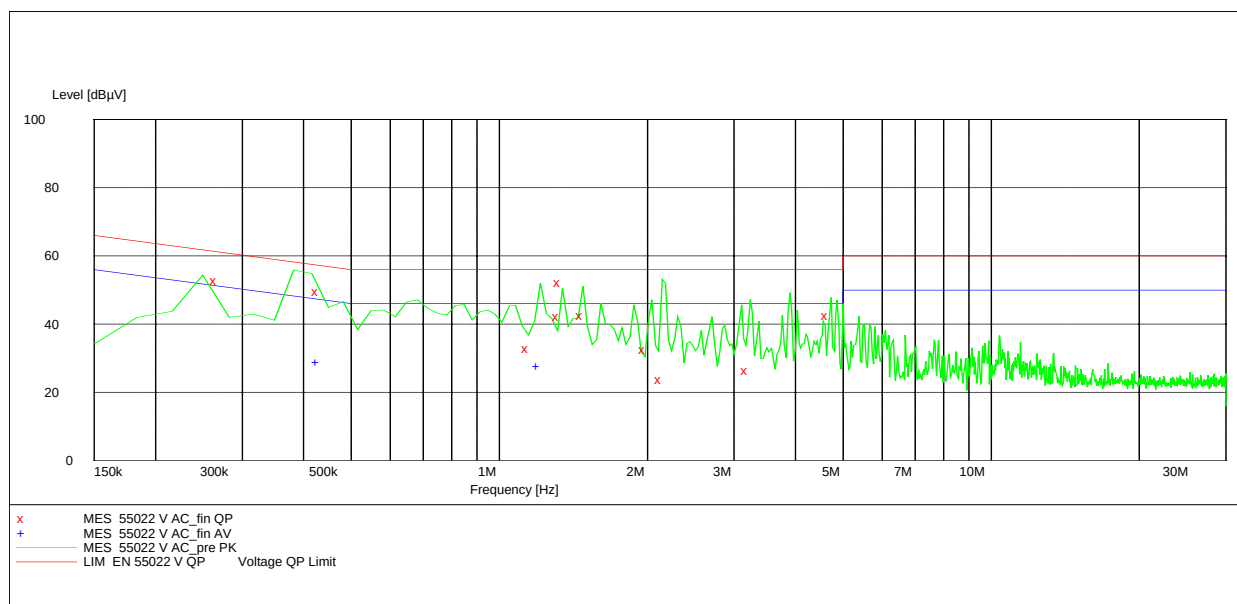
EUT: Mobil-phone B2003a

Manufacturer: Sagem

Operating Condition: With charging unit TA3651-US, idle mode

Test Specification: CISPR 22

Comment: pass



MEASUREMENT RESULT: "CISPR22 AC_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.270000	52.80	10.8	61	8.3	N	FLO
0.435000	49.50	10.5	57	7.7	L1	FLO
1.162500	32.80	10.3	56	23.2	L1	GND
1.342500	42.30	10.3	56	13.7	N	FLO
1.350000	52.30	10.3	56	3.7	N	FLO
1.500000	42.40	10.3	56	13.6	L1	GND
2.010000	32.60	10.4	56	23.4	L1	GND
2.167500	23.60	10.4	56	32.4	L1	GND
3.240000	26.30	10.5	56	29.7	L1	GND
4.725000	42.50	10.5	56	13.5	L1	GND

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03 Issue Date: 2003-08-07 Page 45 (143)

MEASUREMENT RESULT: "CISPR22 AC_{fin} AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.435000	28.70	10.5	47	18.5	L1	FLO
1.222500	27.60	10.3	46	18.4	L1	GND

Limit § 15.207

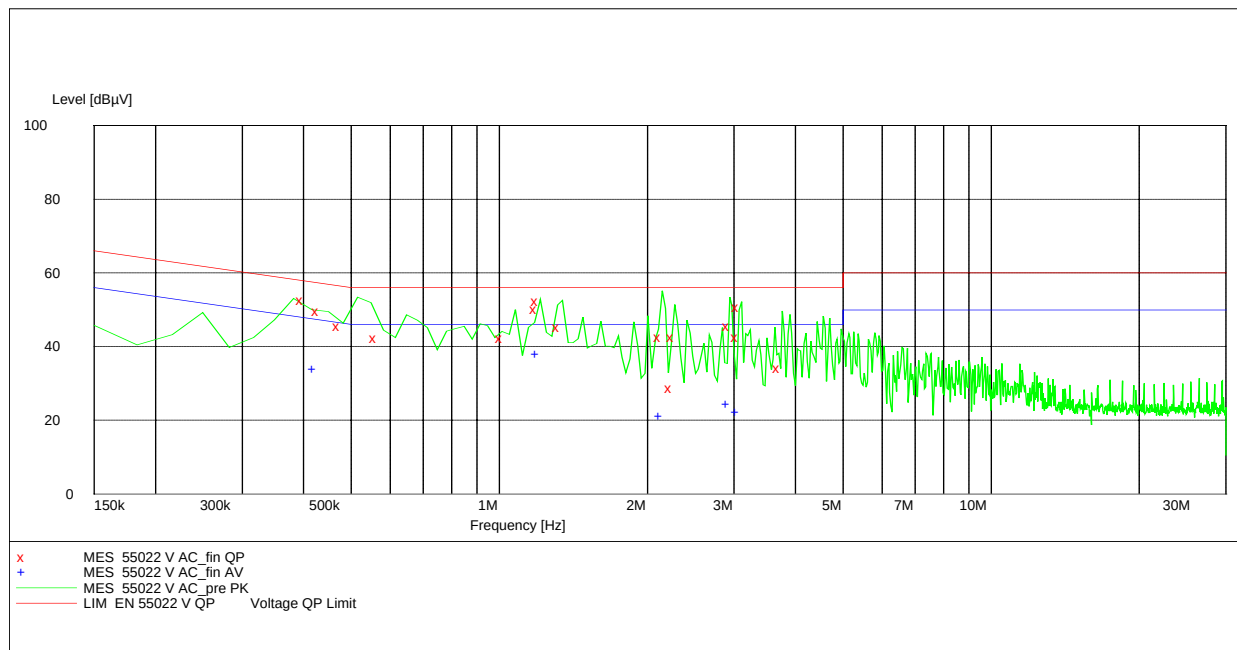
Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

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

With charger TA3651-US, traffic mode (Valid for PCS 850 and PCS1900)

EUT: Mobile phone B2003A
 Manufacturer: Sagem
 Operating Condition: With charging unit TA3651-US, traffic mode mode
 Test Specification: CISPR 22
 Comment: pass



MEASUREMENT RESULT: "CISPR22 AC_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.405000	52.70	10.6	58	5.1	L1	FLO
0.435000	49.50	10.5	57	7.7	L1	FLO
0.480000	45.50	10.3	56	10.8	L1	FLO
0.570000	42.30	10.4	56	13.7	L1	FLO
1.027500	42.20	10.3	56	13.8	L1	FLO
1.207500	50.10	10.3	56	5.9	L1	FLO
1.215000	52.30	10.3	56	3.7	L1	FLO
1.342500	45.30	10.3	56	10.7	L1	FLO
2.152500	42.50	10.4	56	13.5	L1	FLO
2.272500	28.80	10.4	56	27.2	L1	FLO
2.287500	42.40	10.4	56	13.6	L1	FLO
2.970000	45.50	10.4	56	10.5	N	FLO
3.097500	42.40	10.4	56	13.6	N	GND
3.105000	50.80	10.4	56	5.2	N	GND
3.765000	34.20	10.5	56	21.8	N	GND

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 47 (143)

MEASUREMENT RESULT: "CISPR22 AC_{fin} AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.427500	33.80	10.5	47	13.5	L1	FLO
1.215000	38.00	10.3	46	8.0	L1	FLO
2.160000	21.00	10.4	46	25.0	L1	FLO
2.962500	24.30	10.4	46	21.7	N	FLO
3.097500	22.10	10.4	46	23.9	N	GND

Limit § 15.207

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

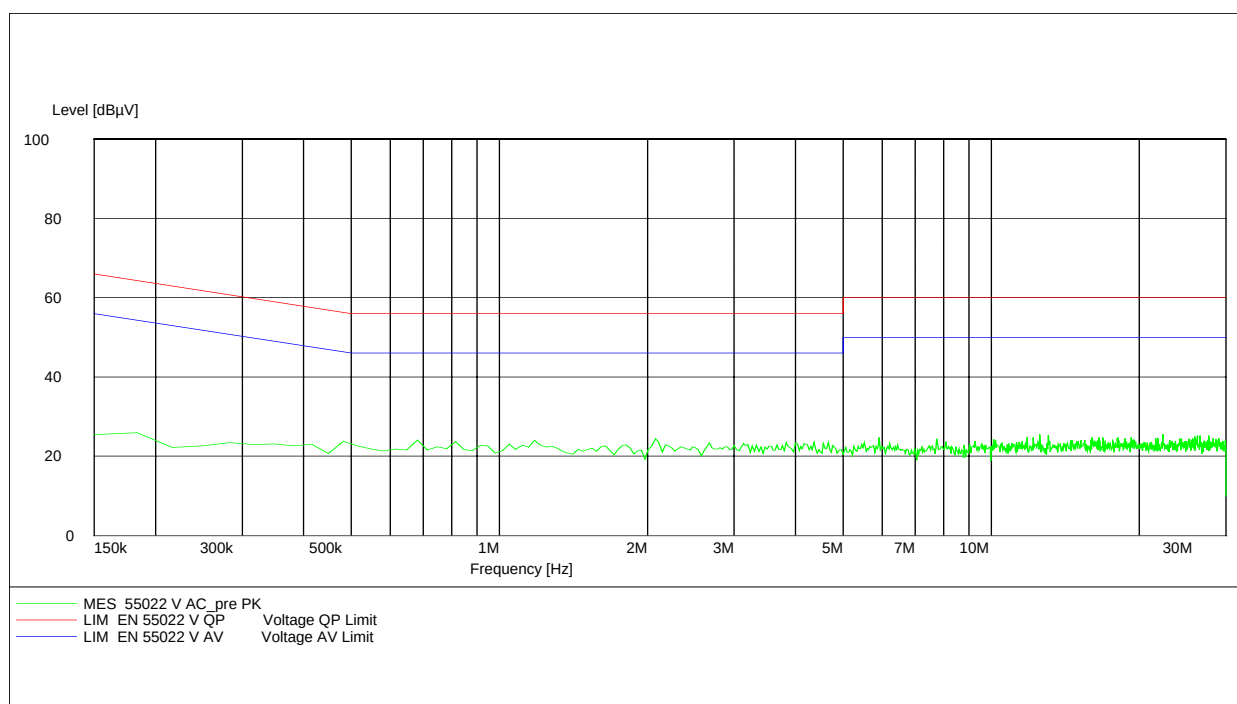
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

17 – 24; 64

With charger 18805593-9, idle mode (Valid for PCS 850 and PCS1900)

CISPR 22

EUT: B2003a
 Manufacturer: Sagem
 Operating Condition: With charging unit 18805593-9, idle mode
 Test Specification: CISPR22
 Comment: pass



Limit § 15.207

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

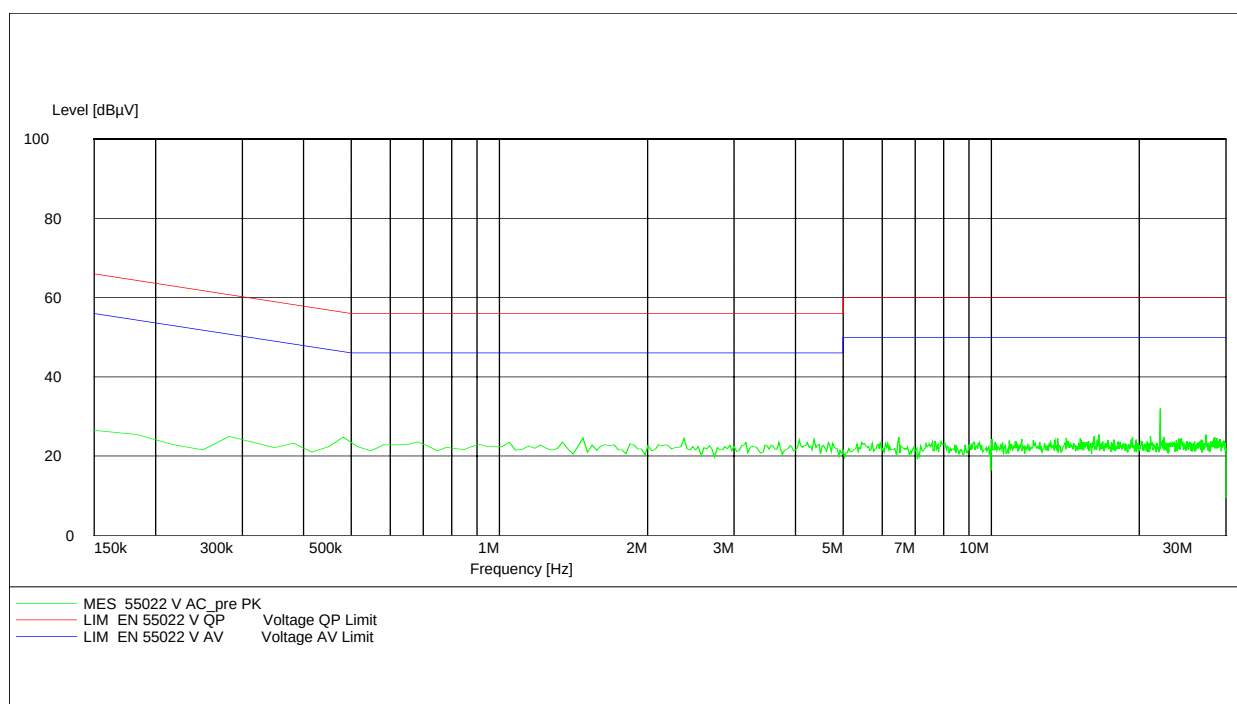
Issue Date: 2003-08-07

Page 49 (143)

With charger 18805593-9, traffic mode (Valid for PCS 850 and PCS1900)

CISPR 22

EUT: B2003a
Manufacturer: Sagem
Operating Condition: With charging unit 18805593-9, traffic mode
Test Specification: CISPR22
Comment: pass



Limit § 15.207

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

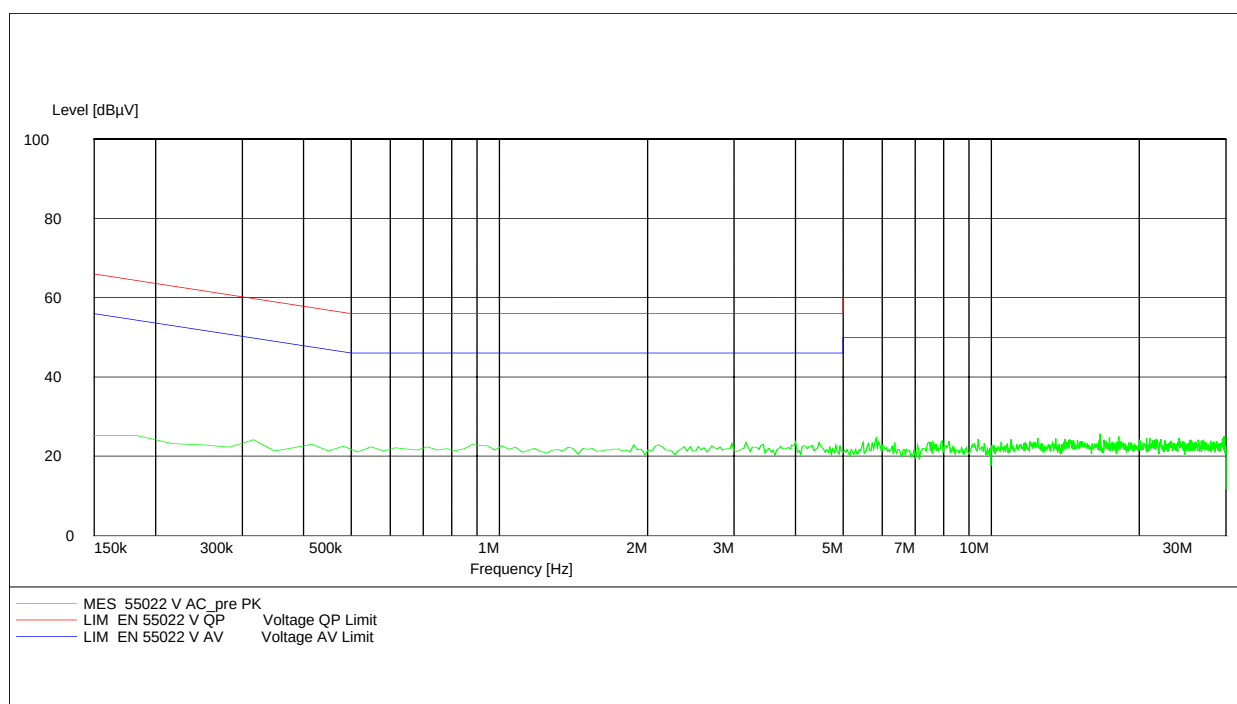
Issue Date: 2003-08-07

Page 50 (143)

With charger DTC3515 045E040E, idle mode (Valid for PCS 850 and PCS1900)

CISPR 22

EUT: B2003a
Manufacturer: Sagem
Operating Condition: With charging unit DTC3515-045E040E, idle mode
Test Specification: CISPR22
Comment: pass



Limit § 15.207

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

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

17 – 24; 64

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

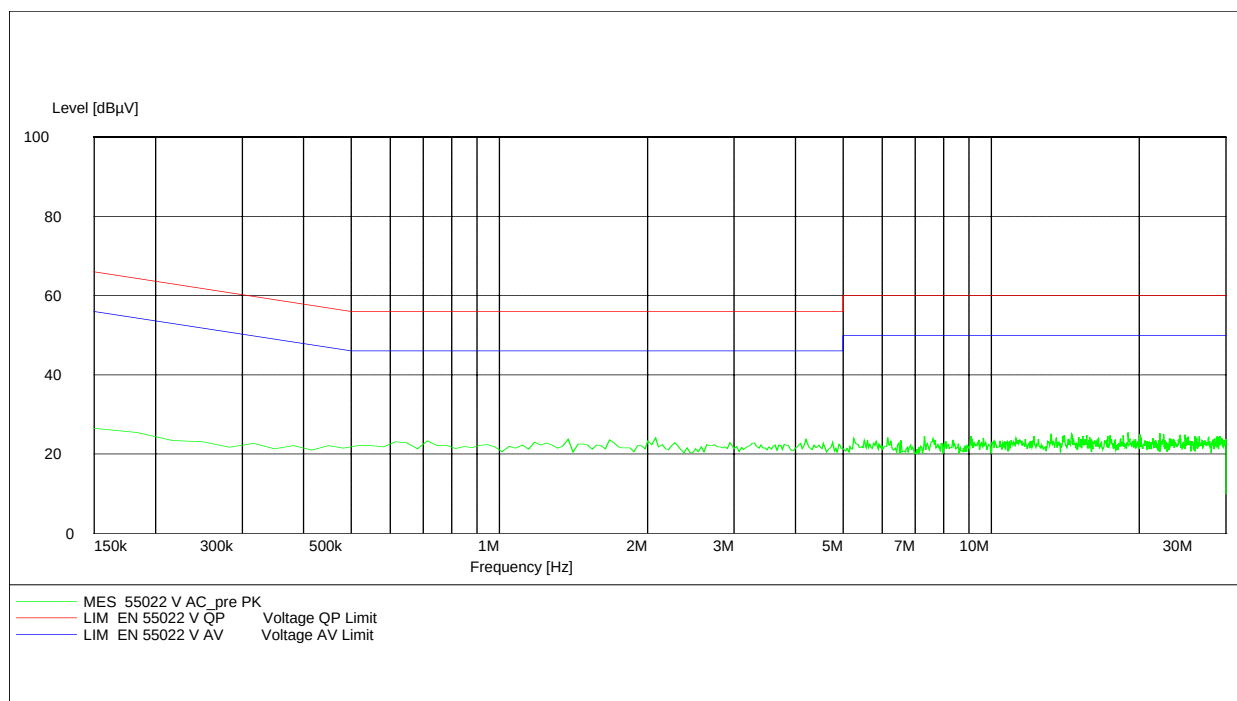
Issue Date: 2003-08-07

Page 51 (143)

With charger DTC3515 045E040E, idle mode (Valid for PCS 850 and PCS1900)

CISPR 22

EUT: B2003a
Manufacturer: Sagem
Operating Condition: With charging unit DTC3515-045E040E, traffic mode
Test Specification: CISPR22
Comment: pass



Limit § 15.207

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

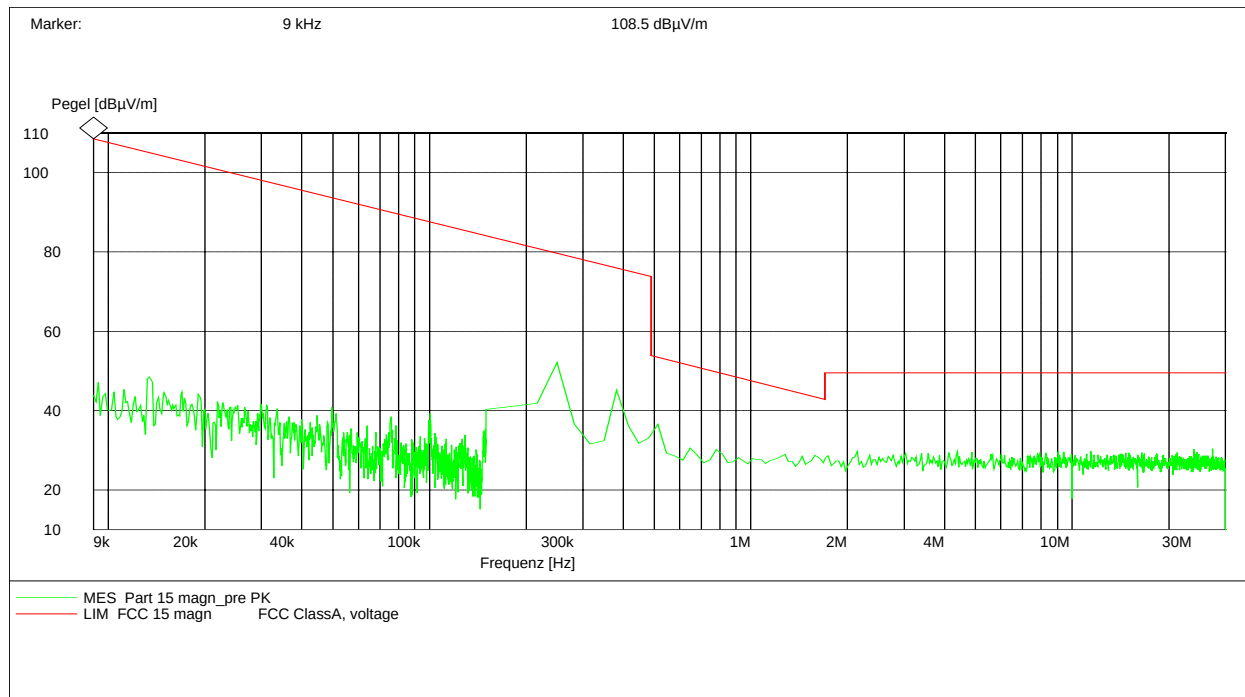
(for reference numbers see test equipment listing)

17 – 24; 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
Manufacturer: Sagem
Operating Condition: Charger TA3651-US
Test Specification: 110V / 60 Hz, traffic and idle mode
Comment: pass



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

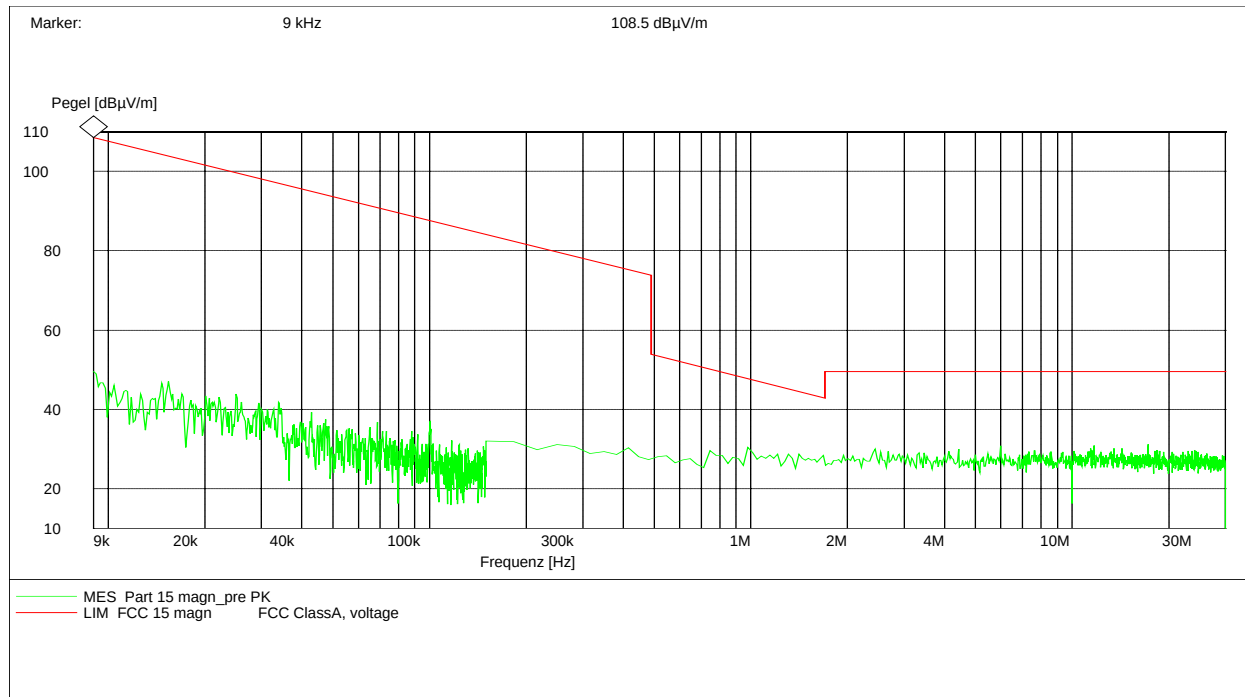
(for reference numbers see test equipment listing)

17 – 24; 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
Manufacturer: Sagem
Operating Condition: Charger 18805593-9
Test Specification: traffic and idle mode
Comment: pass



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

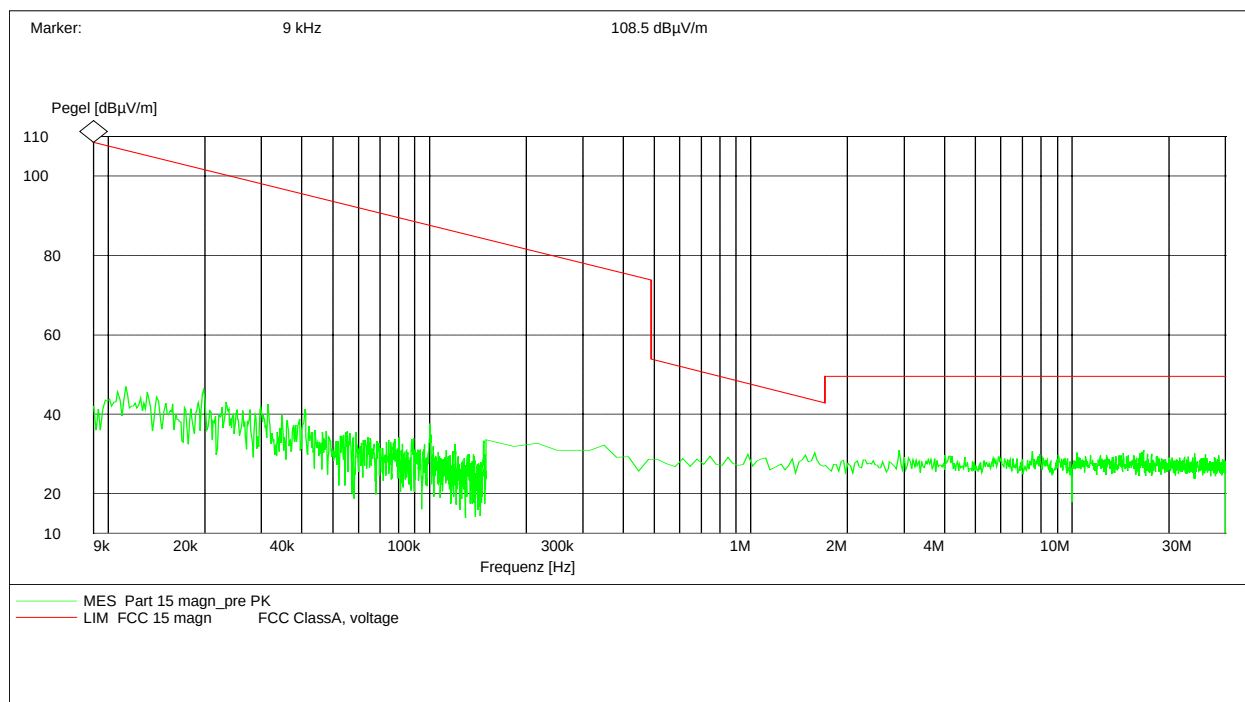
(for reference numbers see test equipment listing)

17 – 24; 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
Manufacturer: Sagem
Operating Condition: Charger DTC3515 045E040E
Test Specification: traffic and idle mode
Comment: pass



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

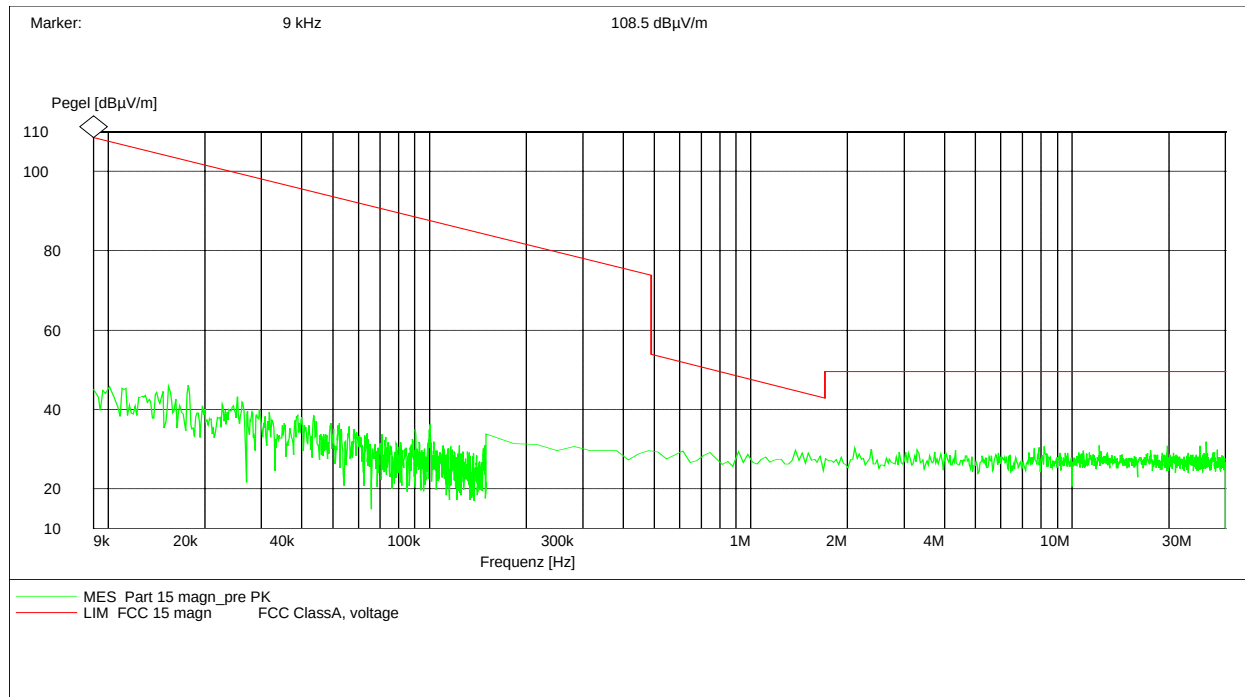
(for reference numbers see test equipment listing)

17 – 24; 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
Manufacturer: Sagem
Operating Condition: with car kit A17-BA10-10
Test Specification: traffic and idle mode
Comment: pass



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

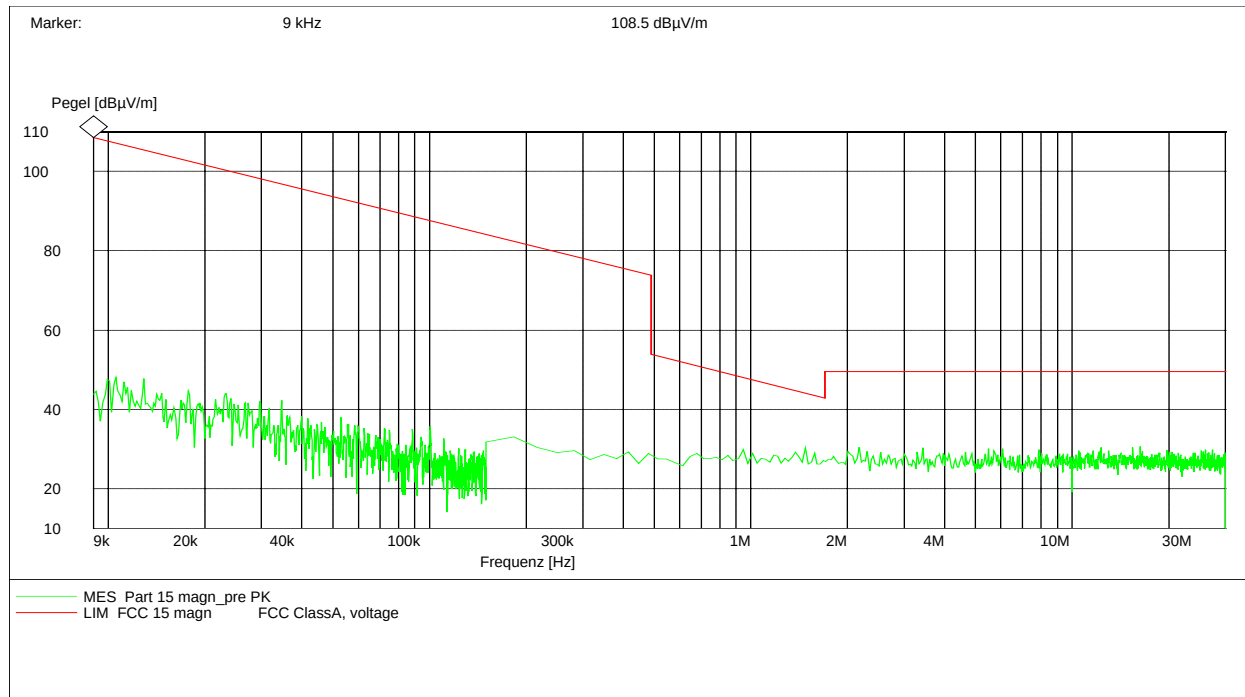
EUT: Mobile phone 2003a

Manufacturer: Sagem

Operating Condition: with cigar lighter adapter 23811253-7 and data cable 23810787-0

Test Specification: traffic and idle mode

Comment: pass



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

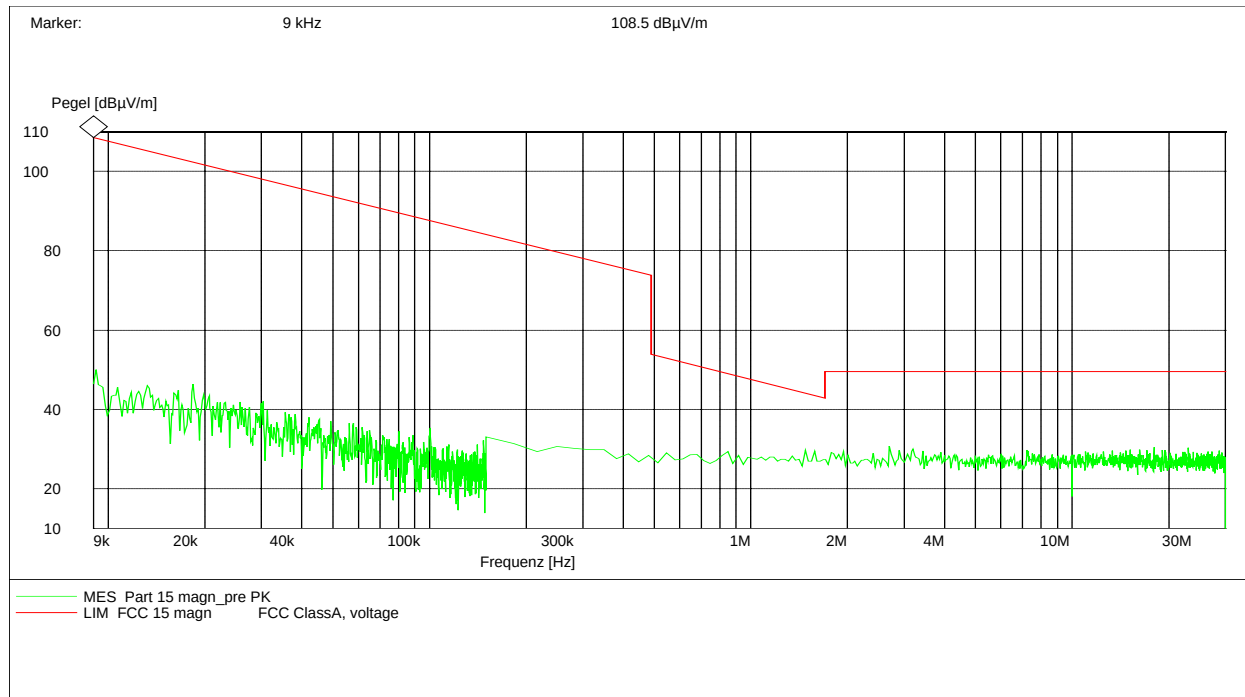
(for reference numbers see test equipment listing)

17 – 24; 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
Manufacturer: Sagem
Operating Condition: with headset 23812517-0
Test Specification: traffic and idle mode
Comment: pass



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 58 (143)

PART PCS 850

POWER OUTPUT

SUBCLAUSE § 24.232

Summery:

This paragraph contains both average , peak output powers and EIRP measurements for the mobile station.

In all cases, the peak output power is within the required mask (this mask is specified in the JTC standards, TIA PN3389 Vol. 1 Chap 7, and is no FCC requirement).

Method of Measurements:

The mobile was set up for the max. output power with pseudo random data modulation.

The power was measured with R&S Signal Analyzer FSIQ 26 (peak and average)

This measurements were done at 3 frequencies, 824.2 MHz, 836.2 MHz and 848.8 MHz (bottom, middle and top of operational frequency range)

Limits:

Power Step	Nominal Peak Output Power (dBm)	Tolerance (dB)
5	+33	± 2

Power Measurements:

Conducted:

Frequency (MHz)	Power Step	Peak Output Power (dBm)	Average Output Power (dBm)
824.2	5	33.10	33.00
836.4	5	33.20	33.10
848.8	5	33.30	33.20
Measurement uncertainty		±0.5 dB	

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24; 64

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 59 (143)

EIRP Measurements

Description: This is the test for the maximum radiated power from the phone.

Rule Part 24.232(b) specifies that "Mobile/portable stations are limited to 2 watts e.i.r.p. peak power..." and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Method of Measurement:

1. In an anechoic antenna test chamber, a half-wave dipole antenna for the frequency band of interest is placed at the reference center of the chamber. An RF Signal source for the frequency band of interest is connected to the dipole with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A known (measured) power (P_{in}) is applied to the input of the dipole, and the power received (P_r) at the chamber's probe antenna is recorded.
2. A "reference path loss" is established as $P_{in} + 2.1 - P_r$.
3. The EUT is substituted for the dipole at the reference centre of the chamber. The EUT is put into CW test mode and a scan is performed to obtain the radiation pattern.
4. From the radiation pattern, the co-ordinates where the maximum antenna gain occurs is identified.
5. The EUT is then put into pulse mode at its maximum power level (Power Step 0).
6. "Gated mode" power measurements are performed with the receiving antenna placed at the co-ordinates determined in Step 3 to determine the output power as defined in FCC Rule 24.232 (b) and (c). The "reference path loss" from Step 1 is added to this result.
7. This value is EIRP since the measurement is calibrated using a half-wave dipole antenna of known gain (2.1 dBi) and known input power (P_{in}).
8. ERP can be calculated from EIRP by subtracting the gain of the dipole, $ERP = EIRP - 2.1\text{dBi}$.

Limits:

Power Step	Burst PEAK EIRP (dBm)
0	<33

Power Measurements (Radiated)

Frequency (MHz)	Power Step	BURST PEAK (dBm)		MODULATION AVERAGE (dBm)	
		EIRP	ERP	EIRP	ERP
824.2	5	26.20	24.10	20.20	18.10
836.4	5	26.20	24.10	20.20	18.10
848.8	5	26.30	24.20	20.30	18.20
Measurement uncertainty		± 3 dB			

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

17 – 24, 64

FREQUENCY STABILITY

SUBCLAUSE § 24.235

Method of Measurement:

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the mobile station in a “call mode”. This is accomplished with the use of a R&S CMU 200 DIGITAL RADIOCOMMUNICATION TESTER..

1. Measure the carrier frequency at room temperature.
2. Subject the mobile station to overnight soak at -30 C.
3. With the mobile station, powered with 3.6 Volts, connected to the CMU 200 and in a simulated call on channel 661 (centre channel), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the mobile station, to prevent significant self warming.
4. Repeat the above measurements at 10 C increments from -30 C to +60 C. Allow at least 1 1/2 hours at each temperature, un-powered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal 3.6 Volts. Vary supply voltage from minimum 3.3 Volts to maximum 4.4 Volts, in 13 steps re-measuring carrier frequency at each voltage. Pause at 3.7 V ac Volts for 1 1/2 hours un-powered, to allow any self heating to stabilize, before continuing.
6. Subject the mobile station to overnight soak at +60 C.
7. With the mobile station, powered with 3.7 Volts, connected to the CMU 200 and in a simulated call on channel 661(center channel), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the mobile station, to prevent significant self warming.
8. Repeat the above measurements at 10 C increments from +60 C to -30 C. Allow at least 1 1/2 hours at each temperature, un-powered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5 C during the measurement procedure.

Measurement Limit:

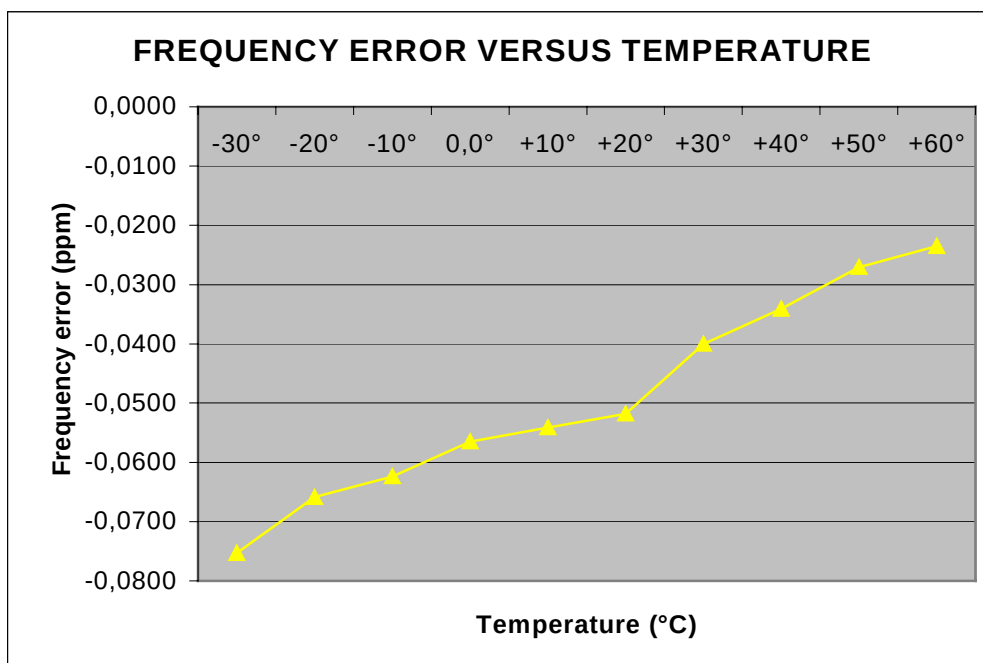
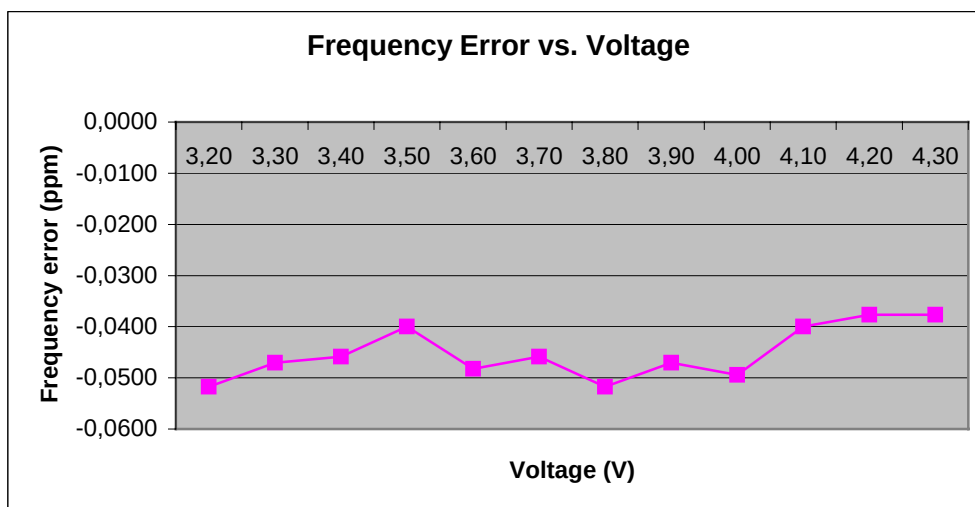
According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.. This transceiver is specified to operate with an input voltage of between 3.3 V dc and 4.4 V dc, with a nominal voltage of 3.8 V dc.

AFC FREQ ERROR vs. VOLTAGE

Voltage (V)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
3.3	-44	-0,00000518	-0,0518
3.4	-40	-0,00000471	-0,0471
3.5	-39	-0,00000459	-0,0459
3.6	-34	-0,00000400	-0,0400
3.7	-41	-0,00000482	-0,0482
3.8	-39	-0,00000459	-0,0459
3.9	-44	-0,00000518	-0,0518
4.0	-40	-0,00000471	-0,0471
4.1	-42	-0,00000494	-0,0494
4.2	-34	-0,00000400	-0,0400
4.3	-32	-0,00000376	-0,0376
4.4	-32	-0,00000376	-0,0376

AFC FREQ ERROR vs. TEMPERATURE

TEMPERATURE (°C)	Frequency Error (Hz)	Frequency Error (%)	Frequency Error (ppm)
-30	-64	-0,00000753	-0,0753
-20	-56	-0,00000659	-0,0659
-10	-53	-0,00000624	-0,0624
±0.0	-48	-0,00000565	-0,0565
+10	-46	-0,00000541	-0,0541
+20	-44	-0,00000518	-0,0518
+30	-34	-0,00000400	-0,0400
+40	-29	-0,00000341	-0,0341
+50	-23	-0,00000271	-0,0271
+60	-20	-0,00000235	-0,0235



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24, 64

EMISSIONS LIMITS

§24.238

Measurement Procedure:

The following steps outline the procedure used to measure the radiated emissions from the mobile station. The site is constructed in accordance with ANSI C63.4 – 1992 requirements and is recognized by the FCC to be in compliance for a 3 and a10 meter site. The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment, which is the transmitted carrier that can be as high as 848.8 MHz. This was rounded up to 12 GHz. The resolution bandwidth is set as outlined in Part 24.238. The spectrum was scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of the USPCS band.

The final open field emission (here 10m semi-anechoic chamber listed by FCC) test procedure is as follows:

- a) The test item was placed on a 0.8 meter high non-conductive stand at a 3 meter test distance from the receive antenna.
- b) The antenna output was terminated in a 50 ohm load.
- c) A double ridged waveguide antenna was placed on an adjustable height antenna mast 3 meters from the test item for emission measurements.
- d) Detected emissions were maximized at each frequency by rotating the test item and adjusting the receive antenna height and polarization. The maximum meter reading was recorded. The radiated emission measurements of the harmonics of the transmit frequency through the 10th harmonic were measured with peak detector and 1 MHz bandwidth. If the harmonic could not be detected above the noise floor, the ambient level was recorded. The equivalent power into a dipole antenna was calculated from the field intensity levels measured at 3 meters using the equation shown below:
- e) Now each detected emissions were substituted by the Substitution method, in accordance with the TIA/EIA 603 .

Measurement Limit:

Sec. 24.238 Emission Limits.

- (a) On any frequency outside a licensee' s frequency block (e.g. A, D, B, etc.) within 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. The specification that emissions shall be attenuated below the transmitter power (P) by at least $43 + 10 \log (P)$ dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 64 (143)

Measurement Results:

Radiated emissions measurements were made only at the upper, center, and lower carrier frequencies of the USPCS band (824.2 MHz, 836.2 MHz and 848.8 MHz). It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the USPCS band into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

RESULTS OF OPEN FIELD RADIATED TEST FOR FCC-24:

The final open field radiated levels are presented on the next pages.

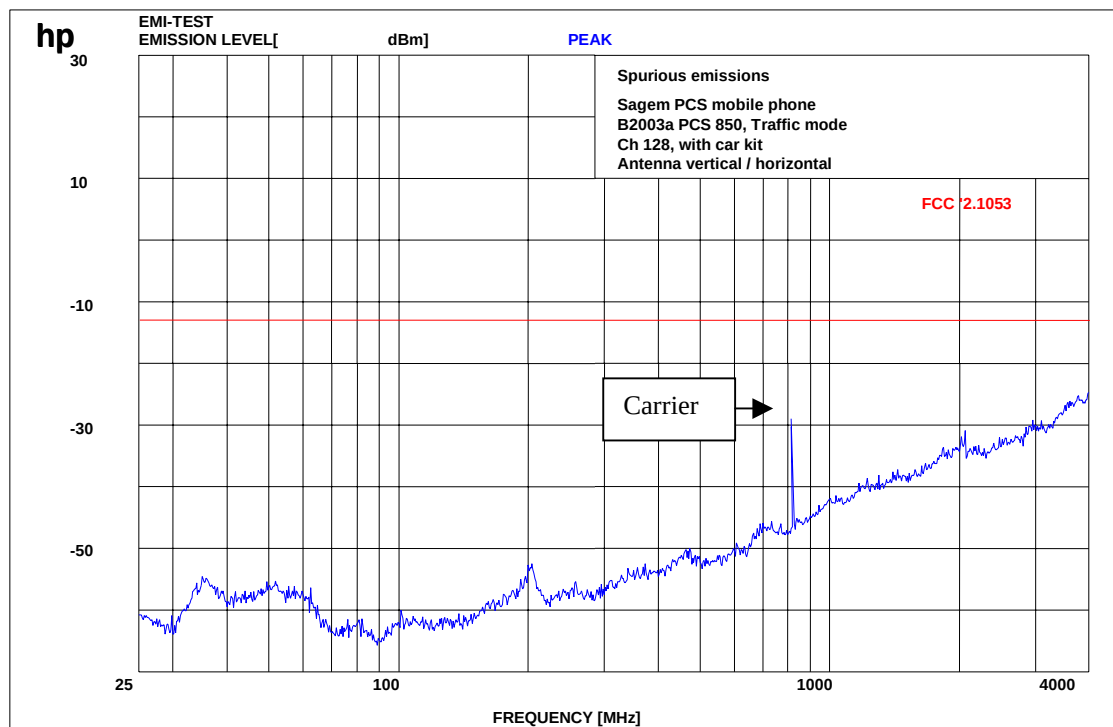
All measurements were done in horizontal and vertical polarization, the plots shows the worst case.

As can be seen from this data, the emissions from the test item were within the specification limit.

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBm)	limit max. allowed emission power (dBm)	actual attenuation below frequency of operation (dBc)	results
CH 128					
824.2		25.10	-13.0 (38.20 dBc)		carrier
4128.0		-35.10		60.60	complies
CH 189					
836.4		25.50	-13.0 (39.20 dBc)		carrier
4182.0		-41.40		66.90	complies
CH 251					
848.8		25.30	-13.0 (39.40 dBc)		carrier
4244.0		-46.8		72.1	complies
Measurement uncertainty		± 0.5dB			

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

Channel 128 (up to 4 GHz)



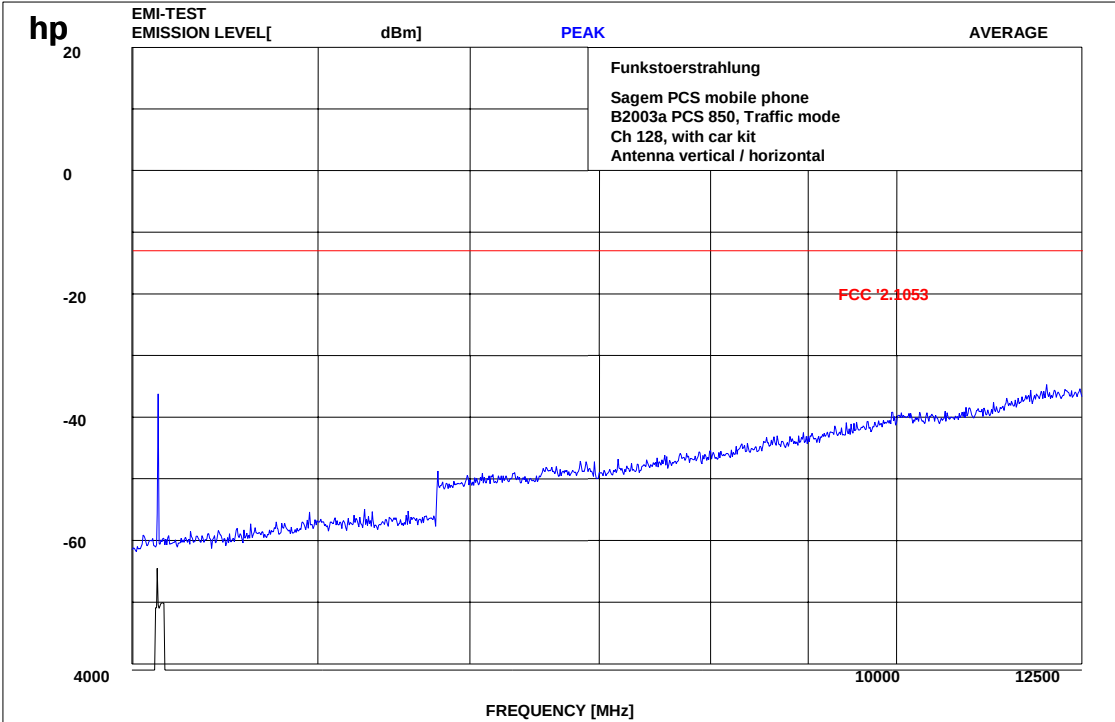
$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz

Carrier suppressed with a rejection filter

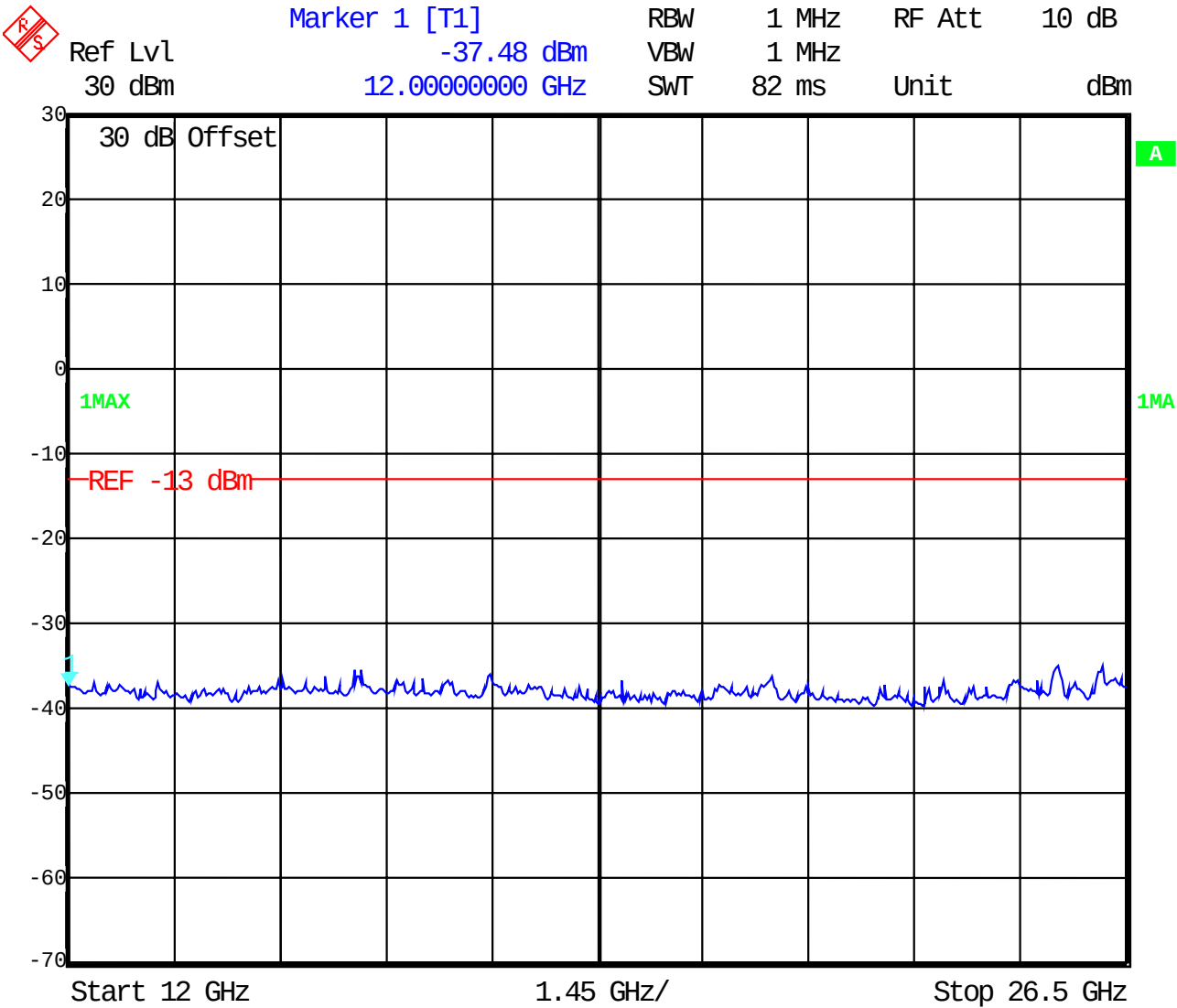
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Channel 128 (up to 12 GHz)

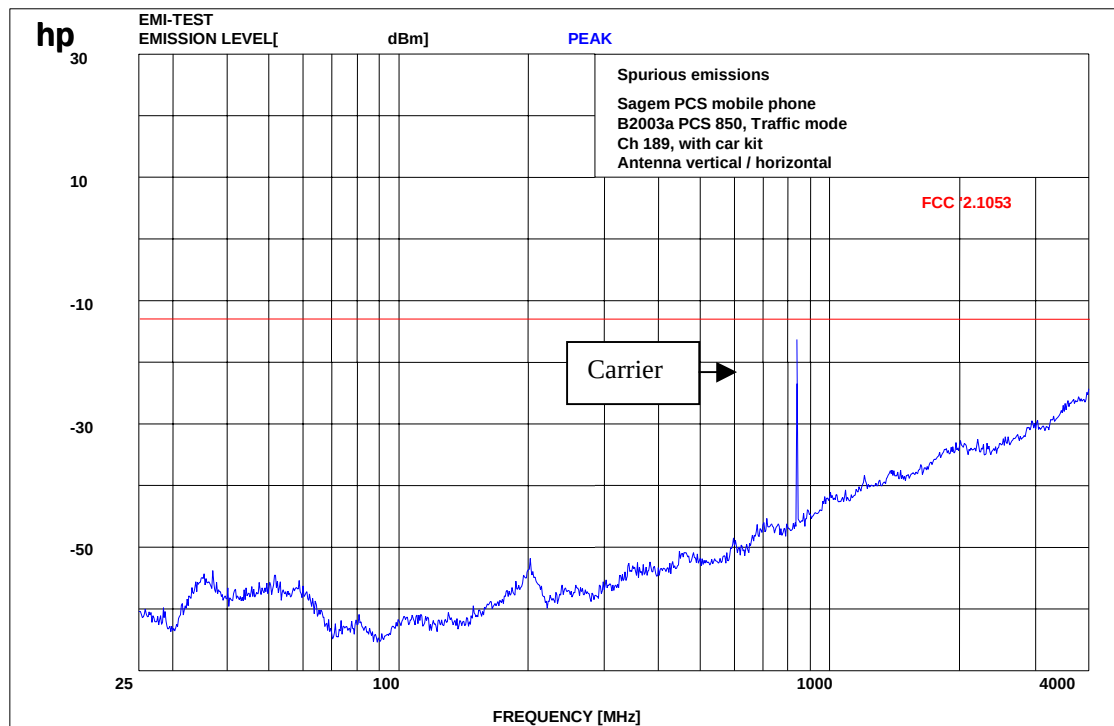


f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW/VBW 1 MHz
Carrier suppressed with a rejection filter

Channel 128 :- 25 GHz



Channel 189 (up to 4 GHz)

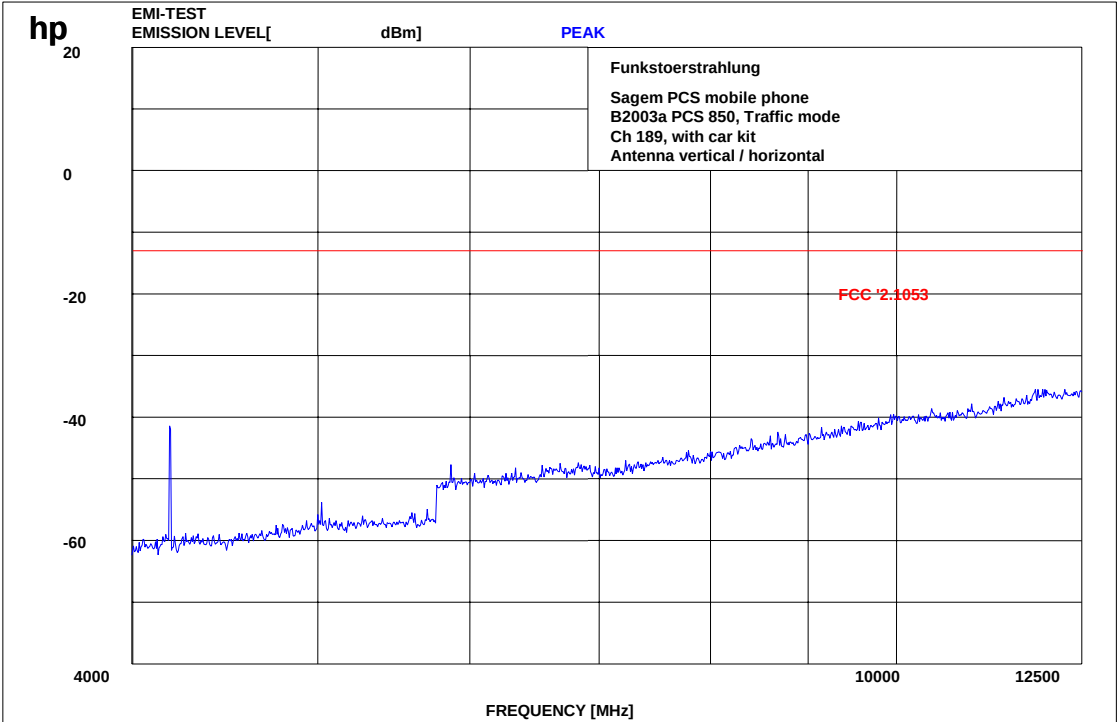


$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz

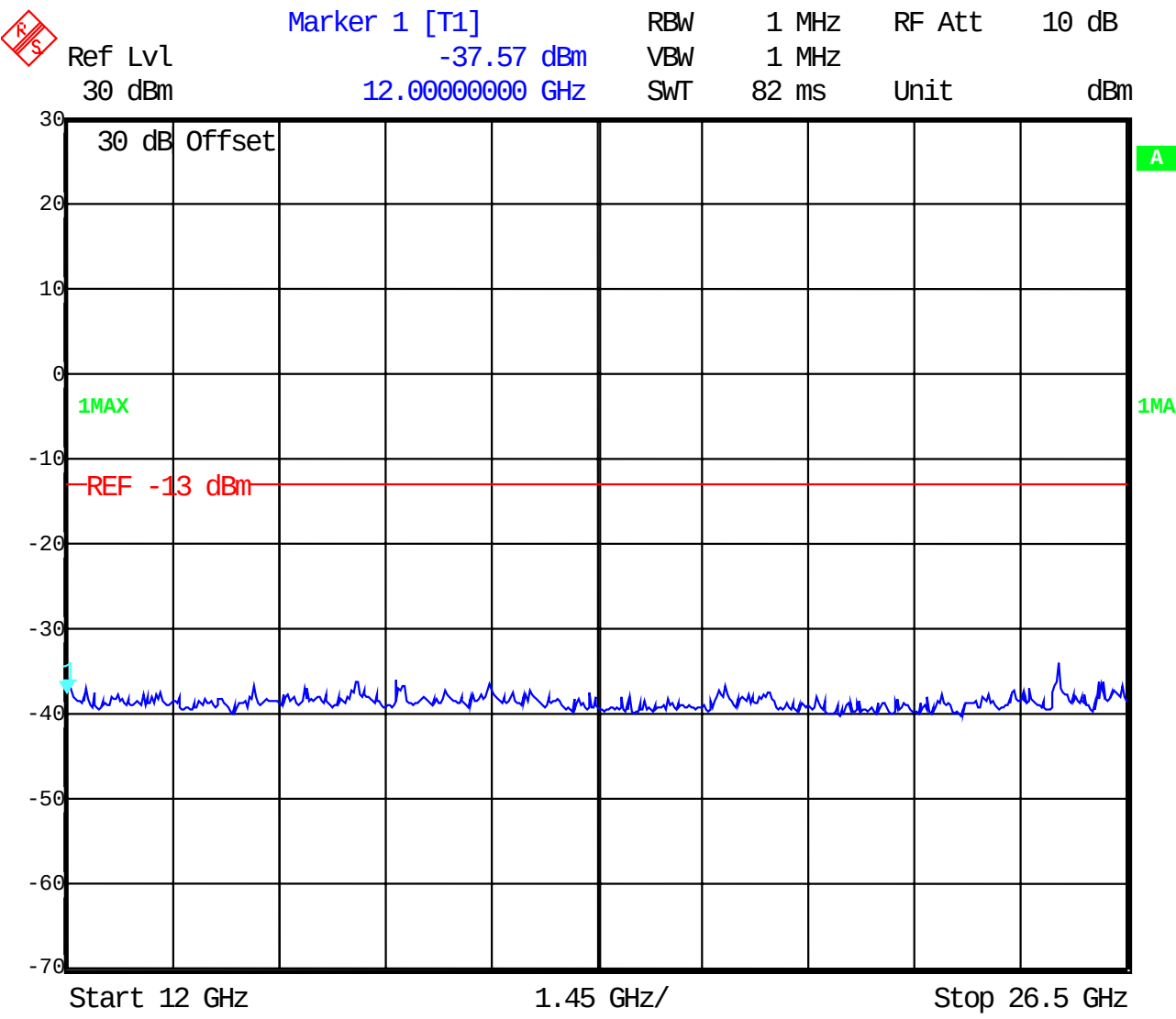
Carrier suppressed with a rejection filter

Channel 189 (up to 12 GHz)

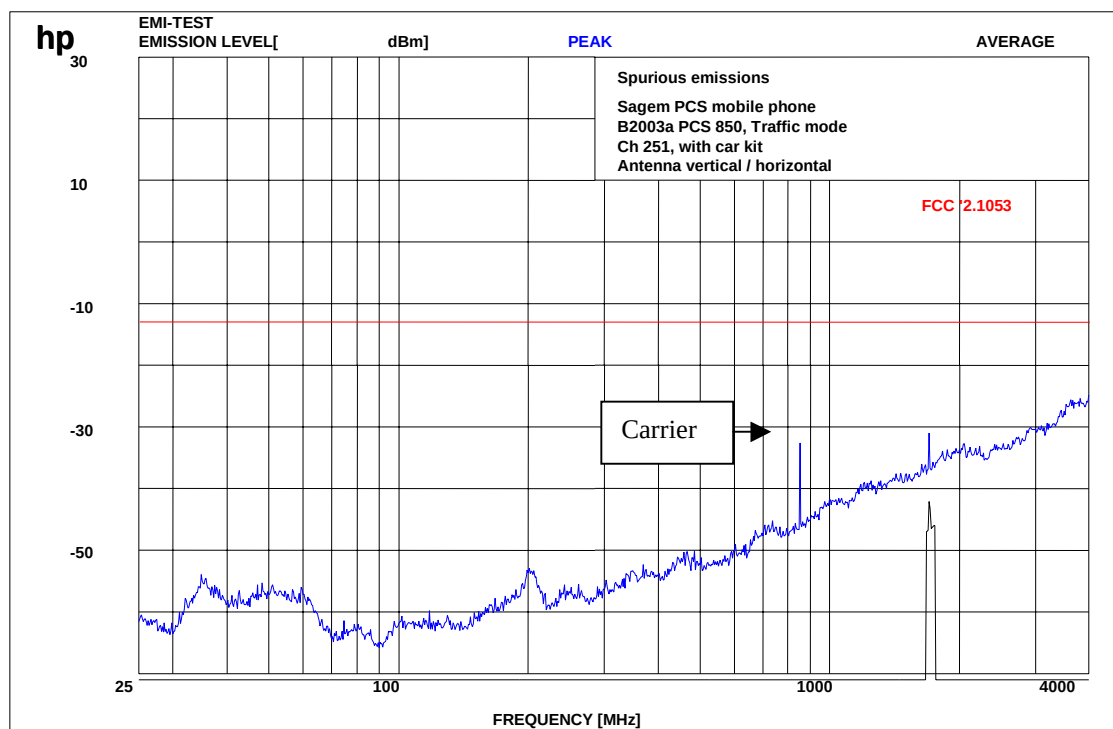


f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW/VBW 1 MHz
Carrier suppressed with a rejection filter

Channel 189 : -25 GHz



Channel 251 up to 4 GHz

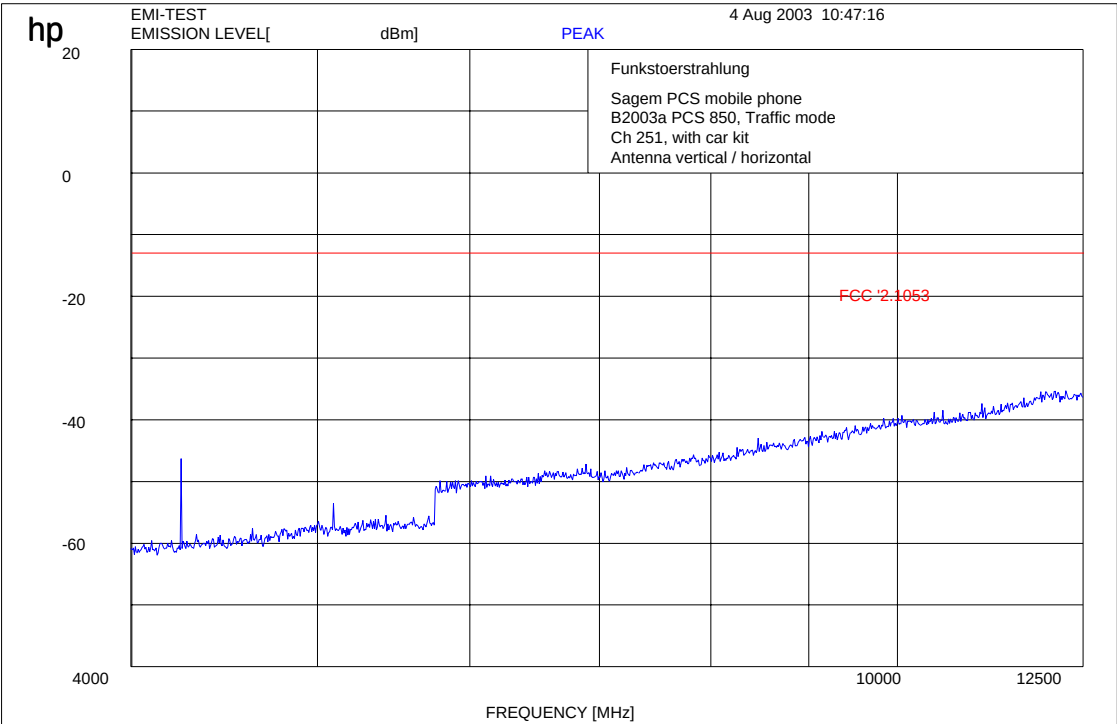


$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz

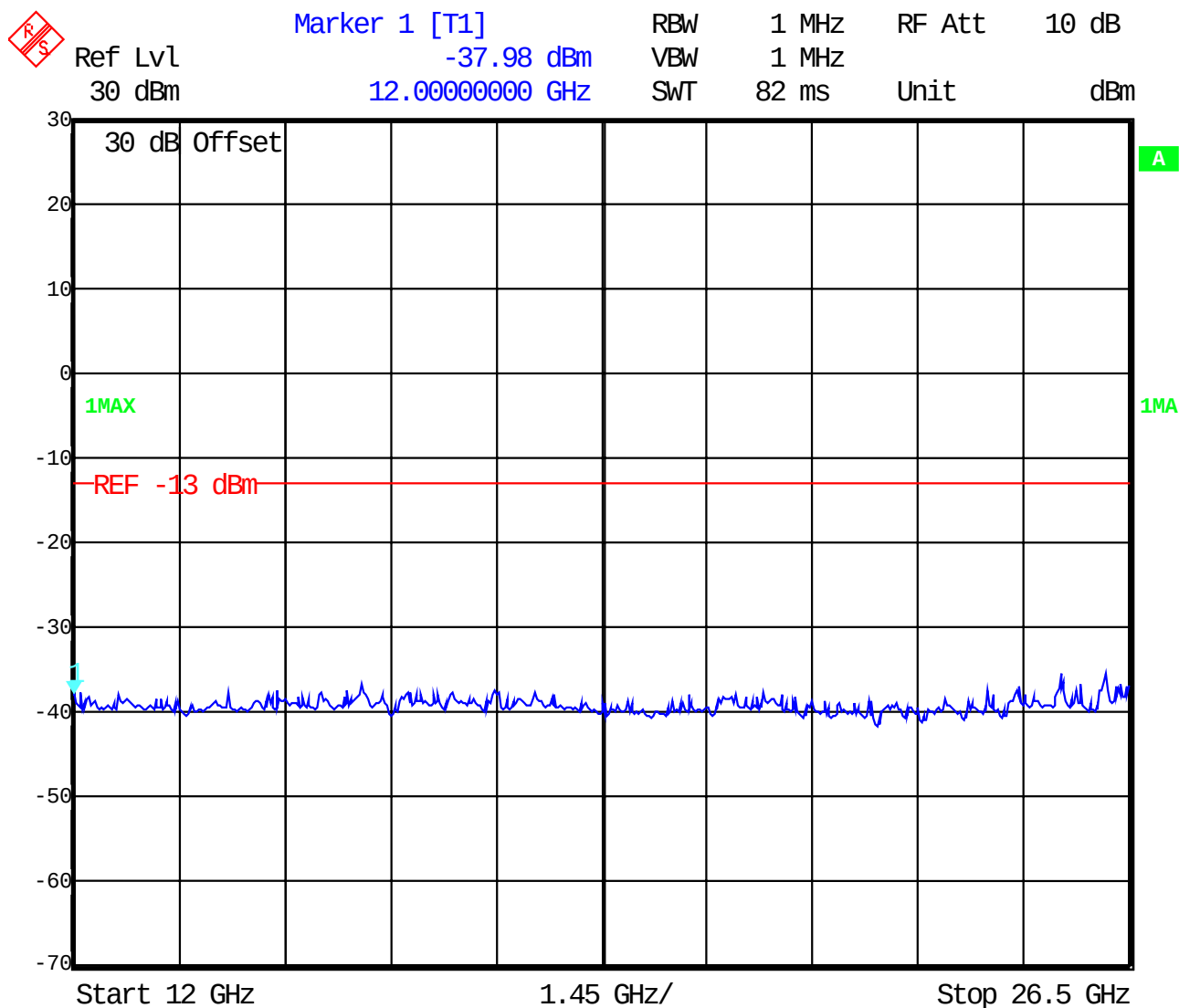
Carrier suppressed with a rejection filter

Channel 251 up to 12 GHz

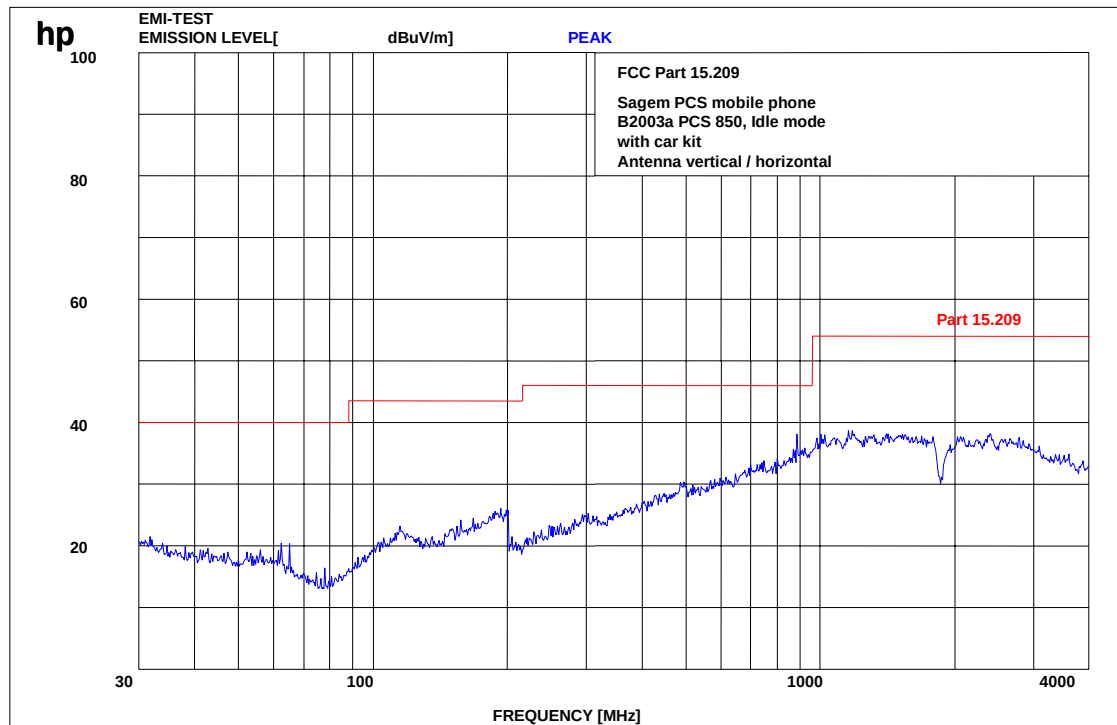


$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz $f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz
Carrier suppressed with a rejection filter

Channel 251 : -25 GHz



Idle-Mode (this is valid for all channels and up to 4 GHz)



$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

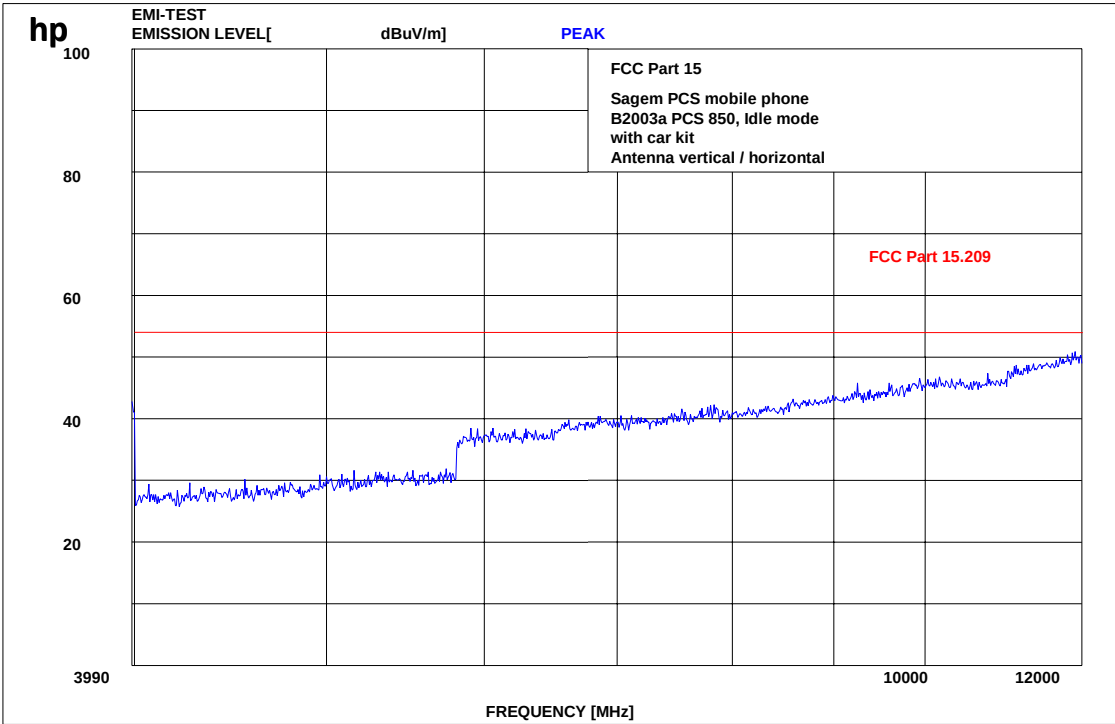
$f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24, 64

Idle-Mode (this is valid for all channels and up to 12 GHz)

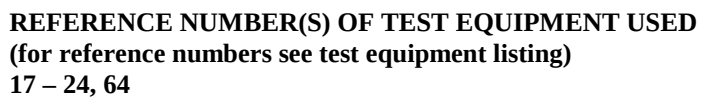


$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz

Test report no.: 4_0902-11-02/03 Issue Date: 2003-08-07 Page 76 (143)

	Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	89.3 dB*	29.39 dBμV/m	VBW	1 MHz		
		12.00000000 GHz	SWT	74 ms	Unit	dBμV/m



CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 77 (143)

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

128 824.2 MHz

189 836.2 MHz

251 848.8 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
CH 128					
13.20		-27.44	-13.0 (45.10 dBc)	59.54	
824,2		32.10		carrier	
823.975		-13.54		45.64	complies
1643.5		-31.32		63.42	complies
CH 189					
13.40		-27.14	-13.0 (45.20 dBc)	59.34	
836,4		32.20		carrier	
1663.5		-30.77		62.97	complies
CH 251					
13.52		-27.49	-13.0 (45.30 dBc)	59.79	
848,8		32.30		carrier	
849.02		-13.99		46.29	complies
1694.3		-32.08		64.38	complies

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

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 78 (143)

Measurement uncertainty	$\pm 0.5\text{dB}$
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REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

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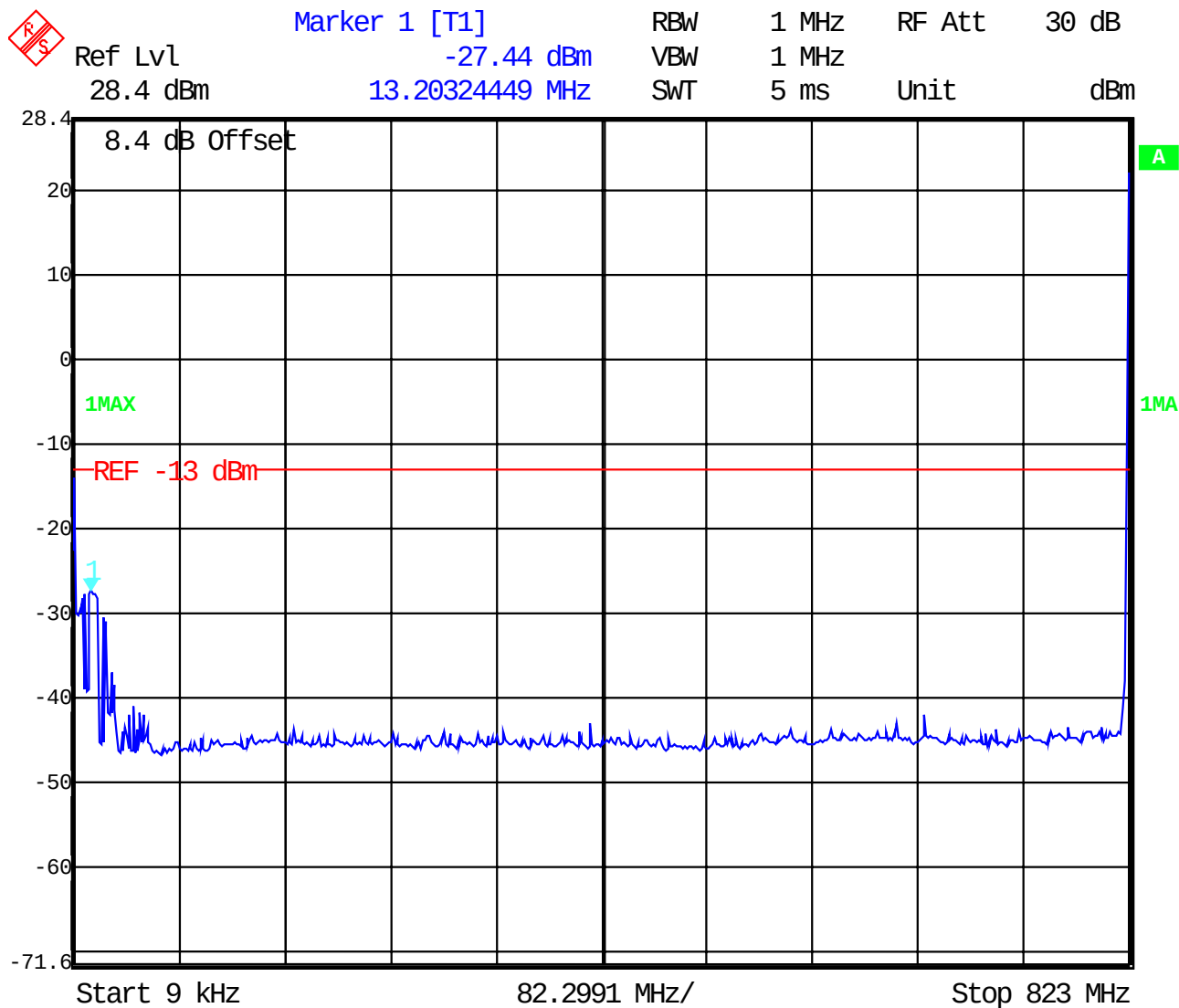
Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 79 (143)

Measurements:

Channel: 128



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

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

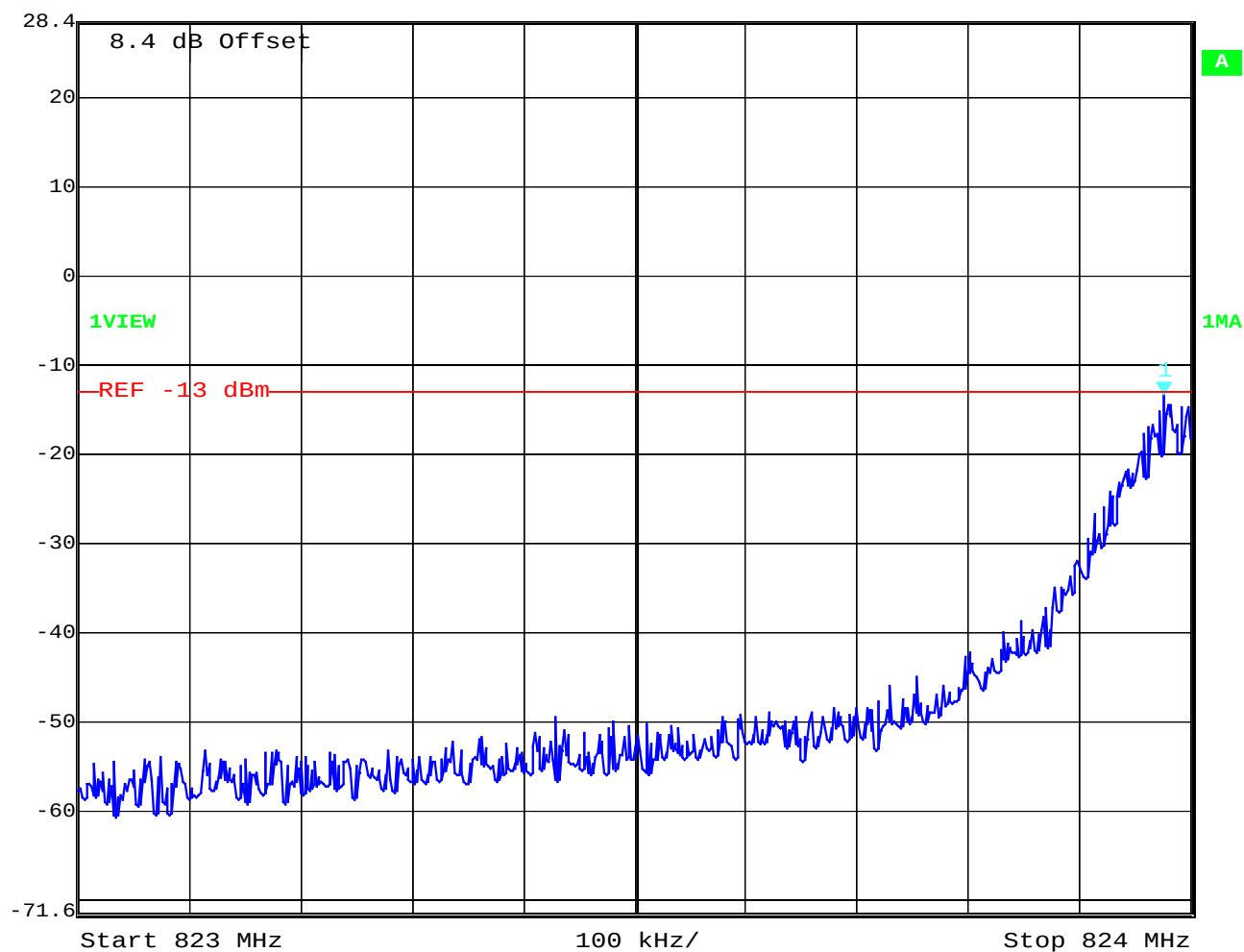
Issue Date: 2003-08-07

Page 80 (143)

Channel 128



Ref Lvl 28.4 dBm
Marker 1 [T1] -13.54 dBm
823.97595190 MHz
RBW 3 kHz
VBW 3 kHz
SWT 280 ms
RF Att 30 dB
Unit dBm



Date: 4.AUG.2003 11:52:39

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

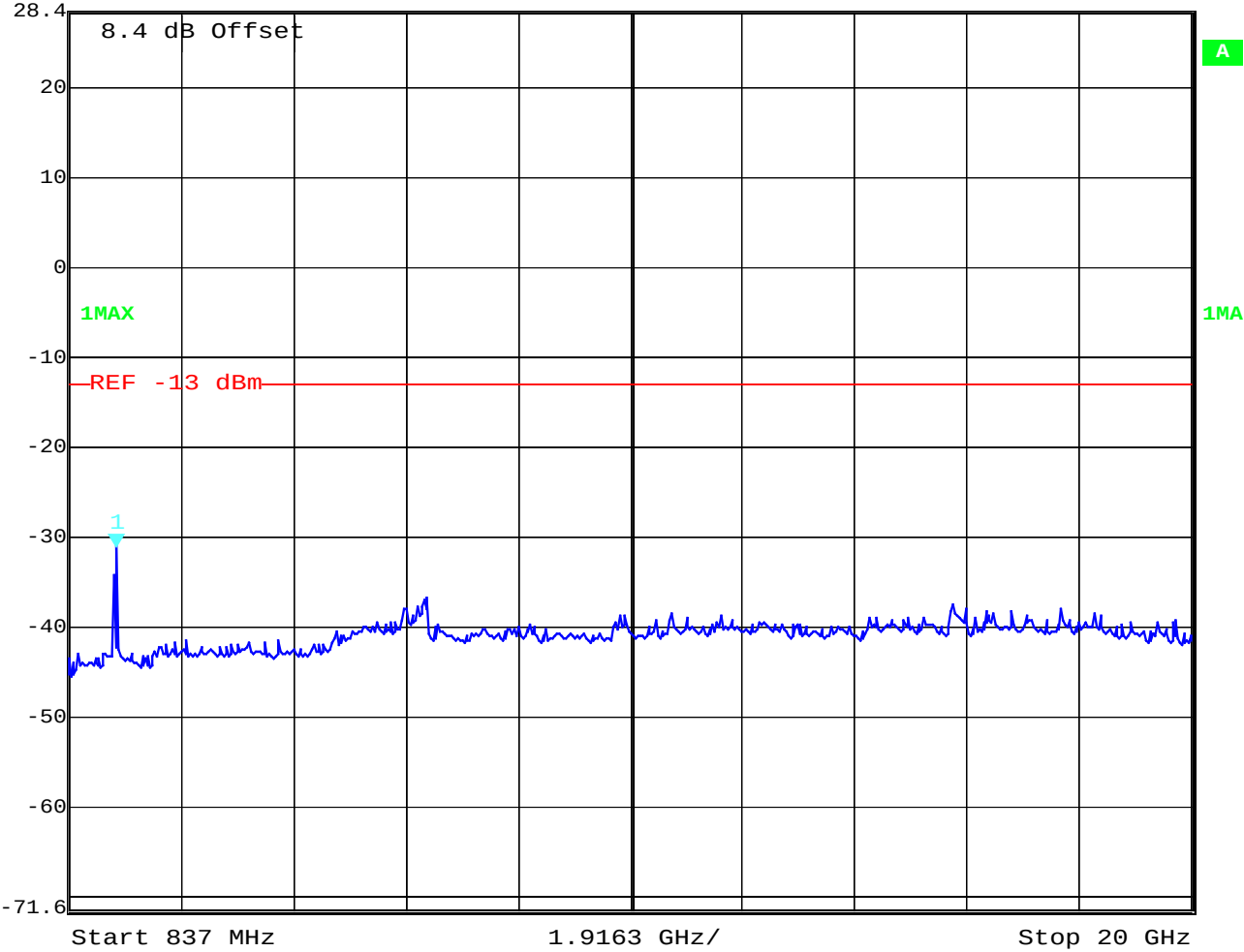
(for reference numbers see test equipment listing)

17 – 24, 64

Channel 128



Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	30 dB
28.4 dBm	-31.32 dBm	VBW	1 MHz		
	1.64345892 GHz	SWT	110 ms	Unit	dBm

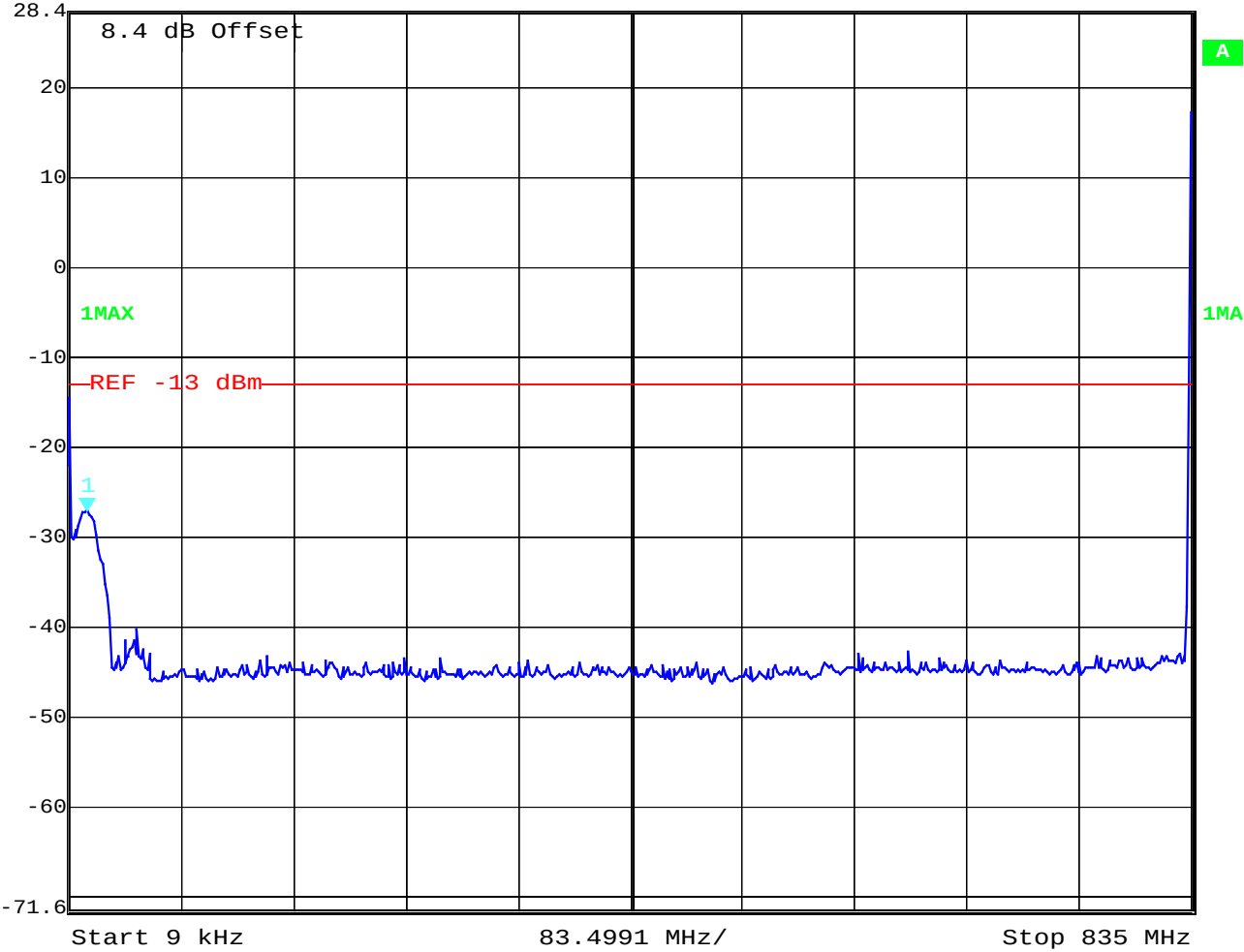


Date: 4.AUG.2003 11:53:33

Channel 189

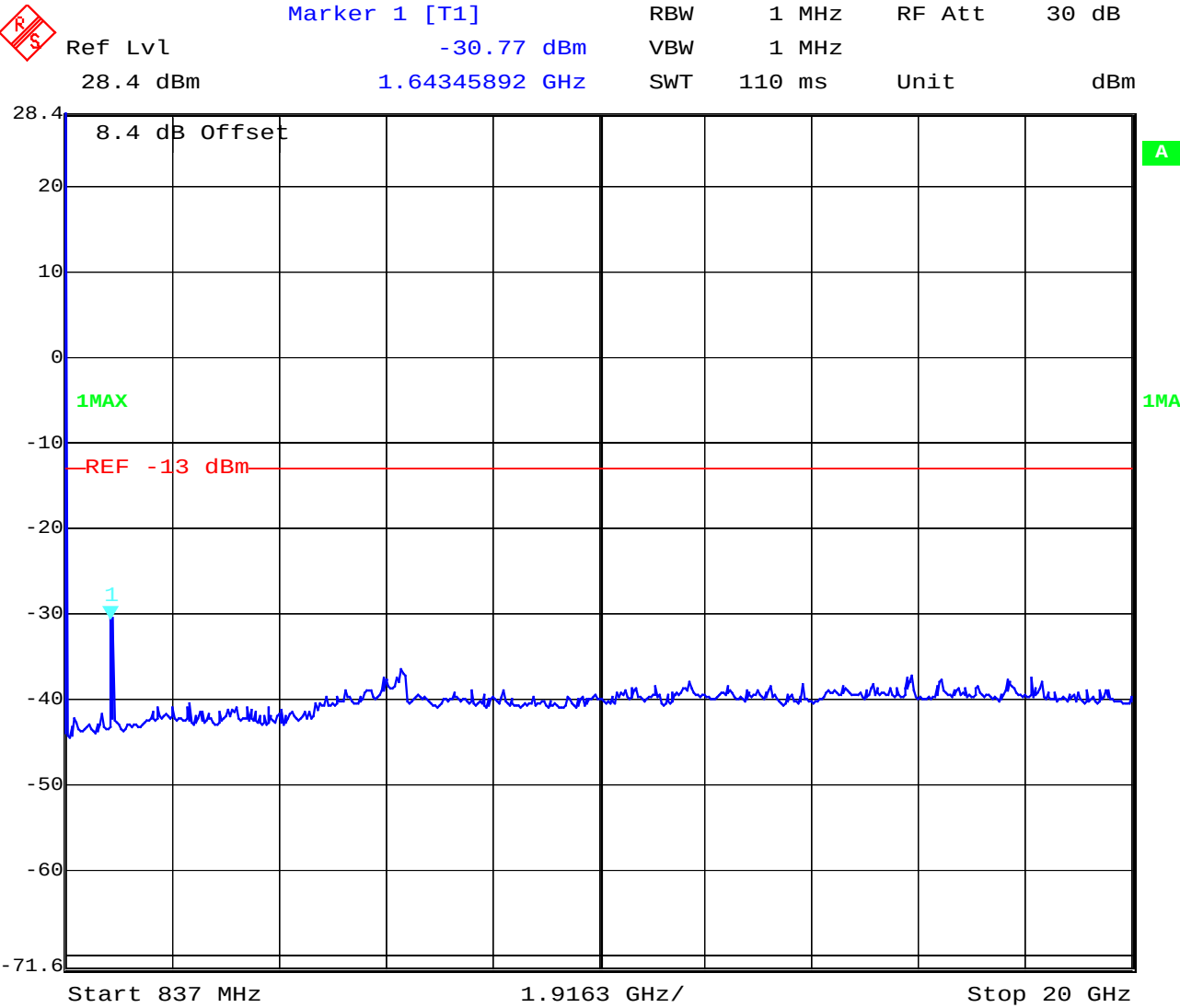


Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	30 dB
28.4 dBm	-27.14 dBm	VBW	1 MHz		
	13.39562926 MHz	SWT	5 ms	Unit	dBm



Date: 4.AUG.2003 12:48:26

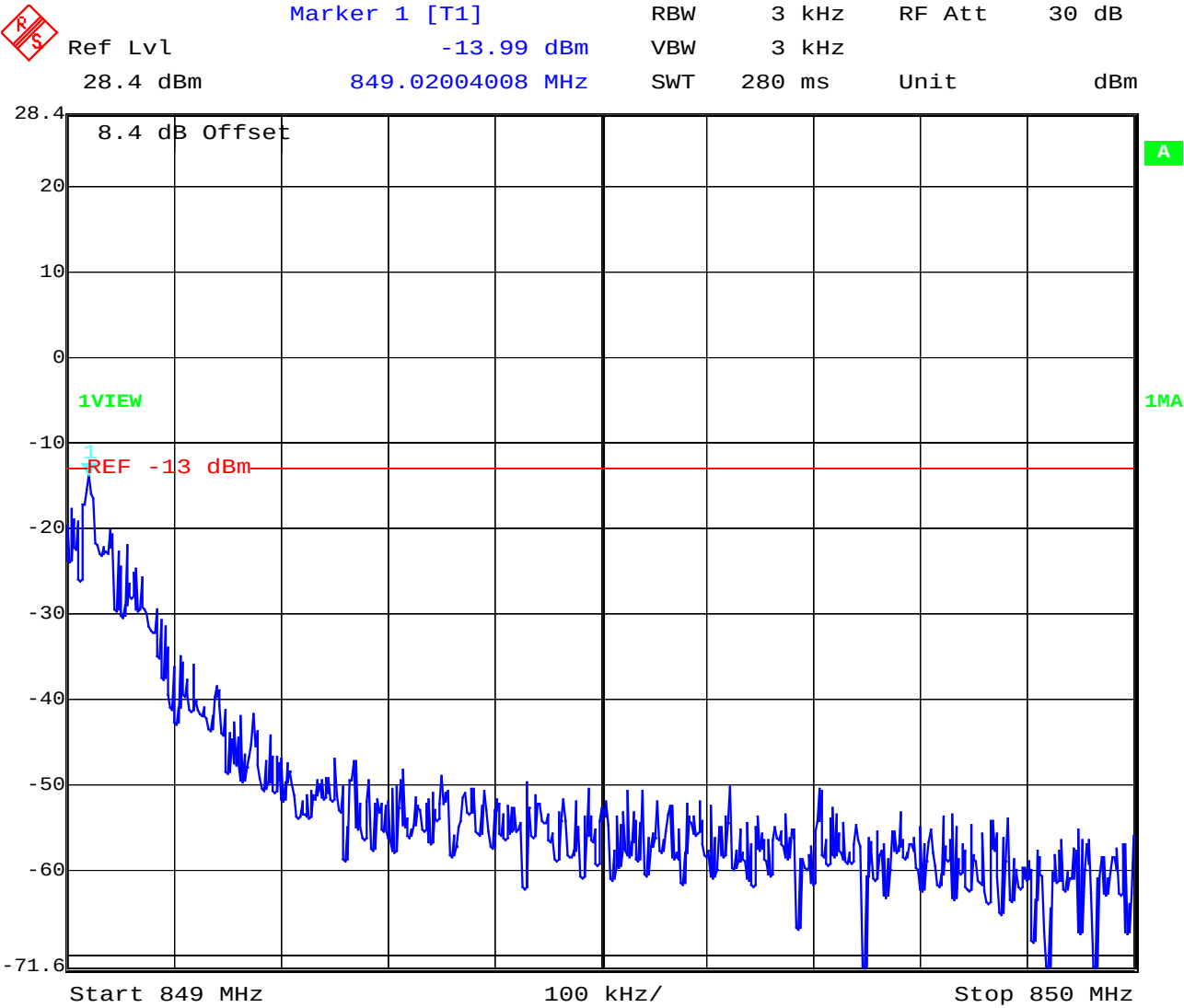
Channel 189



Date: 4.AUG.2003 12:50:23

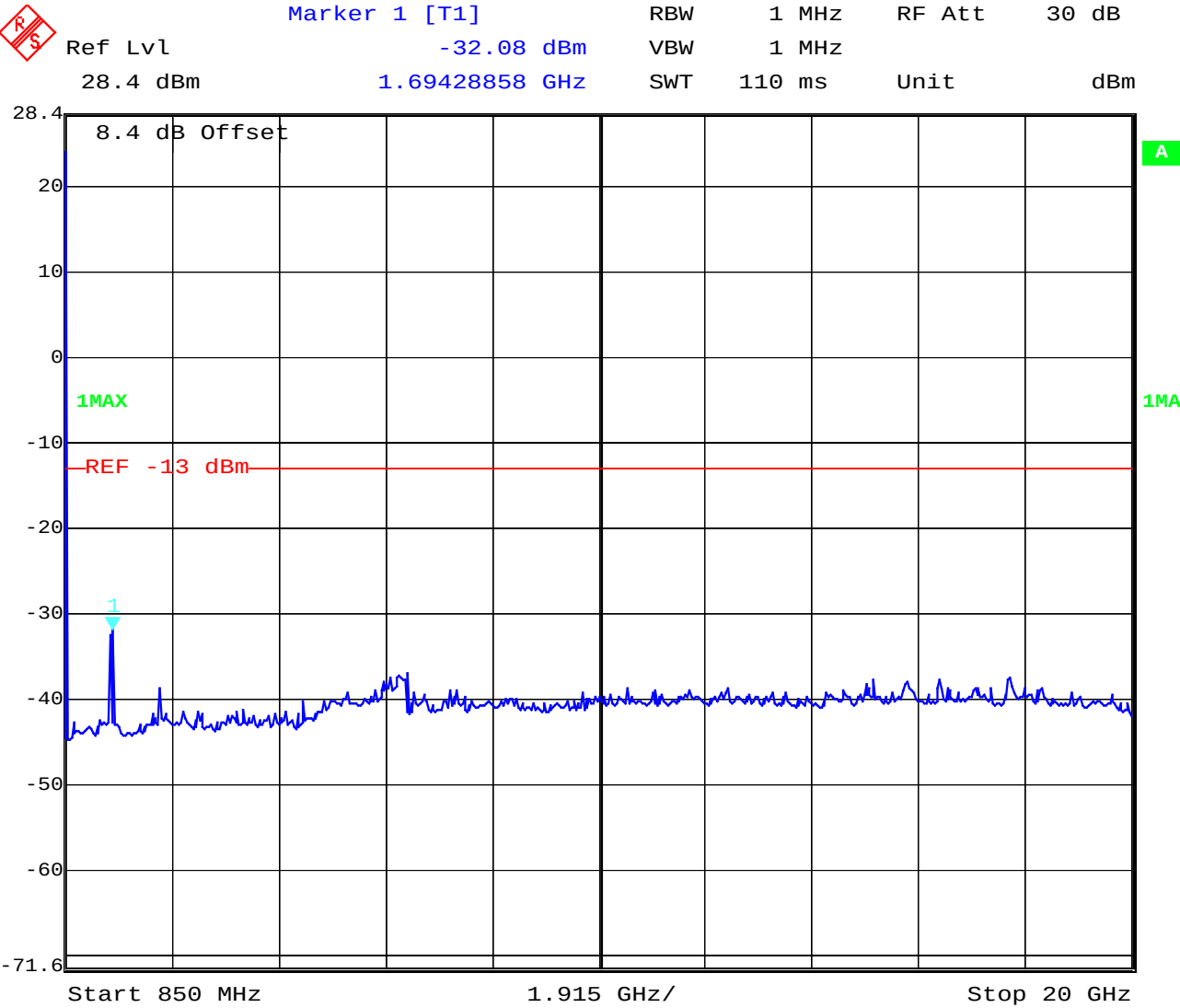
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 – 24, 64

Channel 251



Date: 4.AUG.2003 12:54:05

Channel 251



Date: 4.AUG.2003 12:54:49

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 87 (143)

BLOCK EDGE REQUIREMENTS FOR BLOCK 1 TO BLOCK 4

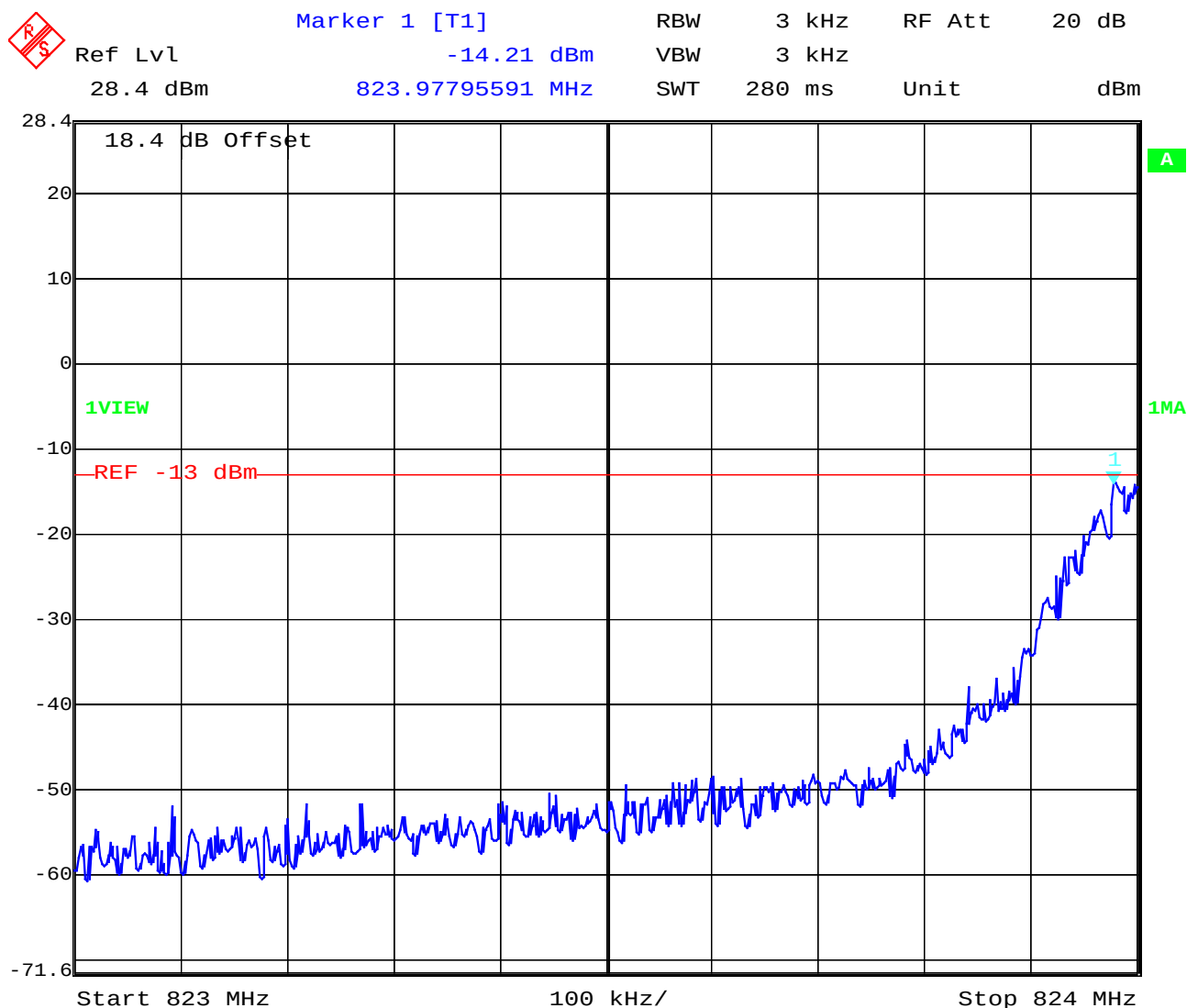
Measurement Limit:

Sec. 22.917(b) 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 +33 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

Measurements:

Block 1 Channel 128



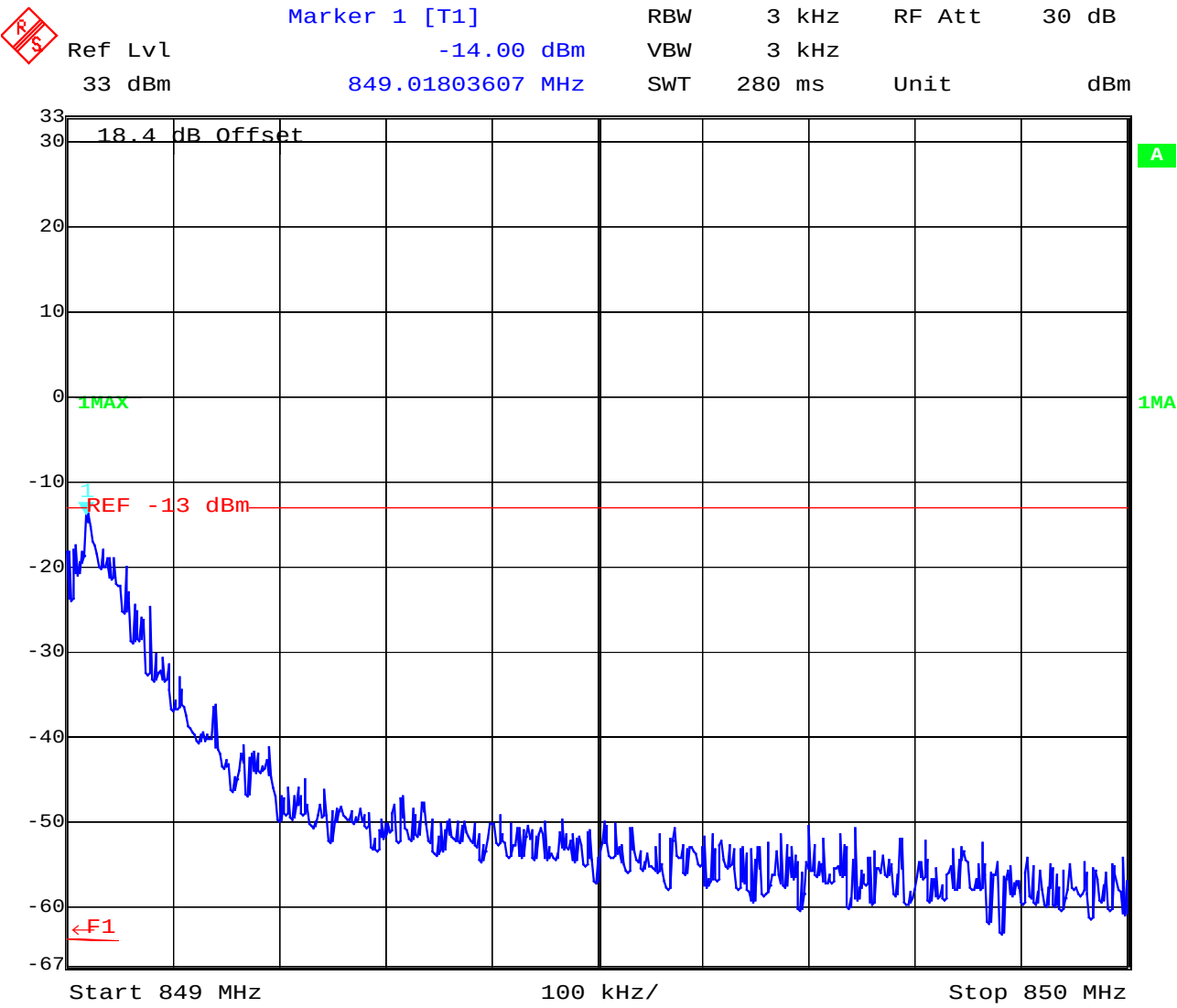
Date: 4.AUG.2003 12:59:18

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 - 24, 64

Block 4 Channel 251



Date: 4.AUG.2003 13:44:09

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 89 (143)

OCCUPIED BANDWIDTH

§2.989

Occupied Bandwidth Results

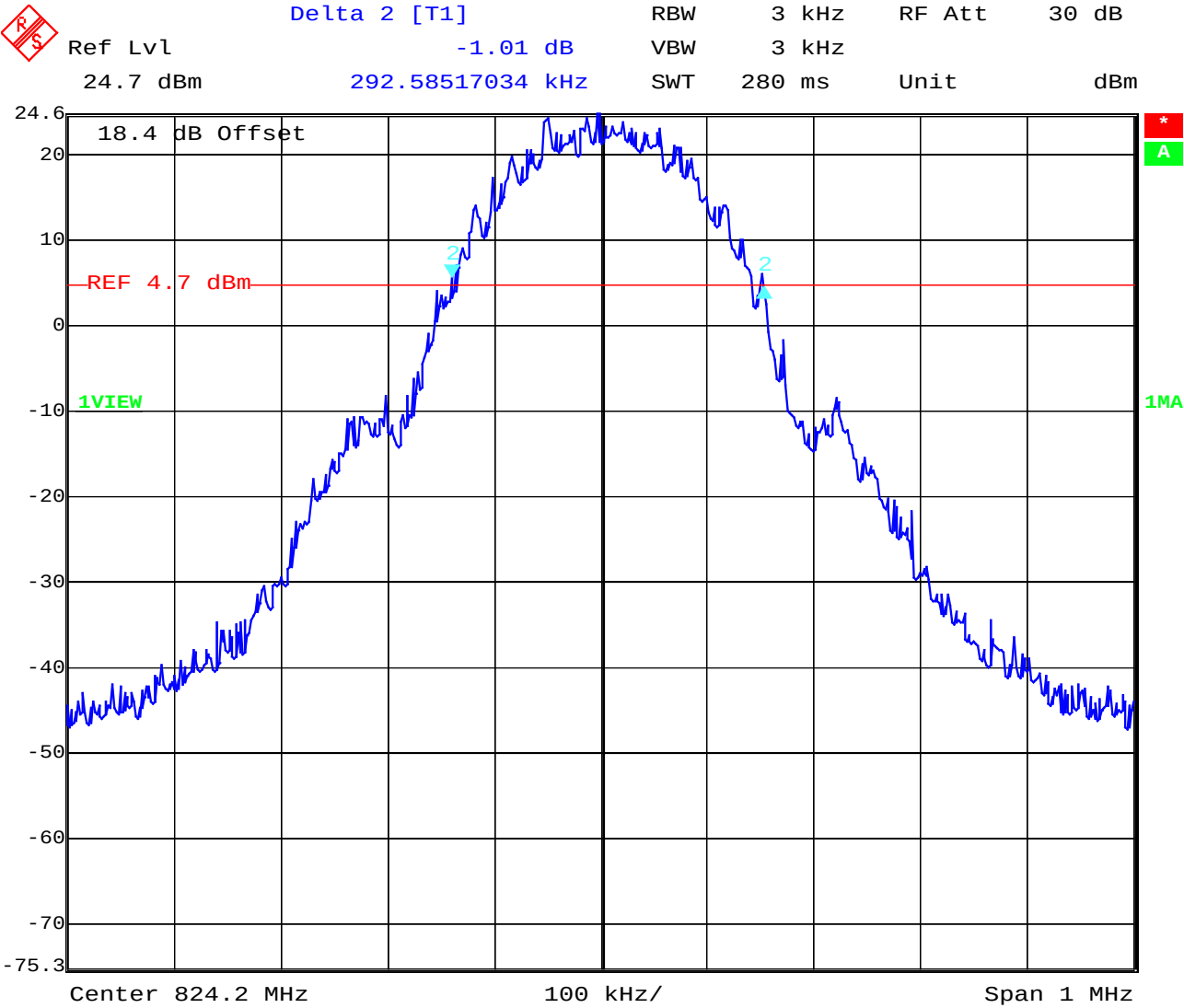
Similar to conducted emissions, occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the USPCS frequency band. Table 8.2 below lists the measured 99% power and -26dBC occupied bandwidths. Spectrum analyzer plots are included on the following pages.

Frequency	99% Occupied Bandwidth	-26 dBc Bandwidth
824.2 MHz	292.585	332.665
836.4 MHz	294.589	322.645
848.8 MHz	292.585	320.641

Part 24.238 (a) requires a measurement bandwidth of at least 1% of the occupied bandwidth. For ca. 279 kHz, this equates to a resolution bandwidth of at least 2.8 kHz. For this testing, a resolution bandwidth 3.0 kHz was used.

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

Channel 128
99% Occupied Bandwidth



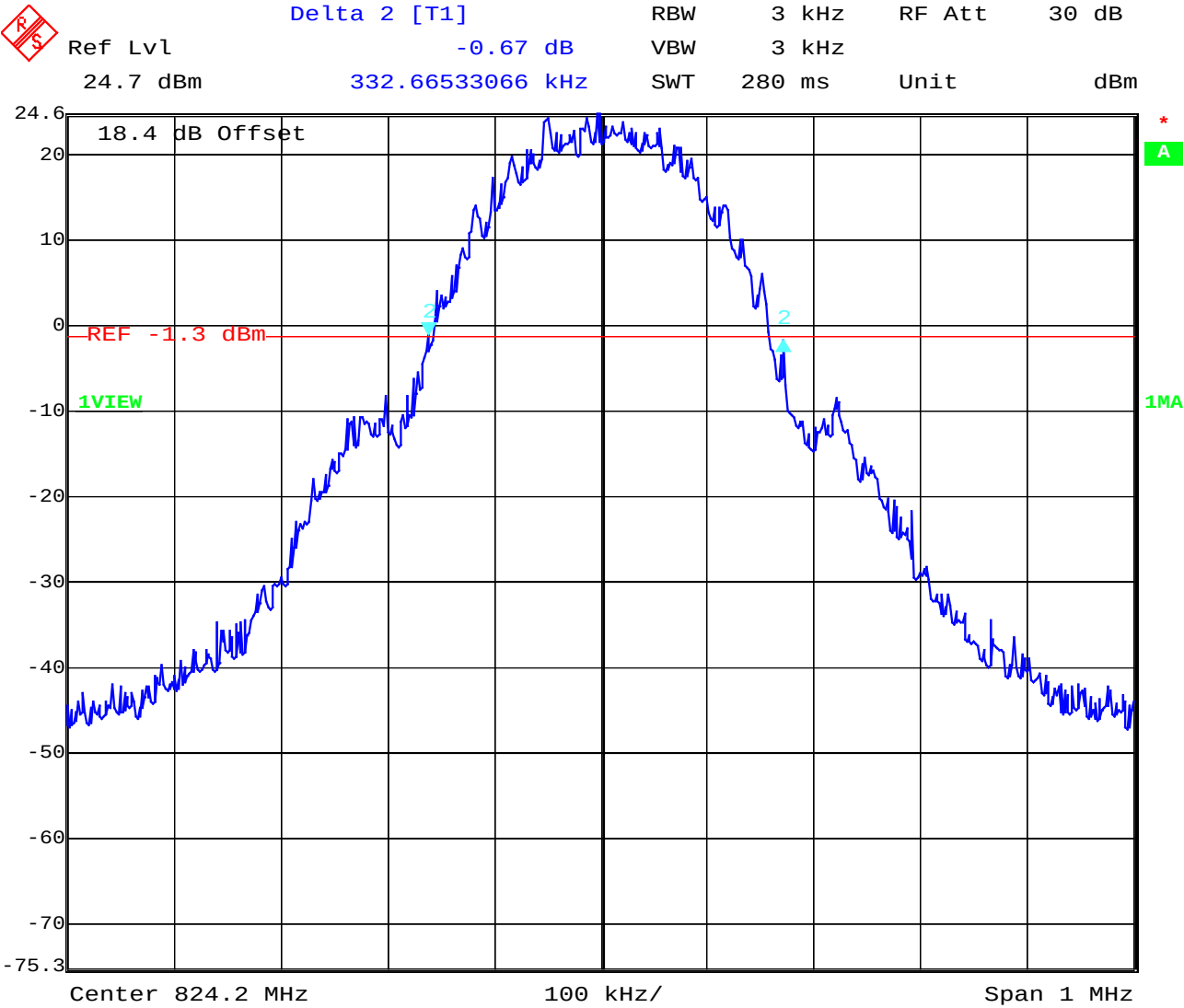
Date: 4.AUG.2003 14:09:50

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

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03 Issue Date: 2003-08-07 Page 91 (143)

Channel 128 -26 dBc Bandwidth



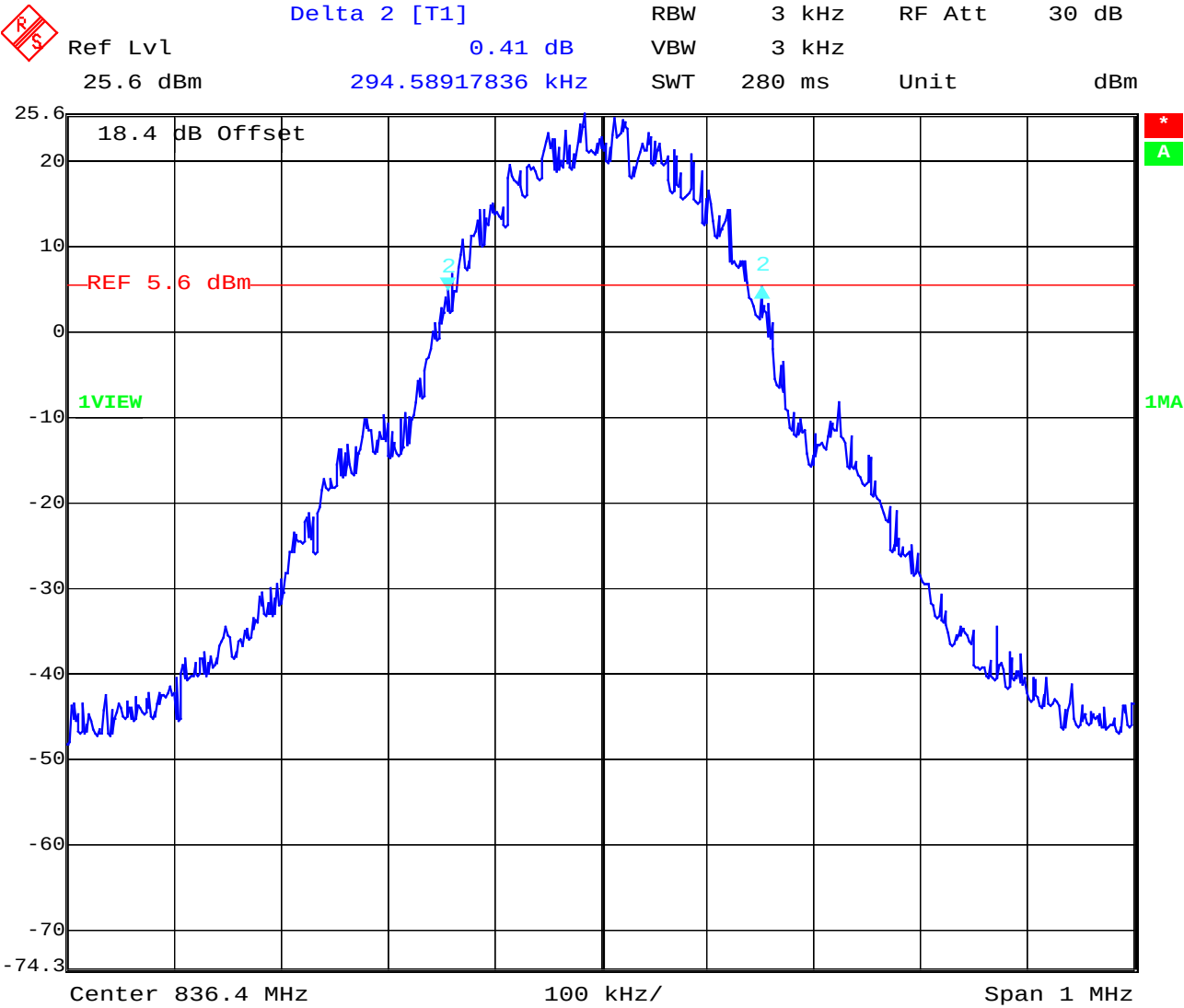
Date: 4.AUG.2003 14:09:21

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

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03 Issue Date: 2003-08-07 Page 92 (143)

Channel 189 99% Occupied Bandwidth



Date: 4.AUG.2003 14:15:17

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

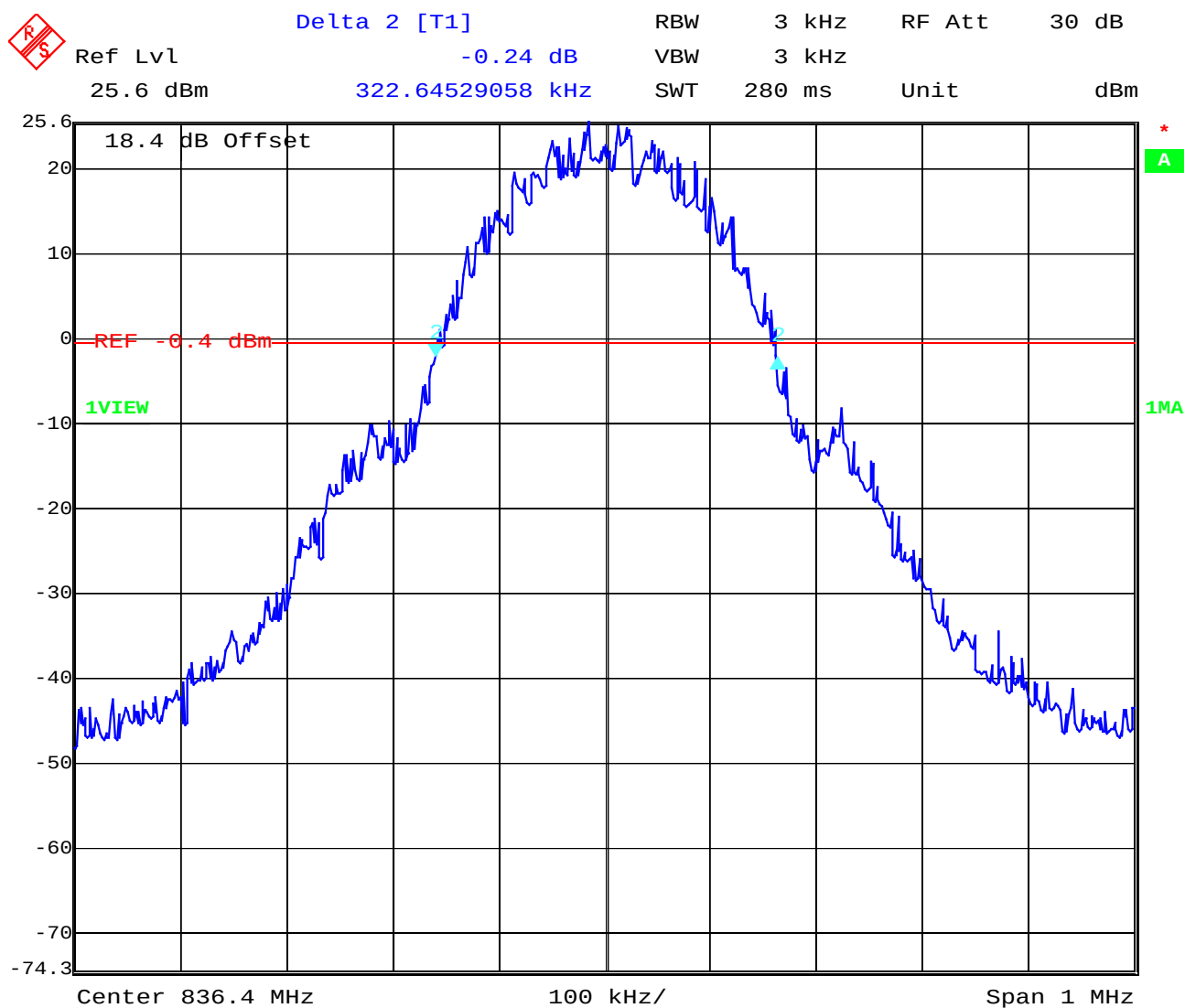
CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 93 (143)

Channel 189 -26 dBc Bandwidth



Date: 4.AUG.2003 14:16:09

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

CETECOM ICT Services GmbH

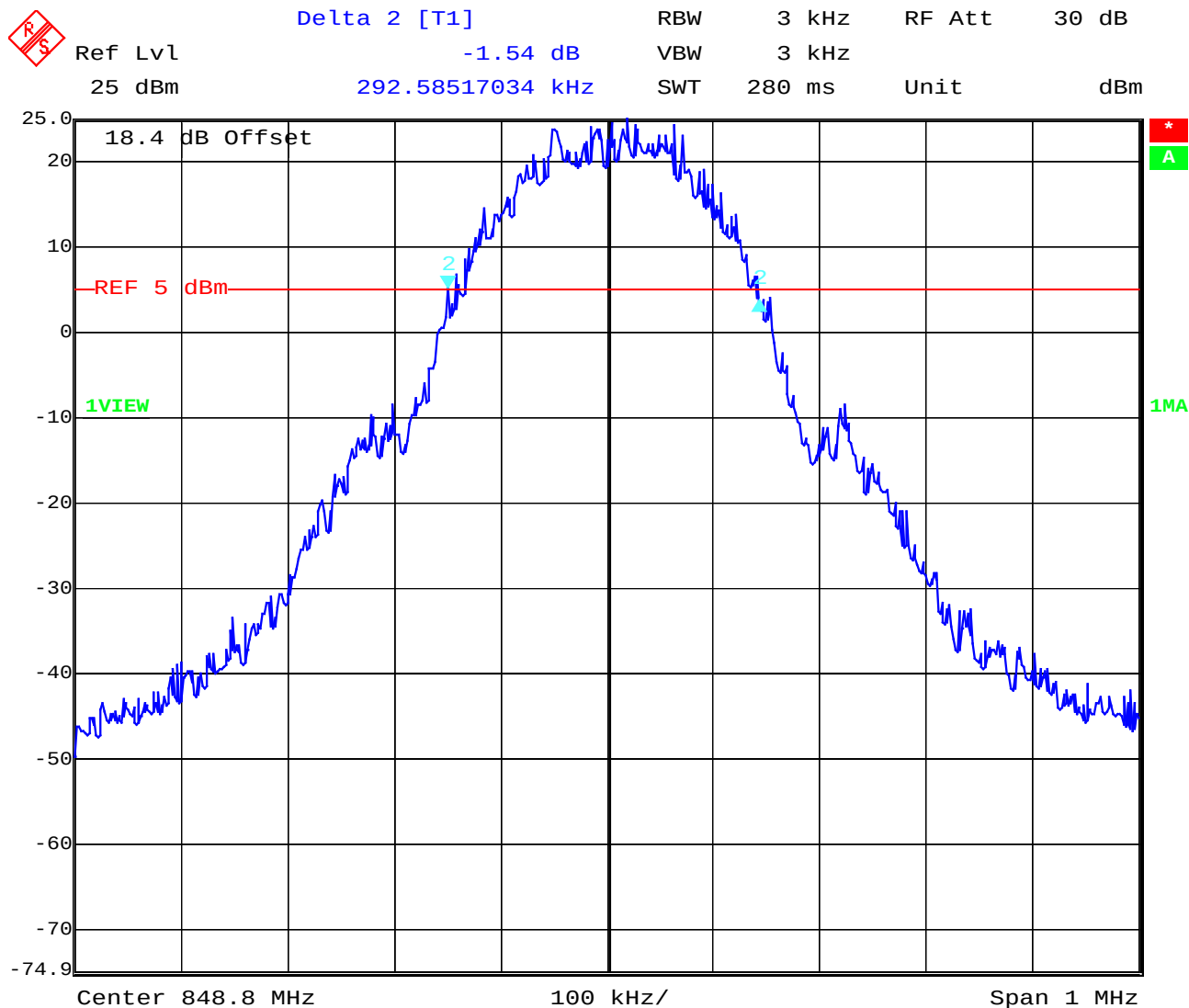
Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 94 (143)

Channel 251

99% Occupied Bandwidth



Date: 4.AUG.2003 14:17:59

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

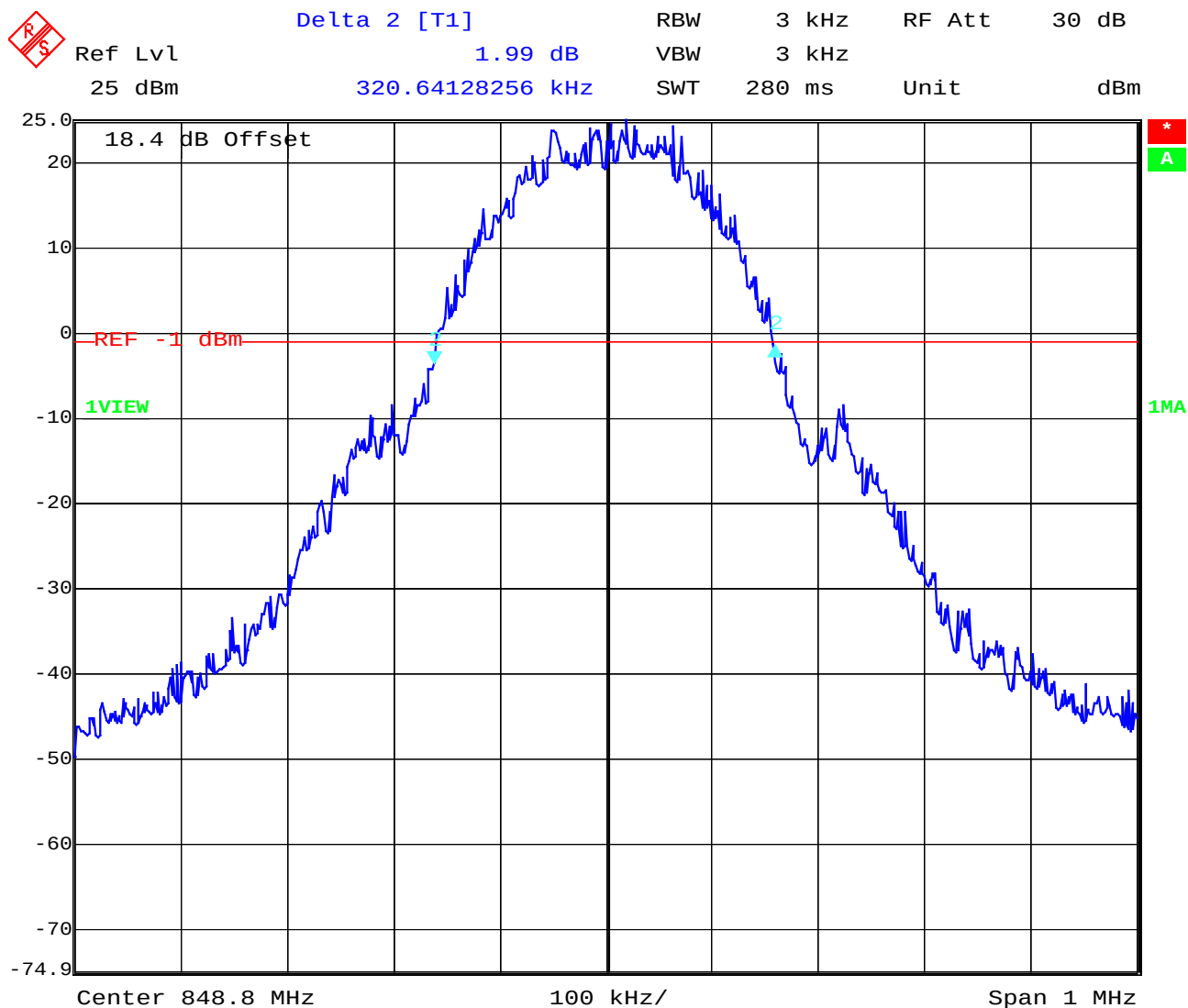
CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 95 (143)

Channel 251 -26 dBc Bandwidth



Date: 4.AUG.2003 14:18:36

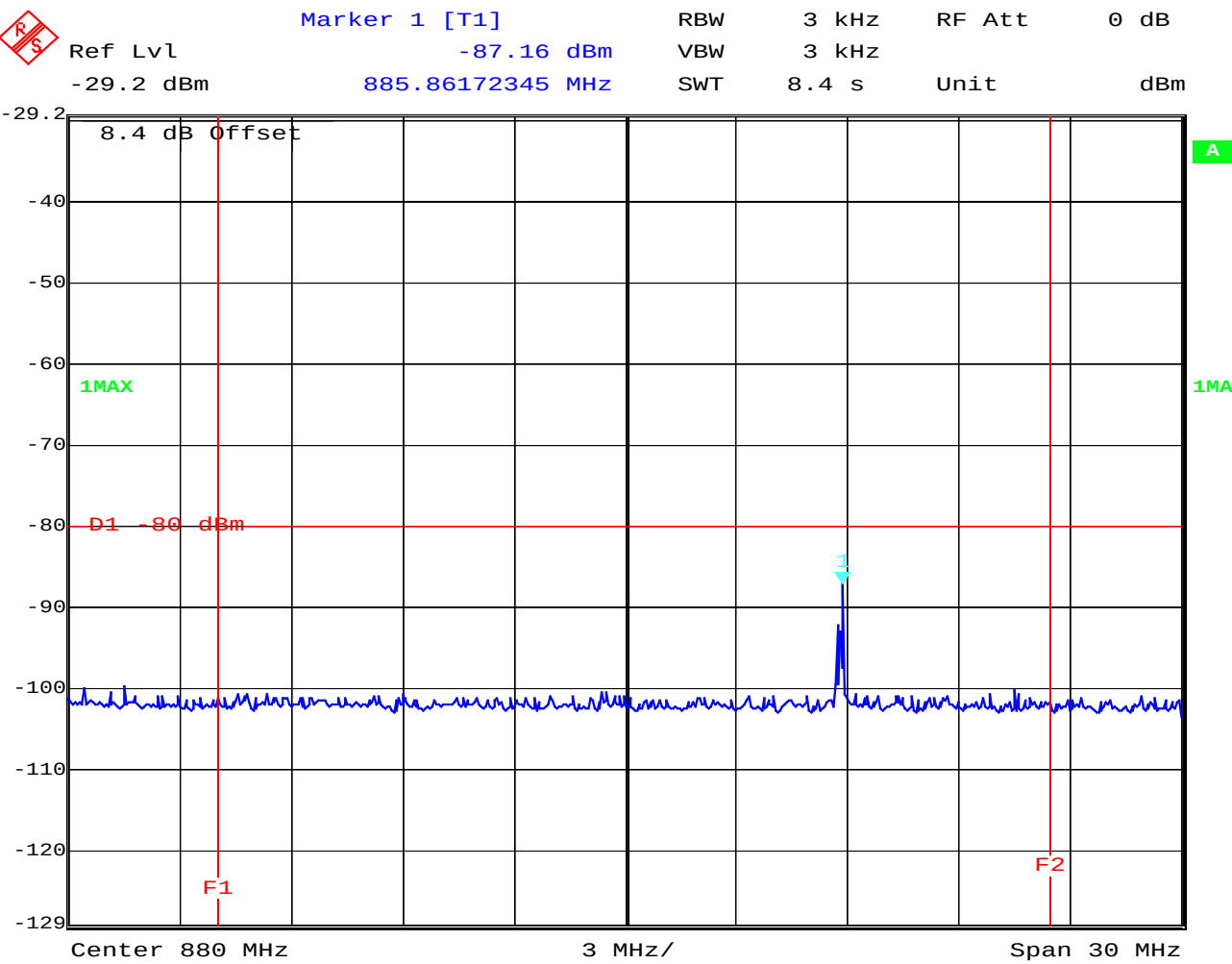
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

EMISSION LIMITATIONS FOR CELLULAR §22.917(F)

Mobile emissions in the base frequency range

All peaks are below –80 dBm in the base frequency range.

Idle Mode base station frequency range A



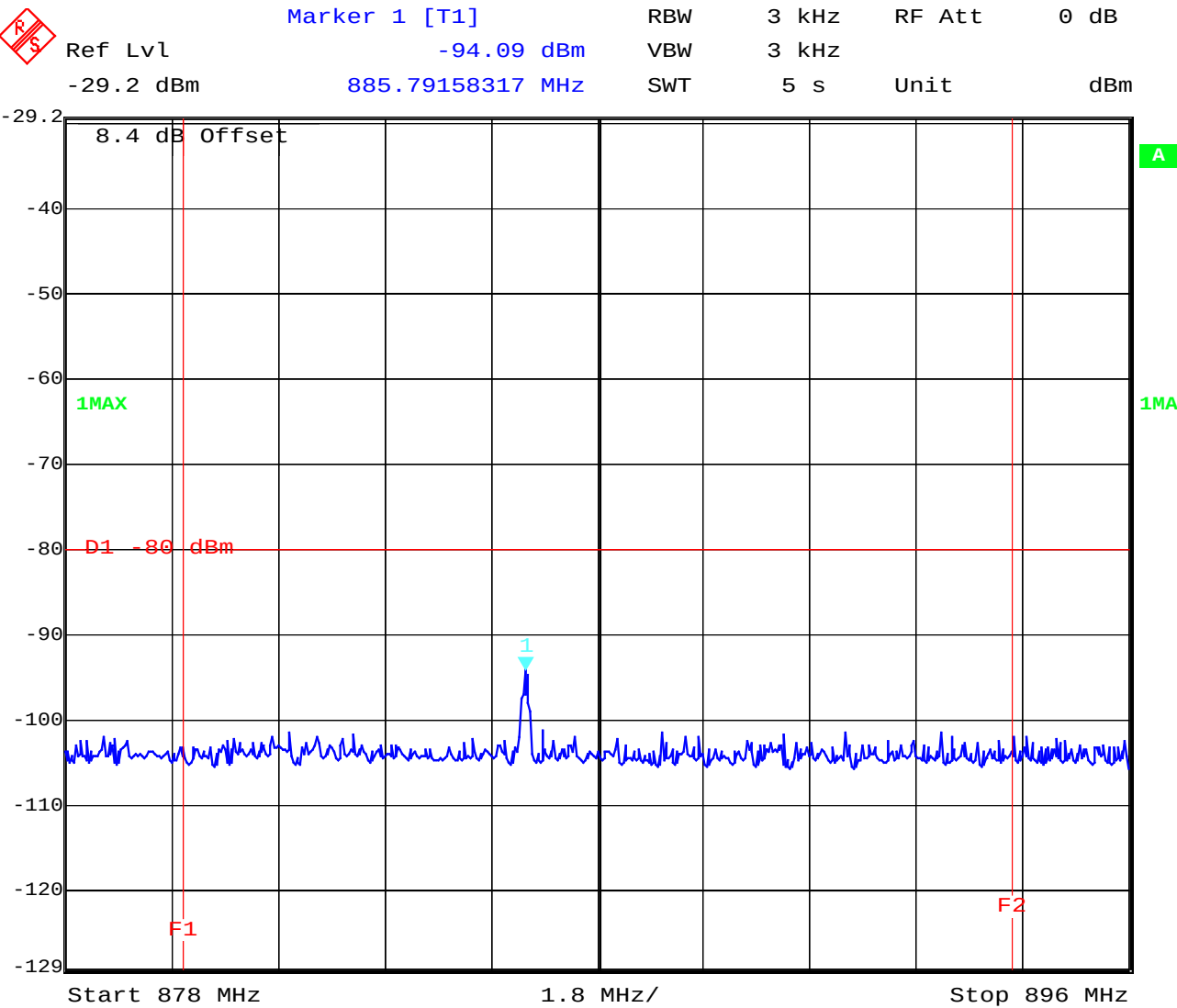
Date: 4.AUG.2003 14:44:33

F1 = 869 MHz, F2 = 891.5 MHz

LIMITS §22.917(f)

The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed –80dBm at the transmitter antenna connector

Mobile emissions in the base frequency range
Idle Mode base station frequency range B



Date: 4.AUG.2003 14:46:49

F1 = 880 MHz, F2 = 894 MHz

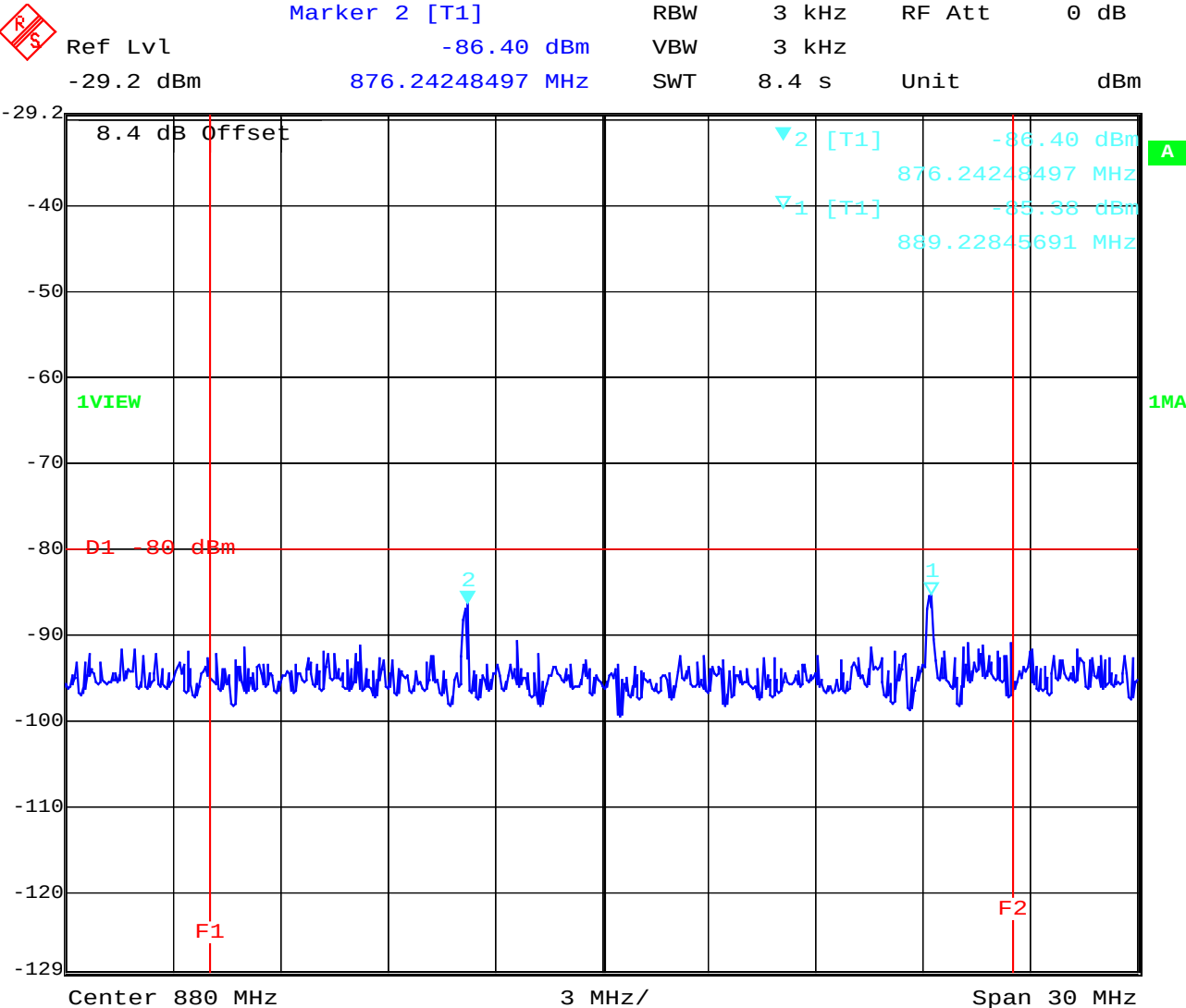
LIMITS

§22.917(f)

The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80dBm at the transmitter antenna connector

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

Mobile emissions in the base frequency range
TX Mode CH 128 base station frequency range A



Date: 4.AUG.2003 14:55:45

F1 = 869 MHz, F2 = 891.5 MHz

LIMITS

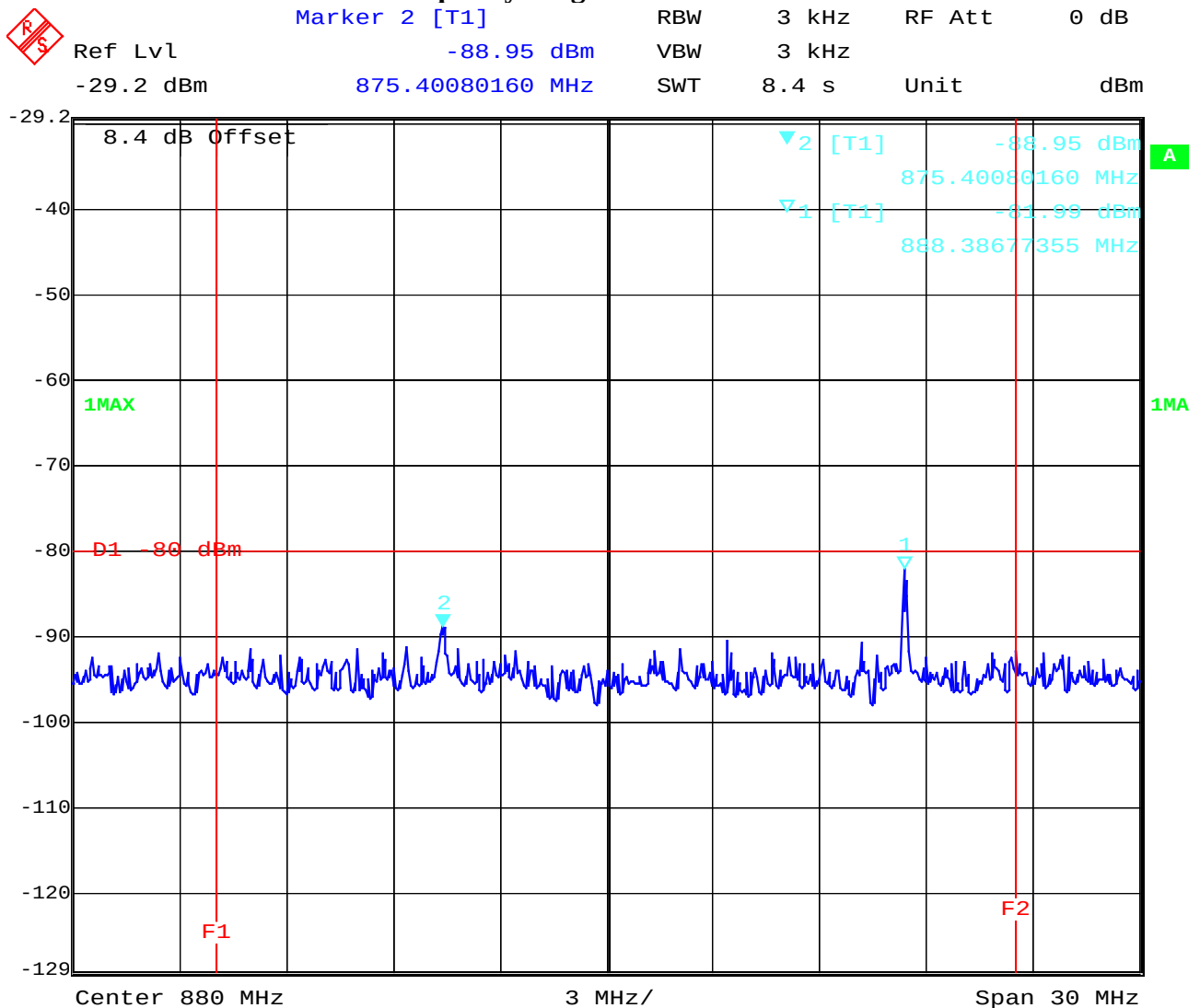
§22.917(f)

The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80dBm at the transmitter antenna connector

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

Test report no.: 4_0902-11-02/03 Issue Date: 2003-08-07 Page 99 (143)

TX Mode CH 189 base station frequency range A



Date: 4.AUG.2003 14:58:35

F1 = 869 MHz, F2 = 891.5 MHz

LIMITS

§22.917(f)

The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80dBm at the transmitter antenna connector

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

Mobile emissions in the base frequency range

TX Mode CH 251 base station frequency range A

RS

Ref Lvl

-29.2 dBm

Marker 1 [T1]

-82.53 dBm

866.14228457 MHz

RBW

3 kHz

VBW

3 kHz

SWT

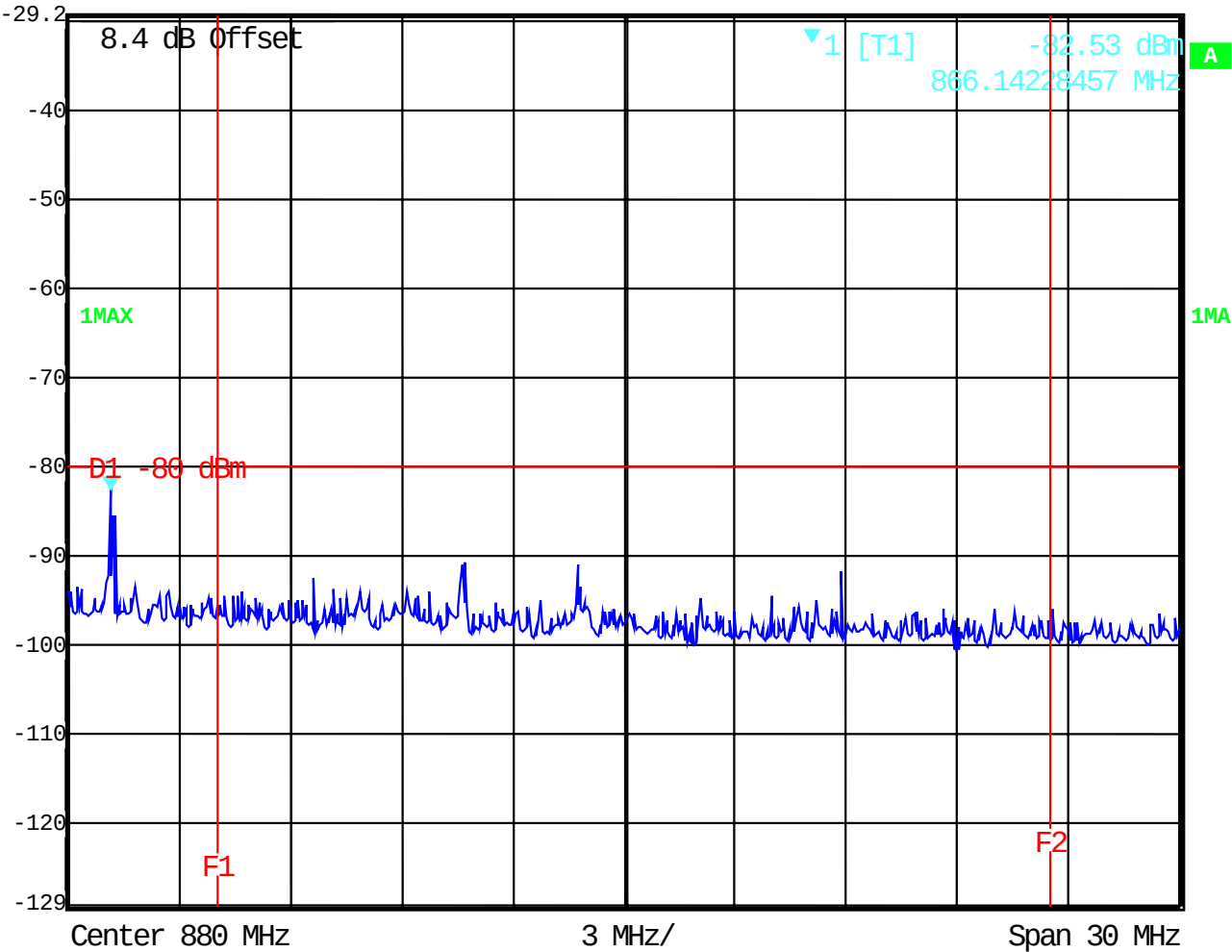
8.4 s

RF Att

0 dB

Unit

dBm



Date: 4.AUG.2003 15:00:43

F1 = 869 MHz, F2 = 891.5 MHz

LIMITS

§22.917(f)

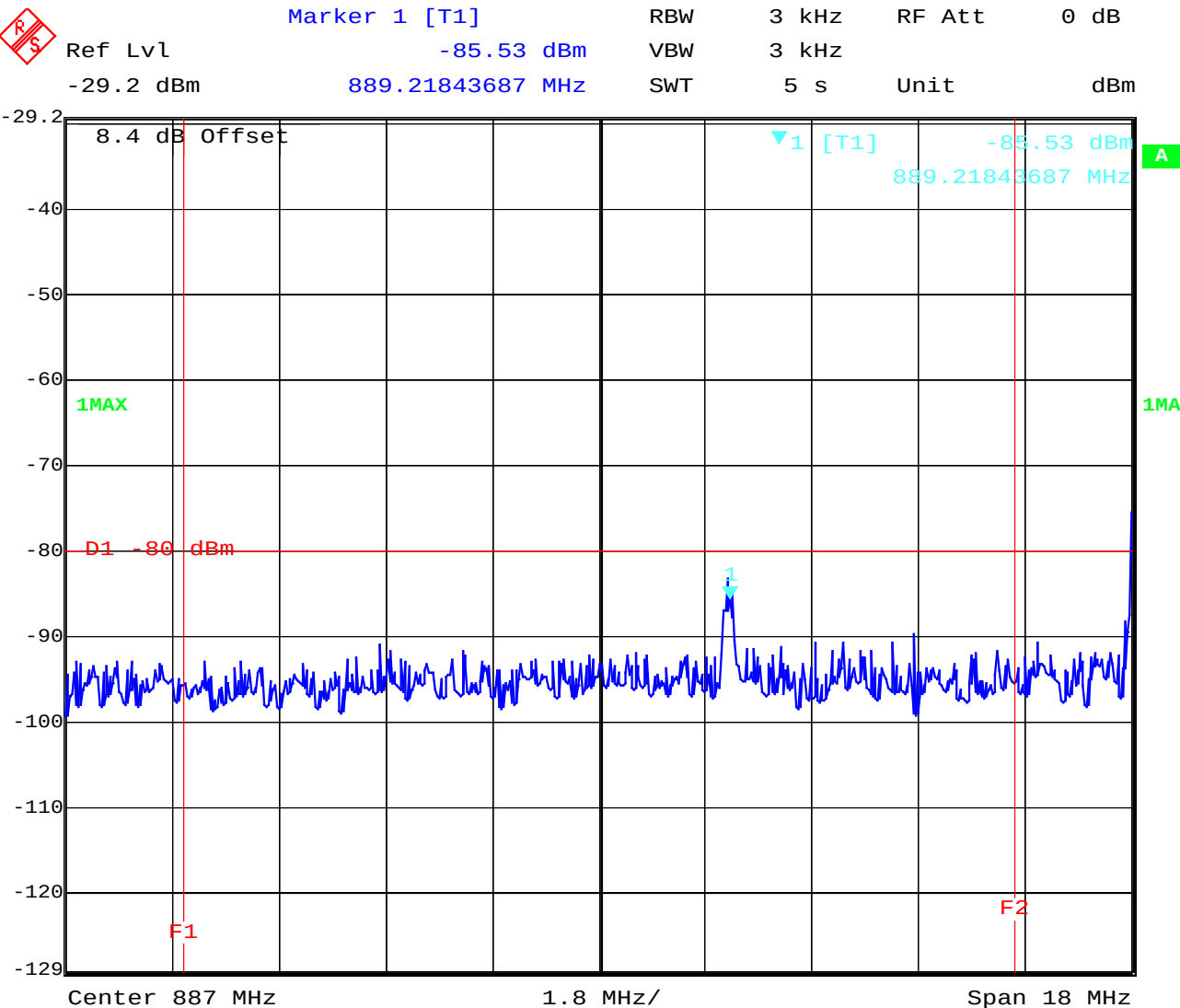
The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80dBm at the transmitter antenna connector

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

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03 Issue Date: 2003-08-07 Page 101 (143)

Mobile emissions in the base frequency range
TX Mode CH 128 base station frequency range B



Date: 4.AUG.2003 15:08:54

F1 = 880 MHz, F2 = 894 MHz

LIMITS

§22.917(f)

The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80dBm at the transmitter antenna connector

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

TX Mode CH 189 base station frequency range B



F1 = 880 MHz, F2 = 894 MHz

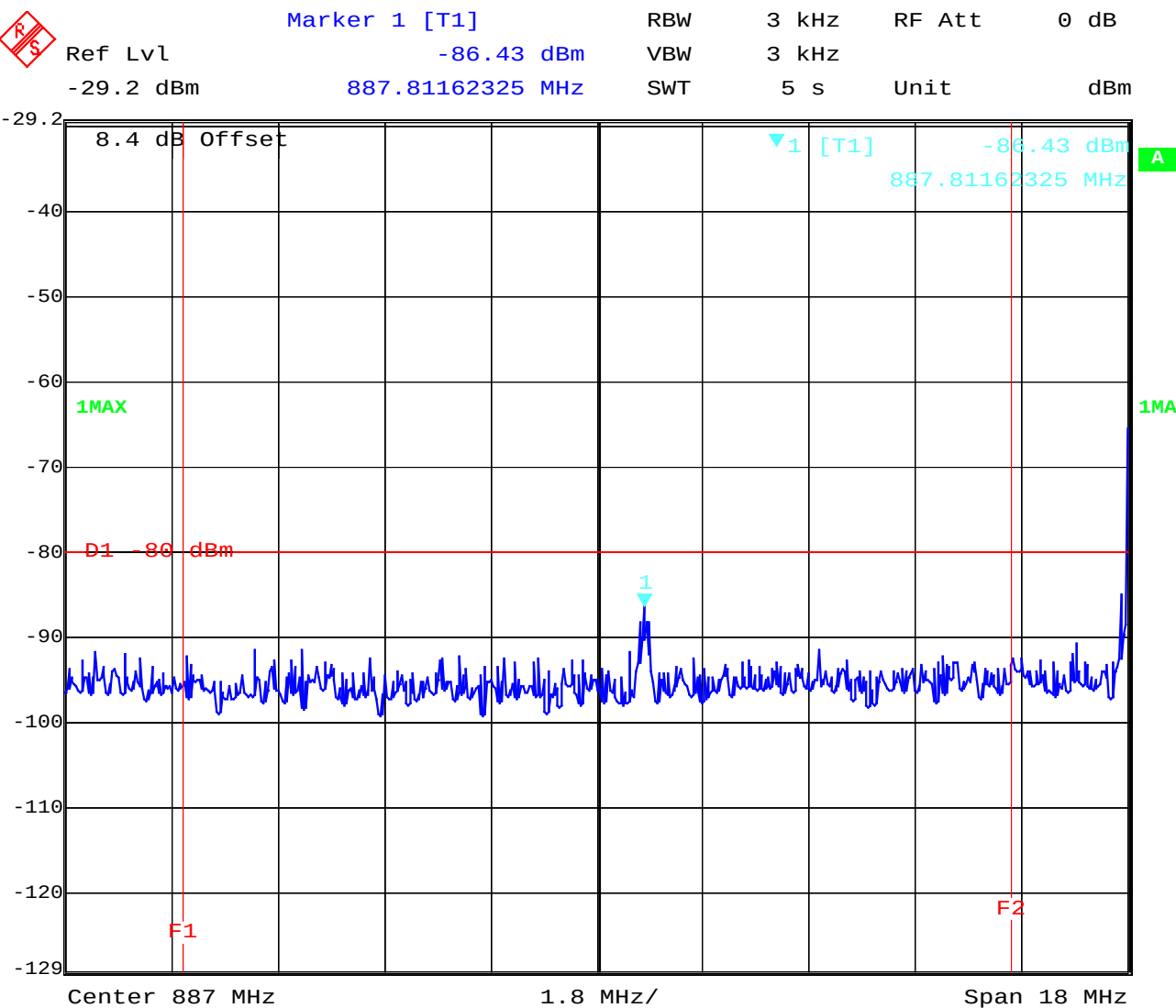
§22.917(f)

The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80dBm at the transmitter antenna connector

64

Mobile emissions in the base frequency range

TX Mode CH 251 base station frequency range B



Date: 4.AUG.2003 15:15:05

F1 = 880 MHz, F2 = 894 MHz

LIMITS

§22.917(f)

The mean power of any emissions appearing in the base station frequency range from cellular mobile transmitters operated must be attenuated to a level not to exceed -80dBm at the transmitter antenna connector

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

ADDITIONAL MEASUREMENTS FOR ANCILLARY EQUIPMENT

PART 15.109

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber.

The receiving antennas are conform with specifications ANSI C63.2-1987 clause 15 and ANSI C63.4-1992 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received.

The wanted and unwanted emissions are received by spectrum analyzers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-1992 clause 4.2.

Antennas are conform with ANSI C63.2-1996 item 15.

9 kHz - 30 MHz: Quasi Peak measurement, 9kHz Bandwidth, passive loop antenna.

30 MHz - 200 MHz: Quasi Peak measurement, 120KHz Bandwidth, biconical antenna

200MHz - 1GHz: Quasi Peak measurement, 120KHz Bandwidth, log periodic antenna

1GHz: Average, RBW 1MHz, VBW 10 Hz, wave-guide horn

Ancillary equipment :

- AC adapter TA3651-US
- AC adapter 18805593-9
- AC adapter DTC3515 045E040E
- Head-set 23812517-0
- Car kit A17-BA10-010
- Data cable 23810787-0
- Cigar lighter adapter 23811253-7

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 105 (143)

Spurious Emissions

SPURIOUS EMISSIONS LEVEL (µV/m)								
CH 189			CH 661			Idle mode(850/1900)		
f (MHz)	Detector	Level (µV/m)	f (MHz)	Detector	Level (µV/m)	f (MHz)	Detector	Level (µV/m)
no traceable peak found			no traceable peak found			no traceable peak found		
Measurement uncertainty			±3 dB					

f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 1GHz : RBW/VBW: 1 MHz

Measurement distance see table

Limits

SUBCLAUSE § 15.109

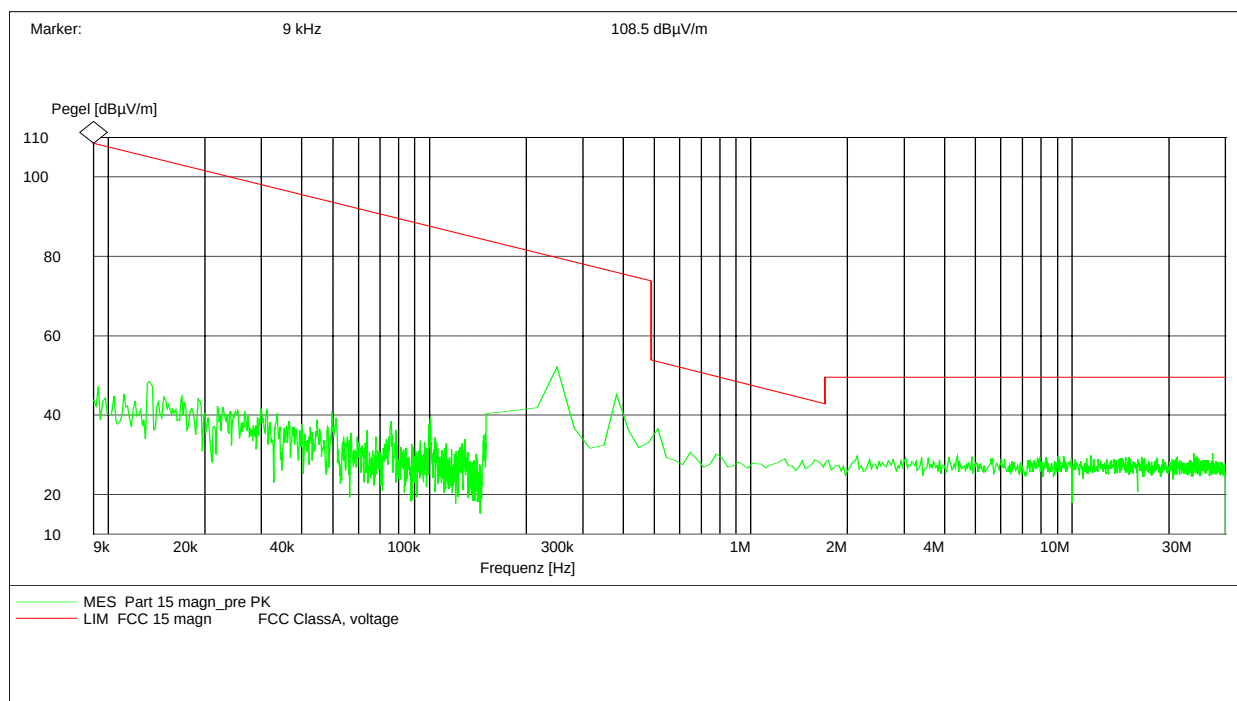
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dBµV/m	30
30 - 88	100 / 40 dBµV/m	3
88 - 216	150 / 43.5 dBµV/m	3
216 - 960	200 / 46 dBµV/m	3
above 960	500 / 54 dBµV/m	3

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

17 – 24, 64

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
 Manufacturer: Sagem
 Operating Condition: Charger TA3651-US
 Test Specification: 110V / 60 Hz, traffic and idle mode
 Comment: pass



Limits

SUBCLAUSE § 15.109

Frequency (MHz)	Field strength (μV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dBμV/m	30

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

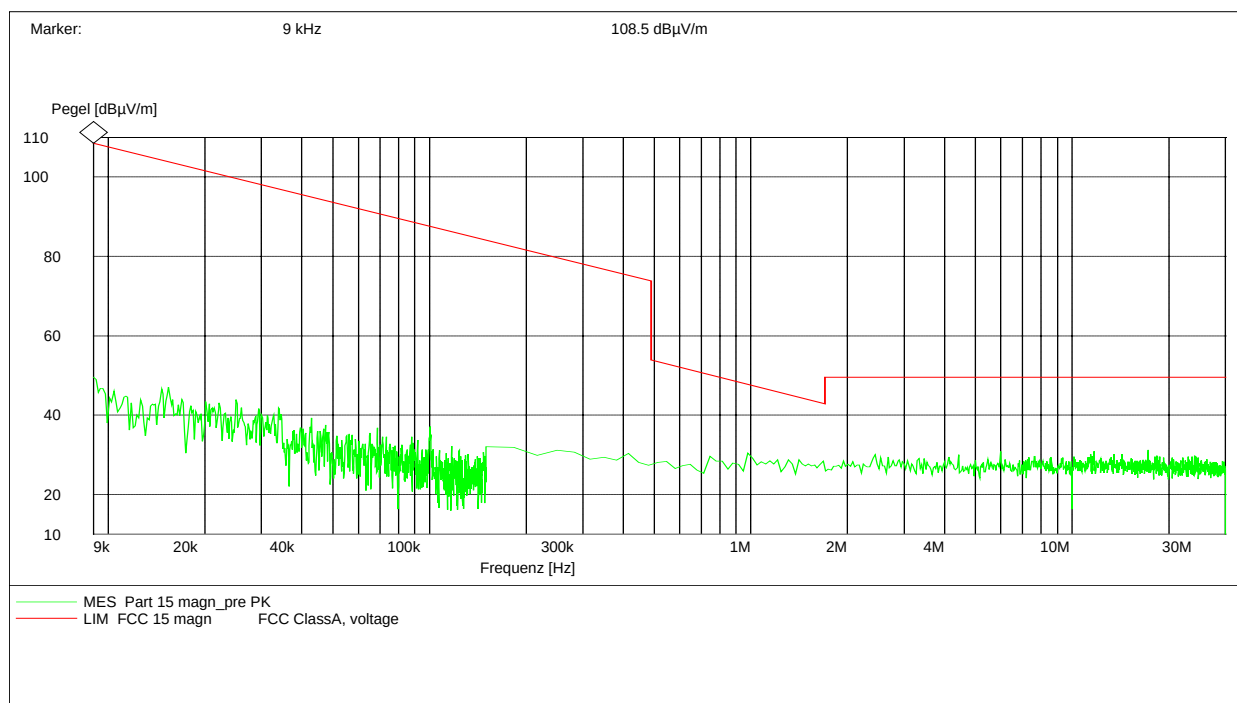
(for reference numbers see test equipment listing)

17 – 24, 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
 Manufacturer: Sagem
 Operating Condition: Charger 18805593-9
 Test Specification: traffic and idle mode
 Comment: pass



Limits

SUBCLAUSE § 15.109

Frequency (MHz)	Field strength (μV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dBμV/m	30

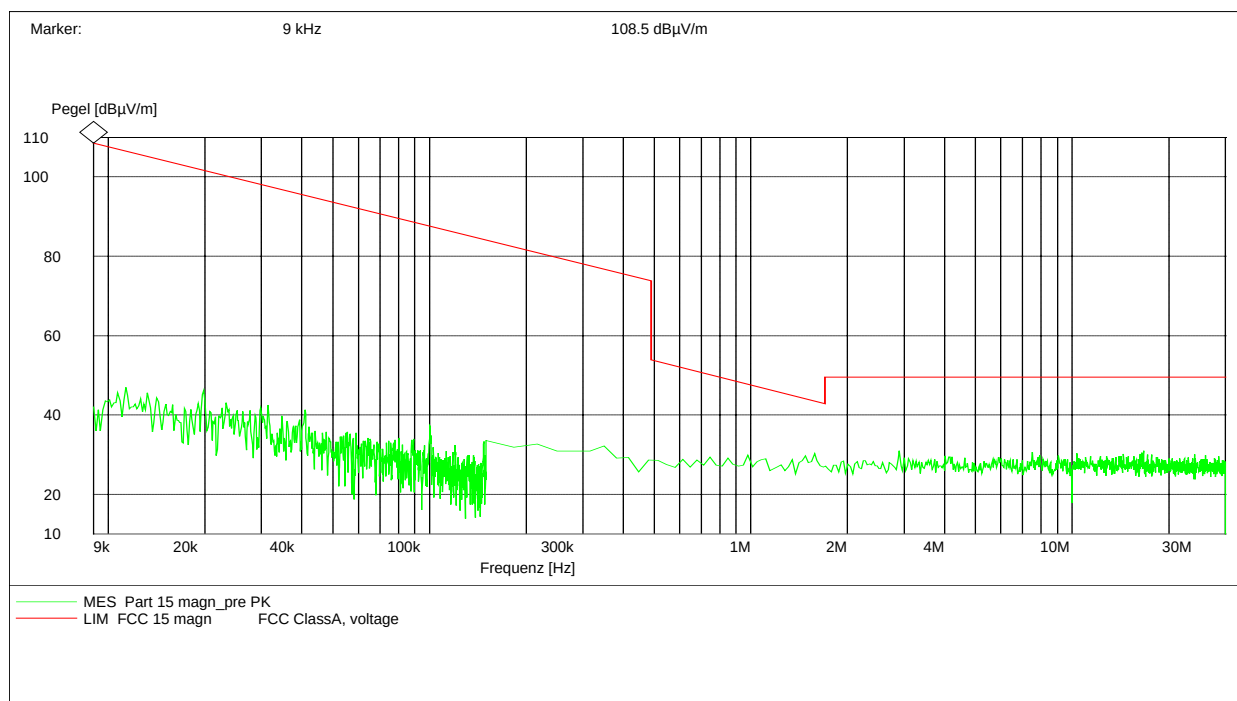
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
 (for reference numbers see test equipment listing)

17 – 24, 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
Manufacturer: Sagem
Operating Condition: Charger DTC3515 045E040E
Test Specification: traffic and idle mode
Comment: pass



Limits

SUBCLAUSE § 15.109

Frequency (MHz)	Field strength (μ V/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dB μ V/m	30

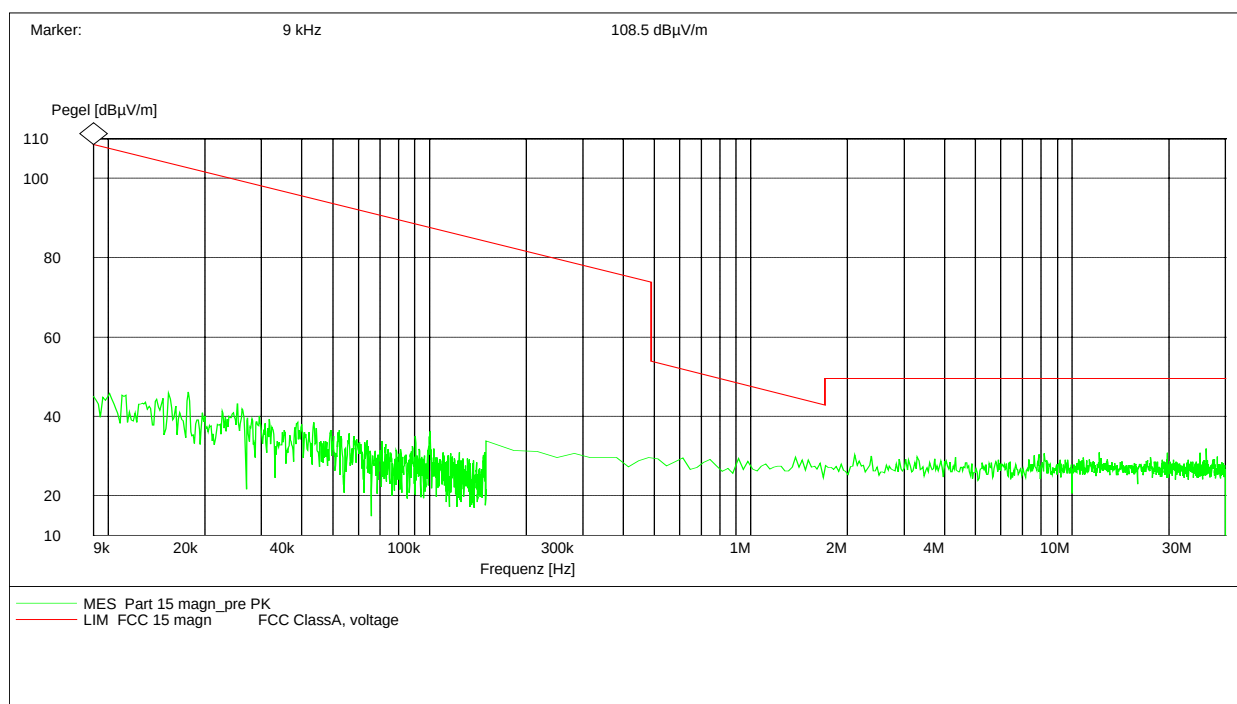
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

17 – 24, 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
Manufacturer: Sagem
Operating Condition: with car kit A17-BA10-10
Test Specification: traffic and idle mode
Comment: pass



Limits

SUBCLAUSE § 15.109

Frequency (MHz)	Field strength (μ V/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dB μ V/m	30

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24, 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

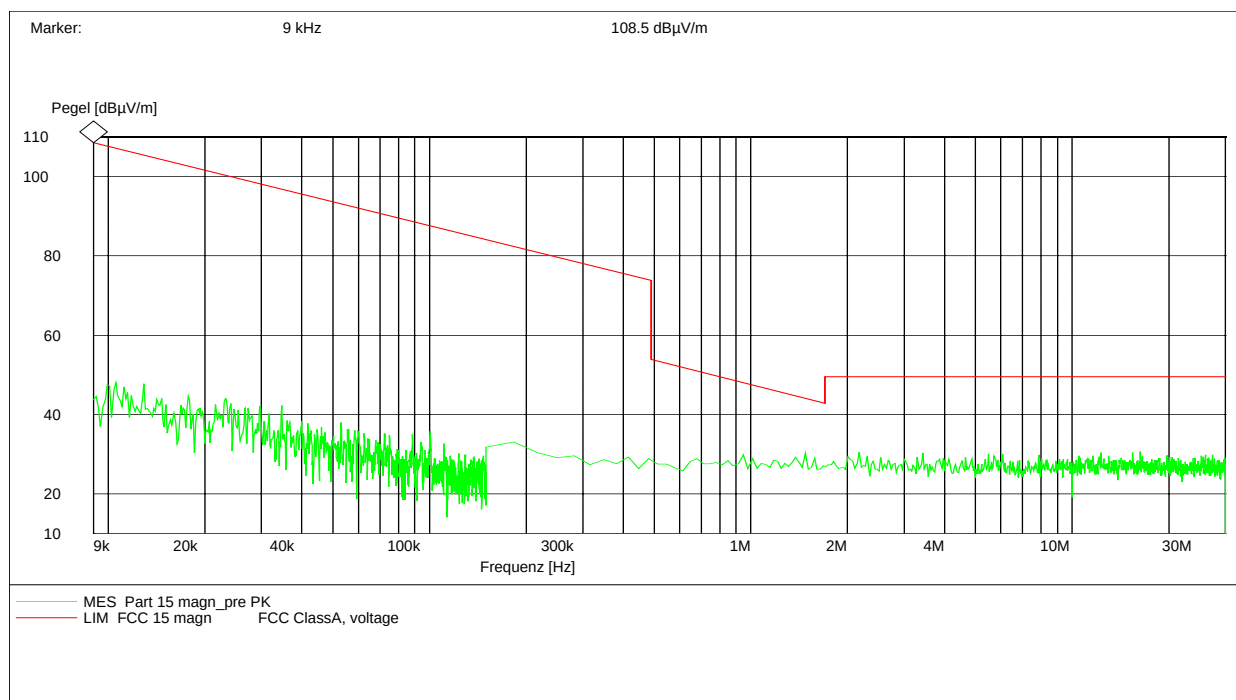
EUT: Mobile phone 2003a

Manufacturer: Sagem

Operating Condition: with cigar lighter adapter 23811253-7 and data cable 23810787-0

Test Specification: traffic and idle mode

Comment: pass



Limits

SUBCLAUSE § 15.109

Frequency (MHz)	Field strength (μ V/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dB μ V/m	30

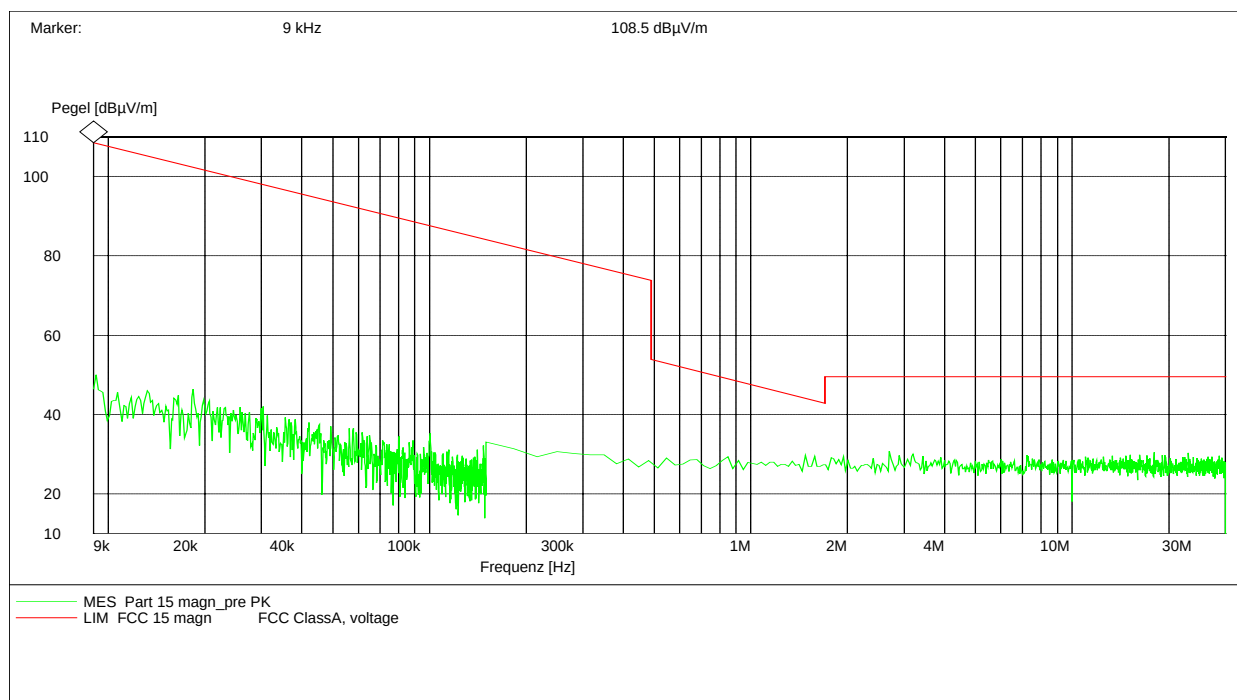
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

17 – 24, 64

FCC Rule 47

Part 15 Magnetics (Valid for PCS 850 and PCS1900)

EUT: Mobile phone 2003a
Manufacturer: Sagem
Operating Condition: with headset 23812517-0
Test Specification: traffic and idle mode
Comment: pass



Limits

SUBCLAUSE § 15.109

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30 / 29.5 dBµV/m	30

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

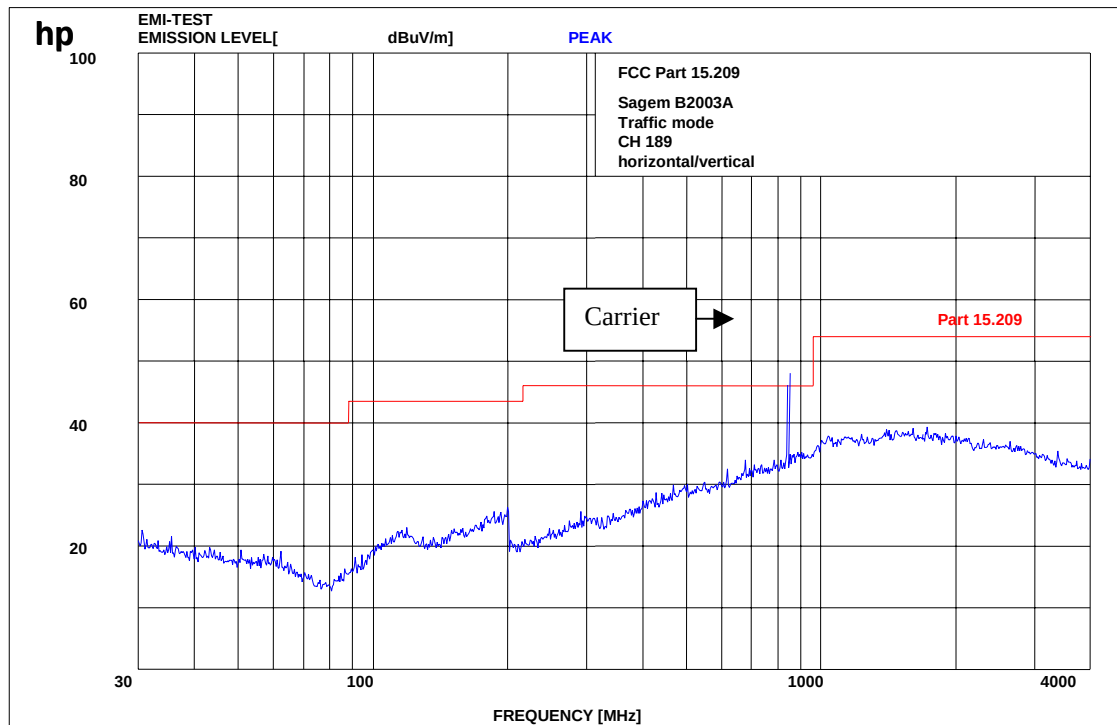
(for reference numbers see test equipment listing)

17 – 24, 64

SPURIOUS RADIATION

§ 15.109

CH 189 up to 4 GHz, valid for all accessories, no difference in behavior



$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz

Carrier suppressed with a rejection filter

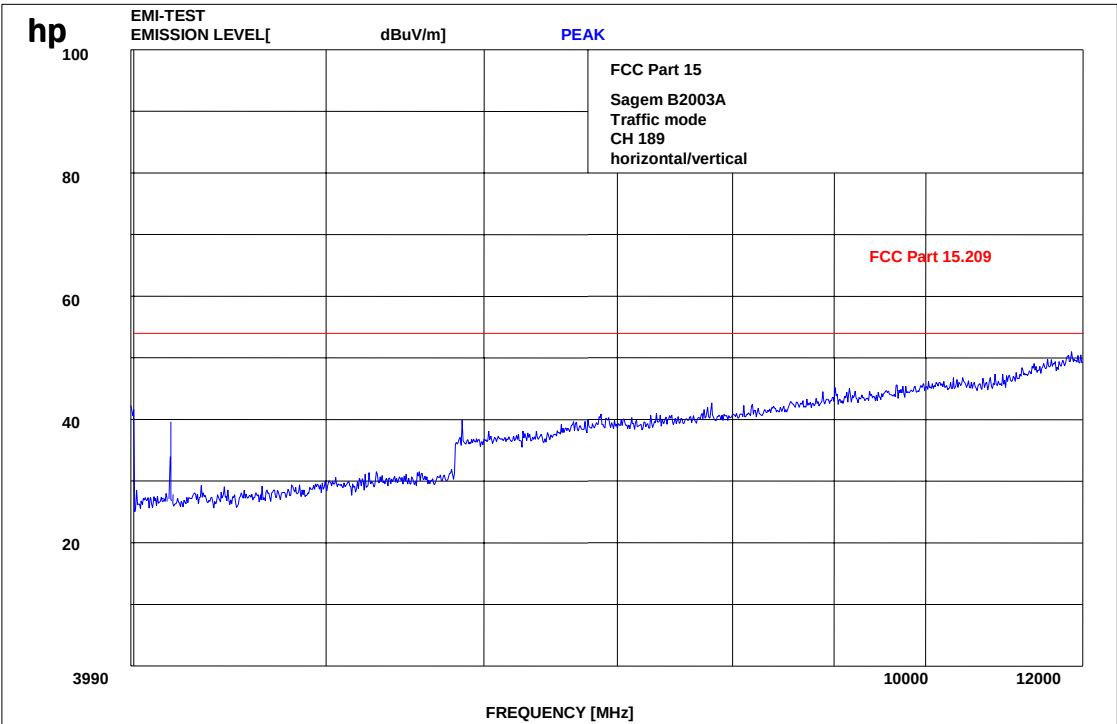
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24, 64

SPURIOUS RADIATION § 15.109

CH 189 up to 12 GHz, valid for all accessories, no difference in behavior



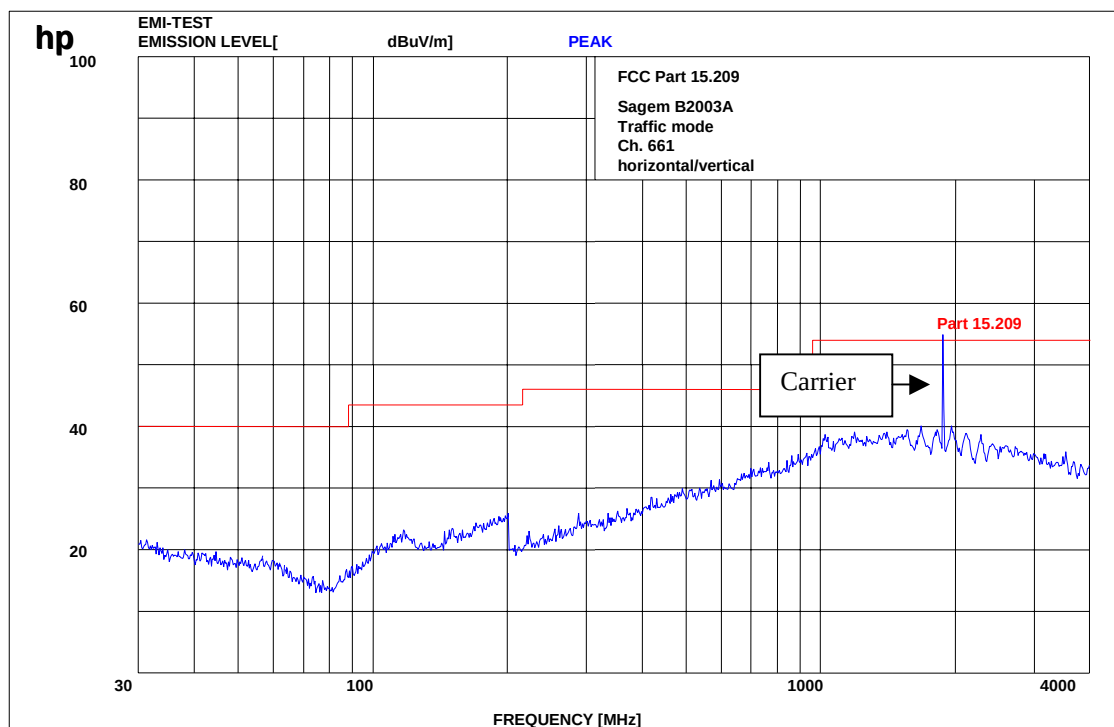
$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz $f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz
Carrier suppressed with a rejection filter

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

SPURIOUS RADIATION

§ 15.109

CH 661 up to 4 GHz, valid for all accessories, no difference in behavior



$f < 1 \text{ GHz}$: RBW/VBW: 100 kHz

$f \geq 1 \text{ GHz}$: RBW/VBW 1 MHz

Carrier suppressed with a rejection filter

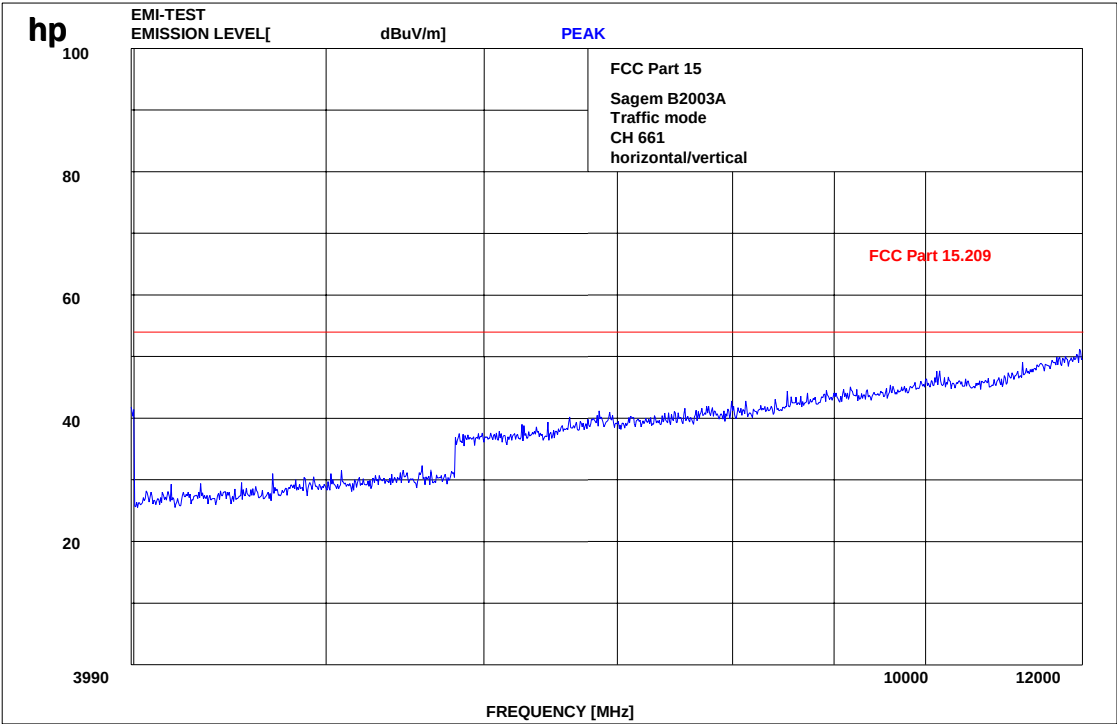
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24, 64

SPURIOUS RADIATION § 15.109

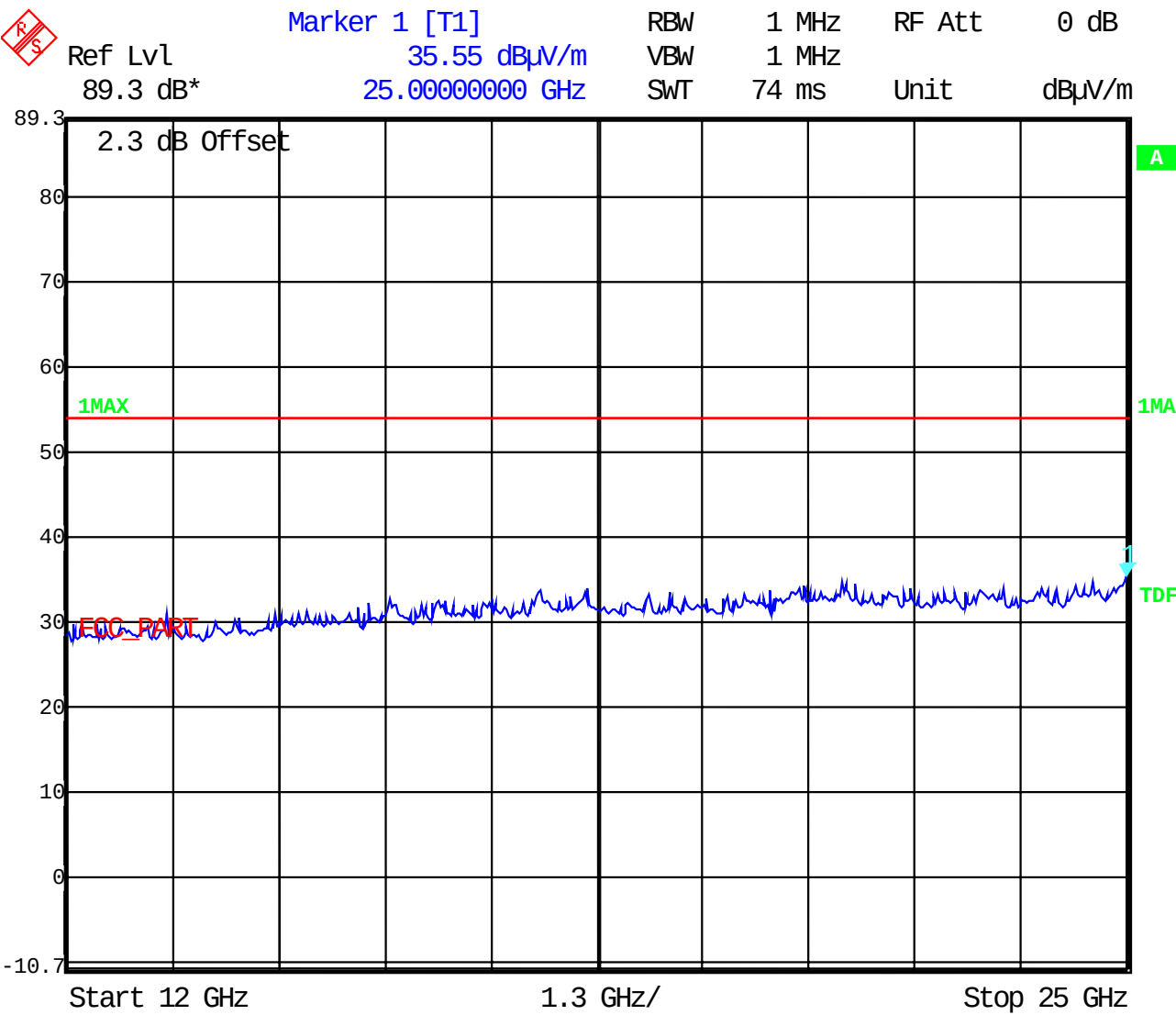
CH 661 up to 12 GHz, valid for all accessories, no difference in behavior



f < 1 GHz : RBW/VBW: 100 kHz f ≥ 1GHz : RBW/VBW 1 MHz
Carrier suppressed with a rejection filter

SPURIOUS RADIATION § 15.109

CH 661 up to 25 GHz, valid for all accessories, no difference in behavior



CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 118 (143)

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

CETECOM ICT Services GmbH

Test report no.: 4_0902-11-02/03

Issue Date: 2003-08-07

Page 119 (143)

TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

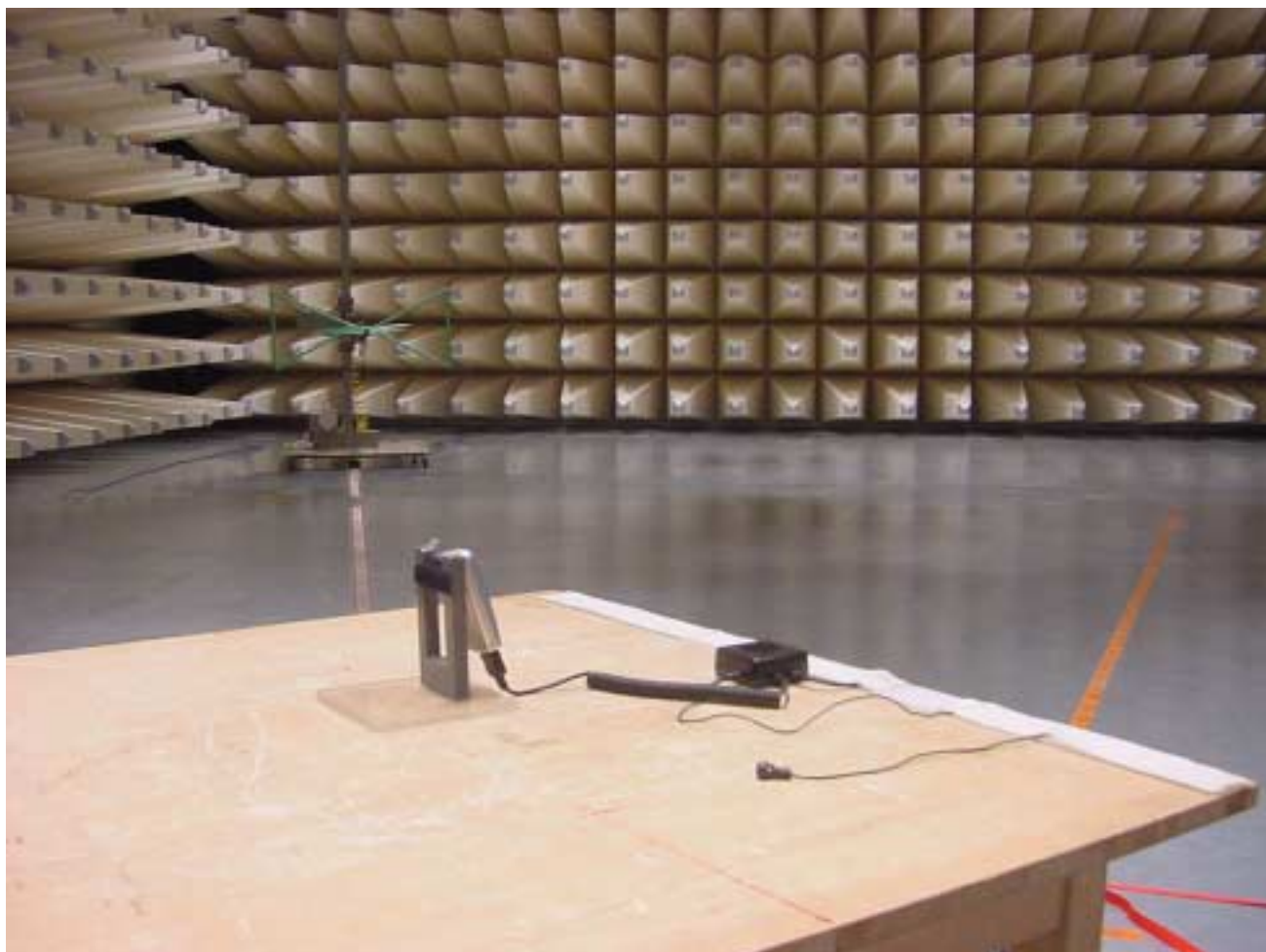
To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

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



Photographs of the equipment



The image shows a Sagem SAZA-DU mobile phone with its back cover removed. The back cover is white and has a label with safety instructions in French and English, a barcode, and the Sagem logo. The phone is black and is lying on a blue surface.

BATTERIE RECHARGEABLE
NE PAS DEMONTER
ATTENTION:
 - S'ILUSSE LE CHARGEUR
 - NE PAS COURT-CIRCUITER
 - LUMIERE DE FUMEE
 - NE PAS REMPLIR
 - NE PAS RECHARGER

RECHARGEABLE BATTERY
DO NOT DISASSEMBLE
CAUTION:
 - DO NOT DISASSEMBLE
 - CHARGE ONLY
 - DO NOT SHORT-CIRCUIT
 - MUST BE DISPOSED
 - OF PROPERLY
 - MAY EXPLODE IF
 - DISPOSED OF IN FIRE

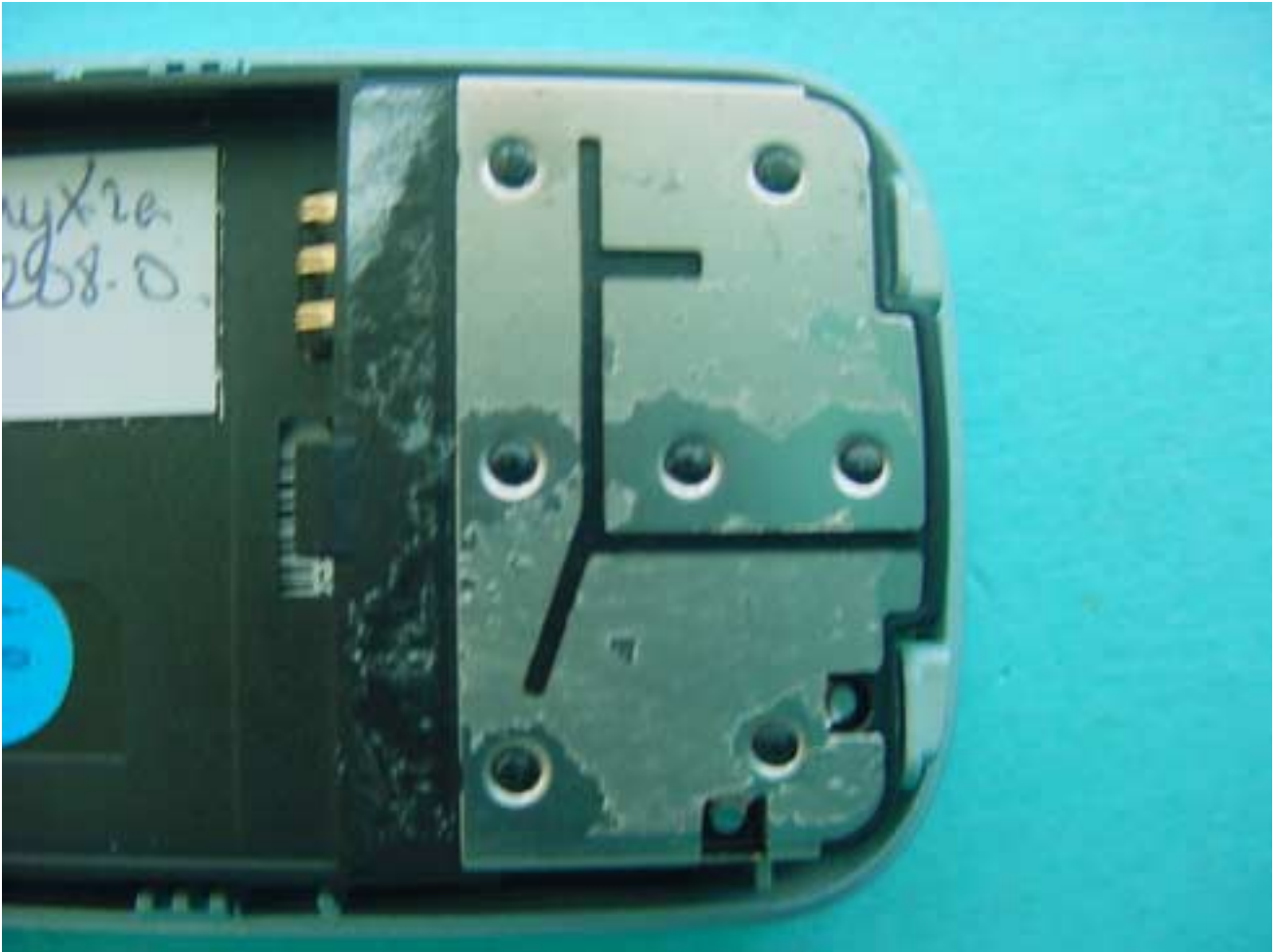
188766567
 SAZA-DU 8W33

CE **SAGEM** MADE IN EUROPE

Photographs of the equipment



Photographs of the equipment



Photographs of the equipment



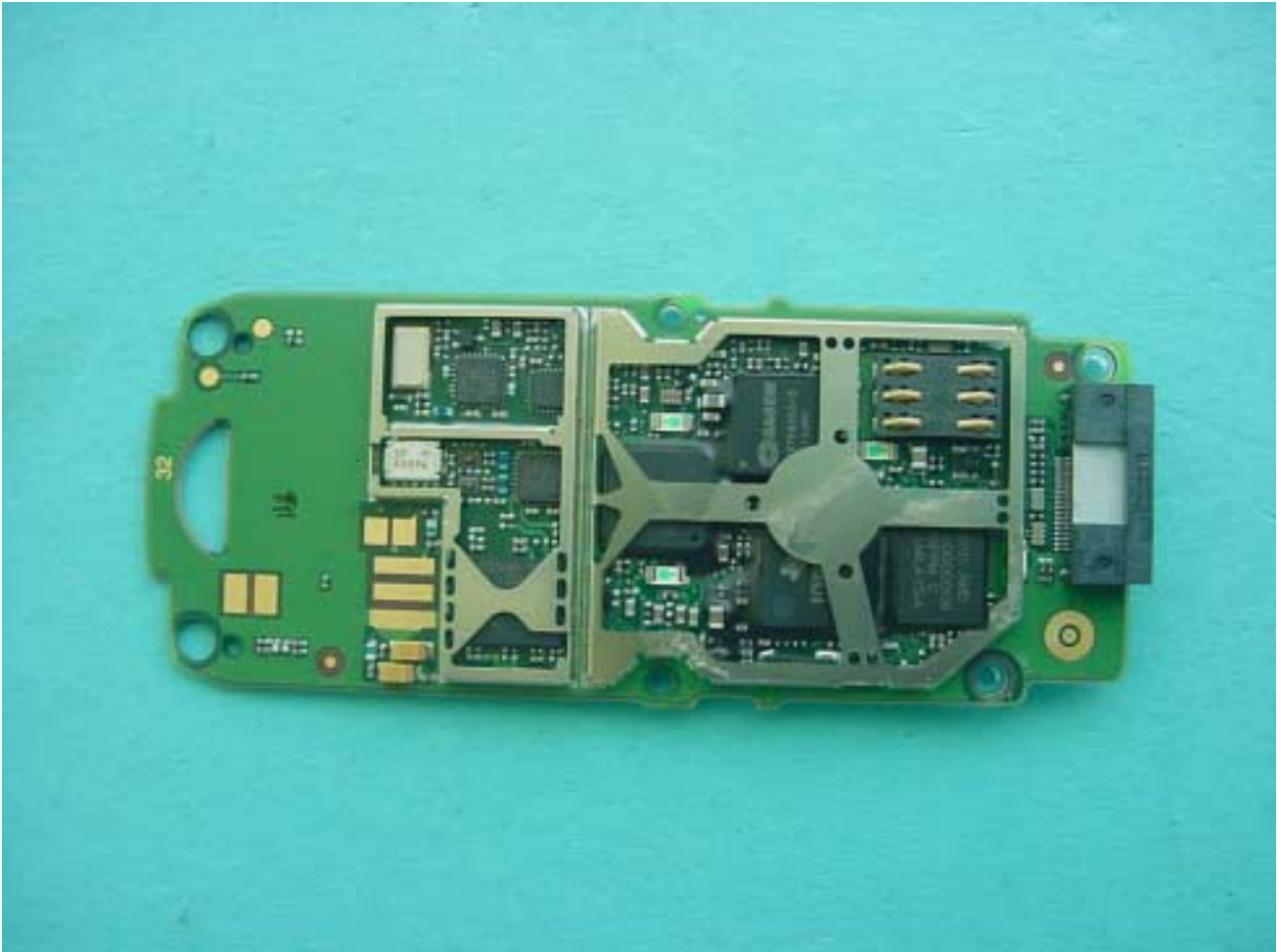
Photographs of the equipment



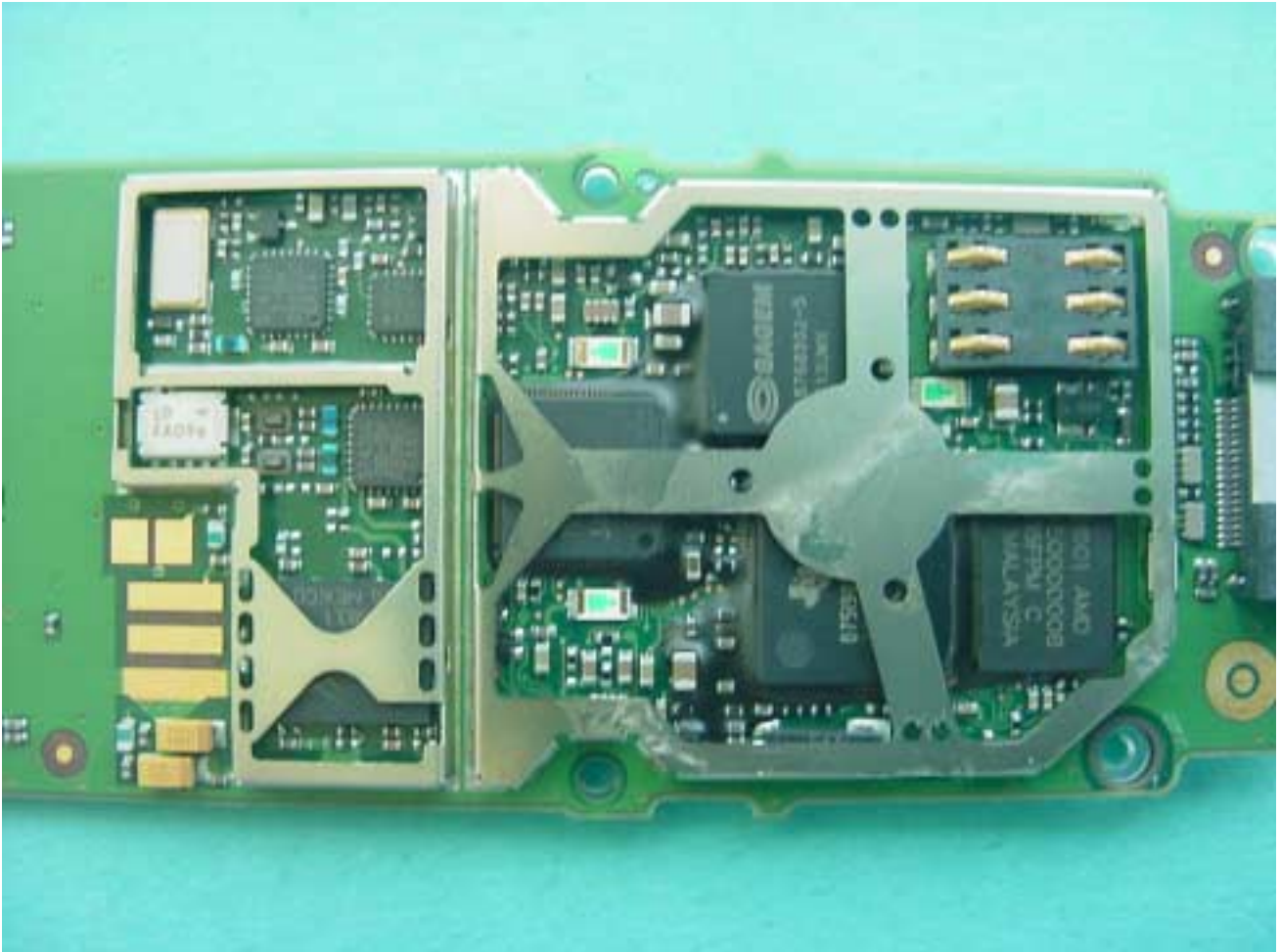
Photographs of the equipment



Photographs of the equipment



Photographs of the equipment



Photographs of the equipment

TA3651-US



Photographs of the equipment

TA3651-US



Photographs of the equipment

18805593-9



Photographs of the equipment

18805593-9



Photographs of the equipment

3515 045E040E



Photographs of the equipment

3515 045E040E



Photographs of the equipment

23811253-7 and 23810787-0



Photographs of the equipment

23811253-7 and 23810787-0



Photographs of the equipment

23811253-7 and 23810787-0



Photographs of the equipment

23812517-0



Photographs of the equipment

A17-BA10-010



Photographs of the equipment

A17-BA10-010

