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FCC TEST REPORT

FCC 47 CFR Part 15C
Industry Canada RSS-210

Frequency hopping systems operating within the 2400 – 2483.5MHz band

Report Reference No. ..... :	G0M-1110-1487-TFC247B-V01
Testing Laboratory ..... :	Eurofins Product Service GmbH
Address ..... :	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation ..... :	 A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
Applicant's name ..... :	Leica Geosystems AG
Address ..... :	Heinrich Wild Strasse 1 9435 Heerbrugg SWITZERLAND
Test specification:	
Standard..... :	47 CFR Part 15C RSS-210, Issue 8, 2010-12 RSS-Gen, Issue 3, 2010-12 ANSI C63.4:2009
Equipment under test (EUT):	
Product description	GNNS Antenna
Model No.	iCG60
Hardware version	1.0
Firmware / Software version	1.0
	FCC-ID: RFD-ICGXX IC: 3177A-ICGXX
Test result	**Passed**

Possible test case verdicts:	
- neither assessed nor tested ..... :	N/N
- required by standard but not appl. to test object ..... :	N/A
- required by standard but not tested ..... :	N/T
- not required by standard for the test object ..... :	N/R
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)

Testing:

Date of receipt of test item..... :	2011-12-14	
Date (s) of performance of tests..... :	2011-12-14 – 2012-01-20	
Compiled by..... :	Christian Weber	
Tested by (+ signature) ..... : (Testing Manager)	Wilfried Treffke	W. Treffke
Approved by (+ signature)..... : (Test Lab Manager)	Jens Zimmermann	J. Z
Date of issue..... :	2012-05-23	
Total number of pages ..... :	117	

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

Additional comments:

REPORT INDEX

1 Equipment (Test item) Description:

Description	GNNS Antenna	
Model	iCG60	
Serial number	None	
Hardware version	1.0	
Software / Firmware version	1.0	
FCC-ID	RFD-ICGXX	
IC	3177A-ICGXX	
Equipment type	End product	
Radio type	Transceiver	
Radio technology	Bluetooth	
Operating frequency range	2402 - 2480MHz	
Assigned frequency band	2400 - 2483.5MHz	
Main test frequencies	F_{LOW}	2402MHz
	F_{MID}	2441MHz
	F_{HIGH}	2480MHz
Spreading	FHSS	
Modulations	GFSK, PI/4-DQPSK, 8-PSK	
Number of channels	79 hopping channels at all	
Channel spacing	1MHz	
Number of antennas	1	
Antenna	Type	integrated chip antenna
	Model	FR05-S1-N-0-001
	Manufacturer	Fractus
	Gain	2.2dBi
Manufacturer	Leica Geosystems AG Heinrich Wild Strasse 1 9435 Heerbrugg SWITZERLAND	
Power supply	V_{NOM}	12VDC
	V_{MIN}	9VDC
	V_{MIN}	28VDC

1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
None				

***Note:** Use the following abbreviations:

AE : Auxiliary/Associated Equipment, or

SIM : Simulator (Not Subjected to Test)

CABL : Connecting cables

1.5 Test Modes

Mode #	Description	
DH5-Sngl	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = GFSK Packet type = DH5 Data rate = 1Mbps Duty cycle = 47% Power level = Maximum
2DH5-Sngl	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = π/4-DQPSK Packet type = 2DH5 Data rate = 2Mbps Duty cycle = 47% Power level = Maximum
3DH5-Sngl	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = 8-DPSK Packet type = 3DH5 Data rate = 3Mbps Duty cycle = 47% Power level = Maximum
DH5-Hop	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = GFSK Packet type = DH5 Data rate = 1Mbps Duty cycle = 47% Power level = Maximum

2DH5-Hop	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = π/4-DQPSK Packet type = 2DH5 Data rate = 2Mbps Duty cycle = 47% Power level = Maximum
3DH5-Hop	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = 8-DPSK Packet type = 3DH5 Data rate = 3Mbps Duty cycle = 47% Power level = Maximum
Receive	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone receive Spreading = Hopping

1.6 Test Equipment Used During Testing

20dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Number of hopping frequencies					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Time of occupancy					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	2011-12	2012-12

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 5	ETS 0583	-	-
Spectrum Analyzer	R&S	FSIQ26	ETS 0413	2011-04	2012-04
Biconical Antenna	R&S	HK 116	ETS 0012	2010-01	2013-01
LPD Antenna	R&S	HL 223	ETS 0295	2011-02	2014-02
LPD Antenna	R&S	HL 025	ETS 0512	2010-02	2013-02

1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

Reading on Analyzer (dBµV) + A.F. (dB) = Net field strength (dBµV/m)

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

Limit (dBµV/m) = 20*log (µV/m)

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading	+	AF	=	Net Reading	:	Net reading - FCC limit	= Margin
21.5 dBµV	+	26 dB	=	47.5 dBµV/m	:	47.5 dBµV/m - 57.0 dBµV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 15C, IC RSS-210				
Product Specific Standard Section	**Requirement – Test**	**Reference Method**	**Result**	**Remarks**
RSS-Gen 4.6.1	Occupied Bandwidth	RSS-Gen 4.6.1	N/R	Informational only
FCC § 15.247(a)(1) IC RSS-210 § A8.1	20dB Bandwidth	Public notice DA 00-705	PASS	
FCC § 15.247(a)(1)(iii) IC RSS-210 § A8.1	Number of hopping frequencies	Public notice DA 00-705	PASS	
FCC § 15.247(a)(1) IC RSS-210 § A8.1	Frequency hopping channel separation	Public notice DA 00-705	PASS	
FCC § 15.247(a)(1)(iii) IC RSS-210 § A8.1	Time of occupancy (Dwell time)	Public notice DA 00-705	PASS	
FCC § 15.247(b)(1) IC RSS-210 § A8.4	Maximum peak conducted power	Public notice DA 00-705	PASS	
47 CFR 15.207 RSS-Gen 7.2.4	AC power line conducted emissions	ANSI C63.4	N/R	EUT exclusively battery powered
FCC § 15.247(d) IC RSS-210 § A8.5	Band edge compliance	Public notice DA 00-705	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Conducted spurious emissions	Public notice DA 00-705	PASS	
FCC § 15.247(d) FCC § 15.209 IC RSS-210 A8.5 IC RSS-Gen 4.9 IC RSS-Gen 7.2.5	Transmitter radiated spurious emissions	Public notice DA 00-705 / ANSI C 63.4	PASS	
IC RSS-Gen 4.10 IC RSS-Gen 6.1	Receiver radiated spurious emissions	ANSI C 63.4	PASS	
Remarks:				

3 Test Conditions and Results

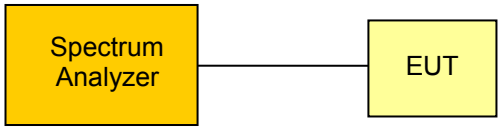
3.1 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. IC RSS-Gen	**Verdict: PASS**
Test according to measurement reference	Reference Method
	RSS-Gen 4.6.1
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}

Limits

None (Informational only)

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to at least twice the emission spectrum
3. Resolution bandwidth set to 1% of span
4. Occupied Bandwidth (99%) measurement with spectrum analyzer built in measurement function

Test results

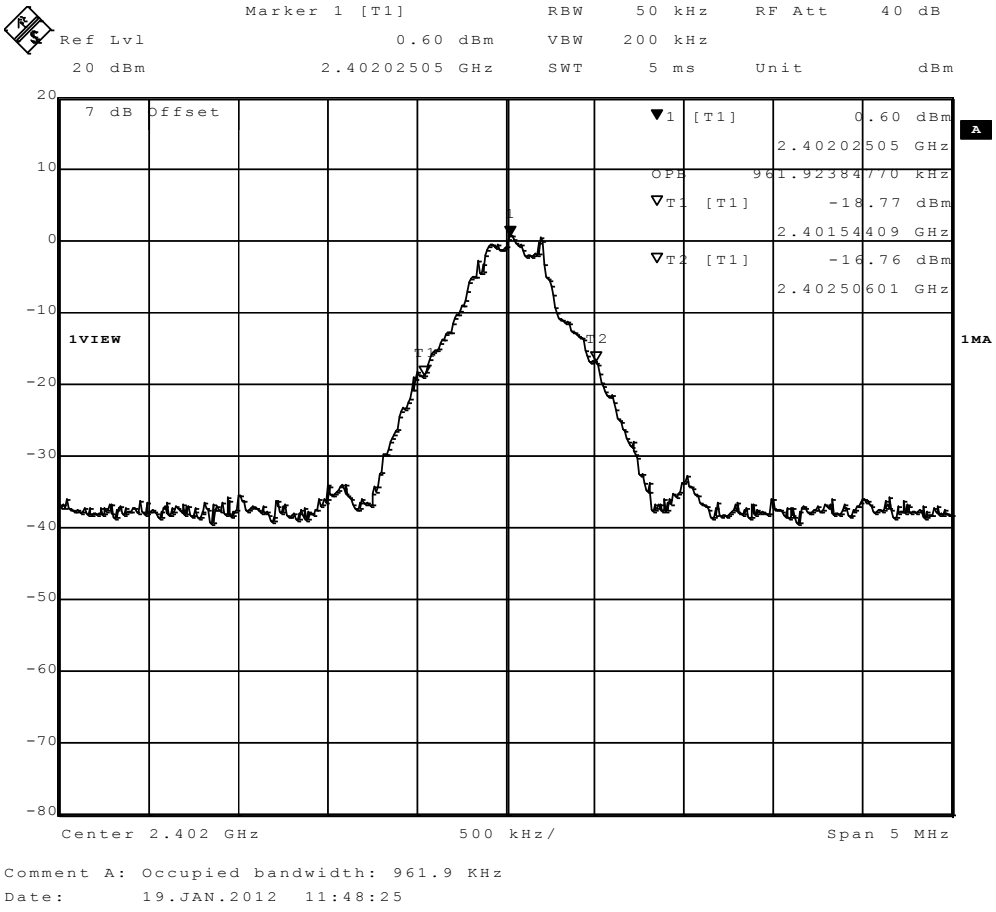
Channel	Frequency [MHz]	Mode	Occupied Bandwidth [kHz]
F_{LOW}	2402	DH5-Sngl	961.924
F_{MID}	2441	DH5-Sngl	1012.024
F_{HIGH}	2480	DH5-Sngl	971.944
F_{LOW}	2402	3DH5-Sngl	1212.425
F_{MID}	2441	3DH5-Sngl	1242.485
F_{HIGH}	2480	3DH5-Sngl	1242.485

Comments:

Occupied Bandwidth – DH5-Sngl F_{LOW}

RSS Gen
Occupied Bandwidth

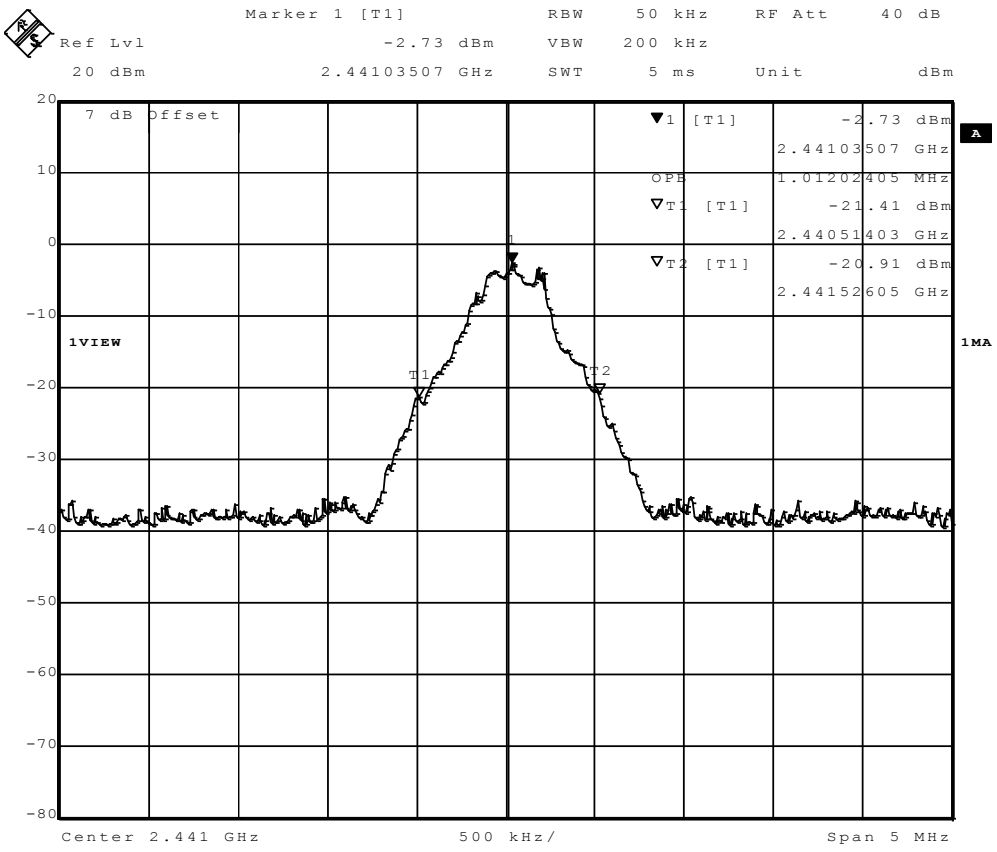
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 0 / 2402 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	GFSK



Occupied Bandwidth – DH5-Sngl F_{MID}

RSS Gen
Occupied Bandwidth

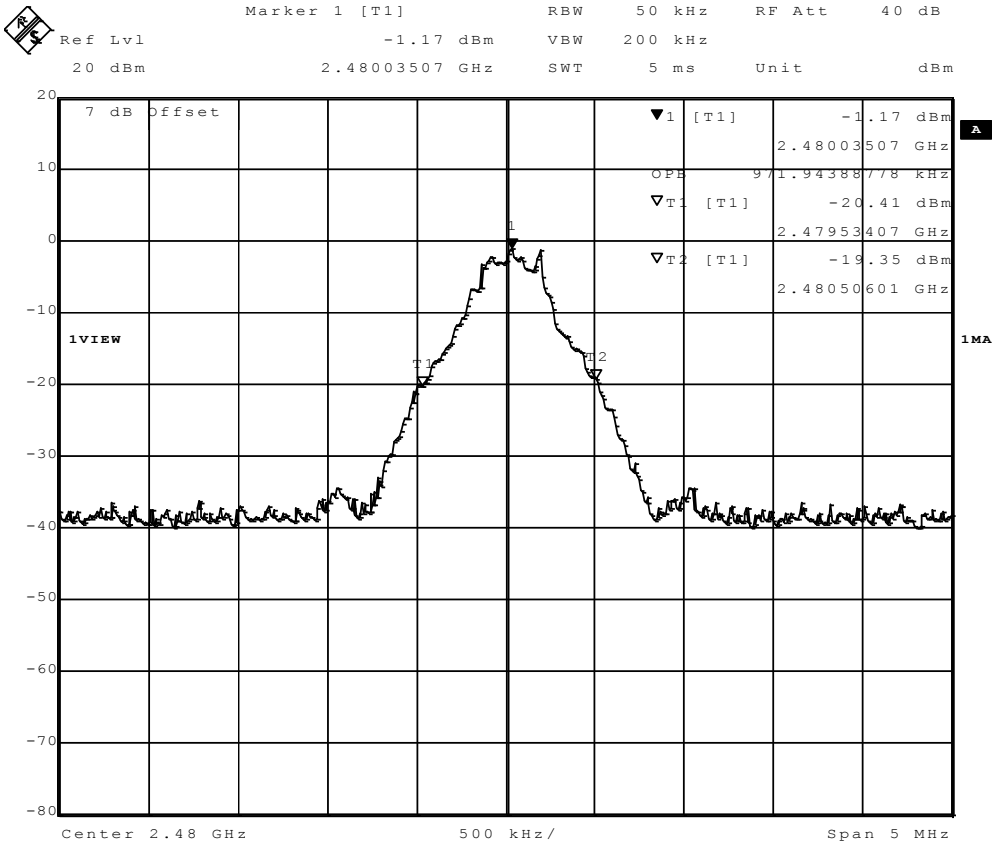
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 39 / 2441 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	GFSK



Occupied Bandwidth – DH5-Sngl F_{HIGH}

RSS Gen
Occupied Bandwidth

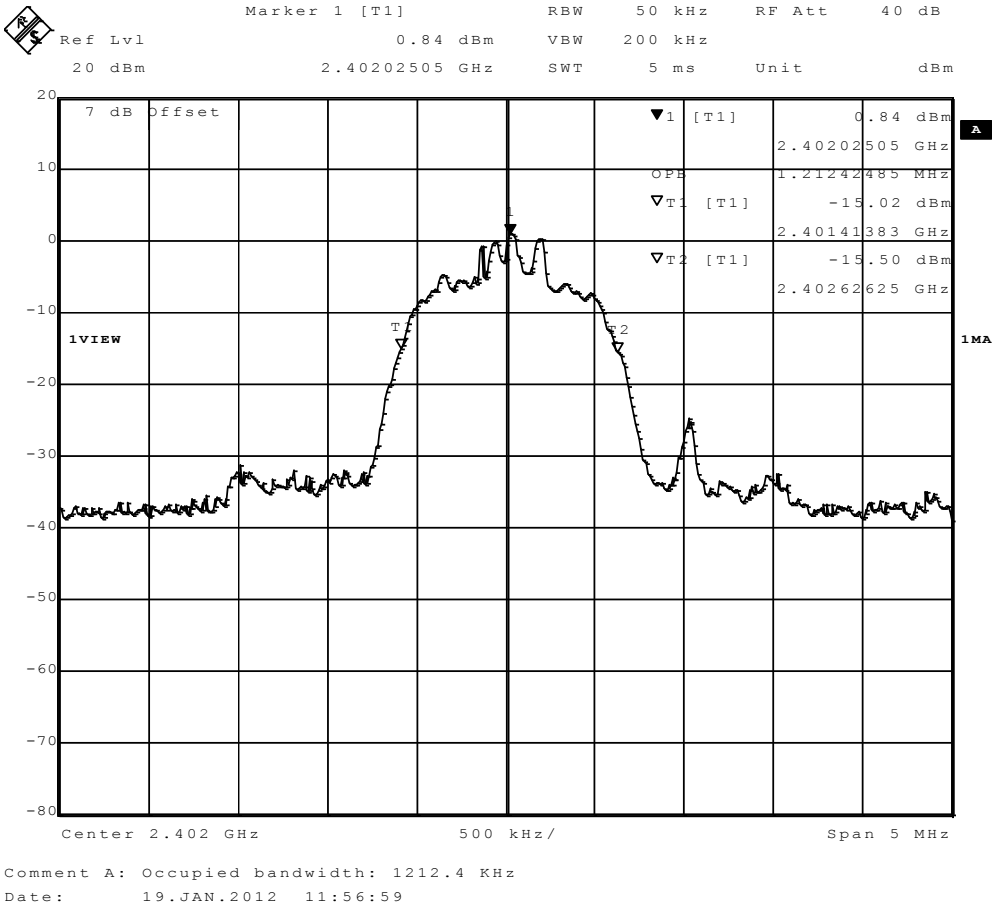
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 78 / 2480 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	GFSK



Occupied Bandwidth – 3-DH5-Sngl F_{LOW}

RSS Gen
Occupied Bandwidth

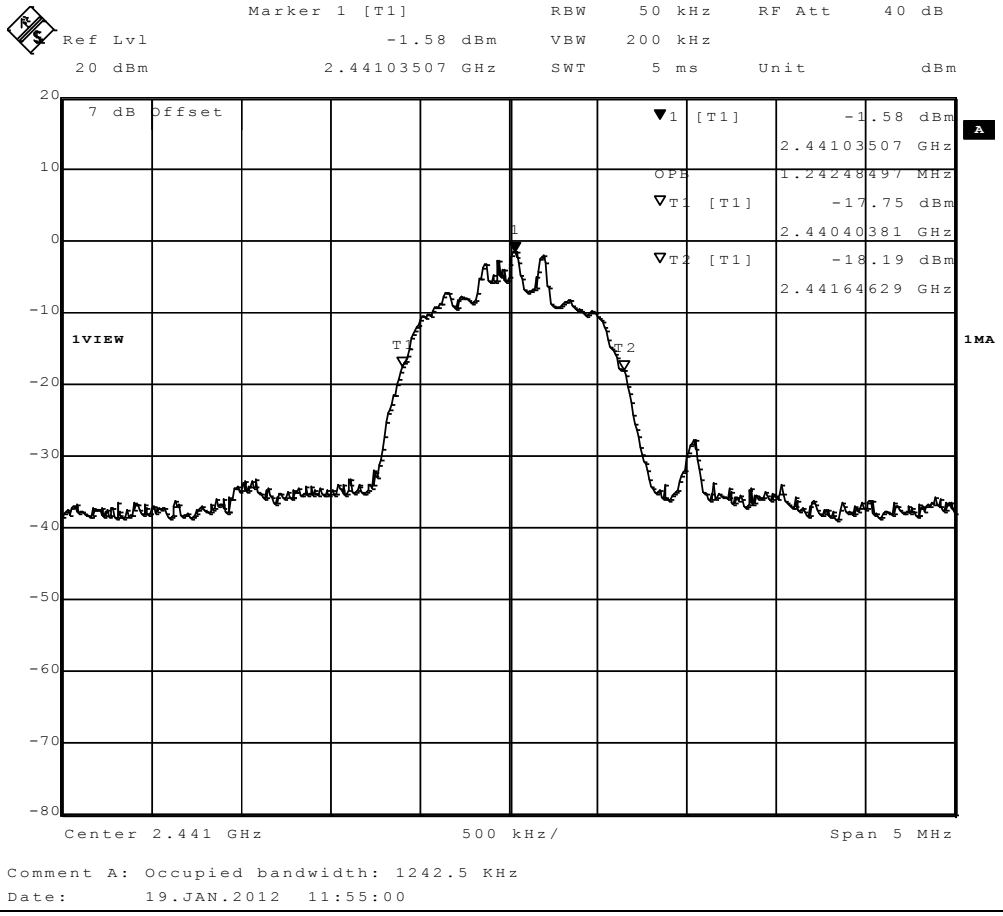
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 0 / 2402 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	8DPSK



Occupied Bandwidth – 3-DH5-Sngl F_{MID}

RSS Gen
Occupied Bandwidth

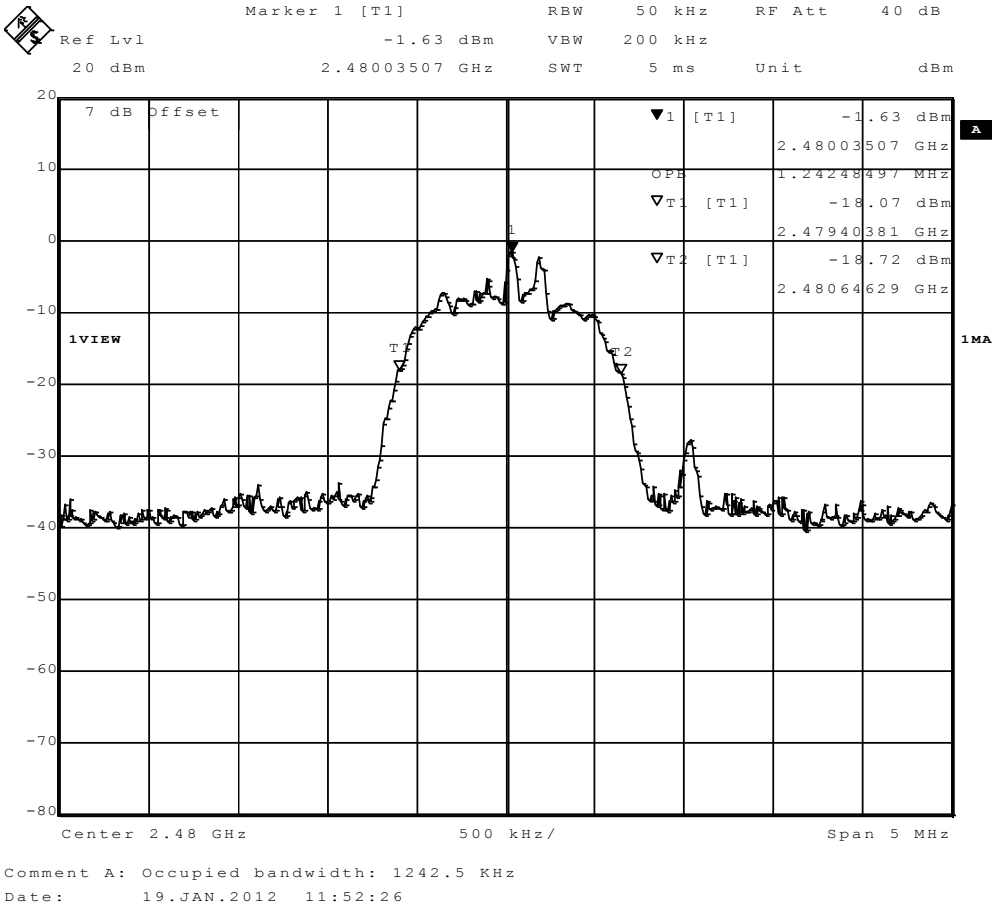
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 39 / 2441 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	8DPSK



Occupied Bandwidth – 3-DH5-Sngl F_{HIGH}

RSS Gen
Occupied Bandwidth

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	4.4.1 Occupied Bandwidth
Comment 1	Channel.: 78 / 2480 MHz
Comment 2	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 3	8DPSK

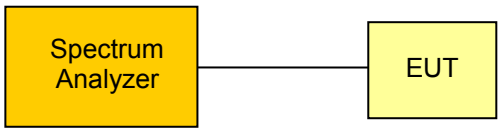


3.2 Test Conditions and Results – 20dB Bandwidth

20dB Bandwidth acc. FCC 15.247 / IC RSS-210	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(a)(1) / IC RSS-210 A8.1
Test according to measurement reference	Reference Method
	FCC Public Notice DA 00-705
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}

Limits	
Limit	Condition
1.5 · Carrier spacing	Output power ≤ 125mW / 21dBm
1.0 · Carrier spacing	125mW / 21dBm < Output power ≤ 1W / 30dBm

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to at least twice the emission spectrum
3. Detector set to peak and max hold
4. Envelope peak value of emission spectrum is selected
5. Marker on envelope of spectrum is set to level of -20dB to the left of the peak
6. Marker on envelope of spectrum is set to level of -20dB to the right of the peak
7. 20dB Bandwidth is determined by marker frequency separation

Test results

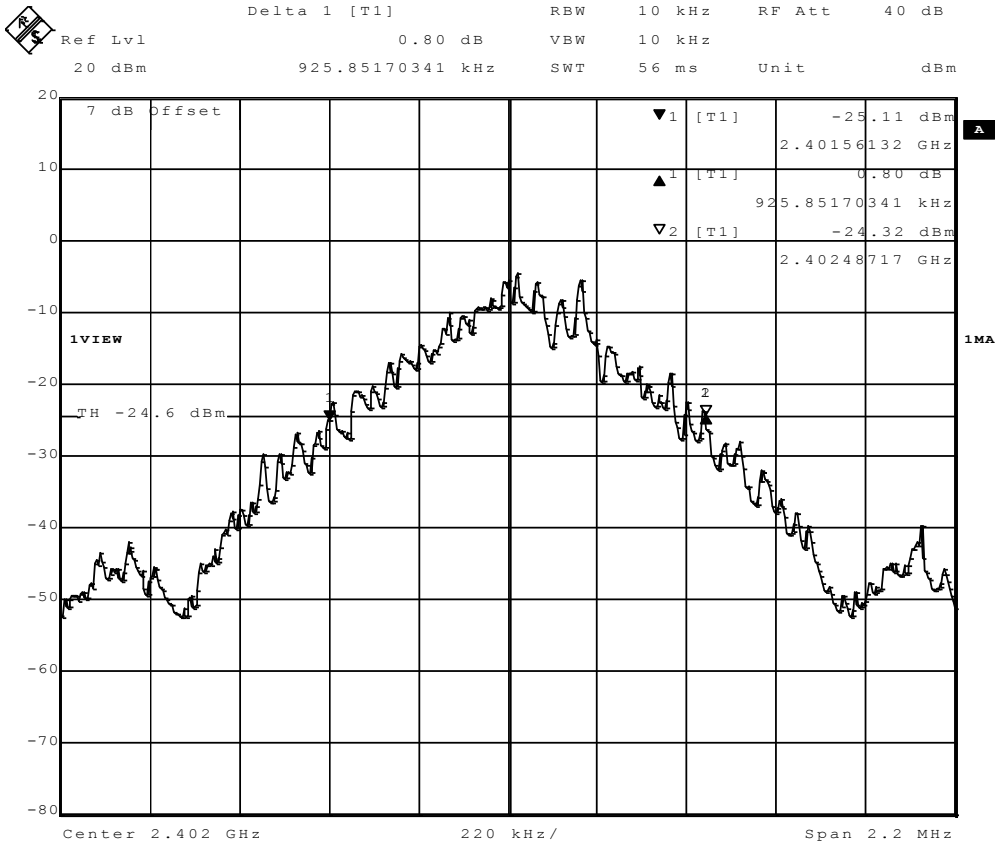
Channel	Frequency [MHz]	Mode	20dB Bandwidth [MHz]	Limit [MHz]	Result
F_{LOW}	2402	DH5-Sngl	925.852	1.5	PASS
F_{MID}	2441	DH5-Sngl	939.061	1.5	PASS
F_{HIGH}	2480	DH5-Sngl	925.852	1.5	PASS
F_{LOW}	2402	2DH5-Sngl	1190.337	1.5	PASS
F_{MID}	2441	2DH5-Sngl	1234.434	1.5	PASS
F_{HIGH}	2480	2DH5-Sngl	1190.337	1.5	PASS
F_{LOW}	2402	3DH5-Sngl	1247.669	1.5	PASS
F_{MID}	2441	3DH5-Sngl	1247.669	1.5	PASS
F_{HIGH}	2480	3DH5-Sngl	1238.816	1.5	PASS

Comments:

20dB Bandwidth – DH5-Sngl F_{LOW}

FCC part 15.247
20 dB bandwidth

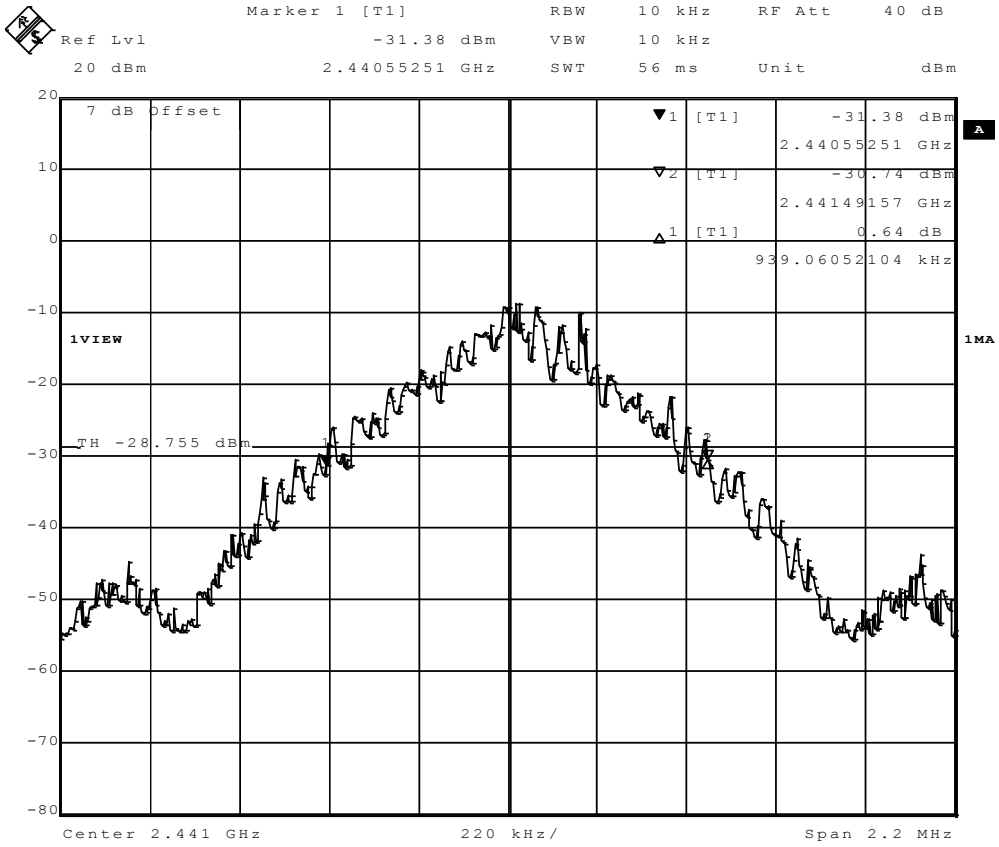
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 0 / 2402 MHz / GFSK
Comment 3	pass



20dB Bandwidth – DH5-Sngl F_{MID}

FCC part 15.247
20 dB bandwidth

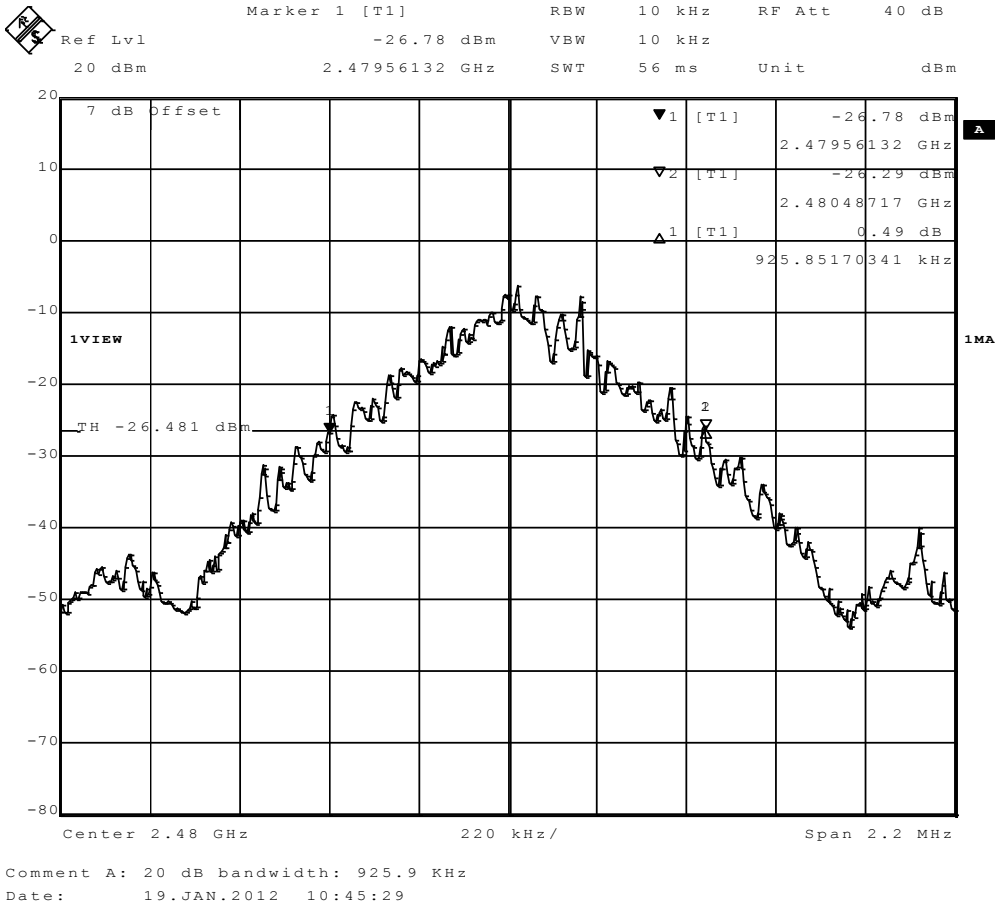
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 39 / 2441 MHz / GFSK
Comment 3	pass



20dB Bandwidth – DH5-Sngl F_{HIGH}

FCC part 15.247
20 dB bandwidth

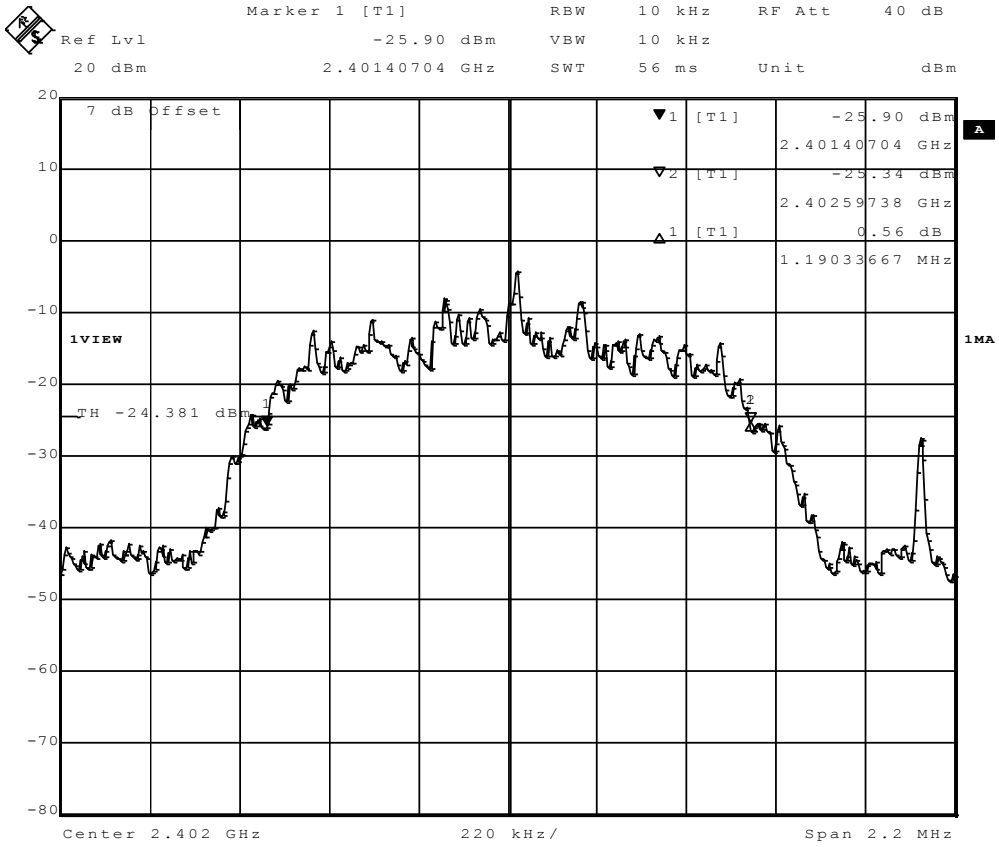
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 78 / 2480 MHz / GFSK
Comment 3	pass



20dB Bandwidth – 2-DH5-Sngl F_{LOW}

FCC part 15.247
20 dB bandwidth

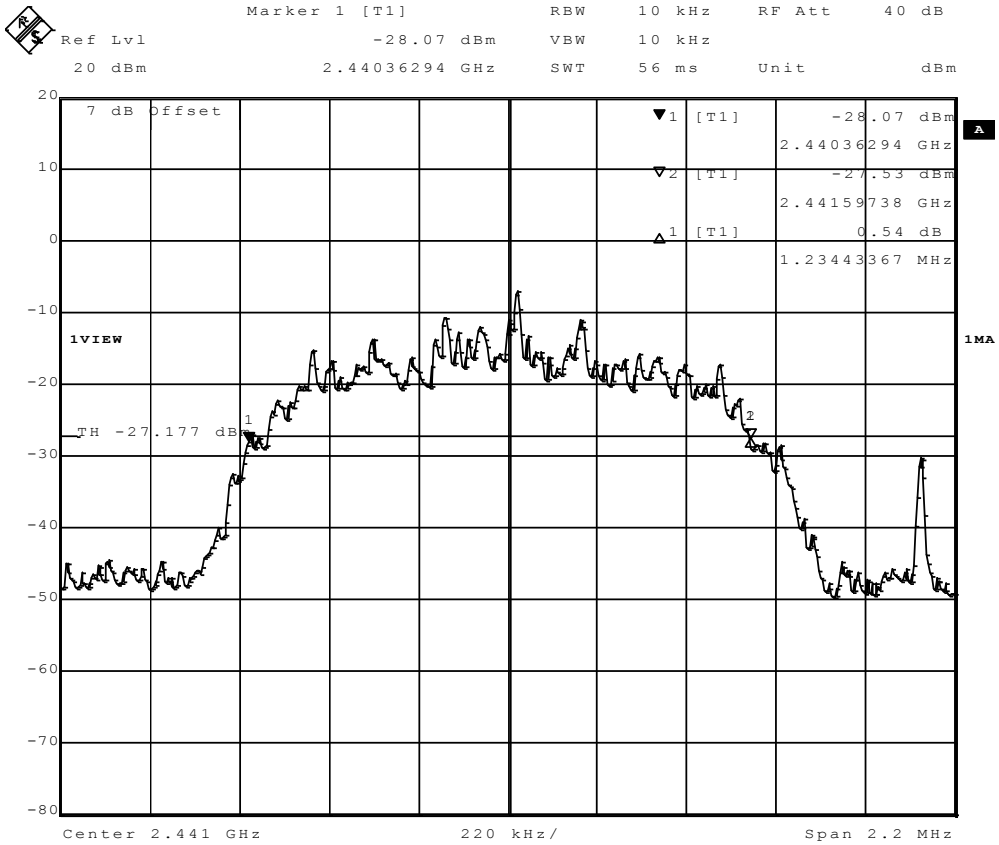
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 0 / 2402 MHz / Pi/4-DQPSK
Comment 3	pass



20dB Bandwidth – 2-DH5-Sngl F_{MID}

FCC part 15.247
20 dB bandwidth

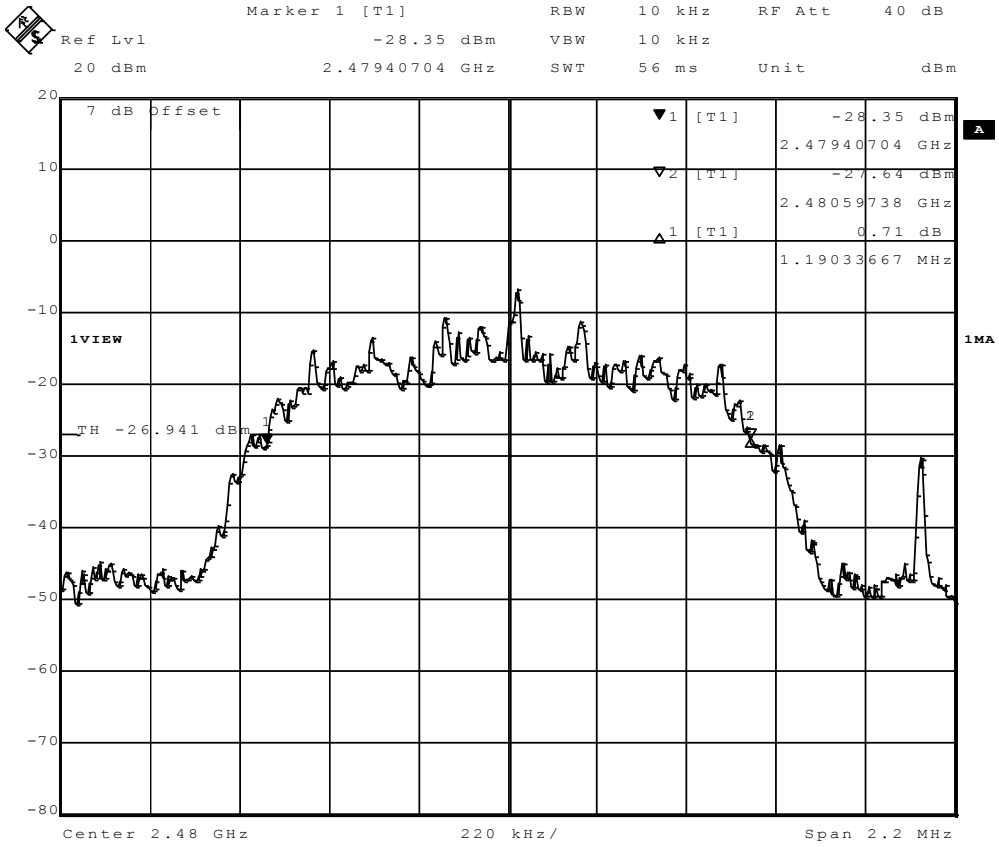
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 39 / 2441 MHz / Pi/4-DQPSK
Comment 3	pass



20dB Bandwidth – 2-DH5-Sngl F_{HIGH}

FCC part 15.247
20 dB bandwidth

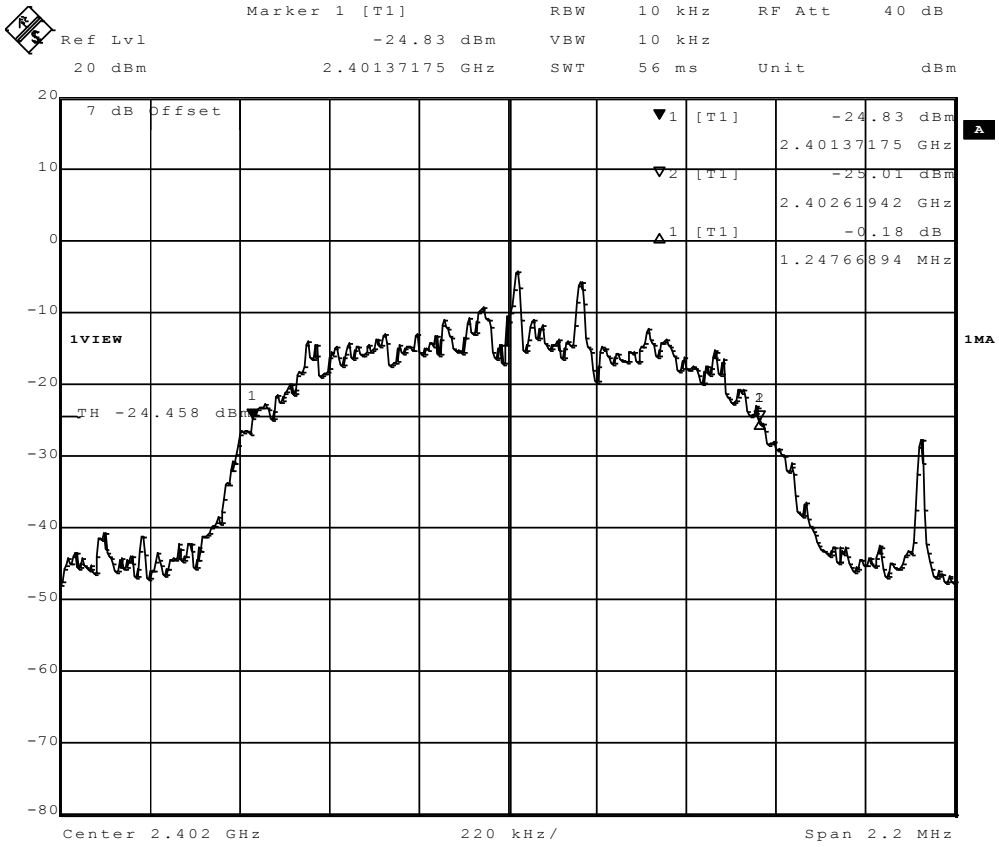
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 78 / 2480 MHz / Pi/4-DQPSK
Comment 3	pass



20dB Bandwidth – 3-DH5-Sngl F_{LOW}

FCC part 15.247
20 dB bandwidth

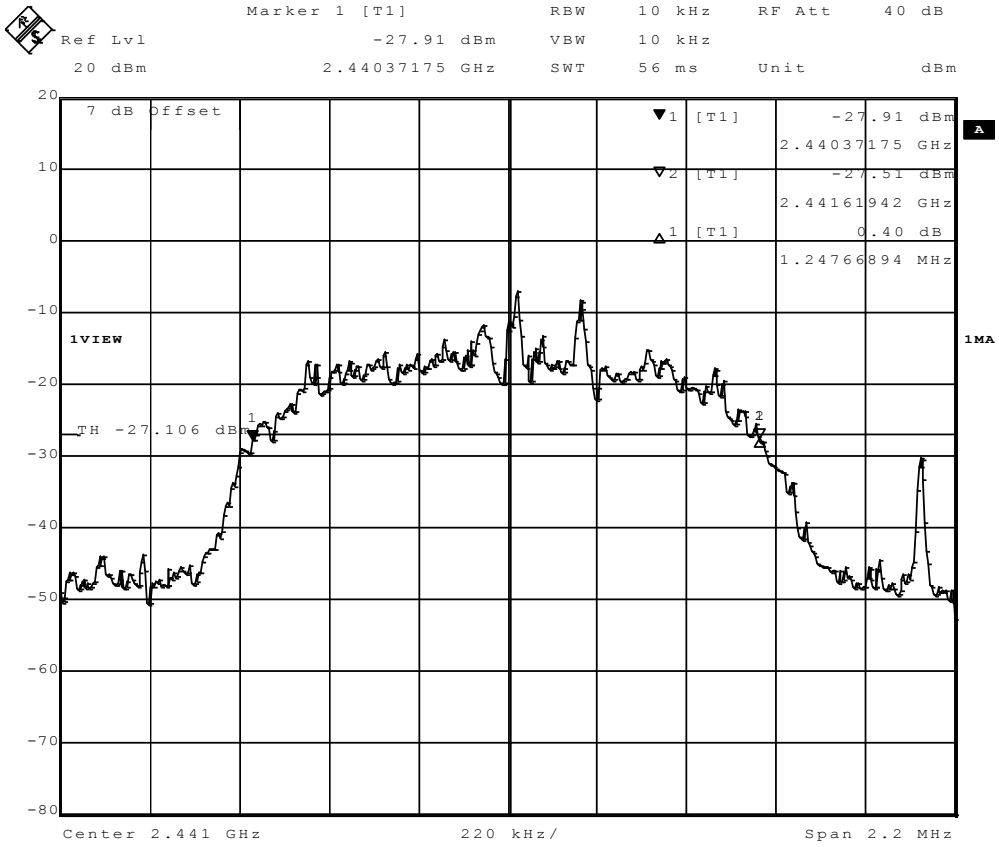
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 0 / 2402 MHz / 8DPSK
Comment 3	pass



20dB Bandwidth – 3-DH5-Sngl F_{MID}

FCC part 15.247
20 dB bandwidth

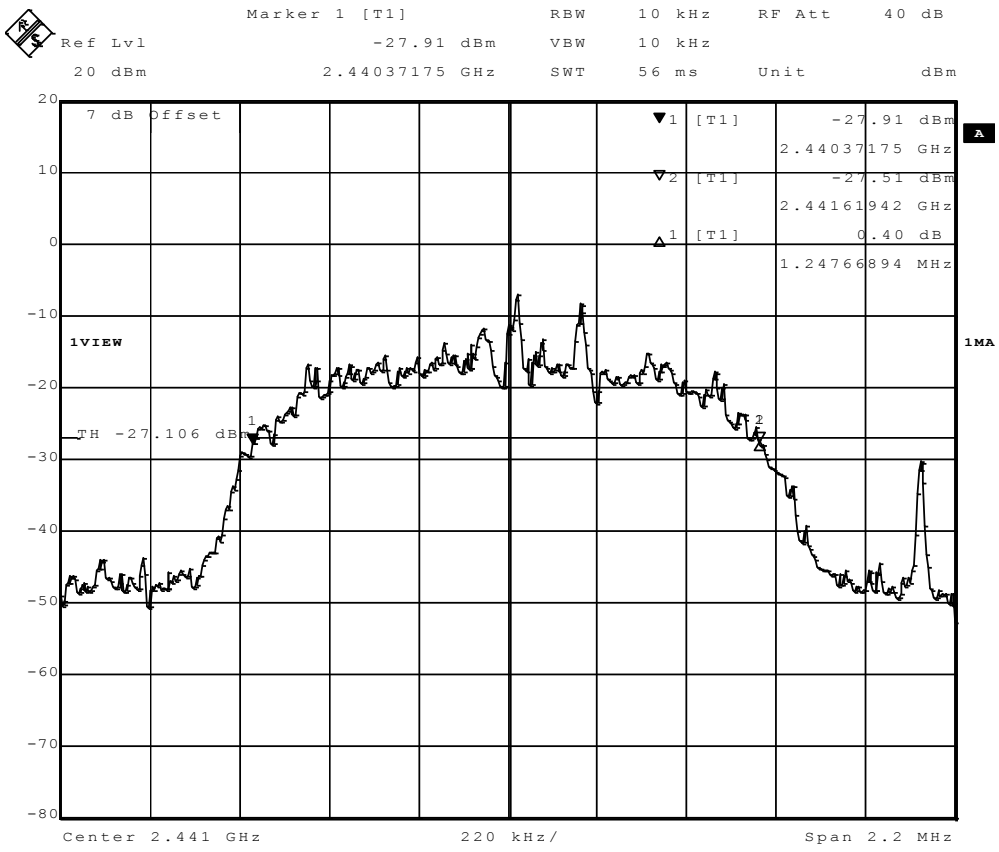
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 39 / 2441 MHz / 8DPSK
Comment 3	pass



20dB Bandwidth – 3-DH5-Sngl F_{HIGH}

FCC part 15.247
20 dB bandwidth

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	20 dB bandwidth
Comment 2	Channel.: 39 / 2441 MHz / 8DPSK
Comment 3	pass



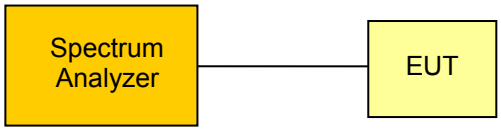
3.3 Test Conditions and Results – Number of hopping frequencies

Number of hopping frequencies acc. FCC 15.247 / IC RSS-210	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1
Test according to measurement reference	Reference Method
	FCC Public Notice DA 00-705
Test frequency range	Tested frequencies
	F_{LOW} - F_{HIGH}
EUT test mode	DH5-Hop

Limits

Limit	Condition
Number of hopping channels ≥ 15	Output power ≤ 125mW / 21dBm
Number of hopping channels ≥ 75	125mW / 21dBm < Output power ≤ 1W / 30dBm

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to measurement frequency range
3. Detector set to peak and max hold
4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra
5. The number of peaks is counted to determine number of hopping frequencies

Test results

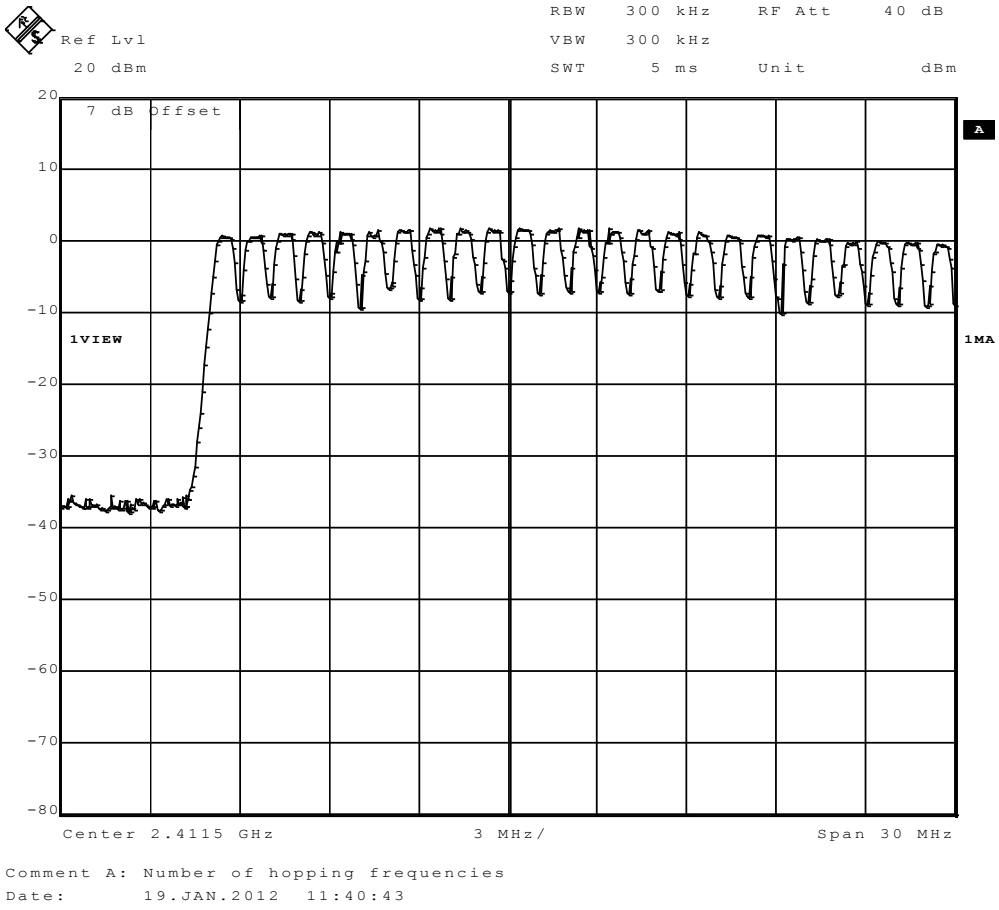
Number of hopping frequencies	Limit	Result
79	≥ 15	PASS

Comments:

Number of hopping frequencies - Range A

FCC part 15.247
Number of hopping frequencies

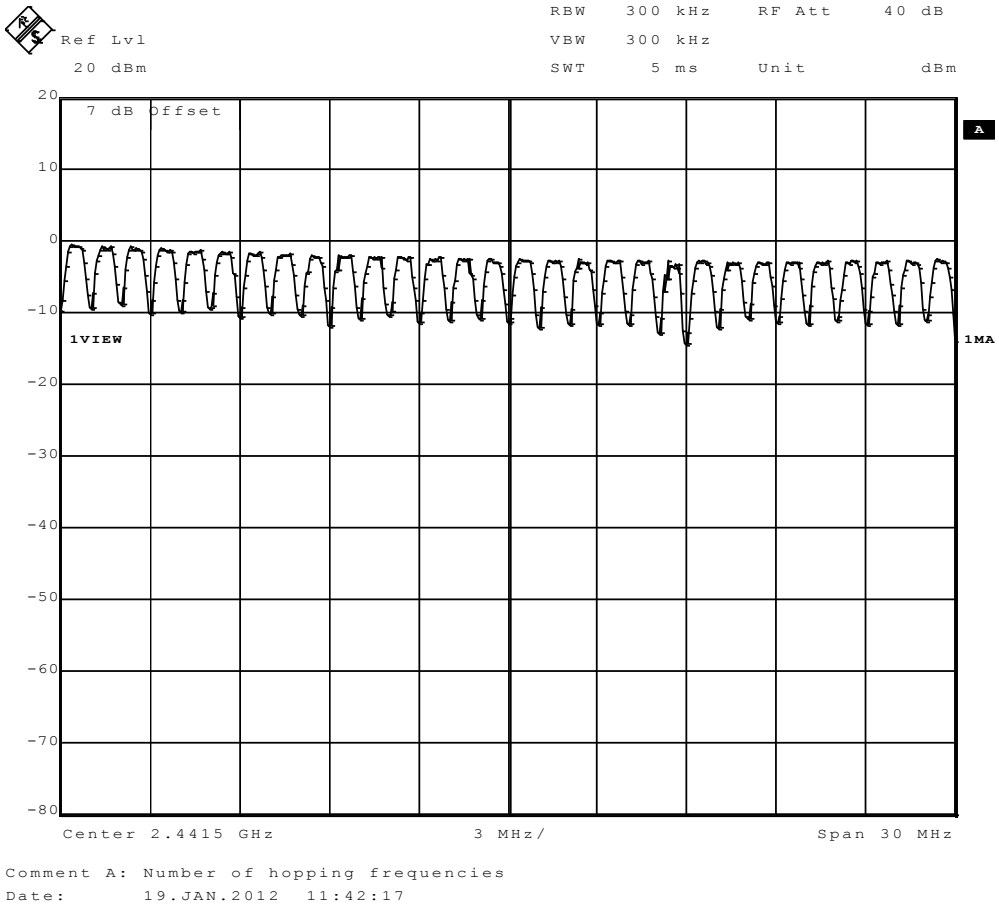
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.: 0-24
Comment 3	pass



Number of hopping frequencies - Range B

FCC part 15.247
Number of hopping frequencies

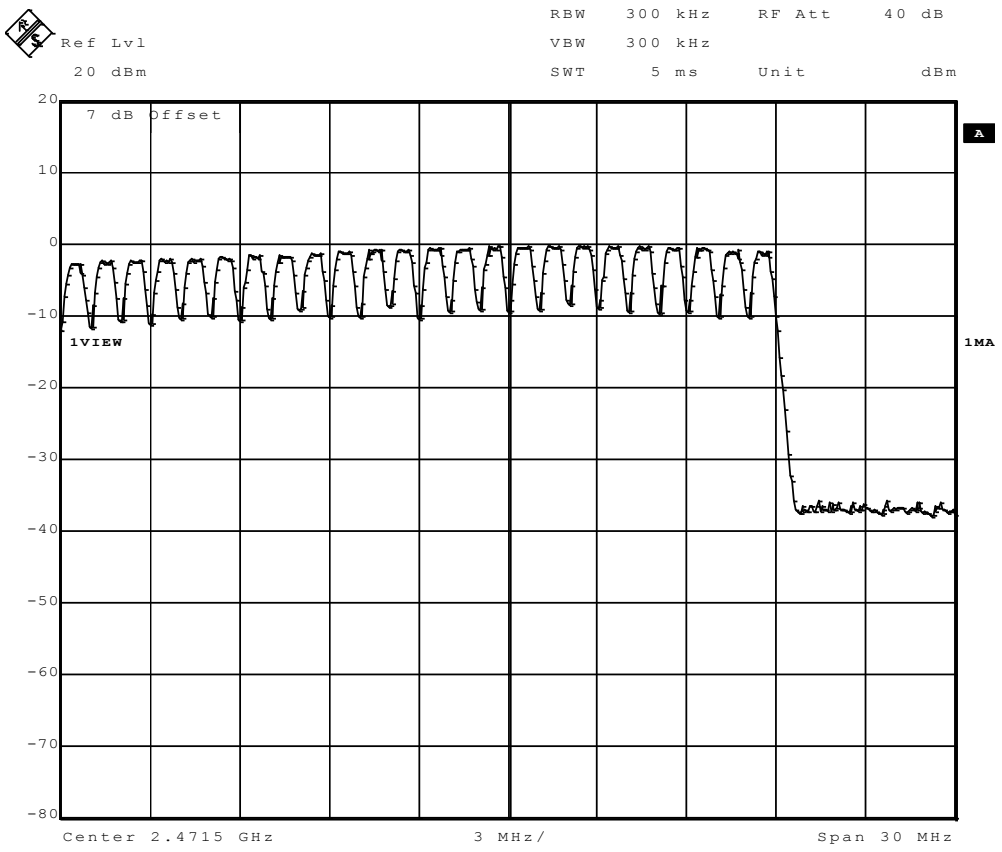
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.: 25-54
Comment 3	pass



Number of hopping frequencies - Range C

FCC part 15.247
Number of hopping frequencies

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	Number of hopping frequencies
Comment 2	Channel.: 55-78
Comment 3	pass

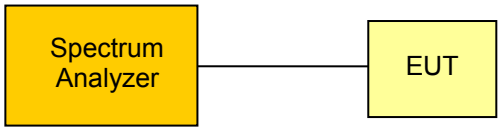


3.4 Test Conditions and Results – Frequency hopping channel separation

Frequency hopping channel separation acc. FCC 15.247 / IC RSS-210	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(a)(1) / IC RSS-210 A8.1
Test according to measurement reference	Reference Method
	FCC Public Notice DA 00-705
Test frequency range	Tested frequencies
	2441 & 2442MHz
EUT test mode	DH5-Hop

Limits	
Limit	Condition
≥ 25kHz or ⅔ of 20dB bandwidth	Output power ≤ 125mW / 21dBm
≥ 25kHz or 20dB bandwidth	125mW / 21dBm < Output power ≤ 1W / 30dBm

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to measurement frequency range
3. Detector set to peak and max hold
4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra
5. The two adjacent channel peaks are marked
6. Channel separation is determined from frequency separation of markers

Test results

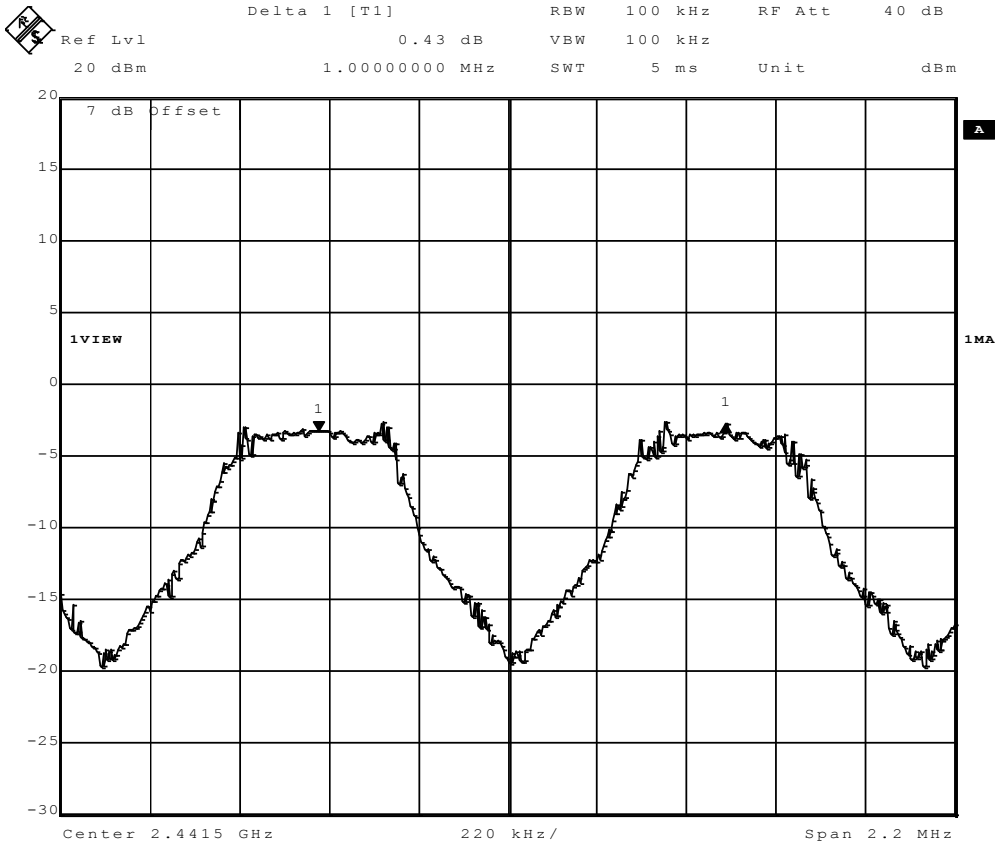
Channel separation [kHz]	Limit [kHz]	Result
1000.00	≥ ⅔ · 1247.669 = 831.779	PASS

Comments:

Frequency hopping channel separation

FCC part 15.247
Carrier frequency separation

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)(1)
Comment 1	Carrier frequency separation
Comment 2	Channel.: 39/40 / 2441/2442 MHz
Comment 3	Hopping mode



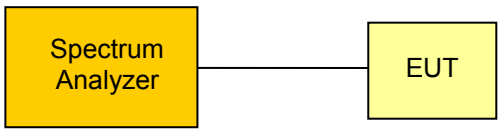
3.5 Test Conditions and Results – Time of occupancy (Dwell Time)

Time of occupancy (Dwell time) acc. FCC 15.247 / IC RSS-210	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1
Test according to measurement reference	Reference Method
	FCC Public Notice DA 00-705
Test frequency range	Tested frequencies
	2441MHz
EUT test mode	DH5-Hop

Limits

Limit
Time of occupancy ≤ 0.4s within 0.4s · Number of hopping channels

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Center frequency set to test channel center frequency
3. Span set to zero span and detector to peak and max hold
4. Resolution bandwidth is set to 100kHz and sweep time to observation period
5. Time of occupancy determined from number of peaks multiplied by single hop dwell time

Test results

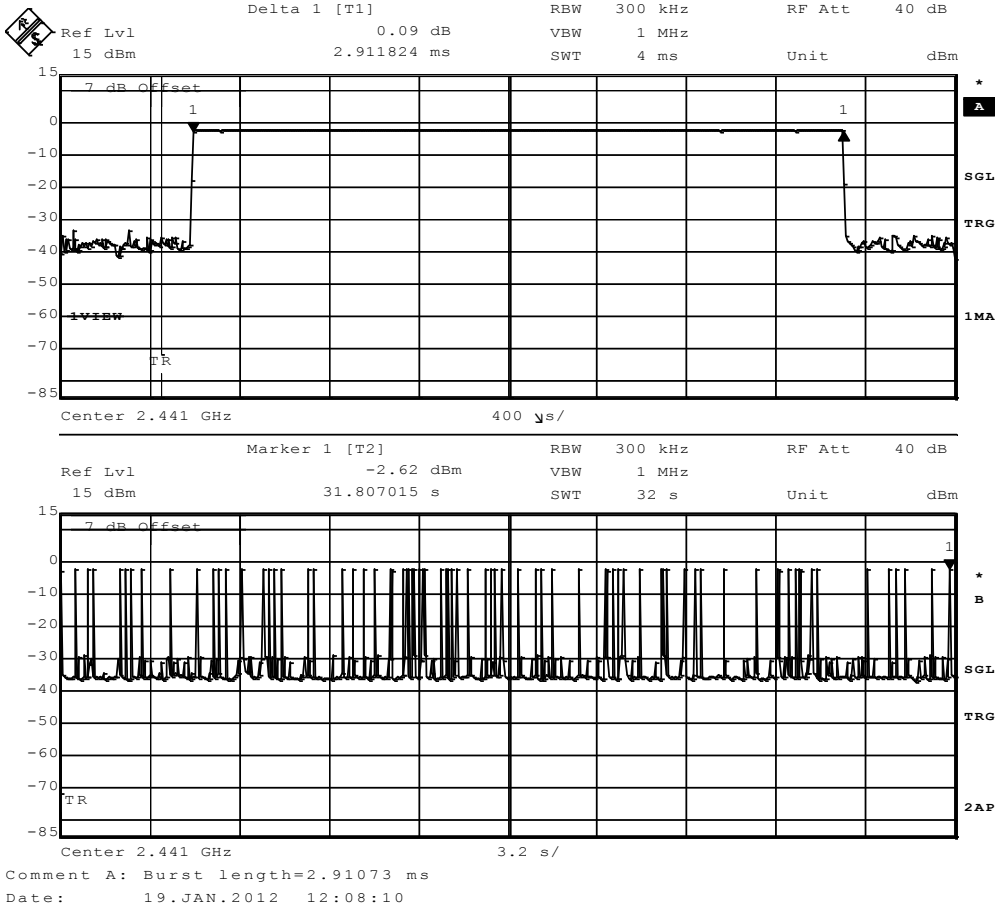
Observation period [s]	No. of hops	Dwell time/hop [s]	Time of occupancy [s]	Limit [s]	Result
31.6	68	0.002912	0.198s	≤ 0.4	PASS

Comments:

Time of occupancy

FCC part 15.247
Time of occupancy (dwell time)

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(a)
Comment 1	Time of occupancy
Comment 2	Channel.: 39 / 2441 MHz (Hopping mode)
Comment 3	68 events * 2.912 ms result: 198.0 ms



3.6 Test Conditions and Results – Maximum peak conducted power

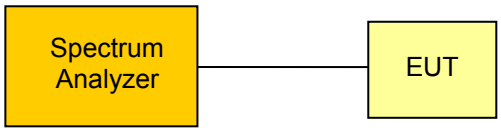
Maximum peak conducted power acc. FCC 15.247 / IC RSS-210	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(b)(1) / IC RSS-210 A8.4
Test according to measurement reference	Reference Method
	FCC Public Notice DA 00-705
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}
Measurement mode	Peak
Maximum antenna gain	2.2dBi ⇒ Limit correction = 0dB

Limits

Limit	Condition
1W (30dBm)	Number of hopping channels ≥ 75
0.125W (21dBm)	75 > Number of hopping channels ≥ 15

The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6dBi. If transmitting antennas of directional gain greater than 6dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Center frequency set to test channel center frequency
3. Span set to twice the 20dB bandwidth and detector to peak and max hold
4. Resolution bandwidth is set to 3MHz
5. Peak conducted power is determined from peak of spectrum envelope

Test results								
Channel	Frequency [MHz]	Voltage	Mode	Peak power [dbm]	Peak power [W]	Limit [dBm]	Margin [dB]	Result
F_{LOW}	2402	12VDC	DH5-Sngl	1.0	0.001	30	-29.00	PASS
F_{LOW}	2402	9VDC	DH5-Sngl	0.6	0.001	30	-29.40	PASS
F_{LOW}	2402	28VDC	DH5-Sngl	0.6	0.001	30	-29.40	PASS
F_{MID}	2441	12VDC	DH5-Sngl	-2.3	0.001	30	-32.30	PASS
F_{MID}	2441	9VDC	DH5-Sngl	-2.3	0.001	30	-32.30	PASS
F_{MID}	2441	28VDC	DH5-Sngl	-2.3	0.001	30	-32.30	PASS
F_{HIGH}	2480	12VDC	DH5-Sngl	-0.7	0.001	30	-30.70	PASS
F_{HIGH}	2480	9VDC	DH5-Sngl	-0.7	0.001	30	-30.70	PASS
F_{HIGH}	2480	28VDC	DH5-Sngl	-0.7	0.001	30	-30.70	PASS
F_{LOW}	2402	12VDC	2DH5-Sngl	0.2	0.001	30	-29.80	PASS
F_{LOW}	2402	9VDC	2DH5-Sngl	0.2	0.001	30	-29.80	PASS
F_{LOW}	2402	28VDC	2DH5-Sngl	0.2	0.001	30	-29.80	PASS
F_{MID}	2441	12VDC	2DH5-Sngl	-2.5	0.001	30	-32.50	PASS
F_{MID}	2441	9VDC	2DH5-Sngl	-2.5	0.001	30	-32.50	PASS
F_{MID}	2441	28VDC	2DH5-Sngl	-2.5	0.001	30	-32.50	PASS
F_{HIGH}	2480	12VDC	2DH5-Sngl	-2.2	0.001	30	-32.20	PASS
F_{HIGH}	2480	9VDC	2DH5-Sngl	-2.2	0.001	30	-32.20	PASS
F_{HIGH}	2480	28VDC	2DH5-Sngl	-2.2	0.001	30	-32.20	PASS
F_{LOW}	2402	12VDC	3DH5-Sngl	0.3	0.001	30	-29.70	PASS
F_{LOW}	2402	9VDC	3DH5-Sngl	0.3	0.001	30	-29.70	PASS
F_{LOW}	2402	28VDC	3DH5-Sngl	0.3	0.001	30	-29.70	PASS
F_{MID}	2441	12VDC	3DH5-Sngl	-2.5	0.001	30	-32.50	PASS
F_{MID}	2441	9VDC	3DH5-Sngl	-2.5	0.001	30	-32.50	PASS
F_{MID}	2441	28VDC	3DH5-Sngl	-2.5	0.001	30	-32.50	PASS
F_{HIGH}	2480	12VDC	3DH5-Sngl	-2.3	0.001	30	-32.30	PASS
F_{HIGH}	2480	9VDC	3DH5-Sngl	-2.2	0.001	30	-32.20	PASS
F_{HIGH}	2480	28VDC	3DH5-Sngl	-2.3	0.001	30	-32.30	PASS
Comments:								

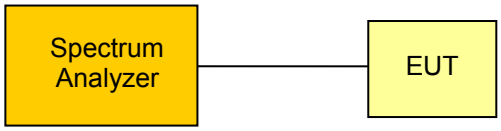
3.7 Test Conditions and Results – Band edge compliance

Band-edge compliance acc. FCC 15.247 / IC RSS-210	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(d) / IC RSS-210 A8.5
Test according to measurement reference	Reference Method
	FCC Public Notice DA 00-705
Test frequency range	Tested frequencies
	F_{LOW} / F_{HIGH}
Measurement mode	Peak

Limits

Limit	Condition
≤ -20dB/100kHz	Peak power measurement detector = Peak
≤ -30dB/100kHz	Peak power measurement detector = RMS

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100kHz
4. Markers are set to peak emission levels within frequency band and outside frequency band
5. Band edge attenuation is determined from level difference

Test results

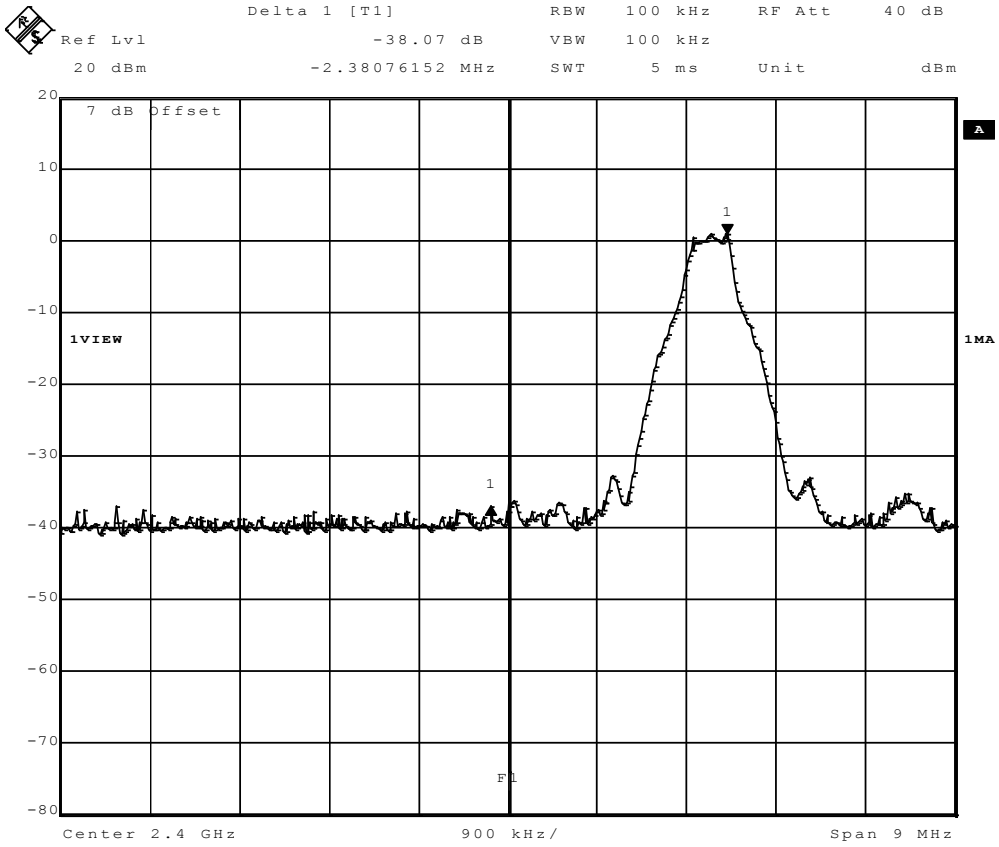
Channel	Frequency [MHz]	Mode	Level [dBc]	Limit [dBc]	Margin [dB]	Result
F_{LOW}	2402	DH5-Sngl	-38.07	-20	-18.07	PASS
F_{HIGH}	2480	DH5-Sngl	-37.82	-20	-17.82	PASS
F_{LOW}	2402	DH5-Hop	-37.86	-20	-17.86	PASS
F_{HIGH}	2480	DH5-Hop	-34.67	-20	-14.67	PASS
F_{LOW}	2402	2DH5-Sngl	-38.32	-20	-18.32	PASS
F_{HIGH}	2480	2DH5-Sngl	-36.63	-20	-16.63	PASS
F_{LOW}	2402	2DH5-Hop	-37.65	-20	-17.65	PASS
F_{HIGH}	2480	2DH5-Hop	-36.24	-20	-16.24	PASS

F_{LOW}	2402	3DH5-Sngl	-38.88	-20	-18.88	PASS
F_{HIGH}	2480	3DH5-Sngl	-36.95	-20	-16.95	PASS
F_{LOW}	2402	3DH5-Hop	-39.04	-20	-19.04	PASS
F_{HIGH}	2480	3DH5-Hop	-35.86	-20	-15.86	PASS
Comments:						

Band-edge compliance – DH5-Sngl F_{LOW}

FCC part 15.247
Band-edge compliance of RF conducted emissions

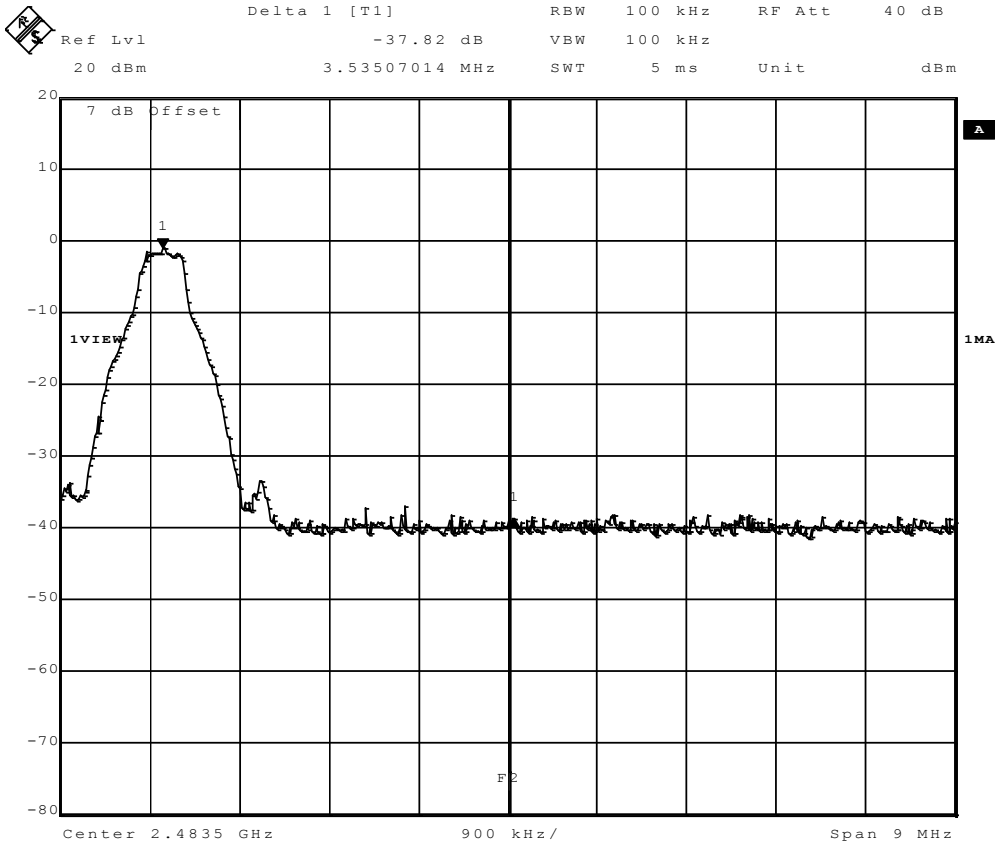
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz GSFK
Comment 3	Single frequency mode



Band-edge compliance – DH5-Sngl F_{HIGH}

FCC part 15.247
Band-edge compliance of RF conducted emissions

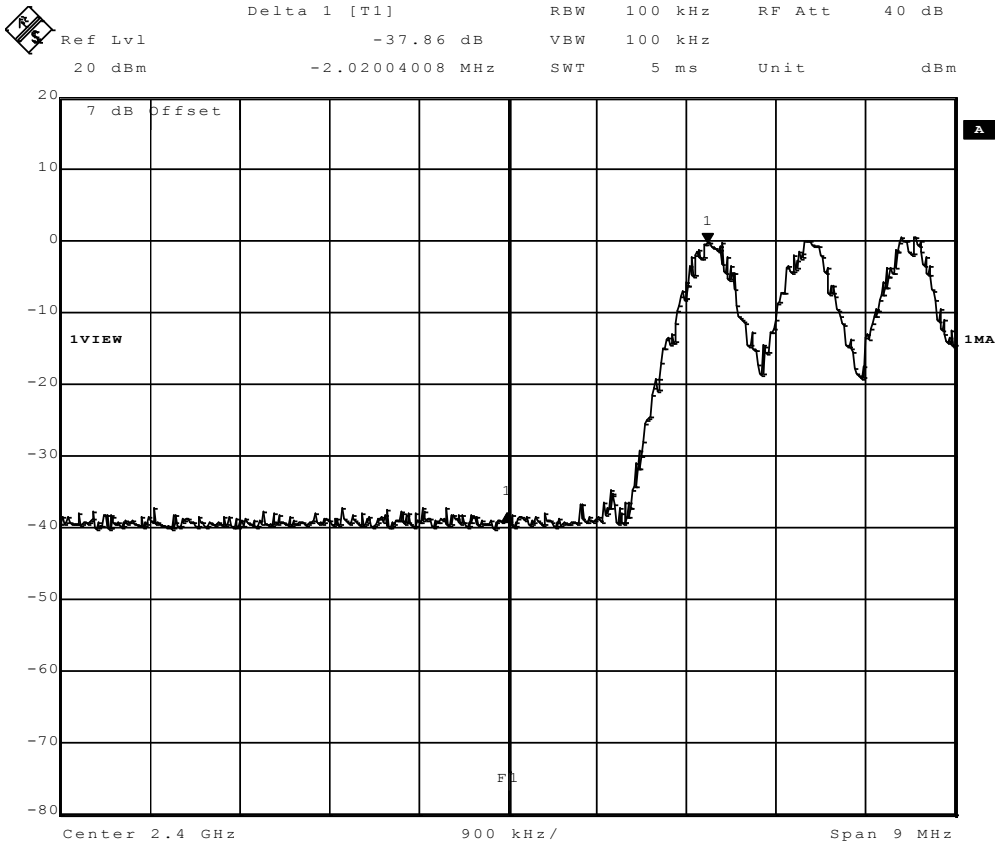
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz, GFSK
Comment 3	Single frequency mode



Band-edge compliance – DH5-Hop F_{LOW}

FCC part 15.247
Band-edge compliance of RF conducted emissions

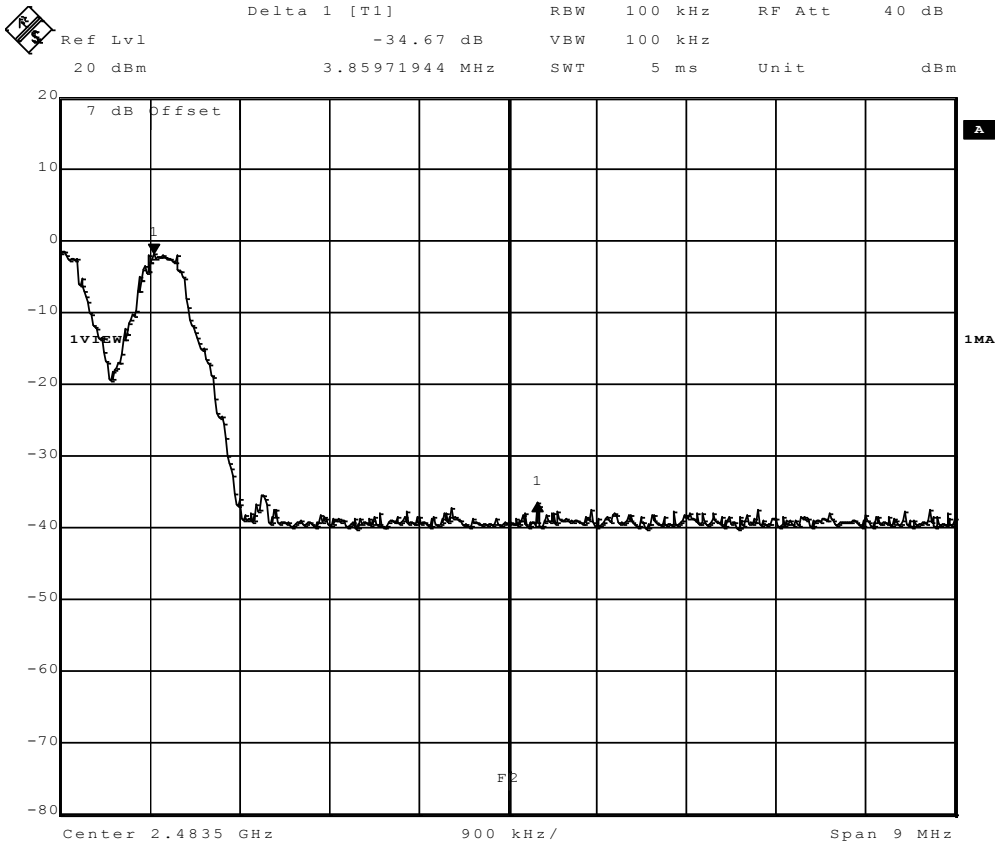
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz, GFSK
Comment 3	Hopping mode



Band-edge compliance – DH5-Hop F_{HIGH}

FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz, GFSK
Comment 3	Hopping mode

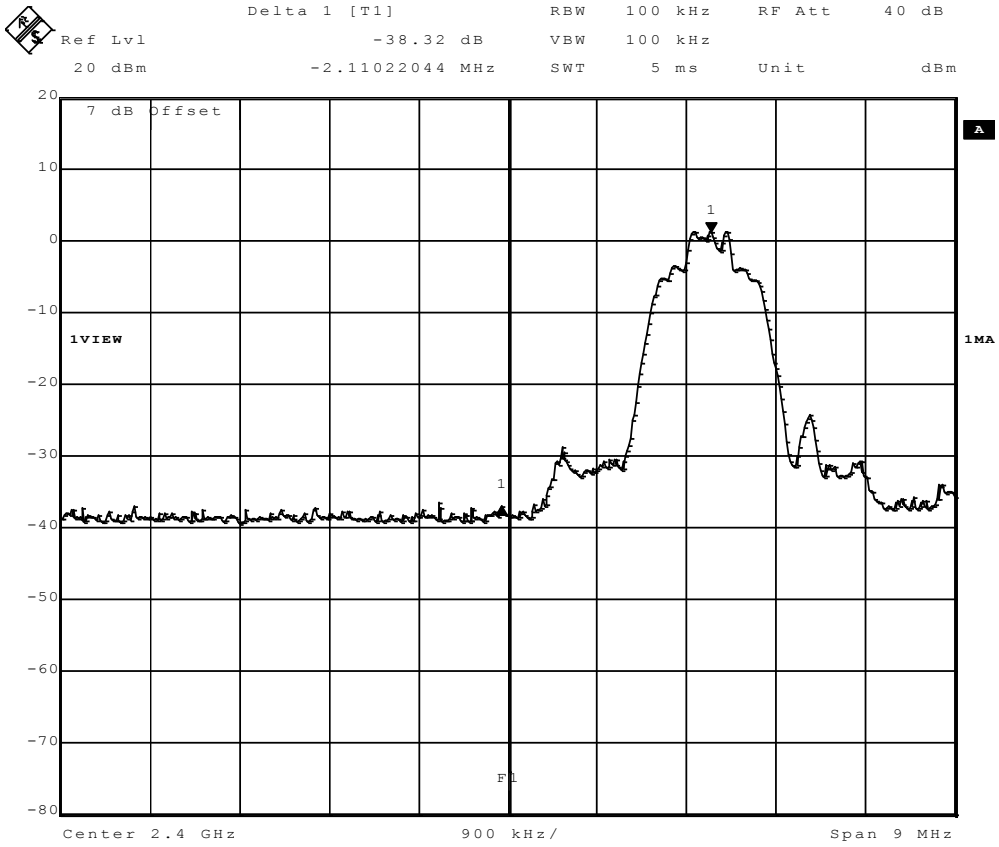


Comment A: Limit: Marker Delta value >20 dB; Result: PASS
Date: 19.JAN.2012 11:19:52

Band-edge compliance – 2-DH5-Sngl F_{LOW}

FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz, PI/4-DQPSK
Comment 3	Single frequency mode

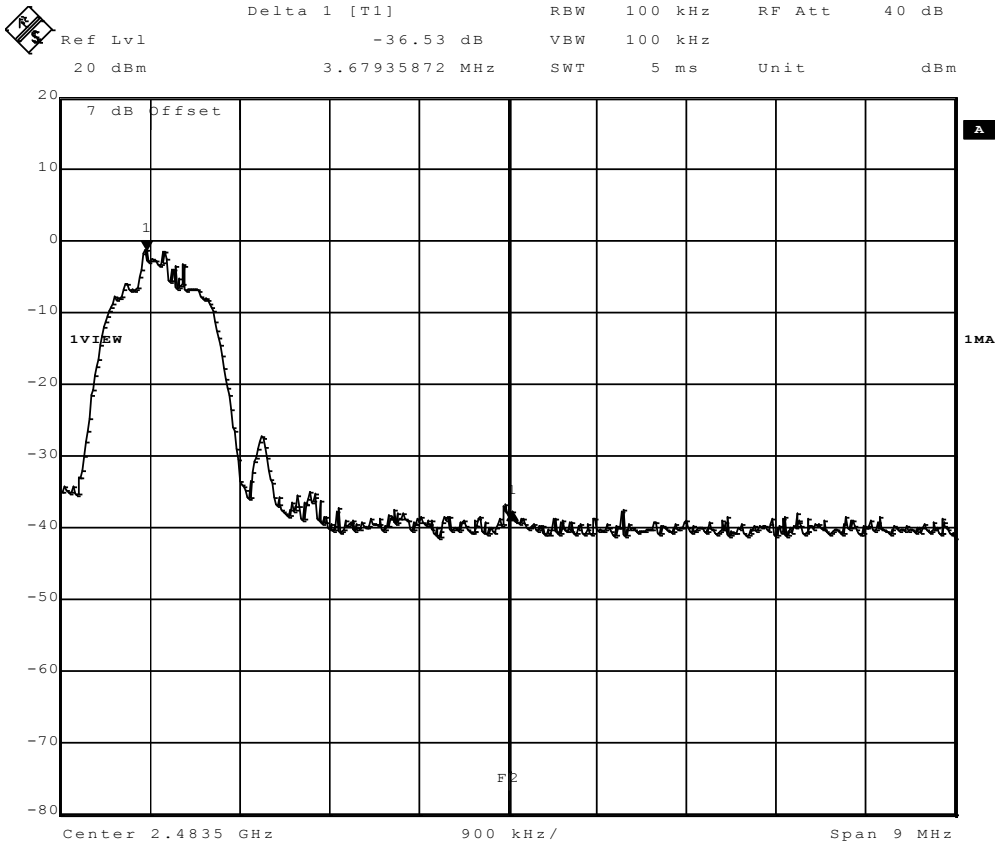


Comment A: Limit: Marker Delta value >20 dB; Result: PASS
Date: 19.JAN.2012 11:06:31

Band-edge compliance – 2-DH5-Sngl F_{HIGH}

FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz, PI/4-DQPSK
Comment 3	Single frequency mode

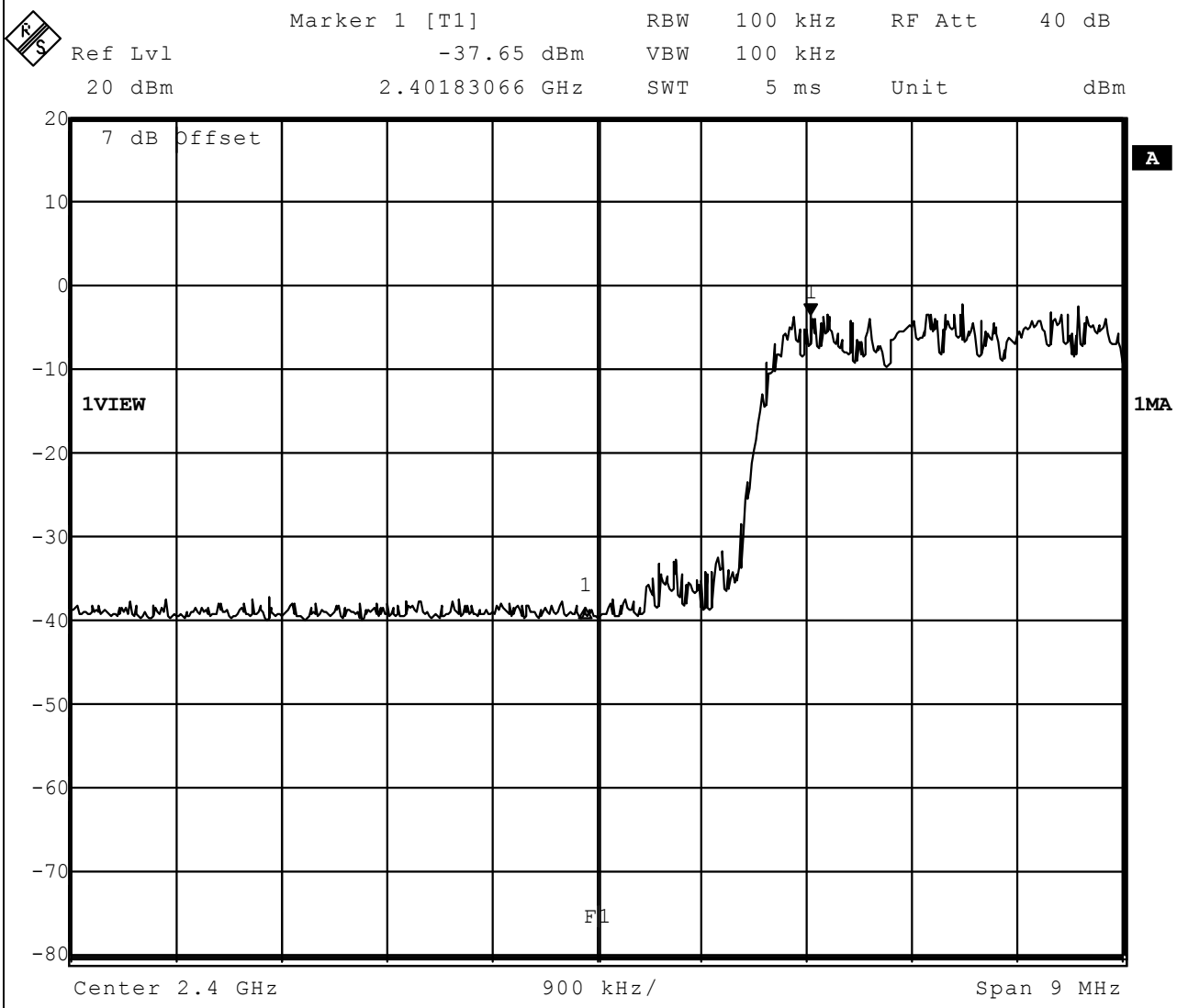


Comment A: Limit: Marker Delta value >20 dB; Result: PASS
Date: 19.JAN.2012 11:08:01

Band-edge compliance – 2-DH5-Hop F_{LOW}

FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz, Pi/4-DQPSK
Comment 3	Hopping mode

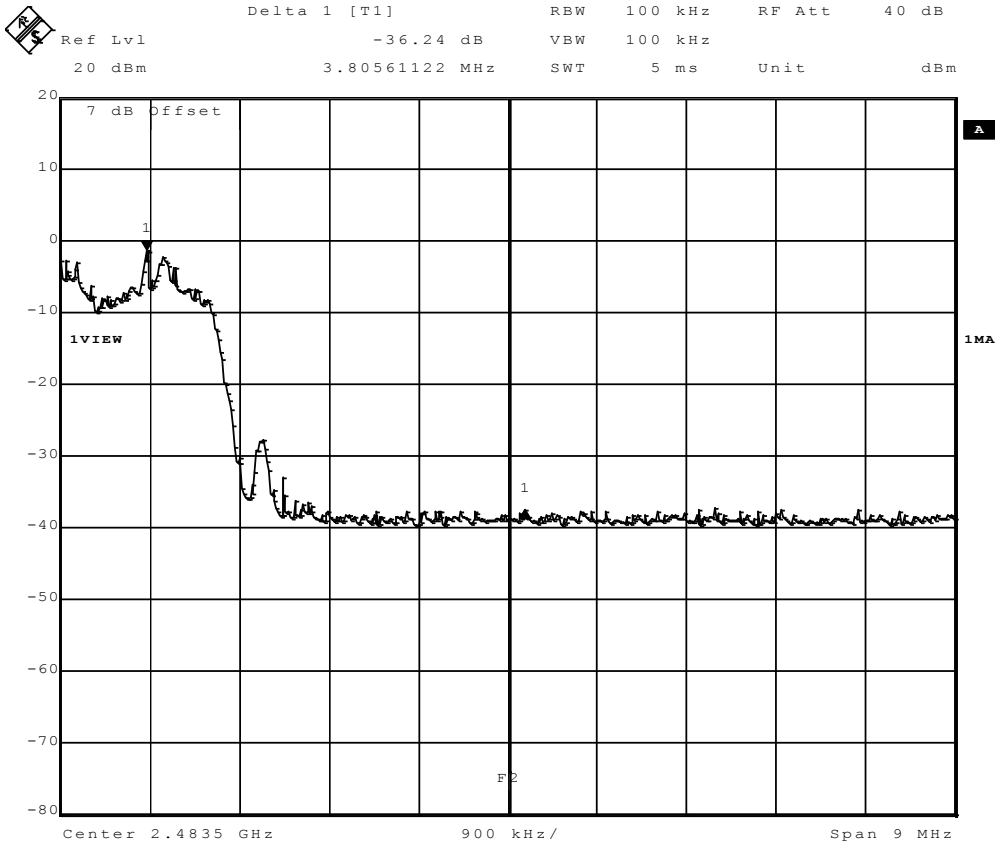


Comment A: Limit: Marker Delta value >20 dB; Result: PASS
Date: 19.JAN.2012 11:21:56

Band-edge compliance – 2-DH5-Hop F_{HIGH}

FCC part 15.247
Band-edge compliance of RF conducted emissions

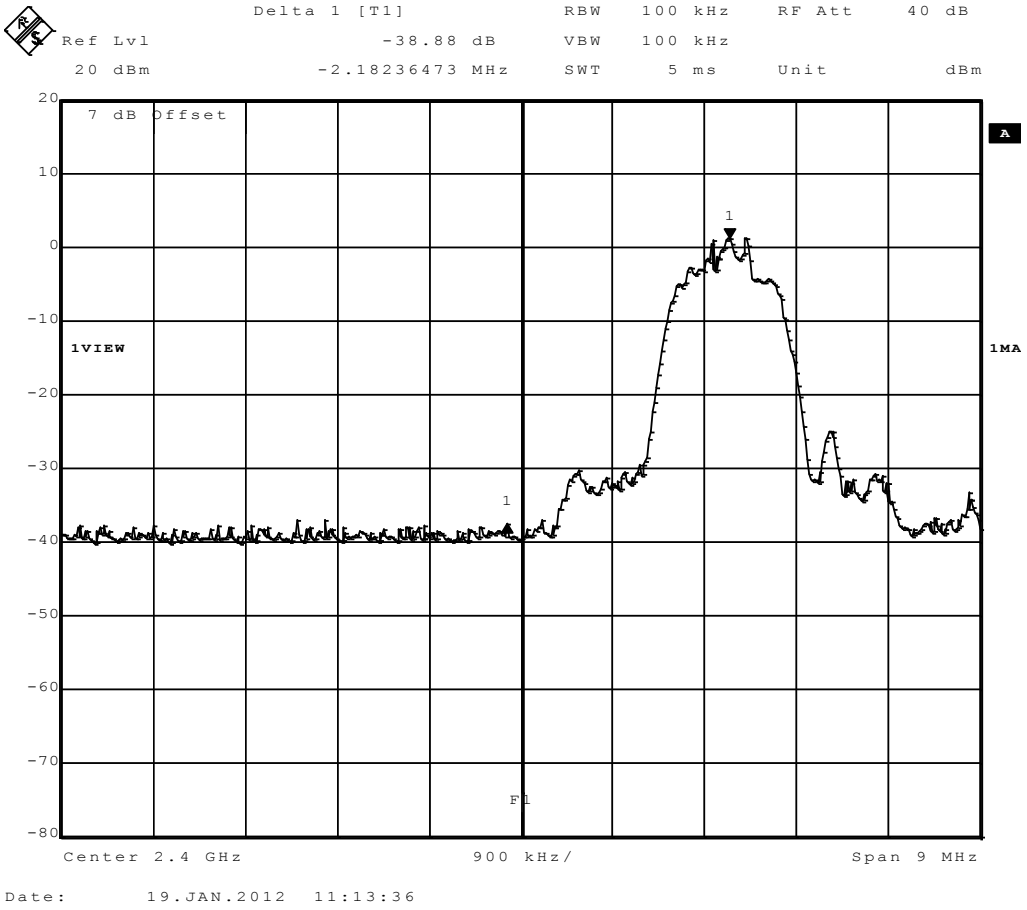
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz, Pi/4-DQPSK
Comment 3	Hopping mode



Band-edge compliance – 3-DH5-Sngl F_{LOW}

FCC part 15.247
Band-edge compliance of RF conducted emissions

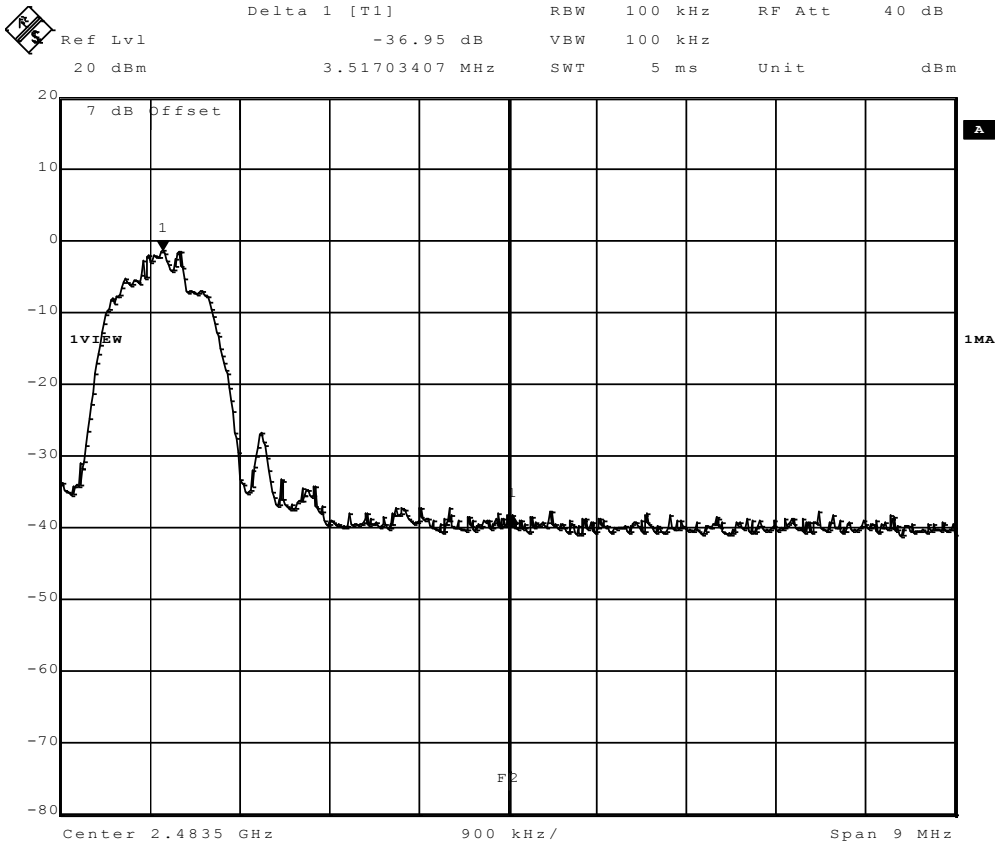
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz, 8DPSK
Comment 3	Single frequency mode



Band-edge compliance – 3-DH5-Sngl F_{HIGH}

FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz, 8DPSK
Comment 3	Single frequency mode

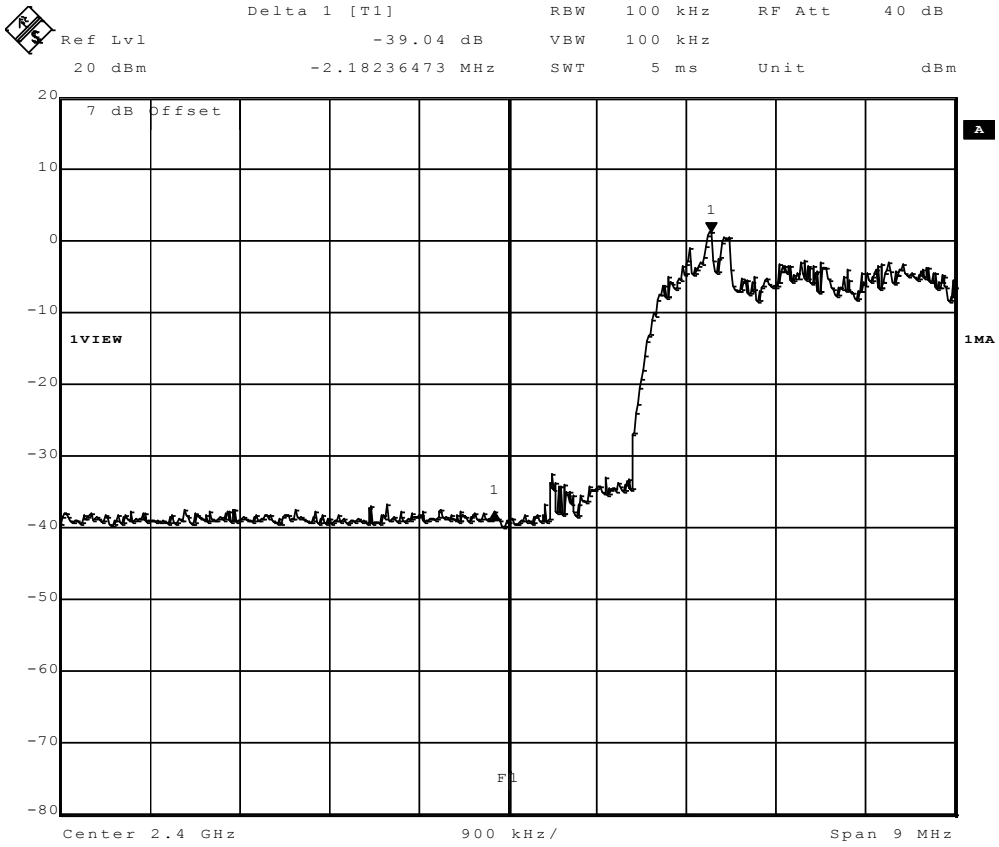


Comment A: Limit: Marker Delta value >20 dB; Result: PASS
Date: 19.JAN.2012 11:09:39

Band-edge compliance – 3-DH5-Hop F_{LOW}

FCC part 15.247
Band-edge compliance of RF conducted emissions

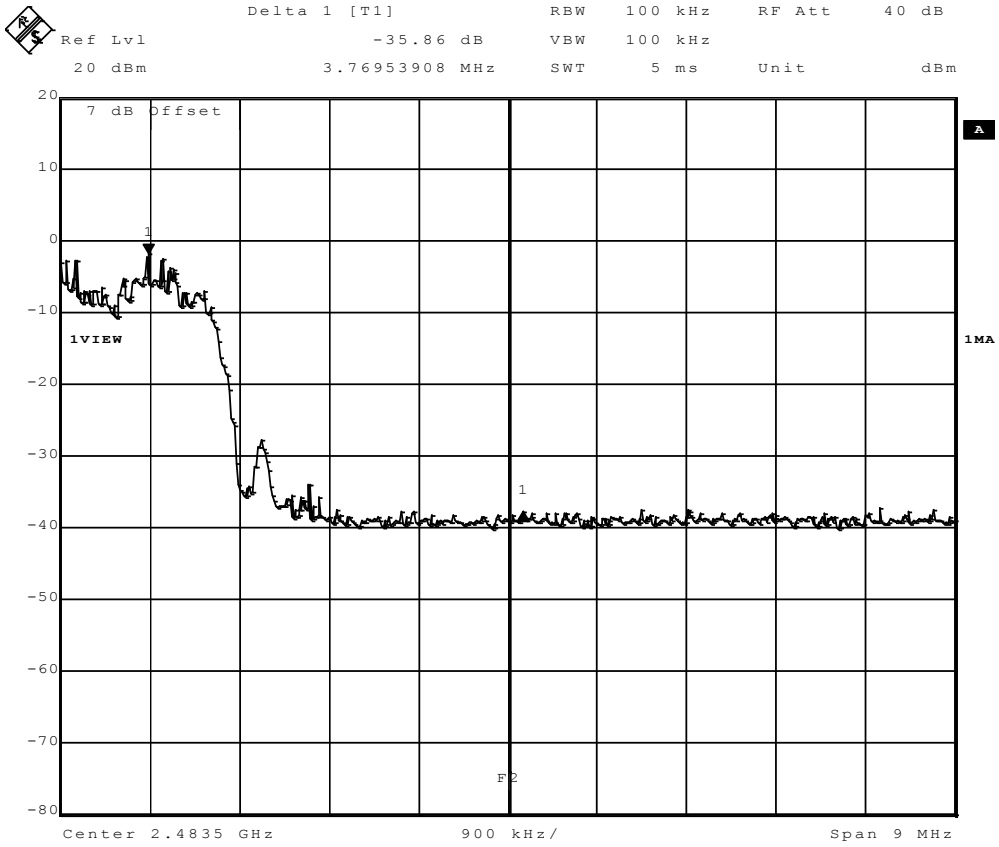
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz, 8DPSK
Comment 3	Hopping mode



Band-edge compliance – 3-DH5-Hop F_{HIGH}

FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(c)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz, 8DPSK
Comment 3	Hopping mode



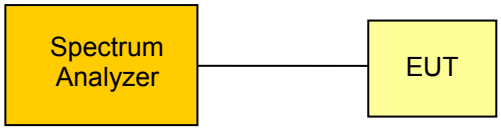
3.8 Test Conditions and Results – Conducted spurious emissions

Conducted spurious emissions acc. FCC 15.247 / IC RSS-210	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(d) / IC RSS-210 A8.5
Test according to measurement reference	Reference Method
	FCC Public Notice DA 00-705
Test frequency range	Tested frequencies
	10MHz – 10th Harmonic
Measurement mode	Peak

Limits

Limit	Condition
≤ -20dB/100kHz	Peak power measurement detector = Peak
≤ -30dB/100kHz	Peak power measurement detector = RMS

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span it set according to measurement range
3. Resolution bandwidth is set to 100kHz and detector to peak and max hold
4. Markers are set to peak emission levels within frequency band
5. Emission level is determined by second marker on emission peak
6. Attenuation is determined from level difference

Test results

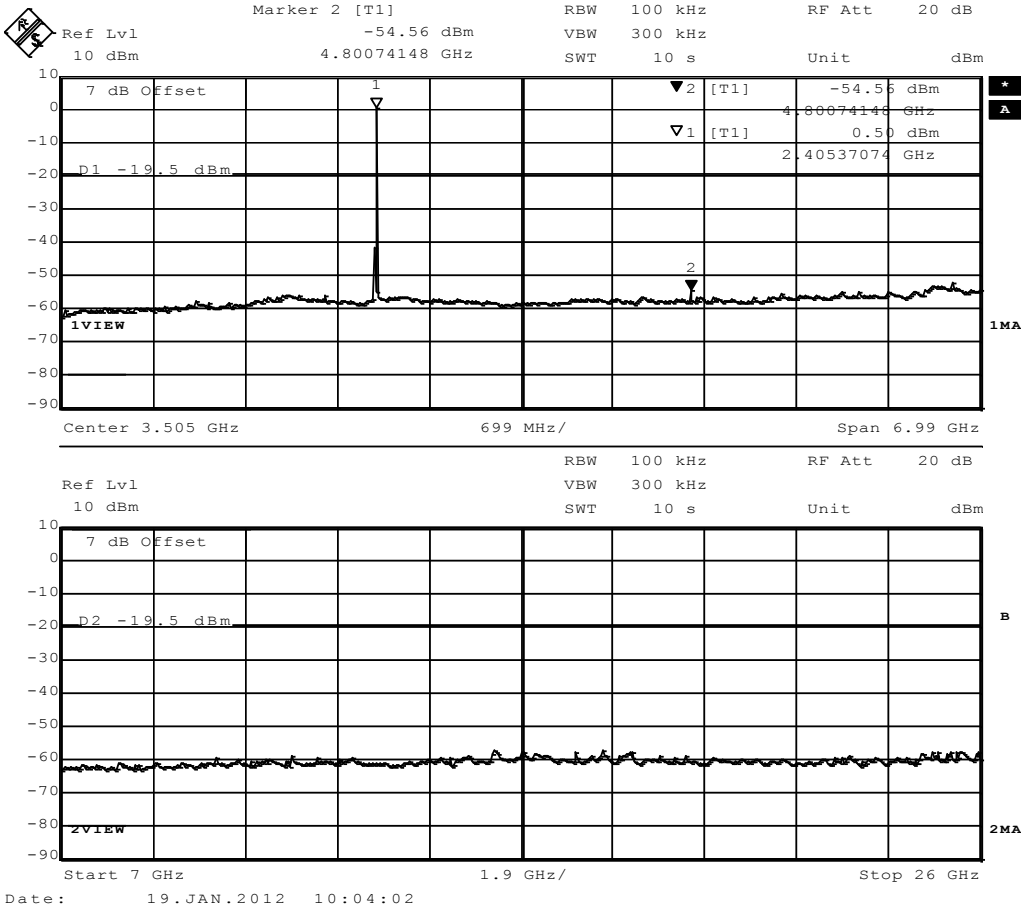
Channel	Frequency [MHz]	Mode	Emission [MHz]	Emission Level [dbm]	Peak power [dBm]	Limit [dBm]	Margin [dB]	Result
F_{LOW}	2402	DH5-Sngl	4800.7	-54.56	0.50	-20.50	-34.06	PASS
F_{MID}	2441	DH5-Sngl	6677.8	-53.25	-2.94	-22.94	-30.31	PASS
F_{HIGH}	2480	DH5-Sngl	6649.8	-53.72	-1.71	-21.71	-32.01	PASS
F_{LOW}	2402	3DH5-Sngl	6635.8	-53.50	-2.28	-22.28	-31.22	PASS
F_{MID}	2441	3DH5-Sngl	6635.8	-53.97	-3.41	-23.41	-30.56	PASS
F_{HIGH}	2480	3DH5-Sngl	6789.9	-54.21	-5.21	-25.21	-29.00	PASS

Comments:

Conducted spurious emissions – DH5-Sngl F_{LOW}

FCC part 15.247 (d)
Spurious Emissions

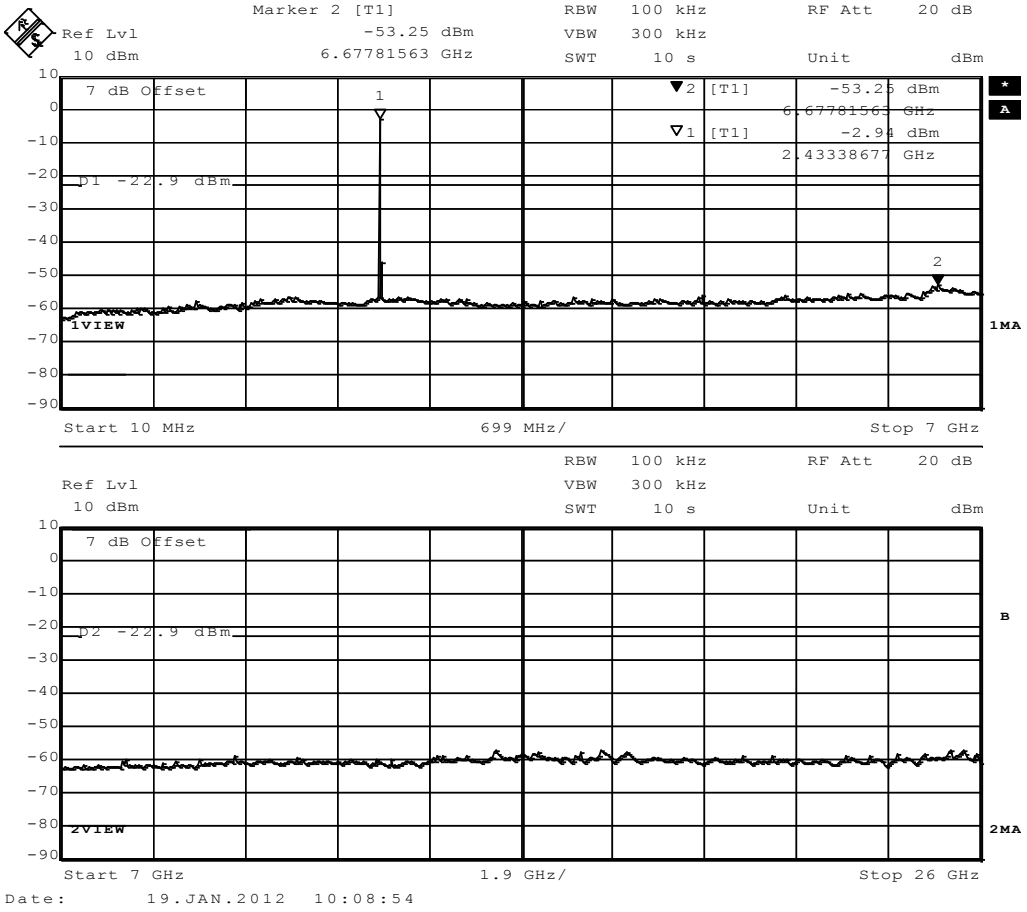
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2402 MHz
Comment 3	GFSK



Conducted spurious emissions – DH5-Sngl F_{MID}

FCC part 15.247 (d)
Spurious Emissions

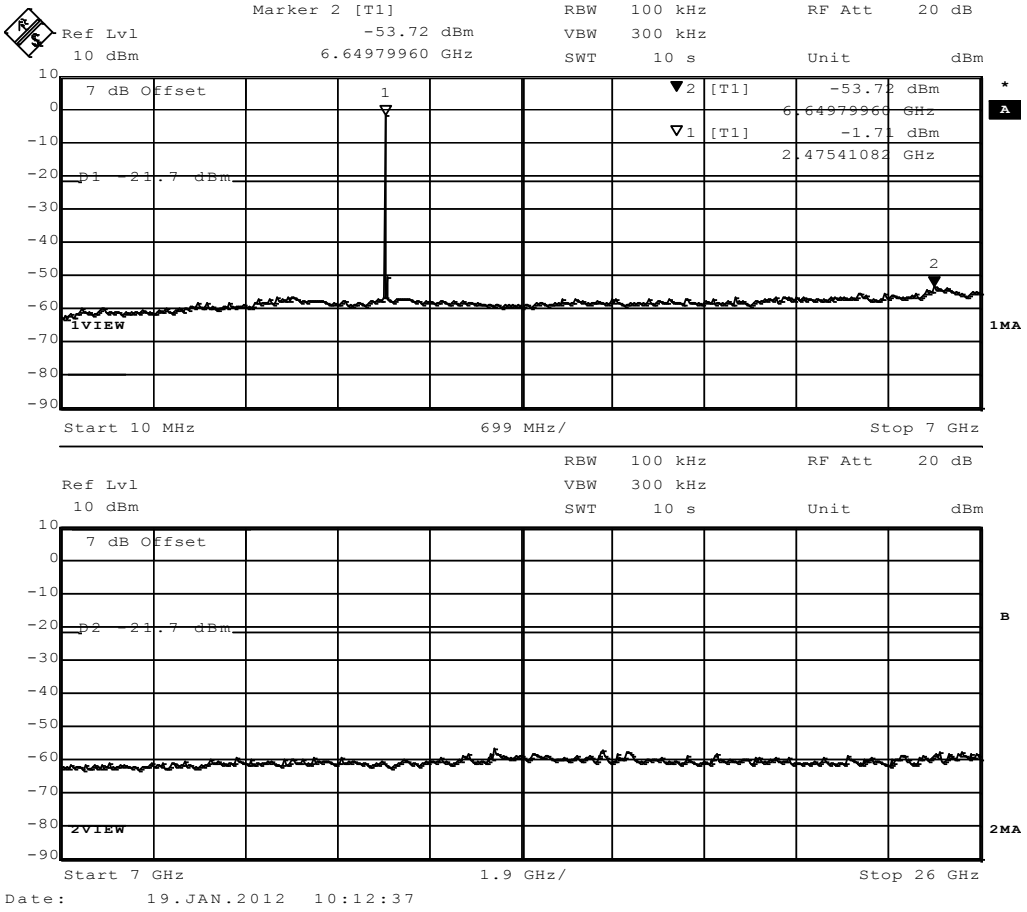
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2441 MHz
Comment 3	GFSK



Conducted spurious emissions – DH5-Sngl F_{HIGH}

FCC part 15.247 (d)
Spurious Emissions

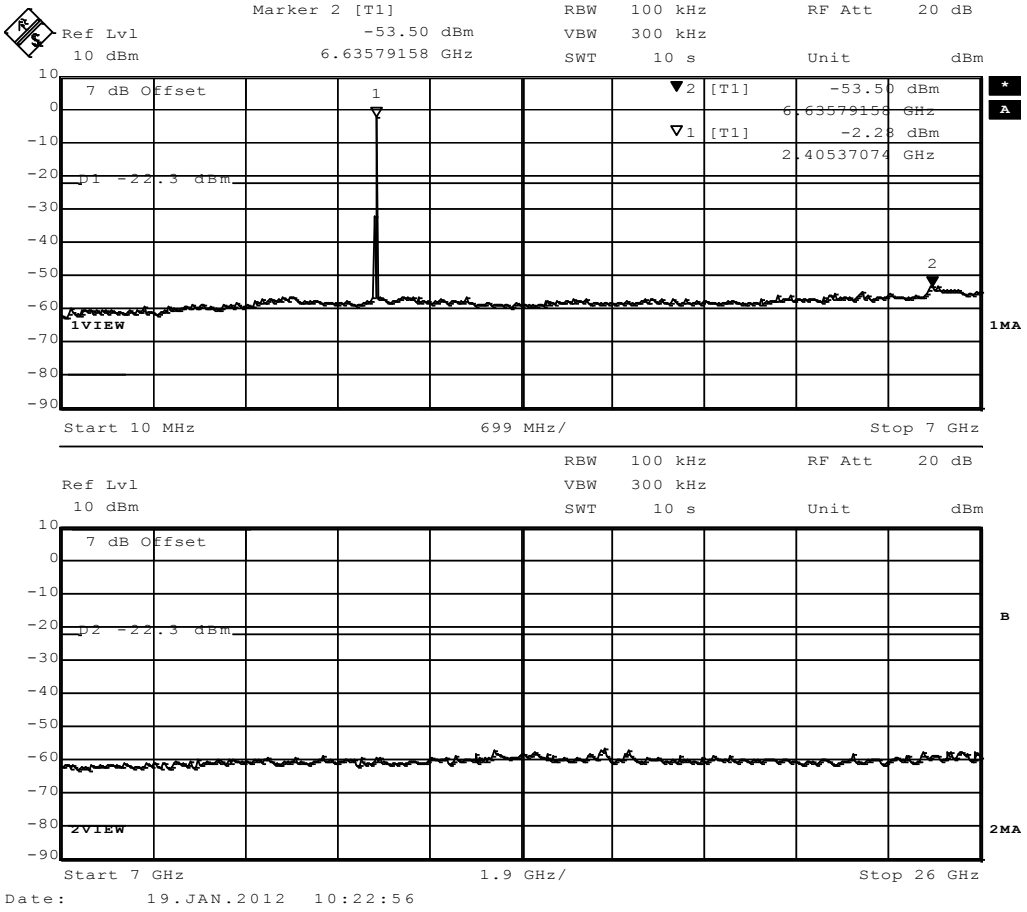
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2480 MHz
Comment 3	GFSK



Conducted spurious emissions – 3-DH5-Sngl F_{LOW}

FCC part 15.247 (d)
Spurious Emissions

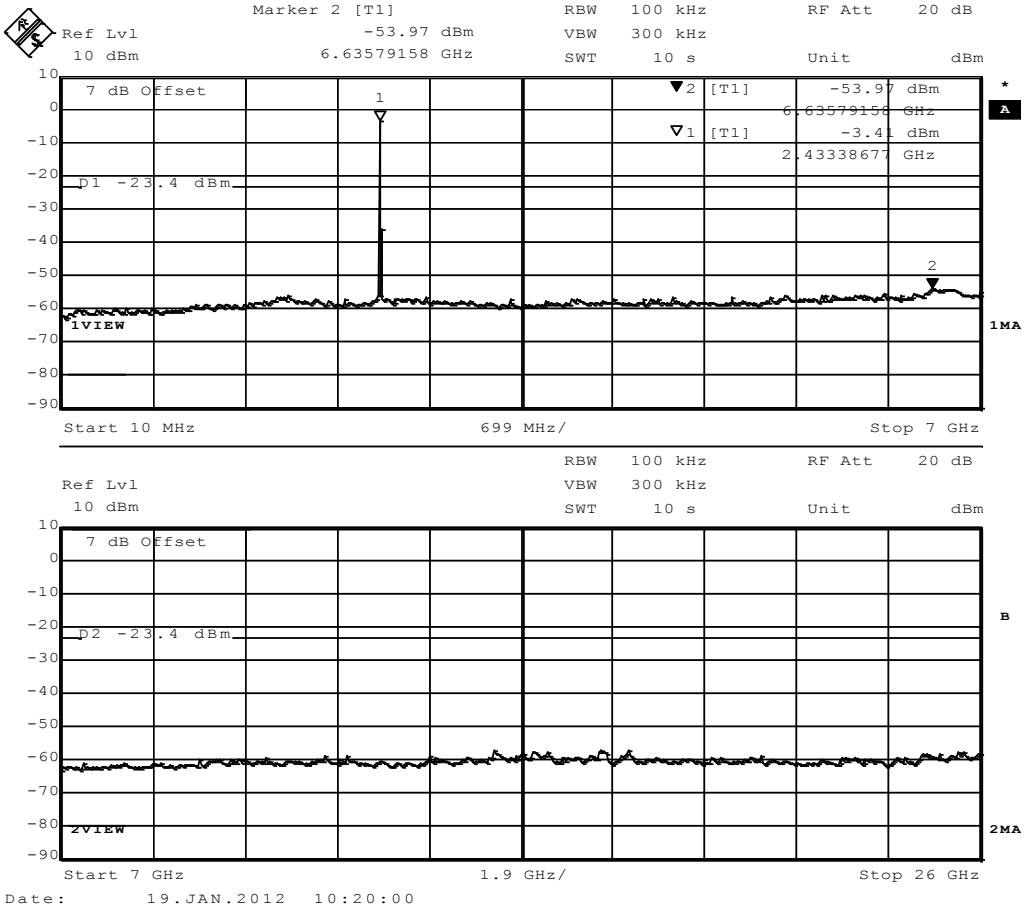
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2402 MHz
Comment 3	8DPSK



Conducted spurious emissions – 3-DH5-Sngl F_{MID}

FCC part 15.247 (d)
Spurious Emissions

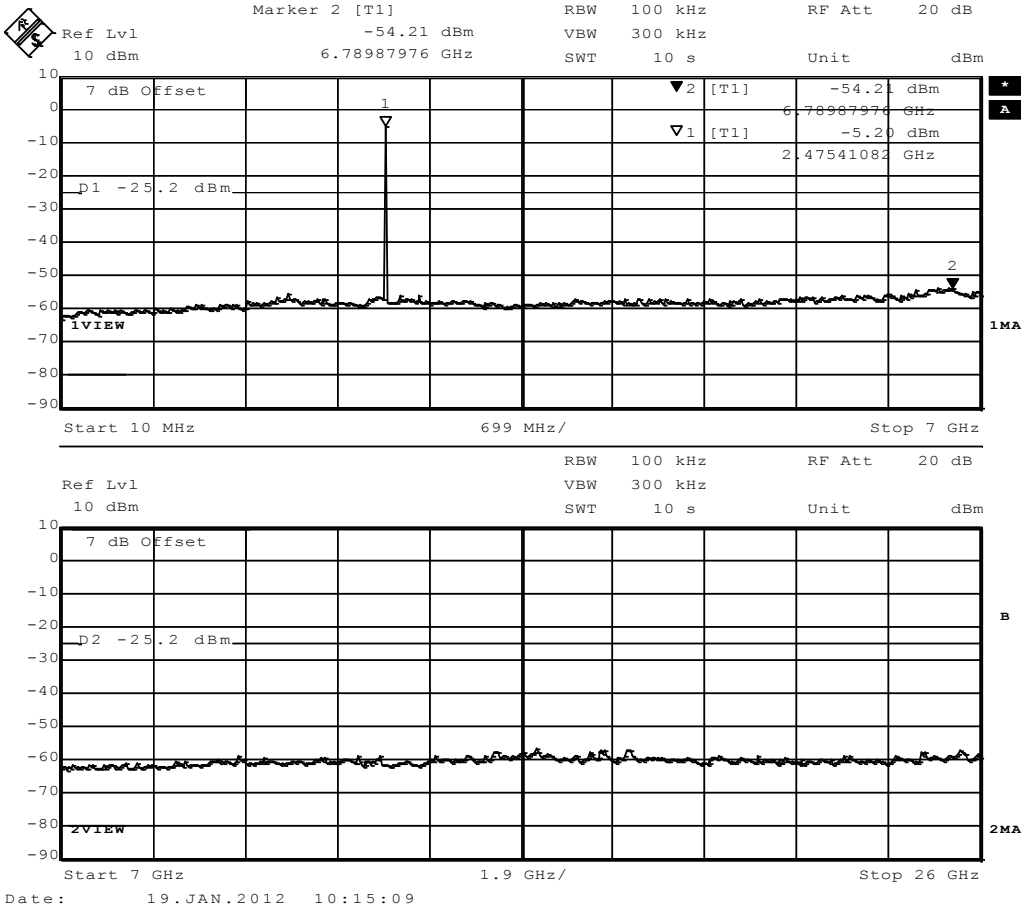
EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2441 MHz
Comment 3	8DPSK



Conducted spurious emissions – 3-DH5-Sngl F_{HIGH}

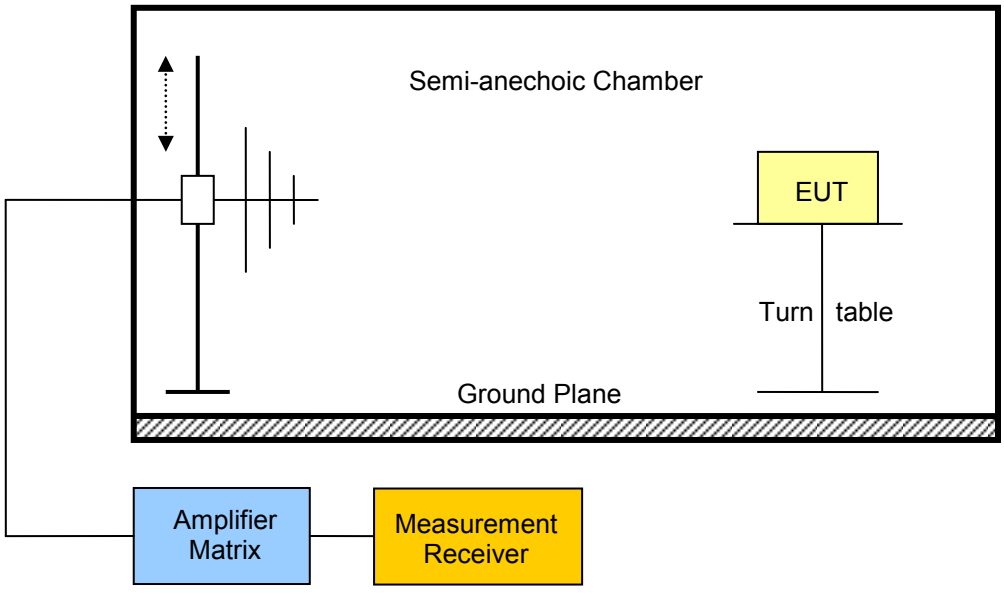
FCC part 15.247 (d)
Spurious Emissions

EUT	GNNS Antenna
Model	iCG60
Approval Holder	Leica Geosystems AG / Ord.: G0M-1110-1487
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15.247 (d)
Comment 1	Spurious Emissions conducted
Comment 2	Channel : 2480 MHz
Comment 3	8DPSK



3.9 Test Conditions and Results – Transmitter radiated emissions

Transmitter radiated emissions acc. FCC 47 CFR 15.247 / IC RSS-210				**Verdict: PASS**
Test according referenced standards	Reference Method			
	FCC 15.247(d) / IC RSS-210 A8.5			
Test according to measurement reference	Reference Method			
	FCC Public Notice DA 00-705 / ANSI C63.4			
Test frequency range	Tested frequencies			
	30MHz – 10th Harmonic			
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.				
Test setup				



Test procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1MHz with peak/average detector is used above 1GHz 4. Markers are set to peak emission levels within restricted bands

Test results – Basic

Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Limit dist. [m]*	Margin [dB]
F_{LOW}	2402	DH5-Sngl	4802	54.3	pk	ver	74	3	-19.70
F_{LOW}	2402	DH5-Sngl	4804	46.2	av	ver	54	3	-07.80
F_{MID}	2441	DH5-Sngl	4882	58.7	pk	ver	74	3	-15.30
F_{MID}	2441	DH5-Sngl	4882	51.2	av	ver	54	3	-02.80
F_{MID}	2441	DH5-Sngl	4882	55.7	pk	hor	74	3	-18.30
F_{MID}	2441	DH5-Sngl	4882	49.3	av	h	54	3	-04.70
F_{HIGH}	2480	DH5-Sngl	2484	60.1	pk	hor	74	3	-13.90
F_{HIGH}	2480	DH5-Sngl	2484	39.8	av	hor	54	3	-14.20
F_{HIGH}	2480	DH5-Sngl	2484	56.2	Pk	hor	74	3	-17.80
F_{HIGH}	2480	DH5-Sngl	2484	43.0	av	hor	54	3	-11.00
F_{HIGH}	2480	DH5-Sngl	4954	60.6	pk	ver	74	3	-13.40
F_{HIGH}	2480	DH5-Sngl	4960	53.3	av	ver	54	3	-00.70

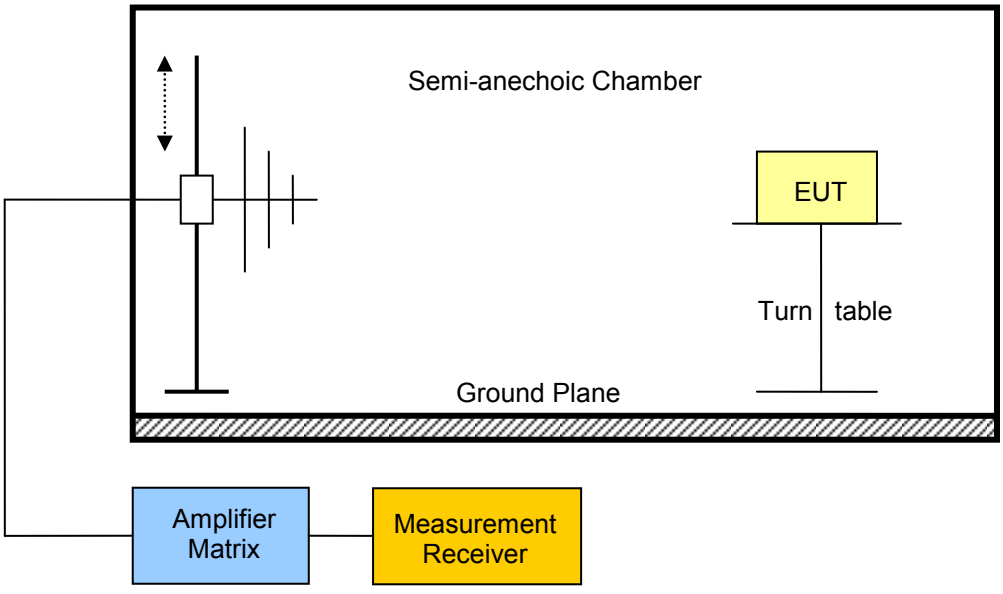
Test results – EDR

F_{LOW}	2402	3DH5-Sngl	2400	69.3	pk	ver	72.0	3	-02.70
F_{HIGH}	2480	3DH5-Sngl	2484	56.2	pk	ver	74	3	-17.80
F_{HIGH}	2480	3DH5-Sngl	2484	41.8	av	ver	54	3	-12.20
F_{HIGH}	2480	3DH5-Sngl	2484	57.0	pk	hor	74	3	-17.00
F_{HIGH}	2480	3DH5-Sngl	2484	46.1	av	hor	54	3	-07.90

Comments: * Physical distance between EUT and measurement antenna.

3.10 Test Conditions and Results – Receiver radiated emissions

Receiver radiated emissions acc. IC RSS-210				**Verdict: PASS**
Test according referenced standards	Reference Method			
	IC RSS-210 A8.5			
Test according to measurement reference	Reference Method			
	ANSI C63.4			
Test frequency range	Tested frequencies			
	30MHz – 3th Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Test setup				



Test procedure
1. EUT set to receive mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1MHz with peak/average detector is used above 1GHz 4. Markers are set to peak emission levels

Test results

Channel	Frequency [MHz]	Emission [MHz]	Emission Level [dbµV/m]	Emission Level [µV/m]	Det.	Limit [µV/m]	Margin [µV/m]
39	2441	198.978	33.7	48.42	pk	150	-101.58
39	2441	199.319	33.73	48.58	pk	150	-101.42
39	2441	797.996	30.77	34.55	pk	200	-165.45
39	2441	1000.000	27.30	23.17	pk	500	-476.83
39	2441	3964.000	42.79	137.88	pk	500	-362.12
39	2441	3958.000	43.50	149.62	pk	500	-350.38
39	2441	7832.000	49.74	306.90	pk	500	-193.10
39	2441	7824.000	50.01	316.59	pk	500	-183.41
39	2441	10974.00	43.53	150.14	pk	500	-349.86
39	2441	11295.00	43.46	148.94	pk	500	-351.06

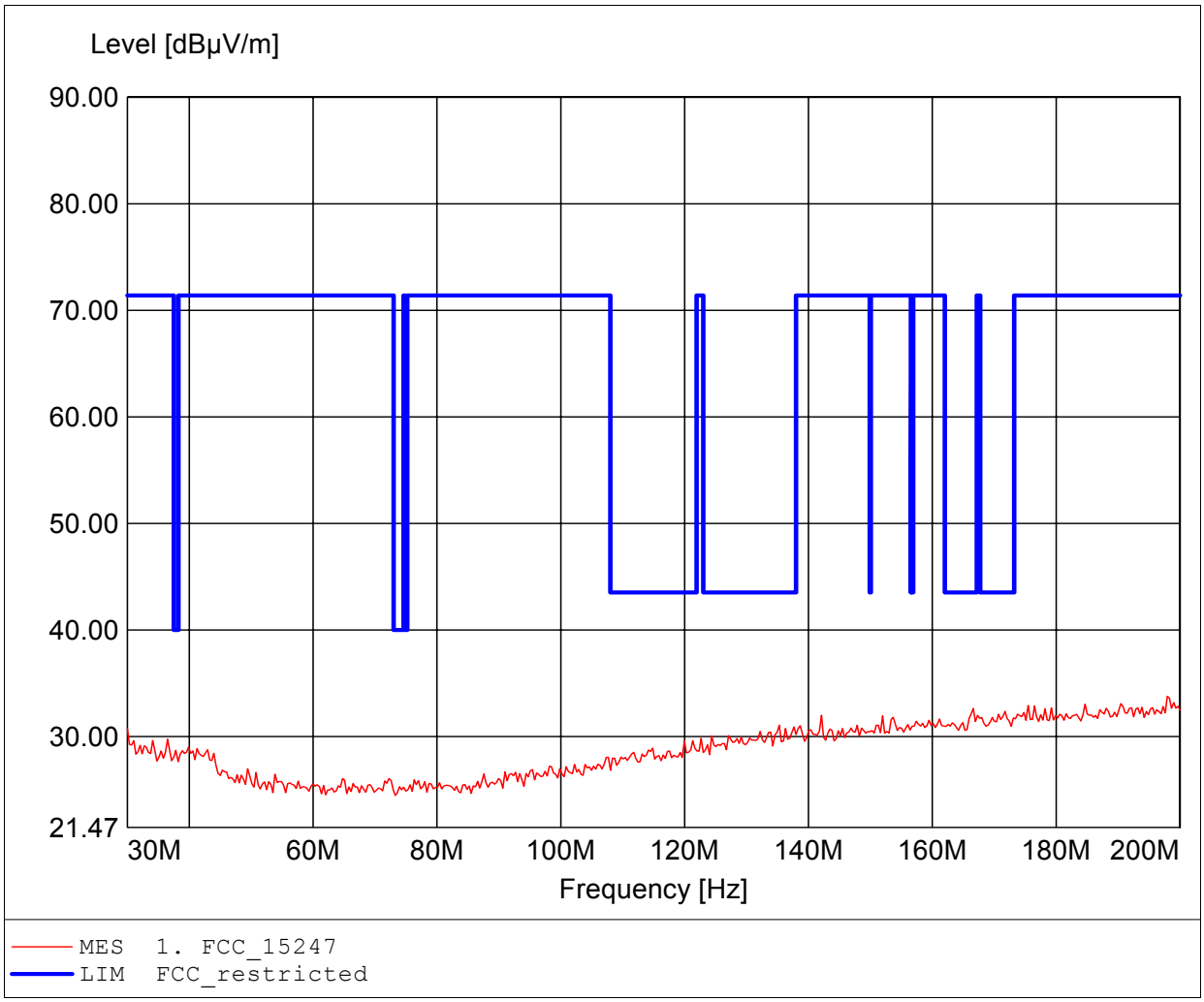
Comments:
* Physical distance between EUT and measurement antenna.
** Emission level corresponds to ambient noise floor

ANNEX A Transmitter radiated spurious emissions

Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

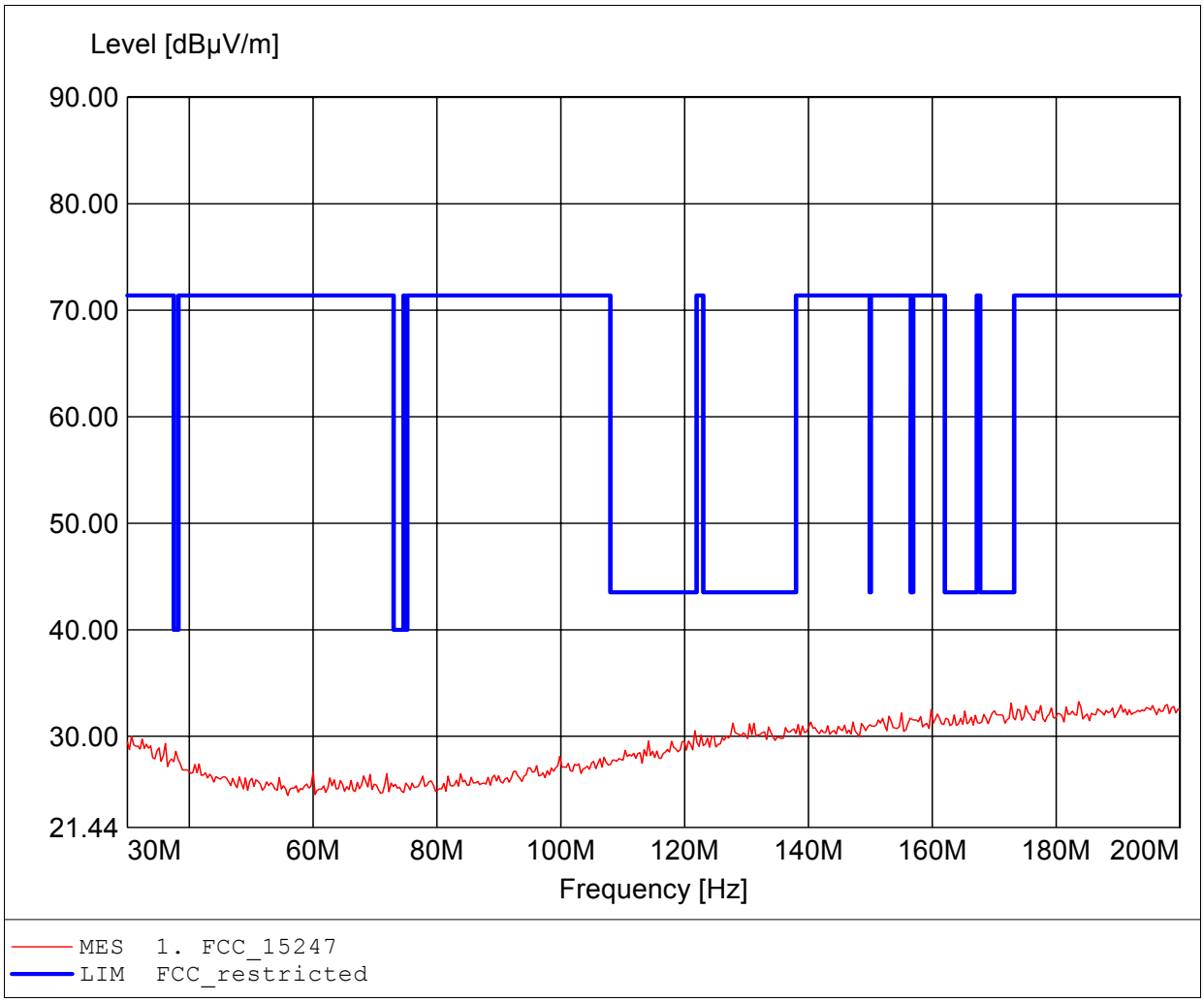
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0 (worst case)
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HK 116
Comment 2:	Freq: 197.956MHz, Emax: 33.76dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

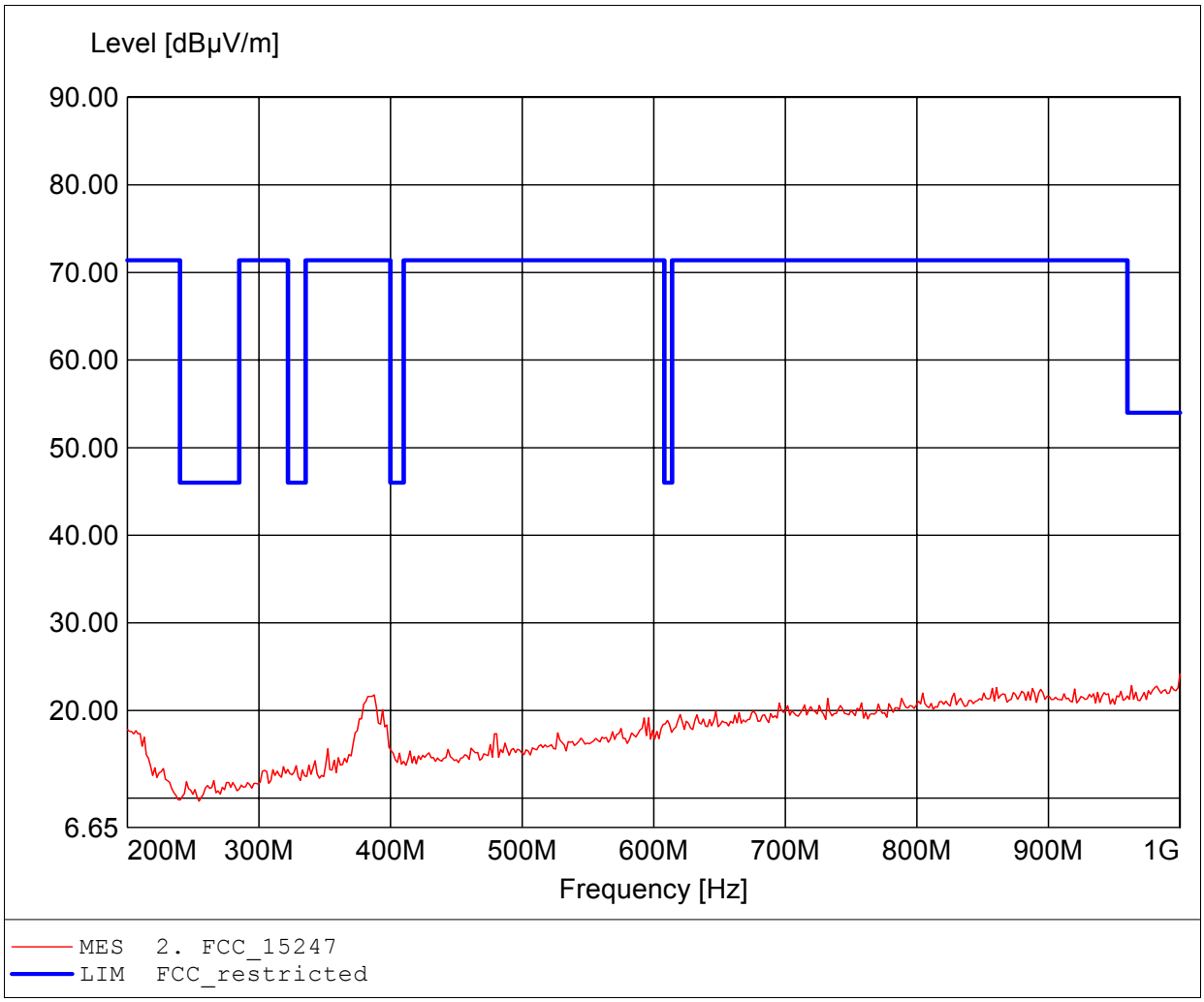
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0 (worst case)
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HK 116
Comment 2:	Freq: 183.647MHz, Emax: 33.25dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

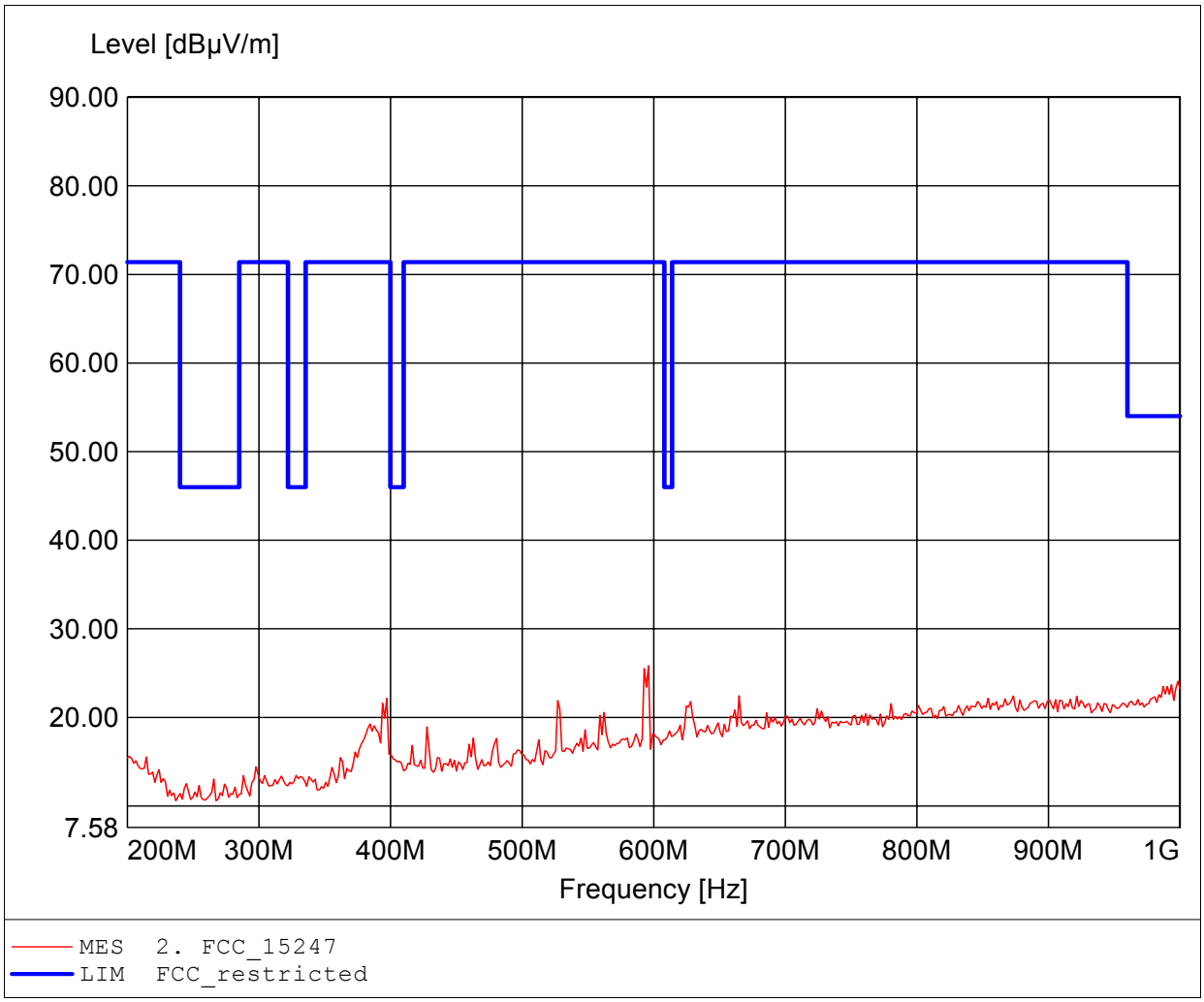
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0 (worst case)
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL 223, amplif.
Comment 2:	Freq: 1.000GHz, Emax: 24.17dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

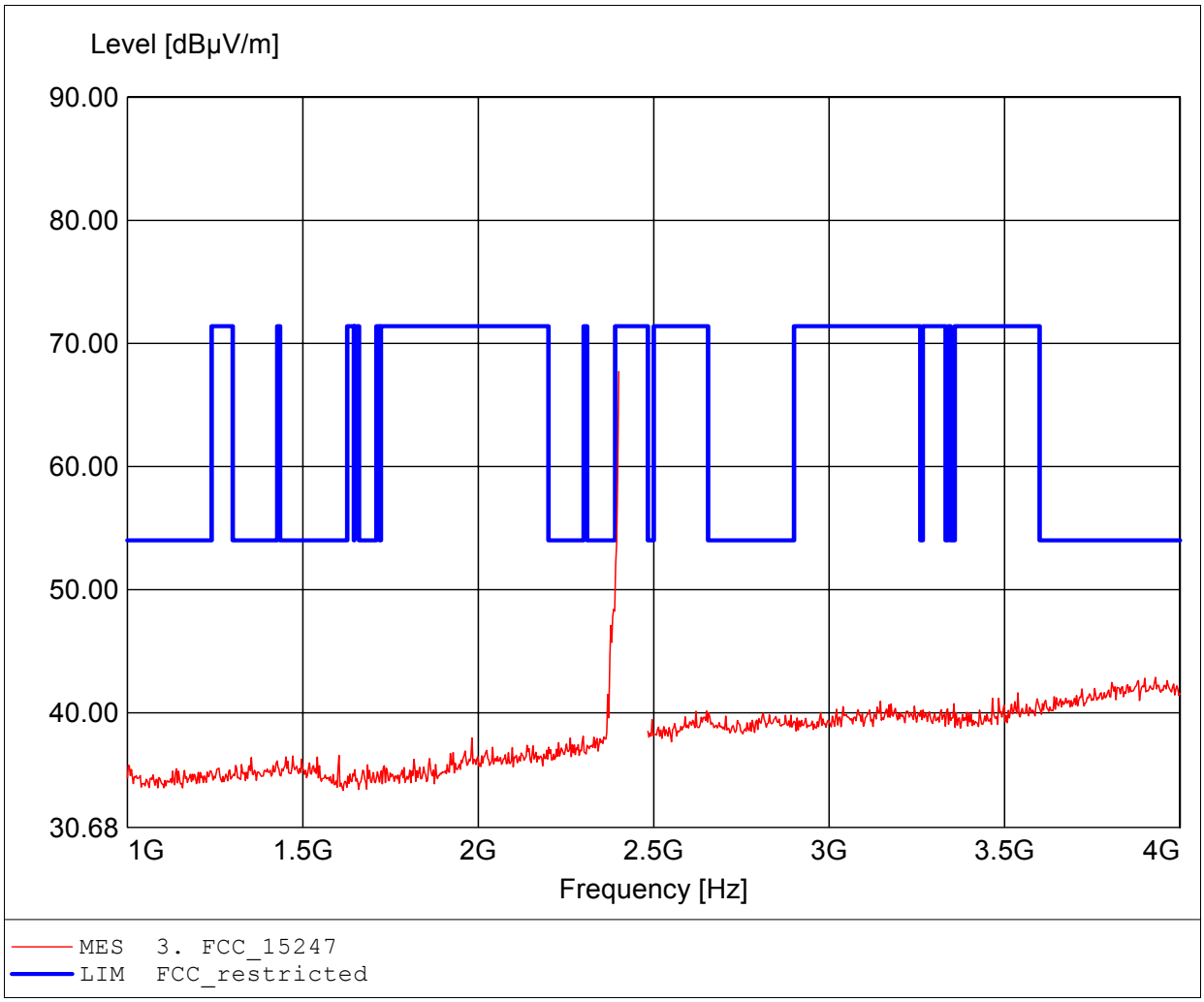
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0 (worst case)
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247
Comment 1:	Dist.: 3m, Ant.: HL 223, amplif.
Comment 2:	Freq: 595.992MHz, Emax: 25.84dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

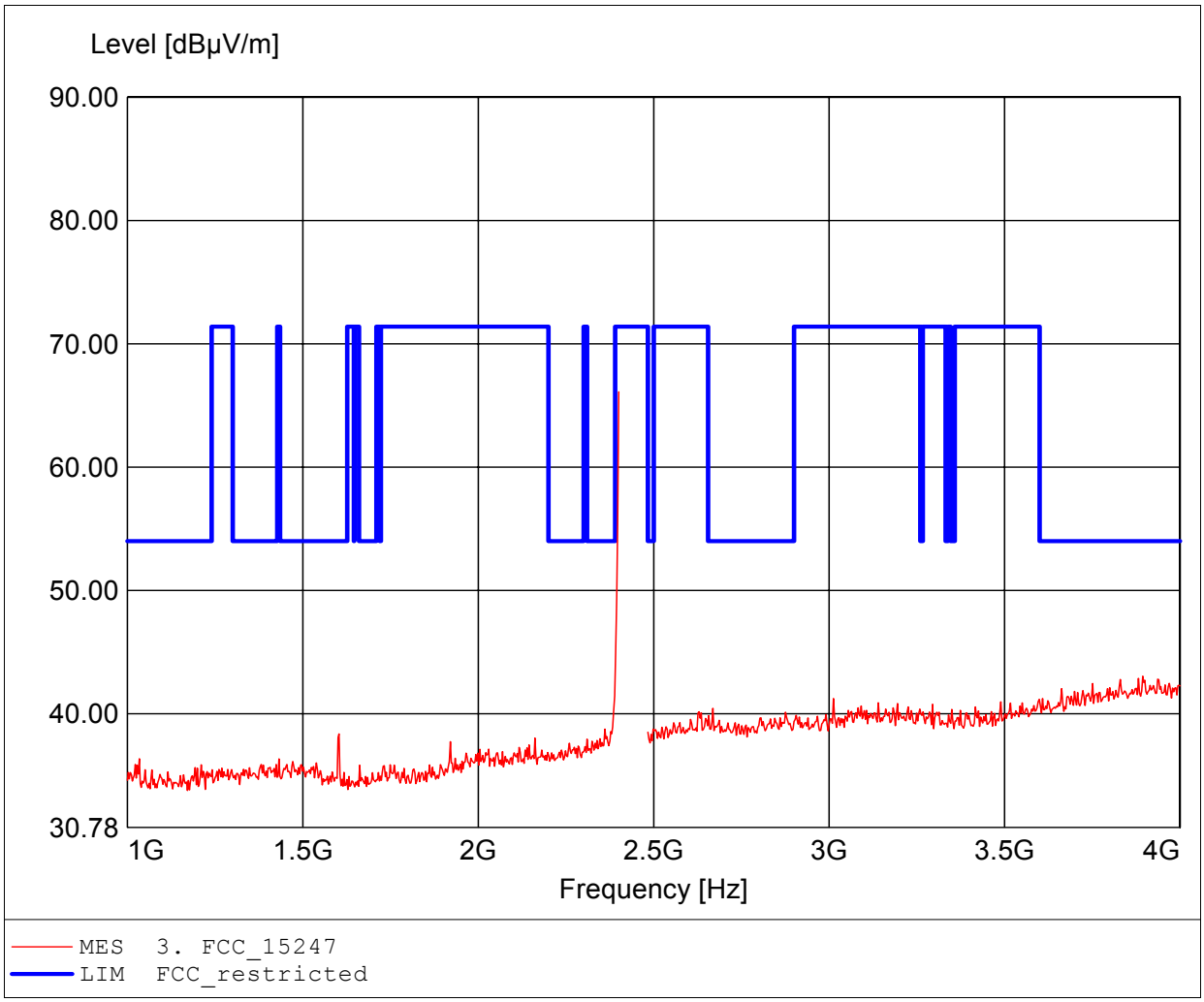
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 2.400GHz, Emax: 67.72dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

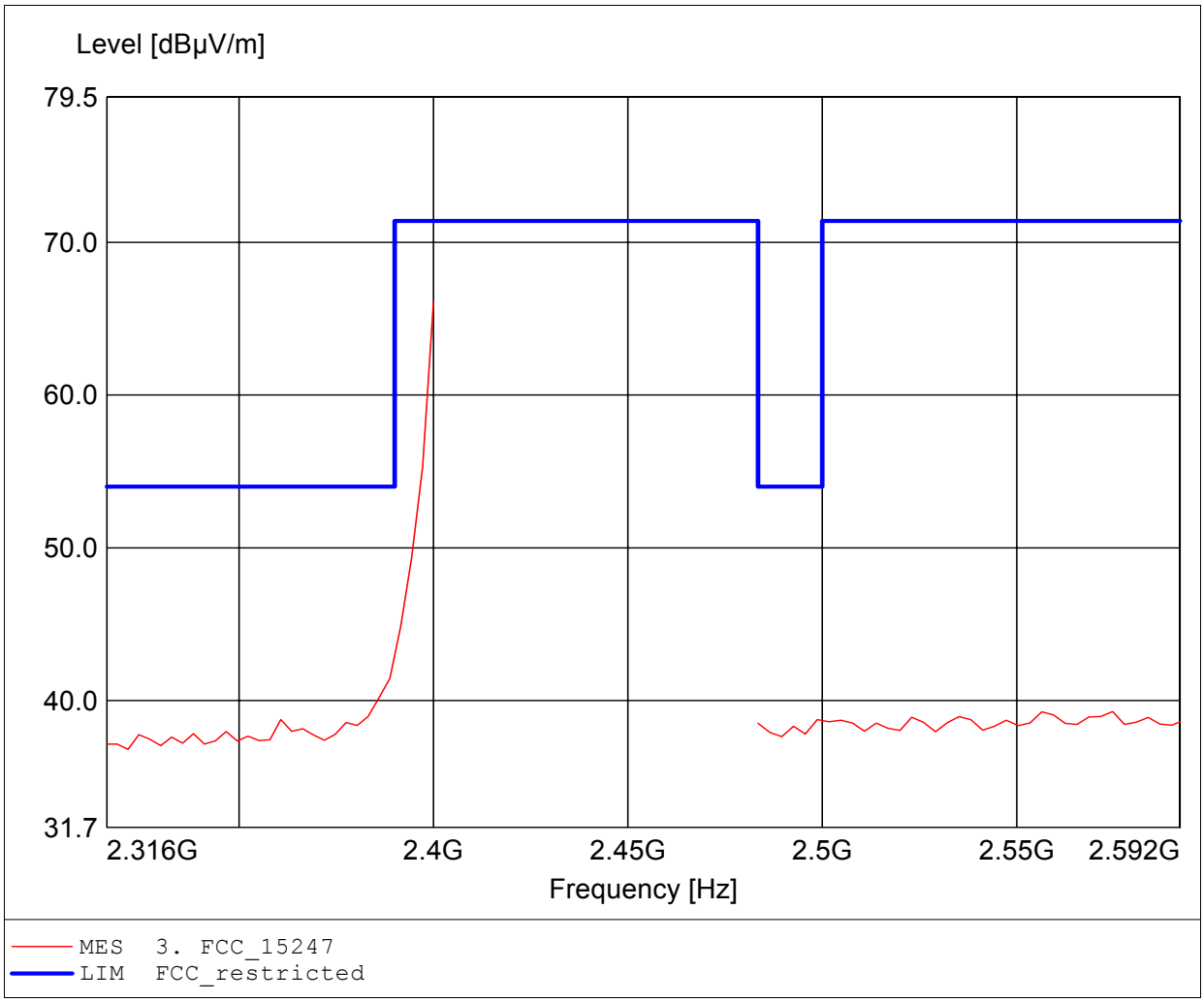
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 2.400GHz, Emax: 66.12dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

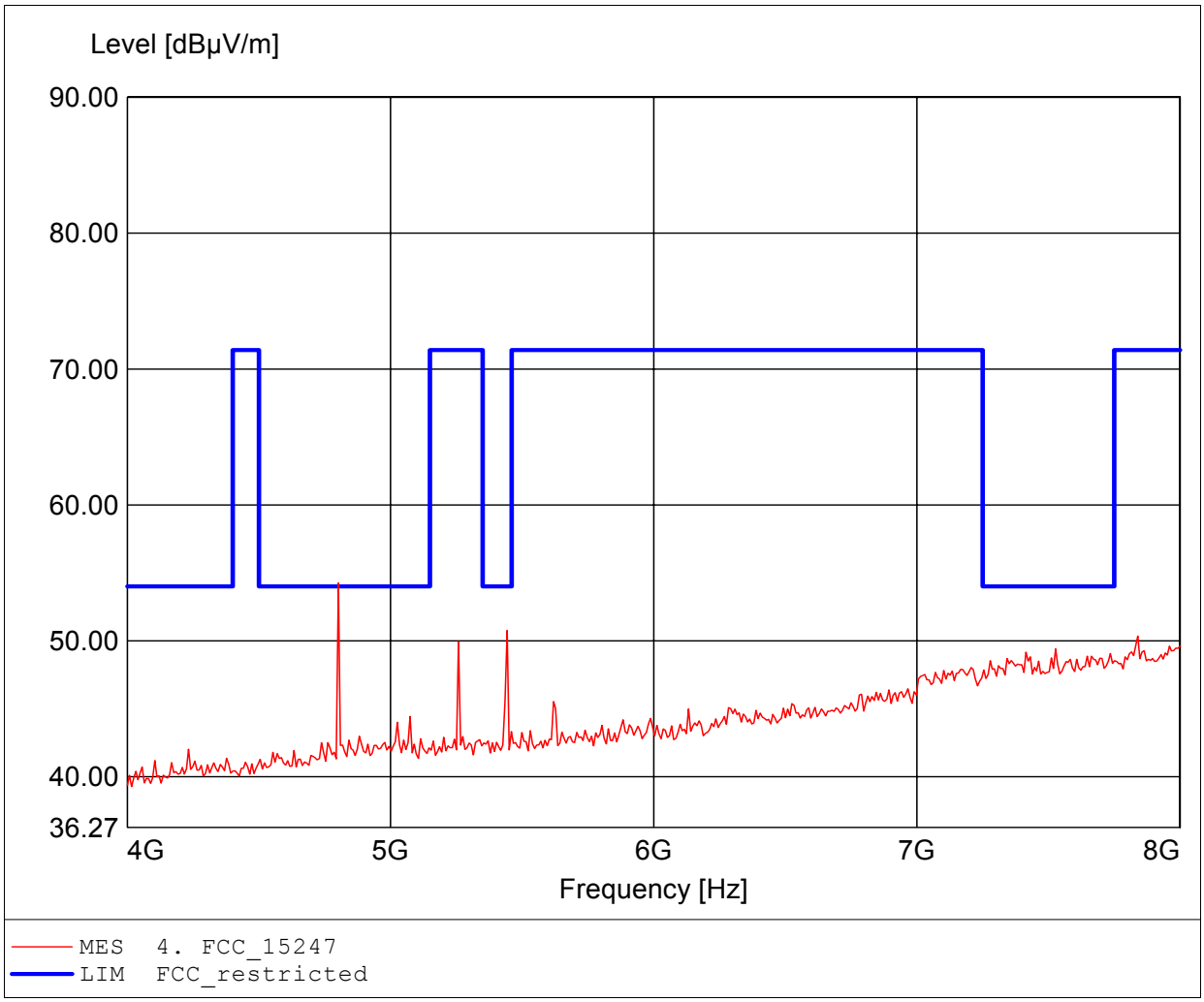
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 2.400GHz, Emax: 66.12dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

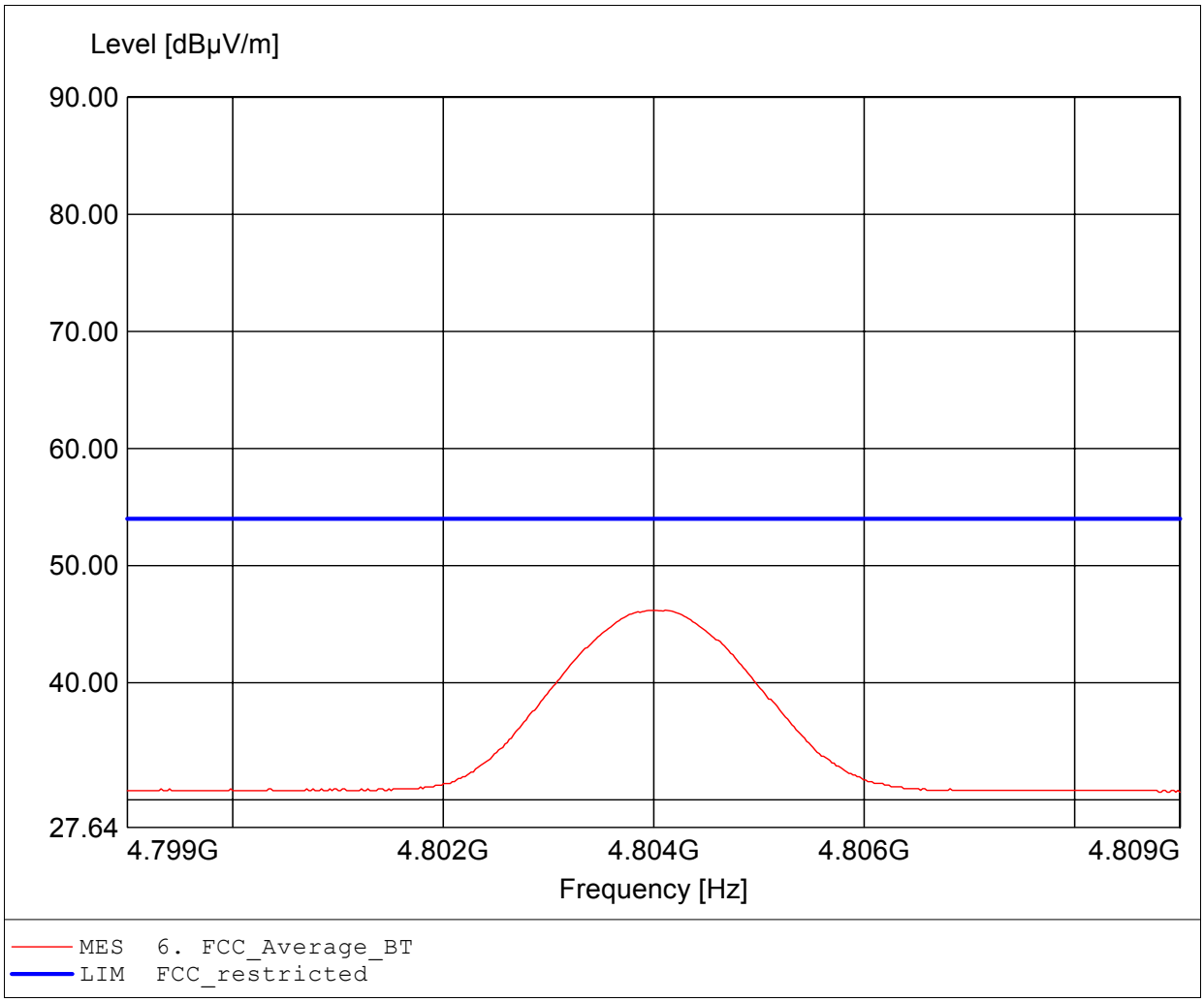
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 4.802GHz, Emax: 54.26dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

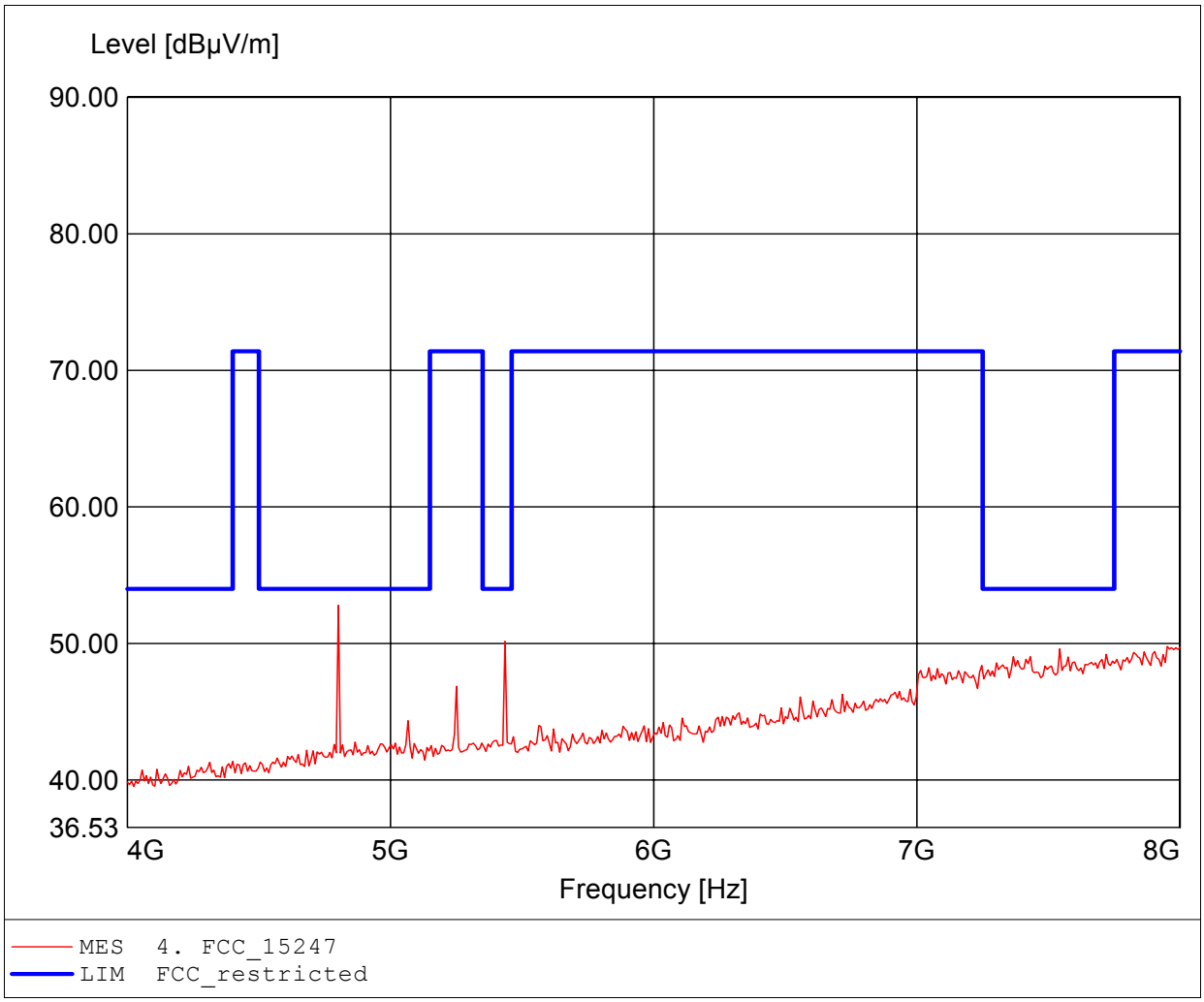
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, average detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 4.804GHz, Emax: 46.20dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 4.802GHz, Emax: 52.80dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

```
Approval Holder:       Leica Geosy stems AG   /   G0M-1110-1487
EUT:                   GNN N S Antenna
Model::                iCG60   /   setup: basic, Tx ch. 0
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:             Freq: 11.375GHz, Emax: 43.55dBµV/m, RBW: 1MHz
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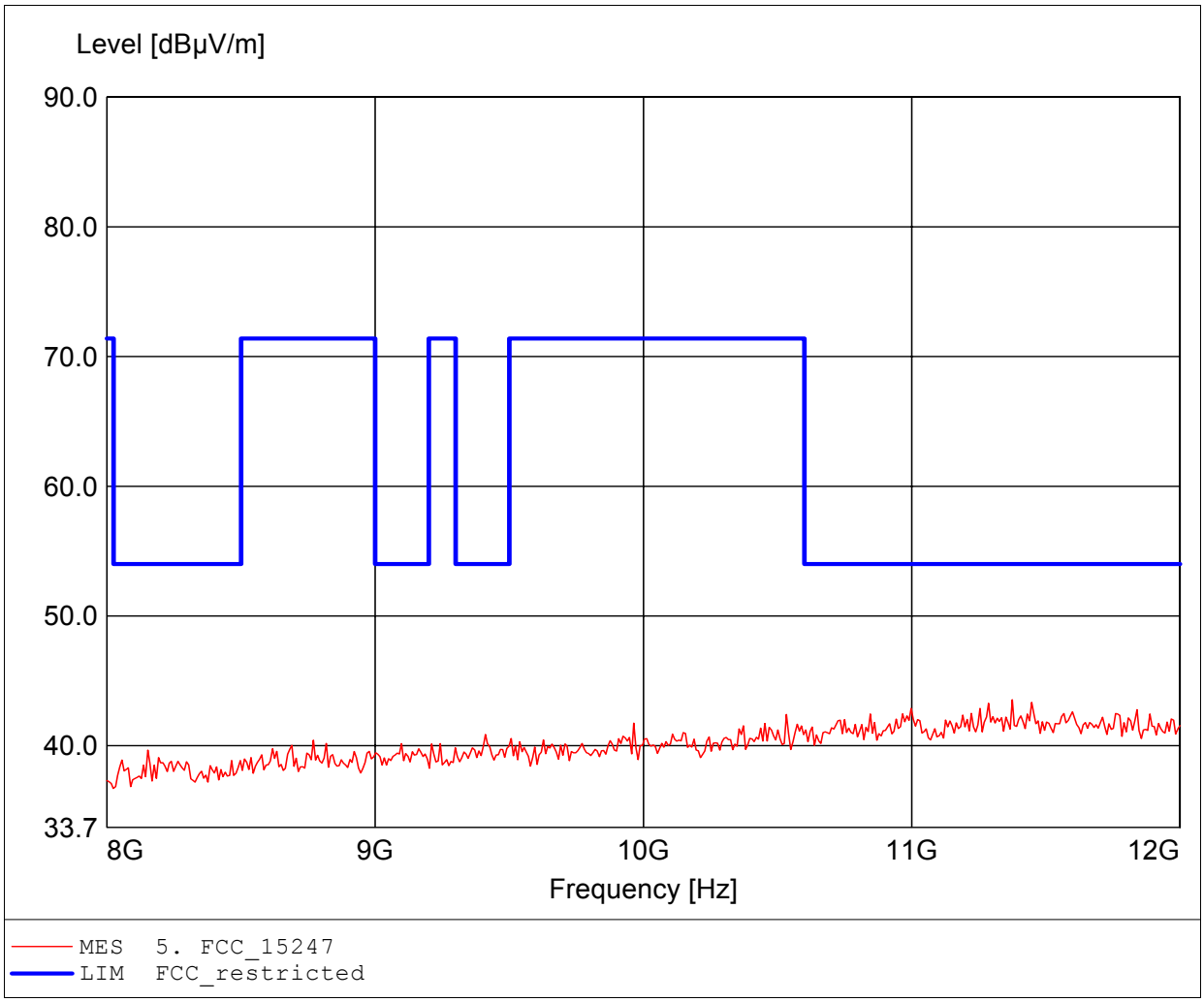

Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

```
Approval Holder:       Leica Geosy stems AG   /   G0M-1110-1487
EUT:                   GNN N S Antenna
Model::                iCG60   /   setup: basic, Tx ch. 0
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    according to §15.247, peak detector
Comment 1:             Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:             Freq: 10.982GHz, Emax: 43.33dBµV/m, RBW: 1MHz
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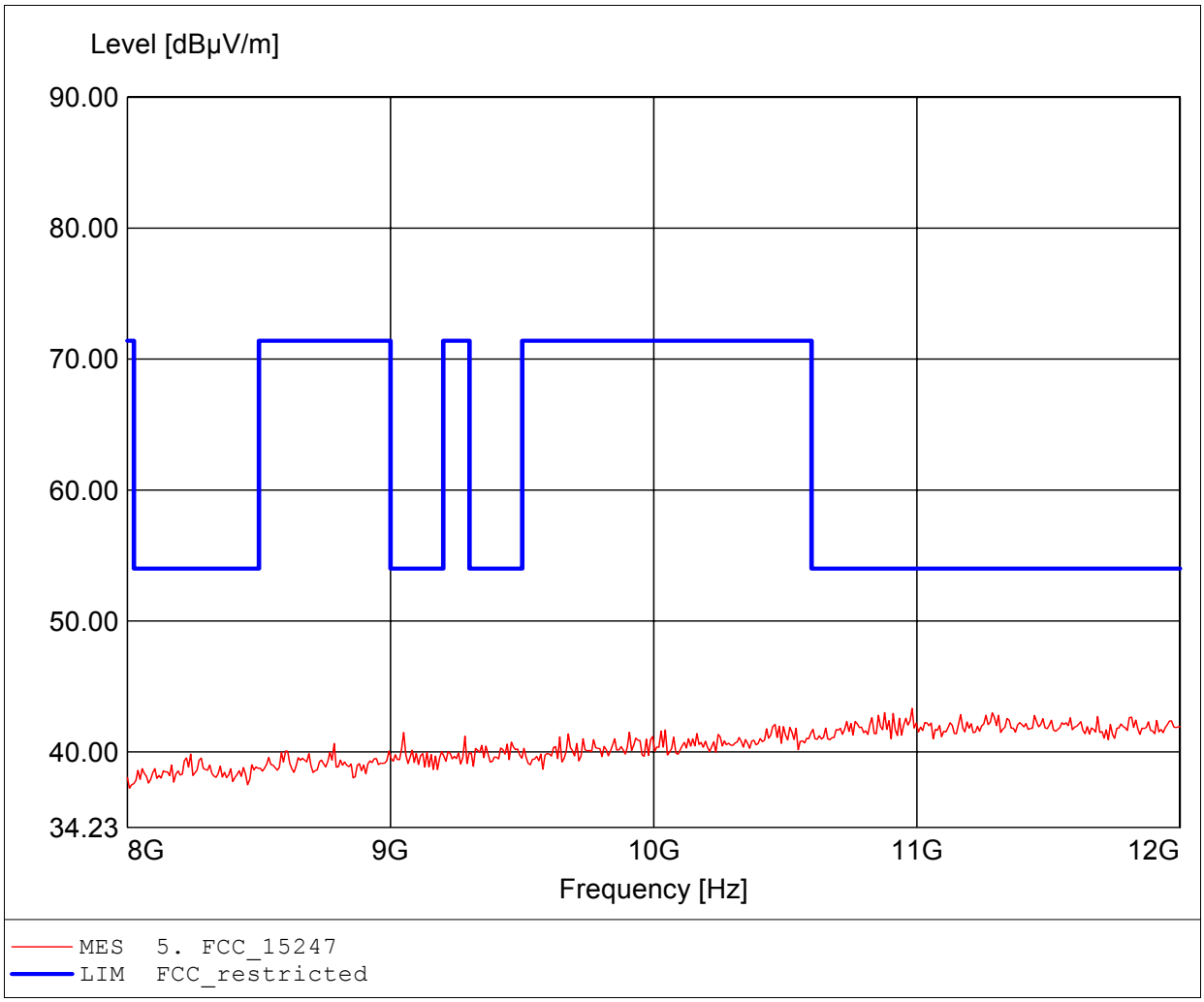
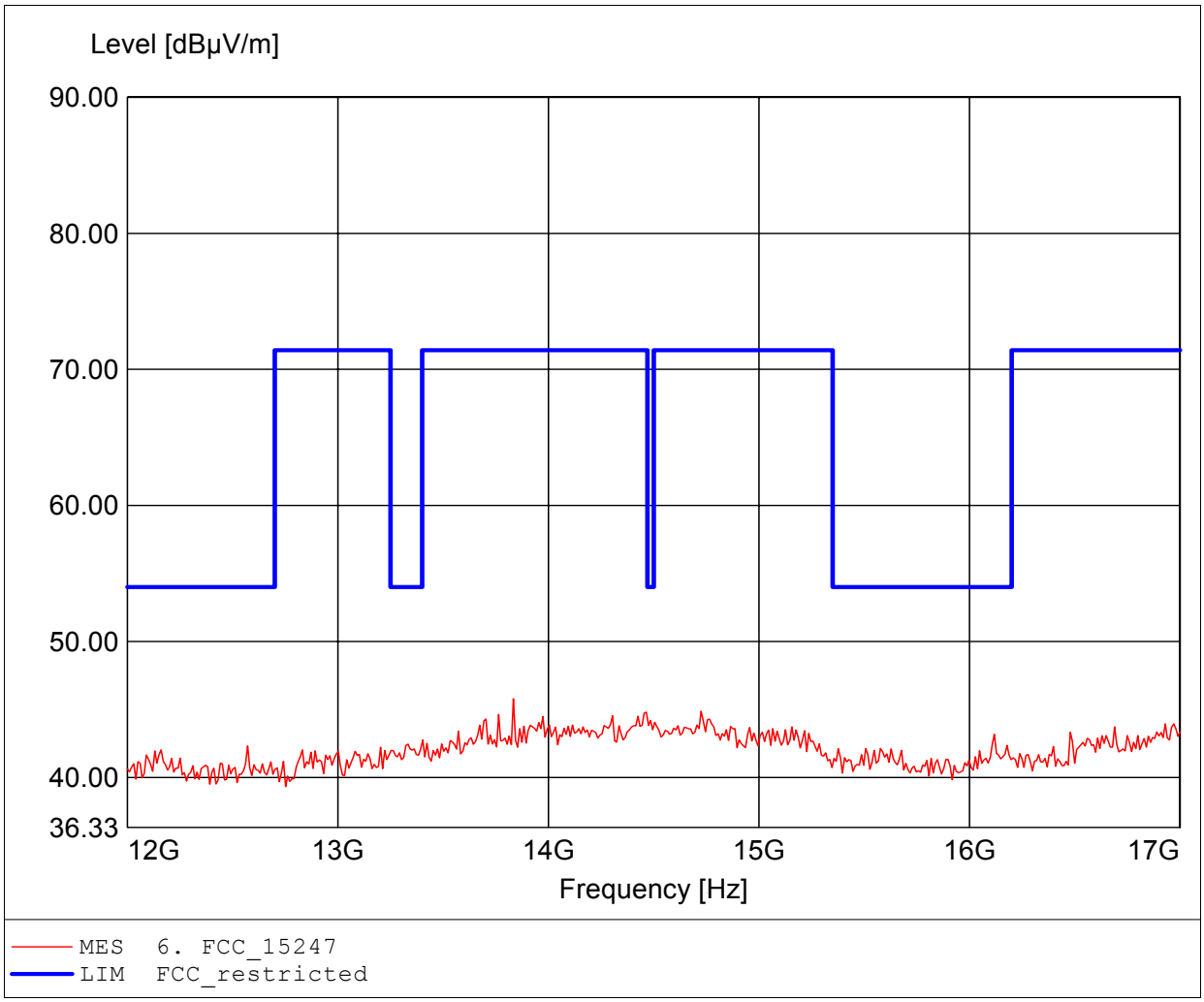


Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

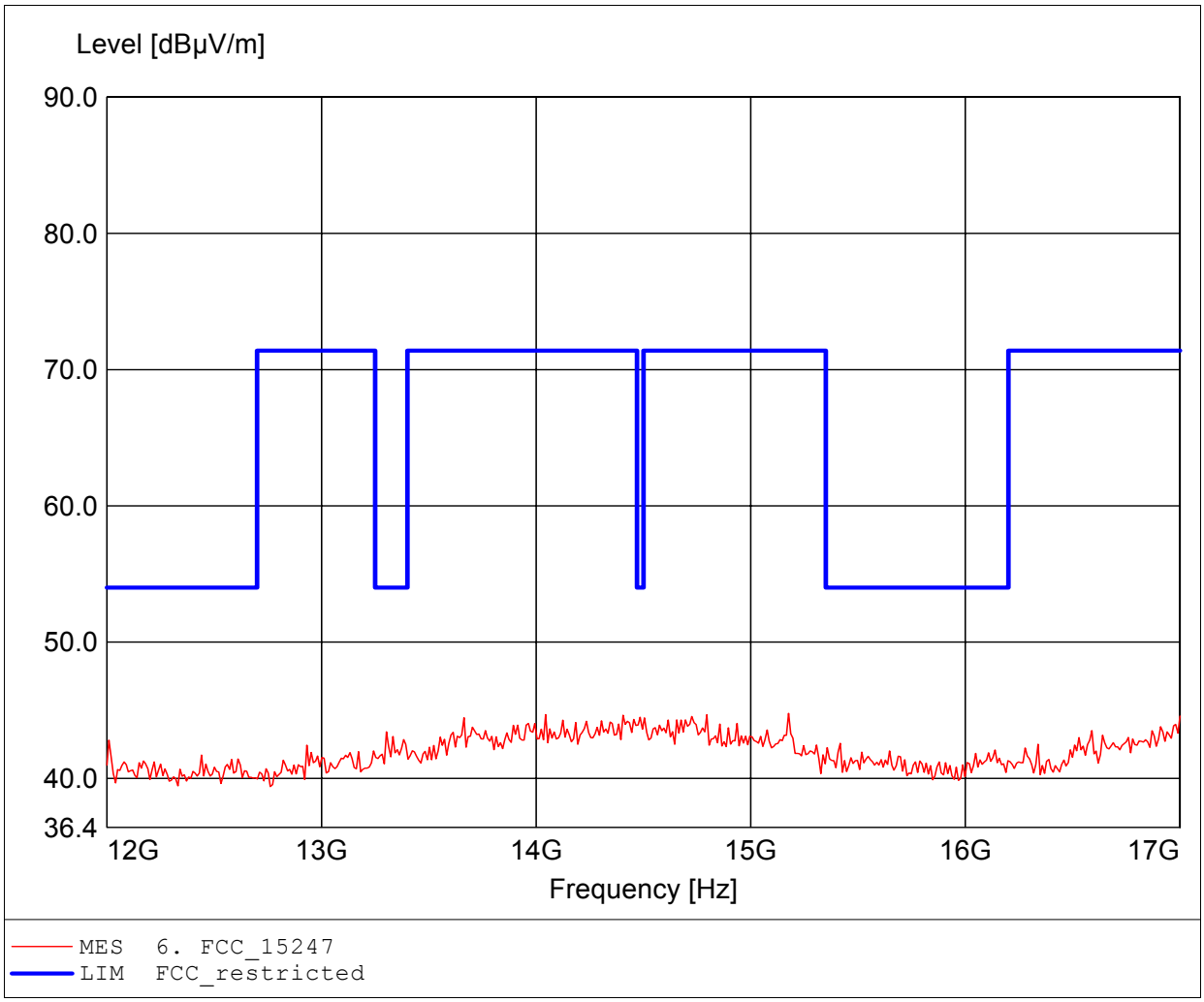
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 13.834GHz, Emax: 45.80dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

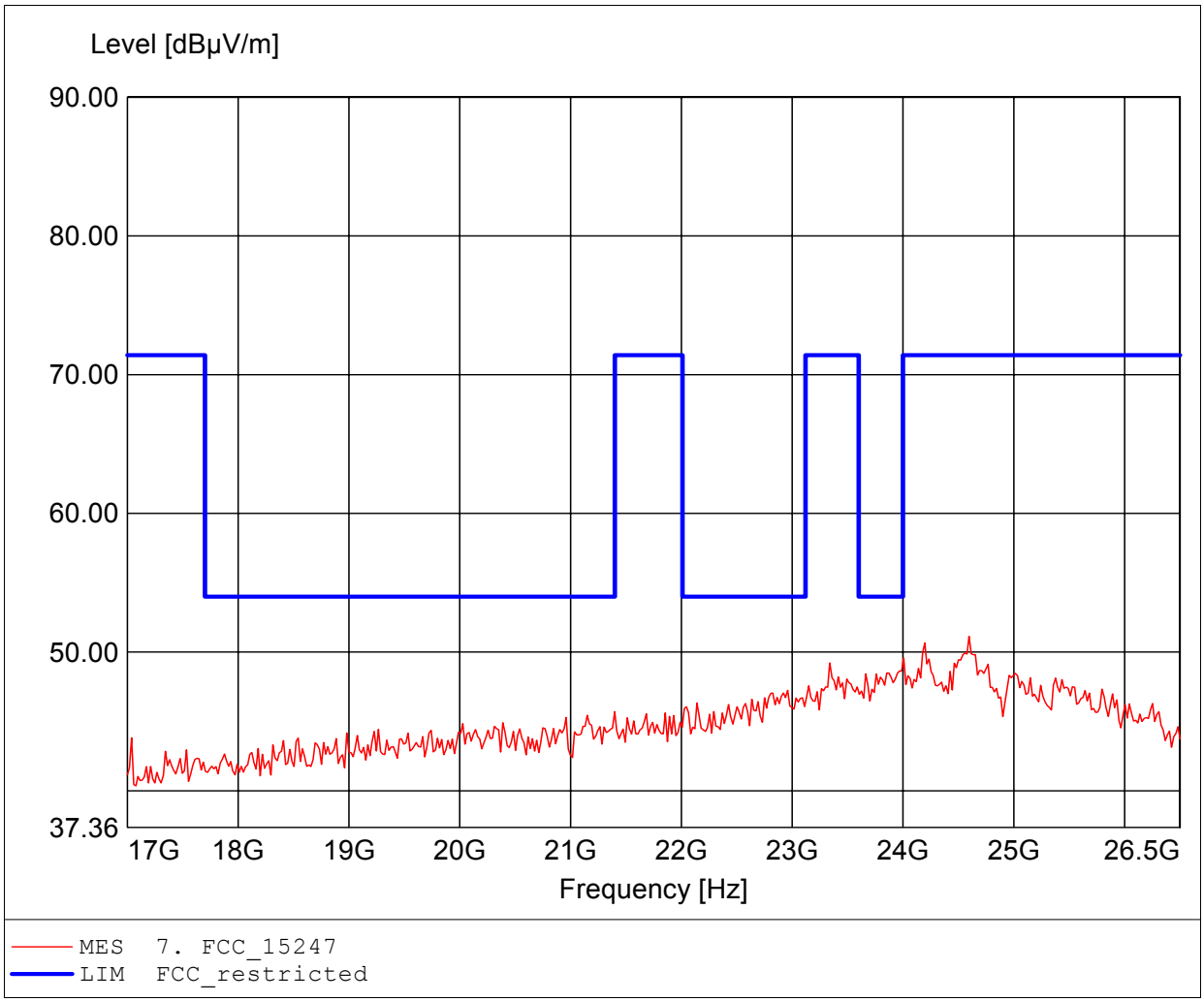
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 15.176GHz, Emax: 44.76dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

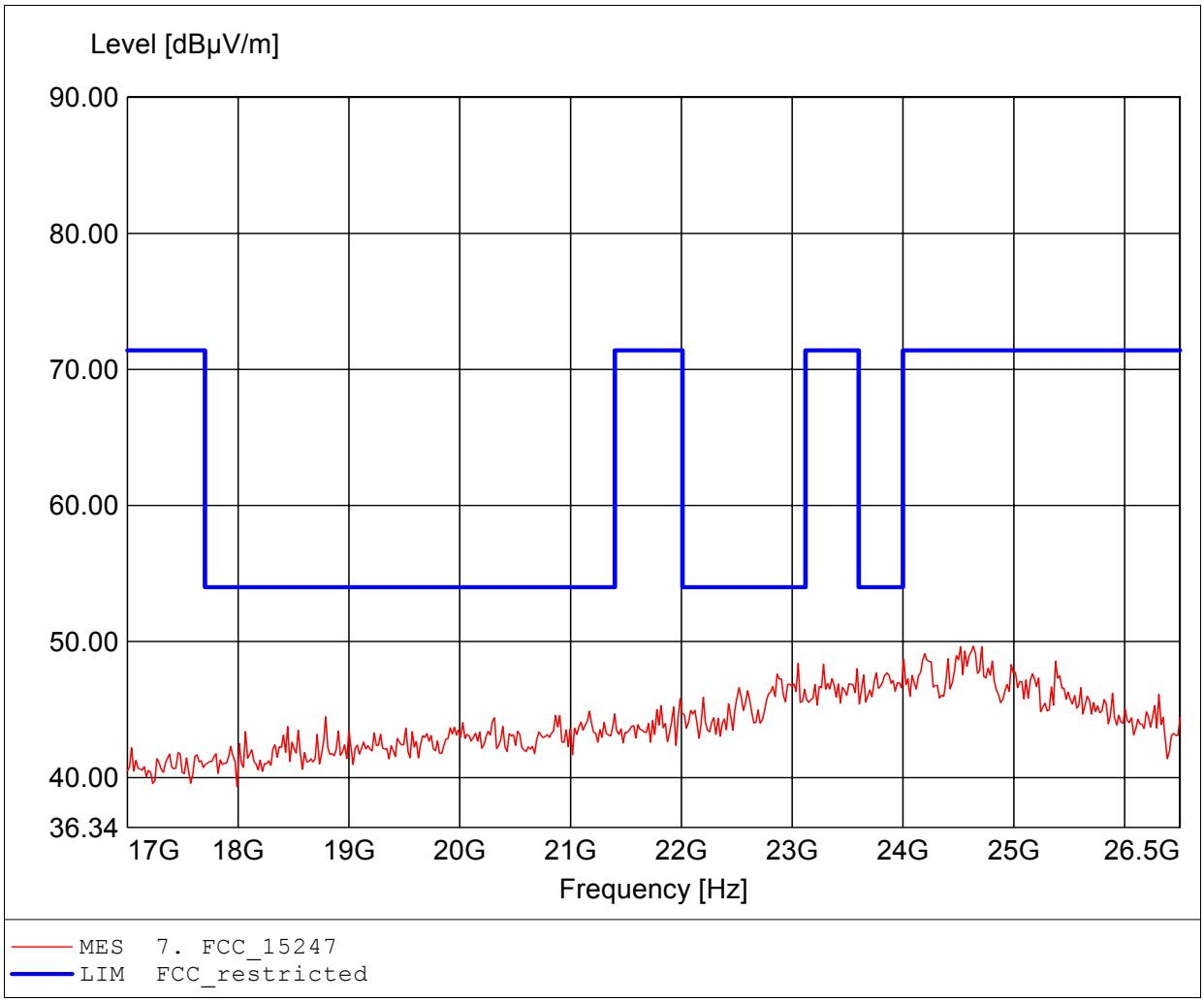
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
Comment 2:	Freq: 24.596GHz, Emax: 51.14dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

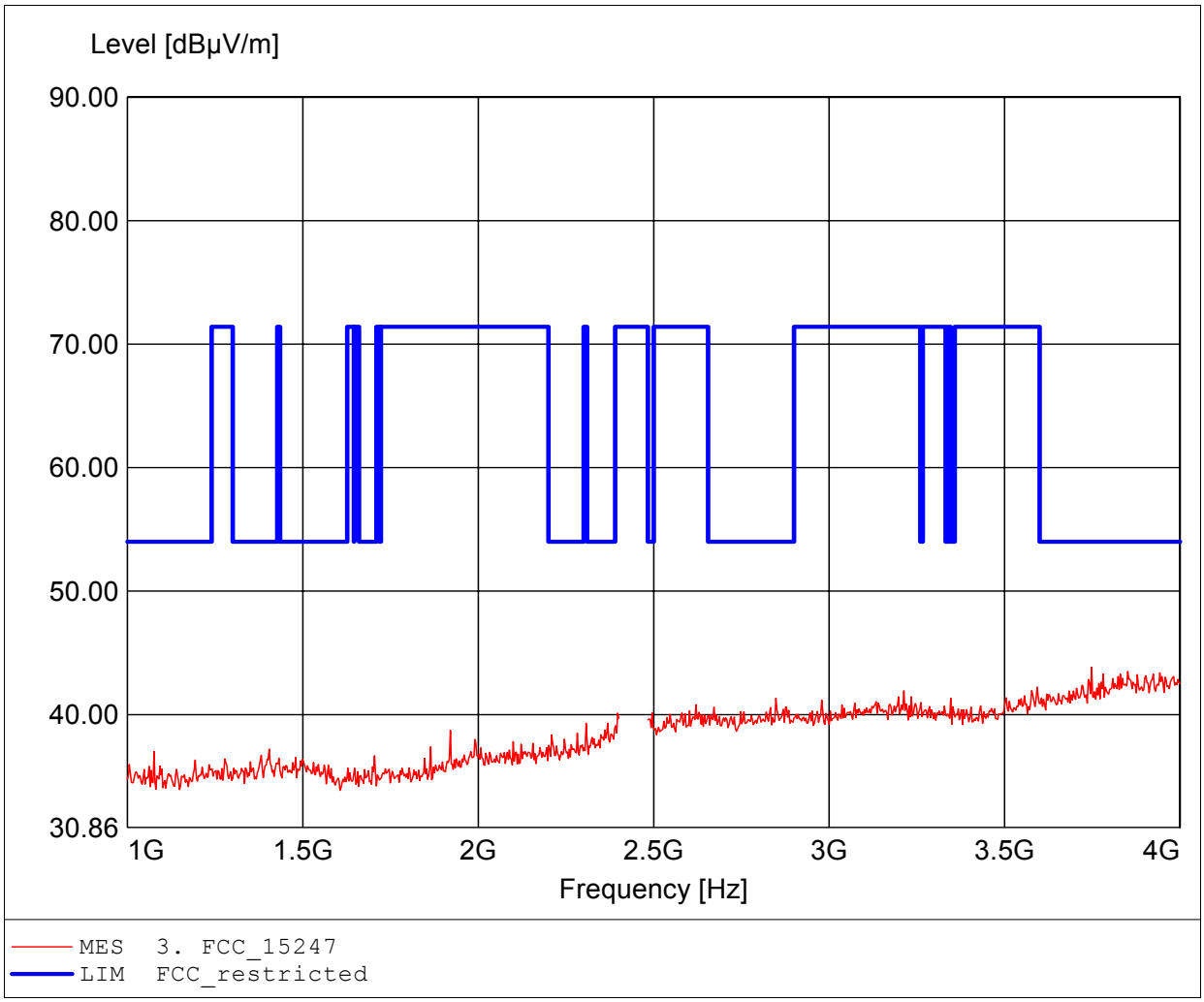
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 0
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: HL025, amplif.
Comment 2:	Freq: 24.634GHz, Emax: 49.66dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

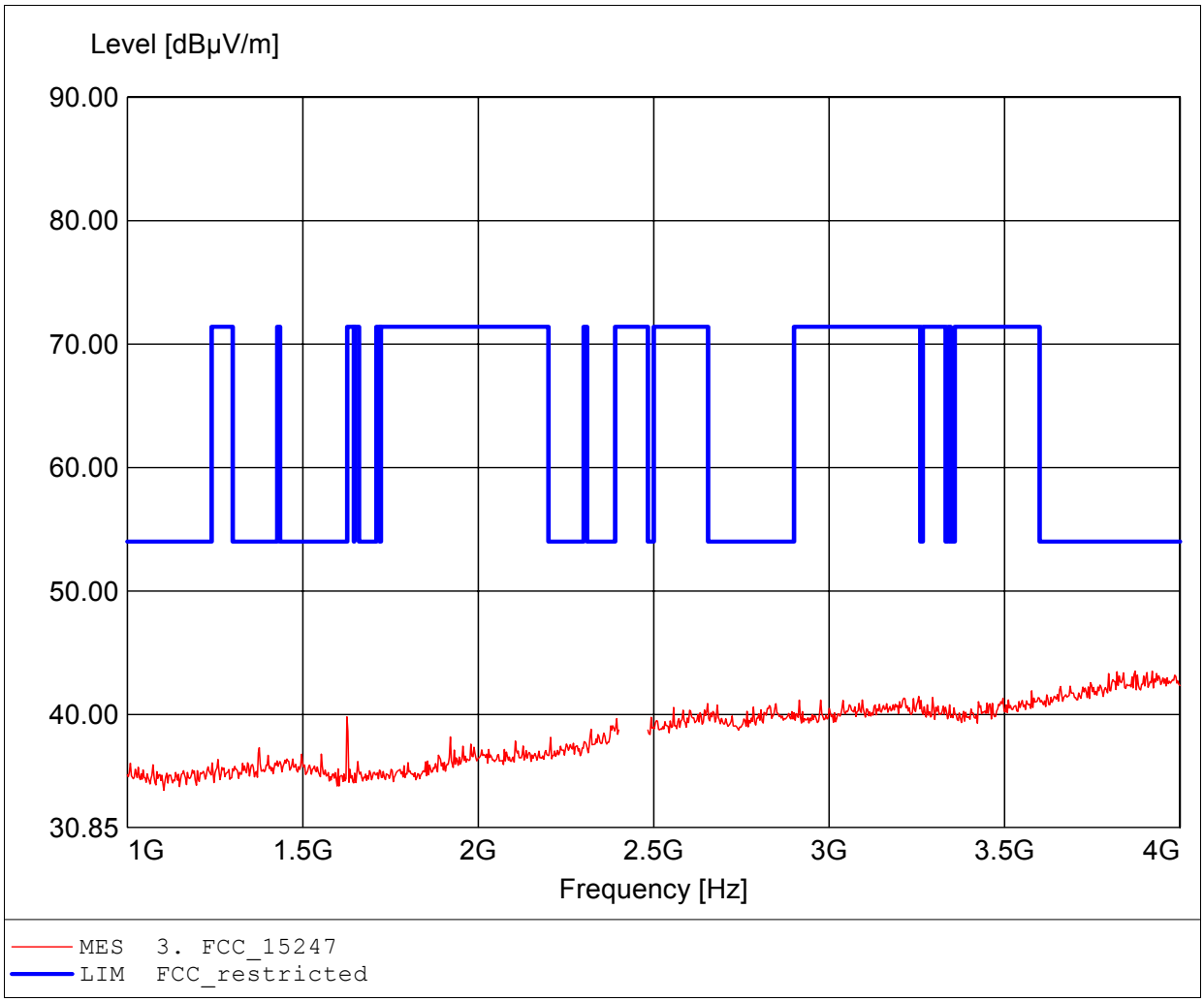
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 3.748GHz, Emax: 43.84dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

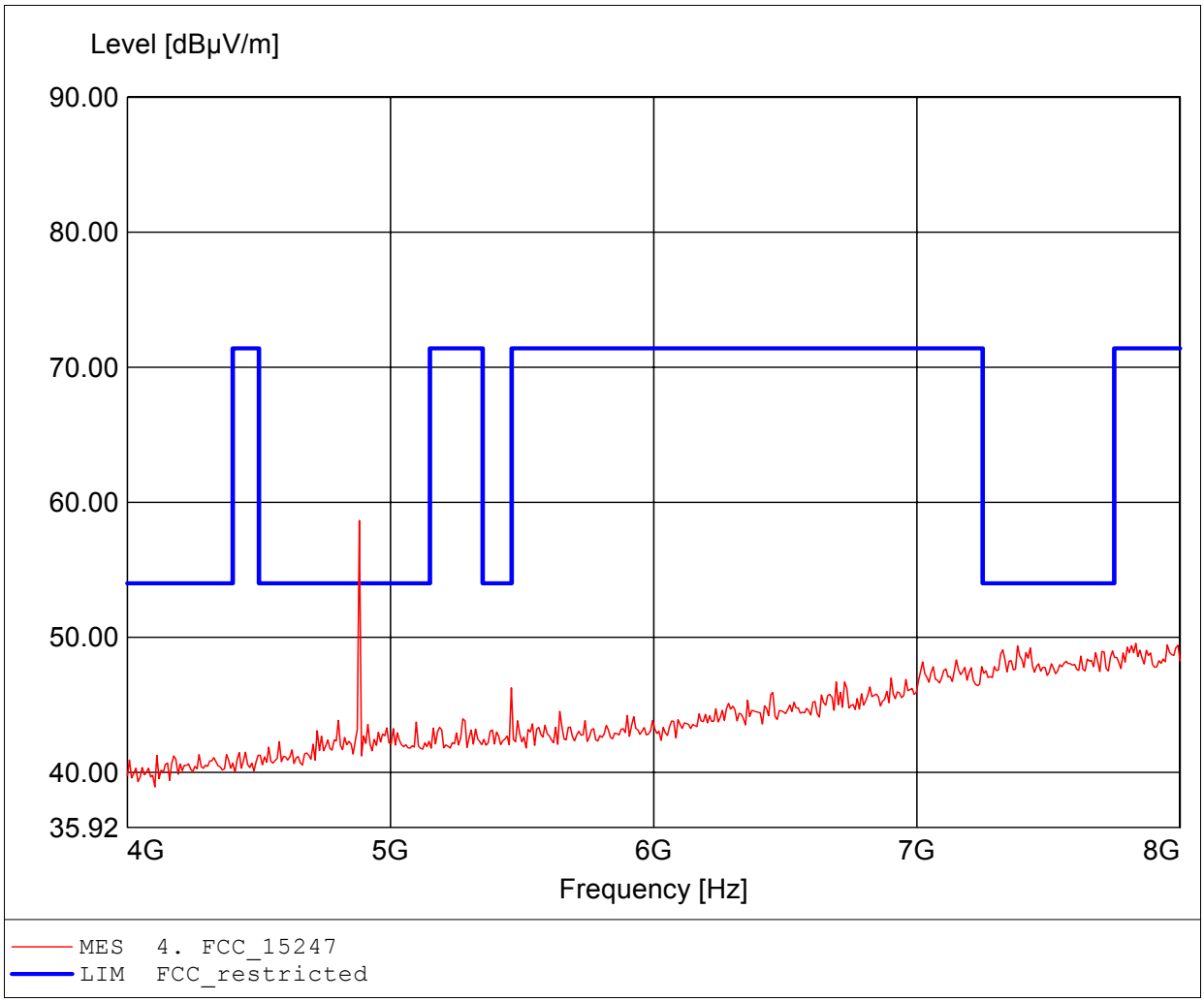
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 3.921GHz, Emax: 43.52dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

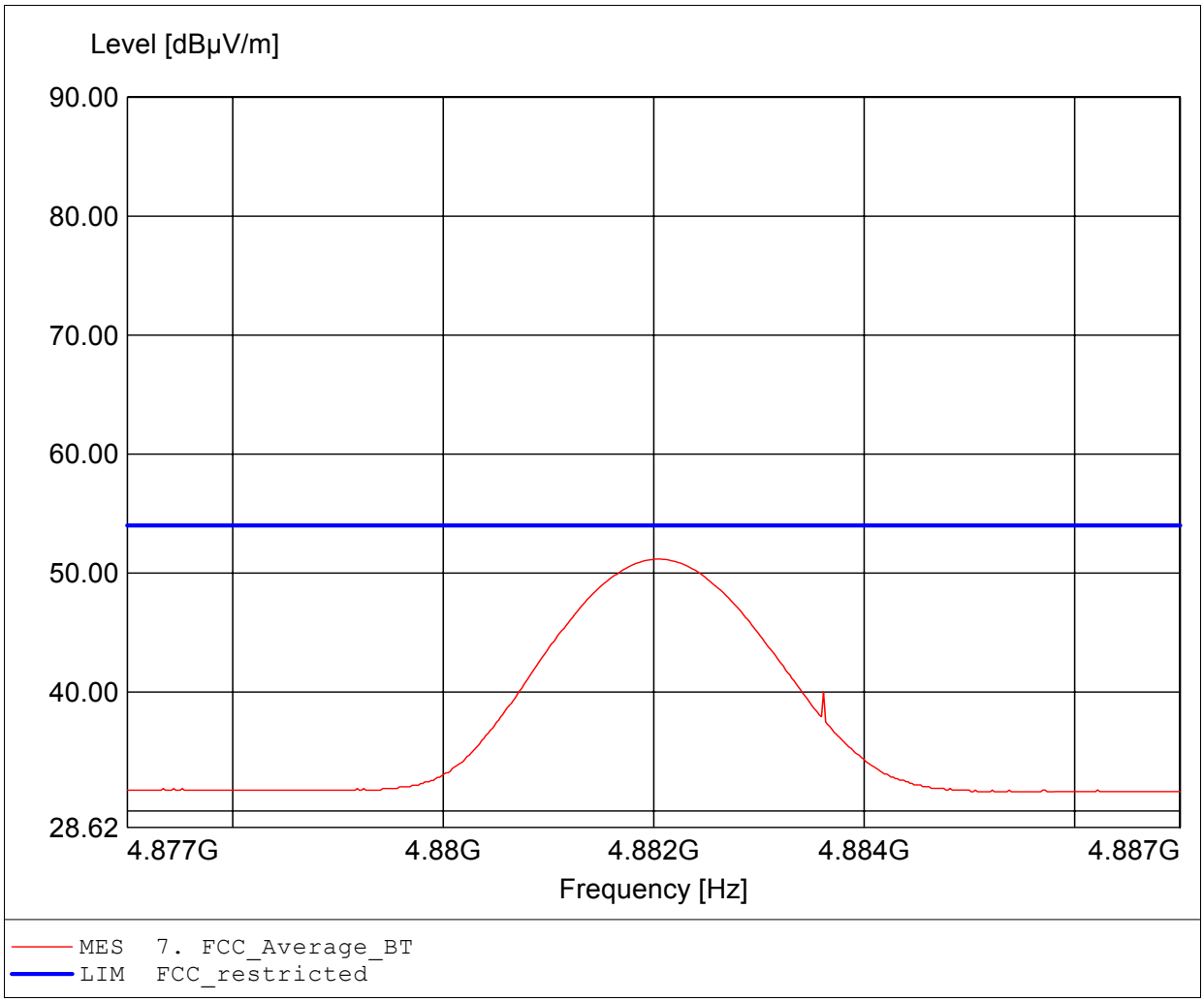
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 4.882GHz, Emax: 58.66dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

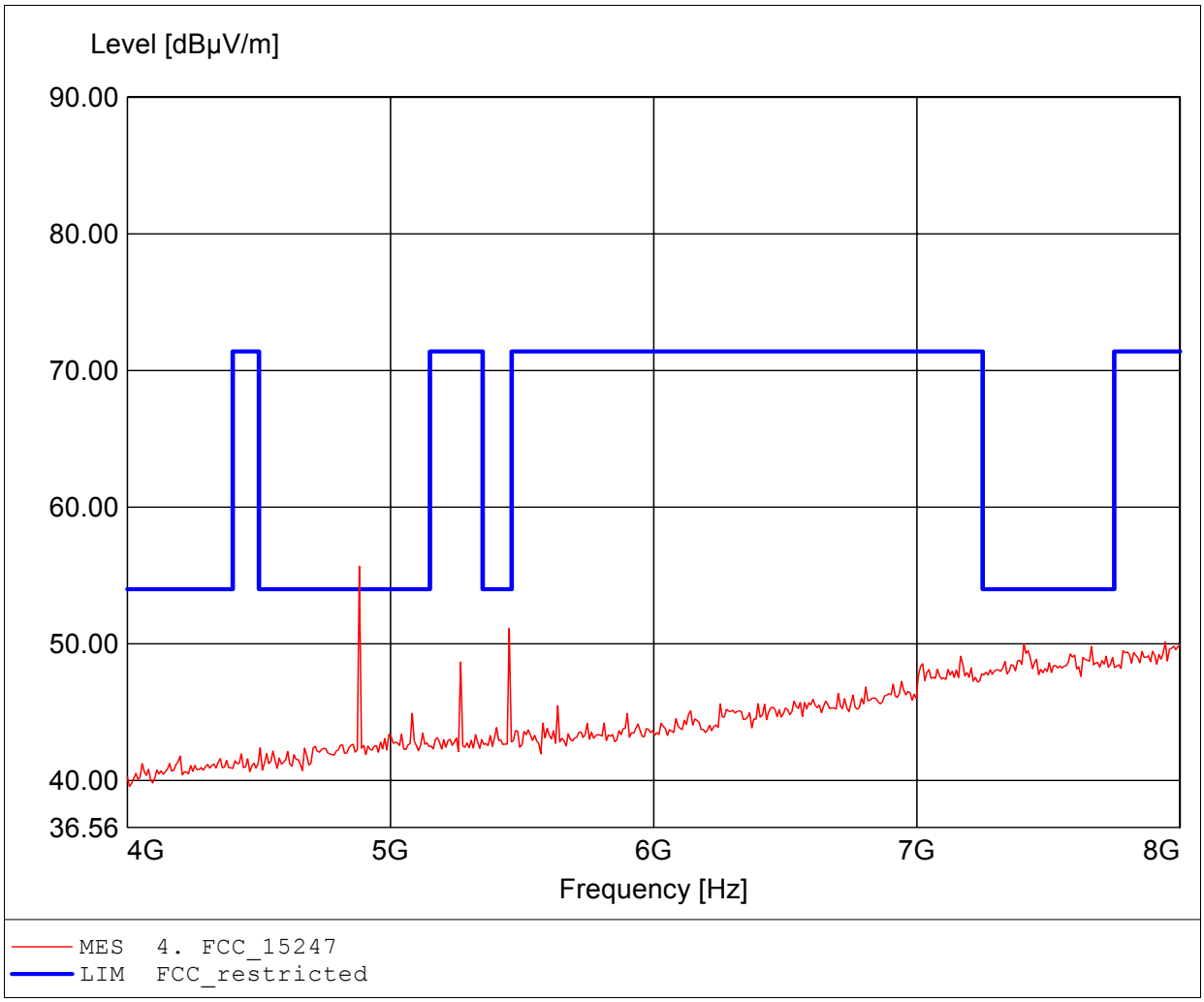
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, average detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 4.882GHz, Emax: 51.19dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

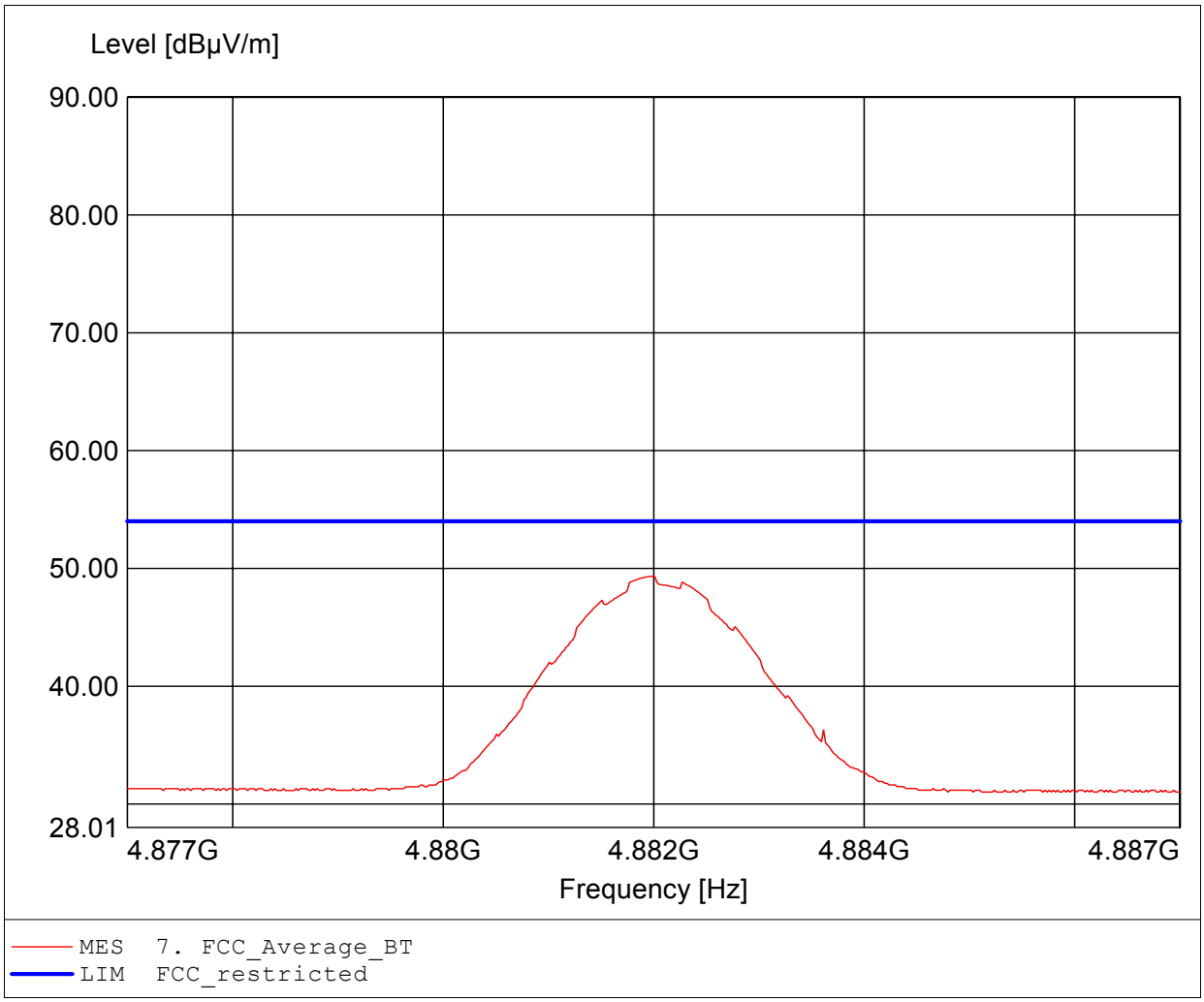
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 4.882GHz, Emax: 55.67dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

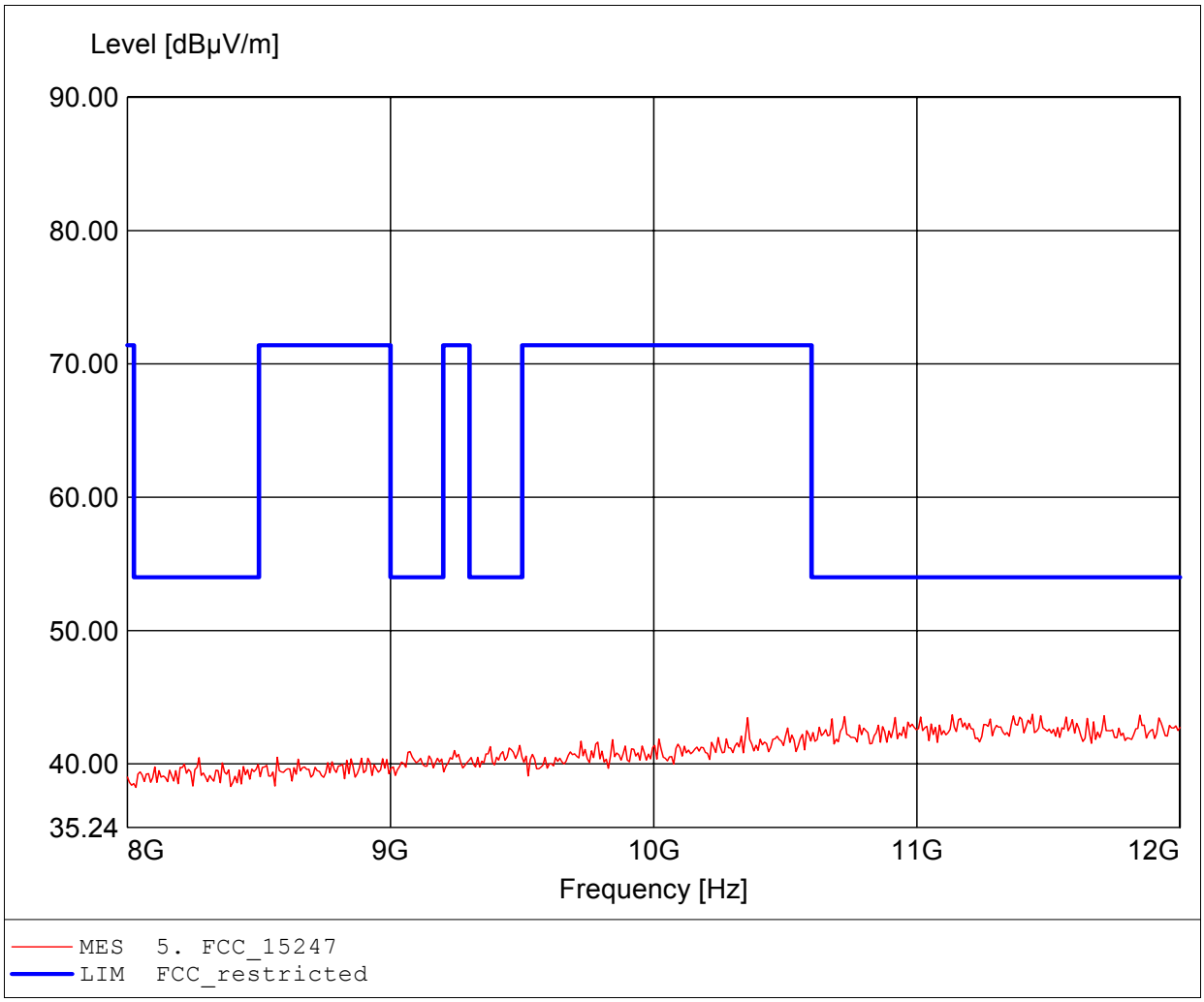
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, average detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 4.882GHz, Emax: 49.34dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

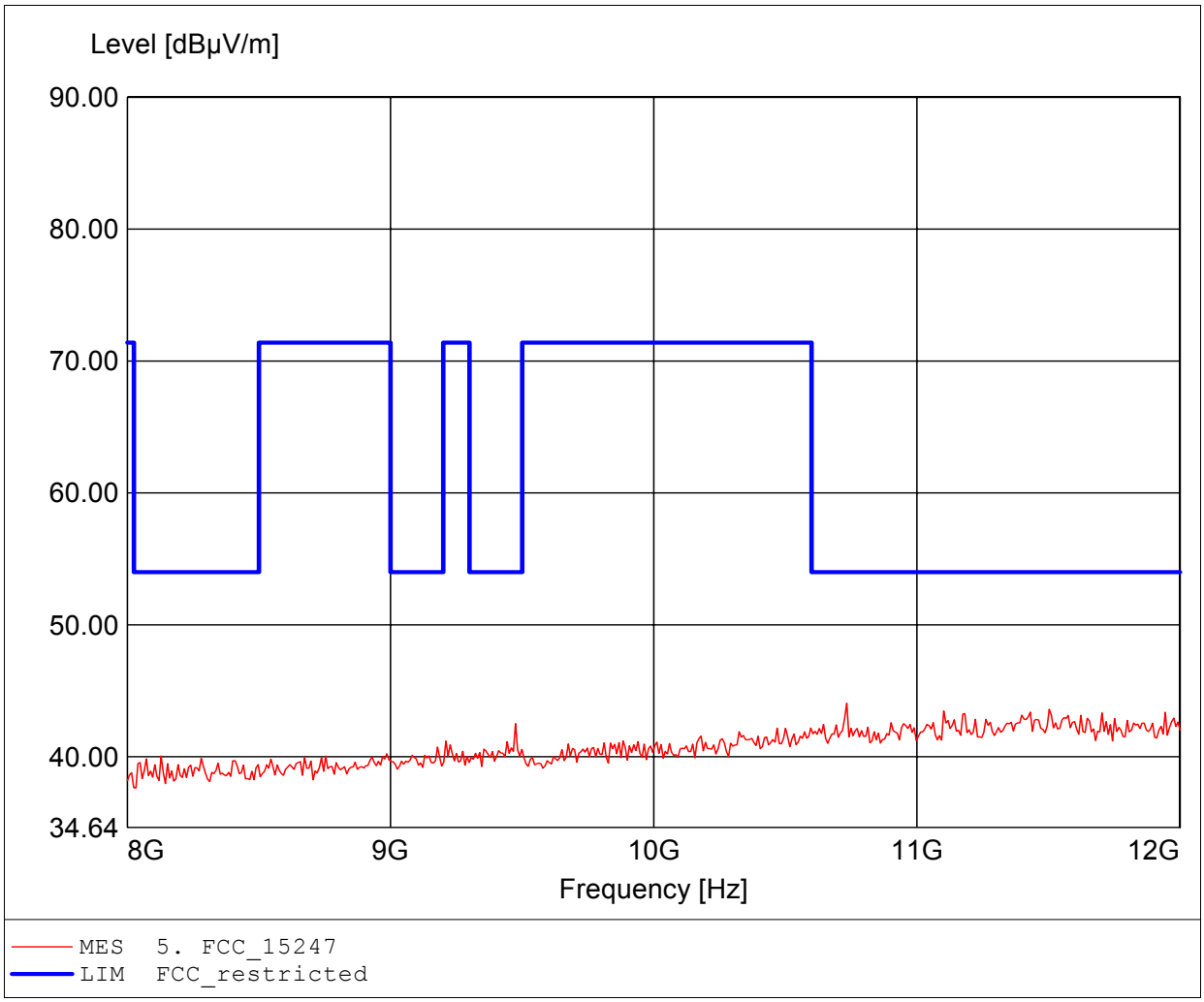
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 11.439GHz, Emax: 43.73dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

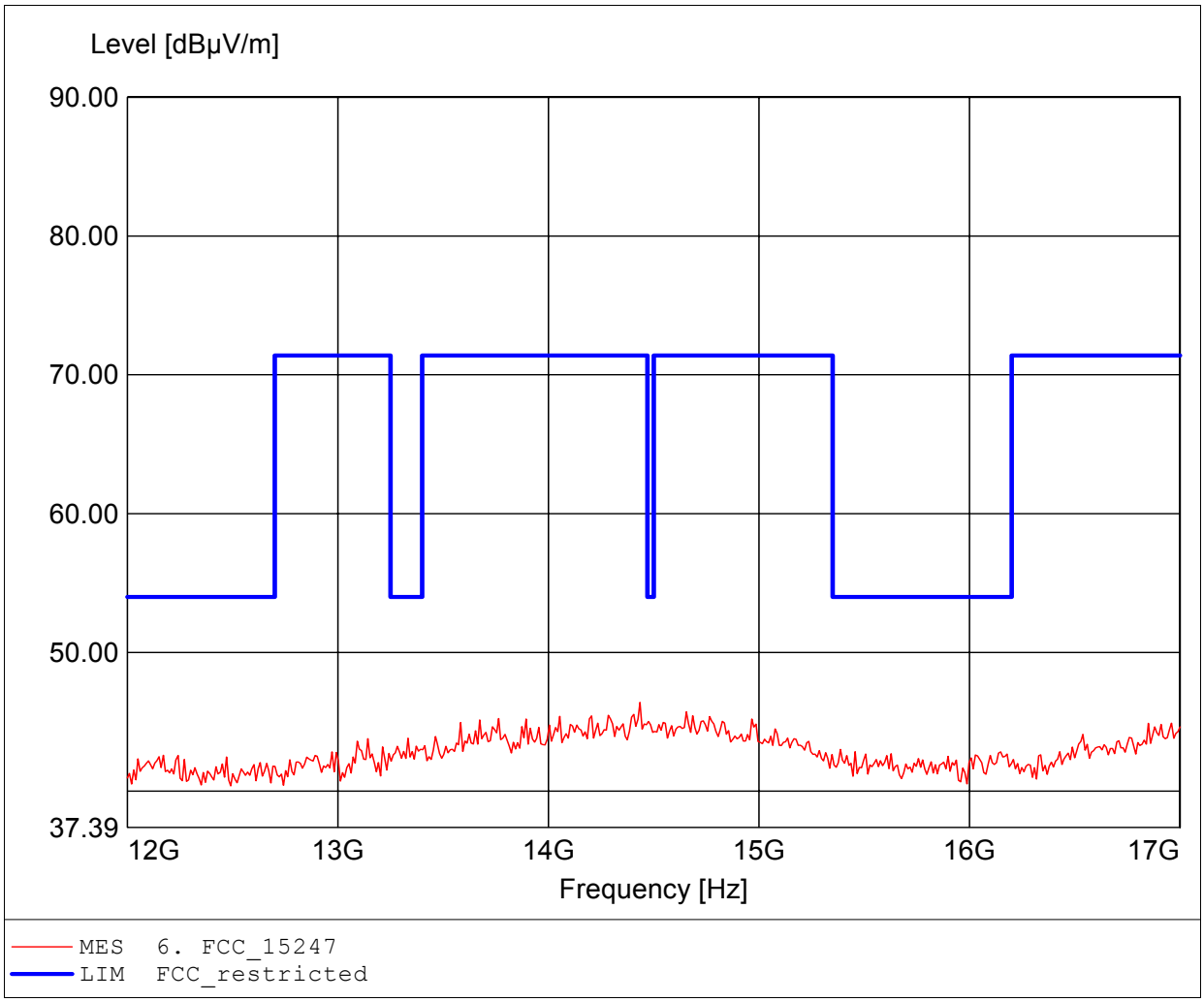
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 10.733GHz, Emax: 44.05dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

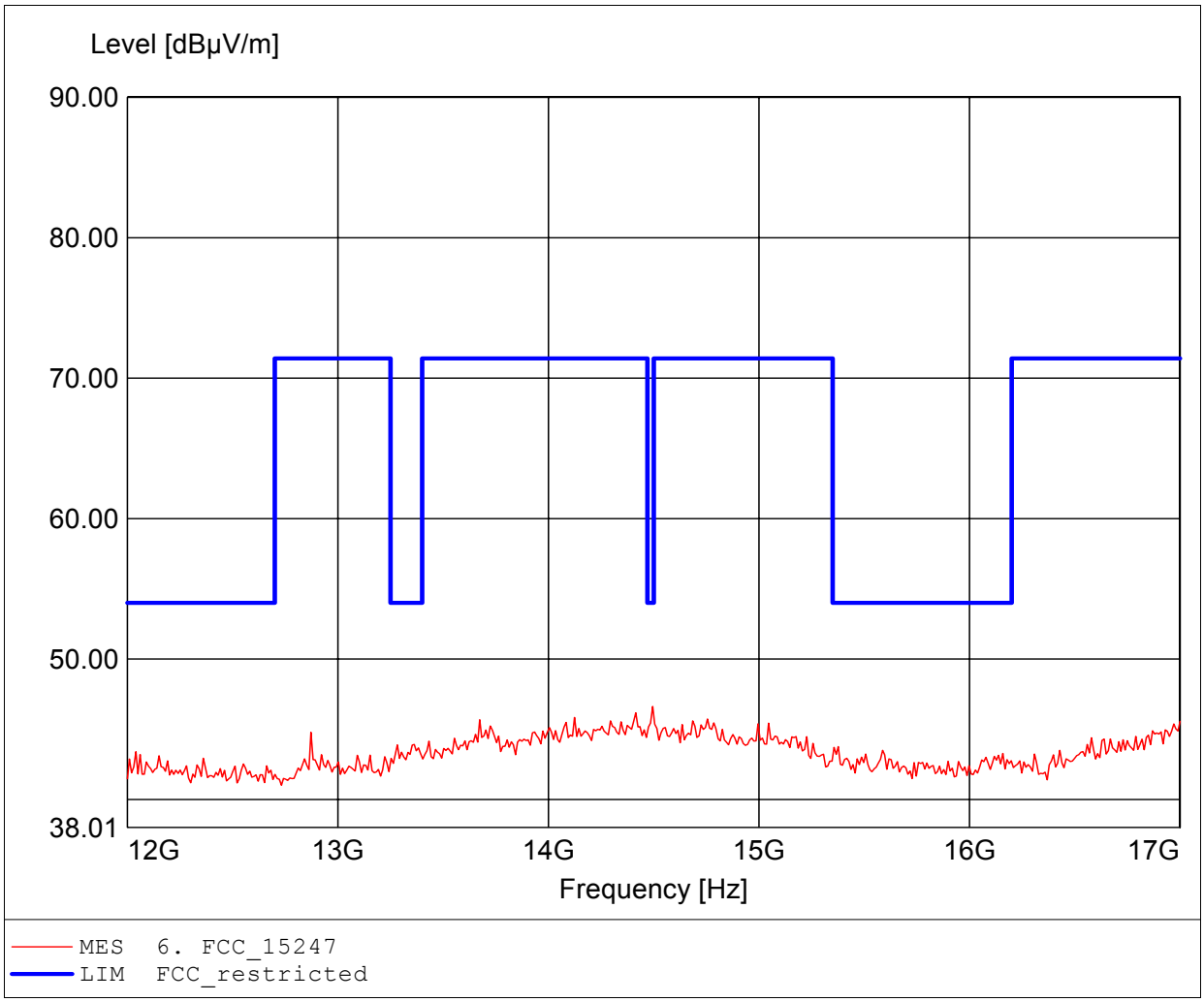
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 14.435GHz, Emax: 46.40dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

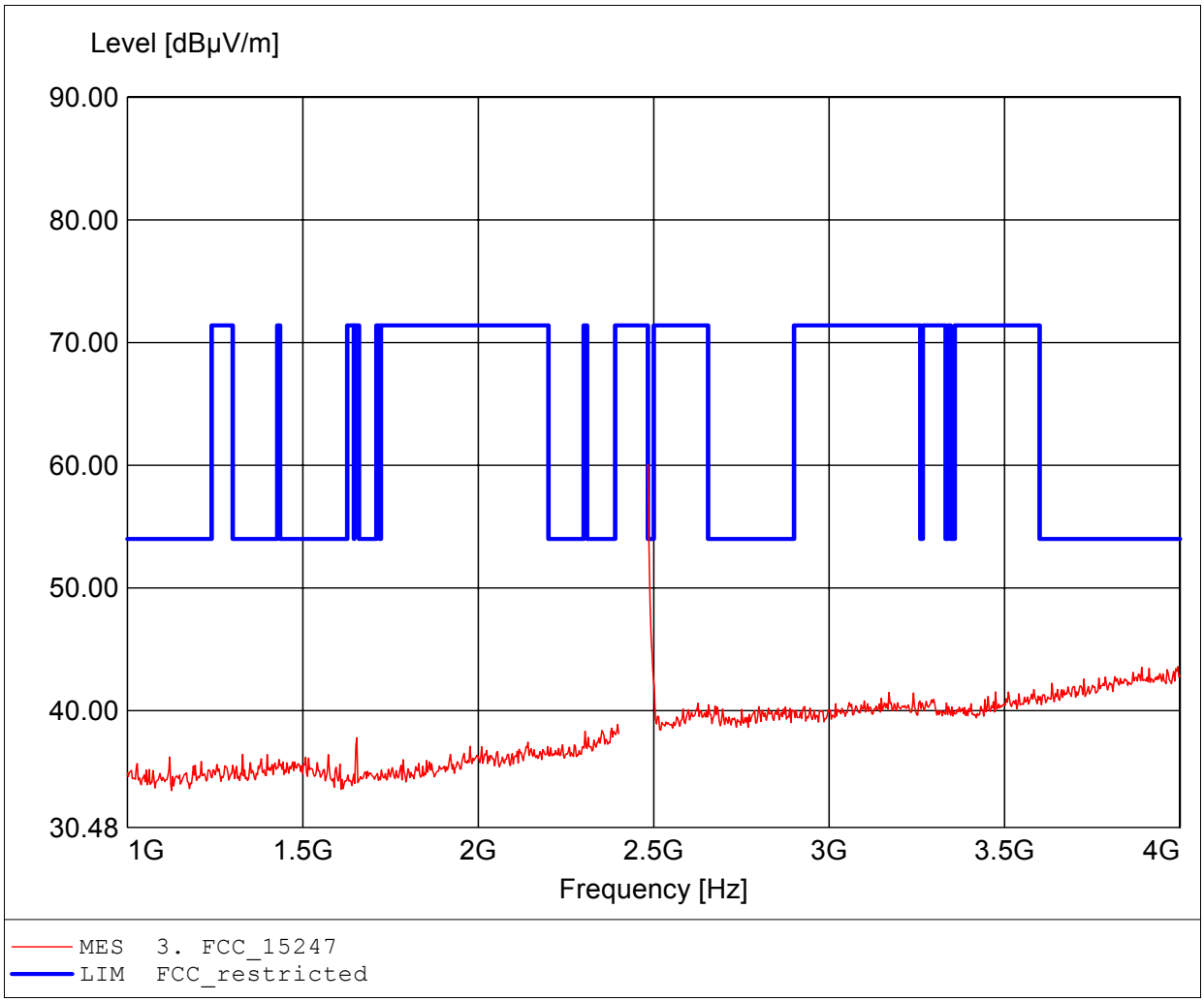
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 14.495GHz, Emax: 46.62dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

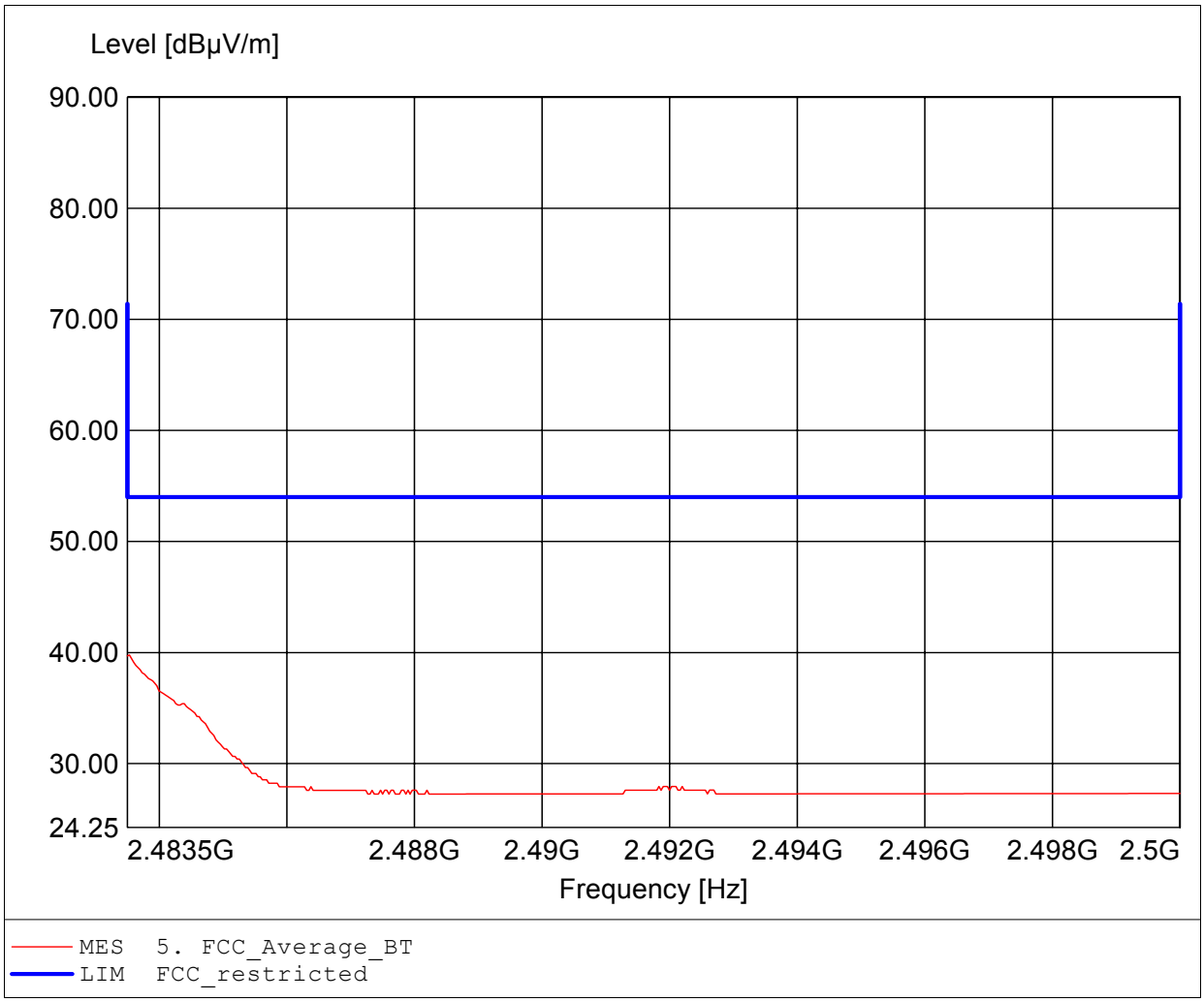
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 2.484GHz, Emax: 60.08dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

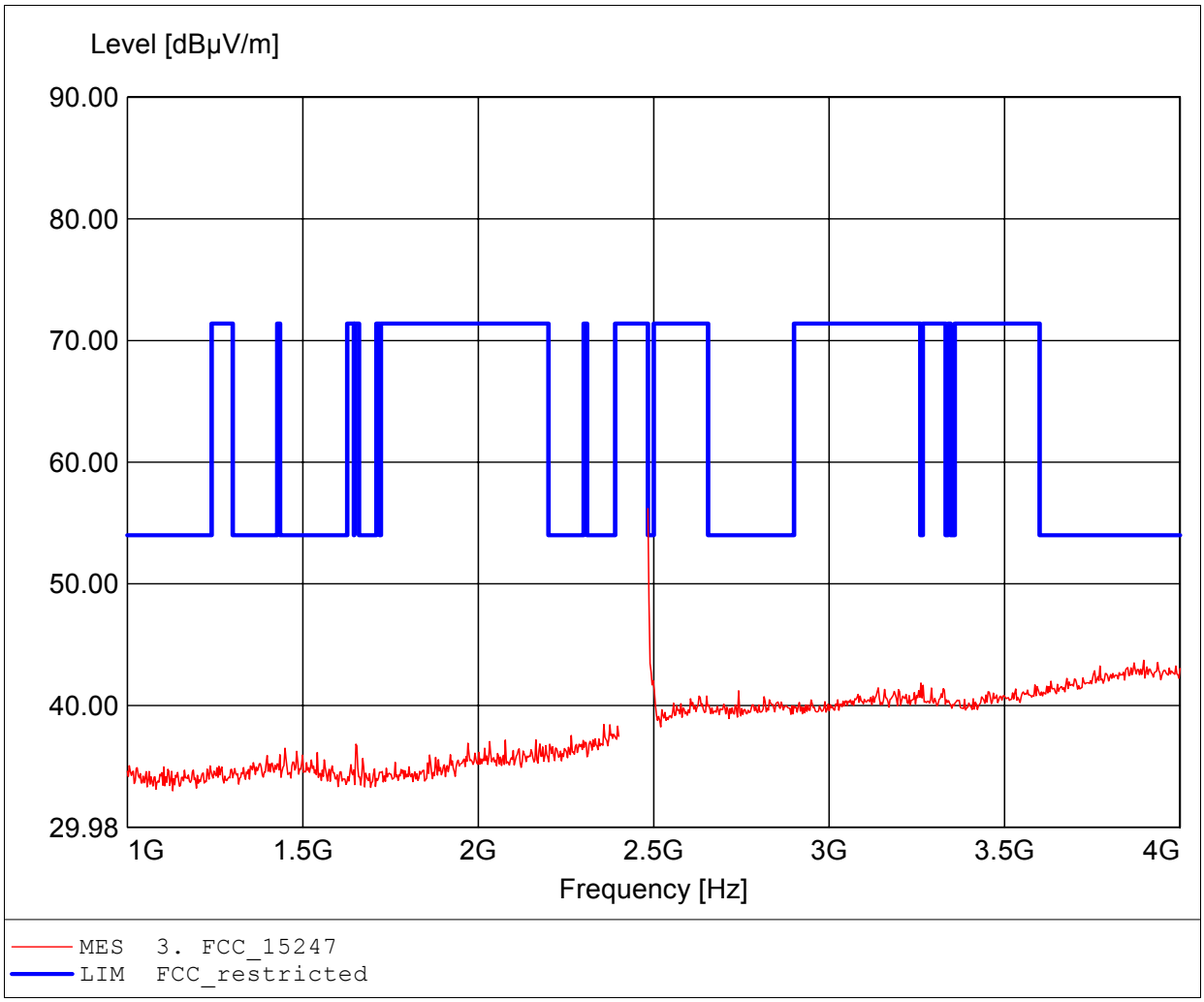
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, average detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 2.484GHz, Emax: 39.78dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

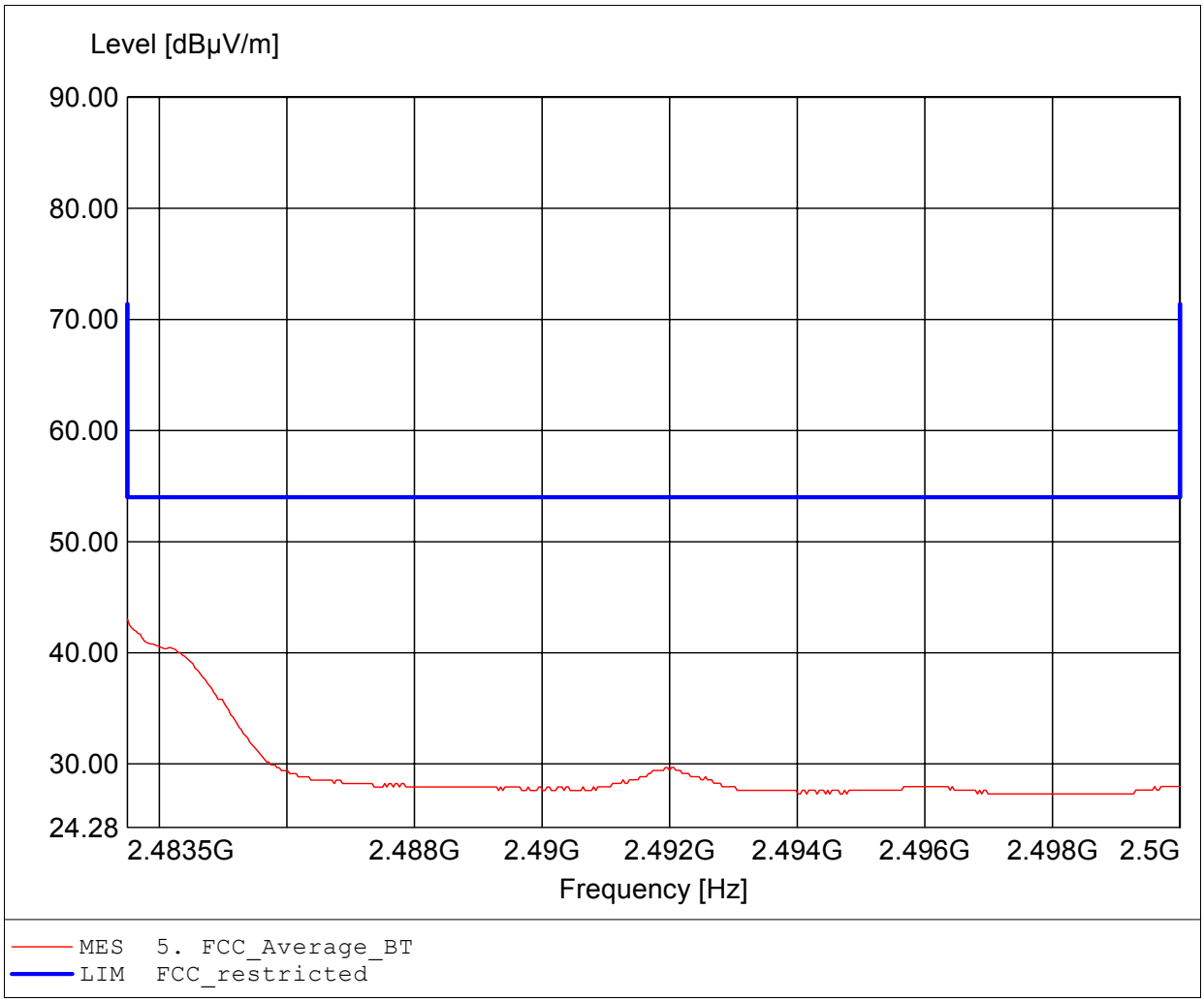
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 2.484GHz, Emax: 56.20dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

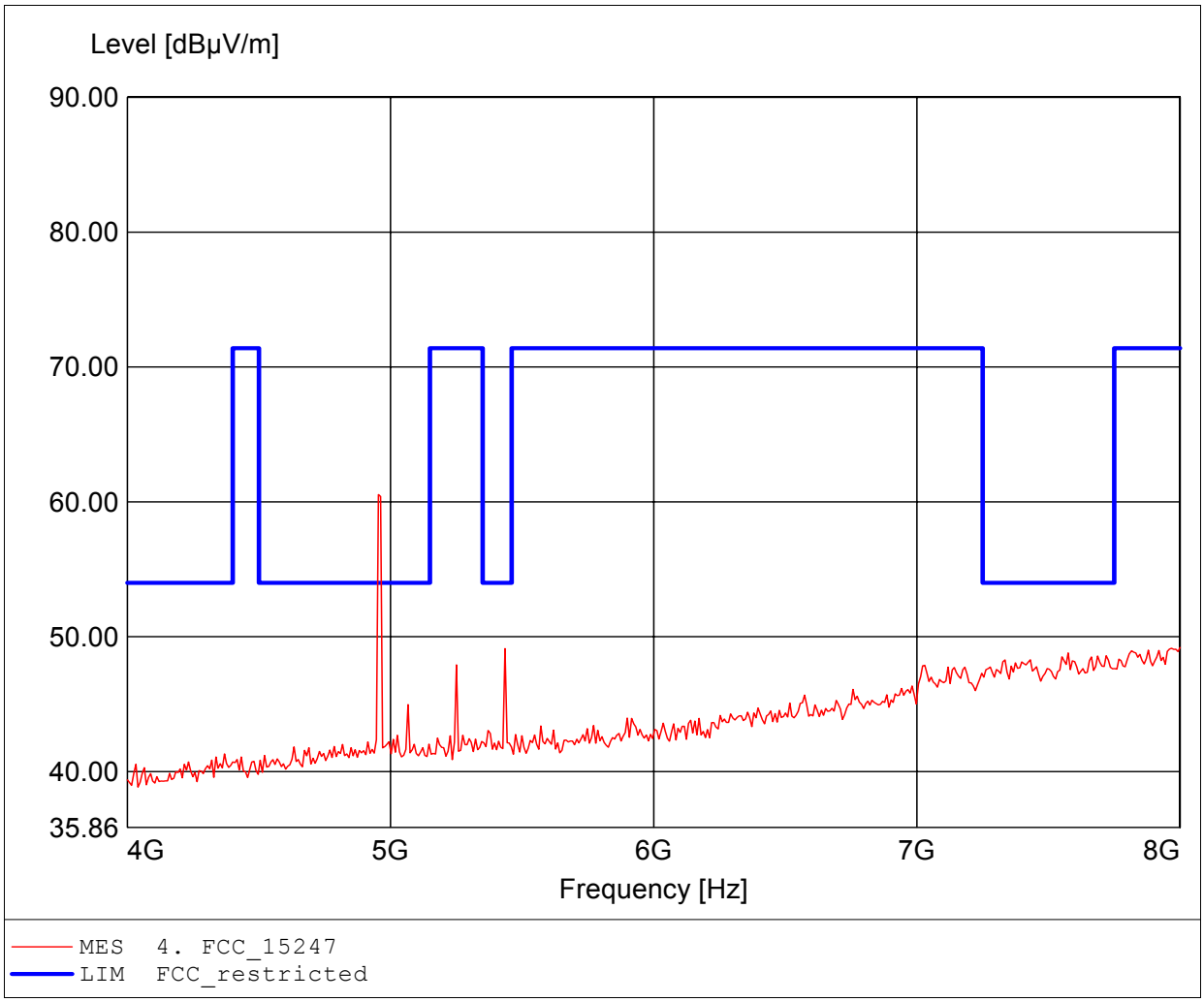
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, average detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 2.484GHz, Emax: 43.02dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

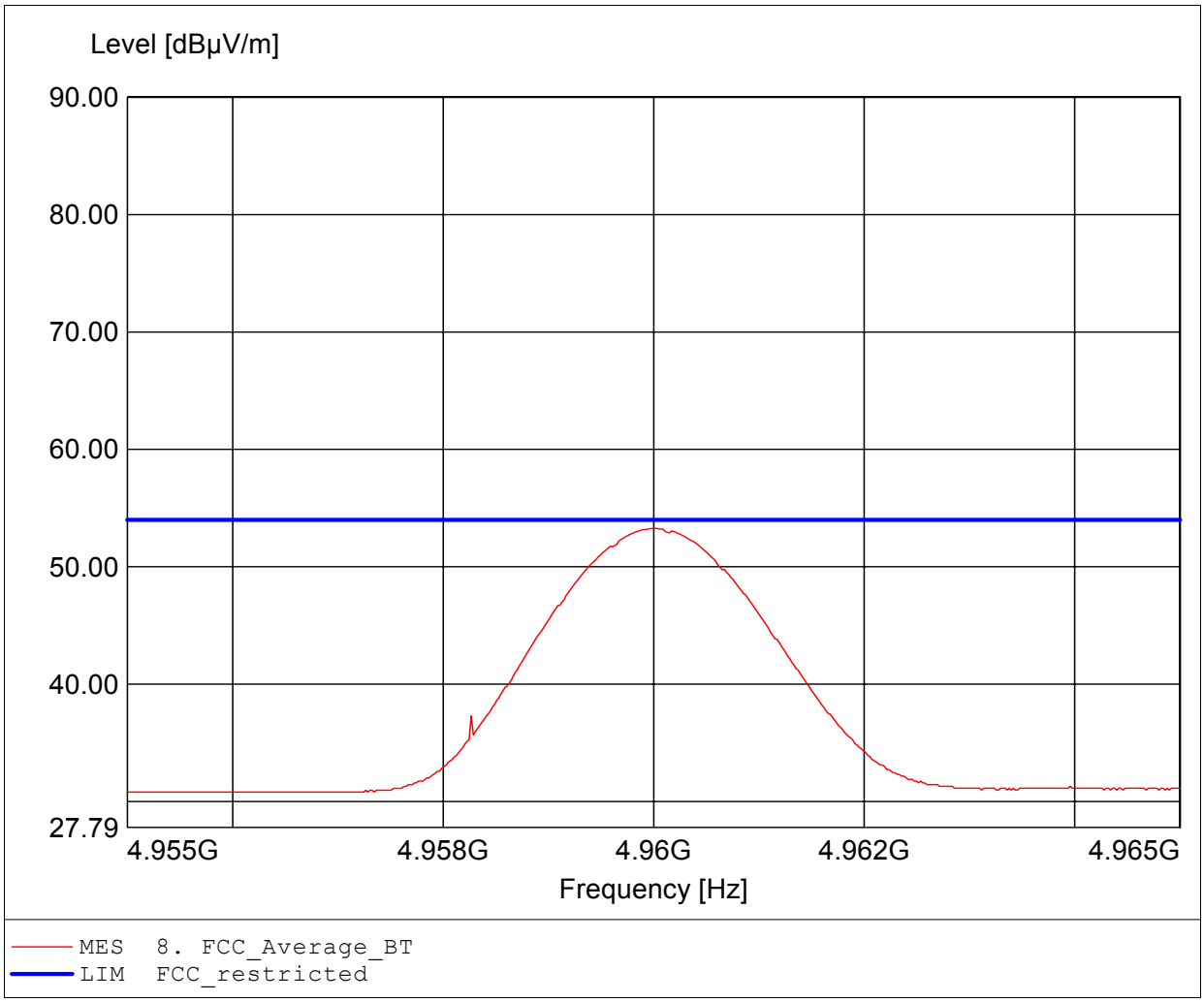
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 4.954GHz, Emax: 60.55dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

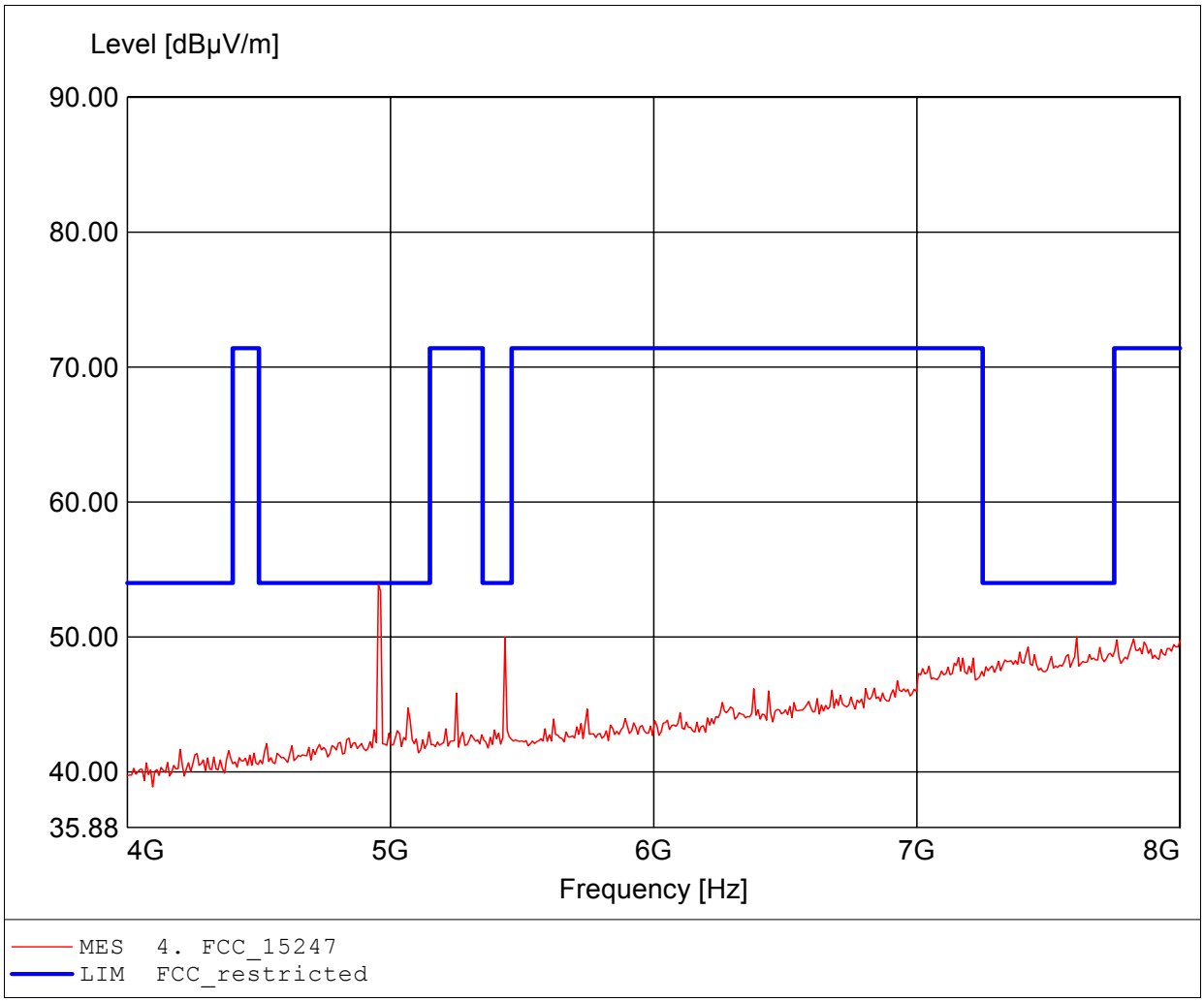
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, average detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2:	Freq: 4.960GHz, Emax: 53.26dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

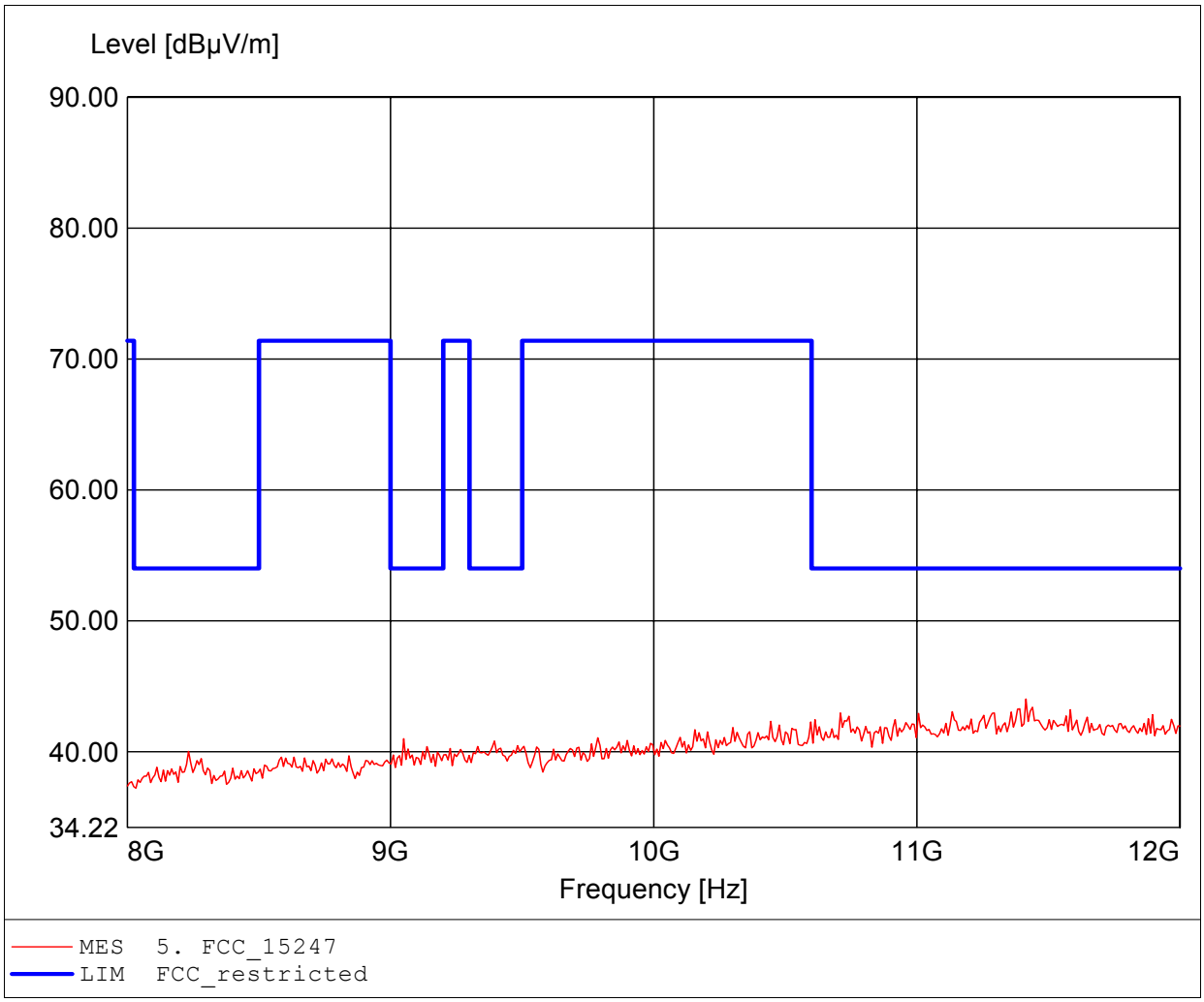
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 4.954GHz, Emax: 53.90dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

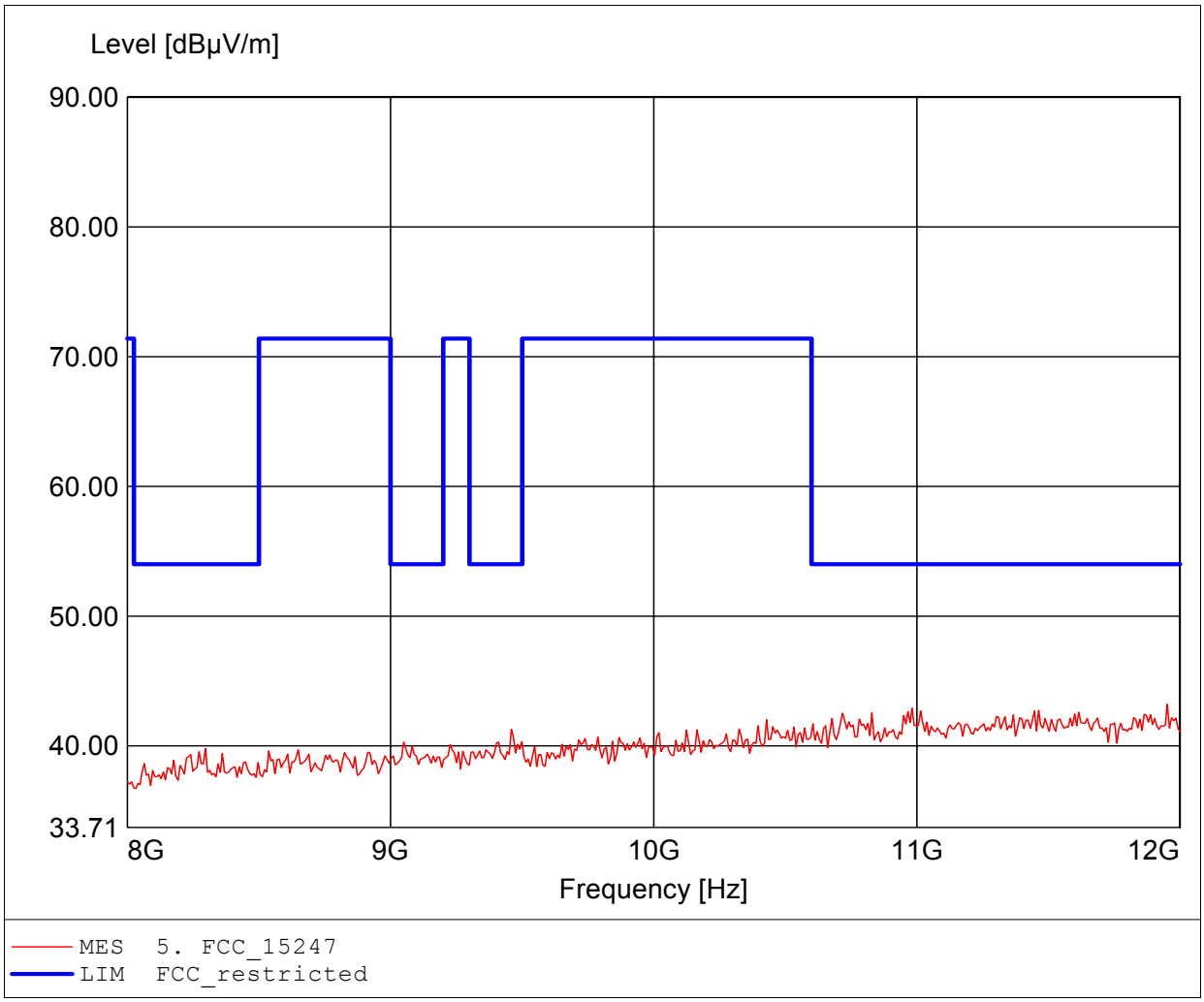
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 11.415GHz, Emax: 44.04dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

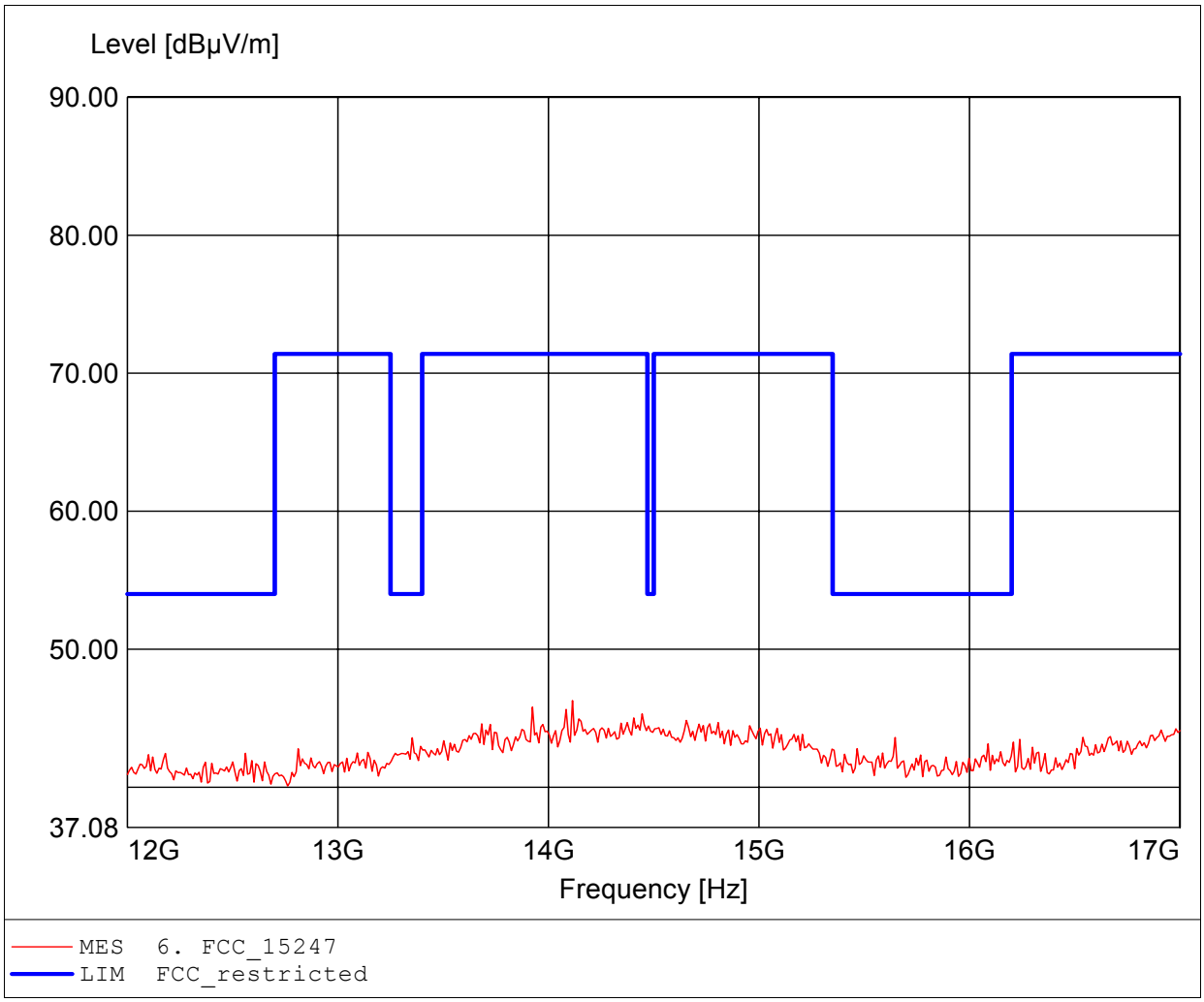
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 11.952GHz, Emax: 43.21dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

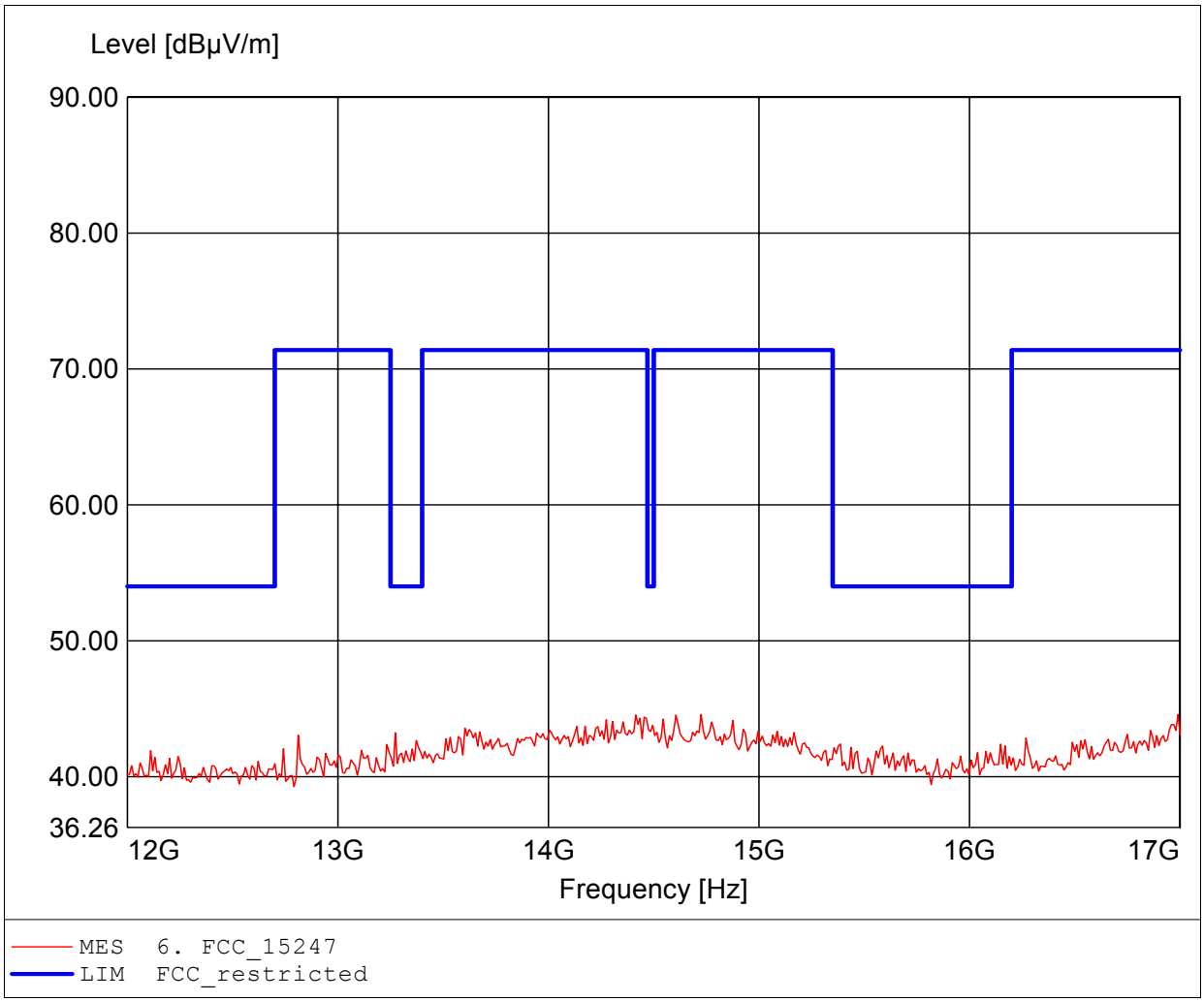
Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 14.114GHz, Emax: 46.28dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

Approval Holder:	Leica Geosy stems AG / G0M-1110-1487
EUT:	GNN N S Antenna
Model::	iCG60 / setup: basic, Tx ch. 78
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	according to §15.247, peak detector
Comment 1:	Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2:	Freq: 14.725GHz, Emax: 44.59dBµV/m, RBW: 1MHz

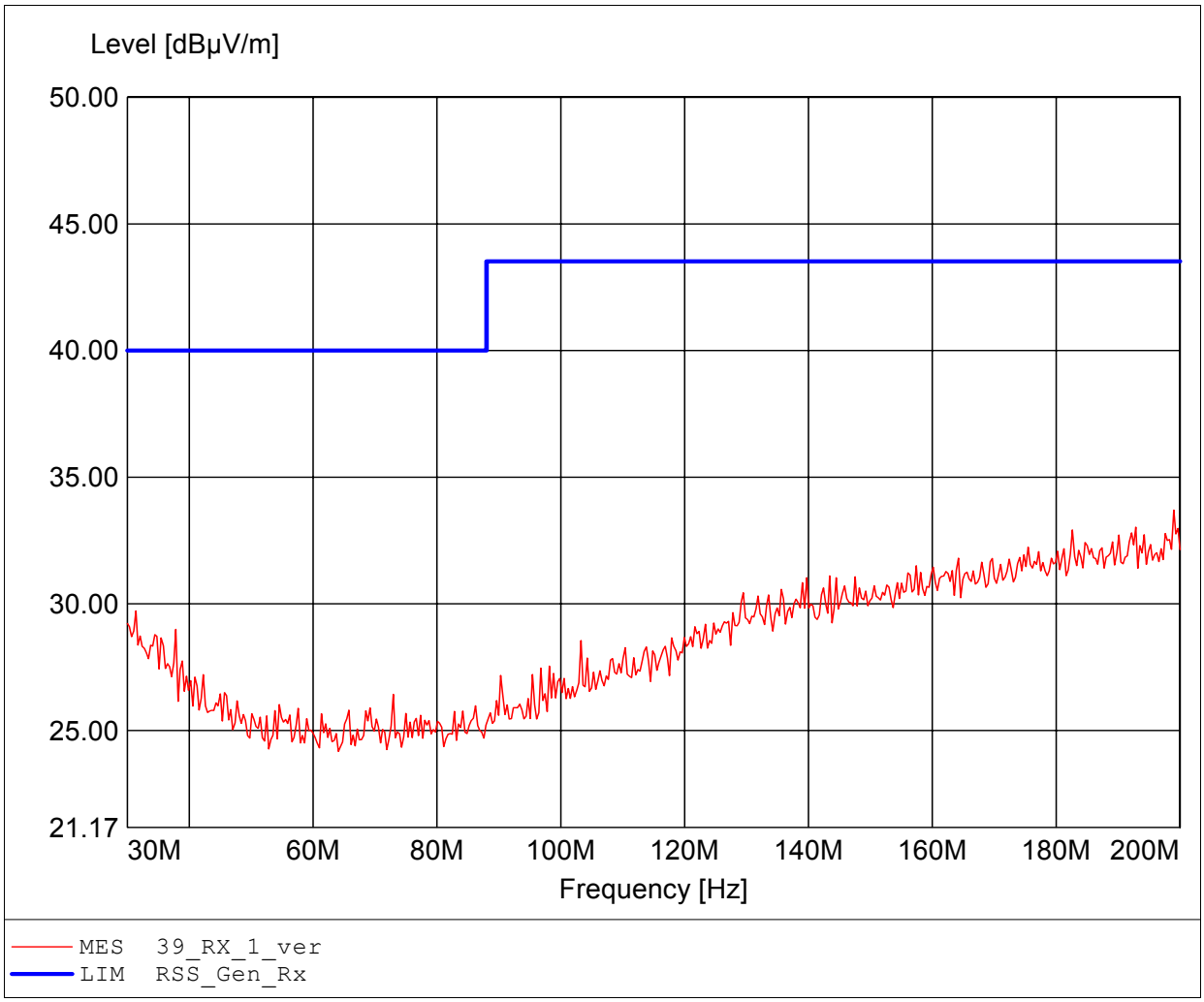


ANNEX B Receiver radiated spurious emissions

Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

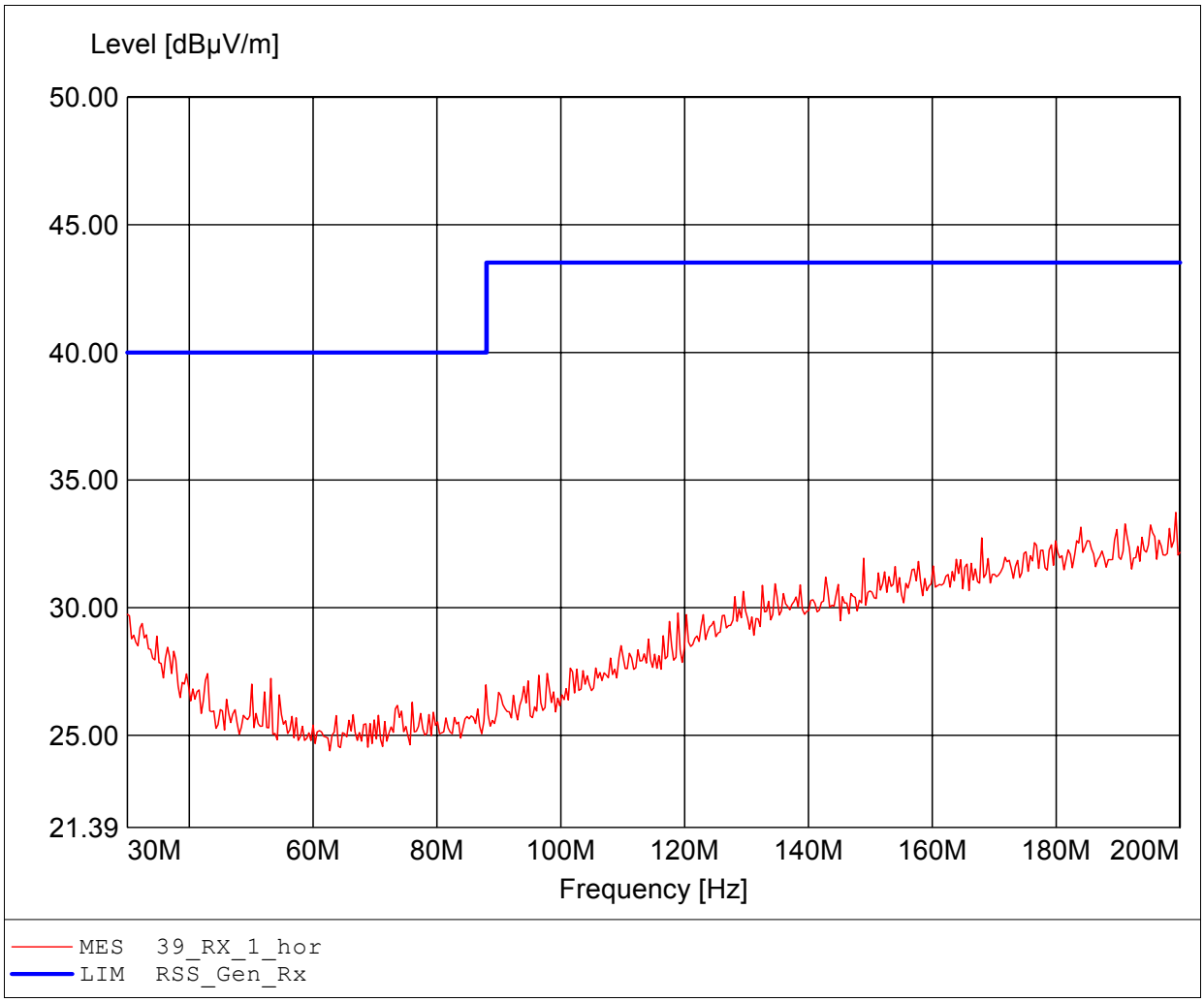
```
Approval Holder:       Leica Geosystems AG   /   G0M-1110-1487
EUT:                   GNNS Antenna
Model:                 iCG60   /   setup: Rx ch. 39
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    Freq. / CH: 39
Comment 1:             Dist.: 3m, Ant.: HK 116
Comment 2:             Freq:198.978MHz Emax:33.70dBµV/m RBW: 100 kHz
```



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

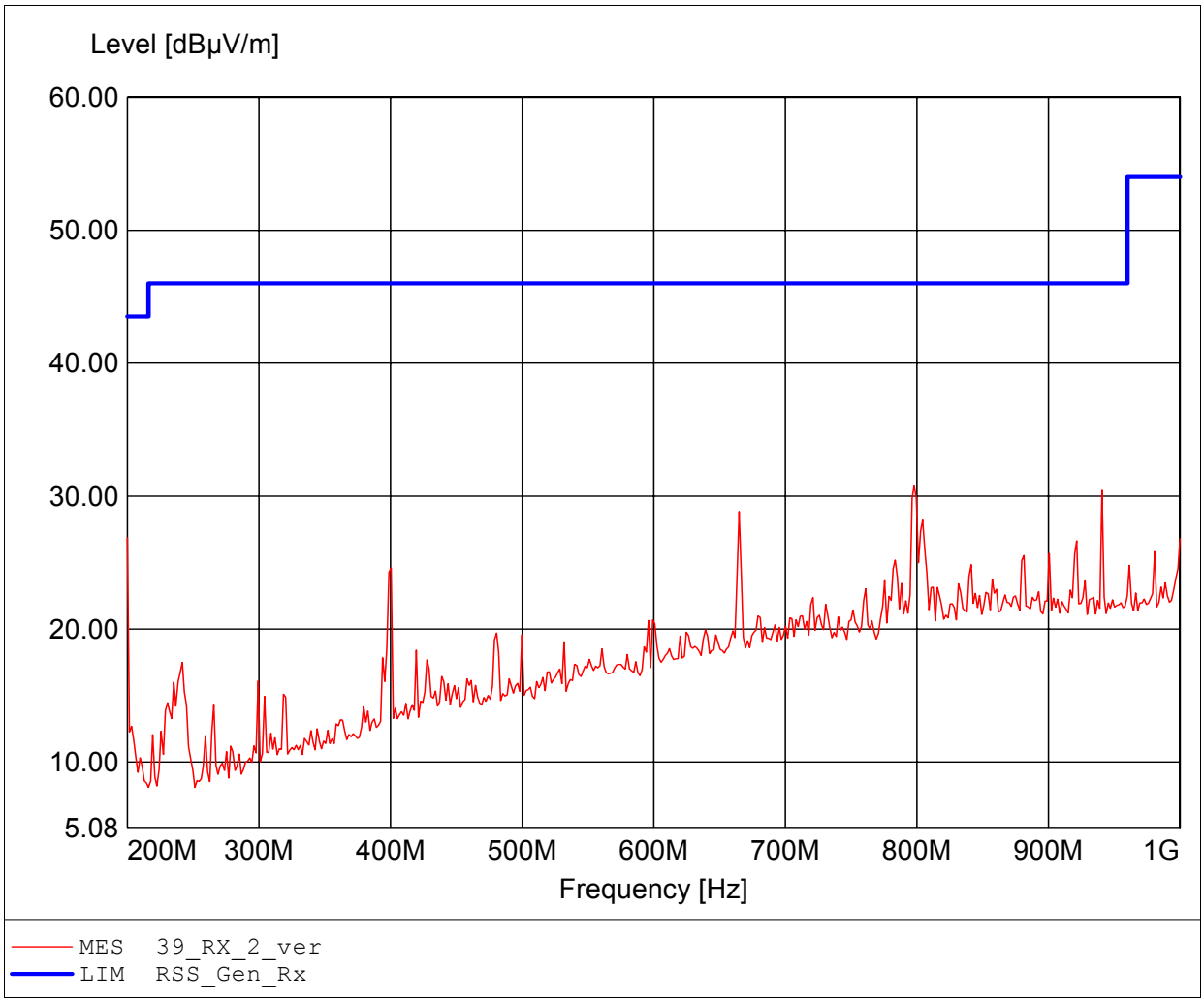
```
Approval Holder:       Leica Geosystems AG   /   G0M-1110-1487
EUT:                   GNNS Antenna
Model:                 iCG60   /   setup: Rx ch. 39
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    Freq. / CH: 39
Comment 1:             Dist.: 3m, Ant.: HK 116
Comment 2:             Freq:199.319MHz Emax:33.73dBµV/m RBW: 100 kHz
```



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

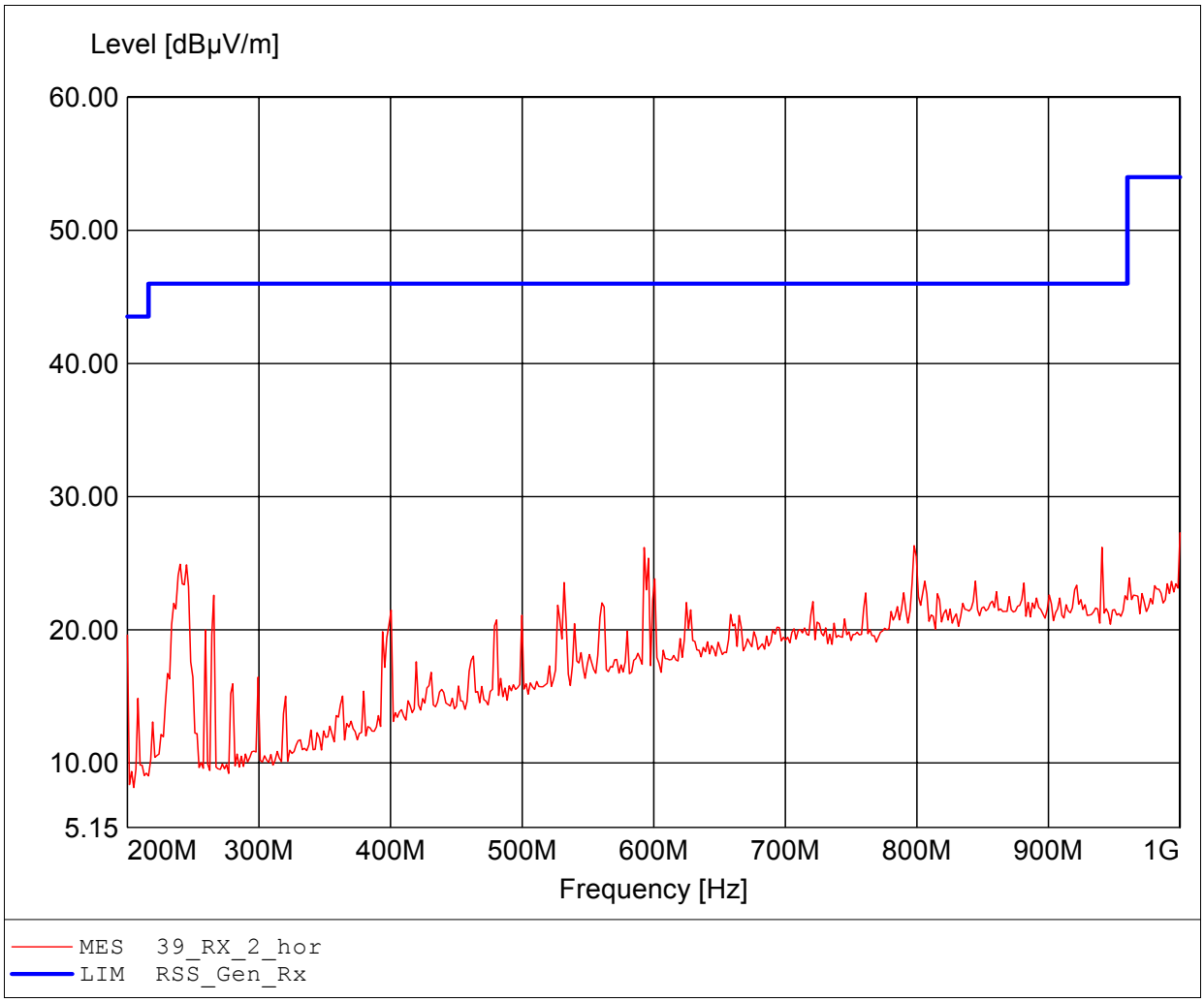
```
Approval Holder:       Leica Geosystems AG   /   G0M-1110-1487
EUT:                   GNNS Antenna
Model:                 iCG60   /   setup: Rx ch. 39
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    Freq. / CH: 39
Comment 1:             Dist.: 3m, Ant.: HL 223, ampl.
Comment 2:             Freq:797.996MHz Emax:30.77dBµV/m RBW: 100 kHz
```



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

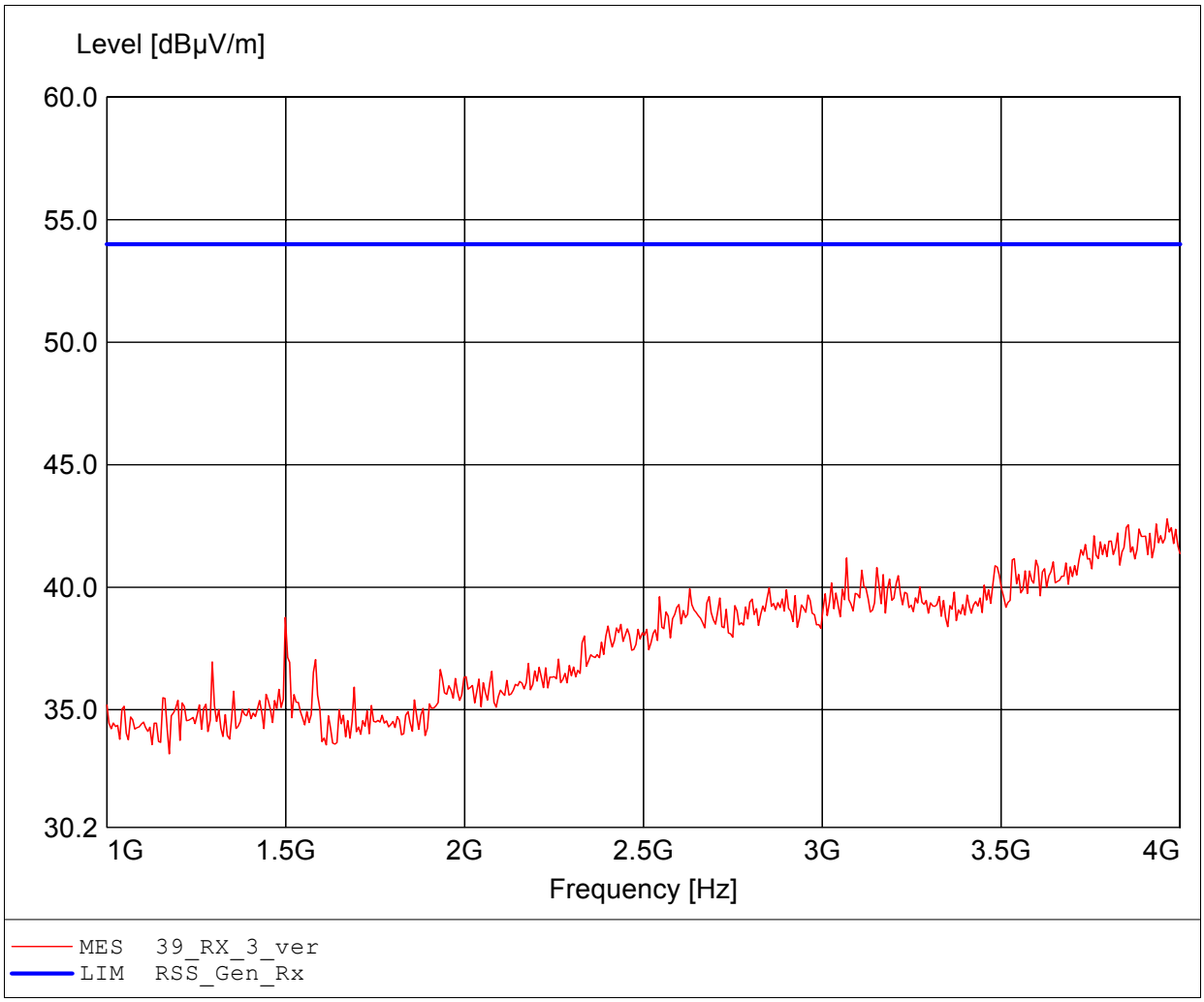
```
Approval Holder:       Leica Geosystems AG   /   G0M-1110-1487
EUT:                   GNNS Antenna
Model:                 iCG60   /   setup: Rx ch. 39
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    Freq. / CH: 39
Comment 1:             Dist.: 3m, Ant.: HL 223, ampl.
Comment 2:             Freq:1.000GHz Emax:27.30dBµV/m RBW: 100 kHz
```



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

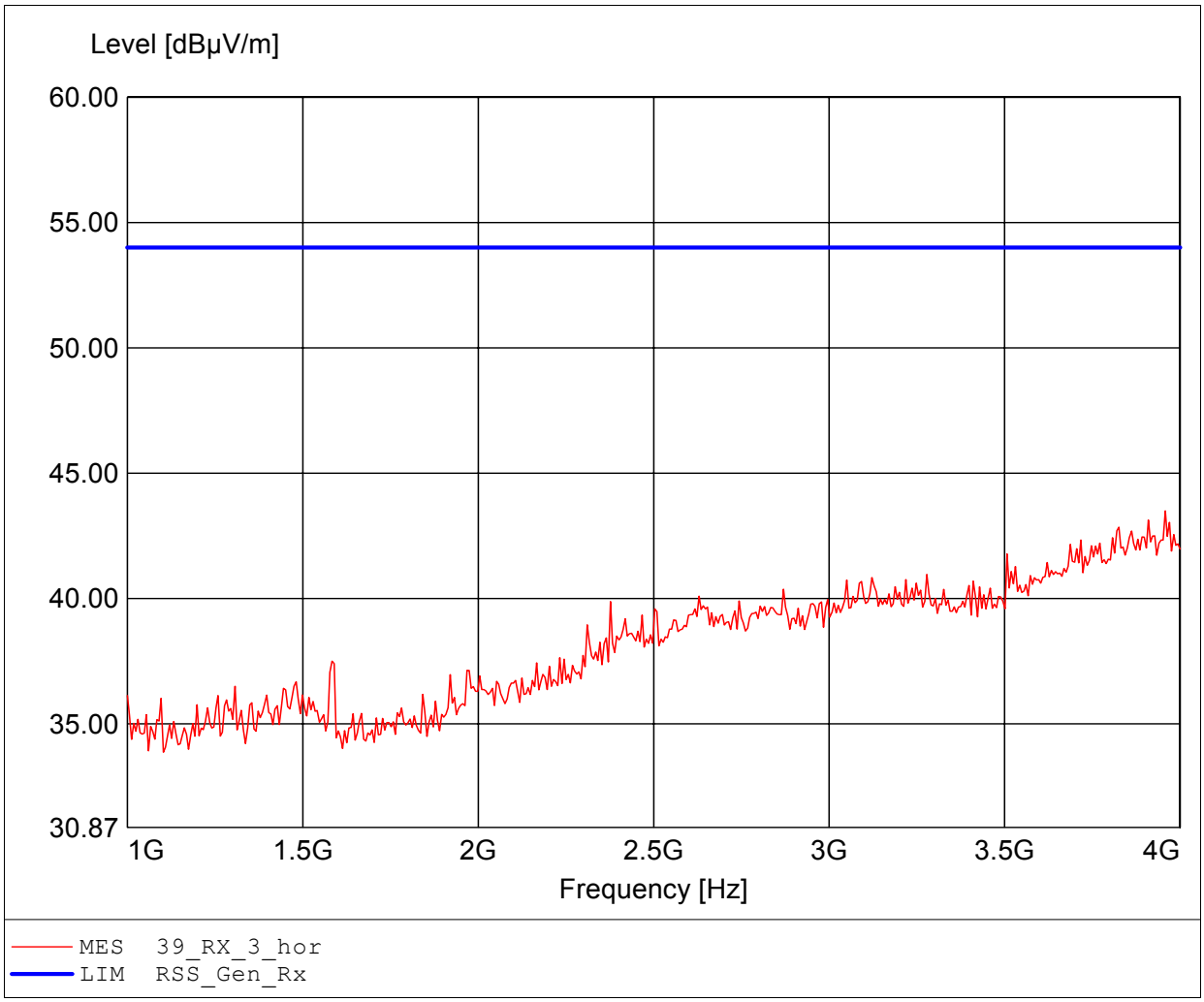
```
Approval Holder:       Leica Geosystems AG   /   G0M-1110-1487
EUT:                   GNNS Antenna
Model:                 iCG60   /   setup: Rx ch. 39
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    Freq. / CH: 39
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.
Comment 2:             Freq:3.964GHz Emax:42.79dBµV/m RBW: 1 MHz
```



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

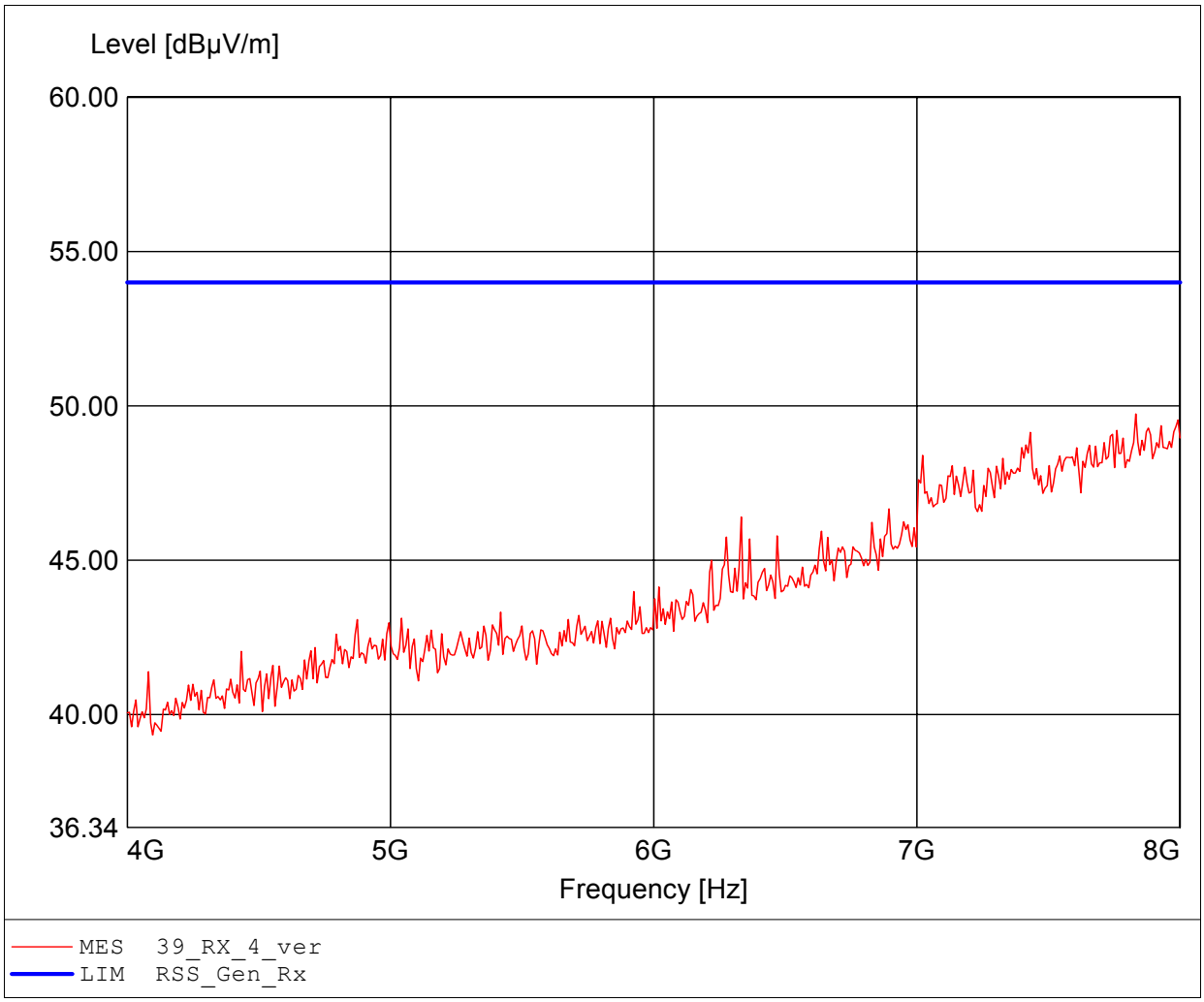
```
Approval Holder:       Leica Geosystems AG   /   G0M-1110-1487
EUT:                   GNNS Antenna
Model:                 iCG60   /   setup: Rx ch. 39
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    Freq. / CH: 39
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.
Comment 2:             Freq:3.958GHz Emax:43.50dBµV/m RBW: 1 MHz
```



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

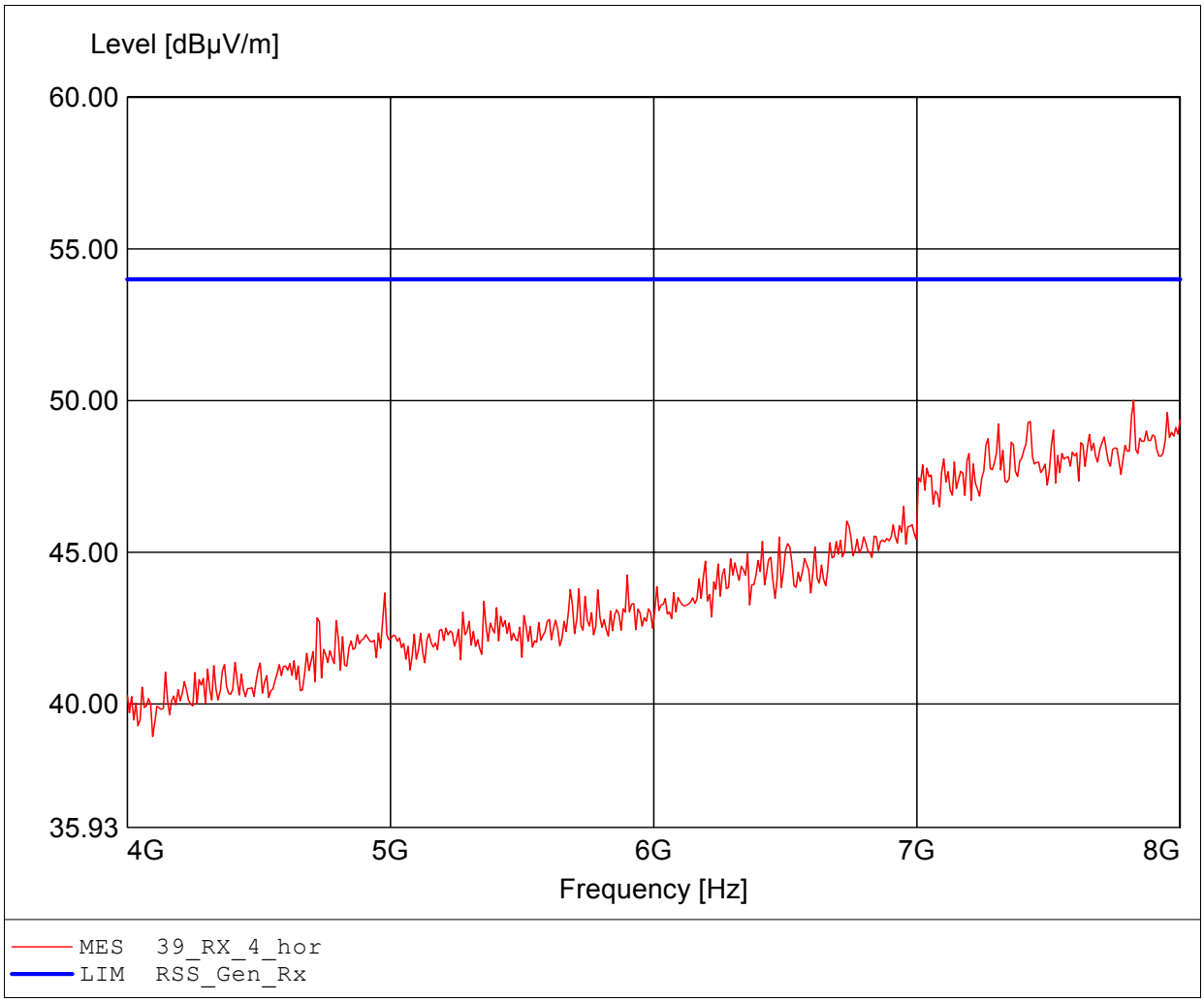
Approval Holder:	Leica Geosystems AG / G0M-1110-1487
EUT:	GNNS Antenna
Model:	iCG60 / setup: Rx ch. 39
Test Site / Operator:	Eurofins Product Service GmbH / Mr. Treffke
Test Condition:	Tnom.: 24°C / Vnom: 13.2 VDC
Test Specification:	Freq. / CH: 39
Comment 1:	Dist.: 3m, Ant.: HL025, ampl.
Comment 2:	Freq:7.832GHz Emax:49.74dBµV/m RBW: 1 MHz



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

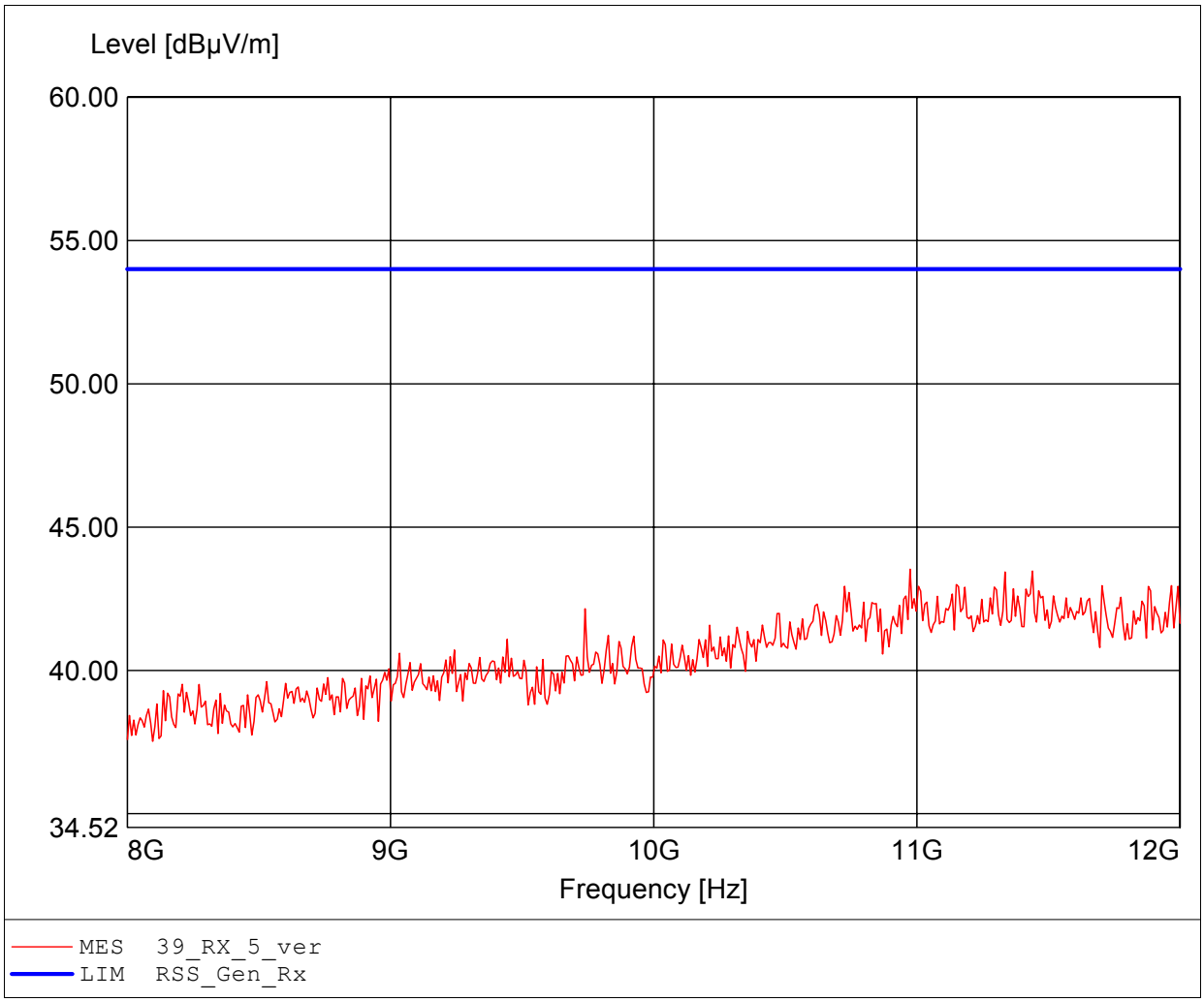
```
Approval Holder:       Leica Geosystems AG   /   G0M-1110-1487
EUT:                   GNNS Antenna
Model:                 iCG60   /   setup: Rx ch. 39
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    Freq. / CH: 39
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.
Comment 2:             Freq:7.824GHz Emax:50.01dBµV/m RBW: 1 MHz
```



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

```
Approval Holder:       Leica Geosystems AG   /   G0M-1110-1487
EUT:                   GNNS Antenna
Model:                 iCG60   /   setup: Rx ch. 39
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    Freq. / CH: 39
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.
Comment 2:             Freq:10.974GHz Emax:43.53dBµV/m RBW: 1 MHz
```



Field Strength under normal conditions

Standards Industry Canada, RSS-GEN

```
Approval Holder:       Leica Geosystems AG   /   G0M-1110-1487
EUT:                   GNNS Antenna
Model:                 iCG60   /   setup: Rx ch. 39
Test Site / Operator:  Eurofins Product Service GmbH  /  Mr. Treffke
Test Condition:        Tnom.: 24°C   /   Vnom: 13.2 VDC
Test Specification:    Freq. / CH: 39
Comment 1:             Dist.: 3m, Ant.: HL025, ampl.
Comment 2:             Freq:11.295GHz Emax:43.46dBµV/m RBW: 1 MHz
```