Report No. E18174.02

Test Report
Electromagnetic Compatibility

Product	USB Camera
Name and address of the applicant	Huddly AS Karenslyst Allé 51 0279 Oslo Norway
Name and address of the manufacturer	Huddly AS Karenslyst Allé 51 0279 Oslo Norway
Model	H2-xxxx-y (xxxx denotes different colors, y denotes different software configuration)
Rating	900mA 5V DC
Trademark	Huddly IQ
Serial number	40G00027
Additional information	-
Tested according to	EN 55032:2015 Class B FCC CFR 47 Part 15B ICES-003 Issue 6 EN 55024:2010
Order number	355032
Tested in period	2018-08-02
Issue date	2018-11-02
Name and address of the testing laboratory	**Nemko Group** Nemko AS Gaustadalléen 30, P.O.Box 73 Blindern, 0314 Oslo, Norway TEL: +47 22 96 03 30 FAX: +47 22 96 05 50

ilac-MRA NORWEGIAN ACCREDITATION TEST 033

An accredited technical test executed under the Norwegian accreditation scheme

Prepared by [Anh Dung Lam]

Approved by [Roger Berget]

REPORT REVISIONS

Revision #	Date	Order #	Description
00	2018-08-06	355032	First issued
01	2018-10-11	355032	Change of model name. Additional Radiated emissons measurement according to FCC CFR 47 Part 15. Additional Conducted emissions measurement on AC mains according to FCC CFR 47 Part 15. Updated test standards.
02	2018-11-02	355032	Correction of Reference standards on page 8

DESCRIPTION OF TESTED ITEM(S)

Product description……..……:	The equipment under test (EuT) is a USB camera for use as video conferencing equipment.
Model/type……..:	H2-xxxx-y (xxxx denotes different colors, y denotes different software configurations)
Serial number……..:	40G00027
Operating voltage……..:	5V DC
Maximum power/current……..:	900mA
Insulation class……..:	III
Highest clock frequency……..:	25 MHz (oscillator) and 700 MHz (internal of CPU)
Hardware version……..:	rev 02
Software version……..:	0.0.0-2667

Mounting position……..:	☒ Table top equipment ☐ Wall/ceiling mounted equipment ☐ Floor standing equipment ☐ Handheld equipment ☐ Rack mounted equipment ☐ Console equipment ☐ Other:

INPUT/OUTPUT PORTS

Port name and description	Cable		
	> 3m	Attached during test	Shielded
USB port	☐	☒	☐

OPERATING MODES

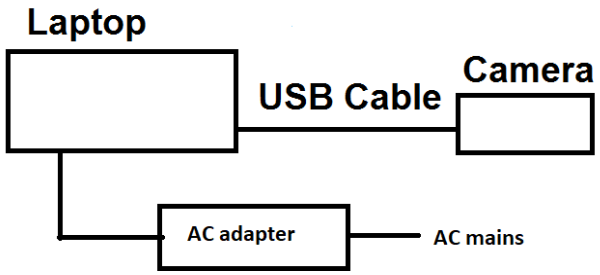
No.	Description	Applied for testing	
		Emissions	Immunity
1	Video streaming to computer	☒	☒

ACCESSORIES USED DURING TEST

Description	Manufacturer	Type
Laptop computer	HP	Zbook 14
Laptop computer (MacBook)	Apple	model A 1466 EMC 2925 A/N C02PG6ZPG941
AC adapter	Apple	MagSafe 2, Input: 100-240V AC 1A 50/60Hz Output 14.85V DC 3.05A

PHOTOS AND DRAWINGS

Photo of the test item…..……..:	

Drawing of test setup…..……..:	

OTHER INFORMATION

Modifications to the test item……:	None
Additional information……:	Conducted Emission and Radiated Emission (FCC): The camera was tested with laptop MacBook model A 1466 EMC 2925 A/N C02PG6ZPG941 and AC adapter MagSafe 2 Input: 100-240V AC 1A 50/60Hz Output 14.85V DC 3.05A

Note: This equipment has been tested with certain cable types and cable configurations. Any changes to these parameters when installed may influence on the EMC properties of this equipment

TEST ENVIRONMENT

Test laboratory……..:	☐ GAUSTAD	(Gaustadalleen 30, N-0314 Oslo, Norway)
	☒ KJELLER	(Instituttveien 6, N-2007 Kjeller, Norway)
Laboratory accreditation……...:	NORWEGIAN ACCREDITATION TEST 033	**Norsk Akkreditering – TEST 033** P06 – Electromagnetic Compatibility
Environmental ref. conditions…..:	The climatic conditions during the tests are within limits specified by the manufacturer for the operation of the product and the test equipment. The climatic conditions during tests are within the following limits: **Ambient temperature:** 15 – 35 °C **Relative humidity:** 25 – 75 %RH **Atmospheric pressure:** 86 – 106 kPa If explicitly required by the test standard, or the requirements are tighter than the above; the climatic conditions are recorded and documented separately in this test report.	
Calibration……..……:	All instruments used in the tests of this test report are calibrated and traceable to national or international standards. Between calibrations test set-ups are controlled and verified on a regular basis by intermediate checks to ensure, with 95% confidence that the instruments remain within their calibrated levels. The instrumentation accuracy is within limits agreed by the IECEE/CTL and defined by Nemko reference document TM-NO/301.	
Measurement uncertainties..……:	EMC uncertainty is specified in CISPR 16-4-2. Only if our uncertainty is larger than the maximum value UCISPR, the uncertainty is added to the measurement result. EMC test uncertainties for transient immunity are kept within the requirements of the relevant basic standard. Further information about measurement uncertainties is provided on request	

POWER SUPPLY SYSTEM UTILISED

Power supply voltage...……...:	☐ 240V AC 50Hz	☐ 400V 3NAC 50Hz
	☐ 230V AC 50Hz	☐ 230V 3AC 50Hz
	☐ 200V AC 60Hz	☒ 5V DC
	☒ 115V AC 60Hz	☐ 24V DC
Grounding conditions ……..…:	☒ Not grounded	
	☐ Ground is received from its power supply connection	
	☐ Additional chassis grounding	

EVALUATION OF PERFORMANCE

PERFORMANCE TESTS

Performance checks…….....:	Quality of the output video signal
Performance tests.....……:	Quality of the output video signal
Monitoring during tests.……...:	Visually monitoring of video signal on a laptop.
Note 1: Performance check is a short functional test carried out during or after a technical test to confirm that the equipment operates. Note 2: Performance test is a measurement or a group of measurements carried out during and/or after a technical test to confirm that the equipment complies with selected parameters as defined in the equipment standard. Note 3: Monitoring during tests describes which functions were monitored and how.	

PERFORMANCE CRITERIA

Performance criteria is……..:	☒	based on the applied product standard
	☐	based on a declaration from the customer

Criterion A……..:	The device shall continue to operate as intended both during and after the test. No degradation of performance or loss of function is allowed below the expected performance level of the device
Criterion B……..:	The device shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below the expected performance level of the device
Criterion C……..:	Temporary loss of function during test is allowed, provided the function is self-recoverable or can be restored by the operation of the controls

Note: In the subsequent test sections of this report, the required and actual specimen performance during immunity testing is indicated by the nomenclatures as given by the table above (A, B or C).

TEST REPORT SUMMARY

APPLIED STANDARDS

Standards	Titles
EN 55032:2015	*Electromagnetic compatibility of multimedia equipment - Emission requirements*
EN 55022:2010	*Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement*
FCC CFR 47 Part 15B	*Digital devices - Unintentinal radiators*
ANSI C63.4:2014	*Conducted emission testing, conducting ground plane, digital equipment, electric field measurement, line impedance stabilization network, low-voltage electrical equipment, low-voltage electronic equipment, magnetic field measurement, normalized site attenuation, radiated emission testing, radio-noise emissions, radio-noise power, site attenuation, unintentional radiators*
ICES-003 Issue 6	*Digital Apparatus – Spectrum Management and Telecommunications Policy Interference-Causing Equipment Standard*
EN 55024:2010	*Information technology equipment - Immunity characteristics - Limits and methods of measurement*

NOTES

Note 1: Product standards with dated references to basic standards may have been performed by Nemko AS according to the newest edition of the basic standard. This may impact the compliance criteria or technical performance of the test, still this is considered to be adequate as long as the test is expected to confirm compliance to the intention of the product standard. The table above lists the actual editions of the basic standards which have been used during testing.

Note 2: The choice of immunity test levels could be higher than those specified by the reference standards when we take into account the nature of the specimen and its intended use, or based on customer requests.

TEST SUMMARY

Requirements – Tests	Reference standards	Verdict
Conducted Emissions	FCC CFR 47 Part 15B ICES-003 Issue 6 ANSI C63.4:2014 CISPR 16-2-1:2014, Ed.3.0	PASS
Conducted Emissions (Telecom Port)	EN 55032:2015 CISPR 16-2-1:2014, Ed.3.0	N/A
Radiated Emissions (30MHz-1000MHz)	EN 55032:2015 FCC CFR 47 Part 15B ICES-003 Issue 6 ANSI C63.4:2014 CISPR 16-2-3:2014, Ed.3.2	PASS
Radiated Emissions (1GHz-6GHz)	EN 55032:2015 FCC CFR 47 Part 15B ICES-003 Issue 6 ANSI C63.4:2014 CISPR 16-2-3:2014, Ed.3.2	PASS
Electrostatic Discharge (ESD) Immunity	EN 55024:2010 EN 61000-4-2:2009, Ed.2.0	PASS
Radiated RF Disturbance Immunity	EN 55024:2010 EN 61000-4-3:2010, Ed.3.2	PASS
Electric Fast Transients Immunity	EN 55024:2010 EN 61000-4-4:2012, Ed.3.0	N/A
Surge Immunity	EN 55024:2010 EN 61000-4-5:2014, Ed.3.0	N/A
Conducted RF Disturbance Immunity	EN 55024:2010 EN 61000-4-6:2014, Ed.4.0	N/A
Power Frequency Magnetic Field Immunity	EN 55024:2010 EN 61000-4-8:2010, Ed.2.0	N/A
Dips and Interruptions Immunity	EN 55024:2010 EN 61000-4-11:2004, Ed.2.0	N/A

PASS : Tested and complied with the requirements
FAIL : Tested and failed the requirements
N/A : Test not relevant to this specimen (evaluated by the test laboratory)
– : Test not performed (instructed by the applicant)
* : An asterisk (*) placed after the verdict in the Result column indicates test items that are not within Nemko's scope of accreditation
# : A grid (#) placed after the verdict in the Result column indicates test items that are only partly covered by Nemko's scope of accreditation. Further information is detailed in the test section

Test Results

CONDUCTED EMISSIONS

TEST DESCRIPTION

Method
The reference method for this test is listed in the table under clause TEST SUMMARY.

Set-up
The measurement was performed at the power supply terminal of the specimen. Nominal supply voltage was provided.
The specimen was energized and in normal operating mode during the measurement.

☐ The specimen and its cables were elevated 10 cm above a ground plane.
☐ The specimen and its cables were elevated 40 cm above a ground plane.
☒ The specimen and its cables were placed 40 cm from a vertical ground plane, 80 cm over ground plane.
☐ The specimen was mounted directly on, and bonded to a ground plane. Cables and auxiliary equipment were elevated by 1 cm

☒ The specimen was connected to an Artificial Mains Network (AMN) by its power supply cable, which was adjusted to 100cm length by folding.
☐ The specimen was connected to an Artificial Mains Network (AMN) by a 0.8 m shielded power supply cable directly connected to the AMN

Conditions
☐ Frequency range was 9kHz – 30MHz.
☐ Frequency range was 10kHz – 30MHz.
☒ Frequency range was 150kHz – 30MHz.

The measuring bandwidth is 200Hz in the frequency range 9 kHz – 150 kHz. Measurement was made with a 100 Hz step size and 100 ms dwell time.
The measuring bandwidth is 9 kHz in the frequency range 150 kHz – 30 MHz. Measurement was made with a 4.5 kHz step size and 20 ms dwell time.

Measurement uncertainty: ± 3.8 dB (9 kHz – 150 kHz); ± 3.5 dB (150 kHz – 30 MHz)

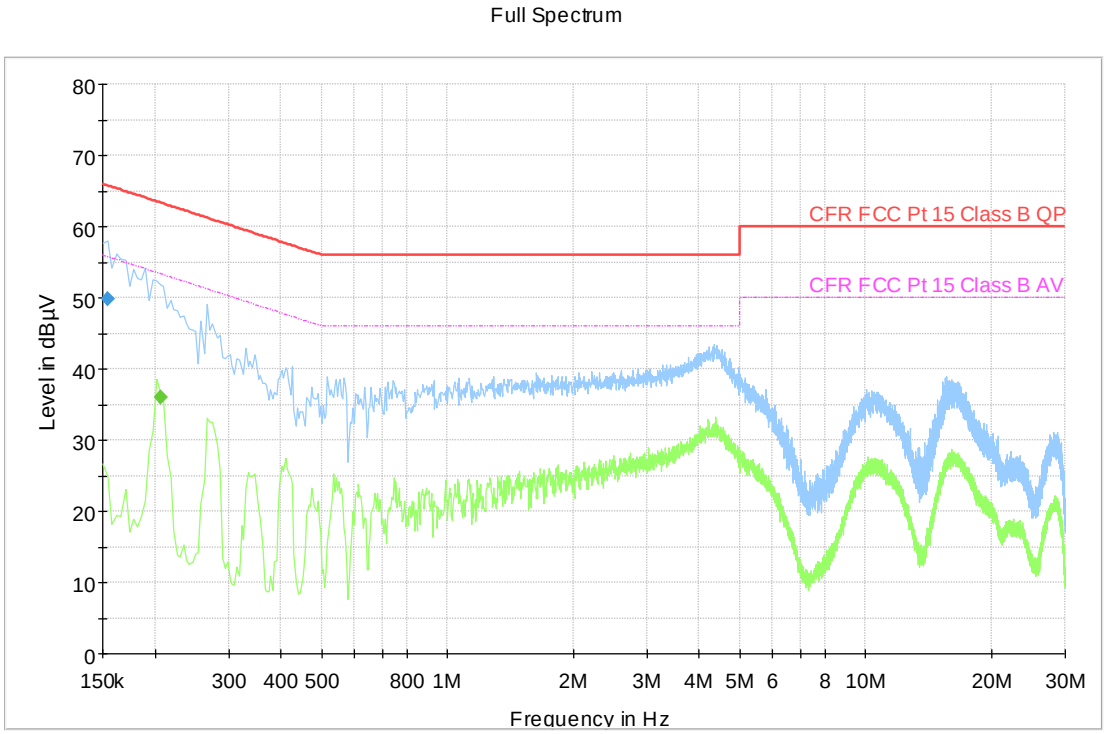
Instruments used during measurement

Instrument list: AMN: R&S / ENV216 (LR-1665) (11/2019)
EMI Receiver: R&S / ESCI 3 (N-4259) (10/2019)

Conformity

Verdict:	PASS
Test engineer:	LAD

EMISSION SPECTRUM



MEASUREMENT DATA

Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter
0.154	49.82	---	65.78	15.96	1000	9	L1	OFF
0.206	---	35.92	53.37	17.44	1000	9	L1	OFF

RADIATED EMISSIONS (30MHZ-1000MHZ)

TEST DESCRIPTION

Method
The reference method for this test is listed in the table under clause TEST SUMMARY.

Set-up
The measurements were performed in a semi-anechoic chamber (SAC). Nominal supply voltage was provided.
The specimen was energized and in normal operating mode during the measurement.

☐ The specimen and its cables were elevated 10 cm above the site ground plane, and placed in the centre of the turntable.
☒ The specimen and its cables were placed on a table 80 cm above the site ground plane, and placed in the centre of the turntable.

The measuring antenna was located 10 meters from the specimen. Measurements were performed with a hybrid bilog antenna. Antenna elevation = 100-400 cm above the ground reference plane. Specimen rotation = 0-360º.

Conditions
The measuring bandwidth is 120 kHz in the frequency range 30 MHz – 1000 MHz. Frequency sweeps with RBW = 120 kHz and VBW = 1 MHz was applied with a sweep time of 20 ms (step size resolution < 60 kHz).

Measurement uncertainty: ± 4.1 dB (30 MHz – 200 MHz); ± 4.2 dB (200 MHz – 1000 MHz)

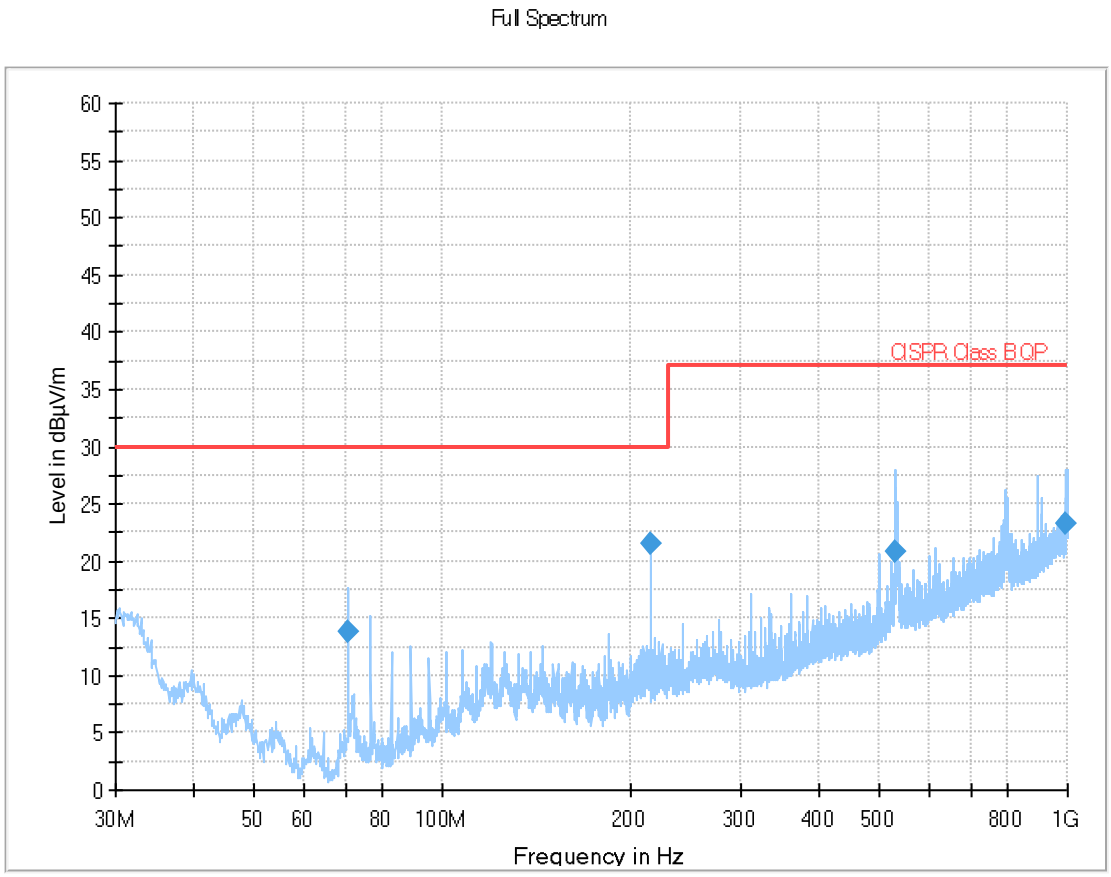
Instruments used during measurement

Instrument list: Antenna, bilog: Sunol / JB3 (N-4525) (11/2019)
EMI Receiver: R&S / ESU40 (LR-1639) (11/2019)
Preamplifier: Sonoma / 310N (LR-1686) (07/2019)

Conformity

Verdict:	PASS
Test engineer:	K Osvoll

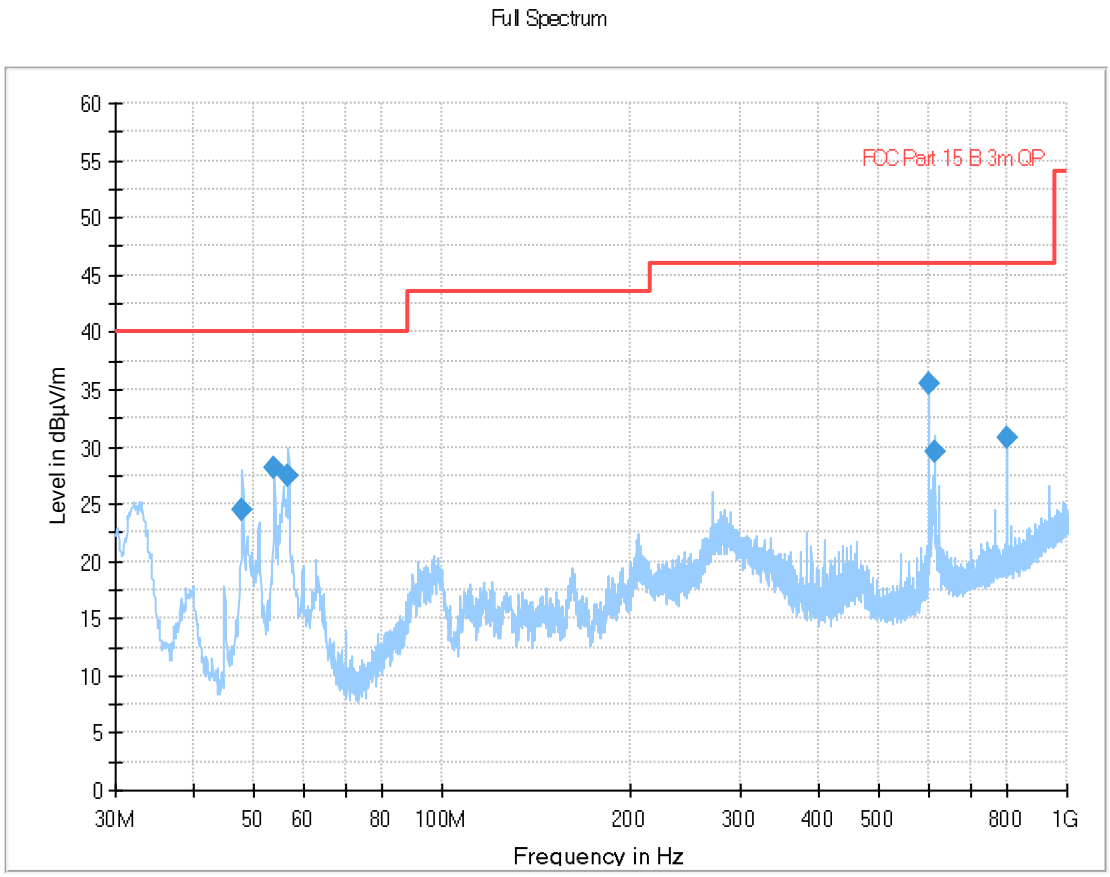
EMISSION SPECTRUM (USB POWERED FROM LAPTOP



MEASUREMENTS DATA

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
70.655300	13.87	30.00	16.13	1000.0	120.000	284.0	V	331.0	-24.0
215.999650	21.47	30.00	8.53	1000.0	120.000	99.0	V	189.0	-19.6
530.776500	20.74	37.00	16.26	1000.0	120.000	170.0	H	238.0	-11.4
995.534250	23.32	37.00	13.68	1000.0	120.000	102.0	H	311.0	-2.6

EMISSION SPECTRUM (WITH MACBOOK POWERED BY AC ADAPTER)



MEASUREMENTS DATA

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
47.827550	24.57	40.00	15.43	1000.0	120.000	101.0	V	46.0	-20.8
53.808750	28.12	40.00	11.88	1000.0	120.000	101.0	V	2.0	-22.5
56.786300	27.54	40.00	12.46	1000.0	120.000	99.0	V	0.0	-23.3
600.000600	35.47	46.00	10.53	1000.0	120.000	125.0	H	3.0	-10.9
614.398900	29.63	46.00	16.37	1000.0	120.000	267.0	H	3.0	-10.6
799.960750	30.71	46.00	15.29	1000.0	120.000	205.0	V	20.0	-7.2

RADIATED EMISSIONS (ABOVE 1GHZ)

TEST DESCRIPTION

Method
The reference method for this test is listed in the table under clause TEST SUMMARY.

Set-up
Nominal supply voltage was provided. The specimen was energized and in normal operating mode during the measurement.

☒ The measurements were performed in a semi-anechoic chamber (SAC) (calibrated volume: D=1.5m / H=2.0m).
☐ The measurements were performed in a fully anechoic room (FAR) (calibrated volume: D=1.2m / H=2.0m).

☐ The specimen and its cables were elevated 10 cm above the site ground plane, and placed in the centre of the turntable.
☒ The specimen and its cables were placed on a table 80 cm above the site ground plane, and placed in the centre of the turntable.

The reference ground plane was covered with ferrite absorbers in the reflecting area between the specimen and the measuring antenna.

The measuring antenna was located 3 meters from the specimen. Measurements were performed with a double-ridged guide horn antenna. Antenna elevation = fixed at centre of specimen height. Specimen rotation = 0-360º.

Frequency range:	Highest internal frequency of specimen:
☐ 1-2 GHz	☐ Below 108MHz
☐ 1-5 GHz	☐ Between 108MHz and 500MHz
☒ 1-6 GHz	☒ Between 500MHz and 1000MHz
☐ 1-12 GHz	☐ Above 1000MHz

The measuring bandwidth is 1 MHz in the above frequency range. Frequency sweeps with RBW = 1 MHz and VBW = 1 MHz was applied with a sweep time of 100 ms (proper segmentation of the frequency range was applied to obtain step size resolution < 500 kHz).

Measurement uncertainty: ± 4.8 dB

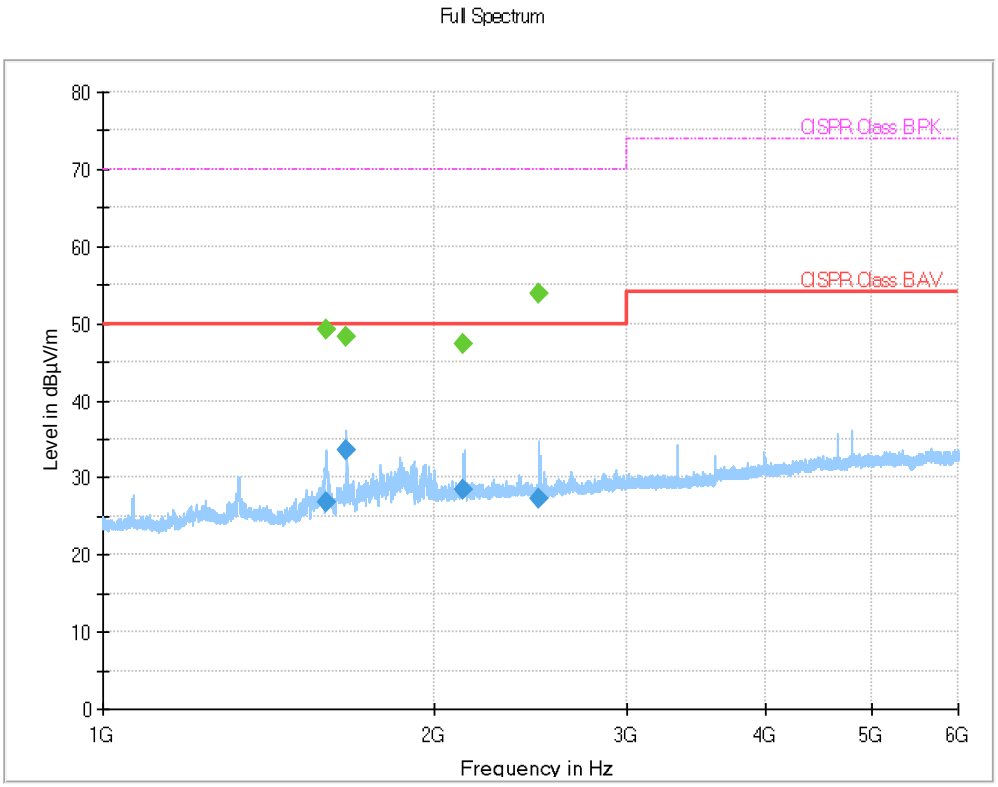
Instruments used during measurement

Instrument list: Antenna Horn: ETS / 3117-PA (LR-1717) (12/2018)
EMI Receiver: R&S / ESU40 (LR-1639) (11/2019)

Conformity

Verdict:	PASS
Test engineer:	K Osvoll

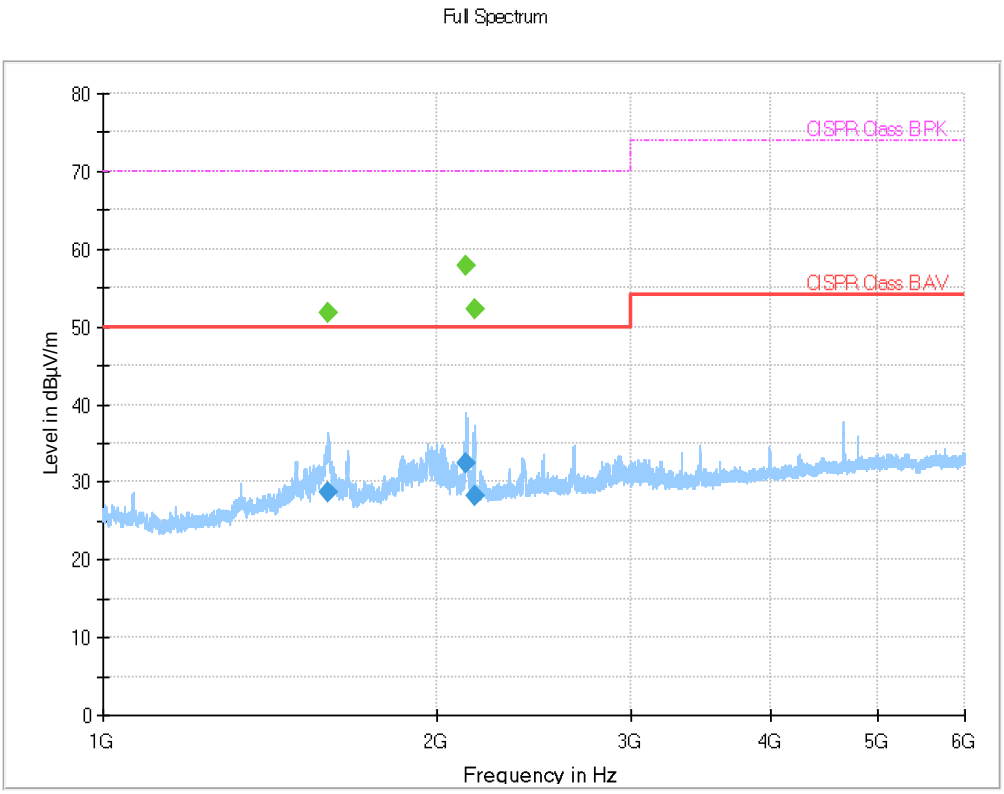
EMISSION SPECTRUM (HORIZONTAL POLARIZATION)



MEASUREMENTS DATA

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1594.936667	26.87	---	50.00	23.13	1000.0	1000.000	99.0	H	68.0
1594.936667	---	49.28	70.00	20.72	1000.0	1000.000	99.0	H	68.0
1666.560667	---	48.37	70.00	21.63	1000.0	1000.000	99.0	H	229.0
1666.560667	33.50	---	50.00	16.50	1000.0	1000.000	99.0	H	229.0
2129.580667	---	47.34	70.00	22.66	1000.0	1000.000	99.0	H	61.0
2129.580667	28.54	---	50.00	21.46	1000.0	1000.000	99.0	H	61.0
2493.799667	27.35	---	50.00	22.65	1000.0	1000.000	99.0	H	177.0
2493.799667	---	53.97	70.00	16.03	1000.0	1000.000	99.0	H	177.0

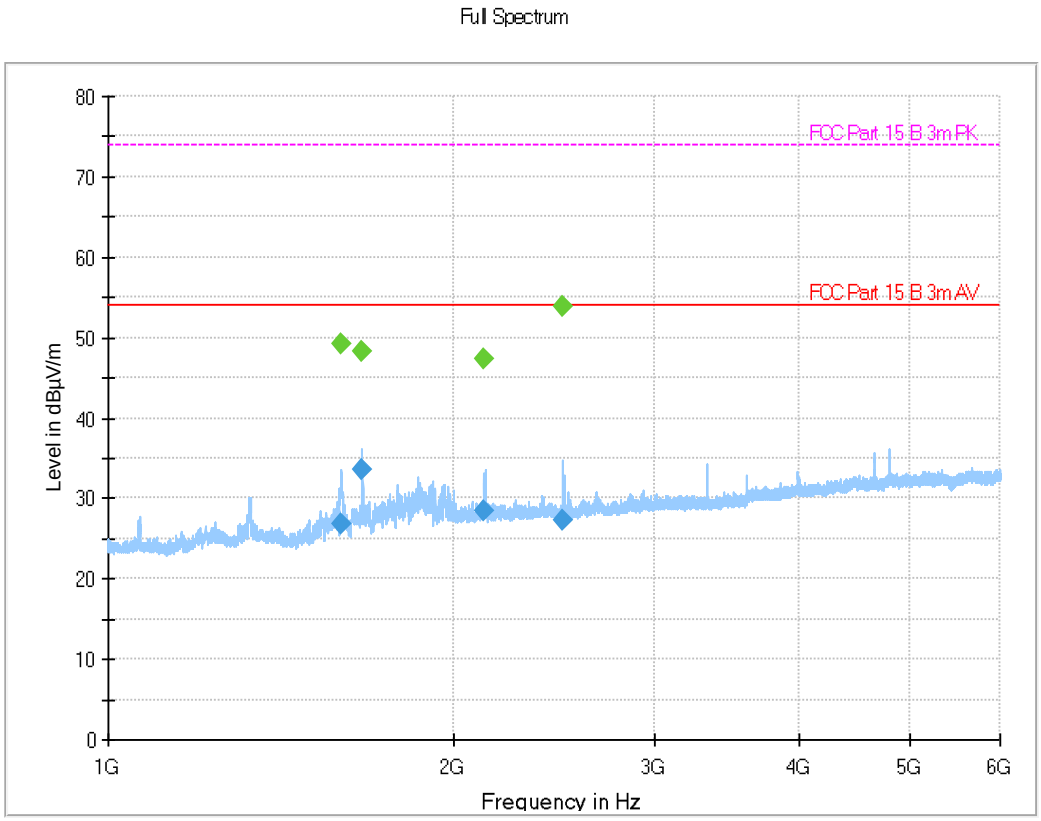
EMISSION SPECTRUM (VERTICAL POLARIZATION)



MEASUREMENTS DATA

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1595.049667	---	51.82	70.00	18.18	1000.0	1000.000	99.0	V	333.0
1595.049667	28.69	---	50.00	21.31	1000.0	1000.000	99.0	V	333.0
2128.963333	32.47	---	50.00	17.53	1000.0	1000.000	99.0	V	16.0
2128.963333	---	57.73	70.00	12.27	1000.0	1000.000	99.0	V	16.0
2163.348000	28.25	---	50.00	21.75	1000.0	1000.000	99.0	V	21.0
2163.348000	---	52.29	70.00	17.71	1000.0	1000.000	99.0	V	21.0

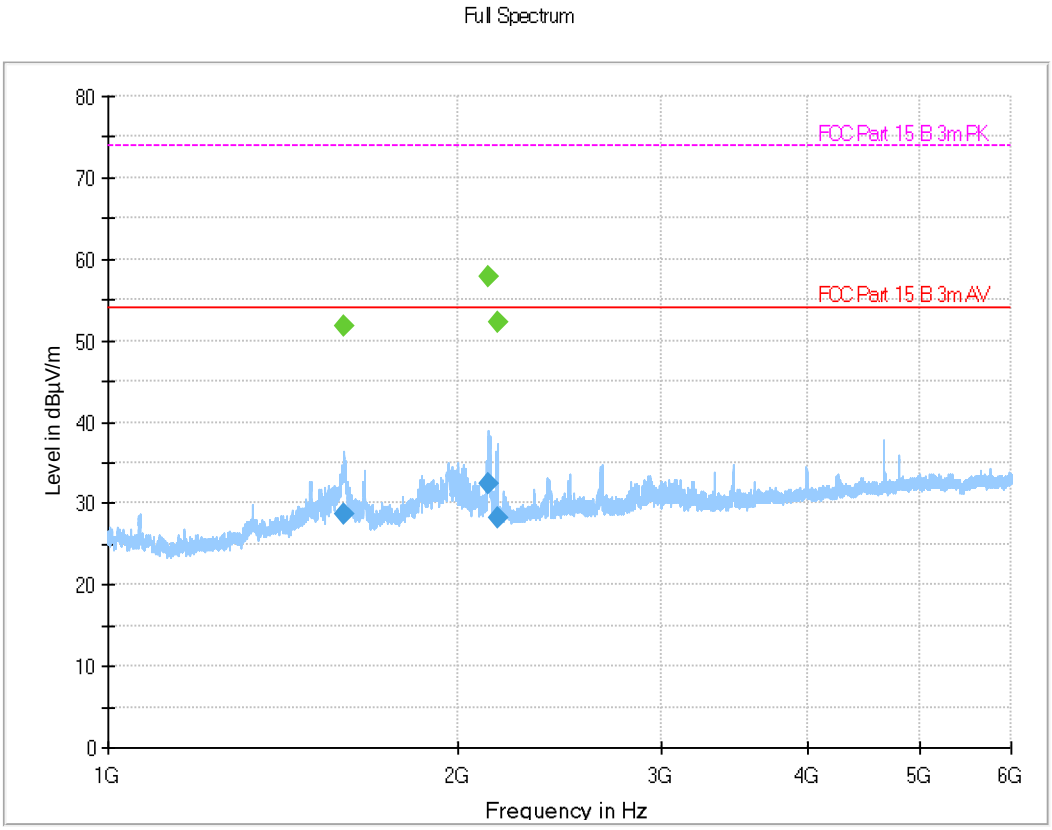
EMISSION SPECTRUM (HORIZONTAL POLARIZATION)



MEASUREMENTS DATA

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1594.936667	---	49.28	70.00	20.72	1000.0	1000.000	99.0	H	68.0
1594.936667	26.87	---	50.00	23.13	1000.0	1000.000	99.0	H	68.0
1666.560667	33.50	---	50.00	16.50	1000.0	1000.000	99.0	H	229.0
1666.560667	---	48.37	70.00	21.63	1000.0	1000.000	99.0	H	229.0
2129.580667	28.54	---	50.00	21.46	1000.0	1000.000	99.0	H	61.0
2129.580667	---	47.34	70.00	22.66	1000.0	1000.000	99.0	H	61.0
2493.799667	---	53.97	70.00	16.03	1000.0	1000.000	99.0	H	177.0
2493.799667	27.35	---	50.00	22.65	1000.0	1000.000	99.0	H	177.0

EMISSION SPECTRUM (VERTICAL POLARIZATION)



MEASUREMENTS DATA

Frequency (MHz)	Average (dBµV/m)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1595.049667	28.69	---	50.00	21.31	1000.0	1000.000	99.0	V	333.0
1595.049667	---	51.82	70.00	18.18	1000.0	1000.000	99.0	V	333.0
2128.963333	---	57.73	70.00	12.27	1000.0	1000.000	99.0	V	16.0
2128.963333	32.47	---	50.00	17.53	1000.0	1000.000	99.0	V	16.0
2163.348000	---	52.29	70.00	17.71	1000.0	1000.000	99.0	V	21.0
2163.348000	28.25	---	50.00	21.75	1000.0	1000.000	99.0	V	21.0

ELECTROSTATIC DISCHARGE (ESD) IMMUNITY

TEST DESCRIPTION

Method
The reference method for this test is listed in the table under clause TEST SUMMARY.

Set-up
The specimen was energized and in normal operating condition.

☐ Floor standing equipment. Specimen was elevated 10 cm above the ground reference plane.
☒ Table top equipment. Specimen was placed on a test table 80 cm above the reference ground plane. A horizontal coupling plane (HCP) of 160x80 cm was placed on the test table, just beneath the specimen, and connected to the reference plane via a cable with two 470kΩ resistors located one in each end of the cable. The specimen was separated from the HCP by a 0.5mm insulating support.

A vertical coupling plane (VCP) of 50x50 cm was placed 10 cm from the specimen exterior. This VCP is connected to the reference plane via a cable with two 470kΩ resistors located one in each end of the cable.

The ESD generator's reference ground was connected to the reference ground plane.

Procedure
☒ Indirect contact discharges were applied to the mid edge of the VCP.
☒ Indirect contact discharges were applied to the mid edge of the HCP.
☒ Direct contact discharges were applied to various selected test points of the specimen at conductive surfaces,
☒ Direct air discharges were applied to various selected test points of the specimen at non-conductive surfaces.

Discharges were applied at increasing levels to each test point.

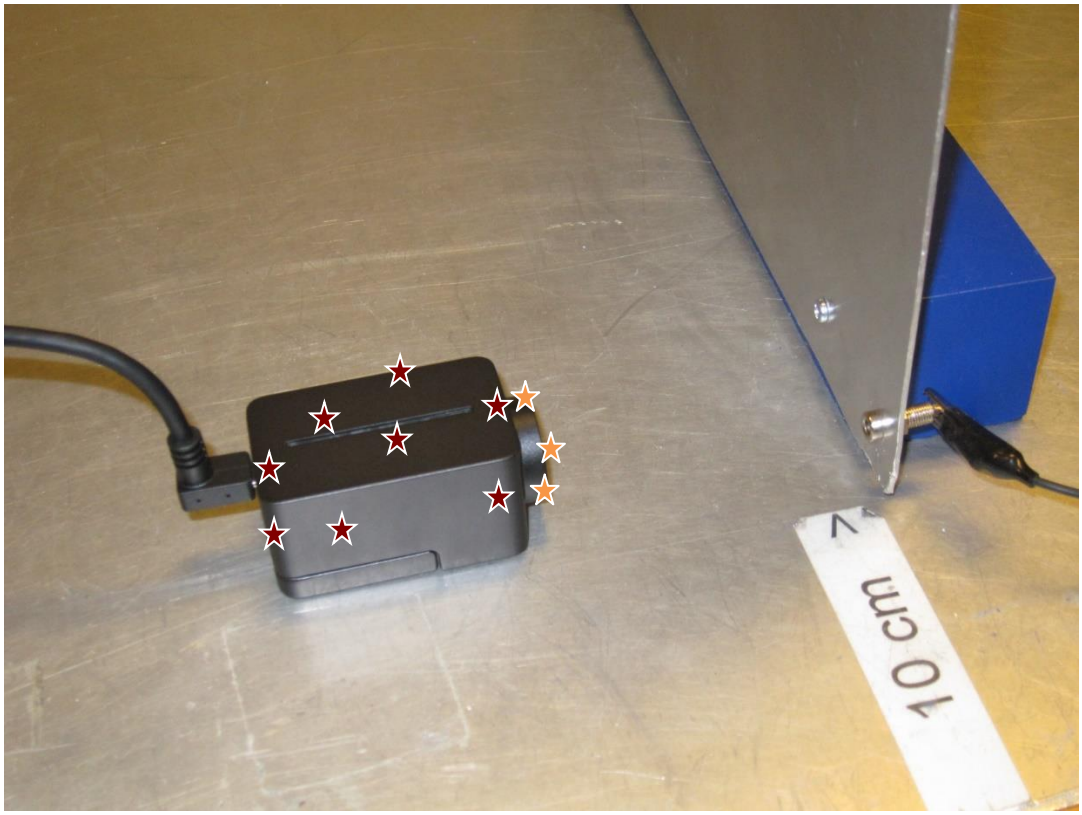
Uncertainty figures: Peak voltage: ± 10 %; Transient shape: ± 30 %

A functional test was performed before and after the exposure. The specimen was observed during exposure in order to detect unintended responses.

Instruments used during measurement
Instrument list: ESD Generator: EMTest / ESD30N (N-4643) (03/2019)

		Conformity	
Temperature:	24 ºC	Verdict:	PASS
Humidity:	58 %RH	Test engineer:	K Osvoll
Atmos. pressure:	1007 hPA		

PHOTO OF SELECTED TEST POINTS



★ = Contact discharge points
★ = Air discharge points

DETAILED TEST LOG

Test Point	Applied Level [kV]	Discharge Type	Discharges per test level	Required Criteria	Complied Criteria	Result
Lens with plastic ring	±4, ±8	Air	ND	B	A	PASS
Plastic part of enclosure (bottom)	±4, ±8	Air	ND	B	A	PASS
Metal part of enclosure	±2, ±4	Contact	25	B	A	PASS
HCP	±2, ±4	Contact	25	B	A	PASS
VCP	±2, ±4	Contact	25	B	A	PASS

Note: ND = No Discharge, indicates discharge attempts, which have given no actual observable discharge.

OBSERVATIONS

No malfunctions were recorded during or after the applied test(s).
Observations showed no unintended responses during test(s).

RADIATED RF DISTURBANCE IMMUNITY

TEST DESCRIPTION

Method
The reference method for this test is listed in the table under clause TEST SUMMARY.

Set-up
The tests were performed at 3 meter antenna distance in an anechoic chamber.

☐ The specimen was placed on a Styrofoam support 10 cm above the floor.
☒ The specimen was placed on a Styrodur/styrofoam table 80 cm above the floor.

The specimen was placed within the calibrated volume, and the cables connected to the specimen was arranged so that 100 cm of each cable was exposed to the electromagnetic field.
Interconnecting cables specified ≤ 300 cm whose length exceeded 100 cm were bundled to achieve 100 cm length.
Interconnecting cables specified > 300 cm and other cables connected to the specimen are exposed for 100 cm, and the remaining cable length was decoupled with the use of ferrites.

Procedure
The specimen was exposed to the RF electromagnetic field generated by one or more antennas. The polarization of the field requires testing each side of the specimen twice, once with the antenna horizontally and again with the antenna vertically. The antenna height during test was 150 cm.

Exposed side of the specimen:
☒ 0º (front)
☒ 90º
☒ 180º (rear)
☒ 270º
☐ Top (handheld)
☐ Bottom (handheld)

Frequency sweep rate:
☒ 1% step with 3 sec dwell time
☐ $1.5x10^{-3}$ decades/sec (80 – 1000MHz)
☐ $0.5x10^{-3}$ decades/sec (1000 – 2000MHz)
☐ Other:

Frequency range:
☒ 80MHz – 1000MHz
☐ 1400MHz – 2000MHz
☐ 2000MHz – 2700MHz
☐ 80MHz – 2000MHz
☐ 80MHz – 6000MHz

Modulation:
☒ 80% AM @ 1000Hz
☐ 80% AM @ 400Hz
☐ 50% PM @ 217Hz

Uncertainty figures:
Field level: ± 2.4 dB

A functional test was performed before and after the exposure. The specimen was observed during exposure in order to detect unintended responses.

Instruments used during measurement

Instrument list:
Amplifier, RF: AR / 500W100A (LR-1354) (N/A)
Antenna Log-periodic: R&S / HL 023A1 (LR-0282) (N/A)
Generator, RF: R&S / SMB100A (LR-1603) (10/2020)
Power Meter: R&S / NRVD 857.8008.02 (LR-1347) (05/2019)
Probe, RF: R&S / NRV-Z5 (LR-1372) (05/2019)

Conformity

Verdict:	PASS
Test engineer:	K Osvoll

DETAILED TEST LOG

Frequency range [MHz]	Field strength [V/m]	Polarization	Required Criteria	Complied Criteria	Result
80 - 1000	3	HOR	A	A	PASS
80 - 1000	3	VER	A	A	PASS

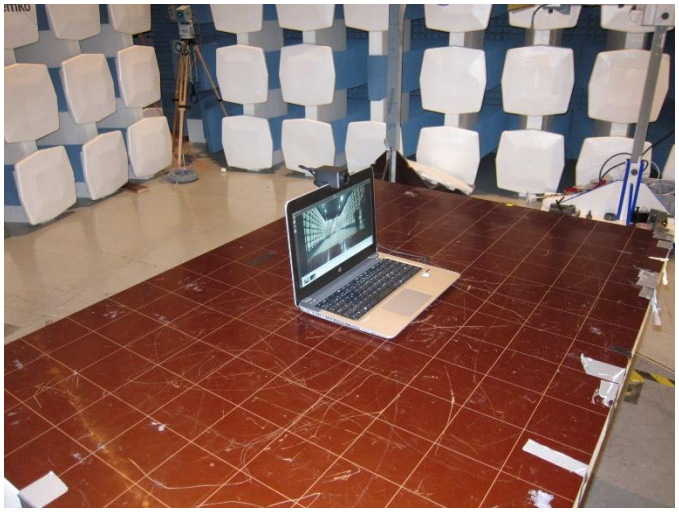
OBSERVATIONS

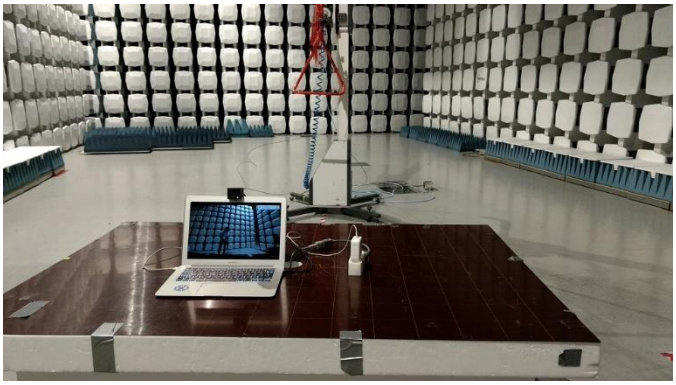
No malfunctions were recorded during or after the applied test(s).
Observations showed no unintended responses during test(s).

Annexes

PHOTOS

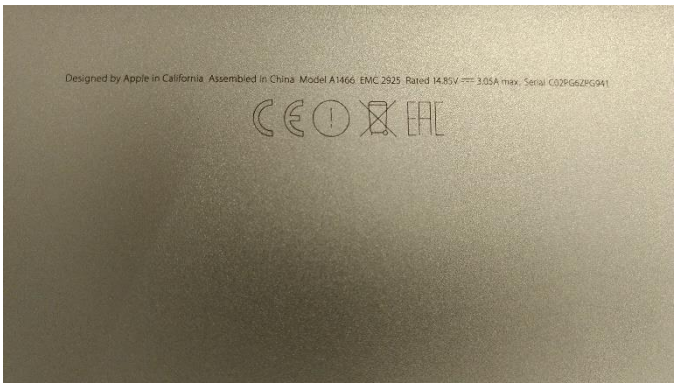
Test set-up for EMC emissions measurements





With Macbook and AC adapter

Test setup for conducted Emission test: Measured with AC/DC adapter Model A1435 and Mac Model A1466, S/N C02PG6ZPG941



Test set-up for EMC immunity tests