

CETECOM ICT Services GmbH

Radio Satellite Communication

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RSC11

issue test report consist of 60 Pages

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Accredited Testing Laboratory
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DAR-Registration number:

TTI-P-G 166/98-20

Test report no.:2-2519-A/01

FCC Part 15

1130201-BV

FCC ID: PBY1130201

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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

Untertürkheimer Straße 6 - 10

66117 Saarbrücken

Germany

Telephone : + 49 681 598 - 9100

Telefax : + 49 681 598 - 9075

E-mail : Michael.Berg@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 : Ericsson Mobile Communications AB
Street : Nya Vattentornet
City : S-22183 Lund
Country : Sweden
Telephone : +46-46-19 3000
Telefax : +46-46-19 3295
Contact : Mr. Bo Johansson
Telephone : +46-46-19 3000

1.4 Application details

Date of receipt of application : 13.05.01
Date of receipt of test item : 17.05.01
Date of test : 17.-25.05.01

1.5 Test item

Type of equipment : **GSM Mobile Phone with integrated Bluetooth Module**
Type designation : **1130201-BV**
Manufacturer : Applicant
Street :
City :
Country :
Serial number : 241 004601-01-188578-8-00
Additional informations: :
Frequency : 2400 – 2483.5 MHz
Type of modulation : 1M00FXD / 79M8FXD (FHSS)
Number of channels : 79
Antenna : Integral antenna
Power supply : 3.6 VDC powered by the mobile accu
Output power : 0,389 mW EIRP
Type of equipment : Temperature range : -20°C - +55°C
FCC ID : PBY 1130201
HW : PA1
SW : R1A023 prgCXC125265 / R1A023 prgCXC125326_TAE

1.6 Test standards: FCC Part 15.247

2 Technical test

2.1 Summary of test results

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

Technical responsibility for area of testing :

30.05.01	RSC 8411	Berg M.
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Date	Section	Name	Signature
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Technical responsibility for area of testing :

30.05.01	RSC8412	Hausknecht
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Date	Section	Name	Signature
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2.2 Testreport

TEST REPORT

Testreport no. : 2-2519-A/01

TEST REPORT REFERENCE**LIST OF MEASUREMENTS**

PARAMETER TO BE MEASURED		PAGE
Antenna Gain	SUBCLAUSE § 15.204	7
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Spectrum Bandwidth of a FHSS System	§15.247(a)	16
MAXIMUM PEAK OUTPUT POWER	SUBCLAUSE § 15.247 (b) (1)	20
MAXIMUM PEAK OUTPUT POWER	SUBCLAUSE § 15.247 (b) (1)	24
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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

Antenna Gain

SUBCLAUSE § 15.204

The gain is –5.68 dBi

(measured effective radiated power – 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

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Issue Date: 21.05.01

Page 8 (60)

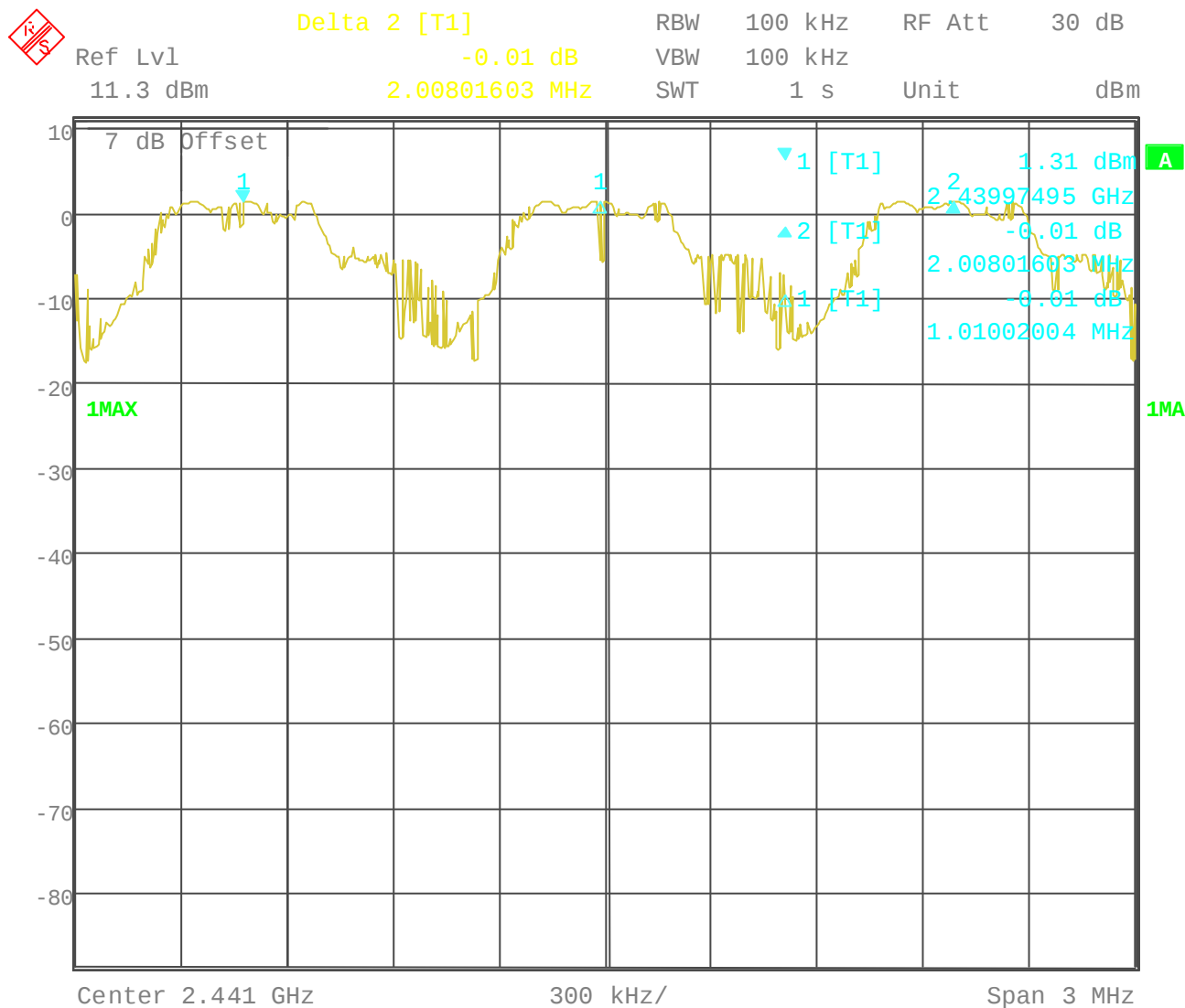
Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

Carrier frequency separation

§15.247(a)



Date: 21.MAY.2001 12:40:31

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

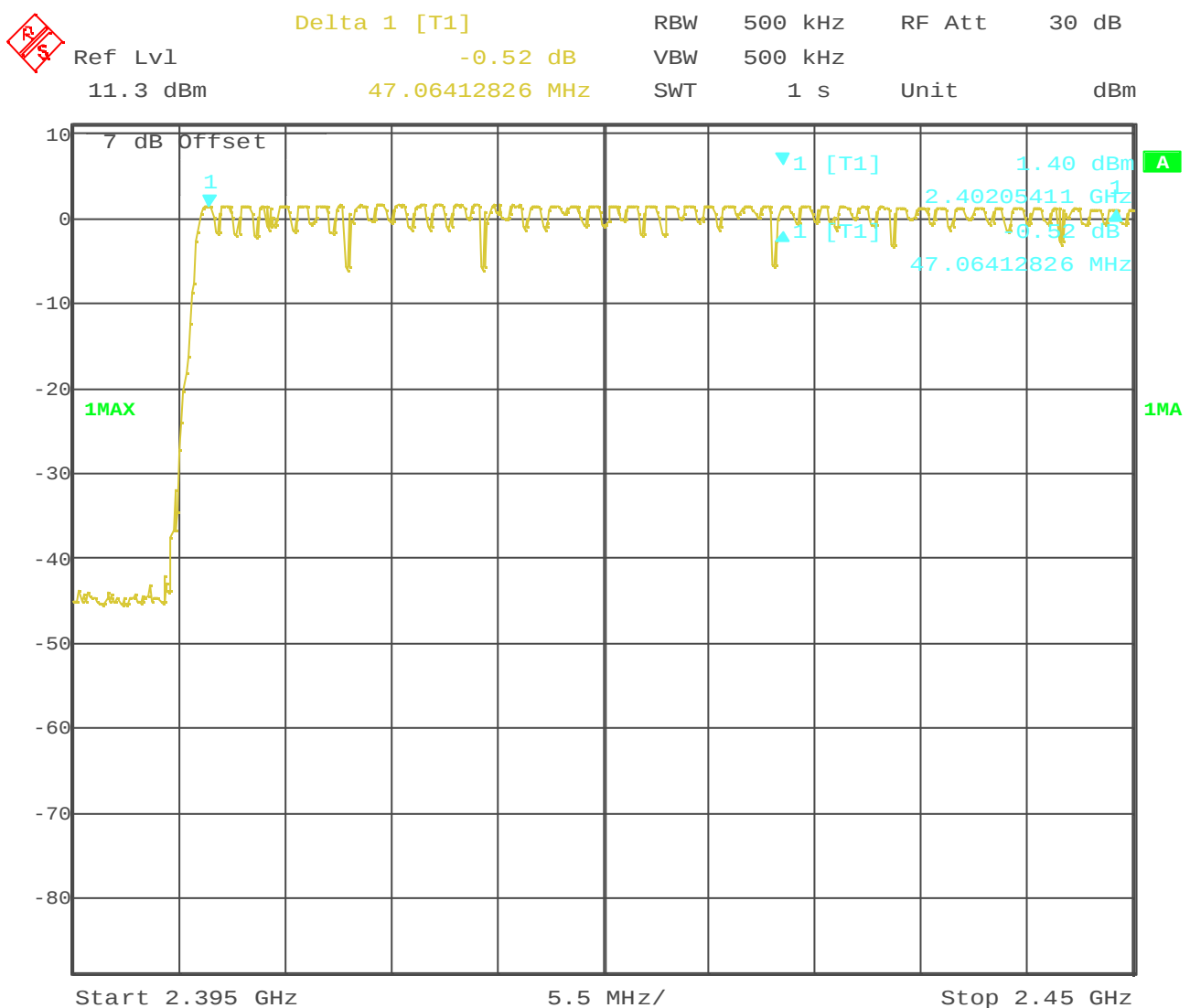
Number of hopping channels

§15.247(a)

The number of hopping channels is 79.

Channel 1 to 47

Plot 1:



Date: 21.MAY.2001 13:04:36

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Test report nr.: 2-2519-A/01

Issue Date: 21.05.01

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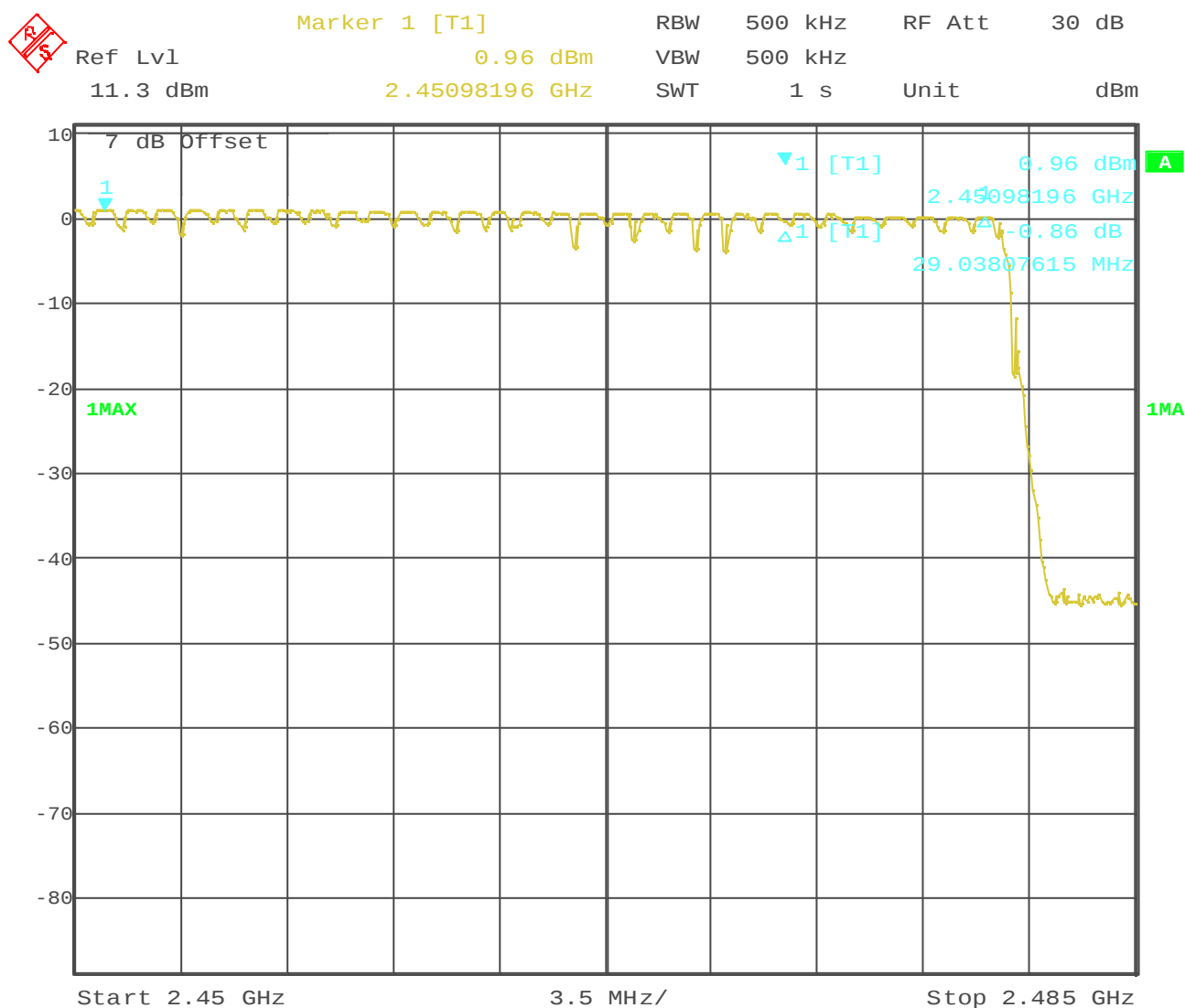
Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

Plot 2:

Channel 48 to 80



Date: 21.MAY.2001 12:58:38

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

Time of occupancy (dwell time) for DH1

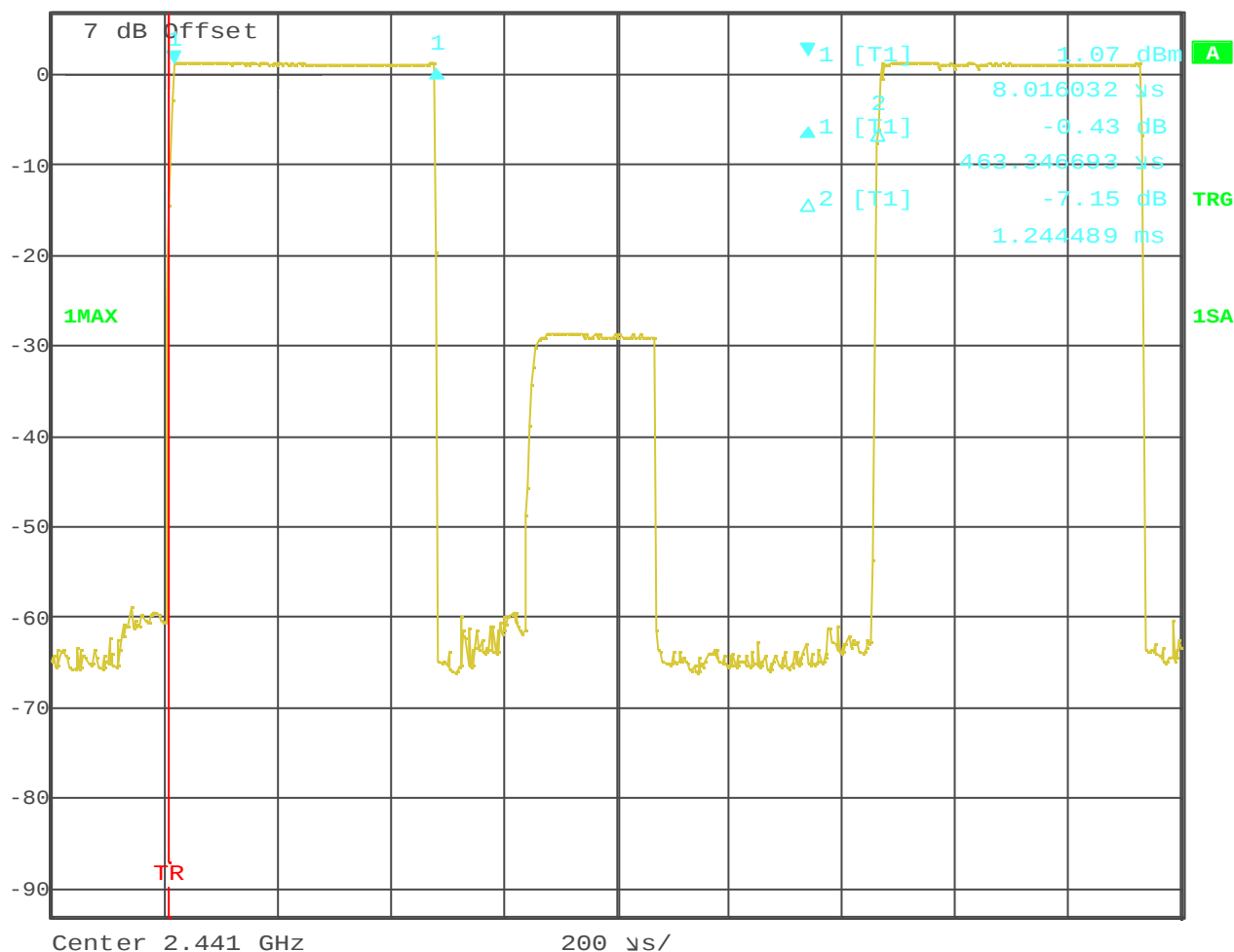
§15.247(a)

The system makes worst case 1600 hops per second or 1 time slot has a length of 625µs with 79 channels. A DH1 Packet need 1 time slot for transmitting and 1 time slot for receiving. Then the system makes worst case 800 hops per second with 79 channels. So you have each channel 10.13 times per second and so for 30 seconds you have 303.9 times of appearance .

Each tx-time per appearance is 463.347 µs.

So we have $303.9 * 463.347 \mu s = 144.811 \text{ ms}$ per 30 seconds.

	Ref Lvl	Delta 1 [T1]	RBW	1 MHz	RF Att	10 dB
	7 dBm	-0.43 dB	VBW	1 MHz		
		463.346693 µs	SWT	2 ms	Unit	dBm



Date: 21.MAY.2001 14:00:17

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Test report nr.: 2-2519-A/01

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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

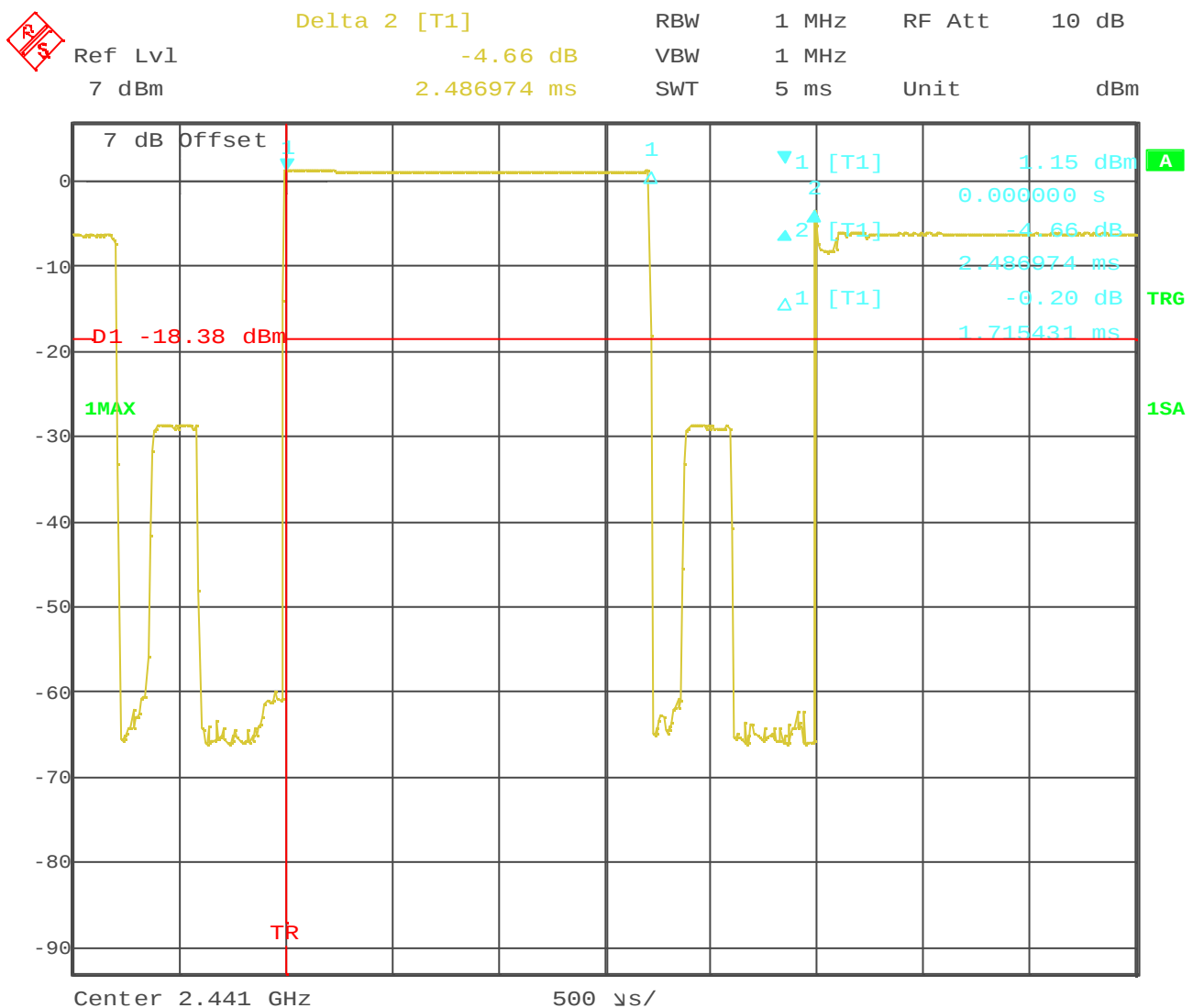
Time of occupancy (dwell time) for DH3

§15.247(a)

A DH3 Packets need 3 time slots for transmit and 1 for receicing, then the system makes worst case 400 hops per second with 79 channels. So you have each channel 5.1 times per second and so for 30 seconds you have 153 times of appearance .

Each tx-time per appearance is 1.715 ms.

So we have $153 * 1.715 \text{ ms} = 262.395 \text{ ms}$ per 30 seconds.



Date: 21.MAY.2001 13:58:03

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

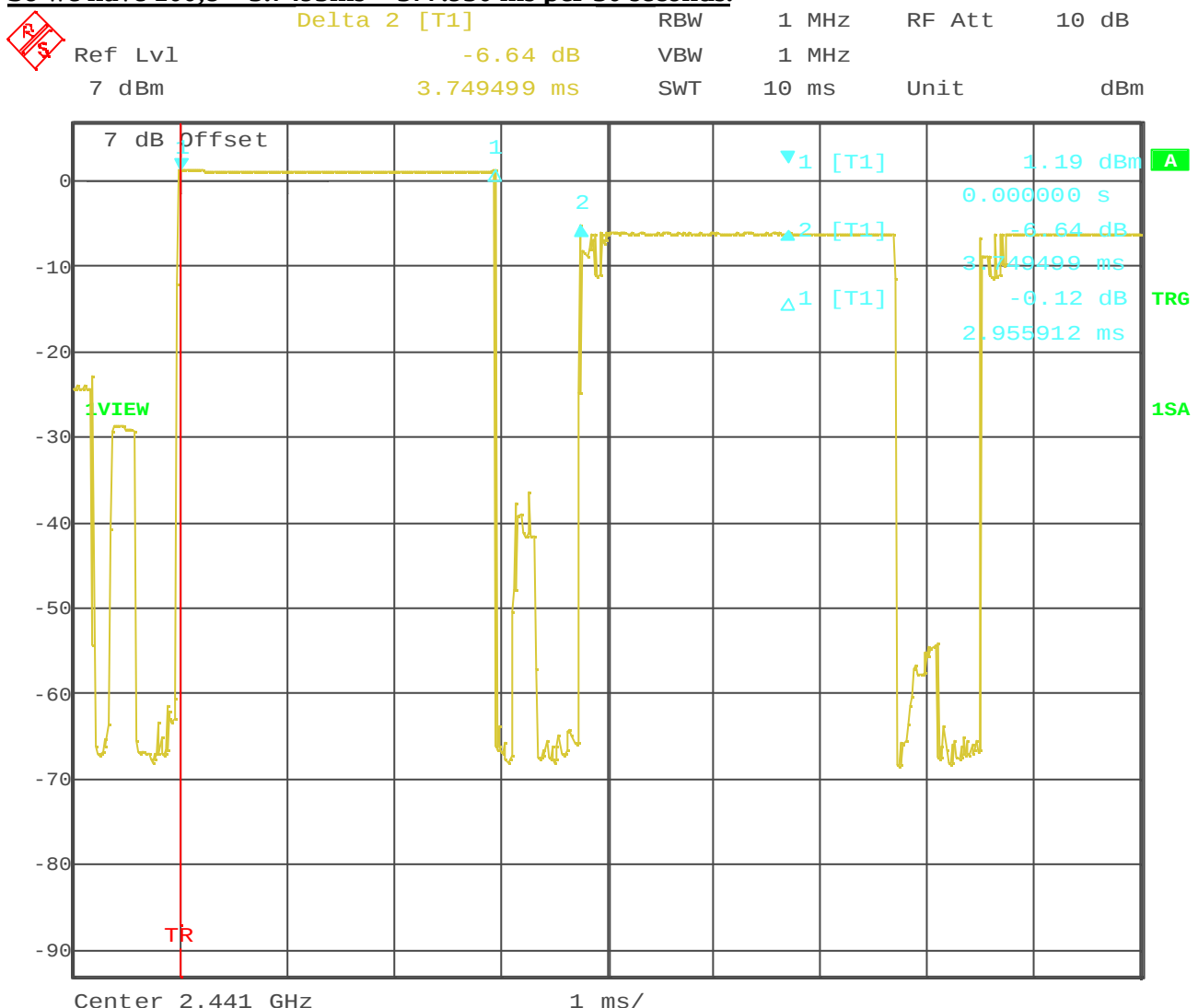
Time of occupancy (dwell time) for DH5

§15.247(a)

At DH5 Packets you need 5 time slots for transmit and 1 for receicing,then the system makes worst case 266,7 hops per second with 79 channels. So you have each channel 3.36 times per second and so for 30 seconds you have 100,8 times of appearance .

Each tx-time per appearance is 3.7495 ms.

So we have $100,8 * 3.7495\text{ms} = 377.950\text{ ms}$ per 30 seconds.



Date: 21.MAY.2001 13:11:16

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

Time of occupancy (dwell time) for page mode /Inquiry mode (TX-on time) §15.247(a)

At paging mode the system makes first hopping with 16 channels. One sequence(called train A) lasts 10 ms. Every 1.28s frequencies change and a second train A starts with different frequencies. After max 7*1.28 s 16 new more distance frequencies (Train B) are used.

So we have in the worst case (same frequency is in every train) the following time scedule.

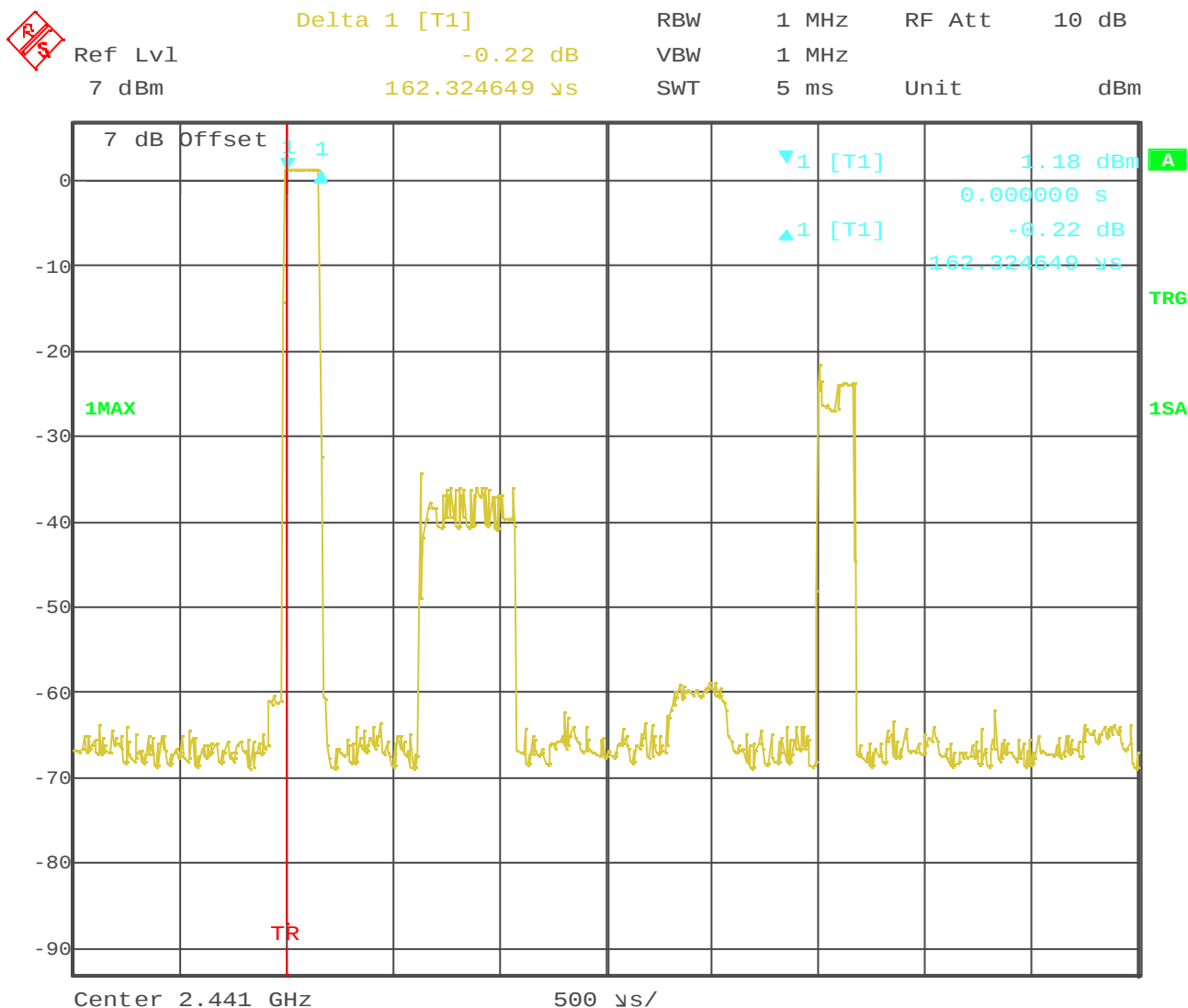
First: 7*128*10ms. For the next 7 seconds train B with other frequencies.

Then train A and B changes frequently.

⇒ so we have 7*128*162.225µs, then 8.96 s other frequencies, then again 7*128*162.225µs

⇒ together in 30 s maximal 2 sequences =>maximal 0.291 s per 30 second period.

Page mode (TX-on time) / Inquiry mode (TX-on time)



Date: 21.MAY.2001 13:31:36

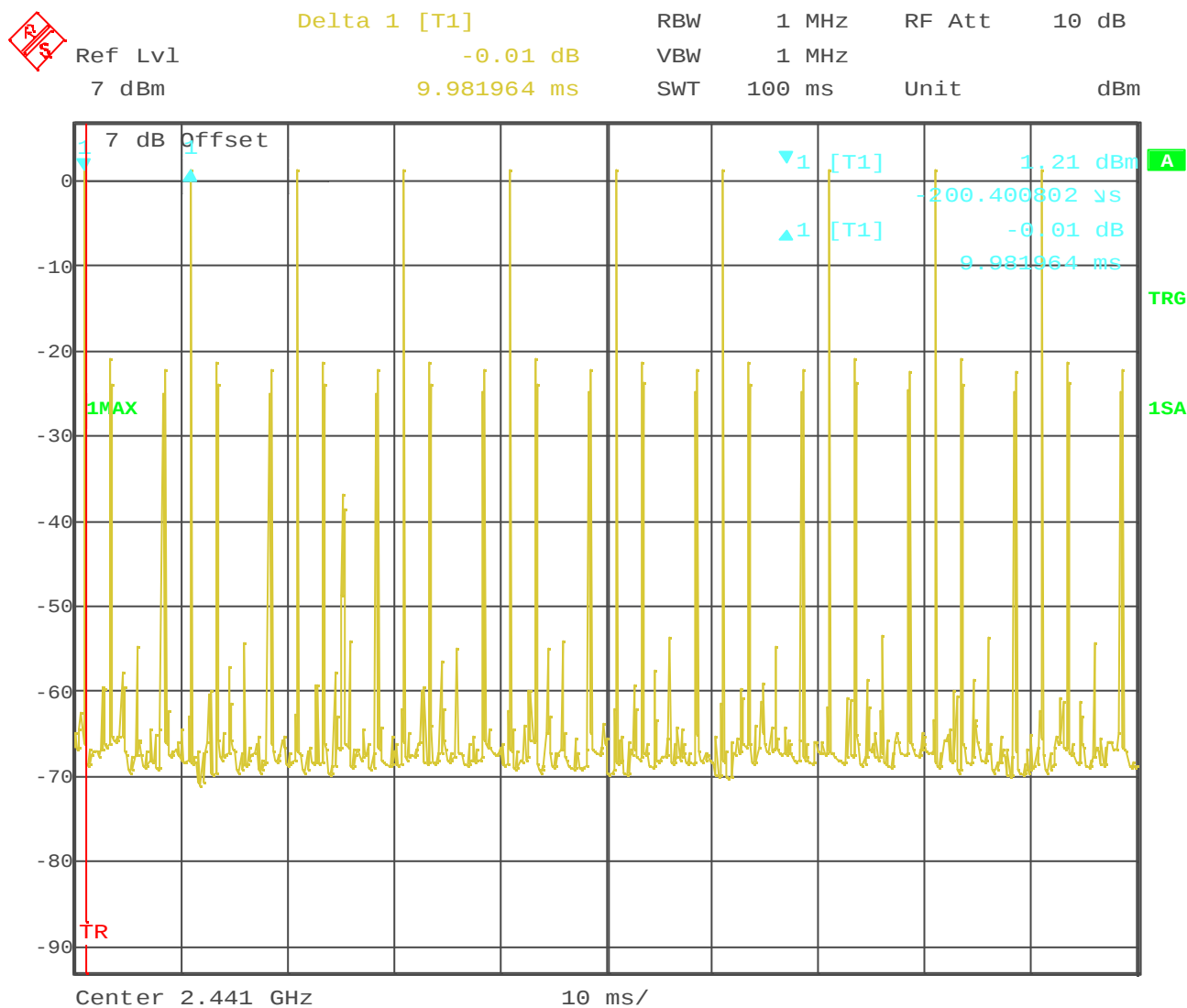
(for reference numbers see test equipment listing)

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

Page mode (complete sequence) / Inquiry mode (complete sequence)



Date: 21.MAY.2001 13:28:34

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31 %

Spectrum Bandwidth of a FHSS System
20 dB bandwidth

§15.247(a)

TEST CONDITIONS		20 dB BANDWIDTH (kHz)		
Frequency (MHz)		2402	2442	2481
T _{nom} (23)° C	V _{nom} (3.6)V	444.890	517.034	517.054
Measurement uncertainty		±3dB		

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

LIMIT

SUBCLAUSE §15.247(a) (1)

The maximum 20dB bandwidth shall be at maximum 1000 KHz

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(for reference numbers see test equipment listing)

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Equipment under test : 1130201-BV

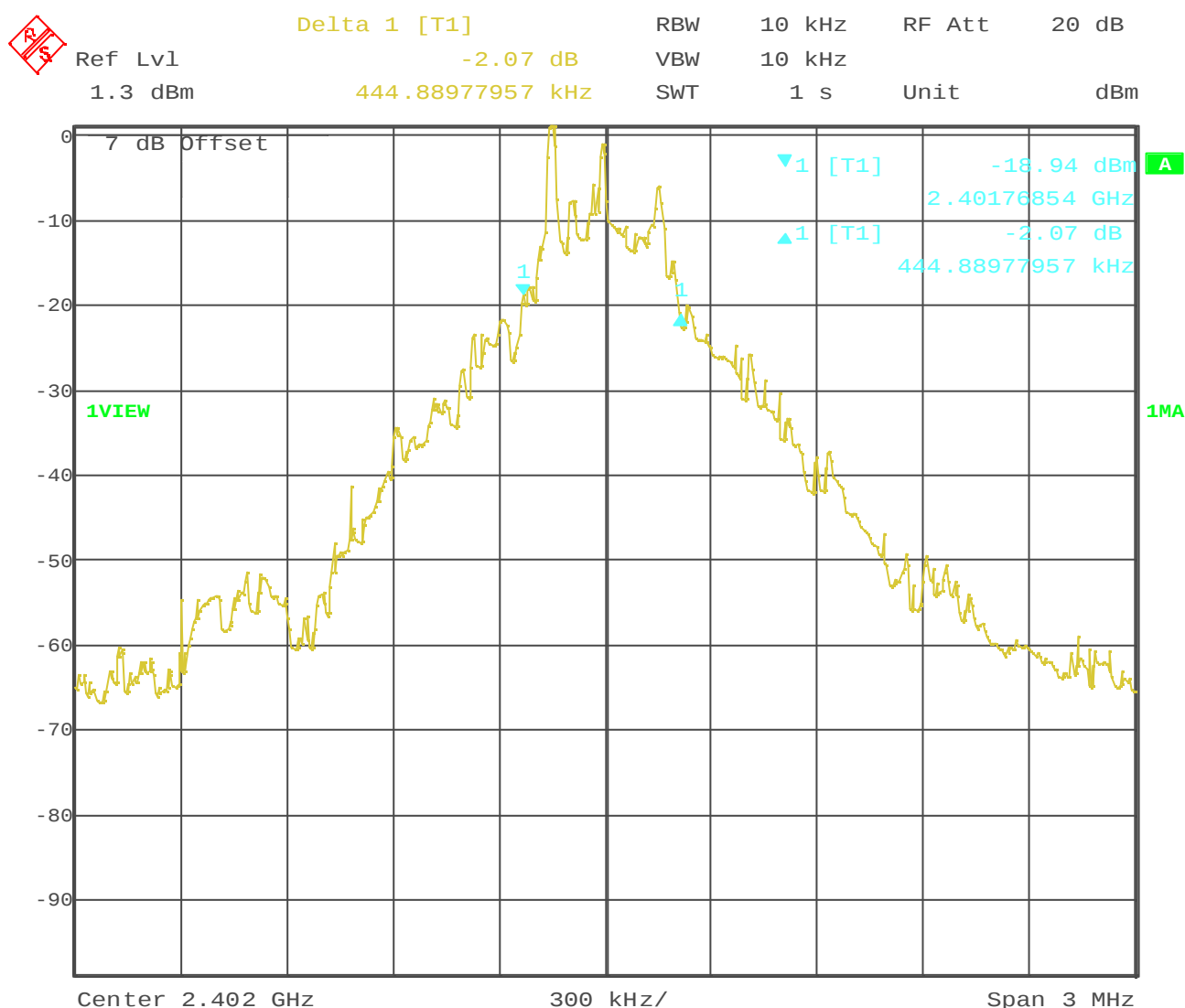
Ambient temperature : 24,5° C

Relative humidity : 31%

Spectrum Bandwidth of a FHSS System
20 dB bandwidth

§15.247(a)

Channel 1



Date: 21.MAY.2001 12:29:25

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

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Issue Date: 21.05.01

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Equipment under test : 1130201-BV

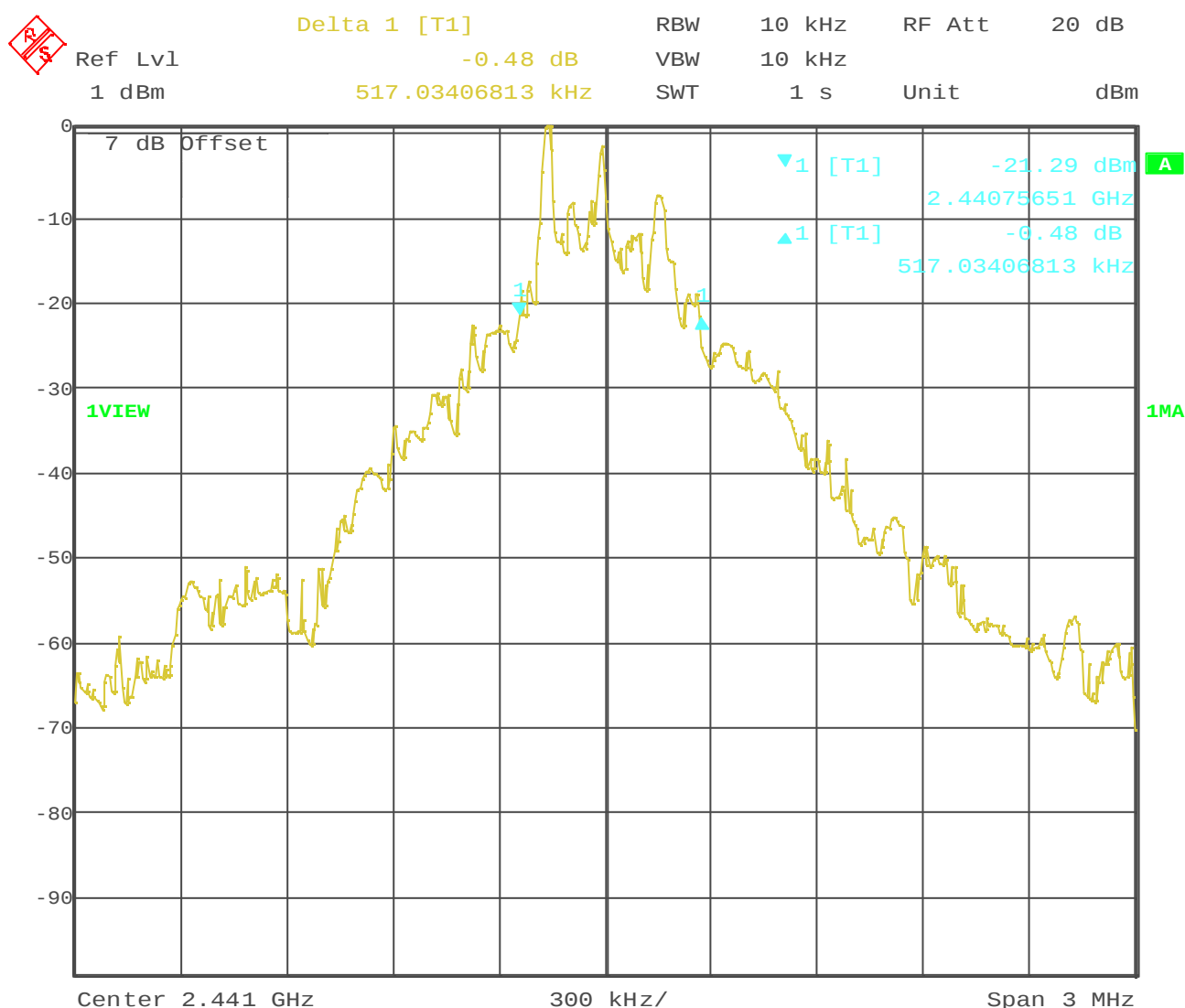
Ambient temperature : 24,5° C

Relative humidity : 31%

Spectrum Bandwidth of a FHSS System
20 dB bandwidth

§15.247(a)

Channel 2



Date: 21.MAY.2001 12:27:06

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Test report nr.: 2-2519-A/01

Issue Date: 21.05.01

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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

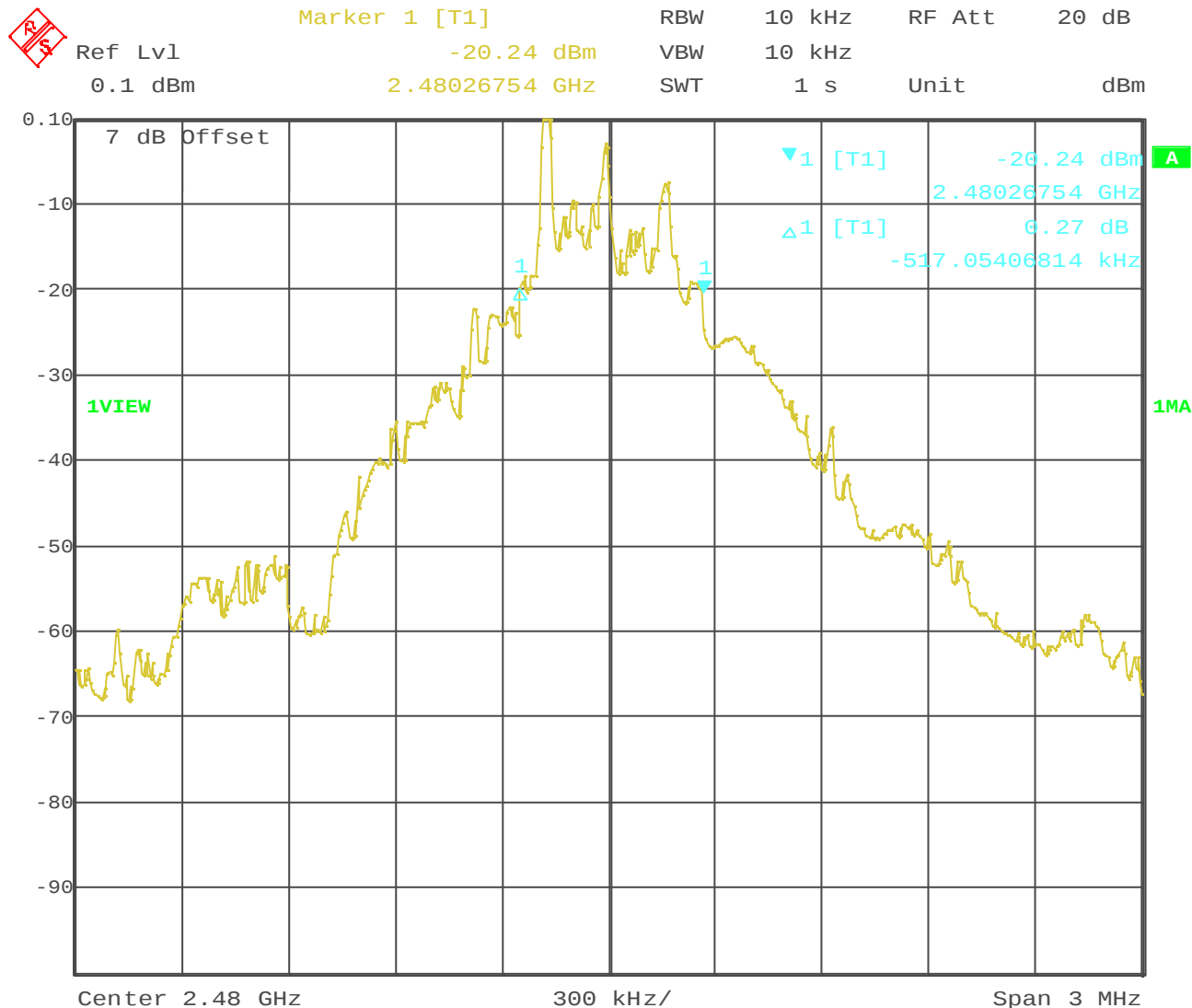
Relative humidity : 31%

Spectrum Bandwidth of a FHSS System

§15.247(a)

20 dB bandwidth

Channel 3:



Date: 21.MAY.2001 12:25:11

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

MAXIMUM PEAK OUTPUT POWER
(conducted)

SUBCLAUSE § 15.247 (b) (1)

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (mW)			
		2402		2442	2481
Frequency (MHz)					
T _{nom} (23)° C	V _{nom} (3.6)V	PK	1.42	1.34	1.07
		AV	1.12	1.06	0.85
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)

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Issue Date: 21.05.01

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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

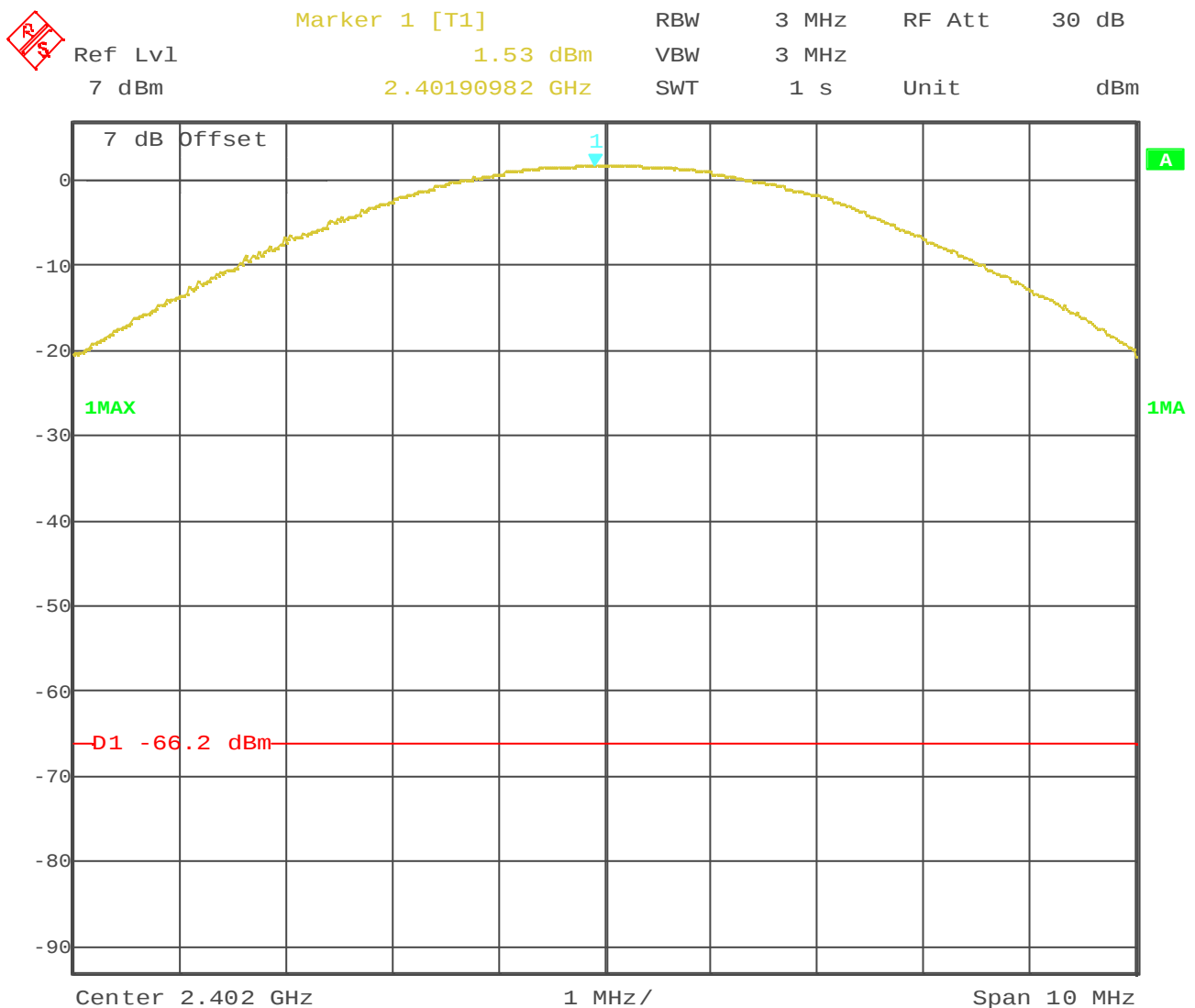
Relative humidity : 31%

Peak output power (conducted)

§15.247 (b)

Channel 1: +1.53 dBm at 2402 MHz

De facto EIRP with – 5.68 dbI max. antenna gain is –4.15 dBm



Date: 21.MAY.2001 11:22:56

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

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

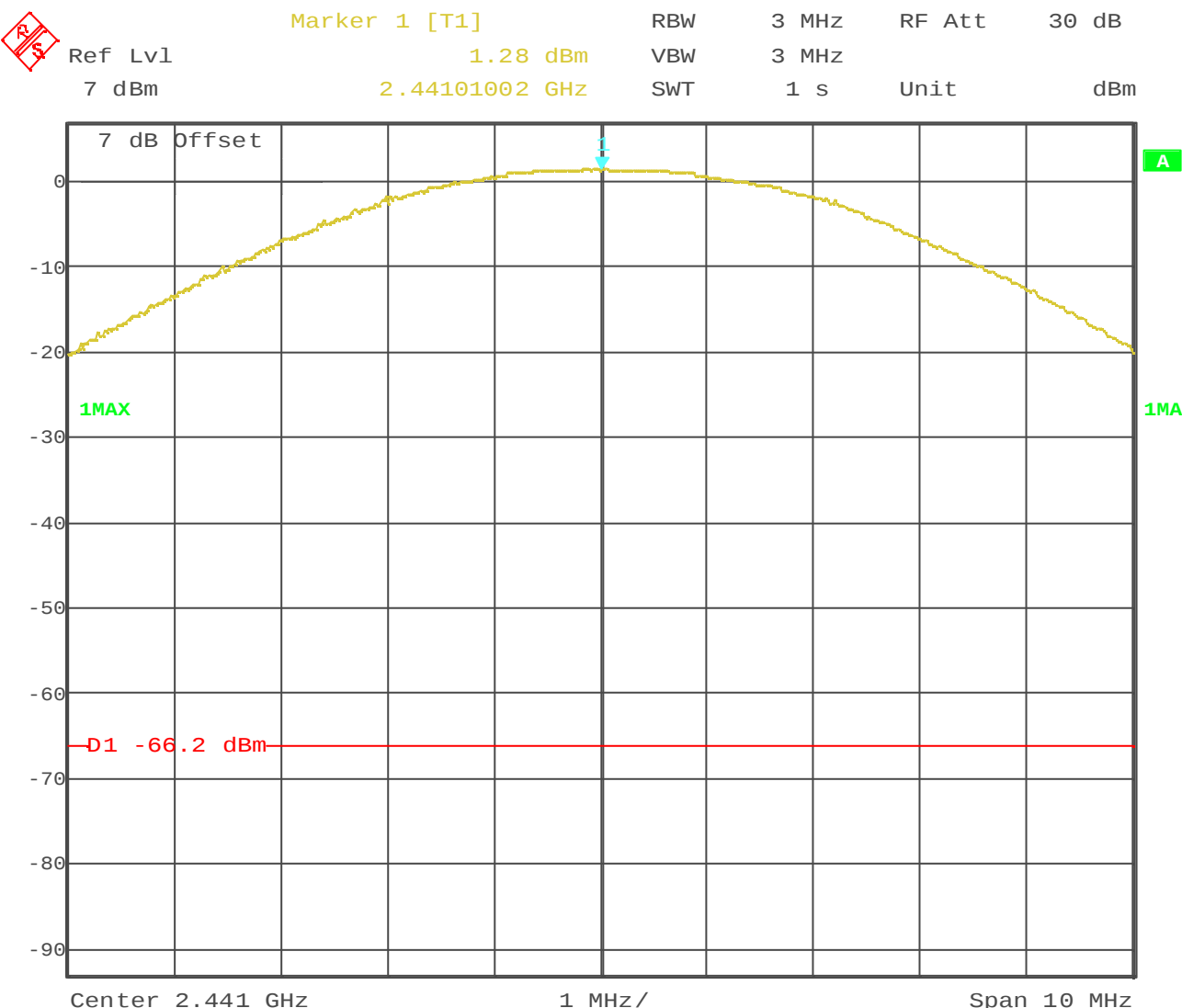
Relative humidity : 31%

Peak output power (conducted)

§15.247 (b)

Channel 2: 1.28dBm at 2441 MHz

De facto EIRP with -5.68 dbI max. antenna gain is -4.4 dBm



Date: 21.MAY.2001 11:21:16

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

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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

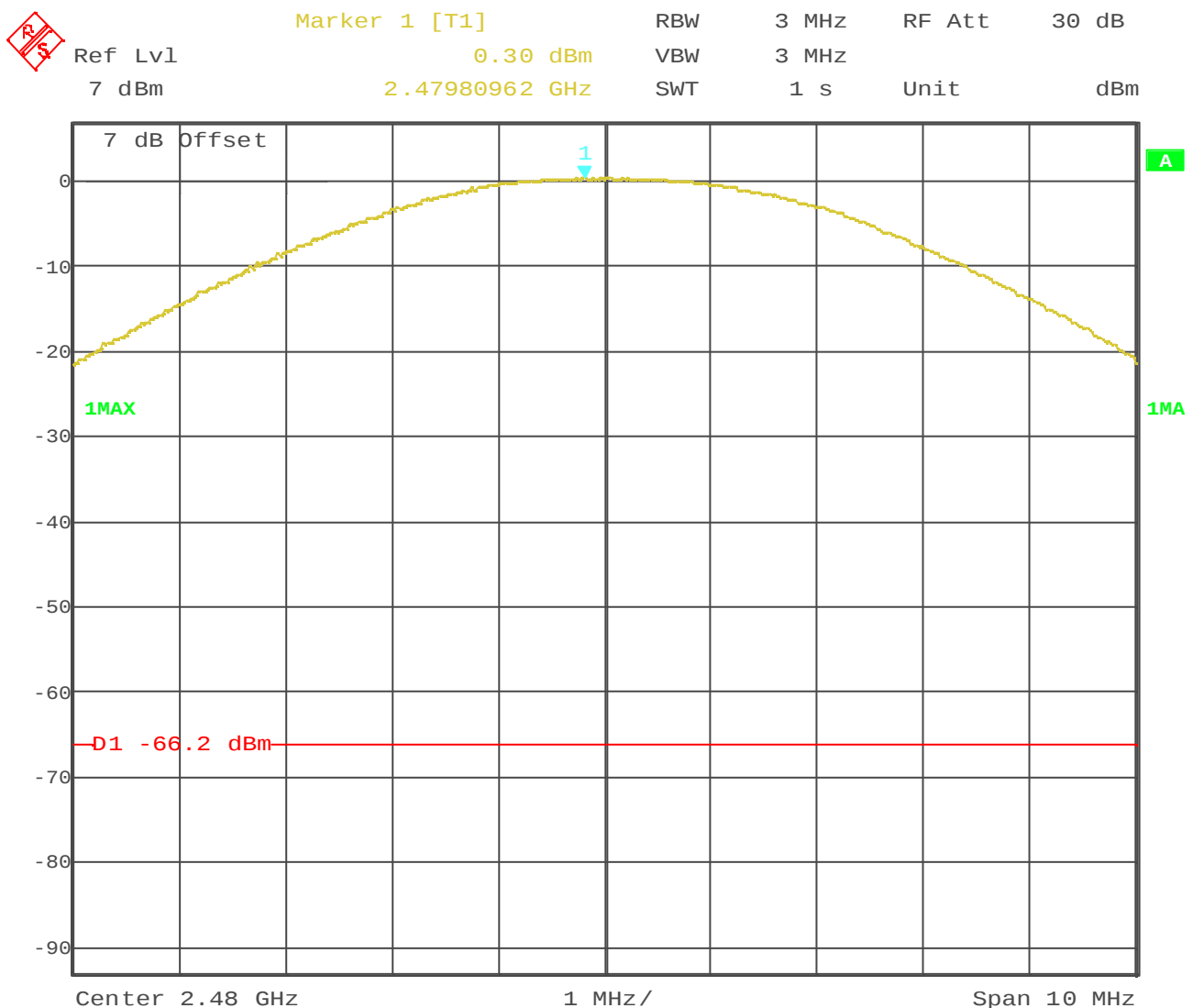
Relative humidity : 31%

Peak output power (conducted)

§15.247 (b)

Channel 3: 0.30 dBm at 2481 MHz

De facto EIRP with -5.68 dbI max. antenna gain is -5.98dBm



Date: 21.MAY.2001 11:22:07

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

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31 %

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

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (mW)		
Frequency (MHz)		2402	2442	2481
T _{nom} (23)° C	V _{nom} (3.6)V	0.389	0.363	0.155
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)

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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

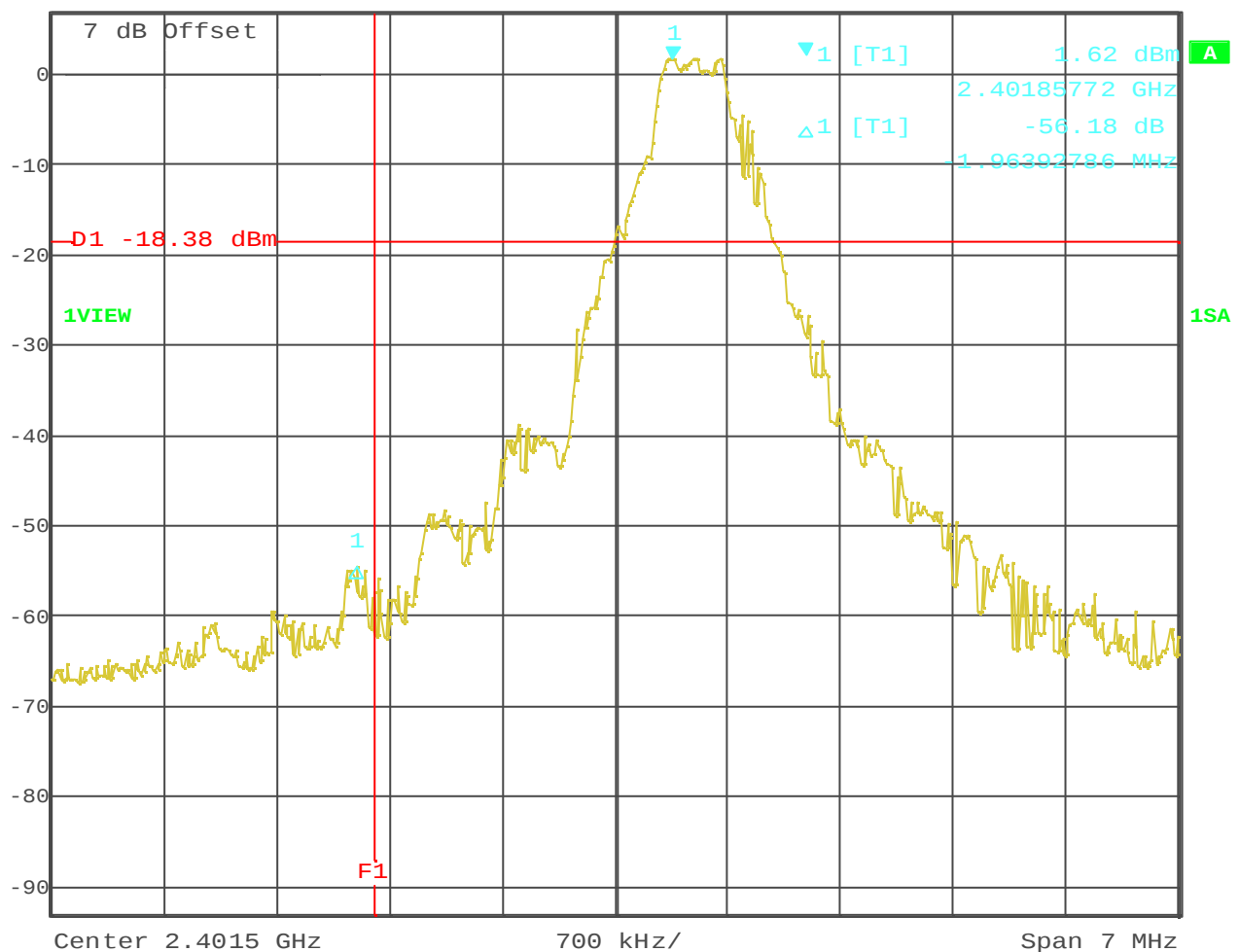
Relative humidity : 31%

Band-edge compliance of conducted emissions

§15.247 (c)

Low frequency section (hopping off)


 Ref Lvl 7 dBm
 Marker 1 [T1] 1.62 dBm
 2.40185772 GHz
 RBW 100 kHz
 VBW 100 kHz
 SWT 5 ms
 RF Att 10 dB
 Unit dBm



Date: 21.MAY.2001 13:36:09

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

Test report nr.: 2-2519-A/01

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Equipment under test : 1130201-BV

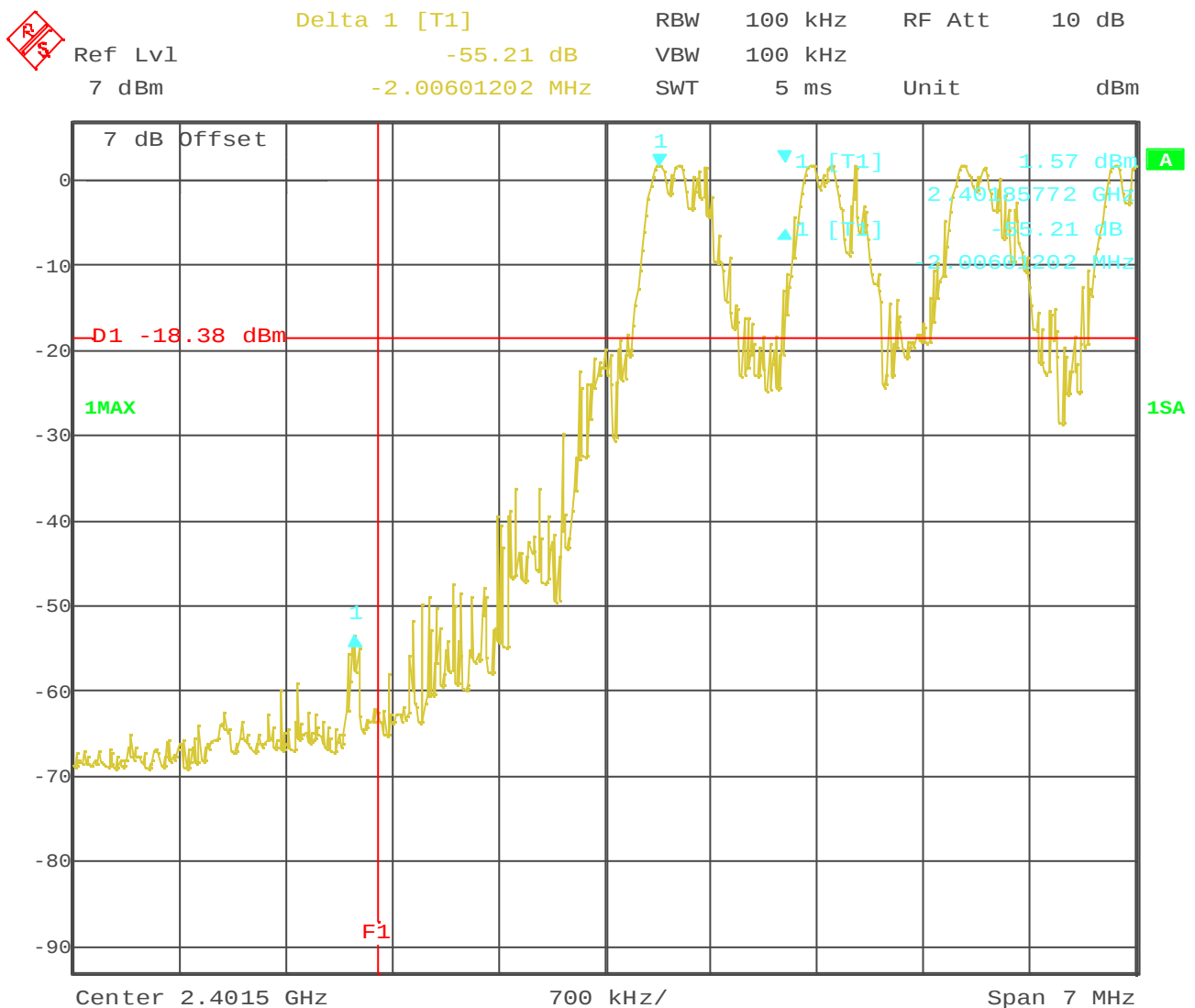
Ambient temperature : 24,5° C

Relative humidity : 31%

Band-edge compliance of conducted emissions

§15.247 (c)

Low frequency section (hopping on)



Date: 21.MAY.2001 13:42:56

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

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Issue Date: 21.05.01

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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

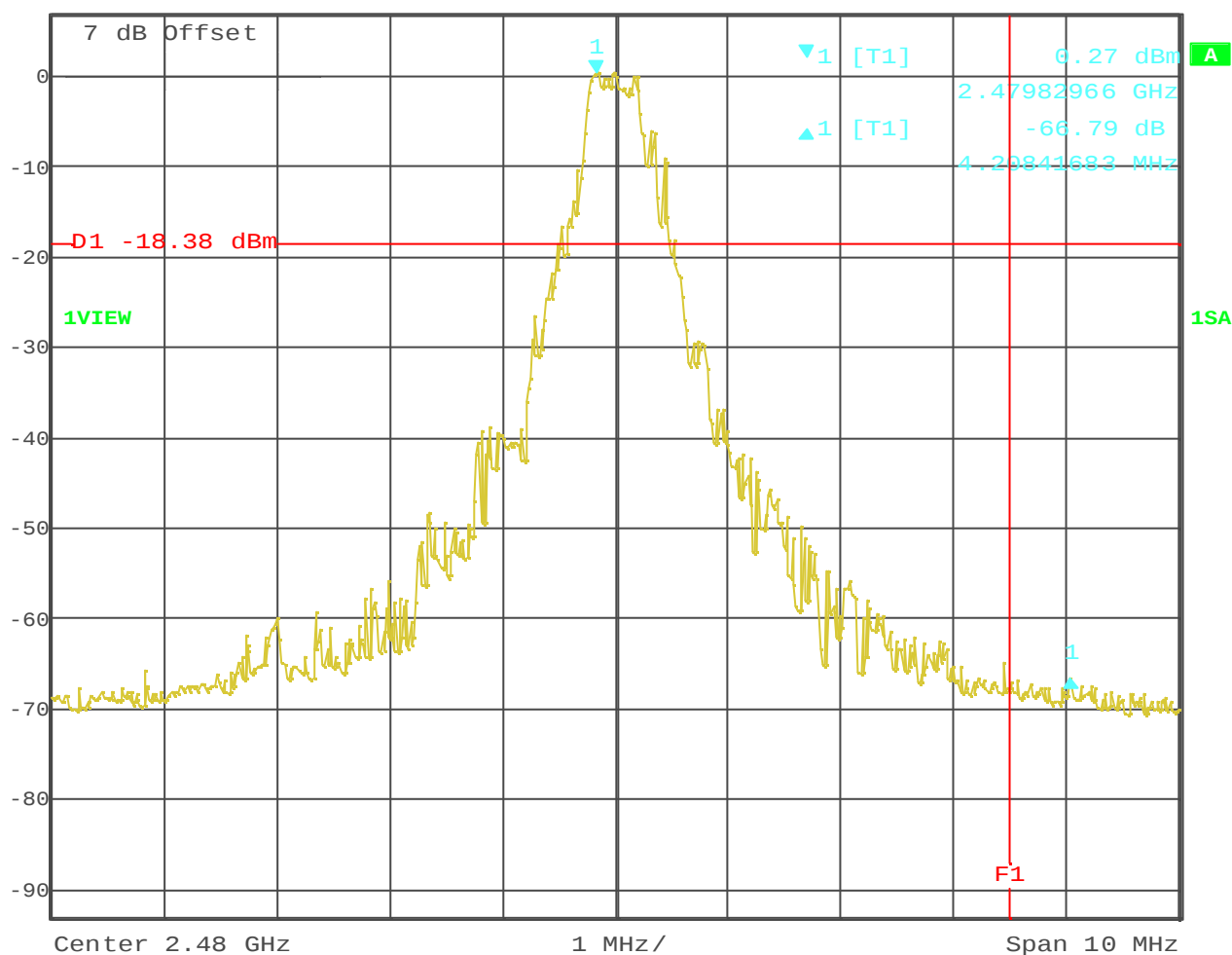
Relative humidity : 31%

Band-edge compliance of conducted emissions

§15.247 (c)

high frequency section (hopping off)


 Ref Lvl 7 dBm
 Delta 1 [T1] -66.79 dB
 4.20841683 MHz
 RBW 100 kHz
 VBW 100 kHz
 SWT 5 ms
 RF Att 10 dB
 Unit dBm



Date: 21.MAY.2001 13:52:40

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

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Equipment under test : 1130201-BV

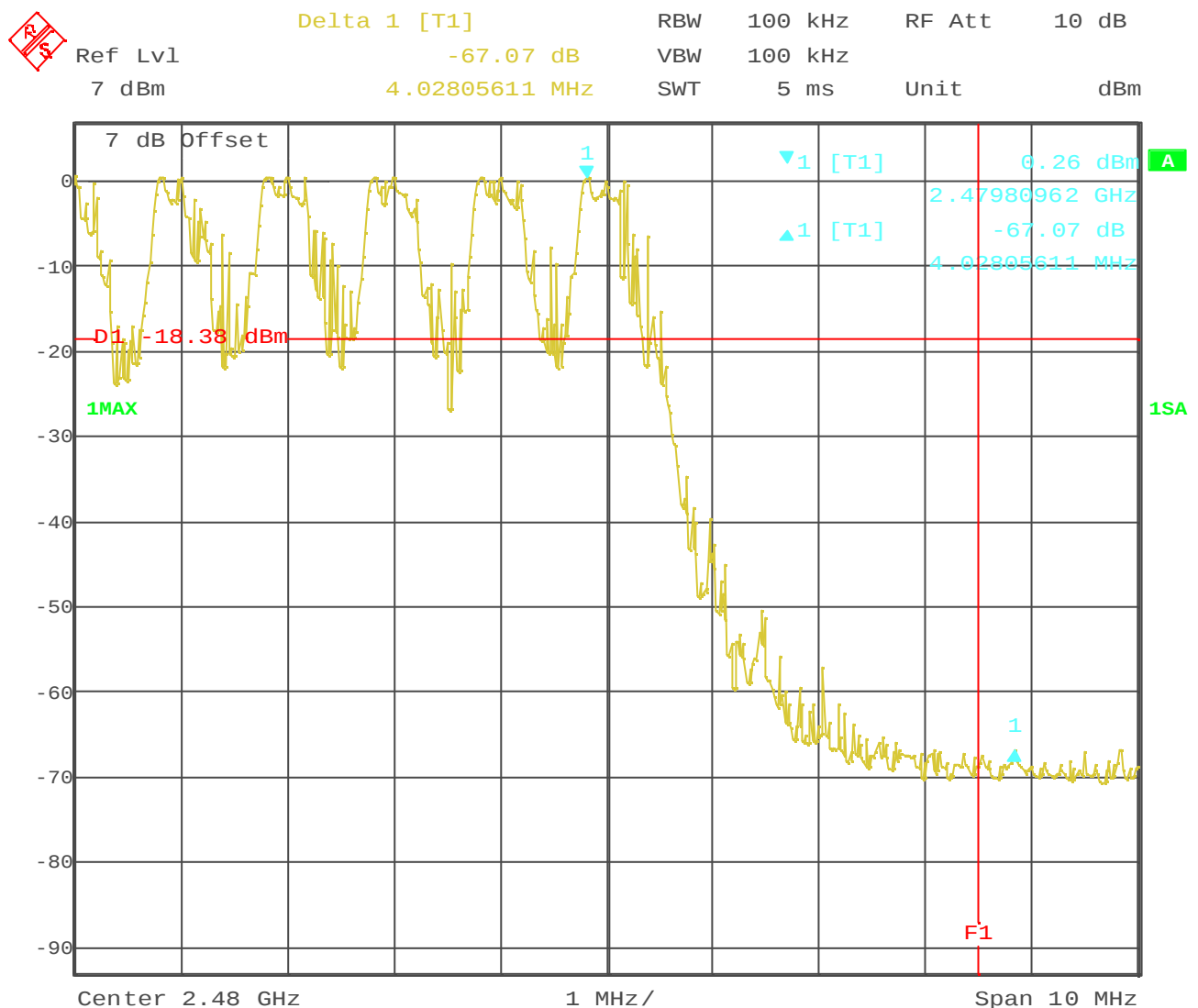
Ambient temperature : 24,5° C

Relative humidity : 31%

Band-edge compliance of conducted emissions

§15.247 (c)

high frequency section (hopping on)



Date: 21.MAY.2001 13:51:31

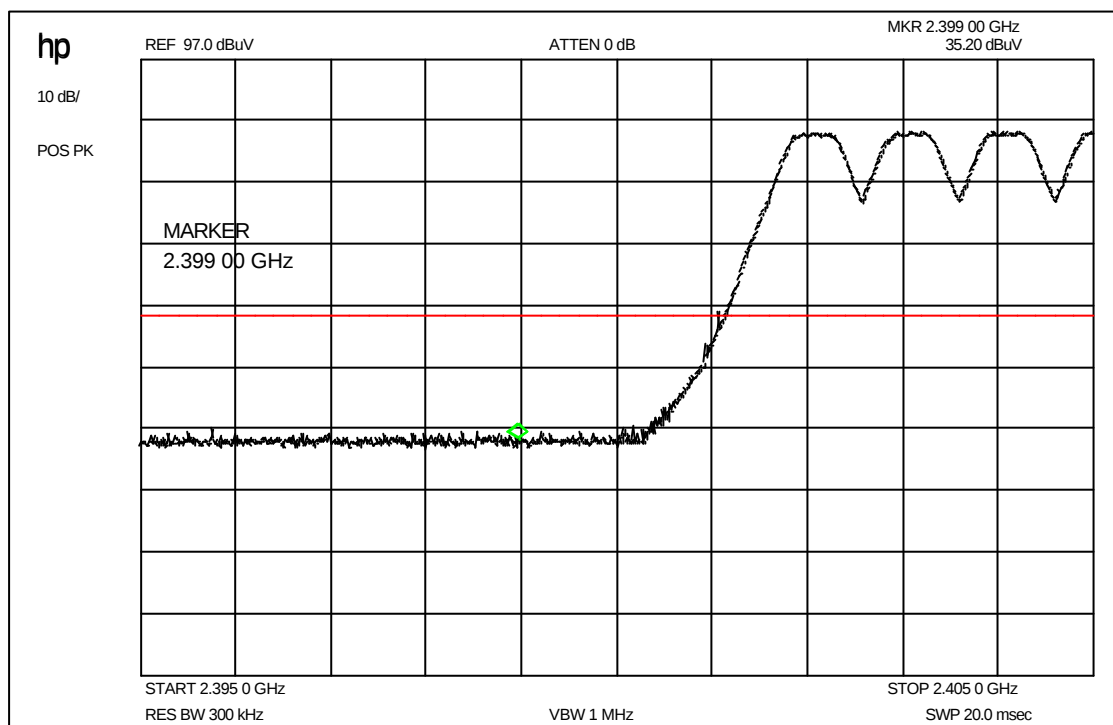
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31 %

Band-edge compliance radiated

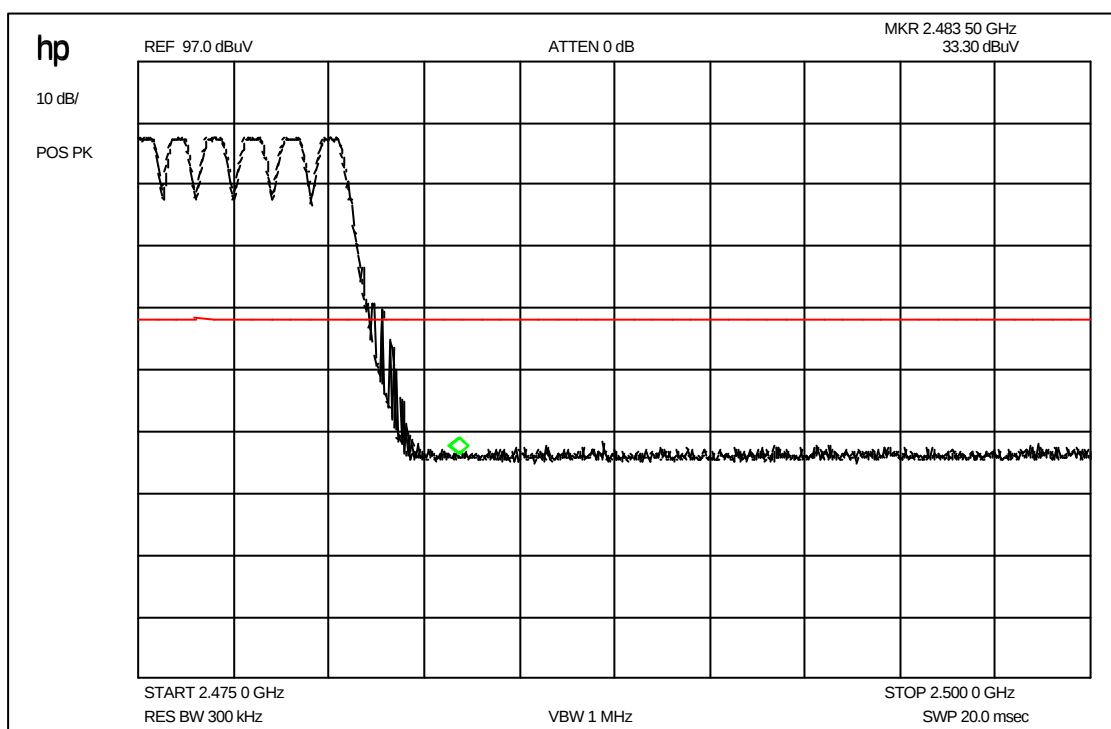


Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

Band-edge compliance radiated



Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

EMISSION LIMITATIONS- Conducted (Transmitter)

§ 15.247 (c) (1)

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBm)	limit max. allowed emmission power	actual attenuation below frequency of operation (dB)	results
2402		1.53	30 dBm	-	Operating frequency
all peaks <<limit				see plot	complies
2441		1.28	30 dBm	-	Operating frequency
all peaks <<limit				see plot	complies
2480		0.30	30 dBm		Operating frequency
all peaks <<limit				see plot	complies
Measurement uncertainty		± 3dB			

RBW : 100 kHz 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)).

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Equipment under test : 1130201-BV

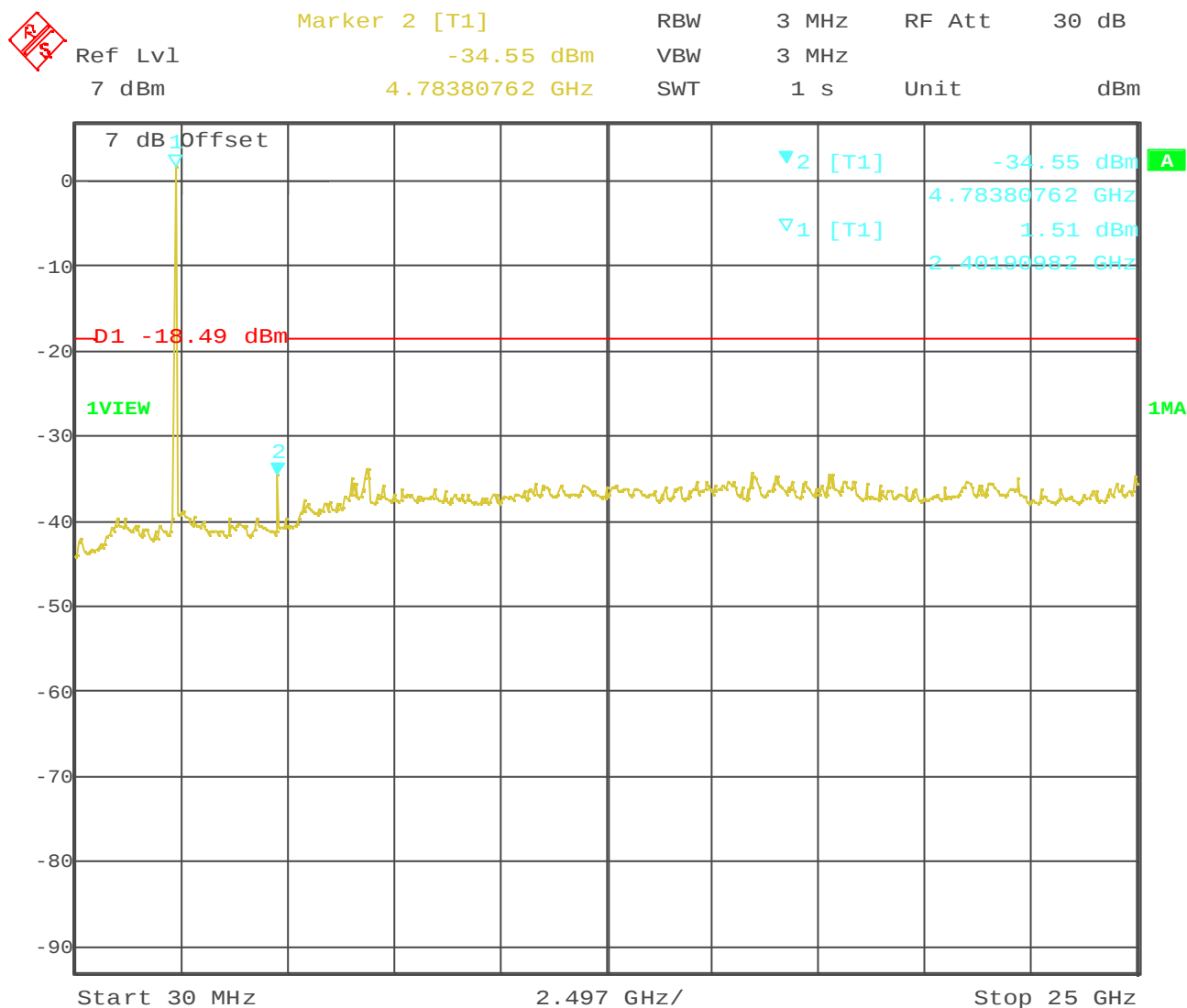
Ambient temperature : 24,5° C

Relative humidity : 31%

EMISSION LIMITATIONS- Conducted (Transmitter)

§ 15.247 (c) (1)

Channel 1: 30 MHz - 25 GHz



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

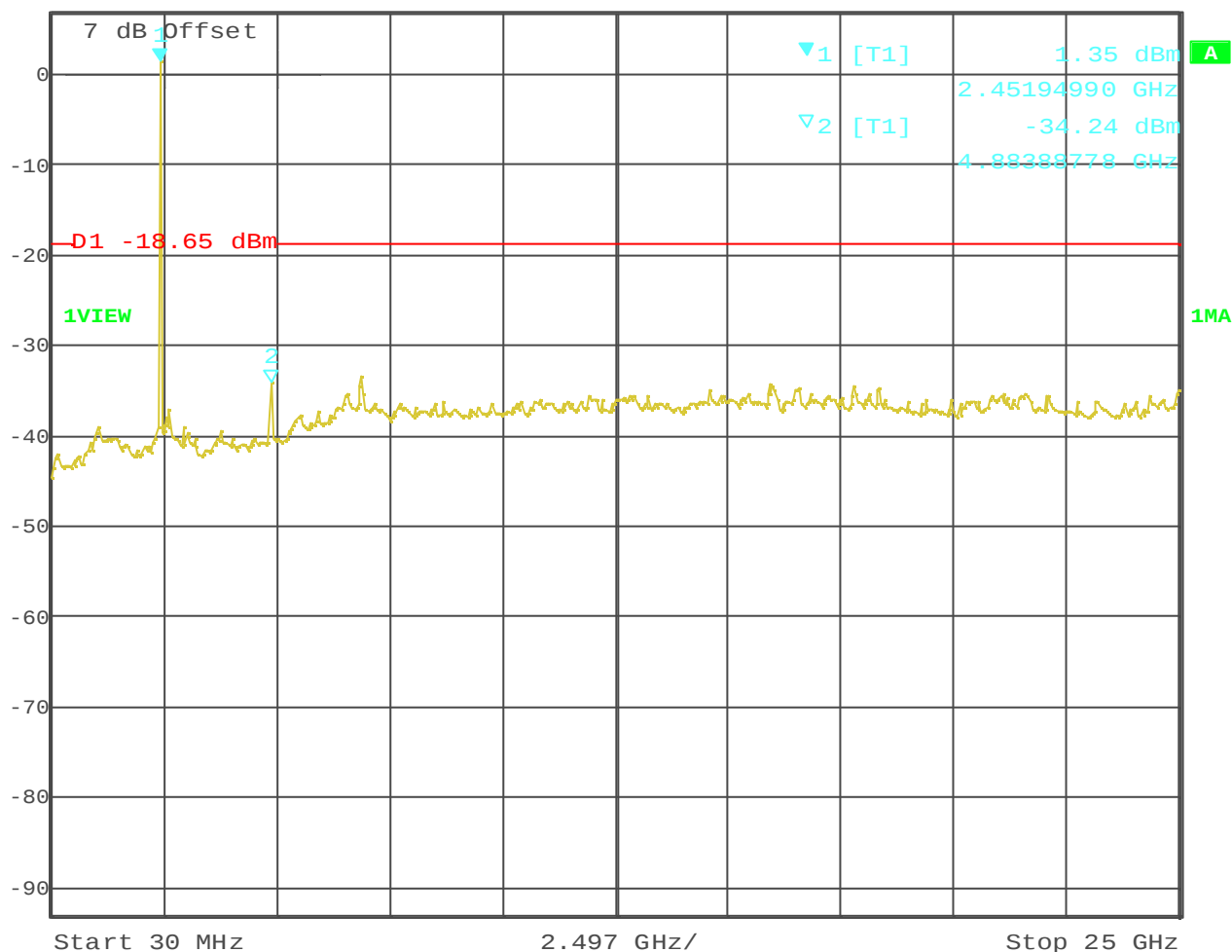
Relative humidity : 31%

EMISSION LIMITATIONS- Conducted (Transmitter)

§ 15.247 (c) (1)

Channel 2: 30 MHz - 25 GHz

	Ref Lvl	Marker 1 [T1]	RBW	3 MHz	RF Att	30 dB
	7 dBm	1.35 dBm	VBW	3 MHz		
		2.45194990 GHz	SWT	1 s	Unit	dBm



Date: 21.MAY.2001 11:25:57

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

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Equipment under test : 1130201-BV

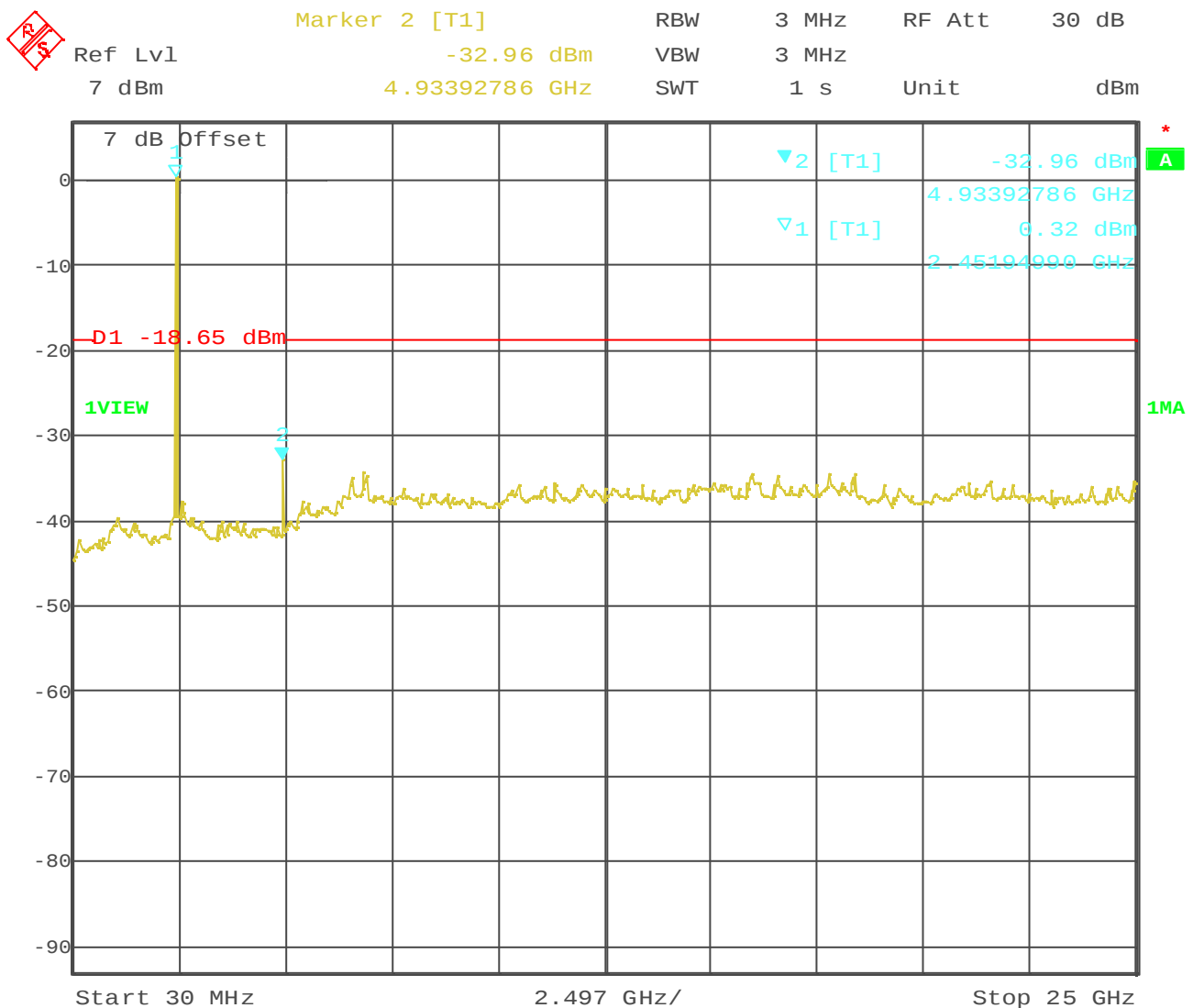
Ambient temperature : 24,5° C

Relative humidity : 31%

EMISSION LIMITATIONS- Conducted (Transmitter)

§ 15.247 (c) (1)

Channel 3: 30 MHz - 25 GHz



Date: 21.MAY.2001 11:27:31

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

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

SPURIOUS RADIATED EMISSION

§ 15.247 (c) (1)

EMISSION LIMITATIONS					
f (MHz)	polarization	amplitude of emission (dBµV/m) PEAK	amplitude of emission (dBµV/m) QUASI PEAK	limit max. allowed emmission power (dBµV/m)	results
CH 1					
No peaks found					
CH 2					
No peaks found					
CH 3					
No peaks found					
Measurement uncertainty		± 3dB			

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)).

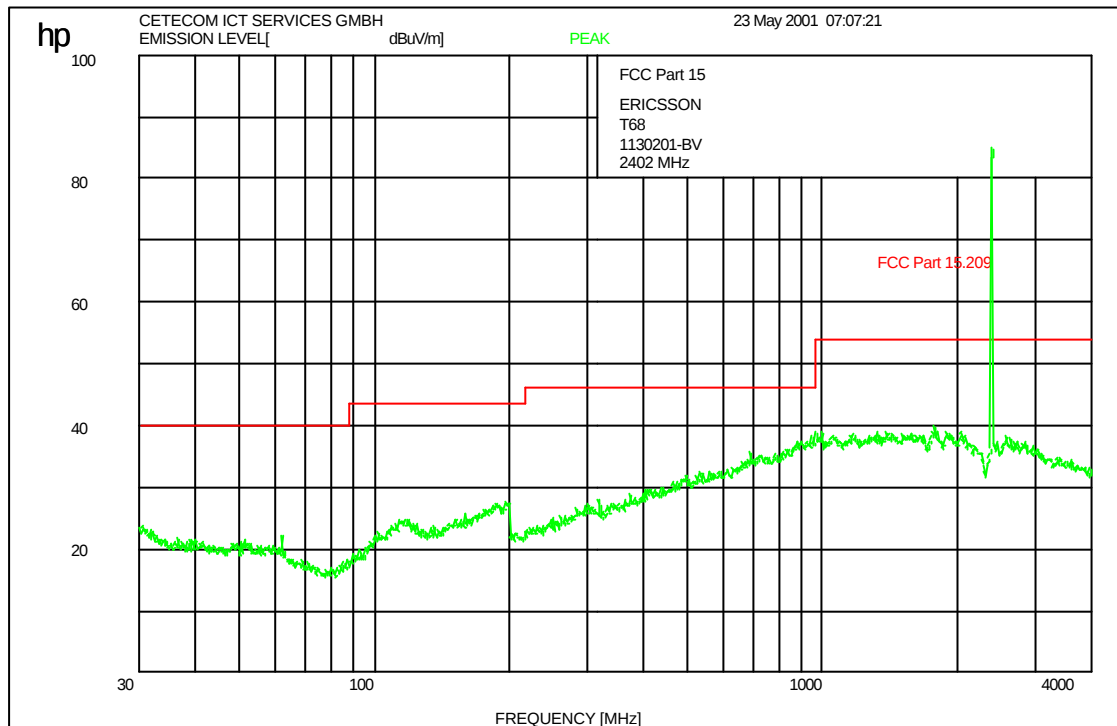
Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

EMISSION LIMITATIONS (Transmitter)
2402 MHz

SUBCLAUSE § 15.247 (c) (1)



f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 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)

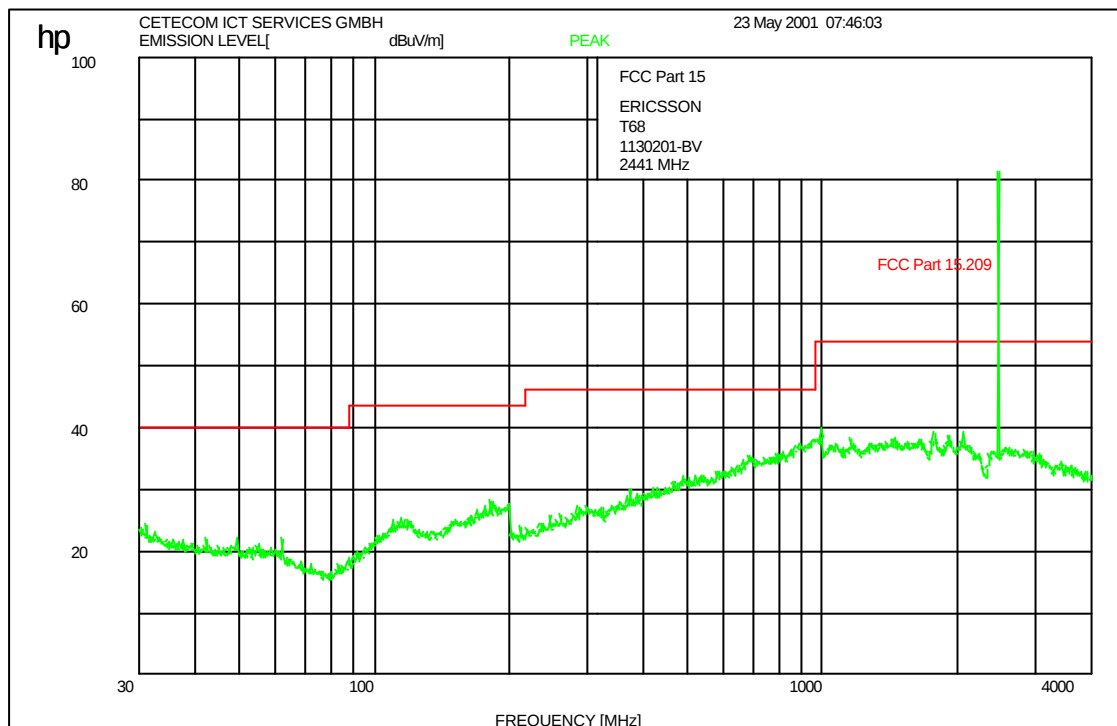
Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

EMISSION LIMITATIONS (Transmitter) 2442 MHz

SUBCLAUSE § 15.247 (c) (1)



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

$f \geq 1 \text{ GHz}$: 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)

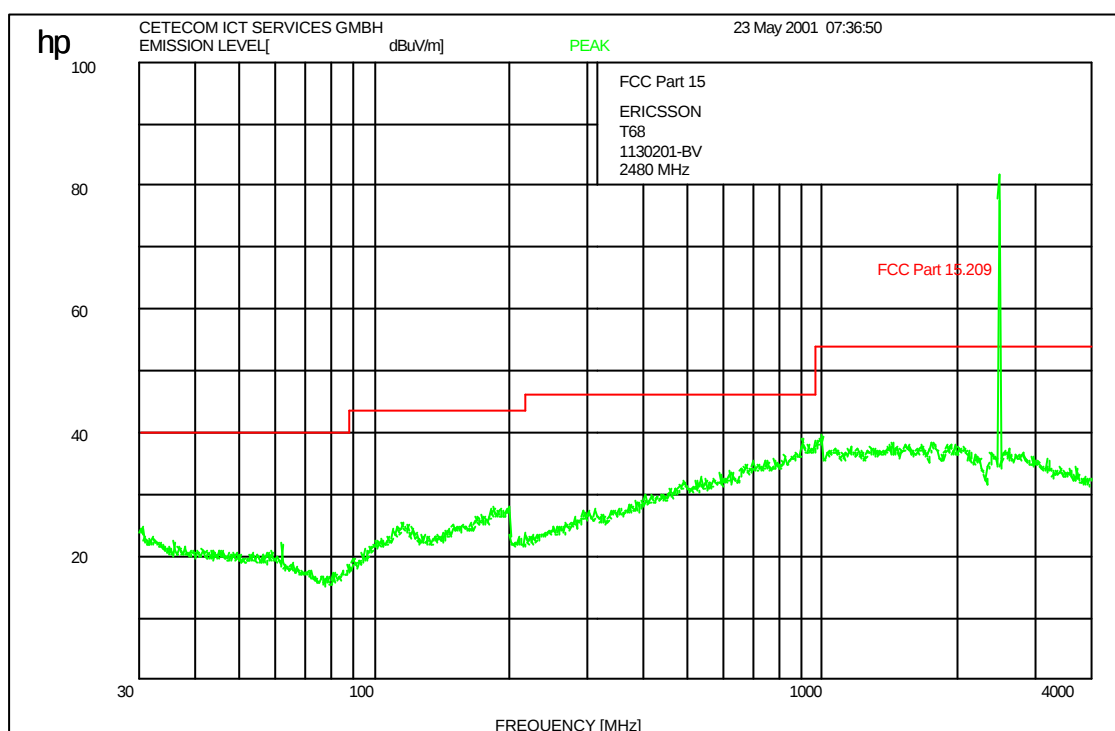
Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31 %

EMISSION LIMITATIONS (Transmitter) 2481 MHz

SUBCLAUSE § 15.247 (c) (1)



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

$f \geq 1 \text{ GHz}$: 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)

Equipment under test : 1130201-BV

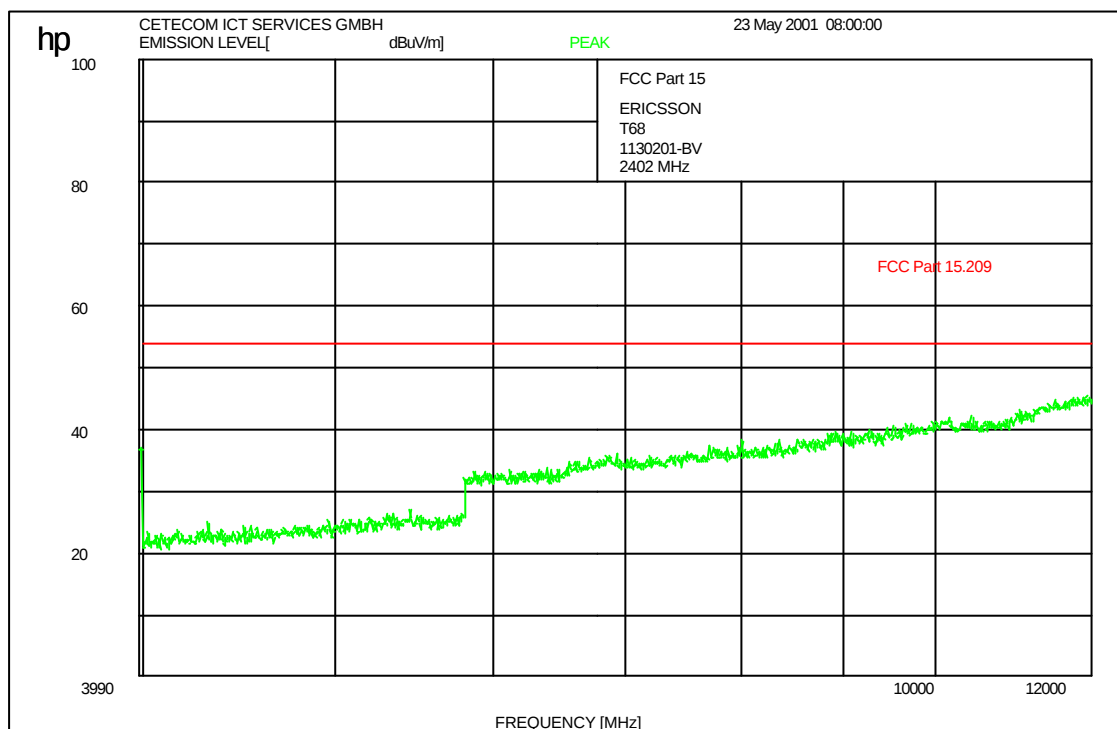
Ambient temperature : 24,5° C

Relative humidity : 31%

EMISSION LIMITATIONS (Transmitter)

CLAUSE § 15.247 (c) (1)

Channel 1



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

$f \geq 1 \text{ GHz}$: 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)

Equipment under test : 1130201-BV

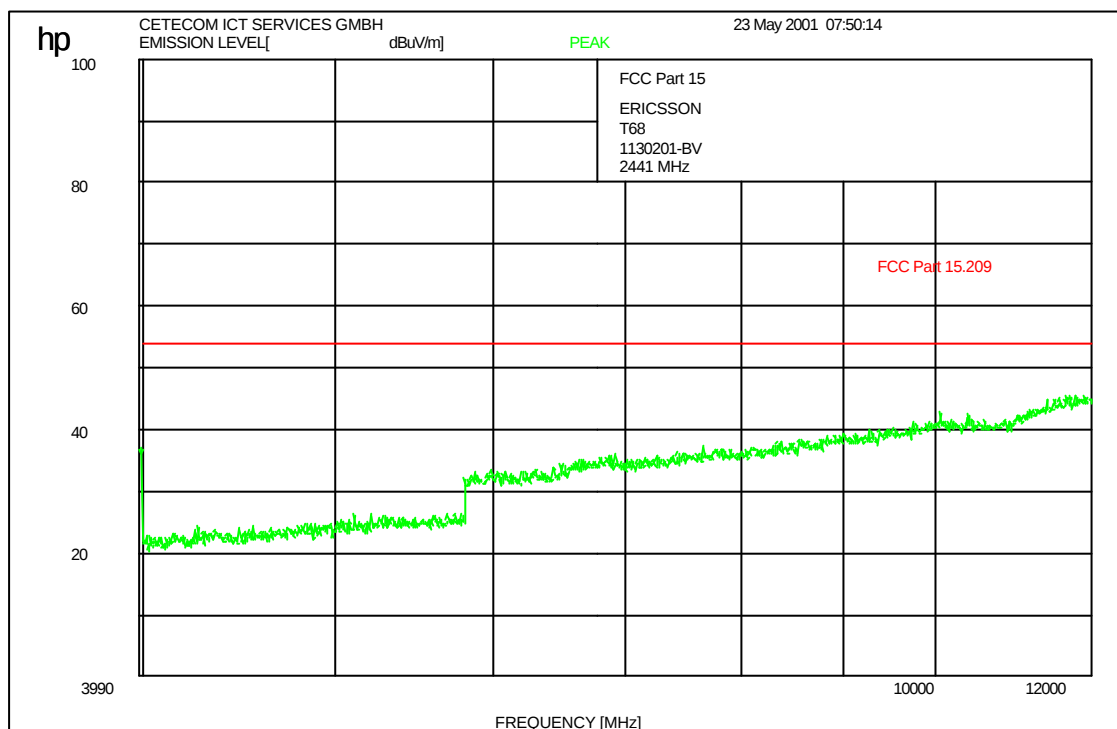
Ambient temperature : 24,5° C

Relative humidity : 31 %

EMISSION LIMITATIONS (Transmitter)

CLAUSE § 15.247 (c) (1)

Channel 2



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

$f \geq 1 \text{ GHz}$: 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)).

Equipment under test : 1130201-BV

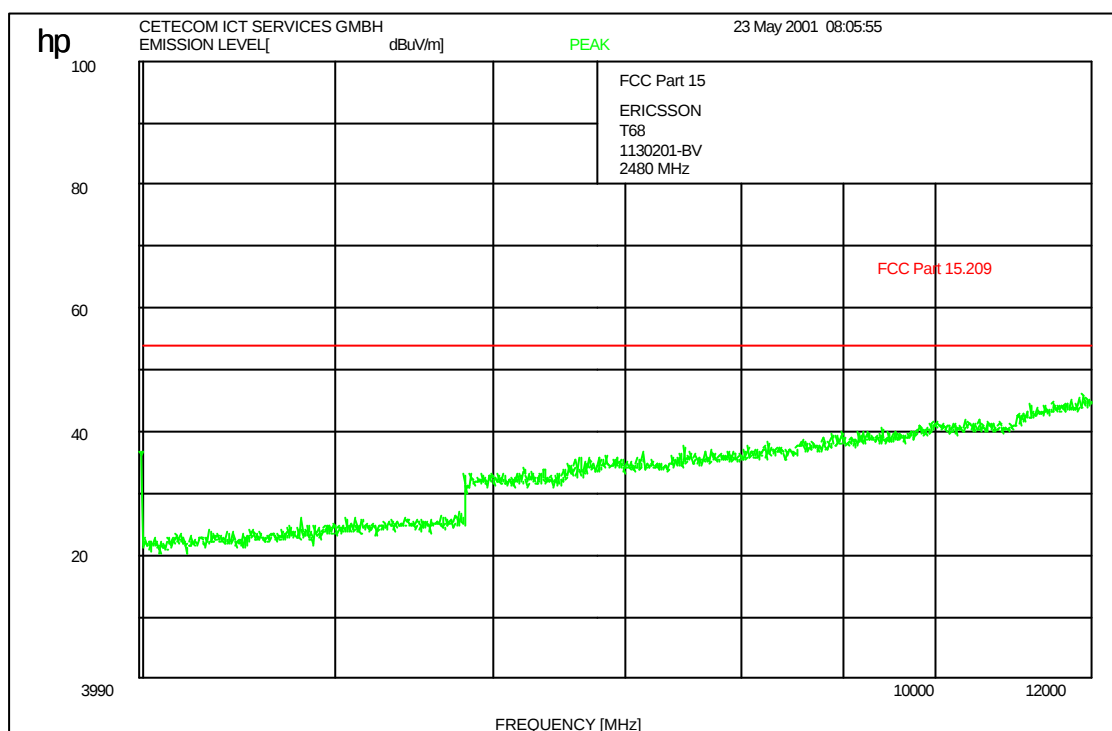
Ambient temperature : 24,5° C

Relative humidity : 31%

EMISSION LIMITATIONS (Transmitter)

CLAUSE § 15.247 (c) (1)

Channel 3



f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 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)).

Test report nr.: 2-2519-A/01

Issue Date: 21.05.01

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Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

Relative humidity : 31%

EMISSION LIMITATIONS (Transmitter)

CLAUSE § 15.247 (c) (1)

Channel 1-3 (this is valid for all 3 channels)

Peak



Marker 1 [T1]

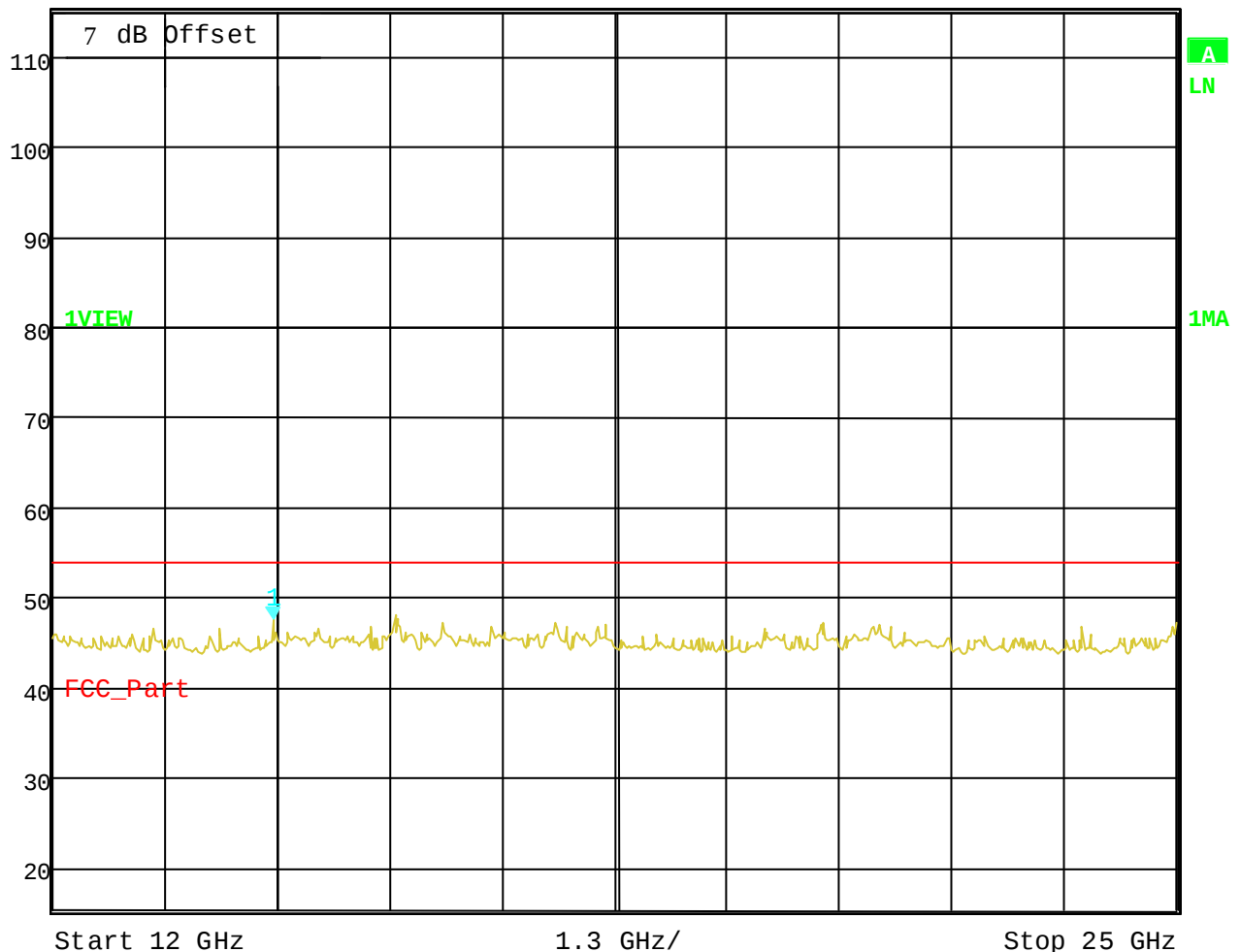
RBW 100 kHz RF Att 20 dB

Ref Lvl 47.66 dBμV

VBW 1 MHz Mixer -20 dBm

115.3 dBμV 14.55310621 GHz

SWT 3.3 s Unit dBμV



Date: 23.MAI.2001 10:44:36

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)

Equipment under test : 1130201-BV

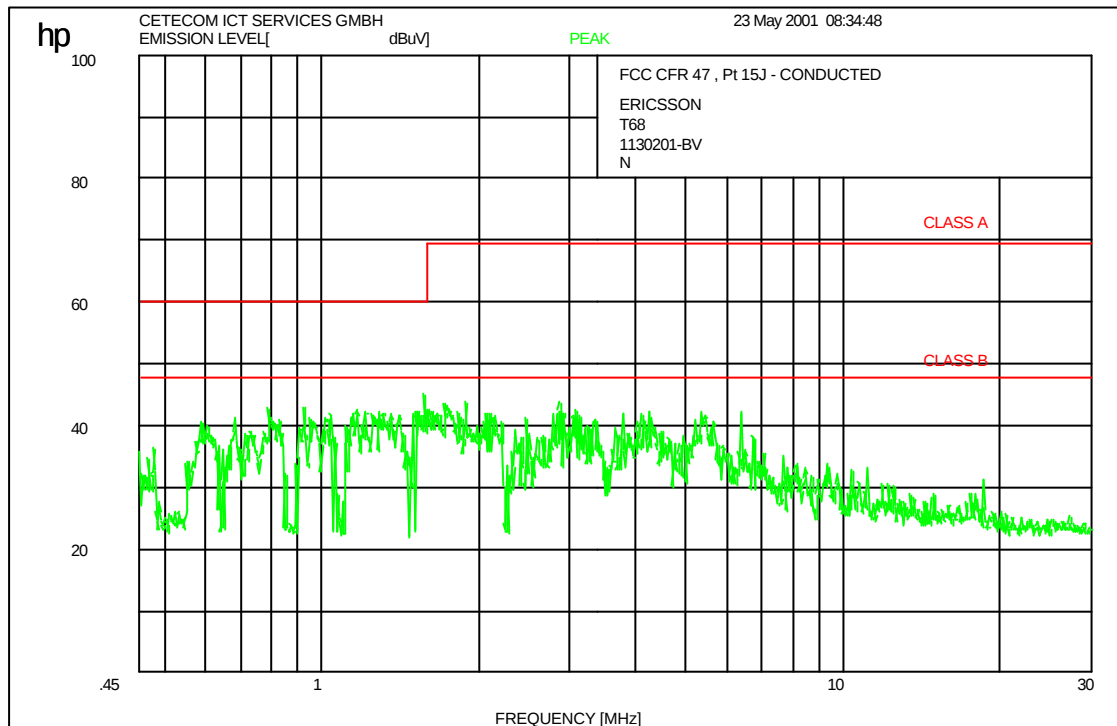
Ambient temperature : 24,5° C

Relative humidity : 31%

Conducted emissions

§ 15.107/207

Measured with AC/DC power adapter



Frequency (MHz)	Level QP (dBμV)	Limit (dBμV)	Exceeding (dB)	Phase	PE
All peaks < Limit					

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

Limit

0.45 to 30 MHz	250 μV / 47.96 dBμV
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REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

52-57 , 17 -24

Equipment under test : 1130201-BV

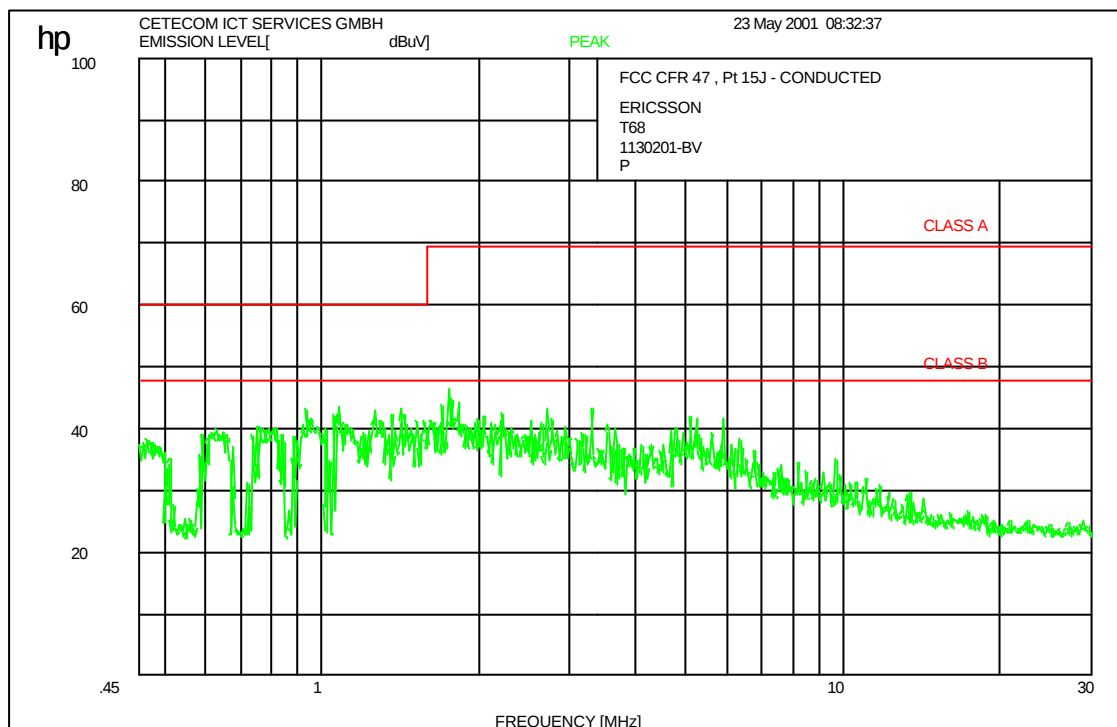
Ambient temperature : 24,5° C

Relative humidity : 31%

Conducted emissions

§ 15.107/207

Measured with AC/DC power adapter



Frequency (MHz)	Level QP (dBuV)	Limit (dBuV)	Exceeding (dB)	Phase	PE
All peaks < Limit					

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

Limit

0.45 to 30 MHz	250 µV / 47.96 dBuV
----------------	---------------------

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

52-57 , 17 -24

Relative humidity : 31%

§ 15.209

SPURIOUS EMISSIONS LEVEL ($\mu\text{V/m}$)								
2402 MHz			2442 MHz			2481 MHz		
f (MHz)	Detector	Level ($\mu\text{V/m}$)	f (MHz)	Detector	Level ($\mu\text{V/m}$)	f (MHz)	Detector	Level ($\mu\text{V/m}$)
all peaks <<limit								
Measurement uncertainty			$\pm 3 \text{ dB}$					

f³ 1GHz : RBW/VBW: 1 MHz

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

17 - 24

Equipment under test : 1130201-BV

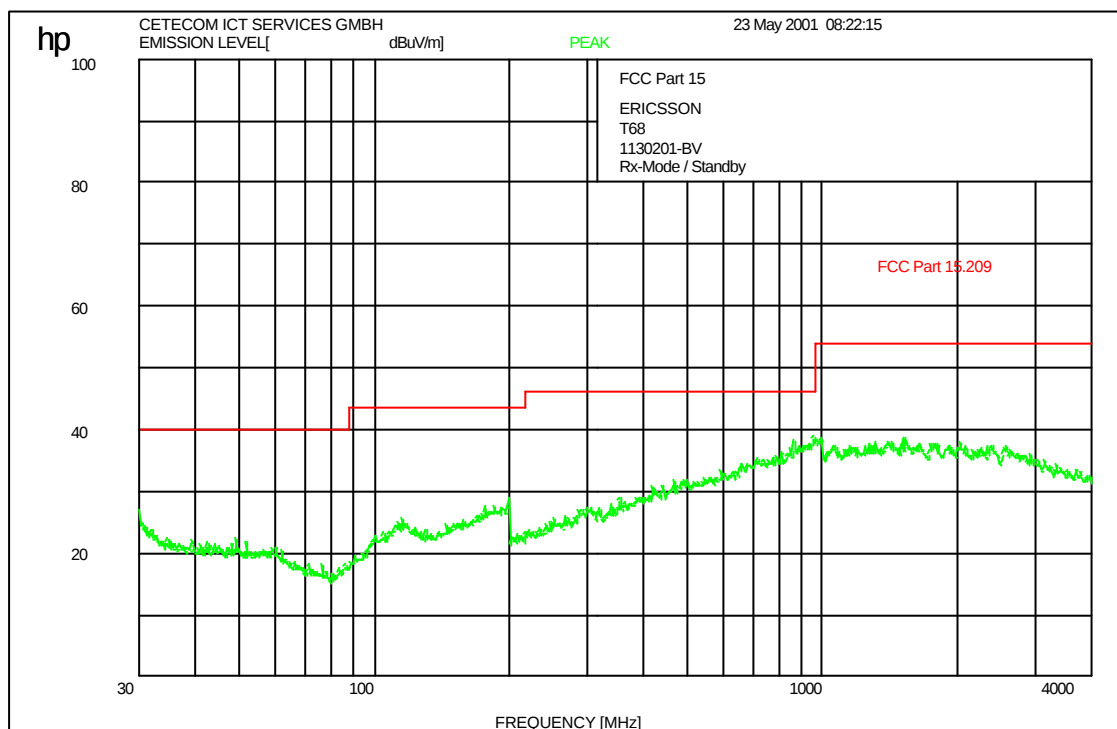
Ambient temperature : 24,5° C

Relative humidity : 31%

RECEIVER SPURIOUS RADIATION

§ 15.209

This plot is valid for all three channels



f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 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)

Equipment under test : 1130201-BV

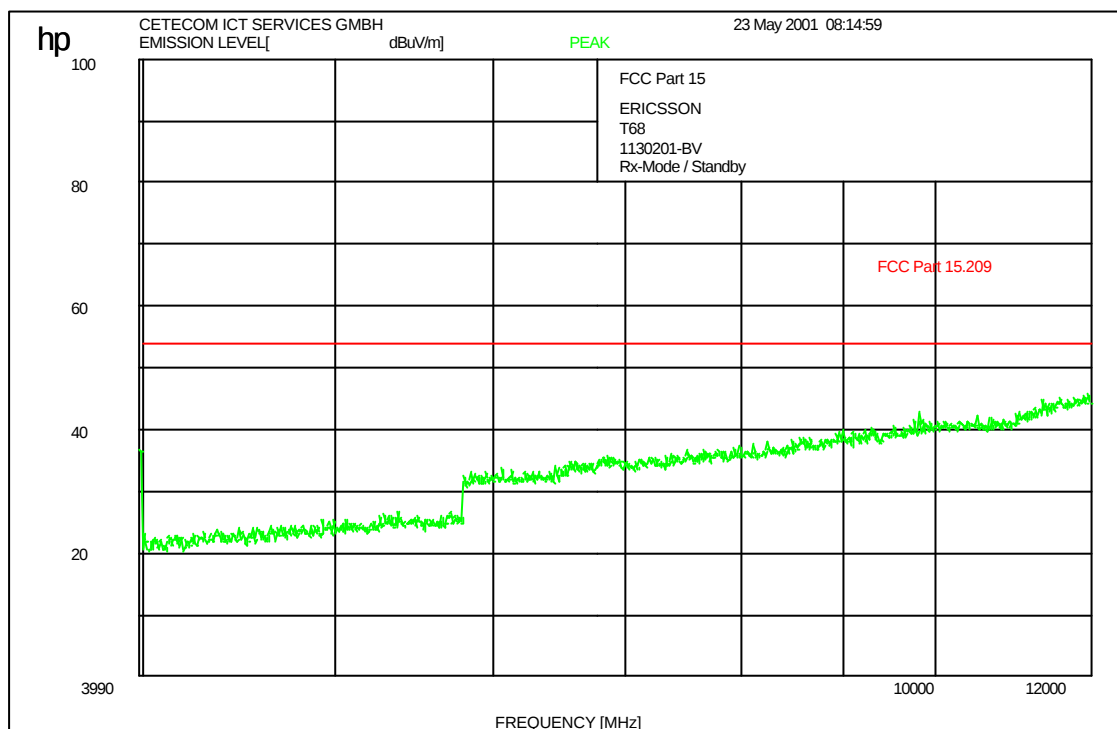
Ambient temperature : 24,5° C

Relative humidity : 31%

RECEIVER SPURIOUS RADIATION

§ 15.209

This plot is valid for all three channels



f < 1 GHz : RBW/VBW: 100 kHz

f ≥ 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)

Equipment under test : 1130201-BV

Ambient temperature : 24,5° C

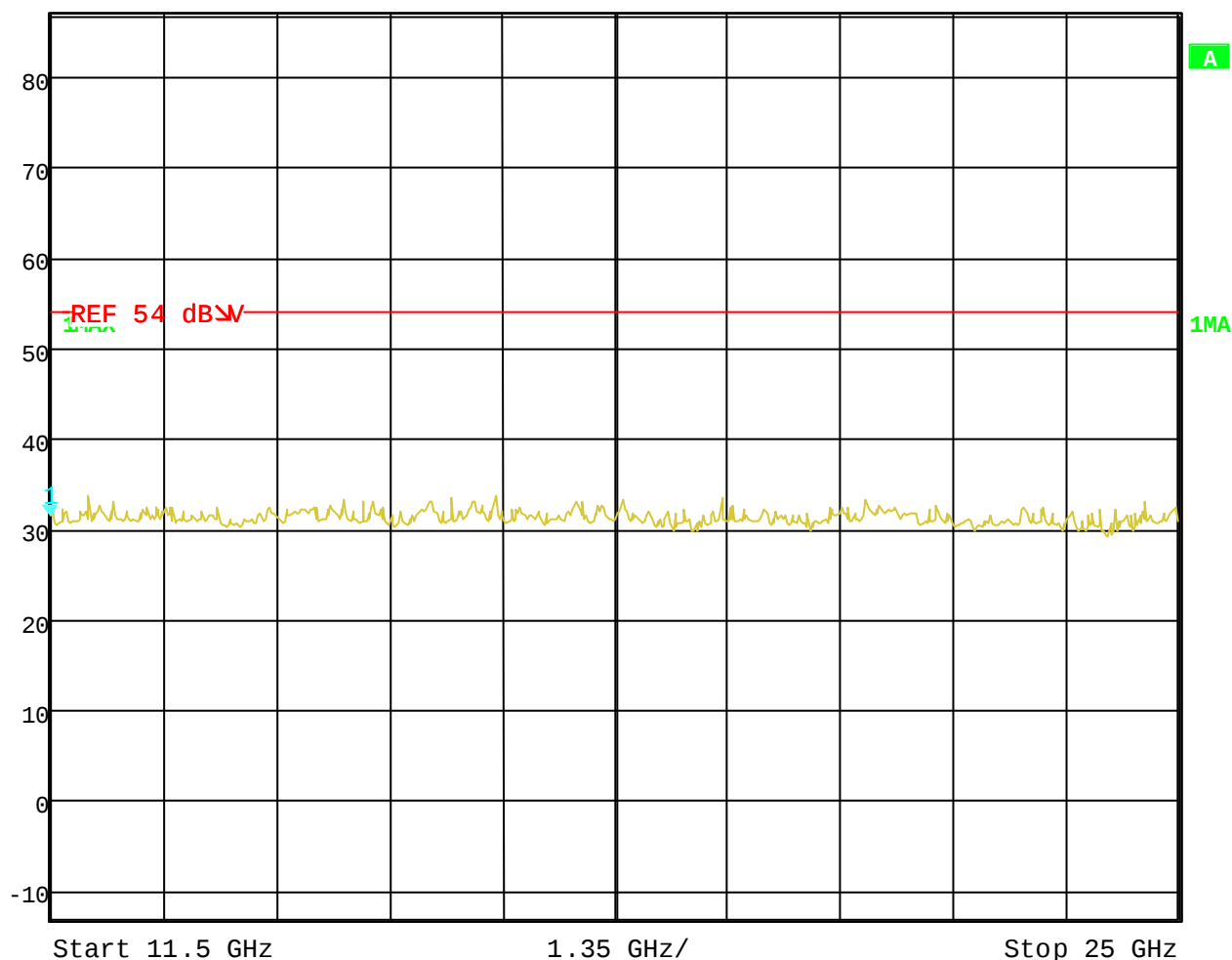
Relative humidity : 31%

RECEIVER SPURIOUS RADIATION

§ 15.209

This plot is valid for all three channels


 Ref Lvl 87 dB μ V
 RBW 1 MHz RF Att 10 dB
 VBW 1 MHz
 SWT 3.5 s Unit dB μ V



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)
above 960	500 / 54 dB μ V	3

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

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	Erft	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 Receiver	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	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	Control Computer	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				