

**TTI-P-G166/98**

Accredited Bluetooth Test Facility (BQTF)

Test report no.: 2-2863-01-01/02
FCC Part15.247/CANADA RSS-210
NOKIA D311 Type : DTE-3

CETECOM – ICT Services GmbH
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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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Internet : www.cetecom.de

Accredited testing laboratory

DAR-registration number : TTI-P-G-166/98-30

Accredited Bluetooth™ Test Facility (BQTF)

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1.3 Details of applicant

Name : Nokia Mobile Phones / TCC Salo
Street : P.O. Box 86 (Joensuunkatu 7 E / Kiila 1 B)
City : FIN-24101 Salo
Country : Finland
Telephone: +358 (0) 7180 42913
Telefax : +358 (0) 7180 42920
Contact : Mr. Jarkko Luoma
Telephone: +358 (0) 7180 42913

1.4 Application details

Date of receipt of application : 04.04.2002
Date of receipt of test item : 24.04.2002
Date of test : 24.-26.04.2002

1.5 Test item

Type of equipment : **Dual Band GSM PCMCIA Card (PCS 850 / 1900 MHz) with 2.4 GHz RLAN**
Type designation : NOKIA D311, Type DTE-3
Manufacturer : - applicant -
Street :
City :
Country :
Serial number : 976000716; IMEI : 001004100753483
Additional informations: :
Frequency : 2402 – 2483,5 MHz here 2412 – 2462 MHz
Type of modulation : 22M0P7D (DSSS) Ch.Sep. : 5 MHz
Number of channels : 11
Antenna : integral antenna
Power supply : 5 DC powered by PC/Laptop
Output power cond. : 205.6 mW / 108.1 mW EIRP
Type of equipment : Class B
Temperature range : -30°C - +60°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 with the build-in antenna and a measuring system including turntable and antenna lift to cover all three antenna planes.

The radiated measurements were performed vertical and horizontal, horizontal results are about 6 dB lower over the complete frequency range.

The antenna gain measurement was performed by the difference between conducted and radiated output measurement.

The conducted power measurement was performed by a temporary added coax adapter.

All measurement settings are according to FCC 15.35, 15.205, 15.209, 15.247 and the „Measurement guidelines for DSSS systems“.

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

The product fullfills also the requirements for CANADA RSS-210.

FINAL VERDICT : PASS

Technical responsibility for area of testing :

2002-07-01 RSC 8411 Berg M.

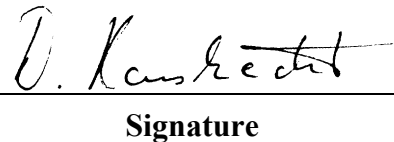
Date Section Name


Signature

Technical responsibility for area of testing :

2002-07-01 RSC8412 Hausknecht D.

Date Section Name


Signature

2.2 Test report

TEST REPORT

Test report no. : 2-2509-N/01

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 (d) | Power spectral density | 20 |
| §15.247 | Band edge compliance | 24 |
| § 15.247 (c)(1) | Emission limitations | 28 |
| | Receiver parameters | |
| § 15.209 | Spurious radiations - Radiated | 47 |
| | Test equipment listing | 53 |

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 | 23.02 dBm | 23.13 dBm | 21.90 dBm |
| Radiated power | 20.18 dBm | 20.34 dBm | 20.01 dBm |
| Gain | -2.81 dBi | -2.79 dB | -1.89 dB |

The calculated antenna gain is between -2.81 and -1.89 dB for the build-in antenna.

REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24, 64

Spectrum Bandwith of a DSSS System

§15.247(a)

6 dB bandwidth

| TEST CONDITIONS | | 6 dB BANDWIDTH (kHz) | | |
|-----------------------------|---------------------------|------------------------|--------|---------|
| | | 2412 | 2437 | 2462 |
| Frequency (MHz) | | | | |
| T _{nom} (22.4)°C | V _{nom} (5.0)V | 9619.2 | 9819.6 | 11222.4 |
| 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 bandwith shall be at least 500 KHz


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

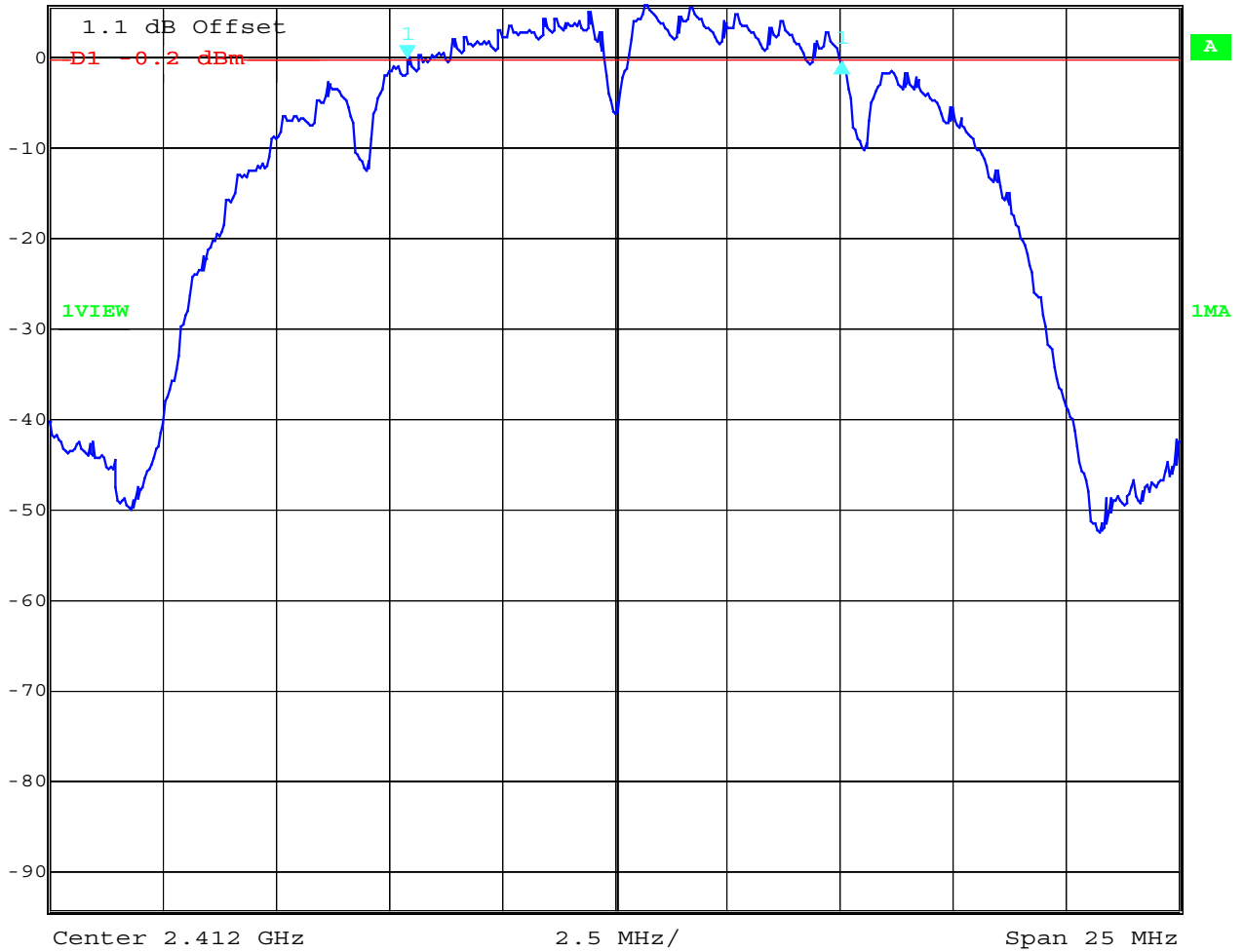
Spectrum Bandwidth of a DSSS System

§15.247(a)

6 dB bandwidth

Channel 1

 Delta 1 [T1] RBW 100 kHz RF Att 30 dB
Ref Lvl -0.57 dB VBW 100 kHz
5.8 dBm 9.61923848 MHz SWT 6.5 ms Unit dBm



Date: 25.APR.2002 09:54:48

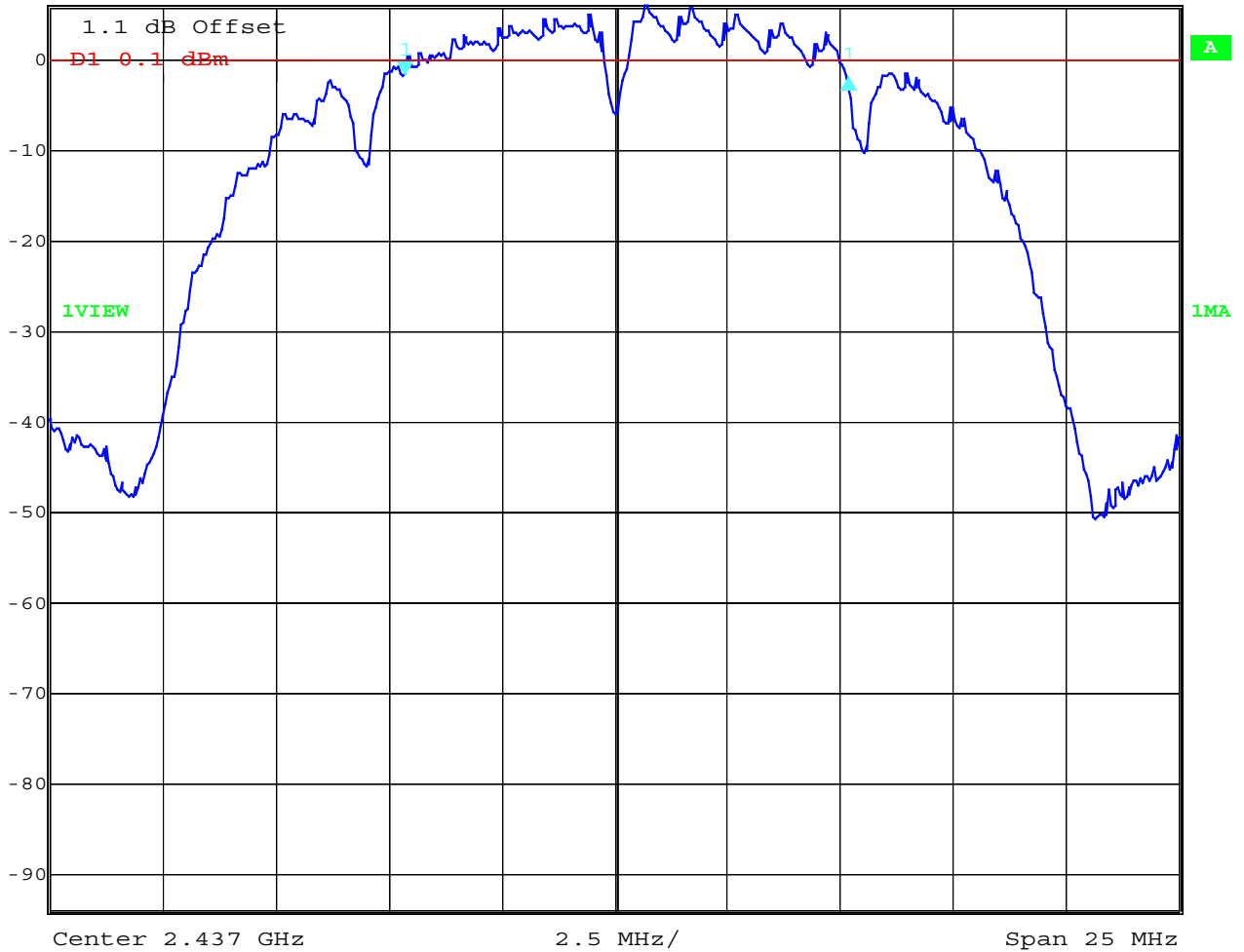
Spectrum Bandwith of a DSSS System

§15.247(a)

6 dB bandwidth

Channel 6

| | | | | | |
|---------|----------------|-----|---------|--------|-------|
| | Delta 1 [T1] | RBW | 100 kHz | RF Att | 30 dB |
| Ref Lvl | -0.40 dB | VBW | 100 kHz | Unit | dBm |
| 6.1 dBm | 9.81963928 MHz | SWT | 6.5 ms | | |



Date: 25.APR.2002 10:08:15

Spectrum Bandwidth of a DSSS System

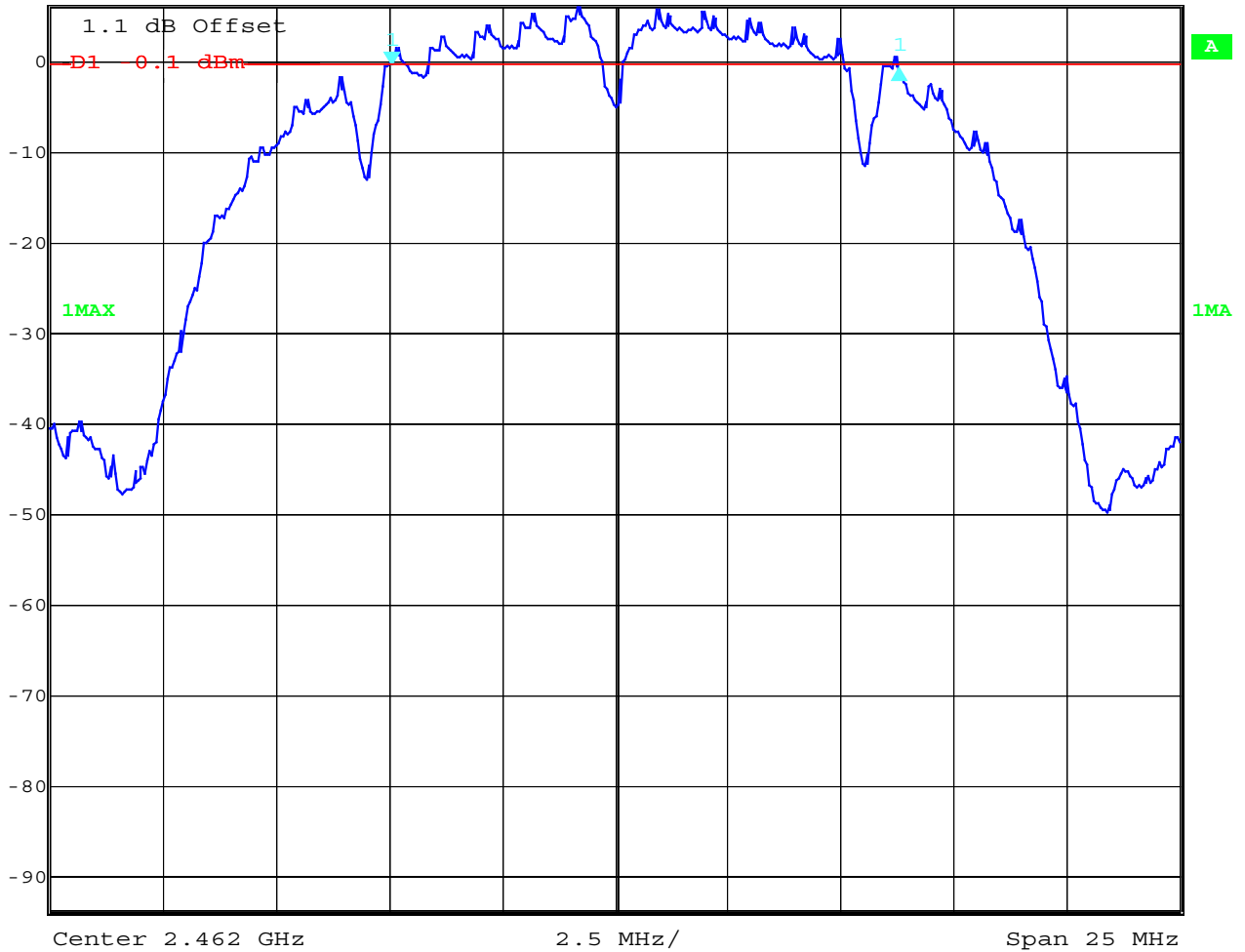
§15.247(a)

6 dB bandwidth

Channel 11:



| | | | | |
|--------------|-----------------|---------|---------|----------|
| Delta 1 [T1] | RBW | 100 kHz | RF Att | 30 dB |
| Ref Lvl | -0.61 dB | VBW | 100 kHz | |
| 6.3 dBm | 11.22244489 MHz | SWT | 6.5 ms | Unit dBm |



Date: 25.APR.2002 09:25:37

**MAXIMUM PEAK OUTPUT POWER
(CONDUCTED)**

SUBCLAUSE § 15.247 (b) (1)

| TEST CONDITIONS | | MAXIMUM PEAK OUTPUT POWER (mW) | | |
|---|--------------------------|--------------------------------|----------------------------|-------------------------------|
| | | 2412 | 2437 | 2462 |
| Frequency (MHz) | | | | |
| T _{nom} (22.4)°C | V _{nom} (5.0)V | Peak :200.45 AV : 33.26 | Peak :205.59 AV : 33.81 | Peak :154.88 dB AV : 27.48 |
| Maximum deviation from output power under extreme test conditions (dBc) | | 0.5 | 0.5 | 0.5 |
| Measurement uncertainty | | ±3dB | | |

RBW/VBW : 10 MHz

LIMIT

SUBCLAUSE § 15.247 (b) (1)

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

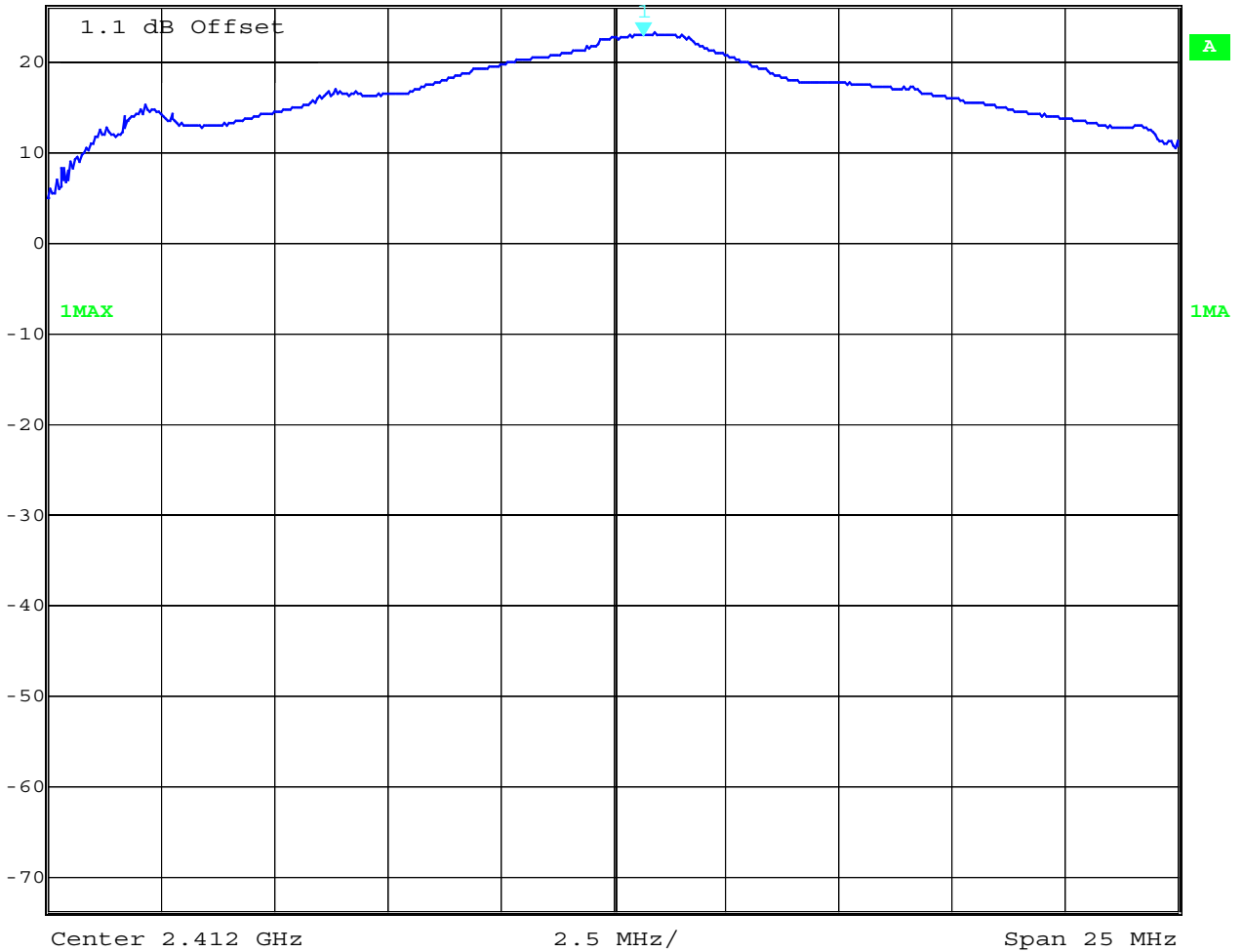
**MAXIMUM PEAK OUTPUT POWER
(CONDUCTED)**

SUBCLAUSE § 15.247 (b) (1)

low channel peak



Marker 1 [T1] RBW 10 MHz RF Att 50 dB
Ref Lvl 23.02 dBm VBW 10 MHz
26.3 dBm 2.41267635 GHz SWT 5 ms Unit dBm



Date: 25.APR.2002 09:49:33

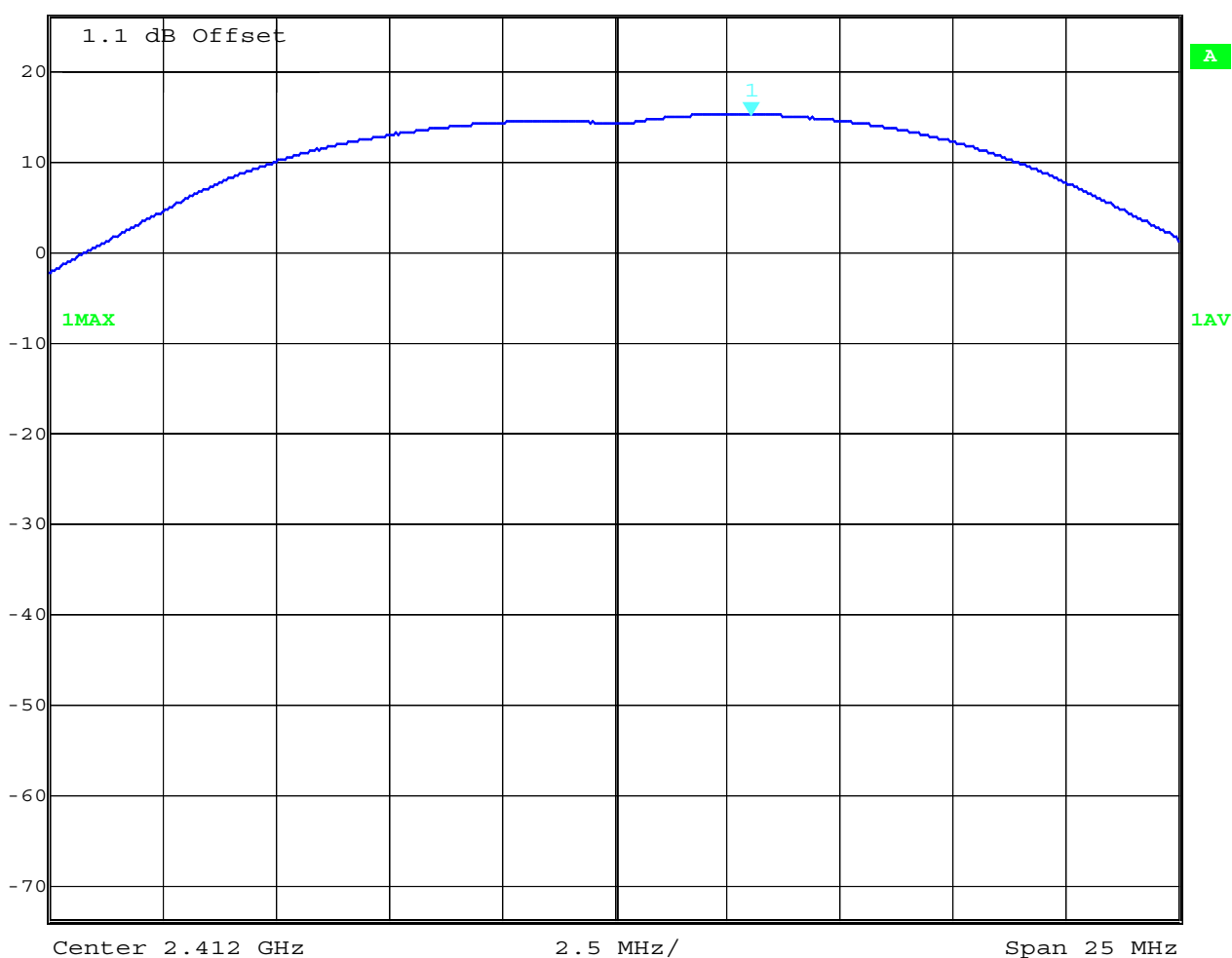
**MAXIMUM PEAK OUTPUT POWER
(CONDUCTED)**

SUBCLAUSE § 15.247 (b) (1)

low channel average



Marker 1 [T1] RBW 10 MHz RF Att 50 dB
Ref Lvl 15.22 dBm VBW 10 MHz
26.3 dBm 2.41503106 GHz SWT 5 ms Unit dBm



Date: 25.APR.2002 09:48:48

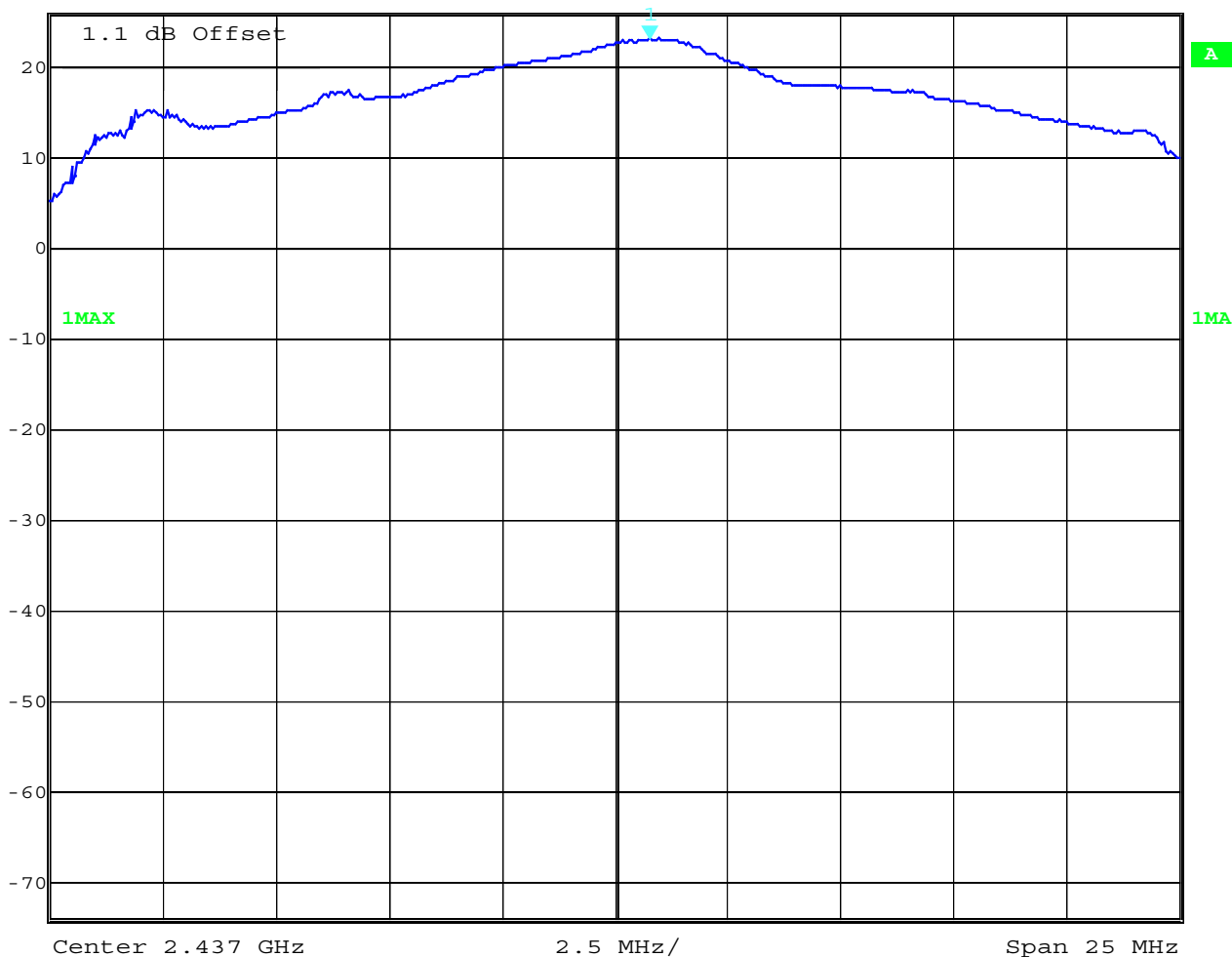
**MAXIMUM PEAK OUTPUT POWER
(CONDUCTED)**

SUBCLAUSE § 15.247 (b) (1)

mid channel peak



Marker 1 [T1] RBW 10 MHz RF Att 50 dB
Ref Lvl 23.13 dBm VBW 10 MHz
26.1 dBm 2.43777655 GHz SWT 5 ms Unit dBm



Date: 25.APR.2002 10:09:18

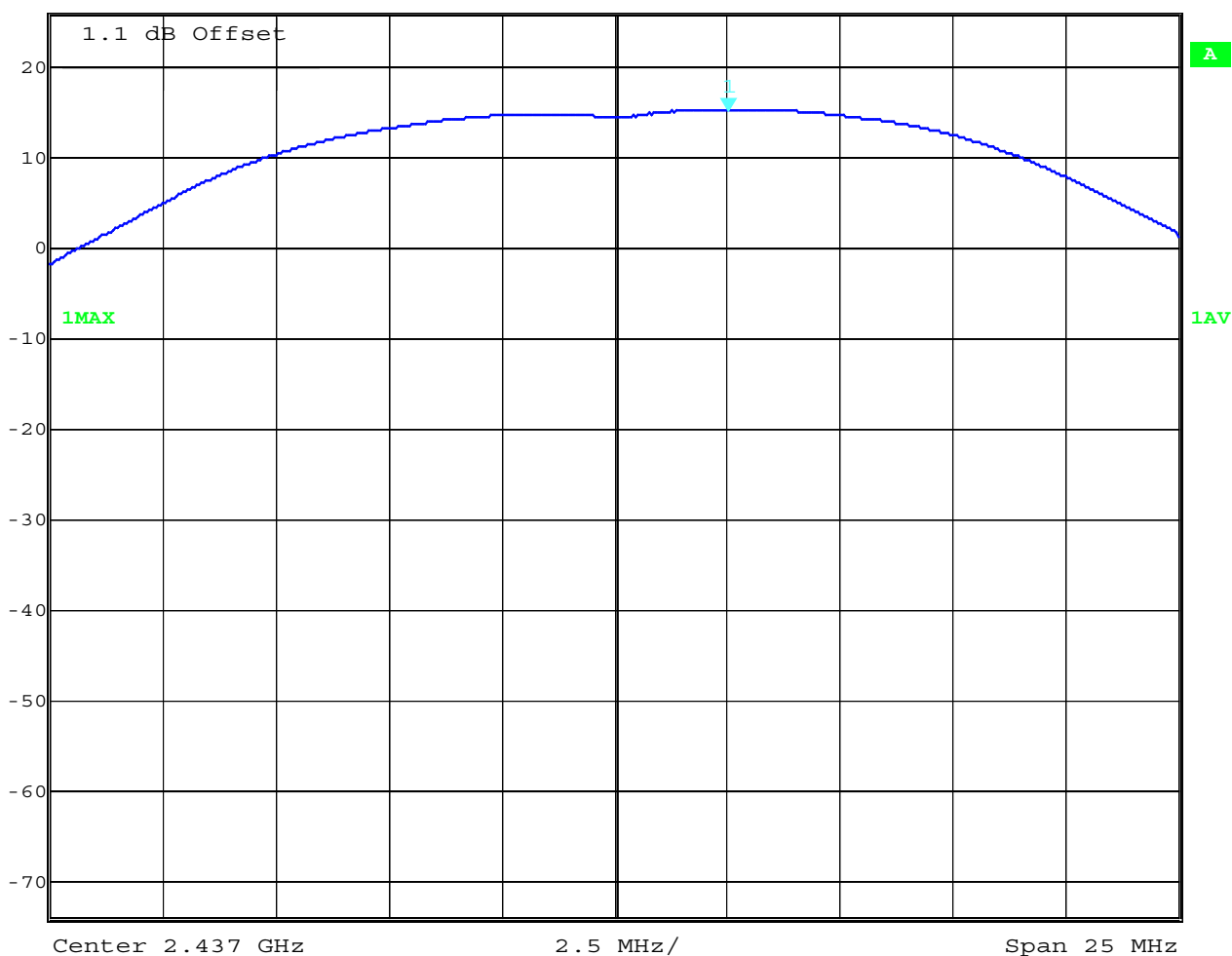
**MAXIMUM PEAK OUTPUT POWER
(CONDUCTED)**

SUBCLAUSE § 15.247 (b) (1)

mid channel average



| | | | | | |
|----------|----------------|-----|--------|--------|-------|
| | Marker 1 [T1] | RBW | 10 MHz | RF Att | 50 dB |
| Ref Lvl | 15.29 dBm | VBW | 10 MHz | | |
| 26.1 dBm | 2.43953006 GHz | SWT | 5 ms | Unit | dBm |

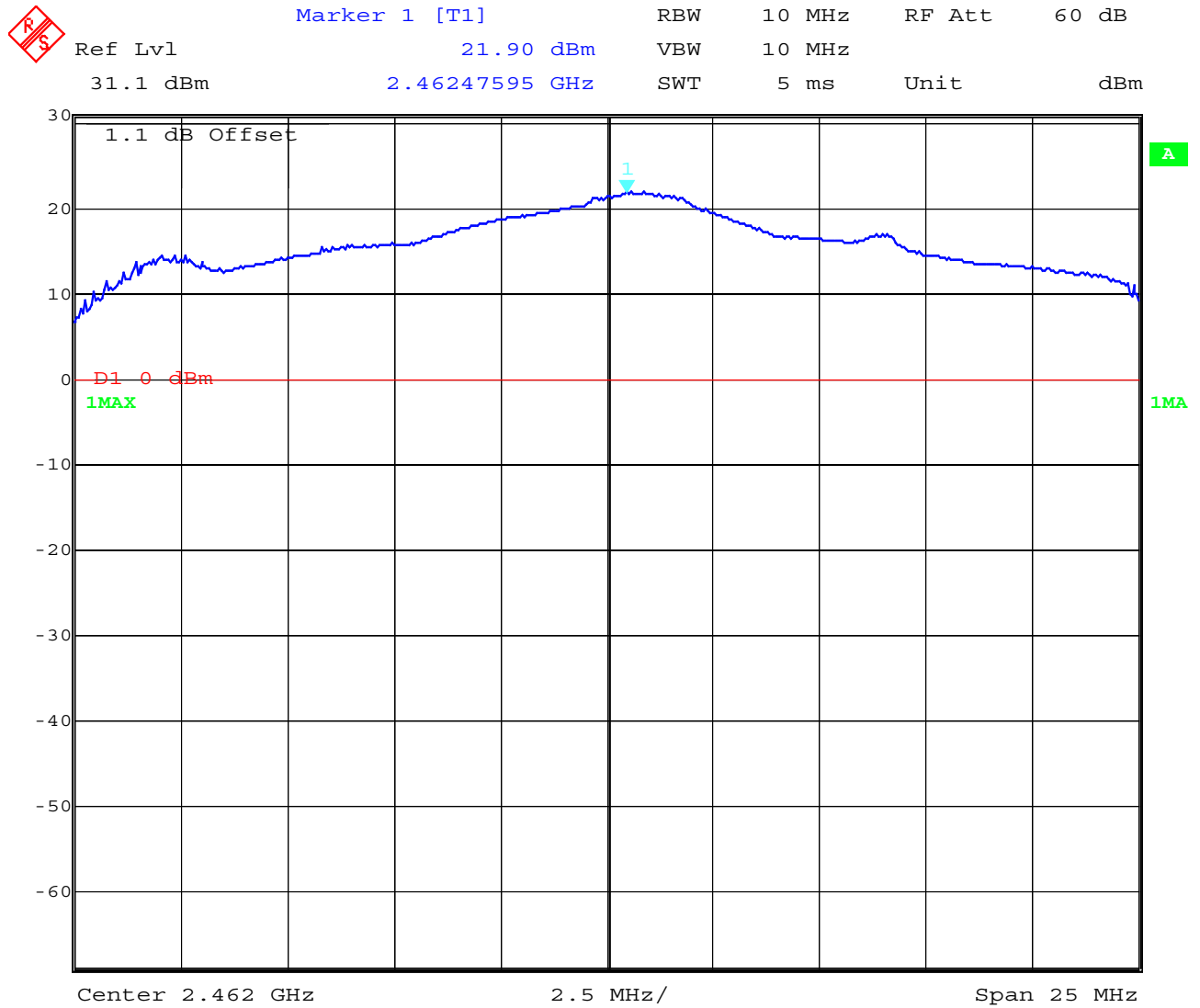


Date: 25.APR.2002 10:10:25

**MAXIMUM PEAK OUTPUT POWER
(CONDUCTED)**

SUBCLAUSE § 15.247 (b) (1)

high channel peak



Date: 25.APR.2002 09:21:56

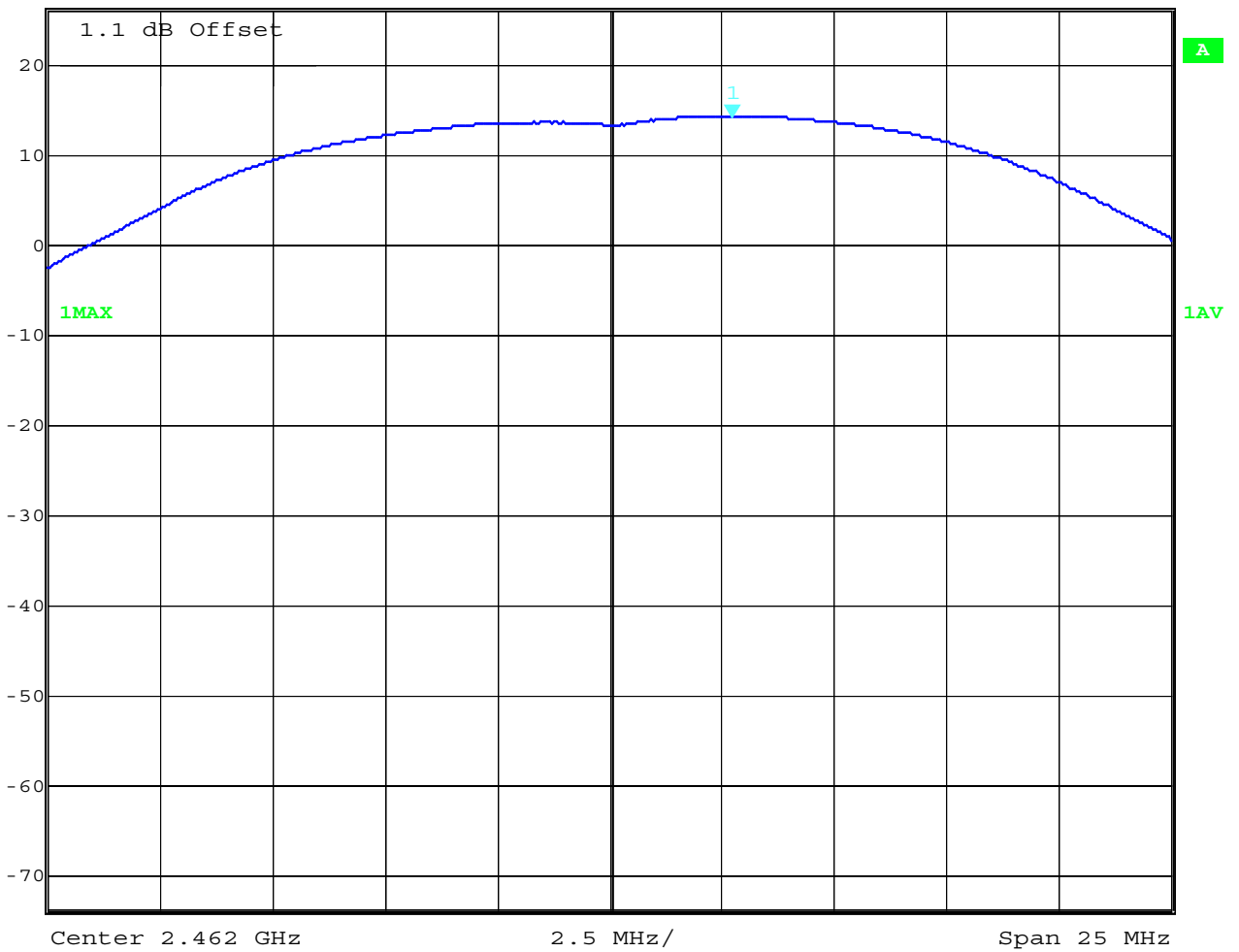
**MAXIMUM PEAK OUTPUT POWER
(CONDUCTED)**

SUBCLAUSE § 15.247 (b) (1)

high channel average



| | | | | | |
|----------|----------------|-----|--------|--------|-------|
| | Marker 1 [T1] | RBW | 10 MHz | RF Att | 50 dB |
| Ref Lvl | 14.31 dBm | VBW | 10 MHz | | |
| 26.3 dBm | 2.46473046 GHz | SWT | 5 ms | Unit | dBm |



Date: 25.APR.2002 09:47:13

**MAXIMUM PEAK OUTPUT POWER
(RADIATED)**

SUBCLAUSE § 15.247 (b) (1)

| TEST CONDITIONS | | MAXIMUM PEAK OUTPUT POWER (mW) | | |
|---|--------------------------|--------------------------------|------------------------|------------------------|
| | | 2412 | 2437 | 2462 |
| Frequency (MHz) | | | | |
| T _{nom} (22.4)°C | V _{nom} (5.0)V | 20.18 dBm 104.23 mW | 20.34 dBm 108.14 mW | 20.01 dBm 100.23 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 |

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

Power spectral density

§15.247 (d)

| TEST CONDITIONS | | RF POWER LEVEL IN 3 kHz BW | | |
|---|-------------------------|----------------------------|------------|------------|
| | | 2412 | 2437 | 2462 |
| Frequency (MHz) | | | | |
| T _{nom} (22.4)°C | V _{nom} (5.0)V | -12.07 dBm | -11.89 dBm | -12.88 dBm |
| Maximum deviation from output power under extreme test conditions (dBc) | | | | |
| 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)

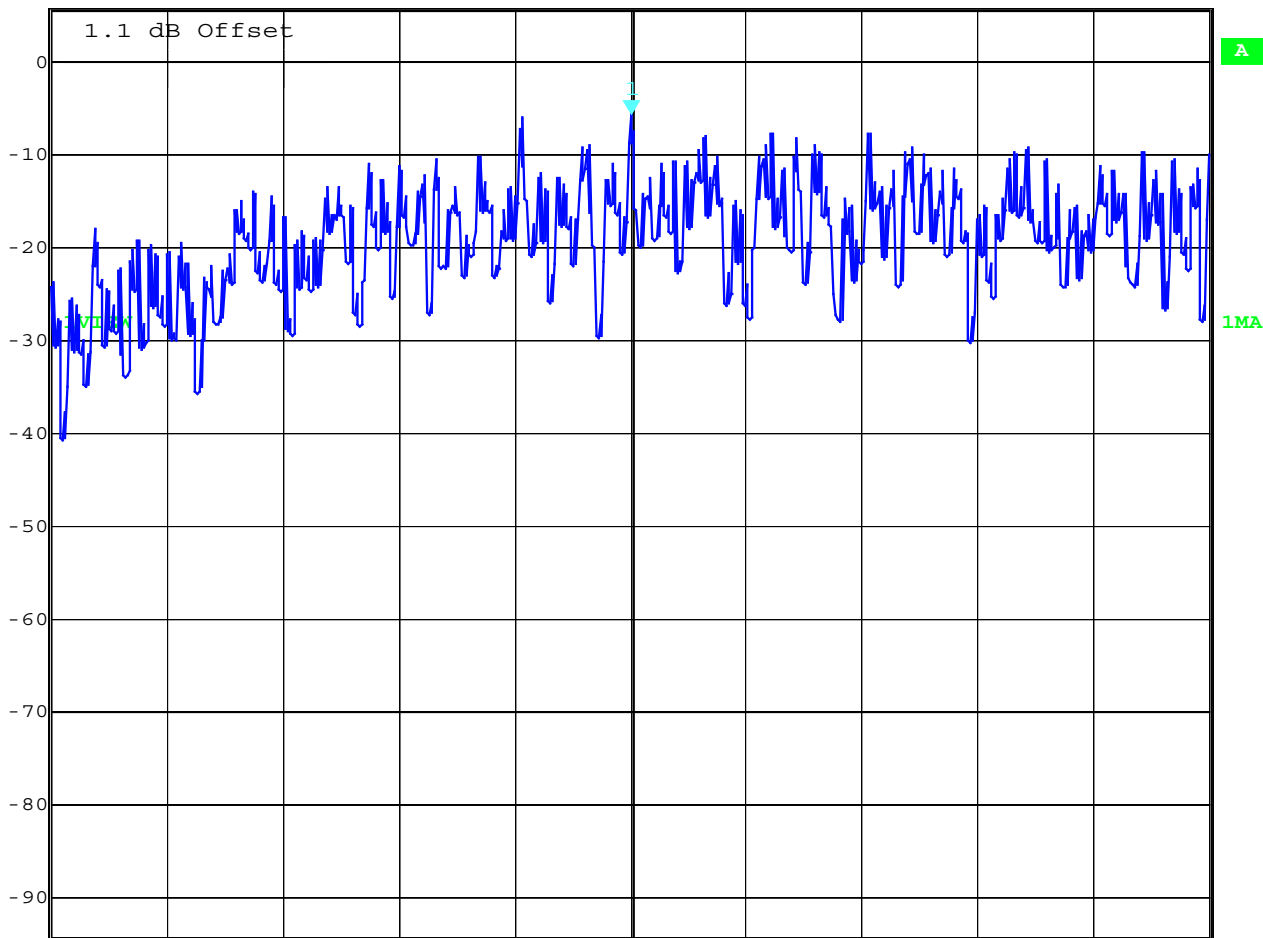
The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band

POWER SPECTRAL DENSITY
2412 MHz

SUBCLAUSE § 15.247 (d)



| | | | | | |
|---------|-------------------|-----|--------|--------|-------|
| | Marker 1 [T1 NOI] | RBW | 3 kHz | RF Att | 30 dB |
| Ref Lvl | -46.87 dBm/Hz | VBW | 3 kHz | | |
| 5.8 dBm | 2.41267786 GHz | SWT | 420 ms | Unit | dBm |



Center 2.412676353 GHz 150 kHz/ Span 1.5 MHz

Date: 25.APR.2002 10:02:12

LIMIT

SUBCLAUSE §15.247(d)

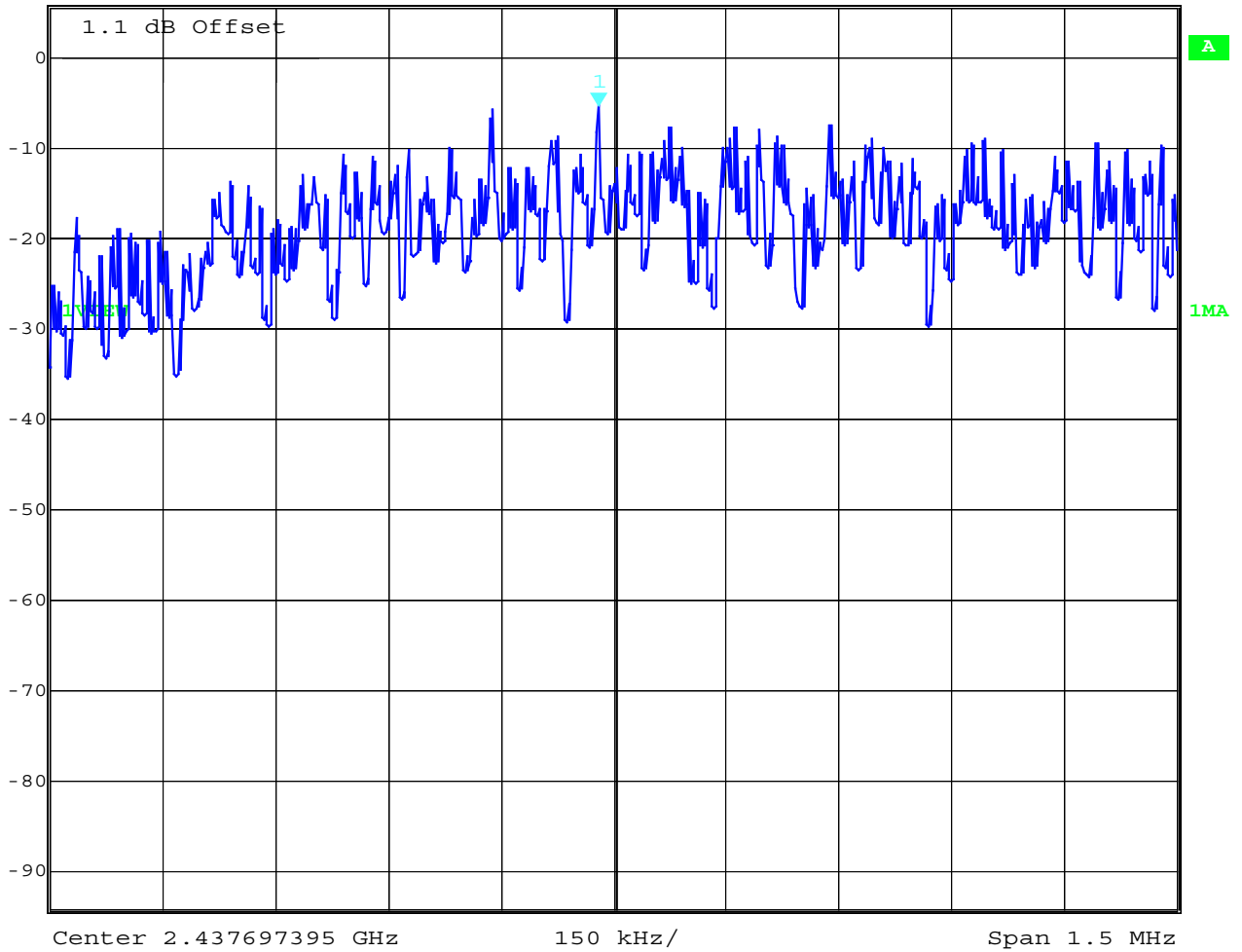
The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band

POWER SPECTRAL DENSITY
2437 MHz

SUBCLAUSE § 15.247 (d)



| | | | | | |
|---------|-------------------|-----|--------|--------|-------|
| | Marker 1 [T1 NOI] | RBW | 3 kHz | RF Att | 30 dB |
| Ref Lvl | -46.69 dBm/Hz | VBW | 3 kHz | | |
| 5.8 dBm | 2.43767786 GHz | SWT | 420 ms | Unit | dBm |



Date: 25.APR.2002 10:05:32

LIMIT

SUBCLAUSE §15.247(d)

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

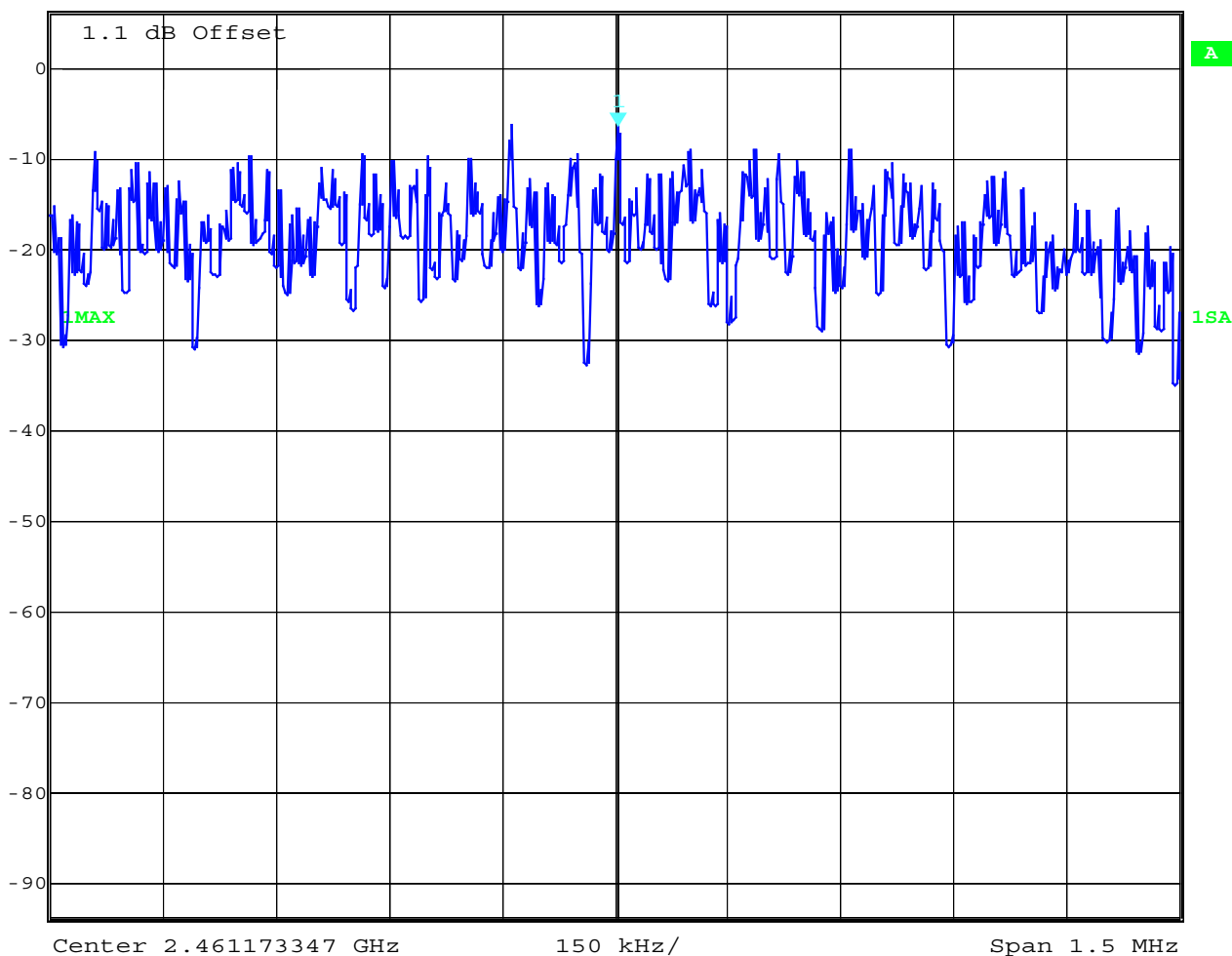
POWER SPECTRAL DENSITY

SUBCLAUSE § 15.247 (d)

2462 MHz



| | | | | | |
|---------|-------------------|-----|--------|--------|-------|
| | Marker 1 [T1 NOI] | RBW | 3 kHz | RF Att | 30 dB |
| Ref Lvl | -47.65 dBm/Hz | VBW | 3 kHz | | |
| 6.3 dBm | 2.46117786 GHz | SWT | 420 ms | Unit | dBm |



Date: 25.APR.2002 09:28:47

LIMIT

SUBCLAUSE §15.247(d)

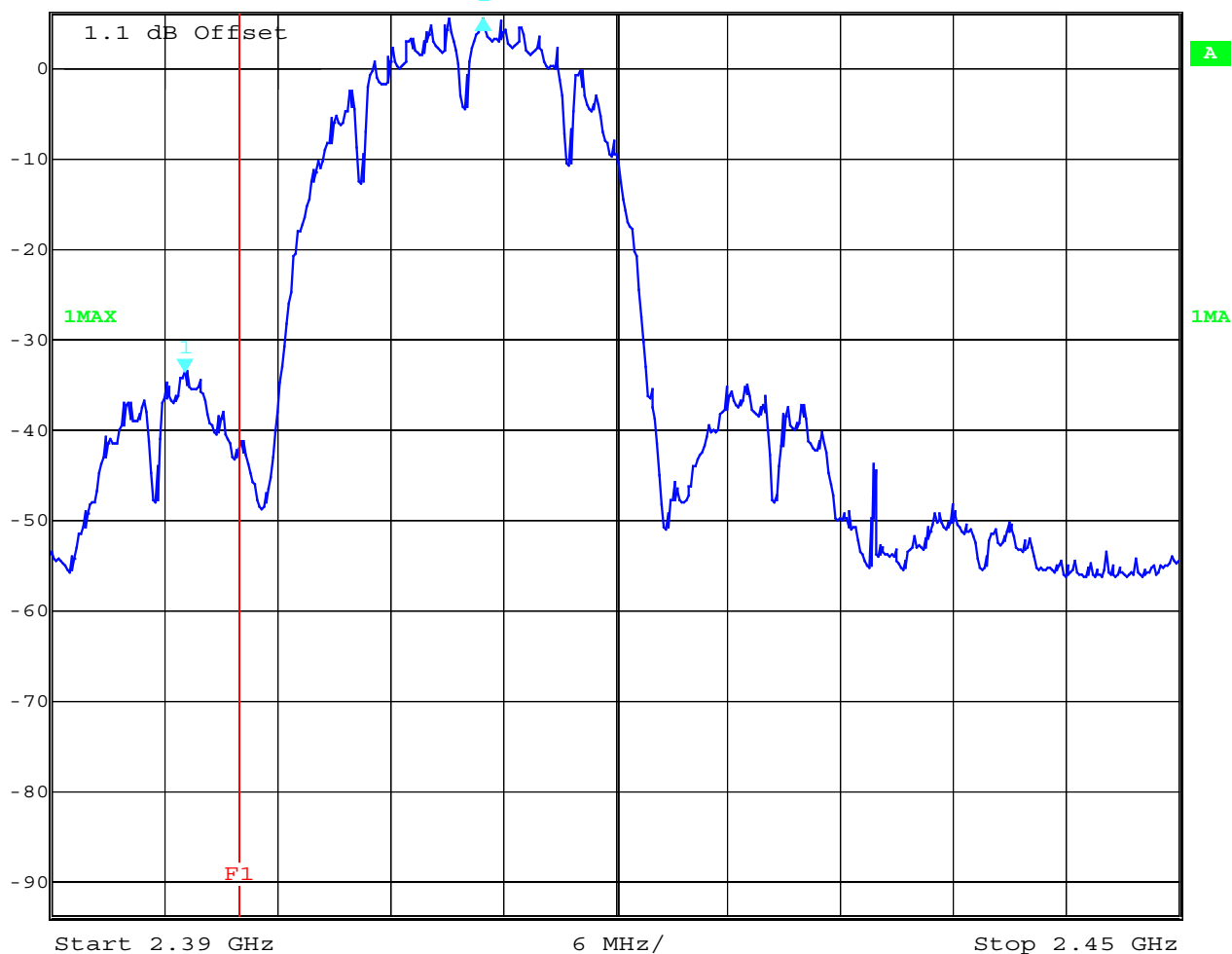
The peak power spectral density shall not be greater than 8 dBm in any 3 kHz band

Band-edge compliance of conducted emissions

§15.247 (c)

Low channel

| | | | | | |
|--|--------------|-----------------|---------|---------|----------|
| | Delta 1 [T1] | RBW | 100 kHz | RF Att | 30 dB |
| | Ref Lvl | 39.18 dB | VBW | 100 kHz | |
| | 6.3 dBm | 15.87174349 MHz | SWT | 15 ms | Unit dBm |



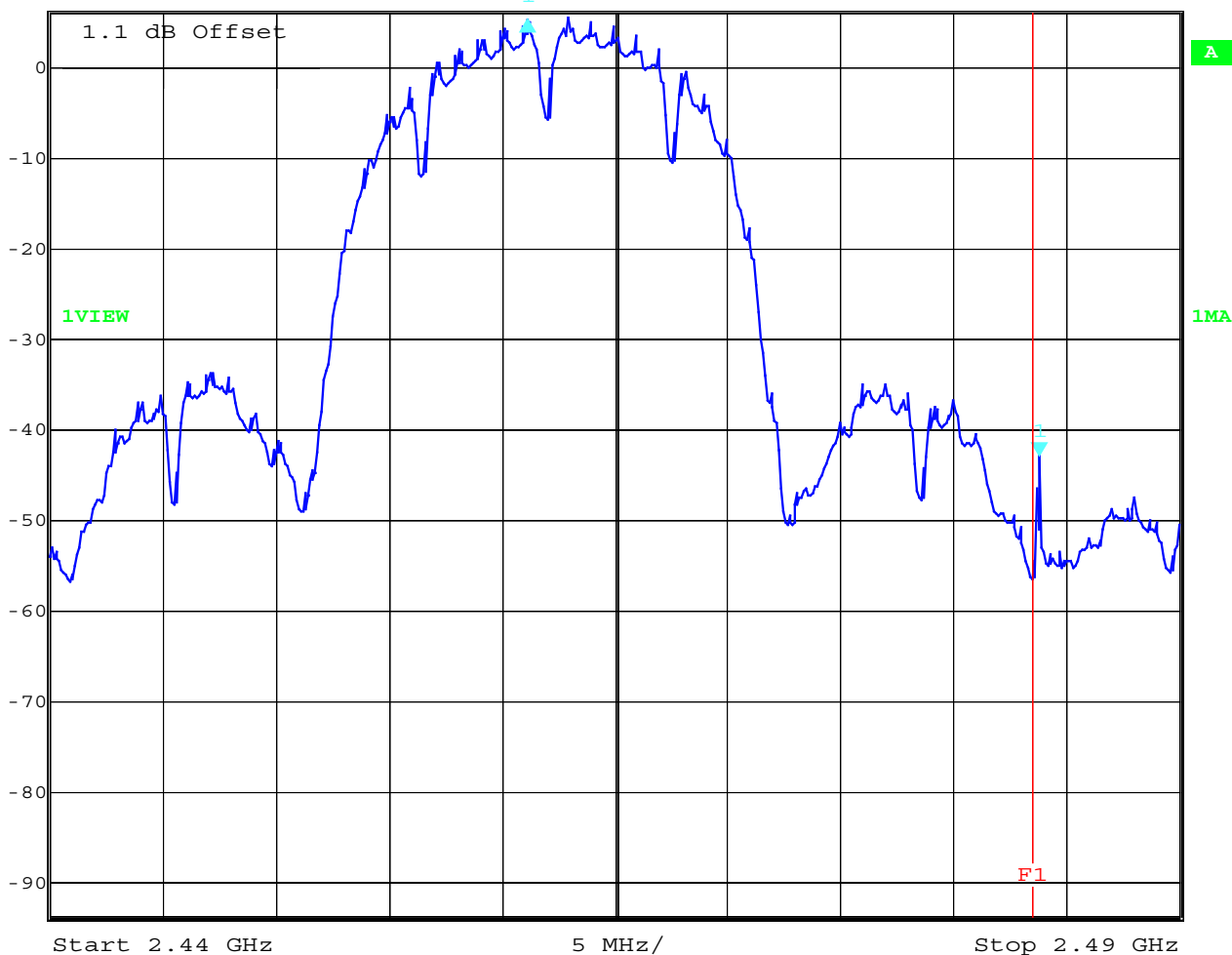
Date: 25.APR.2002 09:35:40

Band-edge compliance of conducted emissions

§15.247 (c)

high channel

Delta 1 [T1]
RBW 100 kHz
RF Att 30 dB
Ref Lvl 47.85 dB
VBW 100 kHz
6.3 dBm
-22.68086172 MHz
SWT 12.5 ms
Unit dBm

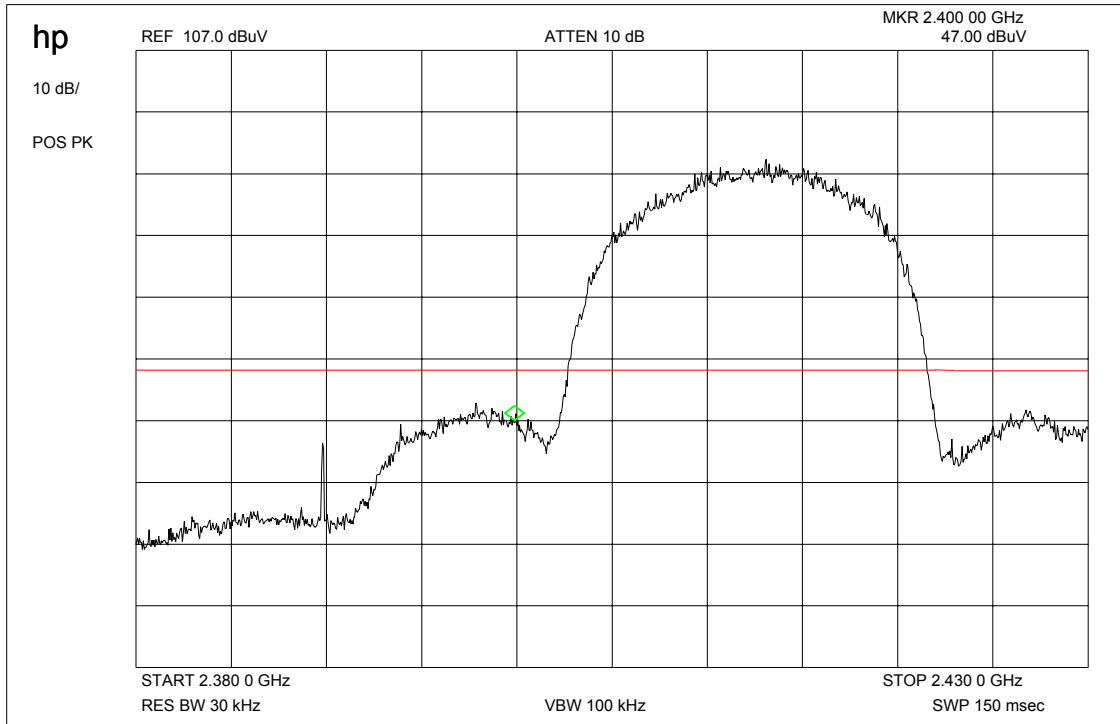


Date: 25.APR.2002 09:32:10

Band-edge compliance of conducted emissions

§15.247 (c)

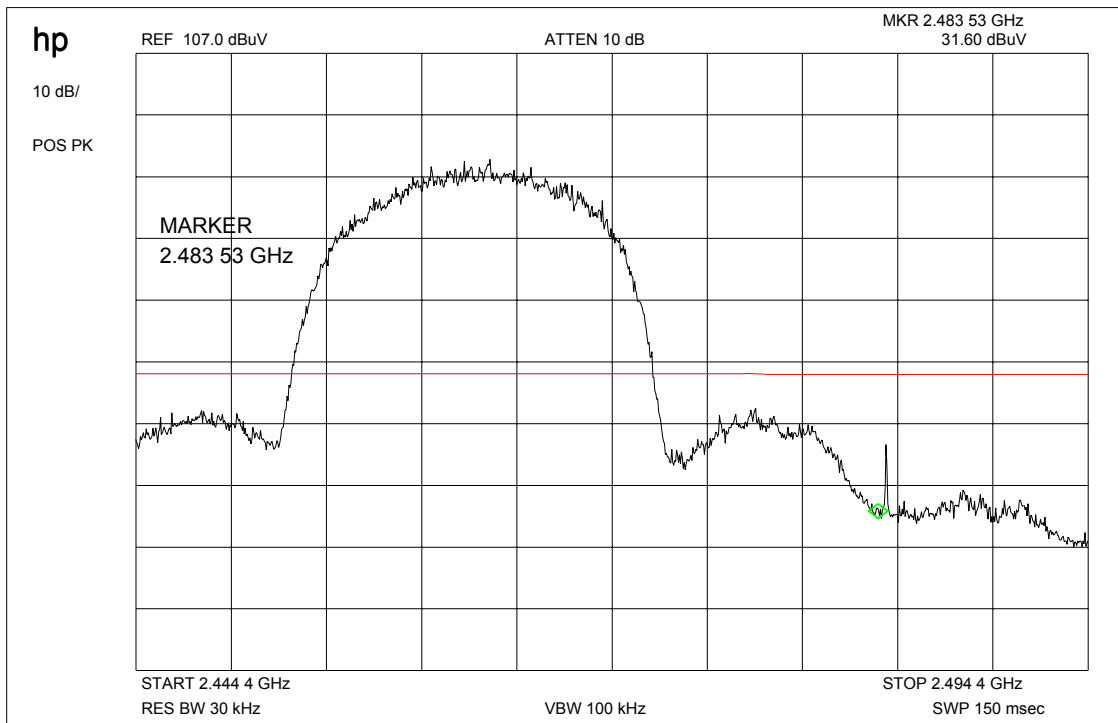
Low channel



Band-edge compliance of conducted emissions

§15.247 (c)

High channel

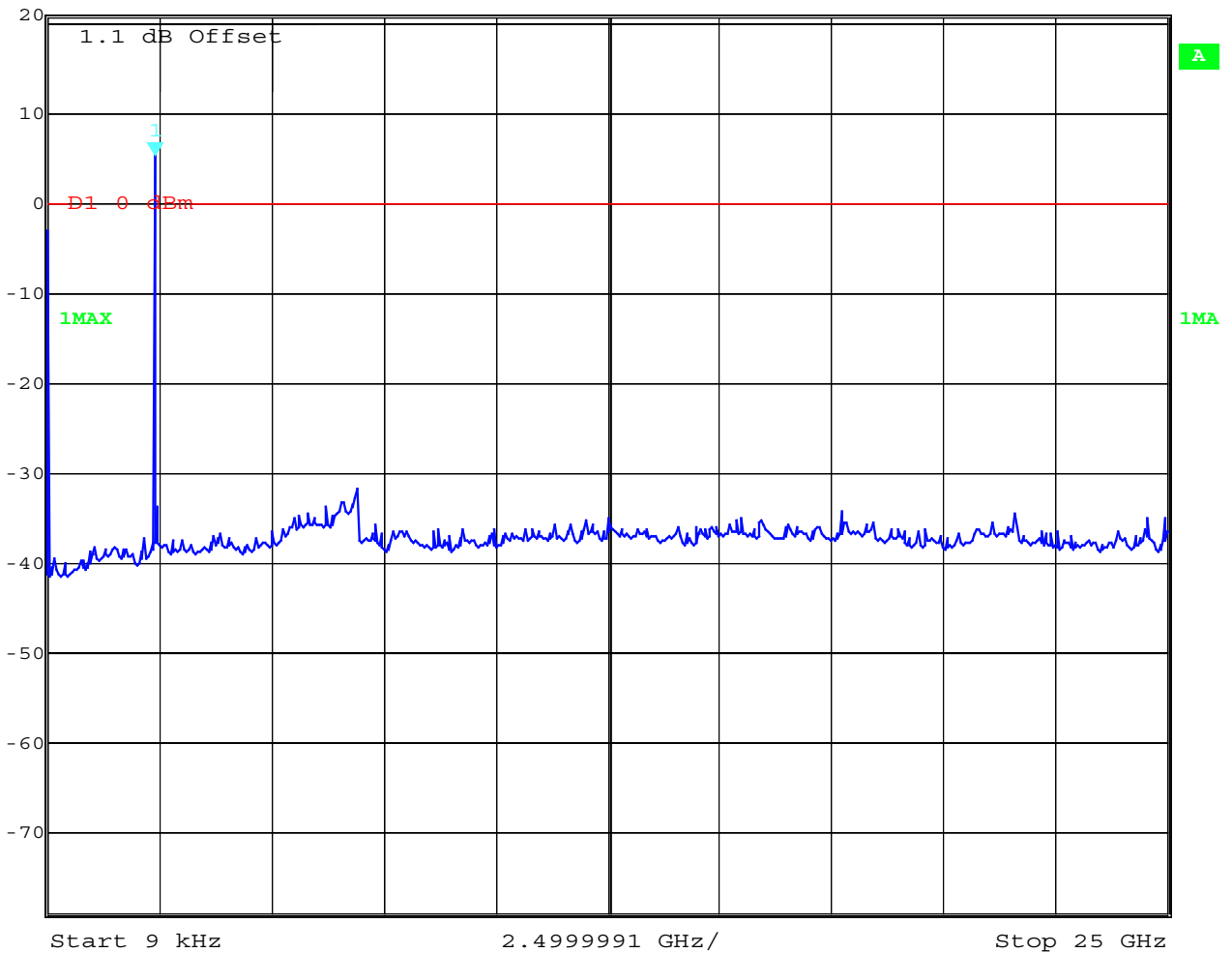


**SPURIOUS EMISSION
CONDUCTED**

§ 15.247 (c) (1)

Mid channel (peak)

| | | | | | | |
|--|----------|----------------|-----|---------|--------|-------|
| | Ref Lvl | Marker 1 [T1] | RBW | 100 kHz | RF Att | 50 dB |
| | 21.1 dBm | 5.59 dBm | VBW | 100 kHz | | |
| | | 2.40481775 GHz | SWT | 6.4 s | Unit | dBm |




Date: 25.APR.2002 09:11:05

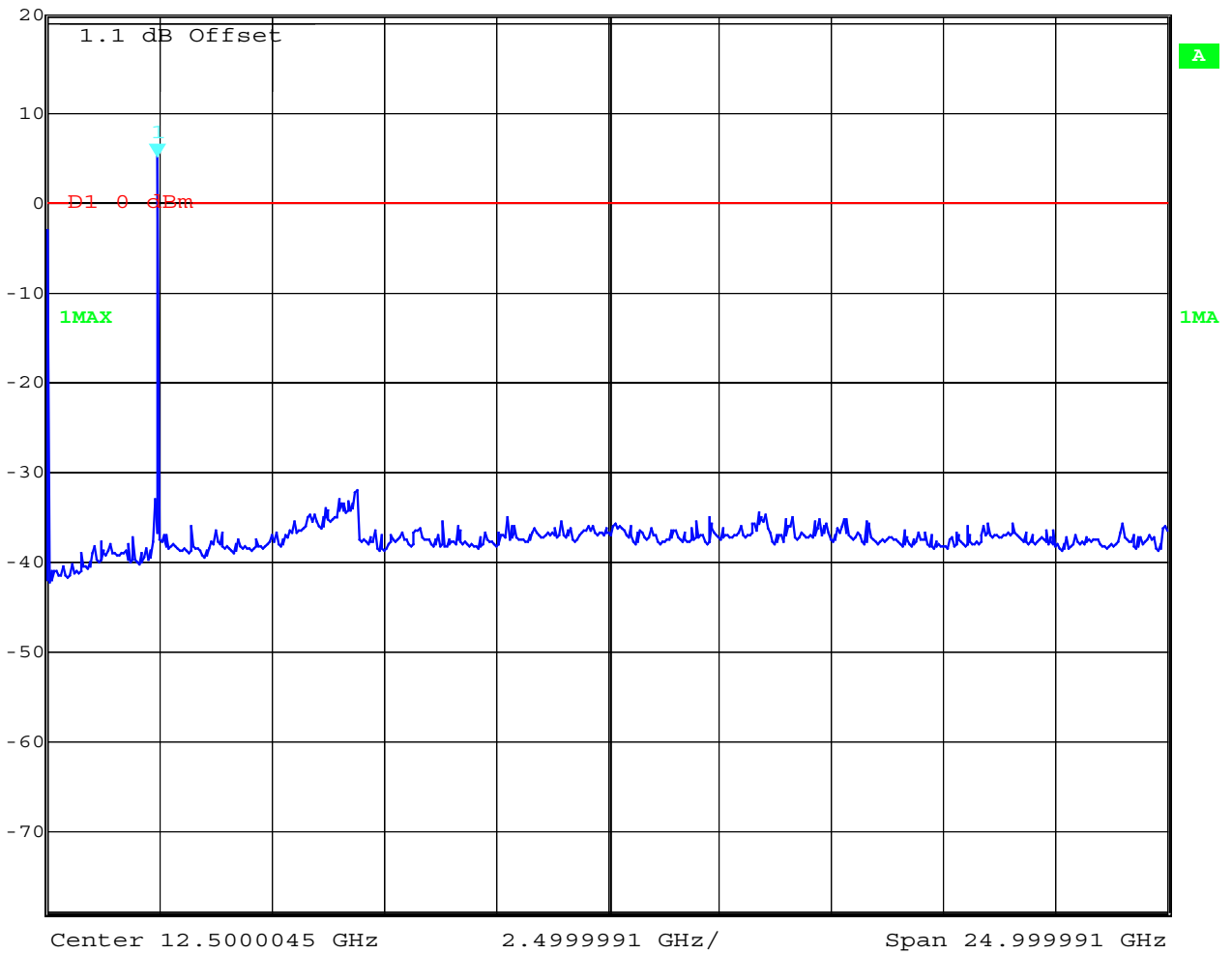
No spurious found in the restricted bands (2310 – 2390 MHz and 2483,5 – 2500 MHz)

**SPURIOUS EMISSION
CONDUCTED**

§ 15.247 (c) (1)

High channel

 Marker 1 [T1] RBW 100 kHz RF Att 50 dB
Ref Lvl 21.1 dBm 5.24 dBm VBW 100 kHz
2.45491794 GHz SWT 6.4 s Unit dBm



Date: 25.APR.2002 09:19:32

No spurious found in the restricted bands (2310 – 2390 MHz and 2483,5 – 2500 MHz)

SPURIOUS EMISSION (radiated)

§ 15.247 (c) (1)

Low Channel

Data File : /22863_05.DOC

24 Apr 2002

| No | EMISSION | SPEC LIMIT | MEASUREMENTS | | | SITE | | | CORR FACTOR | COMMENTS |
|----|---------------|------------|--------------|------|------|------|--------|---------|-------------|----------|
| | FREQUENCY MHz | | ABS | dLIM | MODE | POL | HGT cm | AZM deg | | |
| 1 | 198.9 | 33.0 | 23.4 | -9.6 | PK | V | 97 | 0 | N/T | |
| 2 | 240.8 | 35.5 | 26.3 | -9.2 | PK | H | 332 | 360 | N/T | |
| 3 | 497.1 | 35.5 | 29.3 | -6.2 | PK | V | 97 | 360 | N/T | |
| 4 | 596.6 | 35.5 | 30.1 | -5.4 | PK | V | 97 | 360 | N/T | |

Mid Channel

Data File : /22863_10.DOC

24 Apr 2002

| No | EMISSION | SPEC LIMIT | MEASUREMENTS | | | SITE | | | CORR FACTOR | COMMENTS |
|----|---------------|------------|--------------|-------|------|------|--------|---------|-------------|----------|
| | FREQUENCY MHz | | ABS | dLIM | MODE | POL | HGT cm | AZM deg | | |
| 1 | 99.5 | 33.0 | 24.6 | -8.4 | PK | V | 101 | 0 | N/T | |
| 2 | 198.9 | 33.0 | 23.2 | -9.8 | PK | V | 101 | 0 | N/T | |
| 3 | 224.5 | 35.5 | 23.7 | -11.8 | PK | H | 333 | 360 | N/T | |
| 4 | 598.264 | 35.5 | 26.0 | -9.5 | QP | V | 297 | 335 | 22.1 | |

High Channel

Data File : /22863_15.DOC

24 Apr 2002

| No | EMISSION | SPEC LIMIT | MEASUREMENTS | | | SITE | | | CORR FACTOR | COMMENTS |
|----|---------------|------------|--------------|-------|------|------|--------|---------|-------------|----------|
| | FREQUENCY MHz | | ABS | dLIM | MODE | POL | HGT cm | AZM deg | | |
| 1 | 99.3 | 33.0 | 21.7 | -11.3 | PK | V | 100 | 0 | N/T | |
| 2 | 199.2 | 33.0 | 23.3 | -9.7 | PK | V | 100 | 0 | N/T | |
| 3 | 240.8 | 35.5 | 26.1 | -9.4 | PK | H | 331 | 360 | N/T | |
| 4 | 298.7 | 35.5 | 25.3 | -10.2 | PK | H | 331 | 360 | N/T | |
| 5 | 397.5 | 35.5 | 28.7 | -6.8 | PK | H | 331 | 360 | N/T | |
| 6 | 497.9 | 35.5 | 30.1 | -5.4 | PK | V | 97 | 0 | N/T | |

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

LIMITS

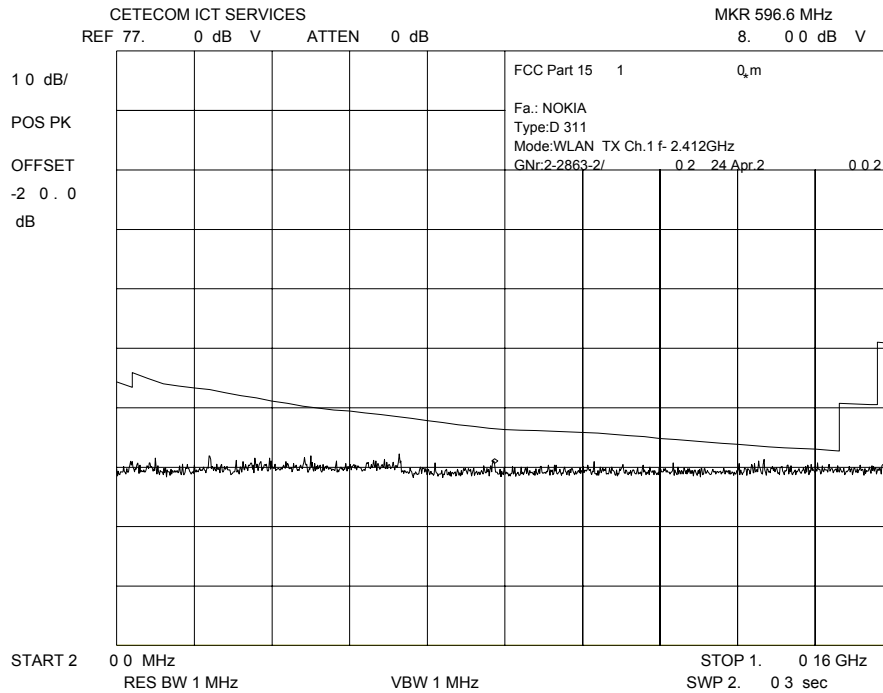
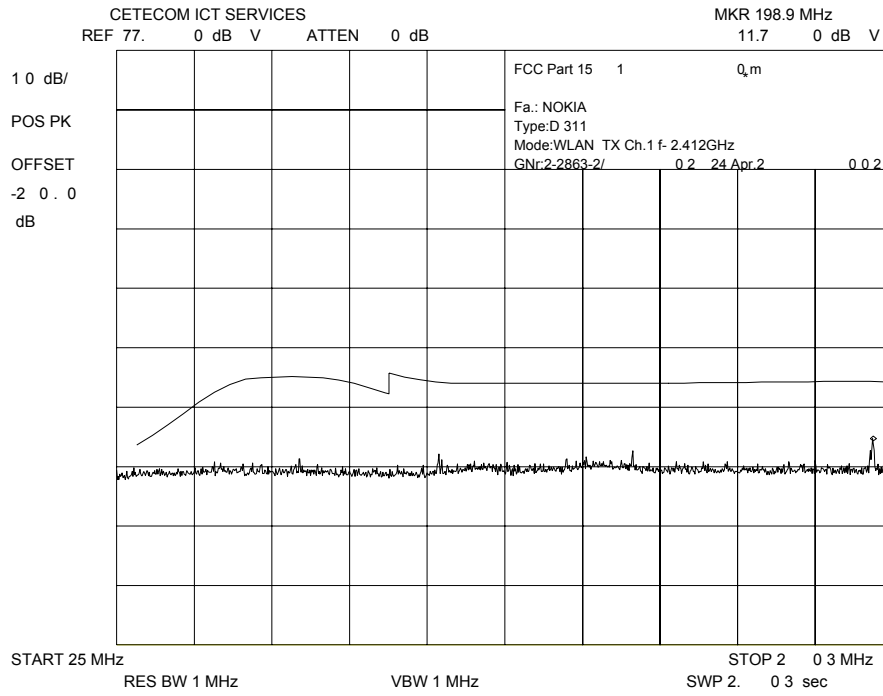
SUBCLAUSE § 15.247 (c)

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)

**EMISSION LIMITATIONS- Radiated
low channel up to 1 GHz (vertical)**

§ 15.247 (c) (1)

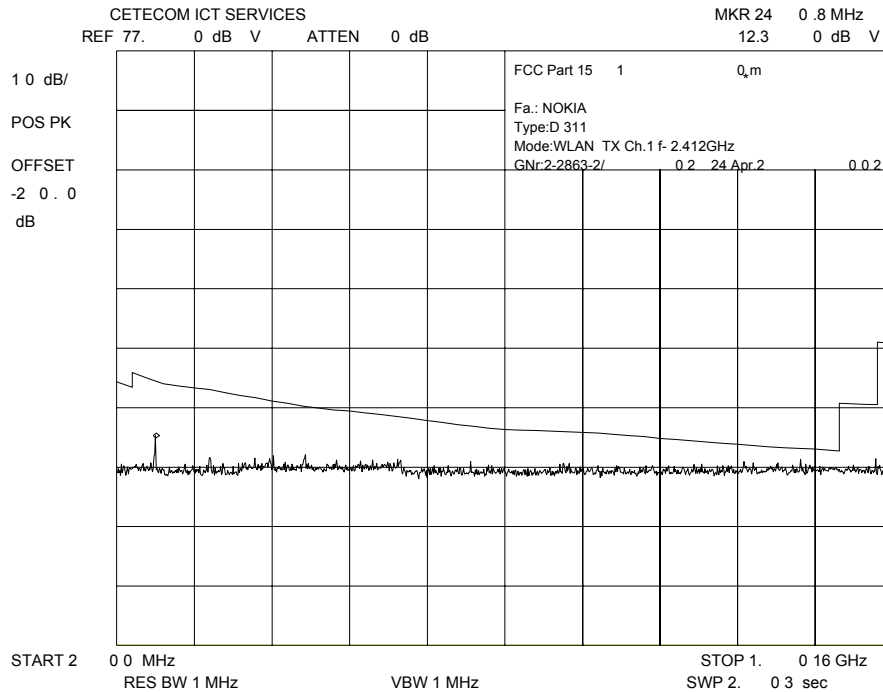
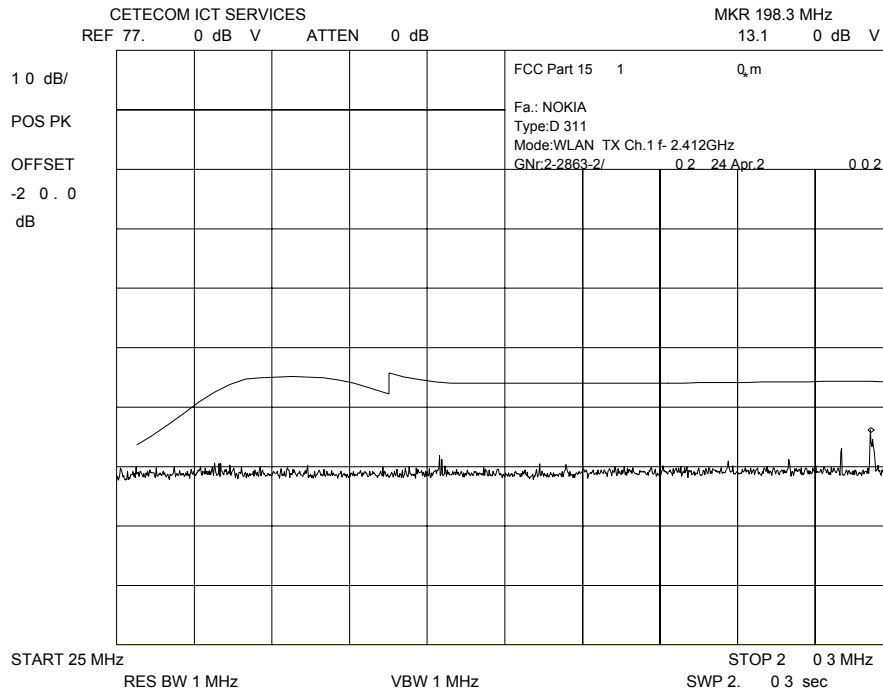


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED
(for reference numbers see test equipment listing)
17 – 24, 64

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

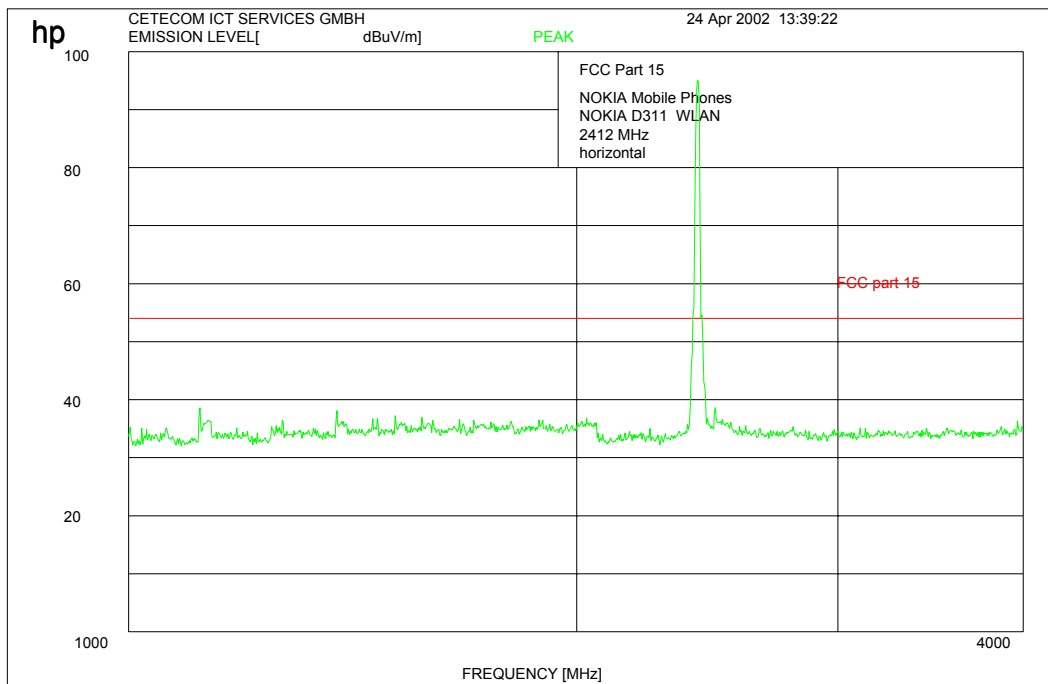
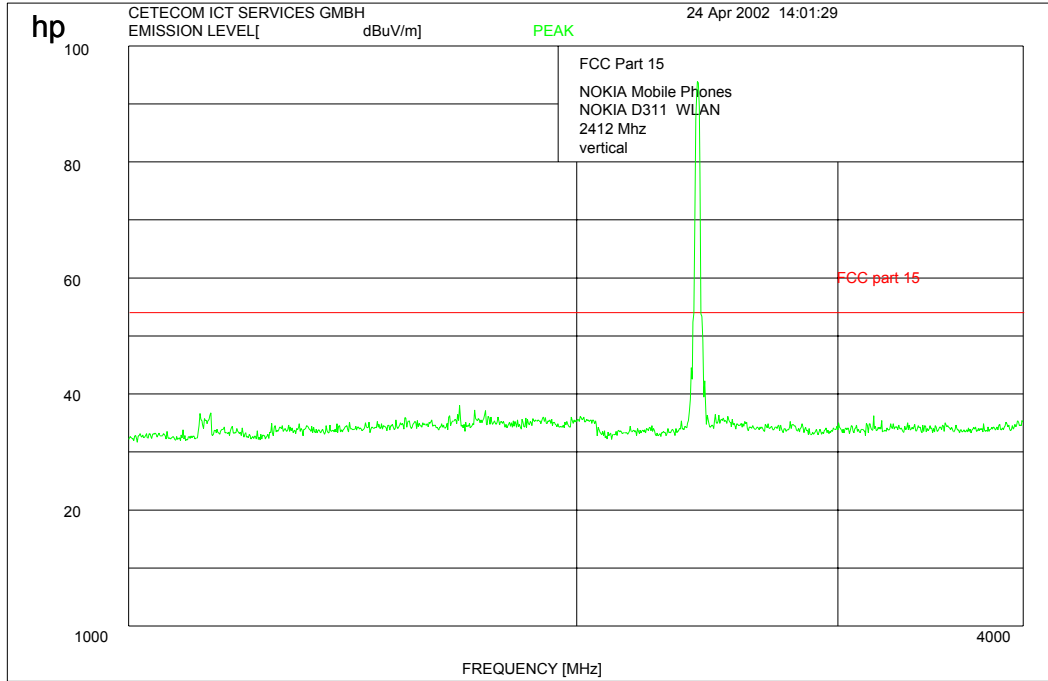
low channel up to 1 GHz (horizontal)



EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

low channel up to 4 GHz

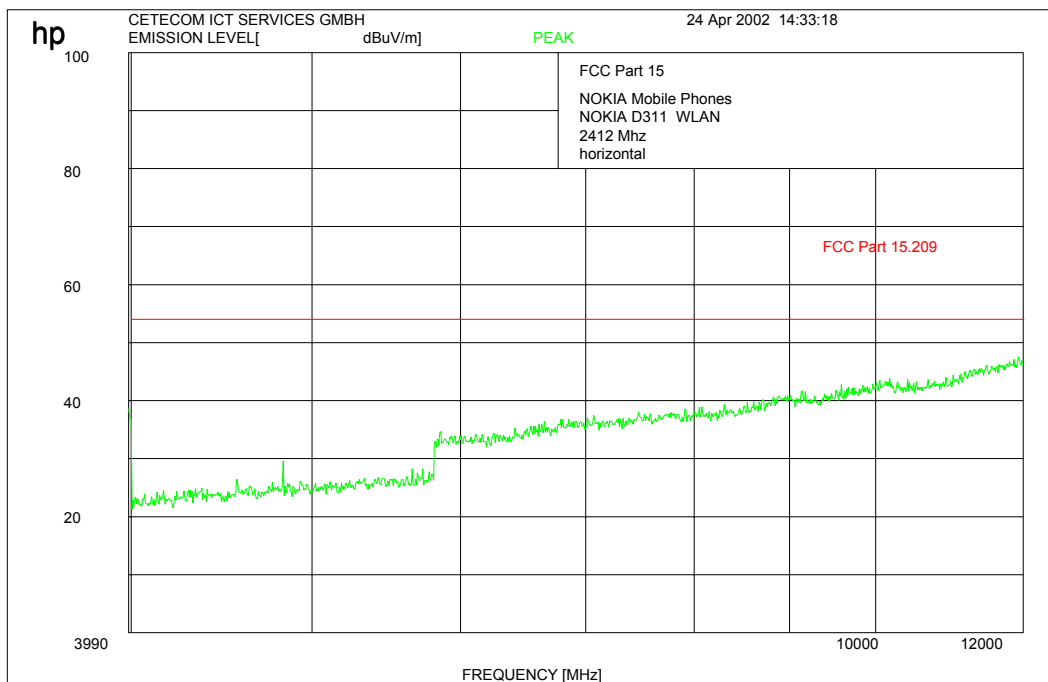
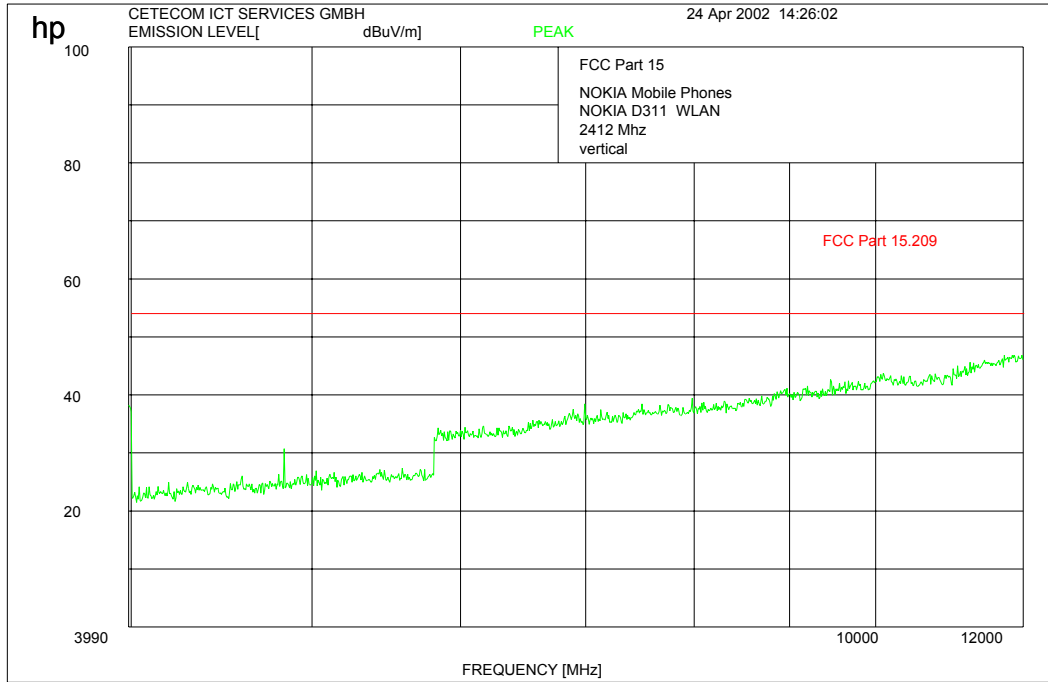


Spurious in the restricted bands (2310 – 2390 MHz and 2483,5 – 2500 MHz) are > 15dB below Limit

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

low channel up to 12 GHz (horizontal)



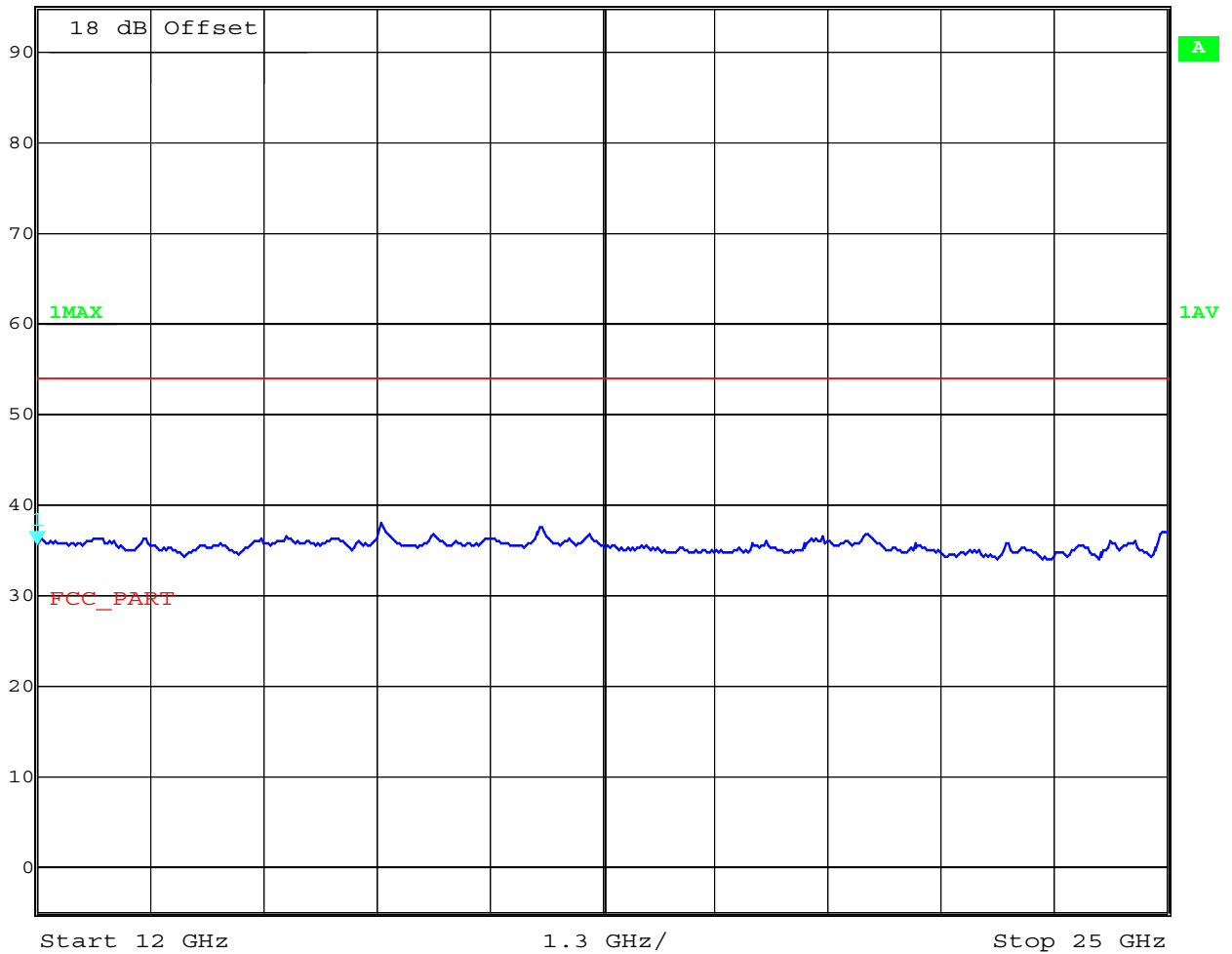
EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

low channel up to 25 GHz



| | | | | | |
|---------|-----------------|-----|-------|--------|------|
| | Marker 1 [T1] | RBW | 1 MHz | RF Att | 0 dB |
| Ref Lvl | 35.69 dBµV | VBW | 2 MHz | | |
| 95 dBµV | 12.00000000 GHz | SWT | 74 ms | Unit | dBµV |

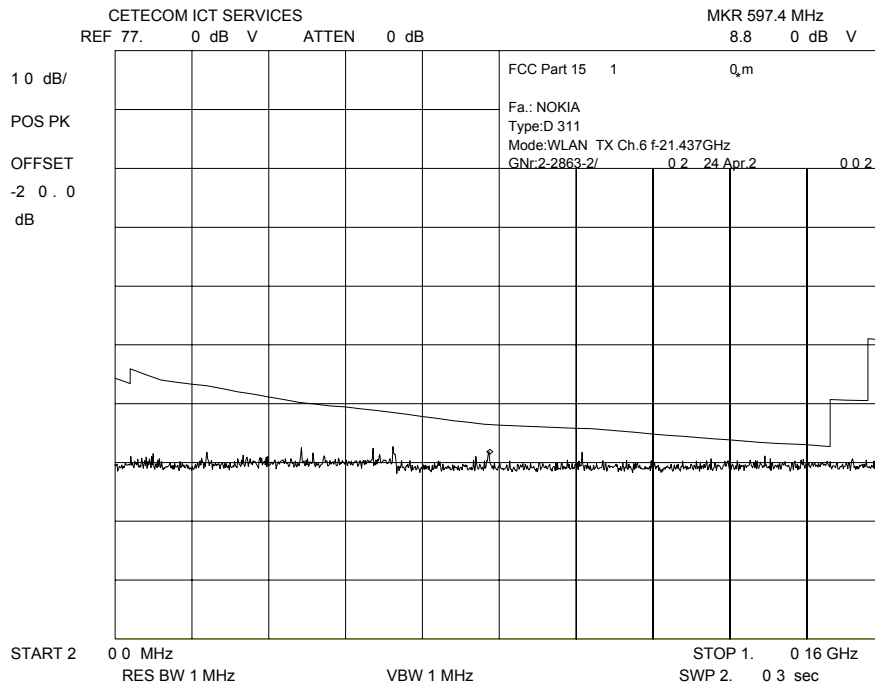
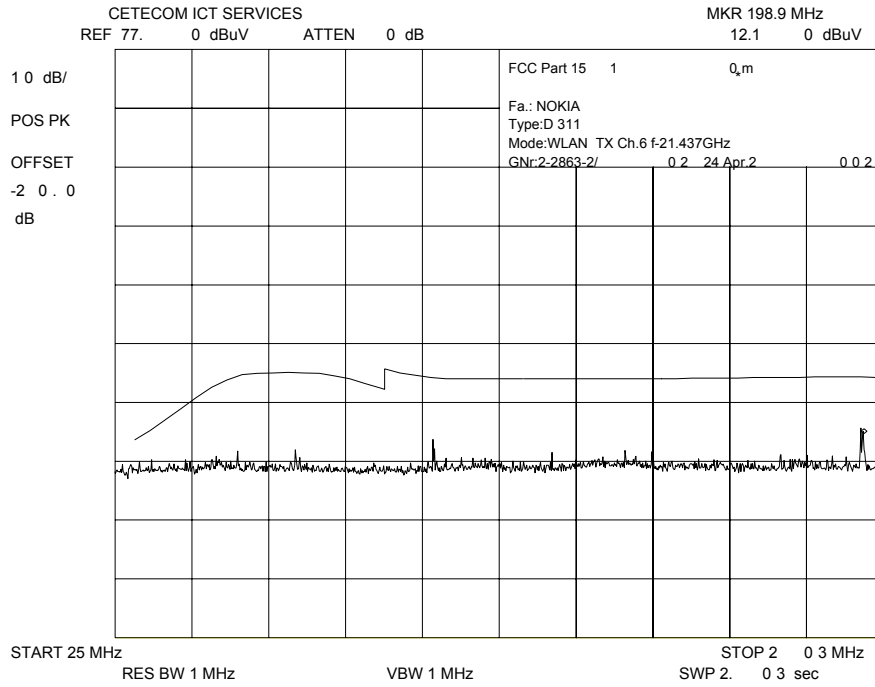


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EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

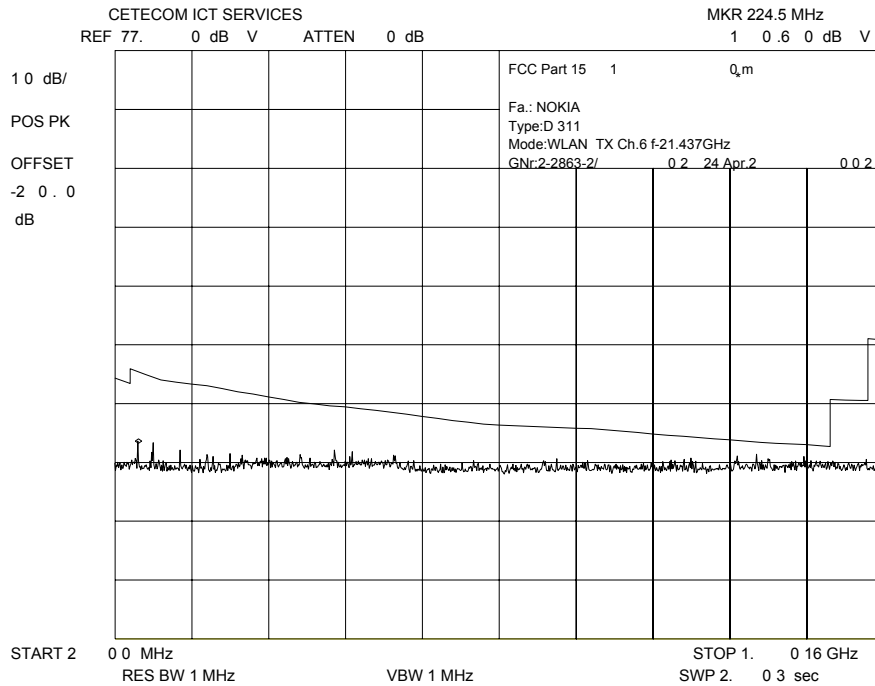
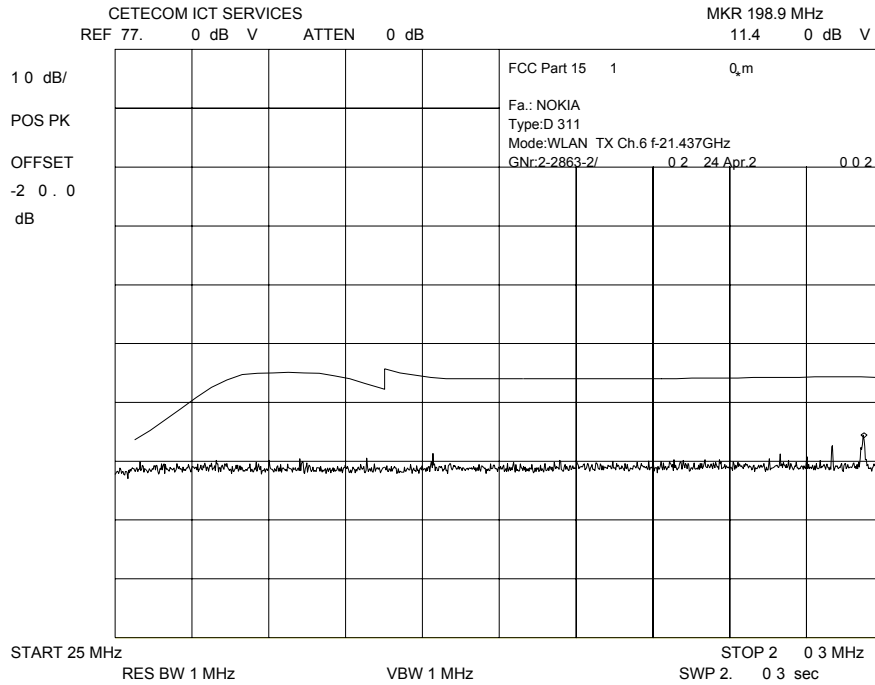
Mid channel up to 1 GHz (vertical)



EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

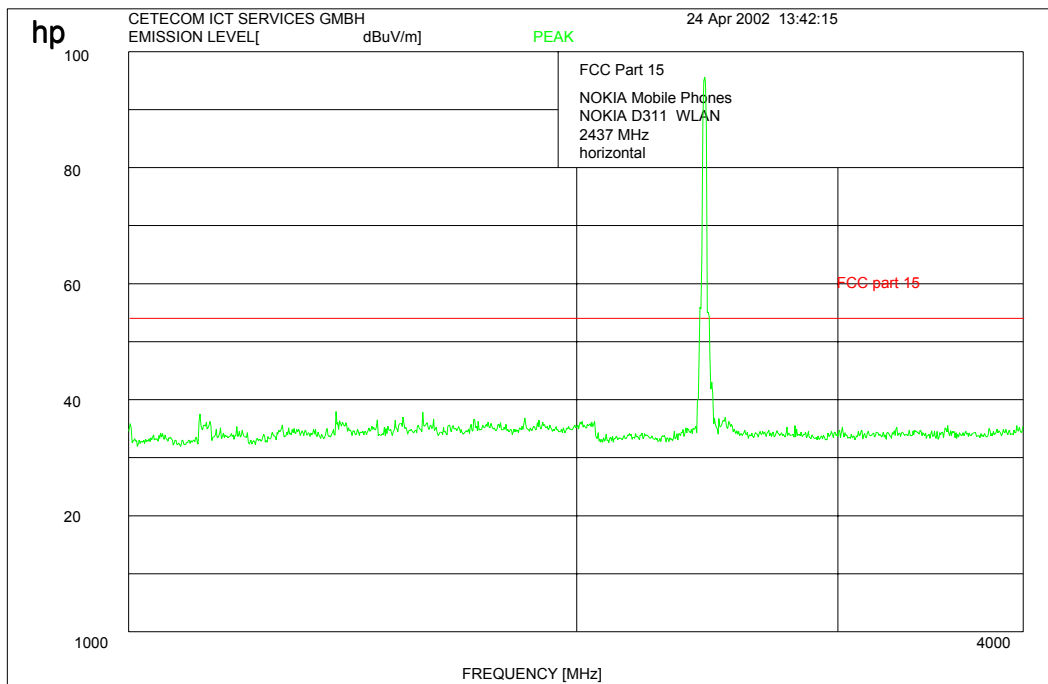
Mid channel up to 1 GHz (horizontal)



EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

Mid channel up to 4 GHz

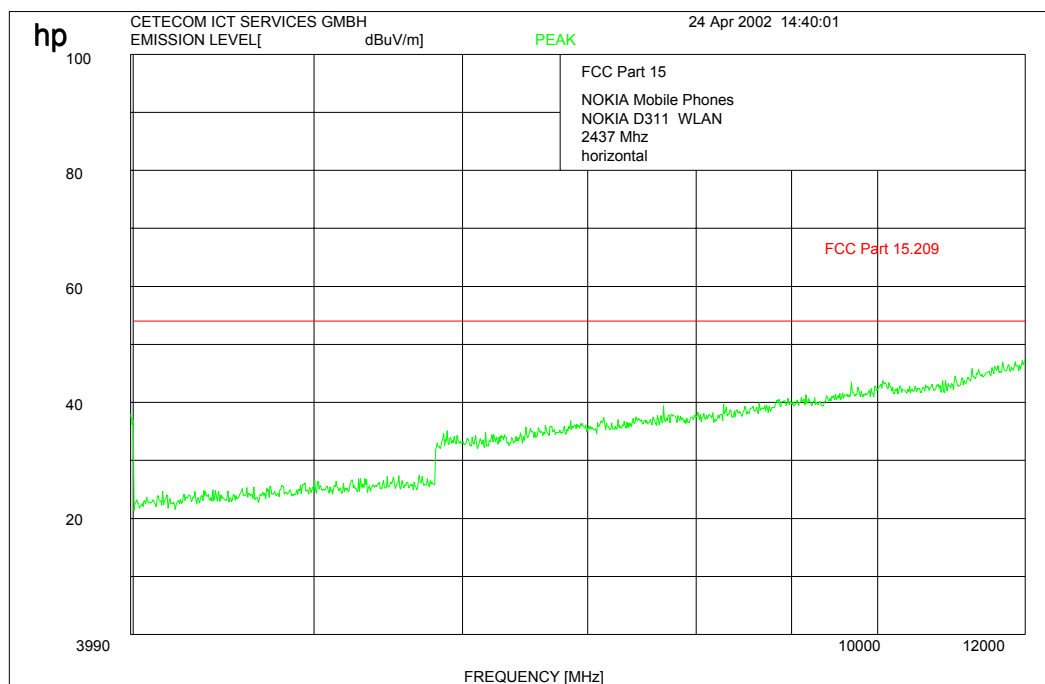
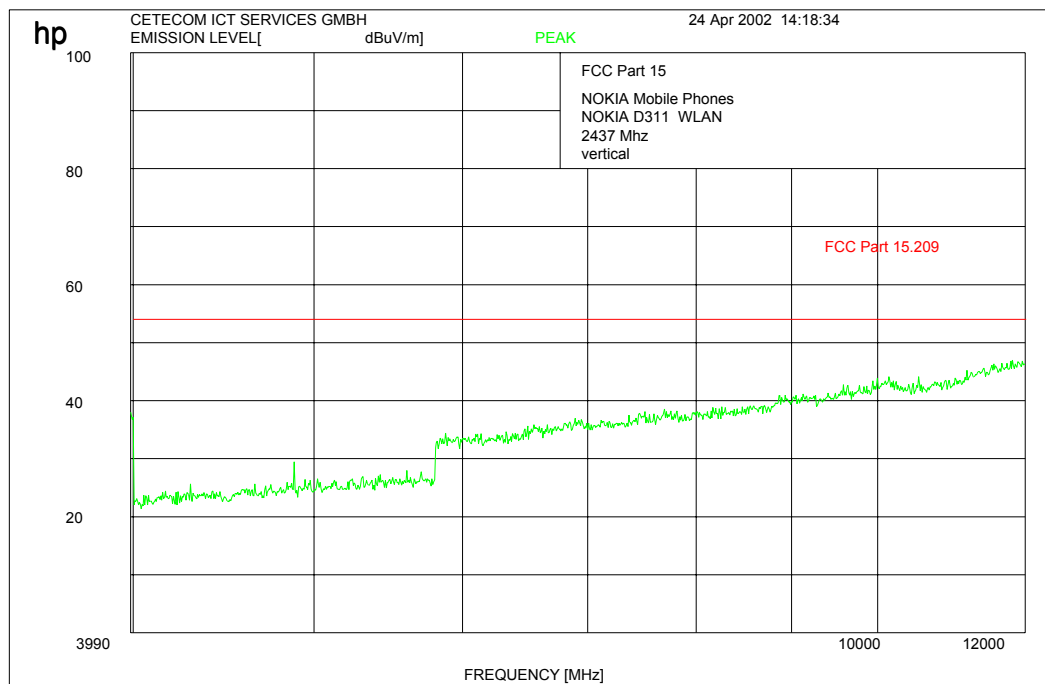


Spurious in the restricted bands (2310 – 2390 MHz and 2483,5 – 2500 MHz) are > 15dB below Limit

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

Mid channel up to 12 GHz



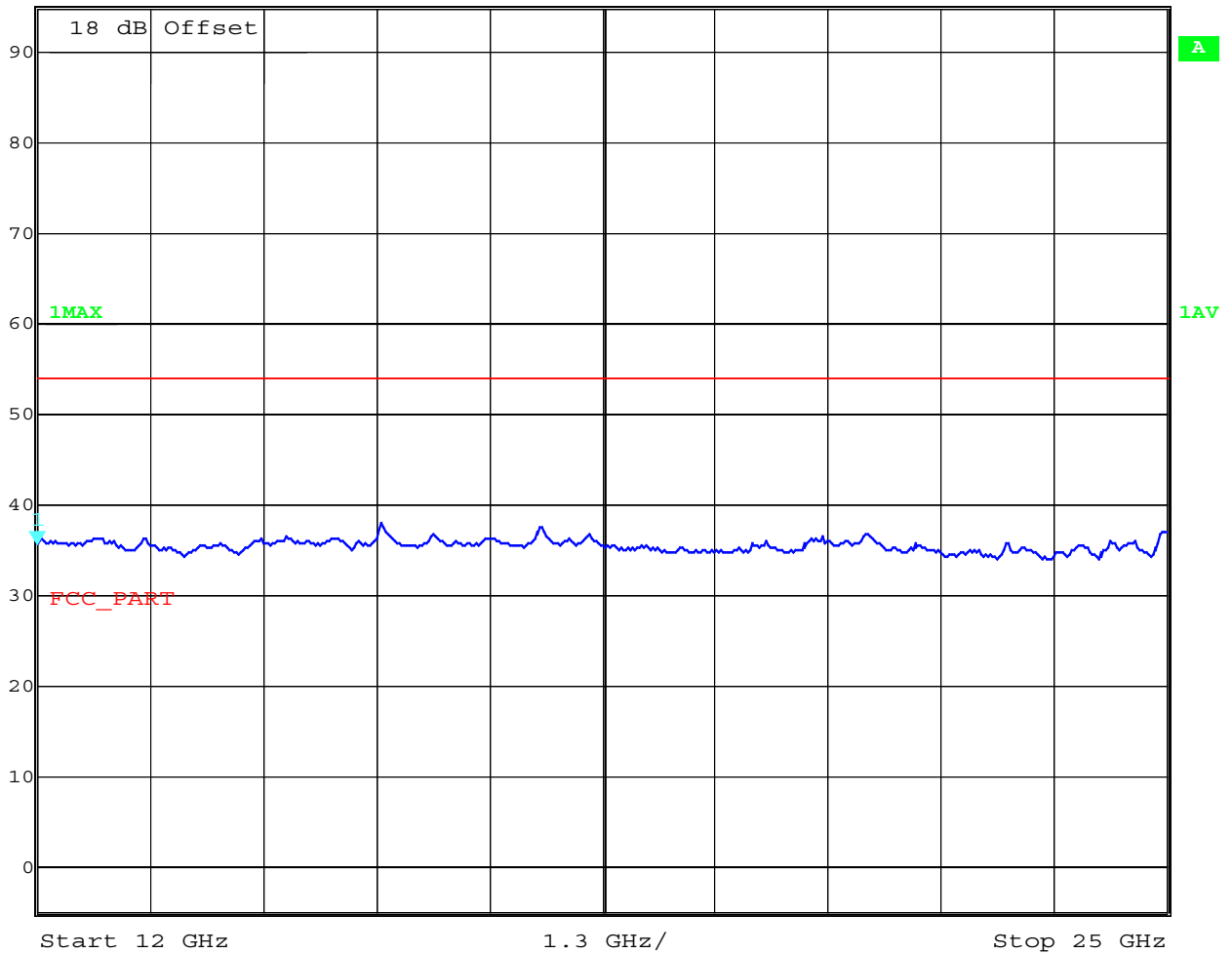
EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

Mid channel up to 25 GHz



| | | | | | |
|---------|-----------------|-----|-------|--------|------|
| | Marker 1 [T1] | RBW | 1 MHz | RF Att | 0 dB |
| Ref Lvl | 35.69 dBµV | VBW | 2 MHz | | |
| 95 dBµV | 12.00000000 GHz | SWT | 74 ms | Unit | dBµV |

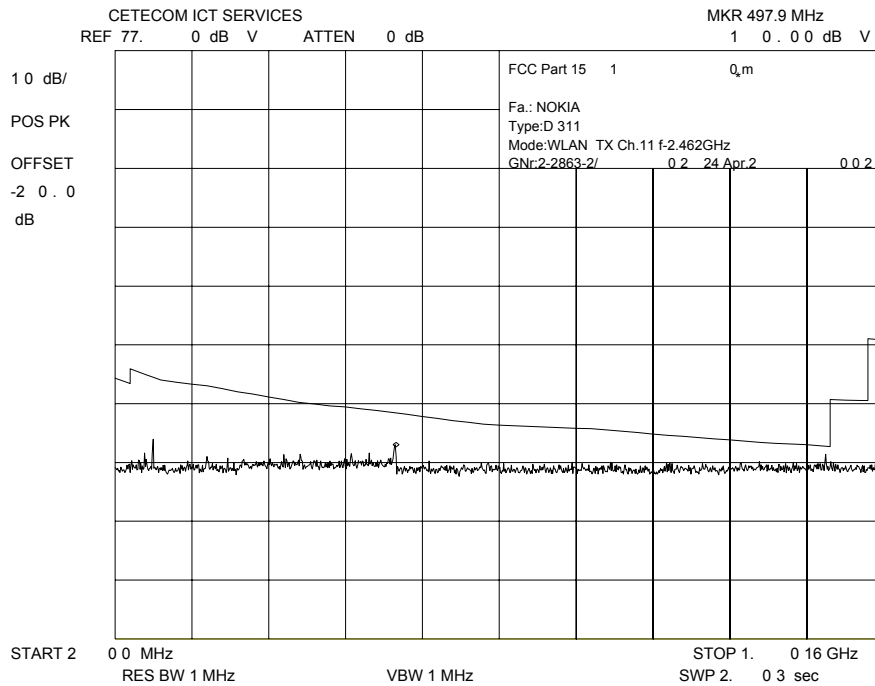
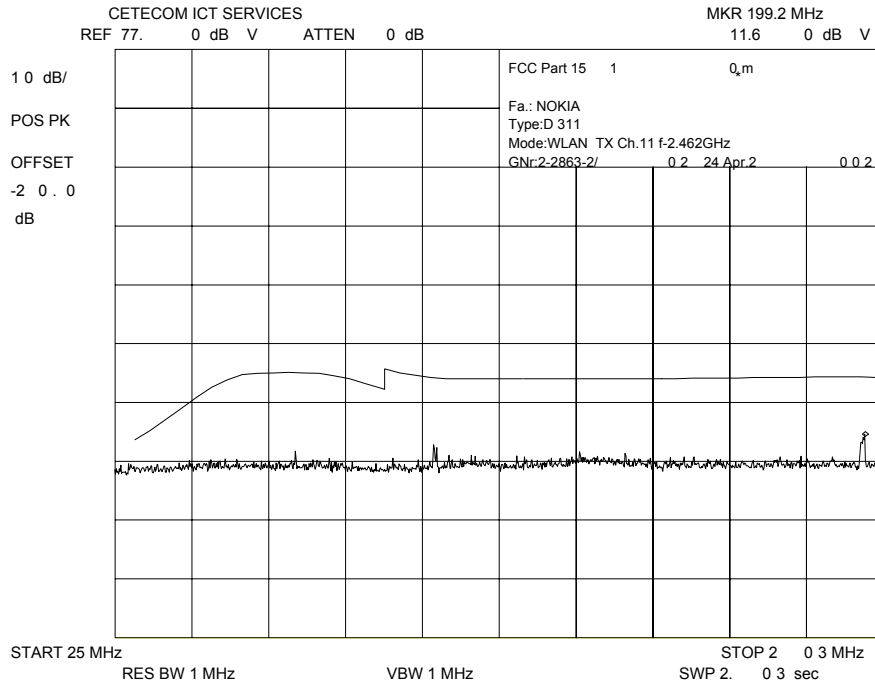


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EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

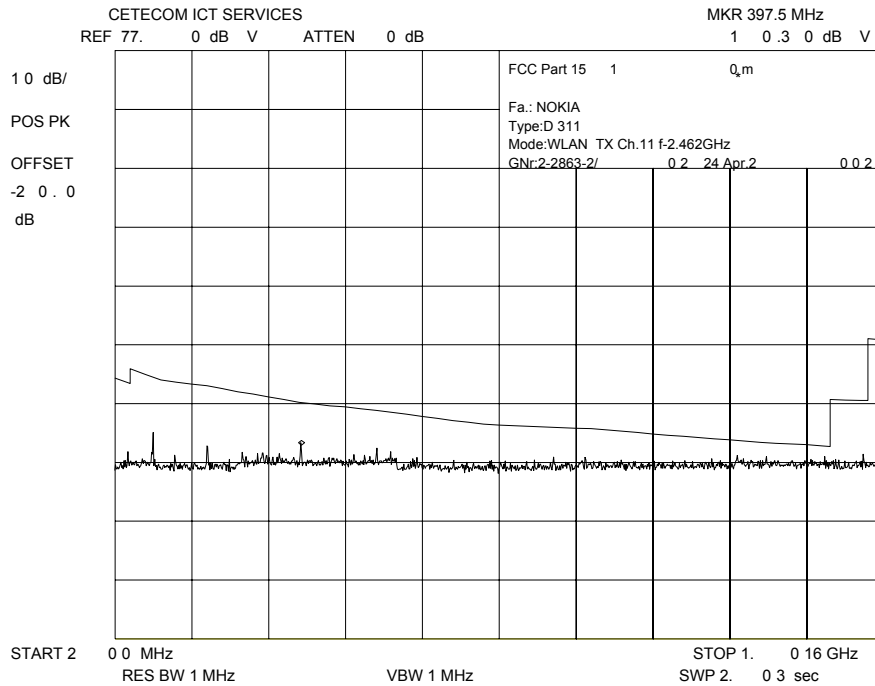
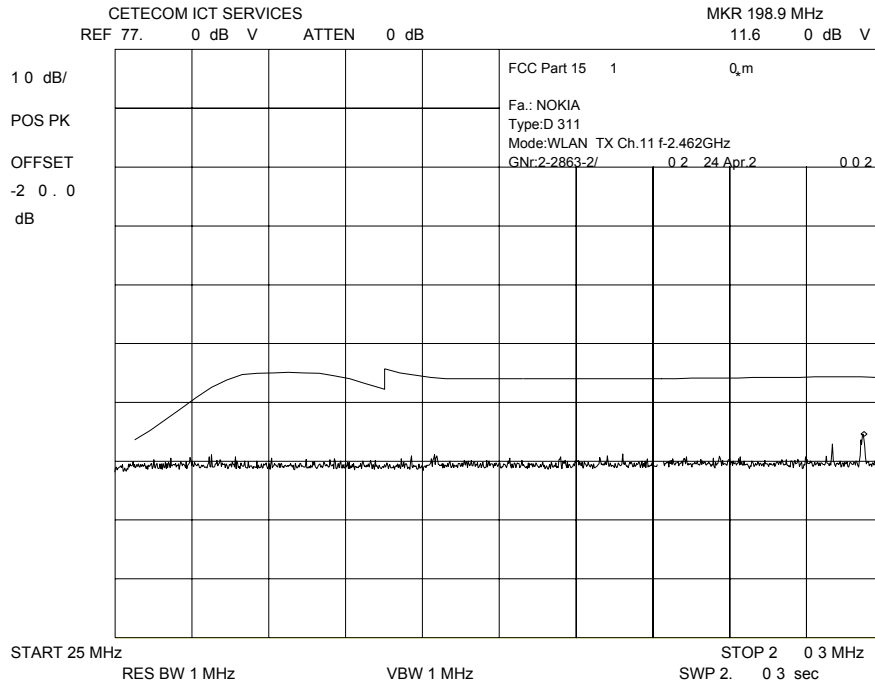
High channel up to 1 GHz (vertical)



EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

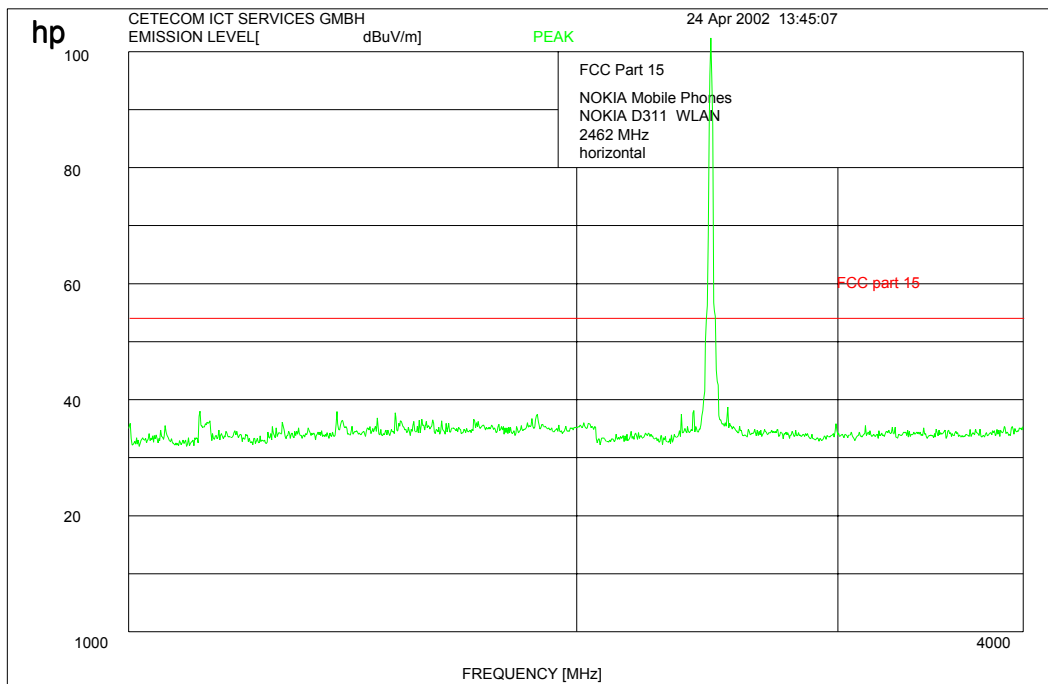
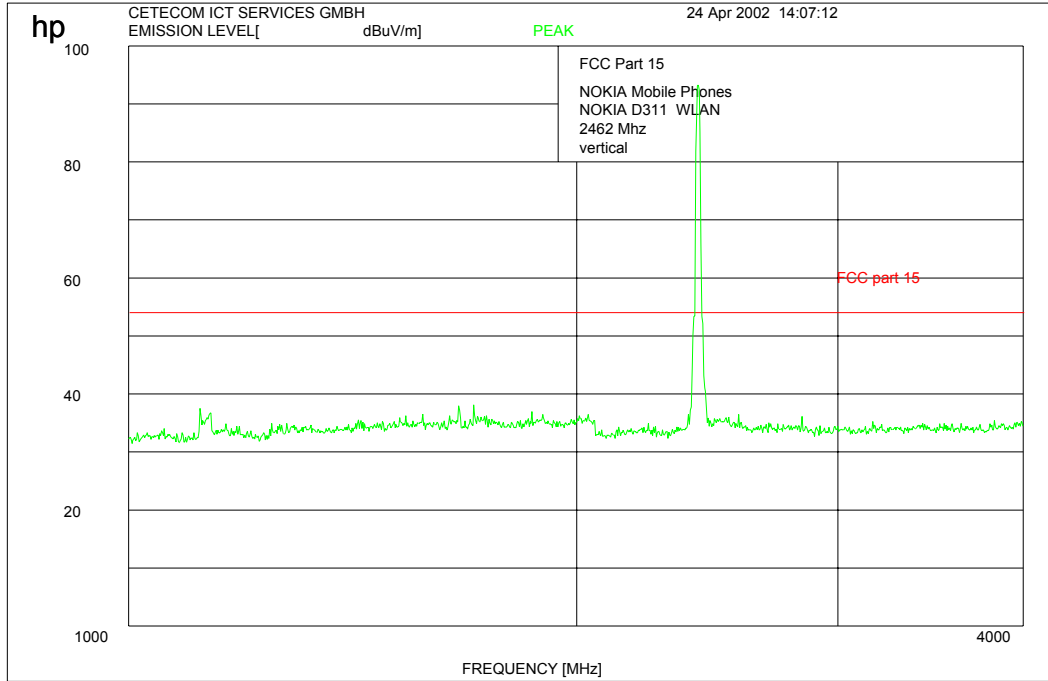
High channel up to 1 GHz (horizontal)



EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

High channel up to 4 GHz

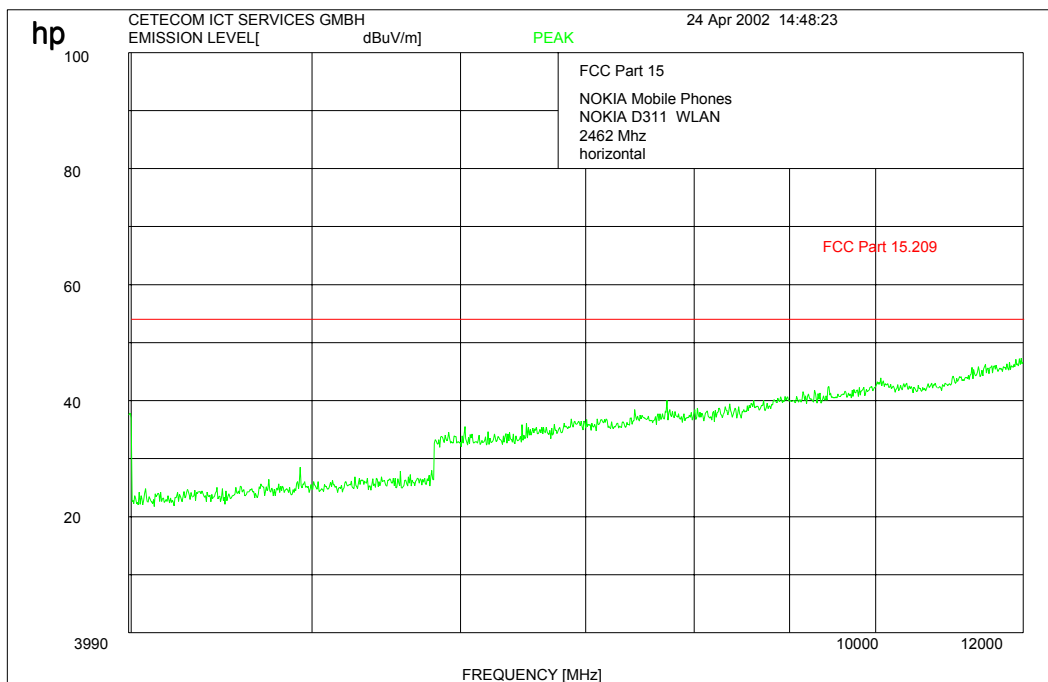
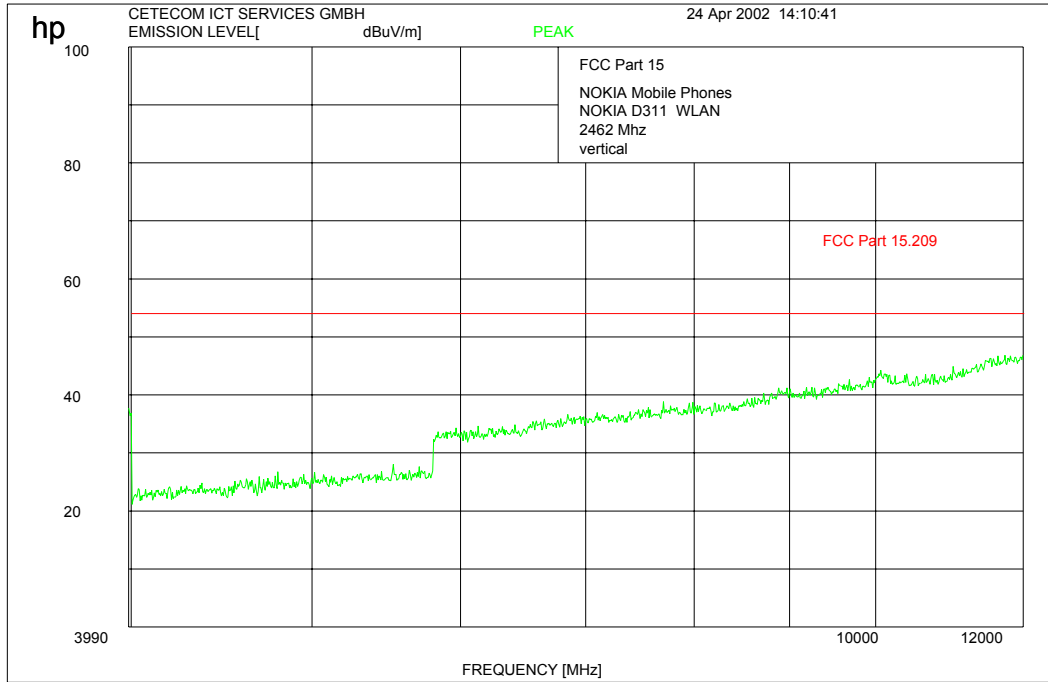


Spurious in the restricted bands (2310 – 2390 MHz and 2483,5 – 2500 MHz) are > 15dB below Limit

EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

High channel up to 12 GHz



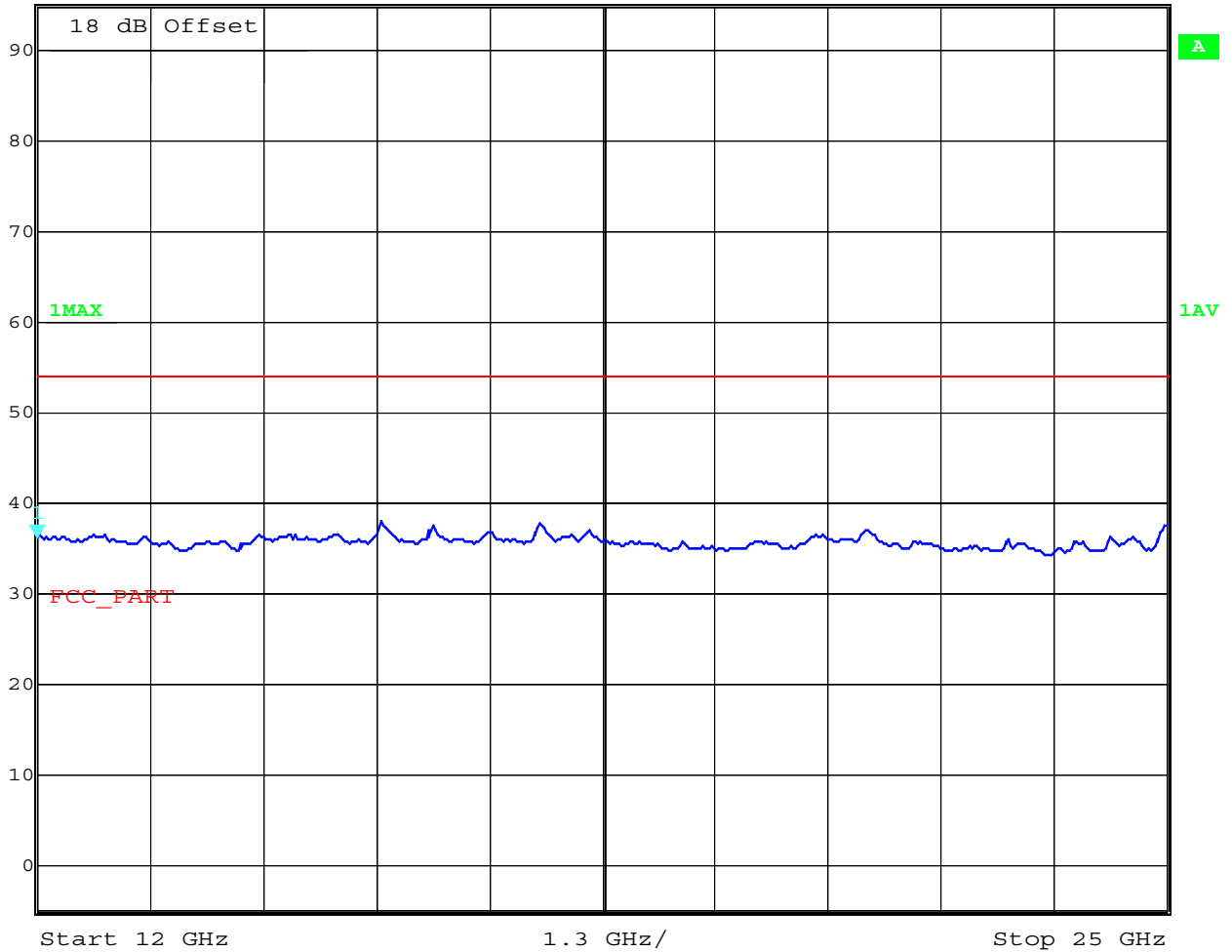
EMISSION LIMITATIONS- Radiated

§ 15.247 (c) (1)

High channel up to 25 GHz



| | | | | | |
|---------|-----------------|-----|-------|--------|------|
| | Marker 1 [T1] | RBW | 1 MHz | RF Att | 0 dB |
| Ref Lvl | 36.08 dBµV | VBW | 2 MHz | | |
| 95 dBµV | 12.00000000 GHz | SWT | 74 ms | Unit | dBµV |



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EMISSION LIMITATIONS- Radiated

§ 15.209

Data File : /22863_65.DOC

26 Apr 2002

| No | EMISSION | SPEC LIMIT | MEASUREMENTS | | | SITE | | | CORR FACTOR | COMMENTS |
|----|---------------|------------|--------------|-------|------|------|--------|---------|-------------|----------|
| | FREQUENCY MHz | | ABS | dLIM | MODE | POL | HGT cm | AZM deg | | |
| 1 | 52.9 | 29.5 | 17.2 | -12.3 | PK | V | 100 | 0 | N/T | |
| 2 | 65.7 | 29.5 | 15.4 | -14.1 | PK | V | 100 | 0 | N/T | |
| 3 | 77.1 | 29.5 | 18.5 | -11.0 | PK | V | 100 | 0 | N/T | |
| 4 | 97.6 | 33.0 | 22.3 | -10.7 | PK | V | 100 | 0 | N/T | |
| 5 | 107.5 | 33.0 | 22.0 | -11.0 | PK | V | 100 | 0 | N/T | |
| 6 | 129.1 | 33.0 | 22.1 | -10.9 | PK | V | 100 | 0 | N/T | |
| 7 | 195.5 | 33.0 | 23.2 | -9.8 | PK | V | 100 | 0 | N/T | |
| 8 | 236.7 | 35.5 | 25.7 | -9.8 | PK | V | 97 | 360 | N/T | |
| 9 | 273.4 | 35.5 | 25.8 | -9.8 | PK | H | 328 | 0 | N/T | |
| 10 | 325.7 | 35.5 | 28.2 | -7.3 | PK | V | 97 | 360 | N/T | |
| 11 | 389.3 | 35.5 | 29.0 | -6.5 | PK | V | 97 | 360 | N/T | |
| 12 | 453.908 | 35.5 | 30.4 | -5.2 | QP | V | 341 | 16 | 19.3 | |

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

All peaks found in Receiving mode are < limit.

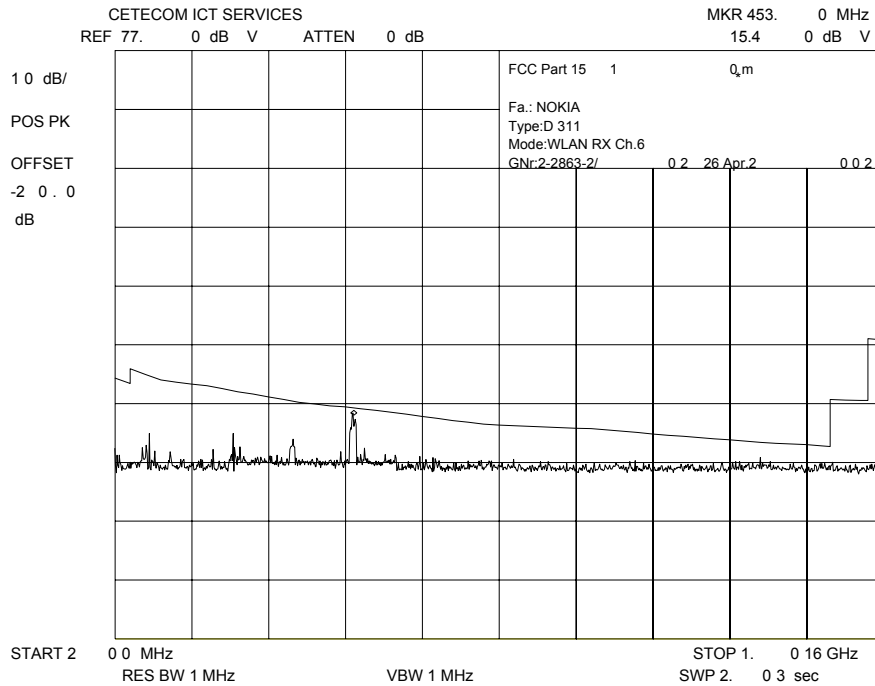
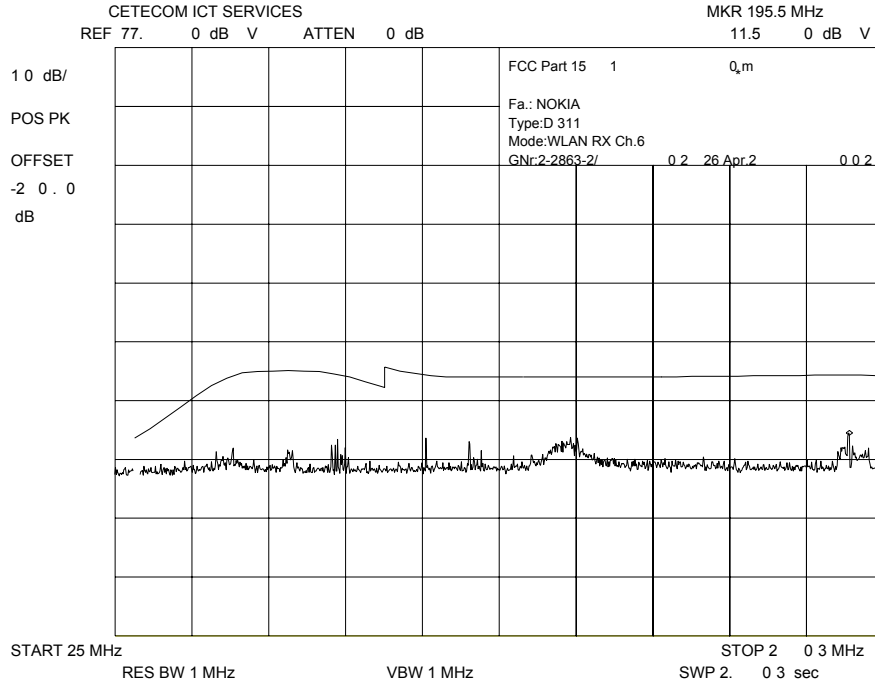
REFERENCE NUMBER(S) OF TEST EQUIPMENT USED

(for reference numbers see test equipment listing)

17 – 24, 64

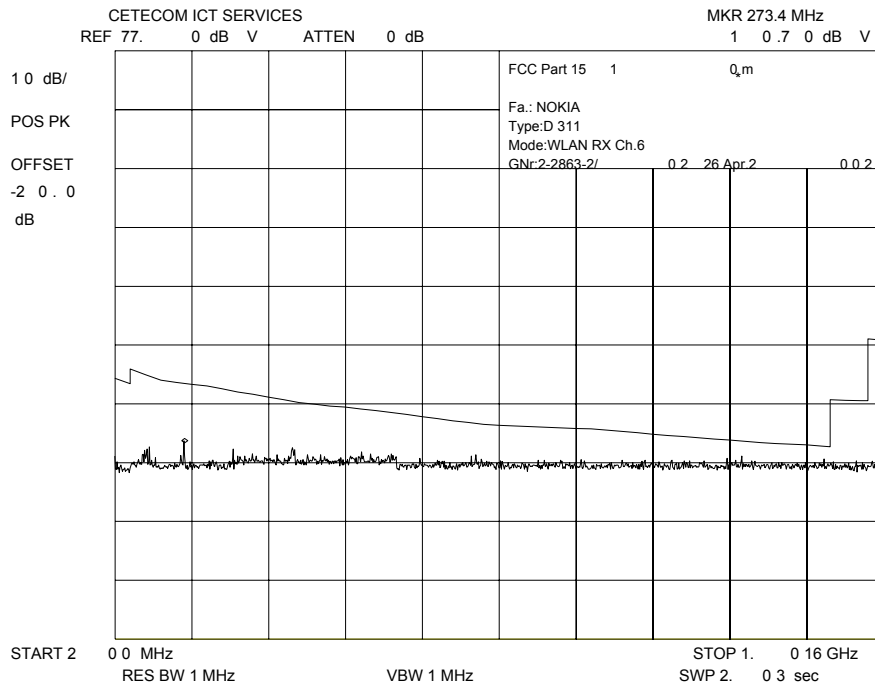
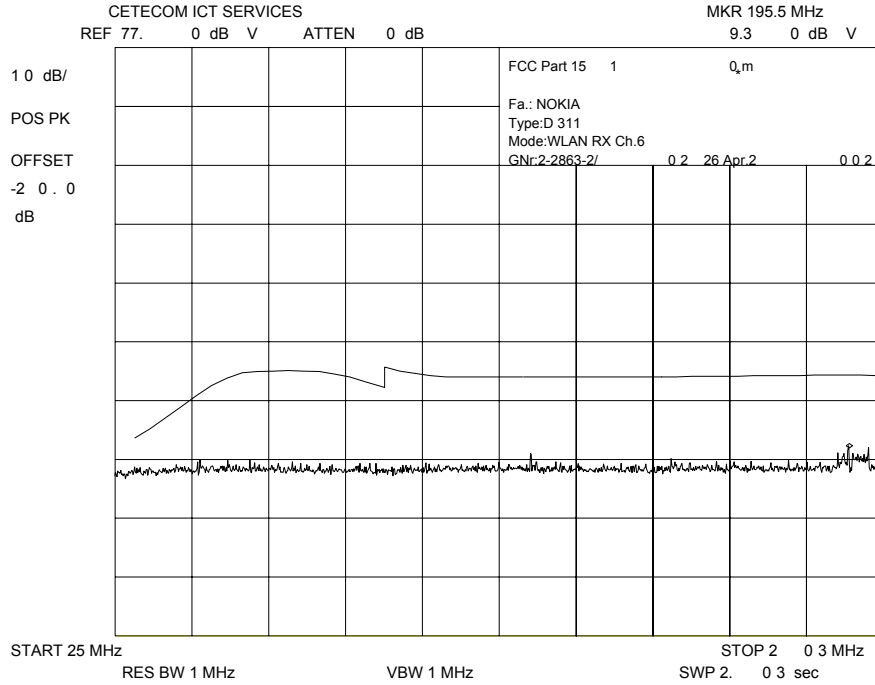
EMISSION LIMITATIONS- Radiated Receiver up to 1 GHz (vertical)

§ 15.209



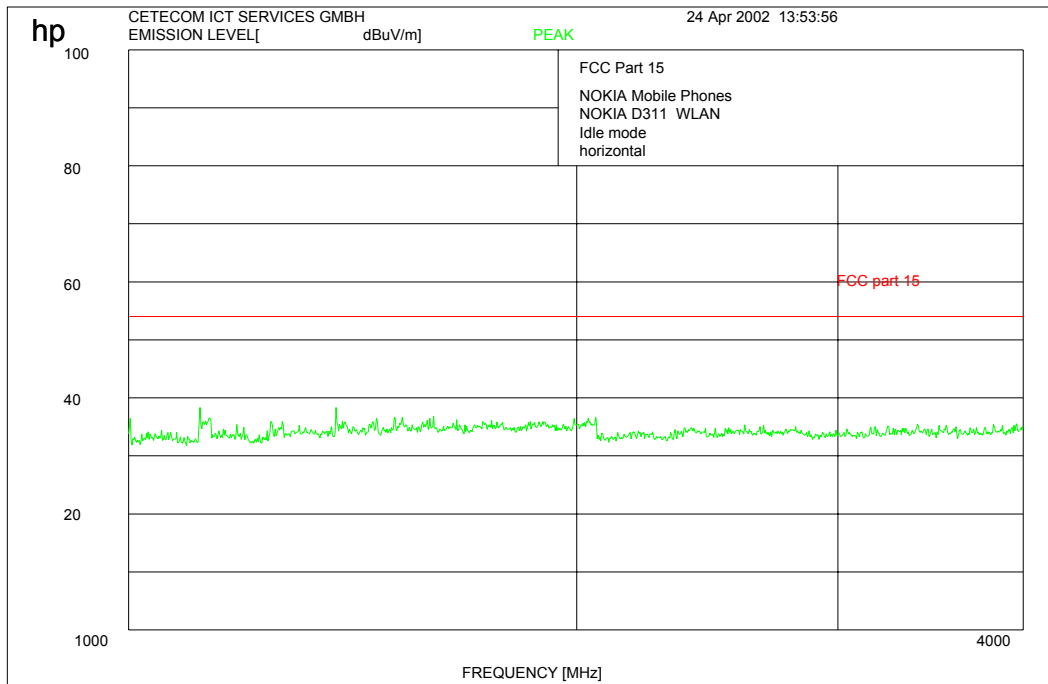
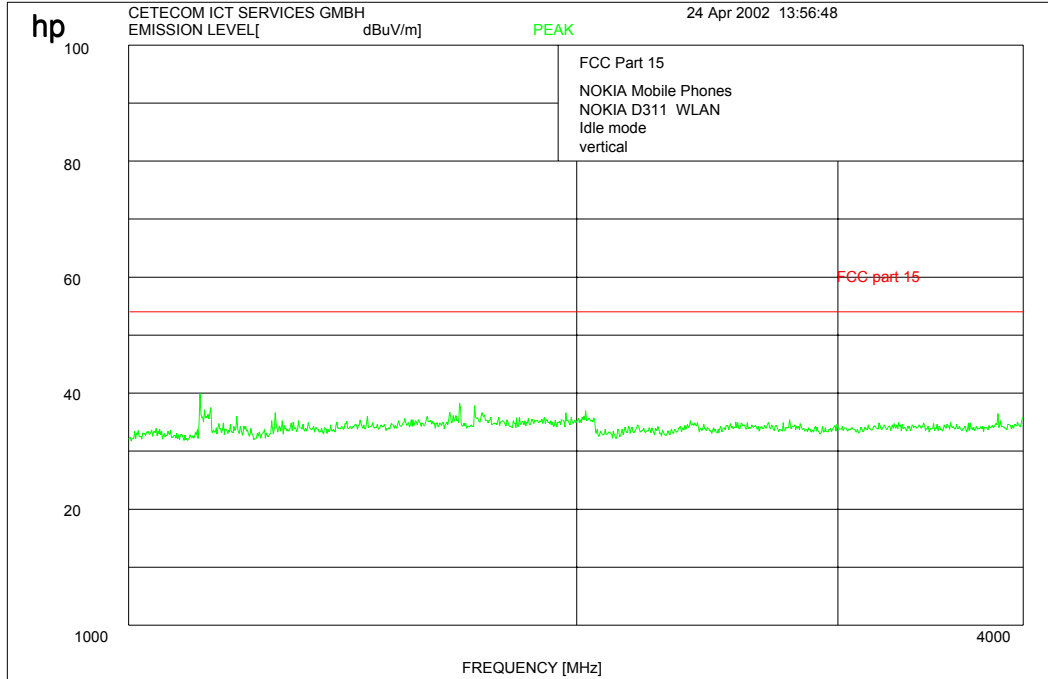
EMISSION LIMITATIONS- Radiated Receiver up to 1 GHz (horizontal)

§ 15.209



EMISSION LIMITATIONS- Radiated
Receiver up to 4 GHz

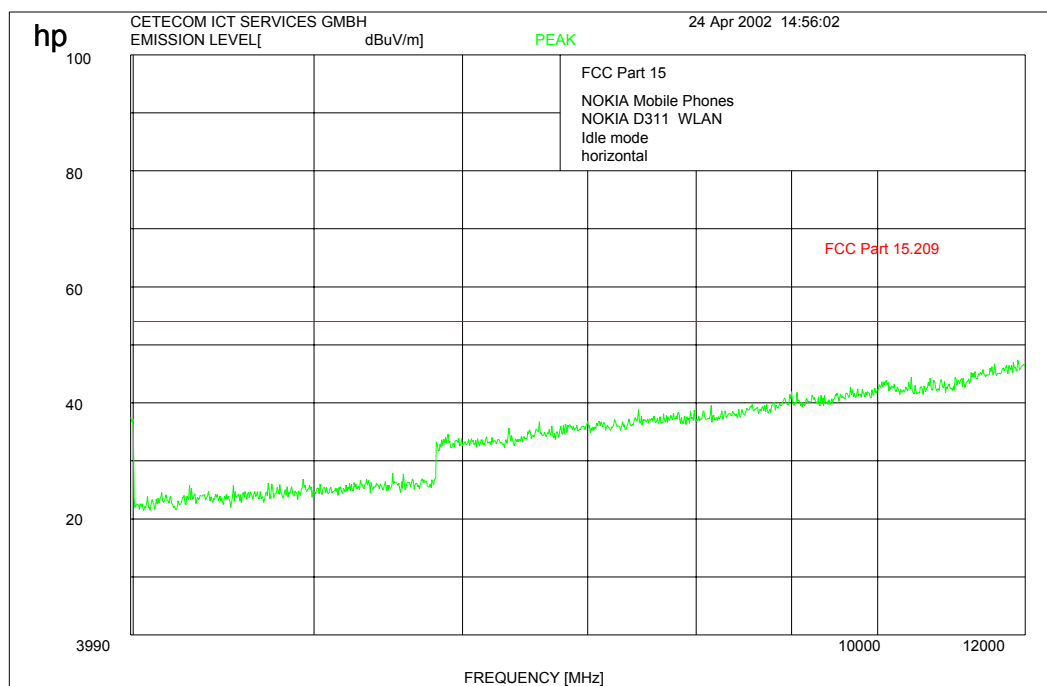
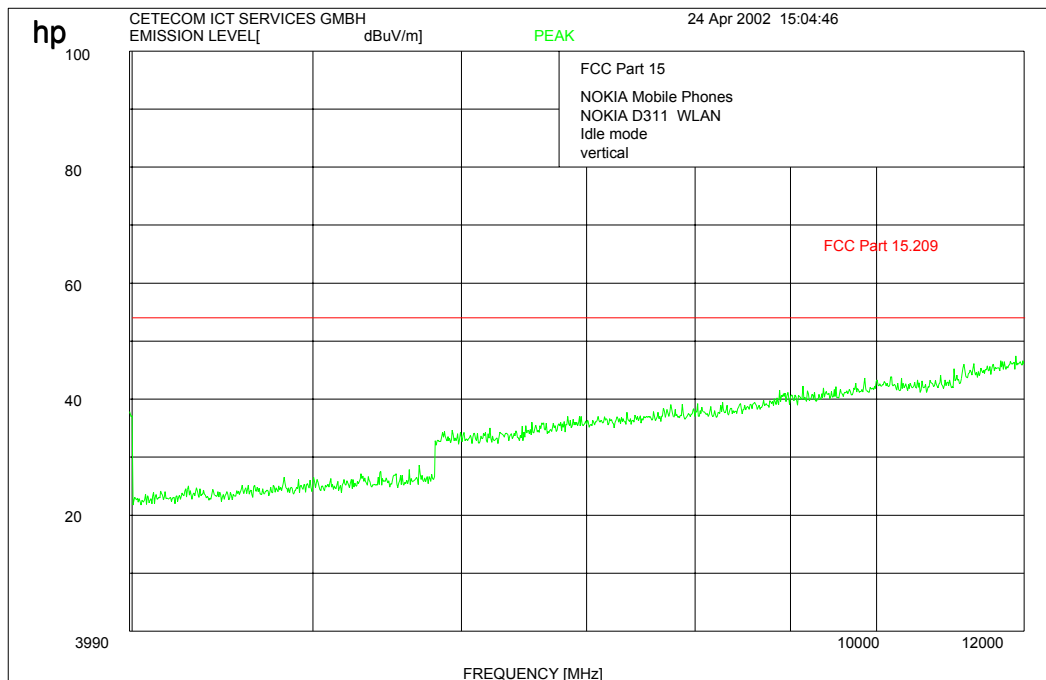
§ 15.209



Spurious in the restricted bands (2310 – 2390 MHz and 2483,5 – 2500 MHz) are > 15dB below Limit

EMISSION LIMITATIONS- Radiated Receiver up to 12 GHz

§ 15.209

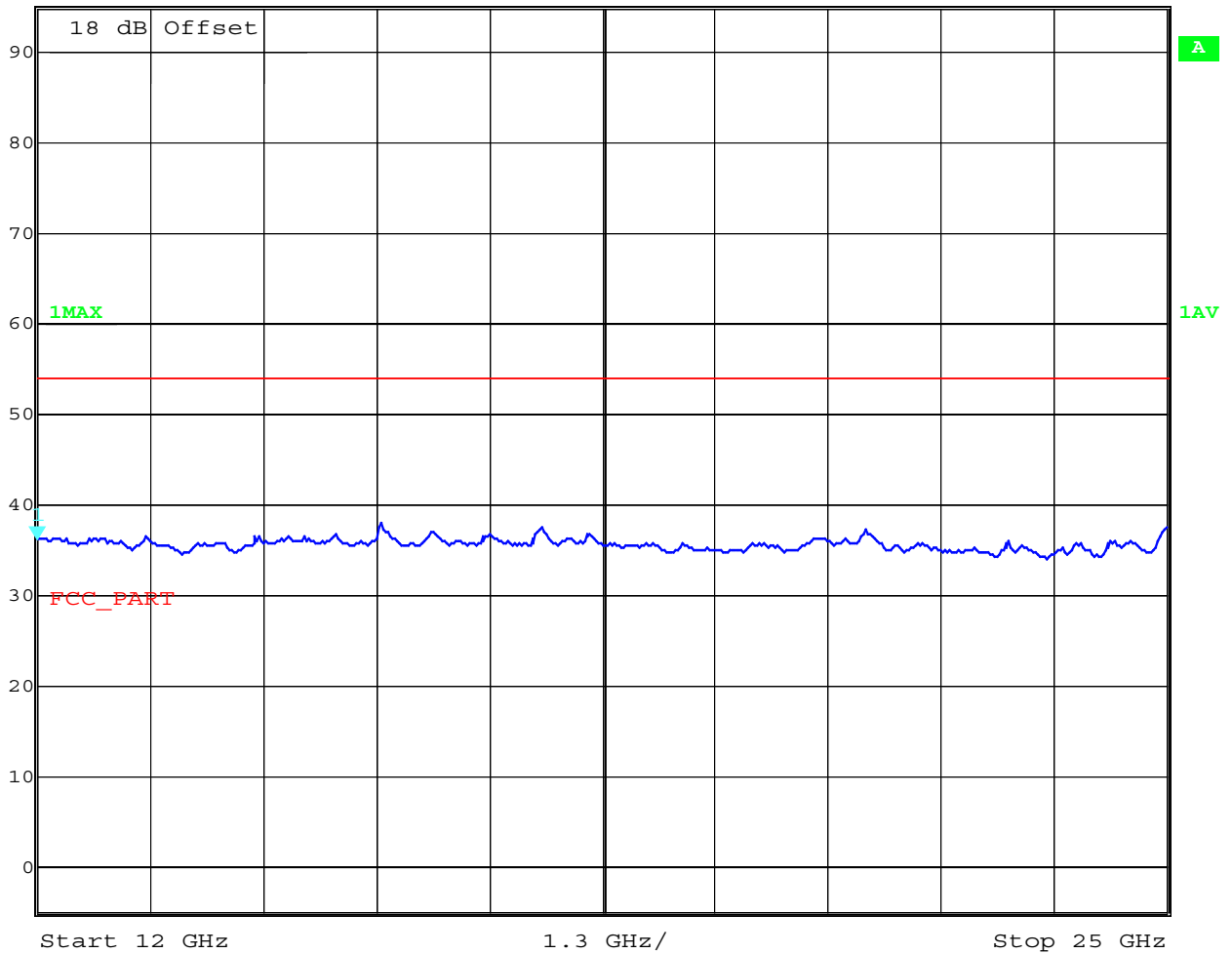


EMISSION LIMITATIONS- Radiated
Receiver up to 25 GHz

§ 15.209



| | | | | | |
|---------|-----------------|-----|-------|--------|------|
| | Marker 1 [T1] | RBW | 1 MHz | RF Att | 0 dB |
| Ref Lvl | 36.21 dBµV | VBW | 2 MHz | | |
| 95 dBµV | 12.00000000 GHz | SWT | 74 ms | Unit | dBµV |



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TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

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

| No | Instrument/Ancillary | Type | Manufacturer | Serial No. |
|----|-----------------------|-----------|-----------------|-------------|
| 01 | Spectrum Analyzer | 8566 A | Hewlett-Packard | 1925A00257 |
| 02 | Analyzer Display | 8566 A | Hewlett-Packard | 1925A00860 |
| 03 | Oscilloscope | 7633 | Tektronix | 230054 |
| 04 | Radio 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 | Spectrum Analyzer | 8562A | Hewlett Packard | 2809AO2682 |
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