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Test Report

Report Number:

F161548E2

Equipment under Test (EUT):

RC Panel Pro

Applicant:

Fronius International GmbH

Manufacturer:

Fronius International GmbH

ilac-MRA DAkkS Deutsche Akkreditierungsstelle
D-PL-17186-01-01
D-PL-17186-01-02
D-PL-17186-01-03

References

[1] ANSI C63.10: 2013 American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

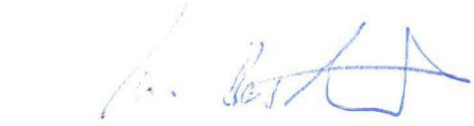
[2] FCC 47 CFR Part 15 Radio Frequency Devices

[3] RSS-210 Issue 9 (August 2016) Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment

[4] RSS-Gen Issue 4 (November 2014) General Requirements and Information for the Certification of Radiocommunication Equipment

Test result

The requirements of the tests performed as shown in the overview (clause 4) were fulfilled by the equipment under test. The complete test results are presented in the following.

Tested and written by	Manuel BASTERT Name	 Signature	03.02.2017 Date
Authorized reviewer:	Michael DINTER Name	 Signature	03.02.2017 Date

This test report is only valid in its original form.

The test results herein refer only to the tested sample. PHOENIX TESTLAB GmbH is not responsible for any generalisations or conclusions drawn from these test results concerning further samples. Any modification of the tested samples is prohibited and leads to the invalidity of this test report. Each page necessarily contains the PHOENIX TESTLAB Logo and the TEST REPORT NUMBER.

Contents: Page

1 Identification

1.1 Applicant

Name:	Fronius International Gmbh
Address:	Günter-Fronius-Str. 1 4600 Thalheim bei Wels
Country:	Austria
Name for contact purposes:	Jan HERNDLER
Tel:	+43-7242-241-2648
Fax:	+43-7242-241-0
e-mail address:	herndler.jan@fronius.com
Applicant represented during the test by the following person:	None

1.2 Manufacturer

Name:	Fronius International Gmbh
Address:	Günter-Fronius-Str. 1 4600 Thalheim bei Wels
Country:	Austria
Name for contact purposes:	Jan HERNDLER
Tel:	+43-7242-241-2648
Fax:	+43-7242-241-0
e-mail address:	herndler.jan@fronius.com
Applicant represented during the test by the following person:	None

1.3 Test Laboratory

The tests were carried out at:

PHOENIX TESTLAB GmbH
Königswinkel 10
32825 Blomberg
Germany

accredited by Deutsche Akkreditierungsstelle GmbH (DAkkS) in compliance with DIN EN ISO/IEC 17025 under Reg. No. D-PL-17186-01-02, FCC Test Firm Accreditation with the registration number 469623, designation number DE0004 and Industry Canada Test site registration SITE# IC3469A-1.

1.4 EUT (Equipment Under Test)

Test object	Display for welding apparatus
Model / HVIN	RC Panel Pro
Serial number	27191639
Software version	1.3.570
FCC ID	QKWSPB209A
IC	12270A-SPB209A

1.5 Technical data of equipment

Power supply:	U_{nom} = 24 V_{DC}
Highest internal frequency[1)]:	860 MHz

[1)]: Declared by the applicant.

Ports / Connectors				
Identification	Connector		Length during test	Shielding (Yes / No)
	EUT	Ancillary		
Speednet	RJ 45	RJ 45	2.9 m	Yes
Power supply	Customized	Customized	2.9 m	Yes

The following radio module was built in the EUT:

NFC module:	SPB209A

Periphery devices

AC adapter UE36LCP1-240150SPA (only for testing; EUT is normally supplied by the welding apparatus)
Laptop Fujitsu Siemens Lifebook E780

1.6 Dates

Date of receipt of test sample:	21.09.2016
Start of test:	02.11.2016
End of test:	09.11.2016

2 Operational states and test setup

Description of function of the EUT:

- The EUT is a remote control for welding equipment with integrated display. NFC technology allows personalizing the remote control; e.g. set user profiles and activate / deactivate them.

The following states were defined as the operating conditions:

During all tests the EUT was supplied with 24 V_{DC} by an AC/DC adapter and not by a welding device to simplify the test of the display. The intercommunication between the devices is realized using Speednet. Because it is IP based, a laptop was connected to the EUT to establish and monitor this communication.

The NFC function was monitored using a counter which counted successful tag authentication. The increasing counter value was shown on the display.

3 Additional information

General information:
- None.

Classification of cables:
- None.

Maximum length of cables, declared by the manufacturer:
- None.

Type of cables, declared by the manufacturer:
- No special type of cable declared

Deviation of the standard or test plan:
- None.

Special EMC measures, as a result of the tests:
- None.

4 Overview

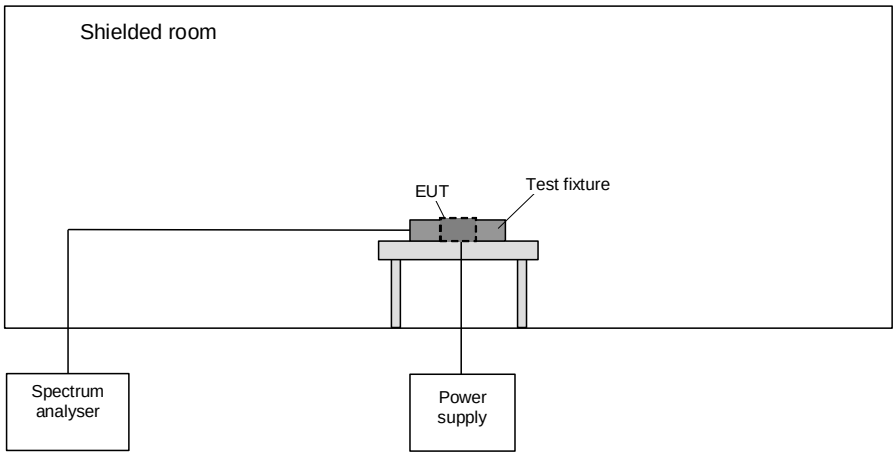
Application	Frequency range [MHz]	FCC 47 CFR Part 15 section [2]	RSS-210 Issue 9 [3] or RSS-Gen, Issue 4 [4]	Status	Refer page
99 % bandwidth	13.560	n.a.	6.6 [4]	Passed	9 et seq.
Conducted emissions on power supply lines	0.15 - 30	15.207 (a)	8.8 [4]	Passed	et seq.
Radiated emissions	0.009 - 1,000	15.205 (a) 15.209 (a)	4.3 [3] 6.4 & 6.5 [4] 6.13 [4] 8.9 [4]	Passed	13 et seq.
Antenna requirement	-	15.203 [2]	8.3 [4]	Passed*	-

*: Integrated antenna only, requirement fulfilled.

5 Results

5.1 99 % bandwidth

5.1.1 Method of measurement



The following procedure will be used for the occupied bandwidth measurement [4]:

The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.
When the occupied bandwidth limit is not stated in the applicable RSS or reference measurement method, the transmitted signal bandwidth shall be reported as the 99% emission bandwidth, as calculated or measured.

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

Note: Video averaging is not permitted.

A peak, or peak hold, may be used in place of the sampling detector as this may produce a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold may be necessary to determine the occupied bandwidth if the device is not transmitting continuously.

The trace data points are recovered and are directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded.

The difference between the two recorded frequencies is the 99% occupied bandwidth.

5.1.2 Test result

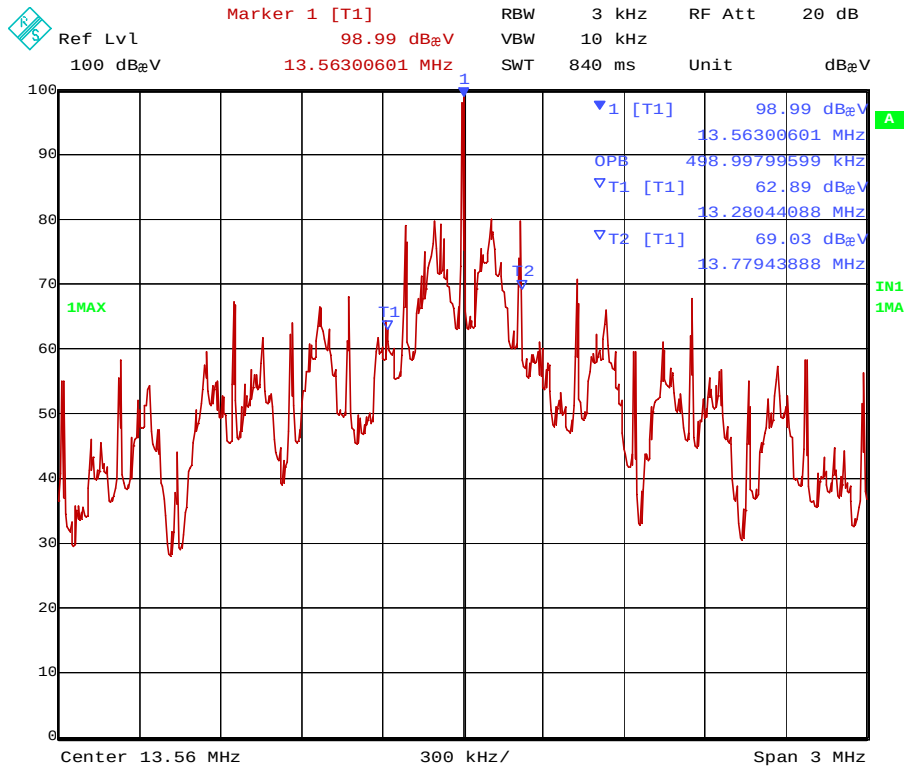
Ambient temperature:	21 °C

Relative humidity:	32 %

Supply voltage: During all measurements the EUT was supplied with 24 V_{DC}.

Test record: The test was carried out while the EUT was reading a TAG.

161548_99%.wmf: 99% Bandwidth:



F_L	F_U	BW (F_U - F_L)
13.28 MHz	13.78 MHz	500 kHz
Measurement uncertainty: < $1*10^{-7}$		

Test equipment used (see chapter 6)

2, 17

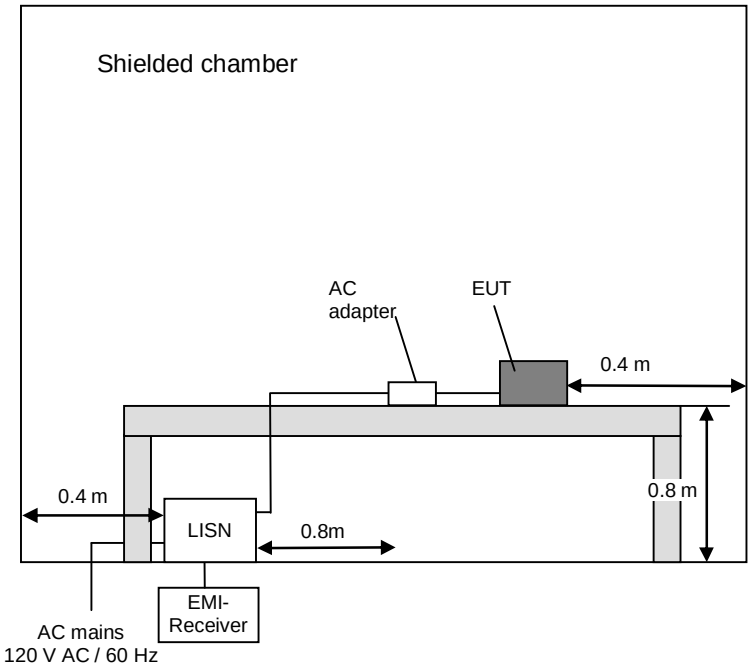
5.2 Conducted emissions on power supply lines

5.2.1 Test method

This test will be carried out in a shielded chamber. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm above the ground plane. Floor-standing devices will be placed directly on the ground plane. The setup of the Equipment under test will be in accordance to [1].

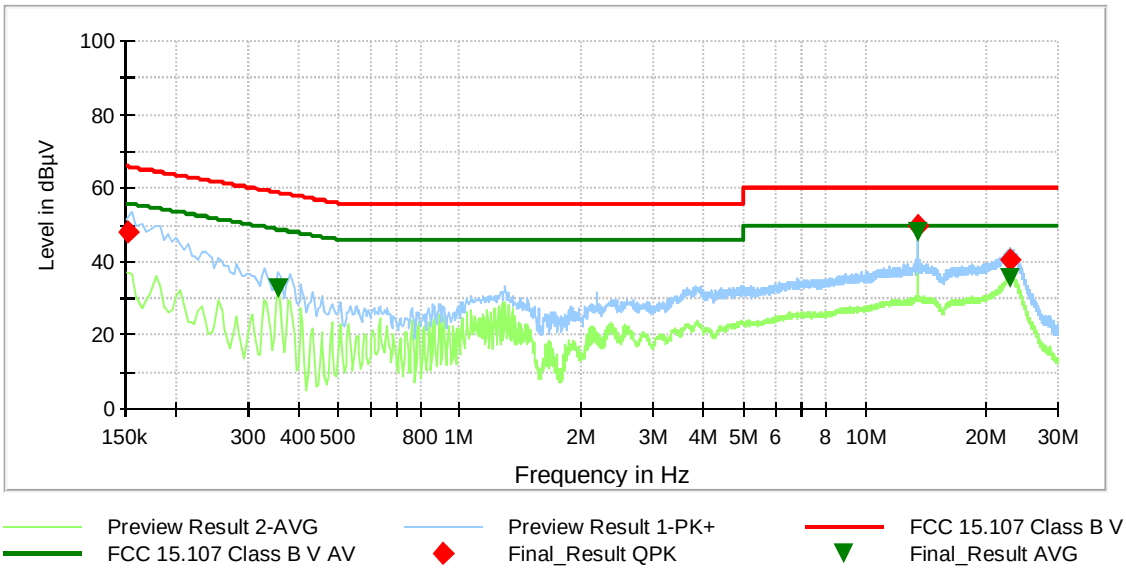
The frequency range 150 kHz to 30 MHz will be measured with an EMI Receiver set to MAX Hold mode with peak and average detector and a resolution bandwidth of 9 kHz. A scan will be carried out on the phase (or plus pole in case of DC powered devices) of the AC mains network. If levels detected 10 dB below the appropriable limit, this emission will be measured with the average and quasi-peak detector on all lines.

Frequency range	Resolution bandwidth
150 kHz to 30 MHz	9 kHz



5.2.2 Test results

Test description:	Conducted emission measurement
EUT:	RC Panel Pro
Manufacturer:	Fronius
Operating conditions:	Normal mode
Test site:	Phoenix TESTLAB GmbH, shielded room M4
Operator:	M. Bastert
Comment:	24 V_{DC} by AC adapter supplied with 120 V_{AC} / 60 Hz



Final result

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (s)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.151800	47.98	---	65.90	17.92	5	9	N	FLO	9.8
0.357900	---	32.92	48.78	15.86	5	9	L1	FLO	9.9
13.560000	---	48.19	50.00	1.81	5	9	N	GND	10.8
13.560000	49.70	---	60.00	10.30	5	9	L1	FLO	10.7
22.812900	40.48	---	60.00	19.52	5	9	L1	GND	10.9
22.867800	---	35.37	50.00	14.63	5	9	L1	GND	10.9
Measurement uncertainty: ± 2.76 dB									

Test equipment used (see chapter 6)

26, 30 - 33

5.3 Radiated emissions

5.3.1 General method of measurement

The radiated emission measurement is subdivided into five stages.

- A preliminary measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 9 kHz to 1 GHz.
- A final measurement carried out on an outdoor test side without reflecting ground plane and a fixed antenna height in the frequency range 9 kHz to 30 MHz.
- A final measurement carried out on an open area test side with reflecting ground plane and various antenna heights in the frequency range 30 MHz to 1 GHz.
- A preliminary measurement carried out in a fully anechoic chamber with a variable antenna distance and height in the frequency range 1 GHz to 25 / 40 GHz.
- A final measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 1 GHz to 40 GHz.

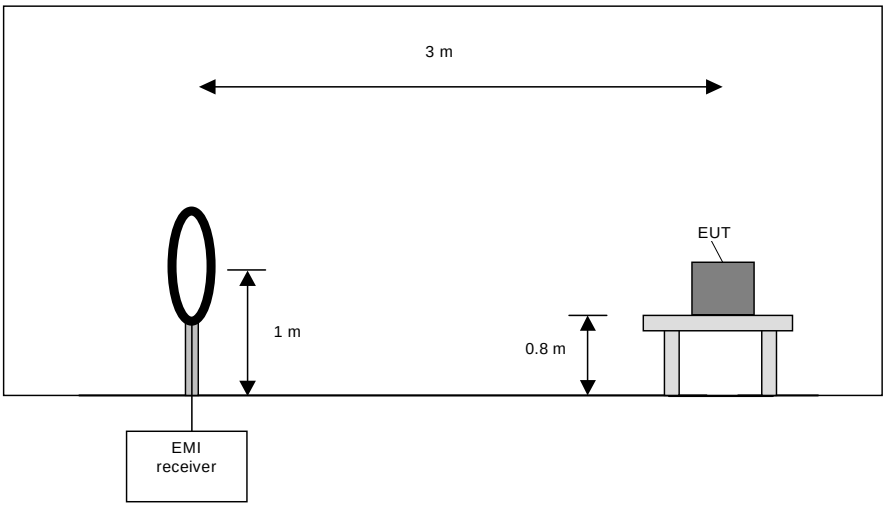
Preliminary measurement (9 kHz to 30 MHz):

In the first stage a preliminary measurement will be performed in a shielded room with a measuring distance of 3 meters. Table-top devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The setup of the Equipment under test will be in accordance to [1].

The frequency range 9 kHz to 30 MHz will be monitored with a spectrum analyzer while the system and its cables will be manipulated to find out the configuration with the maximum emission levels if applicable. The EMI Receiver will be set to MAX Hold mode. The EUT and the measuring antenna will be rotated around their vertical axis to found the maximum emissions.

The resolution bandwidth of the spectrum analyzer will be set to the following values:

Frequency range	Resolution bandwidth
9 kHz to 150 kHz	200 Hz
150 kHz to 30 MHz	10 kHz



Preliminary measurement procedure:

Prescans were performed in the frequency range 9 kHz to 150 kHz and 150 kHz to 30 MHz.

The following procedure will be used:

1) Monitor the frequency range at horizontal polarization and a EUT azimuth of 0 °.
2) Manipulate the system cables within the range to produce the maximum level of emission.
3) Rotate the EUT by 360 ° to maximize the detected signals.
4) Make a hardcopy of the spectrum.
5) Measure the frequencies of highest detected emission with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
6) Repeat steps 1) to 5) with the other orthogonal axes of the EUT (because of EUT is a module and might be used in a handheld equipment application).
7) Rotate the measuring antenna and repeat steps 1) to 5).

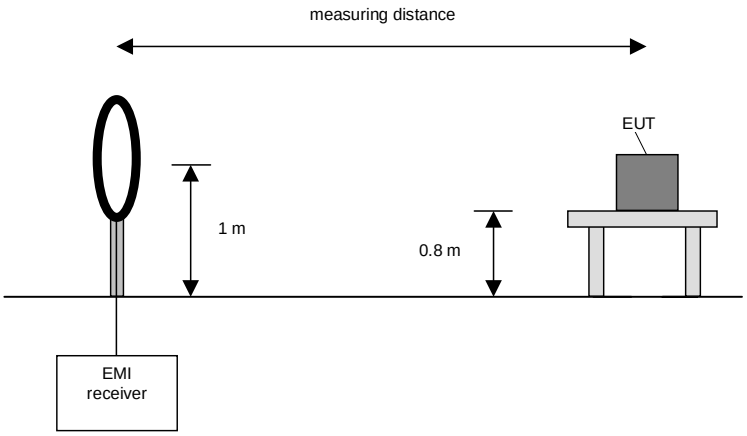
Final measurement (9 kHz to 30 MHz):

In the second stage a final measurement will be performed on an open area test site with no conducting ground plane in measuring distances of 3 m, 10 m and 30 m. In cases where larger measuring distances are required the results will be extrapolated based on the values measured on the closer distances according to Section 15.31 (f) (2) [3]. The final measurement will be performed with a EMI Receiver set to Quasi Peak detector except for the frequency bands 9 kHz to 90 kHz and 110 kHz to 490 kHz where an average detector will be used according Section 15.209 (d) [3].

On the frequencies, which were detected during the preliminary measurements, the final measurement will be performed while rotating the EUT and the measuring antenna in the range of 0 ° to 360 ° around their vertical axis until the maximum value is found.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
9 kHz to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz



Final measurement procedure:

The following procedure will be used:

1) Monitor the frequency range with the measuring antenna at vertical orientation parallel to the EUT at an azimuth of 0 °.
2) Rotate the EUT by 360 ° to maximize the detected signals and note the azimuth and orientation.
3) Rotate the measuring antenna to find the maximum and note the value.
4) Rotate the measuring antenna and repeat steps 1) to 3) until the maximum value is found.
5) Repeat steps 1) to 4) with the other orthogonal axes of the EUT (if the EUT is a module and might be used in a handheld equipment application).

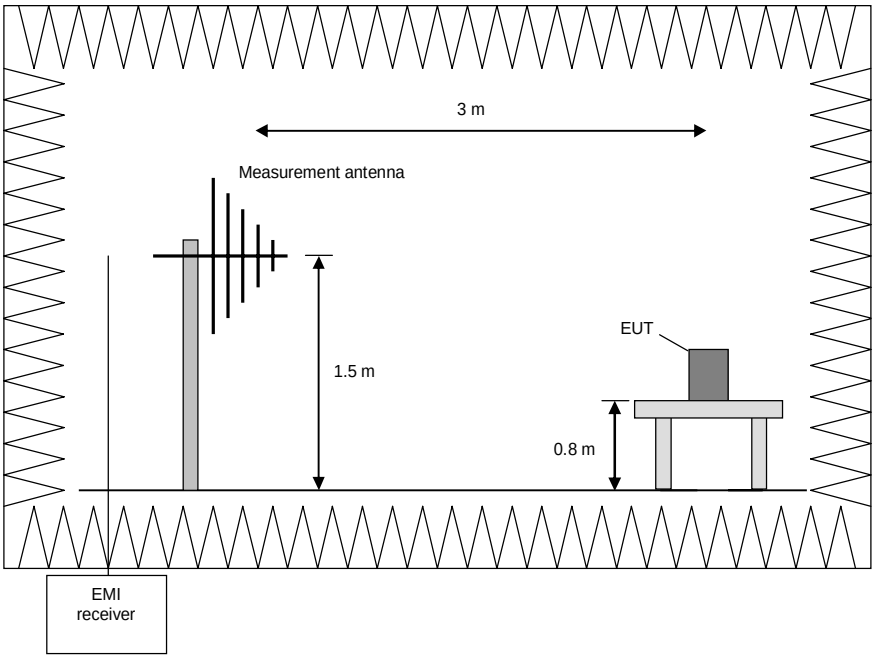
Preliminary measurement (30 MHz to 1 GHz)

In the first stage a preliminary measurement will be performed in a fully anechoic chamber with a measuring distance of 3 meter. Table top devices will set up on a non-conducting turn device on the height of 1.5 m. Floor-standing devices will be placed directly on the turntable/ground plane. The setup of the Equipment under test will be in accordance to [1].

The frequency range 30 MHz to 1 GHz will be measured with an EMI Receiver set to MAX Hold mode and a resolution bandwidth of 100 kHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 ° to 360 °.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
30 MHz to 230 MHz	100 kHz
230 MHz to 1 GHz	100 kHz



Procedure preliminary measurement:

Pre-scans were performed in the frequency range 30 MHz to 230 MHz and 230 MHz to 1 GHz.
The following procedure will be used:

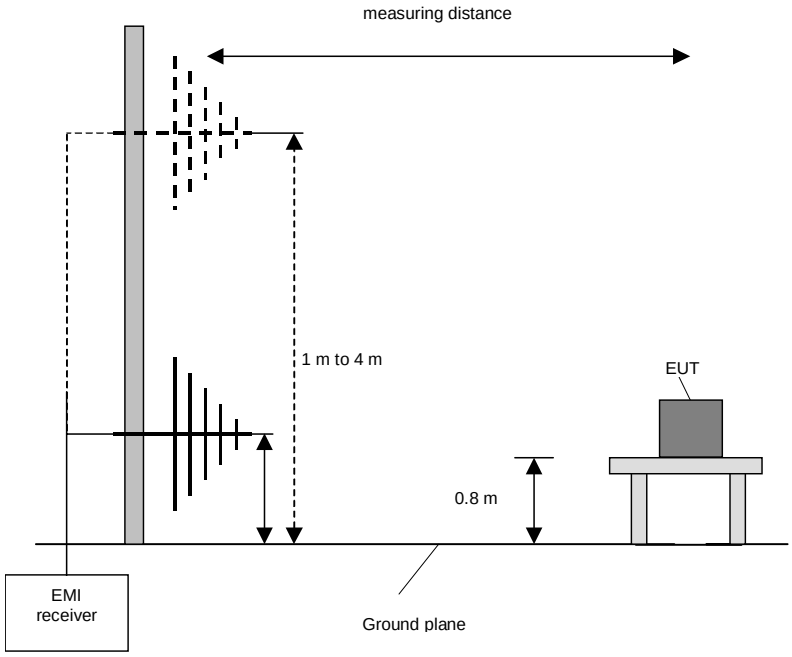
1. Monitor the frequency range at horizontal polarization and a EUT azimuth of 0 °.
2. Manipulate the system cables within the range to produce the maximum level of emission.
3. Rotate the EUT by 360 ° to maximize the detected signals.
4. Repeat 1) to 3) with the vertical polarization of the measuring antenna.
5. Make a hardcopy of the spectrum.
6. Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.

Final measurement (30 MHz to 1 GHz)

A final measurement on an open area test site will be performed on selected frequencies found in the preliminary measurement. During this test the EUT will be rotated in the range of 0 ° to 360 °, the measuring antenna will be set to horizontal and vertical polarisation and raised and lowered in the range from 1 m to 4 m to find the maximum level of emissions.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
30 MHz to 1 GHz	120 kHz



Procedure final measurement:

The following procedure will be used:

1) Measure on the selected frequencies at an antenna height of 1 m and a EUT azimuth of 23 °.
2) Move the antenna from 1 m to 4 m and note the maximum value at each frequency.
3) Rotate the EUT by 45 ° and repeat 2) until an azimuth of 337 ° is reached.
4) Repeat 1) to 3) for the other orthogonal antenna polarization.
5) Move the antenna and the turntable to the position where the maximum value is detected.
6) Measure while moving the antenna slowly +/- 1 m.
7) Set the antenna to the position where the maximum value is found.
8) Measure while moving the turntable +/- 45 °.
9) Set the turntable to the azimuth where the maximum value is found.
10) Measure with Final detector (QP and AV) and note the value.
11) Repeat 5) to 10) for each frequency.
12) Repeat 1) to 11) for each orthogonal axes of the EUT.

Preliminary and final measurement (1 GHz to 40 GHz)

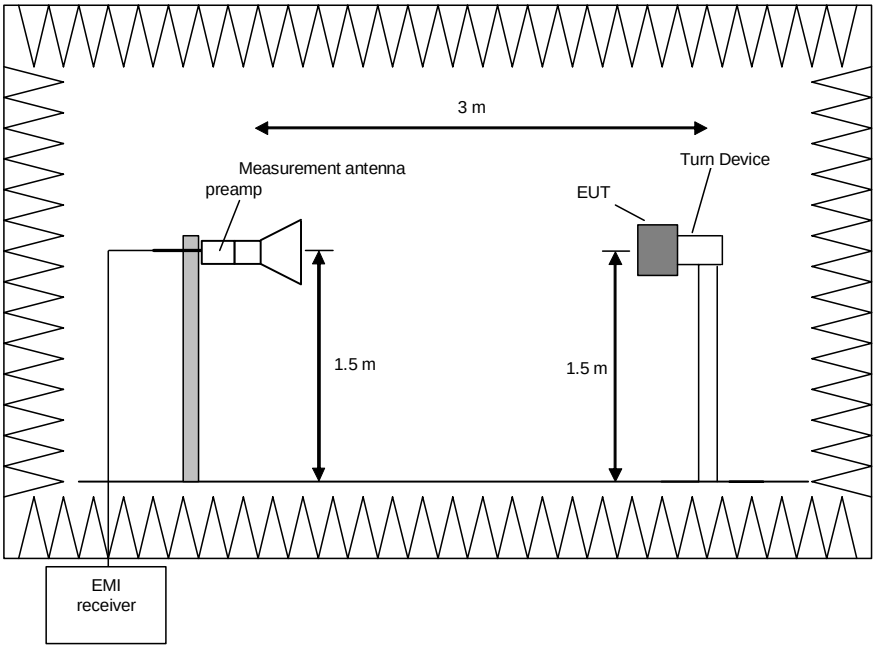
This measurement will be performed in a fully anechoic chamber. Table top devices will set up on a non-conducting turn device on the height of 1.5 m. The set-up of the Equipment under test will be in accordance to [1].

Preliminary measurement (1 GHz to 40 GHz)

The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The spectrum analyzer set to MAX Hold mode and a resolution bandwidth of 100 kHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 ° to 360 °. This measurement is repeated after raising the EUT in 30 ° steps according 6.6.5.4 in [1].

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
1 GHz to 4 GHz	100 kHz
4 GHz to 12 GHz	100 kHz
12 GHz to 18 GHz	100 kHz
18 GHz to 25 / 26.5 GHz	100 kHz
26.5 GHz to 40 GHz	100 kHz



Procedure preliminary measurement:

Pre-scans were performed in the frequency range 1 to 40 GHz.
The following procedure will be used:

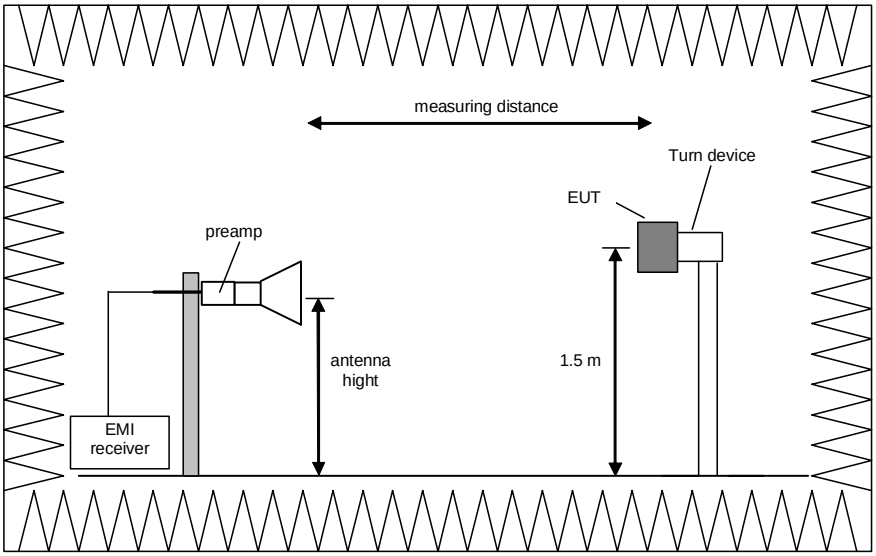
1. Monitor the frequency range at horizontal polarization and a EUT azimuth of 0 °.
2. Rotate the EUT by 360° to maximize the detected signals.
3. Repeat 1) to 2) with the vertical polarization of the measuring antenna.
4. Make a hardcopy of the spectrum.
5. Repeat 1) to 4) with the EUT raised by an angle of 30° (60°, 90°, 120° and 150°) according to 6.6.5.4 in [1].
6. Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
7. The measurement antenna polarization, with the according EUT position (Turntable and Turn device) which produces the highest emission for each frequency will be used for the final measurement. The six closest values to the applicable limit will be used for the final measurement.

Final measurement (1 GHz to 40 GHz)

The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1 MHz. The measurement will be performed by rotating the turntable through 0 to 360° in the worst-case EUT orientation which was obtained during the preliminary measurements.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
1 GHz to 4 GHz	1 MHz
4 GHz to 12 GHz	1 MHz
12 GHz to 18 GHz	1 MHz
18 GHz to 25 / 26.5 GHz	1 MHz
26.5 GHz to 40 GHz	1 MHz



Procedure of measurement:

The measurements were performed in the frequency ranges 1 GHz to 4 GHz, 4 GHz to 12 GHz, 12 GHz to 18 GHz, 18 GHz to 25 /26.5 GHz and 26.5 GHz to 40 GHz.
The following procedure will be used:

1) Set the turntable and the turn device to obtain the worst-case emission for the first frequency identified in the preliminary measurements.
2) Set the measurement antenna polarization to the orientation with the highest emission for the first frequency identified in the preliminary measurements.
3) Set the spectrum analyzer to EMI mode with peak and average detector activated.
4) Rotate the turntable from 0° to 360° to find the EUT angle that produces the highest emissions.
5) Note the highest displayed peak and average values
6) Repeat the steps 1) to 5) for each frequency detected during the preliminary measurements.

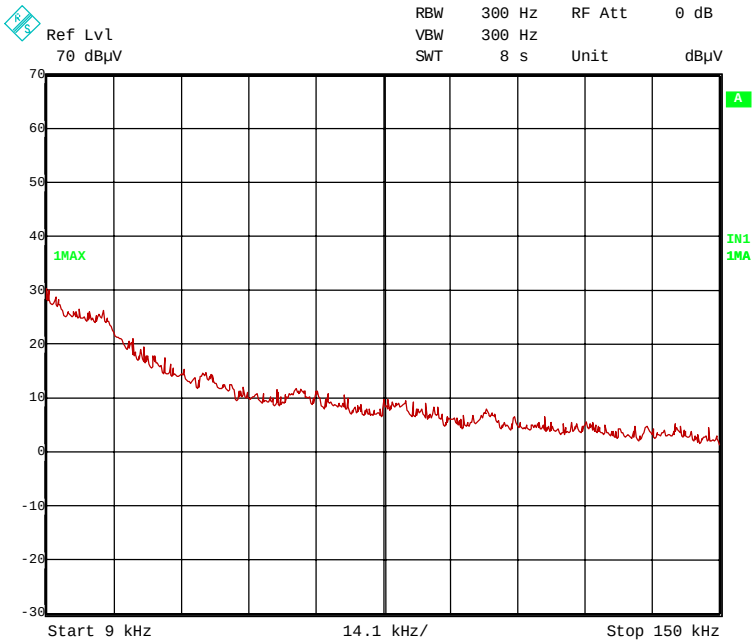
5.4 Test results

5.4.1 Preliminary radiated emission measurement (9 kHz to 1 GHz)

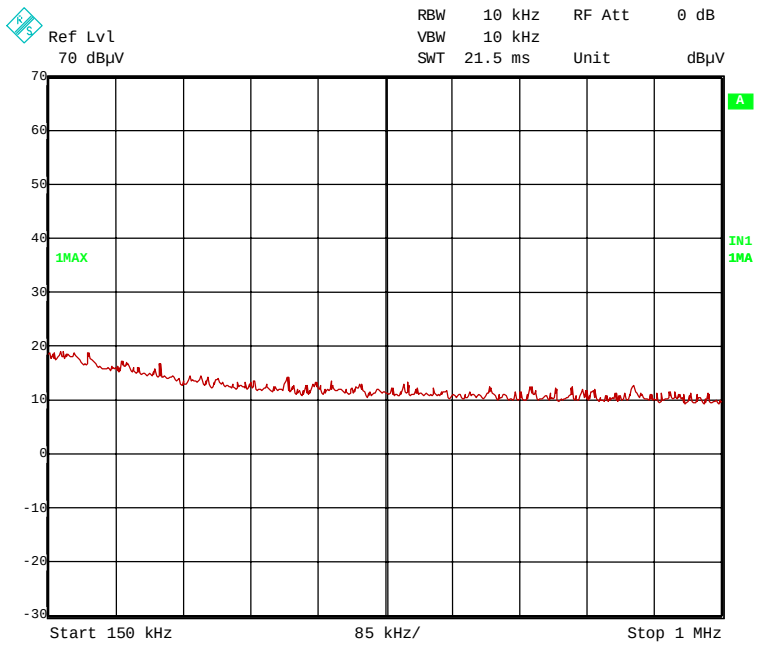
Ambient temperature	21 °C	Relative humidity	45 %

Position of EUT: The EUT was set-up on a non-conducting table of a height of 0.8 m and 1.5 m. The distance between EUT and antenna was 3 m.
Cable guide: For detail information of test set-up and the cable guide refer to the pictures in annex A of this test report.
Test record: All results are shown in the following.
Supply voltage: During all measurements the EUT was supplied 24 V_{DC} by AC adapter.
Frequency range: The preliminary measurement was carried out in the frequency range 9 kHz to 1 GHz according to [3].

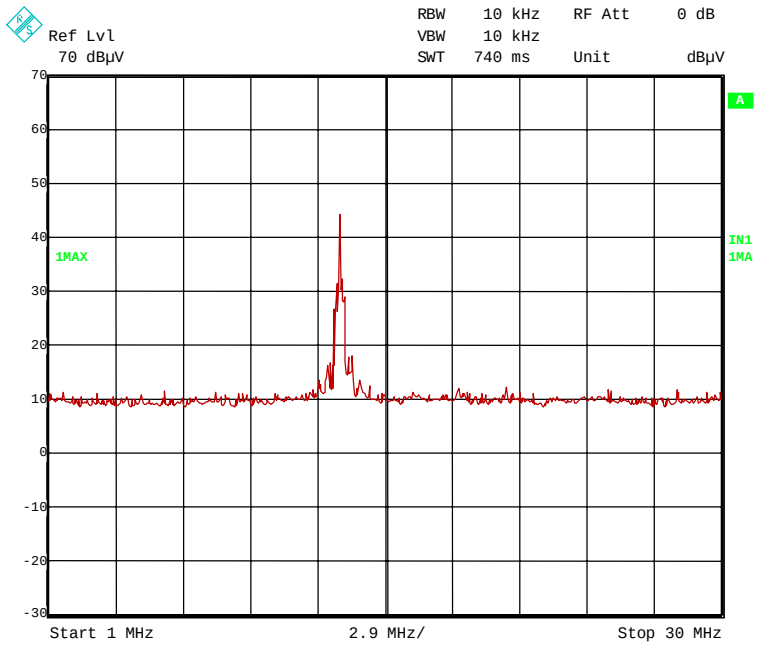
161548_3.wmf: Spurious emissions from 9 kHz to 150 kHz:



161548_2.wmf: Spurious emissions from 150 kHz to 1 MHz:



161548_1.wmf: Spurious emissions from 1 MHz to 30 MHz:

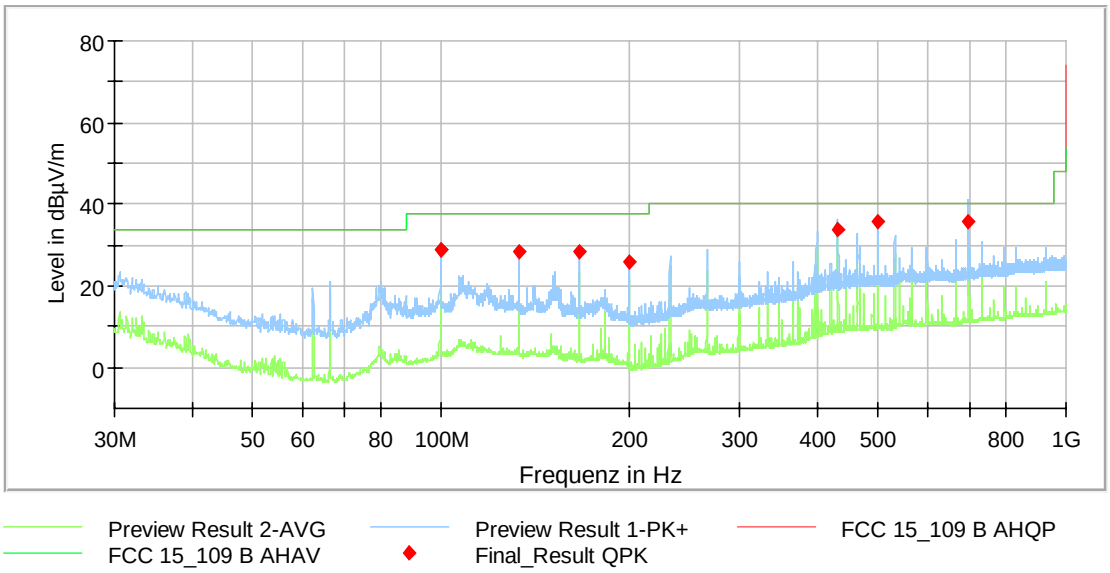


The following frequency was found outside restricted bands during the preliminary emission measurement from 9 kHz to 30 MHz:

13.56 MHz (wanted signal).

This frequency has to be measured in a final measurement at the outdoor test site.

Preliminary spurious emission measurement from 30 MHz to 1 GHz:



The following frequencies were found during the preliminary measurement. They have to be measured on the open area test site.

Frequency (MHz)
99.756000
133.008000
166.248000
199.500000
432.264000
498.768000
698.280000

The results on the open area test site are presented in the following.

Test equipment used (refer clause 6):

1 - 6, 10 -12, 17, 25

5.4.2 Final radiated emission measurement (9 kHz to 30 MHz)

Ambient temperature	10 °C	Relative humidity	50 %

Measurement result of wanted signal:

Radiated emission level (dBµV/m) at 10 m distance					
f (MHz)	Bandwidth[1)] (kHz)	Level[2)] (dBµV/m)	Limit[3)] (dBµV/m)	Margin (dB)	Result
13.56	10	46.6	49.5	2.9	Passed
Measurement uncertainty: ± 3.69 dB					

[1)] The measuring receiver bandwidth
[2)] Level measured with average detector.
[3)] Limit calculated according to [3] §15.209 (a) and §15.31 (f)(2).

The measurement was carried out in 10 m distance to get a sufficient result.

Measurement result of unwanted emissions:

Radiated emission level (dBµV/m) at 3 m distance					
f (kHz)	Bandwidth[1)] (kHz)	Level (dBµV/m)	Limit[4)] (dBµV/m)	Margin (dB)	Result
-	-	-	-	-	-
-	No emission above the noise floor was found				-
-					-
-					-
-	-	-	-	-	-
Measurement uncertainty: ± 3.69 dB					

[1)] The measuring receiver bandwidth
[2)] Levels measured with average detector.
[3)] Levels measured with quasi peak detector.
[4)] Limit calculated according to [3] §15.209 (a) and §15.31 (f)(2).

The measurement was carried out in a 3 m distance because the emissions are not measurable in a 10 m distance.

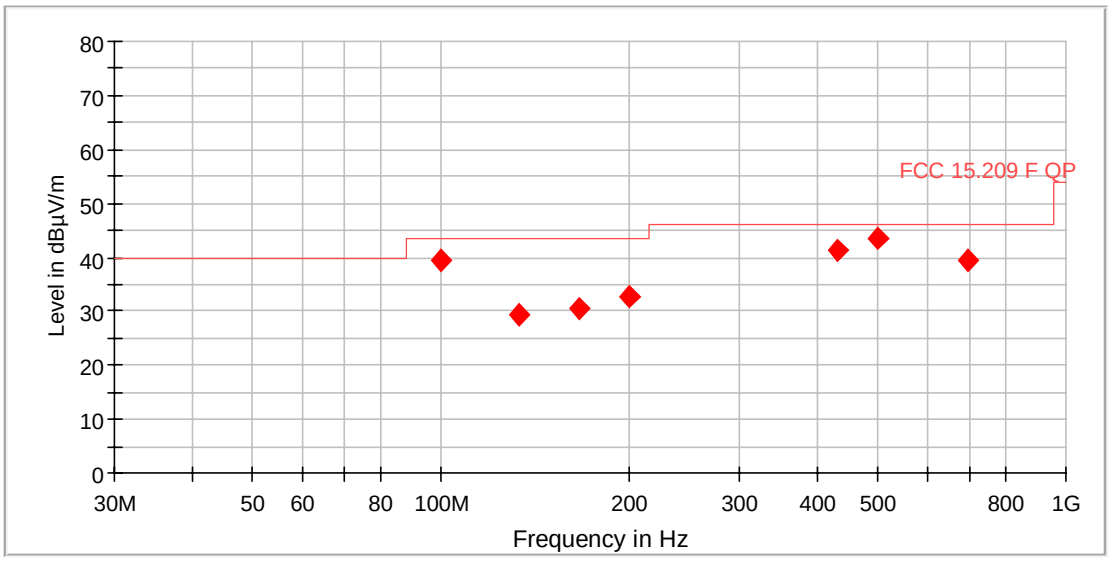
Test equipment used (refer clause 6):

2, 17, 28

5.4.3 Final radiated emission measurement (30 MHz to 1 GHz)

Ambient temperature	23 °C	Relative humidity	56 %

Position of EUT: The EUT was set-up on a non-conducting table of a height of 0.8 m .The distance between EUT and antenna was 3 m.
Cable guide: For detail information of test setup and the cable guide refer to the pictures in annex A of this test report.
Test record: All results are shown in the following.
Supply voltage: During all measurements the EUT was supplied 24 V_{DC} by AC adapter.



The results of the standard subsequent measurement on the open area test site are indicated in the table below. The limits as well as the measured results (levels) refer to the above mentioned standard while taking account of the specified requirements for a 3 m measuring distance.

Final result measured with the Quasi-Peak detector:

Frequency MHz	Final result dBµV/m	Limit dBµV/m	Margin dB	Readings dBµV	Antenna factor 1/m	Cable loss dB	Height cm	Azim deg.	Pol.	Restr. Band
99.756	39.36	43.5	4.1	27.5	10.8	1.1	250	121	Vert.	No
133.008	29.29	43.5	14.2	16.0	12.0	1.3	150	121	Vert.	Yes
166.248	30.39	43.5	13.1	18.4	10.6	1.4	150	266	Hor.	Yes
199.500	32.79	43.5	10.7	22.4	8.9	1.5	125	31	Hor.	No
432.264	41.14	46	4.9	22.5	16.3	2.3	137	136	Vert.	No
498.768	43.4	46	2.6	23.5	17.4	2.5	400	12	Hor.	No
698.280	39.28	46	6.7	16.3	20.0	3.0	350	178	Hor.	No
Measurement uncertainty: ± 4.78										

Test result: Passed.

Test equipment used (refer clause 6):

8, 21 - 25, 27

6 Test equipment

No.	Test equipment	Type	Manufacturer	Serial No.	PM. No.	Cal. Date	Cal. due
1	Fully anechoic chamber M20	-	Albatross Projects	B83107-E2439-T232	480303	Weekly verification (system cal.)	
2	Measuring receiver	ESI 40	Rohde & Schwarz	100064	480355	02/16/2016	02/2017
3	Controller	MCU	Maturo	MCU/043/971107	480832	Calibration not necessary	
4	Turntable	DS420HE	Deisel	420/620/80	480315	Calibration not necessary	
5	Antenna support	AS615P	Deisel	615/310	480187	Calibration not necessary	
6	Antenna	CBL6112 B	Chase	2688	480328	04/14/2014	04/2017
7	Antenna	HL50	Rohde & Schwarz	100438	481170	08/27/2014	08/2017
8	Antenna	CBL6111D	Chase	25761	480894	09/18/2014	09/2017
10	RF-cable No. 36	Sucoflex 106B	Suhner	0587/6B	480865	Weekly verification (system cal.)	
11	RF-cable No. 3	Sucoflex 106B	Suhner	0563/6B	480670	Weekly verification (system cal.)	
12	RF-cable No. 40	Sucoflex 106B	Suhner	0708/6B	481330	Weekly verification (system cal.)	
13	Positioner	TDF 1.5- 10Kg	Maturo	15920215	482034	Calibration not necessary	
14	Preamplifier 100 MHz - 13 GHz	JS3-00101200-23-5A	MITEQ Hauppauge N.Y.	681851	480337	02/18/2016	02/2018
17	Loop antenna	HFH2-Z2	Rohde & Schwarz	100417	481912	10/20/2016	10/2017
20	Loop antenna	-	Phoenix Test-Lab	-	410085	Calibration not necessary	
21	Open area test site M6	-	PHOENIX TESTLAB	-	480085	Weekly verification (system cal.)	
22	Antenna mast	MA240-0	Inn-Co GmbH	MA240-0/030/6600603	480086	Calibration not necessary	
23	Turntable	DS412	Deisel	412/316	480087	Calibration not necessary	
24	Controller	HD100	Deisel	100/349	480139	Calibration not necessary	
25	Software	EMC32	Rohde & Schwarz	100061	481800	Calibration not necessary	
26	Software	EMC32	Rohde & Schwarz	100061	481022	Calibration not necessary	
27	Measuring receiver	ESIB 7	Rohde & Schwarz	100304	480521	02/18/2016	02/2018
28	Outdoor test site	-	-	-	480293	Monthly verification (system cal.)	
29	Spectrum analyser	FSW43	Rohde & Schwarz	100586	481720	02/24/2016	02/2018
30	Shielded chamber M4	B83117-S1-X158	Siemens	190075	480088	Weekly verification (system cal.)	
31	LISN	NSLK8128	Schwarzbeck	8128155	480058	02/16/2016	02/2018
32	EMI Receiver / Spectrum Analyser	ESIB 26	Rohde & Schwarz	100292	481182	02/15/2016	02/2018
33	Transient Filter Limiter	CFL 9206A	Teseq GmbH	38268	481982	02/18/2016	02/2018

7 Report history

Report Number	Date	Comment
F161548E2	03.02.2017	Initial test report
-	-	-

8 List of annexes

Annex A Test setup photos 4 pages

161548_1.JPG: Test setup fully anechoic chamber
161548_2.JPG: Test setup fully anechoic chamber
161548_3.JPG: Test setup outdoor test site
161548_4.JPG: Test setup open area test site

Annex B External photos 4 pages

161548_7.JPG: RC Panel Pro, 3D view 1
161548_8.JPG: RC Panel Pro, 3D view 2
161548_9.JPG: RC Panel Pro, top view
161548_16.JPG: RC Panel Pro, type plate

Annex C Internal photos 9 pages

161548_10.JPG: RC Panel Pro, internal view 1
161548_11.JPG: RC Panel Pro, internal view 2
161548_12.JPG: RC Panel Pro, internal view 3
161548_13.JPG: RC Panel Pro, internal view 4
161548_14.JPG: RC Panel Pro, internal view 5
161548_15.JPG: RC Panel Pro, detail view to radio module
161548_17.JPG: RC Panel Pro, detail view to radio module (shielding removed)
161548_18.JPG: RC Panel Pro, Radio module removed, bottom view
161548_19.JPG: RC Panel Pro, top view to main PCB (radio module removed)

Photos 161548_17.JPG to 161548_19.JPG supplied by the applicant.