



**TEST REPORT OF A 2.4 GHZ LOW POWER WLAN
PCMCIA CARD TRANSCEIVER, BRAND INTERSIL,
TYPE ISL37101P-10, IN CONFORMITY WITH
47 CFR PART 15 (2001-12-18).**

Accredited by : Dutch Council of Accreditation
STERLAB accreditation number L385
FCC listed : 90828
Industry Canada : IC3501

TNO Electronic Products & Services (EPS) B.V.
P.O. Box 15
9822 ZG Niekerk (NL)
Smidshornerweg 18
9822 TL Niekerk (NL)

Telephone: +31 594 505005
Telefax: +31 594 504804

E-mail: info@eps.tno.nl



Test specification(s): 47 CFR Part 15 (2001-12-18)
Description of EUT: 2.4 GHz low power WLAN PCMCIA card transceiver
Manufacturer: Intersil Corporation
Brand mark: Intersil
Type: ISL37101P-10
FCC ID: OSZ37101P-10

MEASUREMENT/TECHNICAL REPORT

Intersil Corporation

Model : ISL37101P-10

FCC ID: OSZ37101P-10

May 22, 2002

This report concerns:	Original grant/certification	Class 2 change	Verification
Equipment type:	Direct Sequence Spread Spectrum Transceiver		
Deferred grant requested per 47 CFR 0.457(d)(1)(ii) ?	Yes	No	
Report prepared by:	Name	: P.A.J.M. Robben, B.Sc.E.E.	
	Company name	: TNO Electronic Products & Services (EPS) B.V.	
	Address	: Smidshornerweg 18	
	Postal code/city	: 9822 ZG Niekerk	
	Mailing address	: P.O. Box 15	
	Postal code/city	: 9822 TL Niekerk	
	Country	: The Netherlands	
	Telephone number	: + 31 594 505 005	
	Telefax number	: + 31 594 504 804	
	E-mail	: info@eps.tno.nl	

The data taken for this test and report herein was done in accordance with 47 CFR Part 15 and the measurement procedures of ANSI C63.4-1992. TNO Electronic Products & Services (EPS) B.V. at Niekerk, The Netherlands, certifies that the data is accurate and contains a true representation of the emission profile of the Equipment Under Test (EUT) on the date of the test as noted in the test report. I have reviewed the test report and find it to be an accurate description of the test(s) performed and the EUT so tested.

Date: May 22, 2002

Signature:

P. de Beer
TNO Electronic Products & Services (EPS) B.V.



Test specification(s): 47 CFR Part 15 (2001-12-18)
Description of EUT: 2.4 GHz low power WLAN PCMCIA card transceiver
Manufacturer: Intersil Corporation
Brand mark: Intersil
Type: ISL37101P-10
FCC ID: OSZ37101P-10

Description of test item

Test item : 2.4 GHz low power WLAN PCMCIA card transceiver
Manufacturer : Intersil Corporation
Brand : Intersil
Type : ISL37101P-10
Serial numbers : n.a.
Revision : n.a.
Receipt number : 1
Receipt date : May 2, 2002

Applicant information

Applicant's representative : Mr. D. Sariredjo
Company : Intersil Corporation, The Netherlands
Address : Rembrandtlaan 1a
Postal code : 3723 BG
City : Bilthoven
PO-box : 343
Postal code : 3720 AH
City : Bilthoven
Country : The Netherlands
Telephone number : +31 30 229 6060
Telefax number : +31 30 229 6061

Test(s) performed

Location : Niekerk
Test(s) started : May 6, 2002
Test(s) completed : May 14, 2002
Purpose of test(s) : Type approval / certification
Test specification(s) : 47 CFR Part 15 (2001-12-18)

Test engineer : O.H. Hoekstra

Report written by : P.A.J.M. Robben, B.Sc.E.E.

Project leader : P.A.J.M. Robben, B.Sc.E.E.

This report is in conformity with NEN-EN-ISO/IEC 17025.

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The test results relate only to the item(s) tested.



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1 General information

1.1 Product description

The 2.4 GHz low power WLAN PCMCIA card transceiver, brand Intersil, type ISL37101P-10, is designed to operate in the 2.4 GHz ISM frequency band, channels 1 to 11 (2412 MHz to 2462 MHz), as specified by the Federal Communications Commission in the USA.

The 2.4 GHz low power WLAN PCMCIA card transceiver, brand Intersil, type ISL37101P-10, utilizes Direct Sequence Spread Spectrum (DSSS) technology.

The 2.4 GHz low power WLAN PCMCIA card transceiver, brand Intersil, type ISL37101P-10, incorporates an integral antenna having a gain of 2.5 dBi.

1.2 Related submittal(s) and/or Grant(s)

Not applicable.

1.3 Tested system details

Details and an overview of the system and all its components, as it has been tested, can be found in table 1 below. FCC ID's are stated in this overview where applicable. The EUT is listed in the first row of this table 1.

Description	Type number	Serial number	FCC ID	Cable descriptions
2.4 GHz low power WLAN PCMCIA card transceiver	ISL37101P-10	n.a.	OSZ37101P-10	None.
Fujitsu notebook computer	Lifebook 780Tx	n.a.	n.a. (DoC)	-Unshielded DC power cord to AC/DC adapter -Shielded parallel cable to printer -Shielded cable to mouse -Shielded USB cable to Webcam
Fujitsu AC/DC power adapter 100-240 VAC/1-0.6 Amps to +16 VDC/2.8 Amps	CA01007-0600	UJ21 9804078515	n.a. (DoC)	-Unshielded DC power cord to notebook computer -Unshielded power cord to AC mains
Microsoft Mouse	2.1A	01303505	n.a. (DoC)	-Shielded mouse cable to notebook computer
Tevion Webcam	MD9388	n.a.	n.a.	-Shielded USB cable to notebook computer

Table 1 - Tested system details overview.



Test specification(s):	47 CFR Part 15 (2001-12-18)
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1.4 Test methodology

The test methodology used is based on the requirements of 47 CFR Part 15 (2001-12-18), sections 15.107, 15.207, 15.109, 15.209, 15.205 and 15.247.

The test methods, which have been used, are based on ANSI C63.4: 1992.

Radiated emission tests above 30 MHz were performed at a measurement distance of 3 meters. Below 30 MHz the radiated emission tests were carried out at measurement distances of 3 and 10 meters. The test results regarding the radiated emission tests on frequencies below 30 MHz have been extrapolated in order to determine the field strength of the measured values at measurement distances of 30 and 300 meters (as required by 47 CFR Part 15).

Radiated emission tests on frequencies above 1 GHz were performed with appropriate pre-amplifiers, antennas and a spectrum analyzer. At frequencies on which radiated emissions were found the level at the input of the pre-amplifier was reproduced by means of a RF signal generator. The output level of the signal generator was then increased with the antenna factor in order to obtain the actual field strength value for each individual frequency on which radiated emissions were found.

1.5 Test facility

The Federal Communications Commission has reviewed the technical characteristics of the test facilities at TNO Electronic Products & Services (EPS) B.V., located in Nieuwerkerk, 9822 TL Smidshornerweg 18, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948, per October 23, 2000.

The description of the test facilities has been filed under registration number 90828 at the Office of the Federal Communications Commission. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The list of all public test facilities is available on the Internet at <http://www.fcc.gov>.

1.6 Product labeling

In accordance with 47 CFR Part 15.19 (a)(3) the following text shall be placed on a label, which is attached to the EUT:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

In accordance with 47 CFR Part 2.925 (a)(1), the FCC ID shall be placed on a label, which is attached to the EUT.

For further details about the labeling requirements (size, legibility, etc.) as set by the Federal Communications Commission see 47 CFR Part 15.19 (a)(3), 47 CFR Part 15.19 (b)(2), 47 CFR Part 15.19 (b)(4), 47 CFR Part 2.925 and 47 CFR Part 2.926.



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1.7 System test configuration

1.7.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it).

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in ANSI C63.4: 1992.

Tests were performed at the lowest operating frequency (channel 1: 2412 MHz), the operating frequency in the middle of the specified frequency band (channel 6: 2437 MHz) and the highest operating frequency (channel 11: 2462 MHz). Further details may be found in table 2 below.

Channel	Operating frequencies (MHz)	Rated output power (dBm)	Test performed
1	2412	+15	yes
2	2417	+15	no
3	2422	+15	no
4	2427	+15	no
5	2432	+15	no
6	2437	+15	yes
7	2442	+15	no
8	2447	+15	no
9	2452	+15	no
10	2457	+15	no
11	2462	+15	yes

Table 2 - Specification of channels and rated maximum output power (excluding an antenna gain of 2.5 dBi).

The EUT was tested in a PCMCIA expansion slot of a notebook computer and while using the integral antenna (having a gain of 2.5 dBi) of the EUT.

1.7.2 EUT exercise software

The EUT could be enabled to transmit or receive continuously on channels 1 (2412 MHz), 6 (2437 MHz) and 11 (2462 MHz) by means of test software, which was supplied by the manufacturer of the EUT. Furthermore, the utilized test software also enables various transmission bit-rate settings in the range of 1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s.

1.8 Special accessories

No special accessories are used and/or needed to achieve compliance with the appropriate sections of 47 CFR Part 15.



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1.9 Equipment modifications

No modifications have been made to the equipment in order to achieve compliance with the appropriate sections of 47 CFR Part 15.

1.10 Configuration of the tested system

Not applicable. See table 1 in section 1.3 of this test report.

1.11 Block diagram(s) of the EUT

The block diagram is available as part of the documentation which is to be submitted to the FCC/TCB.



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2 Radiated emission data

2.1 Test results with EUT operating in receive mode on channel 1

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15.109 and 47 CFR Part 15.209 with the EUT operating in receive mode on channel 1 (2412 MHz), are depicted in table 3.


Frequency (MHz)	Test results quasi peak (dBµV/m)		Test results average (dBµV/m)		Test results peak (dBµV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
	V	H	V	H	V	H				
66.00	25.5	25.1	-	-	-	-	120	40.0	-	-
132.00	37.0	26.7	-	-	-	-	120	43.5	-	-
176.00	26.2	33.4	-	-	-	-	120	43.5	-	-
230.80	32.8	34.9	-	-	-	-	120	46.0	-	-
264.80	32.1	32.8	-	-	-	-	120	46.0	-	-
308.00	28.9	35.9	-	-	-	-	120	46.0	-	-
601.30	34.9	27.6	-	-	-	-	120	46.0	-	-
1066.00	-	-	n.t.	n.t.	40.6	34.0	1000	-	54.0	74.0
1123.00	-	-	n.t.	n.t.	44.6	37.2	1000	-	54.0	74.0
4824.00	-	-	n.t.	n.t.	36.2	36.3	1000	-	54.0	74.0

Table 3 - Test results with the EUT operating in receive mode on channel 1 (2412 MHz).

Note: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested).

Note: Field strength values of radiated emissions at frequencies not listed in table 3 are more than 20 dB below the applicable limit.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



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2.2 Test results with EUT operating in receive mode on channel 6

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15.109 and 47 CFR Part 15.209 with the EUT operating in receive mode on channel 6 (2437 MHz), are depicted in table 4.

Frequency (MHz)	Test results quasi peak (dBμV/m)		Test results average (dBμV/m)		Test results peak (dBμV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBμV/m)	Average limits (dBμV/m)	Peak limits (dBμV/m)
	V	H	V	H	V	H				
66.00	25.5	25.1	-	-	-	-	120	40.0	-	-
132.00	37.0	26.7	-	-	-	-	120	43.5	-	-
176.00	26.2	33.4	-	-	-	-	120	43.5	-	-
230.80	32.8	34.9	-	-	-	-	120	46.0	-	-
264.80	32.1	32.8	-	-	-	-	120	46.0	-	-
308.00	28.9	35.9	-	-	-	-	120	46.0	-	-
601.30	34.9	27.6	-	-	-	-	120	46.0	-	-
1066.00	-	-	n.t.	n.t.	41.4	35.7	1000	-	54.0	74.0
1123.00	-	-	n.t.	n.t.	43.6	38.0	1000	-	54.0	74.0
4874.00	-	-	n.t.	n.t.	35.6	36.7	1000	-	54.0	74.0

Table 4 - Test results with the EUT operating in receive mode on channel 6 (2437 MHz).

Note: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested).

Note: Field strength values of radiated emissions at frequencies not listed in table 4 are more than 20 dB below the applicable limit.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



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2.3 Test results with EUT operating in receive mode on channel 11

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15.109 and 47 CFR Part 15.209 with the EUT operating in receive mode on channel 11 (2462 MHz), are depicted in table 5.


Frequency (MHz)	Test results quasi peak (dBμV/m)		Test results average (dBμV/m)		Test results peak (dBμV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBμV/m)	Average limits (dBμV/m)	Peak limits (dBμV/m)
	V	H	V	H	V	H				
66.00	25.5	25.1	-	-	-	-	120	40.0	-	-
132.00	37.0	26.7	-	-	-	-	120	43.5	-	-
176.00	26.2	33.4	-	-	-	-	120	43.5	-	-
230.80	32.8	34.9	-	-	-	-	120	46.0	-	-
264.80	32.1	32.8	-	-	-	-	120	46.0	-	-
308.00	28.9	35.9	-	-	-	-	120	46.0	-	-
601.30	34.9	27.6	-	-	-	-	120	46.0	-	-
1066.00	-	-	n.t.	n.t.	41.3	35.0	1000	-	54.0	74.0
1123.00	-	-	n.t.	n.t.	43.1	35.8	1000	-	54.0	74.0
4924.00	-	-	n.t.	n.t.	37.8	37.5	1000	-	54.0	74.0

Table 5 - Test results with the EUT operating in receive mode on channel 11 (2462 MHz).

Note: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested).

Note: Field strength values of radiated emissions at frequencies not listed in table 5 are more than 20 dB below the applicable limit.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



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2.4 Test results with EUT operating in transmit mode on channel 1.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15.109, 47 CFR Part 15.209 and 47 CFR Part 15.205 (restricted bands of operation) with the EUT operating in transmit mode on channel 1 (2412 MHz), are depicted in table 6.

Frequency (MHz)	Test results quasi peak (dBμV/m)		Test results average (dBμV/m)		Test results peak (dBμV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBμV/m)	Average limits (dBμV/m)	Peak limits (dBμV/m)
	V	H	V	H	V	H				
66.00	26.4	23.1	-	-	-	-	120	40.0	-	-
132.00	37.8	26.5	-	-	-	-	120	43.5	-	-
176.00	24.0	31.7	-	-	-	-	120	43.5	-	-
230.80	33.7	35.6	-	-	-	-	120	46.0	-	-
264.80	32.6	34.6	-	-	-	-	120	46.0	-	-
308.00	32.3	36.9	-	-	-	-	120	46.0	-	-
601.30	34.7	26.6	-	-	-	-	120	46.0	-	-
1066.00	-	-	n.t.	n.t.	42.3	39.5	1000	-	54.0	74.0
1128.00	-	-	n.t.	n.t.	40.7	38.7	1000	-	54.0	74.0
2257.00	-	-	n.t.	35.9	41.4	45.8	1000	-	54.0	74.0
2568.00	-	-	n.t.	38.8	36.9	48.6	1000	-	54.0	74.0
4824.00	-	-	n.t.	n.t.	37.0	37.2	1000	-	54.0	74.0


Table 6 - Test results with the EUT operating in transmit mode on channel 1 (2412 MHz).

Note: Radiated emission tests have been performed with all possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s) in transmit mode. The highest values measured of the spurious emission components are reported by means of table 6.

Note: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested), unless otherwise noted.

Note: Field strength values of radiated emissions at frequencies not listed in table 6 are more than 20 dB below the applicable limit.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



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2.5 Test results with EUT operating in transmit mode on channel 6.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15.109, 47 CFR Part 15.209 and 47 CFR Part 15.205 (restricted bands of operation) with the EUT operating in transmit mode on channel 6 (2437 MHz), are depicted in table 7.

Frequency (MHz)	Test results quasi peak (dBµV/m)		Test results average (dBµV/m)		Test results peak (dBµV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
	V	H	V	H	V	H				
66.00	26.4	23.1	-	-	-	-	120	40.0	-	-
132.00	37.8	26.5	-	-	-	-	120	43.5	-	-
176.00	24.0	31.7	-	-	-	-	120	43.5	-	-
230.80	33.7	35.6	-	-	-	-	120	46.0	-	-
264.80	32.6	34.6	-	-	-	-	120	46.0	-	-
308.00	32.3	36.9	-	-	-	-	120	46.0	-	-
601.30	34.7	26.6	-	-	-	-	120	46.0	-	-
1066.00	-	-	n.t.	n.t.	42.9	37.0	1000	-	54.0	74.0
1123.00	-	-	n.t.	n.t.	45.3	37.5	1000	-	54.0	74.0
2282.00	-	-	n.t.	39.4	44.6	48.9	1000	-	54.0	74.0
2593.00	-	-	n.t.	37.4	35.2	47.4	1000	-	54.0	74.0
4864.00	-	-	n.t.	n.t.	39.2	38.8	1000	-	54.0	74.0


Table 7 - Test results with the EUT operating in transmit mode on channel 6 (2437 MHz).

Note: Radiated emission tests have been performed with all possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s) in transmit mode. The highest values measured of the spurious emission components are reported by means of table 7.

Note: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested), unless otherwise noted.

Note: Field strength values of radiated emissions at frequencies not listed in table 7 are more than 20 dB below the applicable limit.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



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2.6 Test results with EUT operating in transmit mode on channel 11.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15.109, 47 CFR Part 15.209 and 47 CFR Part 15.205 (restricted bands of operation) with the EUT operating in transmit mode on channel 11 (2462 MHz), are depicted in table 8.

Frequency (MHz)	Test results quasi peak (dBµV/m)		Test results average (dBµV/m)		Test results peak (dBµV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
	V	H	V	H	V	H				
66.00	26.4	23.1	-	-	-	-	120	40.0	-	-
132.00	37.8	26.5	-	-	-	-	120	43.5	-	-
176.00	24.0	31.7	-	-	-	-	120	43.5	-	-
230.80	33.7	35.6	-	-	-	-	120	46.0	-	-
264.80	32.6	34.6	-	-	-	-	120	46.0	-	-
308.00	32.3	36.9	-	-	-	-	120	46.0	-	-
601.30	34.7	26.6	-	-	-	-	120	46.0	-	-
1066.00	-	-	n.t.	n.t.	40.3	36.2	1000	-	54.0	74.0
1123.00	-	-	n.t.	n.t.	45.0	38.4	1000	-	54.0	74.0
2306.00	-	-	n.t.	42.5	45.8	51.1	1000	-	54.0	74.0
2629.00	-	-	n.t.	35.7	36.5	45.2	1000	-	54.0	74.0
4924.00	-	-	n.t.	n.t.	39.9	41.9	1000	-	54.0	74.0


Table 8 - Test results with the EUT operating in transmit mode on channel 11 (2462 MHz).

Note: Radiated emission tests have been performed with all possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s) in transmit mode. The highest values measured of the spurious emission components are reported by means of table 8.

Note: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested), unless otherwise noted.

Note: Field strength values of radiated emissions at frequencies not listed in table 8 are more than 20 dB below the applicable limit.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



Test specification(s): 47 CFR Part 15 (2001-12-18)
Description of EUT: 2.4 GHz low power WLAN PCMCIA card transceiver
Manufacturer: Intersil Corporation
Brand mark: Intersil
Type: ISL37101P-10
FCC ID: OSZ37101P-10

3 Conducted emission data

3.1 AC mains with EUT operating in transmit/receive mode

The (worst-case) results of the conducted emission tests at the 110 Volts AC mains connection terminals of the notebook computer in which the EUT was built-in, carried out in accordance with 47 CFR Part 15.107 and 47 CFR Part 15.207 with the EUT operating in transmit/receive mode on channels 1 (2412 MHz), 6 (2437 MHz) and 11 (2462 MHz) while utilizing all possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s), are depicted in table 9.

Frequency (MHz)	Measurement results dB(μ V) Neutral	Measurement results dB(μ V) Line 1	Limits dB(μ V)	Margin (dB) Neutral	Margin (dB) Line 1	Result
	QP	QP	QP	QP	QP	
0.45	13.9	13.9	48.0	-34.1	-34.1	PASS
0.49	28.3	26.4	48.0	-19.7	-21.6	PASS
0.57	13.1	13.2	48.0	-34.9	-34.8	PASS
0.85	13.1	13.5	48.0	-34.9	-34.5	PASS
1.12	28.4	29.5	48.0	-19.6	-18.5	PASS
1.82	30.3	31.3	48.0	-17.7	-16.7	PASS
3.23	30.5	31.6	48.0	-17.5	-16.4	PASS
5.12	31.0	32.5	48.0	-17.0	-15.5	PASS

Table 9 - Test results with the EUT operating in transmit/receive mode.

Note: Disturbance voltage values of conducted emissions at frequencies not listed in table 9 are more than 20 dB below the applicable limit.

Test engineer

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FCC ID: OSZ37101P-10

3.2 Emission in restricted bands nearest to the band 2400 - 2483.5 MHz

The results of the conducted emission tests, carried out in accordance with 47 CFR Part 15.205 (restricted bands of operation, with the emphasis on the emission in restricted bands nearest to the band 2400-2483.5 MHz) with the EUT operating in transmit mode, are depicted in table 10.


Frequency (MHz)	Test results quasi peak (dBµV/m)	Test results average (dBµV/m)	Test results peak (dBµV/m)	Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
2386.00	-	n.a.	58.9	1000	-	-	74.0
2390.00	-	47.5	n.a.	1000	-	54.0	-
2483.50	-	48.2	n.a.	1000	-	54.0	-
2499.46	-	n.a.	59.2	1000	-	-	74.0

Table 10 - Test results with the EUT operating in transmit mode.

Note: Conducted emission tests have been performed with all possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s) in transmit mode. The highest values measured of the spurious emission components are reported by means of table 10.

Note: Field strength values of conducted emissions at frequencies not listed in table 10 are more than 20 dB below the applicable limit.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



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Brand mark: Intersil
Type: ISL37101P-10
FCC ID: OSZ37101P-10

4 Test results of measurements in conformity with 47 CFR Part 15.247

4.1 Minimum 6 dB bandwidth

The results of tests on the EUT, carried out in accordance with 47 CFR Part 15.247 (a)(2), are depicted in table 11.

Transmission bitrate (Mbit/s)	Minimum 6 dB bandwidth (kHz)			Limit (kHz)
	Channel 1 (2412 MHz)	Channel 6 (2437 MHz)	Channel 11 (2462 MHz)	
1	12150	12150	12230	>500
2	12080	12150	12230	>500
5.5	10800	11330	11330	>500
11	11700	11780	11780	>500

Table 11 - Minimum 6 dB bandwidth.

Test engineer

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Test specification(s): 47 CFR Part 15 (2001-12-18)
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Manufacturer: Intersil Corporation
Brand mark: Intersil
Type: ISL37101P-10
FCC ID: OSZ37101P-10

4.2 Maximum peak output power


The results of tests on the EUT, carried out in accordance with 47 CFR Part 15.247 (b)(1), are depicted in table 12.

Transmission bitrate (Mbit/s)	Maximum peak output power (dBm)			Limit (dBm) Antenna gain < 6 dBi
	Channel 1 (2412 MHz)	Channel 6 (2437 MHz)	Channel 11 (2462 MHz)	
1	15.0	14.2	14.0	30.0
2	15.5	14.6	14.3	30.0
5.5	15.1	14.2	14.0	30.0
11	15.4	14.4	14.3	30.0

Table 12 - Maximum peak output power.

Note: During the measurements, the AC mains supply voltage of the notebook PC in which the EUT was built-in was varied between 85% and 115% of the nominal value. The maximum measured values are depicted in table 12. No differences in measurement results, due to the AC mains voltage variations between 85% and 115% from the nominal value, have been observed. As the antenna gain does not exceed 6 dBi, no reduction of the maximum peak output power is required.

Test engineer

Signature : 

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FCC ID: OSZ37101P-10

4.3 Radiated emission data outside restricted bands

The results of tests on the EUT, carried out in accordance with 47 CFR Part 15.247 (c), are depicted in table 13.


Radiated emission data outside restricted bands in a 100 kHz bandwidth shall be at least 20 dB below the highest level in a 100 kHz bandwidth within the band.

Frequency (MHz)	Level below working channel based on field strength (dB)	Limit (dB)
2397.00	-28.8	< -20.0
all frequencies	<40.0	< -20.0

Table 13 - Radiated emission data outside restricted bands.

Note: Worst case measurement values for transmissions with all possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s) and channel 1 (2412 MHz), channel 6 (2437 MHz) and channel 11 (2462 MHz) combinations.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



Test specification(s): 47 CFR Part 15 (2001-12-18)
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Brand mark: Intersil
Type: ISL37101P-10
FCC ID: OSZ37101P-10

4.4 Conducted emission data outside restricted bands

The results of tests on the EUT, carried out in accordance with 47 CFR Part 15.247 (c), are depicted in table 14.

Conducted emission data outside restricted bands in a 100 kHz bandwidth shall be at least 20 dB below the highest level in a 100 kHz bandwidth within the band.

Frequency (MHz)	Level below working channel based on field strength (dB)	Limit (dB)
2397.00	-28.8	< -20.0
other frequencies	< -40.0	< -20.0

Table 14 - Conducted emission data outside restricted bands.

Note: Worst case measurement values for transmissions with all possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s) and channel 1 (2412 MHz), channel 6 (2437 MHz) and channel 11 (2462 MHz) combinations.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



Test specification(s): 47 CFR Part 15 (2001-12-18)
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FCC ID: OSZ37101P-10


4.5 Peak power spectral density

The results of the tests on the EUT, carried out in accordance with 47 CFR Part 15.247 (d), are depicted in table 15.

Transmission bitrate (Mbit/s)	Peak power spectral density (conducted) in any 3 kHz band (dBm)			Limit (dBm)
	Channel 1 (2412 MHz)	Channel 6 (2437 MHz)	Channel 11 (2462 MHz)	
1	-12.1	-12.8	-13.1	<8.0
2	-10.8	-11.7	-12.0	<8.0
5.5	-10.7	-11.5	-11.8	<8.0
11	-8.7	-9.6	-10.0	<8.0

Table 15 - Peak power spectral density.

Test engineer

Signature : 

Name : Onno H. Hoekstra

Date : May 22, 2002



Test specification(s): 47 CFR Part 15 (2001-12-18)
Description of EUT: 2.4 GHz low power WLAN PCMCIA card
transceiver
Manufacturer: Intersil Corporation
Brand mark: Intersil
Type: ISL37101P-10
FCC ID: OSZ37101P-10

5 Plots of measurement data

For reference purposes and visualization of spectrum analyzer settings during the measurements, a selection of plots of measurement data is included in this test report.

Test engineer

Signature

: 

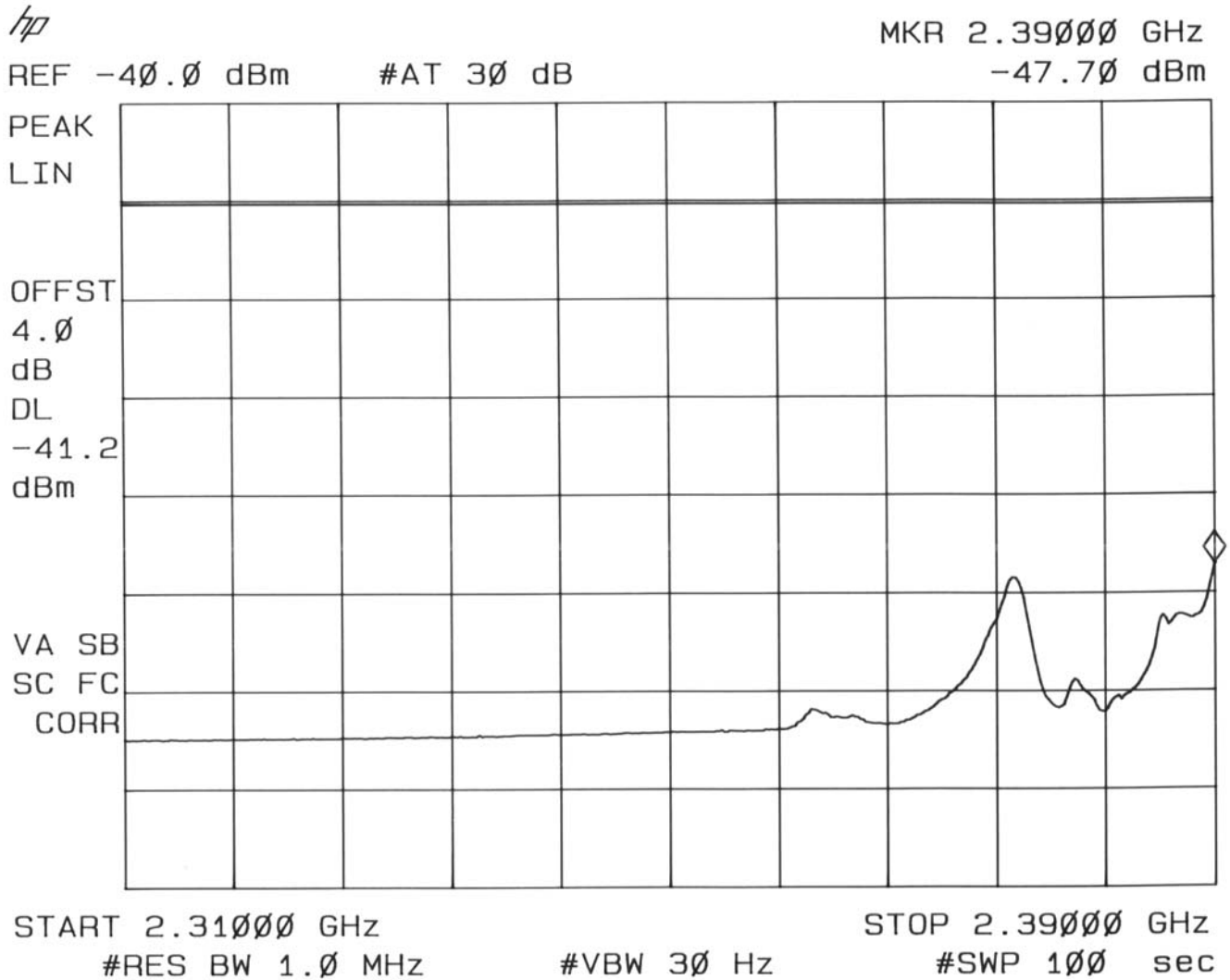
Name

: Onno H. Hoekstra

Date

: May 22, 2002

5.1 Emission in restricted bands nearest to the band 2400 - 2483.5 MHz



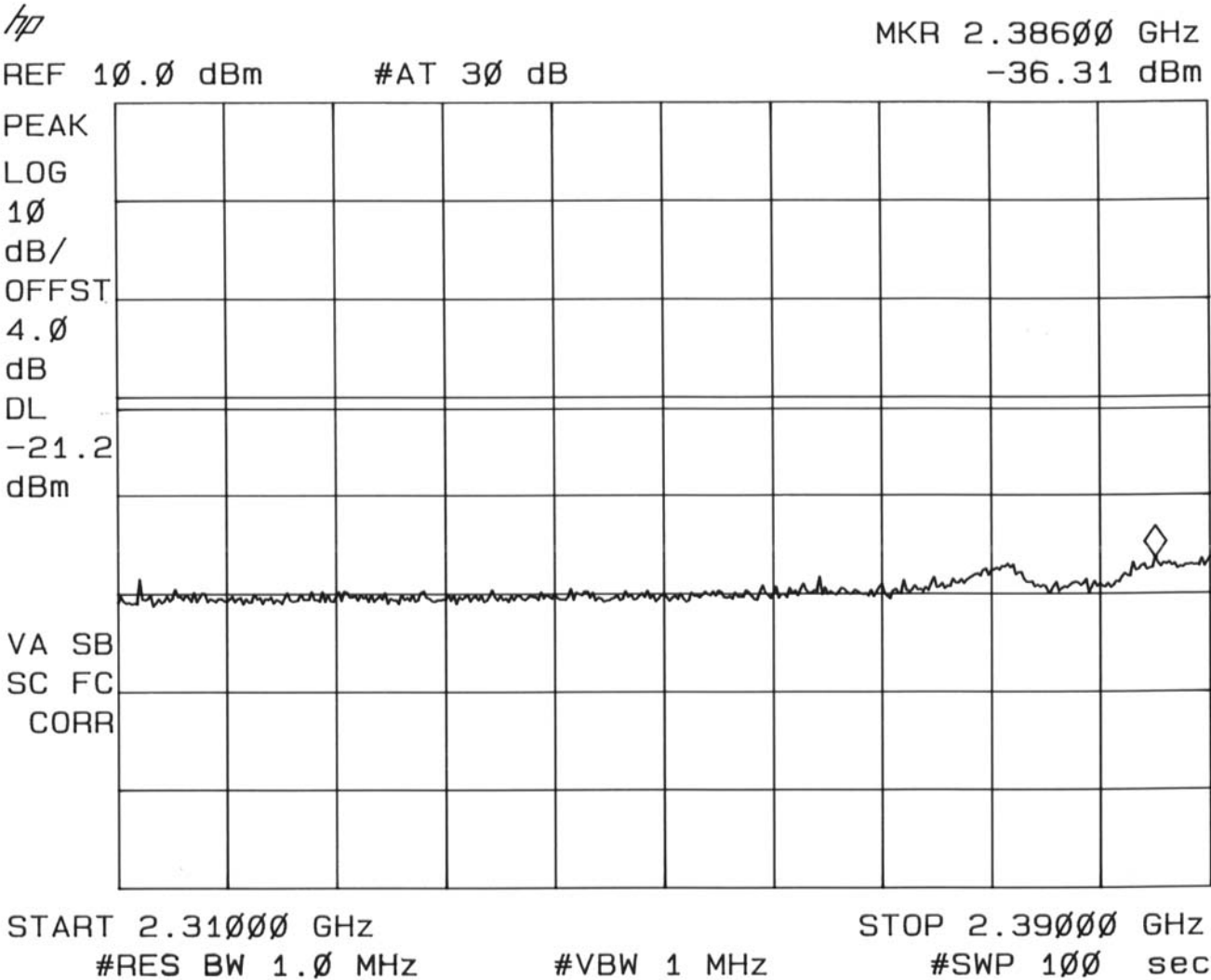
Plot 1 - Average measurement values in restricted band 2310 - 2390 MHz.

Average measurement values in restricted band. All possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s), conducted measurement, corrected for 2.5 dBi antenna gain (including antenna cable losses) and 1.5 dB cable losses (measurement cable)

Note: 54 dBμV/m :: -41.2 dBm display line setting.



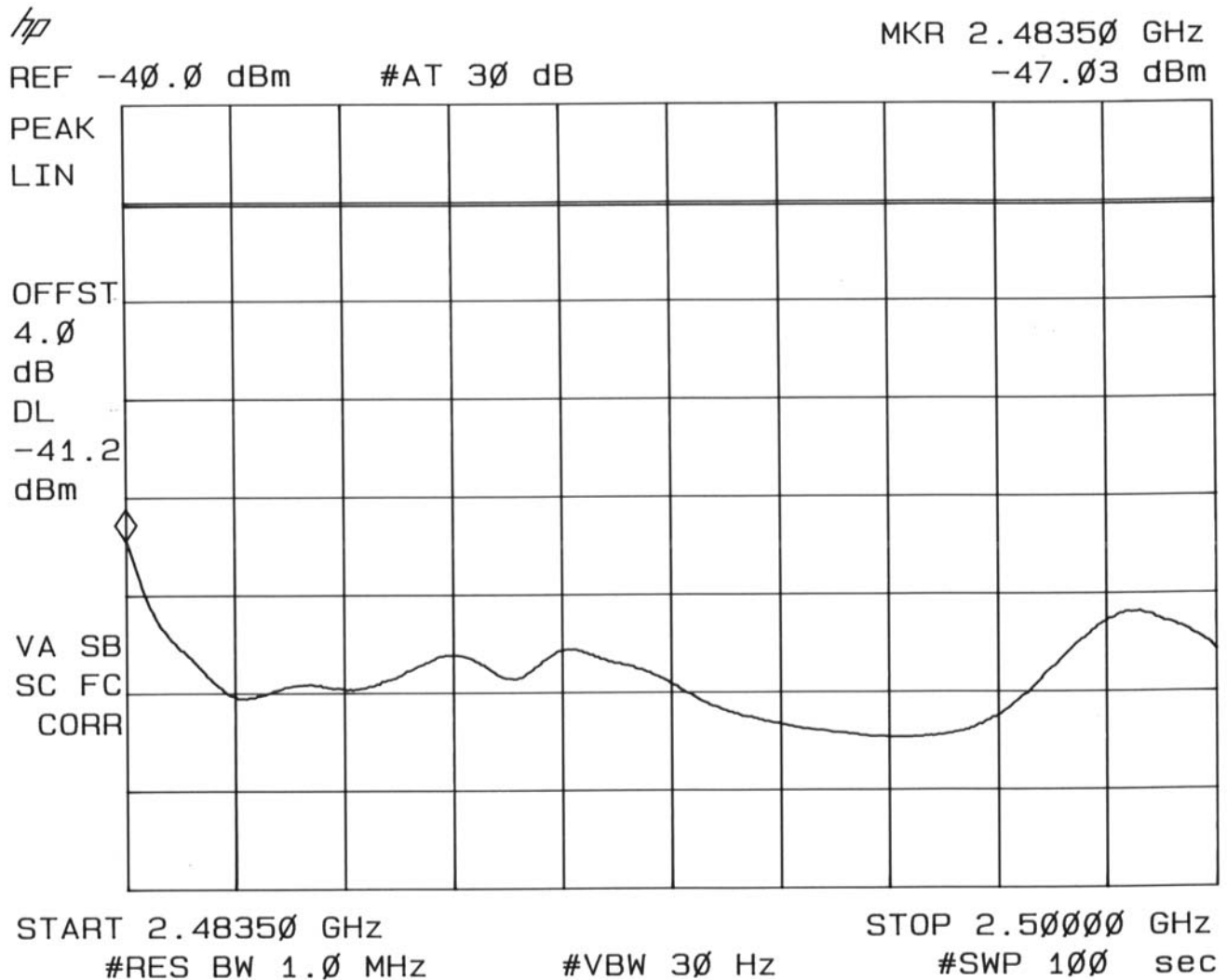
Test specification(s): 47 CFR Part 15 (2001-12-18)
Description of EUT: 2.4 GHz low power WLAN PCMCIA card transceiver
Manufacturer: Intersil Corporation
Brand mark: Intersil
Type: ISL37101P-10
FCC ID: OSZ37101P-10



Plot 2 - Peak measurement values in restricted band 2310 - 2390 MHz.

Peak measurement values in restricted band. All possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s), conducted measurement, corrected for 2.5 dBi antenna gain (including antenna cable losses) and 1.5 dB cable losses (measurement cable).

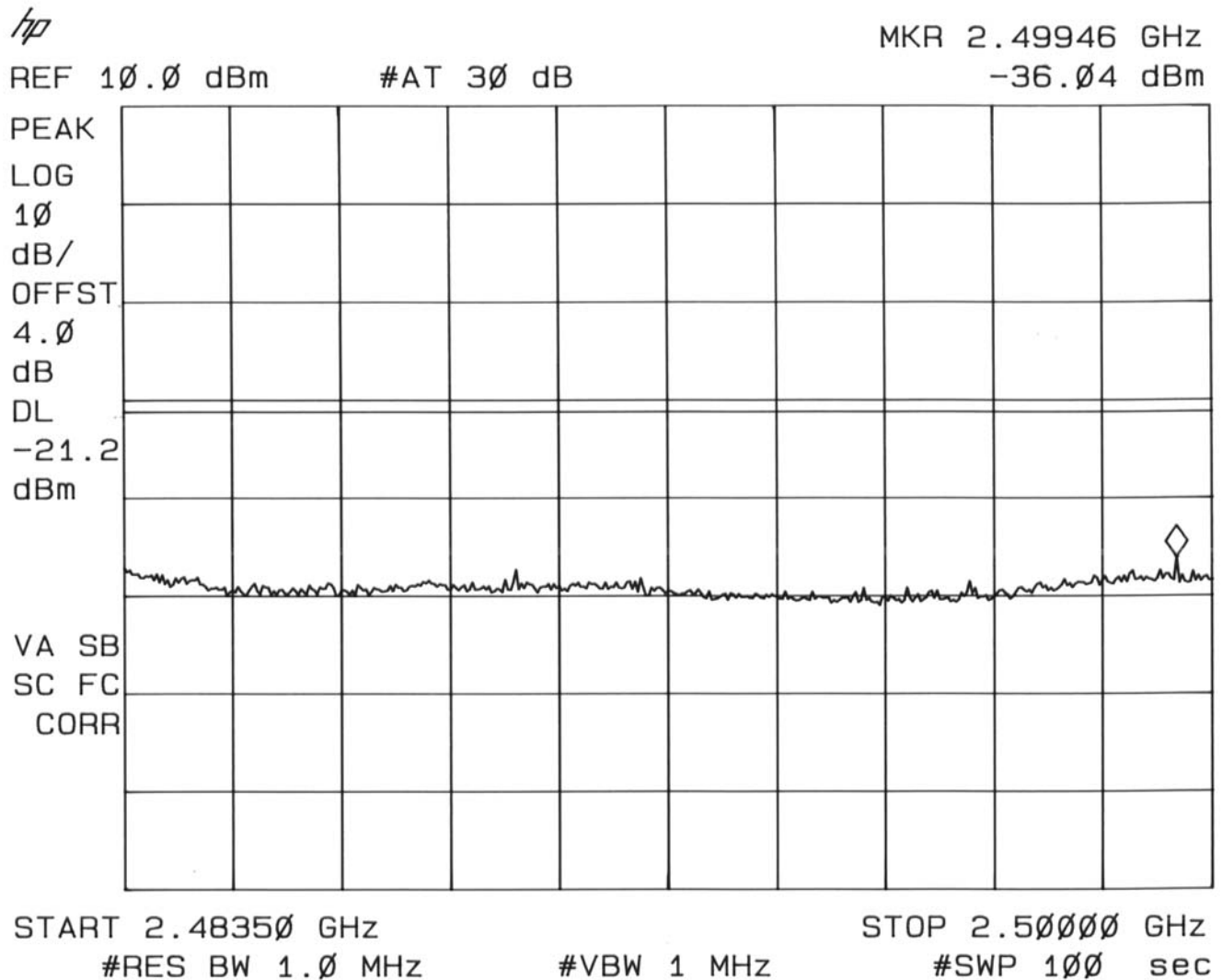
Note: 74 dBμV/m :: -21.2 dBm display line setting.



Plot 3 - Average measurement values in restricted band 2483.5 - 2500 MHz.

Average measurement values in restricted band. All possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s), conducted measurement, corrected for 2.5 dBi antenna gain (including antenna cable losses) and 1.5 dB cable losses (measurement cable).

Note: 54 dBμV/m :: -41.2 dBm display line setting.

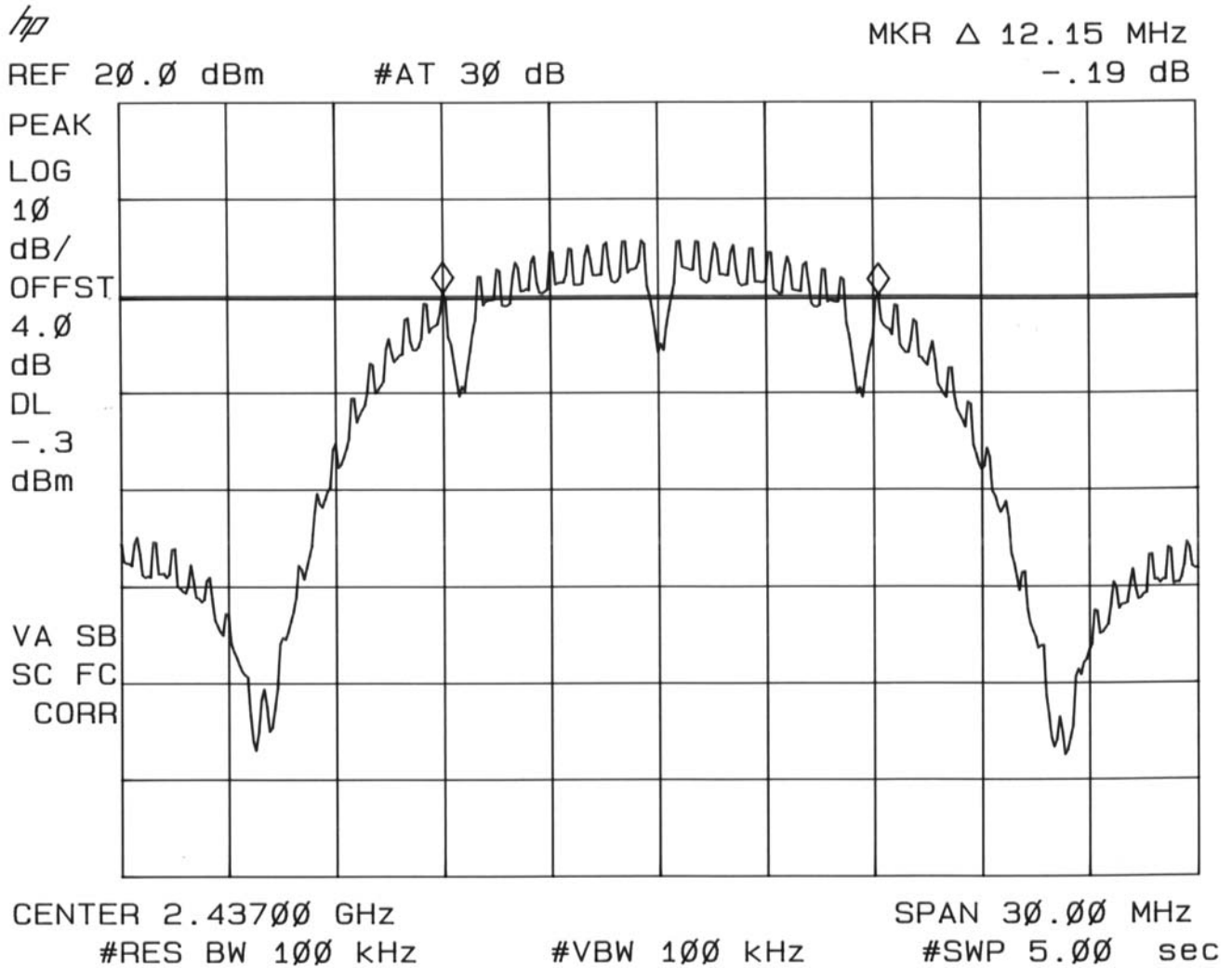


Plot 4 - Peak measurement values in restricted band 2483.5 - 2500 MHz.

Peak measurement values in restricted band. All possible transmission bit-rates (1 Mbit/s, 2 Mbit/s, 5.5 Mbit/s and 11 Mbit/s), conducted measurement, corrected for 2.5 dBi antenna gain (including antenna cable losses) and 1.5 dB cable losses (measurement cable).

Note: 74 dBμV/m :: -21.2 dBm display line setting.

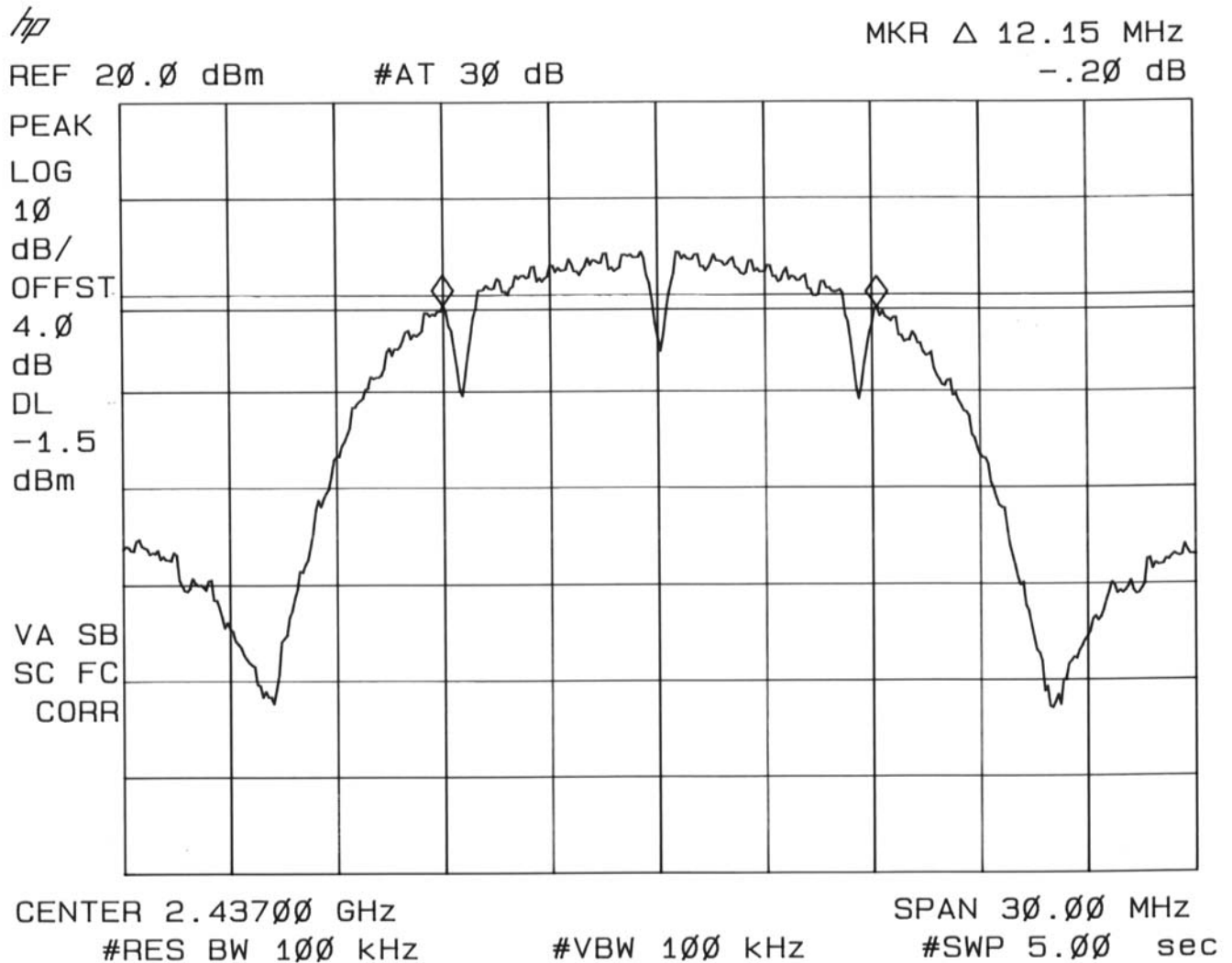
5.2 Minimum 6 dB bandwidth



Plot 5 - Minimum 6 dB bandwidth at a transmission bit-rate of 1 Mbit/s.



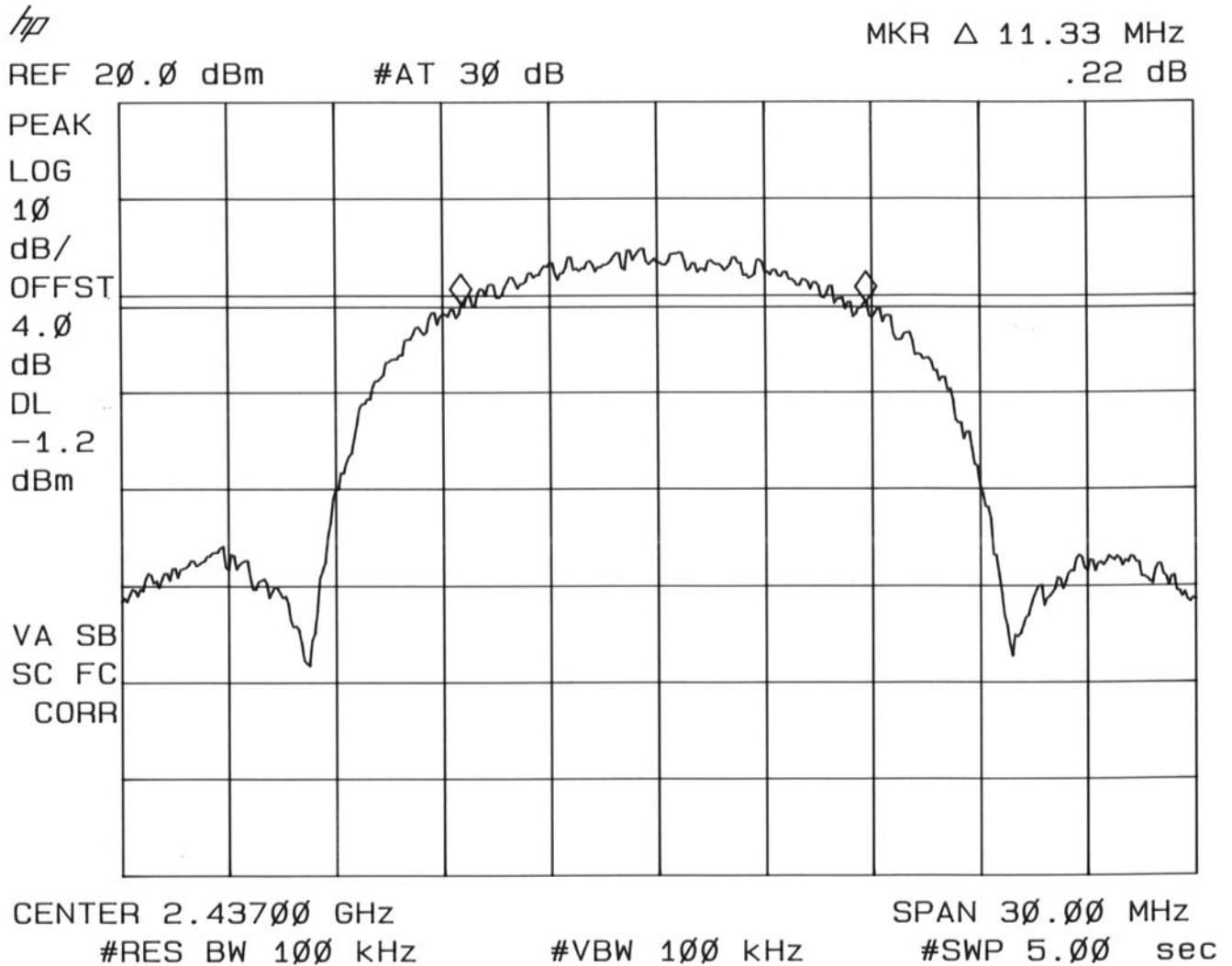
Test specification(s): 47 CFR Part 15 (2001-12-18)
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Type: ISL37101P-10
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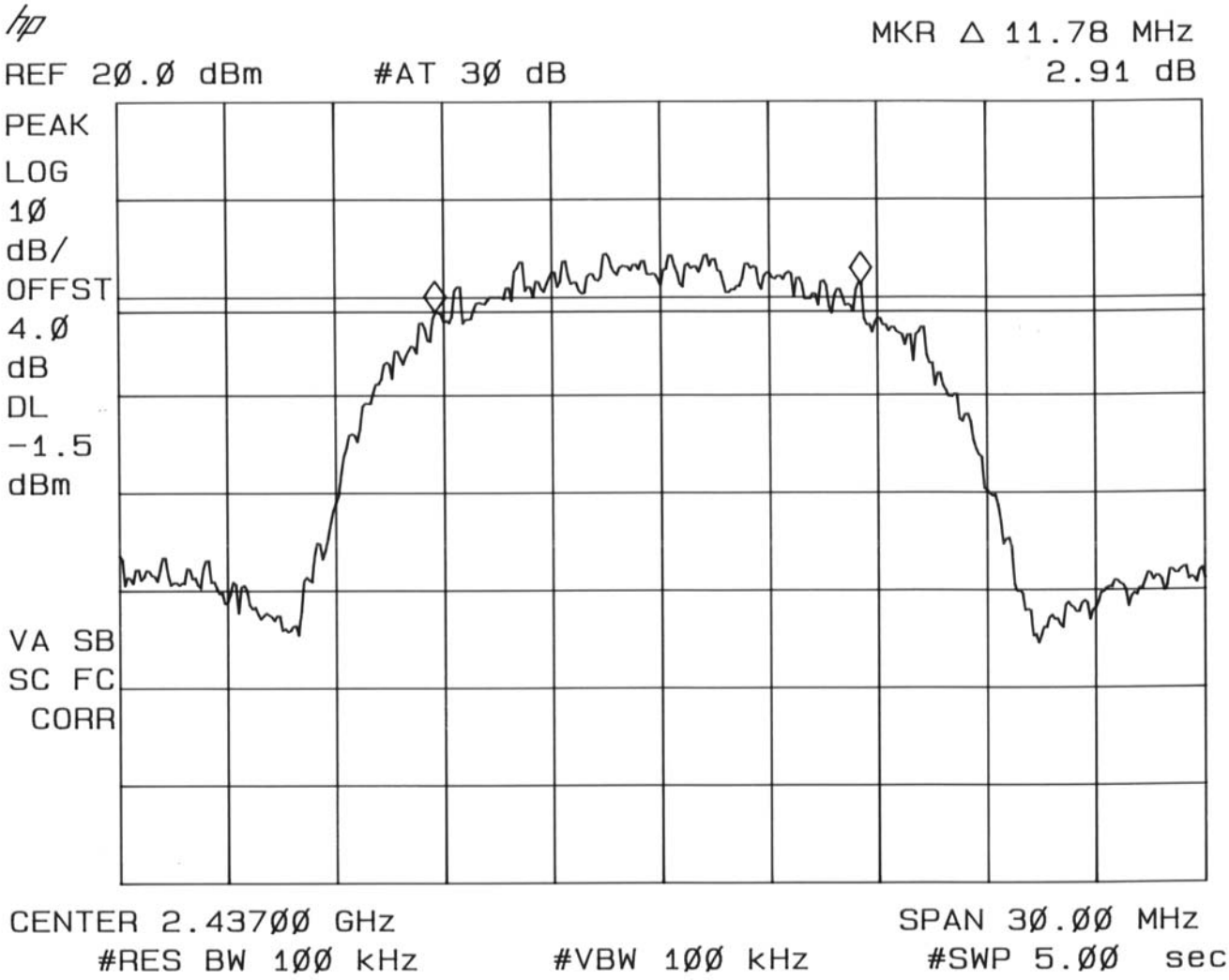
Plot 6 - Minimum 6 dB bandwidth at a transmission bit-rate of 2 Mbit/s.



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Manufacturer: Intersil Corporation
Brand mark: Intersil
Type: ISL37101P-10
FCC ID: OSZ37101P-10

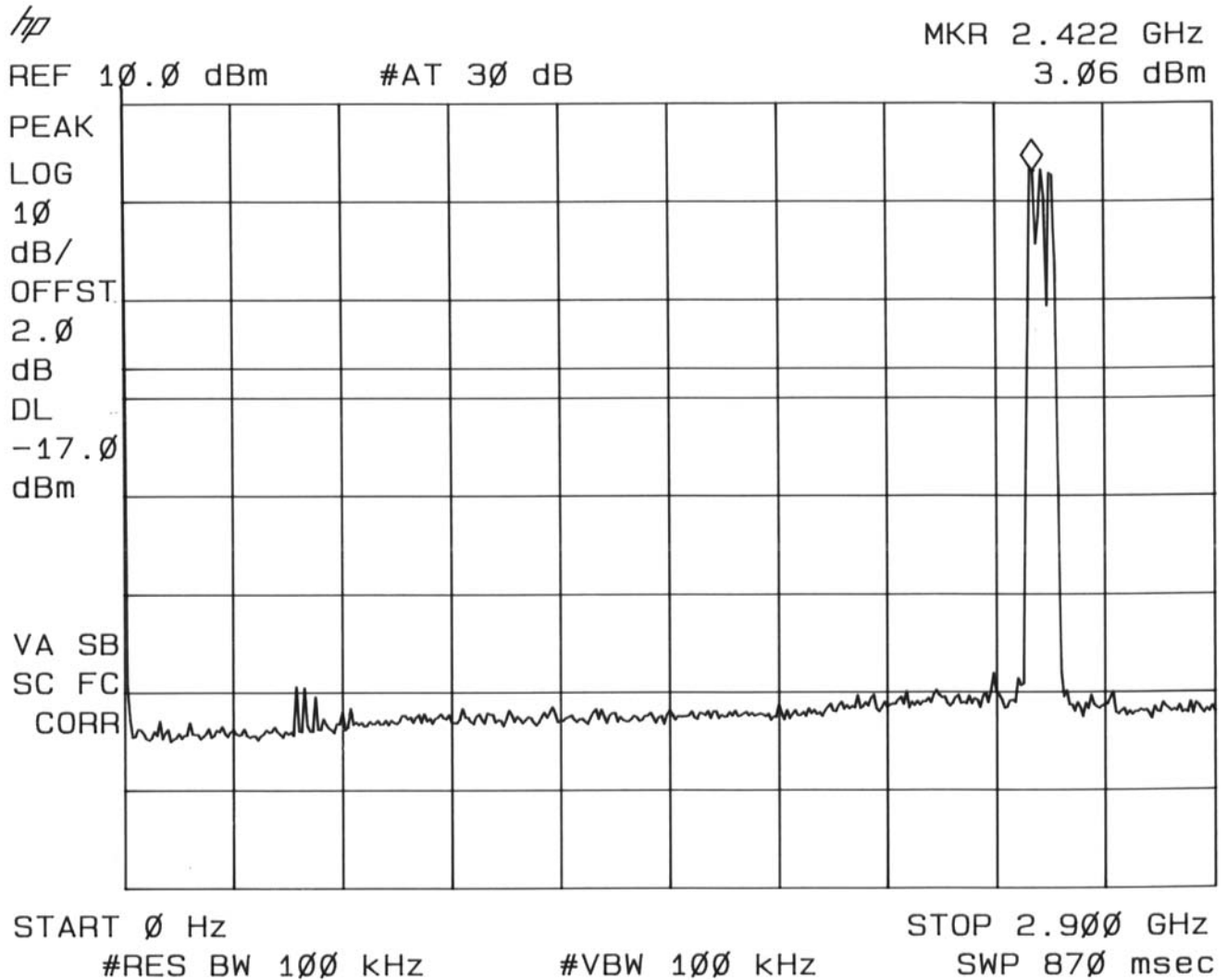


Plot 7 - Minimum 6 dB bandwidth at a transmission bit-rate of 5.5 Mbit/s.



Plot 8 - Minimum 6 dB bandwidth at a transmission bit-rate of 11 Mbit/s.

5.3 Conducted emission data outside restricted bands

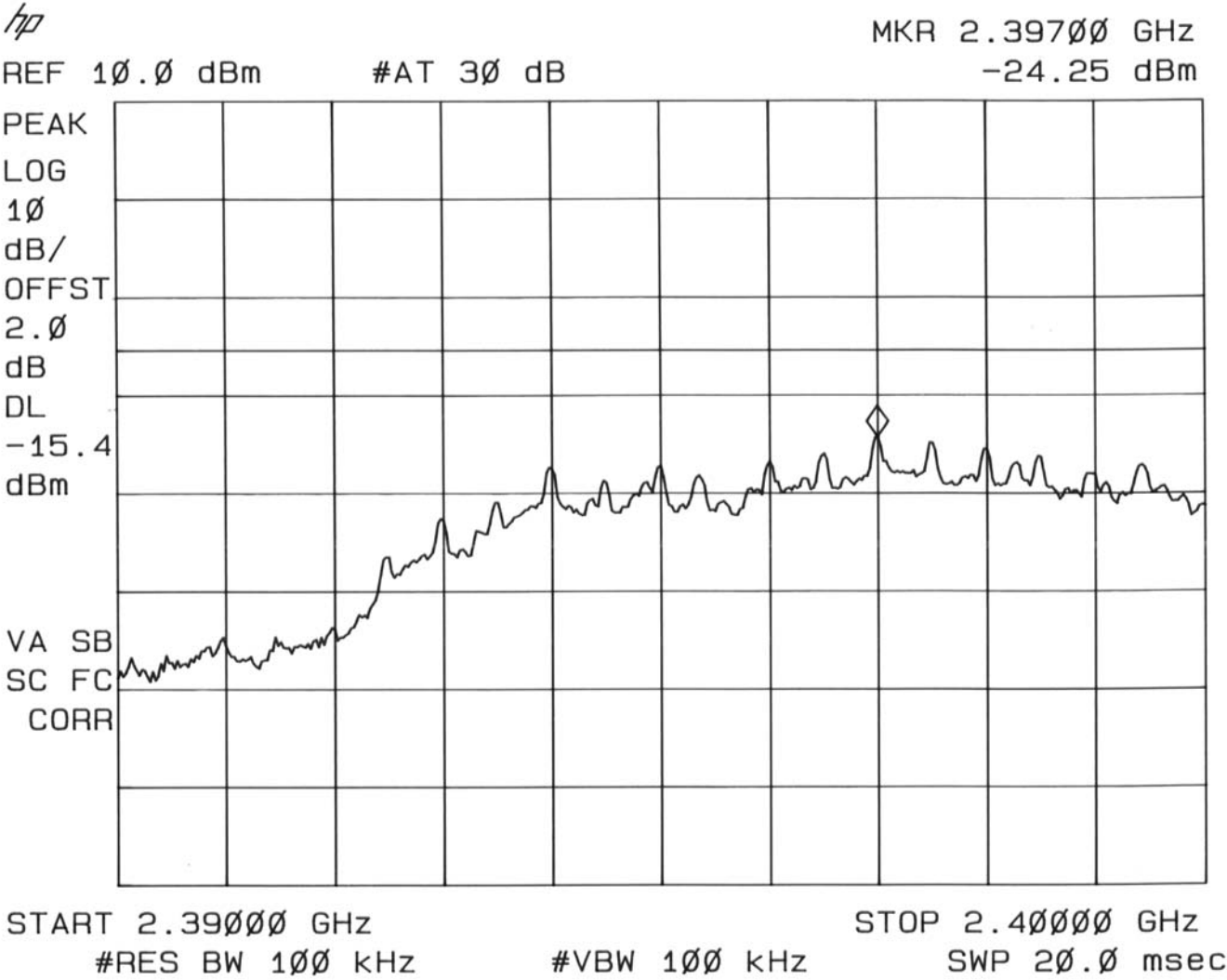


Plot 9 - Conducted emission outside restricted bands.

Conducted emission data outside restricted bands in a 100 kHz bandwidth shall be at least 20 dB below the highest level in a 100 kHz bandwidth within the band. Display line :: -20 dB limit line. Corrected (offset) for cable losses.



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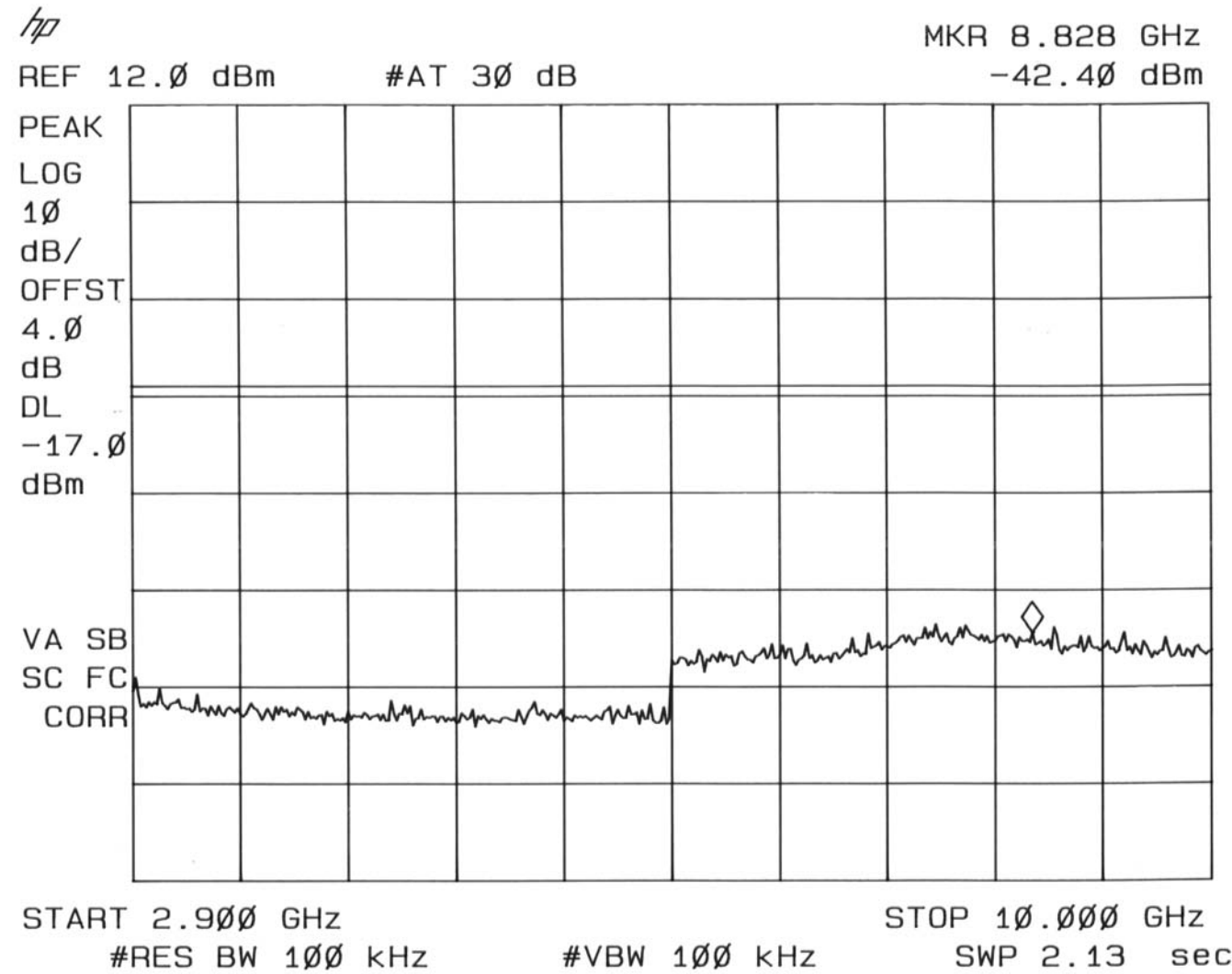


Plot 10 - Conducted emission outside restricted bands.

Conducted emission data outside restricted bands in a 100 kHz bandwidth shall be at least 20 dB below the highest level in a 100 kHz bandwidth within the band. Display line :: -20 dB limit line. Corrected (offset) for cable losses.

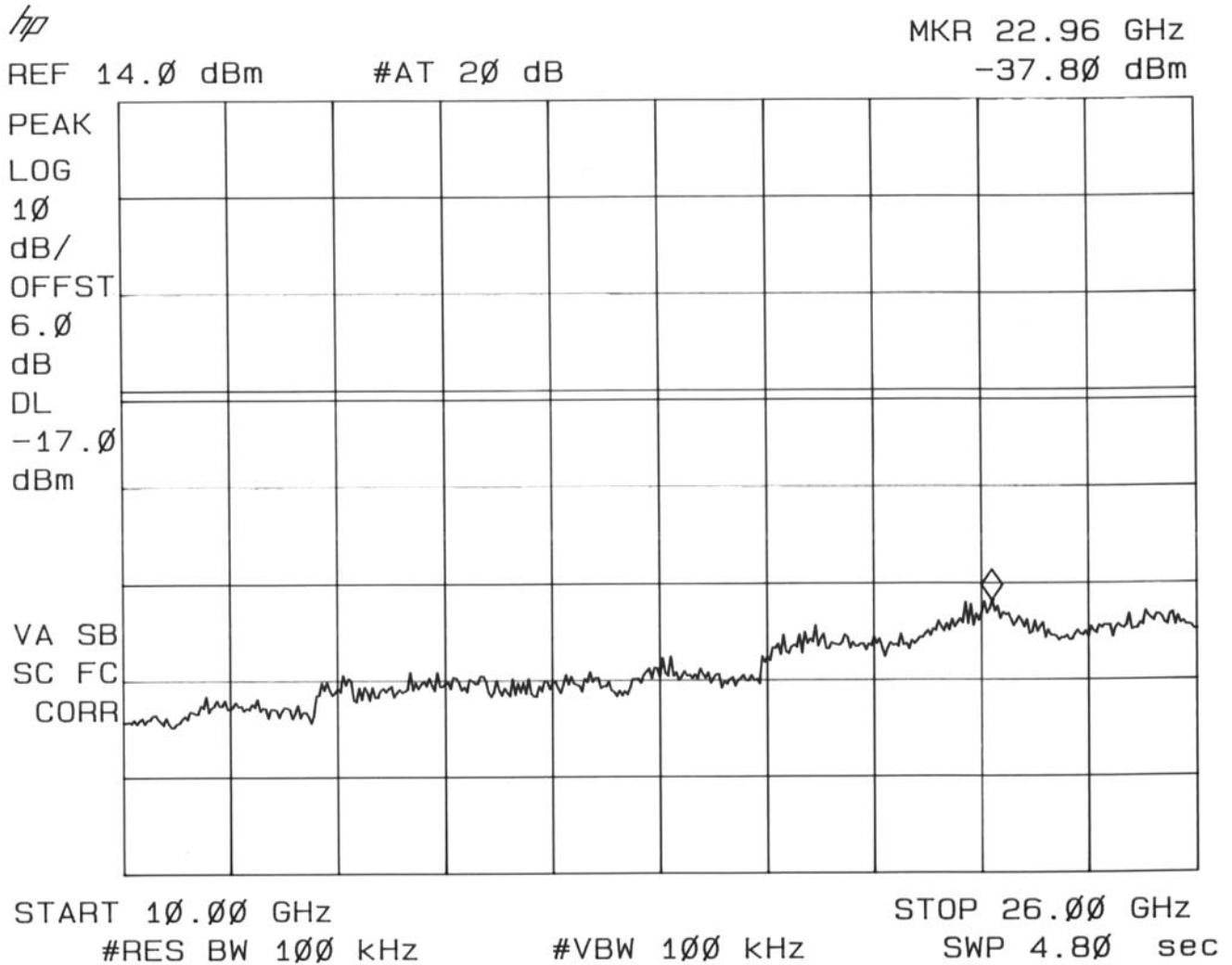


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Plot 11 - Conducted emission outside restricted band.

Conducted emission data outside restricted bands in a 100 kHz bandwidth shall be at least 20 dB below the highest level in a 100 kHz bandwidth within the band. Display line :: -20 dB limit line. Corrected (offset) for cable losses.

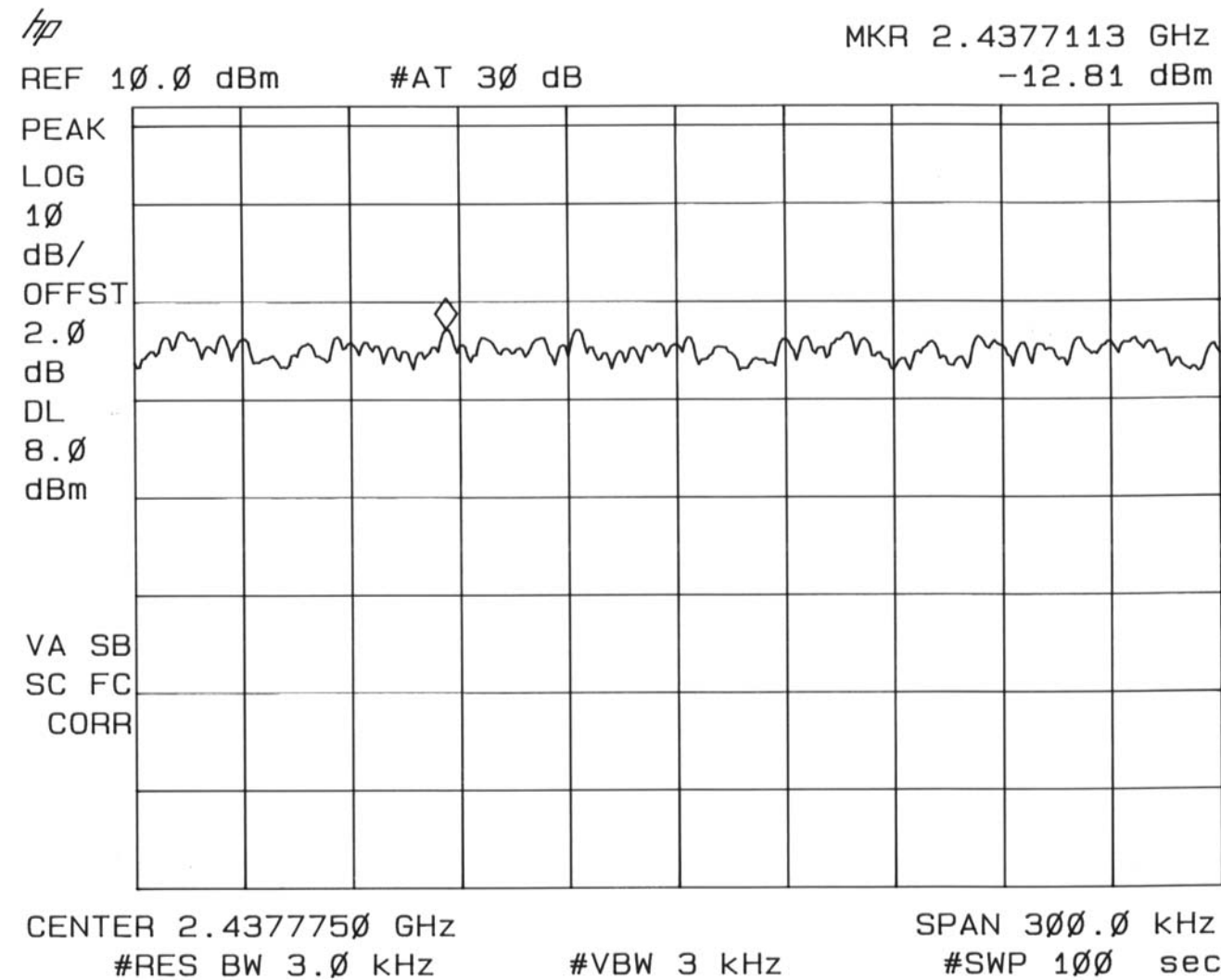


Plot 12 - Conducted emission outside restricted band.

Conducted emission data outside restricted bands in a 100 kHz bandwidth shall be at least 20 dB below the highest level in a 100 kHz bandwidth within the band. Display line :: -20 dB limit line. Corrected (offset) for cable losses.



5.4 Peak power spectral density

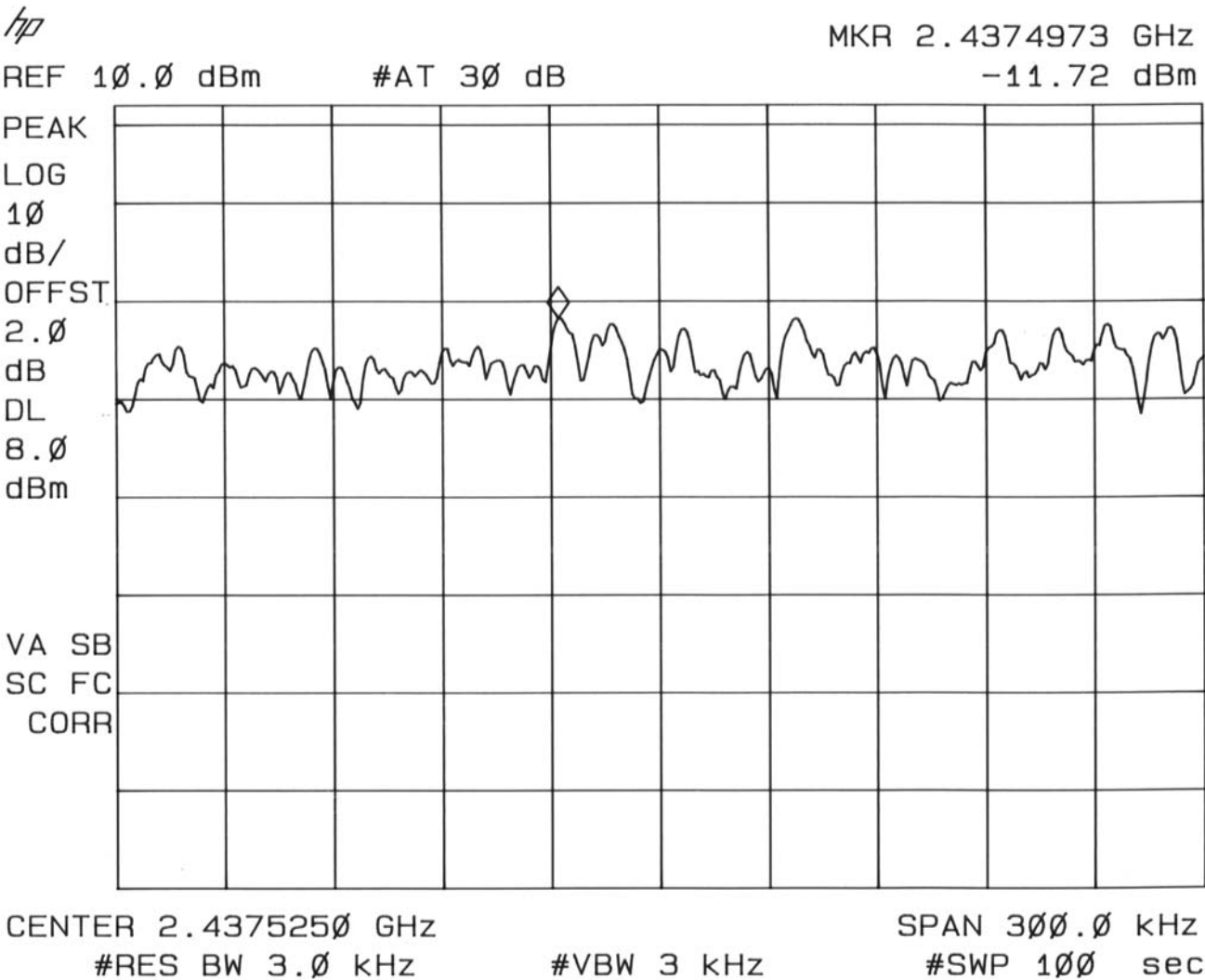


Plot 13 - Peak power spectral density (conducted) from the intentional radiator in any 3 kHz band.

Peak power spectral density (conducted) in a 3 kHz bandwidth at a transmission bit-rate of 1 Mbit/s. Corrected (offset) for cable losses.



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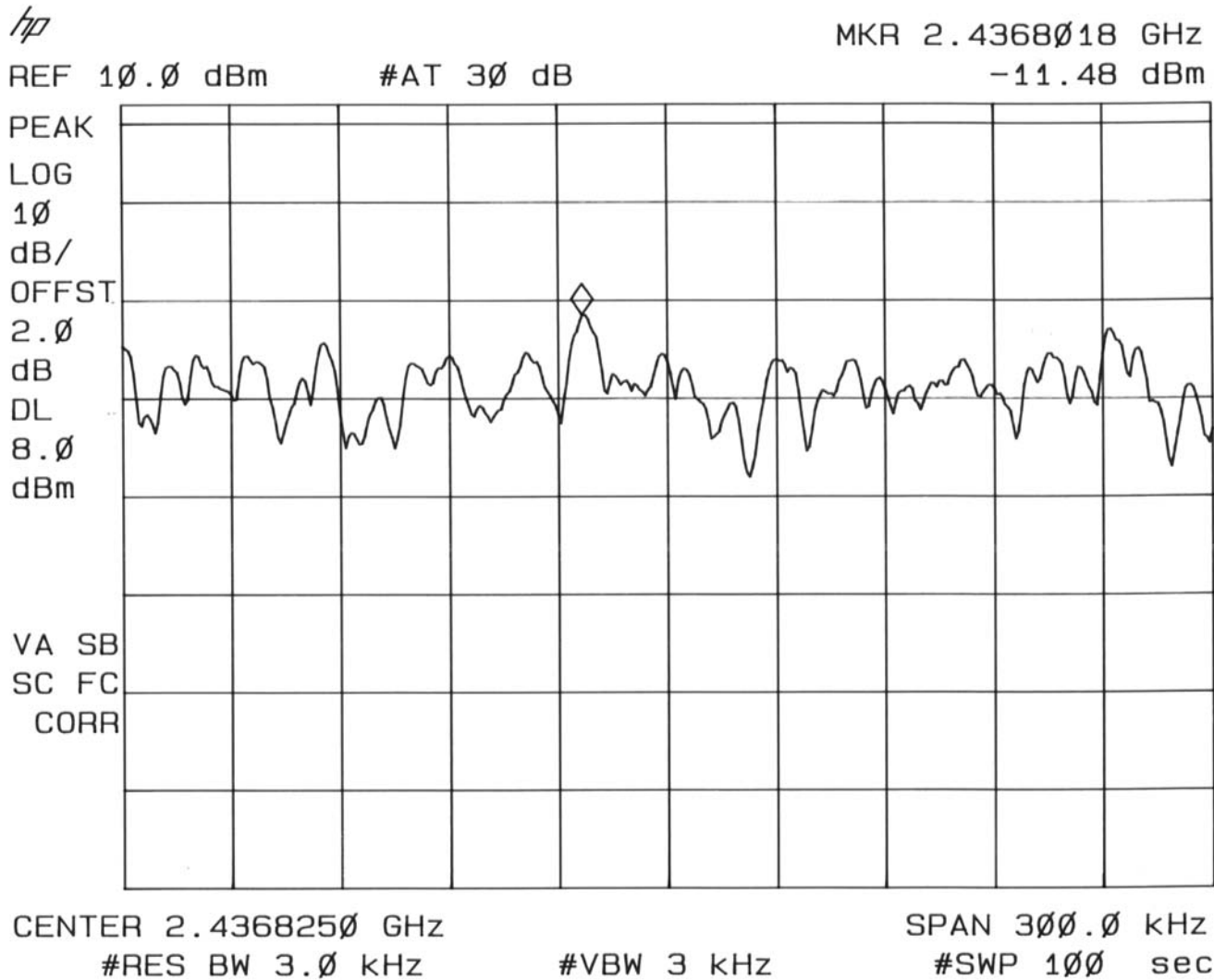


Plot 14 - Peak power spectral density (conducted) from the intentional radiator in any 3 kHz band.

Peak power spectral density (conducted) in a 3 kHz bandwidth at a transmission bit-rate of 2 Mbit/s. Corrected (offset) for cable losses.

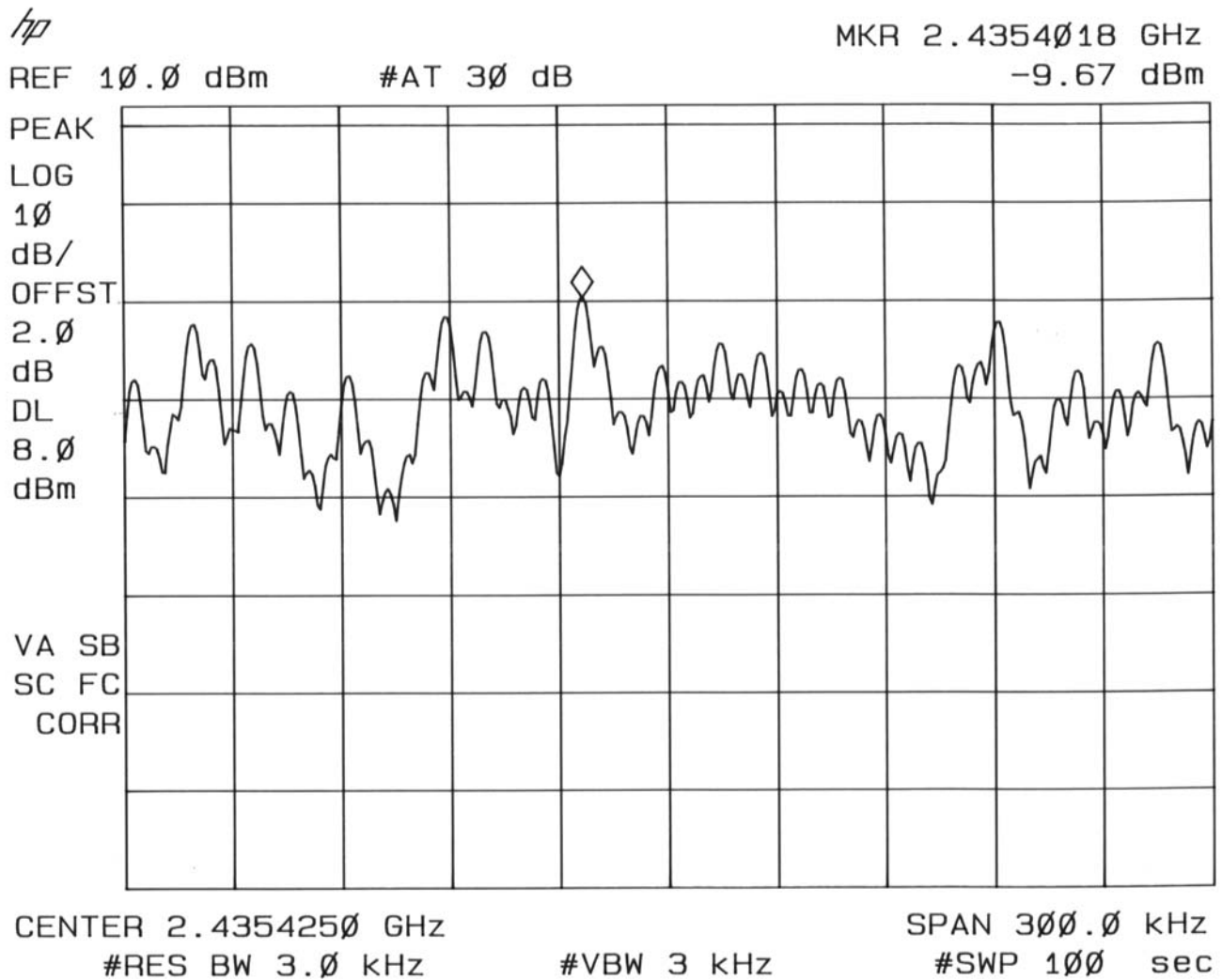


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Plot 15 - Peak power spectral density (conducted) from the intentional radiator in any 3 kHz band.

Peak power spectral density (conducted) in a 3 kHz bandwidth at a transmission bit-rate of 5.5 Mbit/s. Corrected (offset) for cable losses.



Plot 16 - Peak power spectral density (conducted) from the intentional radiator in any 3 kHz band.

Peak power spectral density (conducted) in a 3 kHz bandwidth at a transmission bit-rate of 11 Mbit/s. Corrected (offset) for cable losses.



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FCC ID: OSZ37101P-10

6 List of utilized test equipment

Inventory number	Description	Brand	Type
12471	Biconical antenna 20MHz-200MHz	EATON	94455-1
12473	Log-per antenna 200-1000MHz	EATON	96005
12476	Antenna mast	EMCO	TR3
12477	Antenna mast 1-4 mtr	Poelstra	--
12482	Loop antenna	EMCO	6507
12483	Guidehorn	EMCO	3115
12484	Guidehorn	EMCO	3115
12488	Guidehorn 18 - 26.5 GHz	EMCO	RA42-K-F-4B-C
12533	Signalgenerator	MARCONI	2032
12559	Digital storage oscilloscope	Le Croy	9310M
12561	DC Power Supply 20A/70V	DELTA	SM7020D
12567	Plotter	HP	7440A
12605	calibrated dipole 28MHz-1GHz	Emco	3121c
12608	HF milliwattmeter	Hewlett Packard	HP435a
12609	Power sensor 10MHz-18GHz	Hewlett Packard	HP8481A
12636	Polyester chamber	Polyforce	--
12640	Temperature chamber	Heraeus	VEM03/500
13664	Spectrum analyzer	HP	HP8593E
13078	Preamplifier 0.1 GHz - 12 GHz	Miteq	AMF-3D-001120-35-14p
13452	Digital multi meter	HP	34401A
13526	Signalgenerator 20 GHz	Hewlett & Packard	83620A
13594	Preamplifier 10 GHz - 25 GHz	Miteq	AMF-6D-100250-10p
13886	Open Area testsite	Comtest	--
14051	Anechoic room	Comtest	--
14450	2.4 GHz bandrejectfilter	BSC	XN-1783
15633	Biconilog Testantenna	Chase	CBL 6111B
15667	Measuring receiver	R&S	ESCS 30
99045	DC Power Supply 3A/30V	DELTA	E030/3
99055	Non-conducting support	NMi	--
99061	Non-conducting support 150cm	NMi	--
99068	Detector N-F/BNC-F	Radiall	R451576000
99069	Cable 5m RG214	NMi	--
99071	Cable 10m RG214	NMi	--
99076	Bandpassfilter 4 - 10 GHz	Reactel	7AS-7G-6G-511
99077	Regulating trafo	RFT	LTS006
99112	Tripod	Chase	--
99136	Bandpassfilter 10 - 26.5 GHz	Reactel	9HS-10G/26.5G-S11