

TEST REPORT

Test report no.: 1-6234/13-01-04



Testing laboratory

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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
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Waterloo, ON N2L 3W8 / CANADA
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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:	RFU81UW
FCC ID:	L6ARFU80UW
IC:	2503A-RFU80UW
Frequency:	DTS band 2400 MHz to 2483.5 MHz (lowest channel 01- 2412 MHz, highest channel 11 – 2462 MHz)
Technology tested:	WLAN (DSSS / b – mode; OFDM / g & n HT20 – mode)
Antenna:	Integrated antenna
Power Supply:	3.7 V DC by Li - Ion battery
Temperature:	+23

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:



Stefan Bös
Senior Testing Manager

Test performed:



Marco Bertolino
Testing Manager

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2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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

2.2 Application details

Date of receipt of order:	2013-05-10
Date of receipt of test item:	2013-05-27
Start of test:	2013-05-27
End of test:	2013-06-10
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2012-10	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

DTS : KDB 558074	2013-04	Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247
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4 Test environment

Temperature:	T_{nom}	+23 °C during room temperature tests
	T_{max}	-/- °C during high temperature tests
	T_{min}	-/- °C during low temperature tests
Relative humidity content:		47 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.7 V DC by Li - Ion battery
	V_{max}	-/- V
	V_{min}	-/- V

5 Test item

Kind of test item	:	Blackberry GSM Phones
Type identification	:	RFU81UW
S/N serial number	:	IMEI 004402242283665
HW hardware status	:	CER-56900-001-Rev1-x03-00 (903)
SW software status	:	7.1.0.980 (b2678)
Frequency band [MHz]	:	DTS band 2400 MHz to 2483.5 MHz (lowest channel 01- 2412 MHz, highest channel 11 – 2462 MHz)
Type of radio transmission	:	DSSS, OFDM
Use of frequency spectrum	:	
Type of modulation	:	BPSK, QPSK, 16 – QAM, 64 – QAM
Number of channels	:	11
Antenna	:	Integrated antenna
Power supply	:	3.7 V DC by Li - Ion battery
Temperature range	:	No range needed!

5.1 Additional information

Test setup - and EUT - photos are included in the following test reports:

External EUT photos: 1-6234/13-01-01_AnnexA
 Test setup: 1-6234/13-01-01_AnnexD

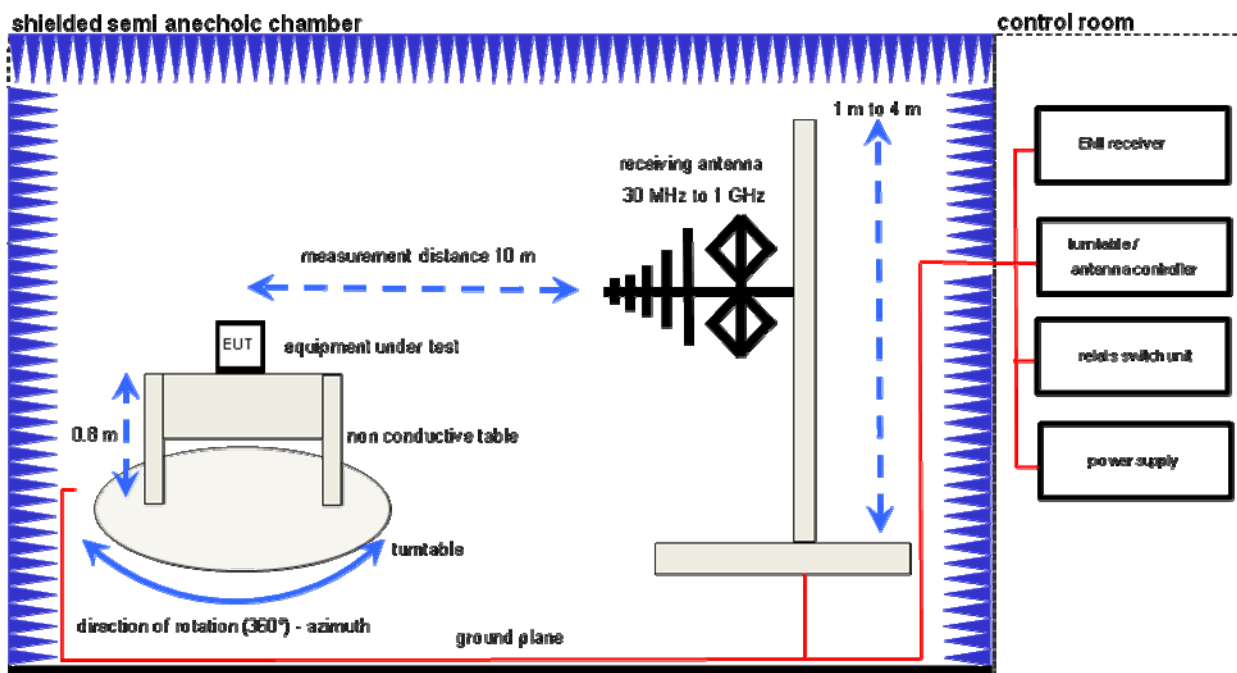
6 Test laboratories sub-contracted

None

7 Description of the test setup (WLAN 2.4 GHz)

7.1 Radiated measurements chamber F

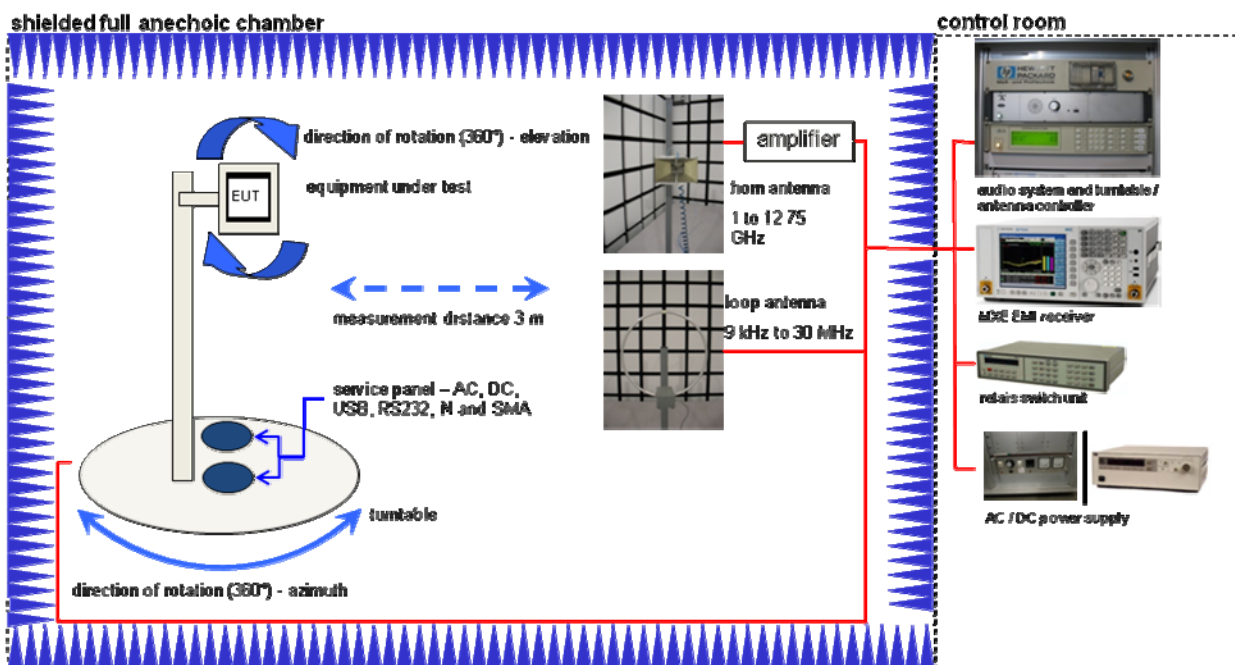
The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 1 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63. 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.



Equipment table:

Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom
Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368
DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580
EMI Test Receiver	ESCI 3	R&S	100083	300003312
Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379
Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745
Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746
Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747
TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787

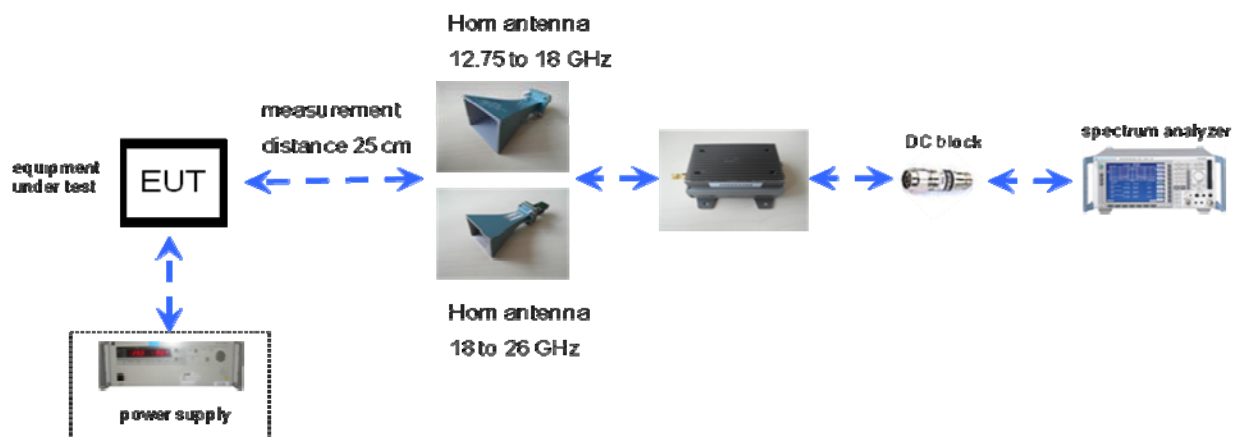
7.2 Radiated measurements chamber C



Equipment table:

Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom
MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405
Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351
Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789
Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032
Active Loop Antenna	6502	EMCO	2210	300001015
Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996
Switch / Control Unit	3488A	HP Meßtechnik	*	300000199
Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001156
Isolating Transformer	MPL IEC625 Bus Regeltrenntravo	Erfi	91350	300001155
Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997
Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143

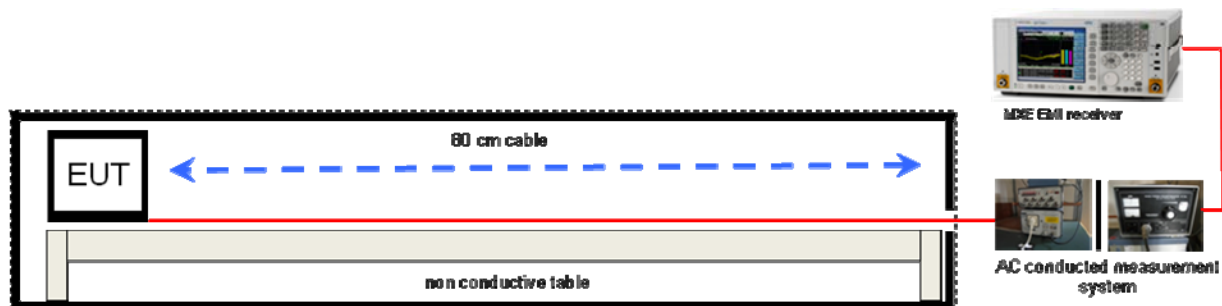
7.3 Radiated measurements 12.75 GHz to 25 GHz



Equipment table:

Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom
Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000786
Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300000486
Microwave System Amplifier, 0.5-26.5 GHz	83017A	HP Meßtechnik	00419	300002268
Signal Analyzer 40 GHz	FSV40	R&S	101042	300004517

7.4 AC conducted



Equipment table:

Equipment	Type	Manufacturer	Serial No.	INV. No Cetecom
MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologies	MY51210197	300004405
Isolating Transformer	MPL IEC625 Bus Regeltrenntrafo	Erfi	91350	300001155
Switch / Control Unit	3488A	HP Meßtechnik	*	300000199
Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001168
Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210

8 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	Passed	2013-06-13	Tests according to manufacturer test plan!

Test specification clause	Test case	Guideline	Temperature conditions	Power source voltages	Mode	Pass	Fail	NA	NP	Remark
§15.247(b)(4) RSS 210 / A8.4(2)	Antenna gain	-/-	Nominal	Nominal	DSSS	☐	☐	☐	☒	-/-
§15.247(e) RSS 210 / A8.2(b)	Power spectral density	KDB 558074 DTS clause: 10.2	Nominal	Nominal	DSSS OFDM g & n	☐ ☐	☐ ☐	☐ ☐	☒ ☒	-/-
§15.247(a)(2) RSS 210 / A8.2(a)	Spectrum bandwidth – 6 dB bandwidth	KDB 558074 DTS clause: 8.2	Nominal	Nominal	DSSS OFDM g & n	☐ ☐	☐ ☐	☐ ☐	☒ ☒	-/-
RSS Gen clause 4.6.1	Occupied bandwidth	-/-	Nominal	Nominal	DSSS OFDM g & n	☐ ☐	☐ ☐	☐ ☐	☒ ☒	-/-
§15.247(b)(3) RSS-210 / A8.4(4)	Maximum output power	KDB 558074 DTS clause: 9.1.2	Nominal	Nominal	DSSS OFDM g & n	☐ ☐	☐ ☐	☐ ☐	☒ ☒	-/-
§15.247(d) RSS-210 / A8.5	Band edge compliance conducted	KDB 558074 DTS clause: 13.2.1	Nominal	Nominal	DSSS OFDM g & n	☐ ☐	☐ ☐	☐ ☐	☒ ☒	-/-
§15.205 RSS-210 / A8.5	Band edge compliance radiated	-/-	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.247(d) RSS-210 / A8.5	TX spurious emissions conducted	KDB 558074 DTS clause: 11.1 & 11.2	Nominal	Nominal	DSSS OFDM g & n	☐ ☐	☐ ☐	☐ ☐	☒ ☒	-/-
§15.247(d) RSS-210 / A8.5	TX spurious emissions radiated	-/-	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies
§15.109 RSS-Gen	RX spurious emissions radiated	-/-	Nominal	Nominal	TX mode / acc. customer test plan	☒	☐	☐	☐	complies
§15.209(a) RSS-Gen	TX spurious emissions radiated < 30 MHz	-/-	Nominal	Nominal	DSSS OFDM g & n	☐ ☐	☐ ☐	☐ ☐	☒ ☒	-/-
§15.107(a)	Conducted emissions < 30 MHz	-/-	Nominal	Nominal	DSSS OFDM g & n	☒ ☒	☐ ☐	☐ ☐	☐ ☐	complies

Note: NA = Not Applicable; NP = Not Performed

9 Additional comments

Reference documents: None

Special test descriptions: None

Configuration descriptions: None

Test mode:

- ☐ No test mode available.
Iperf was used to ping another device with the largest support packet size
- ☒ Special software is used.
EUT is transmitting pseudo random data by itself

10 Measurement results

10.1 Antenna gain

Not performed – reduced test plan!

10.2 Maximum output power

Not performed – reduced test plan!

10.3 Power spectral density

Not performed – reduced test plan!

10.4 Spectrum bandwidth – 6 dB

Not performed – reduced test plan!

10.5 Occupied bandwidth – 99% emission bandwidth

Not performed – reduced test plan!

10.6 Band edge compliance conducted

Not performed – reduced test plan!

10.7 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 channel 1 for the lower restricted band and to channel 11 for the upper restricted band. The measurement is repeated for all modulations. Measurement distance is 3m.

Measurement:

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

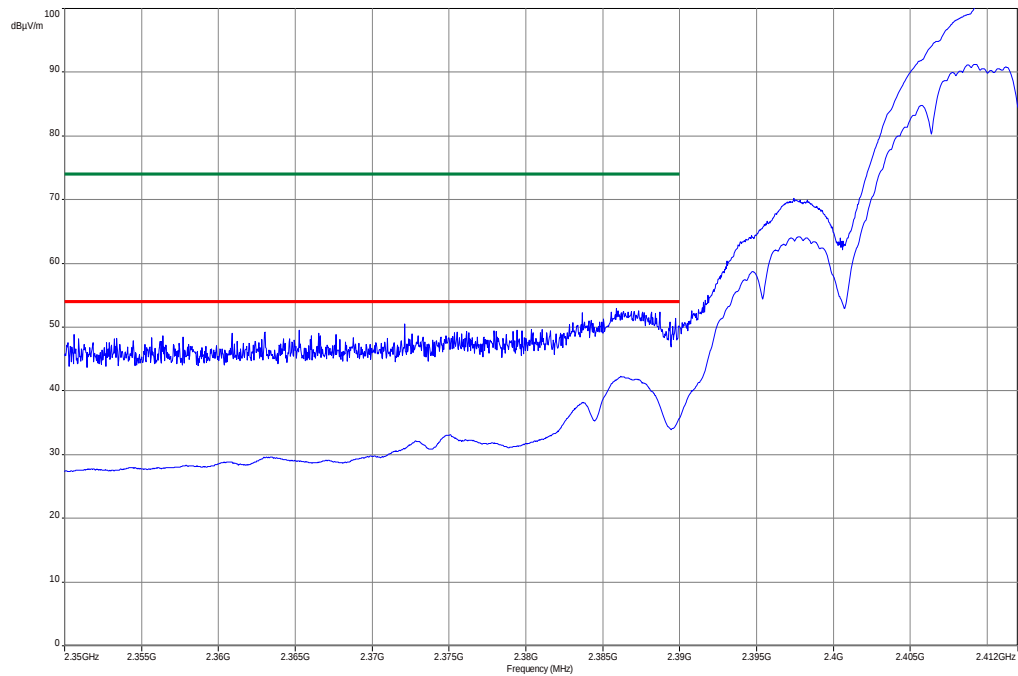
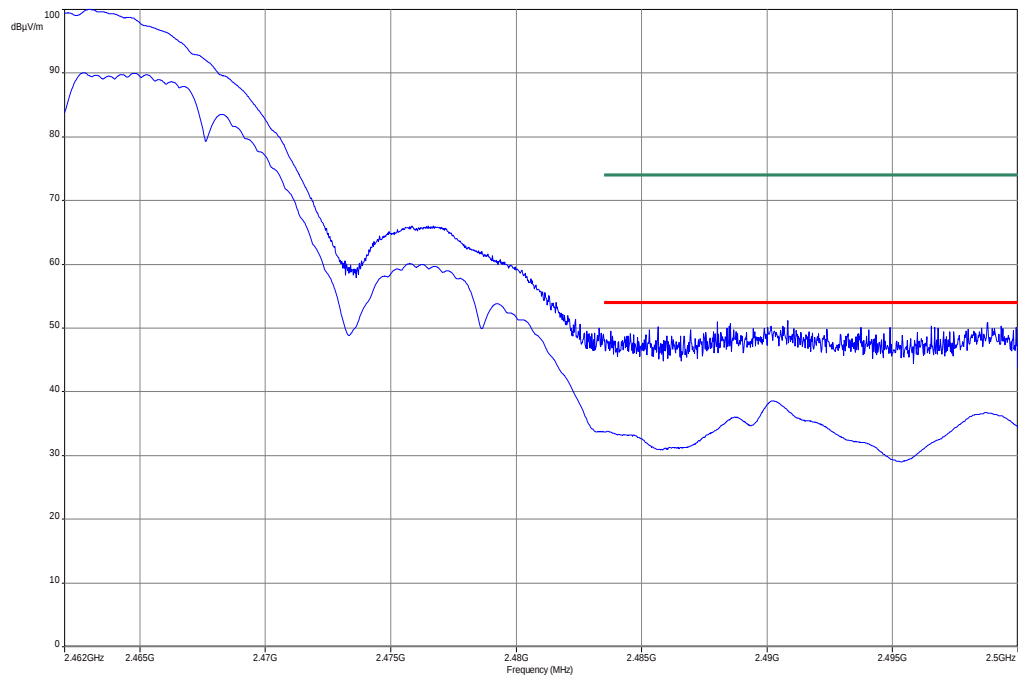
Limits:

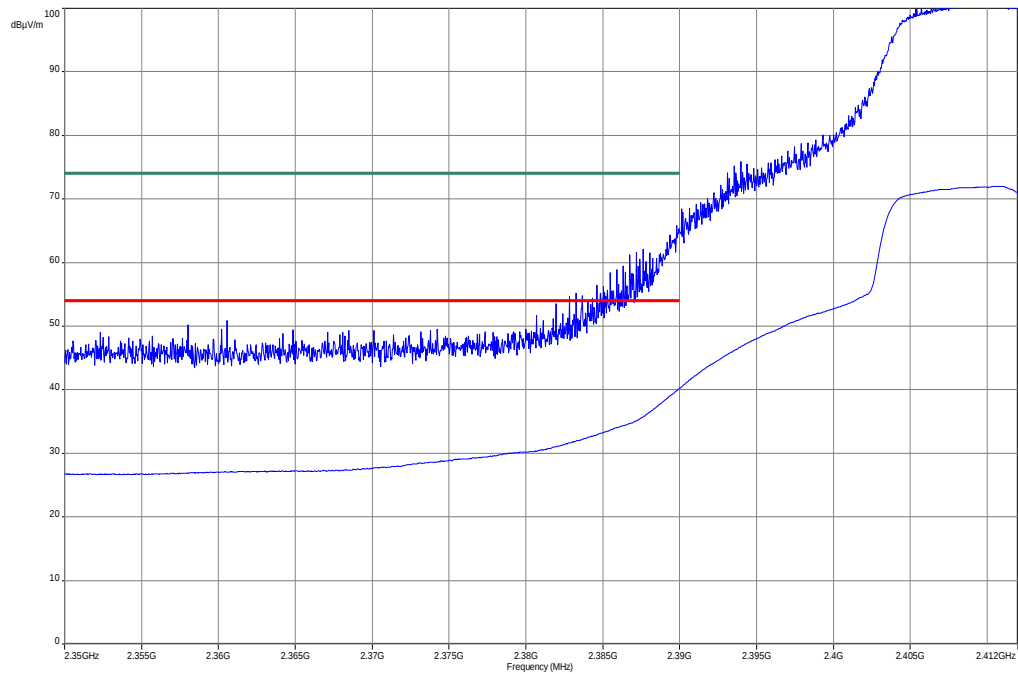
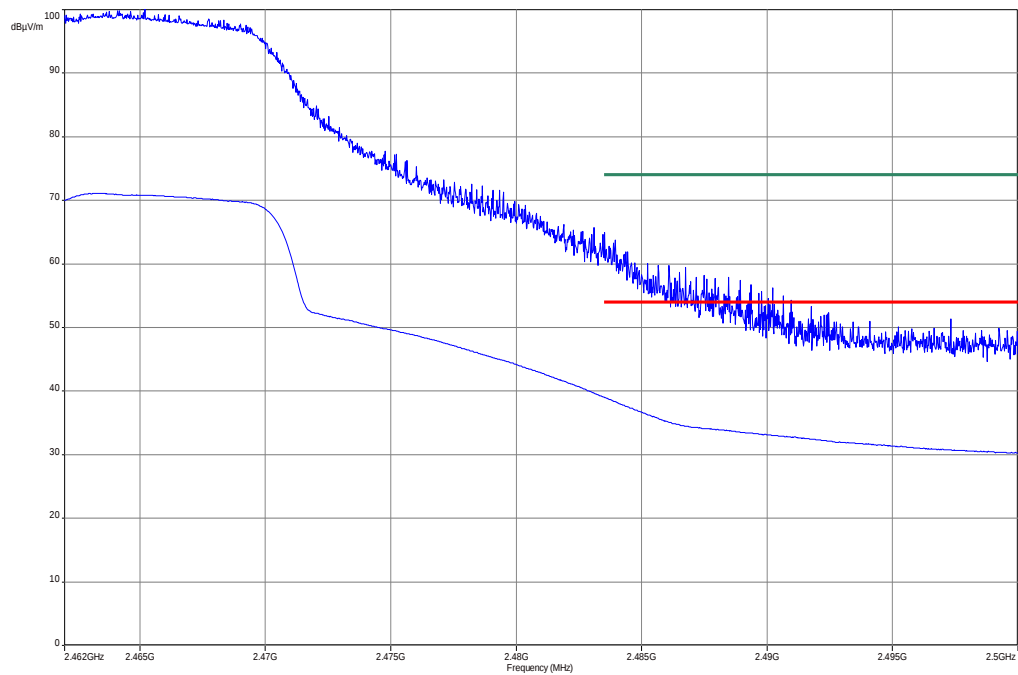
FCC	IC
Band Edge Compliance Radiated	
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth 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)).	
54 dB μ V/m AVG	

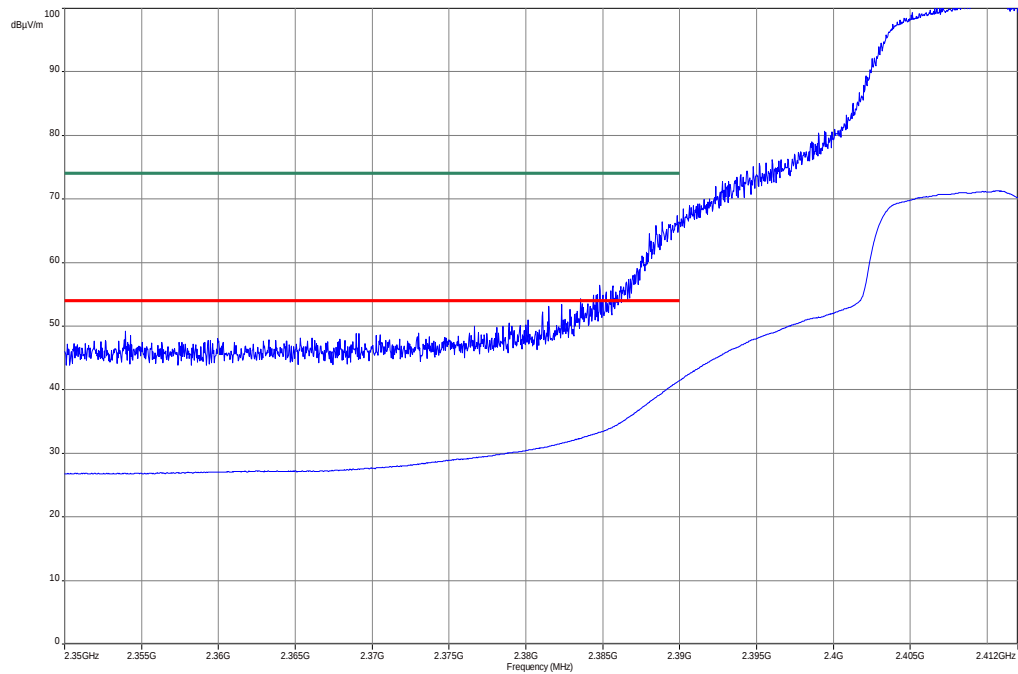
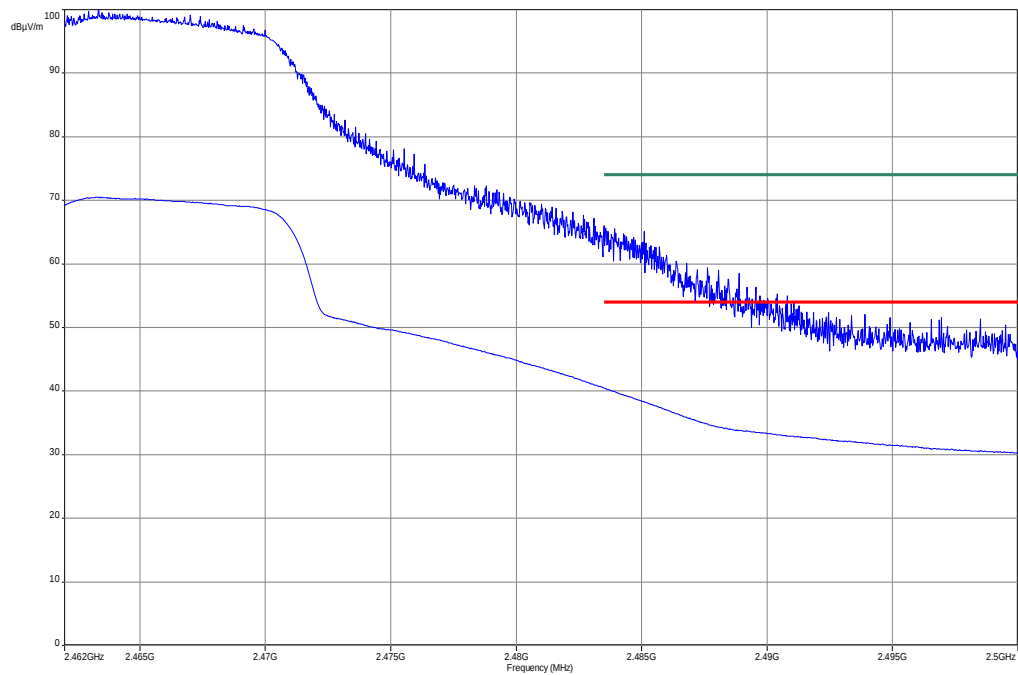
Results:

Scenario Modulation	Band Edge Compliance Conducted [dB]		
	DSSS / b – mode	OFDM / g – mode	OFDM / n – mode
Lower Band Edge – Channel 1	> 20 dB (Peak) > 15 dB (AVG)	> 10 dB (Peak) > 10 dB (AVG)	> 10 dB (Peak) > 10 dB (AVG)
Upper Band Edge – Channel 11	> 20 dB (Peak) > 15 dB (AVG)	> 10 dB (Peak) > 10 dB (AVG)	> 10 dB (Peak) > 10 dB (AVG)
Measurement uncertainty	± 3 dB		

Result: **Passed**

Plots: DSSS/ b – mode peak / average**Plot 1: TX mode, lower band edge, vertical & horizontal polarization****Plot 2: TX mode, upper band edge, vertical & horizontal polarization**

Plots: OFDM / g – mode peak / average**Plot 1: TX mode, lower band edge, vertical & horizontal polarization****Plot 2: TX mode, upper band edge, vertical & horizontal polarization**

Plots: OFDM / n – mode peak / average**Plot 1:** TX mode, lower band edge, vertical & horizontal polarization**Plot 2:** TX mode, upper band edge, vertical & horizontal polarization

10.8 TX spurious emissions conducted

Not performed – reduced test plan!

10.9 TX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in transmit mode. The measurement is performed at channel 1, 7 and 11. The measurement is repeated for all modulations.

Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak / RMS
Sweep time:	Auto
Resolution bandwidth:	F > 1 GHz: 1 MHz F < 1 GHz: 100 kHz
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz / 3 MHz
Span:	30 MHz to 26 GHz
Trace-Mode:	Max Hold
Measured Modulation	☒ DSSS b – mode ☒ OFDM g – mode ☒ OFDM n – mode

The modulation with the highest output power was used to perform the transmitter spurious emissions. If spurious were detected a re-measurement was performed on the detected frequency with each modulation.

Limits:

FCC		IC
TX Spurious Emissions 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 §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).		
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

Results: DSSS / b – mode

TX Spurious Emissions Radiated [dBμV/m]								
DSSS / b – mode								
2412 MHz			2442 MHz			2462 MHz		
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.		
All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.			All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.			All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.		
No emissions detected above 12.75 GHz.			No emissions detected above 12.75 GHz.			No emissions detected above 12.75 GHz.		
Measurement uncertainty			± 3 dB					

Result: Passed**Results: OFDM / g – mode**

TX Spurious Emissions Radiated [dBμV/m]								
OFDM / g – mode								
2412 MHz			2442 MHz			2462 MHz		
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.		
All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.			All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.			All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.		
No emissions detected above 12.75 GHz.			No emissions detected above 12.75 GHz.			No emissions detected above 12.75 GHz.		
Measurement uncertainty			± 3 dB					

Result: Passed**Results: OFDM / n – mode**

TX Spurious Emissions Radiated [dBμV/m]								
OFDM / n – mode								
2412 MHz			2442 MHz			2462 MHz		
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.		
All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.			All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.			All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.		
No emissions detected above 12.75 GHz.			No emissions detected above 12.75 GHz.			No emissions detected above 12.75 GHz.		
Measurement uncertainty			± 3 dB					

Result: Passed

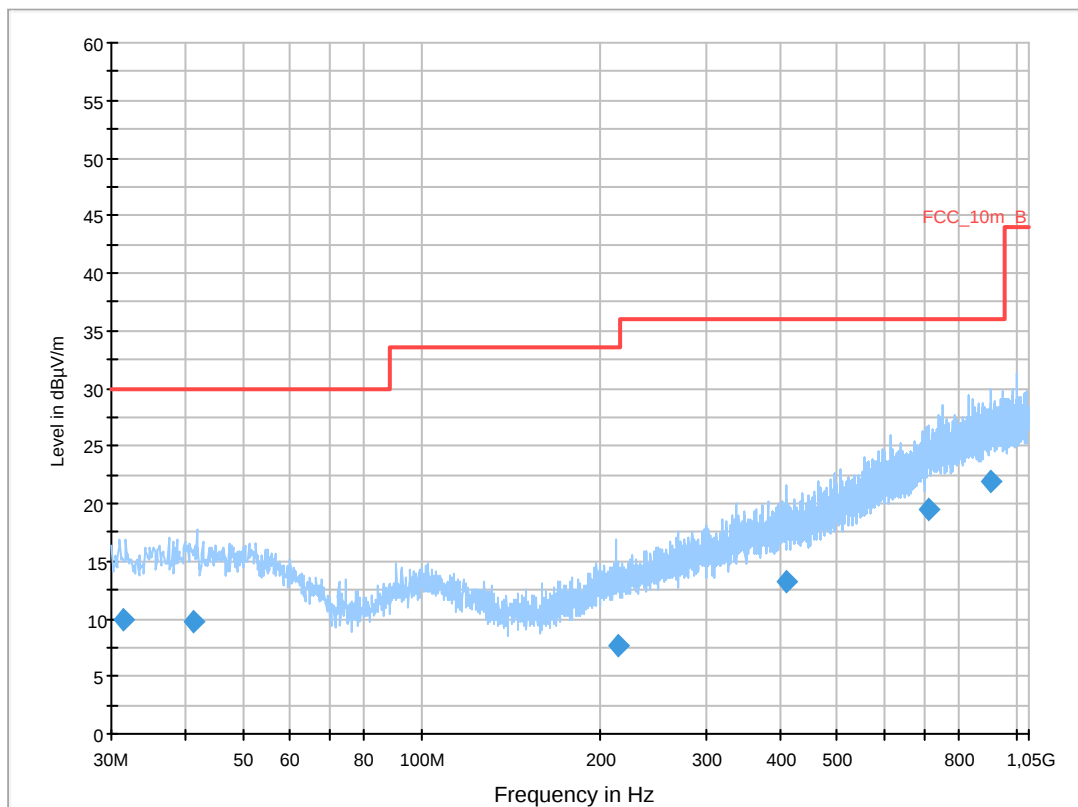
Plots: DSSS / b – mode**Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: RFU81UW
 Serial Number: IMEI:004402242283665
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN b-mode CH1 1Mbps tx
 Operator Name: Wolsdorfer
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

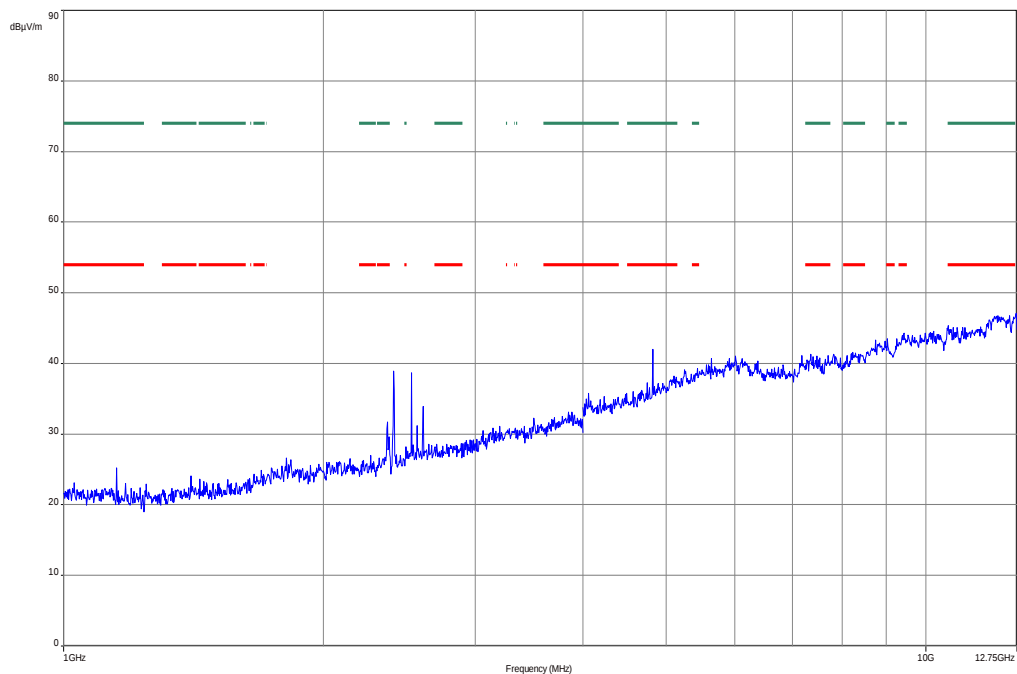
Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dBμV/m

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

**Final Result 1**

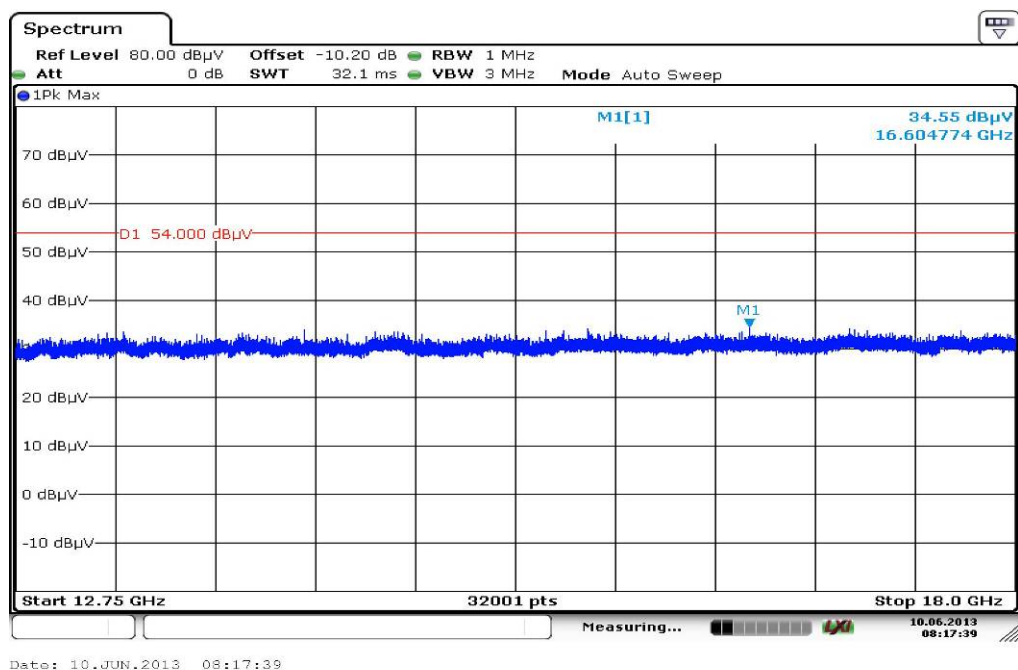
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
31.334100	10.0	1000.0	120.000	170.0	V	280.0	12.6	20.0	30.0	
41.342850	9.7	1000.0	120.000	145.0	V	88.0	13.4	20.3	30.0	
213.065550	7.6	1000.0	120.000	98.0	H	10.0	12.2	25.9	33.5	
411.489750	13.2	1000.0	120.000	164.0	V	0.0	17.1	22.8	36.0	
714.827700	19.6	1000.0	120.000	170.0	H	280.0	22.8	16.4	36.0	
907.658850	21.9	1000.0	120.000	170.0	V	-9.0	25.2	14.1	36.0	

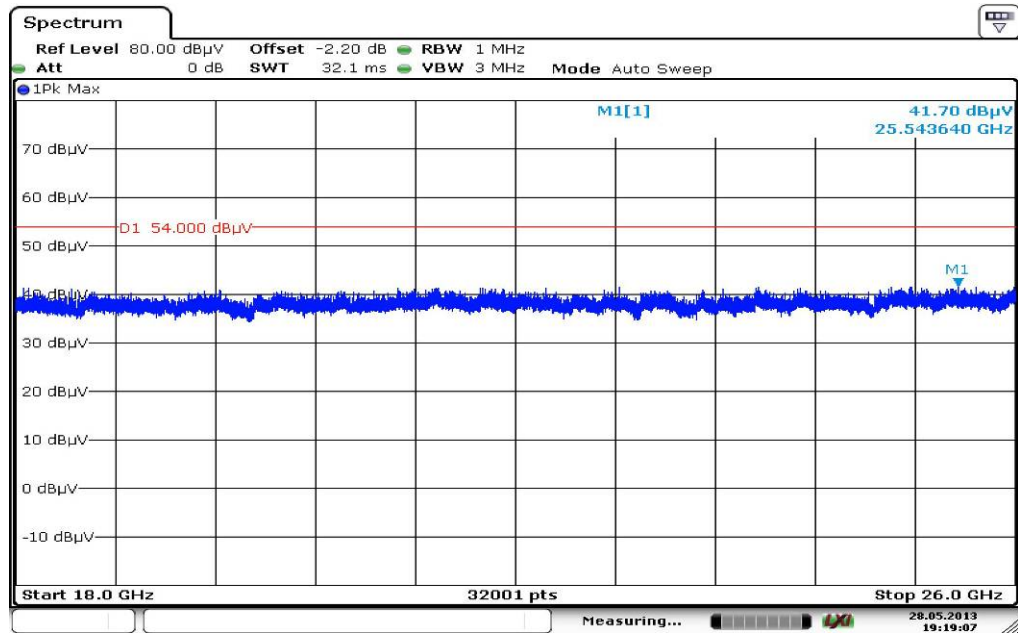
Plot 2: Lowest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization



The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 3: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



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

Date: 28.MAY.2013 19:19:07

Plot 5: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

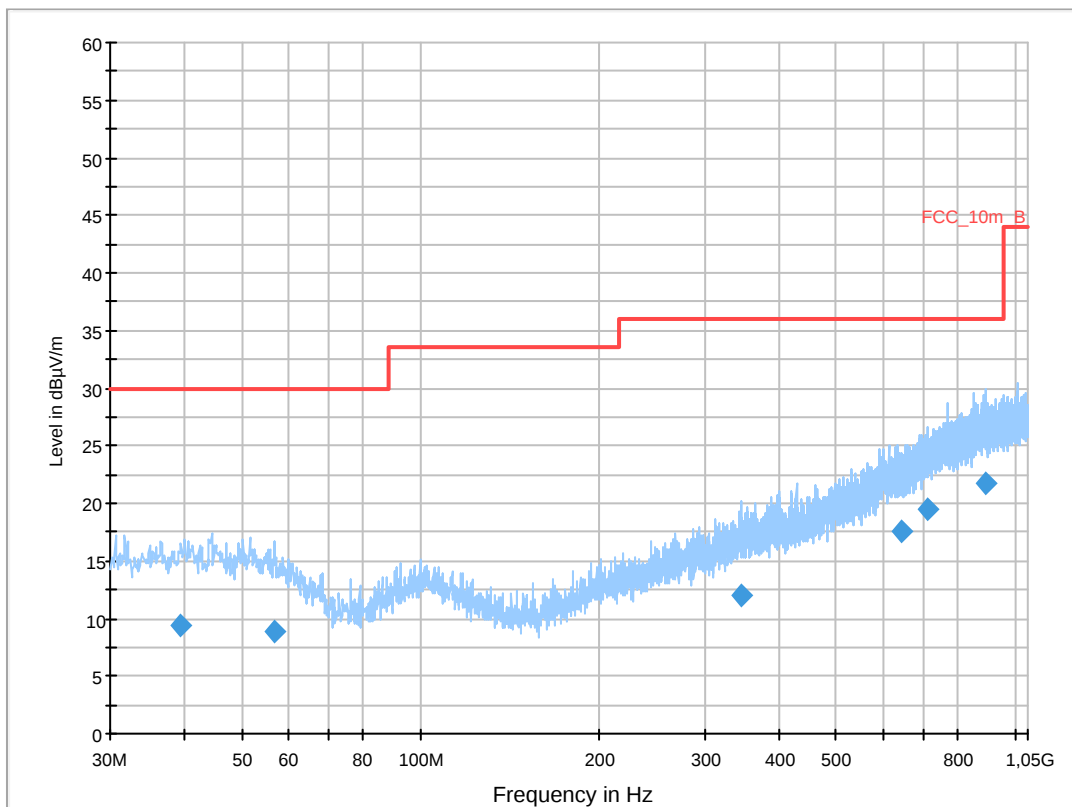
Common Information

EUT: RFU81UW
 Serial Number: IMEI:004402242283665
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN b-mode CH7 1Mbps tx
 Operator Name: Wolsdorfer
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

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

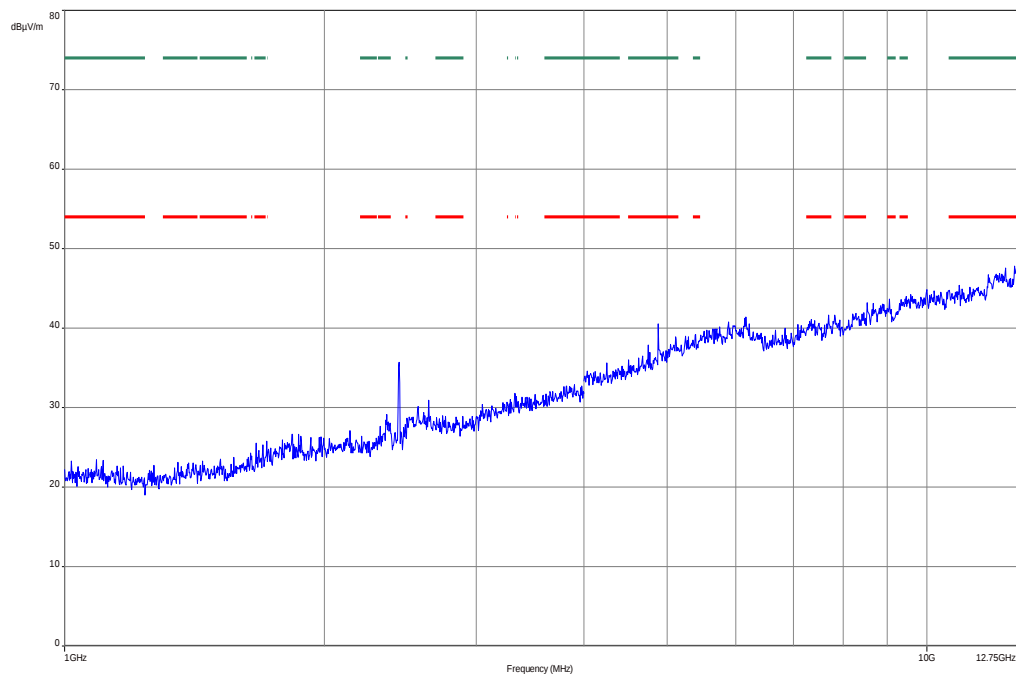
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



Final Result 1

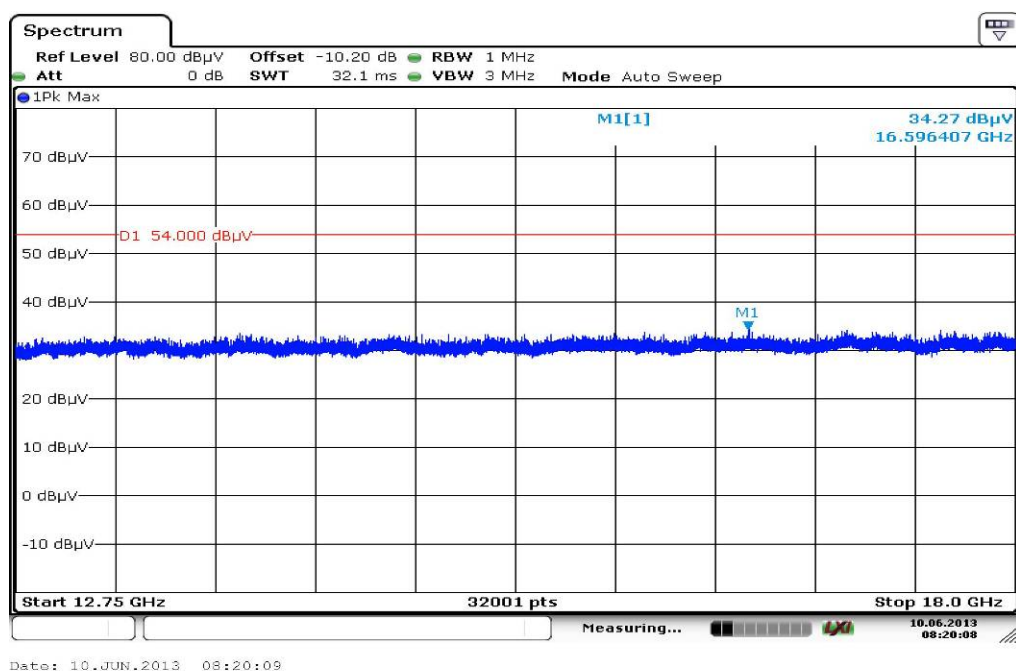
Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
39.337650	9.3	1000.0	120.000	144.0	V	0.0	13.4	20.7	30.0	
56.643750	8.8	1000.0	120.000	98.0	V	100.0	12.5	21.2	30.0	
344.722050	11.9	1000.0	120.000	170.0	V	175.0	15.9	24.1	36.0	
642.391200	17.6	1000.0	120.000	122.0	V	-9.0	21.1	18.4	36.0	
714.876900	19.5	1000.0	120.000	170.0	H	175.0	22.9	16.5	36.0	
895.410600	21.8	1000.0	120.000	98.0	H	100.0	25.1	14.2	36.0	

Plot 6: Middle channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

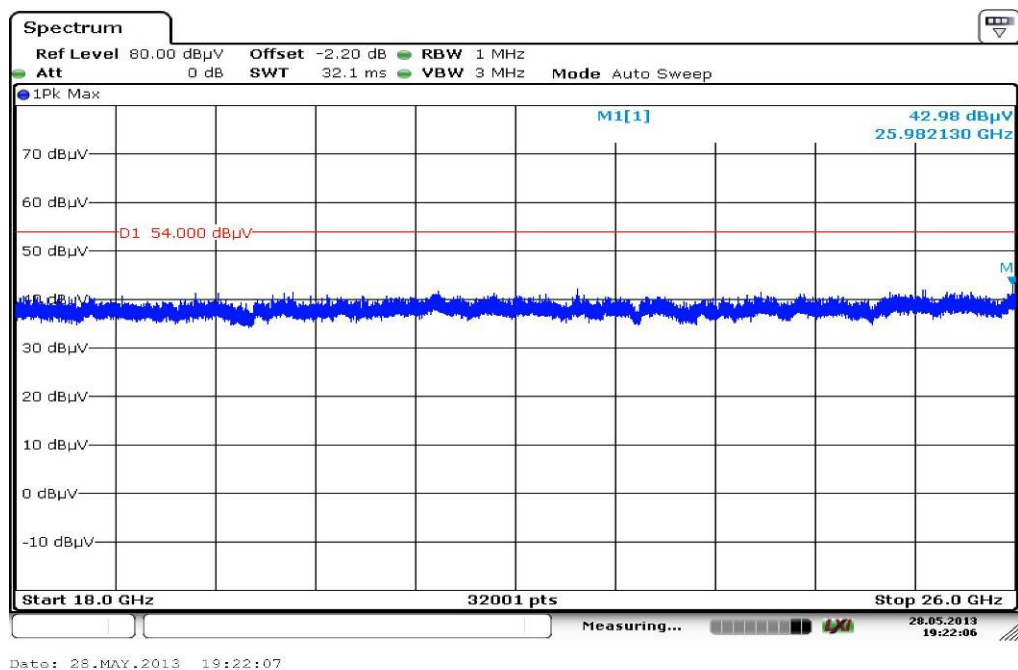


The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 7: Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 8: Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization



Plot 9: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization

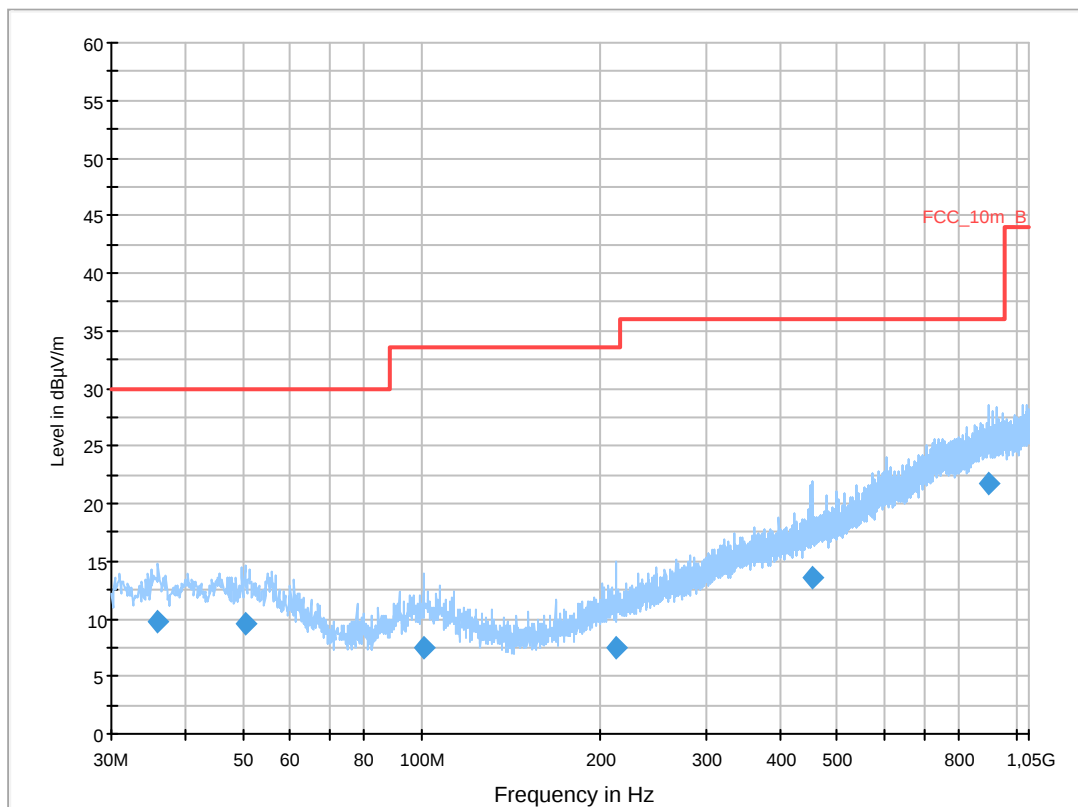
Common Information

EUT: RFU81UW
 Serial Number: IMEI:004402242283665
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN b-mode CH11 1Mbps tx
 Operator Name: Wolsdorfer
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

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

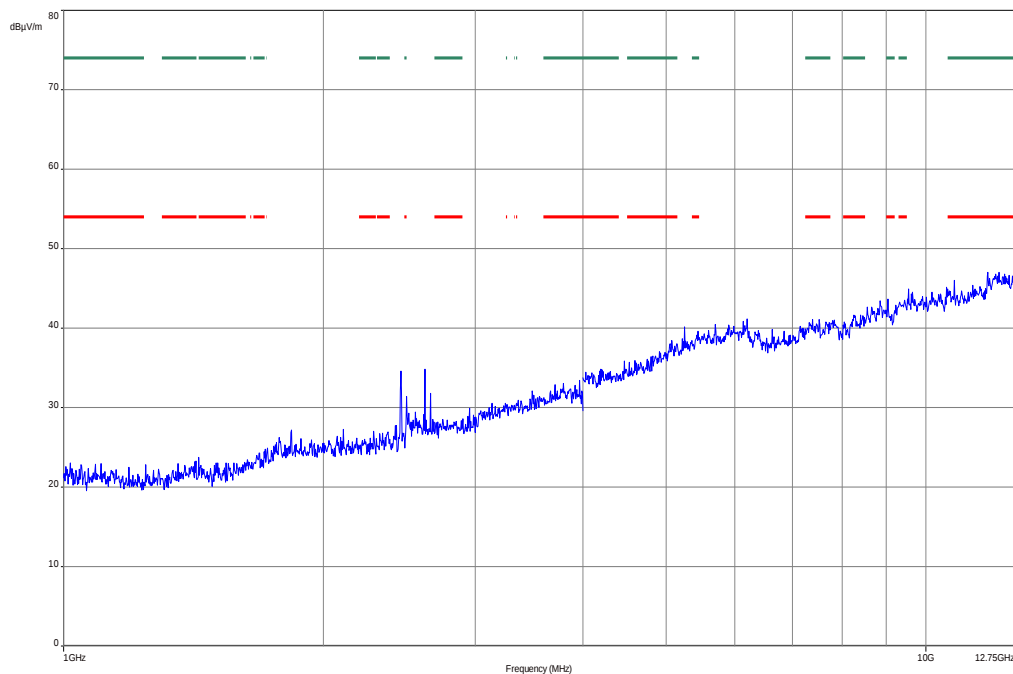
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB



Final Result 1

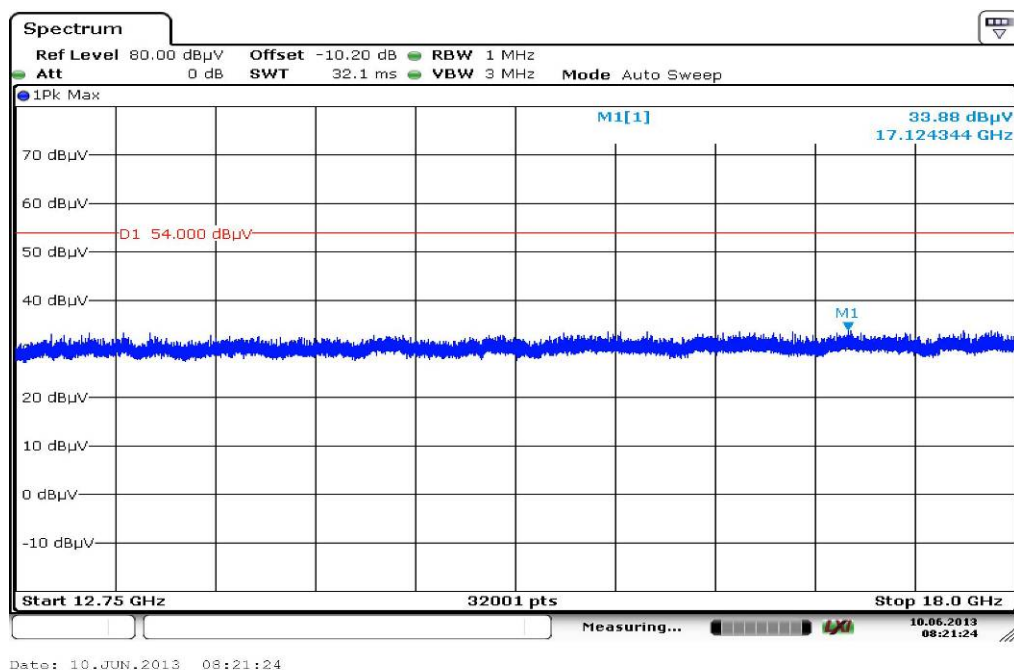
Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
36.000000	9.8	1000.0	120.000	145.0	H	37.0	13.1	20.2	30.0	
50.400000	9.6	1000.0	120.000	170.0	H	44.0	13.3	20.4	30.0	
100.800000	7.5	1000.0	120.000	172.0	V	254.0	11.8	26.0	33.5	
212.880000	7.5	1000.0	120.000	104.0	H	15.0	12.2	26.0	33.5	
453.240000	13.6	1000.0	120.000	264.0	V	54.0	17.7	22.4	36.0	
901.920000	21.8	1000.0	120.000	270.0	V	301.0	25.2	14.2	36.0	

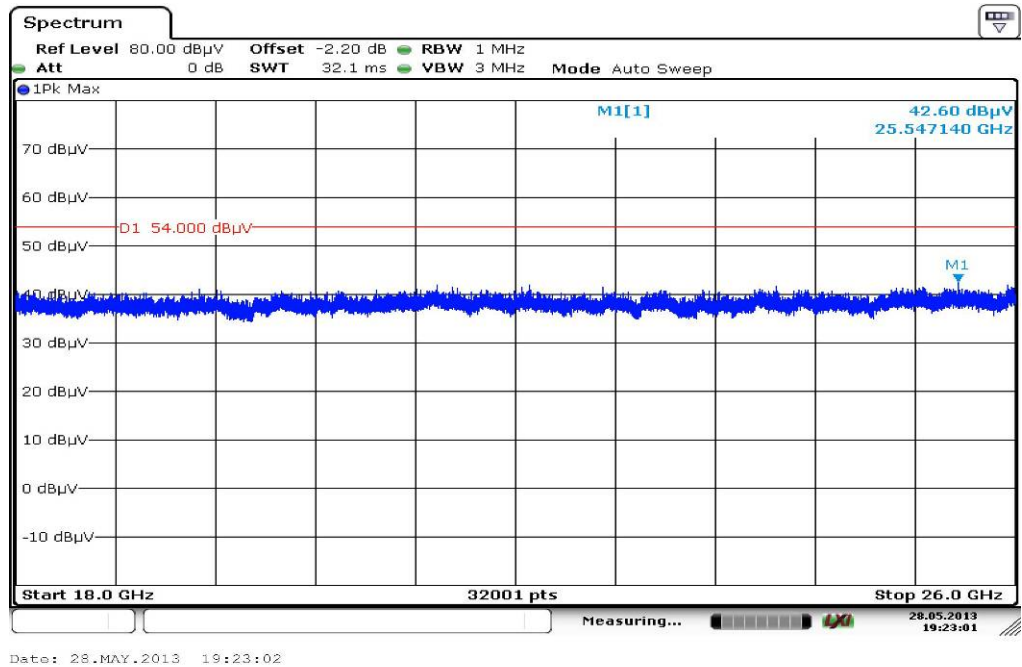
Plot 10: Highest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization



The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 11: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 12: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization

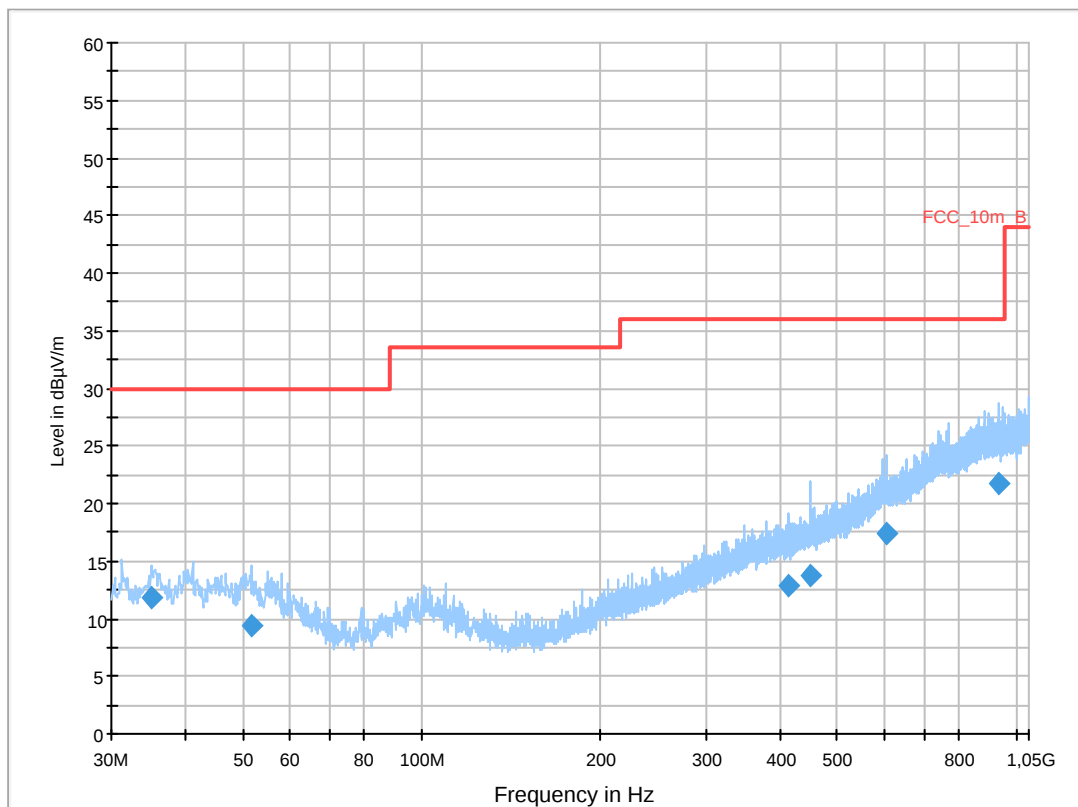
Plots: OFDM / g – mode**Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: RFU81UW
 Serial Number: IMEI:004402242283665
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN g-mode CH1 6Mbps tx
 Operator Name: Wolsdorfer
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

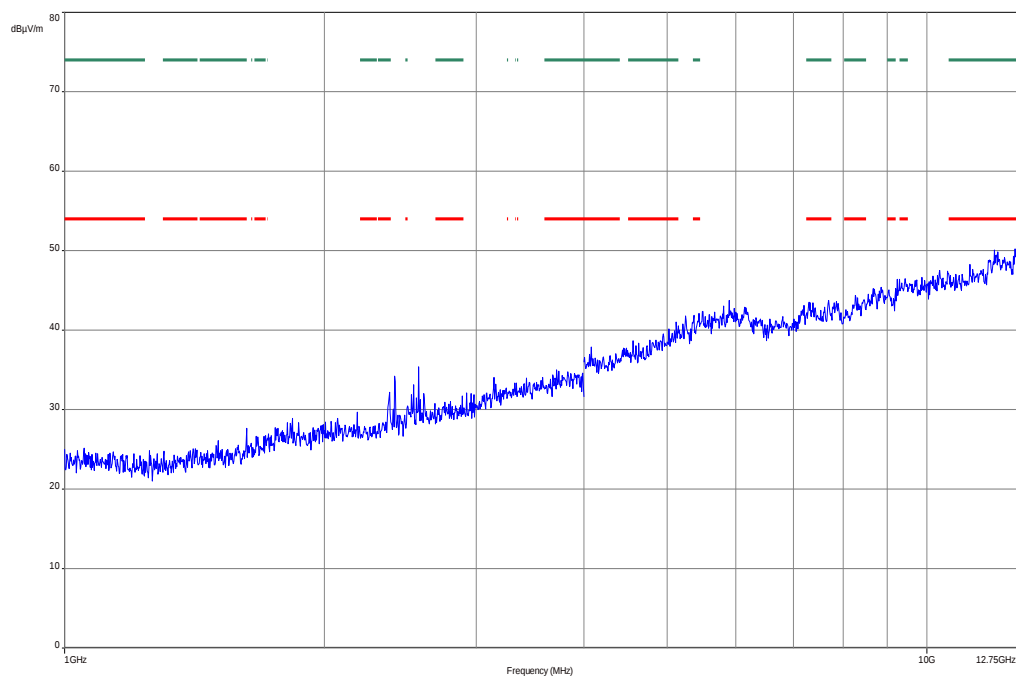
Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dBμV/m

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

**Final Result 1**

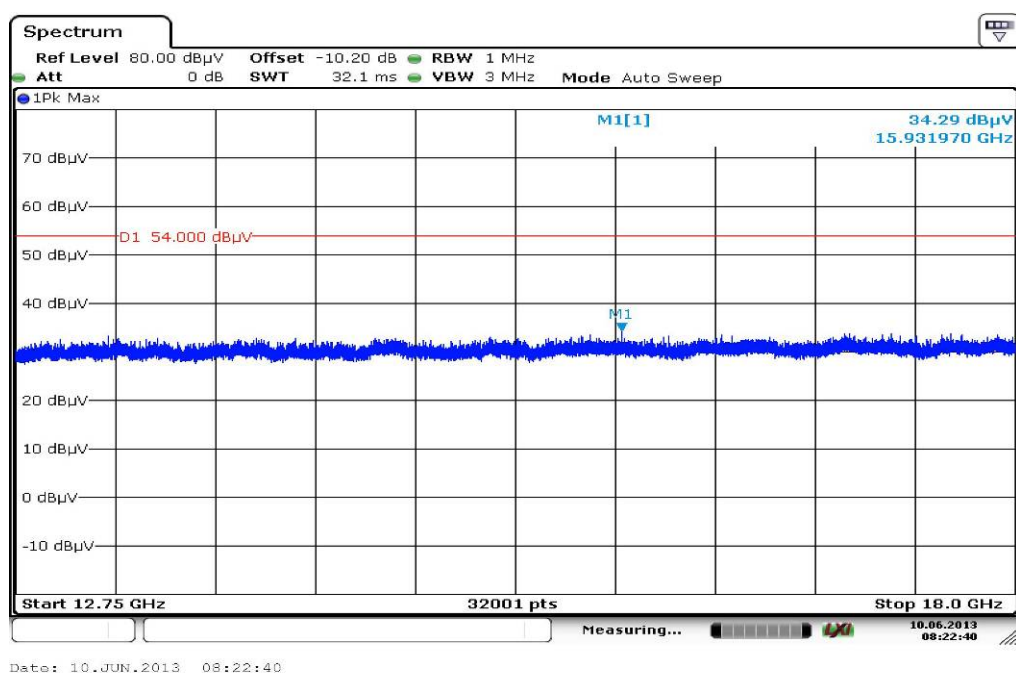
Frequency (MHz)	QuasiPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)	Comment
35.040000	11.8	1000.0	120.000	174.0	V	345.0	13.0	18.2	30.0	
51.720000	9.4	1000.0	120.000	270.0	H	132.0	13.2	20.6	30.0	
414.120000	12.9	1000.0	120.000	270.0	V	104.0	17.1	23.1	36.0	
451.560000	13.8	1000.0	120.000	111.0	V	320.0	17.7	22.2	36.0	
605.160000	17.5	1000.0	120.000	270.0	V	265.0	20.8	18.5	36.0	
933.960000	21.8	1000.0	120.000	98.0	V	331.0	25.3	14.2	36.0	

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

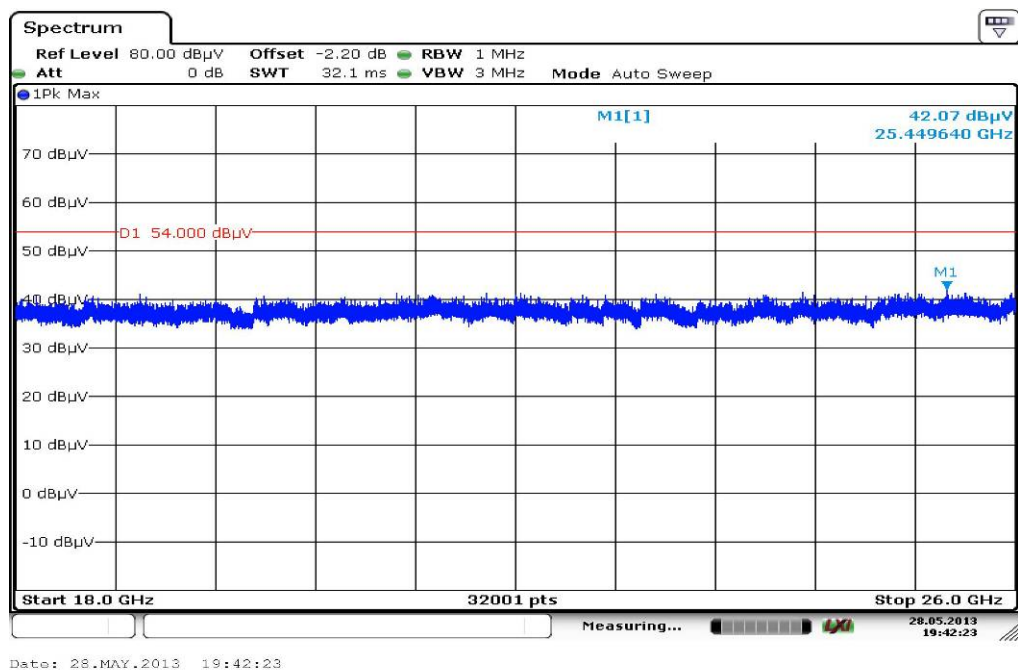


The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 3: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



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



Plot 5: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

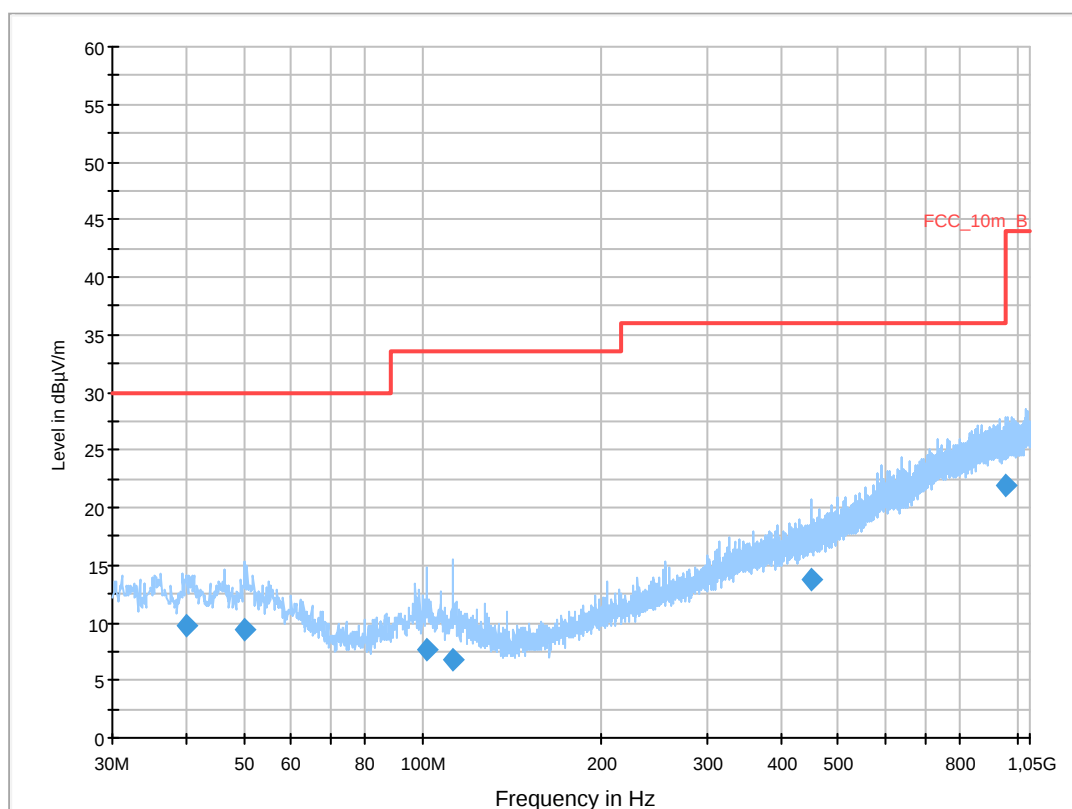
Common Information

EUT: RFU81UW
 Serial Number: IMEI:004402242283665
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN g-mode CH7 6Mbps tx
 Operator Name: Wolsdorfer
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

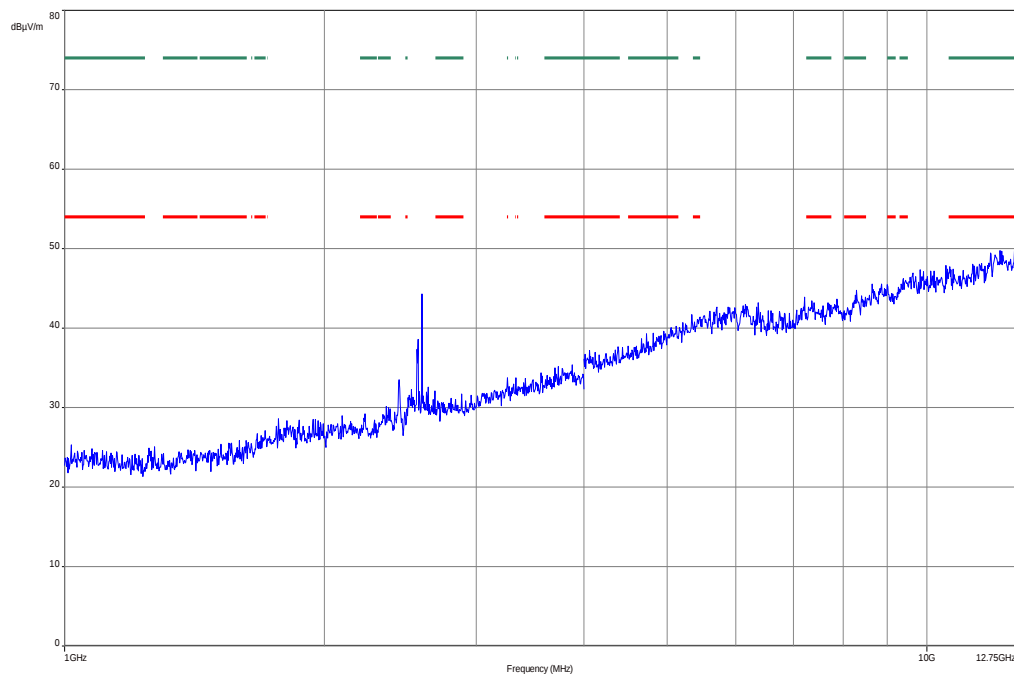
Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dB μ V/m

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

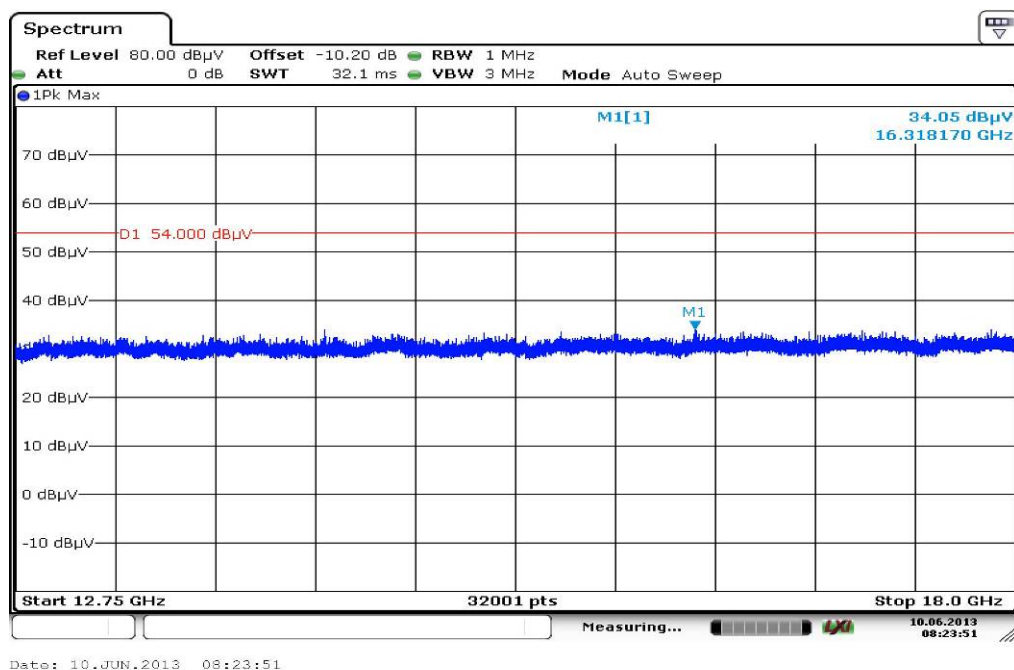


Final Result 1

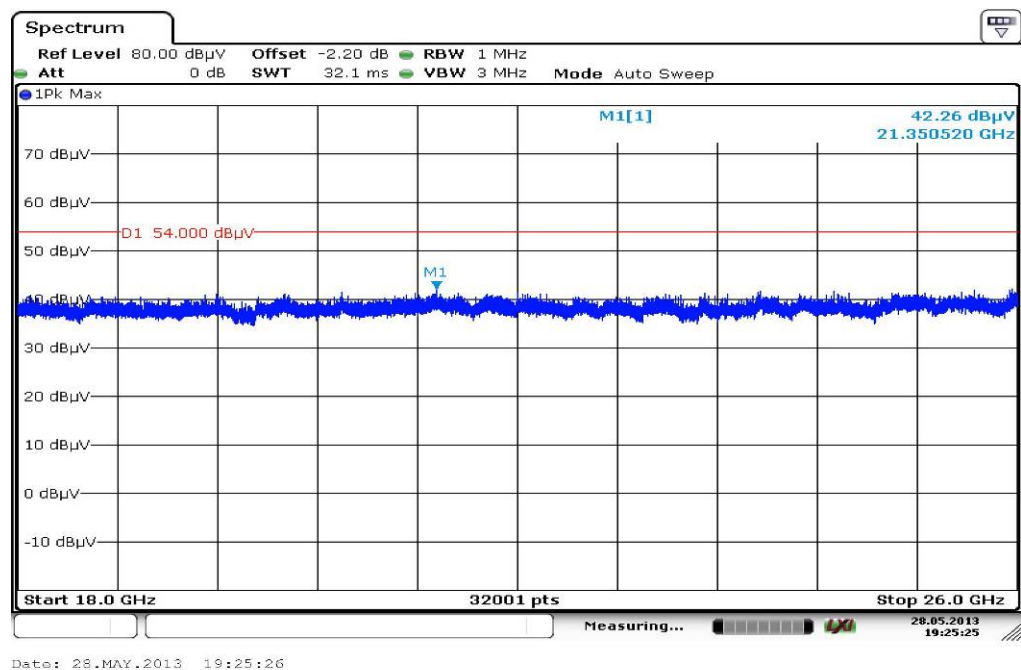
Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
39.960000	9.7	1000.0	120.000	270.0	V	41.0	13.4	20.3	30.0	
50.040000	9.4	1000.0	120.000	270.0	H	106.0	13.4	20.6	30.0	
101.520000	7.7	1000.0	120.000	157.0	V	106.0	11.8	25.8	33.5	
111.960000	6.9	1000.0	120.000	270.0	V	106.0	10.9	26.6	33.5	
451.440000	13.7	1000.0	120.000	263.0	V	64.0	17.7	22.3	36.0	
957.120000	21.8	1000.0	120.000	270.0	V	247.0	25.4	14.2	36.0	

Plot 6: Middle channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 7: Middle channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

Plot 8: Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization



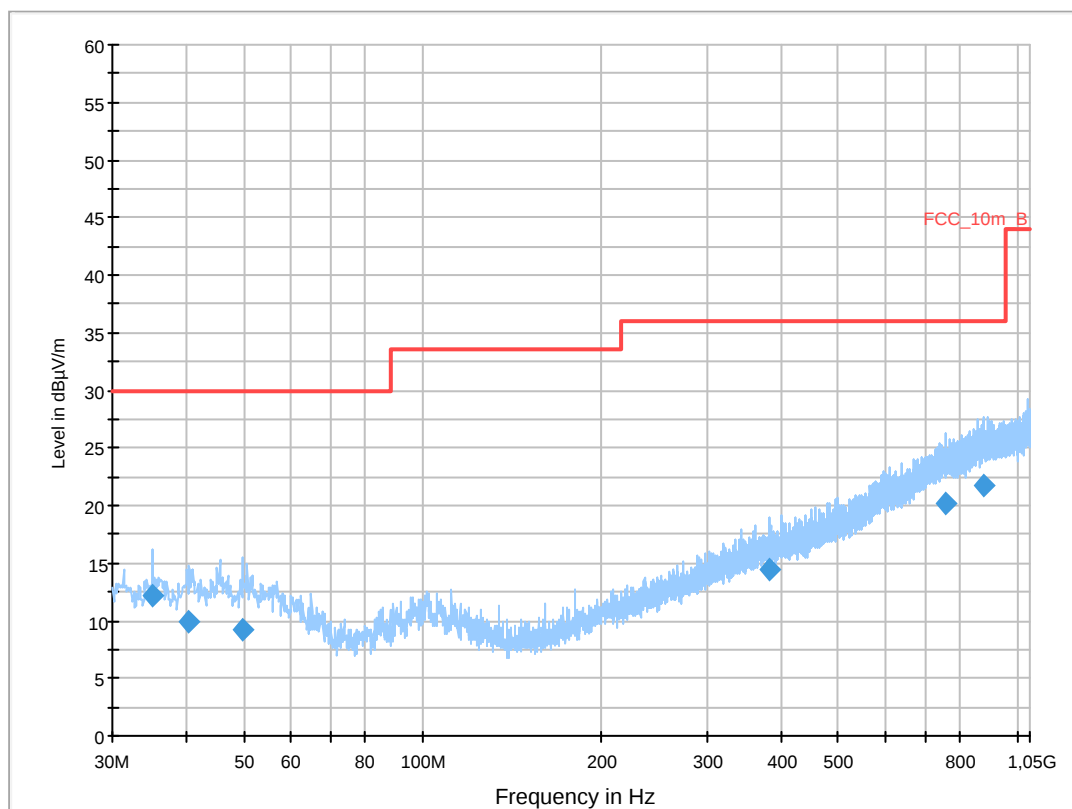
Plot 9: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: RFU81UW
 Serial Number: IMEI:004402242283665
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN g-mode CH11 6Mbps tx
 Operator Name: Wolsdorfer
 Comment: battery powered

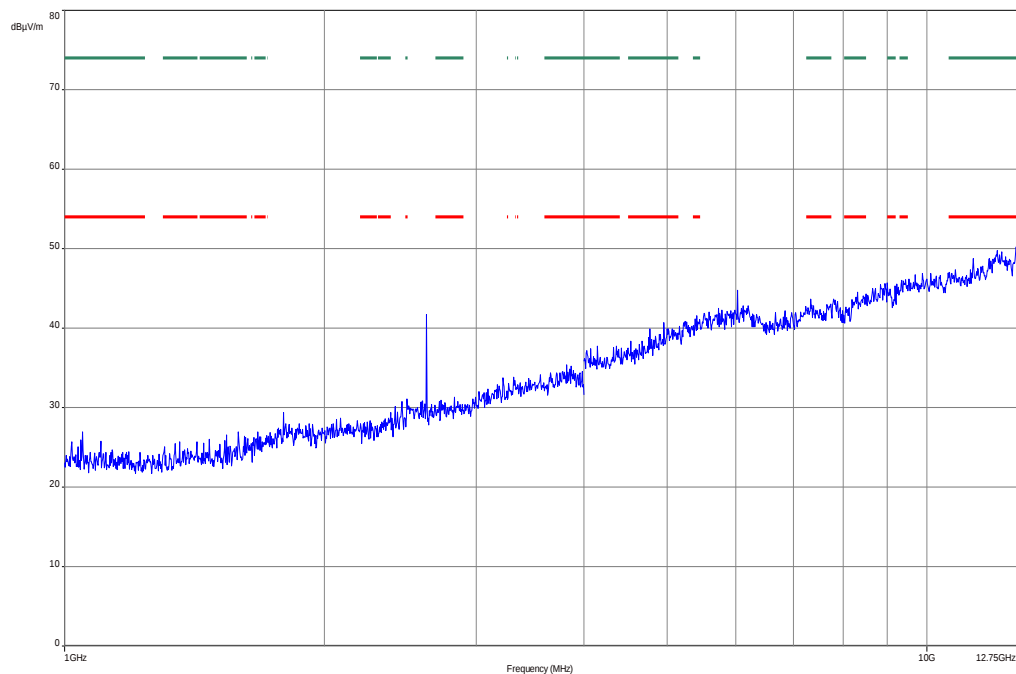
Scan Setup: STAN_Fin [EMI radiated]

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

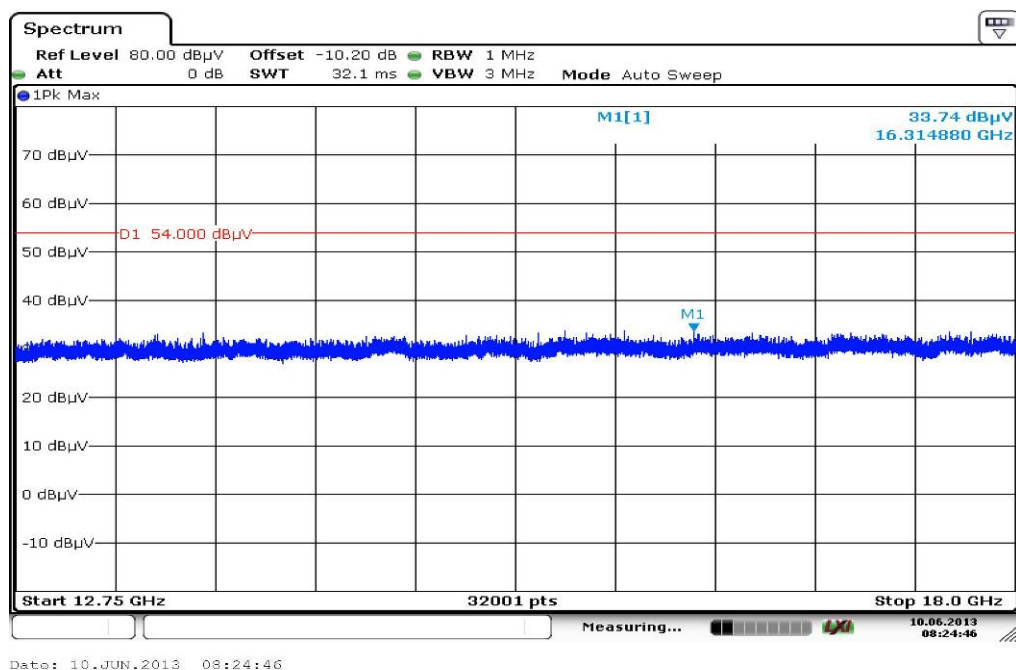
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

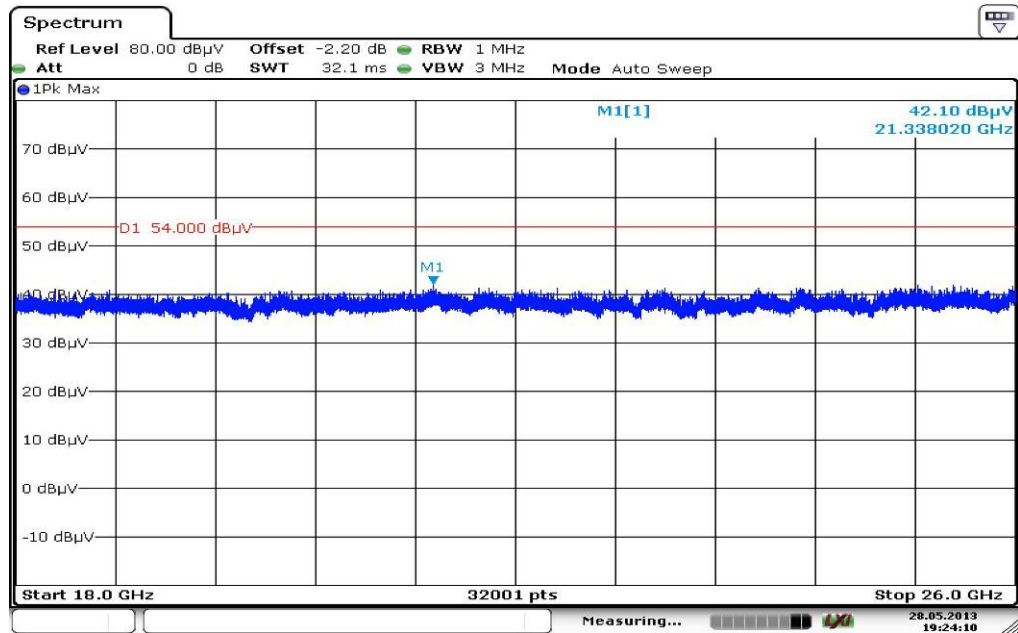
**Final Result 1**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
35.040000	12.2	1000.0	120.000	257.0	V	43.0	13.0	17.8	30.0	
40.440000	9.9	1000.0	120.000	210.0	H	230.0	13.4	20.1	30.0	
49.680000	9.2	1000.0	120.000	208.0	H	216.0	13.4	20.8	30.0	
384.000000	14.5	1000.0	120.000	210.0	V	101.0	16.6	21.5	36.0	
755.280000	20.2	1000.0	120.000	270.0	H	118.0	23.7	15.8	36.0	
881.160000	21.7	1000.0	120.000	168.0	V	335.0	25.0	14.3	36.0	

Plot 10: Highest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization

The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 11: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

Plot 12: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization

Date: 28.MAY.2013 19:24:10

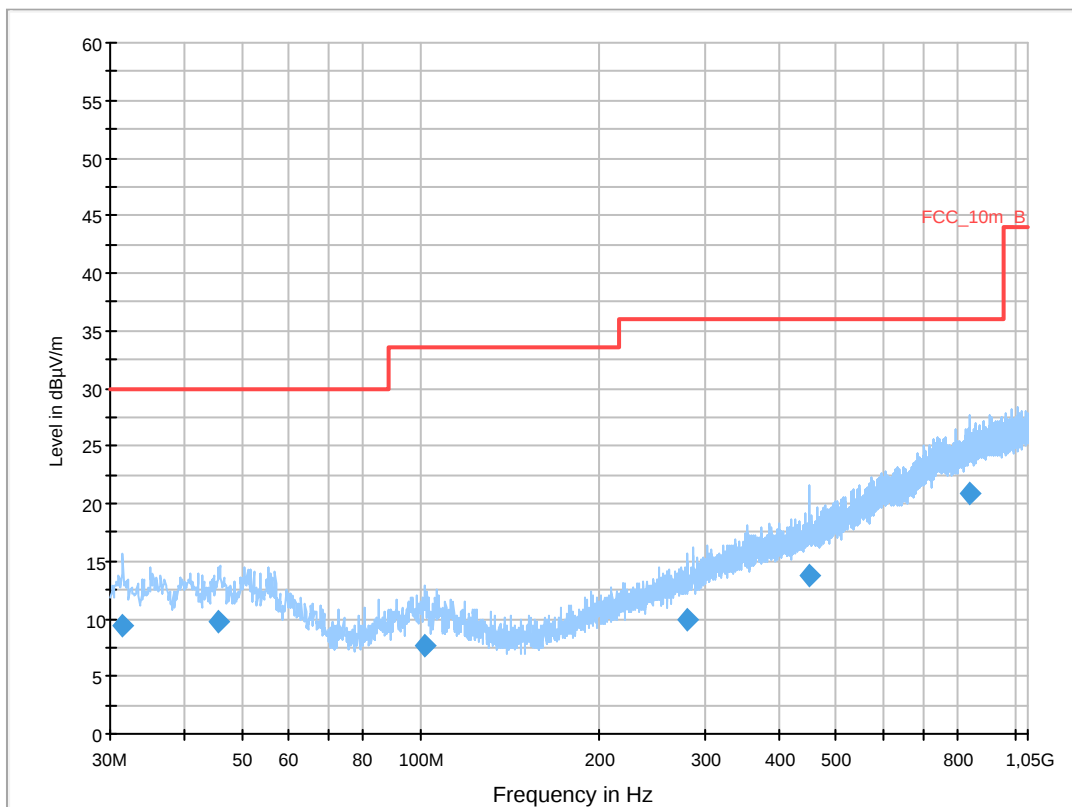
Plots: OFDM / n – mode**Plot 1:** Lowest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: RFU81UW
 Serial Number: IMEI:004402242283665
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN n-mode CH1 MCS0 TX
 Operator Name: Wolsdorfer
 Comment: battery powered

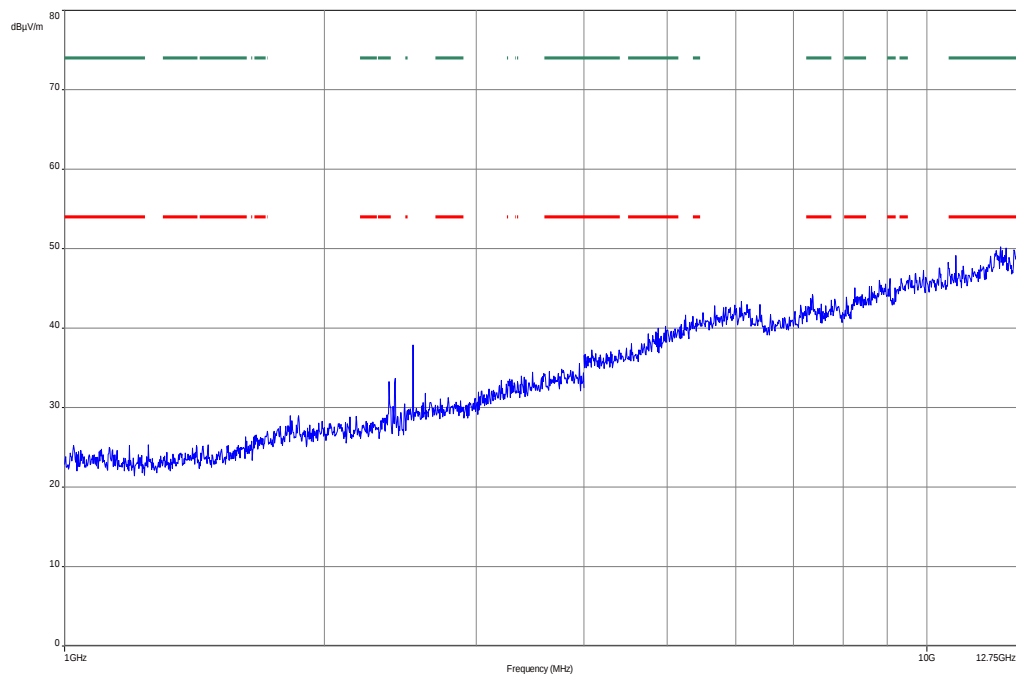
Scan Setup: STAN_Fin [EMI radiated]

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

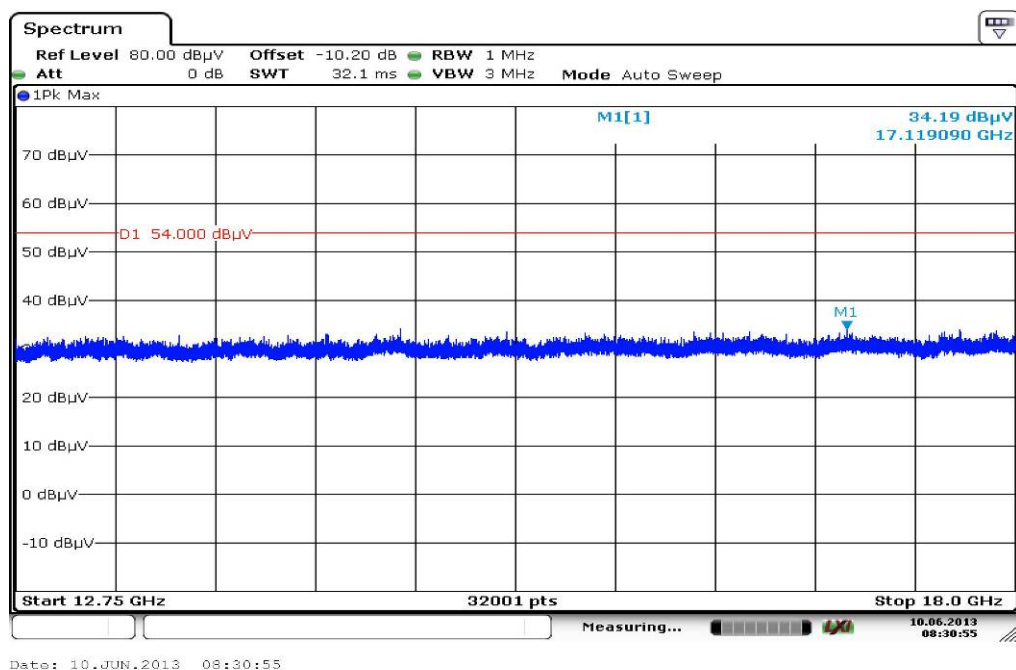
Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
30 MHz - 2 GHz	60 kHz	QPK	120 kHz	1 s	20 dB

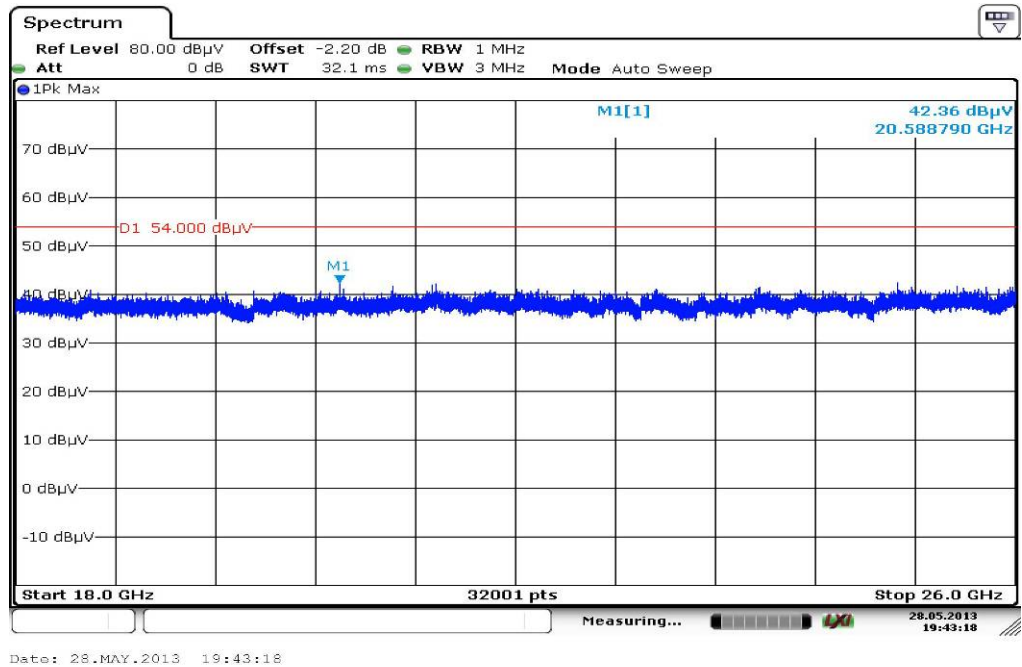
**Final Result 1**

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
31.440000	9.5	1000.0	120.000	146.0	H	209.0	12.7	20.5	30.0	
45.600000	9.7	1000.0	120.000	270.0	V	199.0	13.3	20.3	30.0	
101.280000	7.7	1000.0	120.000	270.0	V	111.0	11.8	25.8	33.5	
280.320000	9.8	1000.0	120.000	270.0	H	288.0	14.1	26.2	36.0	
451.800000	13.8	1000.0	120.000	270.0	V	199.0	17.7	22.2	36.0	
838.200000	20.9	1000.0	120.000	270.0	H	299.0	24.4	15.1	36.0	

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

The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 3: Lowest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization

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

Plot 5: Middle channel, 30 MHz to 1 GHz, vertical & horizontal polarization

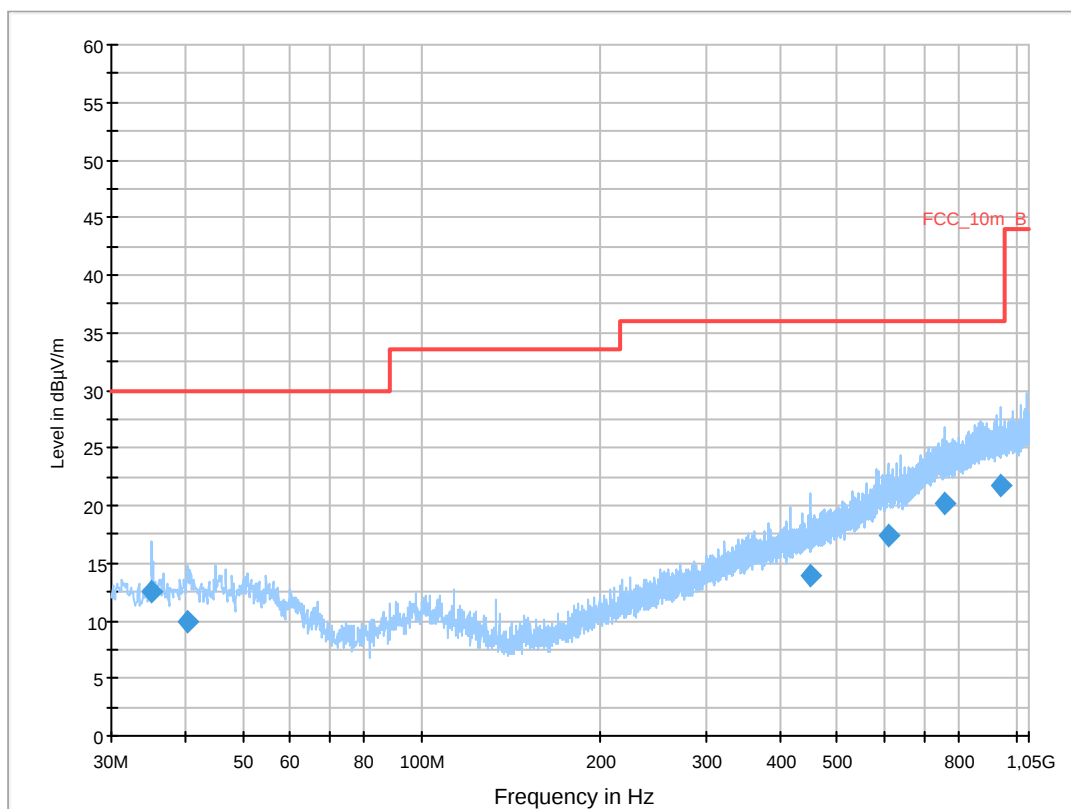
Common Information

EUT: RFU81UW
 Serial Number: IMEI:004402242283665
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN n-mode CH7 MCS0 TX
 Operator Name: Wolsdorfer
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

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

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



Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
35.040000	12.5	1000.0	120.000	246.0	V	199.0	13.0	17.5	30.0	
40.200000	9.9	1000.0	120.000	195.0	V	0.0	13.4	20.1	30.0	
450.120000	14.0	1000.0	120.000	270.0	V	199.0	17.7	22.0	36.0	
607.560000	17.4	1000.0	120.000	270.0	V	279.0	20.8	18.6	36.0	
757.800000	20.1	1000.0	120.000	270.0	H	313.0	23.7	15.9	36.0	
943.560000	21.8	1000.0	120.000	98.0	V	116.0	25.3	14.2	36.0	

The graph displays the frequency spectrum of a signal. The x-axis represents Frequency in MHz on a logarithmic scale, ranging from 1GHz to 12.75GHz. The y-axis represents the signal level in dBμV/m, ranging from 0 to 80. A blue line shows the measured signal, which starts around 25 dBμV/m at 1GHz, rises to a peak of approximately 45 dBμV/m around 10GHz, and then continues to rise towards 50 dBμV/m at 12.75GHz. Two horizontal dashed lines are present: a green line at approximately 75 dBμV/m and a red line at approximately 55 dBμV/m.

Spectrum

Ref Level 80.00 dBμV Offset -10.20 dB RBW 1 MHz
 Att 0 dB SWT 32.1 ms VBW 3 MHz Mode Auto Sweep

1Pk Max

M1[1] 34.30 dBμV
 16.419550 GHz

D1 54.000 dBμV

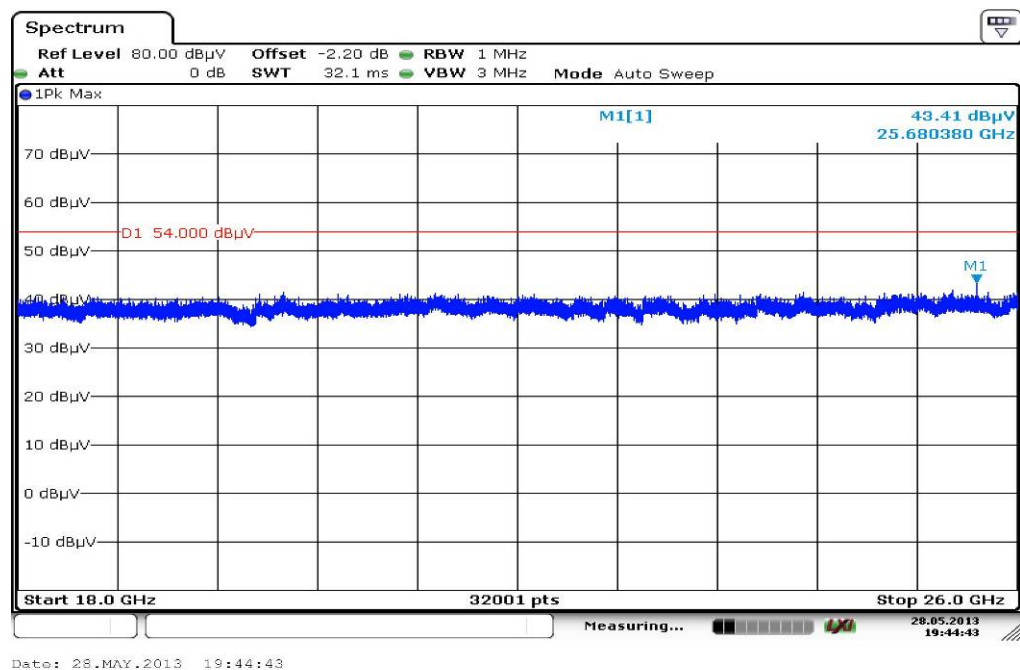
Start 12.75 GHz 32001 pts Stop 18.0 GHz

Measuring...

10.06.2013 08:29:39

Date: 10.JUN.2013 08:29:39

Plot 8: Middle channel, 18 GHz to 26 GHz, vertical & horizontal polarization



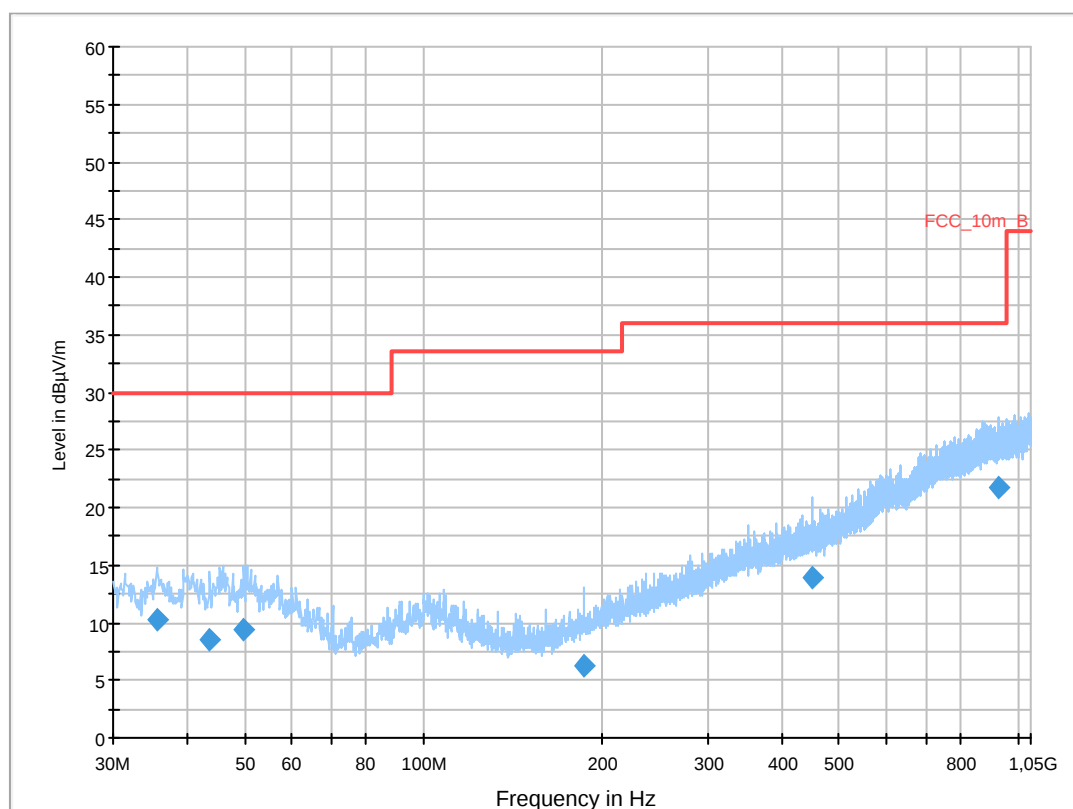
Plot 9: Highest channel, 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: RFU81UW
 Serial Number: IMEI:004402242283665
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN n-mode CH11 MCS0 TX
 Operator Name: Wolsdorfer
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

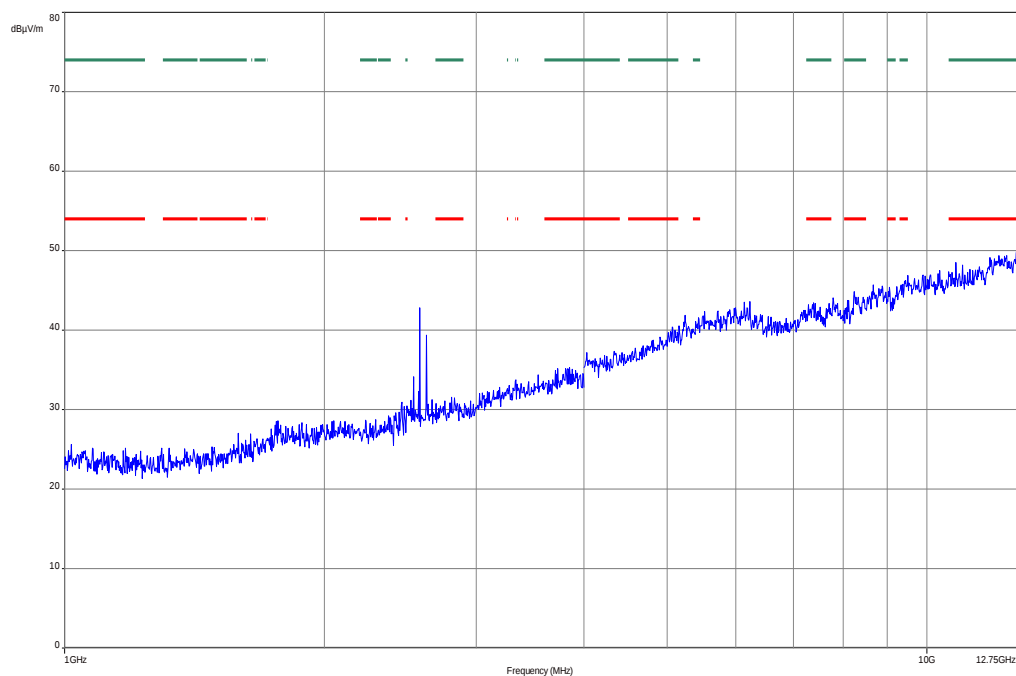
Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dB μ V/m

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

**Final Result 1**

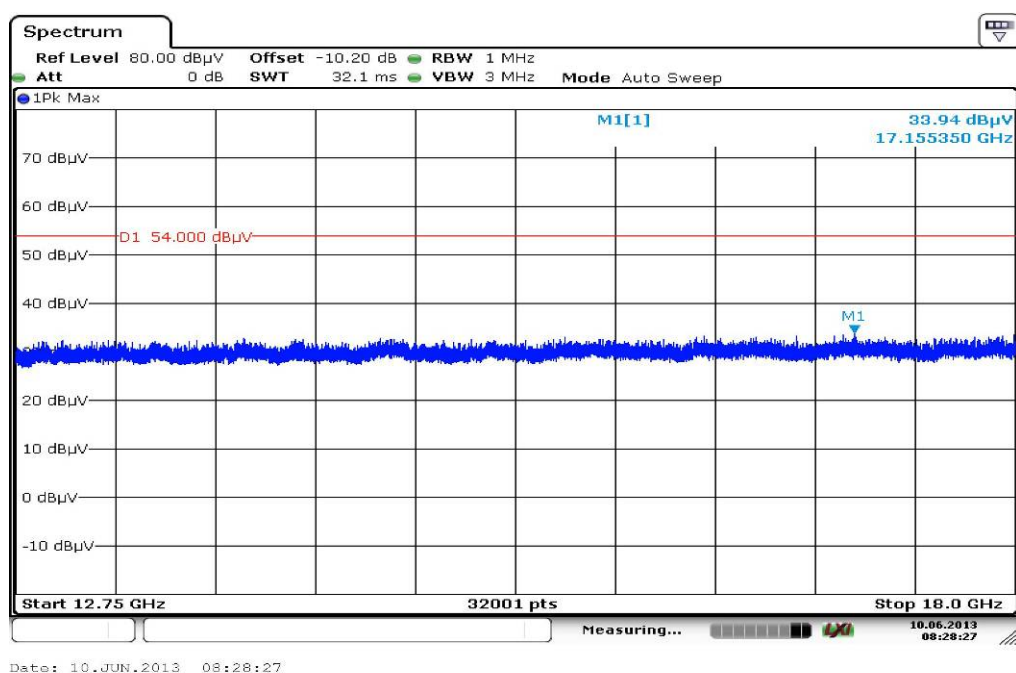
Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
35.520000	10.3	1000.0	120.000	196.0	V	134.0	13.1	19.8	30.0	
43.680000	8.6	1000.0	120.000	270.0	V	291.0	13.3	21.4	30.0	
49.800000	9.4	1000.0	120.000	270.0	V	192.0	13.4	20.6	30.0	
185.880000	6.3	1000.0	120.000	270.0	V	262.0	10.8	27.2	33.5	
450.840000	13.9	1000.0	120.000	270.0	V	163.0	17.7	22.1	36.0	
926.280000	21.8	1000.0	120.000	270.0	V	232.0	25.3	14.2	36.0	

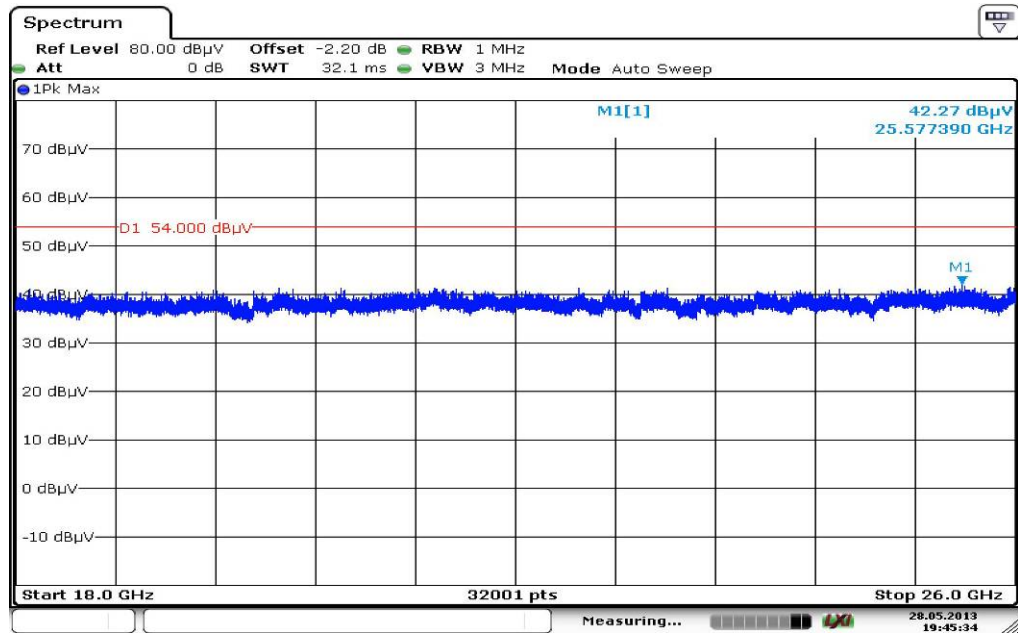
Plot 10: Highest channel, 1 GHz to 12.75 GHz, vertical & horizontal polarization



The carrier signal is notched with a 2.4 GHz band rejection filter.

Plot 11: Highest channel, 12.75 GHz to 18 GHz, vertical & horizontal polarization



Plot 12: Highest channel, 18 GHz to 26 GHz, vertical & horizontal polarization

Date: 28.MAY.2013 19:45:35

10.10 RX spurious emissions radiated

Description:

Measurement of the radiated spurious emissions in idle/receive mode. The results are valid for both modes.

Measurement:

Measurement parameter	
Detector:	Peak / Quasi Peak / RMS
Sweep time:	Auto
Resolution bandwidth:	F > 1 GHz: 1 MHz F < 1 GHz: 100 kHz
Video bandwidth:	Sweep: 100 kHz Remeasurement: 10 Hz / 3 MHz
Span:	30 MHz to 26 GHz
Trace-Mode:	Max Hold

Limits:

FCC		IC
RX Spurious Emissions Radiated		
Frequency (MHz)	Field Strength (dB μ V/m)	Measurement distance
30 - 88	30.0	10
88 – 216	33.5	10
216 – 960	36.0	10
Above 960	54.0	3

Results:

RX Spurious Emissions Radiated [dB μ V/m]		
F [MHz]	Detector	Level [dB μ V/m]
For emissions below 1 GHz, please take a look at the table below the 1 GHz plot.		
All detected peak emissions between 1 GHz and 12.75 GHz are below the average limit.		
No emissions detected above 12.75 GHz.		
Measurement uncertainty	± 3 dB	

Result: Passed.

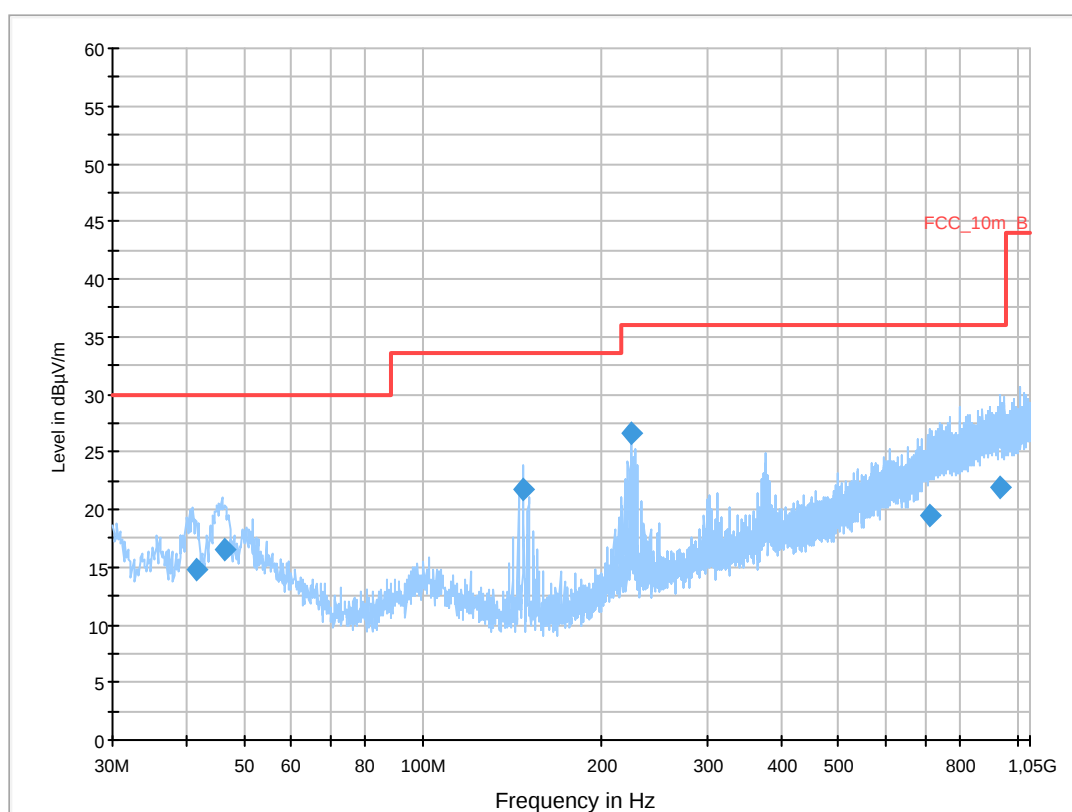
Plots: TX mode (customer tests plan) and periphery equipment**Plot 1:** 30 MHz to 1 GHz, vertical & horizontal polarization**Common Information**

EUT: RFU81UW
 Test Description: FCC part 15 C class B @ 10 m
 Operating Conditions: WLAN ch. 6 + charging
 Operator Name: Wolsdorfer
 Comment: AC 115V / 60Hz

Scan Setup: STAN_Fin [EMI radiated]

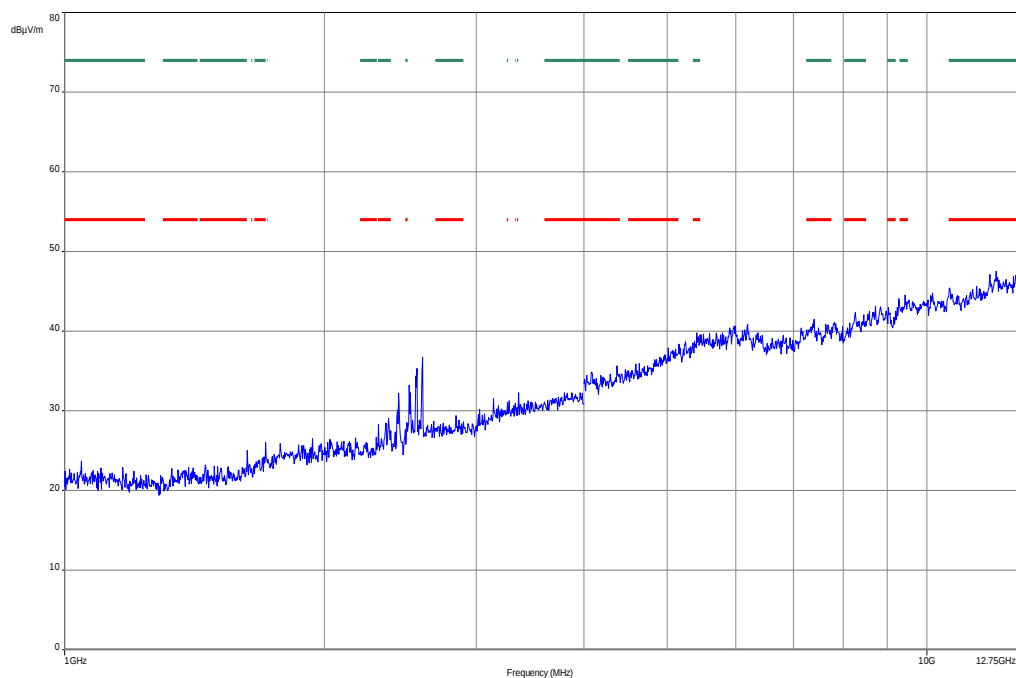
Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dB μ V/m

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

**Final Result 1**

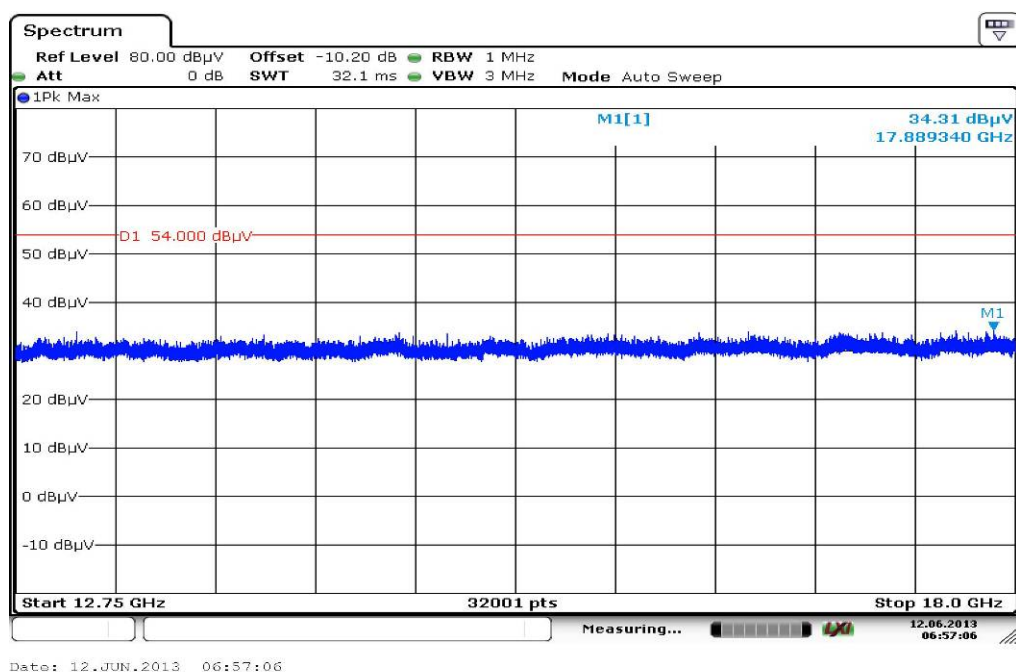
Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
41.426250	14.7	1000.0	120.000	111.0	V	280.0	13.4	15.3	30.0	
46.288800	16.6	1000.0	120.000	98.0	V	100.0	13.3	13.4	30.0	
147.735900	21.7	1000.0	120.000	98.0	V	171.0	8.9	11.8	33.5	
224.376300	26.6	1000.0	120.000	105.0	V	10.0	12.5	9.4	36.0	
711.468600	19.5	1000.0	120.000	170.0	V	178.0	22.8	16.5	36.0	
935.845650	21.9	1000.0	120.000	98.0	V	170.0	25.3	14.1	36.0	

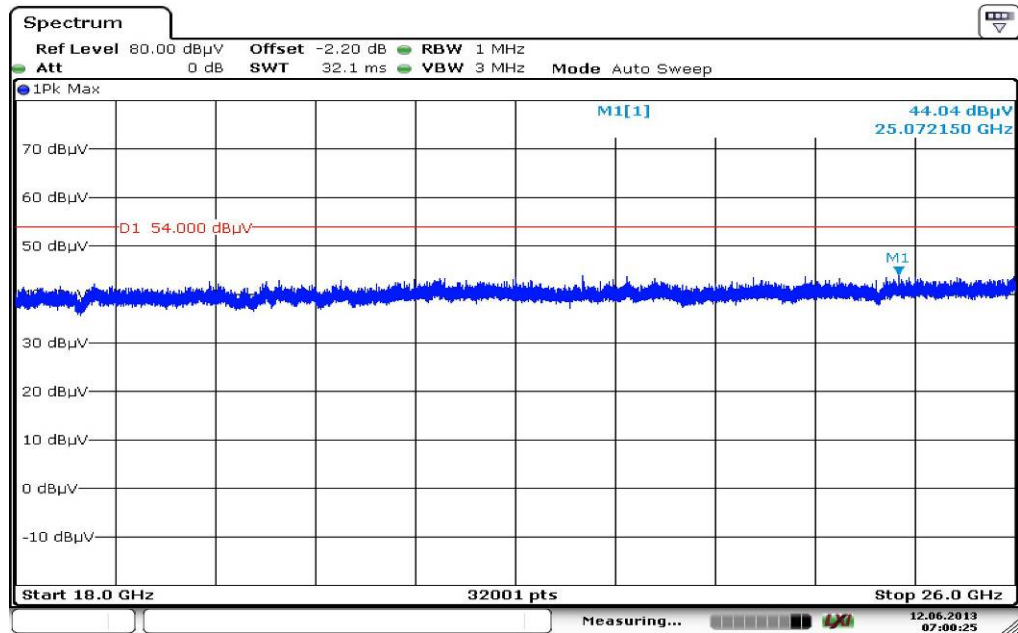
Plot 2: 1 GHz to 12.75 GHz, vertical & horizontal polarization



The carrier signal is notched with a 2.4 GHz band rejection filter!

Plot 3: 12.75 GHz to 18 GHz, vertical & horizontal polarization



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

Date: 12.JUN.2013 07:00:25

10.11 Spurious emissions radiated < 30 MHz

Not performed – reduced test plan!

10.12 Spurious emissions conducted < 30 MHz

Description:

Measurement of the conducted spurious emissions in transmit mode below 30 MHz. The EUT is set to channel 7. This measurement is repeated for DSSS and OFDM modulation. If 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
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

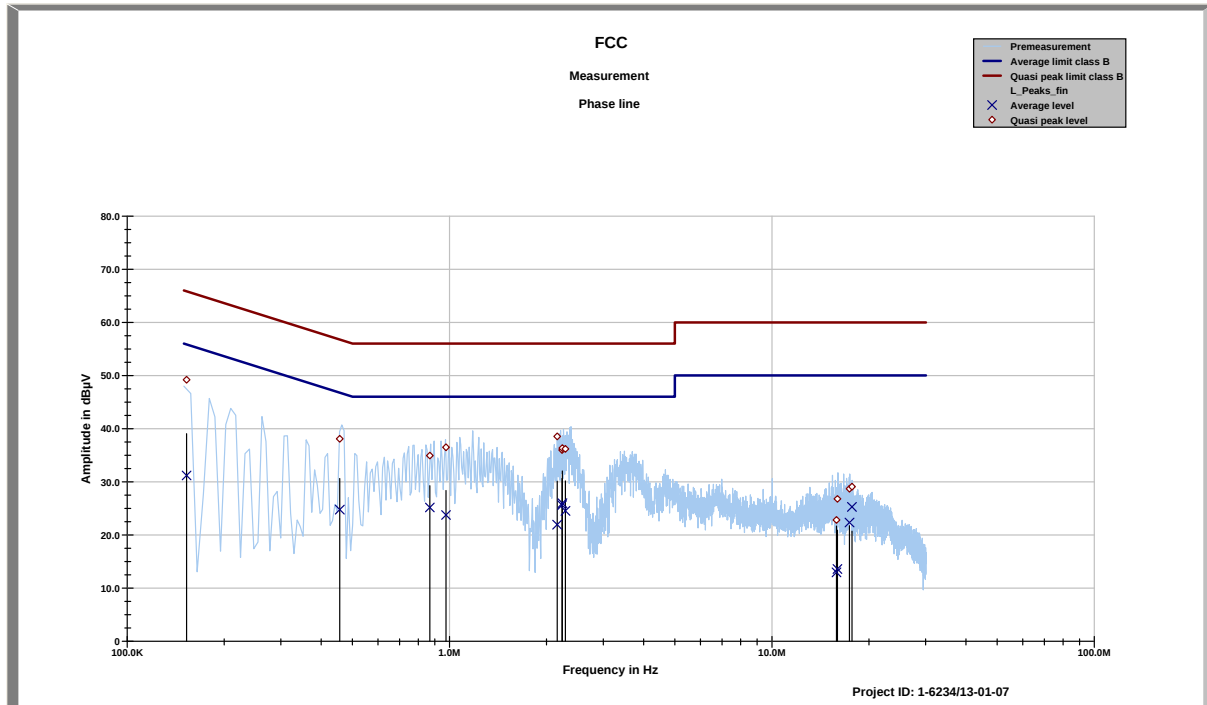
Results:

TX Spurious Emissions Conducted < 30 MHz [dBμV/m]		
F [MHz]	Detector	Level [dBμV/m]
All detected emissions are below the limit – please take a look at the plots.		
Measurement uncertainty	± 3 dB	

Result: Passed

Plots:

Plot 1: TX mode, 150 kHz to 30 MHz, phase line, channel 7, DSSS / b – mode, setup 1



FCC

Phase line tbl

Project ID: 1-6234/13-01-07

11:59:27 AM, Thursday, May 23, 2013

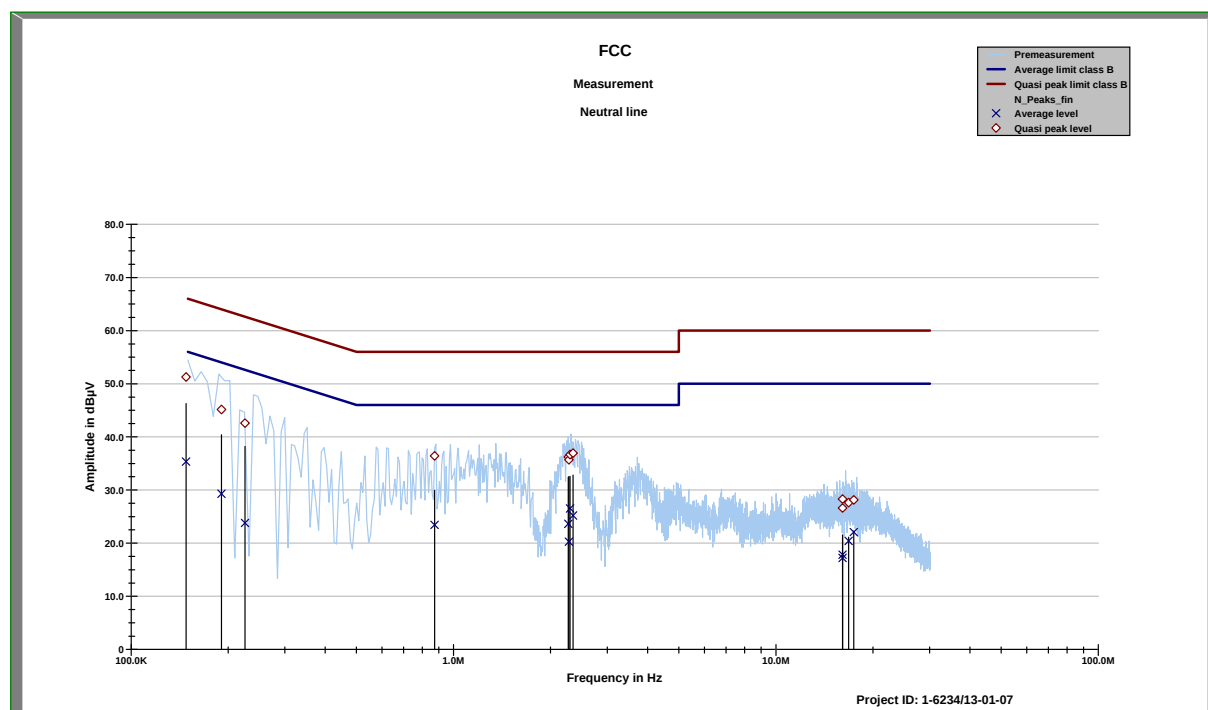
Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.15292	49.21	16.63	31.20	24.72
0.45658	38.10	18.66	24.76	22.48
0.86884	34.94	21.06	25.18	20.82
0.97496	36.50	19.50	23.74	22.26
2.1557	38.54	17.46	21.93	24.07
2.2332	35.98	20.02	25.60	20.40
2.2373	36.34	19.66	25.97	20.03
2.2882	36.18	19.82	24.52	21.48
15.842	22.81	37.19	12.96	37.04
15.955	26.79	33.21	13.60	36.40
17.393	28.68	31.32	22.34	27.66
17.7	29.07	30.93	25.28	24.72

Project ID - 1-6234/13-01-07

EUT - RFU81UW

Serial Number - imei: 004402242282758

Operating mode - w-lan 802.11b tx + charging

Plot 2: TX mode, 150 kHz to 30 MHz, neutral line, channel 7, DSSS / b – mode, setup 1

FCC

Neutral line tbl

Project ID: 1-6234/13-01-07

11:59:27 AM, Thursday, May 23, 2013

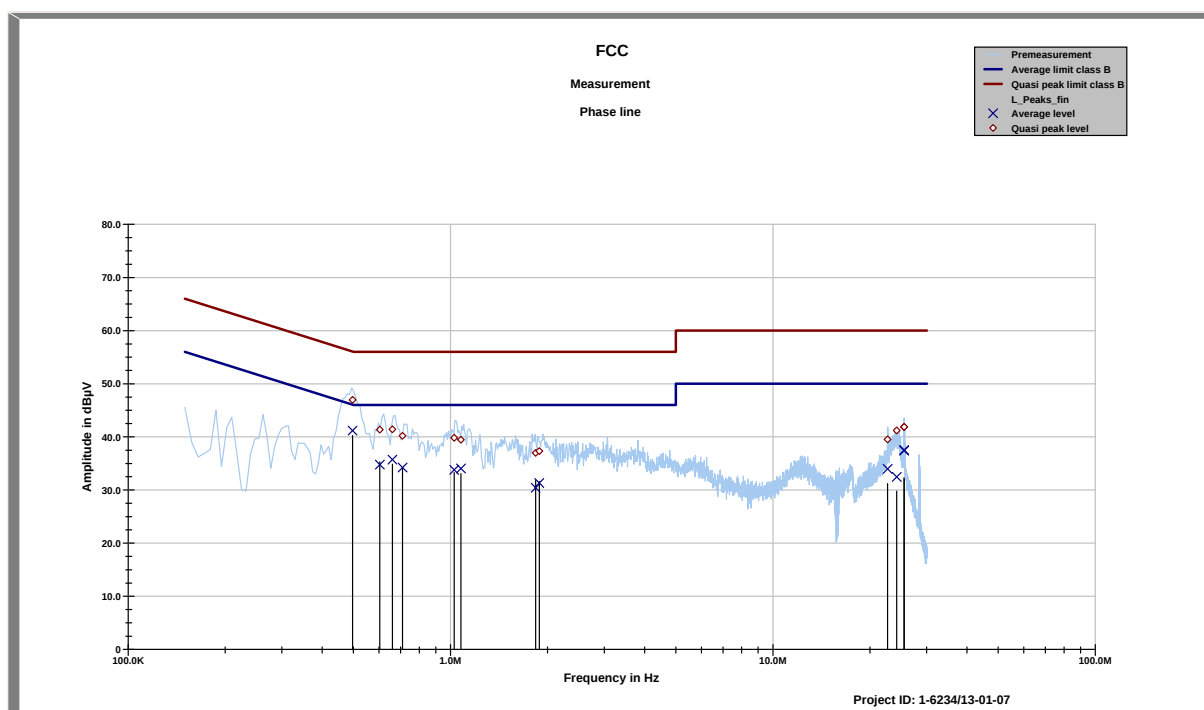
Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBμV	dBμV	dBμV	dBμV
0.14801	51.26	NAN	35.34	NAN
0.1907	45.15	18.86	29.28	25.56
0.22558	42.58	20.03	23.79	30.05
0.87314	36.40	19.60	23.44	22.56
2.2687	36.20	19.80	23.63	22.37
2.2782	35.70	20.30	20.27	25.73
2.2983	36.65	19.35	26.51	19.49
2.3473	36.94	19.06	25.19	20.81
16.083	28.28	31.72	17.20	32.80
16.084	26.61	33.39	17.81	32.19
16.801	27.62	32.38	20.40	29.60
17.425	28.14	31.86	22.06	27.94

Project ID - 1-6234/13-01-07

EUT - RFU81UW

Serial Number - imei: 004402242282758

Operating mode - w-lan 802.11b tx + charging

Plot 3: TX mode, 150 kHz to 30 MHz, phase line, channel 7, DSSS / b – mode, setup 2

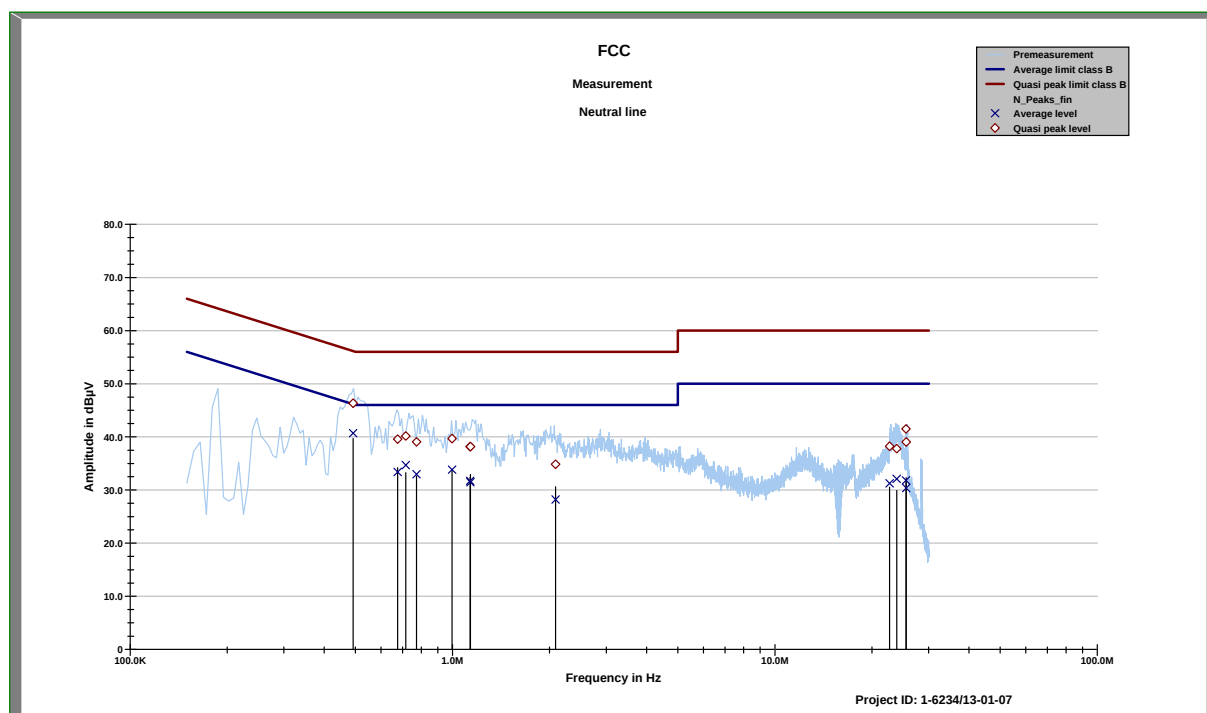
FCC
Phase line tbl

Project ID: 1-6234/13-01-07

02:49:03 PM, Thursday, May 23, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.49683	46.95	9.10	41.17	4.92
0.60351	41.36	14.64	34.77	11.23
0.66033	41.41	14.59	35.71	10.29
0.70998	40.20	15.80	34.23	11.77
1.02581	39.82	16.18	33.78	12.22
1.07732	39.44	16.56	34.04	11.96
1.8362	36.97	19.03	30.40	15.60
1.884	37.32	18.68	31.31	14.69
22.664	39.51	20.49	33.96	16.04
24.199	41.20	18.80	32.46	17.54
25.503	41.85	18.15	37.38	12.62
25.507	41.85	18.15	37.54	12.46

Project ID - 1-6234/13-01-07
 EUT - RFU81UW
 Serial Number - imei: 004402242282758
 Operating mode - w-lan 802.11b tx + charging

Plot 4: TX mode, 150 kHz to 30 MHz, neutral line, channel 7, DSSS / b – mode, setup 2

FCC

Neutral line tbl

Project ID: 1-6234/13-01-07

02:49:03 PM, Thursday, May 23, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBμV	dBμV	dBμV	dBμV
0.49155	46.32	9.82	40.68	5.56
0.67553	39.57	16.43	33.38	12.62
0.71573	40.16	15.84	34.67	11.33
0.77308	39.06	16.94	32.95	13.05
0.99684	39.67	16.33	33.81	12.19
1.13353	38.14	17.86	31.72	14.28
1.13595	38.16	17.84	31.45	14.55
2.0867	34.84	21.16	28.20	17.80
22.674	38.22	21.78	31.24	18.76
23.835	37.77	22.23	32.09	17.91
25.488	41.48	18.52	31.80	18.20
25.519	39.03	20.97	30.37	19.63

Project ID - 1-6234/13-01-07

EUT - RFU81UW

Serial Number - imei: 004402242282758

Operating mode - w-lan 802.11b tx + charging

11 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
11	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;B597 9	300000210	ne		
4	n. a.	EMI Test Receiver	ESCI 3	R&S	100083	300003312	k	09.01.2013	09.01.2014
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.	Spectrum- Analyzer	FSU26	R&S	200809	300003874	k	16.01.2013	16.01.2014
11	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	vIKI!	08.05.2013	08.05.2015
12	n. a.	Active Loop Antenna 10 kHz to 30 MHz	6502	EMCO	2210	300001015	ne		
13	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996	ev		
14	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
15	n. a.	Amplifier	js42- 00502650- 28-5a	Parzich GMBH	928979	300003143	ne		
16	n. a.	Band Reject filter	WRCG240 0/2483- 2375/2505- 50/10SS	Wainwright	11	300003351	ev		
17	n. a.	MXE EMI Receiver 20 Hz bis 26,5 GHz	N9038A	Agilent Technologi es	MY51210197	300004405	k	21.02.2013	21.02.2014
18	11b	Microwave System Amplifier, 0.5- 26.5 GHz	83017A	HP Meßtechnik	00419	300002268	ev		
19	A025	Std. Gain Horn Antenna 12.4 to 18.0 GHz	639	Narda		300000786	ne		
20	A027	Std. Gain Horn Antenna 18.0 to 26.5 GHz	638	Narda		300000486	ne		
21	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	12.01.2012	12.01.2015
22	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	*	300000199	ne		

23	n. a.	Switch / Control Unit	3488A	HP Meßtechnik	2719A15013	300001156	ne		
24	9	Isolating Transformer	MPL IEC625 Bus Regeltrennt ravo	Erfi	91350	300001155	ne		
25	n. a.	Signal Analyzer 40 GHz	FSV40	R&S	101042	300004517	k	22.10.2012	22.10.2013

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
vlk!	Attention: extended calibration interval		
NK!	Attention: not calibrated	*)	next calibration ordered / currently in progress

12 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	2013-06-12

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

Front side of certificate



Deutsche Akkreditierungsstelle GmbH

Befehlens gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV
Unterzeichnerin der Multilateralen Abkommen
von EA, ILAC und IAF zur gegenseitigen Anerkennung

Akkreditierung



Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

CETECOM ICT Services GmbH
Untertürkheimer Straße 6-10, 66117 Saarbrücken

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

Drahtgebundene Kommunikation einschließlich xDSL
VoIP und DECT
Akustik
Funk einschließlich WLAN
Short Range Devices (SRD)
RFID
WiMax und Richtfunk
Mobilfunk (GSM / DCS, Over the Air (OTA) Performance)
Elektromagnetische Verträglichkeit (EMV) einschließlich Automotive
Produktsicherheit
SAR und Hearing Aid Compatibility (HAC)
Umweltsimulation
Smart Card Terminals
Bluetooth
Wi-Fi Services

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 18.01.2013 mit der Akkreditierungsnummer D-PL-12076-01 und ist gültig 17.01.2018. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 80 Seiten.

Registrierungsnummer der Urkunde: D-PL-12076-01-01

Frankfurt am Main, 18.01.2013
Unterzeichnet auf der Rückseite

Impfstrag
Dilgung (PH) Jäger
Abteilungsleiter

Back side of certificate

Deutsche Akkreditierungsstelle GmbH

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Spittelmarkt 10
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Standort Braunschweig
Rundelallee 100
38116 Braunschweig

Die auszugsweise Veröffentlichung der Akkreditierungsurkunde bedarf der vorherigen schriftlichen Zustimmung der Deutschen Akkreditierungsstelle GmbH (DAKKS). Ausgenommen davon ist die separate Weiterverbreitung des Deckblatts durch die umseitig genannte Konformitätsbewertungsstelle in unveränderter Form.

Es darf nicht der Anschein erweckt werden, dass sich die Akkreditierung auch auf Bereiche erstreckt, die über den durch die DAKKS bestätigten Akkreditierungsbereich hinausgehen.

Die Akkreditierung erfolgte gemäß des Gesetzes über die Akkreditierungsstelle (AkkStelleG) vom 31. Juli 2009 (BGBl. I S. 2625) sowie der Verordnung (EG) Nr. 765/2008 des Europäischen Parlaments und des Rates vom 9. Juli 2008 über die Vorschriften für die Akkreditierung und Marktüberwachung im Zusammenhang mit der Vermarktung von Produkten (Abt. L 218 vom 9. Juli 2008, S. 30). Die DAKKS ist Unterzeichnerin der Multilateralen Abkommen zur gegenseitigen Anerkennung der European co-operation for Accreditation (EA), des International Accreditation Forum (IAF) und der International Laboratory Accreditation Cooperation (ILAC). Die Unterzeichner dieser Abkommen erkennen ihre Akkreditierungen gegenseitig an.

Der aktuelle Stand der Mitgliedschaft kann folgenden Webseiten entnommen werden:
EA: www.european-accreditation.org
ILAC: www.ilac.org
IAF: www.iaf.nu

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/eu/de/cetecom-group/europa/deutschland-saarbruecken/akkreditierungen.html>