
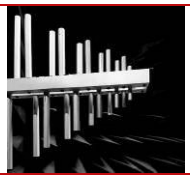
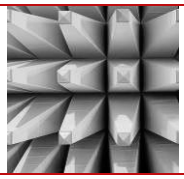

CETECOM™
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consulting - testing - certification

TEST REPORT

Test report no.: 1-5579/12-01-08-D

ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12076-01-01

Testing laboratory

CETECOM ICT Services GmbH
Untertuerkheimer Strasse 6 – 10
66117 Saarbruecken / Germany
Phone: + 49 681 5 98 - 0
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e-mail: ict@cetecom.com

Accredited Testing Laboratory:
The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)
The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01
Area of Testing: Radio/Satellite Communications

Applicant

Research In Motion Limited
305 Phillip Street
Waterloo, ON N2L 3W8 / CANADA
Phone: +1 51 98 88 74 65
Fax: +1 51 98 88 69 06
Contact: Masud Attayi
e-mail: mattayi@rim.com
Phone: +1 51 98 88 74 65

Manufacturer

Research In Motion Limited
305 Phillip Street
Waterloo, ON N2L 3W8 / CANADA

Test standard/s

47 CFR Part 15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item:	**Blackberry GSM Phones**
Model name:	**RFN81UW**
FCC ID:	**L6ARFN80UW**
IC:	**2503A-RFN80UW**
Frequency:	UNII band 5150 MHz to 5250 MHz UNII band 5250 MHz to 5350 MHz UNII band 5470 MHz to 5725 MHz
Technology tested:	WLAN (OFDM)
Antenna:	Integrated antenna
Power Supply:	3.8 V DC by Li - Ion battery
Temperature Range:	No range needed!

This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:

M. Walla
DN: cn=Meheza Walla, o=CETECOM ICT Services GmbH, ou=WAL-100930, email=Meheza.Walla@cetecom.com, c=DE
Datum: 2013.03.28 16:50:16 +01'00'

p.o.
Marco Bertolino
Testing Manager

Test performed:

cn=Christoph Schneider, o=CETECOM ICT Services GmbH, ou=SND-120402, email=christoph.schneider@cetecom.com, c=DE
2013.03.28 16:36:04 +01'00'

p.o.
Andreas Luckenbill
Expert

1 Table of contents

2 General information

2.1 Notes and disclaimer

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2.2 Application details

Date of receipt of order:	2012-11-30
Date of receipt of test item:	2012-12-03
Start of test:	2012-12-03
End of test:	2013-03-12
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	2010-12	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

3.1 Measurement guidance

UNII: KDB 789033	2011-10	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E

4 Test environment

Temperature:	T_{nom}	+22	°C during room temperature tests
	T_{max}	-/-	°C during high temperature tests
	T_{min}	-/-	°C during low temperature tests
Relative humidity content:		42 %	
Barometric pressure:		not relevant for this kind of testing	
Power supply:	V_{nom}	3.8 V	DC by Li - Ion battery
	V_{max}	-/- V	
	V_{min}	-/- V	

5 Test item

Kind of test item	**:**	**Blackberry GSM Phones**
Type identification	**:**	**RFN81UW**
S/N serial number	**:**	**IMEI 004401139252155 / 00440113933468**
HW hardware status	**:**	**CER-53015-001- Rev 2-905-01 / CER-53015-001- Rev 3-905-01**
SW software status	**:**	**127.0.1.3123 / 127.0.1.3901**
Frequency band [MHz]	**:**	**UNII bands:** **- 5150 MHz to 5250 MHz** **- 5250 MHz to 5350 MHz** **- 5470 MHz to 5725 MHz**
Type of radio transmission **Use of frequency spectrum**	**:** **:**	**OFDM**
Type of modulation	**:**	**QPSK, 16 - QAM, 64 - QAM**
Number of channels	**:**	**19**
Antenna	**:**	**Integrated antenna**
Power supply	**:**	**3.8 V DC by Li - Ion battery**
Temperature range	**:**	**Not needed!**

5.1 Additional information

Test setup- and EUT-photos are included in test reports: 1-5579/12-01-01_AnnexA
1-5579/12-01-01_AnnexD

6 Test laboratories sub-contracted

None

7 Summary of measurement results

☒ **No deviations from the technical specifications were ascertained**

☐ There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Part 15 RSS 210, Issue 8, Annex 8	Passed	2013-03-28	Reduced tests according to manufacturer test plan!

Test specification clause	Test case	Temperature conditions	Power source voltages	Pass	Fail	NA	NP	Remark
-/-	Output power verification (conducted)	Nominal	Nominal	☐	☐	☐	☒	-/-
-/-	Gain	Nominal	Nominal	☐	☐	☐	☒	-/-
U-NII Part 15	Duty cycle	Nominal	Nominal	☐	☐	☐	☒	-/-
§15.407(a) RSS-210	Maximum output power (conducted & radiated)	Nominal	Nominal	☐	☐	☐	☒	-/-
§15.407(a) RSS-210	Power spectral density	Nominal	Nominal	☐	☐	☐	☒	-/-
§15.407(a) RSS-210	Spectrum bandwidth 26dB bandwidth	Nominal	Nominal	☐	☐	☐	☒	-/-
§15.407(a) RSS-210	Peak excursion measurements	Nominal	Nominal	☐	☐	☐	☒	-/-
§15.205 RSS-210	Band edge compliance radiated	Nominal	Nominal	☒	☐	☐	☐	complies
§15.407(b) RSS-210	TX spurious emissions radiated	Nominal	Nominal	☒	☐	☐	☐	complies
§15.109 RSS-Gen	RX spurious emissions radiated	Nominal	Nominal	☐	☐	☐	☒	-/-
§15.209(a) RSS-Gen	Spurious emissions radiated < 30 MHz	Nominal	Nominal	☐	☐	☐	☒	-/-
§15.107(a)	Spurious emissions conducted emissions < 30 MHz	Nominal	Nominal	☒	☐	☐	☐	complies

Note: NA = Not Applicable; NP = Not Performed

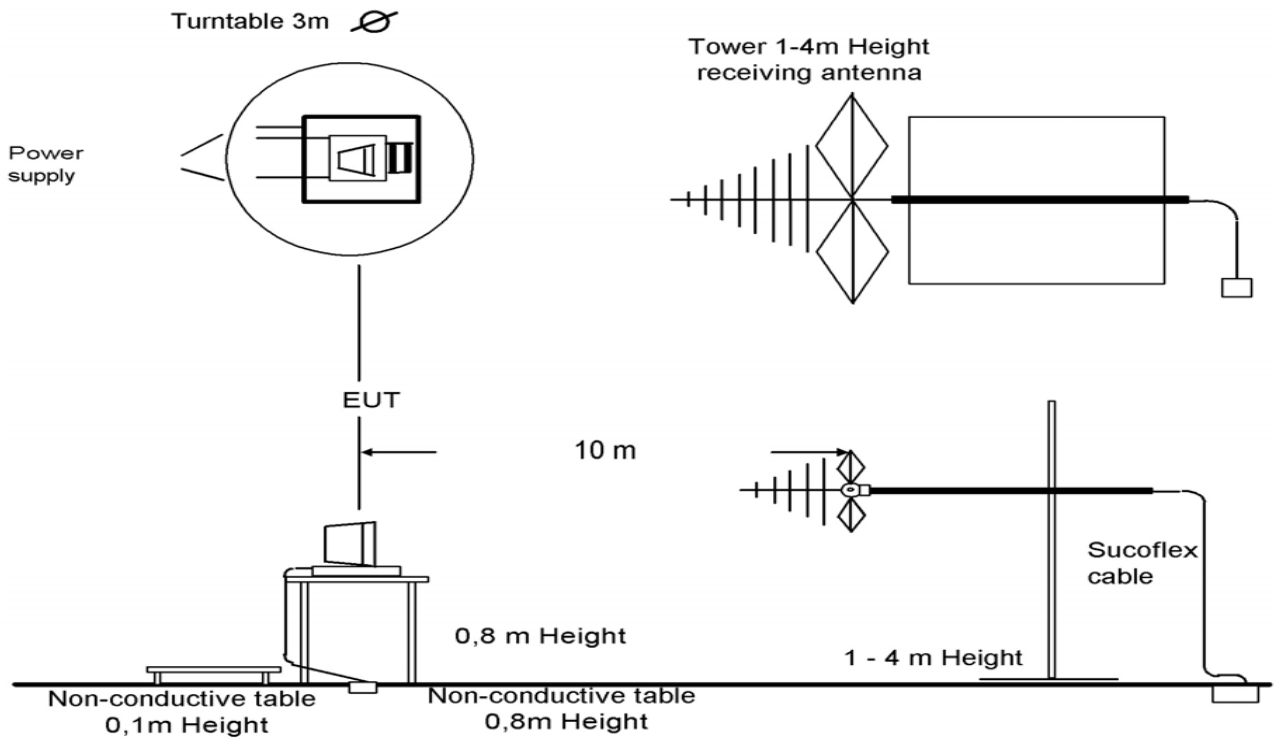
8 RF measurements

8.1 Description of test setup

8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2009 clause 4.1.5. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2009 clause 4.2.
Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



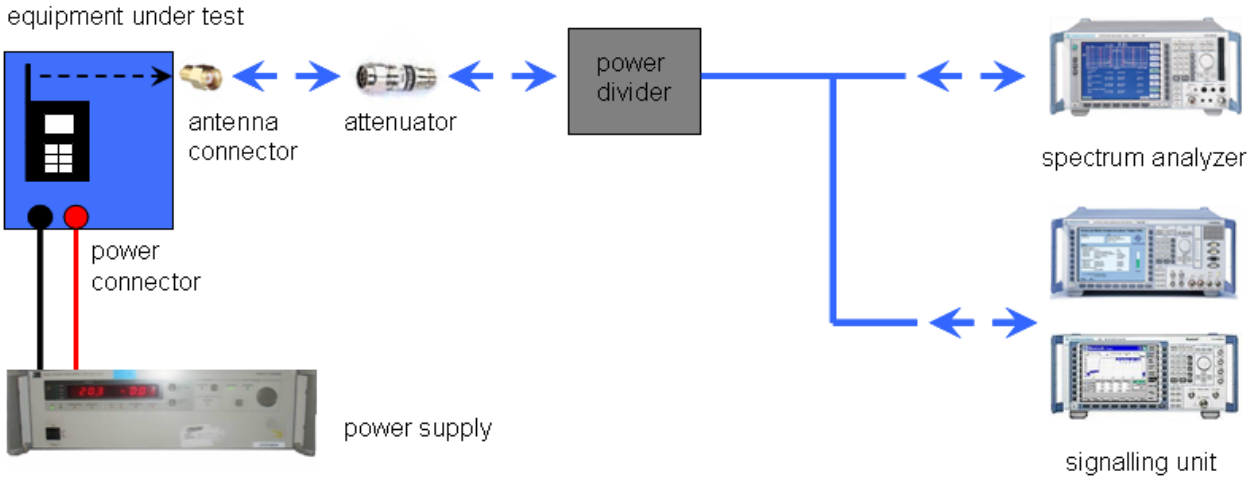
Picture 1: Diagram radiated measurements

9 kHz - 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna

The EUT is powered by an external power supply with nominal voltage

8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). One of the signal paths is connected to the communication base Station (CMU200 or other), the other one is connected to the spectrum analyzer. The specific losses for both signal paths are first checked within a calibration. The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, signalling unit and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

8.2 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

Test mode: ☐ No test mode available.

☒ Special software is used.
EUT is transmitting pseudo random data by itself

9 Measurement results

9.1 Output power verification (conducted)

Not performed!

9.2 Gain

Not performed!

9.3 Duty cycle

Not performed!

9.4 Maximum output power conducted and radiated

Not performed!

9.5 Power spectral density

Not performed!

9.6 Spectrum bandwidth – 26 dB bandwidth

Not performed!

9.7 Peak excursion measurements

Not performed!

9.8 Band edge compliance radiated

Description:

Measurement of the radiated band edge compliance. The EUT is turned in the position that results in the maximum level at the band edge. Then a sweep over the corresponding restricted band is performed. The EUT is set to the lowest channel for the lower restricted band and to the highest channel for the upper restricted band. Measurement distance is 3m.

Measurement:

Measurement parameter	
Detector:	Peak / RMS
Sweep time:	Auto
Resolution bandwidth:	1 MHz
Video bandwidth:	10 Hz / 1 MHz
Span:	See plots!
Trace-Mode:	Max Hold

Limits:

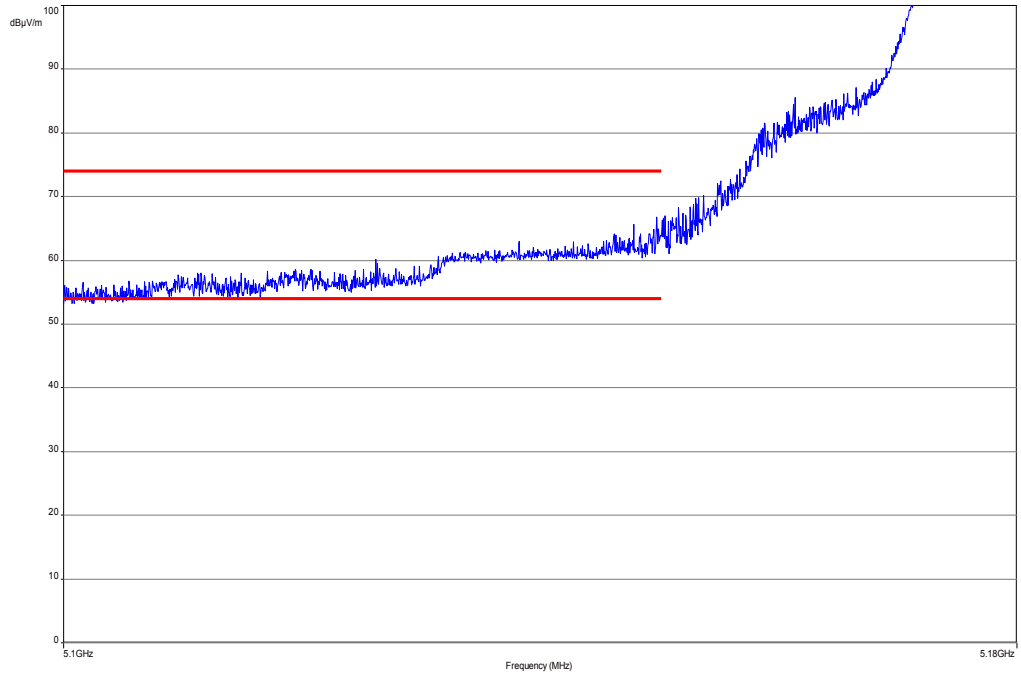
Band Edge Compliance Radiated
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, 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 5.205(c)).
< 74 dBµV/m (peak) < 54 dBµV/m (average) < -27 dBm (Part 15.407)

Result:

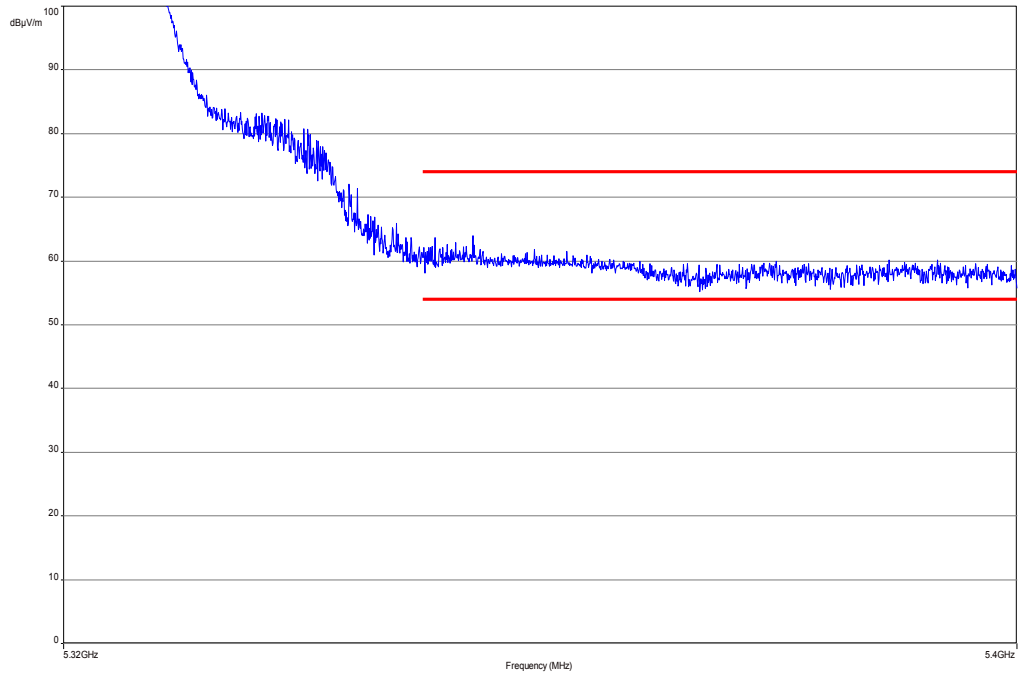
Scenario	Band Edge Compliance Radiated [dBµV/m]
band edge	< 74 dBµV/m (peak) < 54 dBµV/m (average) < -27 dBm (Part 15.407)
Measurement uncertainty	± 3 dB

Plots: peak

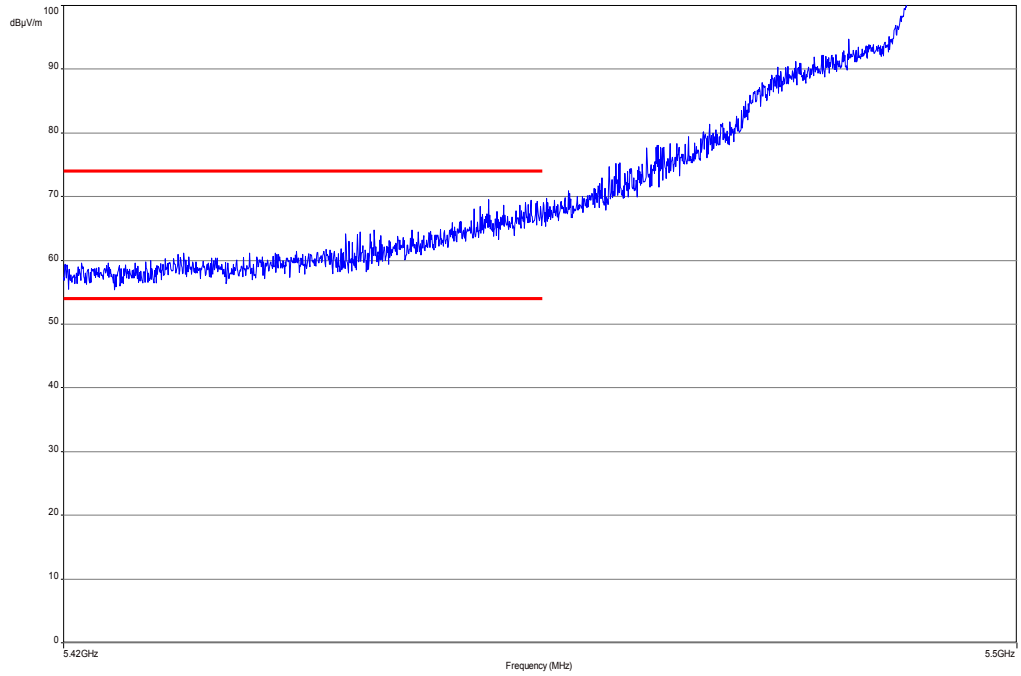
Plot 1: lower band edge, vertical & horizontal polarization (a mode), channel 36



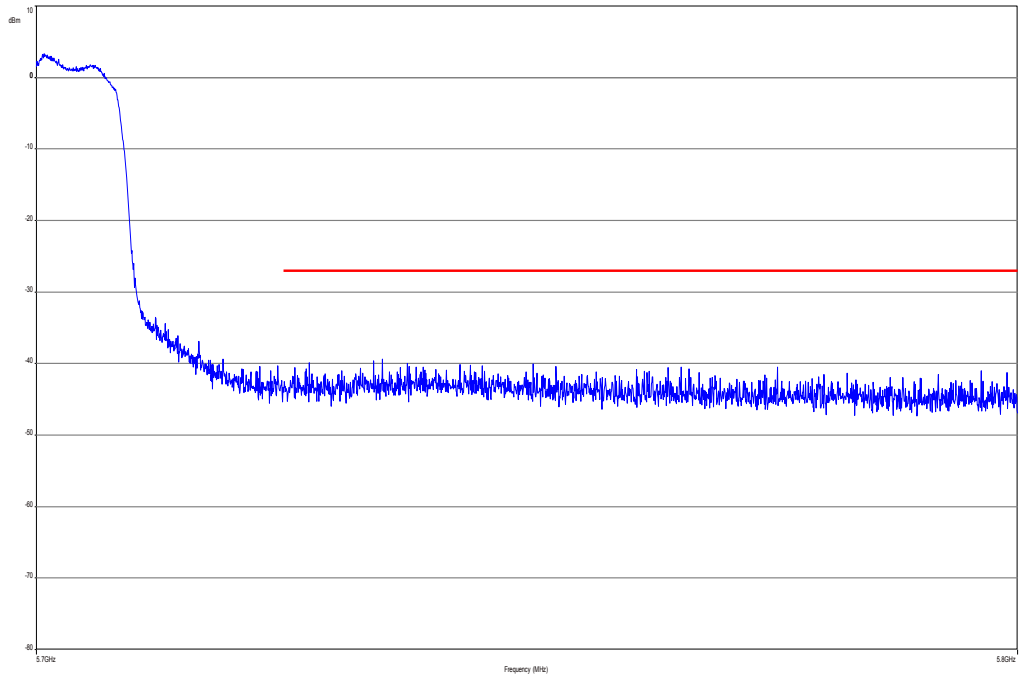
Plot 2: upper band edge, vertical & horizontal polarization (a mode), channel 64



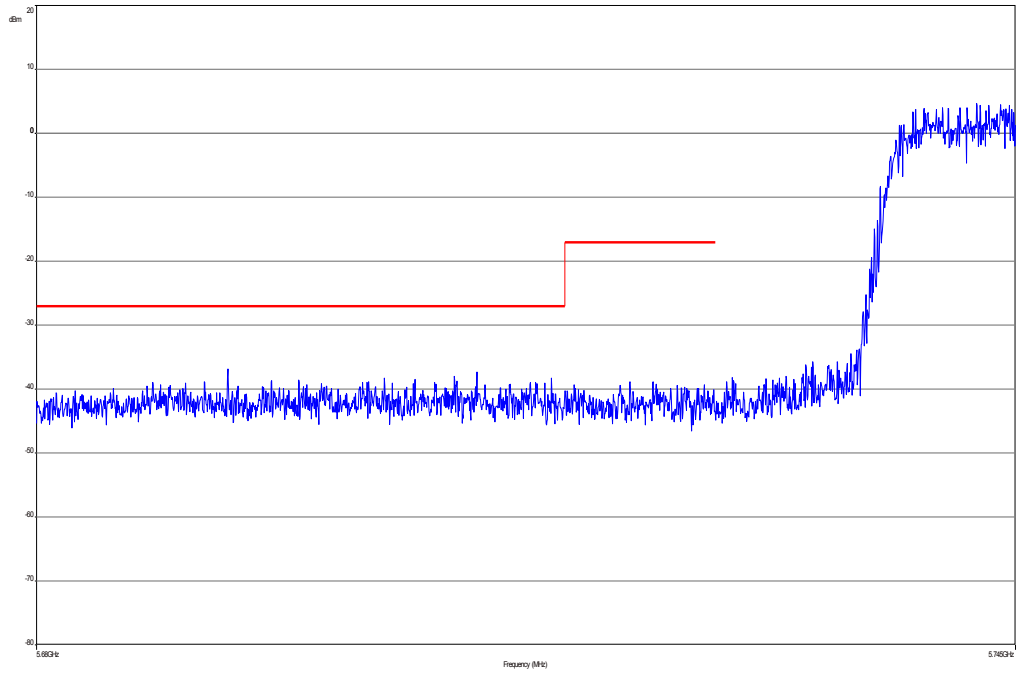
Plot 3: lower band edge, vertical & horizontal polarization (a mode), channel 100



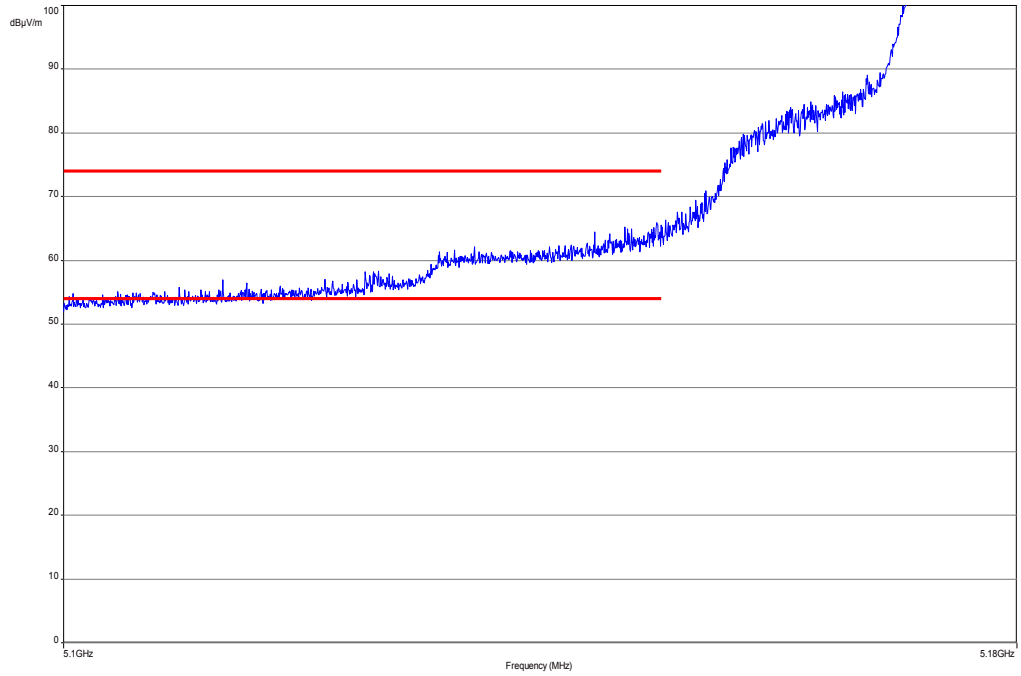
Plot 4: upper band edge, vertical & horizontal polarization (a mode), channel 140 (Part 15.407)



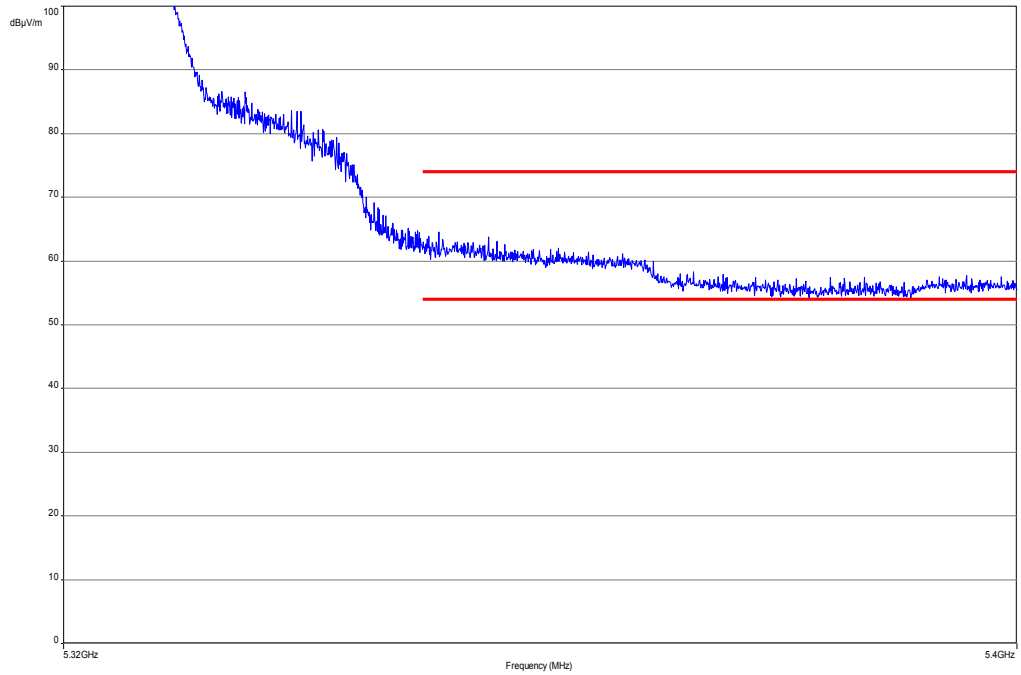
Plot 5: upper band edge, vertical & horizontal polarization (n mode), channel 149 (Part 15.407)



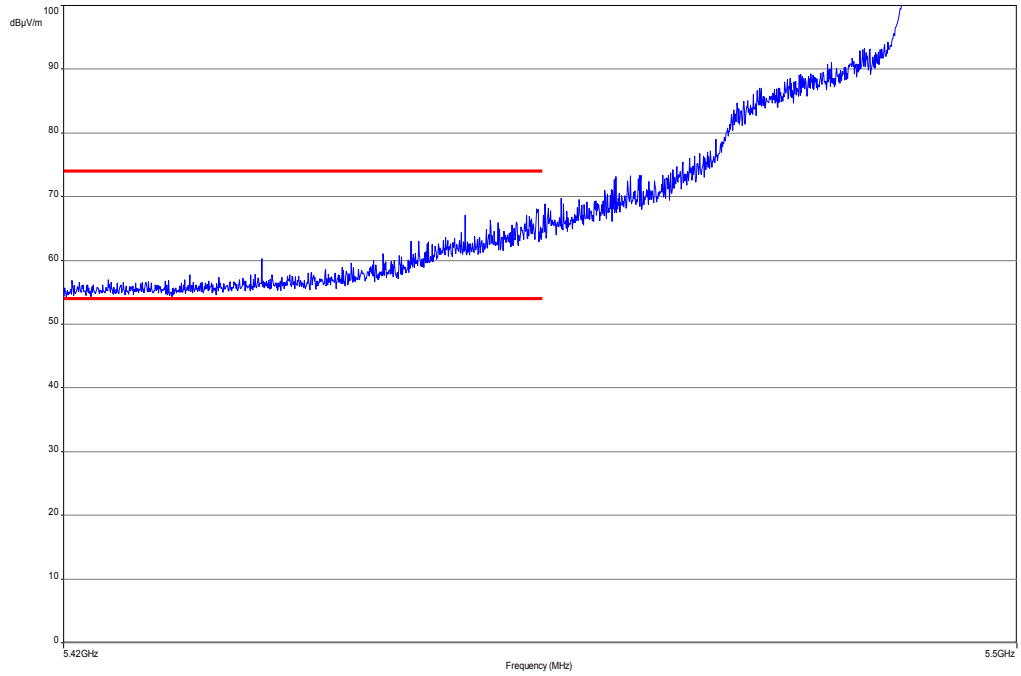
Plot 6: lower band edge, vertical & horizontal polarization (n mode), channel 36



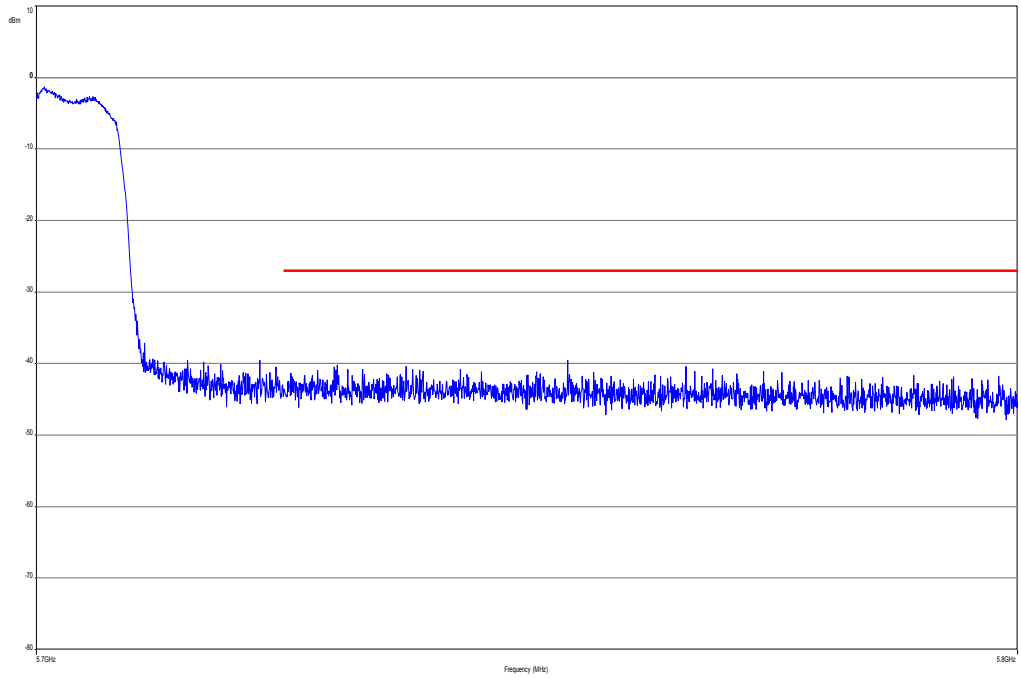
Plot 7: upper band edge, vertical & horizontal polarization (n mode), channel 64



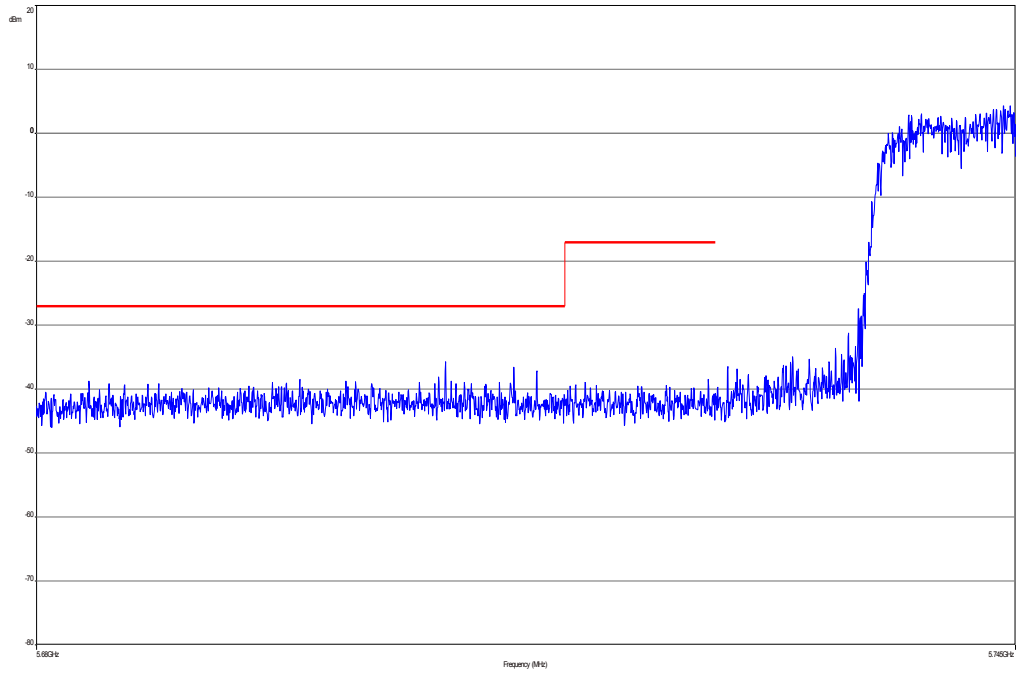
Plot 8: lower band edge, vertical & horizontal polarization (n mode), channel 100



Plot 9: upper band edge, vertical & horizontal polarization (n mode), channel 140 (Part 15.407)

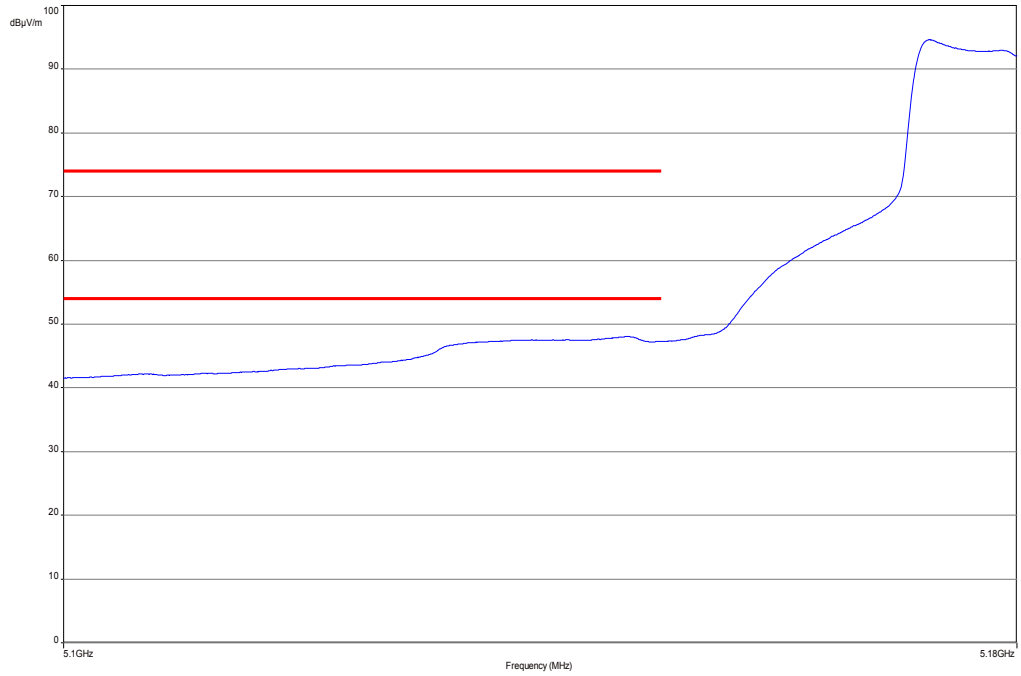


Plot 10: upper band edge, vertical & horizontal polarization (n mode), channel 149 (Part 15.407)

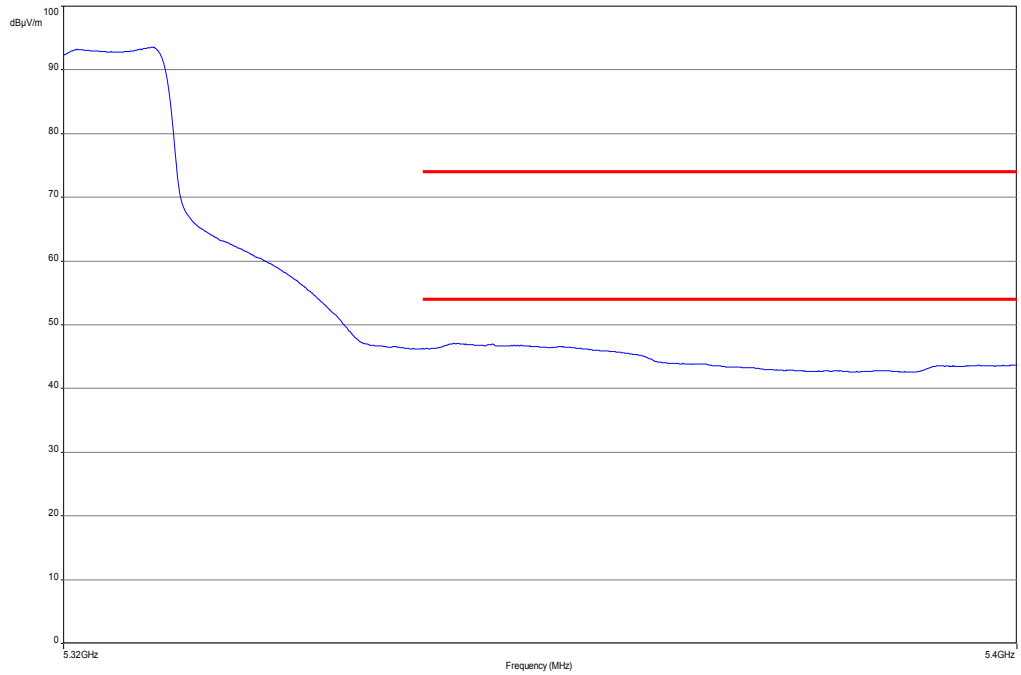


Plots: average

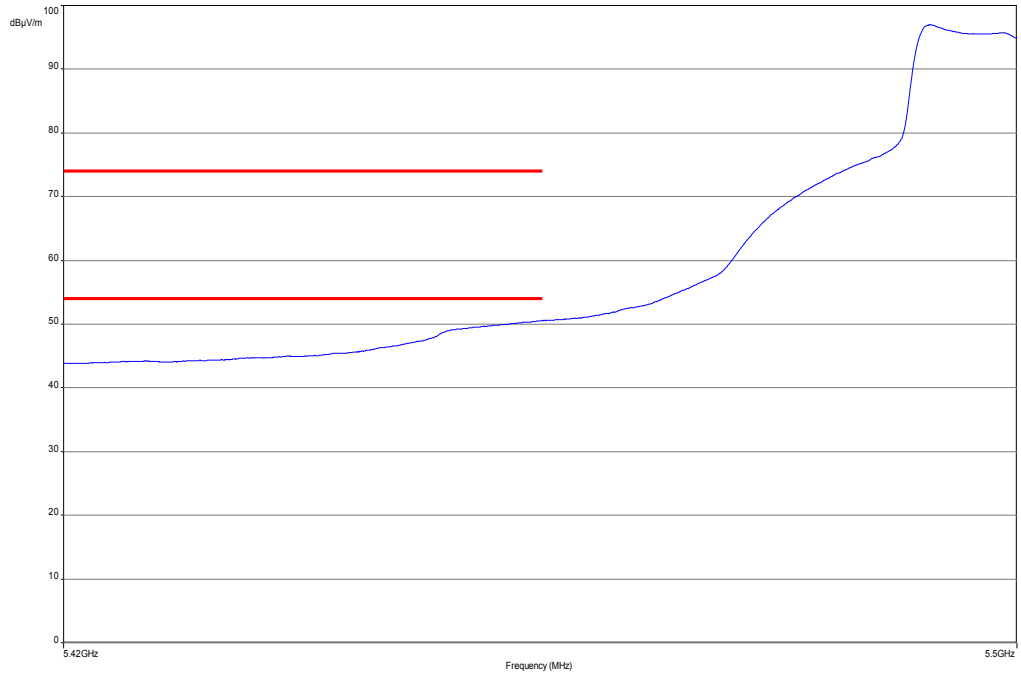
Plot 1: lower band edge, vertical & horizontal polarization (a mode), channel 36



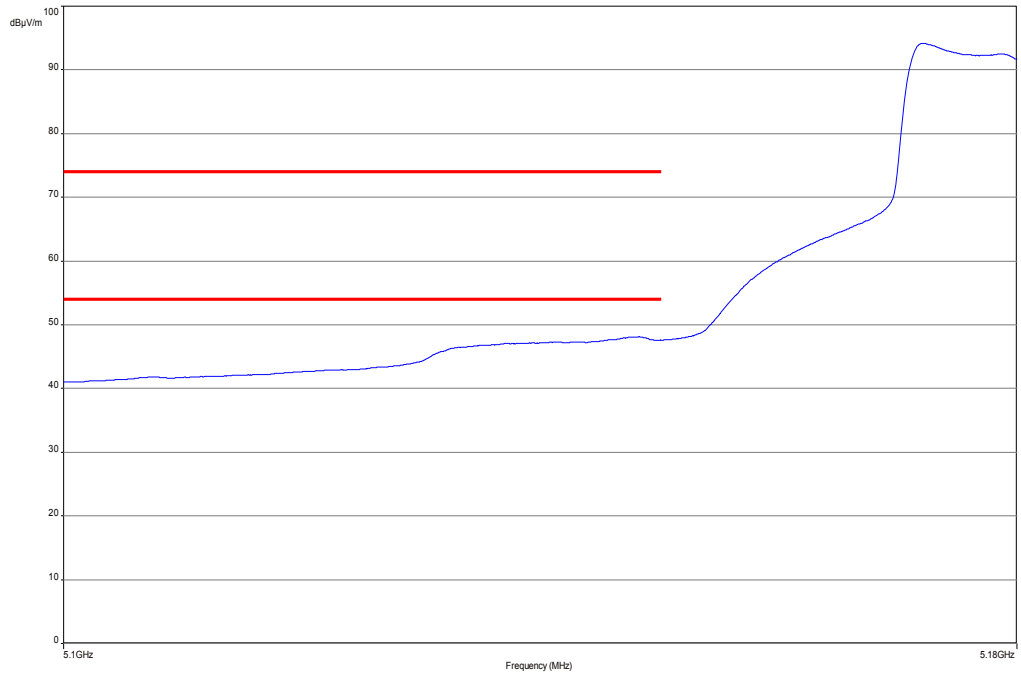
Plot 2: upper band edge, vertical & horizontal polarization (a mode), channel 64



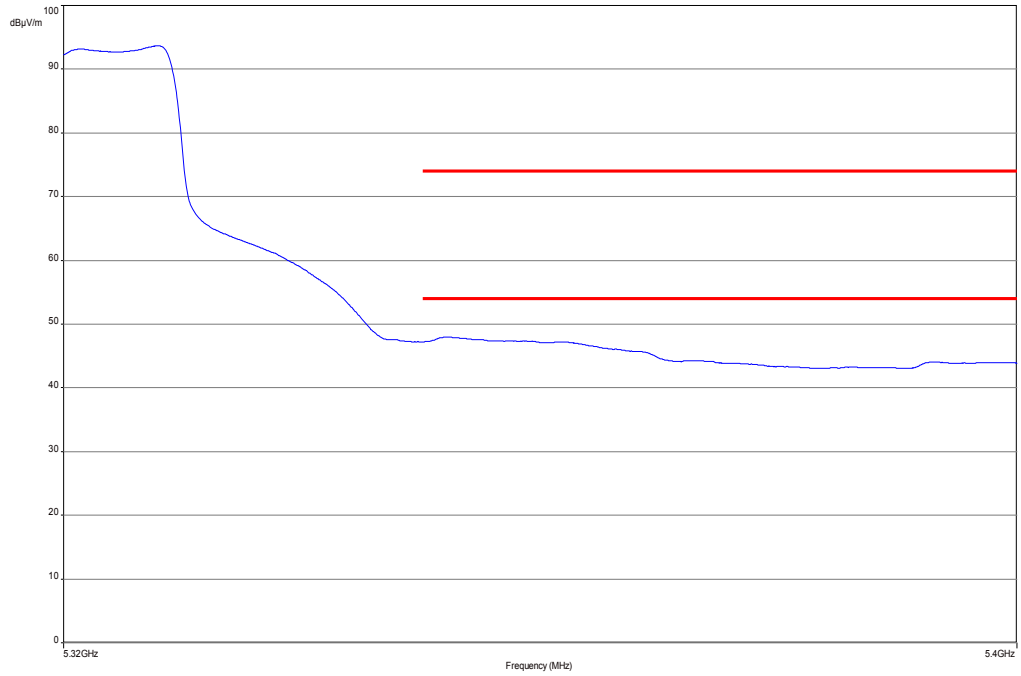
Plot 3: lower band edge, vertical & horizontal polarization (a mode), channel 100



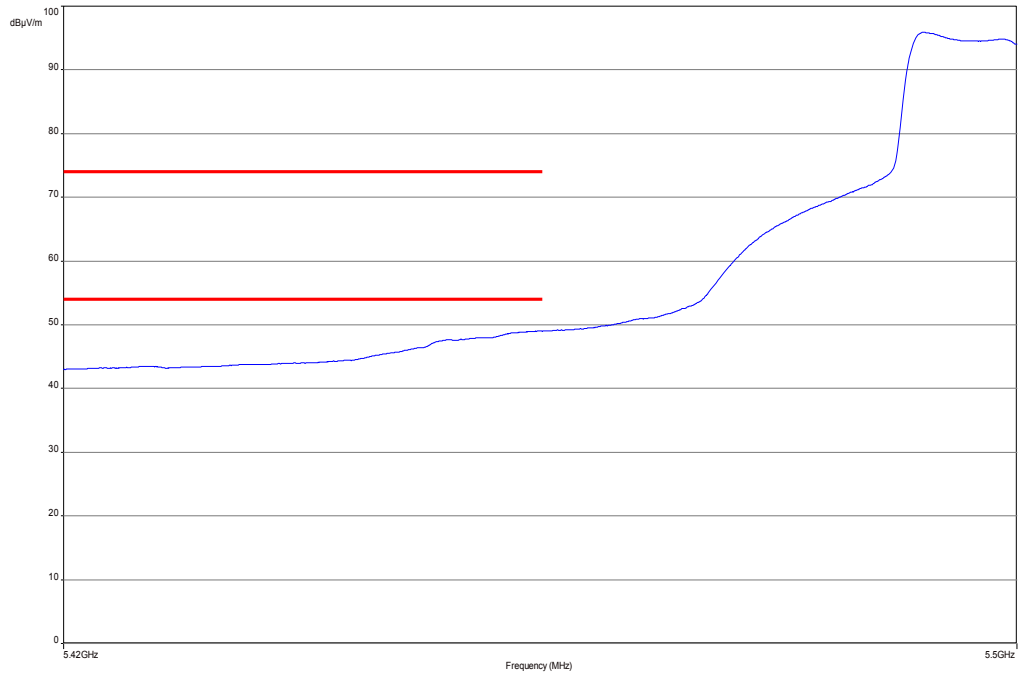
Plot 4: lower band edge, vertical & horizontal polarization (n mode), channel 36



Plot 5: upper band edge, vertical & horizontal polarization (n mode), channel 64



Plot 6: lower band edge, vertical & horizontal polarization (n mode), channel 100



Result: **Passed**

9.9 TX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in transmit mode. The measurement is performed at lowest, middle and highest channel.

Measurement:

Measurement parameter	
Detector:	Quasi Peak below 1 GHz (alternative Peak) Peak above 1 GHz / RMS
Sweep time:	Auto
Resolution bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: 1 MHz
Video bandwidth:	F < 1 GHz: 100 kHz F > 1 GHz: ≥ 3 MHz /10 Hz
Span:	30 MHz to 40 GHz
Trace-Mode:	Max Hold

Limits:

TX Spurious Emissions Radiated		
§15.209		
Frequency (MHz)	Field Strength (dBµV/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3
§15.407		
Outside the restricted bands!	-27 dBm / MHz	

Results: OFDM / a – mode

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM a – mode								
Channel 36			Channel 48			Channel 64		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
No critical emissions detected between 1 GHz and 12.75 GHz.			No critical emissions detected between 1 GHz and 12.75 GHz.			No critical emissions detected between 1 GHz and 12.75 GHz.		
For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.		
Measurement uncertainty			± 3 dB					

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM a – mode								
Channel 100			Channel 120			Channel 140		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
No critical emissions detected between 1 GHz and 12.75 GHz.			3733	Peak	49.00	3800	Peak	55.62
				AVG	45.00		AVG	50.80
For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.		
Measurement uncertainty			± 3 dB					

Result: **Passed**

Results: OFDM / n – mode

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM n – mode								
Channel 36			Channel 48			Channel 64		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
5395	Peak	53.80	No critical emissions detected between 1 GHz and 12.75 GHz.			No critical emissions detected between 1 GHz and 12.75 GHz.		
For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.			For emissions above 12.75 GHz, please take a look at the plots.		
Measurement uncertainty			± 3 dB					

TX Spurious Emissions Radiated [dBµV/m] / dBm								
OFDM n – mode								
Channel 100			Channel 120			Channel 140		
F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]	F [MHz]	Detector	Level [dBµV/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.			For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
5907	Peak	53.69	3733	Peak	48.77	3800	Peak	55.00
							AVG	50.10
For emissions above 12.75 GHz, please take a look at the plots.			5807	Peak	53.92	For emissions above 12.75 GHz, please take a look at the plots.		
			For emissions above 12.75 GHz, please take a look at the plots.					
Measurement uncertainty			± 3 dB					

Result: **Passed**

Plots: OFDM / a – mode

Plot 1: 30 MHz to 1 GHz, channel 36, vertical & horizontal polarization

Common Information

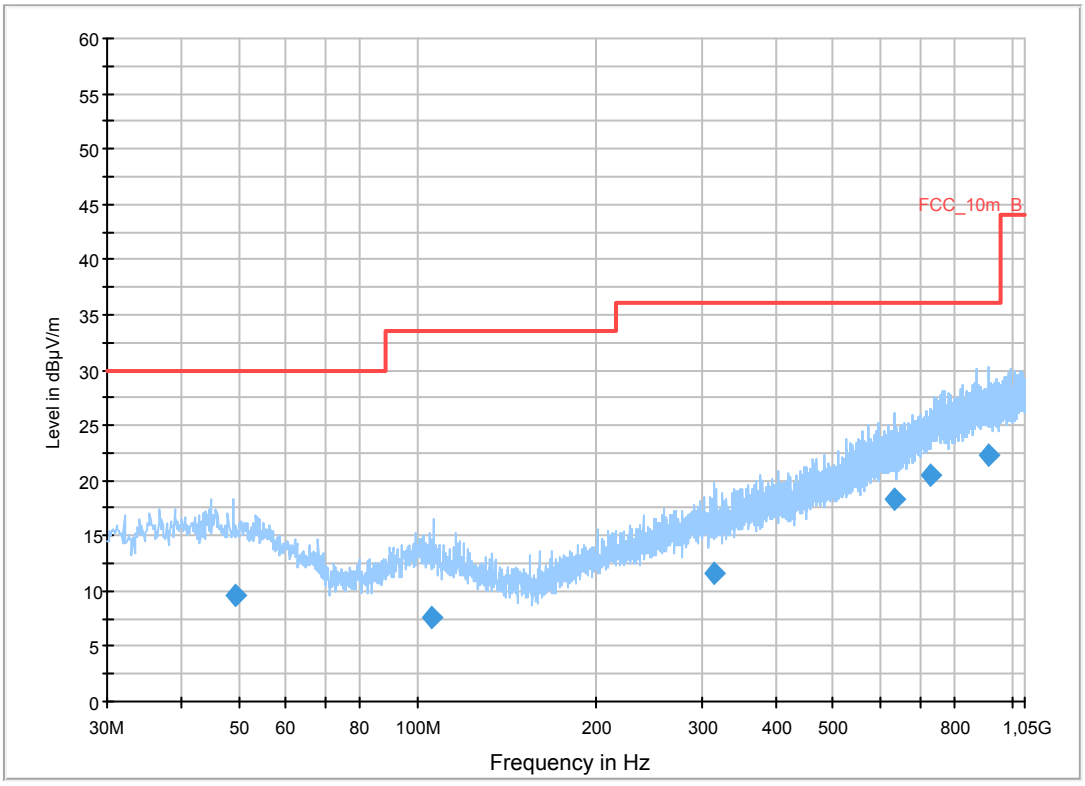
EUT:	RFN81UW
Test Description:	FCC part 15 C class B @ 10m
Operating Conditions:	802.11A TX CH36 6MpS
Operator Name:	Wolsdorfer
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

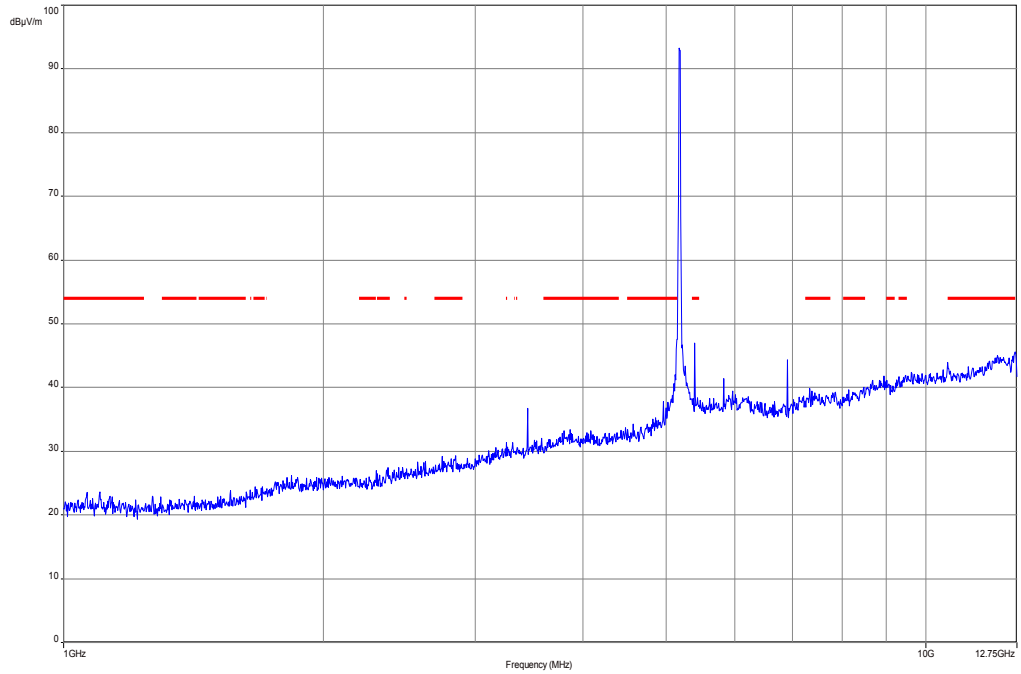
FCC_10m(B)_3



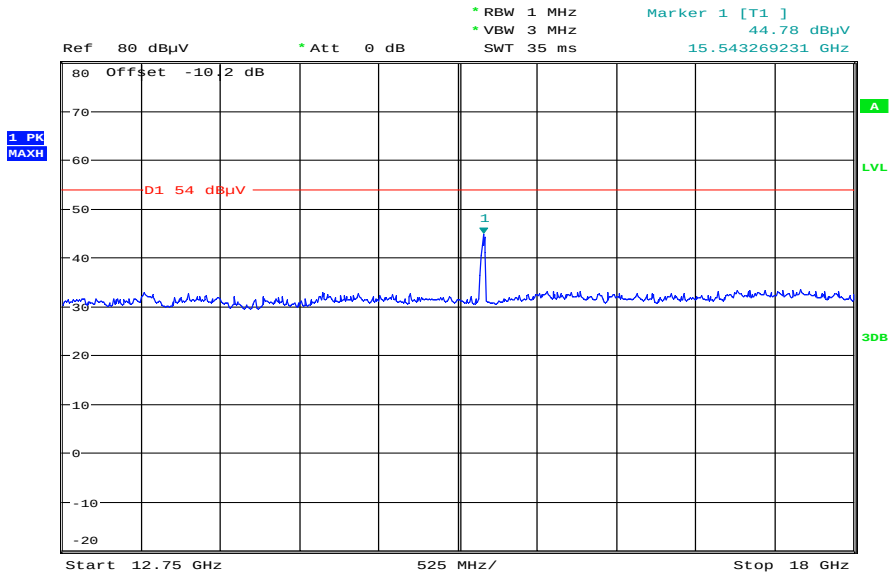
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
49.400850	9.6	1000.0	120.000	170.0	V	178.0	13.4	20.4	30.0	
105.737850	7.6	1000.0	120.000	170.0	V	10.0	11.4	25.9	33.5	
315.264150	11.6	1000.0	120.000	98.0	V	88.0	15.0	24.4	36.0	
633.490950	18.2	1000.0	120.000	170.0	H	183.0	21.0	17.8	36.0	
730.632600	20.4	1000.0	120.000	143.0	V	182.0	23.2	15.6	36.0	
913.395600	22.3	1000.0	120.000	111.0	H	0.0	25.2	13.7	36.0	

Plot 2: 1 GHz to 12.75 GHz, channel 36, vertical & horizontal polarization

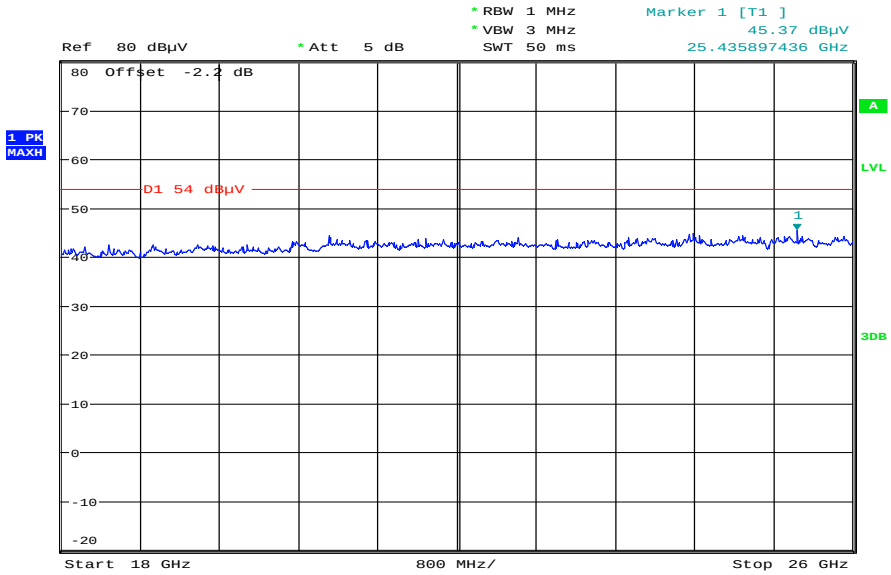


Plot 3: 12 GHz to 18 GHz, channel 36, vertical & horizontal polarization



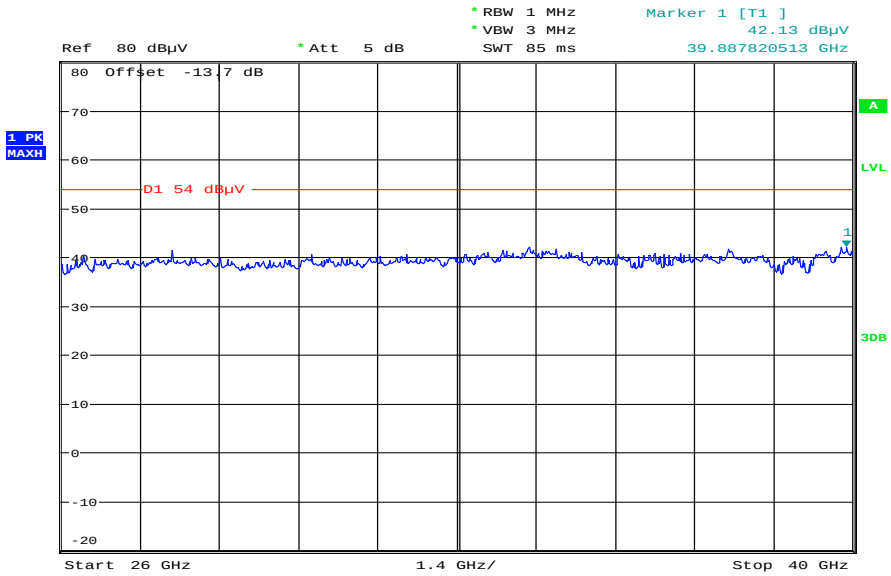
Date: 8.JAN.2013 11:02:31

Plot 4: 18 GHz to 26 GHz, channel 36, vertical & horizontal polarization



Date: 8.JAN.2013 11:41:38

Plot 5: 26 GHz to 40 GHz, channel 36, vertical & horizontal polarization



Date: 8.JAN.2013 12:26:50

Plot 6: 30 MHz to 1 GHz, channel 48, vertical & horizontal polarization

Common Information

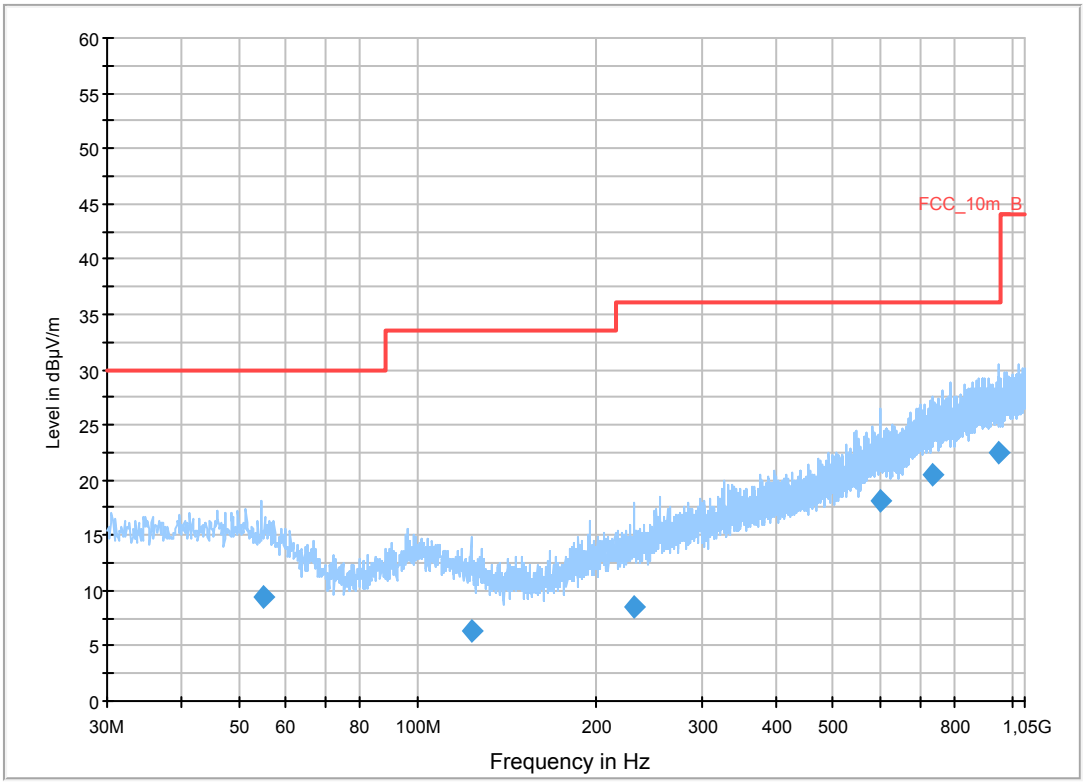
EUT:	RFN81UW
Test Description:	FCC part 15 C class B @ 10m
Operating Conditions:	802.11A TX CH48 6MpS
Operator Name:	Wolsdorfer
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

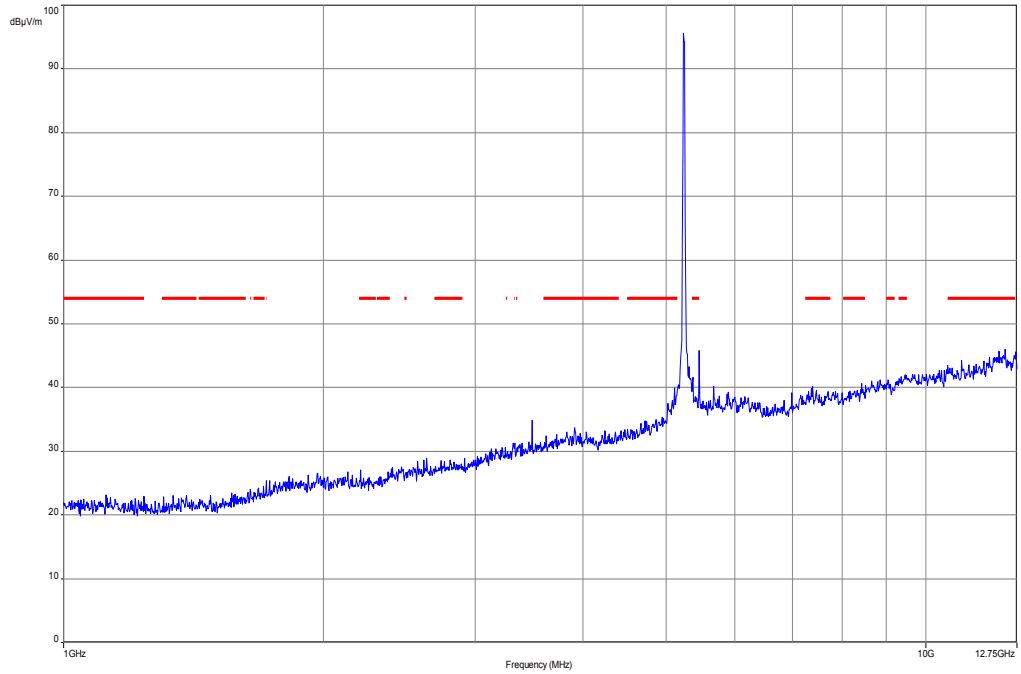
FCC_10m(B)_3



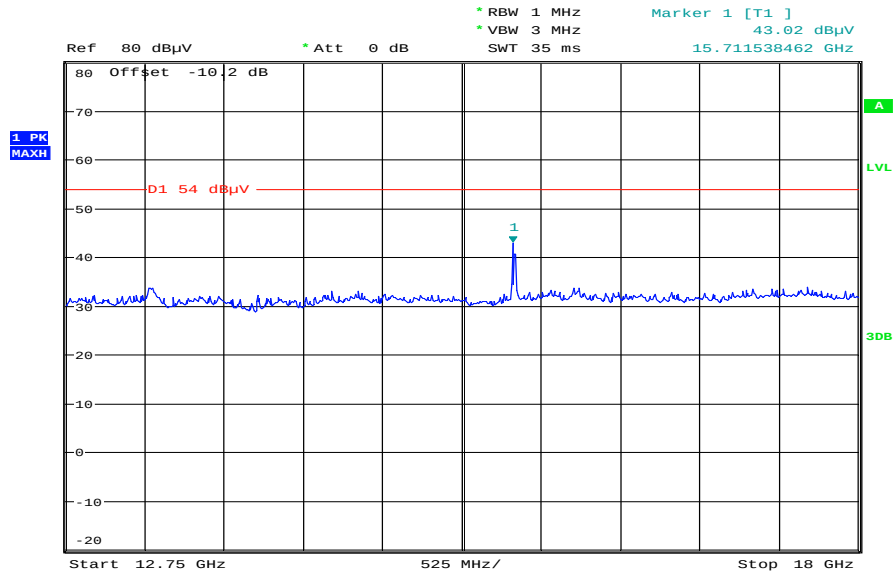
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
55.143600	9.5	1000.0	120.000	170.0	H	-2.0	12.8	20.5	30.0	
122.869350	6.3	1000.0	120.000	109.0	H	-9.0	10.0	27.2	33.5	
231.927000	8.6	1000.0	120.000	120.0	V	261.0	12.8	27.4	36.0	
599.179050	18.1	1000.0	120.000	105.0	H	176.0	20.8	17.9	36.0	
734.996850	20.5	1000.0	120.000	170.0	V	-2.0	23.3	15.5	36.0	
947.643300	22.4	1000.0	120.000	170.0	V	-9.0	25.3	13.6	36.0	

Plot 7: 1 GHz to 12.75 GHz, channel 48, vertical & horizontal polarization

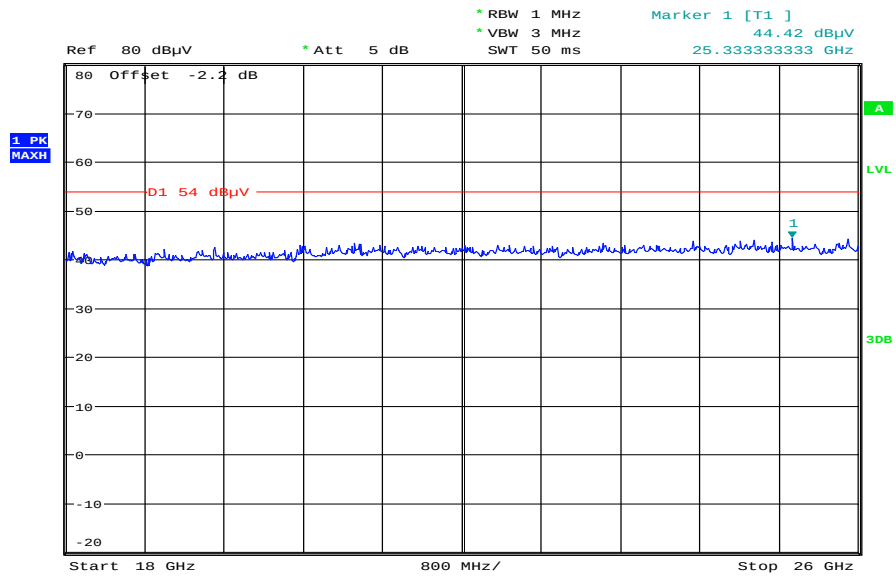


Plot 8: 12 GHz to 18 GHz, channel 48, vertical & horizontal polarization



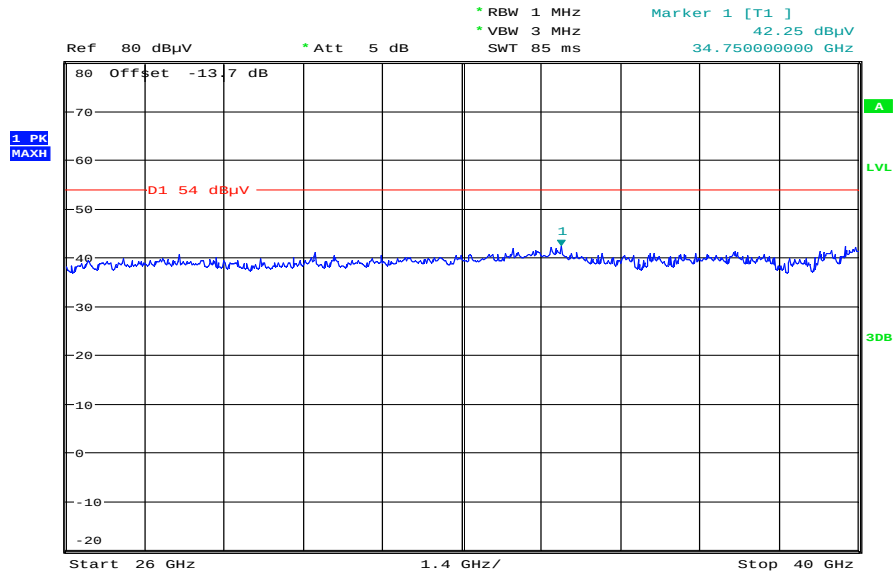
Date: 8.JAN.2013 11:04:25

Plot 9: 18 GHz to 26 GHz, channel 48, vertical & horizontal polarization



Date: 8.JAN.2013 11:43:57

Plot 10: 26 GHz to 40 GHz, channel 48, vertical & horizontal polarization



Date: 8.JAN.2013 12:35:27

Plot 11: 30 MHz to 1 GHz, channel 64, vertical & horizontal polarization

Common Information

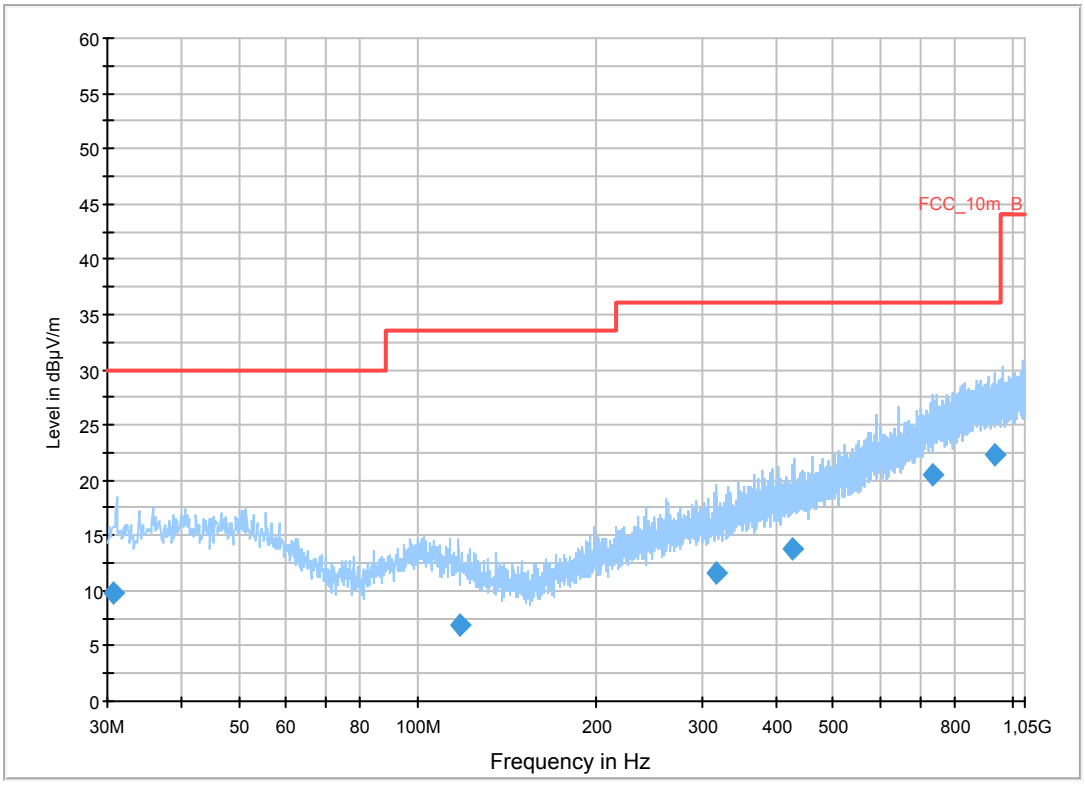
EUT:	RFN81UW
Test Description:	FCC part 15 C class B @ 10m
Operating Conditions:	802.11A TX CH64 6MpS
Operator Name:	Wolsdorfer
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

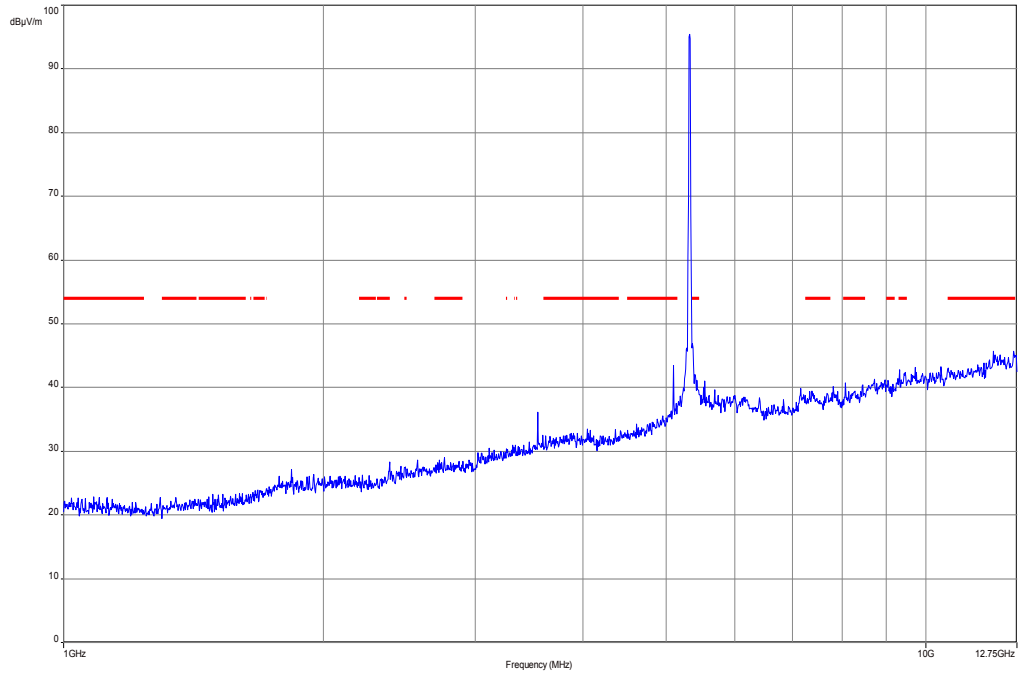
FCC_10m(B)_3



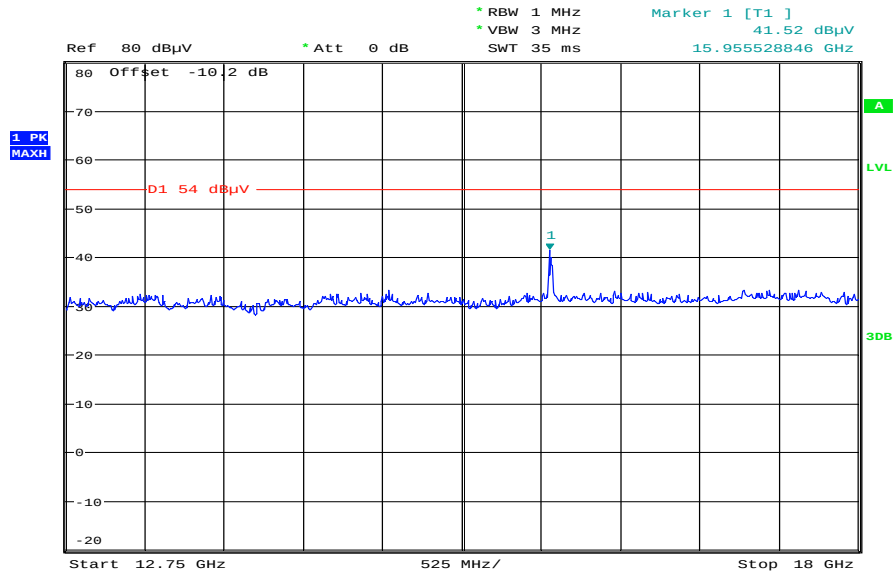
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.771300	9.7	1000.0	120.000	105.0	H	190.0	12.6	20.3	30.0	
117.216750	6.9	1000.0	120.000	112.0	V	272.0	10.4	26.6	33.5	
317.359350	11.6	1000.0	120.000	170.0	V	182.0	15.1	24.4	36.0	
427.851900	13.9	1000.0	120.000	104.0	V	10.0	17.3	22.1	36.0	
733.465350	20.5	1000.0	120.000	111.0	V	280.0	23.3	15.5	36.0	
938.095350	22.3	1000.0	120.000	170.0	H	-10.0	25.3	13.7	36.0	

Plot 12: 1 GHz to 12.75 GHz, channel 64, vertical & horizontal polarization

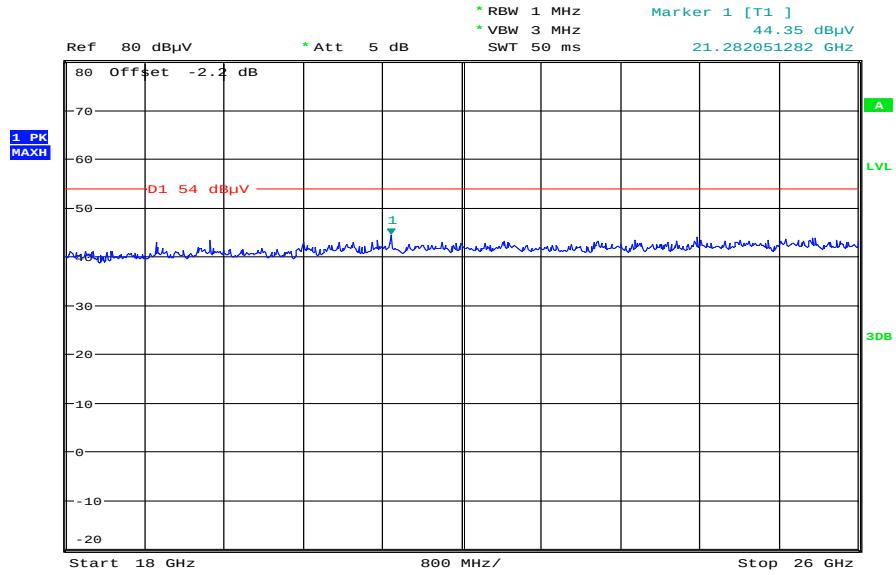


Plot 13: 12 GHz to 18 GHz, channel 64, vertical & horizontal polarization



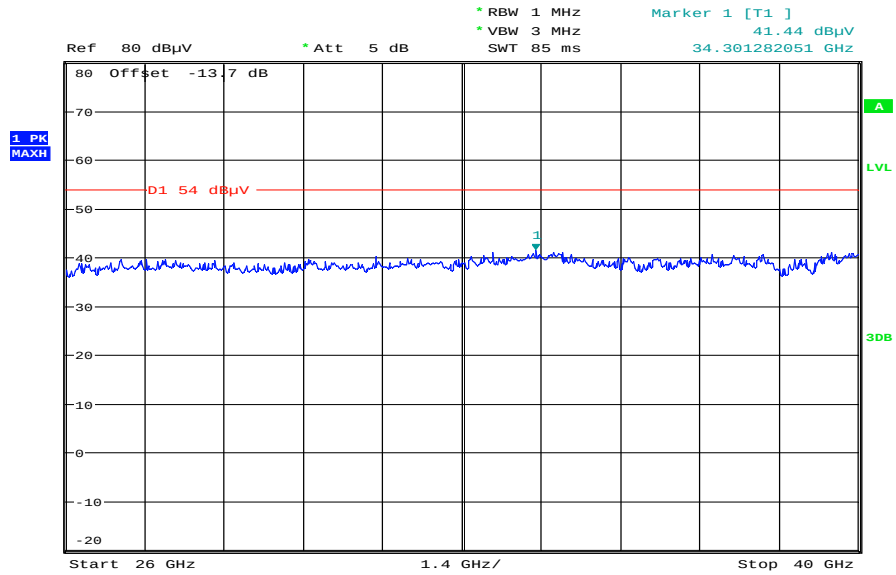
Date: 8.JAN.2013 11:05:25

Plot 14: 18 GHz to 26 GHz, channel 64, vertical & horizontal polarization



Date: 8.JAN.2013 11:45:11

Plot 15: 26 GHz to 40 GHz, channel 64, vertical & horizontal polarization



Date: 8.JAN.2013 12:37:17

Plot 16: 30 MHz to 1 GHz, channel 100, vertical & horizontal polarization

Common Information

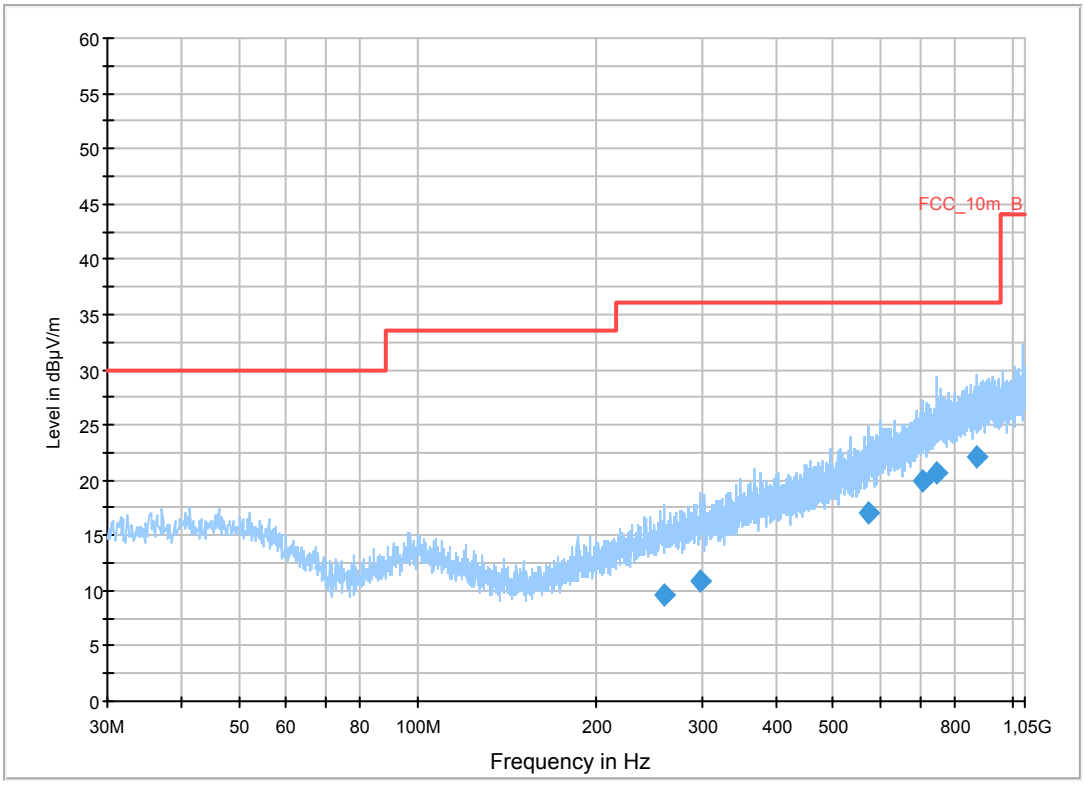
EUT:	RFN81UW
Test Description:	FCC part 15 C class B @ 10m
Operating Conditions:	802.11A TX CH100 6MbpS
Operator Name:	Wolsdorfer
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

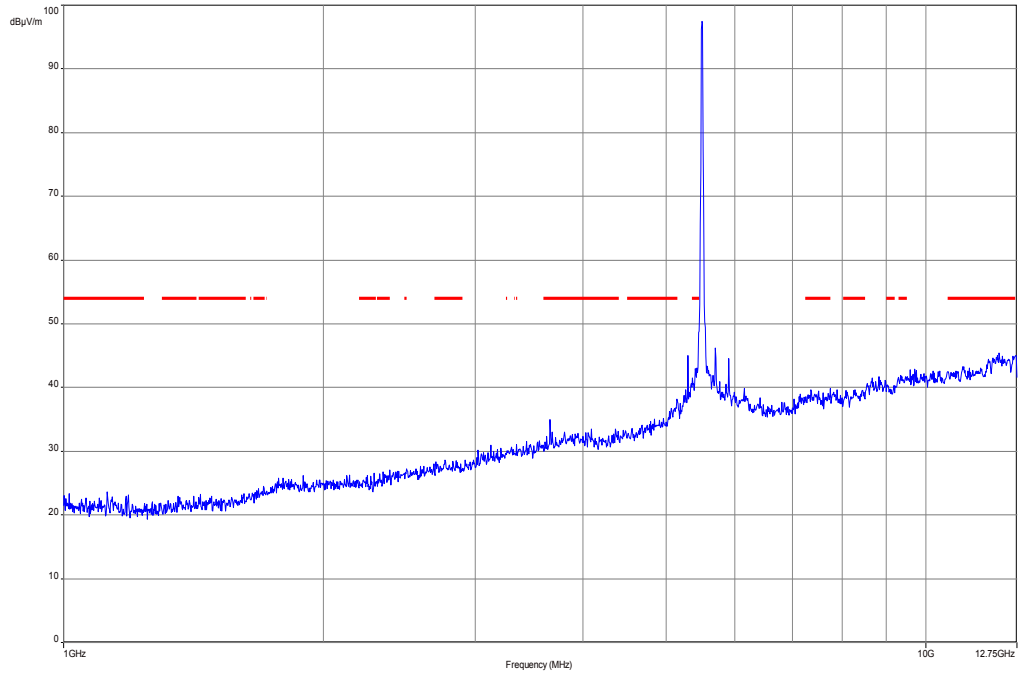
FCC_10m(B)_3



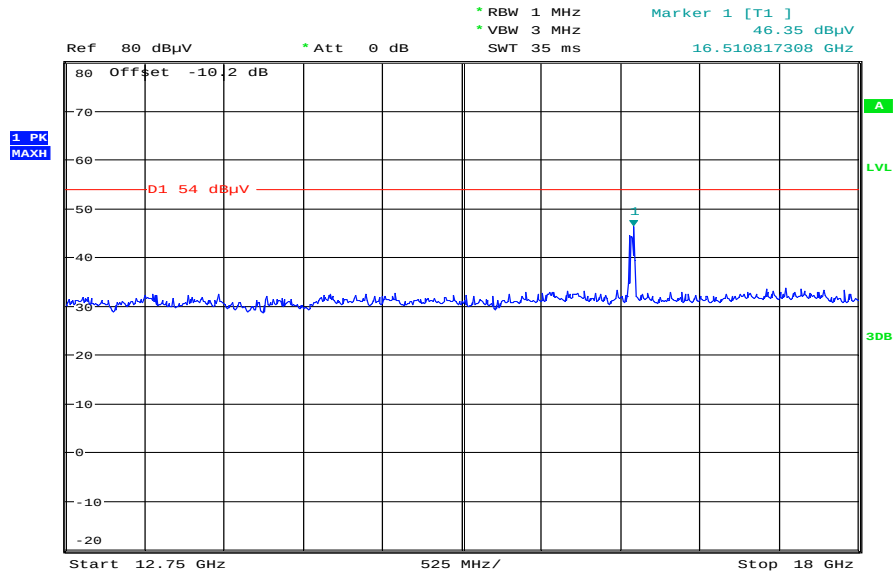
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
259.266600	9.5	1000.0	120.000	170.0	V	-5.0	13.5	26.5	36.0	
299.123700	10.9	1000.0	120.000	98.0	H	2.0	14.5	25.1	36.0	
572.459850	17.1	1000.0	120.000	170.0	V	-4.0	20.0	18.9	36.0	
704.821350	19.9	1000.0	120.000	170.0	H	280.0	22.6	16.1	36.0	
743.812950	20.7	1000.0	120.000	170.0	V	85.0	23.5	15.3	36.0	
871.047900	22.2	1000.0	120.000	98.0	H	190.0	24.8	13.8	36.0	

Plot 17: 1 GHz to 12.75 GHz, channel 100, vertical & horizontal polarization

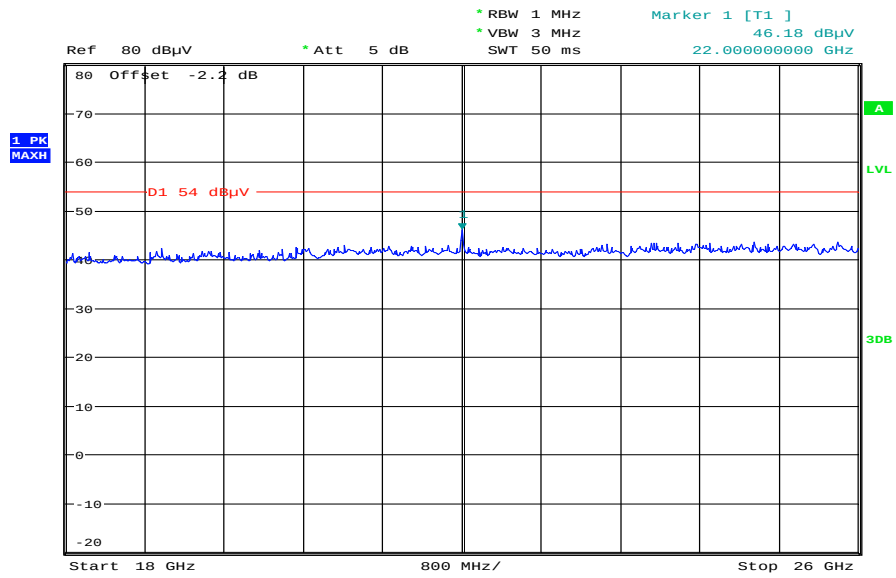


Plot 18: 12 GHz to 18 GHz, channel 100, vertical & horizontal polarization



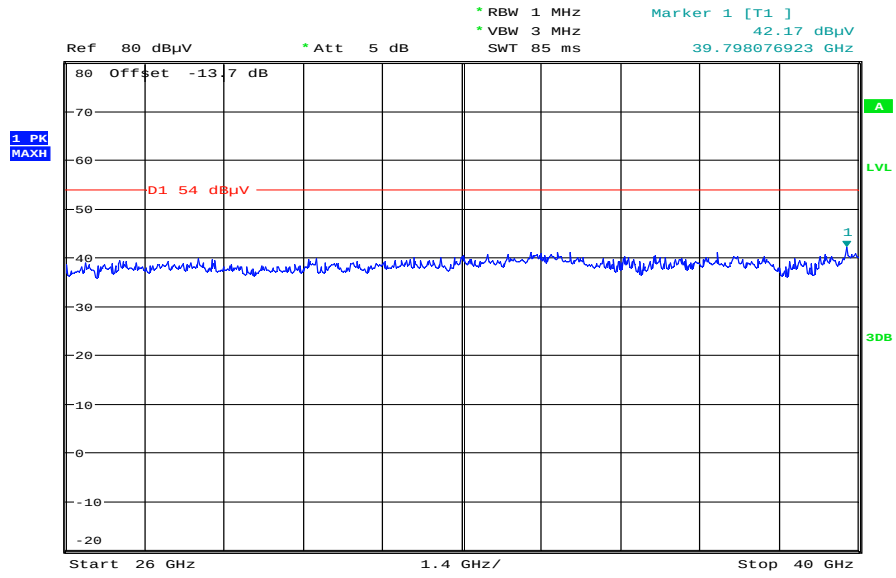
Date: 8.JAN.2013 11:06:44

Plot 19: 18 GHz to 26 GHz, channel 100, vertical & horizontal polarization



Date: 8.JAN.2013 11:46:16

Plot 20: 26 GHz to 40 GHz, channel 100, vertical & horizontal polarization



Date: 8.JAN.2013 12:41:25

Plot 21: 30 MHz to 1 GHz, channel 120, vertical & horizontal polarization

Common Information

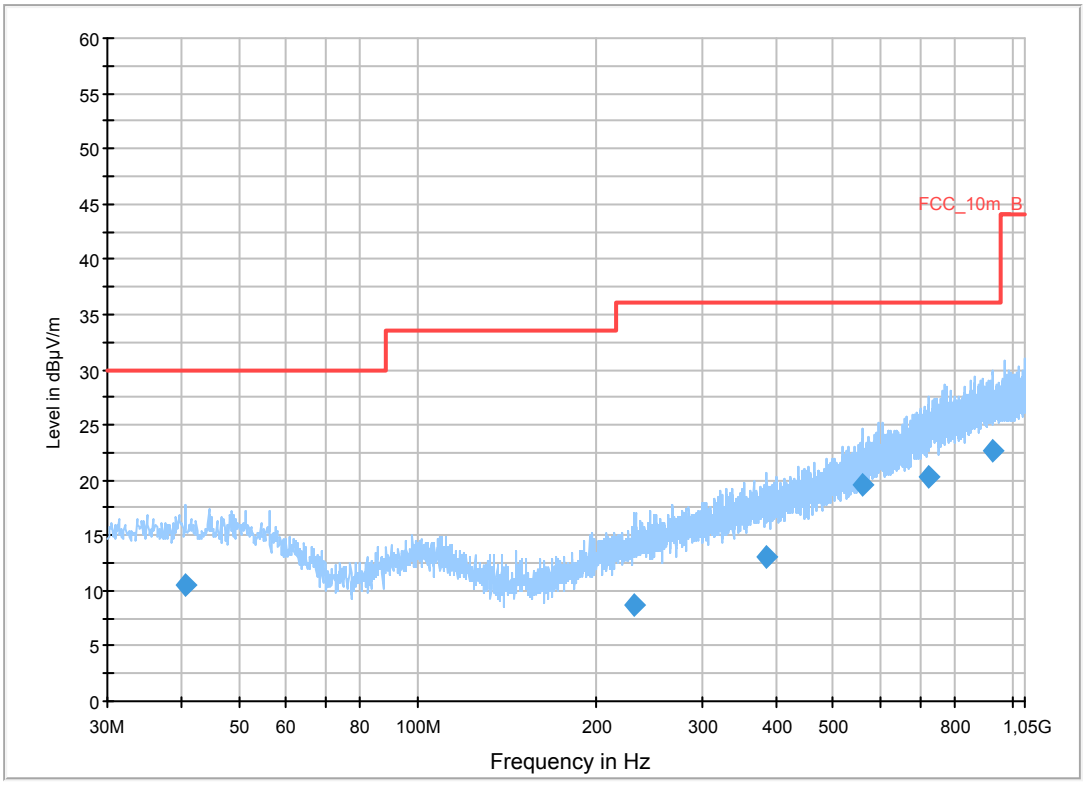
EUT:	RFN81UW
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	802.11A TX CH120 6MbpS
Operator Name:	Medrow
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

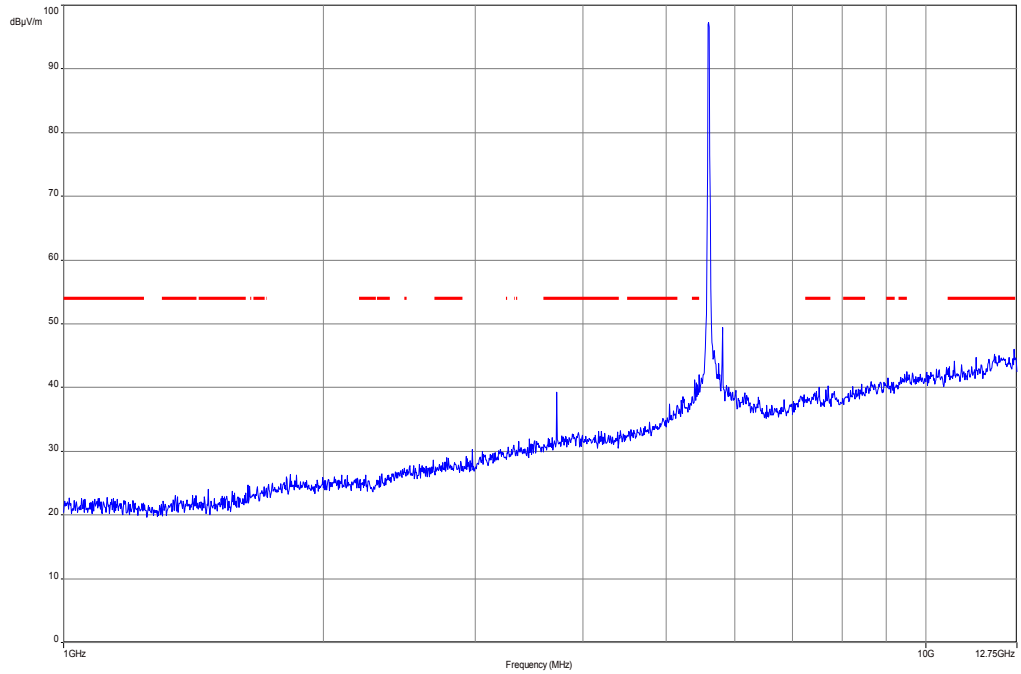
FCC_10m(B)_3



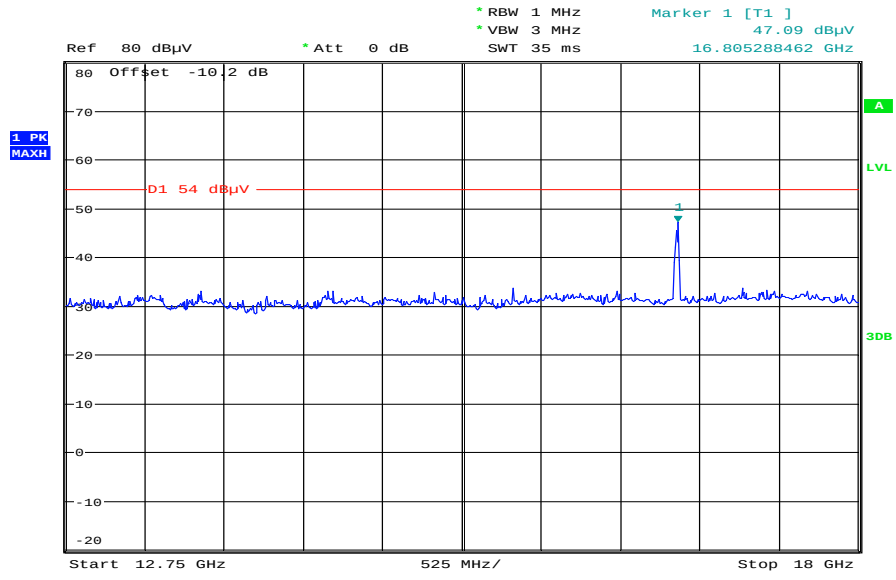
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
40.618050	10.5	1000.0	120.000	162.0	V	268.0	13.4	19.5	30.0	
230.978700	8.7	1000.0	120.000	170.0	H	10.0	12.7	27.3	36.0	
386.815500	13.1	1000.0	120.000	170.0	V	0.0	16.7	22.9	36.0	
559.998000	19.6	1000.0	120.000	121.0	H	100.0	19.7	16.4	36.0	
725.515200	20.3	1000.0	120.000	98.0	V	80.0	23.1	15.7	36.0	
927.364800	22.6	1000.0	120.000	170.0	H	260.0	25.3	13.4	36.0	

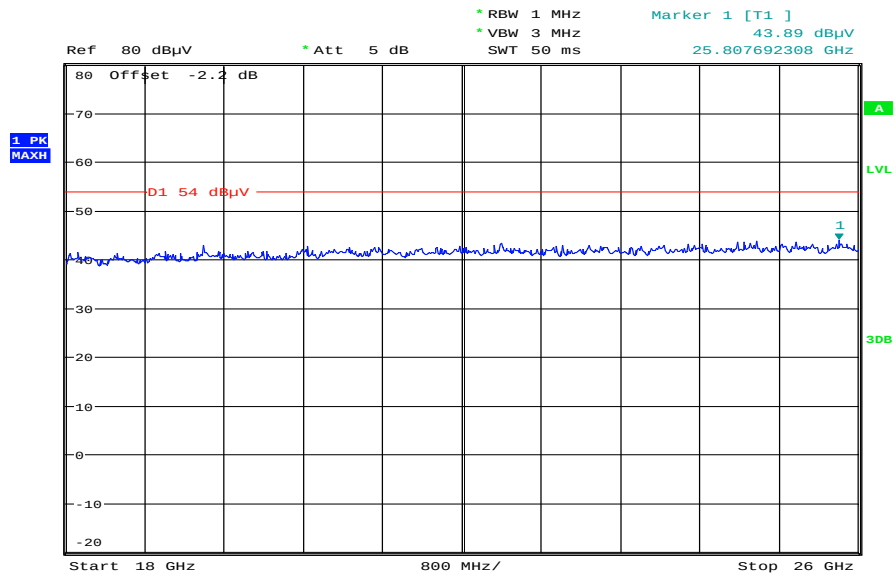
Plot 22: 1 GHz to 12.75 GHz, channel 120, vertical & horizontal polarization



Plot 23: 12 GHz to 18 GHz, channel 120, vertical & horizontal polarization

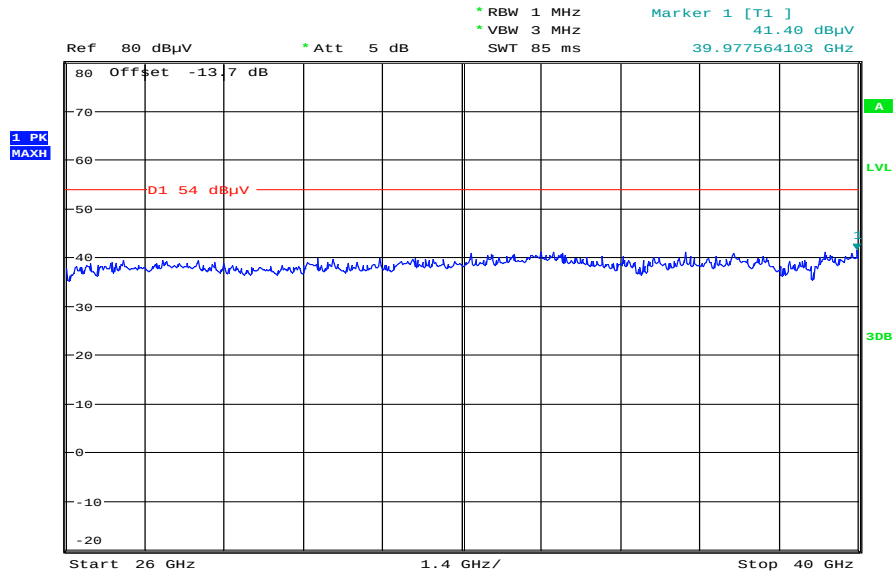


Plot 24: 18 GHz to 26 GHz, channel 120, vertical & horizontal polarization



Date: 8.JAN.2013 11:47:16

Plot 25: 26 GHz to 40 GHz, channel 120, vertical & horizontal polarization



Date: 8.JAN.2013 12:42:34

Plot 26: 30 MHz to 1 GHz, channel 140, vertical & horizontal polarization

Common Information

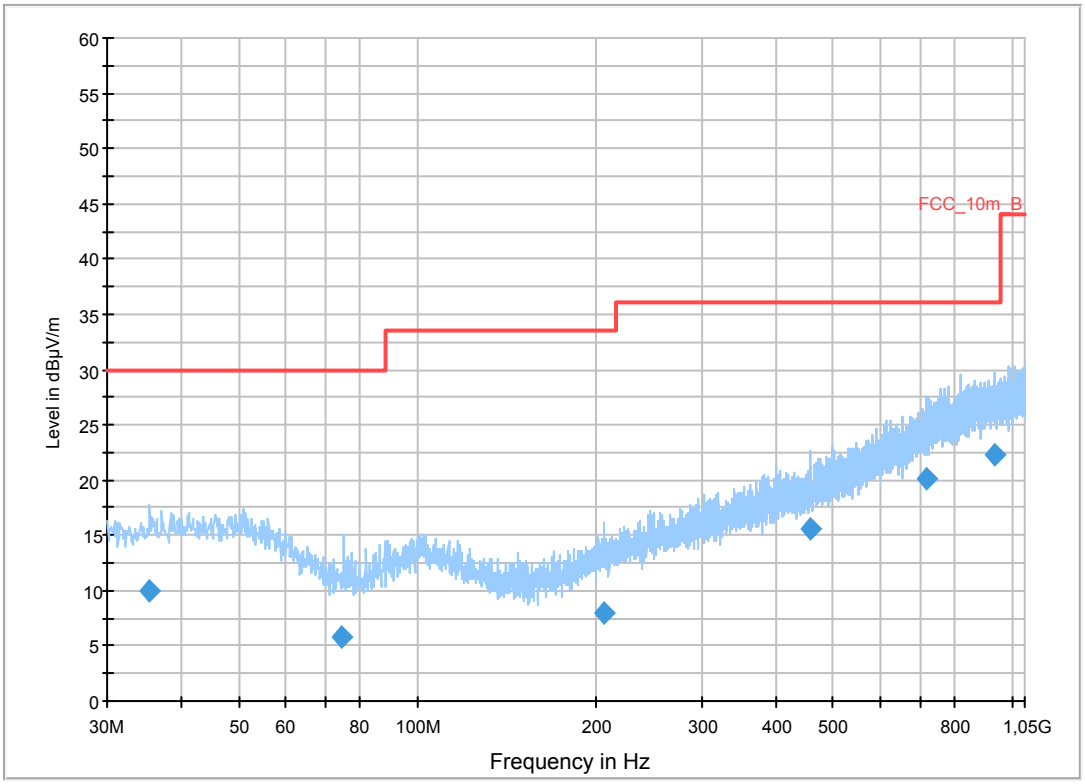
EUT:	RFN81UW
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	802.11A TX CH140 6MpS
Operator Name:	Medrow
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

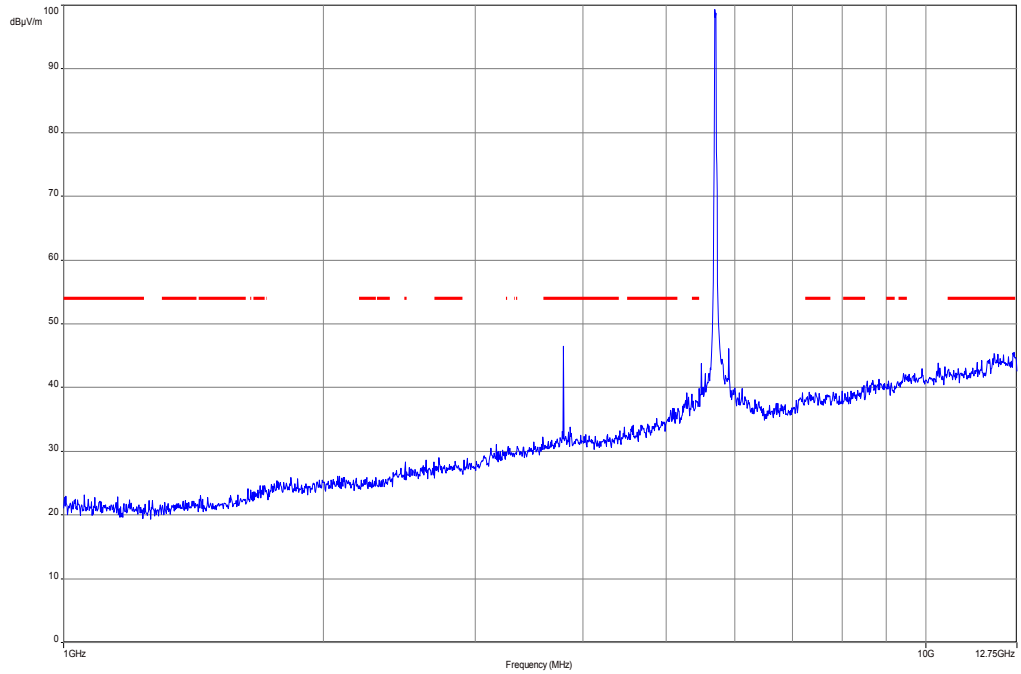
FCC_10m(B)_3



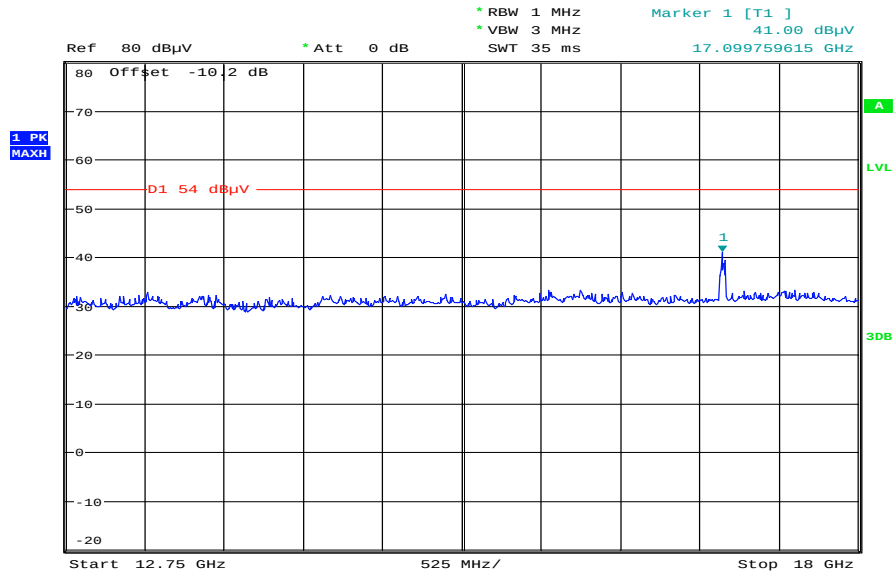
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.188350	10.0	1000.0	120.000	170.0	V	100.0	13.0	20.0	30.0	
74.533200	5.8	1000.0	120.000	170.0	V	100.0	9.2	24.2	30.0	
206.064450	7.9	1000.0	120.000	170.0	H	88.0	11.9	25.6	33.5	
458.158950	15.6	1000.0	120.000	98.0	H	178.0	17.8	20.4	36.0	
717.793800	20.1	1000.0	120.000	170.0	V	80.0	22.9	15.9	36.0	
935.313000	22.4	1000.0	120.000	120.0	V	100.0	25.3	13.6	36.0	

Plot 27: 1 GHz to 12.75 GHz, channel 140, vertical & horizontal polarization

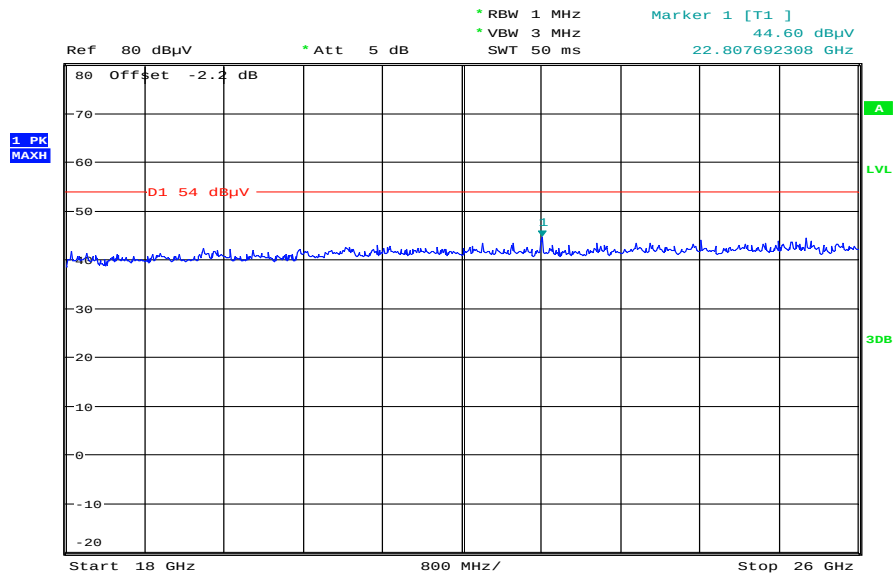


Plot 28: 12 GHz to 18 GHz, channel 140, vertical & horizontal polarization



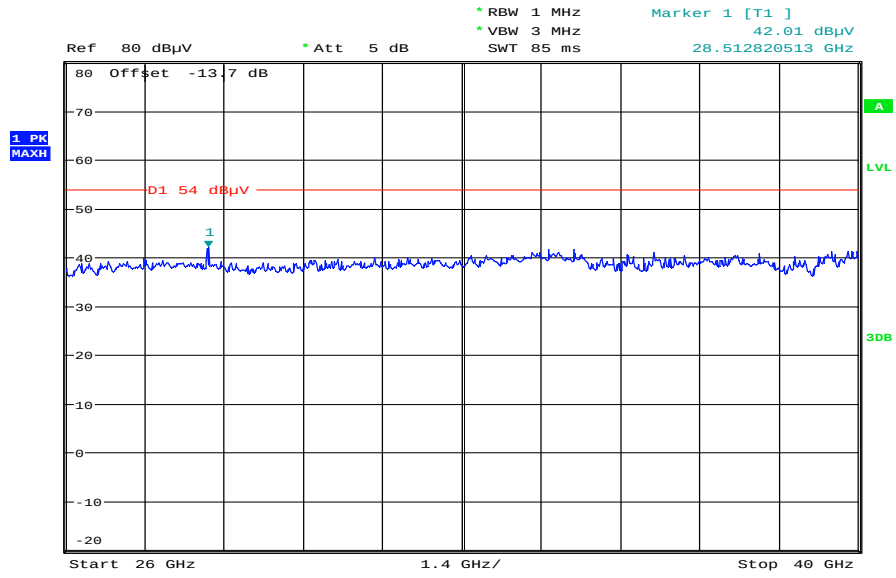
Date: 8.JAN.2013 11:09:14

Plot 29: 18 GHz to 26 GHz, channel 140, vertical & horizontal polarization



Date: 8.JAN.2013 11:48:15

Plot 30: 26 GHz to 40 GHz, channel 140, vertical & horizontal polarization



Date: 8.JAN.2013 12:45:01

Plots: OFDM / n – mode HT20

Plot 1: 30 MHz to 1 GHz, channel 36, vertical & horizontal polarization

Common Information

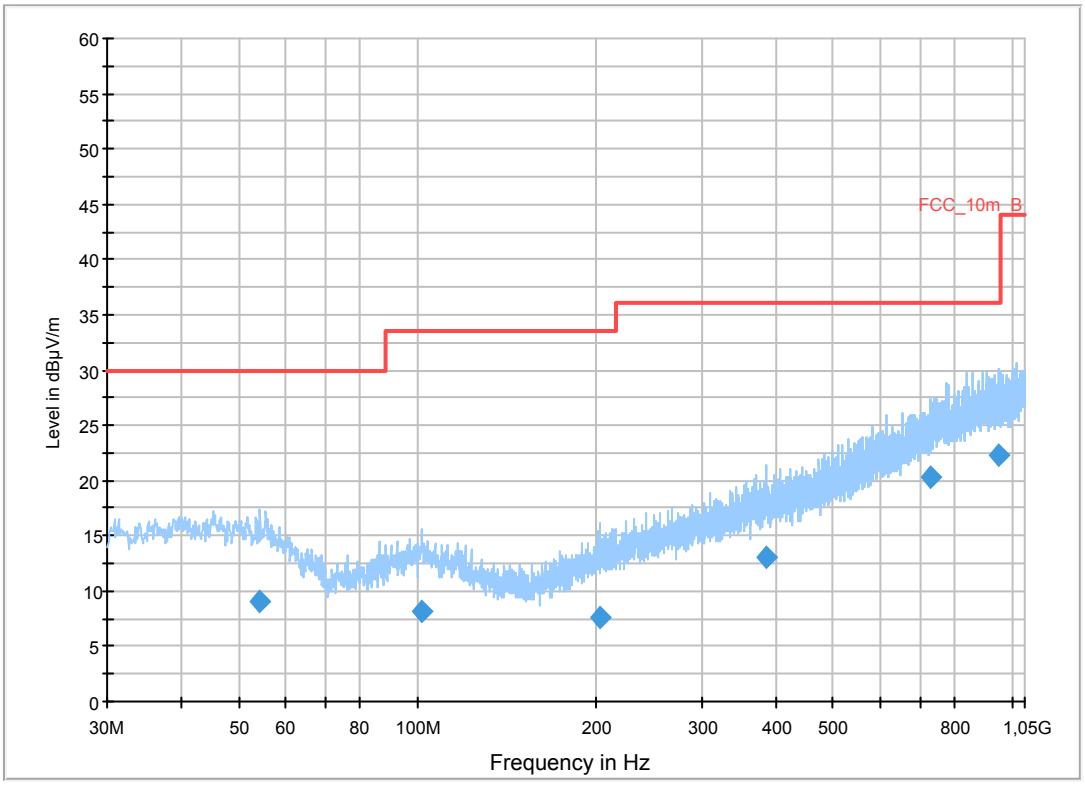
EUT:	RFN81UW
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	802.11N TX CH36 MCS 0
Operator Name:	Medrow
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

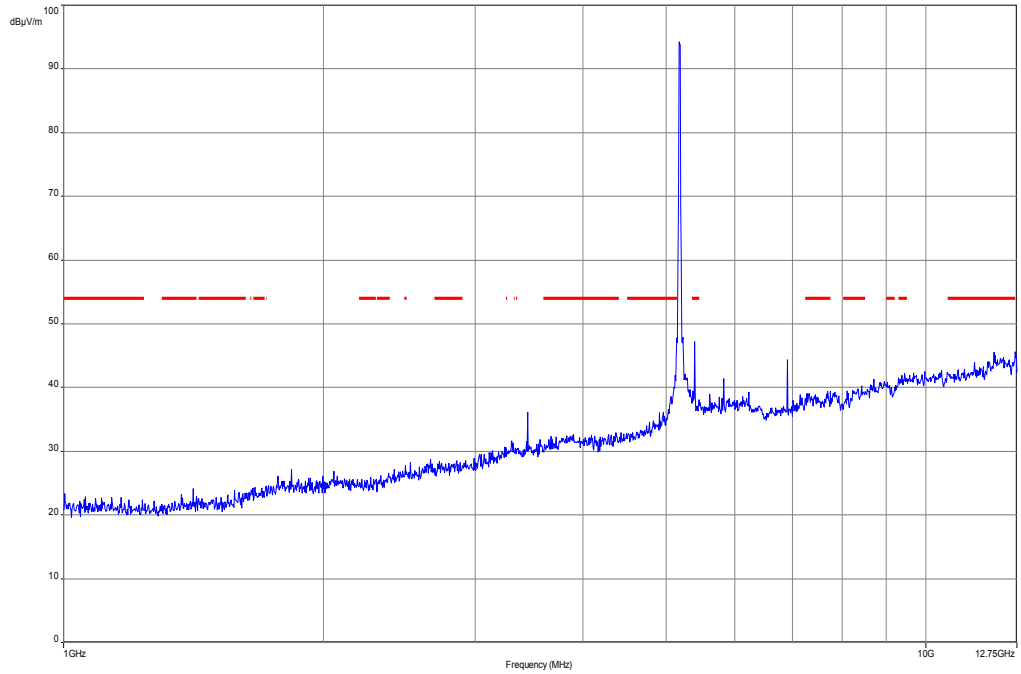
FCC_10m(B)_3



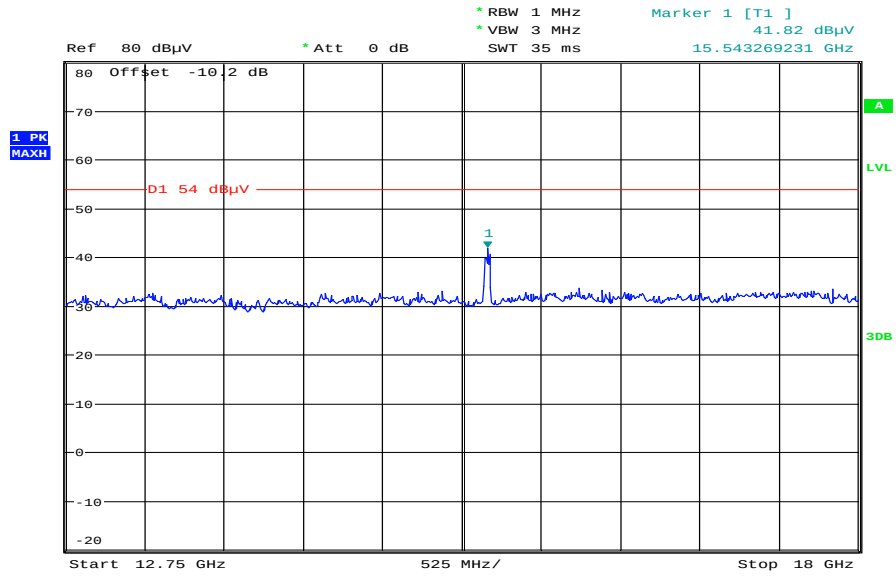
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
54.043650	9.1	1000.0	120.000	105.0	V	80.0	13.0	20.9	30.0	
101.372850	8.2	1000.0	120.000	105.0	H	-2.0	11.8	25.3	33.5	
202.358850	7.6	1000.0	120.000	170.0	V	190.0	11.8	25.9	33.5	
385.358700	13.1	1000.0	120.000	133.0	H	280.0	16.7	22.9	36.0	
728.038500	20.3	1000.0	120.000	170.0	H	10.0	23.2	15.7	36.0	
948.033000	22.4	1000.0	120.000	120.0	V	100.0	25.3	13.6	36.0	

Plot 2: 1 GHz to 12.75 GHz, channel 36, vertical & horizontal polarization

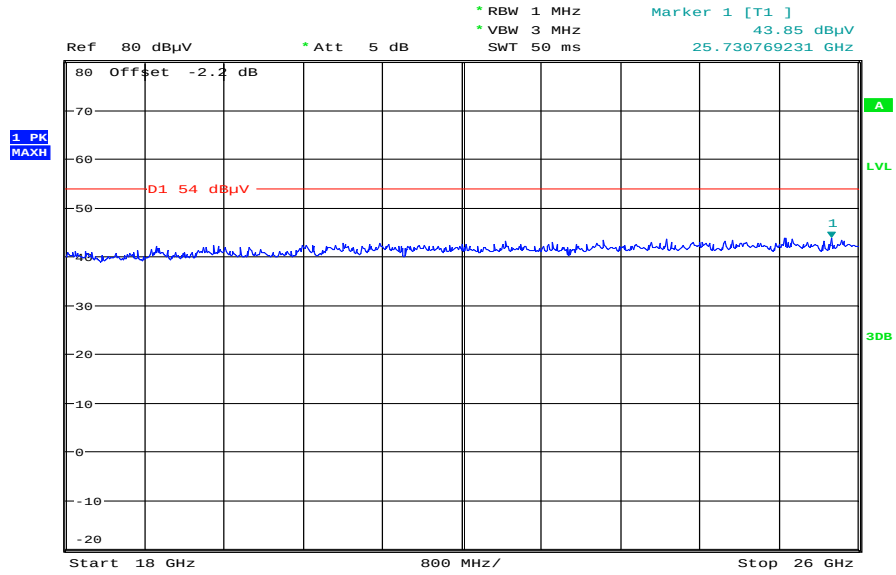


Plot 3: 12 GHz to 18 GHz, channel 36, vertical & horizontal polarization



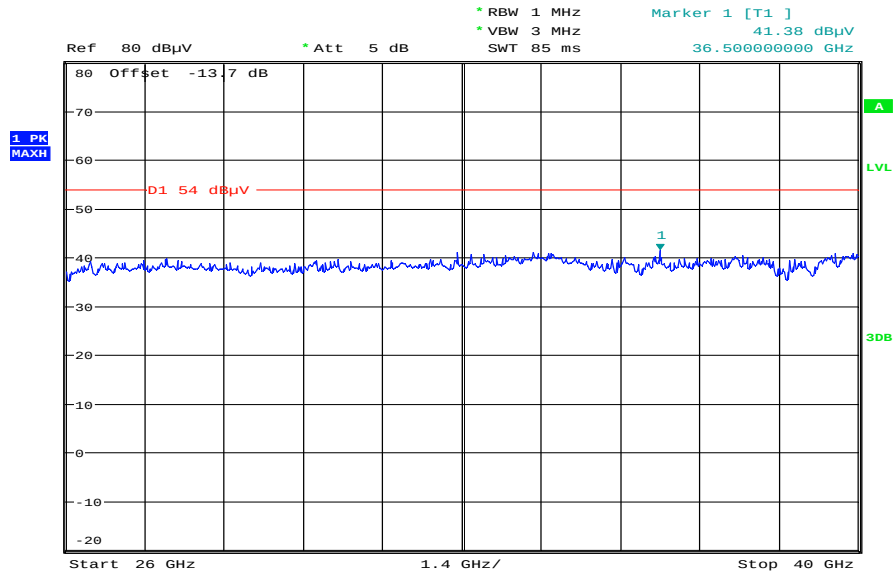
Date: 8.JAN.2013 11:17:10

Plot 4: 18 GHz to 26 GHz, channel 36, vertical & horizontal polarization



Date: 8.JAN.2013 11:58:39

Plot 5: 26 GHz to 40 GHz, channel 36, vertical & horizontal polarization



Date: 8.JAN.2013 12:50:18

Plot 6: 30 MHz to 1 GHz, channel 48, vertical & horizontal polarization

Common Information

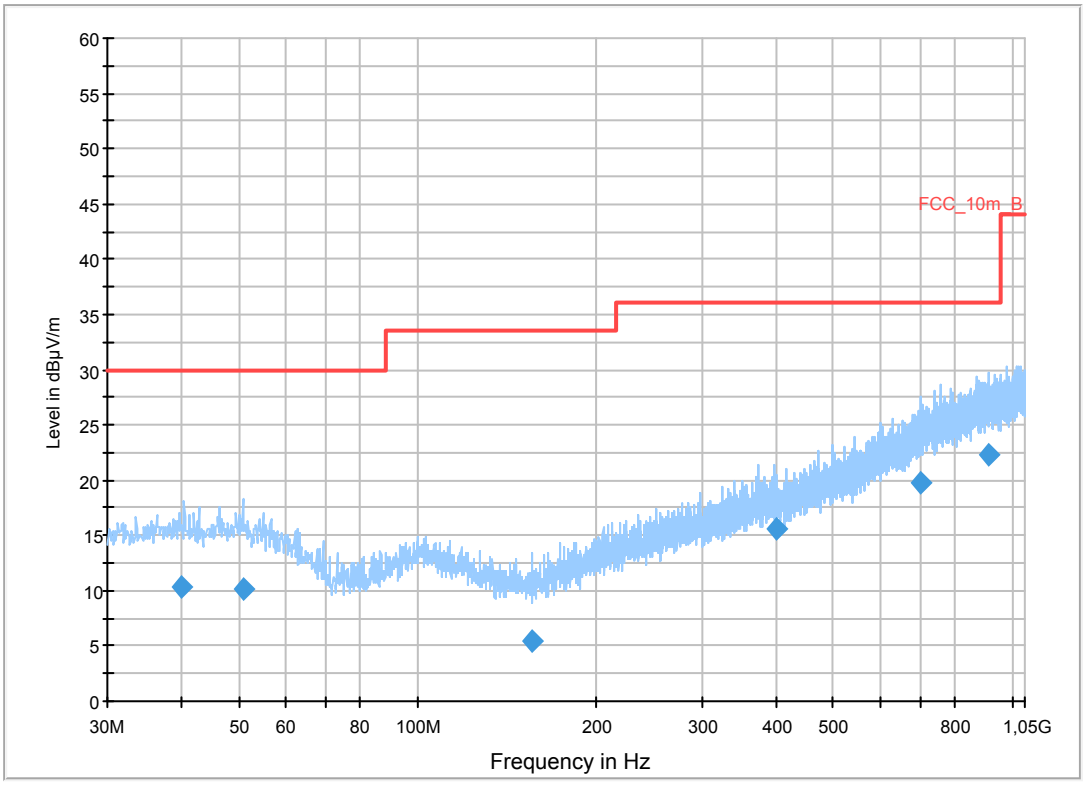
EUT:	RFN81UW
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	802.11N TX CH48 MCS 0
Operator Name:	Medrow
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

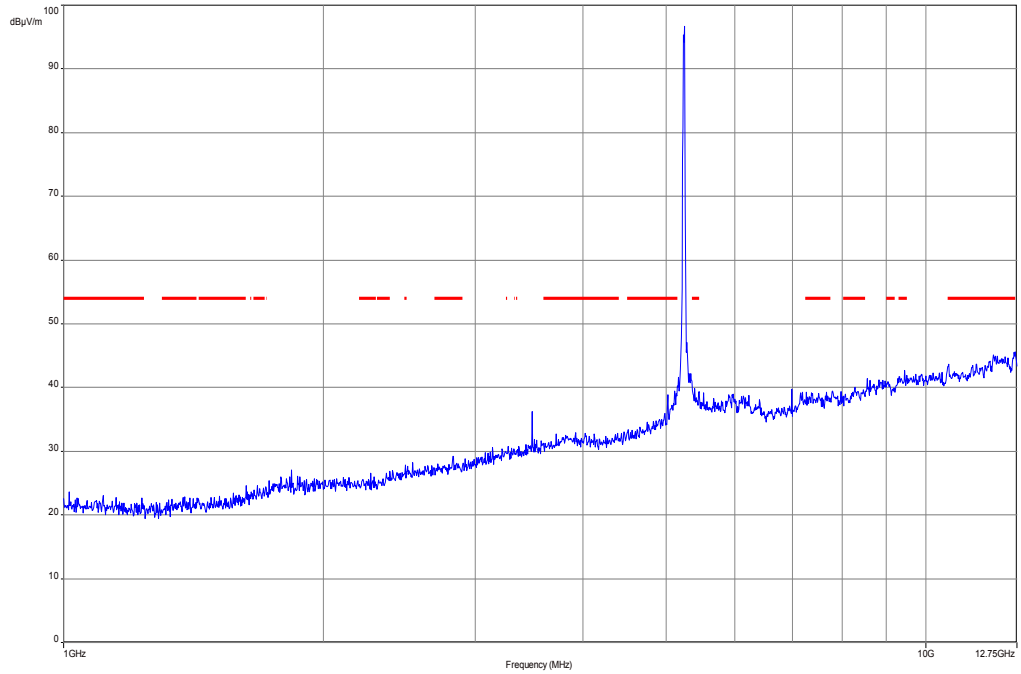
FCC_10m(B)_3



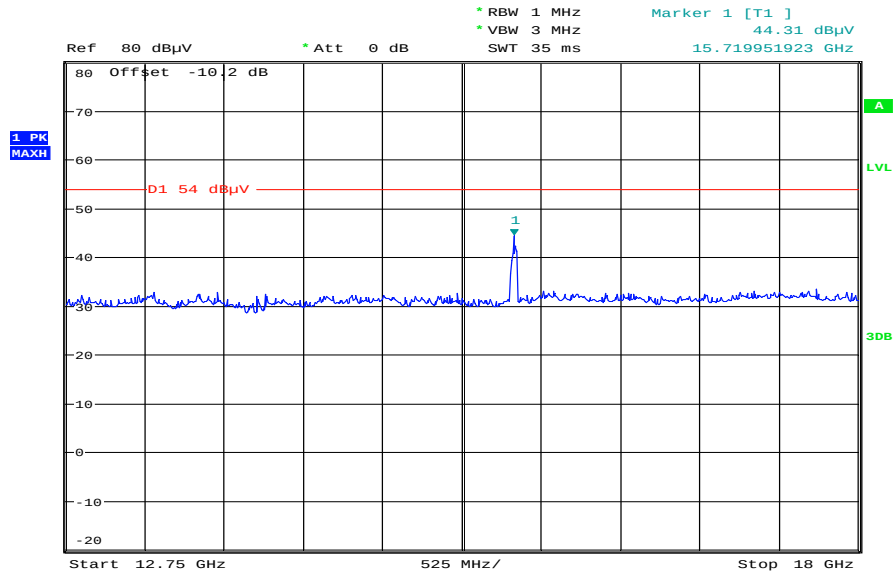
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
40.099650	10.3	1000.0	120.000	170.0	H	190.0	13.4	19.7	30.0	
50.938050	10.1	1000.0	120.000	104.0	H	85.0	13.3	19.9	30.0	
155.713800	5.4	1000.0	120.000	170.0	V	2.0	9.1	28.1	33.5	
399.994650	15.6	1000.0	120.000	170.0	V	94.0	16.9	20.4	36.0	
702.517050	19.8	1000.0	120.000	170.0	H	-10.0	22.6	16.2	36.0	
915.816900	22.2	1000.0	120.000	170.0	V	269.0	25.2	13.8	36.0	

Plot 7: 1 GHz to 12.75 GHz, channel 48, vertical & horizontal polarization

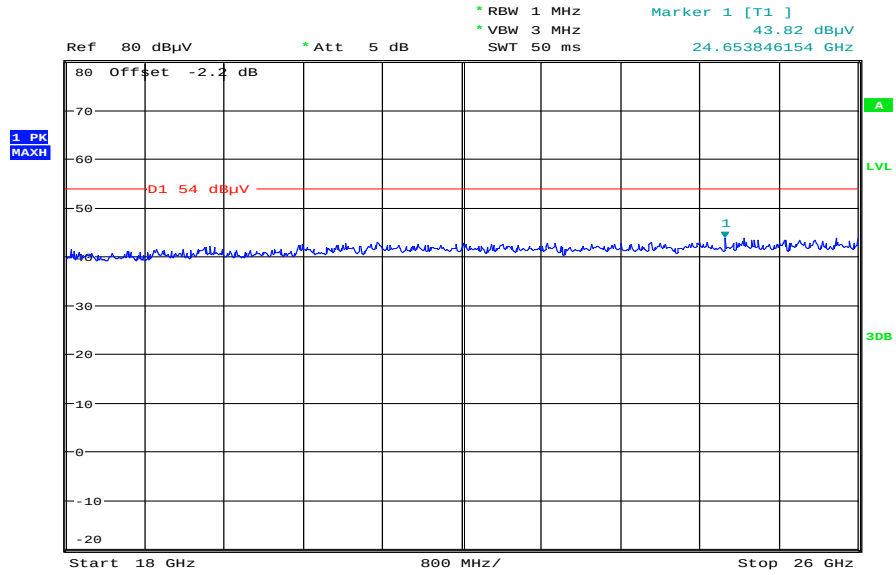


Plot 8: 12 GHz to 18 GHz, channel 48, vertical & horizontal polarization



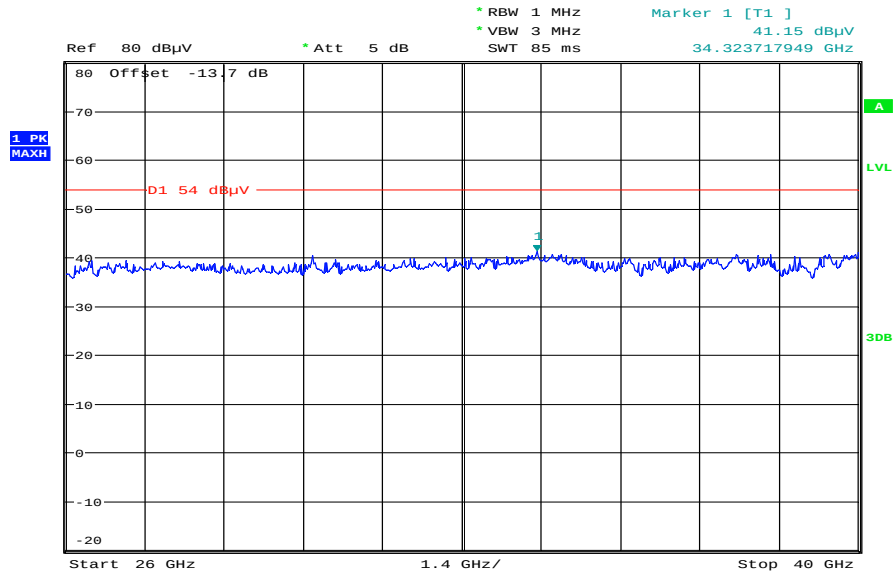
Date: 8.JAN.2013 11:18:08

Plot 9: 18 GHz to 26 GHz, channel 48, vertical & horizontal polarization



Date: 8.JAN.2013 11:59:44

Plot 10: 26 GHz to 40 GHz, channel 48, vertical & horizontal polarization



Date: 8.JAN.2013 12:51:21

Plot 11: 30 MHz to 1 GHz, channel 64, vertical & horizontal polarization

Common Information

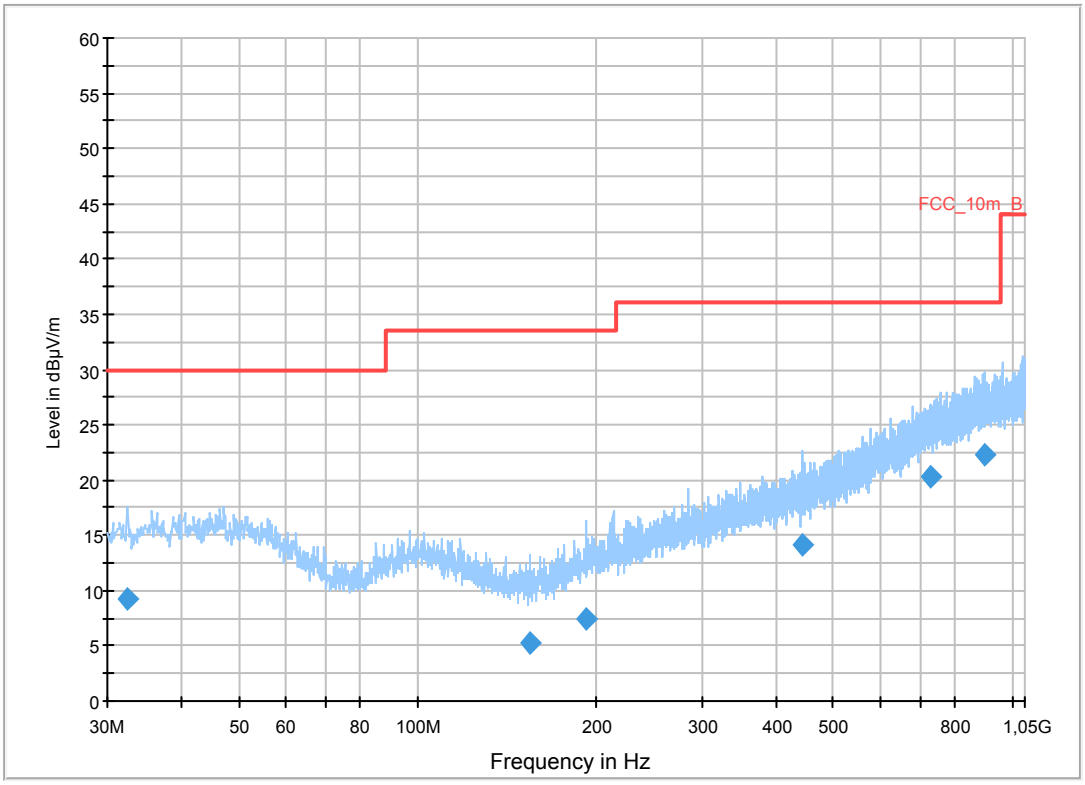
EUT:	RFN81UW
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	802.11N TX CH64 MCS 0
Operator Name:	Medrow
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

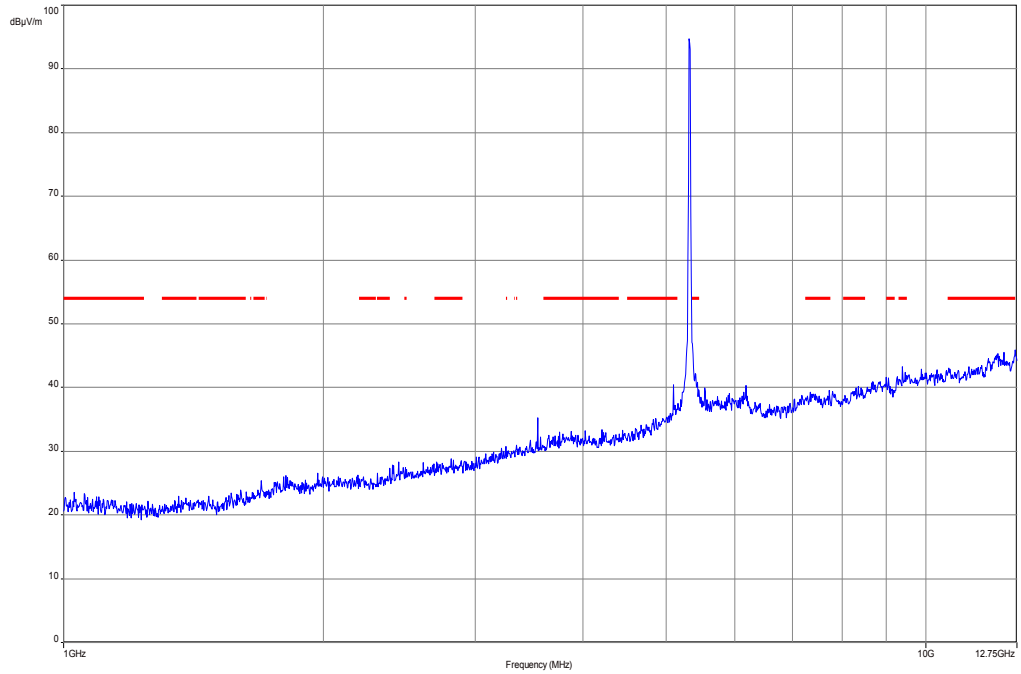
FCC_10m(B)_3



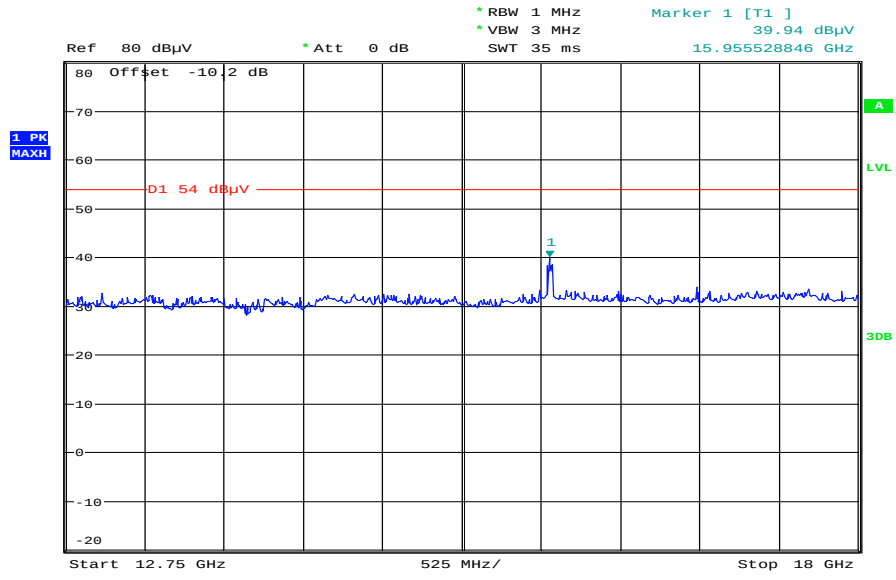
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
32.500050	9.3	1000.0	120.000	170.0	H	280.0	12.8	20.7	30.0	
154.586850	5.3	1000.0	120.000	170.0	H	272.0	9.0	28.2	33.5	
192.024450	7.3	1000.0	120.000	132.0	H	80.0	11.2	26.2	33.5	
444.243000	14.1	1000.0	120.000	132.0	H	100.0	17.6	21.9	36.0	
729.292500	20.3	1000.0	120.000	170.0	V	280.0	23.2	15.7	36.0	
899.916150	22.3	1000.0	120.000	170.0	H	190.0	25.2	13.7	36.0	

Plot 12: 1 GHz to 12.75 GHz, channel 64, vertical & horizontal polarization

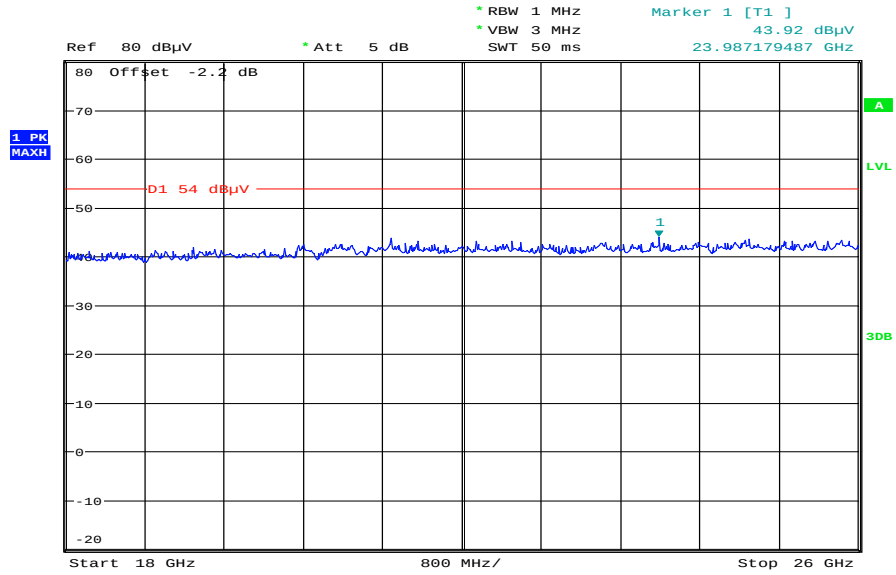


Plot 13: 12 GHz to 18 GHz, channel 64, vertical & horizontal polarization



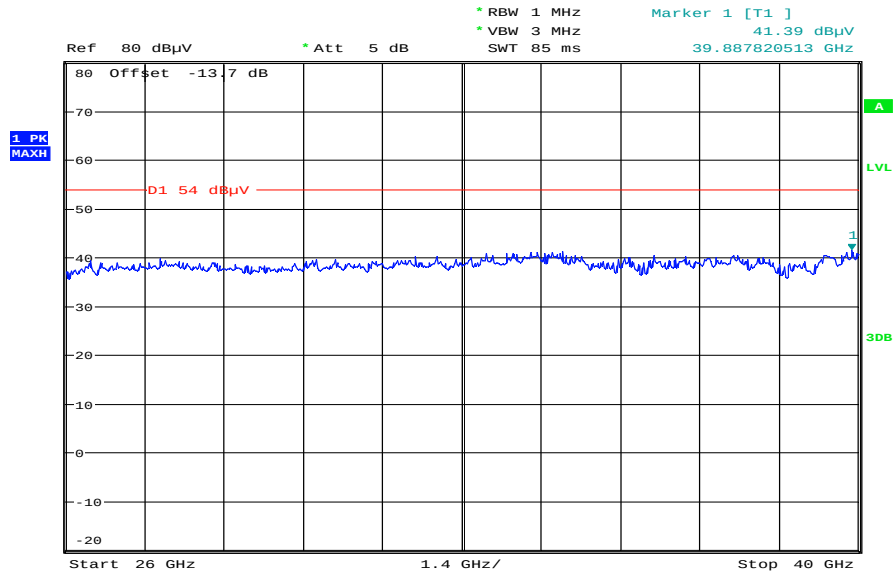
Date: 8.JAN.2013 11:19:02

Plot 14: 18 GHz to 26 GHz, channel 64, vertical & horizontal polarization



Date: 8.JAN.2013 12:00:40

Plot 15: 26 GHz to 40 GHz, channel 64, vertical & horizontal polarization



Date: 8.JAN.2013 12:52:48

Plot 16: 30 MHz to 1 GHz, channel 100, vertical & horizontal polarization

Common Information

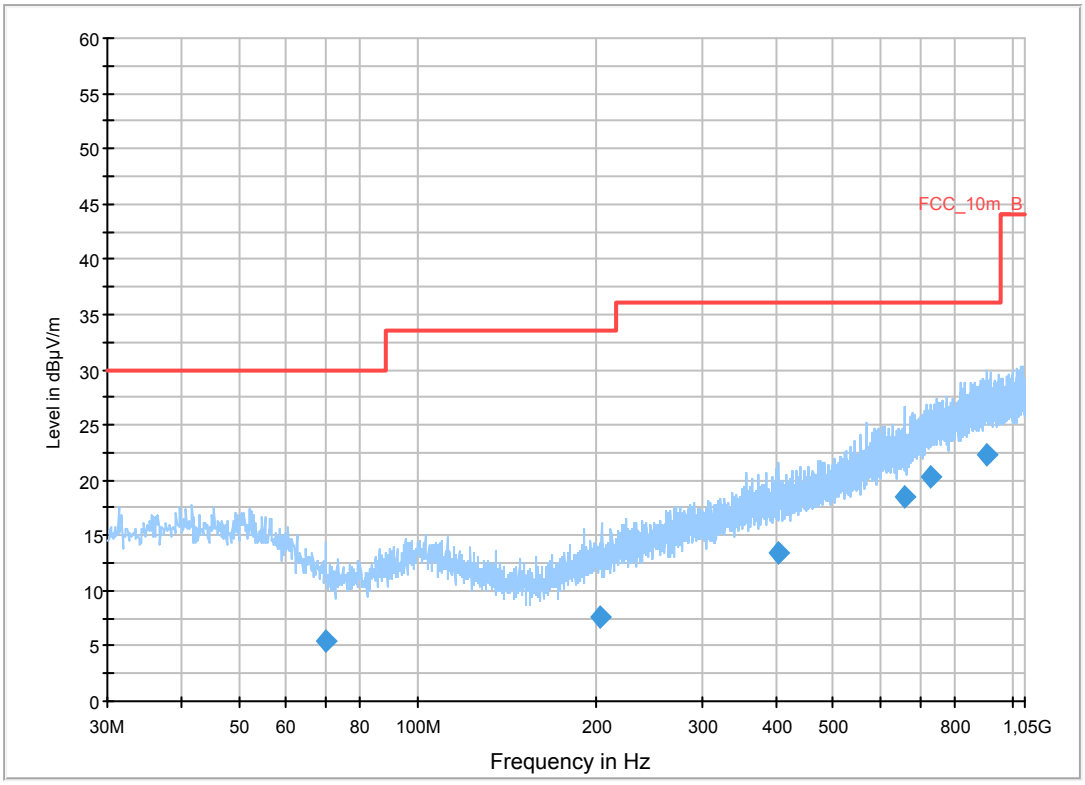
EUT:	RFN81UW
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	802.11N TX CH100 MCS 0
Operator Name:	Medrow
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

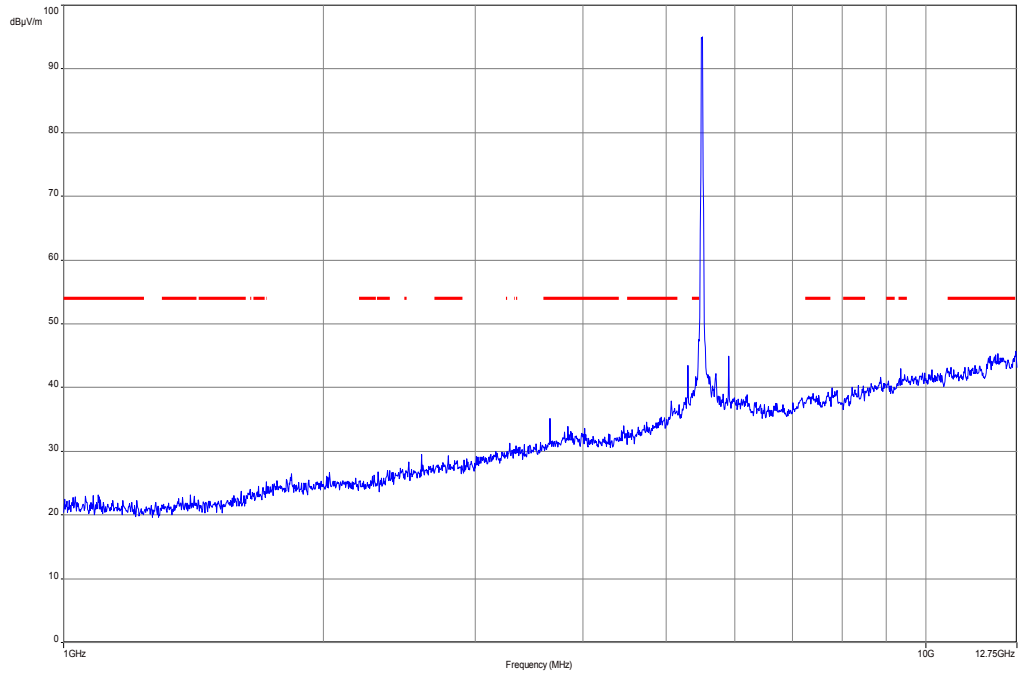
FCC_10m(B)_3



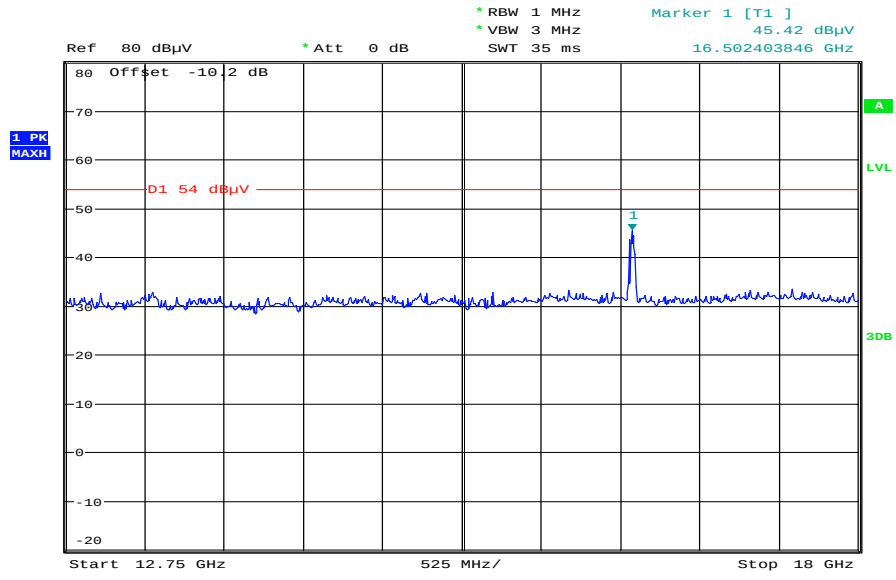
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
70.099200	5.5	1000.0	120.000	157.0	V	10.0	9.3	24.5	30.0	
203.184150	7.6	1000.0	120.000	170.0	V	100.0	11.8	25.9	33.5	
404.676150	13.5	1000.0	120.000	98.0	V	100.0	17.0	22.5	36.0	
659.468850	18.5	1000.0	120.000	170.0	V	260.0	21.4	17.5	36.0	
729.191850	20.3	1000.0	120.000	170.0	V	170.0	23.2	15.7	36.0	
906.039000	22.3	1000.0	120.000	120.0	V	190.0	25.2	13.7	36.0	

Plot 17: 1 GHz to 12.75 GHz, channel 100, vertical & horizontal polarization

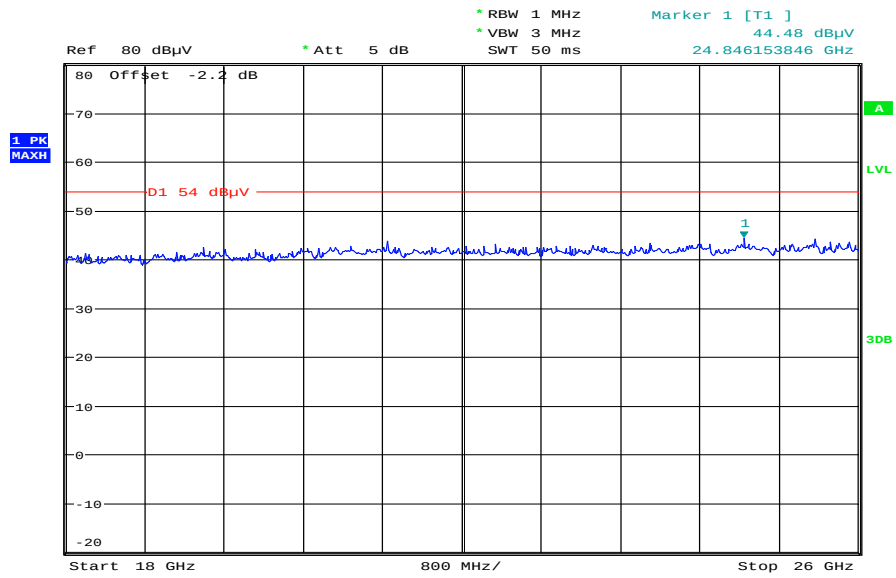


Plot 18: 12 GHz to 18 GHz, channel 100, vertical & horizontal polarization



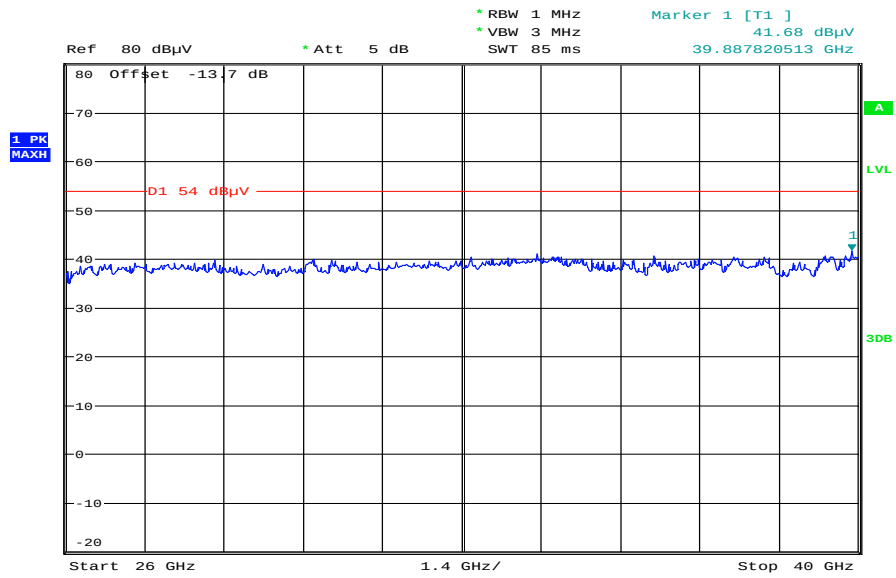
Date: 8.JAN.2013 11:19:51

Plot 19: 18 GHz to 26 GHz, channel 100, vertical & horizontal polarization



Date: 8.JAN.2013 11:52:10

Plot 20: 26 GHz to 40 GHz, channel 100, vertical & horizontal polarization



Date: 8.JAN.2013 12:54:25

Plot 21: 30 MHz to 1 GHz, channel 120, vertical & horizontal polarization

Common Information

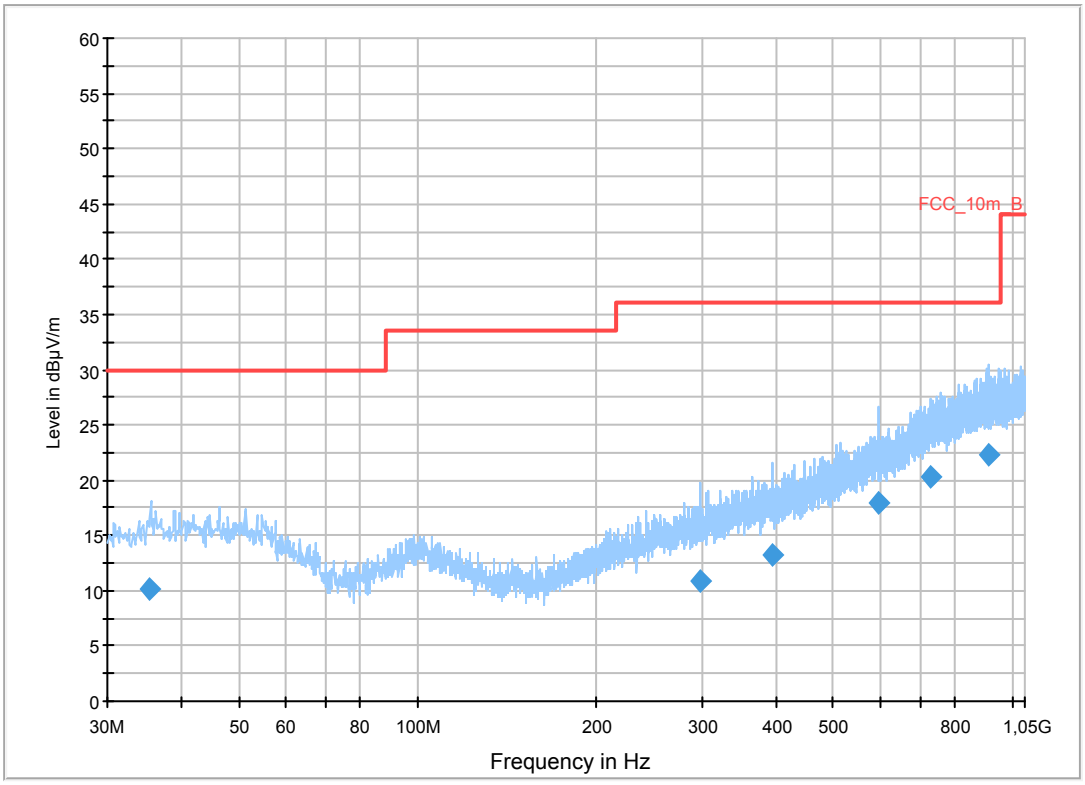
EUT:	RFN81UW
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	802.11N TX CH120 MCS 0
Operator Name:	Medrow
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

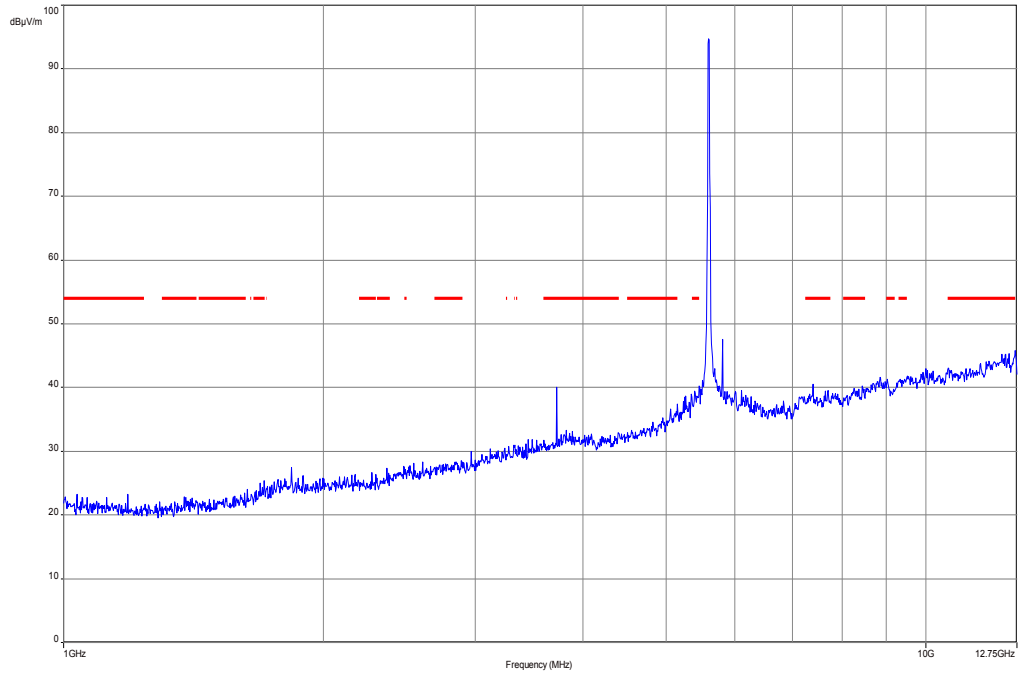
FCC_10m(B)_3



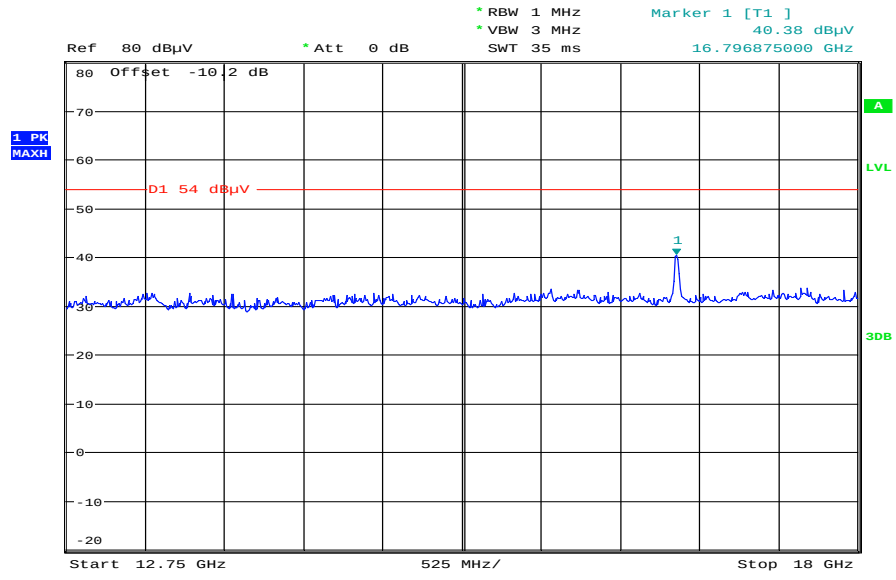
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.383500	10.2	1000.0	120.000	119.0	V	100.0	13.1	19.8	30.0	
298.842000	10.9	1000.0	120.000	122.0	V	-2.0	14.5	25.1	36.0	
395.919600	13.3	1000.0	120.000	133.0	H	182.0	16.8	22.7	36.0	
595.967850	18.0	1000.0	120.000	98.0	H	280.0	20.7	18.0	36.0	
729.157500	20.3	1000.0	120.000	170.0	V	272.0	23.2	15.7	36.0	
911.365650	22.3	1000.0	120.000	98.0	V	260.0	25.2	13.7	36.0	

Plot 22: 1 GHz to 12.75 GHz, channel 120, vertical & horizontal polarization

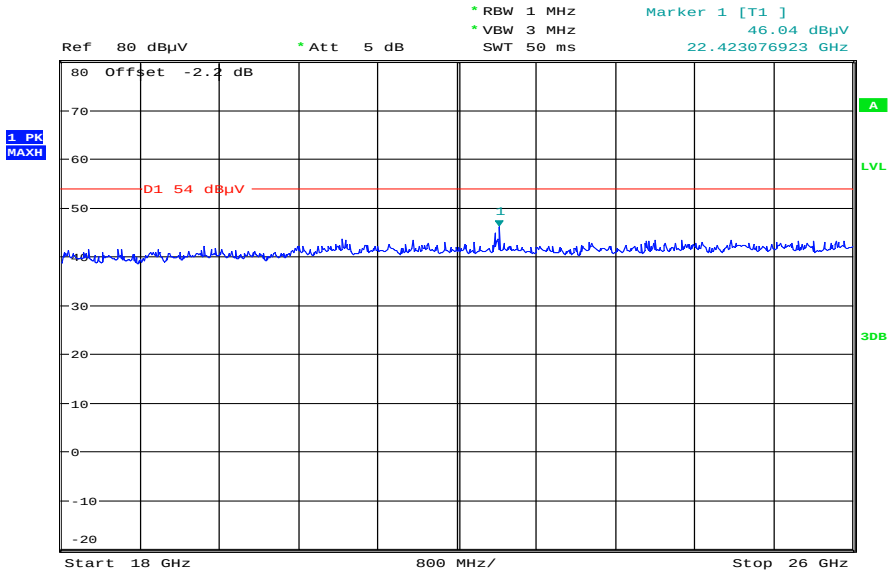


Plot 23: 12 GHz to 18 GHz, channel 120, vertical & horizontal polarization



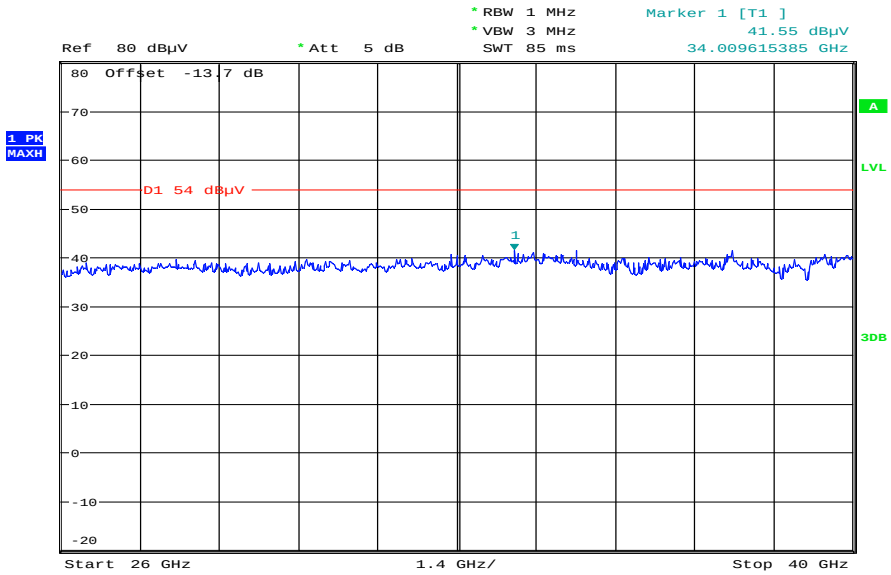
Date: 8.JAN.2013 11:20:51

Plot 24: 18 GHz to 26 GHz, channel 120, vertical & horizontal polarization



Date: 8.JAN.2013 12:02:42

Plot 25: 26 GHz to 40 GHz, channel 120, vertical & horizontal polarization



Date: 8.JAN.2013 12:55:27

Plot 26: 30 MHz to 1 GHz, channel 140, vertical & horizontal polarization

Common Information

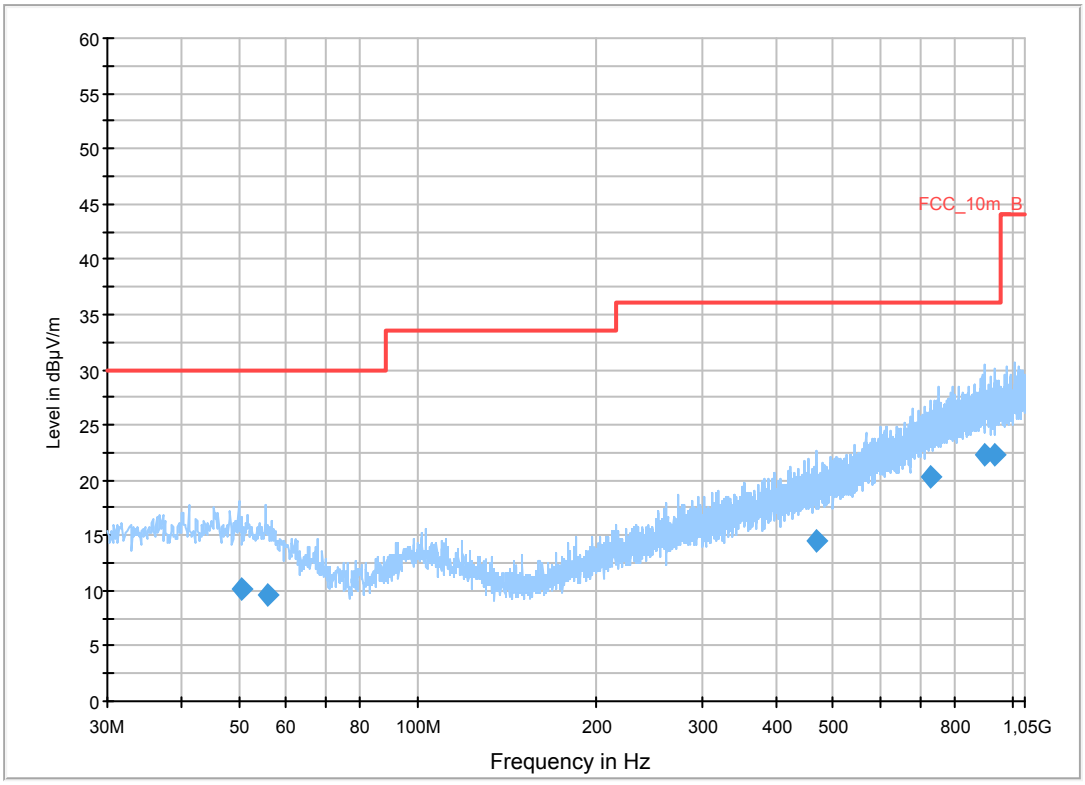
EUT:	RFN81UW
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	802.11N TX CH140 MCS 0
Operator Name:	Medrow
Comment:	battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Receiver:	[ESCI 3]
Level Unit:	dBµV/m

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

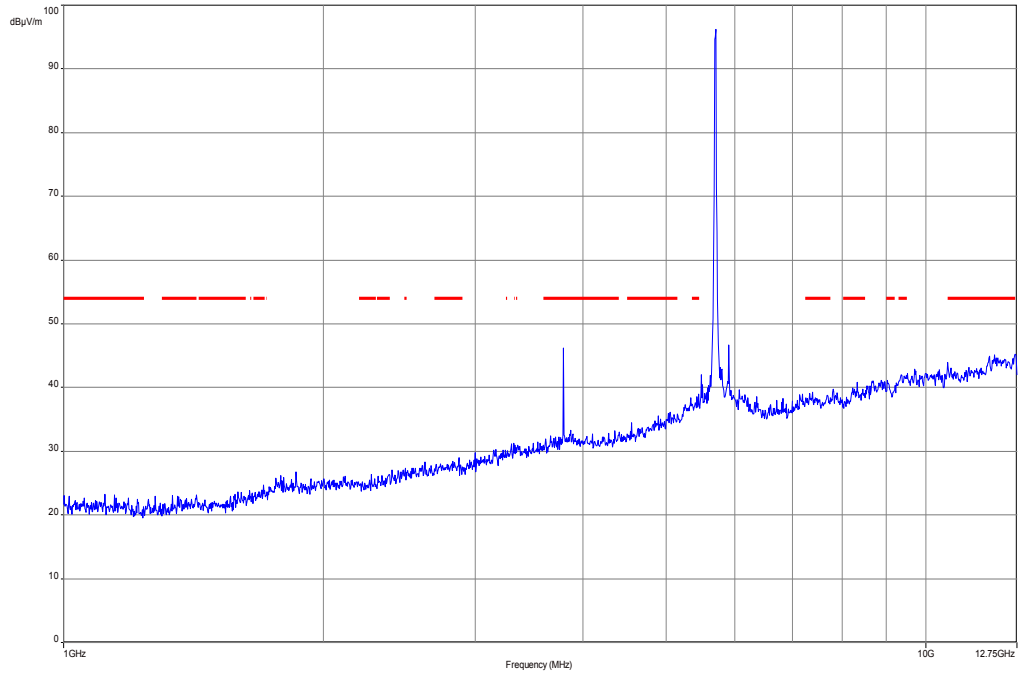
FCC_10m(B)_3



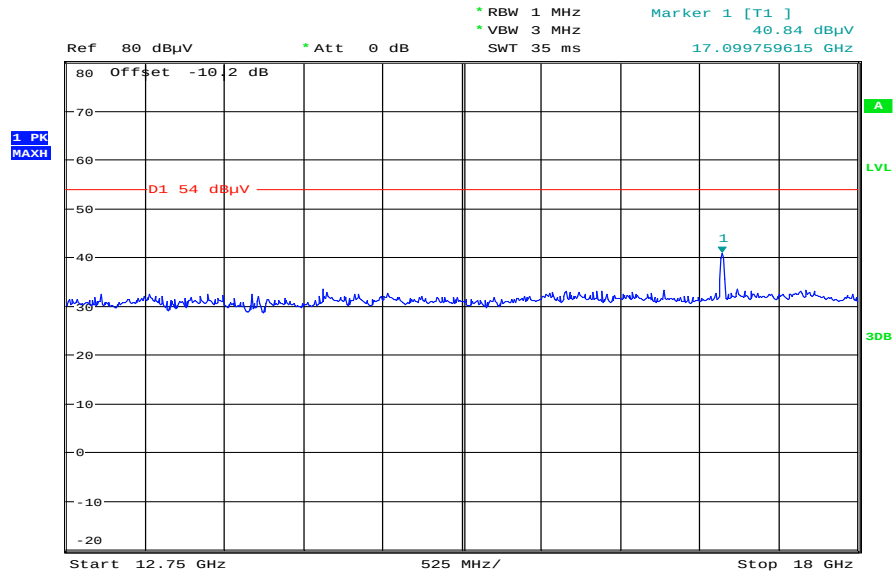
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
50.389050	10.1	1000.0	120.000	142.0	H	100.0	13.3	19.9	30.0	
55.837650	9.5	1000.0	120.000	161.0	V	10.0	12.7	20.5	30.0	
467.183700	14.5	1000.0	120.000	141.0	H	93.0	18.0	21.5	36.0	
729.534300	20.3	1000.0	120.000	170.0	V	176.0	23.2	15.7	36.0	
896.497650	22.3	1000.0	120.000	170.0	H	175.0	25.2	13.7	36.0	
933.790800	22.4	1000.0	120.000	170.0	H	3.0	25.3	13.6	36.0	

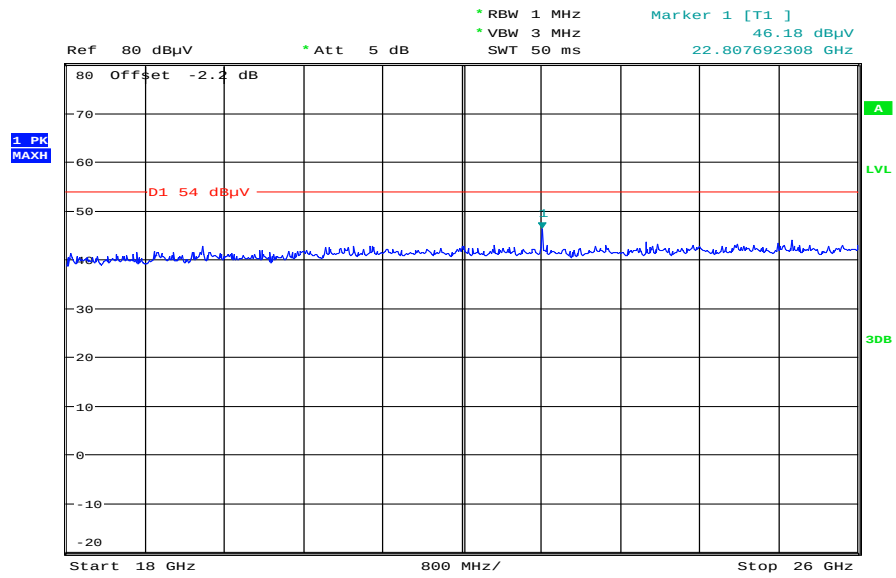
Plot 27: 1 GHz to 12.75 GHz, channel 140, vertical & horizontal polarization



Plot 28: 12 GHz to 18 GHz, channel 140, vertical & horizontal polarization

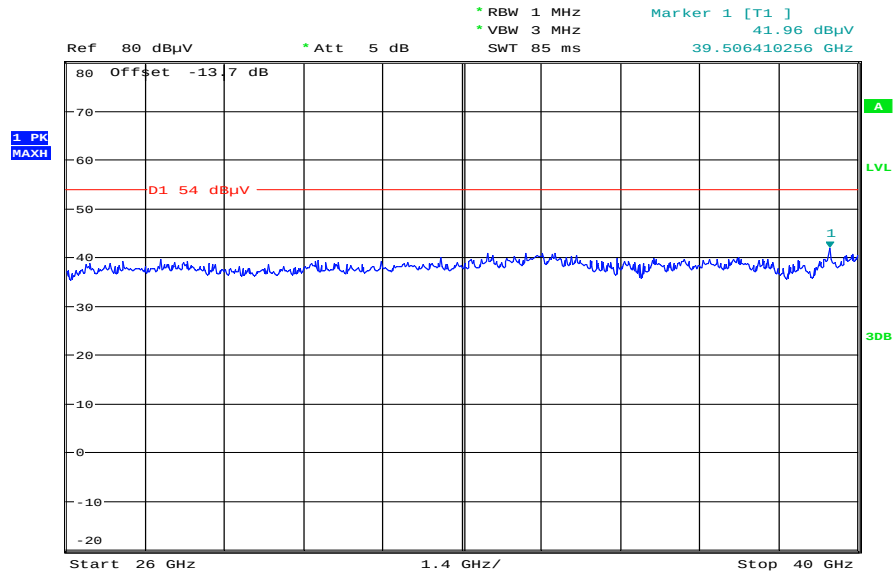


Plot 29: 18 GHz to 26 GHz, channel 140, vertical & horizontal polarization



Date: 8.JAN.2013 12:03:42

Plot 30: 26 GHz to 40 GHz, channel 140, vertical & horizontal polarization



Date: 8.JAN.2013 12:56:26

9.10 RX spurious emissions radiated

Not performed!

9.11 Spurious emissions radiated < 30 MHz

Not performed!

9.12 Spurious emissions conducted < 30 MHz

Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to channel 6. This measurement is repeated for DSSS and OFDM modulation. If critical peaks are found channel 1 and channel 11 will be measured too. The measurement is performed with the data rate producing the highest output power. Both power lines, phase and neutral line, are measured. Found peaks are remeasured with average and quasi peak detection to show compliance to the limits.

Measurement:

Measurement parameter	
Detector:	Peak - Quasi Peak / Average
Sweep time:	Auto
Video bandwidth:	F < 150 kHz: 200 Hz F > 150 kHz: 9 kHz
Resolution bandwidth:	F < 150 kHz: 1 kHz F > 150 kHz: 100 kHz
Span:	9 kHz to 30 MHz
Trace-Mode:	Max Hold

Limits:

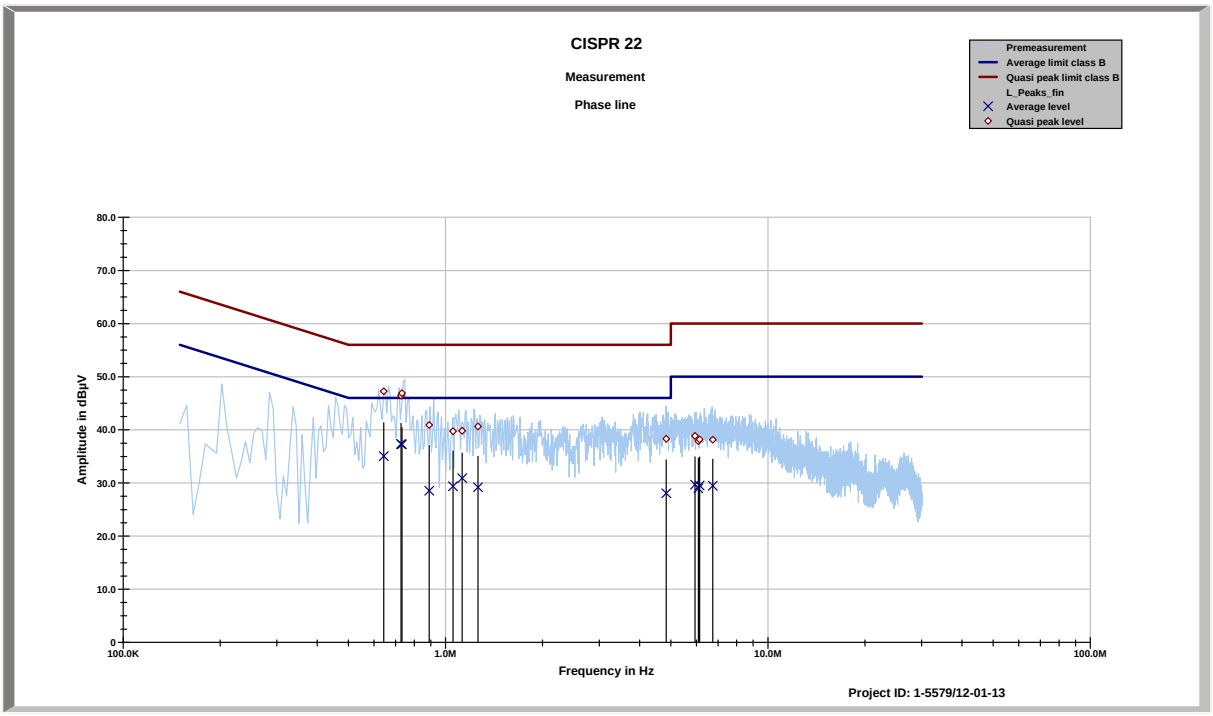
FCC		IC
CFR Part 15.107(a)		ICES-003, Issue 4
TX Spurious Emissions Conducted < 30 MHz		
Frequency (MHz)	Quasi-Peak (dBµV/m)	Average (dBµV/m)
0.15 – 0.5	66 to 56*	56 to 46*
0.5 – 5	56	46
5 – 30.0	60	50

*Decreases with the logarithm of the frequency

Results:

TX Spurious Emissions Conducted < 30 MHz [dBµV/m]		
F [MHz]	Detector	Level [dBµV/m]
No critical peaks detected		
Measurement uncertainty	± 3 dB	

Result: Passed

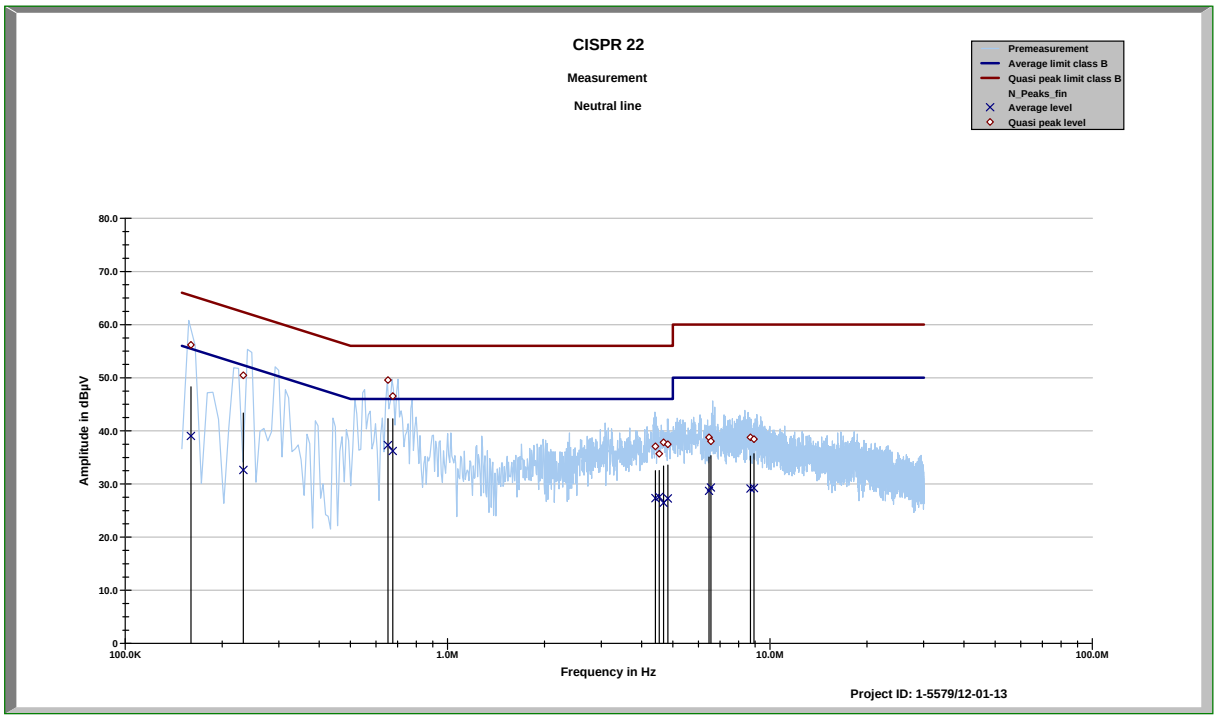


CISPR 22
Phase line tbl
Project ID: 1-5579/12-01-13

03:13:18 PM, Friday, January 18, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.64347	47.25	8.75	35.04	10.96
0.72746	46.45	9.55	37.33	8.67
0.73229	46.91	9.09	37.25	8.75
0.88992	40.90	15.10	28.53	17.47
1.0544	39.74	16.26	29.37	16.63
1.1263	39.82	16.18	30.89	15.11
1.261	40.64	15.36	29.17	16.83
4.8363	38.31	17.69	28.05	17.95
5.9395	38.87	21.13	29.68	20.32
6.0825	37.84	22.16	28.99	21.01
6.1323	38.17	21.83	29.51	20.49
6.7395	38.12	21.88	29.48	20.52

Project ID - 1-5579/12-01-13
EUT - RFN81UW
Serial Number - IMEI:004401139252155
Operating mode - W-LAN 802.11a tx + charging



CISPR 22
Neutral line tbl
Project ID: 1-5579/12-01-13

03:13:18 PM, Friday, January 18, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.15995	56.19	9.28	39.04	16.68
0.23273	50.46	11.89	32.62	21.01
0.6533	49.57	6.43	37.30	8.70
0.67601	46.54	9.46	36.20	9.80
4.4115	37.08	18.92	27.32	18.68
4.5333	35.67	20.33	27.54	18.46
4.6745	37.83	18.17	26.45	19.55
4.8203	37.48	18.52	27.27	18.73
6.4673	38.77	21.23	28.71	21.29
6.5585	38.03	21.97	29.33	20.67
8.6998	38.77	21.23	29.15	20.85
8.9166	38.45	21.55	29.24	20.76

Project ID - 1-5579/12-01-13
EUT - RFN81UW
Serial Number - IMEI:004401139252155
Operating mode - W-LAN 802.11a tx + charging

10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
4	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k		
5	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	14.07.2011	14.07.2013
6	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
8	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
9	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
10	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	12.04.2012	12.04.2014
11	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	06.01.2012	06.01.2014
12	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vlKl!	11.05.2011	11.05.2013
13	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
14	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
15	9	Isolating Transformer	MPL IEC625 Bus Regeltrennt ravo	Erfi	91350	300001155	ne		
16	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
17	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
18	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKl!	14.10.2011	14.10.2014
19	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405	k		
20	CR 79	Std. Gain Horn Antenna 26.5-40.0 GHz	V637	Narda	7911	300001751	ne		
21	11b	Microwave System Amplifier, 0.5-	83017A	HP Meßtechnik	00419	300002268	ev		

		26.5 GHz							
22	A026	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000787	ne		
23	A029	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300002442	ne		
24	n. a.	Broadband Low Noise Amplifier 18-50 GHz	CBL18503 070-XX	CERNEX	19338	300004273	ne		
25	n. a.	Spectrum Analyzer 20 Hz - 50 GHz	FSU50	R&S	200012	300003443	Ve	09.10.2012	09.10.2014

Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vlkI!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

11 Observations

No observations exceeding those reported with the single test cases have been made.

Annex A Document history

Version	Applied changes	Date of release
1.0	Initial release	2013-01-09
-A	Addition of HW / SW status and FCC / IC number	2013-03-01
-B	Editorial changes	2013-03-08
-C	Addition of band edge CH 140 results	2013-03-12
-D	Addition of band edge CH 149 results	2013-03-28

Annex B Further information

Glossary

AVG - Average
DUT - Device under test
EMC - Electromagnetic Compatibility
EN - European Standard
EUT - Equipment under test
ETSI - European Telecommunications Standard Institute
FCC - Federal Communication Commission
FCC ID - Company Identifier at FCC
HW - Hardware
IC - Industry Canada
Inv. No. - Inventory number
N/A - Not applicable
PP - Positive peak
QP - Quasi peak
S/N - Serial number
SW - Software

Annex C Accreditation Certificate

DAkkS Deutsche Akkreditierungsstelle

Deutsche Akkreditierungsstelle GmbH
German Accreditation Body

Entrusted according to Section 8 subsection1 AkkStelleG in connection with Section 1 subsection 1 AkkStelleGBV
Signatory to the Multilateral Agreements of
EA, ILAC and IAF for Mutual Recognition

Accreditation

The Deutsche Akkreditierungsstelle GmbH (German Accreditation Body) attests that the testing laboratory

CETECOM ICT Services GmbH
Untertürkheimer Straße 6-10
66117 Saarbrücken

is competent under the terms of DIN EN ISO/IEC 17025:2005 to carry out tests in the following fields:

Wired communications and DECT
Acoustic
Radio
Shirt Range Devices (SRD)
RFID
WiMax and Richtfunk
Mobile radio (GSM / DCS), Over the Air (OTA) Performance
Electromagnetic Compatibility (EMC) incl. Automotive
Product safety
SAR and Hearing Aid Compatibility (HAC)
Environmental simulation
Smart Card Terminals
Bluetooth
Wi-Fi-Services

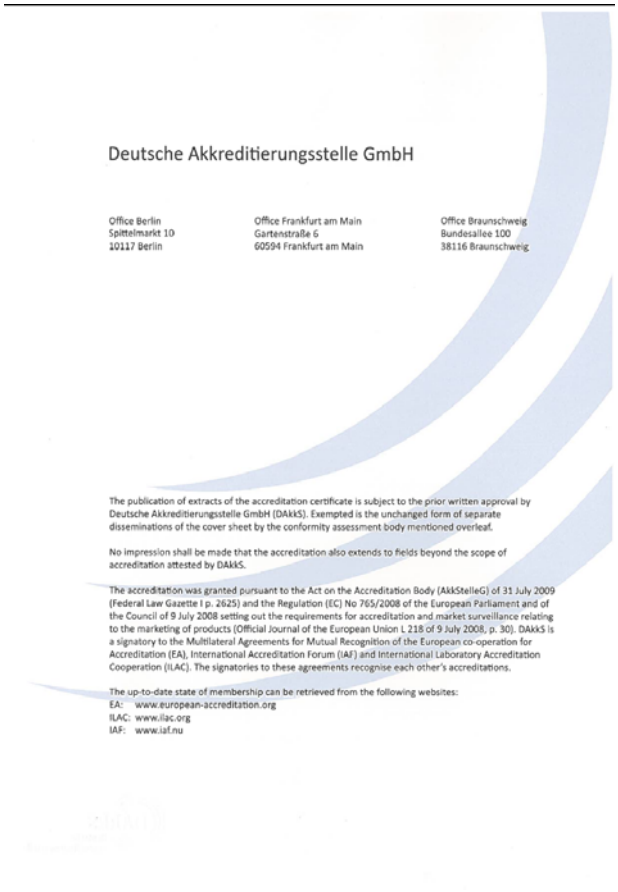
The accreditation certificate shall only apply in connection with the notice of accreditation of 13.04.2011 with the accreditation number D-PL-12076-01 and is valid until 03.09.2014. It comprises the cover sheet, the reverse side of the cover sheet and the following annex with a total of 82 pages.

Registration number of the certificate: **D-PL-12076-01-01**

Frankfurt am Main, 13.04.2011

Dipl.-Ing. (FH) Rolf Egner
Head of Division 2

This document is a translation. The definitive version is the original German accreditation certificate.



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Office Braunschweig
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38116 Braunschweig

The publication of extracts of the accreditation certificate is subject to the prior written approval by Deutsche Akkreditierungsstelle GmbH (DAkkS). Exempted is the unchanged form of separate disseminations of the cover sheet by the conformity assessment body mentioned overleaf.

No impression shall be made that the accreditation also extends to fields beyond the scope of accreditation attested by DAkkS.

The accreditation was granted pursuant to the Act on the Accreditation Body (AkkStelleG) of 31 July 2009 (Federal Law Gazette I p. 2625) and the Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products (Official Journal of the European Union L 218 of 9 July 2008, p. 30). DAkkS is a signatory to the Multilateral Agreements for Mutual Recognition of the European co-operation for Accreditation (EA), International Accreditation Forum (IAF) and International Laboratory Accreditation Cooperation (ILAC). The signatories to these agreements recognise each other's accreditations.

The up-to-date state of membership can be retrieved from the following websites:
EA: www.european-accreditation.org
ILAC: www.ilac.org
IAF: www.iaf.nu

Front side of certificate

Back side of certificate

Note:
The current certificate including annex is published on our website (see link below) or may be received from CETECOM ICT Services on request.

http://www.cetecom.com/fileadmin/de/CETECOM_D_Saarbruecken/accreditations_Jan_2010/DAKKS_Akkredi_Urk_EN17025-En_incl_Annex.pdf