



InterLab®

Flue Gas Analyzer
testo 330i
FCC ID WAF-2016t330i
IC: 6127B -2016t330i

Report Reference: MDE_TESTO_1509_FCCb
According to FCC 47 CFR Ch.1 Part 15 Subpart B, Class B

Date: February 02, 2016

Test Laboratory:

7layers GmbH
Borsigstraße 11
40880 Ratingen
Germany



Note:

The following test results relate only to the devices specified in this document. This report shall not be reproduced in parts without the written approval of the test laboratory.

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Düsseldorf, HRB 75554
USt-IdNr VAT No.:
DE203159652
TAX No. 147/5869/0385
A Bureau Veritas Group Company

1 Administrative Data

1.1 Project Data

Project Responsible: Abdellah Ahakki
Date Of Test Report: 2016/01/27
Date of first test: 2016/01/14
Date of last test: 2016/01/18

1.2 Applicant Data

Company Name: Testo AG
Street: Celsiusstraße 2
City: 79822 Titisee-Neustadt
Country: Germany
Contact Person: Udo Spiwoks
Department: Qualification & Test
Phone: +49 (0) 7653 681 - 7492
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E-Mail: uspiwoks@testo.de

1.3 Test Laboratory Data

The following list shows all places and laboratories involved for test result generation:

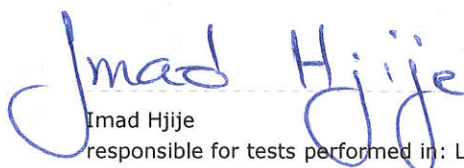
7 layers DE

Company Name : 7layers GmbH
Street : Borsigstrasse 11
City : 40880 Ratingen
Country : Germany
Contact Person : Mr. Michael Albert
Phone : +49 2102 749 201
Fax : +49 2102 749 444
E Mail : Michael.Albert@7Layers.com

Laboratory Details

<i>Lab ID</i>	<i>Identification</i>	<i>Responsible</i>	<i>Accreditation Info</i>
Lab 1	Conducted Emissions	Mr. Andreas Petz Mr. Wolfgang Richter	DAkKS-Registration no. D-PL-12140-01-01
Lab 2	Radiated Emissions	Mr. Marco Kullik Mr. Jens Dörwald	DAkKS-Registration no. D-PL-12140-01-01

1.4 Signature of the Testing Responsible



Imad Hjije
responsible for tests performed in: Lab 1, Lab 2



1.5 Signature of the Accreditation Responsible

B. RETKA [B. RETKA]

Accreditation scope responsible person
responsible for Lab 1, Lab 2

2 Test Object Data

2.1 General OUT Description

The following section lists all OUTs (Object's Under Test) involved during testing.

OUT: testo 330i

Type / Model / Family: Flue Gas Analyzer
testo 330i
FCC ID WAF-2016t330i
IC: 6127B -2016t330i

Product Category: Others

Manufacturer:
Company Name: Testo AG
Street: Celsiusstraße 2
City: 79822 Titisee-Neustadt
Country: Germany
Company URL: <http://www.testo.de/>

Contact Person: Mr. Udo Spiwoks
Department: Qualification & Test
Phone: +49 (0) 7653 681 - 7492
Fax: +49 (0) 7653 681 - 97492
E-Mail: uspiwoks@testo.de

Parameter List:

Parameter name	Value
Parameter for Scope FCC_v2:	
AC Power Supply	120 V / 60 Hz via AC adapter
DC Power Supply	6.0 (V)

Ancillary Equipment: AC Adapter ONTOP / Testo (3rd version)

Type / Model / Family: BLJ15W063200P2-V, 0554 1096

Product Category: Others

Manufacturer:
Company Name: Testo AG
Street: Celsiusstraße 2
City: 79822 Titisee-Neustadt
Country: Germany
Company URL: <http://www.testo.de/>

Contact Person: Mr. Udo Spiwoks
Department: Qualification & Test
Phone: +49 (0) 7653 681 - 7492
Fax: +49 (0) 7653 681 - 97492
E-Mail: uspiwoks@testo.de

Parameter List:

Parameter name	Value
AC Power Supply	Primary: 100-240 V / 50-60 Hz / 0.5 A
DC Power Supply	Secondary: 6.3 V / 2000 mA (V)

Ancillary Equipment: Modular Flue Gas Probe

Type / Model / Family: 0554 9783 / 507

Product Category: Others

Manufacturer:
Company Name: Testo AG
Street: Celsiusstraße 2
City: 79822 Titisee-Neustadt
Country: Germany
Company URL: <http://www.testo.de/>
Contact Person: Mr. Udo Spiwoks
Department: Qualification & Test
Phone: +49 (0) 7653 681 - 7492
Fax: +49 (0) 7653 681 - 97492
E-Mail: uspiwoks@testo.de

Parameter List:

<i>Parameter name</i>	<i>Value</i>
DC Power Supply	supplied by Gas Flue Analyser

2.2 Detailed Description of OUT Samples

Sample : aa01

<i>OUT Identifier</i>	testo 330i		
<i>Sample Description</i>	Radiated sample		
<i>Serial No.</i>	02670814		
<i>Nominal Voltage</i>	3.7 V	<i>Normal Temp.</i>	23 °C

Sample : ab01

<i>OUT Identifier</i>	testo 330i		
<i>Sample Description</i>	Radiated sample		
<i>Serial No.</i>	02922173		
<i>Nominal Voltage</i>	3.7 V	<i>Normal Temp.</i>	23 °C

Sample : AC/DC3

<i>OUT Identifier</i>	AC Adapter ONTOP / Testo (3rd version)
<i>Sample Description</i>	AC adapter
<i>Serial No.</i>	DN#APL150714A-V2 (VI)
<i>Nominal Voltage</i>	120 V / 60 Hz

Sample : probe1

<i>OUT Identifier</i>	Modular Flue Gas Probe
<i>Sample Description</i>	Flue Gas Probe
<i>Serial No.</i>	0554 9783 / 507

2.3 OUT Features

Features for OUT: AC Adapter ONTOP / Testo (3rd version)

<i>Designation</i>	<i>Description</i>	<i>Allowed Values</i>	<i>Supported Value(s)</i>
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Features for scope: FCC_v2

AC	The OUT is powered by or connected to AC Mains		
DC	The OUT is powered by or connected to DC		

Features for OUT: Modular Flue Gas Probe

<i>Designation</i>	<i>Description</i>	<i>Allowed Values</i>	<i>Supported Value(s)</i>
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Features for scope: FCC_v2

DC	The OUT is powered by or connected to DC		
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Features for OUT: testo 330i

<i>Designation</i>	<i>Description</i>	<i>Allowed Values</i>	<i>Supported Value(s)</i>
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Features for scope: FCC_v2

AC	The OUT is powered by or connected to AC Mains		
BT	EUT supports Bluetooth data rate of 1 Mbps with GFSK modulation in the band 2400 MHz - 2483.5 MHz		
DC	The OUT is powered by or connected to DC		
Iant	Integral Antenna: permanent fixed antenna, which may be built-in, designed as an indispensable part of the equipment		

2.4 Auxiliary Equipment

<i>AE No.</i>	<i>Type Designation</i>	<i>Serial No.</i>	<i>HW Status</i>	<i>SW Status</i>	<i>Description</i>
AE AUX4	CHERRY RS 6000 USB ON	G 0000273 2P28			Keyboard
AE AUX1	Fujitsu LIFEBOOK E Series E781	DSCK01381	2012-03	Win7 Prof. Engl.	Laptop
AE AUX2	FUJITSU Model: PJW1942NA	13300281B			AC/DC adapter of Laptop
AE AUX3	LG L17MB-P, L1730BSNHM-ALEUR	412WAPL0U560			TFT Display
AE AUX5	Logitech M-BT58	HC60915A2XC			Mouse

2.5 Operating Mode(s)

<i>Ref.-No.</i>	<i>Description</i>
charge	OUT is connected to AC Mains (120 V / 60 Hz), OUT is switched off, internal rechargeable batteries are at low voltage, a high charge current will be pulled.
meas1	OUT is connected to AC Mains (120 V / 60 Hz), OUT is switched on, internal rechargeable batteries will not be charged, a Bluetooth connection is established, data transfer via USB cable.
meas2	OUT is connected to AC Mains (120 V / 60 Hz), OUT is switched on, internal rechargeable batteries will not be charged, a Bluetooth connection is established, data transfer via USB cable.

2.6 Setups used for Testing

For each setup a relation is given to determine if and which samples and auxiliary equipment is used. The left side list all OUT samples and the right side lists all auxiliary equipment for the given setup.

<i>Setup No.</i>	<i>List of OUT samples</i>	<i>List of auxiliary equipment</i>	
<i>Sample No.</i>	<i>Sample Description</i>	<i>AE No.</i>	<i>AE Description</i>

AB01_charging (Setup with AC Adapter (Charging Mode))

<i>Sample:</i> AC/DC3	AC adapter
<i>Sample:</i> probe1	Flue Gas Probe
<i>Sample:</i> ab01	Radiated sample

AB01_compper (Computer peripheral (Measuring Mode))

<i>Sample:</i> AC/DC3	AC adapter	AE AUX4	Keyboard
<i>Sample:</i> probe1	Flue Gas Probe	AE AUX1	Laptop
<i>Sample:</i> aa01	Radiated sample	AE AUX2	AC/DC adapter of Laptop
		AE AUX3	TFT Display
		AE AUX5	Mouse

3 Results

3.1 General

Documentation of tested devices:

Available at the test laboratory.

Interpretation of the test results:

The results of the inspection are described on the following pages, where 'Conformity' or 'Passed' means that the certification criteria were verified and that the tested device is conform to the applied standard.

In cases where 'Declaration' is printed, the required documents are available in the manufacturers product documentation.

In cases where 'not applicable' is printed, the test case requirements are not relevant to the specific equipment implementation.

Note:

1. All tests are performed under environmental conditions within the requirements of the specifications. Environmental conditions are available at the laboratory.

2. This report contains the abbreviated information content pertaining to services rendered. Supporting documentation not included herein is maintained and available at the laboratory.

3. The device is a Flue Gas Analyzer containing a BT Transceiver operating in the 2.4 GHz ISM band. The EUT was controlled by the CBT via Bluetooth test mode.



3.2 List of the Applicable Body

(Body for Scope: FCC_v2)

<i>Designation</i>	<i>Description</i>
FCC47CFRChIPART15bRADIO FREQUENCY DEVICES	Part 15, Subpart B - Unintentional Radiators

3.3 List of Test Specification

<i>Test Specification:</i>	FCC part 2 and 15
<i>Version</i>	10-1-14 Edition
<i>Title:</i>	PART 2 - GENERAL RULES AND REGULATIONS PART 15 - RADIO FREQUENCY DEVICES



3.4 Summary

<i>Test Case Identifier / Name</i> <i>Test (condition)</i>	<i>Result</i>	<i>Date of Test</i>	<i>Lab</i> <i>Ref.</i>	<i>Setup</i>
15b.1 Conducted Emissions (AC Power Line) §15.107				
15b.1; Mode = generating a high power consumption	Passed	2016/01/18	Lab 1	AB01_charging
	operating mode: charge			
	Passed	2016/01/14	Lab 1	AB01_compper
	operating mode: meas2			
	Passed	2016/01/14	Lab 1	AB01_compper
	operating mode: meas1			
15b.2 Spurious Radiated Emissions §15.109				
15b.2; Mode = generating a high power consumption	Passed	2016/01/18	Lab 2	AB01_charging
	operating mode: charge			
	Passed	2016/01/15	Lab 2	AB01_compper
	operating mode: meas1			

3.5 Detailed Results

3.5.1 15b.1 Conducted Emissions (AC Power Line) §15.107

Test1: 15b.1; Mode = generating a high power consumption

<i>Result:</i>	Passed
<i>Setup No.:</i>	AB01_compper
<i>Date of Test:</i>	2016/01/14 20:17
<i>Body:</i>	FCC47CFRChIPART15bRADIO FREQUENCY DEVICES
<i>Test Specification:</i>	FCC part 2 and 15

Detailed Results:

Test Report

Common Information

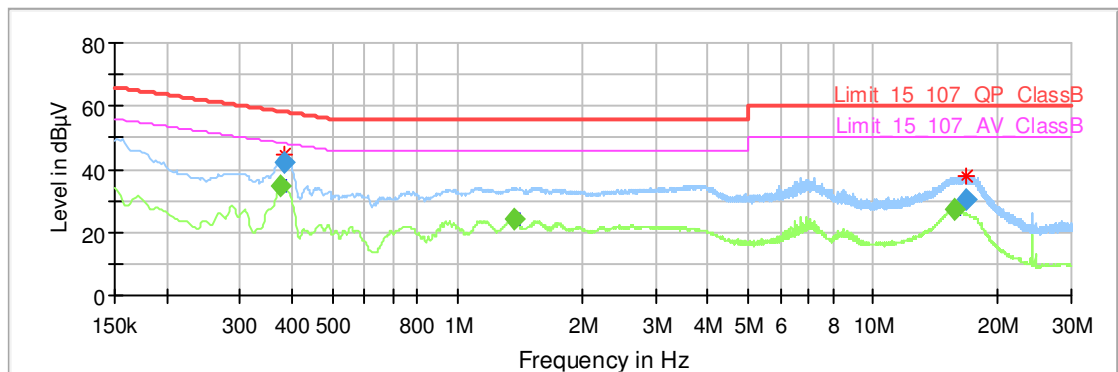
Test Description: Conducted spurious emissions 150 kHz – 30 MHz
 Test Standard: CFR47, Part 15, §15.107/207; ANSI C63.4/10, Class B
 Operating Conditions: Supplied by AC Mains, BT link, operating
 Operator Name: Aso
 Comment: tested at AC adapter

EMI Auto Test Template: FCC15b_15-107_VOLTAGE_ClassB

Hardware Setup: EMI_Conducted_EN_FCC_ESH3-Z5
 Measurement Type: 2 Line LISN
 Frequency Range: 150 kHz - 30 MHz
 Graphics Level Range: 0 dBμV - 80 dBμV

Preview Measurements:
 Scan Test Template: FCC_Part107_Pre_ESH3-Z5

Final Measurements:
 Template for Single Meas.: FCC_Part107_Final_ESH3-Z5



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.377250	---	34.97	48.34	13.37	1000.0	9.000	L1	GND	10.1
0.381750	42.20	---	58.24	16.05	1000.0	9.000	L1	GND	10.1
1.365000	---	24.15	46.00	21.85	1000.0	9.000	L1	FLO	10.1
15.652500	---	27.09	50.00	22.91	1000.0	9.000	N	GND	10.8
16.759500	30.47	---	60.00	29.53	1000.0	9.000	N	FLO	10.9

Test1: 15b.1; Mode = generating a high power consumption

Result: Passed
Setup No.: AB01_compper
Date of Test: 2016/01/14 21:21
Body: FCC47CFRChIPART15bRADIO FREQUENCY DEVICES
Test Specification: FCC part 2 and 15

Detailed Results:

Test Report

Common Information

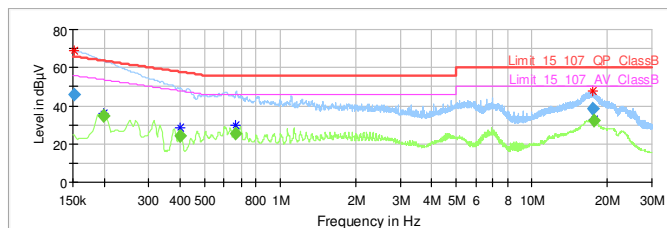
Test Description: Conducted spurious emissions 150 kHz – 30 MHz
Test Standard: CFR47, Part 15, §15.107/207; ANSI C63.4/10, Class B
Operating Conditions: Supplied by AC Mains, BT link, operating
Operator Name: Aso
Comment: tested at AC adapter of Laptop

EMI Auto Test Template: FCC15b_15-107_VOLTAGE_ClassB

Hardware Setup: EMI_Conducted_EN_FCC_ESH3-Z5
Measurement Type: 2 Line LISN
Frequency Range: 150 kHz - 30 MHz
Graphics Level Range: 0 dBµV - 80 dBµV

Preview Measurements:
Scan Test Template: FCC_Part107_Pre_ESH3-Z5

Final Measurements:
Template for Single Meas.: FCC_Part107_Final_ESH3-Z5



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.152250	45.85	---	65.88	20.02	1000.0	9.000	L1	GND	10.1
0.199500	---	34.55	53.63	19.08	1000.0	9.000	L1	FLO	10.1
0.399750	---	23.88	47.86	23.98	1000.0	9.000	L1	FLO	10.1
0.667500	---	25.41	46.00	20.59	1000.0	9.000	L1	FLO	10.1
17.506500	38.60	---	60.00	21.40	1000.0	9.000	L1	FLO	10.9
17.614500	---	32.32	50.00	17.68	1000.0	9.000	L1	FLO	10.9

Test2: 15b.1; Mode = generating a high power consumption

Result: Passed
Setup No.: AB01_charging
Date of Test: 2016/01/18 17:57
Body: FCC47CFRChIPART15bRADIO FREQUENCY DEVICES
Test Specification: FCC part 2 and 15

Detailed Results:

Test Report

Common Information

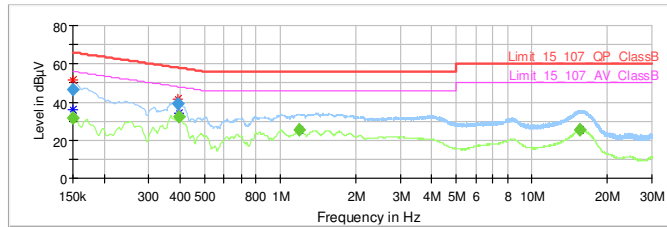
Test Description: Conducted spurious emissions 150 kHz – 30 MHz
 Test Standard: CFR47, Part 15, §15.107/207; ANSI C63.4/10, Class B
 Operating Conditions: Supplied by AC Mains, charging
 Operator Name: Mit
 Comment: tested at AC adapter

EMI Auto Test Template: FCC15b_15-107_VOLTAGE_ClassB

Hardware Setup: EMI_Conducted_EN_FCC_ESH3-Z5
 Measurement Type: 2 Line LISN
 Frequency Range: 150 kHz - 30 MHz
 Graphics Level Range: 0 dBµV - 80 dBµV

Preview Measurements:
 Scan Test Template: FCC_Part107_Pre_ESH3-Z5

Final Measurements:
 Template for Single Meas.: FCC_Part107_Final_ESH3-Z5



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.150000	46.41	---	66.00	19.59	1000.0	9.000	L1	GND	10.1
0.150000	---	31.54	56.00	24.46	1000.0	9.000	N	GND	10.1
0.390750	38.86	---	58.05	19.19	1000.0	9.000	L1	GND	10.1
0.395250	---	32.00	47.95	15.95	1000.0	9.000	L1	GND	10.1
1.191750	---	25.33	46.00	20.67	1000.0	9.000	L1	FLO	10.1
15.531000	---	25.69	50.00	24.31	1000.0	9.000	L1	GND	10.8

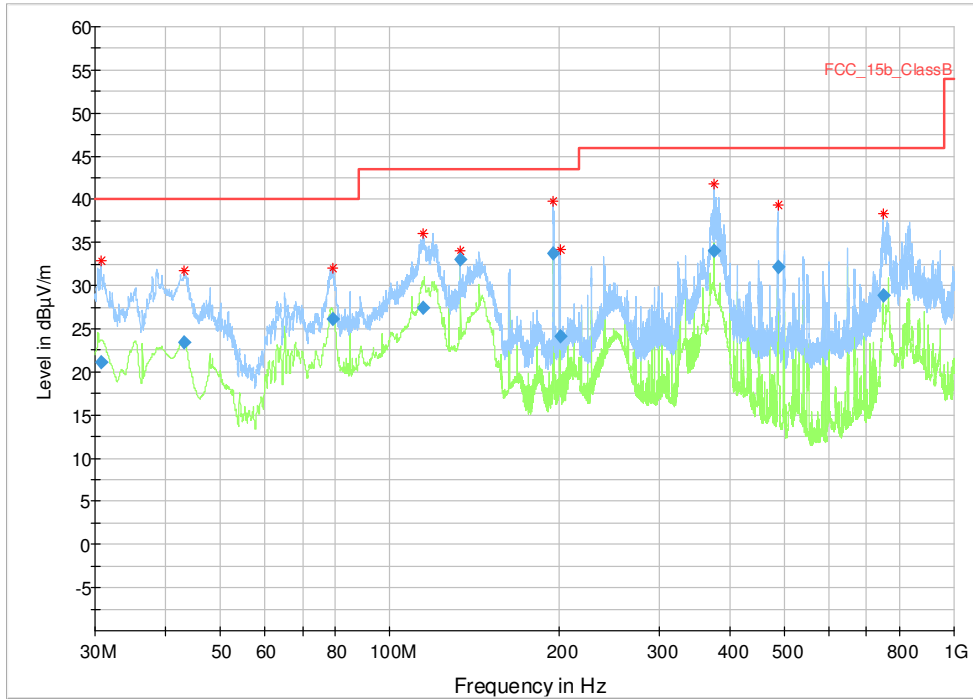


3.5.2 15b.2 Spurious Radiated Emissions §15.109

Test1: 15b.2; Mode = generating a high power consumption

<i>Result:</i>	Passed
<i>Setup No.:</i>	AB01_compper
<i>Date of Test:</i>	2016/01/15 0:46
<i>Body:</i>	FCC47CFRChIPART15bRADIO FREQUENCY DEVICES
<i>Test Specification:</i>	FCC part 2 and 15

Detailed Results:



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
30.750000	32.83	---	40.00	7.17	---	---	115.0	V	-135.0	20.1	00:02:07 - 15/01/2016
43.140000	31.67	---	40.00	8.33	---	---	119.0	V	101.0	12.9	00:10:49 - 15/01/2016
79.320000	31.98	---	40.00	8.02	---	---	147.0	V	122.0	11.4	00:12:41 - 15/01/2016
114.270000	36.02	---	43.50	7.48	---	---	113.0	V	-134.0	12.7	00:04:25 - 15/01/2016
133.440000	33.97	---	43.50	9.53	---	---	364.0	H	78.0	11.7	00:14:57 - 15/01/2016
194.790000	39.76	---	43.50	3.74	---	---	200.0	V	-74.0	10.2	00:06:19 - 15/01/2016
200.460000	34.22	---	43.50	9.28	---	---	105.0	V	-169.0	10.5	23:58:18 - 14/01/2016
374.970000	41.74	---	46.00	4.26	---	---	117.0	H	-168.0	15.6	23:38:56 - 14/01/2016
486.810000	39.32	---	46.00	6.68	---	---	136.0	V	12.0	18.0	00:08:35 - 15/01/2016
748.860000	38.35	---	46.00	7.65	---	---	104.0	V	-151.0	22.2	00:00:04 - 15/01/2016

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
30.750000	21.18	40.00	18.82	1000.0	120.000	115.0	V	-135.0	20.1	00:02:35 - 15/01/2016
43.140000	23.43	40.00	16.57	1000.0	120.000	119.0	V	101.0	12.9	00:11:05 - 15/01/2016
79.320000	26.19	40.00	13.81	1000.0	120.000	147.0	V	122.0	11.4	00:12:53 - 15/01/2016
114.270000	27.47	43.50	16.03	1000.0	120.000	113.0	V	-134.0	12.7	00:04:52 - 15/01/2016
133.440000	33.01	43.50	10.49	1000.0	120.000	364.0	H	78.0	11.7	00:15:19 - 15/01/2016
194.790000	33.70	43.50	9.80	1000.0	120.000	200.0	V	-74.0	10.2	00:06:34 - 15/01/2016
200.460000	24.11	43.50	19.39	1000.0	120.000	105.0	V	-169.0	10.5	23:58:35 - 14/01/2016
374.970000	34.08	46.00	11.92	1000.0	120.000	117.0	H	-168.0	15.6	23:39:12 - 14/01/2016
486.810000	32.21	46.00	13.79	1000.0	120.000	136.0	V	12.0	18.0	00:08:51 - 15/01/2016
748.860000	28.87	46.00	17.13	1000.0	120.000	104.0	V	-151.0	22.2	00:00:18 - 15/01/2016



EMI Auto Test Template: FCC_15b_ClassB_30M-1G

Hardware Setup: EN_FCC_FieldStrength_30M-1G_withoutDistanceCorrection_SAC
Measurement Type: Open-Area-Test-Site
Frequency Range: 30 MHz - 1 GHz
Graphics Level Range: -10 dBµV/m - 60 dBµV/m

Preview Measurements:
Scan Test Template: FCC_15b_3m_PRE

Adjustment:
Template for Single Meas.: FCC_15b_3m_ADJUSTMENT

Final Measurements:
Template for Single Meas.: FCC_15b_3m_FINAL

Hardware Setup: EMI radiated\EN_FCC_FieldStrength_30M-1G_withoutDistanceCorrection_SAC - [EMI radiated]

Subrange 1
Frequency Range: 30 MHz - 1 GHz

Receiver: ESR 7 [ESR 7]
@ GPIB1 (ADR 20), SN 1316.3003K07/101424, FW 2.26

Signal Path: ESR7-direct-HL562_001_With_SU_SAC
FW 1.0
Correction Table: HL562_to_AP1-X1_SAC
Correction Table: AP1-X1_to_KRE4056-RF-IN1_SAC
Correction Table:
KRE4056_RF_IN1_to_KRE4056_RF_OUT2_9k-2GHz_SAC
Correction Table: KRE4056-RF-OUT2_to_ESR7_25M-1GHz_SAC

Antenna: HL562_002_AF_SAC_withoutDistanceCorrection
SN 830547/003
Correction Table (vertical): HL562_002_AF_SAC
Correction Table (horizontal): HL562_002_AF_SAC

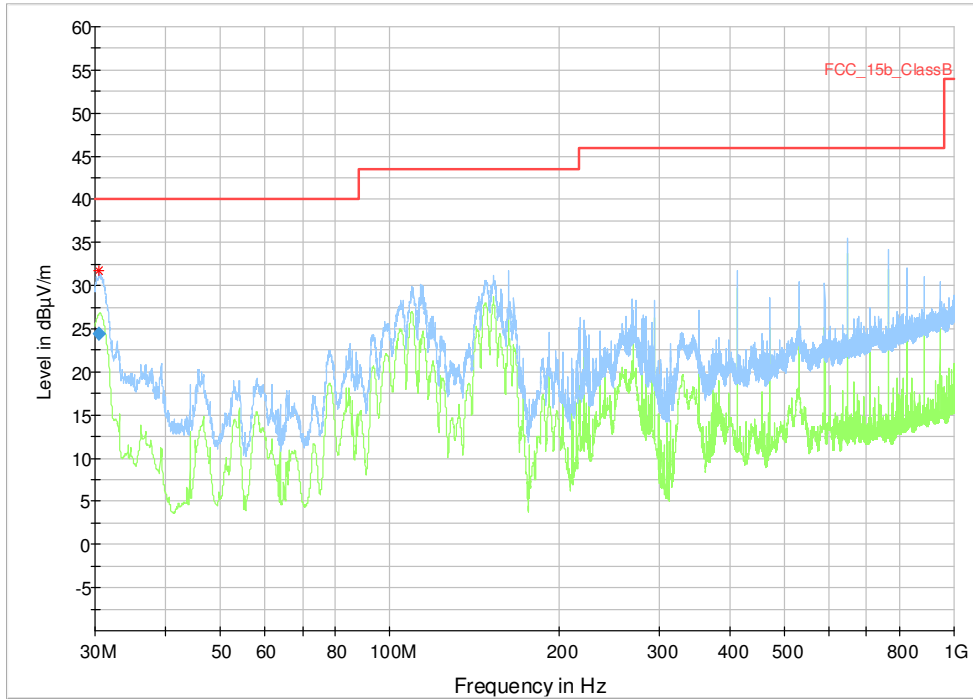
Antenna Tower: Maturo Antenna Tower [Maturo Antenna Tower]
@ GPIB1 (ADR 7)

Turntable: Maturo Turntable [Maturo Turntable]
@ GPIB1 (ADR 7)

Test2: 15b.2; Mode = generating a high power consumption

Result: Passed
Setup No.: AB01_charging
Date of Test: 2016/01/18 19:00
Body: FCC47CFRChIPART15bRADIO FREQUENCY DEVICES
Test Specification: FCC part 2 and 15

Detailed Results:



Critical Freqs

Frequency (MHz)	MaxPeak (dBµV/m)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
30.450000	31.73	---	40.00	8.27	---	---	199.0	V	-121.0	20.3	19:28:34 - 18/01/2016

Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)	Comment
30.450000	24.47	40.00	15.53	1000.0	120.000	200.0	V	-121.0	20.3	19:29:00 - 18/01/2016

EMI Auto Test Template: FCC_15b_ClassB_30M-1G

Hardware Setup: EN_FCC_FieldStrength_30M-1G_withoutDistanceCorrection_SAC
 Measurement Type: Open-Area-Test-Site
 Frequency Range: 30 MHz - 1 GHz
 Graphics Level Range: -10 dBµV/m - 60 dBµV/m

Preview Measurements:
 Scan Test Template: FCC_15b_3m_PRE

Adjustment:
 Template for Single Meas.: FCC_15b_3m_ADJUSTMENT

Final Measurements:
 Template for Single Meas.: FCC_15b_3m_FINAL



Hardware Setup: EMI radiated\EN_FCC_FieldStrength_30M-1G_withoutDistanceCorrection_SAC - [EMI radiated]

Subrange 1
Frequency Range: 30 MHz - 1 GHz

Receiver: ESR 7 [ESR 7]
@ GPIB1 (ADR 20), SN 1316.3003K07/101424, FW 2.26
Signal Path: ESR7-direct-HL562_001_With_SU_SAC
FW 1.0
Correction Table: HL562_to_AP1-X1_SAC
Correction Table: AP1-X1_to_KRE4056-RF-IN1_SAC
Correction Table:
KRE4056_RF_IN1_to_KRE4056_RF_OUT2_9k-2GHz_SAC
Correction Table: KRE4056-RF-OUT2_to_ESR7_25M-1GHz_SAC
Antenna: HL562_002_AF_SAC_withoutDistanceCorrection
SN 830547/003
Correction Table (vertical): HL562_002_AF_SAC
Correction Table (horizontal): HL562_002_AF_SAC
Antenna Tower: Maturo Antenna Tower [Maturo Antenna Tower]
@ GPIB1 (ADR 7)
Turntable: Maturo Turntable [Maturo Turntable]
@ GPIB1 (ADR 7)

4 Test Equipment Details

4.1 List of Used Test Equipment

The calibration, hardware and software states are shown for the testing period.

Test Equipment Anechoic Chamber

Lab ID:	Lab 2		
<i>Description:</i>	Anechoic Chamber for radiated testing		
<i>Type:</i>	10.58x6.38x6.00 m ³		
	<i>Calibration Details</i>		<i>Last Execution Next Exec.</i>
	NSA (FCC)	2014/01/09	2017/01/09

Single Devices for Anechoic Chamber

<i>Single Device Name</i>	<i>Type</i>	<i>Serial Number</i>	<i>Manufacturer</i>
Air compressor	none	-	
Anechoic Chamber	10.58 x 6.38 x 6.00 m ³	none	
	<i>Calibration Details</i>		<i>Last Execution Next Exec.</i>
	FCC listing 96716 3m Part15/18	2014/01/09	2017/01/08
Controller Maturo	MCU	961208	Maturo GmbH
EMC camera	CE-CAM/1	-	
EMC camera Nr.2	CCD-400E	0005033	
Filter ISDN	B84312-C110-E1		
Filter Universal 1A	BB4312-C30-H3	-	

Test Equipment Auxiliary Equipment for Conducted emissions

Lab ID:	Lab 1
<i>Description:</i>	EMI Conducted Auxiliary Equipment

Single Devices for Auxiliary Equipment for Conducted emissions

<i>Single Device Name</i>	<i>Type</i>	<i>Serial Number</i>	<i>Manufacturer</i>
Cable "LISN to ESI"	RG214	W18.03+W48.03	Huber&Suhner
Impedance Stabilization Network	ISN T800	36159	Teseq GmbH
	<i>Calibration Details</i>		<i>Last Execution Next Exec.</i>
	Standard Calibration	2014/02/06	2016/02/28
Impedance Stabilization Network, Coupling Decoupling Network	ISN/CDN ENY41	100002	Rohde & Schwarz GmbH & Co. KG
Impedance Stabilization Network, Coupling Decoupling Network	ISN/CDN ST08	36292	Teseq GmbH
	<i>Calibration Details</i>		<i>Last Execution Next Exec.</i>
	Standard calibration	2014/01/10	2016/01/31
Impedance Stabilization Network, Coupling Decoupling Network	ISN/CDN T8-Cat6	32187	Teseq GmbH
	<i>Calibration Details</i>		<i>Last Execution Next Exec.</i>
	Standard Calibration	2014/01/08	2016/01/31



Reference: MDE_TESTO_1509_FCCb
 According to FCC 47 CFR Ch.1 Part 15 Subpart B, Class B

Single Devices for Auxiliary Equipment for Conducted emissions (continued)

<i>Single Device Name</i>	<i>Type</i>	<i>Serial Number</i>	<i>Manufacturer</i>
One-Line V-Network	ESH 3-Z6	100489	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i> standard calibration		<i>Last Execution</i> <i>Next Exec.</i> 2014/06/18 2017/11/30
One-Line V-Network	ESH 3-Z6	100570	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i> Standard Calibration		<i>Last Execution</i> <i>Next Exec.</i> 2013/11/25 2016/11/24
Two-Line V-Network	ESH 3-Z5	828304/029	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i> DAkKS Calibration		<i>Last Execution</i> <i>Next Exec.</i> 2015/03/30 2017/03/31
Two-Line V-Network	ESH 3-Z5	829996/002	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i> DAkks Calibration		<i>Last Execution</i> <i>Next Exec.</i> 2015/03/30 2017/03/31

Test Equipment Auxiliary Equipment for Radiated emissions

Lab ID: Lab 2
Description: Equipment for emission measurements
Serial Number: see single devices

Single Devices for Auxiliary Equipment for Radiated emissions

Single Device Name	Type	Serial Number	Manufacturer
Antenna mast	AM 4.0	AM4.0/180/11920 513	Maturo GmbH
Biconical Broadband Antenna	SBA 9119	9119-005	
Biconical dipole	VUBA 9117	9117-108	
Broadband Amplifier 1 GHz - 4 GHz	AFS4-01000400-1Q-10P-4	-	
Broadband Amplifier 18 GHz - 26 GHz	JS4-18002600-32-5P	849785	
Broadband Amplifier 30 MHz - 18 GHz	JS4-00101800-35-5P	896037	
Cable "ESI to EMI Antenna"	EcoFlex10	W18.01- 2+W38.01-2	
Cable "ESI to Horn Antenna"	SucoFlex	W18.02- 2+W38.02-2	
Double-ridged horn	HF 906	357357/002	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i>		<i>Last Execution Next Exec.</i>
	Standard Calibration		2015/06/23 2018/06/22
Double-ridged horn	HF 907	102444	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i>		<i>Last Execution Next Exec.</i>
	Standard Calibration		2015/05/11 2018/05/10
Double-ridged horn- duplicated 2015-07- 15 10:47:55	HF 906	357357/001	Rohde & Schwarz GmbH & Co. KG
High Pass Filter	4HC1600/12750-1.5-KK	9942011	
High Pass Filter	5HC2700/12750-1.5-KK	9942012	
High Pass Filter	5HC3500/18000-1.2-KK	200035008	
High Pass Filter	WHKX 7.0/18G-8SS	09	
Horn Antenna Schwarzbeck 15-26.5 GHz BBHA 9170	BBHA 9170	BBHA9170262	
Log.-per. Antenna	HL 562 Ultralog	100609	Rohde & Schwarz GmbH & Co. KG
Log.-per. Antenna (upgraded)	HL 562 Ultralog new biconicals	830547/003	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i>		<i>Last Execution Next Exec.</i>
	Standard Calibration		2015/06/30 2018/06/29
Loop Antenna	HFH2-Z2	829324/006	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i>		<i>Last Execution Next Exec.</i>
	DKD Calibration		2014/11/27 2017/11/27

Single Devices for Auxiliary Equipment for Radiated emissions (continued)

<i>Single Device Name</i>	<i>Type</i>	<i>Serial Number</i>	<i>Manufacturer</i>
Standard Gain / Pyramidal Horn Antenna 40 GHz	3160-10	00086675	
Tilt device Maturo (Rohacell)	Antrieb TD1.5-10kg	TD1.5- 10kg/024/379070 9	Maturo GmbH

Test Equipment Auxiliary Test Equipment

Lab ID:	Lab 2
<i>Description:</i>	Single Devices for various Test Equipment
<i>Type:</i>	various
<i>Serial Number:</i>	none

Single Devices for Auxiliary Test Equipment

<i>Single Device Name</i>	<i>Type</i>	<i>Serial Number</i>	<i>Manufacturer</i>
Broadband Power Divider N (Aux)	1506A / 93459	LM390	
Broadband Power Divider SMA	WA1515	A855	
Digital Multimeter 03 (Multimeter)	Fluke 177	86670383	
Digital Multimeter 13 (Clamp Meter)	Fluke 325	31270091WS	FLUKE
Fibre optic link Satellite (Aux)	FO RS232 Link	181-018	
Fibre optic link Transceiver (Aux)	FO RS232 Link	182-018	
Isolating Transformer	LTS 604	1888	
Notch Filter Ultra Stable (Aux)	WRCA800/960-6EEK	24	
Signal Analyzer	FSV30	103005	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i>		<i>Last Execution</i> <i>Next Exec.</i>
	Standard		2014/02/10 2016/02/09
Spectrum Analyser	FSU26	200418	
	<i>Calibration Details</i>		<i>Last Execution</i> <i>Next Exec.</i>
	Standard calibration		2015/10/20 2016/10/19
Spectrum Analyzer	FSP3	836722/011	Rohde & Schwarz GmbH & Co. KG
	<i>Calibration Details</i>		<i>Last Execution</i> <i>Next Exec.</i>
	DKD calibration		2015/06/23 2018/06/22
Vector Signal Generator	SMIQ 03B	832492/061	

Test Equipment Digital Signalling Devices

Lab ID: Lab 1, Lab 2
Description: Signalling equipment for various wireless technologies.

Single Devices for Digital Signalling Devices

Single Device Name	Type	Serial Number	Manufacturer	
CMW500	CMW500	107500	Last Execution Next Exec.	
	<i>Calibration Details</i>			
	Standard calibration Standard calibration			2014/01/27 2016/01/26 2015/07/13 2017/07/14
Digital Radio Communication Tester	CMD 55	831050/020	Rohde & Schwarz GmbH & Co. KG Last Execution Next Exec.	
	<i>Calibration Details</i>			
	DKD calibration			2014/12/02 2017/12/01
Universal Radio Communication Tester	CMU 200	837983/052	Rohde & Schwarz GmbH & Co. KG Last Execution Next Exec.	
	<i>Calibration Details</i>			
	DKD calibration			2014/12/03 2017/12/02
	<i>HW/SW Status</i>			<i>Date of Start Date of End</i>
	HW options: B11, B21V14, B21-2, B41, B52V14, B52-2, B53-2, B54V14, B56V14, B68 3v04, B95, PCMCIA, U65V02			2007/01/02
	SW options: K21 4v11, K22 4v11, K23 4v11, K24 4v11, K27 4v10, K28 4v10, K42 4v11, K43 4v11, K53 4v10, K65 4v10, K66 4v10, K68 4v10, Firmware: µP1 8v40 01.12.05 --- SW: K62, K69			2008/11/03
Vector Signal Generator	SMU200A	100912	Rohde & Schwarz GmbH & Co. KG	

Test Equipment Emission measurement devices

Lab ID: Lab 1, Lab 2
Description: Equipment for emission measurements
Serial Number: see single devices

Single Devices for Emission measurement devices

<i>Single Device Name</i>	<i>Type</i>	<i>Serial Number</i>	<i>Manufacturer</i>	
EMI Receiver / Spectrum Analyzer	ESR 7	101424		
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Initial Factory Calibration		2014/11/13	2016/11/12
Personal Computer	Dell	30304832059		
	Power Meter	NRVD	828110/016	
<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>	
	Standard calibration		2015/05/11	2016/05/10
Sensor Head A	NRV-Z1	827753/005		
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Standard calibration		2015/05/11	2016/05/10
Signal Generator	SMR 20	846834/008	Rohde & Schwarz GmbH & Co. KG	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Standard Calibration		2014/06/24	2017/06/23
Spectrum Analyzer	ESIB 26	830482/004	Rohde & Schwarz GmbH & Co. KG	
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Standard Calibration		2014/01/07	2016/01/31
	DAkKS Calibration (DK)		2015/12/09	2017/12/08
	<i>HW/SW Status</i>		<i>Date of Start</i>	<i>Date of End</i>
	Firmware-Update 4.34.4 from 3.45 during calibration		2009/12/03	
Spectrum Analyzer	FSW 43	103779		
	<i>Calibration Details</i>		<i>Last Execution</i>	<i>Next Exec.</i>
	Initial Factory Calibration		2014/11/17	2016/11/16

Test Equipment Harmonic & Flicker measurement system and AC Source

Lab ID: Lab 1
Manufacturer: Spitzenberger & Spieß GmbH & Co. KG
Description: EN61000-3-2&3 test system,source for magnetic field EN61000-4-8
Type: PHE 1200/B Spitzenberger&Spies
Serial Number: B6280

Single Devices for Harmonic & Flicker measurement system and AC Source

Single Device Name	Type	Serial Number	Manufacturer
Amplifier with integrated variable Oscillator	EP 1200/B, NA/B1	B6278	Spitzenberger & Spieß GmbH & Co. KG
	<i>Calibration Details</i>		<i>Last Execution</i> <i>Next Exec.</i>
	Standard Calibration		2015/07/23 2018/07/30
Flickermeter / Harmonic Analyzer	B10	M70579	Spitzenberger & Spieß GmbH & Co. KG
	<i>Calibration Details</i>		<i>Last Execution</i> <i>Next Exec.</i>
	Standard Calibration		2015/07/23 2018/07/30
Line impedance simulation system	1-pase 16A	B6279	Spitzenberger & Spieß GmbH & Co. KG
	<i>Calibration Details</i>		<i>Last Execution</i> <i>Next Exec.</i>
	Standard Calibration		2015/07/22 2018/07/30

Test Equipment Multimeter 03

Lab ID: Lab 2
Description: Fluke 177
Serial Number: 86670383

Single Devices for Multimeter 03

Single Device Name	Type	Serial Number	Manufacturer
Digital Multimeter 03 (Multimeter)	Fluke 177	86670383	

Test Equipment Shielded Room 02

Lab ID: Lab 1
Description: Shielded Room for conducted testing
Type: 12 qm
Serial Number: none

Test Equipment T/A Logger 13

Lab ID: Lab 1, Lab 2
Description: Luft Opus10 TPR
Type: Opus10 TPR
Serial Number: 13936

Single Devices for T/A Logger 13

Single Device Name	Type	Serial Number	Manufacturer
ThermoAirpressure Datalogger 13 (Environ)	Opus10 TPR (8253.00)	13936	
	<i>Calibration Details</i>		<i>Last Execution</i> <i>Next Exec.</i>
	Customized calibration		2015/02/27 2017/02/26



Test Equipment T/H Logger 02

Lab ID: Lab 1
Description: Lufft Opus10
Serial Number: 7489

Single Devices for T/H Logger 02

Single Device Name	Type	Serial Number	Manufacturer
ThermoHygro Datalogger 02 (Environ)	Opus10 THI (8152.00)	7489	
<i>Calibration Details</i>			<i>Last Execution</i> <i>Next Exec.</i>
Customized calibration			2015/02/27 2017/02/26

Test Equipment T/H Logger 12

Lab ID: Lab 2
Description: Lufft Opus10
Serial Number: 12482

Single Devices for T/H Logger 12

Single Device Name	Type	Serial Number	Manufacturer
ThermoHygro Datalogger 12 (Environ)	Opus10 THI (8152.00)	12482	
<i>Calibration Details</i>			<i>Last Execution</i> <i>Next Exec.</i>
Customized calibration			2015/03/10 2017/03/09



5 Annex

5.1 Additional Information for Report

Test Description

Conducted emissions (AC power line)

Standard FCC Part 15 Subpart B

The test was performed according to: ANSI C 63.4, 2014

Test Description

The test set-up was made in accordance to the general provisions of ANSI C 63.4-2014. The Equipment Under Test (EUT) was setup in a shielded room to perform the conducted emissions measurements in a typical installation configuration. The EUT was connected to a 50 μ H || 50 Ohm Line Impedance Stabilization Network (LISN), which meets the requirements of ANSI C63.4-2014, Annex B, in the frequency range of the measurements. The LISN's unused connections were terminated with 50 Ohm loads. AC Power supply voltage for EUT: 120 V 60 Hz (if not stated within the measurement plot and/or test result).

The measurement procedure consists of two steps. It is implemented into the EMI test software ES-K1 from R&S.

Step 1: Preliminary scan

Intention of this step is, to determine the conducted EMI-profile of the EUT.

EMI receiver settings:

- Detector: Peak - Maxhold
- Frequency range: 150 kHz – 30 MHz
- Frequency steps: 5 kHz
- IF-Bandwidth: 9 kHz
- Measuring time / Frequency step: 100 ms (FFT-based)
- Measurement on phase + neutral lines of the power cords

On basis of this preliminary scan the highest amplitudes and the corresponding frequencies relative to the limit are identified. Emissions above the limit and emissions which are in the 10 dB range below the limit are considered.

Step 2: Final measurement

Intention of this step is, to determine the highest emissions with the settings defined in the test specification for the frequencies identified in step 1.

EMI receiver settings:

- Detector: Quasi-Peak
- IF - Bandwidth: 9 kHz
- Measuring time: 1 s / frequency

At each frequency determined in step 1, four measurements are performed in the following combinations:

- 1) Neutral lead - reference ground (PE grounded)
- 2) Phase lead - reference ground (PE grounded)
- 3) Neutral lead - reference ground (PE floating)
- 4) Phase lead - reference ground (PE floating)

The highest value is reported.

Test Requirements / Limits

If not stated within the measurement plot and/or test result, class B limits are applied.

FCC Part 15, Subpart B, §15.107, Class B Limit

Frequency Range (MHz)	QP Limit (dB μ V)	AV Limit (dB μ V)
0.15 – 0.5	66 to 56	56 to 46
0.5 – 5	56	46
5 – 30	60	50

FCC Part 15, Subpart B, §15.107, Class A Limit

Frequency Range (MHz)	QP Limit (dB μ V)	AV Limit (dB μ V)
0.15 - 0.5	79	66
0.5 - 30	73	60

Used conversion factor: Limit (dB μ V) = 20 log (Limit (μ V)/1 μ V).

NOTES:

A missing result table in the corresponding test report section means, that no final measurement was performed because no relevant frequencies (peaks) were found in the preliminary scan.

The chosen operating mode is selected as representative mode to generate "worst-case" conditions, i.e. high power consumption.

Spurious radiated emissions

Standard FCC Part 15, Subpart B

The test was performed according to: ANSI C 63.4, 2014

Test Description

Measurement below 1 GHz:

The test set-up was made in accordance to the general provisions of ANSI C 63.4-2014.

The Equipment Under Test (EUT) was set up on a non-conductive table 1.0 x 2.0 m in the semi-anechoic chamber. The influence of the EUT support table that is used between 30-1000 MHz was evaluated.

The test was performed at the distance of 3 m between the EUT and the receiving antenna. The measurement procedure is implemented into the EMI test software ES-K1 from R&S. The radiated emissions measurements were made in a typical installation configuration. Exploratory tests are performed at 3 orthogonal axes to determine the worst-case orientation of a body-worn or handheld EUT. The final test on all kind of EUTs is performed at 2 axes. A pre-check is also performed while the EUT is powered from both AC and DC (battery) power in order to find the worst-case operating condition. AC Power supply voltage for EUT: 120 V 60 Hz (if not stated within the measurement plot and/or test result).

Step 1: Preliminary scan (test to identify the highest amplitudes relative to the limit)

Intention of this step is, to determine the radiated EMI-profile of the EUT.

Settings for step 1:

- Antenna distance: 3 m
- Detector: Peak-Maxhold / quasipeak (FFT-based)
- Frequency range: 30 - 1000 MHz
- Frequency steps: 30 kHz
- IF-Bandwidth: 120 kHz
- Measuring time / Frequency step: 100 ms
- Turntable angle range: -180° to +90°
- Turntable step size: 90°
- Height variation range: 1 - 3 m
- Height variation step size: 2 m
- Polarization: Horizontal + Vertical

On basis of this preliminary scan the highest amplitudes and the corresponding frequencies relative to the limit are identified. Emissions above the limit and emissions which are in the 10 dB range below the limit are considered.

Step 2:

In this step the accuracy of the turntable azimuth and antenna height will be improved. This is necessary to find out the maximum value of every frequency.

For each frequency, which was determined the turntable azimuth and antenna height will be adjusted. The turntable azimuth will slowly vary by $\pm 45^\circ$ around this value. During this action, the value of emission is continuously measured. The turntable azimuth at the highest emission will be recorded and adjusted. In this position, the antenna height will also slowly vary by ± 100 cm around the antenna height determined. During this action, the value of emission is also continuously measured. The antenna height of the highest emission will also be recorded and adjusted.

Settings for step 2:

- Detector: Peak - Maxhold
- Measured frequencies: in step 1 determined frequencies
- IF - Bandwidth: 120 kHz
- Measuring time: 100 ms
- Turntable angle range: $\pm 45^\circ$ around the determined value
- Height variation range: ± 100 cm around the determined value
- Polarizations: max. value determined in step 1

After this step the EMI test system has determined the following values for each frequency (of step 1):

- Frequency
- Azimuth value (of turntable)
- Antenna height

Step 3: Final measurement (with QP detector)

With the settings determined in step 3, the final measurement will be performed:

EMI receiver settings for step 4:

- Detector: Quasi-Peak(< 1GHz)
- Measured frequencies: in step 1 determined frequencies
- IF – Bandwidth: 120 kHz
- Measuring time: 1 s

3. Measurement above 1 GHz

The following modifications apply to the measurement procedure for the frequency range above 1 GHz:

Step 1:

All steps were performed with one height of the receiving antenna only.

The EUT is turned during the preliminary measurement across the elevation axis, with a step size of 90 °.

The turn table step size (azimuth angle) for the preliminary measurement is 45 °.

Step 2:

Due to the fact, that in this frequency range the test is performed in a fully anechoic room, the height scan of the receiving antenna instep 2 is omitted. Instead of this, a maximum search with a step size $\pm 45^\circ$ for the elevation axis is performed.

The turn table azimuth will slowly vary by $\pm 22.5^\circ$.

The elevation angle will slowly vary by $\pm 45^\circ$

EMI receiver settings (for all steps):

- Detector: Peak, Average
- IF Bandwidth = 1 MHz

Step 3:

Spectrum analyser settings for step 3:

- Detector: Peak / Average
- Measured frequencies: in step 1 determined frequencies
- IF – Bandwidth: 1 MHz
- Measuring time: 1 s

Test Requirements / Limits

If not stated within the measurement plot and/or test result, class B limits are applied.

FCC Part 15, Subpart B, §15.109, Radiated Emission Limits

Frequency Range (MHz)	Class B Limit (dB μ V/m)
30 – 88	40.0
88 – 216	43.5
216 – 960	46.0
above 960	54.0

Frequency Range (MHz)	Class A Limit (dB μ V/m) / @ 3 m!
30 - 88	49.5
88 - 216	54.0
216 - 960	56.9
above 960	60.0

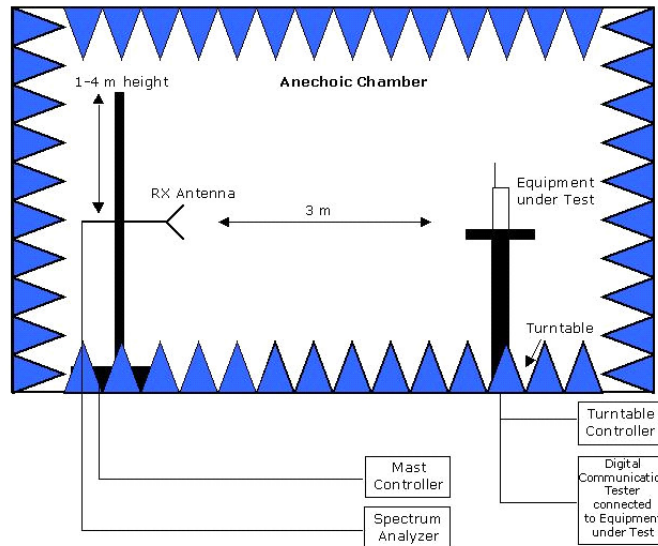
§15.35(b)

..., there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit....

Used conversion factor: Limit (dB μ V/m) = 20 log (Limit (μ V/m)/1 μ V/m)

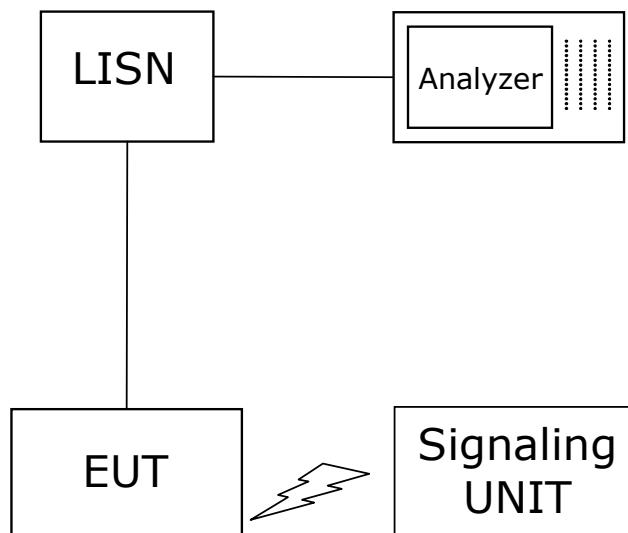
NOTE: A missing result table in the corresponding test report section means, that no final measurement was performed because no relevant frequencies (peaks) were found in the preliminary scan.

Setup Drawings



Remark: Depending on the frequency range suitable antenna types, attenuators or preamplifiers are used.

Setup in the Anechoic chamber. For measurements below 1 GHz the ground was replaced by a conducting ground plane.



Setup in the shielded room for conducted measurements at AC mains port

November, 2014

To Whom This May Concern

**Correlation of measurement requirements for
Information Technology Equipment (ITE) / Digital Circuits
from
FCC and IC**

Information Technology Equipment (ITE) / Radio Apparatus Containing Digital Circuits

Measurement	FCC reference	IC reference
Conducted emissions on AC Mains	§15.107	ICES-003 Issue 6: 6.1
Spurious Radiated Emissions	§15.109	ICES-003 Issue 6: 6.2

Remarks:

1. FCC Part 15 subpart B, ICES 003 and CISPR 22 contain different definitions of Class A and Class B limits, i.e. which class is applicable to which kind of EUT.
ICES 003 and CISPR 22 distinguish between the location where the EUT is intended to operate whilst FCC refers to the method of commercial distribution (distributive trades).
2. The correct assignment of the appropriate class to the concrete EUT is not scope of this test report!

Measurement Uncertainties

FCC Part 22, 24, 27, 90
IC RSS-132, RSS-133, RSS-139

Test Case	Parameter	Uncertainty
RF Power Output	Power	± 2.2 dB
Frequency Stability	Frequency	± 25 Hz
Spurious Emissions at antenna terminal	Power	± 2.2 dB
Field strength of spurious radiation	Power	± 4.5 dB
Emission and Occupied Bandwidth	Power Frequency	± 2.9 dB GSM: ± 10.6 kHz UMTS, LTE: ± 120.0 kHz
Band Edge Compliance	Power Frequency	± 2.9 dB GSM: ± 14.6 kHz UMTS, LTE: ± 68.0 kHz

FCC Part 15b
IC ICES-003

Test Case	Parameter	Uncertainty
AC Power Line	Power	± 3.4 dB
Field Strength of spurious radiation	Power+	± 5.5 dB

FCC Part 15c, 15e
IC RSS-210, IC RSS-247

Test Case	Parameter	Uncertainty
AC Power Line	Power	± 3.4 dB
Field Strength of spurious radiation	Power	± 5.5 dB
6 dB / 26 dB / 99% Bandwidth	Power Frequency	± 2.9 dB ± 11.2 kHz
Conducted Output Power		± 2.2 dB
Spurious Emissions at antenna terminal	Power	± 2.2 dB
Band Edge Compliance	Power Frequency	± 2.2 dB ± 11.2 kHz
Frequency Stability	Frequency	± 25 Hz
Power Spectral Density	Power	± 2.2 dB



6 Index

1	Administrative Data	2
1.1	Project Data	2
1.2	Applicant Data	2
1.3	Test Laboratory Data	2
1.4	Signature of the Testing Responsible	2
1.5	Signature of the Accreditation Responsible	3
2	Test Object Data	4
2.1	General OUT Description	4
2.2	Detailed Description of OUT Samples	5
2.3	OUT Features	6
2.4	Auxiliary Equipment	6
2.5	Operating Mode(s)	6
2.6	Setups used for Testing	7
3	Results	7
3.1	General	7
3.2	List of the Applicable Body	8
3.3	List of Test Specification	8
3.4	Summary	9
3.5	Detailed Results	10
3.5.1	15b.1 Conducted Emissions (AC Power Line) §15.107	10
3.5.2	15b.2 Spurious Radiated Emissions §15.109	14
4	Test Equipment Details	19
4.1	List of Used Test Equipment	19
5	Annex	27
5.1	Additional Information for Report	27
6	Index	34