B.U. PRODUCTS CONFORMITY ASSESSMENT – EMC & RADIO EQUIPMENT LABORATORY

IMQ S.p.A. • www.imq.it
IT • 20138 MI • via Quintiliano 43

TEST REPORT
No. GE20-0056862-01

performed in accordance with

FCC Rules: Code of Federal Regulations (CFR) no. 47
Part 15 Subpart B Section 15.107 and 15.109

PRODUCT	HOT BEVERAGE VENDING MACHINE WITH BUILT-IN RF MODULE
MODEL(s) TESTED	Type; G150, Model; 2ES3RSM
TRADE MARK(s)	GAGGIA

APPLICANT	EVOCA SPA, VIA TOMMASO GROSSI 2, 20121 Milano (MI) – Italy

FCC ID	2AYATG150

Tested by	Massimo Padovan *[Laboratory Technician]*	Massimo Padovan DocuSign
Approved by	Giovanni Di Turi *[Laboratory manager]*	Giovanni Di Turi DocuSign

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	2021-02-12	First edition: GE20-0056862-01_TR EMC_ EVOCA_GAGGIA_2ES3RSM

The results of tests and checks reported in this Test Report refer exclusively to the samples tested and described in the Report itself.
This Report shall not be reproduced partially the written approval of IMQ S.p.A..
The authenticity of this Test Report and its contents can be verified by contacting IMQ S.p.A., responsible for this Test Report.

1. GENERAL DATA

SAMPLE		
Samples received on	**2020-10-13**	**(Item(s) sampled and sent by applicant)**
IMQ reference samples	**BEM**	**101212**
Samples tested No.	1	
Object under analysis recognition	**Not carried out** Except where stated, characteristics of products were taken from client description and were not verified by the laboratory	
Date of acceptance of test item	2020-10-15	
TEST LOCATION		
Testing dates	2020-10-15 ÷ 2020-10-16	
Testing laboratory.	IMQ S.p.A. - Via Quintiliano, 43 – I-20138 Milano	
Testing site	Via Quintiliano, 43 – I-20138 Milano	
Date of acceptance of test item	2020-10-15	
ENVIRONMENTAL CONDITIONING		
Parameter	***Measured***	
Ambient Temperature	25 ÷ 35 °C	
Relative Humidity	50 ÷ 60 %	
Atmospheric Pressure	900 ÷ 1000 mbar	
The laboratory is monitored by a continuous environmental conditions measurements system. Temperature, humidity and pressure data are recorded on a weekly basis and stored in local archive.		
REMARKS		
Throughout this report a point is used as the decimal separator. The ability or reliability of this product to perform its intended function in a particular application has not been investigated. Unless otherwise specified, warnings, installation instruction and/or user manual provided with the sample have been checked in Italian or English version only. IMQ declines any responsibility derived from missing or wrong information provided aside by the applicant.		

2. REFERENCE DOCUMENT

DOCUMENT		DATE	TITLE
☒	47 CFR Part 15	2015	Radio Frequency Device
☒	ANSI C63.4	2014	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
☒	ANSI C63.10	2013	American National Standard for Testing Unlicensed Wireless Devices

3. UNIT UNDER TEST (EUT) DETAILS

GENERAL DATA

MODEL (basic)	**Description**
2ES3RSM	**HOT BEVERAGE VENDING MACHINE WITH BUILT-IN RF MODULE**
VARIANTS (derived)	**Description**
/	/

Contain module with FCC ID	Module: WL18MODGI FCC ID: Z64-WL18DBMOD

Manufacturer	EVOCA SPA Via del Chioso, 13/15 - 24030 Mozzo (BG) – Italy

Type of equipment	**The following data are available in the FV4O0971_R01_Part15B_Texas_WG7837-T0B document as provided by the manufacturer**
Operating frequency:	**Operating frequency:**
Maximum RF radiated power:	
Modulation:	
Channel Spacing:	
Antenna:	
RX sensitivity:	
Main SW identification	
Main HW Board identification	
Peripherals included (for system application)	
Interfaces :	
Integrated interfaces :	
AC adapter:	
Data cable	
Telecom cable	
Power supply type :	
AC power input cable :	
DC power input cable :	

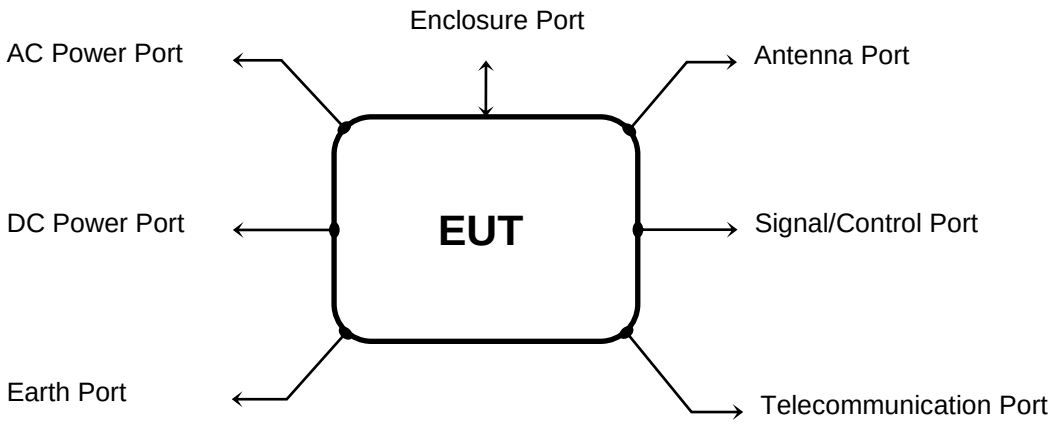
TX Frequency	**802.11b/g/n: 2412 MHz ˜ 2462MHz** **802.11a/n: 5180 MHz ˜ 5240MHz; 5260 MHz ˜ 5320MHz; 5500 MHz ˜ 5580MHz and 5660 MHz ˜ 5700MHz; 5745 MHz ˜ 5825MHz;** **Bluetooth: 2402 MHz ˜ 2480MHz**
RX Frequency	**802.11b/g/n: 2412 MHz ˜ 2462MHz** **802.11a/n: 5180 MHz ˜ 5240MHz; 5260 MHz ˜ 5320MHz; 5500 MHz ˜ 5580MHz and 5660 MHz ˜ 5700MHz; 5745 MHz ˜ 5825MHz;** **Bluetooth: 2402 MHz ˜ 2480MHz**
Type of Modulation	**802.11b : DSSS (DBPSK / DQPSK / CCK)** **802.11a/g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM)** **Bluetooth LE : GFSK** **Bluetooth (1Mbps) : GFSK** **Bluetooth (2Mbps) : µ /4-DQPSK** **Bluetooth (3Mbps) : 8-DPSK**

The following data are available in the FV4O0971_R01_RF Exposure_Texas_WG7837-T0B_for WWAN+WLAN document as provided by the manufacturer

Band	Frequency (MHz)	Antenna Gain (dbi)
Bluetooth	2402.0	3.2
2.4 GHz WLAN	2412.0	3.2
5 GHz WLAN	5180.0	4.5

4. TEST CONFIGURATION OF UNIT UNDER TEST

EUT PORTS



Port	Description	Max length
Enclosure	Metallic surfaces	/
AC power	Input 120Vac / 60Hz (phase-neutral with protective earth)	3m
DC power	Not present	/
Earth	Not present	/
Telecommunication	Not present	/
Signal	Not present	/
Control	Not present	/
Antenna	WIFI and BLUETOOTH module	/

STATE OF THE EUT DURING TESTS

Ref.	Mode	Description
#1	Stand-by	EUT connected to power supply keep warm mode – stand-by (including pre-heating) – RF module in idle mode
#2	Other operation	Dispense of cup of coffee, spotted milk, cappuccino, barley coffee, dispense of hot water – RF module in idle mode

SUPPORT EQUIPMENT

Defined as equipment needed for correct operation or loading of the EUT, but not considered as tested:

Equipment	Manufacturer	Model
/	/	/

ELECTROMAGNETICALLY RELEVANT COMPONENTS

Object / part No.	Manufacturer/ trademark	Type / model	Technical data
SUPPLY CABLE			
Plug with:	VARIOUS	VARIOUS	NEMA L14-30 PLUG ; 250V; 30A
- supply cable	VARIOUS	SJTO	4x14AWG 105°
Terminal block	ITW APPLIANCE COMPONENTS SRL	FV173	600V 40A 115°C
RIF filter Passive filter for electromagnetic interference suppression	DELTA ELECTRONICS INC	16DPCG5C	115/250 Vac, 16A, 50/60Hz, 1Mohm, 2x0.33µF(X2)SH, 2x4.7nF(Y2); 4x0.65mH(L).
Light (or not) main switch ON/OFF	ARCOLECTRIC (mft. ELEKTRON TECHNOLOGY UK LIMITED)	C1553 series	16(4)A; 250V; T85
Switch mode power supply	MW - MEAN WELL	LRS-100-24	IN 100-240V; 50/60Hz; 2,1A OUT 24Vd.c.; 4,5A ta:50°C
Fuse holder	VARIOUS	VARIOUS	16A 250V
SELV circuit protective fuse	VARIOUS	VARIOUS	4A
PCB (board) *(actuating)* with:	EVOCA	6735654xx	V-0 , thick 1mm
- relay (N° 2)	SCHRACK (mft TYCO ELECTRONICS AUSTRIA GMBH)	RY211024	8(4)A; 250V; T75
- relay (N°7)	OMRON	G2R SERIES	10A; 250V; cl.F; T70

Object / part No.	Manufacturer/ trademark	Type / model	Technical data
Fan motor (max N°2)	EBM PAPST	612NH	12V; 2W cl.120 (E)
Solid state switches	CARLO GAVAZZI LTD	RF1A23D25	Operational ratings: up to 280 VAC, 25 AAC Control voltage: 5 VDC, 12 VDC, 24 VDC
WATER INLET			
Electromagnetic valve furnished with: Backsiphonage prevent (n.2)	ELBI NEOPERL	329 OD8/DN6	24Vdc; 7,5W; Cl. 155 (F) LOCATED IN CLASS 2 CIRCUIT ---
INTERLOCK (MAGNETIC) SWITCH / PRESENCE COMPONENTS			
Magnetic sensor *(decaffeinated)*	EUROSWITCH	P915FZ-100	50V; 1A - LOCATED IN CLASS 2 CIRCUIT
Magnetic sensor *(door opening)*	EUROSWITCH	P915FZ-100	50V; 1A - LOCATED IN CLASS 2 CIRCUIT
Magnetic sensor *(canisters presence)*	EUROSWITCH	P915FZ-100	50V; 1A - LOCATED IN CLASS 2 CIRCUIT
Magnetic sensor *(tray presence)*	EUROSWITCH	P915FZ-100	50V; 1A - LOCATED IN CLASS 2 CIRCUIT
Magnetic sensor *(waste container presence)*	EUROSWITCH	P915FZ-100	50V; 1A - LOCATED IN CLASS 2 CIRCUIT
MIXER AND CANISTER COMPONENTS			
Mixer motor	ETI	6ZABG25302	110 V, 45 W, 60 Hz, 0.4 A thermally protected, Class B
Reducing motor *(soluble proportioning)* with:	--	(EVOCA 6805213xx)	--
- gear case	BITRON	MR230	158 rpm
- motor	MABUCHI	RS385 SH2270	24V; Cl. B LOCATED IN CLASS 2 CIRCUIT
- PTC thermal cut-out	BOURNS	MF-R160	1,6A LOCATED IN CLASS 2 CIRCUIT
COFFEE GROUP COMPONENTS			

Object / part No.	Manufacturer/ trademark	Type / model	Technical data
Reducing motor with:	--	(EVOCA 6805193xx)	--
- gear case	BITRON	--	96rpm
- motor	BITRON	39750052	24V d.c; 16W; cl.B LOCATED IN CLASS 2 CIRCUIT
- PTC thermal cut-out	BOURNS	MF-R090	60V; 900mA LOCATED IN CLASS 2 CIRCUIT
Micro Switch (	SAIA-BURGESS	V4LST7	5(1)A; 250V; T85
COMPONENTS FOR COFFEE DISPENSING			
Thermal-device-protected Motors - Grinder motor (max N°2) – with:	AMETEK ITALIA SRL	644074.02	class F, rated 120 V ac, 2.3 A, 60 Hz
Hall sensor (max N°2)	EVOCA	6735517xx	Segnale LOCATED IN CLASS 2 CIRCUIT
Grinding adjustment motor (max N°2)	SAIA	JP2B….	24Vdc; 6RPM; Cl.130 (B) LOCATED IN CLASS 2 CIRCUIT
Coffee release solenoid (max N°2)	EVOCA	B75M-3002	120V 1A
Switch *(coffee release)* (max N°2)	SAIA-BURGESS	V4NC.	5(5)A; 250V; T85 LOCATED IN CLASS 2 CIRCUIT
INLET WATER CIRCUIT COMPONENT			
Motor pump Thermal-device-protected Motors	RPM	C0563.xx	110-120V 50/60Hz cl.F
- motor capacitor	INCO	TEKNO 45	6µF±5% ; 425Vac ; 50/60Hz ; 25/85/21 ; S2
- motor capacitor (ALTERNATIVE)	Various as listed on file E167491	Various as listed on file E167491	6µF±5% ; 425Vac ; 50/60Hz ; 25/85/21 ; S2
Volumetric counter	DIGMESA	9NB-0120/03	2,8-24 Vdc; 20bar ; T100°C LOCATED IN CLASS 2 CIRCUIT

Object / part No.	Manufacturer/ trademark	Type / model	Technical data
Pressure switch	EUROSWITCH	26R14GB0T1.2	48Vdc ; 0,5A LOCATED IN CLASS 2 CIRCUIT
- ES BOILER 0,8l – COFFEE/SOLUBLE			
Heating element	IRCA	RWseries	240V; 2900W;
Temperature limiting thermostats (KC):	Termoregolatori Campini	TY95-H	16A; 250V; T210; Top 87°C
NTC probe (boiler temperature control)	EPCOS	B57301-K0103-A009	LOCATED IN CLASS 2 CIRCUIT
Volumetric counter	DIGMESA	932-9522/B	12Vdc LOCATED IN CLASS 2 CIRCUIT
Electromagnetic valve	ODE	BDV	24Vdc; 11W; ED100%; Cl.180 (H) LOCATED IN CLASS 2 CIRCUIT
Electromagnetic valve	ODE	BDA	24Vdc; 8W; ED100%; Cl.155 (F) LOCATED IN CLASS 2 CIRCUIT
Electromagnetic valve *(milk/rinsing)*	ODE	LBV	24Vdc; 10W; ED50%; Cl.180 (H) LOCATED IN CLASS 2 CIRCUIT
- STEAM BOILER 0,8l			
Heating element	IRCA	RWseries	240V; 2900W;
Electromagnetic valve *(steam boiler emptying)*	PARKER	WB5.0	24Vdc; 5W; ED100%; Cl.155 (F) LOCATED IN CLASS 2 CIRCUIT
Electromagnetic valve (n.2) *(steam boiler inlet)*	ODE	BDV	24Vdc; 11W; ED100%; Cl.180 (H) LOCATED IN CLASS 2 CIRCUIT
Electromagnetic valve (3v) (n.2) *(steam supply)*	PARKER	481865C2	24V; 9W; cl.155 (F) LOCATED IN CLASS 2 CIRCUIT
Temperature limiting thermostats (KC) :	Termoregolatori Campini	TY95-H	16A; 250V; T210; Top 87°C
Temperature regulating thermostats (overboiling protection)	CAMPINI	TY60R	16A; 250V; T210; T_{op} 82°C
- DOOR COMPONENTS			

Object / part No.	Manufacturer/ trademark	Type / model	Technical data
Touch screen 7” with built in CPU + BlueRed + Wi-fi (EVOCA code 8357087xx)	EVOCA (SECO)	8357087xx	24Vdc with BlueRed and wi-fi LOCATED IN CLASS 2 CIRCUIT
Modem wifi and Bluetooth connection module	N&W TEXAS INSTRUMENT	WL18MODGI	24 Vdc Bluetooth 4.1 - Wifi Support of IEEE Std 802.11a, 802.11b, 802.11g, and 802.11n 2.4-GHz MRC Support for Extended Range and 5-GHz Diversity Capable. Electrical rating: 2.1V Ta: –40 to +85°C LOCATED IN CLASS 2 CIRCUIT
Mechanical Counter	IVO	SI/F63.2	24Vdc; 1W LOCATED IN CLASS 2 CIRCUIT
LED			
LED (opt) *(nozzle lighting)*	EVERLIGHT/various	67-31A-B7C-YT1U2MZ3-2T/various	BLUE; 30Ma LOCATED IN CLASS 2 CIRCUIT
FRESH MILK COMPONENTS			
Milk motor pump	MBT	90-54-46	24V; Cl. 130 (B) LOCATED IN CLASS 2 CIRCUIT
Electromagnetic valve *(cappuccino)*	ODE	BDV	24Vdc; 11W; ED100%; Cl.180 (H) LOCATED IN CLASS 2 CIRCUIT

RFI SUPPRESSION DEVICES

Component	No.	Manufacturer	Model
RIF filter Passive filter for electromagnetic interference suppression	1	DELTA ELECTRONICS INC	16DPCG5C; 115/250 Vac, 16A, 50/60Hz, 1Mohm, 2x0.33µF(X2)SH, 2x4.7nF(Y2); 4x0.65mH(L).

EMI PROTECTION DEVICES

Component	No.	Manufacturer	Model
/	/	/	/

EUT TECHNICAL DOCUMENTATION

Document	Reference
Label	 **FCC ID 2AYATG150** This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Contains: **FCC ID Z64-WL18DBMOD / IC ID 451I-WL18DBMOD**

5. METHODS OF MEASUREMENT

All compliance measurements have been carried out using the procedures described in the standard ANSI C63.4:2014, ANSI C63.10:2013 and Section 15.31 of CFR47 Part 15 – Subpart A (General). Additional test requirements have been adopted according to the reference Section indicated in the § 6 of this test report.
FREQUENCY RANGE INVESTIGATED
Conducted emission tests: from 150 kHz to 30 MHz. Radiated emission tests: from 30 MHz to 25 GHz

6. SUMMARY OF TEST RESULTS

POSSIBLE TEST CASE VERDICTS:	
Test object meets the requirement	PASS
Test object does not meet the requirement	FAIL
Test case does not apply to the test object	N.A.
Test not performed	N.P.

CFR47 Part 15	TITLE	RESULT
§ 15.107	Conducted emission	PASS
§ 15.109	Radiated disturbances	PASS

Note 1	Port not present, battery operating device

7. TEST RESULTS

7.1 CONDUCTED EMISSION

TEST REQUIREMENT	
Test setup	ANSI C63.4
Frequency range	150 kHz ÷ 30 MHz
IF bandwidth	9 kHz
EMC class	B
Limits	section 15.107
EUT operating condition	#1 and #2 (The EUT is connected to the input power supply)
Remark	None
Testing dates	2020-10-16

TEST RESULT
The EUT meets the requirements of sections 15.107.

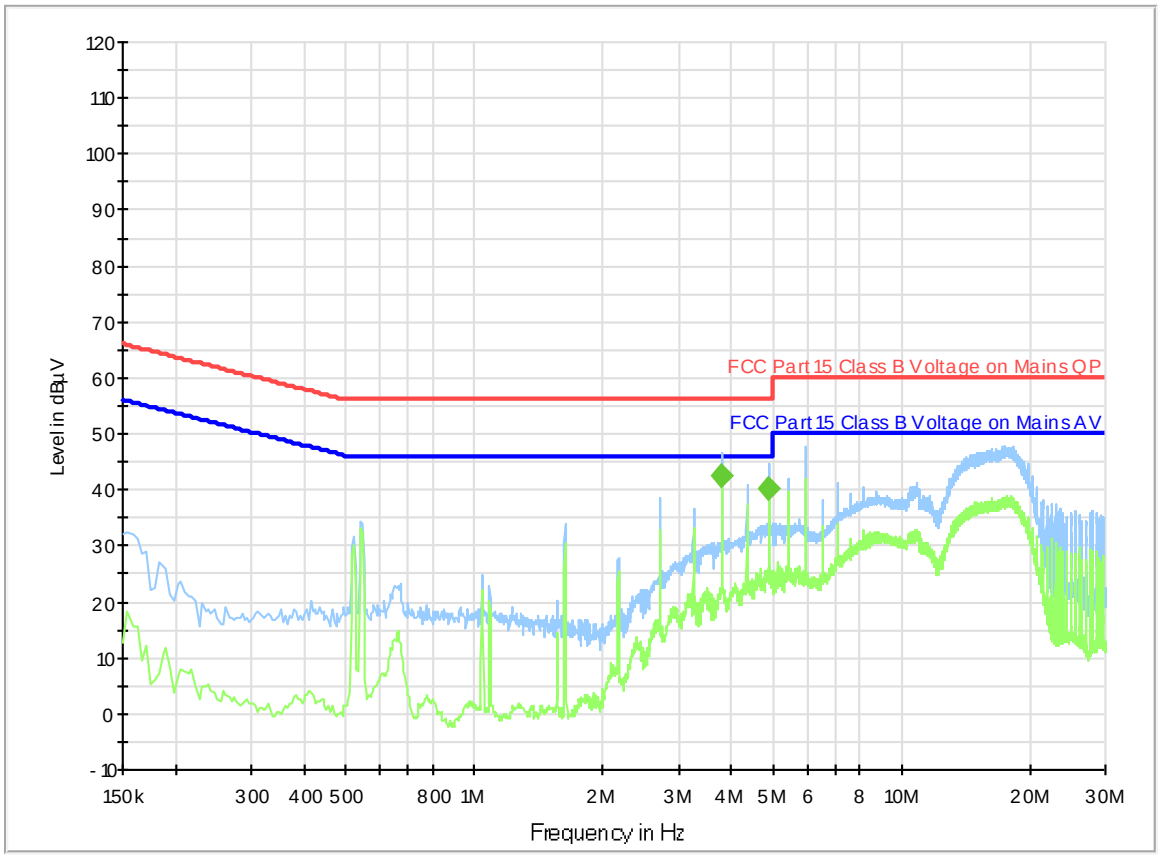
TEST PROCEDURE
1) The EUT was placed on a wooden table of size, 80 cm by 80 cm, raised 80 cm in which is located 40 cm away from the vertical wall the shielded room.
2) Each EUT power cord input cord was individually connected through a 50Ω/50μH LISN to the input power source.
3) Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
4) The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
5) The measurements were made with the detector set to PEAK and AVERAGE amplitude within a bandwidth of 10 kHz during the measurements.
6) The measurements with Quasi-Peak detector are performed only for frequencies for which the Peak values are ≥ (Q.P. limit - 6 dB).

Port	Frequency (MHz)	Limit for Class B	Results
AC mains	0.15 ÷ 0.5	66 ÷ 56 dB(µV/m) Quasi-Peak (*)	PASS
		56 ÷ 46 dB(µV/m) Average (*)	PASS
	0.5 ÷ 5	56 dB(µV/m) Quasi-Peak	PASS
		46 dB(µV/m) Average	PASS
	5 ÷ 30	60 dB(µV/m) Quasi-Peak	PASS
		50 dB(µV/m) Average	PASS

(*) limit decreases linearly with log. frequency

MEASUREMENTS RESULTS		
PORT UNDER TEST	**AC MAINS**	☒ **QUASI-PEAK DETECTOR (◆ MARKED POINTS)** ☒ **AVERAGE DETECTOR (◆ MARKED POINTS)** ☒ **PEAK DETECTOR**

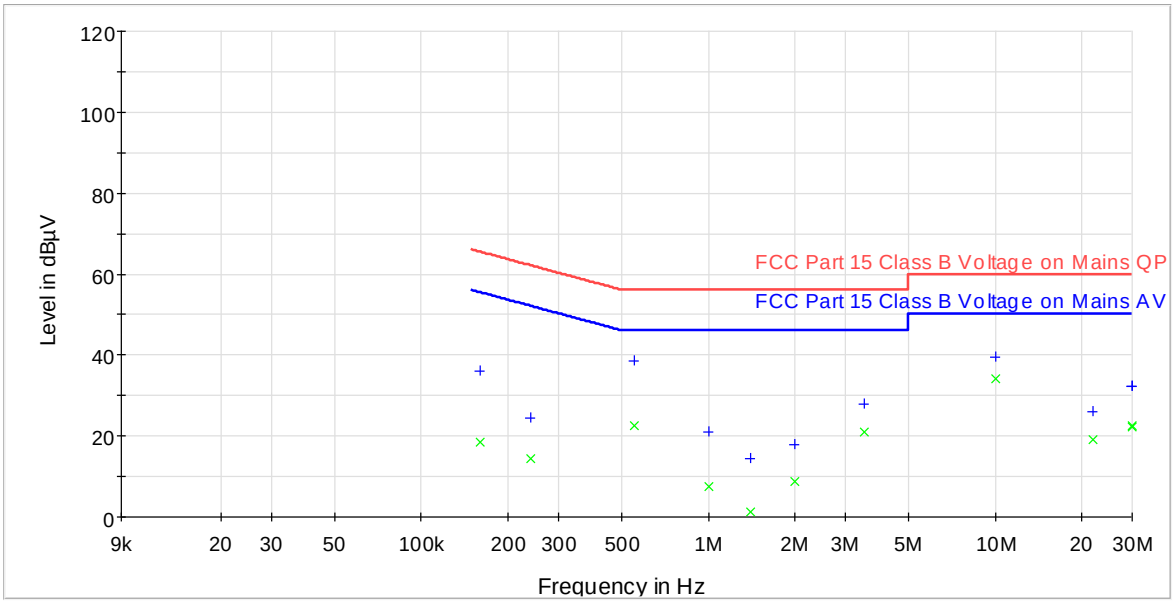
EUT operating condition: #1 - 120V 60Hz – L1 and L3 phases



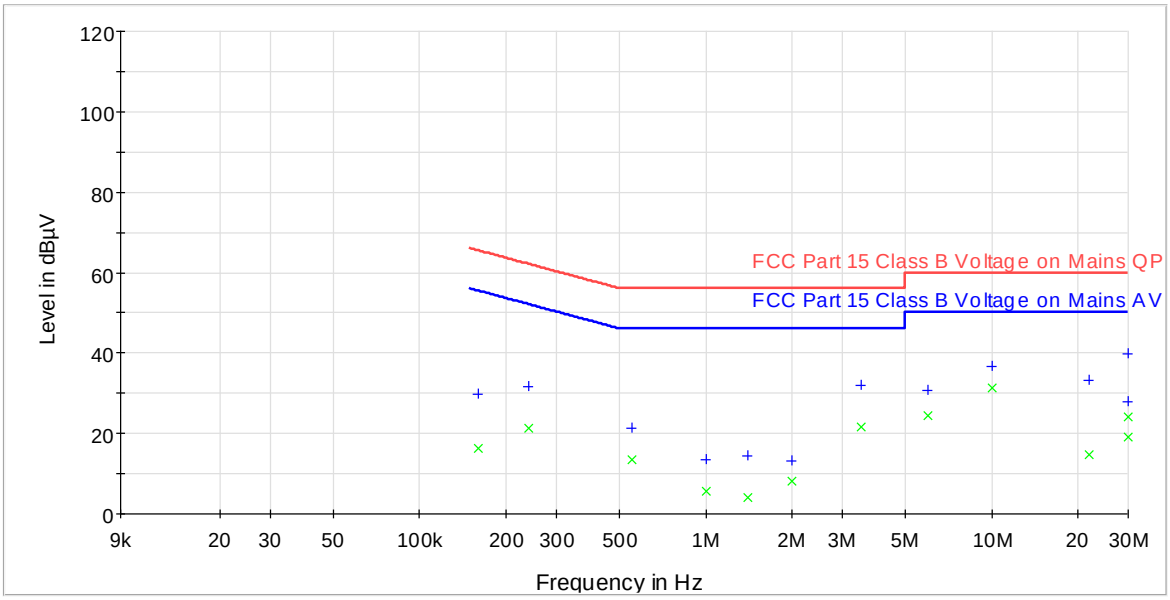
Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
3.803980	42.3	1000.0	9.000	GND	L1	10.1	3.7	46.0
4.893100	40.1	1000.0	9.000	GND	L1	10.1	5.9	46.0

EUT operating condition: #2 - 120V 60Hz – L1 phase



EUT operating condition: #2 - 120V 60Hz – L3 phase



7.2 RADIATED DISTURBANCES

TEST REQUIREMENT	
Test setup	ANSI C63.4
Test facility	Semi-anechoic chamber
Test distance	3 meters
Frequency range	30 kHz to 25 GHz
IF bandwidth (below 30 MHz)	9 kHz
IF bandwidth (below 1,000 MHz)	120 kHz
IF bandwidth (above 1,000 MHz)	1 MHz
Deviation to test procedure	None
Limits	sections 15.109
EUT operating condition	#1
Remark	(*) In accordance with part 15.31 (f) (2), where the measurement distance was specified to be 30 or 300 meters, a correction factor was applied in order to permit measurement to be performed at a separation distance. The applied formula for limits at 3 meter is: Extrapolation (dB) = 40log (300meter / 3meter) = +80db Extrapolation (dB) = 40log (30meter / 3meter) = +40db
Testing dates	2020-10-15

TEST RESULT
The EUT meets the requirements of sections 15.109

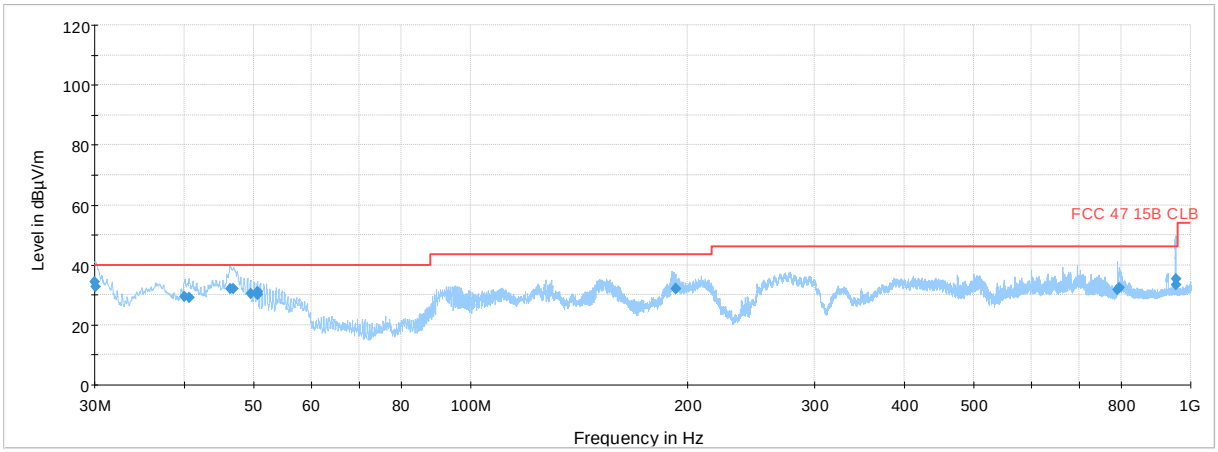
LIMITS FOR SPURIOUS		
Band of operations	**Limit µV/m**	**Limit dBµV/m**
30÷88 MHz	100	40
88÷216 MHz	150	43.5
216÷960 MHz	200	46
Above 960MHz	500	54

TEST PROCEDURE
1) The EUT was placed on turntable which is 0.8 m above the ground plane 2) The turntable shall rotate from 0° to 360° degrees to determine the position of maximum emission level. 3) The EUT is positioned 3 m away from the receiving antenna which varied from 1 to 4 m to find the highest emission. 4) The measurements were made with the detector set to PEAK and AVERAGE amplitude within a bandwidth of 100 kHz below 1000 MHz and 1 MHz above 1000 MHz. 5) The receiving antenna was positioned in both horizontal and vertical polarization. 6) The measurements with Quasi-Peak detector, below 1000 MHz are performed only for frequencies for which the Peak values are ≥ (Q.P. limit – 6 dB).

MEASUREMENTS RESULTS

Range: 30 ÷ 1000 MHz

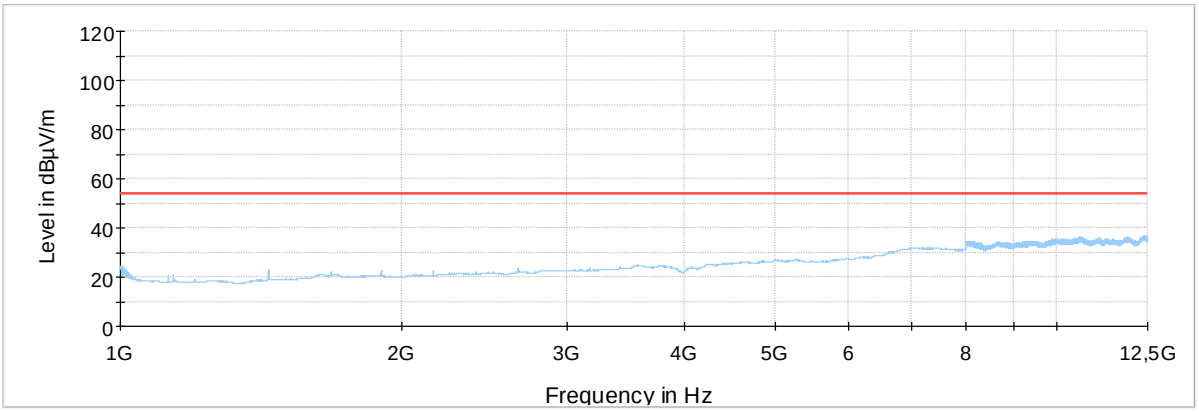
EUT operating condition: #1 - 120V 60Hz – L1 and L3 phases



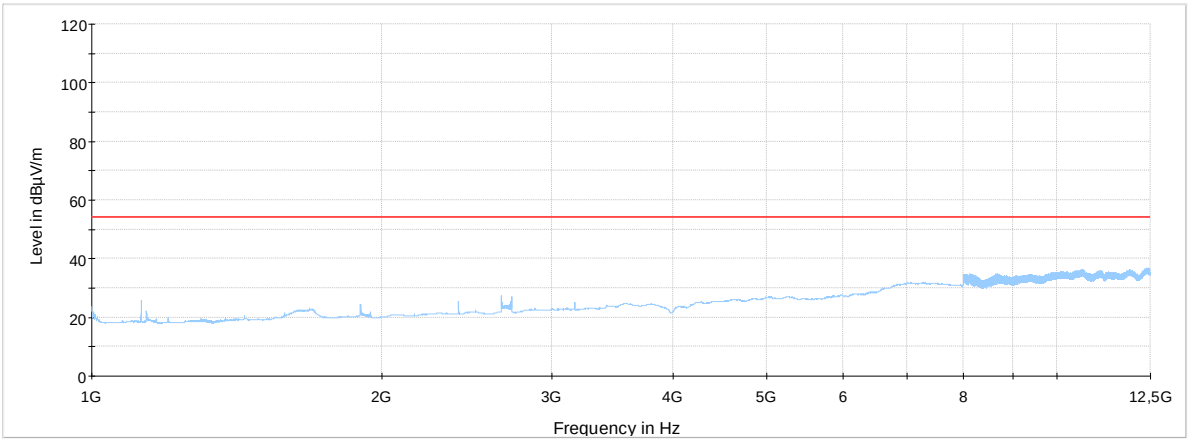
Frequency MHz	Process State	QuasiPeak dBµV/m	Limit dBµV/m	Margin dB	Meas. Time ms	Bandwidth kHz	Height cm	Pol	Azimuth deg	Corr. dB/m	Sig Path dB	Preamp dB	Trd Corr. dB/m	Raw Rec dBµV
30,000000	FINAL	34,22	40,00	5,78	1000,0	120,000	100,0	V	285,0	13,4	0,4	0,0	13,0	20,8
30,120000	FINAL	32,78	40,00	7,22	1000,0	120,000	103,0	V	195,0	13,4	0,4	0,0	13,0	19,4
40,039500	FINAL	29,30	40,00	10,70	1000,0	120,000	100,0	V	86,0	13,6	0,5	0,0	13,1	15,7
40,574100	FINAL	29,02	40,00	10,98	1000,0	120,000	100,0	V	99,0	13,6	0,5	0,0	13,1	15,4
46,337400	FINAL	32,18	40,00	7,82	1000,0	120,000	144,0	V	-1,0	13,9	0,5	0,0	13,4	18,2
46,783200	FINAL	32,11	40,00	7,89	1000,0	120,000	150,0	V	7,0	14,0	0,5	0,0	13,4	18,1
49,480200	FINAL	30,36	40,00	9,64	1000,0	120,000	110,0	V	-18,0	13,9	0,6	0,0	13,4	16,5
50,495000	FINAL	30,24	40,00	9,76	1000,0	120,000	110,0	V	-7,0	13,9	0,6	0,0	13,3	16,4
50,520500	FINAL	31,04	40,00	8,96	1000,0	120,000	100,0	V	108,0	13,9	0,6	0,0	13,3	17,1
192,336000	FINAL	32,00	43,50	11,50	1000,0	120,000	100,0	H	282,0	11,9	1,2	0,0	10,7	20,1
192,344500	FINAL	32,02	43,50	11,48	1000,0	120,000	105,0	H	282,0	11,9	1,2	0,0	10,7	20,1
791,198500	FINAL	31,83	46,00	14,17	1000,0	120,000	210,0	H	-15,0	25,4	2,7	0,0	22,8	6,4
796,298000	FINAL	32,34	46,00	13,66	1000,0	120,000	190,0	H	-1,0	25,4	2,7	0,0	22,7	6,9
954,184500	FINAL	35,22	46,00	10,78	1000,0	120,000	207,0	H	258,0	27,7	3,1	0,0	24,7	7,5
954,458000	FINAL	33,20	46,00	12,80	1000,0	120,000	195,0	H	291,0	27,7	3,1	0,0	24,6	5,5

Range: 1GHz ÷ 12,5GHz

EUT operating condition: #1 - 120V 60Hz – L1 and L3 phases – Horizontal polarization



EUT operating condition: #1 - 120V 60Hz – L1 and L3 phases – Vertical polarisation



There were no emission found up to 25 GHz (background noise at least 10 dB below the limit)

8. MEASUREMENTS AND TESTS UNCERTAINTY

Unless otherwise stated the uncertainties for the tests and measurements are evaluated in according to IMQ Operational Instruction IO-LAB-001 and IO-LAB-004. and requirement of NIST Technical Note 1297 and NIS 81:1994 “The Treatment of Uncertainty in EMC Measurements”

The expanded uncertainty was calculated for all measurements and tests listed in this test report according to CISPR 16-4-2 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainty in EMC Measurements“, with UKAS document LAB 34 and is documented in the quality system accordance to ISO/IEC 17025.

Internal Procedure PG-037 ensures that the requirements for traceability of calibrations, of all test equipment requiring calibration, and calibration intervals are met.

Methods/Standard	Parameter	Expanded Uncertainty	Unit	Confidence level
Continuous disturbance	QP detector 150 k – 30 MHz	2.2	dB	95%
Radiated disturbance	QP detector (30 MHz - 100 MHz) H polarization	4.0	dB	95%
	QP detector (30 MHz - 100 MHz) V polarization	3.9	dB	95%
	QP detector (100 MHz - 200 MHz) H polarization	2.9	dB	95%
	QP detector (100 MHz - 200 MHz) V polarization	4.0	dB	95%
	QP detector (200 MHz - 1000 MHz) H polarization	3.5	dB	95%
	QP detector (200 MHz - 1000 MHz) V polarization	3.4	dB	95%
	P detector 1-6 GHz	4.3	dB	95%
	P detector 6-18 GHz	4.8	dB	95%

9. LIST OF MEASURING EQUIPMENT AND CALIBRATION INFORMATION

Conducted disturbance voltage and discontinuous disturbances					
Test equipment used					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Calibration date**	**Calibration due date**
EMI receiver	ROHDE & SCHWARZ	ESCI 3	S04355	2020-06-04	2021-06-30
Artificial Mains V-network	ROHDE & SCHWARZ	ESH2-Z5	S00554	2019-11-14	2020-11-30
Pulse limiter	ROHDE & SCHWARZ	ESH3-Z2	S02206	2019-05-21	2020-10-31(**)
Coaxial cable	/	/	S05489	2020-23-06	2021-06-30

Radiated disturbances					
Test equipment used					
Description	**Manufacturer**	**Model**	**Identifier**	**Last Calibration date**	**Calibration due date**
Shielded semi-anechoic chamber	SIDT EUROPE	/	P01709	2019-10-21	2020-10-31(**)
EMI receiver	ROHDE & SCHWARZ	ESW44	S07965	2020-06-04	2021-06-30
Bilog antenna	SCHWARZBECK	VULB9160	S06463	2019–07-03	2022-07-31
Horn antenna	SCHWARZBECK	BBHA 9120D	S03463	2020-07-03	2023-07-31
Pre-amplifier (used with S04272 and S03463)	SCHWARZBECK	BBV 9718	S06763	2020-08-07	2022-08-31
Position controller	Frankonia	FCTAM01	P02486/02488	—	—
Software	R&S	EMC32.Ink	—	—	—

(**) Some calibration intervals may be extended, based on sufficient calibration data and experience of use (see IECEE OD-5011:2015 clause 8.3)

10. PHOTOGRAPHIC DOCUMENTATION

EUT IDENTIFICATION

END OF REPORT