CETECOM ICT Services GmbH

Radio Satellite Communication
Untertürkheimer Straße 6-10 . D-66117 Saarbrücken Telefon: +49 (0)681 598-0 Telefax: -9075

Accredited Testing Laboratory

DAR-Registration number:
TTI-P-G 166/98-20

Test report no.: 4-0331-C/01
FCC Part 15.247/CANADA RSS-210
SIEMENS WDCT-PHONE
GIGASET 4010 Basestation

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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 generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or 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
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66117 Saarbrücken
Germany
Telefone : + 49 681 598 - 0
Telefax : + 49 681 598 - 9075
E-mail : Harro.Ames@ict.cetecom.de
Internet : www.cetecom.de

Accredited testing laboratory
DAR-registration number : TTI-P-G 166/98-20

1.3 Details of applicant

Name : SIEMENS AG
Street : Frankenstrasse 2
City : D-46395 Bocholt
Country : Germany
Telephone : +49 2871 91 0
Telefax : +49 2871 91 2495
Contact : Mr. Kai Heinrich
Telephone: +49 2871 91 2948

1.4 Application details

Date of receipt of application : 25.02.01
Date of receipt of test item : 25.02.01
Date of test : 09.-18.04.01

1.5 Test item

Type of equipment	:	**WDCT - Phone , Basestation**
Type designation	:	**GIGASET 4010**
Manufacturer	:	Applicant
Street	:	
City	:	
Country	:	
Serial number	:	
Additional informations:	**:**	
Frequency	:	2400 – 2483.5 MHz
Type of modulation	:	800KFXD / 79M8FXD (FHSS)
Number of channels	:	96
Antenna	:	integral antenna
Power supply	:	9,5V AC via 110V AC Adapter
Output power	:	max 33.8 mW EIRP
Type of equipment	:	Temperature range : -20°C - +55°C

1.6 Test standards: FCC Part 15 §15.247 / CANADA RSS-210

2 Technical test

2.1 Summary of test results

The radiated measurements were performed horizontal, vertical results are about 5 dB lower over the whole frequency range.
The antenna gain measurement was performed by the difference between conducted and radiated output measurement.
All measurement settings are according to FCC 15.35, 15.205, 15.209, 15.247 and the „Measurement guidelines for FHSS systems“.
Measurements below 1 GHz were performed with a CISPR Quasi Peak Adapter, over 1 GHz we used peak measurements. At peaks we did an second, average measurement.
ResBW and VBW were according FCC requirements.

No deviations from the technical specification(s) were ascertained in the course of the tests performed.
The samples fullfill also the requirements according CANADA RSS-210

Technical responsibility for area of testing :

Date	Section	Name	Signature
19.04.01	RSC 8414	Ames H.	

Technical responsibility for area of testing :

Date	Section	Name	Signature
19.04.01	RSC8411	Berg M.	

2.2 Testreport

TEST REPORT

Testreport no. : 4-0331-C/01

TEST REPORT REFERENCE

LIST OF MEASUREMENTS

Paragraph	PARAMETER TO BE MEASURED	PAGE
	Transmitter parameters	
§ 15.204	Antenna gain	7
§ 15.247 (a)	Carrier frequency separation	8
§ 15.247 (a)	Number of hopping channels	9
§ 15.247 (a)	Time of occupancy (dwell time)	10
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Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Antenna Gain **SUBCLAUSE § 15.204**

The gain is about -5.0 dBi

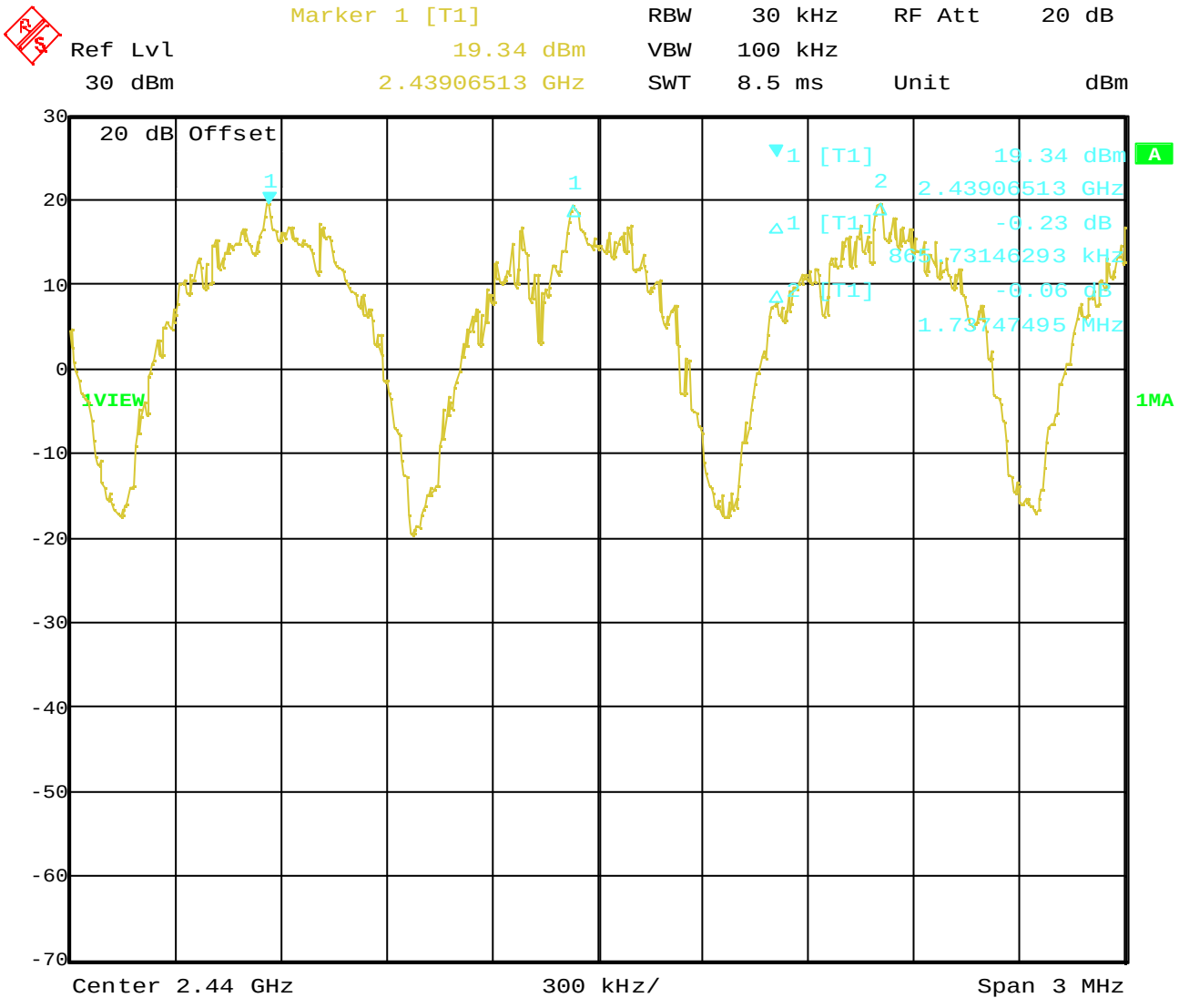
(measured effectiv radiated power over dipol– measured conducted power with a temporary RF-connector)

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

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Carrier frequency separation §15.247(a)

Cursor 1 to cursor 2 ~ 861kHz; cursor 2 to cursor 3 ~ 865 kHz

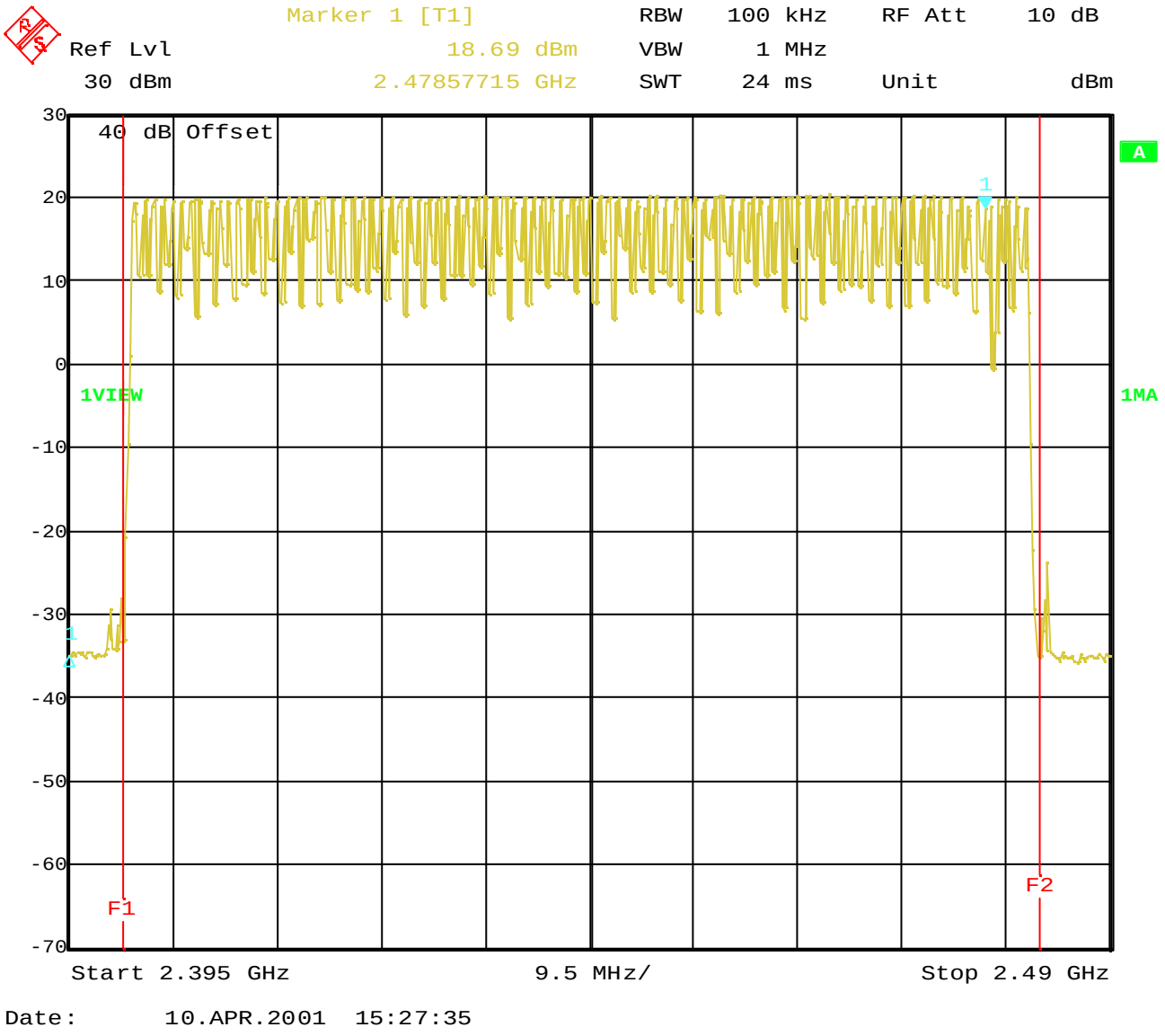


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Number of hopping channels **§15.247(a)**

The number of hopping channels is 96.
The red frequency lines show the limit of the band.
According to the wdct requirements, the sample fullfills the requirement of min 75 hopping channels at every time. The minimum number of used channels is 80.

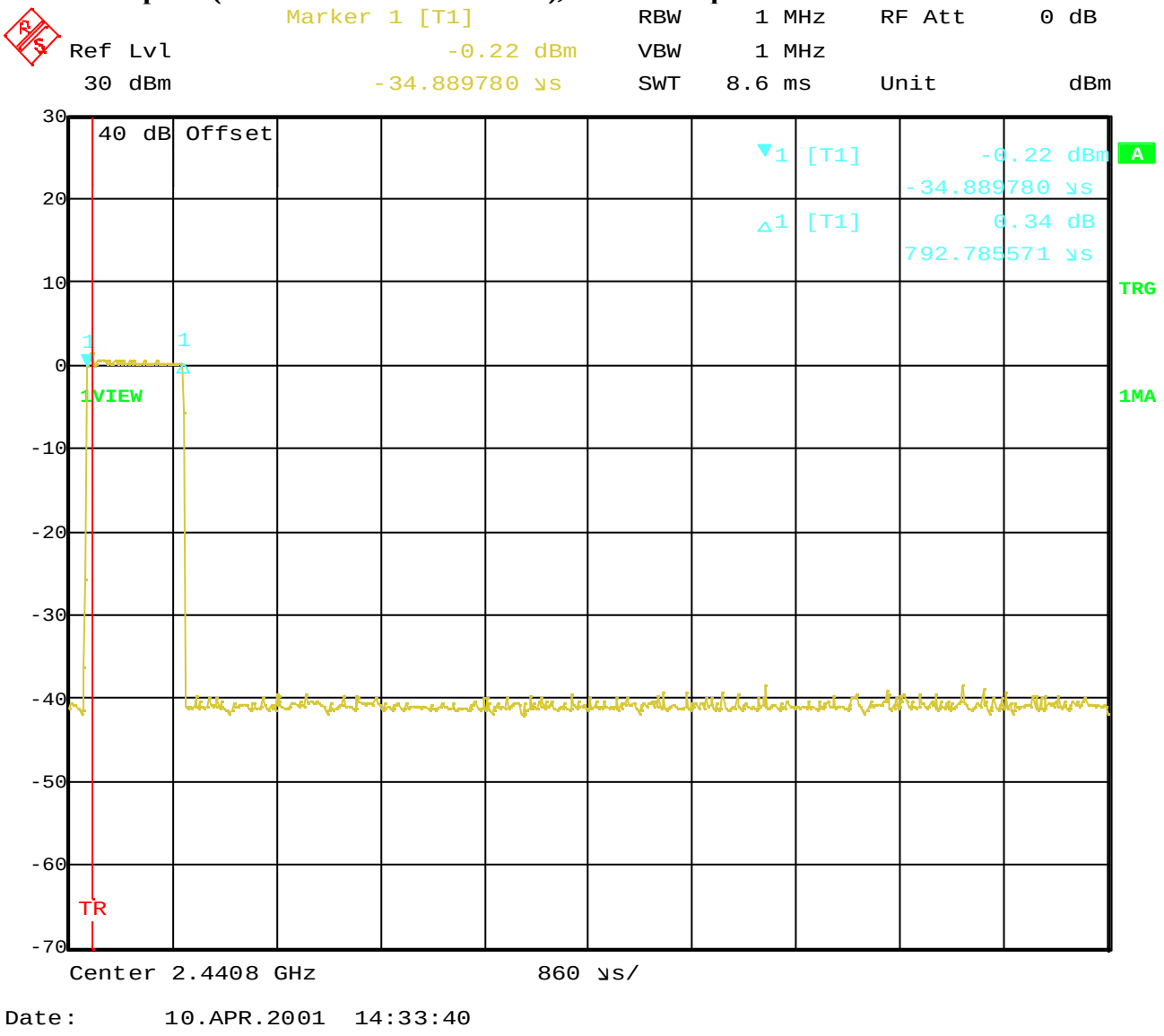


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Time of occupancy (dwell time) **§15.247(a)**

The max. duration of signal is 0.827 ms. the worst case (shortest) period for repetition of signals on one channel is 800 ms. This period equates to approximately 38 pulses within 30 seconds. based on this rate and a signal duration of 0.810 ms, the longest duration would be 38 X 0.792 ms = 30.096 ms. Based on this criteria, the SIEMENS GIGASET 4010 Base station meets the average time of occupancy requirements of FCC15.247. Even in the case of connections to 4 mobile parts (4 X 30.096 ms = 120.384 ms), the limit requirements are fullfilled.

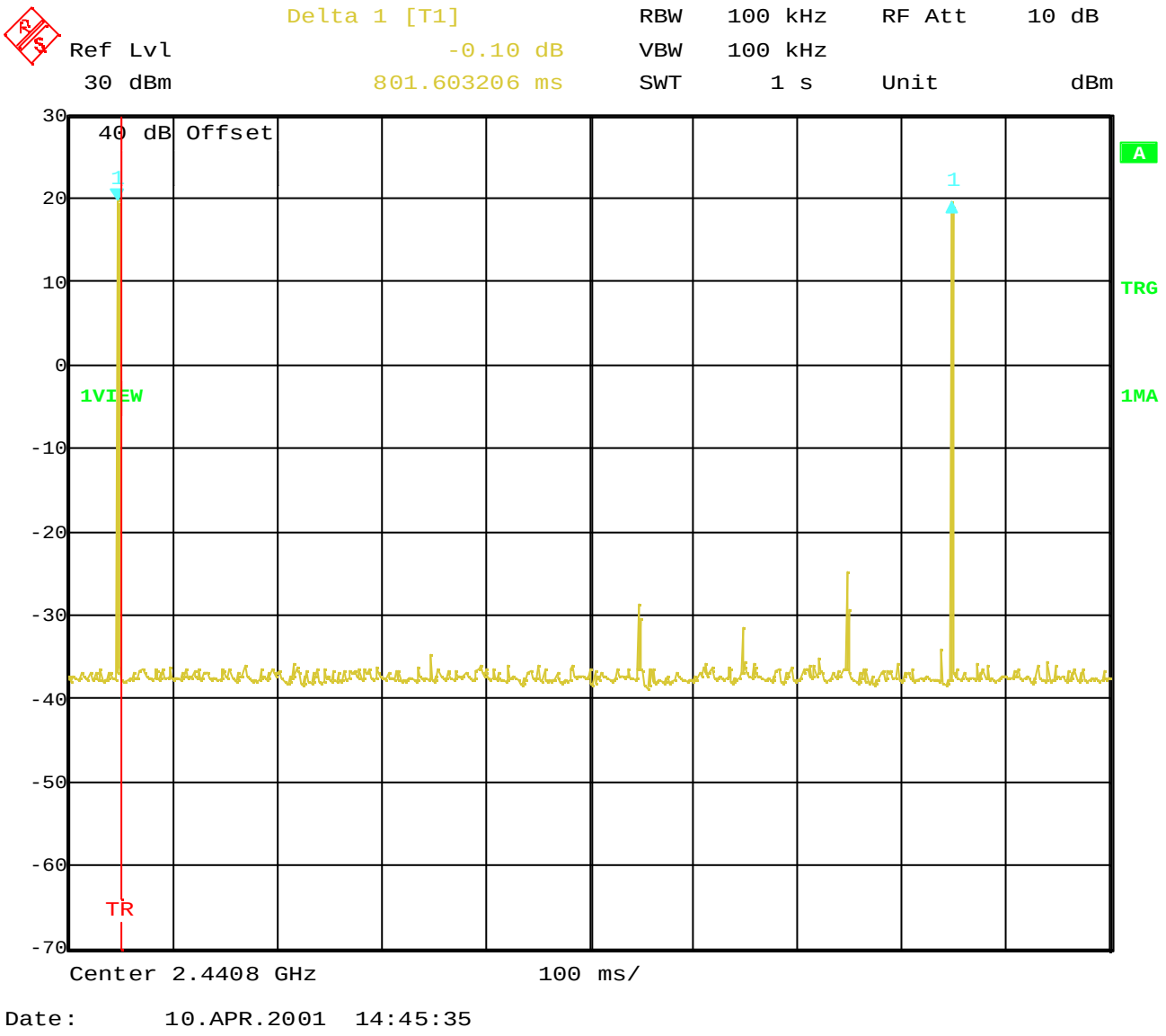


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Time of occupancy (dwell time) **§15.247(a)**

Time between two pulses is 800 ms.



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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Spectrum Bandwidth of a FHSS System **§15.247(a)**

20 dB + 10 dB bandwidth

TEST CONDITIONS		10 dB BANDWIDTH (kHz)		
Frequency (MHz)		2401.06	2441.66	2482.28
T_{nom}(20)° C	V_{nom}(110)V	370.5	410.8	396.8
Measurement uncertainty		±1kHz		

TEST CONDITIONS		20 dB BANDWIDTH (kHz)		
Frequency (MHz)		2401.06	2441.66	2482.28
T_{nom}(20)° C	V_{nom}(110)V	631.2	625	633.3
Measurement uncertainty		±1kHz		

RBW / VBW as provided in the „Measurement Guidelines“ (DA 00-705, March 30, 2000)

LIMIT **SUBCLAUSE §15.247(a) (1)**

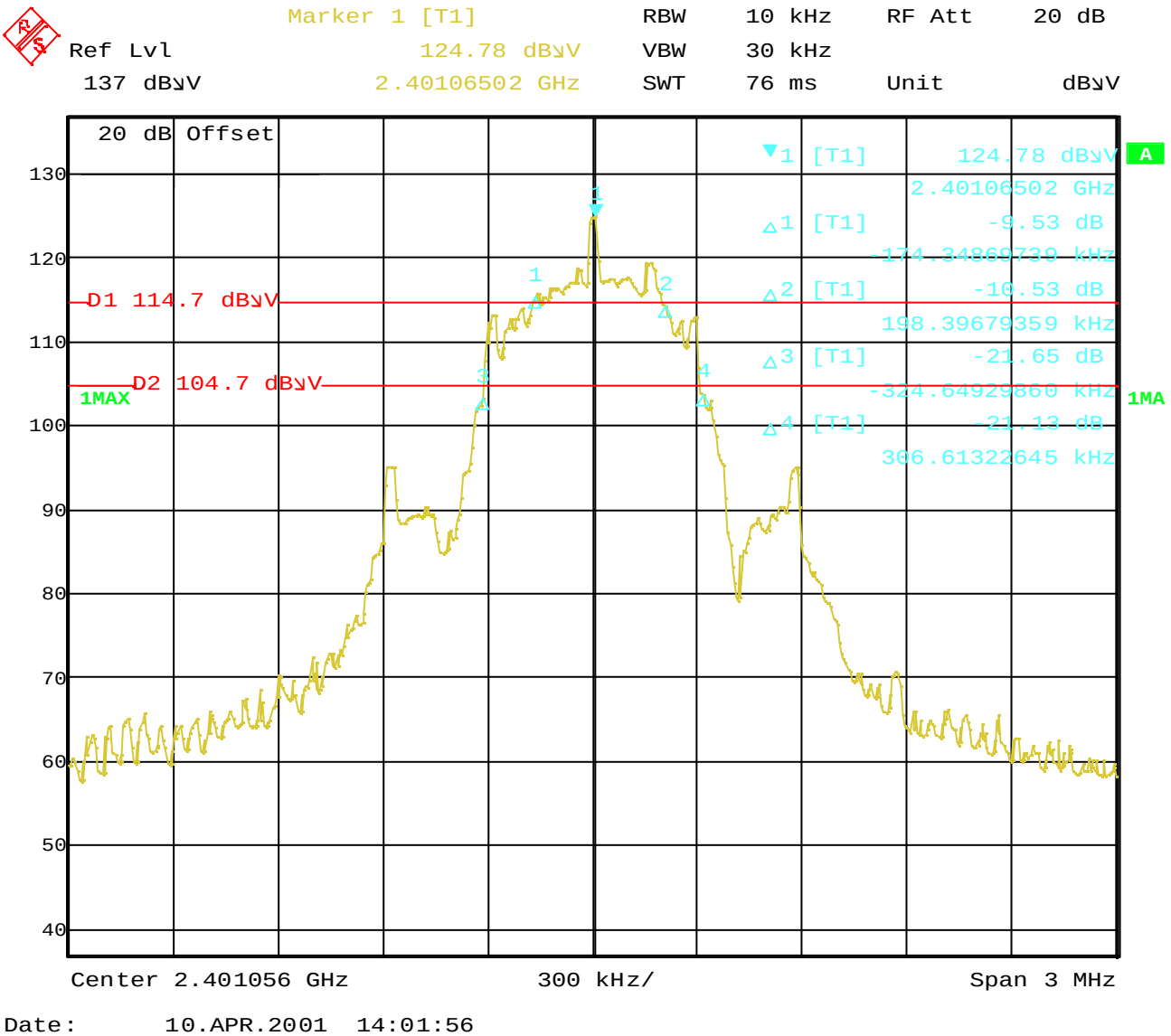
The maximum 20dB bandwith shall be at maximum 1000 KHz

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

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Spectrum Bandwidth of a FHSS System **§15.247(a)**
10 dB + 20 dB bandwidth

Channel 1

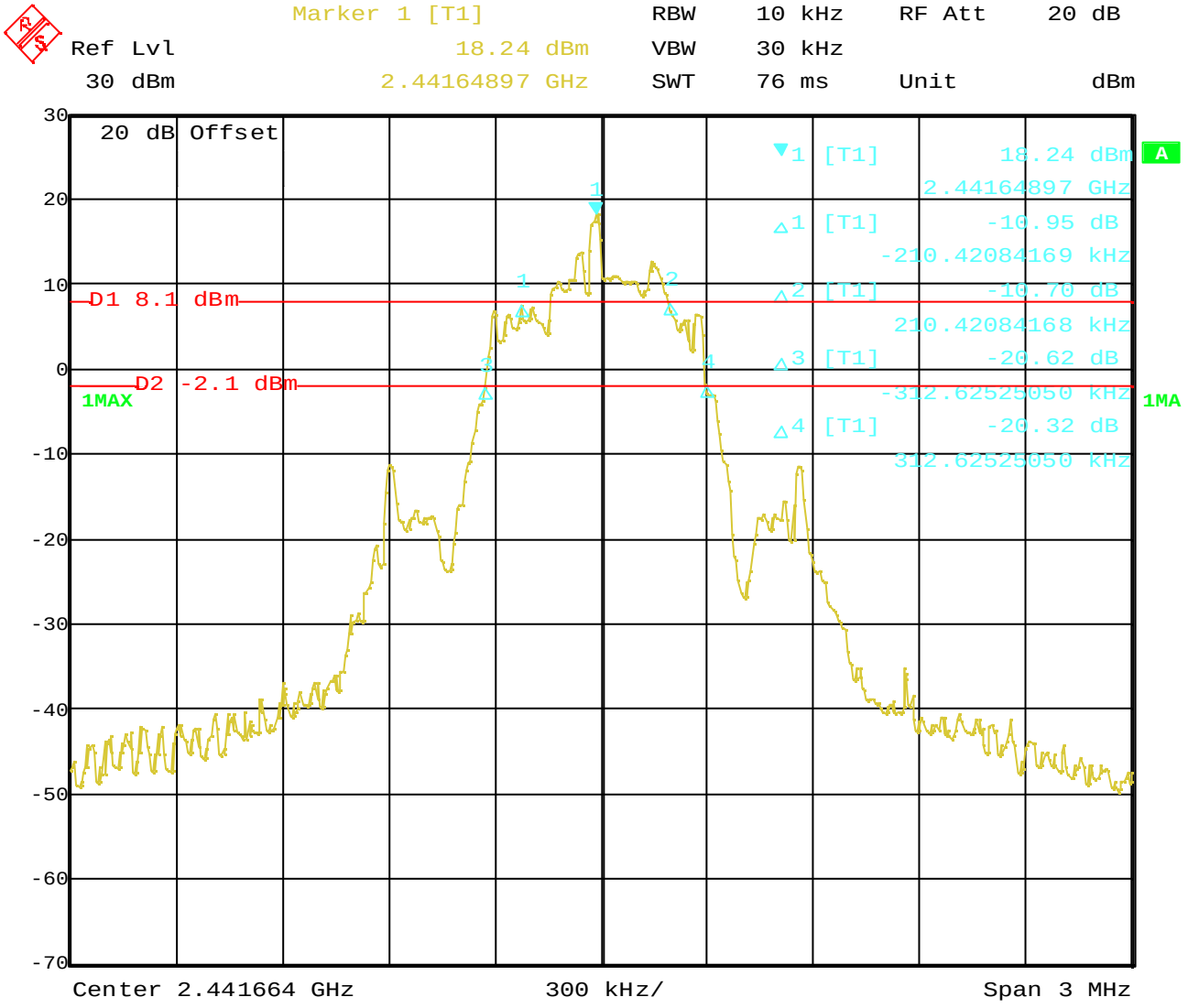


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Spectrum Bandwidth of a FHSS System **§15.247(a)**
10 dB + 20 dB bandwidth

Channel 2

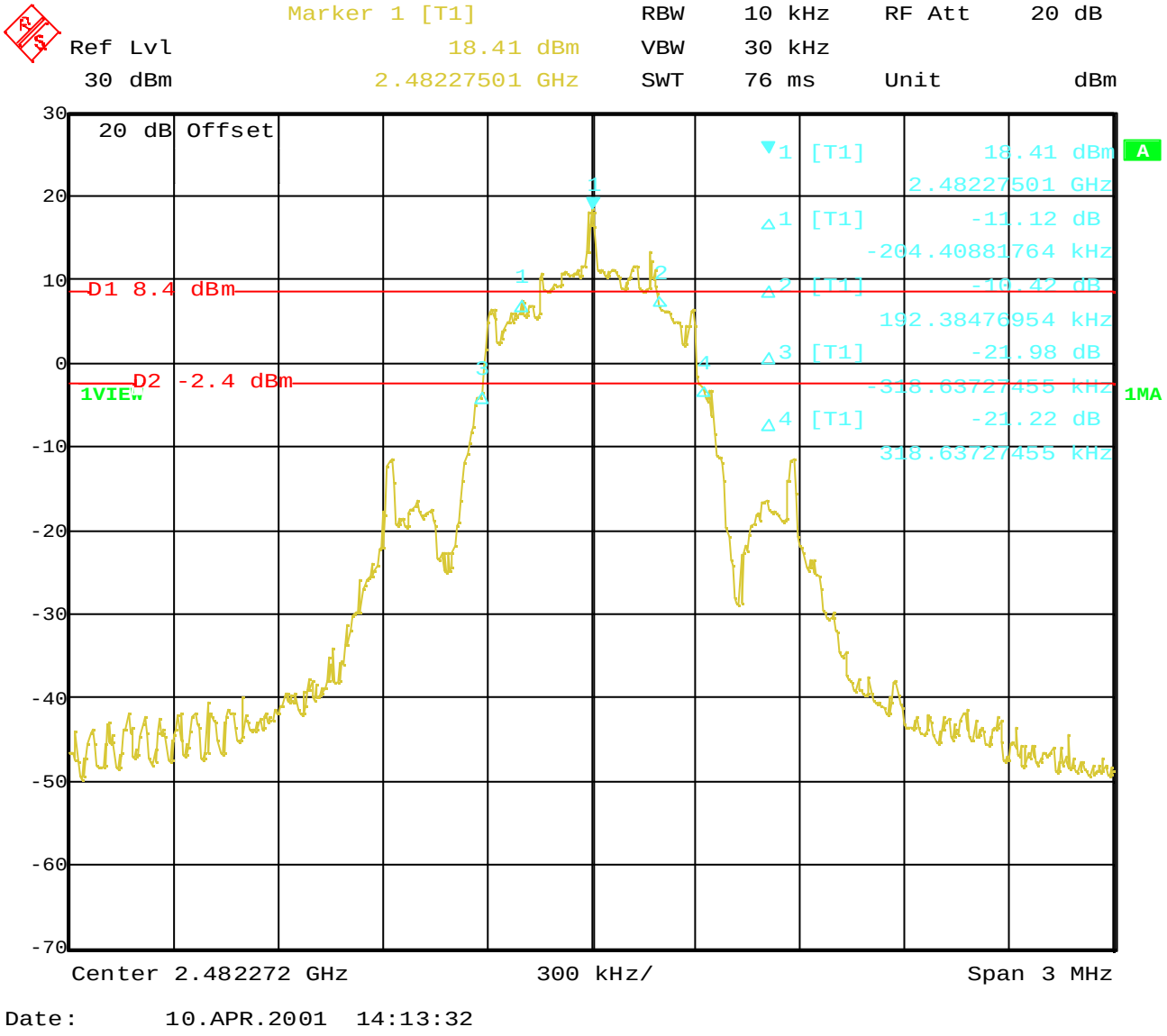


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Spectrum Bandwidth of a FHSS System **§15.247(a)**
10 dB + 20 dB bandwidth

Channel 3:



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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

MAXIMUM PEAK OUTPUT POWER (conducted) **SUBCLAUSE § 15.247 (b) (1)**

The conducted measurements were performed with a temporary coax connector.

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (mW)			
Frequency (MHz)			2401.06	2441.66	2482.28
T_{nom}(20)° C	V_{nom}(110)V	PK	90.78	104	106.9
		AV	10.08	11.55	11.87
Maximum deviation from output power under extreme test conditions (dBc)			+0.2 / -0.6	+0.3 / -0.6	+0.2 / -0.6
Measurement uncertainty			±3dB		

RBW / VBW : 3 MHz

LIMIT **SUBCLAUSE § 15.247 (b) (1)**

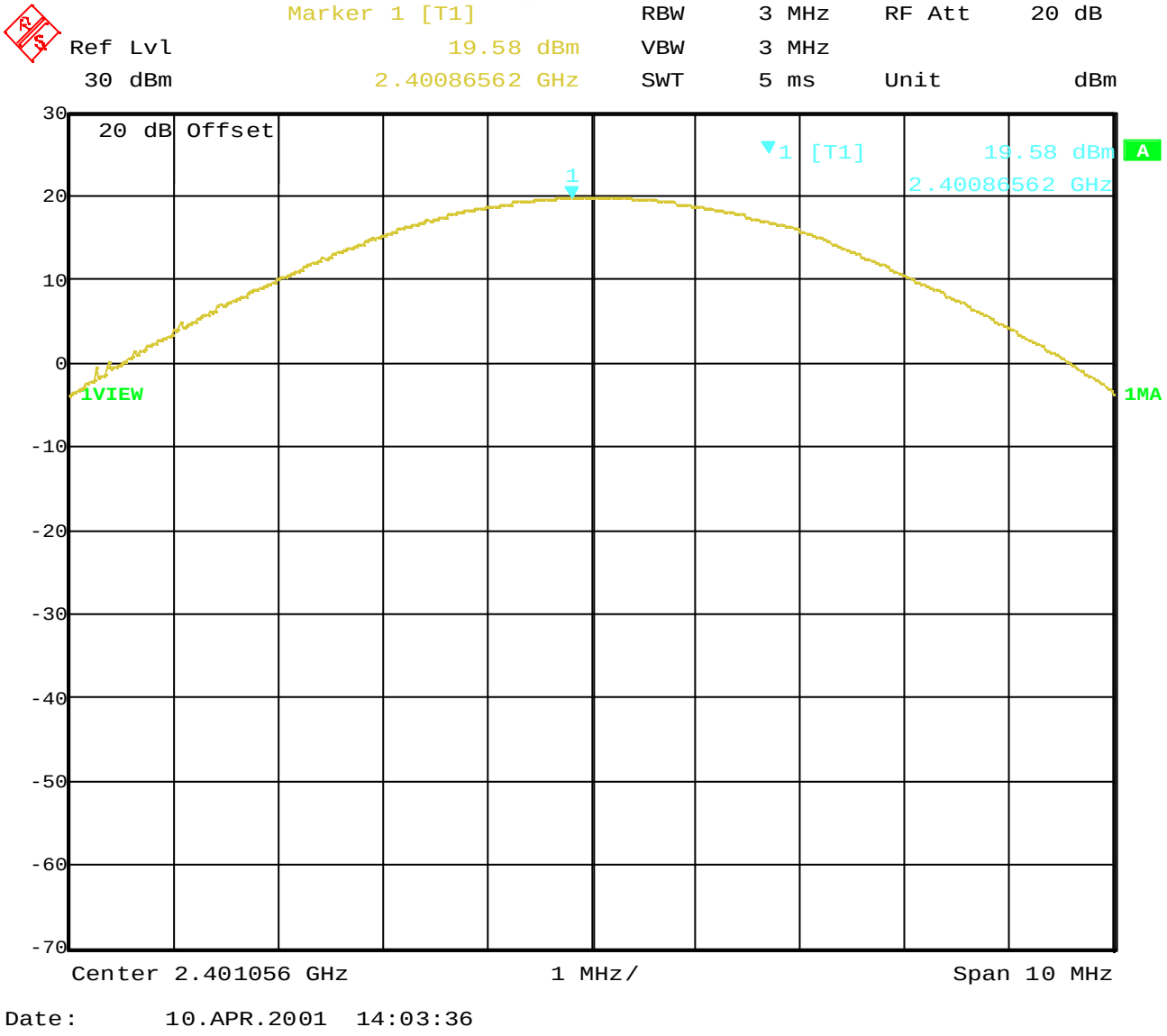
Frequency range	RF power output
2400-2483.5 MHz	1.0 Watt

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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Peak output power (conducted) **§15.247 (b)**

Channel 1: 19.58 dBm at 2401 MHz
De facto EIRP with -5.0 dbI max. antenna gain is +14.58 dBm

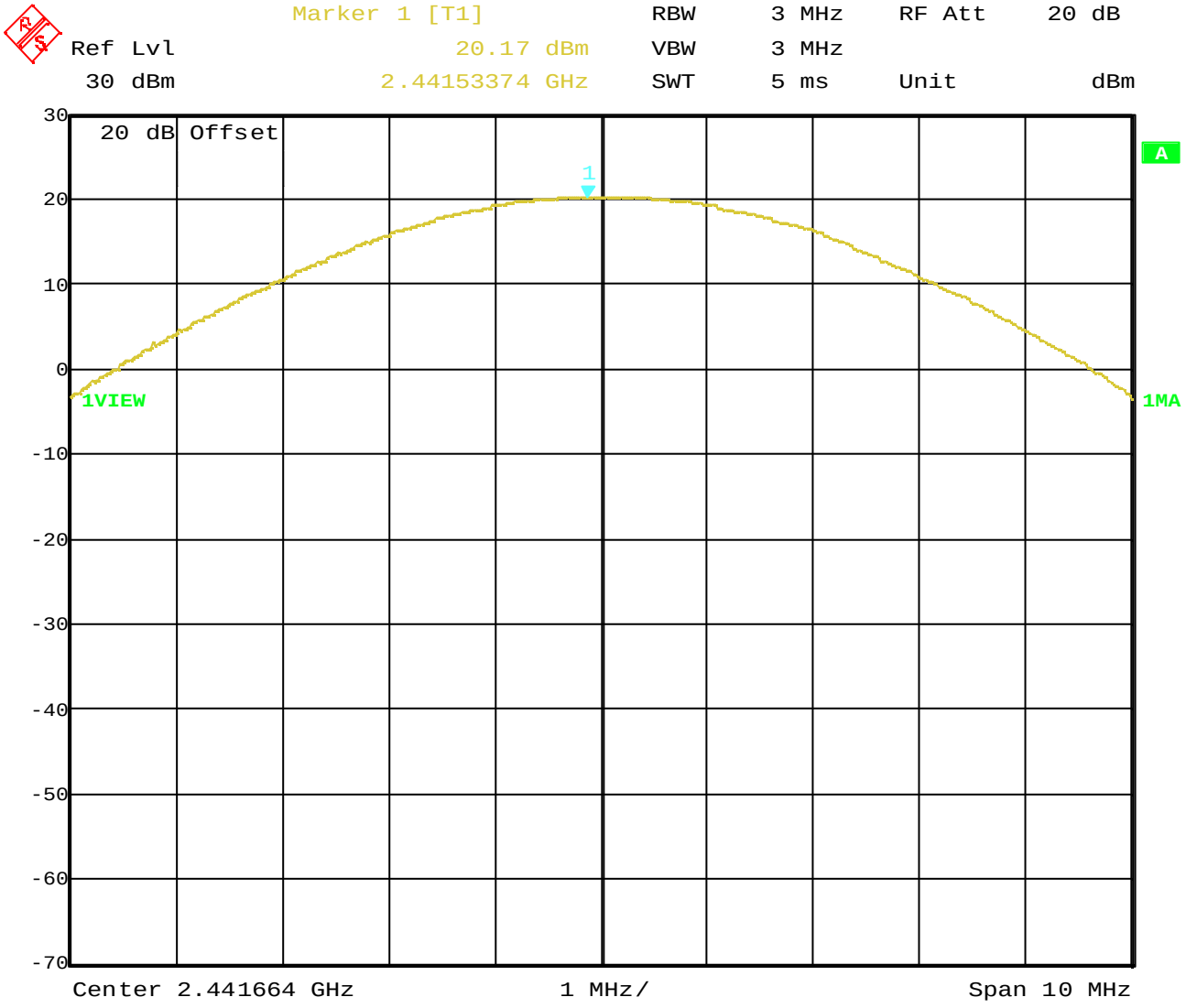


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Peak output power (conducted) **§15.247 (b)**

Channel 2: +20.17 dBm at 2441 MHz
De facto EIRP with -5.0 dbI max. antenna gain is +15.17 dBm

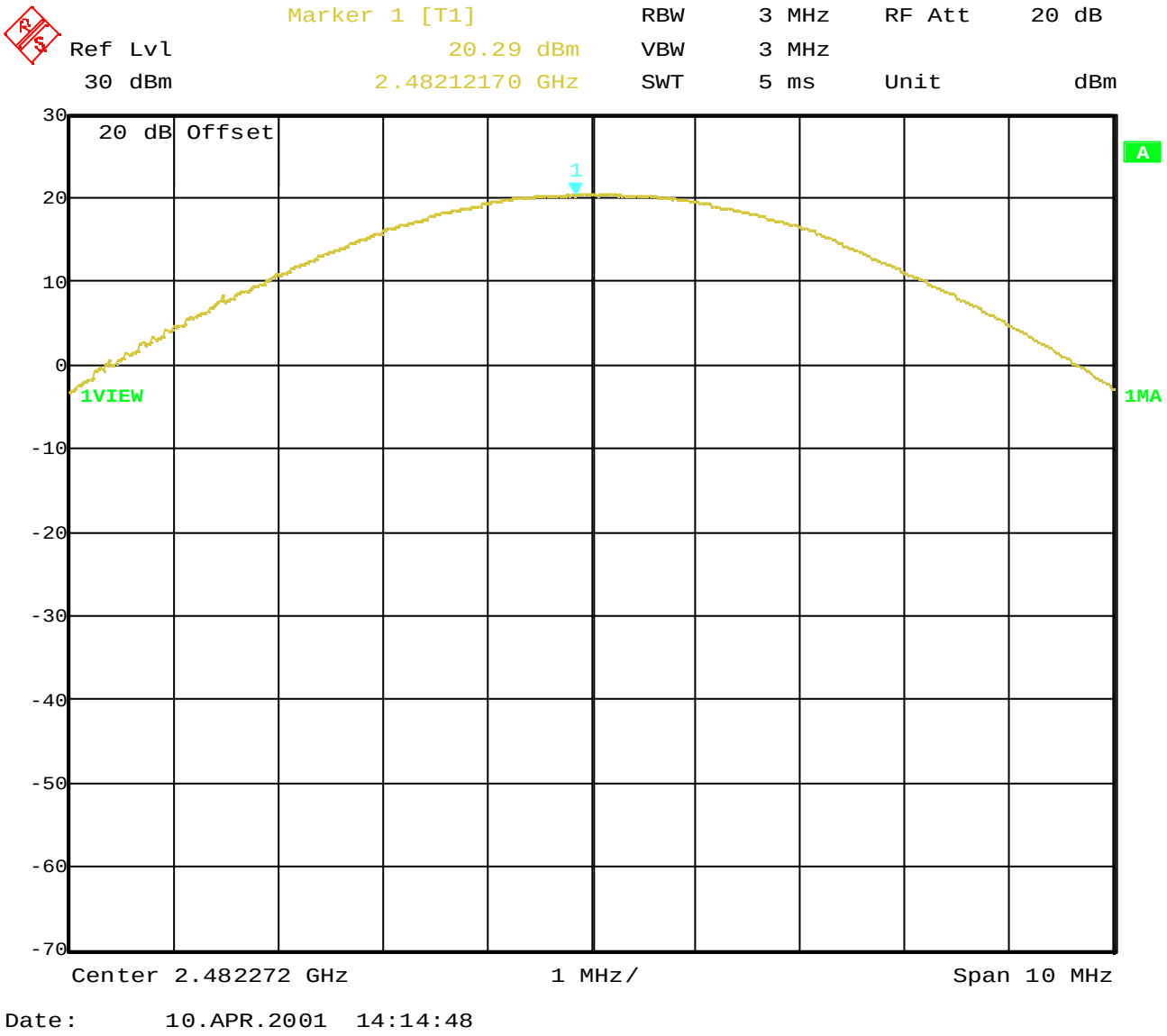


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Peak output power (conducted) **§15.247 (b)**

Channel 3: +20.29 dBm at 2482 MHz
De facto EIRP with -5.0 dbI max. antenna gain is +15.29 dBm



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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

MAXIMUM PEAK OUTPUT POWER (RADIATED) **SUBCLAUSE § 15.247 (b) (1)**

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (mW)		
Frequency (MHz)		2401	2441	2482
T_{nom}(20)° C	V_{nom}(110)V	28.7	32.88	33.8
Maximum deviation from output power under extreme test conditions (dBc)		+0.2 / -0.6	+0.3 / -0.6	+0.2 / -0.6
Measurement uncertainty		±3dB		

RBW/VBW : 3 MHz

Measured at a distance of 3m

LIMIT **SUBCLAUSE § 15.247 (b) (1)**

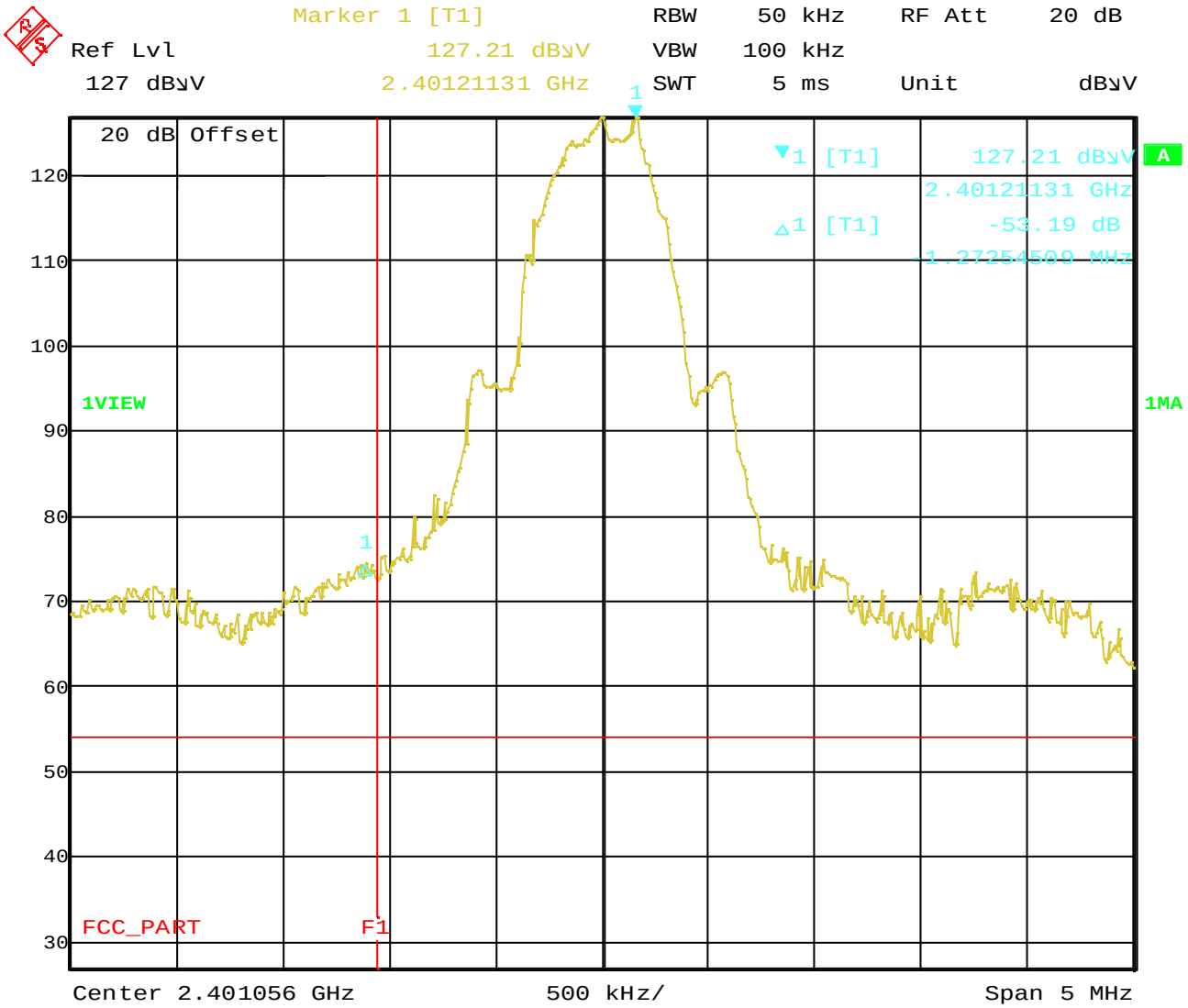
Frequency range	RF power output
2400-2483.5 MHz	1.0 Watt

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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Band-edge compliance of conducted emissions §15.247 (c)

Low frequency section (hopping off) : more than 20 dBc

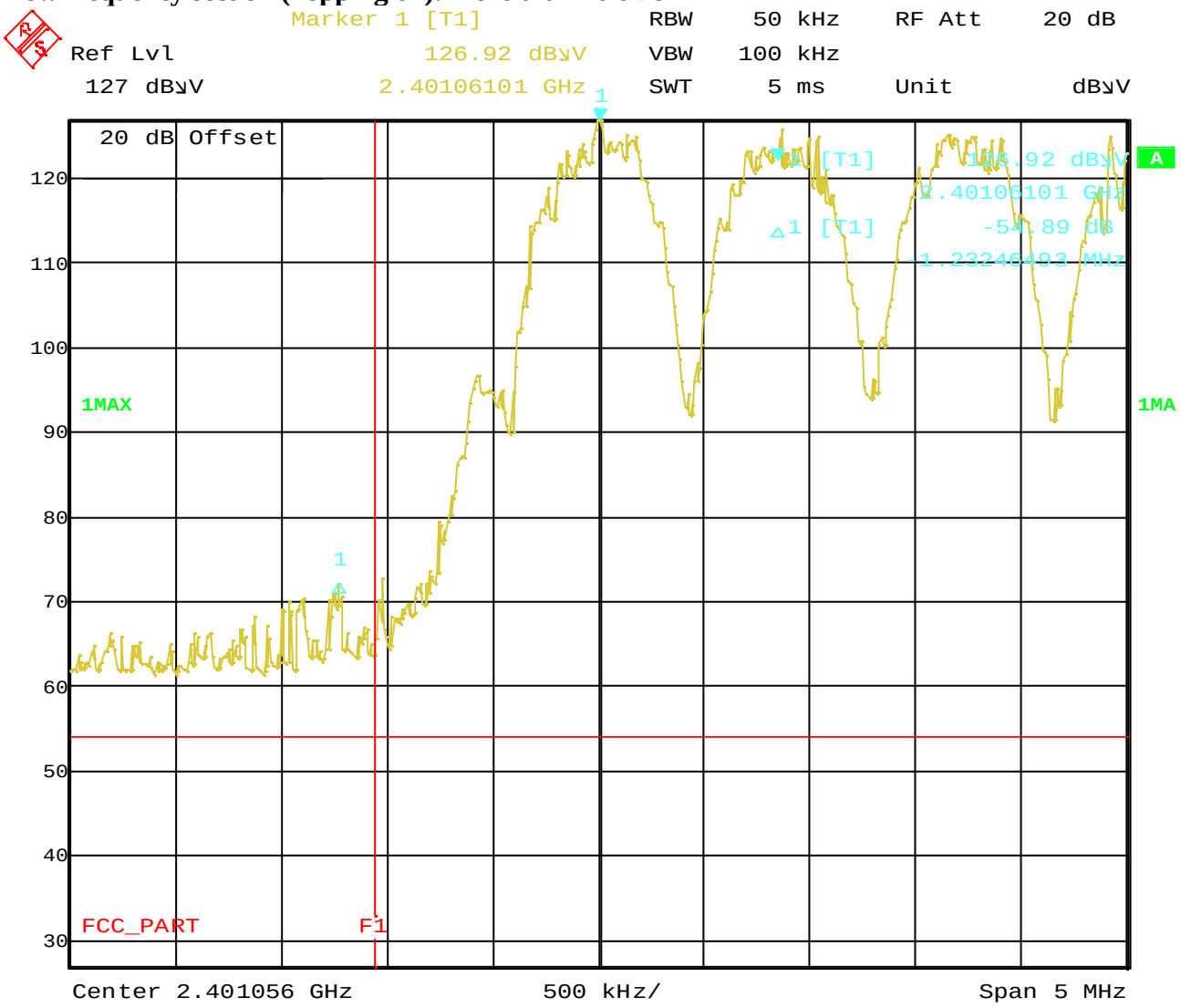


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Band-edge compliance of conducted emissions §15.247 (c)

Low frequency section (hopping on): more than 20 dBc



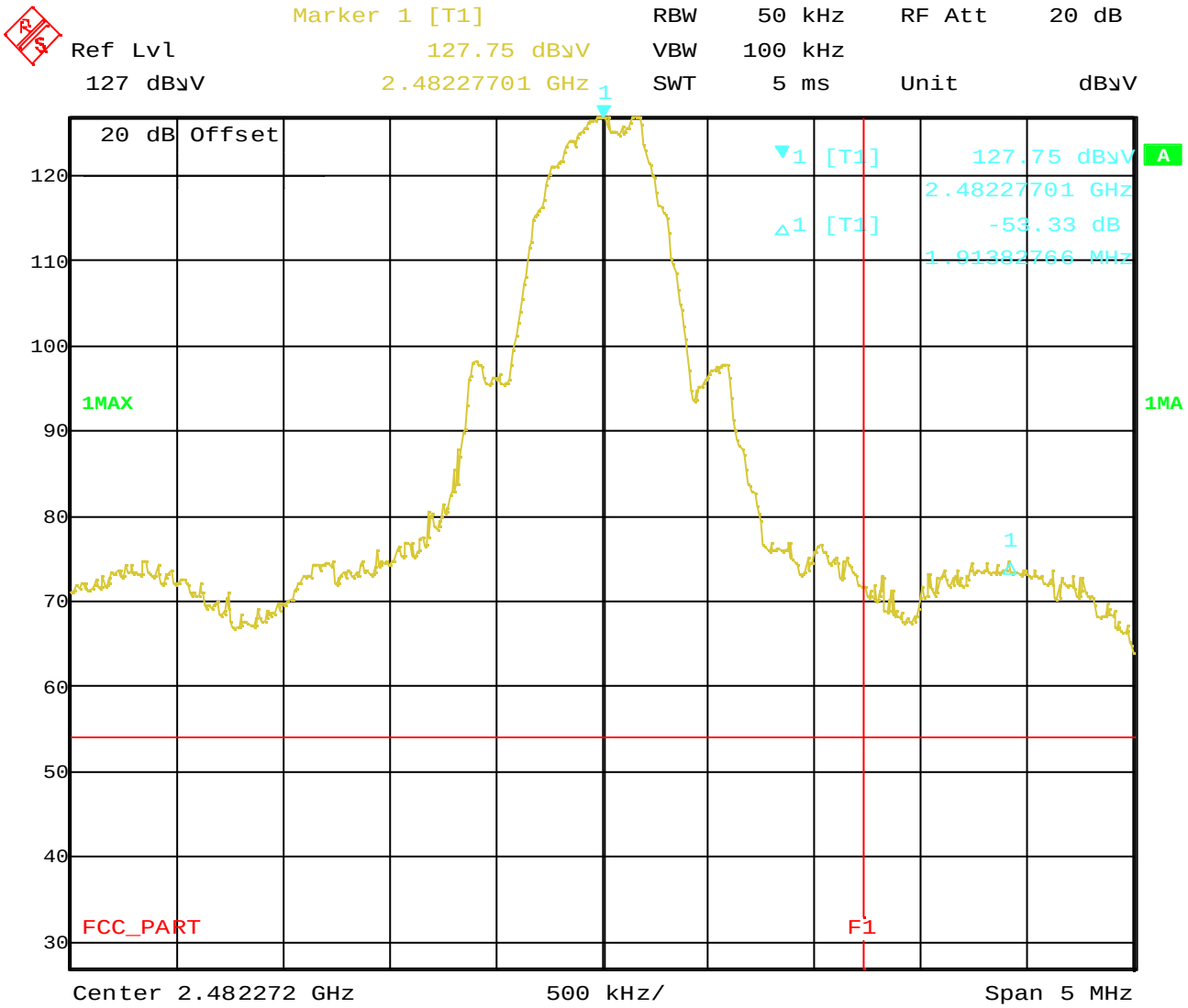
Date: 10.APR.2001 13:46:16

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

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Band-edge compliance of conducted emissions **§15.247 (c)**

high frequency section (hopping off): more than 20 dBc

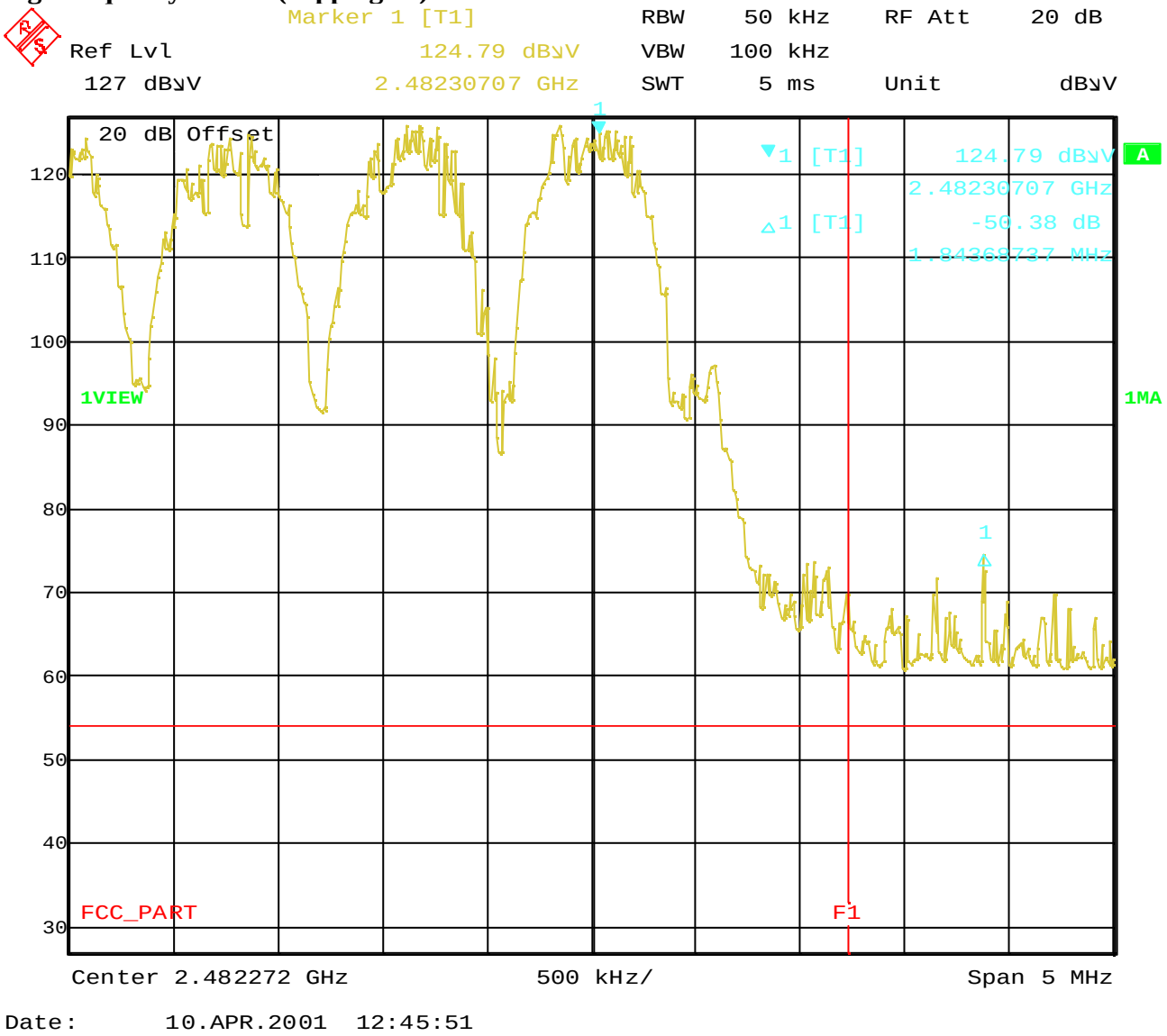


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Band-edge compliance of conducted emissions **§15.247 (c)**

high frequency section (hopping on): more than 20 dBc

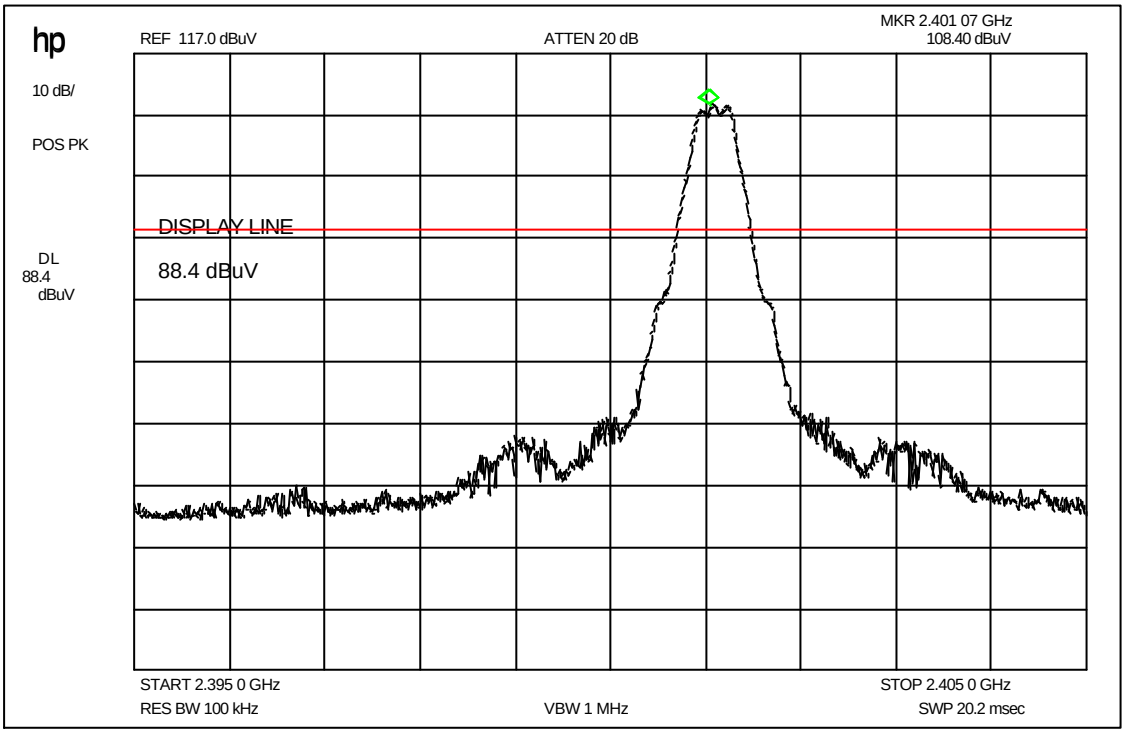


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Band-edge compliance of radiated emissions §15.247 (c)

This measurement was made to show, that the radiated emissions complies to the rules.



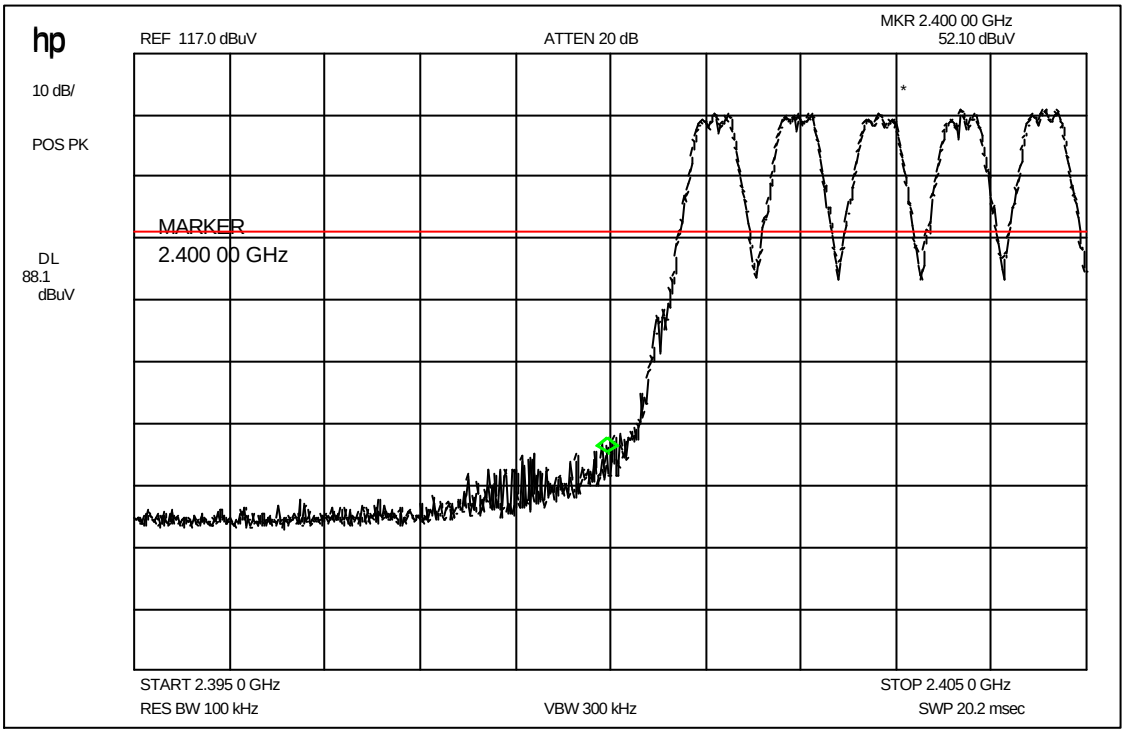
The marker shows the lower frequency of the restricted band .

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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Band-edge compliance of radiated emissions §15.247 (c)

This measurement was made to show, that the radiated emissions complies to the rules.



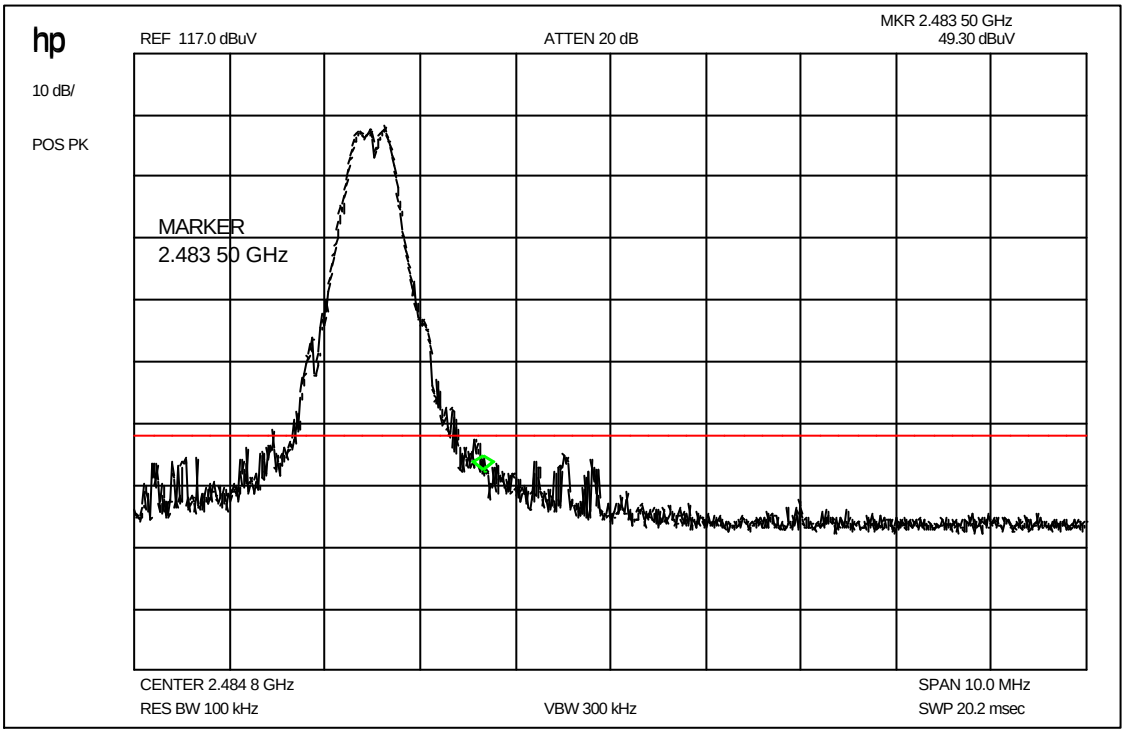
The marker shows the lower frequency of the restricted band .

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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Band-edge compliance of radiated emissions §15.247 (c)

This measurement was made to show, that the radiated emissions complies to the rules.



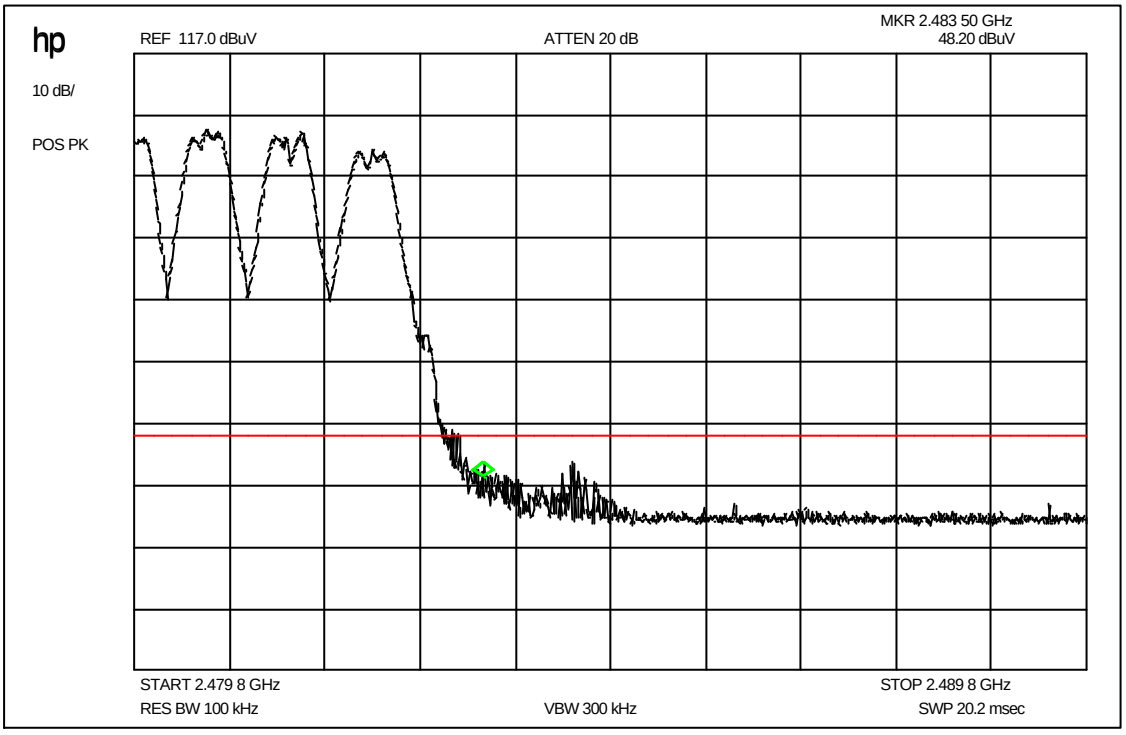
The marker shows the lower frequency of the restricted band .
The lower red limit line is at 54 dBµV.

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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

Band-edge compliance of radiated emissions §15.247 (c)

This measurement was made to show, that the radiated emissions complies to the rules.



The marker shows the lower frequency of the restricted band .
The lower red limit line is at 54 dBµV.

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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

EMISSION LIMITATIONS- Conducted (Transmitter) § 15.247 (c) (1)

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBm)	limit max. allowed emmision power	actual attenuation below frequency of operation (dB)	results
2401		+19.58	30 dBm	-	Operating frequency
all peaks <<limit			-20 dBc	see plots	complies
2441		+20.17	30 dBm	-	Operating frequency
all peaks <<limit			-20 dBc	see plots	complies
2482		+20.29	30 dBm		Operating frequency
all peaks <<limit			-20 dBc	see plot	complies
Measurement uncertainty		± 3dB			

RBW : 100 kHz VBW: 1 MHz

For emissions that fall into restricted bands you find the radiated emissions later in the report.

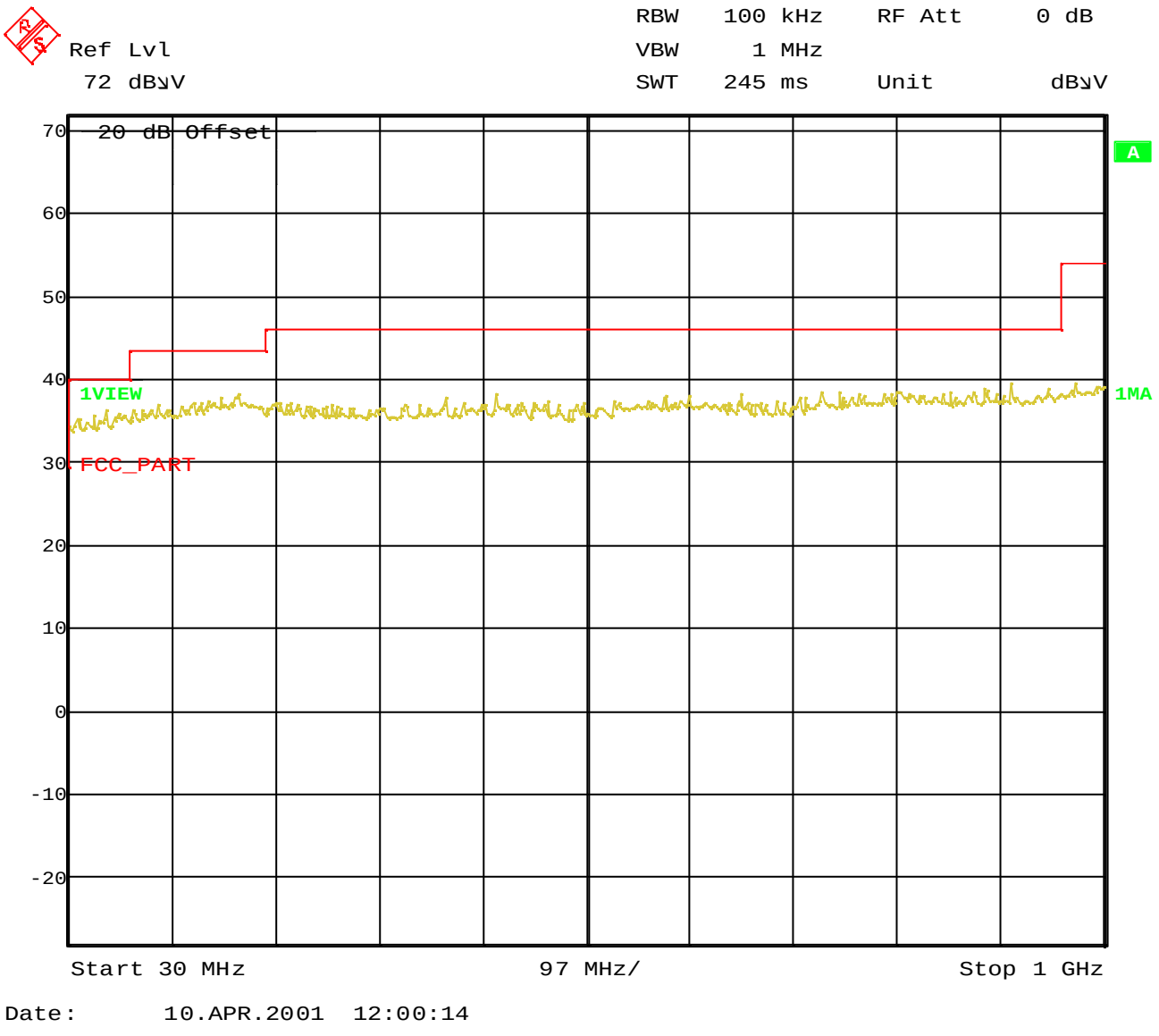
LIMITS SUBCLAUSE § 15.247 (c)

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

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

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

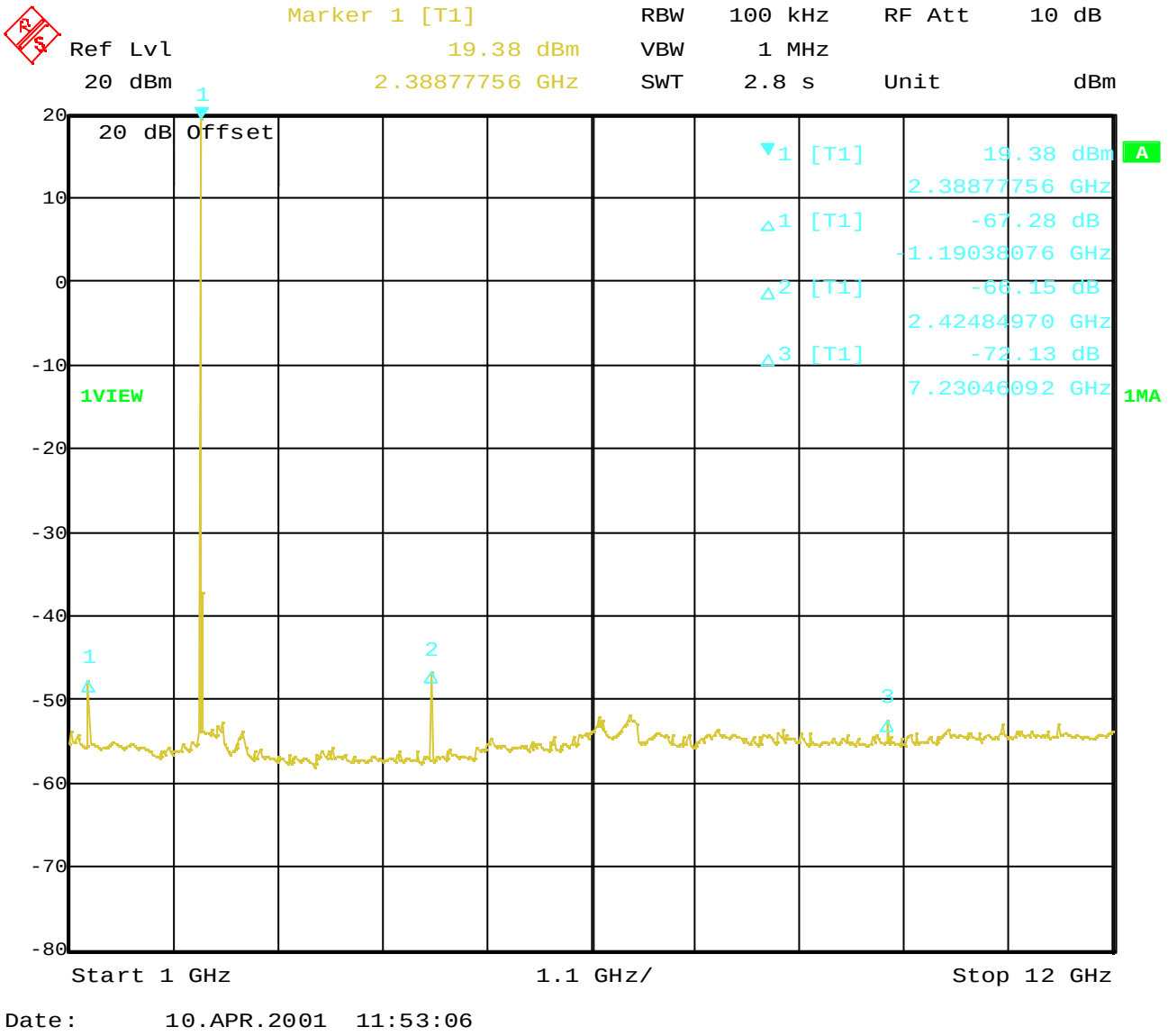
EMISSION LIMITATIONS- Conducted (Transmitter) **§ 15.247 (c) (1)**
Channel 1: 30 MHz - 1 GHz



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

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

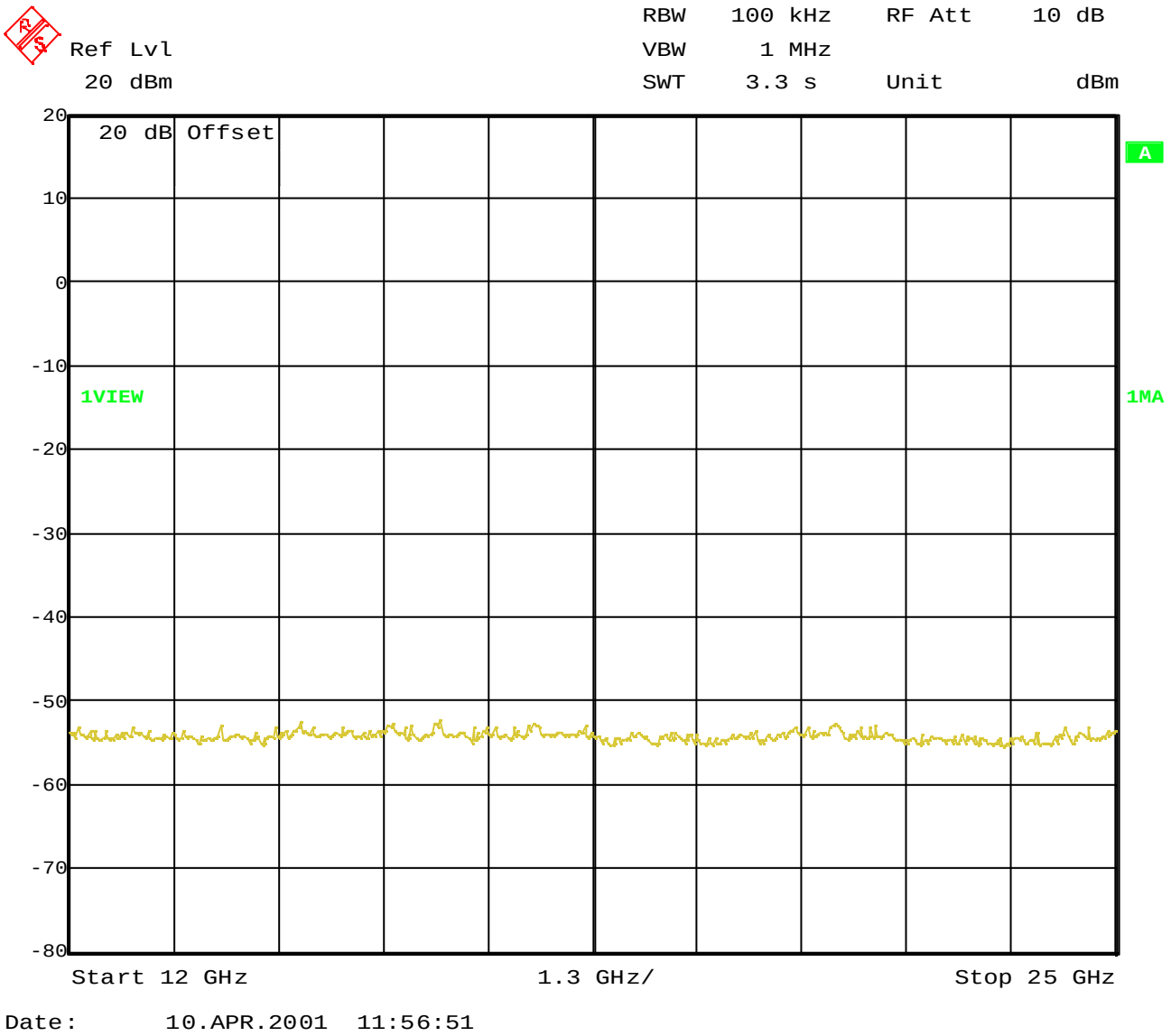
EMISSION LIMITATIONS- Conducted (Transmitter) **§ 15.247 (c) (1)**
Channel 1: 1 – 12 GHz peak



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

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

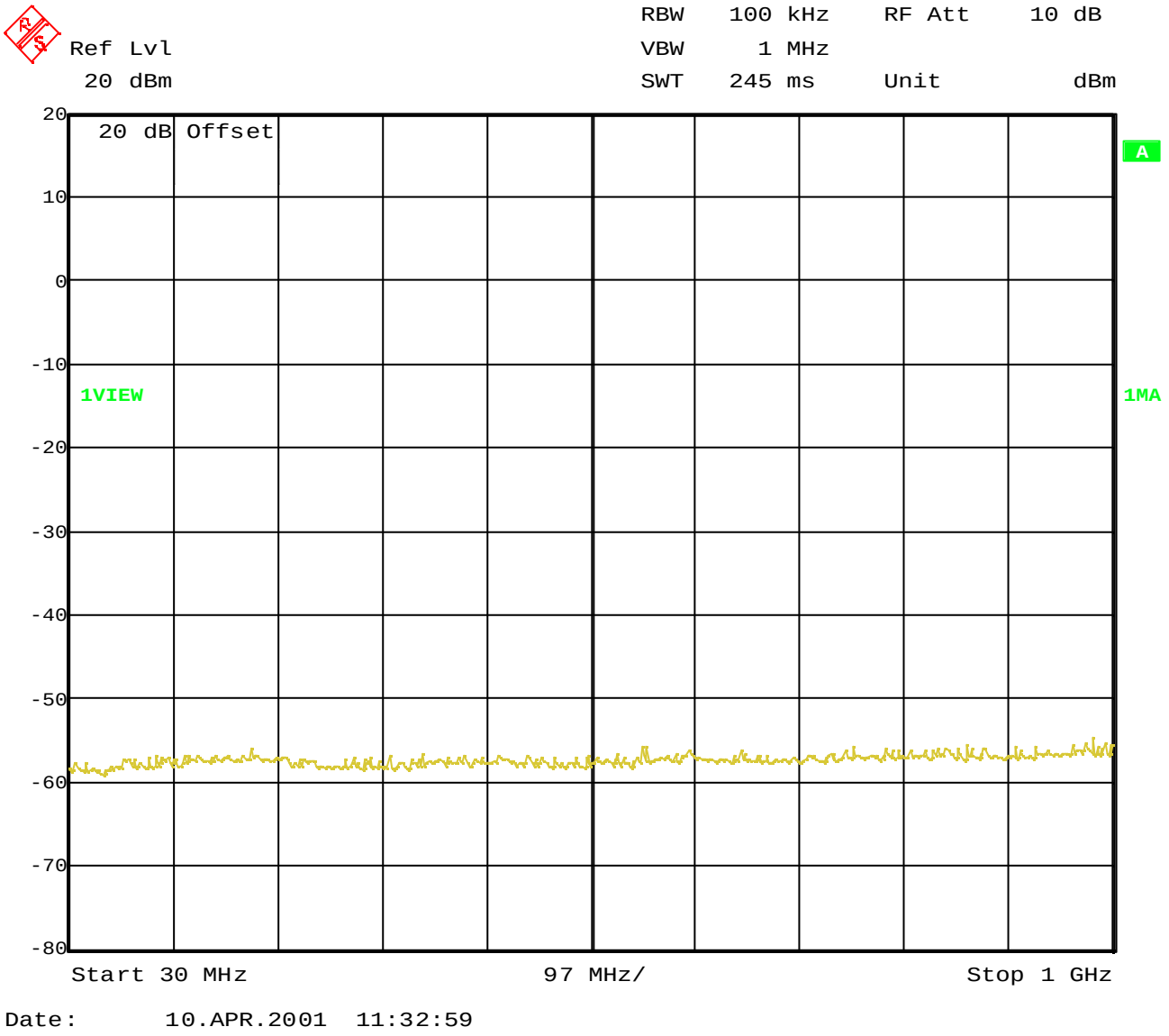
EMISSION LIMITATIONS- Conducted (Transmitter) **§ 15.247 (c) (1)**
Channel 1: 12 - 25 GHz peak



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

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

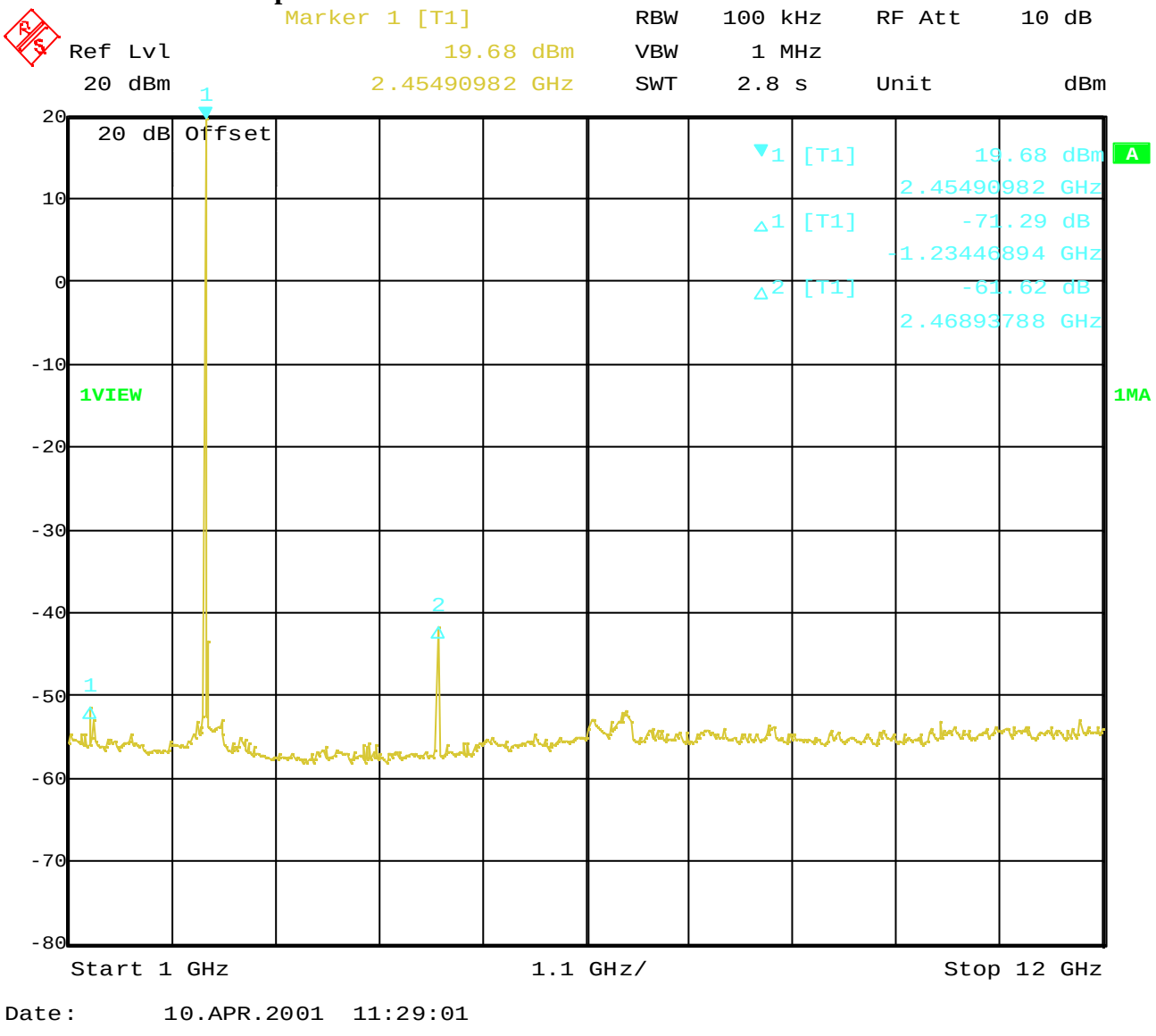
EMISSION LIMITATIONS- Conducted (Transmitter) **§ 15.247 (c) (1)**
Channel 2: 30 MHz - 1GHz



Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

EMISSION LIMITATIONS- Conducted (Transmitter) § 15.247 (c) (1)

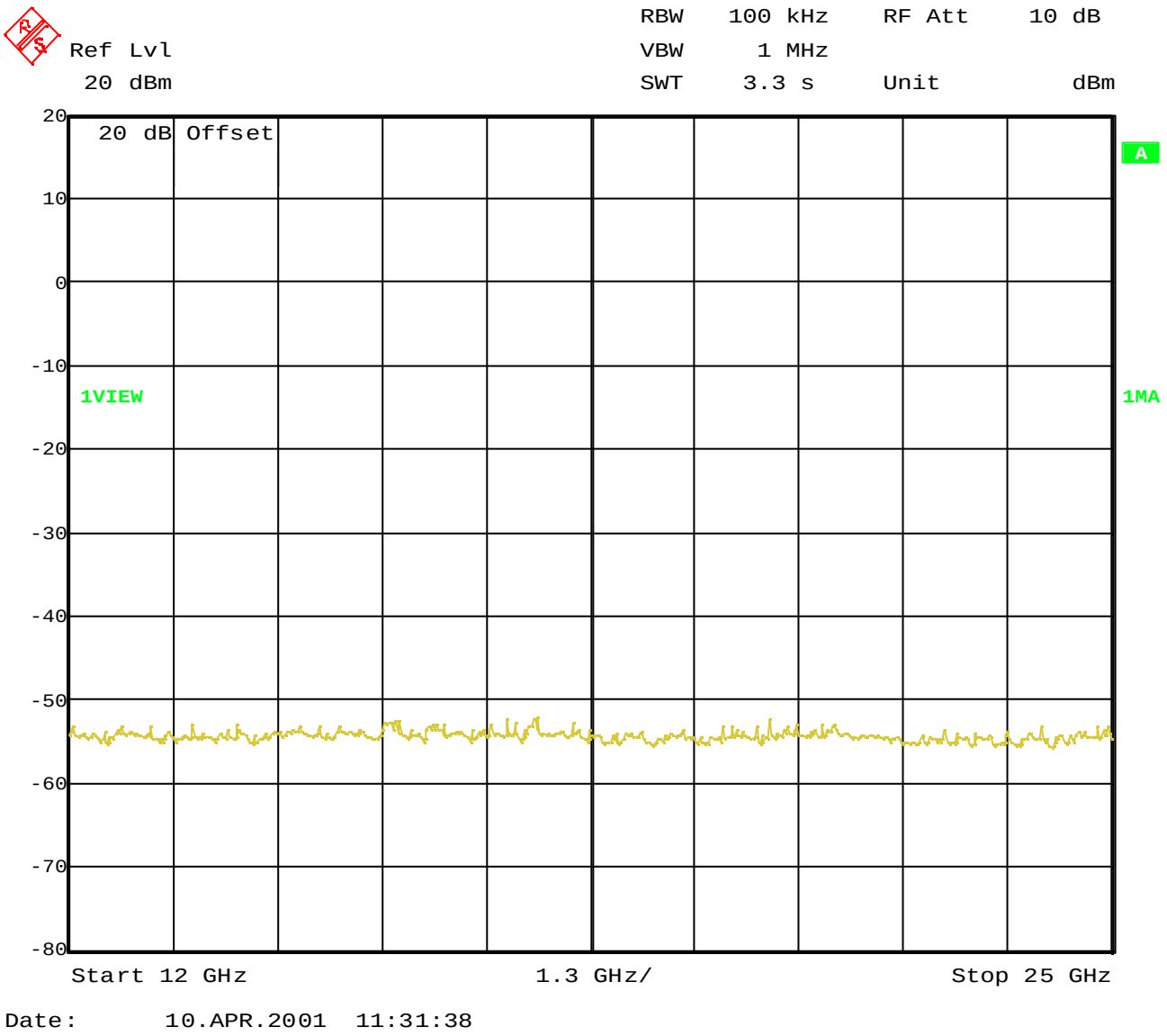
Channel 2: 1 –12 GHz peak



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

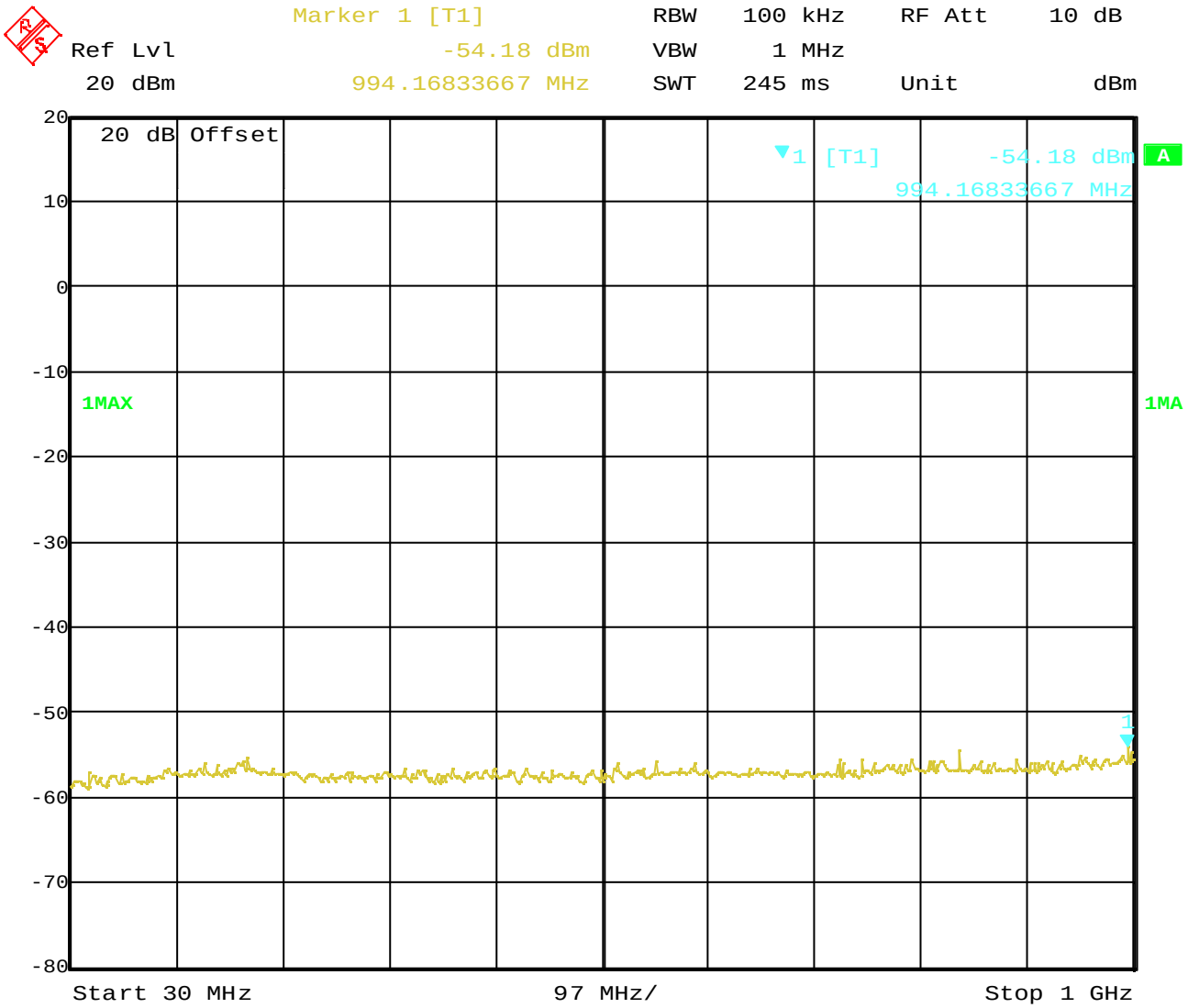
Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

EMISSION LIMITATIONS- Conducted (Transmitter) **§ 15.247 (c) (1)**
Channel 2: 12 –25 GHz peak



Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

EMISSION LIMITATIONS- Conducted (Transmitter) § 15.247 (c) (1)
Channel 3: 30 MHz - 1 GHz

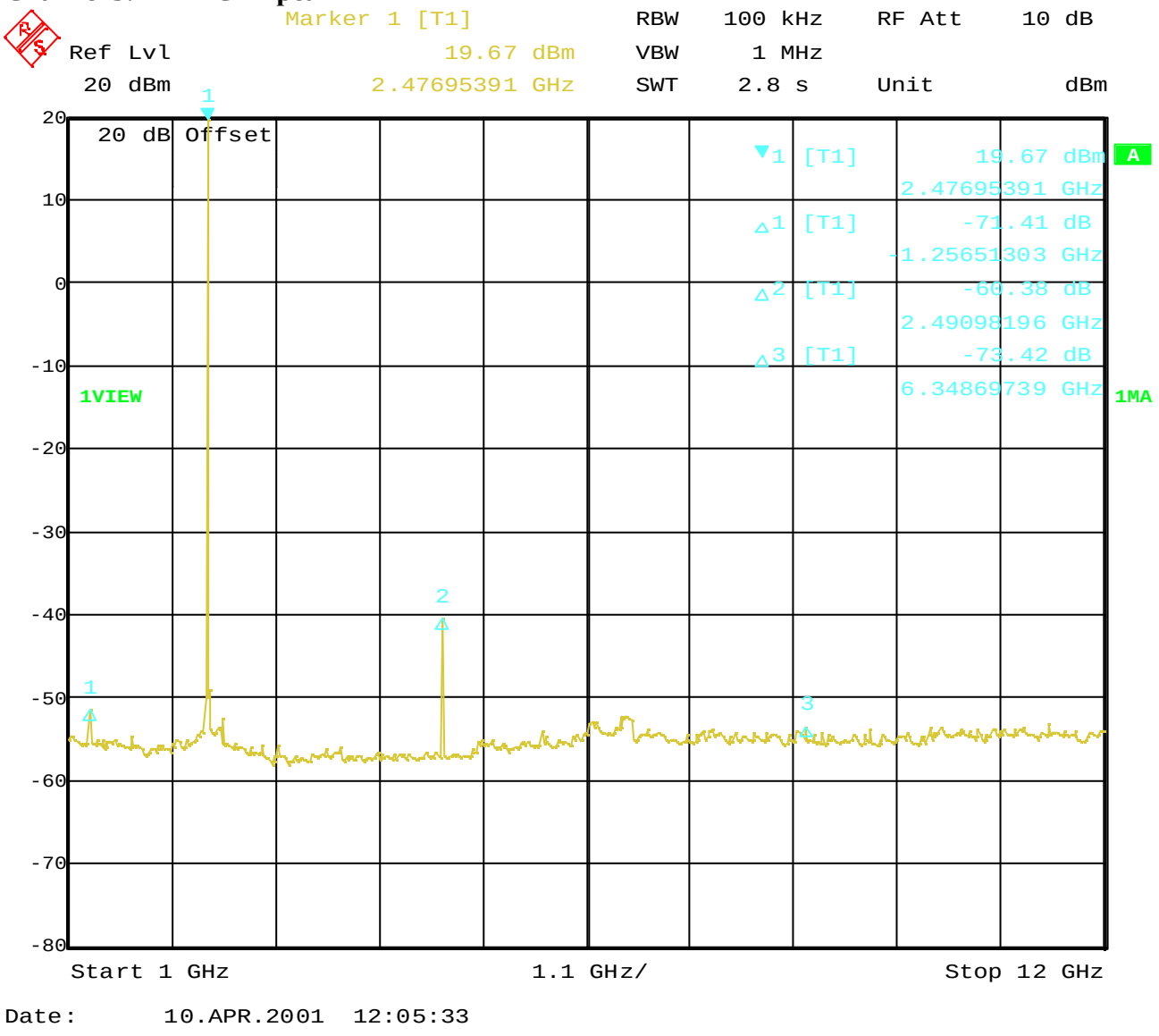


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
64

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

EMISSION LIMITATIONS- Conducted (Transmitter) § 15.247 (c) (1)

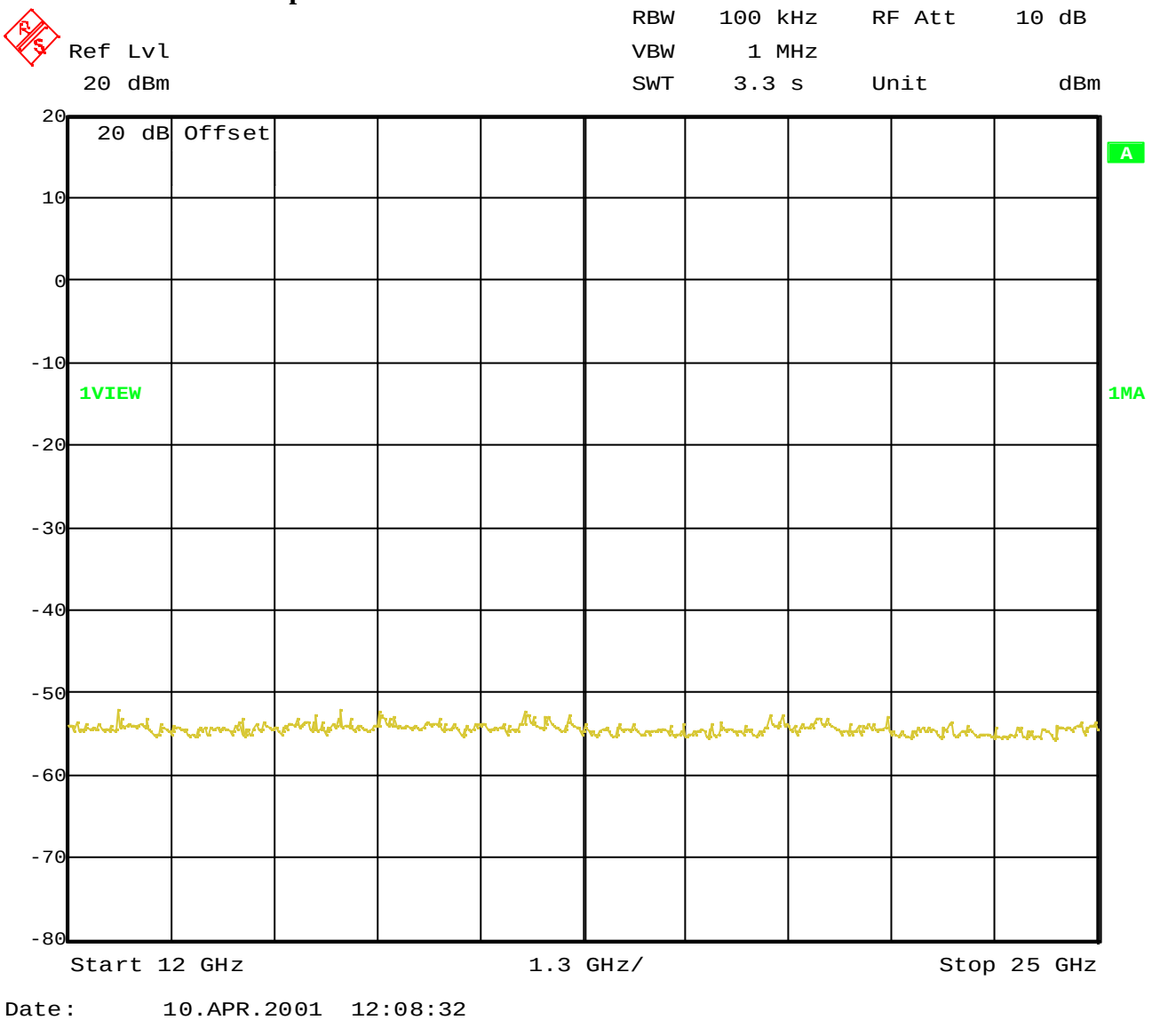
Channel 3: 1 - 12 GHz peak



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

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

EMISSION LIMITATIONS- Conducted (Transmitter) § 15.247 (c) (1)
Channel 3: 12 - 25 GHz peak



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

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

SPURIOUS RADIATED EMISSION § 15.247 (c) (1)

Channel1 07:01:50

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	COMMENTS
1	62.1	29.0	18.7	-10.3	PK	V	101	360	N/T	
2	249.0	36.0	23.5	-12.5	PK	V	97	360	N/T	
3	932.079	36.0	27.5	-8.5	QP	V	97	360	27.	

Channel47 07:34:06

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	COMMENTS
1	62.1	29.0	19.0	-10.0	PK	V	98	0	N/T	
2	120.4	34.0	19.0	-15.0	PK	H	320	360	N/T	
3	147.8	34.0	20.6	-13.4	PK	H	320	360	N/T	
4	493.0	36.0	28.5	-7.6	PK	H	321	360	N/T	
5	644.8	36.0	31.0	-5.0	PK	V	97	0	N/T	
6	972.8	40.0	35.2	-4.8	PK	H	321	360	N/T	

Channel 96 08:11:31

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	COMMENTS
1	62.1	29.0	18.6	-10.4	PK	V	97	0	N/T	
2	83.3	29.0	16.7	-12.3	PK	H	311	360	N/T	
3	179.8	34.0	22.1	-11.9	PK	H	311	360	N/T	
4	886.141	36.0	26.9	-9.1	QP	H	294	42	26.7	

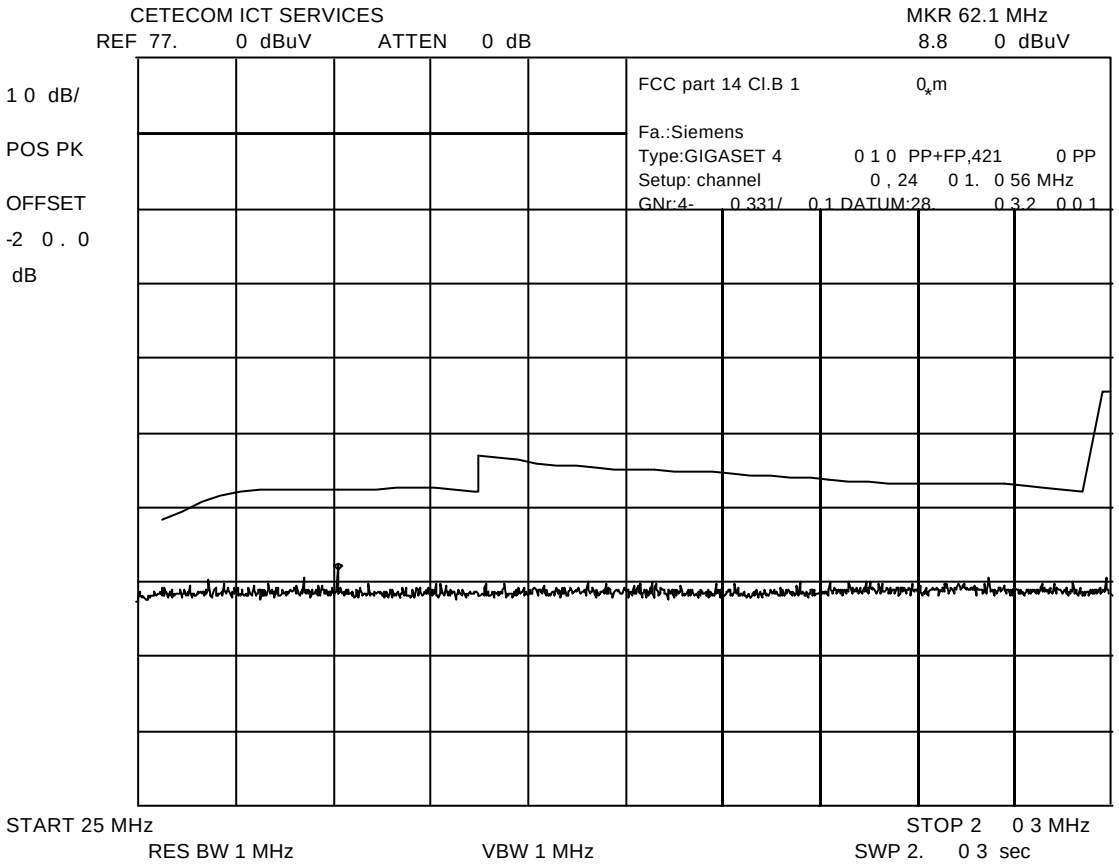
LIMITS **SUBCLAUSE § 15.247 (c)**

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32-50

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

EMISSION LIMITATIONS (Transmitter) **SUBCLAUSE § 15.247 (c) (1)**
30-200 MHz,vertical, System is hopping



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

Carrier was suppressed by a stubb tuner to avoid overload of the system.

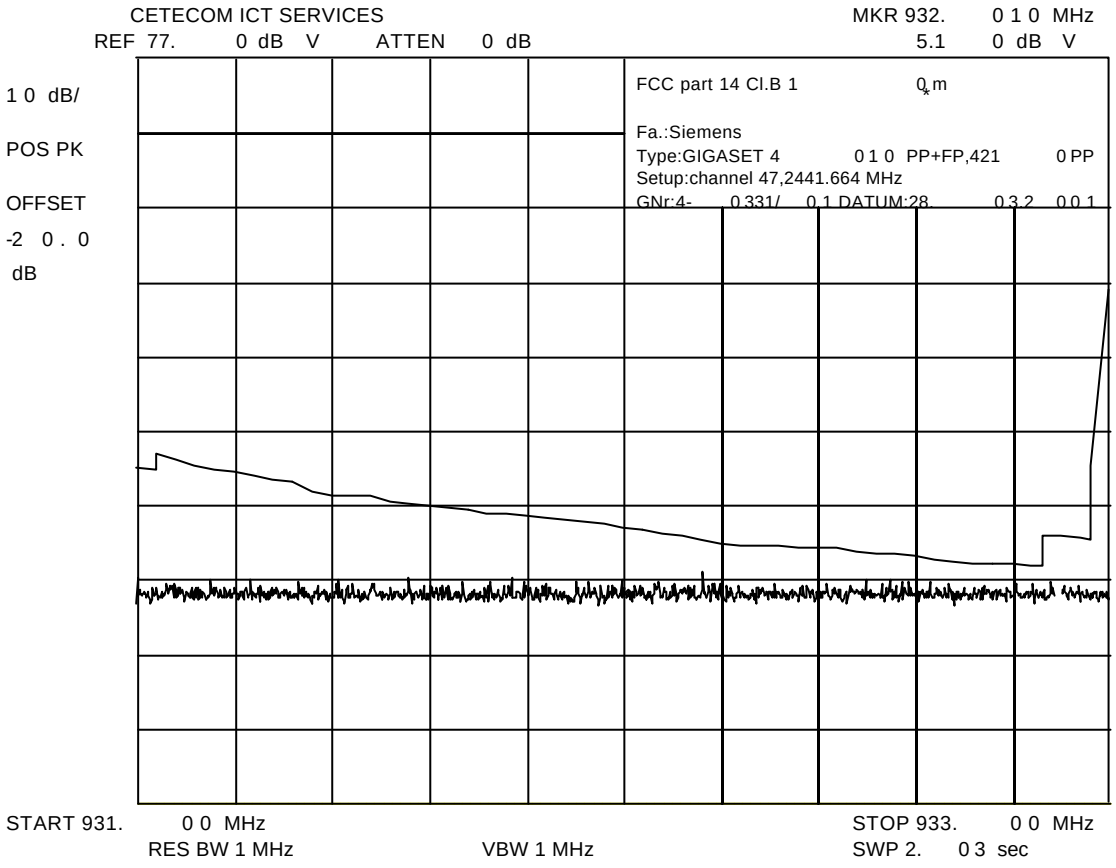
LIMITS **SUBCLAUSE § 15.247 (c)**

In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32-50

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

EMISSION LIMITATIONS (Transmitter) **SUBCLAUSE § 15.247 (c) (1)**
200-1000 MHz,horizontal, System is hopping
The peak at the marker position was caused by a GSM repeater nearby, not by the sample.



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

Carrier was suppressed by a stubb tuner to avoid overload of the system.

LIMITS **SUBCLAUSE § 15.247 (c)**

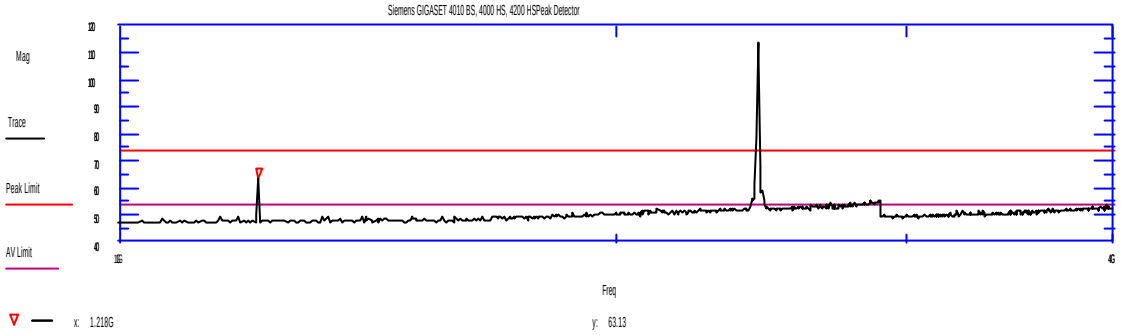
In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32-50

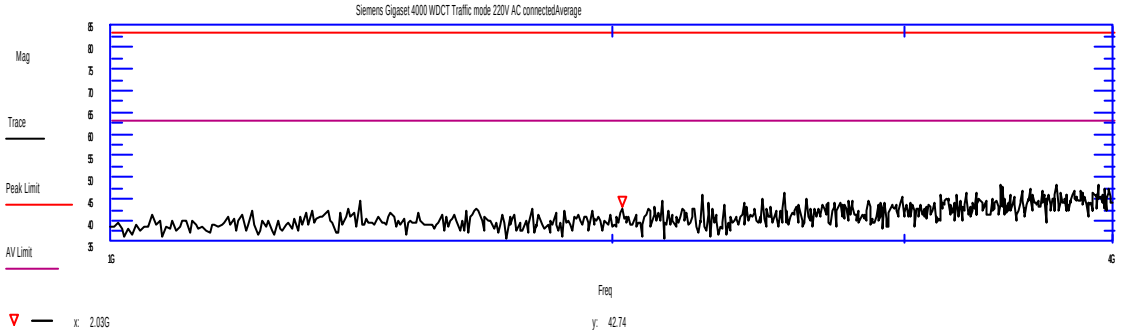
Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

EMISSION LIMITATIONS (Transmitter) **SUBCLAUSE § 15.247 (c) (1)**

1000 – 4000 MHz, horizontal, system is hopping , peak:



1000 – 4000 MHz, horizontal, system is hopping ,average



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

LIMITS **SUBCLAUSE § 15.247 (c)**

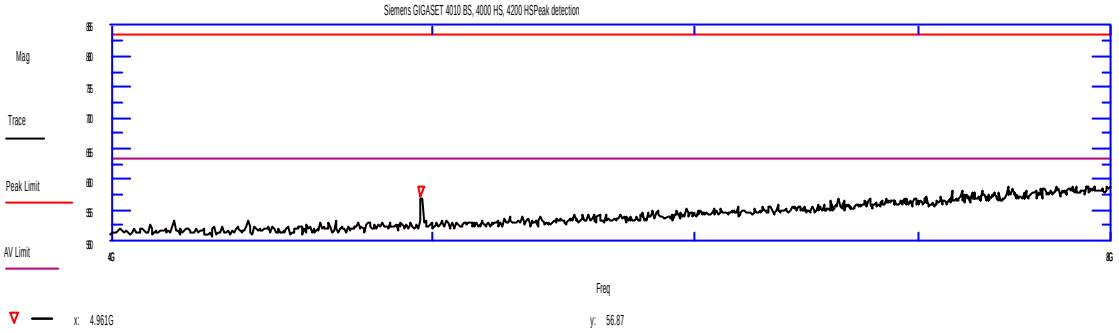
In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32-50

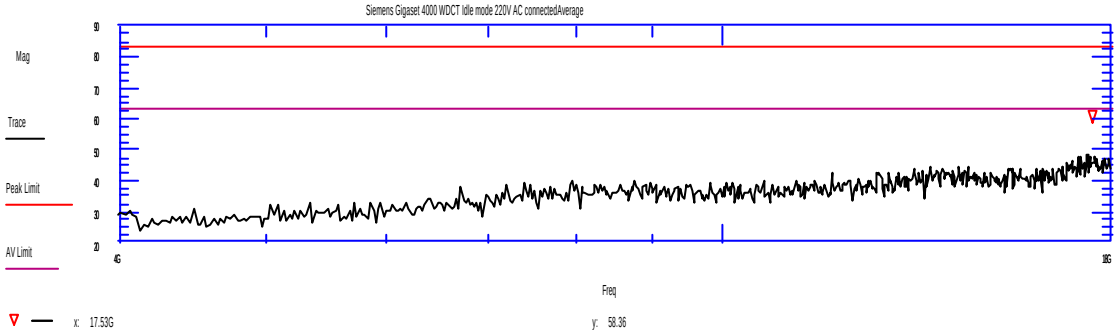
Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

EMISSION LIMITATIONS (Transmitter) CLAUSE § 15.247 (c) (1)

4 GHz – 18 GHz, horizontal, system is hopping ,peak



4 GHz – 18 GHz, horizontal, system is hopping, average



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

LIMITS SUBCLAUSE § 15.247 (c)

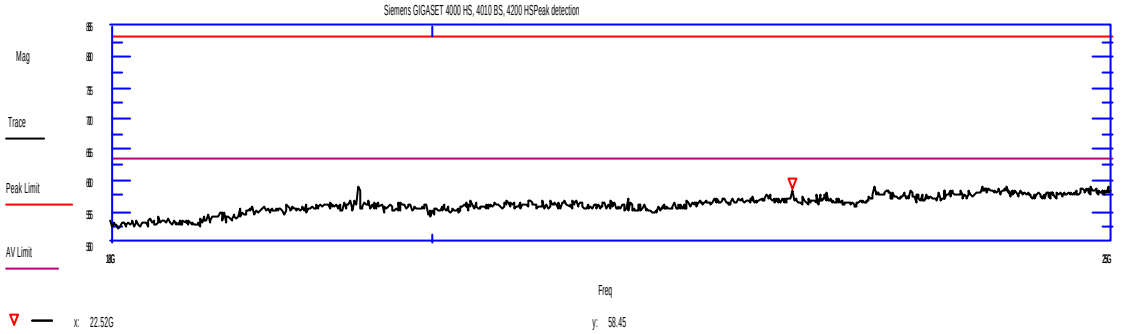
In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32-50

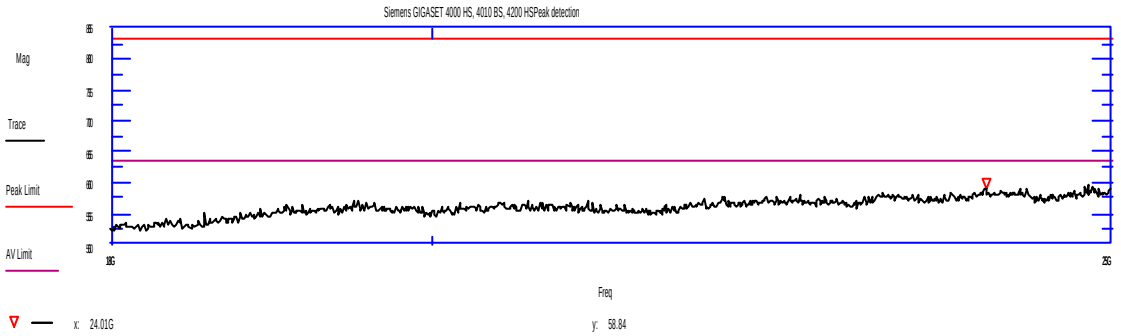
Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

EMISSION LIMITATIONS (Transmitter) CLAUSE § 15.247 (c) (1)

18 GHz – 25 GHz, horizontal, system is hopping: peak



18 GHz – 25 GHz, horizontal, system is hopping, average



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

LIMITS SUBCLAUSE § 15.247 (c)

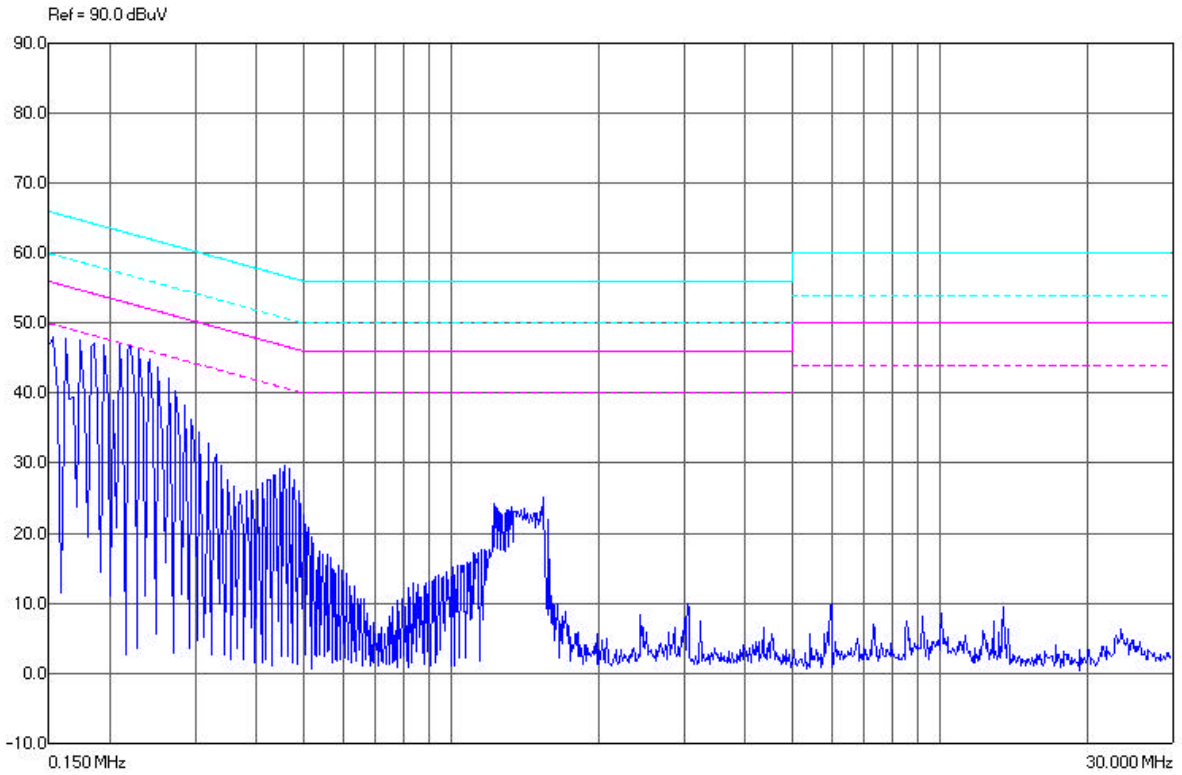
In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32-50

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Conducted emissions **§ 15.107/207**

EN 55022
WDCT-Phone
Siemens
FP: Gigaset 4010 Basestation
PP: Gigaset 4000 HS
Mode: online
Line: L1



Frequency MHz	Peak dBuV	QP Lim dBuV	QP dBuV	DelLim-QP dB	Avg Lim dBuV	Avg dBuV	DelLim-Avg dB	Comment
0.154233	47.84	65.77	42.87	-22.90	55.77	11.96	-43.81	
0.170836	47.63	64.92	42.42	-22.51	54.92	11.55	-43.37	
0.184199	47.24	64.30	42.01	-22.29	54.30	16.57	-37.73	
0.214024	47.13	63.05	41.40	-21.65	53.05	10.65	-42.41	
0.222727	46.80	62.72	40.93	-21.79	52.72	10.51	-42.22	

Technical specification : 15.207 (Revised as of October 1, 1991)
Limit

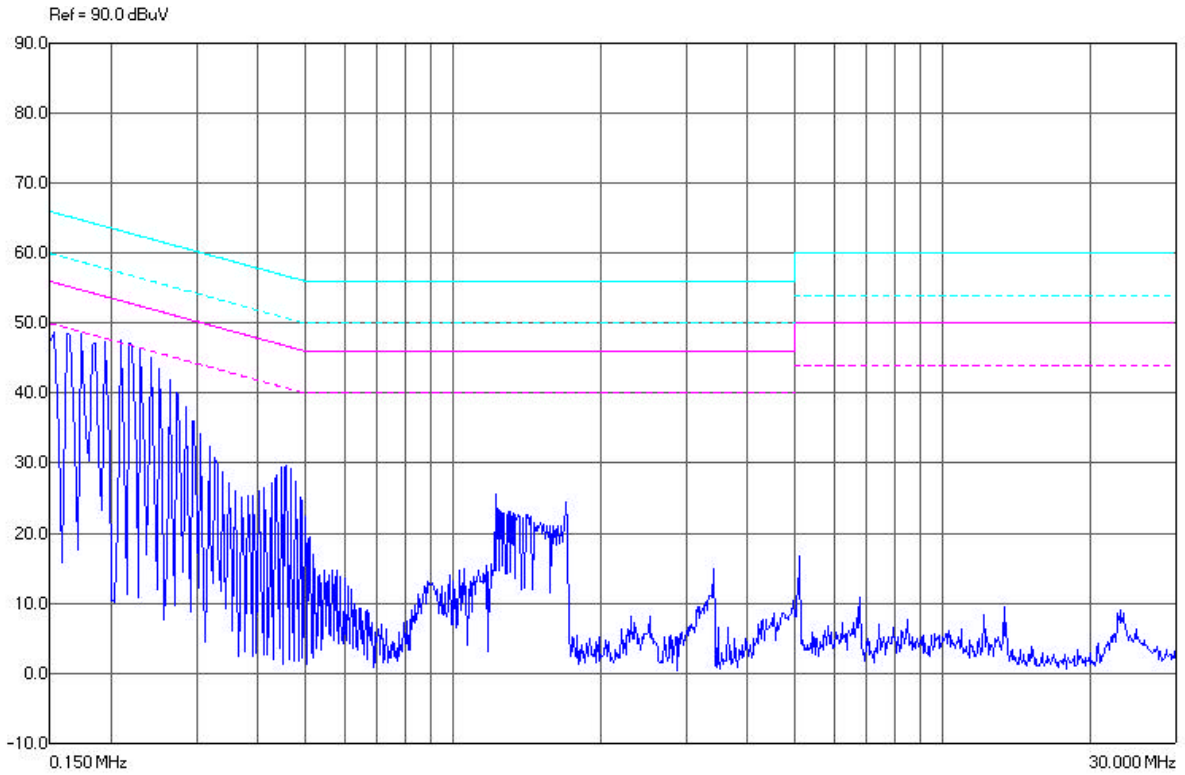
0.45 to 30 MHz	250 µV / 47.96 dBµV

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
52 - 57

Equipment under test : **GIGASET 4010**
Ambient temperature : **20° C**
Relative humidity : **31%**

Conducted emissions **§ 15.107/207**

EN 55022
WDCT-Phone
Siemens
FP: Gigaset 4010 Basestation
PP: Gigaset 4000 HS
Mode: online
Line: N



Frequency MHz	Peak dBuV	QP Lim dBuV	QP dBuV	DelLim-QP dB	Avg Lim dBuV	Avg dBuV	DelLim-Avg dB	Comment
0.156825	48.40	65.63	42.54	-23.09	55.63	12.32	-43.31	
0.166420	48.38	65.14	42.37	-22.77	55.14	11.16	-43.98	
0.190775	47.33	64.01	41.74	-22.27	54.01	14.70	-39.31	
0.205420	47.48	63.40	41.66	-21.74	53.40	13.48	-39.91	
0.223450	46.37	62.70	40.90	-21.79	52.70	8.73	-43.96	

Limit **Technical specification : 15.207 (Revised as of October 1, 1991)**

0.45 to 30 MHz	250 µV / 47.96 dBµV

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
52 - 57

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

RECEIVER SPURIOUS RADIATION § 15.209

Radiated

Data File : /40331_05.DOC

No	EMISSION FREQUENCY MHz	SPEC LIMIT dBuV	MEASUREMENTS ABS	dLIM dB	MODE	POL	SITE HGT cm	AZM deg	CORR FACTOR dB	COMMENTS
1	62.1	29.0	18.7	-10.3	PK	V	101	360	N/T	
2	249.0	36.0	23.5	-12.5	PK	V	97	360	N/T	
3	932.079	36.0	27.5	-8.5	QP	V	97	360	27.	

N/T in CORR FACTOR column denotes a non-traceable signal.

f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

Measurement distance see table

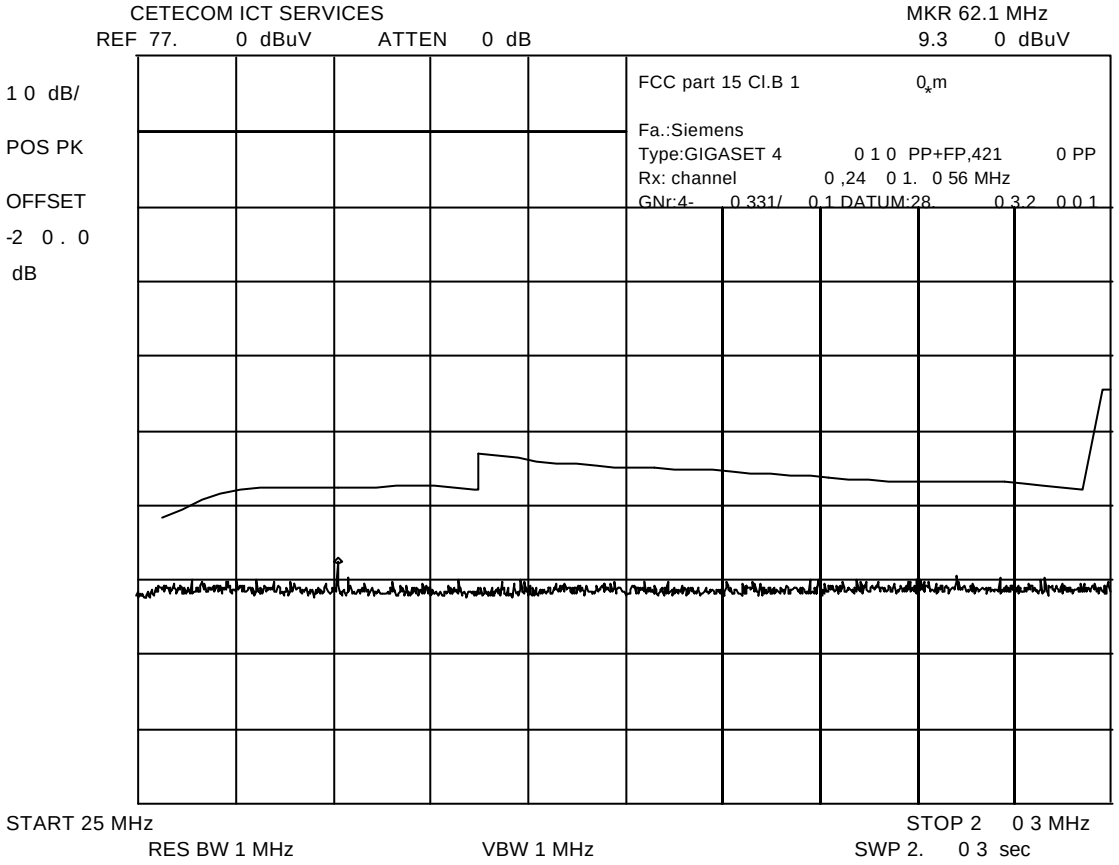
Limits **SUBCLAUSE § 15.209**

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	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32 - 50

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

RECEIVER SPURIOUS RADIATION § 15.209



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

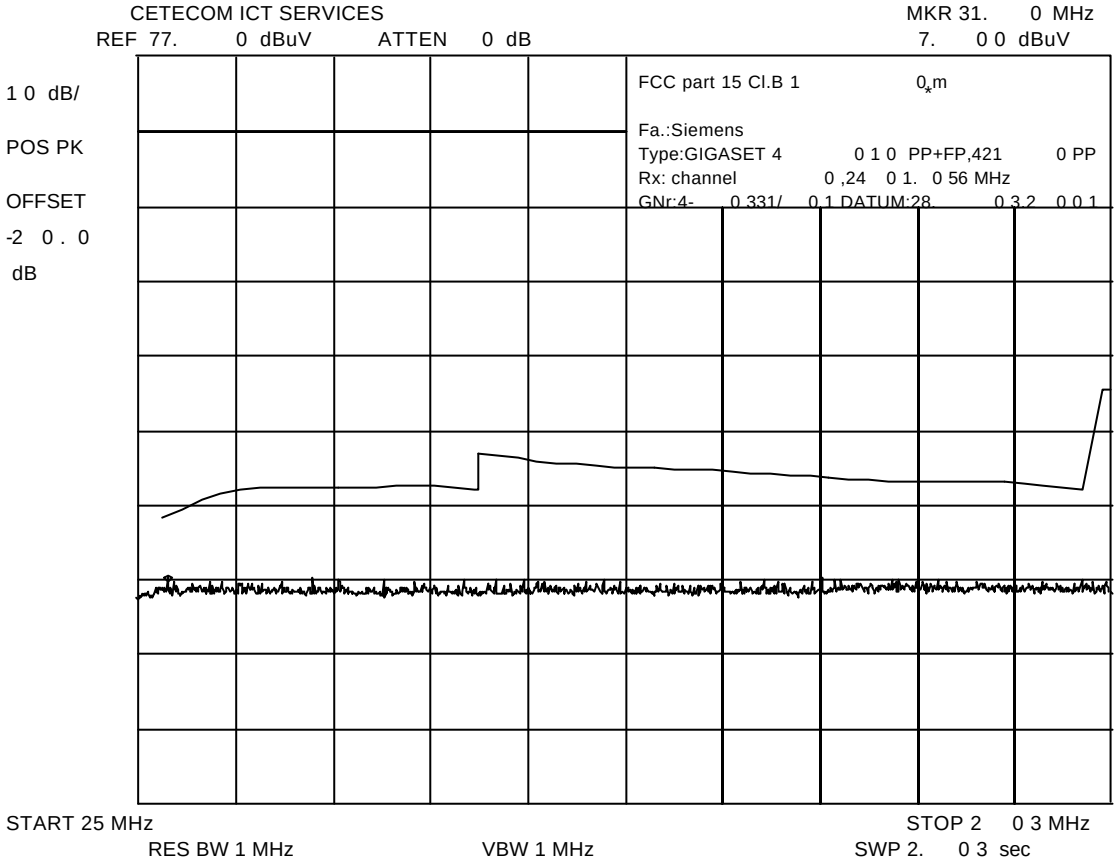
Limits **SUBCLAUSE § 15.209**

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	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32 - 50

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

RECEIVER SPURIOUS RADIATION § 15.209



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

Limits **SUBCLAUSE § 15.209**

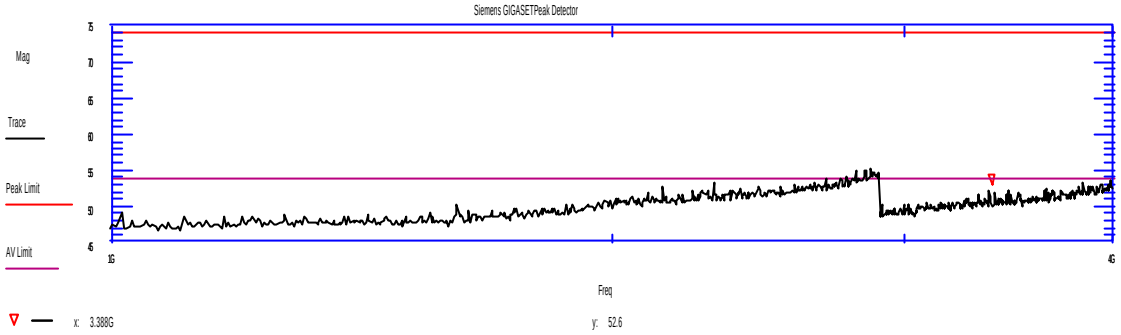
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32 - 50

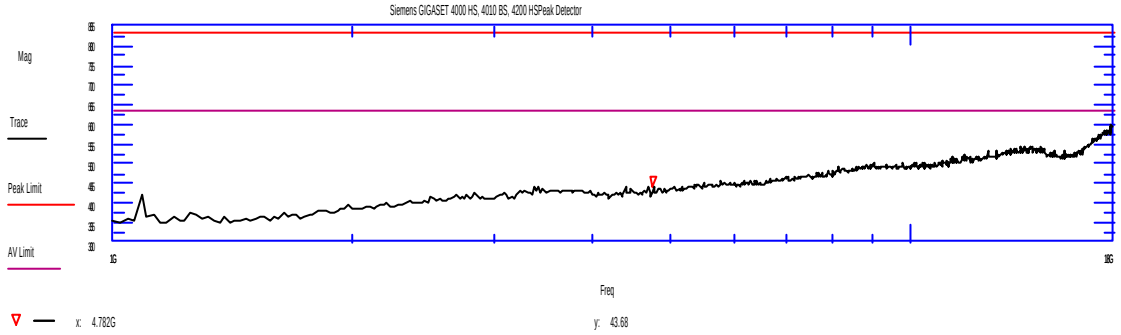
Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

RECEIVER SPURIOUS RADIATION § 15.209

1 GHz – 4 GHz (peak) (all values measutred in AV << Limit)



4 GHz – 18 GHz (Peak) (all values measutred in AV << Limit)



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

Limits **SUBCLAUSE § 15.209**

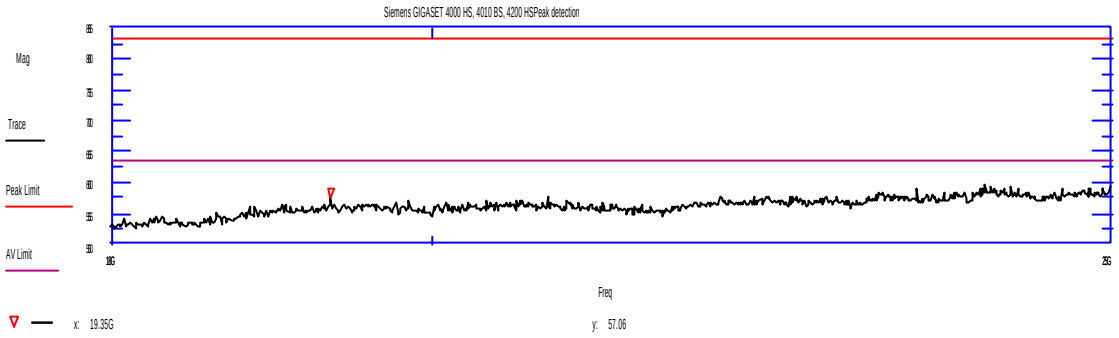
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32 - 50

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

RECEIVER SPURIOUS RADIATION § 15.209

18 GHz – 25 GHz (peak) (all values measutred in AV << Limit)



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

Limits **SUBCLAUSE § 15.209**

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	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

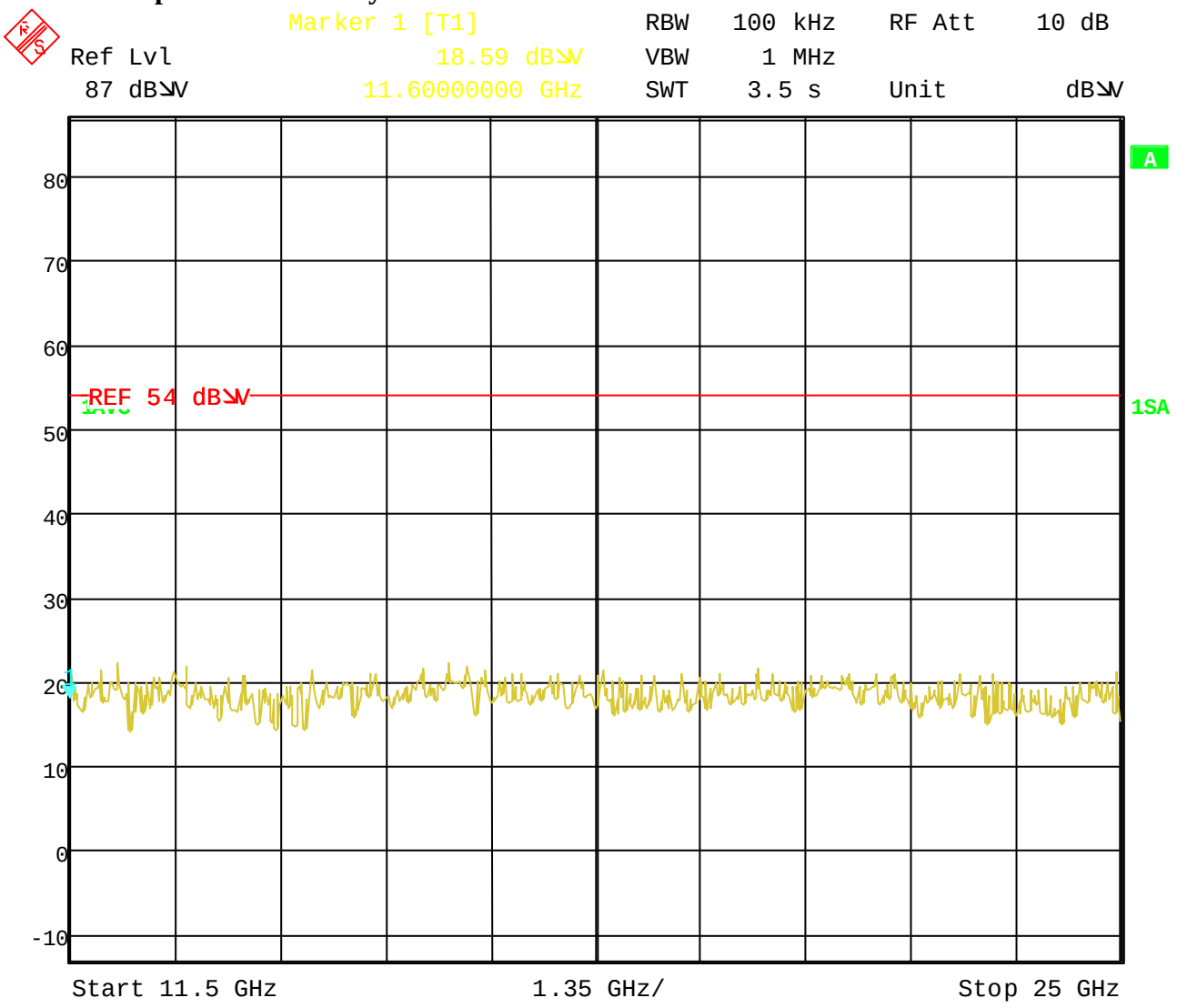
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
32 - 50

Equipment under test : GIGASET 4010
Ambient temperature : 20° C
Relative humidity : 31%

RECEIVER SPURIOUS RADIATION § 15.209

average:

This measurement was made withan low noise analyzer FSIQ from R&S with an additional lownoise amplifier to reduce system noise.



f < 1 GHz : RBW/VBW: 100 kHz **f ³ 1GHz : RBW/VBW: 1 MHz**

Limits **SUBCLAUSE § 15.209**

Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

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

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 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	Funktionsgenerator	AFGU	Rohde & Schwarz	862 480/032
09	Regeltrenntrafo	MPL	Erfi	91350
10	Netznachbildung	NNLA 8120	Schwarzbeck	8120331
11	Relais-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	Modulationsmeter	9008	Racal-Dana	2647
16	Frequenzzähler	5340 A	Hewlett-Packard	1532A03899
17	Absorber Schirmkabine	---	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 Antenne	3104	Emco	3758
23	Log. Per. Antenne	3146	Emco	2130
24	Double Ridge 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 Antenne	HK 116	Rohde & Schwarz	888 945/013
28	Log. Per. Antenne	HL 223	Rohde & Schwarz	825 584/002
29	Relais-Switch-Unit	RSU	Rohde & Schwarz	375 339/002
30	Highpass	HM985955	FSY Microwave	001
31	Amplifier	P42-GA29	Tron-Tech	B 23602
32	Absorber Schirmkabine		Frankonia	
33	Steuerrechner	PSM 7	Rohde & Schwarz	834 621/004
34	EMI Test Reciever	ESMI	Rohde & Schwarz	827 063/010
35	EMI Test Receiver	Display	Rohde & Schwarz	829 808/010

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	Controler	HD 100	Deisel	100/322/93
37	Relais Matrix	PSN	Rohde & Schwarz	829 065/003
38	Control Unit	GB 016 A2	Rohde & Schwarz	344 122/008
39	Relais Switch Unit	RSU	Rohde & Schwarz	316 790/001
40	Power Supply	6032A	Hewlett Packard	2846A04063
41	Spektrum Monitor	EZM	Rohde & Schwarz	883 720/006
42	Meßempfänger	ESH 3	Rohde & Schwarz	890 174/002
43	Meßempfänger	ESVP	Rohde & Schwarz	891 752/005
44	Biconi 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	Polarisationsnetzwerk	HL 024 Z1	Rohde & Schwarz	341 570/002
49	Double Ridge G Horn Antenne 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	Steuerrechner	PSM 7	Rohde & Schwarz	883 086/026
53	DC V-Netzwerk	ESH3-Z6	Rohde & Schwarz	861 406/005
54	DC V-Netzwerk	ESH3-Z6	Rohde & Schwarz	893 689/012
55	AC 2 Phasen V-Netzwerk	ESH3-Z5	Rohde & Schwarz	861 189/014
56	AC 2 Phasen V-Netzwerk	ESH3-Z5	Rohde & Schwarz	894 981/019
57	AC-3 Phasen V-Netzwerk	ESH2-Z5	Rohde & Schwarz	882 394/007
58	Stromversorgung	6032A	Rohde & Schwarz	2933A05441
59	HF-Test Empfänger	ESVP.52	Rohde & Schwarz	881 487/021
60	Spectrum Monitor	EZM	Rohde & Schwarz	883 086/026
61	HF-Test Empfänger	ESH3	Rohde & Schwarz	881 515/002
62	Relais Matrix	PSU	Rohde & Schwarz	882 943/029
63	Relais 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
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