

RADIO REPORT FCC 47 CFR Part 15C ISED Canada RSS-247 Digital transmission systems operating within the 2400.0 MHz - 2483.5 MHz band	
Report Reference No	G0M-2003-8874-TFC247WF-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	    DAkks - Registration number : D-PL-12092-01-03 (ISED) ISED Testing Laboratory site: 3470A-2 DAkks - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	NewTec GmbH
Address	Buchenweg 3 89284 Pfaffenhofen a. d. Roth GERMANY
Test Specification	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, Amendment 1, 2019-03
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Industrial Gateway
Model(s)	NTSecureGateway
Additional Model(s)	None
Brand Name(s)	None
Hardware Version(s)	V2.1
Software Version(s)	V0.9
FCC ID	2AWTTNT-SECGW
IC	N/A
Test Result	PASSED

Possible test case verdicts:		
Required by standard but not tested	N/T	
Not required by standard	N/R	
Not applicable to EUT	N/A	
Test object does meet the requirement	P(PASS)	
Test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 °C - 30 °C	
Test Lab Humidity	25 % - 55 %	
Date of receipt of test item	2020-06-30	
Report:		
Compiled by	Florian Voigt	
Tested by (+ signature) (Responsible for Test)	Florian Voigt	
Approved by (+ signature) (Head of Lab)	Christian Weber	
Date of Issue	2020-10-27	
Total number of pages	49	
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:		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2020-10-27	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
BPSK	Binary Phase Shift Keying
DSSS	Direct Sequence Spread Spectrum
EUT	Equipment Under Test
FCC	Federal Communications Commission
HT	High Throughput
IEEE 802.11	MAC and PHY Layer for WiFi
ISED	Innovation, Science and Economic Development Canada
OFDM	Orthogonal Frequency Division Multiplexing
QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V _{NOM}	Nominal supply voltage

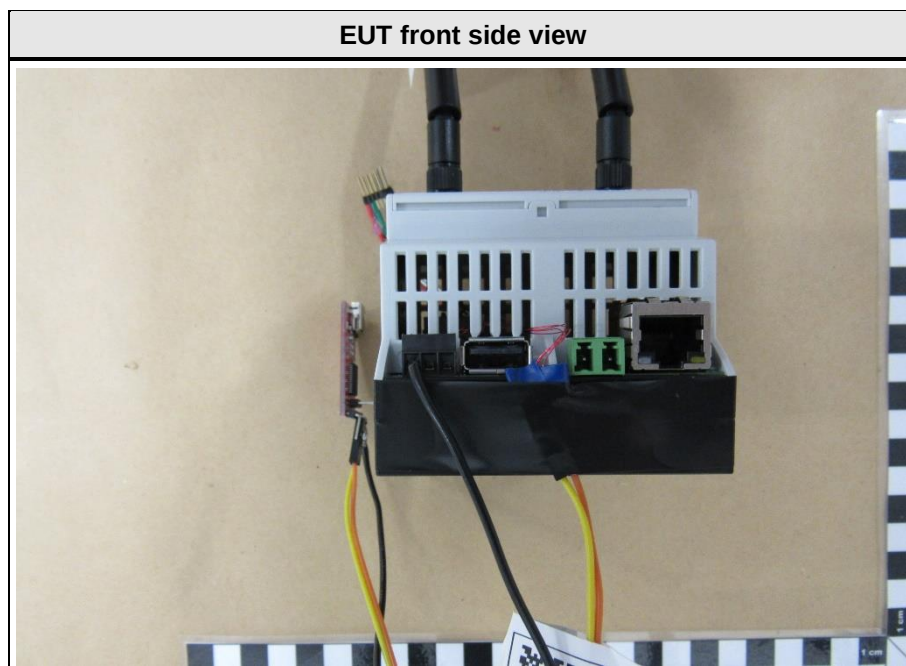
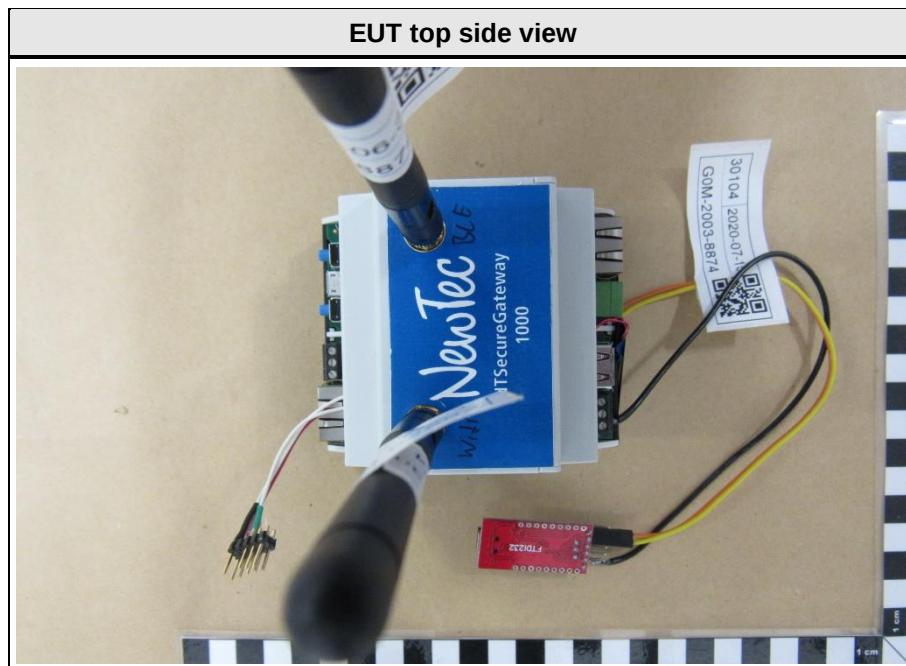
REPORT INDEX

1	Equipment (Test Item) Under Test.....	6
1.1	Photos – Equipment External	7
1.2	Photos – Equipment Internal	11
1.3	Photos – Test Setup.....	12
1.4	Support Equipment.....	16
1.5	Test Modes	17
1.6	Test Frequencies.....	18
1.7	Power setting restrictions	19
1.8	Sample emission level calculation.....	20
2	Result Summary.....	21
3	Test Conditions and Results.....	22
3.1	Test Conditions and Results - AC powerline conducted emissions.....	22
3.2	Test Conditions and Results - Transmitter radiated emissions	25
3.3	Test Conditions and Results - Receiver radiated emissions	28
ANNEX A	Transmitter spurious emissions	31
ANNEX B	Receiver spurious emissions	41

1 Equipment (Test Item) Under Test

Description	Industrial Gateway	
Model	NTSecureGateway	
Additional Model(s)	None	
Brand Name(s)	None	
Serial Number(s)	000029	
Hardware Version(s)	V2.1	
Software Version(s)	V0.9	
PMN	N/A	
HVIN	N/A	
FVIN	N/A	
HMN	N/A	
FCC ID	2AWTTNT-SECGW	
IC	N/A	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400.0 MHz - 2483.5 MHz	
Radio technology	IEEE 802.11 b/g/n (HT20)	
Modulation	BPSK, QPSK, 16-QAM, 64-QAM	
Number of antenna ports	1	
Radio Module	Type	SPI/SDIO to Wi-Fi Module
	Model	ATWILC1000-MR110UB
	Manufacturer	Microchip
	HW Version	Not specified
	SW Version	Not specified
	FCC-ID	2ADHKATWILC1000U
	IC	N/A
Antenna	Type	External
	Model	W1010
	Manufacturer	Pulse
	Gain	2.0 dBi (customer declaration)
Supply Voltage	V _{NOM}	24 VDC
Operating Temperature	T _{NOM}	20 °C
AC/DC-Adaptor	None	
Manufacturer	NewTec GmbH Buchenweg 3 89284 Pfaffenhofen a. d. Roth GERMANY	

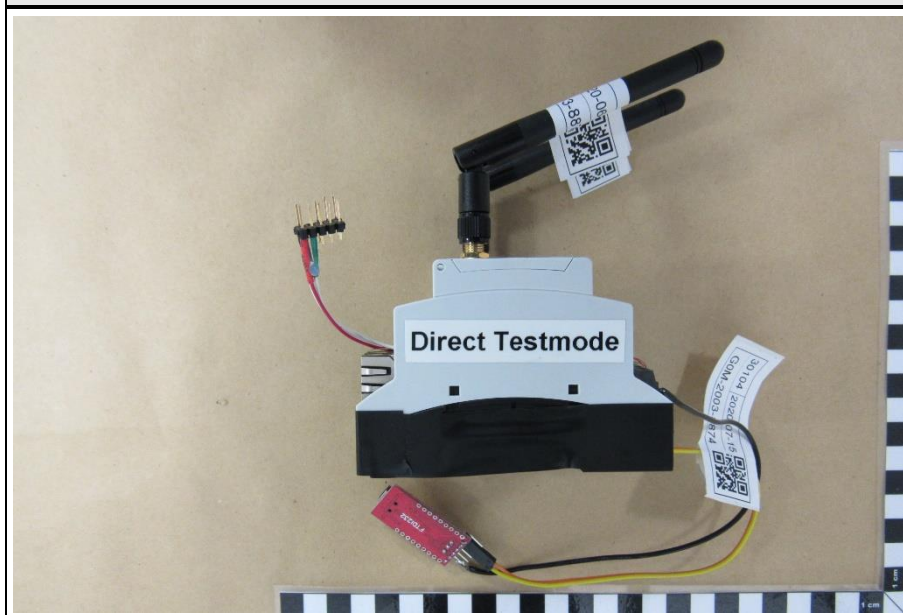
1.1 Photos – Equipment External



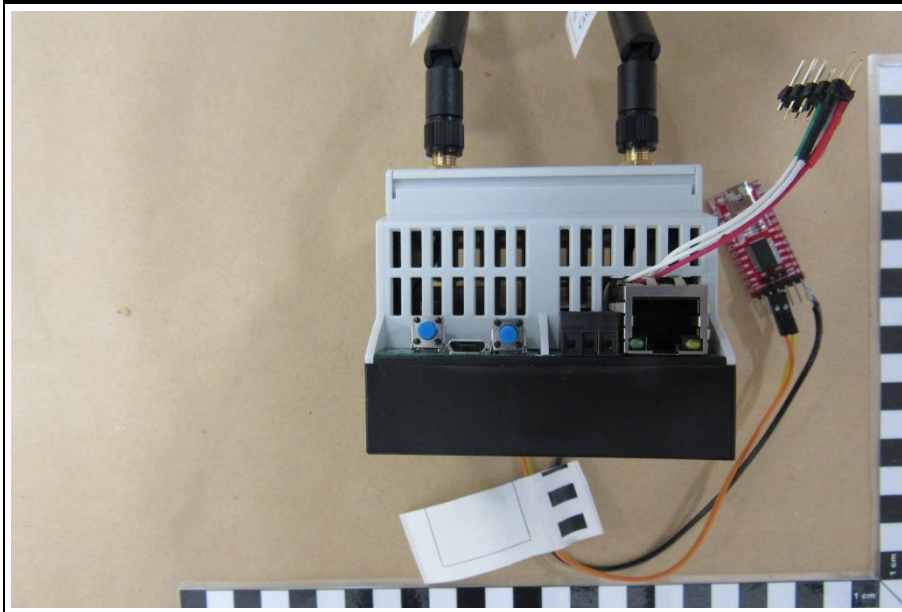
EUT right side view



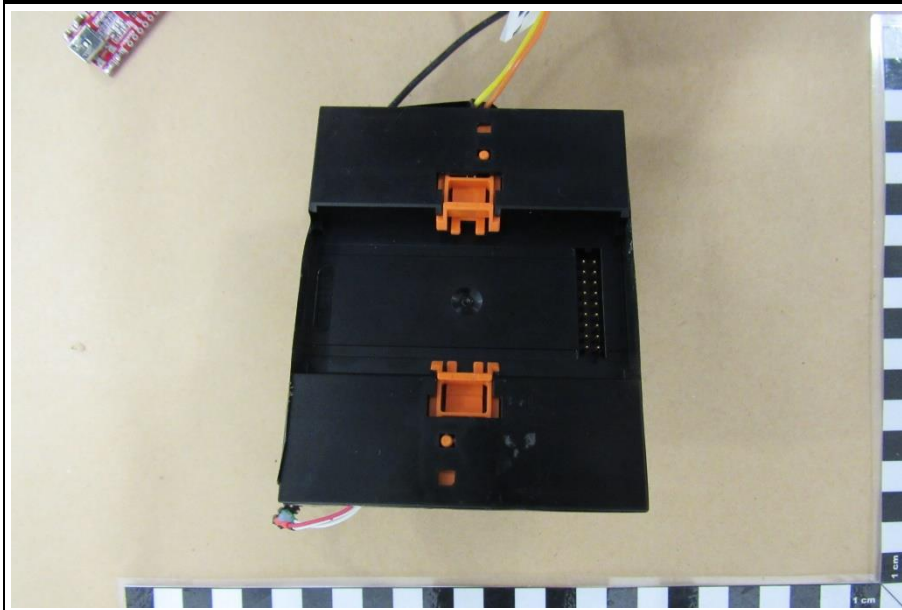
EUT left side view

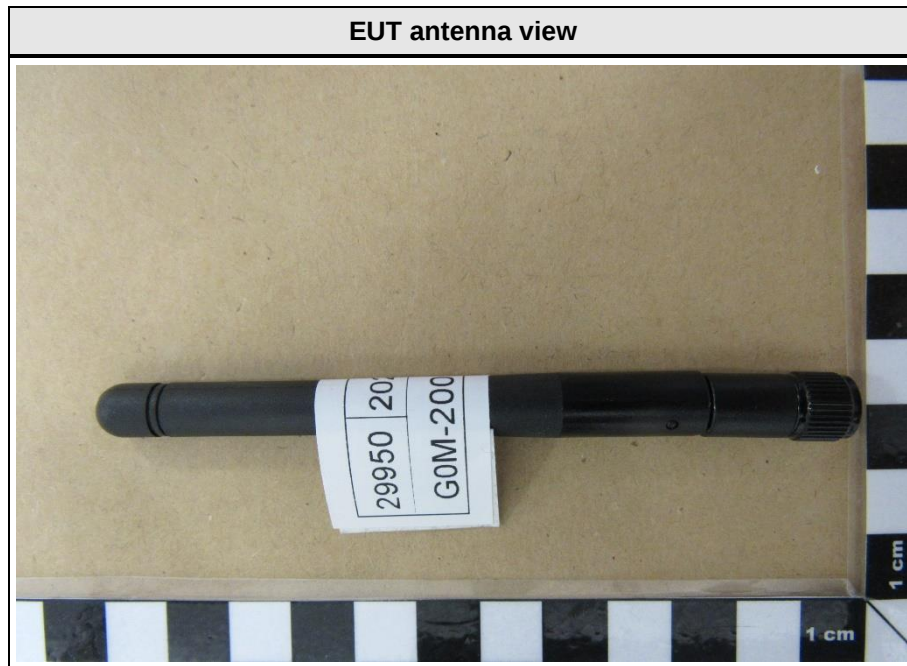


EUT back side view

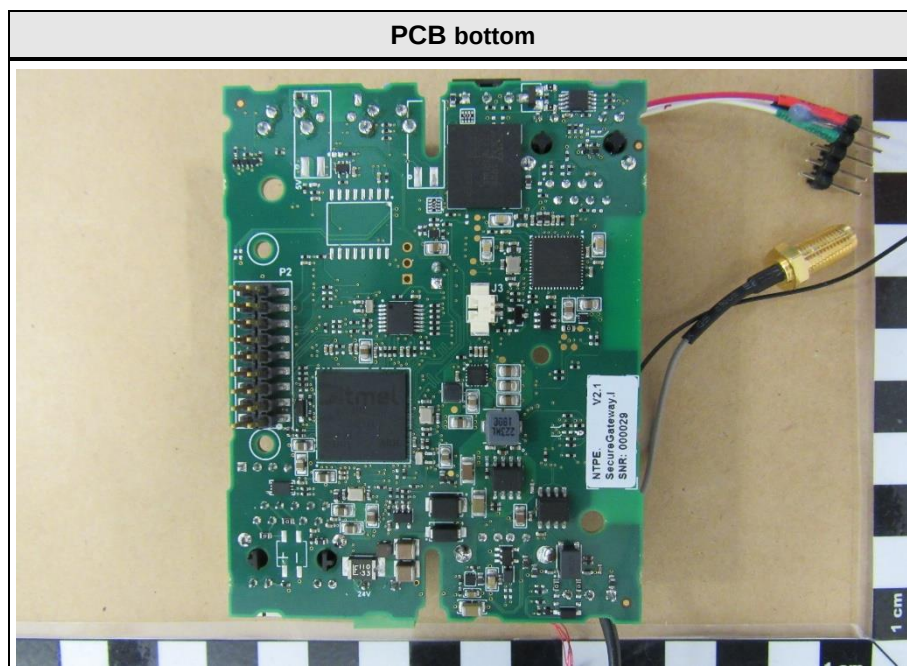
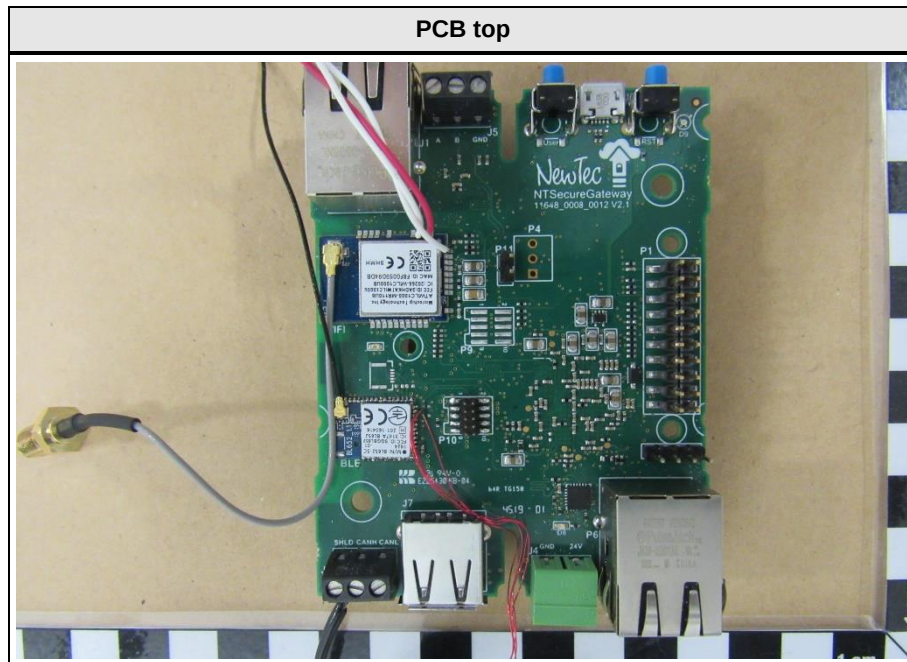


EUT bottom view

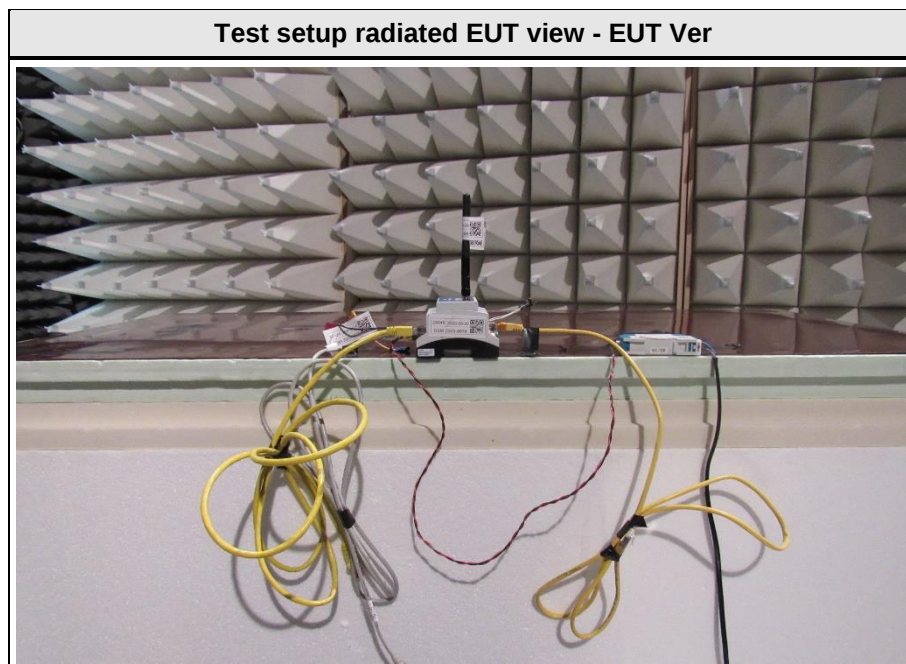
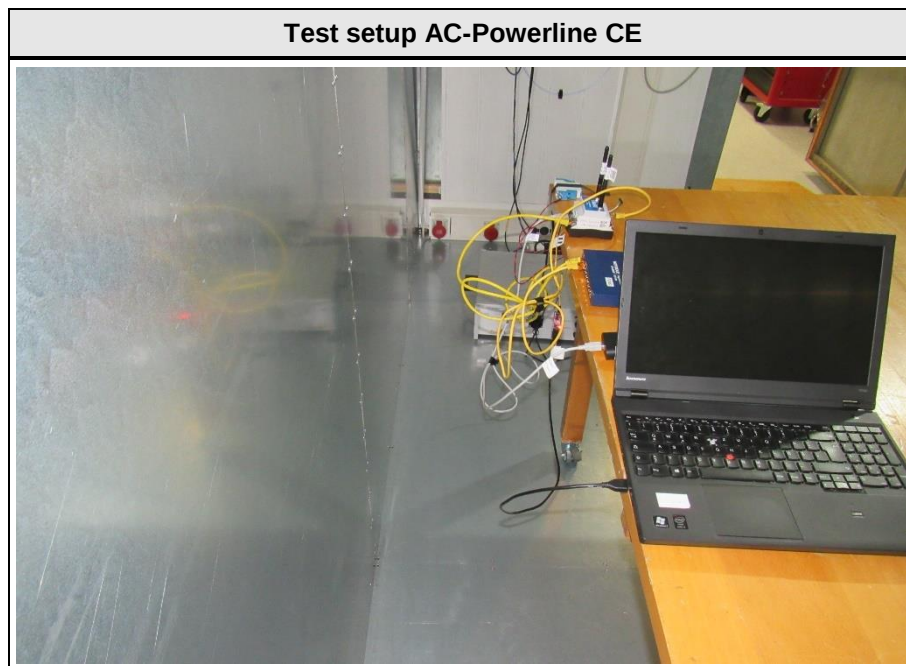




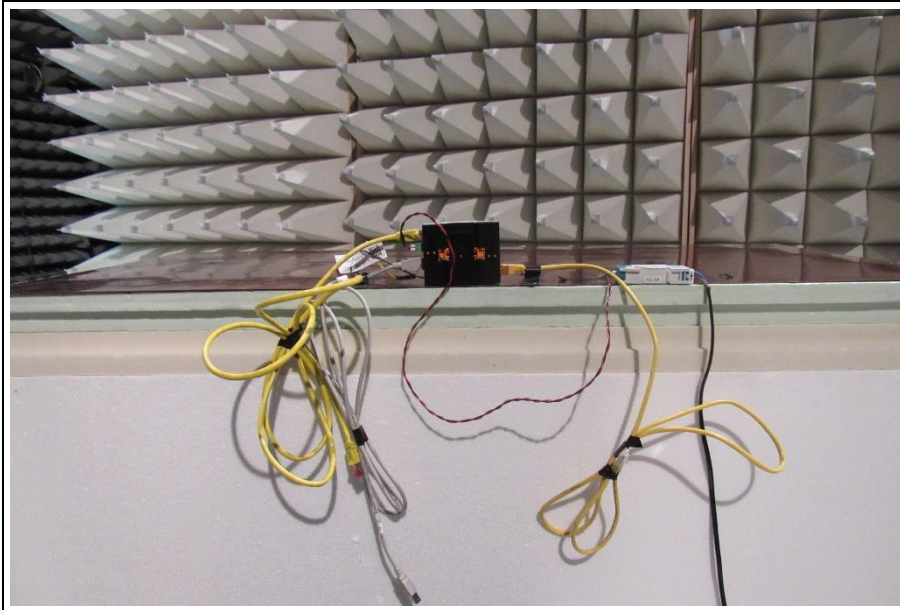
1.2 Photos – Equipment Internal



1.3 Photos – Test Setup



Test setup radiated EUT view - EUT Hor



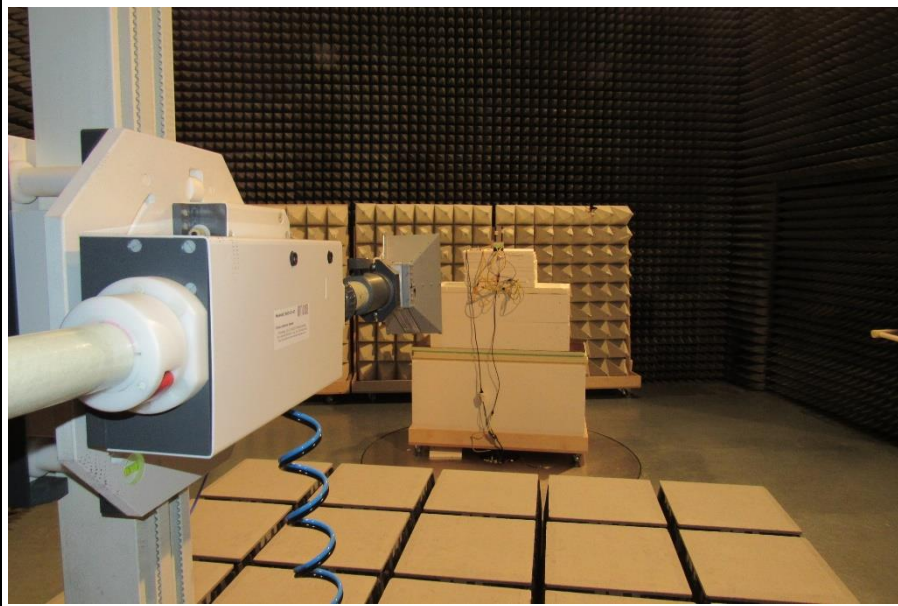
Test setup radiated below 0.2GHz



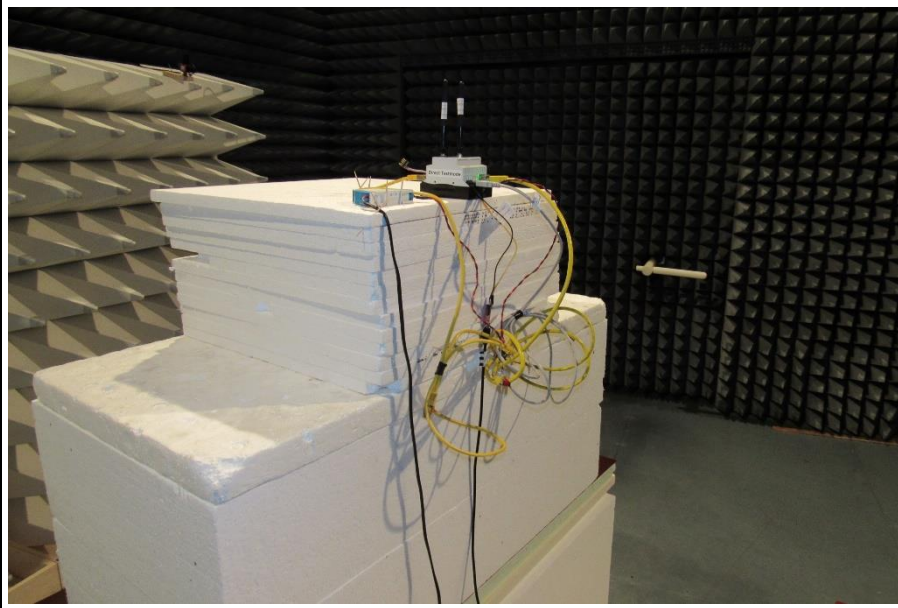
Test setup radiated between 0.2 and 1.0GHz



Test setup radiated above 1 GHz



Test setup radiated EUT view above 1 GHz



1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
AE	Notebook	Lenovo	ThinkPad T510	
AE	Power Supply AC Adapter	Liteon	ADLX90NLC3A	
SFT	nRF Connect	Nordic Semiconductor	v3.4.1	Controlling BTLE testmode
SFT	MCHPRT2	Microchip	v1.0	Controlling WiFi testmode
AE	Power supply	Eltako	SNT12	
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.5 Test Modes

Mode	Description
OFDM (IEEE 802.11g)	Mode = Transmit Modulation = BPSK Spreading = OFDM Bandwidth = 20 MHz Duty cycle = 98% Power setting = PPA = 6; PA = 18; DG = -10 Data rate = 9 Mbps
Receive	Mode = Receive
Comment: The above settings were found as worst case by evaluation of the module test report and pre-tests.	

1.6 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx / Rx	6	2437

1.7 Power setting restrictions

Tests performed require that settings PPA=6 and PA=18 will be used. Also the setting Digital Gain (DG) should never exceed the values from the gain-table shown below.

Channel	1	2	3	4	5	6	7	8	9	10	11
Datarate											
1	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
2	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
5.5	-12	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
11	-12	-11	-11	-11	-11	-11	-11	-11	-11	-11	-11
6	-14	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
9	-14	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
12	-14	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
18	-14	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
24	-14	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
36	-14	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
48	-14	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
54	-14	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
mcs0	-16	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
mcs1	-16	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
mcs2	-16	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
mcs3	-16	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
mcs4	-16	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
mcs5	-16	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
mcs6	-16	-10	-10	-10	-10	-10	-10	-10	-10	-10	-13
mcs7	-16	-12	-12	-12	-12	-12	-12	-12	-12	-12	-13

1.8 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:

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

Net:

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

Limit:

This is the FCC Class B radiated emission limit (in units of 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:

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

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 dBμV + 26 dB/m	= 47.5 dBμV/m	:	47.5 dBμV/m - 57.0 dBμV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 15C, ISED RSS-247				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
ISED RSS-Gen, Issue 5 (section 6.6)	Occupied Bandwidth	ANSI C63.10-2013	N/R	Informational only
FCC § 15.247(a)(2) ISED RSS-247, Issue 2 (section 5.2)	6 dB Bandwidth	ANSI C63.10-2013	N/T	
FCC § 15.247(b)(1) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	N/T	
FCC § 15.247(e) ISED RSS-247, Issue 2 (section 5.2)	Power spectral density	ANSI C63.10-2013	N/T	
FCC § 15.207 ISED RSS-247, Issue 2 (section 3.1)	AC power line conducted emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Band edge compliance	ANSI C63.10-2013	N/T	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	N/T	
FCC § 15.247(d) FCC § 15.209 ISED RSS-Gen, Issue 5 (section 6.13)	Transmitter radiated spurious emissions	ANSI C63.10-2013	PASS	
ISED RSS-247, Issue 2 (section 3.1)	Receiver radiated spurious emissions	ANSI C63.10-2013	PASS	
Comment:				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - AC powerline conducted emissions

3.1.1 Information

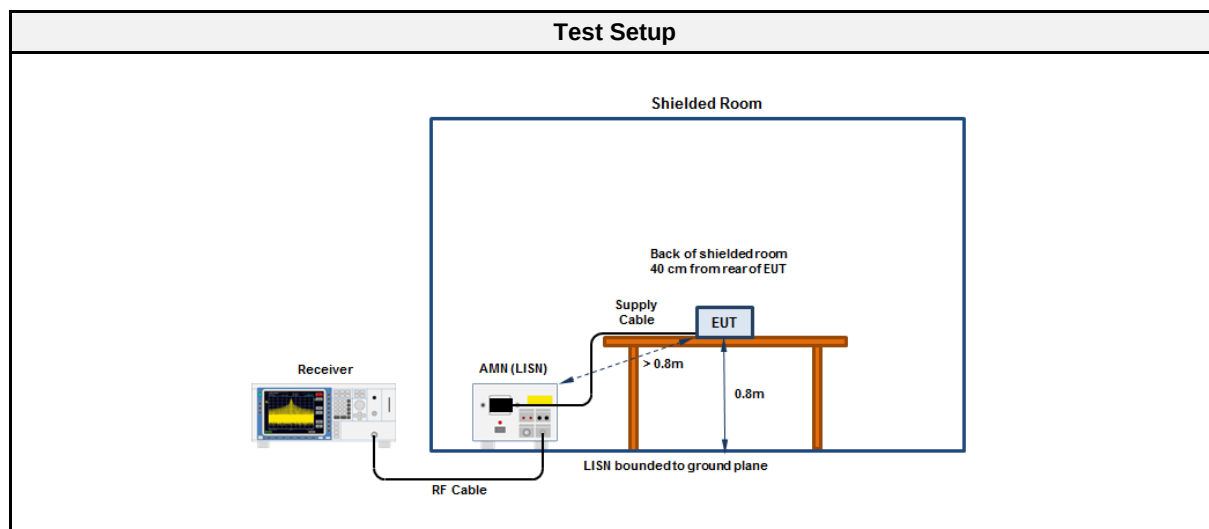
Test Information	
Reference	FCC § 15.207; ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.2
Operator	Florian Voigt
Date	2020-07-29
Measurement uncertainty	≤ 3.82 dB

3.1.2 Limits

Limits		
Frequency [MHz]	Quasi-Peak [dB μ V]	Average [dB μ V]
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50

* Limit decreases linearly with the logarithm of the frequency

3.1.3 Setup



3.1.4 Equipment

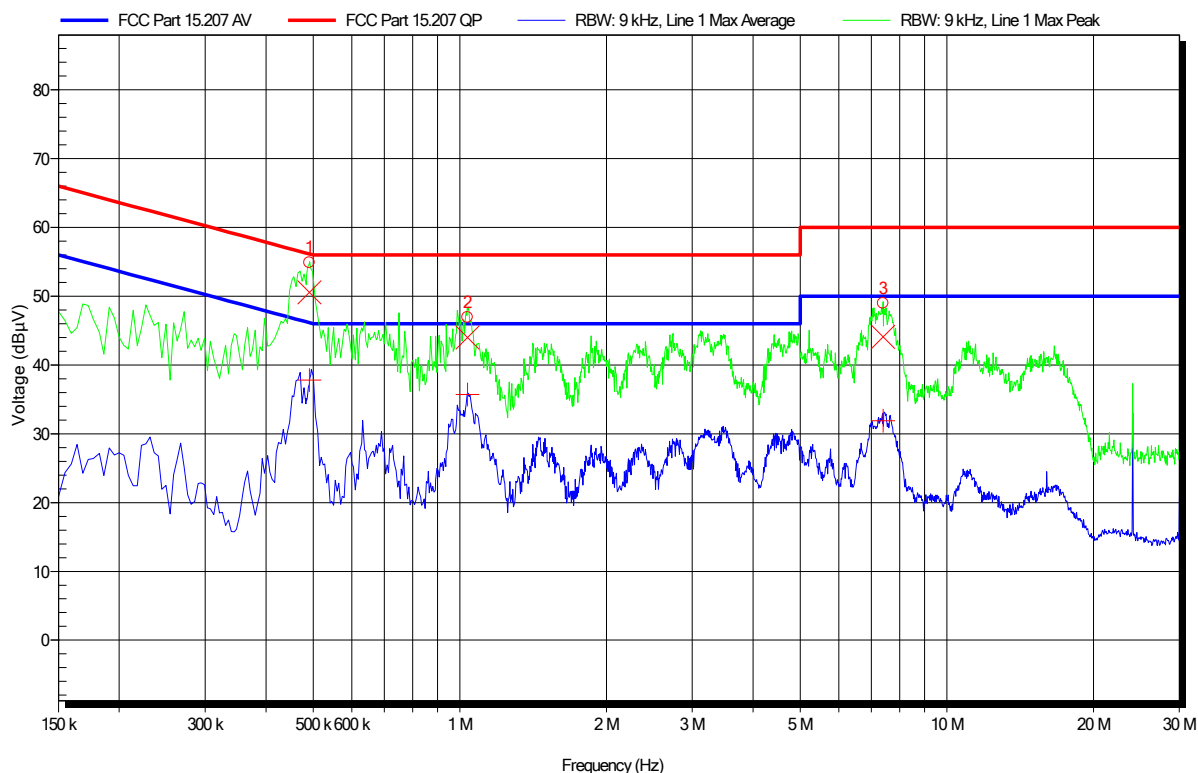
Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2016.1.10

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESU8	EF00379	2020-07	2021-07
Pulse Limiter	R&S	ESH3-Z2	EF01222	2020-07	2021-07
LISN	Schwarzbeck	NSLK 8127 RC	EF01592	2020-07	2021-07

Conducted emissions at the mains power port according to FCC Part C 15.207, ISED RSS-247, Issue 2

Project Number: G0M-2003-8874
 Applicant: NewTec GmbH
 Model Description: Industrial Gateway
 Model: NTSecureGateway
 Test Sample ID: 29949
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Test Date: 2020-07-29
 Operating Conditions: ambient temperature: 25.3°C
 power input: 120 VAC
 LISN: Schwarzbek NSLK 8127 RC L
 Mode: BTLE, 2440MHz, 1MBit/s + 802.11g, 2437MHz, 9MBit/s
 OFDM

Index 27



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	491.55 kHz	50.56 dBμV	56.14 dBμV	-5.58 dB	Pass	Line 1
2	1.036 MHz	43.98 dBμV	56 dBμV	-12.02 dB	Pass	Line 1
3	7.391 MHz	44.11 dBμV	60 dBμV	-15.89 dB	Pass	Line 1

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	491.55 kHz	37.79 dBμV	46.14 dBμV	-8.35 dB	Pass	Line 1
2	1.036 MHz	35.73 dBμV	46 dBμV	-10.27 dB	Pass	Line 1
3	7.391 MHz	31.92 dBμV	50 dBμV	-18.08 dB	Pass	Line 1

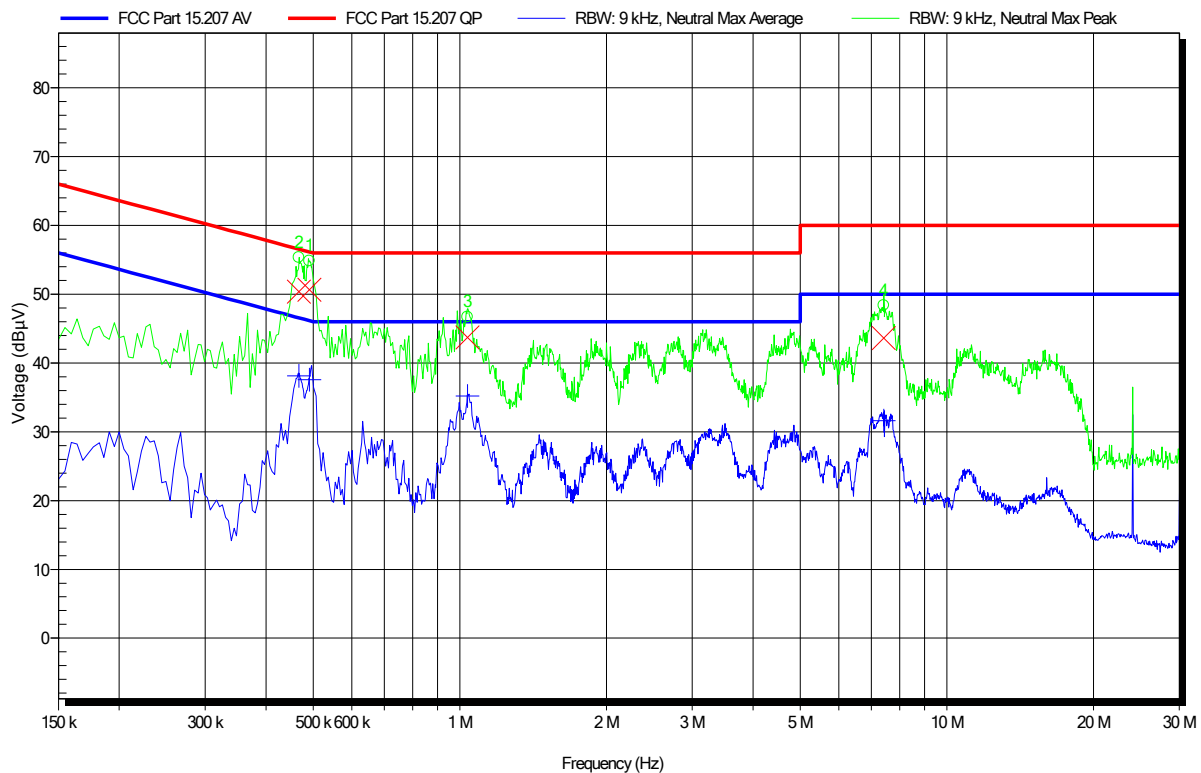
Test Report No.: G0M-2003-8874-TFC247WF-V01

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

Conducted emissions at the mains power port according to FCC Part C 15.207, ISED RSS-247, Issue 2

Project Number: G0M-2003-8874
 Applicant: NewTec GmbH
 Model Description: Industrial Gateway
 Model: NTSecureGateway
 Test Sample ID: 29949
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Test Date: 2020-07-29
 Operating Conditions: ambient temperature: 25.3°C
 power input: 120 VAC
 LISN: Schwarzbeck NSLK 8127 RC N
 Mode: BTLE, 2440MHz, 1MBit/s + 802.11g, 2437MHz, 9MBit/s OFDM

Index 28



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	491.1 kHz	50.64 dBμV	56.15 dBμV	-5.51 dB	Pass	Neutral
2	467.7 kHz	50.38 dBμV	56.55 dBμV	-6.17 dB	Pass	Neutral
3	1.037 MHz	43.7 dBμV	56 dBμV	-12.3 dB	Pass	Neutral
4	7.422 MHz	43.61 dBμV	60 dBμV	-16.39 dB	Pass	Neutral

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	491.1 kHz	37.59 dBμV	46.15 dBμV	-8.56 dB	Pass	Neutral
2	467.7 kHz	38.11 dBμV	46.55 dBμV	-8.44 dB	Pass	Neutral
3	1.037 MHz	35.21 dBμV	46 dBμV	-10.79 dB	Pass	Neutral
4	7.422 MHz	31.63 dBμV	50 dBμV	-18.37 dB	Pass	Neutral

Test Report No.: G0M-2003-8874-TFC247WF-V01

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

3.2 Test Conditions and Results - Transmitter radiated emissions

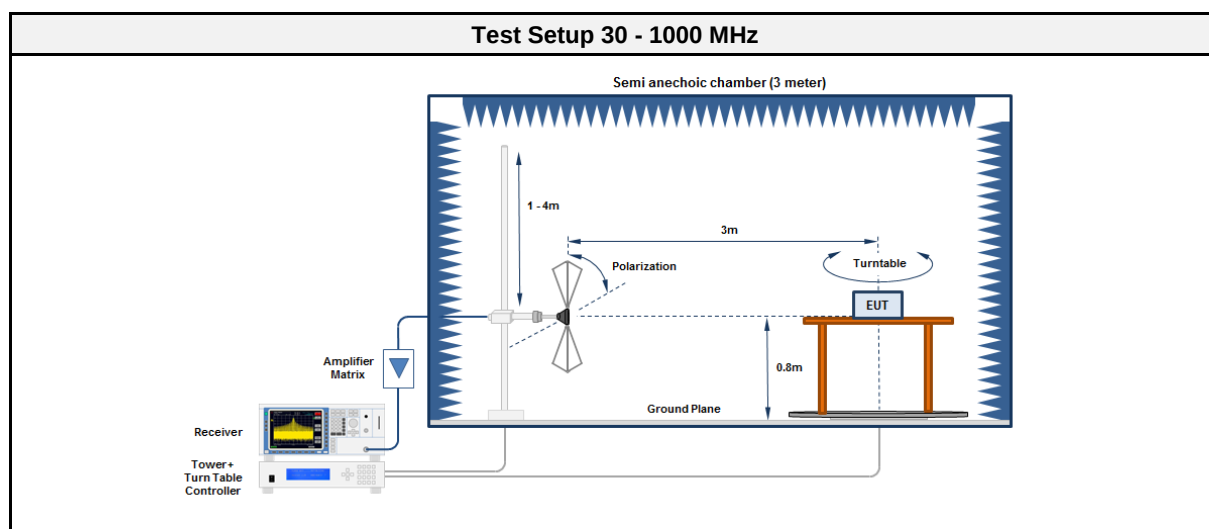
3.2.1 Information

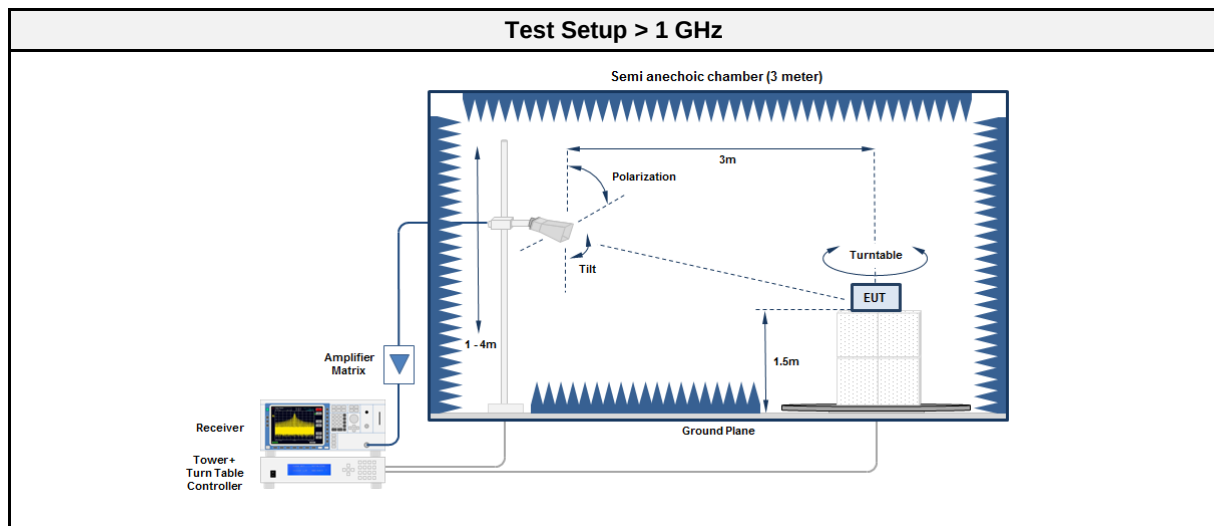
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISSED RSS-Gen, Issue 5 (section 6.13)
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Florian Voigt
Date	2020-09-09 + 2020-09-10
Measurement uncertainty	30MHz ≤ f < 200MHz : ≤ 5.1 dB 200MHz ≤ f < 6GHz : ≤ 5.3 dB f ≥ 6GHz : ≤ 5.95 dB
Comment	Bluetooth LE was additionally turned on with settings: 2440MHz, 1MBit/s, 4dBm, Packetlength = 37, PBRS9

3.2.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [μV/m]	Measurement distance [m]
0.009 - 0.09	Average	2400/F[kHz]	300
0.09 - 0.110	Quasi-Peak	2400/F[kHz]	300
0.110 - 0.490	Average	2400/F[kHz]	300
0.490 - 1.705	Quasi-Peak	24000/F[kHz]	30
1.705 - 30.0	Quasi-Peak	30	30
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.2.3 Setup





3.2.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2020-06	2021-06
Antenna	R&S	HK 116	EF00030	2019-04	2022-04
Antenna	R&S	HL 223	EF00187	2019-05	2022-05

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSU43	EF01631	2020-07	2021-07
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Antenna	Schwarzbeck	BBHA 9120D	EF01561	2019-10	2020-10
Antenna	Amplifier Research	AT4560	EF00302	2019-05	2021-05

3.2.5 Procedure

Test Procedure 30 - 1000 MHz	
1.	EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2.	EUT set to test mode
3.	The receiver is set to peak detection with max hold
4.	The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5.	All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz	
1.	EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground
2.	EUT set to test mode
3.	The receiver is set to peak detection with max hold
4.	The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5.	All significant emissions are measured again using the corresponding final detector

3.2.6 Results

Test Results - OFDM						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2437	37.7764	26.80	qpk	ver	40.00	-13.16
2437	115.9308	27.80	qpk	hor	43.50	-15.73
2437	2200.5	46.37	pk	ver	74.00	-27.63
2437	2290.5	39.16	avg	ver	54.00	-14.84
2437	4612.2	27.51	avg	ver	54.00	-26.49
2437	4880	41.21	avg	ver	54.00	-12.79
2437	4880.5	38.73	avg	hor	54.00	-15.27

3.3 Test Conditions and Results - Receiver radiated emissions

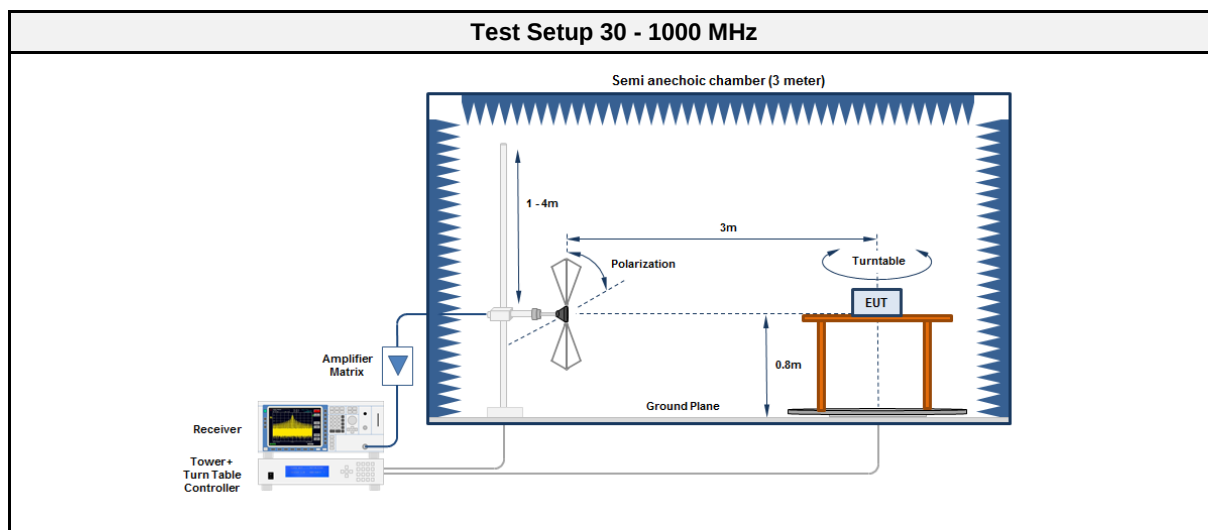
3.3.1 Information

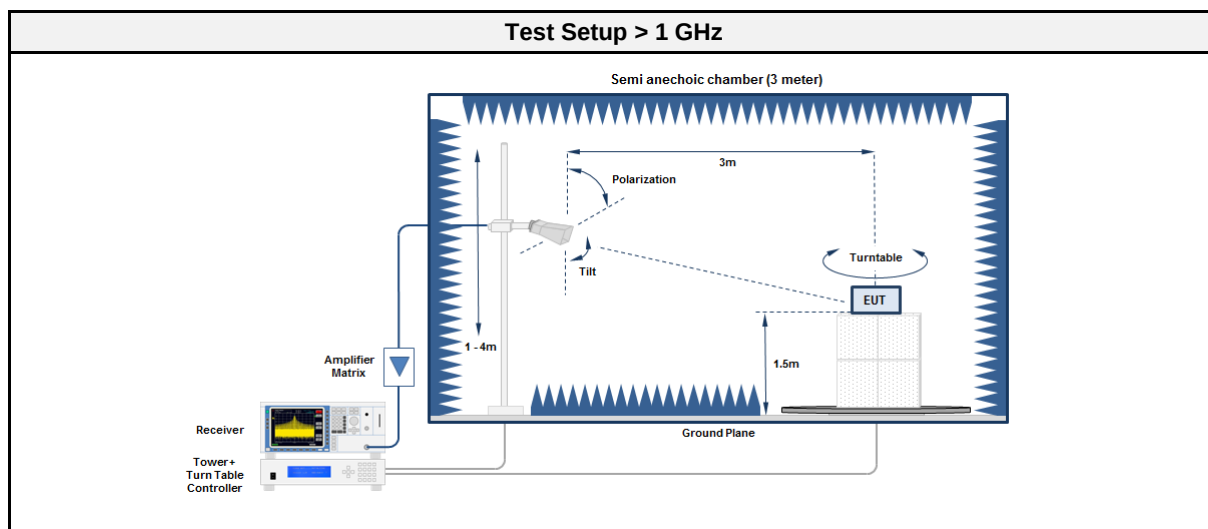
Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.5, 6.6, 11.12
Operator	Florian Voigt
Date	2020-09-10
Measurement uncertainty	$30\text{MHz} \leq f < 200\text{MHz} : \leq 5.1 \text{ dB}$ $200\text{MHz} \leq f < 6\text{GHz} : \leq 5.3 \text{ dB}$ $f \geq 6\text{GHz} : \leq 5.95 \text{ dB}$

3.3.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [$\mu\text{V/m}$]	Measurement distance [m]
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.3.3 Setup





3.3.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2020-06	2021-06
Antenna	R&S	HK 116	EF00030	2019-04	2022-04
Antenna	R&S	HL 223	EF00187	2019-05	2022-05

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum analyzer	R&S	FSU43	EF01631	2020-07	2021-07
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Antenna	Schwarzbeck	BBHA 9120D	EF01561	2019-10	2020-10

3.3.5 Procedure

Test Procedure 30 - 1000 MHz	
- EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground - EUT set to test mode - The receiver is set to peak detection with max hold - The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m - All significant emissions are measured again using the corresponding final detector	

Test Procedure > 1 GHz	
- EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground - EUT set to test mode - The receiver is set to peak detection with max hold - The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m - All significant emissions are measured again using the corresponding final detector	

3.3.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2437	33.0325	29.40	qpk	ver	40.00	-10.64
2437	36.7436	32.50	qpk	ver	40.00	-07.52
2437	44.1477	31.60	qpk	ver	40.00	-08.44
2437	115.7686	30.30	qpk	ver	43.50	-13.16
2437	116.4112	28.10	qpk	hor	43.50	-15.43
2437	141.7699	29.80	qpk	ver	43.50	-13.69
2437	200.7805	24.00	qpk	ver	43.50	-19.54
2437	217.2921	21.90	qpk	hor	46.00	-24.08
2437	331.9903	30.20	qpk	ver	46.00	-15.79
2437	332.0023	32.40	qpk	hor	46.00	-13.64
2437	336.0252	27.50	qpk	hor	46.00	-18.53
2437	2437	41.28	pk	ver	53.98	-12.70
2437	32.3419	30.90	qpk	ver	40.00	-09.09
2437	37.1579	33.20	qpk	ver	40.00	-06.80
2437	43.9615	32.40	qpk	ver	40.00	-07.63
2437	46.2734	33.90	qpk	ver	40.00	-06.10
2437	168.7921	26.10	qpk	ver	43.50	-17.42

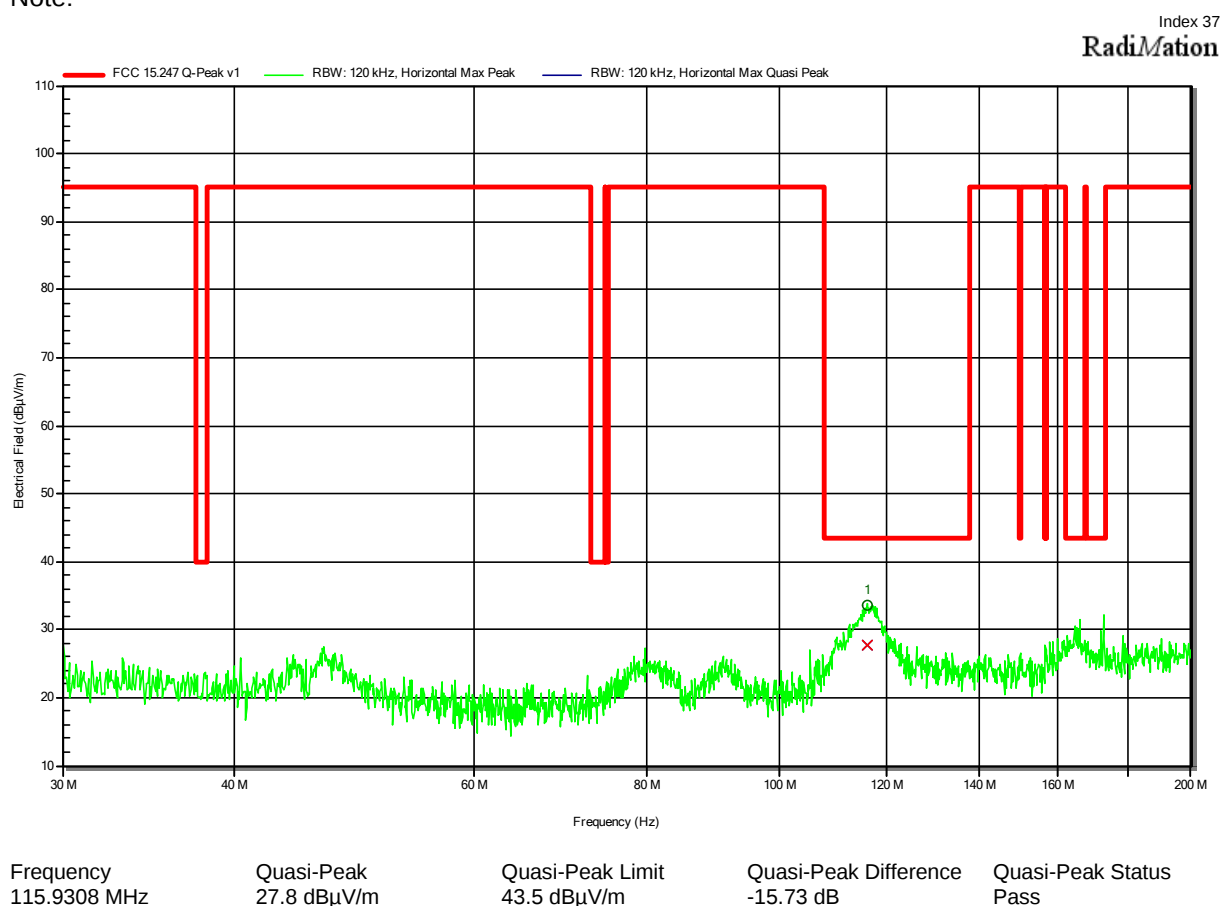
ANNEX A Transmitter spurious emissions

Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 120 VAC
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE
 2440MHz, 1MBit/s; EUT ver
 2020-09-10

Test Date: 2020-09-10
 Note:



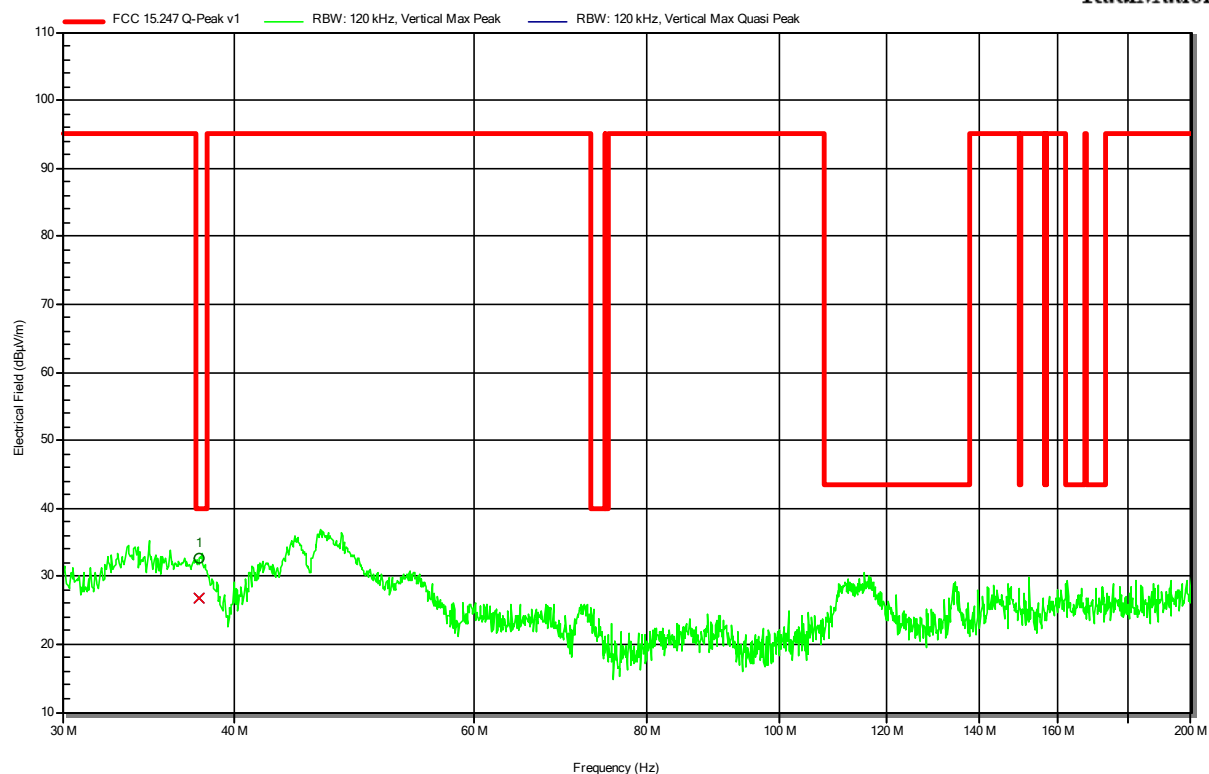
Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE
 2440MHz, 1MBit/s; EUT ver
 Test Date: 2020-09-10
 Note:

Index 36

RadiMation



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status
37.7764 MHz	26.8 dBμV/m	40 dBμV/m	-13.16 dB	Pass

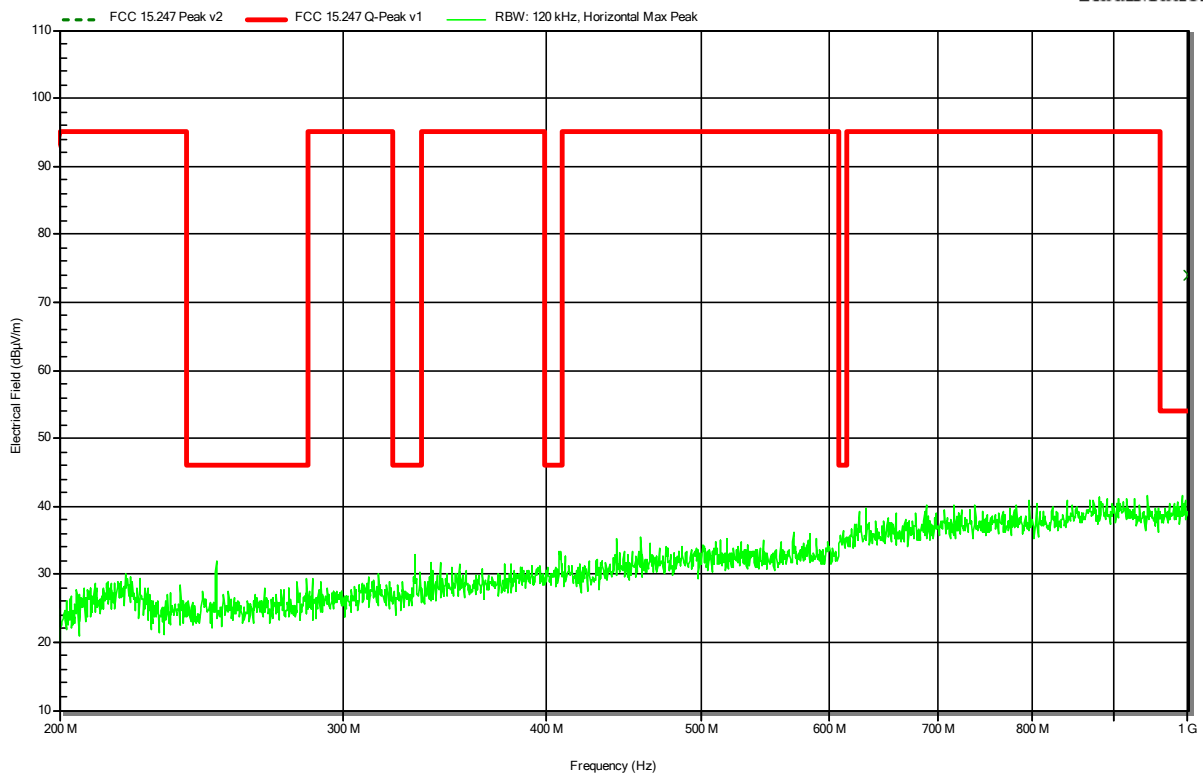
Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
EUT Name: Industrial Gateway
Model: NTSecureGateway
Test Site: Eurofins Product Service GmbH
Operator: Mr. Voigt
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE
2440MHz, 1MBit/s; EUT ver
Test Date: 2020-09-10
Note:

Index 34

RadiMation



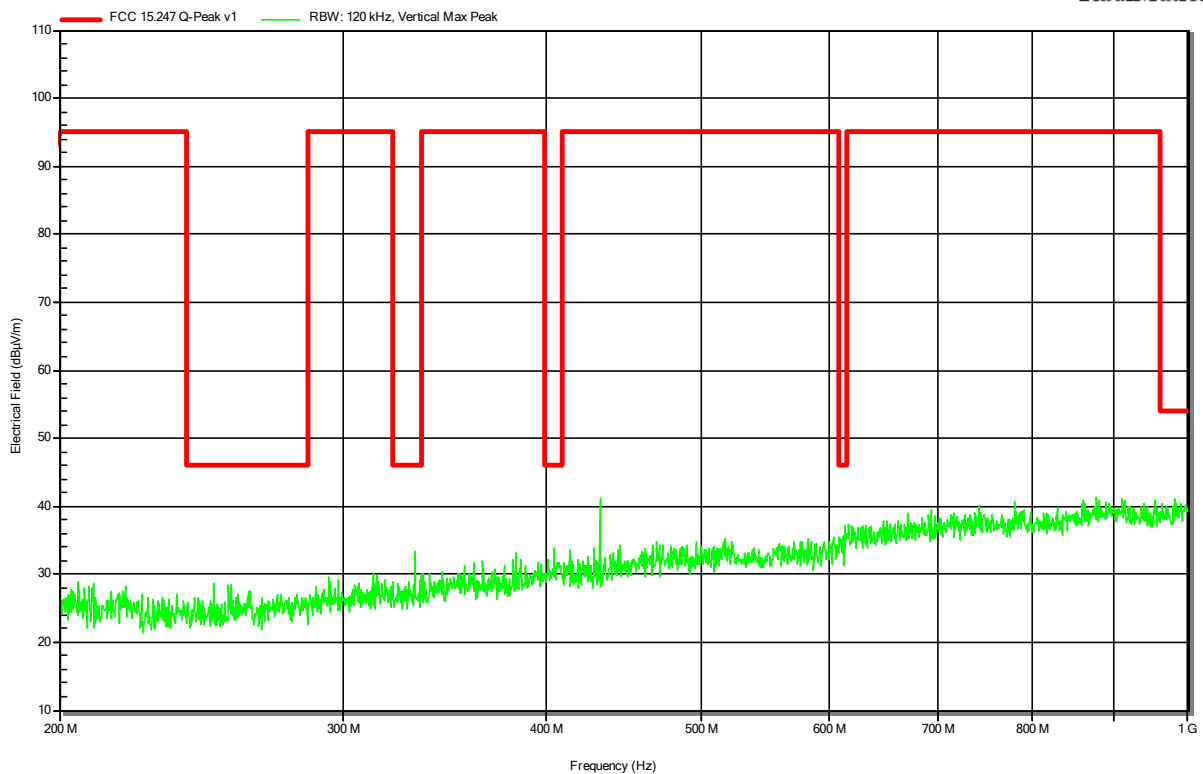
Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
EUT Name: Industrial Gateway
Model: NTSecureGateway
Test Site: Eurofins Product Service GmbH
Operator: Mr. Voigt
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE
2440MHz, 1MBit/s; EUT ver
Test Date: 2020-09-10
Note:

Index 35

RadiMation



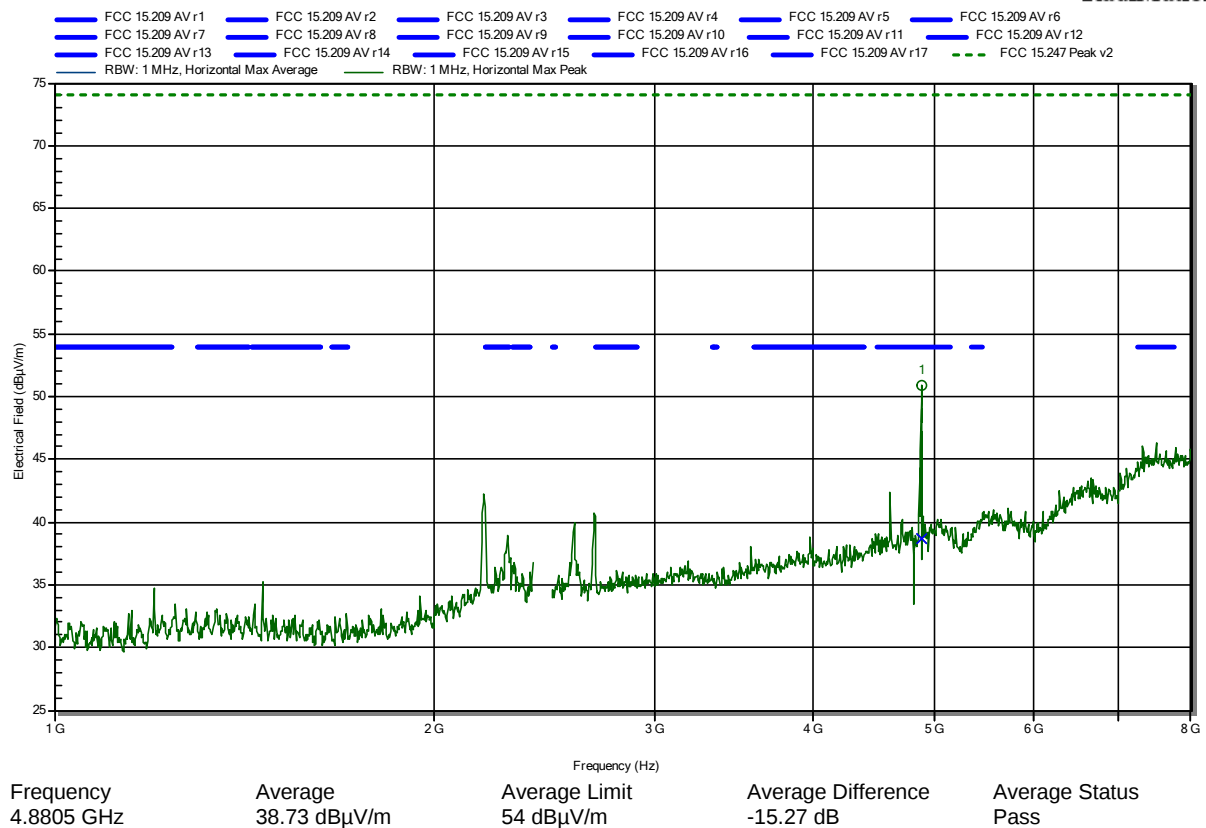
Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
EUT Name: Industrial Gateway
Model: NTSecureGateway
Test Site: Eurofins Product Service GmbH
Operator: Mr. Voigt
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
Antenna: BBHA 9120D, Horizontal
Measurement distance: 3 m
Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE 2440MHz, 1MBit/s; EUT ver
Test Date: 2020-09-09
Note:

Index 11

RadiMation



Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

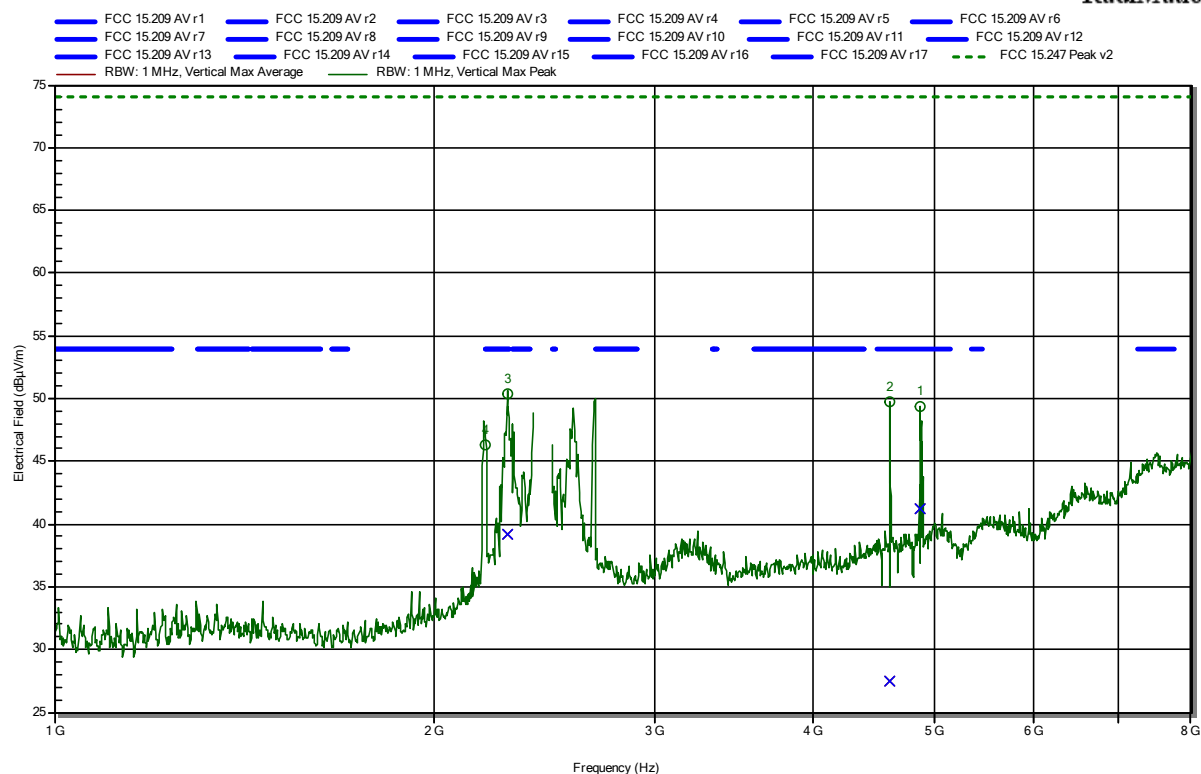
Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE 2440MHz, 1MBit/s; EUT ver 2020-09-09

Test Date: 2020-09-09

Note:

Index 10

RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.2005 GHz	46.37 dBμV/m	74 dBμV/m	-27.63 dB	Pass
Frequency	Average	Average Limit	Average Difference	Average Status
2.2905 GHz	39.16 dBμV/m	54 dBμV/m	-14.84 dB	Pass
4.6122 GHz	27.51 dBμV/m	54 dBμV/m	-26.49 dB	Pass
4.88 GHz	41.21 dBμV/m	54 dBμV/m	-12.79 dB	Pass

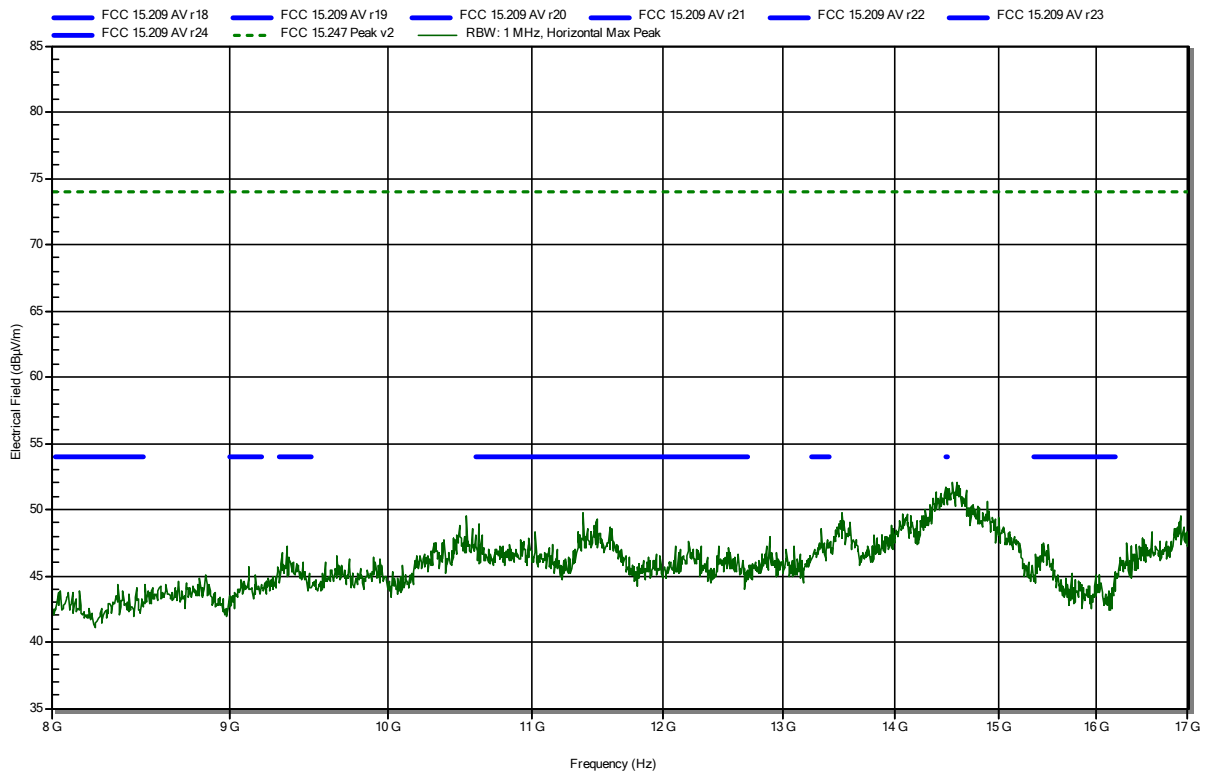
Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
EUT Name: Industrial Gateway
Model: NTSecureGateway
Test Site: Eurofins Product Service GmbH
Operator: Mr. Voigt
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
Antenna: BBHA 9120D, Horizontal
Measurement distance: 3 m
Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE
2440MHz, 1MBit/s; EUT ver
Test Date: 2020-09-10
Note:

Index 12

RadiMation



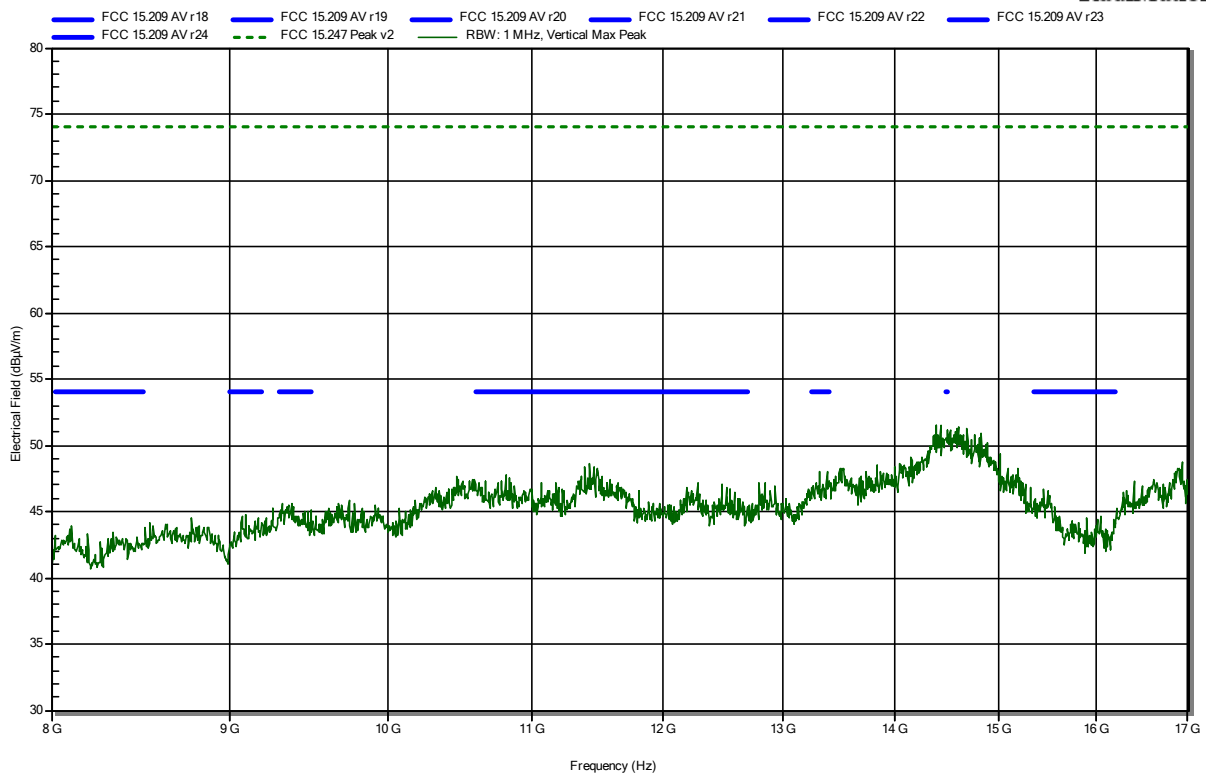
Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
EUT Name: Industrial Gateway
Model: NTSecureGateway
Test Site: Eurofins Product Service GmbH
Operator: Mr. Voigt
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
Antenna: BBHA 9120D, Vertical
Measurement distance: 3 m
Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE
2440MHz, 1MBit/s; EUT ver
Test Date: 2020-09-10
Note:

Index 13

RadiMation



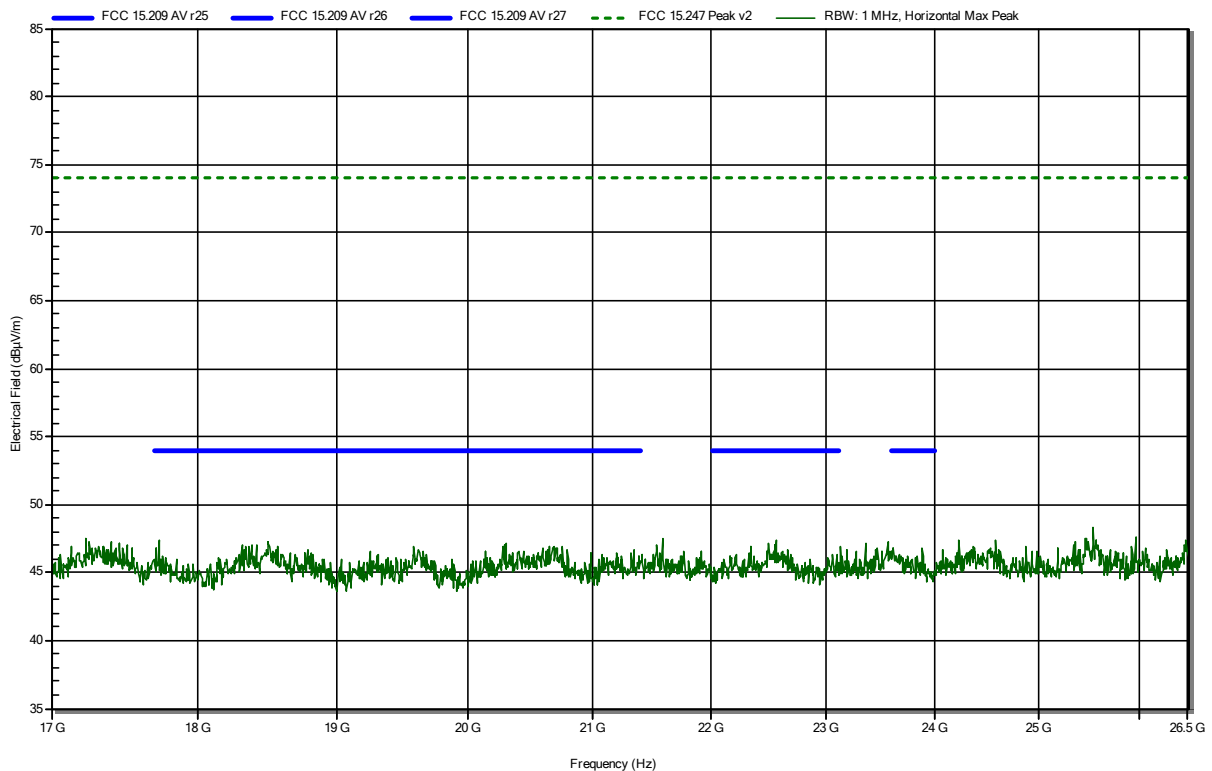
Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: Amplifier Research AT4560, Horizontal
 Measurement distance: 3 m
 Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE
 2440MHz, 1MBit/s; EUT ver
 2020-09-10
 Test Date:
 Note:

Index 23

RadiMation



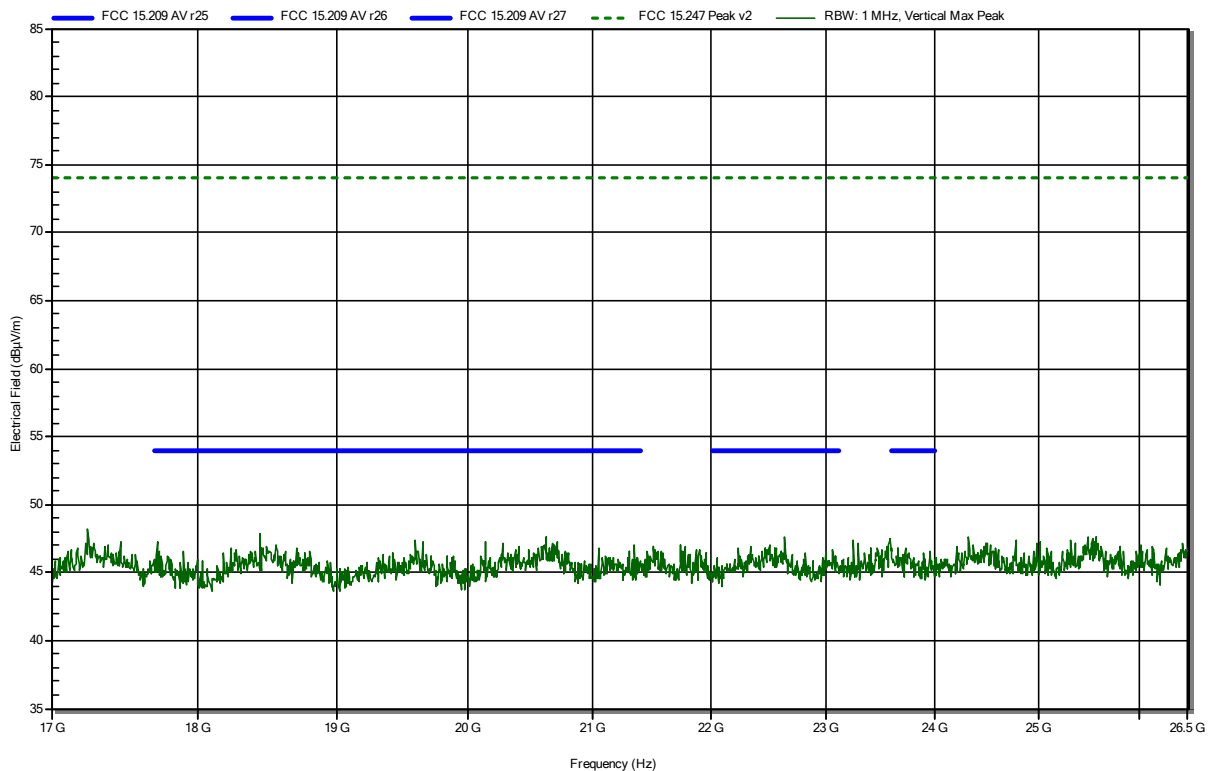
Spurious emissions according to FCC CFR Part 15.247, RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: Amplifier Research AT4560, Vertical
 Measurement distance: 3 m
 Mode: TX; WiFi, 2437MHz, 9MBit/s OFDM, DG= -10, PPA6, PA18 + BTLE
 2440MHz, 1MBit/s; EUT ver
 Test Date: 2020-09-10
 Note:

Index 22

RadiMation



ANNEX B Receiver spurious emissions

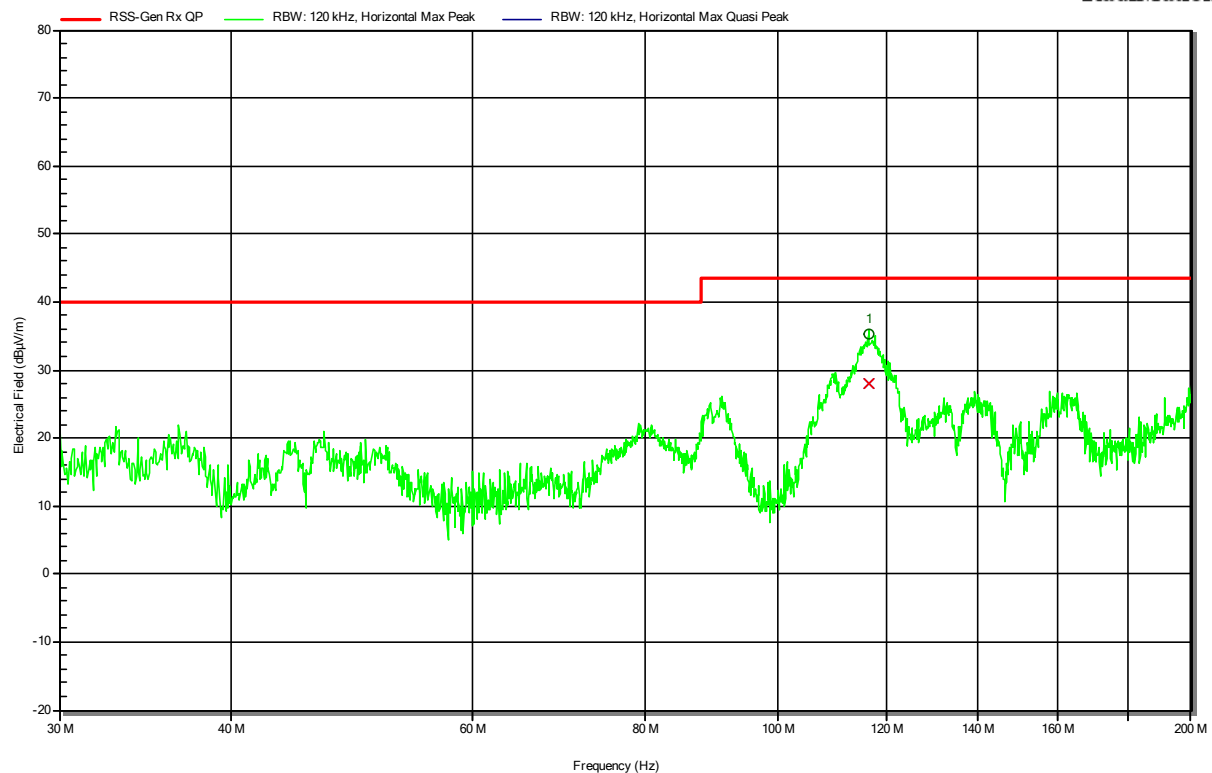
Spurious emissions according to RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: RX; WiFi, 2437MHz; EUT ver
 Test Date: 2020-09-10
 Note:

Index 30

RadiMation



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
116.4112 MHz	28.1 dBμV/m	43.5 dBμV/m	-15.43 dB	Pass	0 degrees	1 m

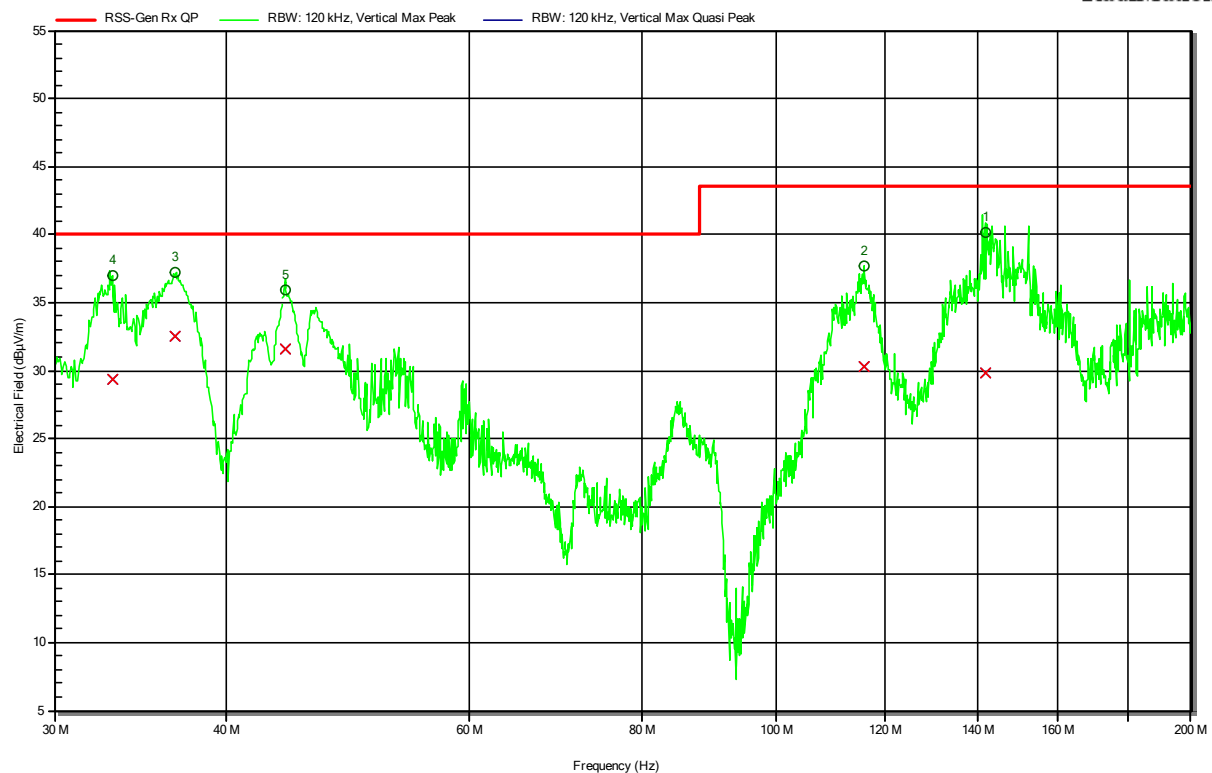
Spurious emissions according to RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
EUT Name: Industrial Gateway
Model: NTSecureGateway
Test Site: Eurofins Product Service GmbH
Operator: Mr. Voigt
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3 m
Mode: RX; WiFi, 2437MHz; EUT ver
Test Date: 2020-09-10
Note:

Index 29

RadiMation



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
33.0325 MHz	29.4 dBμV/m	40 dBμV/m	-10.64 dB	Pass	0 degrees	1 m
36.7436 MHz	32.5 dBμV/m	40 dBμV/m	-7.52 dB	Pass	0 degrees	1 m
44.1477 MHz	31.6 dBμV/m	40 dBμV/m	-8.44 dB	Pass	0 degrees	1 m
115.7686 MHz	30.3 dBμV/m	43.5 dBμV/m	-13.16 dB	Pass	0 degrees	1 m
141.7699 MHz	29.8 dBμV/m	43.5 dBμV/m	-13.69 dB	Pass	0 degrees	1 m

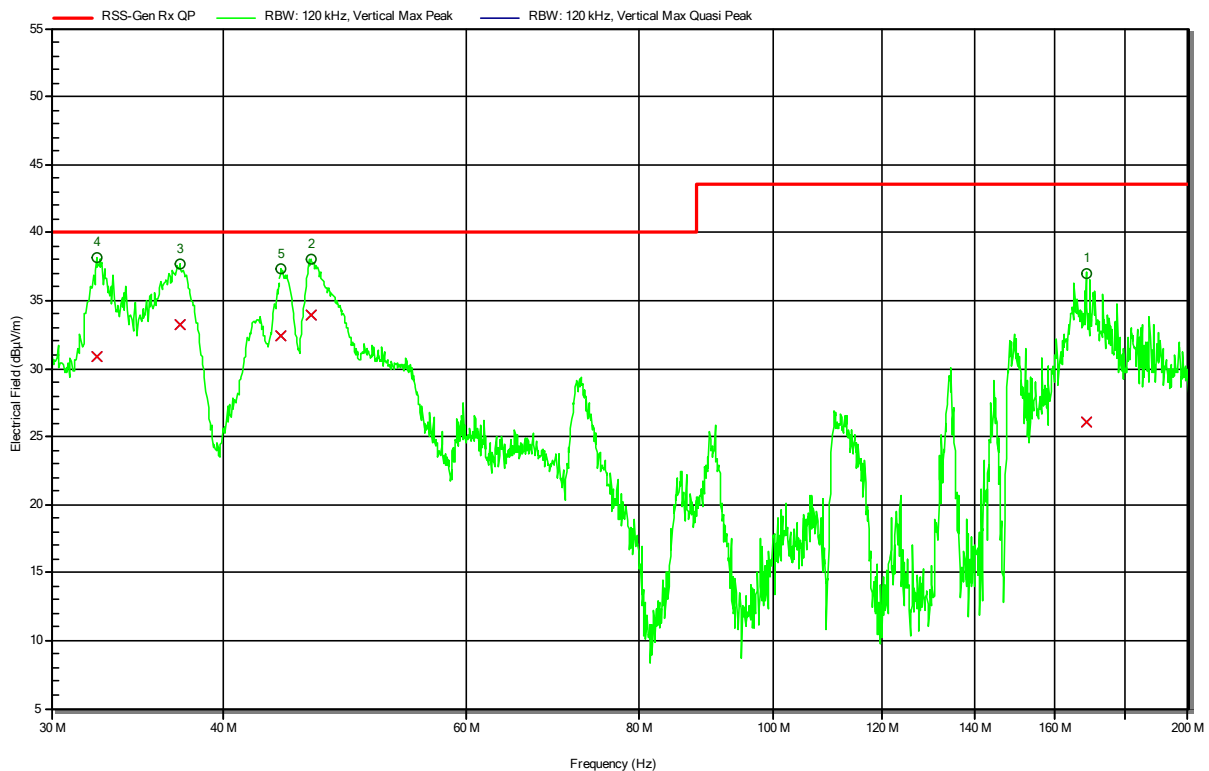
Spurious emissions according to RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: RX; WiFi, 2437MHz; EUT hor
 Test Date: 2020-09-10
 Note:

Index 31

RadiMation



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
32.3419 MHz	30.9 dBμV/m	40 dBμV/m	-9.09 dB	Pass	0 degrees	1 m
37.1579 MHz	33.2 dBμV/m	40 dBμV/m	-6.8 dB	Pass	0 degrees	1 m
43.9615 MHz	32.4 dBμV/m	40 dBμV/m	-7.63 dB	Pass	0 degrees	1 m
46.2734 MHz	33.9 dBμV/m	40 dBμV/m	-6.1 dB	Pass	0 degrees	1 m
168.7921 MHz	26.1 dBμV/m	43.5 dBμV/m	-17.42 dB	Pass	0 degrees	1 m

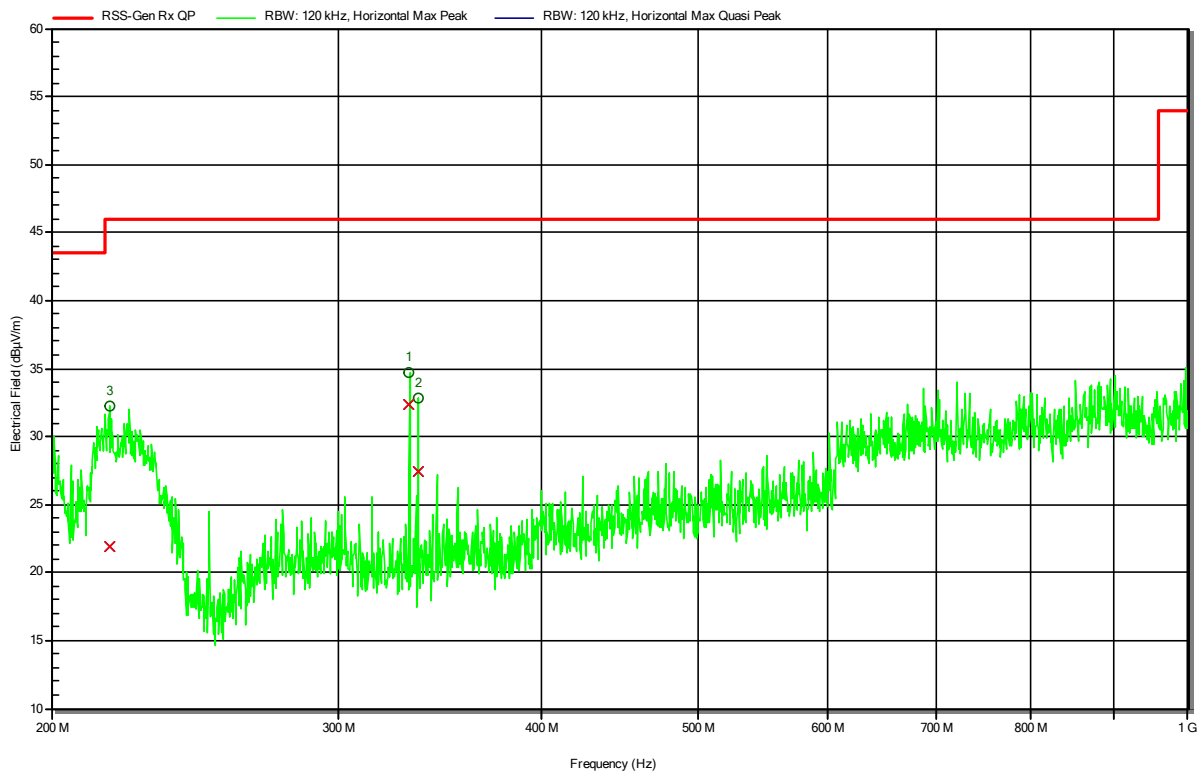
Spurious emissions according to RSS-247

Project number: GOM-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: RX; WiFi, 2437MHz; EUT ver
 Test Date: 2020-09-10
 Note:

Index 33

RadiMation



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
217.2921 MHz	21.9 dBμV/m	46 dBμV/m	-24.08 dB	Pass	0 degrees	1 m
332.0023 MHz	32.4 dBμV/m	46 dBμV/m	-13.64 dB	Pass	0 degrees	1 m
336.0252 MHz	27.5 dBμV/m	46 dBμV/m	-18.53 dB	Pass	0 degrees	1 m

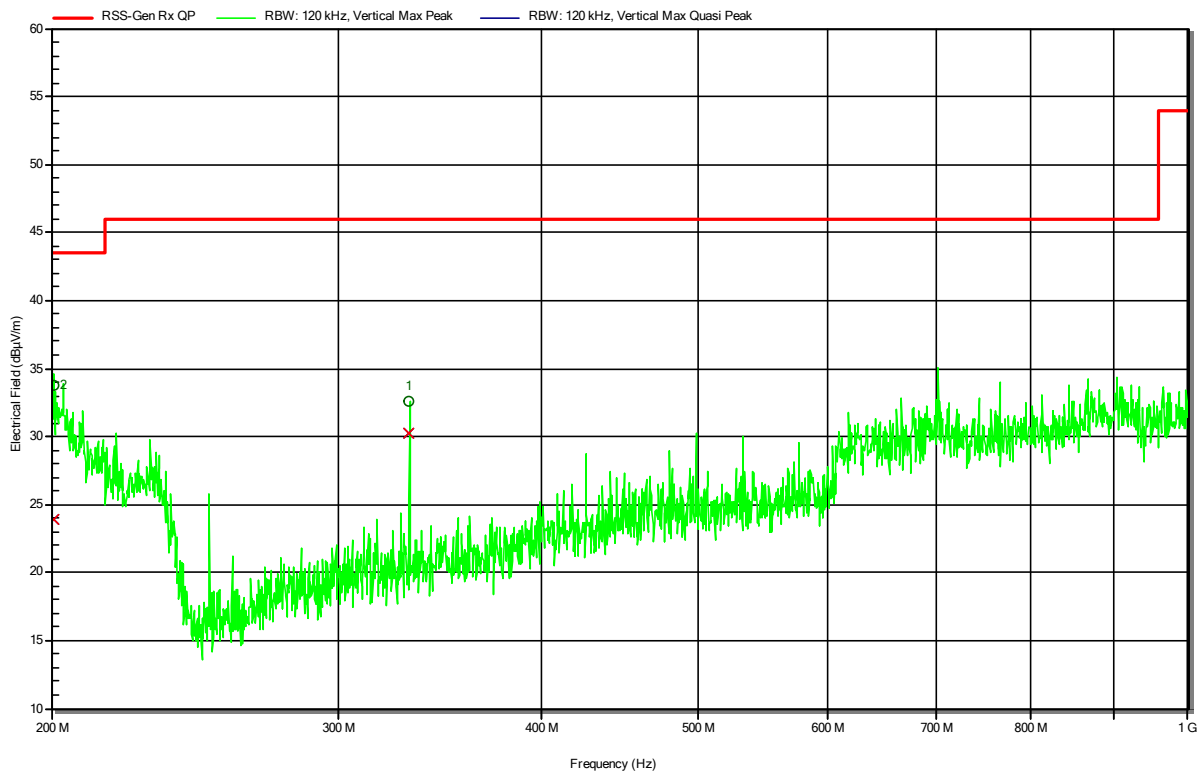
Spurious emissions according to RSS-247

Project number: GOM-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: RX; WiFi, 2437MHz; EUT ver
 Test Date: 2020-09-10
 Note:

Index 32

RadiMation



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
200.7805 MHz	24 dBμV/m	43.5 dBμV/m	-19.54 dB	Pass	0 degrees	1 m
331.9903 MHz	30.2 dBμV/m	46 dBμV/m	-15.79 dB	Pass	0 degrees	1 m

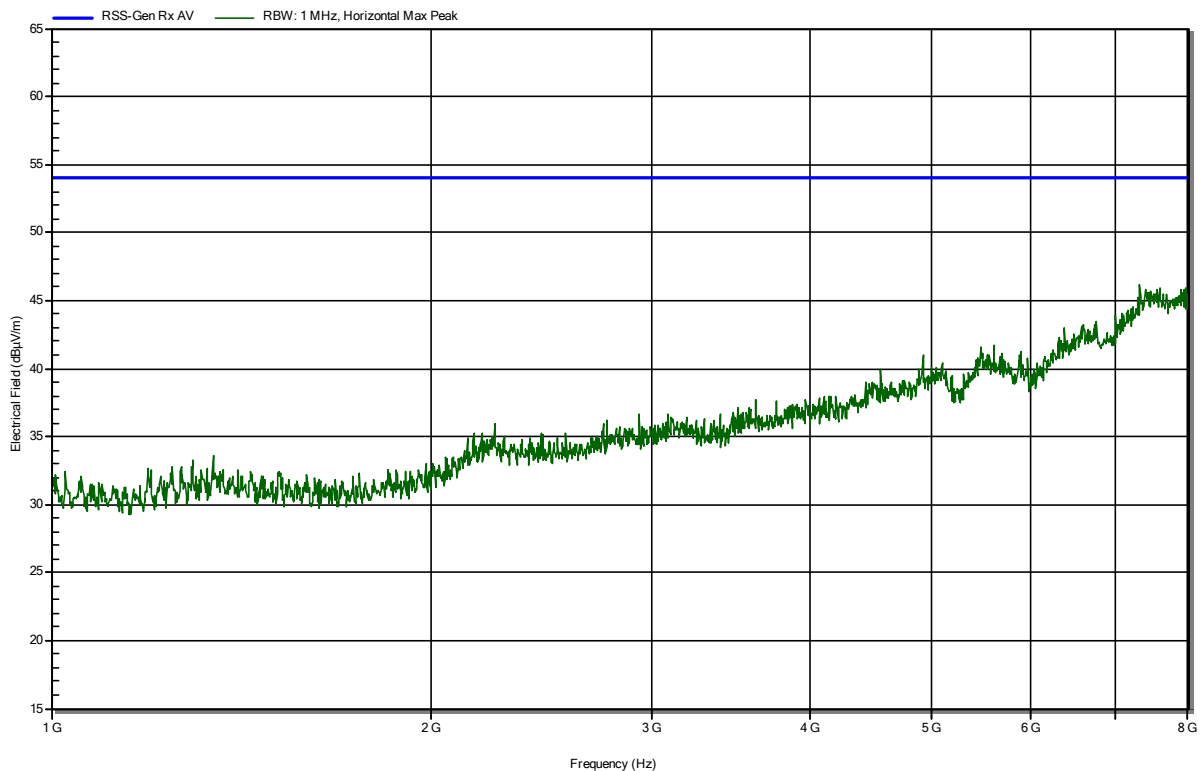
Spurious emissions according to RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
EUT Name: Industrial Gateway
Model: NTSecureGateway
Test Site: Eurofins Product Service GmbH
Operator: Mr. Voigt
Measurement software: RadiMation, version 2020.1.8
Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
Antenna: BBHA 9120D, Horizontal
Measurement distance: 3 m
Mode: RX; WiFi, 2437MHz; EUT ver
Test Date: 2020-09-10
Note:

Index 25

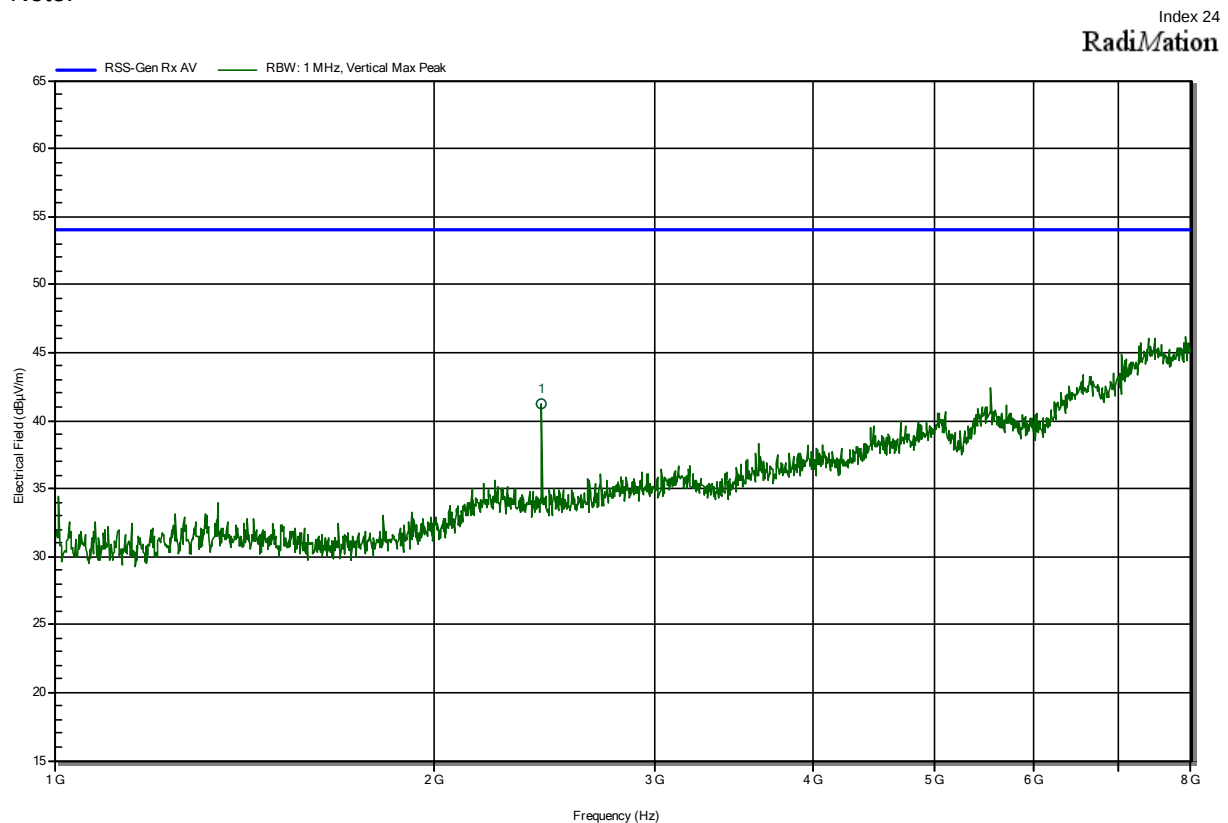
RadiMation



Spurious emissions according to RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: BBHA 9120D, Vertical
 Measurement distance: 3 m
 Mode: RX; WiFi, 2437MHz; EUT ver
 Test Date: 2020-09-10
 Note:



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.437 GHz	41.28 dBµV/m	53.98 dBµV/m	-12.7 dB	Pass

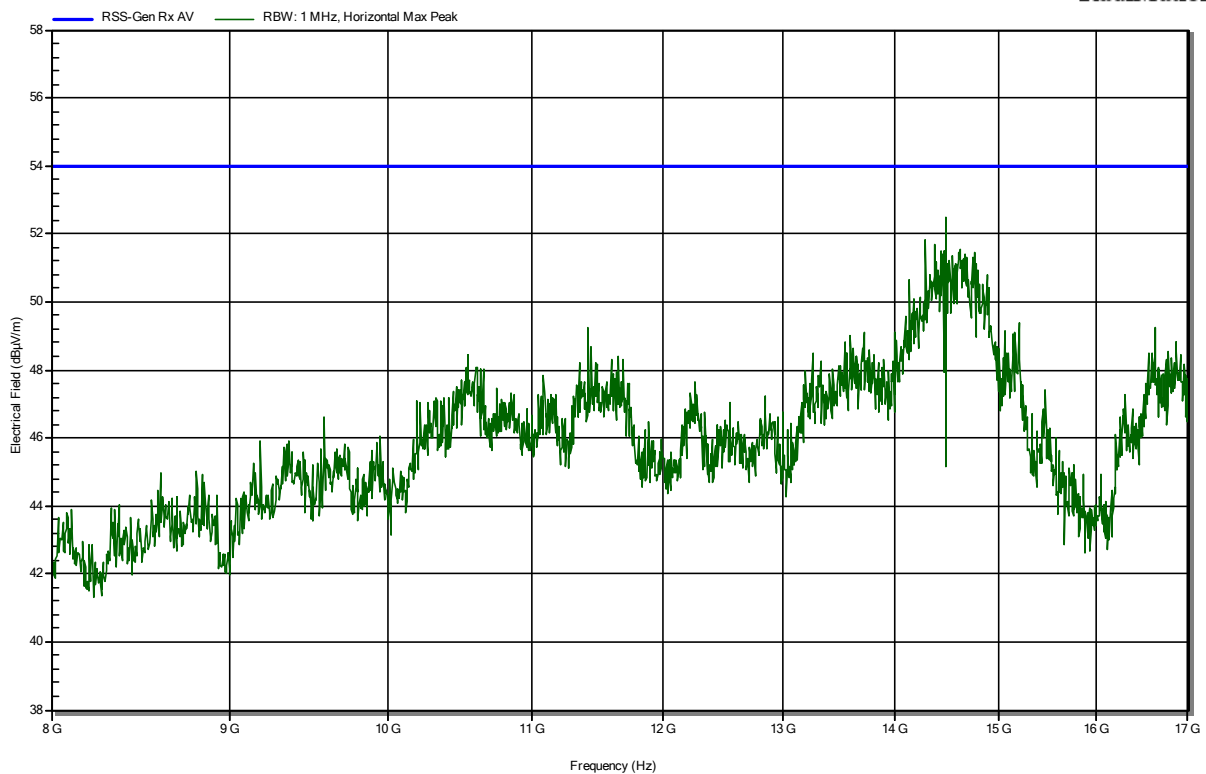
Spurious emissions according to RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
EUT Name: Industrial Gateway
Model: NTSecureGateway
Test Site: Eurofins Product Service GmbH
Operator: Mr. Voigt
Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
Antenna: BBHA 9120D, Horizontal
Measurement distance: 3 m
Mode: RX; WiFi, 2437MHz; EUT ver
Test Date: 2020-09-10
Note:

Index 26

RadiMation



Spurious emissions according to RSS-247

Project number: G0M-2003-8874

Applicant: NewTec GmbH
 EUT Name: Industrial Gateway
 Model: NTSecureGateway
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Test Conditions: Tnom: 25.1 °Celsius, Vnom: 24 VAC
 Antenna: BBHA 9120D, Horizontal
 Measurement distance: 3 m
 Mode: RX; WiFi, 2437MHz; EUT ver
 Test Date: 2020-09-10
 Note:

Index 27

RadiMation

