
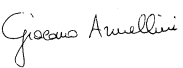


RAPPORTO DI PROVA / TEST REPORT

Rif./Ref.No. FCCTR_170245-2	Data / Date: 18/07/2017	Pagine / Pages : 20
Scopo delle prove / Test object :	Prove di tipo in accordo a / Type test according to FCC Cfr 47 part 15 - Subpart B - §15.107, §15.109	
Richiedente / Applicant :	MUNDO READER S.L. Calle Sofia,10 P.I Europolis - Las Rozas - Madrid, 28232 - Spain	
Persona di riferimento / Applicant's referee :	Mr. Ivan Garcia	
Marchio commerciale / Trademark :	MUNDO READER	
Fabbricante / Manufacturer :	MUNDO READER S.L.	
Prodotto / Product :	3D Printer	
Modello / Model :	WITBOX GO!	
FCC ID	2AKDW-WG	
Data ricevimento campioni / Date of test sample receipt:	29/03/2017	
Campioni verificati / No. of tested samples	1	
Data verifiche / Testing date :	29/03/2017 and 15/06/2017	
Sito di prova / Testing site :	Prima Ricerca & Sviluppo Via Campagna - 92 ITALY - 22020 FALOPPIO CO	
Esito delle valutazioni / Assessment results :	CONFORME / COMPLIANT	
Verifiche effettuate da / Verifications carried out by :	Antonio ROTONDO Tecnico Laboratorio EMC / EMC Laboratory Technician	
Approvato / Approved by :	Giacomo ARMELLINI Responsabile Laboratorio EMC e RADIO / EMC and RADIO Laboratory Manager	

La conformità alle prove e verifiche effettuate non conferisce in alcun modo presunzione di conformità a tutte le prescrizioni previste dalla norma di riferimento / Compliance with test requirements recorded in this technical report does not give presumption of compliance to all requirements by reference standard.

I risultati delle prove riportati nel presente rapporto di prova si riferiscono solo ai campioni esaminati./

The test results reported in this test report shall refer only to the samples tested

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CONTENUTO / TABLE OF CONTENTS

0	RELEASE CONTROL RECORD	2
1	TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)	3
1.1	EUT Identification EUT Identification	3
1.2	EUT Technical Data	3
1.3	EUT ports identification	4
1.4	Modifications incorporated in E.U.T.	4
1.5	Auxiliary equipment	4
2	REFERENCE STANDARD	5
3	OPERATING TEST MODES AND CONDITIONS	5
4	SUMMARY OF TEST RESULTS	5
5	TEST RESULTS.....	6
6	LIST OF EQUIPMENT USED.....	17
7	PHOTOGRAPHIC DOCUMENTATION	18

0 RELEASE CONTROL RECORD

TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
FCCTR_170245-0	Original release	18/07/2017
FCCTR_170245-1	Editorial Change	18/07/2017
FCCTR_170245-2	Editorial Change	18/07/2017

1 TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

1.1 EUT Identification EUT Identification

DESCRIPTION :	3D Printer
TRADEMARK:	MUNDO READER
MODEL:	WITBOX GO!
S/N:	Prototype
FCC ID	2AKDW-WG
MANUFACTURER:	MUNDO READER S.L.
COUNTRY OF MANUFACTURER:	Spain
COMPOSED BY:	Single
EUT DIMENSIONS :	See photography documentation
EUT STANDING:	Table

1.2 EUT Technical Data

POWER SOURCE :	AC/DC adaptor
POWER SUPPLY NOMINAL VOLTAGE:	115V ~ 60Hz
NOMINAL POWER OR ABSORBING CURRENT :	Not declared
FCC CLASS:	B
TYPICAL USAGE :	Printer
TYPE:	Unintentional radiator

1.3 EUT ports identification

This section contains descriptions of all ports, the length and the type of the cable provided by manufacturer needed for the tests. Moreover it is specified if the ports are ever or optionally connected.

Port	Description	Connector	Max cable length
Enclosure	Plastic	Screw / Snaps	-----
AC mains input/output ports	230V - 50Hz	Plug	< 3m
DC mains input/output ports	Port not present	-----	-----
Signals / Control Ports	USB	miniUSB	< 3m
Telecommunication port	Port not present	-----	-----

Note: During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.

1.4 Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test :

- Ferrite Wurth Elektronik -- 742 700 34 with one cable turn.
- Ferrite Wurth Elektronik -- 742 700 45 with two cable turns.
- Capacitor EPCOS -- B32911B3223M (Class X1 | 330V | 0.022uF)

1.5 Auxiliary equipment

- None

2 REFERENCE STANDARD

CODE OF FEDERAL REGULATIONS	
Title 47 Part 15 Subpart B § 15.107	Radio frequency devices – Unintentional Radiators Conducted Limits
Title 47 Part 15 Subpart B § 15.109	Radio frequency devices – Unintentional Radiators Radiated Emissions Limits

In the following table there are the operating conditions adopted during tests identified by an indicator (#..) at which has been referred the item “Operating condition of the equipment under test”

3 OPERATING TEST MODES AND CONDITIONS

OPERATING CONDITION	DESCRIPTION
#1	Continuous moving motor

4 SUMMARY OF TEST RESULTS

Port	Phenomena	Reference Standard	Operating condition	Result
Enclosure	Radiated Emissions	Title 47 Part 15 Subpart B § 15.109	#1	<i>Within The limits</i>
AC mains	Conducted Emissions	Title 47 Part 15 Subpart B § 15.107	#1	<i>Within The limits</i>

5 TEST RESULTS

RADIATED EMISSIONS	7
CONDUCTED EMISSIONS	14



**TEST
1.**

RADIATED EMISSIONS

REFERENCE DOCUMENT FCC Cfr 47 part 15 - Subpart B - §15.109

- TEST SETUP: In according to manufacturer specifications
- TEST LOCATION: Semi-anechoic chamber (CISPR 16-1 :1993)
Siemens+Matsushita type B84117-D6019-T232
Measure distance 3 meters
- TEST EQUIPMENT USED FOR TEST: EMI receiver Rohde & Schwarz Mod. ESU40
Chase Antenna Mod. CBL 6111 C
R&S Antenna Mod. HL050
- TESTED PORT: Enclosure
- FREQUENCY RANGE: 30MHz – 12.5 GHz
- MEASUREMENT DISTANCE : 3mt
- EMISSION LIMITS: Acc. to Section 15.109 of reference document
- UNCERTAINTY OF MEASURE: Level of confidence = 95%
Degree of freedom = 10
Coverage factor $k_p = 2,28$
Combined uncertainty = 4,49 dB

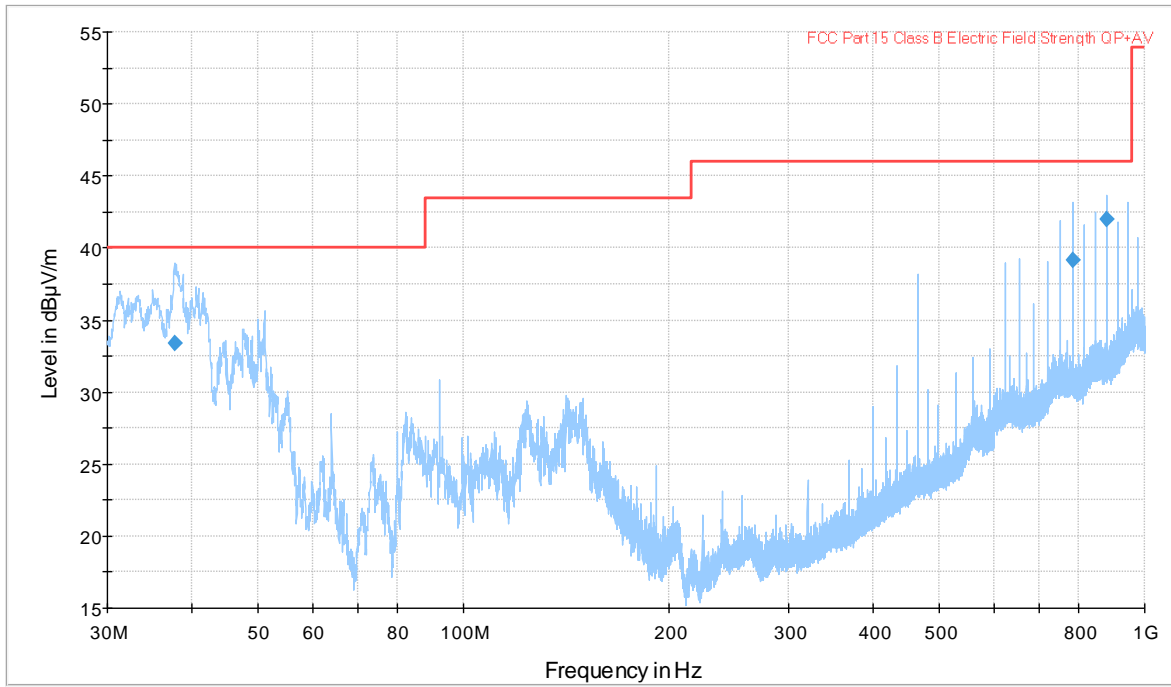
TEST CONDITIONS:	MEASURED
Ambient temperature : 15 - 35 °C	24 ± 3 °C
Ambient humidity : 25 - 75 %rH	40 ± 5 %rH
Pressure : 85 - 106 kPa (860 mbar - 1060 mbar)	950 ± 50 mbar
Voltage :	115V ~ 60Hz

OPERATING CONDITION (Rif. Section. 3) : #1

RESULT: WITHIN THE LIMIT

VERTICAL POLARIZATION: 30MHz – 1GHz

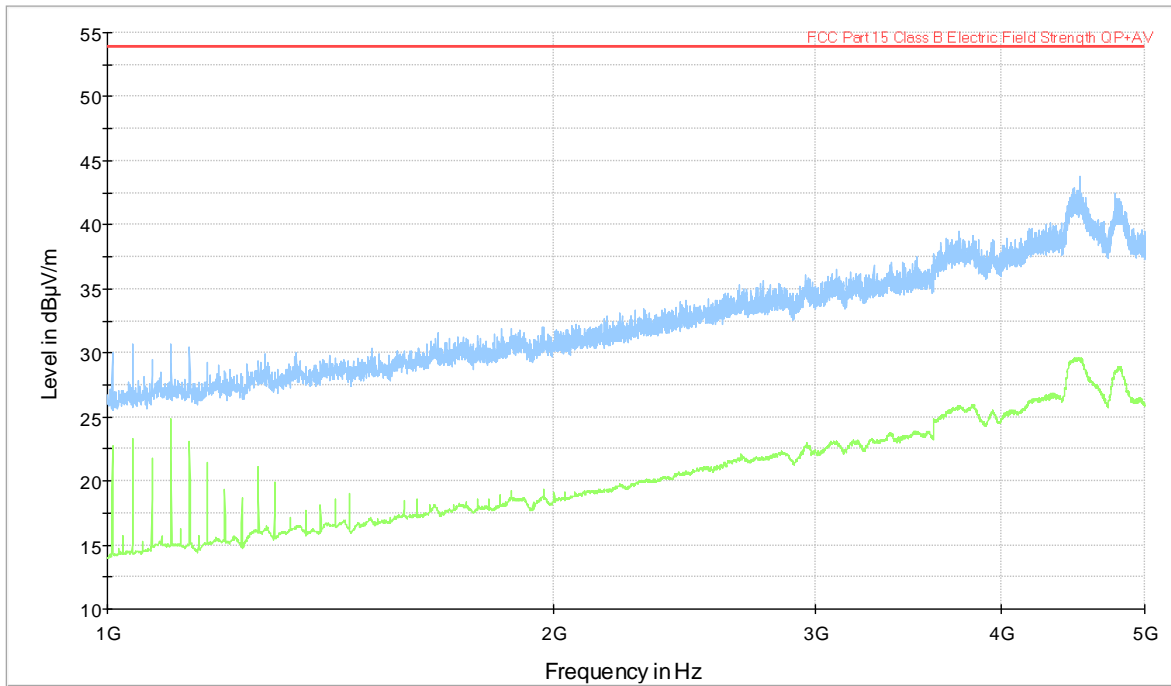
FCC_15_109_RADIATED_EMISSIONS_VERTICAL



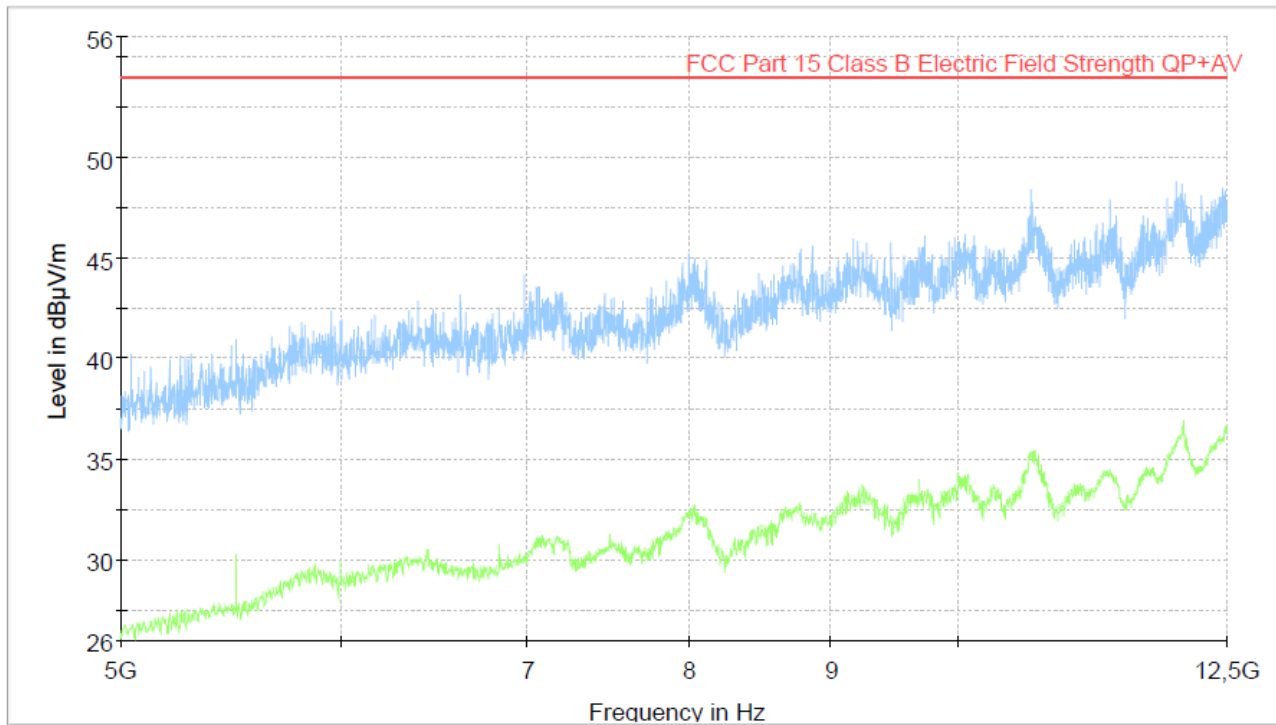
Final Result QuasuPeak

Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
37.640000	33.4	102.0	V	175.0	6.6	40.0
784.000000	39.2	101.0	V	172.0	6.8	46.0
880.000000	42.0	241.0	V	270.0	4.0	46.0

VERTICAL POLARIZATION: 1GHz – 5GHz

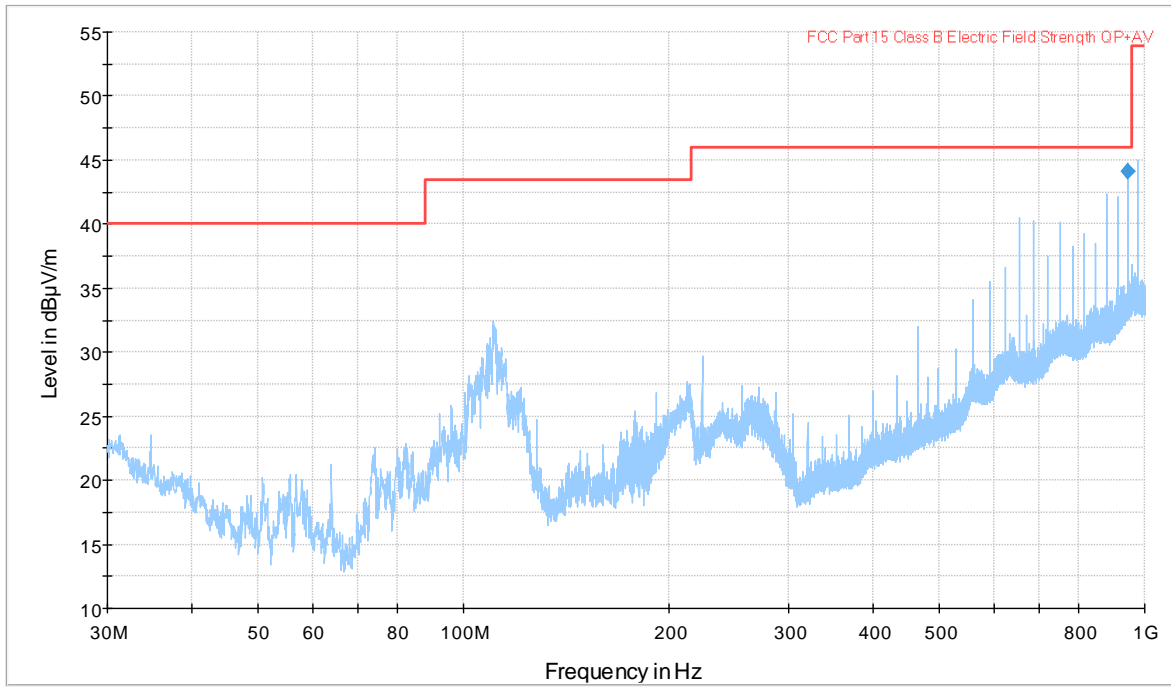


VERTICAL POLARIZATION: 5-12.5GHz



HORIZONTAL POLARIZATION: 30MHz – 1GHz

FCC_15_109_RADIATED_EMISSIONS_HORIZONTAL

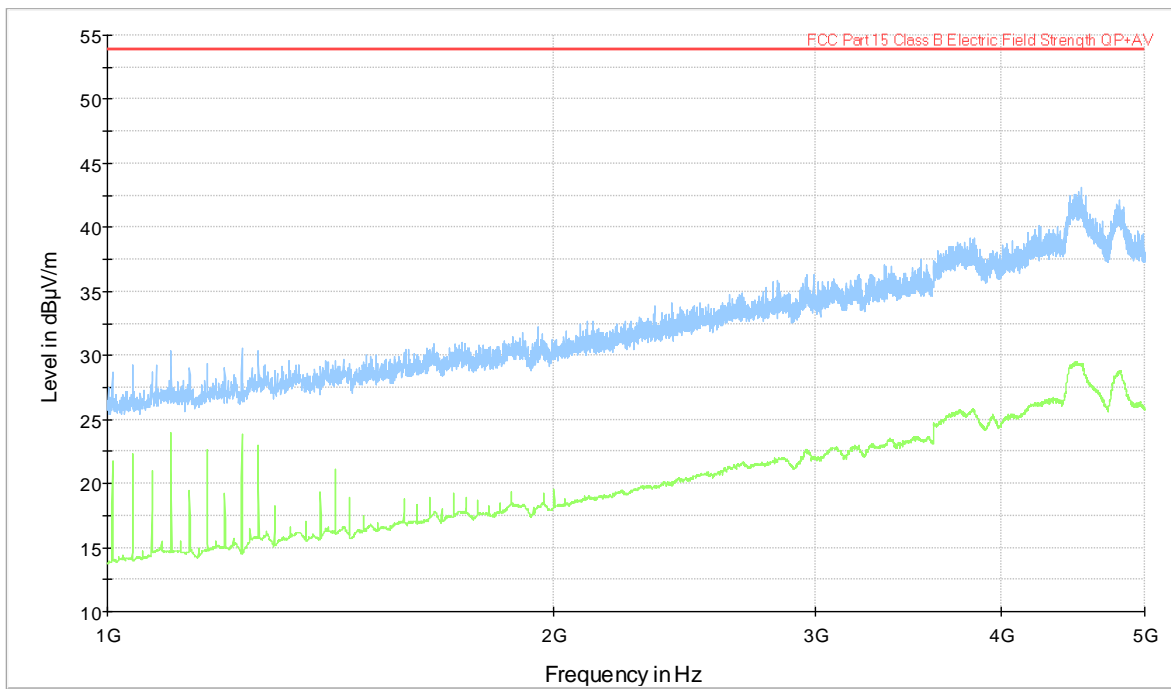


Final Result QuasiPeak

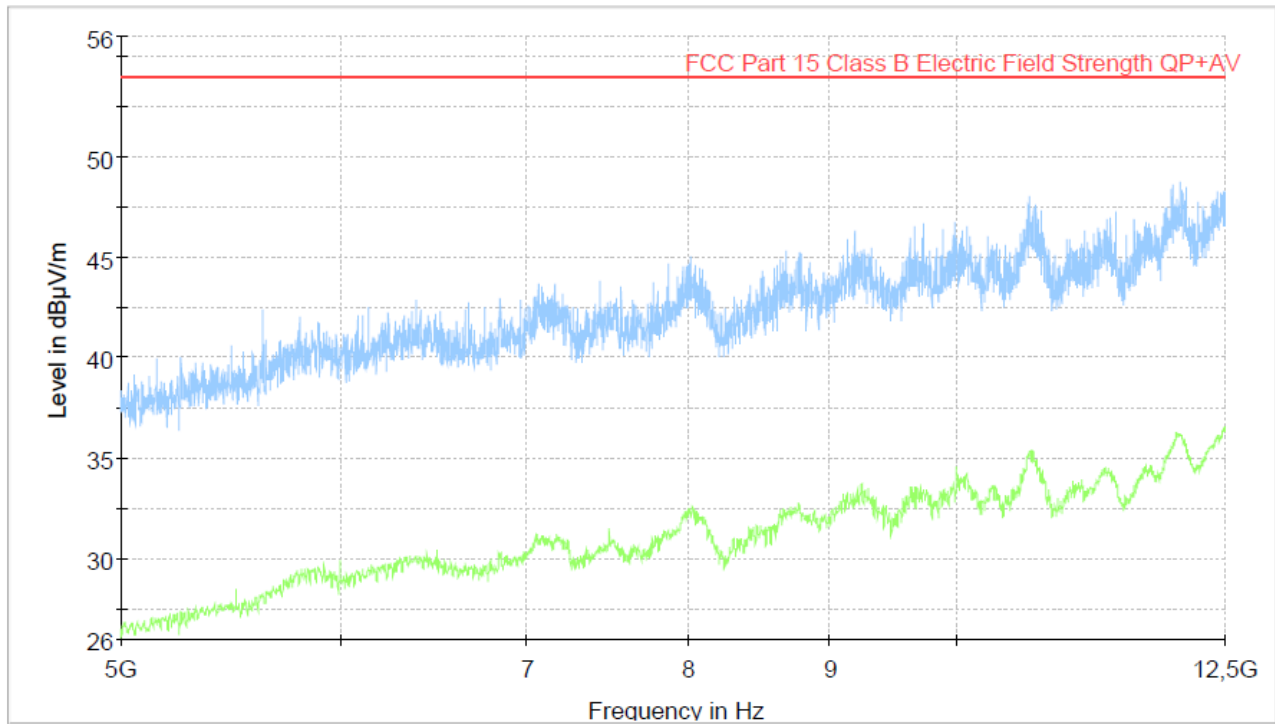
Frequency (MHz)	QuasiPeak (dBµV/m)	Height (cm)	Polarization	Azimuth (deg)	Margin (dB)	Limit (dBµV/m)
944.000000	44.1	285.0	H	-14.0	1.9	46.0

HORIZONTAL POLARIZATION: 1GHz – 5GHz

FCC_15_109_RADIATED_EMISSIONS_HORIZONTAL



HORIZONTAL POLARIZATION: 5-12.5GHz



**TEST
2.**

CONDUCTED EMISSIONS

REFERENCE DOCUMENT FCC Cfr 47 part 15 - Subpart B - §15.107

- TEST SETUP: Acc. to reference standard
- TEST LOCATION: Semianechoic chamber
- TEST EQUIPMENT USED FOR TEST: EMI receiver Rohde & Schwarz Mod. ESU 40 (20Hz-40GHz)
Artificial Network Rohde & Schwarz Mod. ESH3-Z5
- TESTED PORT: AC mains
- FREQUENCY RANGE: 0.15 - 30 MHz
- EMISSION LIMITS: Section 15.207 of Standard
- MEASUREMENT UNCERTAINTY: Level of confidence = 95%
Degree of freedom = 10
Coverage factor $k_p = 2,28$
Combined uncertainty = 2,36 dB

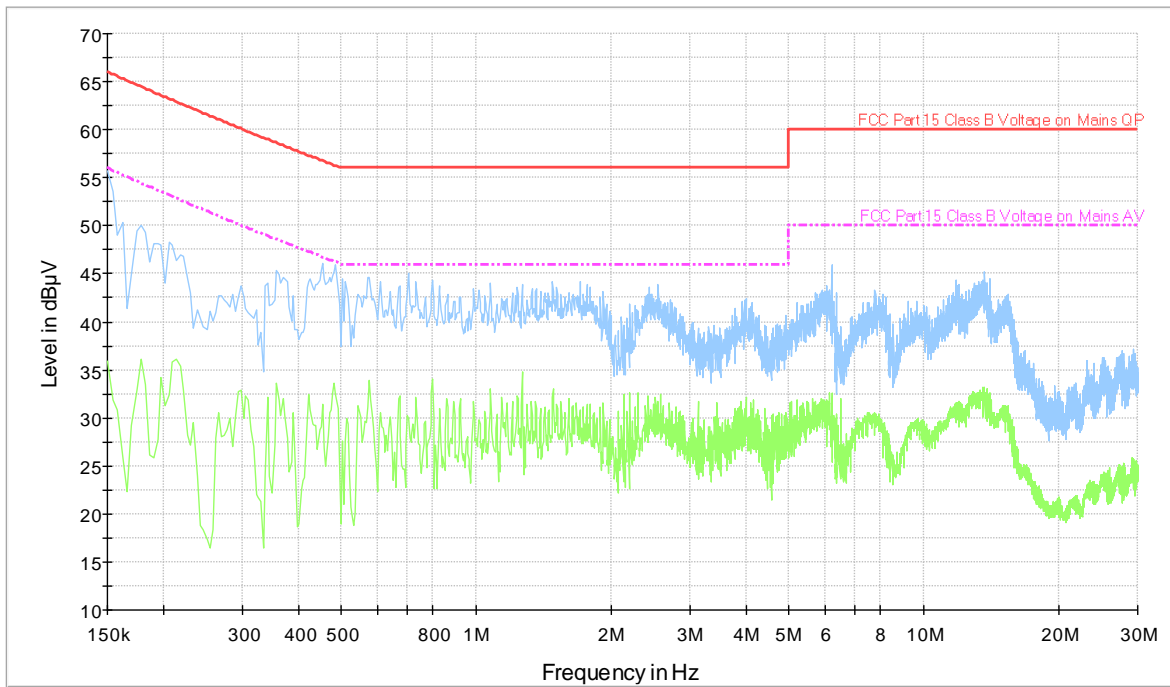
TEST CONDITIONS:	MEASURED
Ambient temperature : 15 - 35 °C	24 ± 3 °C
Ambient humidity : 25 - 75 %rH	40 ± 5 %rH
Pressure : 85 - 106 kPa (860 mbar - 1060 mbar)	950 ± 50 mbar
Voltage :	115V ~ 60Hz

OPERATING CONDITION (Rif. Section. 3) : #1

RESULT: WITHIN THE LIMITS

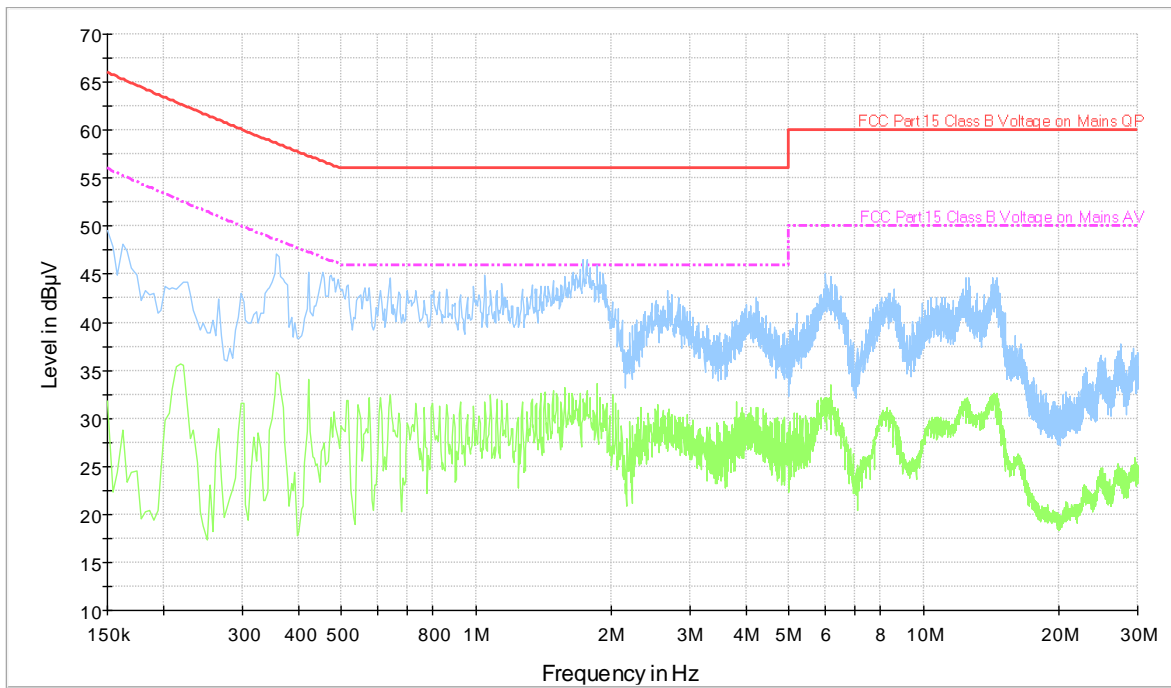
L1 LINE

FCC_15_107_EMI_COND_L1



NEUTRAL LINE

FCC_15_107_EMI_COND_N



6 LIST OF EQUIPMENT USED

EQUIPMENT	MANUFACTURER	MODEL	SERIAL NUMBER	CAL. DUE
EMI TEST RECEIVER	R&S	ESU40	100111	MAR.2018
ARTIFICIAL MAINS NETWORK	R&S	ESH3-Z5	835268/013	JUN.2018
RF SEMI-ANECHOIC CHAMBER (CSSA)	SIEMENS	B83117-D6019-T232	003-005-134/94C	JAN.2018
BILOG ANTENNA	CHASE	CBL6111C	2717	MAY.2018
LOG PERIODICA ANTENNA	R&S	HL050	100437	JUN.2018

7 PHOTOGRAPHIC DOCUMENTATION

PHOTO 1 – EUT IDENTIFICATION



PHOTO N° 2 – RADIATED EMISSION SETUP

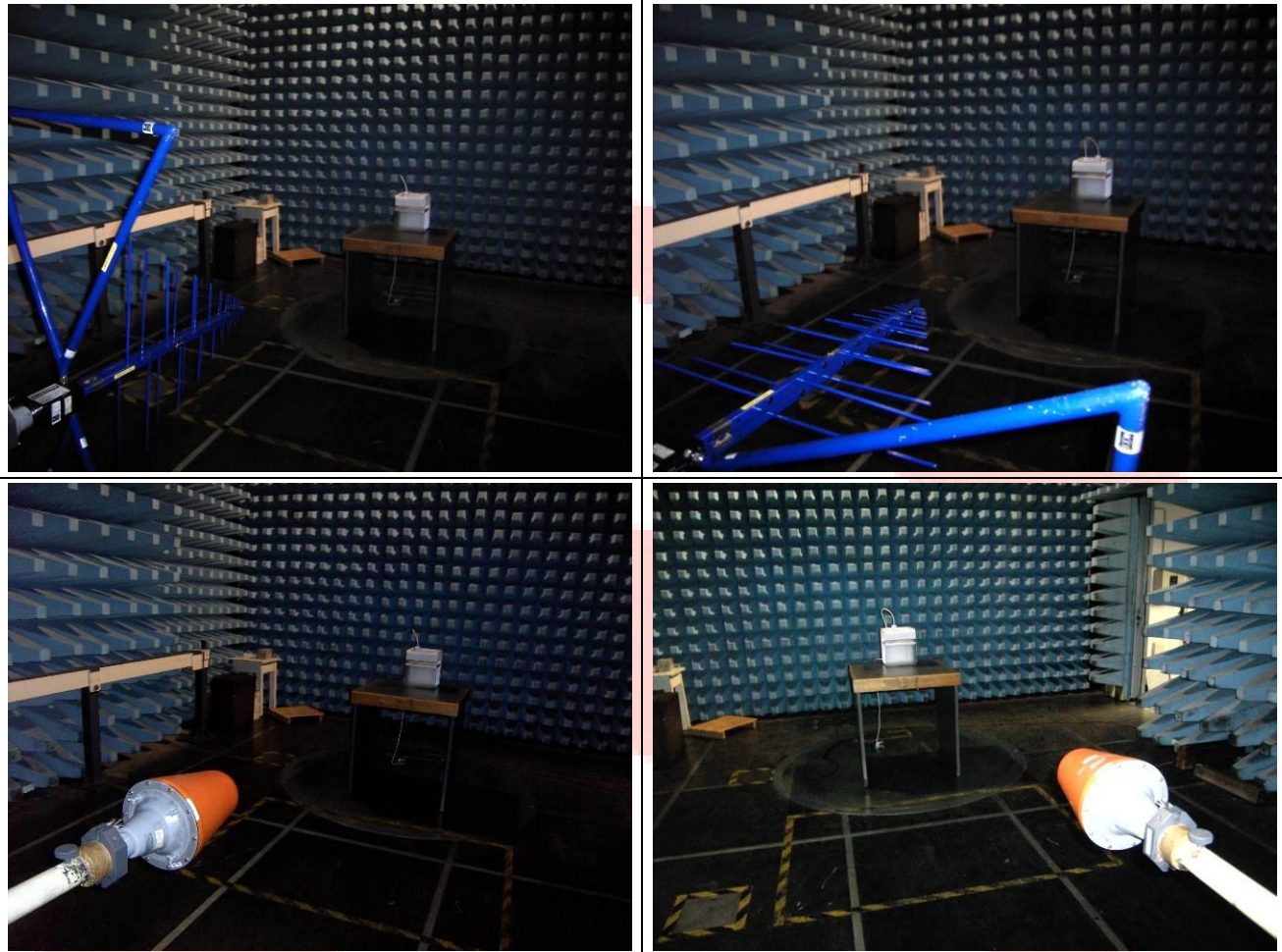


PHOTO N° 3 – CONDUCTED EMISSION SETUP

