eurofins | Product Service

FCC TEST REPORT

FCC 47 CFR Part 15C
Industry Canada RSS-210
Digital transmission systems operating within the 2400 – 2483.5 MHz band

Report Reference No.....:	G0M-1406-3919-TFC247WF-V01
Testing Laboratory.....:	Eurofins Product Service GmbH
Address.....:	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation.....:	A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
Applicant's name.....:	Leica Geosystems AG
Address.....:	Heinrich Wild Strasse 9435 Heerbrugg SWITZERLAND
Test specification:	
Standard.....:	47 CFR Part 15C KDB Publication No. 558074 D01 v03r02 RSS-210, Issue 8, 2010-12 RSS-Gen, Issue 4, 2014-11 ANSI C63.4:2009
Test scope.....:	partial Radio compliance test
Equipment under test (EUT):	
Product description	Field Controller Win EC7
Model No.	CS20
Additional Model(s)	None
Brand Name(s)	Leica Geosystems
Hardware version	V5.0
Firmware / Software version	None
	FCC-ID: RFD-CSNGB IC: 3177A-CSNGB
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:

Test Lab Temperature..... :	20 – 23 °C	
Test Lab Humidity ..... :	32 – 38 %	
Date of receipt of test item ..... :	2015-02-26	
Date (s) of performance of tests ..... :	2014-08-07 - 2015-02-27	
Compiled by ..... :	Burkhard Pudell	
Tested by (+ signature)..... : (Responsible for Test)	Burkhard Pudell	B. Pudell
Approved by (+ signature) ..... :	Christian Weber	C. Weber
Date of issue ..... :	2015-04-23	
Total number of pages ..... :	139	

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	Issue Date	Remarks	Revised by
01	2015-04-23	Initial Release	

REPORT INDEX

1 Equipment (Test item) Description

Description	Field Controller Win EC7	
Model	CS20	
Additional Model(s)	None	
Brand Name(s)	Leica Geosystems	
Serial number	None	
Hardware version	V5.0	
Software / Firmware version	None	
FCC-ID	RFD-CSNGB	
IC	3177A-CSNGB	
Equipment type	End product	
Radio type	Transceiver	
Radio technology	IEEE 802.11 b/g/n	
Operating frequency range	2412 - 2462 MHz	
Assigned frequency band	2400 - 2483.5 MHz	
Main test frequencies	F_{LOW20}	2412 MHz
	F_{MID20}	2437 MHz
	F_{HIGH20}	2462 MHz
Spreading	CCK, DSSS, OFDM	
Modulations	BPSK, QPSK, 16-QAM, 64-QAM	
Number of channels	11	
Channel spacing	5 MHz	
Number of antennas	1	
Antenna	Type	integrated
	Model	W3008C
	Manufacturer	Pulse
	Gain	+2.2 dBi (manufacturer declaration)
Manufacturer	Leica Geosystems AG Heinrich Wild Strasse 9435 Heerbrugg SWITZERLAND	
Power supply	V_{NOM}	11.1 VDC
	V_{MIN}	N/R
	V_{MAX}	N/R
AC/DC-Adaptor	Model	AEL40US15
	Vendor	XP Power
	Input	100 - 240 V AC
	Output	15 V DC

1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
none				

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

AE : Auxiliary/Associated Equipment, or

SIM : Simulator (Not Subjected to Test)

CABL : Connecting cables

1.5 Test Modes

Mode #	Description	
DSSS	General conditions:	EUT powered by battery.
	Radio conditions:	Mode = standalone transmit Spreading = DSSS Modulation = BPSK Data rate = 1 Mbps Bandwidth = 20 MHz Duty cycle = 99 % Power level = Max
OFDM	General conditions:	EUT powered by battery.
	Radio conditions:	Mode = standalone transmit Spreading = OFDM Modulation = BPSK Data rate = 6 Mbps Bandwidth = 20 MHz Duty cycle = 99 % Power level = Max
HT20	General conditions:	EUT powered by battery.
	Radio conditions:	Mode = standalone transmit Spreading = OFDM Modulation = BPSK Data rate = 7.2 Mbps Bandwidth = 20 MHz Duty cycle = 99 % Power level = Max
Receive	General conditions:	EUT powered by battery.
	Radio conditions:	Mode = standalone receive Spreading = DSSS / OFDM
AC-Powerline	General conditions:	EUT powered by dedicated AC/DC-Adaptor
	Radio conditions:	Mode = standalone transmit Spreading = DSSS Power level = Maximum

1.6 Test Equipment Used During Testing

Measurement Software			
Description	Manufacturer	Name	Version
EMC Test Software	Dare Instruments	Radimation	2014.1.15

Occupied Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

6dB Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Maximum peak conducted power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Power spectral density					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Band edge compliance					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Conducted spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2015-02	2016-02

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 1	EF00062	-	-
Spectrum Analyzer	R&S	FSIQ26	EF00242	2014-03	2015-03
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD Antenna	R&S	HL 223	EF00187	2014-03	2017-03
LPD Antenna	R&S	HL 025	EF00327	2013-02	2016-02

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2014-11	2016-11
EMI Test Receiver	R&S	ESCS 30	EF00295	2014-10	2015-10

1.7 Sample emission level calculation

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

Reading:

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

A.F.:

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

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

Net:

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

Limit:

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

Limit (dBµV/m) = 20*log (µV/m)

Margin:

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

Example only:

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

2 Result Summary

FCC 47 CFR Part 15C, IC RSS-210				
Product Specific Standard Section	**Requirement – Test**	**Reference Method**	**Result**	**Remarks**
RSS-Gen 6.6	Occupied Bandwidth	RSS-Gen 6.6	N/R	Informational only
FCC § 15.247(a)(2) IC RSS-210 § A8.2	6dB Bandwidth	KDB Publication No. 558074	PASS	
FCC § 15.247(b)(3) IC RSS-210 § A8.4	Maximum peak conducted power	KDB Publication No. 558074	PASS	
FCC § 15.247(e) IC RSS-210 § A8.2	Power spectral density	KDB Publication No. 558074	PASS	
47 CFR 15.207 RSS-Gen 8.8	AC power line conducted emissions	KDB Publication No. 558074 / ANSI C63.4	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Band edge compliance	KDB Publication No. 558074	PASS	
FCC § 15.247(d) IC RSS-210 § A8.5	Conducted spurious emissions	KDB Publication No. 558074	PASS	
FCC § 15.247(d) FCC § 15.209 IC RSS-210 A8.5 IC RSS-Gen 6.13	Transmitter radiated spurious emissions	KDB Publication No. 558074 / ANSI C 63.4	PASS	
IC RSS-Gen 7.1	Receiver radiated spurious emissions	ANSI C 63.4	PASS	
Remarks:				

3 Test Conditions and Results

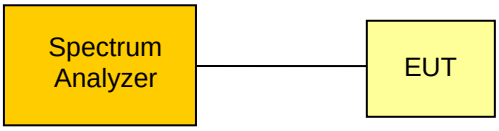
3.1 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. to IC RSS-Gen	**Verdict: N/R**
Test according to measurement reference	Reference Method
	RSS-Gen 6.6
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}

Limits

None (Informational only)

Test setup



Test procedure

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

Test results

Channel	Frequency [MHz]	Mode	Occupied Bandwidth [MHz]
F_{LOW20}	2412	DSSS	14.128
F_{MID20}	2437	DSSS	14.329
F_{HIGH20}	2462	DSSS	14.429
F_{LOW20}	2412	OFDM	17.635
F_{MID20}	2437	OFDM	17.936
F_{HIGH20}	2462	OFDM	18.437
F_{LOW20}	2412	HT20	19.539
F_{MID20}	2437	HT20	20.741
F_{HIGH20}	2462	HT20	22.846

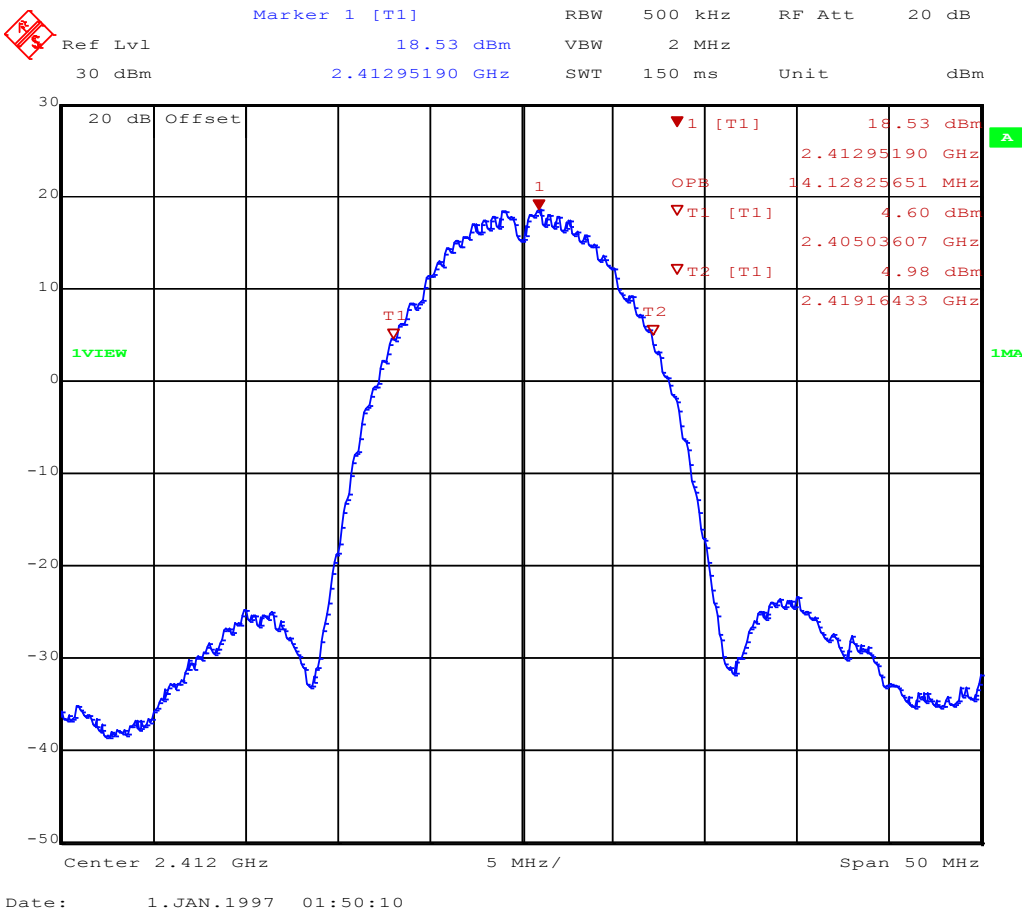
Comments:

Occupied Bandwidth – DSSS F_{LOW}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Burkhard Pudell
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN 2.4G, 2412 MHz, DSSS, 1Mbps
Test Date:	2015-02-27
Verdict:	NONE (INFORMATION ONLY)
Note 1:	A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2:	OBW= 14.128 MHz

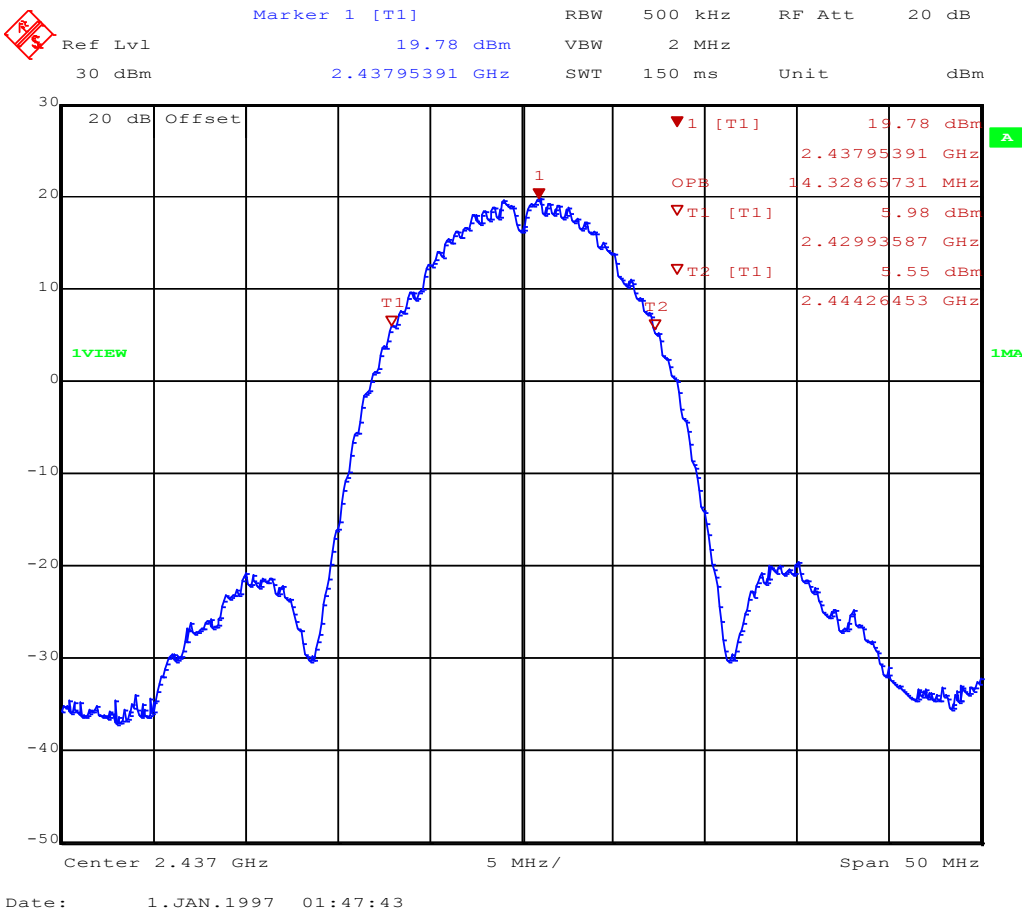


Occupied Bandwidth – DSSS F_{MID}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Burkhard Pudell
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN 2.4G, 2437 MHz, DSSS, 1Mbps
Test Date:	2015-02-27
Verdict:	NONE (INFORMATION ONLY)
Note 1:	A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2:	OBW= 14.329 MHz

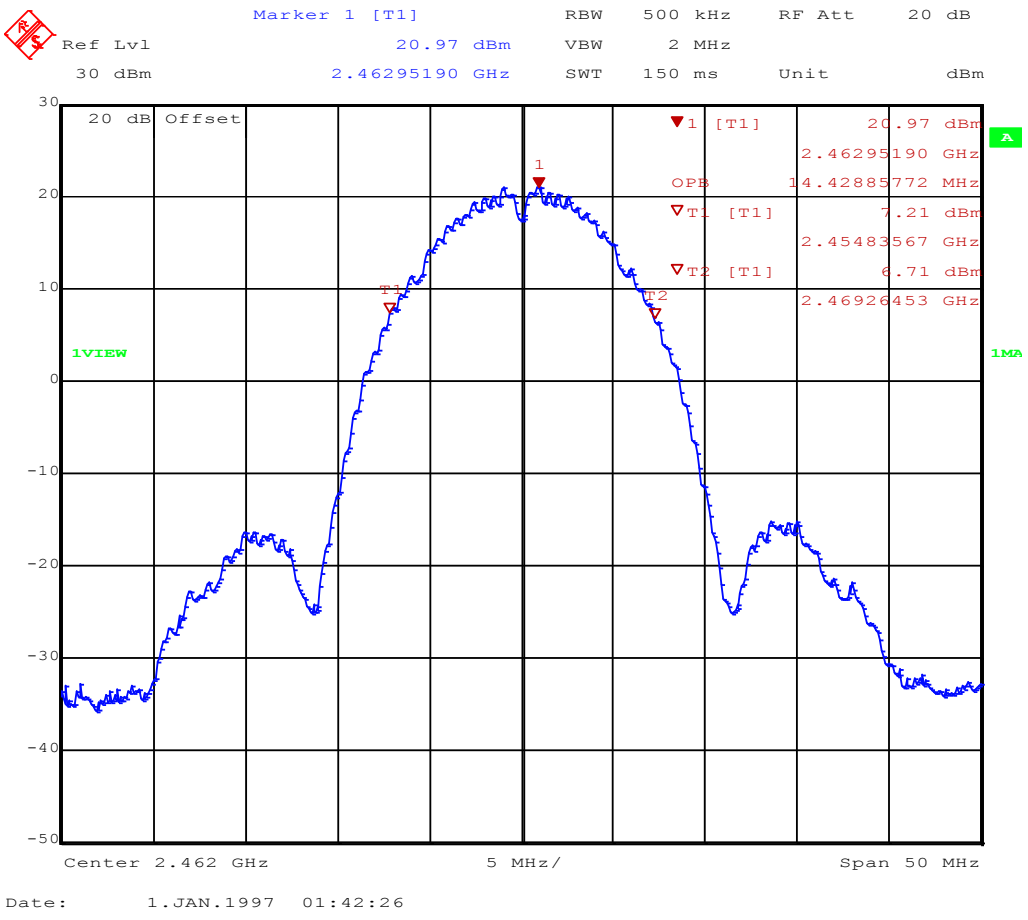


Occupied Bandwidth – DSSS F_{HIGH}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Burkhard Pudell
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN 2.4G, 2462 MHz, DSSS, 1Mbps
Test Date:	2015-02-27
Verdict:	NONE (INFORMATION ONLY)
Note 1:	A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2:	OBW= 14.429 MHz

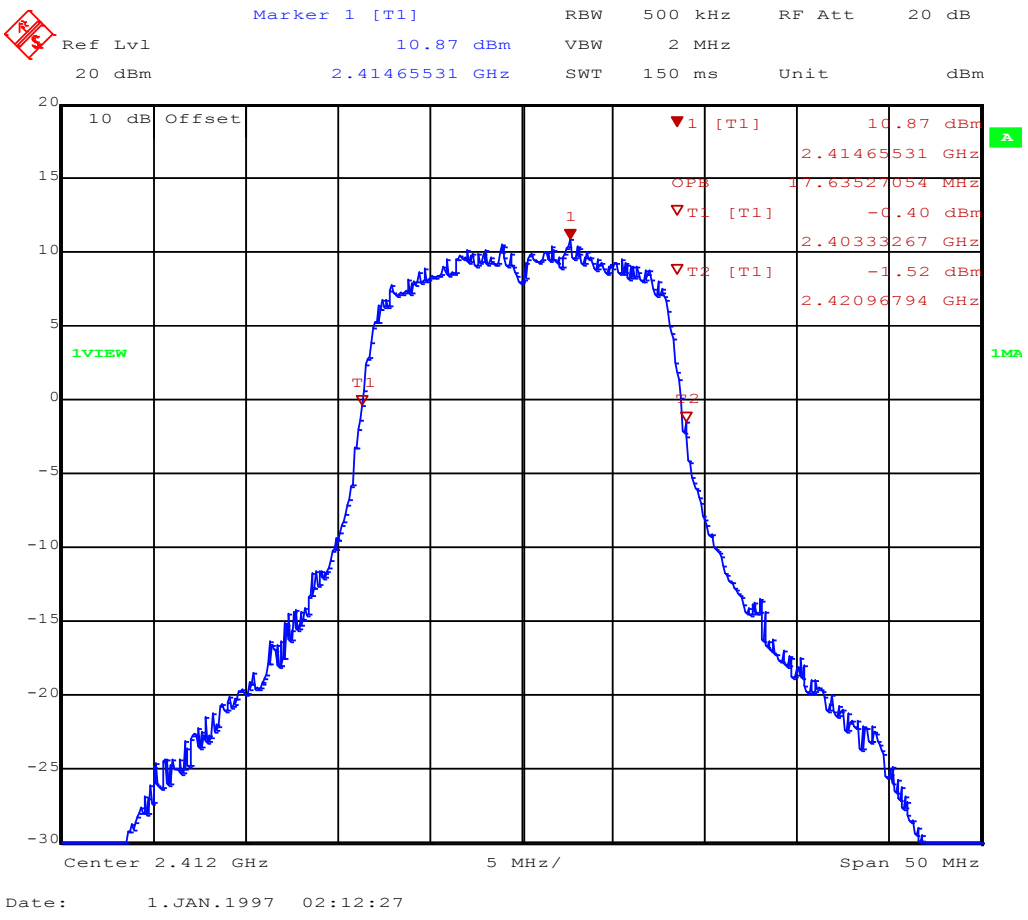


Occupied Bandwidth – OFDM F_{LOW}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Burkhard Pudell
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN 2.4G, 2412 MHz, OFDM, 6Mbps
Test Date:	2015-02-27
Verdict:	NONE (INFORMATION ONLY)
Note 1:	A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2:	OBW= 17.635 MHz

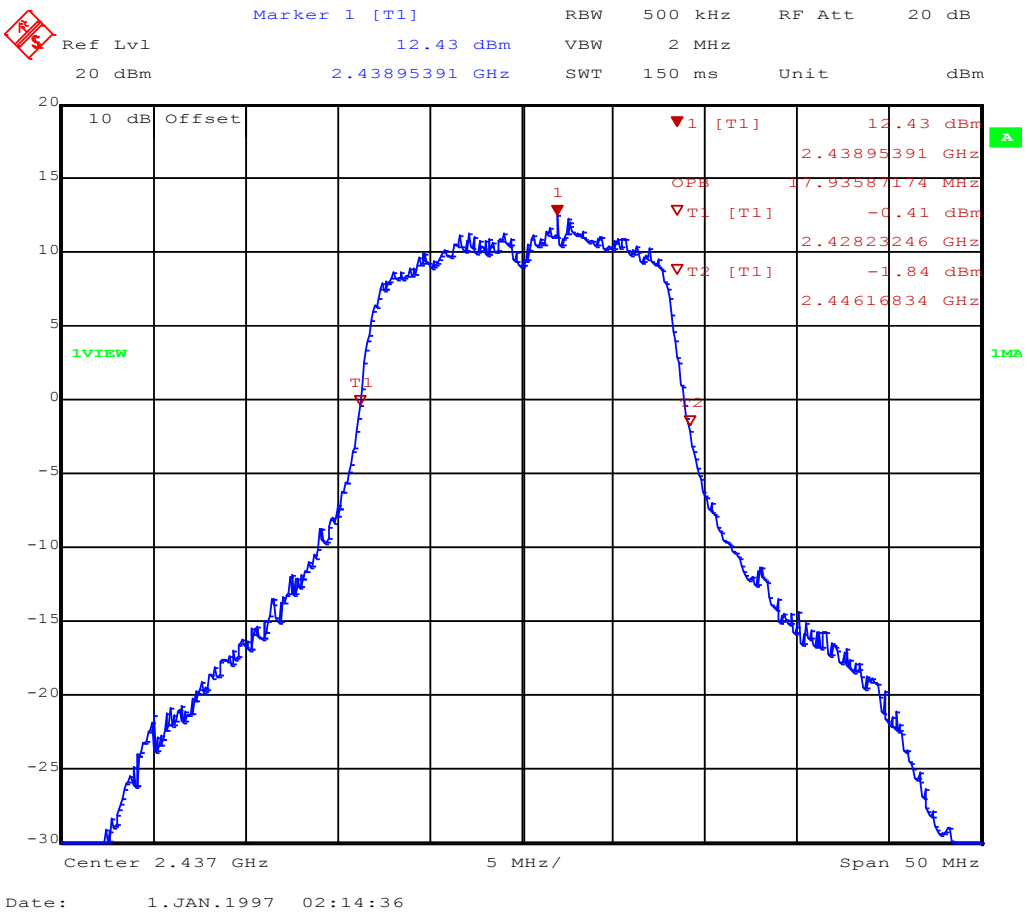


Occupied Bandwidth – OFDM F_{MID}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Burkhard Pudell
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN 2.4G, 2437 MHz, OFDM, 6Mbps
Test Date:	2015-02-27
Verdict:	NONE (INFORMATION ONLY)
Note 1:	A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2:	OBW= 17.936 MHz

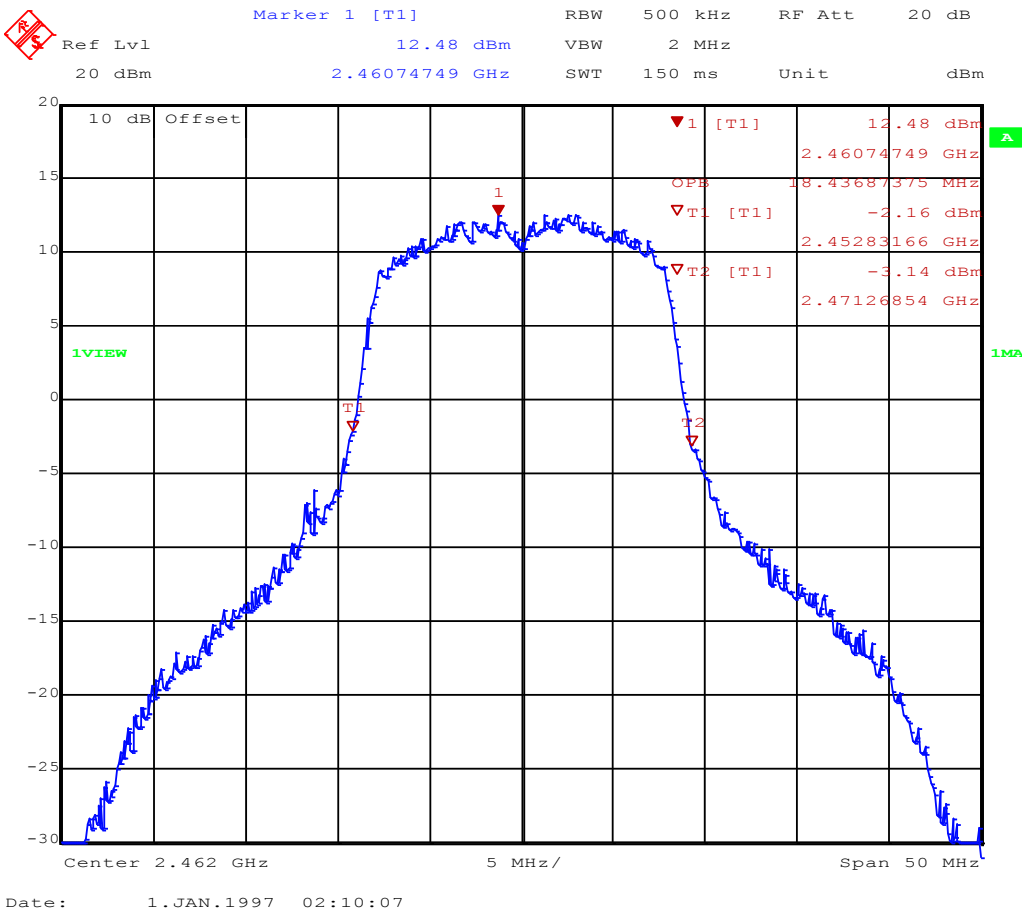


Occupied Bandwidth – OFDM F_{HIGH}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Burkhard Pudell
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN 2.4G, 2462 MHz, OFDM, 6Mbps
Test Date:	2015-02-27
Verdict:	NONE (INFORMATION ONLY)
Note 1:	A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2:	OBW= 18.437 MHz

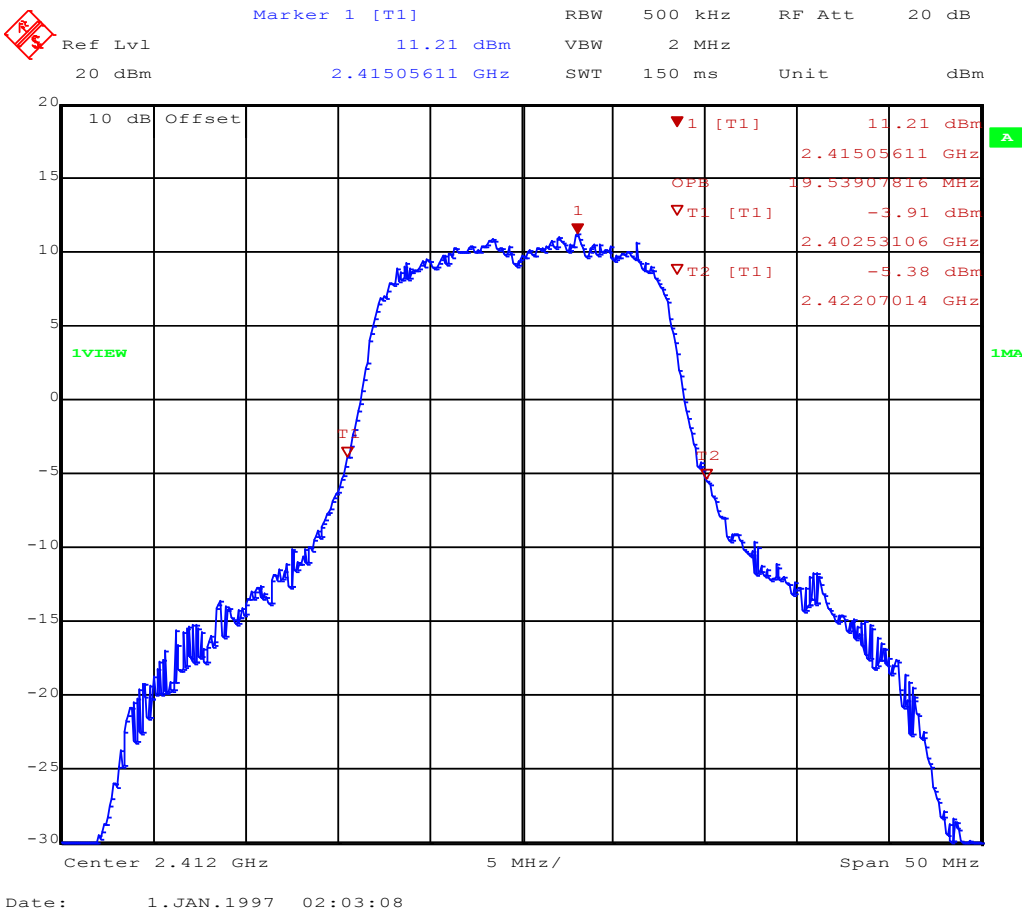


Occupied Bandwidth – HT20 F_{LOW}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Burkhard Pudell
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN 2.4G, 2412 MHz, OFDM, HT20, MCS0
Test Date:	2015-02-27
Verdict:	NONE (INFORMATION ONLY)
Note 1:	A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2:	OBW= 19.539 MHz

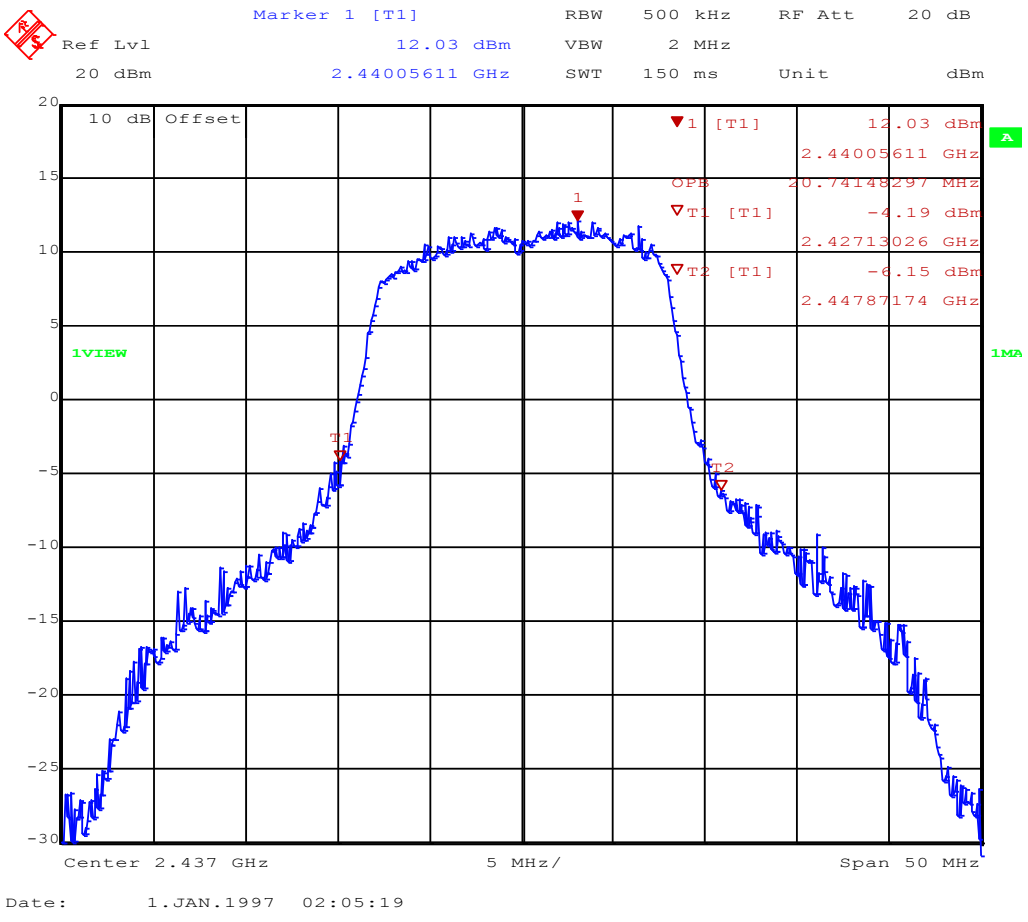


Occupied Bandwidth – HT20 F_{MID}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Burkhard Pudell
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN 2.4G, 2437 MHz, OFDM, HT20, MCS0
Test Date:	2015-02-27
Verdict:	NONE (INFORMATION ONLY)
Note 1:	A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2:	OBW= 20.741 MHz

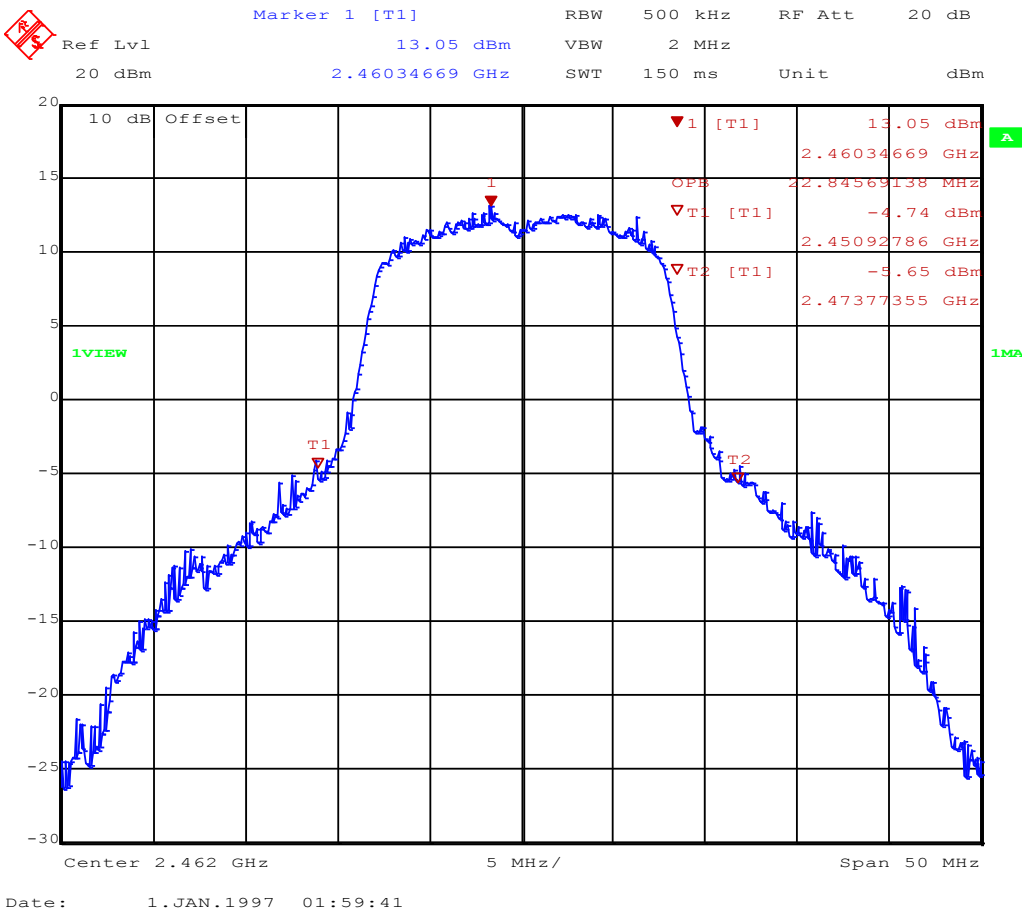


Occupied Bandwidth – HT20 F_{HIGH}

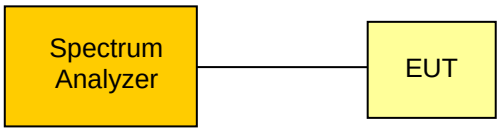
Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Burkhard Pudell
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN 2.4G, 2462 MHz, OFDM, HT20, MCS0
Test Date:	2015-02-27
Verdict:	NONE (INFORMATION ONLY)
Note 1:	A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2:	OBW= 22.846 MHz



3.2 Test Conditions and Results – 6 dB Bandwidth

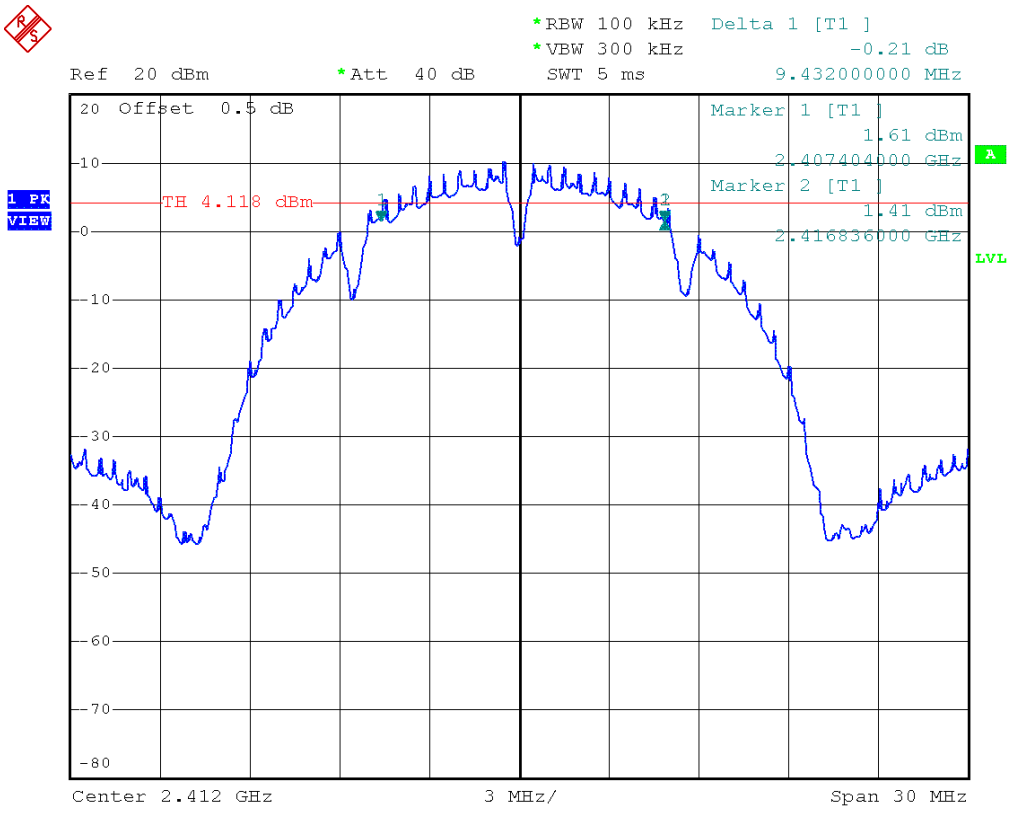
6dB Bandwidth acc. to FCC 15.247 / IC RSS-210					Verdict: PASS
EUT requirement rule parts and clause	Reference				
	FCC 15.247(a)(2) / IC RSS-210 A8.2				
Test according to measurement reference	Reference Method				
	FCC KDB Publication No. 558074				
Test frequency range	Tested frequencies				
	F_{LOW} / F_{MID} / F_{HIGH}				
Limits					
Limit					
≥ 500kHz					
Test setup					
					
Test procedure					
1. EUT set to test mode 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold and RBW is set to 100 kHz 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -6 dB to the left of the peak 6. Marker on envelope of spectrum is set to level of -6 dB to the right of the peak 7. 6 dB Bandwidth is determined by marker frequency separation					
Test results					
Channel	Frequency [MHz]	Mode	6 dB Bandwidth [kHz]	Limit [kHz]	Result
F_{LOW}	2412	DSSS	9432	500	PASS
F_{MID}	2437	DSSS	9144	500	PASS
F_{HIGH}	2462	DSSS	9144	500	PASS
F_{LOW}	2412	OFDM	15636	500	PASS
F_{MID}	2437	OFDM	15888	500	PASS
F_{HIGH}	2462	OFDM	15384	500	PASS
F_{LOW}	2412	HT20	15756	500	PASS
F_{MID}	2437	HT20	15576	500	PASS
F_{HIGH}	2462	HT20	15.624	500	PASS
Comments:					

6 dB Bandwidth – DSSS F_{LOW}

Minimum 6 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, DSSS, 1Mbps, 2412 MHz, modulated
Test Date:	2015-01-07
Verdict:	PASS
Note 1:	Procedure 8.1 DTS (558074 D01 Meas Guidance)
Note 2:	Minimum 6 dB Bandwidth conducted



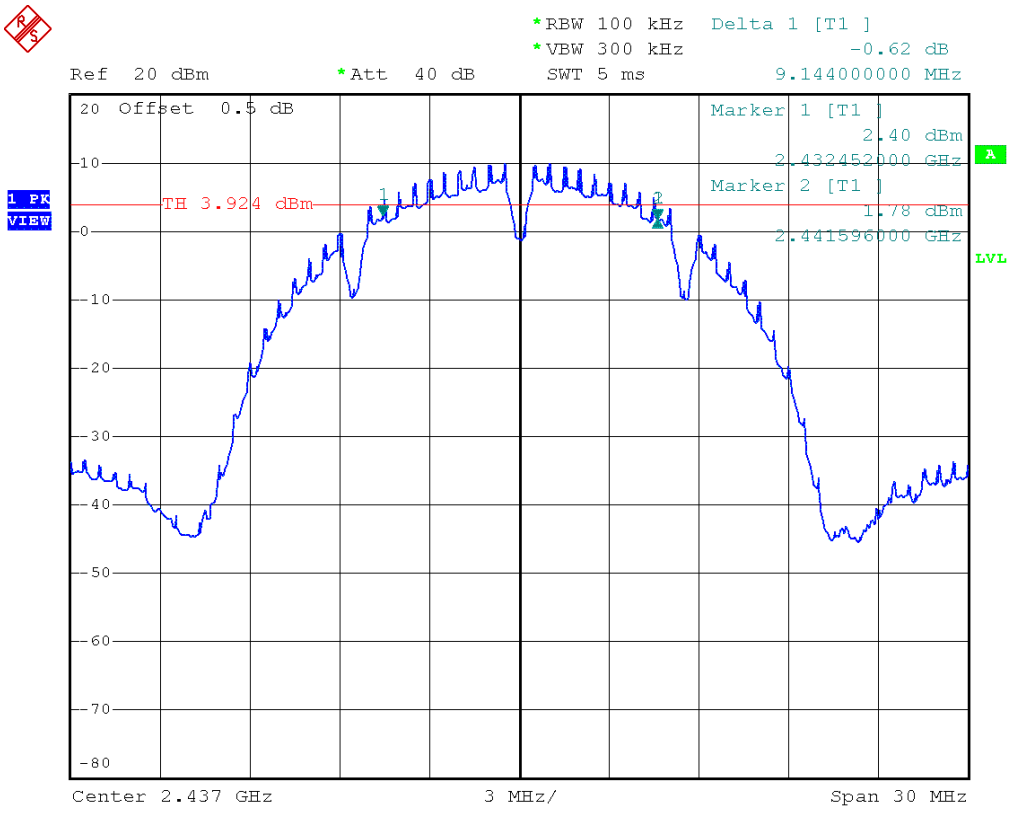
Comment: 6 dB bandwidth: 9432 KHz > 500 KHz; verdict: PASS
Date: 7.JAN.2015 15:36:57

6 dB Bandwidth – DSSS F_{MID}

Minimum 6 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, DSSS, 1Mbps, 2437 MHz, modulated
Test Date:	2015-01-07
Verdict:	PASS
Note 1:	Procedure 8.1 DTS (558074 D01 Meas Guidance)
Note 2:	Minimum 6 dB Bandwidth conducted



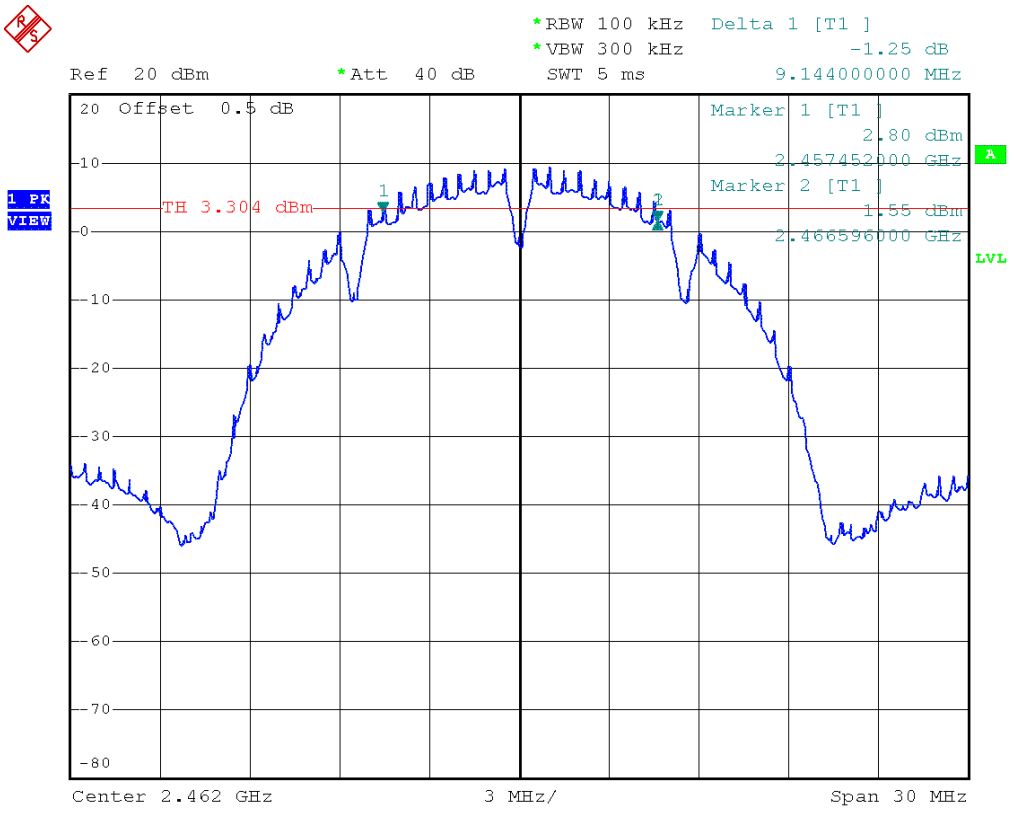
Comment: 6 dB bandwidth: 9144 KHz > 500 KHz; verdict: PASS
Date: 7.JAN.2015 15:39:12

6 dB Bandwidth – DSSS F_{HIGH}

Minimum 6 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, DSSS, 1Mbps, 2462 MHz, modulated
Test Date:	2015-01-07
Verdict:	PASS
Note 1:	Procedure 8.1 DTS (558074 D01 Meas Guidance)
Note 2:	Minimum 6 dB Bandwidth conducted



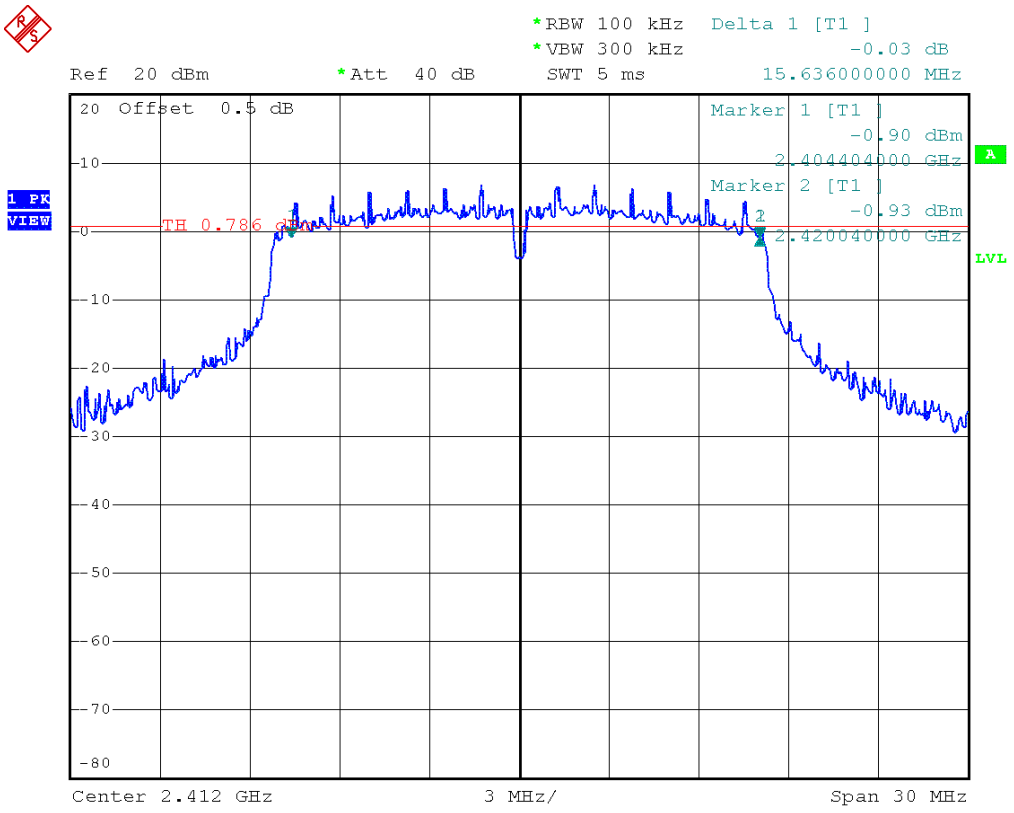
Comment: 6 dB bandwidth: 9144 KHz > 500 KHz; verdict: PASS
Date: 7.JAN.2015 15:42:05

6 dB Bandwidth – OFDM F_{LOW}

Minimum 6 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, OFDM, 6Mbps, 2412 MHz, modulated
Test Date:	2015-01-07
Verdict:	PASS
Note 1:	Procedure 8.1 DTS (558074 D01 Meas Guidance)
Note 2:	Minimum 6 dB Bandwidth conducted



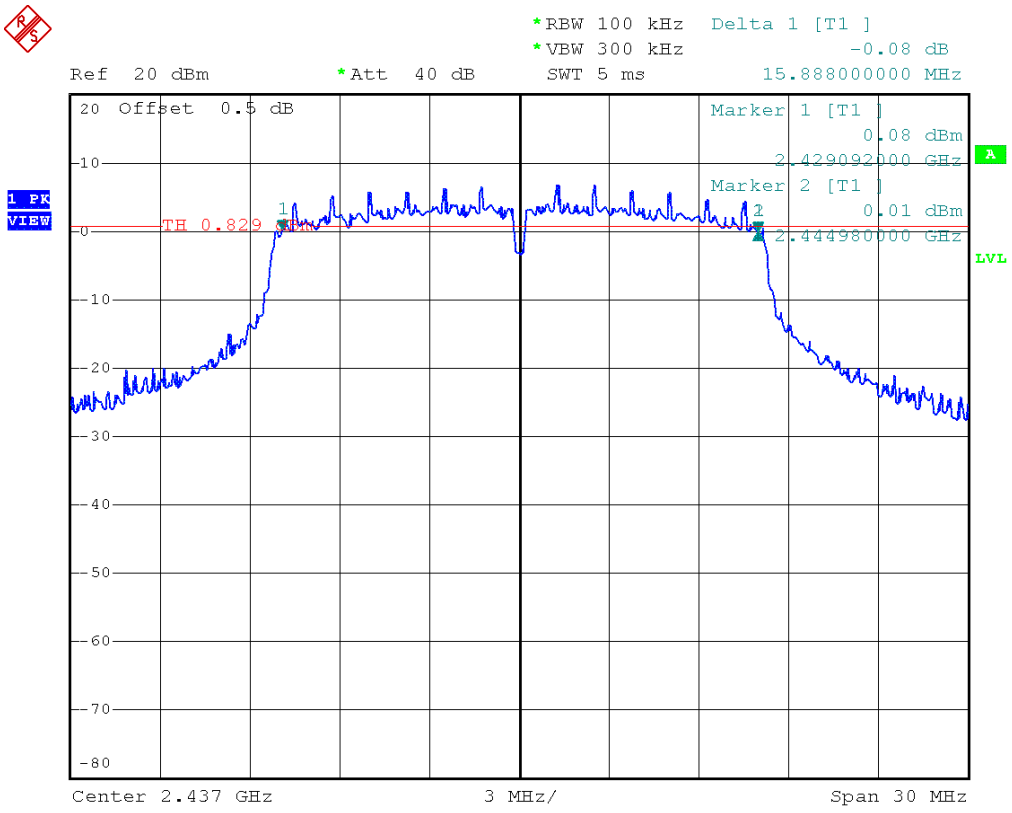
Comment: 6 dB bandwidth: 15636 KHz > 500 KHz; verdict: PASS
Date: 7.JAN.2015 15:46:53

6 dB Bandwidth – OFDM F_{MID}

Minimum 6 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, OFDM, 6Mbps, 2437 MHz, modulated
Test Date:	2015-01-07
Verdict:	PASS
Note 1:	Procedure 8.1 DTS (558074 D01 Meas Guidance)
Note 2:	Minimum 6 dB Bandwidth conducted



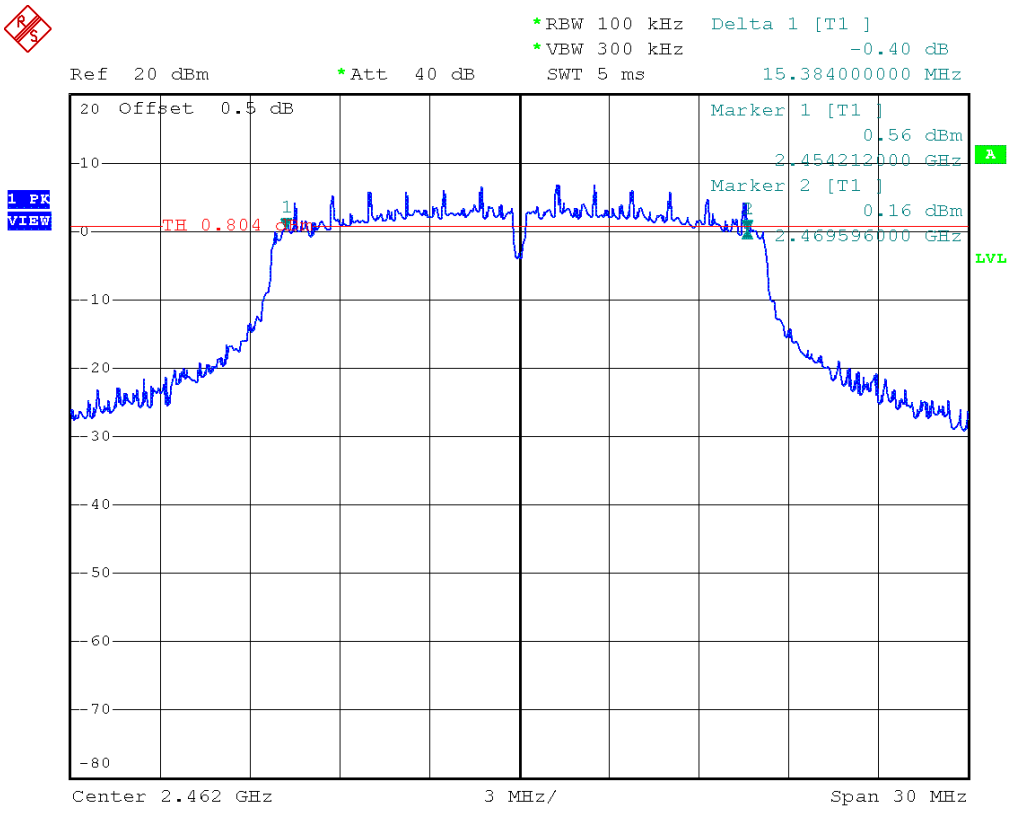
Comment: 6 dB bandwidth: 15888 KHz > 500 KHz; verdict: PASS
Date: 7.JAN.2015 15:49:10

6 dB Bandwidth – OFDM F_{HIGH}

Minimum 6 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, OFDM, 6Mbps, 2462 MHz, modulated
Test Date:	2015-01-07
Verdict:	PASS
Note 1:	Procedure 8.1 DTS (558074 D01 Meas Guidance)
Note 2:	Minimum 6 dB Bandwidth conducted



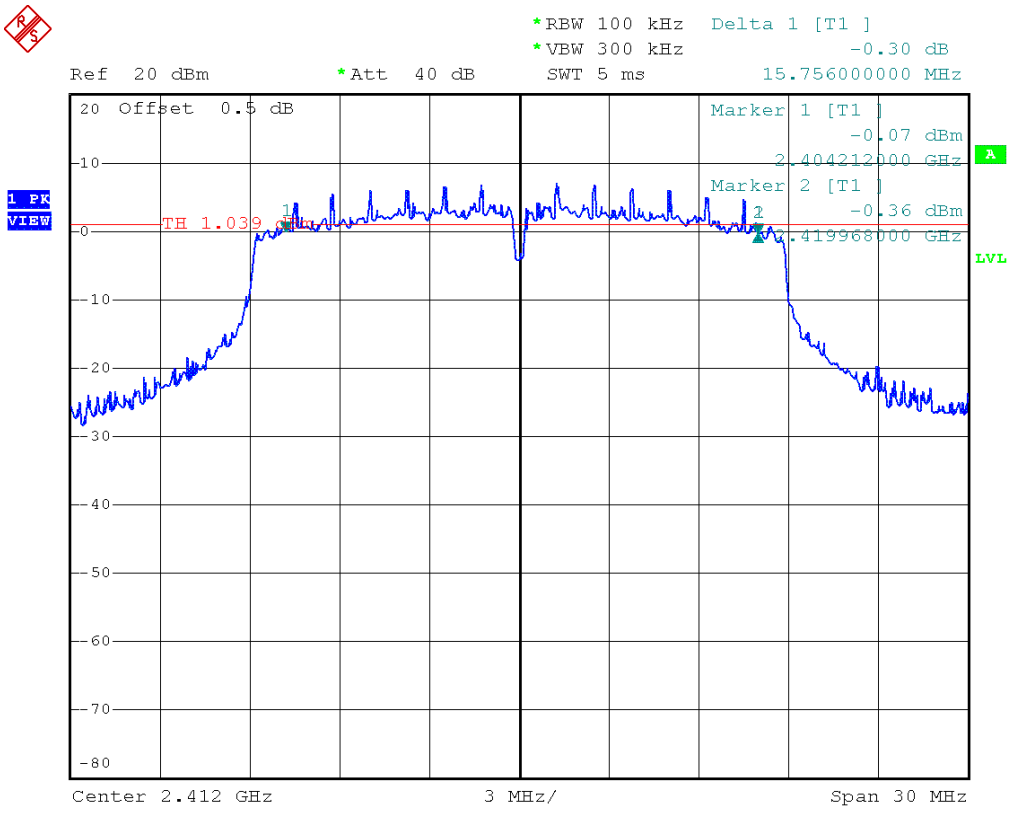
Comment: 6 dB bandwidth: 15384 KHz > 500 KHz; verdict: PASS
Date: 7.JAN.2015 15:51:13

6 dB Bandwidth – HT20 F_{LOW}

Minimum 6 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, HT20, MCS0, 2412 MHz, modulated
Test Date:	2015-01-07
Verdict:	PASS
Note 1:	Procedure 8.1 DTS (558074 D01 Meas Guidance)
Note 2:	Minimum 6 dB Bandwidth conducted



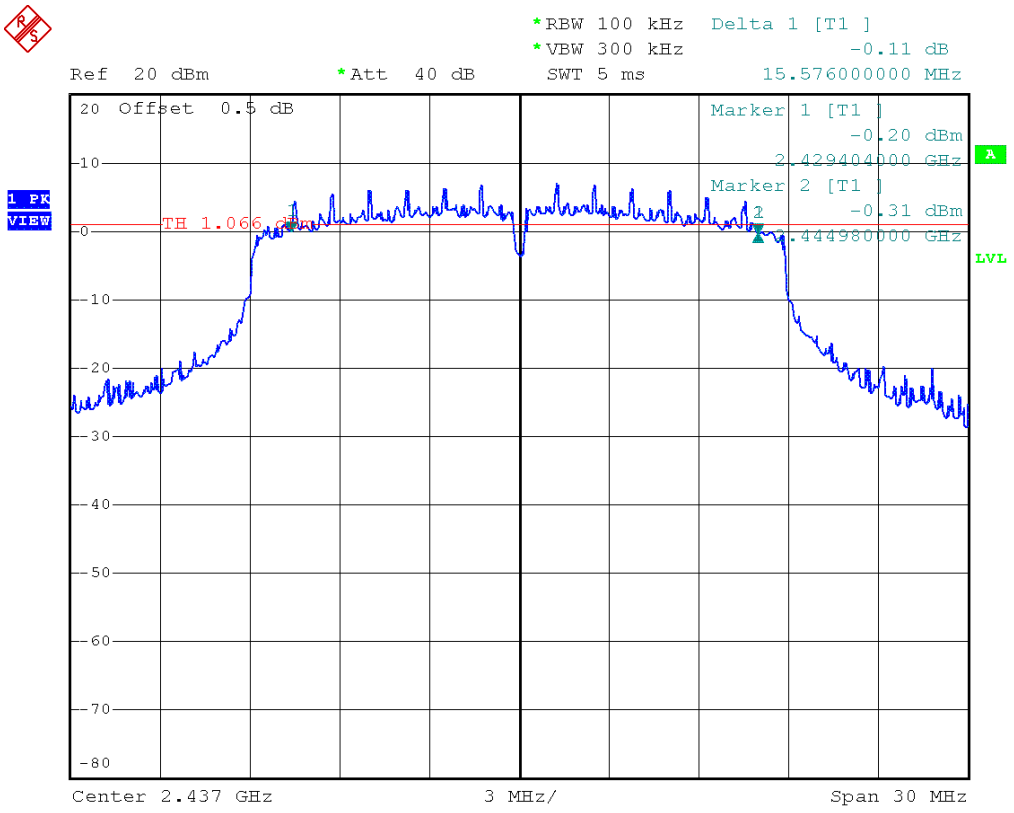
Comment: 6 dB bandwidth: 15756 KHz > 500 KHz; verdict: PASS
Date: 7.JAN.2015 15:55:15

6 dB Bandwidth – $HT20_{MID}$

Minimum 6 dB Bandwidth acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, HT20, MCS0, 2437 MHz, modulated
Test Date:	2015-01-07
Verdict:	PASS
Note 1:	Procedure 8.1 DTS (558074 D01 Meas Guidance)
Note 2:	Minimum 6 dB Bandwidth conducted



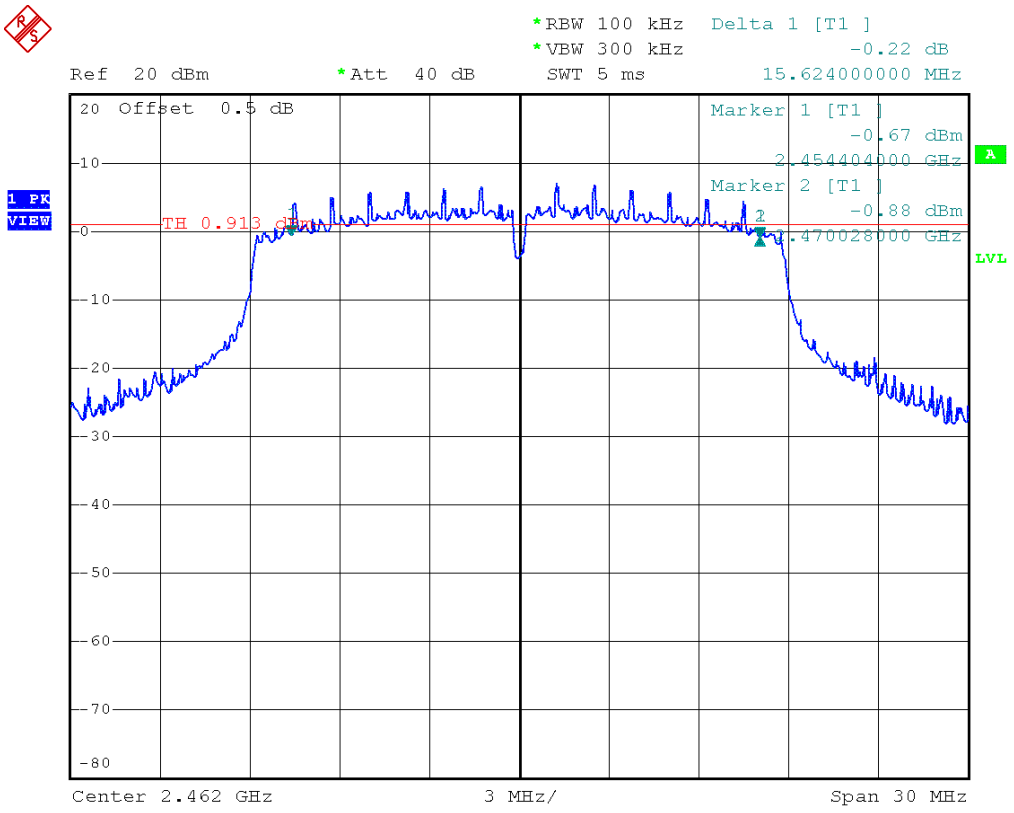
Comment: 6 dB bandwidth: 15576 KHz > 500 KHz; verdict: PASS
Date: 7.JAN.2015 15:58:00

6 dB Bandwidth – HT20 F_{HIGH}

Minimum 6 dB Bandwidth acc. to FCC 15.247

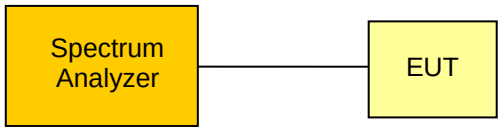
Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, HT20, MCS0, 2462 MHz, modulated
Test Date:	2015-01-07
Verdict:	PASS
Note 1:	Procedure 8.1 DTS (558074 D01 Meas Guidance)
Note 2:	Minimum 6 dB Bandwidth conducted



Comment: 6 dB bandwidth: 15624 KHz > 500 KHz; verdict: PASS
Date: 7.JAN.2015 16:00:01

3.3 Test Conditions and Results – Maximum peak conducted power

Maximum peak conducted power acc. to FCC 15.247 / IC RSS-210	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(b)(3) / IC RSS-210 A8.4
Test according to measurement reference	Reference Method
	FCC KDB Publication No. 558074
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}
Measurement mode	Peak
Maximum antenna gain	2.2 dBi ⇒ Limit correction = 0 dB
Limits	
Limit	
1 W (30 dBm)	
The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi 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 6 dBi.	
Test setup	
	
Test procedure	
1. EUT set to test mode (Communication tester is used if needed) 2. Center frequency set to test channel center frequency 3. Span set to twice the 20 dB bandwidth and detector to peak and max hold 4. Resolution bandwidth is set to 3 MHz 5. Peak conducted power is determined from peak of spectrum envelope	

Test results							
Channel	Frequency [MHz]	Voltage	Mode	Peak power [dbm]	Peak power [W]	Limit [dBm]	Margin [dB]
F_{LOW}	2412	11.1 VDC	DSSS	20.3	0.107	30	-09.70
F_{MID}	2437	11.1 VDC	DSSS	20.0	0.100	30	-10.00
F_{HIGH}	2462	11.1 VDC	DSSS	19.9	0.098	30	-10.10
F_{LOW}	2412	11.1 VDC	OFDM	24.1	0.257	30	-05.90
F_{MID}	2437	11.1 VDC	OFDM	23.9	0.245	30	-06.10
F_{HIGH}	2462	11.1 VDC	OFDM	23.6	0.229	30	-06.40
F_{LOW}	2412	11.1 VDC	HT20	24.1	0.257	30	-05.90
F_{MID}	2437	11.1 VDC	HT20	23.9	0.245	30	-06.10
F_{HIGH}	2462	11.1 VDC	HT20	23.6	0.229	30	-06.40
Comments:							

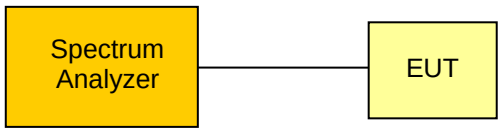
3.4 Test Conditions and Results – Power spectral density

Power spectral density acc. to FCC 15.247 / IC RSS-210	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 15.247(e) / IC RSS-210 A8.2
Test according to measurement reference	Reference Method
	FCC KDB Publication No. 558074
Test frequency range	Tested frequencies
	F_{MID}
Measurement mode	Peak

Limits

8 dBm / 3 kHz

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Center frequency set to test channel center frequency
3. Span is set large enough to capture maximum emissions in passband, RBW is set to 3kHz
4. Peak power density is determined from peak emission of envelope

Test results

Channel	Frequency [MHz]	Test mode	Peak frequency [MHz]	Peak power density [dBm/10kHz]	Limit [dBm/3kHz]	Margin [dB]
F_{LOW}	2412	DSSS	2410.47	1.58	8.0	-06.42
F_{MID}	2437	DSSS	2436.46	1.26	8.0	-06.74
F_{HIGH}	2462	DSSS	2462.54	1.27	8.0	-06.73
F_{LOW}	2412	OFDM	2413.26	-0.81	8.0	-08.81
F_{MID}	2437	OFDM	2440.15	-1.89	8.0	-09.89
F_{HIGH}	2462	OFDM	2465.15	-1.85	8.0	-09.85
F_{LOW}	2412	HT20	2409.48	-1.32	8.0	-09.32
F_{MID}	2437	HT20	2438.26	-1.74	8.0	-09.74
F_{HIGH}	2462	HT20	2464.52	-2.87	8.0	-10.87

Comments:

3.5 Test Conditions and Results – AC power line conducted emissions

Power line conducted emissions acc. to 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			
	0.15 MHz to 30 MHz			
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 0.5	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.				

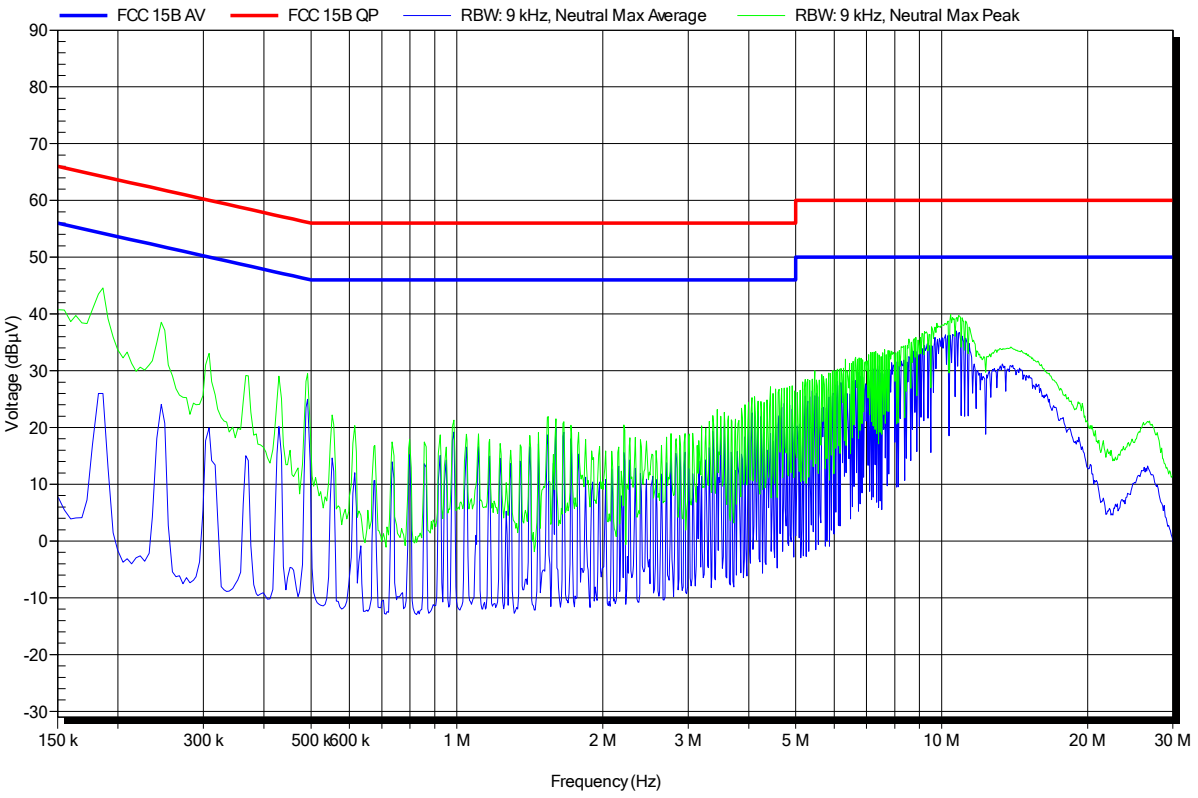
Conducted Emissions

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

Project number: G0M-1406-3919

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld- Controller
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 25°C, Unom: 10.8VDC via AC/DC Adapter
LISN:	ESH2-Z5 N
Mode:	Basic, with power supply, WLAN link to AP, BT link to GPS Antenna
Test Date:	2014-08-06
Note:	

Index 13



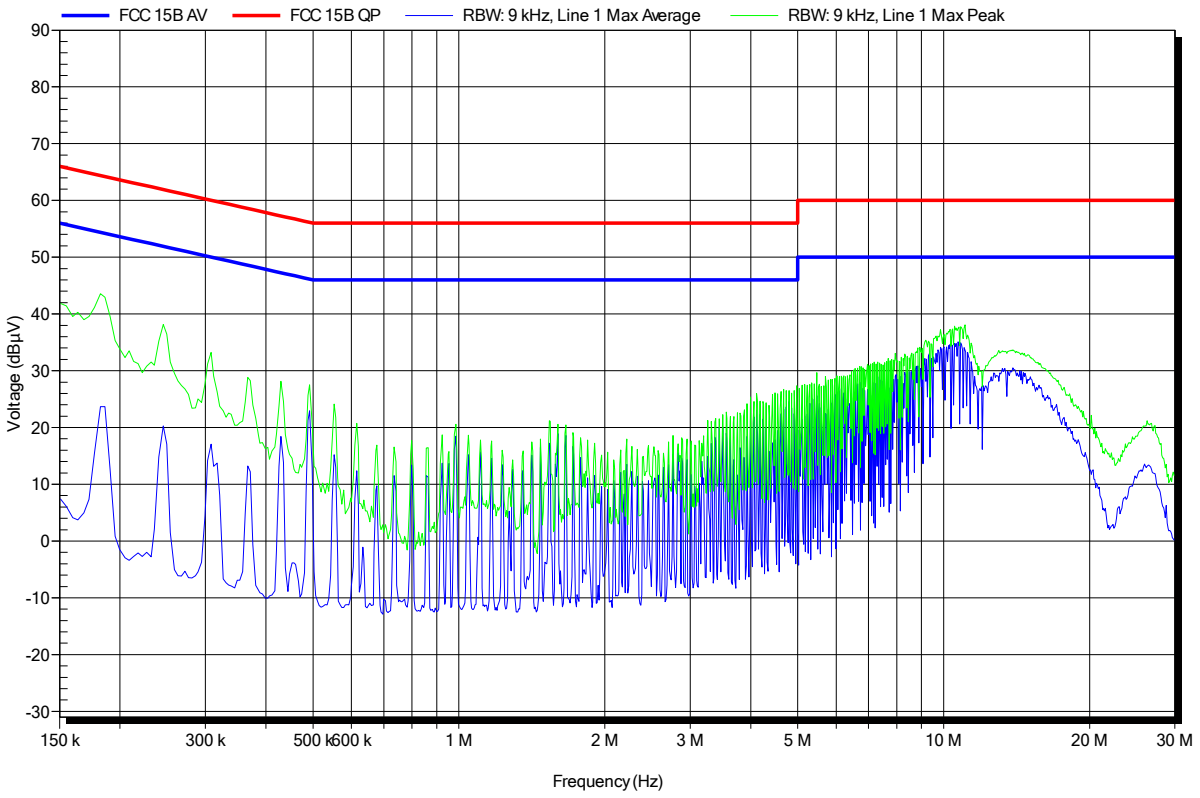
Conducted Emissions

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

Project number: G0M-1406-3919

Manufacturer:	Leica Geosystems AG
EUT Name:	Feld- Controller
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Zunke
Test Conditions:	Tnom: 25°C, Unom: 10.8VDC via AC/DC Adapter
LISN:	ESH2-Z5 L
Mode:	Basic, with power supply, WLAN link to AP, BT link to GPS Antenna
Test Date:	2014-08-06
Note:	

Index 14



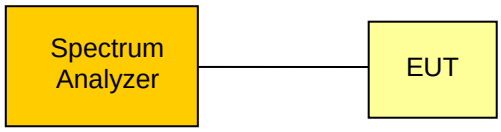
3.6 Test Conditions and Results – Band edge compliance

Band-edge compliance acc. to 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 KDB Publication No. 558074
Test frequency range	Tested frequencies
	F_{LOW} / F_{HIGH}
Measurement mode	Peak

Limits

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

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set around lower band edge and detector is set to peak and max hold
3. Resolution bandwidth is set to 100 kHz
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]
F_{LOW20}	2412	DSSS	-41.06	-20	-21.06
F_{HIGH20}	2462	DSSS	-46.65	-20	-26.65
F_{LOW20}	2412	OFDM	-27.73	-20	-07.73
F_{HIGH20}	2462	OFDM	-39.49	-20	-19.49
F_{LOW20}	2412	HT20	-27.02	-20	-07.02
F_{HIGH20}	2462	HT20	-38.86	-20	-18.86

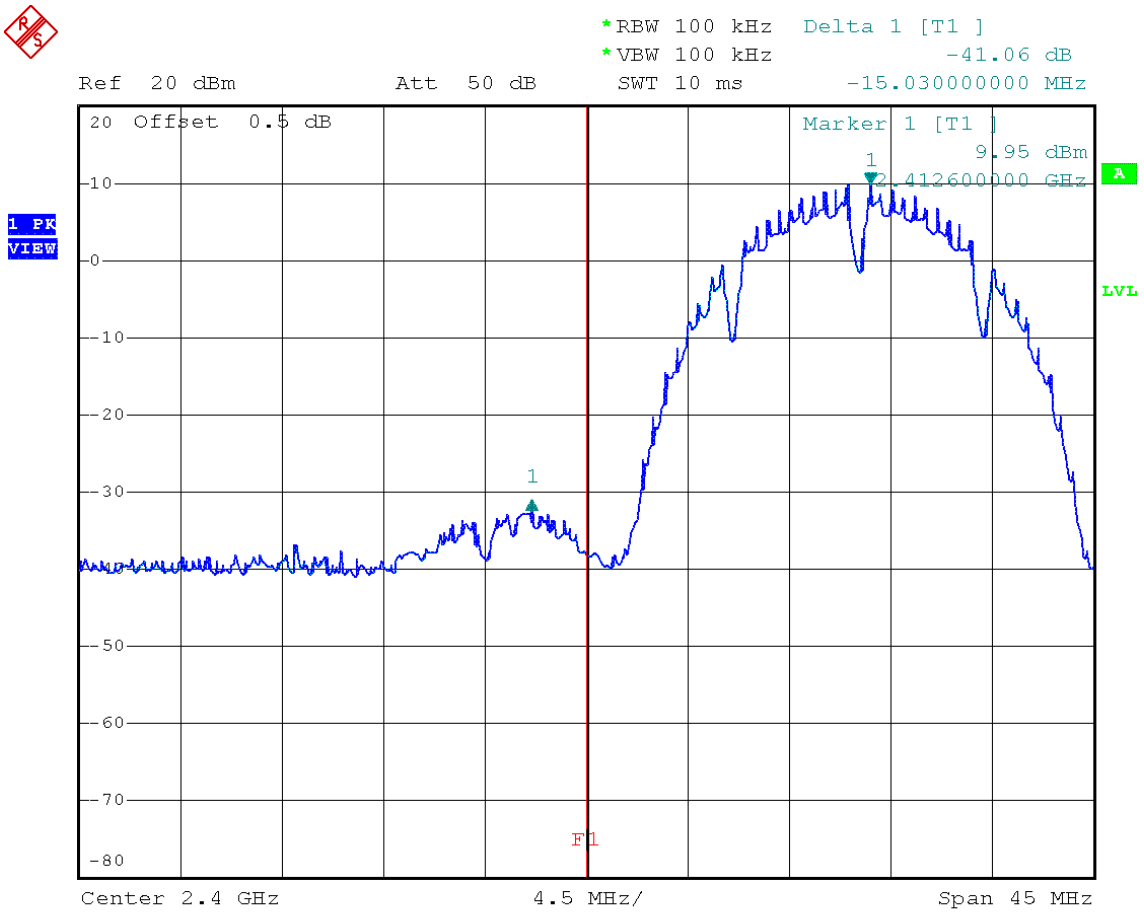
Comments:

Band-edge compliance – DSSS F_{LOW}

Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, DSSS, 1Mbps, 2412 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Procedure 13.2 Marker-delta method (558074 D01 Meas Guidance)
Note 2:	lower Band-edge, conducted measurement



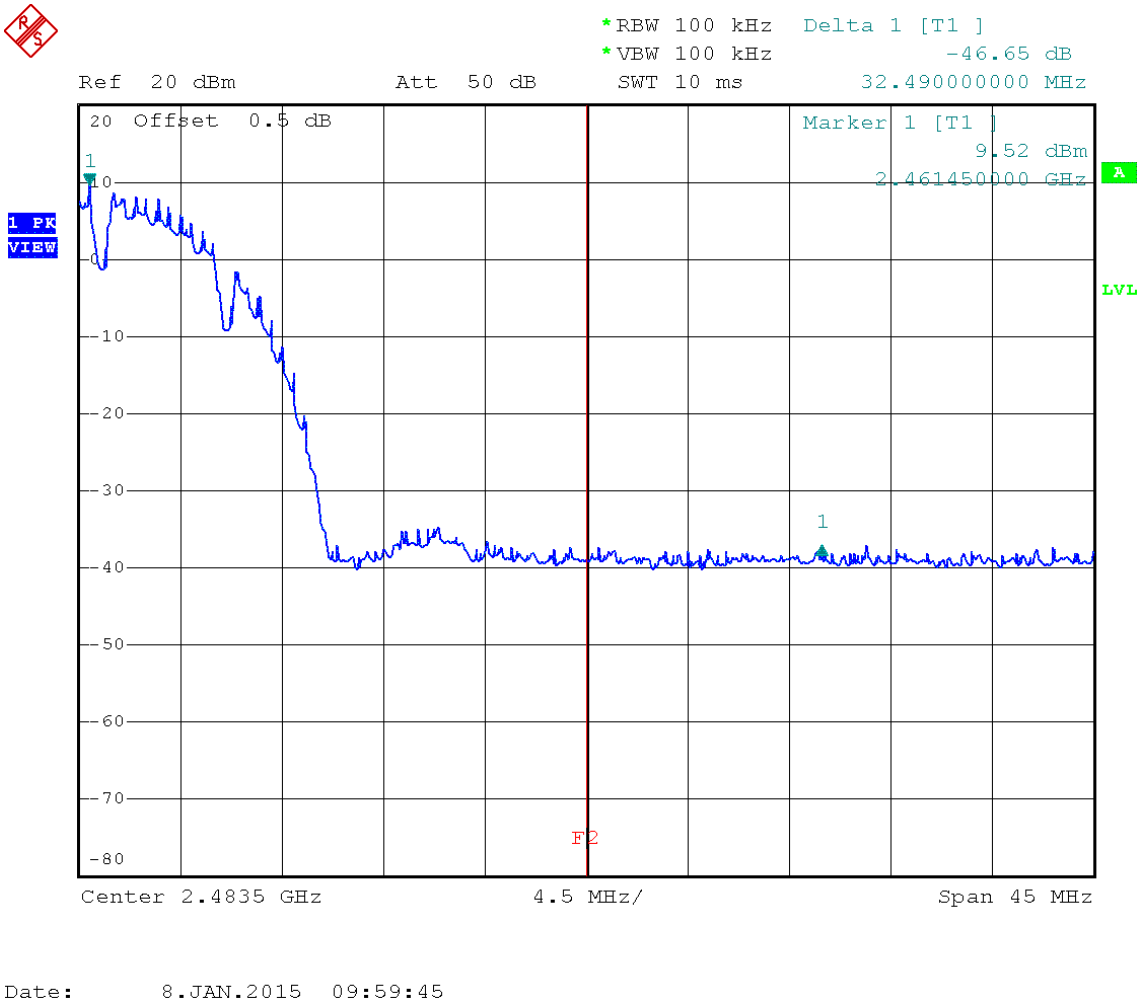
Comment: Limit: Marker Delta value >20 dB; Result: PASS
Date: 8.JAN.2015 09:52:46

Band-edge compliance – DSSS F_{HIGH}

Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, DSSS, 1Mbps, 2462 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Procedure 13.2 Marker-delta method (558074 D01 Meas Guidance)
Note 2:	upper Band-edge, conducted measurement

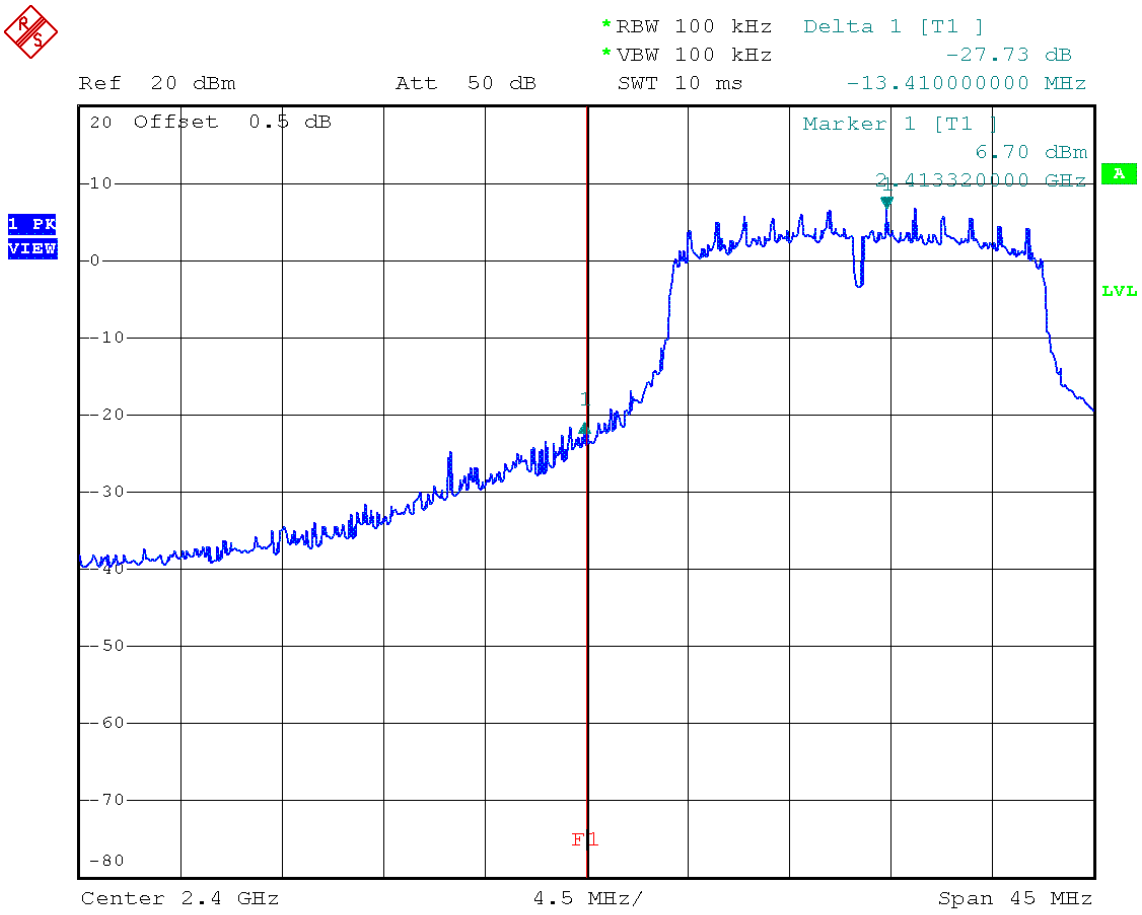


Band-edge compliance – OFDM F_{LOW}

Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, OFDM, 6Mbps, 2412 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Procedure 13.2 Marker-delta method (558074 D01 Meas Guidance)
Note 2:	lower Band-edge, conducted measurement



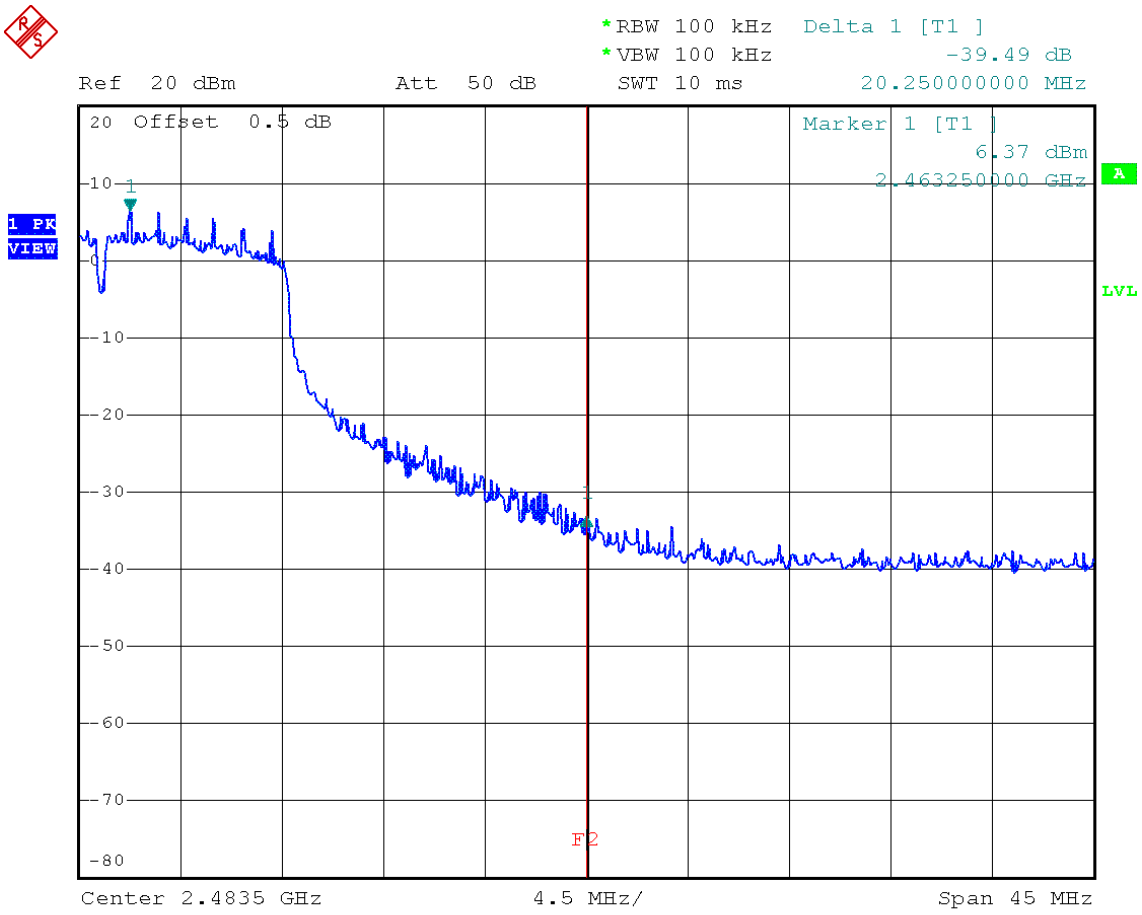
Comment: Limit: Marker Delta value >20 dB; Result: PASS
Date: 8.JAN.2015 10:04:17

Band-edge compliance – OFDM F_{HIGH}

Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, OFDM, 6Mbps, 2462 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Procedure 13.2 Marker-delta method (558074 D01 Meas Guidance)
Note 2:	upper Band-edge, conducted measurement



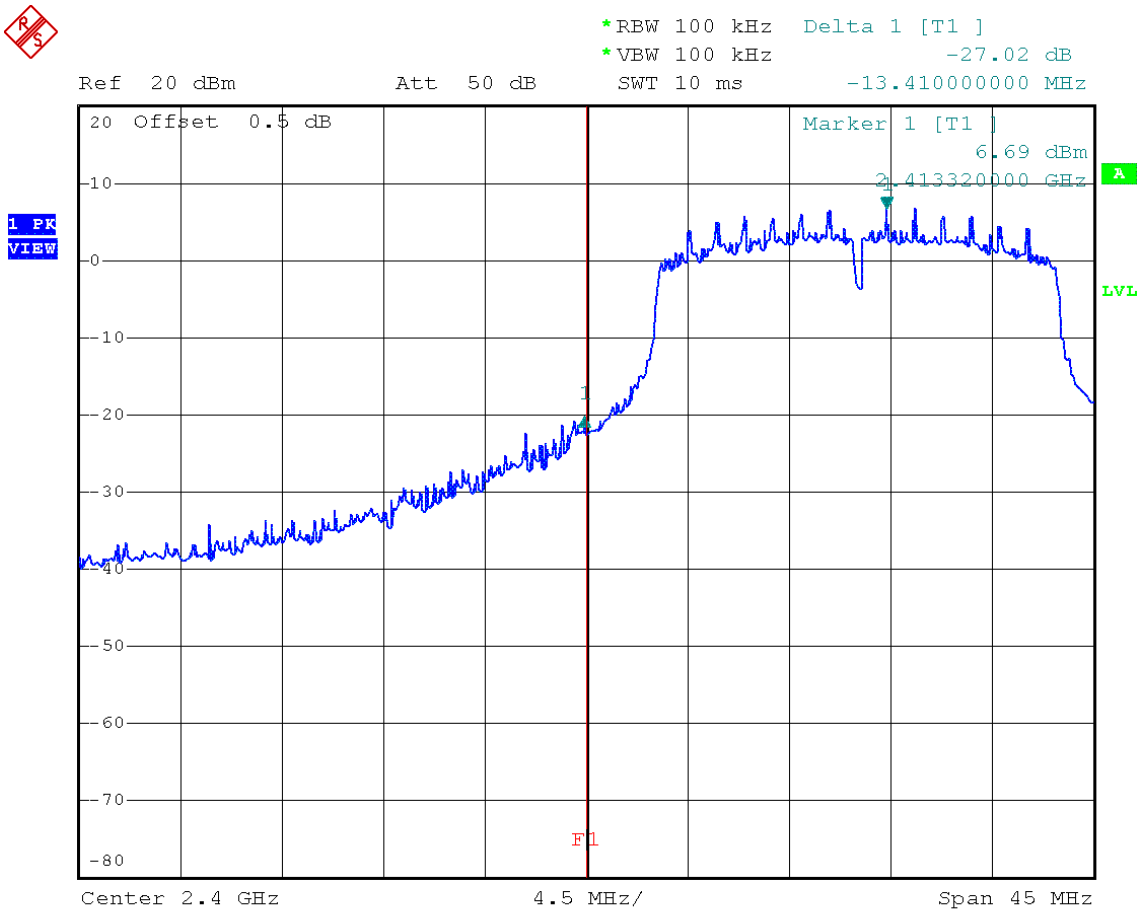
Comment: Limit: Marker Delta value >20 dB; Result: PASS
Date: 8.JAN.2015 10:02:08

Band-edge compliance – HT20 F_{LOW}

Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, HT20, MCS0, 2412 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Procedure 13.2 Marker-delta method (558074 D01 Meas Guidance)
Note 2:	lower Band-edge, conducted measurement



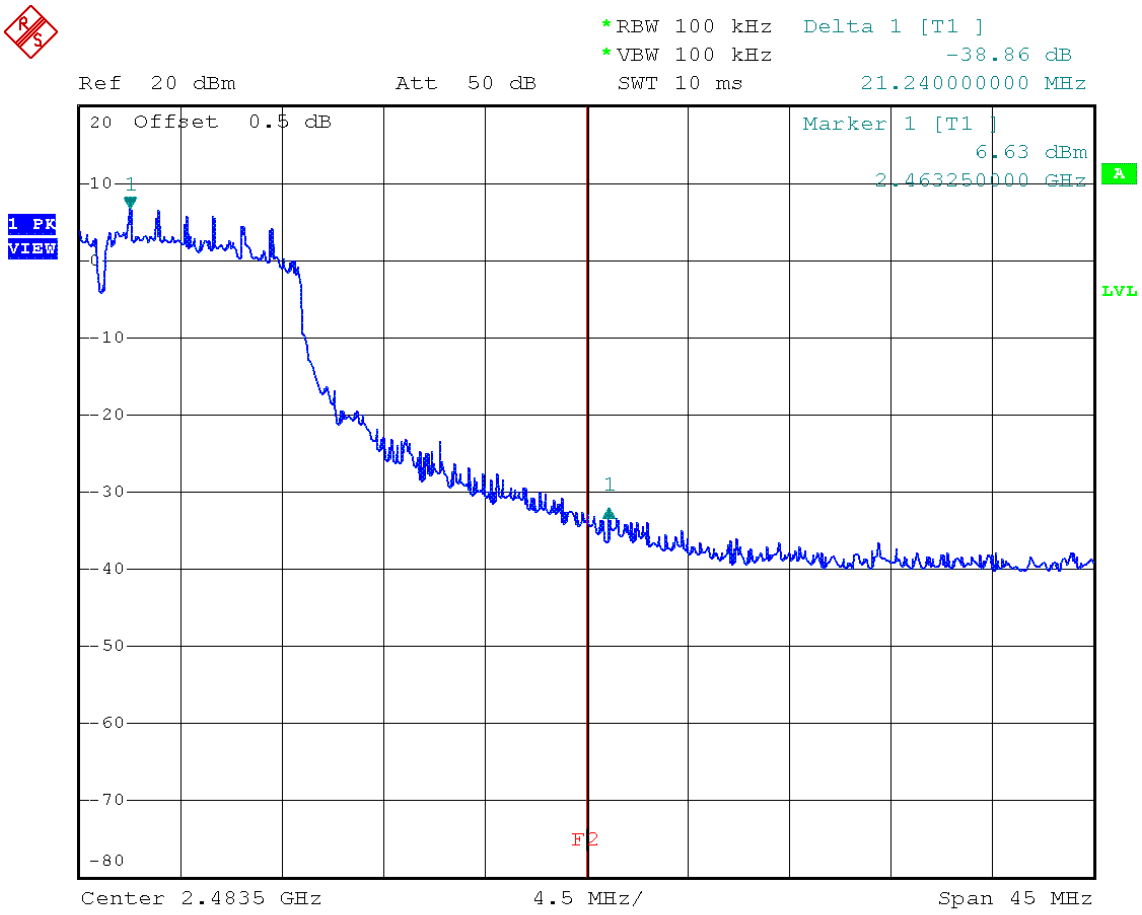
Comment: Limit: Marker Delta value >20 dB; Result: PASS
Date: 8.JAN.2015 10:07:01

Band-edge compliance – HT20 F_{HIGH}

Band-edge compliance acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, HT20, MCS0, 2462 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Procedure 13.2 Marker-delta method (558074 D01 Meas Guidance)
Note 2:	upper Band-edge, conducted measurement



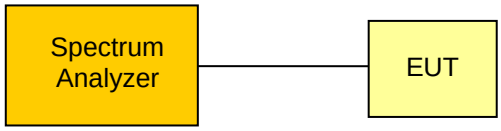
Comment: Limit: Marker Delta value >20 dB; Result: PASS
Date: 8.JAN.2015 10:09:43

3.7 Test Conditions and Results – Conducted spurious emissions

Conducted spurious emissions acc. to 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 KDB Publication No. 558074
Test frequency range	Tested frequencies
	10 MHz – 10th Harmonic
Measurement mode	Peak

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

Test setup



Test procedure

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

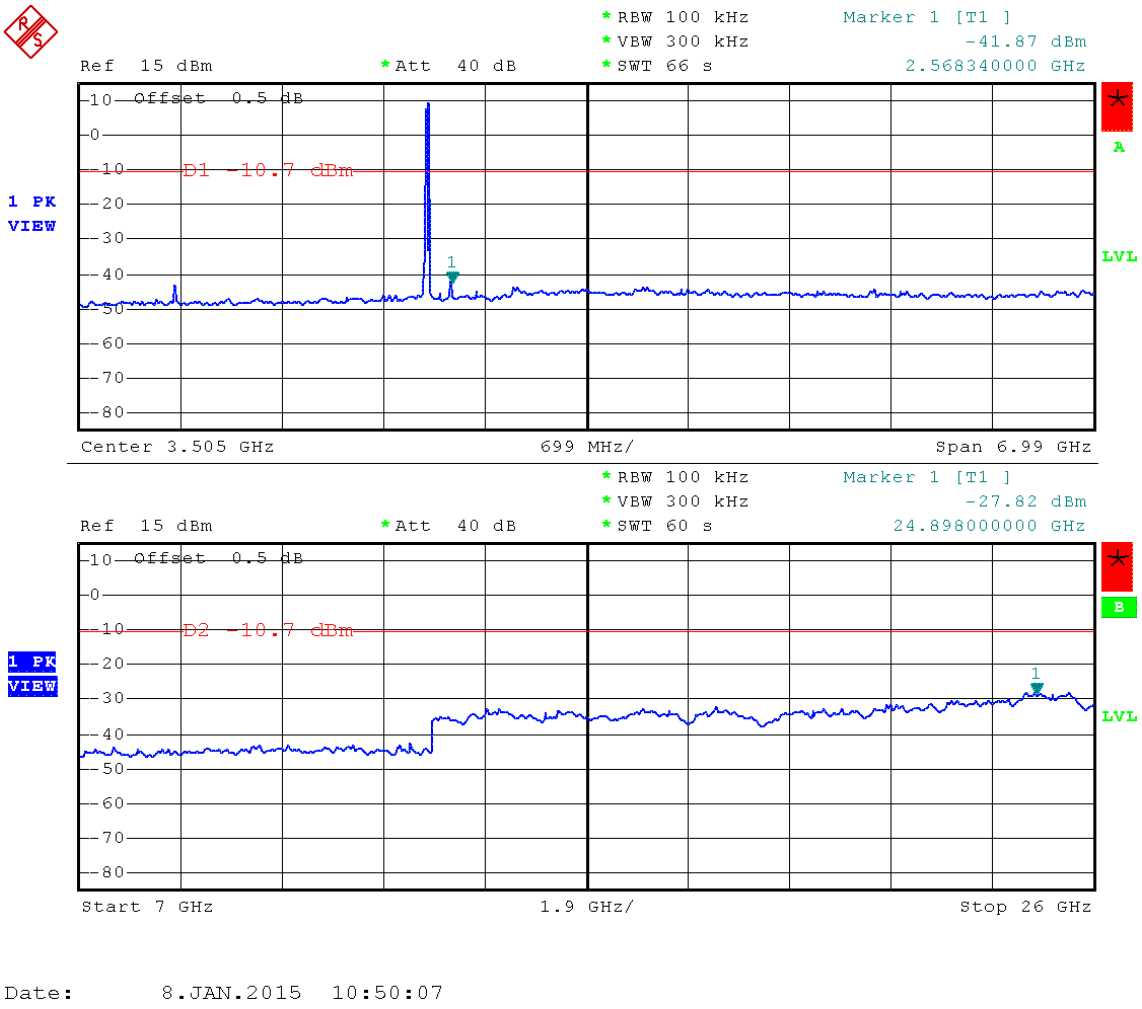
Test results							
Channel	Frequency [MHz]	Mode	Emission [MHz]	Emission Level [dbm]	Peak power [dBm]	Limit [dBm]	Margin [dB]
F_{LOW20}	2412	DSSS	24898.0	-27.82	9.3	-10.7	-17.12
F_{MID20}	2437	DSSS	24822.0	-27.73	8.3	-11.7	-16.03
F_{HIGH20}	2462	DSSS	25506.0	-27.35	8.6	-11.4	-15.95
F_{LOW20}	2412	OFDM	25544.0	-27.82	6.9	-13.1	-14.72
F_{MID20}	2437	OFDM	24974.0	-27.98	8.7	-14.3	-13.68
F_{HIGH20}	2462	OFDM	25012.0	-27.44	8.7	-14.3	-13.14
F_{LOW20}	2412	HT20	25468.0	-27.96	7.0	-13.0	-14.96
F_{MID20}	2437	HT20	24974.0	-27.52	7.2	-12.8	-14.72
F_{HIGH20}	2462	HT20	25582.0	-27.39	6.3	-13.7	-13.69
Comments:							

Conducted spurious emissions – DSSS F_{LOW}

Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, DSSS, 1Mbps, 2412 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)
Note 2:	conducted measurement

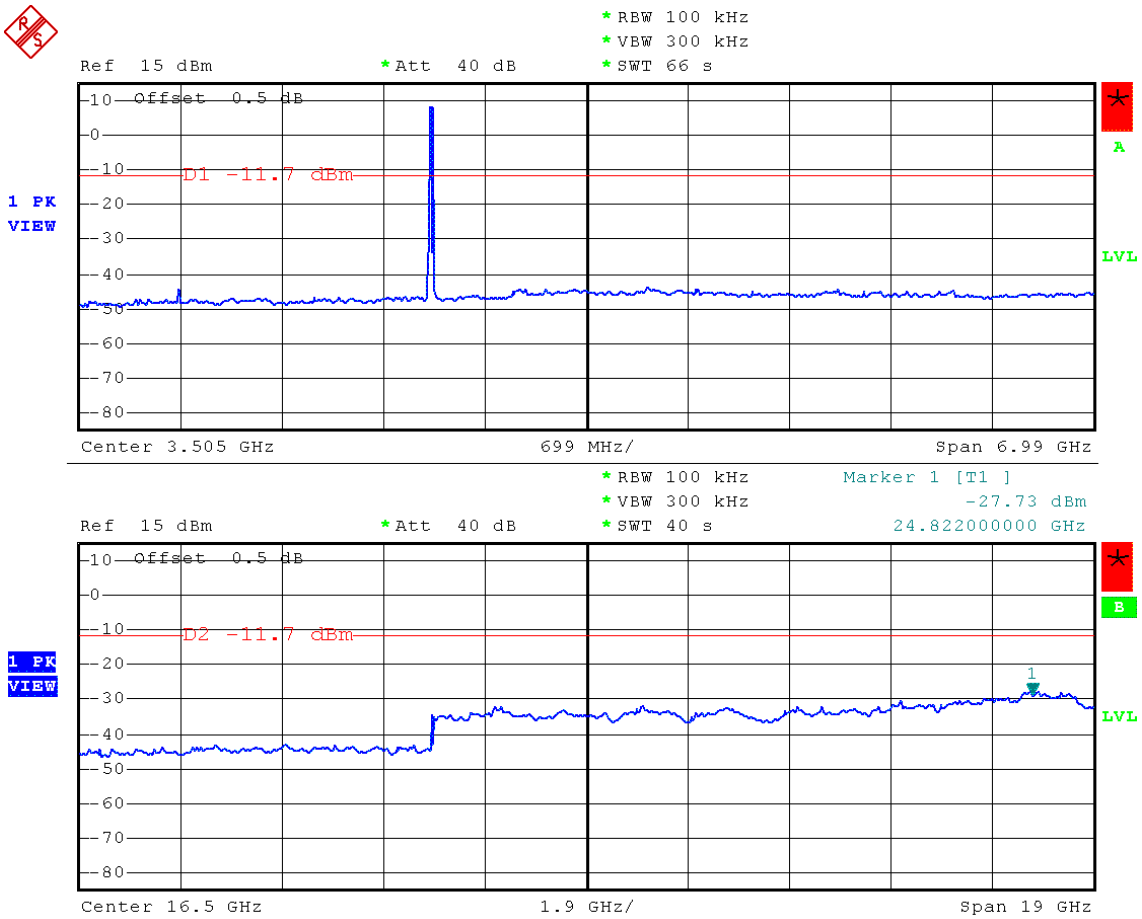


Conducted spurious emissions – DSSS F_{MID}

Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, DSSS, 1Mbps, 2437 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)
Note 2:	conducted measurement

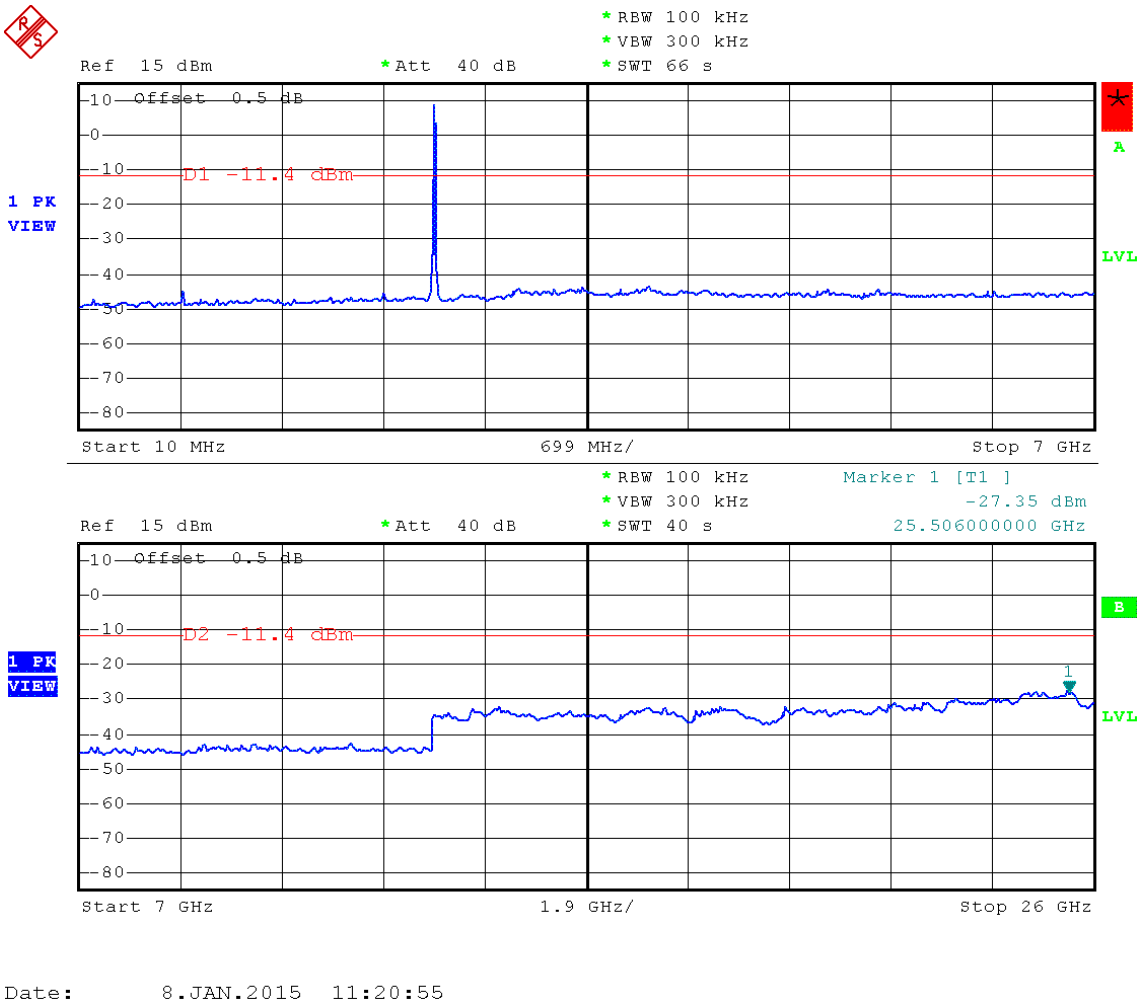


Conducted spurious emissions – DSSS F_{HIGH}

Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, DSSS, 1Mbps, 2462 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)
Note 2:	conducted measurement

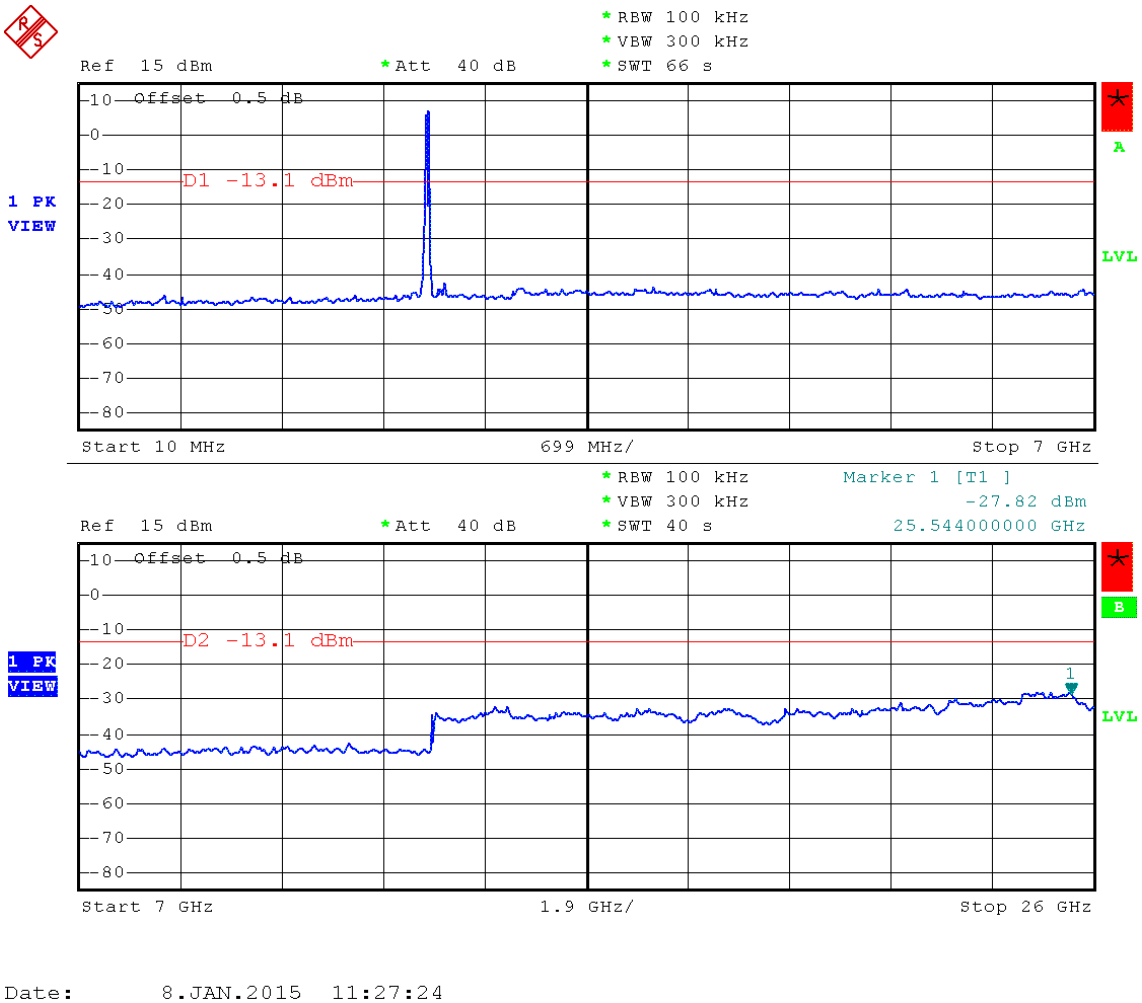


Conducted spurious emissions – OFDM F_{LOW}

Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, OFDM, 6Mbps, 2412 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)
Note 2:	conducted measurement

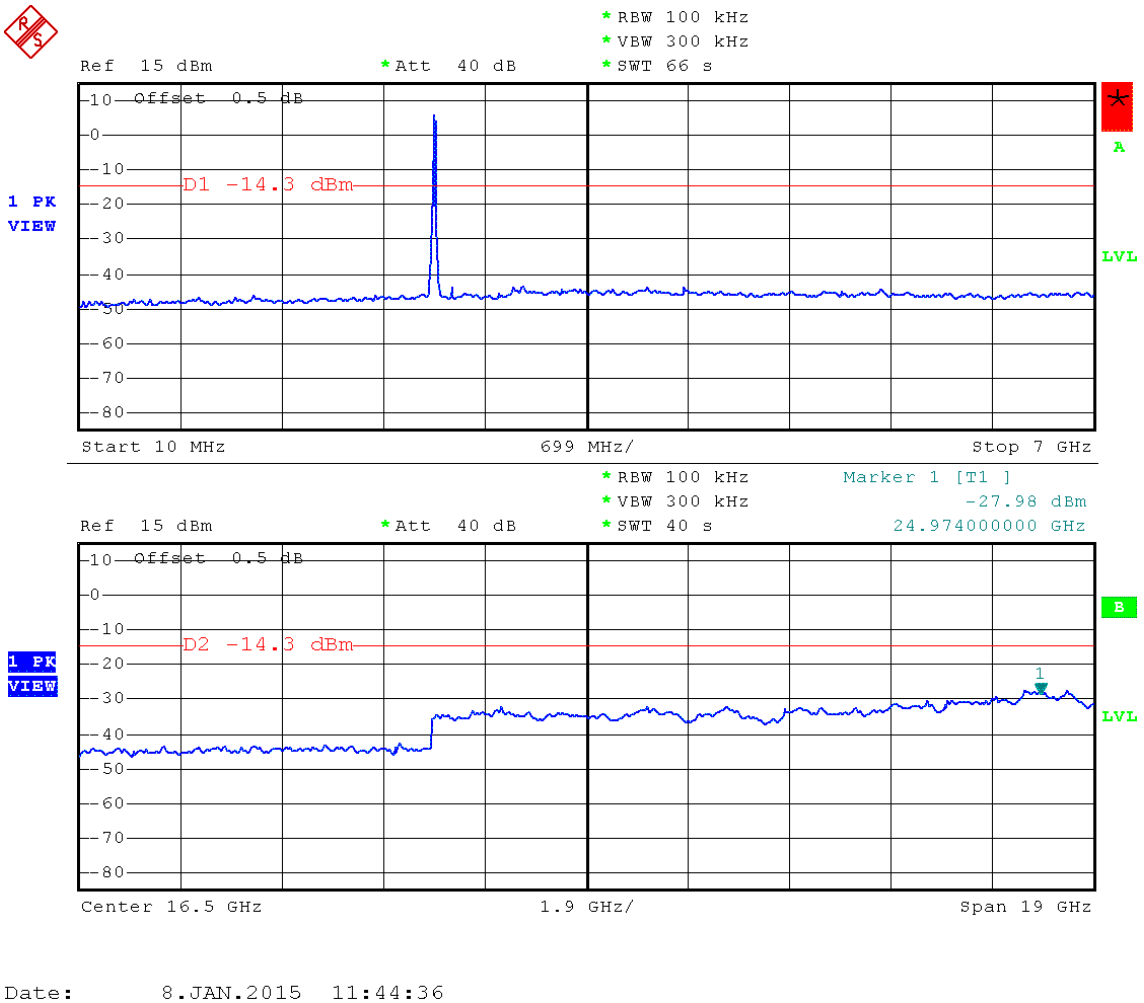


Conducted spurious emissions – OFDM F_{MID}

Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, OFDM, 6Mbps, 2437 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)
Note 2:	conducted measurement

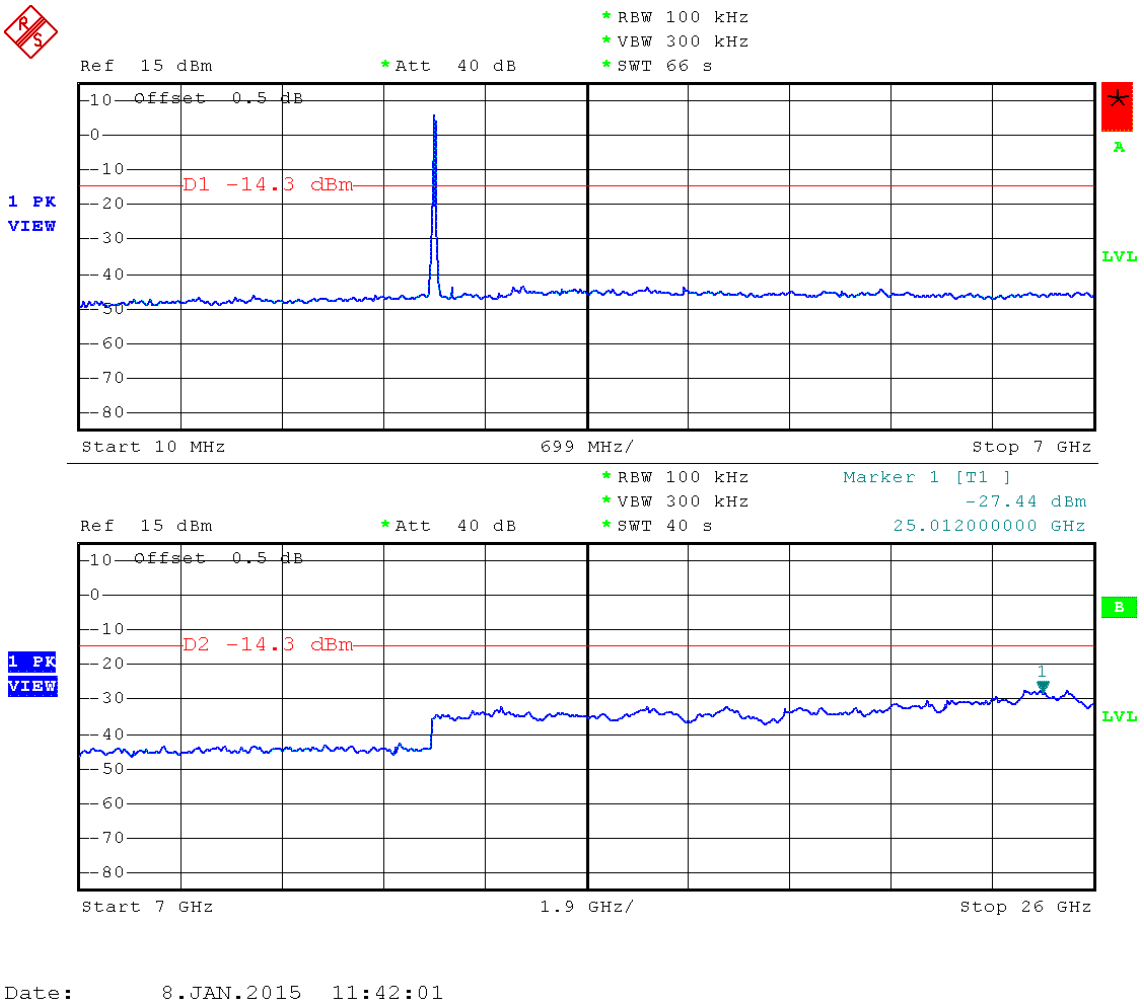


Conducted spurious emissions – OFDM F_{HIGH}

Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, OFDM, 6Mbps, 2462 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)
Note 2:	conducted measurement



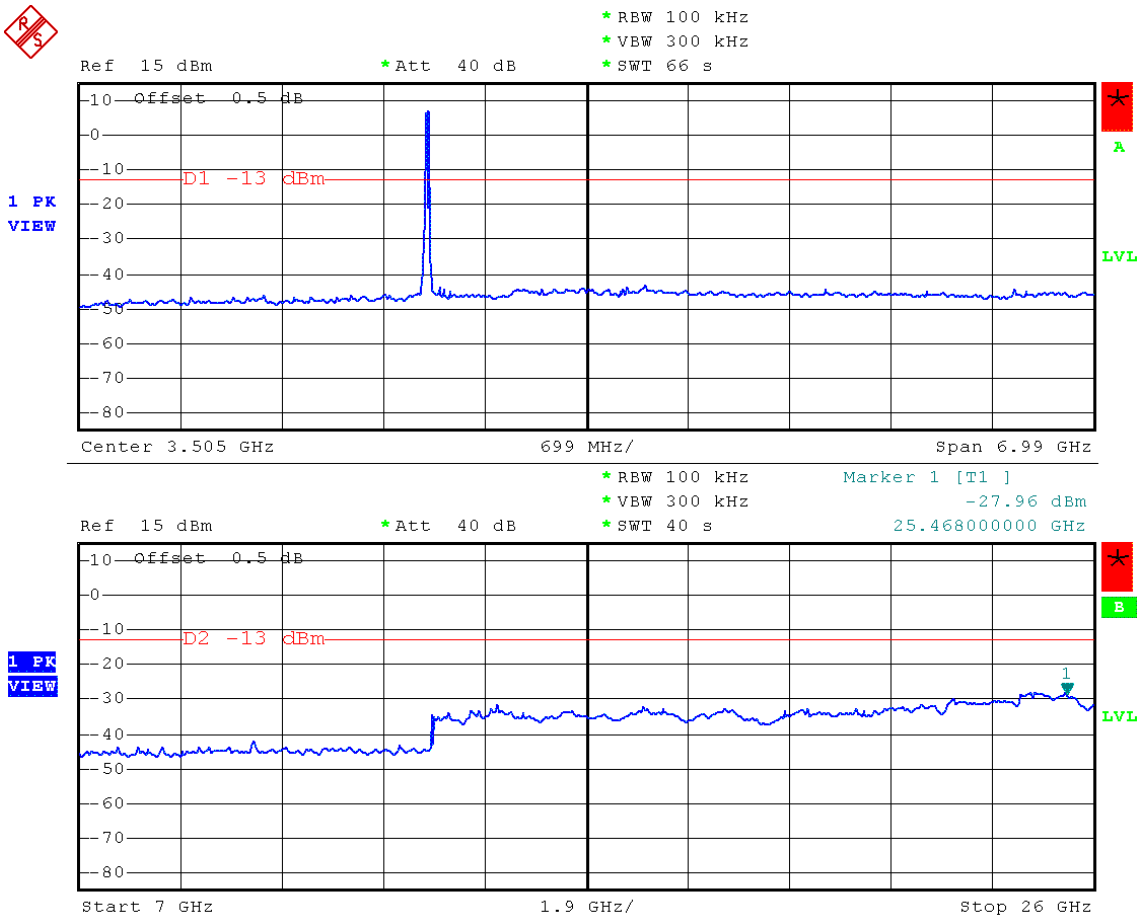
Date: 8.JAN.2015 11:42:01

Conducted spurious emissions – HT20 F_{LOW}

Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, HT20, MCS0, 2412 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)
Note 2:	conducted measurement

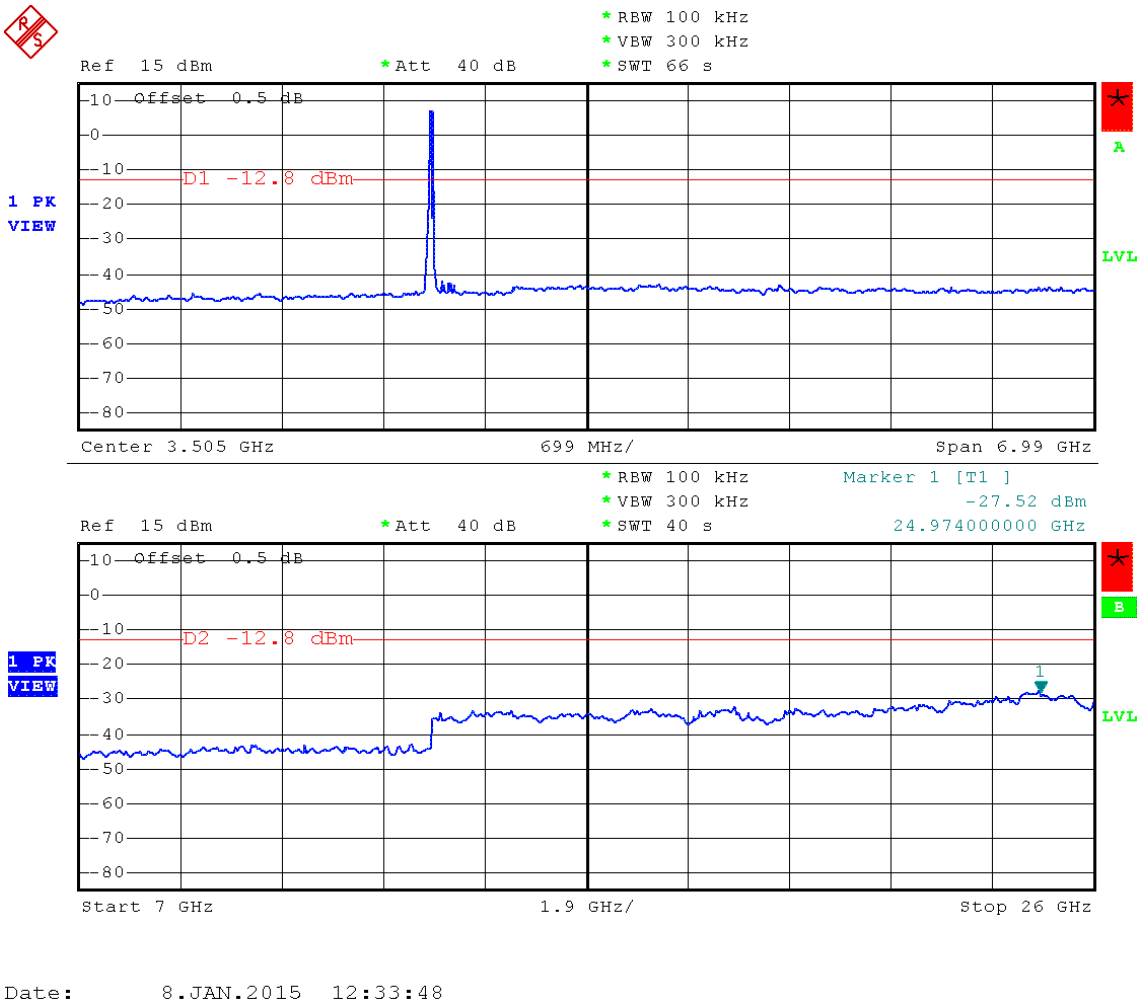


Conducted spurious emissions – HT20 F_{MID}

Spurious Emissions acc. to FCC 15.247

Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, HT20, MCS0, 2437 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)
Note 2:	conducted measurement

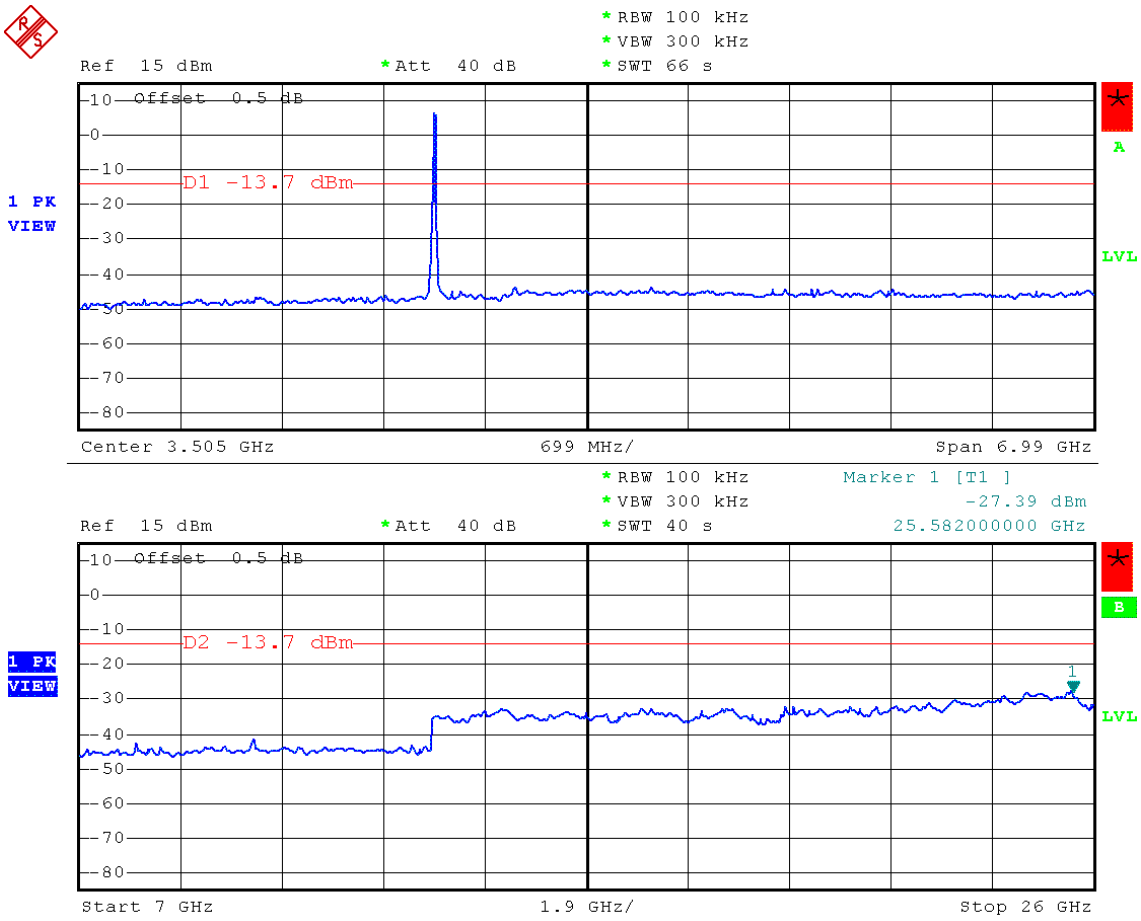


Conducted spurious emissions – HT20 F_{HIGH}

Spurious Emissions acc. to FCC 15.247

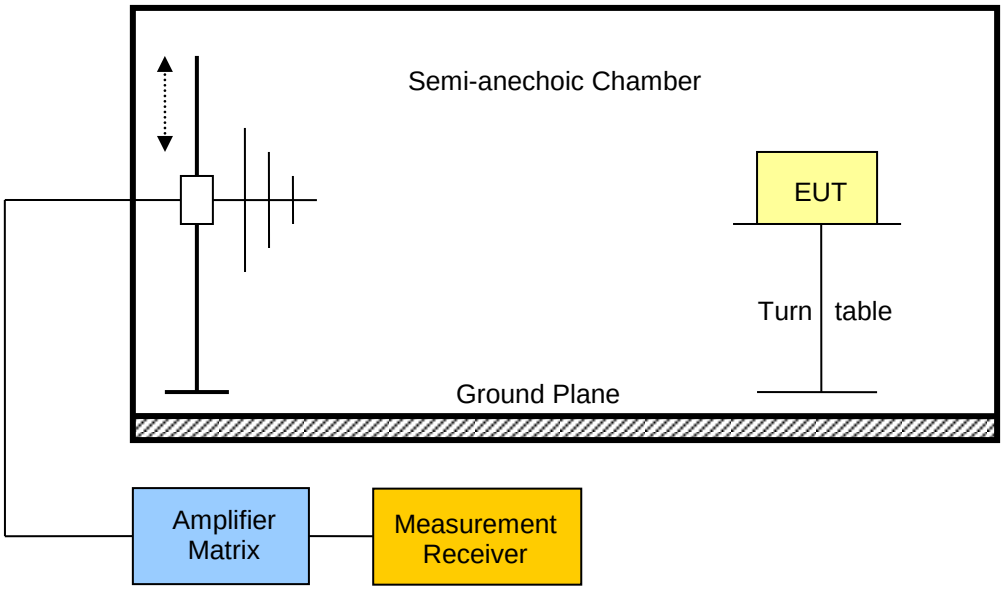
Project Number: G0M-1406-3917

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Wilfried Treffke
Test Conditions:	Tnom / Vnom
Mode:	Tx, WLAN, HT20, MCS0, 2462 MHz, modulated
Test Date:	2015-01-08
Verdict:	PASS
Note 1:	Spurious in non-restricted frequency bands (558074 D01 Meas Guidance)
Note 2:	conducted measurement



3.8 Test Conditions and Results – Transmitter radiated emissions

Transmitter radiated emissions acc. to 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 KDB Publication No. 558074 / ANSI C63.4		
Test frequency range		Tested frequencies		
		30 MHz – 10th Harmonic		
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)). When average radiated emission measurements are specified, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.				
Test setup				



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

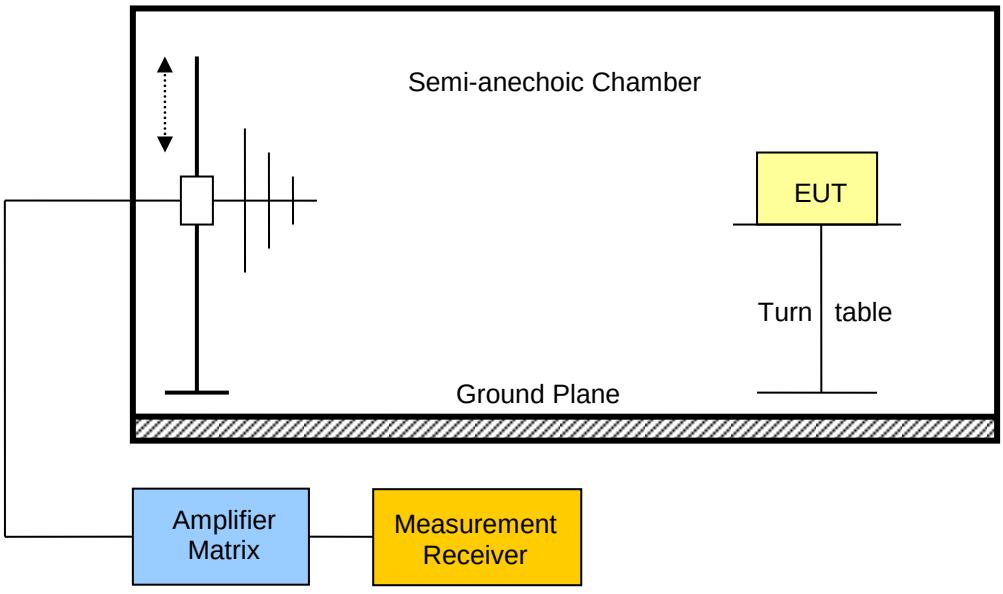
Test results

Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Limit dist. [m]*	Margin [dB]
F_{LOW}	2412	HT20	2386	55.88	pk	ver	74.00	3	-18.12
F_{LOW}	2412	HT20	2386	35.66	RMS	ver	54.00	3	-18.34
F_{LOW}	2412	HT20	2387	53.95	pk	hor	74.00	3	-20.05
F_{LOW}	2412	HT20	2387	34.10	RMS	hor	54.00	3	-19.90
F_{LOW}	2412	HT20	2389	56.86	pk	hor	74.00	3	-17.14
F_{LOW}	2412	HT20	2389	35.67	RMS	hor	54.00	3	-18.33
F_{LOW}	2412	HT20	2390	58.65	pk	ver	74.00	3	-15.35
F_{LOW}	2412	HT20	2390	40.20	RMS	ver	54.00	3	-13.80
F_{LOW}	2412	HT20	2390	56.82	pk	hor	74.00	3	-17.18
F_{LOW}	2412	HT20	2390	37.57	RMS	hor	54.00	3	-16.43
F_{LOW}	2412	HT20	2490	51.73	pk	ver	74.00	3	-22.27
F_{LOW}	2412	HT20	2493	51.08	pk	hor	74.00	3	-22.92
F_{HIGH}	2462	HT20	2484	64.15	pk	ver	74.00	3	-09.85
F_{HIGH}	2462	HT20	2484	39.56	RMS	ver	54.00	3	-14.44
F_{HIGH}	2462	HT20	2484	64.42	pk	hor	74.00	3	-09.58
F_{HIGH}	2462	HT20	2484	40.90	RMS	hor	54.00	3	-13.10
F_{HIGH}	2462	HT20	2486	62.76	pk	ver	74.00	3	-11.24
F_{HIGH}	2462	HT20	2486	39.71	RMS	ver	54.00	3	-14.29
F_{HIGH}	2462	HT20	2488	60.15	pk	ver	74.00	3	-13.85
F_{HIGH}	2462	HT20	2488	37.57	RMS	ver	54.00	3	-16.43
F_{HIGH}	2462	HT20	2489	57.50	pk	hor	74.00	3	-16.50
F_{HIGH}	2462	HT20	2489	36.49	RMS	hor	54.00	3	-17.51
F_{HIGH}	2462	HT20	2493	52.86	pk	hor	74.00	3	-21.14
F_{HIGH}	2462	HT20	2493	34.28	RMS	hor	54.00	3	-19.72

Comments: * Physical distance between EUT and measurement antenna.

3.9 Test Conditions and Results – Receiver radiated emissions

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



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

Test results

Channel	Frequency [MHz]	Emission [MHz]	Emission Level [dbµV/m]	Det.	Limit* Distance [m]	Limit [dBµV/m]	Margin [µV/m]
F_{MID}	2437	141.568	34.25	pk	3	43.50	-9.25 dB
F_{MID}	2437	416	36.46	pk	3	46.00	-9.54 dB

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

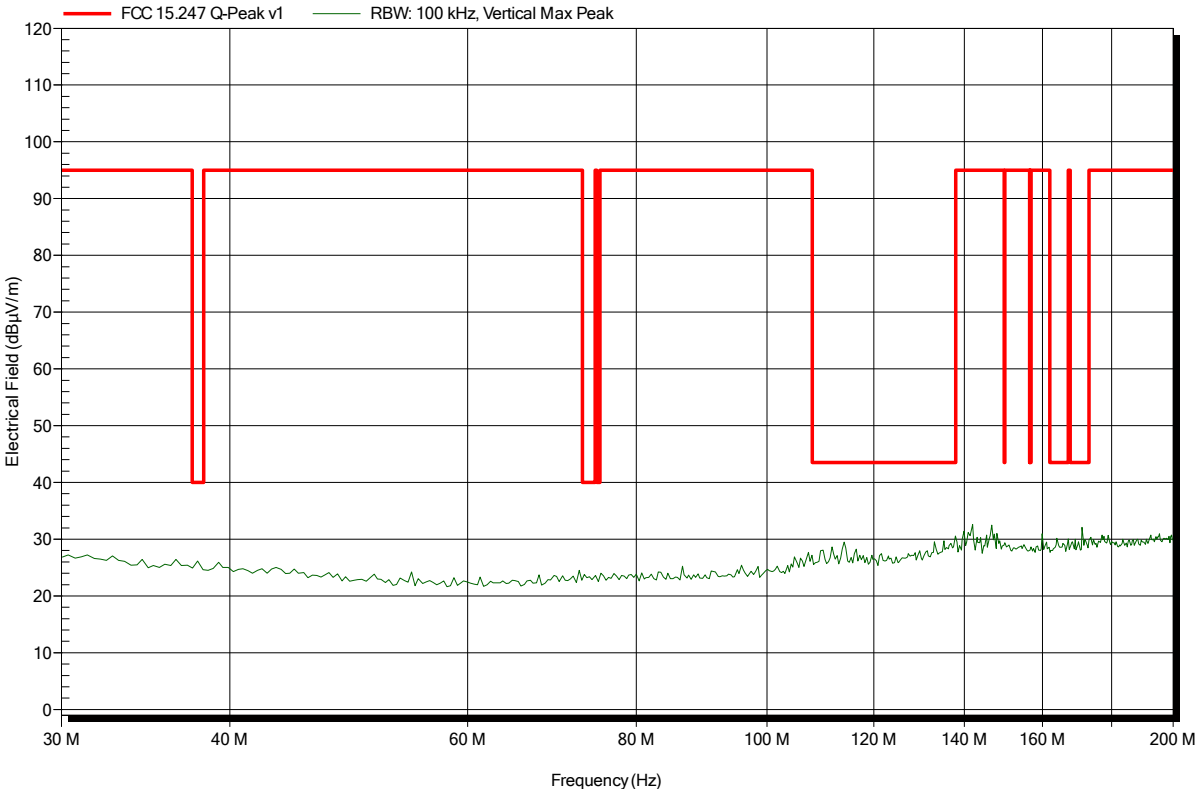
ANNEX A Transmitter radiated spurious emissions

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 164

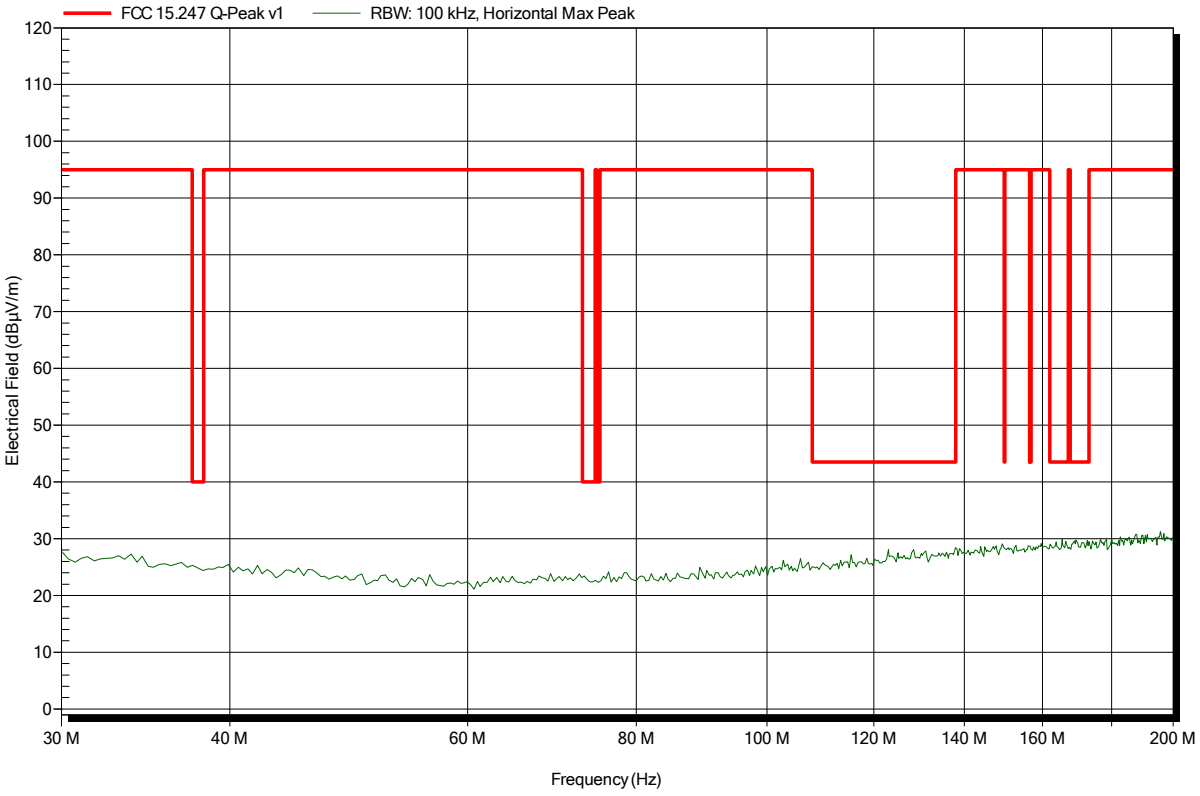


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 167

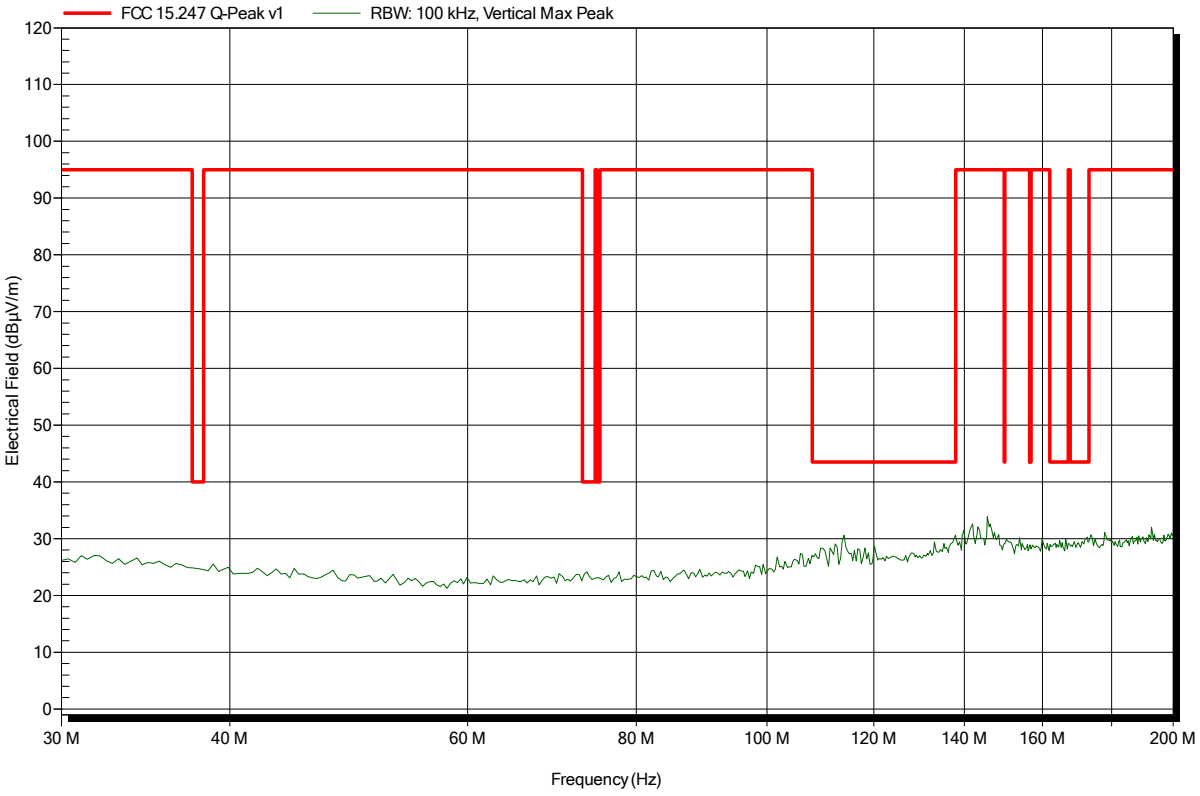


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 165

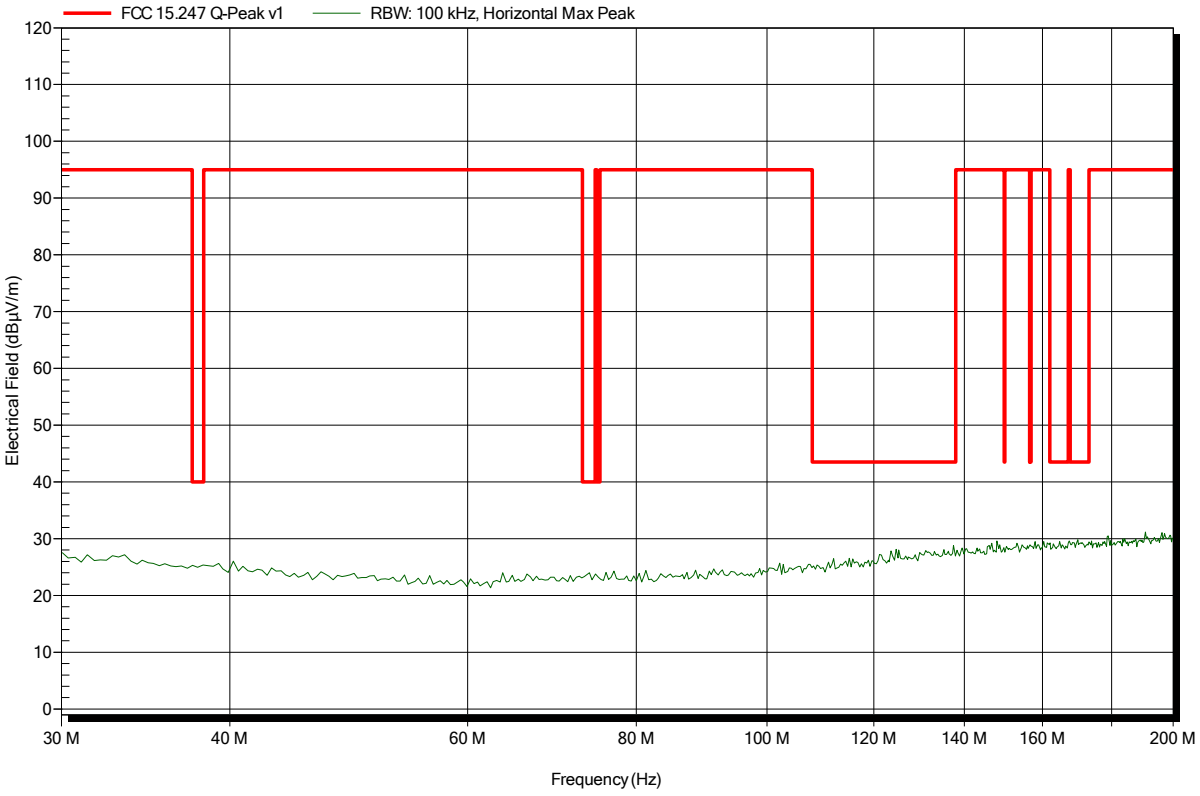


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 168

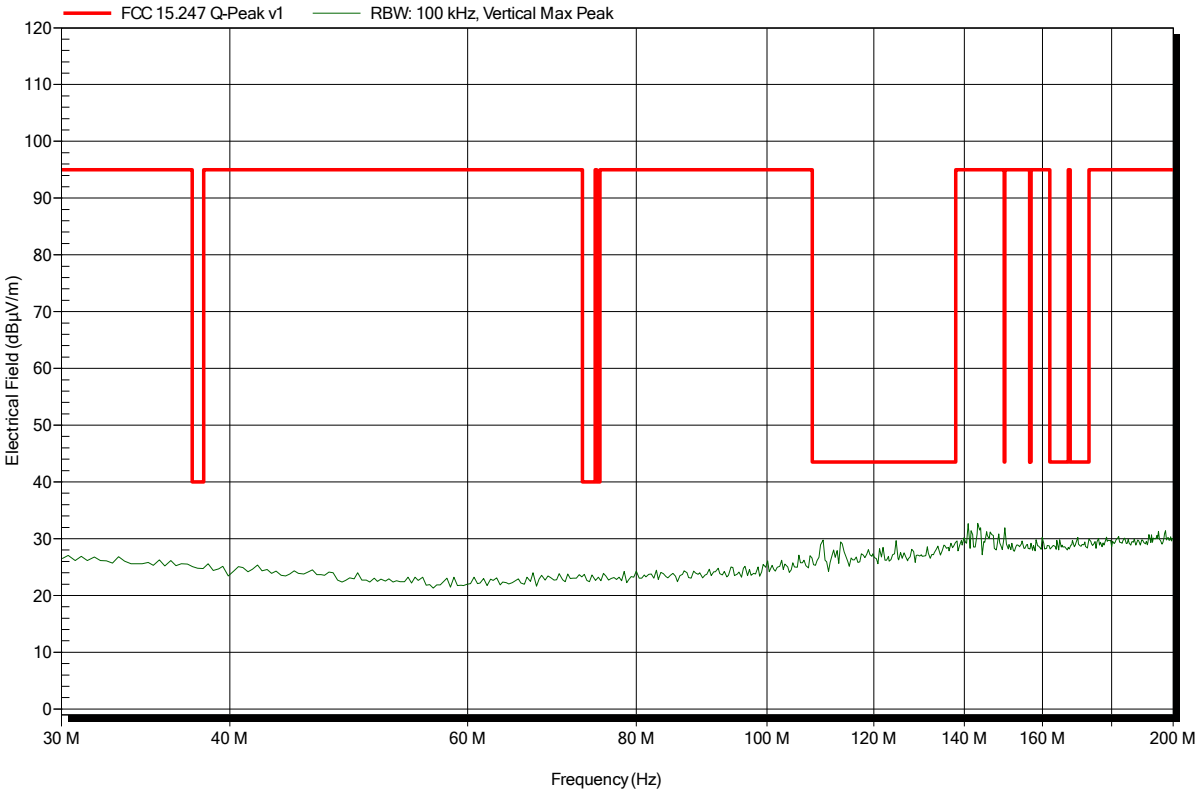


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 166

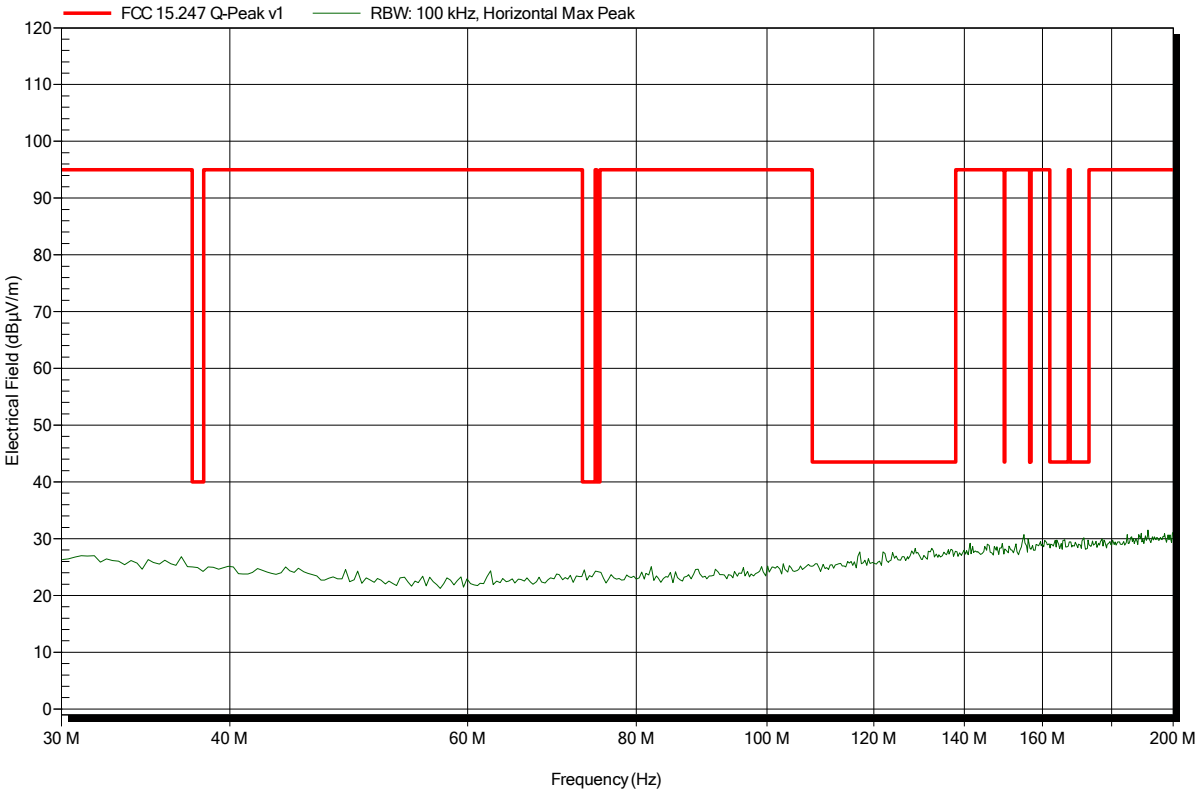


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 169

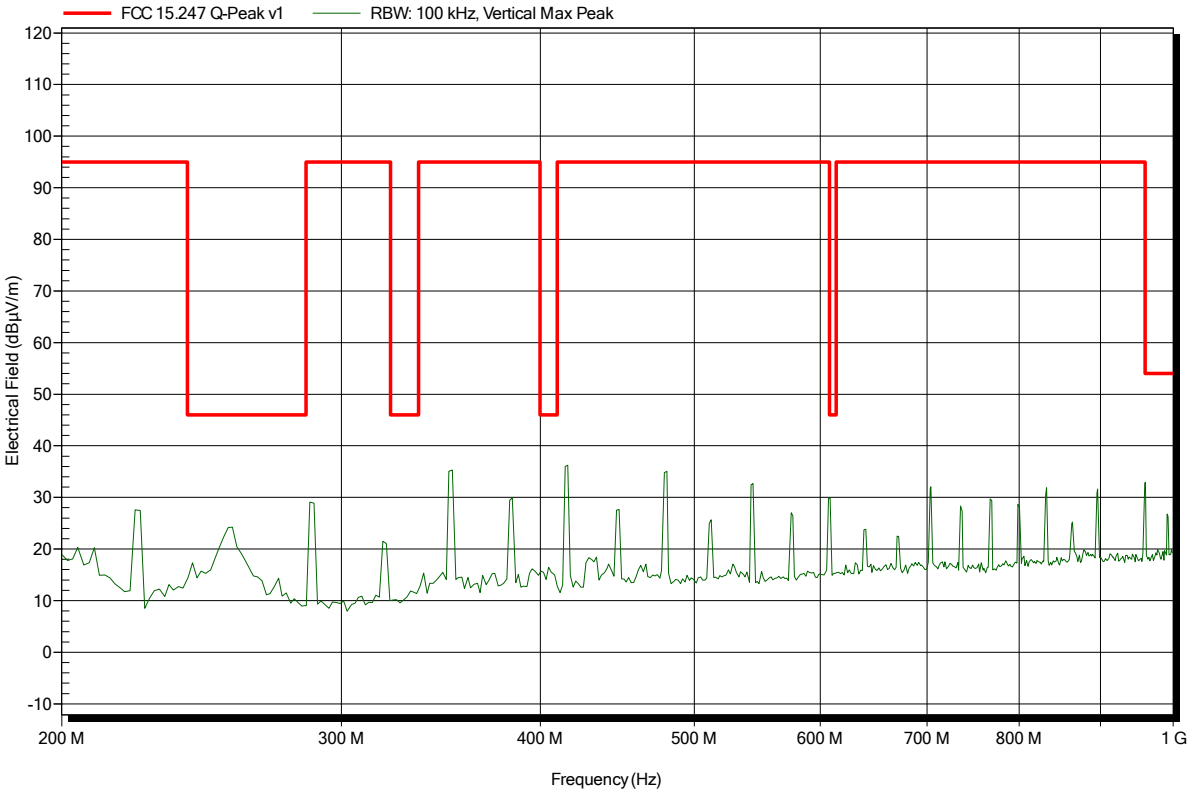


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 170

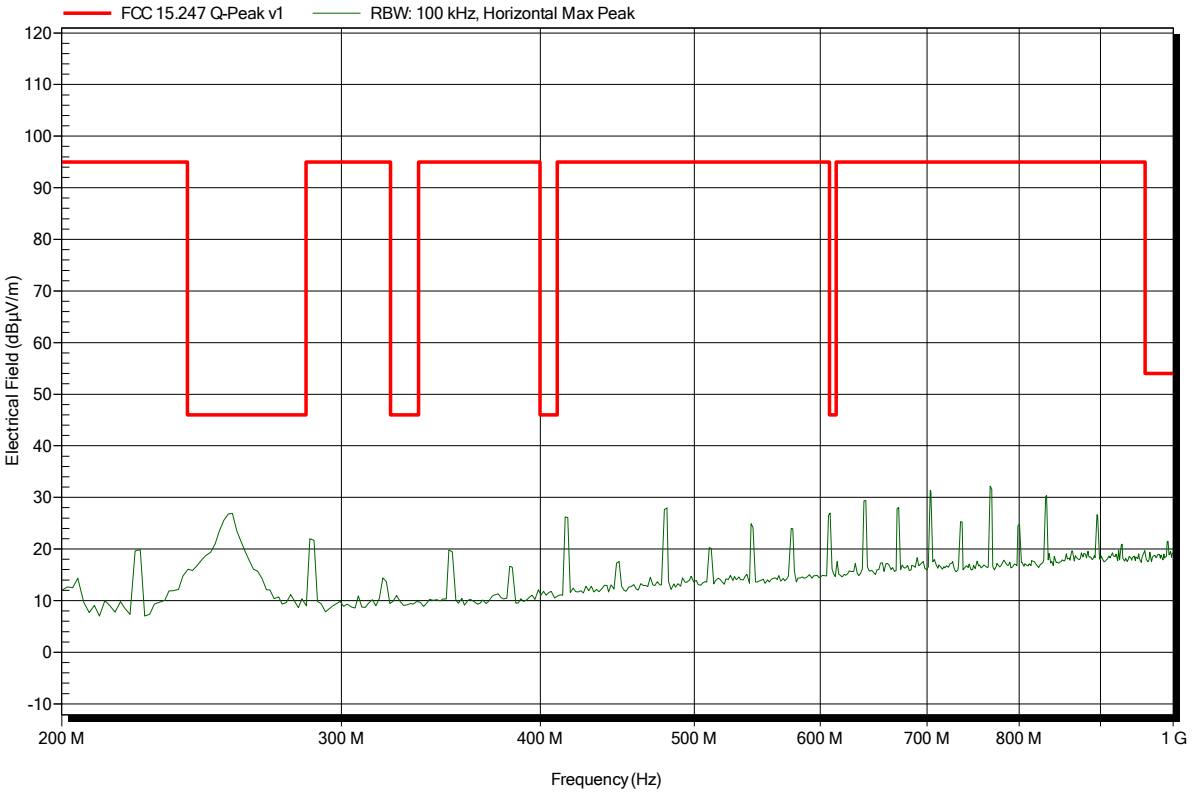


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 173

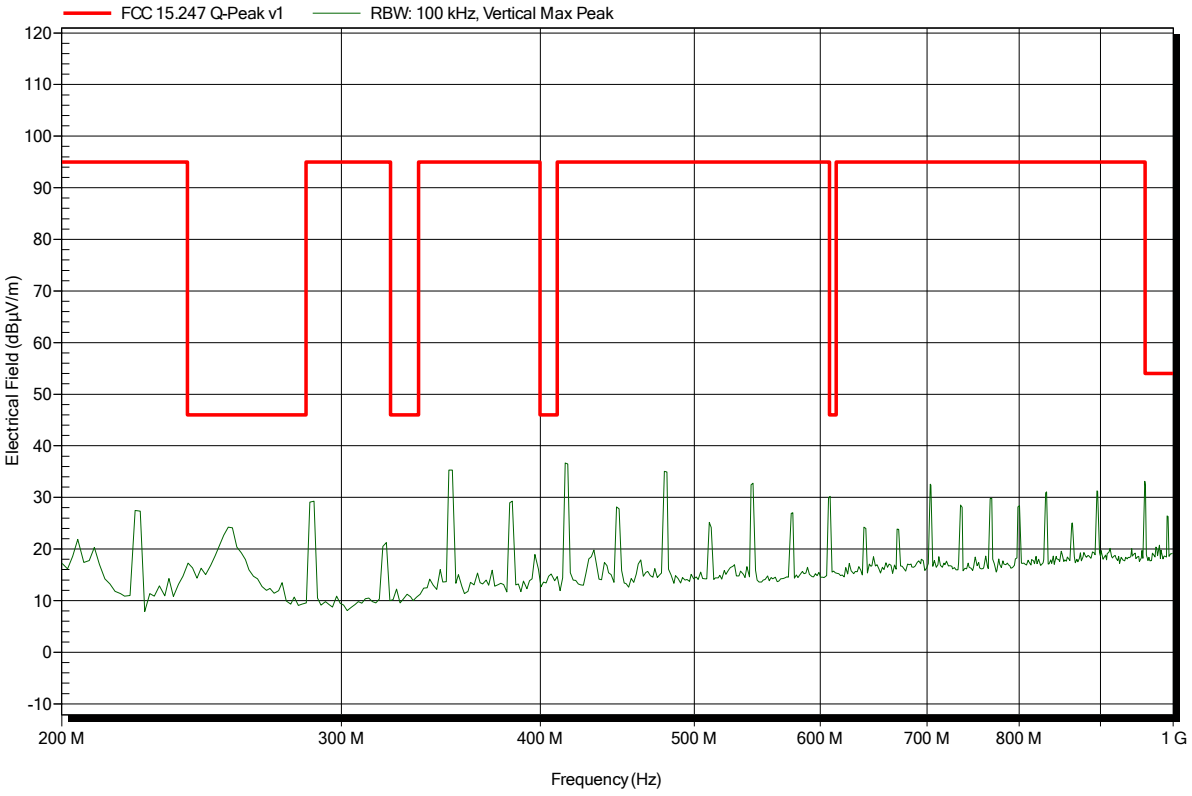


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 171

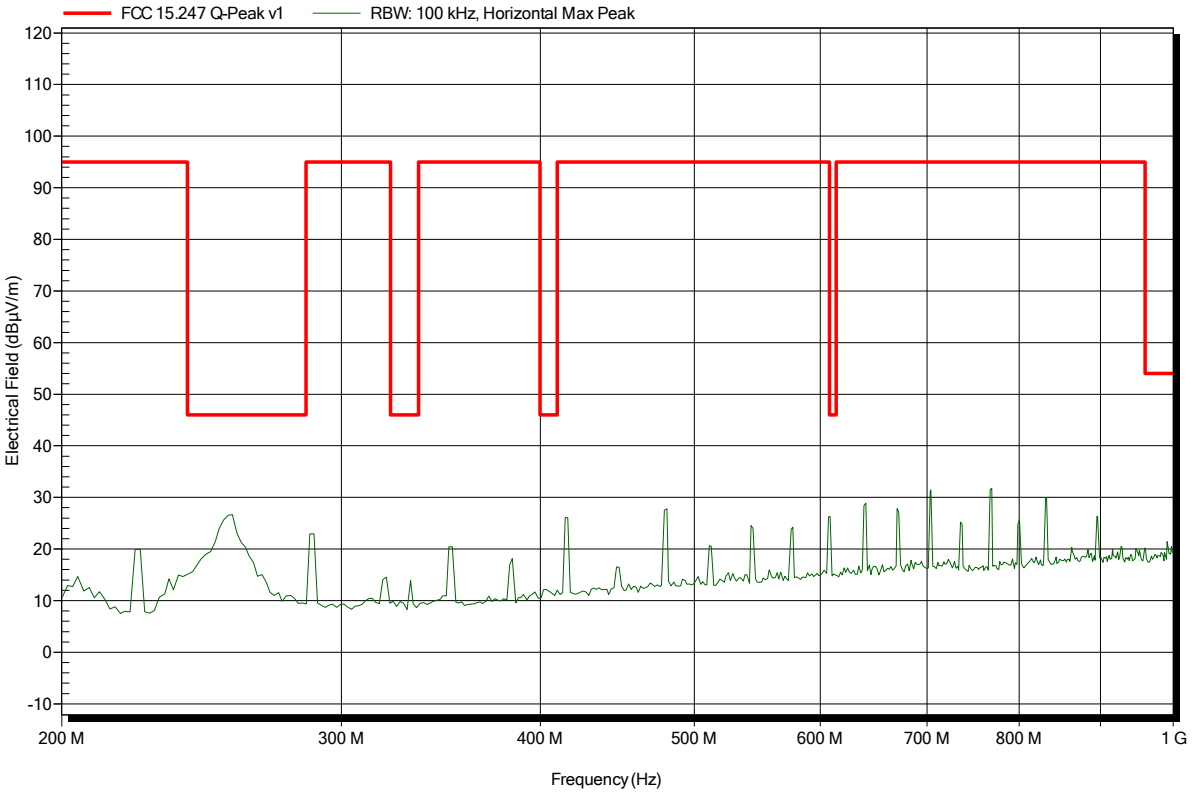


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 174

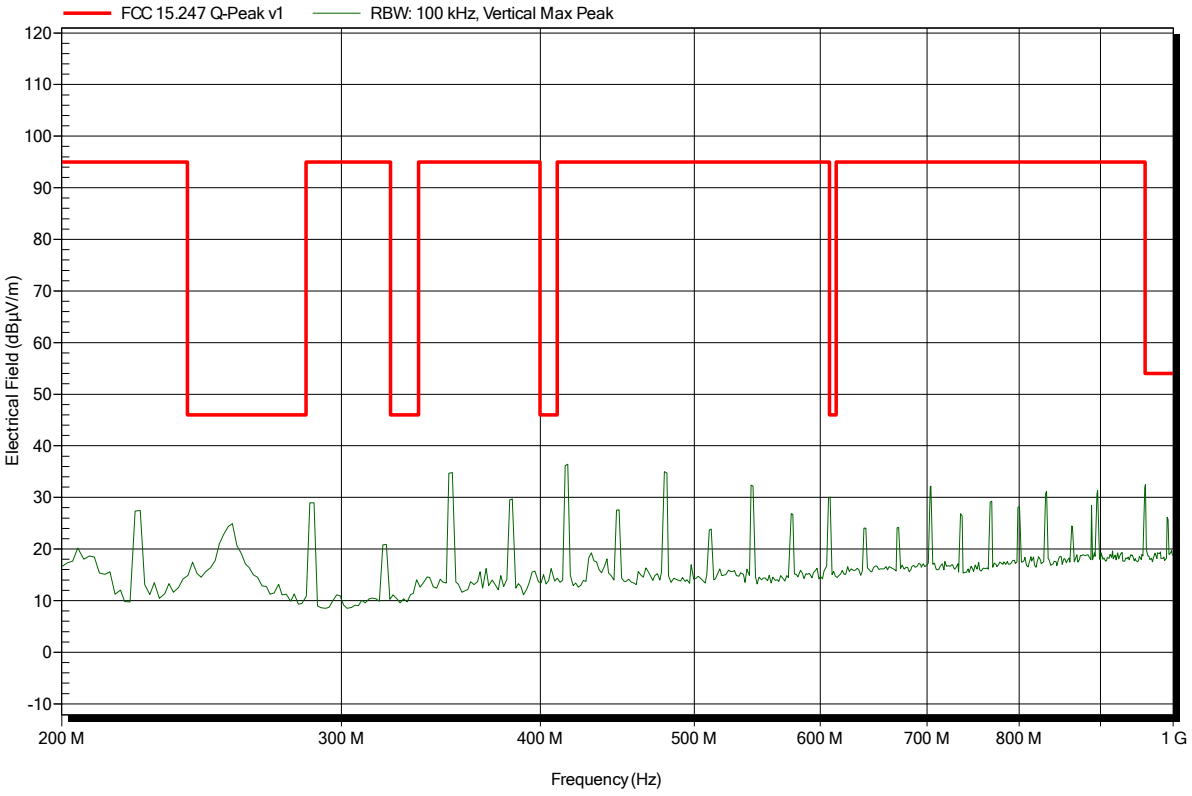


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 172

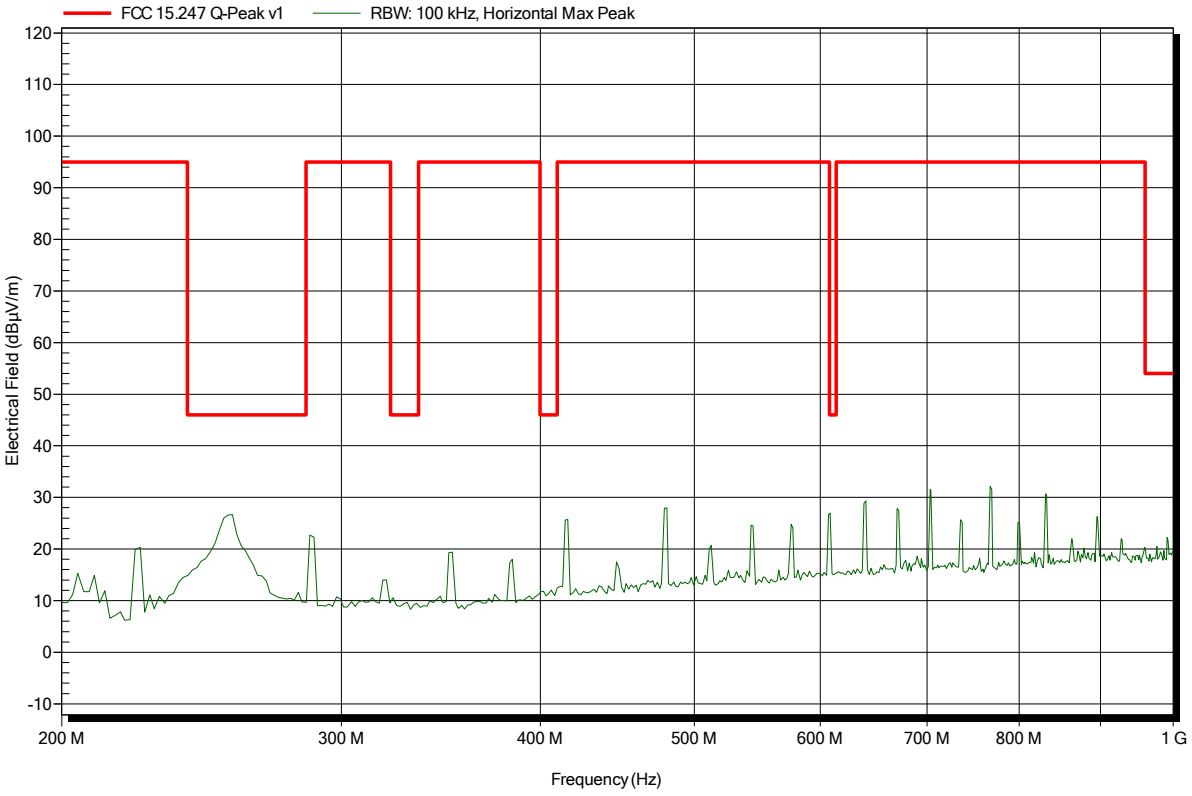


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 175

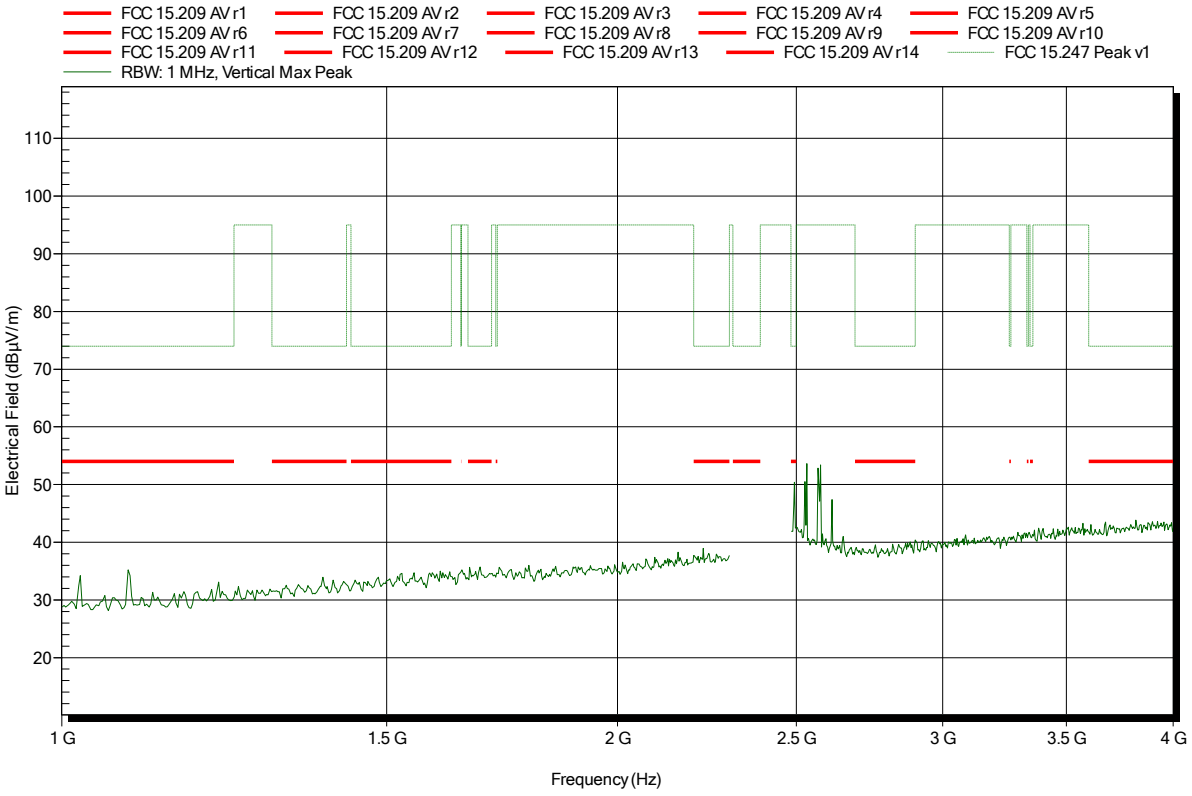


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 176

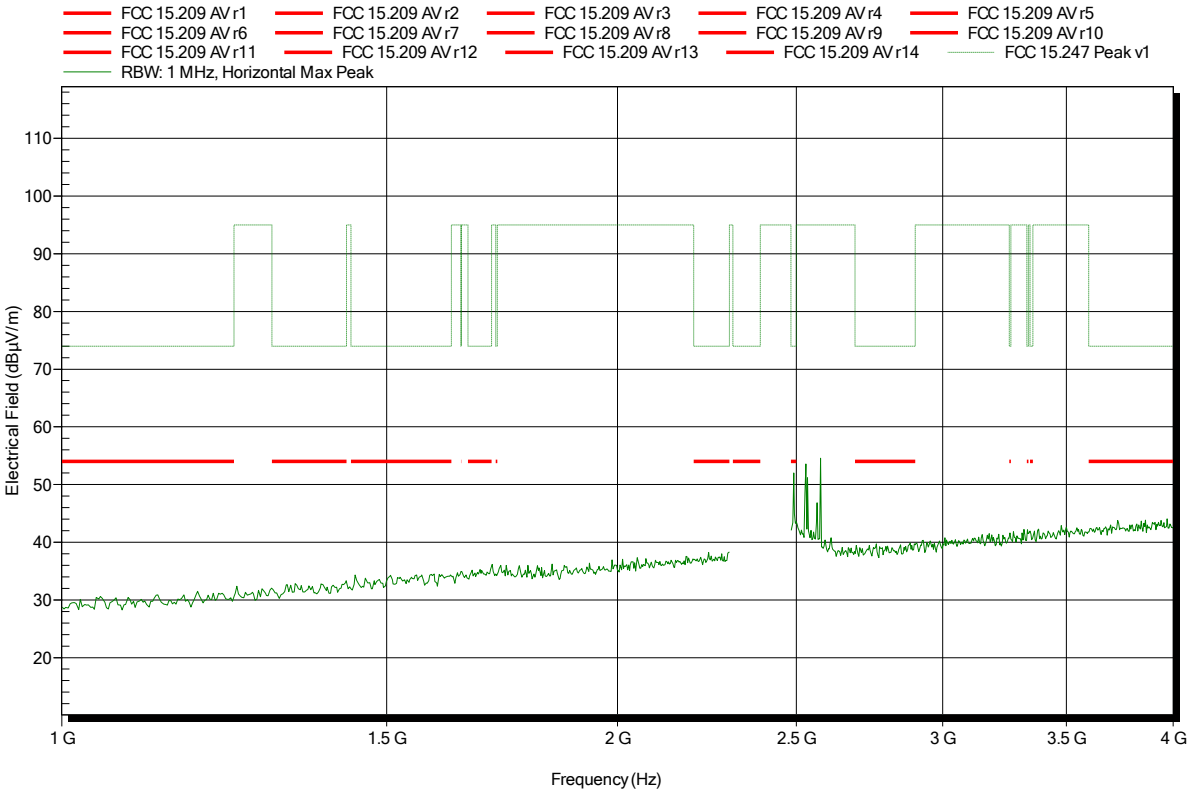


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 178

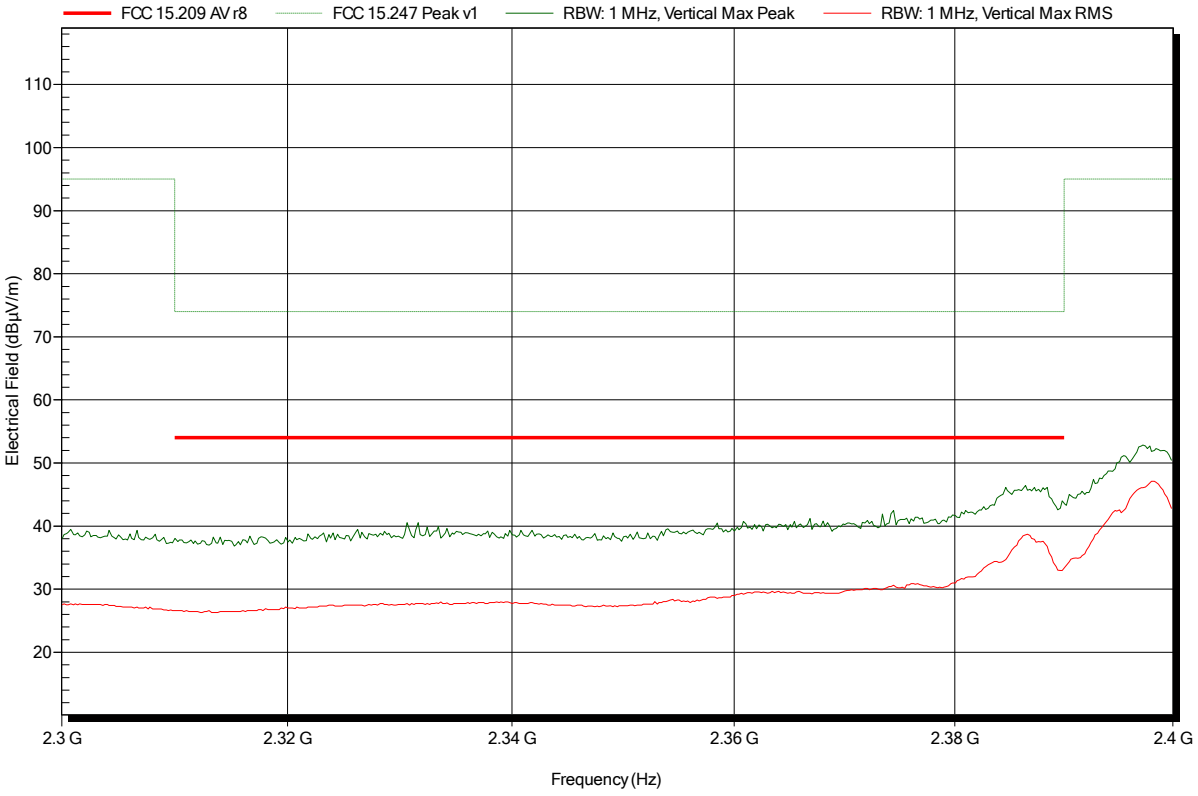


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical; lower bandedge

Index 177

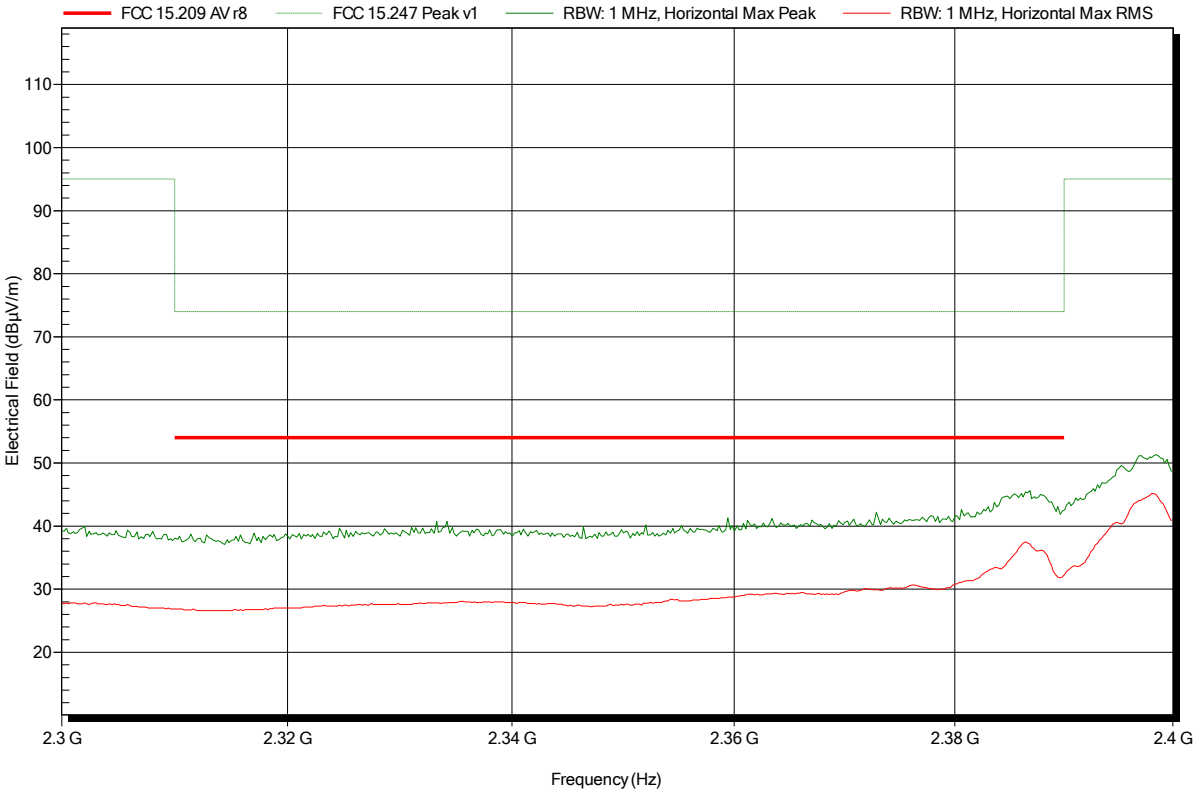


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical; lower bandedge

Index 179

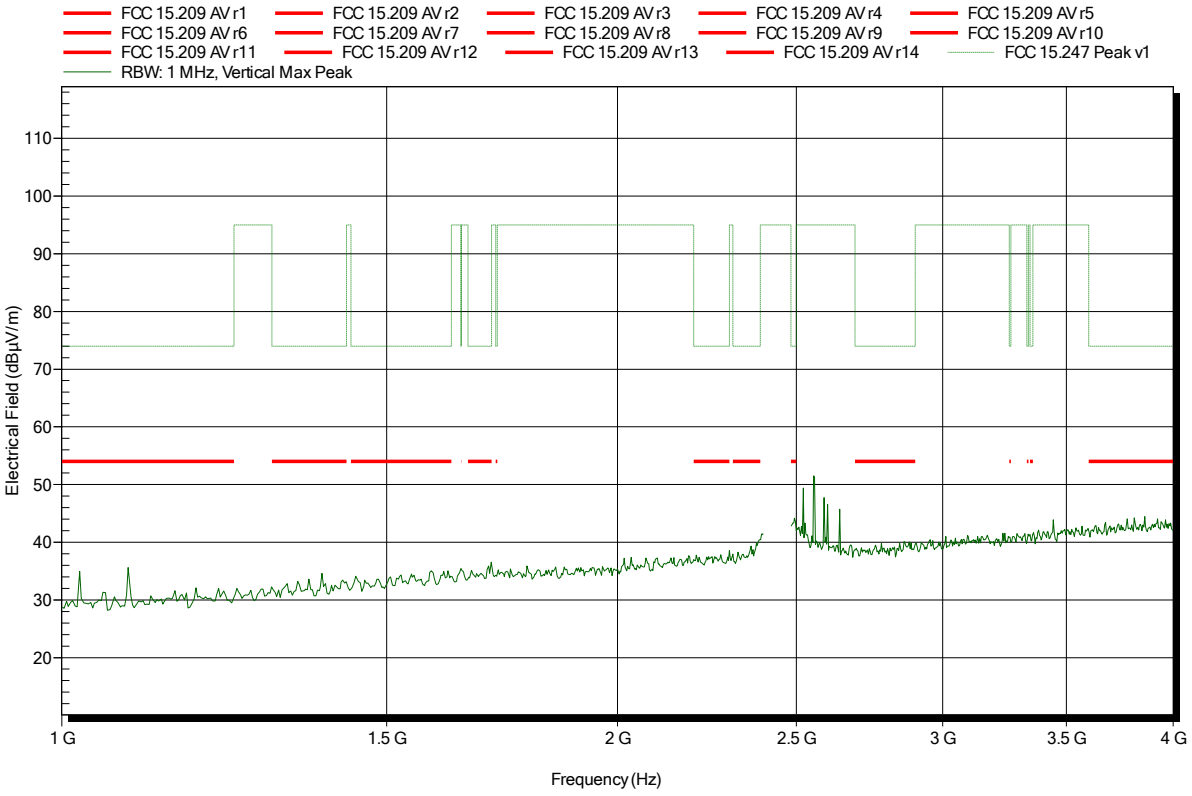


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 181

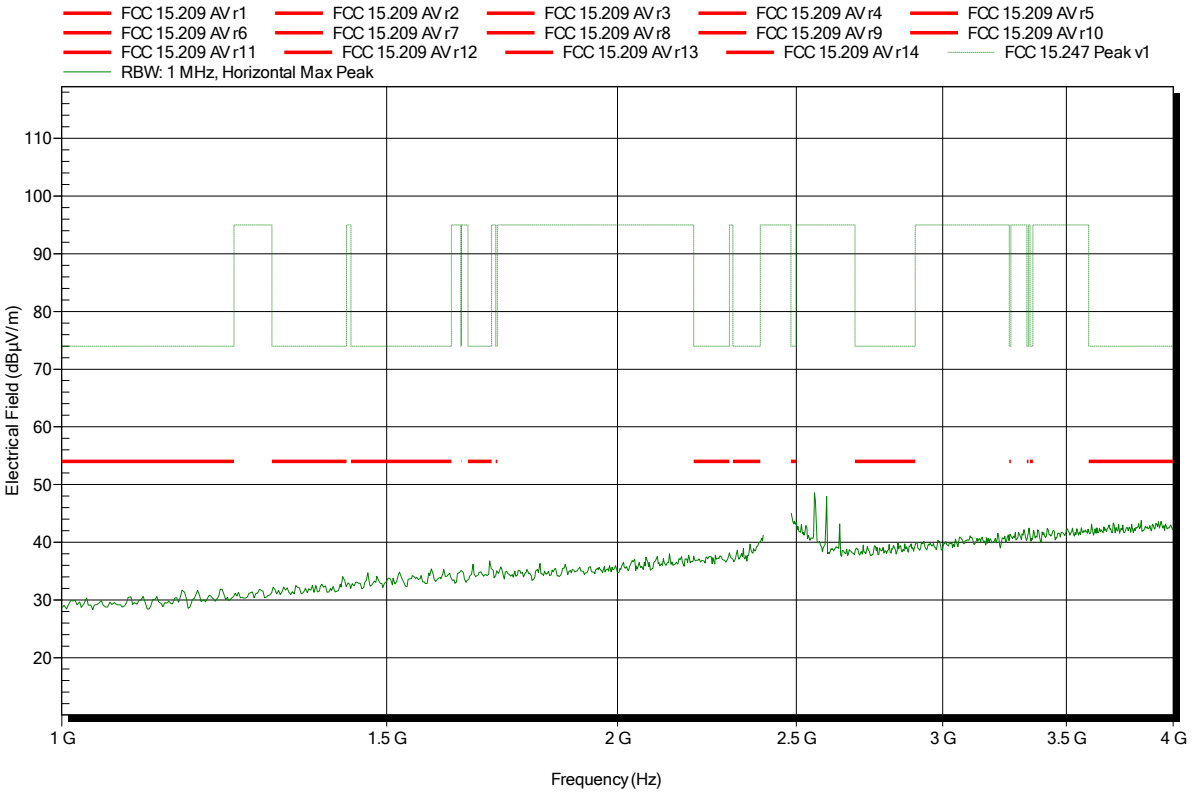


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 180

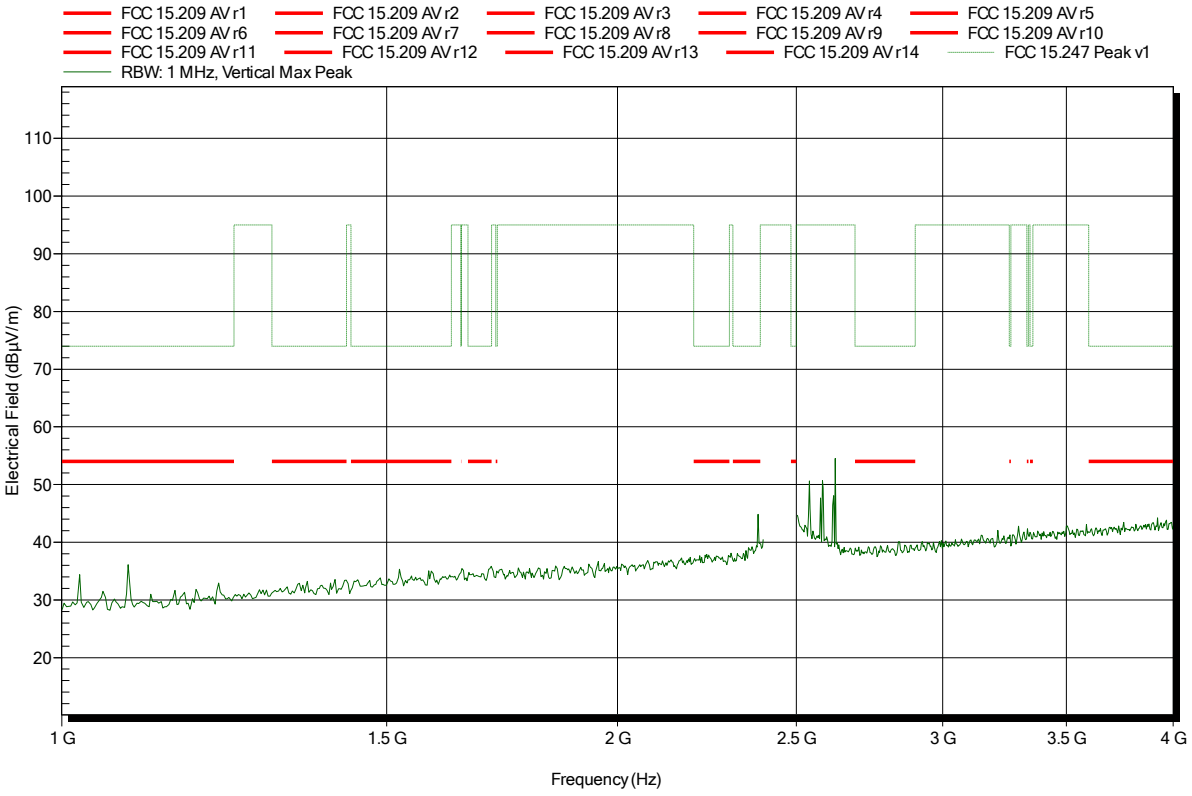


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 182

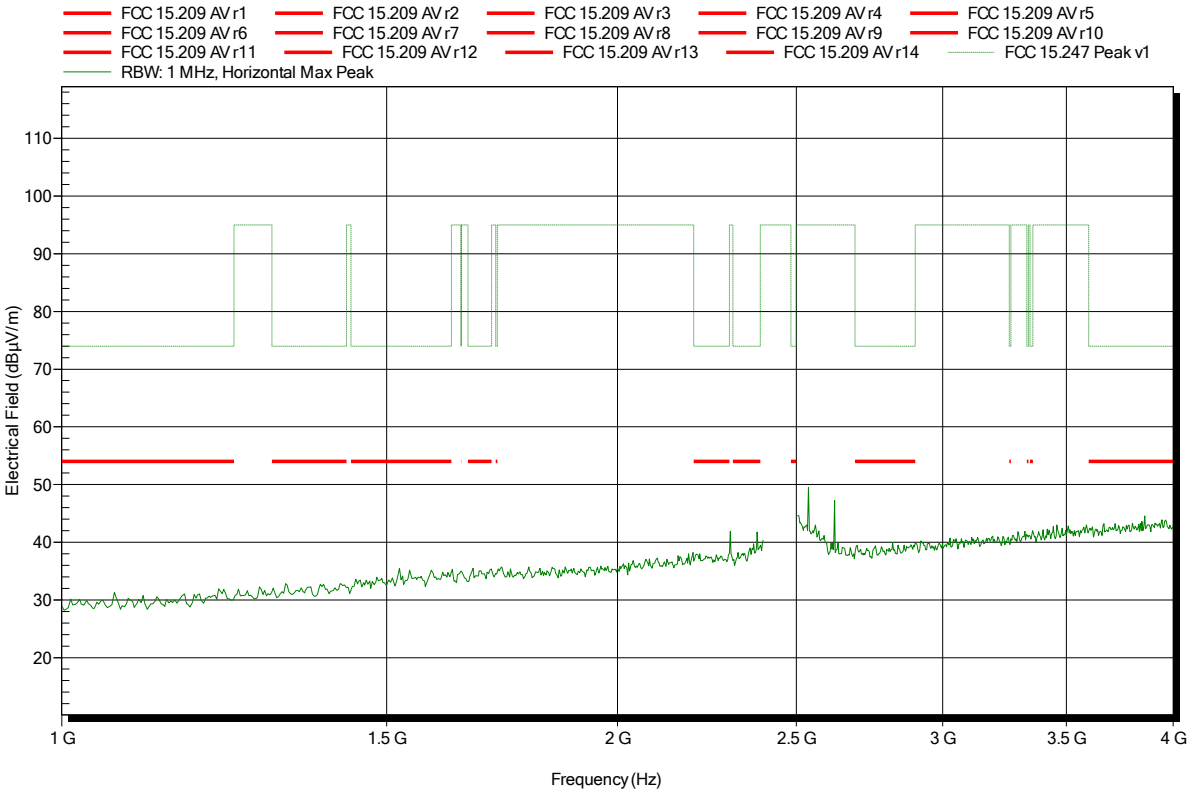


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 184

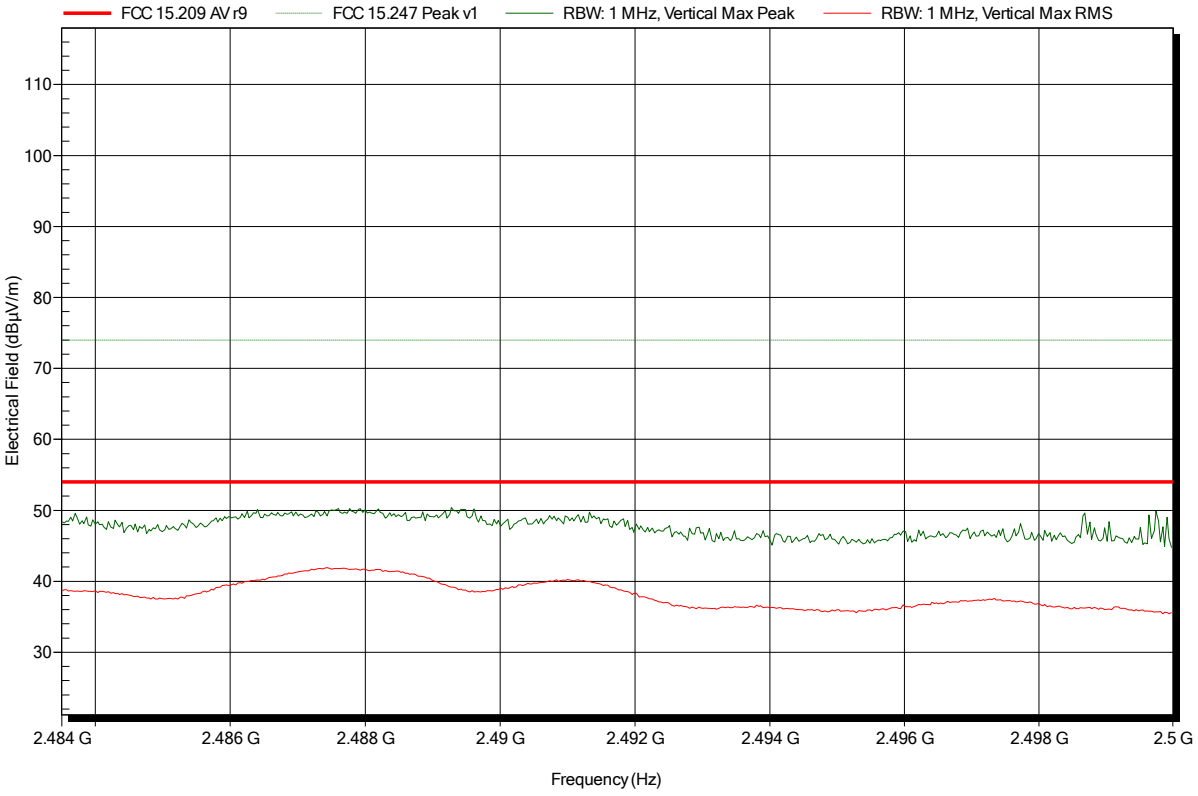


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical; higher bandedge

Index 183

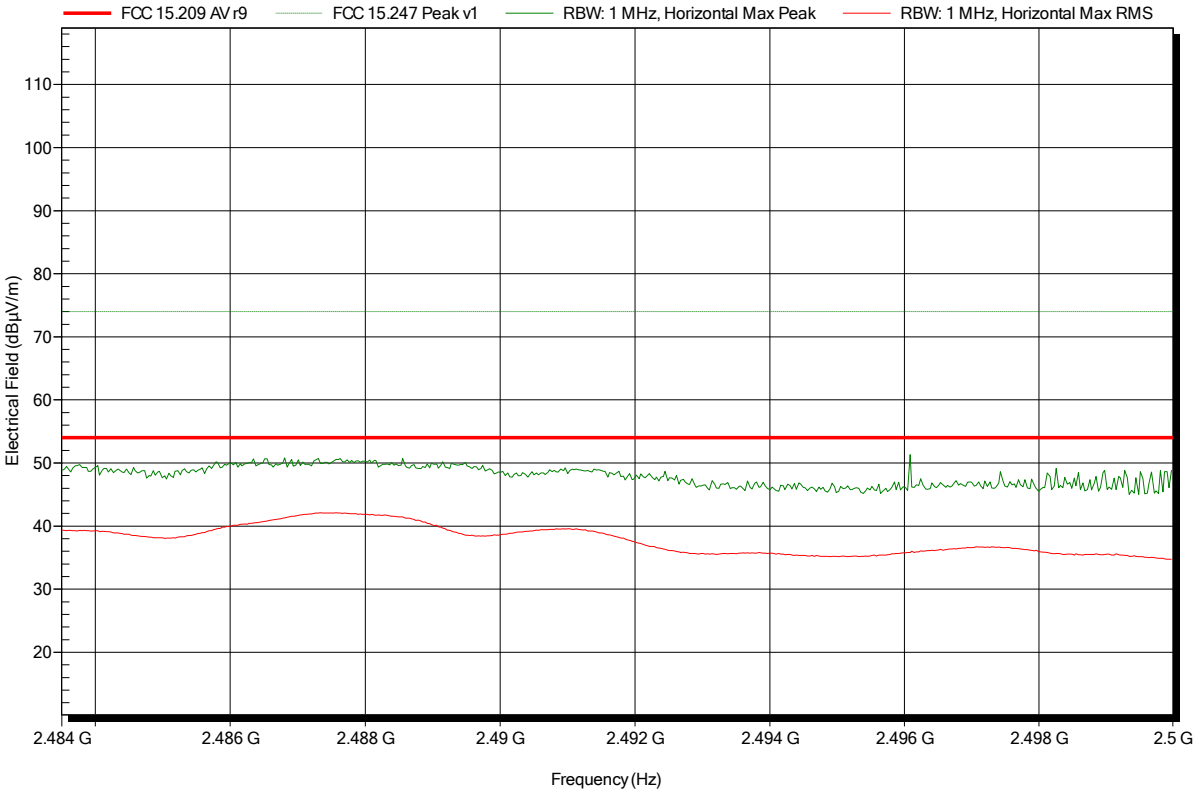


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical; higher bandedge

Index 185

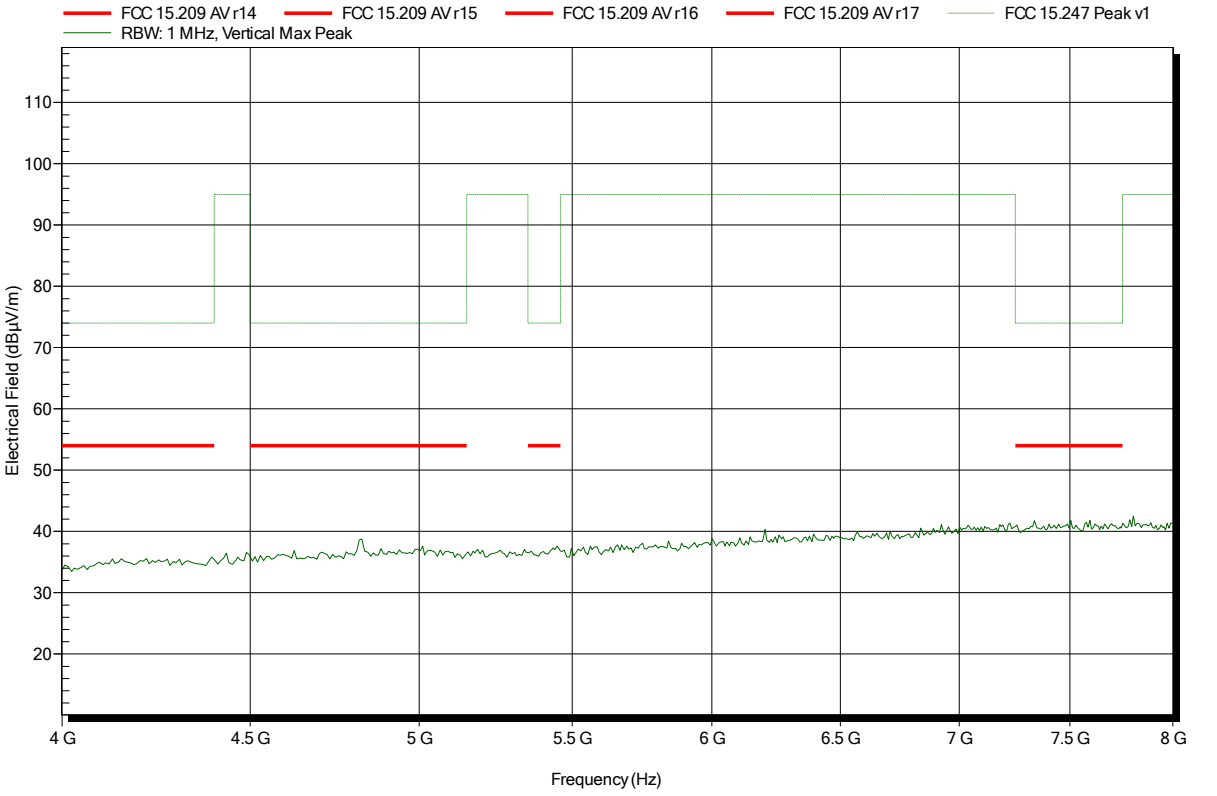


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 199

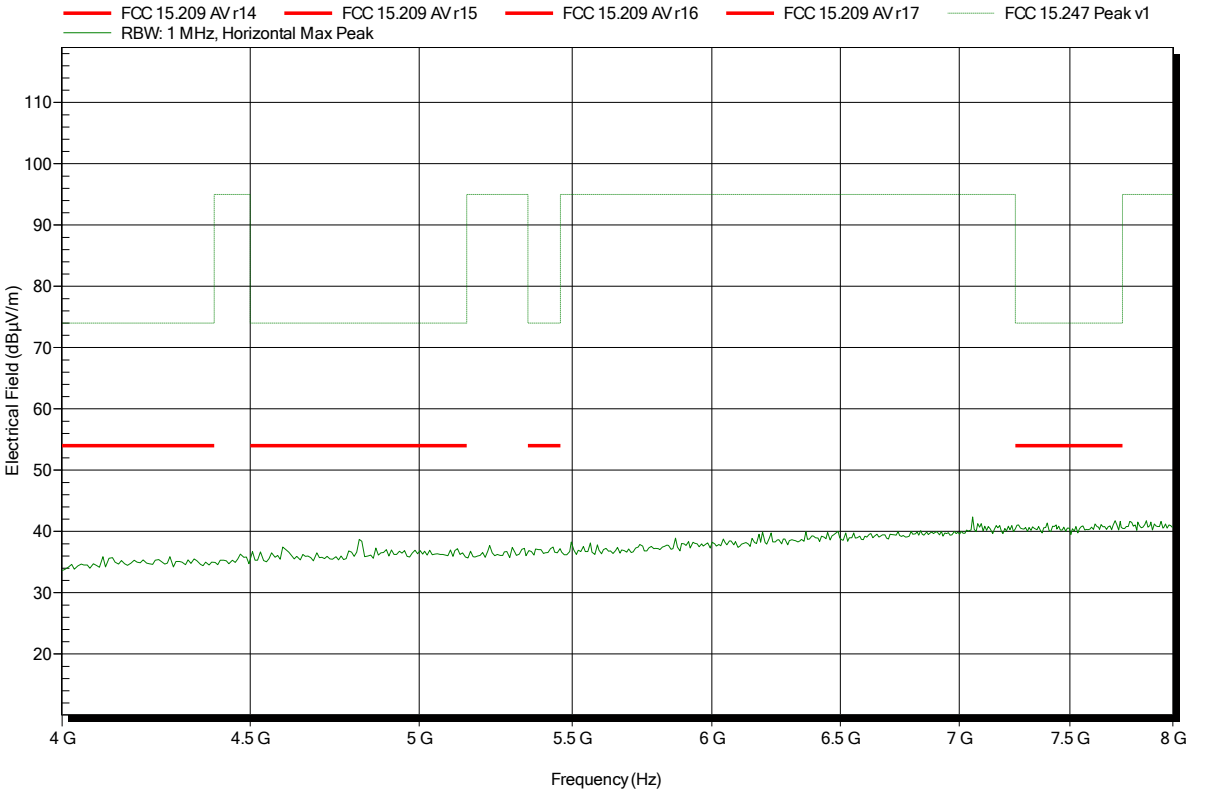


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 202

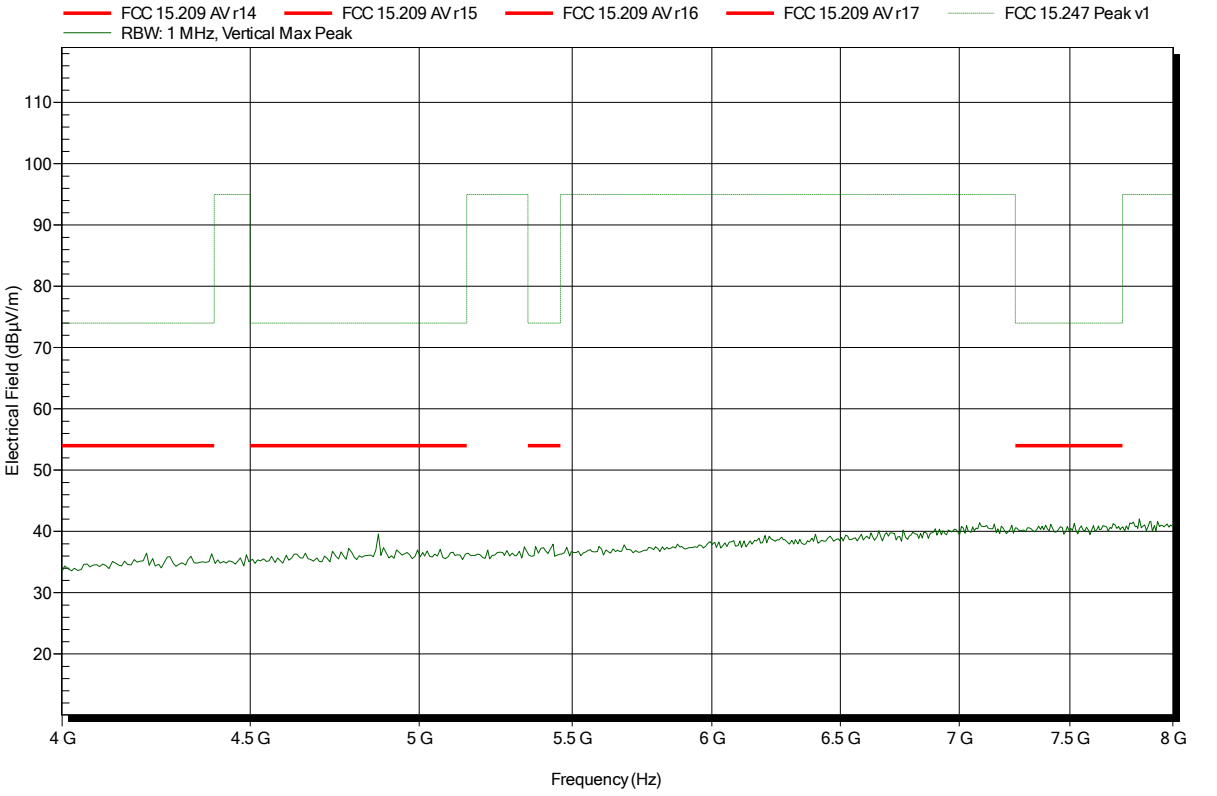


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 205

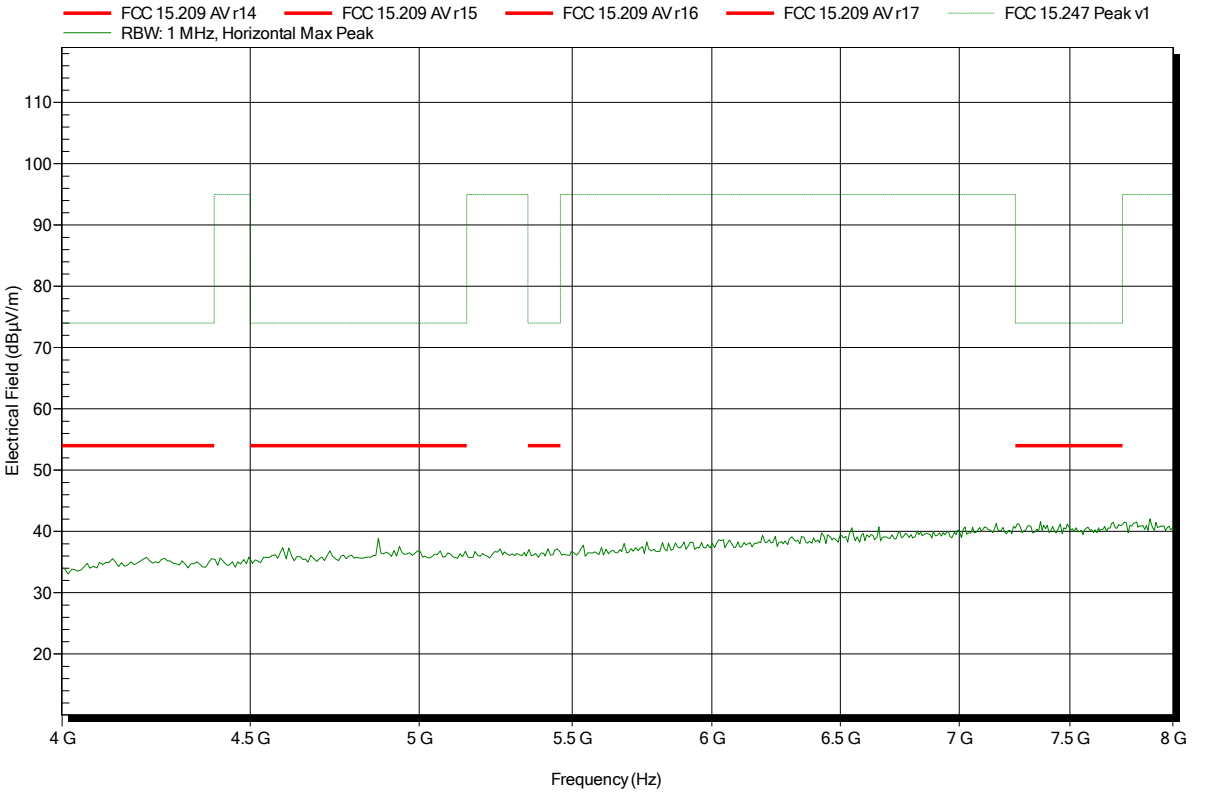


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 208

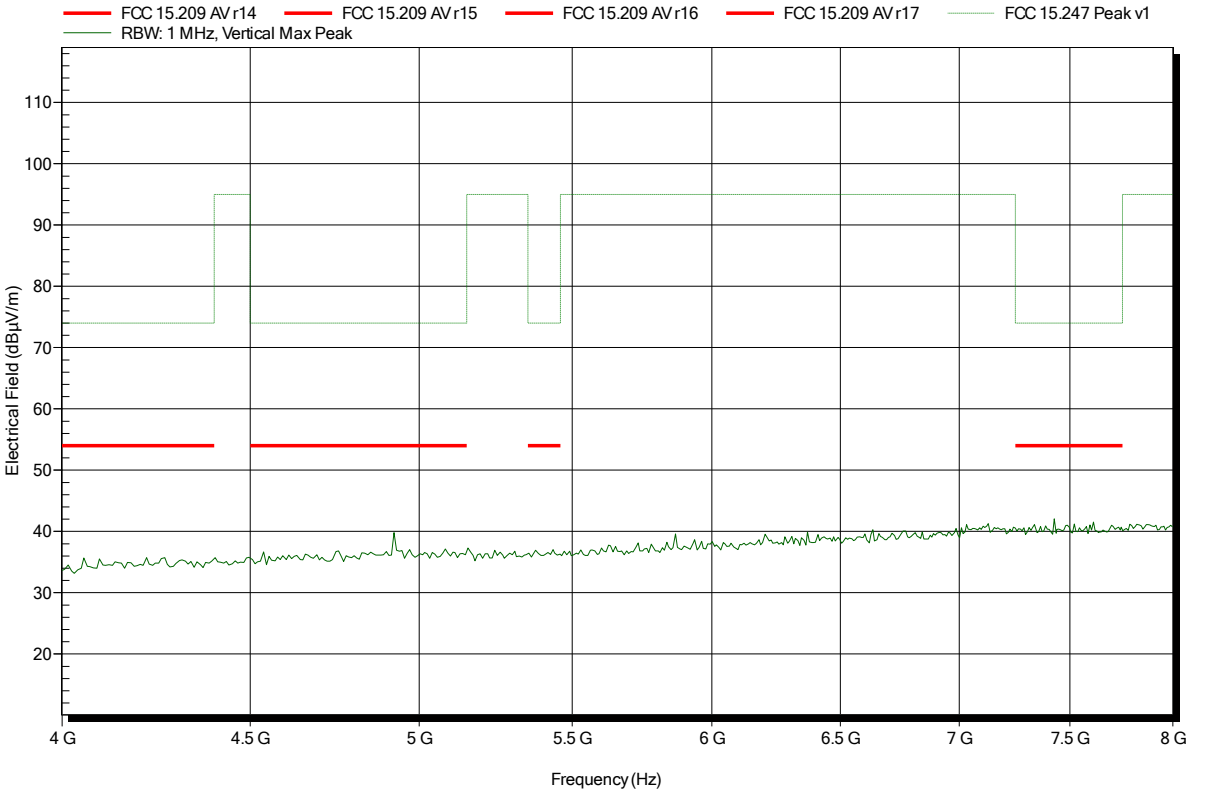


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 211

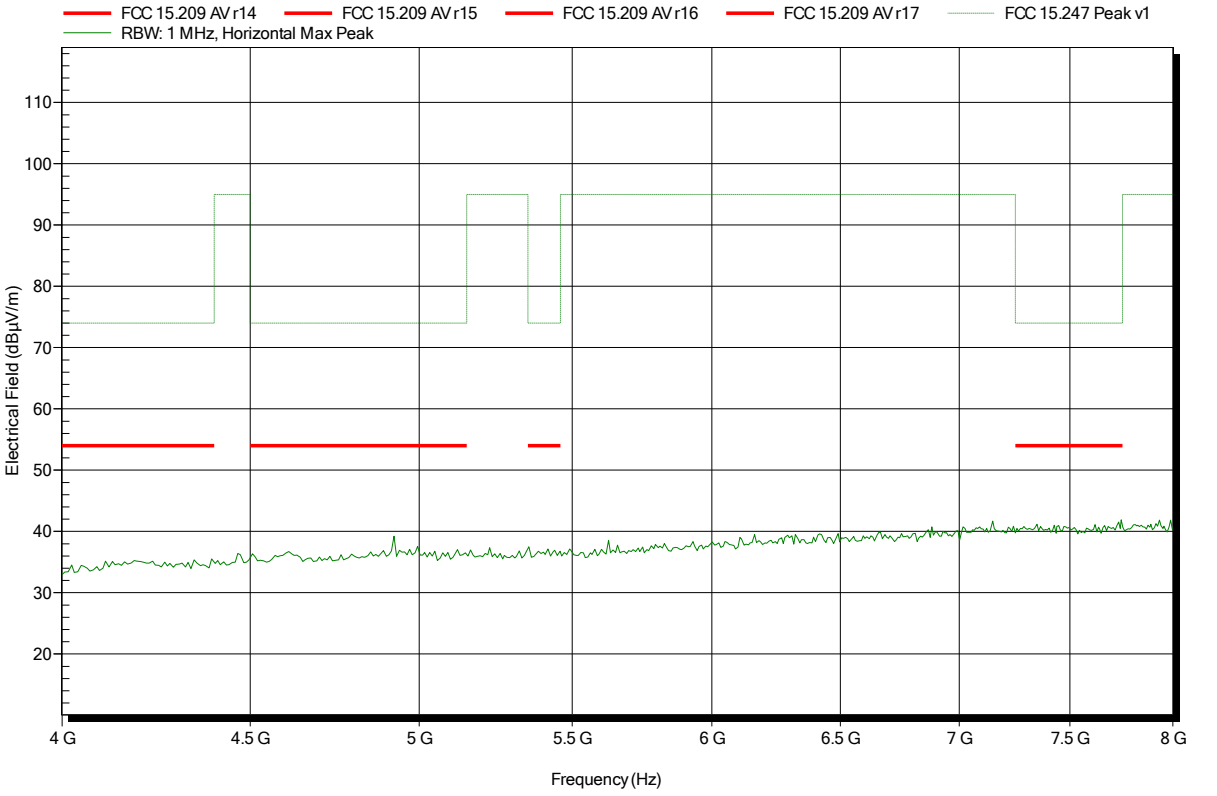


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 214

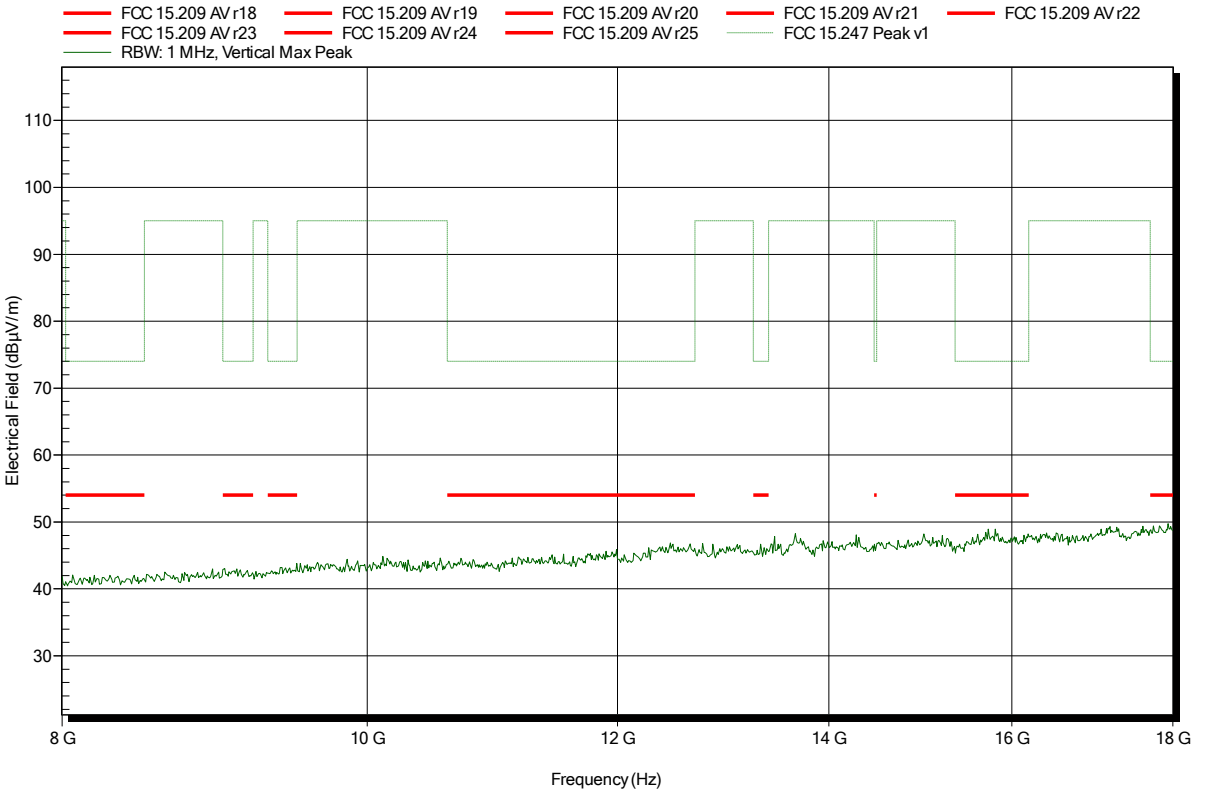


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 200

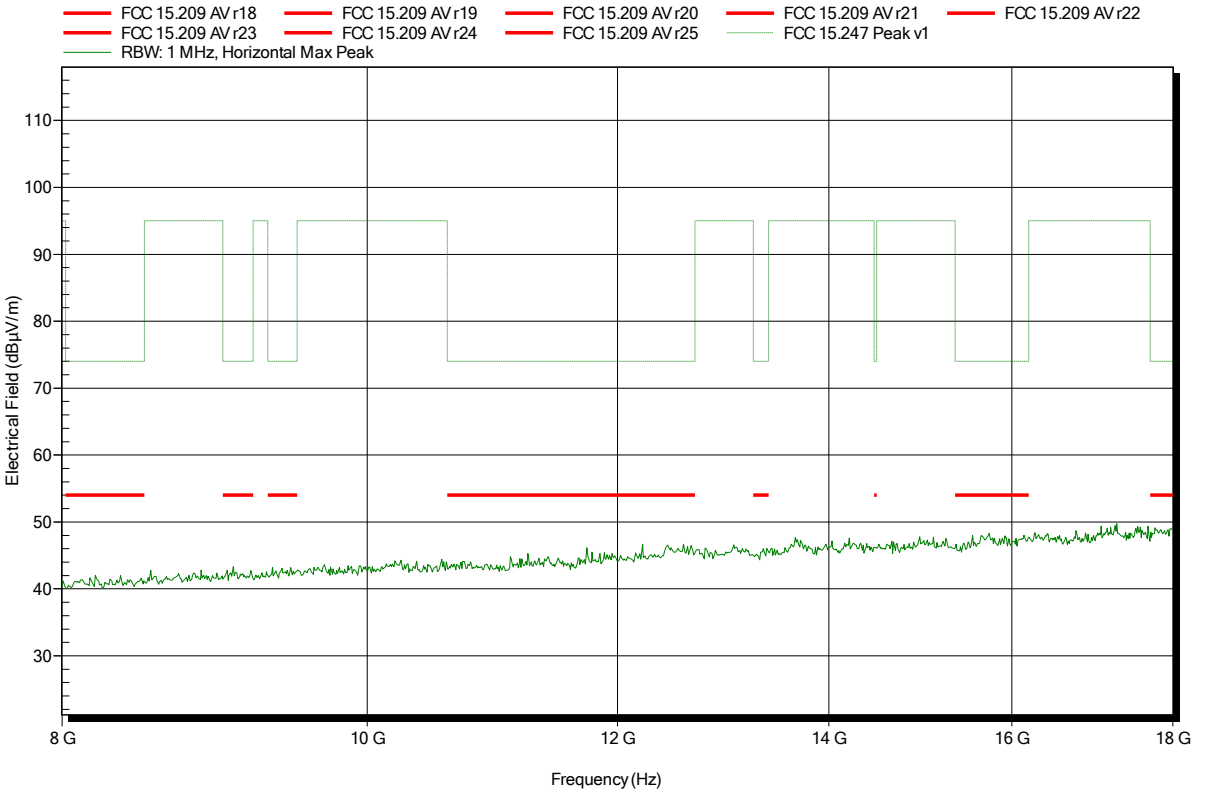


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 203

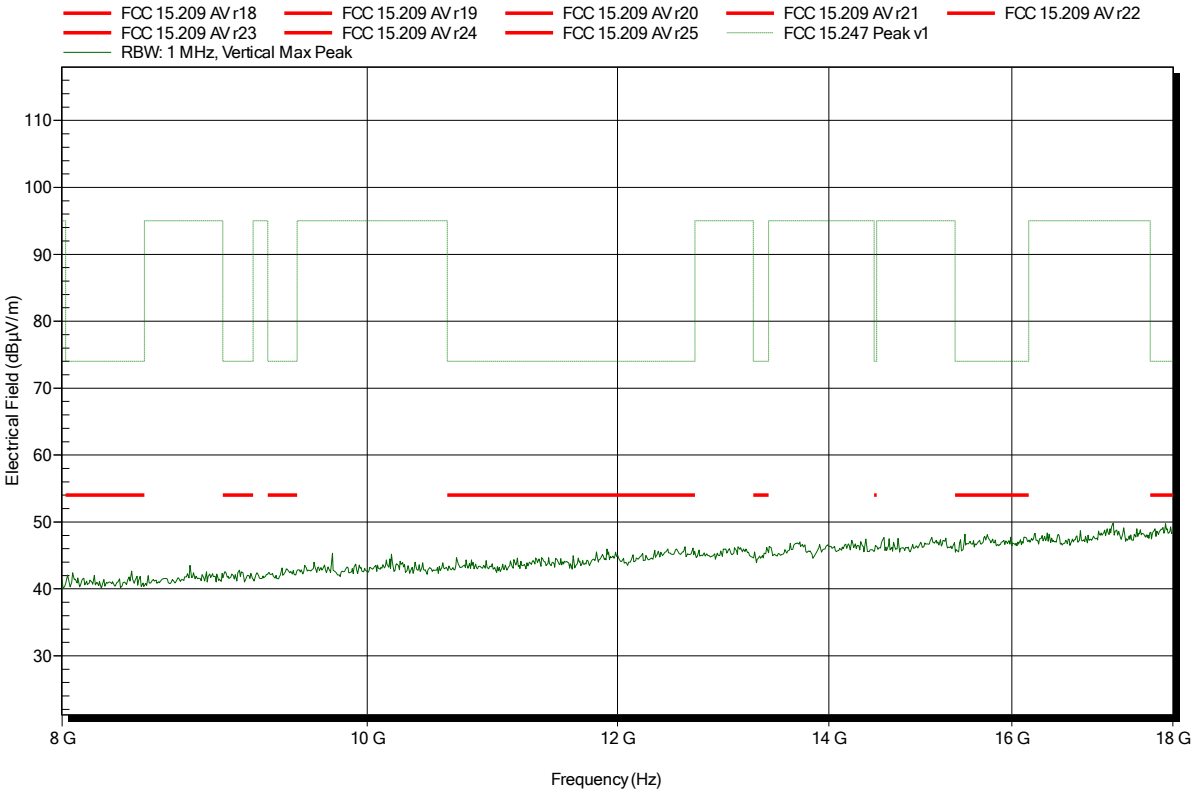


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 206

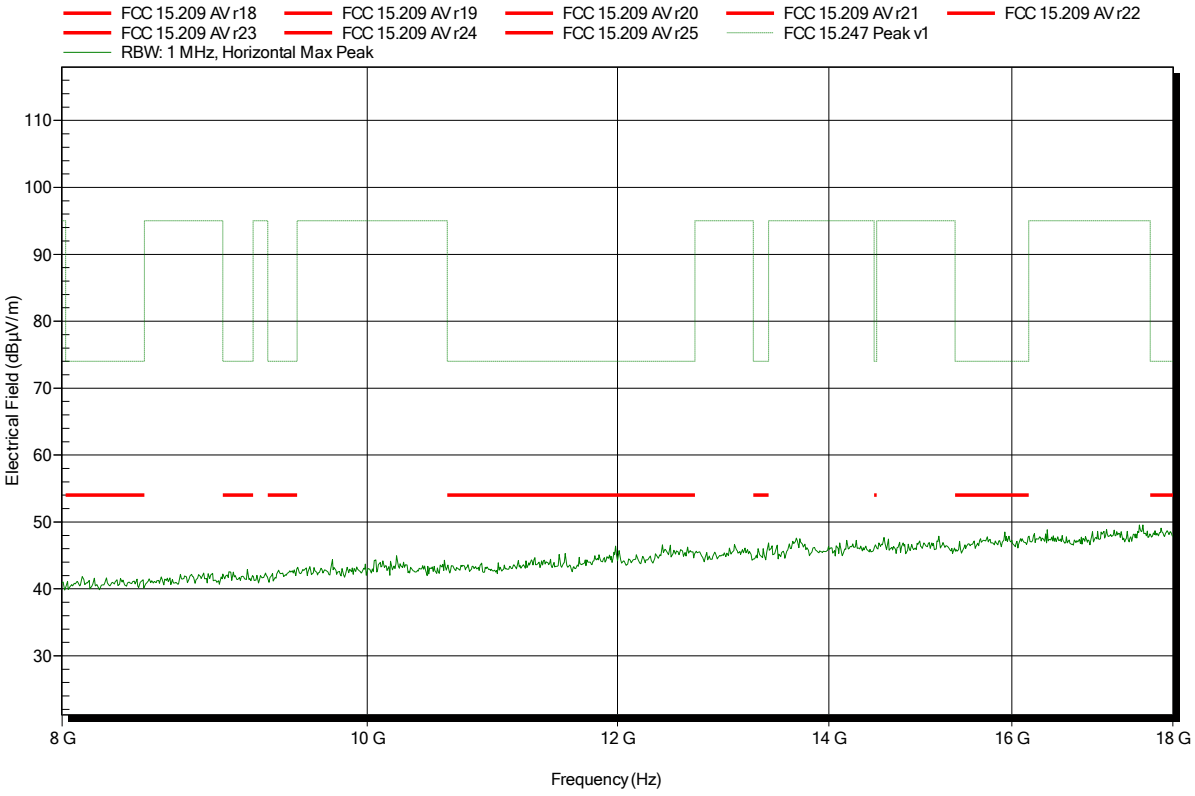


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 209

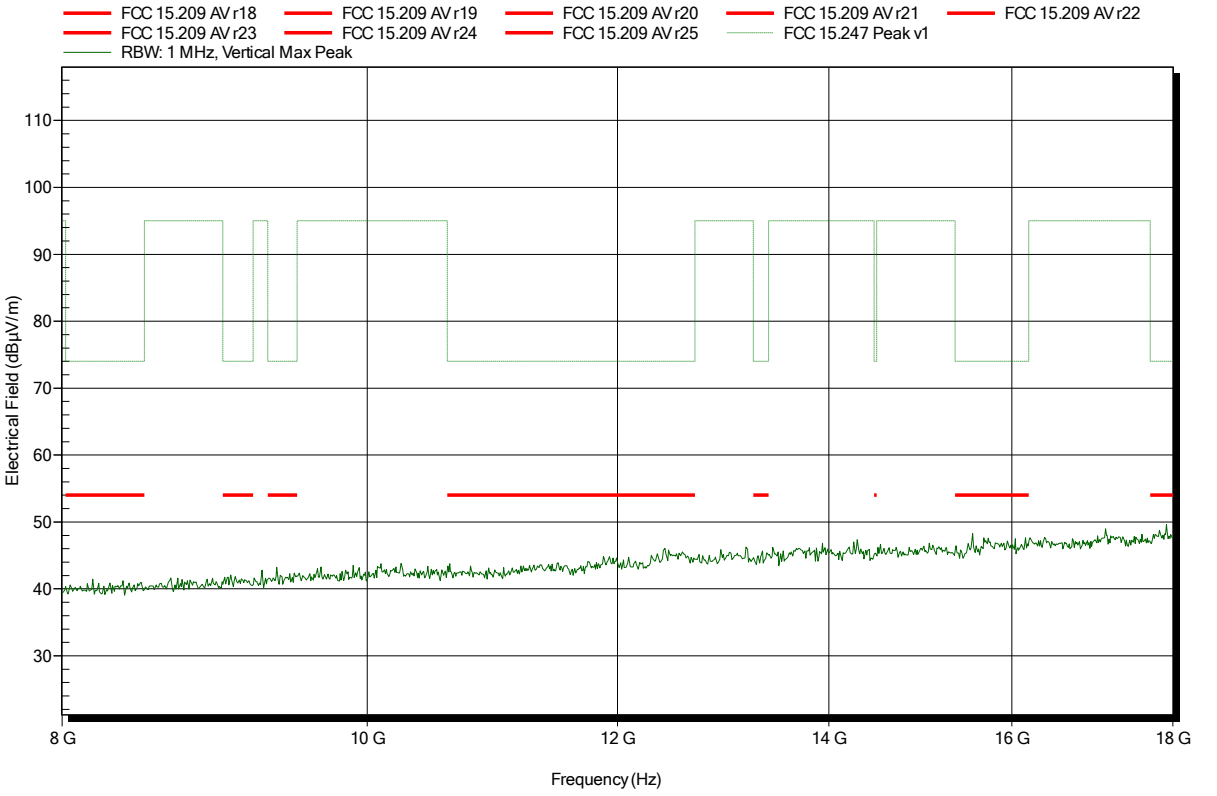


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 212

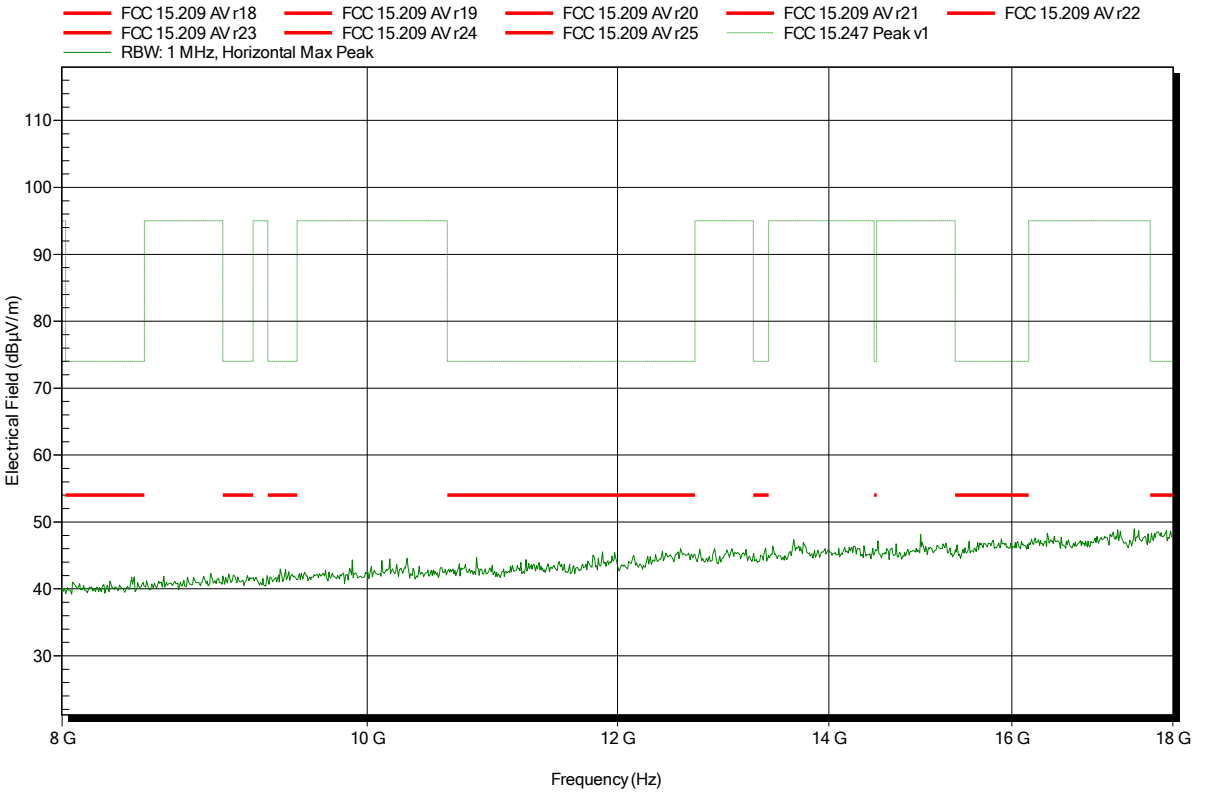


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 215

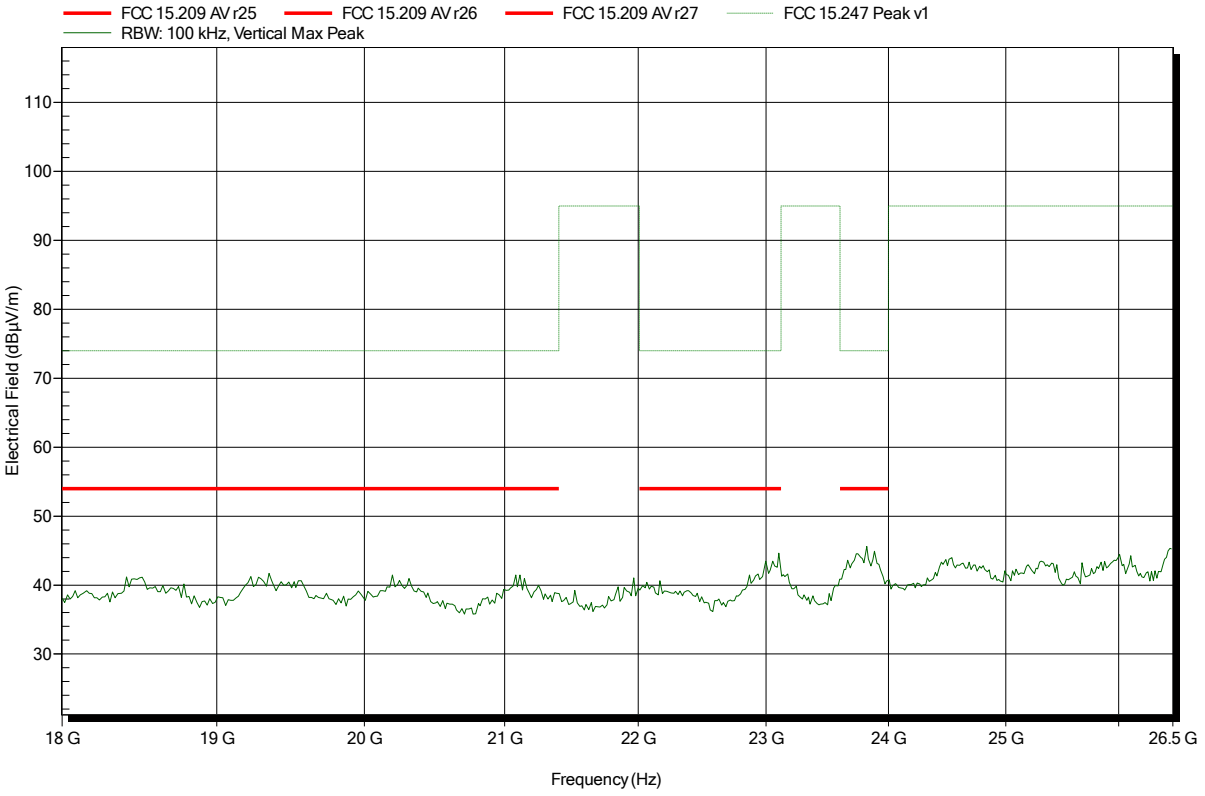


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 201

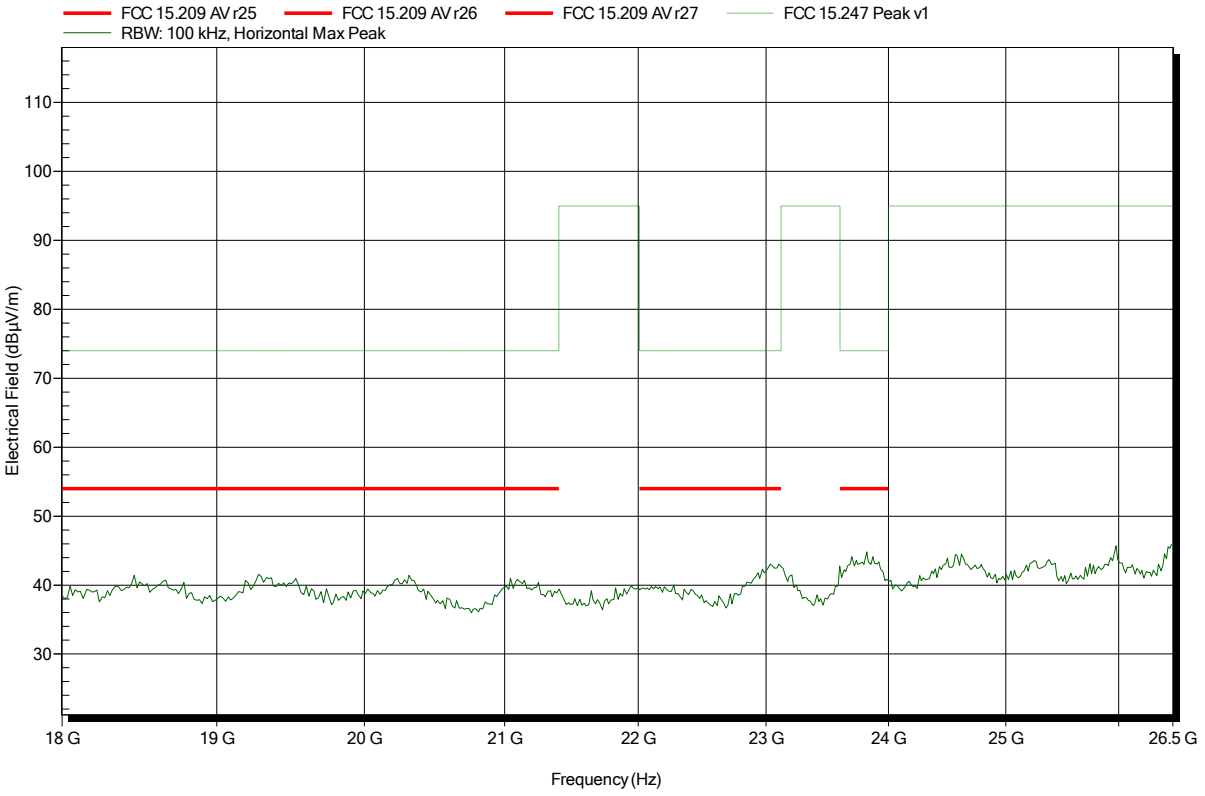


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 204

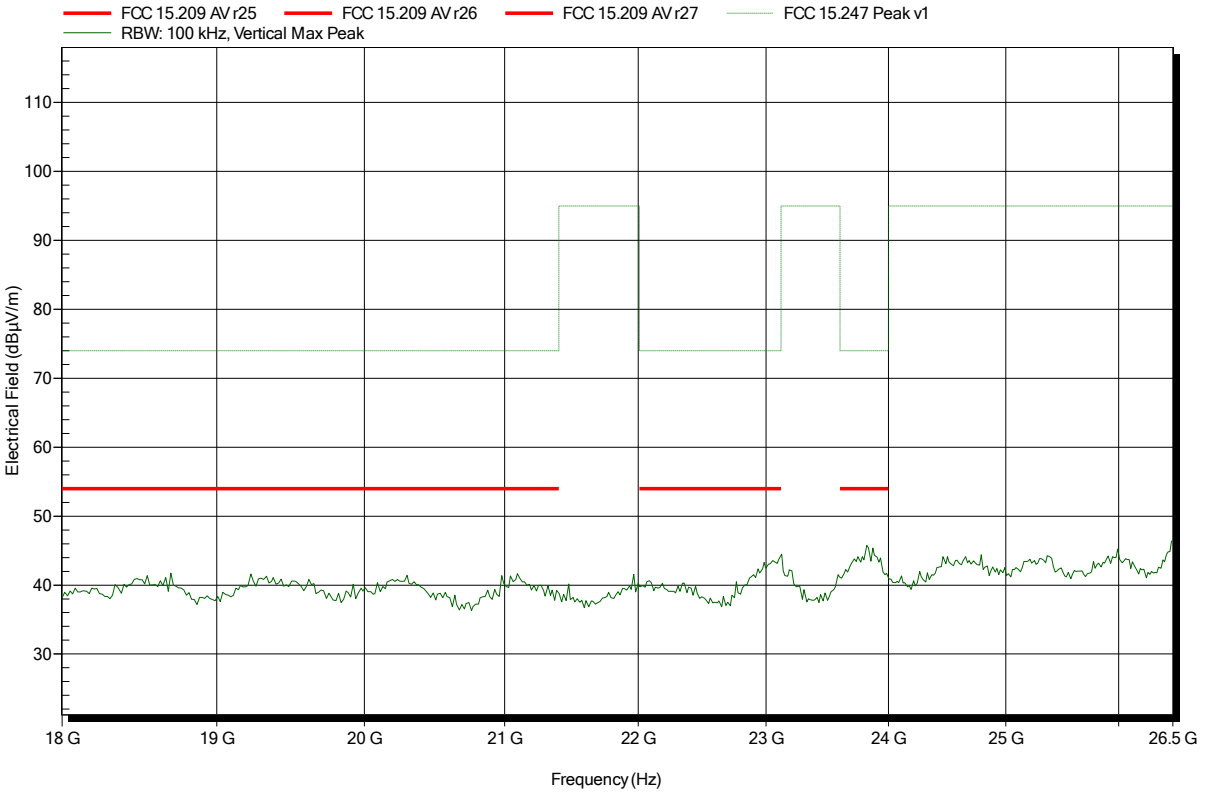


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 207

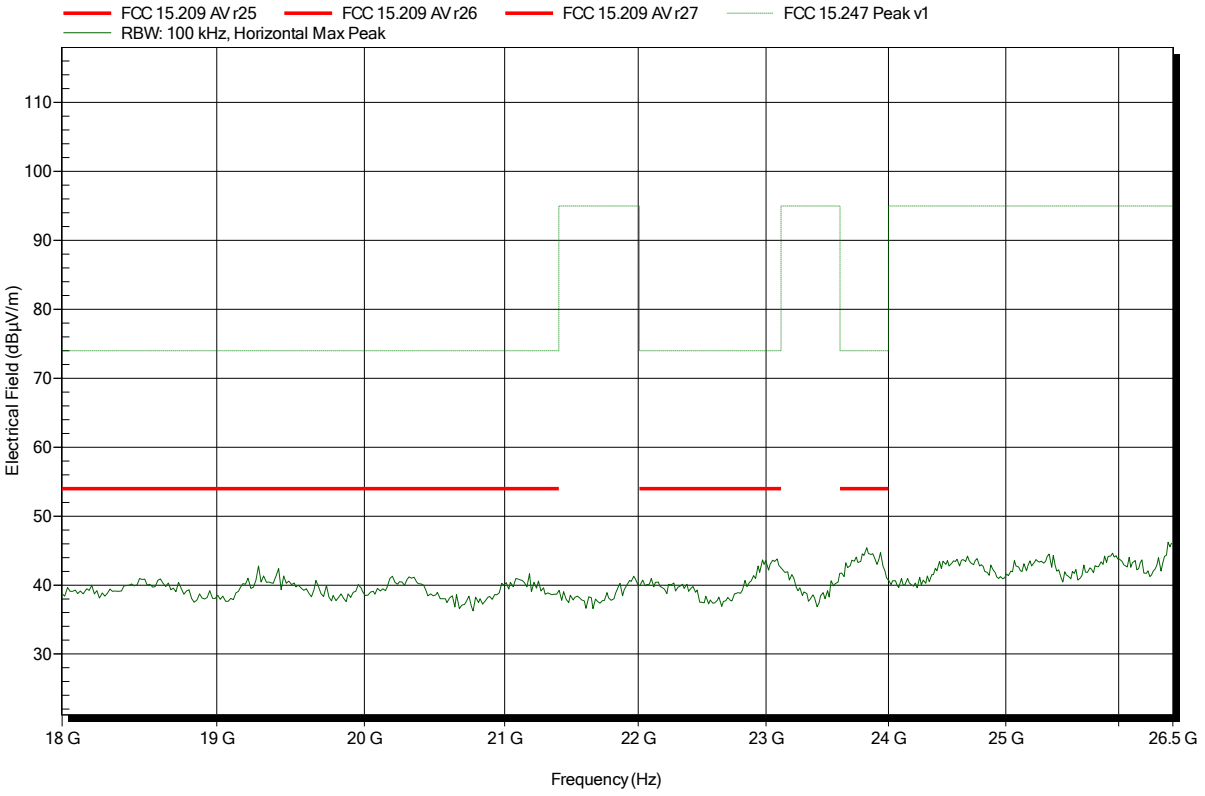


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 210

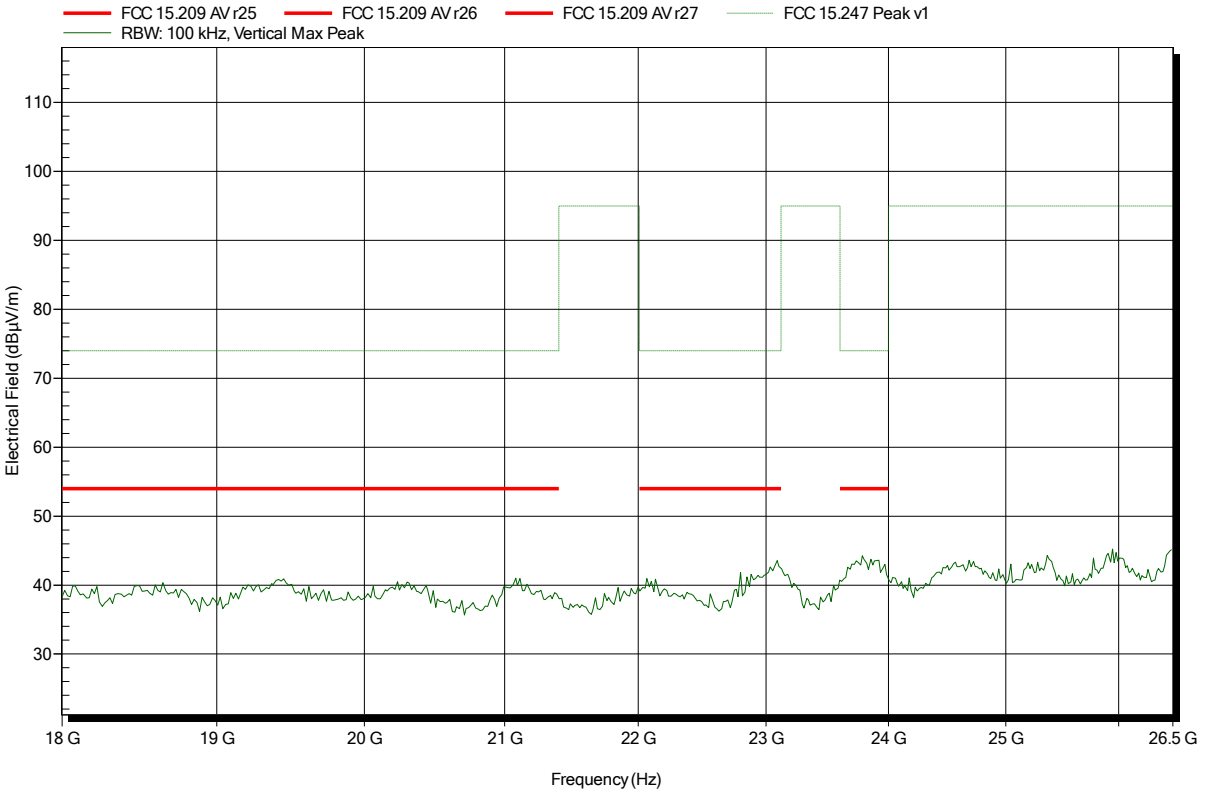


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 213

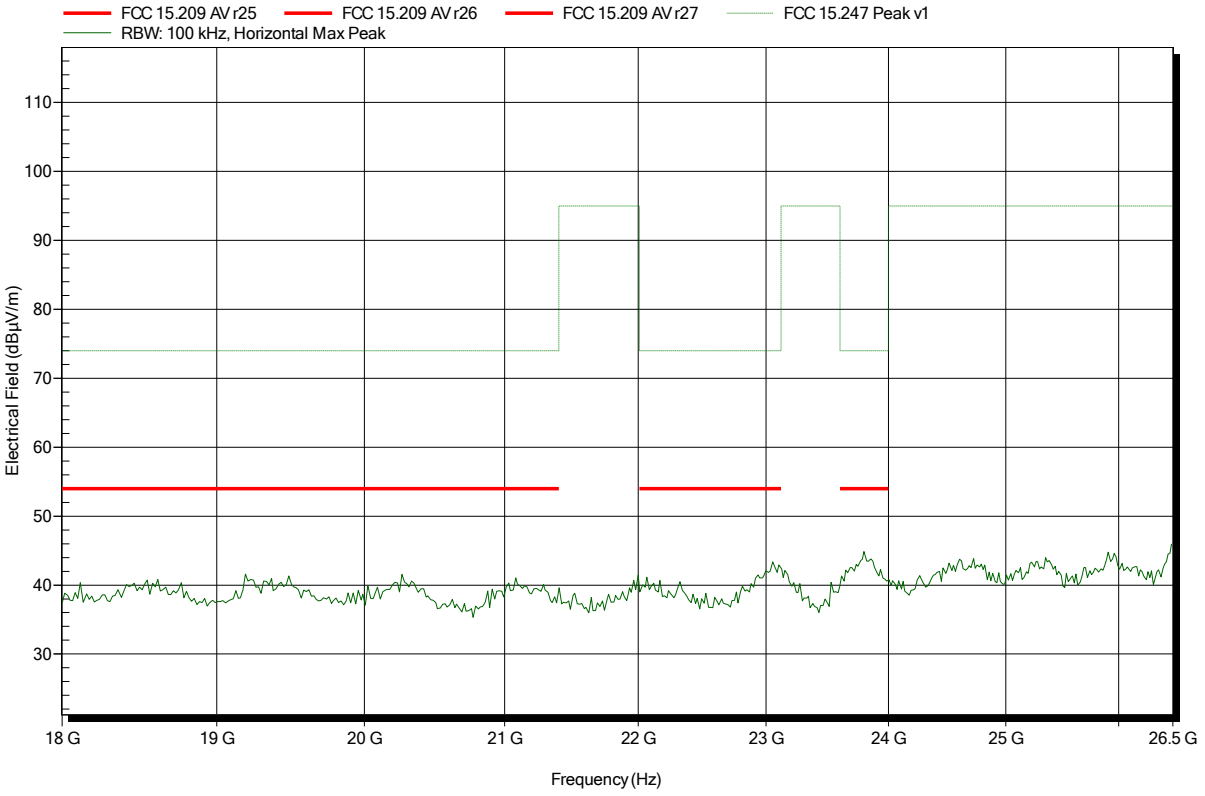


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; DSSS; 1Mbps
Test Date:	2015-02-27
Note:	EUT vertical

Index 216

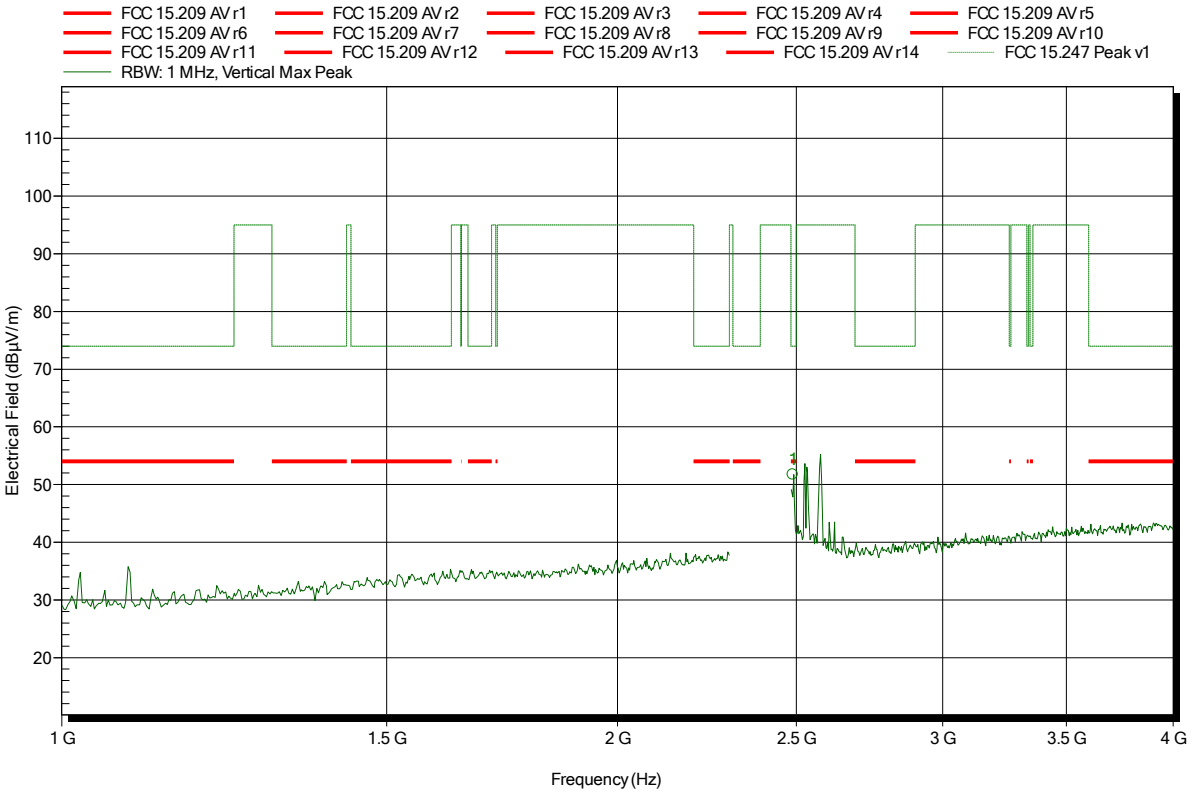


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 186



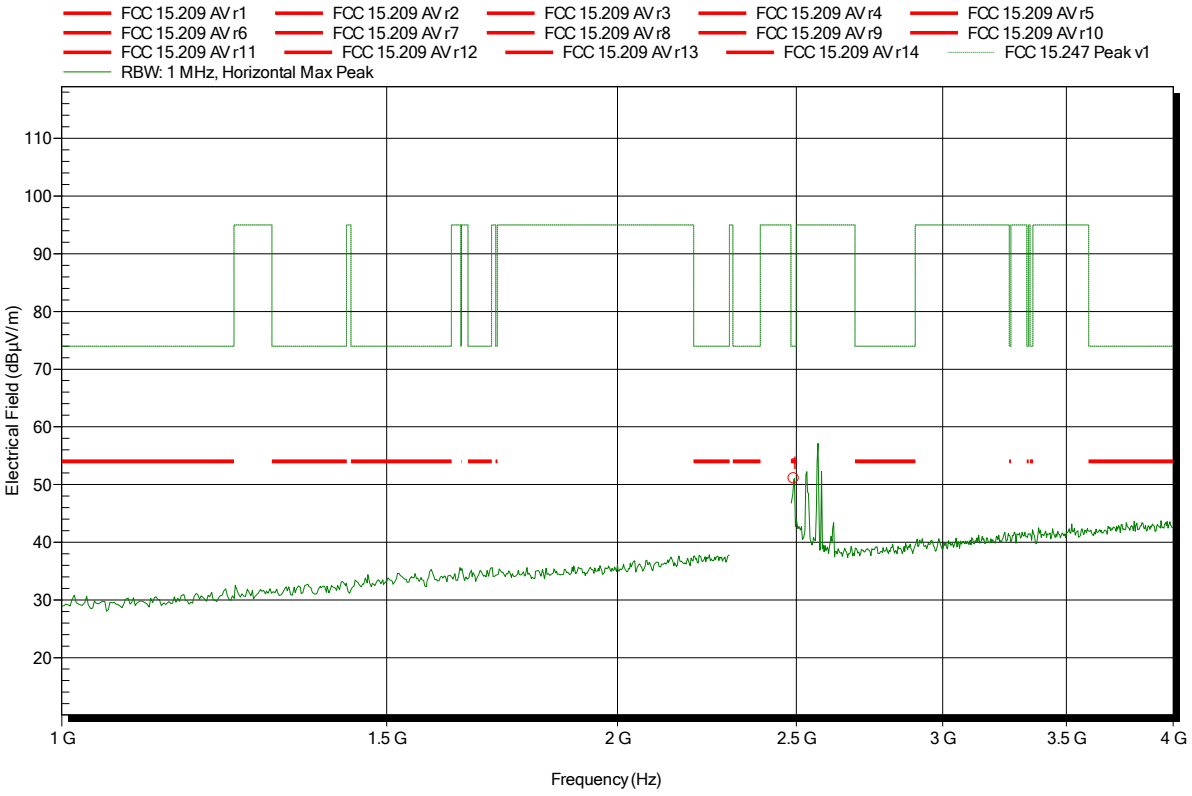
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.49 GHz	51.73 dBµV/m	74 dBµV/m	-22.27 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 188



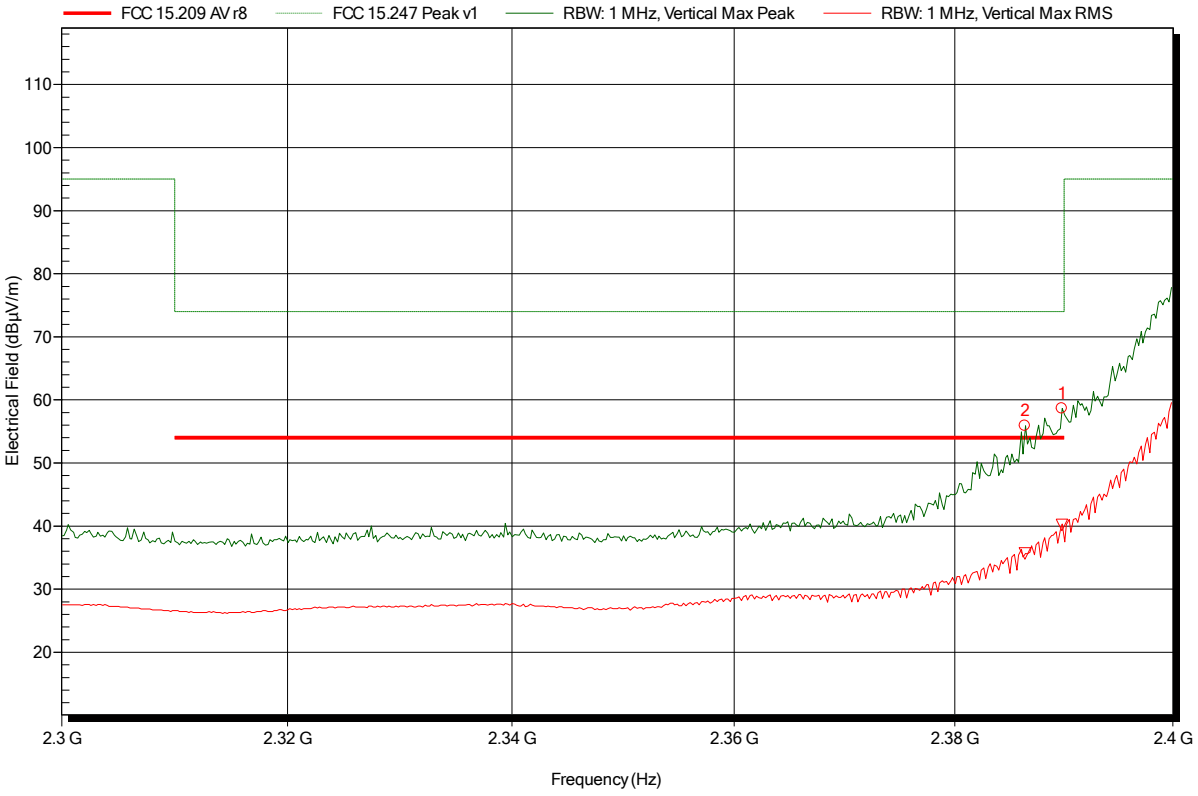
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.493 GHz	51.08 dBµV/m	74 dBµV/m	-22.92 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical; lower bandedge

Index 187



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.386 GHz	55.88 dBµV/m	74 dBµV/m	-18.12 dB	Pass
2.39 GHz	58.65 dBµV/m	74 dBµV/m	-15.35 dB	Pass

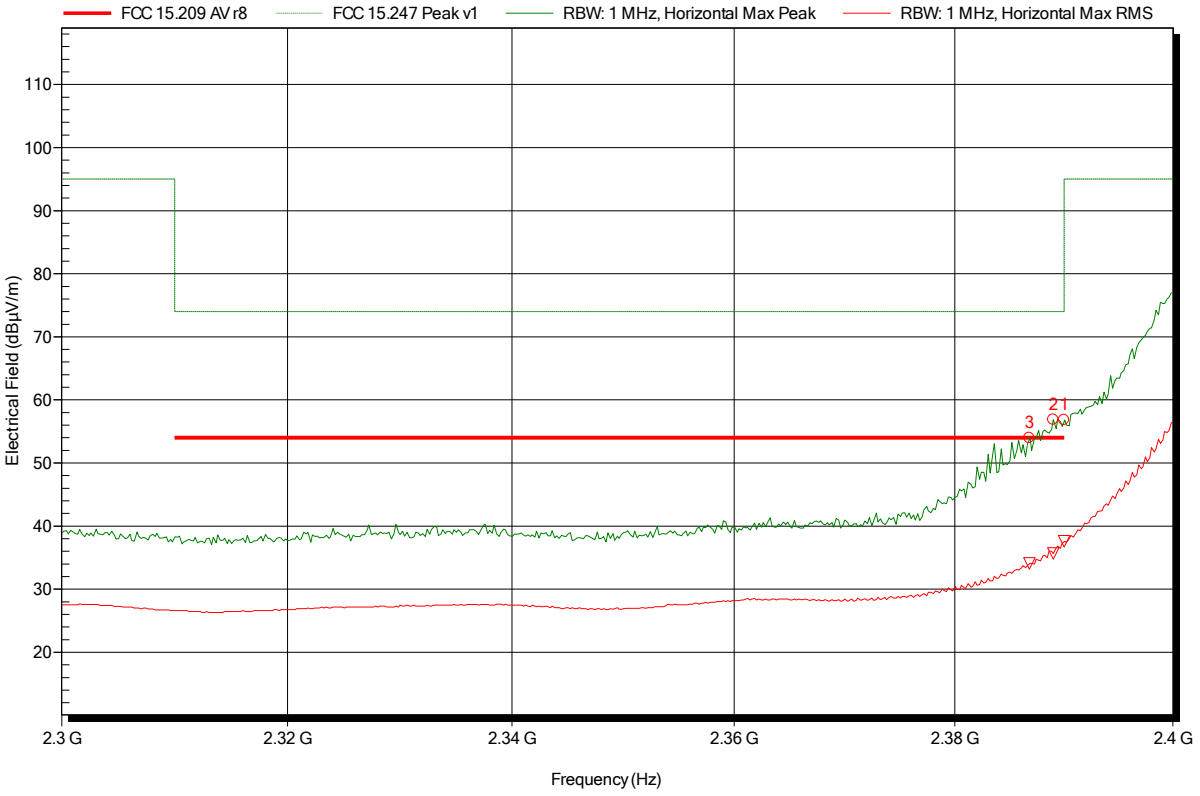
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.386 GHz	35.66 dBµV/m	54 dBµV/m	-18.34 dB	Pass
2.39 GHz	40.2 dBµV/m	54 dBµV/m	-13.8 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical; lower bandedge

Index 189



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.387 GHz	53.95 dBµV/m	74 dBµV/m	-20.05 dB	Pass
2.389 GHz	56.86 dBµV/m	74 dBµV/m	-17.14 dB	Pass
2.39 GHz	56.82 dBµV/m	74 dBµV/m	-17.18 dB	Pass

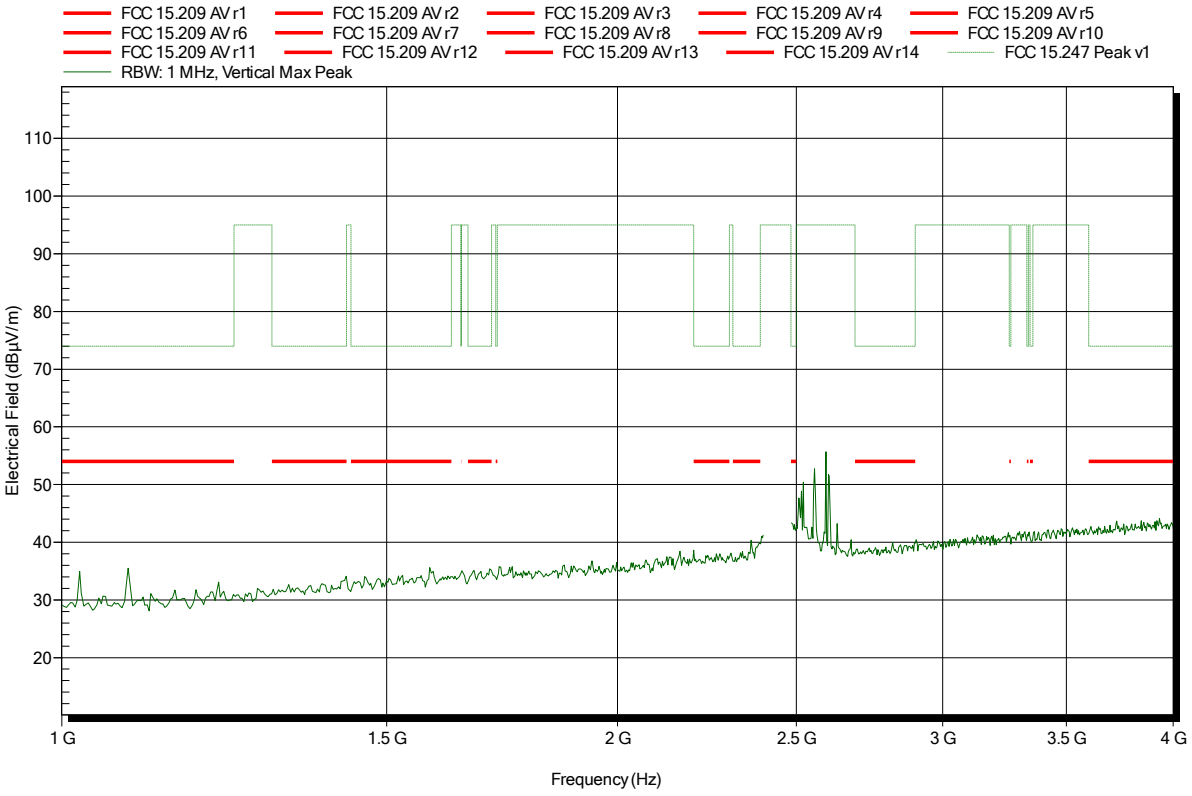
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.387 GHz	34.1 dBµV/m	54 dBµV/m	-19.9 dB	Pass
2.389 GHz	35.67 dBµV/m	54 dBµV/m	-18.33 dB	Pass
2.39 GHz	37.57 dBµV/m	54 dBµV/m	-16.43 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 6; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 191

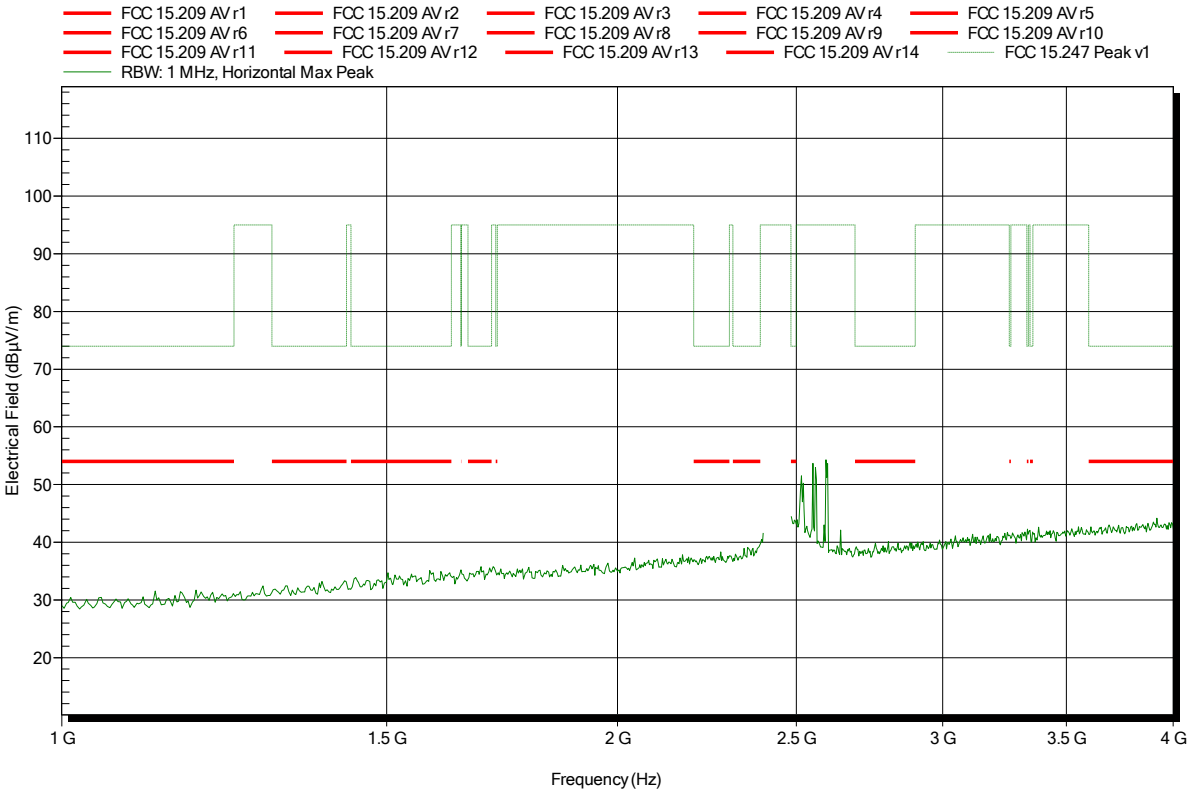


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 6; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 190

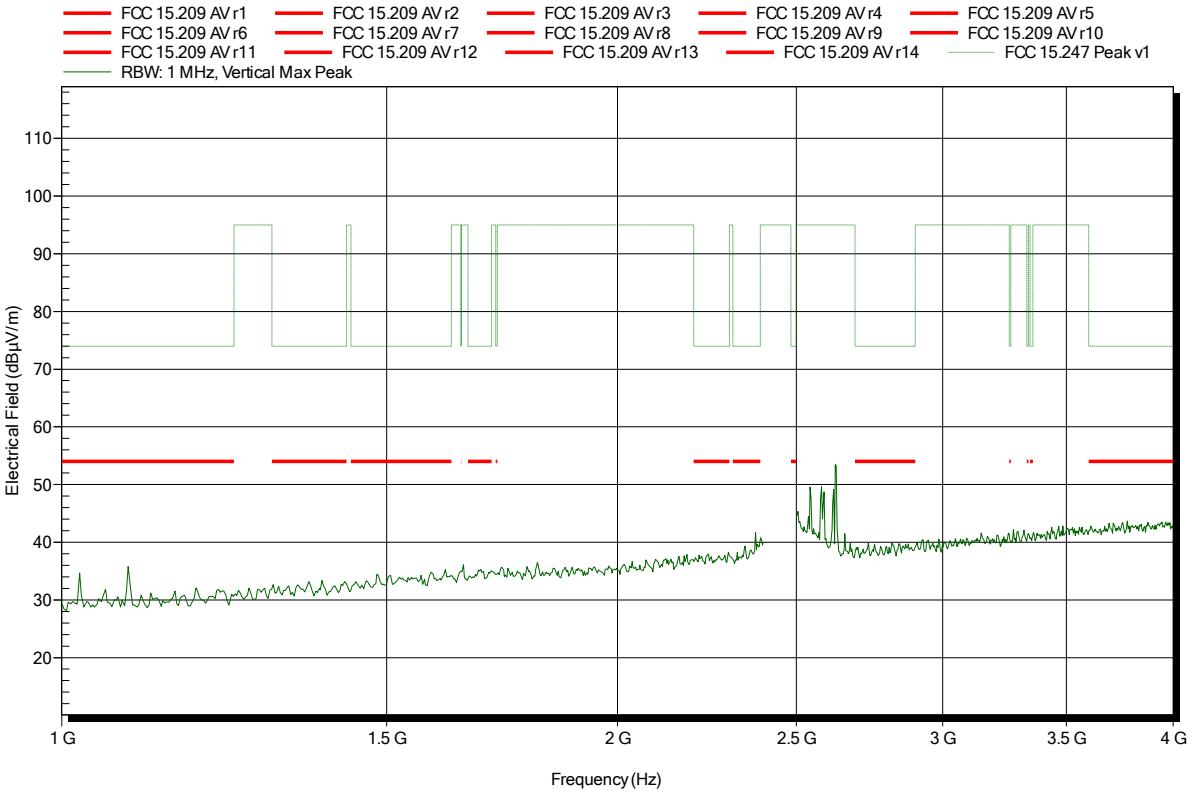


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 192

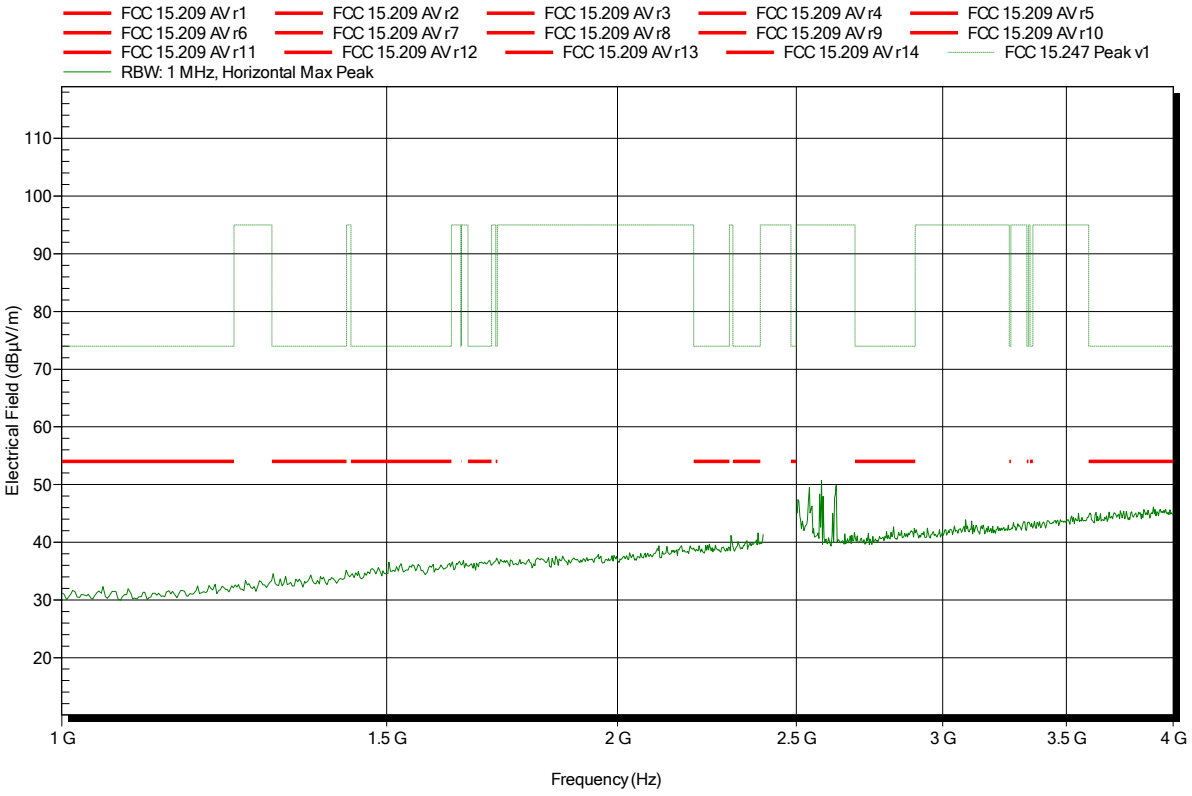


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 197

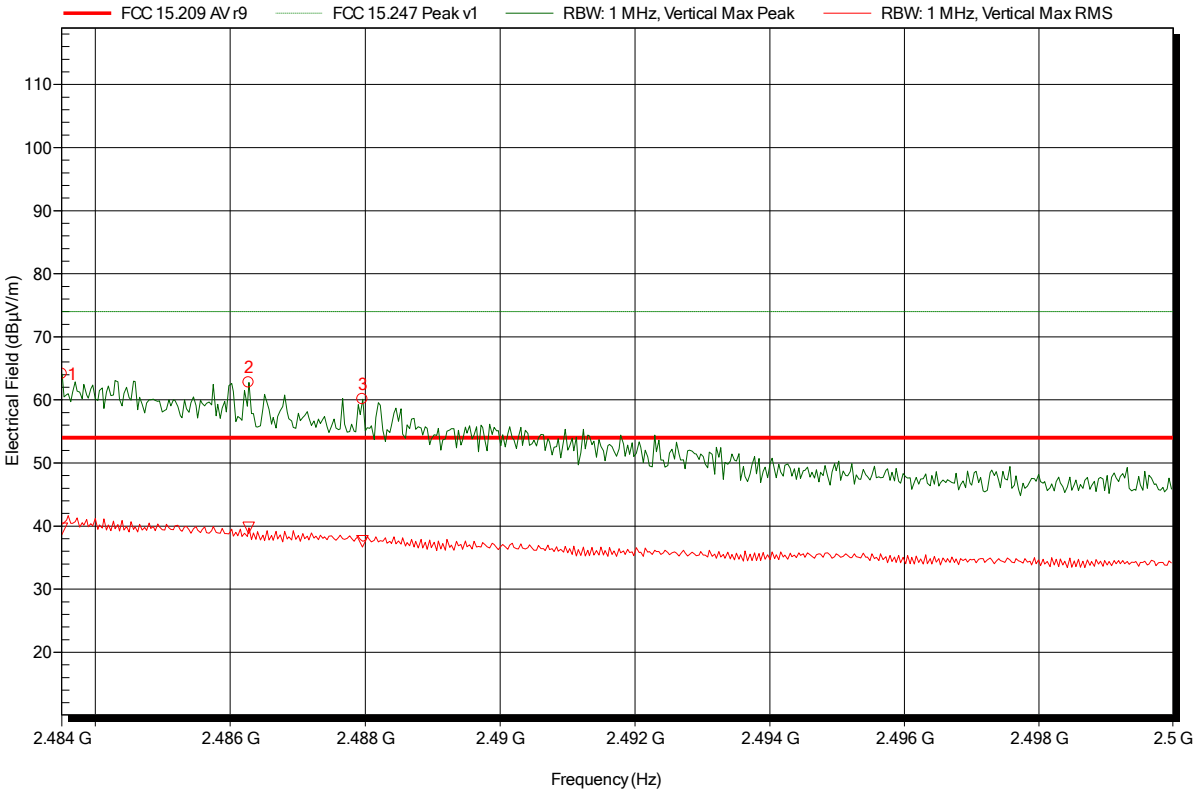


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical; higher bandedge

Index 193



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.484 GHz	64.15 dBµV/m	74 dBµV/m	-9.85 dB	Pass
2.486 GHz	62.76 dBµV/m	74 dBµV/m	-11.24 dB	Pass
2.488 GHz	60.15 dBµV/m	74 dBµV/m	-13.85 dB	Pass

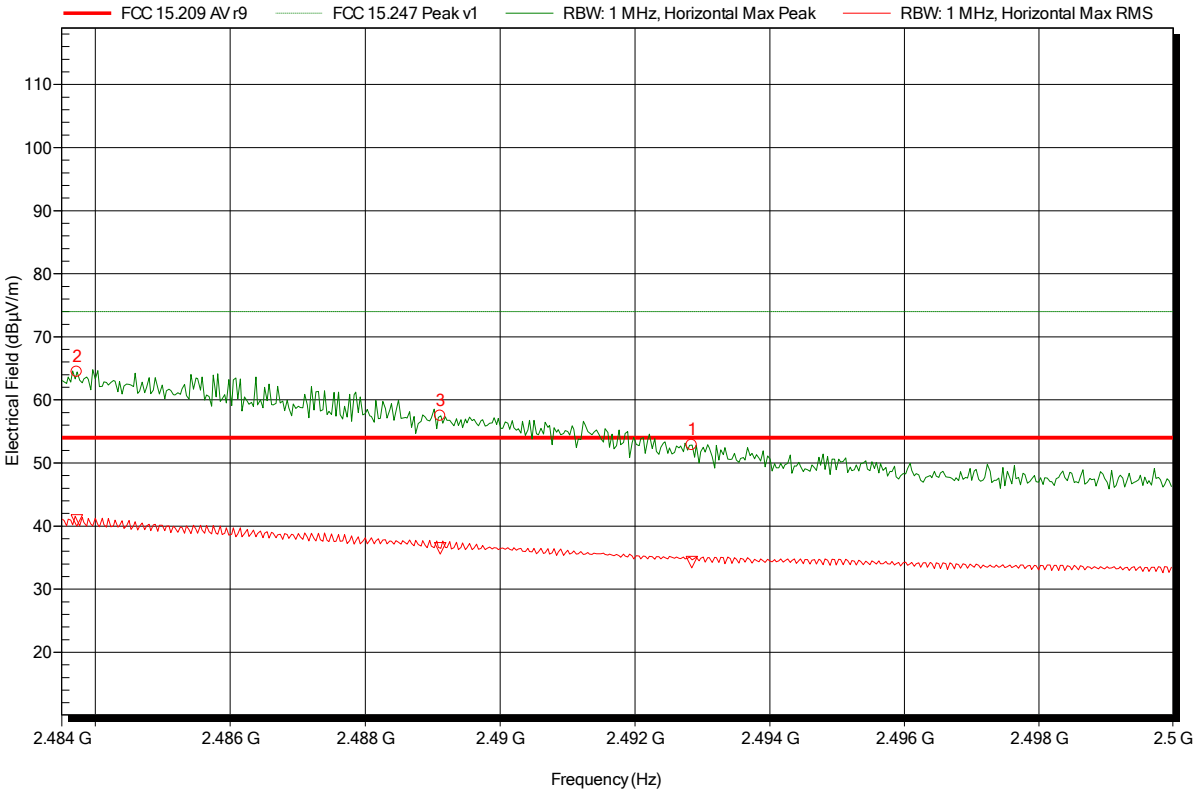
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.484 GHz	39.56 dBµV/m	54 dBµV/m	-14.44 dB	Pass
2.486 GHz	39.71 dBµV/m	54 dBµV/m	-14.29 dB	Pass
2.488 GHz	37.57 dBµV/m	54 dBµV/m	-16.43 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical; higher bandedge

Index 198



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.484 GHz	64.42 dBµV/m	74 dBµV/m	-9.58 dB	Pass
2.489 GHz	57.5 dBµV/m	74 dBµV/m	-16.5 dB	Pass
2.493 GHz	52.86 dBµV/m	74 dBµV/m	-21.14 dB	Pass

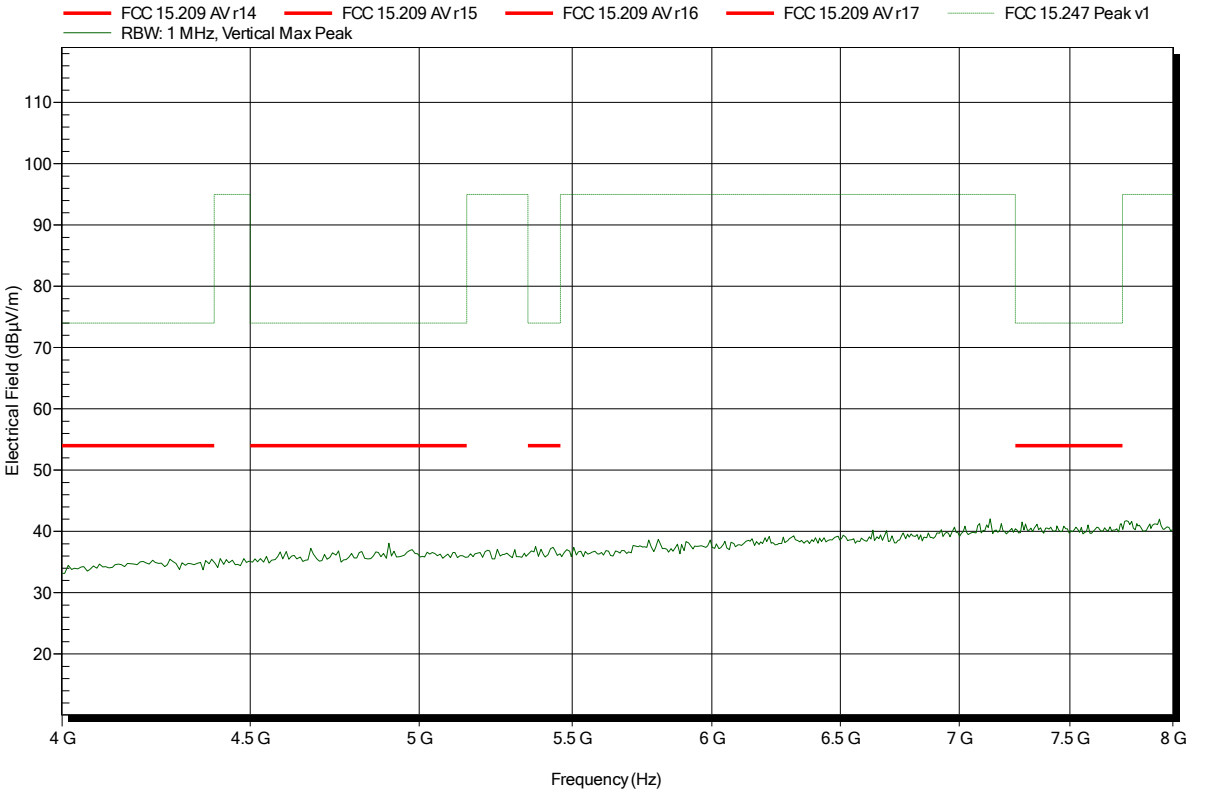
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.484 GHz	40.9 dBµV/m	54 dBµV/m	-13.1 dB	Pass
2.489 GHz	36.49 dBµV/m	54 dBµV/m	-17.51 dB	Pass
2.493 GHz	34.28 dBµV/m	54 dBµV/m	-19.72 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 217

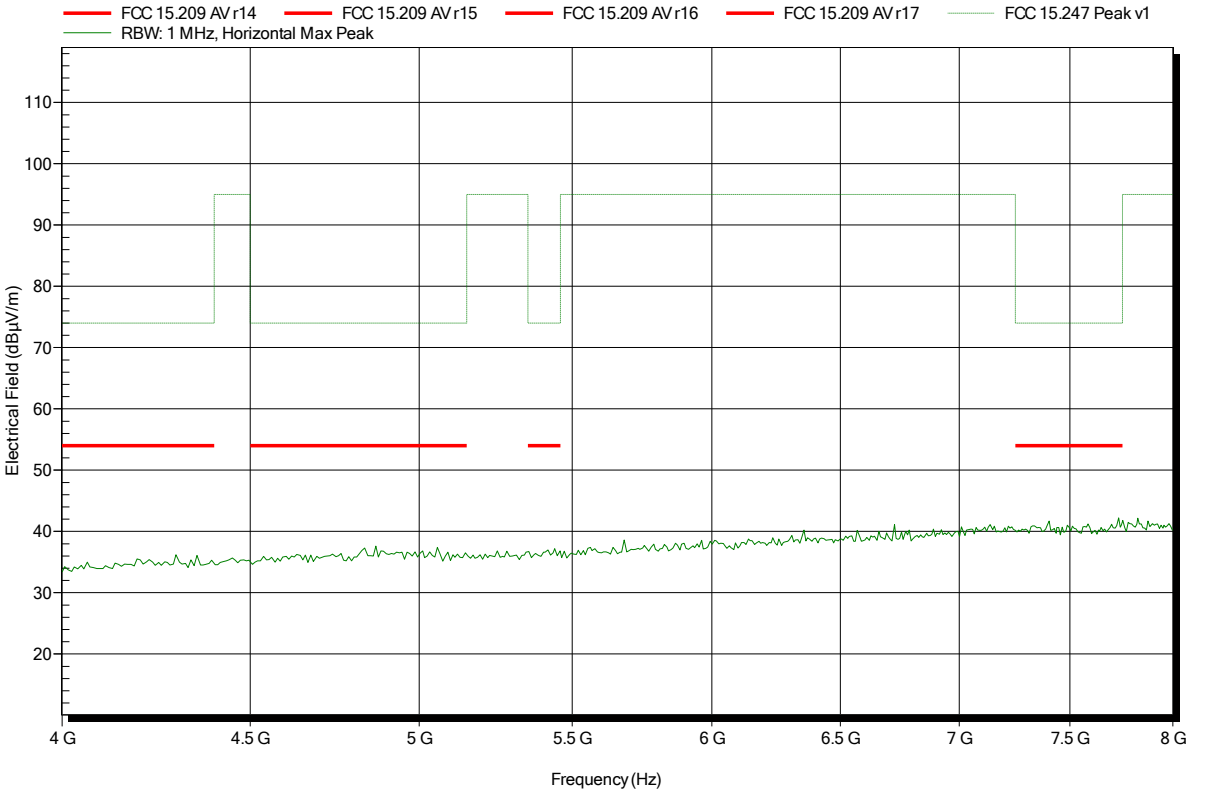


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 220

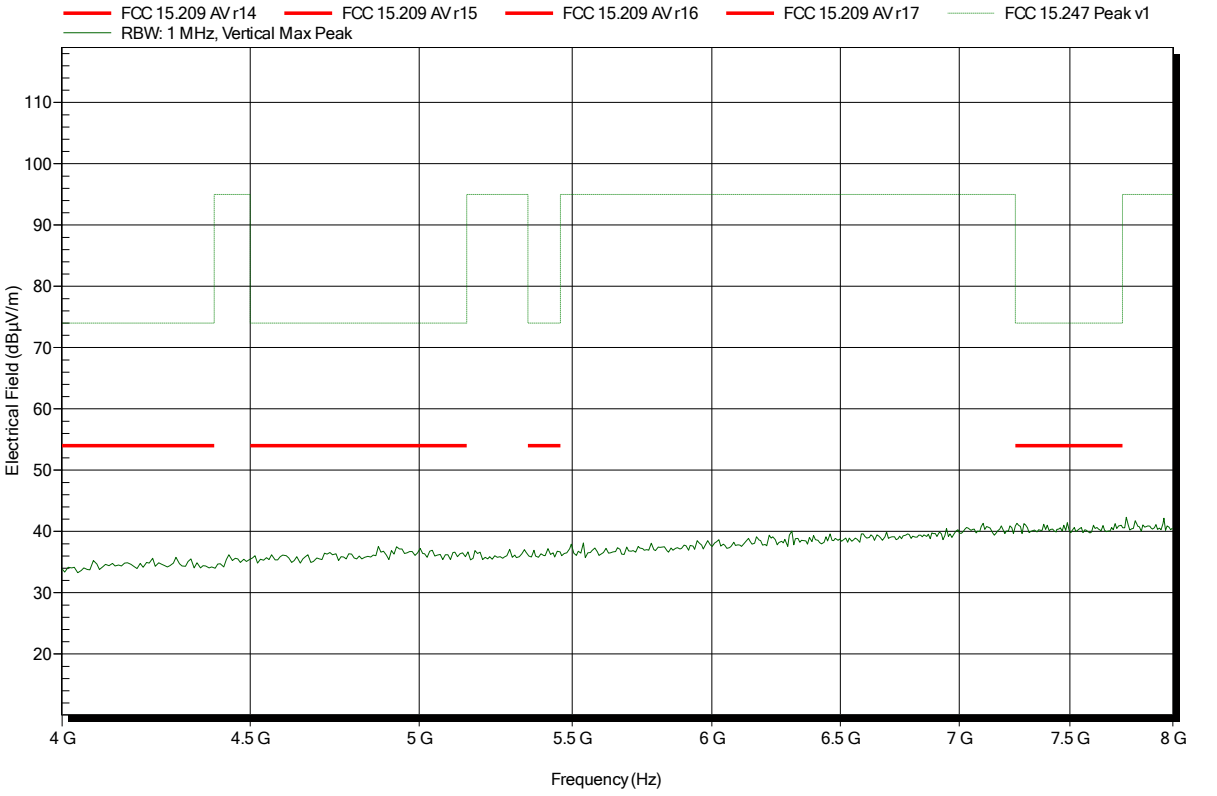


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 223

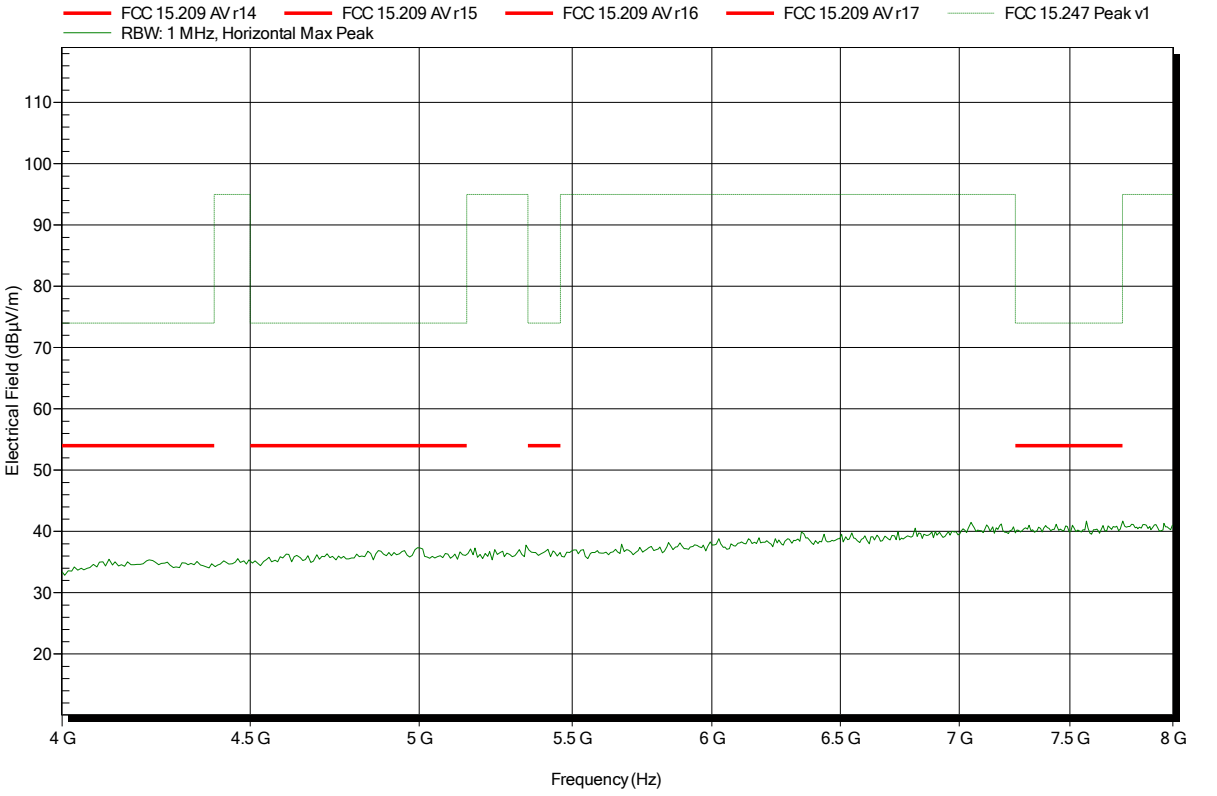


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 226

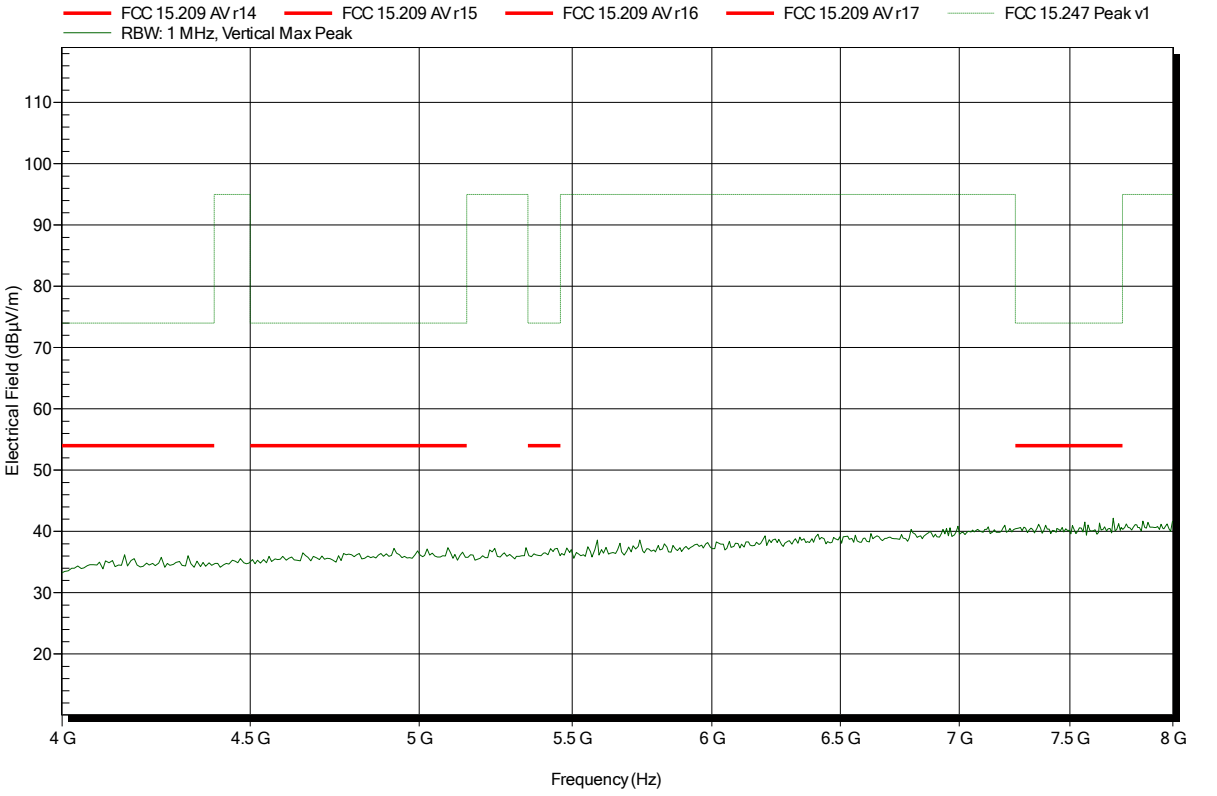


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 229

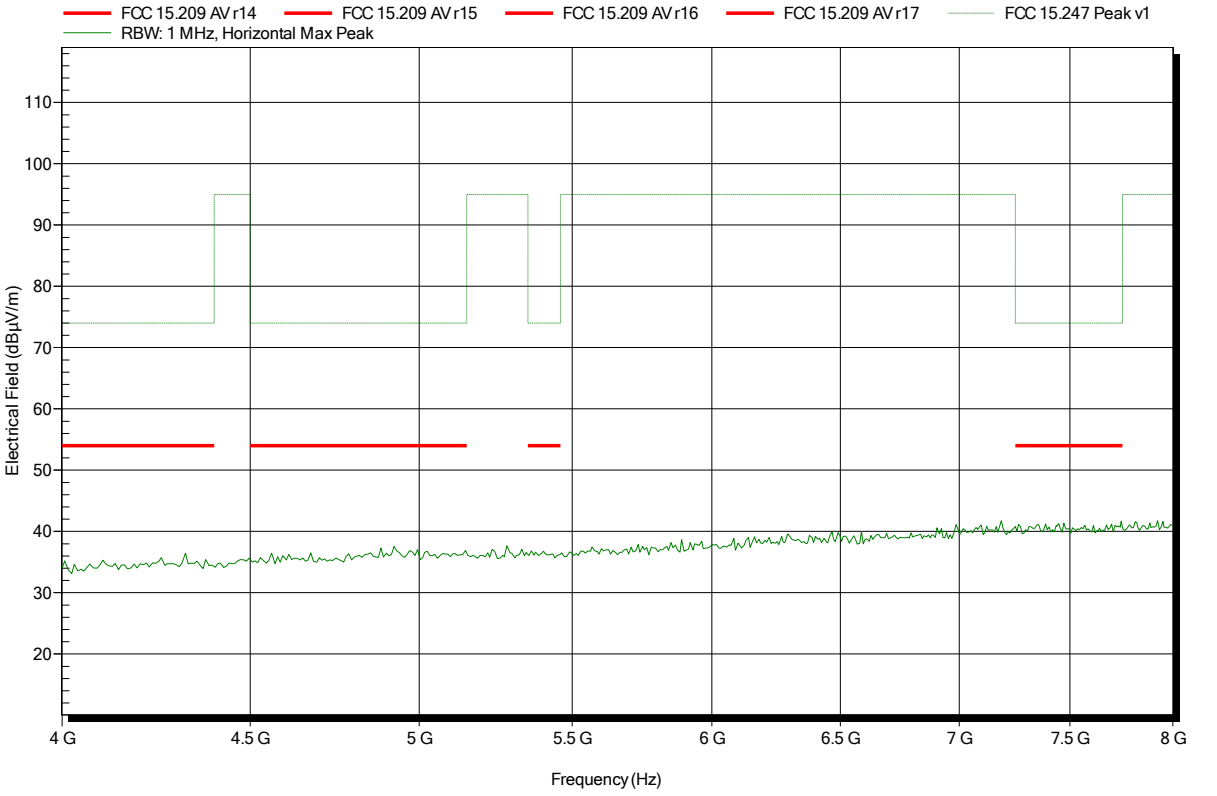


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 232

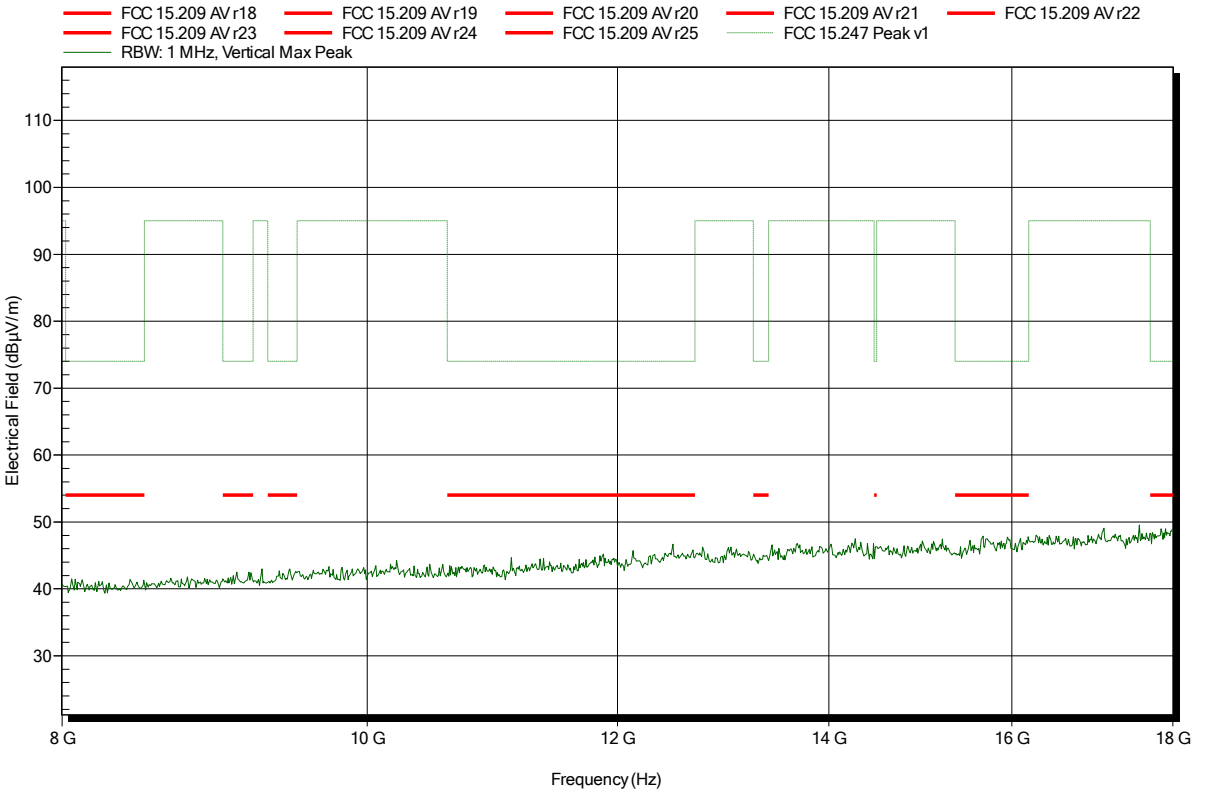


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 218

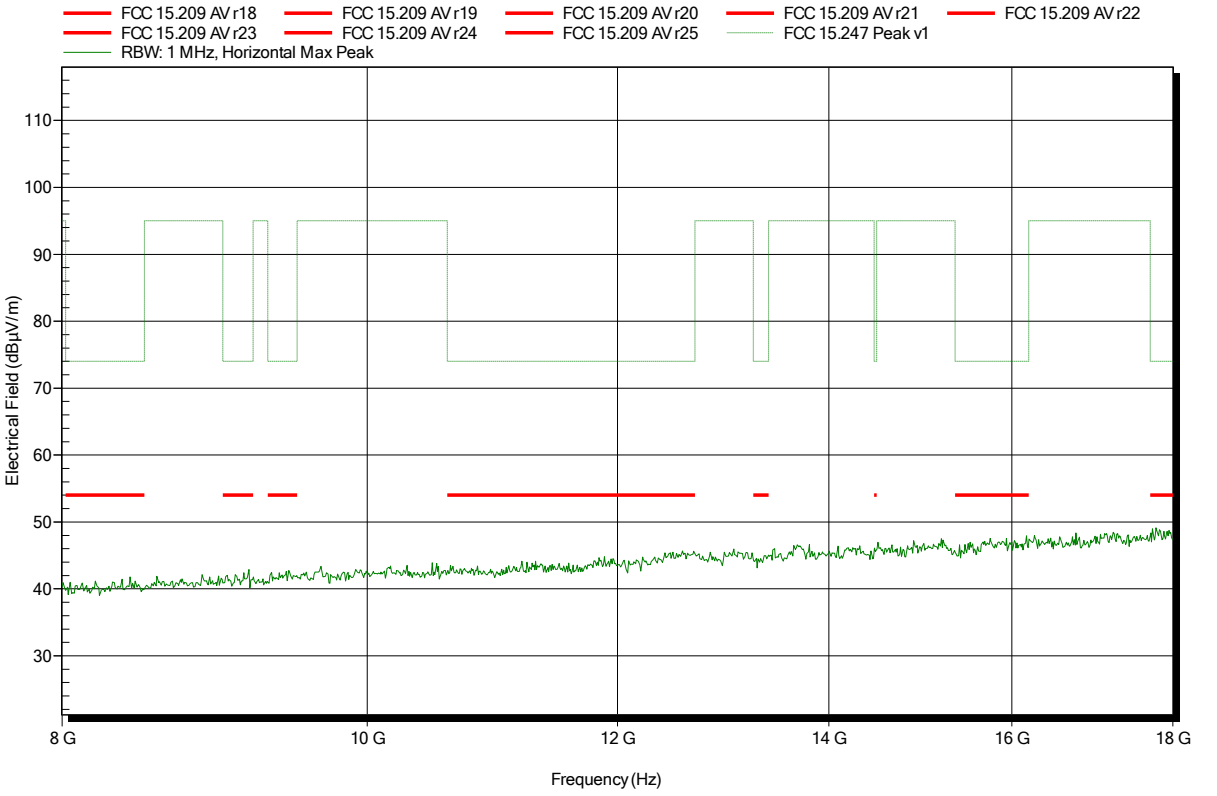


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 221

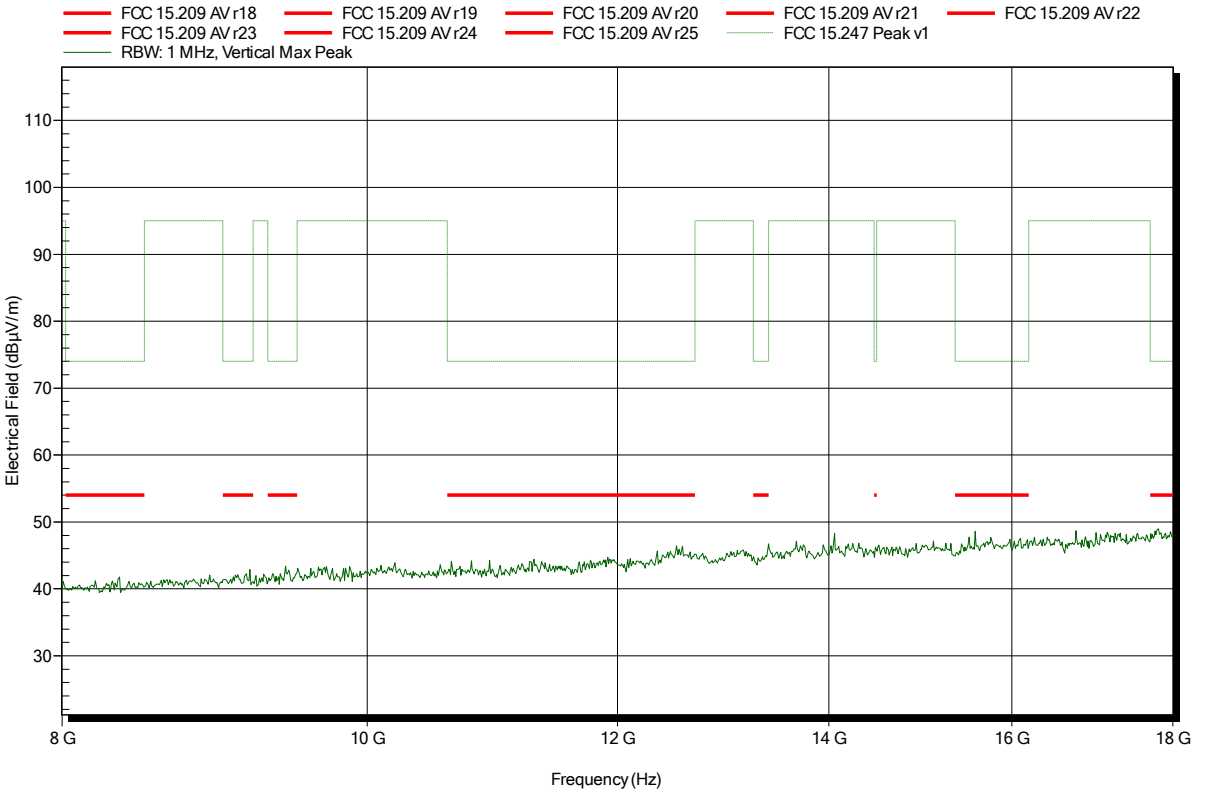


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 224

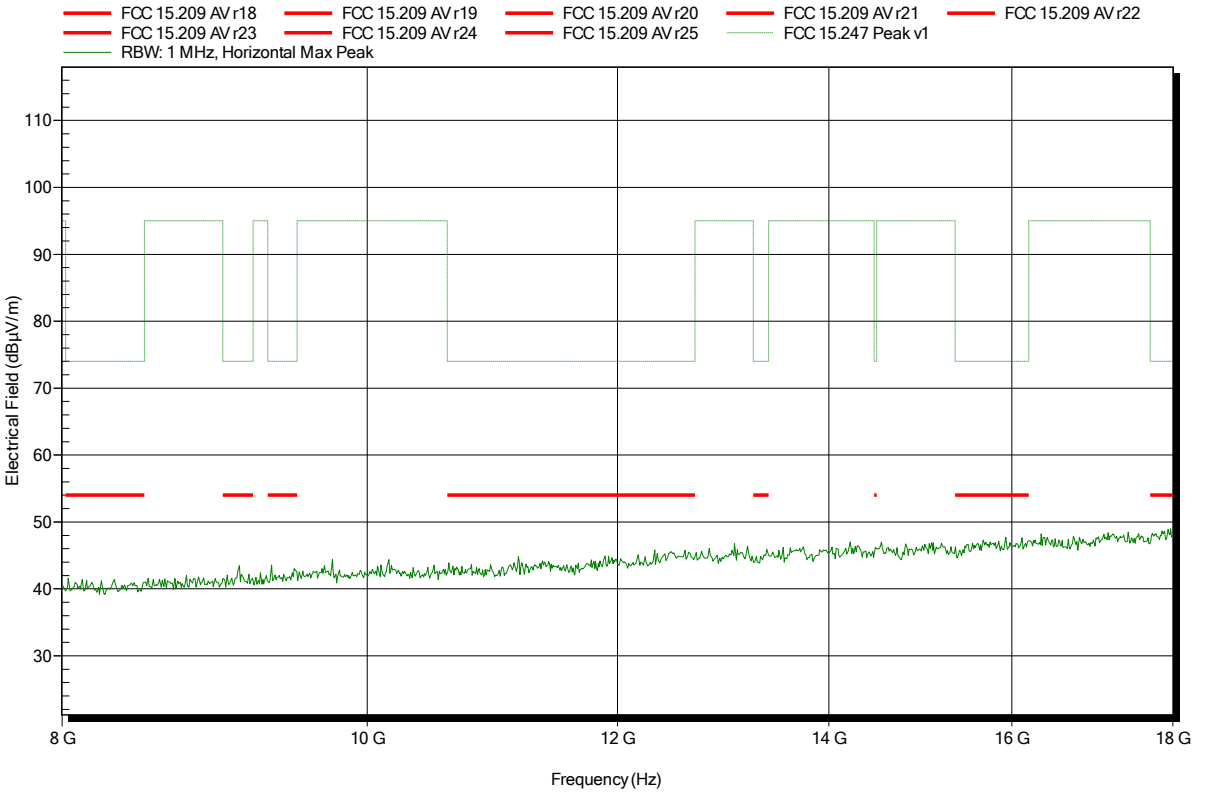


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 227

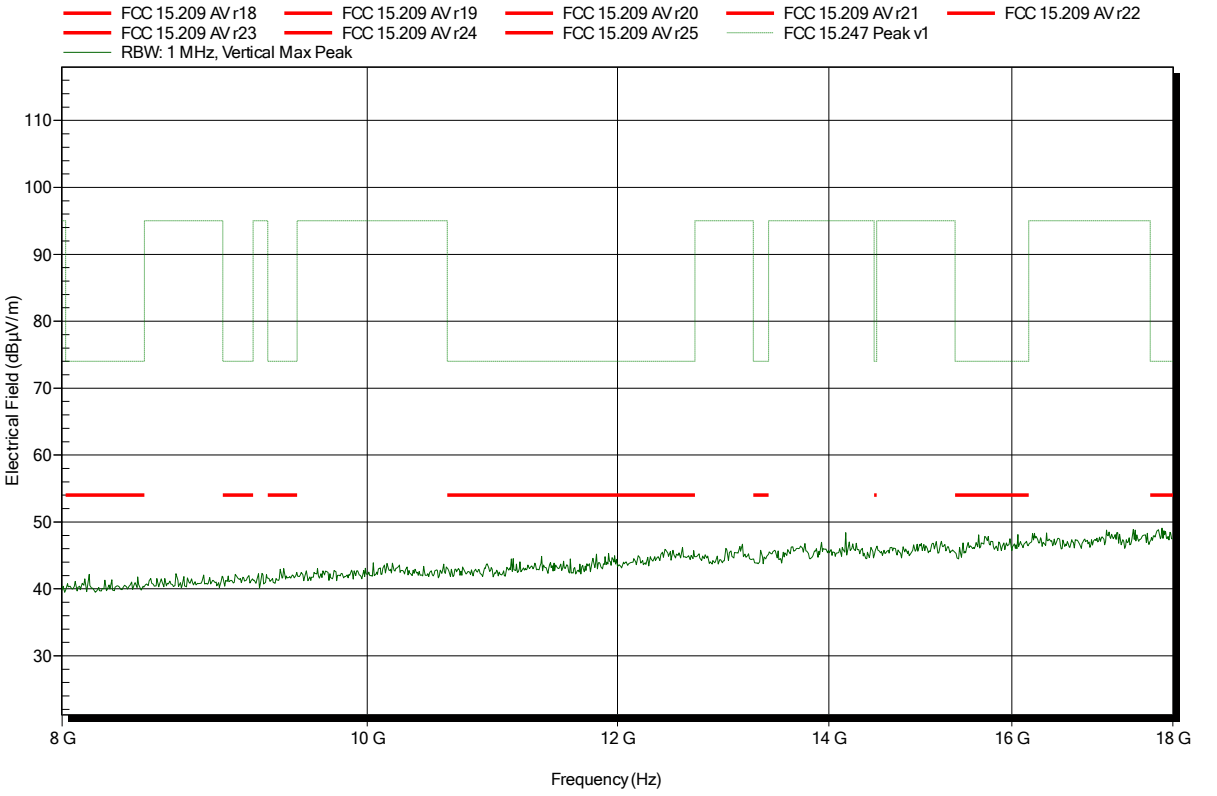


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 230

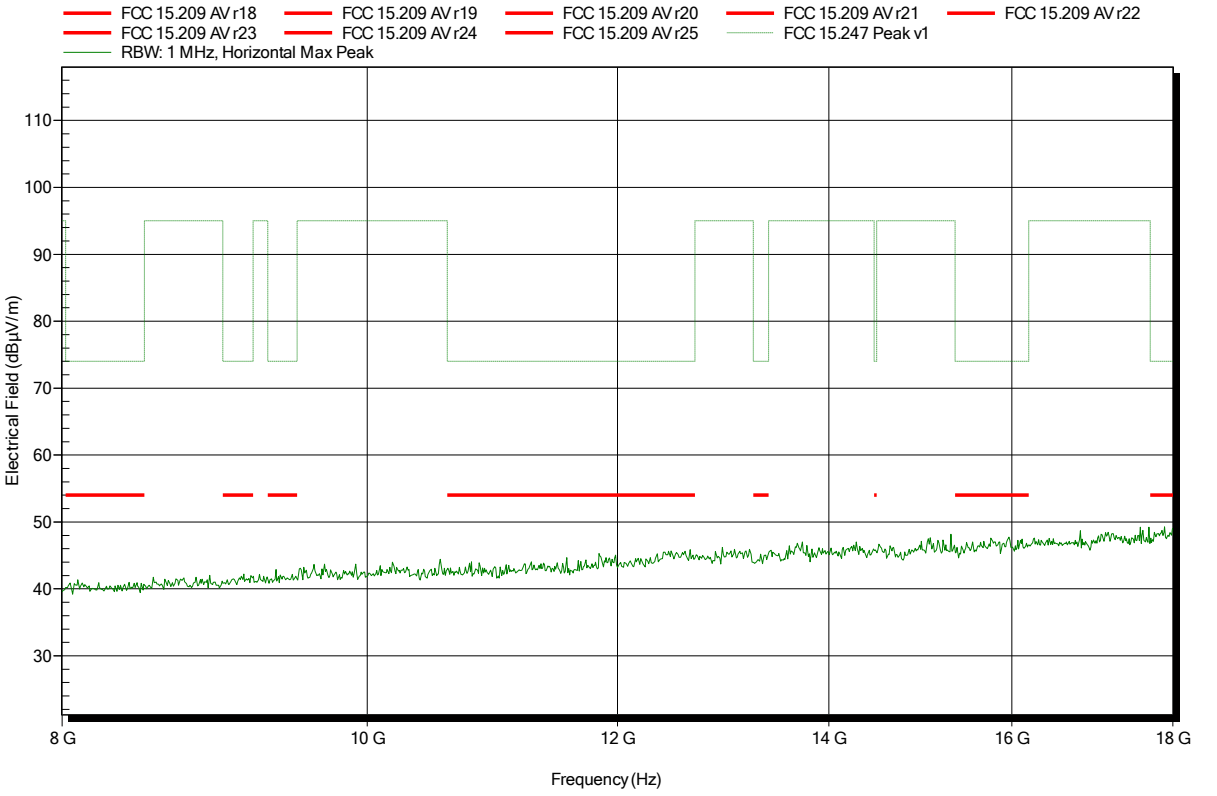


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 233

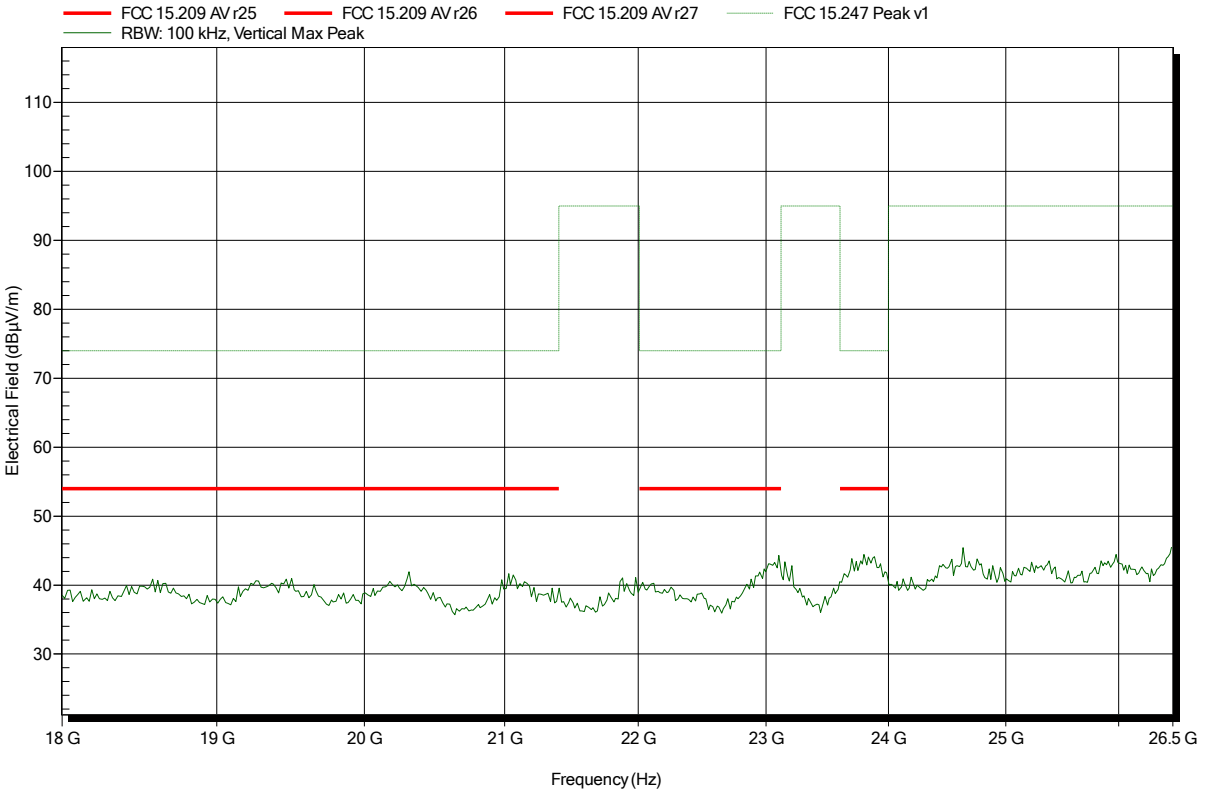


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 219

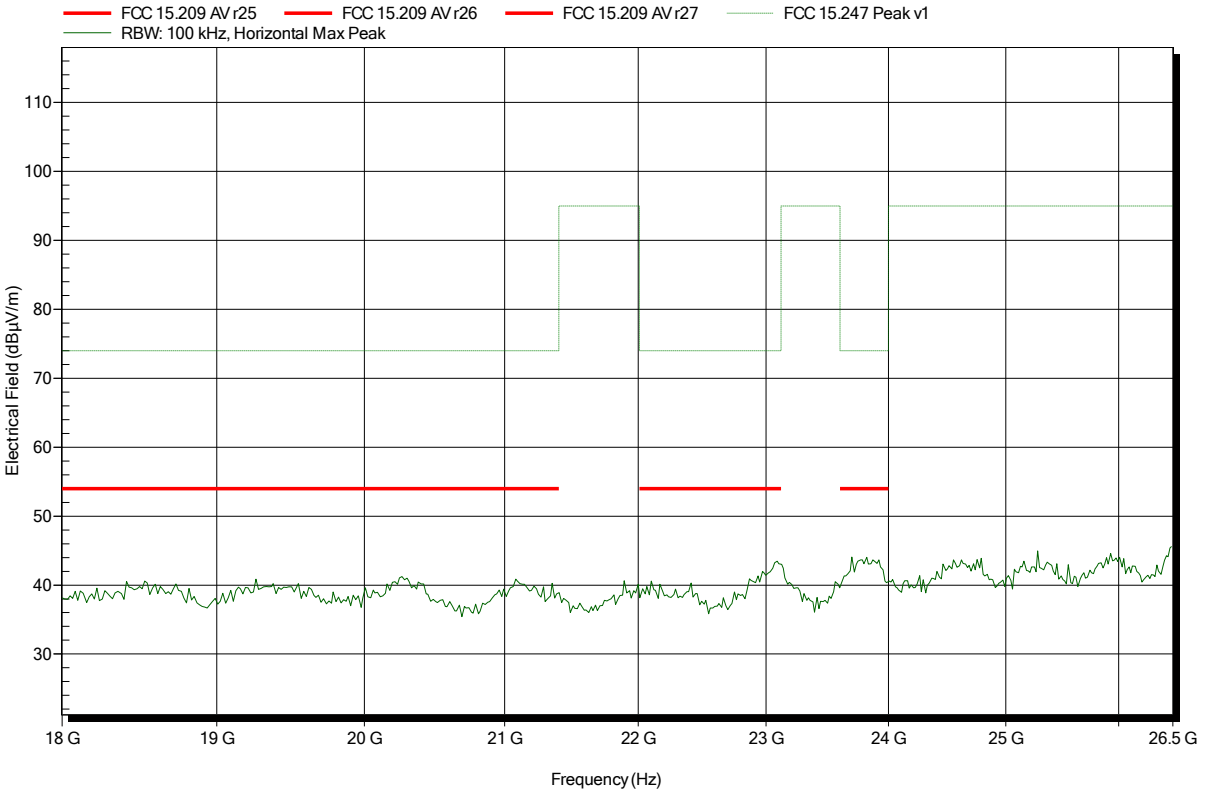


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 1; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 222

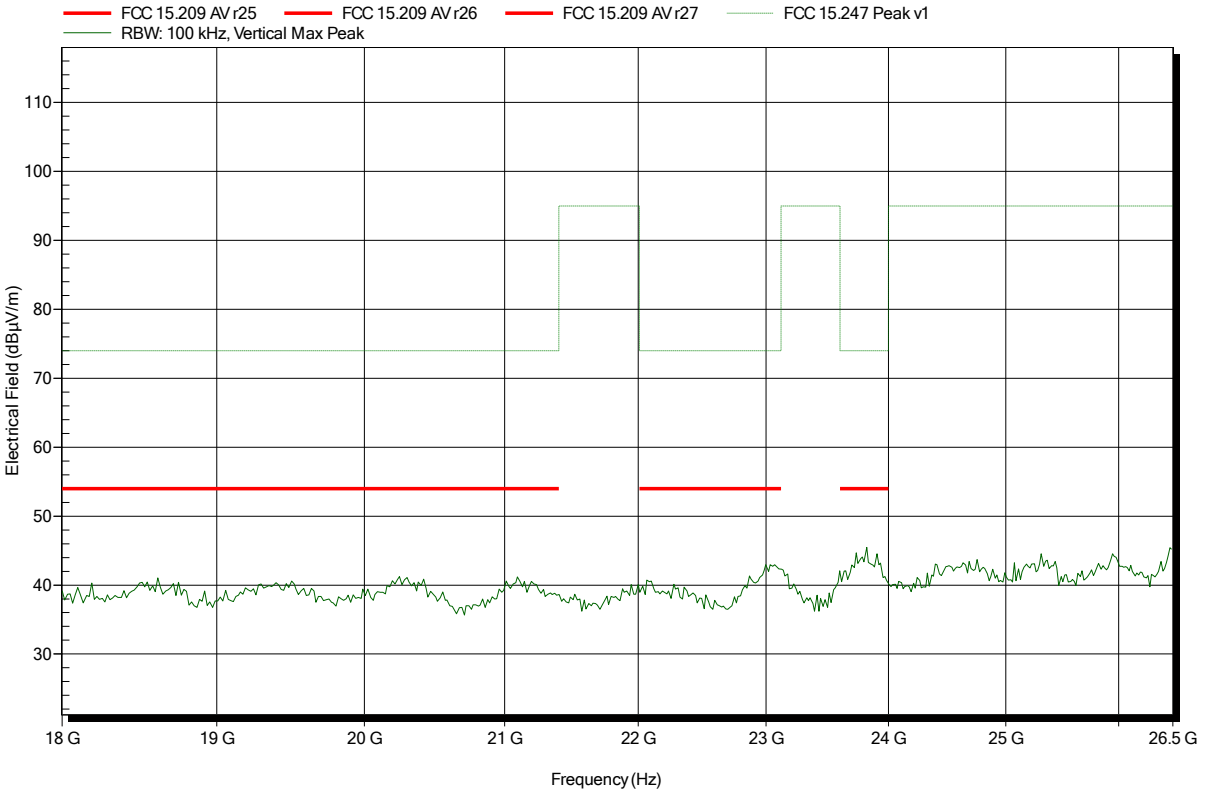


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 225

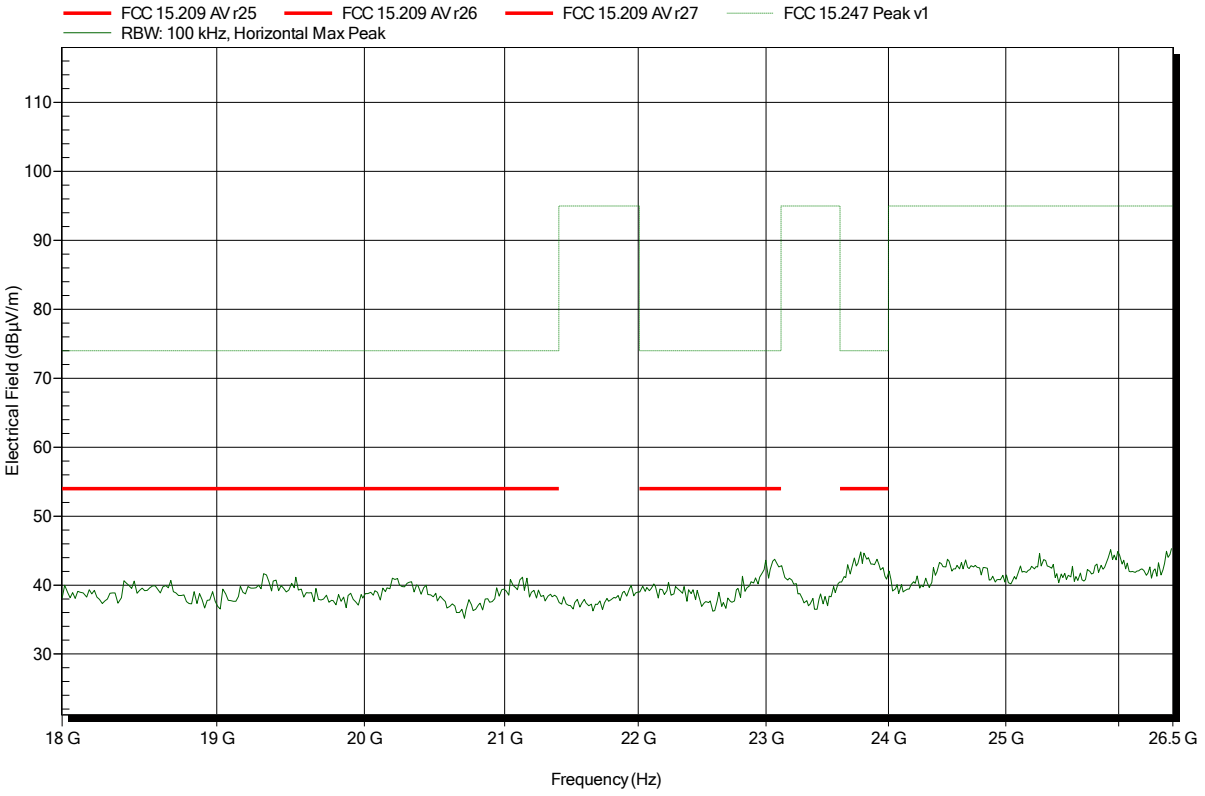


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 6; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 228

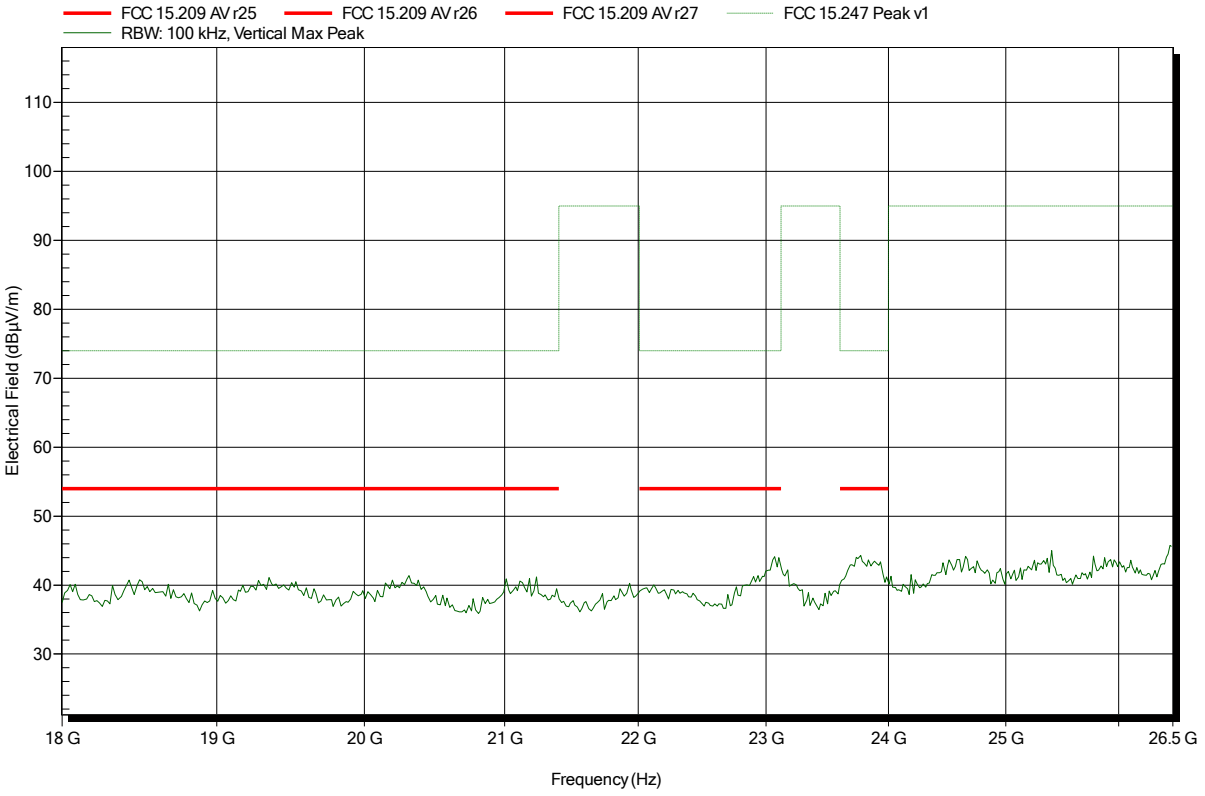


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 231

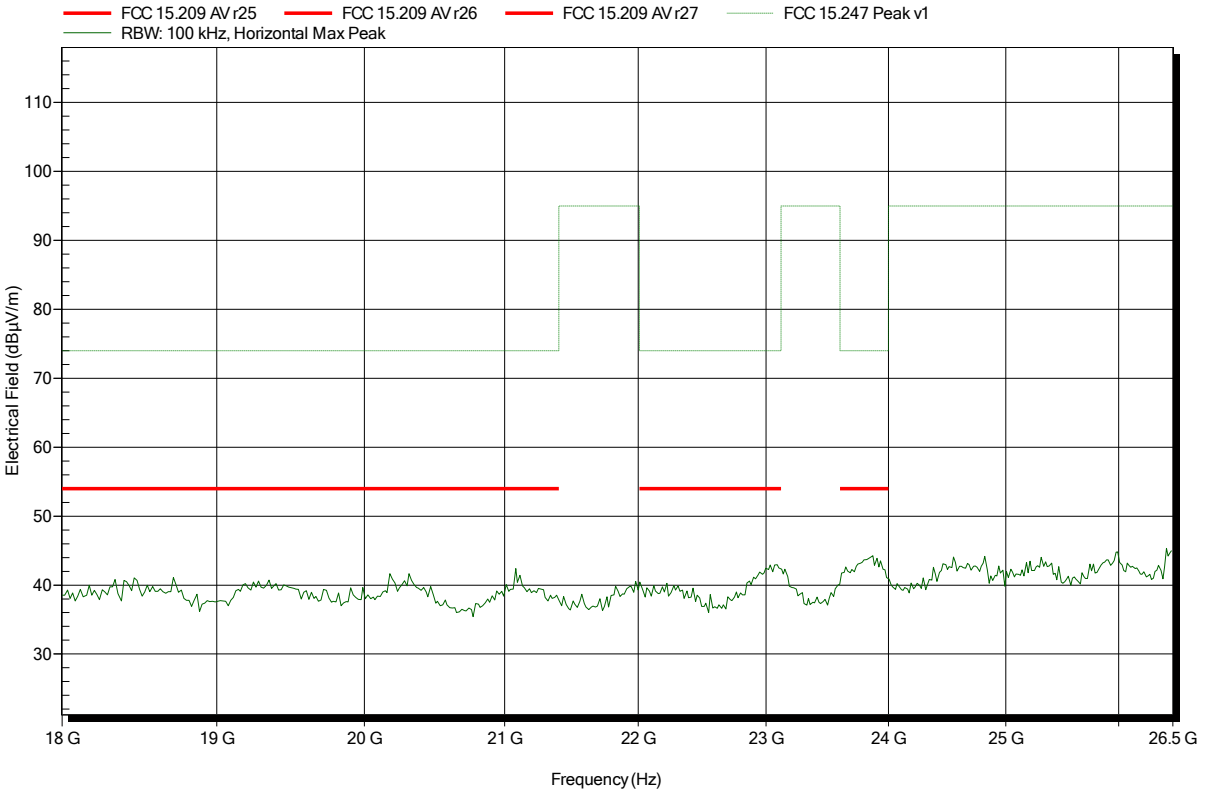


Spurious emissions according to FCC part 15 Subpart C § 15.247

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1 V DC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	1 m converted to 3m
Mode:	TX; WLAN 2.4G; CH: 11; OFDM; HT20; MCS0
Test Date:	2015-02-27
Note:	EUT vertical

Index 234



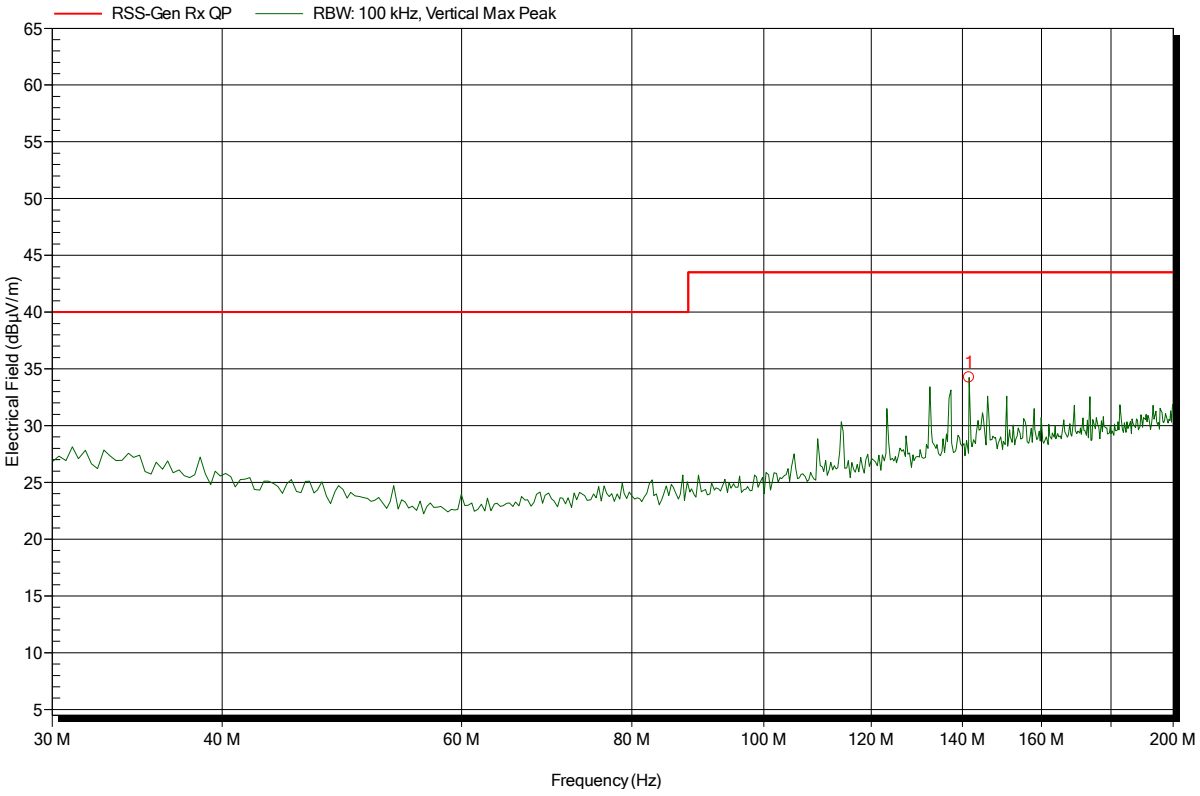
ANNEX B Receiver radiated spurious emissions

Spurious emissions according to FCC part 15 Subpart C § 15.247, IC RSS-210

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; WLAN 2.4G; CH: 6; RX -Test-Mode
Test Date:	2015-02-27
Note:	EUT vertical

Index 89



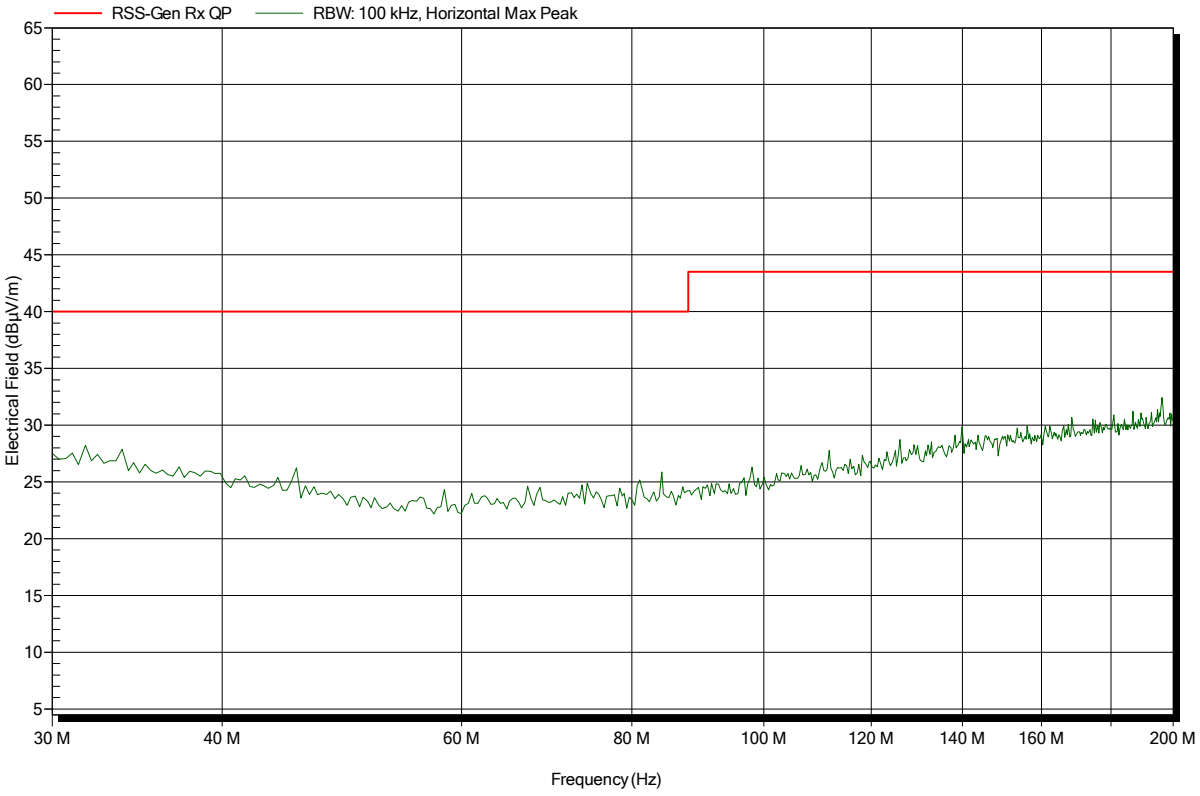
Frequency	Peak	Peak Limit	Peak Difference	Status
141.568 MHz	34.25 dBµV/m	43.5 dBµV/m	-9.25 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247, IC RSS-210

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; WLAN 2.4G; CH: 6; RX -Test-Mode
Test Date:	2015-02-27
Note:	EUT vertical

Index 90

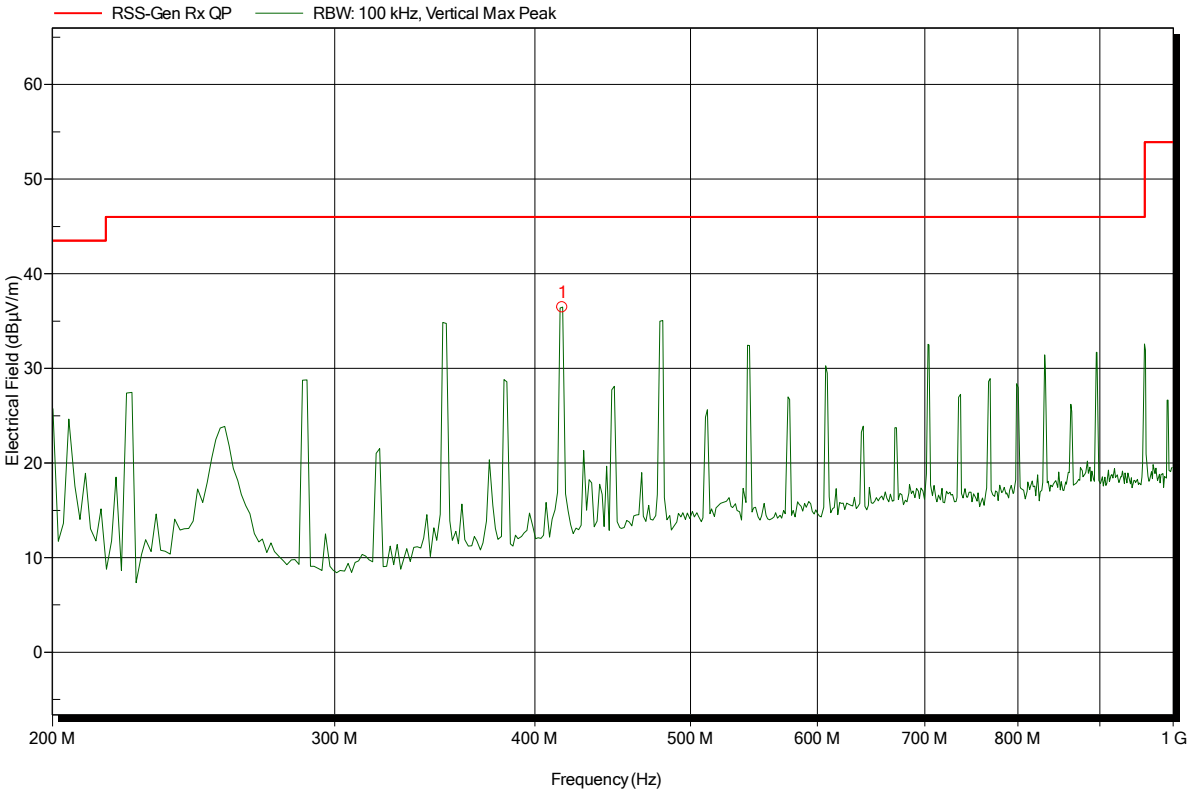


Spurious emissions according to FCC part 15 Subpart C § 15.247, IC RSS-210

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	RX; WLAN 2.4G; CH: 6; RX -Test-Mode
Test Date:	2015-02-27
Note:	EUT vertical

Index 83



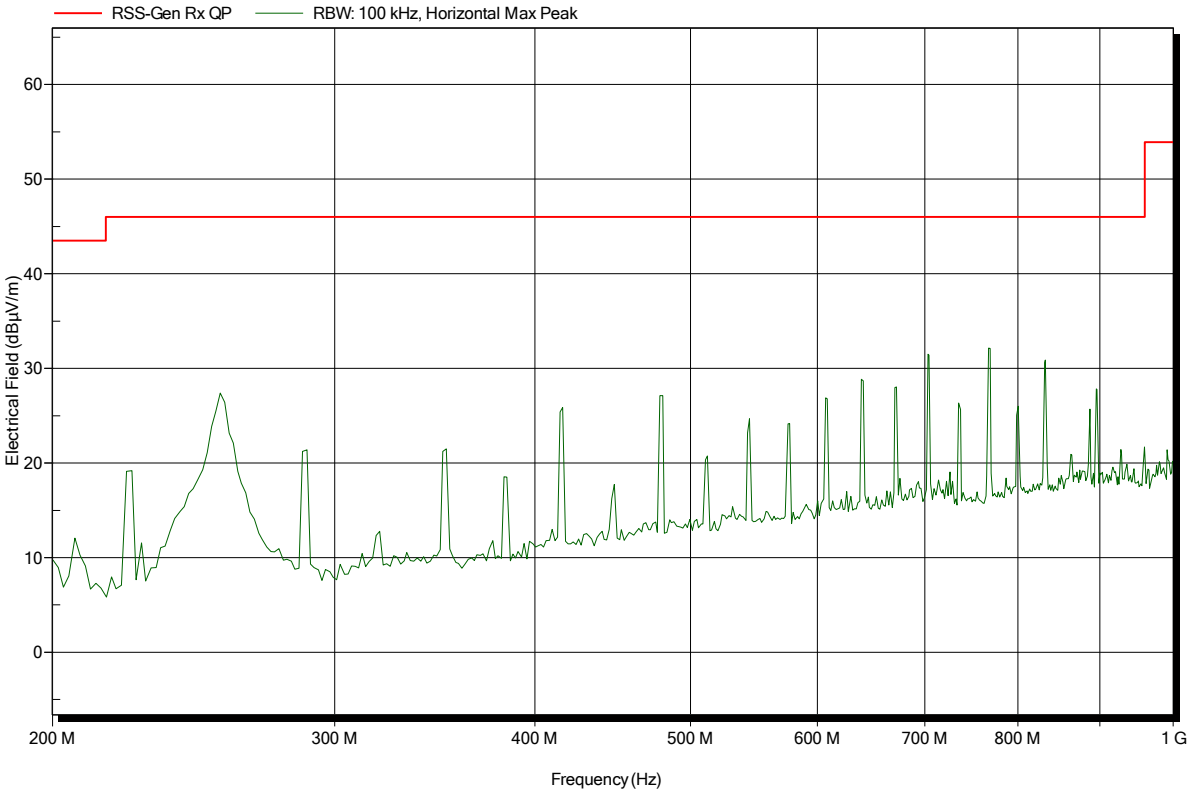
Frequency	Peak	Peak Limit	Peak Difference	Status
416 MHz	36.46 dBµV/m	46 dBµV/m	-9.54 dB	Pass

Spurious emissions according to FCC part 15 Subpart C § 15.247, IC RSS-210

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	RX; WLAN 2.4G; CH: 6; RX -Test-Mode
Test Date:	2015-02-27
Note:	EUT vertical

Index 84

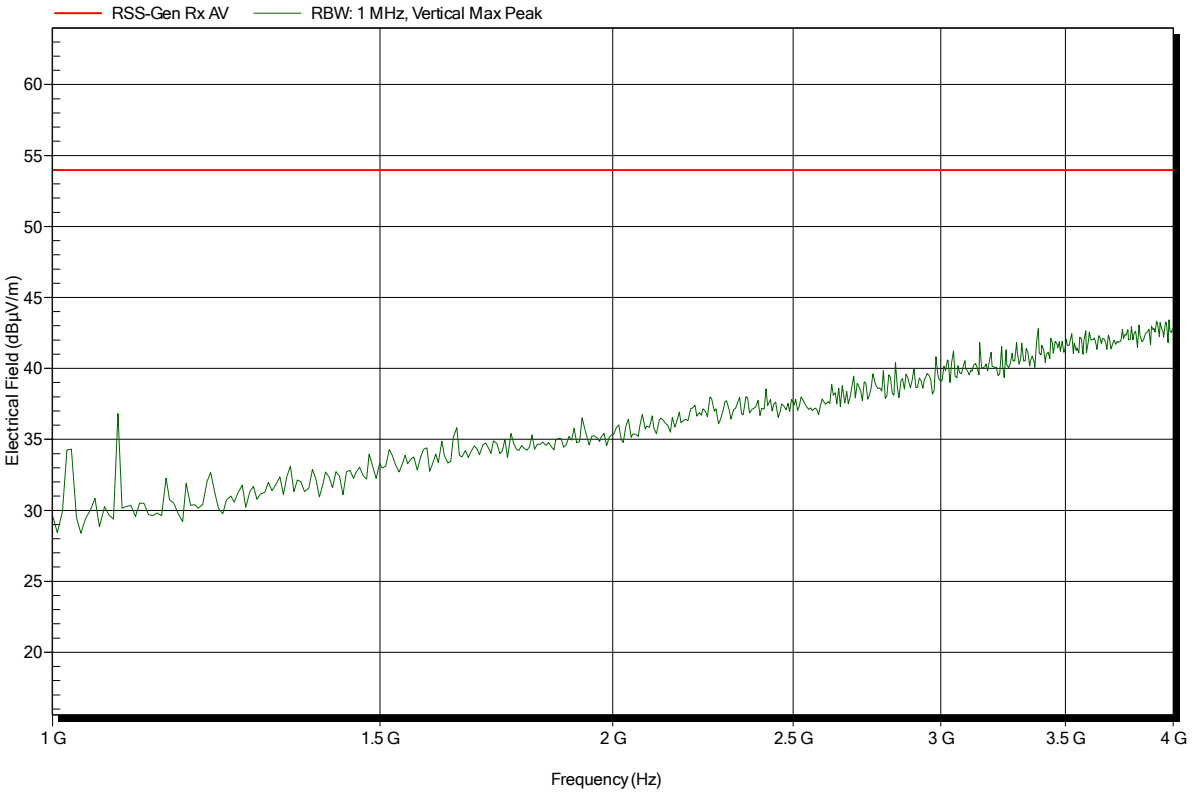


Spurious emissions according to FCC part 15 Subpart C § 15.247, IC RSS-210

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	RX; WLAN 2.4G; CH: 6; RX -Test-Mode
Test Date:	2015-02-27
Note:	EUT vertical

Index 73

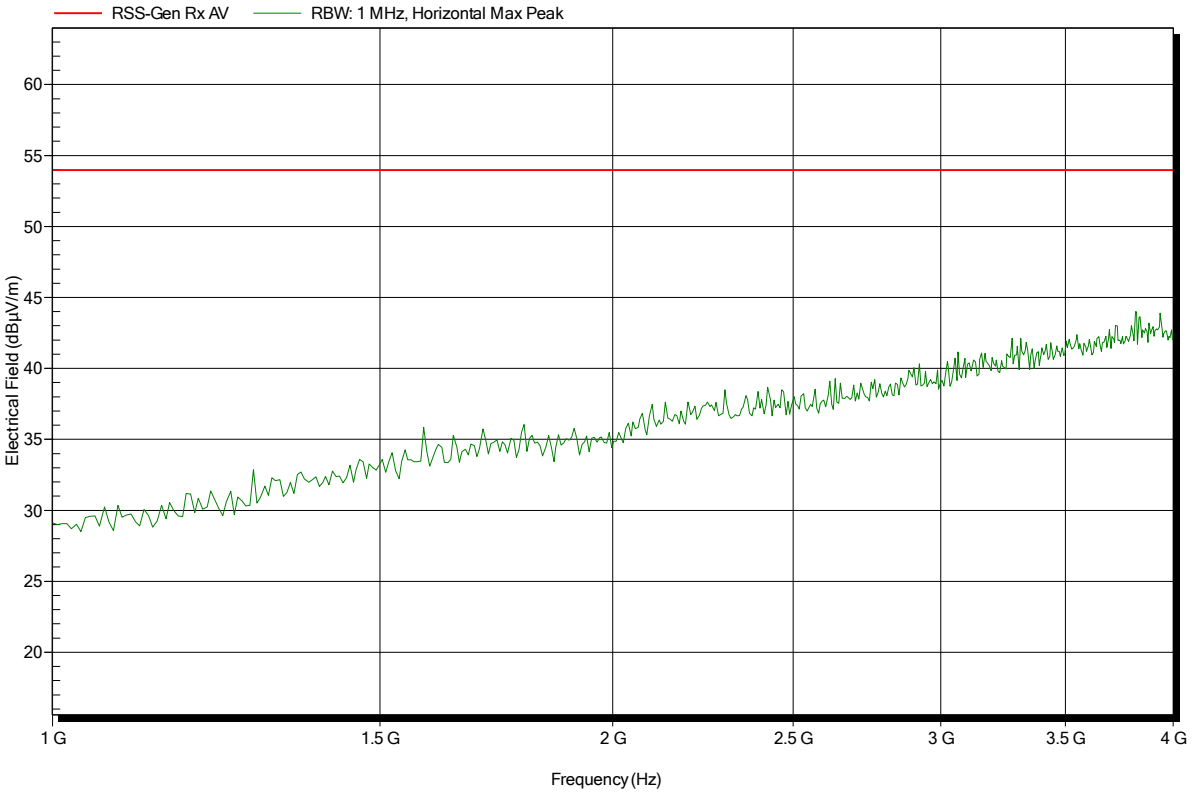


Spurious emissions according to FCC part 15 Subpart C § 15.247, IC RSS-210

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	RX; WLAN 2.4G; CH: 6; RX -Test-Mode
Test Date:	2015-02-27
Note:	EUT vertical

Index 75

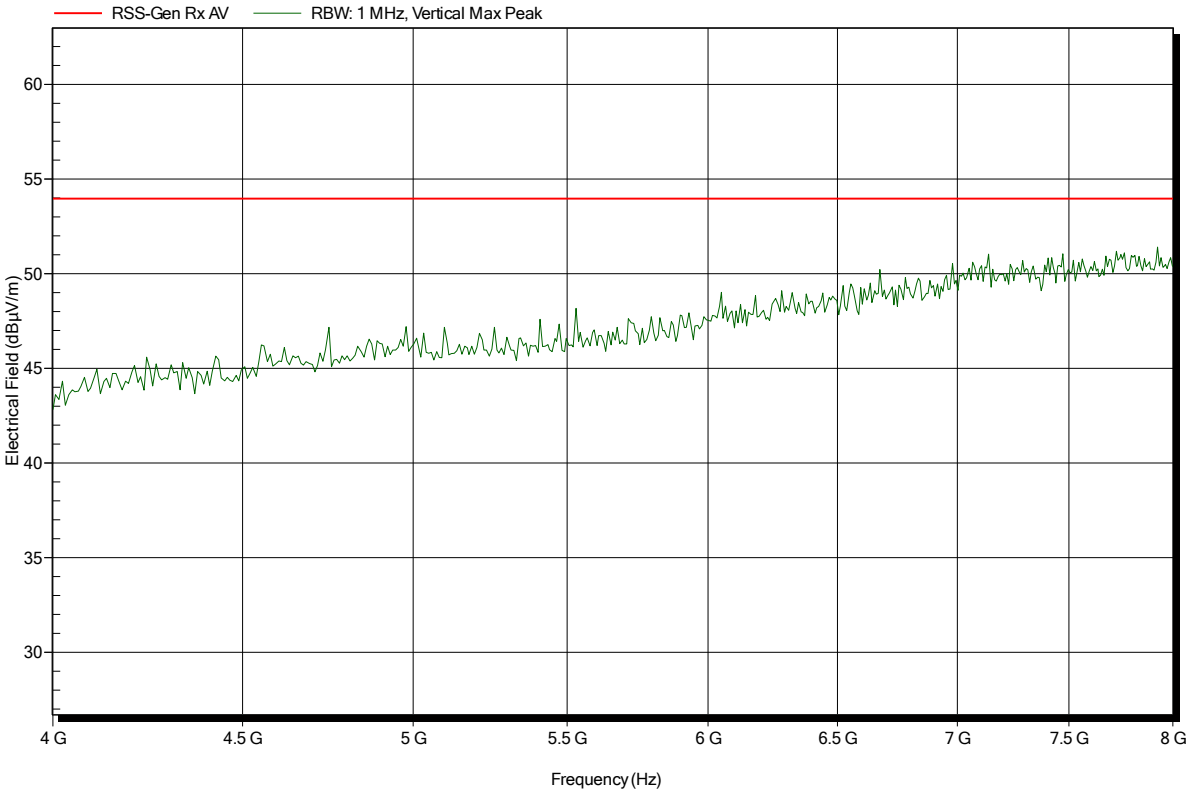


Spurious emissions according to FCC part 15 Subpart C § 15.247, IC RSS-210

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	RX; WLAN 2.4G; CH: 6; RX -Test-Mode
Test Date:	2015-02-27
Note:	EUT vertical

Index 74



Spurious emissions according to FCC part 15 Subpart C § 15.247, IC RSS-210

Project number: G0M-1406-3919

Applicant:	Leica Geosystems AG
EUT Name:	Field Controller Win EC7
Model:	CS20
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pudell
Test Conditions:	Tnom: 24°C, Vnom: 11.1VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	RX; WLAN 2.4G; CH: 6; RX -Test-Mode
Test Date:	2015-02-27
Note:	EUT vertical

Index 76