

# TEST REPORT

An Accredited Technical Test Executed under the Danish Accreditation Scheme

## Prøvningsrapport

for akkrediteret prøvning i henhold til Dansk Akkrediterings Ordning

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Side

No. of annexes 17  
Antal bilag

<b>Test-report No</b> <i>Prøvningsrapport Nr.</i>	UPRR010047-02		<b>Our reference</b> <i>Vor reference</i>	MBAR	<b>Copy No</b> <i>Eksemplar Nr.</i>	1
<b>Equipment</b> <i>Udstyr</i>	Bluetooth Printer Adapter					
<b>Manufacture</b> <i>Fabrikat</i>	MPI Tech, a business unit of I-data international a-s					
<b>Type</b> <i>Type</i>	x42100					
<b>Serial No</b> <i>Serie Nr.</i>	-		<b>Equipment received</b> <i>Udstyr modtaget</i>	26.03.2001		
<b>Client</b> <i>Rekvirent</i>	MPI Tech, a business unit of I-data international a-s					
<b>Address</b> <i>Adresse</i>	Vadstrupvej 35 - 43					
<b>Postal code</b> <i>Post Nr.</i>	2880	<b>City</b> <i>By</i>	Bagsværd	<b>Country</b> <i>Land</i>	Denmark	
<b>The testing has been carried out in accordance with</b> <i>Prøvningen er udført i henhold til</i>	FCC Part 15C - Clause 15.247 (10-1-00 Edition)					
<b>Remarks</b> <i>Bemærkninger</i>	All the tested parameters fulfil the requirements					
<b>Date and signature</b> <i>Dato og underskrift</i>	12 June 2001     Martin Bilow Arndt					

**The test result is only valid for the equipment tested.**  
*Prøvningsresultatet gælder kun for det afprøvede udstyr.*

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Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

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**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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**Annexes:**

- 1 – 4 : RF Conducted emission, 0.45-30MHz**
- 5 : Separation of channels**
- 6 : Number of hopping channels**
- 7 - 9 : 20 dB bandwidth**
- 10 - 11 : Occupancy of individual frequencies**
- 12 : Antenna gain (Radiation Pattern)**
- 13 - 15 : RF power emission / Radiated emission**
- 16 - 17 : RF field emission**

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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## **1. Test Specification and Methods**

**Purpose of Test:** The tests are performed in order to demonstrate compliance with the FCC requirements for frequency hopping intentional transmitters operating in the freq. range 2400MHz to 2483,5MHz.

**Test Specifications:**

**Limits:**

- [1] **CFR 47 Part 15 : 2001**, Code of Federal Regulation 47 (Telecommunication), Part 15 (Radio Frequency Devices), Subpart C (Intentional Radiators)  
Clause 15.207, 15.209 and 15.247

**Methods and Procedures:**

The Test methods and procedures are defined in the following standard(s) (for undated references the latest edition applies):

- [2] **ANSI C63.4 : 1992**, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

## **2. Location of Test Site**

Test are performed at the test site of Tele Danmark A/S (Telelaboratoriet) at the address:

Tele Danmark A/S (Telelaboratoriet)  
Telegade 2  
DK-2630 Taastrup  
Denmark

This site is listed at the FCC under the Registration Number 92797 since December 30, 1998.

Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

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### 3. EUT Description

#### 3.1. General

The EUT is a printer adapter that is intended to serve as one half of a radio link based, printer cable replacement system. The printer adapter is to be connected directly to the centronics port on a printer. The EUT operates in the 2.4GHz band and the RF and protocols used are based on the Bluetooth technology.

Product:	Bluetooth Printer Adapter
Type No:	x42100
Version:	500.000*02/01374.002
Manufacture:	I-data international Vadstrupvej 35 – 43 DK-2880 Bagsværd Denmark

#### 3.2. Technical specifications

Frequency	:	2400,0 – 2483,5 MHz
Number of channels	:	79 (2402 – 2480)
Type of modulation	:	GFSK, FHSS (TDD)
Output power	:	+20dBm / 100 mW
Antenna type	:	Internal
Antenna gain	:	5,5dBi (max) / -1,88 (Avg)
Power supply	:	5,0VDC (100 – 120VAC)
Type of equipment	:	Bluetooth Transceiver class 1
Temperature range	:	0 – 35 deg. C.

### 4. Deviations or Exclusions from the Test Specifications

None

Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

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## 5. Tests and test conditions

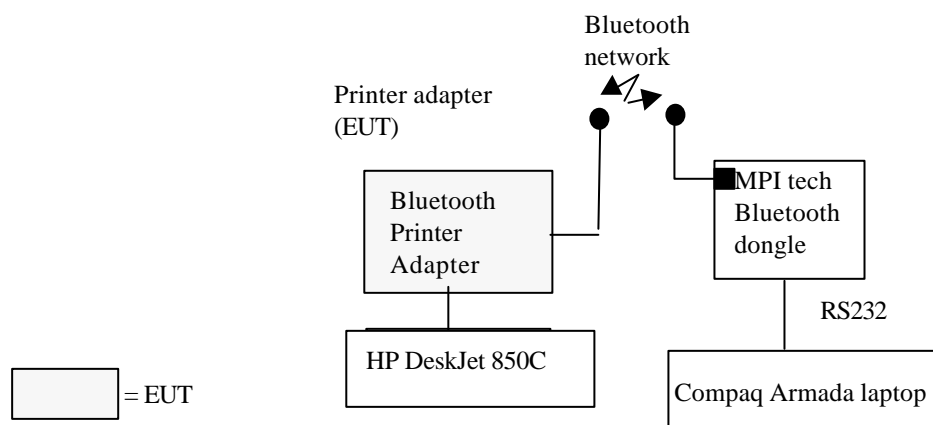
### 5.1. EUT ports to be examined

Following port was examined during the tests:

1. Enclosure port
2. AC-mains port

### 5.2. Operation of the EUT

The EUT was connected to a passive printer simulator. During the conducted measurements a link was established between the EUT and a MPI Tech Bluetooth dongle supporting the Bluetooth print profile. A print job was active during the test to ensure data flow between the EUT and Bluetooth dongle. During RF measurements the EUT was locked to either the lowest, middle or highest hopping channel and transmitting data. EUT was set to send at it's maximum output power. EUT was powered by 115VAC @ 60Hz during testing.



**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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### **5.3. Limits and frequency ranges used**

#### **5.3.1. Enclosure port measurements**

Compliance is checked according to §15.209 general limits and § 15.247 covering frequency-hopping transmitters using the 2400,0 - 2483,5 MHz ISM band.

According to [1] §15.33, spurious and RF emission is measured up to the 10. harmonic of the maximum TX channel frequency. This give a measuring range of 30 MHz to 25 GHz as the highest TX channel is at 2480 MHz.

#### **5.3.2. AC mains port measurements**

Compliance is checked according to the general line conducted emission limits in §15.207. Measurements is performed in the frequency range 0.45 to 30 MHz.

Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

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## 6. Measurements, Examinations and Derived Results

### General Comments

The measurement uncertainties stated below are calculated according with the requirements of the Danish Institute of Fundamental Metrology.

#### 6.1. Test results, Emission

#### 6.2. §15.207 - Line conducted emission, 0.45-30MHz

The RF-voltage was measured between the neutral and ground and between phase and ground. An artificial mains network (RF) terminates the EUT with 50ohm//50μH.

#### Measurement uncertainty:

Radio frequency voltage: **-4,5 / +3,4 dB (K=2)**

#### Measurement results:

The measurement results are plotted in annex 1-4.

#### Limit:

The conducted RF on the AC supply terminals shall not exceed 250microvolts ⇔ 47,95dBuV.

#### Conclusion:

**The EUT complies with the given limit.**



**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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### **6.3. §15.247 (a) (1) – Separation of channels**

The frequency spectrum is measured using a spectrum analyser with a max-hold function. This is done in order to measure the channel separation. Measurement is performed with EUT in active mode (transfer of DH5 packages) hopping on all 79 channels.

#### **Measurement uncertainty:**

Amplitude: **+/- 2,5dB (k=2)**  
Frequency **+/- 80kHz (k=2)**

#### **Measurement results:**

The measurement shows that the channel carrier frequencies is separated by more than 20dB (20dB bandwidth)

The measurement results are plotted in annex 3.

#### **Limit:**

Separation shall be minimum 25kHz or the 20dB bandwidth of the hopping channel.

#### **Conclusion:**

**The EUT complies with the given limit.**

**Test performed by: MBAR      Date: 31. May 2001**

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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**6.4. §15.247 (a) (1) – Number of hopping channels**

The number of channels used by the EUT was measured using a spectrum analyser with a max hold function. Measurement was performed with the EUT in active mode (transfer of DH5 packages).

**Measurement uncertainty:**

**N/A**

**Measurement results:**

In annex 4 the number of channels used by the EUT is shown. Lowest channel is 2402MHz and highest channel is 2480. Number of channels used is 79.

**Limit:**

Frequency hopping systems operating in the 2400,0 – 2483,5MHz band shall use at least 75 hopping channels.

**Conclusion:**

**The EUT complies with the given limit.**

**Test performed by: MBAR      Date: 31. May 2001**

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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**6.5. §15.247 (a) (1) – 20 dB bandwidth**

The used RF bandwidths were measured at the lowest, highest and centre frequency in active mode (transfer of DH5 packages).

**Measurement uncertainty:**

Amplitude: **+/-1 dB**  
Frequency **+/- 40 kHz**

**Measurement results:**

Channel / TX freq.	Lowest / 2402MHz	Centre 2441MHz	Highest 2480MHz
Bandwidth [MHz]	0,881	0,906	0,913

The measurement results are plotted in annex 5-7.

**Limit:**

The occupied bandwidth shall not exceed 1MHz.

**Conclusion:**

**The EUT complies with the given limit.**

Test performed by: MBAR      Date: 30. May 2001

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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#### **6.6. §15.247 (a) (1) – Occupancy of individual frequencies**

The maximum TX slot length and the number of times a particular hopping frequency is (re)used is measured. These measurements are performed in order to establish the TX time on this channel within a 30-second period.

##### **Measurement uncertainty:**

**Time :            +/- 0.1mS**

##### **Measurement results:**

The maximum TX slot length is measured to 2,8msec. The (re)use of a single hopping frequency within a 10 second period is 33 giving a calculated (re)use of 99 times within a 30 second period.

Use of a single frequency is:  $99 * 0,0028 = 0,2772$  second over a 30 second period.

The measured (re)use of a frequency is plotted in annex 10.  
The measured TX slot length is plotted in annex 11.

##### **Limit:**

The average time of occupancy on any frequency shall not be greater than 0,4 second within a 30 second period.

##### **Conclusion:**

**The EUT complies with the given limit.**

Test performed by: MBAR            Date: 30. May 2001

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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**6.7. §15.247 (b) (1) – Maximum peak output power**

The maximum RF output power were measured at the lowest, highest and centre frequency in active mode (transfer of DH5 packages). The output values are found by using substitution and give the EIRP values for the EUT.

**Measurement uncertainty:**

Amplitude: **+1,3 / -1,2 dB**

**Measurement results:**

Measured with peak detector.

Temp.	Voltage	Transmitter power [dBm]		
		Lowest / 2402MHz	Centre 2441MHz	Highest 2480MHz
Normal	Normal	16,6	16,6	16,7
Min.	Max.	17,0	17,3	17,5
Min.	Min.	17,0	17,3	17,6
Max.	Max.	15,6	15,5	15,5
Max.	Min.	15,5	15,5	15,6

Highest measured peak power (EIRP): 17,6dBm ⇔ 0.05755Watt

**Limit:**

The maximum peak output power shall not exceed 1Watt.

**Conclusion:**

**The EUT complies with the given limit under normal and extreme conditions.**

**Test performed by: FBOLL Date: 25. May 2001**

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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**6.8. §15.247 (b) (2) – Antenna gain**

The antenna gain is measured to ensure that a limited EIRP. The antenna gain / radiation pattern is measured in a fully anechoic room relative to a tuned dipole antenna.

**Measurement uncertainty:**

**N/A** (relative measurement)

**Measurement results:**

The radiation pattern plot of the horizontal polarisation (highest values) is shown in annex 10.

Avg. gain is -4,04dBd ⇔ -1,88dBi  
Max. gain is 3,29dBd ⇔ 5,45dBi

**Limit:**

The maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

**Conclusion:**

**The EUT antenna gain is less than 6dBi and no reduction in allowed peak output power is needed.**

**Test performed by: MBAR      Date: 27. March 2001**

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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#### **6.9. §15.247 (c) – RF power emission**

The maximum RF power that is produced by the EUT is measured in a GTEM (pre-scan) and in an anechoic room in 1-meter distance (final measurement).

##### **Measurement uncertainty:**

Field strength: **-4.2/+3.4 dB** ( $k = 2$ )

##### **Measurement results:**

The plots of the pre-scans (lowest, middle and highest channel) are shown in annex 13 – 15.

For the RF power measurement the pre-scan peaks is maximised during the final measurement using 100kHz BW.

##### TX locked at 2402MHz

In-band level = 121,74dBuV/m

Maximum out of band level = 78,53dBuV/m

##### TX locked at 2432MHz

In-band level = 122,05dBuV/m

Maximum out of band level = 70,99dBuV/m

##### TX locked at 2480MHz

In-band level = 119,90dBuV/m

Maximum out of band level = 77,21dBuV/m

##### **Limit:**

All RF power values measured outside the frequency band in which the spread spectrum intentional radiator is operated must be at least 20 dB less than the maximum value found in the frequency band in which the spread spectrum intentional radiator is operated. Both measurements performed with 100kHz BW.

##### **Conclusion:**

**The EUT complies with the given limit.**

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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#### **6.10. §15.209 (a) – Radiated emission**

The maximum RF power that is produced by the EUT is measured in a GTEM (pre-scan) and in an anechoic room in 1-meter distance (final measurement). Measurement below 1GHz is performed according to CISPR 22.

##### **Measurement uncertainty:**

Field strength: **-4.2/+3.4 dB** (k = 2)

##### **Measurement results:**

The plots of the pre-scans (lowest, middle and highest channel) are shown in annex 13 – 15. For the radiated emission test the pre-scan peaks is maximised during the final measurement using 1MHz BW. For emission below 1GHz see annex 16 + 17.

##### TX locked at 2402MHz

Frequency	Values @ 3 meter	Limit @ 3 meter
0,3-25 GHz Excluding TX band	less than 70dBuV/m (peak)	74dBuV/m (peak) / 54 dBuV (avg.)

##### TX locked at 2432MHz

Frequency	Values @ 3 meter	Limit @ 3 meter
0,3-25 GHz Excluding TX band	less than 70dBuV/m (peak)	74dBuV/m (peak) / 54 dBuV (avg.)

##### TX locked at 2480MHz

Frequency	Values @ 3 meter	Limit @ 3 meter
0,3-25 GHz Excluding TX band	less than 70dBuV/m (peak)	74dBuV/m (peak) / 54 dBuV (avg.)

Note: During normal operation the duty cycle will be maximum 1% (0,27-sec. TX in 30-sec. period) giving a peak to avg. relation of -40dB. E.g. max avg. ~30dBuV/m

##### **Limit:**

All Radiated emission that falls in the restricted bands as defined in 15.205 (a) must comply with the radiated emission limits specified in 15.209.

##### **Conclusion:**

**The EUT complies with the given limit.**

Test performed by: MBAR      Date: 11. June 2001



Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

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## 7. List of instruments

### Conducted emission:

Test receiver	R&S ESH3	21076	15. Nov. 00 / 1 Yr.
V-network	R&S ESH2-Z5	14093	27. Nov. 00 / 1 Yr.

### Radiated emission (Prescan <1GHz):

Test receiver	R&S ESVP	14853	13.Sept.00 / 1 Yr.
Antenna 1	Schwarzbeck VHA	14117	12. Feb.01 / 1 Yr.
Antenna 2	Schwarzbeck UHALP	16066	12. Feb.01 / 1 Yr.
Antenna 3	EMCO 3115	15781	12. Feb.01 / 1 Yr.

### Radiated emission (Prescan >1GHz):

Test receiver	R&S ESMI	14853	13.Sept.00 / 1 Yr.
GTEM	EMCO 5302	Ser. No. 9410-1118	

### Radiated emission (Final < 1GHz):

Test receiver (<1GHz)	R&S ESVP	17654	2. Nov.00 / 1 Yr.
Antenna 1	Schwarzbeck VHA	17094	12. Feb.01 / 1 Yr.
Antenna 2	Schwarzbeck UHALP	17380	12. Feb.01 / 1 Yr.

### Radiated emission (Final > 1GHz) + RF conducted measurements:

Test receiver	R&S ESMI-RF	17643	9. May 00 / 2 Yr.
Antenna 3	EMCO 3115	15781	12. Feb.01 / 1 Yr.

### Support Equipment:

Laptop PC : Compaq Armada 1530D

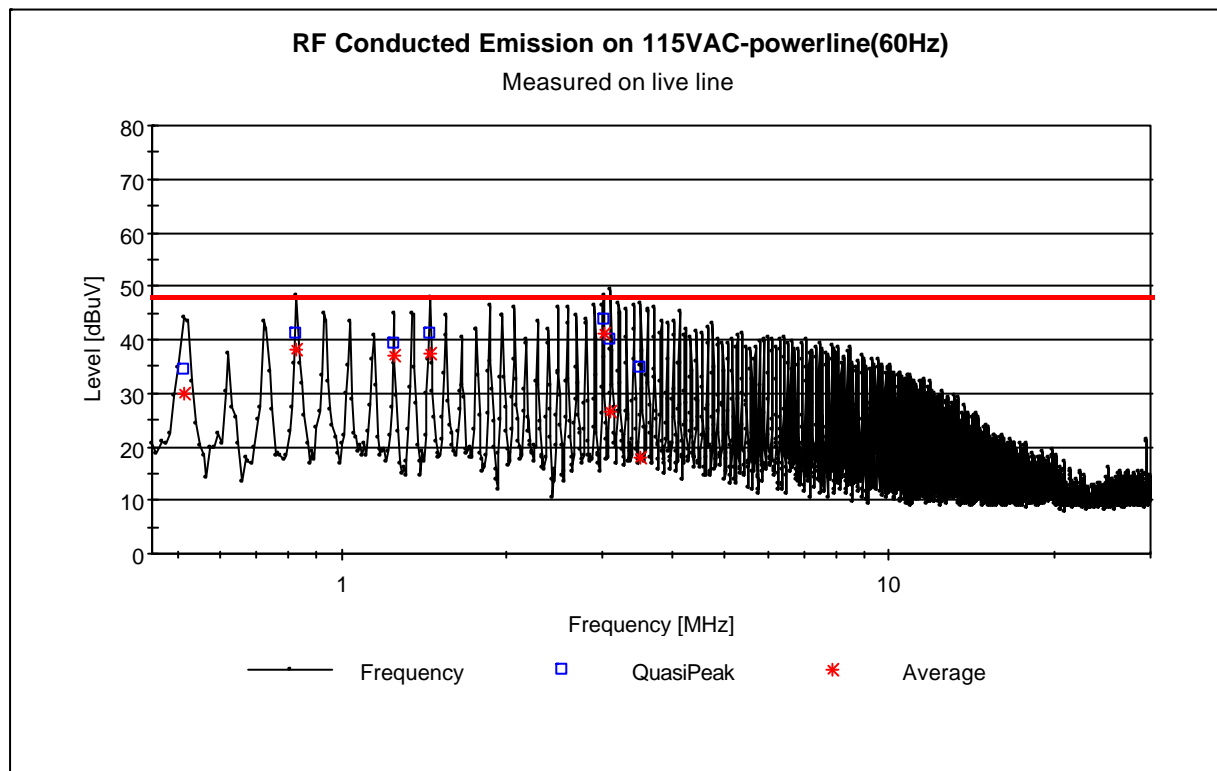
Bluetooth Link, PC end : MPI Tech Bluetooth dongle

Printer : HP DeskJet 850C

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

**RF Conducted Emission Test:**

**Manufacturer:** MPI Tech  
**Equipment under Test:** Bluetooth Printer Adapter  
**Type No.:** x42100  
**Operating condition:** Link established - transfer print job  
**Test specification:** §15.207  
**Comments:** FCC



**Sweep carried out at:** 1 May 2001, 12:52

**Sweep Settings:**

**Test Receiver:** Rohde & Schwarz ESH3  
**Detector:** Peak  
**Demodulation:** AM  
**Preamplifier:** OFF

	Start [MHz]	Stop [MHz]	Step [kHz]	BW [kHz]	Meastime [sec]
Sweep 1:	0.45	30	9	10	0.05

**Transducer and Cable Factors:**

**Transducer factor:** 0dB, 9kHz-30MHz  
**Cable factor:** 0dB, 9kHz-30MHz

**Test Program and Version:**

**Title:** RF Conducted Emission Test  
**Program:** RFCONDUCTEDEMITION  
**Program Path:** T:\EMC-DATA\EMC PROGRAMMER\RFCONDUCTEDEMITION  
**Version:** 1.4.3

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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**RF Conducted Emission Test:**

**Manufacturer:** MPI Tech  
**Equipment under Test:** Bluetooth Printer Adapter  
**Type No.:** x42100  
**Operating condition:** Link established - transfer print job  
**Test specification:** §15.207  
**Comments:** FCC

**Final Measurement:**

Quasipeak measure time 1 sec  
Average measure time 1 sec

**Final Quasipeak Measurement:**

Frequency	Level	Limit
[MHz]	[dBuV]	[+/- dB]
0.513	34.3	-13.7
0.828	41.3	-6.7
1.242	39.2	-8.8
1.449	41.0	-7.0
3.006	43.7	-4.3
3.105	40.0	-8.0
3.519	34.8	-13.2

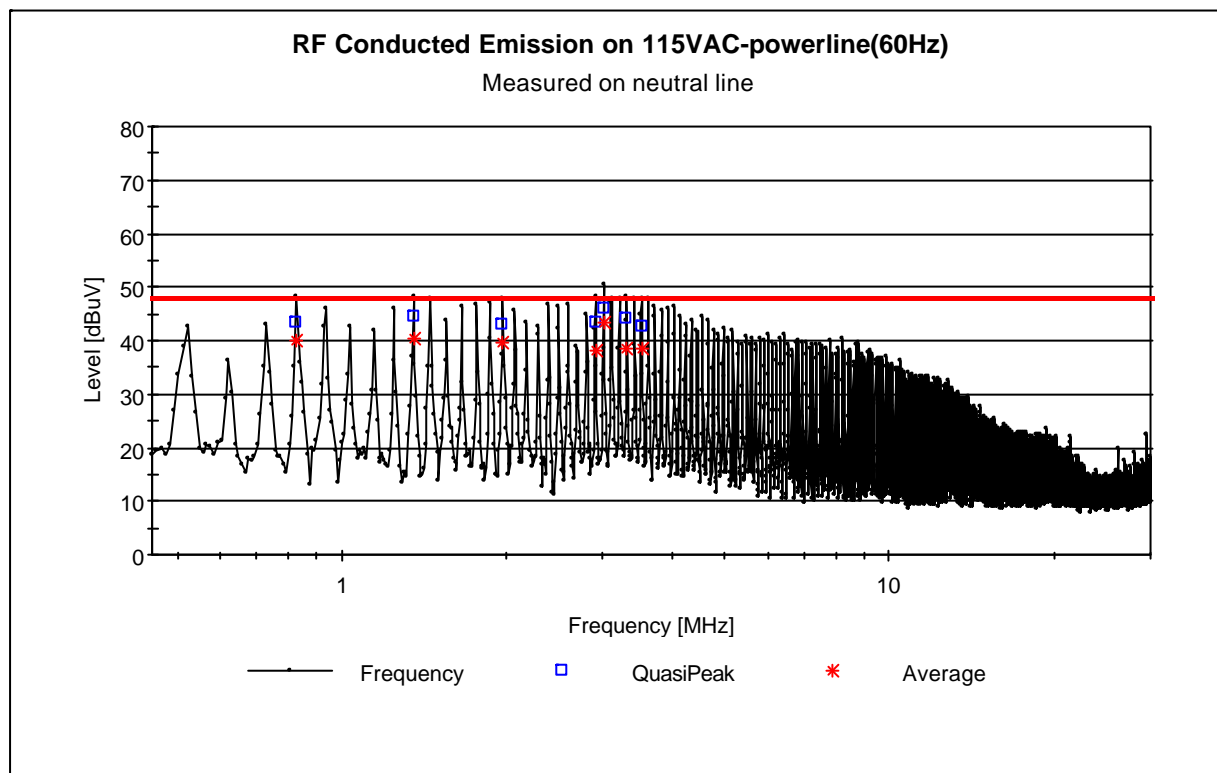
**Final Average Measurement:**

Frequency	Level	Limit
[MHz]	[dBuV]	[+/- dB]
0.513	29.9	-18.1
0.828	38.1	-9.9
1.242	37.0	-11.0
1.449	37.3	-10.7
3.006	41.3	-6.7
3.105	26.7	-21.3
3.519	17.9	-30.1

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

**RF Conducted Emission Test:**

**Manufacturer:** MPI Tech  
**Equipment under Test:** Bluetooth Printer Adapter  
**Type No.:** x42100  
**Operating condition:** Link established - transfer print job  
**Test specification:** §15.207  
**Comments:** FCC



**Sweep carried out at:** 1 May 2001, 13:40

**Sweep Settings:**

**Test Receiver:** Rohde & Schwarz ESH3  
**Detector:** Peak  
**Demodulation:** AM  
**Preamplifier:** OFF

	Start [MHz]	Stop [MHz]	Step [kHz]	BW [kHz]	Meastime [sec]
Sweep 1:	0.45	30	9	10	0.05

**Transducer and Cable Factors:**

**Transducer factor:** 0dB, 9kHz-30MHz  
**Cable factor:** 0dB, 9kHz-30MHz

**Test Program and Version:**

**Title:** RF Conducted Emission Test  
**Program:** RFCONDUCTEDEMISSION  
**Program Path:** T:\EMC-DATA\EMC PROGRAMMER\RFCONDUCTEDEMISSION  
**Version:** 1.4.3

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

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**RF Conducted Emission Test:**

**Manufacturer:** MPI Tech  
**Equipment under Test:** Bluetooth Printer Adapter  
**Type No.:** x42100  
**Operating condition:** Link established - transfer print job  
**Test specification:** §15.207  
**Comments:** FCC

**Final Measurement:**

Quasipeak measure time 1 sec  
Average measure time 1 sec

**Final Quasipeak Measurement:**

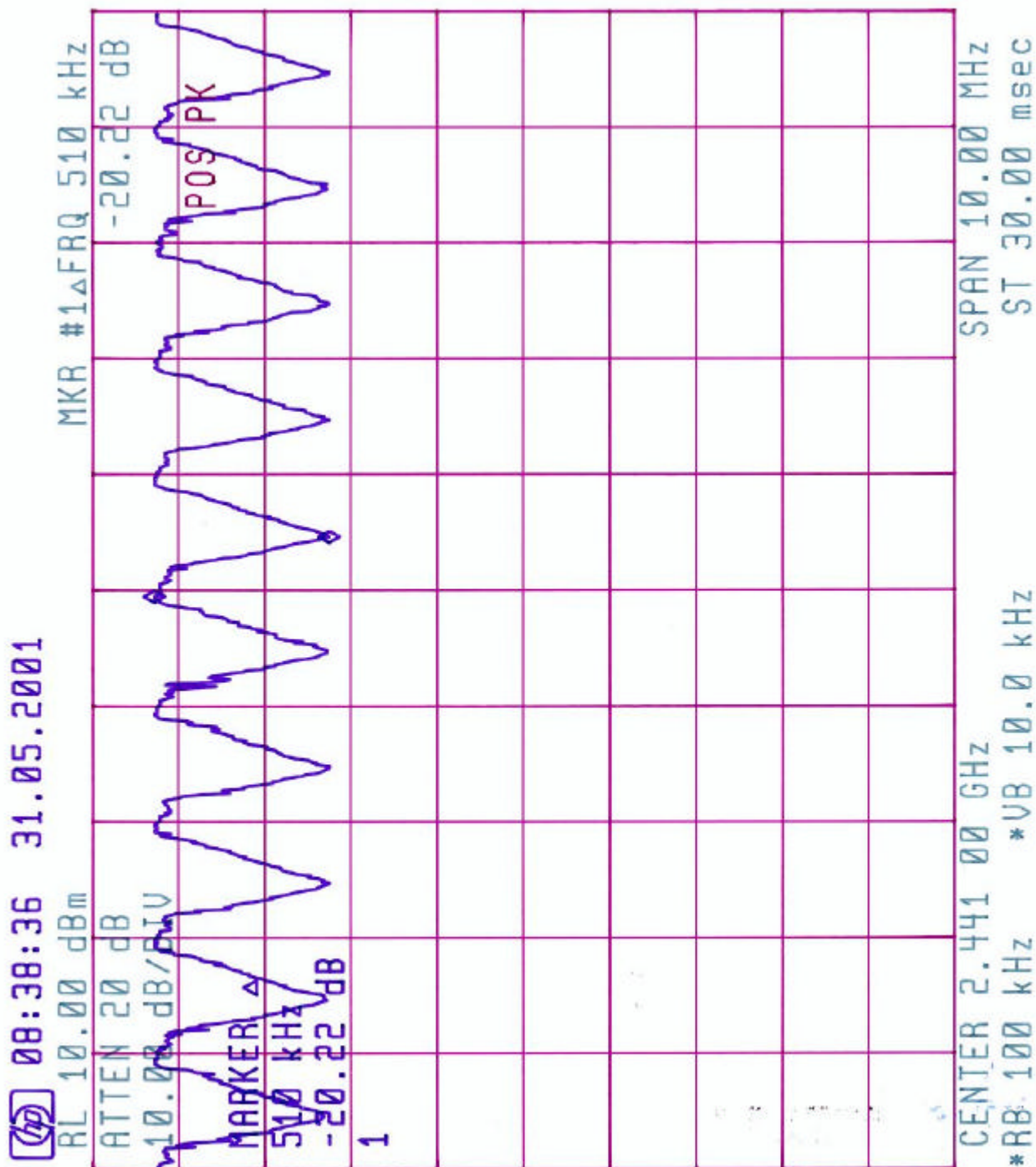
Frequency	Level	Limit
[MHz]	[dBuV]	[+/- dB]
0.828	43.3	-4.7
1.35	44.6	-3.4
1.971	43.0	-5.0
2.907	43.5	-4.5
3.006	46.0	-2.0
3.321	44.1	-3.9
3.5288	42.8	-5.2

**Final Average Measurement:**

Frequency	Level	Limit
[MHz]	[dBuV]	[+/- dB]
0.828	39.9	-8.1
1.35	40.5	-7.5
1.971	39.6	-8.4
2.907	38.0	-10.0
3.006	43.2	-4.8
3.321	38.6	-9.4
3.5288	38.5	-9.5

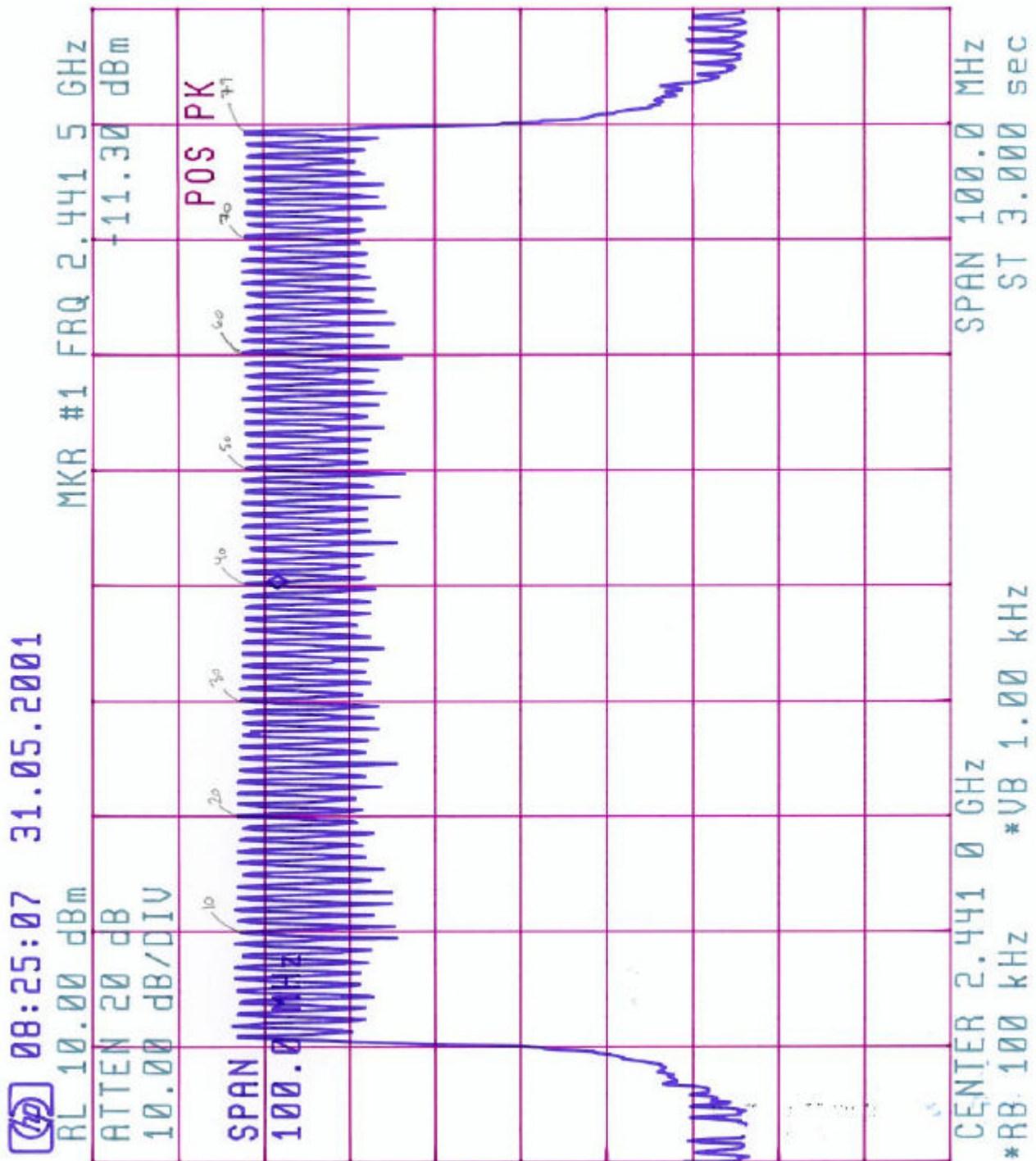
Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

§15.247 (a) (1) – Separation of channels:



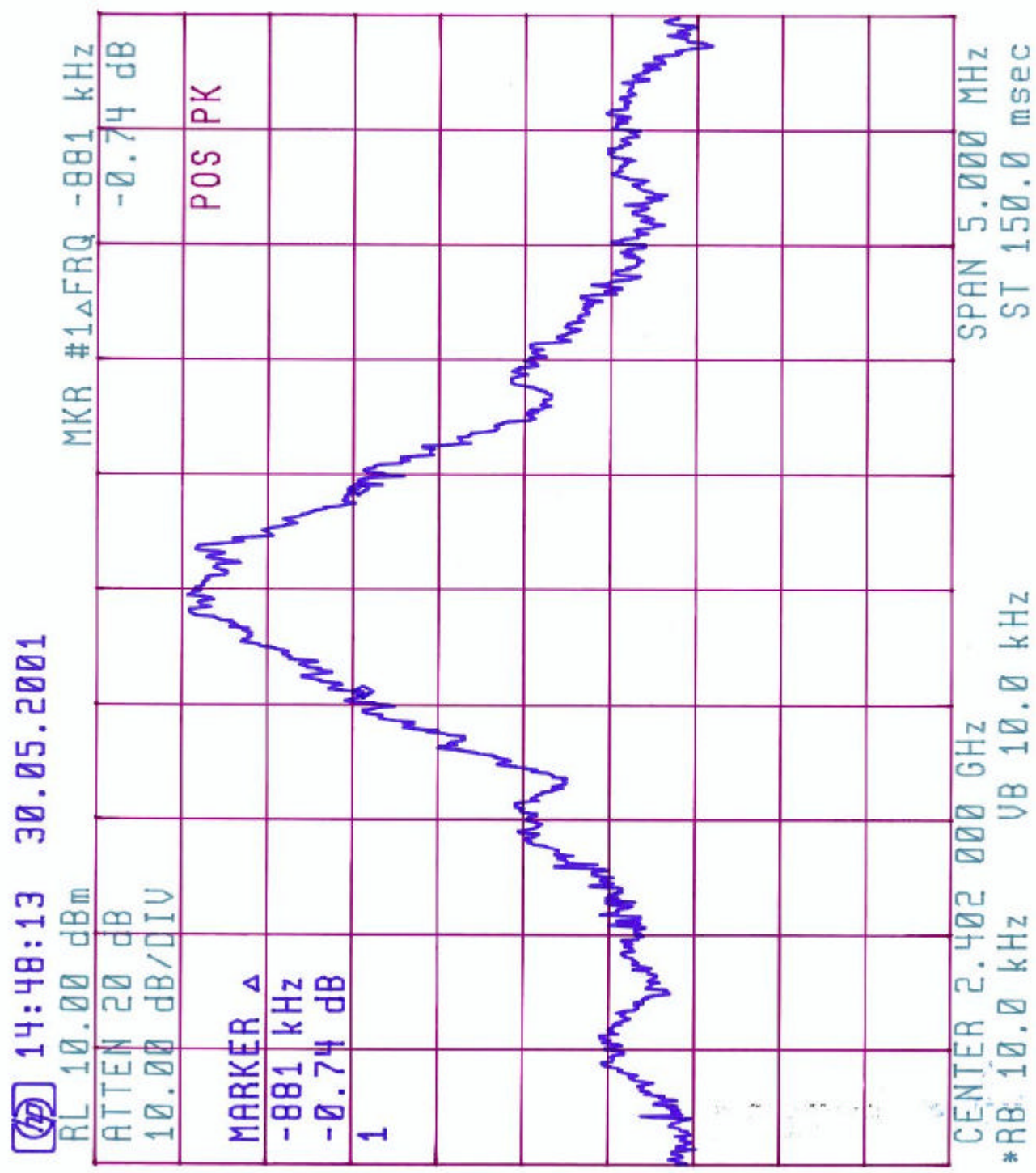
Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

§15.247 (a) (1) – Number of hopping channels:



Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

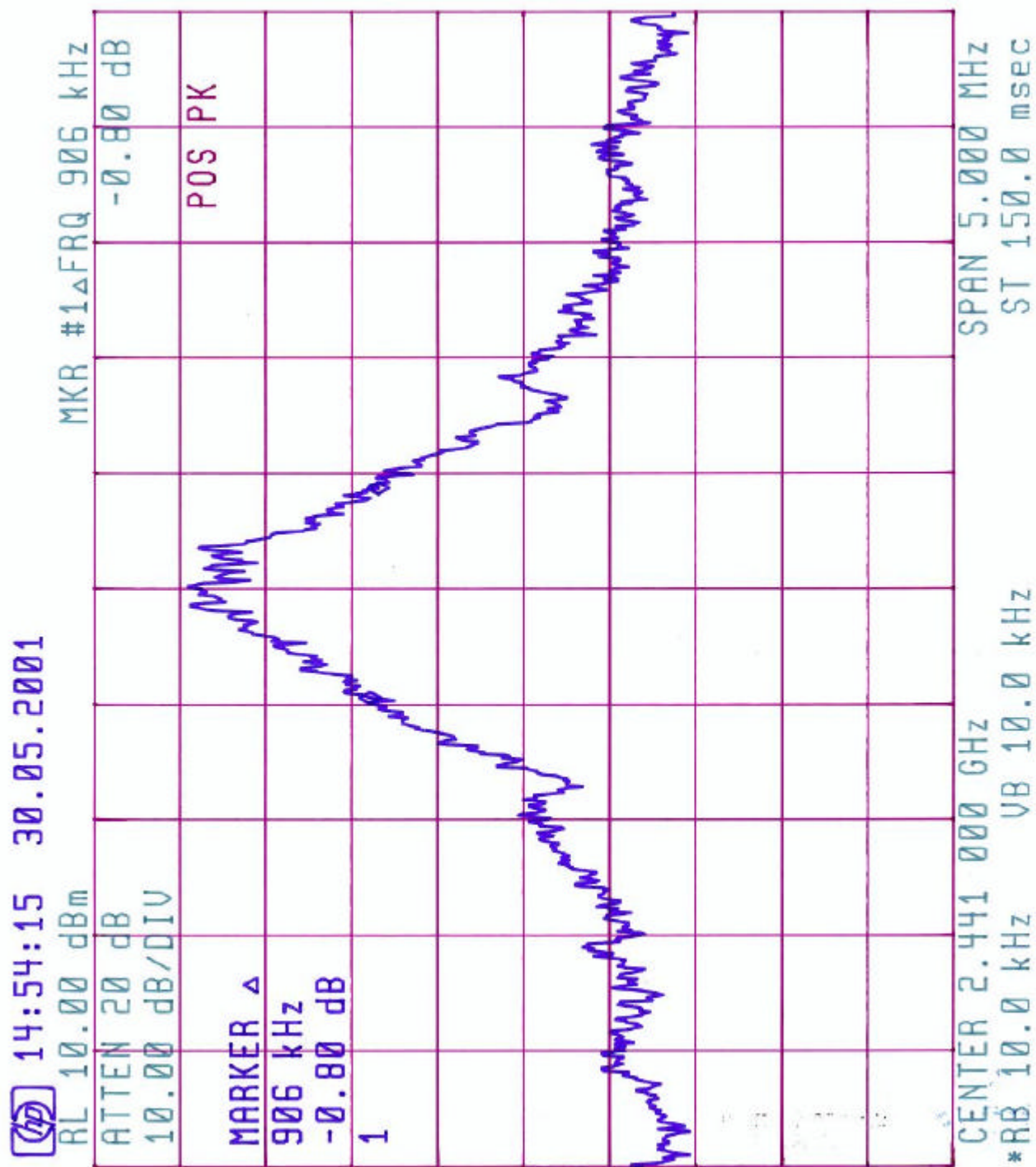
§15.247 (a) (1) – 20 dB bandwidth (lowest TX channel):





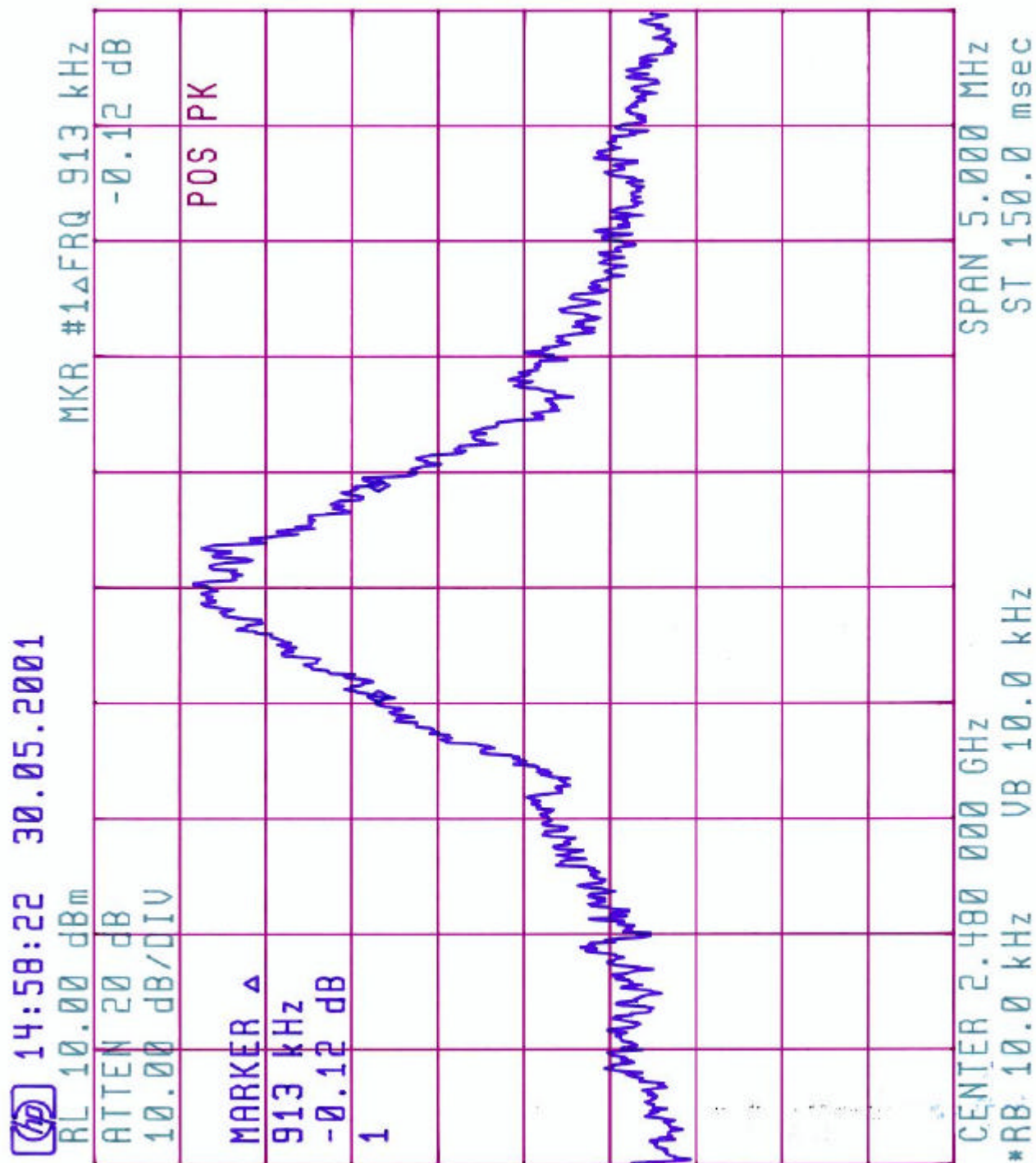
Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

§15.247 (a) (1) – 20 dB bandwidth (centre TX channel):



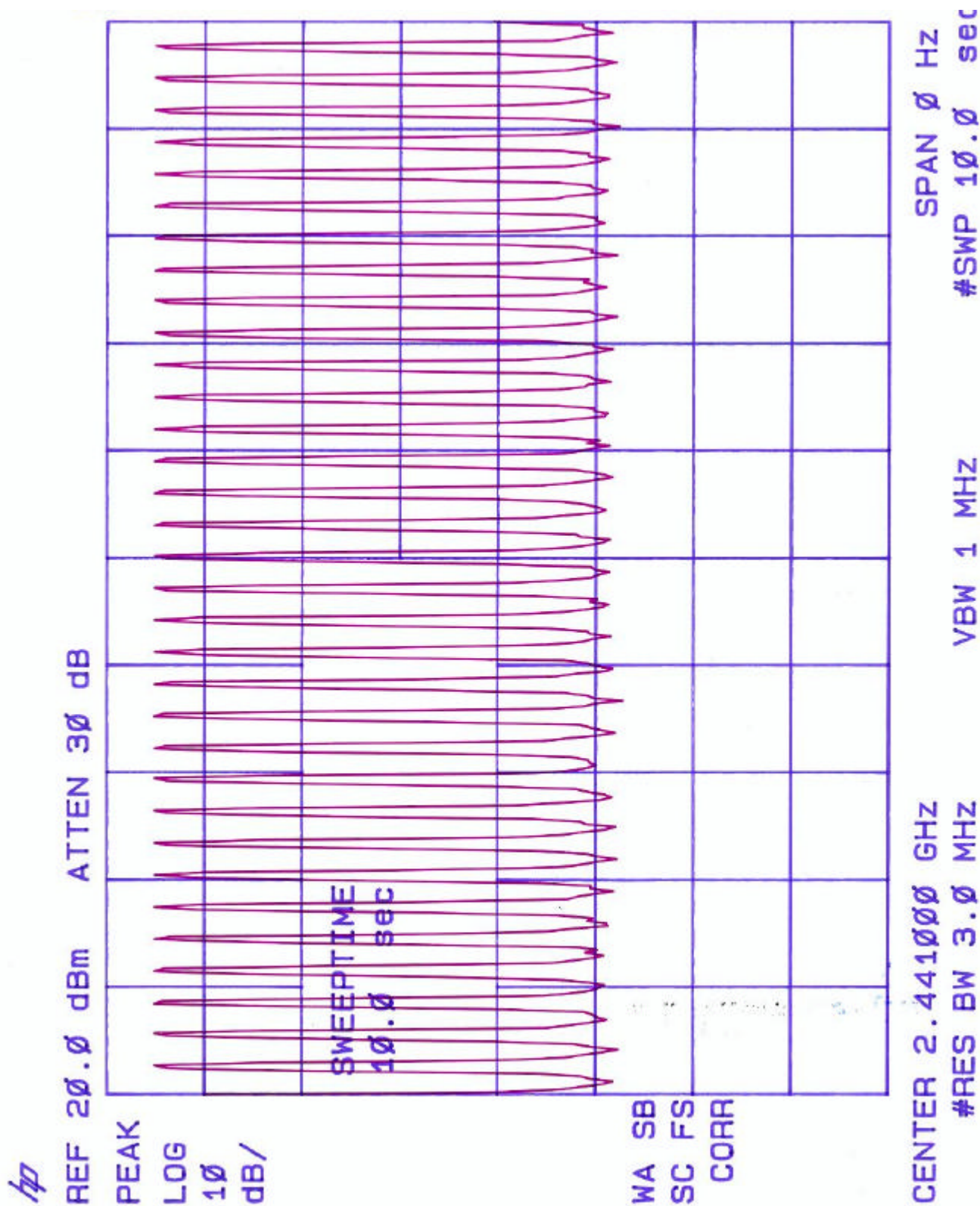
Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

§15.247 (a) (1) – 20 dB bandwidth (highest TX channel):



Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

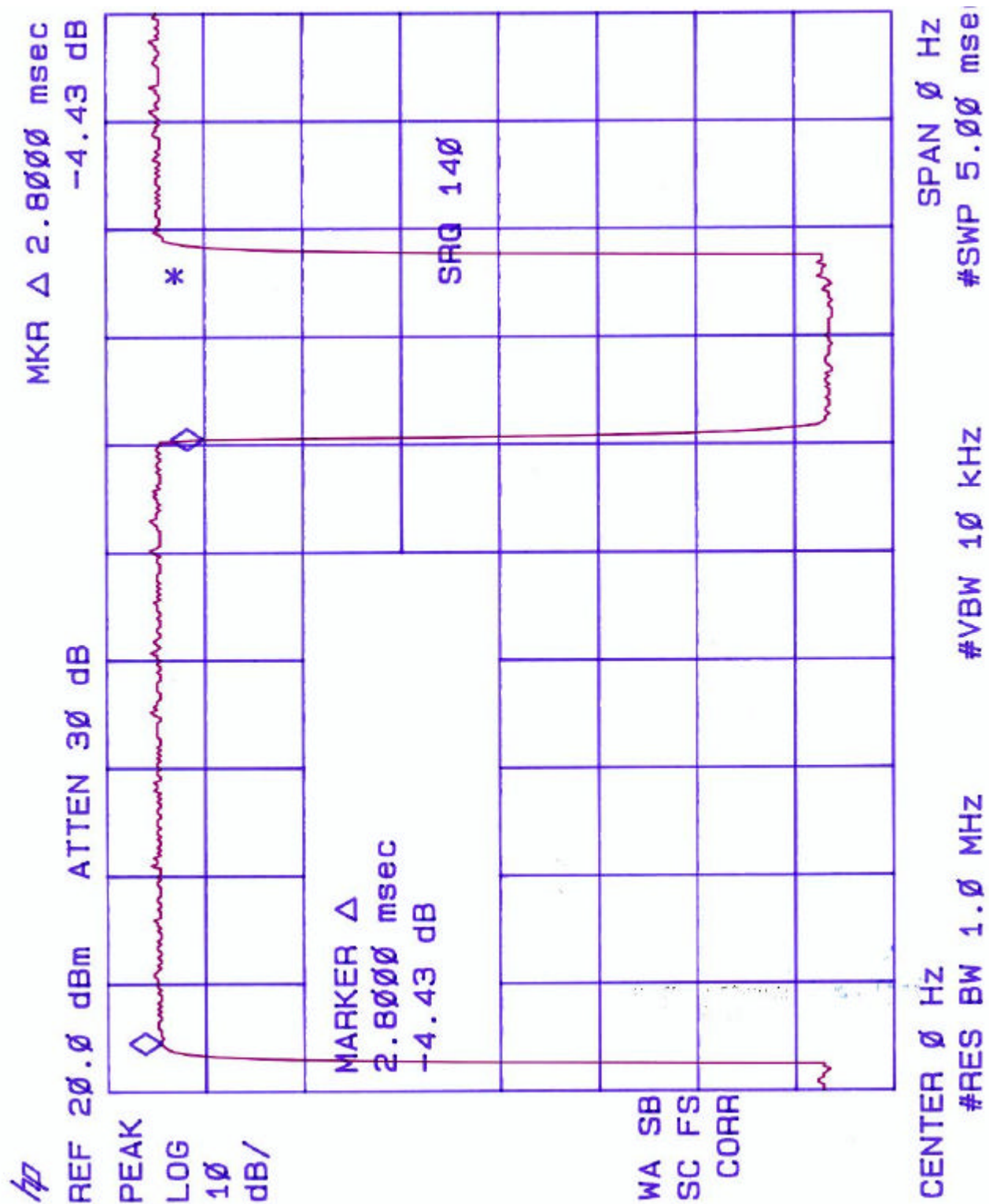
§15.247 (a) (1) – Occupancy of individual frequencies (Hops on single Ch. in 10-sec. period):





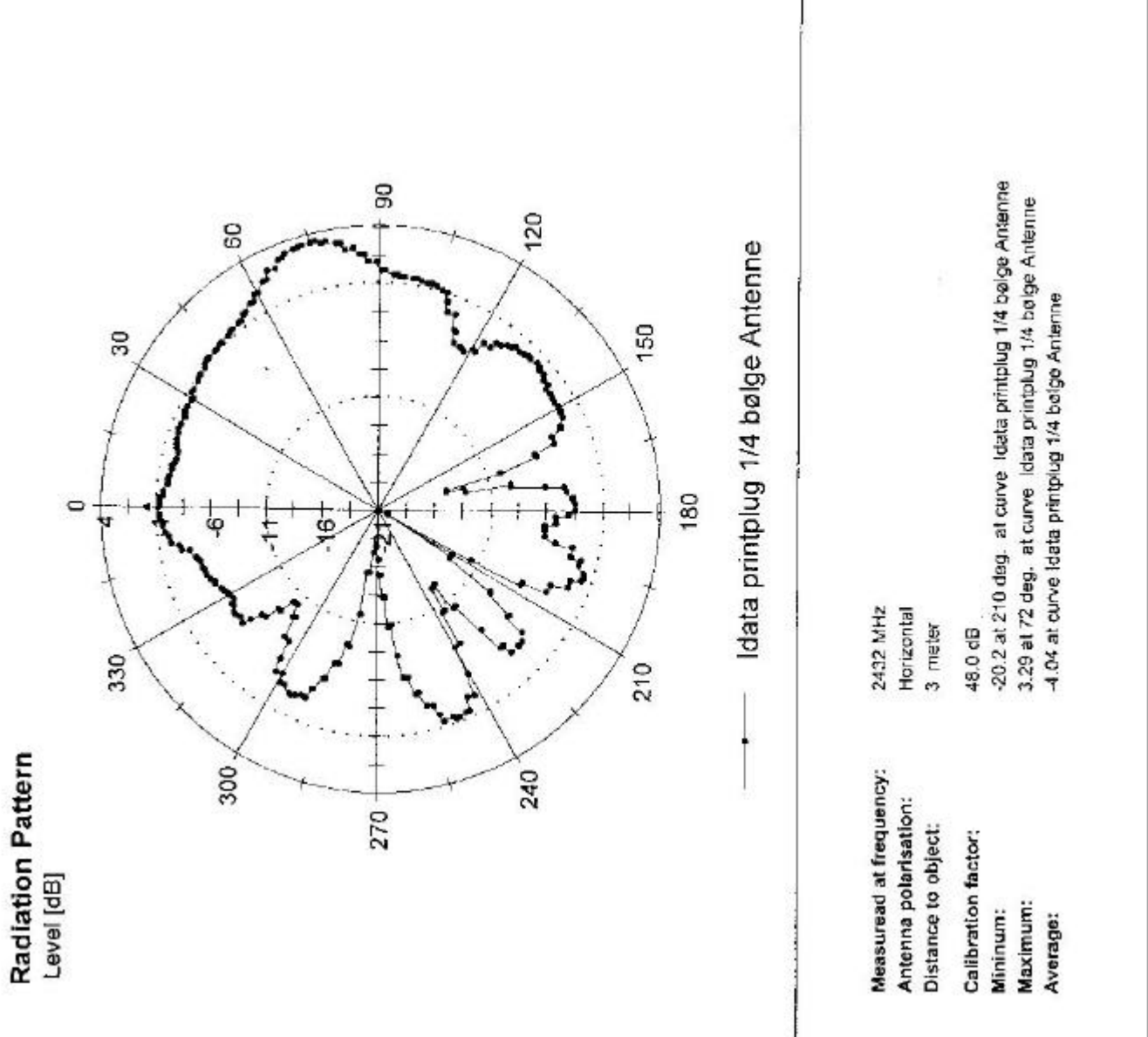
Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

§15.247 (a) (1) – Occupancy of individual frequencies (maximum TX slot time):



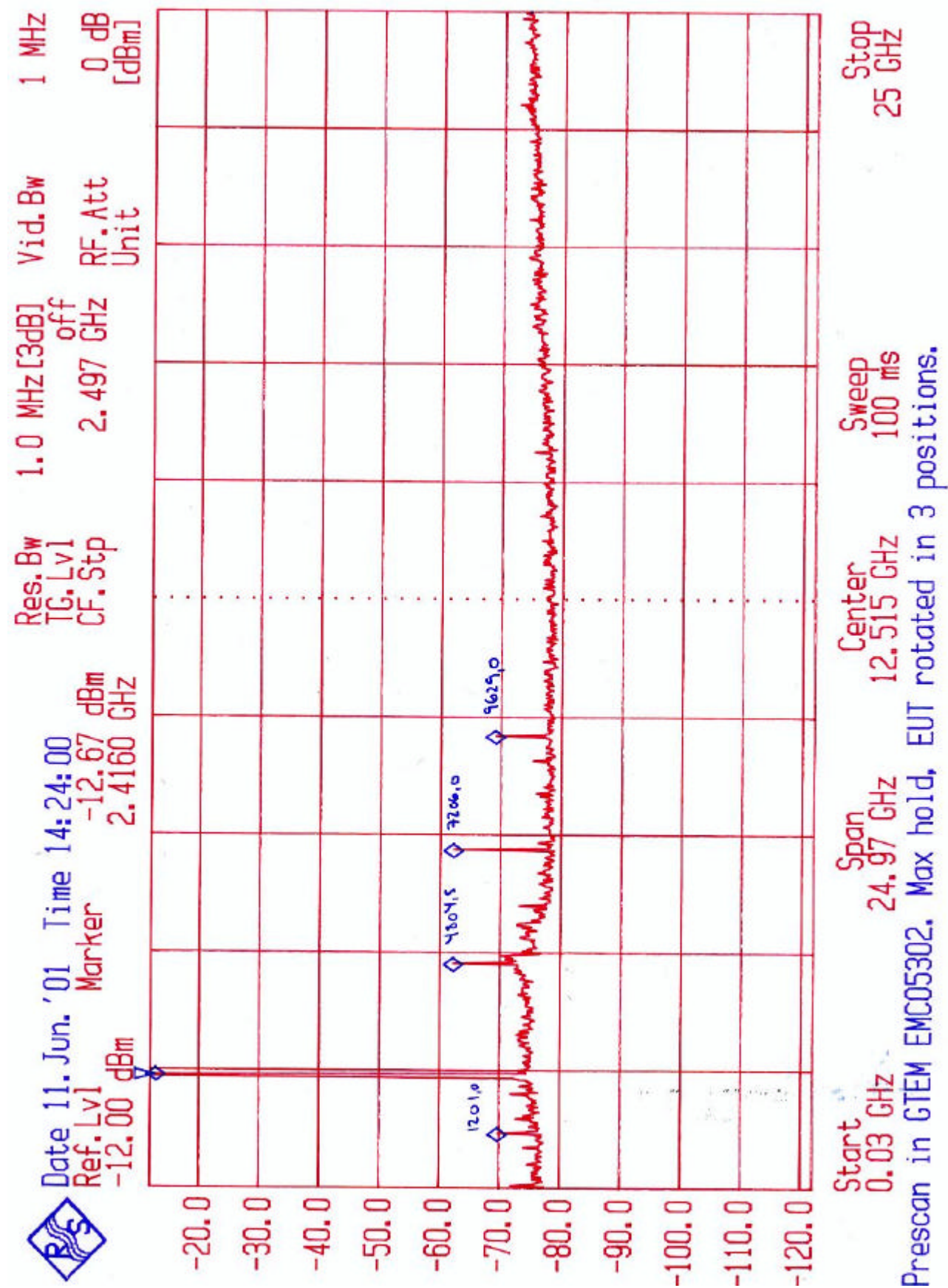
Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

§15.247 (b) (2) – Antenna gain (Radiation pattern)



Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

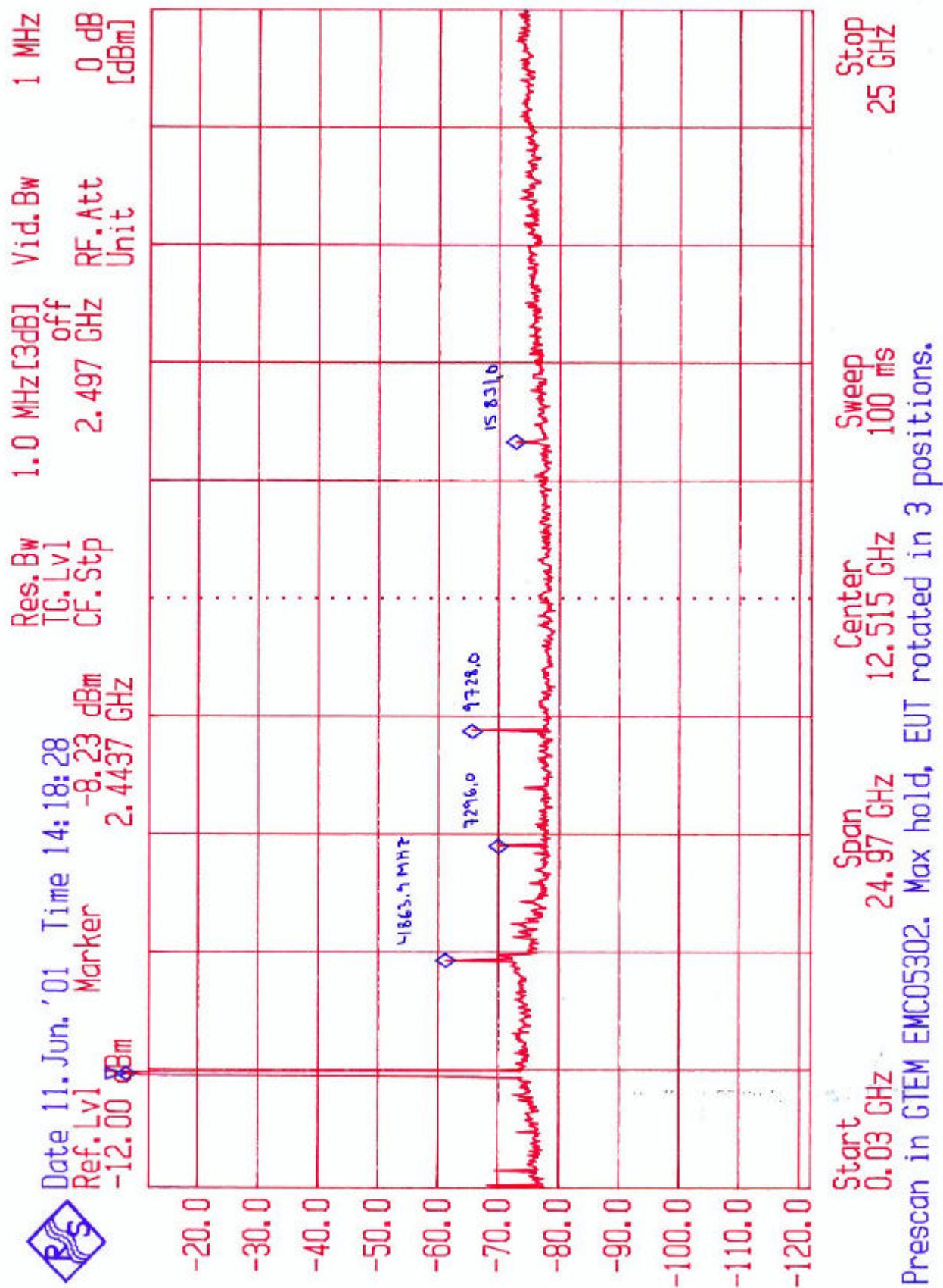
§15.247 (c) – RF power emission / Radiated emission (lowest channel):





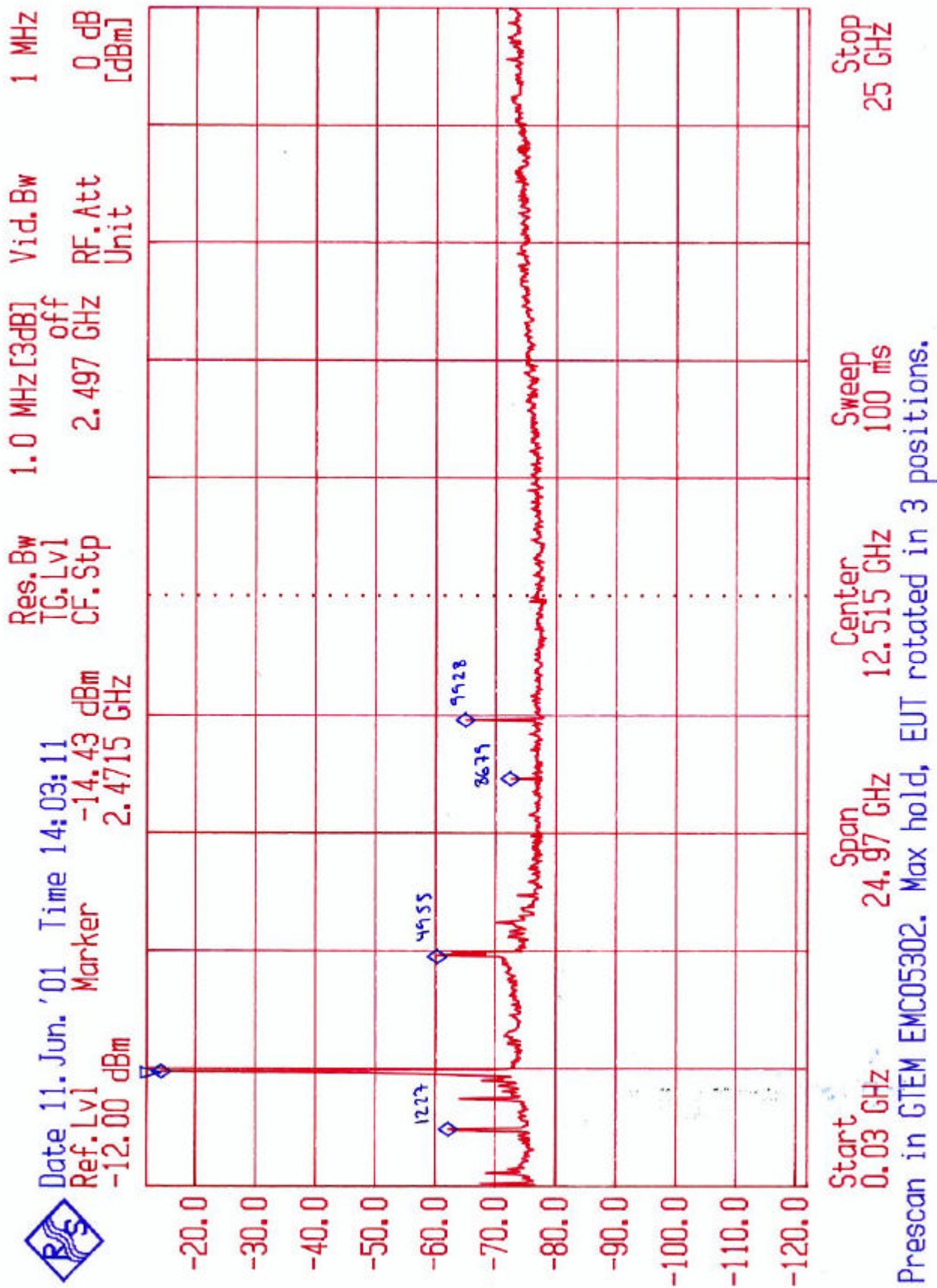
Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

§15.247 (c) – RF power emission/ Radiated emission (centre channel)



Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

§15.247 (c) – RF power emission/ Radiated emission (highest channel):



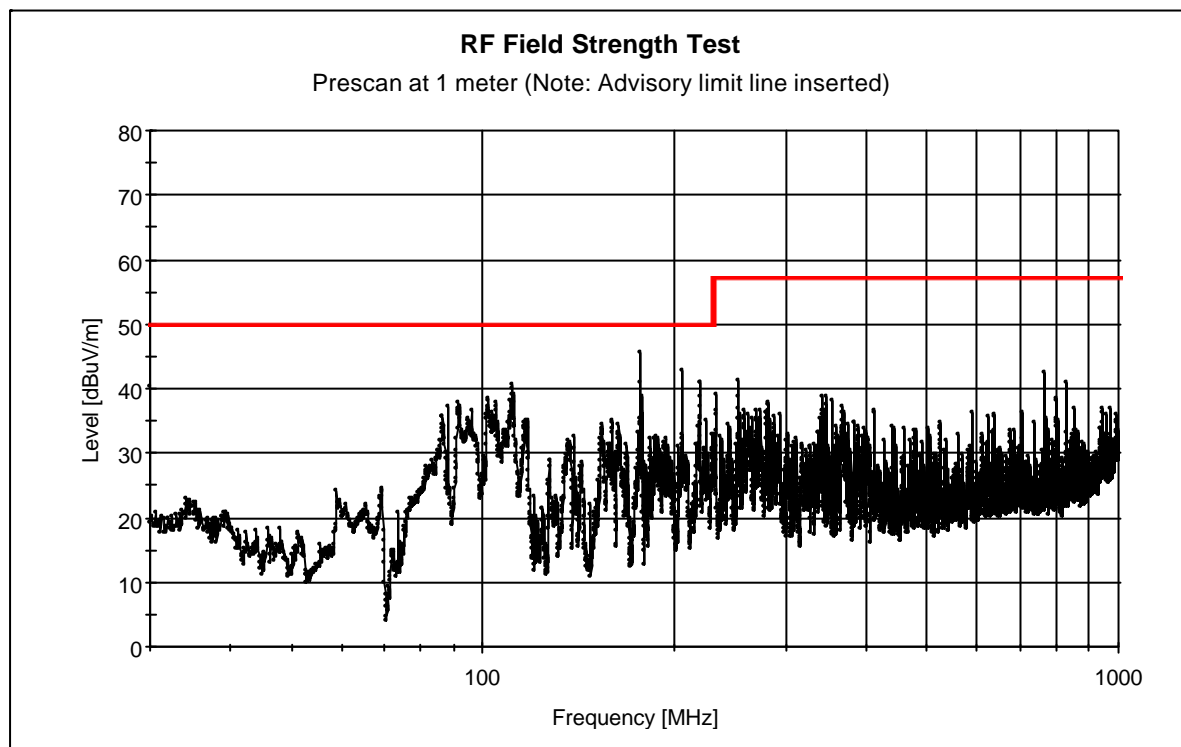


**Title:** Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.

**RF Field Emission:**

**Manufacturer:** MPI Tech  
**Equipment under Test:** Bluetooth Printer Adapter  
**Type No.:** x42100  
**Operating condition:** Link established - transfer print job  
**Test specification:** CISPR 22 / EN55022

**Comments:** Link and data transfer active



**Sweep Settings:**

**Test Receiver:** Rohde & Schwarz ESVP  
**Start frequency [MHz]:** 30  
**Stop frequency [MHz]:** 1000  
**Step frequency [%]:** 100  
**Demodulation:** AM  
**Preamplifier:** 10 dB  
**Detector:** Peak  
**IF Bandwidth:** 120 kHz  
**Measure Time [sec]:** 0.005

**Antenna and Cable Factors:**

**Antenna factor Low range:** 1m Bikonisk VHA9103 M14117  
**Antenna factor High range:** 1m Logperiodisk UHALP9107 M16066  
**Cable factor:** Lille skærmbakke kabel 1+2

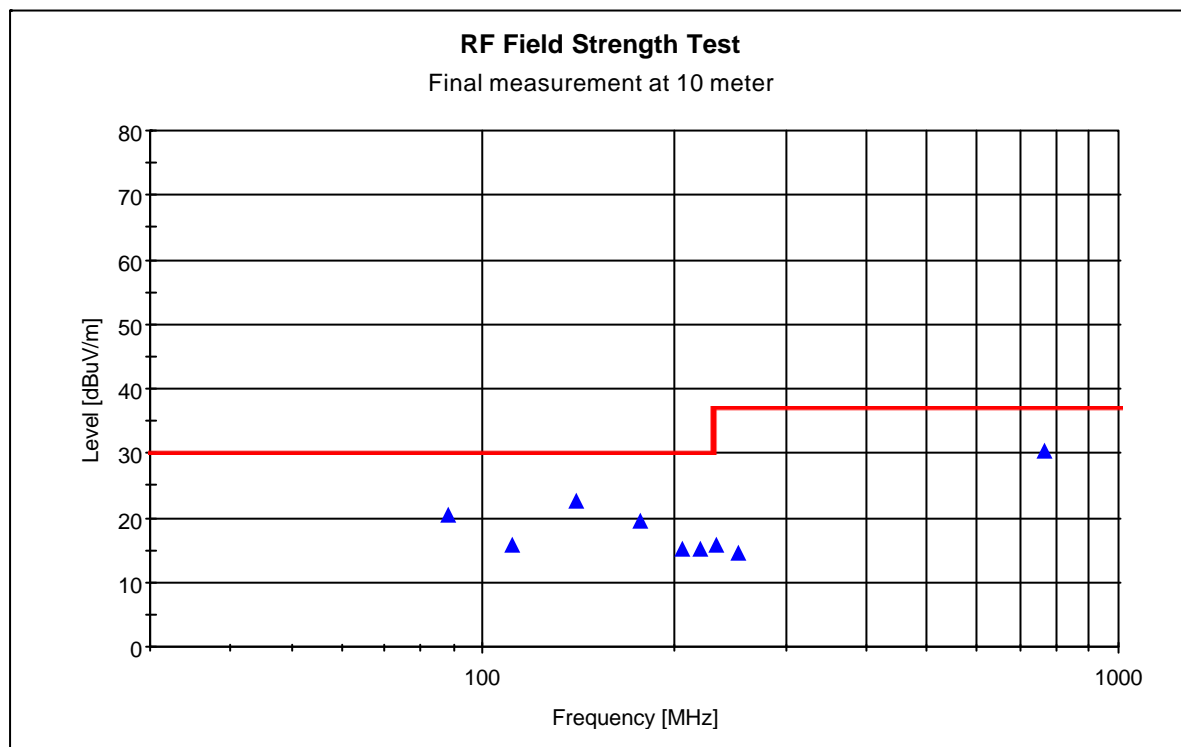
**Test Program and Version:**

**Title:** RF Field Emission  
**Program:** RFFIELDEMISSION  
**Program Path:** T:\EMC-DATA\EMC PROGRAMMER\RFFIELDEMISSION  
**Version:** 1.5.0

**Title: Test on I-data Bluetooth printer adapter, to FCC Part 15 C clause 15.207, 15.209 and 15.247.**

**RF Field Emission:**

**Manufacturer:** MPI Tech  
**Equipment under Test:** Bluetooth Printer Adapter  
**Type No.:** x42100  
**Operating condition:** Link established - transfer print job  
**Test specification:** CISPR22 / EN55022  
**Comments:** Link and data transfer active



**Final Measurement:**

Frequency [MHz]	Level [dBuV/m]	Detector	Bandwidth	Meastime [sec]	Preamp
88.5	20.49	Peak	7.5 kHz	0.005	10 dB
111.4	15.67	CISPR	120 kHz	1	10 dB
140.0	22.5	CISPR	120 kHz	1	10 dB
177.0	19.57	CISPR	120 kHz	1	10 dB
206.5	15.17	CISPR	120 kHz	1	10 dB
219.5	15.21	CISPR	120 kHz	1	10 dB
232.6	15.75	CISPR	120 kHz	1	10 dB
252.3	14.59	CISPR	120 kHz	1	10 dB
766.8	30.5	CISPR	120 kHz	1	10 dB

**Antenna and Cable Factors:**

**Antenna factor Low range:** 10m Bikonisk VHA9103 M17094  
**Antenna factor High range:** 10m Logperiodisk UHALP9107 M17380  
**Cable factor:** 10m OATS cable