



## TEST REPORT

Test Report No.: 1-5579/12-02-16-A



### Testing Laboratory

**CETECOM ICT Services GmbH**

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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

### Applicant

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### Manufacturer

Same as Applicant

### Test Standard/s

47CFR15	2012-10	Subpart B - Unintentional Radiators
ICES-003, Issue 4	2012-08	Interference-Causing Equipment Standard Digital Apparatus

### Test Item

<b>Kind of test item:</b>	<b>Smartphone</b>
<b>Model name:</b>	<b>RFM121LW</b>
FCC ID:	L6ARFM120LW
IC:	2503A-RFM120LW
S/N serial number:	IMEI:990002430024636
HW hardware status:	CER-53013-001 Rev.1-905-00
SW software status:	OS Version: 127.0.1.3901
Power Supply:	AC 115V/60Hz

This test report is electronically signed and valid without handwritten signature. The public keys can be requested at the test laboratory to verify the electronic signatures.

**Test performed:**
**Test Report authorised:**


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Joachim Wolsdorfer  
Testing Manager

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Thomas Merten  
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.

**This test report replaces the test report with the number 1-5579/12-02-16 and dated 2013-03-28**

## 2.2 Application details

Date of receipt of order: 2013-01-04  
Date of receipt of test item: 2013-02-01  
Start of test: 2013-02-05  
End of test: 2013-03-12  
Person(s) present during the test: -/-

## 3 Test standard/s:

Test Standard	Version	Test Standard Description
47CFR15	2012-10	Subpart B - Unintentional Radiators
ICES-003, Issue 5	2012-08	Interference-Causing Equipment Standard Digital Aparatus

## 4 Test Environment

Temperature: 20°C – 25°C  
Relative humidity content: 30 % - 50 %  
Air pressure: 1020 hPa  
Power supply: 230 V / 50 Hz

## 5 Test Laboratories sub-contracted

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## 6 Information about Test Conditions

### 6.1 Test Item

<b>Kind of test item</b> :	Smartphone		
<b>Type identification</b> :	RFM121LW		
<b>Equipment classification:</b>	Equipment for portable use		
<b>Environment classification:</b>	Residential, commercial and light industry		
<b>Supply voltage</b> :	AC 115 V/ 60 Hz		
<b>Ports</b> : (maximum cable lengths declared by manufacturer)	<b>Description</b>	<b>Direction</b>	<b>Length</b>
	AC power port:	Input	> 3m
	Signal/control/DC power port: USB	In / output	< 3m
	Signal/control port: headset	In / output	< 3m
	Signal port: HDMI	Output	< 3m
<b>Is mounting position / usual operating position defined?</b>			Hand held
<b>Additional information:</b>			
- tests have been performed according to customers test plan			
- conducted emission in NFC mode has been performed using a Demiload cover, provided by customer			

### 6.2 EUT: Type, S/N etc. and Short Descriptions Used in this Test Report

short description*)	EUT	Type	S/N serial number	HW hardware status	SW software status
EUT A	Smartphone	RFM121LW	IMEI:990002430024636 PIN: 303E5590	CER-53013-001 Rev.1-905-00	OS Version: 127.0.1.3901

\*) EUT short description is used to simplify the identification of the EUT in this test report.

### 6.3 Auxiliary Equipment (AE): Type, S/N etc. and Short Descriptions

AE description*)	Auxiliary equipment	Type	S/N serial number	HW hardware status	SW software status
AE A	Headset	HDW-44306-003 Wired Headset (Trojan - Cresyn) (HS1)	- / -	- / -	- / -
AE B	Headset	HDW-44306-003 Wired Headset (Trojan - Hoisden) (HS2)	- / -	- / -	- / -
AE C	Headset	HDW-49299-001 Wired Headset (BlackBird) (HS3)	- / -	- / -	- / -
AE D	AC Charger	HDW-24481-001 Cobra NA Fixed Blade 750mA (Flextronics Rev 2) (CH1)	- / -	- / -	- / -
AE E	AC Charger	HDW-24481-001 Cobra NA Fixed Blade 750mA (Phihong Rev 3) (CH2)	- / -	- / -	- / -
AE F	AC Charger	HDW-47725-001 Cobra NA Fixed Blade 850mA (Flextronics Rev C) (CH3)	- / -	- / -	- / -
AE G	AC Charger	HDW-46445-00x Scarlet NA Fixed Blade 850mA ( Flextronics Rev A) (CH4)	- / -	- / -	- / -
AE H	AC Charger	HDW-34724-001 NA Folding Blade 1.8A (Phihong Rev 1) (CH5)	- / -	- / -	- / -
AE I	AC Charger	HDW-34725-001 WWTC 2.0A (Phihong Rev 1) (CH6)	- / -	- / -	- / -
AE J	AC Charger	HDW-34725-002 WWTC 2.0A (Phihong Rev 1) (CH7)	- / -	- / -	- / -
AE K	DC Charger	HDW-46706-001 12V DC Charger – Premium (CH8)	- / -	- / -	- / -
AE L	DC Charger	HDW-46705-001 12V DC Charger (CH9)	- / -	- / -	- / -
AE M	AC Charger	HDW-29713-001 Cobra EU 750mA (Salcomp Rev 1) (CH10)	- / -	- / -	- / -
AE N	AC Charger	HDW-29713-001 Cobra EU 750mA (Phihong Rev 1) (CH11)	- / -	- / -	- / -
AE O	AC Charger	HDW-29714-001 Cobra UK 750mA (Salcomp Rev 1) (CH12)	- / -	- / -	- / -

<b>AE P</b>	AC Charger	HDW-29714-001 Cobra UK 750mA (Phihong Rev 1) (CH13)	- / -	- / -	- / -
<b>AE Q</b>	AC Charger	HDW-53513-001 Cobra EU 850mA (Salcomp Rev A) (CH14)	- / -	- / -	- / -
<b>AE R</b>	AC Charger	HDW-53514-001 Cobra UK 850mA (Salcomp Rev A) (CH15)	- / -	- / -	- / -
<b>AE S</b>	AC Charger	HDW-46446-001 Scarlet EU 850mA (Flextronics Rev B)# (CH16)	- / -	- / -	- / -
<b>AE T</b>	AC Charger	HDW-46447-001 Scarlet UK 850mA (Flextronics Rev A) (CH17)	- / -	- / -	- / -
<b>AE U1</b>	Data Cable	HDW-28109-003 Boa 1.2m (Phihong Rev 1) (USB1)	- / -	- / -	- / -
<b>AE U2</b>	Data Cable	HDW-28109-003 Boa 1.2m (HL Rev 1) (USB2)	- / -	- / -	- / -
<b>AE U3</b>	Data Cable	HDW-28109-005 Boa 1.2m (HL Rev A) (USB3)	- / -	- / -	- / -
<b>AE U4</b>	Data Cable	HDW-48415-001 Taipan 1.0m (HL Rev1) (USB4)	- / -	- / -	- / -
<b>AE U5</b>	Data Cable	HDW-48415-001 Taipan 1.0m (Phihong Rev1) (USB5)	- / -	- / -	- / -
<b>AE U6</b>	Data Cable	HDW-50071-001 Boa (Garter Variant) 1.2m (Phihong Rev B) (USB6)	- / -	- / -	- / -
<b>AE U7</b>	Data Cable	HDW-50071-001 Boa (Garter Variant) 1.2m (HL Rev B) (USB7)	- / -	- / -	- / -
<b>AE U8</b>	Data Cable	HDW-51800-001 Taipan (King Variant) 1.2m (Phihong Rev B) (USB8)	- / -	- / -	- / -
<b>AE U9</b>	Data Cable	HDW-51800-001 Taipan (King Variant) 1.2m (HL Rev B) (USB9)	- / -	- / -	- / -
<b>AE U10</b>	Data Cable	HDW-19137-002 Y-Cable (USB10)	- / -	- / -	- / -
<b>AE V</b>	HDMI cable	HDW-29572-001 HDMI cable 6ft.	- / -	- / -	- / -
<b>AE W</b>	external battery charger	HDW-53182-001 EBC	- / -	- / -	- / -
<b>AE X</b>	HDMI monitor	Samsung SyncMaster T220HD	- / -	- / -	- / -

\*) AE short description is used to simplify the identification of the auxiliary equipment in this test report.

## 6.4 EUT Set-up(s)

EUT Set-ups for conducted emission

EUT set-up no.*)	Combination of EUT and AE	Operation mode
set. 1	EUT A + AE A + AE D + AE U1	GSM850 idle + charging
set. 2	EUT A + AE B + AE E + AE U2	PCS1900 idle + charging
set. 3	EUT A + AE A + AE F + AE U3	UMTS FDD 2 (HSDPA+, release 7) idle + charging
set. 4	EUT A + AE B + AE G + AE U4 + AE V + AE X	UMTS FDD 5 (HSDPA+, release 7) idle + charging
set. 5	EUT A + AE C + AE E + AE U5	LTE FDD 4 idle + charging
set. 6	EUT A + AE B + AE H + AE U6	LTE FDD 13 idle + charging
set. 7	EUT A + AE A + AE E + AE U1 + AE U10 + EBC	CDMA Cellular (800MHz) idle + charging
set. 8	EUT A + AE C + AE I	CDMA PCS (1900 MHz) idle + charging
set. 9	EUT A + AE B + AE J + AE V + AE X	GSM850 idle + charging
set. 10	EUT A + AE A + AE D + AE U8	PCS1900 idle + charging
set. 11	EUT A + AE A + AE F + AE U1 + AE W + AE U9	UMTS FDD 2 idle + charging

EUT Set-ups for radiated emission

EUT set-up no.*)	Combination of EUT and AE	Operation mode
set. 21	EUT A + AE A + AE D + AE U1	GSM850 idle + charging
set. 22	EUT A + AE B + AE E + AE U2	PCS1900 idle + charging
set. 23	EUT A + AE C + AE I	UMTS FDD 2 idle + charging
set. 24	EUT A + AE C + AE J	UMTS FDD 2 idle + charging
set. 25	EUT A + AE A + AE F + AE U3 + AE V + AE X	UMTS FDD 5 idle + charging
set. 26	EUT A + AE B + AE G + AE U4	UMTS FDD 5 idle + charging
set. 27	EUT A + AE A + AE D + AE U5	LTE FDD 4 idle + charging
set. 28	EUT A + AE A + AE E + AE U1 + AE U10 + EBC + AE U6	LTE FDD 4 idle + charging
set. 29	EUT A + AE B + AE H	LTE FDD 13 idle + charging
set. 30	EUT A + AE B + AE J + AE V + AE X	LTE FDD 13 idle + charging
set. 31	EUT A + AE A + AE E + AE U1 + AE U8	CDMA Cellular (800MHz) idle + charging
set. 32	EUT A + AE C + AE G + AE U3 + AE U10 + AE W + AE U9	CDMA PCS (1900 MHz) idle + charging



## 7 Summary of Test Results

- No deviations from the technical specifications were ascertained  
 There were deviations from the technical specifications ascertained

### 7.1 Emission

#### 7.1.1 Enclosure

EMI Phenomenon	Frequency range	Basic standard	Result
Radiated Interference Field Strength	30 - 1000 MHz	FCC Part 15 Class B	passed
Radiated Interference Field Strength	> 1 GHz	FCC Part 15 Class B	passed

#### 7.1.2 AC Mains Power Input/Output Ports

EMI Phenomenon	Frequency range	Basic standard	Result
Conducted interference voltage	0,15– 30 MHz	FCC Part 15 Class B	passed

#### Remarks:

NA1	Not tested because not required by used standard
NA2	Test not applicable because port does not exists
NA3	Test not applicable because port only for services
NA4	Test not applicable because port lengths not longer than 3m
NA5	Not tested because not required by customer
NA6	Not tested because used frequency < 108 MHz

## 7.2 Measurement and Test Set-up

Note: The test configuration is in accordance with the requirements given in the standards in point 3

## 7.3 Measurement uncertainty

The uncertainty of the measurement equipment fulfils CISPR 16 and the related European and national standards.

The semi anechoic chamber fulfils the requirements of CISPR 16-1 (ANSI C63.4) for a test volume of 3m Ø.

The uncertainty of the measurement equipment fulfils CISPR 16 and the related European and national standards.

The semi anechoic chamber fulfils the requirements of CISPR 16-1 (ANSI C63.4) for a test volume of 3m Ø.

The table below shows the measurement uncertainties for each measurement method. The expanded uncertainty (k=2 or 95%) was calculated with worst case values.

Measurement Method	Frequency area Impulse duration time	Description	Expanded uncertainty (k=2 or 95%)
<b>Radiated Emission FCC part 15 B, ANSI C63.4</b>	30 MHz – 18 GHz	- / -	± 4.28 dB
<b>Conducted Emission FCC part 15 B, ANSI C63.4</b>	9 kHz – 30 MHz	- / -	± 3.49 dB

## 8 Detailed test results - Emission

### 8.1 Conducted Emission

#### 8.1.1 Instrumentation for Test (see equipment list)

G 1	G 2	F 21								
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#### 8.1.2 Test Plan

<b>EUT set-up</b>	see test details		
<b>Operating mode</b>	<b>Port / Line</b>	<b>Limit</b>	<b>Result</b>
see test details	AC power line	FCC part 15 B Class B	passed

**Remark :** Powered by external power supply (115V / 60Hz)

#### 8.1.3 Conducted Limits (Power-Line)

Frequency- range	FCC part 15 B Class B		FCC part 15 B Class A	
	Quasi-Peak (dB $\mu$ V)	Average (dB $\mu$ V)	Quasi-Peak (dB $\mu$ V)	Average (dB $\mu$ V)
0,15 MHz – 0,5 MHz	66-56	56-46	79	66
0,5 MHz -5 MHz	56	46	73	60
5 MHz -30 MHz	60	50	73	60

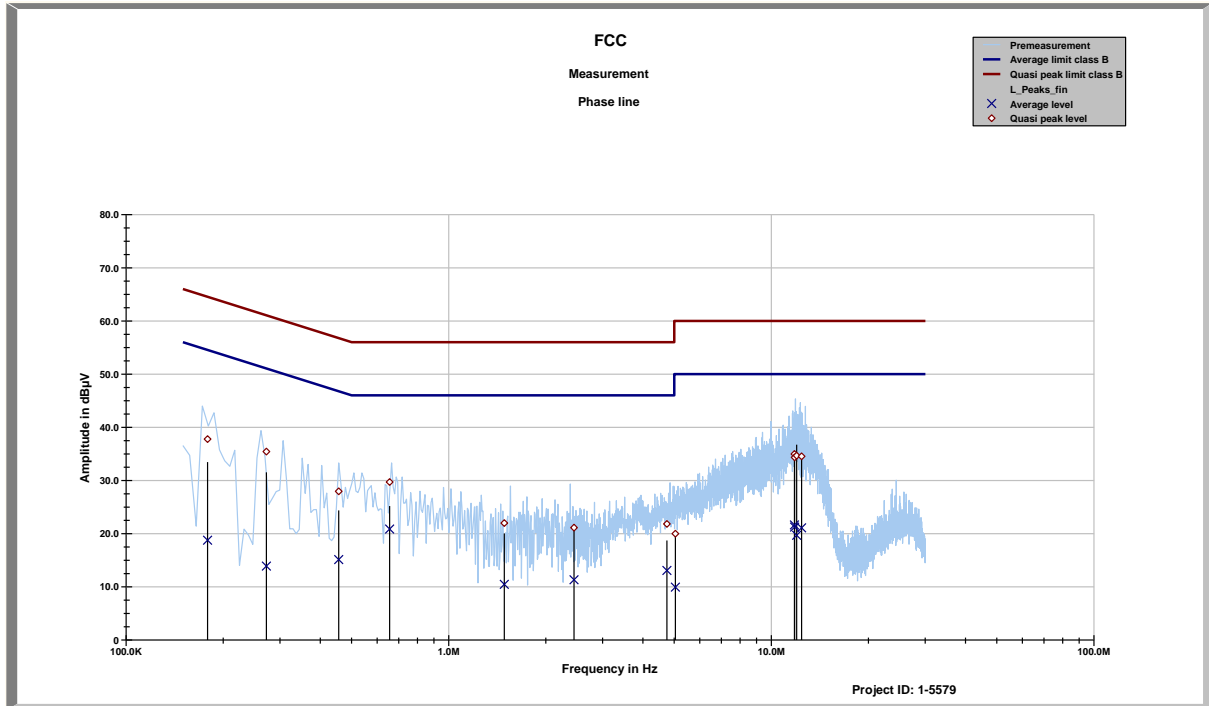
#### 8.1.4 Calibration Information

Device	Serial number	ICT Number	Calibration valid until	Calibration interval
HP 8542 EMI Receiver with RF Filter Unit	3617A00170	300000568	01 / 2014	12 month
VISN ESH 3-Z5	892475/017	300002209	01 / 2014	24 month

Remarks: All emission components and the shielded room were checked weekly  
Cable loss: 0.6 to 2.4 dB (150kHz to 30 MHz)

### 8.1.5 Test Results of Main

set 1



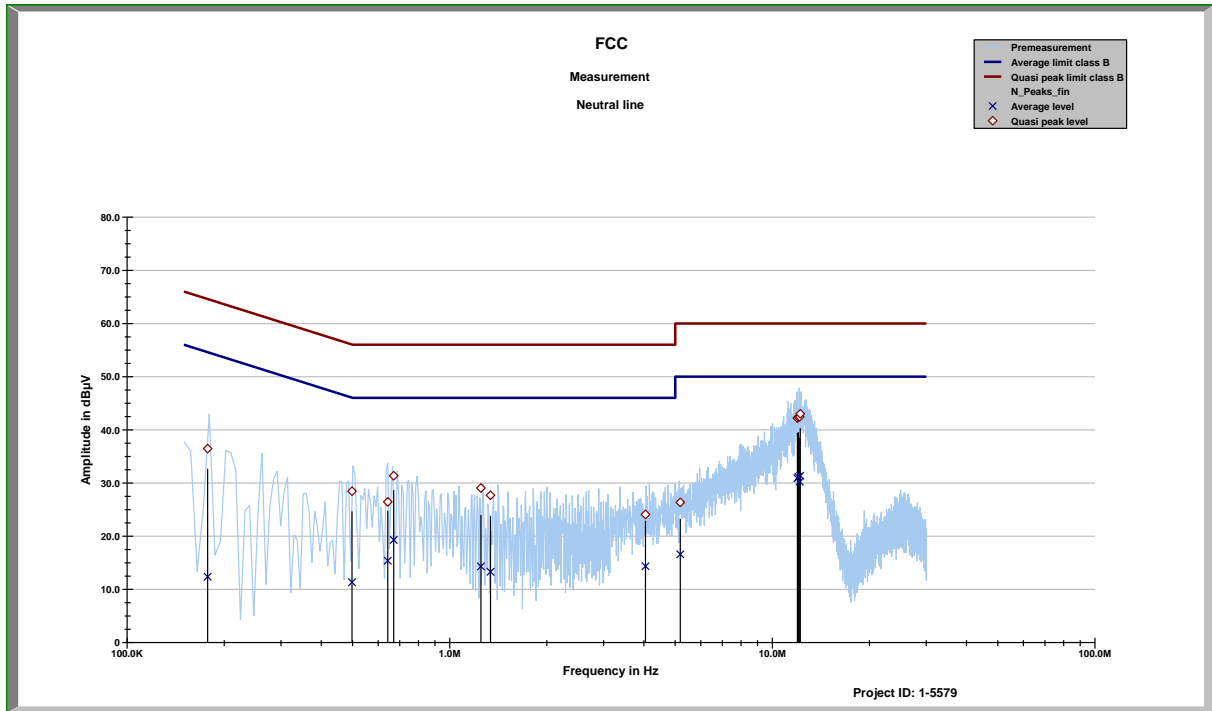
FCC  
Phase line tbl

Project ID: 1-5579

09:26:29 AM, Tuesday, February 26, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.17892	37.77	26.76	18.76	36.41
0.27217	35.43	25.62	13.90	38.61
0.45602	27.95	28.82	15.11	32.14
0.65583	29.70	26.30	20.86	25.14
1.4869	21.98	34.02	10.47	35.53
2.4441	21.13	34.87	11.33	34.67
4.7434	21.83	34.17	13.07	32.93
5.039	19.98	40.02	9.93	40.07
11.7869	34.97	25.03	21.63	28.37
11.8023	34.34	25.66	21.23	28.77
11.9758	34.66	25.34	19.68	30.32
12.4026	34.54	25.46	21.09	28.91

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - GSM850 idle + charging; AC 115V/60Hz



FCC  
Neutral line tbl

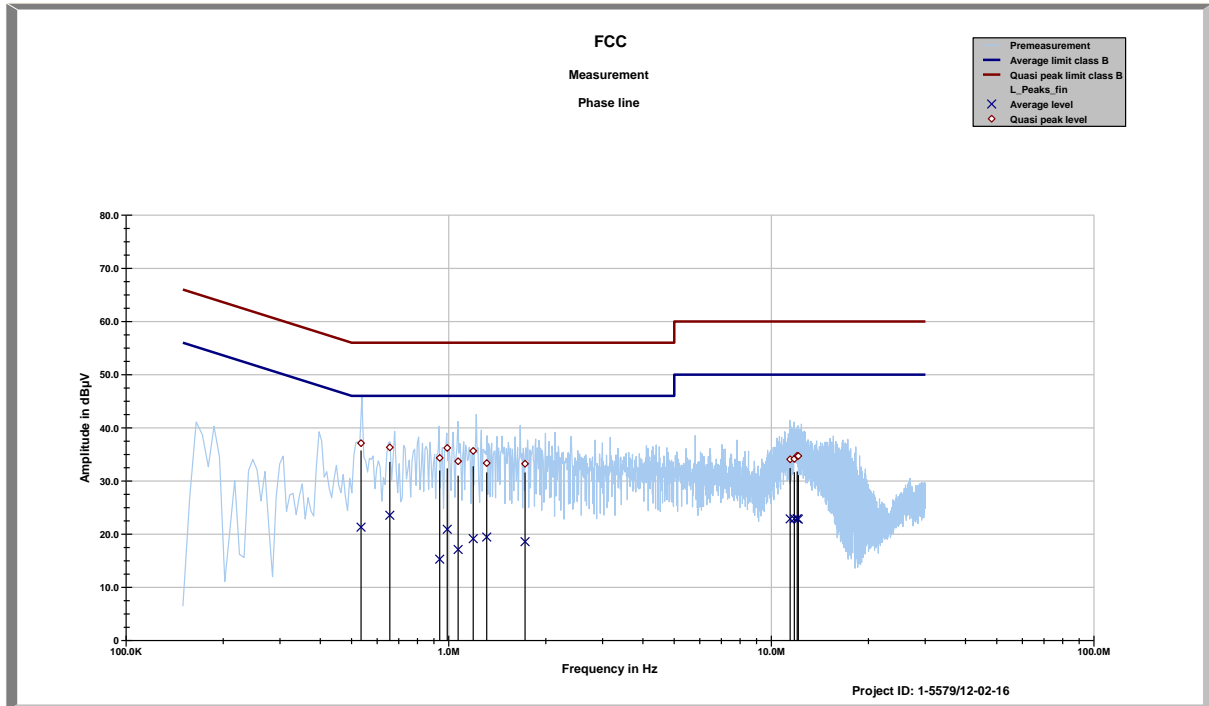
Project ID: 1-5579

09:26:29 AM, Tuesday, February 26, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.17773	36.46	28.13	12.37	42.84
0.49792	28.46	27.57	11.34	34.71
0.64257	26.45	29.55	15.38	30.62
0.67048	31.37	24.63	19.29	26.71
1.24947	29.05	26.95	14.32	31.68
1.3376	27.70	28.30	13.30	32.70
4.0408	24.08	31.92	14.34	31.66
5.1832	26.36	33.64	16.58	33.42
11.9531	42.18	17.82	30.88	19.12
12.0344	42.40	17.60	31.14	18.86
12.1503	42.47	17.53	30.27	19.73
12.1979	43.01	16.99	31.37	18.63

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - GSM850 idle + charging; AC 115V/60Hz

set 2



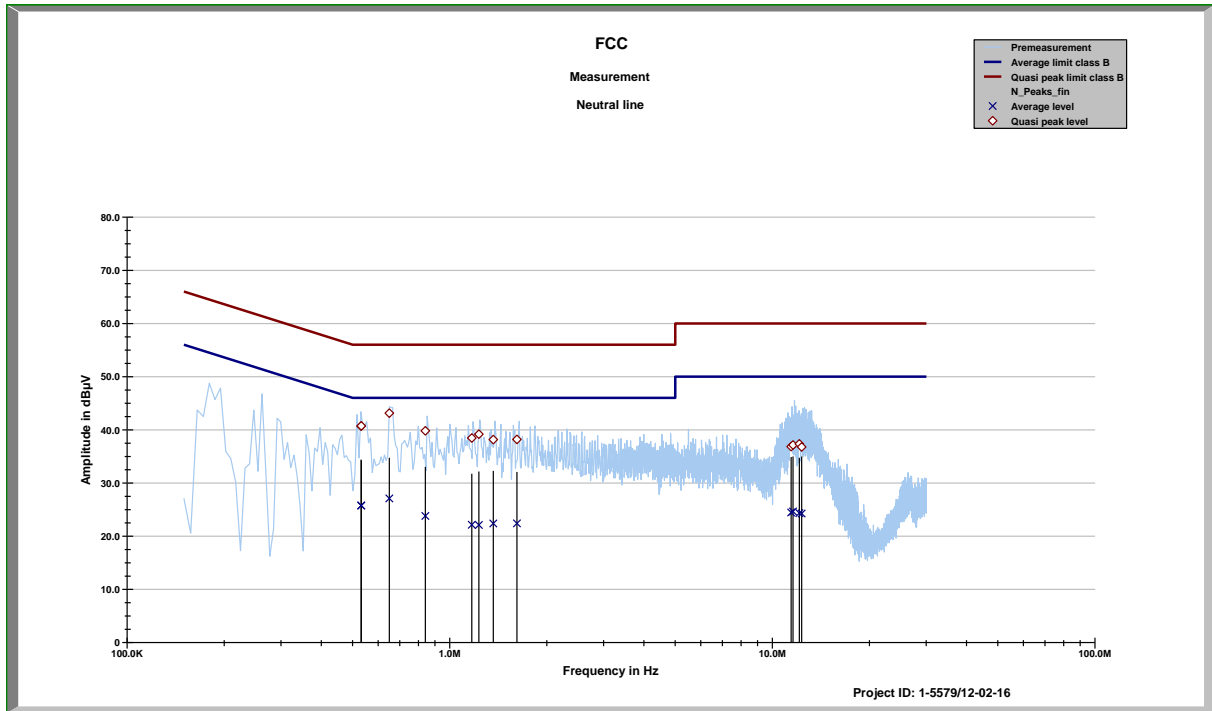
FCC  
Phase line tbl

Project ID: 1-5579/12-02-16

02:20:39 PM, Wednesday, February 27, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.53472	37.10	18.90	21.31	24.69
0.65671	36.32	19.68	23.57	22.43
0.93749	34.34	21.66	15.30	30.70
0.98934	36.23	19.77	20.92	25.08
1.06937	33.72	22.28	17.12	28.88
1.19061	35.66	20.34	19.14	26.86
1.3115	33.37	22.63	19.45	26.55
1.7236	33.25	22.75	18.58	27.42
11.4328	34.08	25.92	22.87	27.13
11.7773	34.15	25.85	22.92	27.08
12.0196	34.74	25.26	22.91	27.09
12.1173	34.71	25.29	22.82	27.18

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - PCS1900 idle + charging; AC 115V/60Hz



FCC  
Neutral line tbl

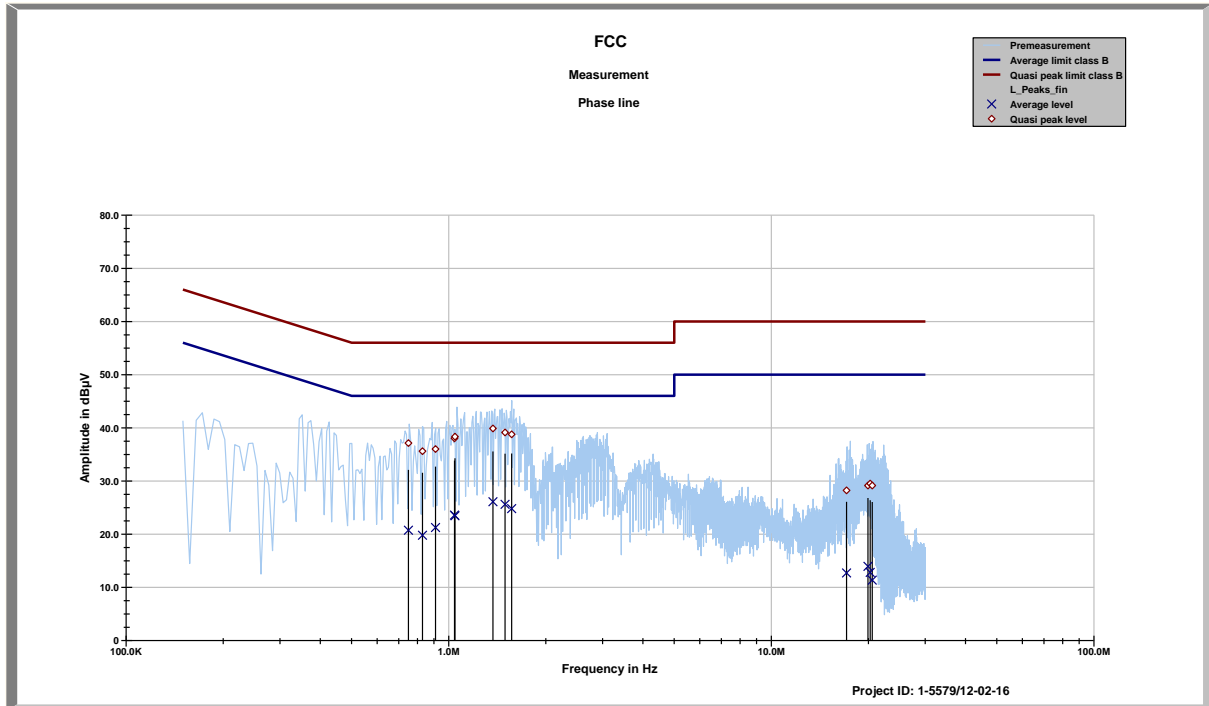
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02:20:39 PM, Wednesday, February 27, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.53144	40.70	15.30	25.76	20.24
0.53195	40.74	15.26	25.75	20.25
0.64985	43.13	12.87	27.09	18.91
0.8401	39.81	16.19	23.80	22.20
1.17012	38.46	17.54	22.14	23.86
1.23131	39.17	16.83	22.11	23.89
1.3647	38.16	17.84	22.38	23.62
1.615	38.19	17.81	22.41	23.59
11.4332	36.84	23.16	24.44	25.56
11.5839	37.15	22.85	24.65	25.35
12.1198	37.36	22.64	24.32	25.68
12.3183	36.78	23.22	24.26	25.74

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - PCS1900 idle + charging; AC 115V/60Hz

set 3



FCC  
Phase line tbl

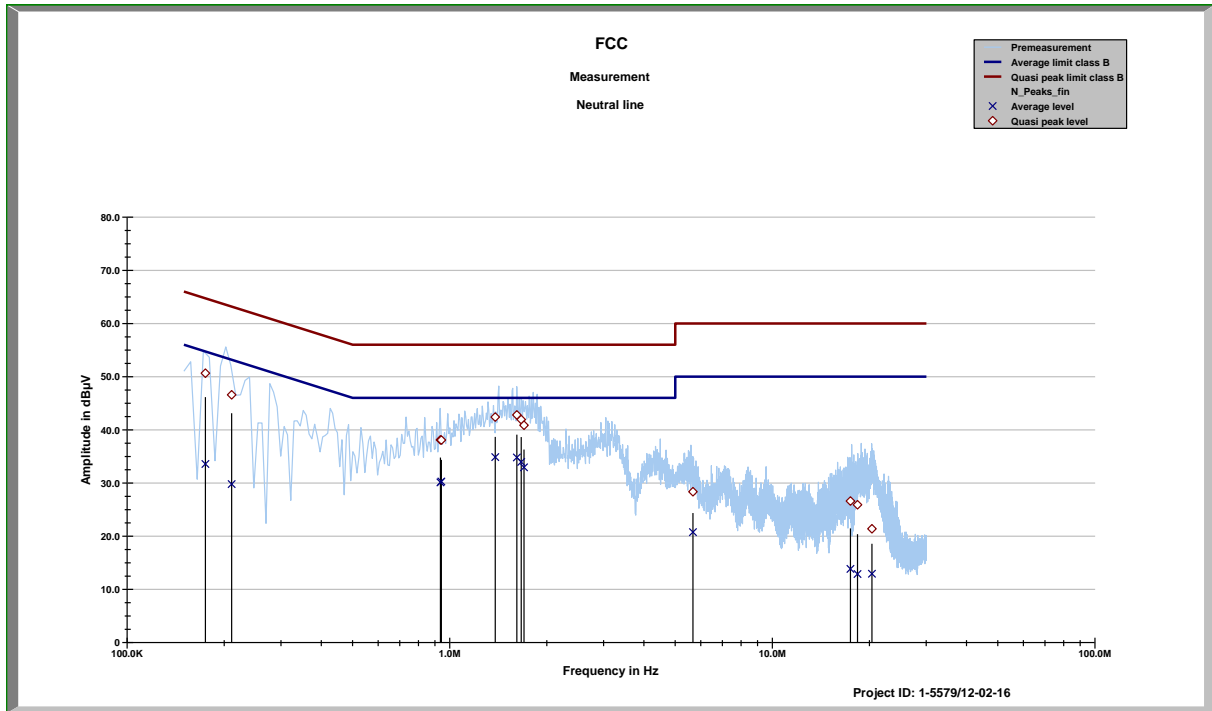
Project ID: 1-5579/12-02-16

02:46:14 PM, Wednesday, February 27, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.75021	37.14	18.86	20.74	25.26
0.82888	35.60	20.40	19.79	26.21
0.90982	36.01	19.99	21.24	24.76
1.04164	38.02	17.98	23.60	22.40
1.04555	38.33	17.67	23.45	22.55
1.3708	39.88	16.12	26.10	19.90
1.4942	39.12	16.88	25.60	20.40
1.5665	38.78	17.22	24.79	21.21
17.092	28.24	31.76	12.70	37.30
19.911	29.14	30.86	13.95	36.05
20.236	29.51	30.49	12.82	37.18
20.53	29.14	30.86	11.36	38.64

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - UMTS FDD2 idle + charging; AC 115V/60Hz





FCC  
Neutral line tbl

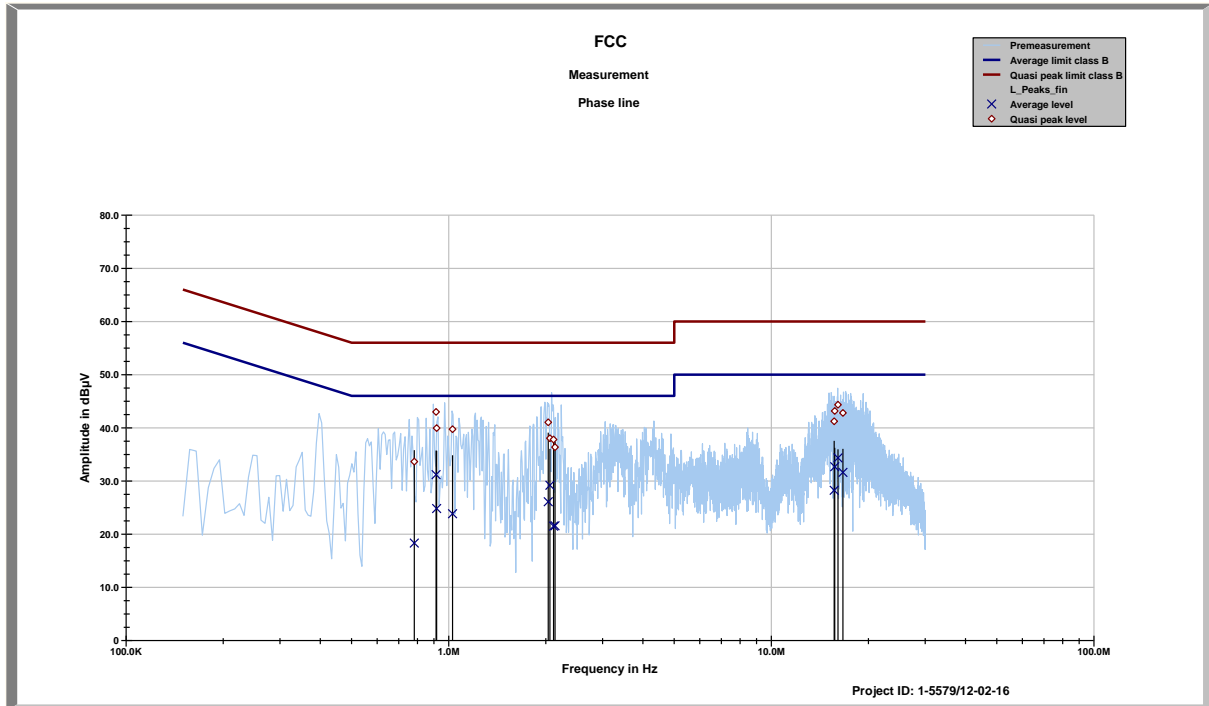
Project ID: 1-5579/12-02-16

02:46:14 PM, Wednesday, February 27, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.17485	50.65	14.08	33.58	21.71
0.21097	46.59	16.58	29.80	24.46
0.93581	38.11	17.89	30.11	15.89
0.94183	38.07	17.93	30.28	15.72
1.3833	42.40	13.60	34.86	11.14
1.6137	42.81	13.19	34.80	11.20
1.6648	41.92	14.08	33.96	12.04
1.6988	40.86	15.14	32.95	13.05
5.6709	28.35	31.65	20.75	29.25
17.446	26.61	33.39	13.84	36.16
18.353	25.90	34.10	12.88	37.12
20.342	21.39	38.61	12.93	37.07

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - UMTS FDD2 idle + charging; AC 115V/60Hz

set 4



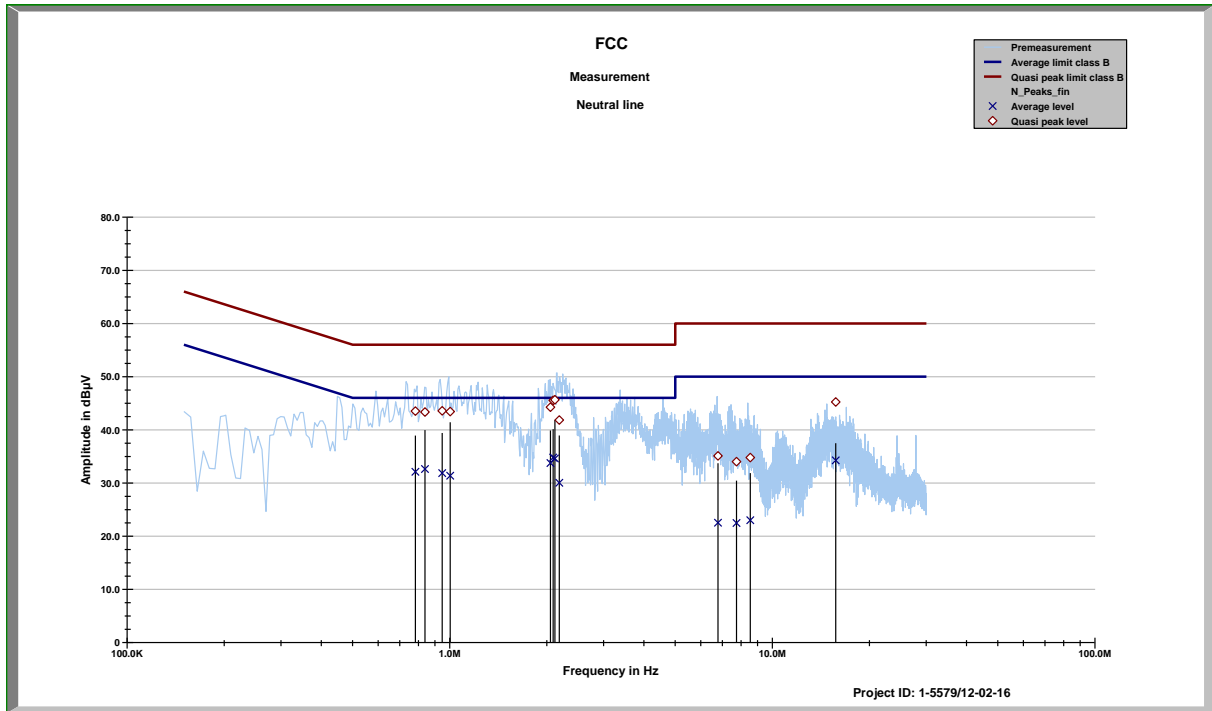
FCC  
Phase line tbl

Project ID: 1-5579/12-02-16

03:19:25 PM, Wednesday, February 27, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.78187	33.64	22.36	18.32	27.68
0.91342	42.99	13.01	31.19	14.81
0.91711	39.95	16.05	24.81	21.19
1.0272	39.73	16.27	23.83	22.17
2.0339	41.04	14.96	26.09	19.91
2.0581	38.03	17.97	29.19	16.81
2.112	37.79	18.21	21.52	24.48
2.1353	36.36	19.64	21.58	24.42
15.649	41.22	18.78	28.26	21.74
15.712	43.17	16.83	32.69	17.31
16.083	44.34	15.66	34.35	15.65
16.658	42.80	17.20	31.61	18.39

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - UMTS FDD5 idle + HDMI + charging; AC 115V/60Hz



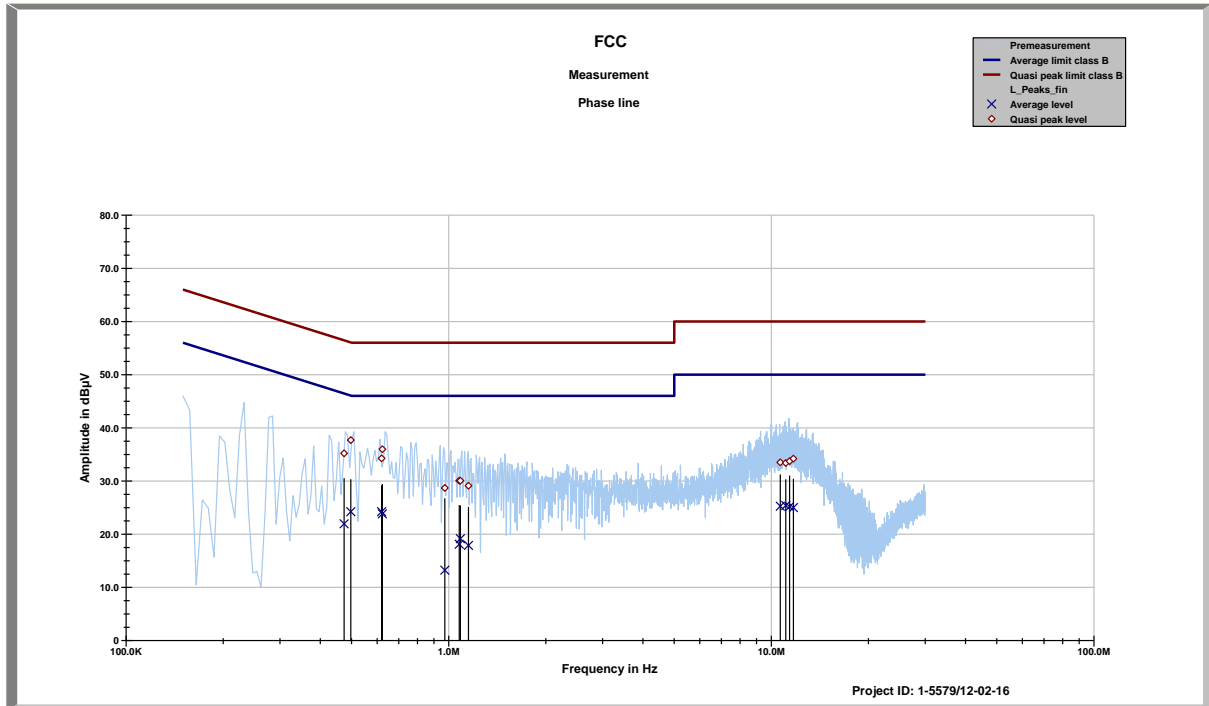
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 Neutral line tbl  
 Project ID: 1-5579/12-02-16

03:19:25 PM, Wednesday, February 27, 2013

MHz	dBµV	dBµV	dBµV	dBµV
0.78239	43.52	12.48	32.10	13.90
0.8377	43.35	12.65	32.62	13.38
0.94763	43.57	12.43	31.86	14.14
1.003	43.42	12.58	31.36	14.64
2.0517	44.25	11.75	33.74	12.26
2.0919	45.54	10.46	34.79	11.21
2.1181	45.66	10.34	34.61	11.39
2.1852	41.83	14.17	30.04	15.96
6.7799	35.10	24.90	22.52	27.48
7.74	34.02	25.98	22.47	27.53
8.5397	34.78	25.22	22.99	27.01
15.706	45.23	14.77	34.26	15.74

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - UMTS FDD5 idle + HDMI + charging; AC 115V/60Hz

set 5



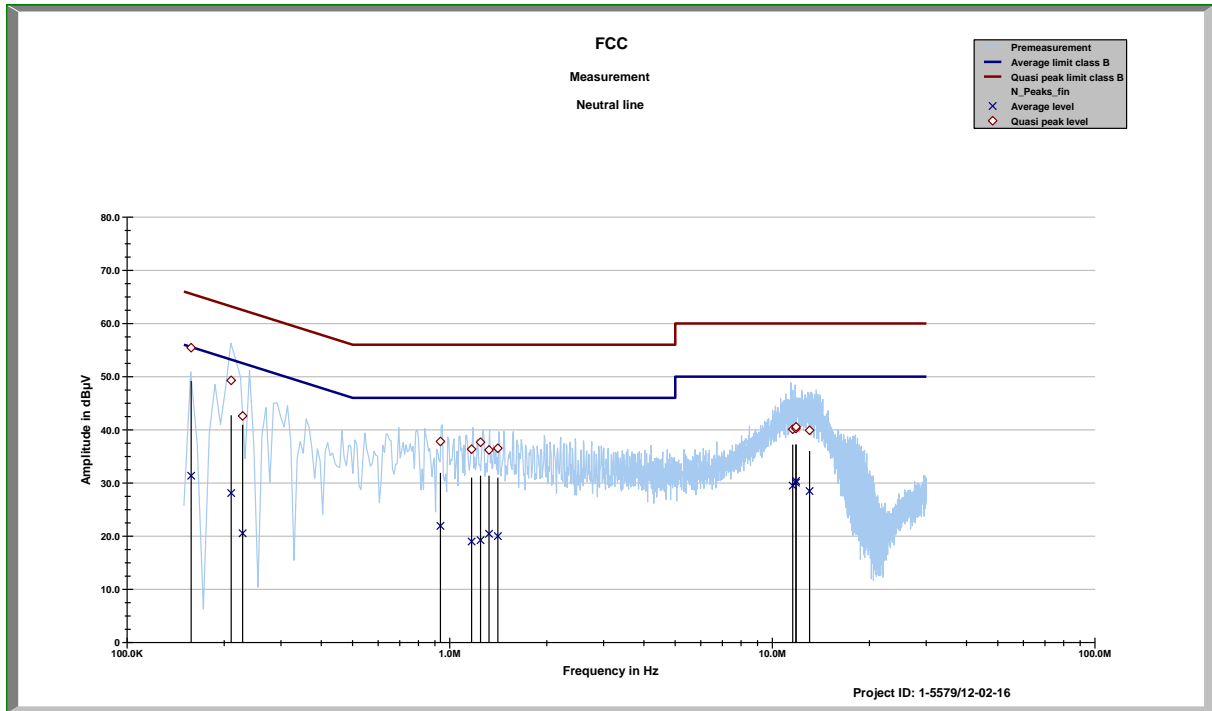
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Phase line tbl

Project ID: 1-5579/12-02-16

11:14:15 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.47398	35.20	21.25	21.95	24.79
0.497	37.68	18.37	24.23	21.86
0.61952	34.26	21.74	24.22	21.78
0.6227	35.97	20.03	23.82	22.18
0.97243	28.69	27.31	13.22	32.78
1.07812	30.06	25.94	18.11	27.89
1.08676	30.05	25.95	19.14	26.86
1.15113	29.11	26.89	17.88	28.12
10.6512	33.50	26.50	25.25	24.75
11.0769	33.38	26.62	25.40	24.60
11.3839	33.73	26.27	25.17	24.83
11.7001	34.20	25.80	25.00	25.00

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - LTE FDD 4 idle + charging; AC 115V/60Hz



FCC  
Neutral line tbl

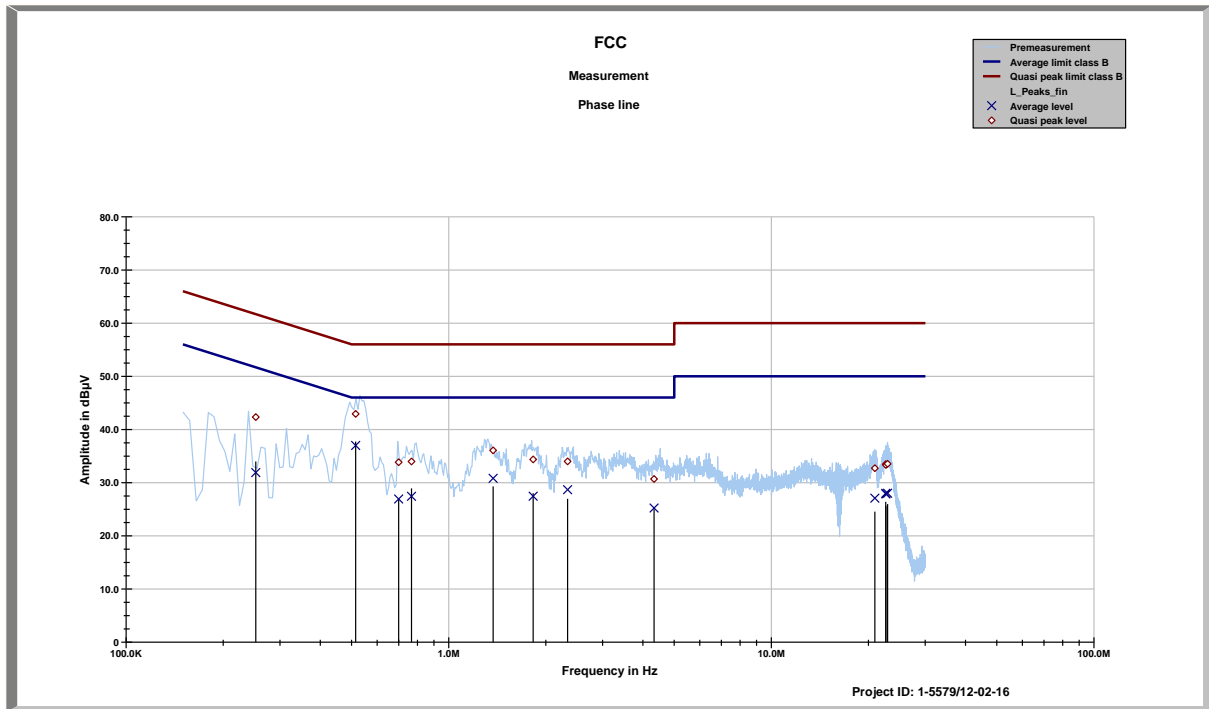
Project ID: 1-5579/12-02-16

11:14:15 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.15796	55.45	10.13	31.37	24.40
0.21024	49.30	13.89	28.11	26.17
0.22804	42.60	19.92	20.55	33.22
0.93561	37.82	18.18	21.93	24.07
1.16896	36.36	19.64	18.98	27.02
1.24605	37.68	18.32	19.25	26.75
1.3235	36.22	19.78	20.45	25.55
1.4098	36.52	19.48	20.01	25.99
11.5625	40.10	19.90	29.50	20.50
11.8229	40.24	19.76	30.06	19.94
11.8379	40.56	19.44	30.38	19.62
13.04	39.91	20.09	28.48	21.52

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - LTE FDD 4 idle + charging; AC 115V/60Hz

set 6



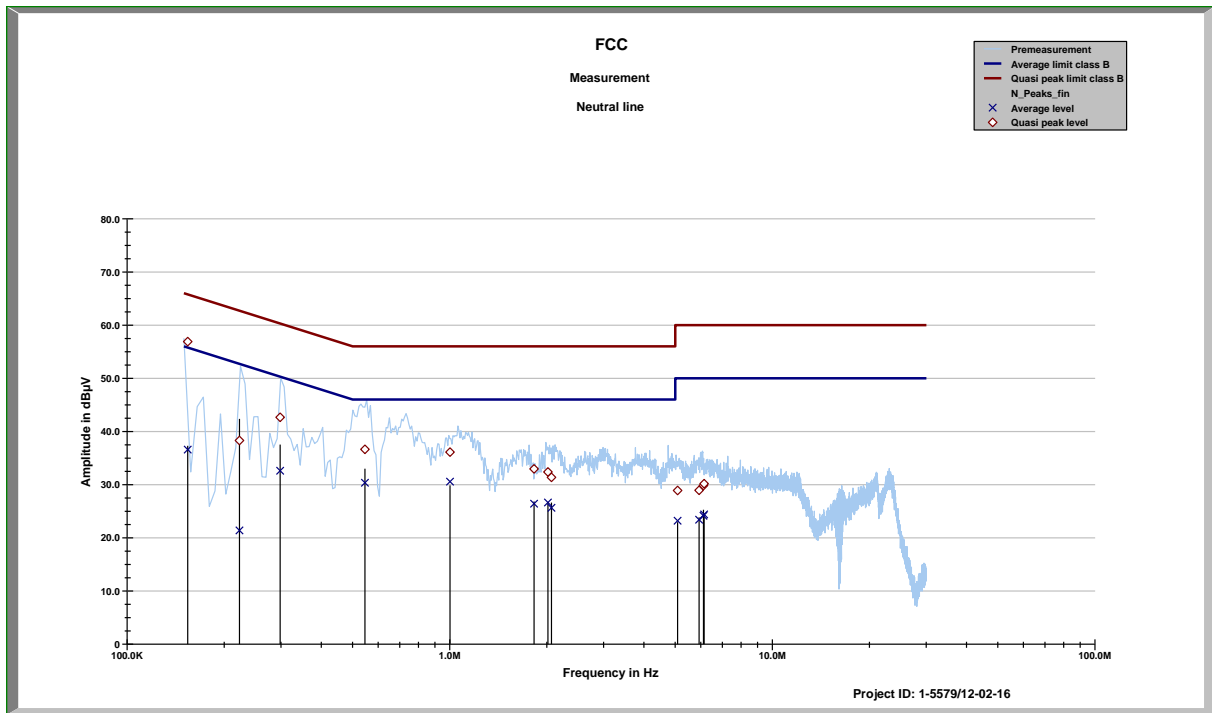
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Phase line tbl

Project ID: 1-5579/12-02-16

11:35:41 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.2524	42.33	19.34	31.89	21.18
0.51468	42.93	13.07	37.00	9.00
0.69938	33.84	22.16	26.91	19.09
0.76674	33.98	22.02	27.43	18.57
1.3729	36.06	19.94	30.81	15.19
1.8258	34.36	21.64	27.44	18.56
2.3355	33.99	22.01	28.67	17.33
4.3268	30.69	25.31	25.22	20.78
20.923	32.72	27.28	27.08	22.92
22.613	33.46	26.54	27.98	22.02
22.637	33.31	26.69	27.86	22.14
22.916	33.54	26.46	28.01	21.99

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - LTE FDD 13 idle + charging; AC 115V/60Hz



FCC  
Neutral line tbl

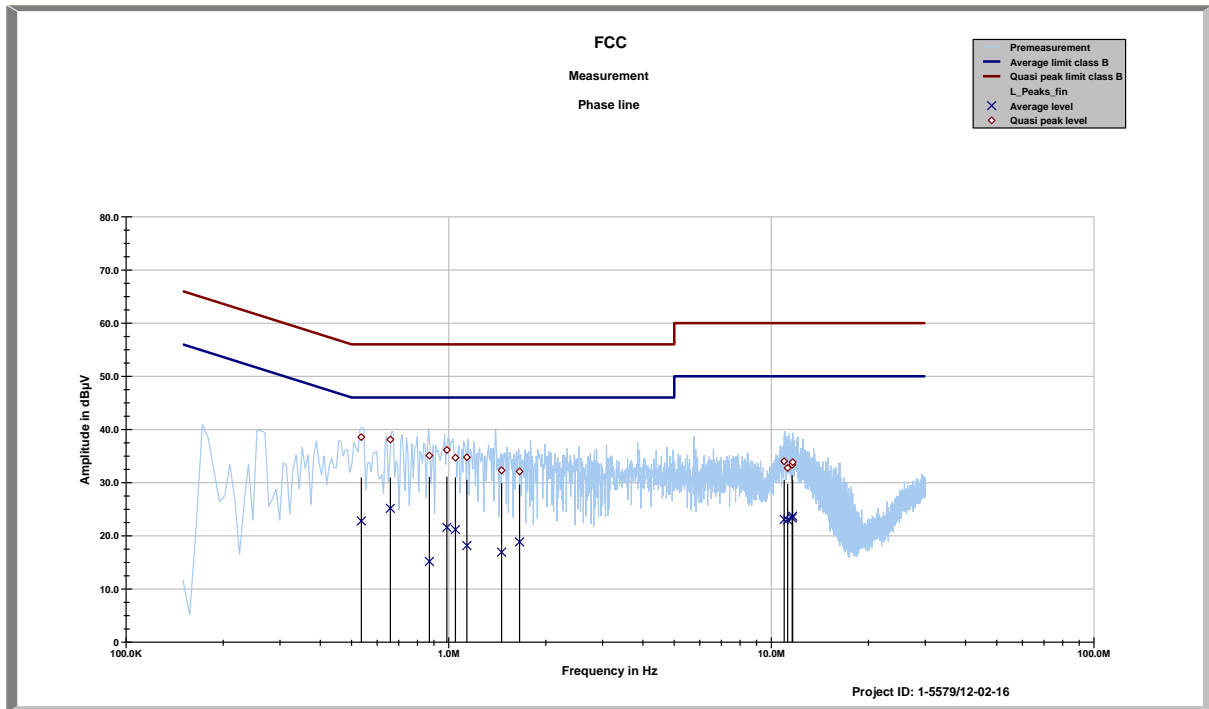
Project ID: 1-5579/12-02-16

11:35:41 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.1541	56.90	8.87	36.59	19.30
0.22295	38.31	24.40	21.38	32.53
0.29803	42.67	17.63	32.61	19.16
0.546	36.64	19.36	30.36	15.64
1.00199	36.10	19.90	30.57	15.43
1.8249	32.96	23.04	26.41	19.59
2.0155	32.39	23.61	26.64	19.36
2.0668	31.36	24.64	25.64	20.36
5.0843	28.89	31.11	23.20	26.80
5.9254	28.93	31.07	23.40	26.60
6.1121	29.82	30.18	24.13	25.87
6.1433	30.17	29.83	24.39	25.61

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - LTE FDD 13 idle + charging; AC 115V/60Hz

set 7



FCC  
Phase line tbl

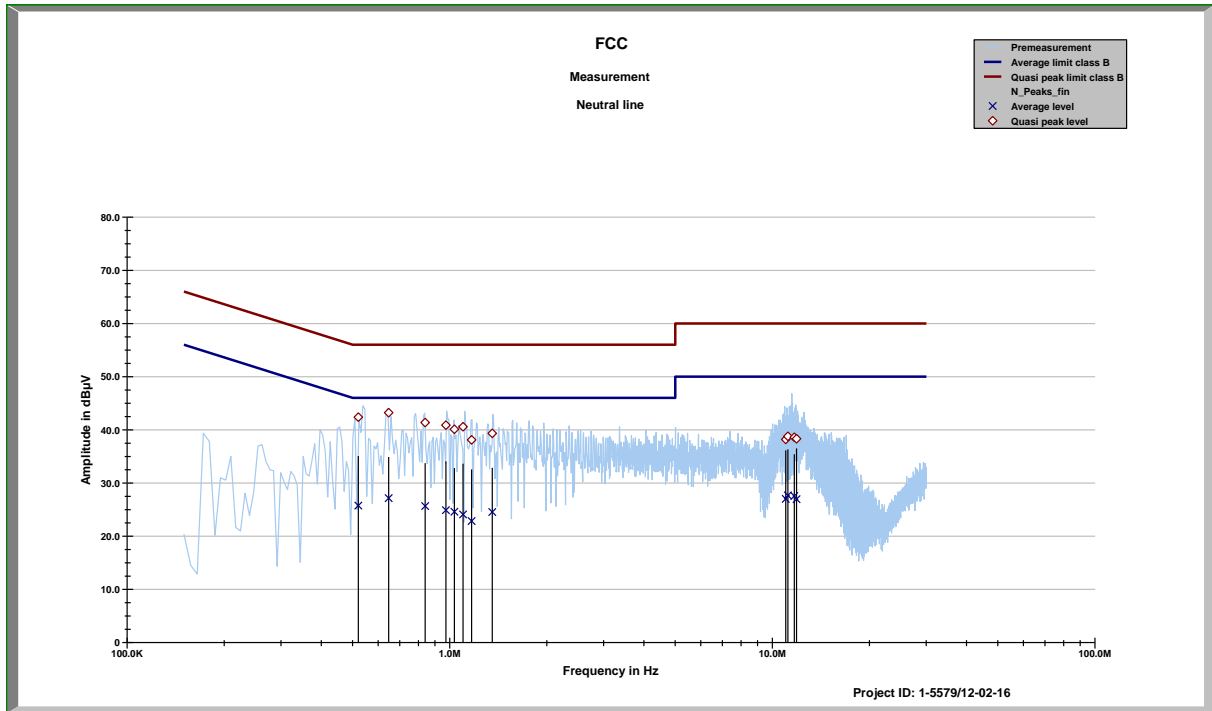
Project ID: 1-5579/12-02-16

09:19:42 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.536	38.57	17.43	22.79	23.21
0.65941	38.10	17.90	25.17	20.83
0.87109	35.09	20.91	15.17	30.83
0.98653	36.15	19.85	21.61	24.39
1.04917	34.69	21.31	21.17	24.83
1.13808	34.76	21.24	18.16	27.84
1.458	32.31	23.69	16.92	29.08
1.6574	32.11	23.89	18.84	27.16
10.9563	34.01	25.99	23.06	26.94
11.225	32.75	27.25	23.00	27.00
11.6004	33.36	26.64	23.37	26.63
11.6351	33.85	26.15	23.69	26.31

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - CDMA 800MHz idle + 2x charging; AC 115V/60Hz





FCC  
Neutral line tbl

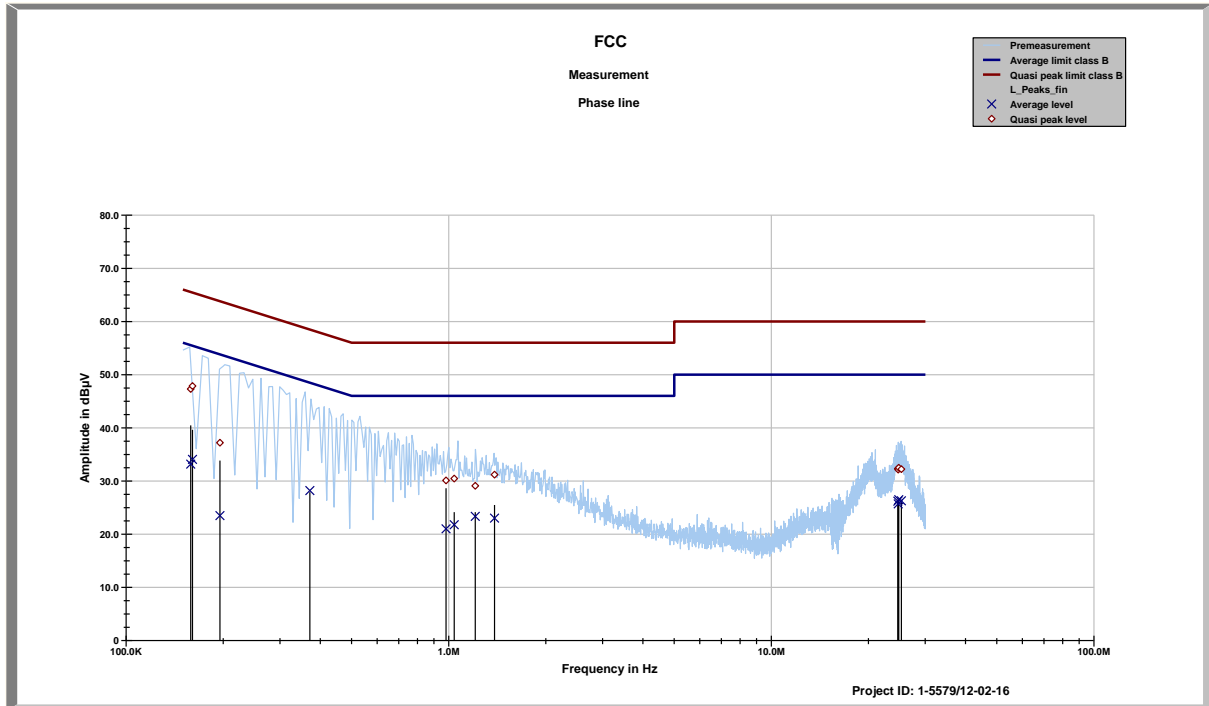
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09:19:42 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.52089	42.39	13.61	25.75	20.25
0.64663	43.23	12.77	27.15	18.85
0.83889	41.37	14.63	25.66	20.34
0.97305	40.88	15.12	24.89	21.11
1.03367	40.11	15.89	24.58	21.42
1.09976	40.58	15.42	24.08	21.92
1.16862	38.11	17.89	22.84	23.16
1.3545	39.34	16.66	24.53	21.47
10.9995	38.19	21.81	27.01	22.99
11.1648	38.77	21.23	27.68	22.32
11.6874	38.60	21.40	27.55	22.45
11.8757	38.33	21.67	26.96	23.04

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - CDMA 800MHz idle + 2x charging; AC 115V/60Hz

set 8



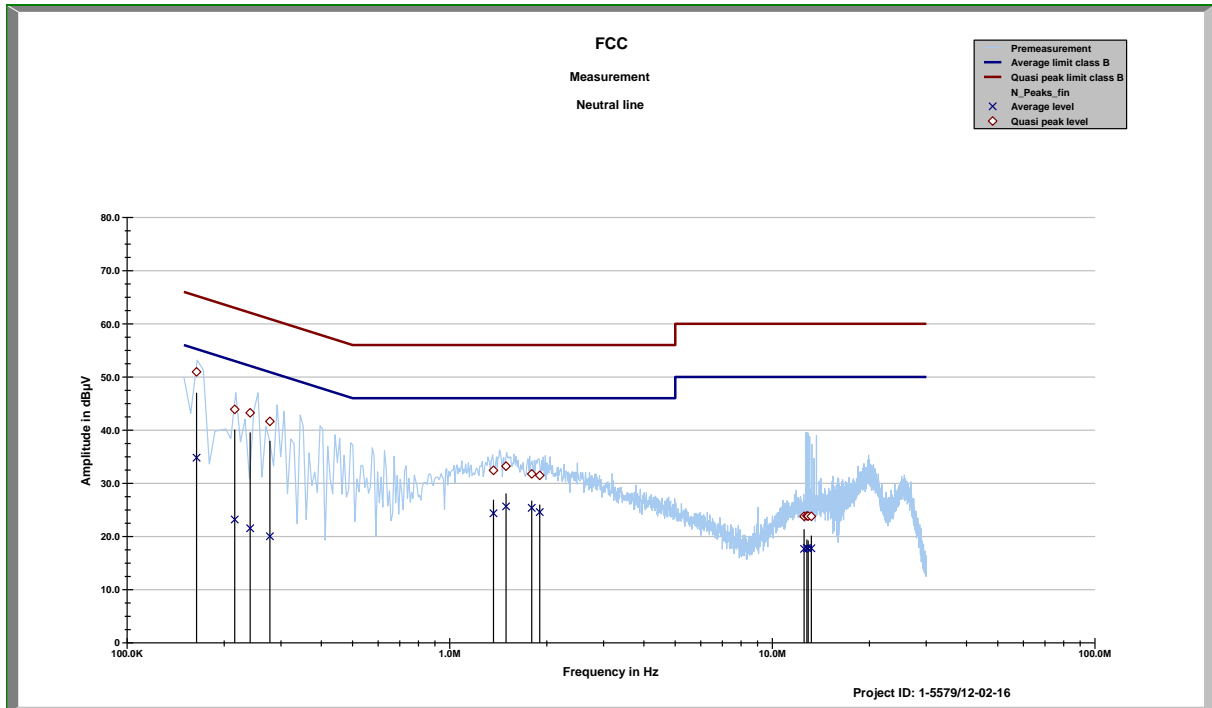
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Phase line tbl

Project ID: 1-5579/12-02-16

10:04:13 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.15857	47.30	18.24	33.18	22.58
0.16059	47.86	17.57	34.07	21.63
0.19544	37.19	26.61	23.50	31.21
0.37126	-49.31	107.78	28.19	21.49
0.98111	30.11	25.89	21.00	25.00
1.03984	30.46	25.54	21.78	24.22
1.20846	29.10	26.90	23.36	22.64
1.3866	31.19	24.81	23.02	22.98
24.656	32.32	27.68	26.21	23.79
24.715	32.13	27.87	25.70	24.30
24.815	32.49	27.51	26.48	23.52
25.274	32.22	27.78	26.27	23.73

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - CDMA 1900MHz idle + charging; AC 115V/60Hz



FCC  
Neutral line tbl

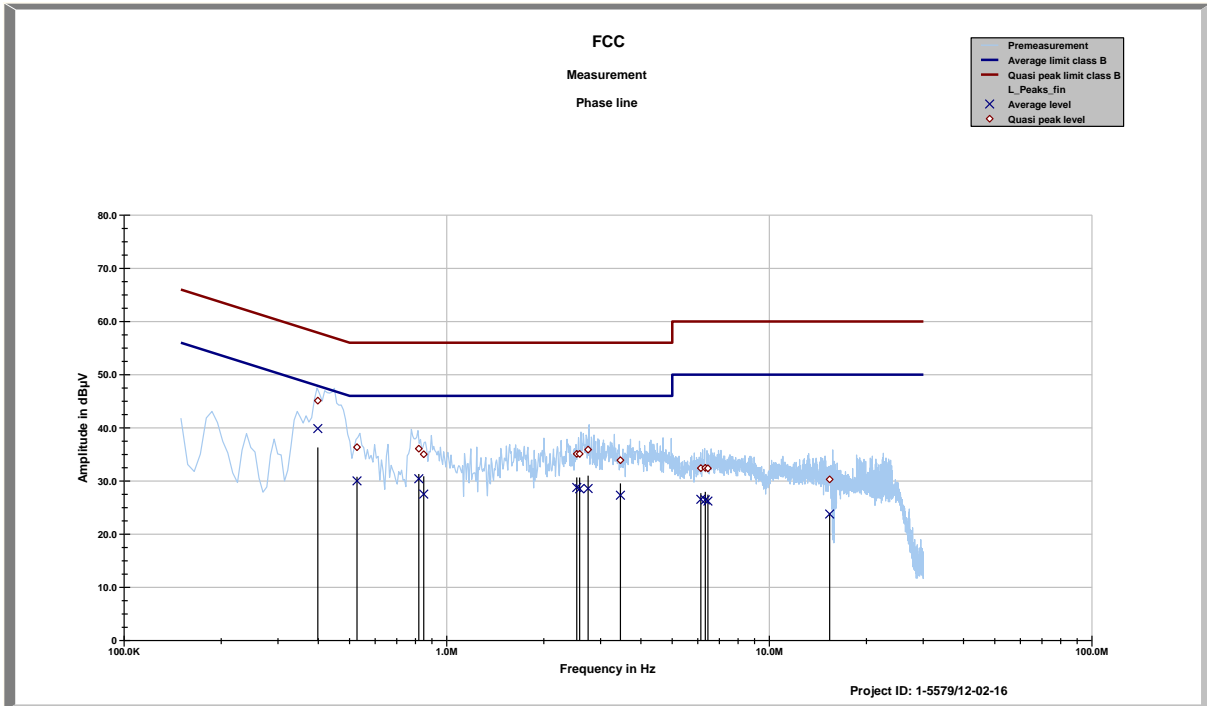
Project ID: 1-5579/12-02-16

10:04:13 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.16424	50.96	14.29	34.82	20.77
0.21562	43.90	19.09	23.19	30.93
0.24065	43.26	18.82	21.55	31.86
0.27706	41.65	19.26	20.05	32.32
1.3664	32.44	23.56	24.36	21.64
1.4941	33.22	22.78	25.66	20.34
1.7955	31.77	24.23	25.37	20.63
1.9006	31.49	24.51	24.59	21.41
12.5349	23.79	36.21	17.68	32.32
12.7845	23.87	36.13	17.84	32.16
12.905	23.83	36.17	17.73	32.27
13.2	23.79	36.21	17.77	32.23

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - CDMA 1900MHz idle + charging; AC 115V/60Hz

set 9



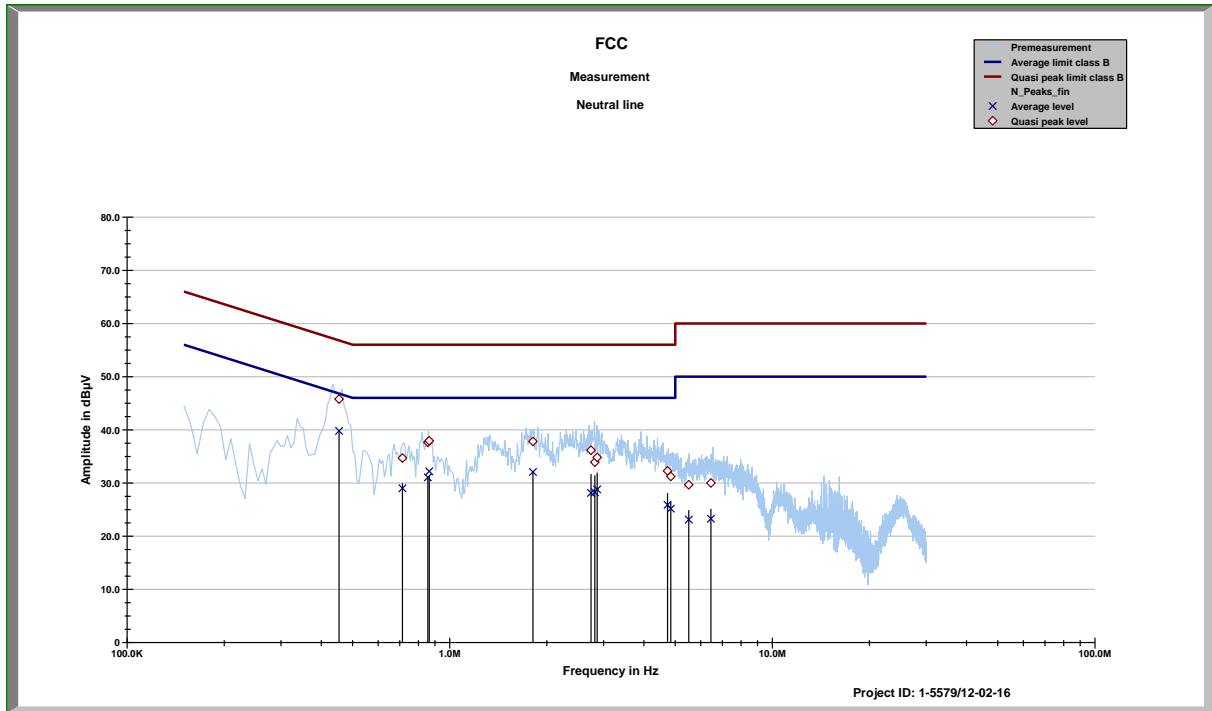
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Phase line tbl

Project ID: 1-5579/12-02-16

03:48:21 PM, Wednesday, February 27, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.39862	45.11	12.77	39.85	9.05
0.52697	36.37	19.63	30.01	15.99
0.8191	36.08	19.92	30.42	15.58
0.84857	35.03	20.97	27.53	18.47
2.5289	35.09	20.91	28.78	17.22
2.5817	35.09	20.91	28.53	17.47
2.7432	35.91	20.09	28.59	17.41
3.4521	33.90	22.10	27.33	18.67
6.1292	32.42	27.58	26.55	23.45
6.3272	32.47	27.53	26.44	23.56
6.4467	32.39	27.61	26.23	23.77
15.369	30.30	29.70	23.79	26.21

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - GSM 850 idle + HDMI + charging; AC 115V/60Hz



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Neutral line tbl

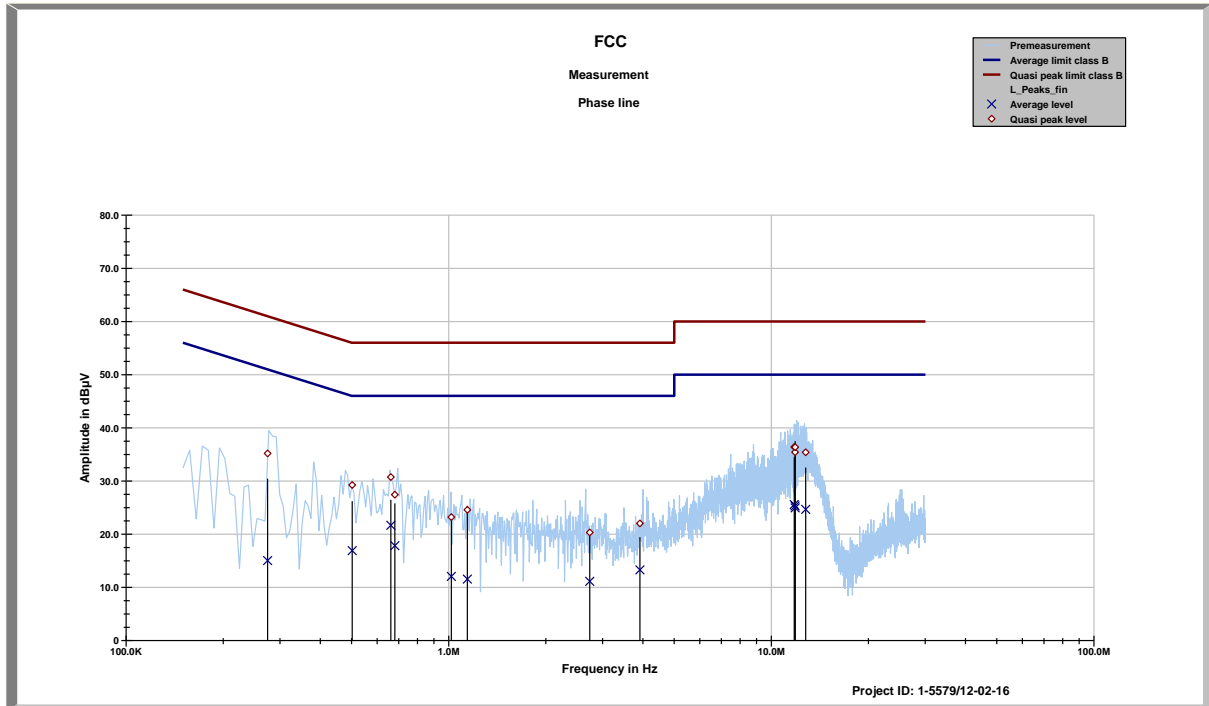
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Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.454	45.77	11.03	39.79	7.53
0.71343	34.69	21.31	29.00	17.00
0.85566	37.64	18.36	31.06	14.94
0.86384	37.94	18.06	32.19	13.81
1.8105	37.82	18.18	32.08	13.92
2.7397	36.16	19.84	28.12	17.88
2.8169	33.91	22.09	28.25	17.75
2.8634	34.82	21.18	28.80	17.20
4.7324	32.28	23.72	25.89	20.11
4.8412	31.22	24.78	25.18	20.82
5.506	29.66	30.34	23.11	26.89
6.4461	30.00	30.00	23.28	26.72

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - GSM 850 idle + HDMI + charging; AC 115V/60Hz

set 10



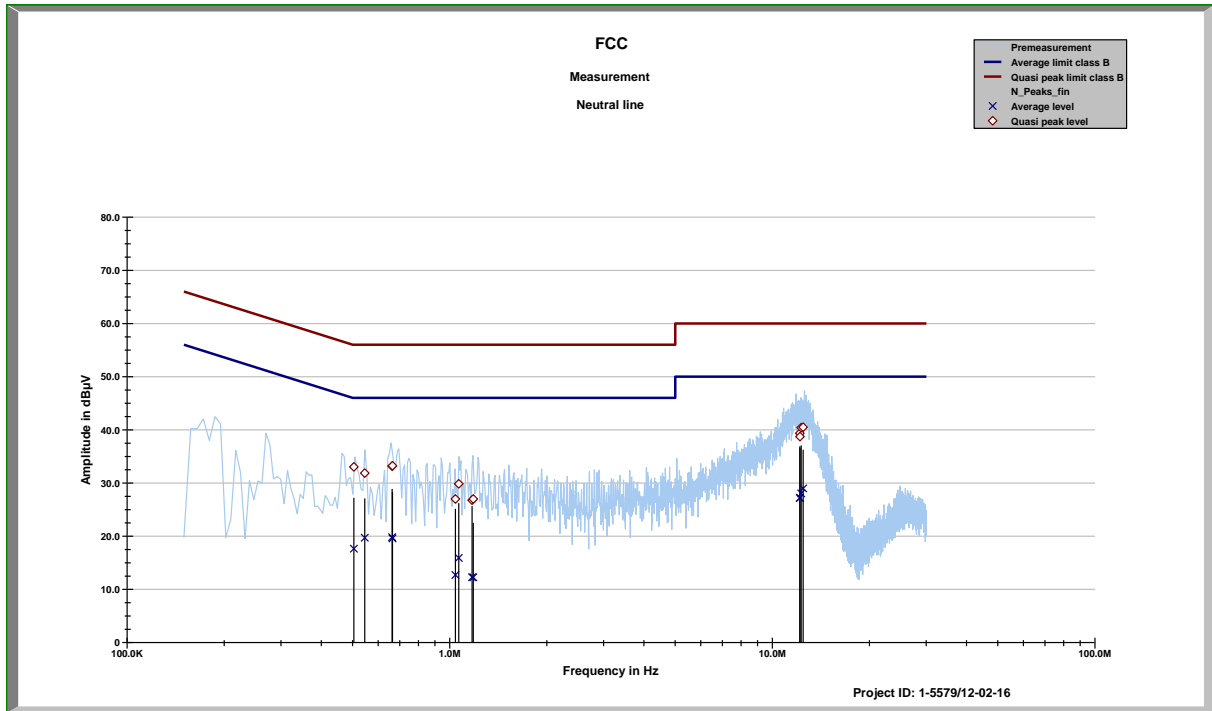
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Phase line tbl

Project ID: 1-5579/12-02-16

04:18:01 PM, Wednesday, February 27, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.27458	35.18	25.79	15.03	37.41
0.50226	29.24	26.76	16.91	29.09
0.66135	30.73	25.27	21.67	24.33
0.68047	27.44	28.56	17.83	28.17
1.01838	23.21	32.79	12.06	33.94
1.14179	24.58	31.42	11.55	34.45
2.7354	20.31	35.69	11.13	34.87
3.9121	22.01	33.99	13.28	32.72
11.7686	36.40	23.60	25.57	24.43
11.8368	35.41	24.59	25.30	24.70
11.8484	36.37	23.63	24.95	25.05
12.768	35.39	24.61	24.65	25.35

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - PCS1900 idle + charging; AC 115V/60Hz



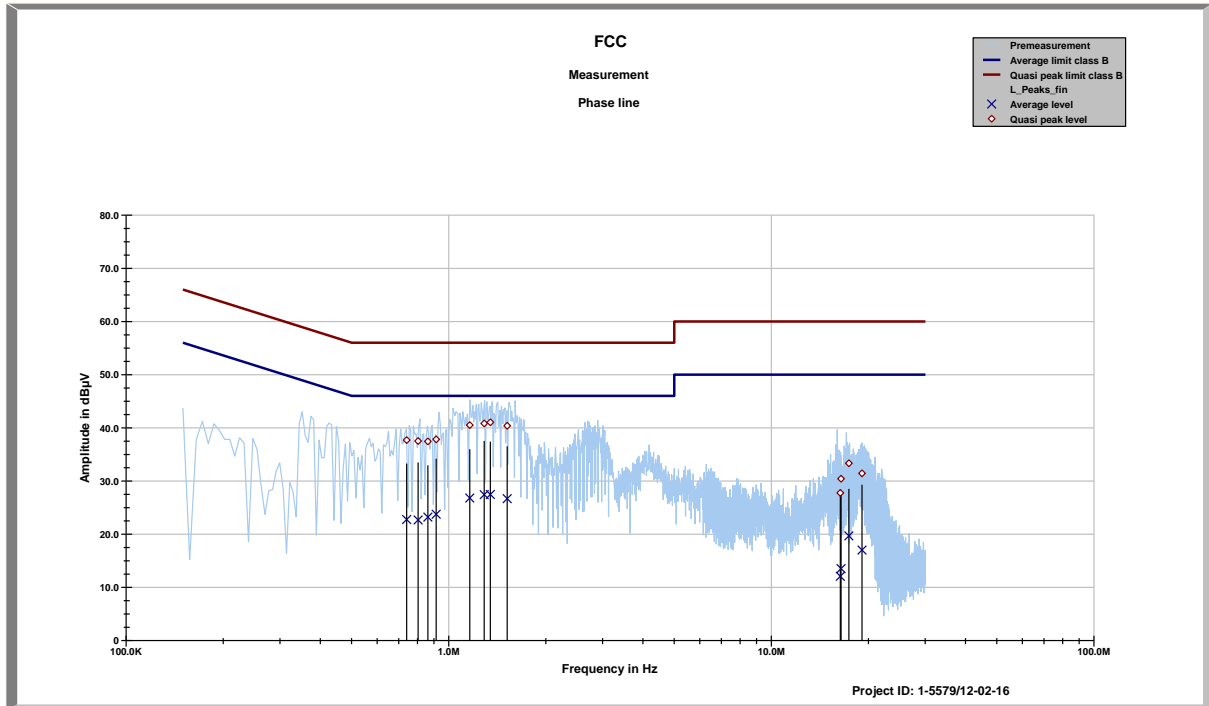
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 Project ID: 1-5579/12-02-16

04:18:01 PM, Wednesday, February 27, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.50432	33.03	22.97	17.65	28.35
0.54508	31.86	24.14	19.70	26.30
0.66291	33.15	22.85	19.82	26.18
0.66459	33.23	22.77	19.59	26.41
1.04146	26.99	29.01	12.70	33.30
1.06619	29.84	26.16	15.91	30.09
1.17243	26.76	29.24	12.28	33.72
1.18272	26.99	29.01	12.27	33.73
12.1612	39.36	20.64	27.16	22.84
12.1739	38.72	21.28	27.23	22.77
12.283	40.41	19.59	28.04	21.96
12.452	40.49	19.51	28.99	21.01

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - PCS1900 idle + charging; AC 115V/60Hz

set 11



FCC

Phase line tbl

Project ID: 1-5579/12-02-16

10:31:20 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.74048	37.70	18.30	22.75	23.25
0.80349	37.51	18.49	22.66	23.34
0.86184	37.44	18.56	23.21	22.79
0.91423	37.83	18.17	23.75	22.25
1.16191	40.51	15.49	26.80	19.20
1.2877	40.83	15.17	27.43	18.57
1.3457	41.03	14.97	27.46	18.54
1.5173	40.38	15.62	26.68	19.32
16.348	27.76	32.24	12.07	37.93
16.442	30.42	29.58	13.53	36.47
17.379	33.33	26.67	19.68	30.32
19.086	31.44	28.56	17.02	32.98

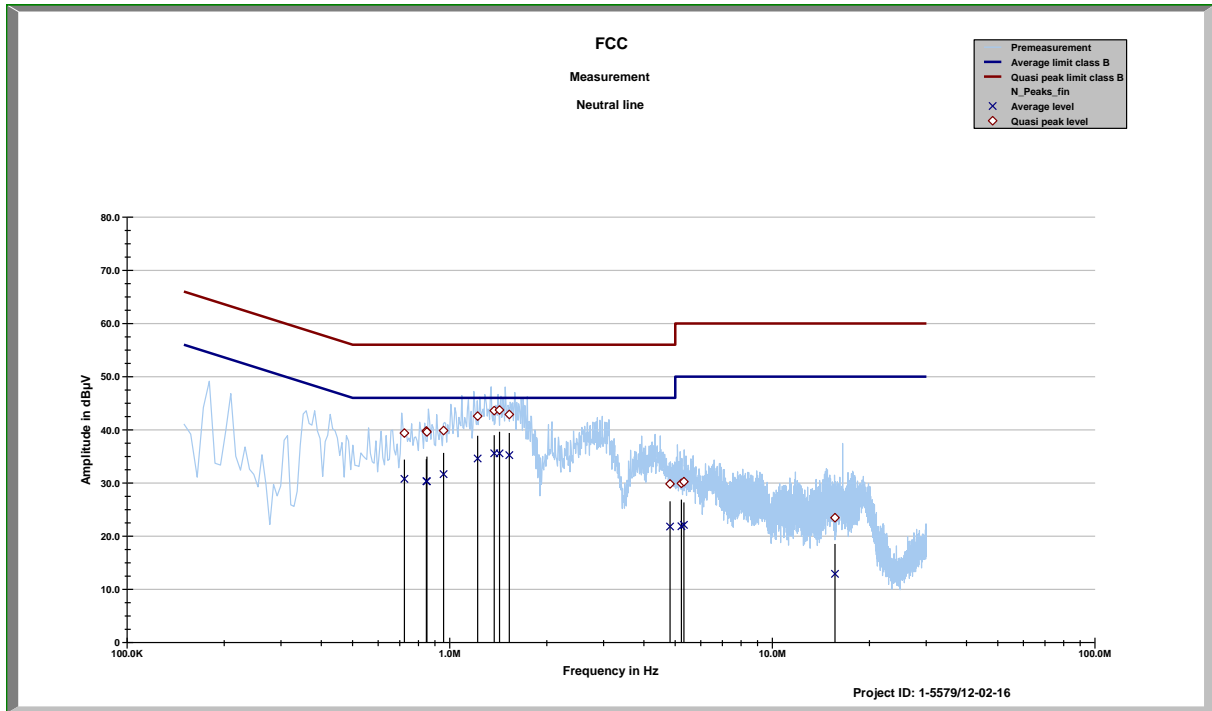
Project ID - 1-5579/12-02-16

EUT - RFM121LW

Serial Number - 990002430024636

Operating mode - UMTS FDD 2 idle + 2x charging; AC 115V/60Hz





FCC  
Neutral line tbl

Project ID: 1-5579/12-02-16

10:31:20 AM, Thursday, February 28, 2013

Frequency	Quasi peak level	Margin quasi peak	Average level	Margin average
MHz	dBµV	dBµV	dBµV	dBµV
0.72347	39.39	16.61	30.77	15.23
0.84619	39.79	16.21	30.33	15.67
0.84976	39.60	16.40	30.32	15.68
0.95691	39.86	16.14	31.66	14.34
1.22019	42.57	13.43	34.60	11.40
1.3734	43.61	12.39	35.59	10.41
1.4266	43.72	12.28	35.56	10.44
1.5297	42.88	13.12	35.24	10.76
4.8167	29.82	26.18	21.80	24.20
5.2228	29.94	30.06	21.86	28.14
5.3178	30.25	29.75	22.12	27.88
15.631	23.47	36.53	12.92	37.08

Project ID - 1-5579/12-02-16  
 EUT - RFM121LW  
 Serial Number - 990002430024636  
 Operating mode - UMTS FDD 2 idle + 2x charging; AC 115V/60Hz

### 8.1.6 Signal strength calculation

Calculation formula:

$$SS = UR + CF + VC$$

List of abbreviations:

- SS      ▶      signal strength
- UR      ▶      voltage at the receiver
- CF      ▶      loss of the cable and filter (passband filter 130 kHz – 30 MHz)
- VC      ▶      correction factor of the ISN (ESH3-Z5)

List with correction factors:

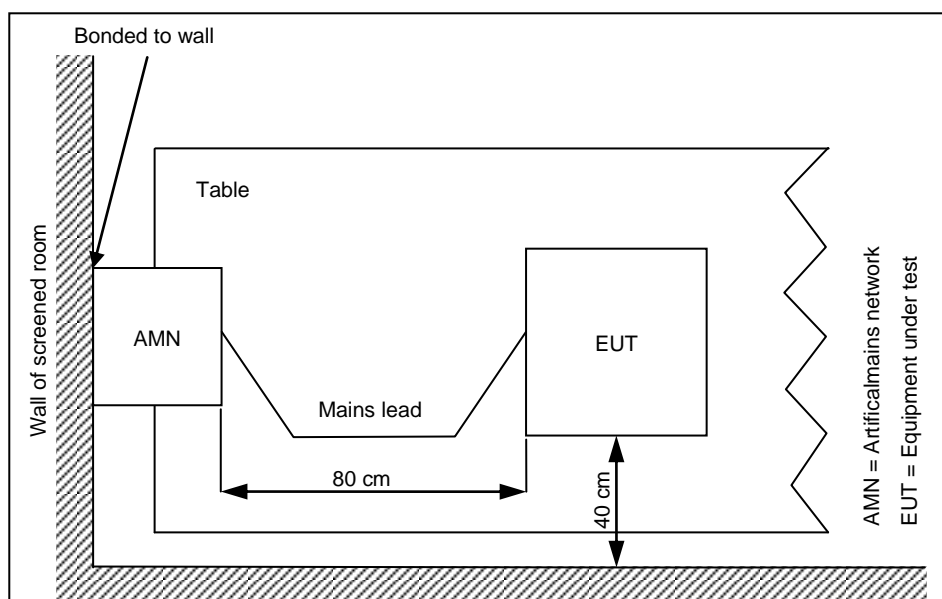
Frequency [MHz]	CF [dB]	VC [dB]
0,150	9,80	1,42
1,000	9,80	0,41
5,000	9,90	0,32
10,000	9,90	0,23
15,000	10,00	0,39
20,000	10,00	1,19
25,000	10,20	1,55
30,000	10,30	1,31

Example calculation:

For example at 10,000 000 MHz the measured Voltage (UR) is 37,62 dBµV, the loss of the cable and filter (CF) is 9,90 dB and the correction factor of the ISN (VC) is 0,23 dB the final result will be calculated:  
 $SS [dB\mu V] = 37,62 [dB\mu V] + 9,90 [dB] + 0,23 [dB] = \underline{47,75 [dB\mu V]} (244, 06 \mu V)$

### 8.1.7 Test Set-up

According to EMC basic standard **ANSI 63.4**



## 8.2 Electromagnetic Radiated Emissions (Distance 10 m)

### 8.2.1 Instrumentation for Test (see equipment list)

F 1	F 2	F 4b	F 5	F 6	F 7	F 8	F 21				
-----	-----	------	-----	-----	-----	-----	------	--	--	--	--

### 8.2.2 Test Plan

<b>EUT set-up</b>	see test details		
<b>Operating mode</b>	<b>Application</b>	<b>Limit</b>	<b>Result</b>
see test details	Enclosure	FCC part 15 B Class B	passed

**Remarks:** Powered by external power supply (115V / 60Hz)

### 8.2.3 Radiated Limits

Frequency- range	FCC part 15 B Class B	FCC part 15 B Class A
30 MHz – 88 MHz	30 dB $\mu$ V/m	39,1 dB $\mu$ V/m
88 MHz – 216 MHz	33,5 dB $\mu$ V/m	43,5 dB $\mu$ V/m
216 MHz – 960 MHz	36 dB $\mu$ V/m	46,4 dB $\mu$ V/m
960 MHz – 40000 MHz	44 dB $\mu$ V/m	49,5 dB $\mu$ V/m
	* This values are recalculated from the class B limits at 3 m antenna distance in §15.109 (g 2) of the FCC rules	

### 8.2.4 Calibration Information

Device	Serial number	ICT Number	Calibration valid until	Calibration interval
ESCI 3 Receiver	100083/003	300003312	01/2014	12 month
Trilog Antenna	9163-295	300003787	05/2014	24 month

**Remarks:**  
System check of all relevant devices and the chamber (weekly)

### 8.2.5 Test Results

set 21:

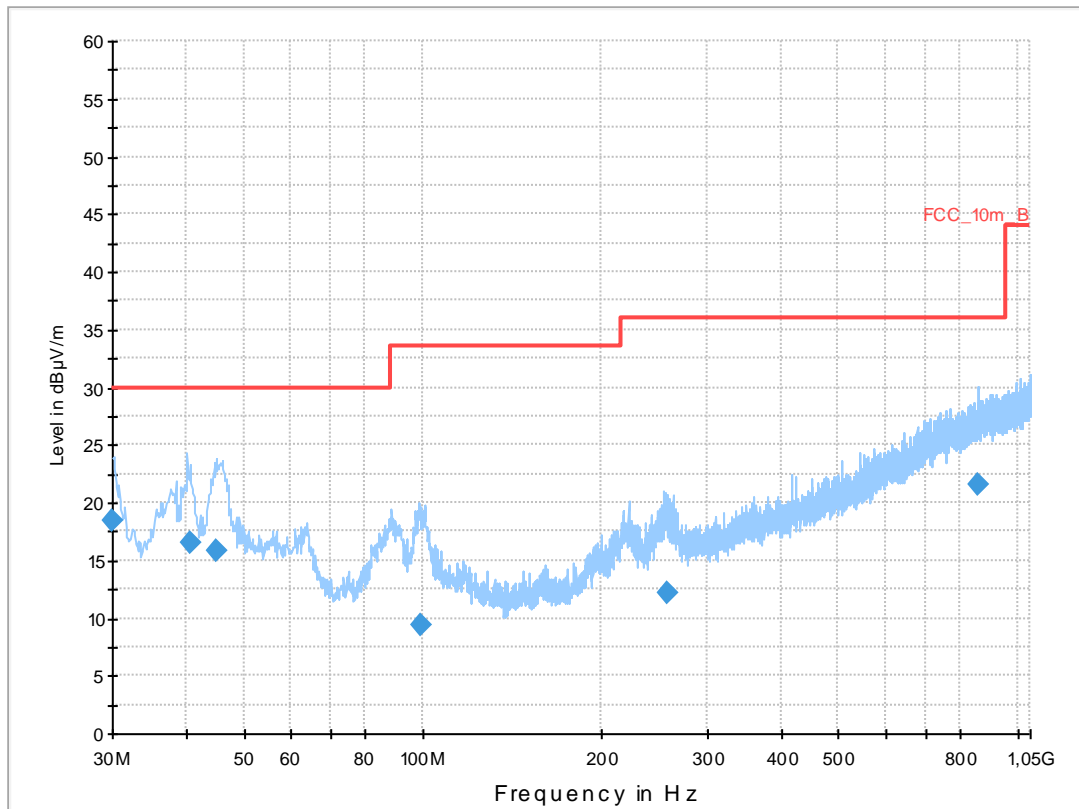
#### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 10 m  
 Operating Conditions: GSM 850 idle + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

#### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 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
30.024644	18.4	1000.0	120.000	146.0	V	185.0	12.5	11.6	30.0	
40.566000	16.5	1000.0	120.000	147.0	V	314.0	13.4	13.5	30.0	
44.950800	15.9	1000.0	120.000	200.0	V	115.0	13.3	14.1	30.0	
98.891550	9.3	1000.0	120.000	100.0	V	314.0	11.8	24.2	33.5	
258.010200	12.2	1000.0	120.000	100.0	V	89.0	13.5	23.8	36.0	
858.169500	21.5	1000.0	120.000	123.0	H	-50.0	24.7	14.5	36.0	

set 22:

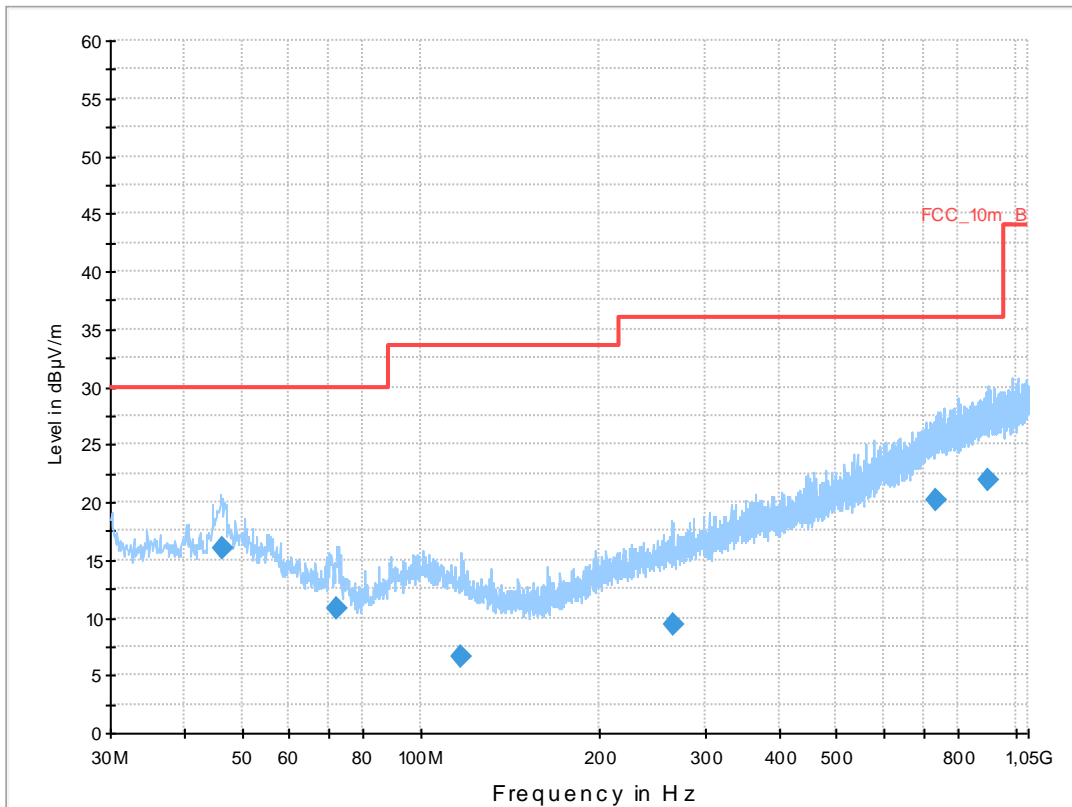
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 10 m  
 Operating Conditions: PCS1900 idle + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 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
46.361700	15.9	1000.0	120.000	100.0	V	-49.0	13.3	14.1	30.0	
72.322650	10.7	1000.0	120.000	300.0	V	86.0	9.2	19.3	30.0	
117.018300	6.7	1000.0	120.000	315.0	V	18.0	10.5	26.8	33.5	
264.811200	9.4	1000.0	120.000	400.0	V	131.0	13.7	26.6	36.0	
732.427200	20.1	1000.0	120.000	335.0	H	332.0	23.3	15.9	36.0	
897.068700	21.9	1000.0	120.000	106.0	H	135.0	25.2	14.1	36.0	

set 23:

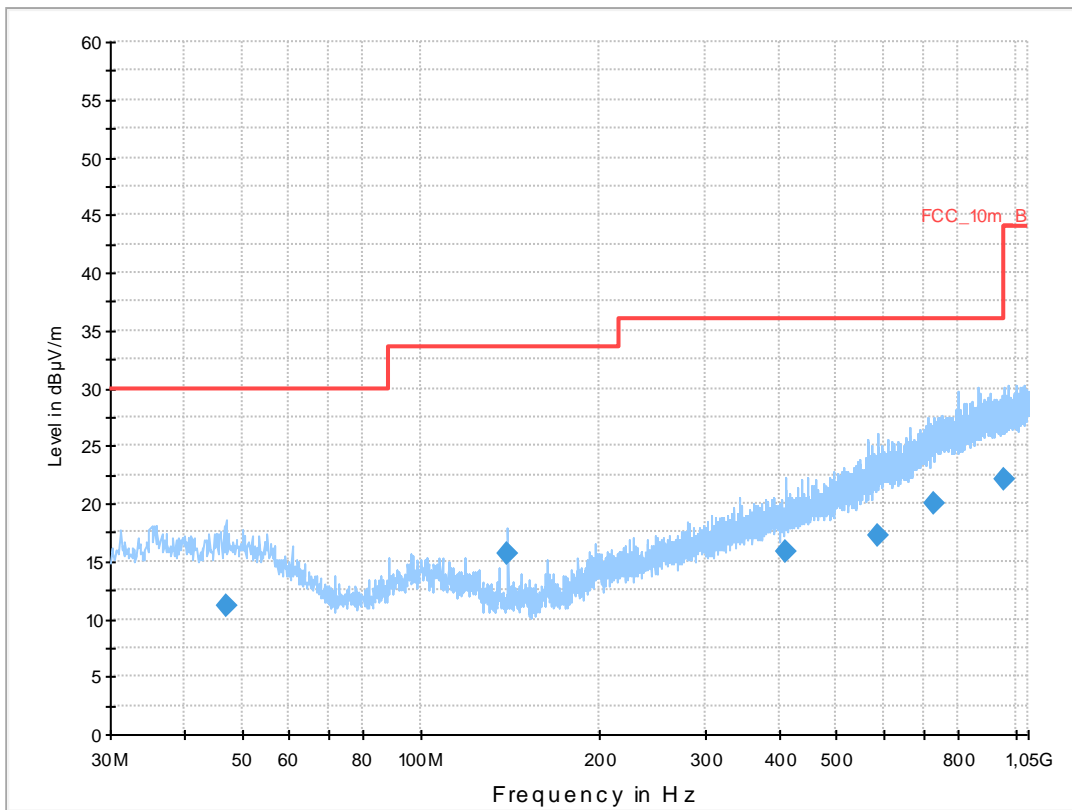
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 10 m  
 Operating Conditions: UMTS idle + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 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
46.967700	11.1	1000.0	120.000	200.0	V	102.0	13.3	18.9	30.0	
140.009850	15.7	1000.0	120.000	114.0	V	286.0	8.6	17.8	33.5	
409.584900	15.9	1000.0	120.000	120.0	V	-50.0	17.1	20.1	36.0	
585.535200	17.2	1000.0	120.000	400.0	V	270.0	20.4	18.8	36.0	
728.553000	20.0	1000.0	120.000	200.0	H	331.0	23.2	16.0	36.0	
954.141150	22.0	1000.0	120.000	200.0	H	70.0	25.4	14.0	36.0	

set 24:

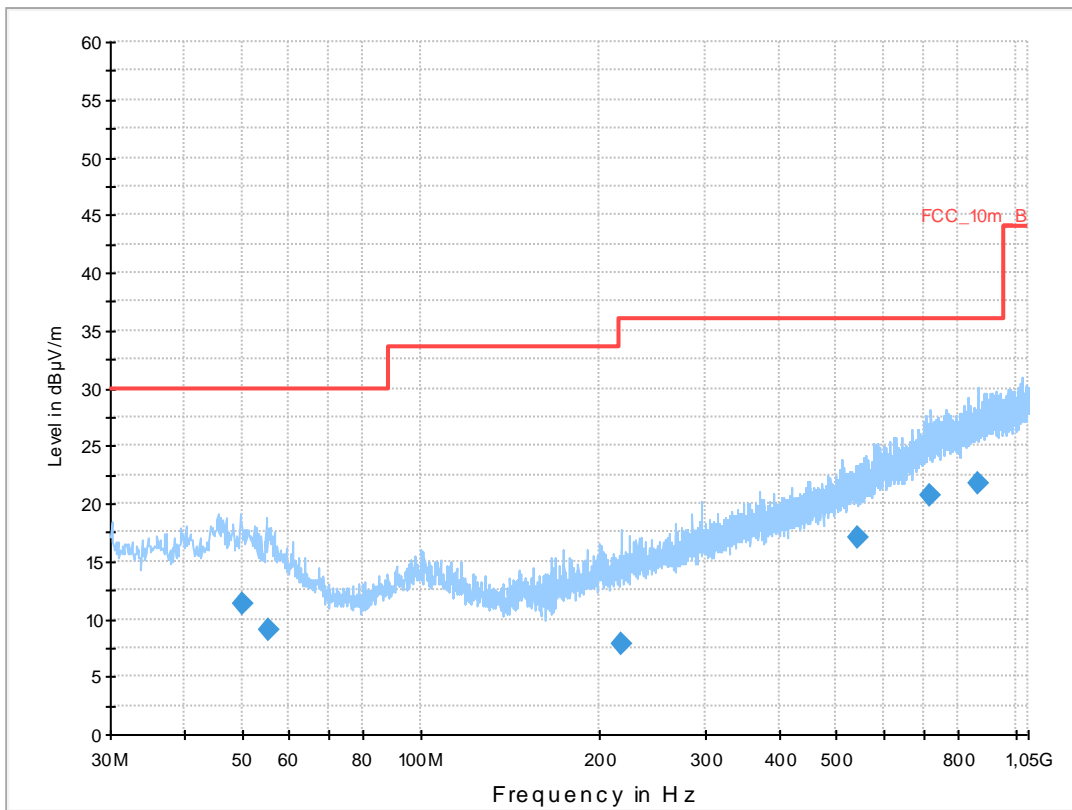
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 10 m  
 Operating Conditions: UMTS idle + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### Scan Setup: STAN\_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)  
 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
50.043600	11.4	1000.0	120.000	200.0	V	310.0	13.4	18.6	30.0	
55.287150	9.1	1000.0	120.000	200.0	H	282.0	12.8	20.9	30.0	
216.816150	7.8	1000.0	120.000	200.0	V	79.0	12.3	28.2	36.0	
540.856950	17.0	1000.0	120.000	246.0	V	58.0	19.2	19.0	36.0	
719.962350	20.7	1000.0	120.000	200.0	V	95.0	23.0	15.3	36.0	
866.291850	21.7	1000.0	120.000	188.0	H	-41.0	24.8	14.3	36.0	

set 25:

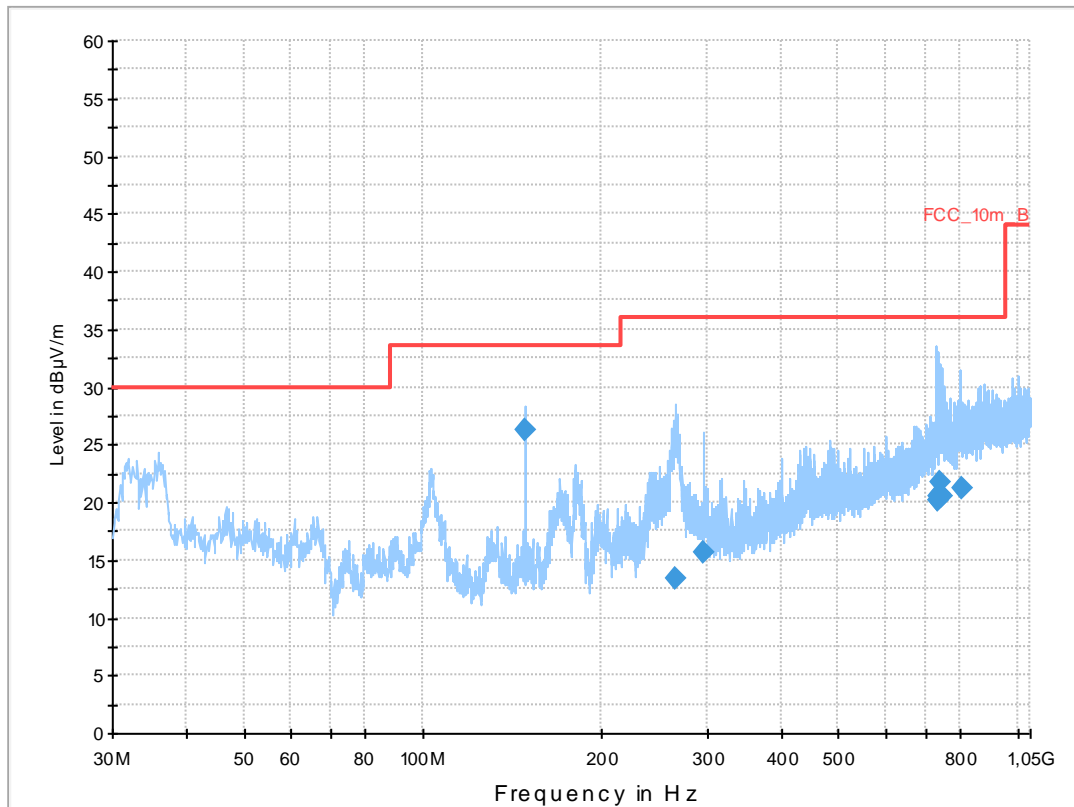
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: HDMI  
 Operator Name: Medrow  
 Comment: AC: 115 V / 60 Hz

### 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 h (kHz)	Height (cm)	Polarization	Azimuth h (deg)	Corr. (dB)	Margi n (dB)	Limit (dBµV/m)	Comment
148.518750	26.2	1000.0	120.000	98.0	V	190.0	8.9	7.3	33.5	
266.197500	13.3	1000.0	120.000	170.0	V	170.0	13.7	22.7	36.0	
297.055650	15.7	1000.0	120.000	170.0	V	-10.0	14.4	20.3	36.0	
731.922150	20.2	1000.0	120.000	170.0	V	268.0	23.2	15.8	36.0	
732.443400	20.3	1000.0	120.000	170.0	V	265.0	23.3	15.7	36.0	
734.573850	20.6	1000.0	120.000	98.0	V	280.0	23.3	15.4	36.0	



set 26:

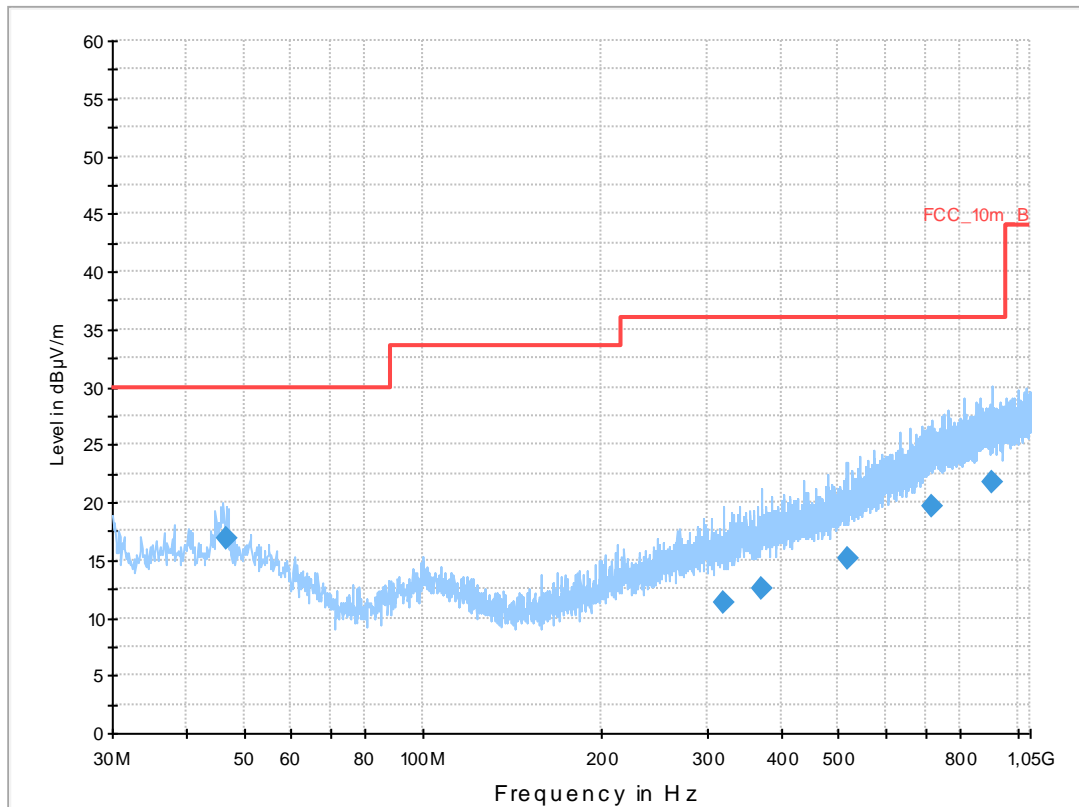
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 10 m  
 Operating Conditions: UMTS idle + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### 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 h (kHz)	Height (cm)	Polarization	Azimuth h (deg)	Corr. (dB)	Margi n (dB)	Limit (dBµV/m)	Comment
46.523400	16.8	1000.0	120.000	98.0	V	81.0	13.3	13.2	30.0	
320.221950	11.4	1000.0	120.000	170.0	H	100.0	15.2	24.6	36.0	
370.576500	12.5	1000.0	120.000	98.0	V	-10.0	16.4	23.5	36.0	
516.290100	15.1	1000.0	120.000	170.0	V	190.0	18.9	20.9	36.0	
718.747800	19.7	1000.0	120.000	98.0	V	-2.0	22.9	16.3	36.0	
904.357500	21.8	1000.0	120.000	143.0	V	100.0	25.2	14.2	36.0	

set 27:

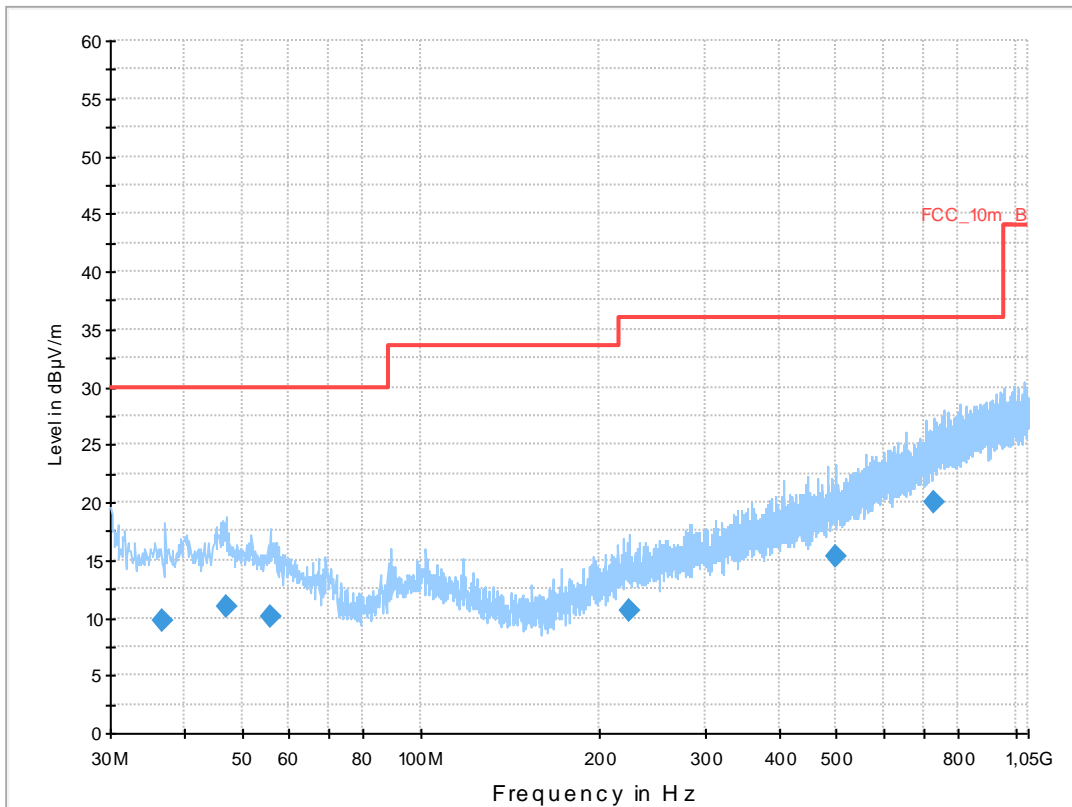
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 10 m  
 Operating Conditions: LTE idle + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### 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 h (kHz)	Height (cm)	Polarization	Azimuth h (deg)	Corr. (dB)	Margi n (dB)	Limit (dBµV/m)	Comment
36.816150	9.7	1000.0	120.000	170.0	V	100.0	13.2	20.3	30.0	
47.096250	10.9	1000.0	120.000	98.0	V	0.0	13.3	19.1	30.0	
55.832550	10.1	1000.0	120.000	170.0	V	100.0	12.7	19.9	30.0	
223.816350	10.6	1000.0	120.000	98.0	V	10.0	12.5	25.4	36.0	
498.146550	15.2	1000.0	120.000	163.0	V	182.0	18.7	20.8	36.0	
731.258250	20.1	1000.0	120.000	170.0	V	85.0	23.2	15.9	36.0	

set 28:

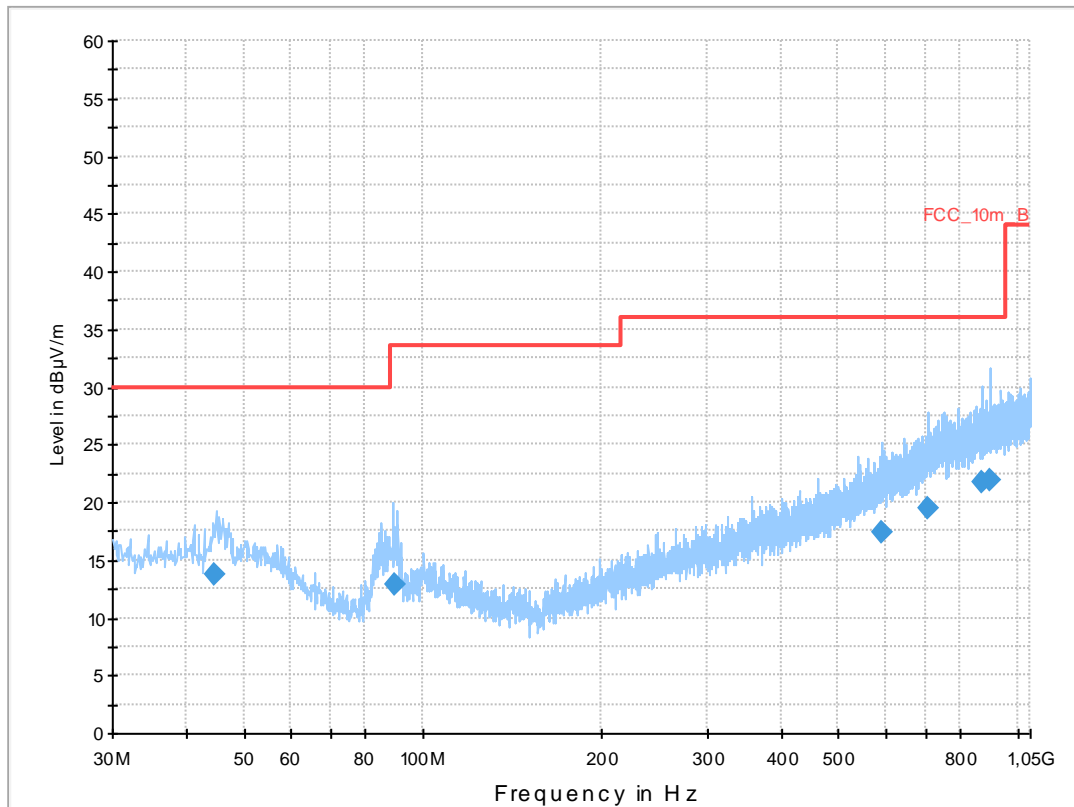
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 5 m  
 Operating Conditions: LTE FDD 4 idle + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### 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 h (kHz)	Height (cm)	Polarization	Azimuth h (deg)	Corr. (dB)	Margi n (dB)	Limit (dBµV/m)	Comment
44.452200	13.7	1000.0	120.000	98.0	V	280.0	13.3	16.3	30.0	
89.556300	12.9	1000.0	120.000	170.0	V	280.0	10.5	20.6	33.5	
589.069800	17.4	1000.0	120.000	170.0	V	171.0	20.5	18.6	36.0	
704.482200	19.5	1000.0	120.000	105.0	H	273.0	22.6	16.5	36.0	
869.173650	21.7	1000.0	120.000	170.0	V	10.0	24.8	14.3	36.0	
898.042350	21.9	1000.0	120.000	170.0	H	-2.0	25.2	14.1	36.0	

set 29:

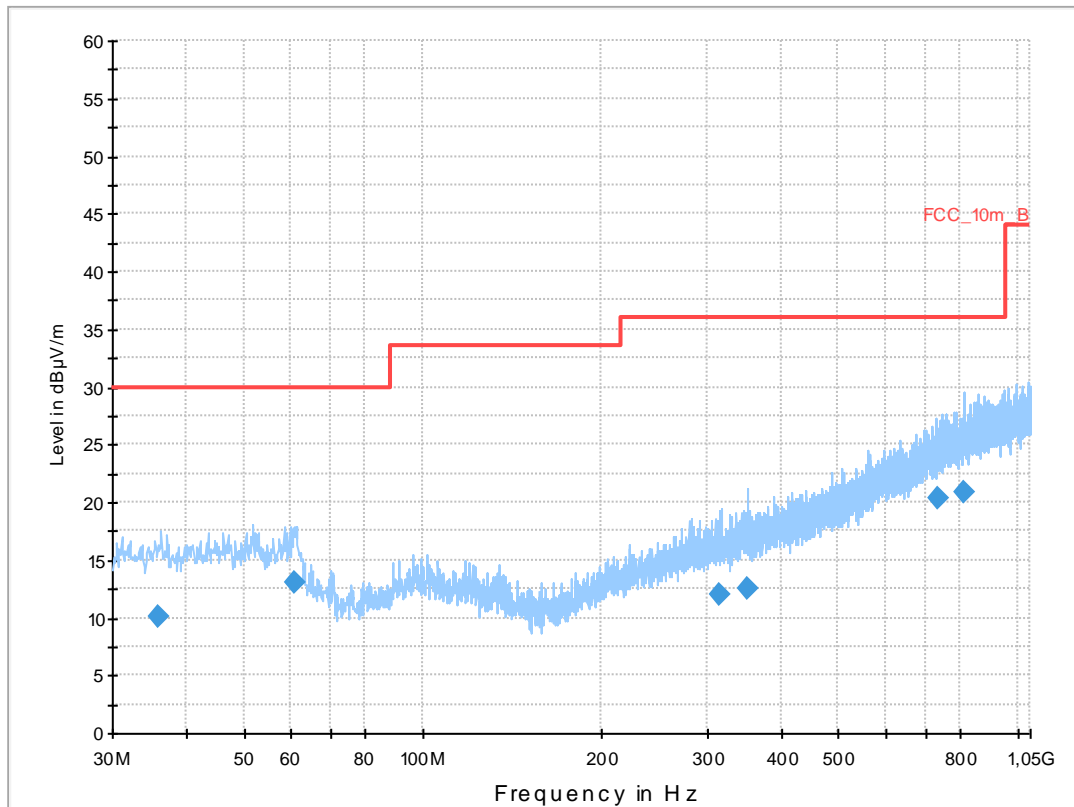
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 5 m  
 Operating Conditions: LTE FDD 13 idle + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### 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 h (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin - QPK	Limit - QPK (dBµV/m)	Comment
35.989050	10.1	1000.0	120.000	170.0	H	170.0	13.1	19.9	30.0	
60.714300	13.0	1000.0	120.000	170.0	V	170.0	11.4	17.0	30.0	
316.031400	11.9	1000.0	120.000	170.0	V	81.0	15.0	24.1	36.0	
350.673750	12.5	1000.0	120.000	170.0	H	190.0	16.1	23.5	36.0	
731.960700	20.3	1000.0	120.000	105.0	V	81.0	23.2	15.7	36.0	
812.310000	20.8	1000.0	120.000	170.0	H	190.0	24.0	15.2	36.0	

set 30:

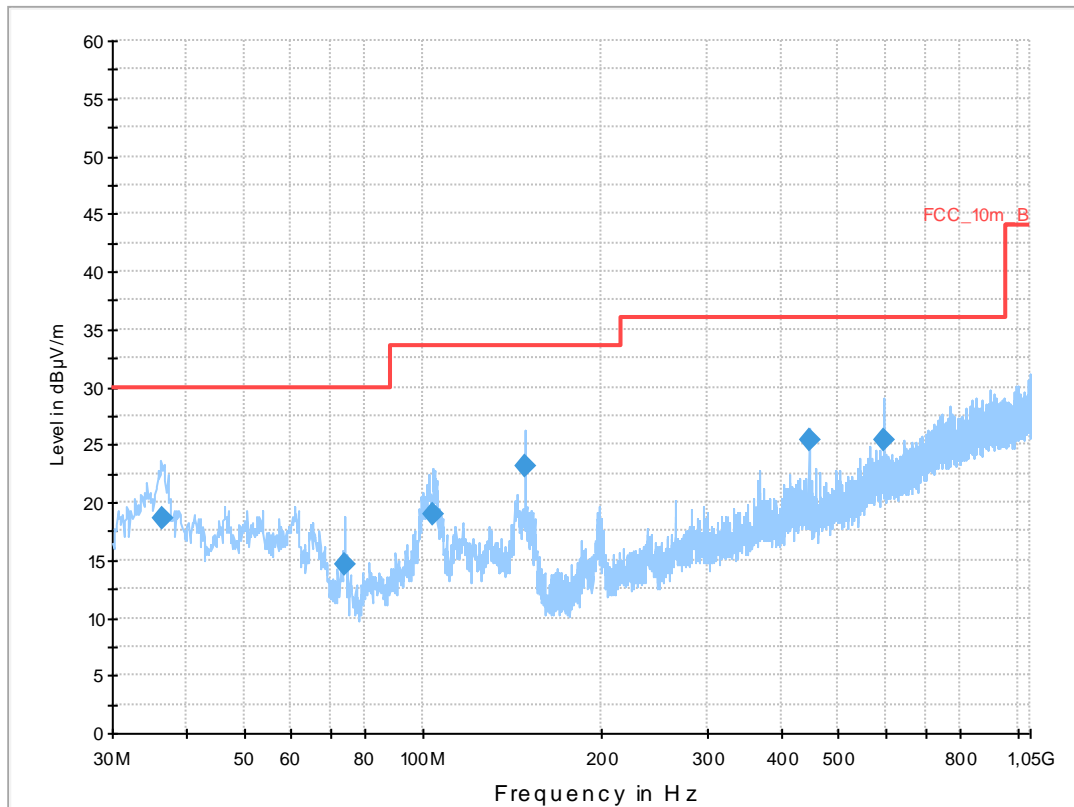
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 5 m  
 Operating Conditions: LTE FDD 4 idle + HDMI + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

### 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 h (kHz)	Height (cm)	Polarization	Azimuth h (deg)	Corr. (dB)	Margi n (dB)	Limit (dBµV/m)	Comment
36.402750	18.6	1000.0	120.000	170.0	V	100.0	13.1	11.4	30.0	
73.709400	14.6	1000.0	120.000	170.0	V	100.0	9.2	15.4	30.0	
103.867050	19.0	1000.0	120.000	111.0	V	280.0	11.6	14.5	33.5	
148.500900	23.1	1000.0	120.000	111.0	V	270.0	8.9	10.4	33.5	
445.513200	25.3	1000.0	120.000	121.0	V	10.0	17.6	10.7	36.0	
594.039150	25.3	1000.0	120.000	98.0	V	175.0	20.6	10.7	36.0	

set 31:

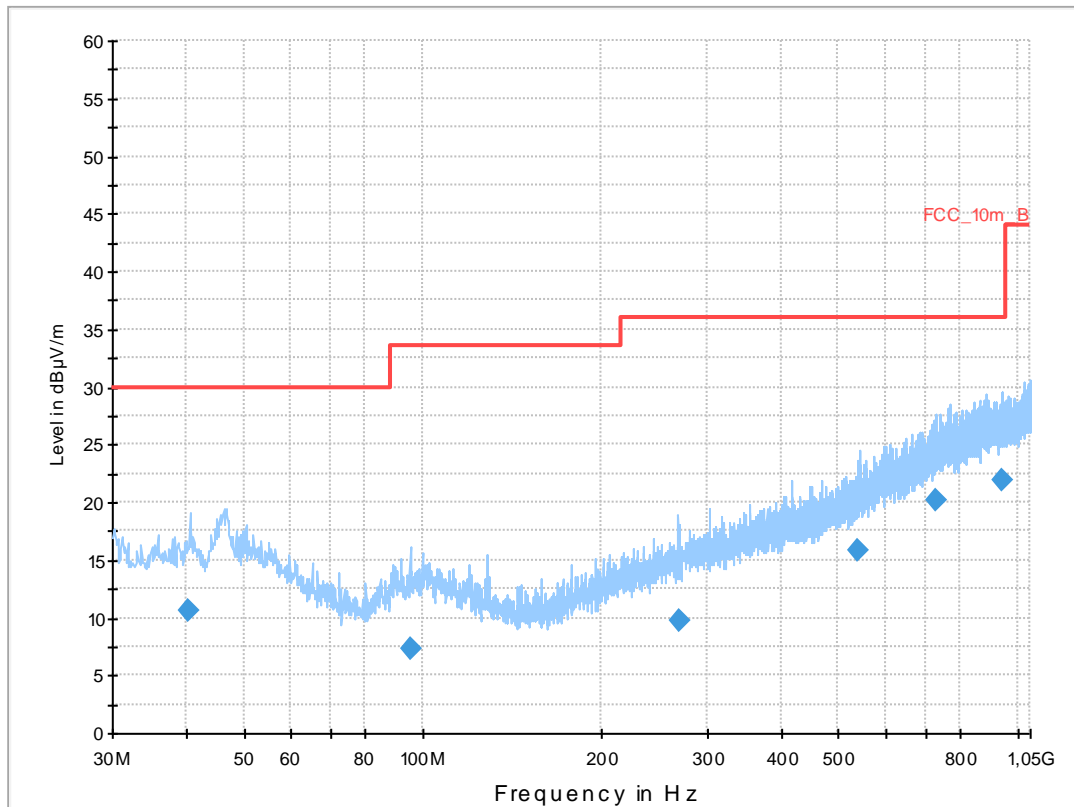
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: CDMA Cellular 800MHz+ charging  
 Operator Name: Medrow  
 Comment: AC: 115 V / 60 Hz

### 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 h (kHz)	Height (cm)	Polarization	Azimuth h (deg)	Corr. (dB)	Margi n (dB)	Limit (dBµV/m)	Comment
40.374600	10.6	1000.0	120.000	133.0	V	280.0	13.4	19.4	30.0	
95.236500	7.3	1000.0	120.000	98.0	V	170.0	11.3	26.2	33.5	
269.382600	9.7	1000.0	120.000	170.0	V	260.0	13.8	26.3	36.0	
540.226800	15.8	1000.0	120.000	170.0	V	265.0	19.2	20.2	36.0	
730.876800	20.1	1000.0	120.000	120.0	H	171.0	23.2	15.9	36.0	
943.871400	21.9	1000.0	120.000	170.0	V	190.0	25.3	14.1	36.0	

set 32:

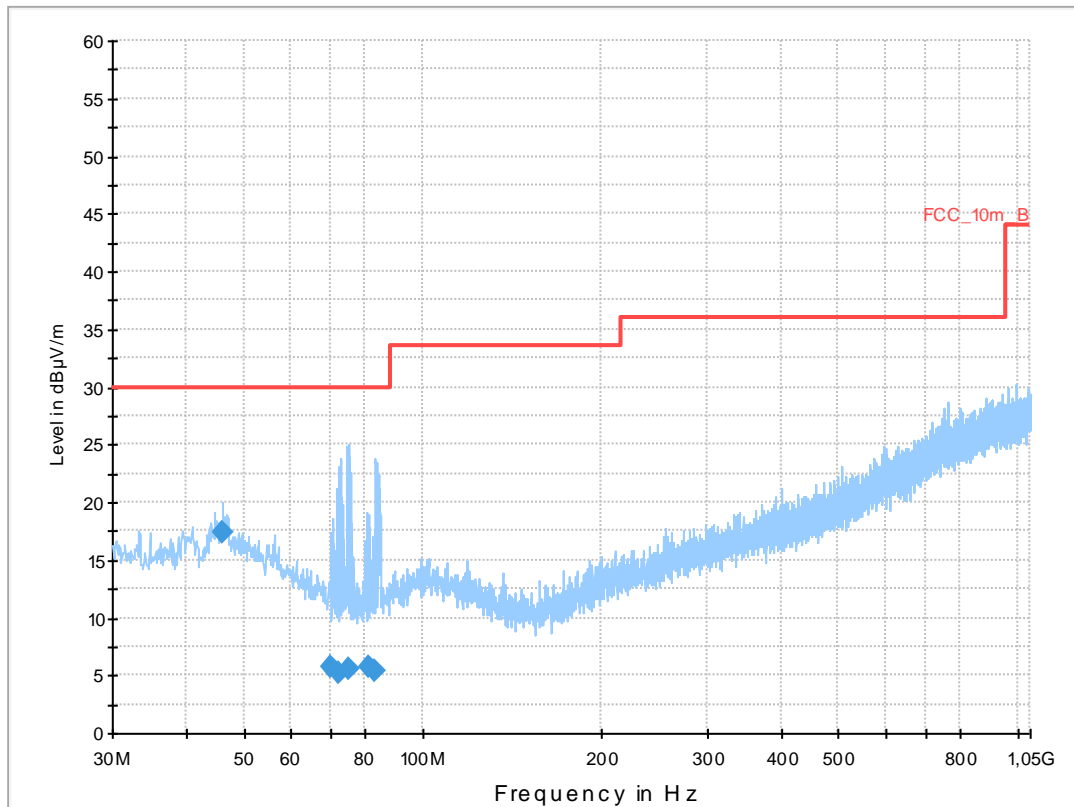
### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: CDMA PCMS 1900MHz idle+ charging  
 Operator Name: Medrow  
 Comment: AC: 115 V / 60 Hz

### 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 h (kHz)	Height (cm)	Polarization	Azimuth h (deg)	Corr. (dB)	Margi n (dB)	Limit (dBµV/m)	Comment
46.028700	17.3	1000.0	120.000	105.0	V	10.0	13.3	12.7	30.0	
69.983250	5.7	1000.0	120.000	170.0	V	80.0	9.3	24.3	30.0	
72.244800	5.3	1000.0	120.000	143.0	V	100.0	9.2	24.7	30.0	
74.766450	5.5	1000.0	120.000	161.0	V	92.0	9.2	24.5	30.0	
80.840850	5.7	1000.0	120.000	170.0	V	171.0	9.2	24.3	30.0	
82.676850	5.4	1000.0	120.000	170.0	V	280.0	9.5	24.6	30.0	

## 8.2.6 Hardware Set-up

Subrange 1  
Frequency Range: 30 MHz - 2 GHz

Receiver: Receiver [ESCI 3]  
@ GPIB0 (ADR 20), SN 100083/003, FW 4.42

Signal Path: without Notch  
FW 1.0

Antenna: VULB 9163  
SN 9163-295, FW ---  
Correction Table (vertical): VULP6113  
Correction Table (horizontal): VULP6113  
Correction Table (vertical): Cable\_EN\_1GHz (1005)  
Correction Table (horizontal): Cable\_EN\_1GHz (1005)

Antenna Tower: Tower [EMCO 2090 Antenna Tower]  
@ GPIB0 (ADR 8), FW REV 3.12

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.52



## 8.2.7 Signal strength calculation

### Calculation formula:

$$SS = U_R + CL + AF$$

### List of abbreviations:

SS	▶	signal strength
$U_R$	▶	voltage at the receiver
CL	▶	loss of the cable
AF	▶	antenna factor

### List with correction factors:

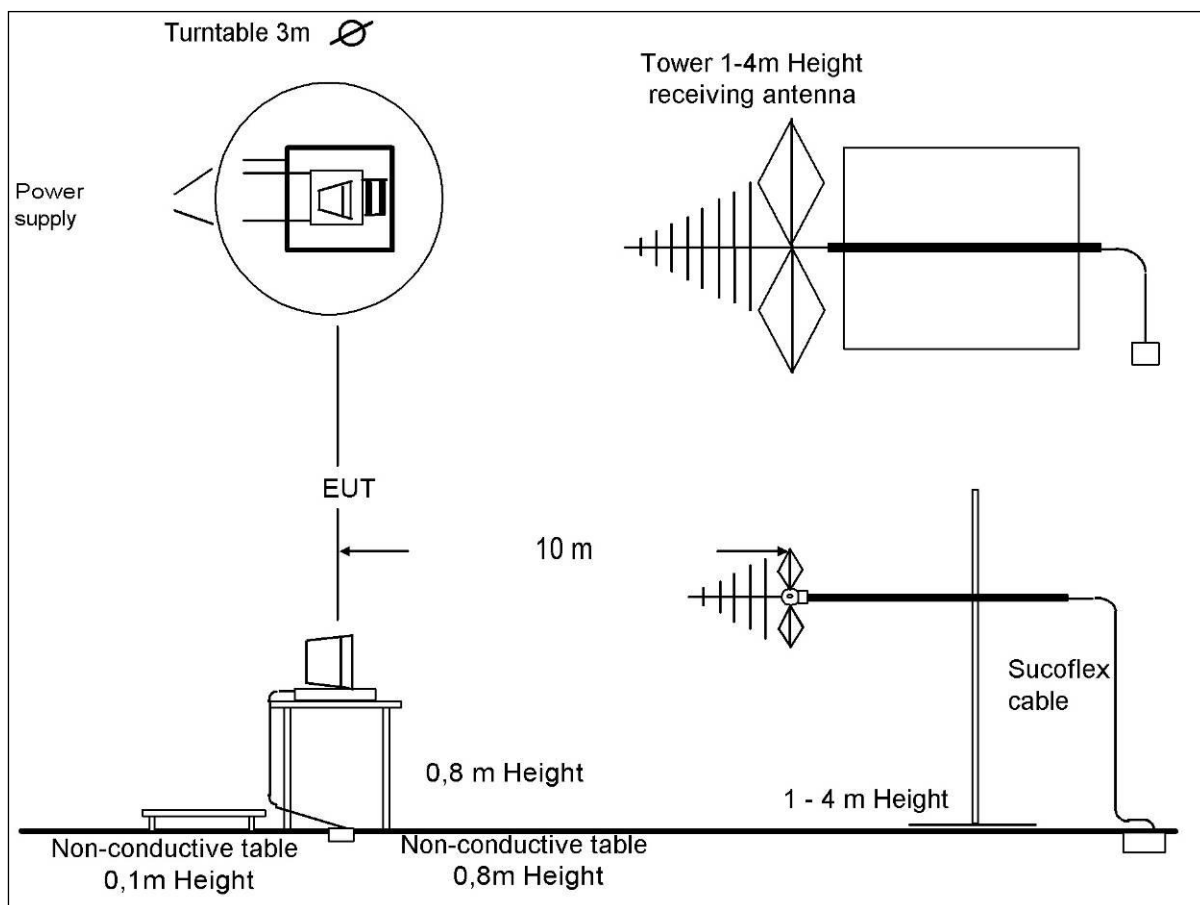
Frequency [MHz]	CL [dB]	AF [dB $\mu$ V/m]
30,000	0,20	12,30
100,000	0,60	11,30
200,000	1,10	10,60
300,000	1,30	13,20
400,000	1,60	15,30
500,000	1,90	16,80
600,000	2,00	18,80
700,000	2,20	20,30
800,000	2,30	21,50
900,000	2,40	22,80
1000,000	2,50	23,30

### Example calculation:

For example at 500,000 000 MHz the measured Voltage ( $U_R$ ) is 12,35 dB $\mu$ V/m, the loss of the cable (CL) is 1,90 dB and the antenna factor (AF) is 16,80 dB $\mu$ V/m the final result will be calculated:

$$SS \text{ [dB}\mu\text{V]} = 12,35 \text{ [dB}\mu\text{V/m]} + 1,90 \text{ [dB]} + 16,80 \text{ [dB}\mu\text{V/m]} = \underline{31,05 \text{ [dB}\mu\text{V/m]}} \text{ (35,69 } \mu\text{V/m)}$$

### 8.2.8 Test Set-up



### 8.3 Electromagnetic Radiated Emissions (Distance 5 m)

#### 8.3.1 Instrumentation for Test (see equipment list)

F 1	F 6	F 21	F 29	F 30	F 33						
-----	-----	------	------	------	------	--	--	--	--	--	--

#### 8.3.2 Test Plan

<b>EUT set-up</b>	see test details		
<b>Operating mode</b>	<b>Application</b>	<b>Limit</b>	<b>Result</b>
see test details	Enclosure	FCC part 15B class B	passed

<b>Remarks:</b>	The measured values are recalculated from 5m to 3m distance Powered by external power supply (115V / 60Hz)
-----------------	---

#### 8.3.3 Radiated Limits

Frequency- range	47CFR15: (FCC part 15 B) Class B	47CFR15: (FCC part 15 B) Class A *
30 MHz – 88 MHz	40 dB $\mu$ V/m	49,1 dB $\mu$ V/m
88 MHz – 216 MHz	43,5 dB $\mu$ V/m	53,5 dB $\mu$ V/m
216 MHz – 960 MHz	46 dB $\mu$ V/m	56,4 dB $\mu$ V/m
960 MHz – 18000 MHz	54 dB $\mu$ V/m	59,5 dB $\mu$ V/m
		* This values are recalculated from the class A limits at 10 m antenna distance in §15.109 (g 2) of the FCC rules.

#### 8.3.4 Calibration Information

Device	Serial number	ICT Number	Calibration valid until	Calibration interval
ESU 26	100037	300003555	01/2014	12 month
Horn Antenna	9120B188	300003896	04/2014	24 month
Remarks: System check of all relevant devices and the chamber (weekly)				

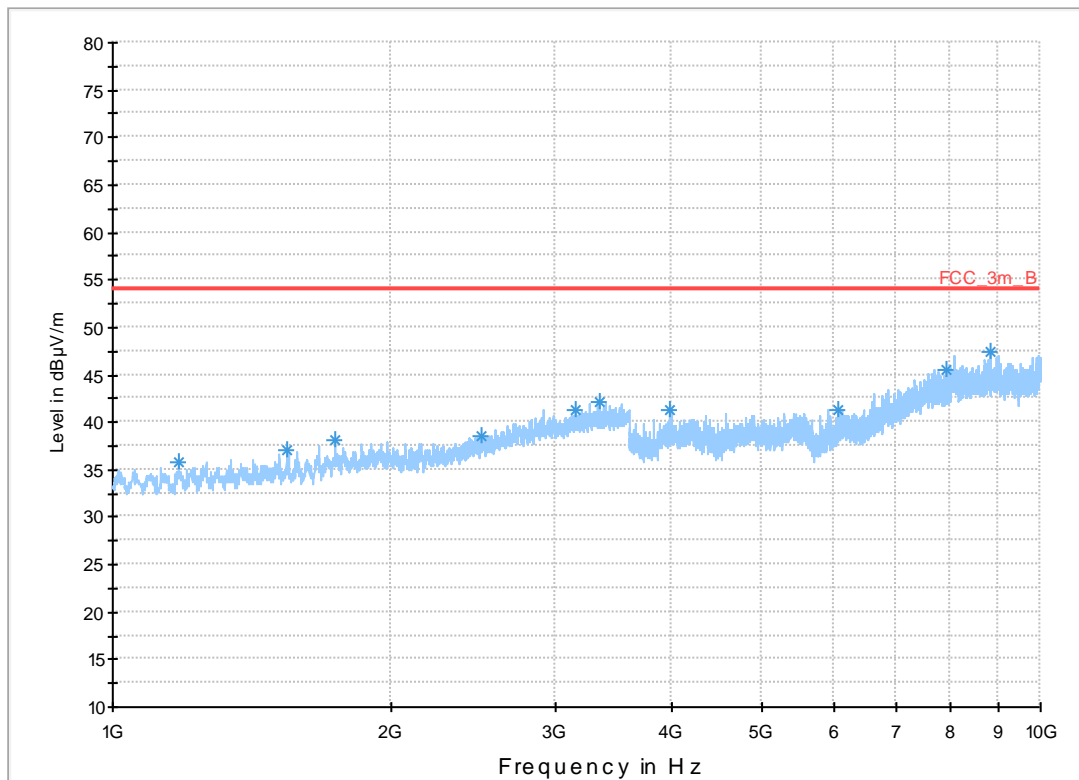
### 8.3.5 Test Results

set 21:

#### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	GSM 850 idle + charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m

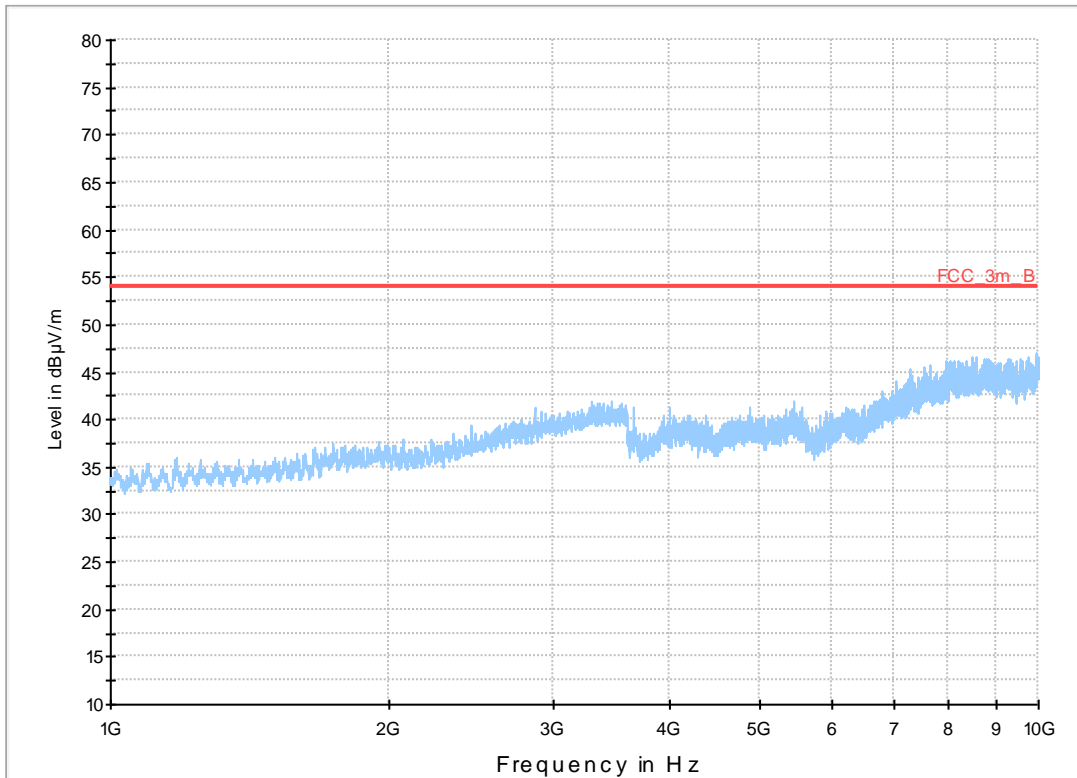


set 22:

### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	PCS1900 idle + charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m

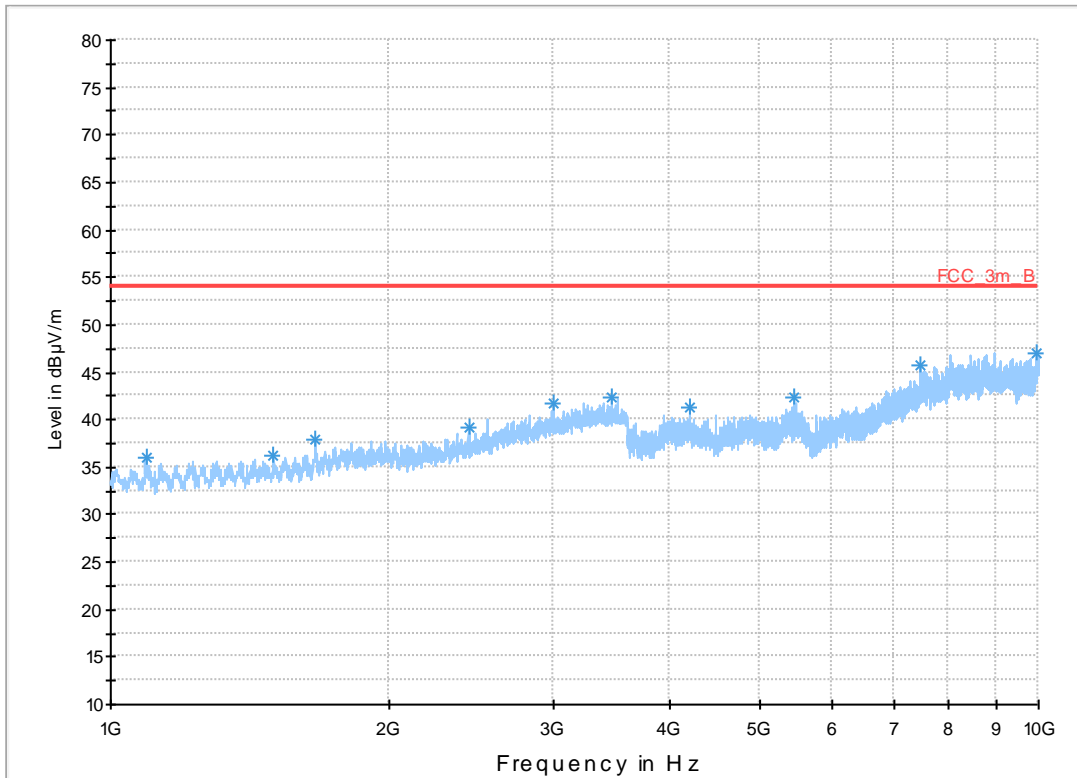


set 23:

### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 B class B @ 10 m  
 Operating Conditions: UMTS FDD2 idle + charging  
 Operator Name: Wolsdorfer  
 Comment: AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m



### Data Reduction Result 1 [1]

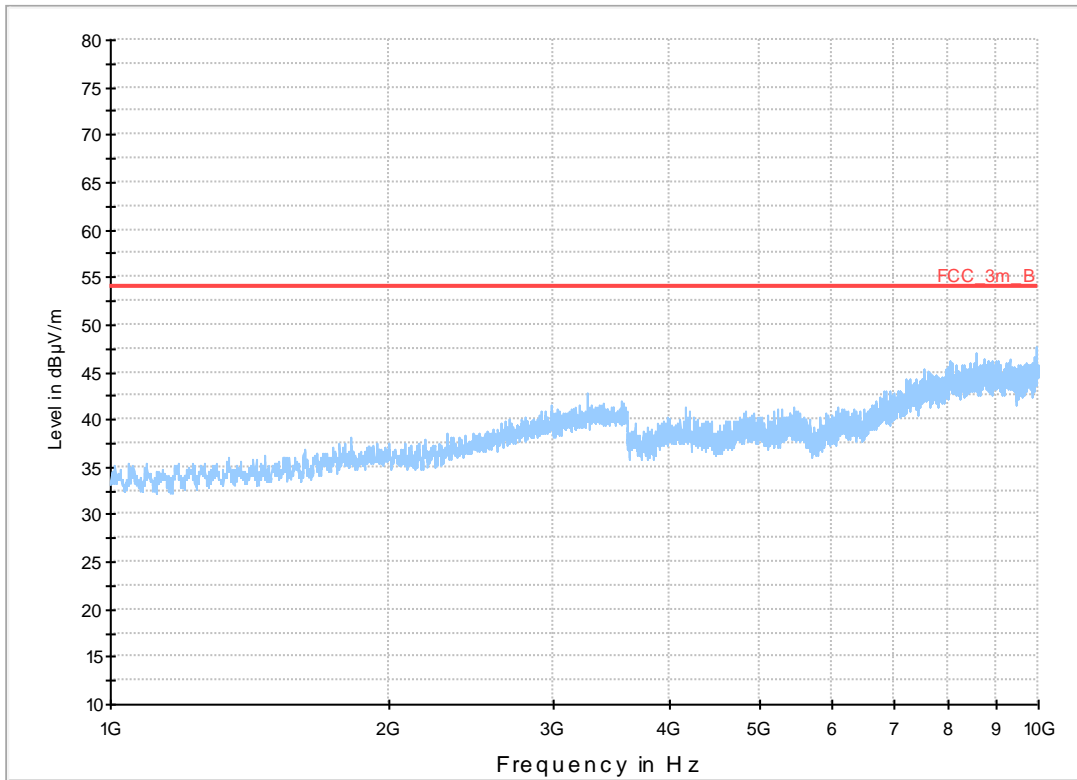
Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth	Corr. (dB)	Comment
1091.800000	35.9	100.0	V	311.0	-6.9	
1499.500000	36.2	100.0	V	8.0	-5.8	
1658.800000	37.9	100.0	H	65.0	-5.0	
2430.100000	39.1	100.0	H	85.0	-2.3	
2996.200000	41.7	100.0	V	311.0	-0.1	
3473.200000	42.3	100.0	V	161.0	0.7	
4202.200000	41.3	100.0	H	327.0	1.7	
5460.400000	42.5	100.0	H	238.0	3.6	
7461.100000	45.8	100.0	H	46.0	7.8	
9958.600000	47.0	100.0	H	352.0	9.7	

set 24:

### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	UMTS FDD2 idle +charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m

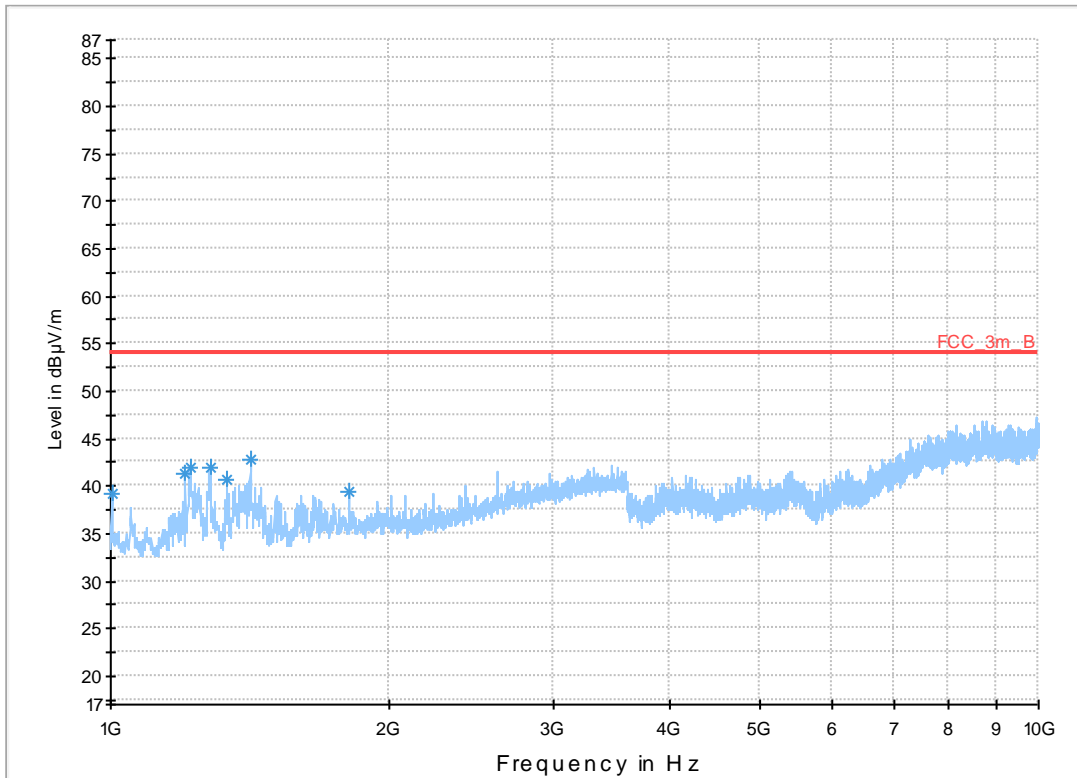


set 25:

### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	UMTS FDD5 idle + charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m



### Data Reduction Result 1 [1]

Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth	Corr. (dB)	Comment
1002.700000	39.2	100.0	V	243.0	-7.2	
1203.400000	41.3	100.0	V	61.0	-6.5	
1219.600000	42.0	100.0	V	42.0	-6.5	
1279.900000	41.9	100.0	V	84.0	-6.3	
1336.600000	40.7	100.0	V	135.0	-6.2	
1414.000000	42.9	100.0	V	167.0	-6.0	
1806.400000	39.3	100.0	H	0.0	-4.3	

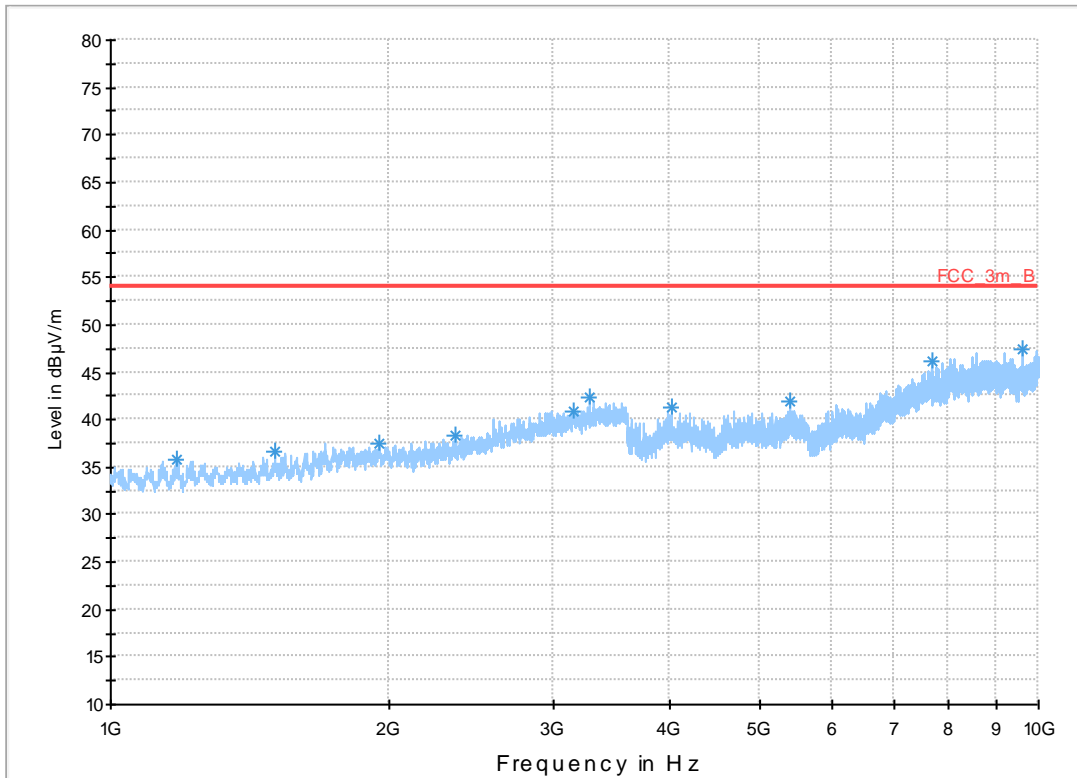


set 26:

### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 10 m
Operating Conditions:	UMTS FDD5 idle + charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m



### Data Reduction Result 1 [1]

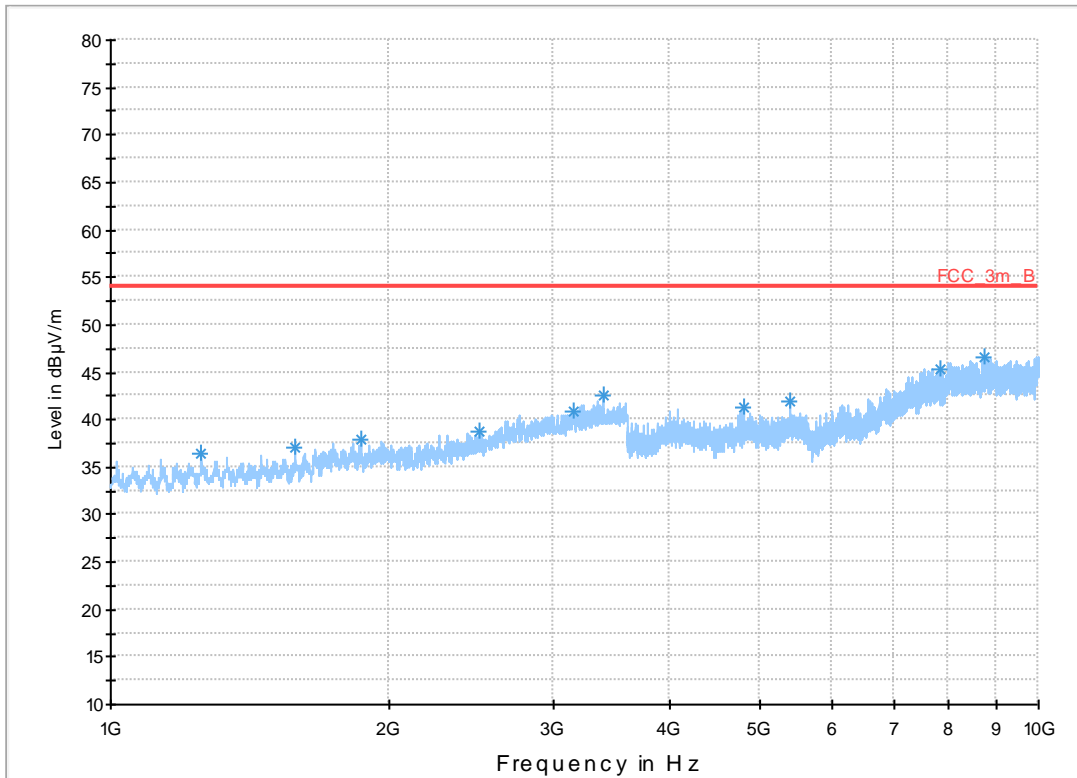
Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth	Corr. (dB)	Comment
1175.500000	35.7	100.0	V	51.0	-6.6	
1504.000000	36.7	100.0	V	89.0	-5.7	
1945.000000	37.6	100.0	H	173.0	-3.7	
2358.100000	38.3	100.0	V	177.0	-2.5	
3151.900000	41.0	100.0	H	51.0	0.2	
3282.400000	42.3	100.0	H	256.0	0.4	
4019.500000	41.2	100.0	V	114.0	1.7	
5401.900000	41.9	100.0	H	348.0	3.5	
7664.500000	46.2	100.0	H	336.0	8.1	
9608.500000	47.3	100.0	H	173.0	9.5	

set 27:

### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 5 m
Operating Conditions:	LTE FDD4 idle + charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m

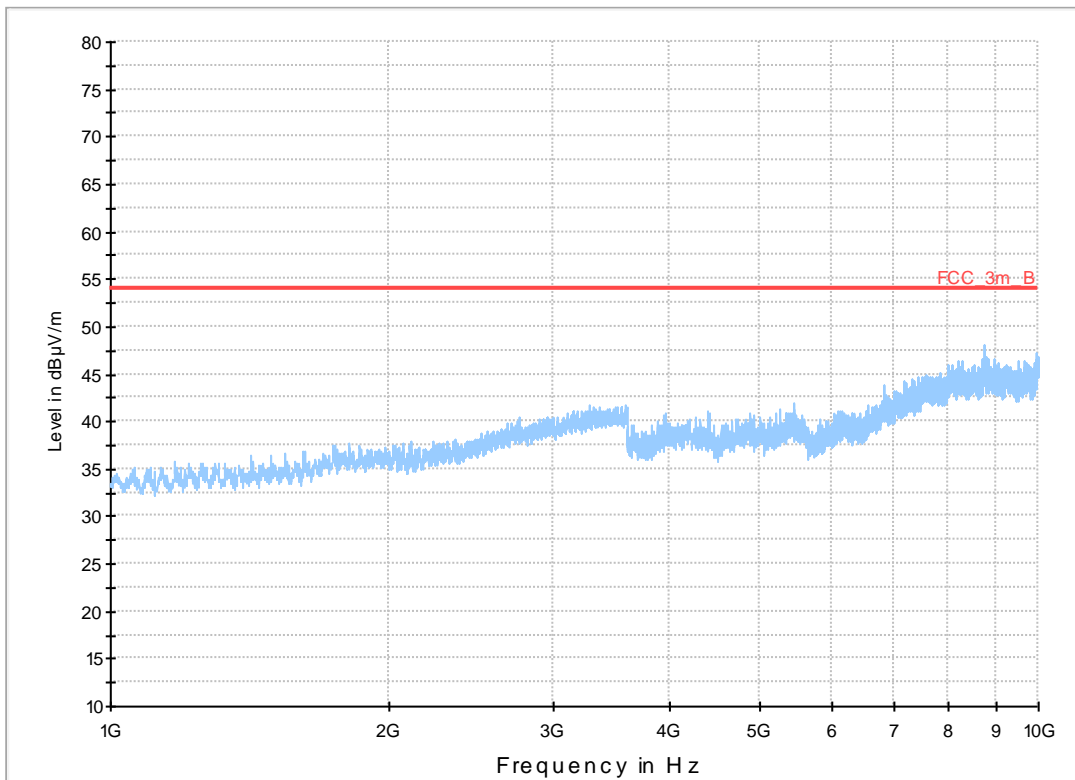


set 28:

### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 5 m
Operating Conditions:	LTE FDD 4 idle + charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m

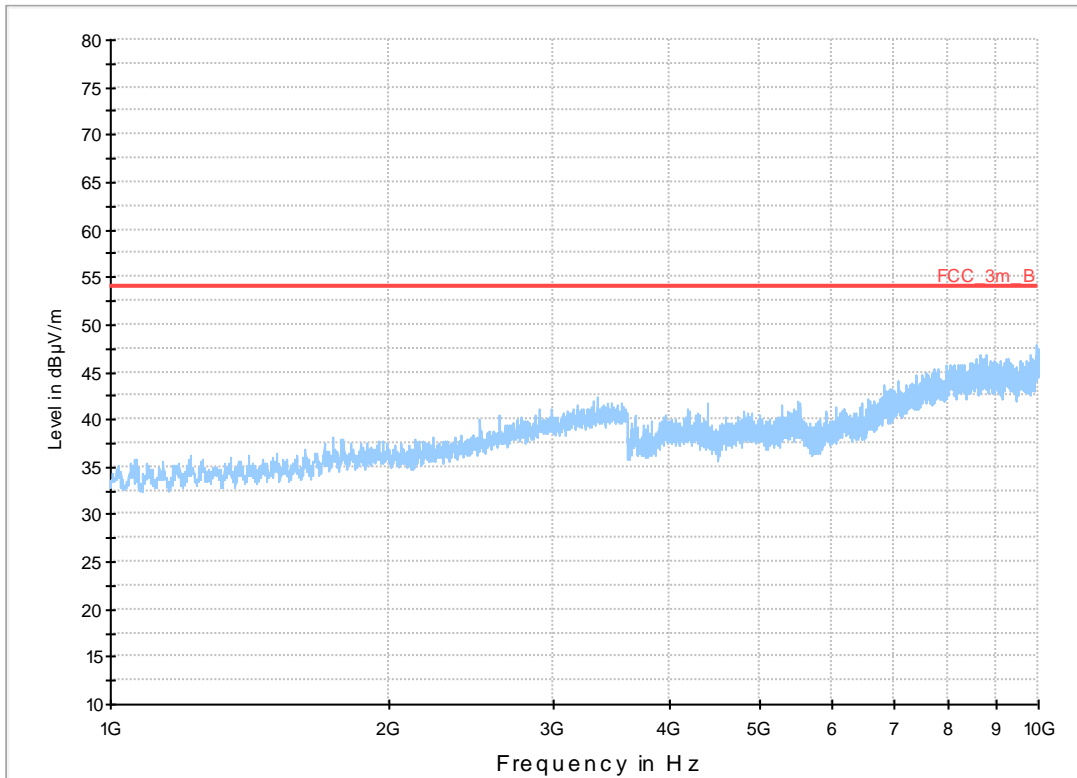


set 29:

### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 5 m
Operating Conditions:	LTE FDD 13 idle + charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m

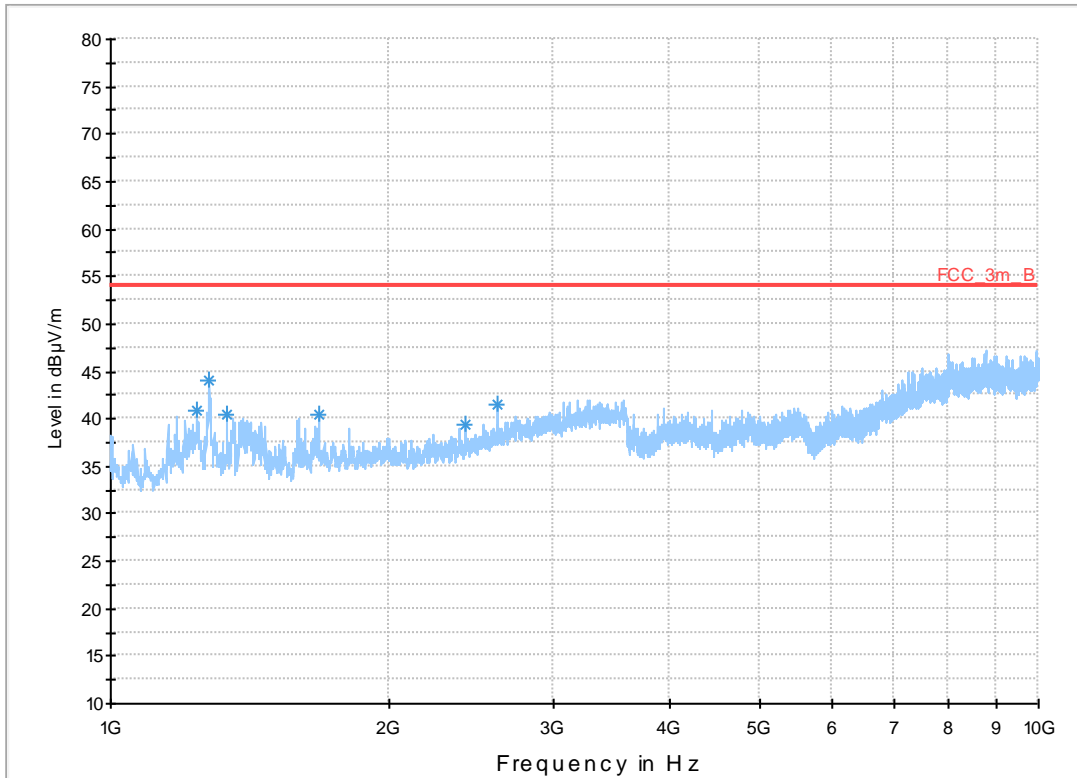


set 30:

### Common Information

EUT: RFM121LW  
 Serial Number: IMEI:990002430024636  
 Test Description: FCC part 15 class B @ 10 m  
 Operating Conditions: LTE FDD13 idle + charging  
 Operator Name: Medrow  
 Comment: AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m



### Data Reduction Result 1 [1]

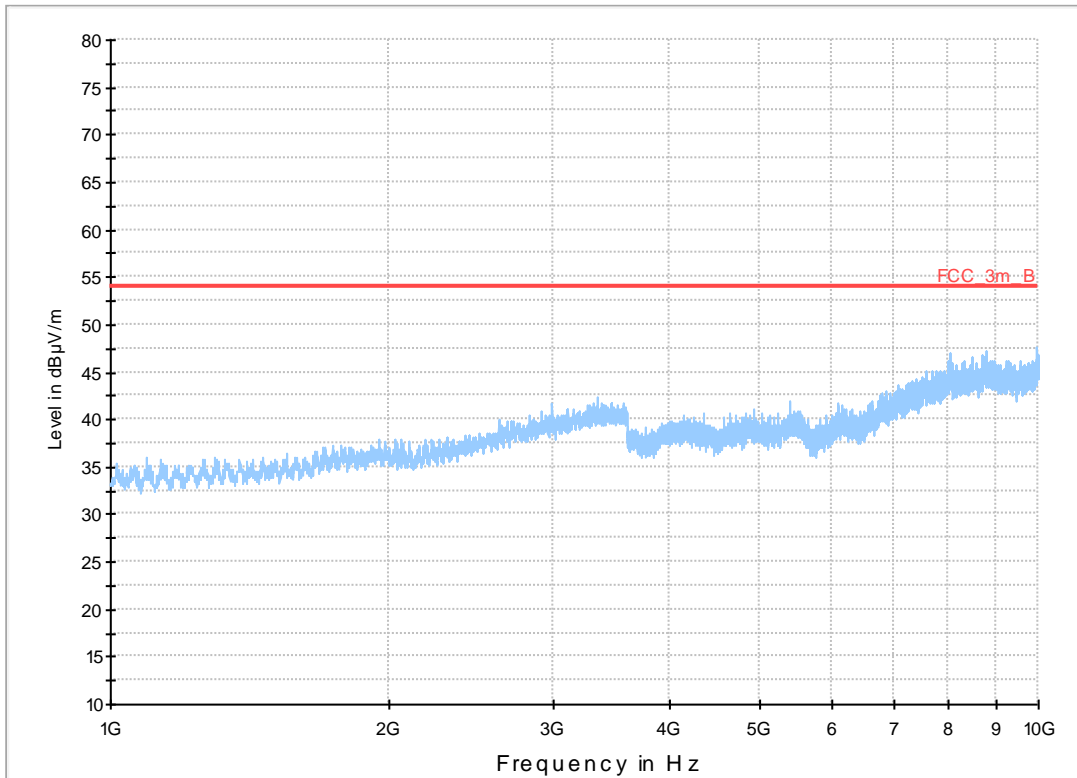
Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Height (cm)	Polarization	Azimuth	Corr. (dB)	Comment
1236.700000	40.8	100.0	V	41.0	-6.4	
1279.000000	43.9	100.0	V	90.0	-6.3	
1333.000000	40.5	100.0	V	60.0	-6.2	
1677.700000	40.5	100.0	V	60.0	-4.9	
2407.600000	39.4	100.0	H	32.0	-2.3	
2608.300000	41.6	100.0	V	202.0	-1.6	

set 31:

### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 5 m
Operating Conditions:	CDMA Cellular 800MHz + charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m

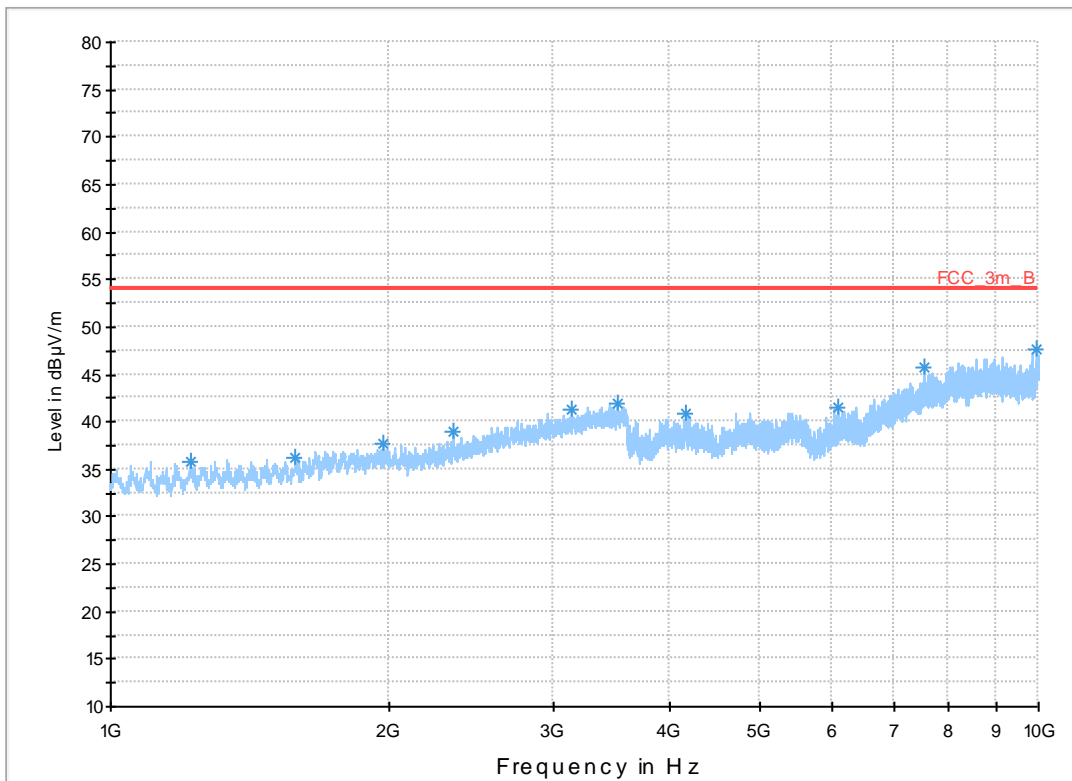


set 32:

### Common Information

EUT:	RFM121LW
Serial Number:	IMEI:990002430024636
Test Description:	FCC part 15 B class B @ 5 m
Operating Conditions:	CDMA PSC 1900 idle + 2x charging
Operator Name:	Wolsdorfer
Comment:	AC: 115 V / 60 Hz

FCC\_1\_10\_B\_5m



### 8.3.6 Hardware Set-up

Subrange 1  
Frequency Range: 1 GHz - 10 GHz

Receiver: ESU [ESU 26]  
@ GPIB0 (ADR 17), SN 100037/026, FW 4.43

Signal Path: 1\_6\_EN  
FW 1.0  
Correction Table: 3\_5m  
Correction Table: LNA\_EN (matix)

Antenna: BBHA 9120 B  
Correction Table (vertical): BBHA9120  
Correction Table (horizontal): BBHA9120  
Correction Table (vertical): Cable\_Horn\_EN (1103)  
Correction Table (horizontal): Cable\_Horn\_EN (1103)

Antenna Tower: Generic Tripod [Generic Tripod]  
@ GPIB0 (ADR 19), SN ?

Turntable: Turntable [EMCO Turntable]  
@ GPIB0 (ADR 9), FW REV 3.12



### 8.3.7 Signal strength calculation

Calculation formula:

$$SS = U_R + CL + AF + PA + DC$$

List of abbreviations:

SS	▶	signal strength
$U_R$	▶	voltage at the receiver
CL	▶	loss of the cable and gain of the preamp
AF	▶	antenna factor
DC	▶	distance correction (results measured on 5 m calculated to 3 m)

List with correction factors:

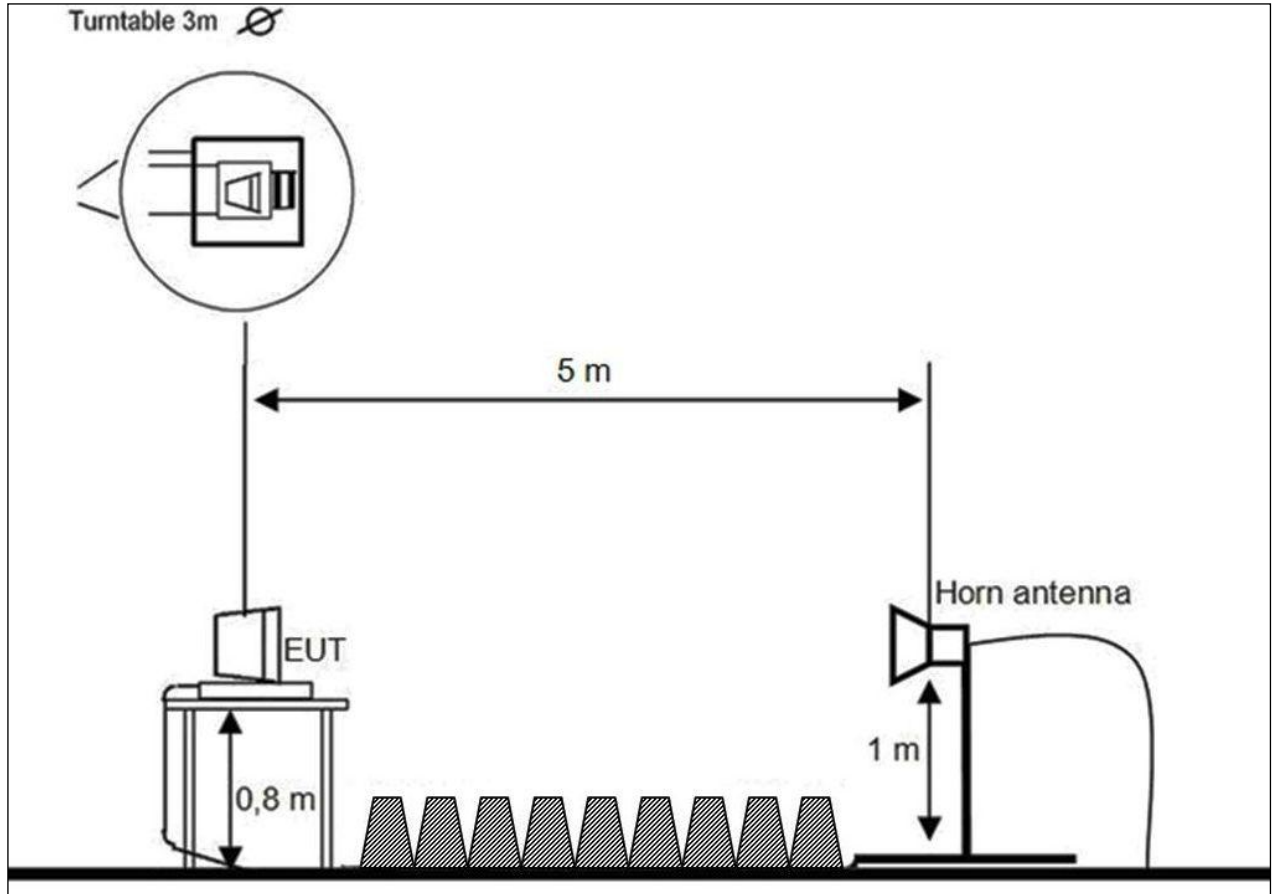
Frequency [GHz]	CL [dB]	AF [dB $\mu$ V/m]	DC [dB]
1,000	-35,50	26,20	4,40
1,500	-35,20	26,10	4,40
2,000	-35,10	26,70	4,40
2,500	-35,00	26,50	4,40
3,000	-34,70	27,60	4,40
3,500	-34,80	28,40	4,40
4,000	-35,00	28,60	4,40
4,500	-34,90	28,90	4,40
5,000	-34,80	29,30	4,40
5,500	-34,35	29,80	4,40
6,000	-34,00	30,30	4,40
6,500	-33,50	31,20	4,40
7,000	-33,10	31,20	4,40
7,500	-33,40	31,70	4,40
8,000	-33,80	32,10	4,40
8,500	-33,75	32,30	4,40
9,000	-33,70	31,70	4,40
9,500	-33,50	29,40	4,40
10,000	-33,40	33,00	4,40

Example calculation:

For example at 4,000 000 000 GHz the measured Voltage ( $U_R$ ) is 46,13 dB $\mu$ V/m, the loss of the cable (CL) is -35,00 dB, the antenna factor (AF) is 28,60 dB $\mu$ V/m and the distance correction (DC) is 4,40 dB the final result will be calculated:

$$SS \text{ [dB}\mu\text{V]} = 46,13 \text{ [dB}\mu\text{V/m]} + (-35,00) \text{ [dB]} + 28,60 \text{ [dB}\mu\text{V/m]} + 4,4 \text{ [dB]} = \underline{44,13 \text{ [dB}\mu\text{V/m]} (160,88 \mu\text{V/m})}$$

**8.3.8 Test Set-up**



## 9 Test equipment and ancillaries used for tests

To simplify the identification of the test equipment and/or ancillaries which were used, the reporting of the relevant test cases only refer to the test item number as specified in the table below.

No.	Instrument/Ancillary	Manufacturer	Type	Serial-No.	Internal identification
<b>Radiated emission in chamber F</b>					
F-1	Control Computer	F+W		FW0502032	300003303
F-2	Trilog-Antenna	Schwarzbeck	VULB 9163	9163-295	---
F-3a	Amplifier	Veritech Microwave Inc.	0518C-138	- / -	- / -
F-4b	Switch	HP	3488A	- / -	300000368
F-5	EMI Test receiver	R&S	ESCI	100083	300003312
F-6	Turntable Interface-Box	EMCO / ETS-LINDGREN	Model 105637	44583	300003747
F-7	Tower/Turntable Controller	EMCO / ETS-LINDGREN	Model 2090	64672	300003746
F-8	Tower	EMCO / ETS-LINDGREN	Model 2175	64762	300003745
F-9	Ultra Notch-Filter Rejected band Ch. 62	WRCD		9	
<b>Radiated immunity in chamber F</b>					
F-10	Control Computer	F+W		FW0502032	300003303
F-11	Signal Generator	HP	8665A	2833A00112	300001373
F-13	RF-Amplifier	ar	100W1000M1	13161	300003410
F-14	Stacked Logper Antenna	Schwarzbeck	STLP9128 E	9128 E 013	300003408
F-15	RF-Amplifier	BONN	BLWA 0810-250	129100	300004536
F-16	Directional Coupler	ar	DC7144A	312786	300003411
F-17	Horn Antenna	ar	AT 4002	19739	300000633
F-18	Power Meter	R&S	NRV	860327/024	F033
F-19	Power sensor	R&S	URV5-Z2	839080/005	300002844.02
F-20	Power sensor	R&S	URV5-Z2	830755/057	F032
<b>Harmonics and flicker in front of chamber F</b>					
F-21	Flicker and Harmonics Test System	Spitzenberger & Spies	PHE4500/B I PHE4500/B II	B5983 B5984	300000210
F-28	Power Supply	Hewlett Packard	6032 A	2920 A 04466	300000580
<b>Radiated emission in chamber F &gt; 1GHz</b>					
F-29	Horn antenna	Schwarzbeck	BBHA 9120 B	9120B188	300003896
F-30	Amplifier	ProNova	0518C-138	005	F 024
F-31	Amplifier	Miteq	42-00502650-28-5A	1103782	300003379
F-32	Horn antenna	Emco	3115	9709-5289	300000213
F-33	Spectrum Analyzer	R&S	ESU26	100037	300003555
F-34	Loop antenna	EMCO	6502	8905-2342	300000256

No.	Instrument/Ancillary	Manufacturer	Type	Serial-No.	Internal identification
<b>Conducted emission in chamber G</b>					
G-1	EMI Receiver	Hewlett Packard	8542 E	3617A00170	300000568
G-2	V-ISN	Rohde & Schwarz	ESH 3-Z5	892475/017	300002209
G-2a	V-ISN	Rohde & Schwarz	ESH 2-Z5	892602/024	300000587
G-3	2-Wire ISN	Schaffner	ISN T200	19075	300003422
G-4	4-Wire ISN	Schaffner	ISN T400	22325	300003423
G-5	Shielded wire ISN	Schaffner	ISN ST08	22583	300003433
G-6	Unshielded 8 wire ISN	Teseq	ISN T800	26113	300003833
G-7	Unshielded 8 wire ISN	Teseq	ISN T8-Cat. 6	26374	300003851
G-8	RF Current probe	FCC	F-33-4	46	300003257
G-9	V-ISN	Schaffner	ISN PLC-150	21579	300003318
G-10	V-ISN	Schaffner	ISN PLC-25-30	21584	300003319
G 10a	PLC Filter	TESEQ	Filter PLC	23436	300003598
G 10b	Coupling unit 75 Ohm	Fiedler	AC	----	300003272.04
<b>Conducted immunity in chamber G</b>					
G-11	Signal generator	R&S	SMG	8610647025	300000204.01
G-12	RF-Amplifier	BONN	BSA 0125-75	066502-01	300003545
G-13	Power Meter	R&S	URV 5	837723/025	300002844.01
G-14	Power Sensor	R&S	URV 5-Z2	832874/021	300002239
G-15	Directional coupler	emv	DC 2000	9401-1677	300000592
G-16	Attenuator 6dB	Alan	50HP6-100 N	121048 0348	300003148
G-17	EM-Injection Clamp	FCC	203i	232	300000626
G-18	CDN	FCC	FCC-801-M3-16	237	300000627
G-19	CDN	FCC	FCC-801-T2	78	300000629
G-20	CDN	FCC	FCC-801-AF 2	62	300000630
G-21	CDN	FCC	FCC-801-AF 4	61	300000631
G-22	CDN	FCC	FCC-801-M1	2027	300002761
G-23	CDN	Lüthi	CDN 801-M2/M3	9350105	300000534
G-24	Transformator for 50Hz Loop Antenna	EM-Test	MC2630	0200-10	300002659.01
G-25	50Hz Loop Antenna	EM-Test	MS 100	none	300002659
<b>Surge, Burst, Dips and Interruptions in chamber G</b>					
G-26	Hybrid-Generator	EM-Test	UCS 500N5	V112711033	300004257
G-27	Motor Variac	EM-Test	MV 2616	0600-01	300002658
G-28	Capacitive Coupling Clamp	MWB	KKS 100	---	300000589
G- 29a	Coupling Decoupling Network	EMC-Partner	CDN-2000-06-32	158	300004108
G-29	Coupling Decoupling Network	EMC-Partner	CDN-UTP	00014	300003226
<b>ESD in chamber G</b>					
G-30	ESD generator	Schaffner	NSG 435	308	300002249
<b>Emission on bench in chamber G</b>					
G-31	Absorbing Clamp	R&S	MDS-21	832 231/006	300000527
<b>generic in chamber G</b>					
G-32	power supply	Hewlett Packard	6038A	2848A06673	300001512

## 10 Observations

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

**Annex A: Photographs of the test set-up**

see external document 1-5579/12-02-16-Annex A.pdf

**Annex B: Photographs of the EUT**

see external document 1-5579/12-02-16-Annex A.pdf

**Annex C: Document history**

Version	Applied changes	Date of release
-/-	Initial release	2013-03-28
-A	editorial changes	2013-04-04

**Annex D: Further information****Glossary**

DUT	-	Device under Test
EMC	-	Electromagnetic Compatibility
EUT	-	Equipment under Test
FCC	-	Federal Communication Commission
FCC ID	-	Company Identifier at FCC
HW	-	Hardware
IC	-	Industry Canada
Inv. No.	-	Inventory number
N/A	-	not applicable
S/N	-	Serial Number
SW	-	Software