

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-1112-1585-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 : MIR Medical International Research

Address : via del Maggiolino 125
00155 Rome
Italy

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 Bluetooth module
Model No. 001075
Hardware version rev.1
Firmware / Software version 3.0
FCC-ID: TUK-MIR045

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:

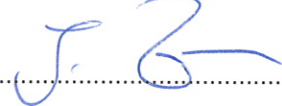
Date of receipt of test item: 2011-12-05

Date (s) of performance of tests: 2011-12-06 - 2011-12-16

Compiled by: Antje Bartusch

Tested by (+ signature).....: Wilfried Treffke 

(Testing Manager)

Approved by (+ signature): Jens Zimmermann 

(Test Lab Manager)

Date of issue: 2012-03-01

Total number of pages: 110

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:

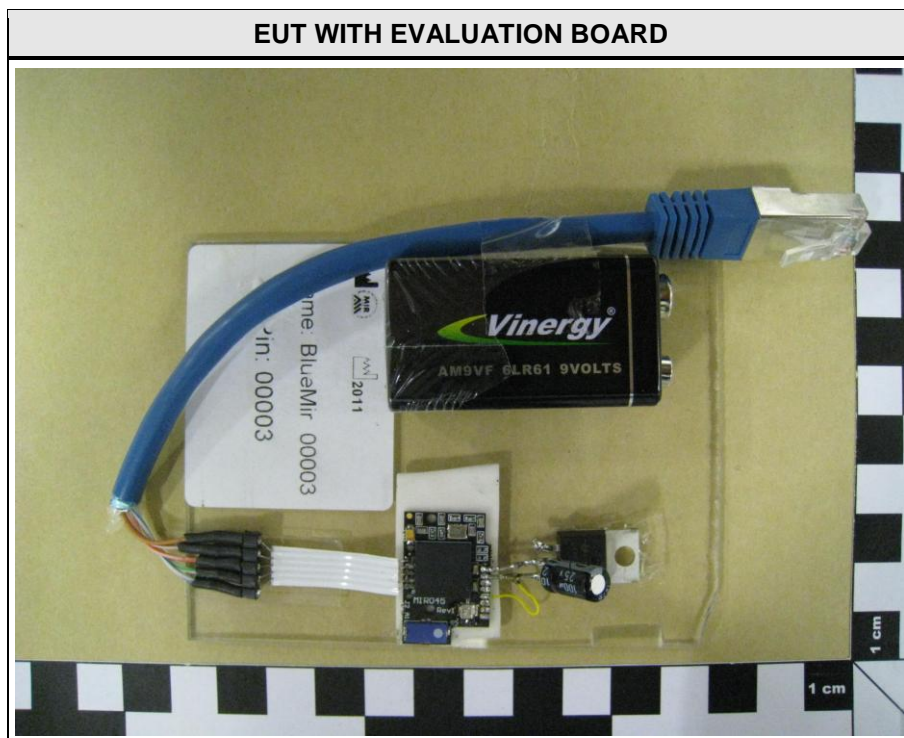
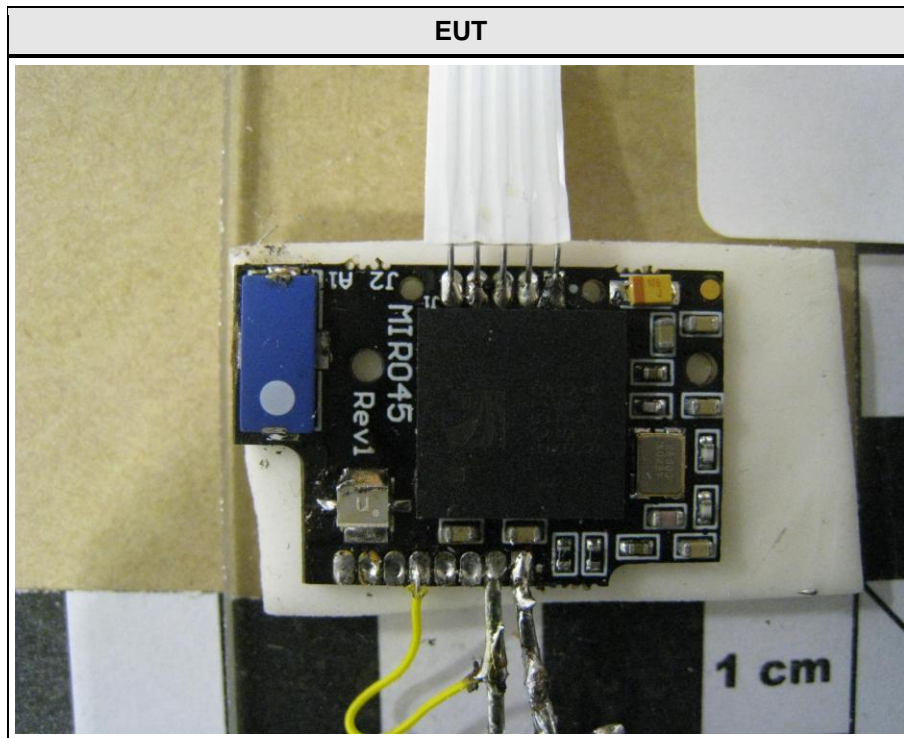
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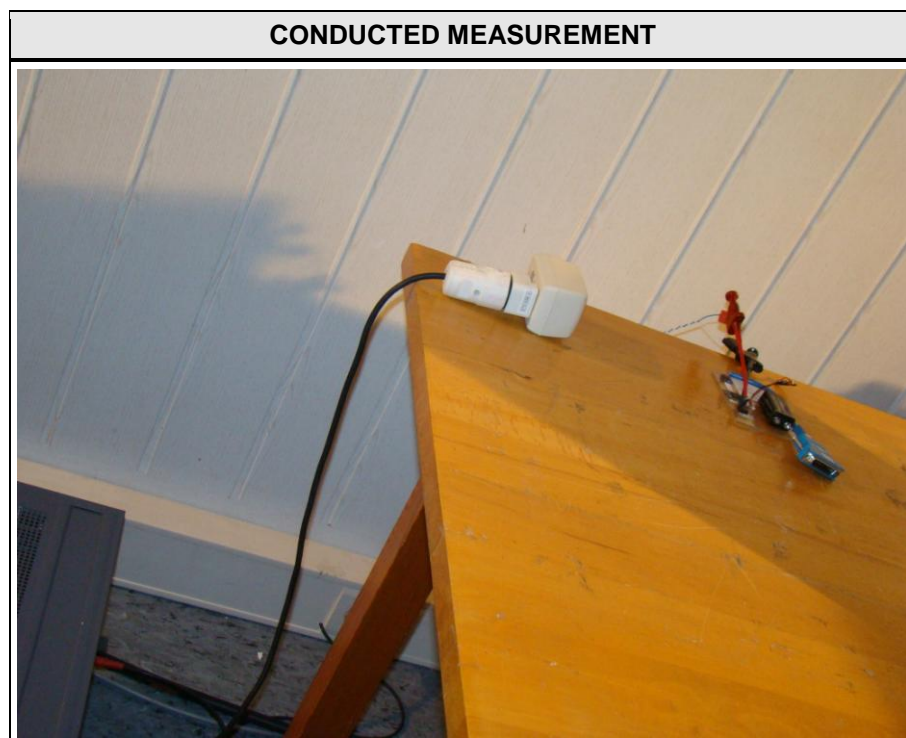
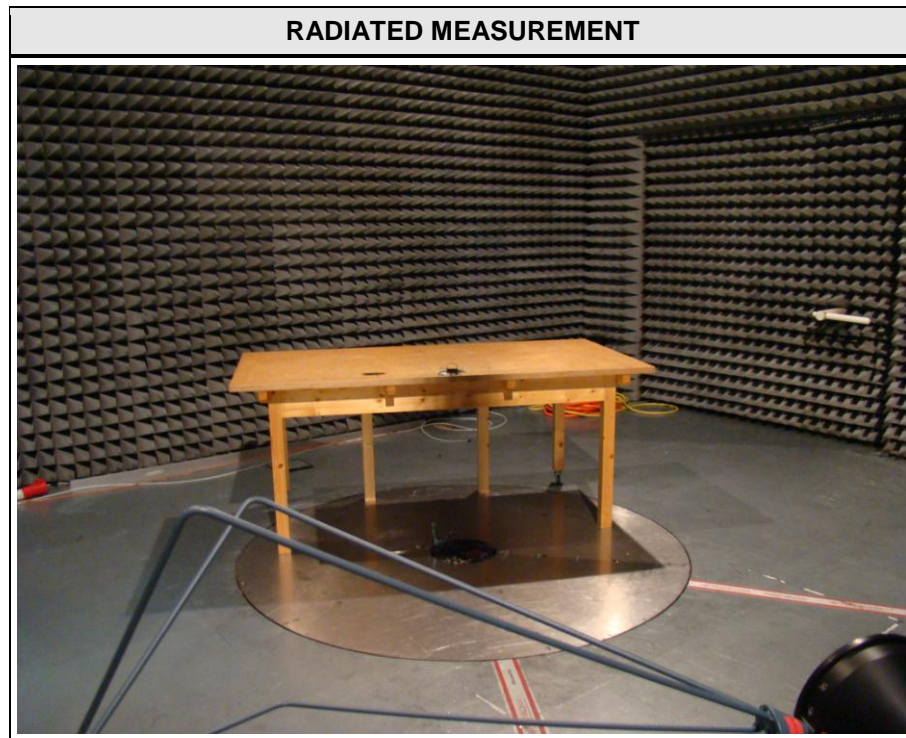
1 Equipment (Test item) Description:

Description	Bluetooth module	
Model	001075	
Serial number	None	
Hardware version	rev.1	
Software / Firmware version	3.0	
FCC-ID	TUK-MIR045	
IC	none	
Equipment type	Radio module	
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 ceramic chip antenna
	Model	431111500245
	Manufacturer	phicomp
	Gain	0dBi
Manufacturer	MIR Medical International Research via del Maggiolino 125 00155 Rome Italy	
Power supply	V _{NOM}	3.3VDC
	V _{MIN}	N/A
	V _{MIN}	N/A
AC/DC-Adaptor	Model	none
	Vendor	none
	Input	none
	Output	none

1.1 Photos – Equipment internal



1.2 Photos – Test setup



1.3 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
AE	AC/DC Adapter	RadioShock	293-1770	
<p>*Note: Use the following abbreviations:</p> <p>AE : Auxiliary/Associated Equipment, or</p> <p>SIM : Simulator (Not Subjected to Test)</p> <p>CABL : Connecting cables</p>				

1.4 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 = 46% Power level = Maximum (Power setting -12)
2DH5-Sngl	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping stopped (single hopping channel) Modulation = $\pi/4$ -DQPSK Packet type = 2DH5 Data rate = 2Mbps Duty cycle = 46% Power level = Maximum (Power setting -12)
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 = 46% Power level = Maximum (Power setting -12)
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 = 46% Power level = Maximum (Power setting -12)

2DH5-Hop	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Modulation = $\pi/4$ -DQPSK Packet type = 2DH5 Data rate = 2Mbps Duty cycle = 46% Power level = Maximum (Power setting -12)
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 = 46% Power level = Maximum (Power setting -12)
AC-Powerline	General conditions:	EUT powered by commercial AC/DC-Adapter
	Radio conditions:	Mode = standalone transmit Spreading = Hopping Power level = Maximum (Power setting -12)

1.5 Test Equipment Used During Testing

20dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	Aug 10	Aug 12

Number of hopping frequencies					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	Aug 10	Aug 12

Time of occupancy					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	Aug 10	Aug 12

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	Aug 10	Aug 12

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	Aug 10	Aug 12

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	ETS 0496	Aug 10	Aug 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	Apr. 11	Apr. 12
Biconical Antenna	R&S	HK 116	ETS 0012	Jan 10	Jan 13
LPD Antenna	R&S	HL 223	ETS 0295	Feb 11	Feb 13
LPD Antenna	R&S	HL 025	ETS 0512	Feb 10	Feb 13

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	ETS 0288	Sep 10	Sep 12
AMN	R&S	ESH3-Z5	ETS 0040	Nov 10	Nov 12
EMI Test Receiver	R&S	ESCS 30	ETS 0474	Jun 11	Jun 12

1.6 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 dB μ V. 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:

$$\text{Reading on Analyzer (dB}\mu\text{V)} + \text{A.F. (dB)} = \text{Net field strength (dB}\mu\text{V/m)}$$

Net:

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

Limit:

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

$$\text{Limit (dB}\mu\text{V/m)} = 20 * \log (\mu\text{V/m})$$

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 dB μ V	+	26 dB	=	47.5 dB μ V/m	:	47.5 dB μ V/m - 57.0 dB μ V/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/A	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	PASS	
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	N/A	
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – 20dB Bandwidth

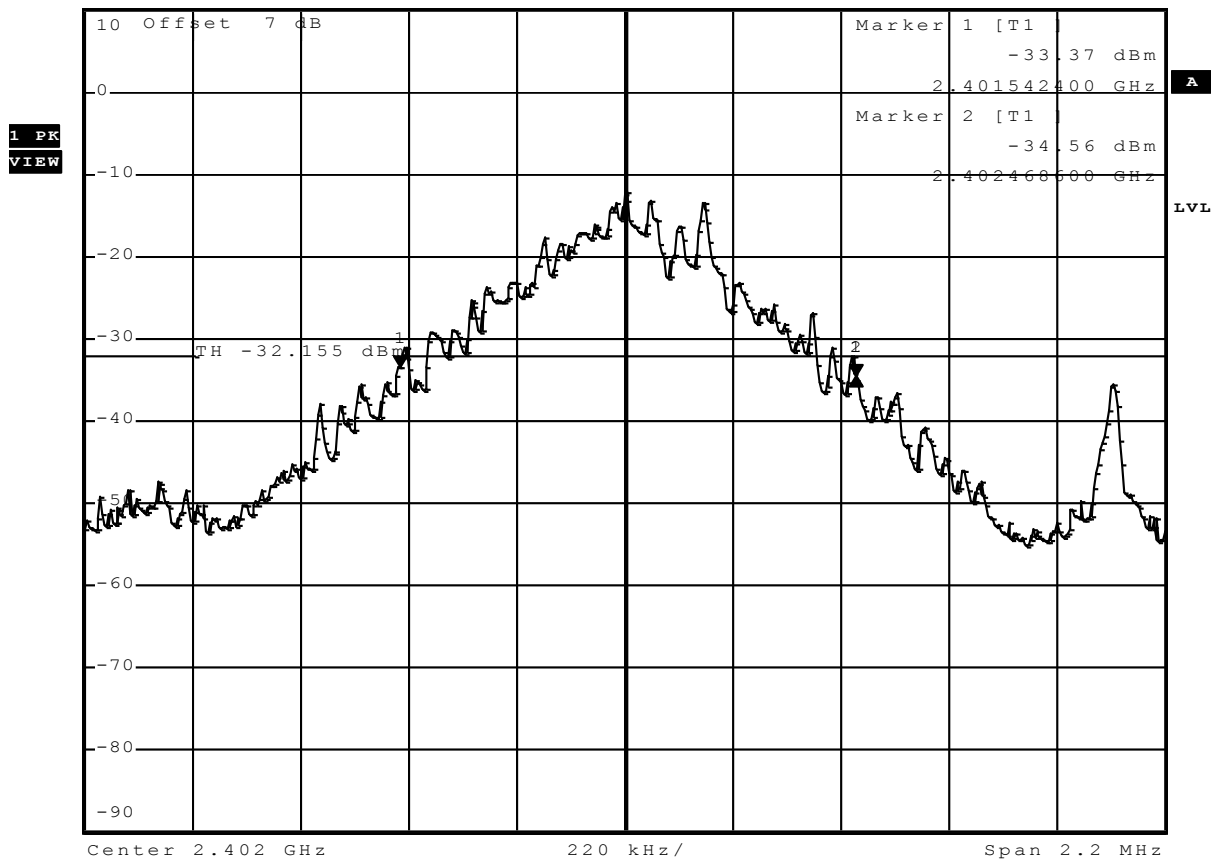
20dB Bandwidth acc. FCC 15.247 / IC RSS-210				Verdict: PASS	
EUT requirement rule parts and clause	Reference				
	FCC 15.247(a)(1) / IC RSS-210 A8.1				
Test according to measurement reference	Reference Method				
	FCC Public Notice DA 00-705				
Test frequency range	Tested frequencies				
	F _{LOW} / 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					
<div><div>Spectrum Analyzer</div><div>EUT</div></div>					
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	0.92620	1.5	PASS
F _{MID}	2441	DH5-Sngl	0.92180	1.5	PASS
F _{HIGH}	2480	DH5-Sngl	0.92620	1.5	PASS
F _{LOW}	2402	2DH5-Sngl	1.32220	1.5	PASS
F _{MID}	2441	2DH5-Sngl	1.30900	1.5	PASS
F _{HIGH}	2480	2DH5-Sngl	1.31340	1.5	PASS
F _{LOW}	2402	3DH5-Sngl	1.26500	1.5	PASS
F _{MID}	2441	3DH5-Sngl	1.26500	1.5	PASS
F _{HIGH}	2480	3DH5-Sngl	1.26940	1.5	PASS
Comments:					

20dB Bandwidth – DH5-Sngl F_{Low}
FCC part 15.247
20 dB bandwidth

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



*RBW 10 kHz Delta 1 [T1]
 *VBW 10 kHz -1.19 dB
 Ref 10 dBm Att 40 dB SWT 45 ms 926.200000000 kHz



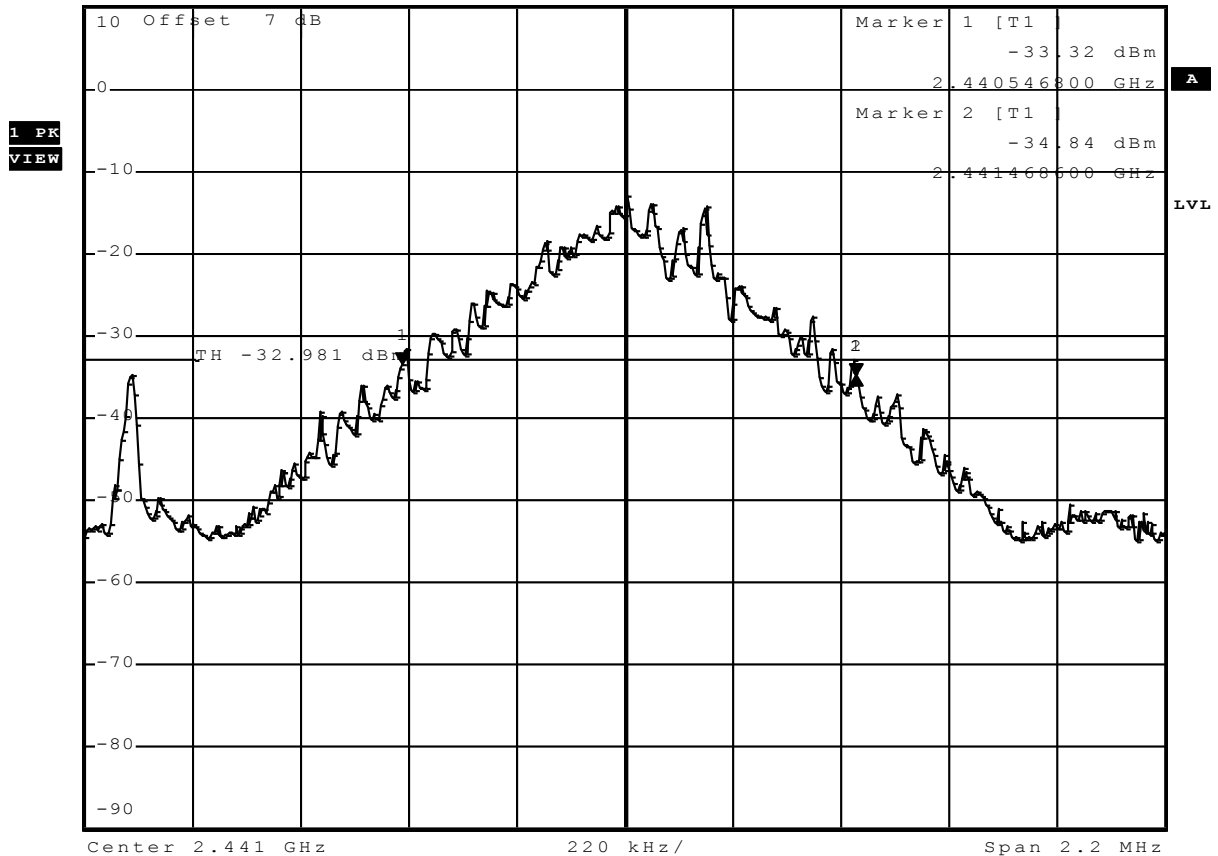
Comment: 20 dB bandwidth: 926.2 KHz
 Date: 9.DEC.2011 08:34:33

20dB Bandwidth – DH5-Sngl F_{MID}
**FCC part 15.247
20 dB bandwidth**

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



*RBW 10 kHz Delta 1 [T1]
 *VBW 10 kHz -1.52 dB
 Ref 10 dBm Att 40 dB SWT 45 ms 921.800000000 kHz



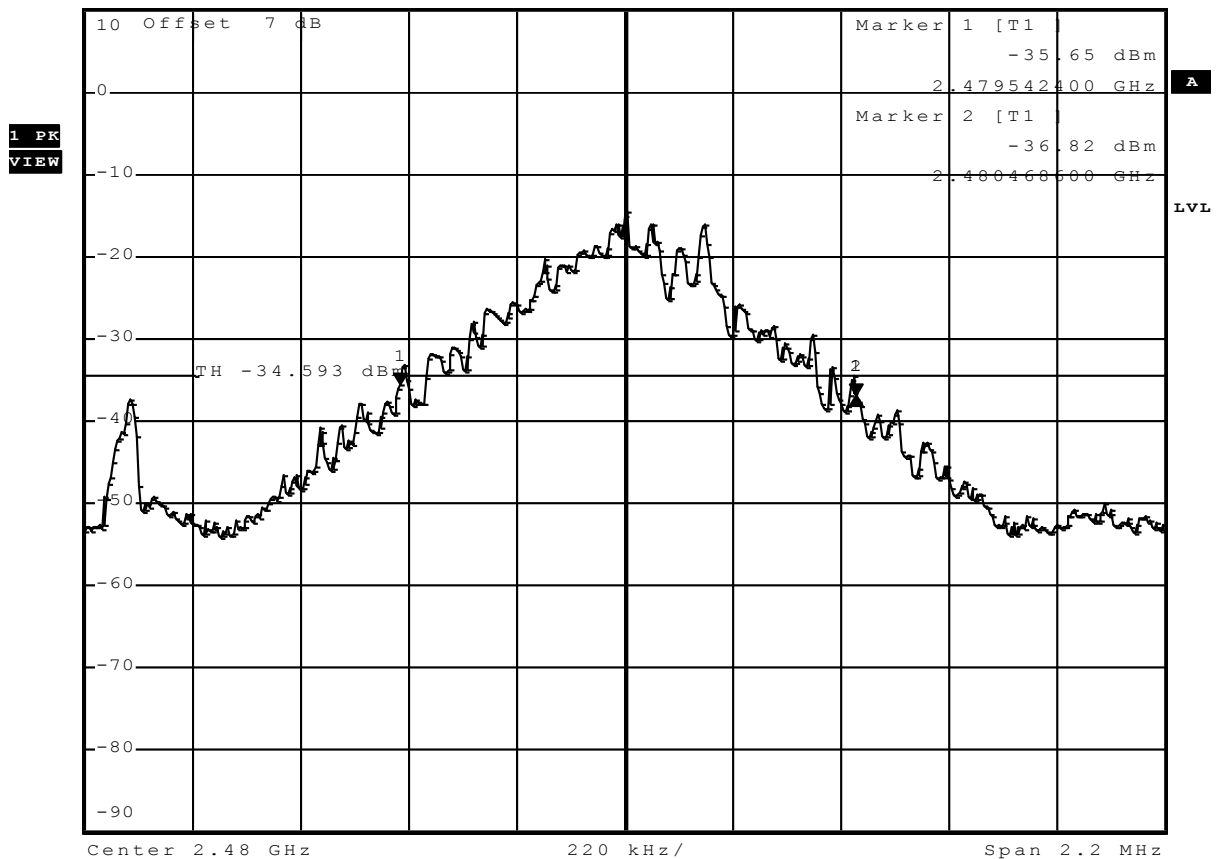
Comment: 20 dB bandwidth: 921.8 KHz
 Date: 9.DEC.2011 08:38:17

20dB Bandwidth – DH5-Sngl F_{HIGH}
FCC part 15.247
20 dB bandwidth

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	t _{nom} / V _{nom}
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



*RBW 10 kHz Delta 1 [T1]
 *VBW 10 kHz -1.17 dB
 Ref 10 dBm Att 40 dB SWT 45 ms 926.200000000 kHz



Comment: 20 dB bandwidth: 926.2 KHz
 Date: 9.DEC.2011 08:48:20

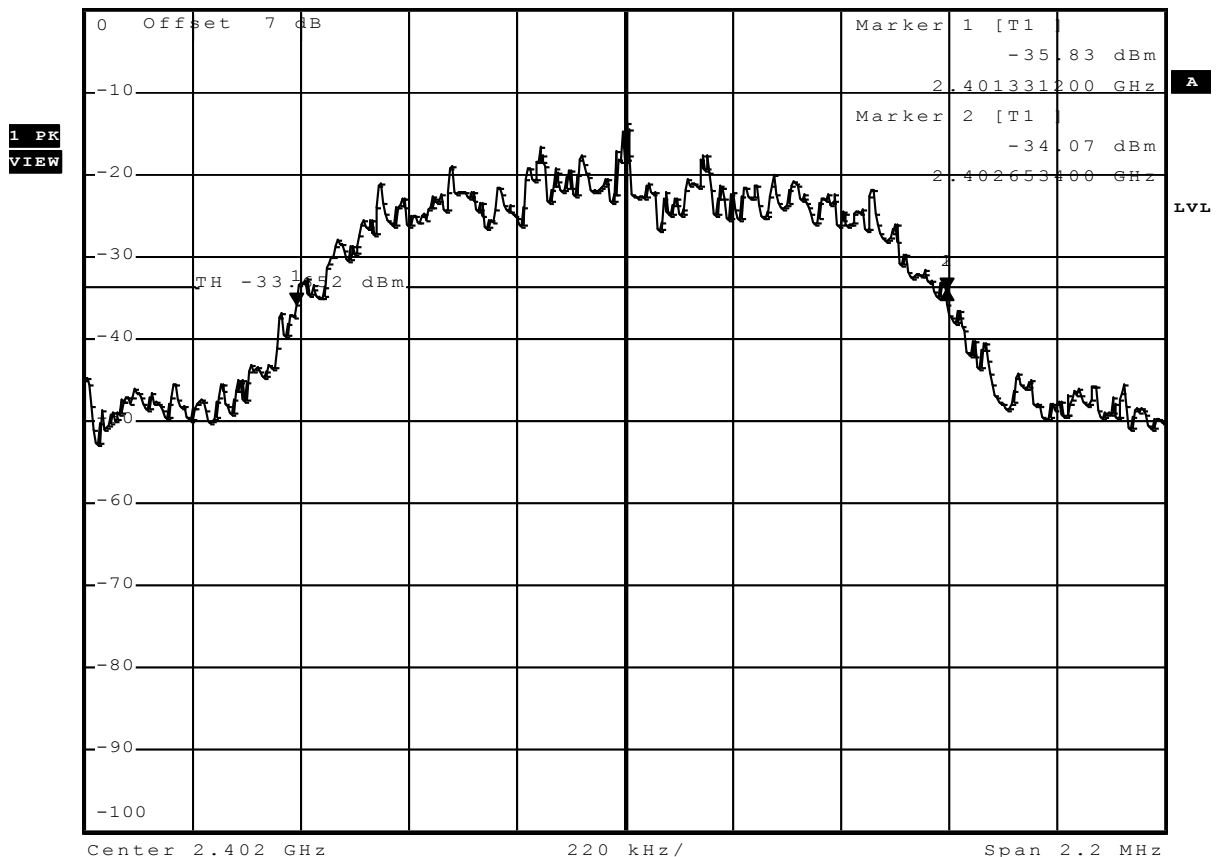
20dB Bandwidth – 2-DH5-Sngl F_{Low}

FCC part 15.247
20 dB bandwidth

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



*RBW 10 kHz Delta 1 [T1]
*VBW 10 kHz 1.75 dB
Ref 0 dBm Att 30 dB SWT 45 ms 1.322200000 MHz



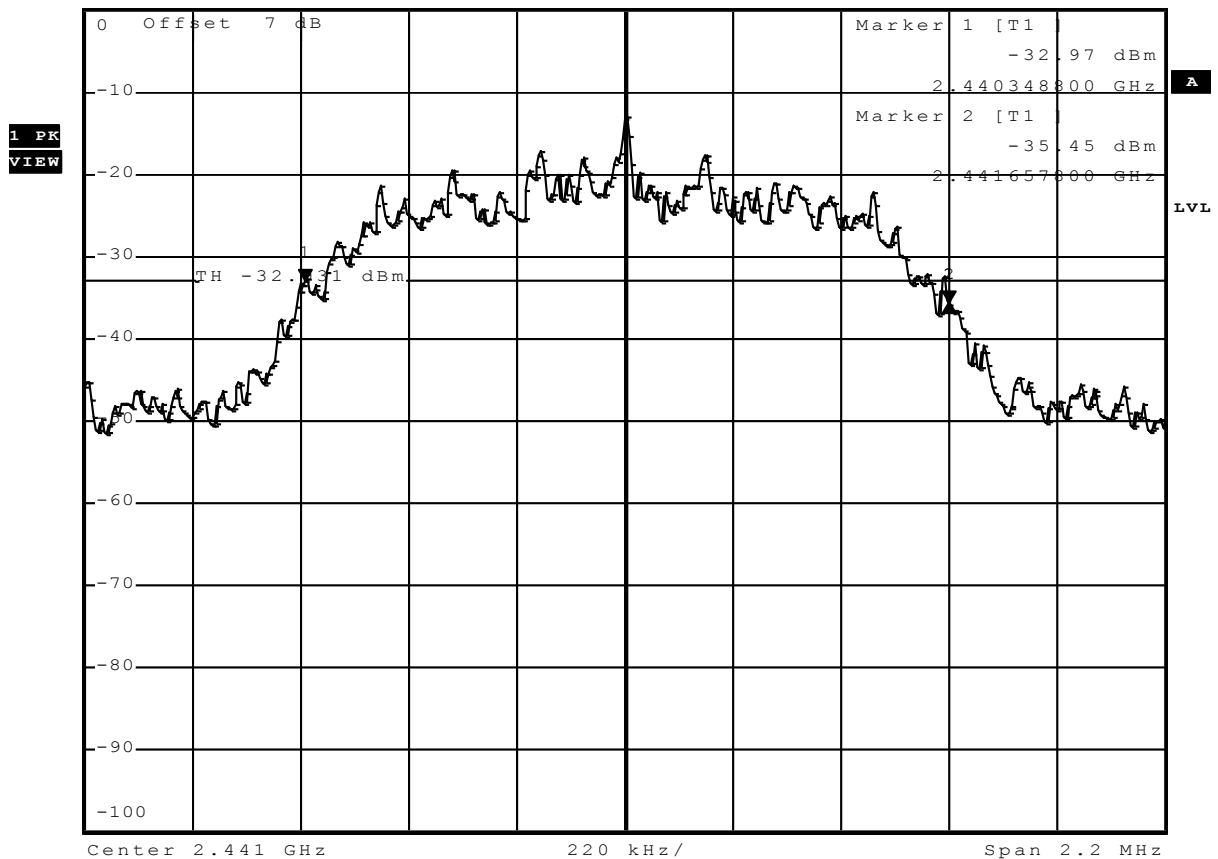
Comment: 20 dB bandwidth: 1322.2 KHz
Date: 9.DEC.2011 08:55:15

20dB Bandwidth – 2-DH5-Sngl F_{MID}
**FCC part 15.247
20 dB bandwidth**

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



*RBW 10 kHz Delta 1 [T1]
 *VBW 10 kHz -2.48 dB
 Ref 0 dBm Att 30 dB SWT 45 ms 1.309000000 MHz



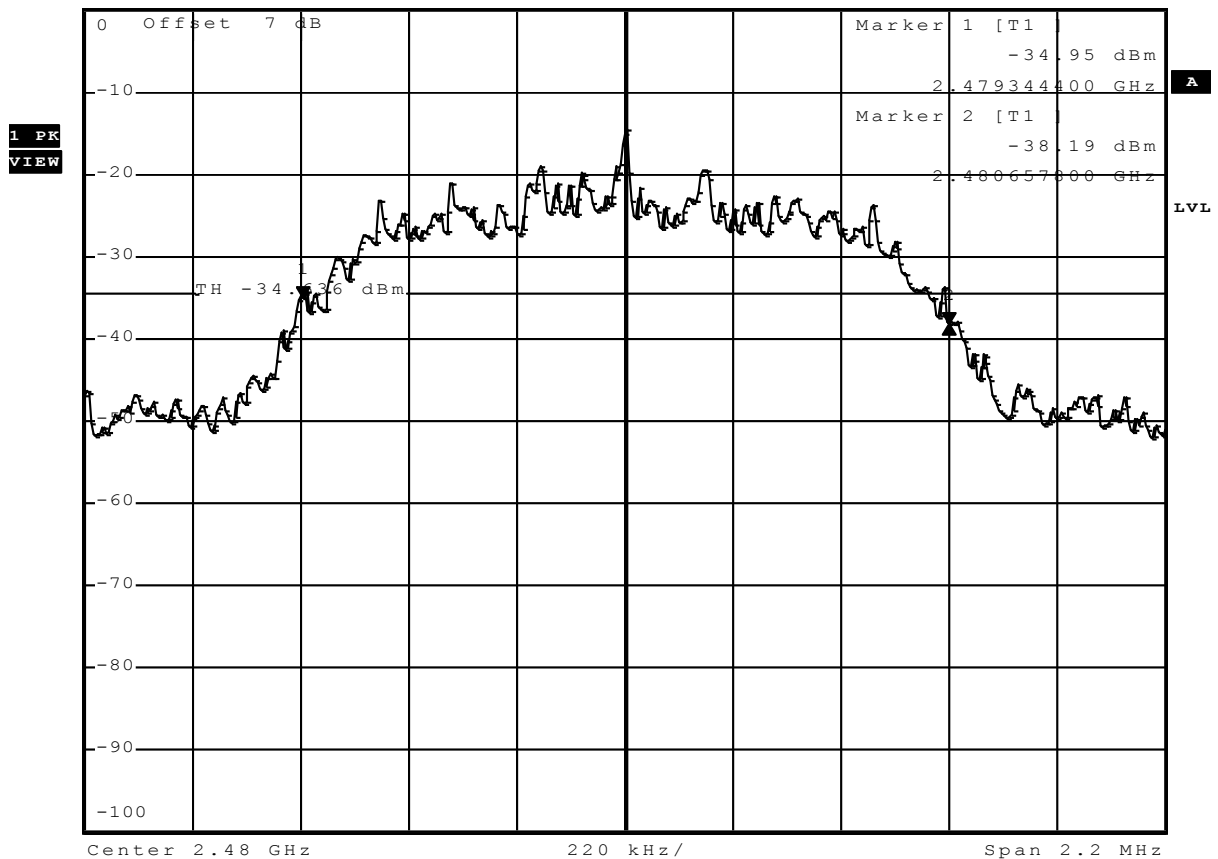
Comment: 20 dB bandwidth: 1309 KHz
 Date: 9.DEC.2011 09:01:11

20dB Bandwidth – 2-DH5-Sngl F_{HIGH}
FCC part 15.247
20 dB bandwidth

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



*RBW 10 kHz Delta 1 [T1]
 *VBW 10 kHz -3.24 dB
 Ref 0 dBm Att 30 dB SWT 45 ms 1.313400000 MHz



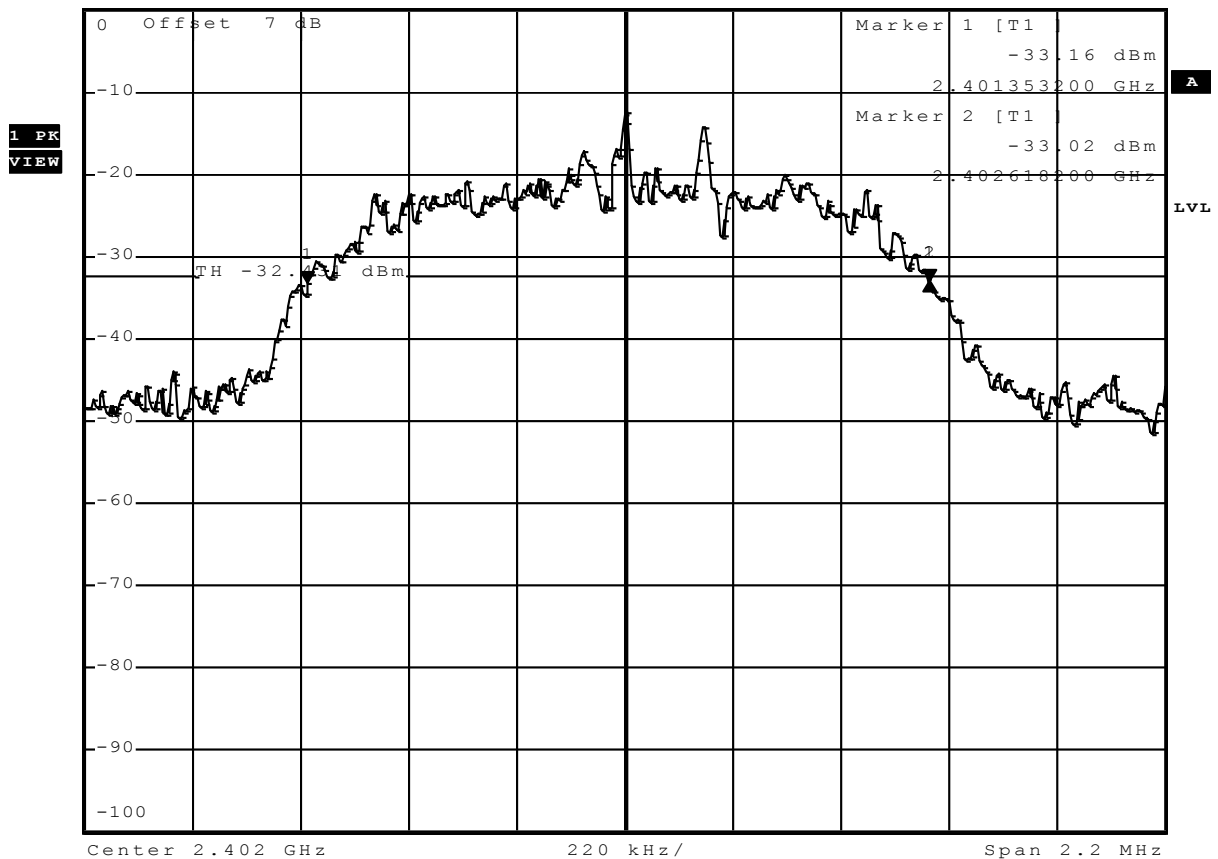
Comment: 20 dB bandwidth: 1313.4 KHz
 Date: 9.DEC.2011 09:05:20

20dB Bandwidth – 3-DH5-Sngl F_{Low}
**FCC part 15.247
20 dB bandwidth**

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



*RBW 10 kHz Delta 1 [T1]
 *VBW 10 kHz 0.15 dB
 Ref 0 dBm Att 30 dB SWT 45 ms 1.265000000 MHz



Comment: 20 dB bandwidth: 1265 KHz
 Date: 9.DEC.2011 09:23:28

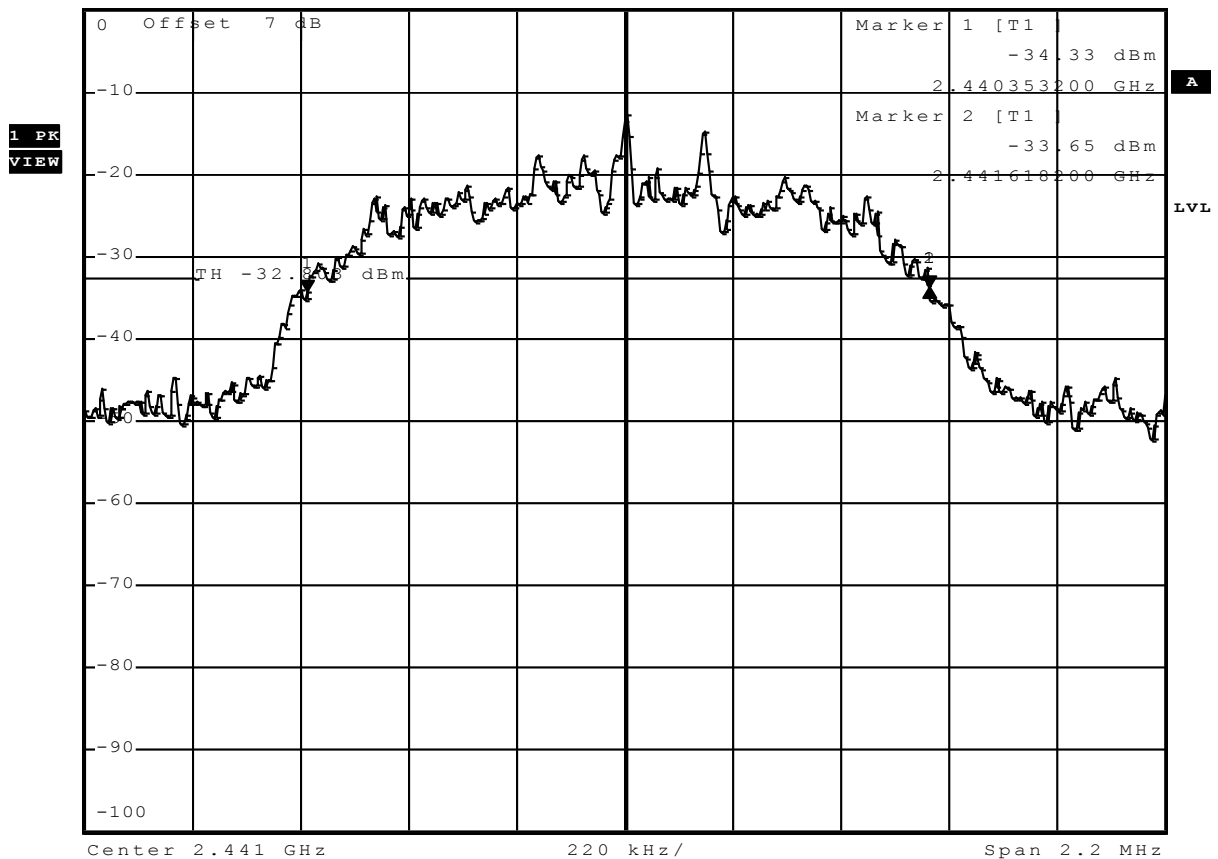
20dB Bandwidth – 3-DH5-Sngl F_{MID}

FCC part 15.247
20 dB bandwidth

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



*RBW 10 kHz Delta 1 [T1]
*VBW 10 kHz 0.68 dB
Ref 0 dBm Att 30 dB SWT 45 ms 1.265000000 MHz



Comment: 20 dB bandwidth: 1265 KHz
Date: 9.DEC.2011 09:25:40

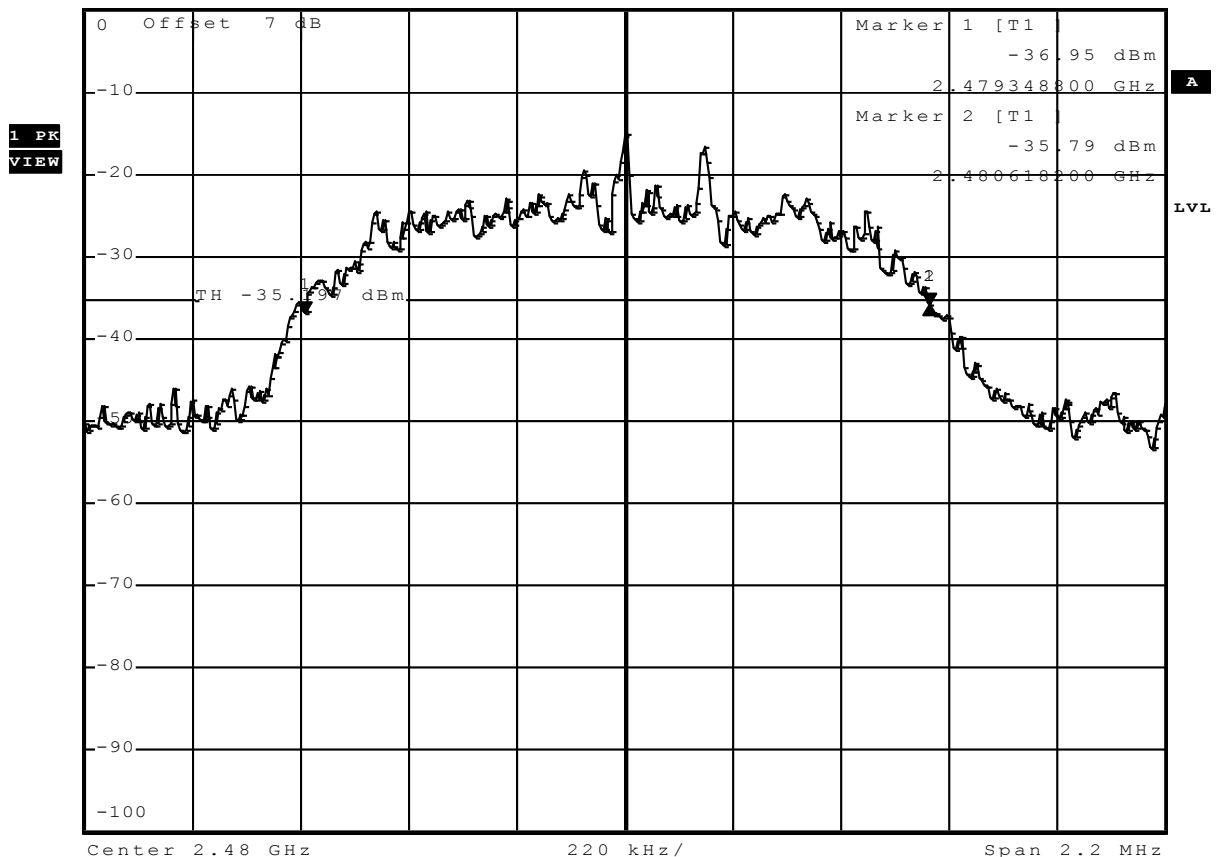
20dB Bandwidth – 3-DH5-Sngl F_{HIGH}

FCC part 15.247
20 dB bandwidth

EUT Bluetooth module
Model BlueMir
Approval Holder MIR Medical International Research / Ord.: G0M-1112-1585
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 / 8DPSK
Comment 3 pass



*RBW 10 kHz Delta 1 [T1]
*VBW 10 kHz 1.16 dB
Ref 0 dBm Att 30 dB SWT 45 ms 1.269400000 MHz



Comment: 20 dB bandwidth: 1269.4 KHz
Date: 9.DEC.2011 09:27:05

3.2 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		
<div><div>Spectrum Analyzer</div><div>EUT</div></div>		
Test procedure		
<div>1. EUT set to test mode (Communication tester is used if needed)</div> <div>2. Span set to measurement frequency range</div> <div>3. Detector set to peak and max hold</div> <div>4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra</div> <div>5. The number of peaks is counted to determine number of hopping frequencies</div>		
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	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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.: 0-13
Comment 3	pass



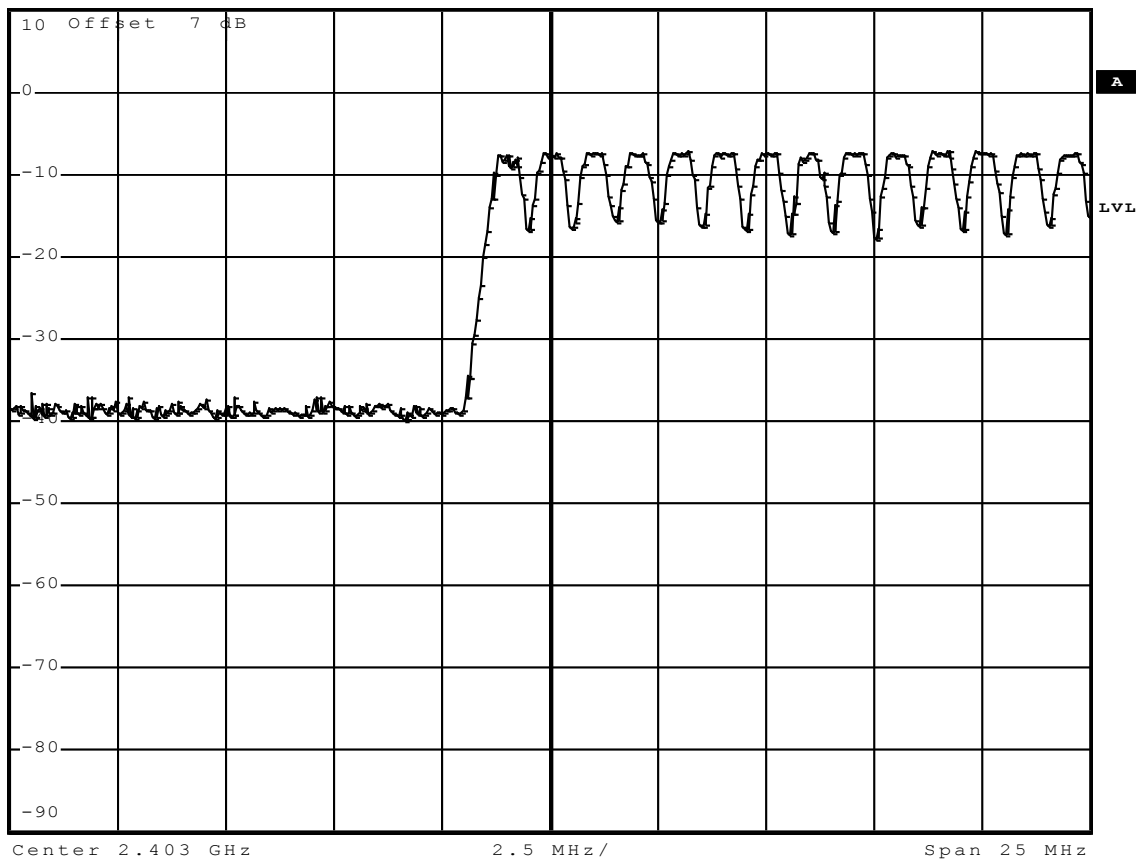
* RBW 300 kHz

* VBW 300 kHz

Ref 10 dBm

Att 40 dB

SWT 2.5 ms

1 PR
VIEW


Comment: Number of hopping frequencies

Date: 9.DEC.2011 10:36:05

Number of hopping frequencies - Range B

FCC part 15.247

Number of hopping frequencies

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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.: 14-38
Comment 3	pass



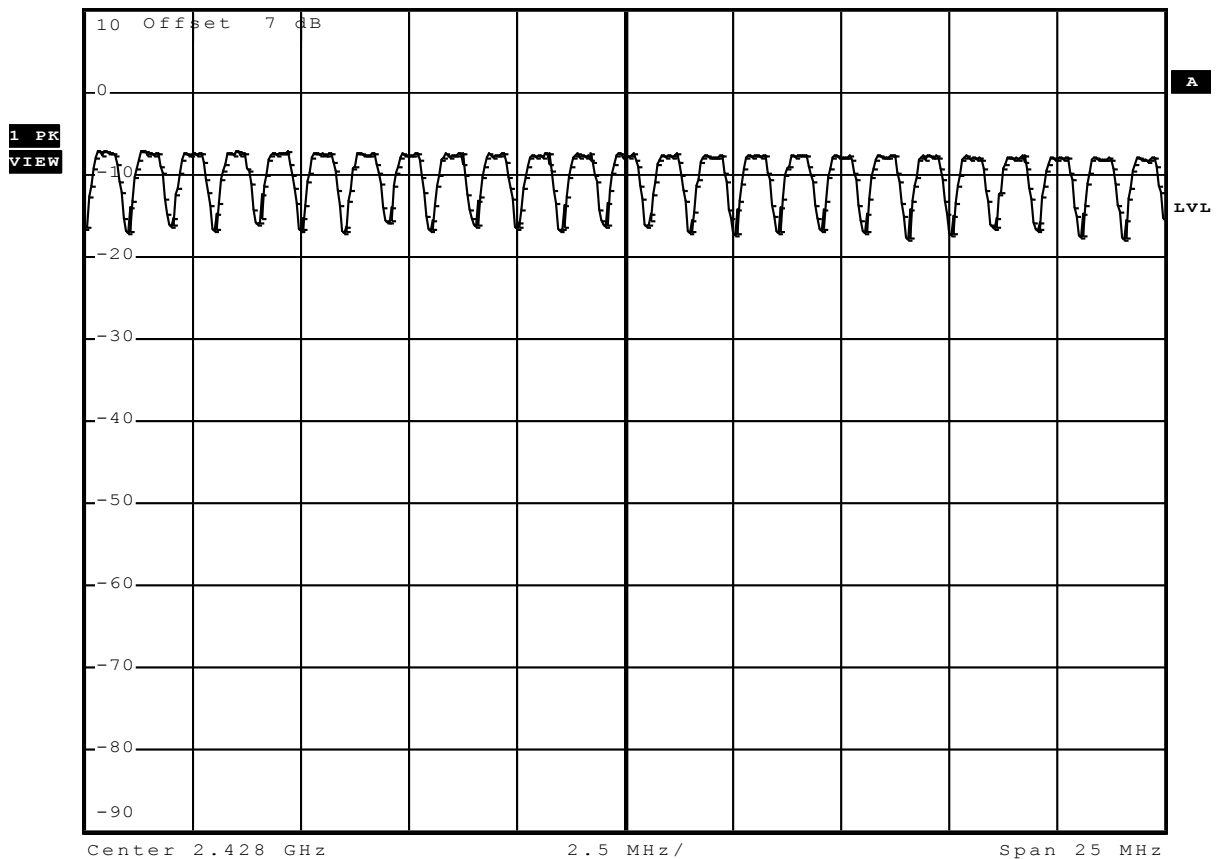
* RBW 300 kHz

* VBW 300 kHz

Ref 10 dBm

Att 40 dB

SWT 2.5 ms



Comment: Number of hopping frequencies

Date: 9.DEC.2011 10:38:43

Number of hopping frequencies - Range C

FCC part 15.247

Number of hopping frequencies

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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.:39-63
Comment 3	pass



* RBW 300 kHz

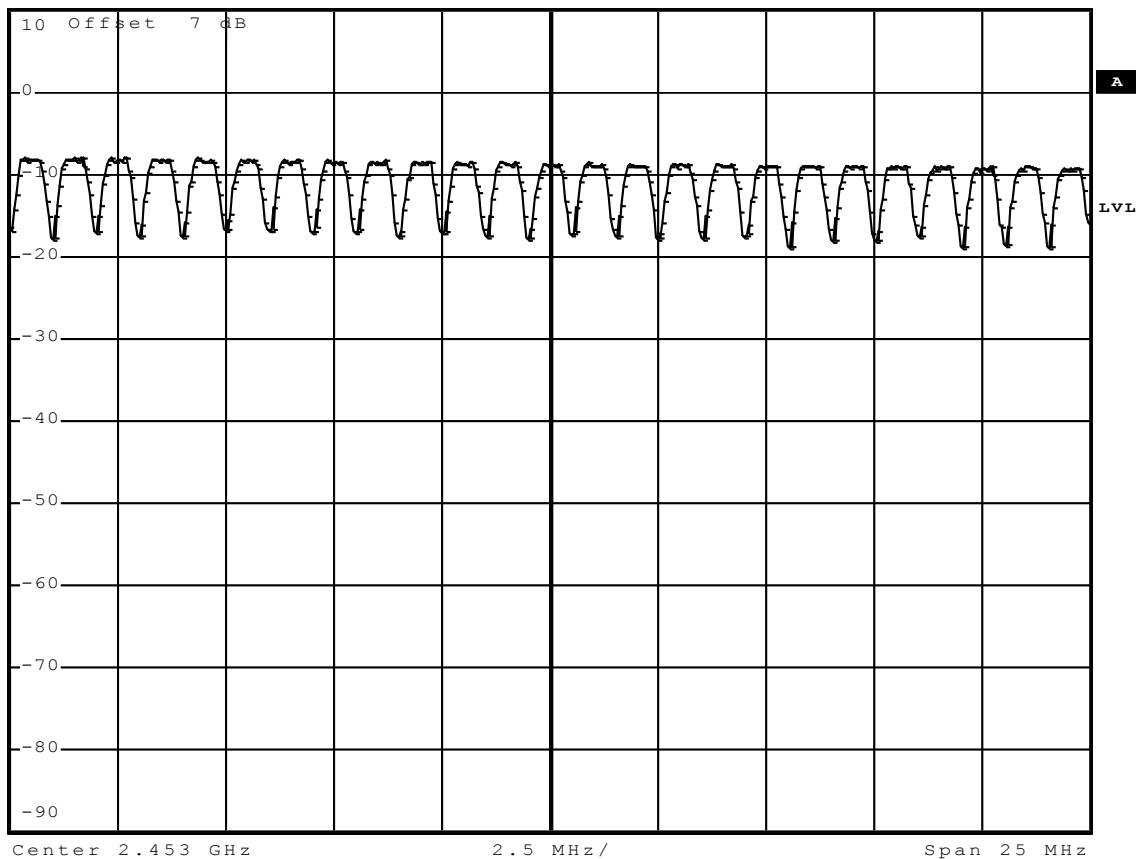
* VBW 300 kHz

Ref 10 dBm

Att 40 dB

SWT 2.5 ms

1 PR
VIEW



Comment: Number of hopping frequencies

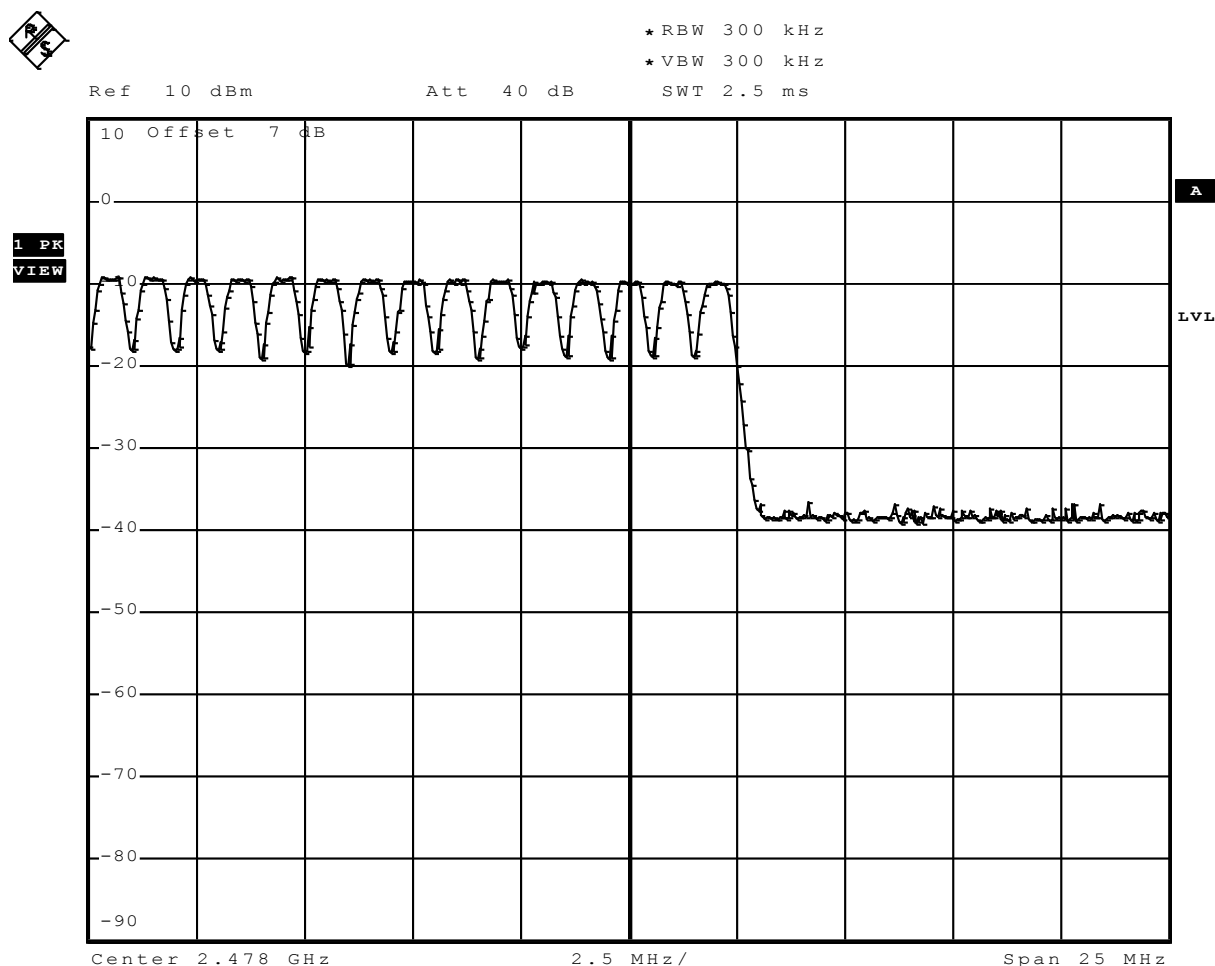
Date: 9.DEC.2011 10:41:19

Number of hopping frequencies - Range D

FCC part 15.247

Number of hopping frequencies

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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.: 64-78
Comment 3	pass



Comment: Number of hopping frequencies

Date: 9.DEC.2011 10:43:11

3.3 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		
<div><div>Spectrum Analyzer</div><div>EUT</div></div>		
Test procedure		
<div>1. EUT set to test mode (Communication tester is used if needed)</div> <div>2. Span set to measurement frequency range</div> <div>3. Detector set to peak and max hold</div> <div>4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra</div> <div>5. The two adjacent channel peaks are marked</div> <div>6. Channel separation is determined from frequency separation of markers</div>		
Test results		
Channel separation [kHz]	Limit [kHz]	Result
1000.00	≥ ⅔ · 921.80 = 614.53	PASS
Comments:		

Frequency hopping channel separation

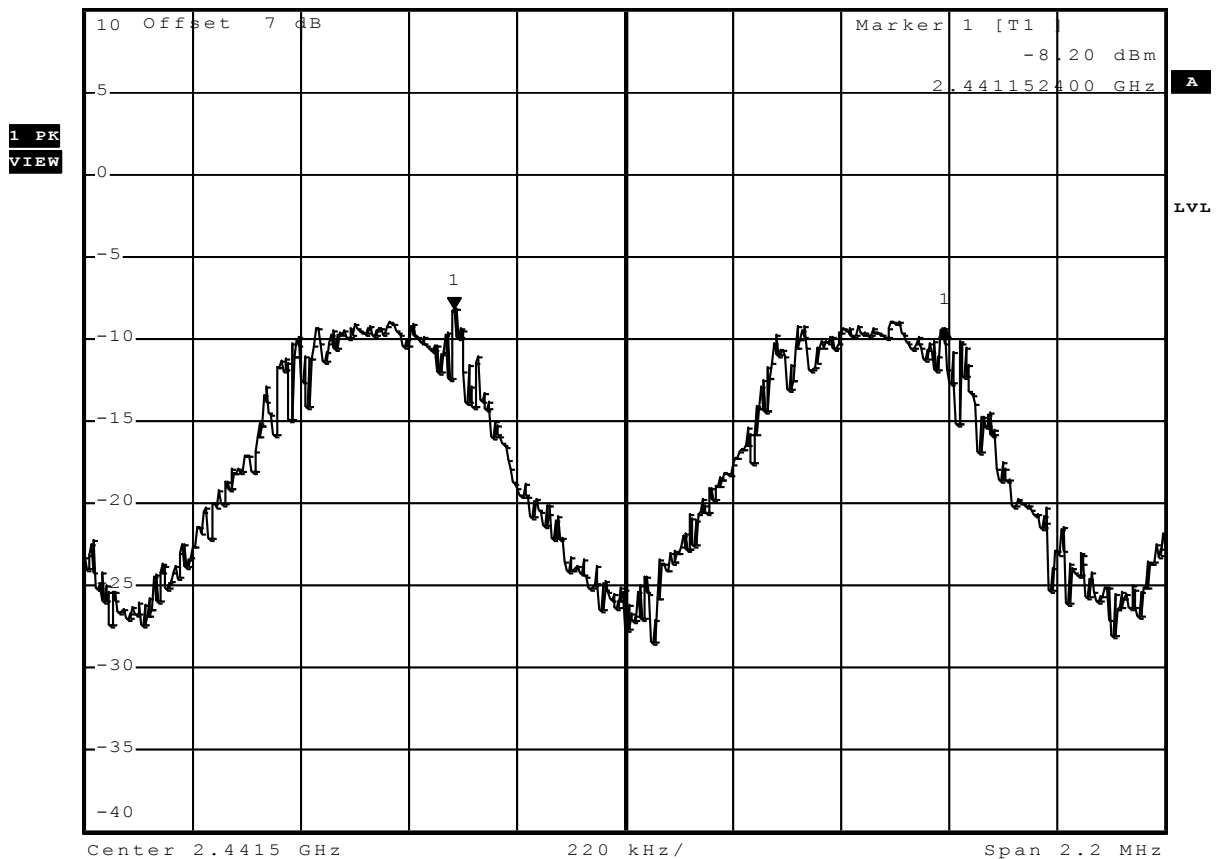
FCC part 15.247

Carrier frequency separation

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -1.20 dB
 Ref 10 dBm Att 40 dB SWT 2.5 ms 1.000000000 MHz



Comment: Limit: > two-thirds of the 20 dB bandwidth ; Result: Pass
 Date: 9.DEC.2011 10:33:09

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

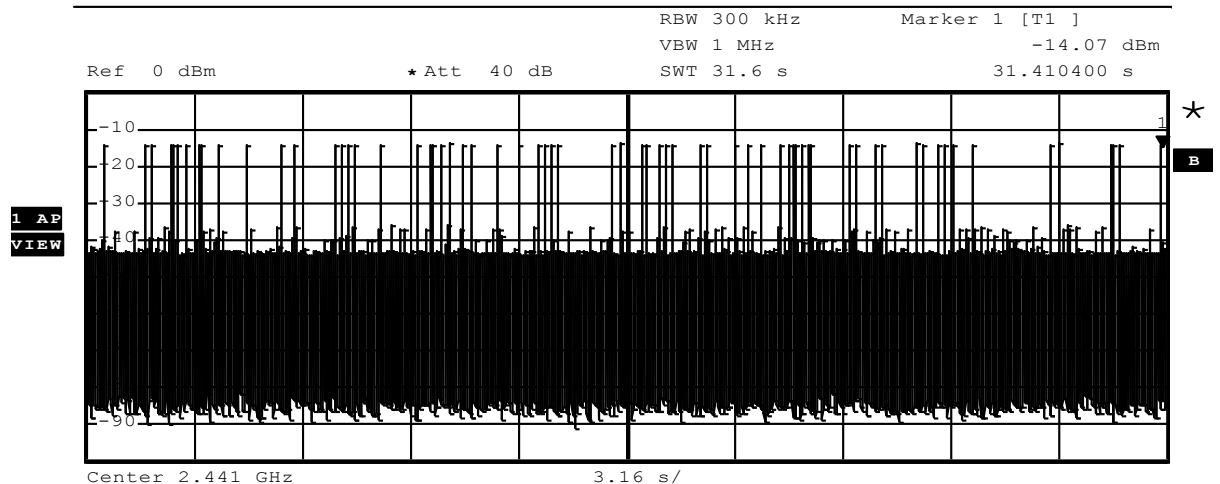
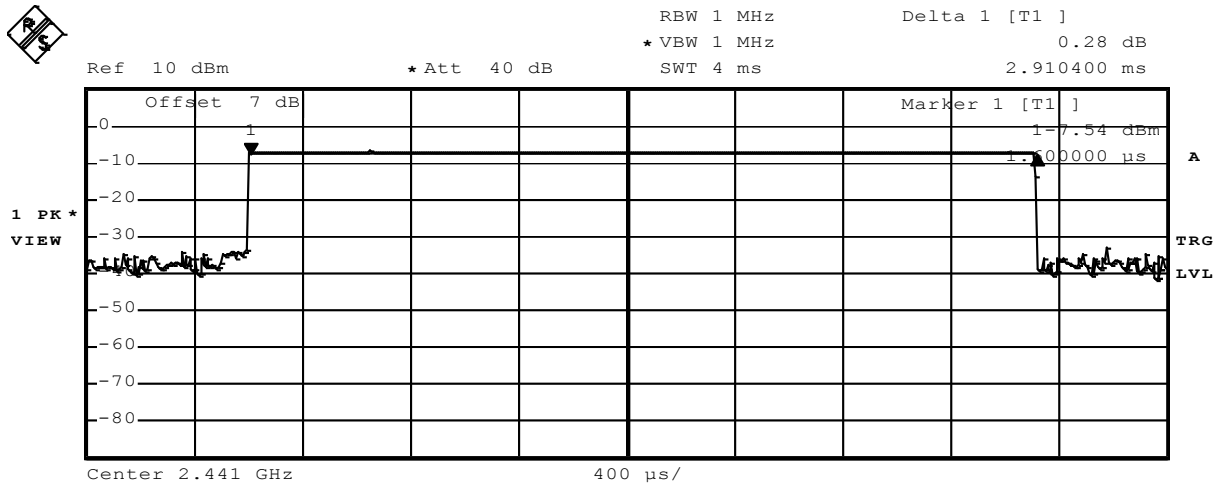
Time of occupancy (Dwell time) acc. FCC 15.247 / IC RSS-210				Verdict: PASS	
EUT requirement rule parts and clause		Reference			
		FCC 15.247(a)(1)(iii) / IC RSS-210 A8.1			
Test according to measurement reference		Reference Method			
		FCC Public Notice DA 00-705			
Test frequency range		Tested frequencies			
		2441MHz			
EUT test mode		DH5-Hop			
Limits					
Limit					
Time of occupancy ≤ 0.4s within 0.4s · Number of hopping channels					
Test setup					
<div><div>Spectrum Analyzer</div><div>EUT</div></div>					
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	63	0.00291	0.183	≤ 0.4	PASS
Comments:					

Time of occupancy

FCC part 15.247

Time of occupancy (dwell time)

EUT Bluetooth module
 Model BlueMir
 Approval Holder MIR Medical International Research / Ord.: G0M-1112-1585
 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 63 events * 2.91 ms result: 183.3 ms



Comment: Burst length=2.9104 ms
 Date: 12.DEC.2011 08:25:55

3.5 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	0dBi ⇒ 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		
<div><div>Spectrum Analyzer</div><div>EUT</div></div>		
Test procedure		
<div><div>1. EUT set to test mode (Communication tester is used if needed)</div><div>2. Center frequency set to test channel center frequency</div><div>3. Span set to twice the 20dB bandwidth and detector to peak and max hold</div><div>4. Resolution bandwidth is set to 3MHz</div><div>5. Peak conducted power is determined from peak of spectrum envelope</div></div>		

Test results								
Channel	Frequency [MHz]	Voltage	Mode	Peak power [dbm]	Peak power [W]	Limit [dBm]	Margin [dB]	Result
F _{LOW}	2402	3.3VDC	DH5-Sngl	-12.0	0.000063	30	-42.00	PASS
F _{MID}	2441	3.3VDC	DH5-Sngl	-12.0	0.000063	30	-42.00	PASS
F _{HIGH}	2480	3.3VDC	DH5-Sngl	-12.0	0.000063	30	-42.00	PASS
F _{LOW}	2402	3.3VDC	2DH5-Sngl	-9.9	0.000102	30	-39.90	PASS
F _{MID}	2441	3.3VDC	2DH5-Sngl	-9.9	0.000102	30	-39.90	PASS
F _{HIGH}	2480	3.3VDC	2DH5-Sngl	-9.9	0.000102	30	-39.90	PASS
F _{LOW}	2402	3.3VDC	3DH5-Sngl	-9.8	0.000105	30	-39.80	PASS
F _{MID}	2441	3.3VDC	3DH5-Sngl	-9.8	0.000105	30	-39.80	PASS
F _{HIGH}	2480	3.3VDC	3DH5-Sngl	-9.8	0.000105	30	-39.80	PASS
Comments:								

3.6 Test Conditions and Results – AC power line conducted emissions

Power line conducted emissions acc. FCC 47 CFR 15.207 / IC RSS-Gen				Verdict: PASS	
Test according referenced standards		Reference Method			
		ANSI C63.4			
Fully configured sample scanned over the following frequency range		Frequency range			
		0.15MHz to 30MHz			
Points of Application		Application Interface			
AC Mains		LISN			
EUT test mode		AC-Powerline			
Limits and results					
Frequency [MHz]	Quasi-Peak [dBµV]	Result	Average [dBµV]	Result	
0.15 to 5	66 to 56*	PASS	56 to 46*	PASS	
0.5 to 5	56	PASS	46	PASS	
5 to 30	60	PASS	50	PASS	
Comments:					
* Limit decreases linearly with the logarithm of the frequency.					

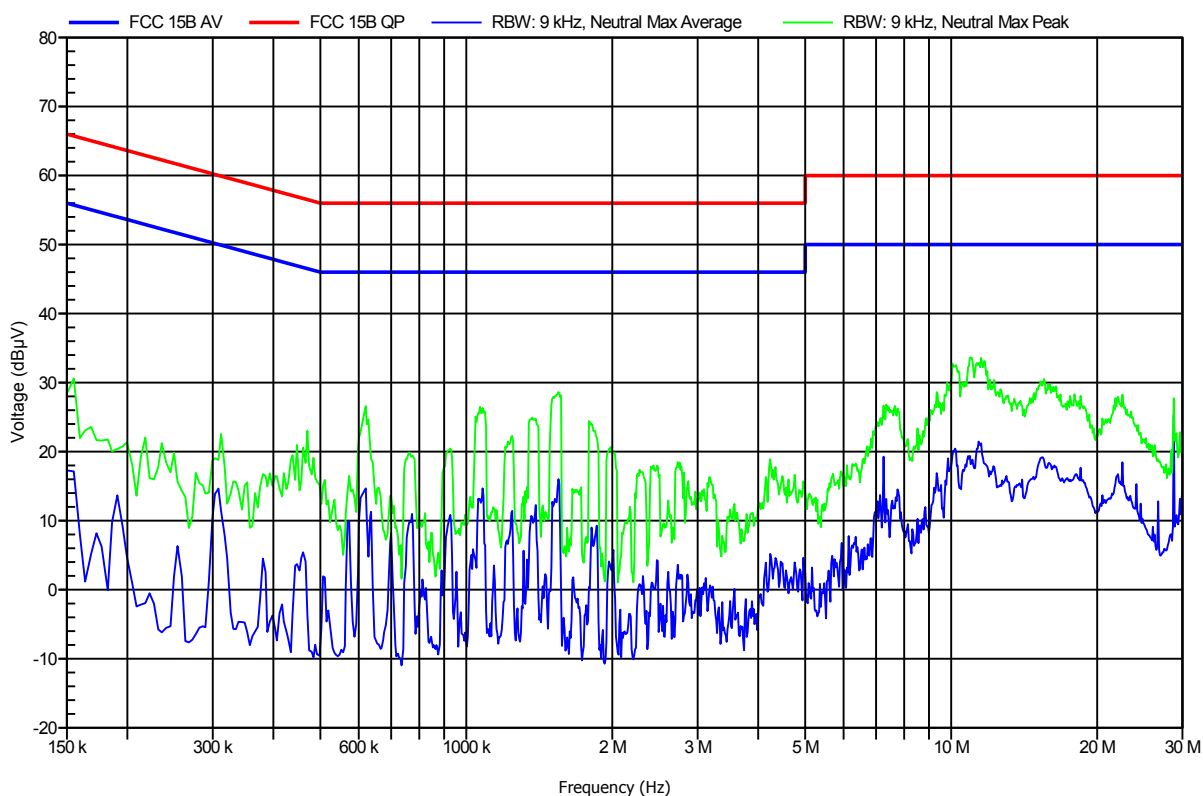
Conducted Emissions

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

Project number: G0M-1112-1585

Manufacturer: MIR Medical International Research
 EUT Name: Bluetooth module
 Model: 001075
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Conditions: Tnom: 22°C,
 Unom: 120 V AC (AC/DC adaptor: RadioShack No. 273-1770)
 LISN: ESH2-Z5 N
 Mode: Bluetooth active
 Test Date: 09.02.2012
 Note:

Index 1



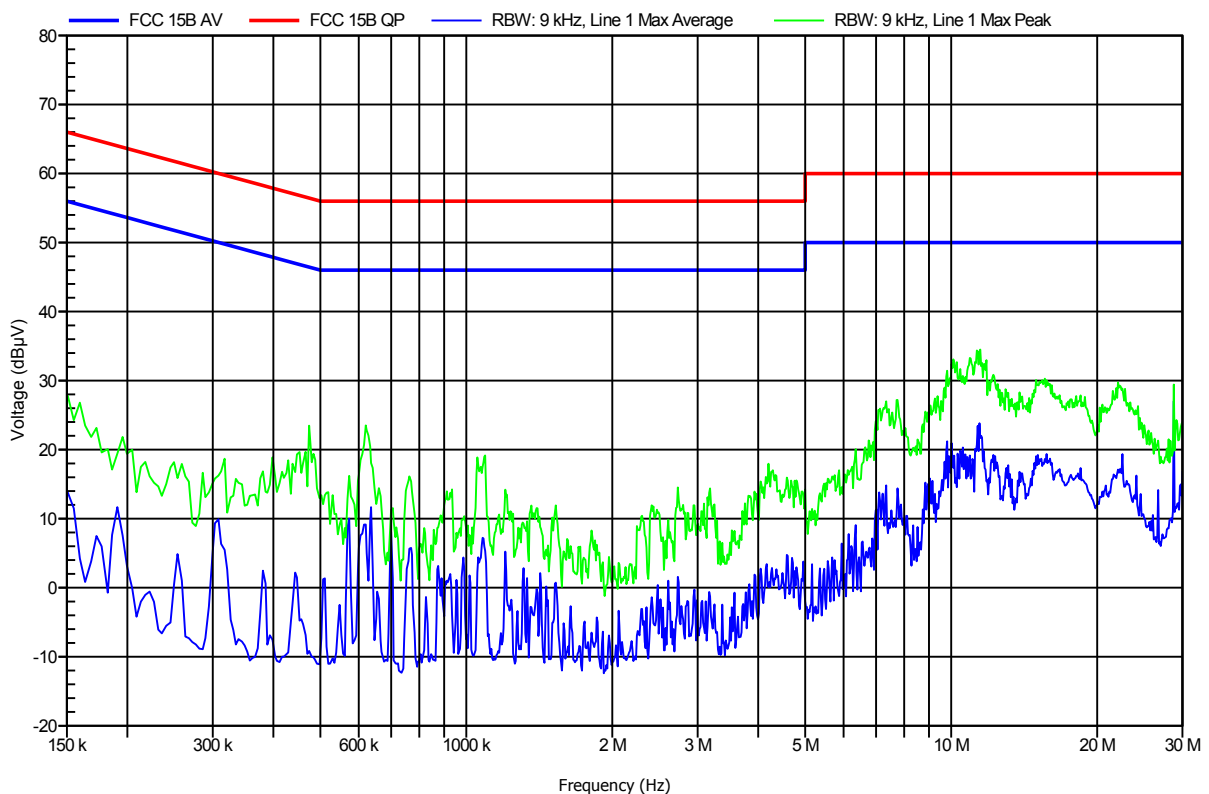
Conducted Emissions

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

Project number: G0M-1112-1585

Manufacturer: MIR Medical International Research
 EUT Name: Bluetooth module
 Model: 001075
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Handrik
 Test Conditions: Tnom: 22°C,
 Unom: 120 V AC (AC/DC adaptor: RadioShack No. 273-1770)
 LISN: ESH2-Z5 L
 Mode: Bluetooth active
 Test Date: 09.02.2012
 Note:

Index 2



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						
<div><div>Spectrum Analyzer</div><div>EUT</div></div>						
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	-41.94	-20	-21.94	PASS
F _{HIGH}	2480	DH5-Sngl	-42.93	-20	-22.93	PASS
F _{LOW}	2402	DH5-Hop	-45.23	-20	-25.23	PASS
F _{HIGH}	2480	DH5-Hop	-42.00	-20	-22.00	PASS
F _{LOW}	2402	2DH5-Sngl	-38.83	-20	-18.83	PASS
F _{HIGH}	2480	2DH5-Sngl	-43.18	-20	-23.18	PASS
F _{LOW}	2402	2DH5-Hop	-36.79	-20	-16.79	PASS
F _{HIGH}	2480	2DH5-Hop	-42.83	-20	-22.83	PASS

F _{LOW}	2402	3DH5-Sngl	-37.91	-20	-17.91	PASS
F _{HIGH}	2480	3DH5-Sngl	-41.72	-20	-21.72	PASS
F _{LOW}	2402	3DH5-Hop	-39.51	-20	-19.51	PASS
F _{HIGH}	2480	3DH5-Hop	-42.39	-20	-22.39	PASS
Comments:						

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

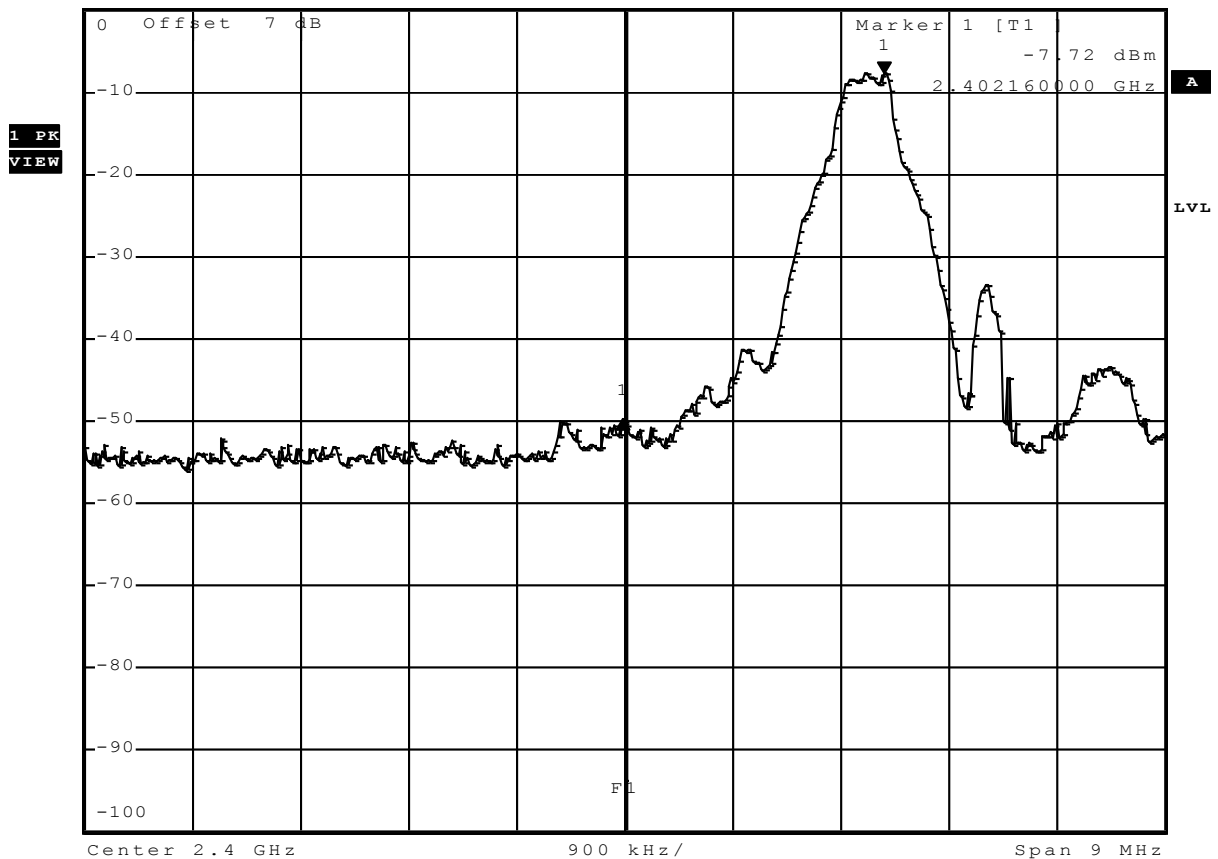
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz / GFSK
Comment 3	pass



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -41.94 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms -2.178000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 9.DEC.2011 09:32:42

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

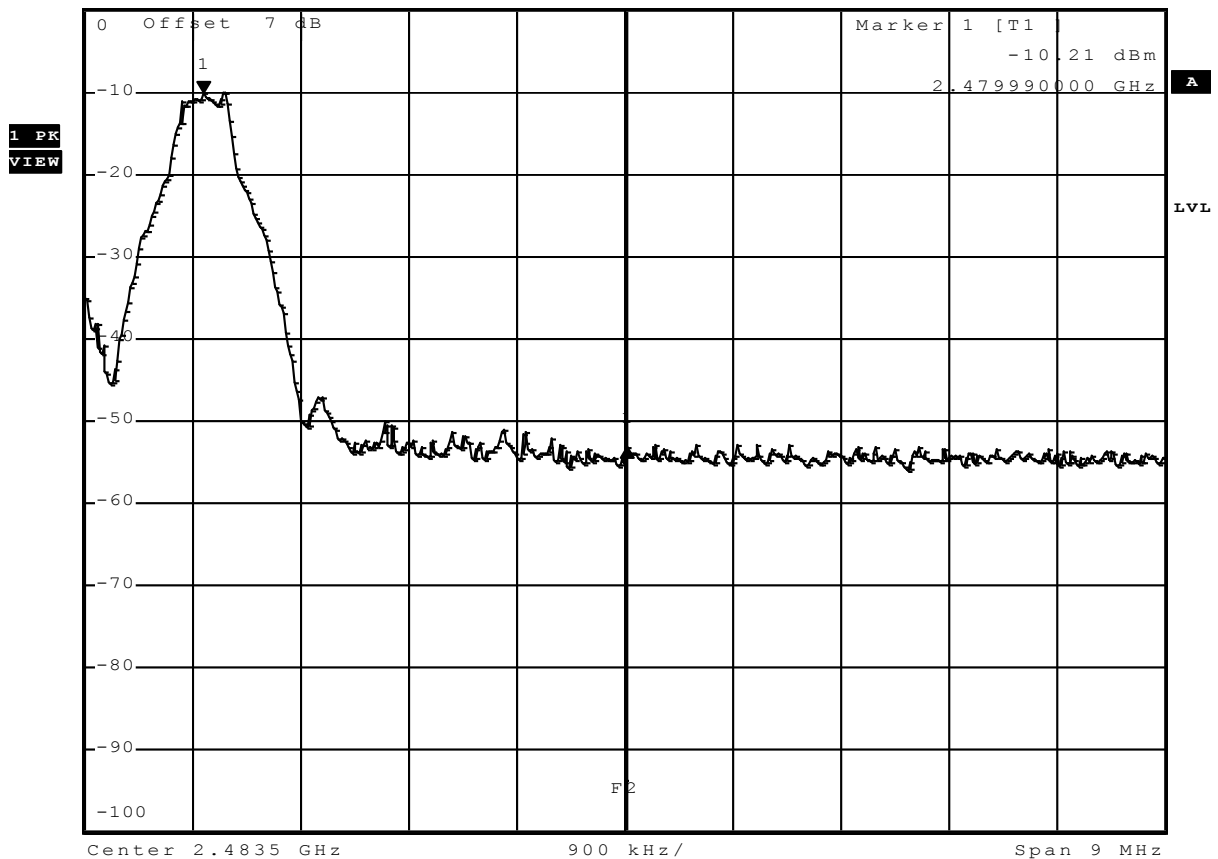
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz / GFSK
Comment 3	pass



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -42.93 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms 3.528000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 9.DEC.2011 09:38:17

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

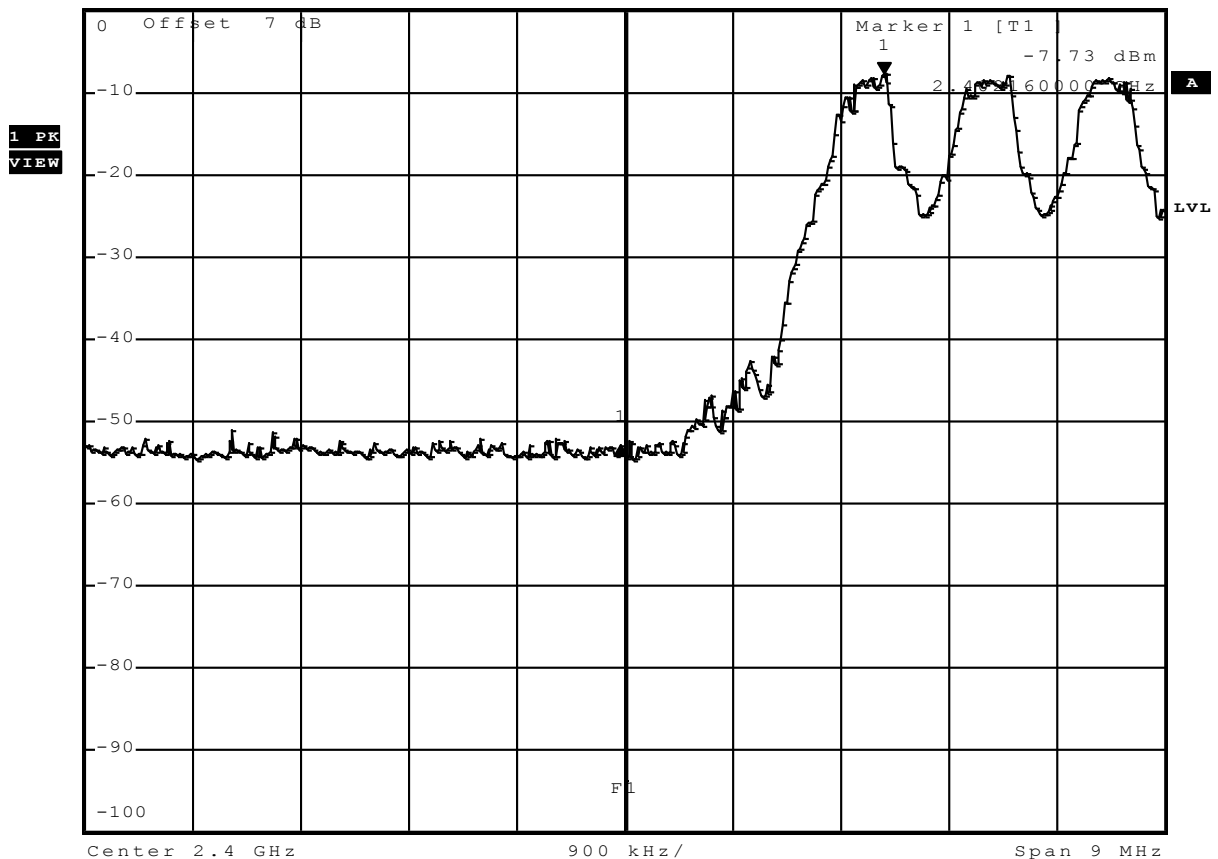
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz / GFSK
Comment 3	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -45.23 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms -2.196000000 MHz



Date: 9.DEC.2011 10:18:32

Test Report No.: G0M-1112-1585-TFC247B-V01

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

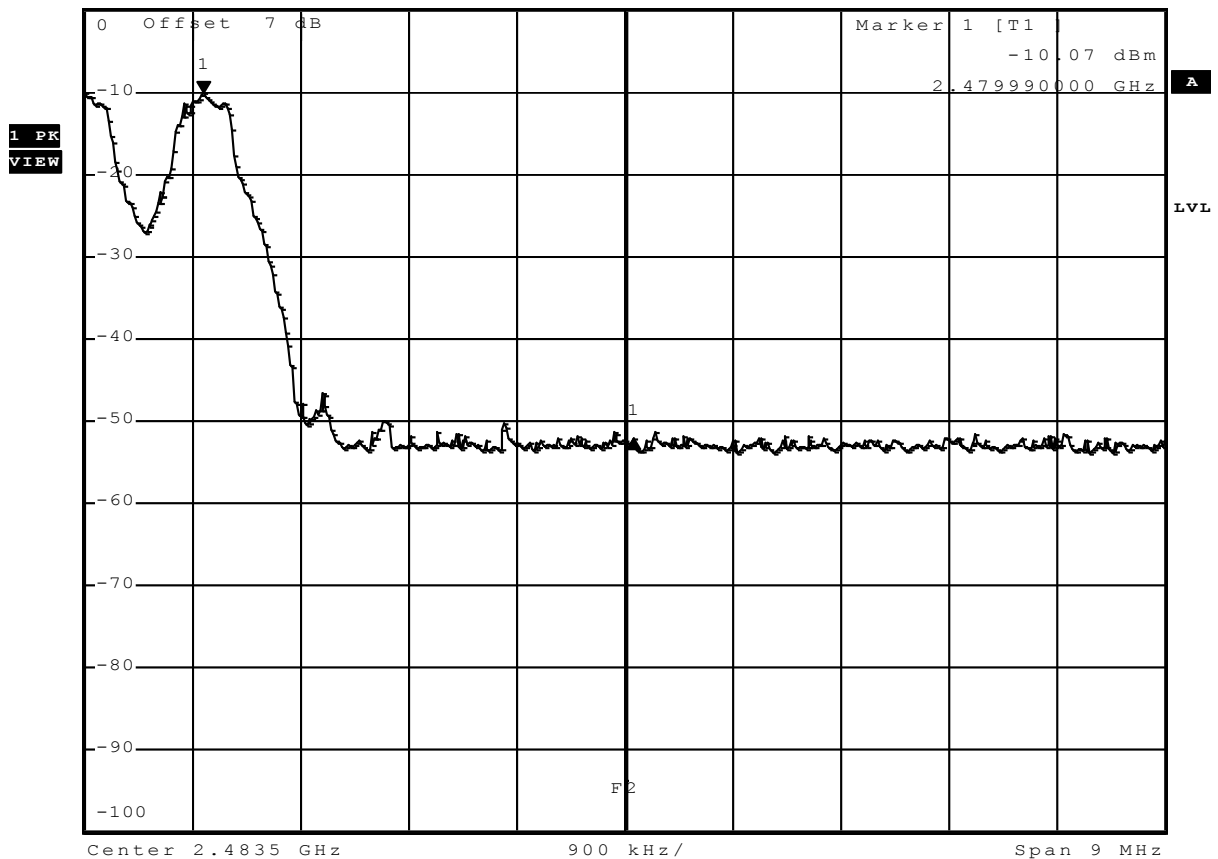
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Band-edge compliance – DH5-Hop F_{HIGH}
FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz / GFSK
Comment 3	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -42.00 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms 3.582000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 9.DEC.2011 10:25:07

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

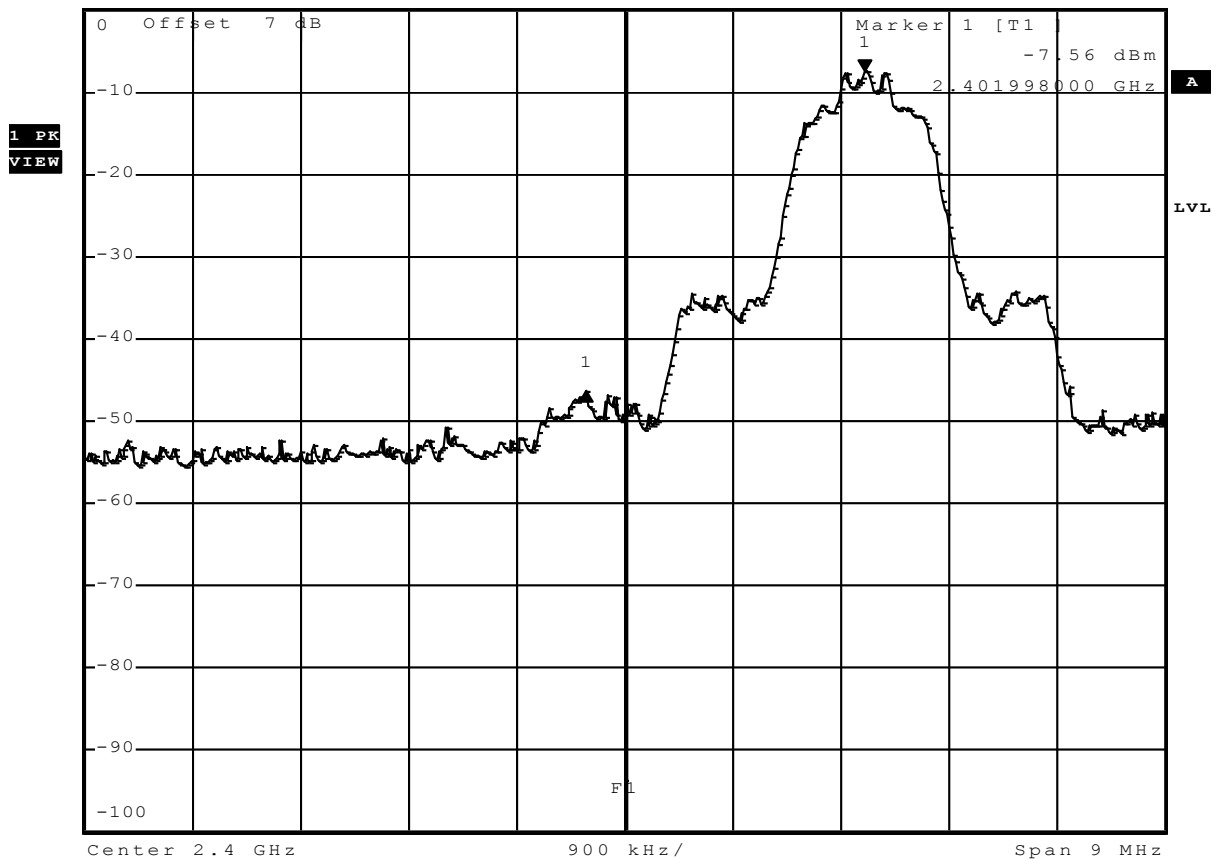
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz / Pi/4-DQPSK
Comment 3	pass



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -38.83 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms -2.322000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 9.DEC.2011 09:45:28

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

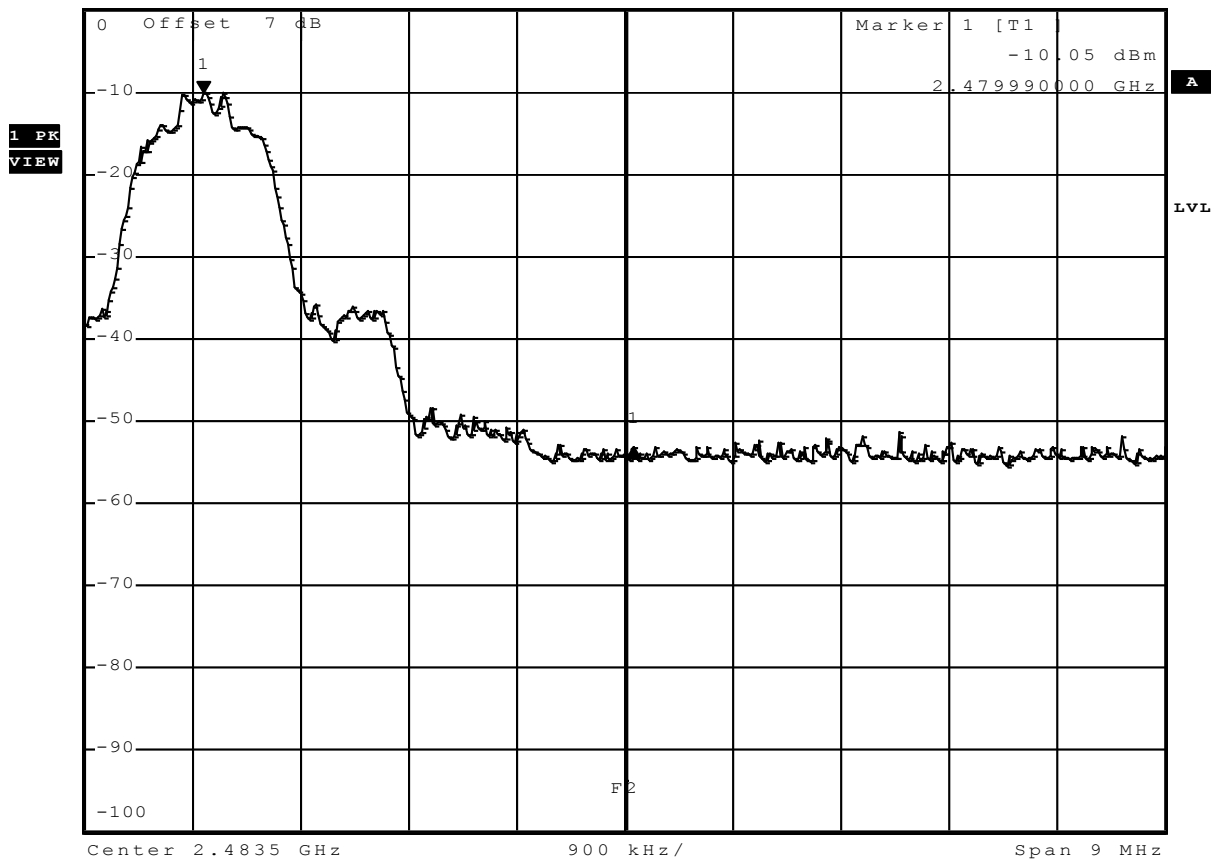
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz / Pi/4-DQPSK
Comment 3	pass



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -43.18 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms 3.582000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 9.DEC.2011 09:43:38

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

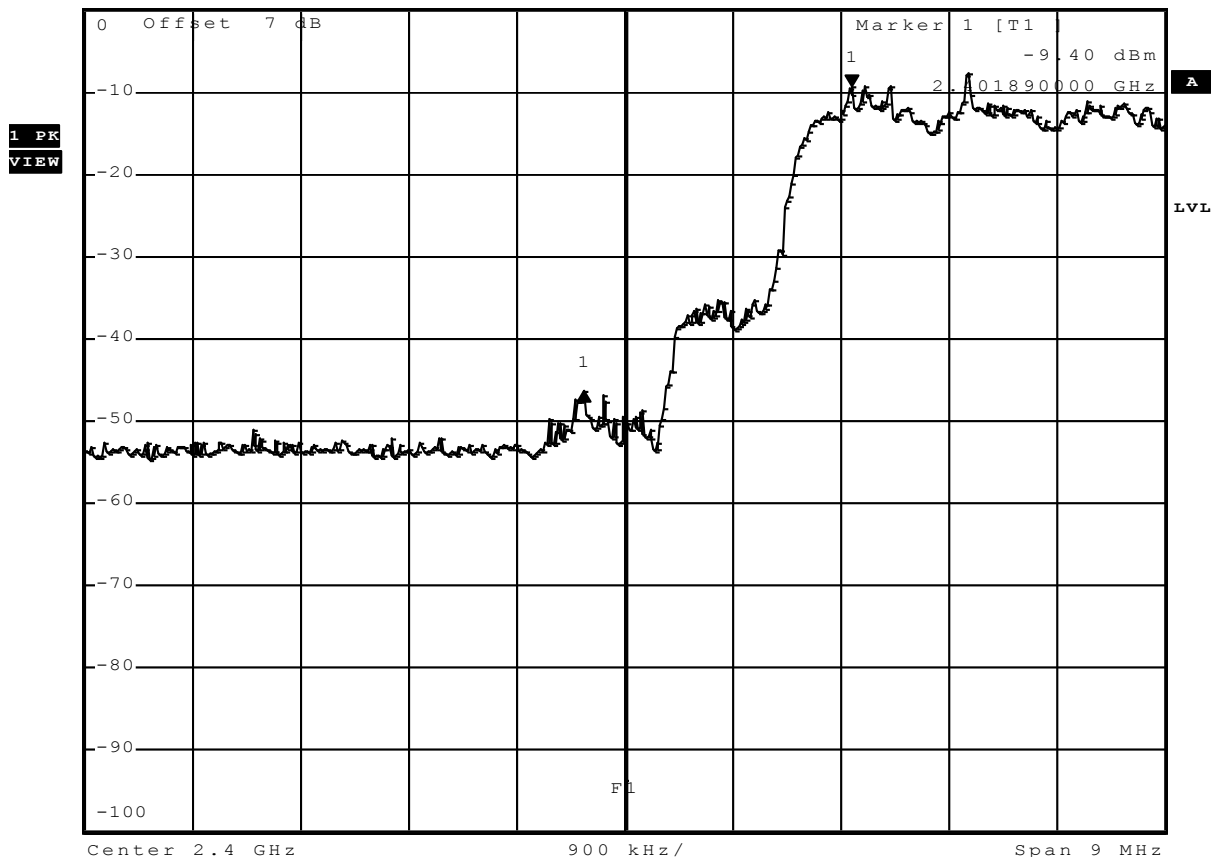
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz / Pi/4-DQPSK
Comment 3	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -36.79 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms -2.232000000 MHz



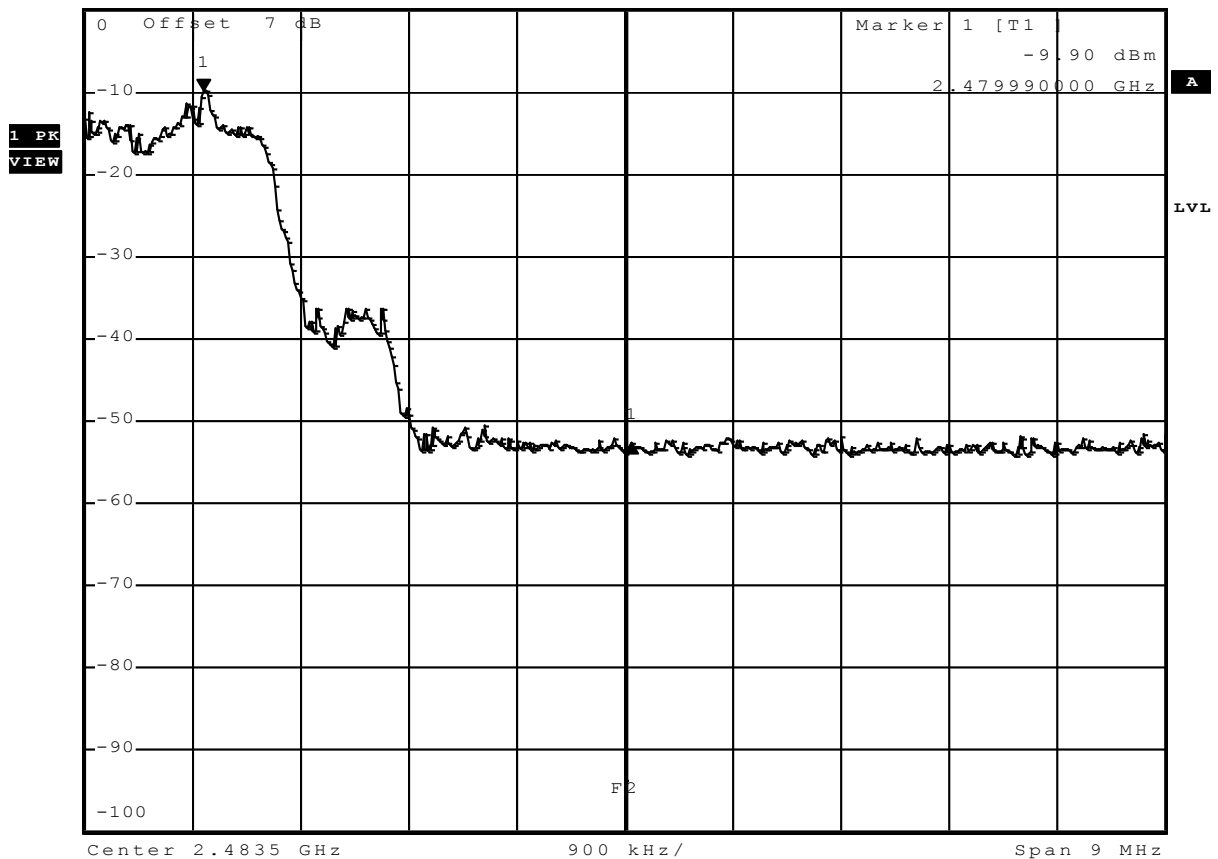
Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 9.DEC.2011 10:15:32

Band-edge compliance – 2-DH5-Hop F_{HIGH}
FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz / Pi/4-DQPSK
Comment 3	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -42.83 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms 3.564000000 MHz



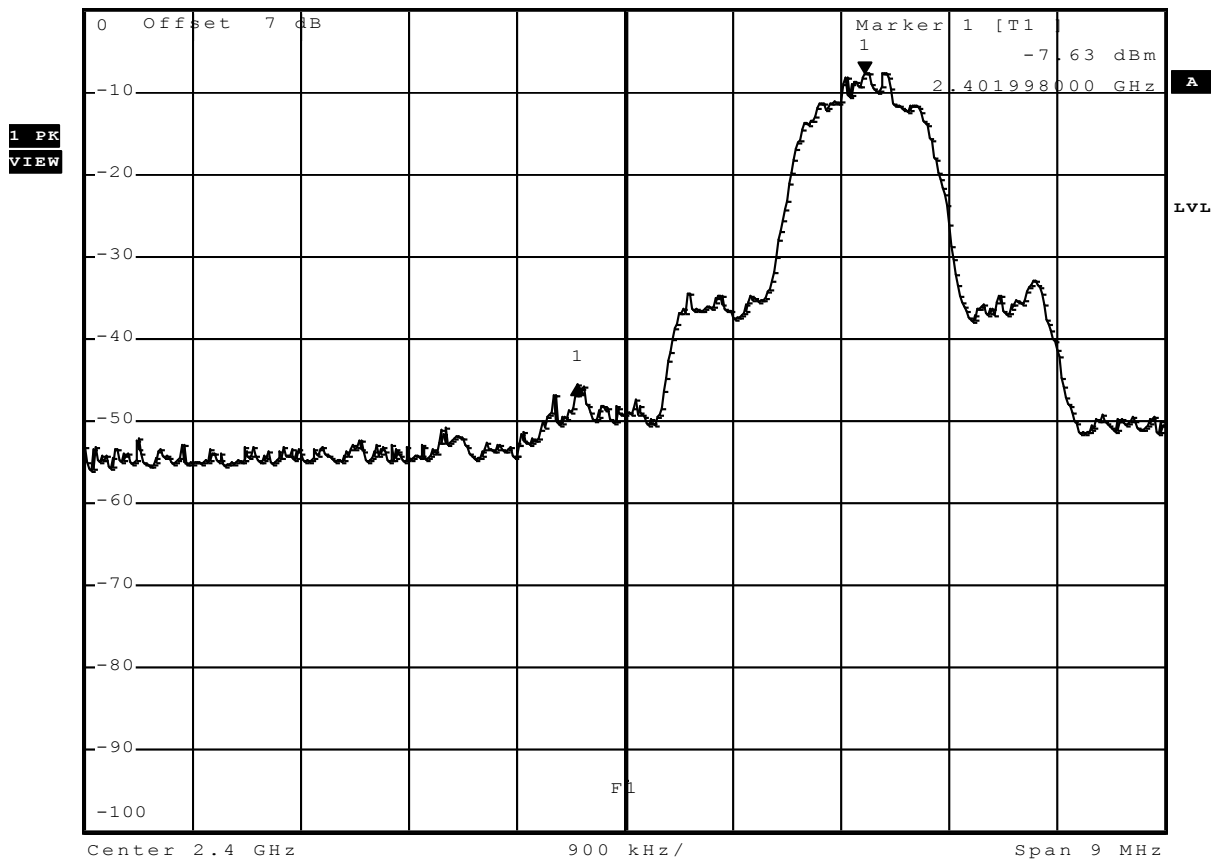
Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 9.DEC.2011 10:10:57

Band-edge compliance – 3-DH5-Sngl F_{LOW}
FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz / 8DPSK
Comment 3	pass



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -37.91 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms -2.394000000 MHz



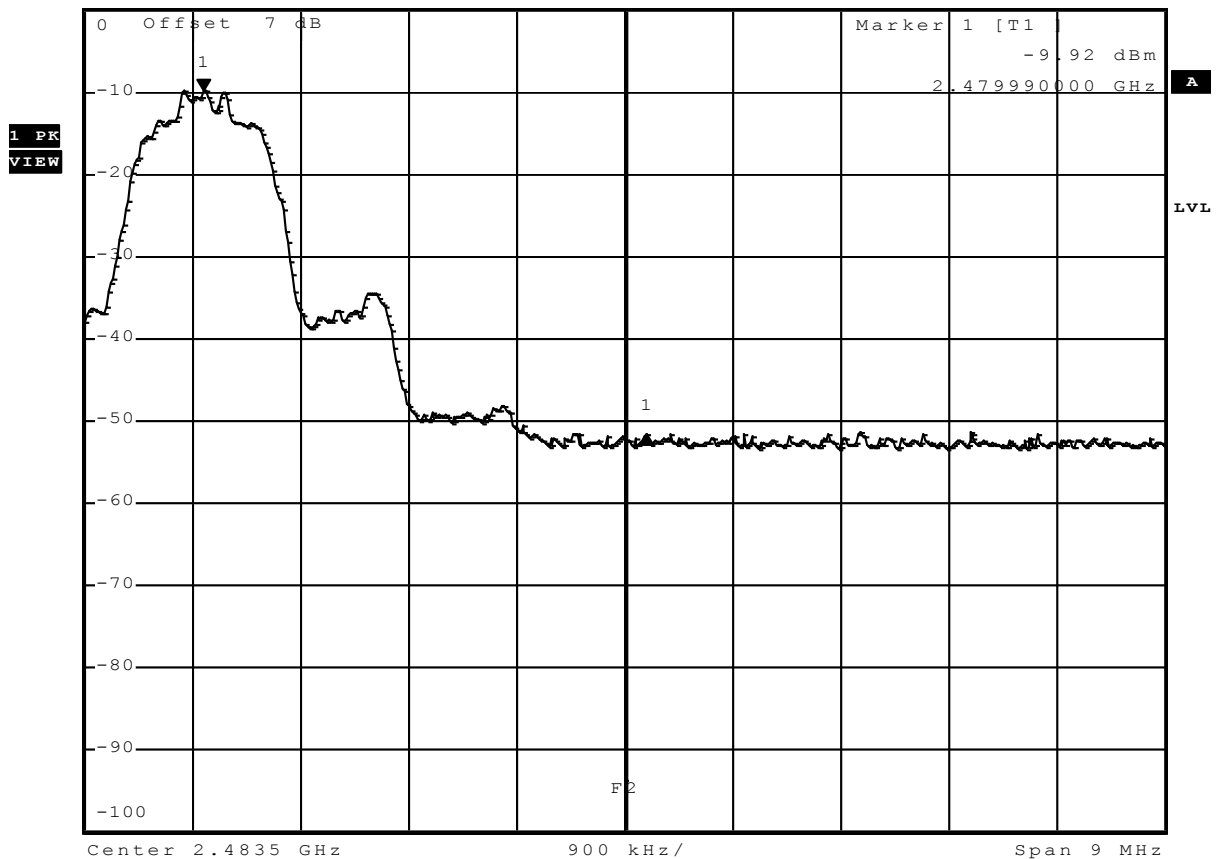
Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 9.DEC.2011 09:47:25

Band-edge compliance – 3-DH5-Sngl F_{HIGH}
FCC part 15.247
Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz / 8DPSK
Comment 3	pass



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -41.72 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms 3.690000000 MHz



Comment: Limit: Marker Delta value >20 dB; Result: PASS
 Date: 9.DEC.2011 09:58:02

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

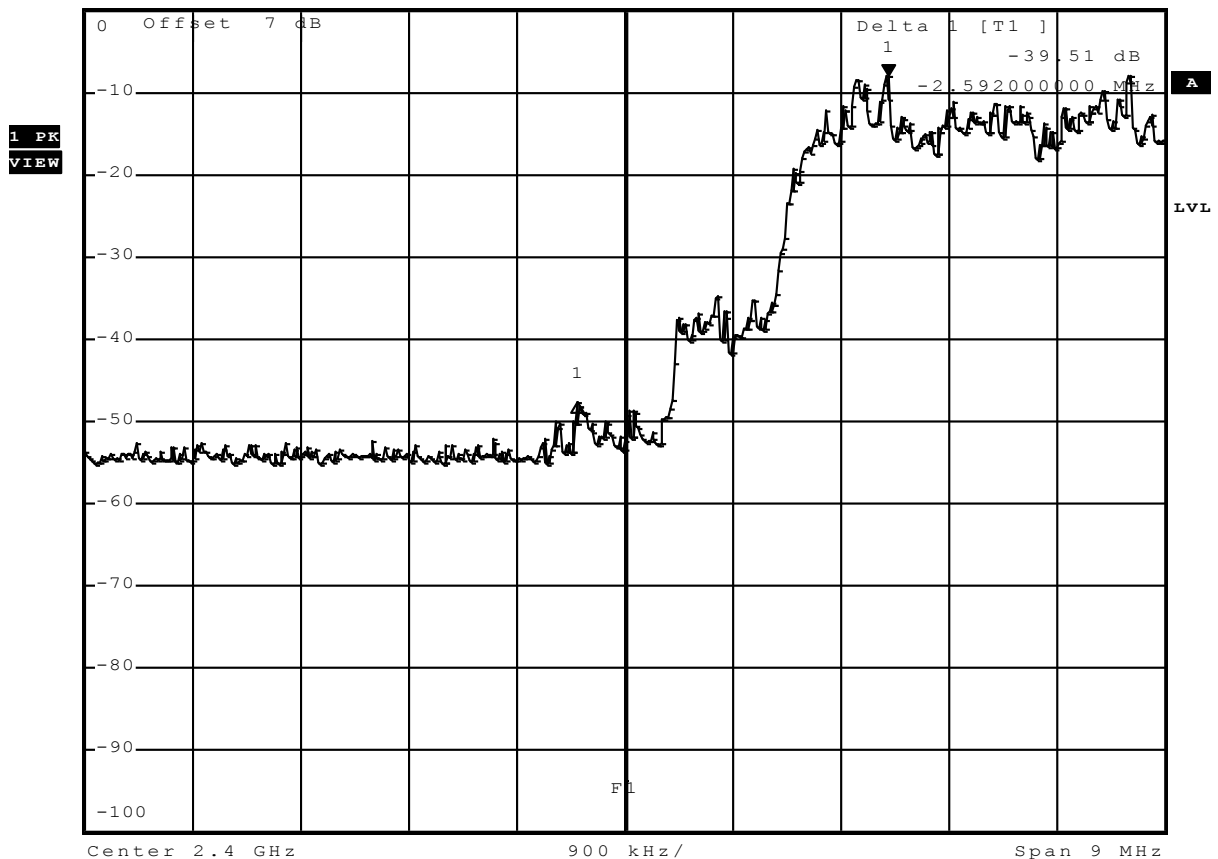
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 0 / 2402 MHz / 8DPSK
Comment 3	Hopping mode



*RBW 100 kHz Marker 1 [T1]
 *VBW 100 kHz -8.09 dBm
 Ref 0 dBm Att 30 dB SWT 2.5 ms 2.402196000 GHz



Date: 9.DEC.2011 10:02:53

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

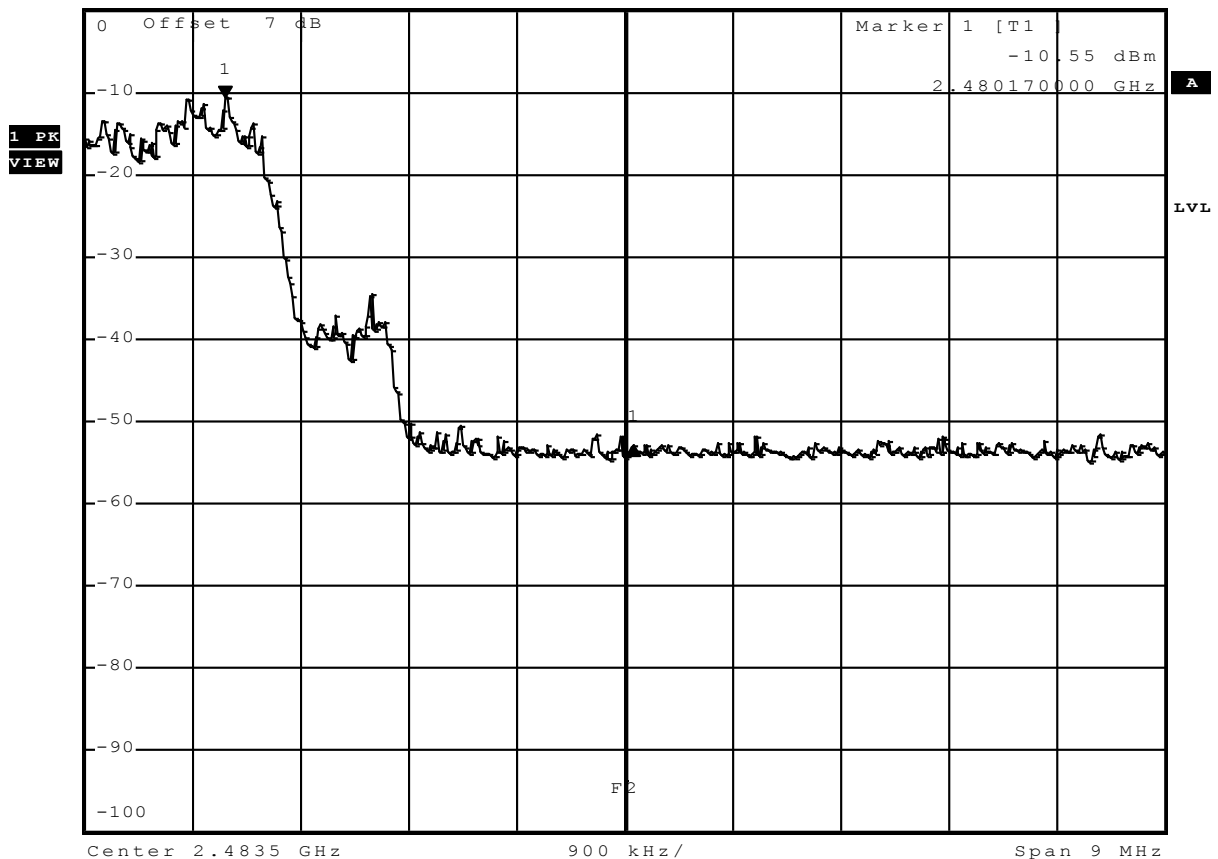
FCC part 15.247

Band-edge compliance of RF conducted emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
Temperature / Voltage	tnom / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr. Treffke
Test Specification	FCC part 15 section 247(d)
Comment 1	Band-edge compliance
Comment 2	Channel.: 78 / 2480 MHz / 8DPSK
Comment 3	Hopping mode



*RBW 100 kHz Delta 1 [T1]
 *VBW 100 kHz -42.39 dB
 Ref 0 dBm Att 30 dB SWT 2.5 ms 3.402000000 MHz



Date: 9.DEC.2011 10:07:07

Test Report No.: G0M-1112-1585-TFC247B-V01

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

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3.8 Test Conditions and Results – Conducted spurious emissions

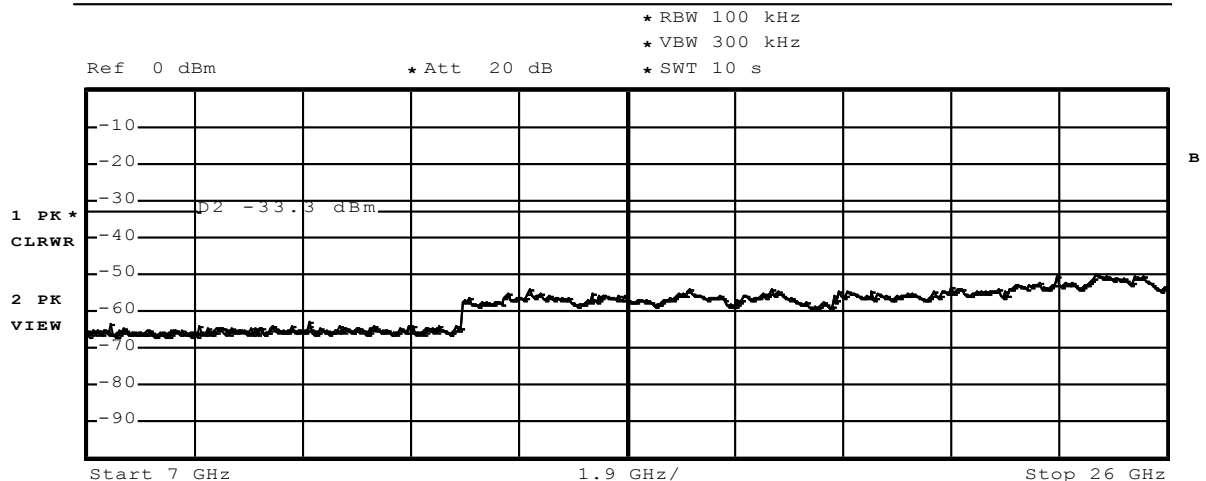
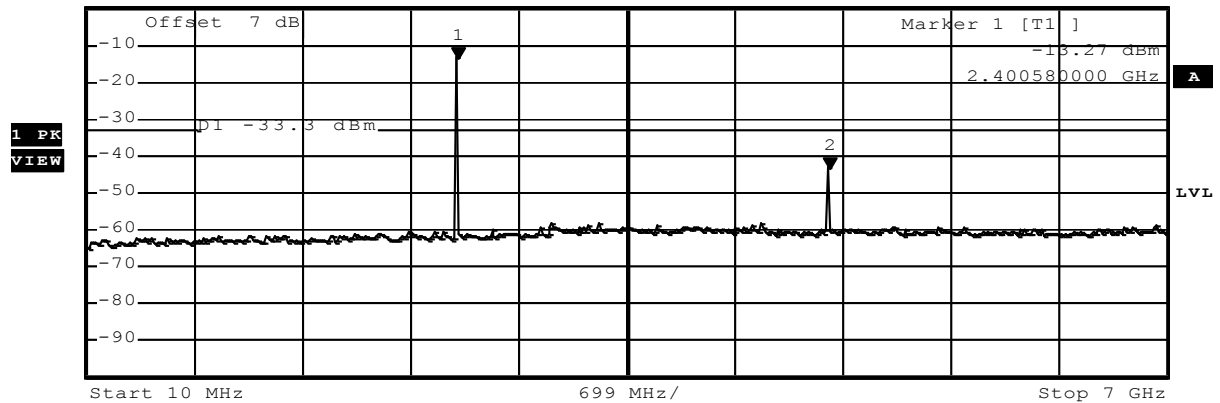
Conducted spurious emissions acc. FCC 15.247 / IC RSS-210						Verdict: PASS		
EUT requirement rule parts and clause			Reference					
			FCC 15.247(d) / IC RSS-210 A8.5					
Test according to measurement reference			Reference Method					
			FCC Public Notice DA 00-705					
Test frequency range			Tested frequencies					
			10MHz – 10 th Harmonic					
Measurement mode			Peak					
Limits								
Limit				Condition				
≤ -20dB/100kHz				Peak power measurement detector = Peak				
≤ -30dB/100kHz				Peak power measurement detector = RMS				
Test setup								
<div><div>Spectrum Analyzer</div><div>EUT</div></div>								
Test procedure								
<div>1. EUT set to test mode (Communication tester is used if needed)</div> <div>2. Span it set according to measurement range</div> <div>3. Resolution bandwidth is set to 100kHz and detector to peak and max hold</div> <div>4. Markers are set to peak emission levels within frequency band</div> <div>5. Emission level is determined by second marker on emission peak</div> <div>6. Attenuation is determined from level difference</div>								
Test results								
Channel	Frequency [MHz]	Mode	Emission [MHz]	Emission Level [dbm]	Peak power [dBm]	Limit [dBm]	Margin [dB]	Result
F _{LOW}	2402	DH5-Sngl	4805.14	-42.70	-13.27	-33.3	-09.40	PASS
F _{MID}	2441	DH5-Sngl	4889.02	-36.51	-13.82	-33.8	-02.71	PASS
F _{HIGH}	2480	DH5-Sngl	4958.92	-39.16	-15.16	-35.2	-03.96	PASS
F _{LOW}	2402	3DH5-Sngl	4805.14	-47.12	-17.32	-37.3	-09.82	PASS
F _{MID}	2441	3DH5-Sngl	4889.02	-41.69	-12.78	-32.8	-08.89	PASS
F _{HIGH}	2480	3DH5-Sngl	4958.92	-39.81	-15.66	-35.7	-04.11	PASS
Comments:								

Conducted spurious emissions – DH5-Sngl F_{Low}
**FCC part 15.247 (d)
Spurious Emissions**

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



Ref 0 dBm * Att 20 dB * RBW 100 kHz Marker 2 [T1] -42.70 dBm
 * VBW 300 kHz 4.805140000 GHz
 * SWT 10 s



Date: 16.DEC.2011 13:43:24

Test Report No.: G0M-1112-1585-TFC247B-V01

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

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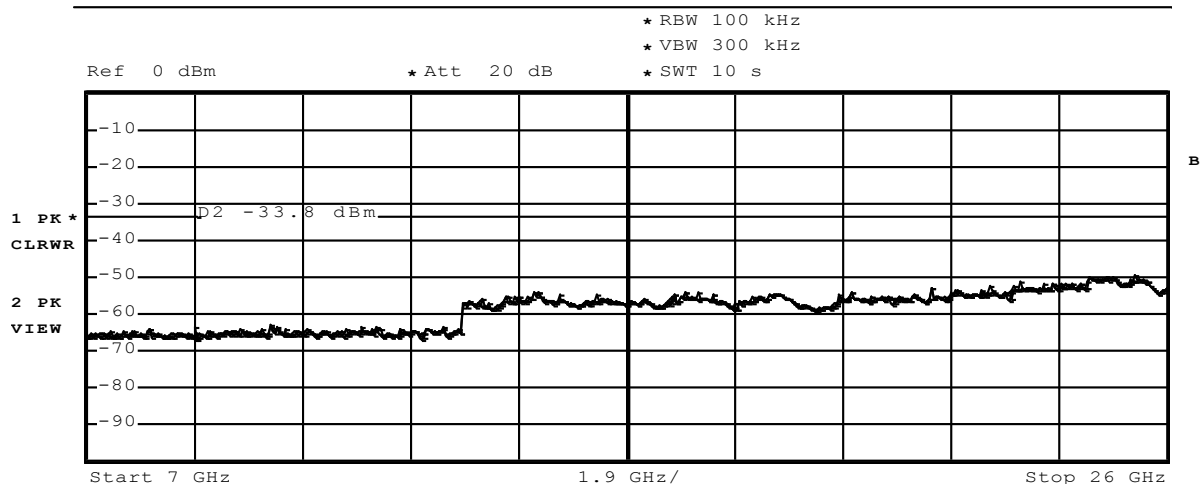
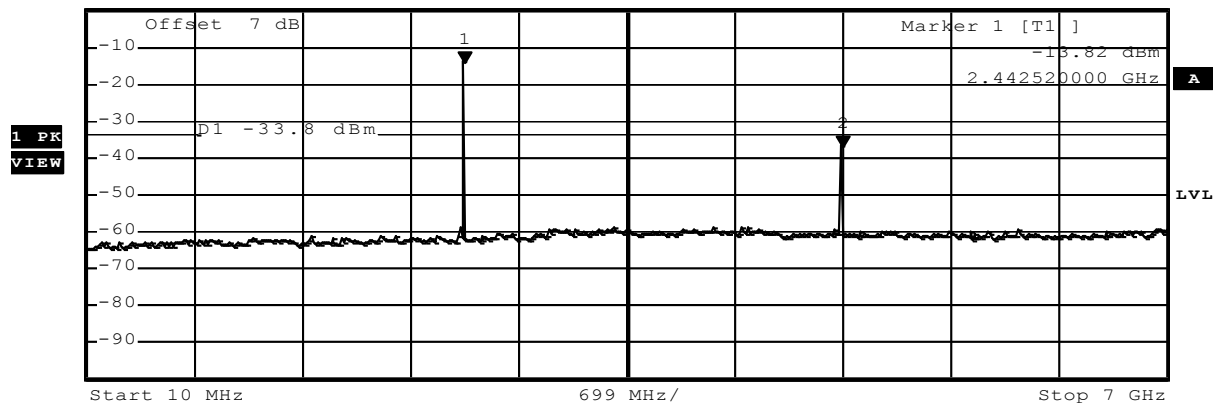
Conducted spurious emissions – DH5-Sngl F_{MID}

FCC part 15.247 (d) Spurious Emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



Ref 0 dBm * Att 20 dB * RBW 100 kHz Marker 2 [T1]
 * VBW 300 kHz -36.51 dBm
 * SWT 10 s 4.889020000 GHz



Date: 16.DEC.2011 13:46:30

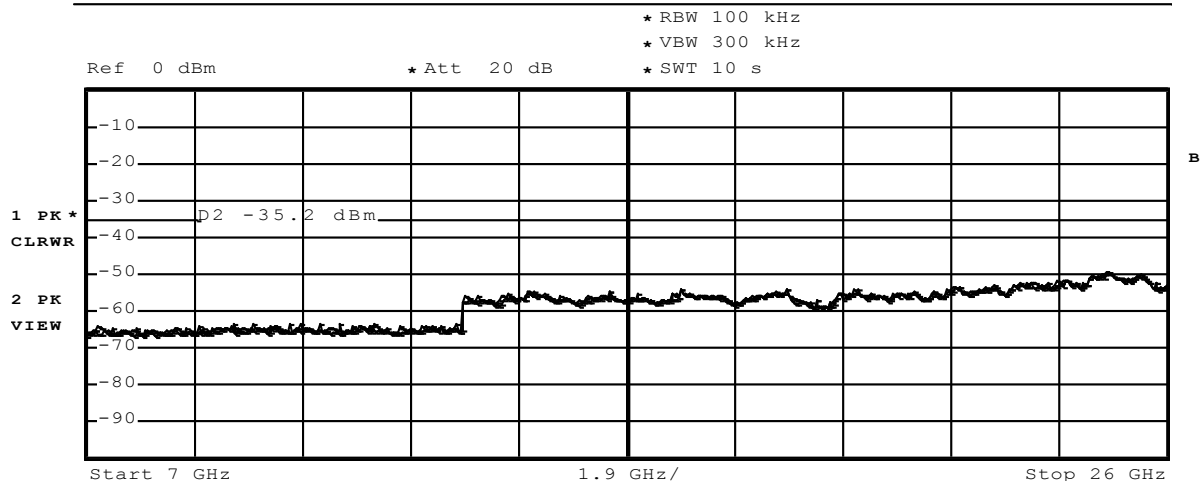
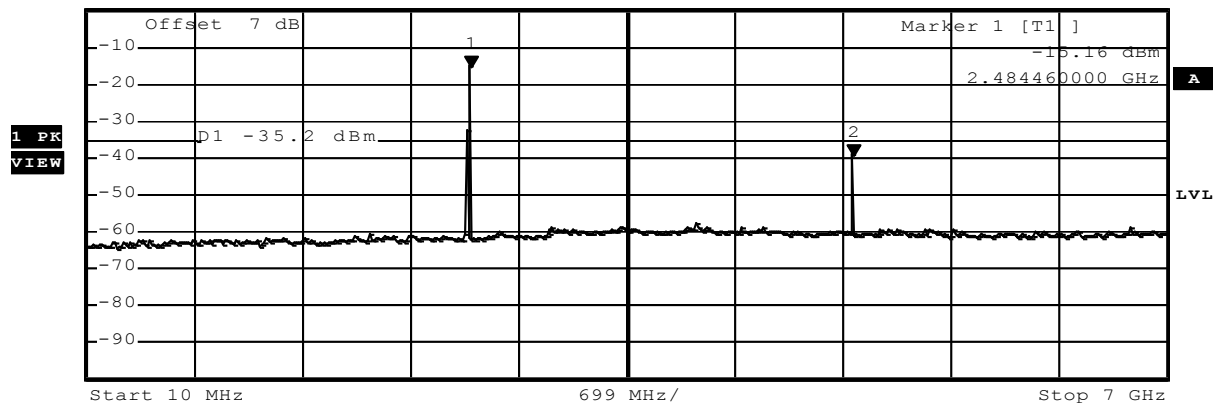
Conducted spurious emissions – DH5-Sngl F_{HIGH}

FCC part 15.247 (d) Spurious Emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



Ref 0 dBm * Att 20 dB * RBW 100 kHz Marker 2 [T1]
* VBW 300 kHz -39.16 dBm
* SWT 10 s 4.958920000 GHz



Date: 16.DEC.2011 13:50:16

Test Report No.: G0M-1112-1585-TFC247B-V01

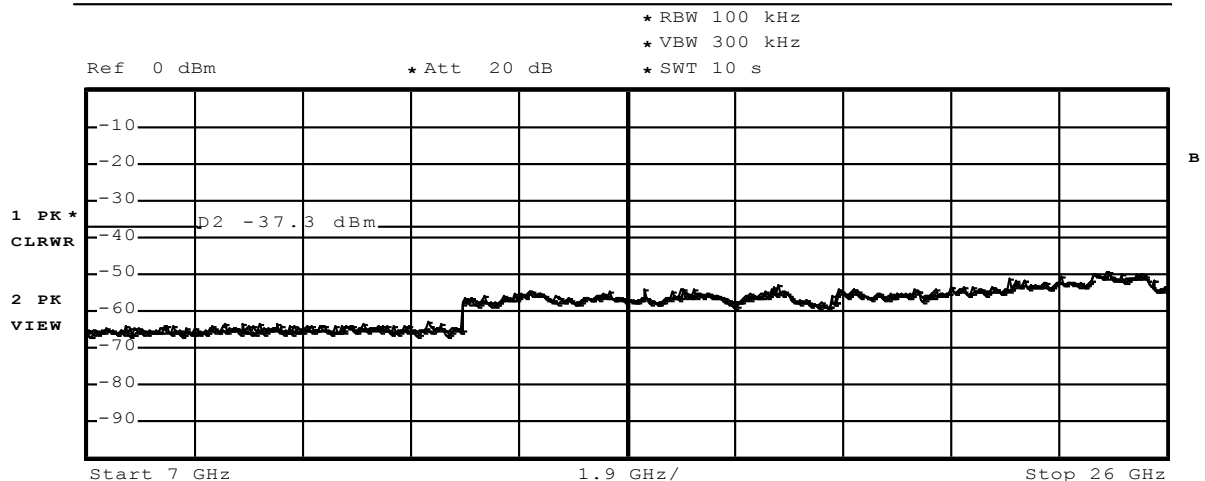
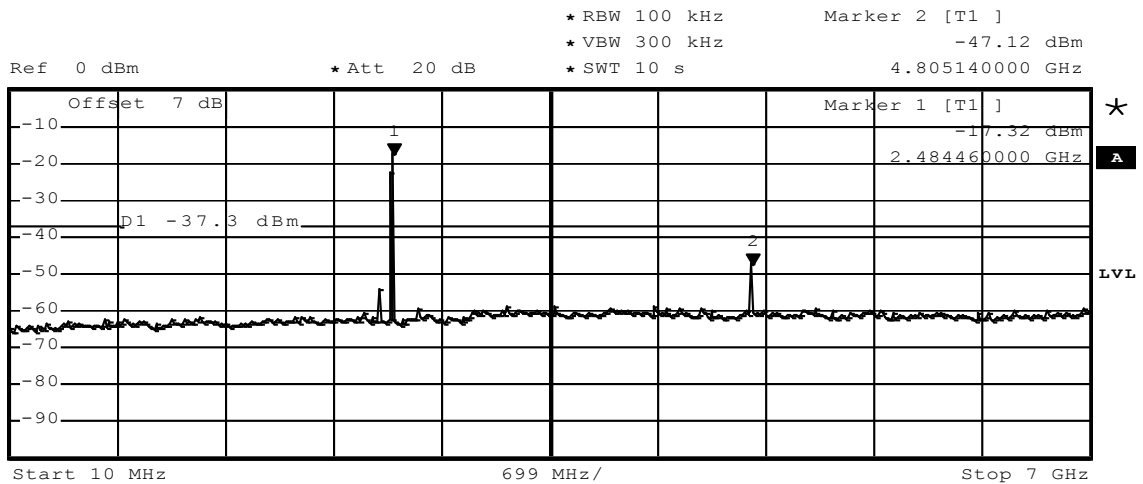
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

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

FCC part 15.247 (d)
Spurious Emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



Date: 16.DEC.2011 13:53:18

Test Report No.: G0M-1112-1585-TFC247B-V01

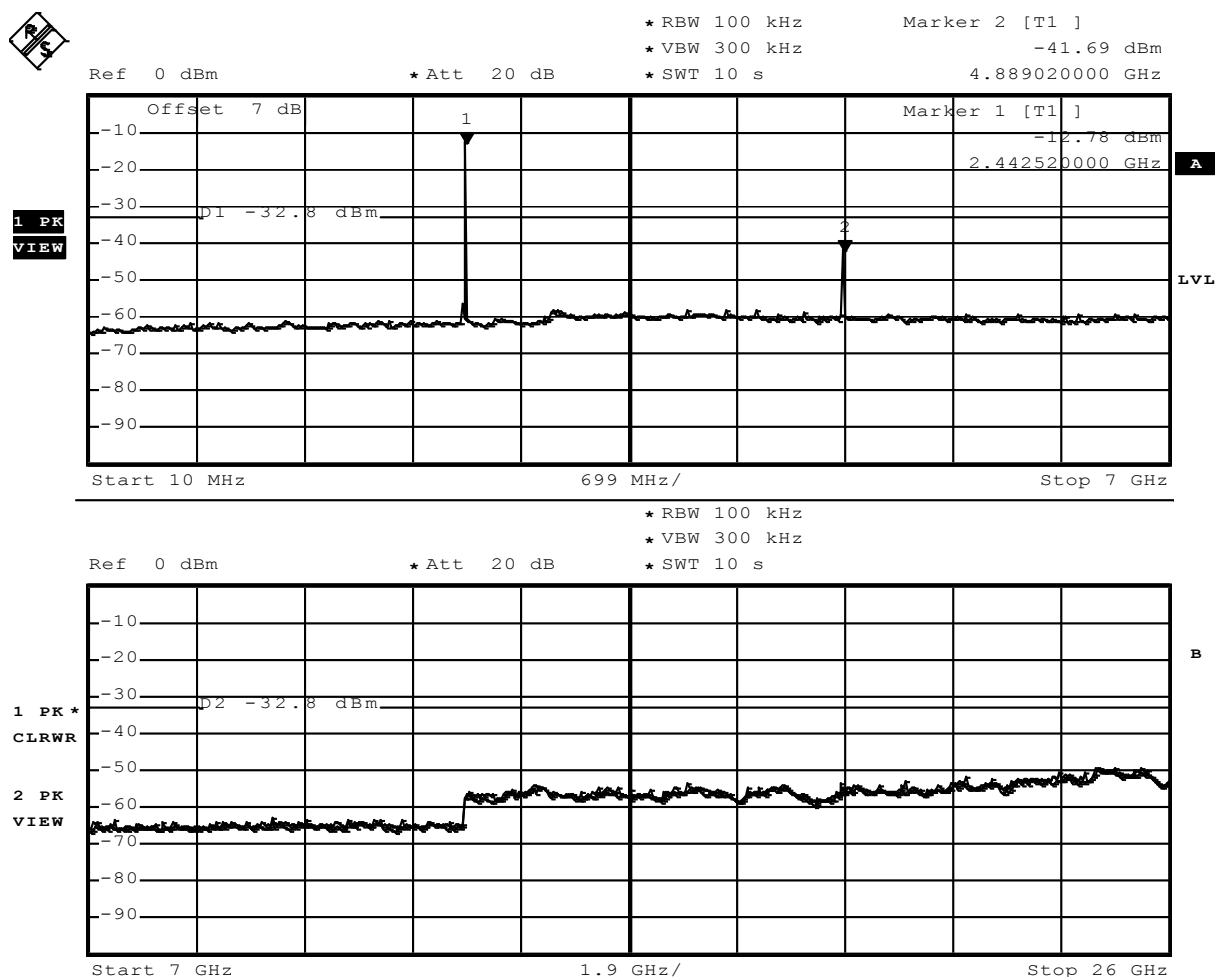
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

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

FCC part 15.247 (d)
Spurious Emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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



Date: 16.DEC.2011 13:59:15

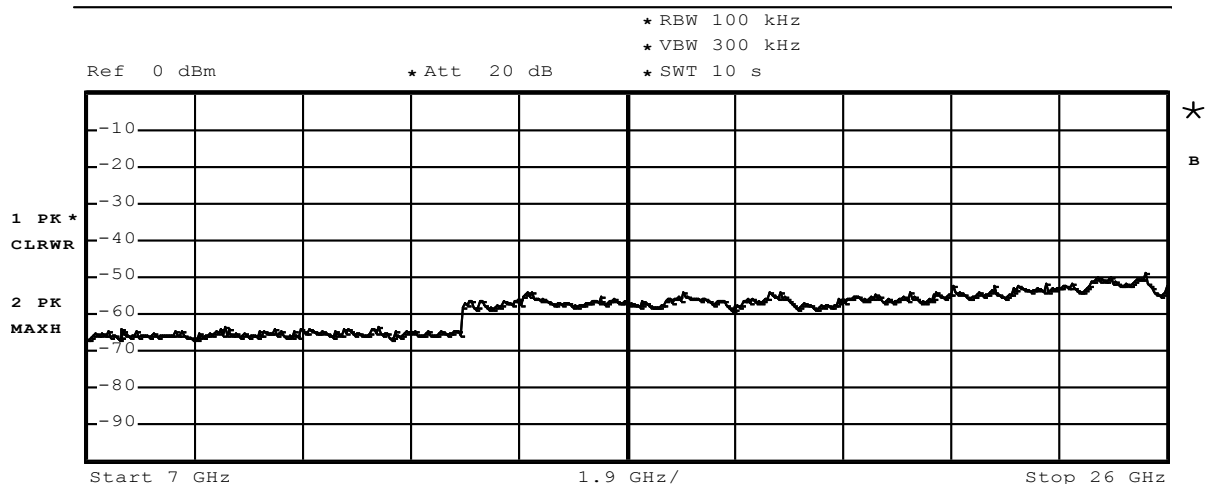
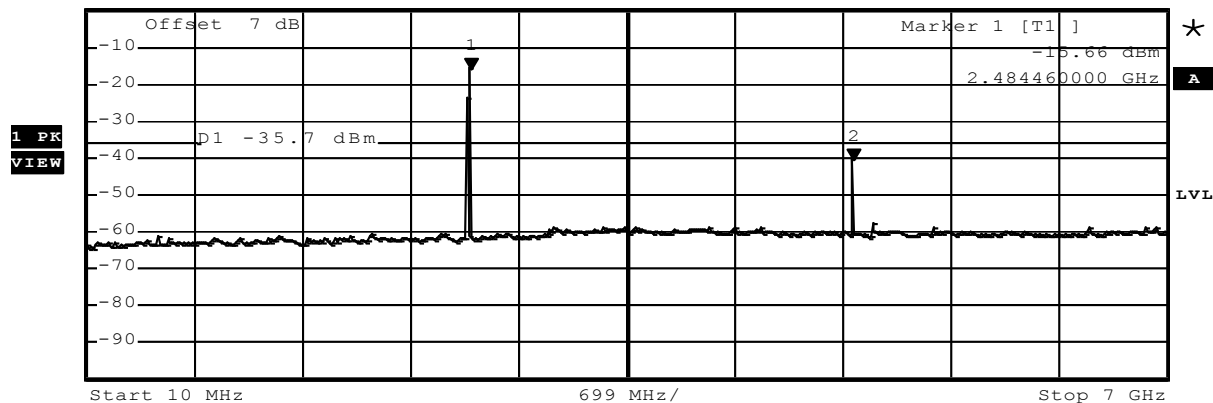
Conducted spurious emissions – 3-DH5-Sngl F_{HIGH}

FCC part 15.247 (d) Spurious Emissions

EUT	Bluetooth module
Model	BlueMir
Approval Holder	MIR Medical International Research / Ord.: G0M-1112-1585
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 : 2478 MHz
Comment 3	8DPSK

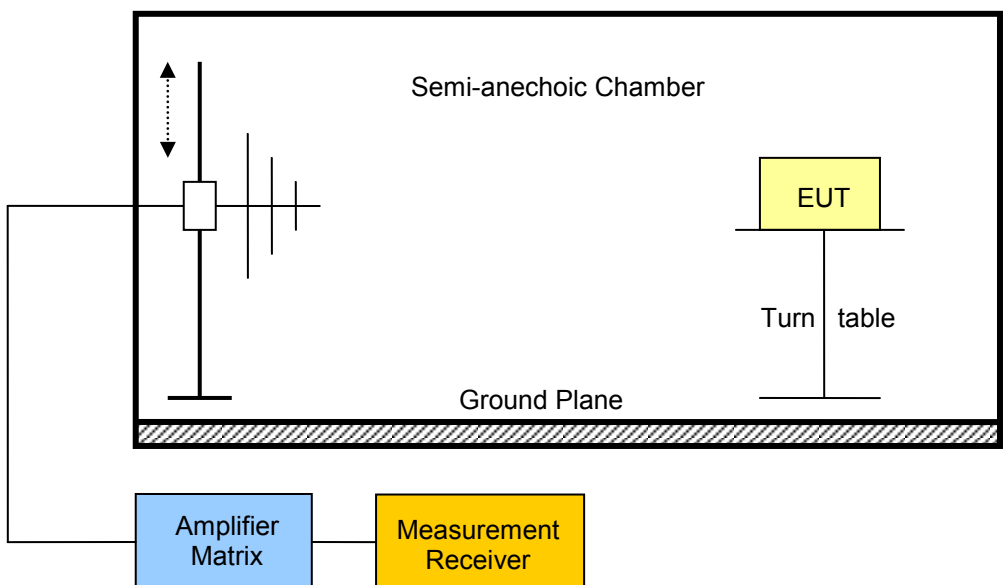


Ref 0 dBm * Att 20 dB * RBW 100 kHz Marker 2 [T1]
* VBW 300 kHz -39.81 dBm
* SWT 10 s 4.958920000 GHz



Date: 16.DEC.2011 14:01:55

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 – 10 th 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
<p>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)).</p> <p>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.</p>				
Test setup				
				

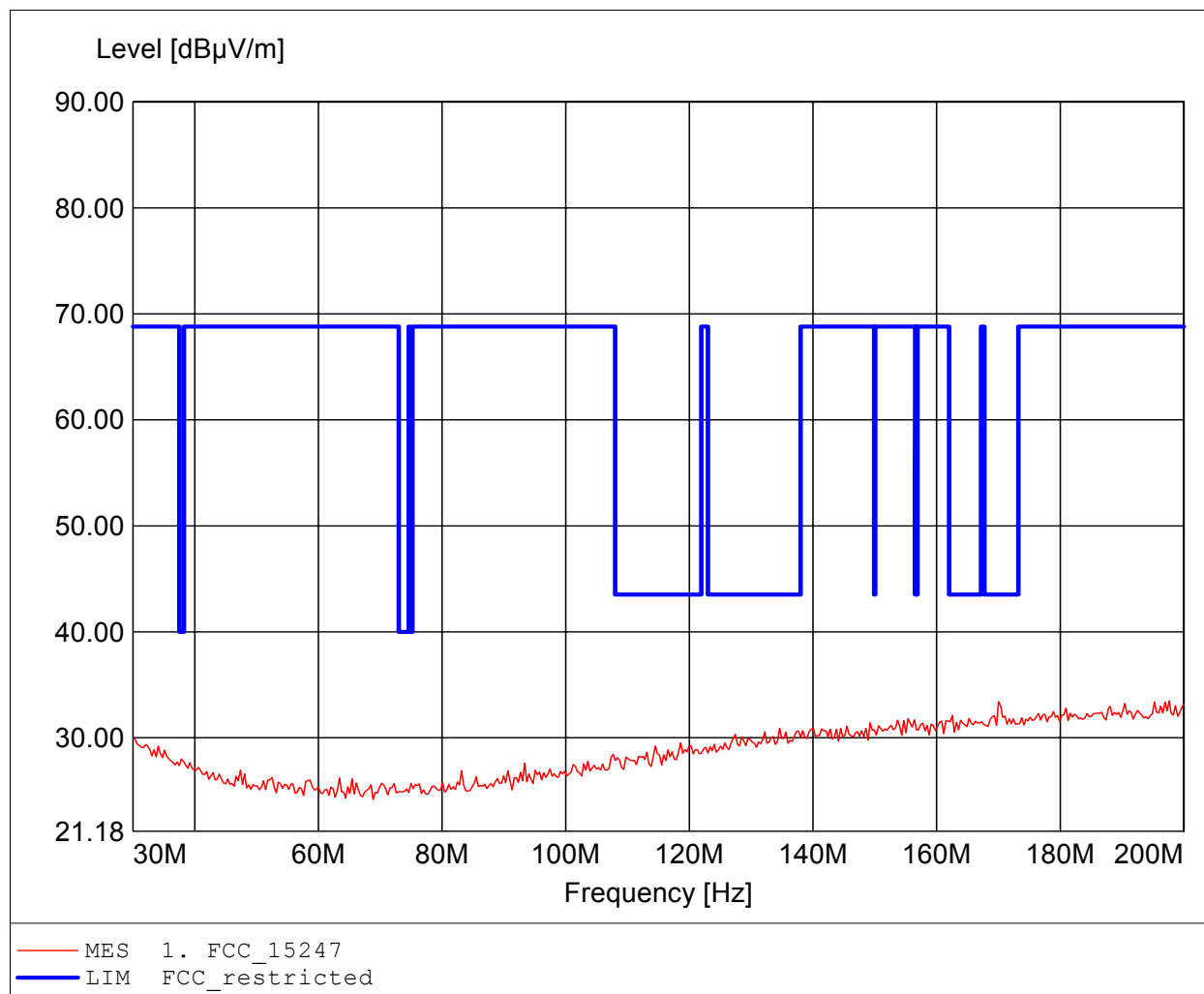
Test procedure									
<ol style="list-style-type: none"> 1. EUT set to test mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1MHz with peak/average detector 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	41.8	Av	v	54	3	-12.20
F _{LOW}	2402	DH5-Sngl	4802	55.8	P	h	74	3	-18.20
F _{LOW}	2402	DH5-Sngl	4804	48.7	Av	h	54	3	-05.30
F _{MID}	2441	DH5-Sngl	2482	44.2	Av	v	54	3	-09.80
F _{MID}	2441	DH5-Sngl	2882	59.8	P	h	74	3	-14.20
F _{MID}	2441	DH5-Sngl	2482	53.1	Av	h	54	3	-00.90
F _{HIGH}	2480	DH5-Sngl	4962	53.2	P	v	74	3	-20.80
F _{HIGH}	2480	DH5-Sngl	4960	46.0	Av	v	54	3	-08.00
F _{HIGH}	2480	DH5-Sngl	4960	52.2	Av	H	54	3	-01.80
Test results - EDR									
F _{MID}	2441	3DH5-Sngl	4882	57.2	P	h	74	3	-16.80
F _{MID}	2441	3DH5-Sngl	4882	47.8	Av	h	54	3	-06.20
Comments: * Physical distance between EUT and measurement antenna.									

ANNEX A Transmitter radiated spurious emissions

Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

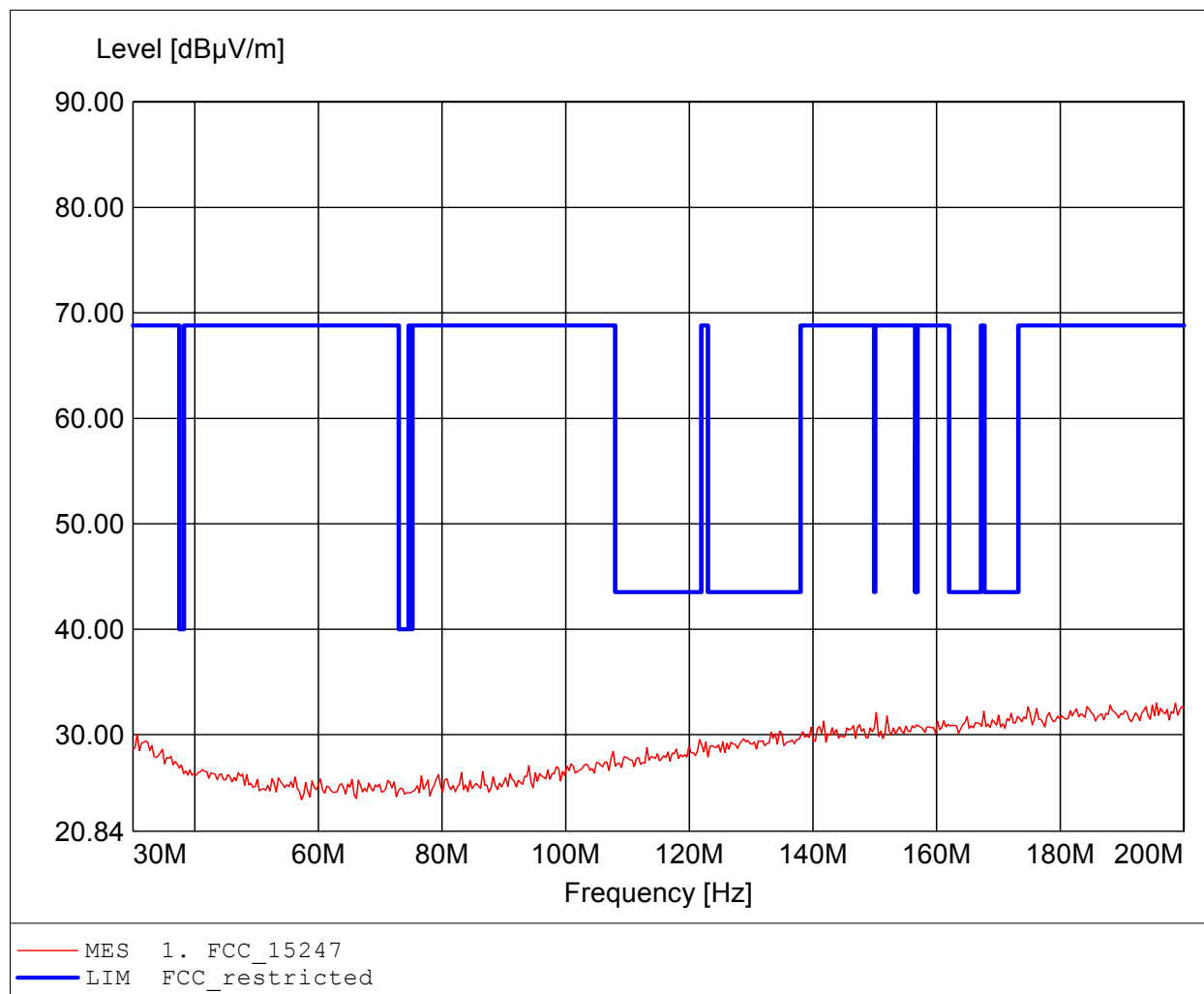
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HK 116
Comment 2: Freq: 197.615MHz, Emax: 33.48dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

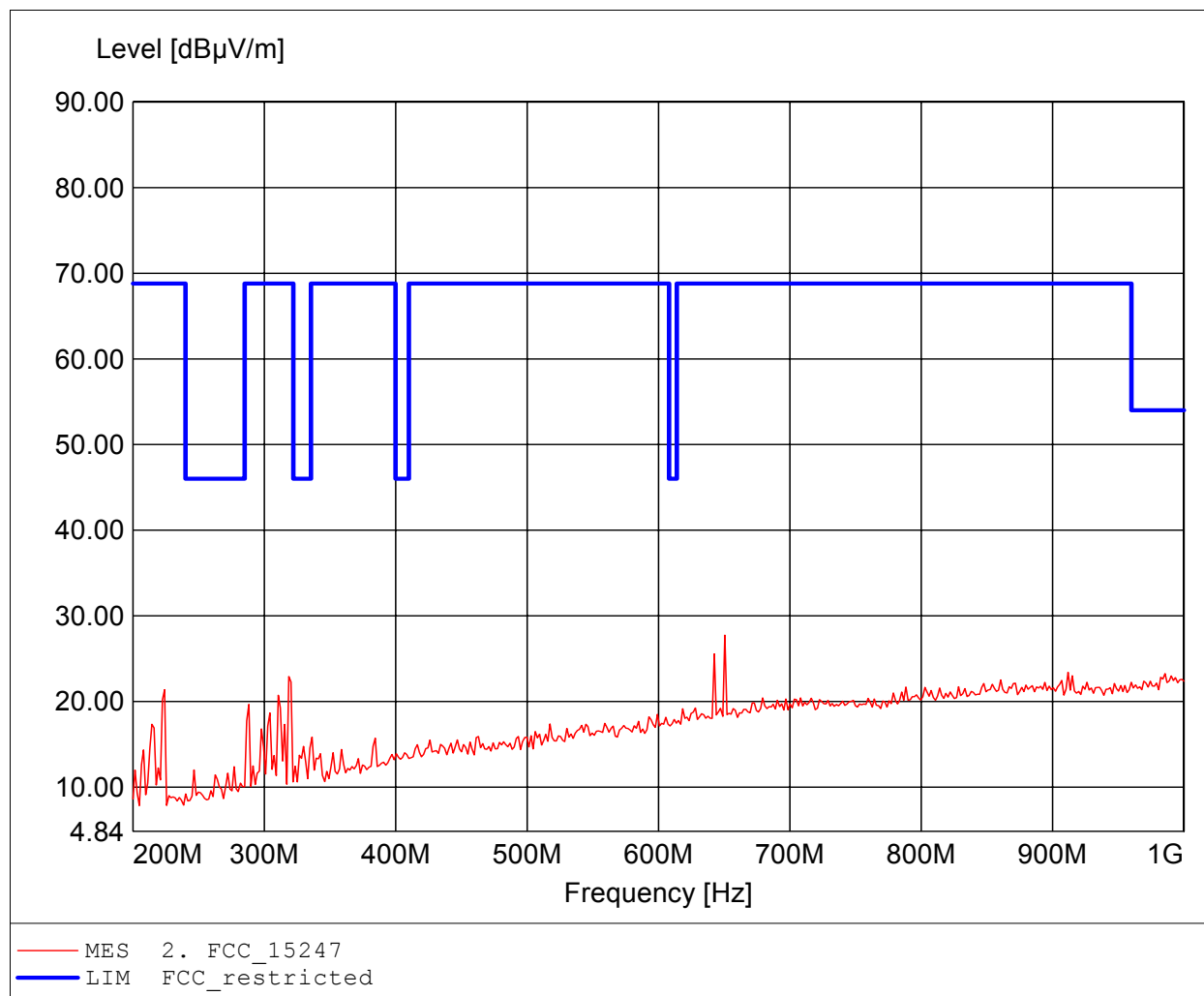
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HK 116
Comment 2: Freq: 198.637MHz, Emax: 32.99dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

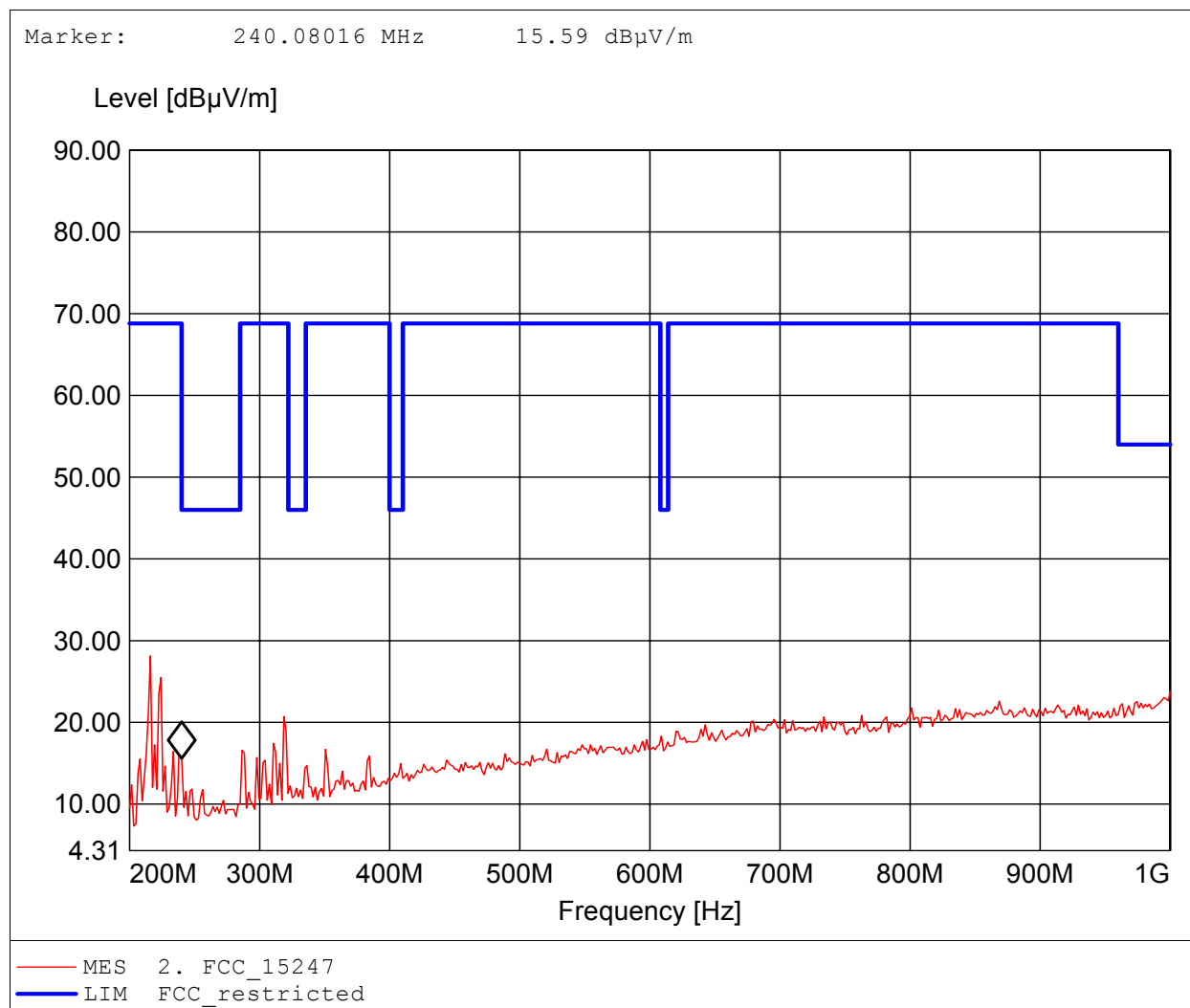
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.
Comment 2: Freq: 650.501MHz, Emax: 27.74dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

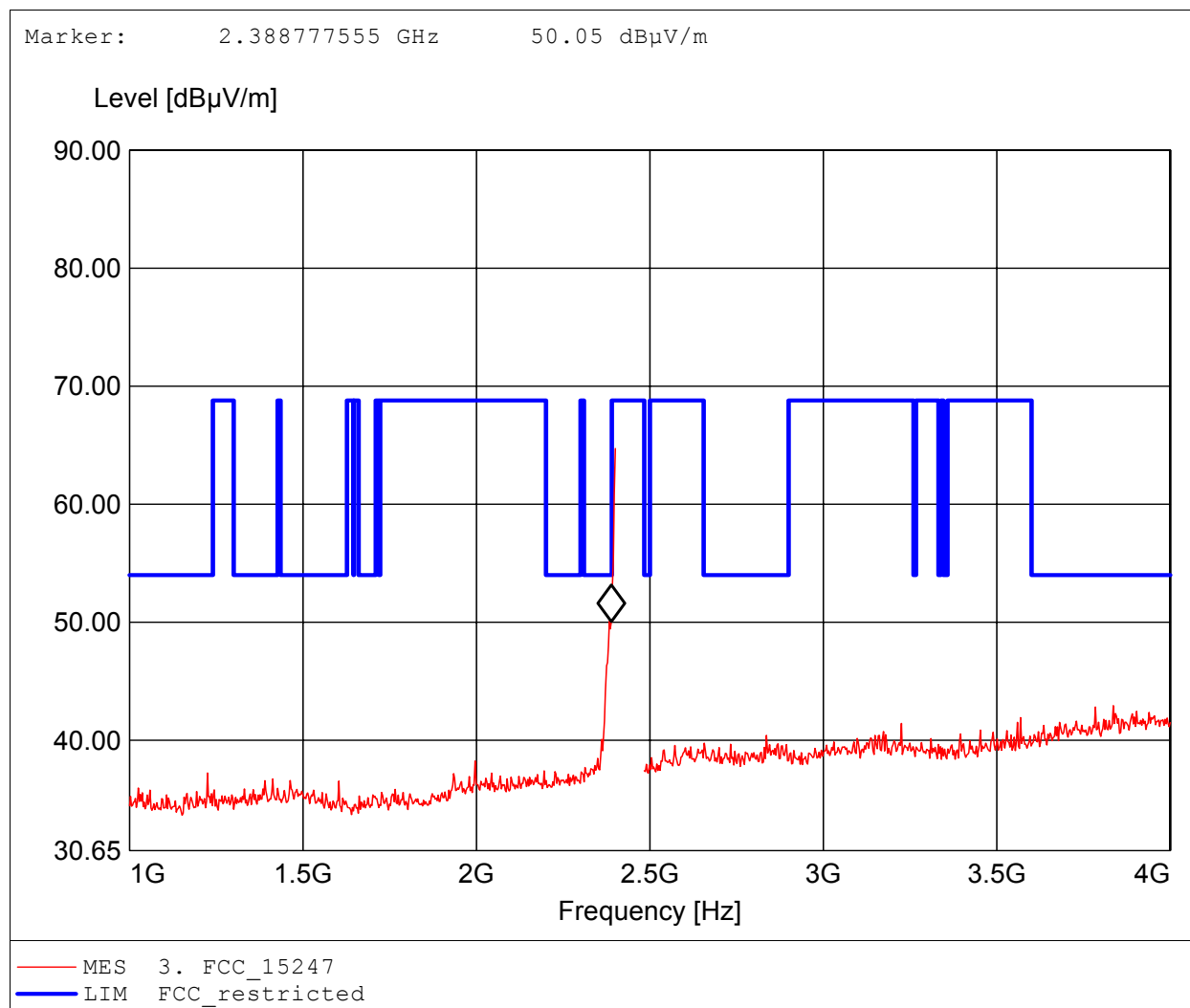
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247
Comment 1: Dist.: 3m, Ant.: HL 223, amplif.
Comment 2: Freq: 216.032MHz, Emax: 28.13dBµV/m, RBW: 100kHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

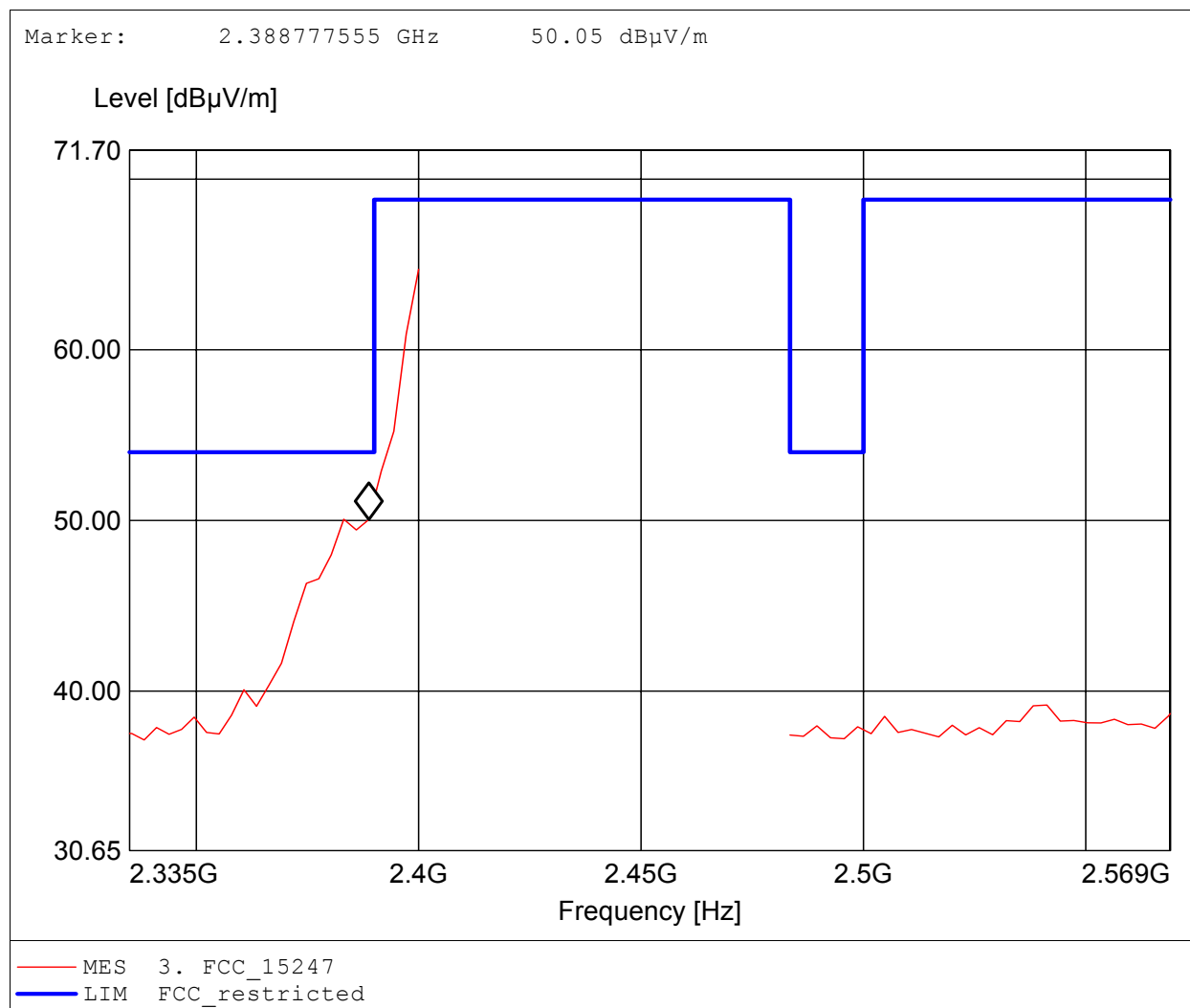
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch.0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.400GHz, Emax: 64.72dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

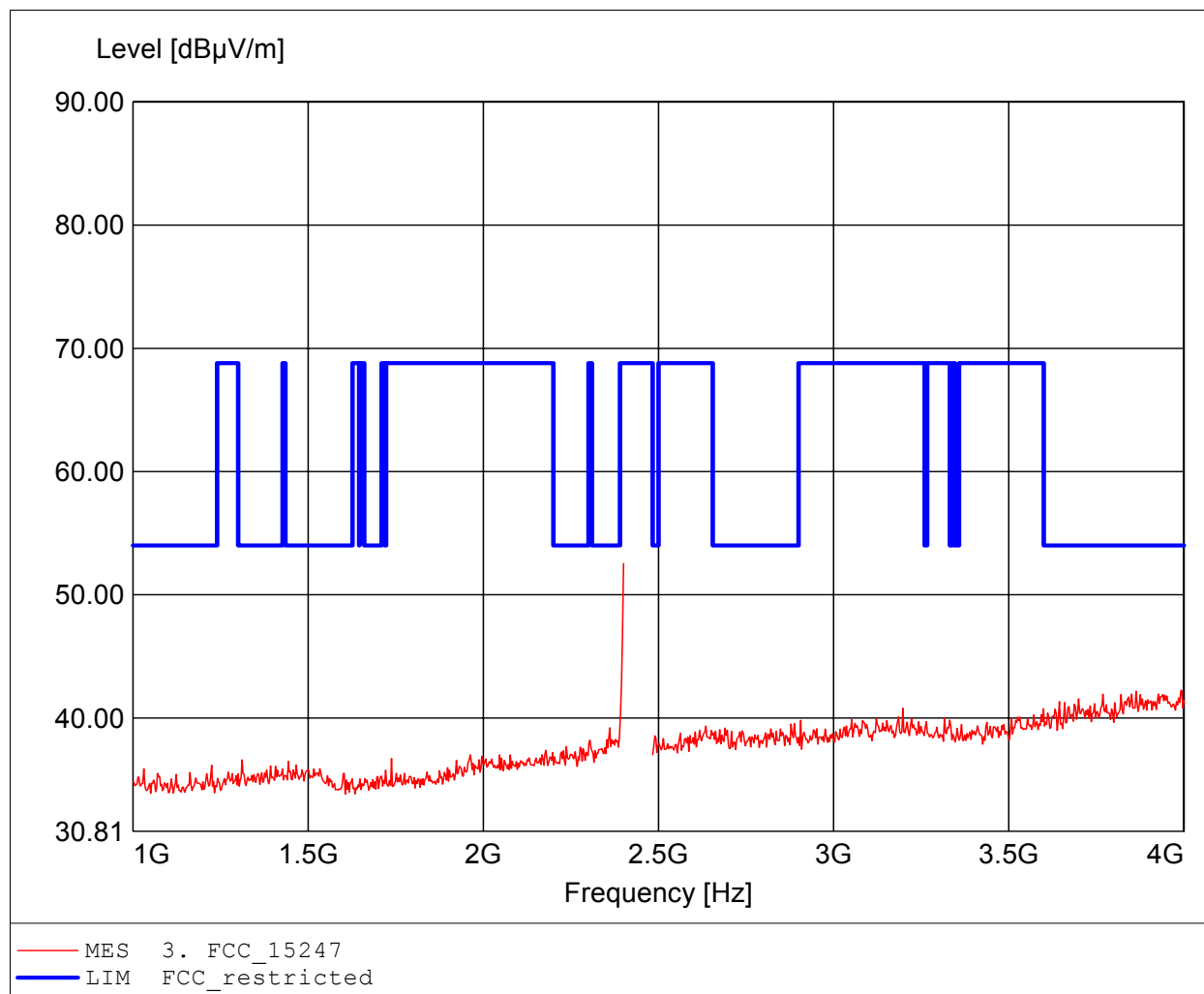
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch.0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.400GHz, Emax: 64.72dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

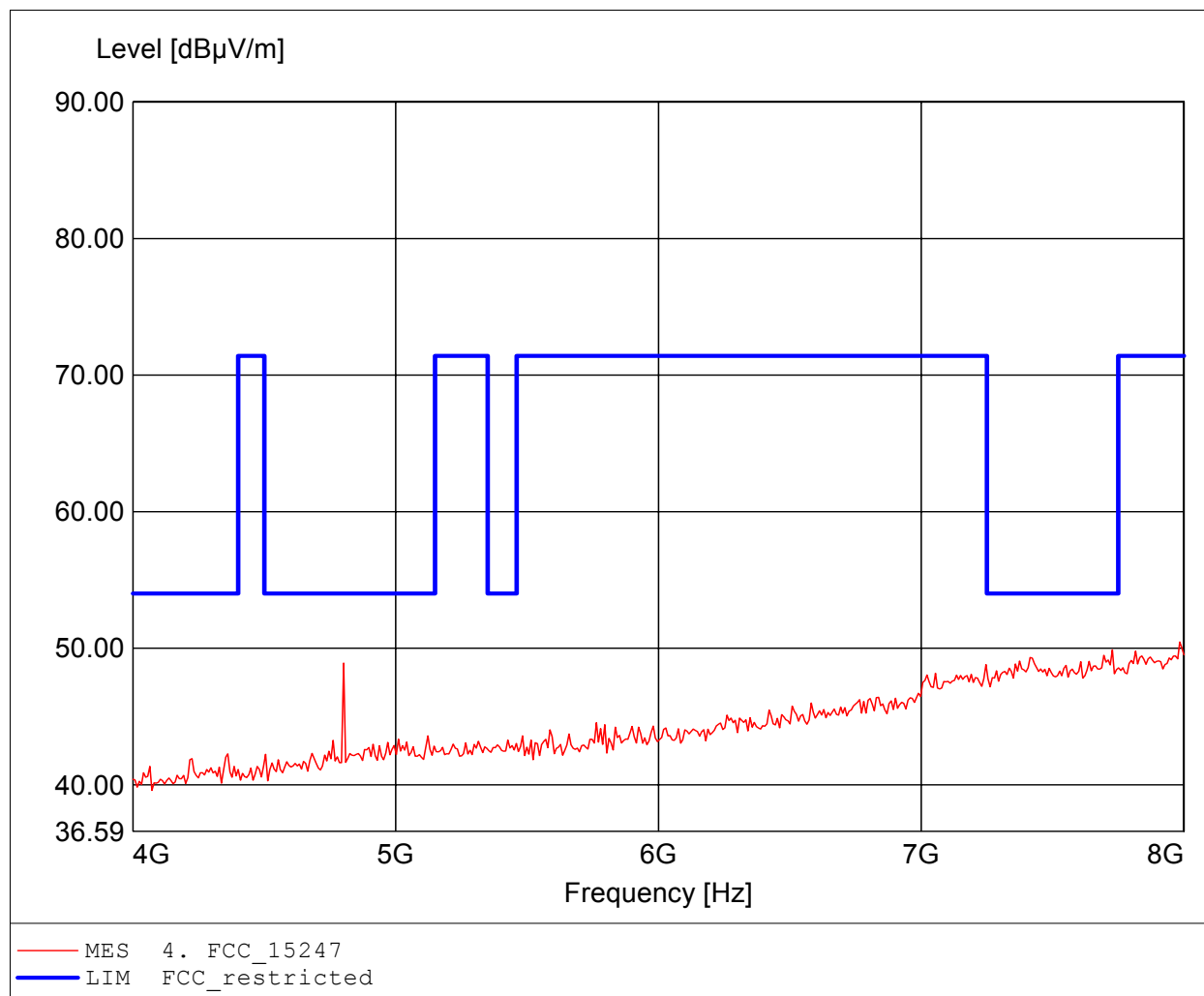
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.400GHz, Emax: 52.53dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

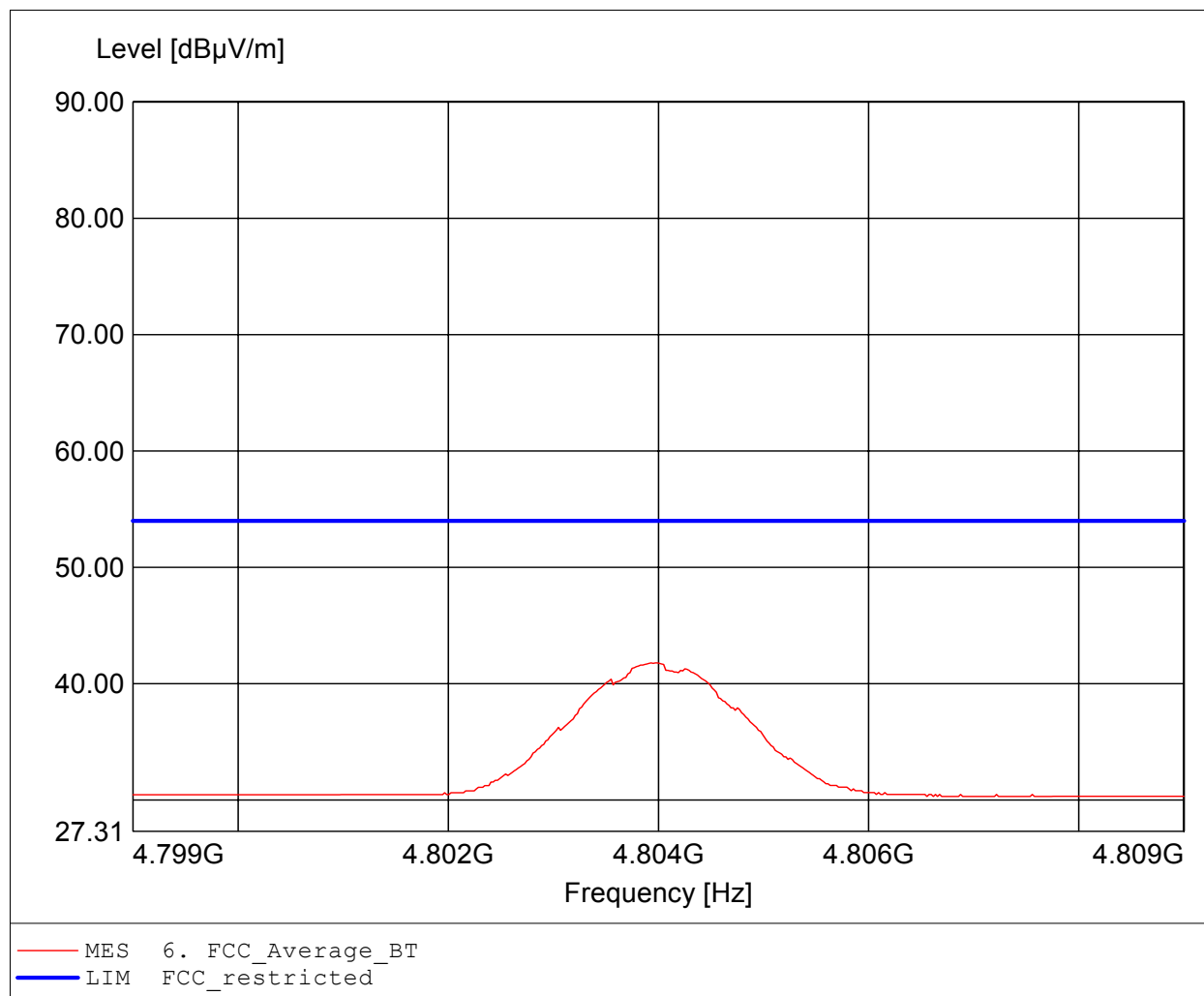
Approval Holder: MIR Medical Research / GOM-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 7.984GHz, Emax: 50.46dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

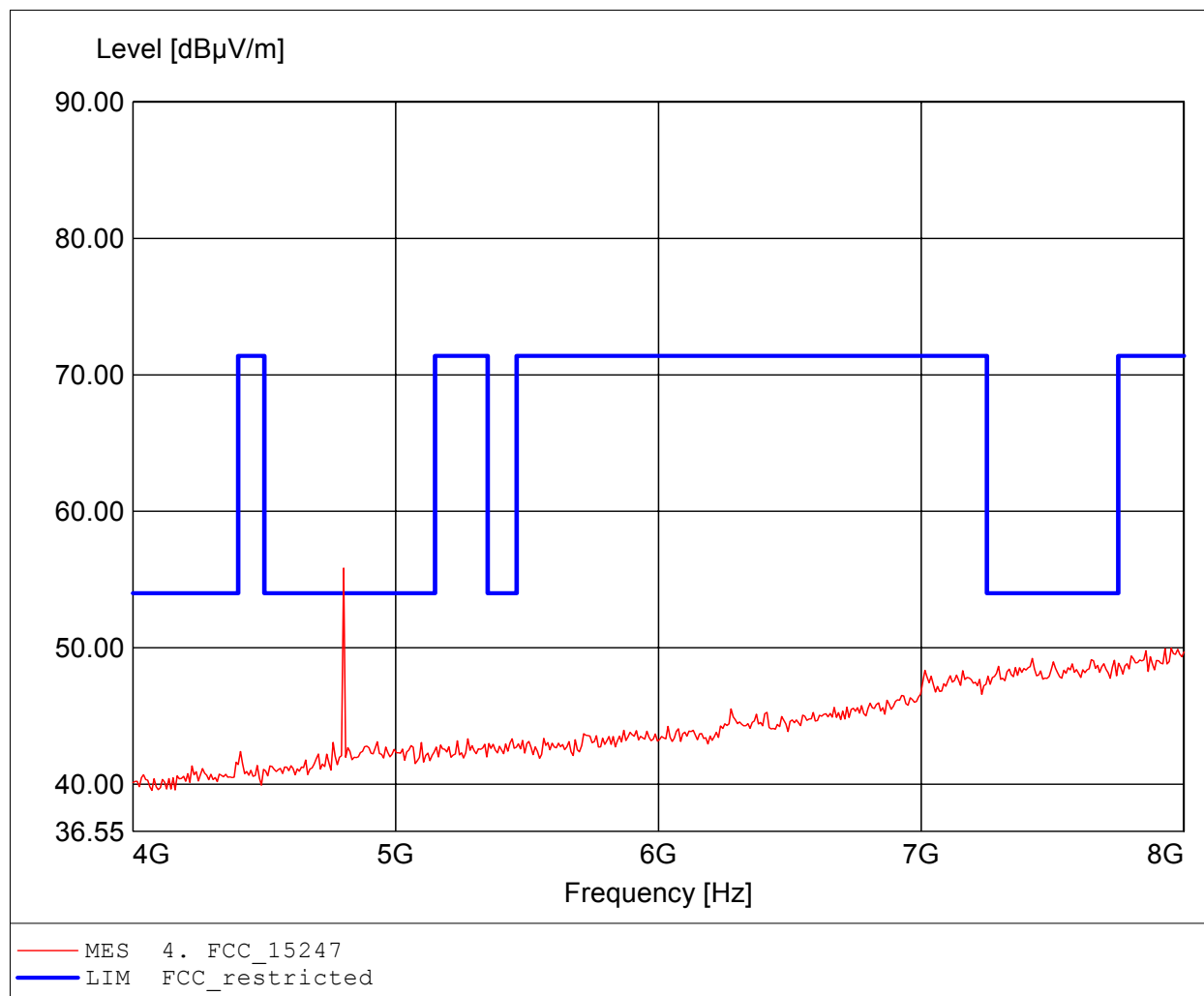
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.804GHz, Emax: 41.79dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

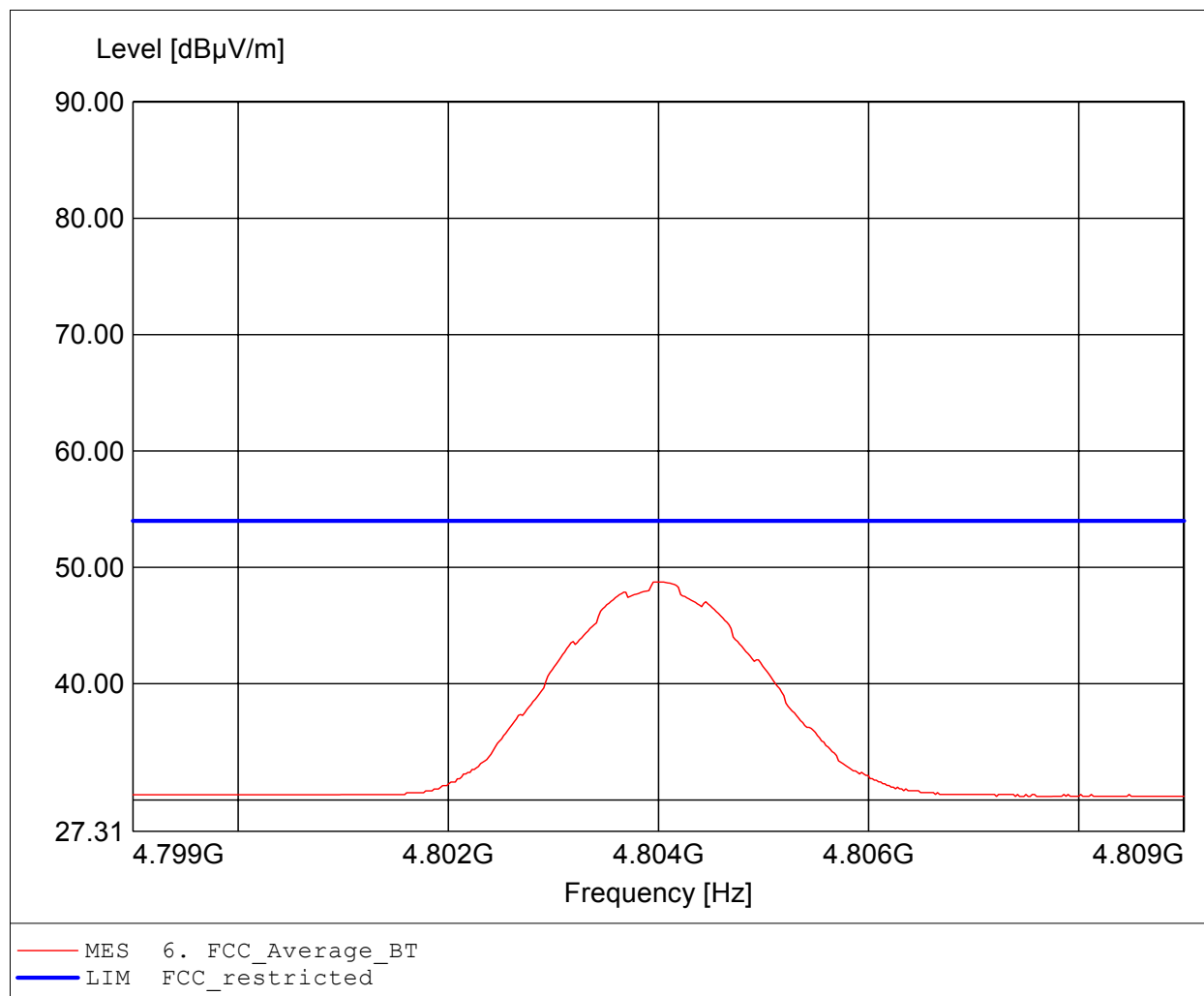
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.802GHz, Emax: 55.84dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

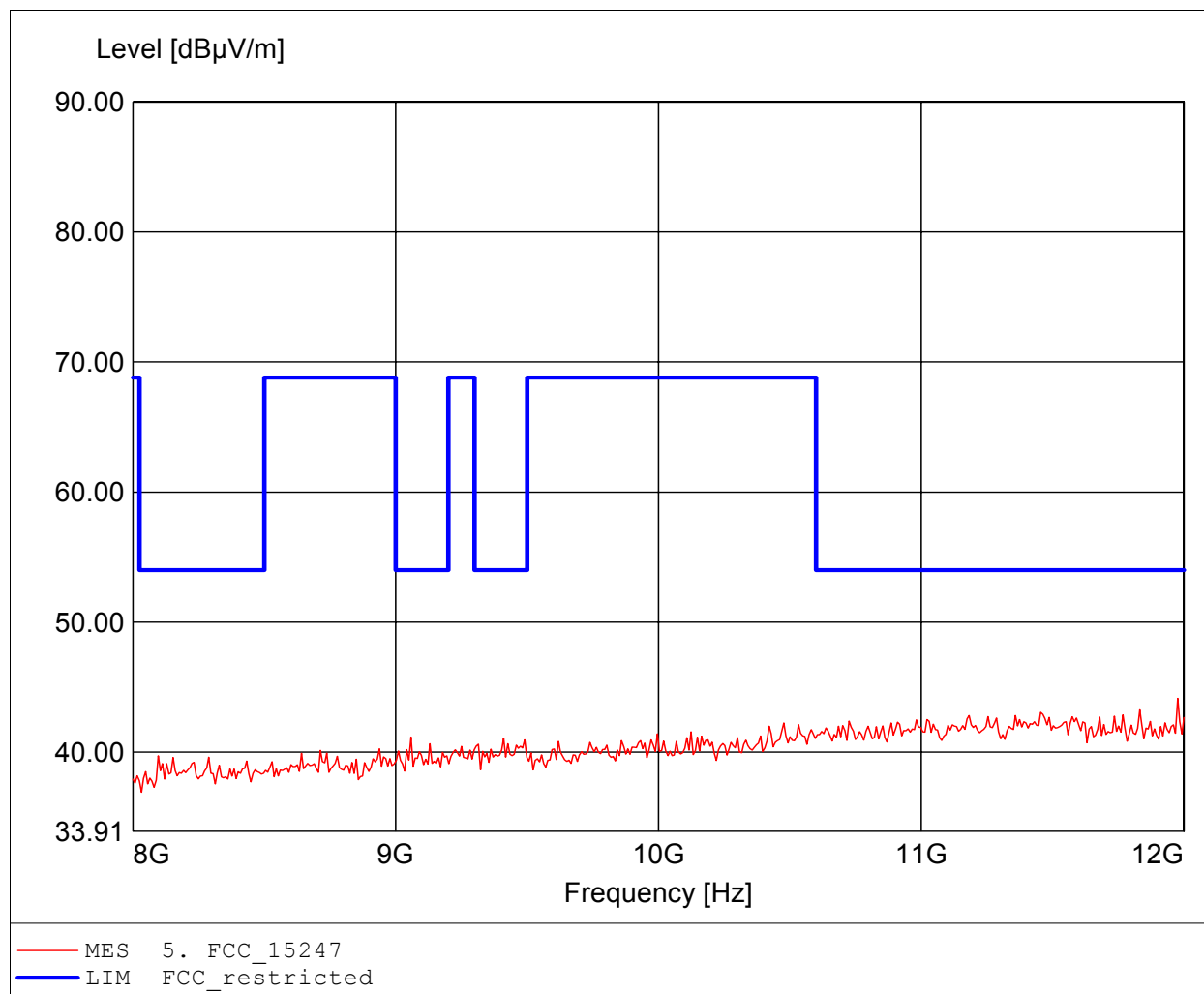
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.804GHz, Emax: 48.73dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

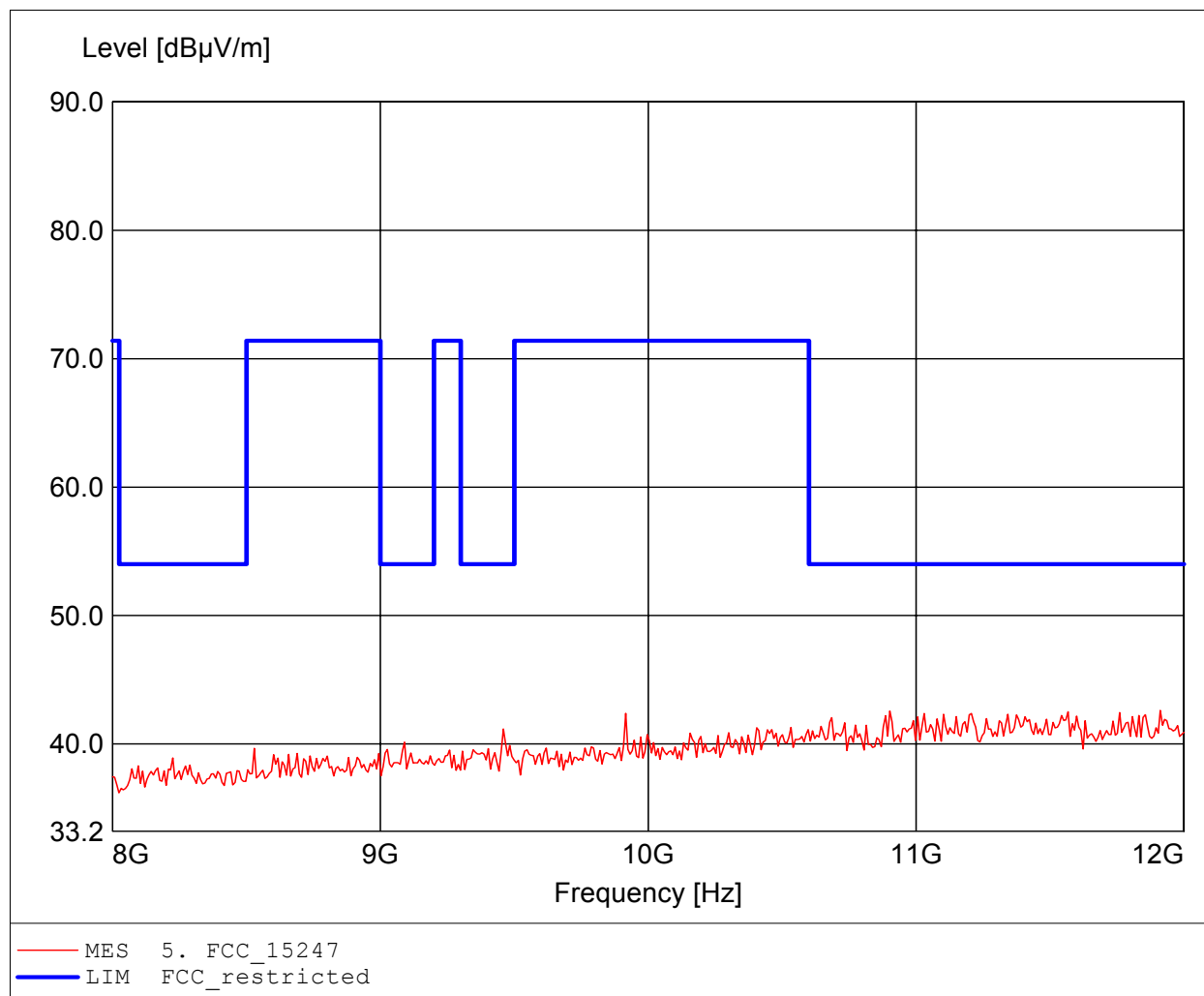
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.976GHz, Emax: 44.13dBμV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

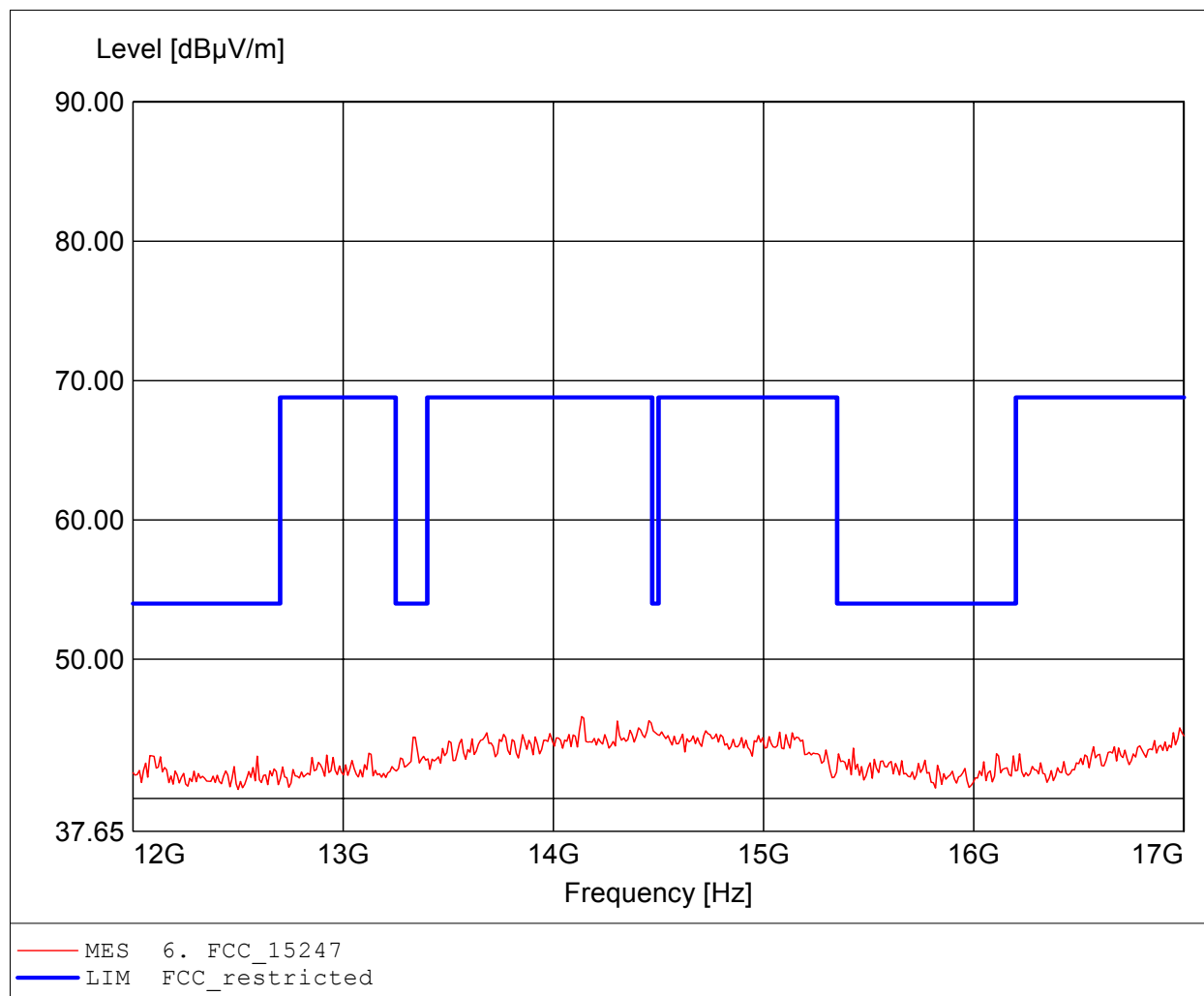
Approval Holder: MIR Medical Research / GOM-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.912GHz, Emax: 42.61dBμV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

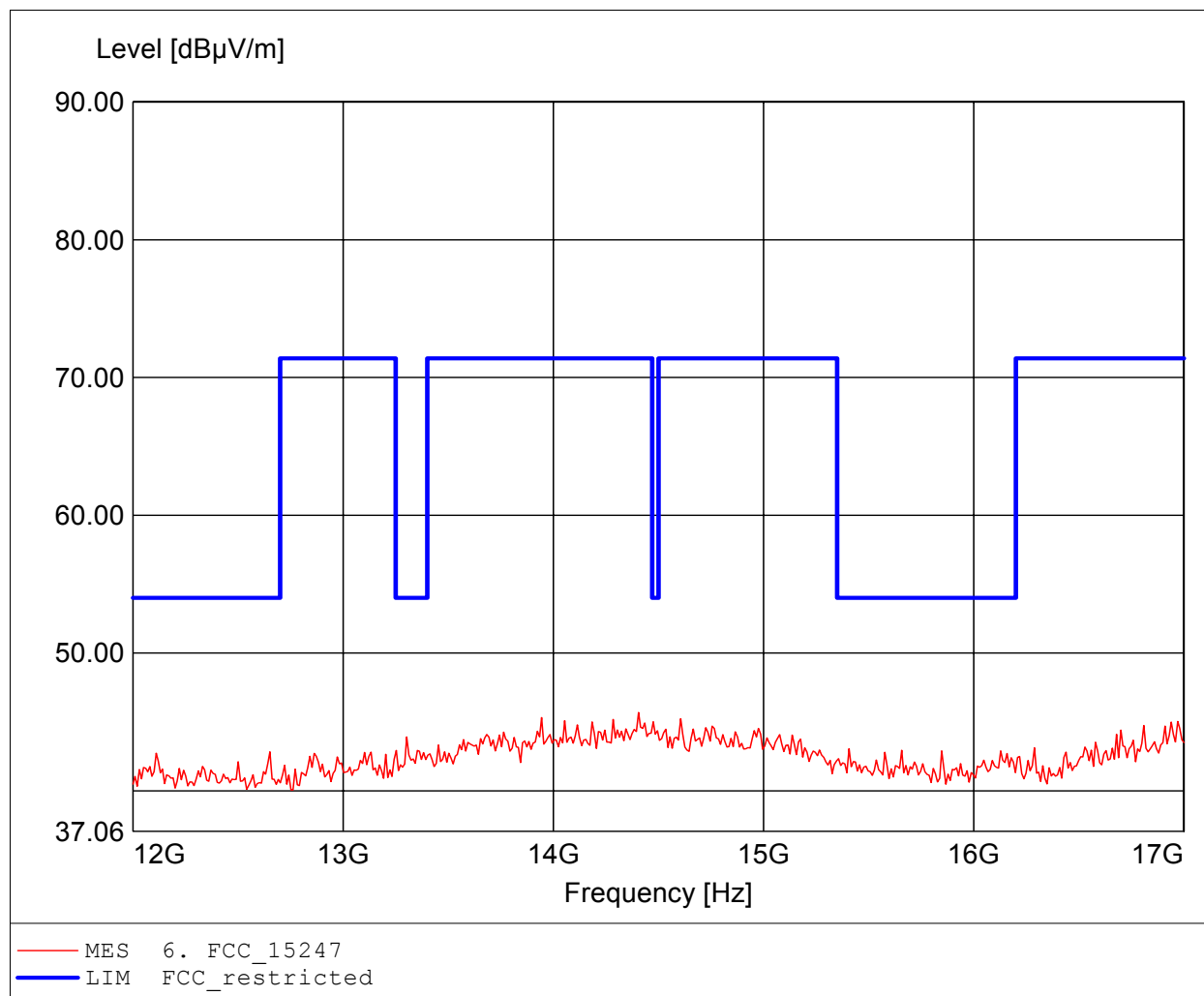
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 14.134GHz, Emax: 45.89dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

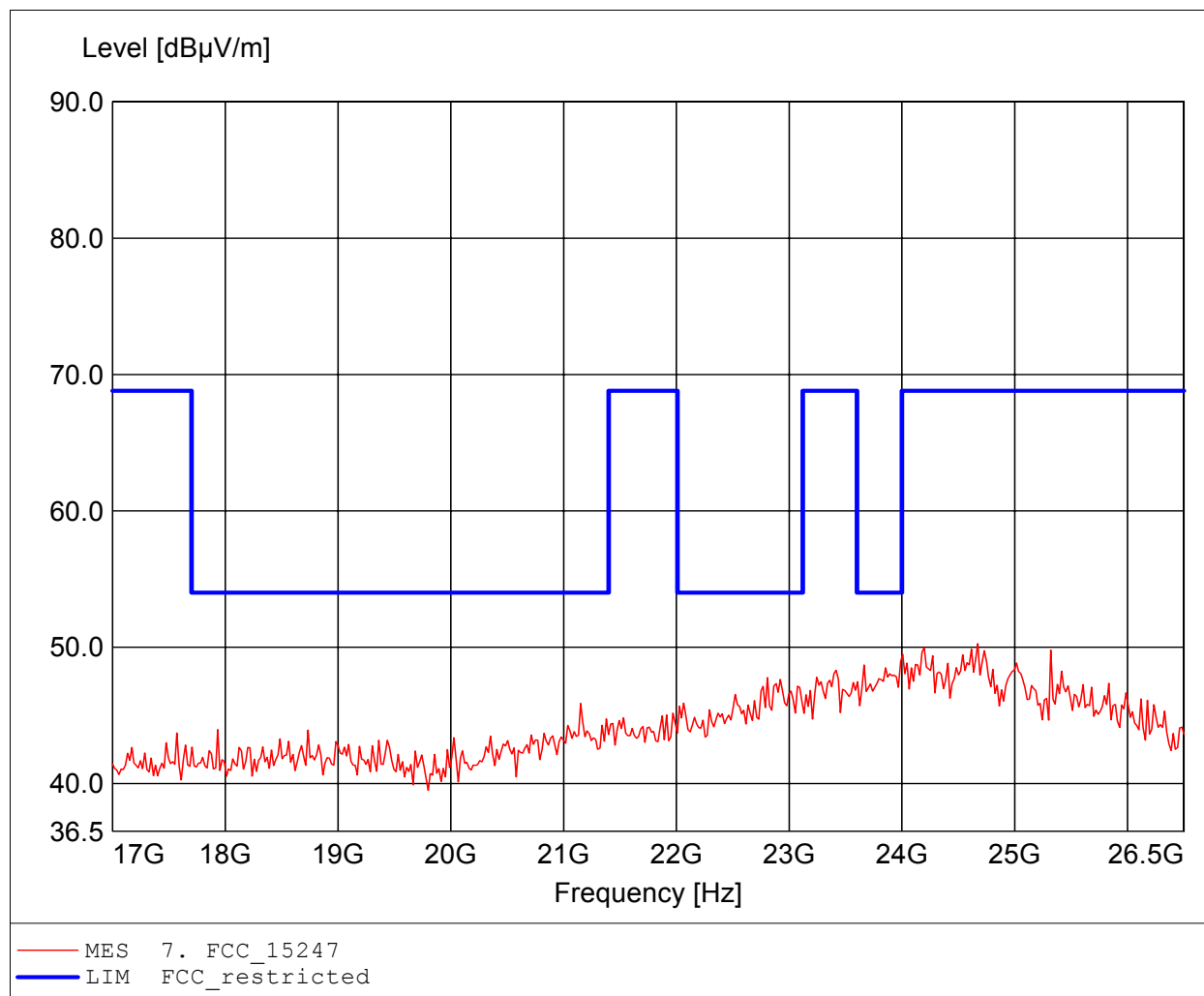
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 14.405GHz, Emax: 45.68dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

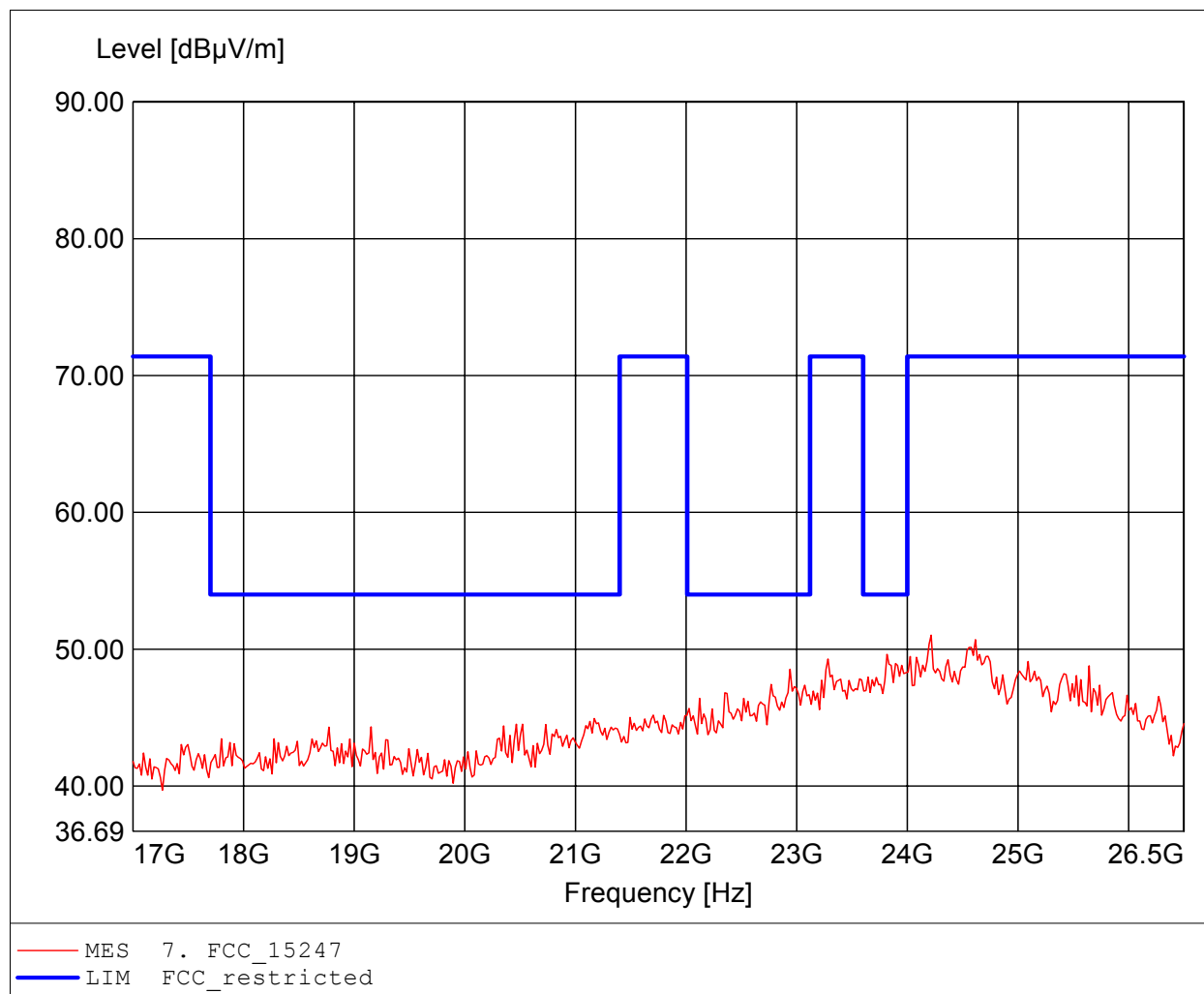
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Comment 2: Freq: 24.672GHz, Emax: 50.25dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

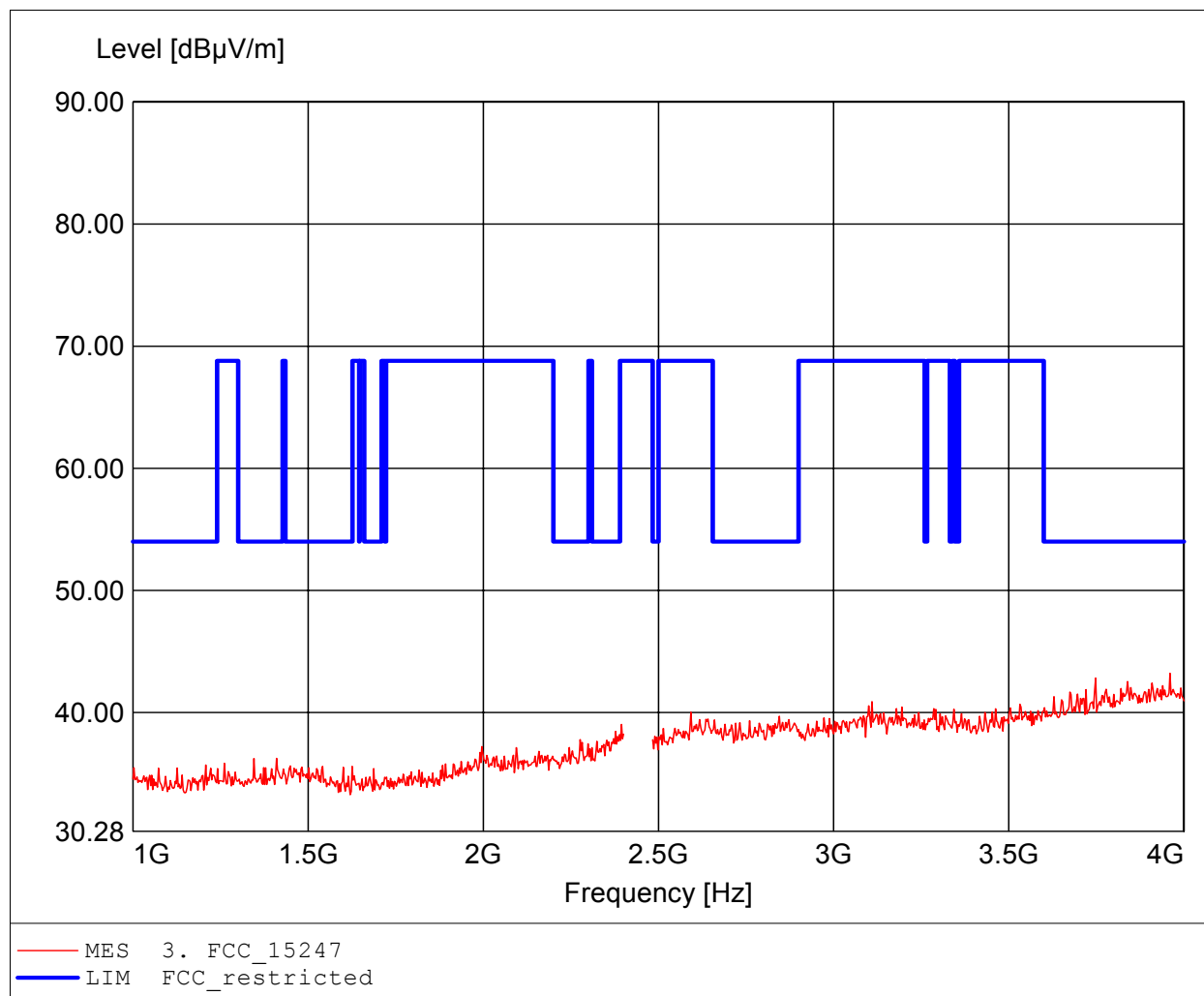
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: HL025, amplif.
Comment 2: Freq: 24.215GHz, Emax: 51.02dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

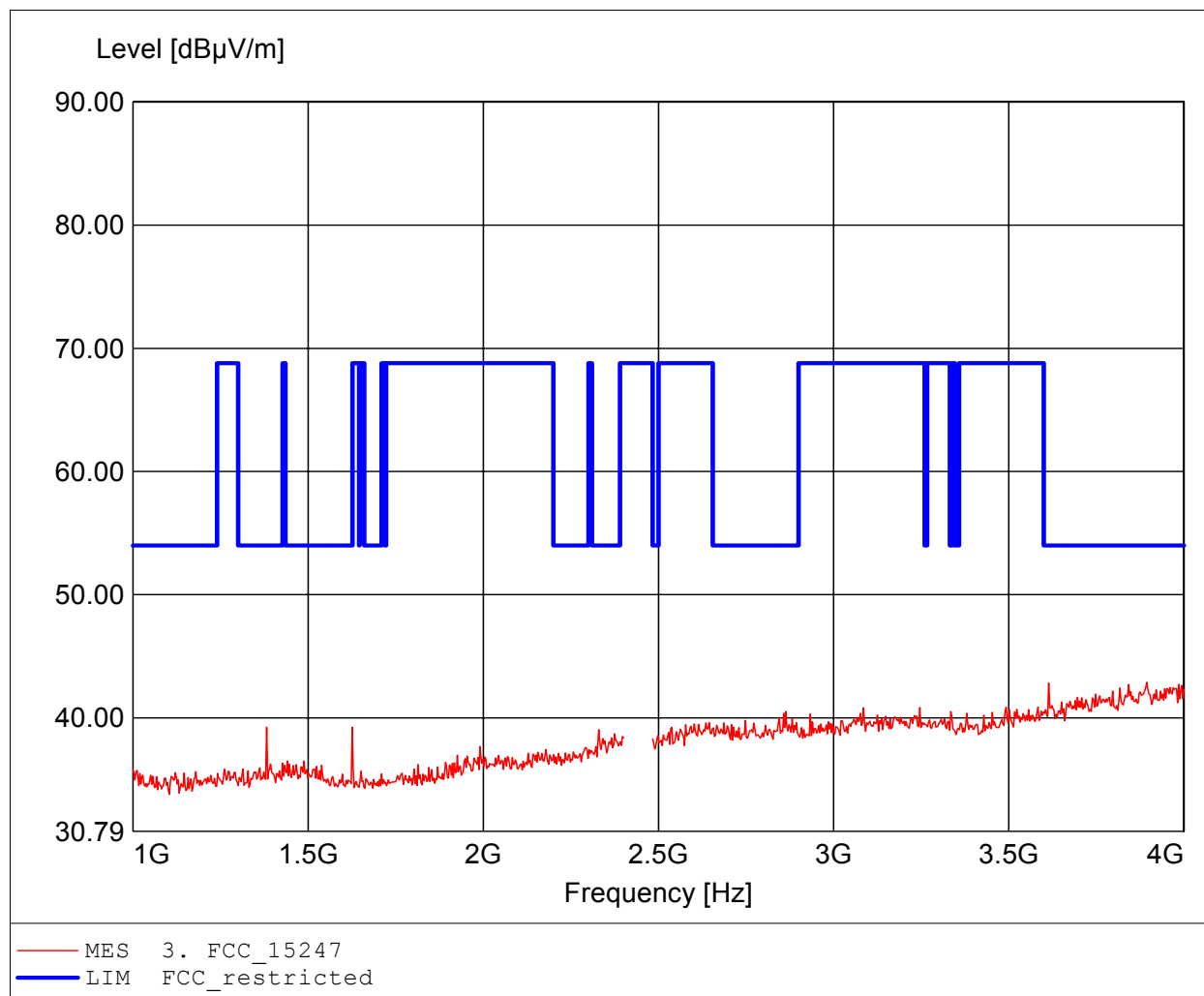
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 3.960GHz, Emax: 43.21dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

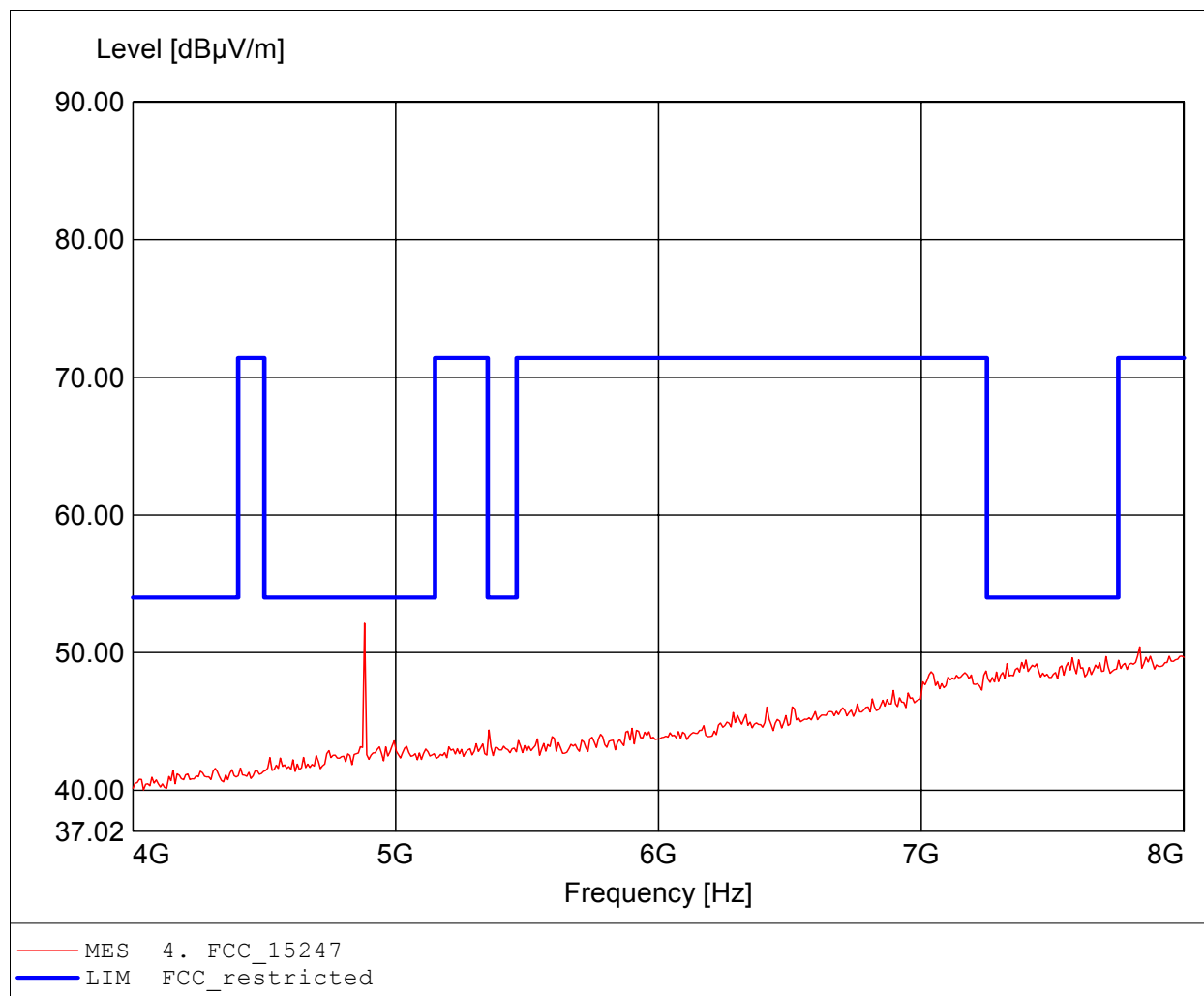
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 3.894GHz, Emax: 42.89dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

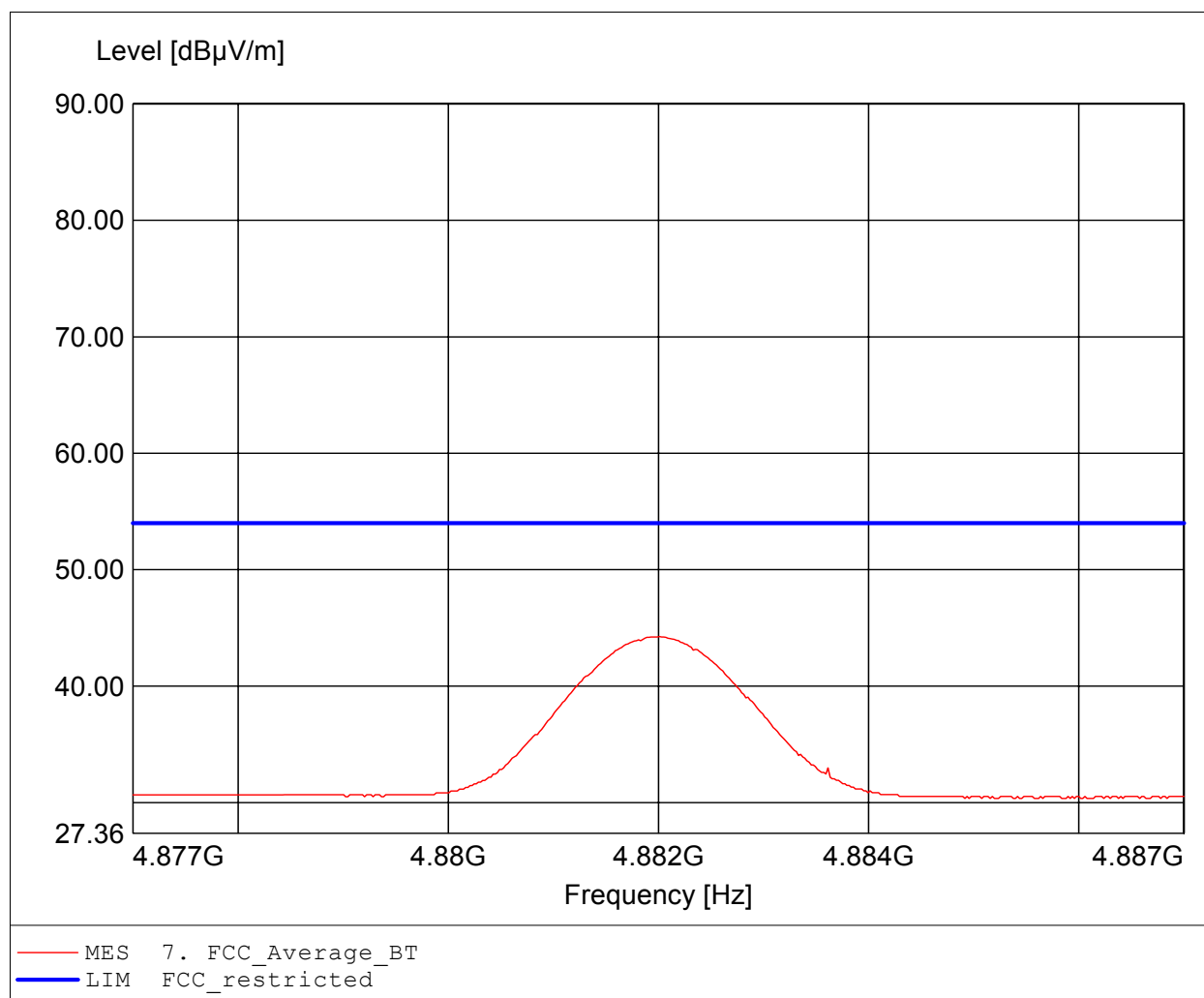
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.882GHz, Emax: 52.13dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

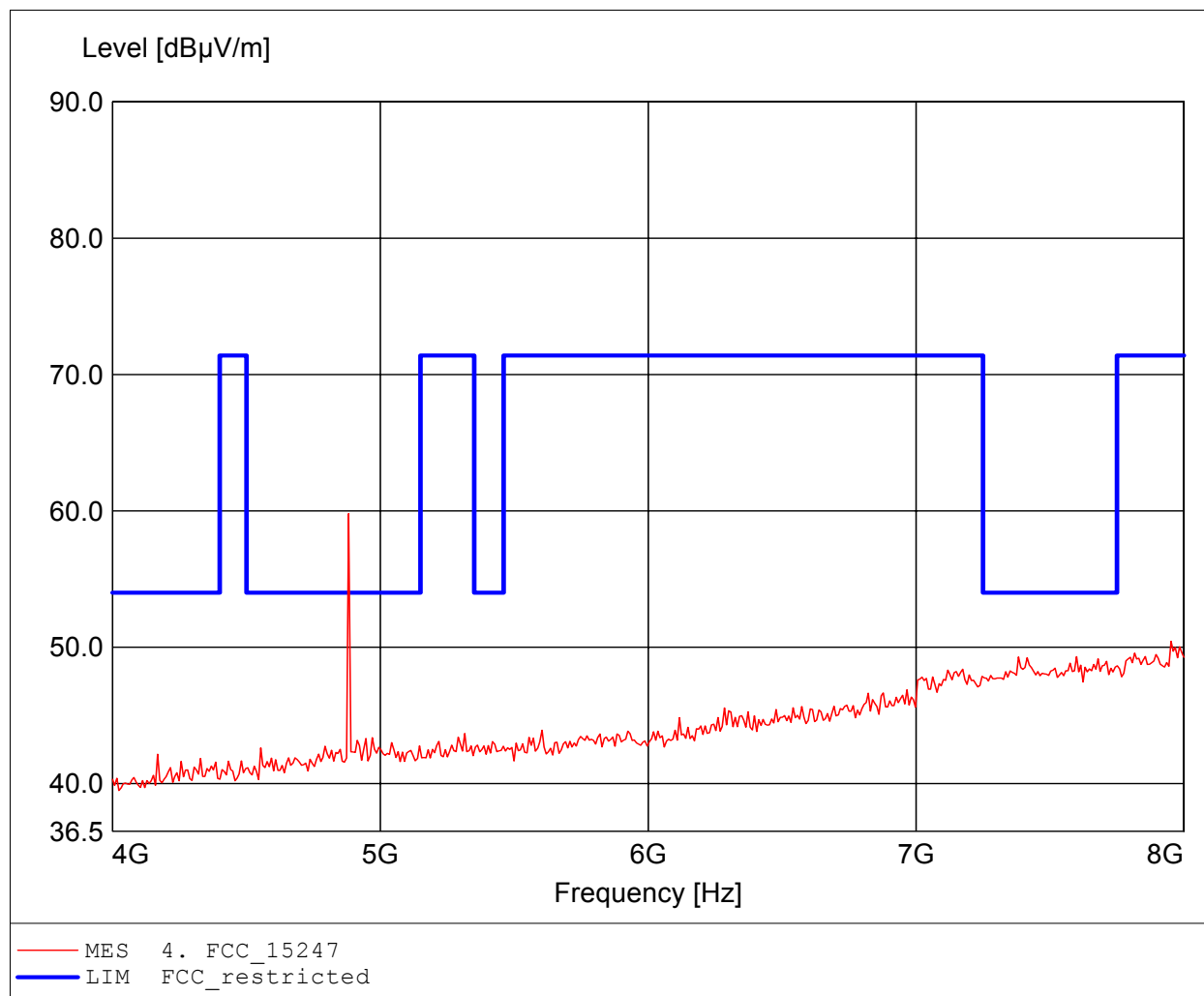
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 4.882GHz, Emax: 44.26dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

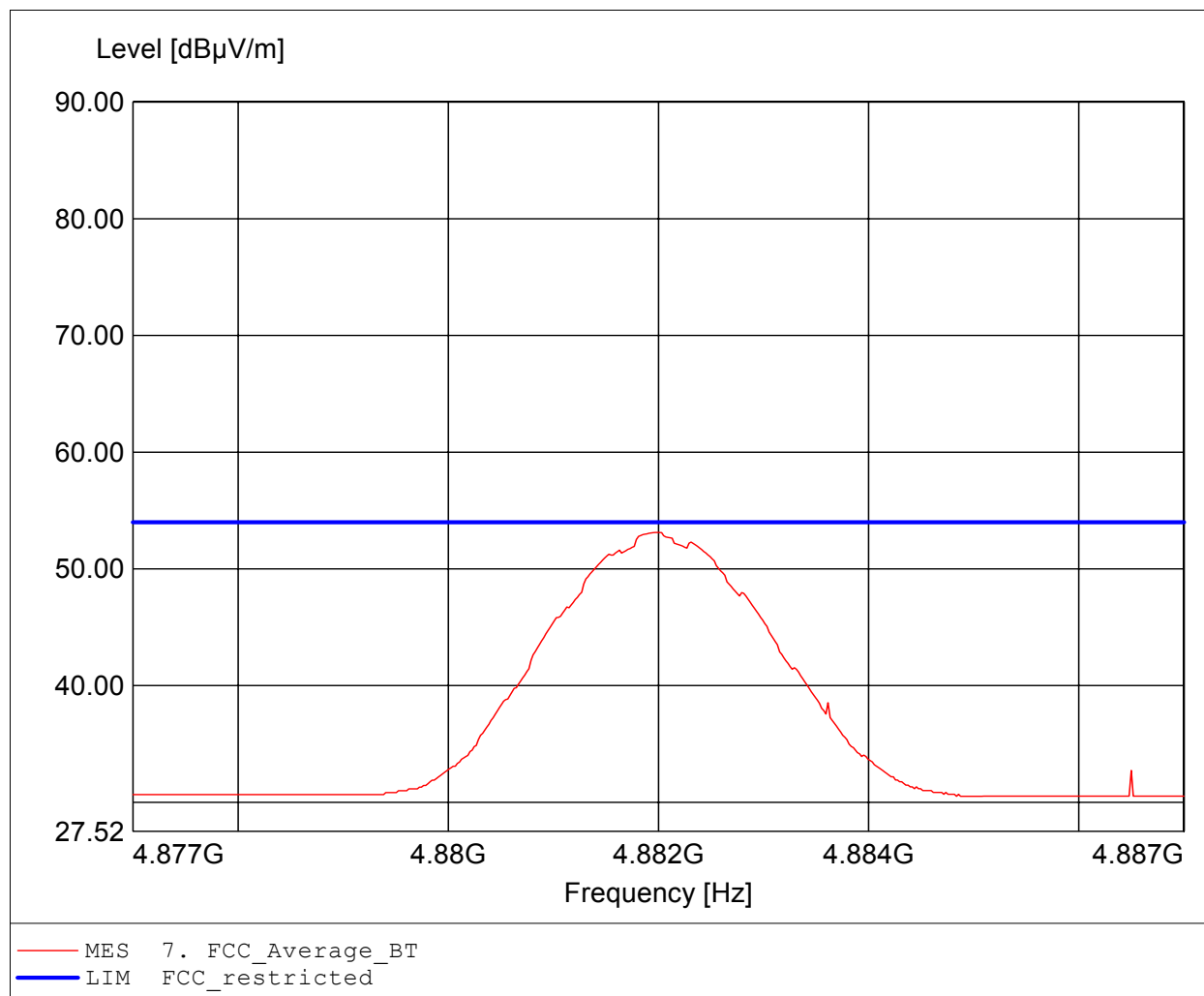
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.882GHz, Emax: 59.79dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

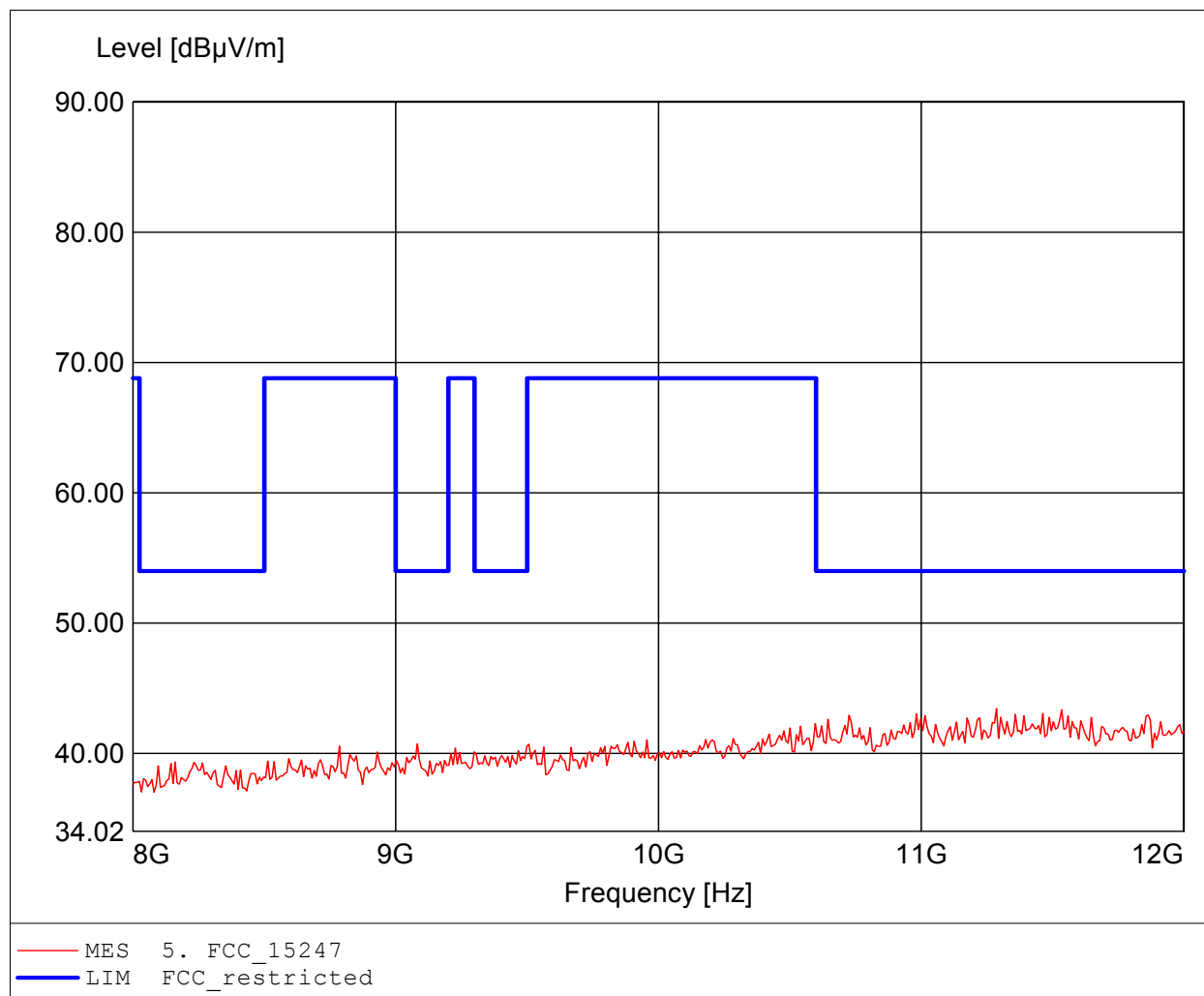
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 4.882GHz, Emax: 53.12dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

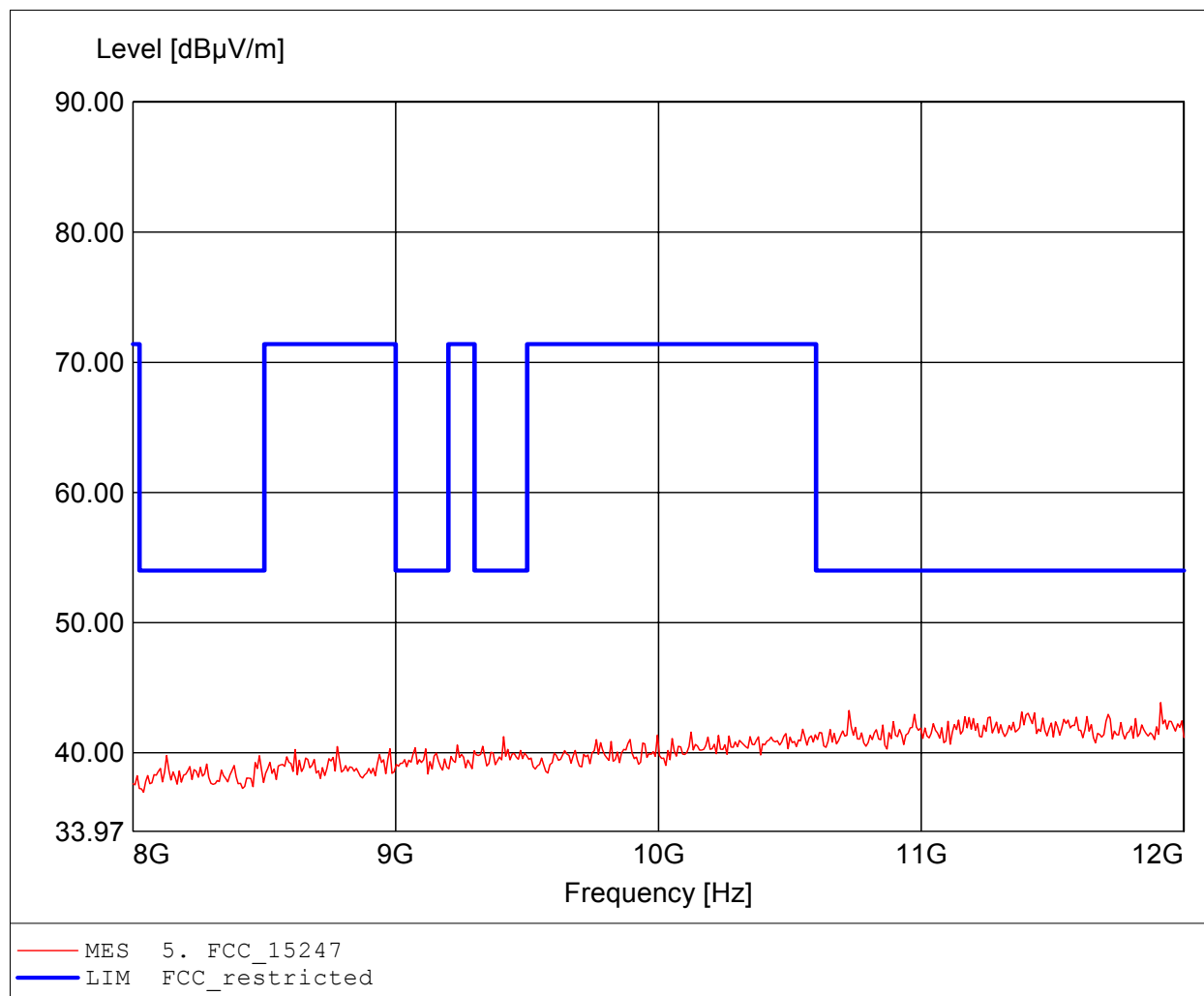
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.287GHz, Emax: 43.43dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

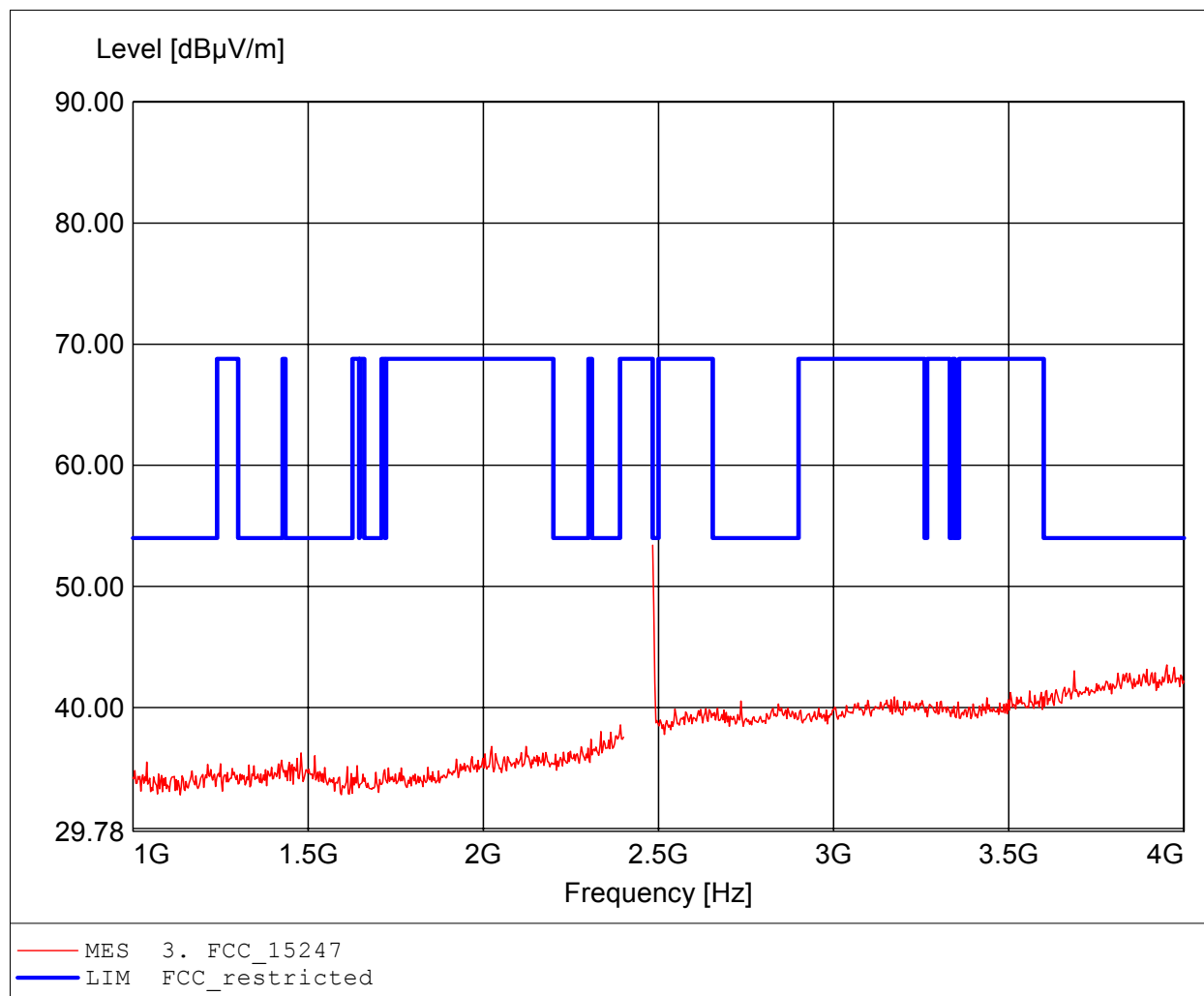
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.912GHz, Emax: 43.86dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

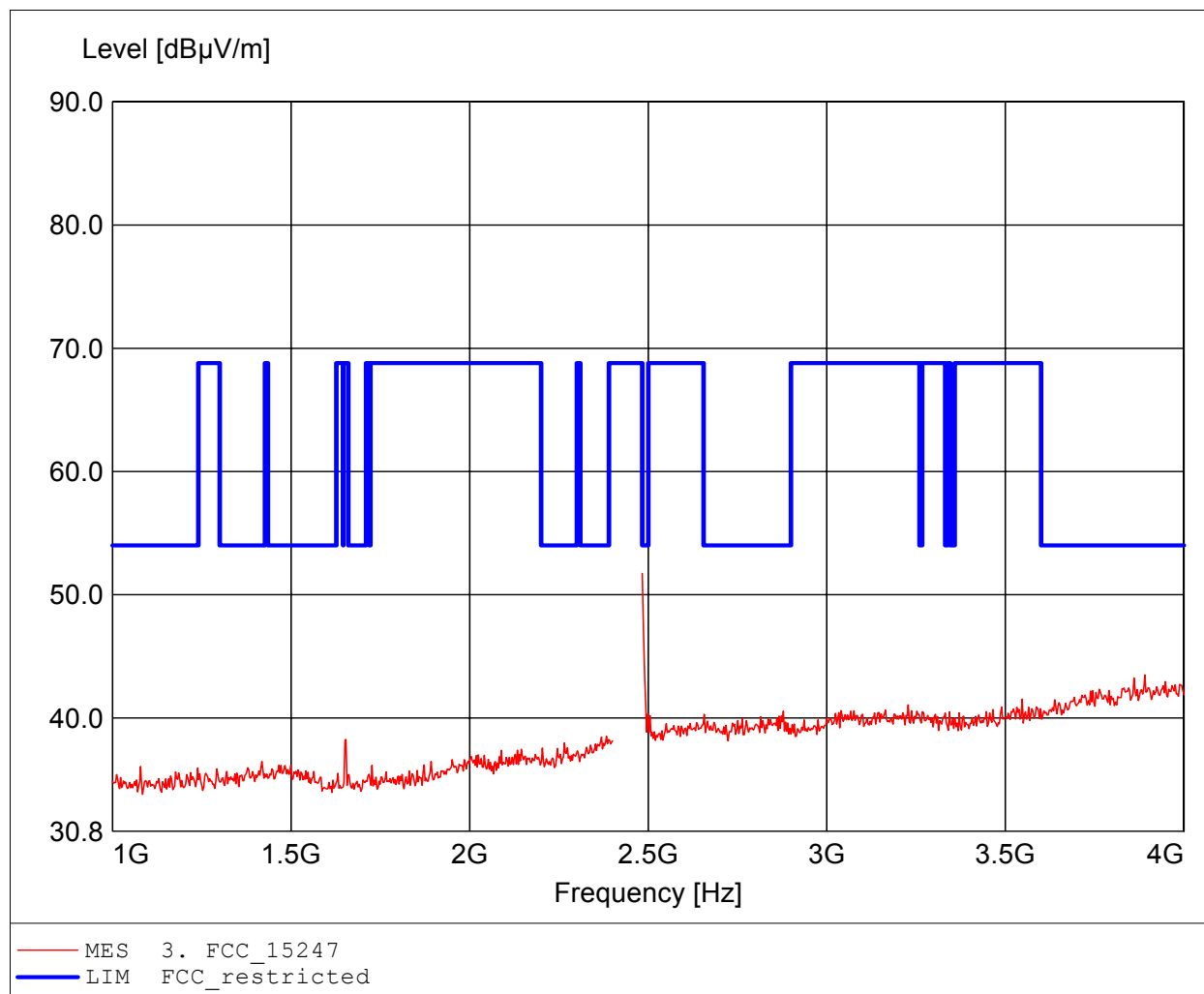
Approval Holder: MIR Medical Research / GOM-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.484GHz, Emax: 53.41dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

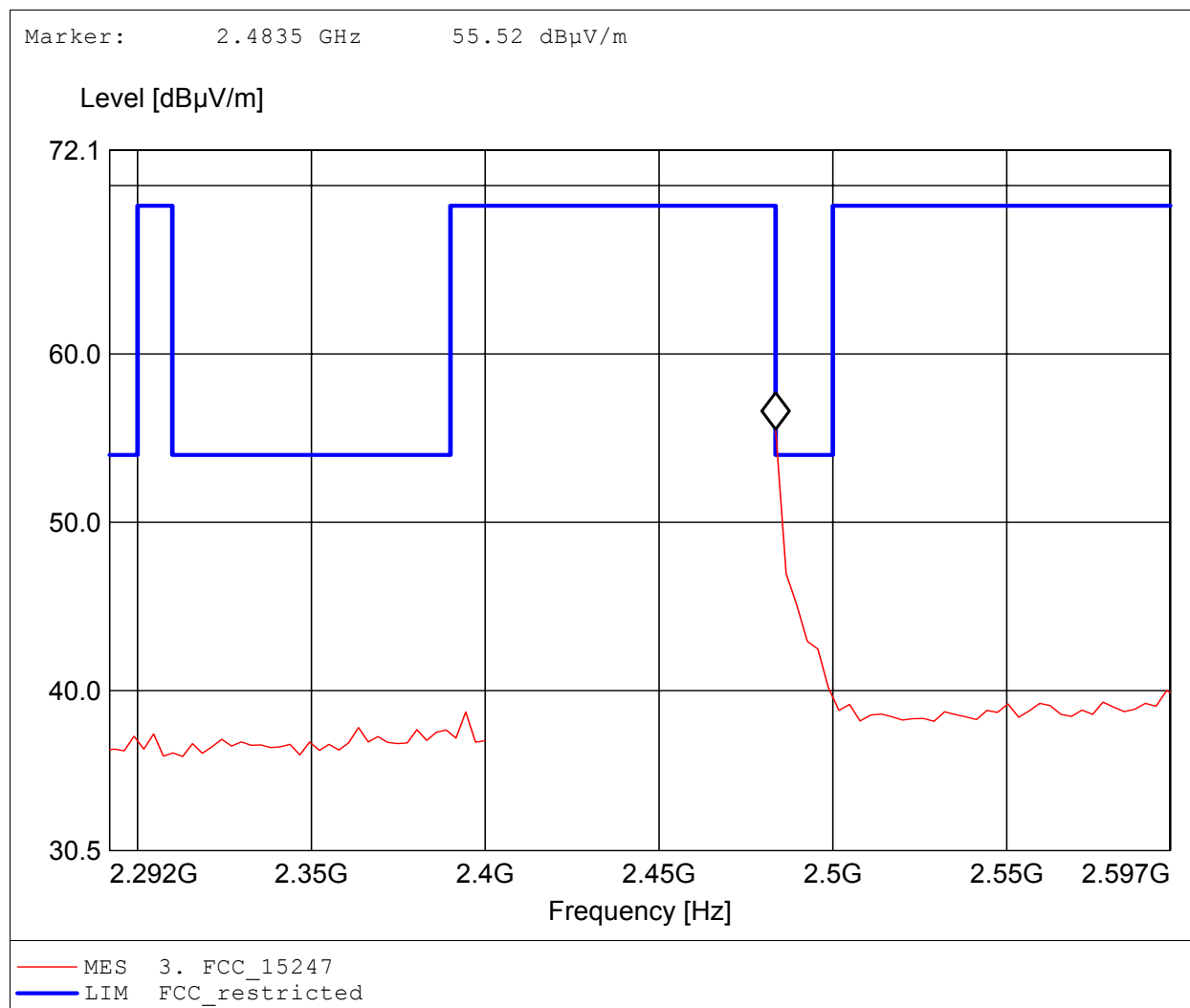
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.484GHz, Emax: 51.73dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

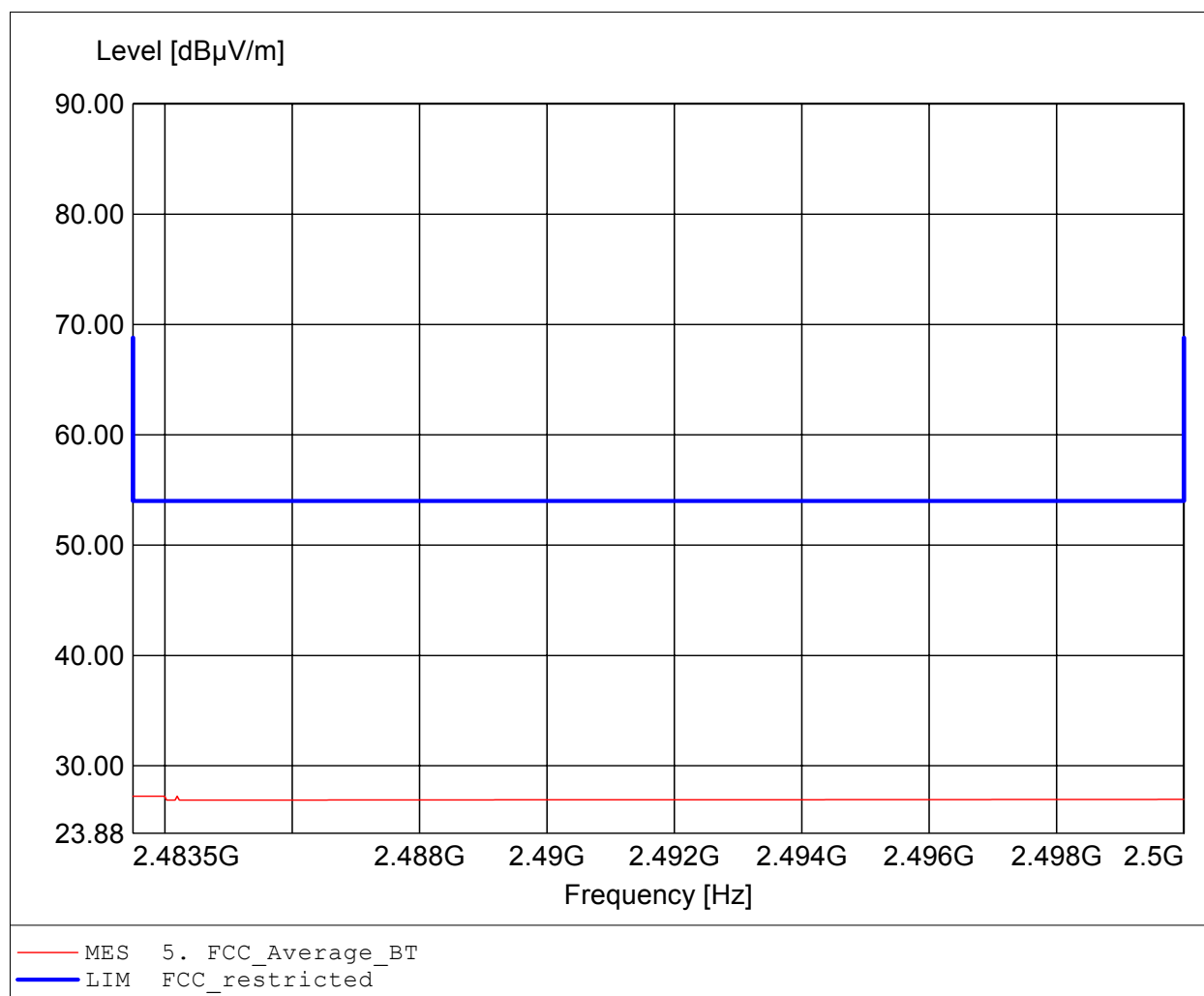
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.484GHz, Emax: 55.52dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

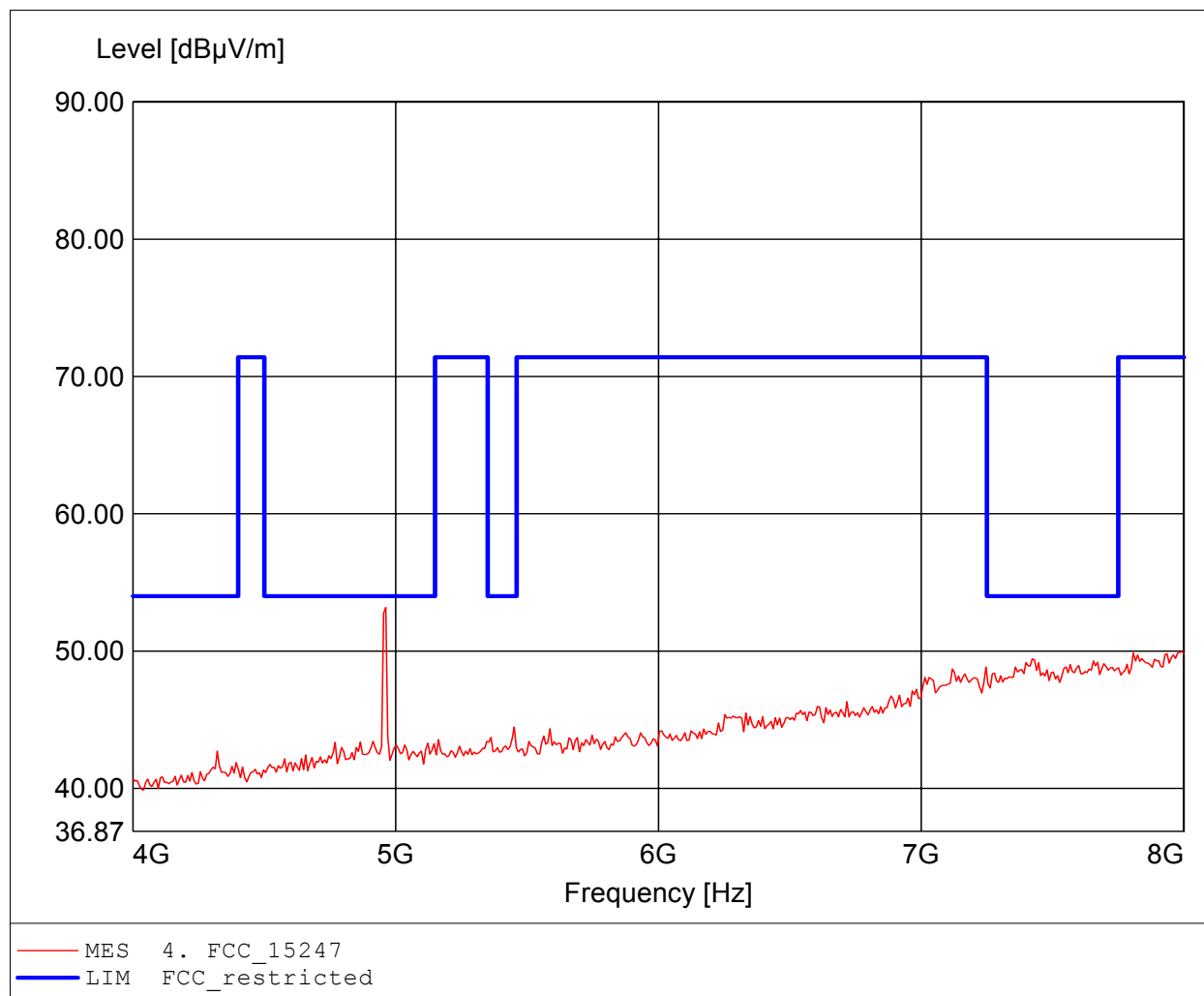
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 2.484GHz, Emax: 27.24dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

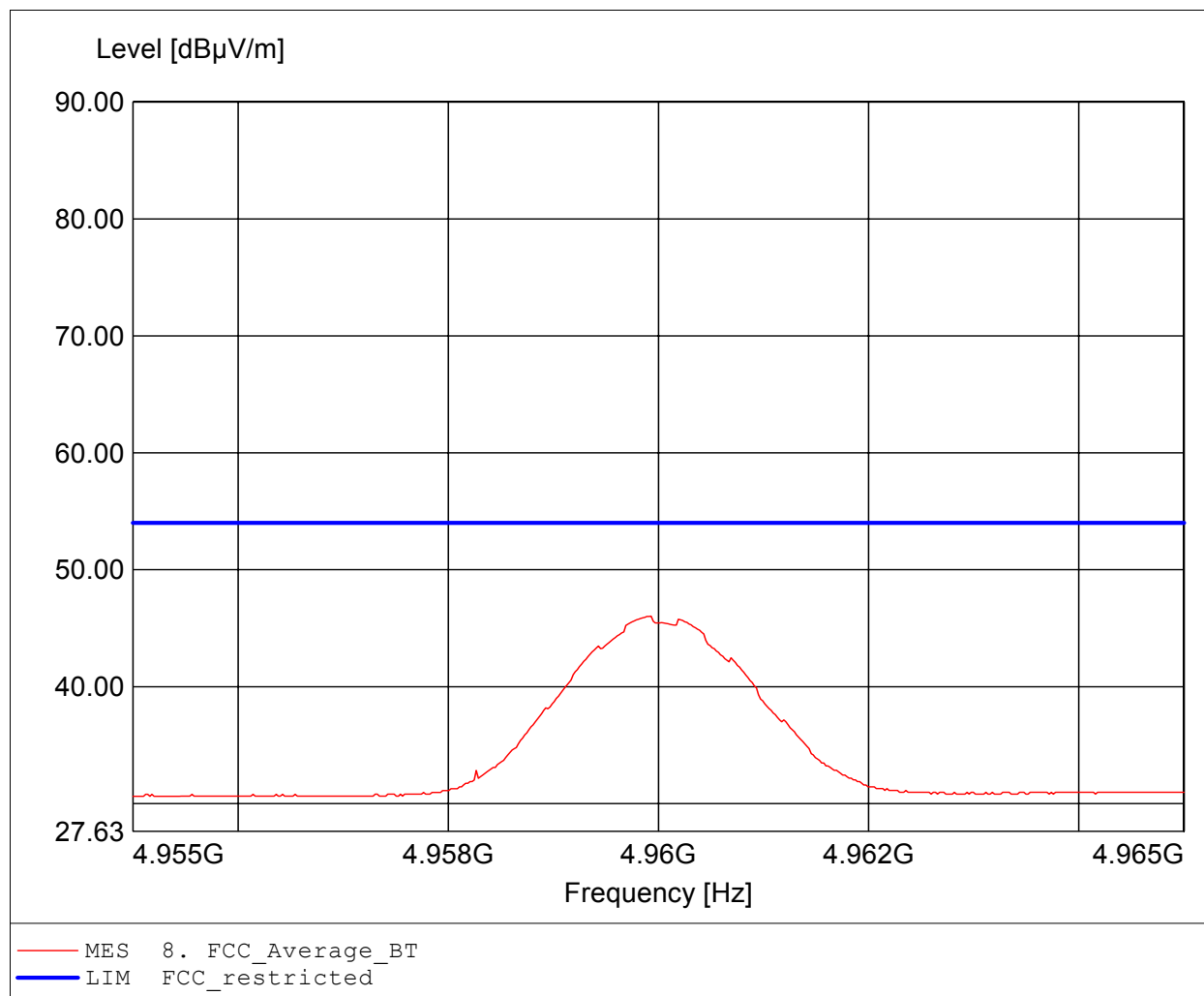
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.962GHz, Emax: 53.18dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

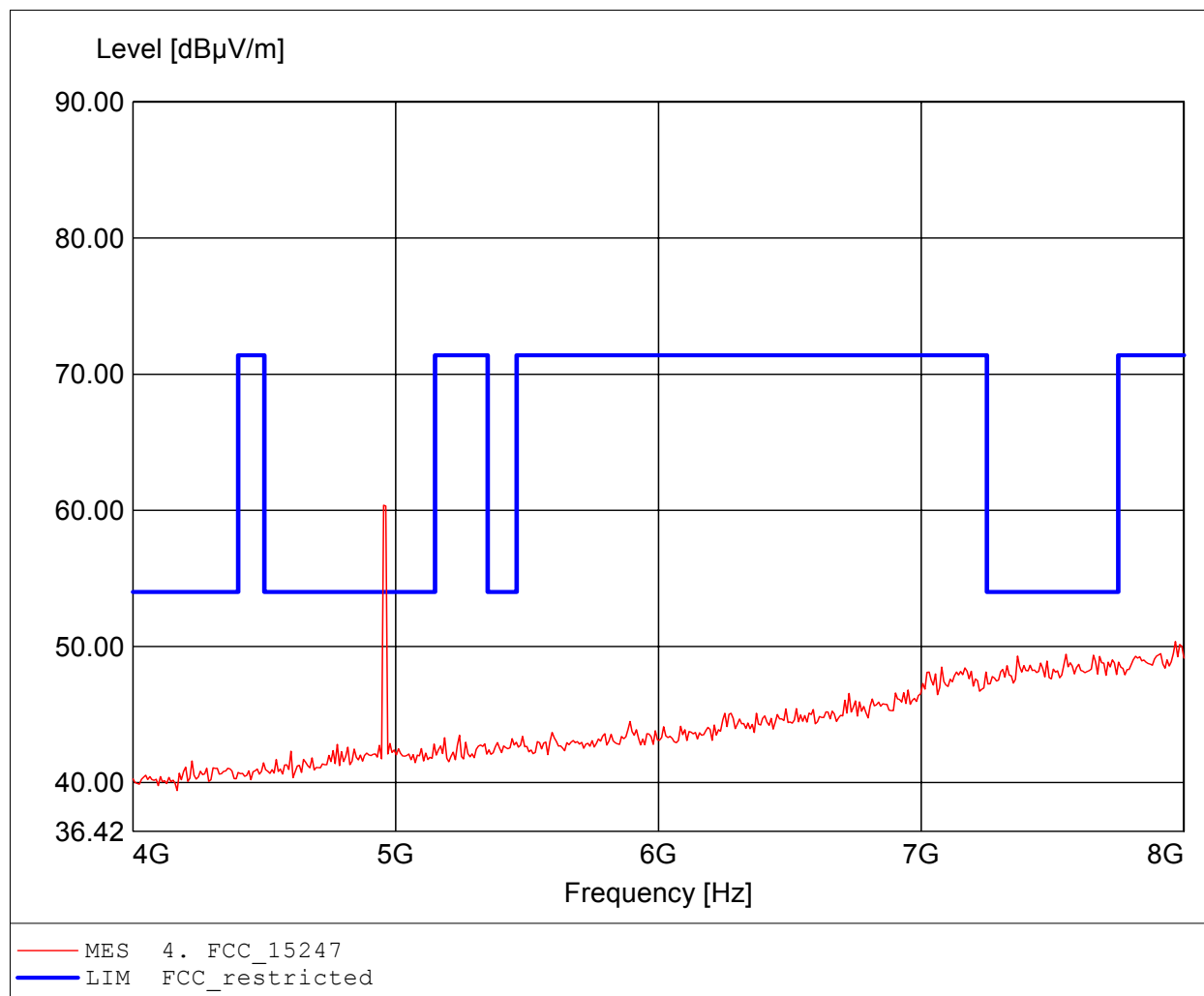
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 4.960GHz, Emax: 46.03dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

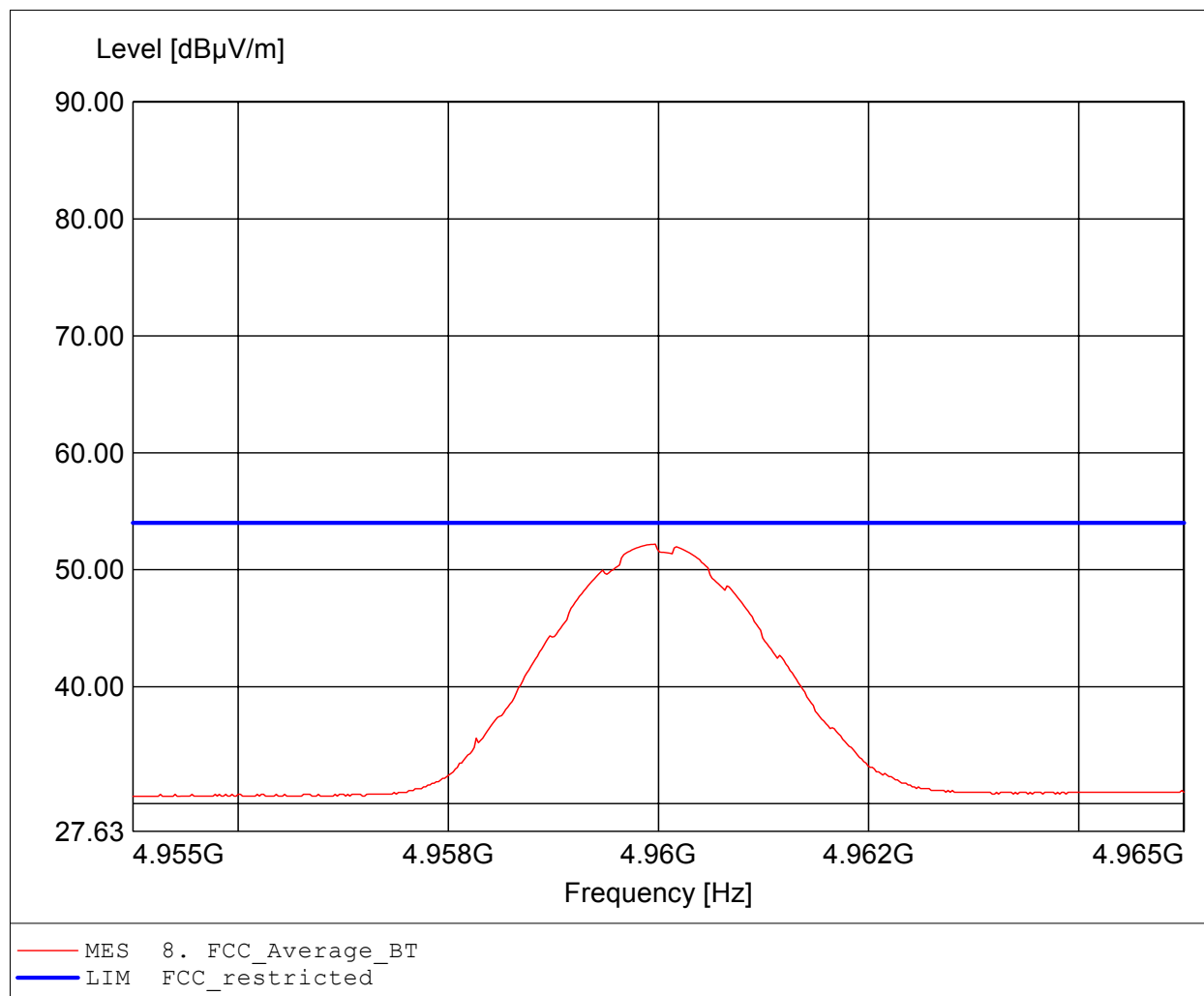
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.954GHz, Emax: 60.38dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

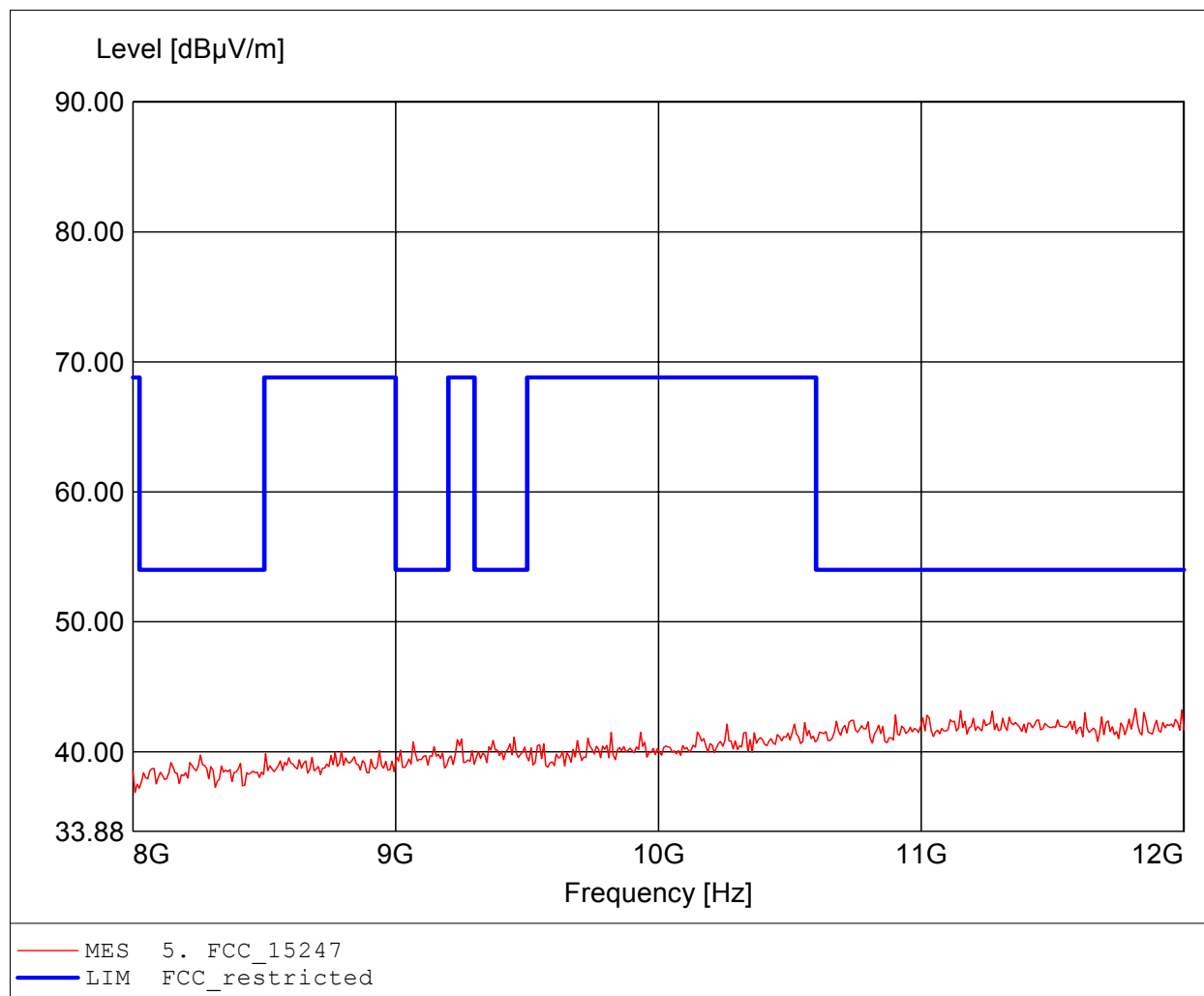
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 4.960GHz, Emax: 52.19dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

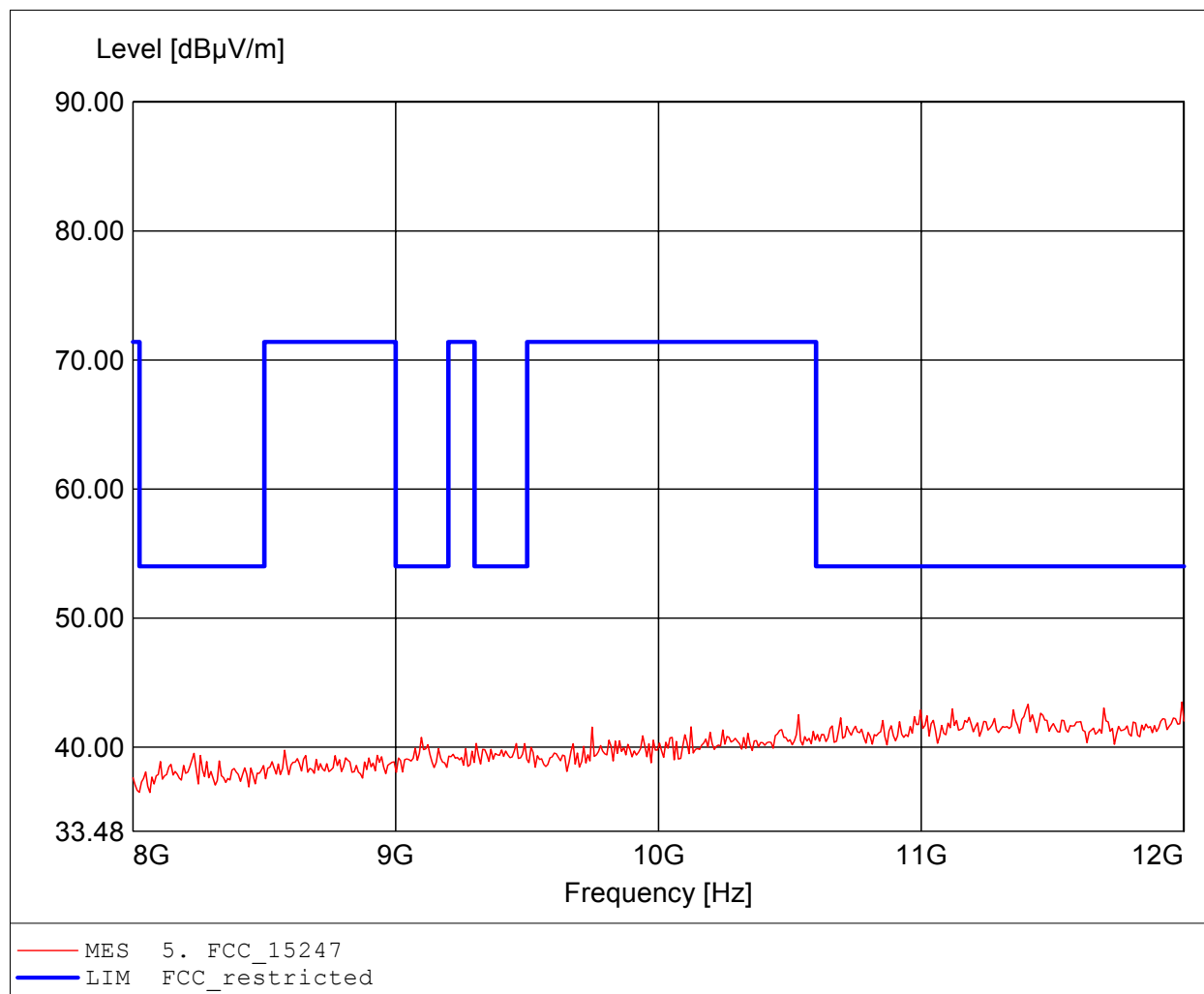
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.816GHz, Emax: 43.33dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

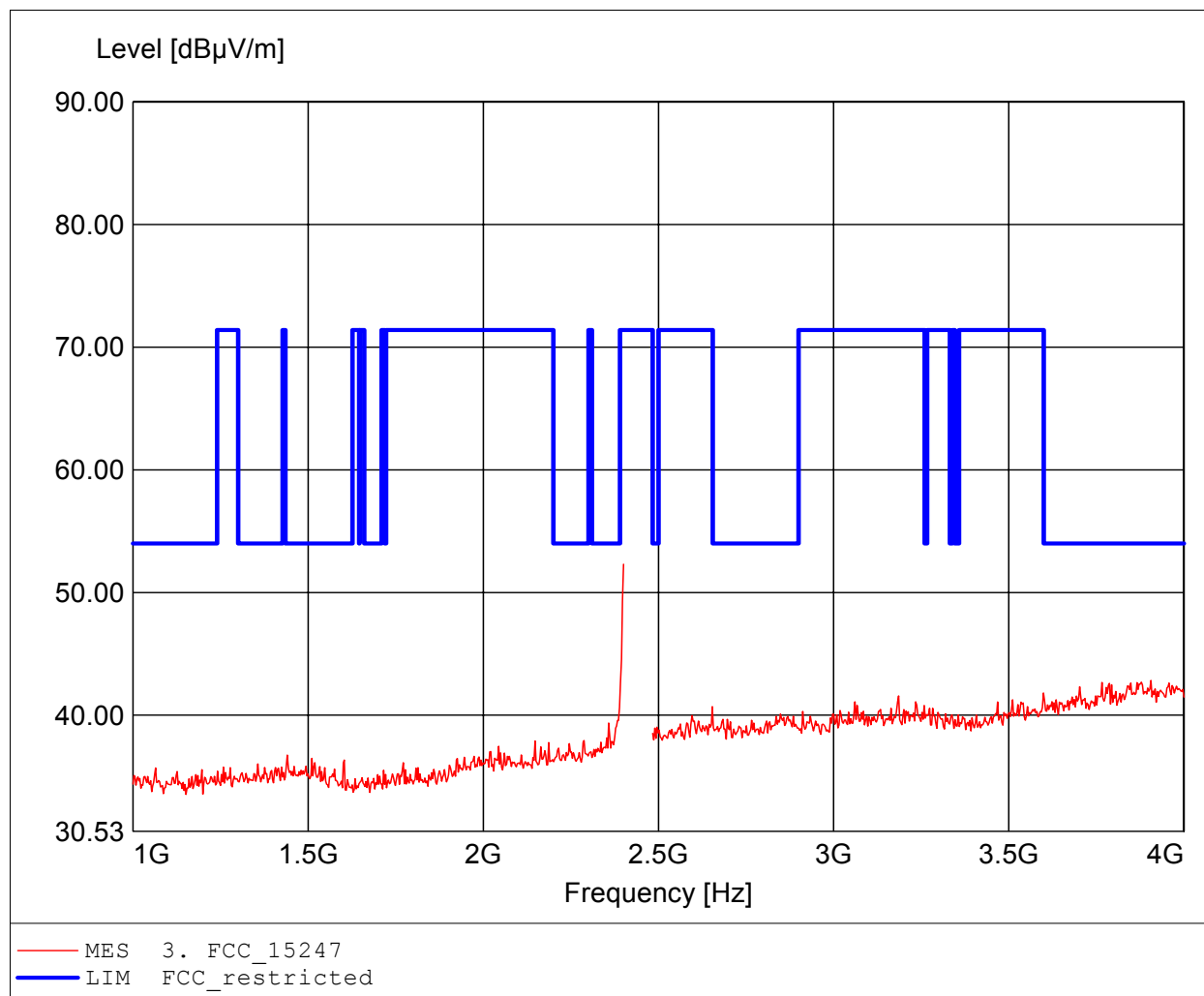
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: basic, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.992GHz, Emax: 43.50dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

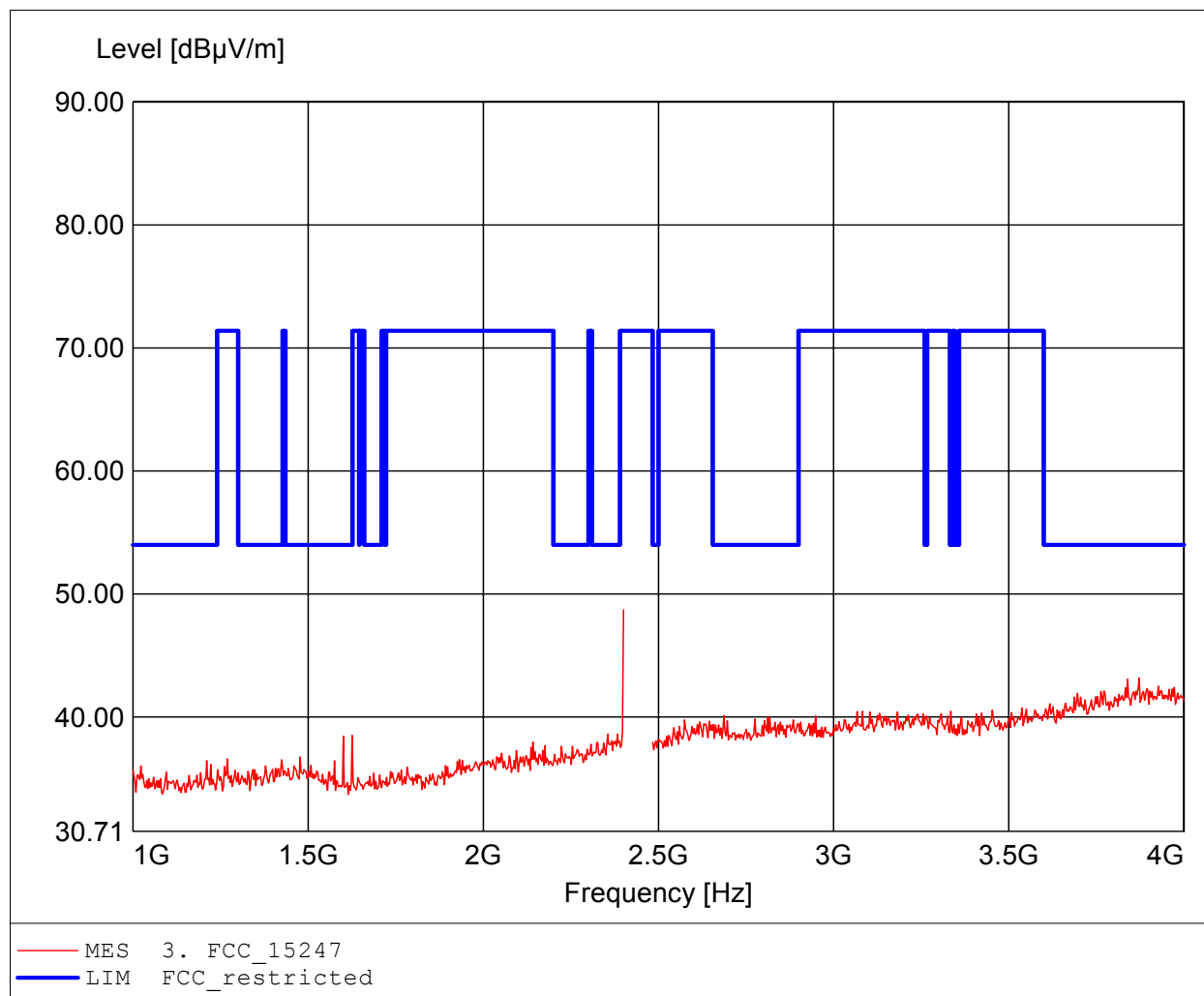
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.400GHz, Emax: 52.31dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

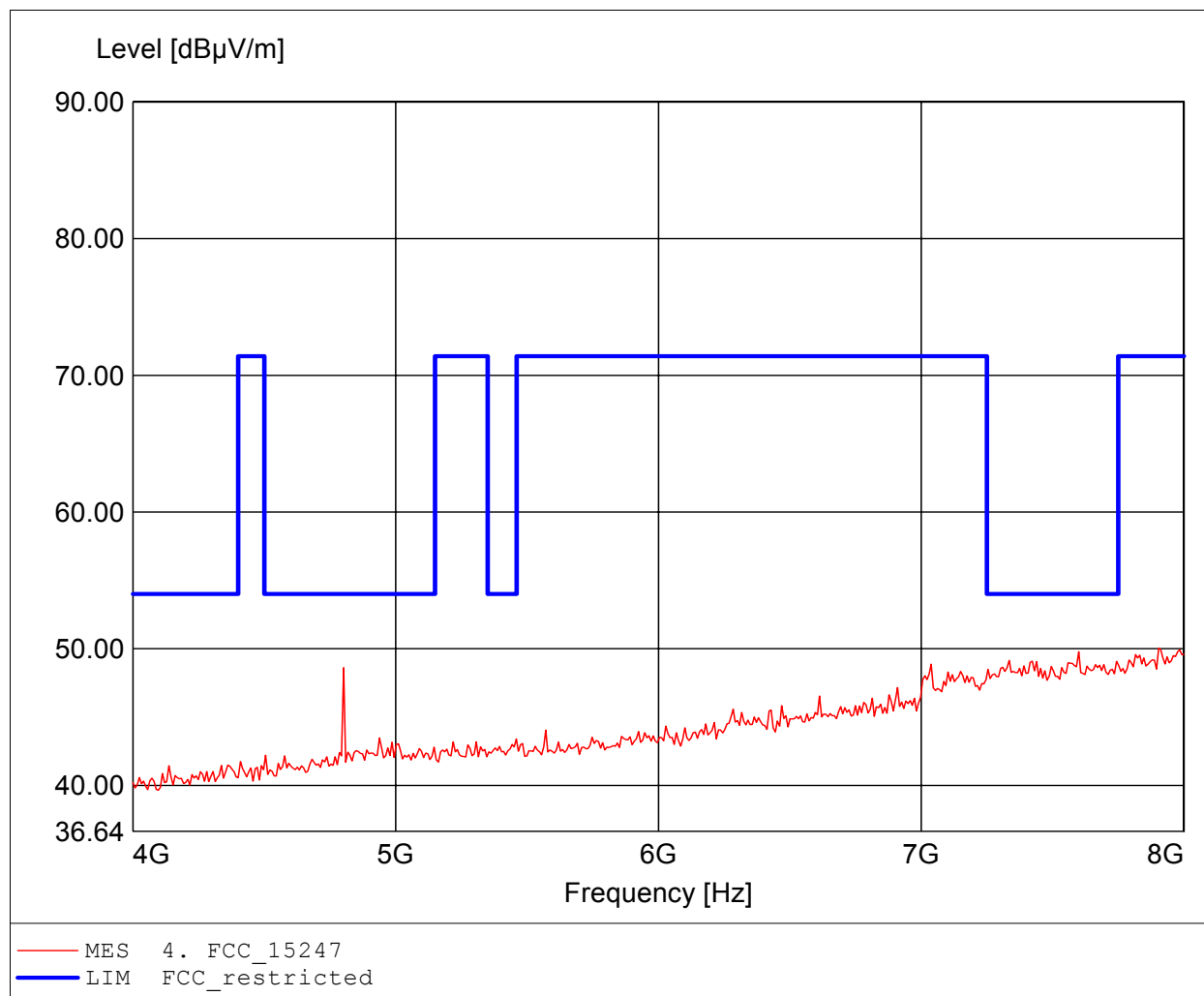
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 2.400GHz, Emax: 48.72dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

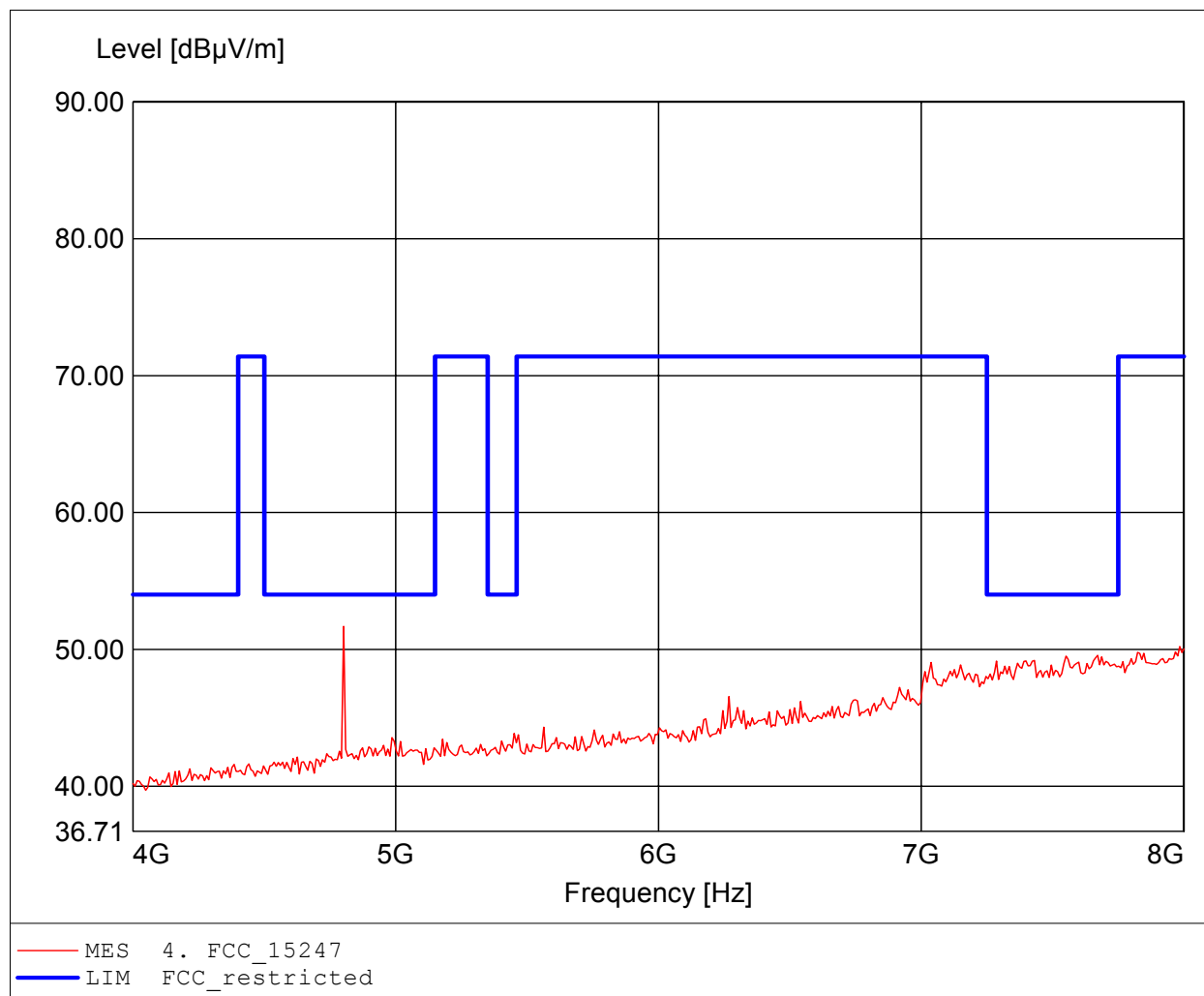
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 7.904GHz, Emax: 50.04dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

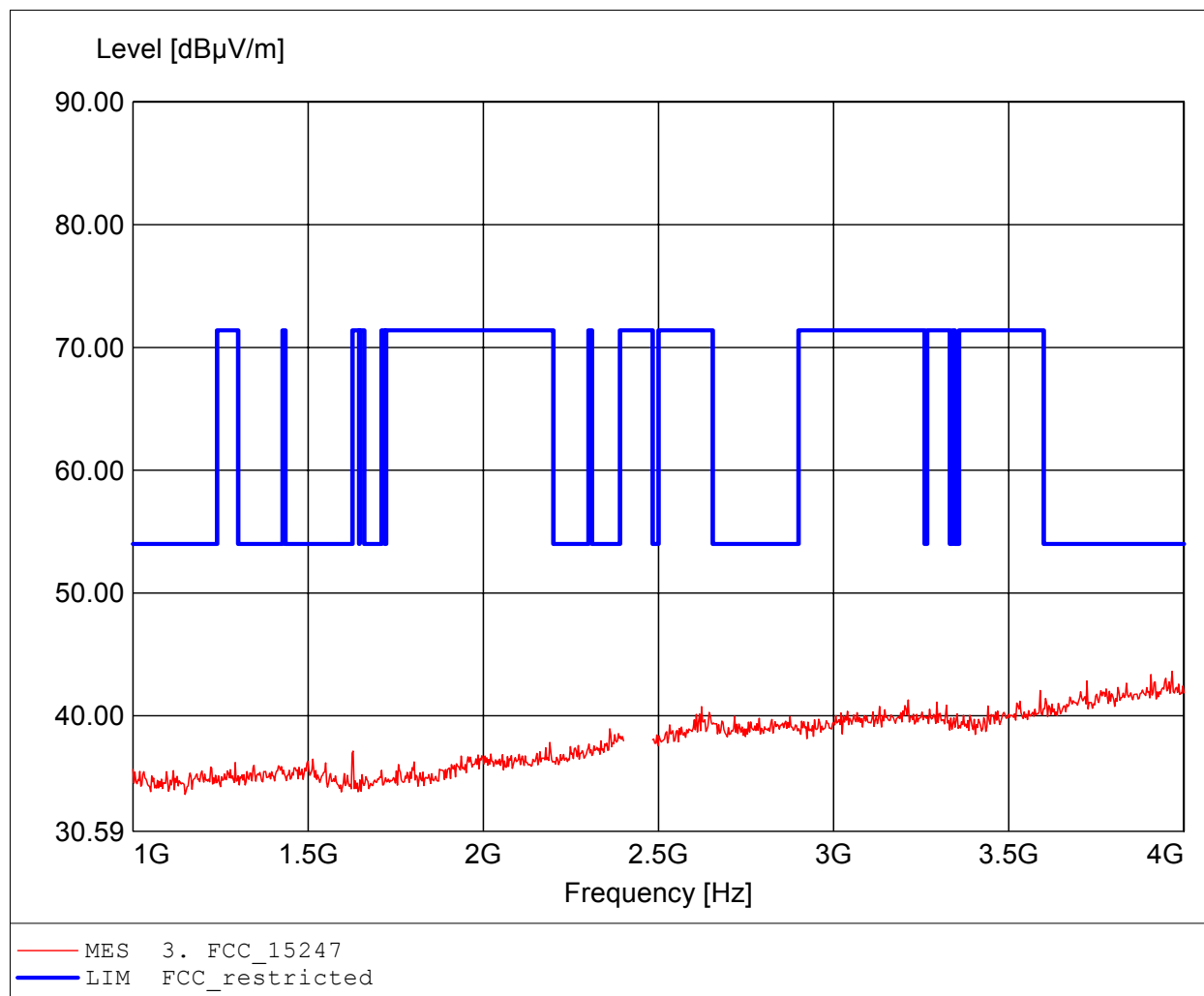
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 0
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.802GHz, Emax: 51.68dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

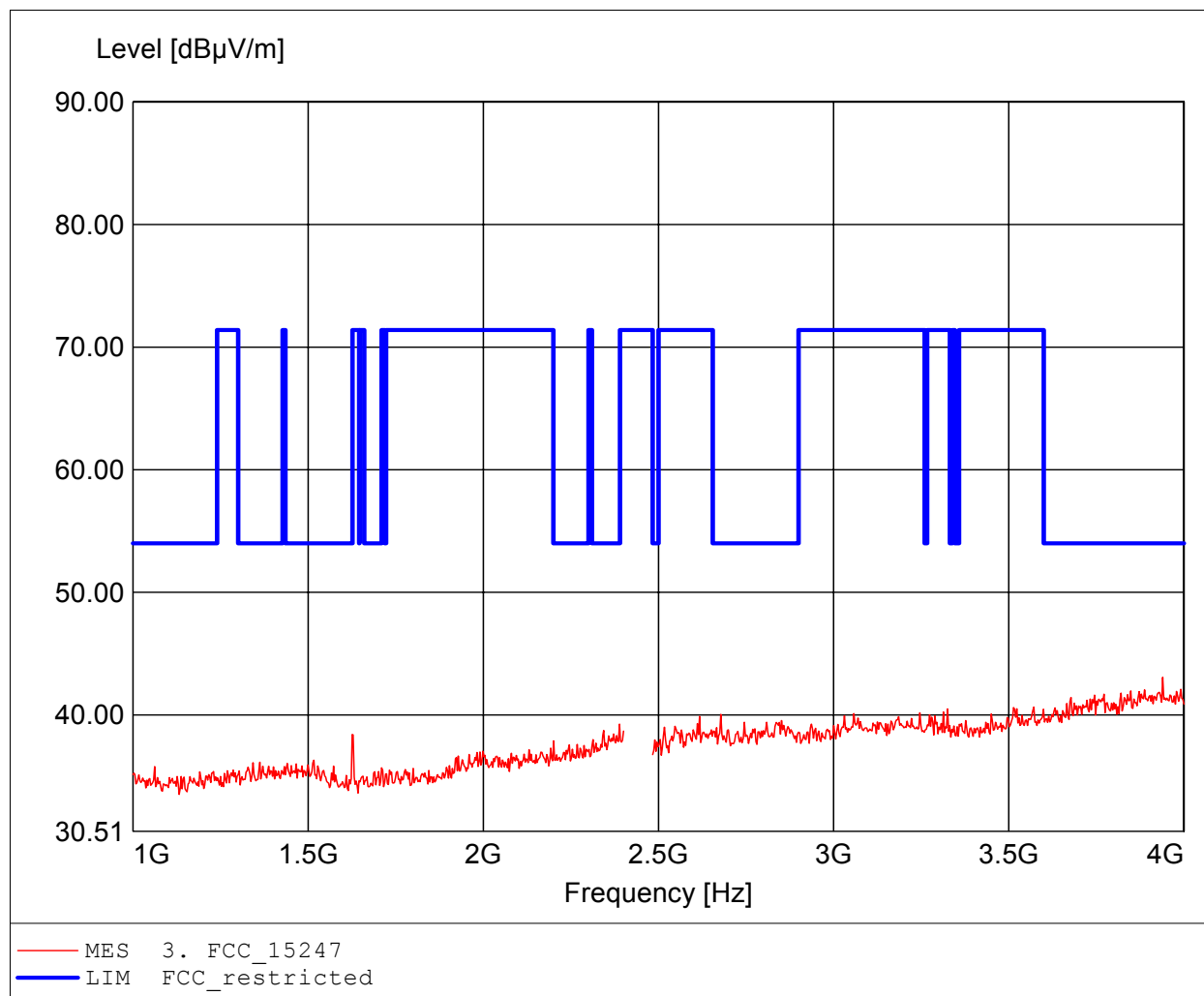
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 3.967GHz, Emax: 43.63dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

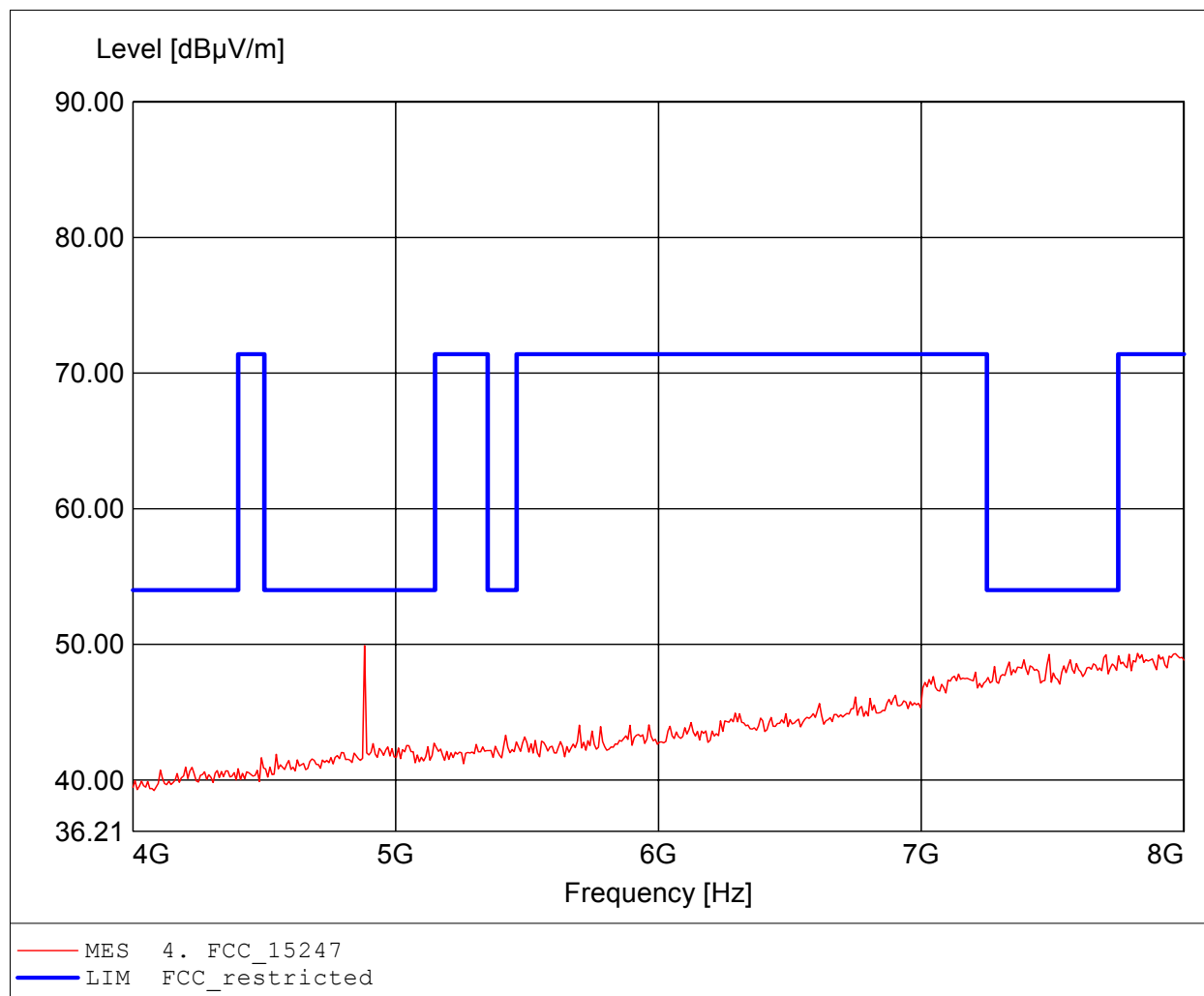
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 3.939GHz, Emax: 43.08dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

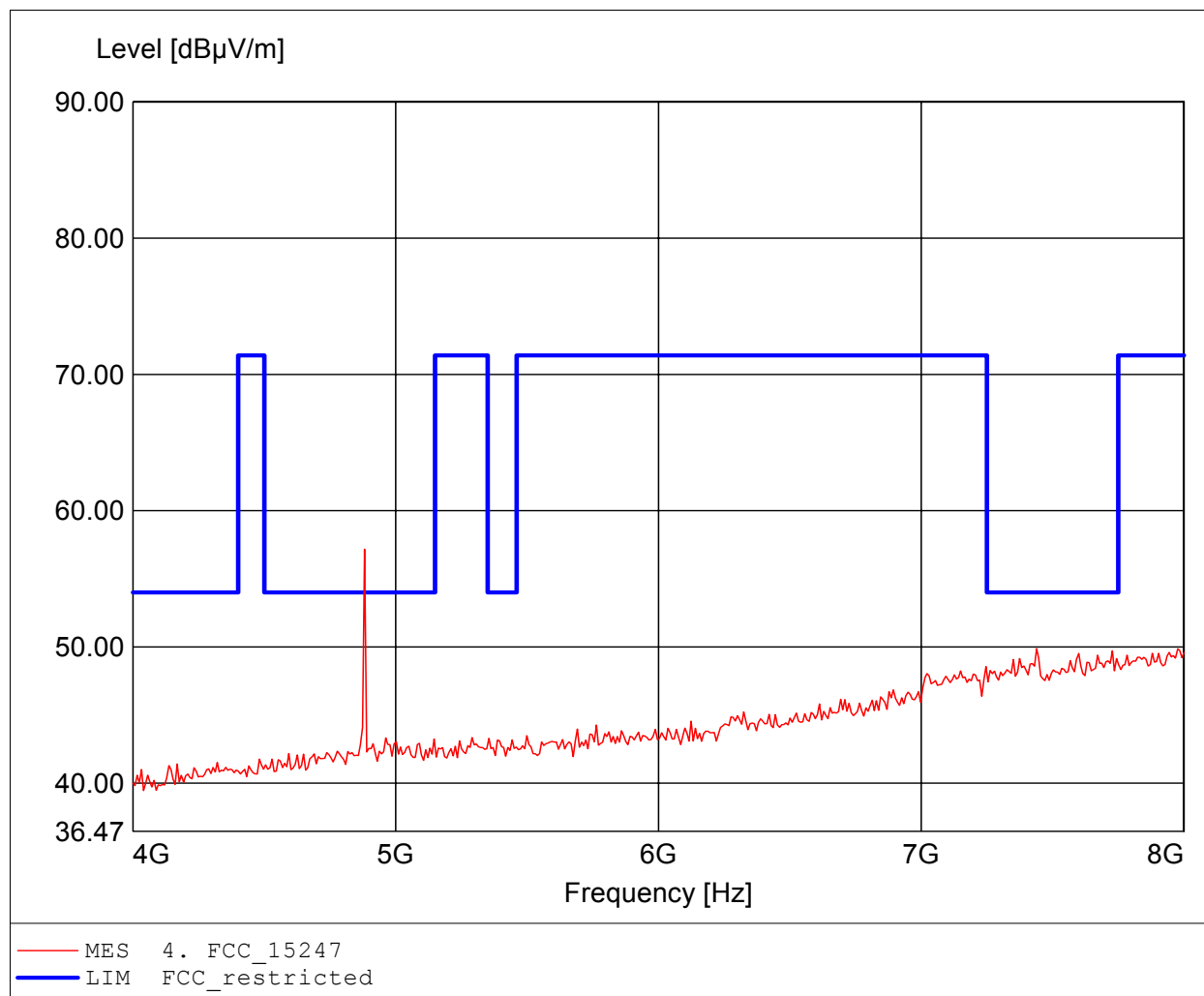
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.882GHz, Emax: 49.91dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

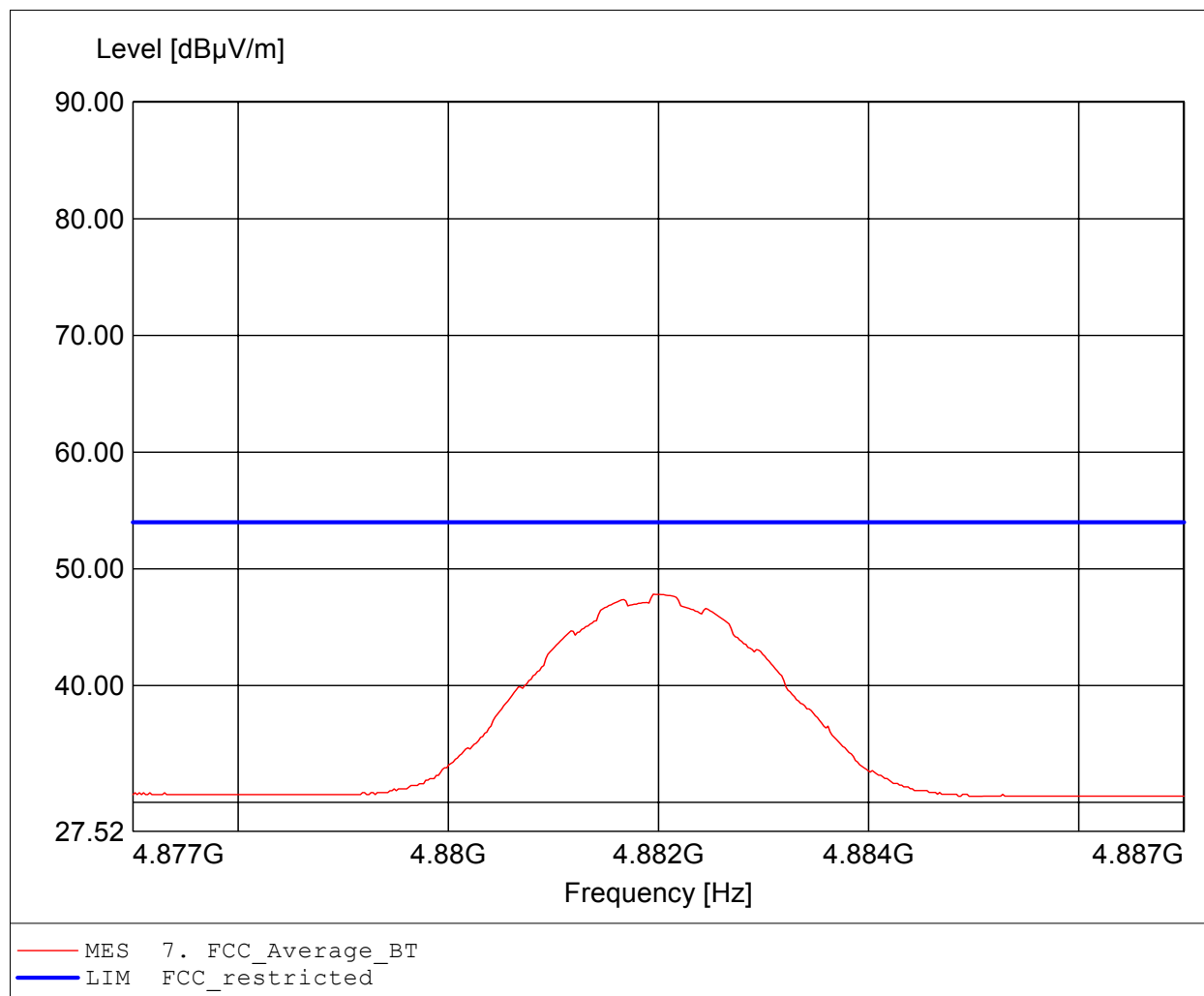
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.882GHz, Emax: 57.18dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

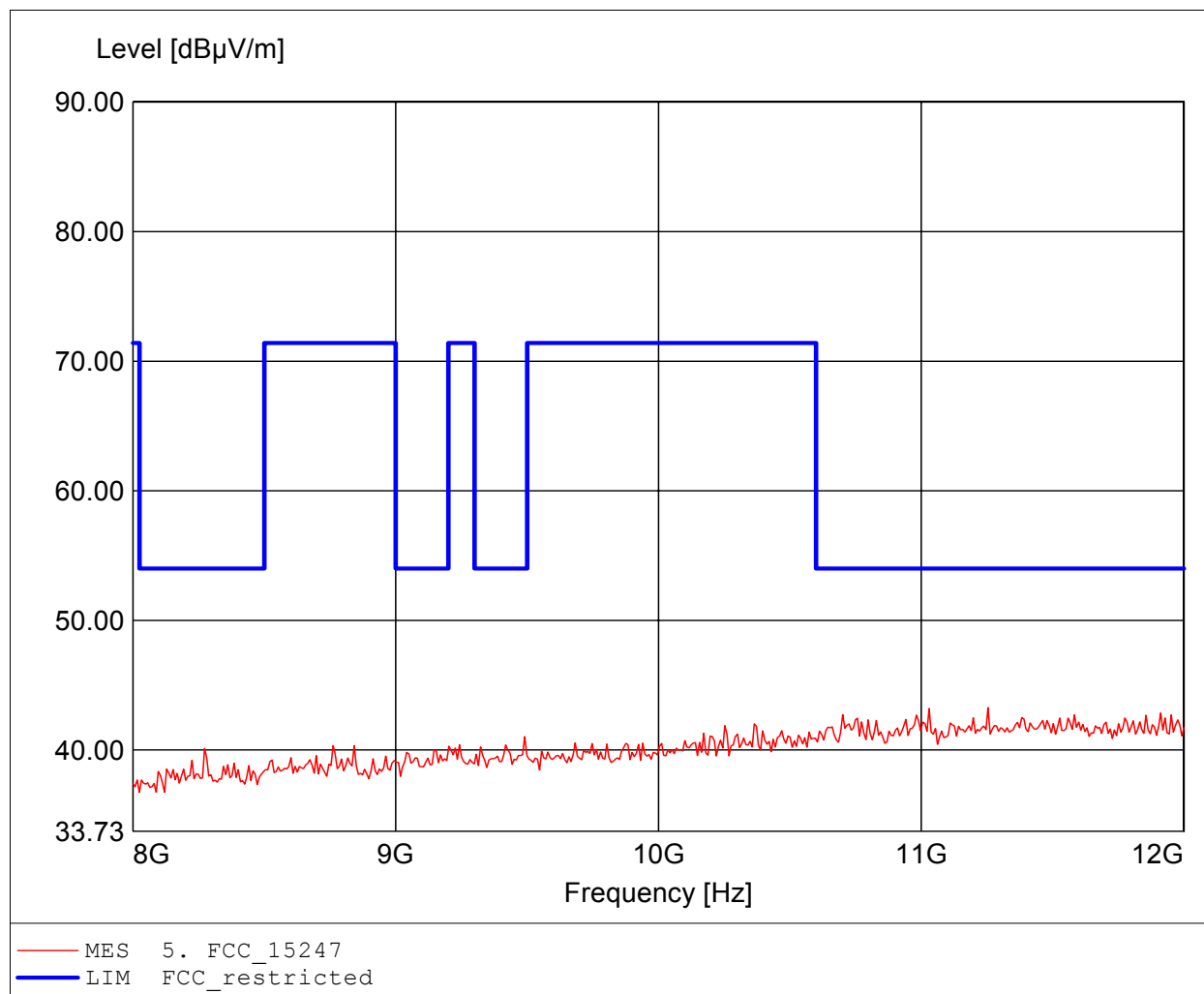
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, average detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 4.882GHz, Emax: 47.84dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

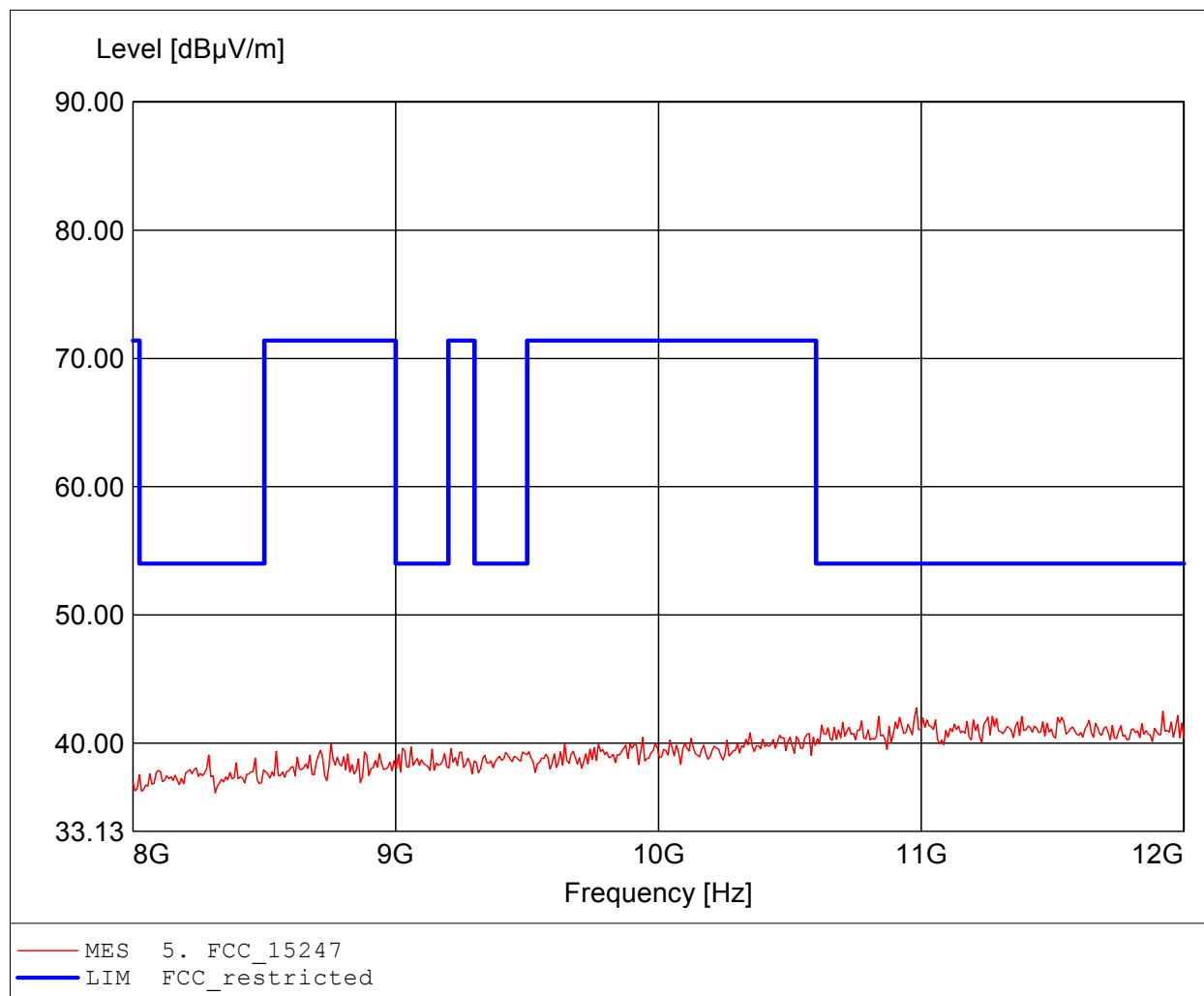
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch.39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 11.255GHz, Emax: 43.26dBμV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

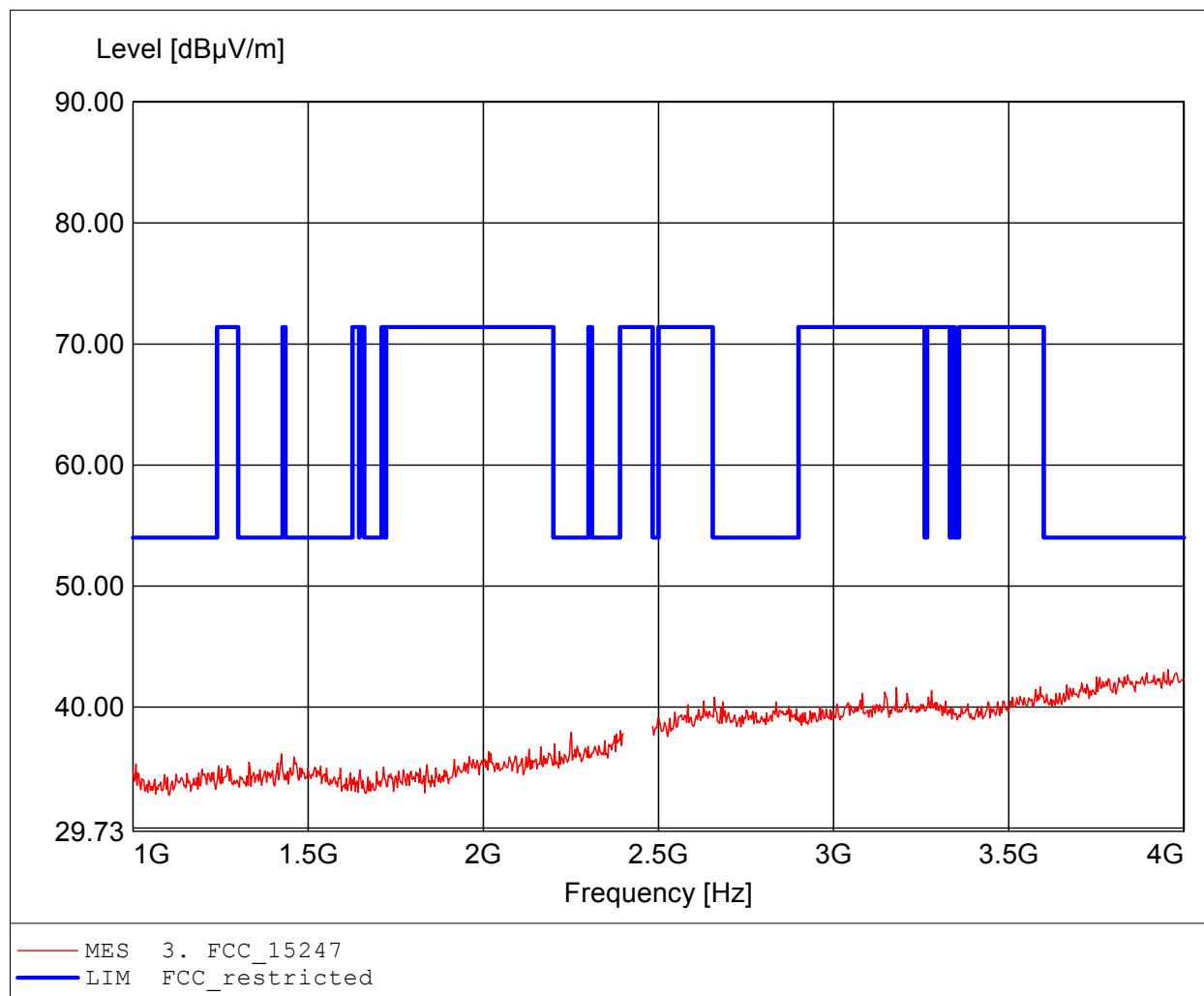
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch.39
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 10.982GHz, Emax: 42.76dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

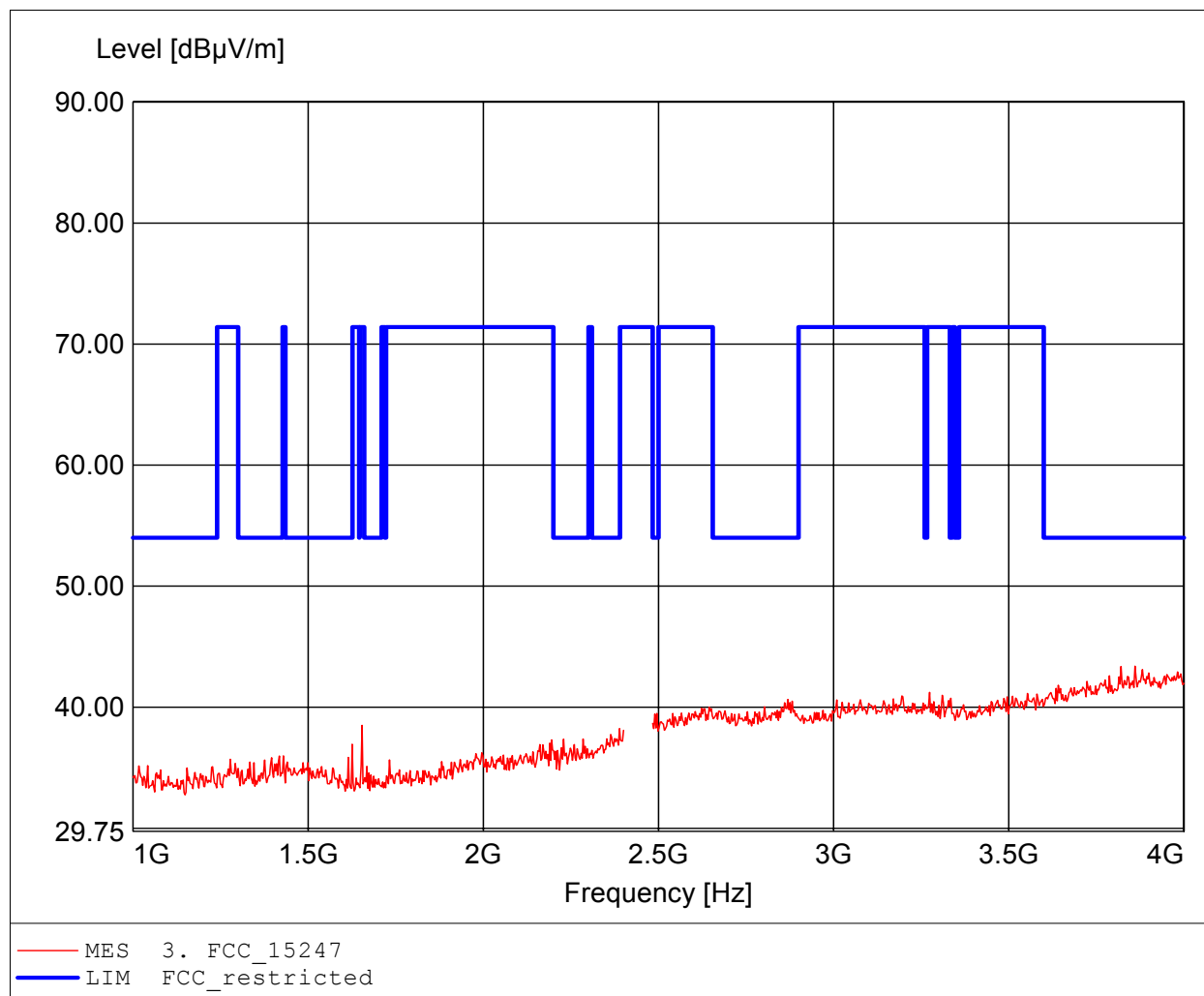
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 3.954GHz, Emax: 43.09dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

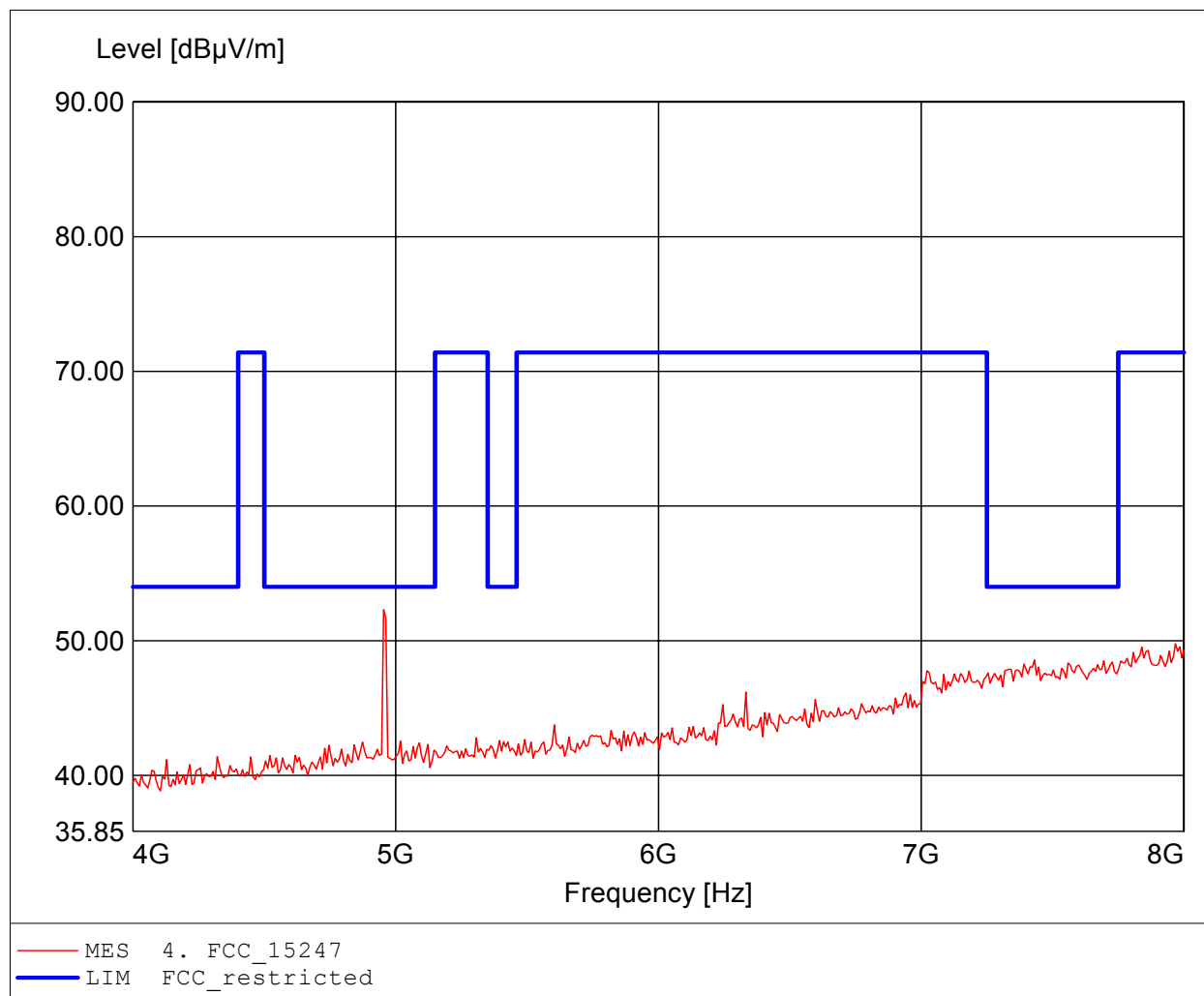
Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, amplif.
Comment 2: Freq: 3.860GHz, Emax: 43.39dBuV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.954GHz, Emax: 52.31dBµV/m, RBW: 1MHz



Spurious emissions Field Strength

FCC RULES PART 15, SUBPART C

Approval Holder: MIR Medical Research / G0M-1112-1585
EUT: Bluetooth module
Model: BlueMir / setup: EDR, Tx ch. 78
Test Site / Operator: Eurofins Product Service GmbH / Mr. Treffke
Test Condition: Tnom.: 24°C / Vnom: 3.3 VDC
Test Specification: according to §15.247, peak detector
Comment 1: Dist.: 3m, Ant.: BBHA9120D, ampl.+HP.
Comment 2: Freq: 4.962GHz, Emax: 52.76dBµV/m, RBW: 1MHz

