

TEST REPORT

Test report no.: 1-3067-01-02/11-A



Testing laboratory

CETECOM ICT Services GmbH
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Accredited test laboratory:
The test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025
DAkkS registration number: D-PL-12076-01-01
Area of Testing: Radio/Satellite Communications

Applicant

HBC radiomatic GmbH
Haller Str. 45-53
74564 Crailsheim / GERMANY
Phone: +49 795 139-30
Fax: +49 795 139-3723
Contact: D. Hahn
e-mail: dhahn@radiomatic.com
Phone: +49 795 139-3725

Manufacturer

HBC radiomatic GmbH
Haller Str. 45-53
74564 Crailsheim / GERMANY

Test standard/s

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

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

Test item

Kind of test item: 915 MHz Transceiver
Model name: TC693
FCC ID: NO9TC693
IC: 2977A-TC693
Frequency: 902.025 MHz – 917.975 MHz
Power supply: 3.6 V DC by battery
Temperature range: -30 °C to +70 °C



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

Test performed:

[Signature box]

Stefan Bös

Test report authorised:

[Signature box]

Marco Bertolino

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2 General information

2.1 Notes

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 generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM ICT Services GmbH.

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

2.2 Application details

Date of receipt of order:	2011-03-10
Date of receipt of test item:	2011-05-16
Start of test:	2011-05-16
End of test:	2011-06-10
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Version	Test standard description
47 CFR Part 15	2009-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	2010-12	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

4 Test environment

Temperature:	T_{nom}	+23 °C during room temperature tests
	T_{max}	+70 °C during high temperature test
	T_{min}	-30 °C during low temperature test
Relative humidity content:		54 %
Air pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	3.6 V DC by battery
	V_{max}	4.6 V
	V_{min}	3.3 V

5 Test item

Kind of test item	:	915 MHz Transceiver
Type identification	:	TC693
S/N serial number	:	-/-
HW hardware status	:	Unknown
SW software status	:	Unknown
Frequency band [MHz]	:	902.025 MHz – 917.975 MHz
Type of modulation	:	F2D
Number of channels	:	639
Antenna	:	Wire antenna with MMCX-connector
Power supply	:	3.6 V DC by battery
Temperature range	:	-30 °C to +70 °C

6 Test laboratories sub-contracted

None

7 Summary of measurement results

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

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Part 15 RSS 210, Issue 8	Passed	2011-06-21	-/-

Test Specification Clause	Test Case	Temperature Conditions	Power Source Voltages	Pass	Fail	NA	NP	Results
§ 15.249 / RSS-210 Issue 8	Fieldstrength of fundamental	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.209 (a) / RSS-210 Issue 8	Fieldstrength of harmonics and spurious	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.109 / RSS-210 Issue 8	Receiver spurious emissions	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.109 / § 15.207	Conducted limits	Nominal	Nominal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-

Note: NA = Not Applicable; NP = Not Performed

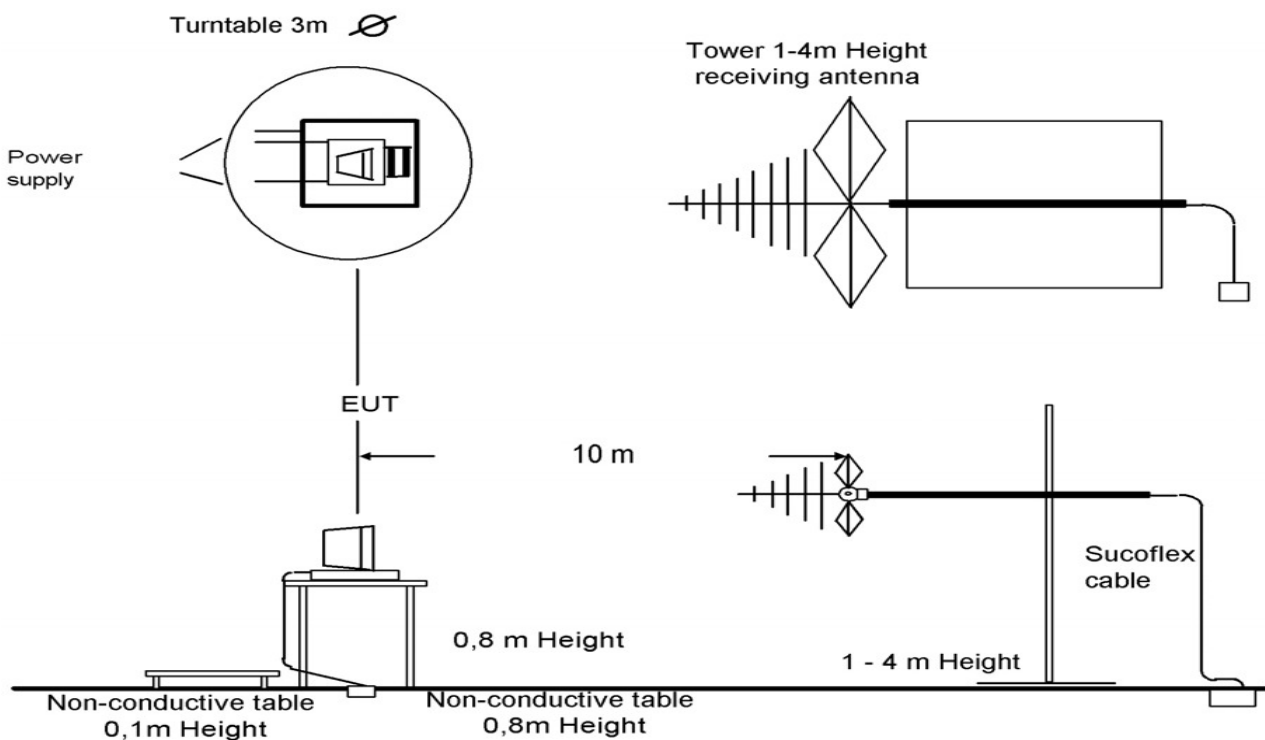
8 RF measurements

8.1 Description of test setup

8.1.1 Radiated measurements

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

Semi anechoic chamber



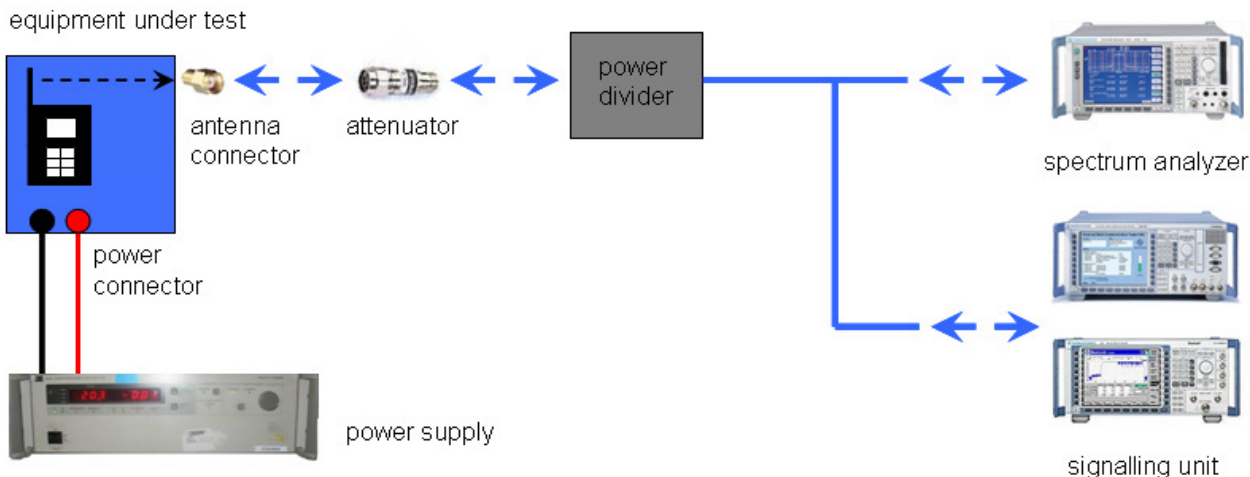
Picture 1: Diagram radiated measurements

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

The EUT is powered by an external power supply with nominal voltage. The signalling (if needed) is performed from outside the chamber with a signalling unit by air link using signalling antenna.

8.1.2 Conducted measurements

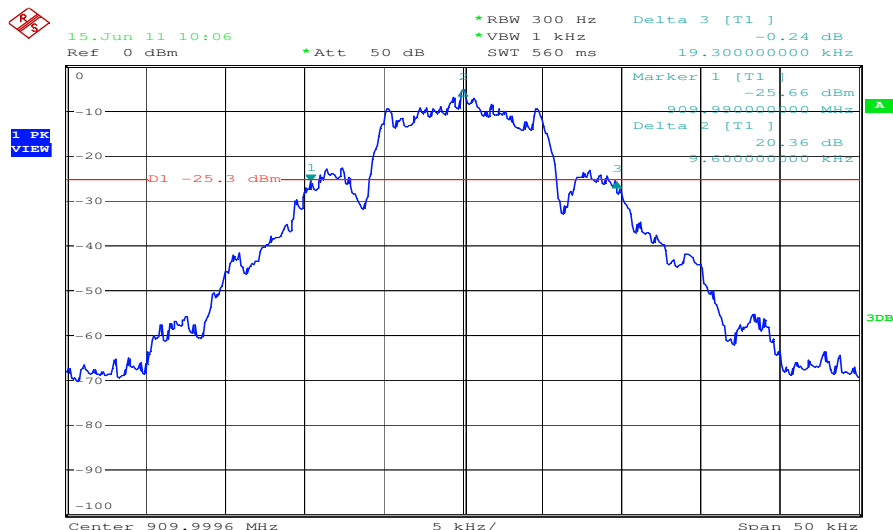
The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

8.2 Additional comments

Reference documents: Transmit spectrum of the device:



min
Date: 15.JUN.2011 10:06:20

Special test descriptions: None

Configuration descriptions: None

8.3 RSP100 test report cover sheet / performance test data

Test Report Number	:	1-3067-01-02/11-A
Equipment Model Number	:	TC693
Certification Number	:	2977A-TC693
Manufacturer (complete Address)	:	HBC radiomatic GmbH Haller Str. 45-53 74564 Crailsheim / GERMANY
Tested to radio standards specification no.	:	RSS 210, Issue 8, Annex 8
Open Area Test Site IC No.	:	IC 3462C-1
Frequency Range or fixed frequency	:	902.025 MHz – 917.975 MHz
Field Strength [dB μ V/m] (at which distance)	:	93.8 dB μ V/m @ 3 m
Occupied bandwidth (20 dB-BW) [kHz]	:	19.3
Type of modulation	:	F2D
Emission Designator (TRC-43)	:	19k3F2D
Antenna Information	:	Wire antenna with MMCX-connector
TX Spurious (worst case) [dB μ V/m @ 3m]	:	52.7@ 2619.1 MHz (AVG)
RX Spurious (worst case) [dB μ V/m @ 3m]	:	53.9 @ 2590.2 MHz

ATTESTATION:

DECLARATION OF COMPLIANCE:

I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Laboratory Manager:

2011-06-21

Stefan Bös

Signature

9 Measurement results

9.1 Fieldstrength of the fundamental

Measurement:

Measurement parameter	
Detector:	Peak
Resolution bandwidth:	1 MHz
Trace-Mode:	Max Hold

Limits:

FCC		IC
CFR Part SUBCLAUSE § 15.249		RSS-210 Issue 8
Fundamental Frequency (MHz)	Fieldstrength of Fundamental ($\mu\text{V}/\text{m}$)	Measurement distance (m)
902 – 928 MHz	50000	3

Result:

	Fieldstrength of Fundamental ($\mu\text{V}/\text{m}$)		
	Channel low	Channel mid	Channel high
Range 1 (902.025 MHz – 905.175 MHz)	31188.9	31622.8	27542.3
Range 2 (908.4 MHz – 911 MHz)	38282.5	39810.7	33189.4
Range 3 (914.8 MHz – 917.975 MHz)	48865.2	41162.3	32359.4
Measurement uncertainty	± 3 dB		

Result: The result of the measurement is passed.

9.2 Fieldstrength of the harmonics and spurious

Measurement:

Measurement parameter	
Detector:	Average / Quasi Peak
Sweep time:	Auto
Span:	9 kHz – 10 GHz
Trace-Mode:	Max Hold

Limits:

FCC	IC	
SUBCLAUSE § 15.209 (a)	RSS-210 Issue 8	
Fieldstrength of the harmonics and spurious.		
Frequency (MHz)	Fieldstrength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30 (29.5 dBµV/m)	30
30 – 88	100 (40 dBµV/m)	3
88 – 216	150 (43.5 dBµV/m)	3
216 – 960	200 (46 dBµV/m)	3

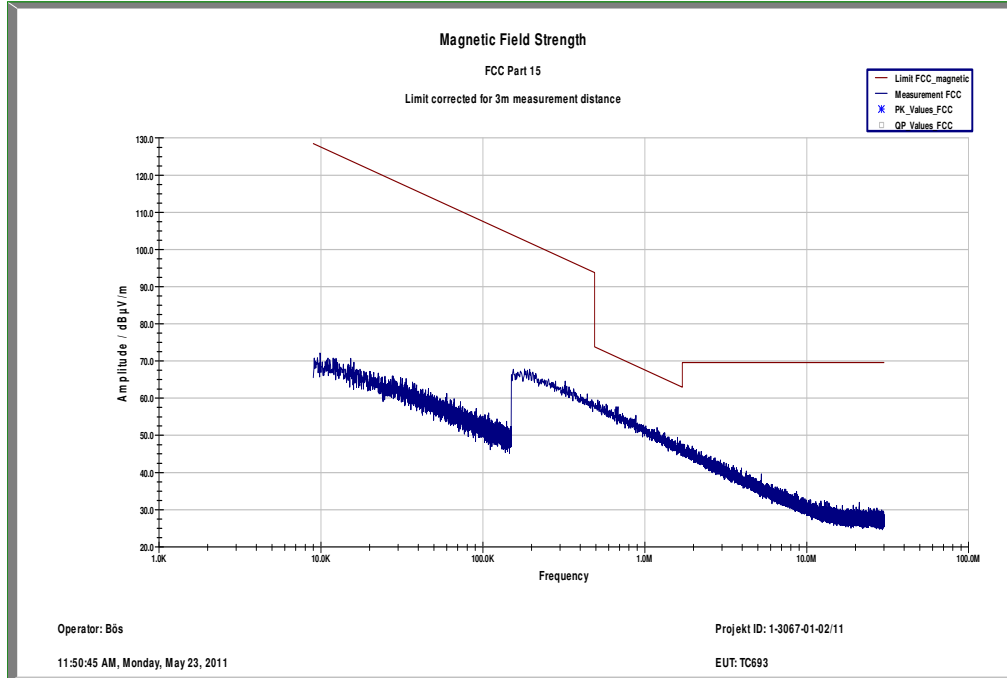
Result:

EMISSION LIMITATIONS				
f [MHz]	Detector	Limit max. allowed [dBµV/m]	Amplitude of emission [dBµV/m]	Results
Please have a look at the plots.				

Result: The result of the measurement is passed.

Plots of the measurements

Plot 1: 9 kHz – 30 MHz, Modul low



Plot 2: 30 MHz – 1000 MHz, Modul low

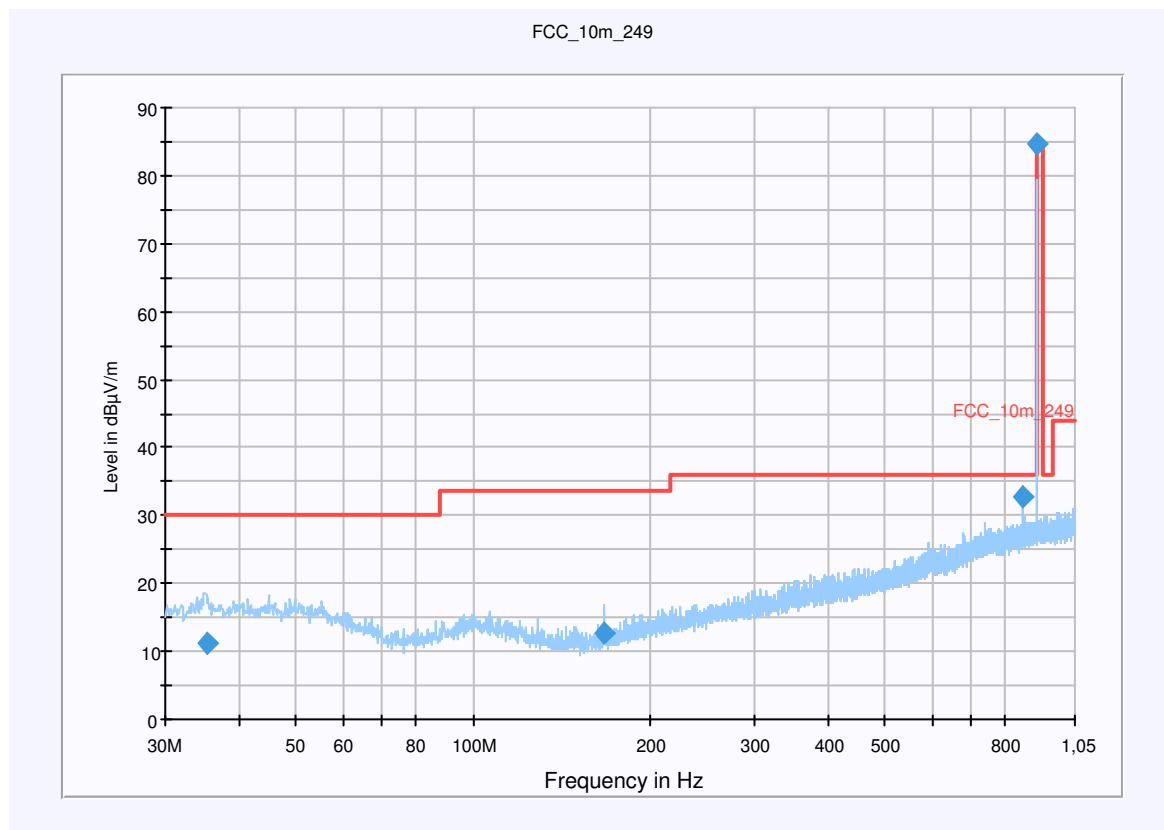
Common Information

EUT: TC693
 Serial Number: unknown
 Test Description: FCC part 15.249
 Operating Conditions: TX 902.025 MHz
 Operator Name: Hennemann
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
35.425050	11.1	15000.000	120.000	147.0	V	4.0	13.1	18.9	30.0	
166.980450	12.7	15000.000	120.000	99.0	V	281.0	9.6	20.8	33.5	
856.998150	32.7	15000.000	120.000	353.0	H	315.0	24.6	3.3	36.0	

Final Result 2 (carrier)

Frequency (MHz)	Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
902.025	83.6	15000.000	120.000	162.0	V	244.0	25.2	0.4	84.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

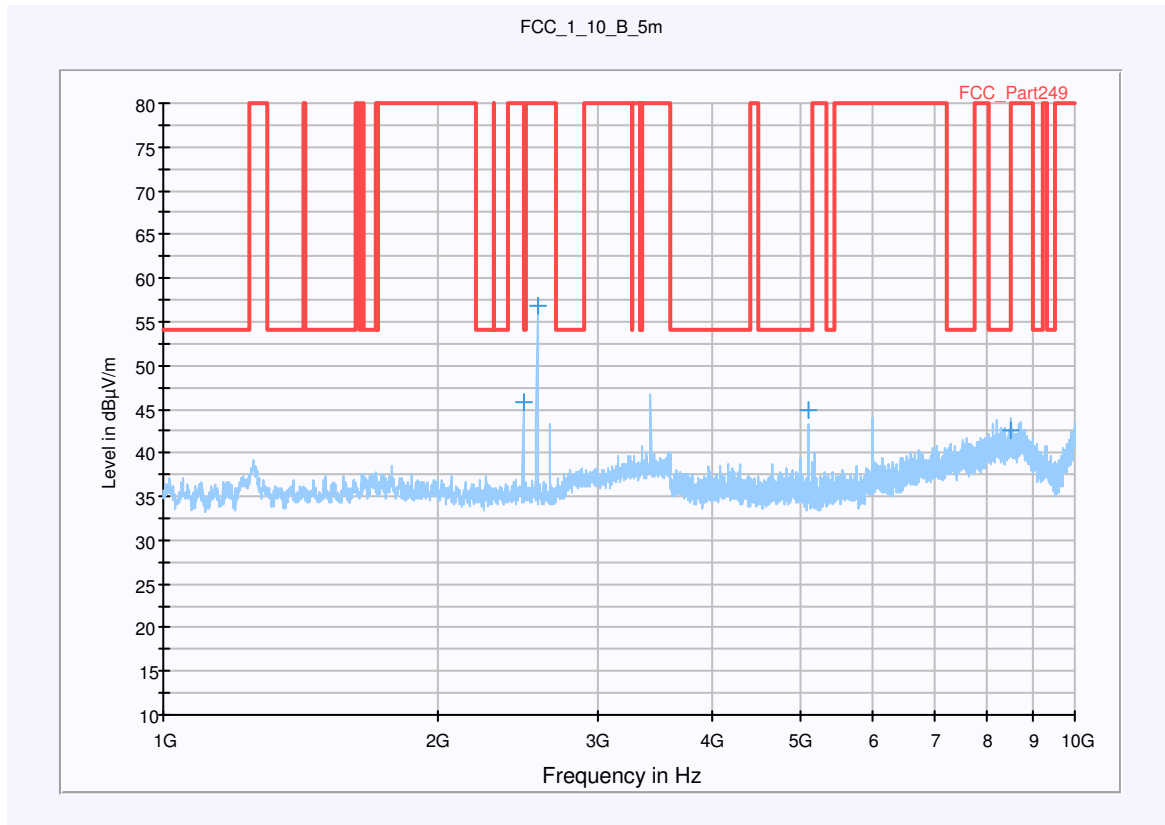
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
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

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Plot 3: 1 GHz – 10 GHz, Modul low

Common Information

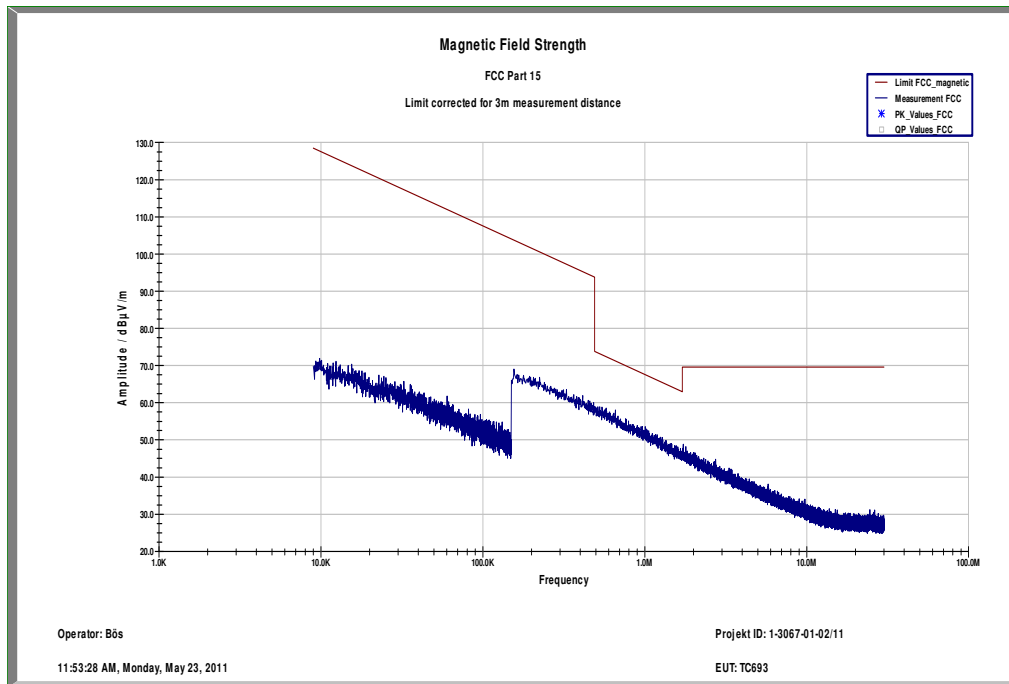
EUT: TC693
 Serial Number: unknown
 Test Description: FCC part 15.249
 Operating Conditions: TX 902.025 MHz
 Operator Name: Hennemann
 Comment: battery powered



Zoom(PreMax) 1

Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Comment
2480.991119	45.9	155.0	V	104.0	-4.1	
2570.979576	50.7	155.0	H	326.0	-4.0	AVG
5096.996227	44.8	155.0	V	160.0	-1.2	
8523.570503	42.6	155.0	H	44.0	4.2	

Plot 4: 9 kHz – 30 MHz, Modul mid



Plot 5: 30 MHz – 1000 MHz, Modul mid

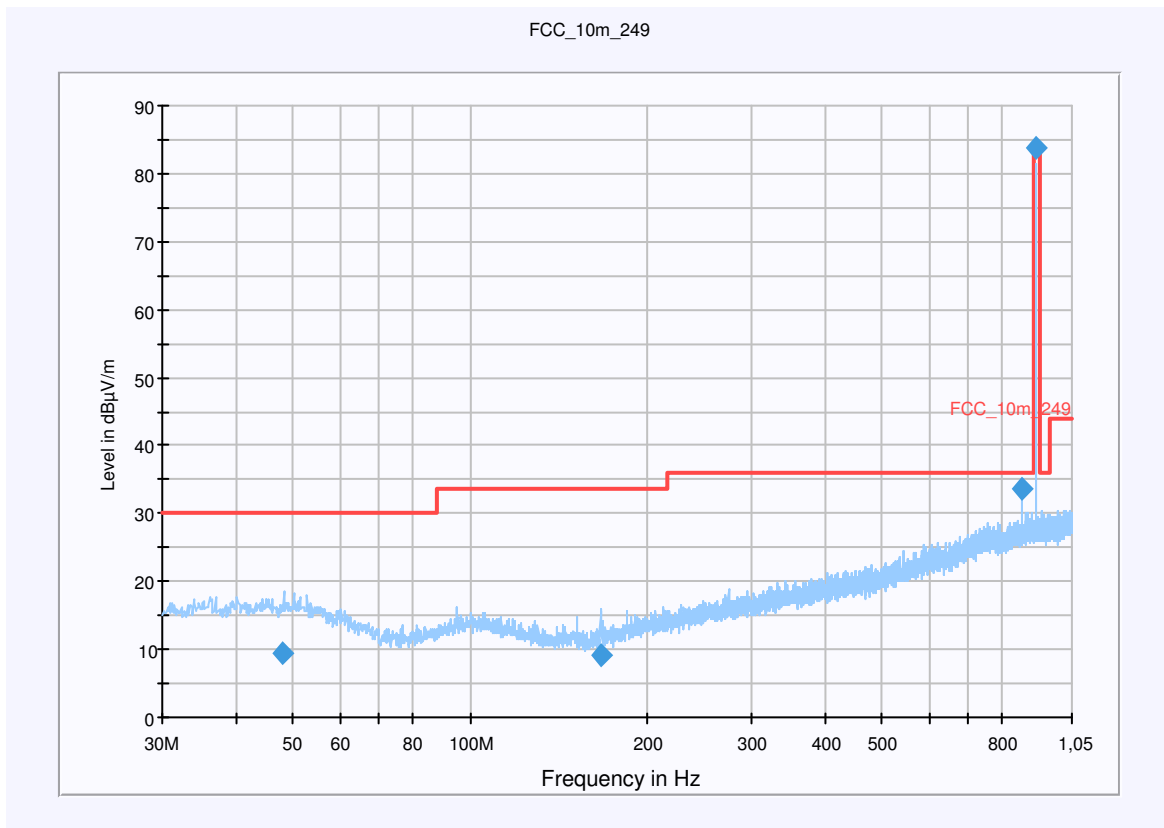
Common Information

EUT: TC693
 Serial Number: unknown
 Test Description: FCC part 15.249
 Operating Conditions: TX 910 MHz
 Operator Name: Hennemann
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dBµV/m

Subrange **Detectors** **IF Bandwidth** **Meas. Time** **Receiver**
 30 MHz - 2 GHz QuasiPeak 120 kHz 15 s Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
48.024900	9.4	15000.000	120.000	124.0	H	61.0	13.3	20.6	30.0	
166.563600	9.0	15000.000	120.000	330.0	V	83.0	9.6	24.5	33.5	
864.999900	33.8	15000.000	120.000	98.0	H	-6.0	24.7	2.2	36.0	

Final Result 2 (carrier)

Frequency (MHz)	Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
910.000350	83.8	15000.000	120.000	183.0	V	216.0	25.2	0.2	84.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

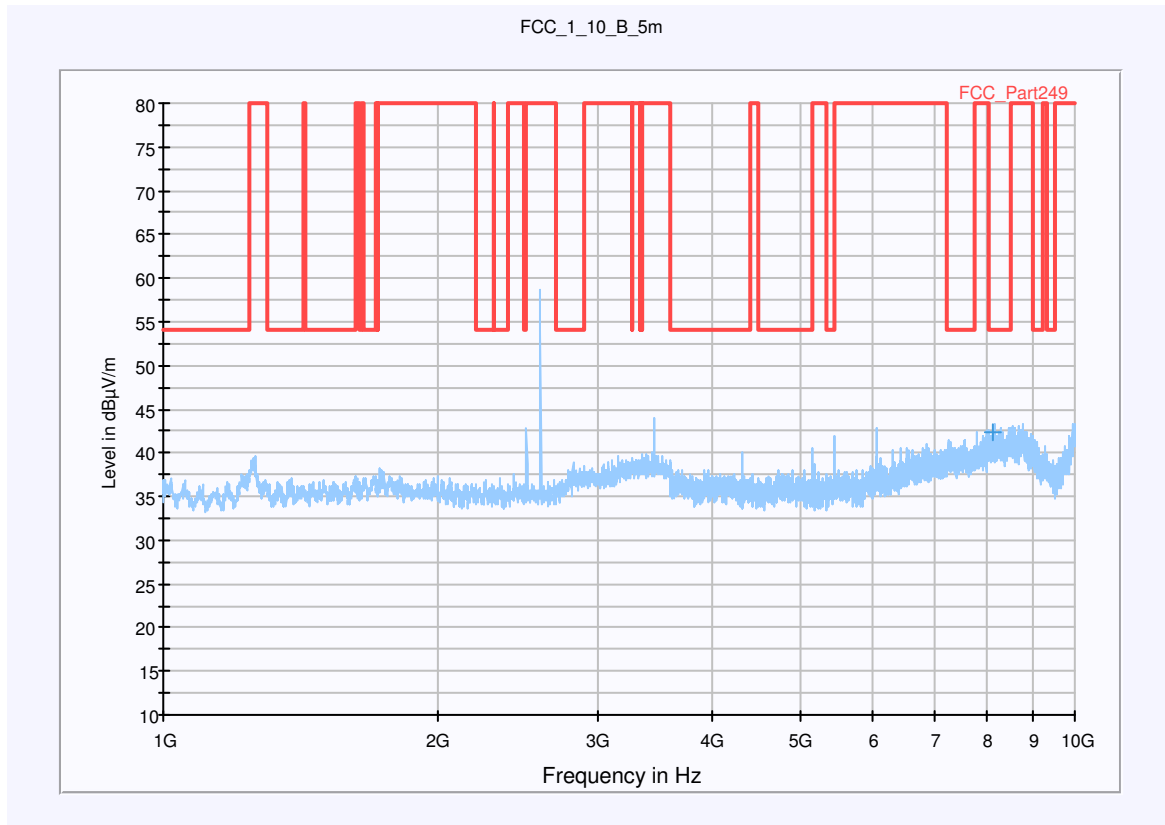
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
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

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Plot 6: 1 GHz – 10 GHz, Modul mid

Common Information

EUT: TC693
 Serial Number: unknown
 Test Description: FCC part 15.249
 Operating Conditions: TX 910 MHz
 Operator Name: Hennemann
 Comment: battery powered



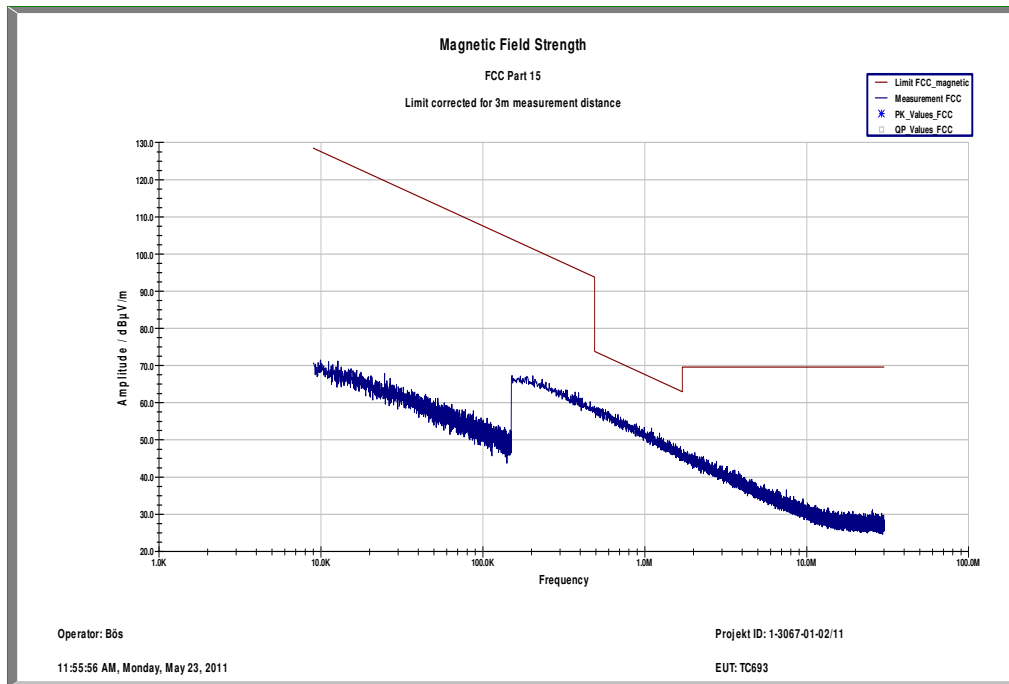
Zoom (PreMax)

Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Comment
2594.800000	52.6	155.0	H	318.0	-4.0	AVG
8152.300000	43.2	155.0	V	215.0	4.3	

Max

Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Comment
8152.300000	43.2	155.0	V	215.0	4.3	

Plot 7: 9 kHz – 30 MHz, Modul high



Plot 8: 30 MHz – 1000 MHz, Modul high

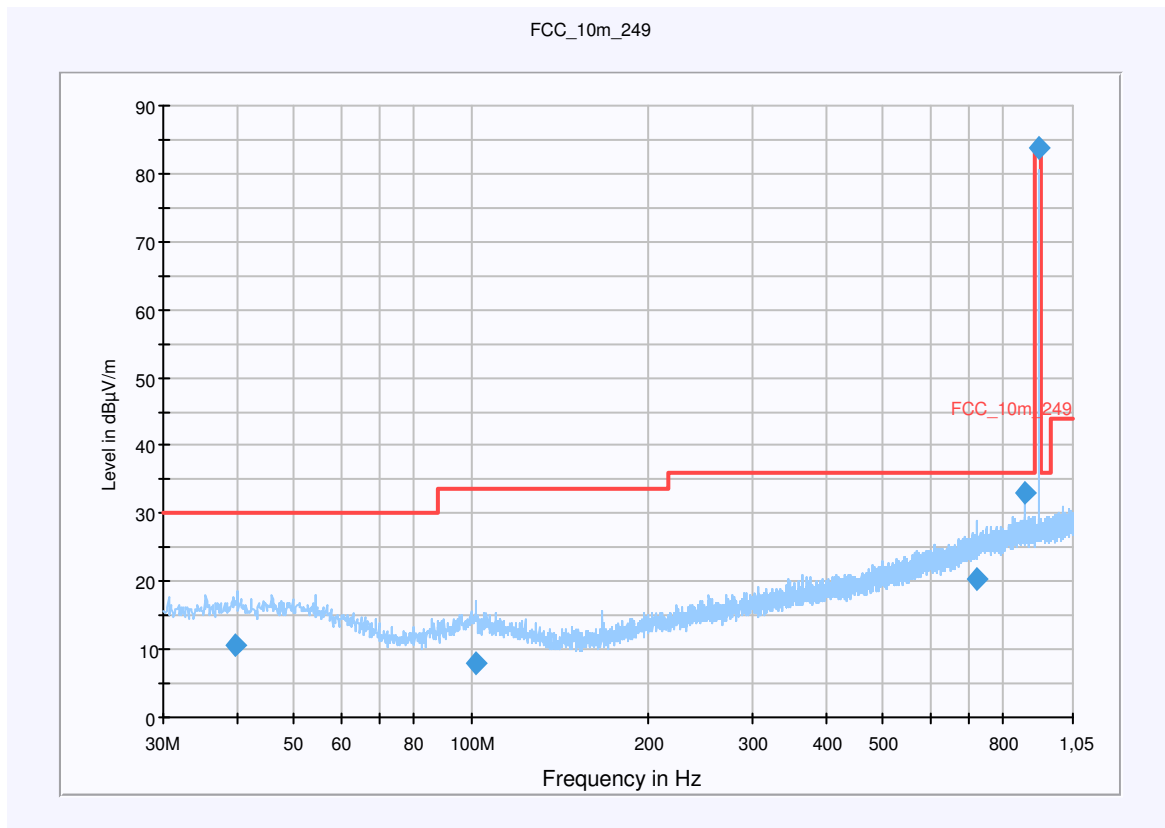
Common Information

EUT: TC693
 Serial Number: unknown
 Test Description: FCC part 15.249
 Operating Conditions: TX 917 MHz
 Operator Name: Hennemann
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
39.832950	10.5	15000.000	120.000	200.0	H	212.0	13.4	19.5	30.0	
102.094950	8.1	15000.000	120.000	187.0	H	229.0	11.7	25.4	33.5	
718.228500	20.3	15000.000	120.000	198.0	H	10.0	22.9	15.7	36.0	
872.975100	33.1	15000.000	120.000	280.0	H	309.0	24.9	2.9	36.0	

Final Result 2 (carrier)

Frequency (MHz)	Peak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
917.974950	83.7	15000.000	120.000	163.0	V	183.0	25.3	0.3	84.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

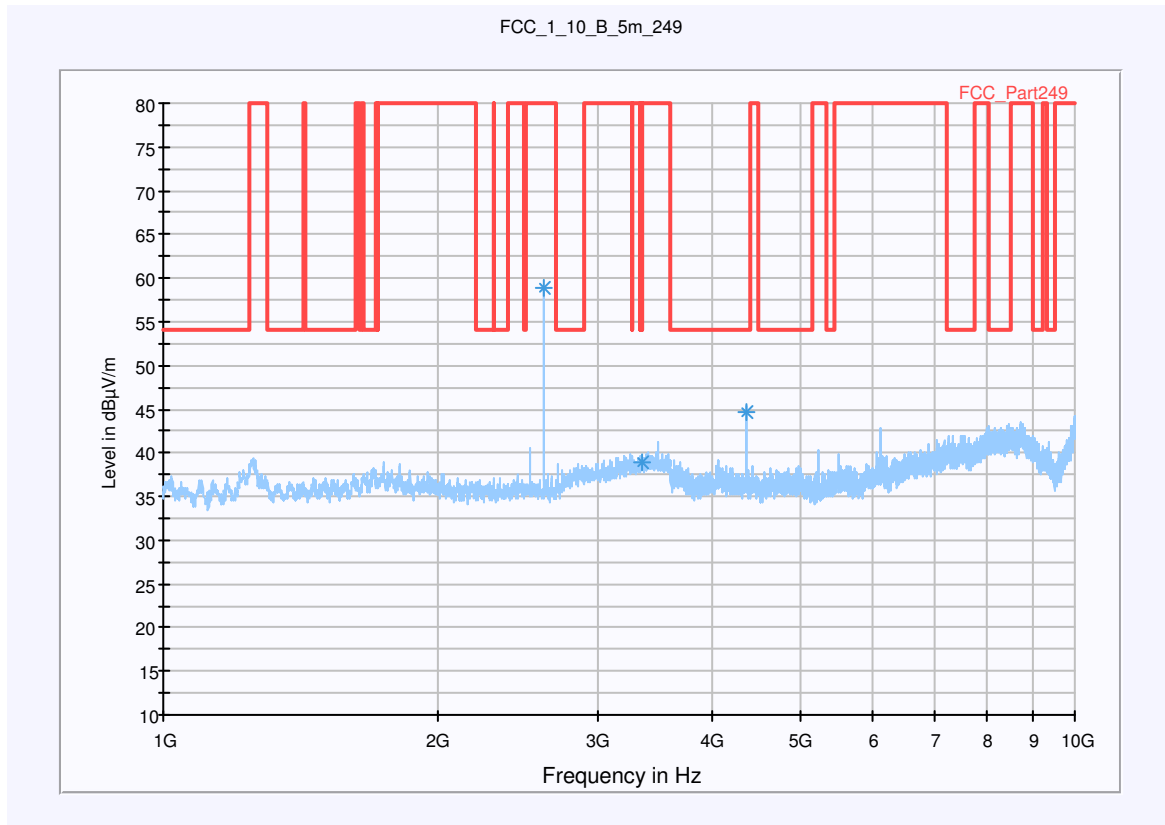
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
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

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Plot 9: 1 GHz – 10 GHz, Modul high

Common Information

EUT: TC693
 Serial Number: unknown
 Test Description: FCC part 15.249
 Operating Conditions: TX 917 MHz
 Operator Name: Hennemann
 Comment: battery powered



Data Reduction 1 [1]

Frequency (MHz)	MaxPeak-MaxHold (dBµV/m)	Azimuth (deg)	Polarity	Turntable position (deg)	Corr. (dB)	Comment
3350.800000	39.0	45.0	V	-1.0	-2.0	
2619.100000	52.7	0.0	V	271.0	-3.9	AVG
4364.200000	44.7	0.0	V	204.0	-1.6	

9.3 Receiver spurious emissions

Measurement:

Measurement parameter	
Detector:	Average / Quasi Peak
Sweep time:	Auto
Span:	9 kHz – 10 GHz
Trace-Mode:	Max Hold

Limits:

FCC	IC	
SUBCLAUSE § 15.109	RSS-210 Issue 7	
Fieldstrength of the harmonics and spurious.		
Frequency (MHz)	Fieldstrength (µV/m)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30 (29.5 dBµV/m)	30
30 – 88	100 (40 dBµV/m)	3
88 – 216	150 (43.5 dBµV/m)	3
216 – 960	200 (46 dBµV/m)	3

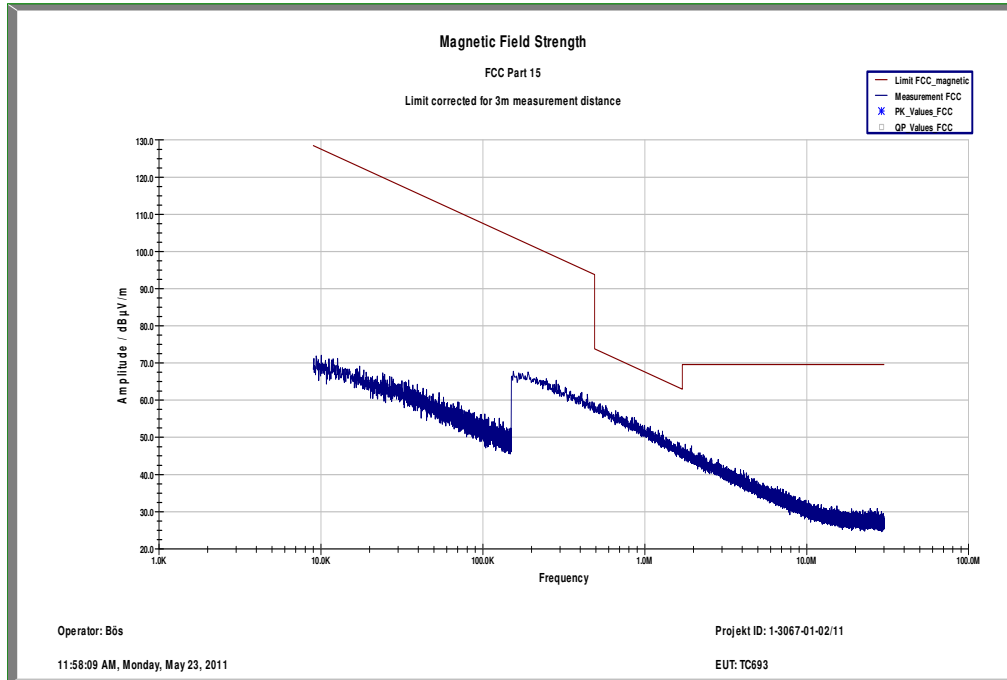
Result:

EMISSION LIMITATIONS				
f [MHz]	Detector	Limit max. allowed [dBµV/m]	Amplitude of emission [dBµV/m]	Results
2590.2	AVG	54	53.9	complies
No additional critical peaks found. For more information please have a look at the plots.				

Result: The result of the measurement is passed.

Plots of the measurements

Plot 1: 9 kHz – 30 MHz



Plot 2: 30 MHz – 1000 MHz

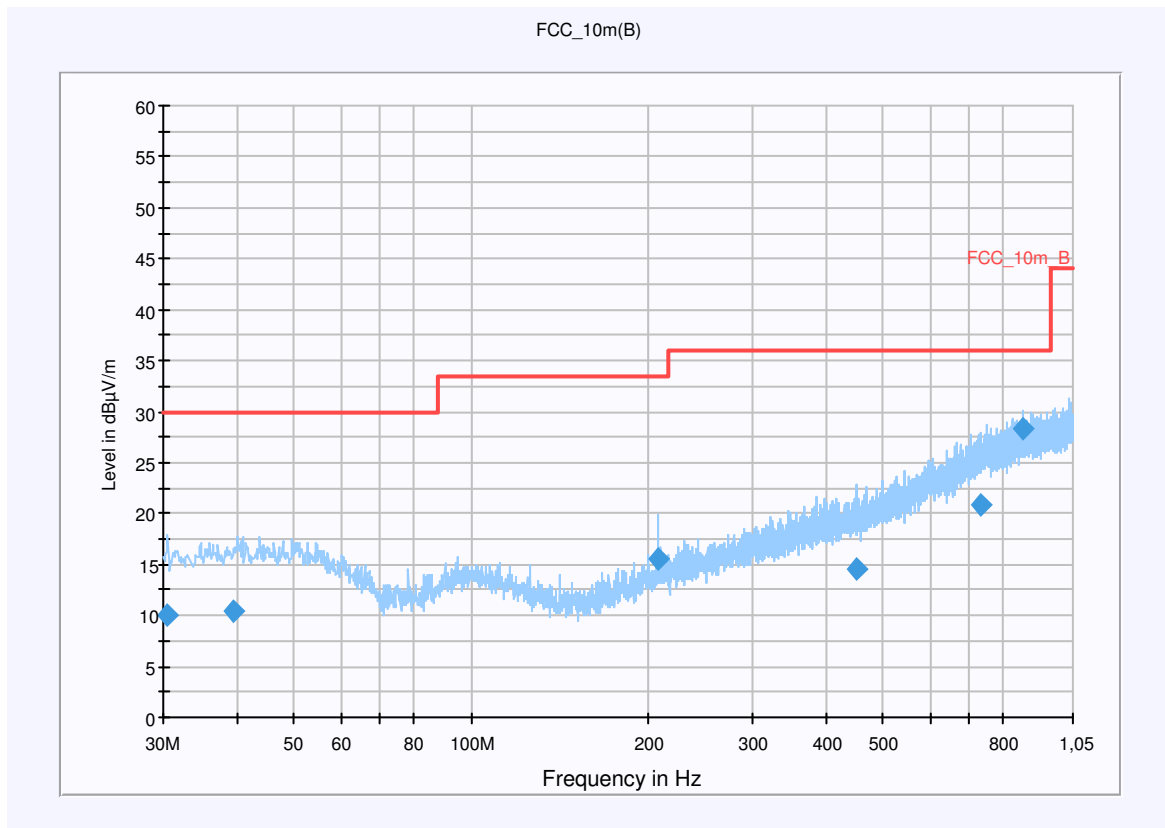
Common Information

EUT: TC693
 Serial Number: unknown
 Test Description: FCC part 15.249
 Operating Conditions: RX
 Operator Name: Hennemann
 Comment: battery powered

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dBµV/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 2 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
30.573592	10.1	15000.000	120.000	300.0	H	40.0	12.6	19.9	30.0	
39.566100	10.4	15000.000	120.000	200.0	H	194.0	13.4	19.6	30.0	
207.990750	15.5	15000.000	120.000	108.0	V	234.0	12.0	18.0	33.5	
452.280600	14.5	15000.000	120.000	388.0	V	181.0	17.7	21.5	36.0	
732.716550	20.8	15000.000	120.000	149.0	V	100.0	23.3	15.2	36.0	
863.395500	28.3	15000.000	120.000	100.0	H	180.0	24.7	7.7	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

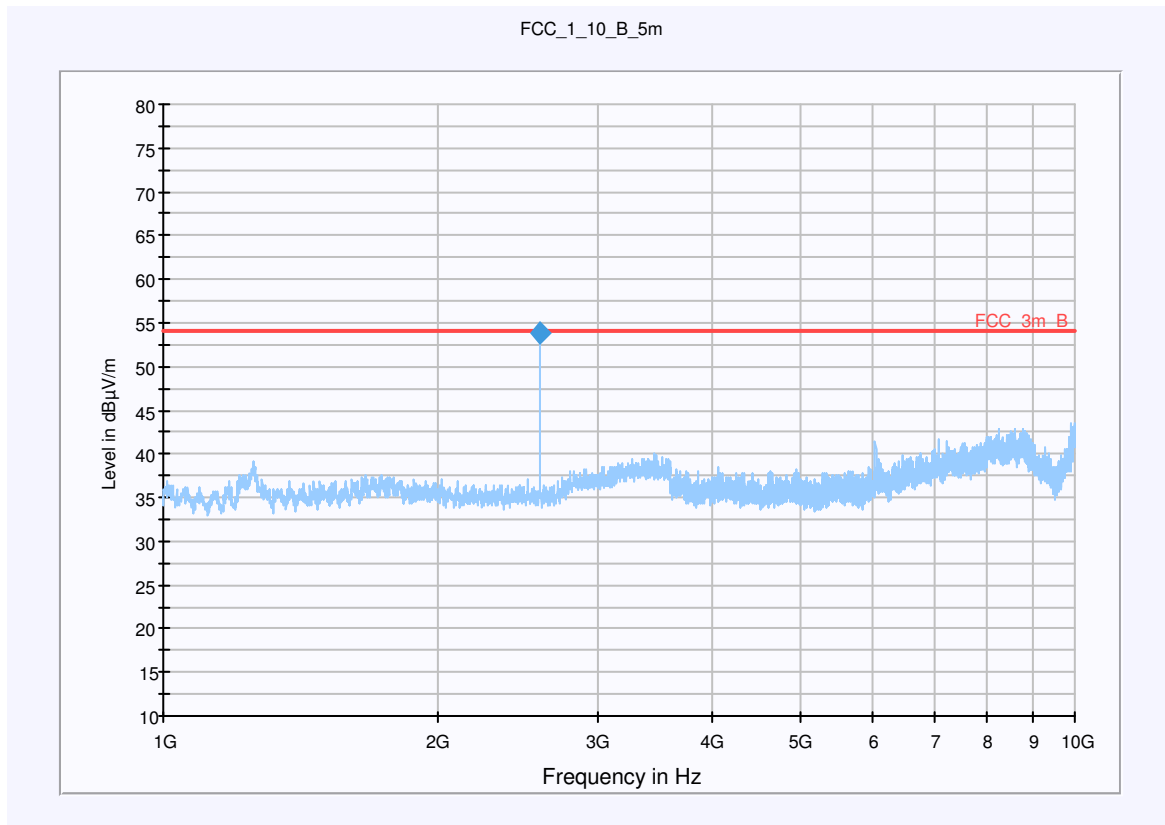
Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (1005)
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 8.10.00

Plot 3: 1 GHz – 10 GHz

Common Information

EUT: TC693
 Serial Number: unknown
 Test Description: FCC part 15.249
 Operating Conditions: RX
 Operator Name: Hennemann
 Comment: battery powered



Final Result 1

Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
2590.184727	53.9	100.000	1000.000	100.0	H	172.0	-4.0	0.1	54.0	

9.4 Conducted limits

Not applicable

10 Test equipment and ancillaries used for tests

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

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

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
2	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
3	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
4	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	05.01.2011	05.01.2013
5	n. a.	Analyser-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	31.07.2009	31.07.2011
6	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
7	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
8	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
9	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
10	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012
11	n. a.	Spectrum-Analyzer	FSU26	R&S	200809	300003874	k	10.01.2011	10.01.2013
12	n. a.	Isolating Transformer	RT5A	Grundig	8041	300001626	g		
13	n. a.	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2818A03450	300001040	Ve	08.01.2009	08.01.2012
14	n. a.	Coaxial Attenuator 30dB/500W	8325	Bird	1530	300001595	ev		
15	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	viKI!	05.03.2009	05.09.2011
16	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
17	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
18	Spec.A. 2_2e	System rack for EMI measurement solution	85900	HP I.V.	*	300000222	ne		
19	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
20	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
21	n. a.	Relais Matrix	PSU	R&S	890167/024	300001168	ne		
22	n. a.	Isolating Transformer	RT5A	Grundig	9242	300001263	ne		
23	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		

24	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
25	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
26	n. a.	Band Reject filter	WRCG1855/1910-1835/1925-40/8SS	Wainwright	7	300003350	ev		
27	n. a.	Band Reject filter	WRCG2400/2483-2375/2505-50/10SS	Wainwright	11	300003351	ev		
28	n. a.	TILE -Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
29	n. a.	Highpass Filter	WHKX2.9/18G-12SS	Wainwright	1	300003492	ev		
30	n. a.	Highpass Filter	WHK1.1/15G-10SS	Wainwright	3	300003255	ev		
31	n. a.	Highpass Filter	WHKX7.0/18G-8SS	Wainwright	18	300003789	ne		
32	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
33	n. a.	MXG Microwave Analog Signal Generator	N5183A	Agilent Technologies	MY47420220	300003813	k	13.09.2010	13.09.2012
34	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	vlKI!	08.09.2010	08.09.2012
35	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	vlKI!	17.12.2008	17.12.2011

Agenda: Kind of Calibration

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

Annex A Photographs of the test setup

Photo documentation:

Photo 1:

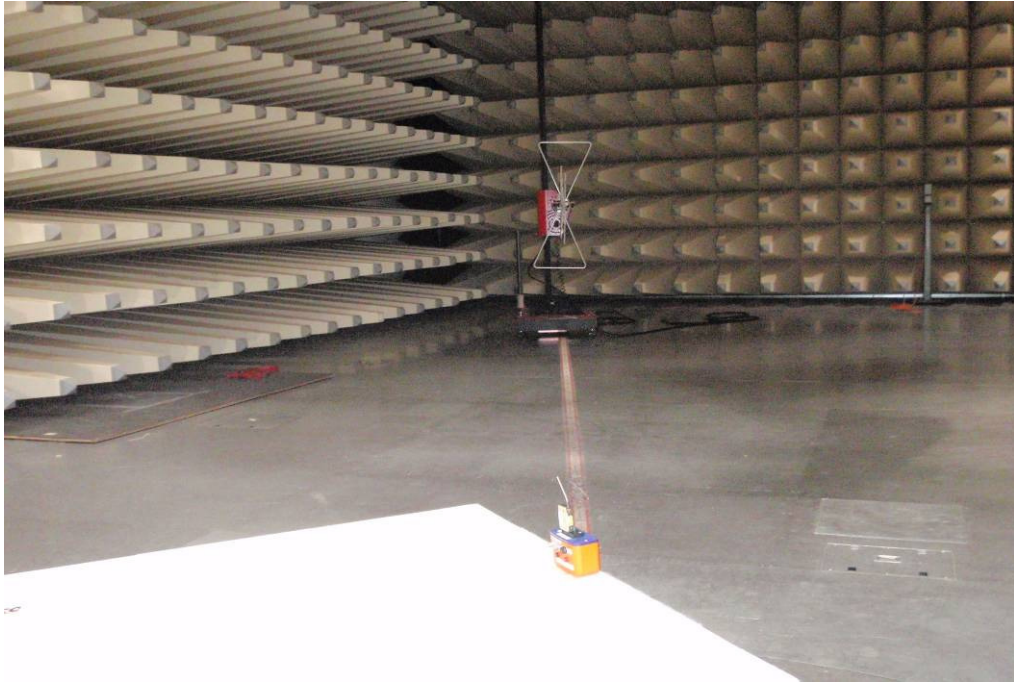
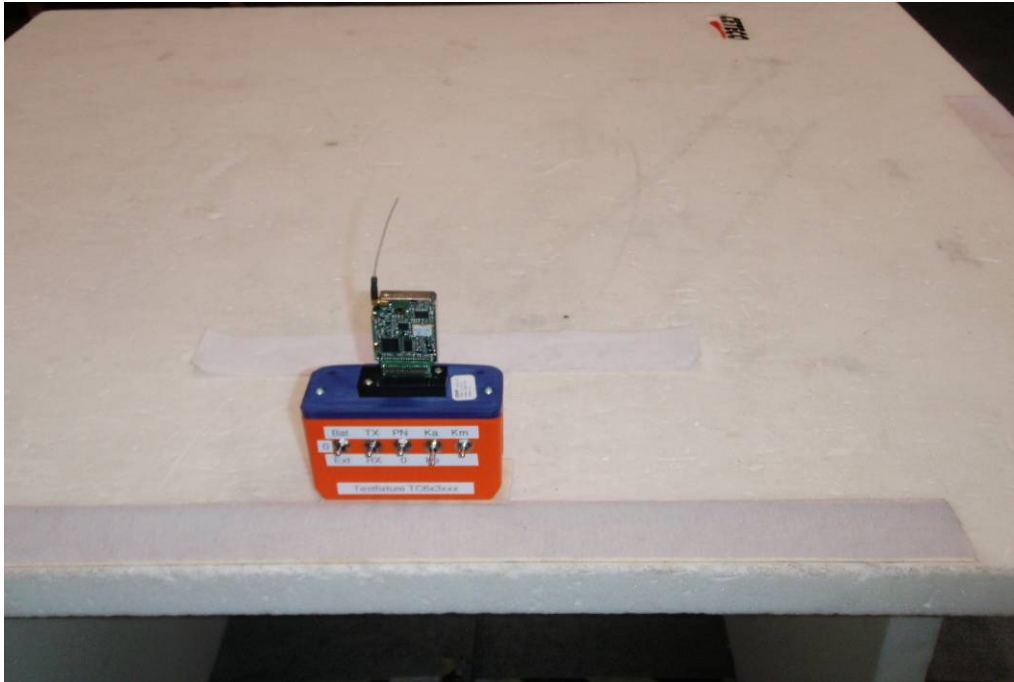


Photo 2:



Photo 3:



Annex B External photographs of the EUT

Photo documentation:

Photo 1:

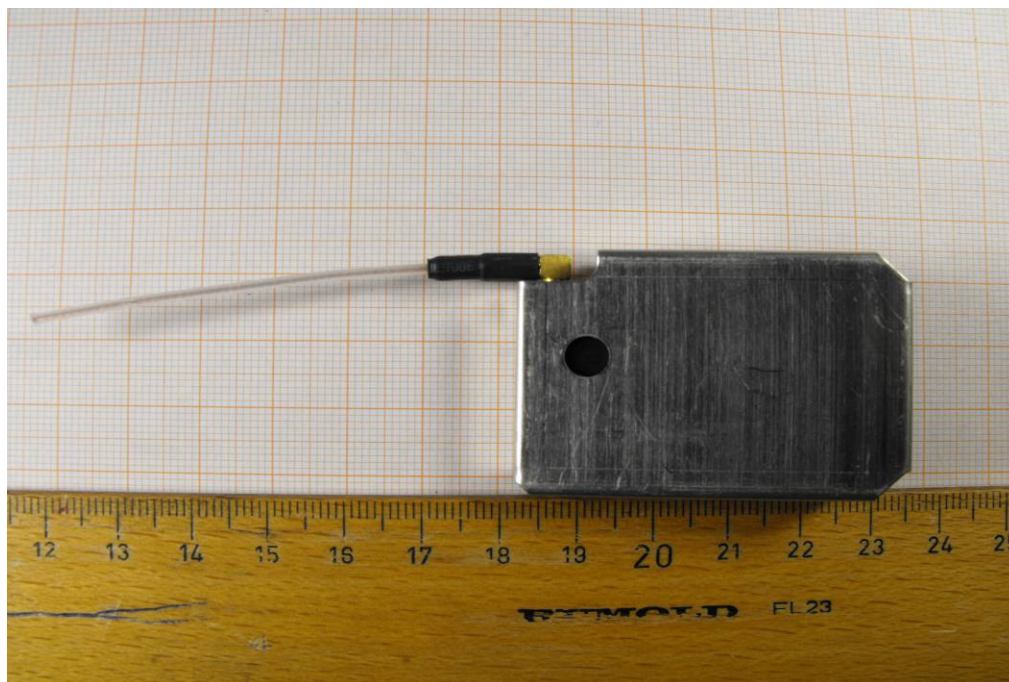


Photo 2:

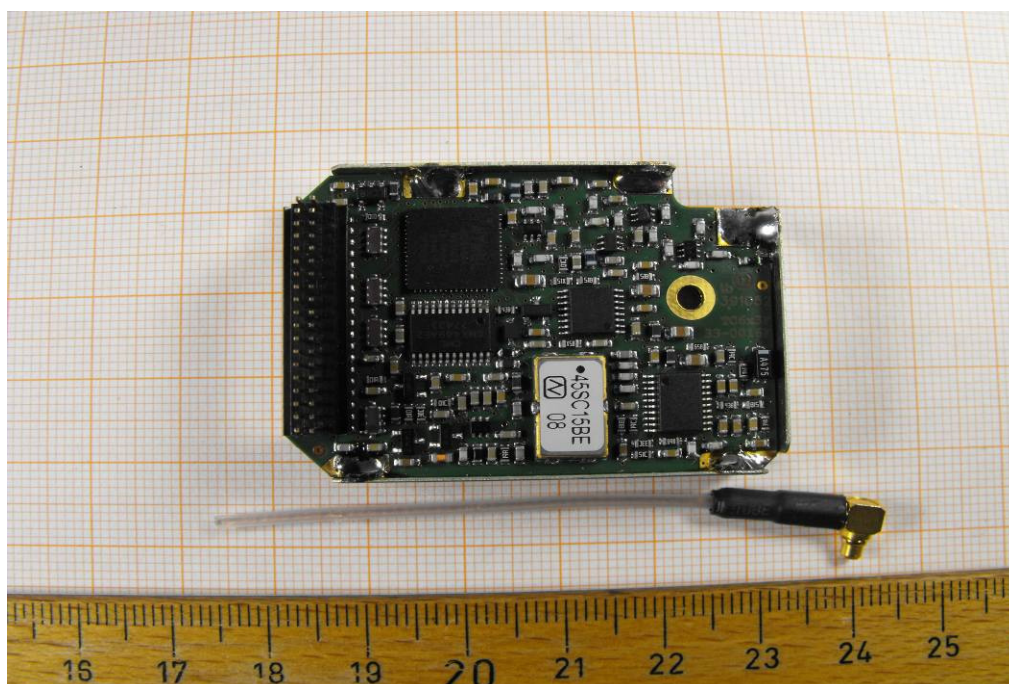


Photo 3:

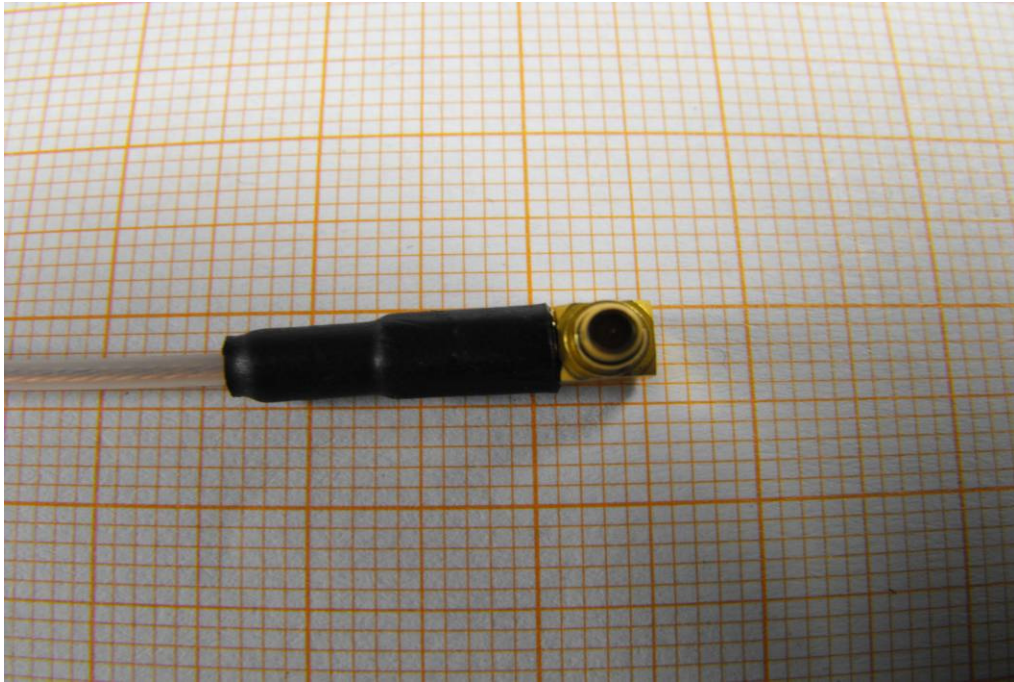


Photo 4:



Photo 5:

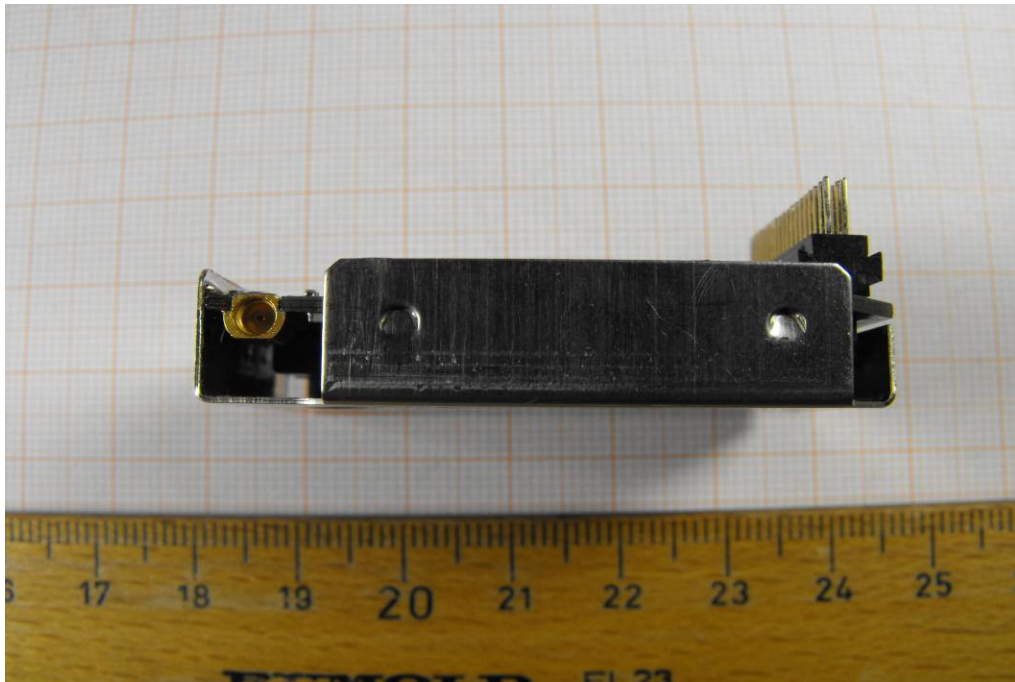


Photo 6:

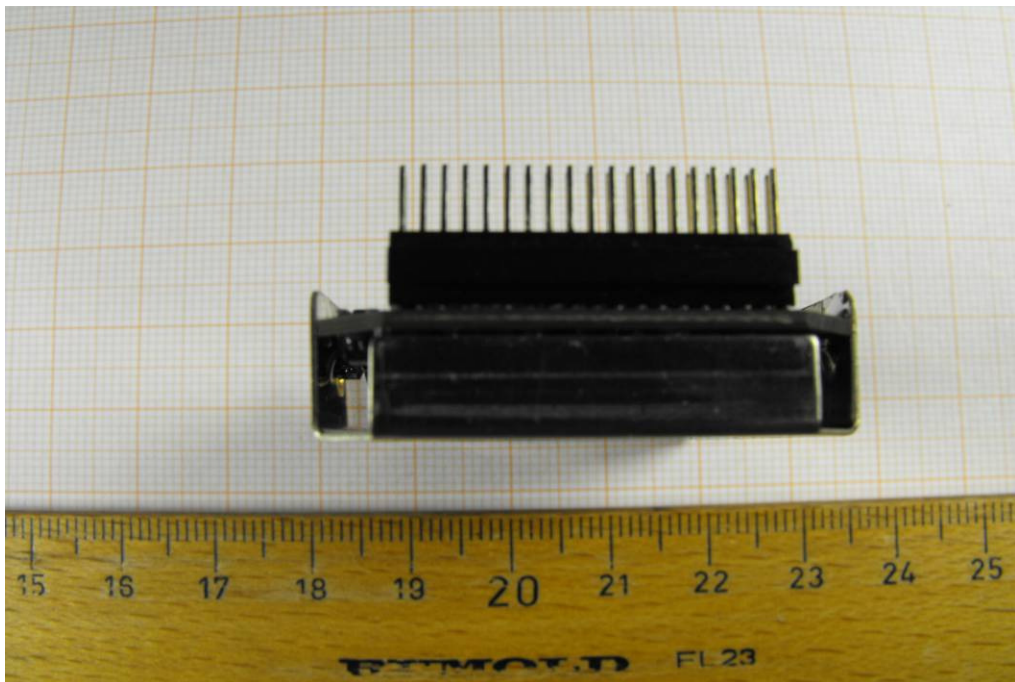
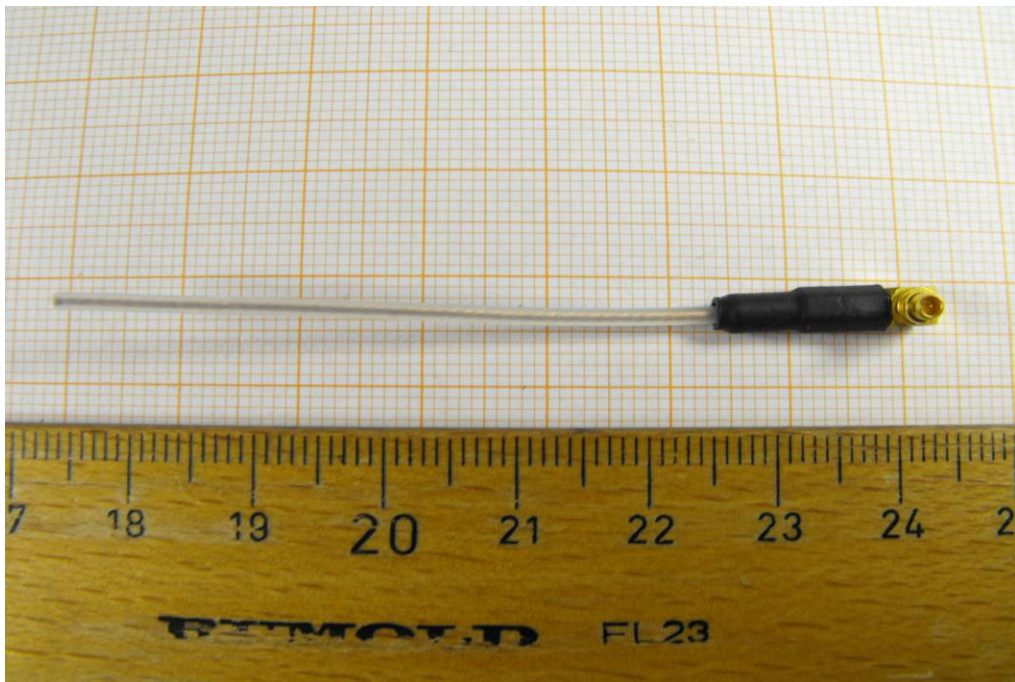


Photo 7:



Photo 8:



Annex C Internal photographs of the EUT

Photo documentation:

Photo 1:

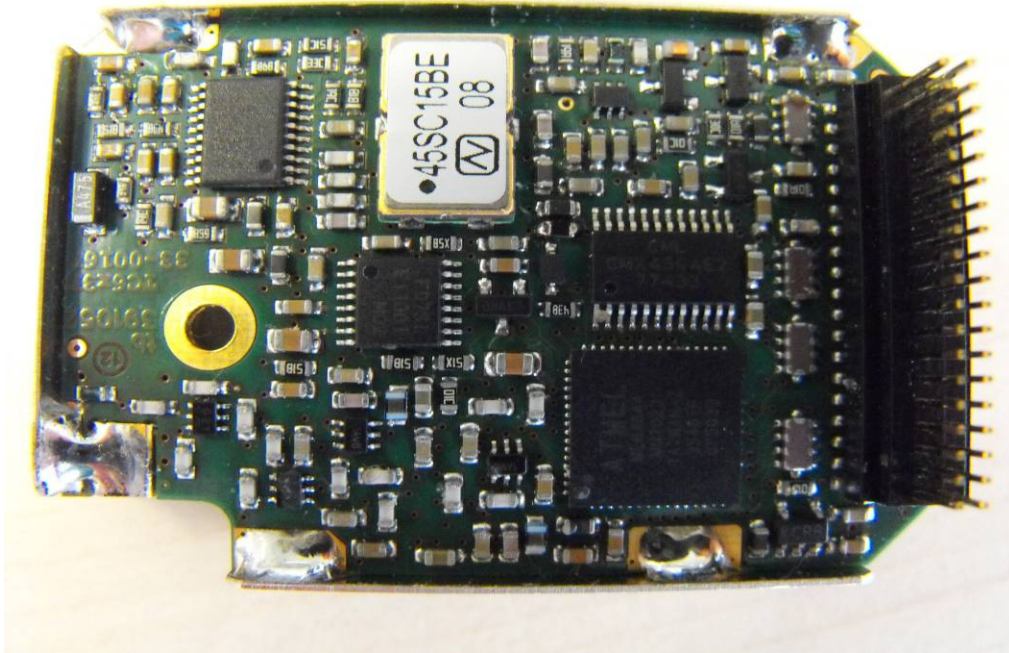
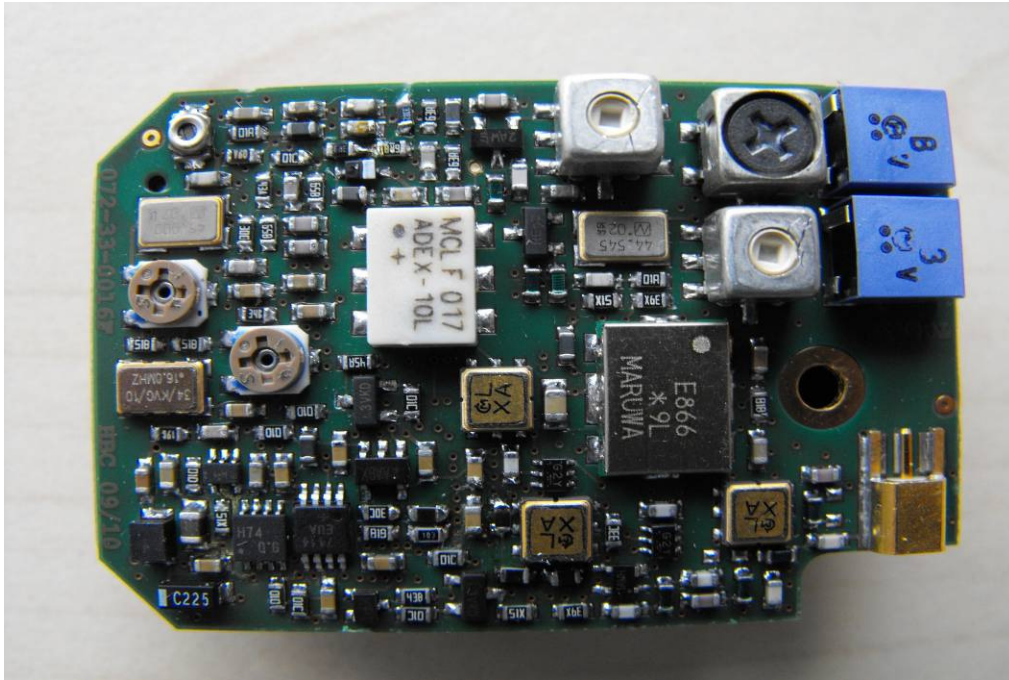


Photo 2:



Photo 3:



Annex D Document history

Version	Applied changes	Date of release
1.0	Initial release	2011-06-15
-A	Remeasurements of Spurious emissions radiated added	2011-06-21

Annex E 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