

FCC TEST REPORT FCC 47 CFR Part 22H Industry Canada RSS-132, Issue 3 Cellular Telephones Operating in the Bands 824-849MHz and 869-894MHz FCC 47 CFR Part 24E Industry Canada RSS-133, Issue 6 2GHz Personal Communication Services	
Report Reference No.	G0M-1406-3915-TFC224WC-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 22H, 47 CFR Part 24E RSS-132, Issue 3 : 2013-01, RSS-133, Issue 6 : 2013-01 SRSP-503 Issue 7 : 2008-09, SRSP-510 Issue 5 : 2009-02 RSS-Gen, Issue 4, 2014-11, ANSI/TIA-603-C-2004
Equipment under test (EUT):	
Product description	Field Controller Win EC7
Model No.	CS20 CDMA Disto
Additional Model(s)	None
Brand Name(s)	Leica Geosystems
Hardware version	V5.0
Firmware / Software version	None
	FCC-ID: RFD-CSNGC IC: 3177A-CSNGC
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: 2014-09-22

Date (s) of performance of tests: 2014-12-04 - 2014-12-09

Compiled by: Christian Weber

Tested by (+ signature).....: Burkhard Pudell *B. Pudell*
(Responsible for Test)

Approved by (+ signature): Christian Weber *C. Weber*

Date of issue: 2015-04-20

Total number of pages: 88

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:

Test case selection is based on full modular approval of licensed transmitter module used by the EUT. The EUT uses a WCDMA module with full modular approval according to FCC and IC rules. For details about the radio module see EUT description in section 1.

Version History

Version	Issue Date	Remarks	Revised by
01	2015-04-20	Initial Release	

REPORT INDEX

1	EQUIPMENT (TEST ITEM) DESCRIPTION	5
1.1	Photos – Equipment External	7
1.2	Photos – Equipment internal	8
1.3	Photos – Test setup	10
1.4	Supporting Equipment Used During Testing	11
1.5	Test Modes	12
1.6	Test Equipment Used During Testing	13
1.7	Sample emission level calculation	14
2	RESULT SUMMARY	15
3	TEST CONDITIONS AND RESULTS	16
3.1	Test Conditions and Results – Occupied Bandwidth	16
3.2	Test Conditions and Results – Effective radiated power / Equivalent isotropic radiated power	23
3.3	Test Conditions and Results – Transmitter radiated emissions	25
3.4	Test Conditions and Results – Receiver radiated emissions	27
ANNEX A	Transmitter radiated spurious emissions	29
ANNEX B	Receiver radiated spurious emissions	75

1 Equipment (Test item) Description

Description	Field Controller Win EC7		
Model	CS20 CDMA Disto		
Additional Model(s)	None		
Brand Name(s)	Leica Geosystems		
Serial number	None		
Hardware version	V5.0		
Software / Firmware version	None		
FCC-ID	RFD-CSNGC		
IC	3177A-CSNGC		
Equipment type	End product		
Equipment classification	Portable Device (Human Body distance < 20 cm)		
Radio type	Transceiver		
Radio technology	WCDMA V / WCDMA II		
Operating frequency range	WCDMA V : TX = 826.4 - 846.6 MHz, RX = 871.4 - 891.6 MHz WCDMA II : TX = 1852.4 - 1907.6 MHz, RX = 1932.4 - 1987.6 MHz		
Assigned frequency band	Cell. Service Block A & B : 824 - 849 MHz & 869 - 894 MHz Broadband PCS : 1850 - 1910 MHz & 1930 - 1990 MHz		
Main test frequencies WCDMA V	F _{LOW}	CH : 4133 UL: 826.6 MHz	CH : 4358 DL: 871.6 MHz
	F _{MID}	CH : 4175 UL: 835.0 MHz	CH : 4382 DL: 880.0 MHz
	F _{HIGH}	CH : 4232 UL: 846.4 MHz	CH : 4457 DL: 891.4 MHz
Main test frequencies WCDMA II	F _{LOW}	CH : 9263 UL: 1852.6 MHz	CH : 9663 DL: 1932.6 MHz
	F _{MID}	CH : 9400 UL: 1880.0 MHz	CH : 9800 DL: 1960.0 MHz
	F _{HIGH}	CH : 9537 UL: 1907.4 MHz	CH : 9937 DL: 1987.4 MHz
Supported transmission modes	WCDMA, HSDPA, HSUPA		
Modulations	QPSK		
Number of antennas	1		
Radio module	Type	WCDMA module	
	Model	PXS8	
	Manufacturer	Gemalto	
	HW Version	B2	
	SW Version	3.001	
	FCC-ID	QIPPPXS8	
	IC	7830A-PXS8	
Antenna	Type	integrated	
	Model	P522303	
	Manufacturer	Ethertronics	
	Gain	2.8 dBi	

Manufacturer	Leica Geosystems AG Heinrich Wild Strasse 9435 Heerbrugg SWITZERLAND	
	V_{NOM}	11.1 VDC (Lithium Battery)
	V_{MIN}	N/A
	V_{MIN}	N/A
Power supply	Model	N/A
	Vendor	N/A
	Input	N/A
	Output	N/A
AC/DC-Adaptor	Model	N/A
	Vendor	N/A
	Input	N/A
	Output	N/A

1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
SIM	Communication Tester	R&S	CMW500	
*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	
WCDMA FDDV	General conditions:	EUT powered by battery
	Radio conditions:	Mode = transmit Connection = packet switched Modulation = QPSK Power level = Maximum (TPC all 1)
WCDMA FDDII	General conditions:	EUT powered by battery
	Radio conditions:	Mode = transmit Connection = packet switched Modulation = QPSK Power level = Maximum (TPC all 1)
WCDMA IDLE FDDV	General conditions:	EUT powered by battery
	Radio conditions:	Mode = CELL-FACH
WCDMA IDLE FDDII	General conditions:	EUT powered by battery
	Radio conditions:	Mode = CELL-FACH

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	FSEK 30	EF00168	2014-01	2015-01

Radiated power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 1	EF00062	-	-
Spectrum Analyzer	R&S	FSEK 30	EF00168	2014-01	2015-01
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD Antenna	R&S	HL 223	EF00212	2013-02	2016-02
LPD Antenna	R&S	HL 025	EF00327	2013-02	2016-02

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 1	EF00062	-	-
Spectrum Analyzer	R&S	FSEK 30	EF00168	2014-01	2015-01
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD Antenna	R&S	HL 223	EF00212	2013-02	2016-02
LPD Antenna	R&S	HL 025	EF00327	2013-02	2016-02

1.7 Sample emission level calculation

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

Reading:

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

A.F.:

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

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

Net:

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

Limit:

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

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

Margin:

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

Example only:

$$\begin{array}{rclcl} \text{Reading} & + & \text{AF} & = & \text{Net Reading} & : & \text{Net reading - FCC limit} & = & \text{Margin} \\ 21.5 \text{ dB}\mu\text{V} & + & 26 \text{ dB} & = & 47.5 \text{ dB}\mu\text{V/m} & : & 47.5 \text{ dB}\mu\text{V/m} - 57.0 \text{ dB}\mu\text{V/m} & = & -9.5 \text{ dB} \end{array}$$

2 Result Summary

FCC 47 CFR Part 22H, 24E, IC RSS-132, 133				
Product Specific Standard Section	Requirement – Test	Reference Method	Result	Remarks
FCC § 2.1049 RSS-Gen 6.6	Occupied Bandwidth	RSS-Gen 6.6		Informational only
FCC § 24.235 FCC § 22.355 IC RSS-132 § 4.3 IC RSS-133 § 6.3	Frequency stability	FCC § 24.235 FCC § 22.355 IC RSS-132 § 4.3 IC RSS-133 § 6.3	N/R	Conducted results of licensed radio unaffected. See module radio report.
FCC § 22.913(a)	Effective radiated power	ANSI/TIA-603-C	PASS	
FCC § 24.232(c) IC RSS-132 § 4.4 IC RSS-133 § 6.4	Equivalent isotropic radiated power	ANSI/TIA-603-C	PASS	
FCC § 24.232(d) IC RSS-133 § 6.4	Peak to average ratio	FCC § 24.232(d) IC RSS-133 § 6.4	N/R	Conducted results of licensed radio unaffected. See module radio report
FCC § 22.917(b) FCC § 24.238(b) IC RSS-132 § 4.5 IC RSS-133 § 6.5	Band-edge compliance	FCC § 22.917(b) FCC § 24.238(b) IC RSS-132 § 4.5 IC RSS-133 § 6.5	N/R	Conducted results of licensed radio unaffected. See module radio report
FCC § 22.917(a) FCC § 24.238(a) IC RSS-132 § 4.5 IC RSS-133 § 6.5	Conducted out-of-band emissions	FCC § 22.917(a) FCC § 24.238(a) IC RSS-132 § 4.5 IC RSS-133 § 6.5	N/R	Conducted results of licensed radio unaffected. See module radio report
FCC § 22.917(a) FCC § 24.238(a) IC RSS-132 § 4.5 IC RSS-133 § 6.5	Radiated out-of-band emissions	ANSI/TIA-603-C	PASS	
IC RSS-132 § 4.6 IC RSS-133 § 6.6 IC RSS-Gen 7.1	Receiver radiated spurious emissions	IC RSS-132 § 4.6 IC RSS-133 § 6.6 IC RSS-Gen 7.1	PASS	
Remarks:				

3 Test Conditions and Results

3.1 Test Conditions and Results – Occupied Bandwidth

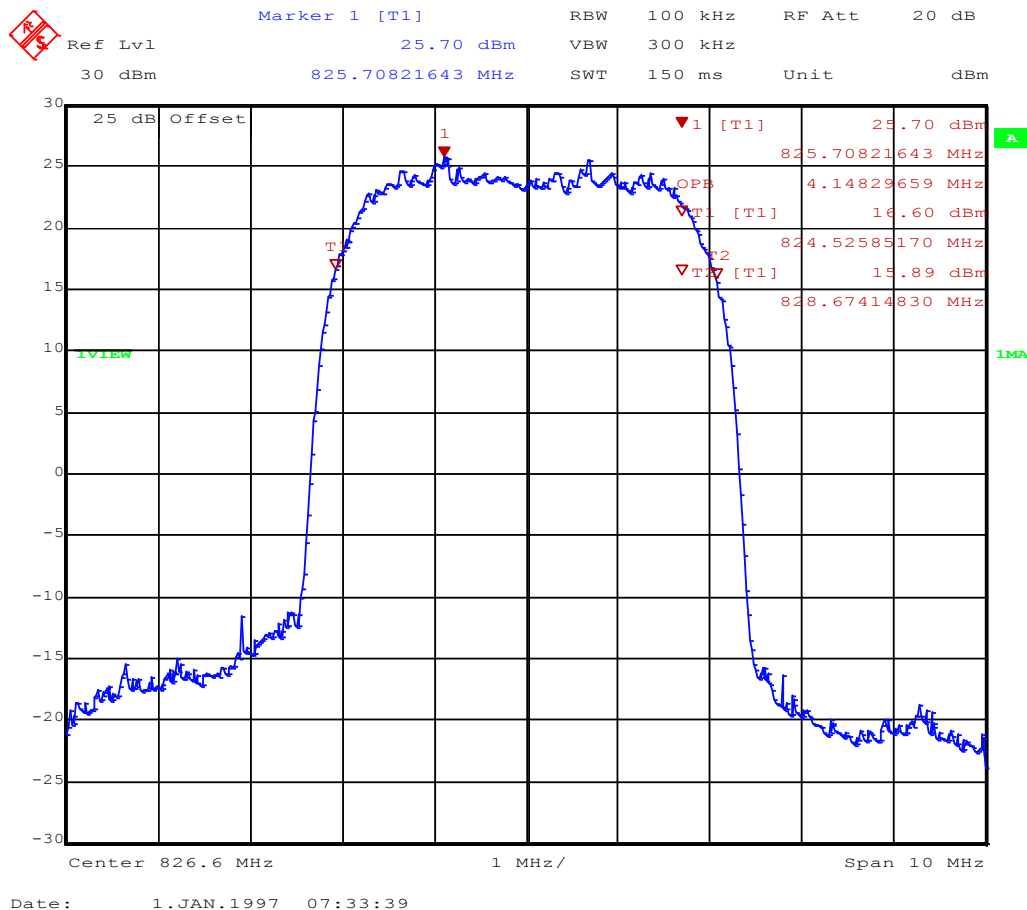
Occupied Bandwidth acc. to FCC Part 2 / IC RSS-Gen			
Test according to measurement reference	Reference Method		
	RSS-Gen 6.6		
Test frequency range	Tested frequencies		
	$F_{\text{LOW}} / F_{\text{MID}} / F_{\text{HIGH}}$		
Limits			
None (Informational only)			
Test setup			
Spectrum Analyzer EUT			
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_{LOW}	826.6	WCDMA FDDV	4.148
F_{MID}	835.0	WCDMA FDDV	4.188
F_{HIGH}	846.4	WCDMA FDDV	4.168
F_{LOW}	1852.6	WCDMA FDDII	4.168
F_{MID}	1880.0	WCDMA FDDII	4.168
F_{HIGH}	1907.4	WCDMA FDDII	4.168
Comments:			

Occupied Bandwidth – WCDMA FDDV F_{Low}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3915

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: UMTS FDD V / CH: 4133 / HSUPA-HSDPA
Test Date: 2014-12-04
Verdict: NONE (INFORMATION ONLY)
Note 1: A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2: OBW = 4.148 MHz

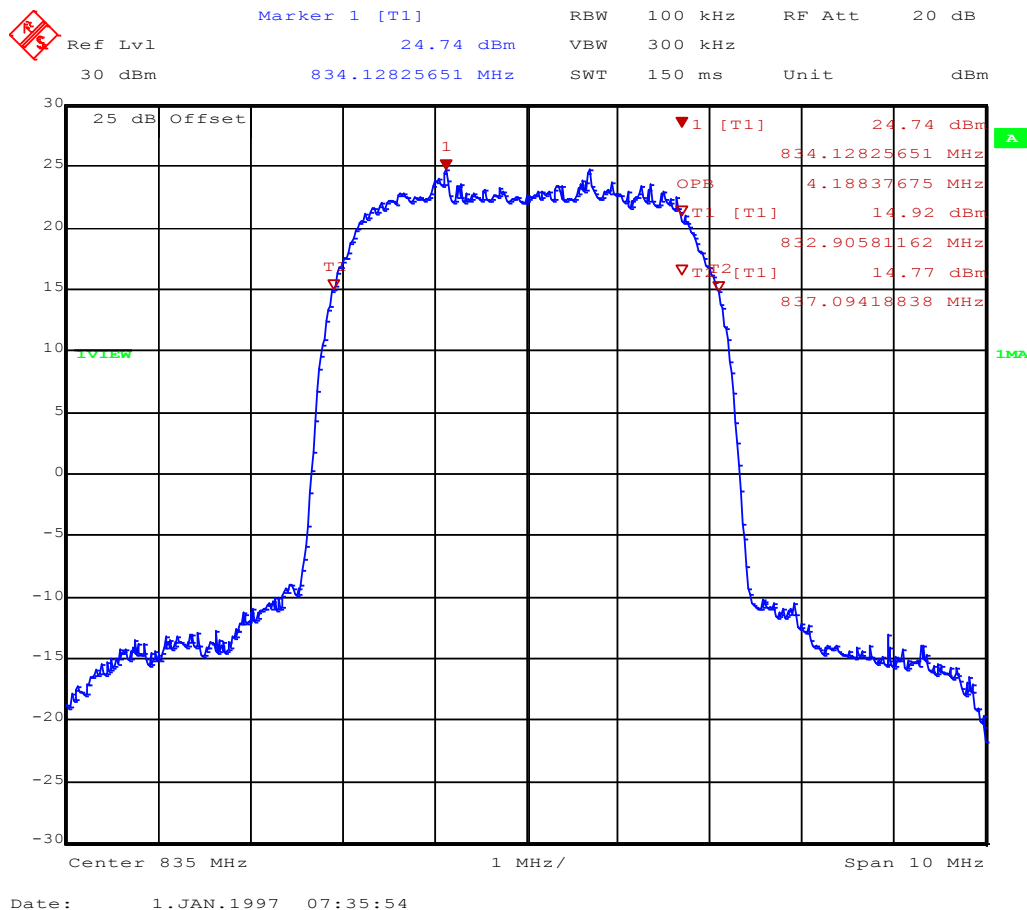


Occupied Bandwidth – WCDMA FDDV F_{MID}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3915

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: UMTS FDD V / CH: 4175 / HSUPA-HSDPA
Test Date: 2014-12-04
Verdict: NONE (INFORMATION ONLY)
Note 1: A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2: OBW = 4.188 MHz



Test Report No.: G0M-1406-3915-TFC224WC-V01

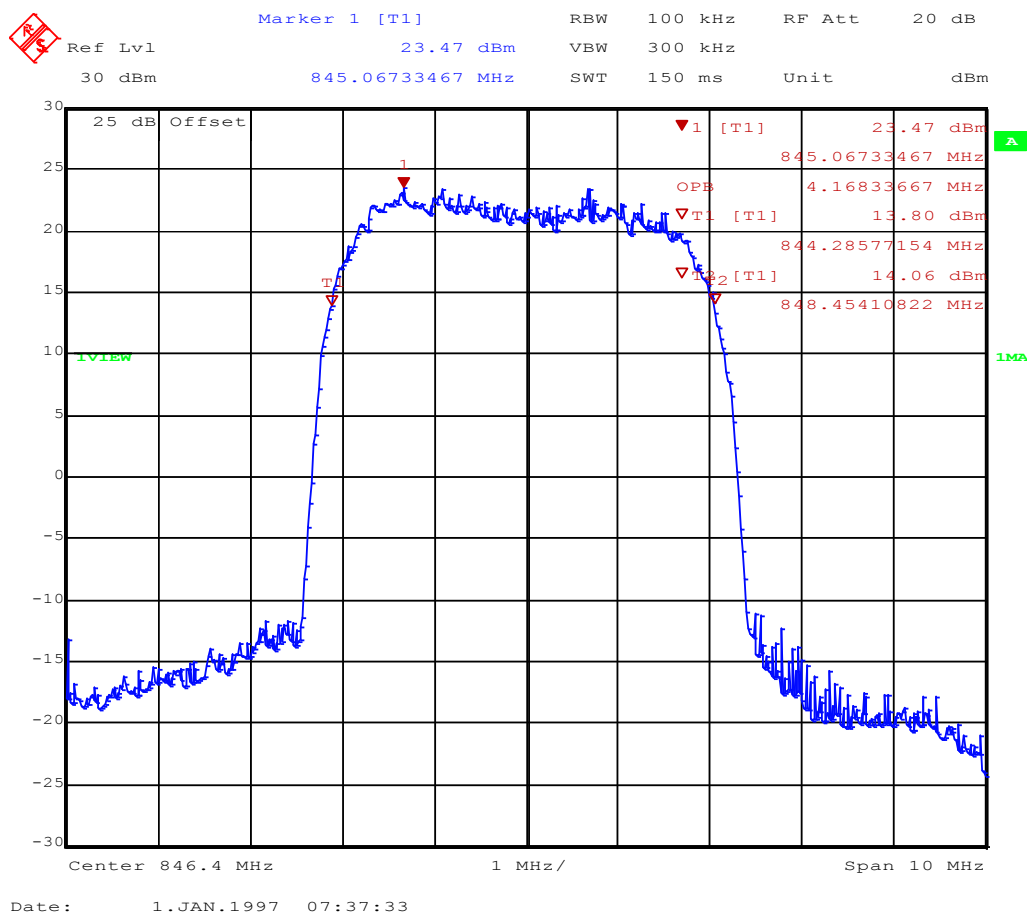
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Occupied Bandwidth – WCDMA FDDV F_{HIGH}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3915

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: UMTS FDD V / CH: 4232 / HSUPA-HSDPA
Test Date: 2014-12-04
Verdict: NONE (INFORMATION ONLY)
Note 1: A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2: OBW = 4.168 MHz

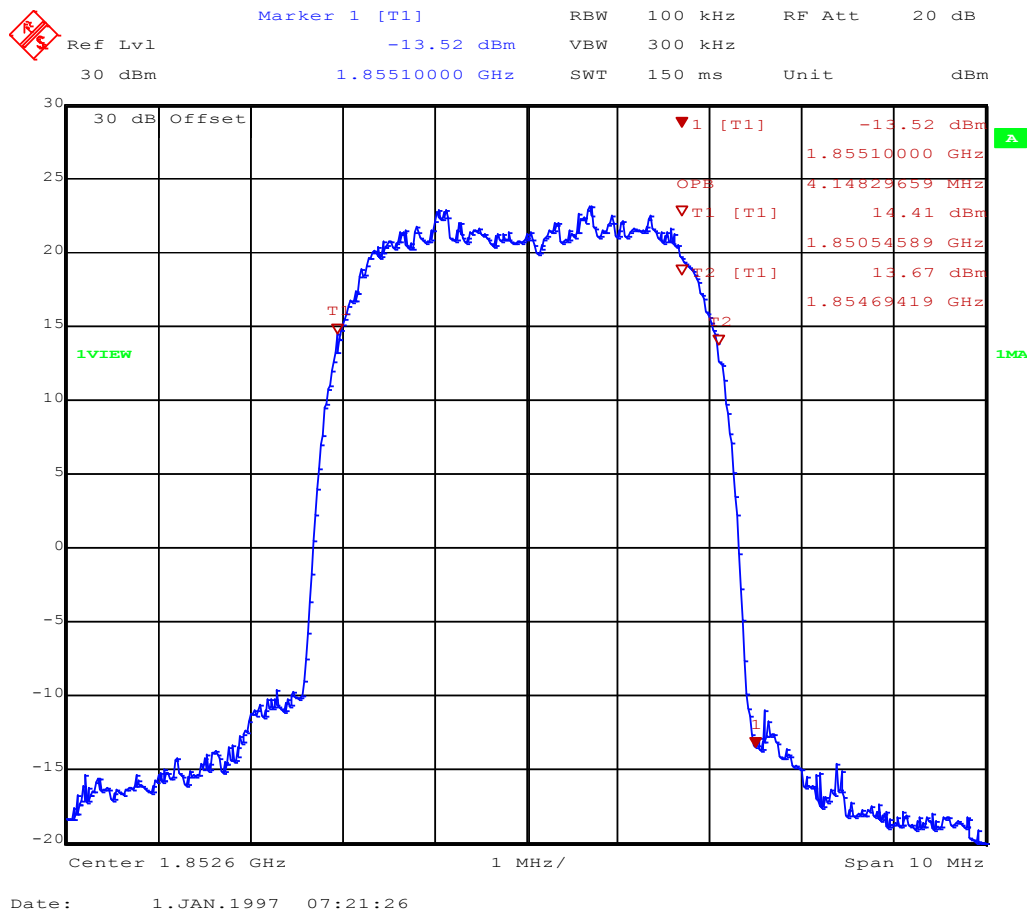


Occupied Bandwidth – WCDMA FDDII F_{Low}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3915

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: UMTS FDD II / CH: 9263 / HSUPA-HSDPA
Test Date: 2014-12-04
Verdict: NONE (INFORMATION ONLY)
Note 1: A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2: OBW = 4.148 MHz



Test Report No.: G0M-1406-3915-TFC224WC-V01

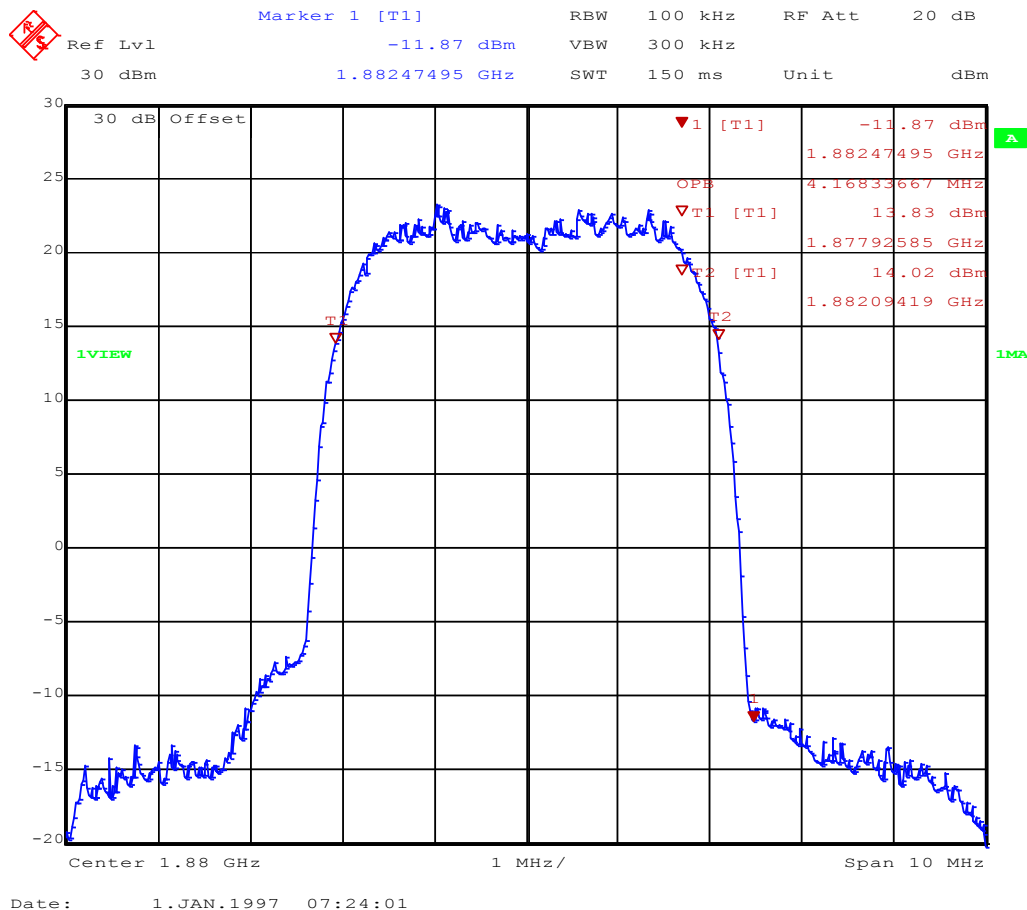
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Occupied Bandwidth – WCDMA FDDII F_{MD}

Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3915

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: UMTS FDD II / CH: 9400 / HSUPA-HSDPA
Test Date: 2014-12-04
Verdict: NONE (INFORMATION ONLY)
Note 1: A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2: OBW = 4.168 MHz



Test Report No.: G0M-1406-3915-TFC224WC-V01

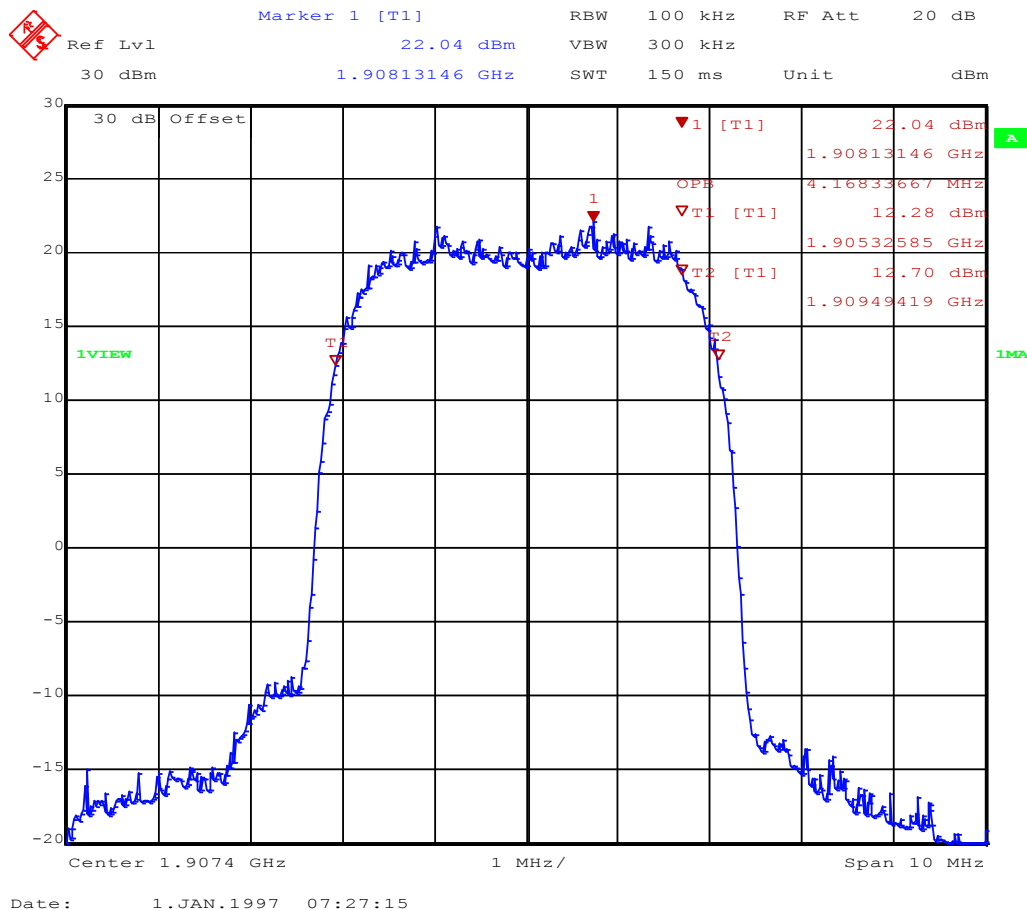
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Occupied Bandwidth – WCDMA FDDII F_{HIGH}

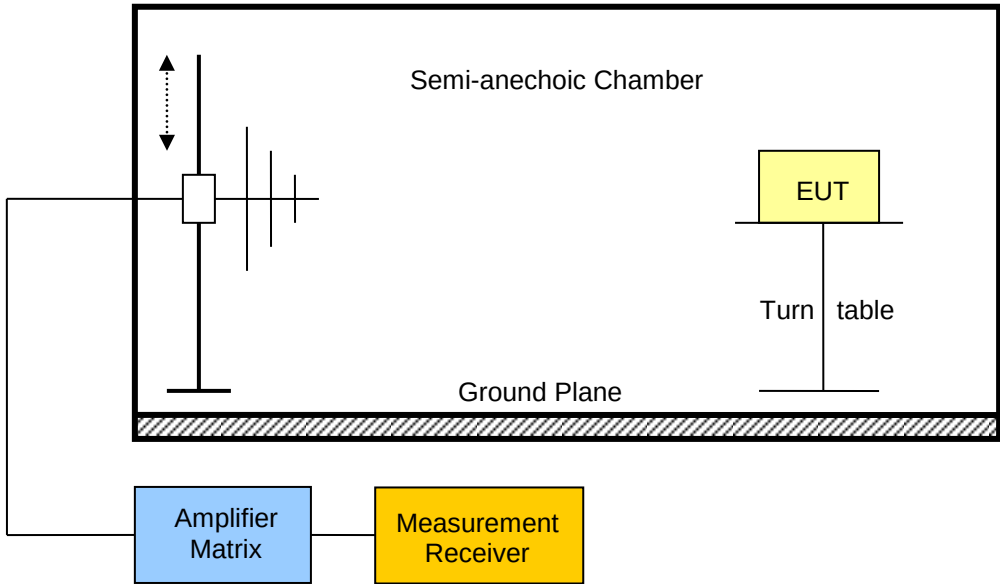
Occupied Bandwidth acc. to RSS-Gen

Project Number: G0M-1406-3915

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: UMTS FDD II / CH: 9537 / HSUPA-HSDPA
Test Date: 2014-12-04
Verdict: NONE (INFORMATION ONLY)
Note 1: A spectrum analyzer with an integrated 99% power bandwidth function is used
Note 2: OBW = 4.168 MHz

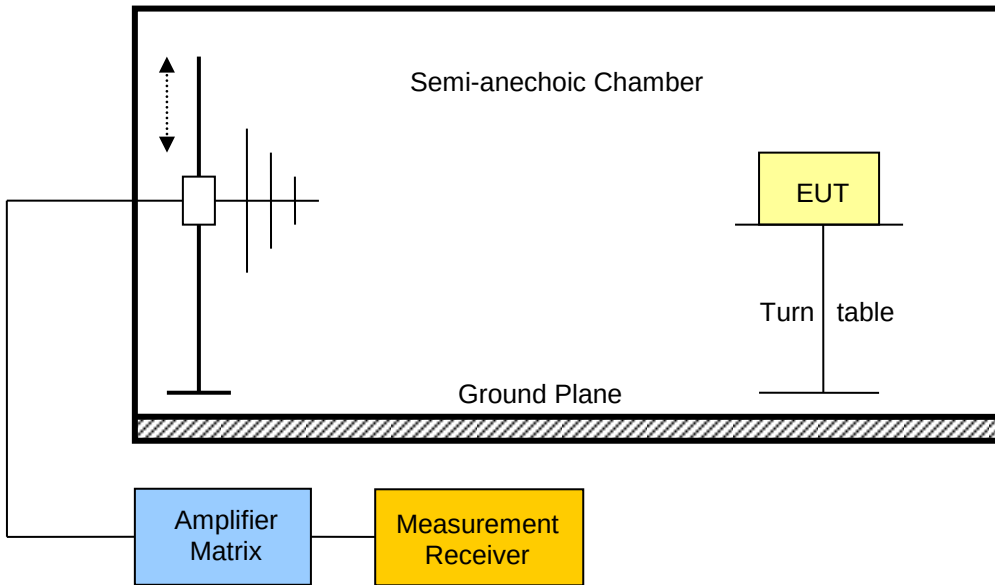


3.2 Test Conditions and Results – Effective radiated power / Equivalent isotropic radiated power

Radiated power acc. to FCC 22H / FCC 24E / IC RSS-132 / IC RSS-133			Verdict: PASS
EUT requirement rule parts and clause	Reference		
	FCC § 22.913(a) / FCC § 24.232(c) IC RSS-132 § 4.4 /IC RSS-133 § 6.4		
Test according to measurement reference	Reference Method		
	FCC § 22.913(a) / FCC § 24.232(c) / ANSI/TIA-603-C IC RSS-132 § 4.4 /IC RSS-133 § 6.4		
Test frequency range	Tested frequencies		
	F _{LOW} / F _{MID} / F _{HIGH}		
Limits			
Frequency range	Equipment type	Power limit	
824-849 MHz	Mobile transmitter	FCC : 7 Watts (38.45 dBm) e.i.r.p. IC : 11.5 Watts (40.6 dBm) e.i.r.p.	
1850-1910 MHz	Mobile transmitter	FCC : 2 Watts (33 dBm) e.i.r.p. IC : 2 Watts (33 dBm) e.i.r.p.	
Test setup			
			
Test procedure			
1. EUT set to test mode 2. The radiated power is measured with a measurement antenna in vertical polarization 3. To obtain maximum level the EUT is rotated 4. The EUT is replaced with a half-wave dipole and the power to the dipole is adjusted to obtain same radiated power measurement value			

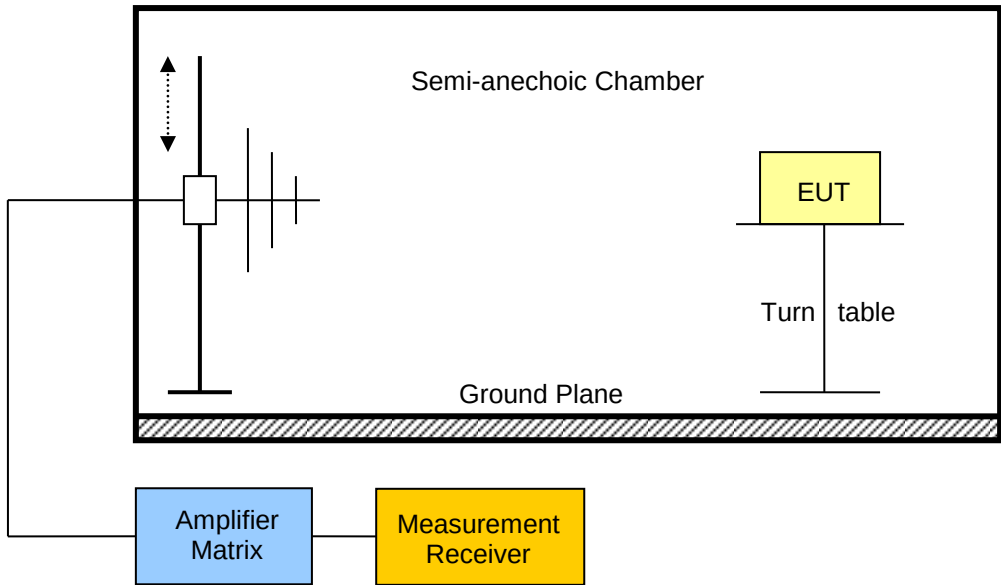
Test results – WCDMA FDDV E.R.P.							
Channel	Frequency [MHz]	Mode	Pol.	Power [dBm e.r.p.]	Limit [dBm e.r.p.]	Margin [dB]	Result
F _{LOW}	826.6	WCDMA FDDV	hor	22.1	38.45	-16.35	PASS
F _{MID}	835.0	WCDMA FDDV	hor	22.3	38.45	-16.15	PASS
F _{HIGH}	846.4	WCDMA FDDV	hor	22.6	38.45	-15.85	PASS
Test results – WCDMA FDDV E.I.R.P.							
Channel	Frequency [MHz]	Mode	Pol.	Power [dBm e.i.r.p.]	Limit [dBm e.i.r.p.]	Margin [dB]	Result
F _{LOW}	826.6	WCDMA FDDV	hor	24.25	40.6	-16.35	PASS
F _{MID}	835.0	WCDMA FDDV	hor	24.45	40.6	-16.15	PASS
F _{HIGH}	846.4	WCDMA FDDV	hor	24.75	40.6	-15.85	PASS
Test results – GSM1900 E.I.R.P.							
Channel	Frequency [MHz]	Mode	Pol.	Power [dBm e.i.r.p.]	Limit [dBm e.i.r.p.]	Margin [dB]	Result
F _{LOW}	1852.6	WCDMA FDDII	hor	29.9	33	-03.10	PASS
F _{MID}	1880	WCDMA FDDII	hor	29.4	33	-03.60	PASS
F _{HIGH}	1907.4	WCDMA FDDII	hor	29.2	33	-03.80	PASS
Comments:							

3.3 Test Conditions and Results – Transmitter radiated emissions

Transmitter radiated power acc. to FCC 22H / FCC 24E / IC RSS-132 / IC RSS-133		Verdict: PASS
Test according referenced standards	Reference Method	
	FCC § 22.917(a) / FCC § 24.238(a) IC RSS-132 § 4.5 / IC RSS-133 § 6.5	
Test according to measurement reference	Reference Method	
	ANSI/TIA-603-C	
Test frequency range	Tested frequencies	
	30 MHz – 10 th Harmonic	
Limits		
Frequency range	Limit	
824-849 MHz	Attenuation below transmitter power ≥ 43 + 10 · log ₁₀ (P) [dB] = -13 dBm	
1850-1910 MHz	Attenuation below transmitter power ≥ 43 + 10 · log ₁₀ (P) [dB] = -13 dBm	
Test setup		
		
Test procedure		
1. EUT set to test mode 2. Maximum emission level is measured by rotating the EUT and adjusting the antenna height for vertical polarization 3. The EUT is replaced by a substitution antenna and generator 4. The power level is set to obtain the same power reading 5. Measurement is repeated for horizontal polarization		

Test results – WCDMA FDDV							
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbm]	Pol.	Limit [dBm]	Margin [dB]
4133	826.6	WCDMA FDD V	822.678	-25.30	hor	-13.00	-12.34
4133	826.6	WCDMA FDD V	822.908	-29.10	ver	-13.00	-16.14
4232	846.4	WCDMA FDD V	850.6	-28.00	hor	-13.00	-15.02
Test results – WCDMA FDDII							
Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbm]	Pol.	Limit [dBm]	Margin [dB]
9263	1852.6	WCDMA FDD II	1850	-26.30	hor	-13.00	-13.34
9400	1880.0	WCDMA FDD II	512	-26.90	ver	-13.00	-13.88
9400	1880.0	WCDMA FDD II	819.319	-26.10	hor	-13.00	-13.06
9537	1907.4	WCDMA FDD II	1910	-31.10	hor	-13.00	-18.12
9537	1907.4	WCDMA FDD II	1915	-31.80	ver	-13.00	-18.82
Comments:							

3.4 Test Conditions and Results – Receiver radiated emissions

Receiver radiated emissions acc. to IC RSS-132 / IC RSS-133				Verdict: PASS
Test according to measurement reference	Reference Method			
	ANSI C63.4			
Test frequency range	Tested frequencies			
	30 MHz – 3 th Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Test setup				
				

Test procedure							
1. EUT set to receive mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1MHz with peak/average detector is used above 1GHz 4. Markers are set to peak emission levels							
Test results – WCDMA FDDV							
Channel	Frequency [MHz]	Emission [MHz]	Emission Level [dBμV/m]	Pol.	Det.	Limit [dBμV/m]	Margin [dB]
4400	880.0	374.4	34.32	ver	pk	46.00	-11.68
4400	880.0	512	34.05	ver	pk	46.00	-11.95
4400	880.0	750.4	36.55	hor	pk	46.00	-09.45
Test results – WCDMA FDDII							
Channel	Frequency [MHz]	Emission [MHz]	Emission Level [dBμV/m]	Pol.	Det.	Limit [dBμV/m]	Margin [dB]
9800	1960.0	374.4	34.54	ver	pk	46.00	-11.46
9800	1960.0	512	33.73	ver	pk	46.00	-12.27
9800	1960.0	750.4	36.48	hor	pk	46.00	-09.52
Comments: * Physical distance between EUT and measurement antenna. ** Emission level corresponds to ambient noise floor							

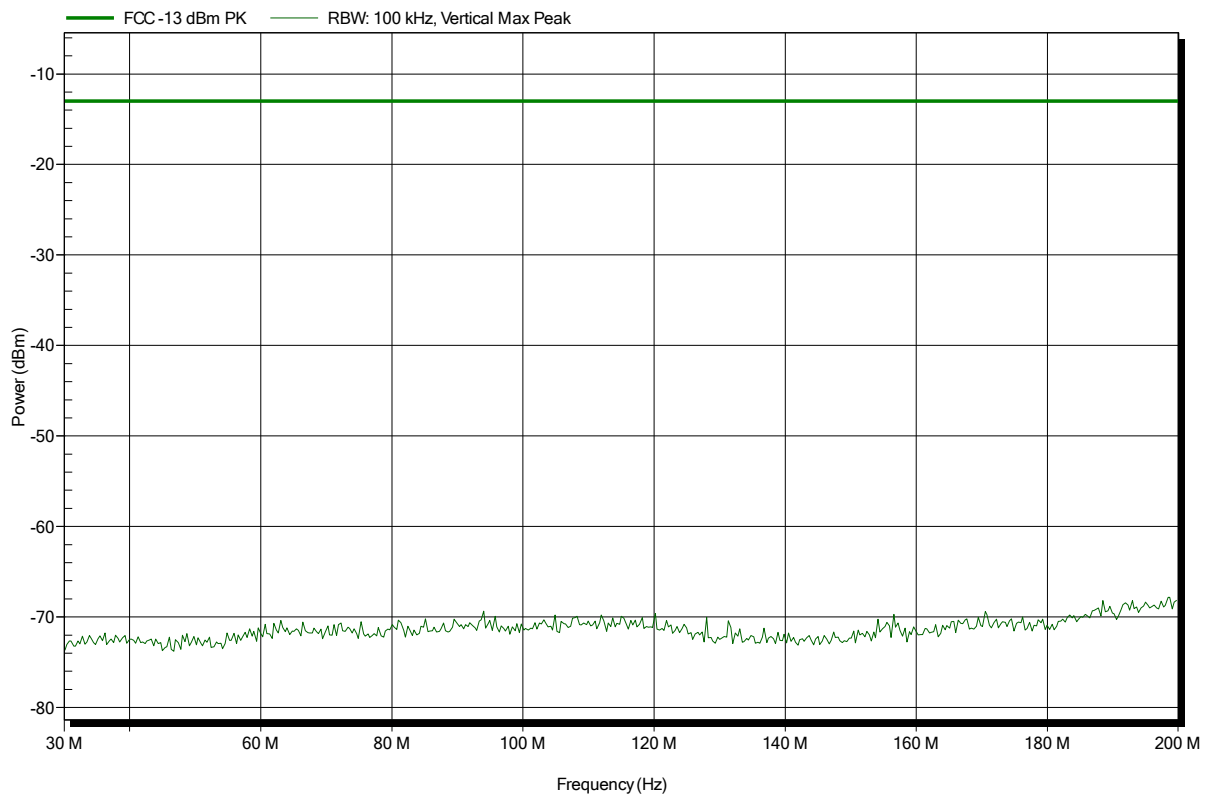
ANNEX A Transmitter radiated spurious emissions

Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
Test Date:	2014-12-04
Note:	EUT vertical; worst case

Index 50

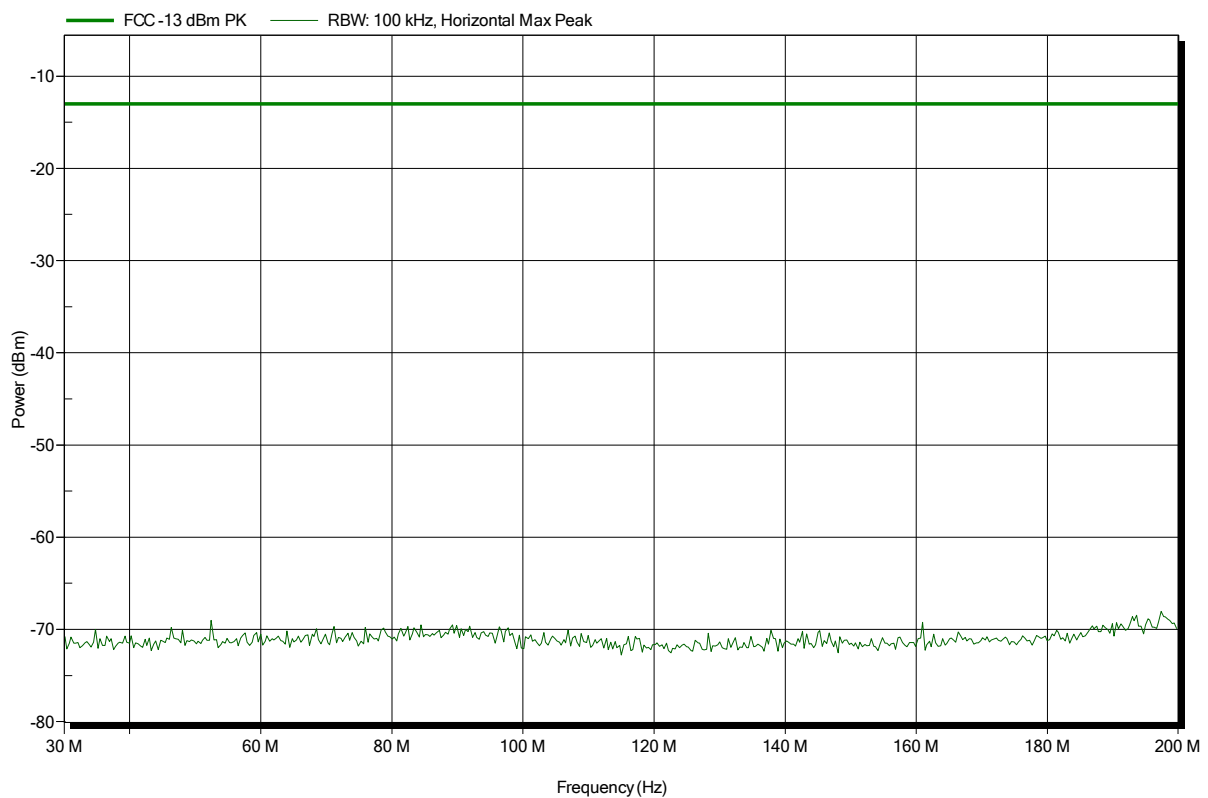


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
Test Date:	2014-12-04
Note:	EUT vertical; worst case

Index 51

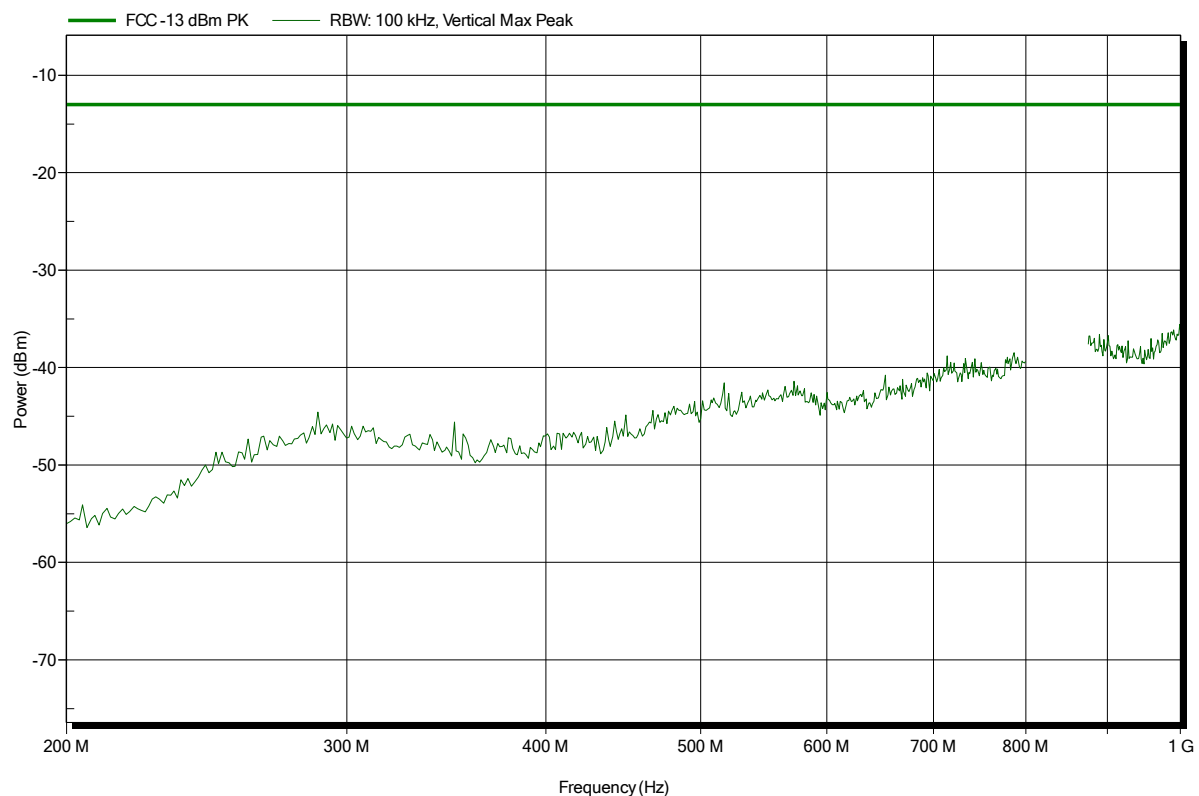


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
Test Date:	2014-12-08
Note:	EUT vertical; worst case

Index 52

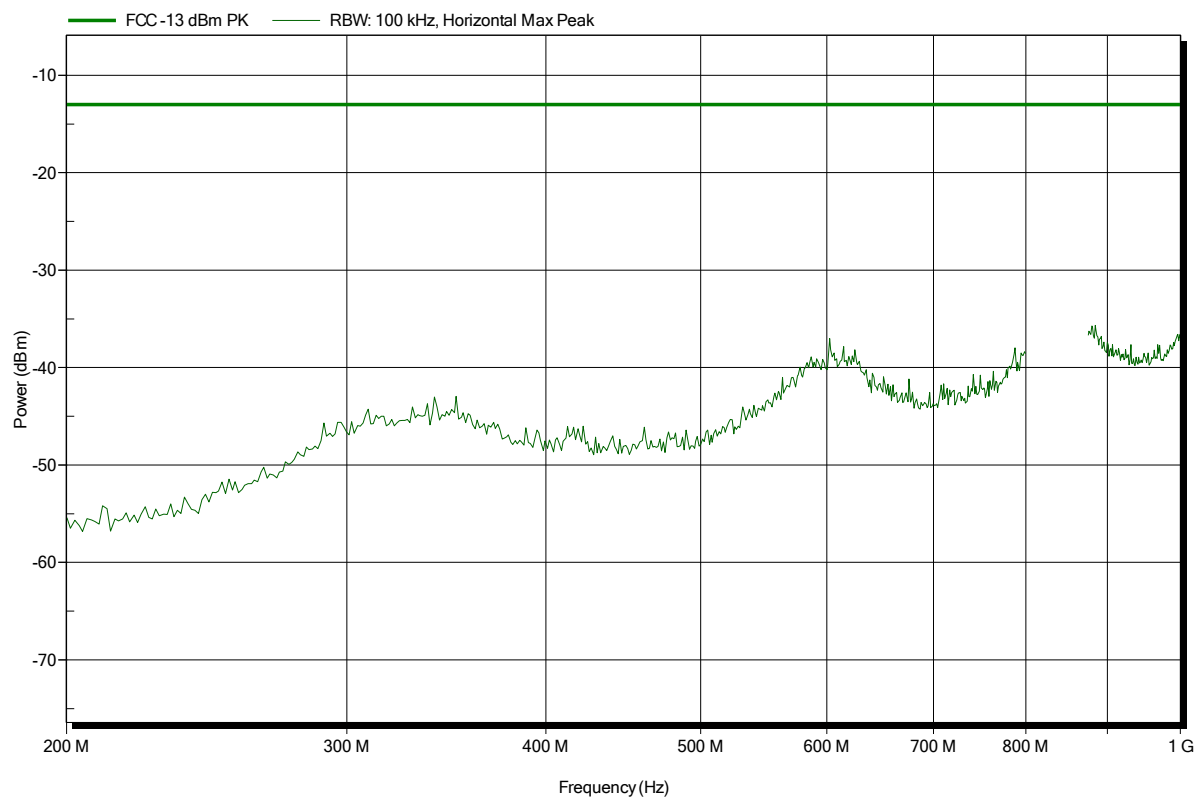


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
Test Date:	2014-12-08
Note:	EUT vertical; worst case

Index 59

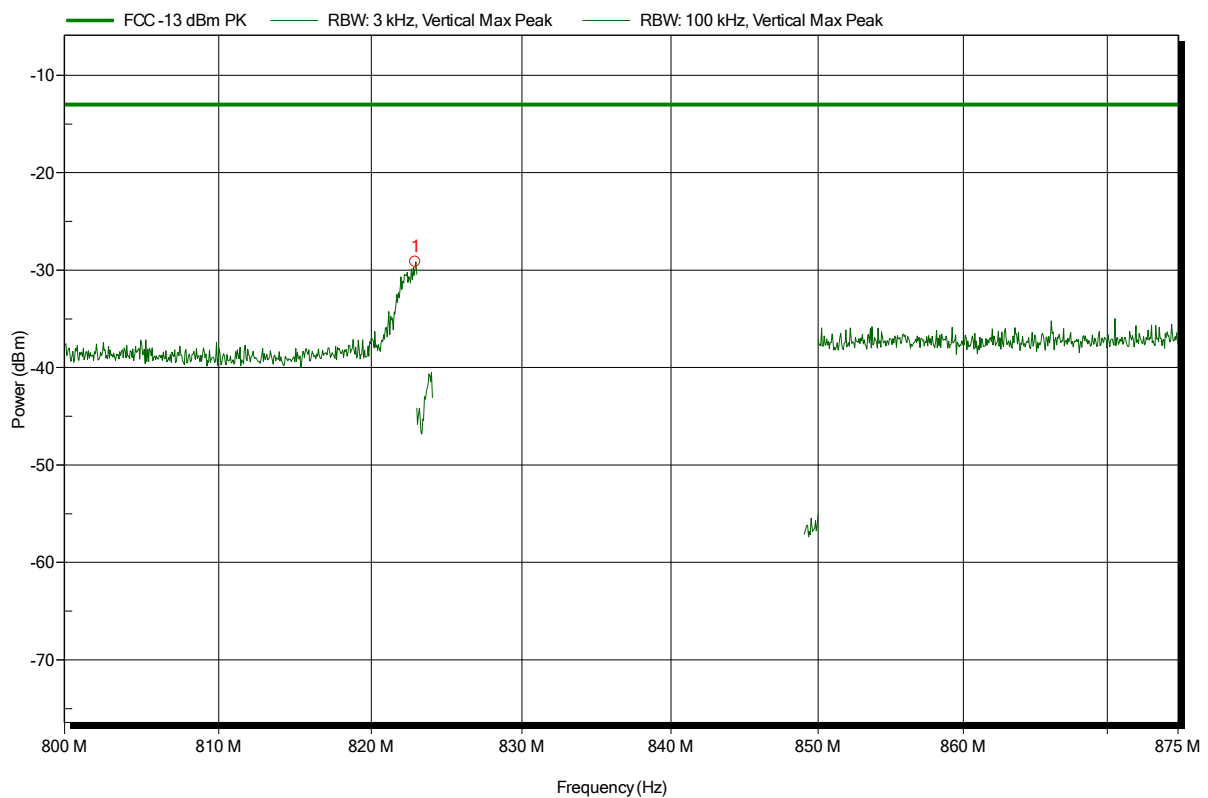


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; UMTS FDD V ; CH: 4133, HSUPA / HSDPA
 Test Date: 2014-12-08
 Note: EUT vertical

Index 53



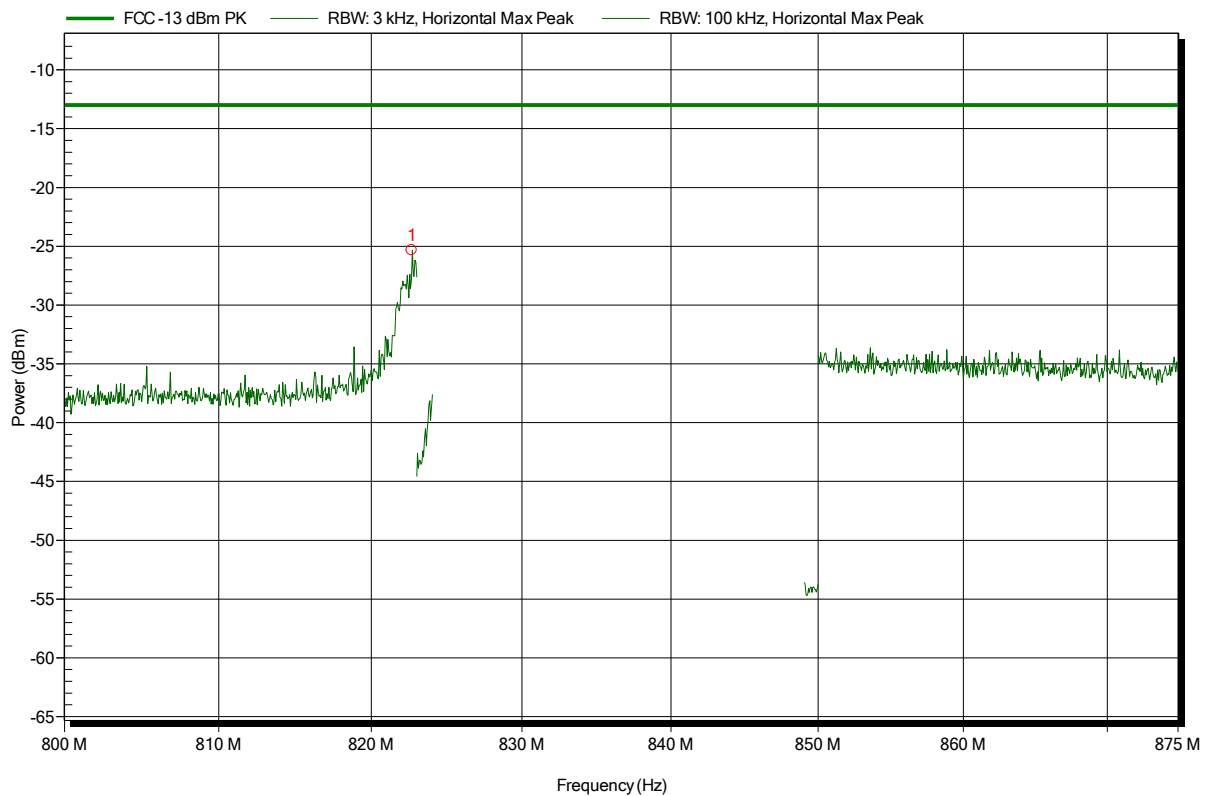
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
822.908 MHz	-29.1 dBm	-13 dBm	-16.14 dB	Pass

Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; UMTS FDD V ; CH: 4133, HSUPA / HSDPA
 Test Date: 2014-12-08
 Note: EUT vertical

Index 58



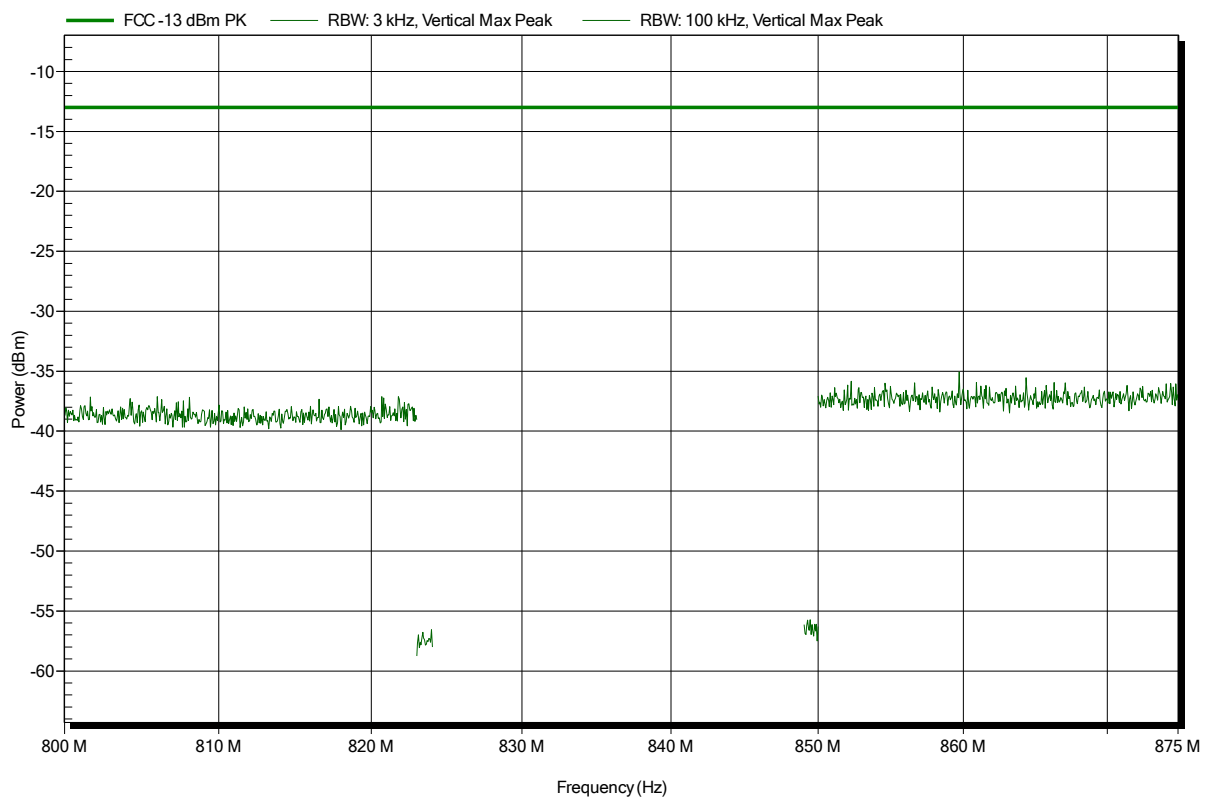
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
822.678 MHz	-25.3 dBm	-13 dBm	-12.34 dB	Pass

Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
Test Date:	2014-12-08
Note:	EUT vertical

Index 54

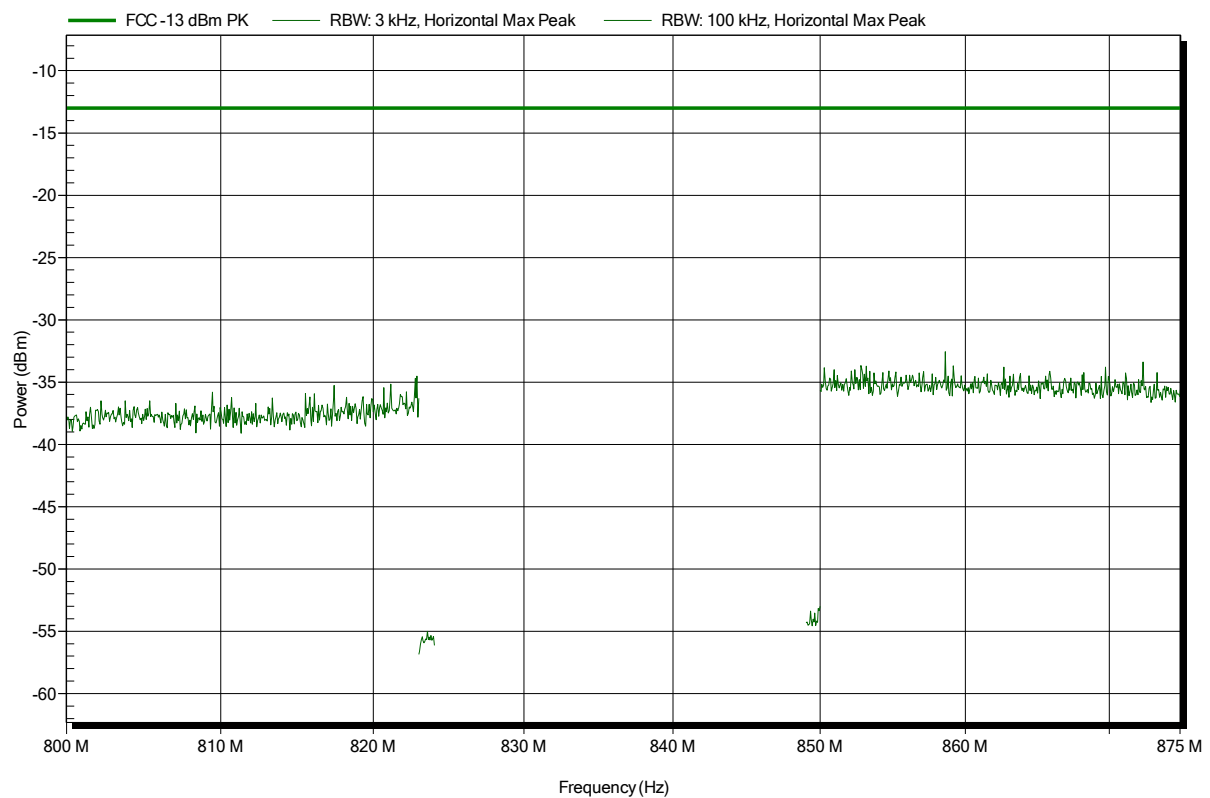


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
 Test Date: 2014-12-08
 Note: EUT vertical

Index 57

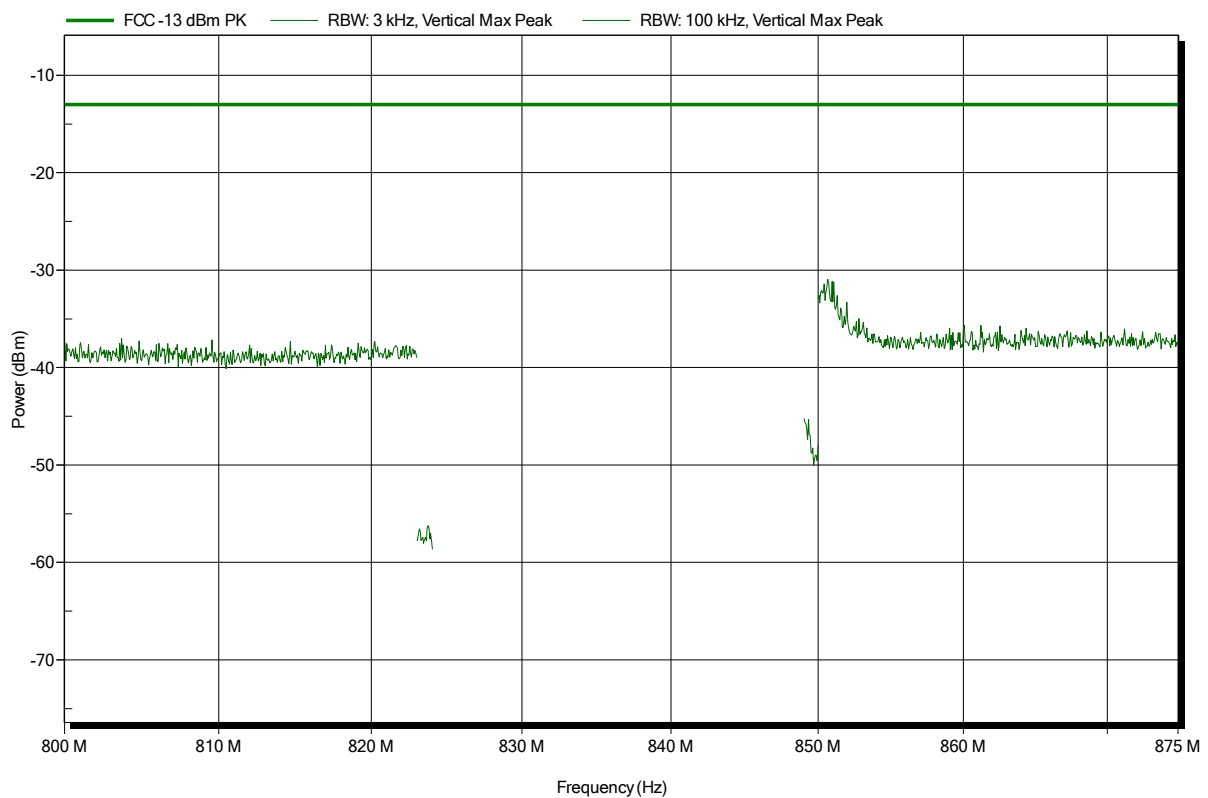


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4232, HSUPA / HSDPA
Test Date:	2014-12-08
Note:	EUT vertical

Index 55

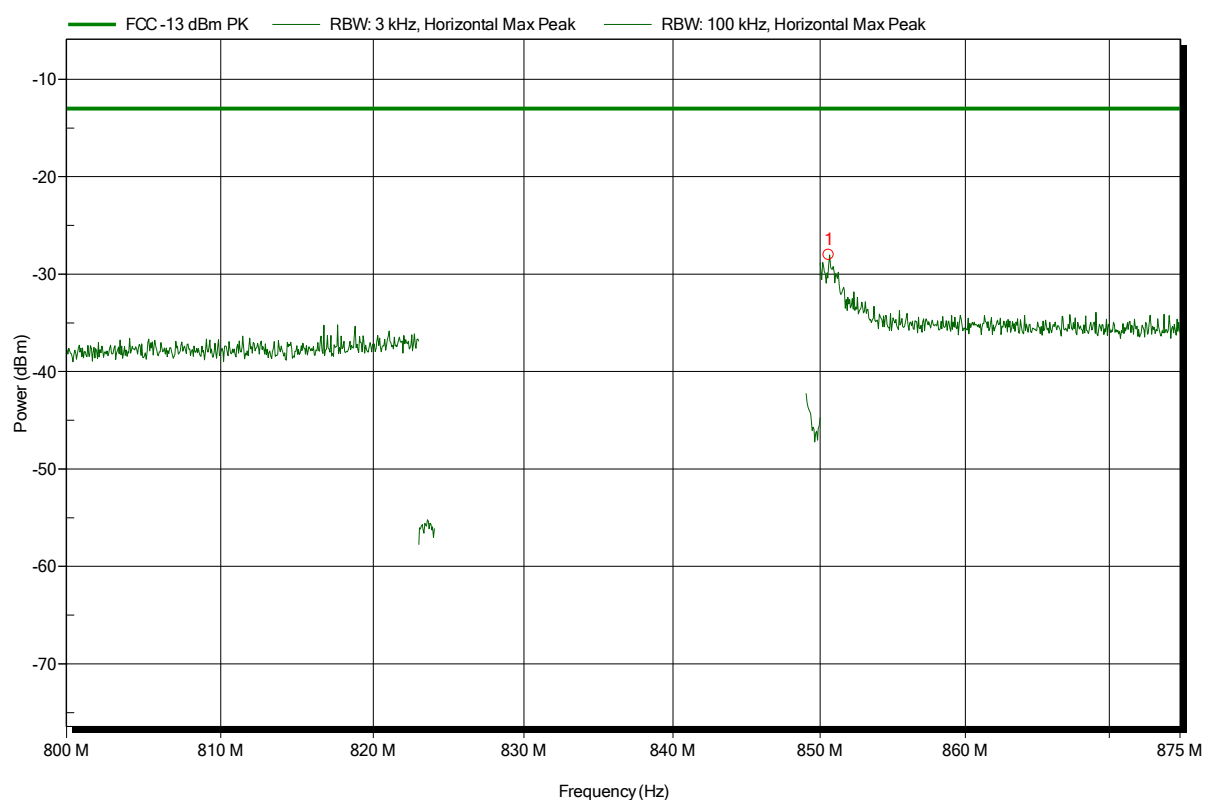


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; UMTS FDD V ; CH: 4232, HSUPA / HSDPA
 Test Date: 2014-12-08
 Note: EUT vertical

Index 56



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
850.6 MHz	-28 dBm	-13 dBm	-15.02 dB	Pass

Test Report No.: G0M-1406-3915-TFC224WC-V01

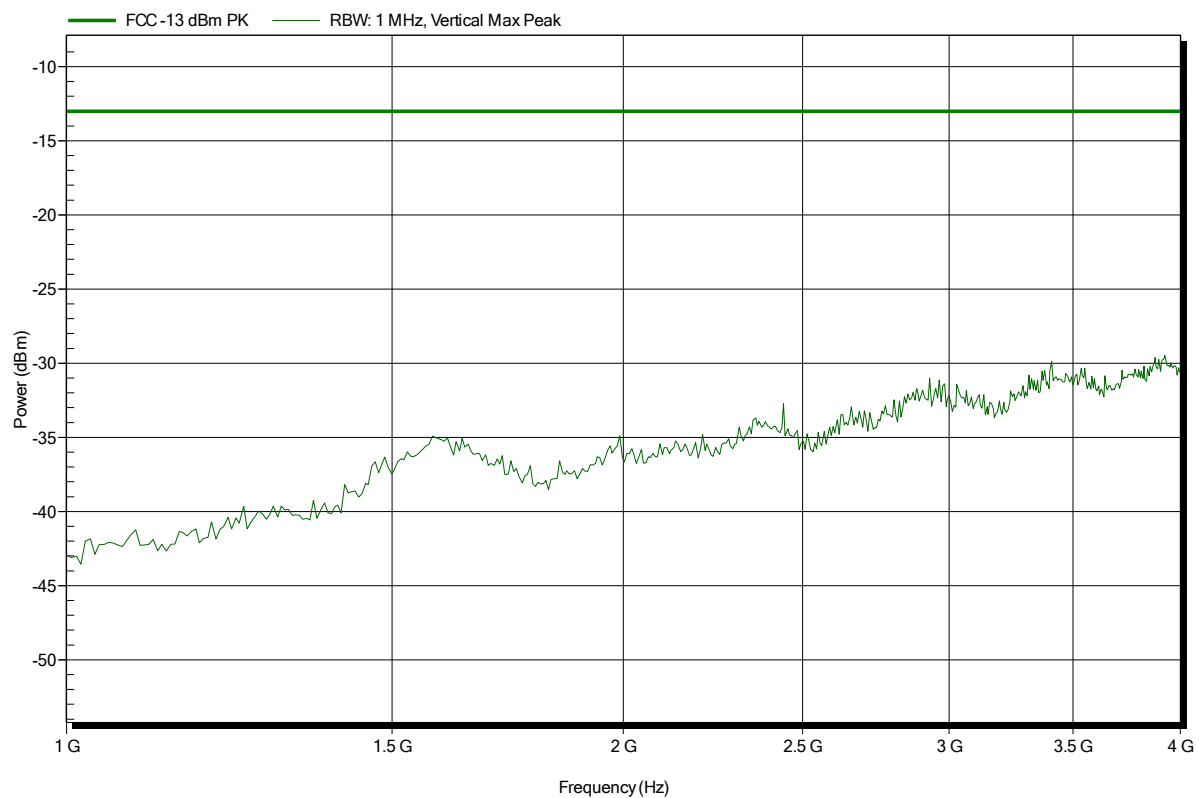
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3 m
 Mode: TX; UMTS FDD V ; CH: 4133, HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical

Index 60

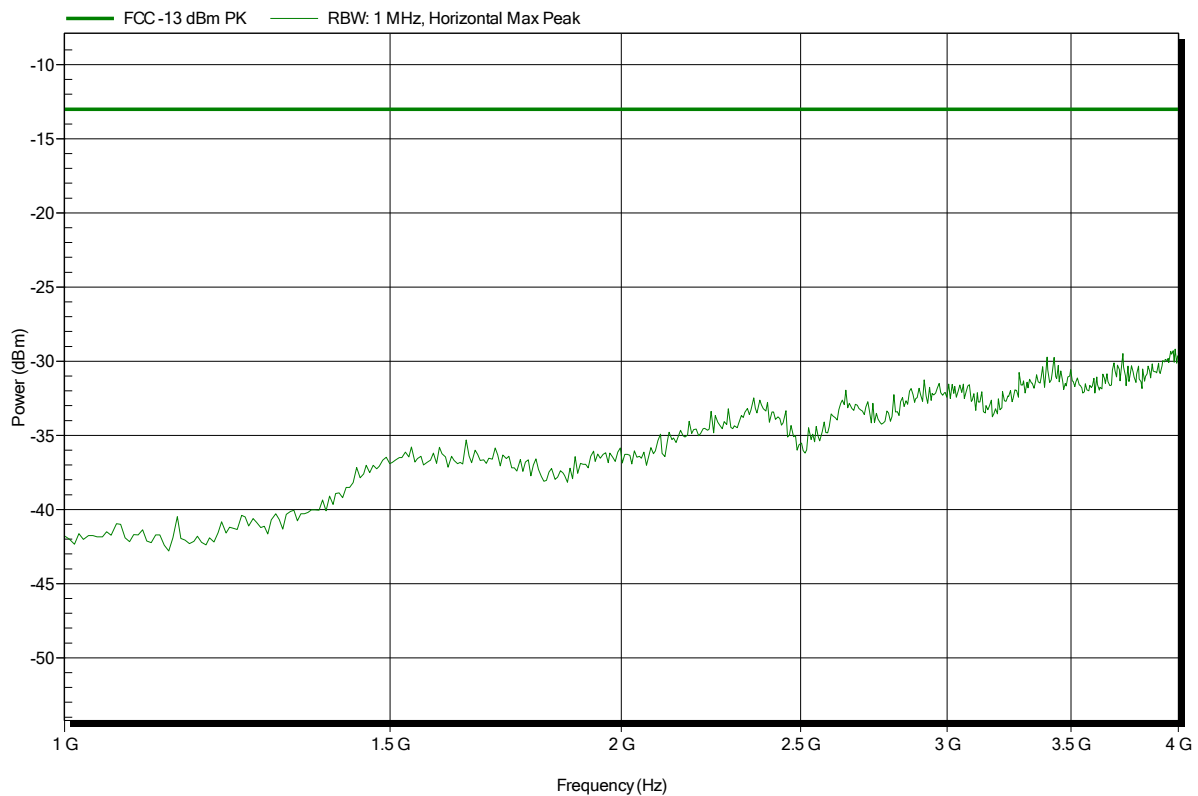


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4133, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 76

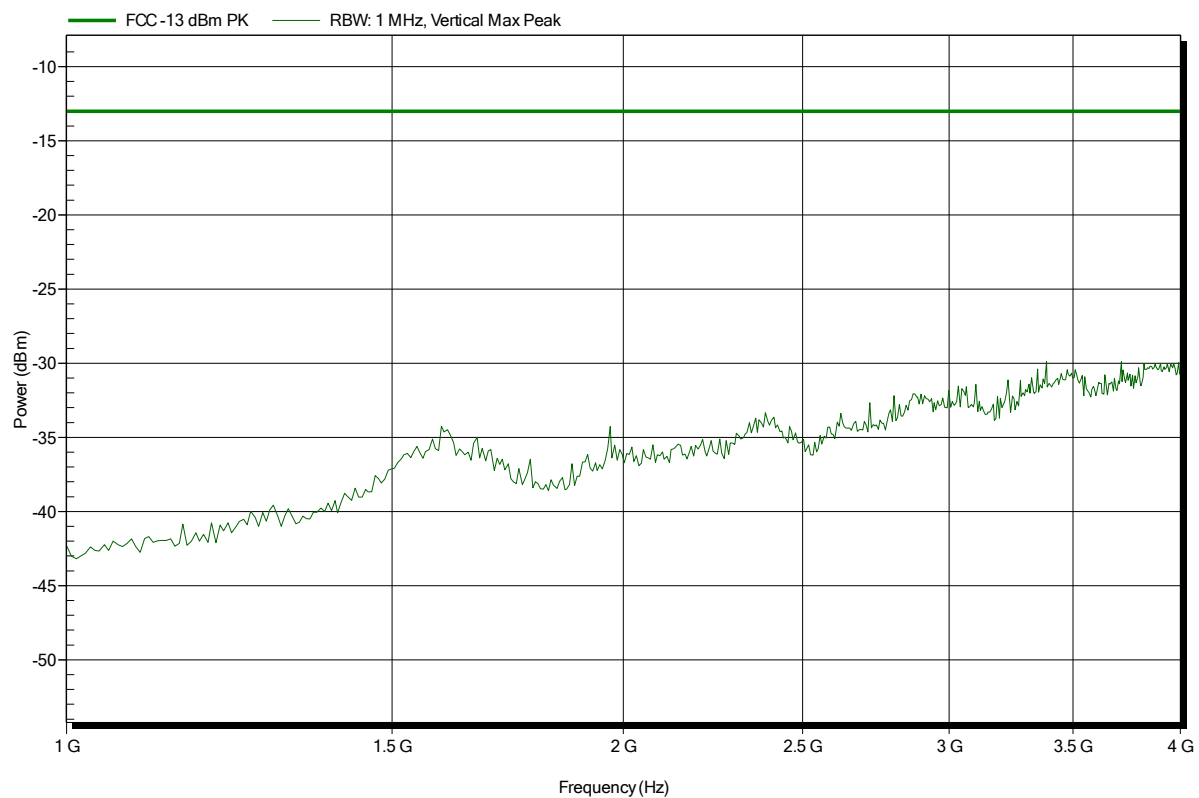


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3 m
 Mode: TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical

Index 66

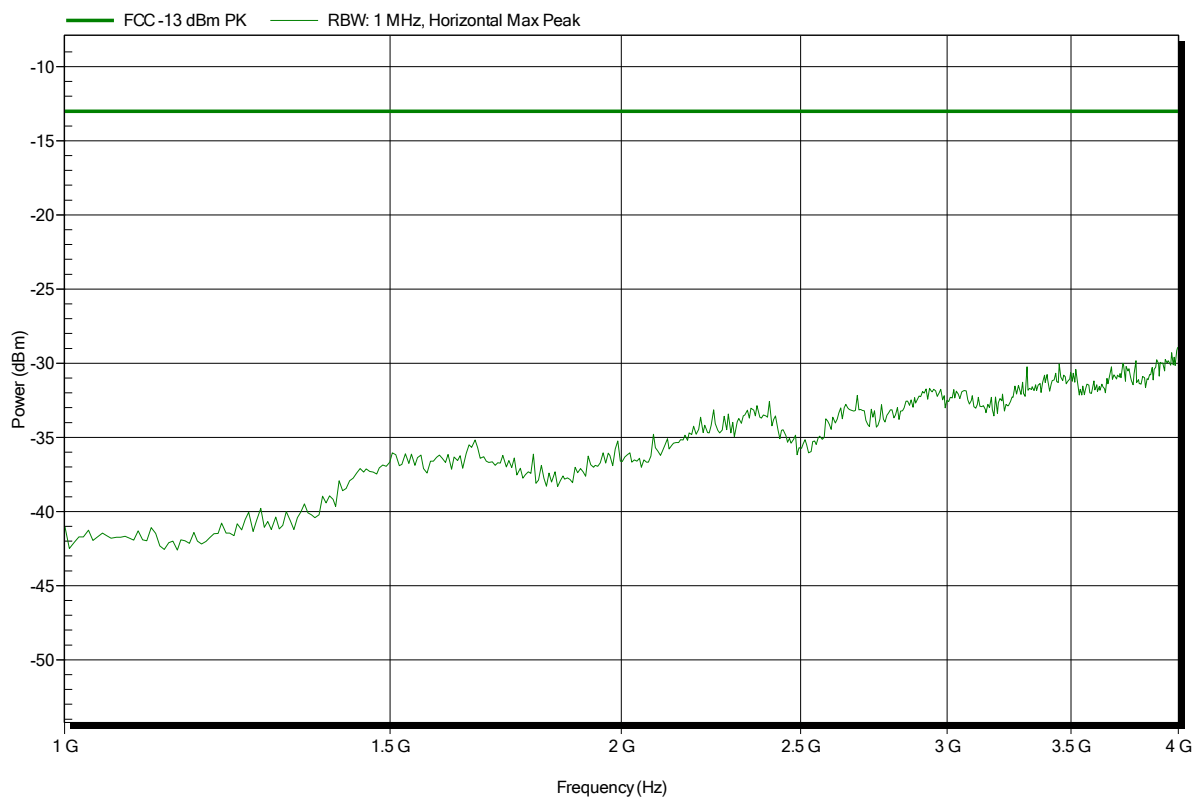


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3 m
 Mode: TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical

Index 73

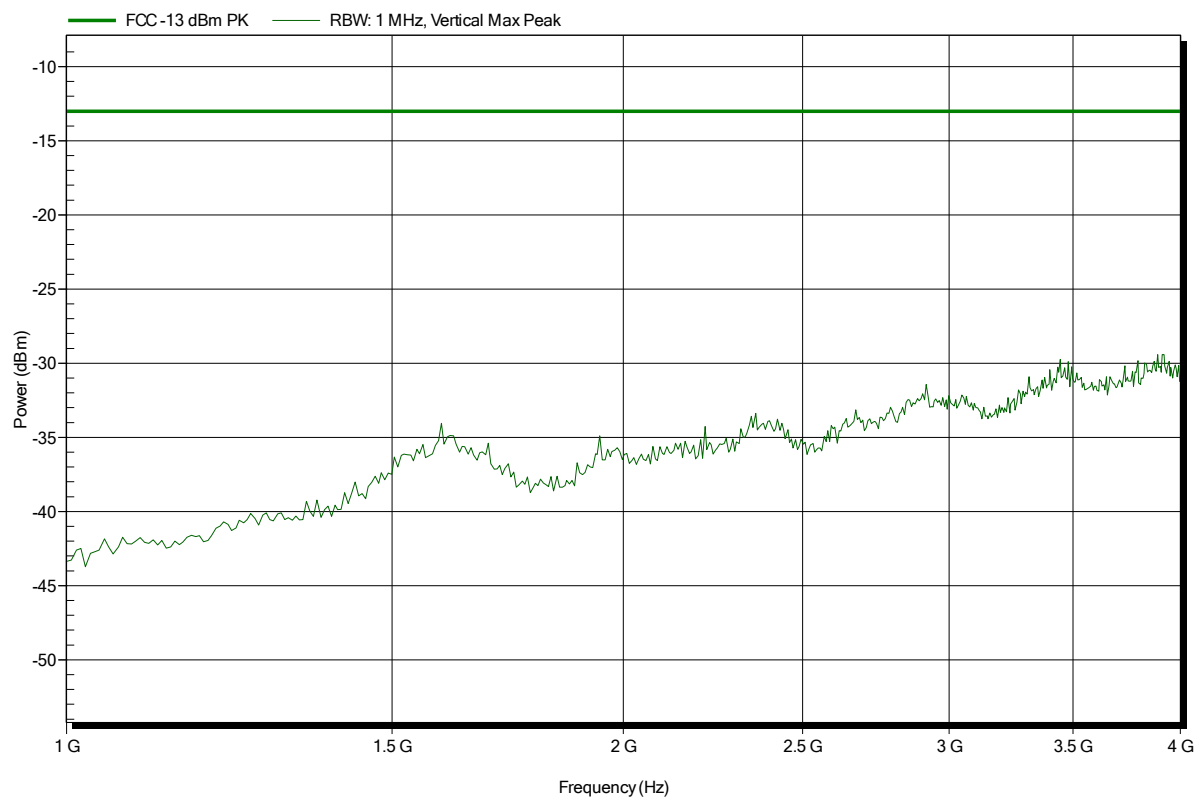


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3 m
 Mode: TX; UMTS FDD V ; CH: 4232, HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical

Index 67



Test Report No.: G0M-1406-3915-TFC224WC-V01

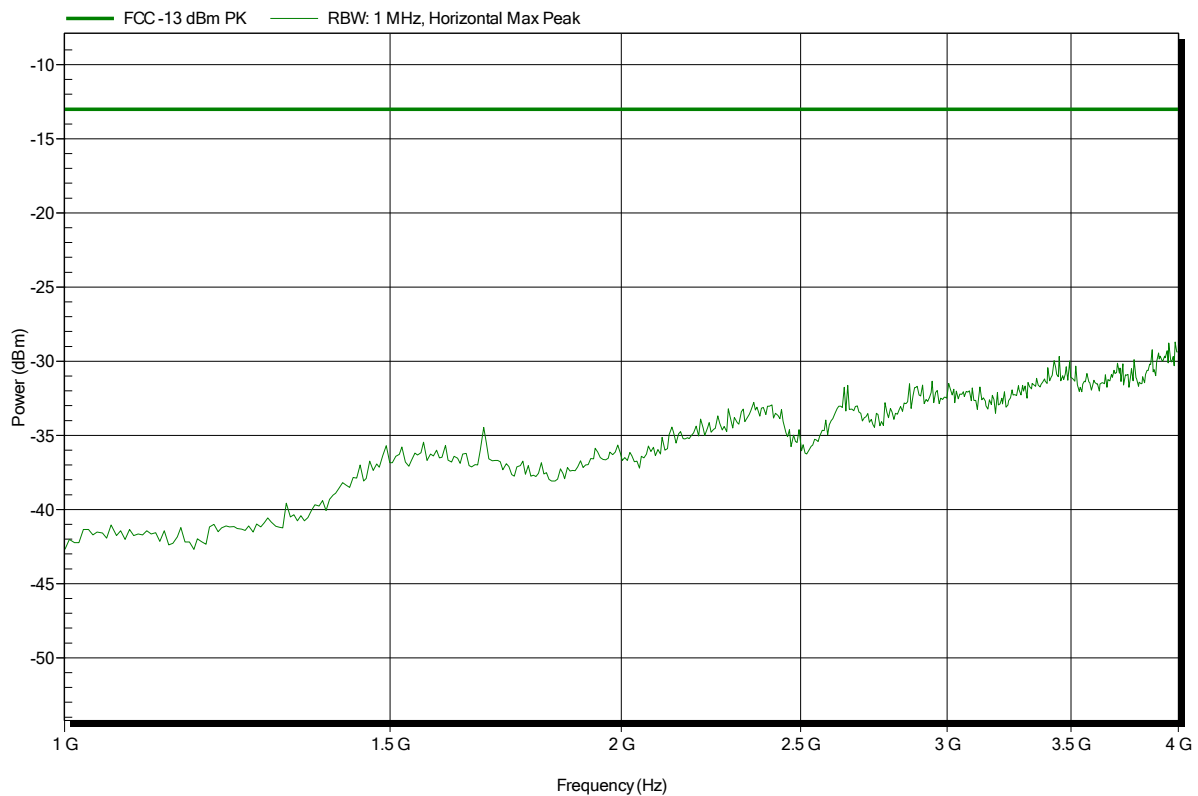
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4232, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 70

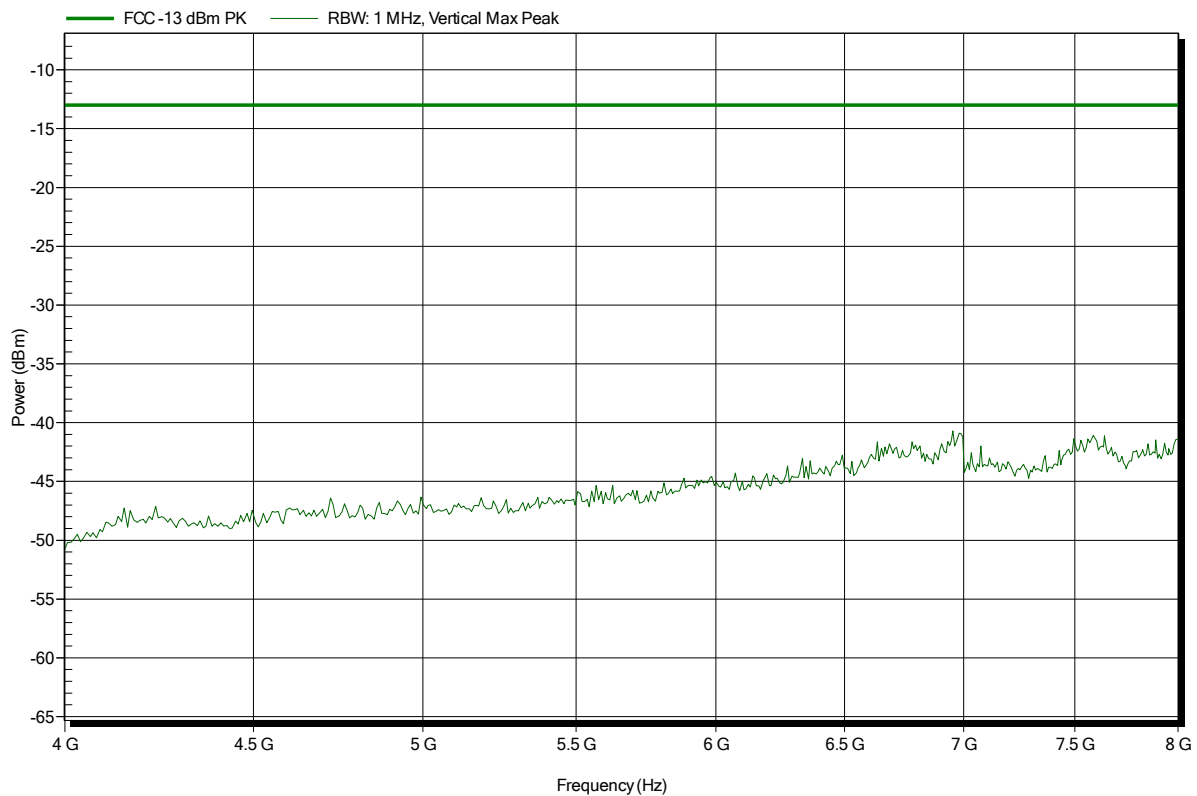


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4133, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 61

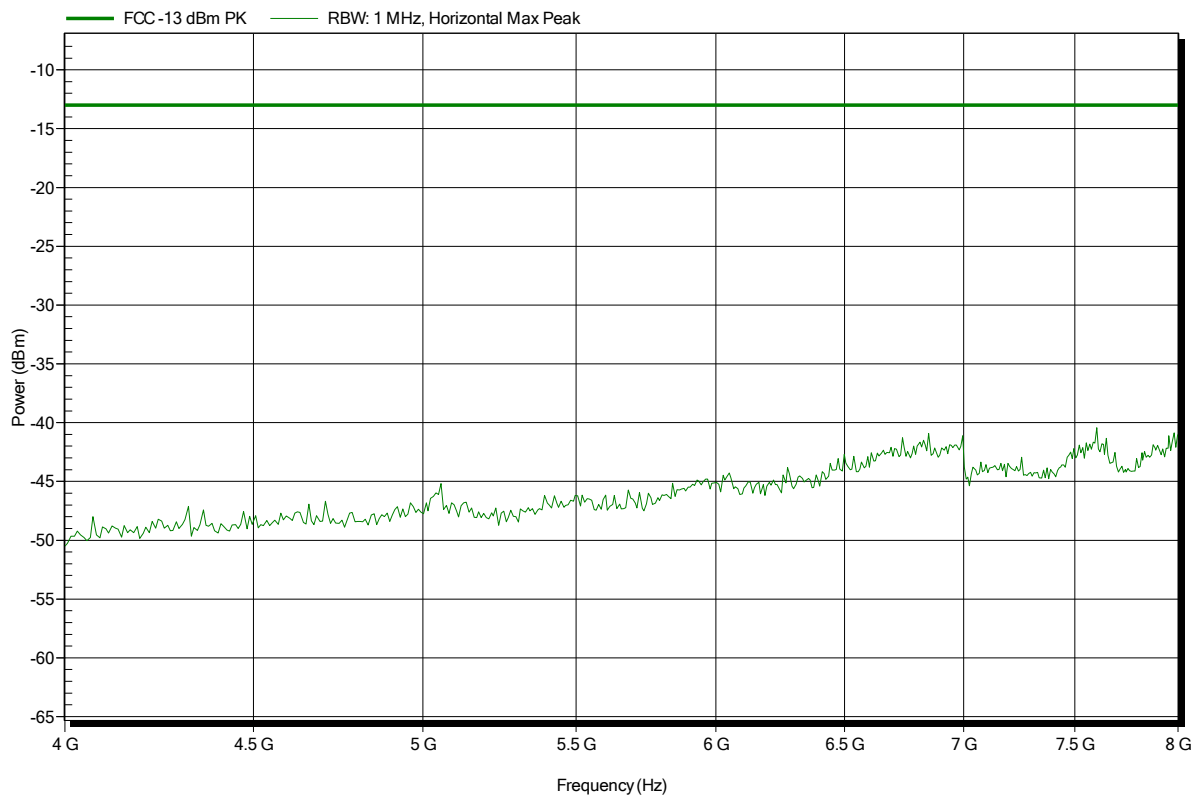


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4133, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 77

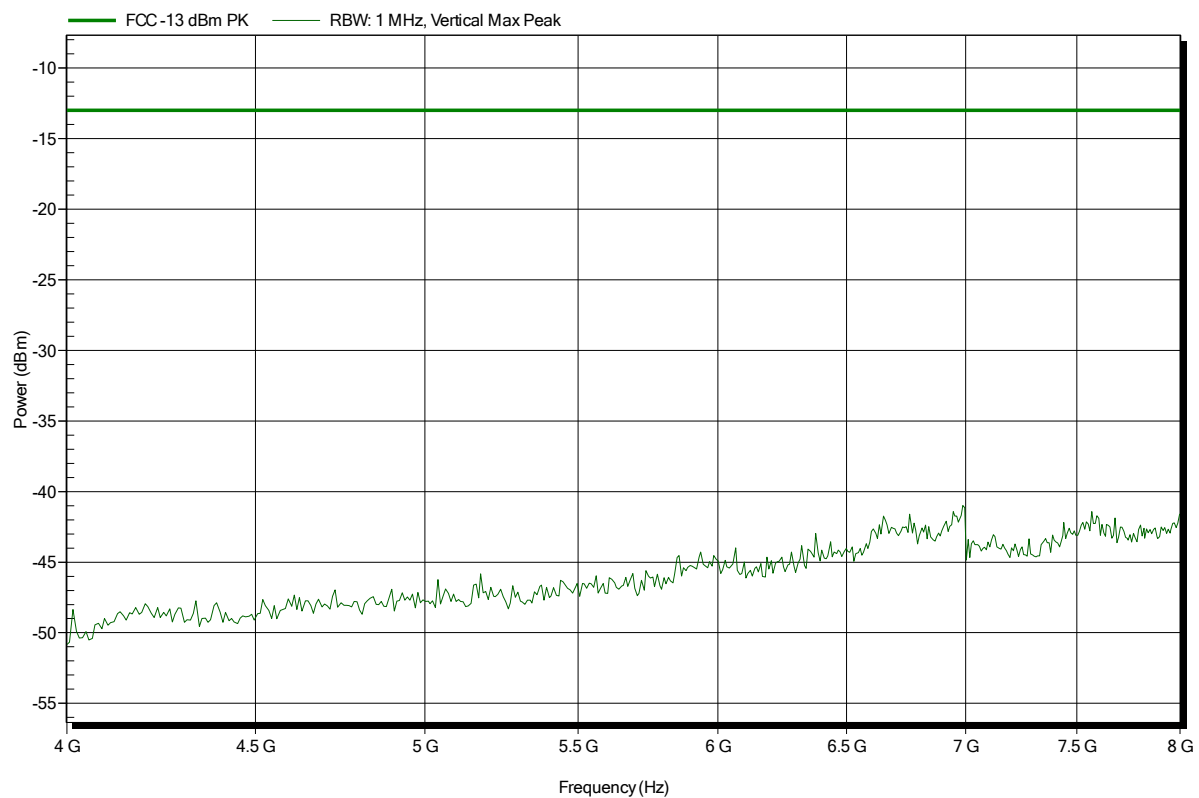


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 64

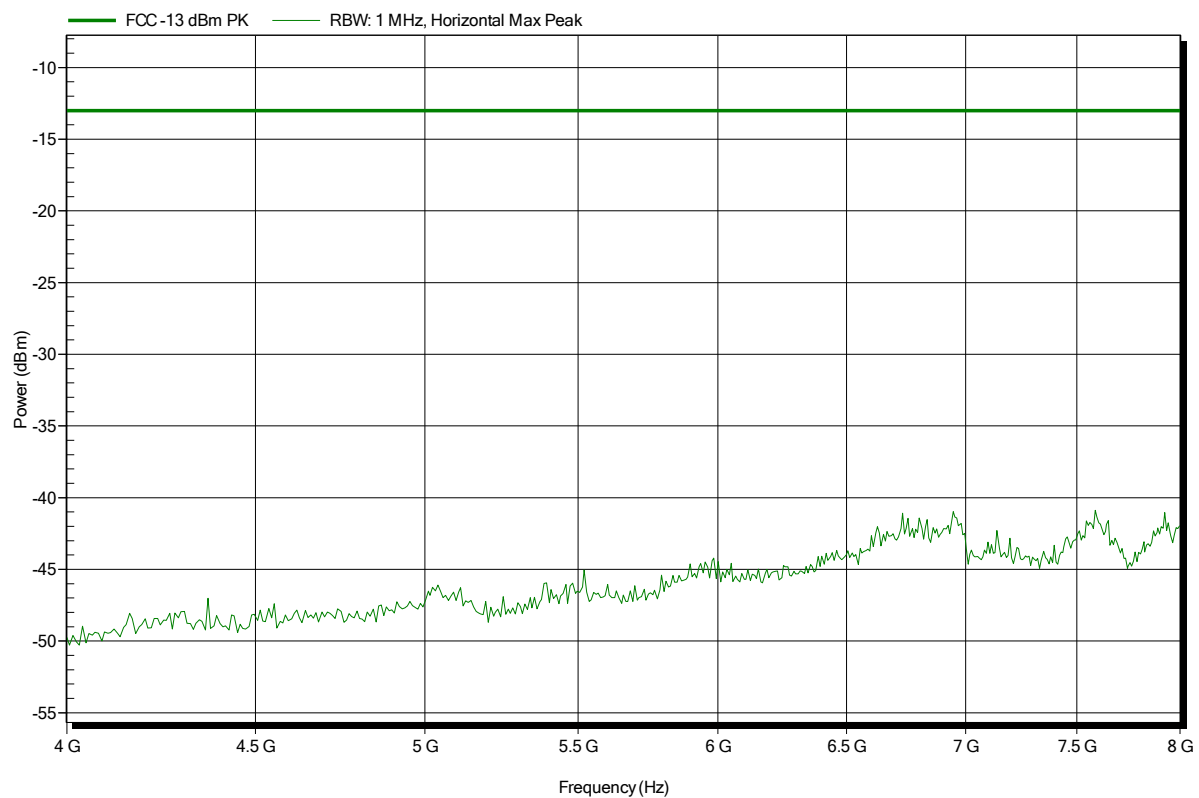


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 74

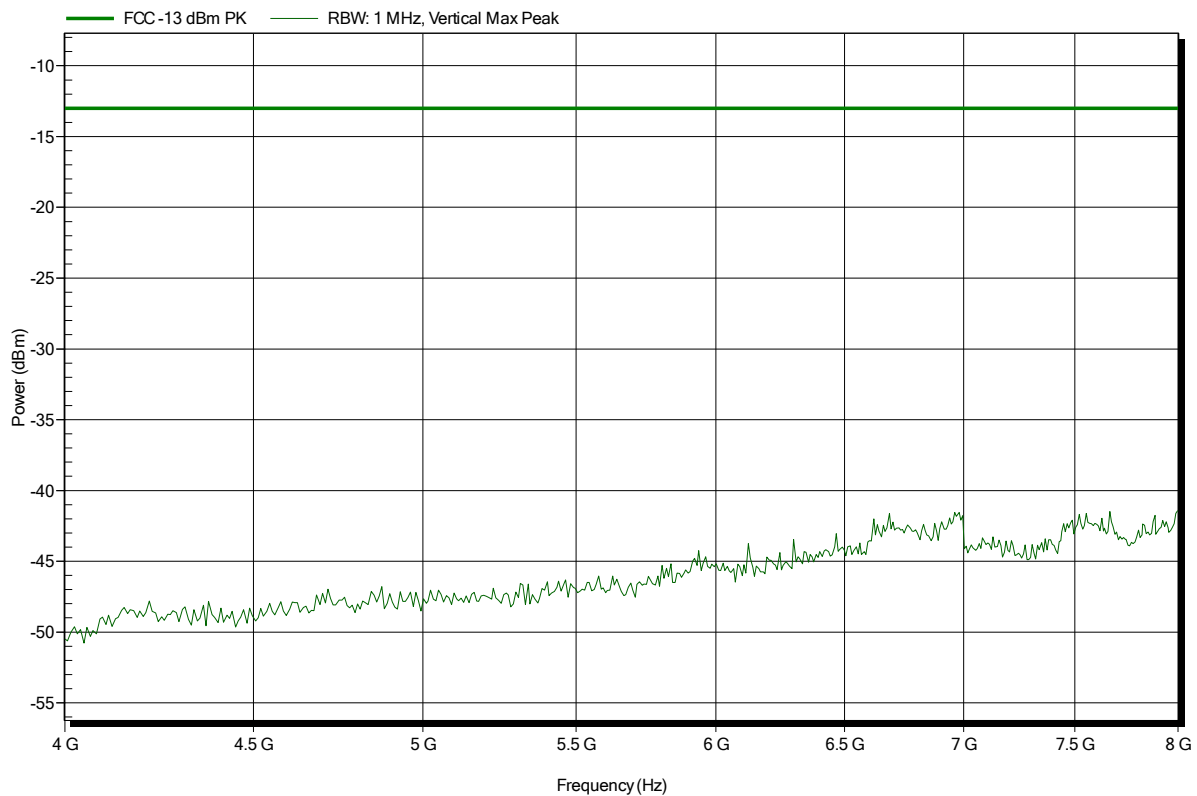


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4232, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 68

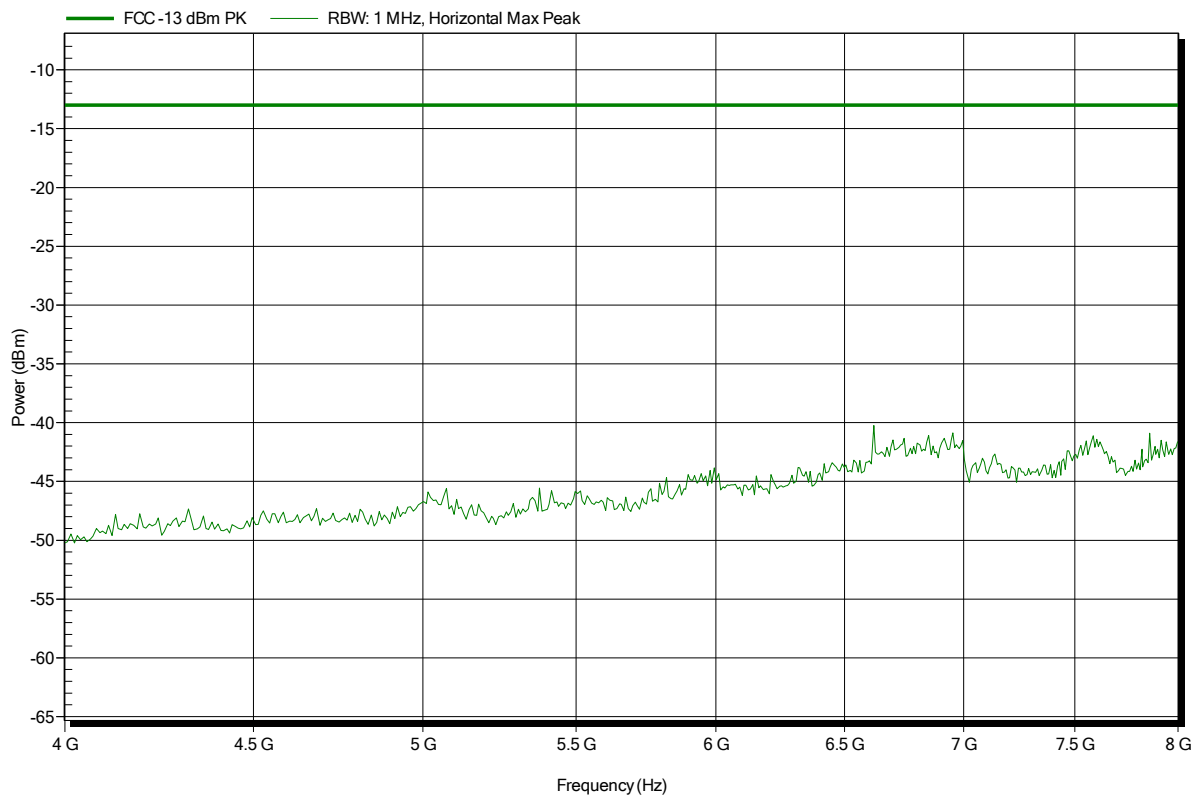


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4232, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 71

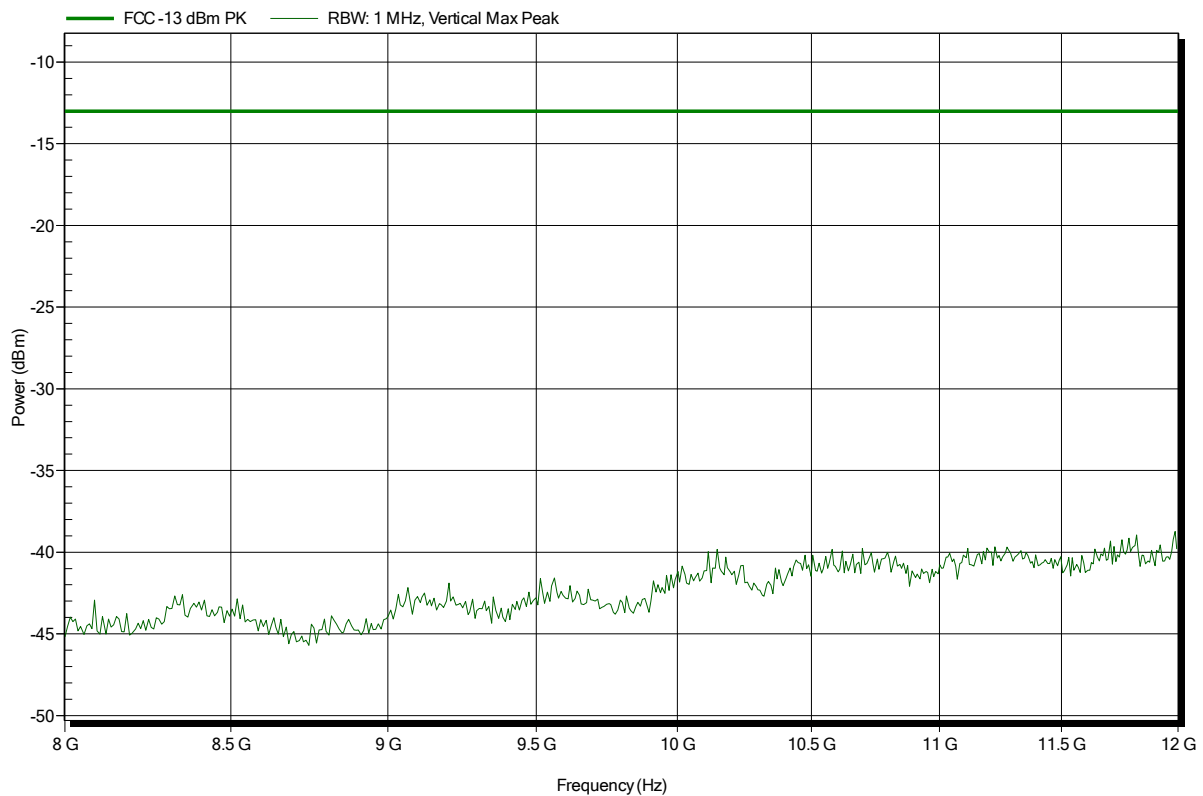


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4133, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 62

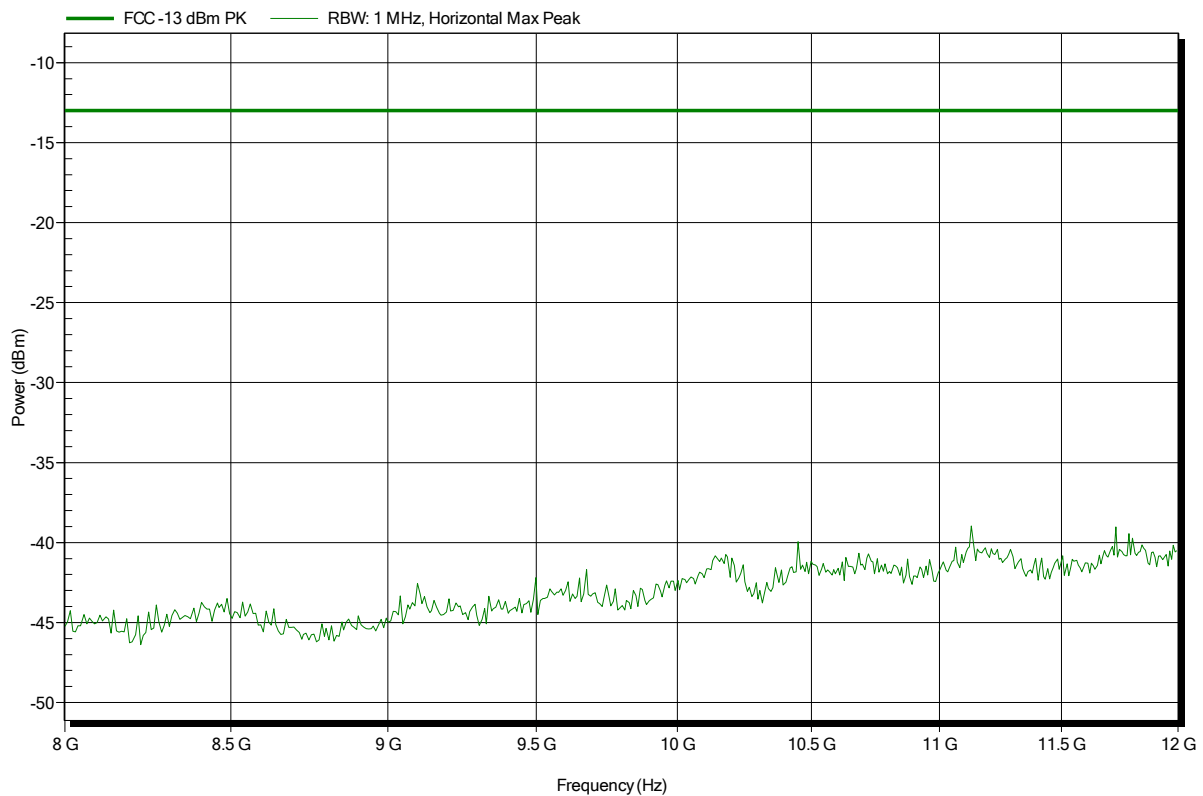


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4133, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 78

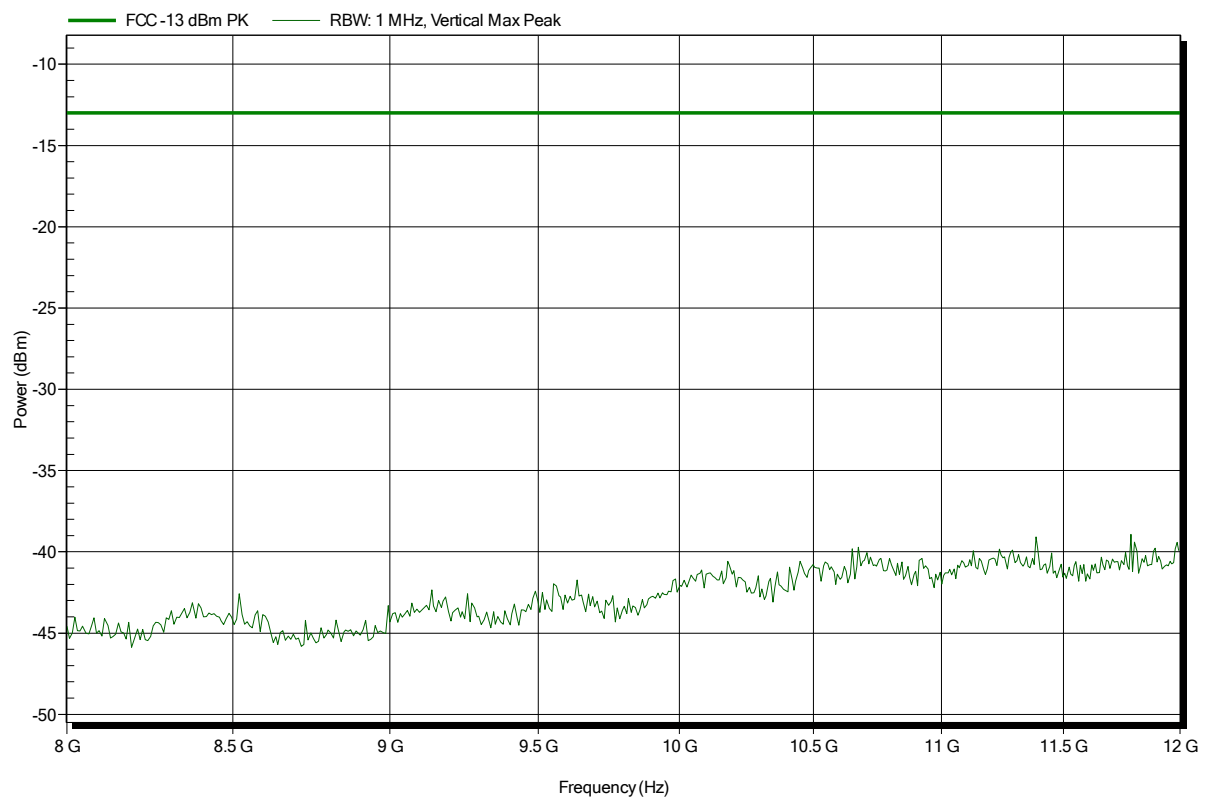


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 65

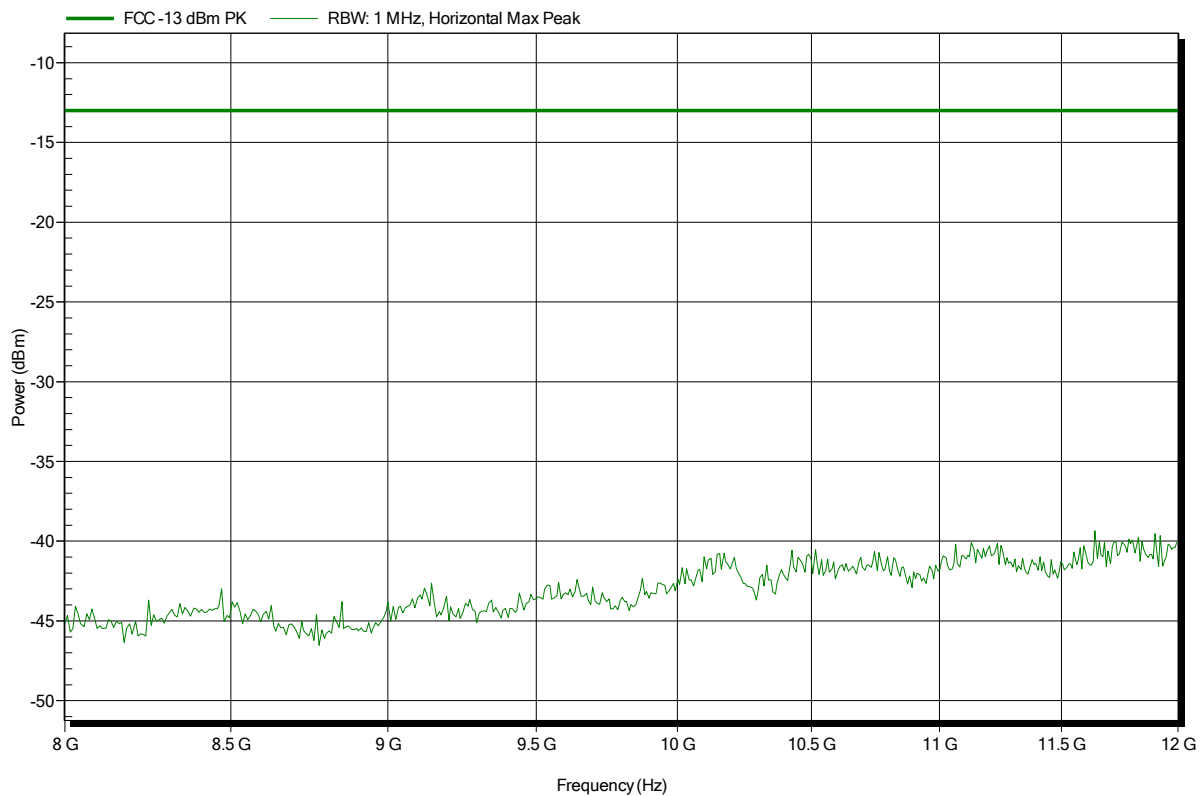


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4175, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 75

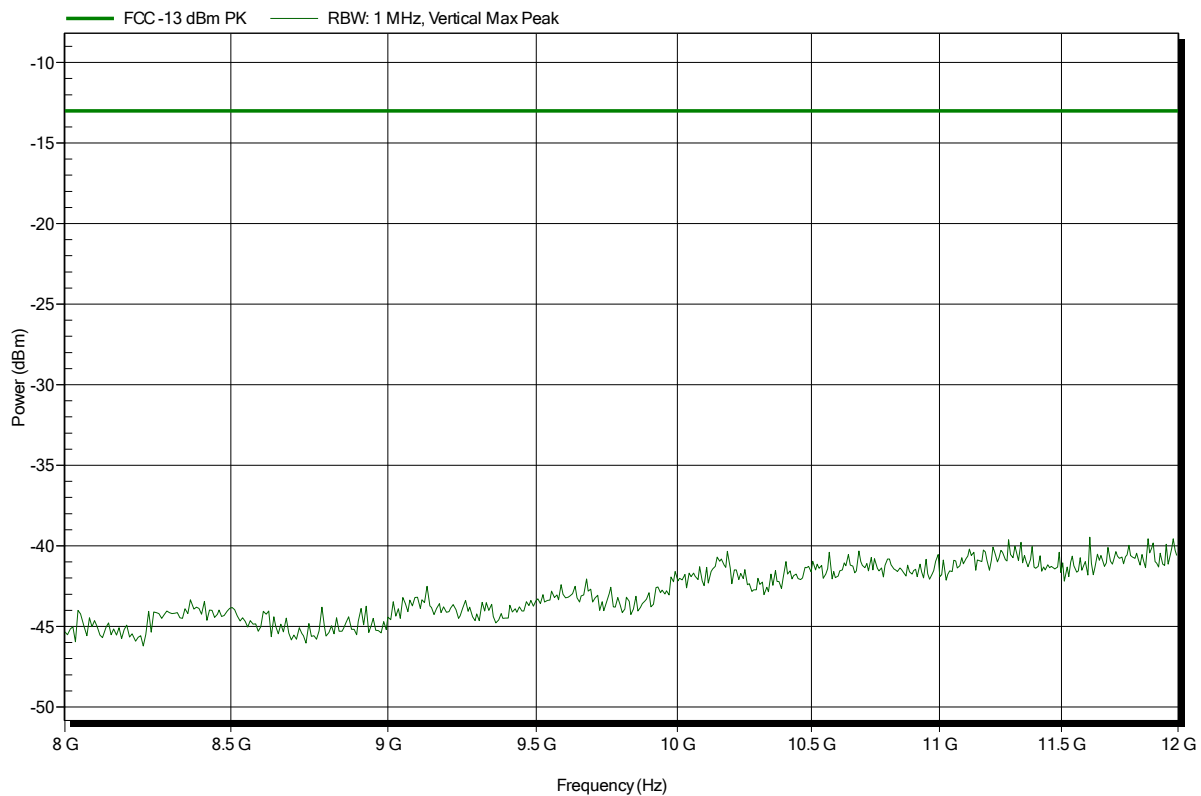


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4232, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 69

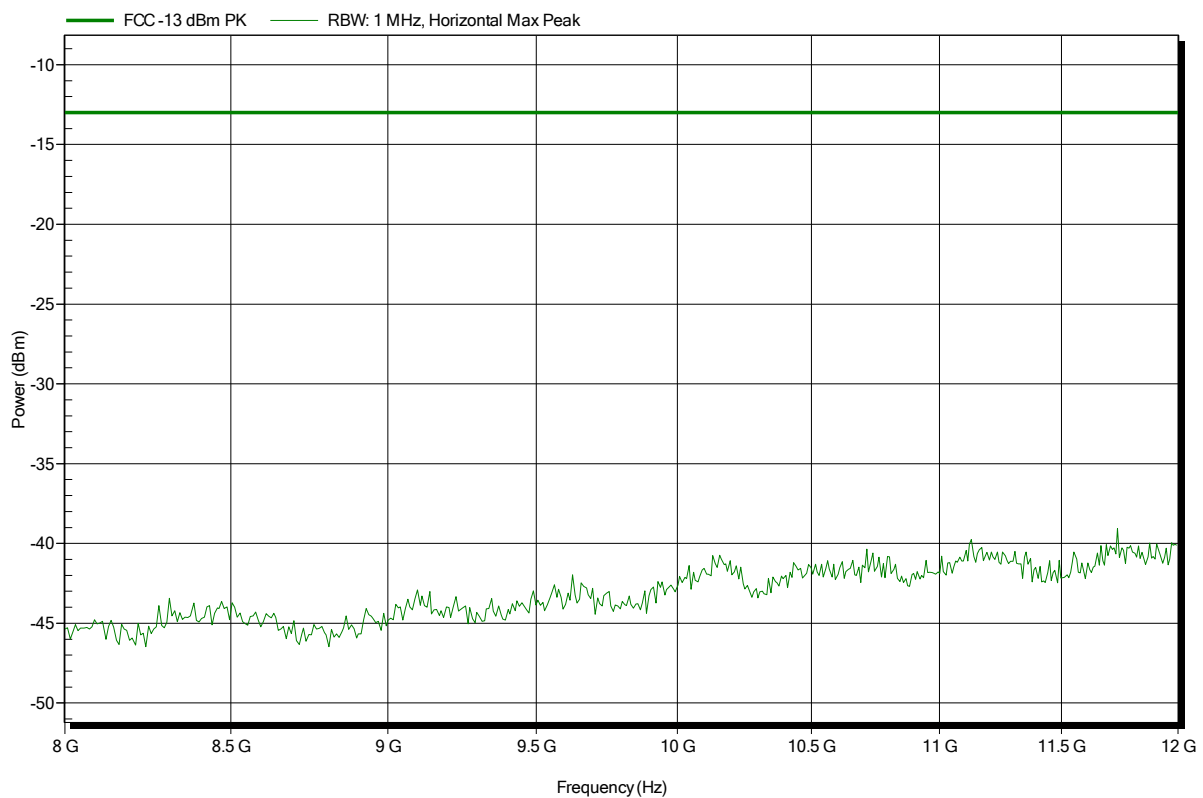


Spurious emissions according to FCC part 22 Subpart H, IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD V ; CH: 4232, HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 72

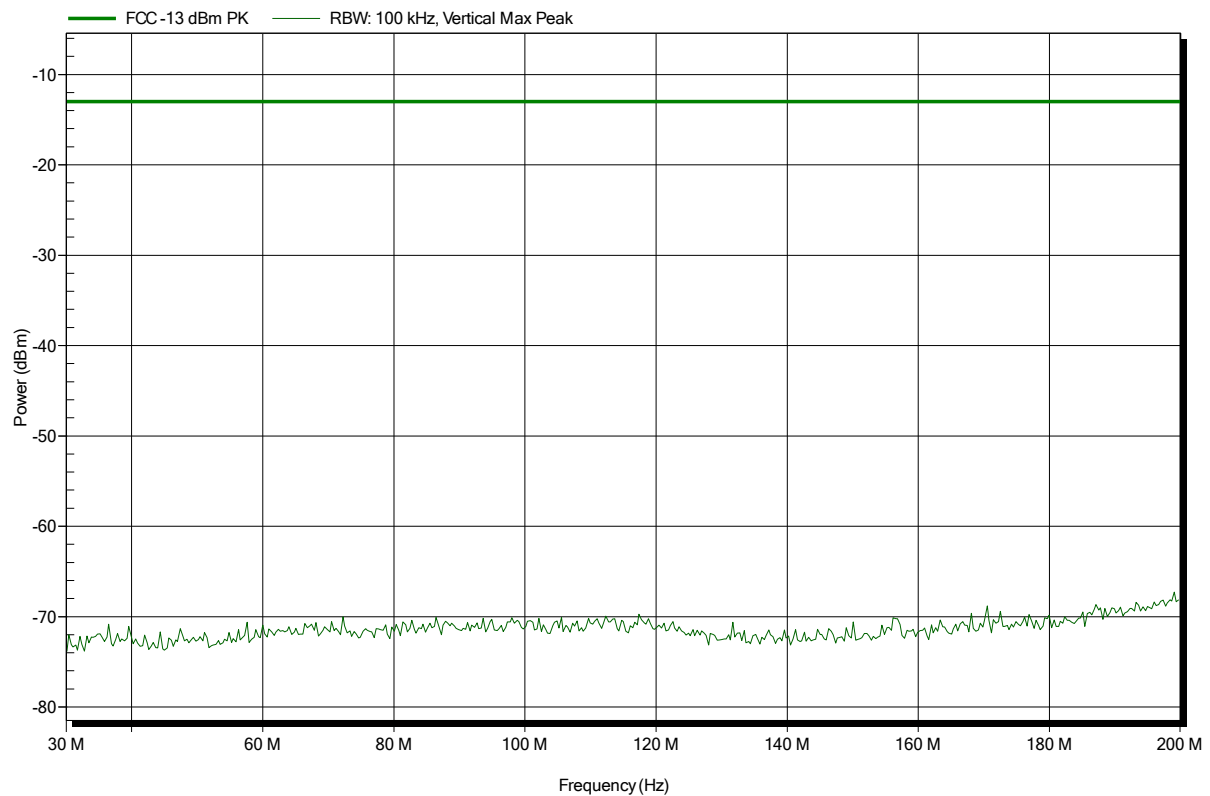


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
 Test Date: 2014-12-04
 Note: EUT vertical; worst case

Index 50

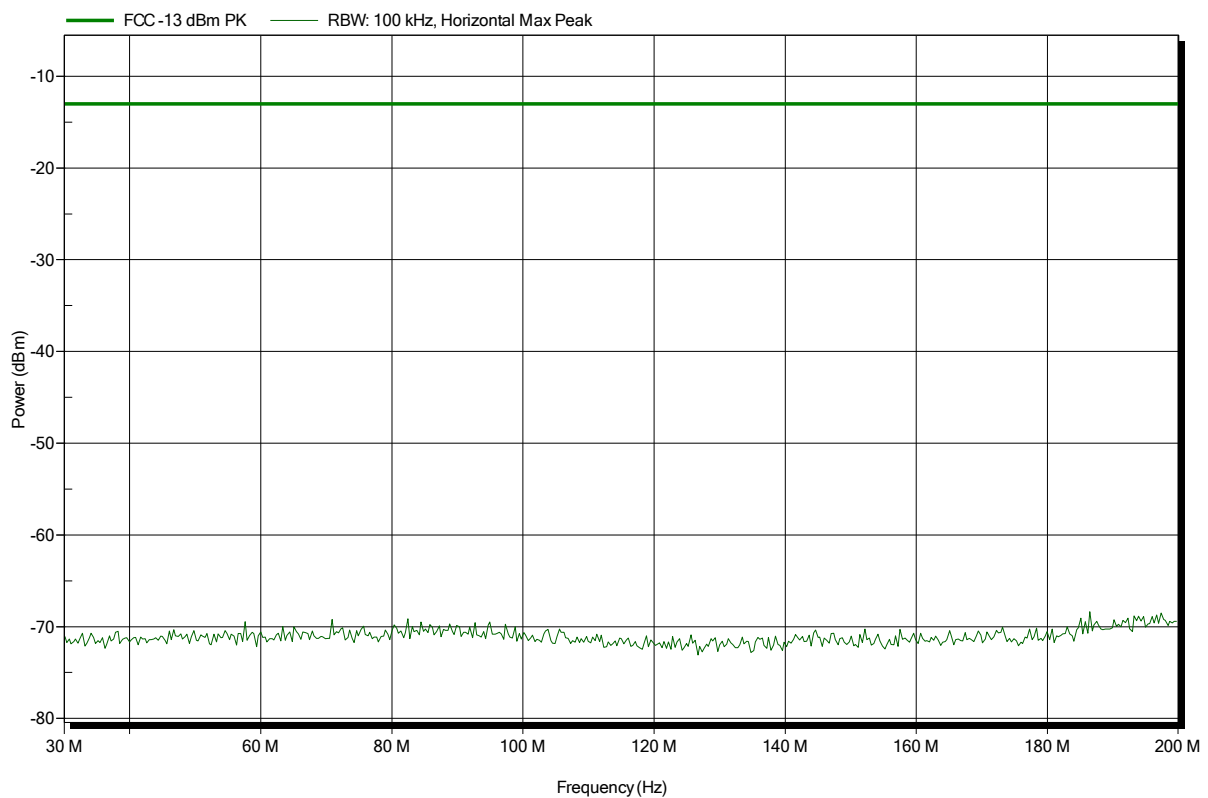


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
Test Date:	2014-12-04
Note:	EUT vertical; worst case

Index 49

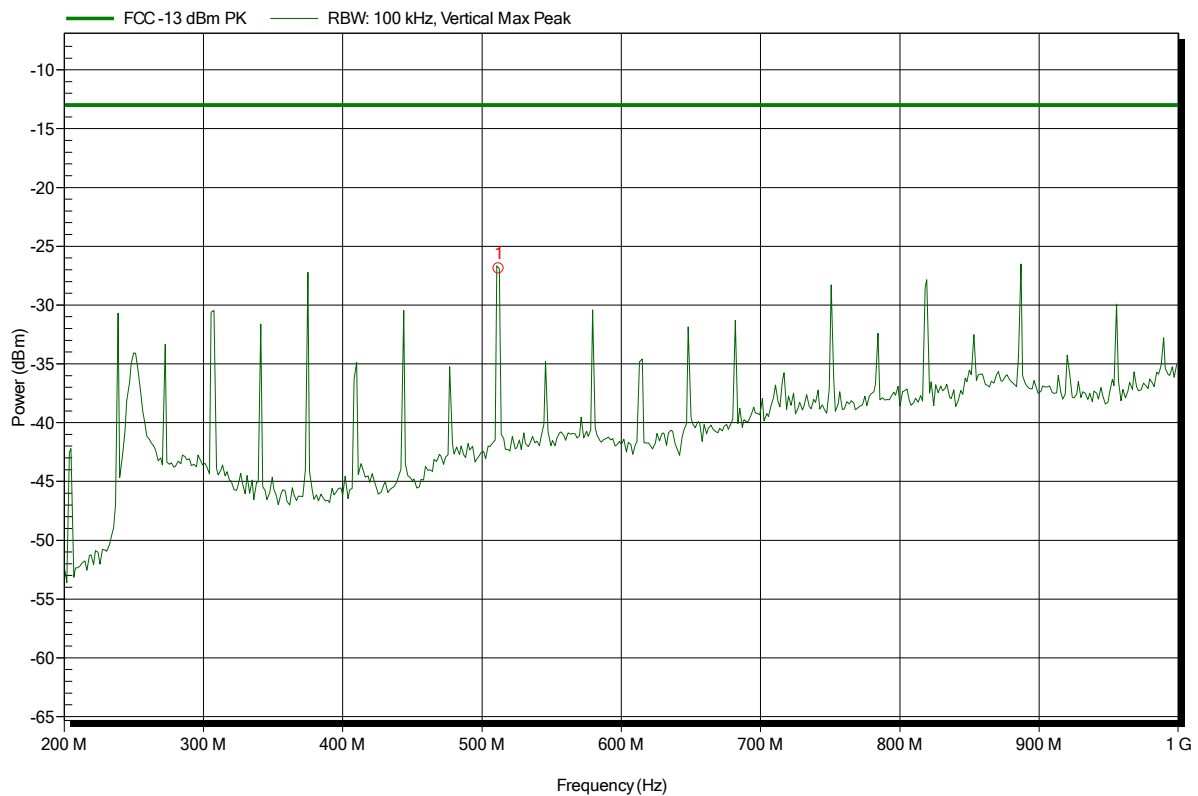


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
 Test Date: 2014-12-04
 Note: EUT vertical; worst case

Index 51



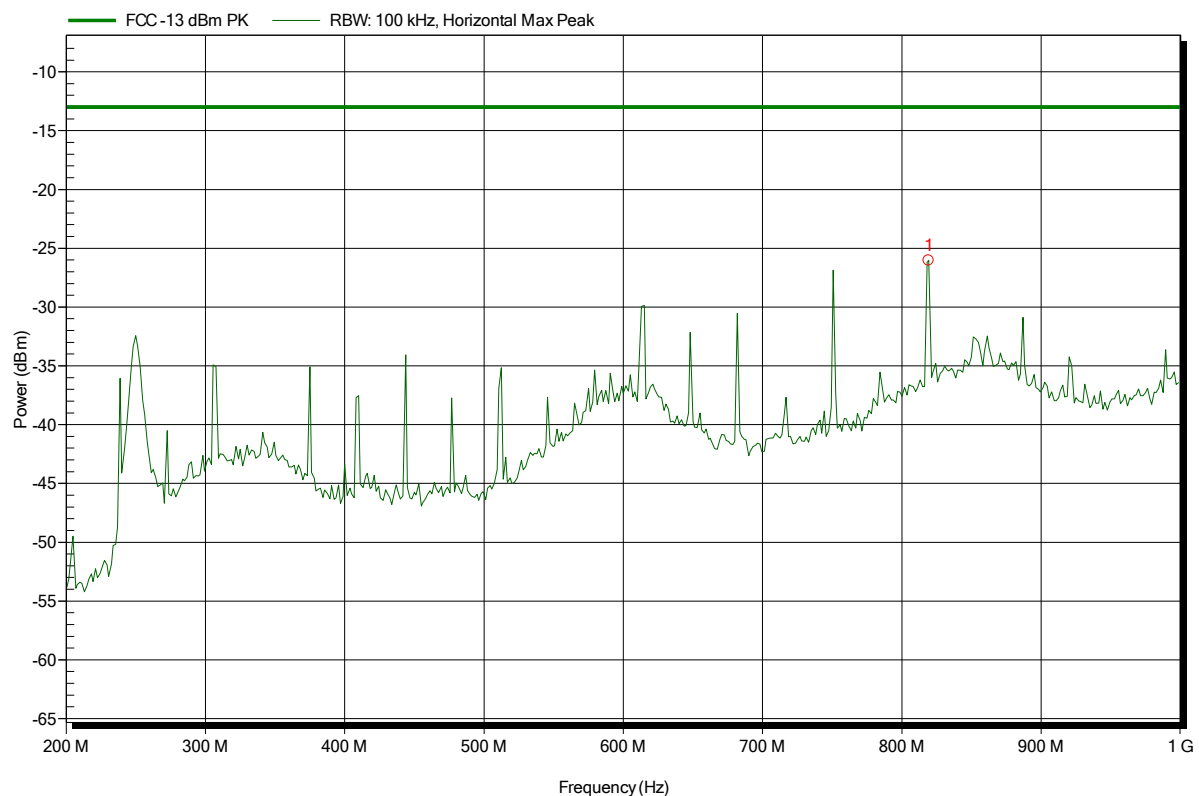
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
512 MHz	-26.9 dBm	-13 dBm	-13.88 dB	Pass

Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
 Test Date: 2014-12-04
 Note: EUT vertical; worst case

Index 52



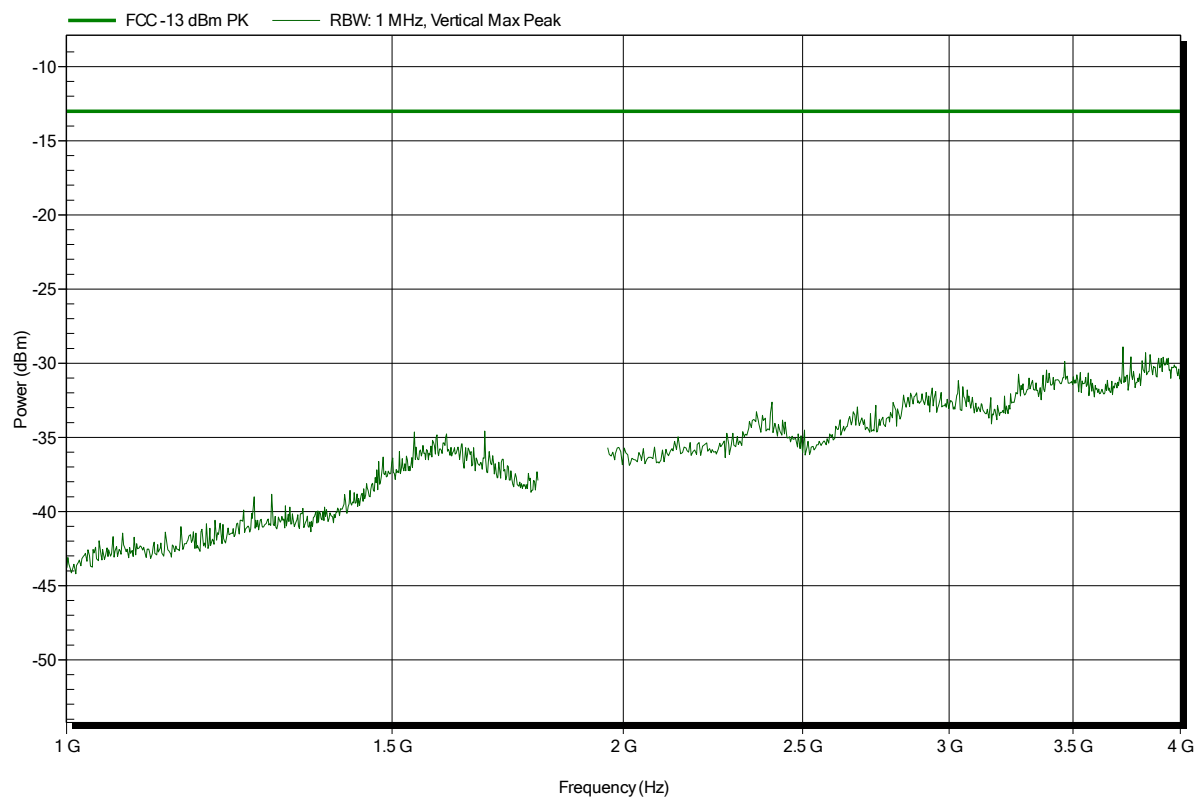
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
819.319 MHz	-26.1 dBm	-13 dBm	-13.06 dB	Pass

Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical; worst case

Index 53

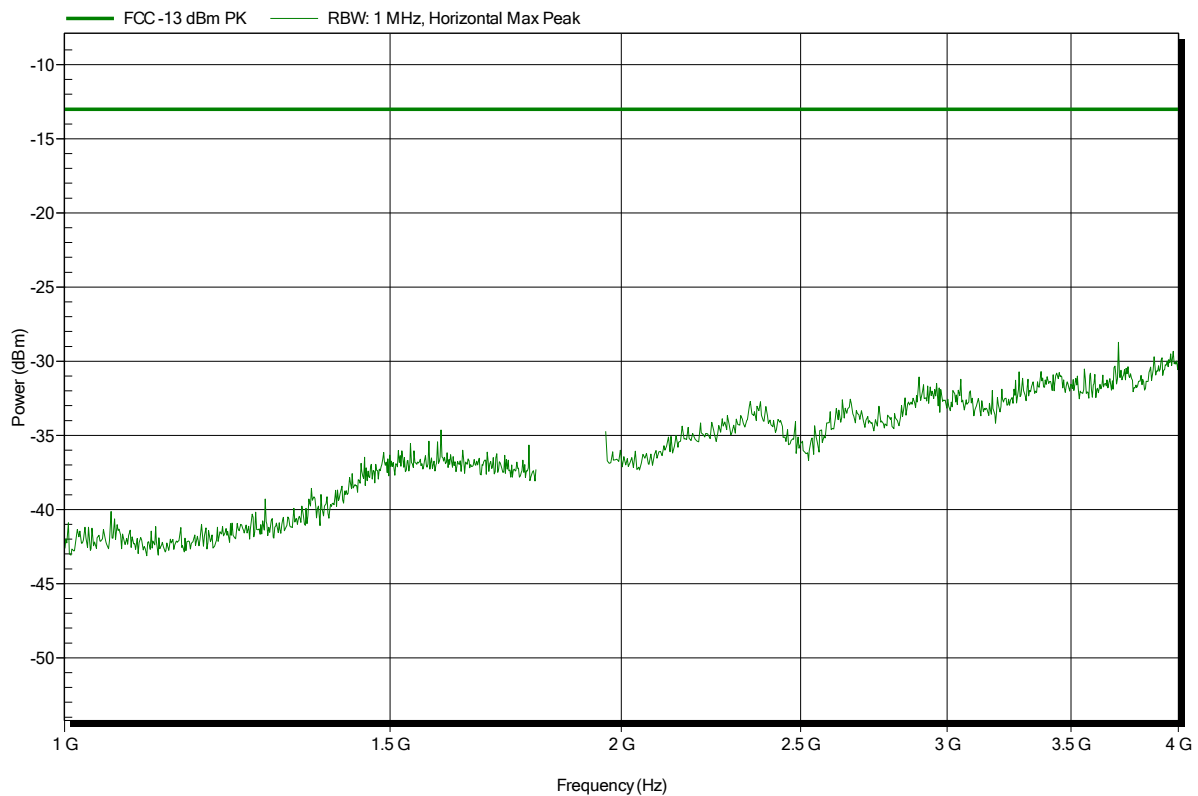


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical; worst case

Index 58

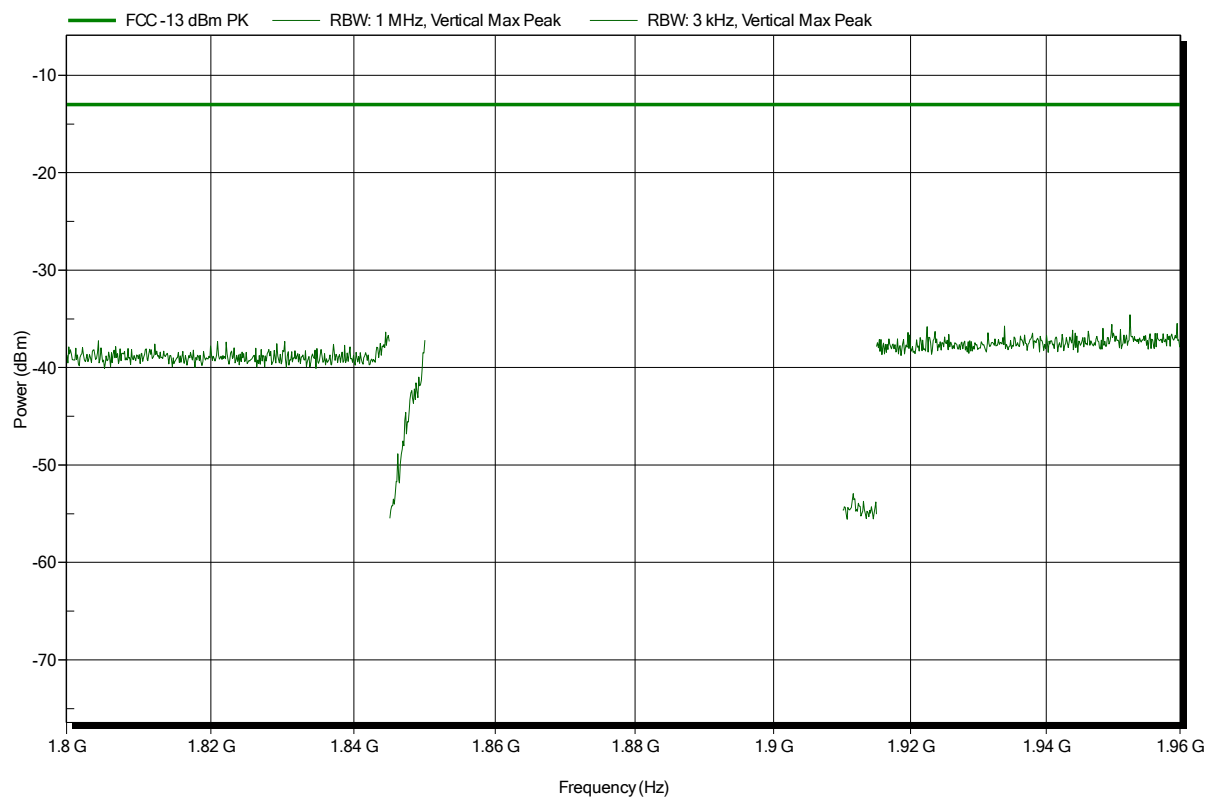


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD II; CH: 9263; HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 66



Test Report No.: G0M-1406-3915-TFC224WC-V01

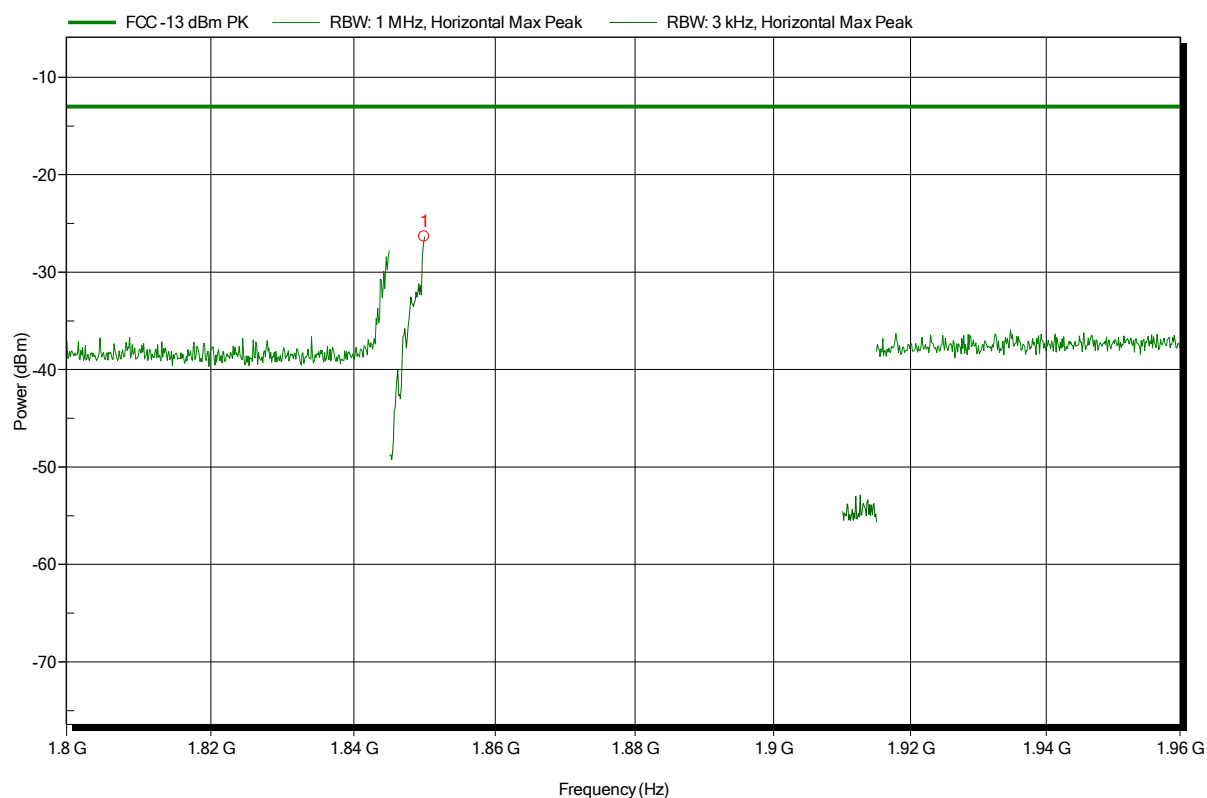
Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3 m
 Mode: TX; UMTS FDD II; CH: 9263; HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical

Index 63



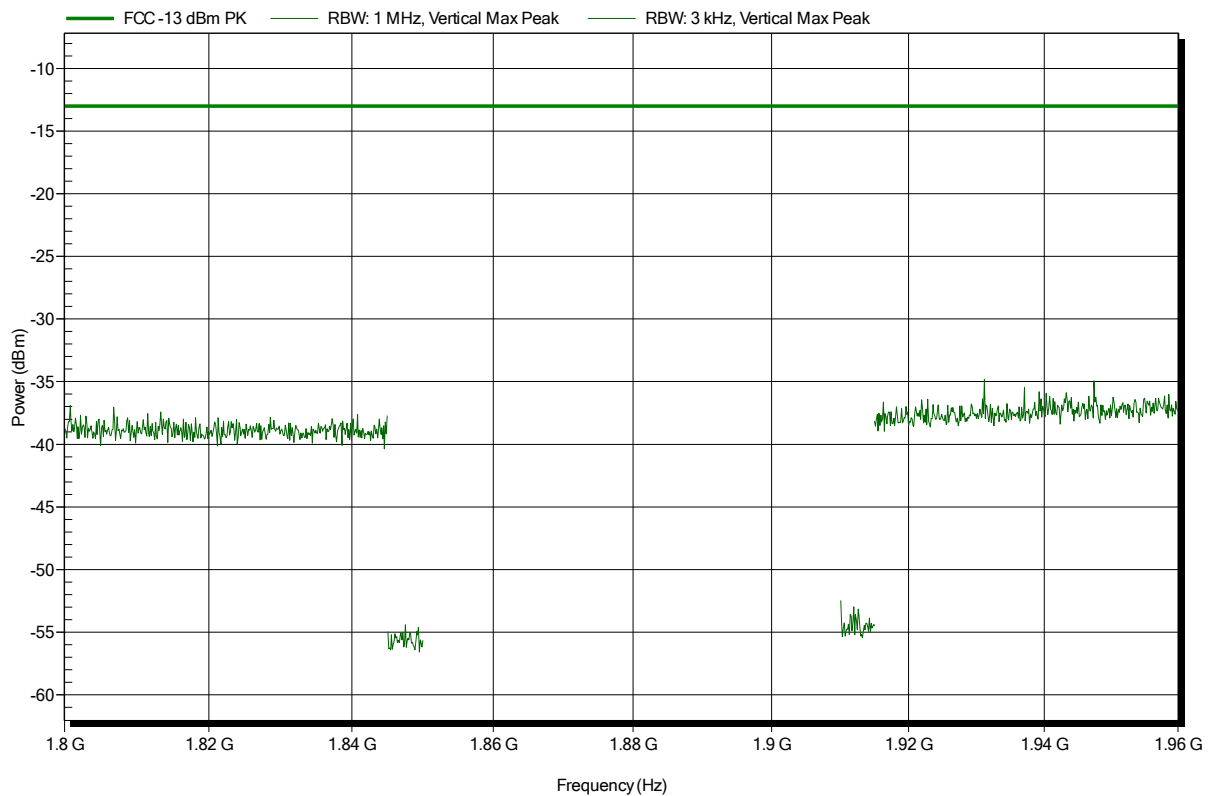
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.85 GHz	-26.3 dBm	-13 dBm	-13.34 dB	Pass

Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3 m
 Mode: TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical

Index 54



Test Report No.: G0M-1406-3915-TFC224WC-V01

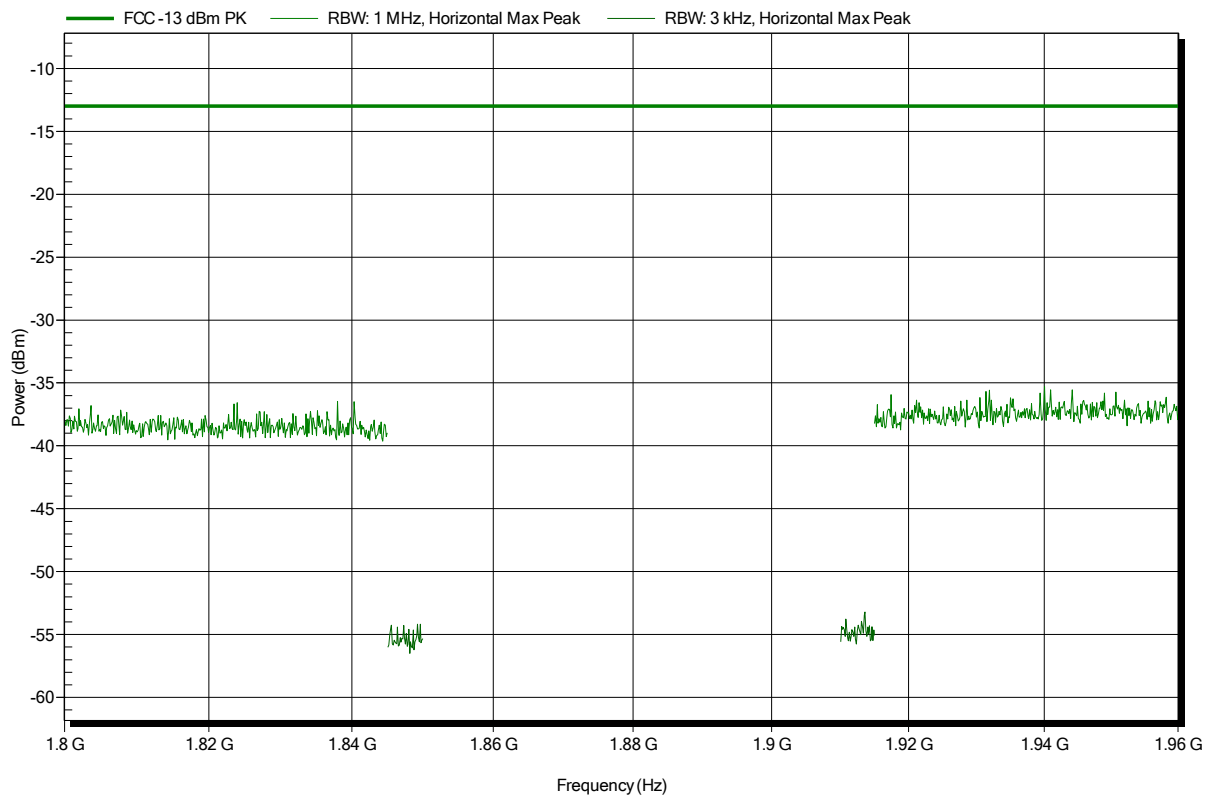
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical

Index 59

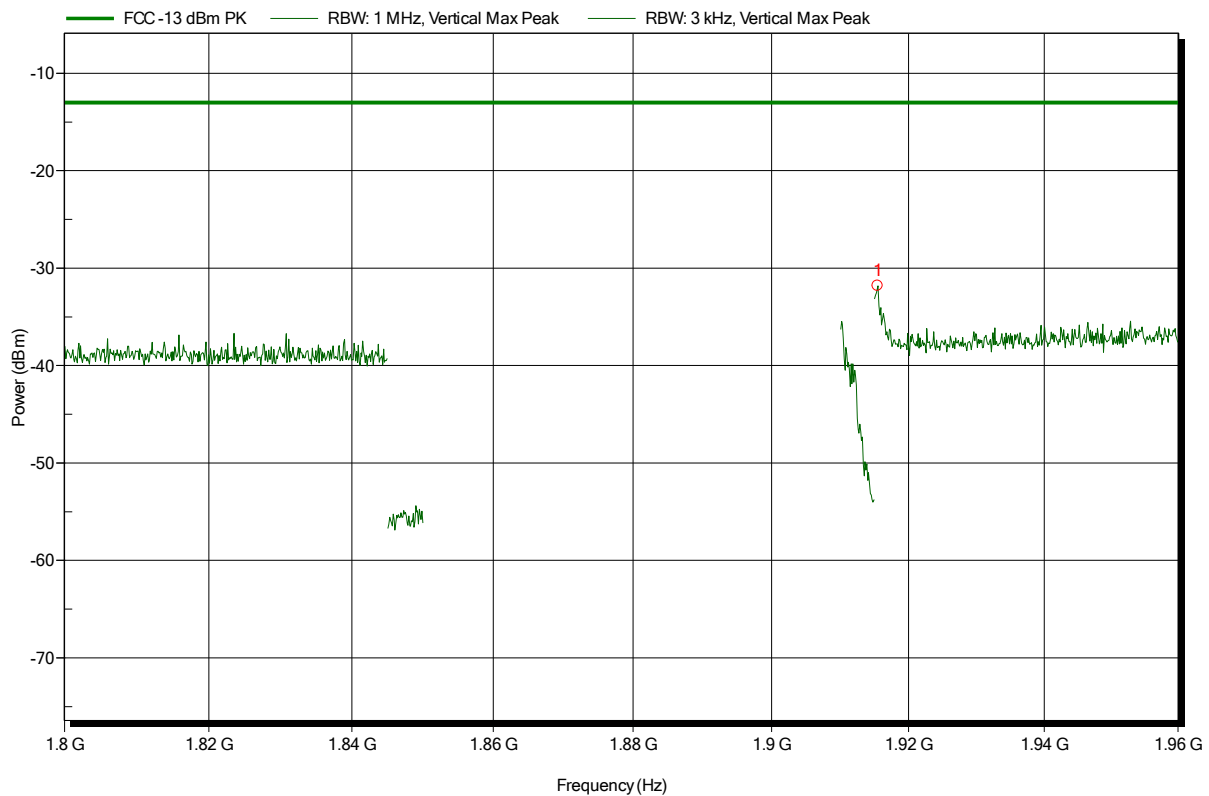


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3 m
 Mode: TX; UMTS FDD II; CH: 9537; HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical

Index 65



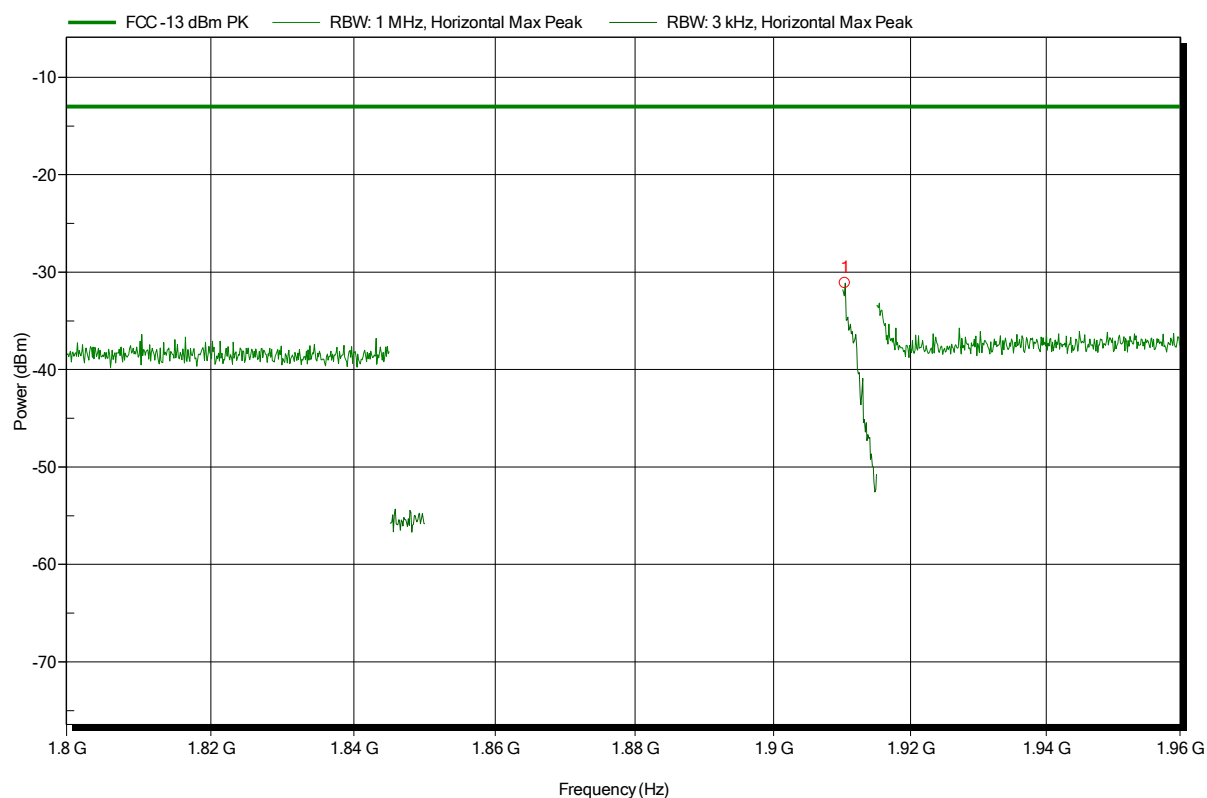
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.915 GHz	-31.8 dBm	-13 dBm	-18.82 dB	Pass

Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3 m
 Mode: TX; UMTS FDD II; CH: 9537; HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical

Index 64



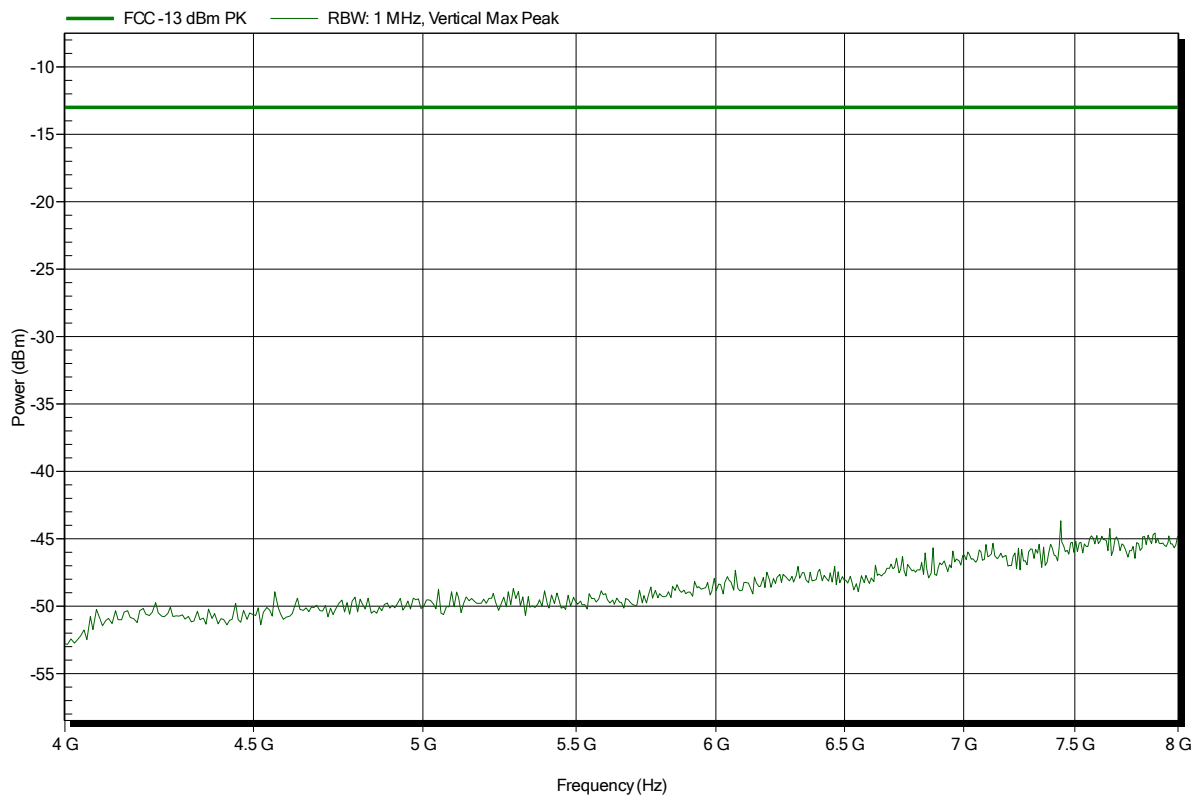
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.91 GHz	-31.1 dBm	-13 dBm	-18.12 dB	Pass

Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical; worst case

Index 55

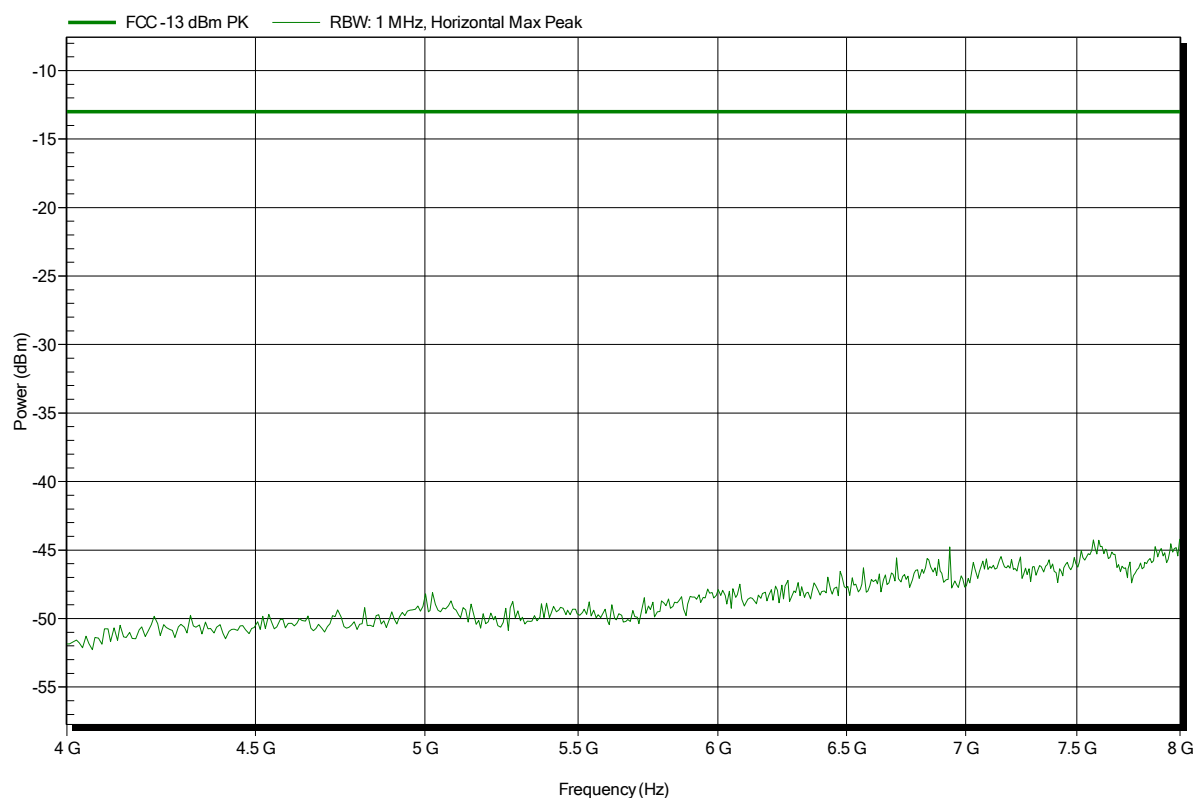


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical; worst case

Index 60

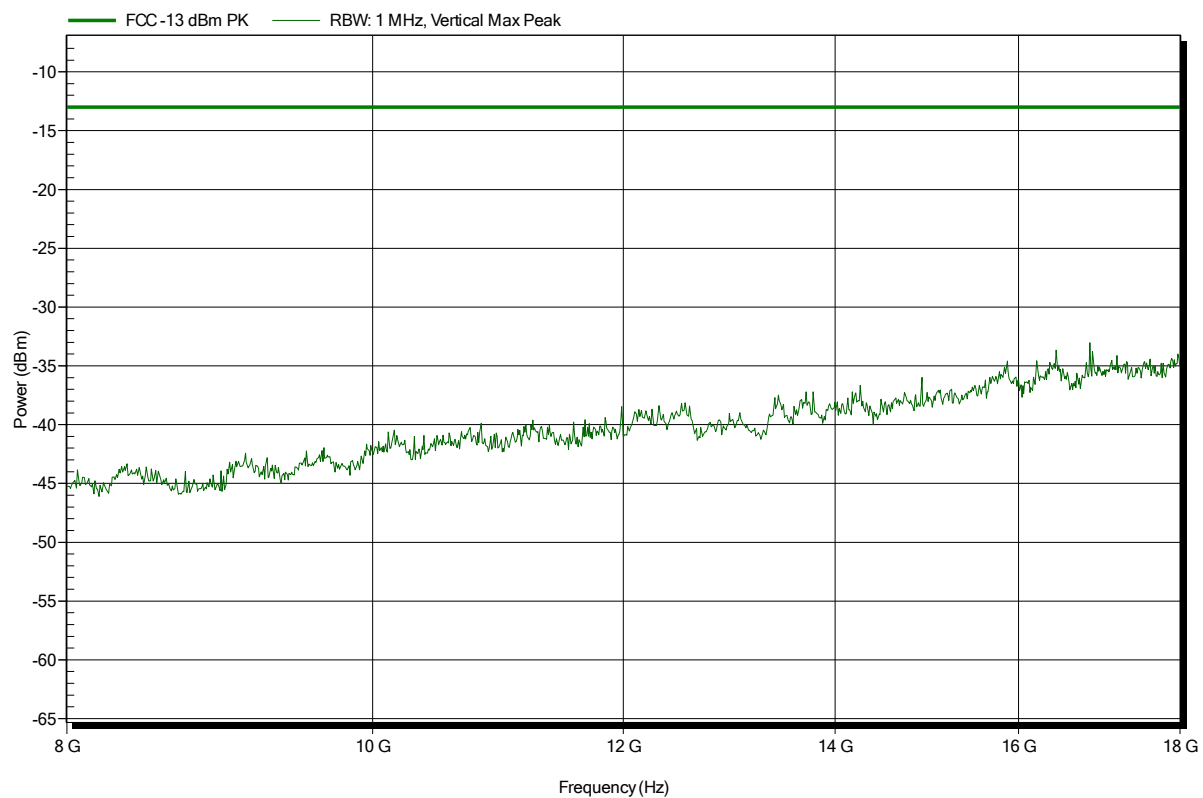


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Vertical
 Measurement distance: 3 m
 Mode: TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical; worst case

Index 56

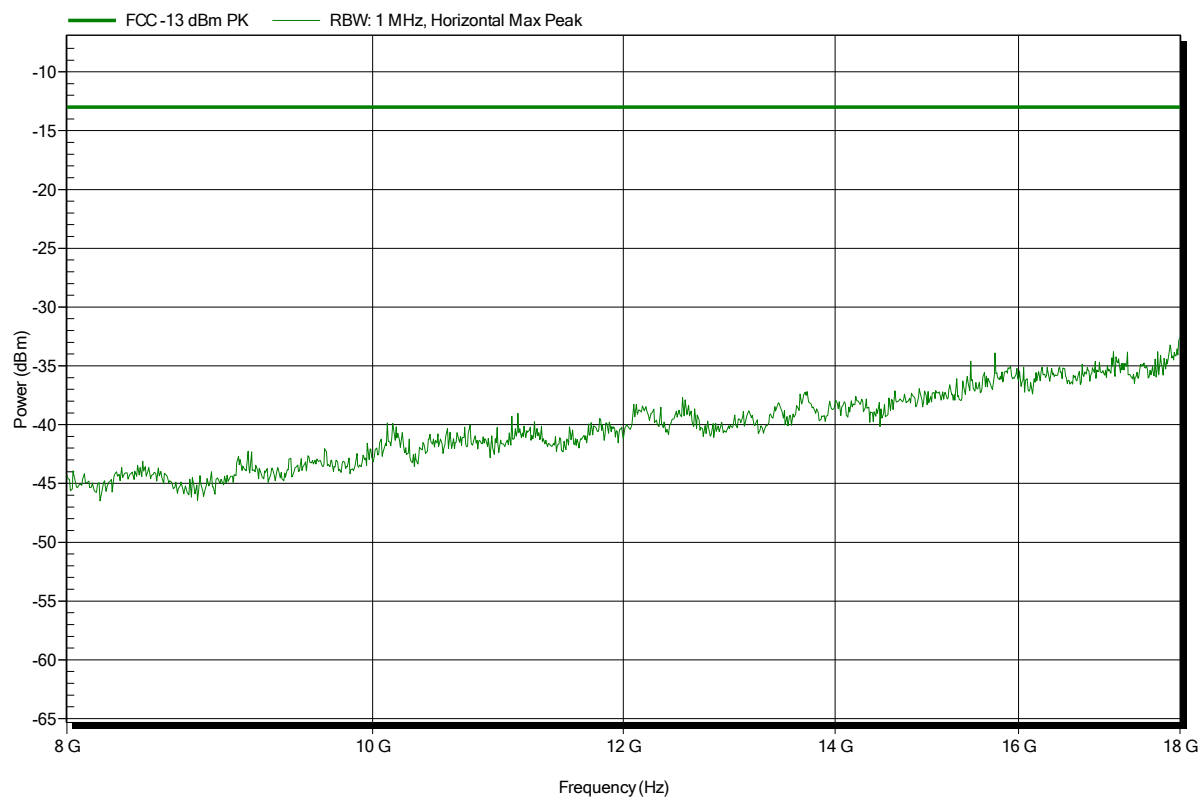


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 025, Horizontal
 Measurement distance: 3 m
 Mode: TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
 Test Date: 2014-12-09
 Note: EUT vertical; worst case

Index 61

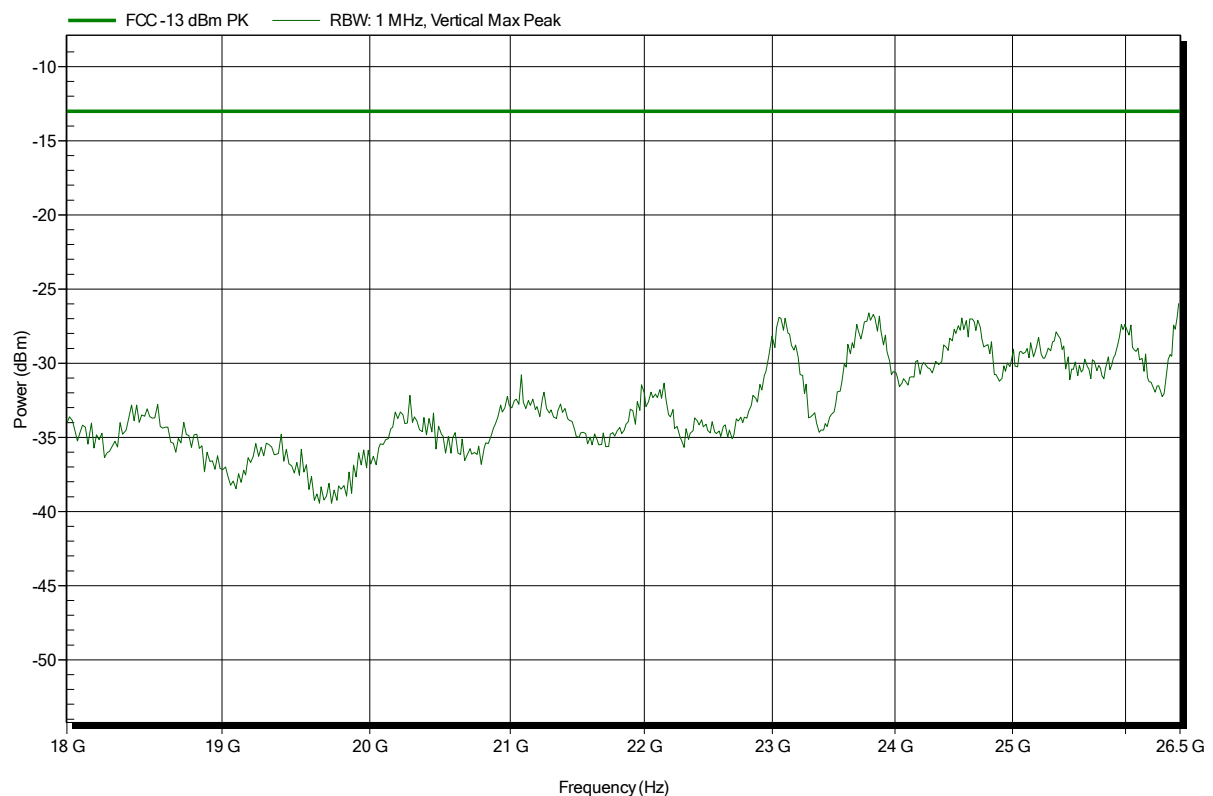


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical; worst case

Index 57

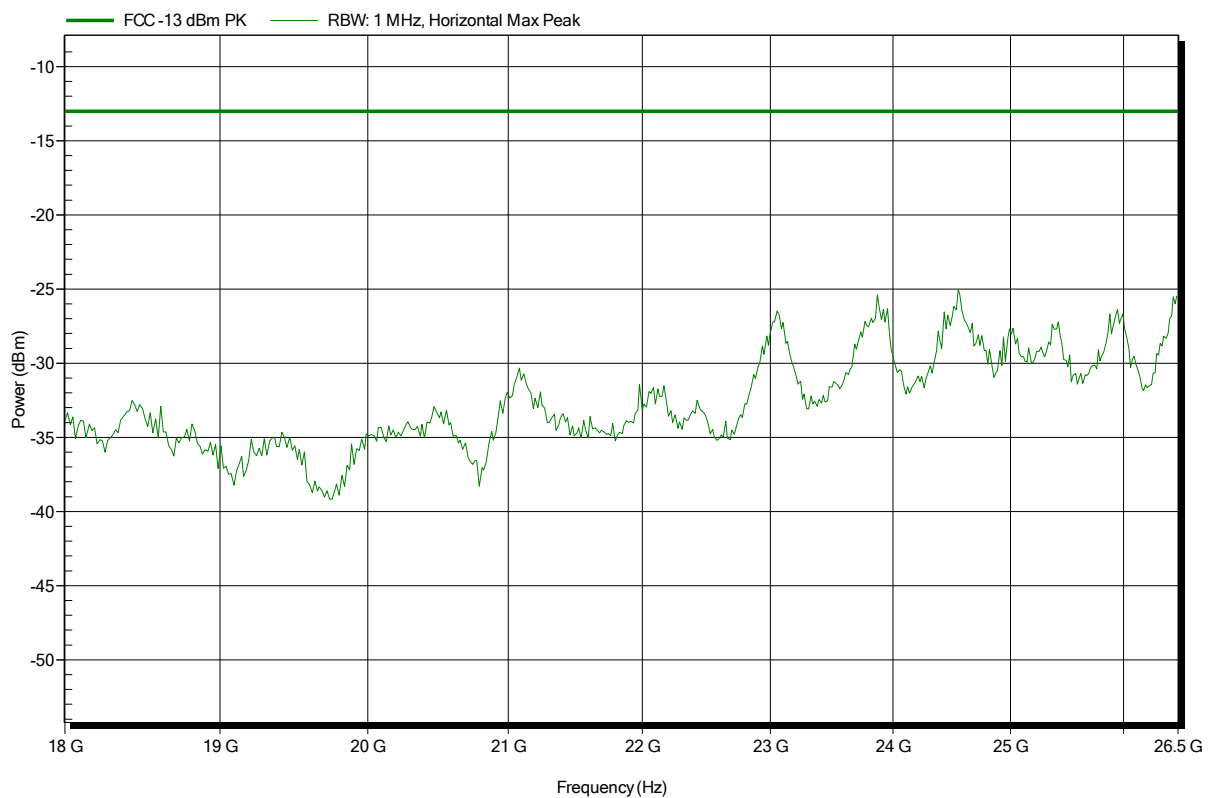


Spurious emissions according to FCC part 24 Subpart E, IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	TX; UMTS FDD II; CH: 9400; HSUPA / HSDPA
Test Date:	2014-12-09
Note:	EUT vertical; worst case

Index 62



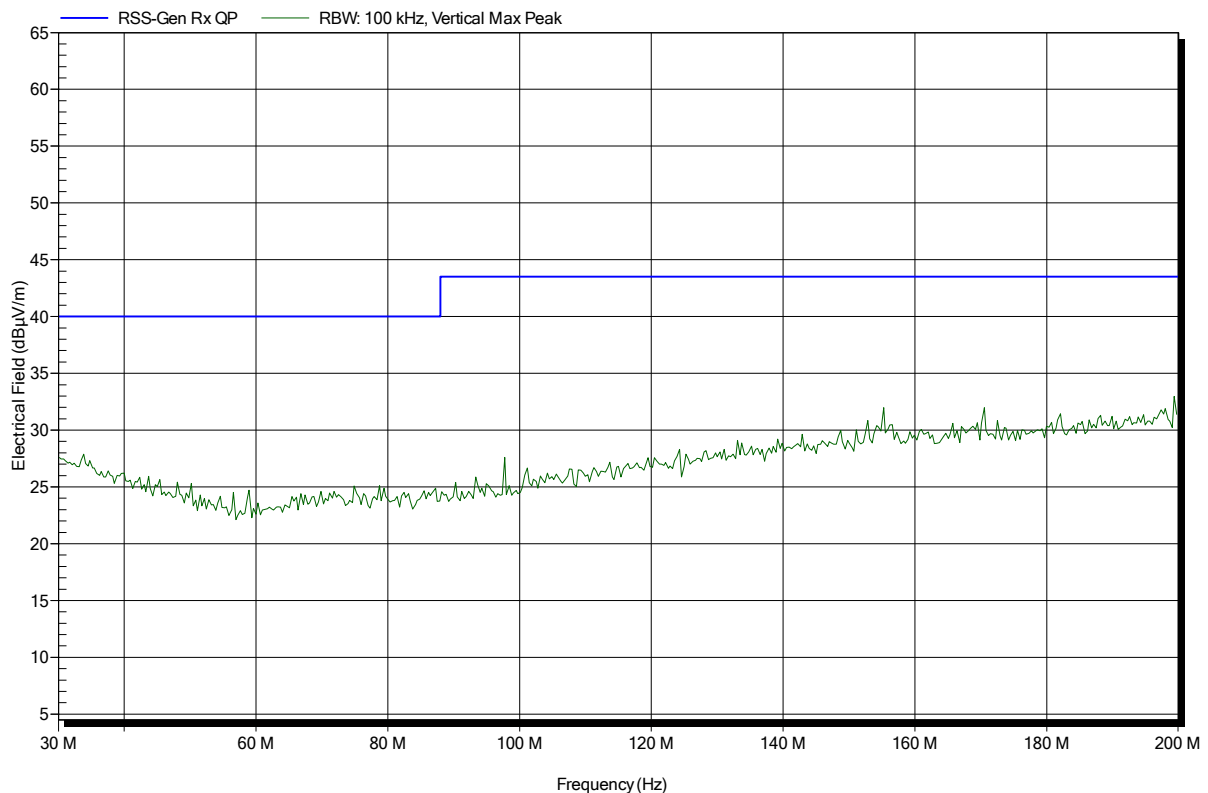
ANNEX B Receiver radiated spurious emissions

Spurious emissions according to IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; UMTS FDD V; CH: 4175, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 83

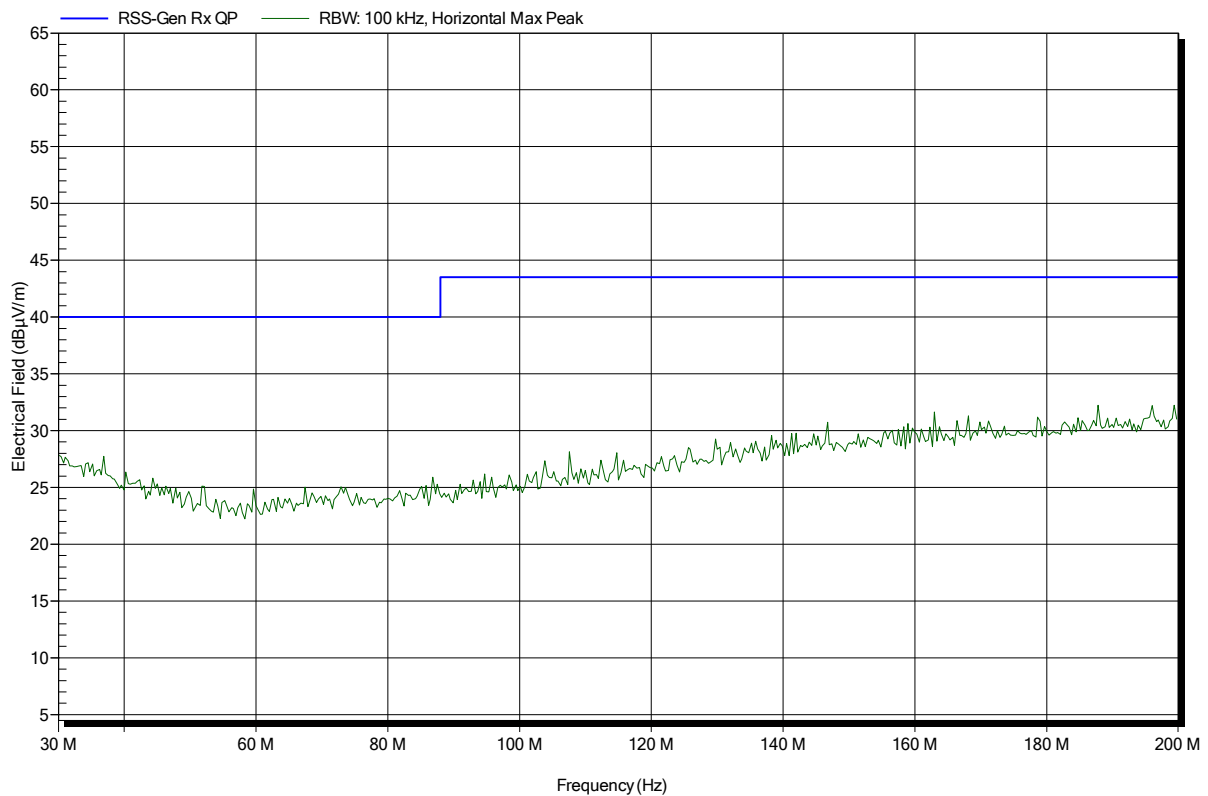


Spurious emissions according to IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; UMTS FDD V; CH: 4175, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 86

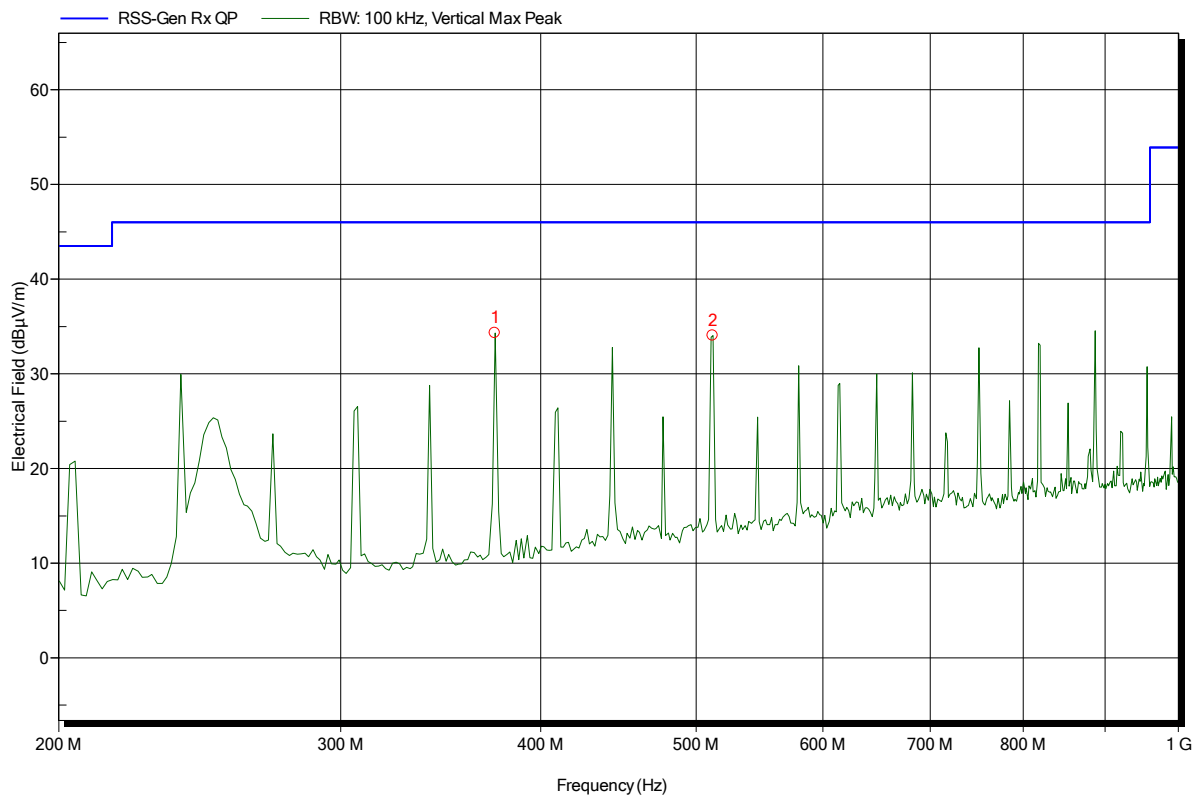


Spurious emissions according to IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: RX; UMTS FDD V; CH: 4175, RX-Idle Mode
 Test Date: 2014-12-04
 Note: EUT vertical

Index 79



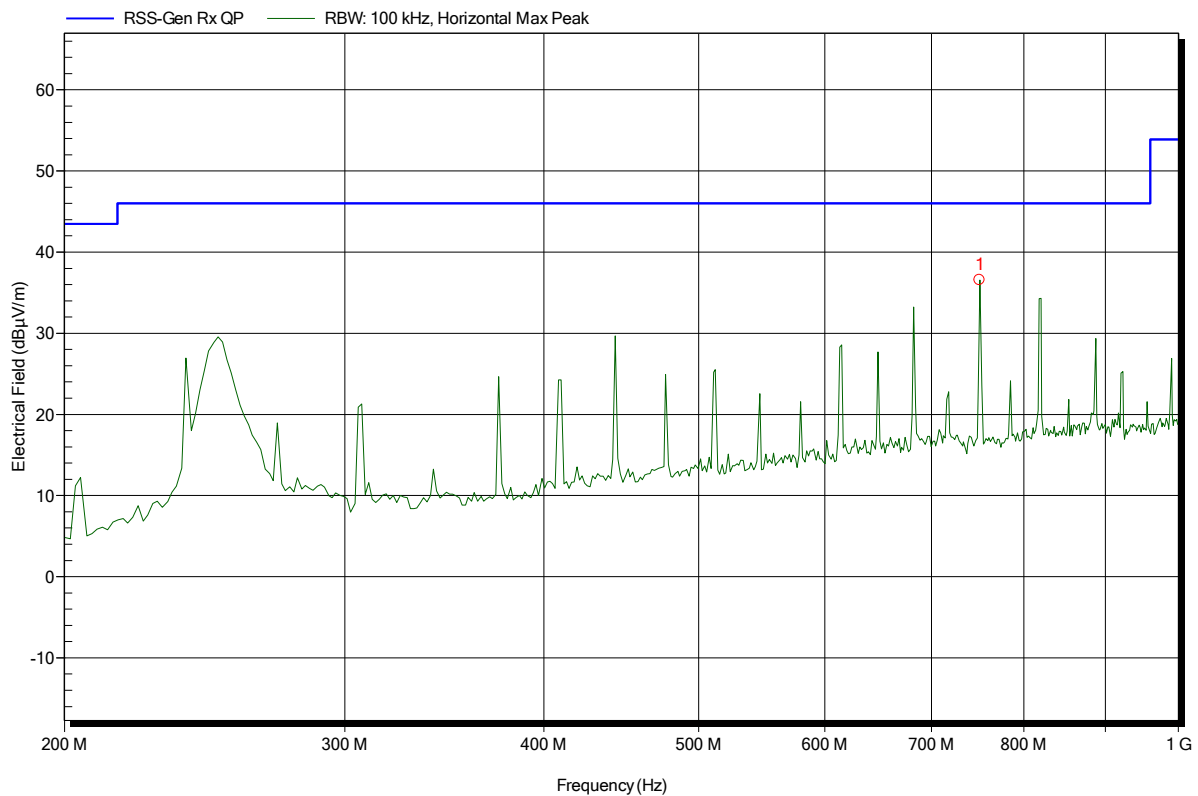
Frequency	Peak	Peak Limit	Peak Difference	Status
374.4 MHz	34.32 dBµV/m	46 dBµV/m	-11.68 dB	Pass
512 MHz	34.05 dBµV/m	46 dBµV/m	-11.95 dB	Pass

Spurious emissions according to IC RSS-132

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: RX; UMTS FDD V; CH: 4175, RX-Idle Mode
 Test Date: 2014-12-04
 Note: EUT vertical

Index 82



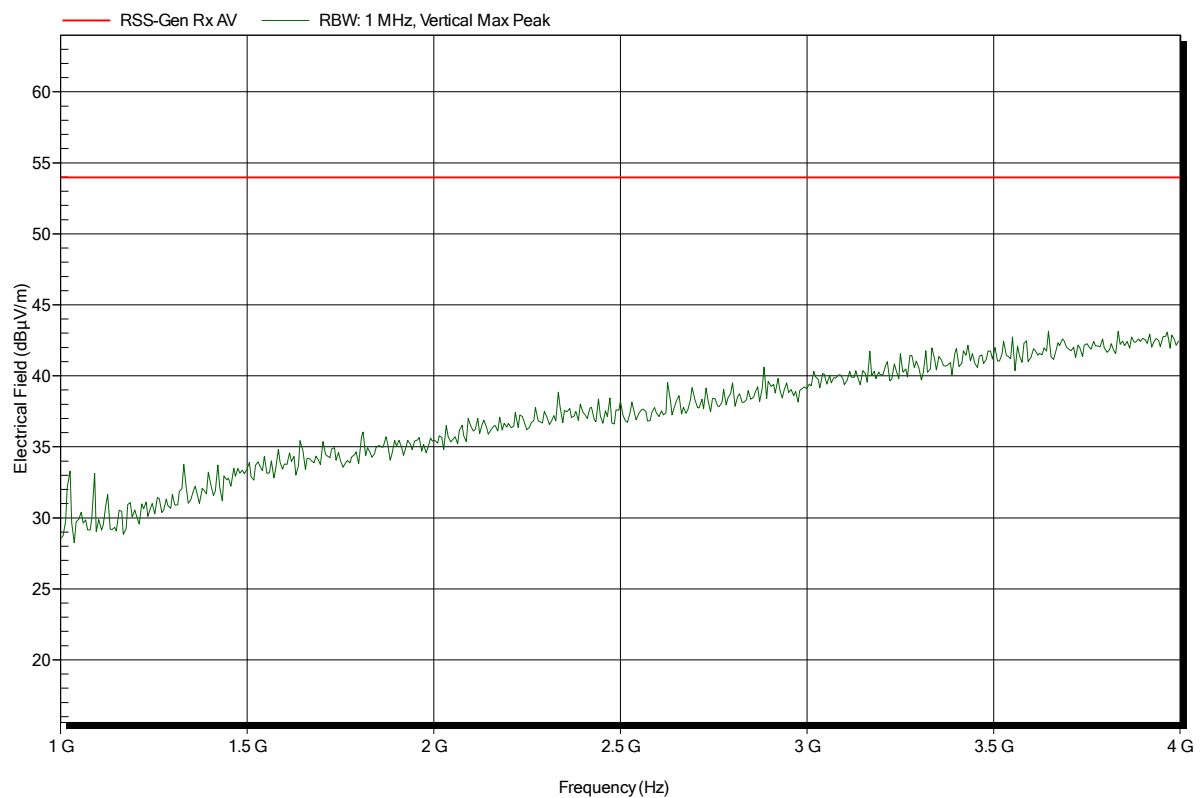
Frequency	Peak	Peak Limit	Peak Difference	Status
750.4 MHz	36.55 dBμV/m	46 dBμV/m	-9.45 dB	Pass

Spurious emissions according to IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	RX; UMTS FDD V; CH: 4175, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 73

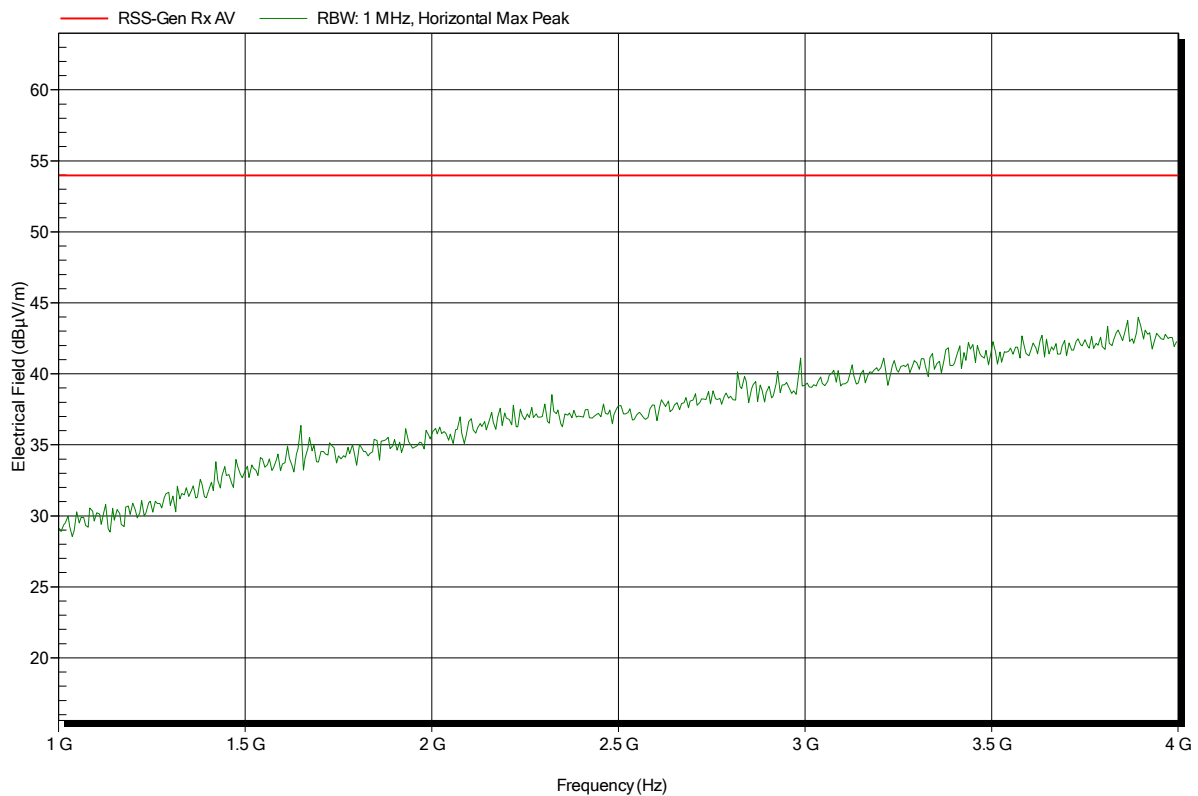


Spurious emissions according to IC RSS-132

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	RX; UMTS FDD V; CH: 4175, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 78

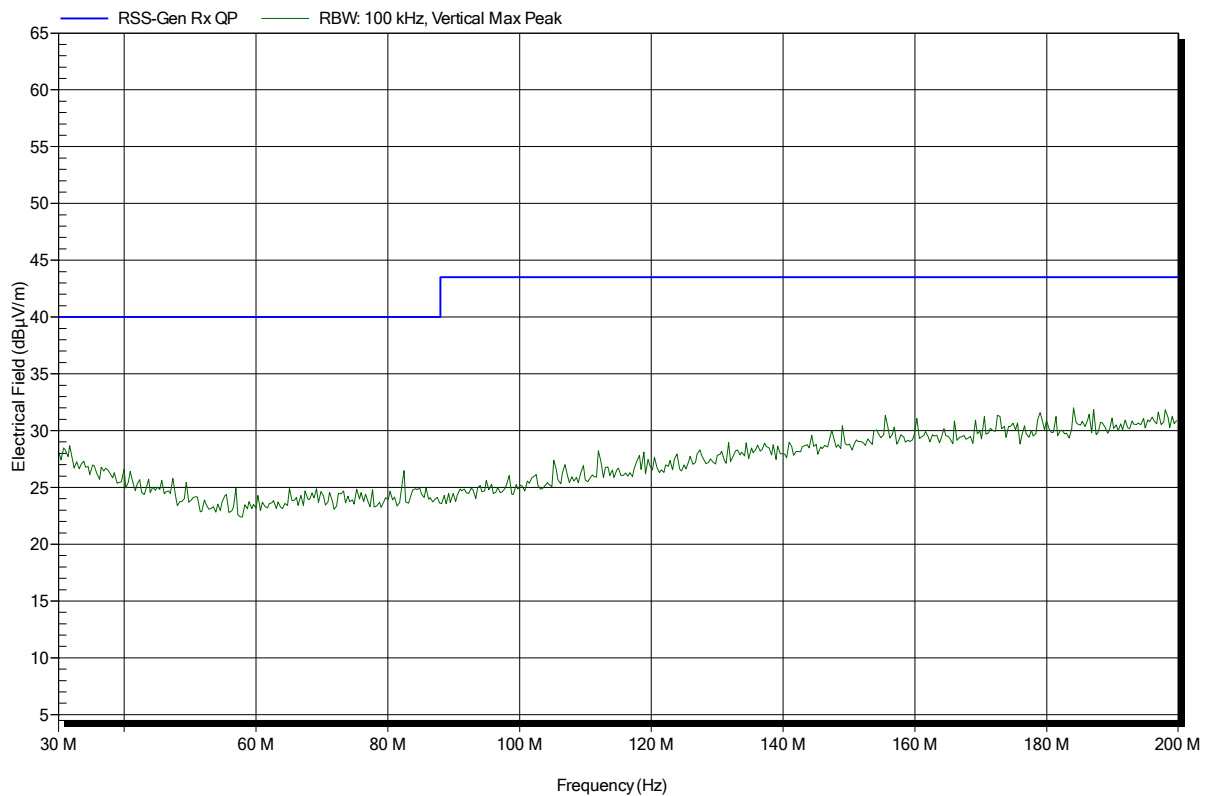


Spurious emissions according to IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; UMTS FDD II; CH: 9400, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 84

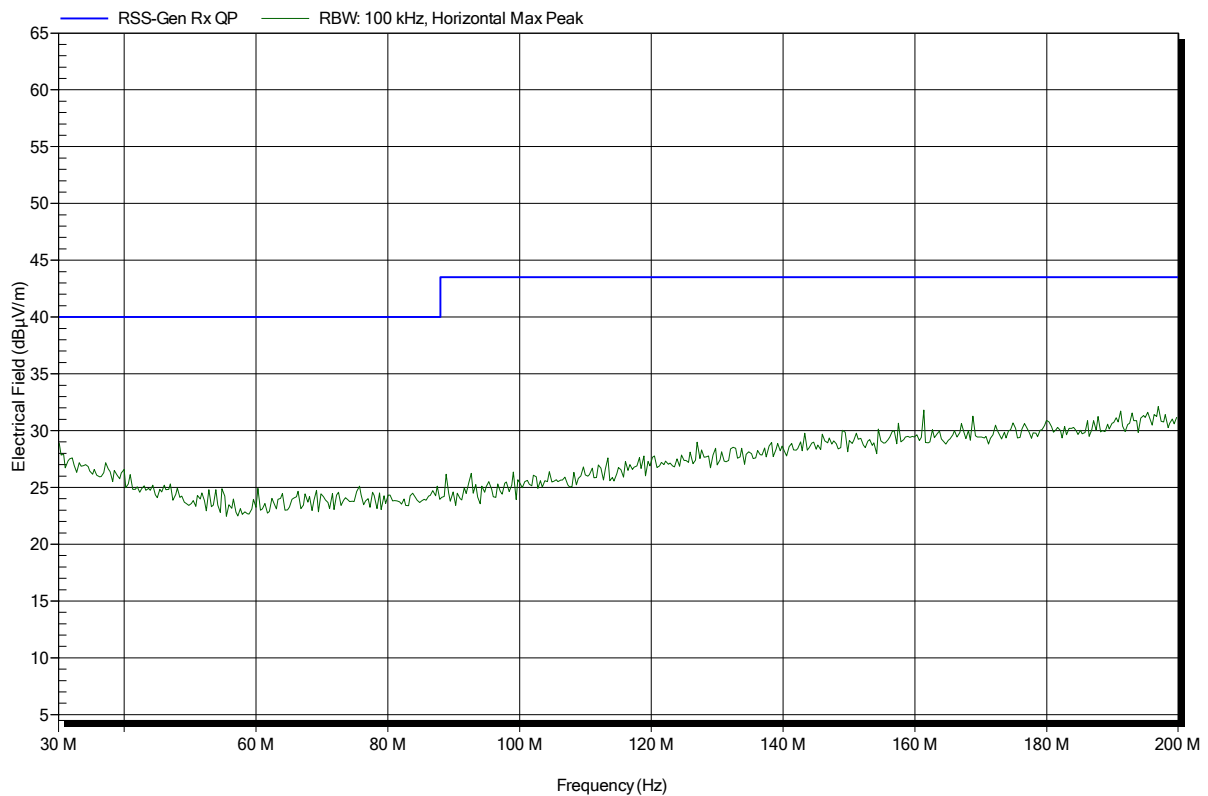


Spurious emissions according to IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; UMTS FDD II; CH: 9400, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 85

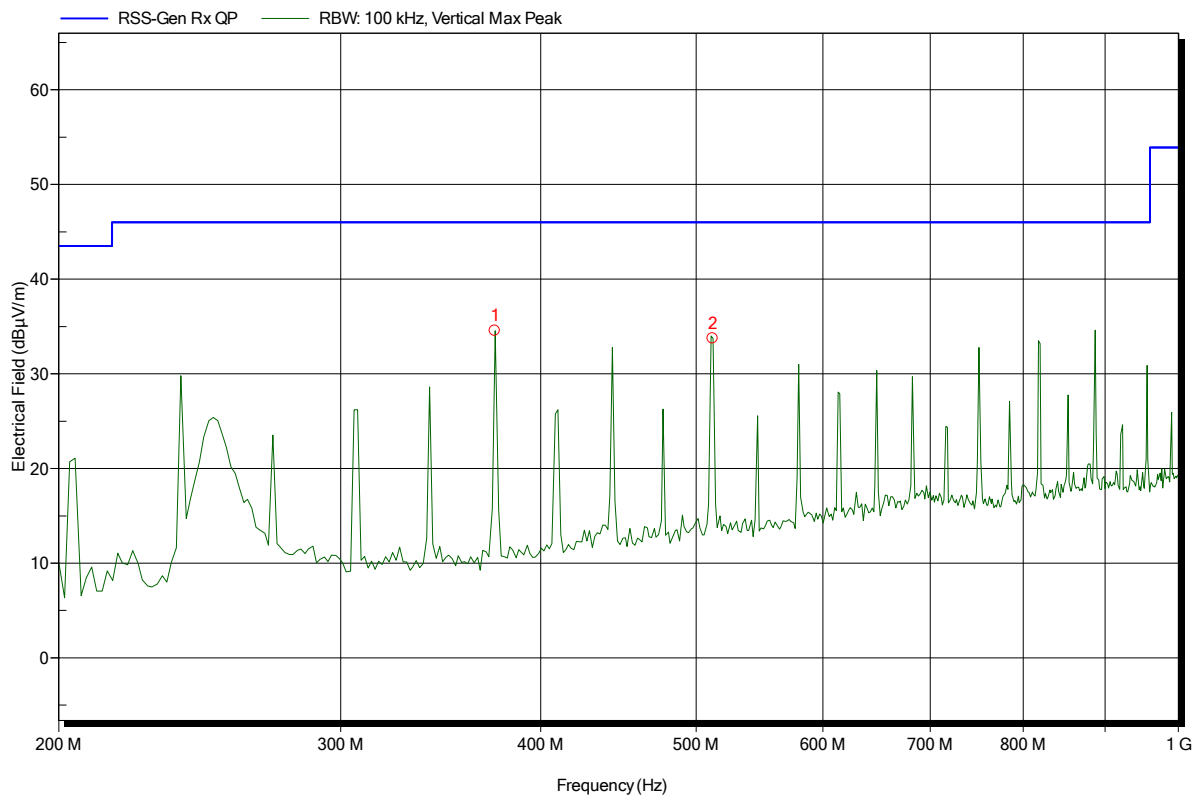


Spurious emissions according to IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: RX; UMTS FDD II; CH: 9400, RX-Idle Mode
 Test Date: 2014-12-04
 Note: EUT vertical

Index 80



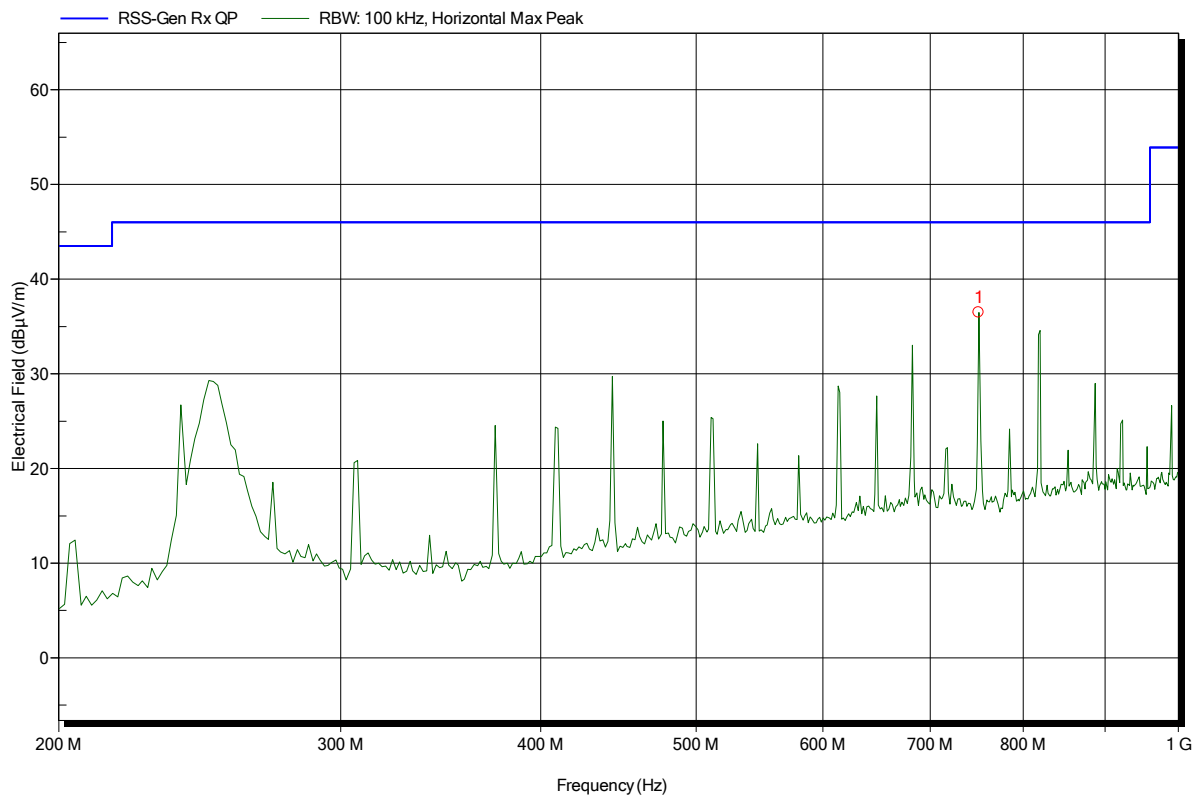
Frequency	Peak	Peak Limit	Peak Difference	Status
374.4 MHz	34.54 dBµV/m	46 dBµV/m	-11.46 dB	Pass
512 MHz	33.73 dBµV/m	46 dBµV/m	-12.27 dB	Pass

Spurious emissions according to IC RSS-133

Project number: G0M-1406-3915

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 VDC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3 m
 Mode: RX; UMTS FDD II; CH: 9400, RX-Idle Mode
 Test Date: 2014-12-04
 Note: EUT vertical

Index 81



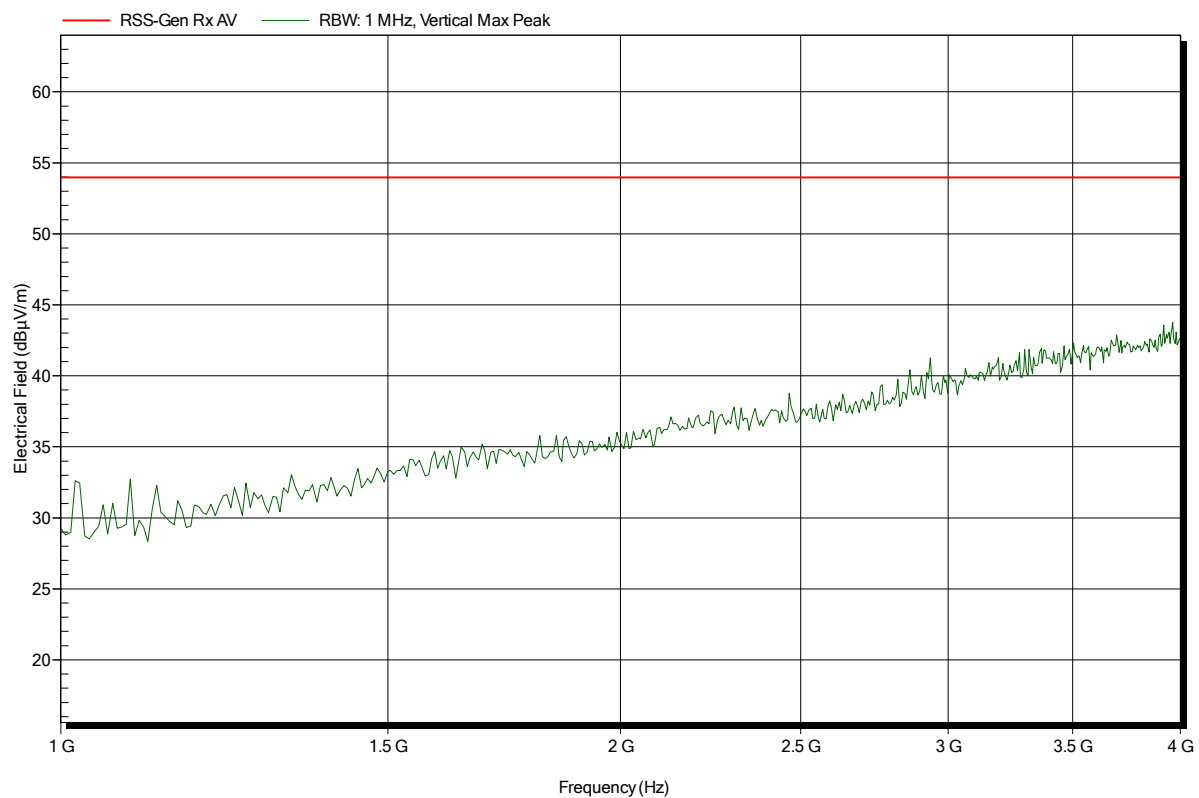
Frequency	Peak	Peak Limit	Peak Difference	Status
750.4 MHz	36.48 dBµV/m	46 dBµV/m	-9.52 dB	Pass

Spurious emissions according to IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	RX; UMTS FDD II; CH: 9400, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 74

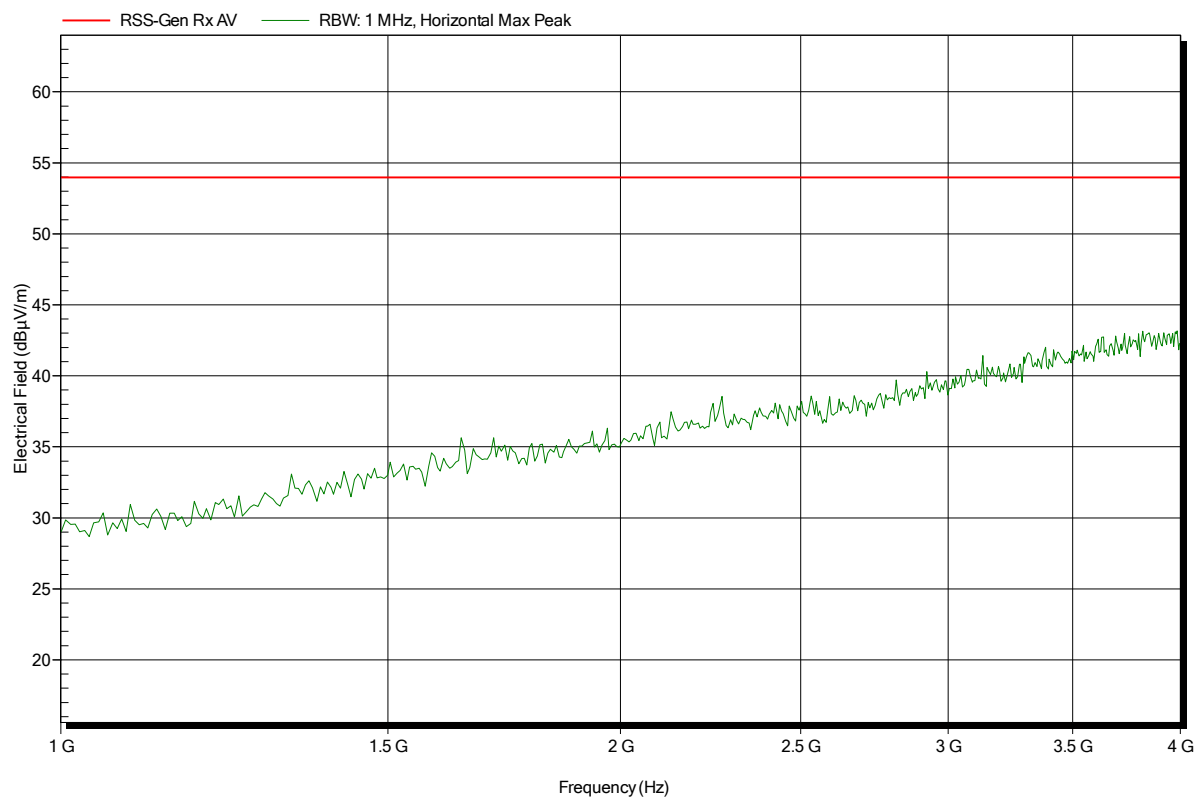


Spurious emissions according to IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	RX; UMTS FDD II; CH: 9400, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 77

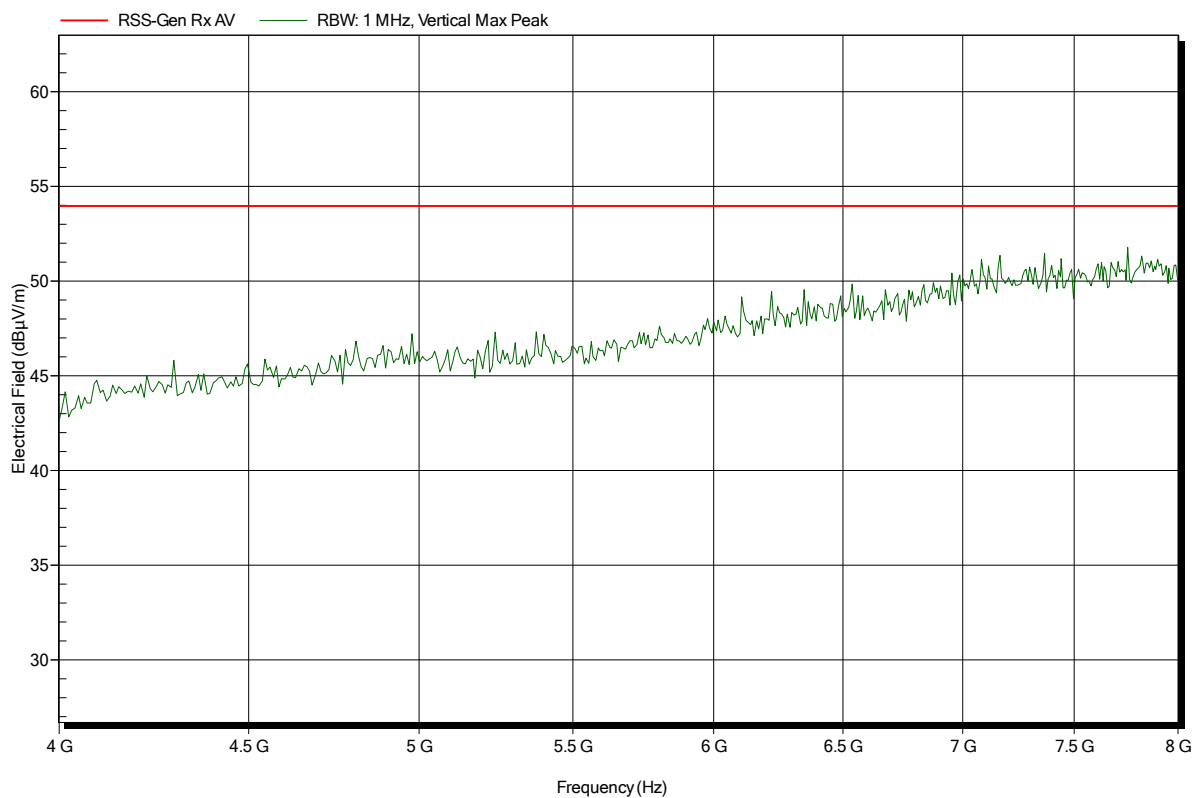


Spurious emissions according to IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Vertical
Measurement distance:	3 m
Mode:	RX; UMTS FDD II; CH: 9400, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 75



Spurious emissions according to IC RSS-133

Project number: G0M-1406-3915

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 VDC
Antenna:	Rohde & Schwarz HL 025, Horizontal
Measurement distance:	3 m
Mode:	RX; UMTS FDD II; CH: 9400, RX-Idle Mode
Test Date:	2014-12-04
Note:	EUT vertical

Index 76

