

CETECOM ICT Services GmbH

Radio Satellite Communication

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RSC11

issue test report consist of

60 Pages

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Accredited Bluetooth Test Facility (BQTF)

TTI-P-G166/98

Test report no.: 5-4004-01-03/02
FCC Part15.247/CANADA RSS-210
BCM94301MP
FCC ID:QDSBRCM1002

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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

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

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

Accredited Bluetooth™ Test Facility (BQTF)

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CETECOM ICT Services GmbH

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Issue date:2002-07-29

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1.3 Details of applicant

Name : Broadcom Corporation
Street : 400 E Caribbean Drive
City : Sunnyvale, CA 94089
Country : USA
Telephone: +1 408 922 5810
Telefax : +1 408 543 3399
Contact : Mr. Chris McGough
Telephone: +1 408 922 5810

1.4 Application details

Date of receipt of application : 2002-05-30
Date of receipt of test item : 2002-06-04
Date of test : 2002-06-06 to 2002-06-12

1.5 Test item

Type of equipment : **Wireless LAN mini-PCI Card**
Type designation : **Model : BCM94301MP**
Manufacturer : Gemtek
Street : No.1, Jen Ai Road, Hsinchu Industrial Park
City : Hokou, Hsinchu
Country : Taiwan
Serial number : See photographs
Additional informations: :
Frequency : 2412 – 2472 MHz
Type of modulation : 22M0P7D (DSSS) Ch.Sep. : 5 MHz
Number of channels : 13
Antenna : Hirose U.FL connectors,
Antenna used for testing: FoxConn Model: FX-01L03-P1, +3 dBi
gain
Power supply : 3,3 V DC from PC
Output power cond. : 20.82 dBm / 120.78mW
Type of equipment : Class B
Temperature range : -30°C - +60°C
FCC ID

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

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2 Technical test

2.1 Summary of test results

We first used a peak power analyzer HP 8990 to determine the power offset between a real wideband meter (HP 8990) and the spectrum analyzer FSIQ 26 with 10 MHz RBW. This offset is 1.1 dB at 2472 Mhz. It is shown in the plot at page 11 and at the pages 17, 18 and 22. We used this method as the peak power analyzer has no possibility to make a plot from the screen.

The radiated measurements were performed vertical and horizontal over the whole frequency range. We start at 1 m high with vertical receiving antenna and rotate the dish continuously. During rotation we use the antenna lift system to vary the high from 1 to 4 m. So we find maximum radiation output. At this points we do manual re-measurements. After this we do the same measurements in horizontal position of the receiving antenna. This (horizontal and vertical) is made for all the three planes of the test sample. We use the maximum received results.

The detector function and selection of bandwidth are according ANSI C63.2-1996 item 8.2.1 and ANSI C63.4-1992 Item 4.2. Antennas are conform with ANSI C63.2-1996 item 15.

150 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 MHz, waveguide horn

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 DSSS systems“.

The product fulfills also the requirements for CANADA RSS-210

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 :

2002-07-29

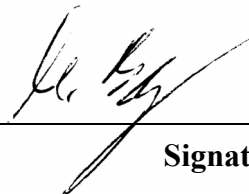
RSC 8411 Berg M.

Date

Section

Name

Signature



Technical responsibility for area of testing :

2002-07-29

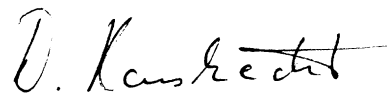
RSC8412 Hausknecht D.

Date

Section

Name

Signature



TEST REPORT

Test report no. : 5-4004-01-03/02

TEST REPORT REFERENCE

LIST OF MEASUREMENTS

Paragraph	PARAMETER TO BE MEASURED	PAGE
	Transmitter parameters	
§ 15.204	Antenna gain	7
§ 15.247 (a)(2)	Spectrum bandwidth of a DSSS System	8
§ 15.247 (b)(1)	Maximum peak output power	12
§ 15.247 (b) (4)	RF Exposure calculation	20
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Antenna Gain

SUBCLAUSE § 15.204

The antenna gain of the complete system is calculated by the difference of conducted power of the module and the radiated power in EIRP.

	low channel	mid channel	high channel
Conducted power	17.99 dBm	18.84 dBm	20.82 dBm
Radiated power	20.40 dBm	21.20 dBm	23.69 dBm
Gain	2.41 dBi	2.36 dBi	2.87 dBi

The calculated antenna gain is between 2.41 and 2.87 dB for FoxConn Model: FX-01L03-P Antenna.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

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Spectrum Bandwidth of a DSSS System

§15.247(a)

6 dB bandwidth

TEST CONDITIONS		6 dB BANDWIDTH (kHz)		
Frequency (MHz)		2412	2437	2462
T _{nom} (23.4)°C	V _{nom} (3.3)V	10220.4	10.220.4	11523.0
Measurement uncertainty		±1kHz		

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

LIMIT

SUBCLAUSE §15.247(a) (2)

The minimum 6dB bandwidth shall be at least 500 KHz

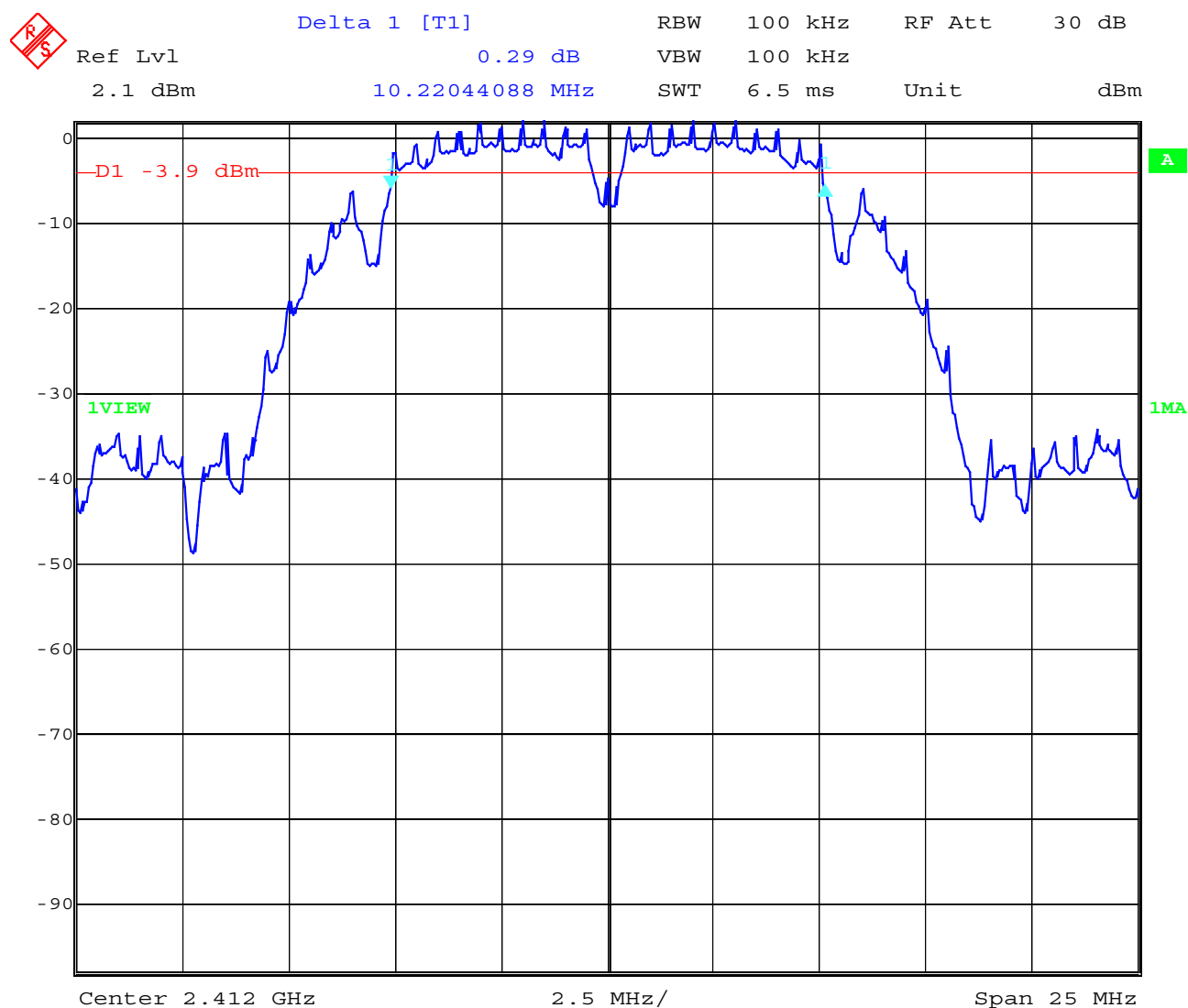
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)

Spectrum Bandwidth of a DSSS System

§15.247(a)

6 dB bandwidth

Channel 1




Date: 7.JUN.2002 10:58:11

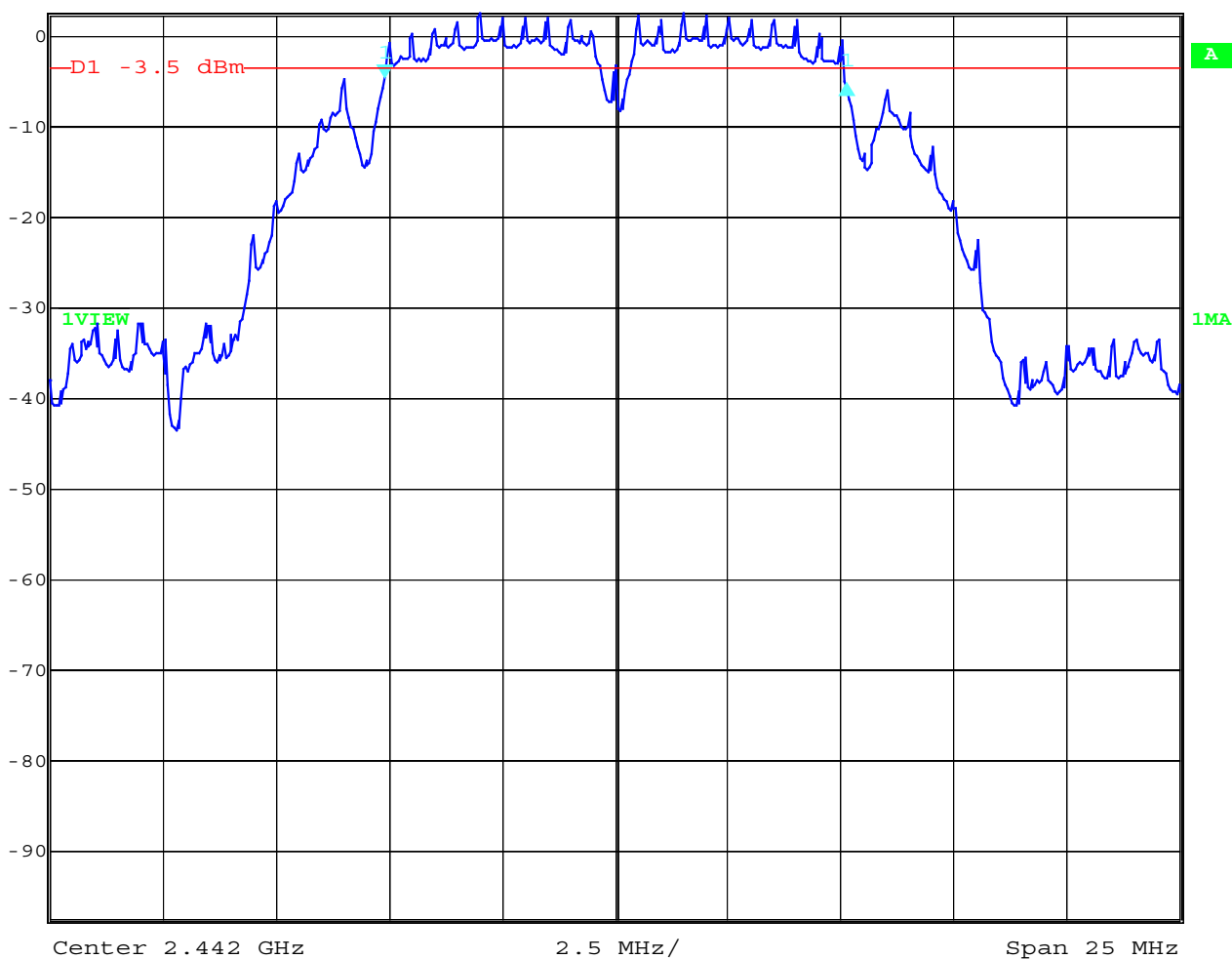
Spectrum Bandwidth of a DSSS System

§15.247(a)

6 dB bandwidth

Channel 7

	Delta 1 [T1]	RBW	100 kHz	RF Att	40 dB
Ref Lvl	-0.90 dB	VBW	100 kHz		
2.5 dBm	10.22044088 MHz	SWT	6.5 ms	Unit	dBm



Date: 7.JUN.2002 09:27:14

Spectrum Bandwidth of a DSSS System

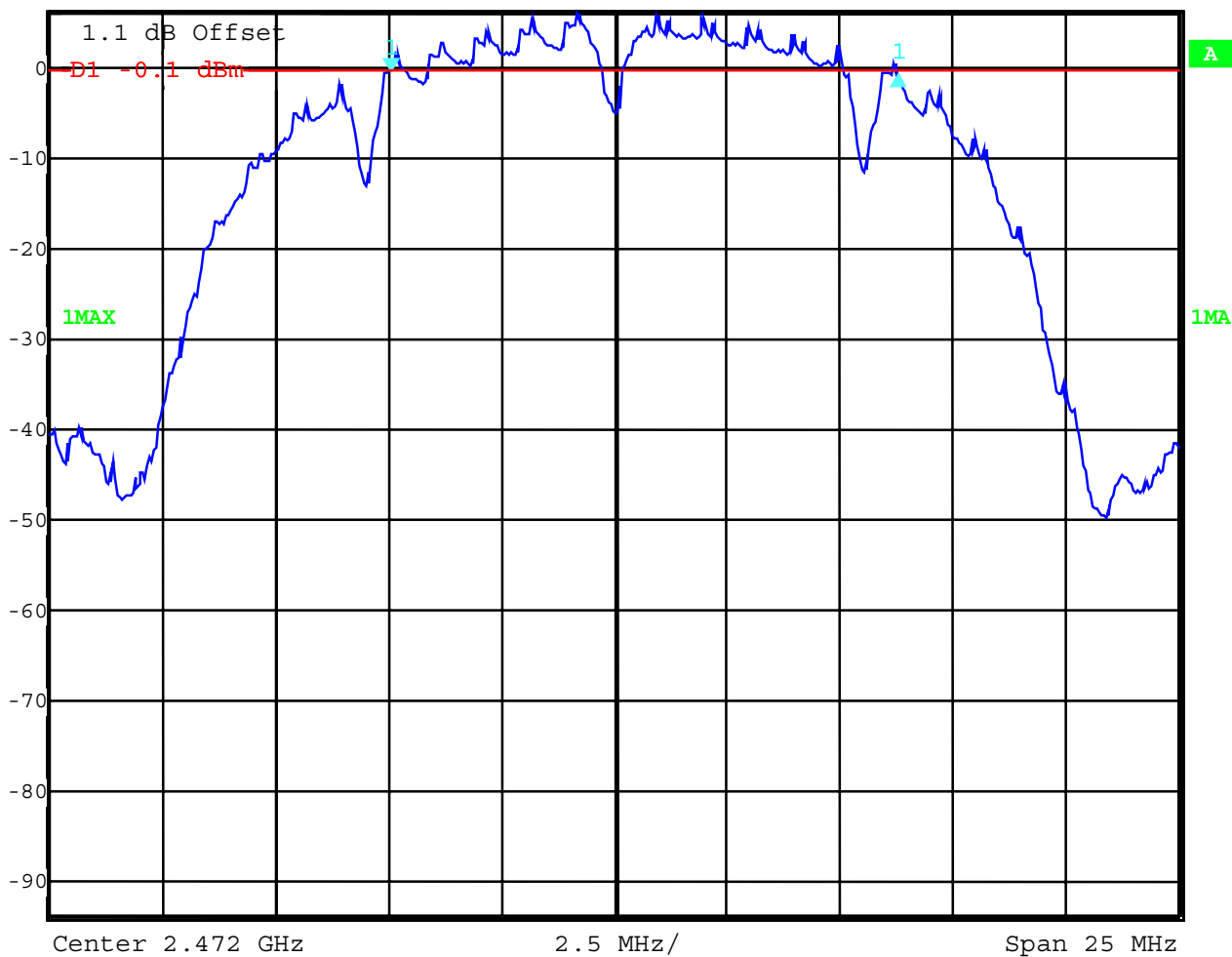
§15.247(a)

6 dB bandwidth

Channel 13:



Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
Ref Lvl	-0.61 dB	VBW	100 kHz	
6.3 dBm	11.52344489 MHz	SWT	6.5 ms	Unit dBm



Date: 12.JUN.2002 09:25:37

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MAXIMUM PEAK OUTPUT POWER (CONDUCTED)

SUBCLAUSE § 15.247 (b) (1)

We used first a peak power analyzer HP 8990 to determine the power offset between a real wideband meter (HP 8990) and the spectrum analyzer FSIQ 26 with 10 MHz RBW. This offset is 1.1 dB at 2472 MHz.

It is shown in the plot at page 11 and pages 17, 18 and 22.

We used this method as the peak power analyzer has no possibility to make a plot from the screen.

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER (W)		
		2412	2442	2472
Frequency (MHz)				
T _{nom} (23.4)°C	V _{nom} (3.3)V	Peak :0.063 AV : 0.010	Peak :0.077 AV : 0.011	Peak :0.121 AV : 0.025
Maximum deviation from output power under extreme test conditions (dBc)		0.5	0.5	0.5
Measurement uncertainty		±0.5dB		

RBW/VBW : 10 MHz

LIMIT

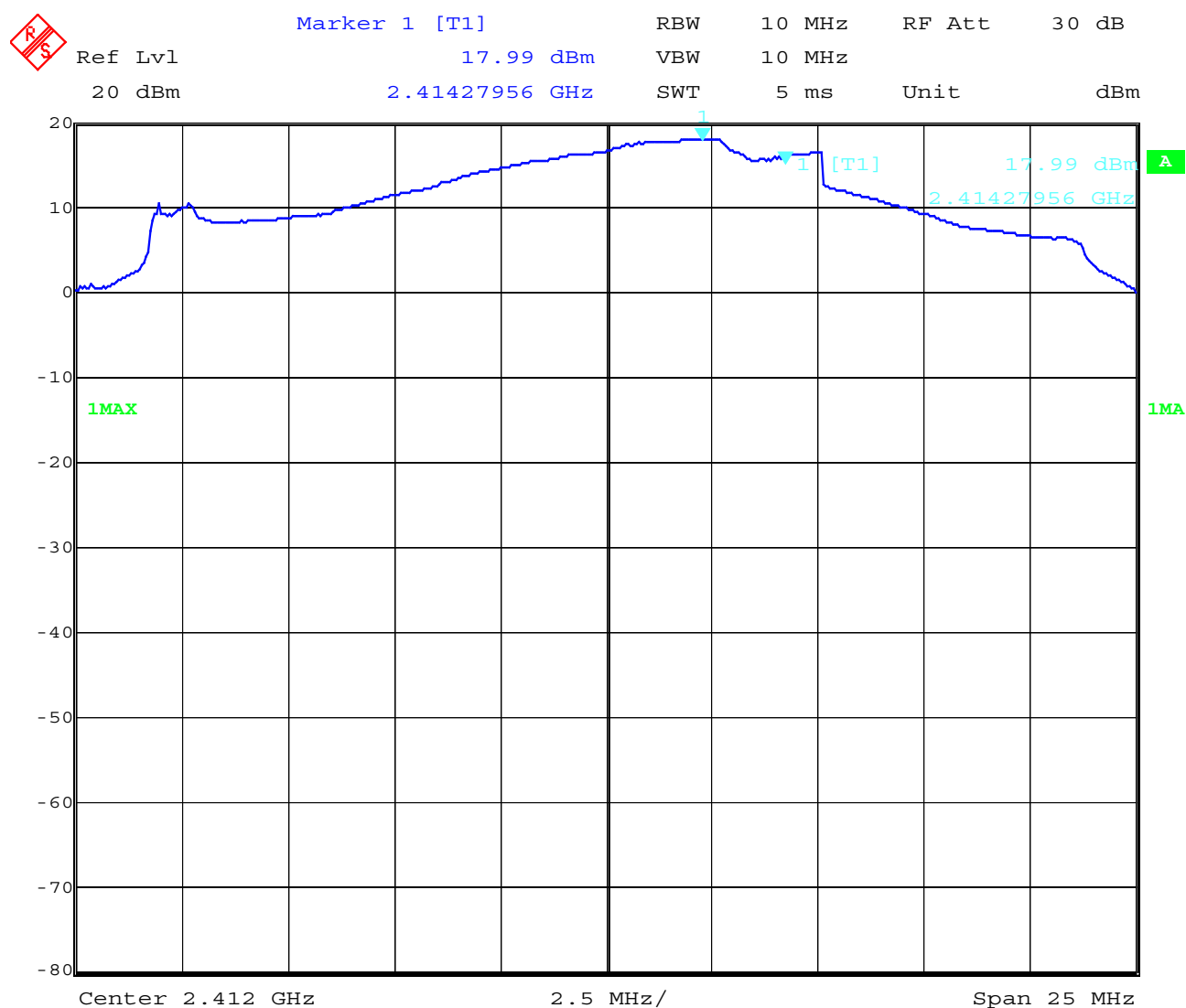
SUBCLAUSE § 15.247 (b) (1)

Frequency range	RF power output
2400-2483.5 MHz	1.0 Watt/ 30dBm

MAXIMUM PEAK OUTPUT POWER (CONDUCTED)

SUBCLAUSE § 15.247 (b) (1)

low channel peak

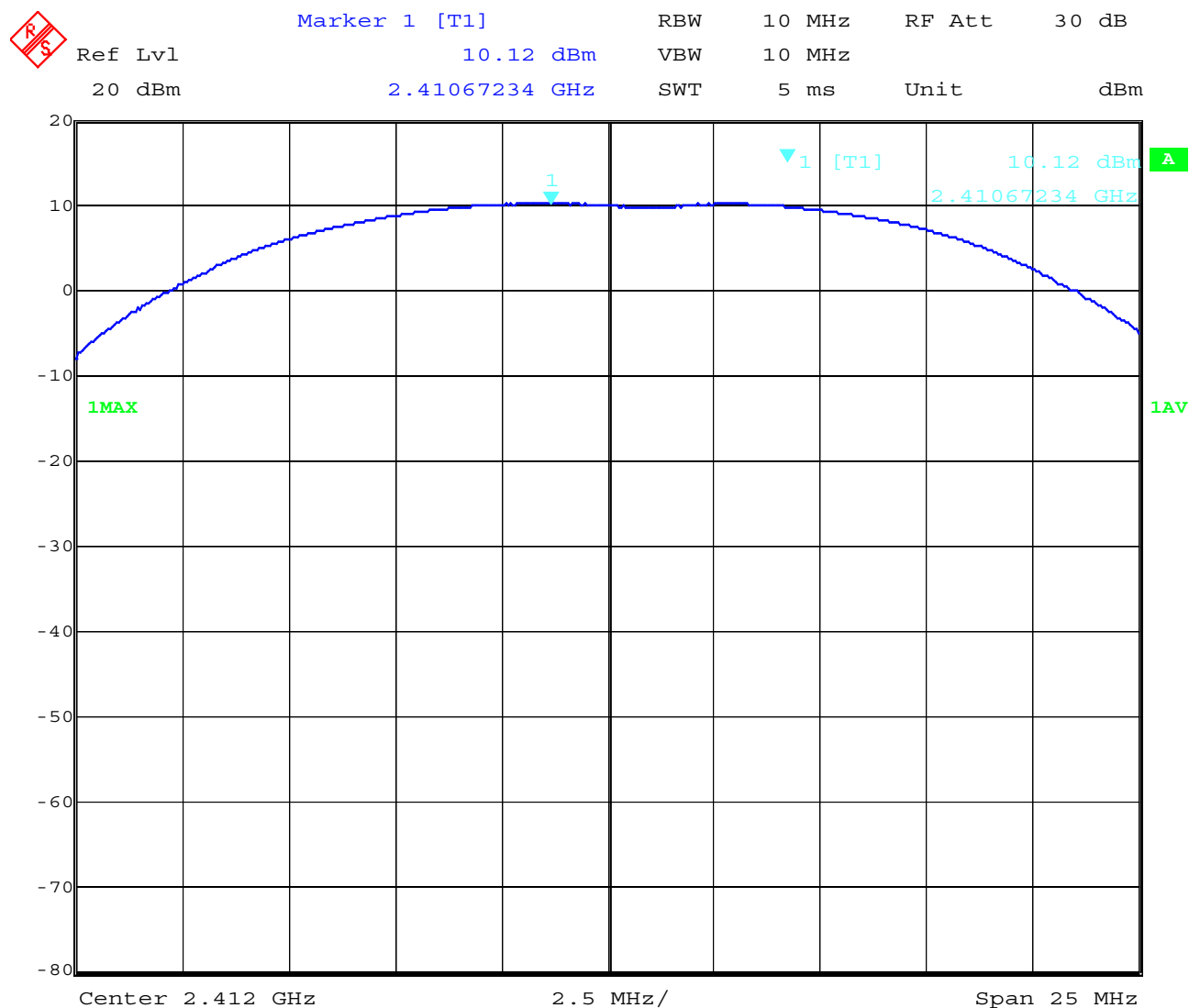


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MAXIMUM PEAK OUTPUT POWER (CONDUCTED)

SUBCLAUSE § 15.247 (b) (1)

low channel average

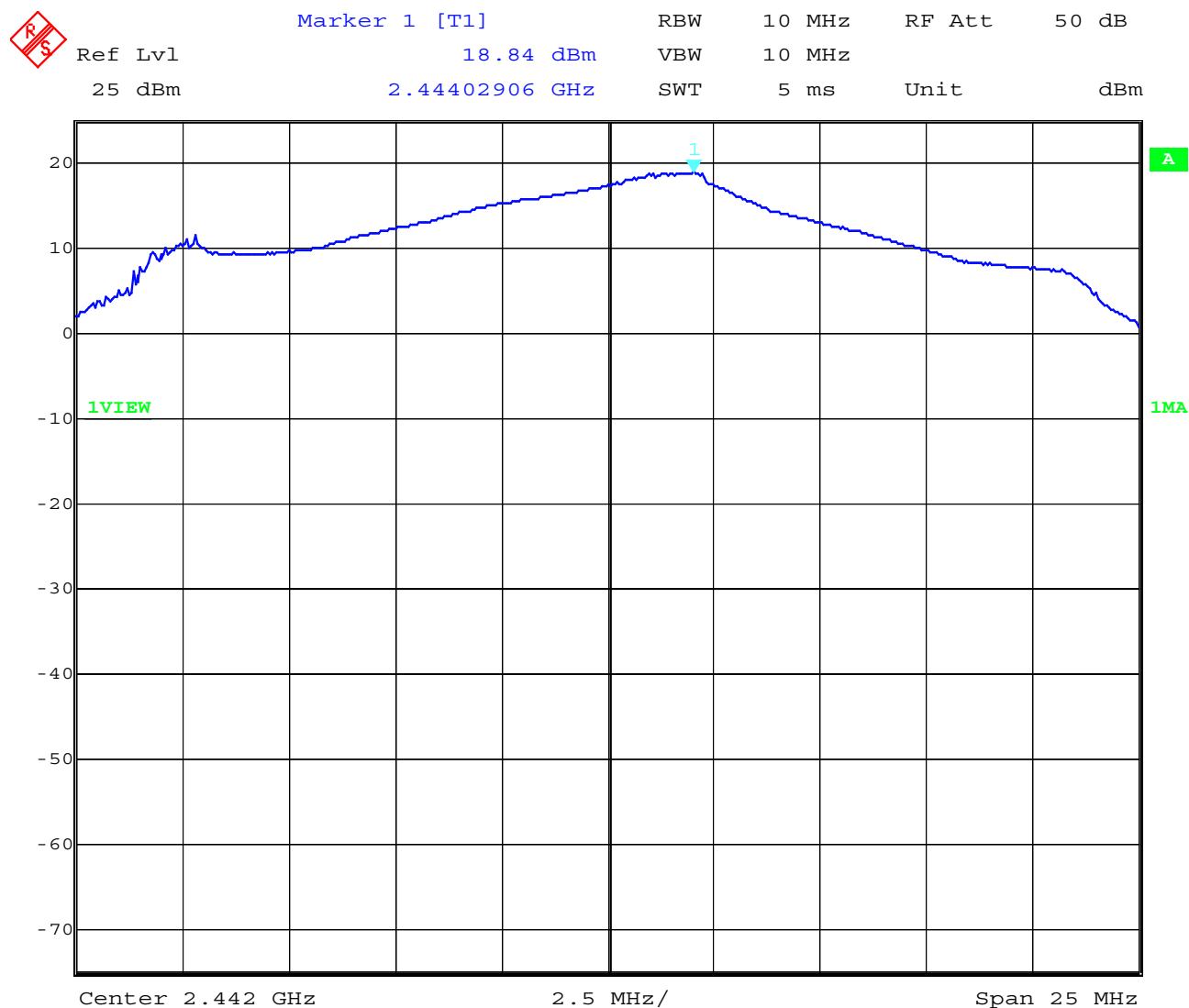


Date: 7.JUN.2002 10:54:15

MAXIMUM PEAK OUTPUT POWER (CONDUCTED)

SUBCLAUSE § 15.247 (b) (1)

mid channel peak



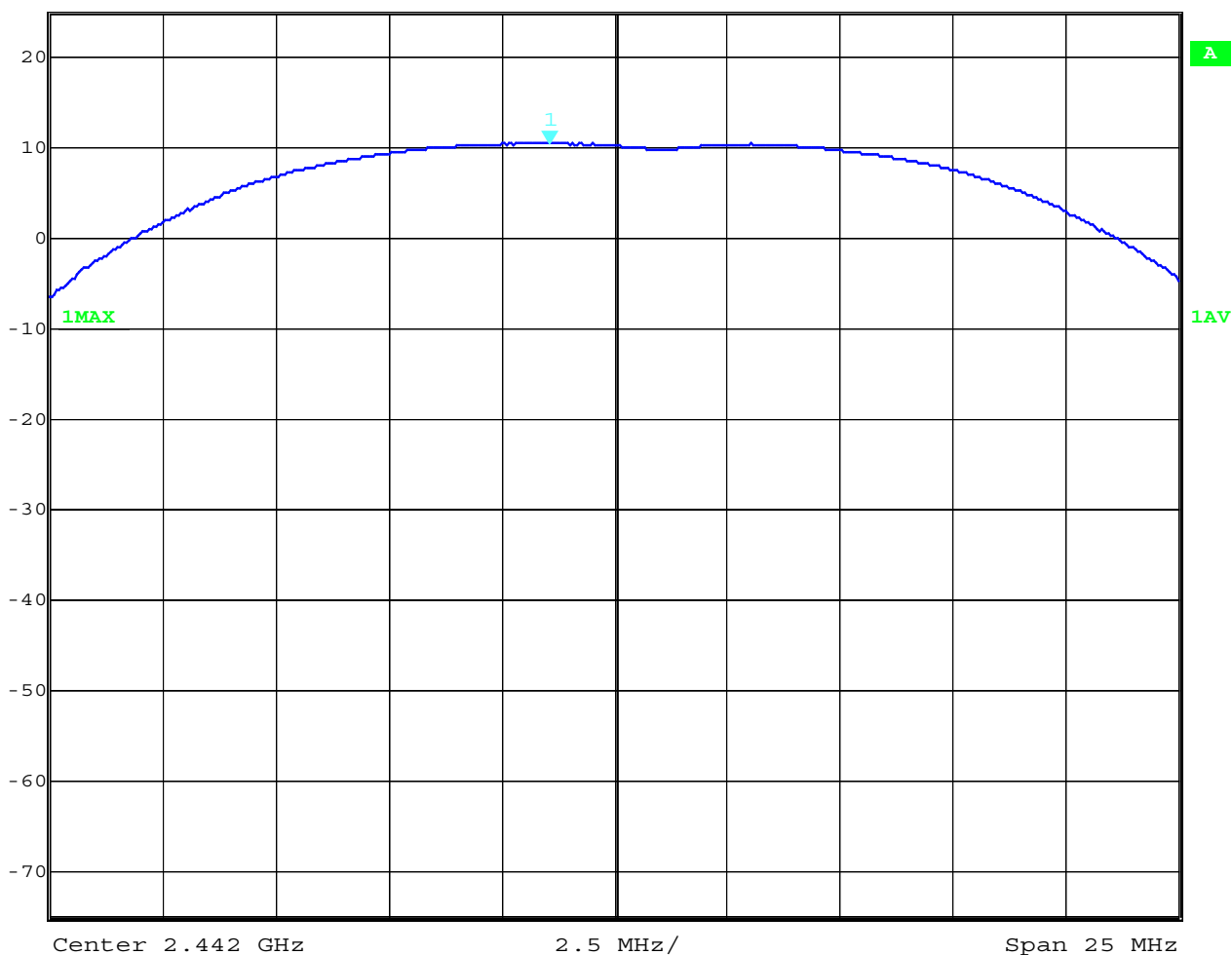
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MAXIMUM PEAK OUTPUT POWER (CONDUCTED)

SUBCLAUSE § 15.247 (b) (1)

mid channel average

	Ref Lvl	Marker 1 [T1]	RBW	10 MHz	RF Att	50 dB
	25 dBm	10.36 dBm	VBW	10 MHz		
		2.44057214 GHz	SWT	5 ms	Unit	dBm

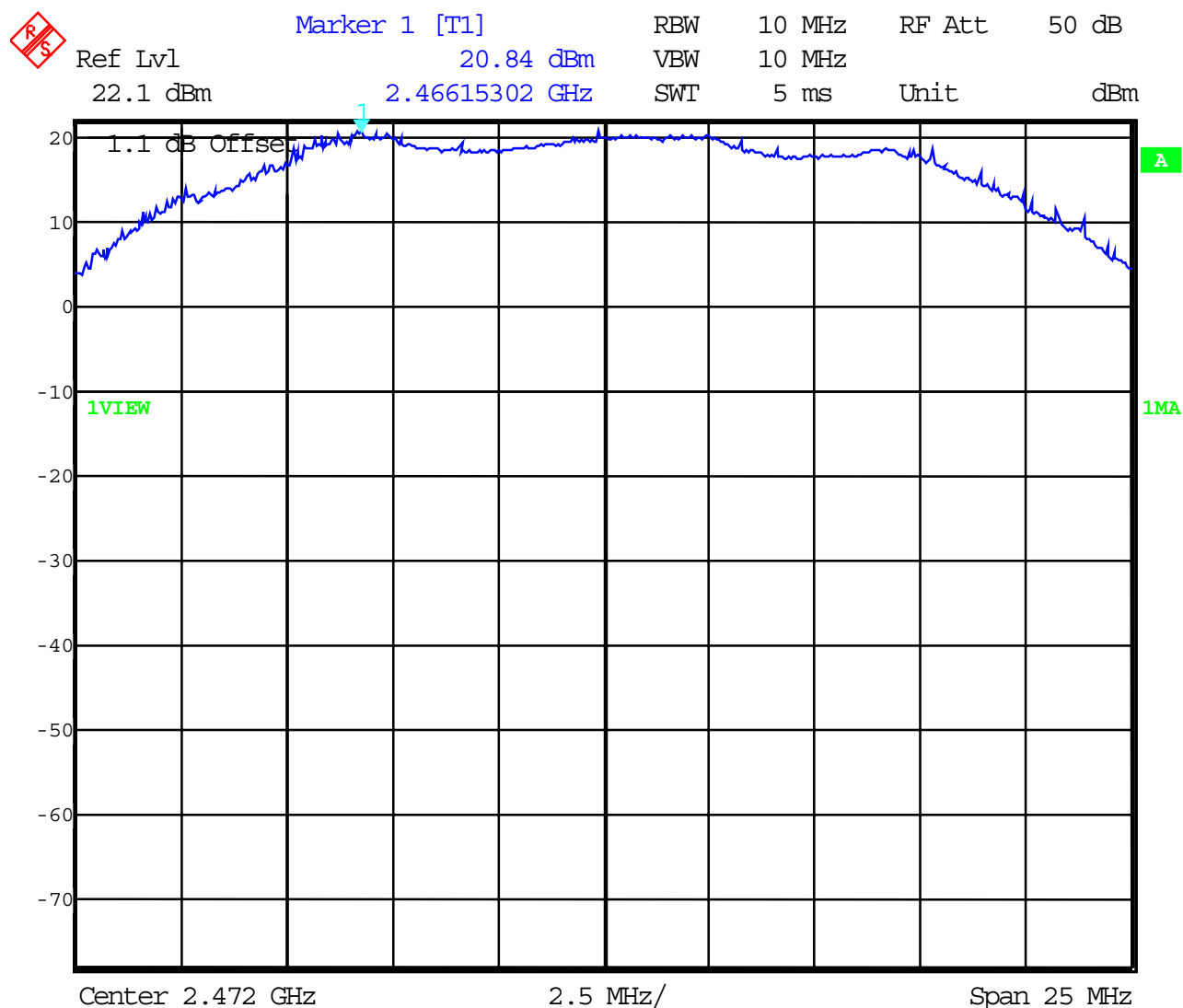


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MAXIMUM PEAK OUTPUT POWER (CONDUCTED)

SUBCLAUSE § 15.247 (b) (1)

high channel peak

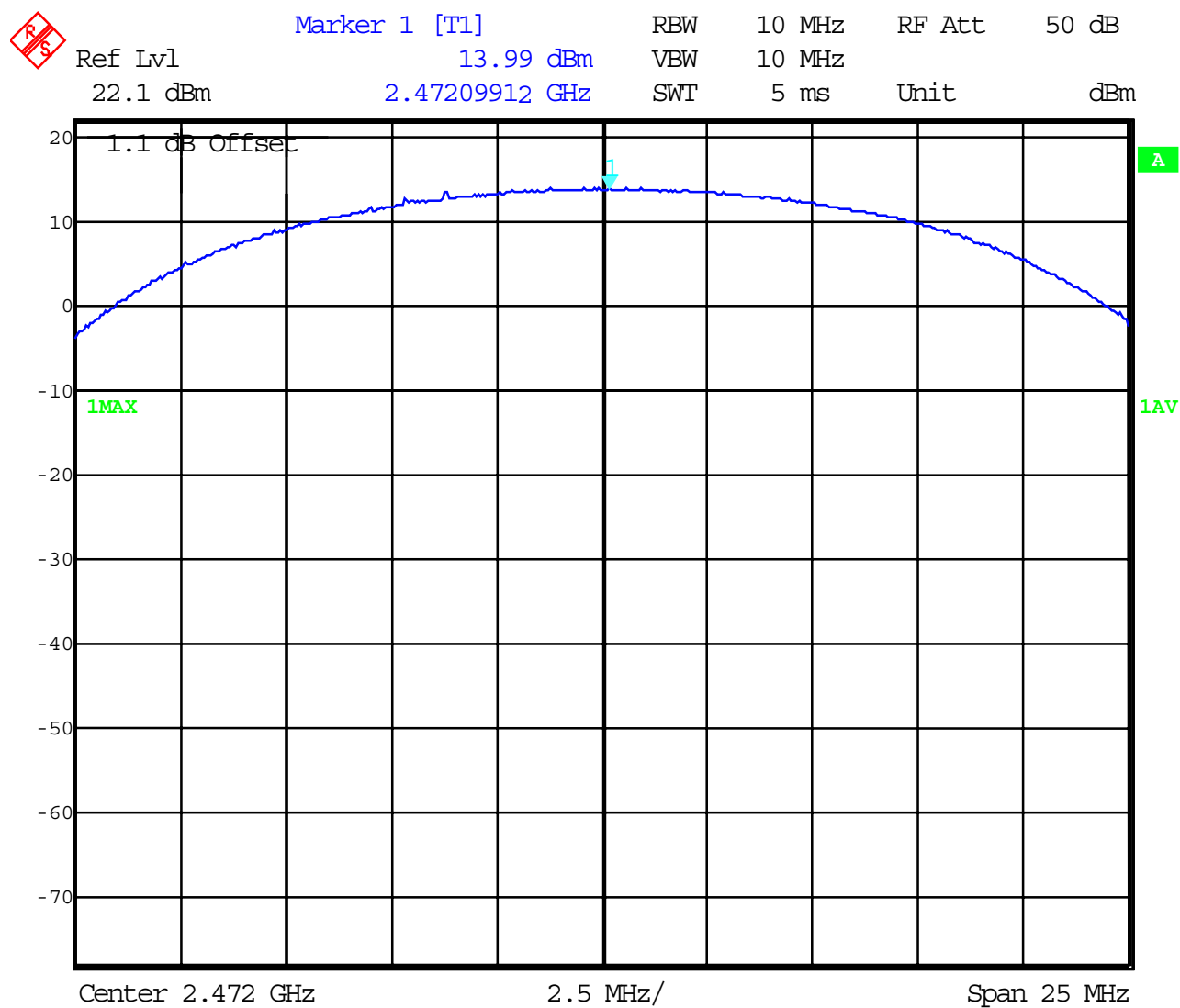


Date: 11.JUN.2002 14:20:01

MAXIMUM PEAK OUTPUT POWER (CONDUCTED)

SUBCLAUSE § 15.247 (b) (1)

high channel average



Date: 11.JUN.2002 14:22:10

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MAXIMUM PEAK OUTPUT POWER (EIRP)

SUBCLAUSE § 15.247 (b) (1)

TEST CONDITIONS		MAXIMUM PEAK OUTPUT POWER EIRP (mW)		
		2412	2437	2462
T_{nom} (23.4)°C	V_{nom} (3.3)V	20.40 dBm 109.65 mW	21.20 dBm 131.83 mW	23.69 dBm 233.88 mW
Maximum deviation from output power under extreme test conditions (dBc)		-	-	-
Measurement uncertainty		±3dB		

RBW/VBW : 10 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

RF EXPOSURE CALCULATION

SUBCLAUSE § 15.247 (B) (4)

The maximal power density at 20cm distance is calculated as: $P_d = (P_{out} * G)/(4\pi * r^2)$

$$233.88 \text{ mW} / 4\pi 400\text{cm}^2 = 0.04653\text{mW}/\text{cm}^2$$

Limit

The Limit for general population/uncontrolled exposures according §1.1307(b) is $1\text{mW}/\text{cm}^2$

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

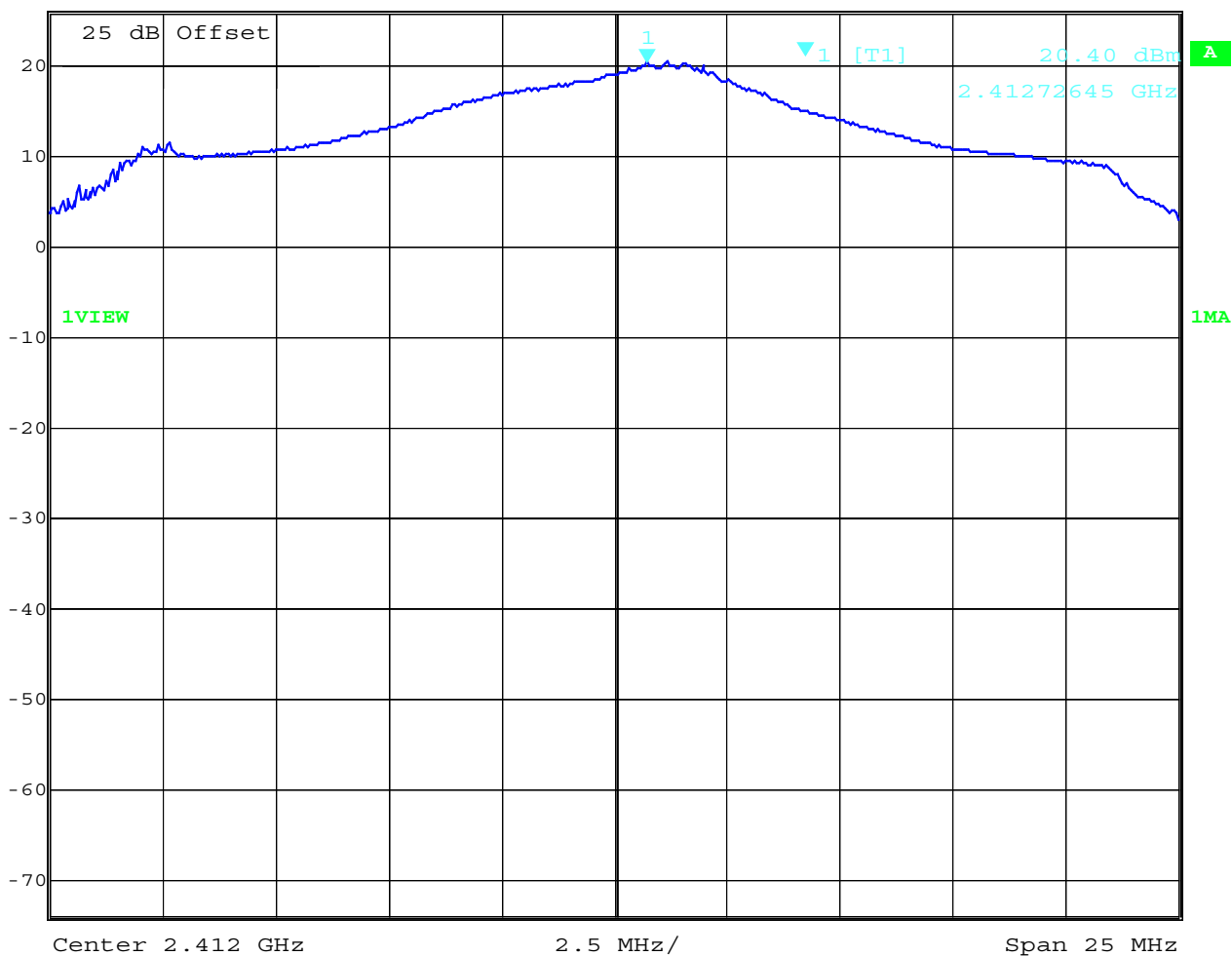
MAXIMUM PEAK OUTPUT POWER (RADIATED)

SUBCLAUSE § 15.247 (b) (1)

2412 MHz



Marker 1 [T1] RBW 10 MHz RF Att 30 dB
Ref Lvl 20.40 dBm VBW 10 MHz
26 dBm 2.41272645 GHz SWT 5 ms Unit dBm



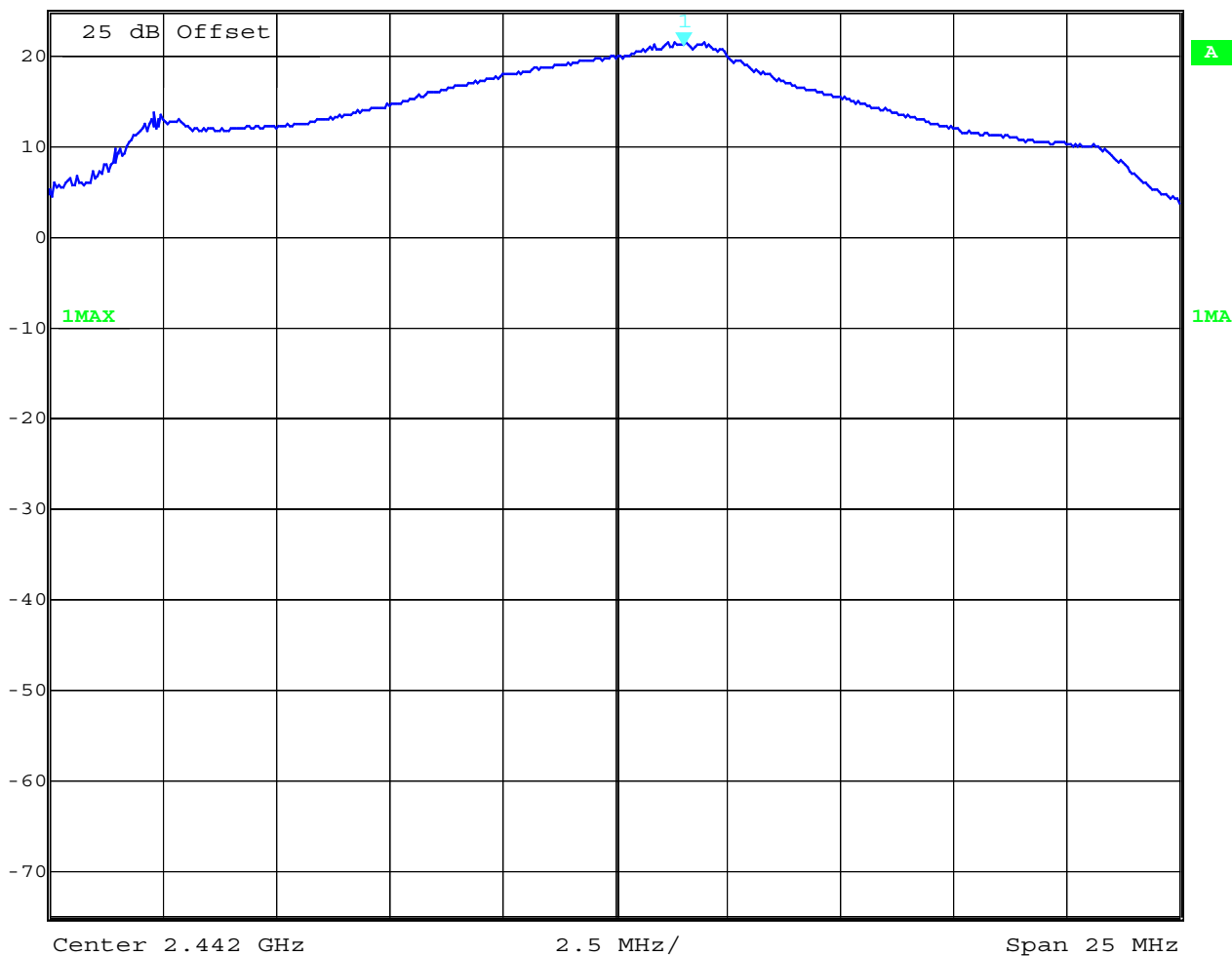
Date: 7.JUN.2002 08:25:35

MAXIMUM PEAK OUTPUT POWER (RADIATED)

SUBCLAUSE § 15.247 (b) (1)

2442 MHz

	Marker 1 [T1]	RBW	10 MHz	RF Att	30 dB
	Ref Lvl	21.20 dBm	VBW	10 MHz	
	25 dBm	2.44352806 GHz	SWT	5 ms	Unit



Date: 7.JUN.2002 08:56:55

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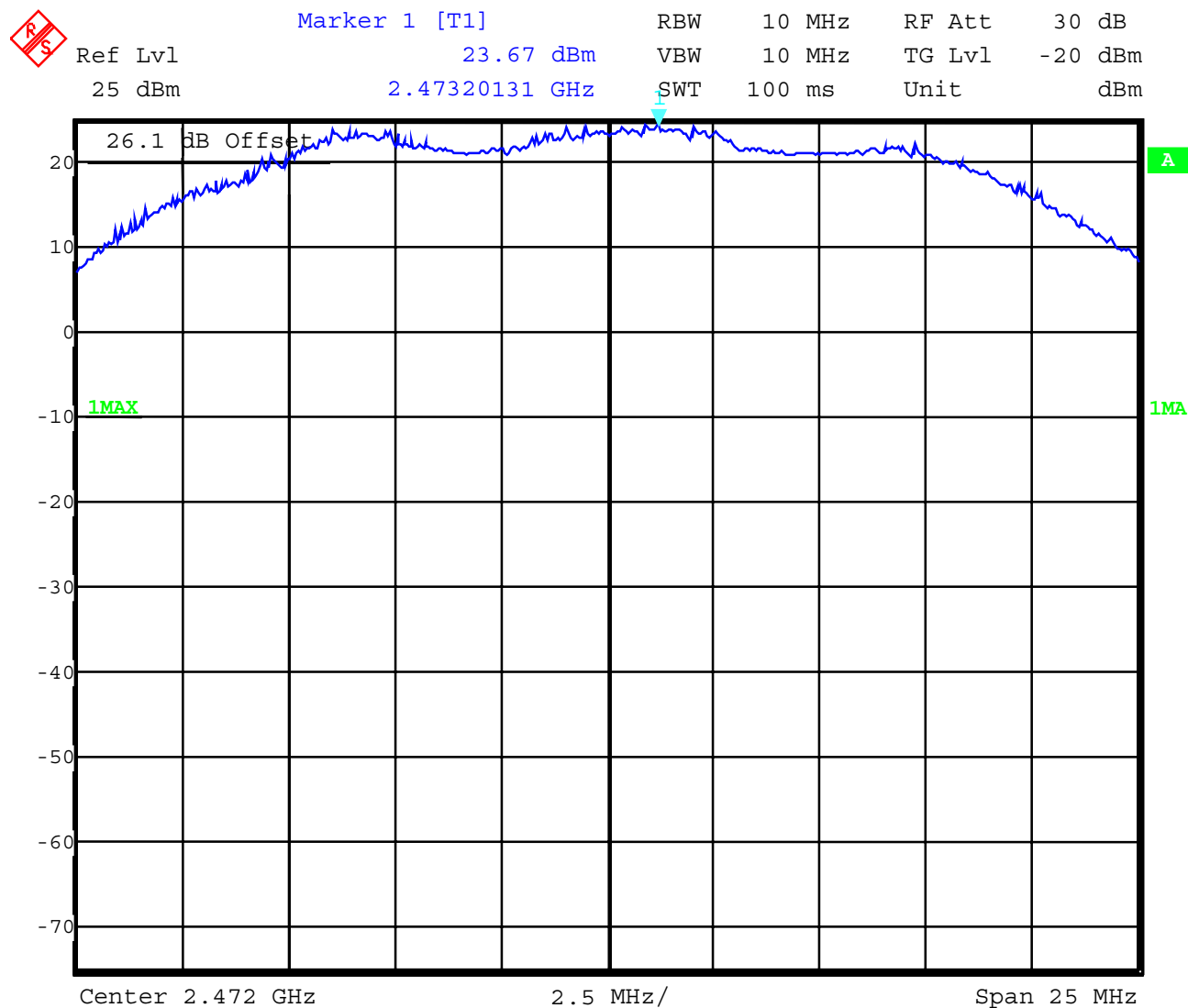
Issue date:2002-07-29

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MAXIMUM PEAK OUTPUT POWER (RADIATED)

SUBCLAUSE § 15.247 (b) (1)

2472 MHz



Date: 11.JUN.2002 13:48:21

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Power spectral density

§15.247 (d)

TEST CONDITIONS		RF POWER LEVEL IN 3 kHz BW		
		2412	2437	2462
Frequency (MHz)				
T _{nom} (23.4)°C	V _{nom} (3.3)V	-20.81 dBm	-20.54 dBm	-8.93 dBm
Measurement uncertainty		±3dB		

The measurement was performed with the power density funktion of the analyzer.
The readout is related to 1 Hz BW. For 3 kHz BW we have to add 34.8 dB.

LIMIT

SUBCLAUSE §15.247(d)

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band

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

POWER SPECTRAL DENSITY 2412 MHz

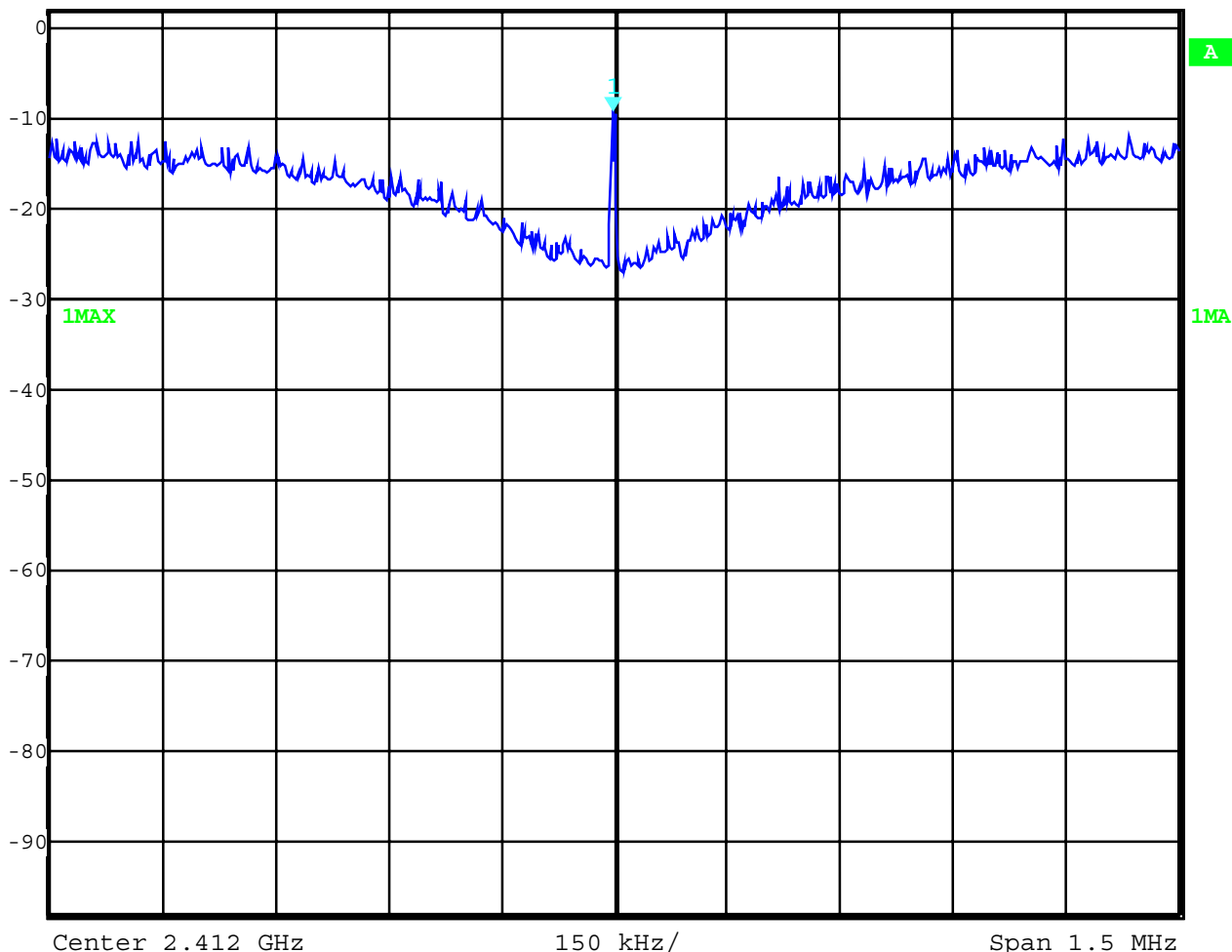
SUBCLAUSE § 15.247 (d)



Ref Lvl
2.1 dBm

Marker 1 [T1 NOI]
-55.49 dBm/Hz
2.41199850 GHz

RBW 3 kHz RF Att 30 dB
VBW 3 kHz
SWT 500 s Unit dBm



Date: 7.JUN.2002 11:04:20

LIMIT

SUBCLAUSE §15.247(d)

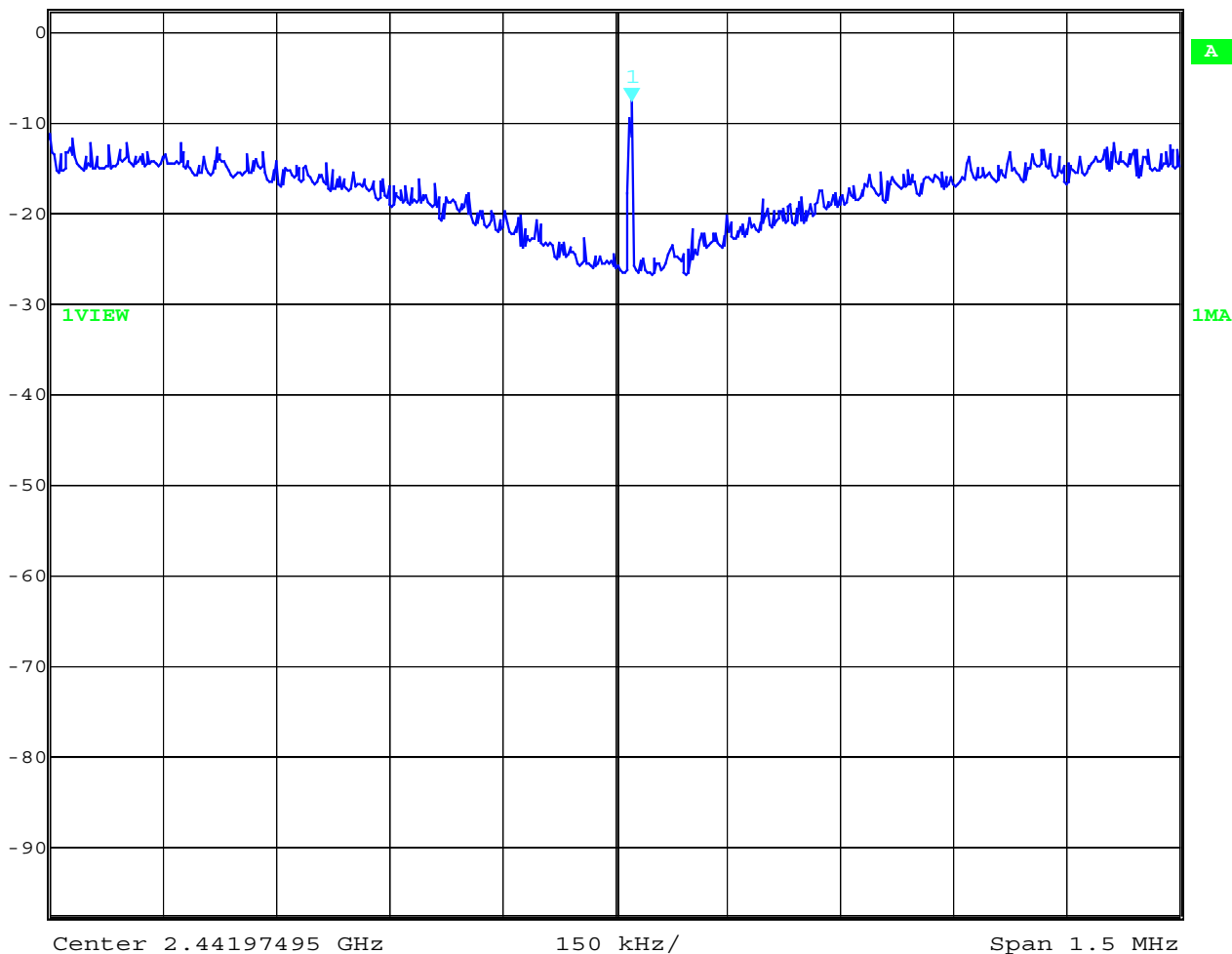
The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band

POWER SPECTRAL DENSITY 2442 MHz

SUBCLAUSE § 15.247 (d)



Ref Lvl	Marker 1 [T1 NOI]	RBW	3 kHz	RF Att	40 dB
2.5 dBm	-55.34 dBm/Hz	VBW	3 kHz		
	2.44199749 GHz	SWT	500 s	Unit	dBm



Date: 7.JUN.2002 09:30:58

LIMIT

SUBCLAUSE §15.247(d)

The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band

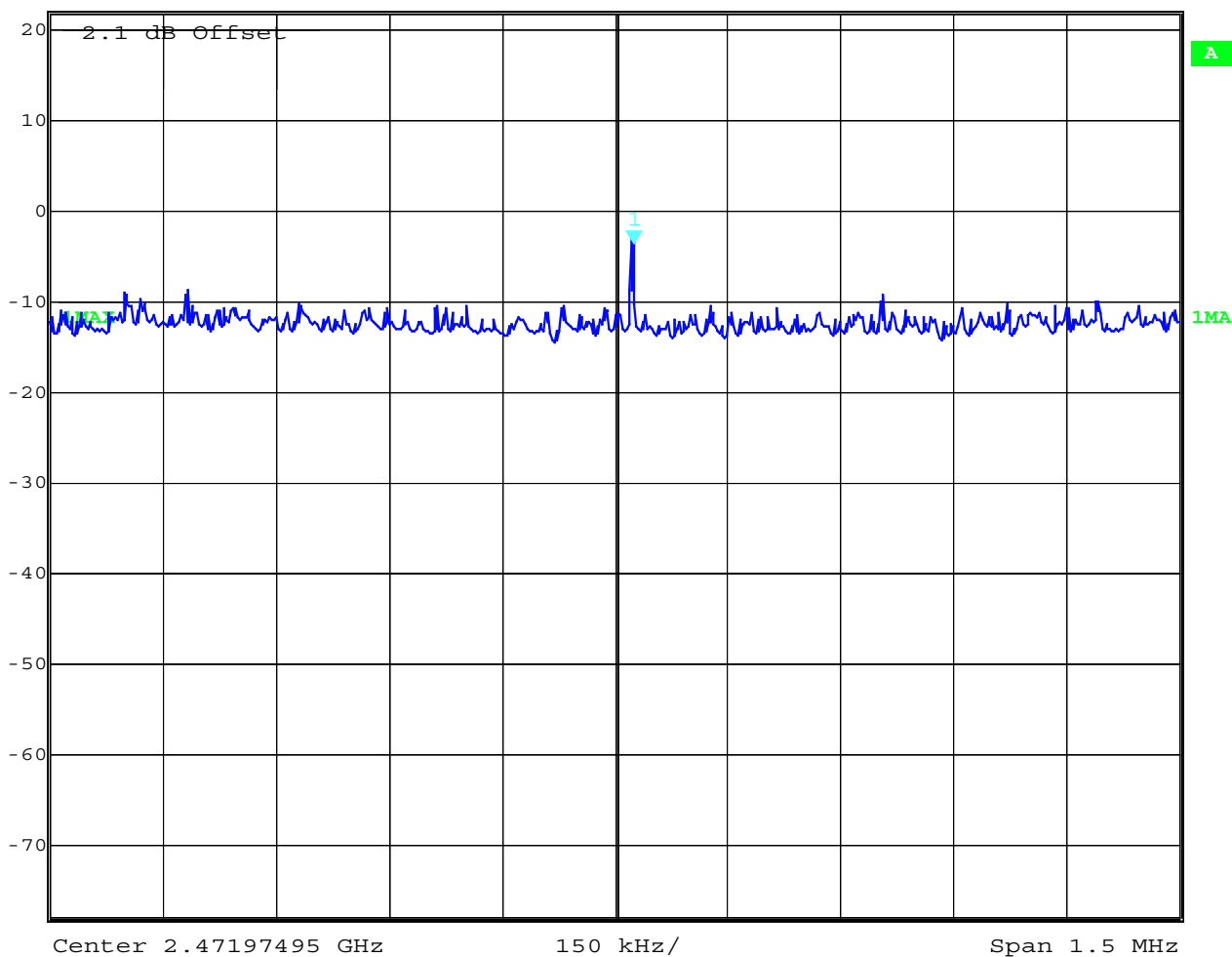
POWER SPECTRAL DENSITY

SUBCLAUSE § 15.247 (d)

2472 MHz



Ref Lvl	Marker 1 [T1 NOI]	RBW	3 kHz	RF Att	50 dB
22.1 dBm	-43.73 dBm/Hz	VBW	3 kHz		
	2.47200050 GHz	SWT	500 s	Unit	dBm



Date: 11.JUN.2002 14:22:06

LIMIT


SUBCLAUSE §15.247(d)

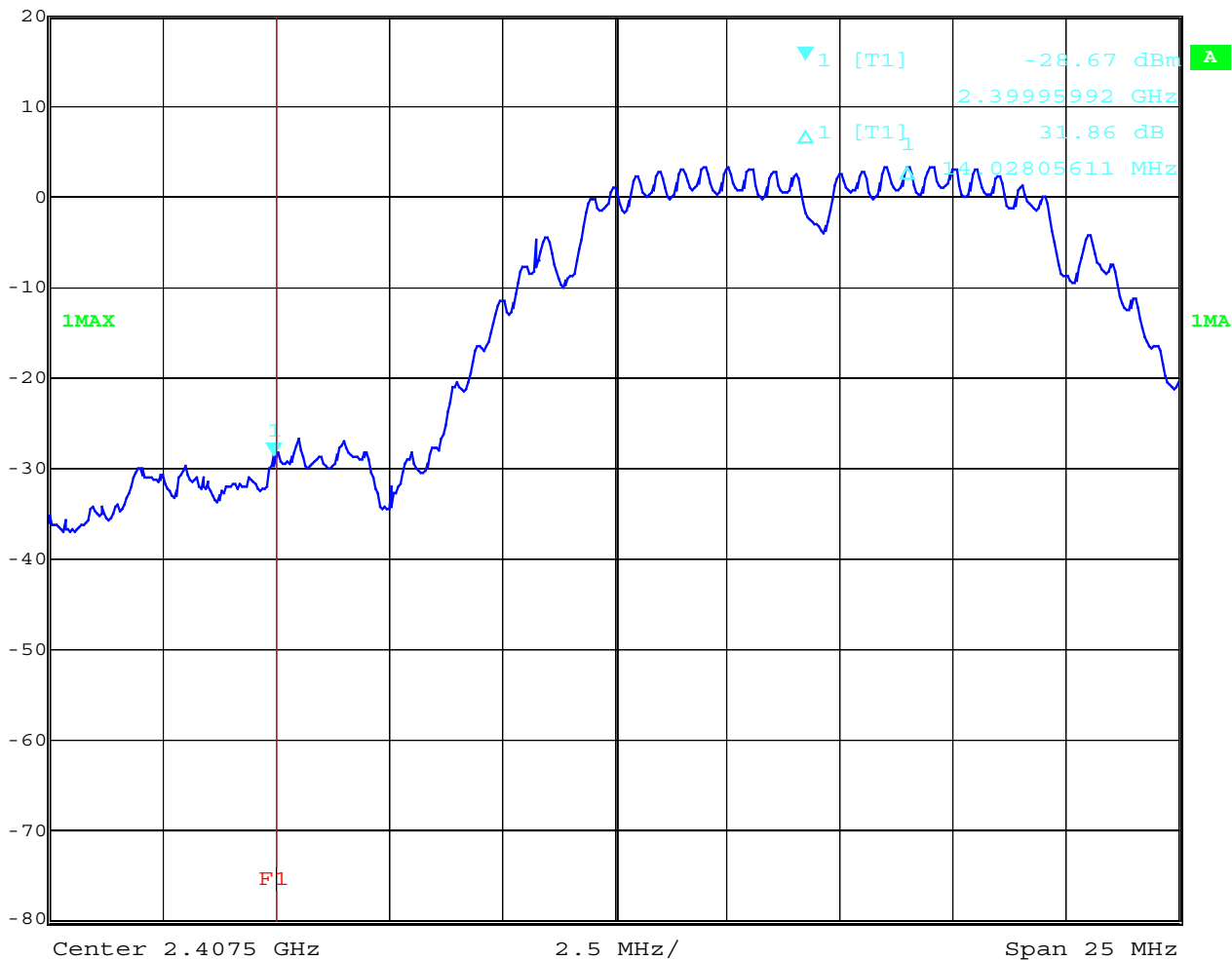
The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band

Band-edge compliance of conducted emissions

§15.247 (c)

Low channel

	Marker 1 [T1]	RBW	300 kHz	RF Att	50 dB
	Ref Lvl	-28.67 dBm	VBW	300 kHz	
	20 dBm	2.39995992 GHz	SWT	5 ms	Unit




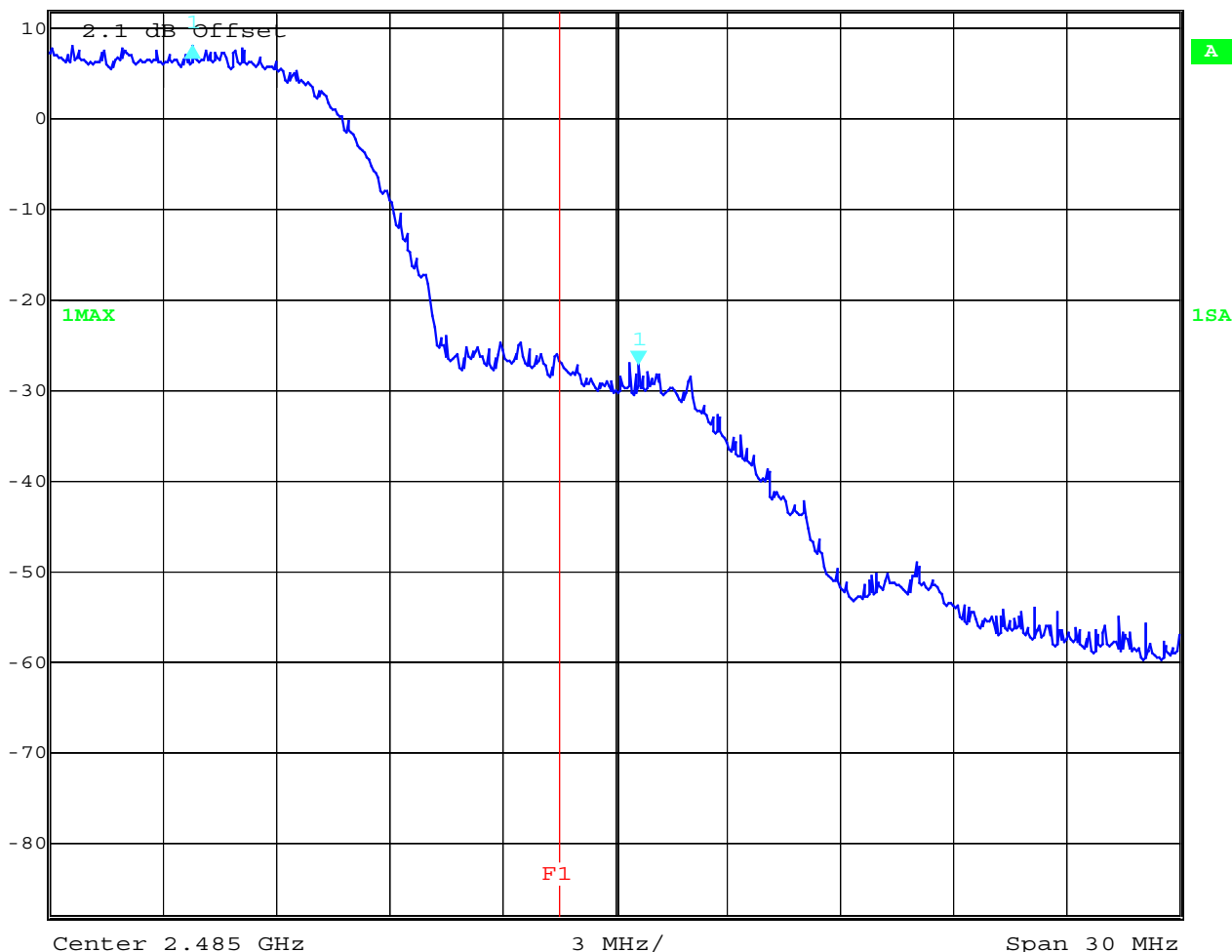
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Band-edge compliance of conducted emissions

§15.247 (c)

high channel

	Delta 1 [T1]	RBW	300 kHz	RF Att	20 dB
Ref Lvl	35.04 dB	VBW	300 kHz		
12.1 dBm	-11.84368737 MHz	SWT	5 ms	Unit	dBm

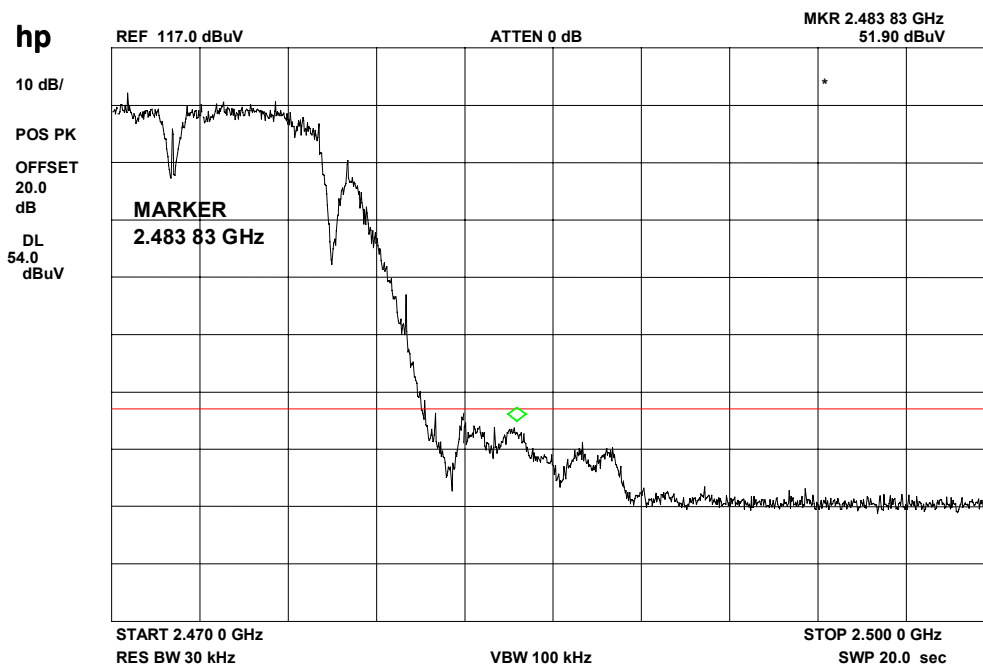


Date: 11.JUN.2002 14:39:01

Band-edge compliance radiated

§15.247 (c)

High channel

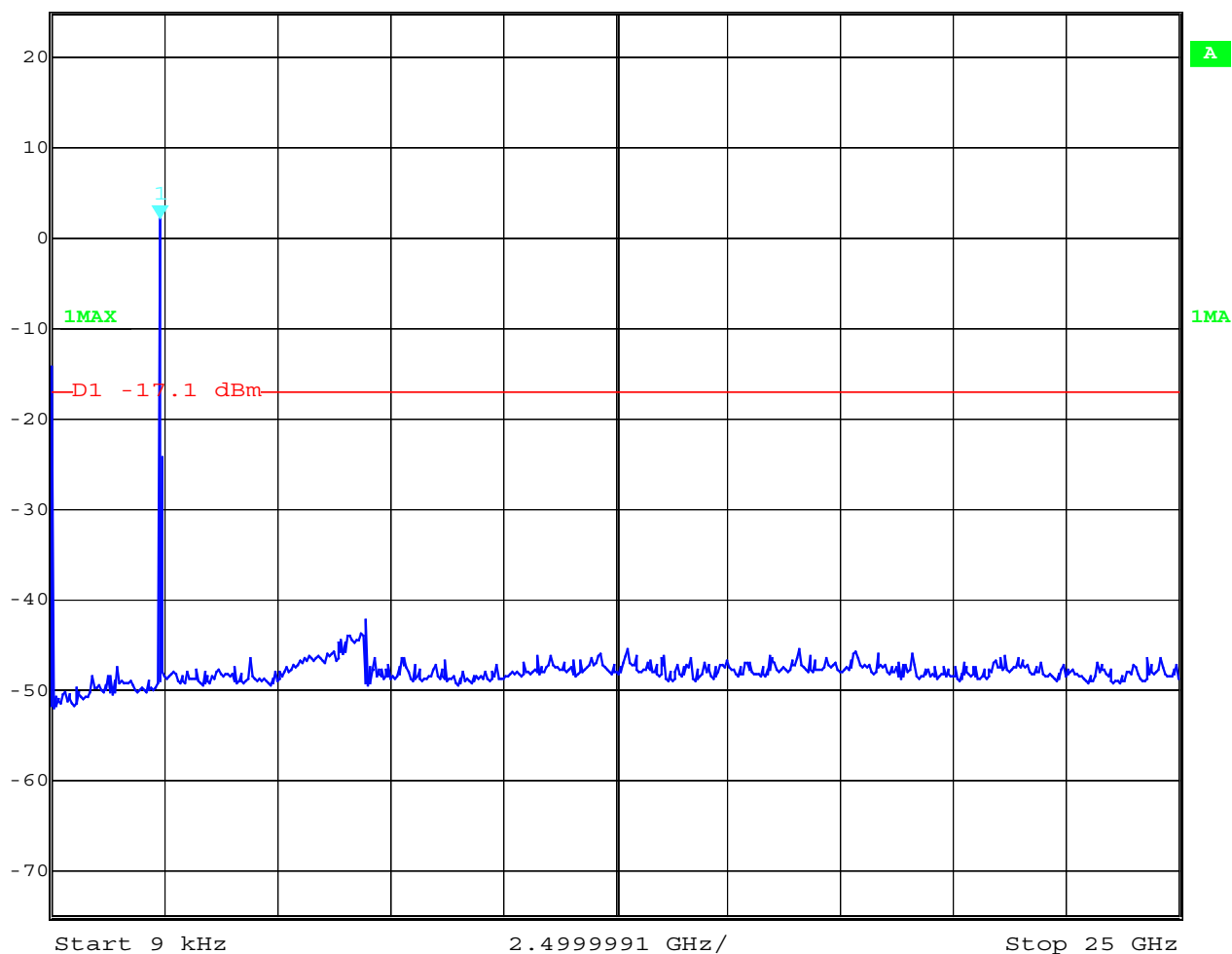


SPURIOUS EMISSION CONDUCTED

§ 15.247 (c) (1)

Mid channel (peak)

	Ref Lvl	2.15 dBm	RBW	100 kHz	RF Att	40 dB
	25 dBm	2.39189982 GHz	VBW	100 kHz	SWT	6.4 s
			Unit			dBm

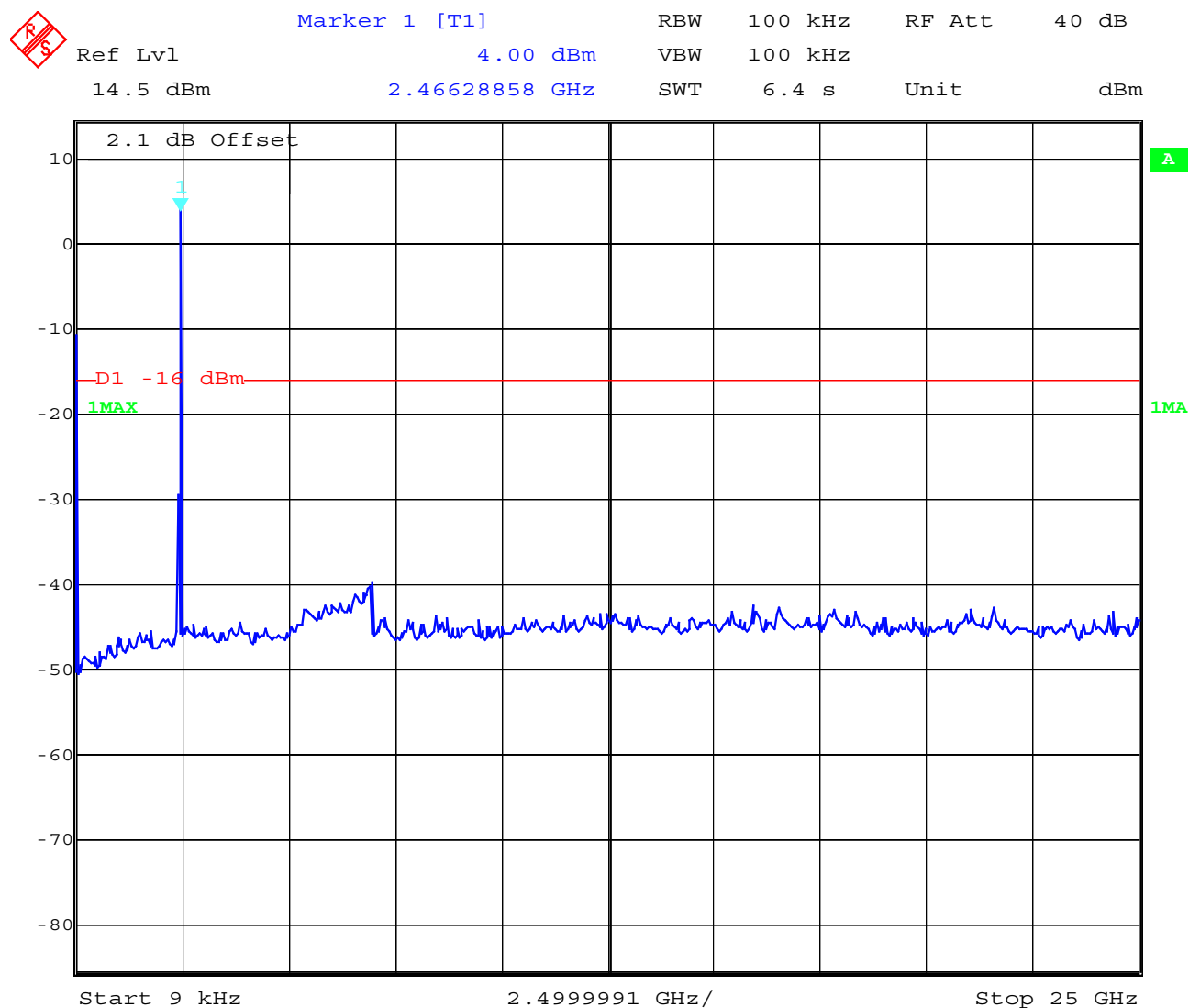


Date: 7.JUN.2002 09:23:31

SPURIOUS EMISSION CONDUCTED

§ 15.247 (c) (1)

High channel



Date: 11.JUN.2002 14:31:47

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SPURIOUS EMISSION (radiated)

§ 15.247 (c) (1)

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBm)	limit max. allowed emission power	actual attenuation below frequency of operation (dB)	results
2412		20.40	30 dBm	-	Operating frequency
all peaks <<limit §15.209(a)			-20 dBc		complies
2442		21.20	30 dBm	-	Operating frequency
all peaks <<limit §15.209(a)			-20 dBc		complies
2472		23.69	30 dBm		Operating frequency
all peaks <<limit §15.209(a)			-20 dBc		complies
Measurement uncertainty		± 3dB			

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)

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SPURIOUS EMISSION (radiated)

§ 15.247 (c) (1)

EMISSION LIMITATIONS					
f (MHz)	polarization	amplitude of emission (dBµV/m) QUASISPEAK	amplitude of emission (dBµV/m) average	limit max. allowed emission power (dBµV/m)	results
CH 1					
141.27	V	QP	22.1	43	complies
698.58	V	QP	30.5	46	Complies
4824	V	AV	38.5	54	Complies
CH 7					
141.27	V	QP	22.1	43	complies
698.58	V	QP	30.5	46	Complies
1063.6	V	AV	30.7	54	Complies
1856.9	V	AV	36.5	54	Complies
4884	V	AV	41,8	54	Complies
CH 13					
141.27	V	QP	22.1	43	complies
698.58	V	QP	30.5	46	Complies
1856.9	V	AV	37.5	54	Complies
4944	V	AV	36.4		
Measurement uncertainty		± 3dB			

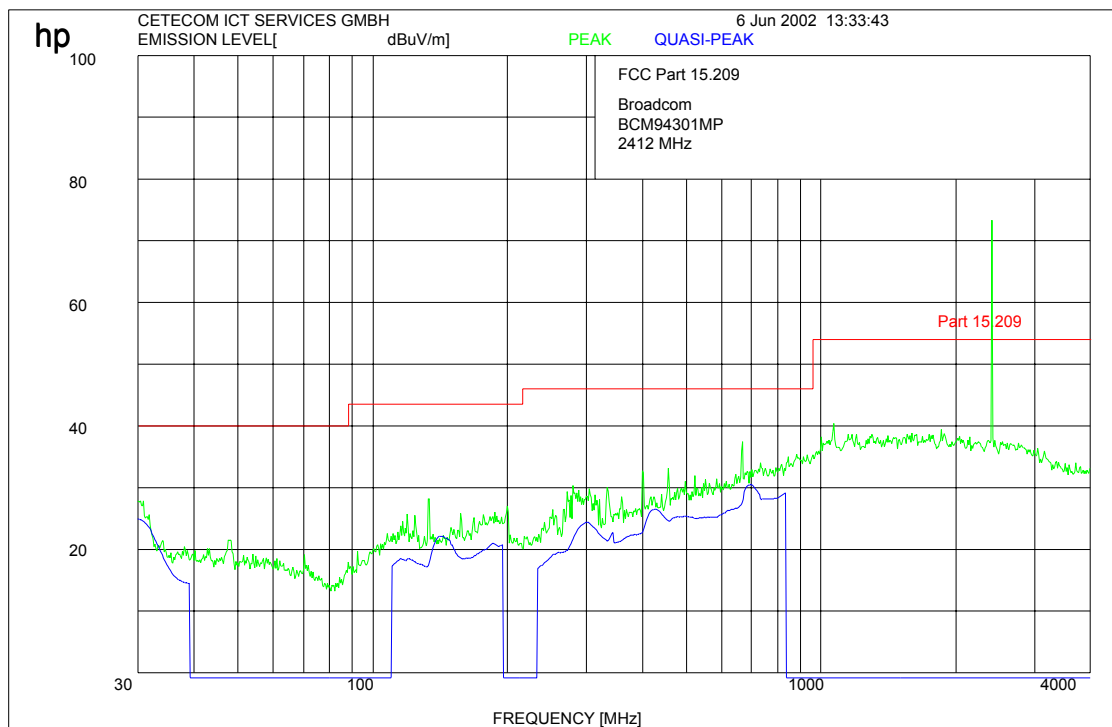
LIMITS

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)).

EMISSION LIMITATIONS- Radiated low channel up to 4 GHz (vertical, worst case)

§ 15.247 (c) (1)



The peak above the limit is the 2412 MHz Carrier

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

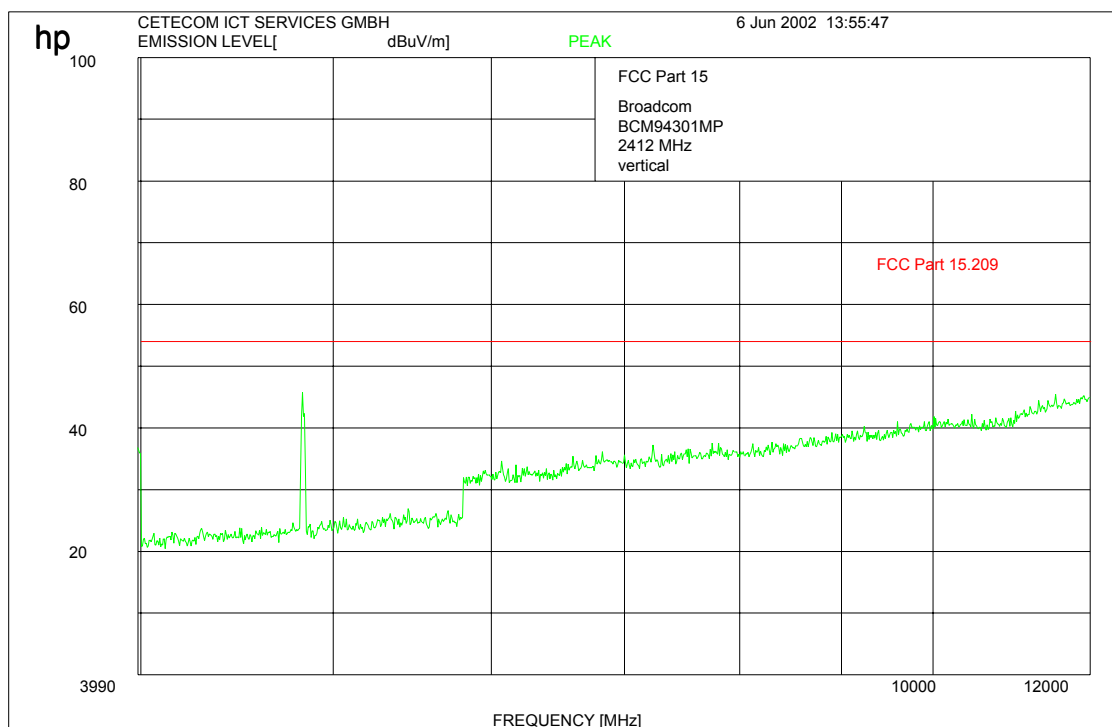
(for reference numbers see test equipment listing)

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EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

low channel up to 12 GHz



LIMITS

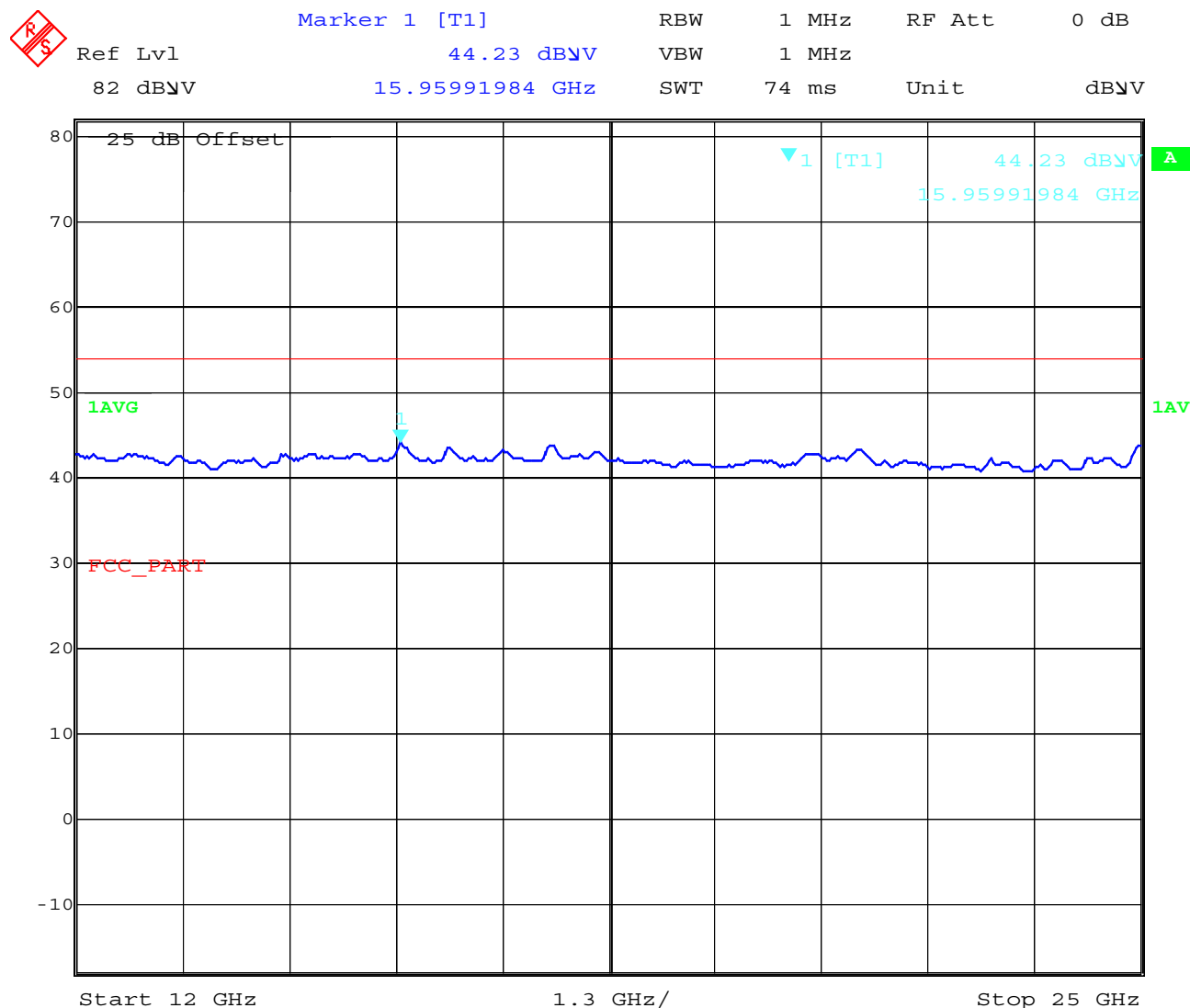
SUBCLAUSE § 15.247 (c)

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)).

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

low channel up to 25 GHz



Date: 7.JUN.2002 08:42:32

LIMITS

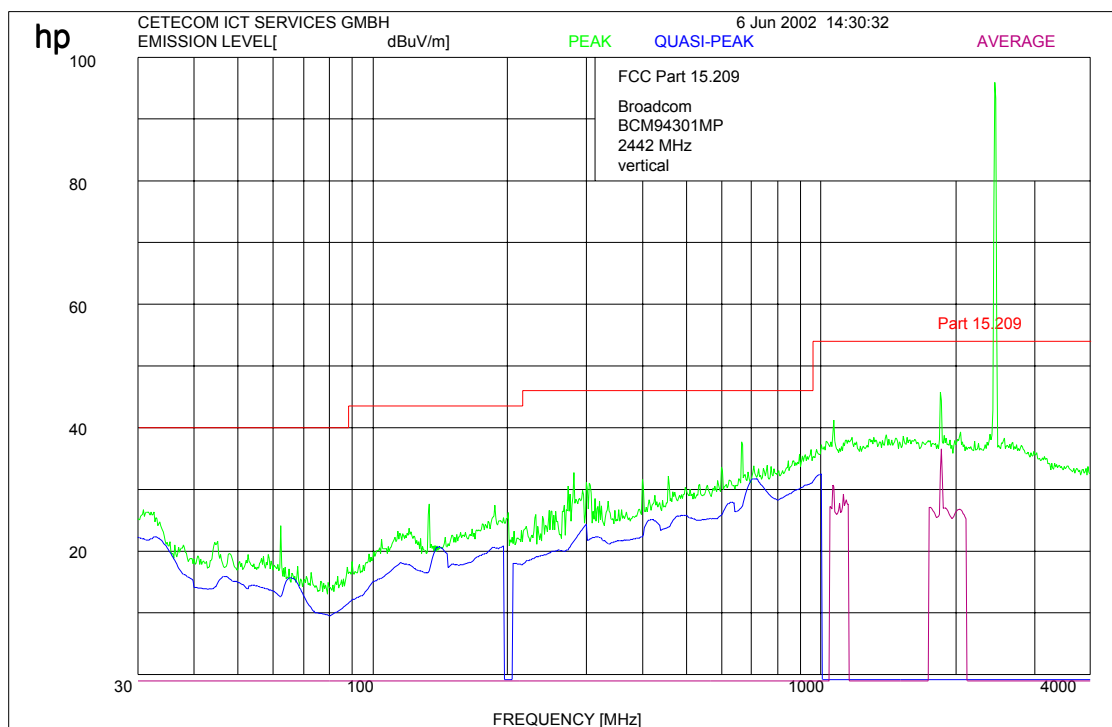
SUBCLAUSE § 15.247 (c)

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)).

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

Mid channel up to 4 GHz (vertical, worst case)



The peak above the limit is the 2442 MHz Carrier

LIMITS

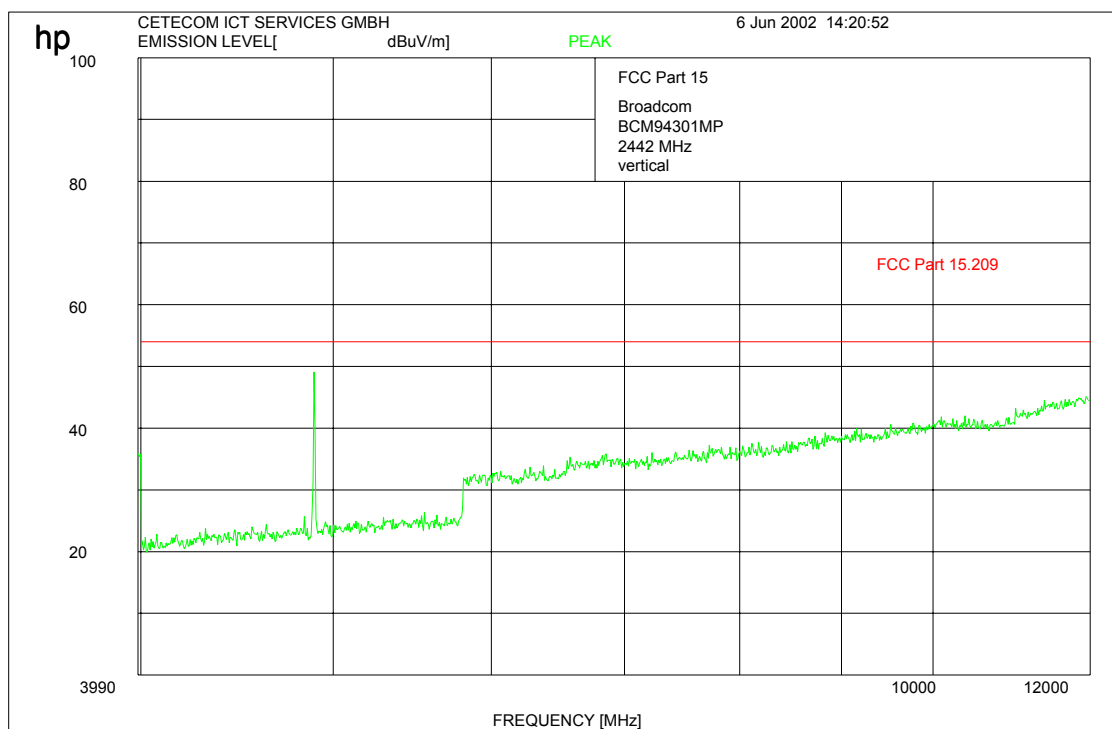
SUBCLAUSE § 15.247 (c)

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)).

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

Mid channel up to 12 GHz (vertical, worst case)



LIMITS

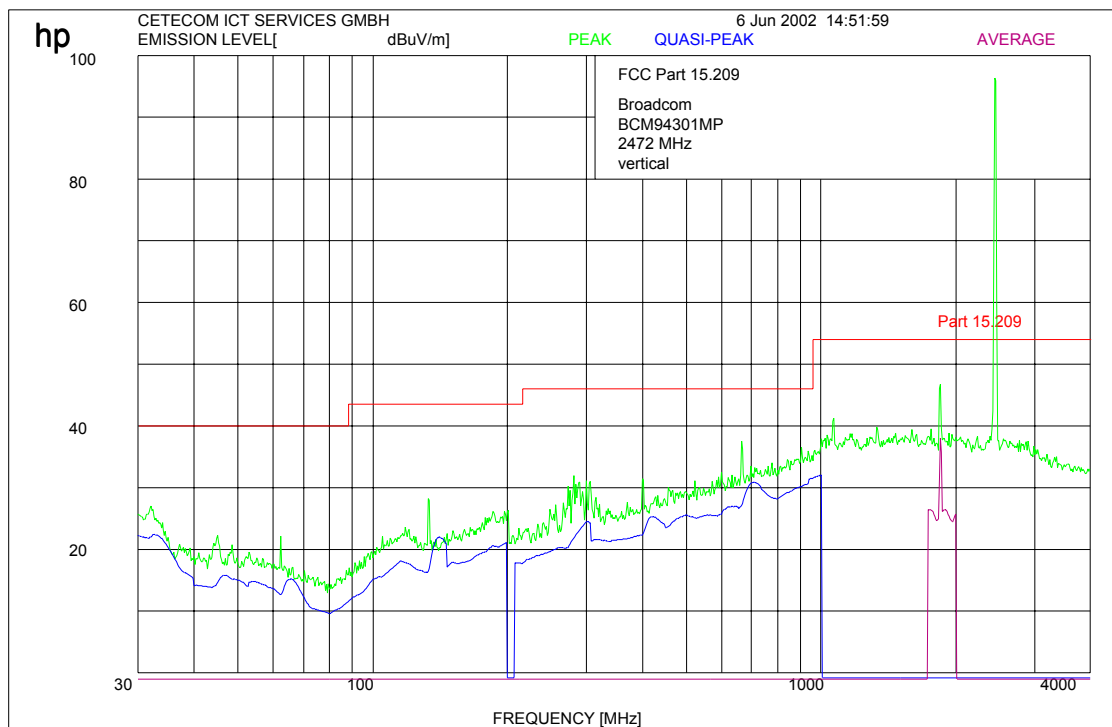
SUBCLAUSE § 15.247 (c)

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)).

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

High channel up to 4 GHz (vertical, worst case)



The peak above the limit is the 2472 MHz Carrier

LIMITS

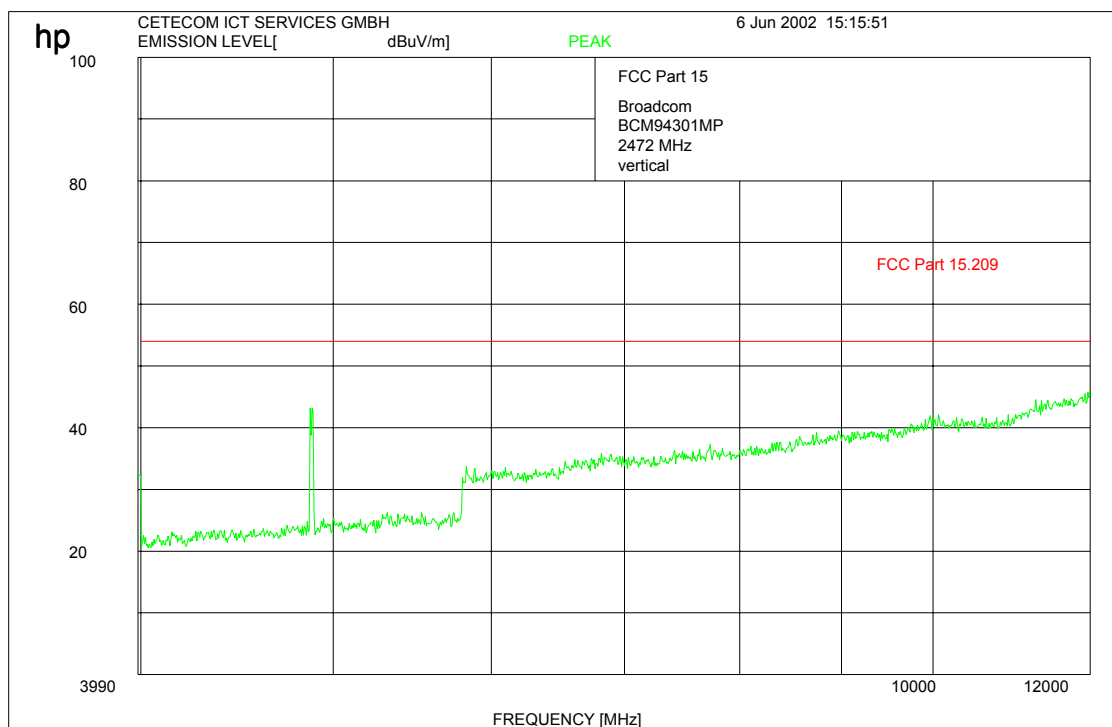
SUBCLAUSE § 15.247 (c)

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)).

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

High channel up to 12 GHz



LIMITS


SUBCLAUSE § 15.247 (c)

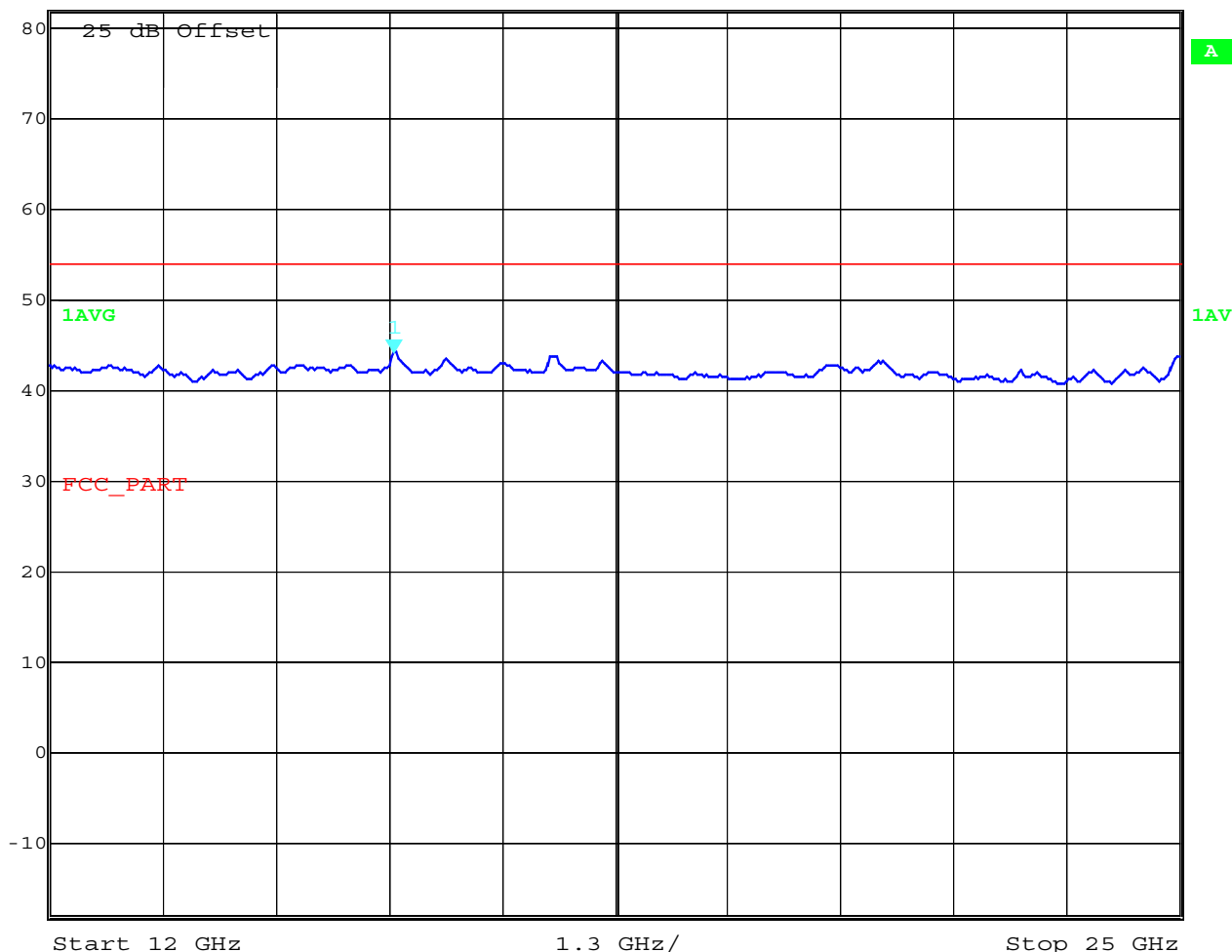
In any 100 kHz bandwidth outside the frequency band at least 20dB below the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

High channel up to 25 GHz

	Marker 1 [T1]	RBW	1 MHz	RF Att	0 dB
	Ref Lvl	44.12 dBµV	VBW	1 MHz	
	82 dBµV	15.95991984 GHz	SWT	74 ms	Unit



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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)).

PROCESSING GAIN OF DSSS SYSTEMS

SUBCLAUSE §15.247 (e)

The processing gain of this product:

For 11 Mbit/s : >12db

For 5,5 Mbit/s: >12dB

For 2 Mbit/s : >12dB

For 1 Mbit/s :>12dB

CETECOM ICT Services GmbH

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Receiver

EMISSION LIMITATIONS- Radiated

§ 15.209

EMISSION LIMITATIONS					
f (MHz)	polarization	amplitude of emission (dBµV/m) QUASIPEAK	amplitude of emission (dBµV/m) average	limit max. allowed emission power (dBµV/m)	results
CH 1/2/3					
698	V	QP	30.8	46	complies
Measurement uncertainty		± 3dB			

All peaks found in Receiving mode are < limit.

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

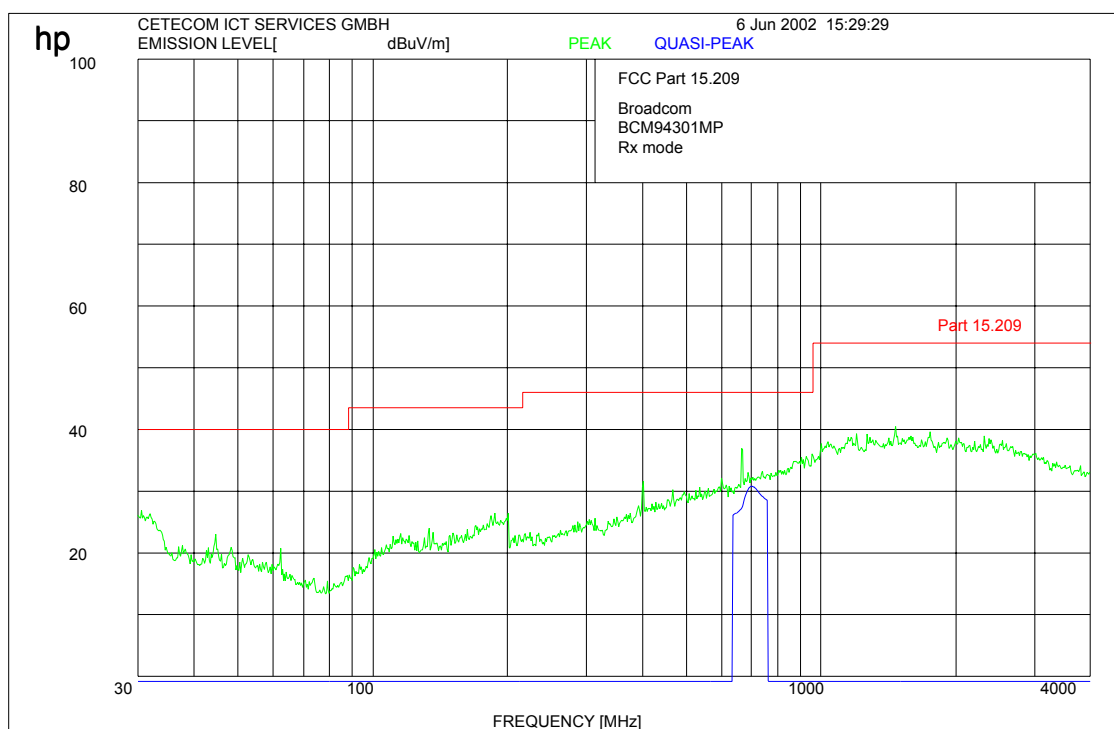
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 - 24, 64

EMISSION LIMITATIONS- Radiated
Receiver up to 4 GHz (vertical, worst case)

§ 15.209



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

CETECOM ICT Services GmbH

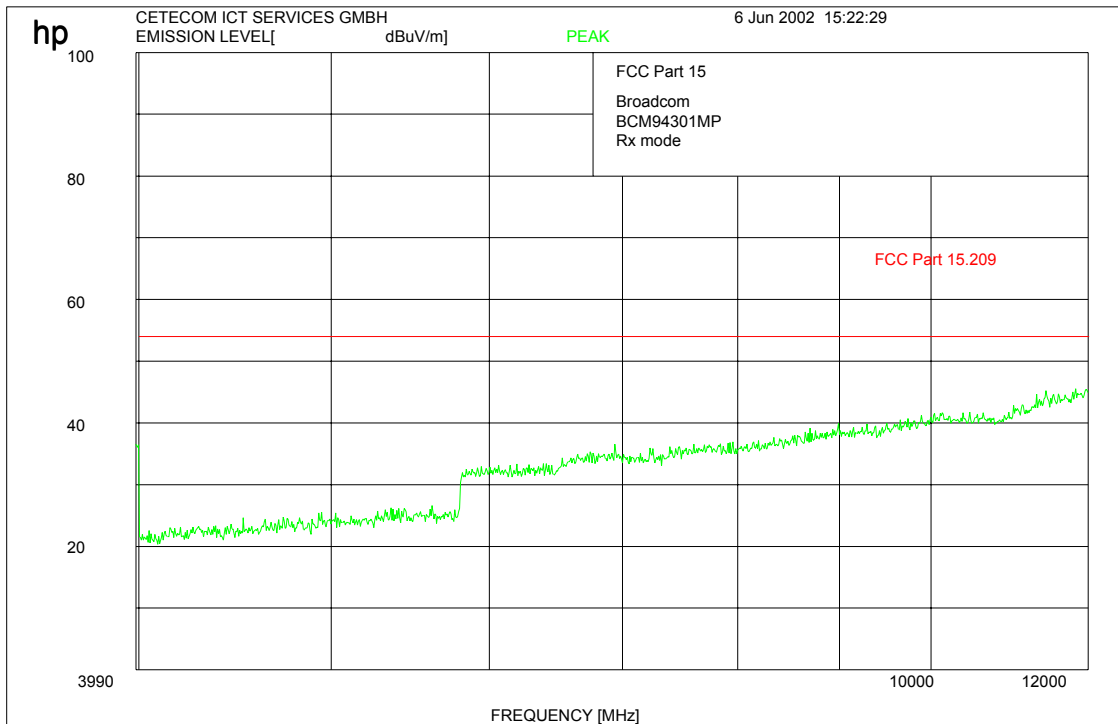
Test report no.:5-4004-01-03/02

Issue date:2002-07-29

Page 47 (60)

EMISSION LIMITATIONS- Radiated Receiver up to 12 GHz

§ 15.209



Limits

SUBCLAUSE § 15.209

Frequency (MHz)	Field strength ($\mu\text{V}/\text{m}$)	Measurement distance (m)
0.009 - 0.490	$2400/F(\text{kHz})$	300
0.490 - 1.705	$24000/F(\text{kHz})$	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

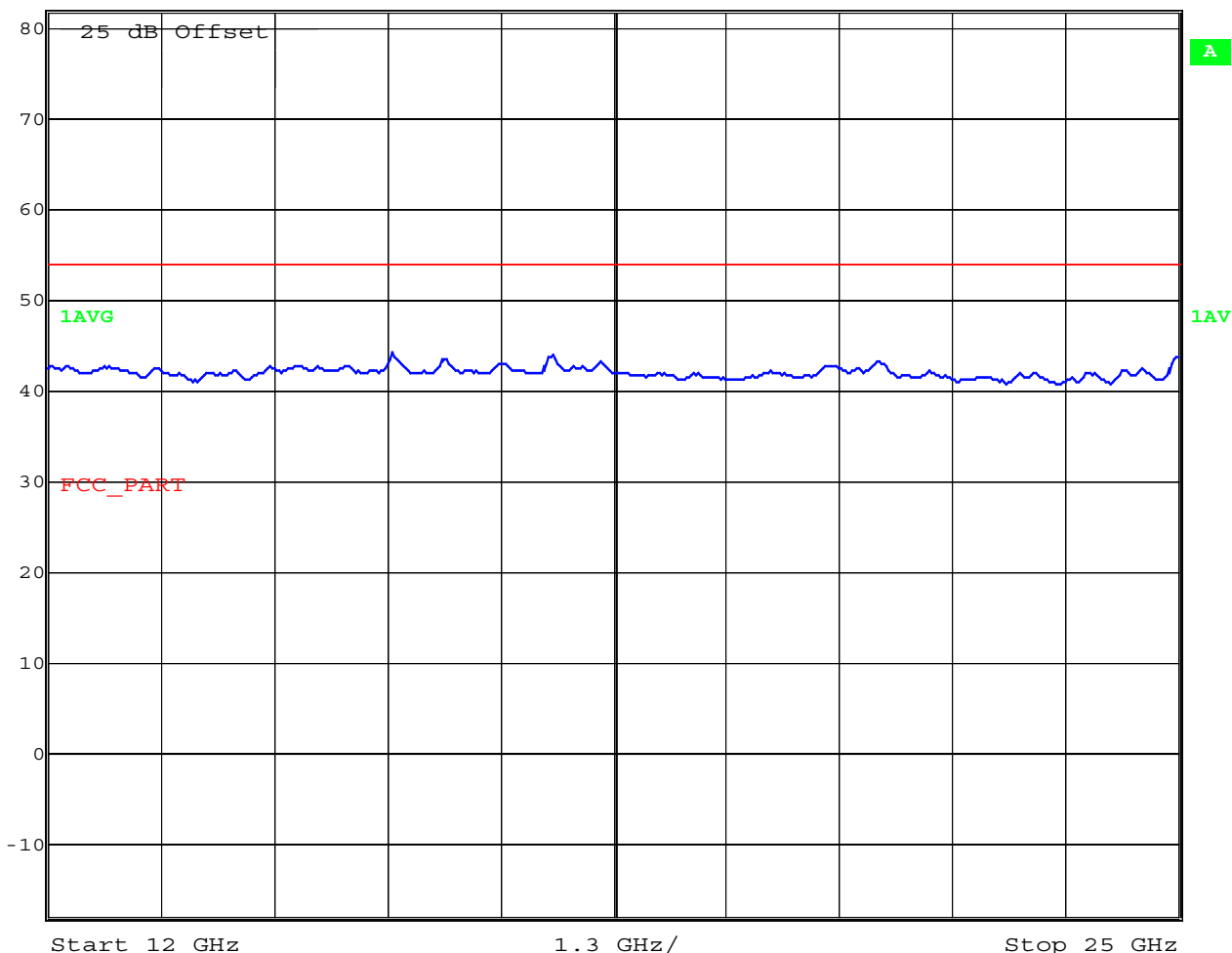
EMISSION LIMITATIONS- Radiated Receiver up to 25 GHz

§ 15.209



Ref Lvl
82 dBµV

RBW 1 MHz RF Att 0 dB
VBW 1 MHz
SWT 74 ms Unit dBµV



Date: 7.JUN.2002 08:43:15

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

CETECOM ICT Services GmbH

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Conducted emissions

§ 15.107

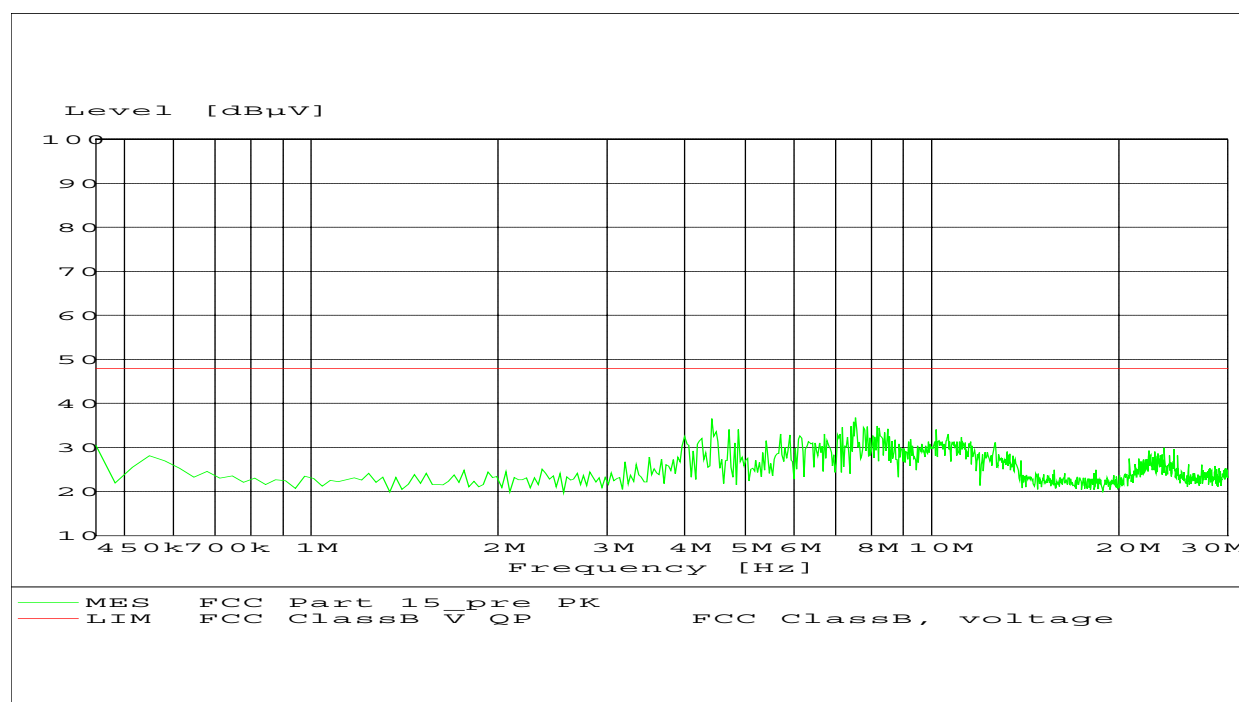
FCC Rule 47 Part 15

EUT: BMC94301MP
Applicant: Broadcom
Operating condition: Tx-mode
Test Site: CETECOM ICT Services GmbH Saarbrücken, Room 006
Operator: Berg M.

Power Supply: 115V/60Hz
Start of Test: 13.06.02 / 08:06:03

SCANTABELLE: "FCC Part 15 AC"

Kurzbeschreibung: Voltage Mains 1.60
Start- Stop- Schritt- Detektor Meß- ZF- Transducer
Frequenz Frequenz weite zeit Bandbr.
450.0 kHz 30.0 MHz 6.0 kHz MaxPeak 100.0 ms 10 kHz ESH3-Z5 L1 2209



REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

CETECOM ICT Services GmbH

Test report no.: 5-4004-01-03/02 Issue Date: 2002-07-29 Page 50 (60)

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 Receiver	ESMI	Rohde & Schwarz	827 063/010
35	EMI Test Receiver	Display	Rohde & Schwarz	829 808/010

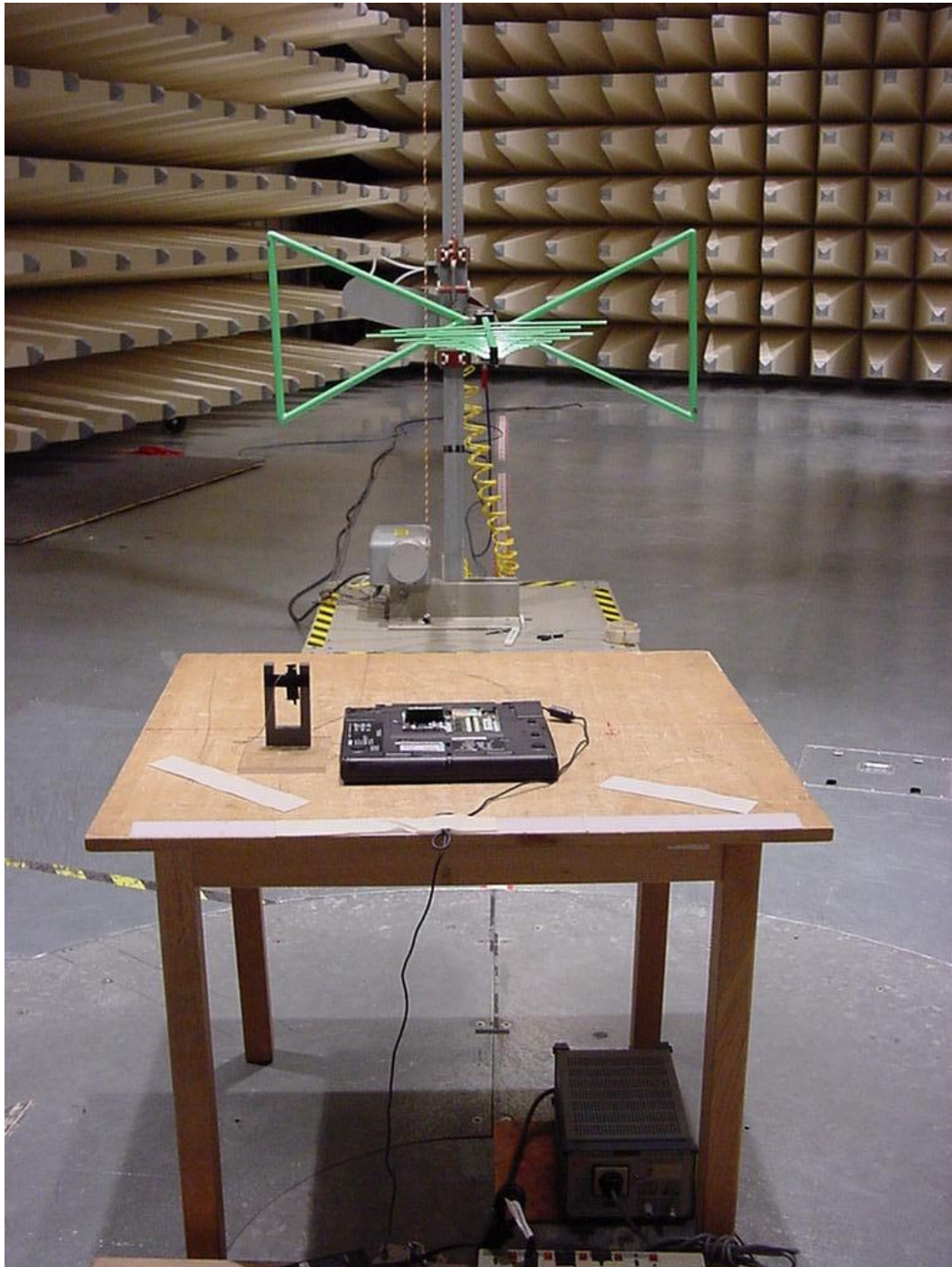
TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

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.

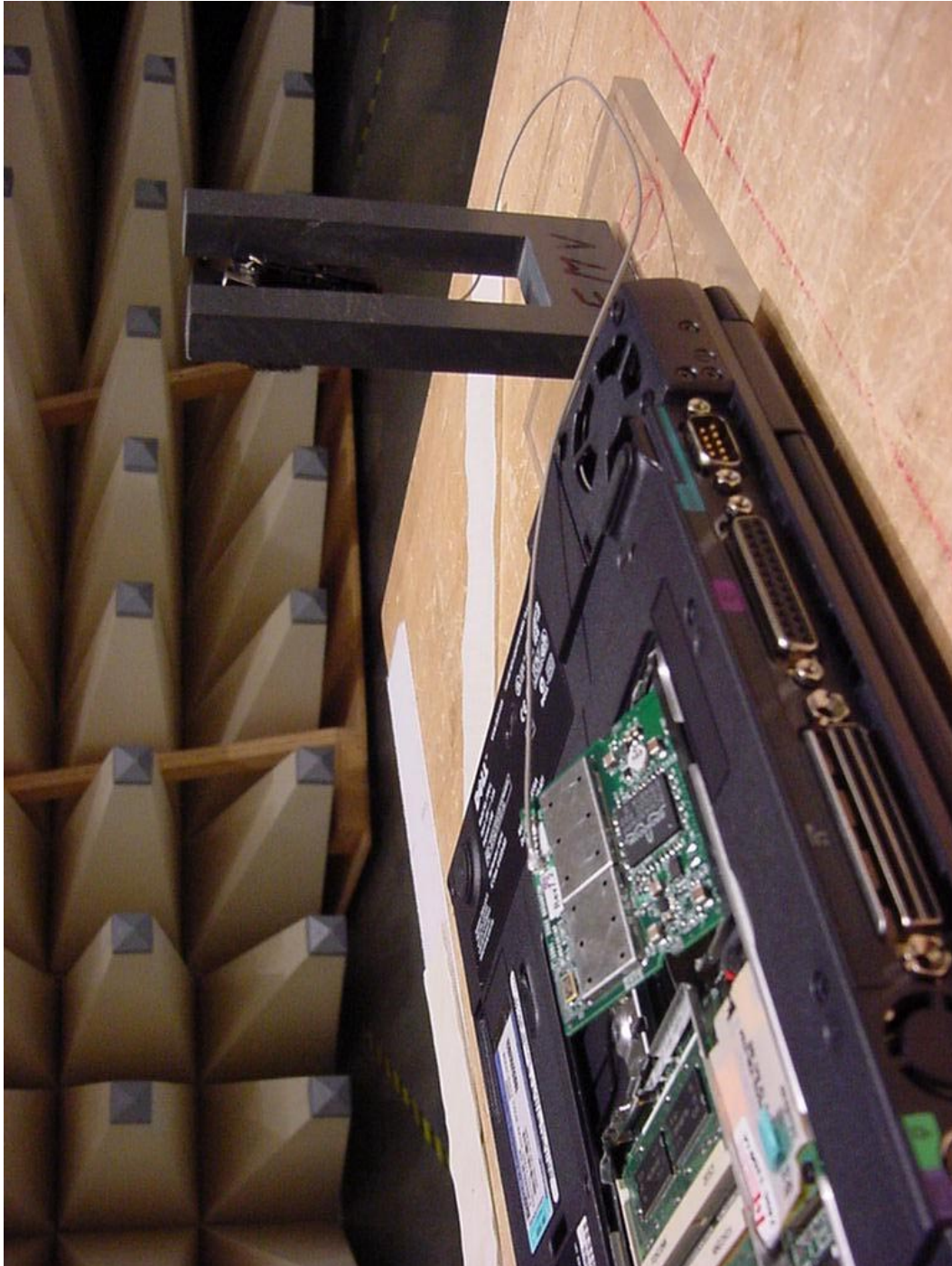
No	Instrument/Ancillary	Type	Manufacturer	Serial No.
36	Controler	HD 100	Deisel	100/322/93
37	Relais Matrix	PSN	Rohde & Schwarz	829 065/003
38	Control Unit	GB 016 A2	Rohde & Schwarz	344 122/008
39	Relais Switch Unit	RSU	Rohde & Schwarz	316 790/001
40	Power Supply	6032A	Hewlett Packard	2846A04063
41	Spektrum 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
67	Peak Power Analyzer	8990	Hewlett Packard	33245A00231

Test site

RADIATED EMISSIONS

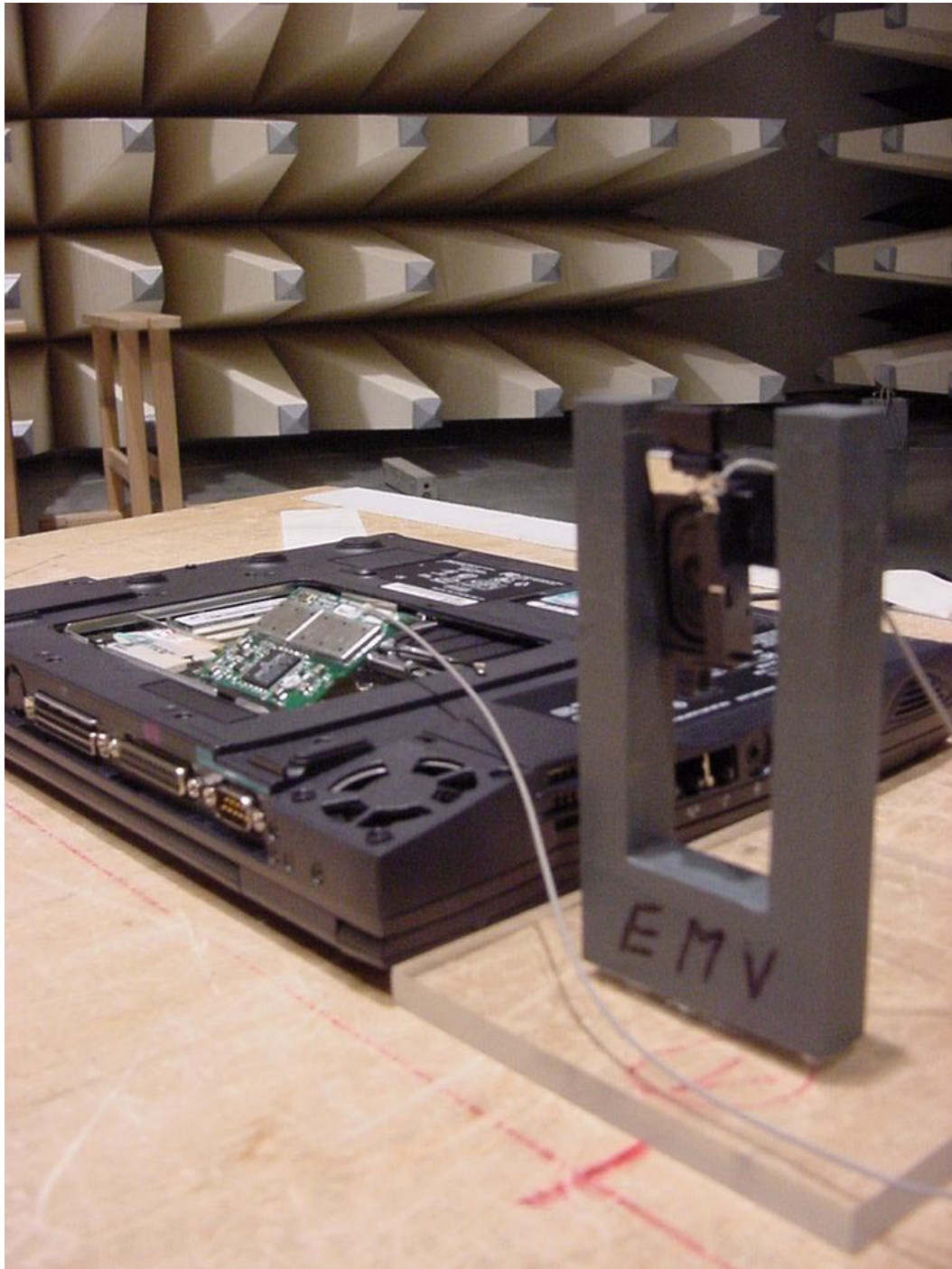


Test site
Radiated Emissions



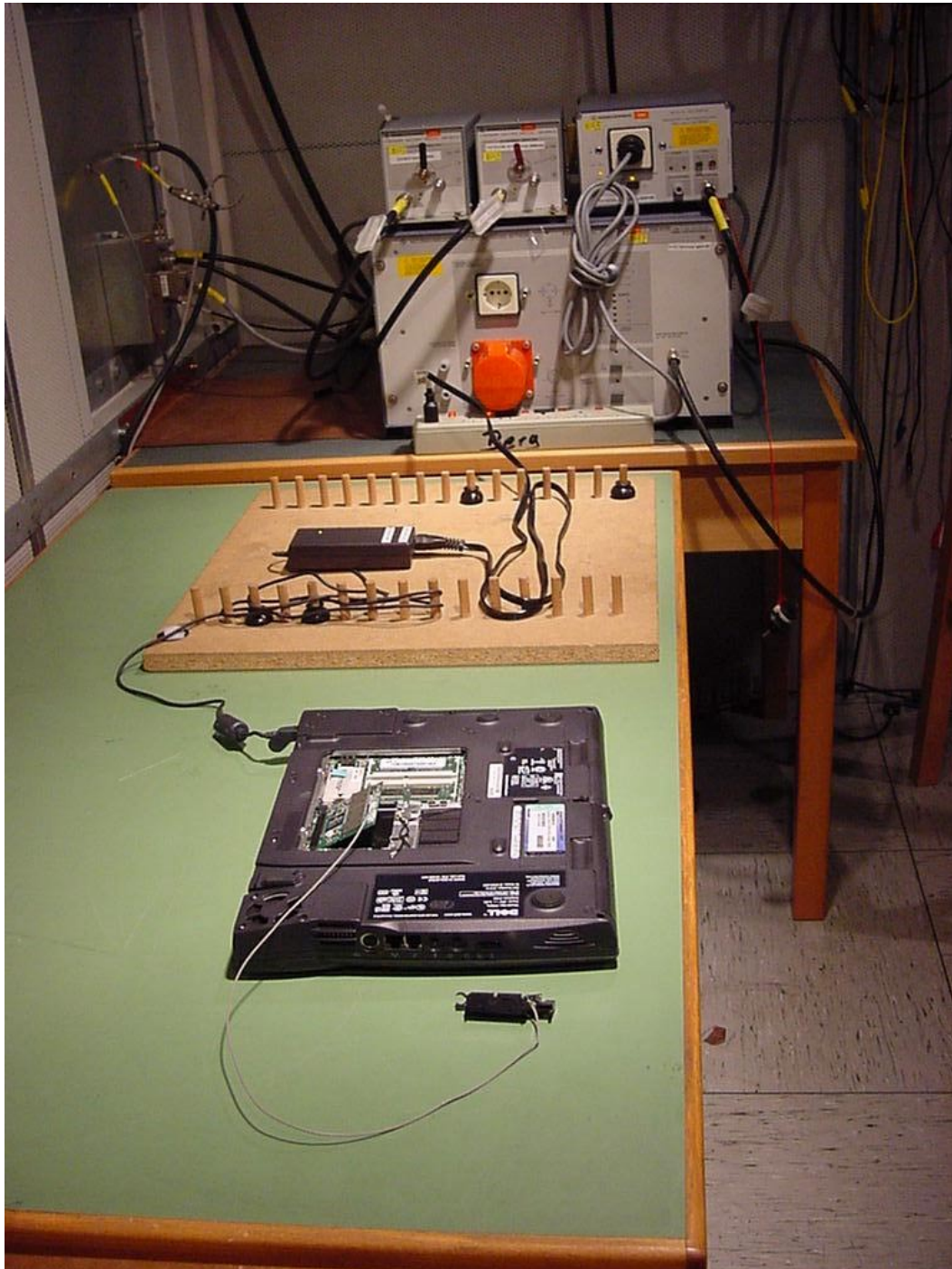
Test site

Radiated Emissions



Test site

Conducted Emissions



Photographs of the equipment

Photograph no.: 1

Mini-PCI Card in “Host adapter”



Photographs of the equipment

Photograph no.: 2

Antenna used for testing: FoxConn Model: FX-01L03-P1, +3 dBi gain



Photographs of the equipment

Photograph no.: 3

Mini-PCI Card front view



Photographs of the equipment

Photograph no.: 4

Mini-PCI Card back view



Photographs of the equipment

Photograph no.: 5

Mini-PCI Card front view without shielding

