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File Number **26/36400691**

TEST REPORT
Electromagnetic Compatibility

Petitioner's Reference:	ENKOA SYSTEM S.L.		
Company Address:	POLIGONO ERRAMONE 45, 20850 MENDARO SPAIN		
Equipment:	DNDMURbuton		
Brand:	ENKOA	HW version/HMN	DMTxITF
Sample #1:	20251272/0326	Applus Id:	41878-0004
Result:	**complies**		
It has been tested and complies with the applicable standard. See test result summary section.			
Applicable Standard:			
EMC standard/s:	**FCC 47 CFR Part 15 Subpart B (October 2024)** **ICES-003 Issue 7 (October 2020)**		
[1]*The latest modifications of the standard, published at the date of the tests reported in this document, have been considered.*			
Dates and Test Site:	Applus Barcelona, Bellaterra		
Equipment Reception Date	March 19, 2026		
Test Initial Date:	March 25, 2026		
Test Final Date:	April 13, 2026		

Test Manager: Javier Miguel Nadales
Date of issue: Bellaterra, April 23, 2026

Firmado digitalmente por JAIME BARRANQUERO GOMEZ
Fecha: 2026.04.23 12:22:34 +02'00'

EMC & Wireless Technical Manager
Electrical and Electronics
LGAI Technological Center S.A.

ENSAYO ISO 17025 Nº9 / LE894

The results refer only and exclusively to the sample, product or material delivered for testing, and tested under conditions stipulated in this document. The equipment has been tested under conditions stipulated by standard(s) quoted in this document. This document will not be reproduced otherwise than in full.
This is the first page of the document, which consists of 32 pages.

1 TEST RESULTS SUMMARY

Test Description	Sample #	DUT Test Modes	Req. Criteria	Results	Criteria Note
RADIO-FREQUENCY RADIATED EMISSIONS (FCC Part 15.109, ICES-003 Issue 7 (3.2.2))	#1	Mode 1	CLASS B	PASS	CN3
POWER LINE CONDUCTED EMISSIONS (FCC Part 15.107, ICES-003 Issue 7 (3.2.1))	#1	Mode 1	CLASS B	PASS	CN4

The test results are shown in detail on the following pages.

The criteria to give conformity in those cases where it is not implicit in the standard or specification will be, for EMC emissions tests, a non-simple binary decision rule will be followed with a safety zone equal to the value of the uncertainty (w = U).

In this case, the upper limit of the value of the probability of false acceptance, according to ILAC G8, is 2.5 % and the criteria notes are:
CN1: The measured results are above the upper limit, even considering the uncertainty interval.
CN2: The measured results are above the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that non-compliance is more probable than compliance.
CN3: The measured results are below the specified limits, but within the uncertainty interval. It is therefore not possible to state compliance based on the 95% level of confidence. However, the results indicate that compliance is more probable than non-compliance.
CN4: The measured results are within the limits, including the uncertainty interval.

2 INDEX

3 GENERAL DESCRIPTION OF TEST ITEMS

3.1 EQUIPMENT DESCRIPTION

This information has been provided by the customer and it is not covered by the accreditation. LGAI does not assume any responsibility from it.

EQUIPMENT DESCRIPTION				
Description	DND / MUR "Touch" Pushbuttons (inside room)			
EUT Version	**FVIN**		**HVIN**	
	N/A		DMTxITF	
Power supply	AC	1 PH + N	100 – 240 V~	50/60 Hz
Applicability	**Fixed device**	**Mobile devices**	**Mode I personal/portable**	**Mode II personal/portable**
	☒	☐	☐	☐
Class Type	**Class B**			
Operating frequency band	2.4 GHz (IEEE 802.15.4)			
Sample #1 Size	**Length**	**Width**	**Height**	
	80.5 mm	80.5 mm	20.6mm	
Maximum internal frequency [MHz]	16 Mhz			

Table 1: Equipment description

I/O CABLES						
	Port #	**Name**	**Type**	**Cable length**	**Cable Shielded**	**Comments**
Description	1	AC Mains	Fixed wiring (terminal block)	0 m (no cable included)	N/A	Power is connected directly to the PCB rising-clamp connector; no external cable provided.

Table 2: Input/output ports description

RF FEATURES					
	Communication Technology	**Radio Chipset**	**Brand**	**Module Model**	**Antenna Gain[dBi]**
Description	IEEE 802.15.4 @ 2.4 GHz	Microchip AT86RF231 / AT86RF233	Microchip	Integrated on PCB (not a module)	3.3 dBi (inverted-F PCB antenna)

Table 3: RF Features

3.2 DUT TEST MODES

Test signals for data	
Mode #	**Description**
1	Wireless communication mode (IEEE 802.15.4 @ 2.4 GHz)

3.3 ACCEPTANCE CRITERIA

According to standard **FCC 47 CFR Part 15 Subpart B and ICES-003 Issue 7**

3.4 PHOTOGRAPHS

Photographs identifying the equipment under test and its auxiliaries, as well as assembly photographs for radiated and conducted tests, can be found in the document: *ENKOA_TR_EMC_FCC_DTM_BUTTON_ANNEX*

3.5 TEST FACILITIES ID

TEST FACILITIES ID	
FCC Test Firm Registration Number:	507478
ISED Assigned Code:	5766A
CABID	ES0001

Table 4: Test facilities ID

3.6 COMPETENCES AND GUARANTEES

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4 TEST RESULTS

4.1 RADIO-FREQUENCY RADIATED EMISSIONS

4.1.1 Test Setup Required

According to standard ANSI C63.4:2014

4.1.1.1 Tabletop equipment

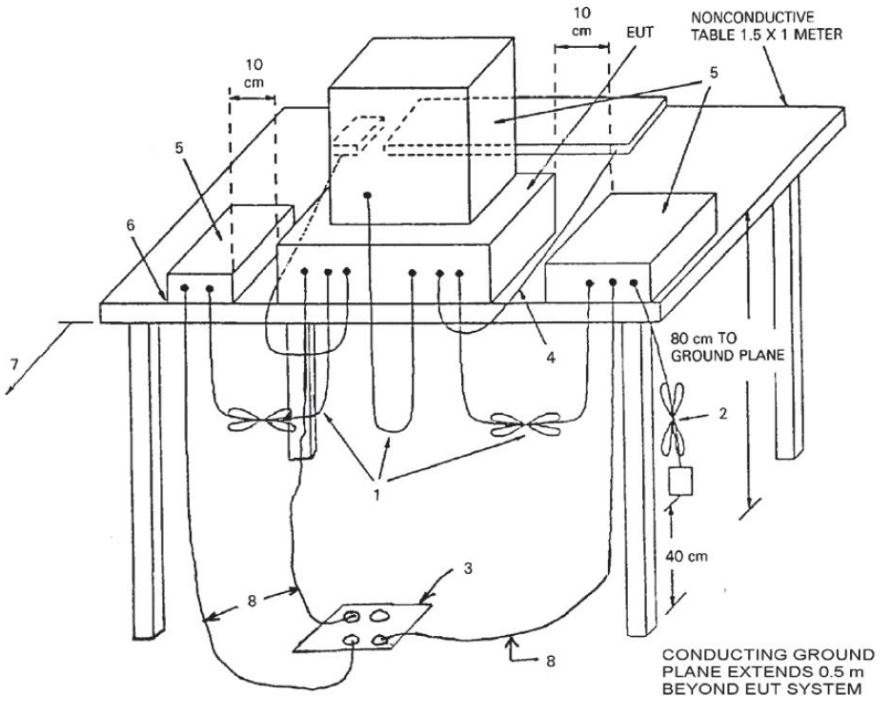


Fig. 1: Radio-frequency radiated emissions setup of table top equipment.

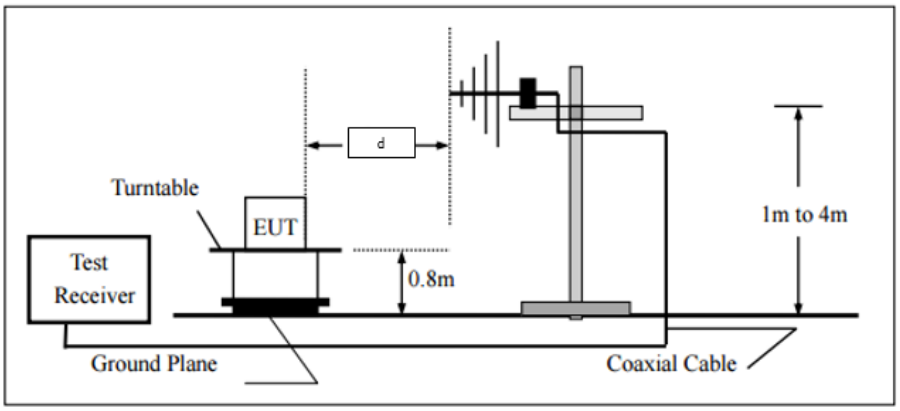


Fig. 2: Radio-frequency radiated emissions of table top equipment from 30 MHz to 1000 MHz

Distance "d" depends on test chamber.

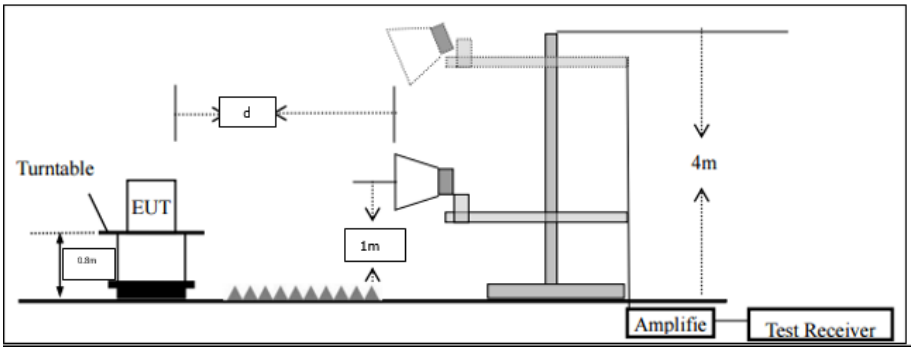


Fig. 3: Radio-frequency radiated emissions setup of table top equipment above 1 GHz

Distance "d" depends on test chamber.

4.1.1.2 Floor standing equipment

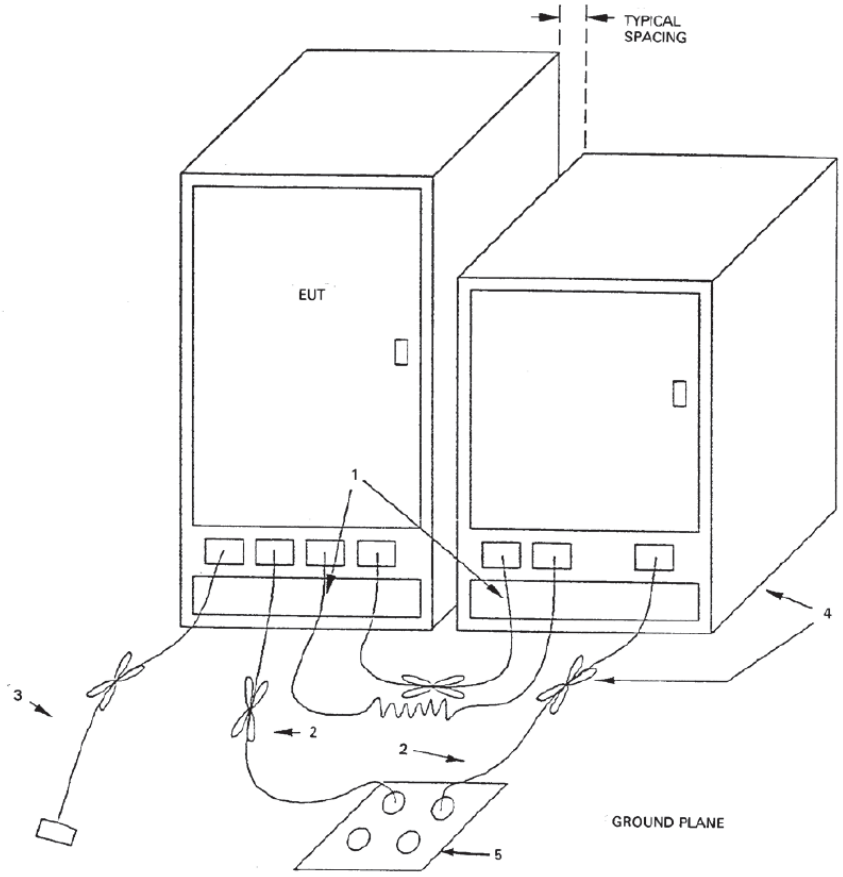


Fig. 4: Radio-frequency radiated emissions of floor-standing setup equipment.

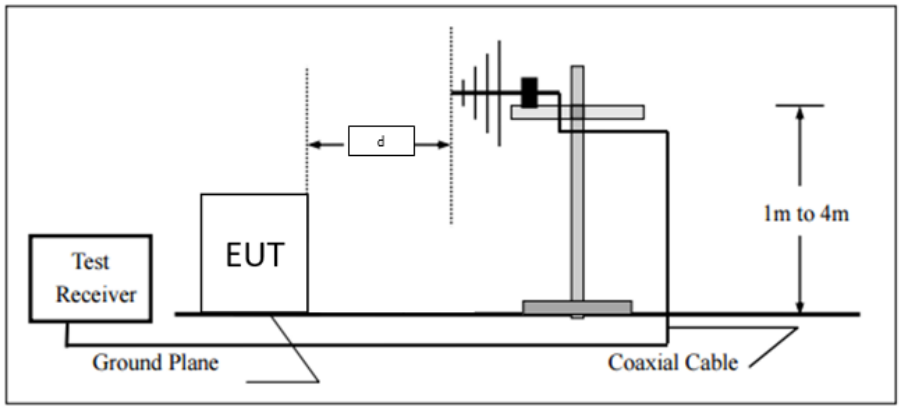


Fig. 5: Radio-frequency radiated emissions of floor-standing setup equipment from 30 MHz to 1000 MHz

Distance "d" depends on test chamber.

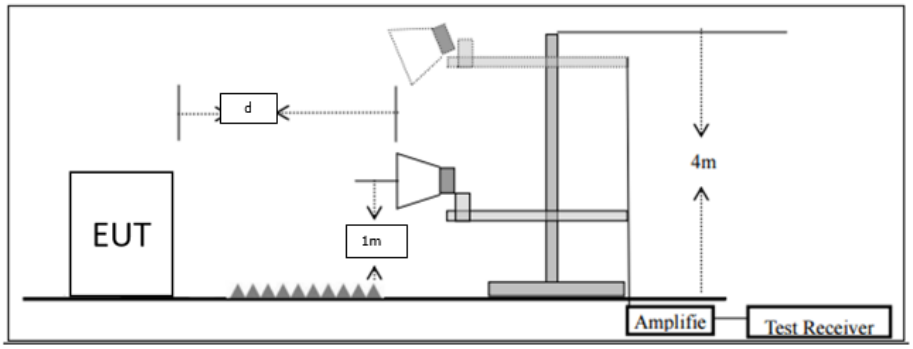


Fig. 6: Radio-frequency radiated emissions of floor-standing setup equipment above 1 GHz

Distance "d" depends on test chamber.

4.1.2 Test Procedure

The test site, 3 or 10 m semi-anechoic chamber, has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.4-2014

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 30 MHz to 1 GHz in semi-anechoic chambers. The receiving antennas are conform to specifications ANSI C63. These antennas can be moved over the height range between 1 m and 4 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.

Pre-measurement

- The turntable rotates from 0° to 315° using 45° steps
- The antenna is polarized vertical and horizontal
- The antenna height changes from 1 m to 4 m
- At each turntable position, antenna polarization and height the receiver finds the maximum of all emissions

Final measurement

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4
- Based on antenna and turntable positions at which the peak values are measured the software maximize the peaks by changing turntable position 360 º and antenna height between 1 m and 4 m
- The final measurement is done with quasi-peak detector (as described in ANSI C63.4) for 30 MHz to 1 GHz emissions test
- The final measurement is done in the position (azimuth, height and antenna polarization) causing the highest emissions with Peak and RMS detector (as described in ANSI C63.4) for 1 GHz to 18 GHz test
- Final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factors, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is shown

Correction Factor:

Emission Level = Read Level +Corrections (Antenna Factor + Cable Loss – Amplifier Gain (if applies) + Attenuator (if applies))

4.1.3 Test Parameters

4.1.3.1 Requirements

According to FCC Part 15.109:

Class A Equipment's						
Frequency Range [MHz]	**Quasi-peak detector (QP) [dBµV/m]**		**Peak detector (PK) [dBµV/m]**		**Average detector (AVG) [dBµV/m]**	
	10 m measuring distance	3 m measuring distance[1]	8.5 m measuring distance[2]	3 m measuring distance[3]	8.5 m measuring distance[2]	3 m measuring distance[3]
30 – 288	39.0	49.5	N/A	N/A	N/A	N/A
88 – 216	43.5	54	N/A	N/A	N/A	N/A
216 – 960	46.4	56.9	N/A	N/A	N/A	N/A
960 – 1000	49.5	60	N/A	N/A	N/A	N/A
Above 1000	N/A	N/A	70.95	80	50.95	60

Table 5: Radio-frequency radiated emissions requirements – Class A equipment's

Note 1: The limits has been modified according to the applicable standard applying the formula: $L_2 = L_1 - 20log(d_2/d_1)$*, where:*

L_2: New Limit.
L_1: Limit at 10 meters.
d_1: 10 meters (standard distance).
d_2: 3 meters (new measurement distance).

Note 2: The limits has been modified according to the applicable standard applying the formula: $L_2 = L_1 - 20log(d_2/d_1)$*, where:*
L_2: New Limit.
L_1: Limit at 10 meters.
d_1: 10 meters (standard distance).
d_2: 8.5 meters (new measurement distance).

Note 3: The limits has been modified according to the applicable standard applying the formula: $L_2 = L_1 - 20log(d_2/d_1)$*, where:*

L_2: New Limit.
L_1: Limit at 10 meters.
d_1: 10 meters (standard distance).
d_2: 3 meters (new measurement distance).

Class B Equipment's						
Frequency Range [MHz]	**Quasi-peak detector (QP) [dBµV/m]**		**Peak detector (PK) [dBµV/m]**		**Average detector (AVG) [dBµV/m]**	
	10 m measuring distance[1]	3 m measuring distance	8.5 m measuring distance[2]	3 m measuring distance	8.5 m measuring distance[2]	3 m measuring distance
30 – 288	29.5	40	N/A	N/A	N/A	N/A
88 – 216	33.0	43.5	N/A	N/A	N/A	N/A
216 – 960	35.5	46	N/A	N/A	N/A	N/A
960 – 1000	43.5	54	N/A	N/A	N/A	N/A
Above 1000	N/A	N/A	65	74	45	54

Table 6: Radio-frequency radiated emissions requirements – Class B equipment's

Note 1: The limits has been modified according to the applicable standard applying the formula: $L_2 = L_1 - 20log(d_2/d_1)$*, where:*

L_2: New Limit.
L_1: Limit at 3 meters.
d_1: 3 meters (standard distance).
d_2: 10 meters (new measurement distance).

Note 2: The limits has been modified according to the applicable standard applying the formula: $L_2 = L_1 - 20log(d_2/d_1)$*, where:*
L_2: New Limit.
L_1: Limit at 3 meters.
d_1: 3 meters (standard distance).
d_2: 8.5 meters (new measurement distance).

According to ICES-003 Issue 7 (3.2.2):

Class A Equipment's						
Frequency Range [MHz]	**Quasi-peak detector (QP) [dBµV/m]**		**Peak detector (PK) [dBµV/m]**		**Average detector (AVG) [dBµV/m]**	
	10 m measuring distance	3 m measuring distance[1]	8.5 m measuring distance[1]	3 m measuring distance	8.5 m measuring distance[1]	3 m measuring distance
30 – 288	40.0	50.0	N/A	N/A	N/A	N/A
88 – 216	43.5	54.0	N/A	N/A	N/A	N/A
216 – 230	46.4	56.9	N/A	N/A	N/A	N/A
230 – 960	47.0	57.0	N/A	N/A	N/A	N/A
960 – 1000	49.5	60.0	N/A	N/A	N/A	N/A
Above 1000	N/A	N/A	71	80	51	60

Table 7: Radio-frequency radiated emissions requirements – Class A equipment's

Class B Equipment's						
Frequency Range [MHz]	**Quasi-peak detector (QP) [dBµV/m]**		**Peak detector (PK) [dBµV/m]**		**Average detector (AVG) [dBµV/m]**	
	10 m measuring distance	3 m measuring distance	8.5 m measuring distance[1]	3 m measuring distance	8.5 m measuring distance[1]	3 m measuring distance
30 – 288	30.0	40.0	N/A	N/A	N/A	N/A
88 – 216	33.1	43.5	N/A	N/A	N/A	N/A
216 – 230	35.6	46.0	N/A	N/A	N/A	N/A
230 – 960	37.0	47.0	N/A	N/A	N/A	N/A
960 – 1000	43.5	54.0	N/A	N/A	N/A	N/A
Above 1000	N/A	N/A	65	74	45	54

Table 8: Radio-frequency radiated emissions requirements – Class B equipment's

Note 1: The limits has been modified according to the applicable standard applying the formula: $L_2 = L_1 - 20log(d_2/d_1)$*, where:*
L_2: New Limit.
L_1: Limit at 3 meters.
d_1: 3 meters (standard distance).
d_2: 8.5 meters (new measurement distance).

4.1.3.2 Receiver Parameters

According to standard ANSI C63.4:2014:

Frequency Range [MHz]	Detector	Resolution Bandwidth [MHz]	Video Bandwidth [MHz]
30 – 1000	Quasi-peak (QP)	0.12	0.30
Above 1000	Peak (PK)	1	3
	Average (AVG)	1	$10 \cdot 10^{-6}$

Table 9: Receiver parameters – Radio-frequency radiated emissions

4.1.3.3 Sample Calculations for Field Strength Measurements

Field Strength is calculated from the Receiver readings, based on the following equation:

$$Final\ Result\ [dB\mu V/m] = Raw\ Rec\ [dB\mu V] + Corr.\ [dB/m]$$

$$Final\ Result\ [dB\mu V/m] = Raw\ Rec\ [dB\mu V] + Trd\ Corr\ [dB/m] + Preamp\ [dB] + Sig\ Path\ [dB]$$

Equation 1: Equation for Calculation for Field Strength

Where:

- *Raw Rec – Measured reading in dBµV.*
- *Sig Path – Cable Loss + External Amplifier in dB.*
- *Preamp - Internal Amplifier in dB.*
- *Trd Corr – Antenna Factor in dB/m.*
- *Corr [dB/m] = Sig Path [dB] + Preamp [dB] + Trd Corr [dB/m]*

Example calculation from primary register taken from EMC-32 Test Software:

Frequency [MHz]	MaxPeak [dBµV/m]	CAverage [dBµV/m]	Limit [dBµV/m]	Corr. [dB/m]	Raw Rec [dBµV]	Sig Path [dB]	Preamp [dB]	Trd Corr. [dB/m]
1060.000	61.2	---	74.0	26.4	34.8	2.0	0.0	24.4
1060.000	---	22.8	54.0	26.4	-3.6	2.0	0.0	24.4

Table 10: Sample Calculation for Field Strength

$$MaxPeak\ [dB\mu V/m] = 34.8 + 24.4 + 0 + 2 = 61.2\ [dB\mu V/m]$$

$$CAverage\ [dB\mu V/m] = -3.6 + 24.4 + 0 + 2 = 22.8\ [dB\mu V/m]$$

Equation 2: Sample Calculation for Field Strength

4.1.4 Test Environmental Conditions

Test Date	Technician	Supervisor	Temperature [ºC]	Humidity [%]	Atm. Pressure [mbar]
25/03/2026	A. Perez	---	23.0	40.3	996.4
27/03/2026	A.Perez	--	18.2	36.9	1000.2

Table 11: Test environmental conditions – Radio-frequency radiated emissions

4.1.5 Summary Test Results

Frequency Range[1] [MHz]	Equipment Class	Test Area	Distance [m]	Emissions	Results
30 – 1000	B	SAC 2	3	QP < Limit - I	PASS
1000 – 3.500	B	SAC 2	3	Limit - I <= PK < Limit Limit - I <= AVG < Limit	PASS
3.500 – 13000	B	SAC 2	3	PK < Limit - I AVG < Limit - I	PASS

Table 12: Summary test results – Radio-frequency radiated emissions

Note 1: Upper limit according to the fifth harmonic of the maximum internal frequency declared by the manufacturer or to 40 GHz, whichever is lower.

Test Results

4.1.5.1 Ambient Levels. Frequency range: 30 MHz – 1 GHz

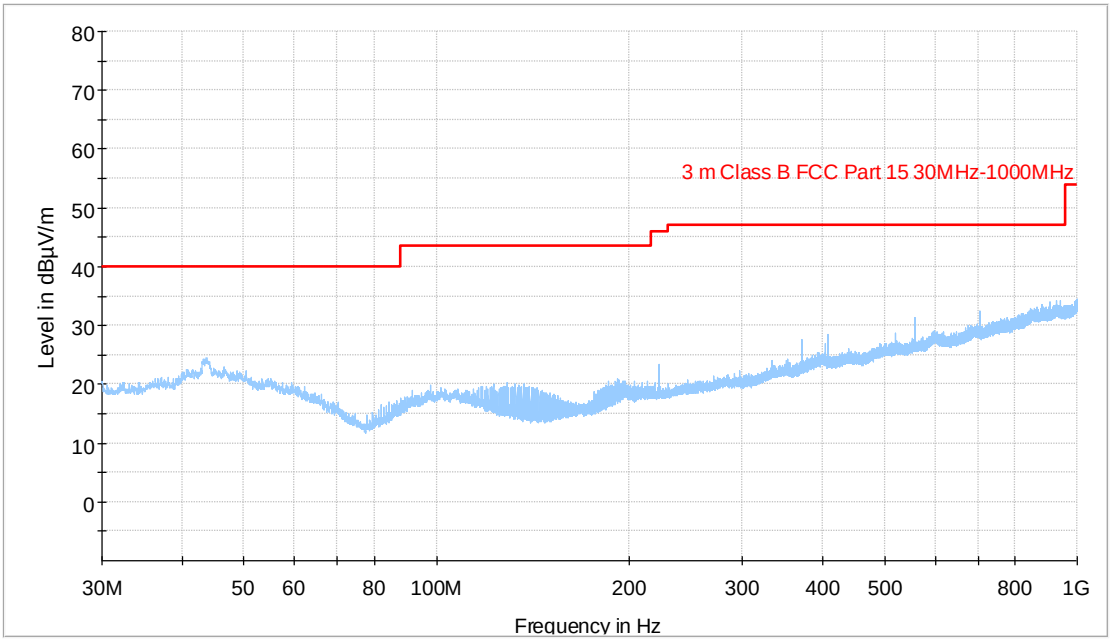


Fig. 7: Ambient level. Frequency range: 30 MHz – 1 GHz

4.1.5.2 Ambient Levels. Frequency range: 1 GHz – 3.5 GHz

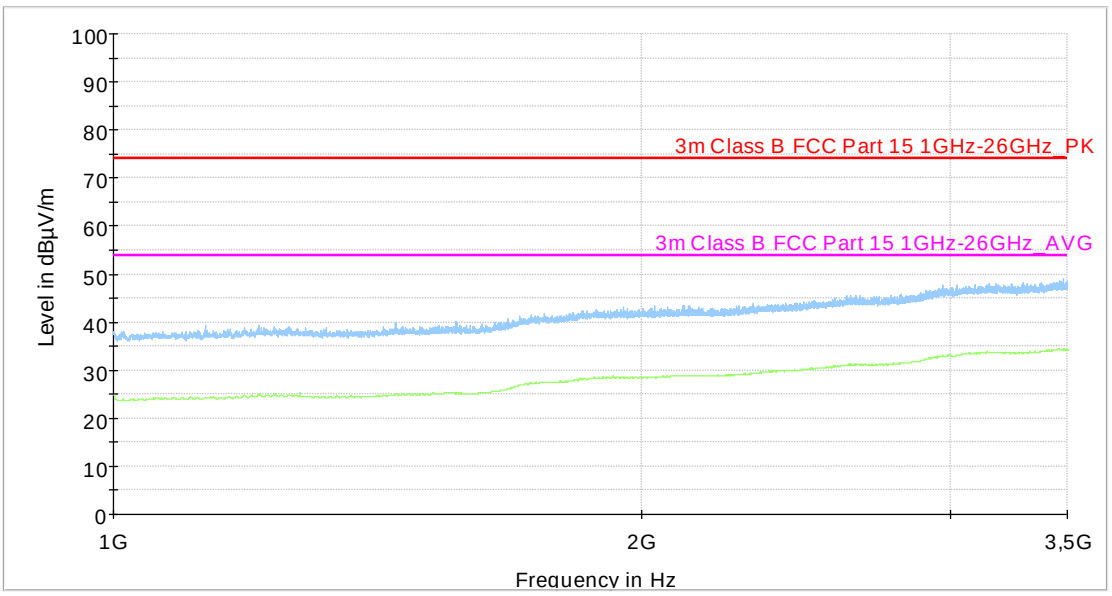


Fig. 8: Ambient level. Frequency range: 1 GHz – 3.5 GHz

4.1.5.3 Ambient Levels. Frequency range: 3.5 GHz – 13 GHz

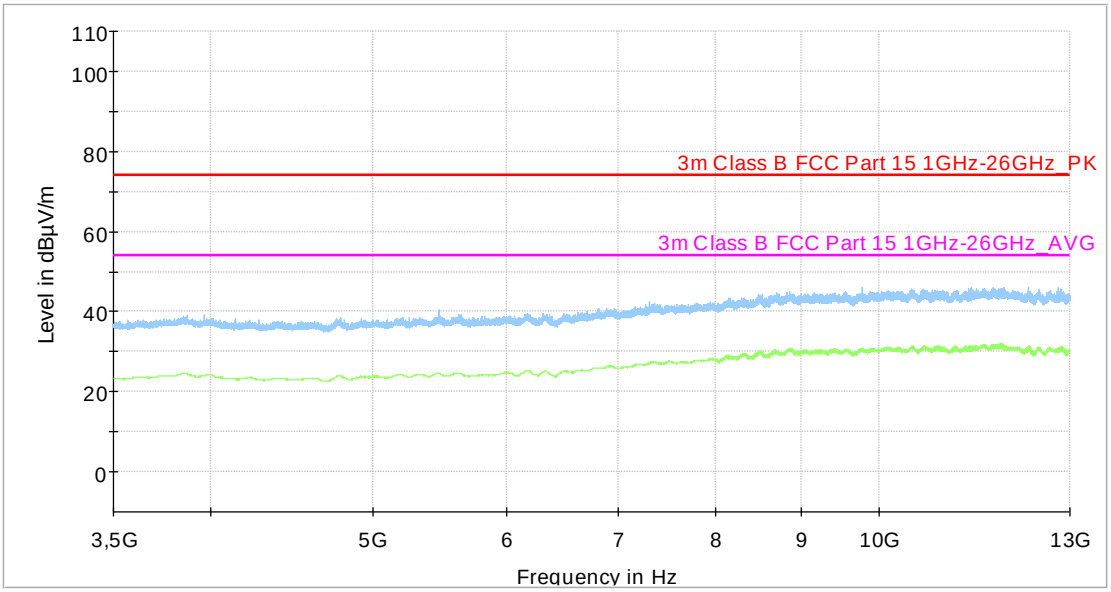


Fig. 9: Ambient level. Frequency range: 3.5 GHz – 13GHz

4.1.5.4 Sample #1. Mode 1. Frequency range: 30 MHz – 1 GHz

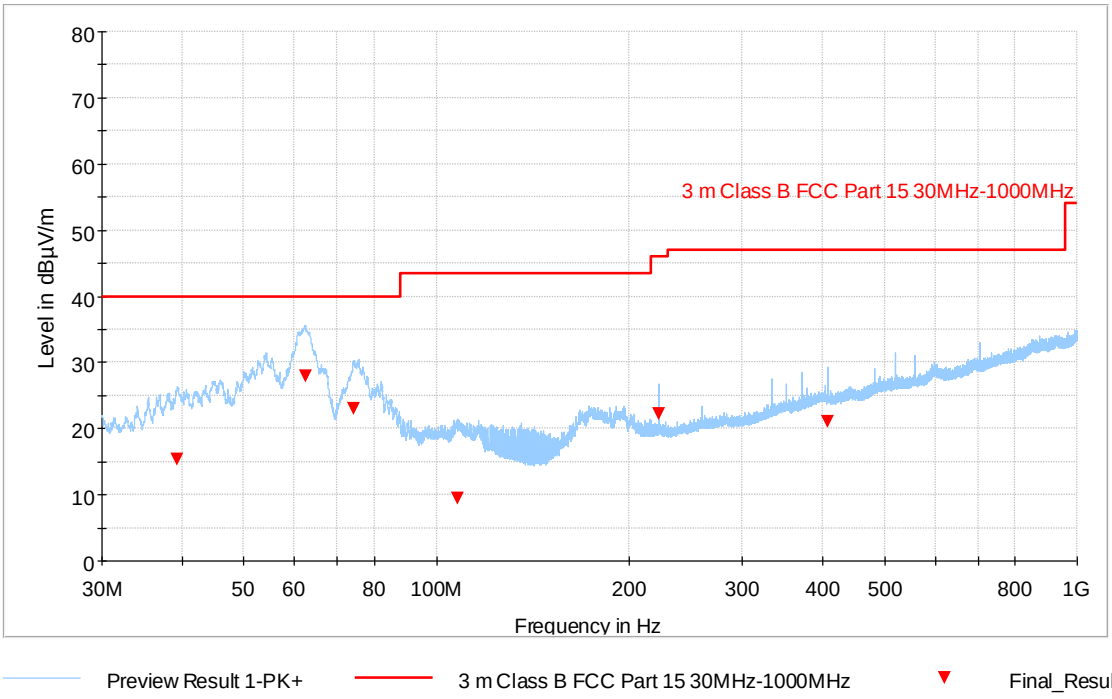


Fig. 10: Sample #1. Mode 1. Frequency range: 30 MHz – 1 GHz

FINAL MEASUREMENTS

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)
39.360	15.3	40.00	24.7	100.0	V	275.0
62.310	28.0	40.00	12.0	100.0	V	2.0
74.310	22.9	40.00	17.1	128.0	V	0.0
107.910	9.3	43.50	34.2	100.0	V	190.0
222.750	22.2	46.00	23.8	342.0	H	67.0
408.360	21.1	47.00	25.9	150.0	H	26.0

4.1.5.5 Sample #1. Mode 1. Frequency range: 1 GHz – 3.5 GHz

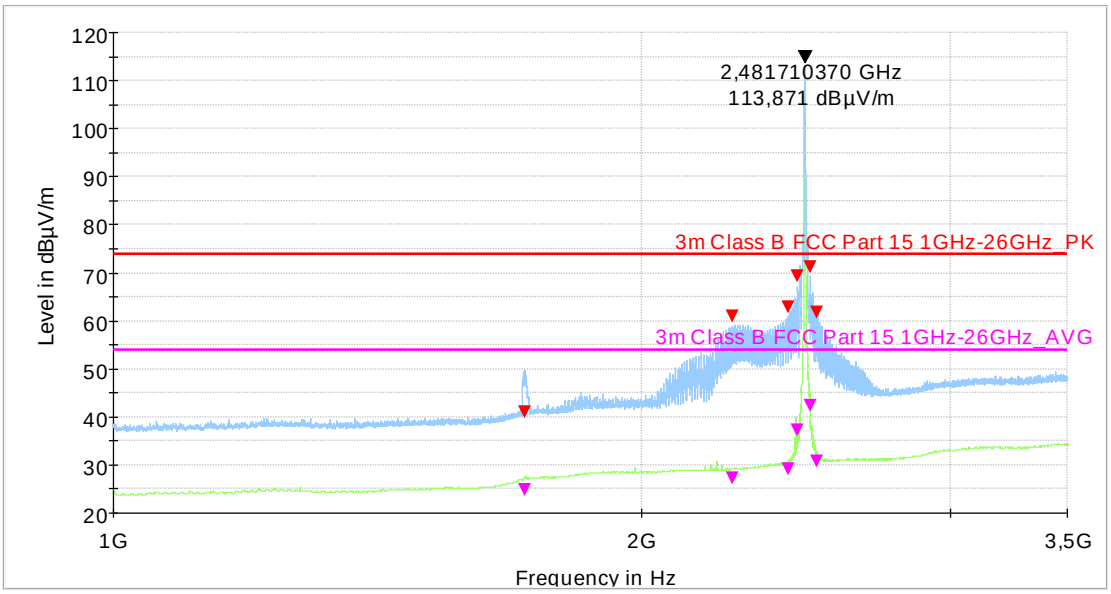


Fig. 11: Sample #1. Mode 1. Frequency range: 1 GHz – 3.5GHz

FINAL MEASUREMENTS

Frequency (MHz)	Max Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1716.500	41.0	74.00	33.0	24.8	54.00	29.2	304.0	H	314.0	28.1
2253.250	60.9	74.00	13.1	27.2	54.00	26.8	238.0	V	312.0	29.6
2424.250	62.9	74.00	11.1	29.2	54.00	24.8	194.0	V	198.0	30.4
2457.000	69.3	74.00	4.7	37.3	54.00	16.7	191.0	V	201.0	30.3
2496.500	69.2	74.00	4.8	42.3	54.00	11.7	198.0	V	292.0	30.4
2519.500	61.7	74.00	12.3	30.8	54.00	23.2	191.0	V	291.0	30.5

4.1.5.6 Sample #1. Mode 1. Frequency range: 3.5 GHz – 13 GHz

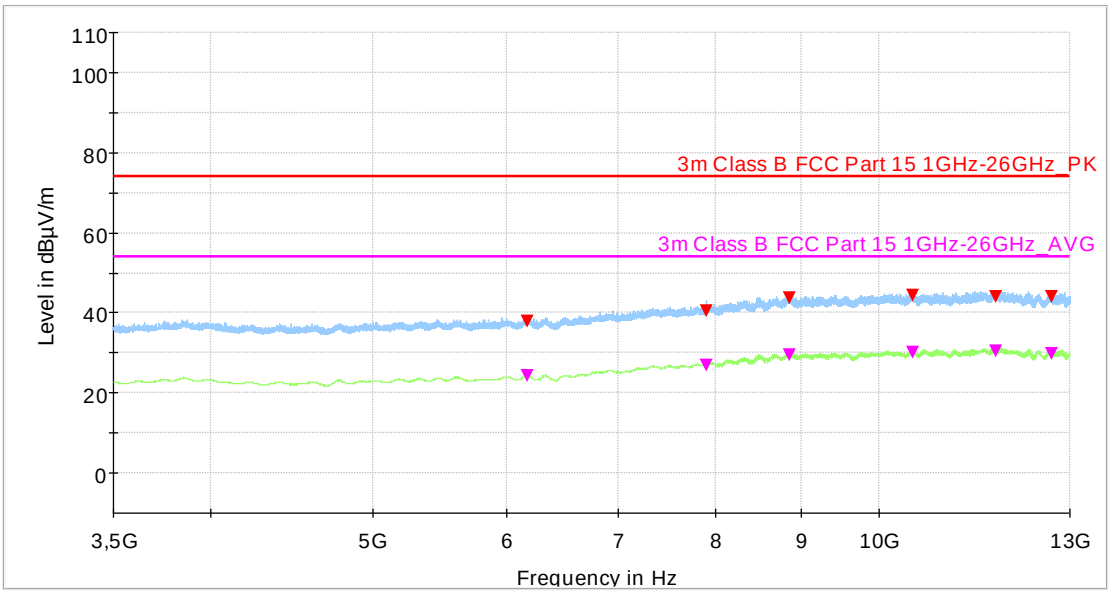


Fig. 12: Sample #1. Mode 2. Frequency range: 3.5 GHz – 13 GHz

FINAL MEASUREMENTS

Frequency (MHz)	Max Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	CAverage (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
6171.250	37.92	74.00	36.1	24.3	54.00	29.7	100.0	H	183.0	-18.2
7901.000	40.60	74.00	33.4	26.8	54.00	27.2	147.0	H	136.0	-14.9
8852.750	43.56	74.00	30.4	29.6	54.00	24.4	312.0	V	59.0	-12.6
10485.500	44.36	74.00	29.6	30.3	54.00	23.7	194.0	H	0.0	-11.0
11735.500	44.12	74.00	29.9	30.5	54.00	23.5	244.0	V	93.0	-9.4
12671.250	43.98	74.00	30.0	29.81	54.00	24.2	219.0	V	294.0	-9.6

4.1.6 Test Equipment Used

Equipment	Brand	Model	Applus Ref.	Last Calibration	Next Calibration
EMI RECEIVER	R&S	ESW26/2Hz-26GHz	1041791	30/01/2026	30/01/2027
BILOG ANTENNA EMI	SCHWARZBECK	VULB9164	1042740	17/12/2025	17/12/2026
ATENUADOR 3 DB	HUBER/SUHNER	6803.17.B	1042020	24/07/2025	24/07/2026
RF ROTARY TRANSITION	SPINNER	BN835088	1042793	20/06/2025	20/06/2026
RF CABLE	HUBER/SUHNER	SF103	1042875	22/08/2025	22/08/2026
RF CABLE 8m	HUBER/SUHNER	SF 106	1043041	26/09/2025	26/09/2026
RF CABLE (WALL PANEL)	--	--	104572	24/07/2025	24/07/2026
SEMIANECHOIC CHAMBER	EUROSHIELD	TC2TESTCHAMBER	104563	12/03/2026	12/03/2029
TEST SOFTWARE	R&S	EMC32v.10.50.00	104624_SAC2	-----	-----
MAST-TABLE CONTROLLER	MATURO	NCD/052/8931211	1042758	-----	-----
HORN ANTENNA EMI	EMCO	3115	05-ER-182	07/01/2026	07/01/2027

Table 13: Test Instruments – Radio-frequency radiated emissions

4.1.7 Uncertainty

Test Type	Test Description	Uncertainty
Emissions	RADIO-FREQUENCY RADIATED EMISSIONS 30 MHz – 1 GHz	± 5.3 dB
Emissions	RADIO-FREQUENCY RADIATED EMISSIONS 1 GHz – 6 GHz	± 5.3 dB
Emissions	RADIO-FREQUENCY RADIATED EMISSIONS 6 GHz – 18 GHz	± 5.5 dB

Table 14: Radio-frequency radiated emissions measuring Uncertainties

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by a coverage factor k=2, which for normal distribution corresponds to a coverage probability of approximately 95%.

4.2 POWER LINE CONDUCTED EMISSIONS

4.2.1 Test Setup Required

According to standard ANSI C63.4:2014

4.2.1.1 Tabletop equipment

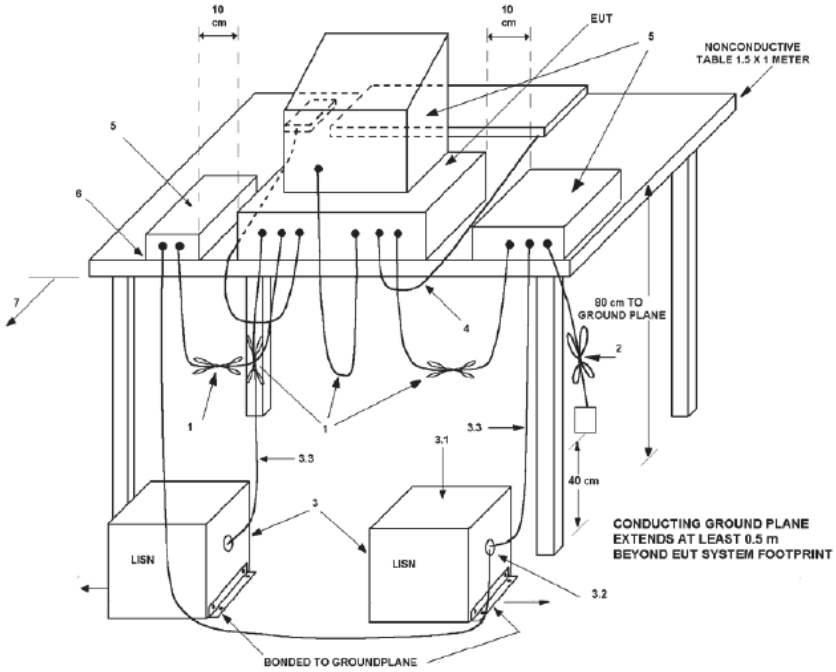


Fig. 13: Power line conducted emissions of table top equipment setup in shielded room

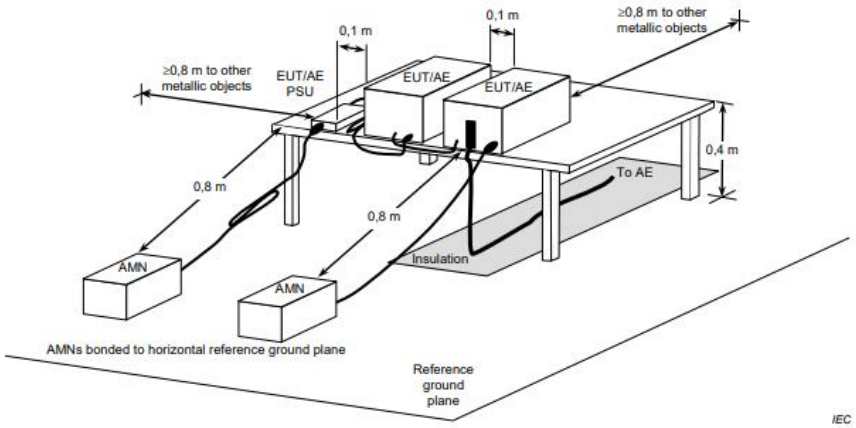


Fig. 14: Power line conducted emissions of table top equipment setup in semi anechoic chamber

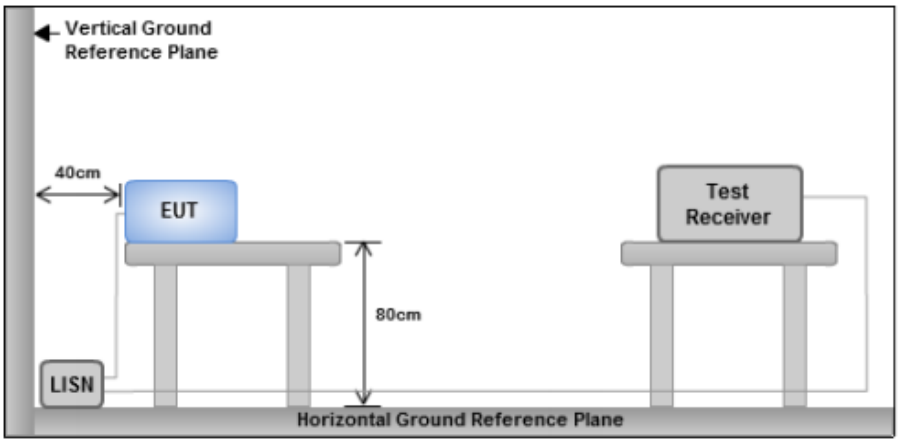


Fig. 15: Power line conducted emissions of table top equipment in shielded room

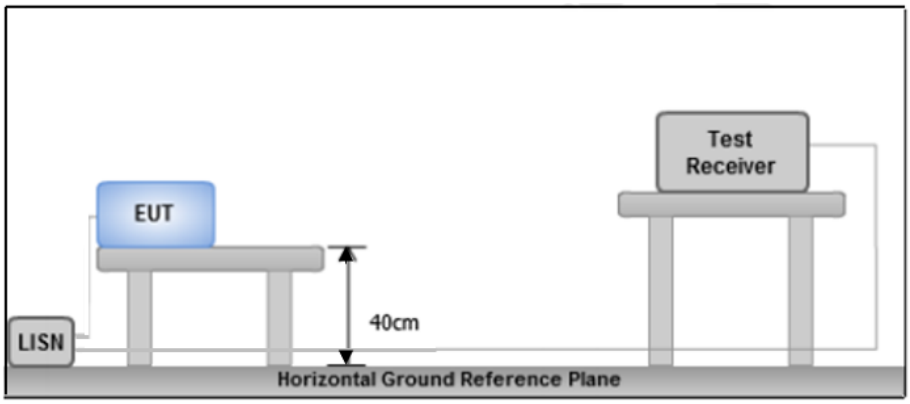


Fig. 16: Power line conducted emissions of table top equipment in in semi anechoic chamber

4.2.1.2 Floor standing equipment

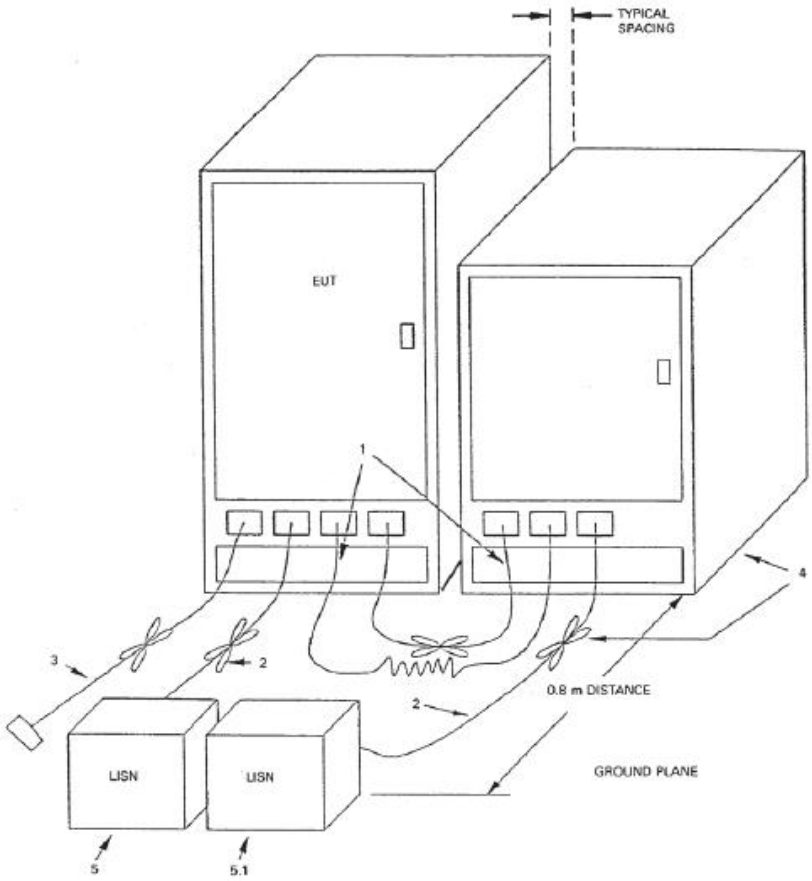


Fig. 17: Power line conducted emissions of floor-standing setup equipment

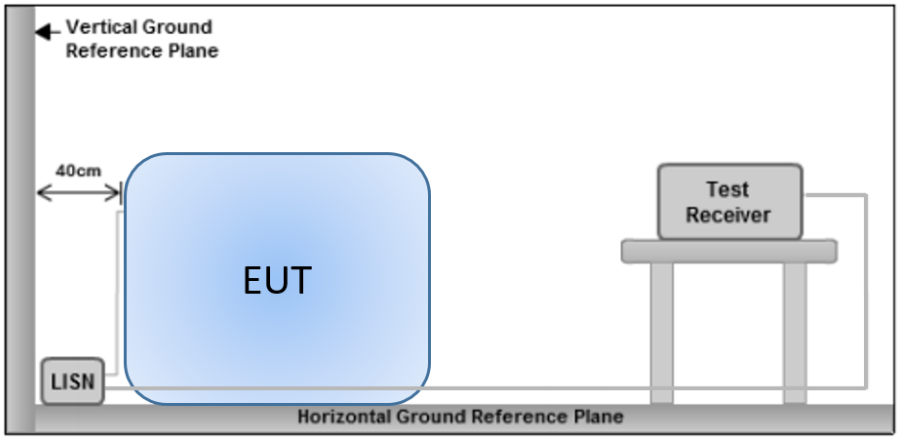


Fig. 18: Power line conducted emissions of floor-standing equipment in shielded room

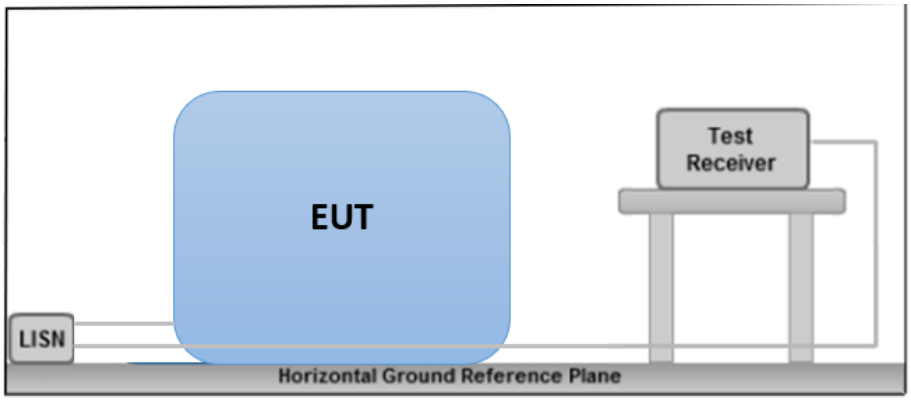


Fig. 19: Power line conducted emissions of floor-standing equipment in in semi anechoic chamber

4.2.2 Test Procedure

The device under test is arranged in table-top or floor-standing position depending on the kind of equipment and keeping the distance from the vertical or horizontal conducting plane located 40 cm to the rear or below of the device, in respective on the test chamber which is evaluated.

The device is connected to line impedance stabilization network (LISN), placed 80 cm far from the device under test and other accessories are connected to other LISN too. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.

AC conducted emission measurements are made over frequency range from 150 kHz to 30 MHz.

Pre-measurement:

- Pre-scan measurement using a peak and average detector is performed in order to show the emissions of the device under test
- Each line of the power cord is evaluated to find the maximum emissions

Final measurement:

- The final measurement is performed for at least six highest peaks according to the requirements of the ANSI C63.4
- The final measurement is done with quasi-peak and average detector (as described in ANSI C63.4)
- Final levels, frequency, measuring time, bandwidth, correction factors, margin to the limit and limit are recorded. A plot with the graph of the premeasurement with marked maximum final results and the limit is shown

Correction Factor:

Emission Level = Read Level + Corrections (LISN factor + Cable Loss + Attenuator)

4.2.3 Test Parameters

4.2.3.1 Requirements

According to standard ANSI C63.4:2014

The conducted emissions shall not exceed the following levels:

AC main power ports of Class A Equipment's		
Frequency Range [MHz]	**Quasi-peak detector (QP) [dBµV]**	**Average detector (AVG) [dBµV]**
0.15 – 0.5	79	66
0.5 – 30	73	60

Table 15: Power line conducted emissions requirements – AC main power ports of Class A equipment's

AC main power ports of Class B Equipment's		
Frequency Range [MHz]	**Quasi-peak detector (QP) [dBµV]**	**Average detector (AVG) [dBµV]**
0.15 – 0.5	66 to 56[1]	56 to 46[1]
0.5 – 5	56	46
5 – 30	60	50

Table 16: Power line conducted emissions requirements – AC main power ports of Class B equipment's

Note 1: Decreases with the logarithm of the frequency.

4.2.3.2 Receiver Parameters

According to standard ANSI C63.4:2014

Frequency Range [MHz]	Detector	Resolution Bandwidth [kHz]
0.15 – 30	Peak (PK) Average (AV)	9
0.5 – 5		
5 – 30		

Table 17: Receiver parameters – Power line conducted emissions

4.2.3.3 Sample Calculations for Power Line conducted emissions

Field Strength is calculated from the Receiver readings, based on the following equation:

$$Final\ Result\ [dB\mu V/m] = Raw\ Rec\ [dB\mu V] + Corr.\ [dB]$$

$$Final\ Result\ [dB\mu V/m] = Raw\ Rec\ [dB\mu V] + Trd\ Corr\ [dB] + Sig\ Path\ [dB]$$

Equation 3: Equation for Calculation for Field Strength

Where:

- *Raw Rec – Measured reading in dBµV.*
- *Sig Path – Cable Loss + Pulse Limitter in dB.*
- *Trd Corr – LISN Factor in dB*
- *Corr [dB/m] = Sig Path [dB] + Trd Corr [dB]*

Example calculation from primary register taken from EMC-32 Test Software:

Frequency [MHz]	QuasiPeak [dBµV]	Limit [dBµV]	Margin [dB]	Corr. [dB]	Raw Rec [dBµV]	Sig Path [dB]	Trd Corr. [dB]
8.274	46.1	60.0	13.9	20.1	26.0	10.4	9.7

Table 18: Sample Calculation for Field Strength

$$QuasiPeak\ [dB\mu V] = 26.0 + 9.7 + 10.4 = 46.1\ [dB\mu V]$$

Equation 4: Sample Calculation for Power Line conducted emissions.

4.2.4 Test Environmental Conditions

Test Date	Technician	Supervisor	Temperature [ºC]	Humidity [%]	Atm. Pressure [mbar]
13/04/2026	Adrian Perez	---	23.3	46,3	991

Table 19: Test environmental conditions – Power line conducted emissions

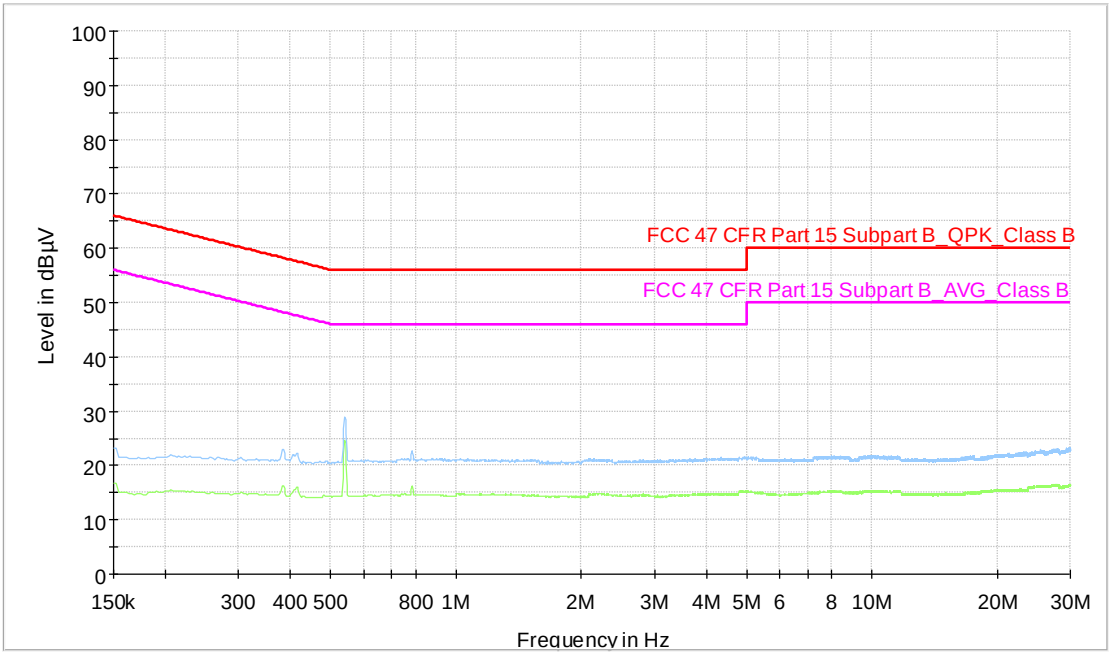
4.2.5 Summary Test Results

Frequency Range [MHz]	Ports	Equipment Class	Test Area	Results
0.15 – 30 MHz	AC Mains	B	SAC 0	PASS

Table 20: Summary test results – Power line conducted emissions

4.2.6 Test Results

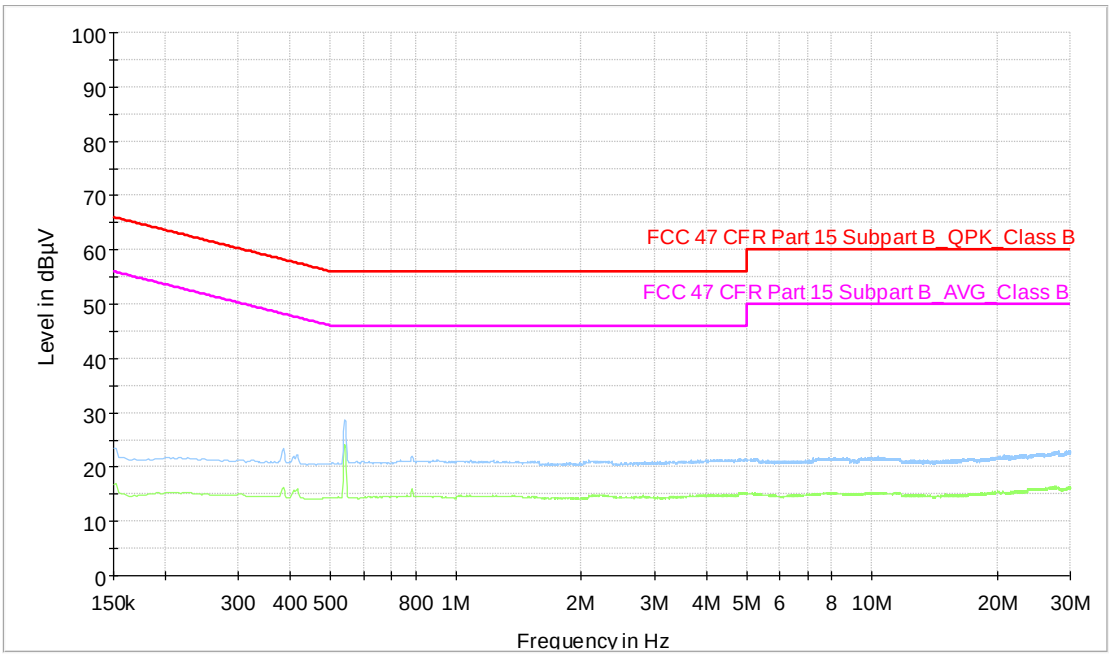
4.2.6.1 Ambient Levels. AC Mains: Neutral. Frequency range: 0.15 MHz – 30 MHz



CAV_MAXH
FCC 47 CFR Part 15 Subpart B_QPK_Class B
QPK_MAXH
FCC 47 CFR Part 15 Subpart B_AVG_Class B

Fig. 20: Ambient level. AC Mains: Neutral. Frequency range: 0.15 MHz – 30 MHz

4.2.6.2 Ambient Levels. AC Mains: Line 1. Frequency range: 0.15 MHz – 30 MHz



CAV_MAXH
FCC 47 CFR Part 15 Subpart B_QPK_Class B
QPK_MAXH
FCC 47 CFR Part 15 Subpart B_AVG_Class B

Fig. 21: Ambient level. AC Mains: Line 1. Frequency range: 0.15 MHz – 30 MHz

4.2.6.3 Sample #1. Mode 1. AC Mains: Neutral. Frequency range: 0.15 MHz – 30 MHz

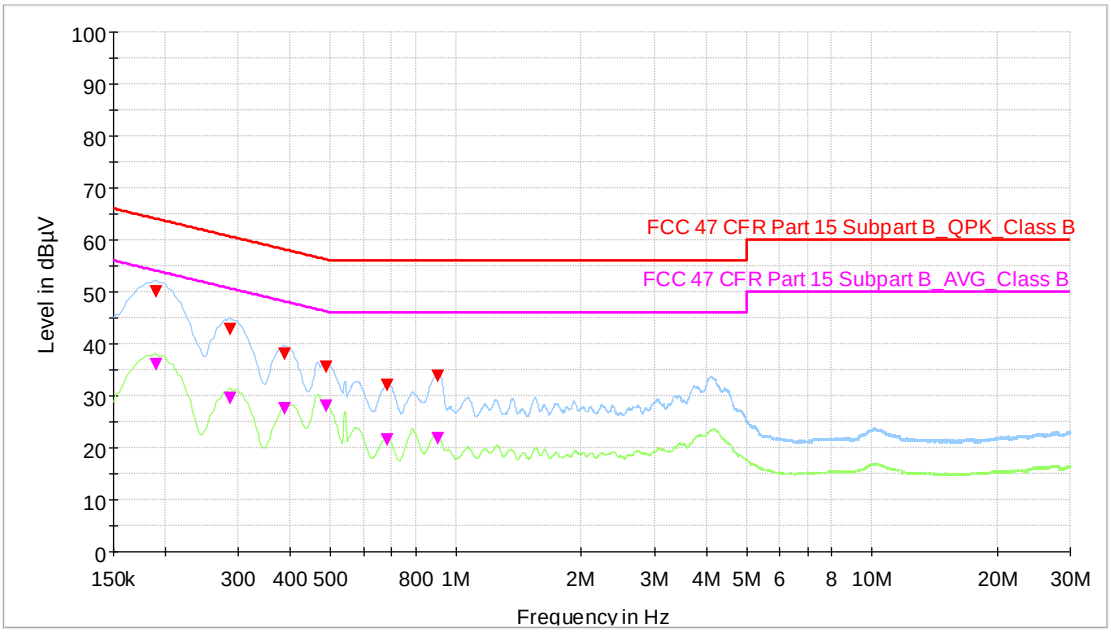
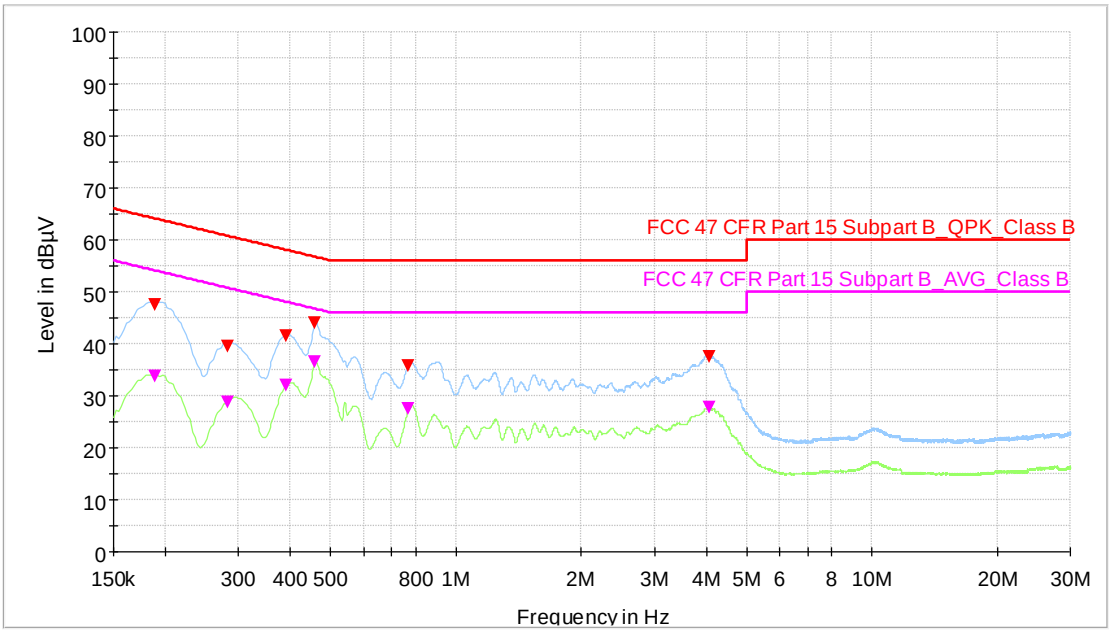


Fig. 22: Sample #1. Mode 1. AC Mains: Neutral. Frequency range: 0.15 MHz – 30 MHz

FINAL MEASUREMENTS

Frequency (MHz)	QuasiPeak (dBµV)	Limit - QPK (dBµV)	Margin - QPK (dB)	CAverage (dBµV)	Limit - CAV (dBµV)	Margin - CAV (dB)	Line	Corr. (dB)
0.190500	**50.1**	**64.0**	**13.9**	**36.0**	**55.9**	**40.1**	N	**19.7**
0.287250	**42.8**	**60.6**	**17.8**	**29.5**	**48.2**	**32.6**	N	**19.7**
0.386250	**38.0**	**58.1**	**20.2**	**27.4**	**47.5**	**32.1**	N	**19.7**
0.487500	**35.4**	**56.2**	**20.8**	**28.1**	**46.0**	**20.5**	N	**19.7**
0.683250	**31.9**	**56.0**	**24.1**	**21.4**	**46.0**	**30.1**	N	**19.7**
0.906000	**33.9**	**56.0**	**22.2**	**21.8**	**50.0**	**36.0**	N	**19.7**

4.2.6.4 Sample #1. Mode 1. AC Mains: Line 1. Frequency range: 0.15 MHz – 30 MHz



CAV_MAXH
FCC 47 CFR Part 15 Subpart B_QPK_Class B
QuasiPeak-QPK (Single)

QPK_MAXH
FCC 47 CFR Part 15 Subpart B_AVG_Class B
CAverage-CAV (Single)

Fig. 23: Sample #1. Mode 1. AC Mains: Line 1. Frequency range: 0.15 MHz – 30 MHz

FINAL MEASUREMENTS

Frequency (MHz)	QuasiPeak (dBµV)	Limit - QPK (dBµV)	Margin - QPK (dB)	CAverage (dBµV)	Limit - CAV (dBµV)	Margin - CAV (dB)	Line	Corr. (dB)
0.188250	47.5	64.1	16.6	33.8	55.9	40.1	L1	19.7
0.282750	39.4	60.7	21.3	28.8	48.2	32.6	L1	19.7
0.390750	41.4	58.0	16.6	32.1	47.5	32.1	L1	19.7
0.458250	44.1	56.7	12.7	36.5	46.0	20.5	L1	19.7
0.768750	35.8	56.0	20.2	27.4	46.0	30.1	L1	19.7
4.071750	37.4	56.0	18.6	27.8	50.0	36.0	L1	19.9

4.2.7 Test Equipment Used

Equipment	Brand	Model	Applus Ref.	Last Calibration	Next Calibration
EMI RECEIVER	R&S	ESW26	1041791	30/01/2026	30/01/2027
LISN	R&S	ENV216	1042950	28/07/2025	28/07/2026
TRANSIENT LIMITER	SCHWARTZBECK	VTSD 9561	1042102	08/05/2025	08/05/2026
CABLE SR2	HUBER/SUHNER	RG-223	1042154	15/12/2025	15/12/2026
TEST SOFTWARE	ROHDE & SCHWARZ	EMC32 v.10.50.00	104624	---	---
SHIELDED ROOM	ALBATROSS	SR-2	1042269	--	--

Table 21: Test Instruments – Power line conducted emissions

4.2.8 Uncertainty

Test Type	Test Description	Uncertainty
Emissions	POWER LINE CONDUCTED EMISSIONS	± 3.4 dB

Table 22: Radio-frequency radiated emissions measuring Uncertainties

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by a coverage factor k=2, which for normal distribution corresponds to a coverage probability of approximately 95%.