



EUROFINS PRODUCT SERVICE GMBH

TEST - REPORT

FCC RULES PARTS 15.247
IC RADIO STANDARDS RSS-210 - Issue 7

FCC ID: SIFNANOPAN5375V1

Model Name:
Communication and Real Time Location Systems
in 2.4 GHz ISM Band

Test report no.:G0M20902-2239-C-1



Testing Cert #1983.01



Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde,
Germany

Phone +49-33631-888 00
Fax +49-33631-888 660

TABLE OF CONTENTS

1	General information	3
1.1	Notes	3
1.2	Testing laboratory	4
1.3	Details of approval holder	5
1.4	Application details	5
1.5	Test item	5
1.6	Test standards	8
2	Technical test	8
2.1	Summary of test results	8
2.2	Test environment	8
2.3	Test equipment utilized	9
2.4	Test Procedure	10
3	Test results	11
3.1	Transmitter parameters	12
3.1.1	RF power output, conducted	12
3.1.2	RF power output, radiated (EIRP)	13
3.1.3	6 db bandwidth; Occupied bandwidth (99% BW)	14
3.1.4	Peak power spectral density	15
3.1.5	Spurious emissions, conducted	16
3.1.6	Spurious emissions, radiated	17
3.1.7	AC power line conducted emissions	20
3.2	Receiver parameters	21
3.2.1	Spurious emissions	21
Annex		22

1 General information
1.1 Notes

The purpose of conformity testing is to increase the probability of adherence to the essential requirements or conformity specifications, as appropriate.

The complexity of the technical specifications, however, means that full and thorough testing is impractical for both technical and economic reasons.

Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification.

Neither is there any guarantee that such a test sample will interwork with other genuinely open systems.

The existence of the tests nevertheless provides the confidence that the test sample possesses the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

The test results of this test report relate exclusively to the item tested as specified in 1.5.

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 Eurofins Product Service GmbH.

Operator:

12.03.2009

W. Treffke



Date

Eurofins-Lab.

Name

Signature

Technical responsibility for area of testing:

12.03.2009

T. Jahn



Date

Name

Signature

1.2 Testing laboratory

1.2.1 Location

EUROFINS PRODUCT SERVICE GMBH
Storkower Straße 38c
D-15526 Reichenwalde b. Berlin
Germany
Telephone : +49 33631 888 00
Telefax : +49 33631 888 660

1.2.2 Details of accreditation status

DAR ACCREDITED TESTING LABORATORY
DAR-REGISTRATION NUMBER: DAT-P-268/08

RECOGNIZED NOTIFIED BODY EMC
REGISTRATION NUMBER: BNetzA-bS EMV-07/61

RECOGNIZED NOTIFIED BODY R&TTE
REGISTRATION NUMBER: BNetzA-bS-02/51-53

FCC FILED TEST LABORATORY
REG.-No. 96970

A2LA ACCREDITED TESTING LABORATORY
CERTIFICATE No. 1983.01

BLUETOOTH QUALIFICATION TEST FACILITY (BQTF)
ACCREDITED BY BLUETOOTH QUALIFICATION REVIEW BOARD

INDUSTRY CANADA FILED TEST LABORATORY
REG. No. IC 3470

1.2.3 Test location, where different:

Name	: ./.
Street	: ./.
Town	: ./.
Country	: ./.
Telephone	: ./.
Fax	: ./.

1.3 Details of approval holder

Name : Nanotron Technologies GmbH
Street : Alt-Moabit 60
Town : D-10555 Berlin
Country : Germany
Telephone : +49.30.399954202
Fax : +49.30.399954202

Contact : Herr Dr. Frank Schlichting
E-Mail : f.schlichting@nanotron.com

1.4 Application details

Date of receipt of application : 04.03.2009
Date of receipt of test item : 04.03.2009
Date of test : 04.03.2009 - 05.03.2009

1.5 Test item

Description of test item : Communication and Real Time Location Systems in 2.4 GHz ISM Band
Type identification : MN5375V1
Brand Name : nanoPAN 5375
Serial number : without
Photos : See Annex A.

Technical data

Frequency band : 2.4 GHz – 2.4835 GHz
Number of Channels : 1
Frequency Channel : 2441.75 MHz
Operating Modes : duplex
Type of modulation : Chirp Spread Spectrum (CSS)
Fixed point-to-point operation: ☐ Yes / ☒ No
Power supply : 2.5 V DC 120 V AC (AC/DC Adapter)
Antenna : sleeve dipole antenna (model 17010.11)
Antenna gain : 2.15 dBi (manufacturer declaration)

Classification : For a module not determined.

Fixed Device	☐
Mobile Device (Human Body distance > 20cm)	☐
Portable Device (Human Body distance < 20cm)	☐

CSS chirp mode 22 MHz -4

<u>Transmitter</u>	<u>Unom</u>	<u>Umin – 15 %</u>	<u>Umax + 15 %</u>
Power (ch A)	: Conducted: 19.18 dBm	Conducted: 18.33 dBm	Conducted: 19.89 dBm

CSS chirp mode 80-1

<u>Transmitter</u>	<u>Unom</u>	<u>Umin – 15 %</u>	<u>Umax + 15 %</u>
Power (ch A)	: Conducted: 19.10 dBm	Conducted: 18.30 dBm	Conducted: 19.80 dBm

CSS chirp mode 80-4

<u>Transmitter</u>	<u>Unom</u>	<u>Umin – 15 %</u>	<u>Umax + 15 %</u>
Power (ch A)	: Conducted: 19.09 dBm	Conducted: 18.23 dBm	Conducted: 19.80 dBm

Manufacturer:
(if applicable)

Name	: Nanotron Technologies GmbH
Street	: Alt-Moabit 60
Town	: D-10555 Berlin
Country	: Germany

Additional information: This test sample is using a transmission technology based on Multi Dimensional Multiple Access (MDMA). The applied spread spectrum modulation Chirp Spread Spectrum (CSS) is using a transmitter signal which will be swept from the lower edge of 2.4 GHz ISM band to the higher edge. It means that every signal will use the whole ISM frequency band and no further canalisation is possible. For testing appears the consequence that some measurement have to be performed at one operating frequency only. According to FCC Part 15.247(a) the used "other form of modulation" lead to determination that the sample is a digitally modulated intentional radiator.

In order to be compliant to FCC regulation the nanoPAN 5375 power module can be operated in three different operation modes:

- 1) FDMA 22 MHz Mode: In this mode the chirp bandwidth is 15.67 MHz. The module can be operated up to 100% duty cycle with full output power of nominal 20 dBm plus 2.14 dB antenna gain provided the specified antenna 17010.11 or an antenna with the same gain (EIRP) is used.
- 2) Full 80 MHz Mode, Chirp duration 4us: In this mode the chirp bandwidth is 56.97 MHz with 56 MHz typical 6dB bandwidth. The chirp duration time is 4us for each Chirp. The module can be operated with full output power of nominal 20 dBm plus 2.14 dB antenna gain provided the specified antenna 17010.11 or an antenna with the same gain (EIRP) is used and the duty cycle is less than 100% to comply with average rule for spurious emission at the band edges of the ISM band. For the measurements performed in this test report a duty cycle of 6% - which is typical for customer application scenarios - has been used.
- 3) Full 80 MHz Mode, Chirp duration 1us: In this mode the chirp bandwidth is 57.69 MHz with 56 MHz typical 6dB bandwidth. The chirp duration time is 1us for each Chirp. The module can be operated with full output power of nominal 20 dBm plus 2.14 dB antenna gain provided the specified antenna 17010.11 or an antenna with the same gain (EIRP) is used and the duty cycle is less than 100% to comply with average rule for spurious emission at the band edges of the ISM band. For the measurements performed in this test report a duty cycle of 6% - which is typical for customer application scenarios - has been used.

The center frequency for all operation modes performed in this test reports was 2.44175 GHz.

1.6 Test standards

Technical standard : FCC Parts: 15.247
IC Standards: RSS 210 Issue 7

2 Technical test

2.1 Summary of test results

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

or

The deviations as specified in 2.5 were ascertained in the course of the tests performed. ☐

2.2 Test environment

Temperature : 25°C

Relative humidity content : 20 ... 75 %

Air pressure : 86 ... 103 kPa

Details of power supply : 2.5 V DC 120 V AC (AC/DC Adapter)

Extrem conditions parameters: : test voltage - extreme min.: 2.3 V DC
max: 2.7 V DC

2.3 Test equipment utilized

No.	Test equipment	Type	Manufacturer
ETS 0013	LPD Antenna	HL 223	R & S
ETS 0019	Horn antenna	BBHA 9120 D	Schwarzbeck
ETS 0030	Biconical Antenna	HK 116	R & S
ETS 0271	Spectrum Analyzer	FSEK 30	R & S
ETS 0294	Biconical antenna	HK 116	R & S
ETS 0295	LPD antenna	HL 223	R & S
ETS 0310	Anechoic chamber	AC 3	Frankonia
ETS 0311	Anechoic chamber	AC 4	Frankonia
ETS 0416	Power Supply	EX752M	TTi
ETS 0484	Radio Communication Tester	CMU 200	R&S
ETS 0496	Spectrum Analyzer	FSP	R & S

2.4 General test procedure

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-2003 5.2 using a 50µH LISN (if necessary). Both lines were observed. The bandwidth of the spectrum analyzer was 10 kHz with an appropriate sweep speed.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-2003 6.4 using a spectrum analyzer. The resolution bandwidth of the spectrum analyzer was 100 kHz for measurements below 1 GHz and RBW 1 MHz was used above 1 GHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna.

FORMULA OF CONVERSION FACTORS for Field strength: The Field Strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBµV) to the antenna correction factor supplied by the antenna manufacturer. The antenna correction factors are stated in terms of dB.

Example:

Freq. (MHz)	METER READING + ACF + CABLE LOSS (to the receiver) = FS
33	20 dBµV + 10.36 dB + 6 dB = 36.36 dBµV/m @3m

ANSI STANDARD C63.4-2003 6.2.1 MEASUREMENT PROCEDURES: The UUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m (non metallic table). The UUT was placed in the center of the table. The table used for radiated measurements is capable of continuous rotation. The spectrum was scanned from 30 MHz to at least 10th harmonic of the fundamental.

Peak readings were taken in three (3) orthogonal planes and the highest readings.

Measurements were made by Eurofins Product Service GmbH at the registered open field test site located at Storkower Str. 38c, 15526 Reichenwalde, Germany.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

ANTENNA & GROUND:

This unit uses internal antenna.

3 Test results

☒ 1st test

☐ test after modification

☐ production test

SECT.	TEST CASE	FCC 47CFR PART	IC RSS-	Required	Test passed	Test failed
3.1	<i>TRANSMITTER PARAMETERS</i>					
3.1.1	RF power output, conducted	15.247 (b)(3)	210 A8.4	☒	☒	☐
3.1.2	RF power output, radiated (EIRP)	15.247 (b)(3)	210 A8.4	☐	☐	☐
3.1.3	6 dB bandwidth	15.247 (a)(2)	210 A8.2	☒	☒	☐
3.1.4	Peak power spectral density	15.247 (e)	210 A8.2	☒	☒	☐
3.1.5	Spurious emissions, conducted	15.247 (d)	210 A8.5	☒	☒	☐
3.1.6	Spurious emissions, radiated	15.247 (d)	210 A8.5	☒	☒	☐
3.1.7	AC power line conducted emissions	15.207	Gen 7.2.2	☒	☒	☐
3.2	<i>RECEIVER PARAMETERS</i>					
3.2.1	Spurious emissions	-	Gen 7.2.3	☒	☒	☐

3.1 Transmitter parameters

3.1.1 RF power output, conducted

Reference

FCC	47 CFR part 15.247 (b)
IC	RSS-210 A 8.4

Method of measurement

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

The power was measured with modulation (declared by the applicant).

Limits

FCC	1 Watt (30dBm)
IC	1 Watt (30dBm)

Test results

Test conditions	CSS chirp mode 22MHz -4	CCCS chirp mode 80-1	CCCS chirp mode 80-4
$T_{nom} = 25^{\circ}C$ $V_{nom} = 2.5 V$	19.18 dBm	19.10 dBm	19.09 dBm
$T_{nom} = 25^{\circ}C$ $V_{min} = 2.3 V$	18.33 dBm	18.30 dBm	18.23 dBm
$T_{nom} = 25^{\circ}C$ $V_{max} = 2.7 V$	19.89 dBm	19.80 dBm	19.80 dBm
Measurement uncertainty	< 3 dB		

Test equipment: ETS 0013; ETS 0019; ETS 0030; ETS 0311; ETS 0496

3.1.2 RF power output, radiated (EIRP)

Reference

FCC	CFR part 15.247 (b)(3)
IC	RSS-210 A8.4

Method of measurement

This measurement applies to equipment with an integral antenna and to equipment with an antenna connector and equipped with an antenna as declared by the applicant.

The power was measured with modulation (declared by the applicant).

Limits

FCC	1 Watt (30dBm)
IC	1 Watt (30dBm)

Test Results

Test conditions	Frequency 1	Frequency 2	Frequency 3
	EIRP [dBm]	EIRP [dBm]	EIRP [dBm]
$T_{nom} = 25^{\circ}C$ $V_{nom} = 2.5V$	--	--	--
Measurement uncertainty	< 3 dB		

Comment: Not required.

Test equipment:--

3.1.3 6 dB bandwidth; Occupied bandwidth (99% BW)

Reference

FCC	CFR part 15.247 (a)(2)
IC	RSS-210 A8.2, RSS-Gen 4.4.1

Method of measurement

Spectrum analyser for 6 dB bandwidth:

RBW: 100 kHz

Span: VBW > RBW

Spectrum analyser for Occupied bandwidth:

99 % emission bandwidth

Limits

FCC	$BW_{6dB} \geq 500 \text{ kHz}$
IC	$BW_{6dB} \geq 500 \text{ kHz}$
IC	Occupied BW no limit

Test results

Test conditions	CSS chirp mode 22MHz -4	CCCS chirp mode 80-1	CCCS chirp mode 80-4
<u>6 dB BW</u>			
$T_{nom} = 25 \text{ }^{\circ}\text{C}$ $V_{nom} = 2.5 \text{ V}$	15.67 MHz	56.97 MHz	57.69 MHz
<u>Occupied BW</u>			
$T_{nom} = 25 \text{ }^{\circ}\text{C}$ $V_{nom} = 2.5 \text{ V}$	17.16 MHz	62.98 MHz	58.17 MHz
Measurement uncertainty	< 10 Hz		

System receiver input bandwidth:

The manufacturer declares that the receiver input bandwidth matches to the bandwidth of the transmitter signal.

Comment: See attached diagrams in Annex B.

Test equipment: ETS 0013; ETS 0019; ETS 0030; ETS 0311; ETS 0496

3.1.4 Peak power spectral density

Reference

FCC	CFR part 15.247 (e)
IC	RSS-210 A8.2

Method of measurement

The same method of determining the conducted output power shall be used to determine the power spectral density.

Spectrum analyser for Peak power spectral density:

span: RBW = 3 kHz
 VBW > RBW
 Sweep = span/3 kHz

Limits

FCC	≤ 8 dBm in any 3kHz band
IC	≤ 8 dBm in any 3kHz band

Test results

Test conditions	Peak Power Spectral Density		
	CSS chirp mode 22MHz -4	CCCS chirp mode 80-1	CCCS chirp mode 80-4
T _{nom} = 25 °C V _{nom} = 2.5 V	-9.93 dBm	-14.33 dBm	-15.63 dBm
Measurement uncertainty	< 3 dBs		

Comment: See attached diagrams in Annex C.

Test equipment: ETS 0013; ETS 0019; ETS 0030; ETS 0311; ETS 0496

3.1.5 Spurious emissions, conducted

Reference

FCC	CFR part 15.247 (d)
IC	RSS-210 A8.5

Method of measurement

The EUT is connected to the spectrum analyzer via a low loss cable. If the EUT is not equipped with an antenna connector, a temporary antenna connector has to be installed. The EUT is switched on, the hopping function is disabled.

The analyzer setting was as following:

Frequency range	RES bandwidth		Video bandwidth	
	Pk	Avg	Pk	Avg
f < 1GHz	100 kHz	-	100 kHz	-
f > 1GHz	1 MHz	1 MHz	1 MHz	1MHz

Limits

FCC	20 dB below peak output power
IC	20 dB below peak output power

Test results

Frequency	CSS chirp mode 22MHz -4	CCCS chirp mode 80-1	CCCS chirp mode 80-4
30 MHz - 1.0 GHz	-42.42	-50.96	-54.94
1.0 GHz - 2.4 GHz	-41.70	-30.90	-31.55
2.48835 GHz - 4 GHz	-43.88	-26.49	-29.15
4 GHz - 8 GHz	-50.50	-50.75	-53.68
8 GHz -13 GHz	-51.48	-53.13	-53.67
13.0 GHz - 18.0 GHz	-41.94	-41.99	-40.99
18 GHz -25 GHz	-38.08	-37.31	-39.14

Comment: See attached diagrams in Annex D.

Test equipment: ETS 0013; ETS 0019; ETS 0030; ETS 0271; ETS 0311

3.1.6 Spurious emissions, radiated

Reference

FCC	CFR part 15.247(d), 15.205. 15.209, 15.35
IC	RSS-210 A8.5

Method of measurement

Spurious emissions were measured with modulation (declared by manufacturer).

According to 47 CFR 15, Part 15.247 (d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required.

In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emissions limits specified in Section 15.209(a) (see Section 15.205(c)).

Sample Calculation of Limit:

All results are updated by an automatic measuring system in accordance to point 2.3

Limit = max. reading (because peak detector is used)
98.28 dBµV/m

Limit = Max. reading - 20 dB (because average detector is used)
98.28 dBµV/m - 20 dB = 78.28 dBµV/m

Calculation of test results:

Such factors like antenna correction, cable loss, external attenuation etc. are already included in the provided measurement results.

The peak and average spurious emissions plots were measured with the average limits.
In the Table being listed the critical peak and average value an exhibit the compliance with the above calculated Limits.

If in the column's correction factor states a value then the max. Field strength in the same row is corrected by a value gained from the "Marker-Delta-Method" or the „Duty-Cycle Correction Factor“.

15.35 (c) average value

When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds.

Duty cycle correction = 20 log (dwell time / pulse-train time of 100 ms or less)

The radiated emissions measurements were performed from 30 MHz to 26000 MHz.
The analyzer setting was as following:

Frequency range	RES bandwidth		Video bandwidth	
	Pk	Avg	Pk	Avg
f < 1GHz	100 kHz	-	100 kHz	-
f > 1GHz	1 MHz	1 MHz	1 MHz	1MHz

Limits

FCC	20 dB below peak output power, emissions which fall in the restricted bands (15.205(a)) must comply the following limits:		
	Frequencies below 1GHz:		
	Frequency of emissions [MHz]	Field strength [$\mu\text{V} / \text{m}$]	Field strength [$\text{dB}\mu\text{V} / \text{m}$]
	30 – 88	100	40.0
	88 – 216	150	43.5
	216 – 960	200	46.0
IC	Above 960	500	54.0
	For frequencies above 1 GHz (Avg measurements): 54.0 $\text{dB}\mu\text{V} / \text{m}$		
	For frequencies above 1 GHz (Pk measurements):		
	Limit + 20 dB = 54.0 $\text{dB}\mu\text{V} / \text{m}$ + 20 dB = 74 $\text{dB}\mu\text{V} / \text{m}$		
IC	20 dB below peak output power, emissions which fall in the restricted bands of table 1 (RSS-210 §2.7) must also comply with limits specified in tables 2 and 3		

Test results

Summary table with radiated data of the test plots - CSS chirp mode 80-4

Freq.	Used Ch.	Frequency Marker [GHz]	Polarization	Δ corrections dB	Max. Field Strength [dB μ V/m]	Compliance Limit [dB μ V/m]	Detector	BW [MHz]	Margin [dB]
		2.374	V		56.73	74	P	1	<u>-17.27</u>
		2.374	V		28.12	54	AV	1	<u>-25.88</u>
		2.684	V		55.67	74	P	1	<u>-18.33</u>
		2.684	V		28.54	54	AV	1	<u>-25.46</u>
		2.483	H		55.54	74	P	1	<u>-18.46</u>
		2.485	H		31.39	54	AV	1	<u>-22.61</u>

Summary table with radiated data of the test plots - CSS chirp mode 20-4

Freq.	Used Ch.	Frequency Marker [GHz]	Polarization	Δ corrections dB	Max. Field Strength [dB μ V/m]	Compliance Limit [dB μ V/m]	Detector	BW [MHz]	Margin [dB]
		2.374	V		51.00	74	P	1	<u>-23.00</u>
		2.400	V		47.86	54	AV	1	<u>-6.14</u>
		2.559	V		57.43	74	P	1	<u>-16.57</u>
		2.496	V		51.04	54	AV	1	<u>-2.96</u>
		4.882	V		53.30	74	P	1	<u>-20.70</u>
		4.886	V		39.83	54	AV	1	<u>-14.17</u>
		7.342	V		51.47	74	P	1	<u>-22.53</u>
		12.214	V		49.18	74	P	1	<u>-24.82</u>
		12.214	V		49.34	54	AV	1	<u>-4.66</u>

Freq. – Frequency Range:

- 1: 30 – 200 MHz
- 2: 200 – 1000 MHz
- 3: 1 – 4 GHz
- 4: 4 – 8 GHz
- 5: 8 – 12 GHz
- 6: 12 – 17 GHz
- 7: 17 – 26.5 GHz

Comment: All other not noted test plots do not contain significant test results in relation to the limits.
Please see attached diagrams in Annex E.

Test equipment: ETS 0013; ETS 0019; ETS 0030; ETS 0271; ETS 0311

3.1.7 AC power line conducted emissions

Reference

FCC	CFR part 15.207
IC	RSS-Gen 7.2.2

Method of measurement

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

This measurement was transact first with instrumentation using an average and peak detector and a 10 kHz bandwidth. If the peak detector achieves a calculated level, the measurement is repeated by an instrumentation using a quasi-peak detector.

Limits

FCC & IC	Frequency of emissions	Conducted limit field strength [dB μ V]	
	[MHz]	Quasi Peak	Avg
	0.15 - 0.5	66 to 56	56 - 46
	0.5 - 5	56	46
	5 - 30	60	50

Test results

Frequency	Level	
	Quasi-peak	Average
150 kHz	Lower limit line	Lower limit line

Comment: See attached diagrams in Annex F.

Test equipment: ETS 0288, ETS 0474

3.2 Receiver parameters

3.2.1 Spurious emissions

Reference

FCC	-
IC	RSS-Gen 7.2.3

Method of measurement

The compliance of the EUT Receiver with the Limits of spurious emissions was performed according to the radiated measurement method.

The spectrum analyzer RBW was set to 100 kHz for measurements below 100 kHz and 1.0 MHz above 1.0 GHz. The measurement results are evaluated according to the procedure described in section 2.4 of this test report.

Limits:

	Spurious frequency	Field strength
	MHz	microvolt/m at 3 meter
FCC & IC	30 - 88	100
	88 - 216	150
	216 - 960	200
	above 960	500

Test Results

	Frequency marker indication [MHz]	Antenna polarization	Worst case emissions level [$\mu\text{V/m}$]	Compliance limit [$\mu\text{V/m}$]	Results
	200,000	V	49,55	150	<u>-100,45</u>
	198,297	H	43,25	150	<u>-106,75</u>
	977,555	V	39,54	500	<u>-460,46</u>
	977,555	H	56,23	500	<u>-443,77</u>
	3982,000	V	174,98	500	<u>-325,02</u>
	3970,000	H	162,93	500	<u>-337,07</u>
	7824,000	V	326,21	500	<u>-173,79</u>
	7824,000	H	327,72	500	<u>-172,28</u>

Comment: Please see attached diagrams in Annex G.

Test equipment: ETS 0013; ETS 0019; ETS 0030; ETS 00271; ETS 0311;

Annex

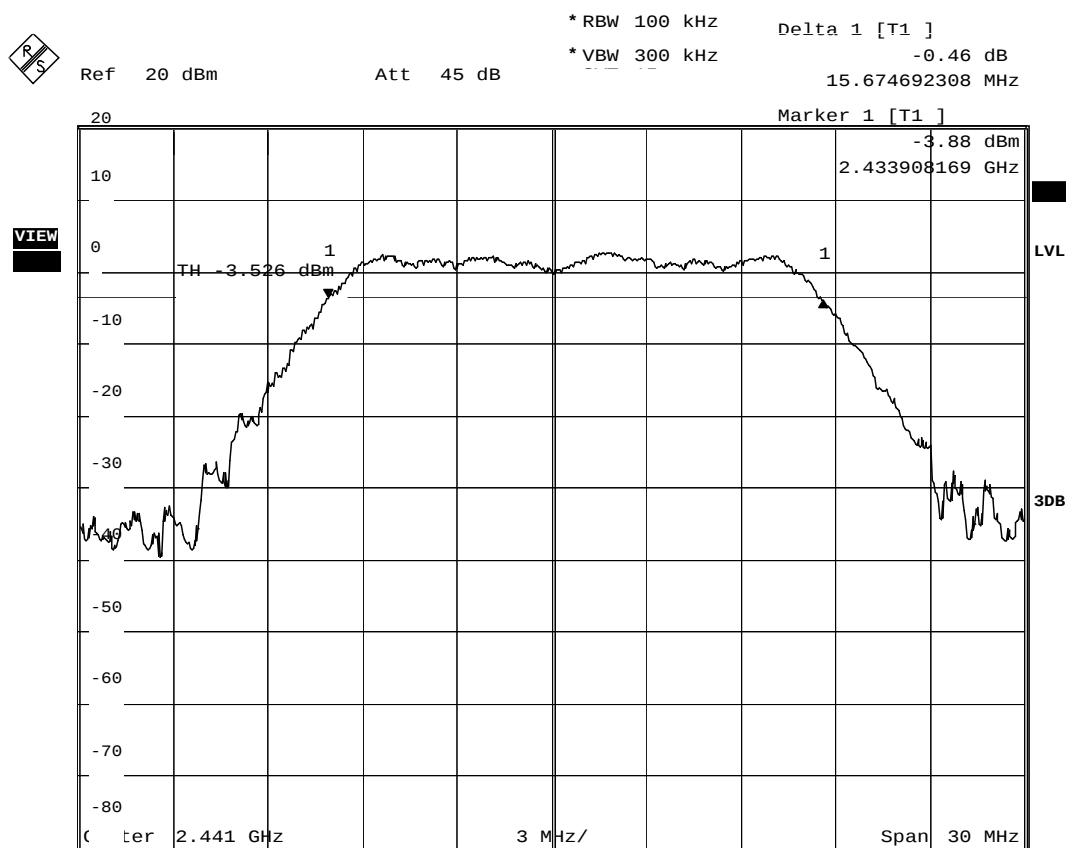
A	Pictures	23
B	6 dB bandwidth; Occupied bandwidth	34
C	Power spectral density	41
D	Spurious emissions conducted	45
E	Spurious emissions radiated	68
F	AC power line conducted	107
G	Receiver spurious emissions	110

Annex B

6 dB bandwidth; Occupied bandwidth

FCC part 15.247 (a)2
Minimum 6 dB Bandwidth

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	CSS chirp mode 22MHz -4
Comment 3	



6 dB bandwidth: 15.6747 MHz > 500 KHz; verdict: PASS

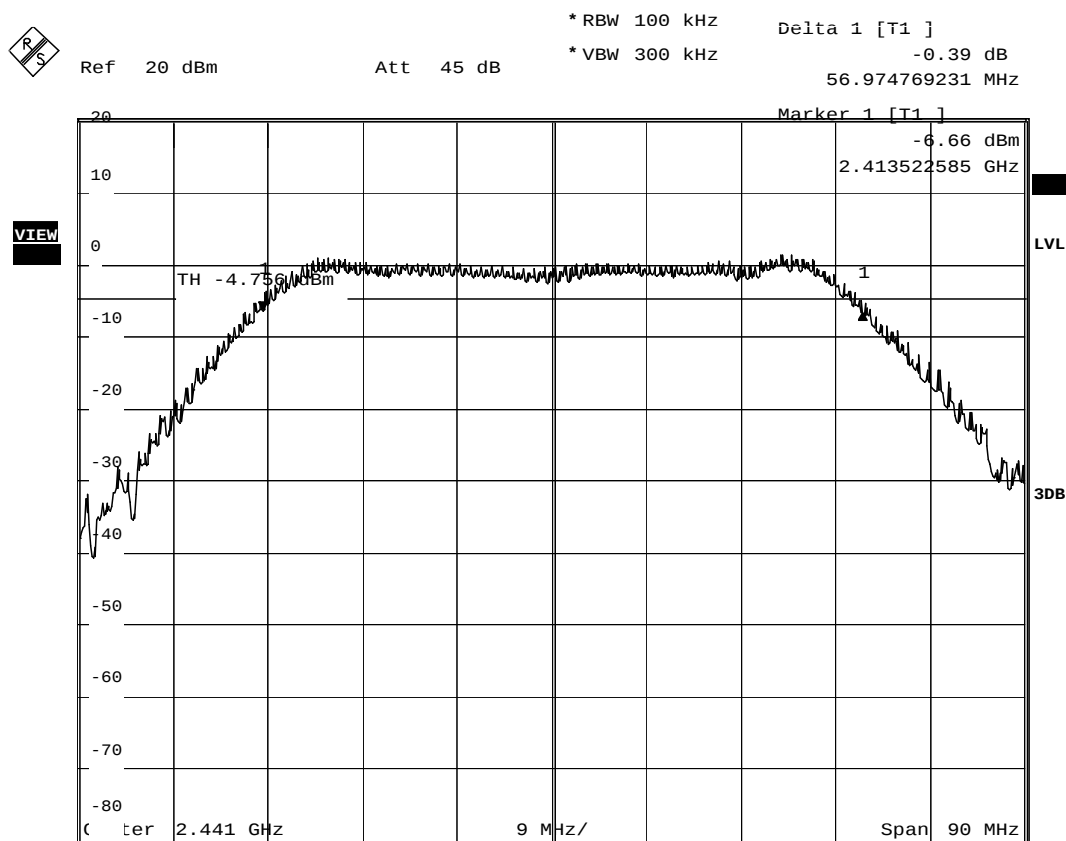
Date: 5.MAR.2009 11:25:48

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

FCC part 15.247 (a)2
Minimum 6 dB Bandwidth

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	CSS chirp mode 80-1
Comment 3	



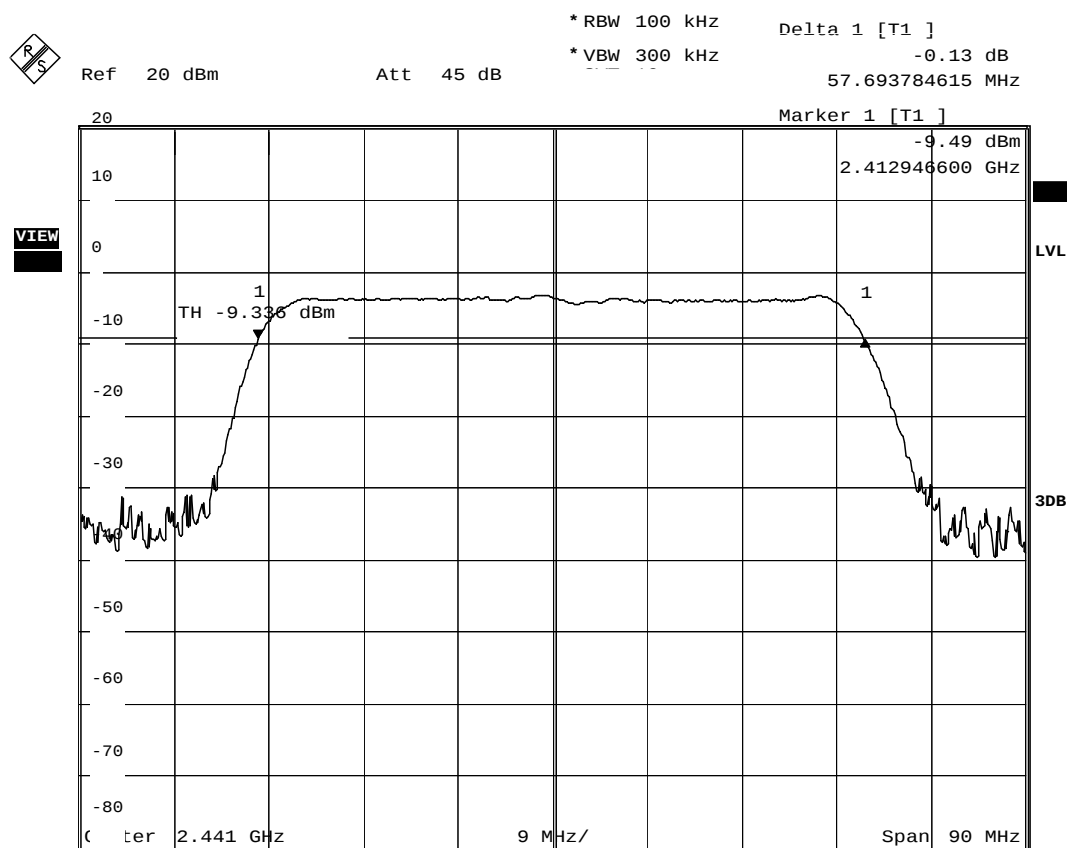
Date: 5.MAR.2009 11:31:33

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

FCC part 15.247 (a)2
Minimum 6 dB Bandwidth

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (a)2
Comment 1	Minimum 6 dB Bandwidth
Comment 2	CSS chirp mode 80-4
Comment 3	



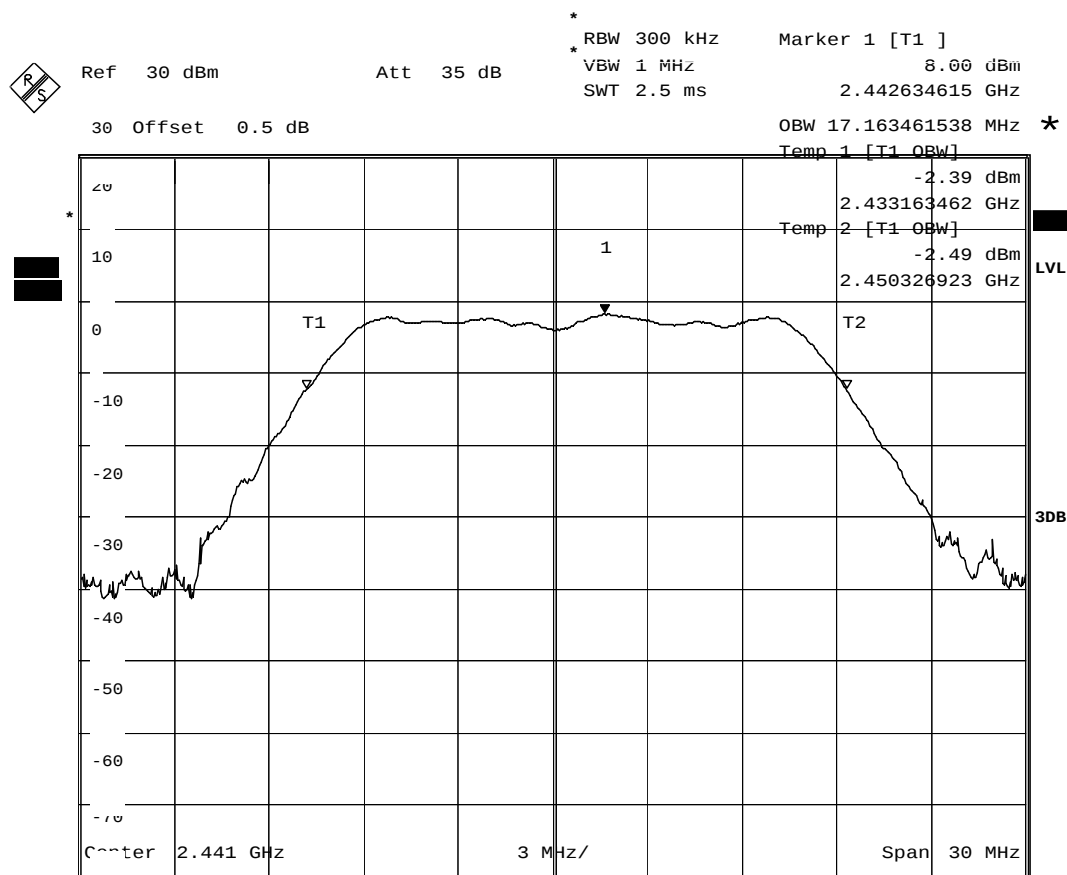
6 dB bandwidth: 57.6938 MHz > 500 KHz; verdict: PASS
 Date: 5.MAR.2009 11:40:54

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**RSS Gen
Occupied Bandwidth**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2412 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	CSS shirp mode 22-4



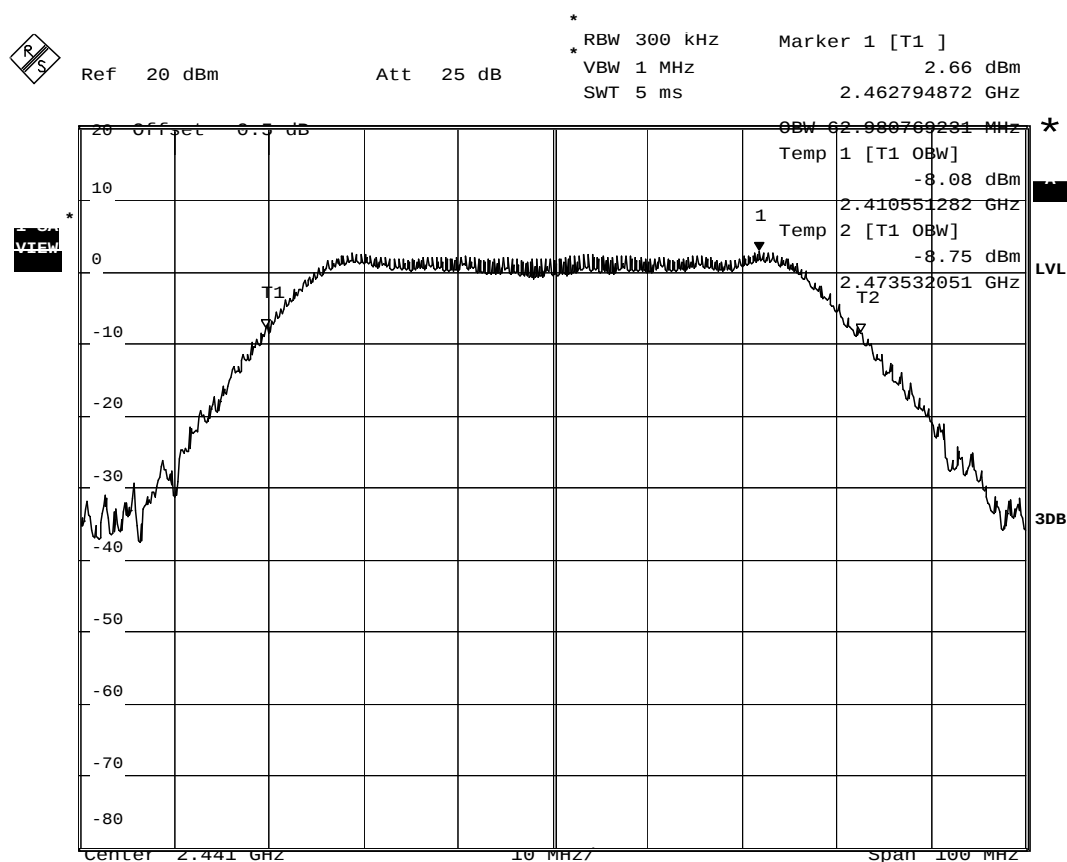
Occupied bandwidth: 17.1635 MHz
 Date: 5.MAR.2009 11:51:49

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

RSS Gen Occupied Bandwidth

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2412 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	CSS chirp mode 80-1



Occupied bandwidth: 62.9808 MHz

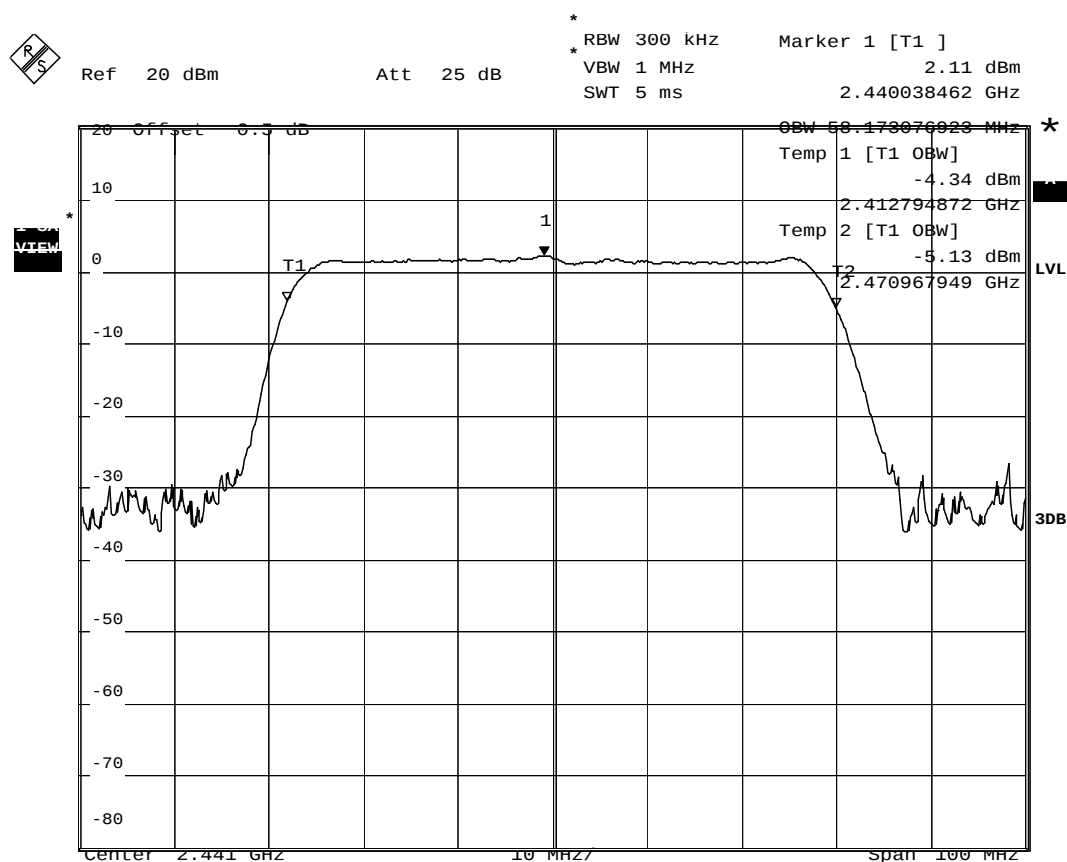
Date: 5.MAR.2009 11:49:01

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

RSS Gen Occupied Bandwidth

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 2412 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	CSS shirp mode 80-4



Occupied bandwidth: 58.1731 MHz

Date: 5.MAR.2009 11:45:09

Measurement diagram

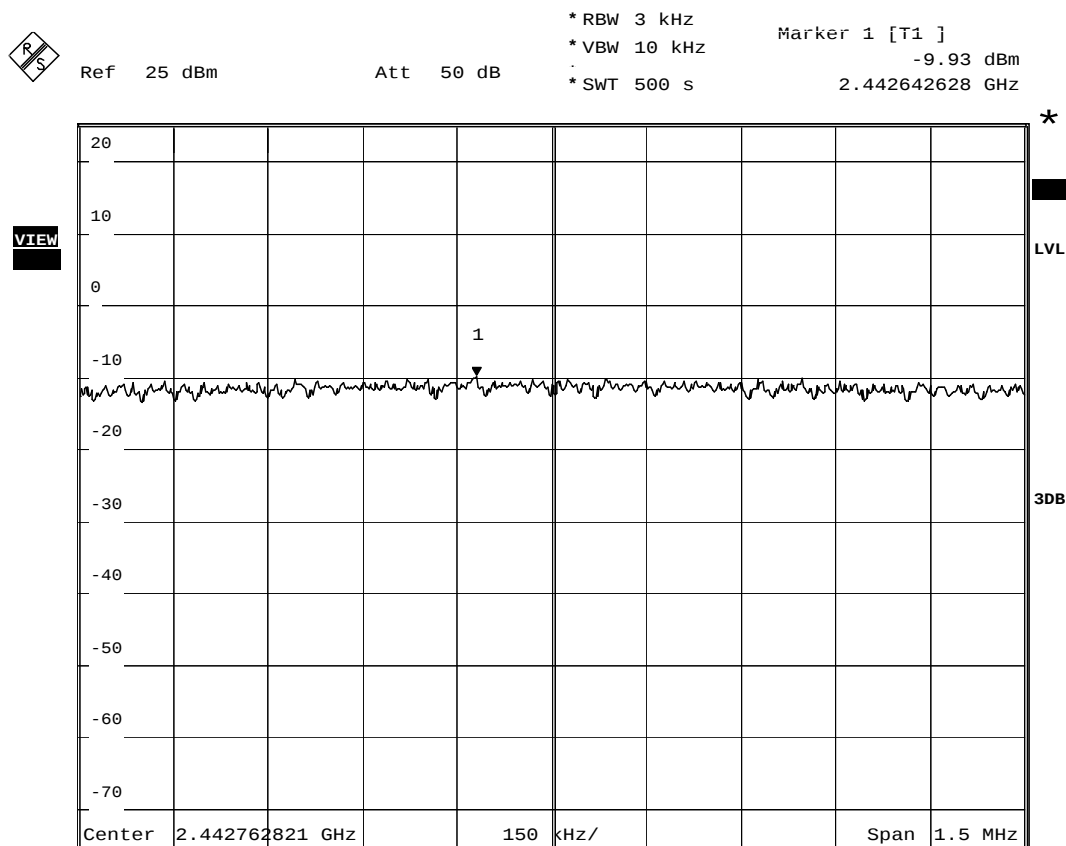
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Annex C

Power spectral density

FCC part 15.247 (d)
Power spectral density (PSD)

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (PSD Option1)
Comment 1	Power spectral density conducted
Comment 2	CSS chirp mode 22MHz -4
Comment 3	



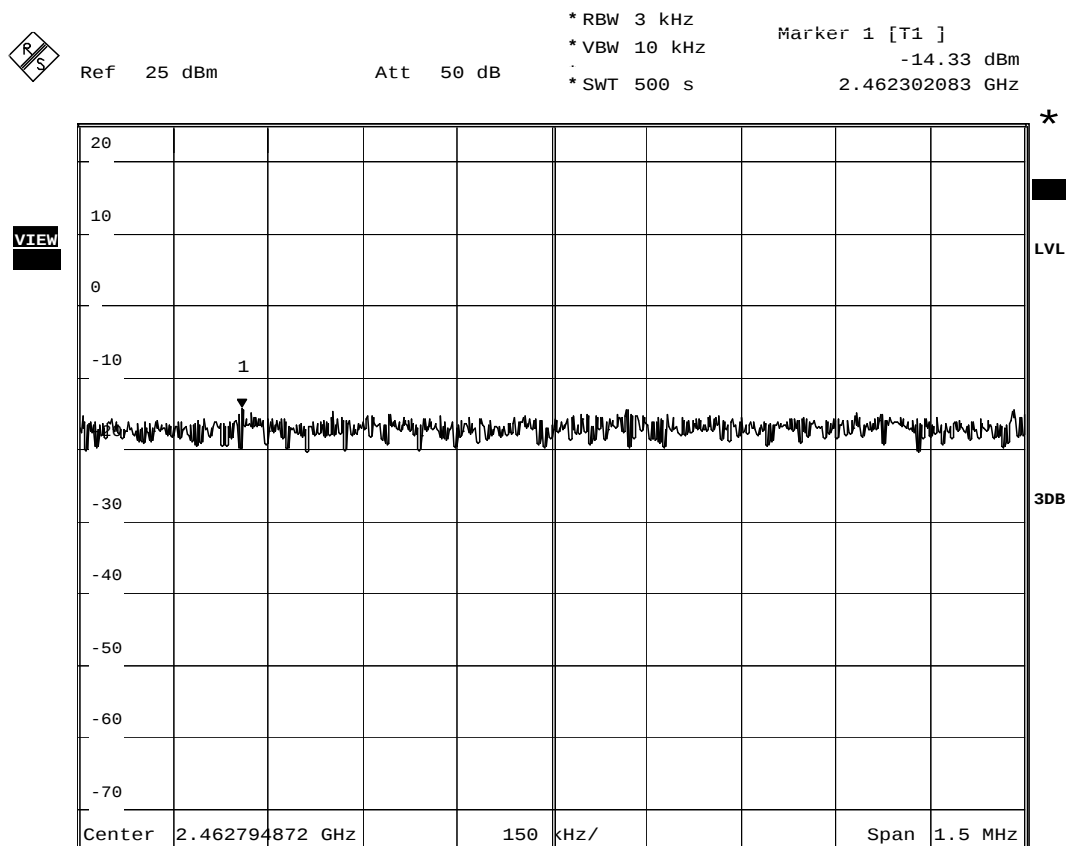
Date: 5.MAR.2009 11:19:07

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

FCC part 15.247 (d)
Power spectral density (PSD)

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (PSD Option1)
Comment 1	Power spectral density conducted
Comment 2	CSS chirp mode 80-1
Comment 3	



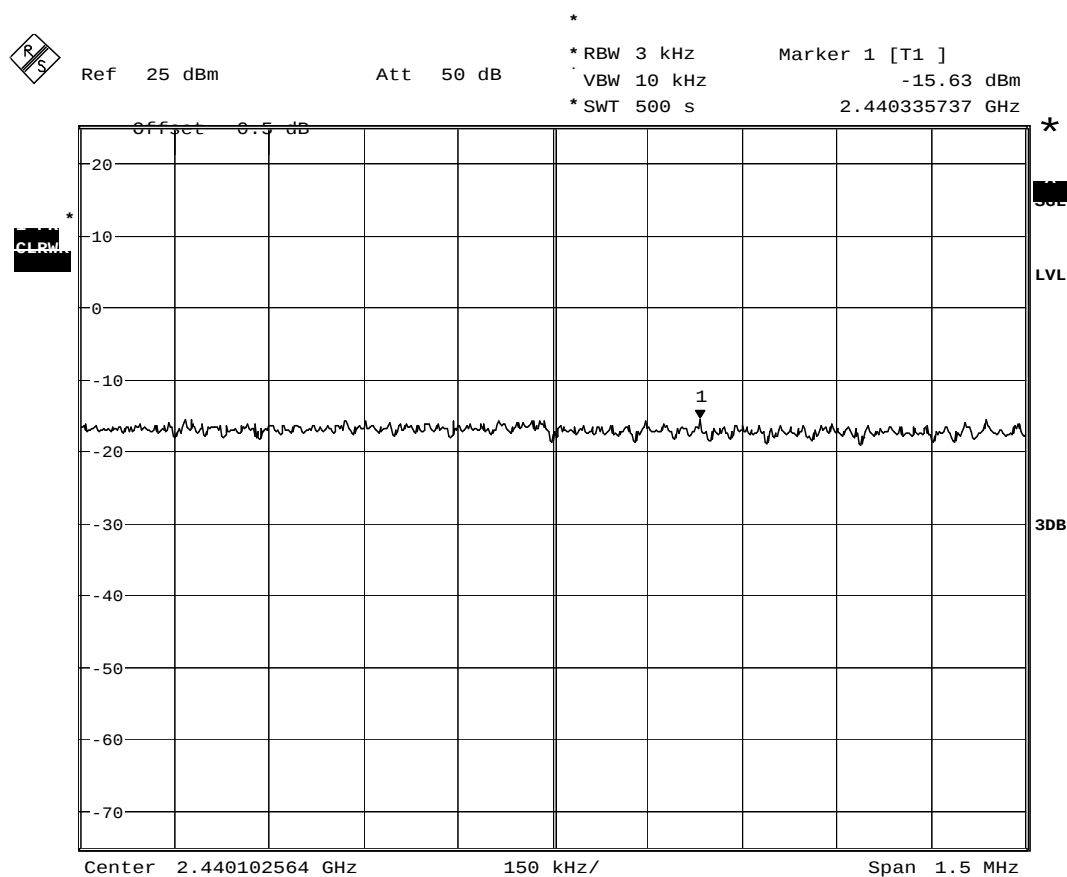
Date: 5.MAR.2009 11:14:46

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

FCC part 15.247 (d)
Power spectral density (PSD)

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (PSD Option1)
Comment 1	Power spectral density conducted
Comment 2	CSS chirp mode 80-4
Comment 3	



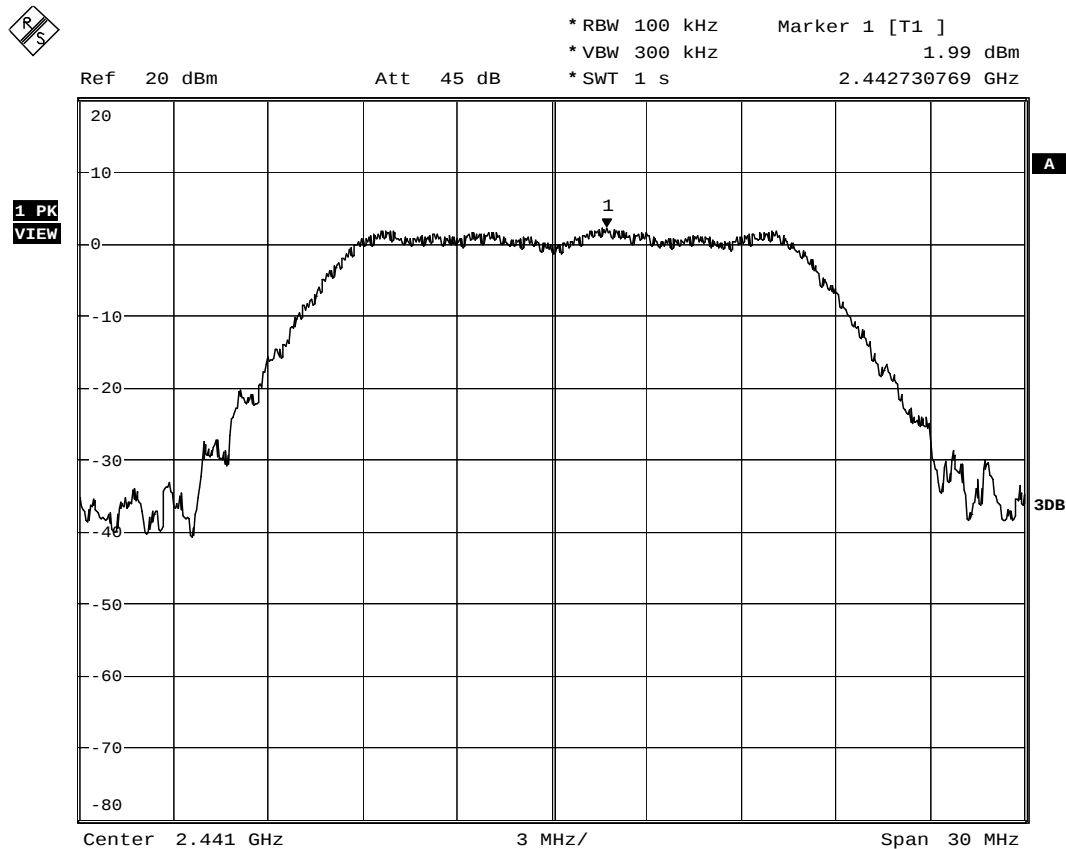
Date: 5.MAR.2009 10:55:56

Annex D

Spurious emissions conducted

FCC part 15.247 (d)
Power for Limit Line

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Power for Limit Line
Comment 2	CSS chirp mode 80-4
Comment 3	



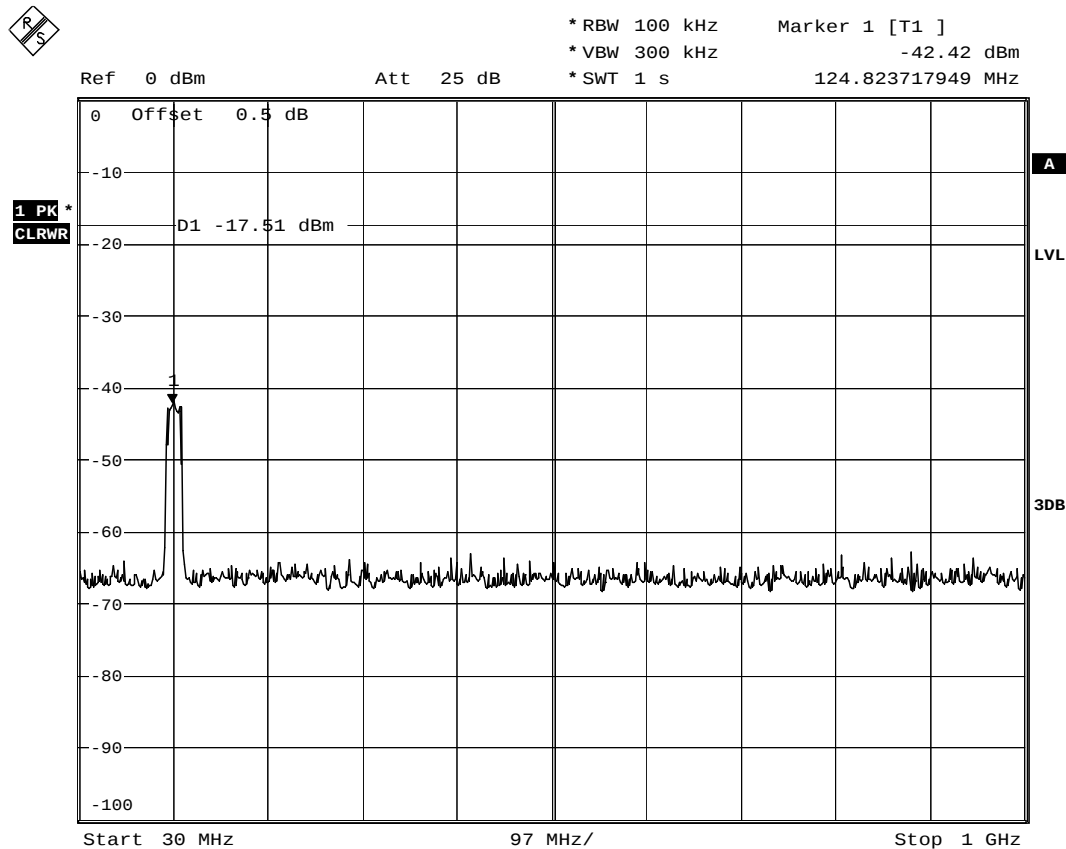
Date: 5.MAR.2009 12:02:27

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 22-4
Comment 3	30-1000 MHz



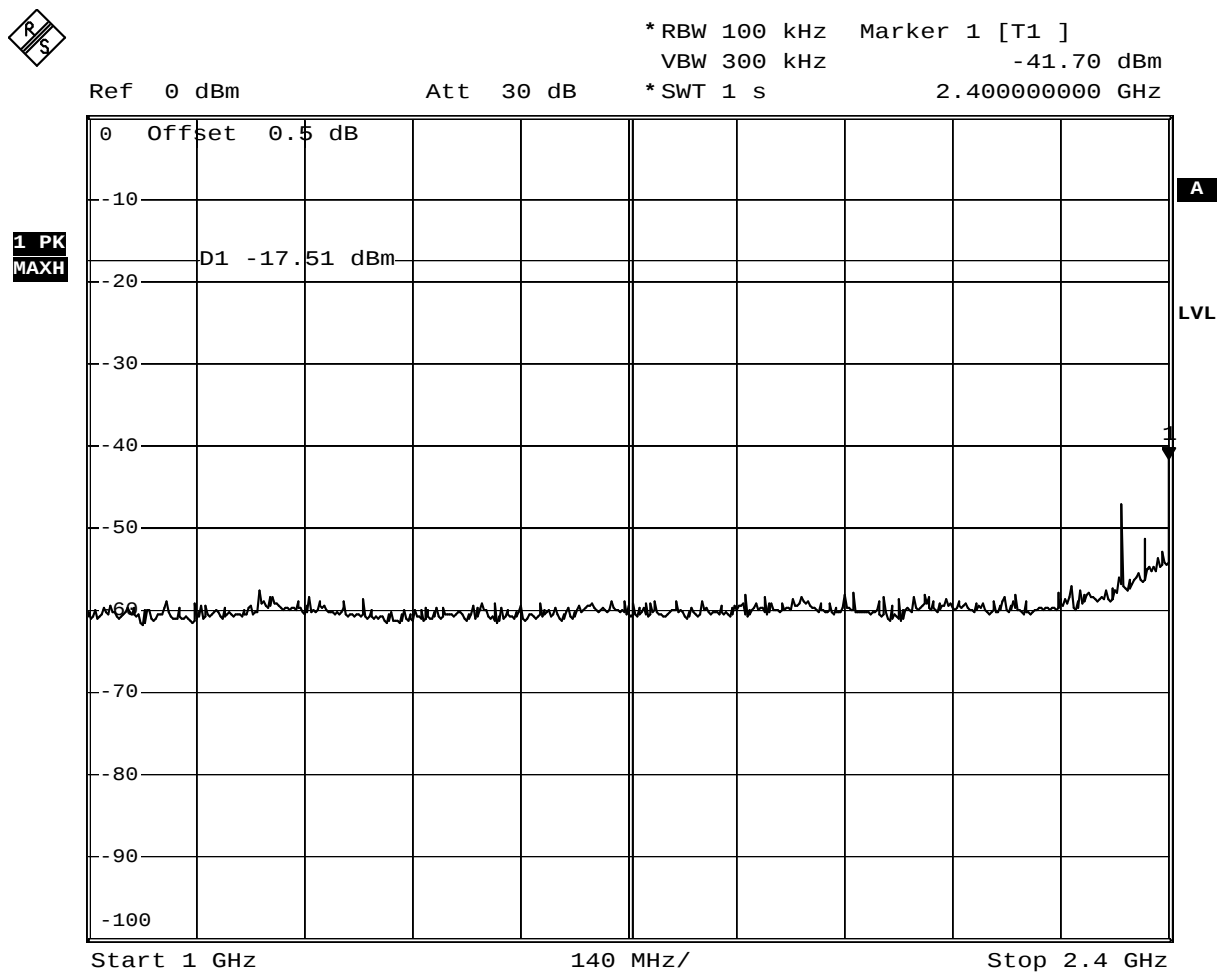
Date: 5.MAR.2009 12:42:54

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 22-4
Comment 3	1.0 - 2.4 GHz



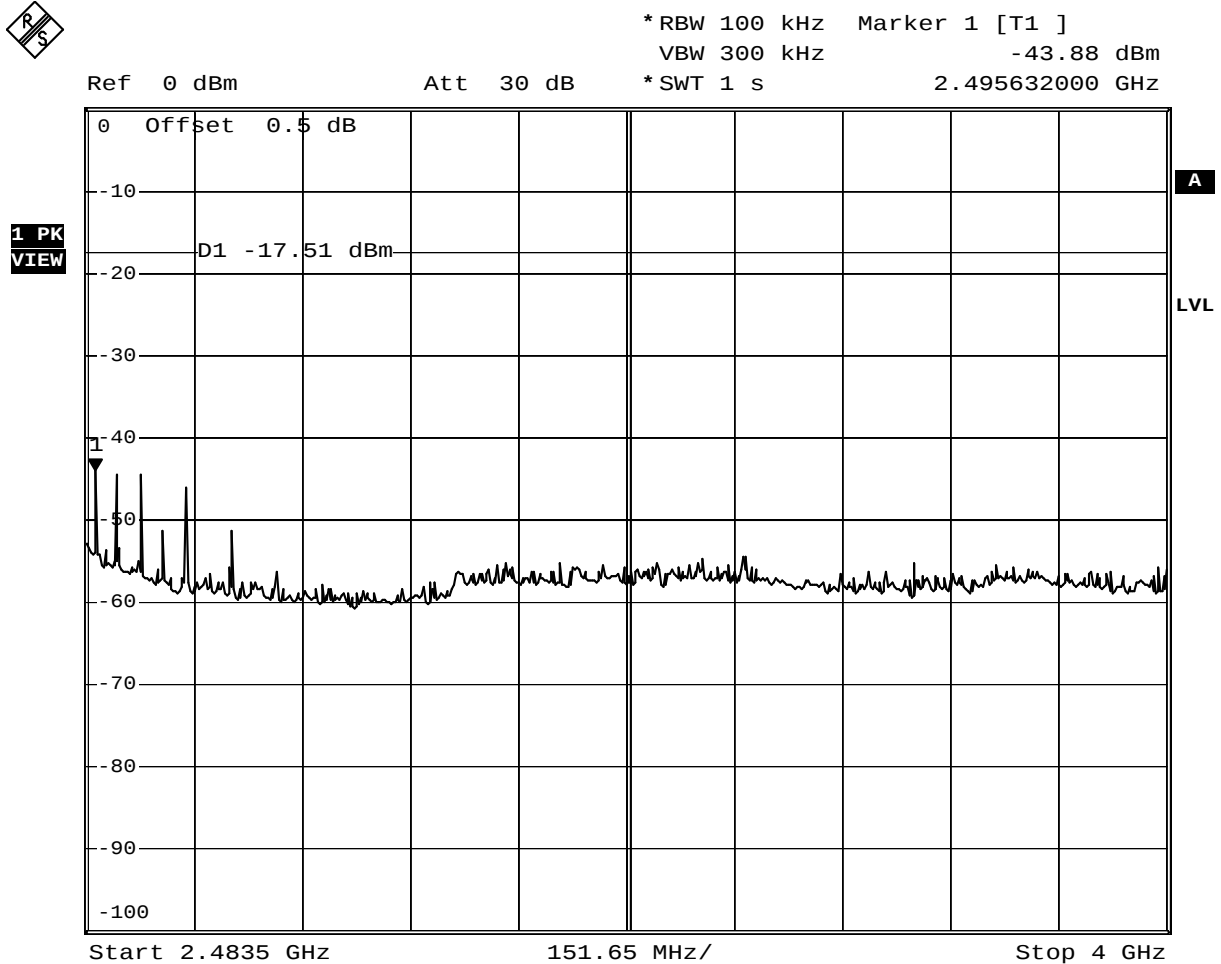
Date: 5.MAR.2009 12:27:19

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 22-4
Comment 3	2.4835 - 4 GHz



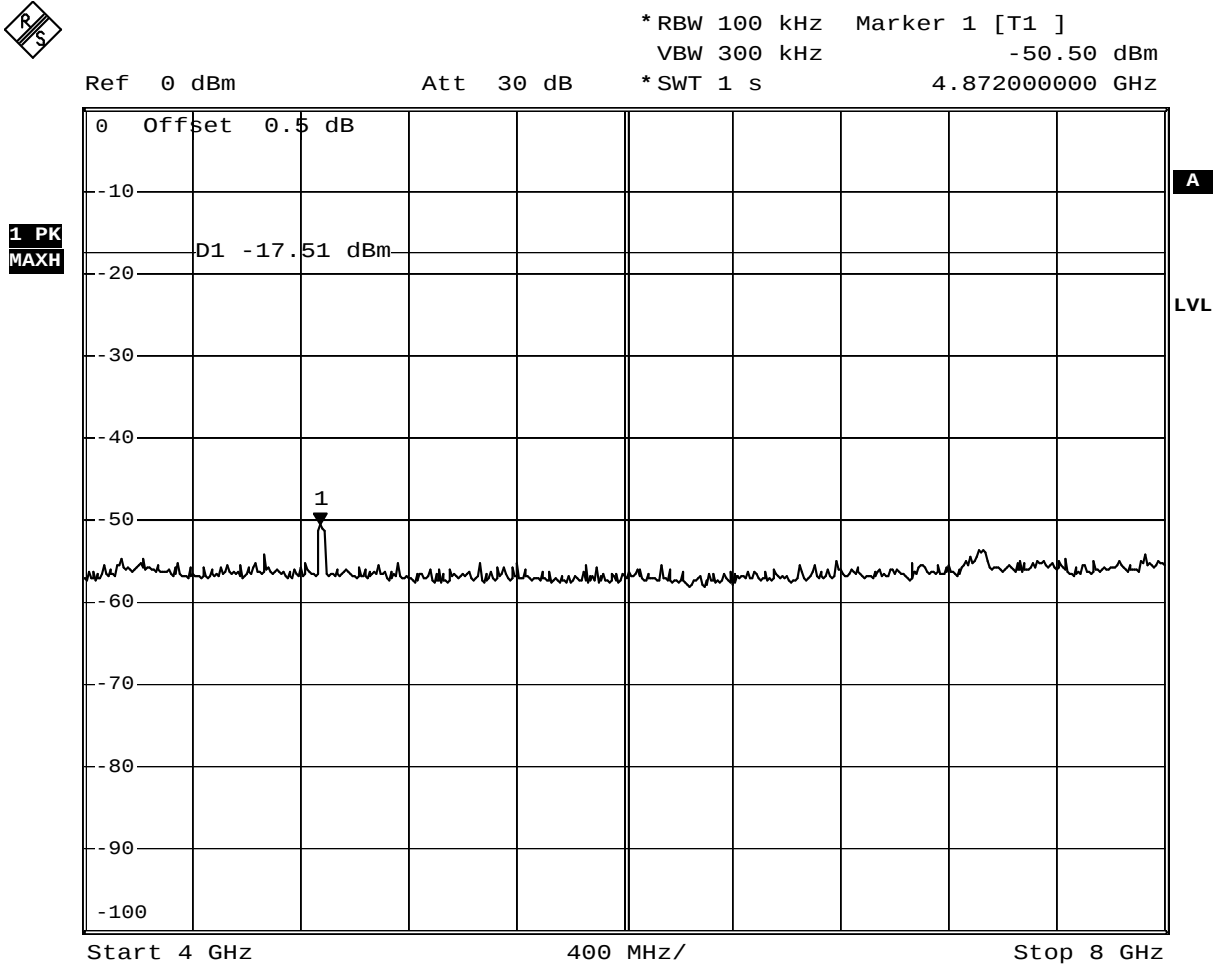
Date: 5.MAR.2009 12:25:21

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 22-4
Comment 3	4.0 - 8 GHz



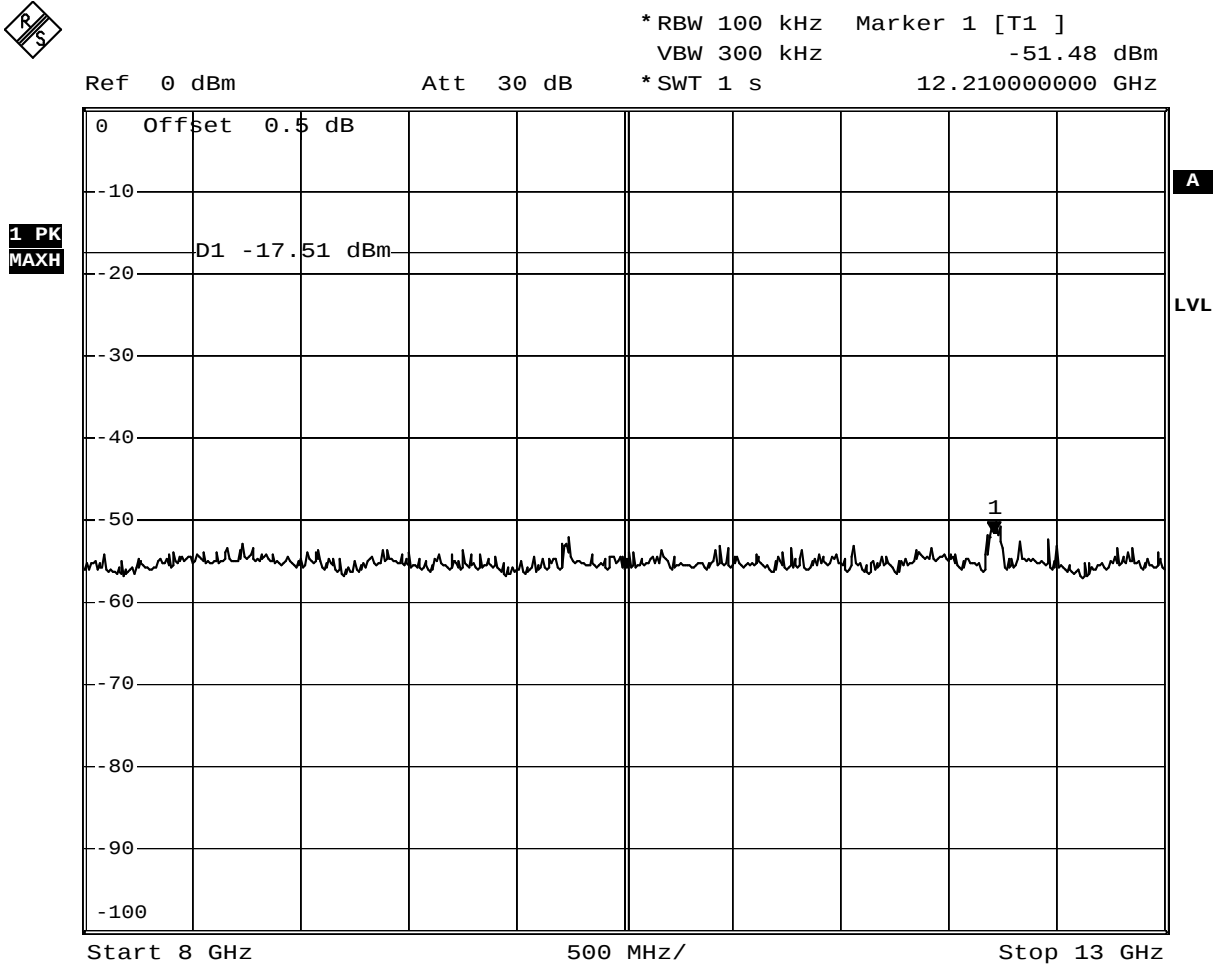
Date: 5.MAR.2009 12:29:23

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 22-4
Comment 3	8.0 - 13.0 GHz



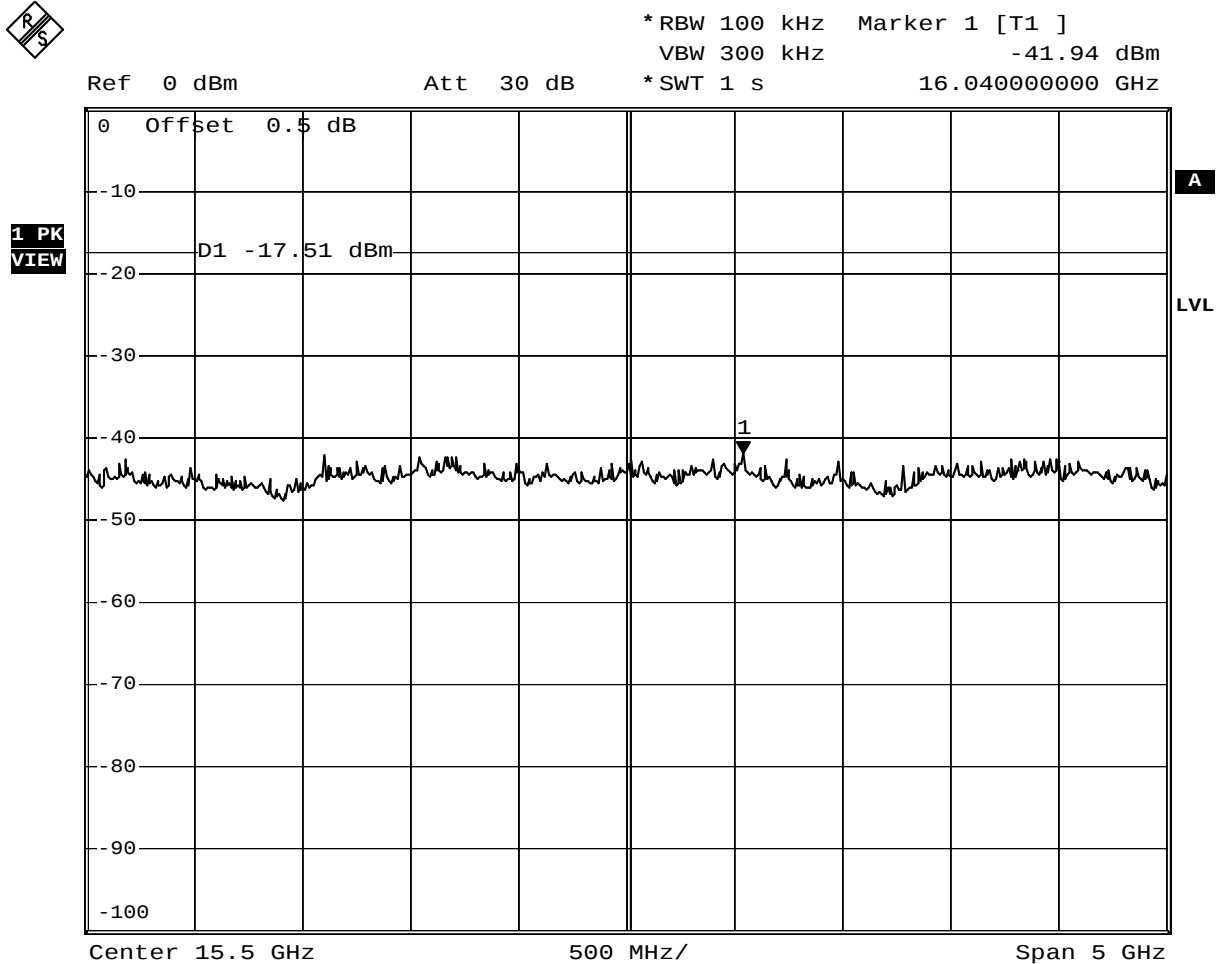
Date: 5.MAR.2009 12:31:15

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 22-4
Comment 3	13.0 - 18.0 GHz



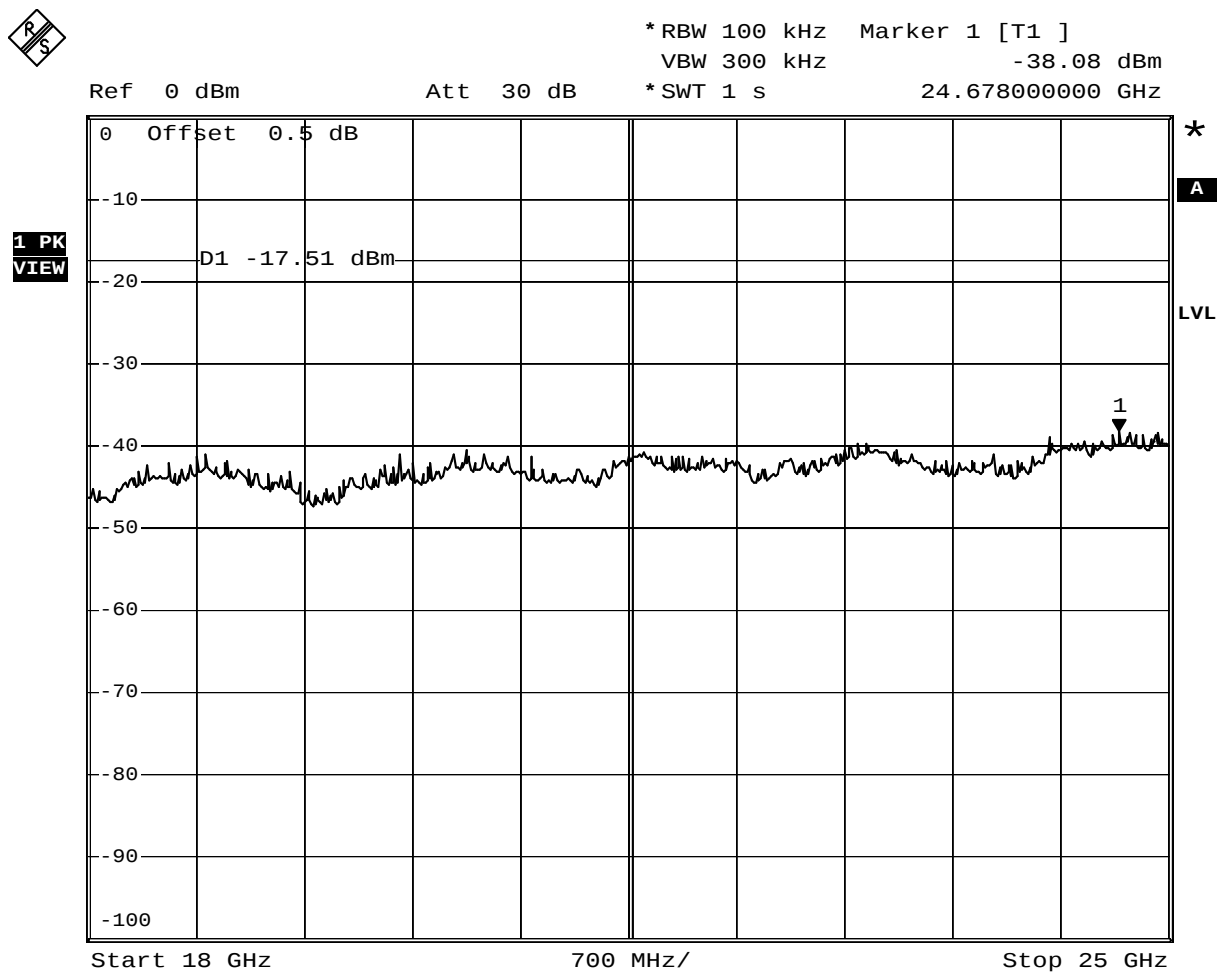
Date: 5.MAR.2009 12:33:01

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 22-4
Comment 3	18.0 - 25.0 GHz



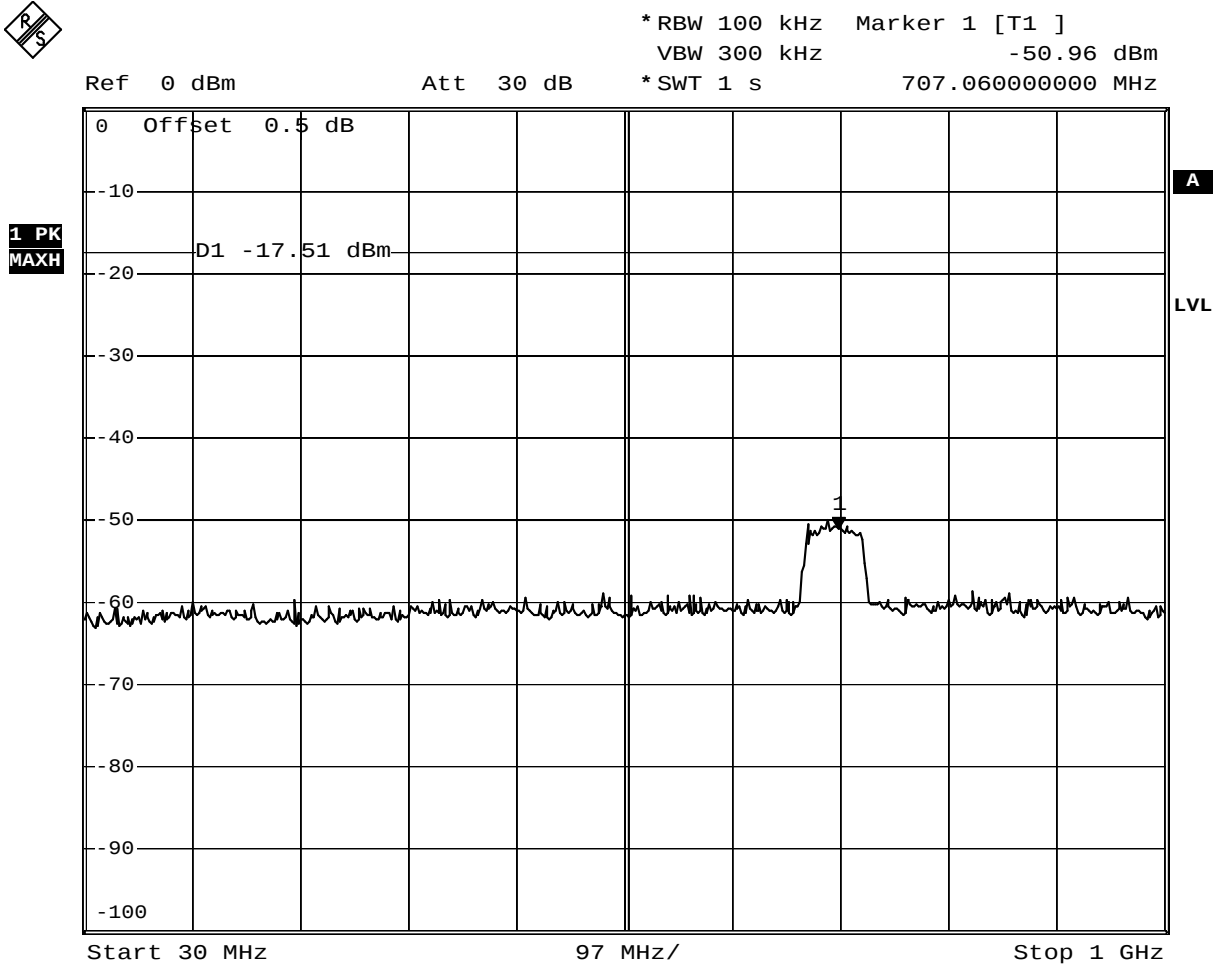
Date: 5.MAR.2009 12:34:23

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-1
Comment 3	30 MHz - 1.0 GHz



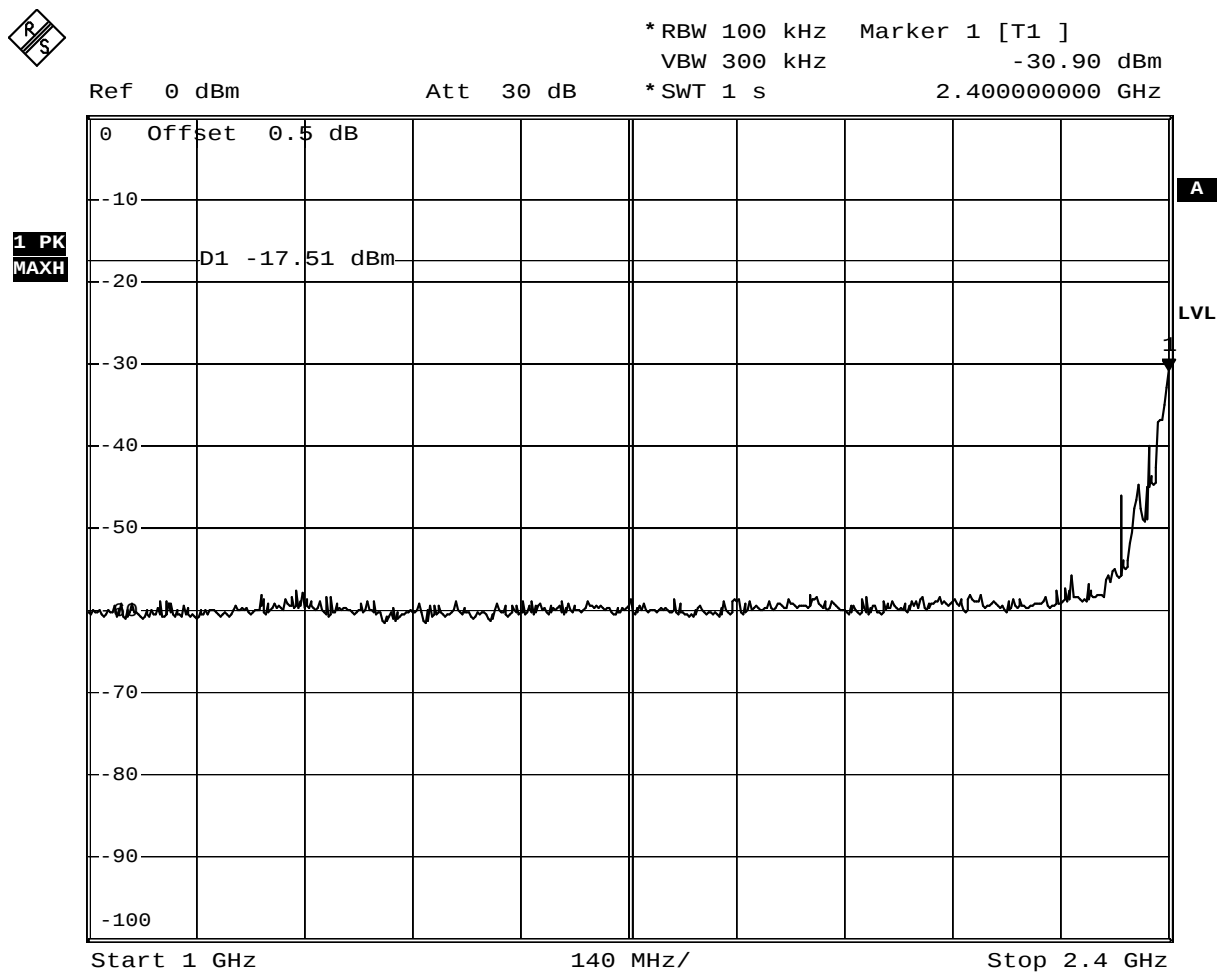
Date: 5.MAR.2009 12:49:18

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-1
Comment 3	1.0 GHz - 2.4 GHz



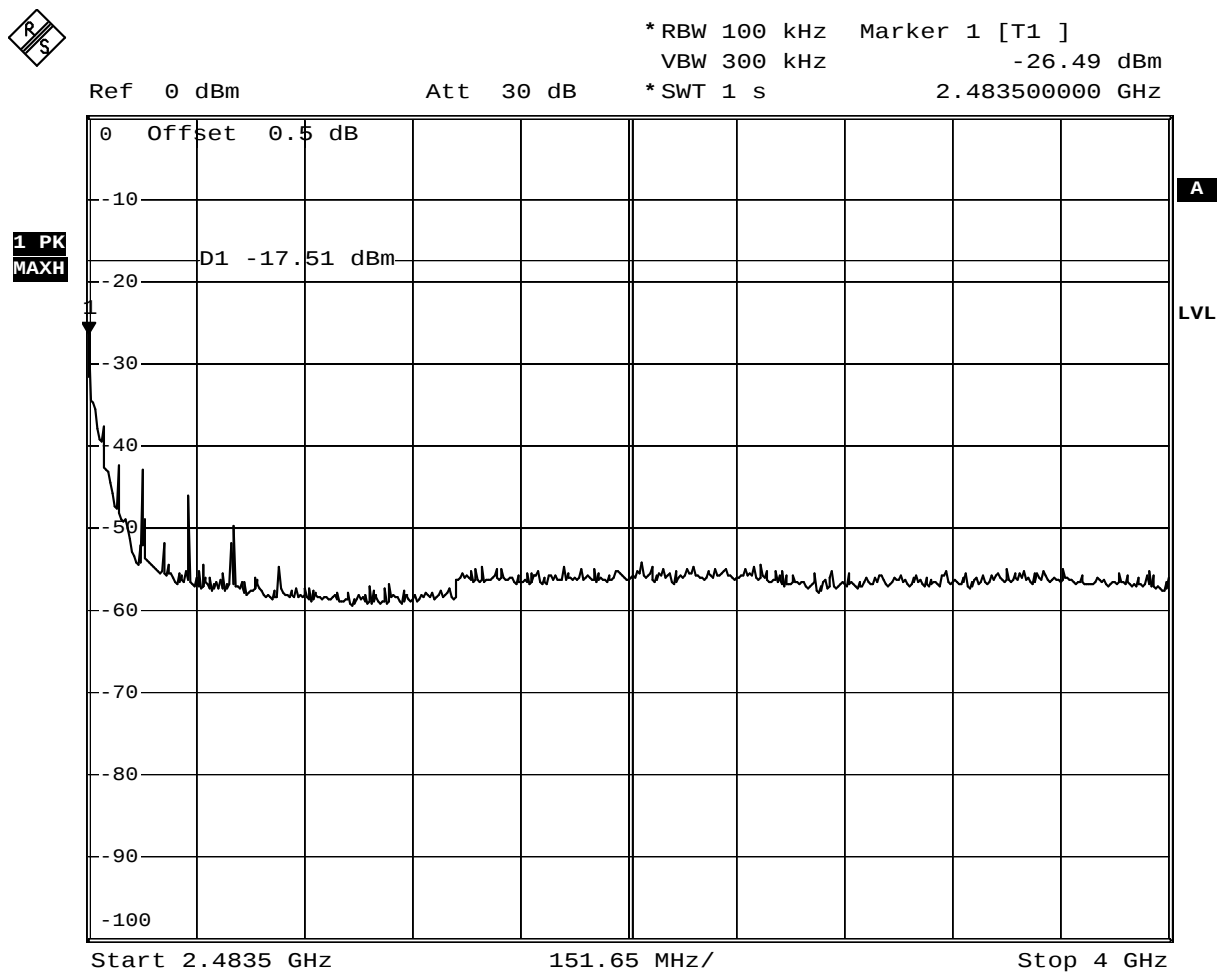
Date: 5.MAR.2009 12:51:23

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-1
Comment 3	2.4835 GHz - 4.0 GHz



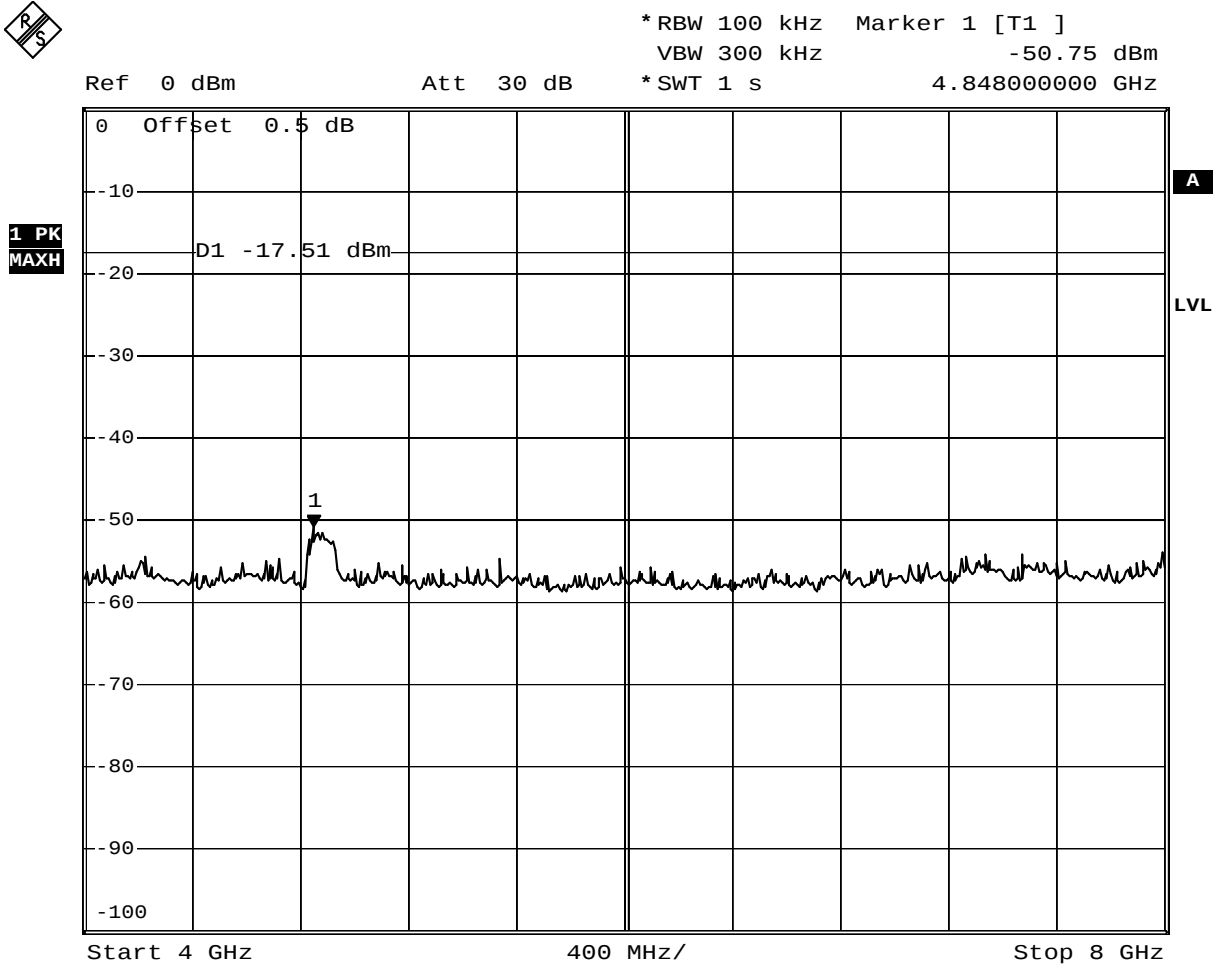
Date: 5.MAR.2009 12:53:23

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-1
Comment 3	4.0 GHz - 8.0 GHz



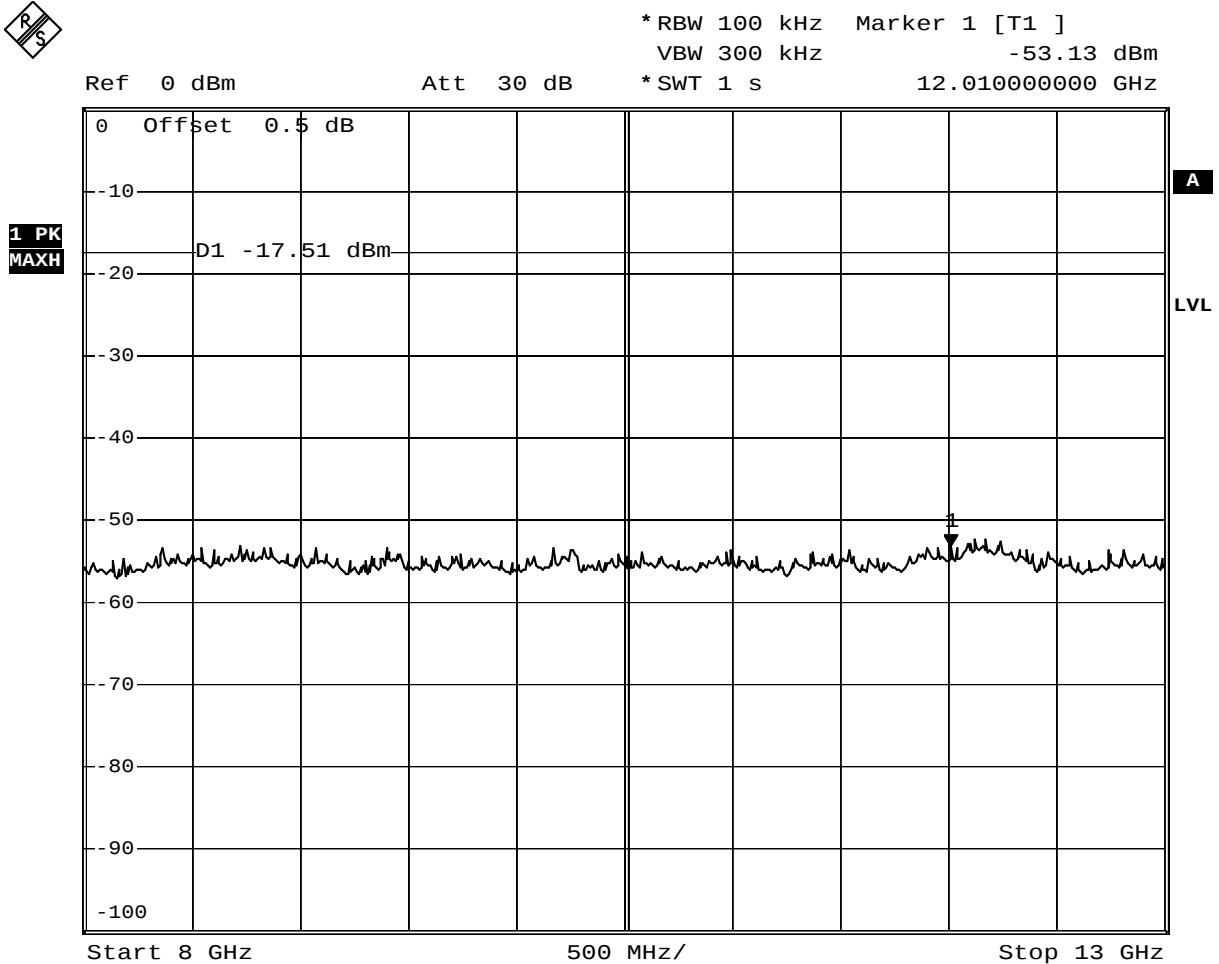
Date: 5.MAR.2009 12:54:22

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-1
Comment 3	8.0 GHz - 13.0 GHz



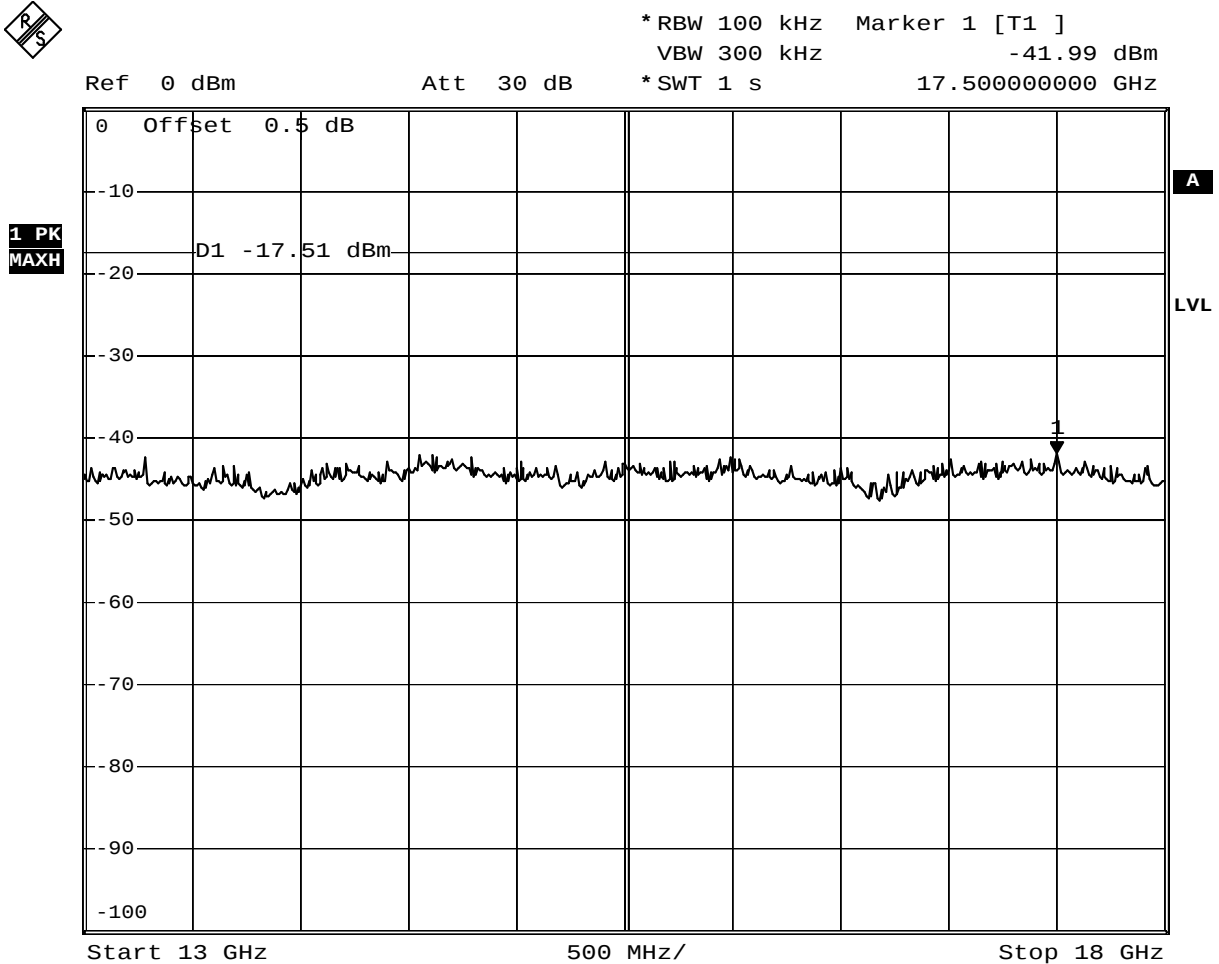
Date: 5.MAR.2009 12:55:34

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-1
Comment 3	13.0 GHz - 18.0 GHz



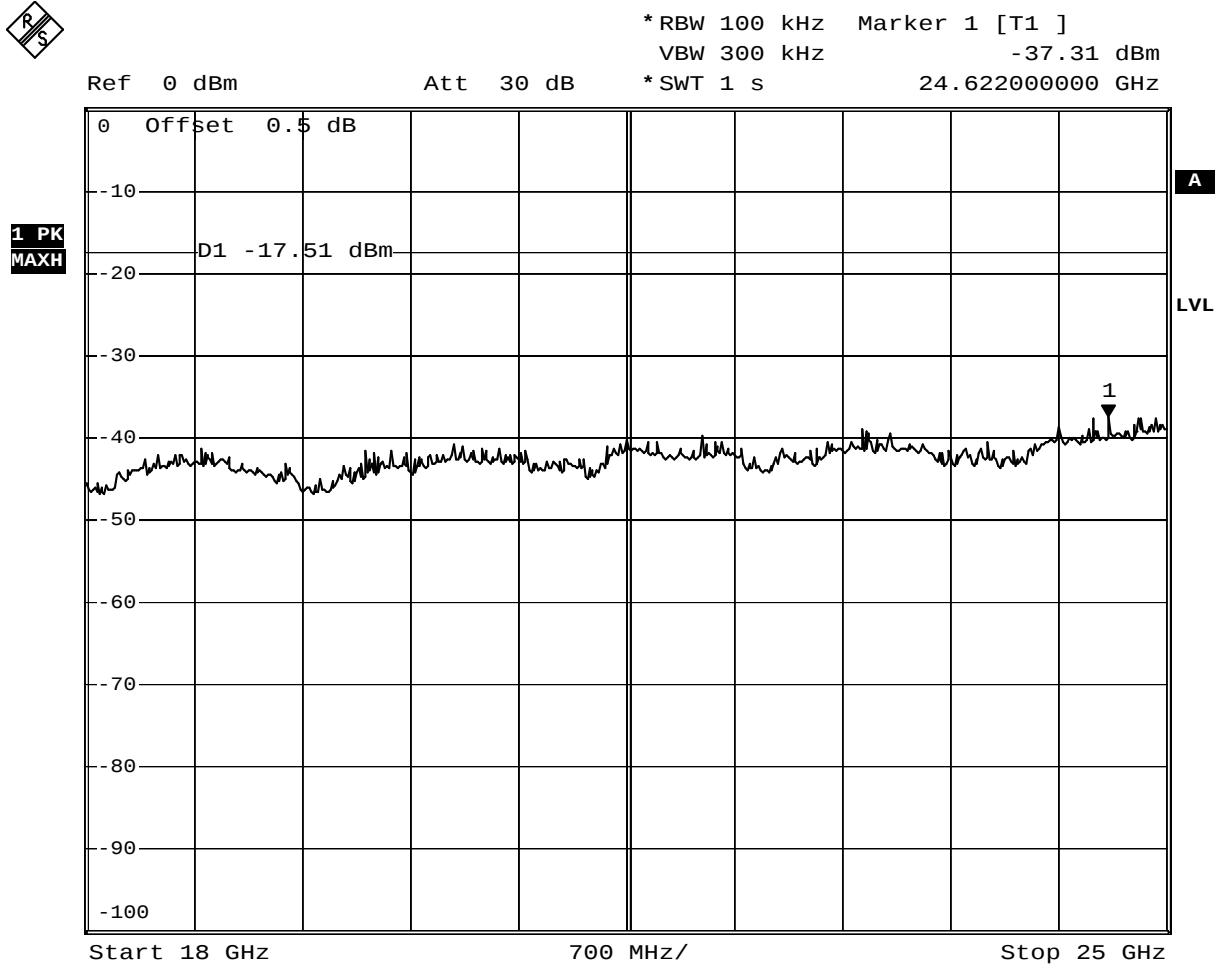
Date: 5.MAR.2009 12:56:48

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-1
Comment 3	18.0 GHz - 25.0 GHz



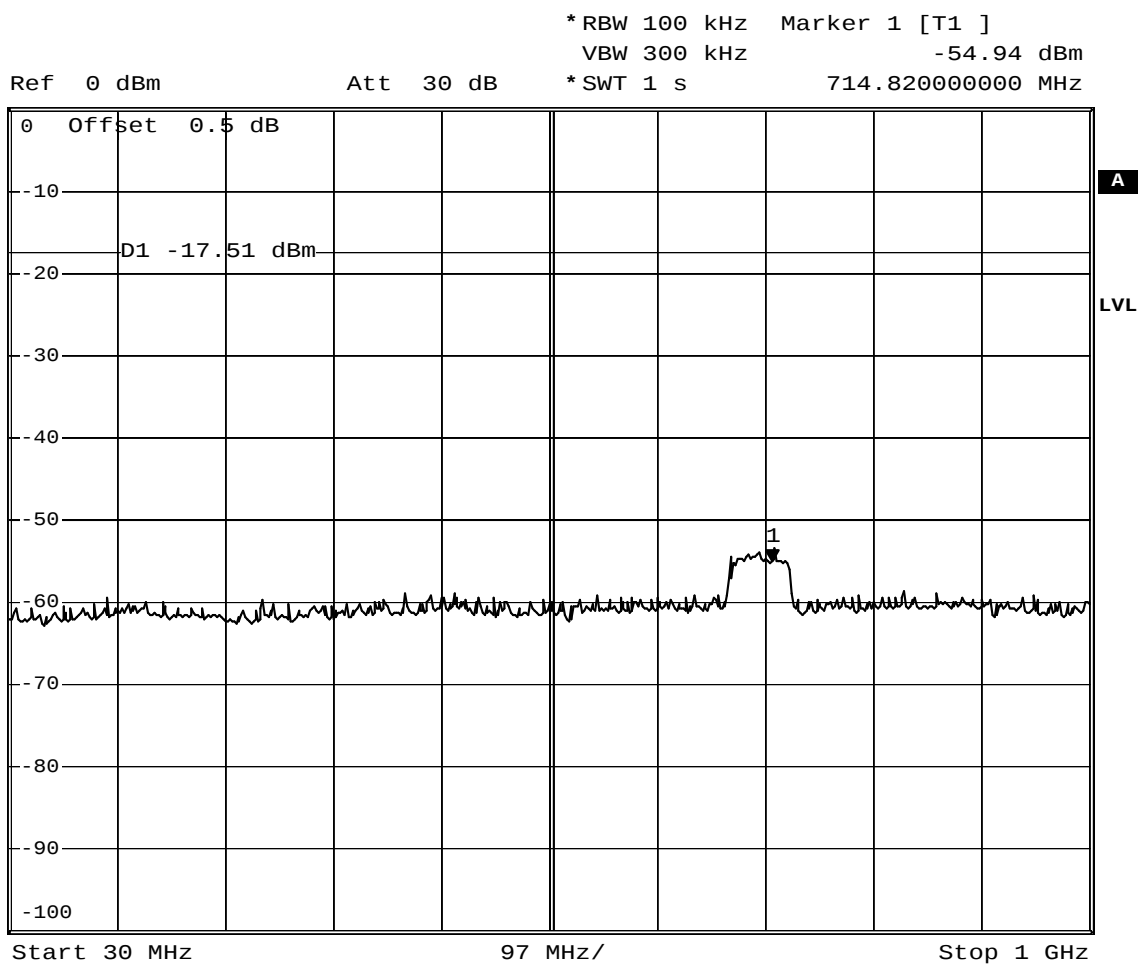
Date: 5.MAR.2009 12:57:53

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-4
Comment 3	30 MHz - 1.0 GHz



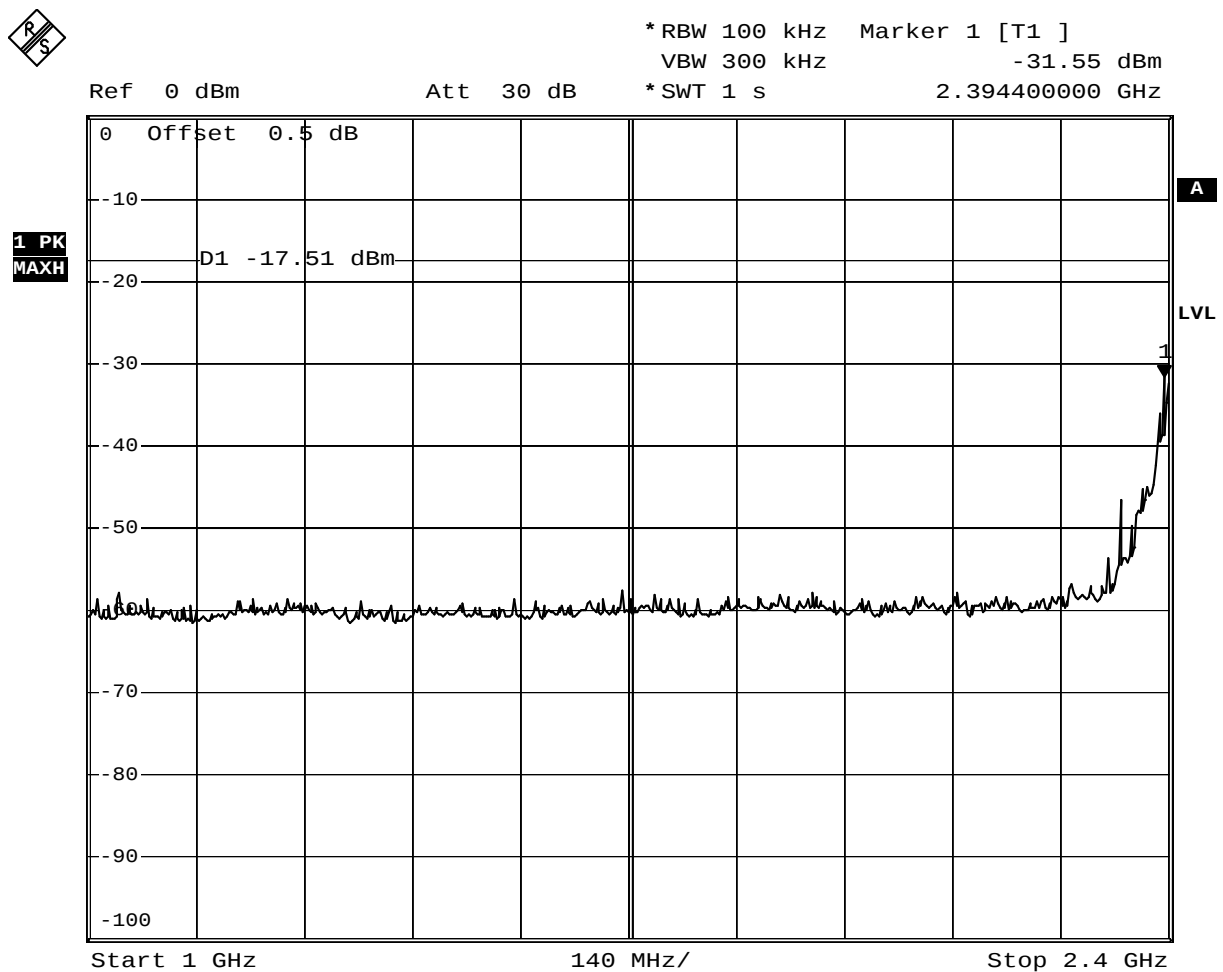
Date: 5.MAR.2009 12:36:03

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-4
Comment 3	1.0 GHz - 2.4 GHz



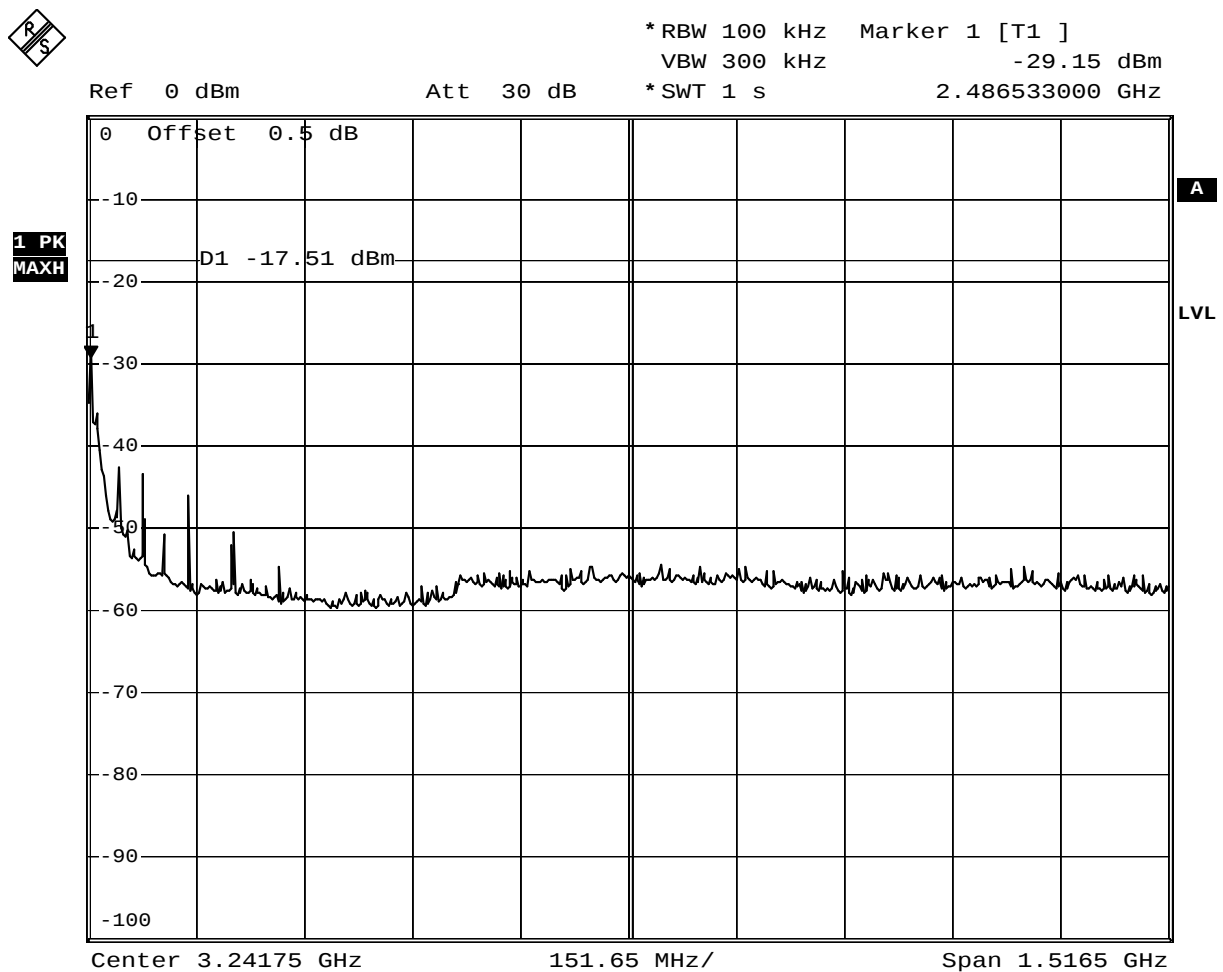
Date: 5.MAR.2009 12:37:59

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-4
Comment 3	2.4835 GHz - 4 GHz



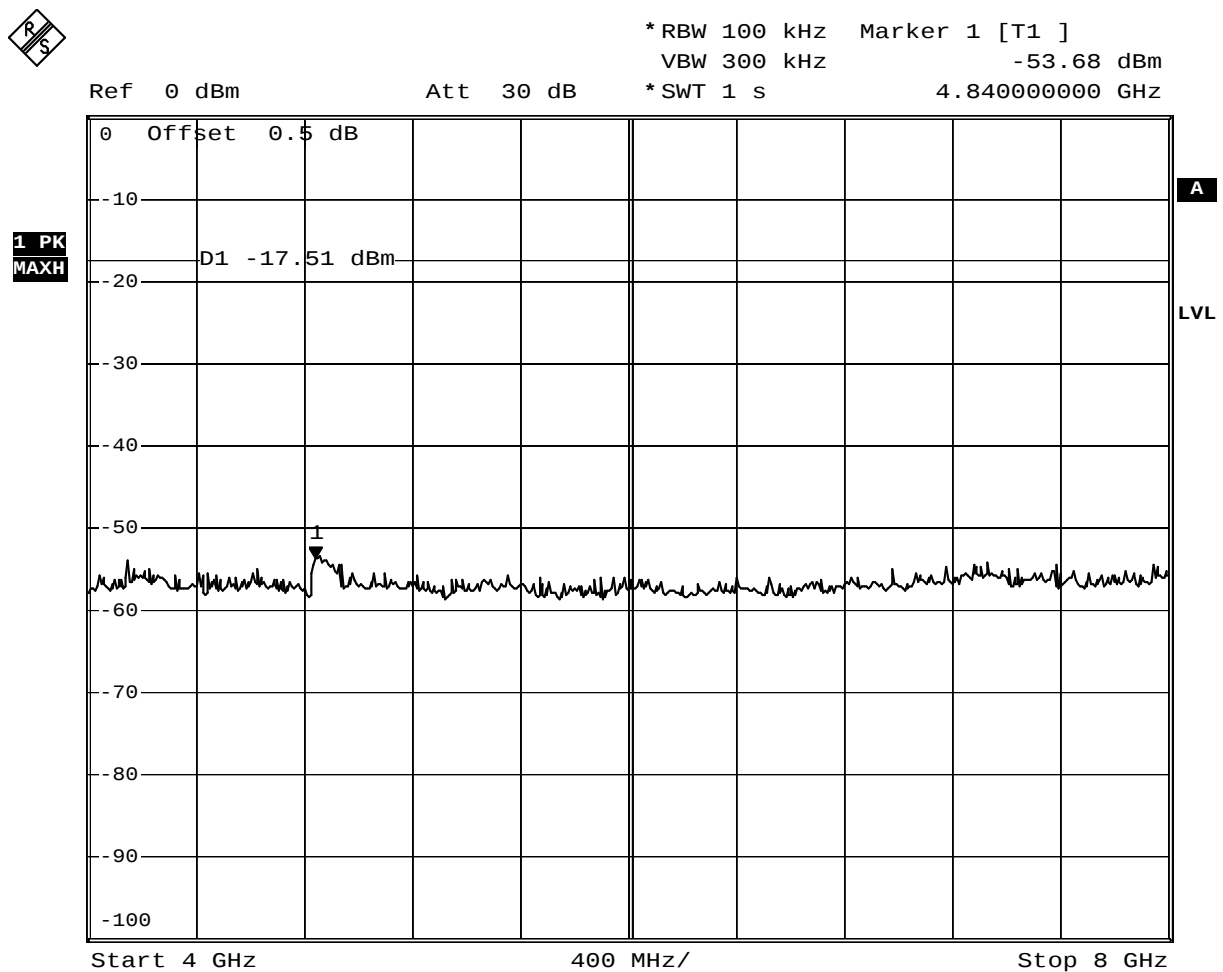
Date: 5.MAR.2009 12:41:03

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-4
Comment 3	4 GHz - 8 GHz



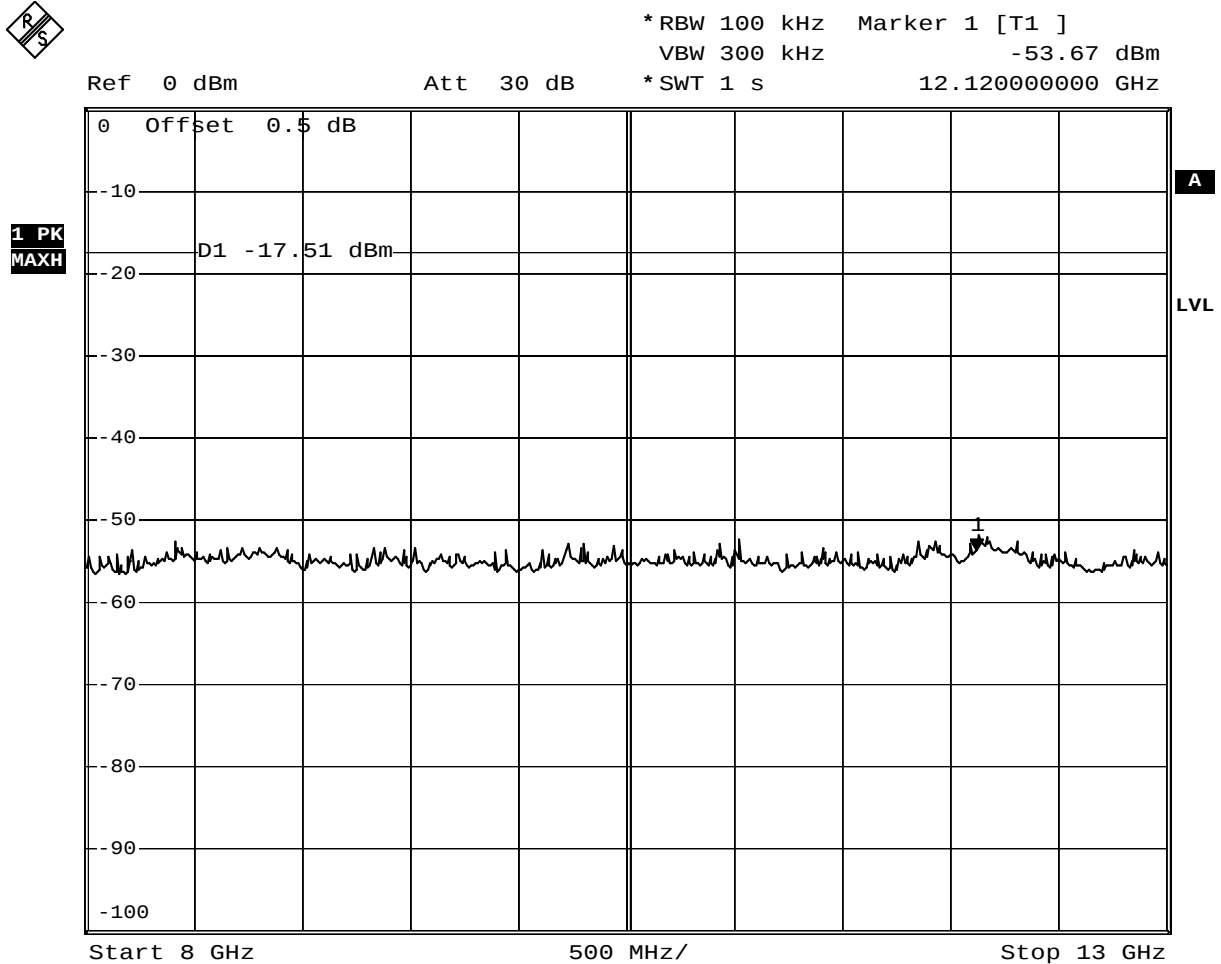
Date: 5.MAR.2009 12:42:27

Measurement diagram

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-4
Comment 3	8.0 GHz - 13.0 GHz



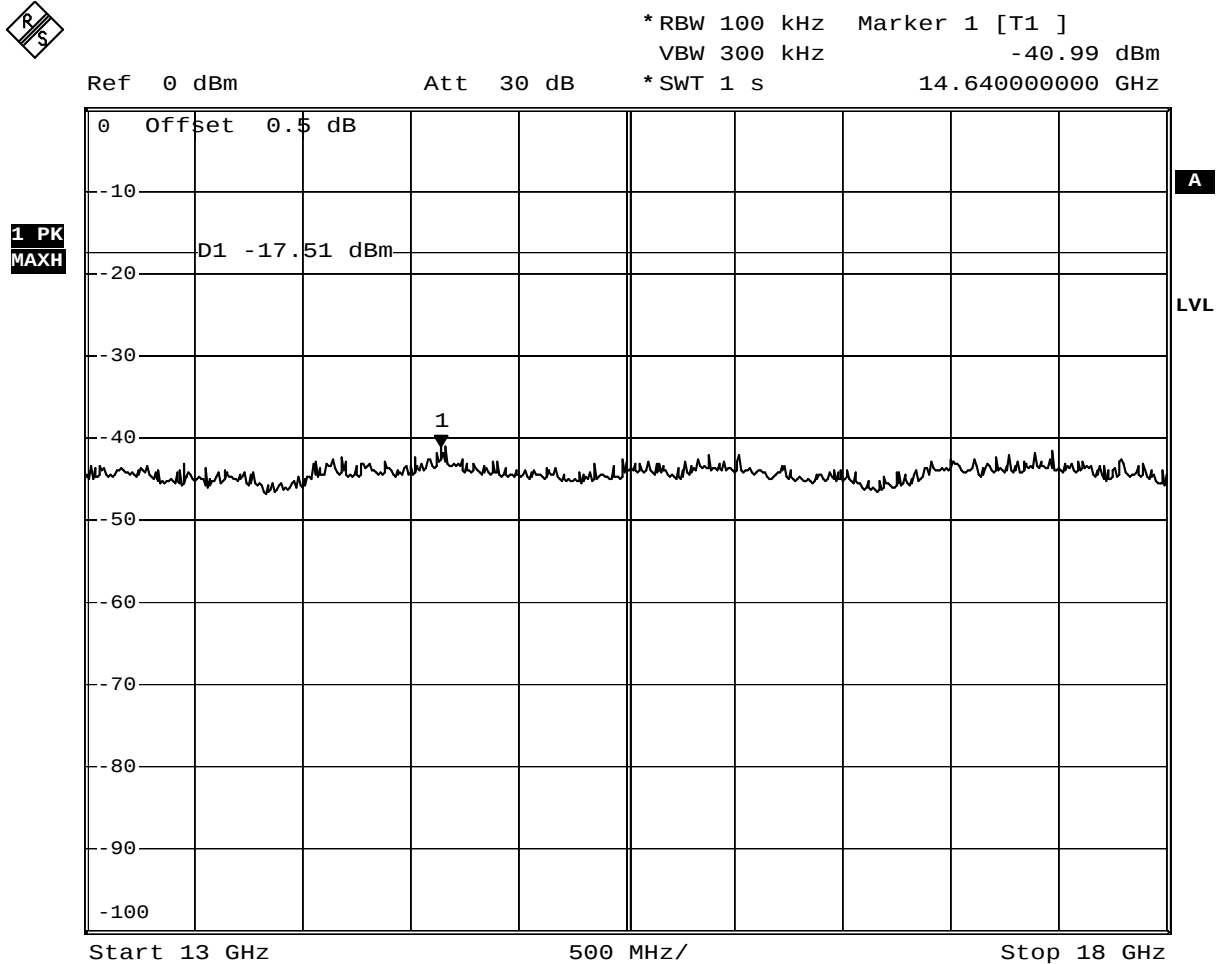
Date: 5.MAR.2009 12:45:07

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-4
Comment 3	13.0 GHz - 18.0 GHz



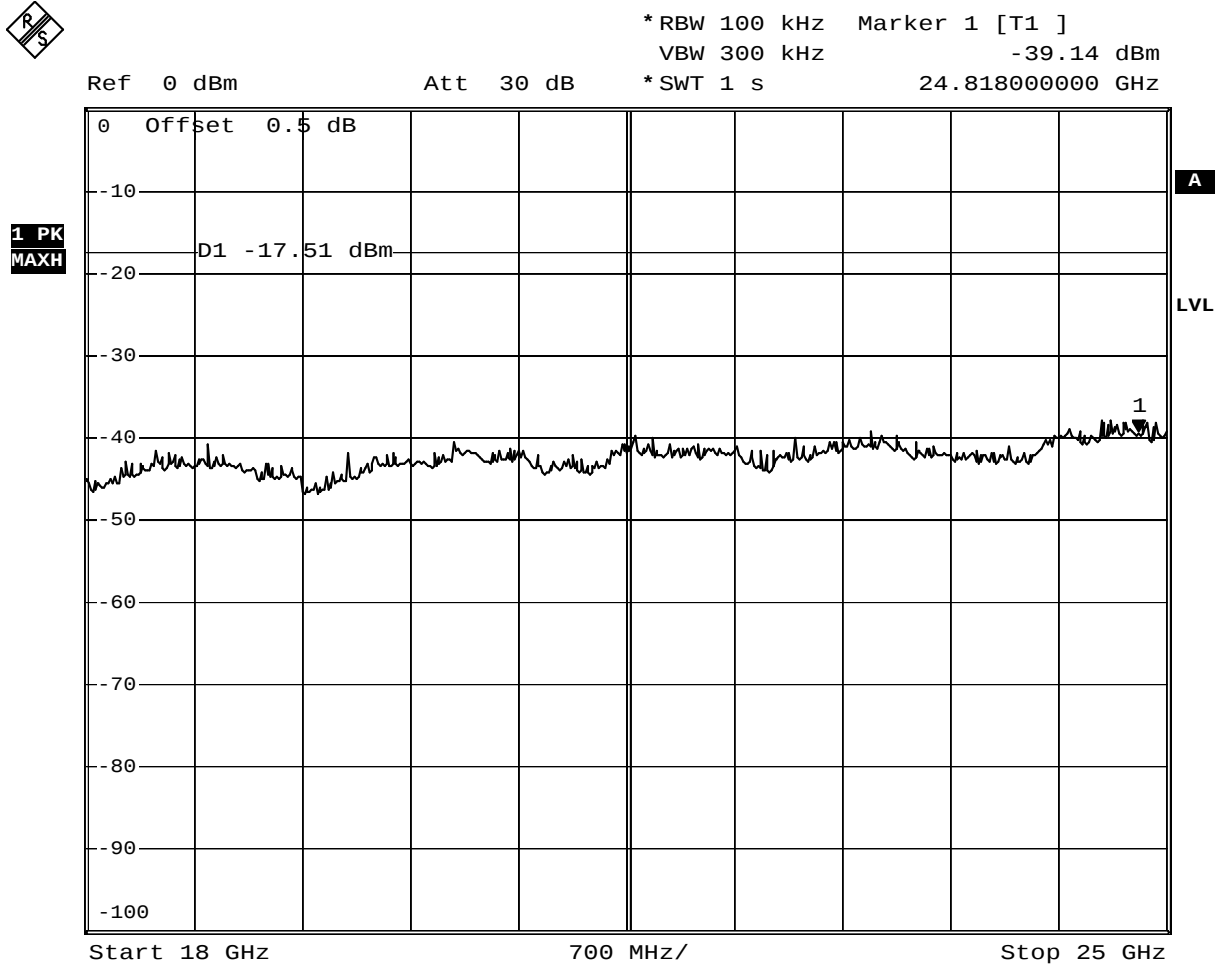
Date: 5.MAR.2009 12:46:37

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

**FCC part 15.247 (d)
Spurious Emissions**

EUT	2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model	MN5375
Approval Holder	Nanotron Technologies GmbH
Temperature / Voltage	23°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d) (conducted emissions)
Comment 1	Spurious Emissions
Comment 2	CSS chirp mode 80-4
Comment 3	18.0 GHz - 25.0 GHz



Date: 5.MAR.2009 12:47:59

Measurement diagram

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

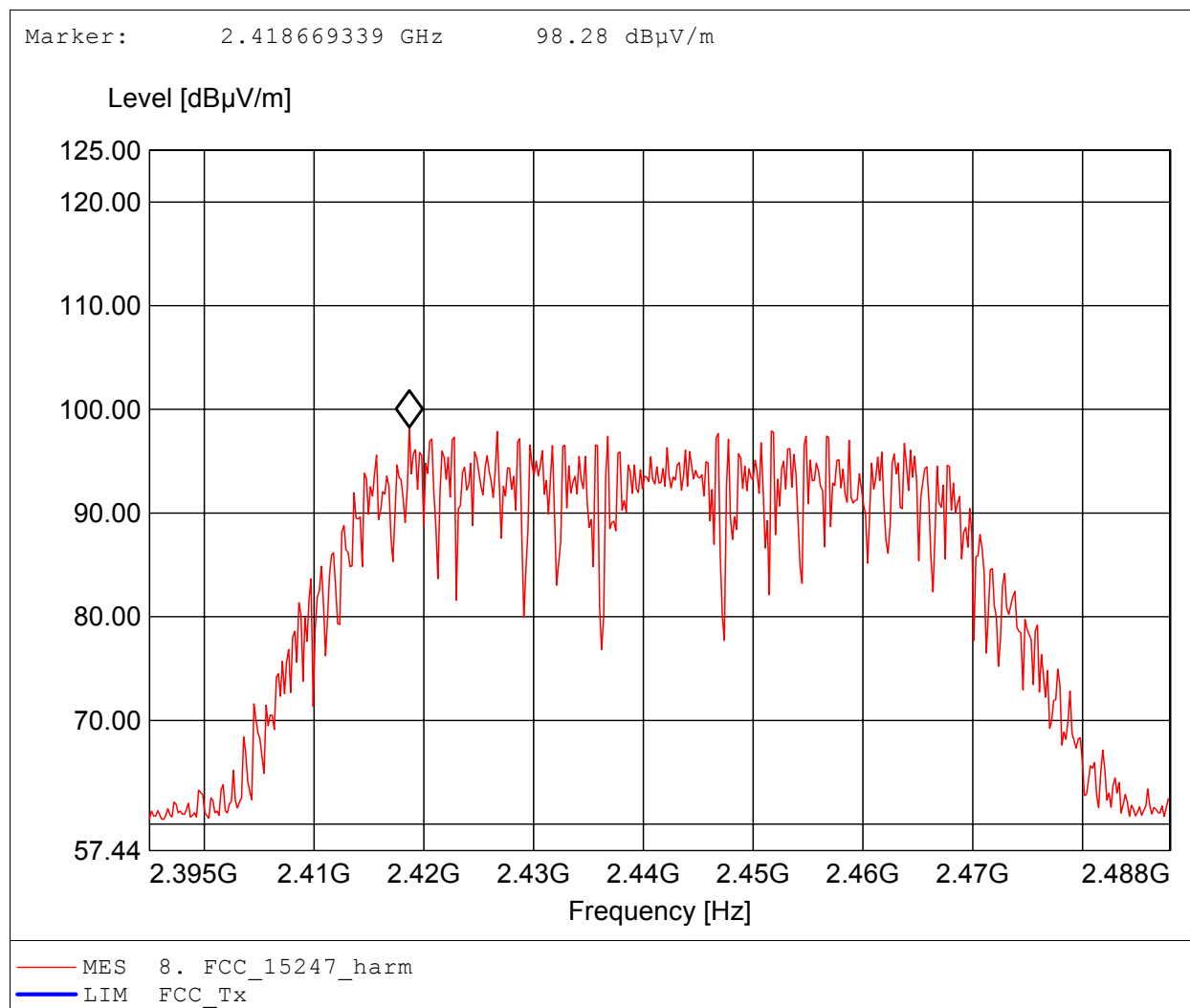
Annex E

Spurious emissions radiated

Carrier power (Field Strength)

FCC RULES PART 15, SUBPART C

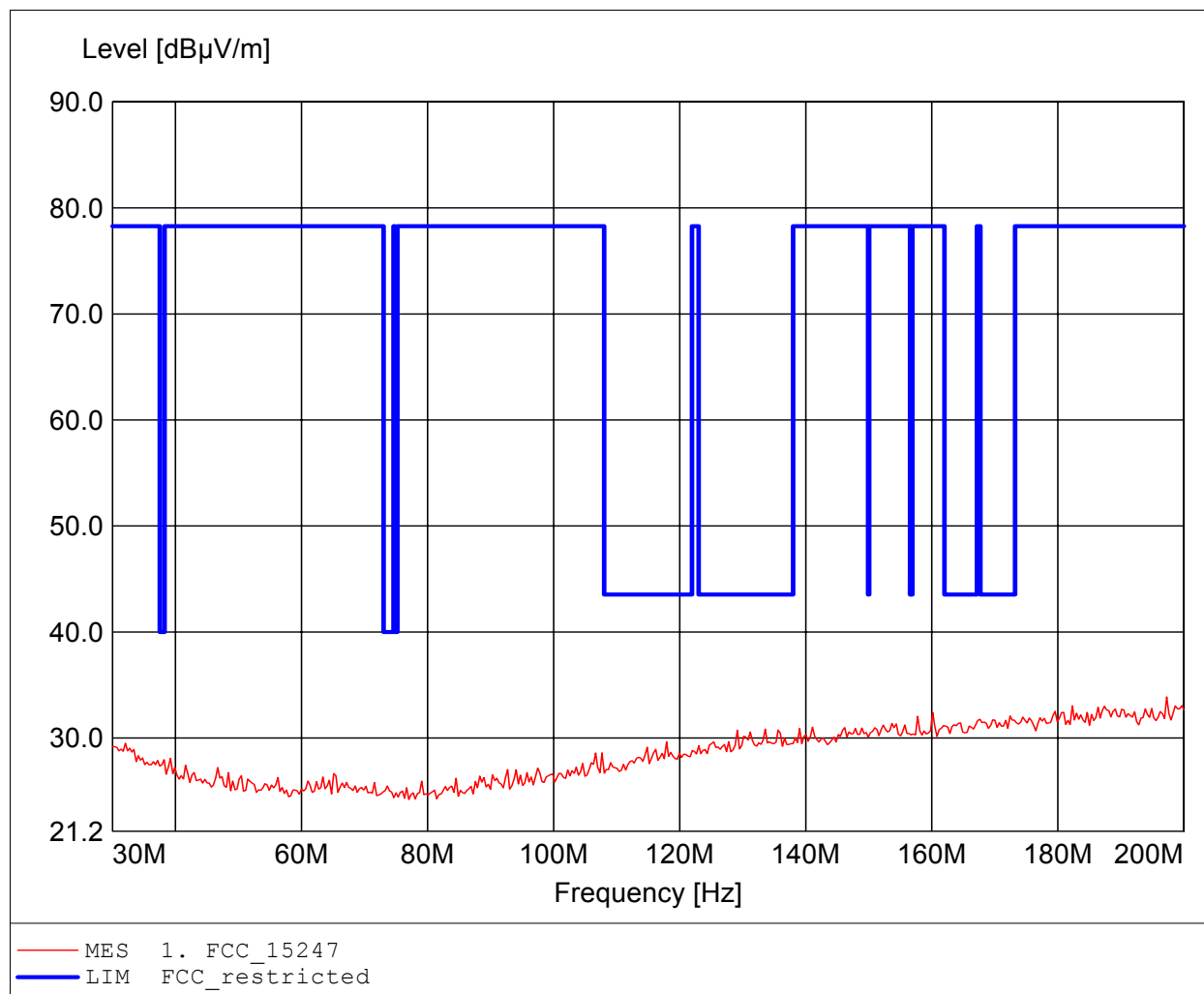
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: BBHA9120D
Comment 2: Freq: 2.419GHz, Emax: 98.28dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

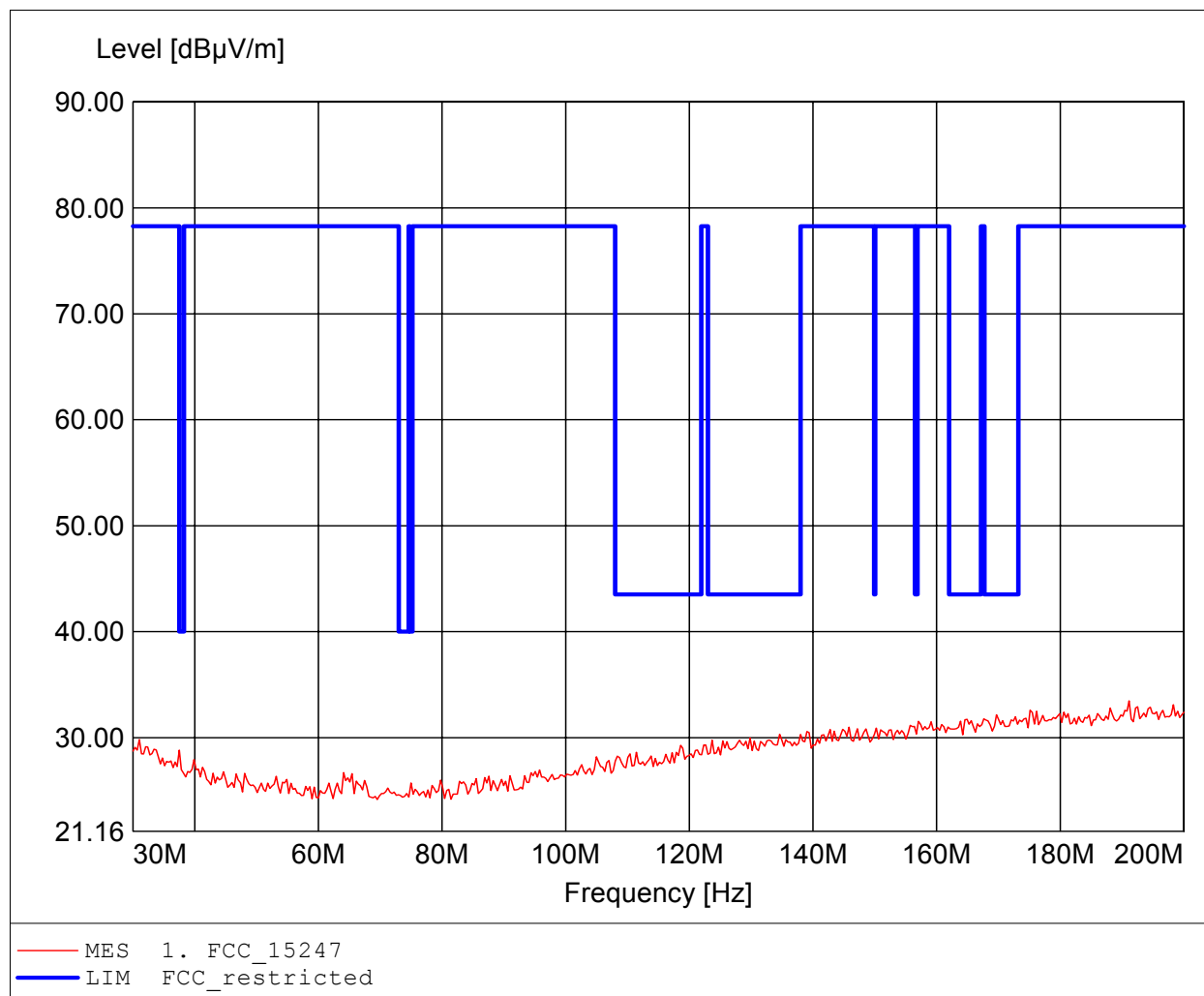
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HK 116
Comment 2: Freq: 197.275MHz, Emax: 33.87dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

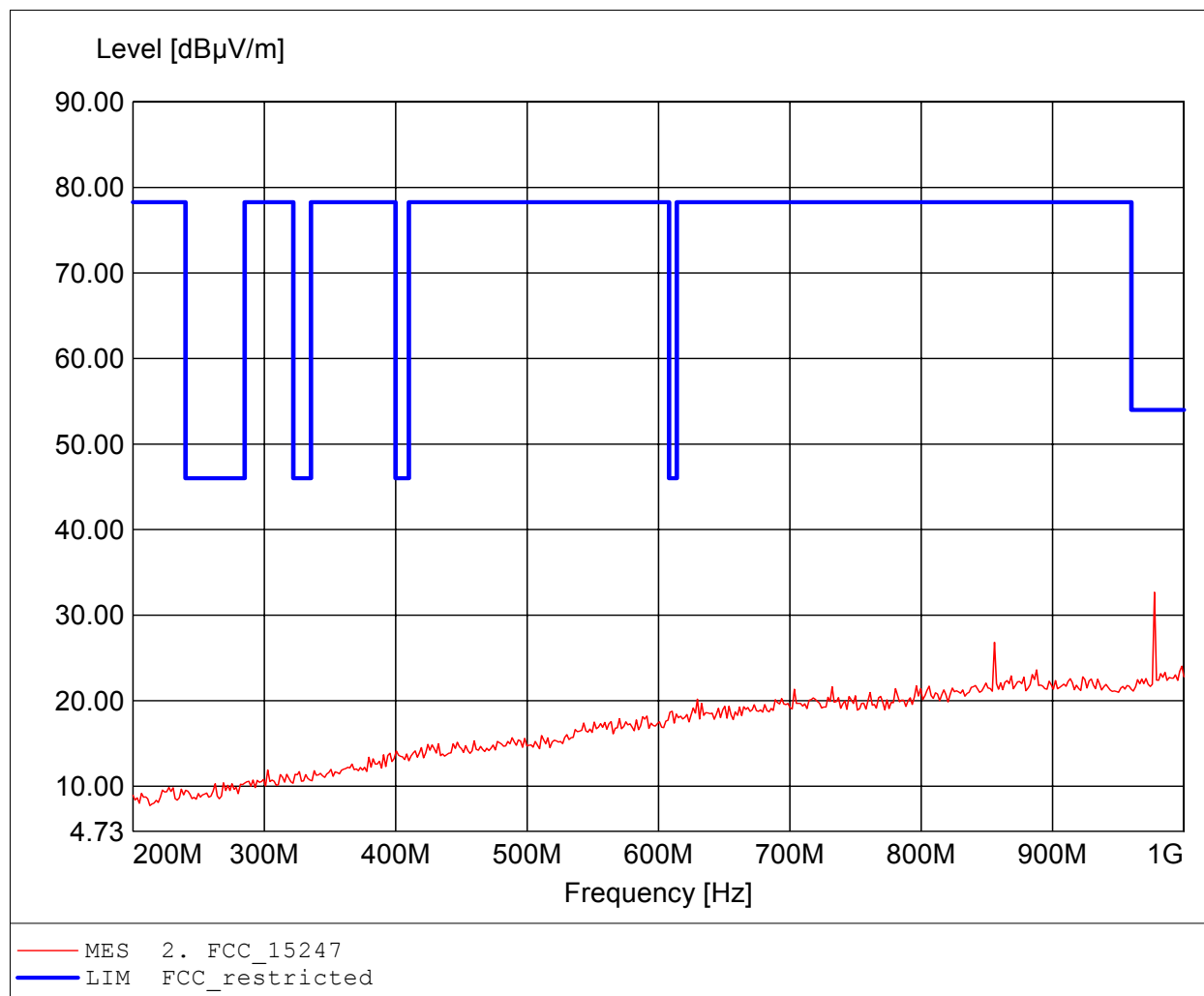
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HK 116
Comment 2: Freq: 191.142MHz, Emax: 33.47dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

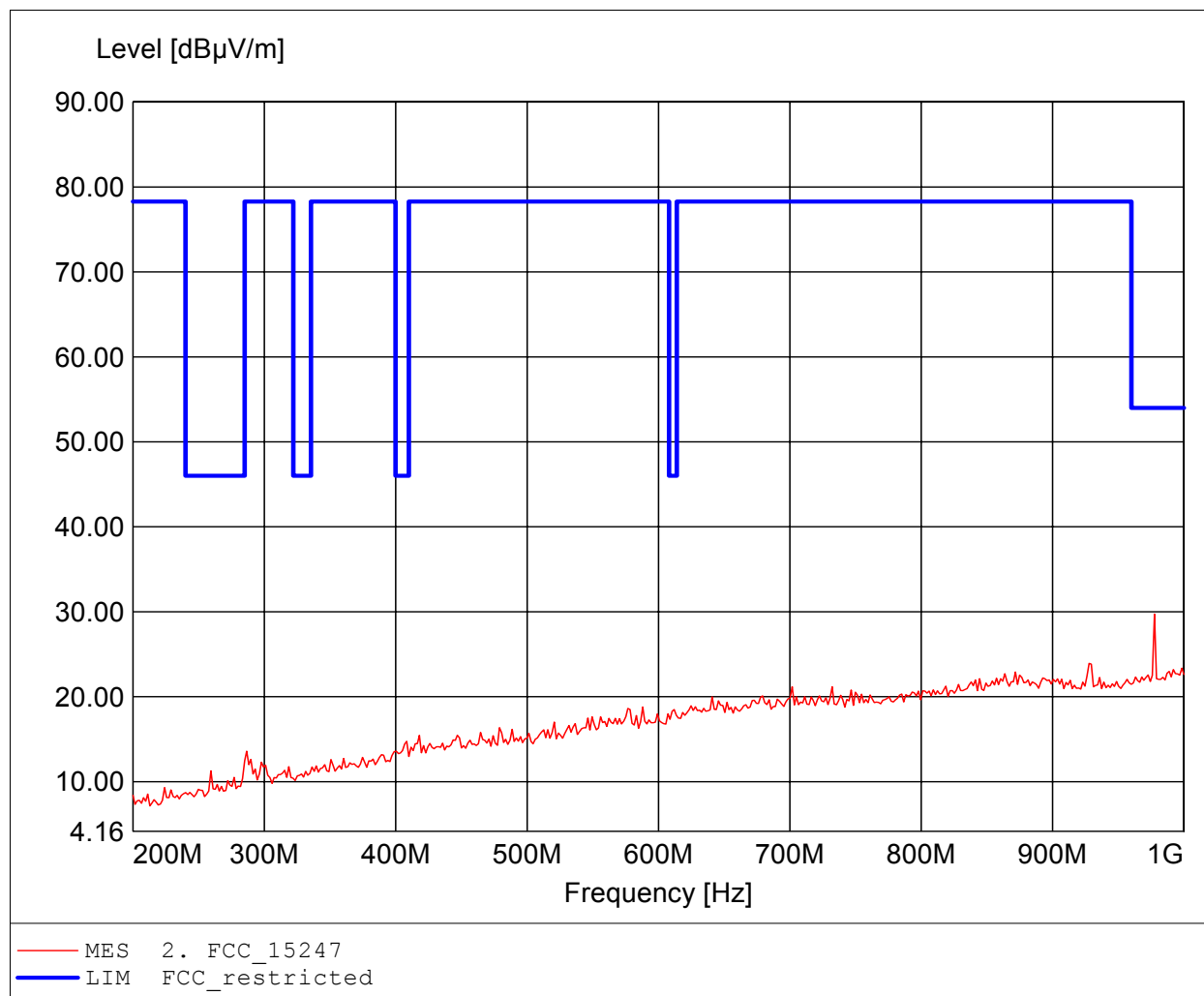
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.
Comment 2: Freq: 977.555MHz, Emax: 32.67dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

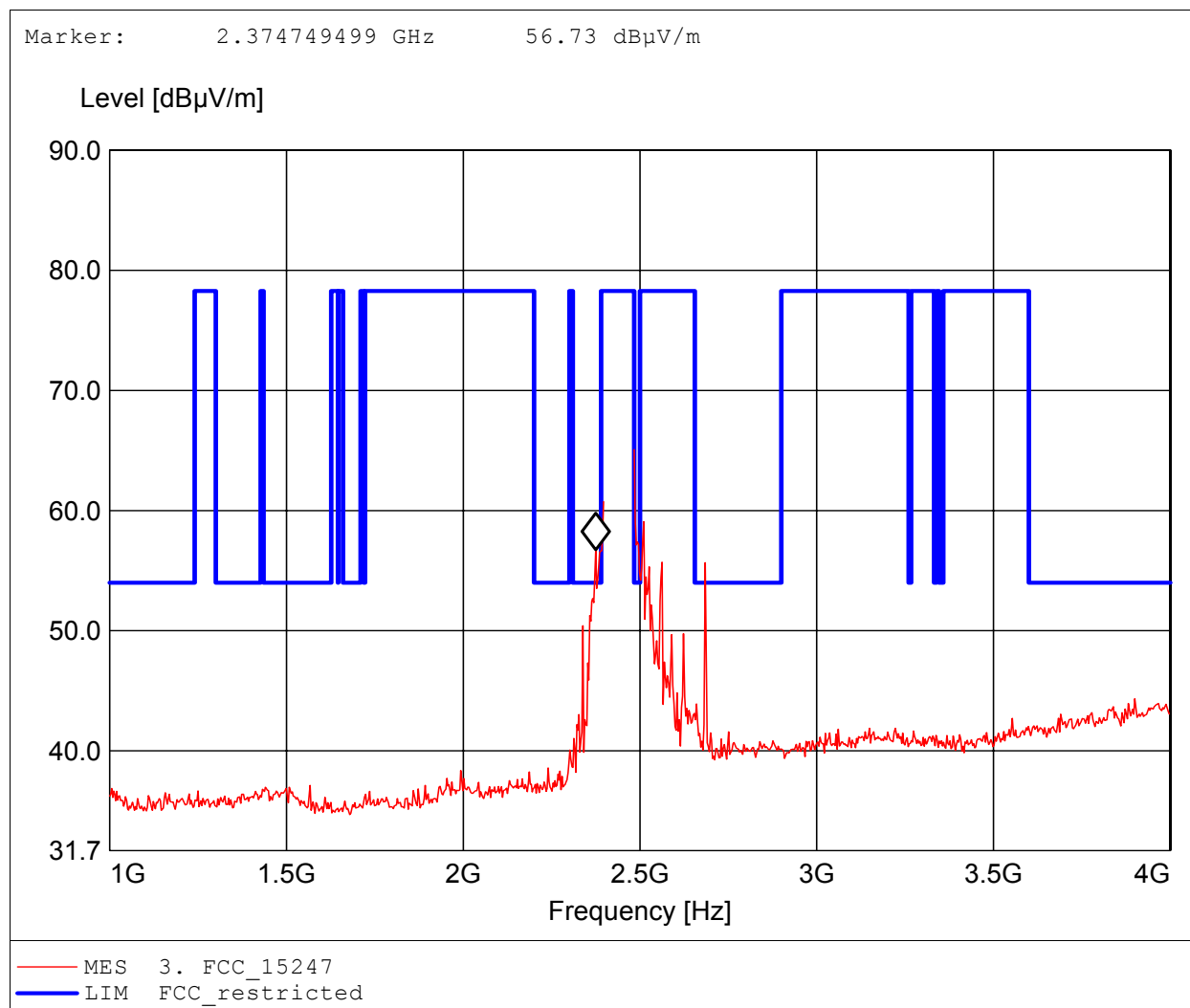
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.
Comment 2: Freq: 977.555MHz, Emax: 29.72dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

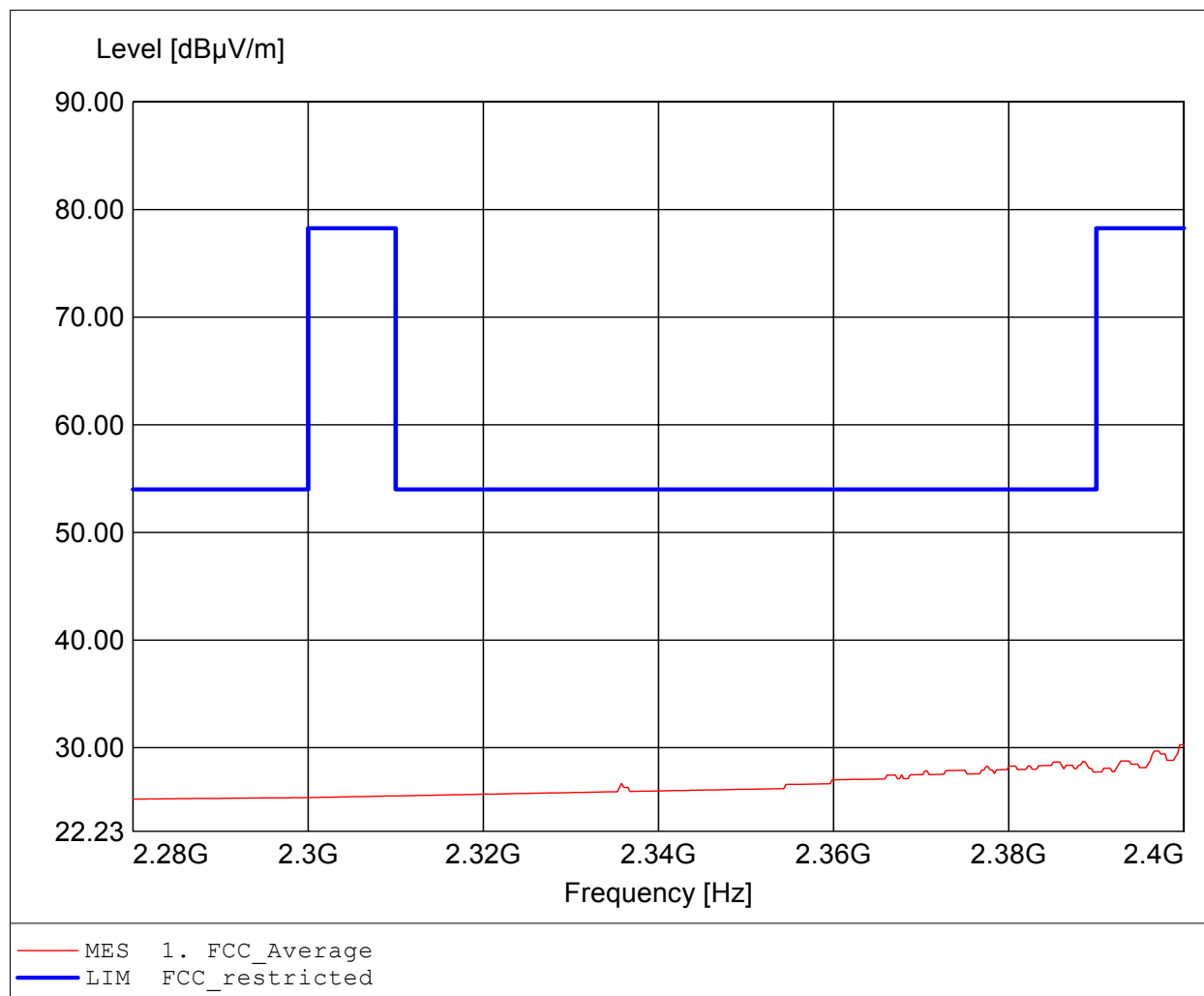
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.484GHz, Emax: 65.08dBμV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

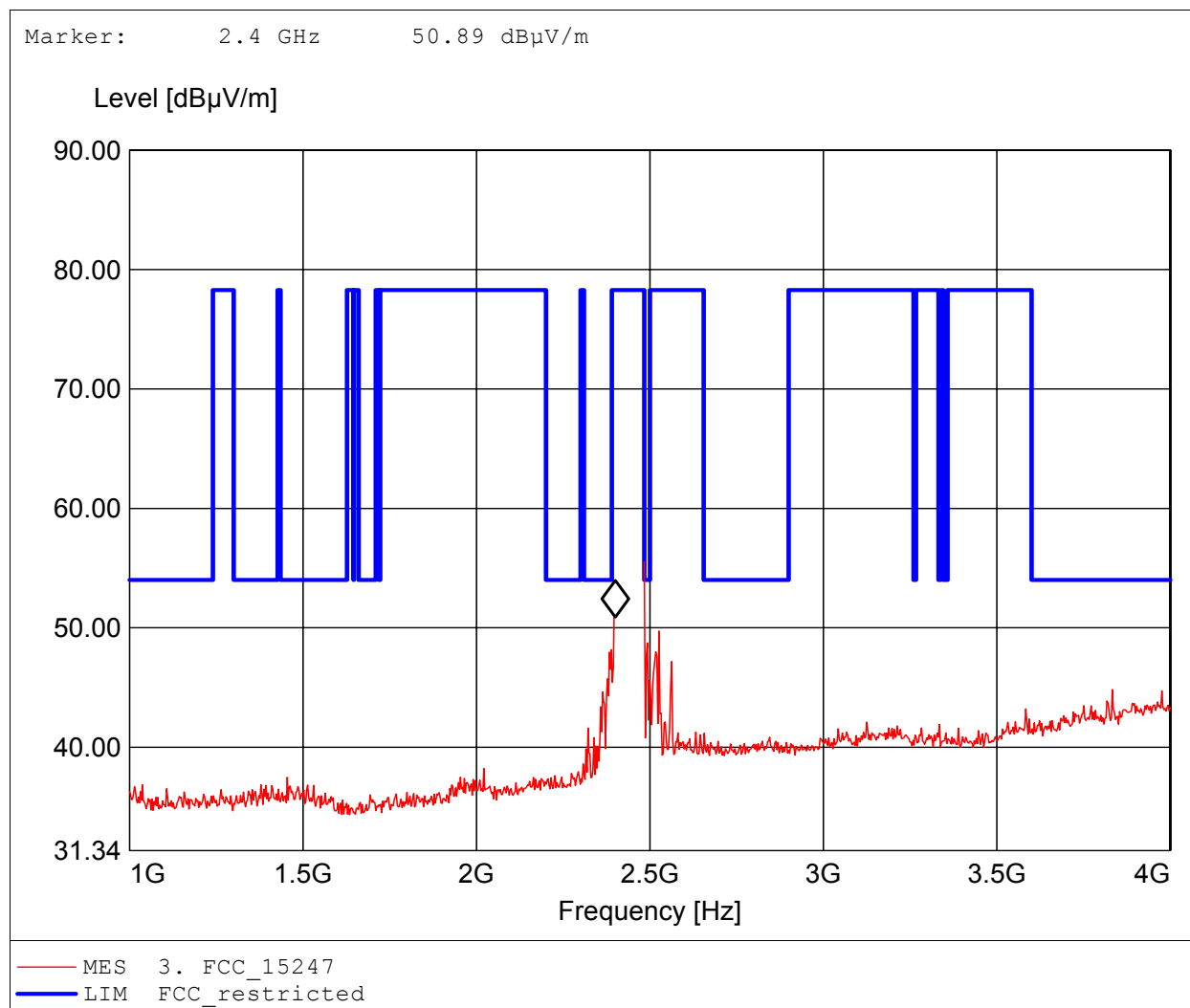
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.400GHz, Emax: 30.27dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

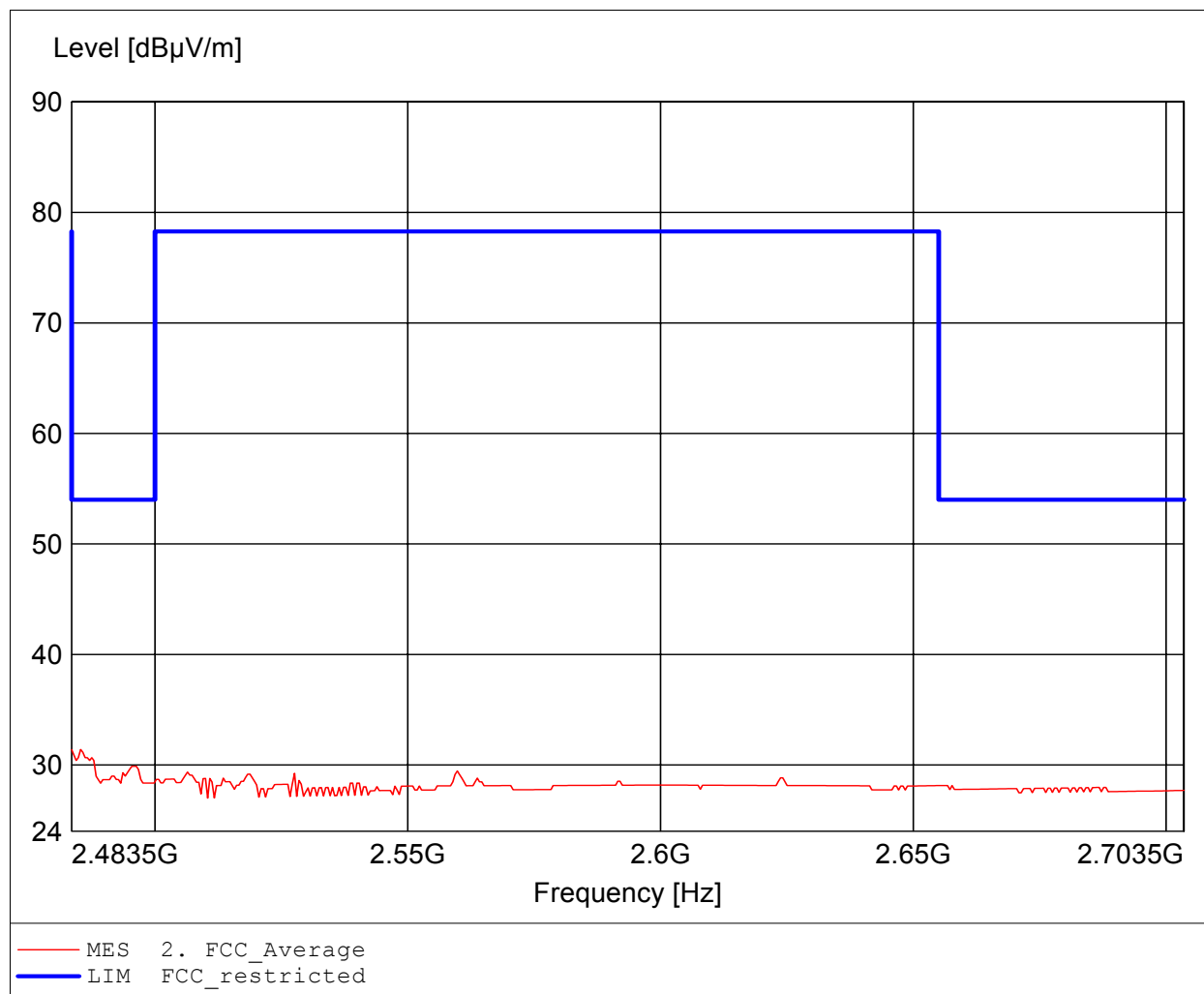
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.484GHz, Emax: 55.54dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

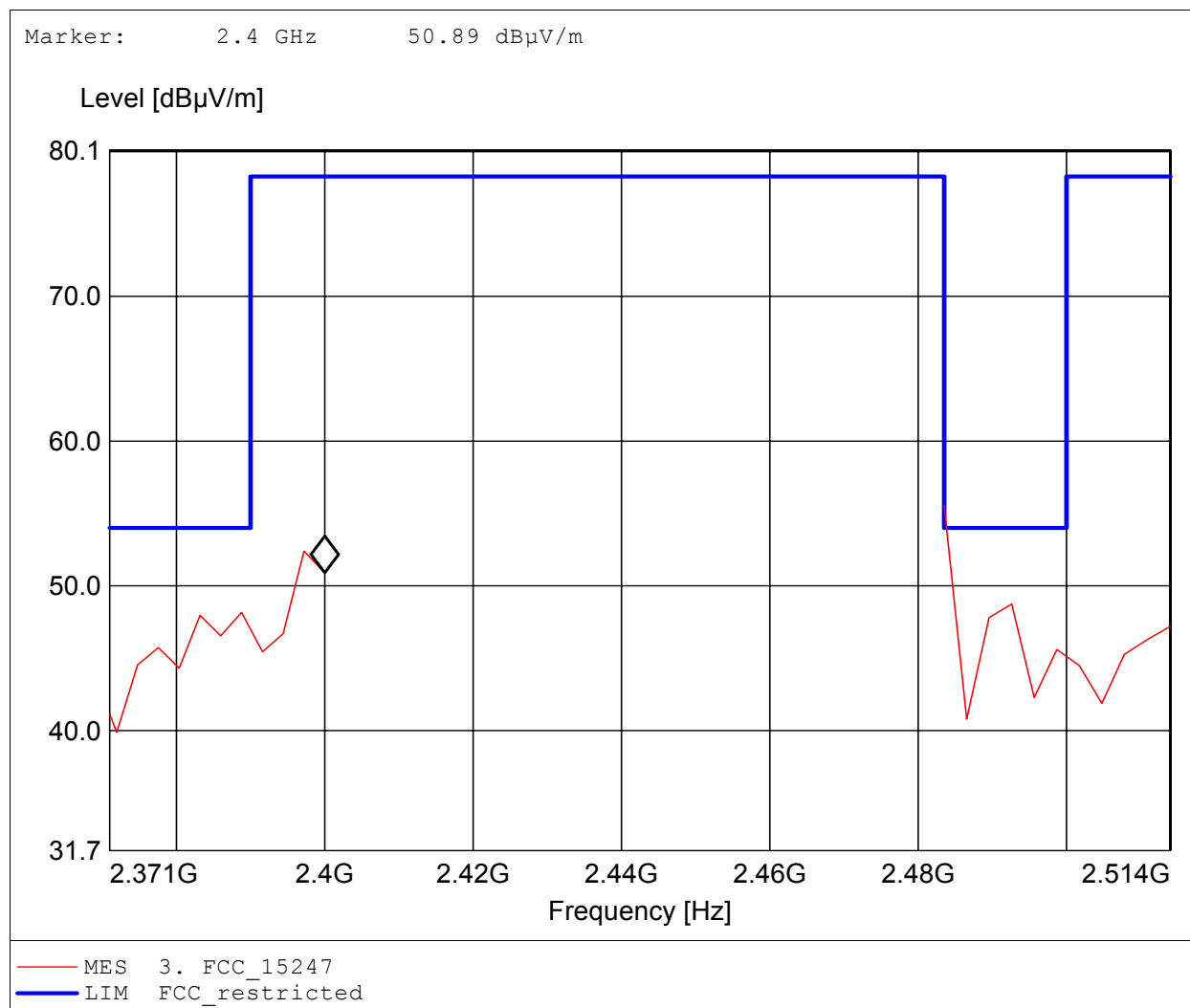
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.485GHz, Emax: 31.39dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

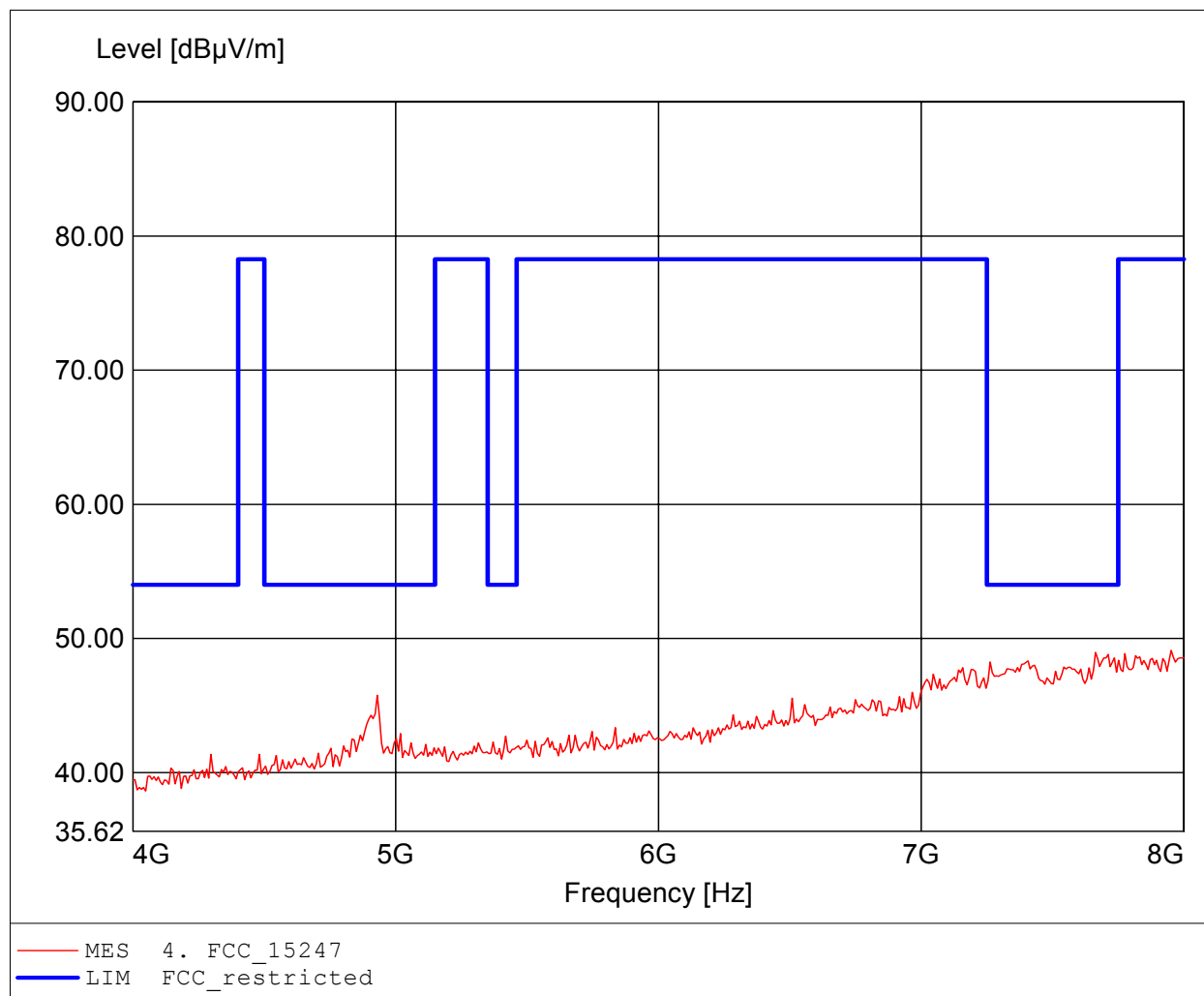
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.484GHz, Emax: 55.54dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

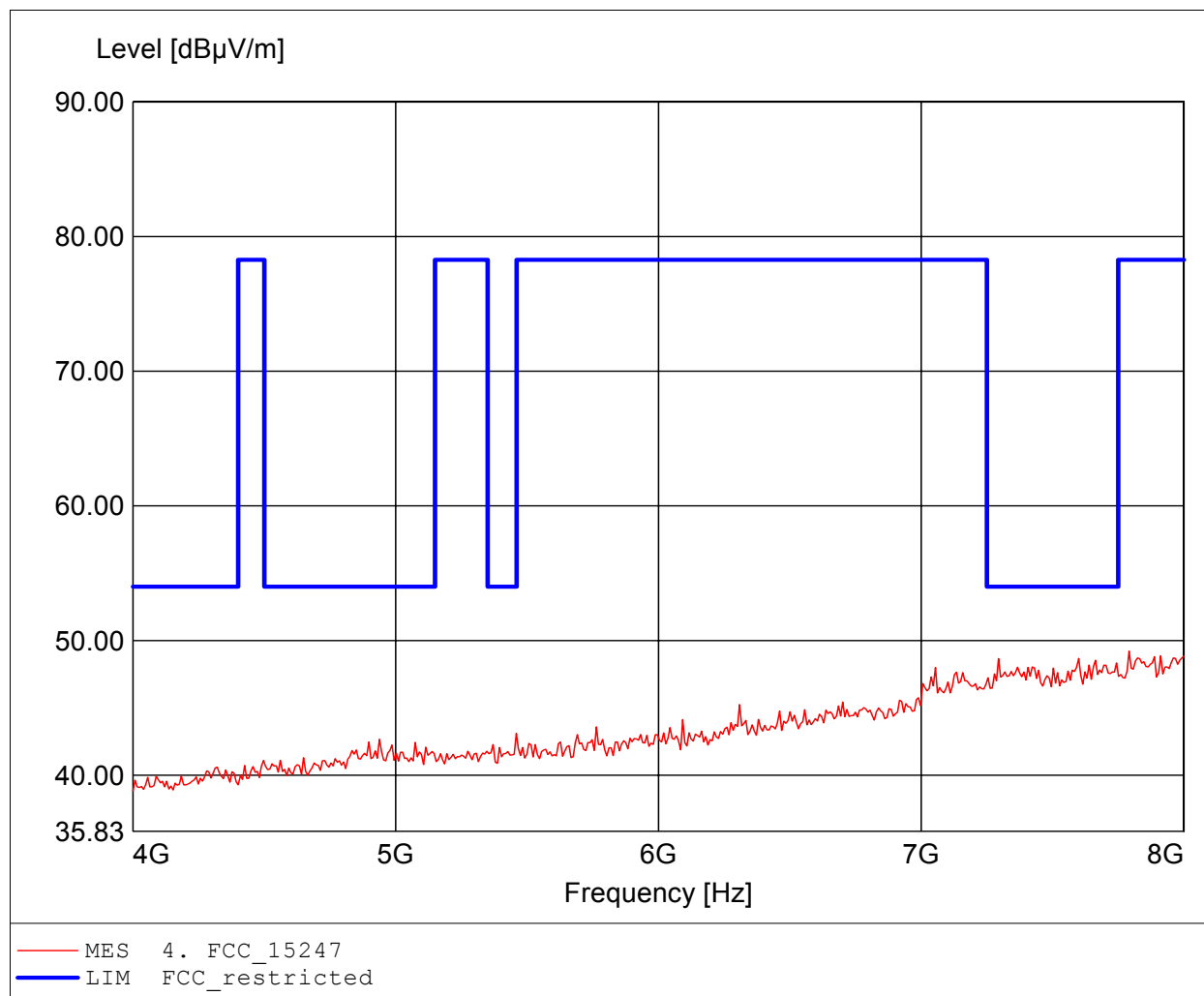
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 7.952GHz, Emax: 49.11dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

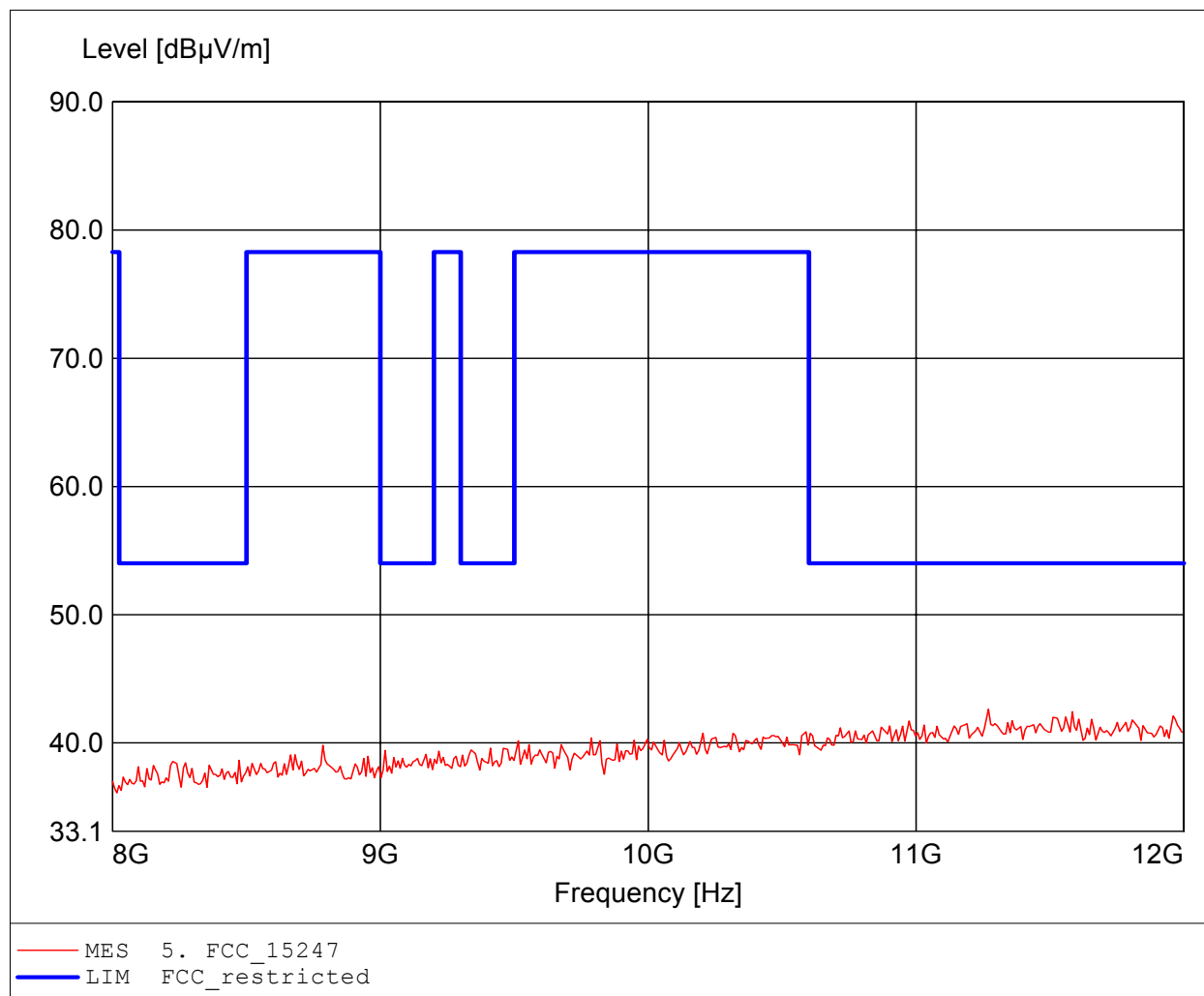
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 7.792GHz, Emax: 49.20dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

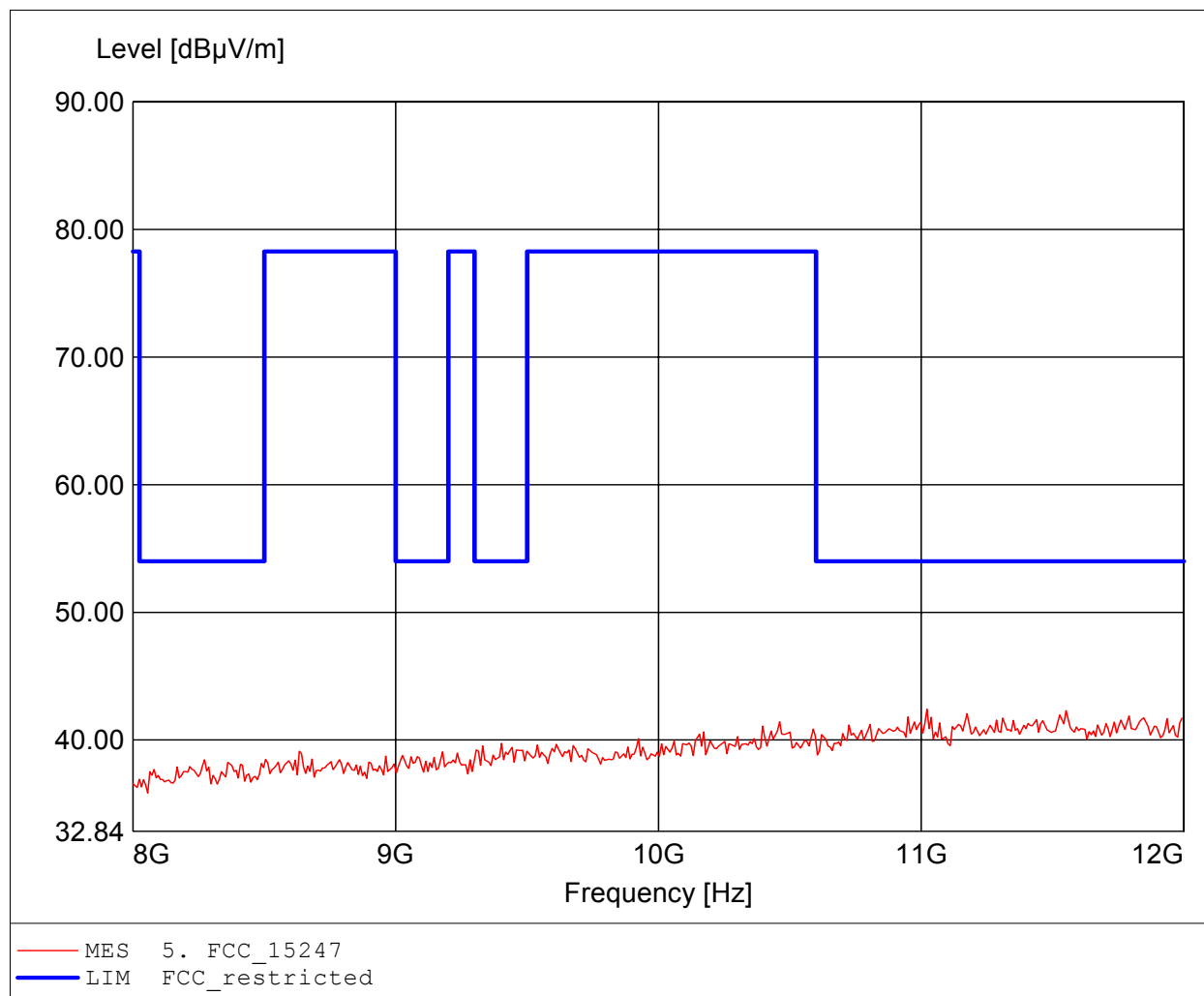
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.271GHz, Emax: 42.63dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

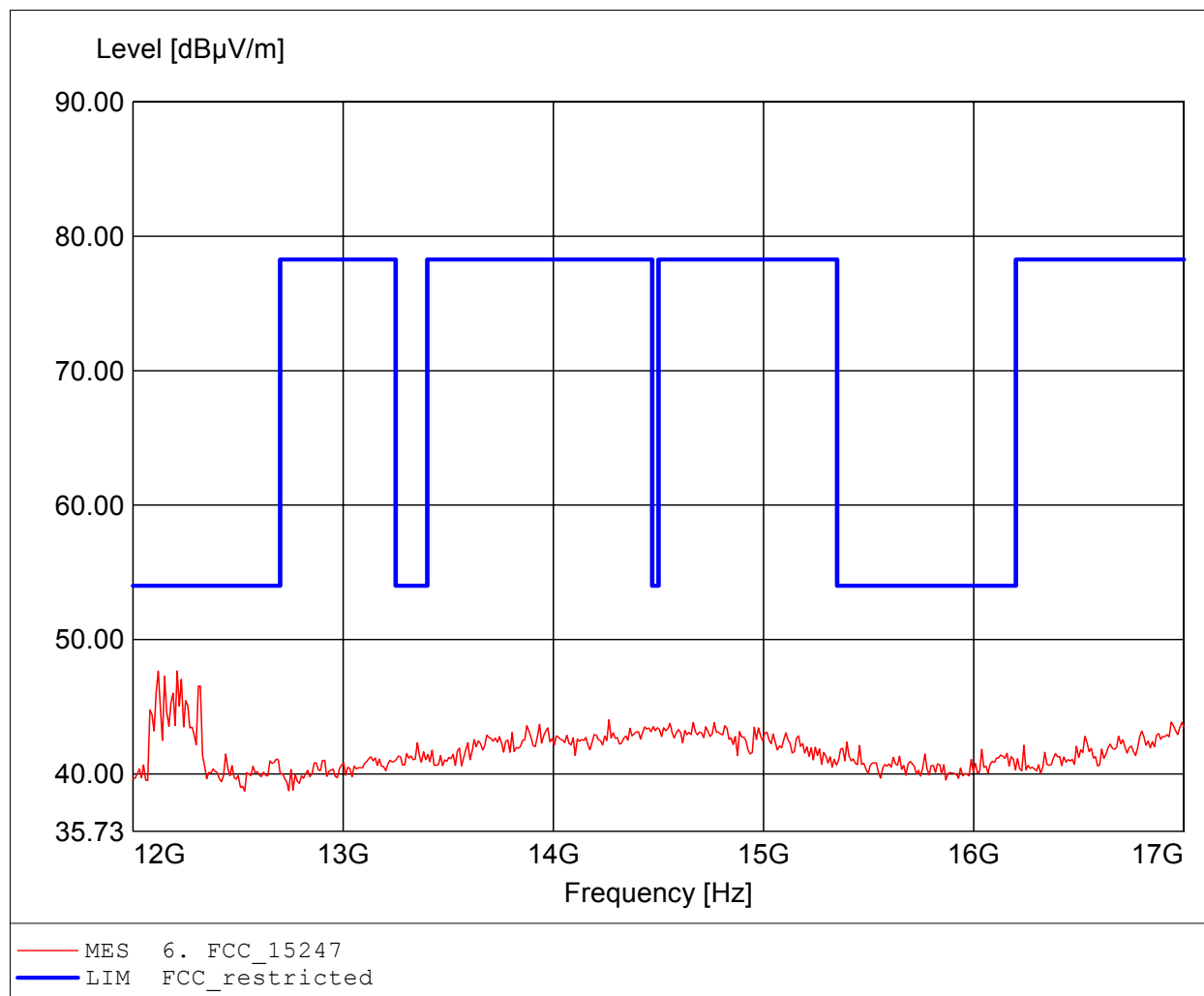
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.022GHz, Emax: 42.41dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

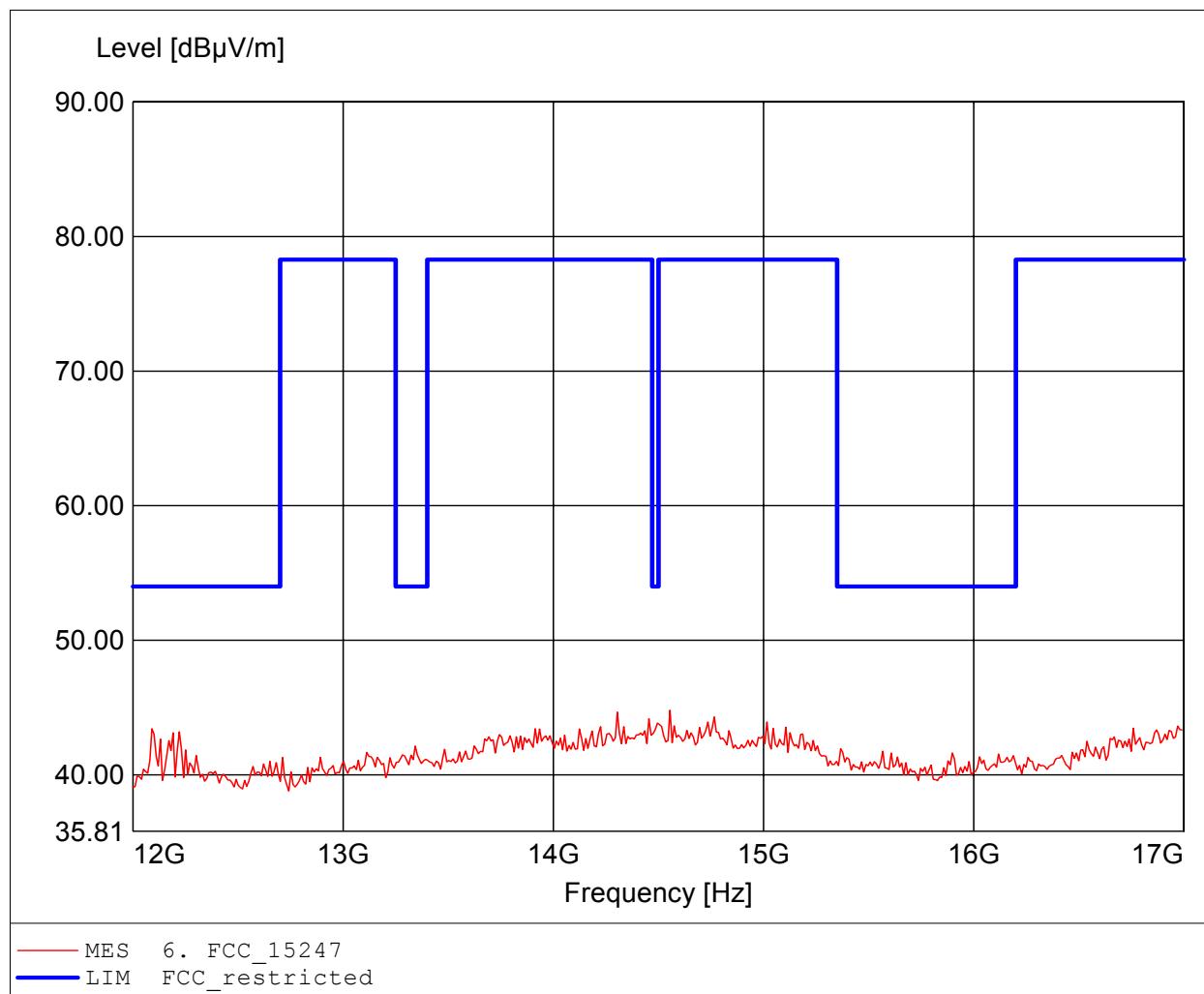
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 12.210GHz, Emax: 47.66dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

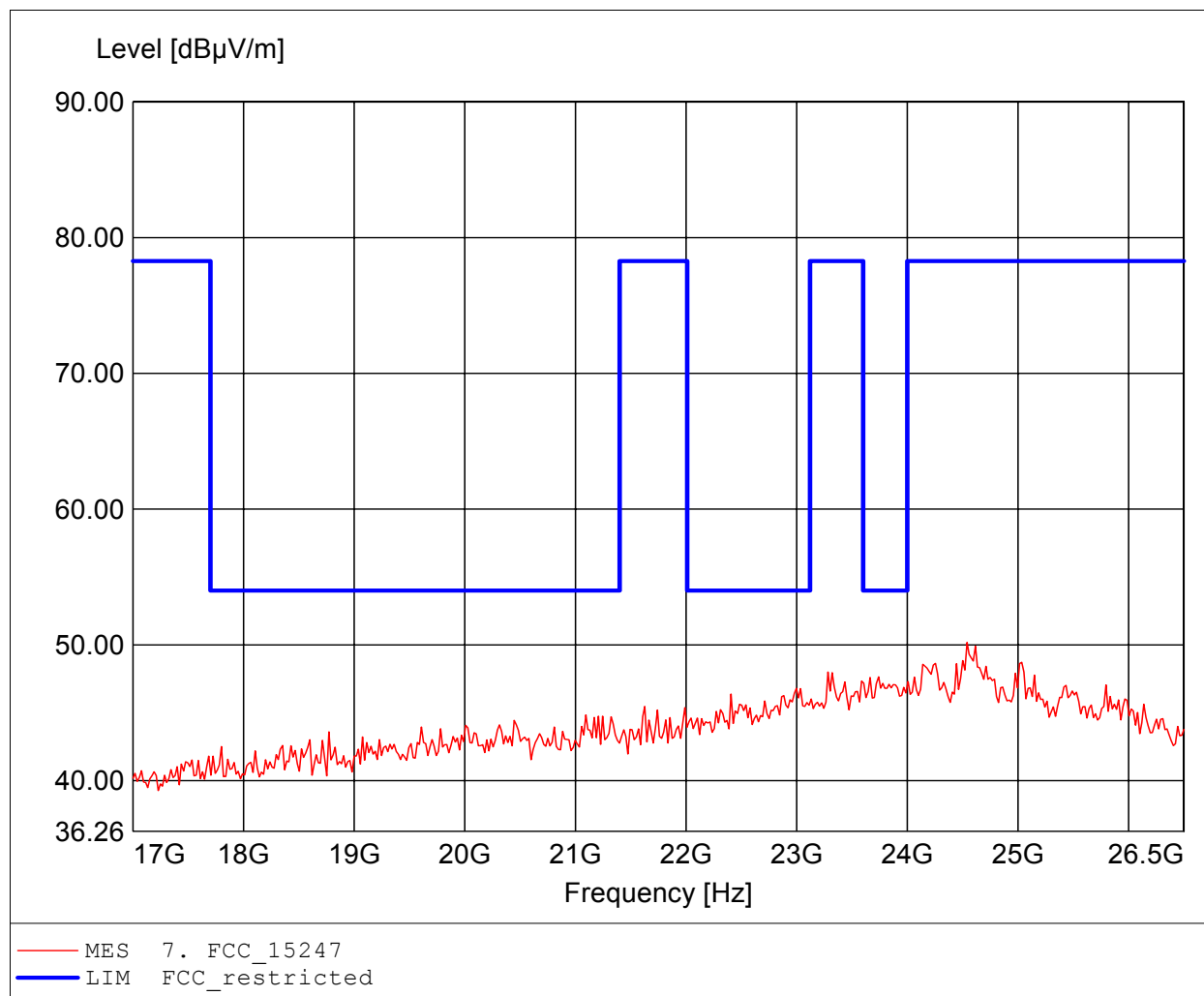
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 14.555GHz, Emax: 44.80dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

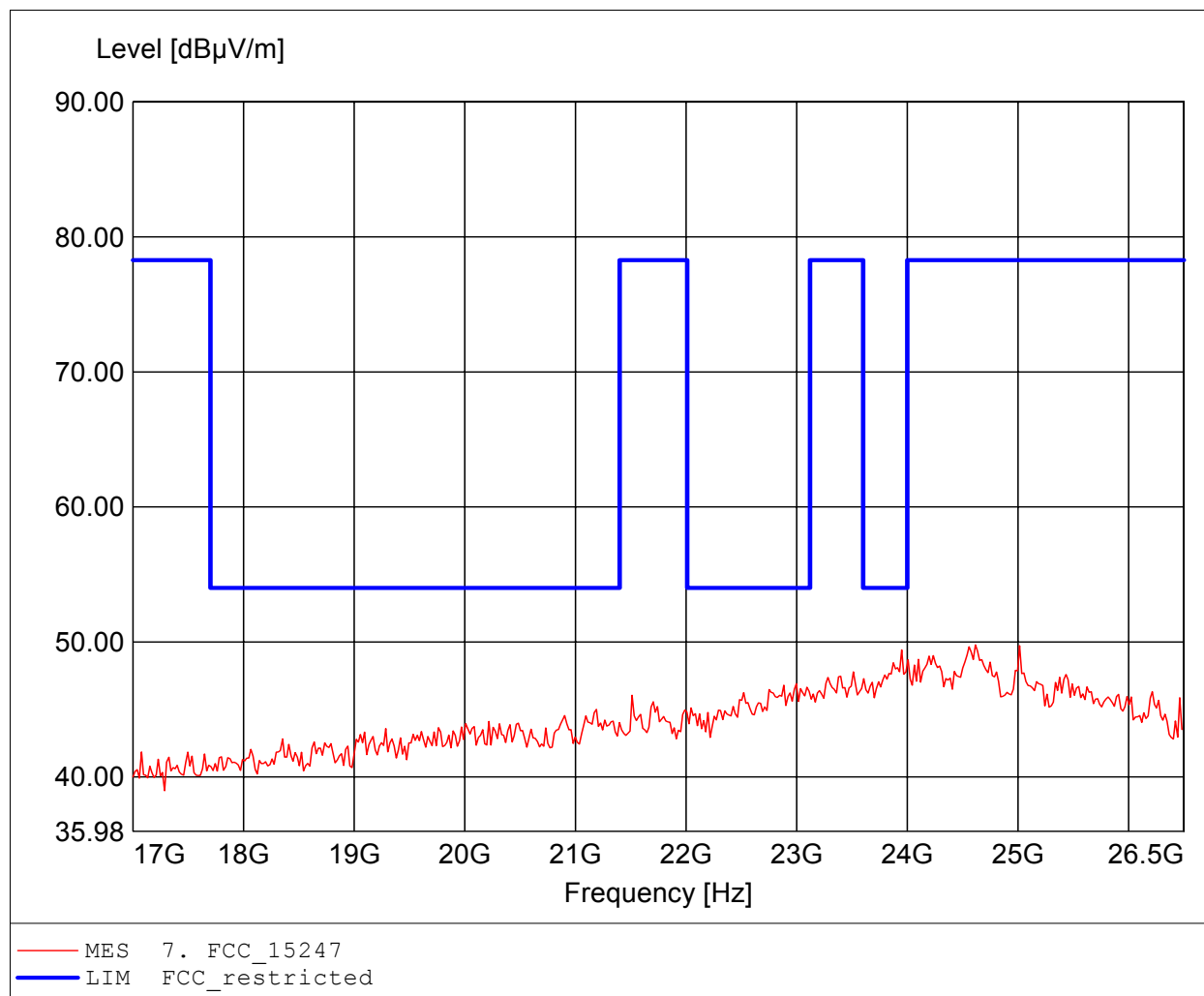
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Comment 2: Freq: 24.539GHz, Emax: 50.18dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

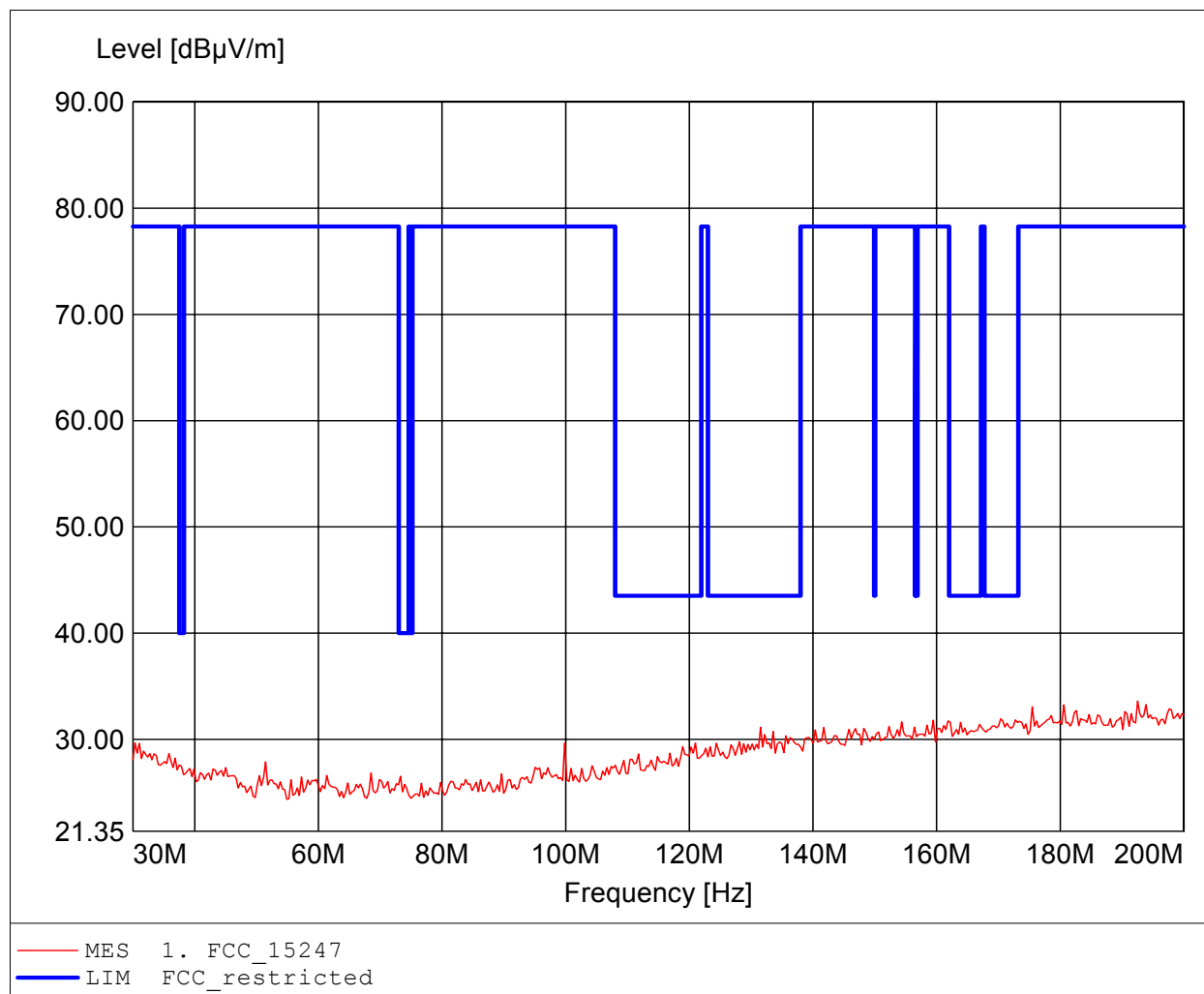
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 80-4 MHz / duty 5.8%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Comment 2: Freq: 24.615GHz, Emax: 49.78dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

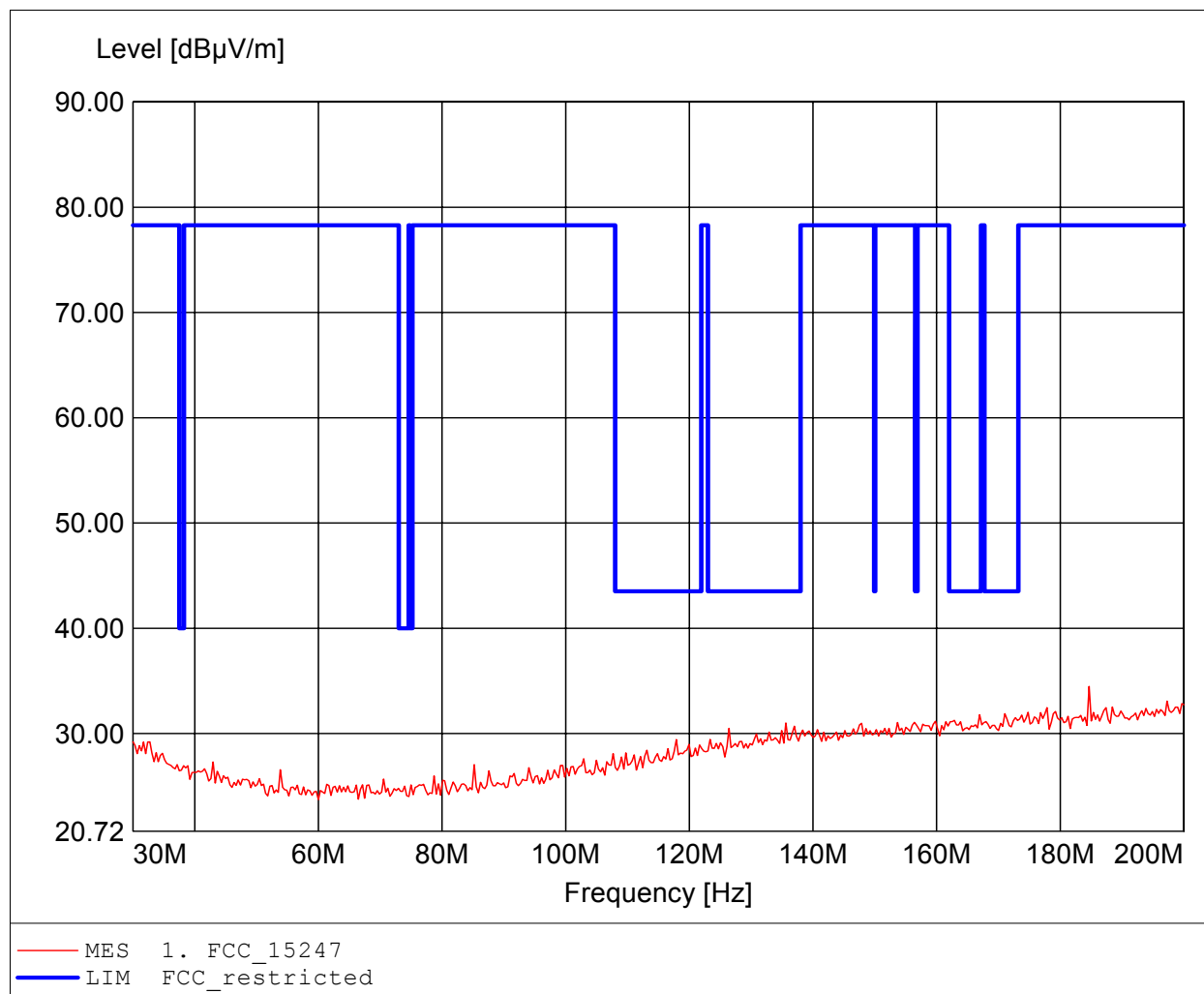
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HK 116
Comment 2: Freq: 192.505MHz, Emax: 33.60dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

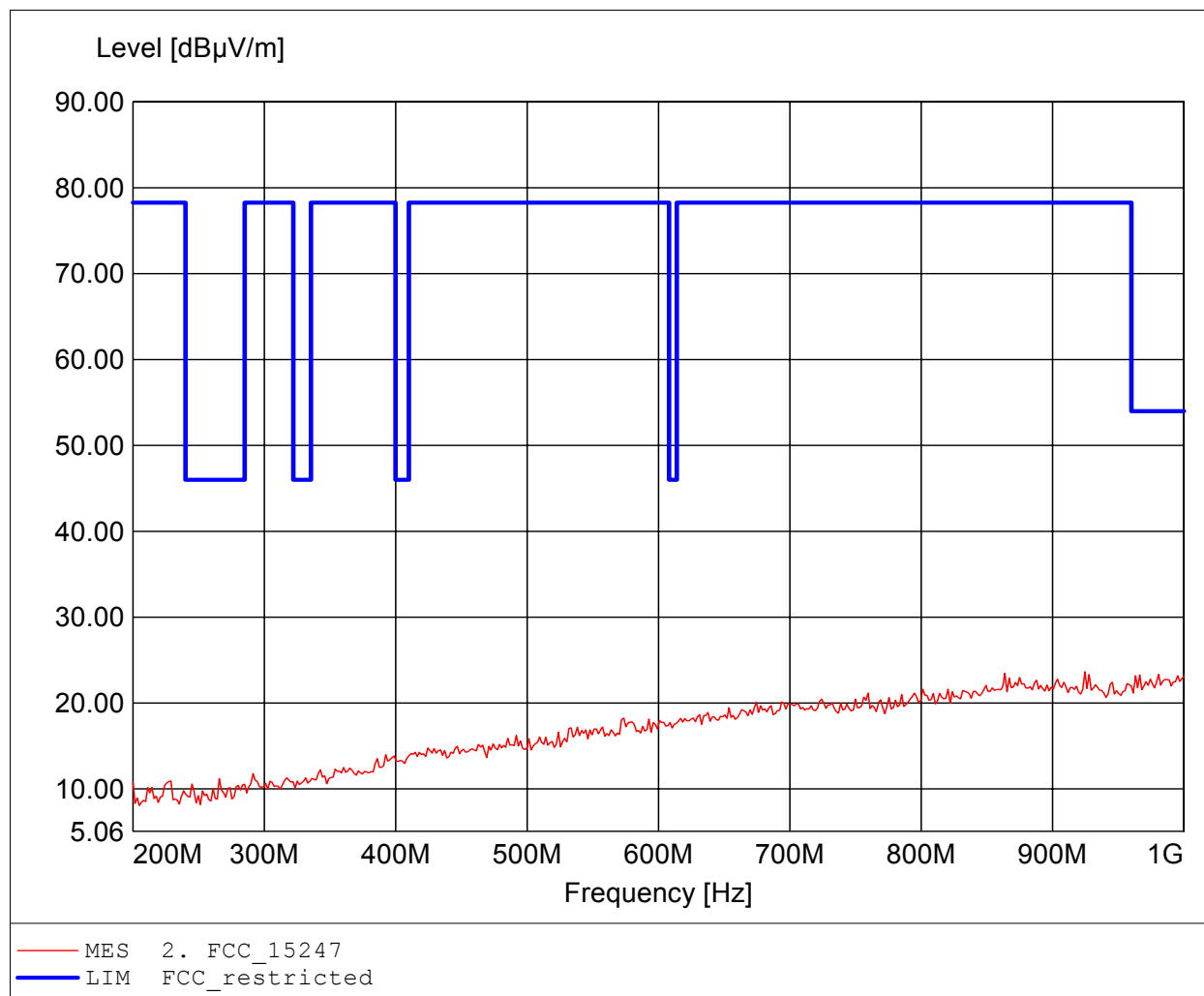
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HK 116
Comment 2: Freq: 184.669MHz, Emax: 34.48dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

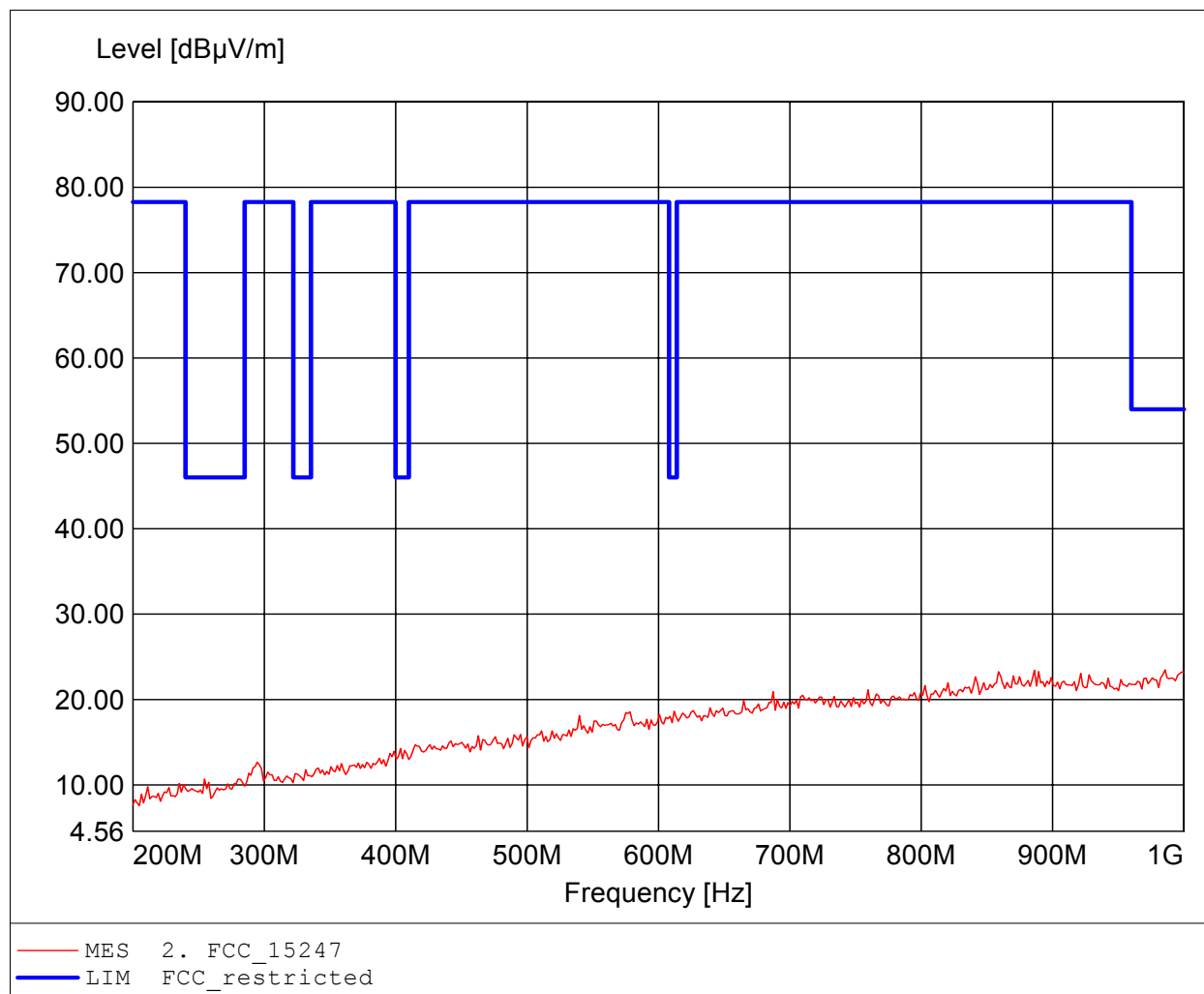
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.
Comment 2: Freq: 924.649MHz, Emax: 23.64dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

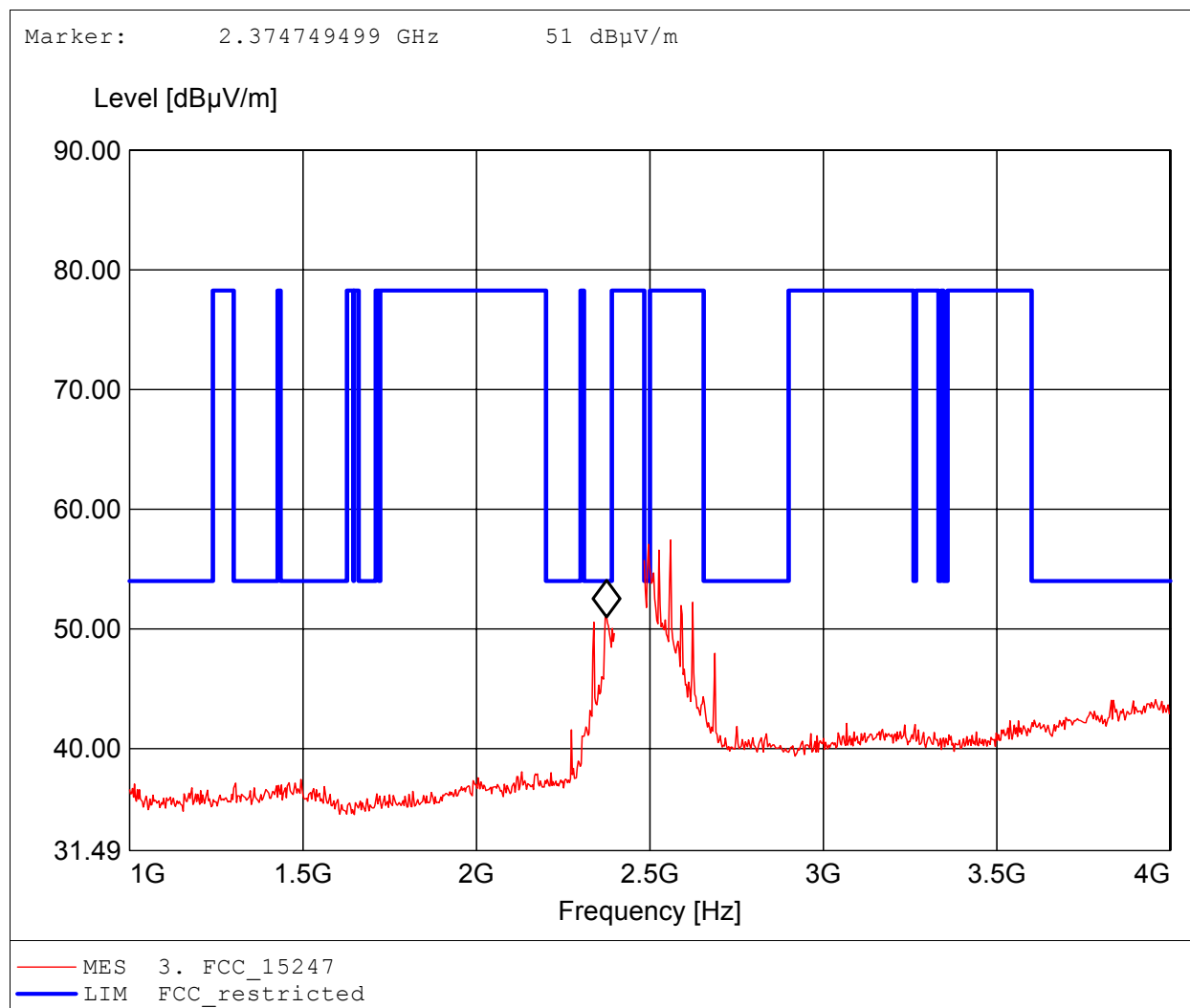
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.
Comment 2: Freq: 985.571MHz, Emax: 23.47dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

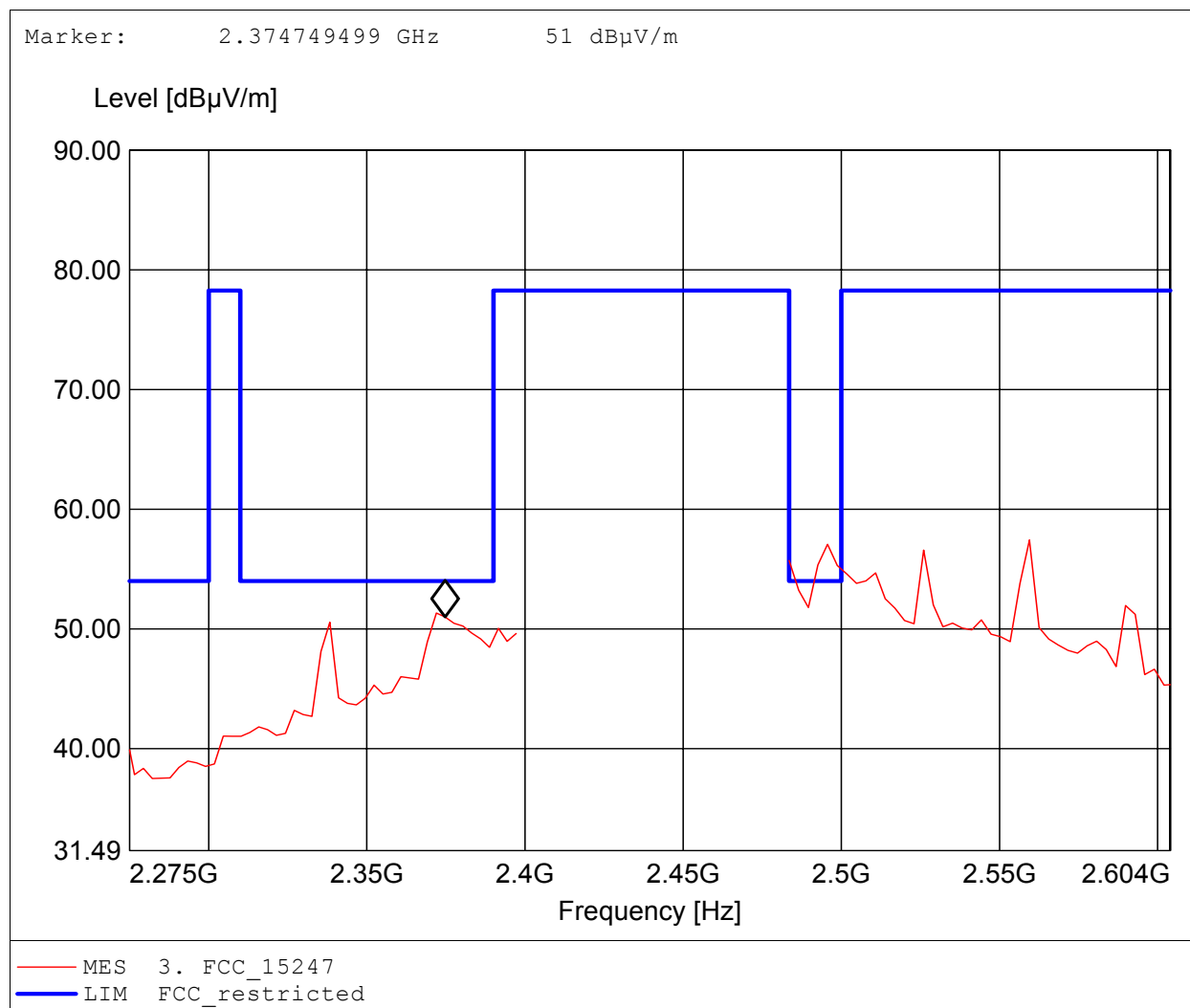
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.559GHz, Emax: 57.43dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

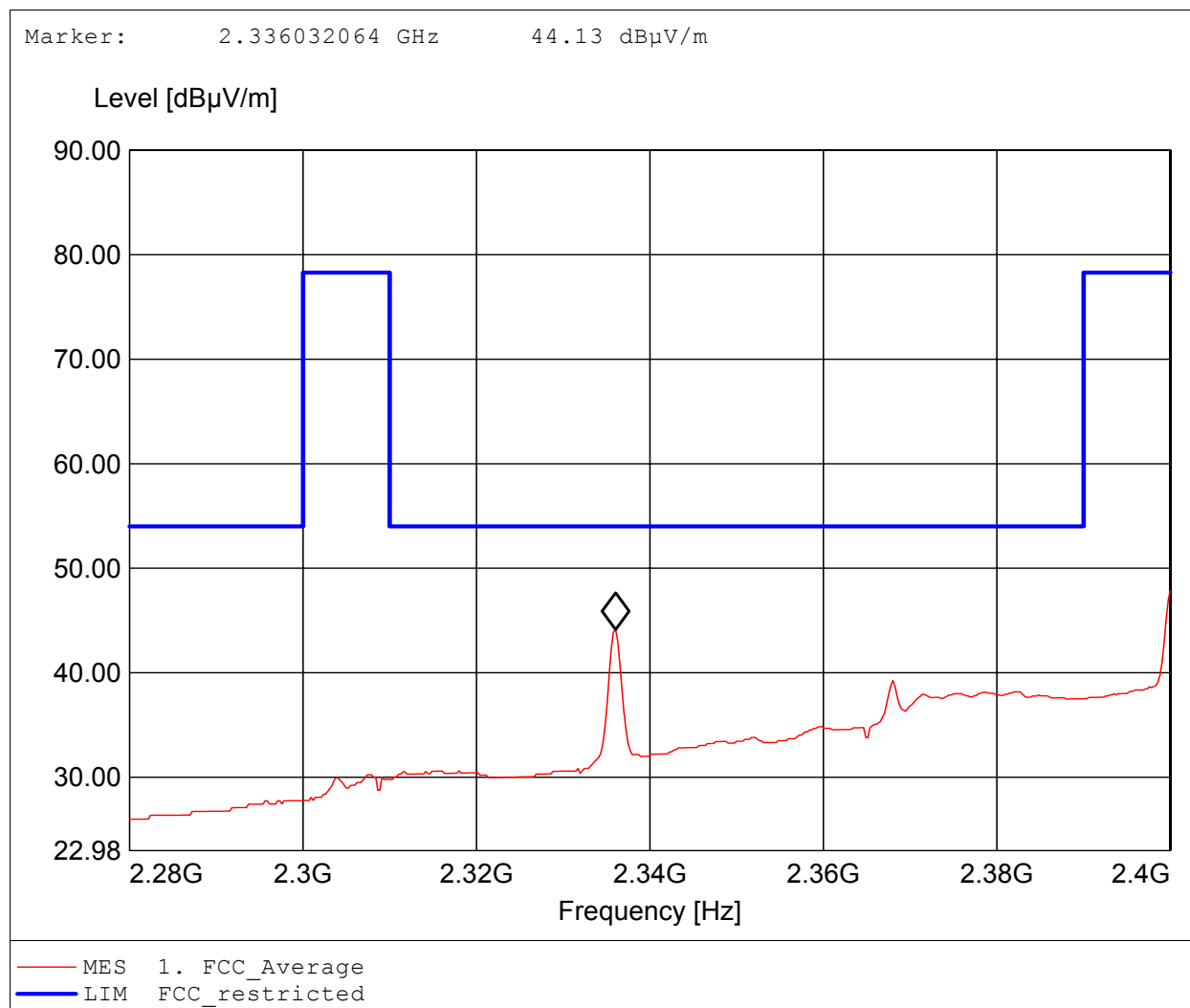
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.559GHz, Emax: 57.43dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

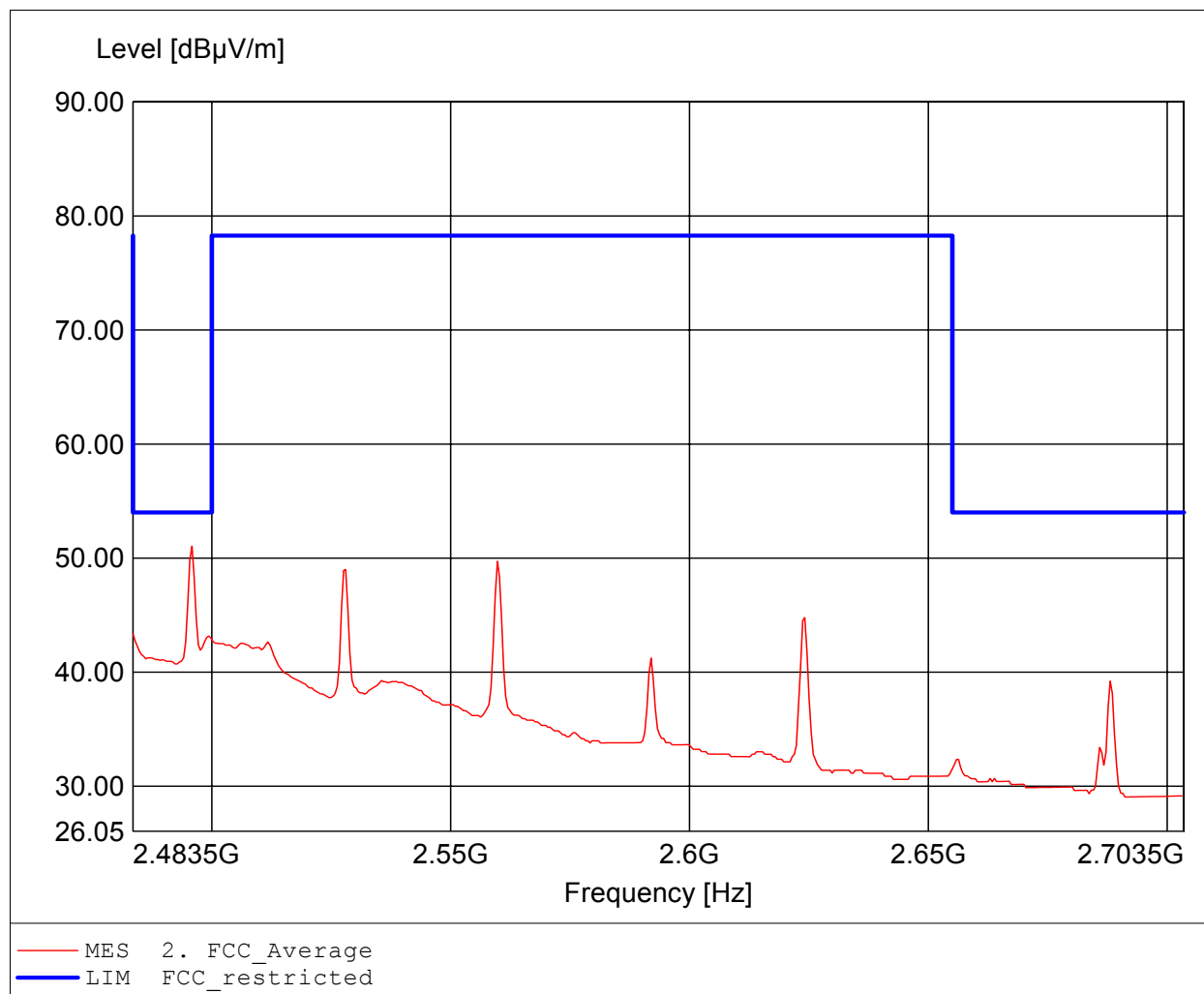
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.400GHz, Emax: 47.86dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

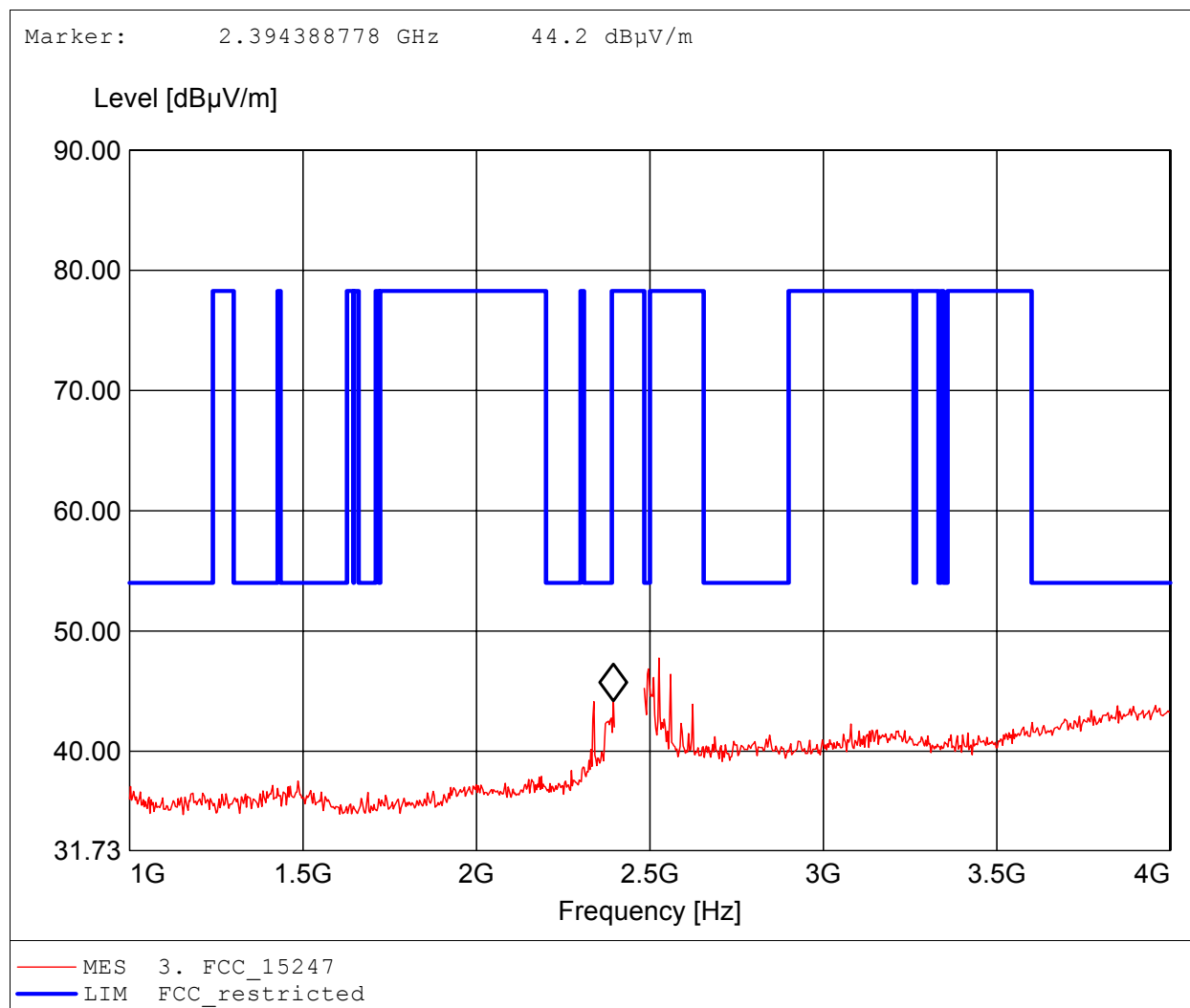
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.496GHz, Emax: 51.04dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

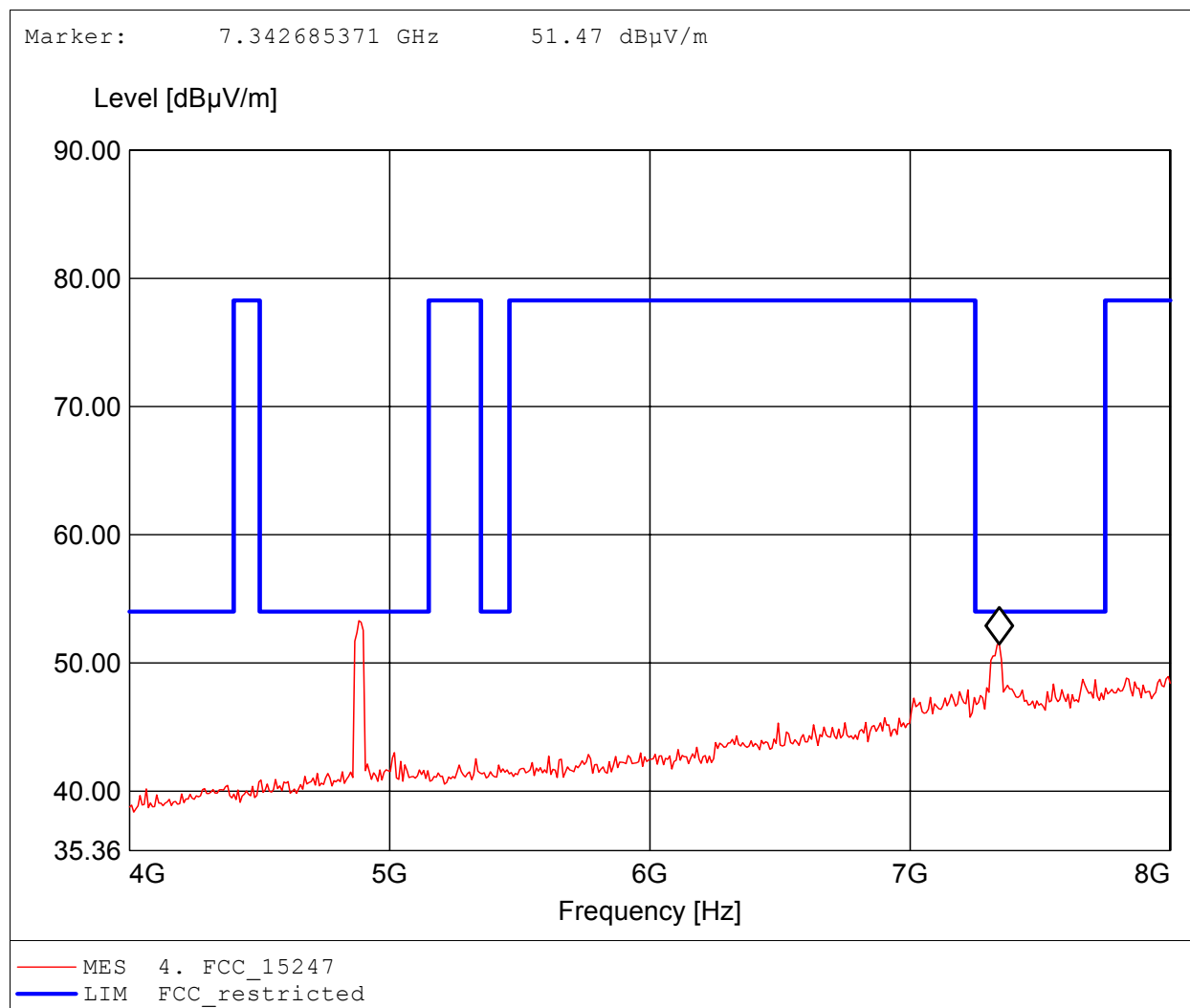
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.526GHz, Emax: 47.74dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

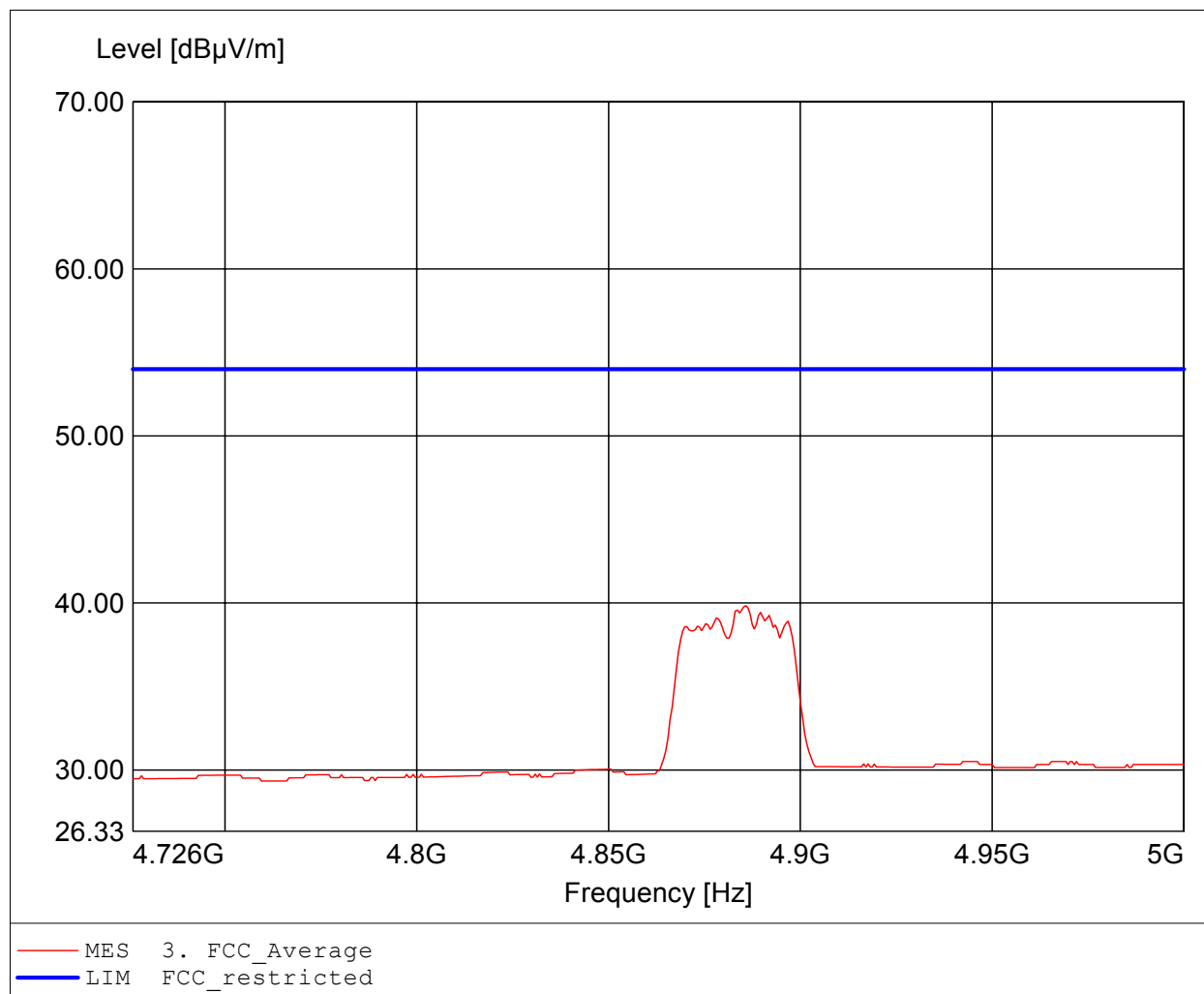
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.882GHz, Emax: 53.30dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

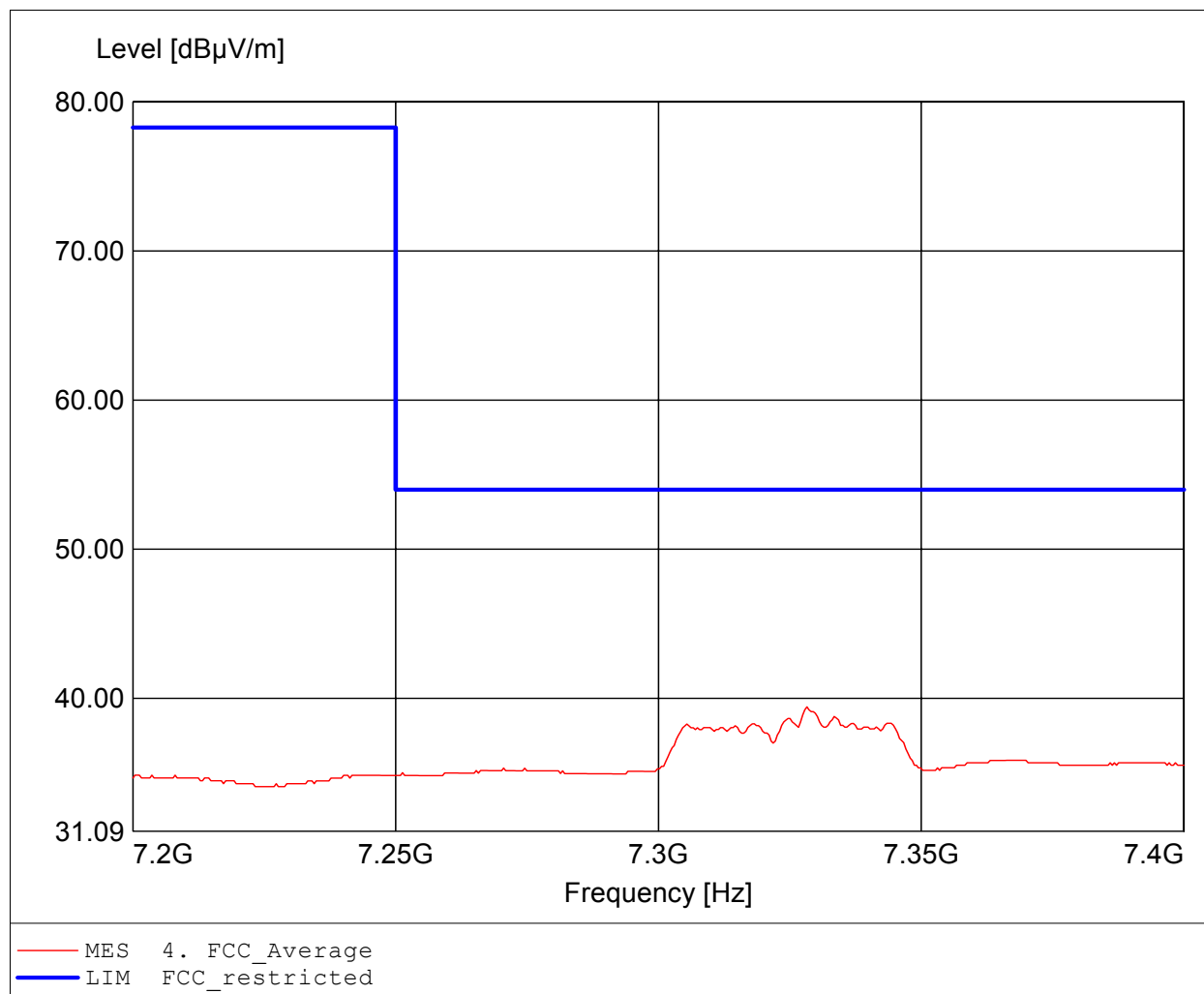
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 4.886GHz, Emax: 39.83dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

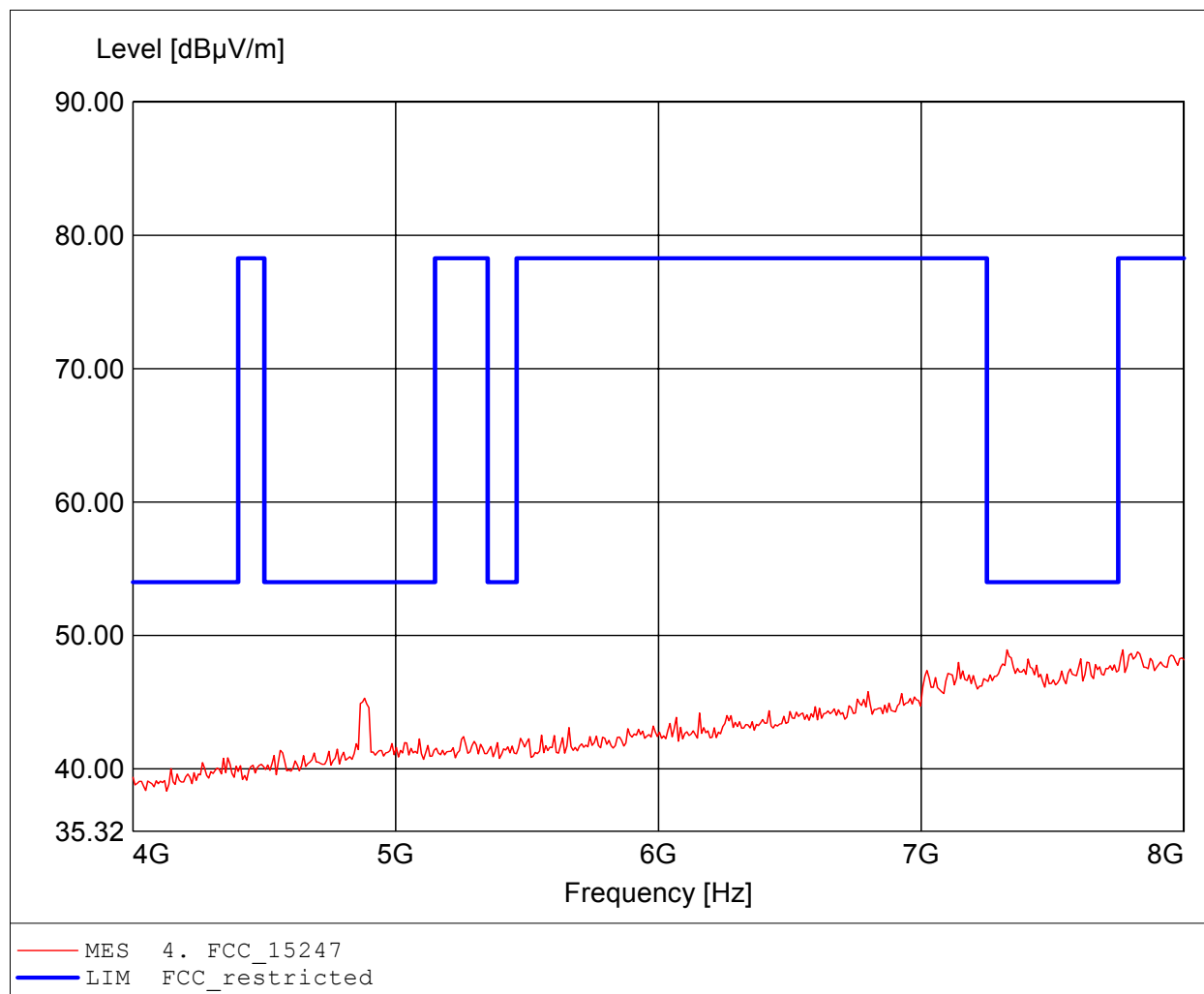
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 7.328GHz, Emax: 39.44dBμV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

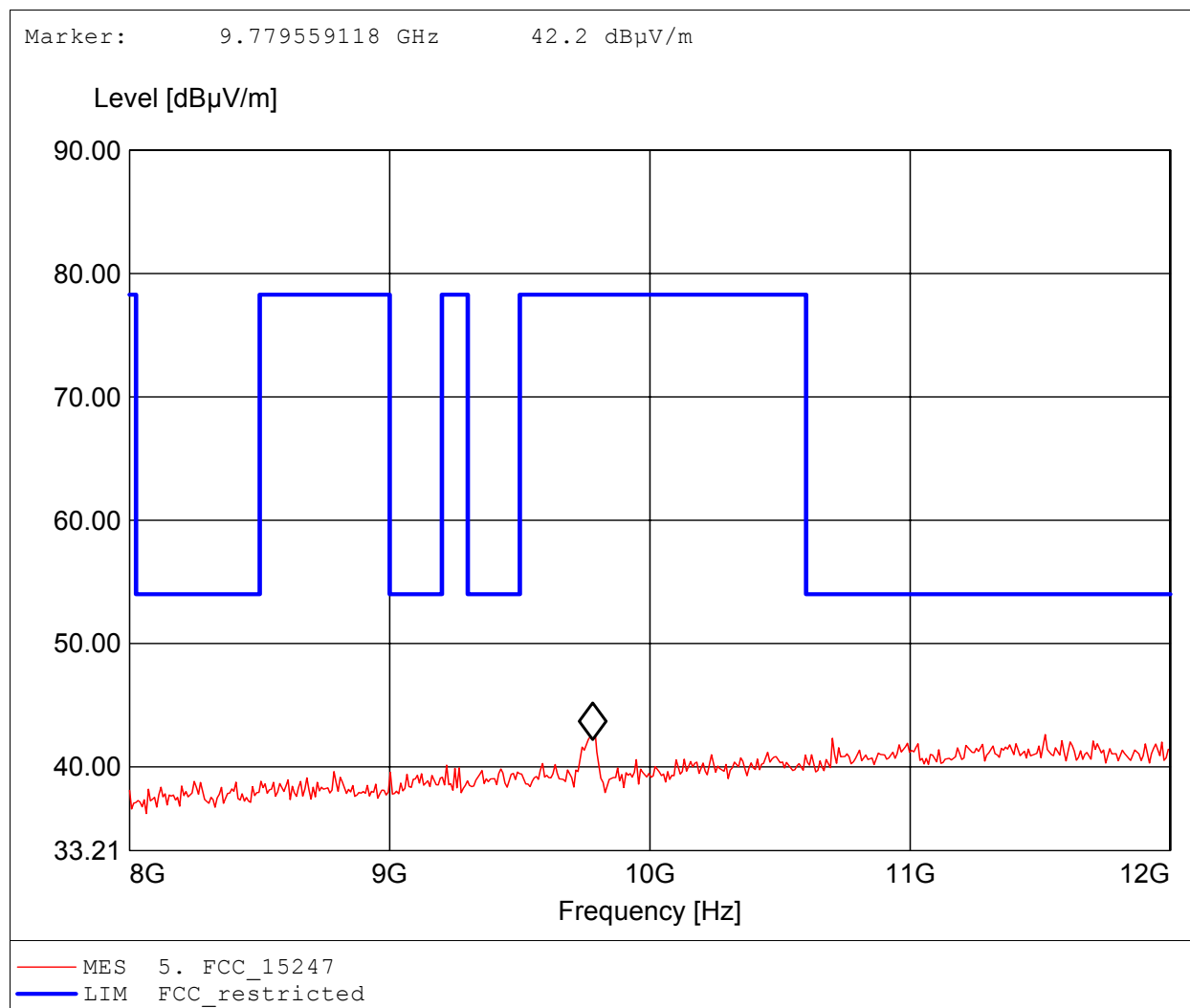
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 7.768GHz, Emax: 48.92dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

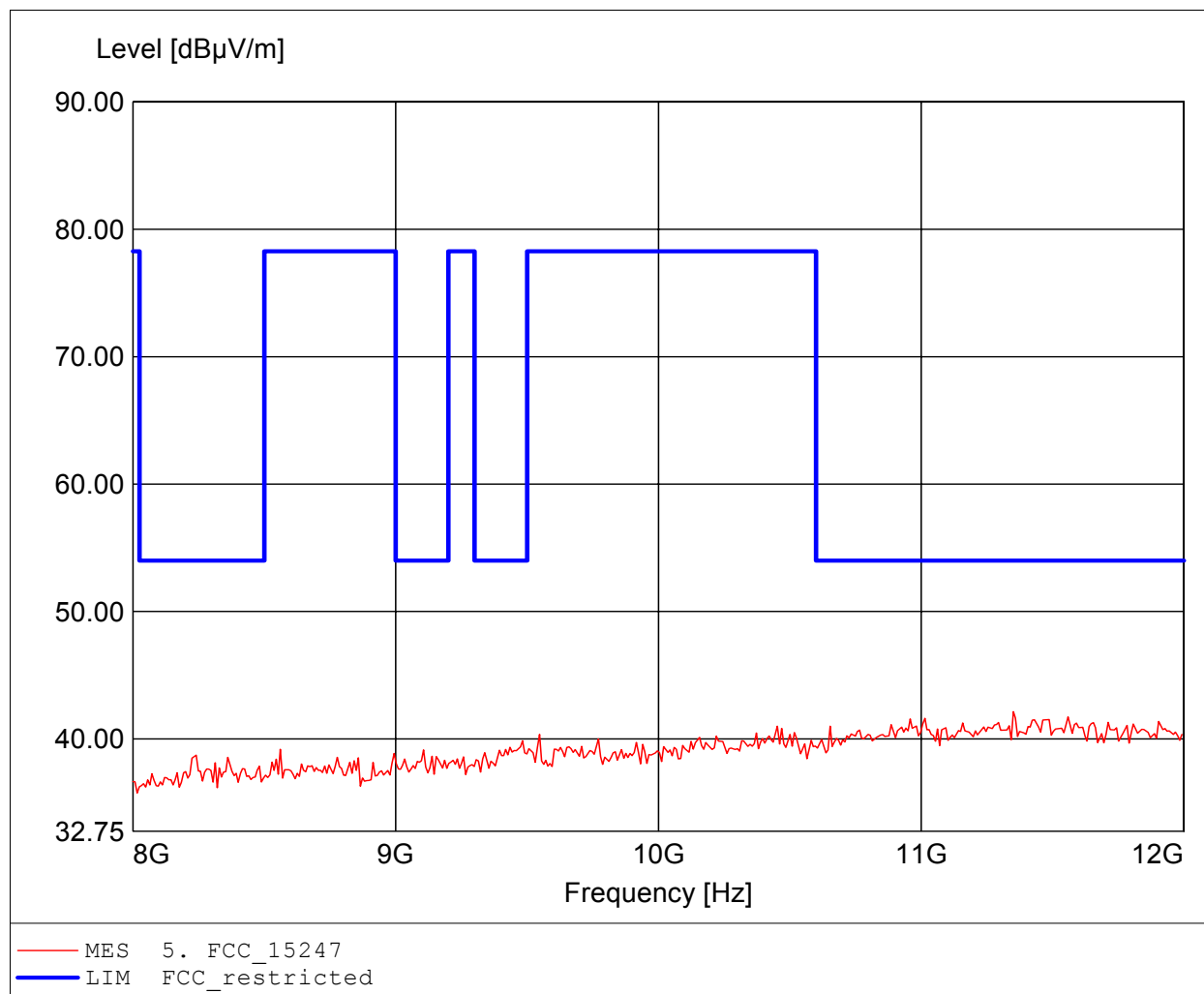
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 9.788GHz, Emax: 43.24dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

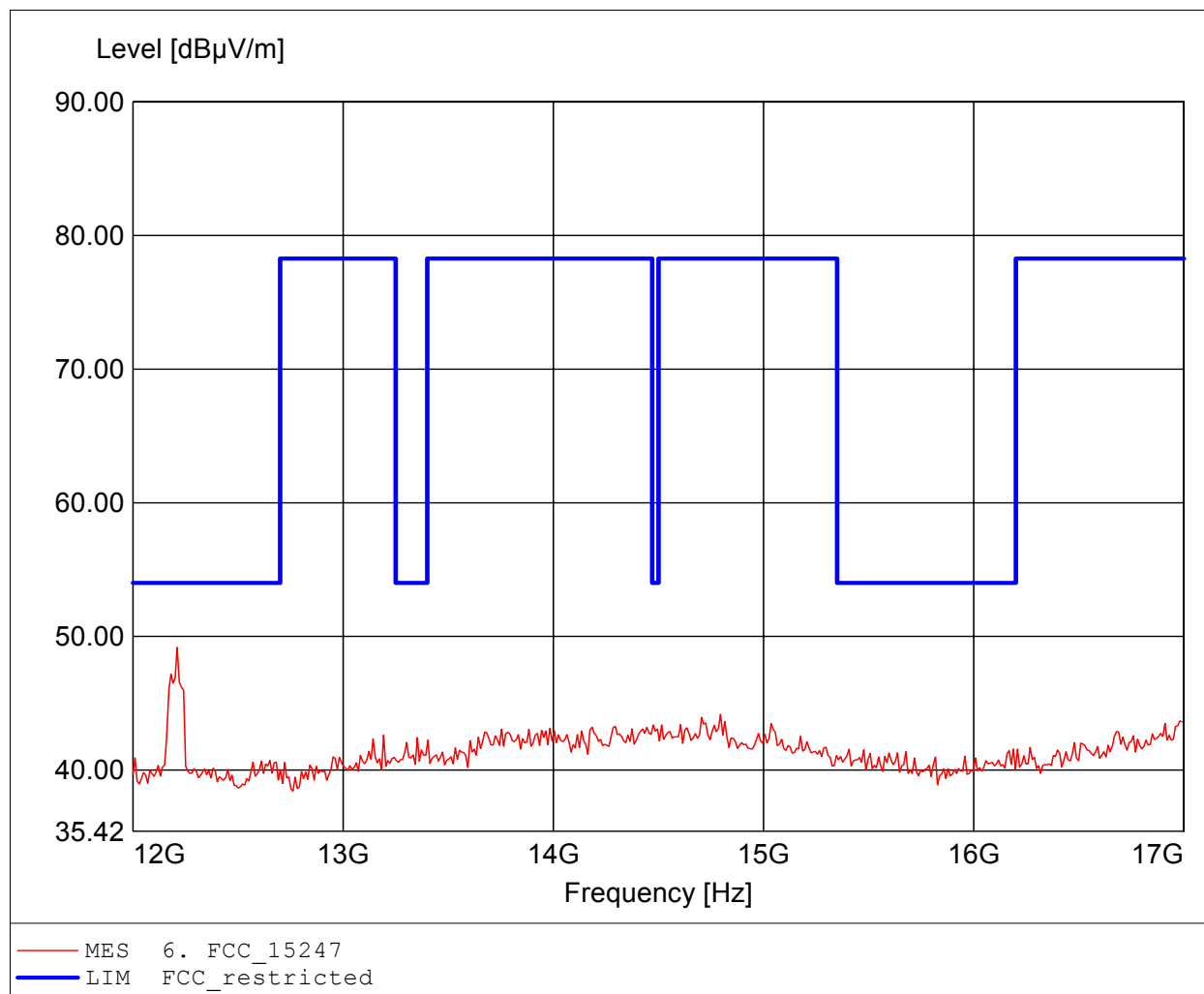
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.351GHz, Emax: 42.14dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

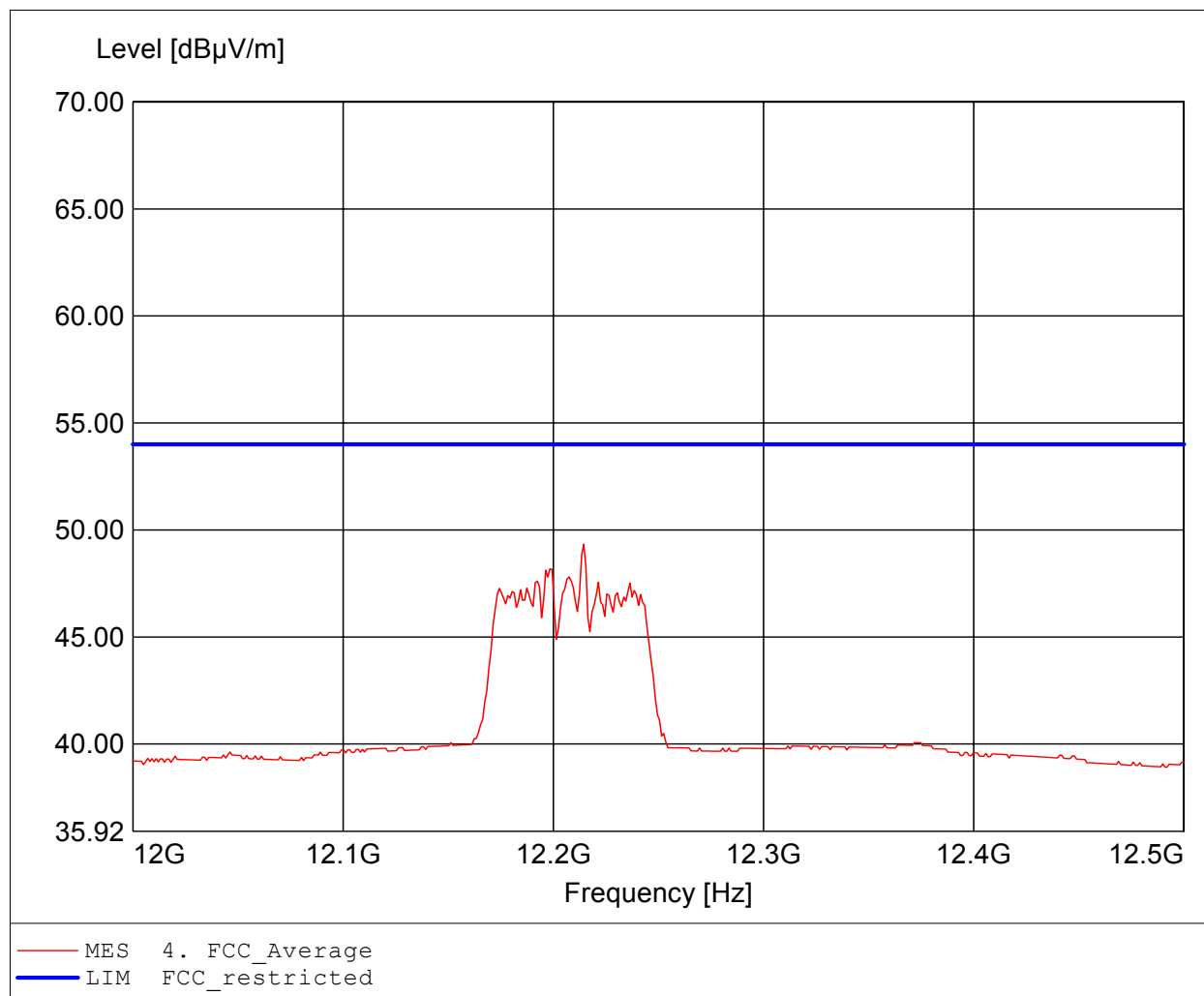
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 12.210GHz, Emax: 49.18dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

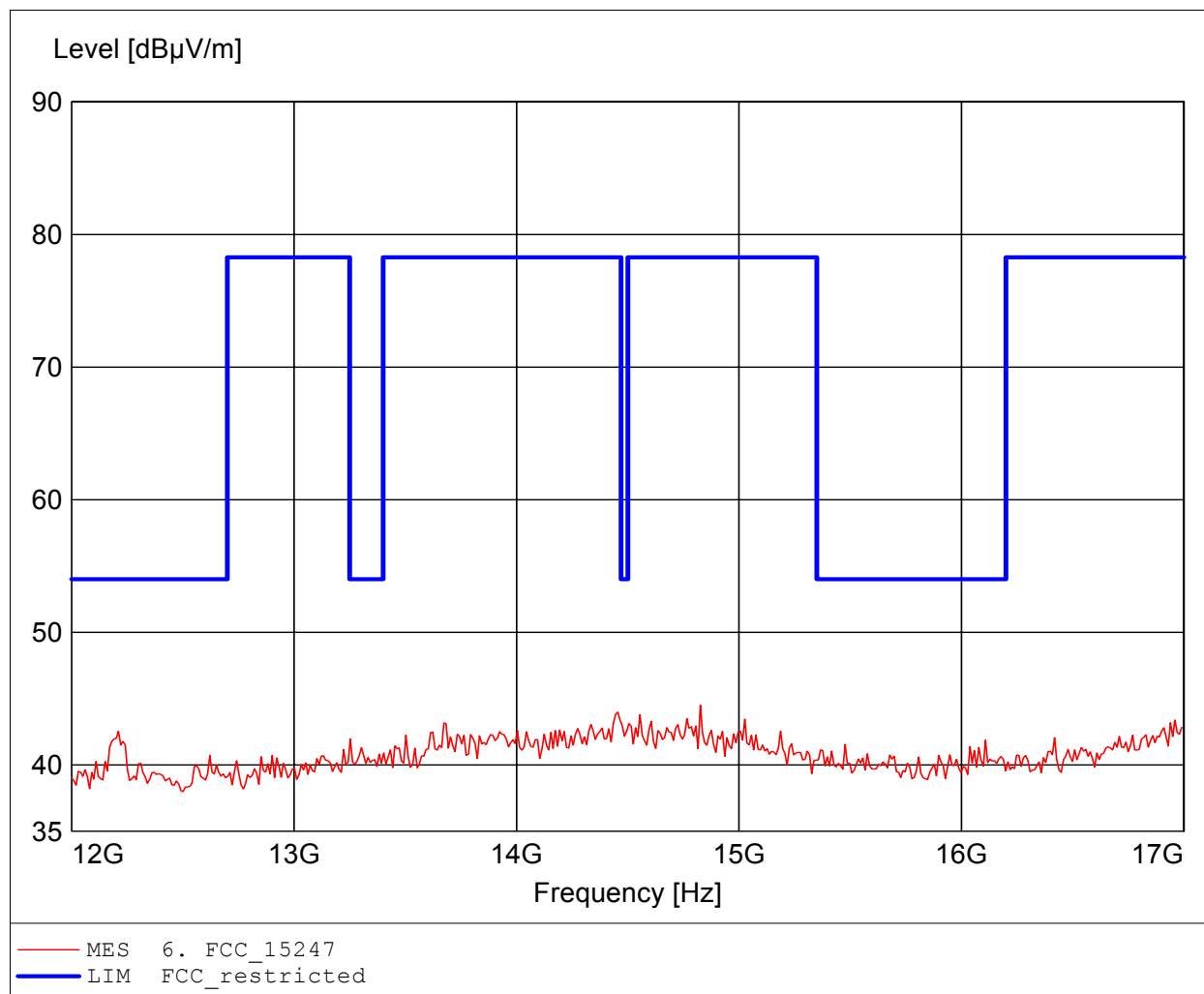
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 12.214GHz, Emax: 49.34dBμV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

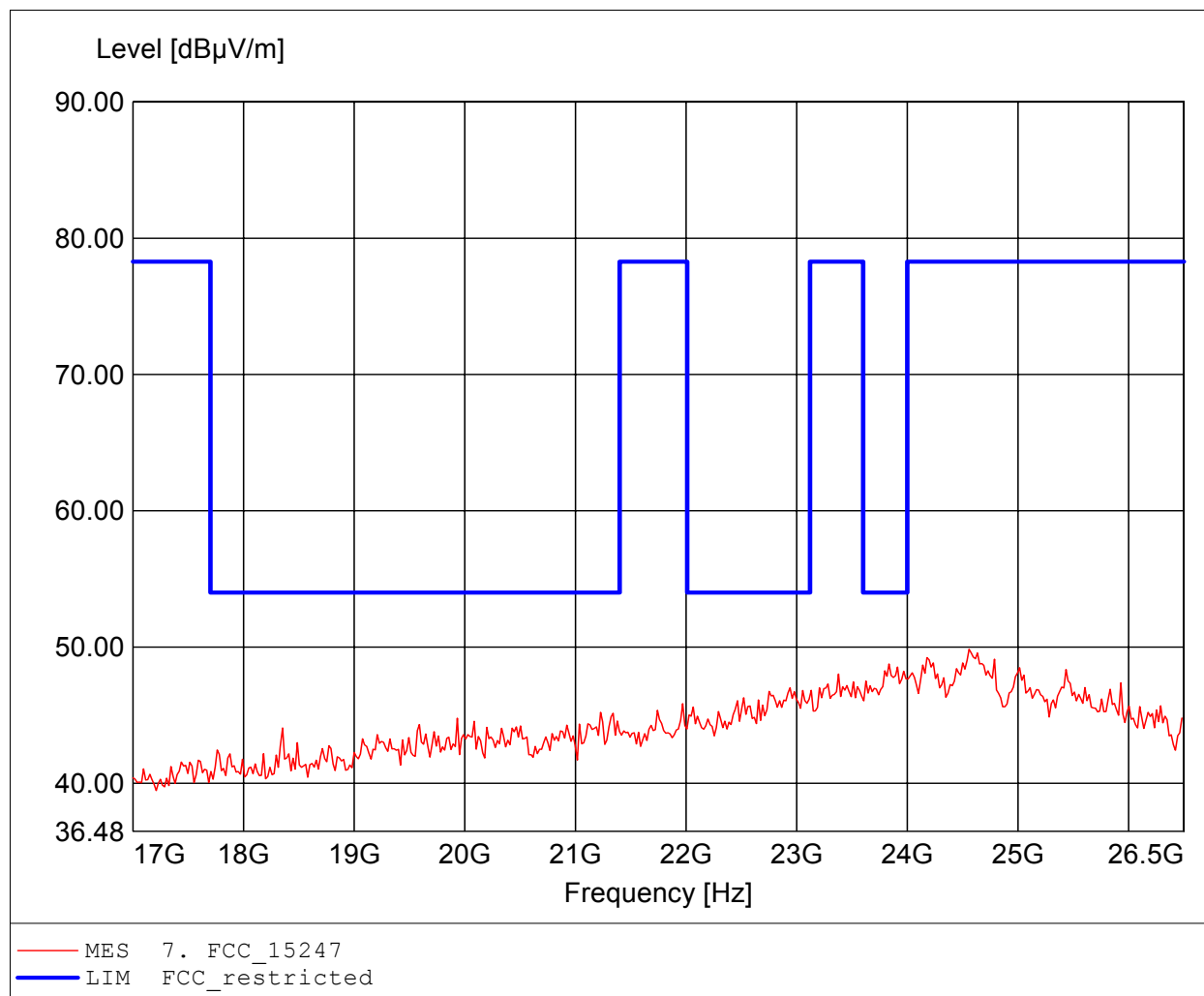
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 14.826GHz, Emax: 44.51dBμV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

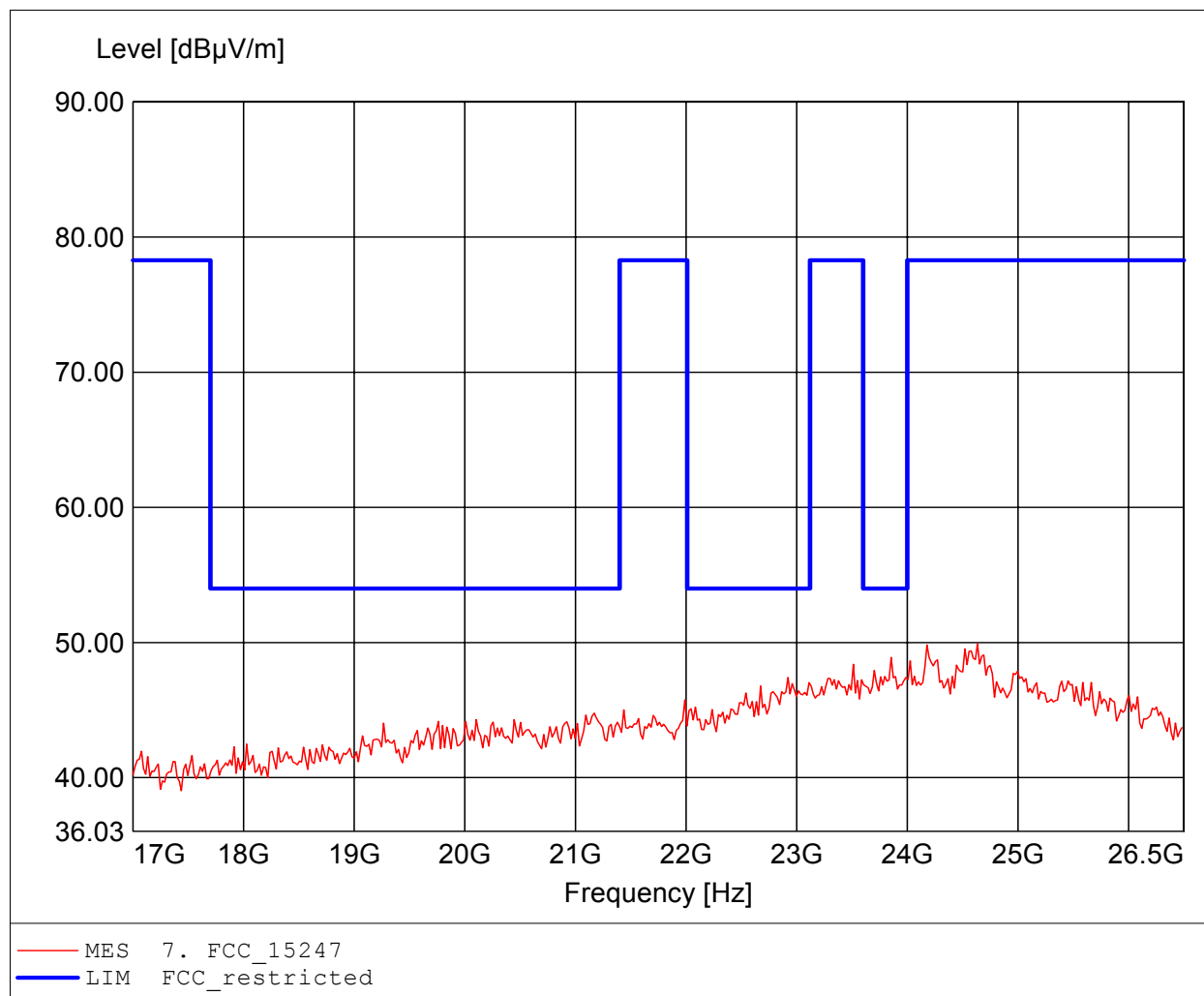
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Comment 2: Freq: 24.558GHz, Emax: 49.84dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / power lev. max / 22-4 MHz / duty 100%
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Comment 2: Freq: 24.634GHz, Emax: 49.90dBuV/m, RBW: 1MHz



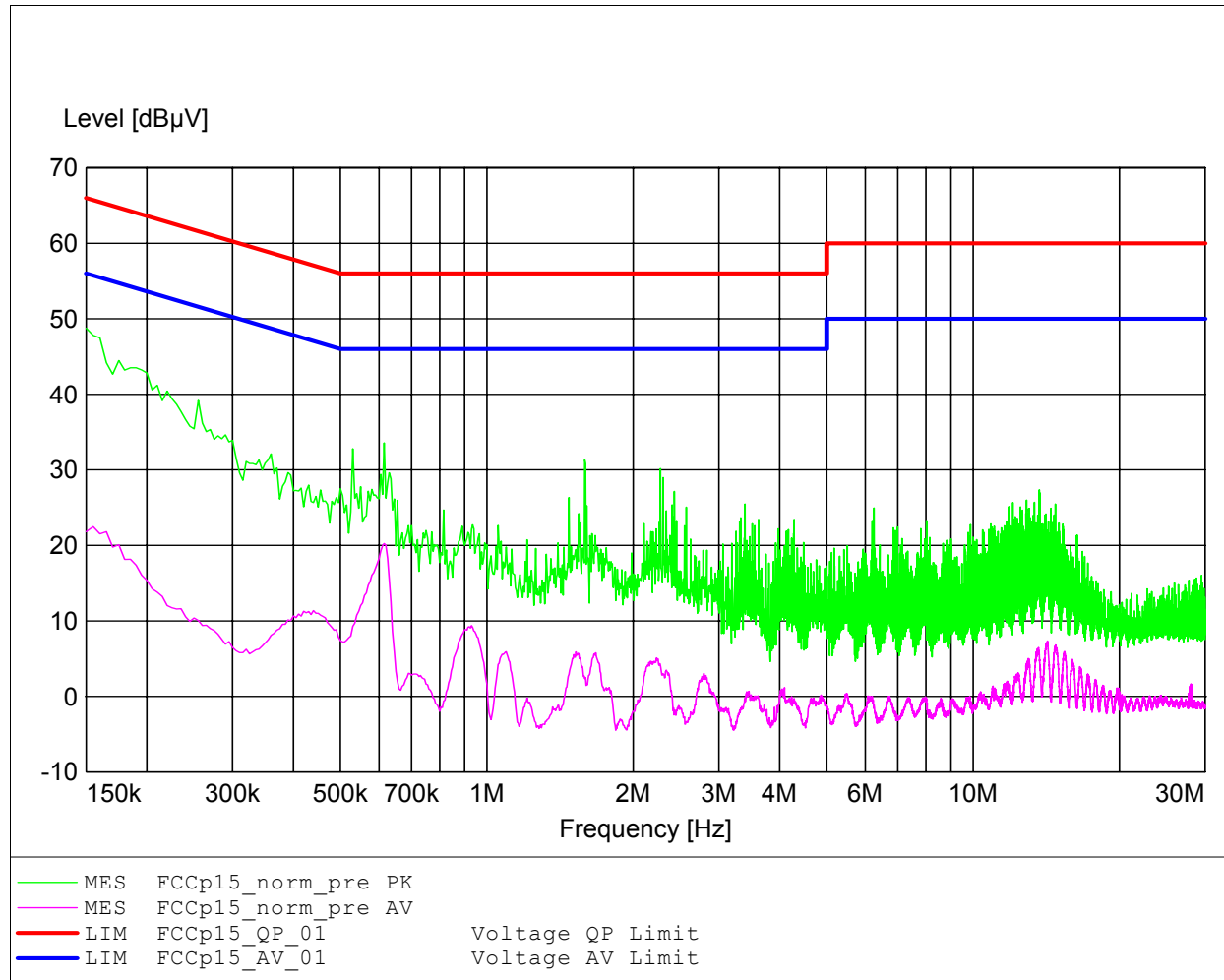
Annex F

AC power line conducted

EMI voltage test in the ac-mains according to FCC part 15

Ordernumber: GOM20902-2239

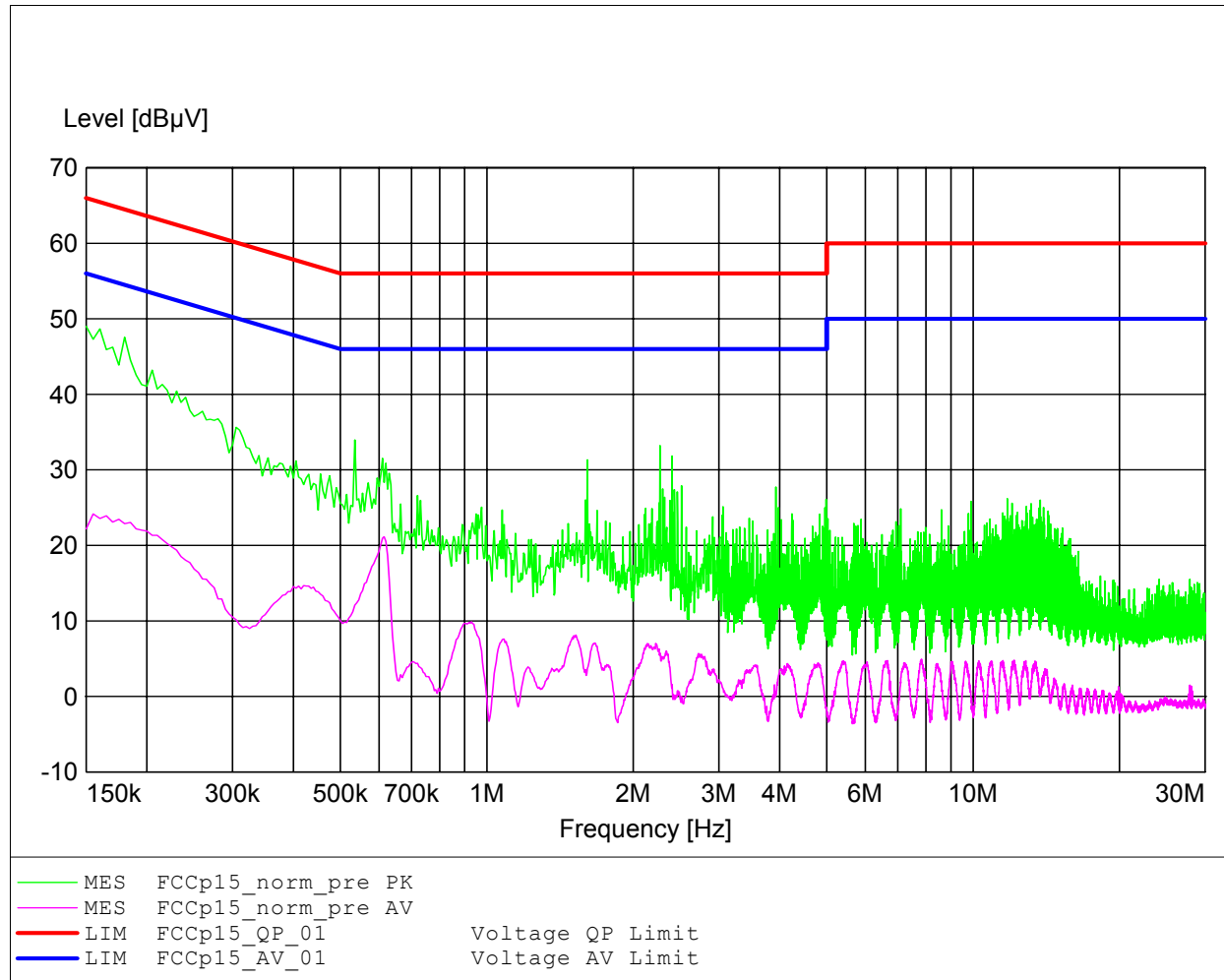
Approval Holder: Nanotron Technologies
EUT: 2.4 GHz ISM Band Chirp Spectrum Wireless Power Module
Model: MN5375V1
Test Site / Operator: Eurofins Product Service GmbH / Mr. Marquardt
Test Conditions: Tnom: 23°C, Unom: 120VAC
Test Specification: V-Network: ESH2-Z5 (L1/N)
Comment 1: mode: TX
Comment 2:



EMI voltage test in the ac-mains according to FCC part 15

Ordernumber: GOM20902-2239

Approval Holder: Nanotron Technologies
EUT: 2.4 GHz ISM Band Chirp Spectrum Wireless Power Module
Model: MN5375V1
Test Site / Operator: Eurofins Product Service GmbH / Mr. Marquardt
Test Conditions: Tnom: 23°C, Unom: 120VAC
Test Specification: V-Network: ESH2-Z5 (N)
Comment 1: mode: TX
Comment 2:



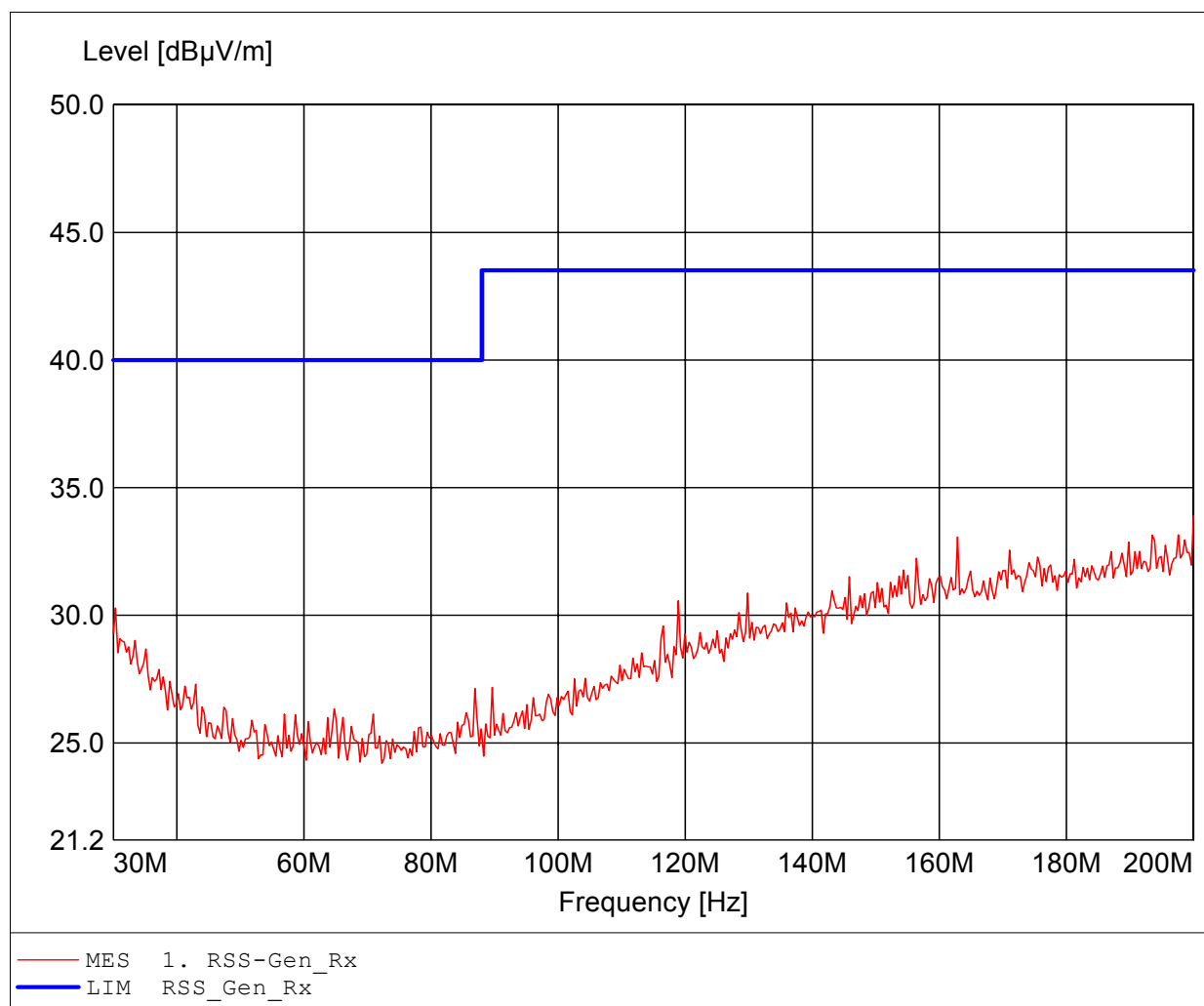
Annex G

Receiver spurious emissions

Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

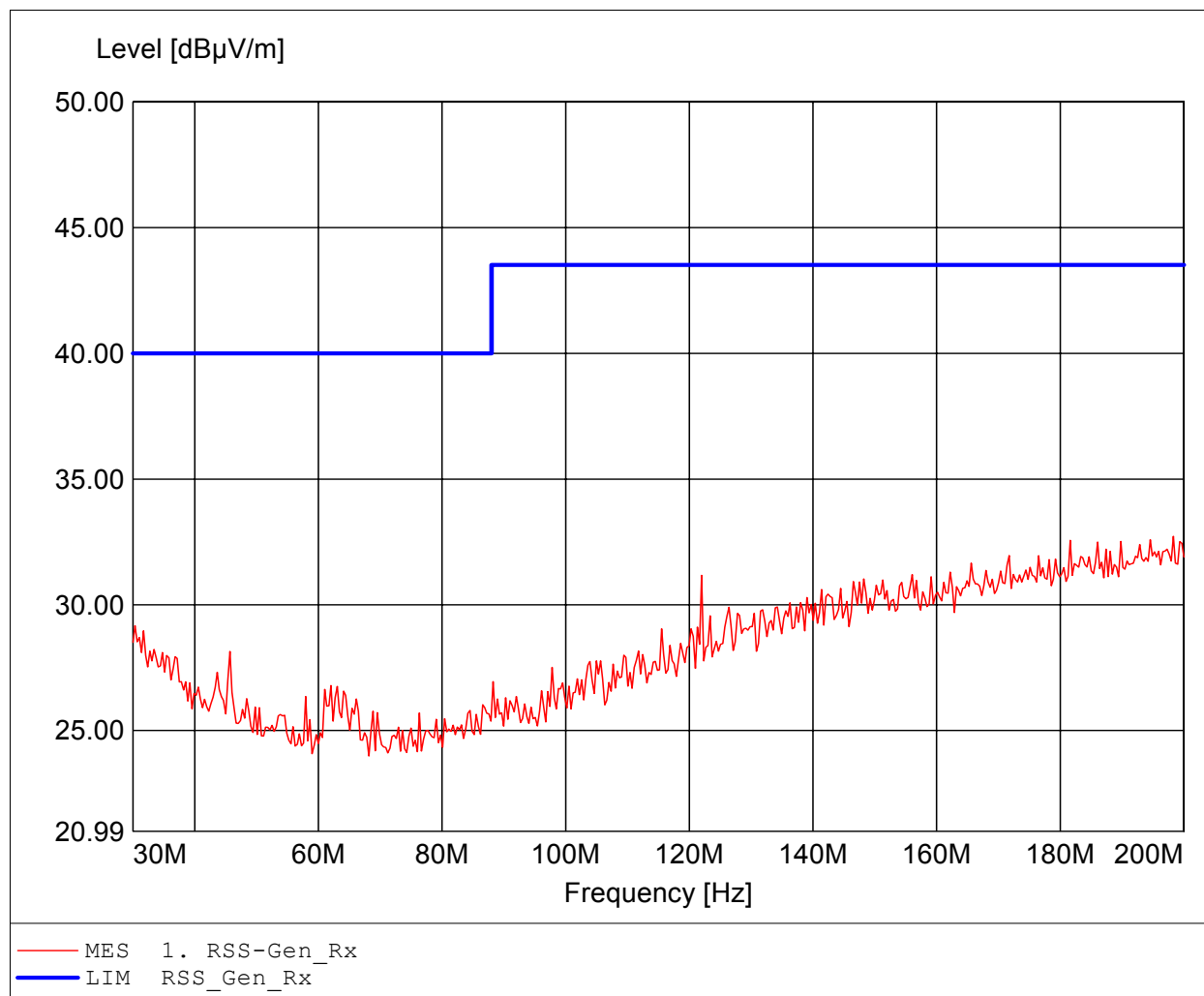
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / Rx
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to RSS-Gen Issue 1
Comment 1: Dist.: 3m, Ant.: HK 116
Comment 2: Freq:200.000MHz Emax:33.90dBμV/m RBW: 100 kHz



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

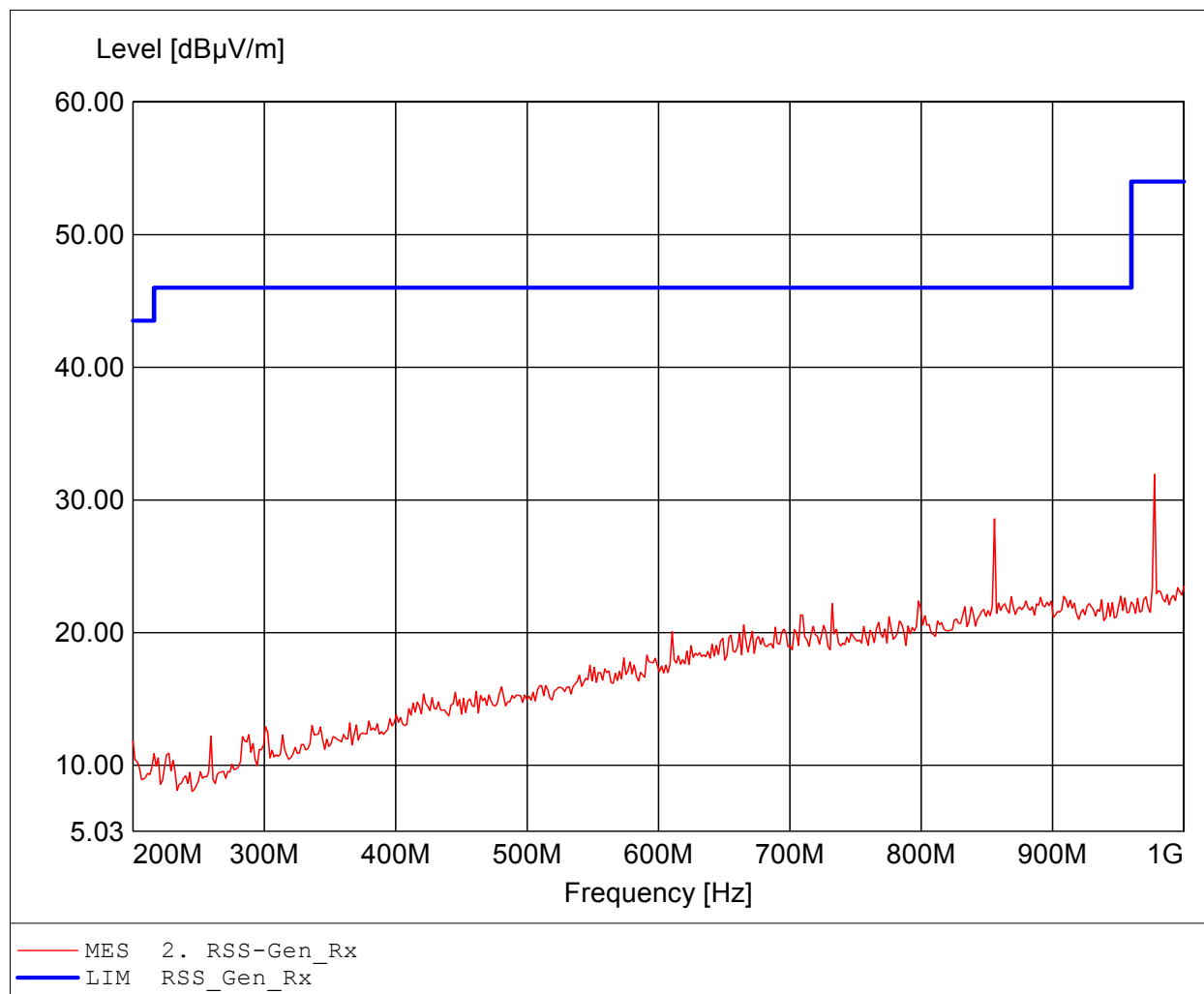
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / RX
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to RSS-Gen Issue 1
Comment 1: Dist.: 3m, Ant.: HK 116
Comment 2: Freq:198.297MHz Emax:32.72dBuV/m RBW: 100 kHz



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

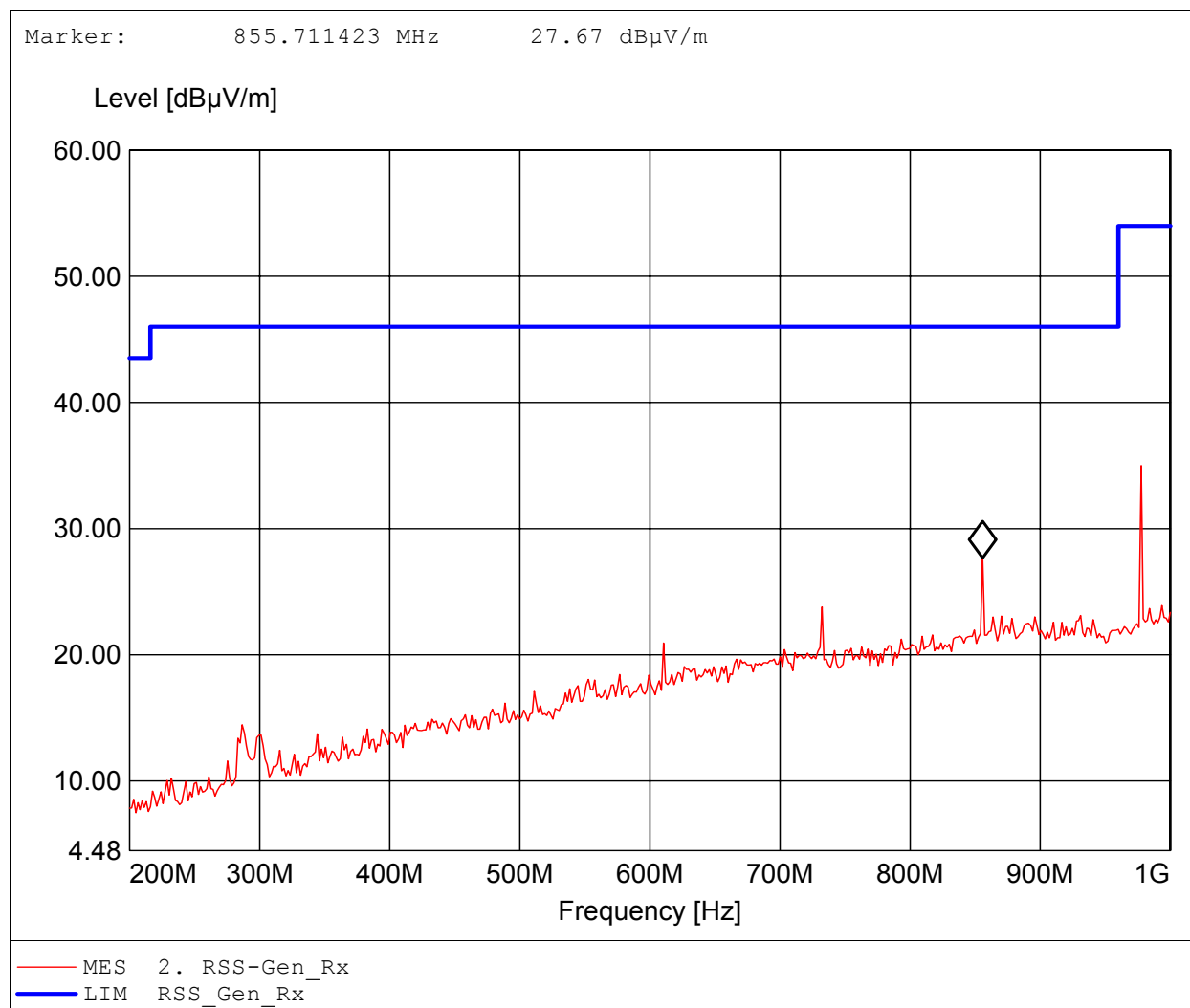
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / Rx
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to RSS-Gen Issue 1
Comment 1: Dist.: 3m, Ant.: HL 223, ampl.
Comment 2: Freq:977.555MHz Emax:31.94dBuV/m RBW: 100 kHz



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

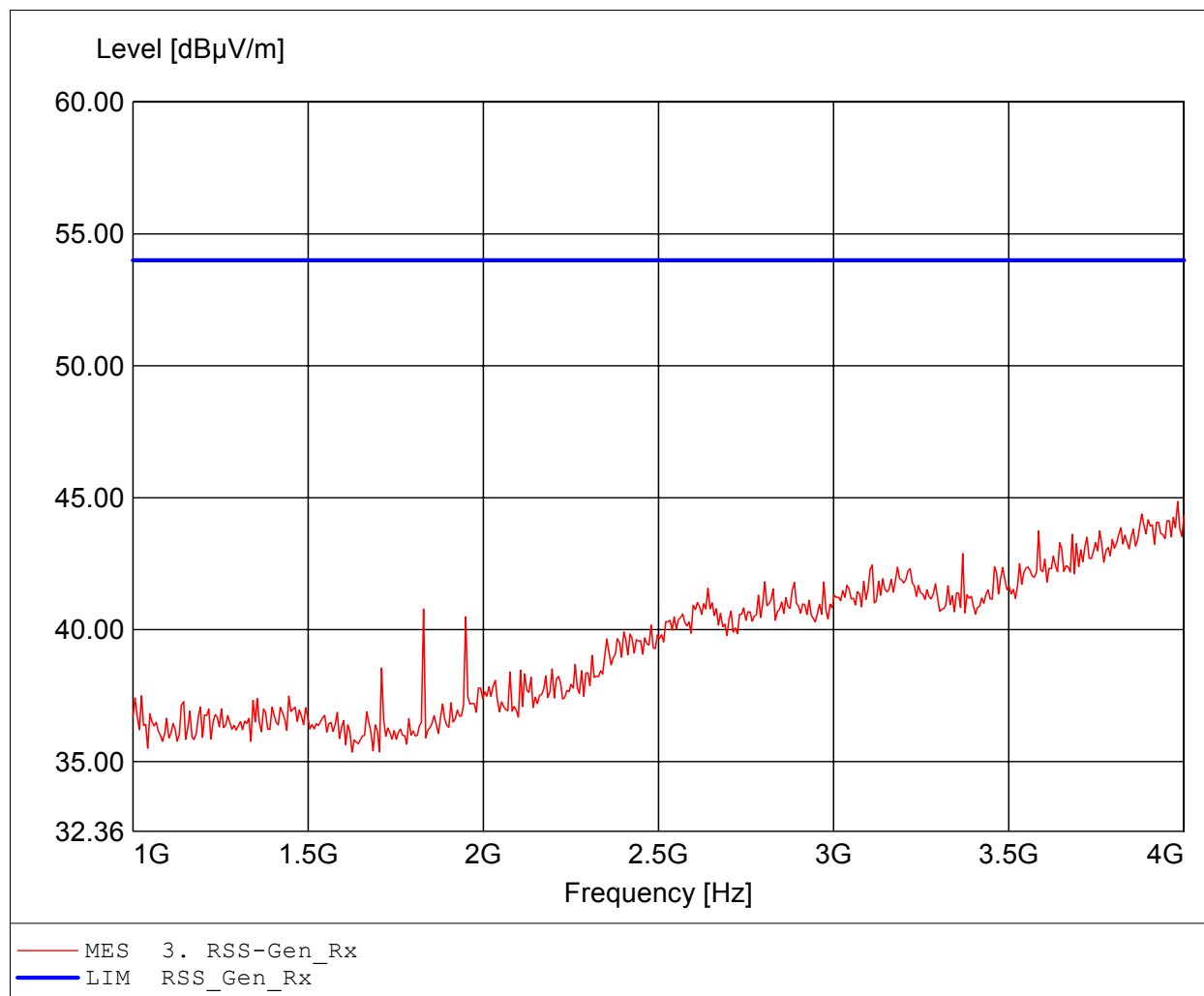
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / Rx
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to RSS-Gen Issue 1
Comment 1: Dist.: 3m, Ant.: HL 223, ampl.
Comment 2: Freq: 977.555MHz Emax: 35.00dBµV/m RBW: 100 kHz



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

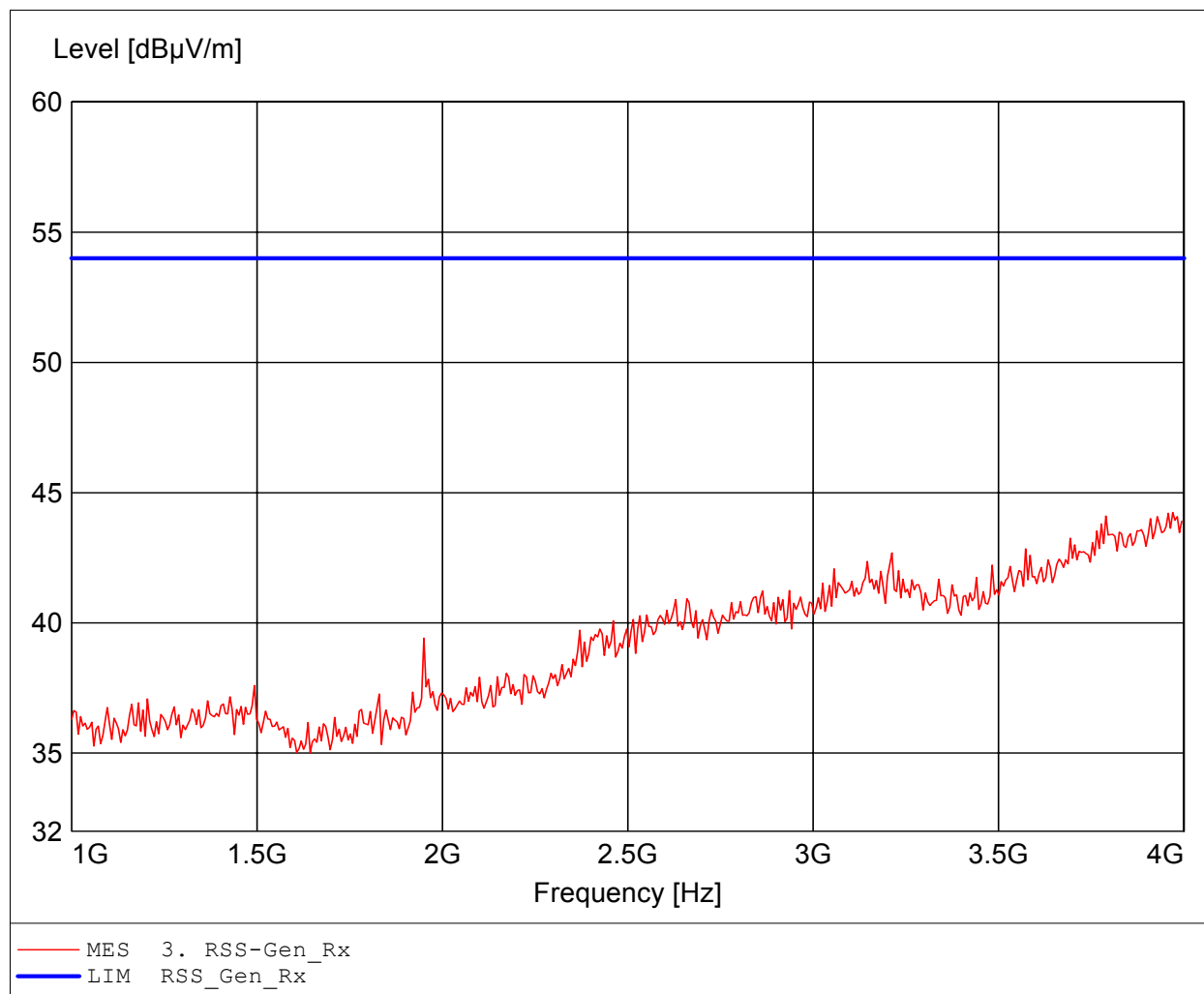
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / Rx
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to RSS-Gen Issue 1
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.
Comment 2: Freq:3.982GHz Emax:44.86dBµV/m RBW: 1 MHz



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

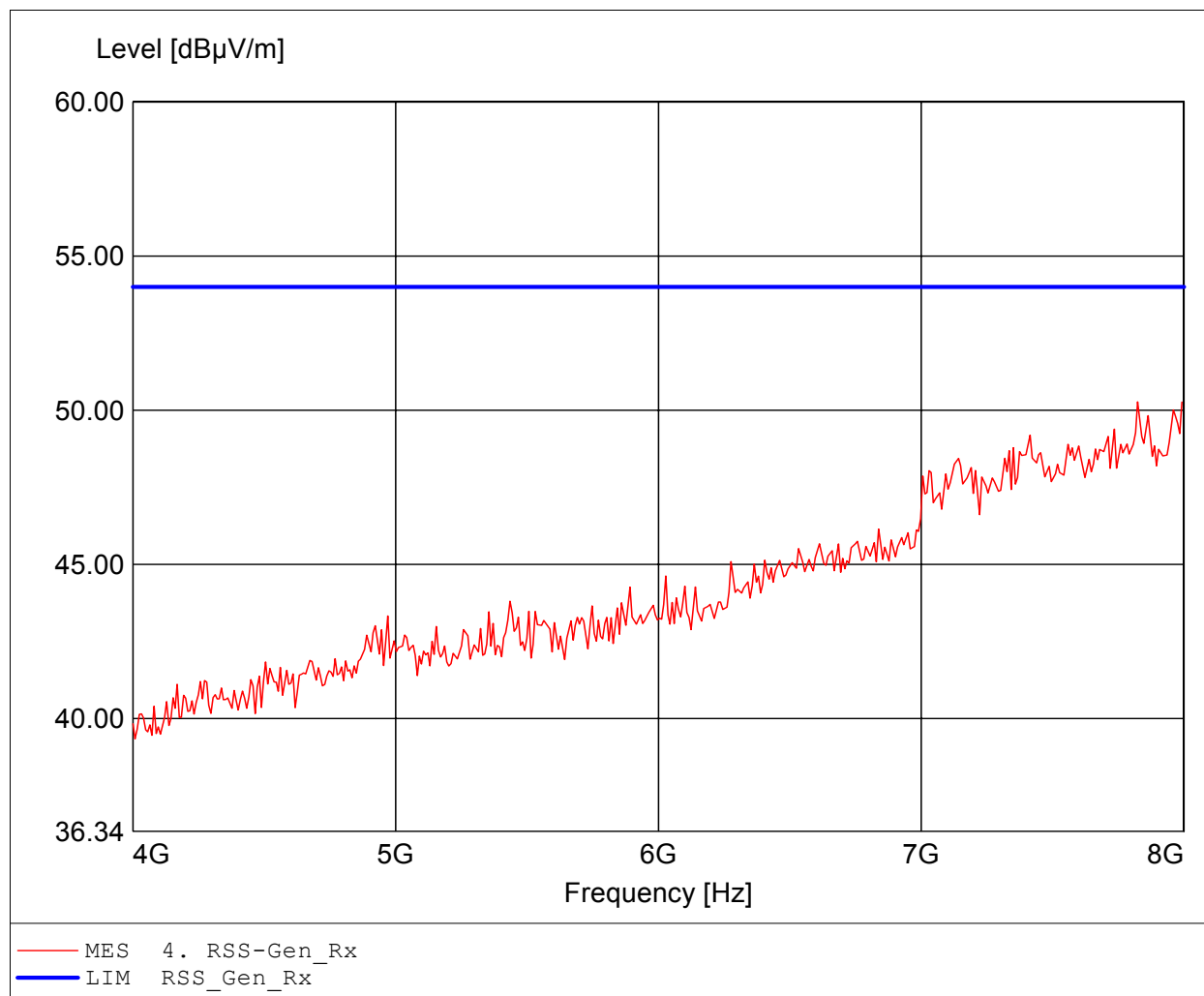
Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / Rx
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to RSS-Gen Issue 1
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.
Comment 2: Freq:3.970GHz Emax:44.24dBµV/m RBW: 1 MHz



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / Rx
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to RSS-Gen Issue 1
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.
Comment 2: Freq:7.824GHz Emax:50.27dBµV/m RBW: 1 MHz



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

Approval Holder: Nanotron Technologies GmbH
EUT: 2.4 GHz ISM Band Chirp Spread Spectrum Wireless Power Module
Model: MN5375V1 # 3558 / Rx
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 25°C / Unom: 2.5 V DC
Test Specification: according to RSS-Gen Issue 1
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.
Comment 2: Freq: 7.824GHz Emax: 50.31dBμV/m RBW: 1 MHz

