



# EMC TEST REPORT

**Applicant** Mercado Libre SRL

**FCC ID** 2A5U9-MP100

**Product** Mobile POS

**Brand** MercadoPago

**Model** MP100

**Report No.** R2203A0269-E1

**Issue Date** June 15, 2022

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2021)/ ANSI C63.4-2014**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

*Wei Liu*

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*Guangchang Fan*

*Approved by: Guangchang Fan*

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## Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	FCC Part15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	FCC Part15.107, ANSI C63.4-2014	PASS
Date of Testing: May 30, 2022 ~ June 15, 2022			
Date of Sample Received: May 20, 2022			
Note: All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			



## 1 Test Laboratory

### 1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

### 1.2 Test facility

#### **FCC (Designation number: CN1179, Test Firm Registration Number: 446626)**

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

#### **A2LA (Certificate Number: 3857.01)**

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

### 1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.

Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

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## 2 General Description of Equipment under Test

### 2.1 Applicant and Manufacturer Information

Applicant	Mercado Libre SRL
Applicant address	Caseros 3039, Buenos Aires, Argentina Buenos Aires 1264 ARGENTINA
Manufacturer	Dspread Technology (Beijing) Inc.
Manufacturer address	Rm.407, b12c. #10 (Universal Business Park), Jiuxianqiao Road, Chaoyang District, Beijing, China,100015

### 2.2 General information

EUT Description			
Device Type	Portable Device		
Model	MP100		
SN	02100002202203090012		
HW Version	1.0		
SW Version	1.0.1		
Power Rating	DC 3.7V from battery		
Connecting I/O Port(s)	Please refer to the User's Manual.		
Antenna Type	Internal Antenna		
Frequency	Band	Tx (MHz)	Rx (MHz)
	Bluetooth	2400 ~ 2483.5	2400 ~ 2483.5
	NFC	13.56	13.56

EUT Accessory			
Battery	Manufacturer: Beijing Guocai Huayang Technology Co., Ltd. Model: GCHY601239 DC 3.7V, 250mAh		
USB Cable 1	Manufacturer: JiangXi JieYe Electronics Co., Ltd. Model: JY-C15-09 100cm Cable, Shielded		
USB Cable 2	Manufacturer: SHENZHEN LITKCONN TECHNOLOGY CO., LTD Model: ZY-1130018 100cm Cable, Shielded		

Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.  
2. There is more than one USB cable, each one should be applied throughout the compliance test respectively, and however, only the worst case (USB cable 2) will be recorded in this report.



## 2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

### Test standards

**FCC Code CFR47 Part15B (2021)**

**ANSI C63.4-2014**



## 2.4 Test Mode

Test Mode	
Mode 1	PC power supply+ USB + EUT +BT/NFC Receiver
Mode 2	PC power supply+ USB + EUT +BT/NFC Traffic

During the test, the preliminary test was performed in all modes with all USB and batteries, mode 2 and USB cable 2 is selected as the worst condition. The test data of the worst-case condition was recorded in this report.



### 3 Test Case Results

#### 3.1 Radiated Emission

##### Ambient condition

Temperature	Relative humidity	Pressure
15°C~35°C	30%~60%	101.5kPa

##### Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK Detector: RBW=1MHz / VBW=3MHz/ Sweep=AUTO

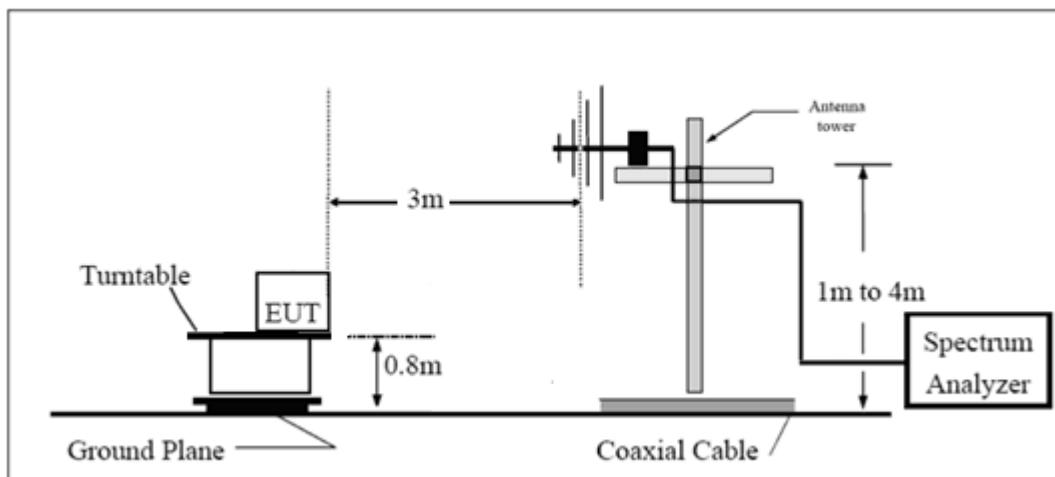
(b) AVERAGE Detector: RBW=1MHz / VBW=3MHz / Sweep=AUTO

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

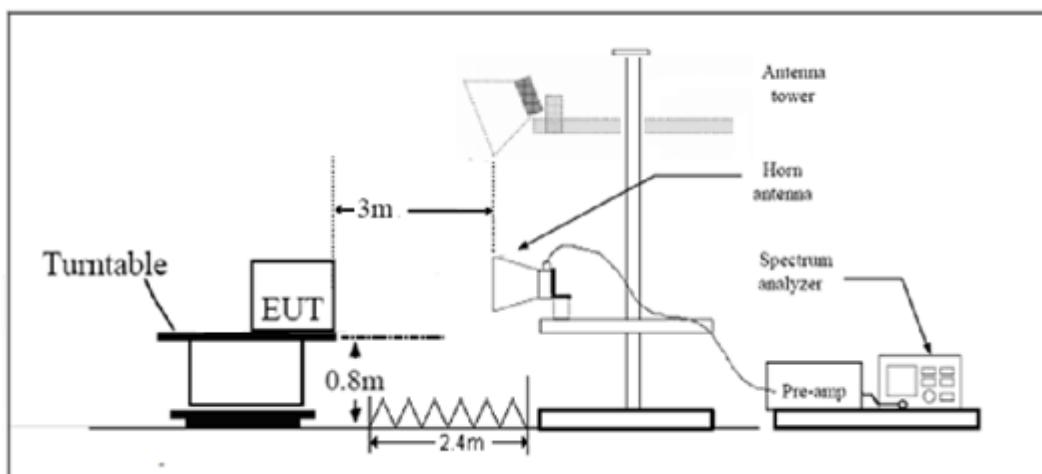
During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC; PC is connected to server via a long LAN cable.

## Test Setup

### Below 1GHz



### Above 1GHz



Note: Area side: 2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

**Limits**

Frequency (MHz)	Field Strength (dB $\mu$ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 <sup>th</sup> harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

**Measurement Uncertainty**

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .

Frequency	Uncertainty
30MHz~200MHz	4.17 dB
200MHz~1000MHz	4.84 dB
1GHz~18GHz	4.35 dB

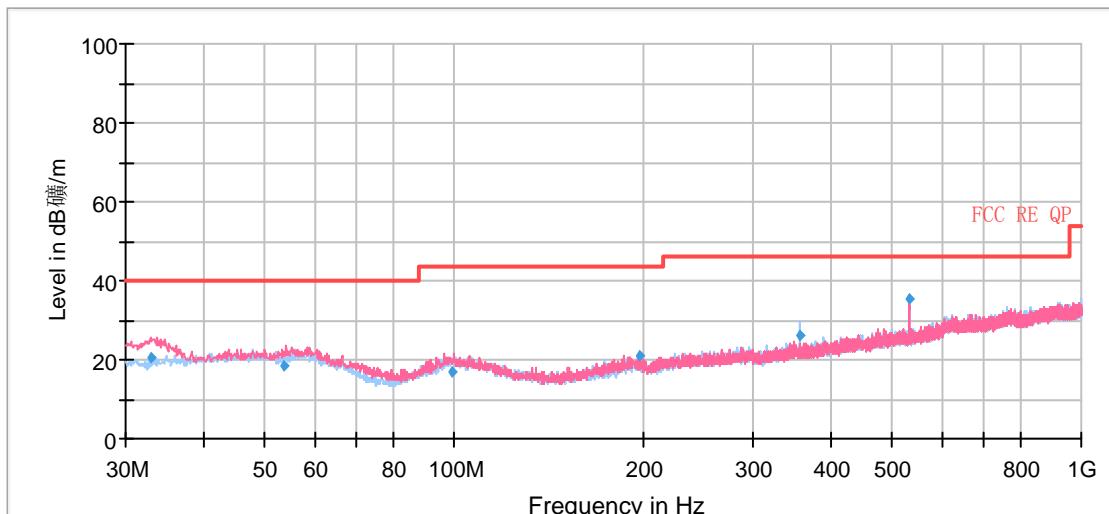
## Test Results

Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier.

The following graphs display the maximum values of horizontal and vertical by software.

For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

A font (Level in dB $\mu$ V/m) in the test plot =(level in dB $\mu$ V/m)

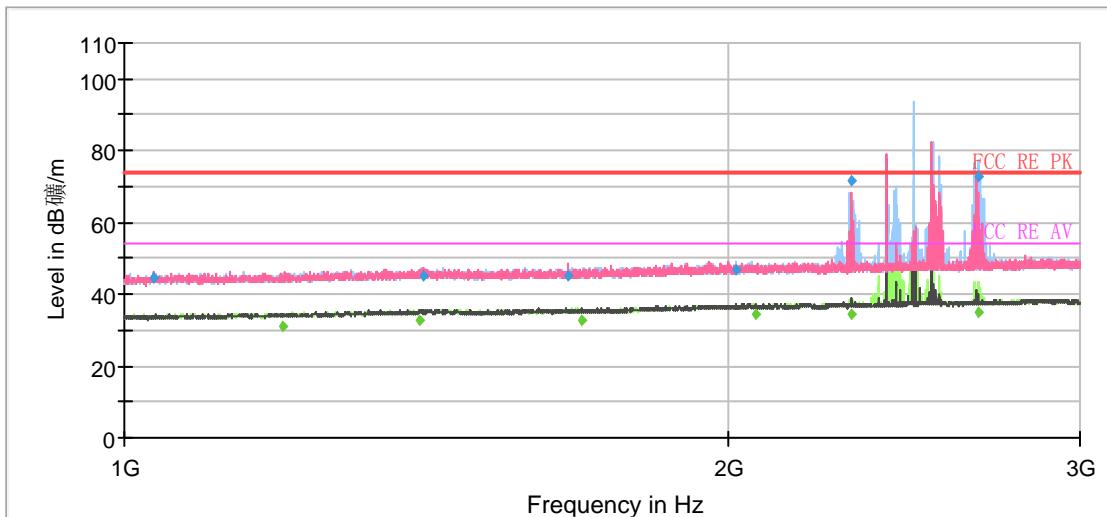


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
32.99	20.37	40.00	19.63	1000.00	111.0	V	34.00	12
53.53	18.58	40.00	21.42	1000.00	115.0	V	237.00	13
99.48	16.99	43.50	26.51	1000.00	100.0	V	278.00	13
198.01	21.14	43.50	22.36	1000.00	216.0	V	0.00	12
355.51	25.93	46.00	20.07	1000.00	105.0	H	282.00	16
533.59	35.31	46.00	10.69	1000.00	196.0	H	75.00	20

Remark: 1. Correction Factor = Antenna factor + Insertion loss(cable loss+amplifier gain)

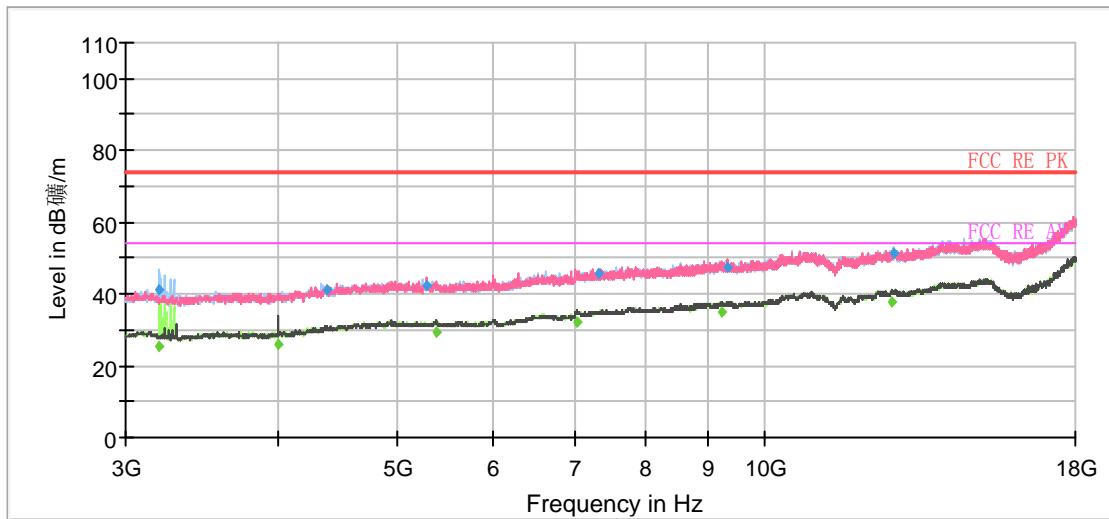
2. Margin = Limit – Quasi-Peak



Note: The signal beyond the limit is carrier

Radiated Emission from 1GHz to 3GHz

Frequency (MHz)	Peak (dB <sub>AV</sub> /m)	Average (dB <sub>AV</sub> /m)	Limit (dB <sub>AV</sub> /m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
1034.50	44.52	---	74.00	29.48	1000.00	110.0	V	351.00	-10
1198.50	---	31.28	54.00	22.72	1000.00	110.0	H	249.00	-9
1403.75	---	32.64	54.00	21.36	1000.00	210.0	V	121.00	-7
1410.25	44.95	---	74.00	29.05	1000.00	190.0	V	190.00	-7
1665.00	45.33	---	74.00	28.67	1000.00	190.0	V	61.00	-6
1692.00	---	32.84	54.00	21.16	1000.00	106.0	V	176.00	-6
2021.25	46.96	---	74.00	27.04	1000.00	210.0	H	301.00	-5
2066.75	---	34.21	54.00	19.79	1000.00	190.0	H	332.00	-5
2307.75	---	34.41	54.00	19.59	1000.00	190.0	V	350.00	-4
2307.75	71.43	---	74.00	2.57	1000.00	190.0	V	0.00	-4
2666.50	72.76	---	74.00	1.24	1000.00	190.0	H	269.00	-3
2666.50	---	35.25	54.00	18.75	1000.00	190.0	H	269.00	-3



Radiated Emission from 3GHz to 18GHz

Frequency (MHz)	Peak (dBuV/m)	Average (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
3198.75	41.24	---	74.00	32.76	1000.00	100.0	H	156.00	-13
3198.75	---	25.58	54.00	28.42	1000.00	100.0	H	166.00	-13
3997.50	---	26.13	54.00	27.87	1000.00	100.0	V	293.00	-11
4385.63	41.27	---	74.00	32.73	1000.00	106.0	V	316.00	-10
5287.50	42.25	---	74.00	31.75	1000.00	100.0	V	353.00	-8
5398.13	---	29.38	54.00	24.62	1000.00	210.0	V	88.00	-7
7031.25	---	32.12	54.00	21.88	1000.00	110.0	V	195.00	-3
7318.13	45.70	---	74.00	28.30	1000.00	110.0	V	0.00	-3
9251.25	---	34.72	54.00	19.28	1000.00	206.0	V	59.00	-2
9346.88	47.49	---	74.00	26.51	1000.00	190.0	V	11.00	-2
12742.50	---	37.70	54.00	16.30	1000.00	210.0	V	289.00	3
12776.25	51.06	---	74.00	22.94	1000.00	106.0	H	10.00	2

## 3.2 Conducted Emission

### Ambient condition

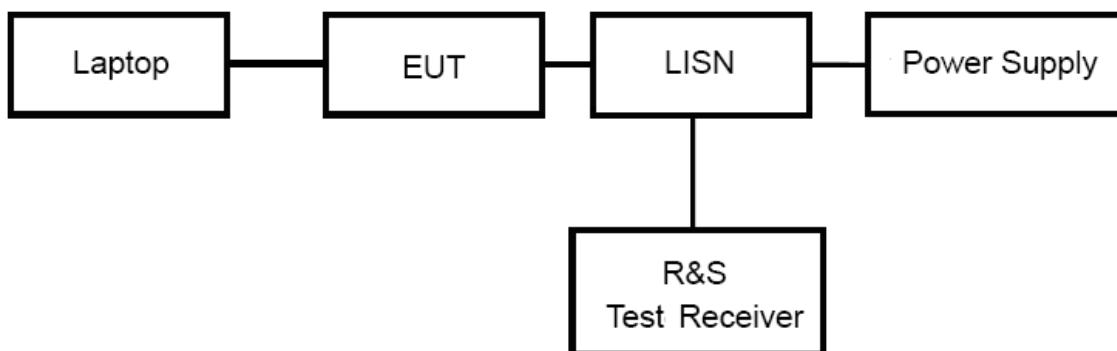
Temperature	Relative humidity	Pressure
15°C~35°C	30%~60%	101.5kPa

### Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC; PC is connected to server via a long LAN cable.

### Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

### Limits

Frequency (MHz)	Conducted Limits(dB $\mu$ V)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 <sup>*</sup>	56 to 46 <sup>*</sup>
0.5 - 5	56	46
5 - 30	60	50

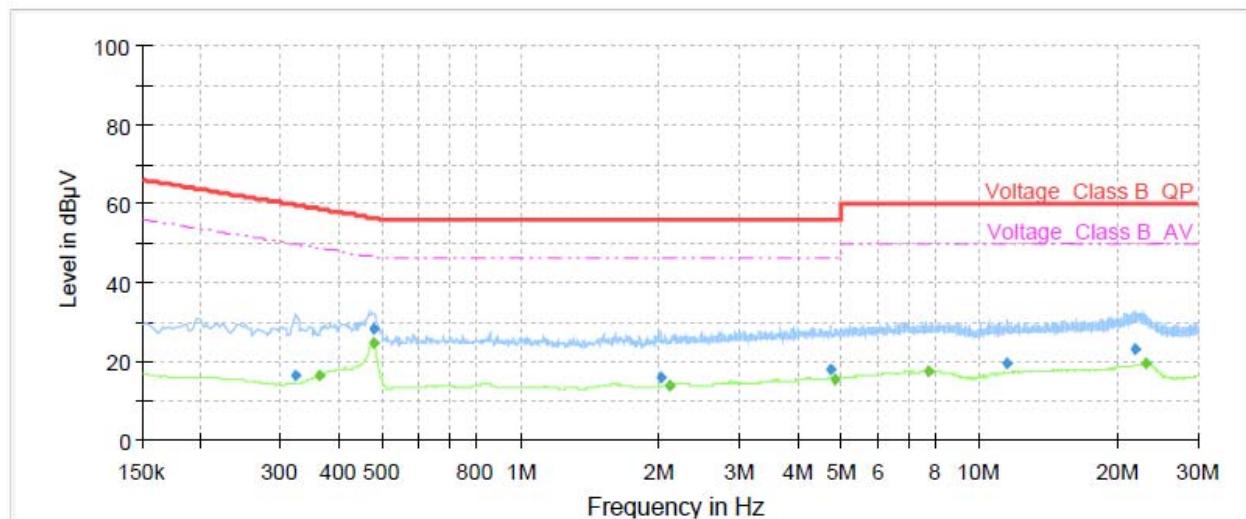
<sup>\*</sup>: Decreases with the logarithm of the frequency.

### Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor  $k = 1.96$ .  $U = 2.57$  dB.

## Test Results

Following plots, Blue trace uses the peak detection; Green trace uses the average detection.

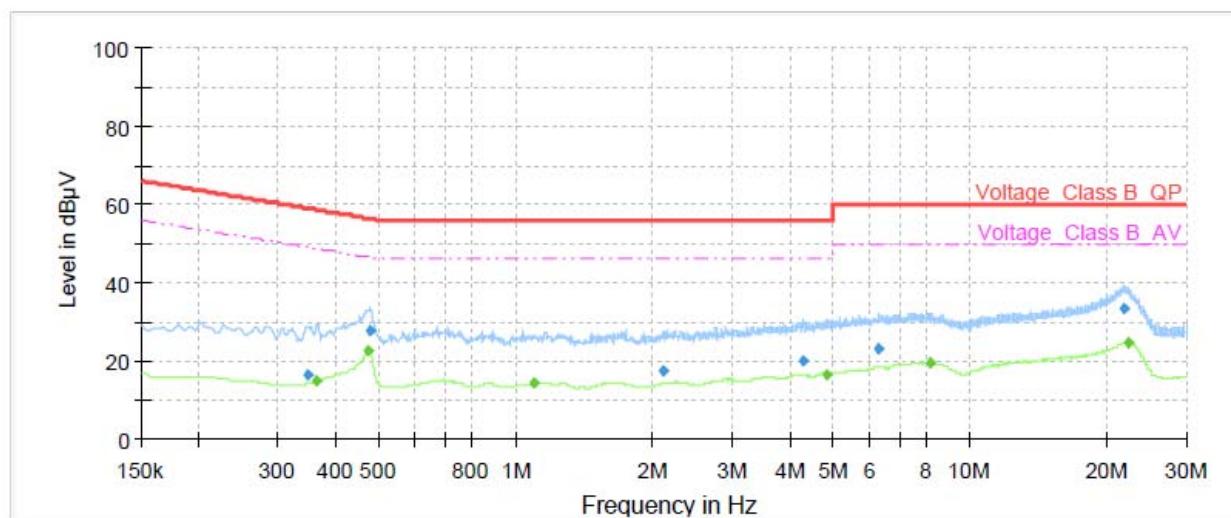


Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Average (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.32	16.57	---	59.62	43.05	1000.00	9.000	L1	ON	21
0.36	---	16.28	48.69	32.41	1000.00	9.000	L1	ON	21
0.48	---	24.41	46.40	21.99	1000.00	9.000	L1	ON	20
0.48	28.05	---	56.40	28.35	1000.00	9.000	L1	ON	20
2.02	16.14	---	56.00	39.86	1000.00	9.000	L1	ON	20
2.11	---	14.09	46.00	31.91	1000.00	9.000	L1	ON	20
4.73	17.81	---	56.00	38.19	1000.00	9.000	L1	ON	19
4.87	---	15.52	46.00	30.48	1000.00	9.000	L1	ON	19
7.71	---	17.35	50.00	32.65	1000.00	9.000	L1	ON	20
11.42	19.53	---	60.00	40.47	1000.00	9.000	L1	ON	20
21.86	23.15	---	60.00	36.85	1000.00	9.000	L1	ON	20
22.98	---	19.25	50.00	30.75	1000.00	9.000	L1	ON	20

Remark: Correct factor=cable loss + LISN factor

L line

Conducted Emission from 150 KHz to 30 MHz



Frequency (MHz)	QuasiPeak (dB $\mu$ V)	Average (dB $\mu$ V)	Limit (dB $\mu$ V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.35	16.41	---	59.01	42.60	1000.00	9.000	N	ON	21
0.36	---	14.69	48.69	34.00	1000.00	9.000	N	ON	21
0.47	---	22.73	46.44	23.71	1000.00	9.000	N	ON	20
0.48	27.59	---	56.37	28.78	1000.00	9.000	N	ON	20
1.10	---	14.29	46.00	31.71	1000.00	9.000	N	ON	20
2.10	17.33	---	56.00	38.67	1000.00	9.000	N	ON	20
4.28	20.10	---	56.00	35.90	1000.00	9.000	N	ON	19
4.84	---	16.31	46.00	29.69	1000.00	9.000	N	ON	19
6.30	23.25	---	60.00	36.75	1000.00	9.000	N	ON	20
8.17	---	19.47	50.00	30.53	1000.00	9.000	N	ON	20
21.94	33.13	---	60.00	26.87	1000.00	9.000	N	ON	20
22.32	---	24.83	50.00	25.17	1000.00	9.000	N	ON	20

Remark: Correct factor=cable loss + LISN factor

N line

Conducted Emission from 150 KHz to 30 MHz



## 4 Main Test Instruments

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Date	Expiration Time
Radiated Emission					
EMI Test Receiver	R&S	ESR	101667	2022-05-25	2023-05-24
Signal Analyzer	R&S	FSV40	101297	2021-12-12	2022-12-11
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	1023	2020-05-05	2023-05-04
Horn Antenna	Schwarzbeck	BBHA 9120D	430	2021-07-26	2024-07-25
Horn Antenna	ETS-Lindgren	3160-09	00102643	2021-10-10	2024-10-09
Software	R&S	EMC32	9.26.01	/	/
Conducted Emission					
Artificial main network	R&S	ENV216	102191	2020-12-13	2022-12-12
EMI Test Receiver	R&S	ESR	101667	2022-05-25	2023-05-24
Software	R&S	EMC32	10.35.10	/	/

\*\*\*\*\*END OF REPORT\*\*\*\*\*



## ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.



## ANNEX B: Test Setup Photos

The Test Setup Photos are submitted separately.