



Test Report

Date : 2023-10-26
No. : HMD23100001

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Applicant : Joue Music Instruments
87 Quai des Queyries, Joue Music Instruments, Bordeaux, France.

Supplier / Manufacturer : Joue Music Instruments
87 Quai des Queyries, Joue Music Instruments, Bordeaux, France.

Description of Sample(s) : Submitted sample(s) said to be
Product: JPLAY V2 Production Unit
Brand Name: Joué Music Instruments
Model No.: JPLAY V2
FCC ID: 2ANHUPL23

Date Samples Received : 2023-09-27

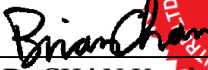
Date Tested : 2023-09-27 to 2023-10-09

Investigation Requested : Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.10: 2013 for FCC Certification.

Conclusions : The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15, Subpart C. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

Remarks : 13.56MHz

Test by Susu


Dr. CHAN Kwok Hung, Brian
Authorized Signatory





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1.0 General Details

1.1 Test Laboratory

The Hong Kong Standards and Testing Centre Ltd.
EMC Laboratory
10 Dai Wang Street, Taipo Industrial Estate, New Territories, Hong Kong
Telephone: 852 2666 1888
Fax: 852 2664 4353

1.2 Equipment Under Test [EUT]

Description of Sample(s)

Product:	JPLAY V2 Production Unit
Manufacturer:	Joue Music Instruments 87 Quai des Queyries, Joue Music Instruments, Bordeaux, France.
Brand Name:	Joué Music Instruments
Model Number:	JPLAY V2
Rating:	5.0V.d.c. by Type-C port

1.2.1 Description of EUT Operation

The Equipment Under Test (EUT) is a JPLAY V2 Production Unit. It is a transceiver operating at 13.56MHz and the RF signal was modulated by IC.

1.3 Date of Order

2023-09-27

1.4 Submitted Sample(s):

1 Sample

1.5 Test Duration

2023-09-27 to 2023-10-09

1.6 Country of Origin

France

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1.7 RF Module Details

Module Model Number: N/A
Module FCC ID: N/A
Modulation: ASK
Frequency Range: 13.553-13.567MHz
Test Channel: 13.56MHz

1.8 Antenna Details

Antenna Type: Magnetic loop antenna
Antenna Gain: N/A

1.9 Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	13.56	/	/

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2.0 Technical Details

2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 Regulations and ANSI C63.10: 2013 for FCC Certification.
The device was realized by test software, there is no the power level setting.

2.2 Test Standards and Results Summary Tables

EMISSION Results Summary						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Failed	N/A
Field strength of emissions within the band 13.110 MHz -14.010 MHz	FCC 47CFR 15.225(a)(b)(c)	ANSI C63.10: 2013	N/A	☒	☐	☐
Field strength of emissions outside of the band 13.110 MHz -14.010 MHz	FCC 47CFR 15.225(d) FCC 47CFR 15.209	ANSI C63.10: 2013	N/A	☒	☐	☐
AC Mains Conducted Emissions	FCC 47CFR 15.207	ANSI C63.10: 2013	N/A	☒	☐	☐
Antenna requirement	FCC 47CFR 15.203	N/A	N/A	☒	☐	☐
20dB Emission bandwidth	FCC 47CFR 15.215(c)	ANSI C63.10: 2013	N/A	☒	☐	☐
The frequency tolerance of the carrier signal	FCC 47CFR 15.225(e)	ANSI C63.10: 2013	N/A	☒	☐	☐

Note: N/A - Not Applicable



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3.0 Test Results

3.1 Emission

3.1.1 Field strength of emissions within the band 13.110 MHz -14.010 MHz

Ambient temperature 25°C

Relative humidity 57%

Test Requirement:	FCC 47CFR 15.225(a)(b)(c)
Test Method:	ANSI C63.10:2013
Test Date:	2023-09-27
Mode of Operation:	Tx mode

Test Method:

For emission measurements at or below 1 GHz, the sample was placed 0.8m above the ground plane of semi-anechoic Chamber*. For emission measurements above 1 GHz, the sample was placed 1.5m above the ground plane of semi-anechoic Chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

* Semi-Anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd.
with Registration Number: HK0001
Test Firm Registration Number: 367672

Test limit:

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.

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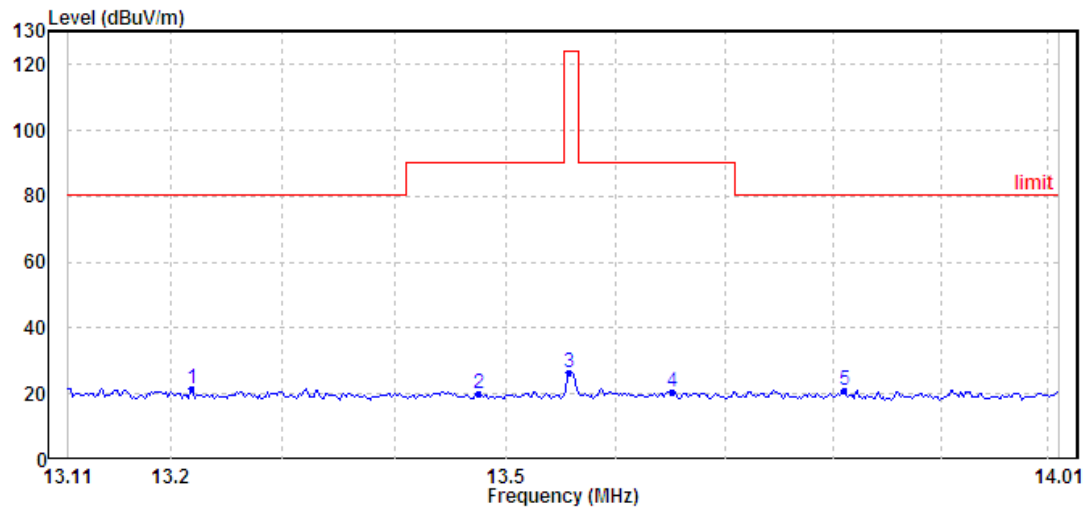
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Test Result: PASS

Emissions within the band 13.110 MHz -14.010 MHz



Ambient Temperature: 26.3C
Relative Humidity : 54.7%
Air Pressure : 100.9kPa

	Freq	Level	Limit	Over		
	MHz	dBuV/m	dBuV/m	dB	Remark	Pol/Phase
1	13.220	21.57	80.50	-58.93	QP	Horizontal
2	13.475	20.31	90.50	-70.19	QP	Horizontal
3	13.558	26.56	124.00	-97.44	QP	Horizontal
4	13.652	20.63	90.50	-69.87	QP	Horizontal
5	13.810	21.16	80.50	-59.34	QP	Horizontal

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3.1.2 Field strength of emissions outside of the band 13.110 MHz -14.010 MHz

Ambient temperature 25°C

Relative humidity 57%

Test Requirement:	FCC 47CFR 15.225(d) & FCC 47CFR 15.209
Test Method:	ANSI C63.10:2013
Test Date:	2023-09-28
Mode of Operation:	Tx mode

Test Method:

For emission measurements at or below 1 GHz, the sample was placed 0.8m above the ground plane of semi-anechoic Chamber*. For emission measurements above 1 GHz, the sample was placed 1.5m above the ground plane of semi-anechoic Chamber*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

* Semi-Anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with
Registration Number: HK0001
Test Firm Registration Number: 367672

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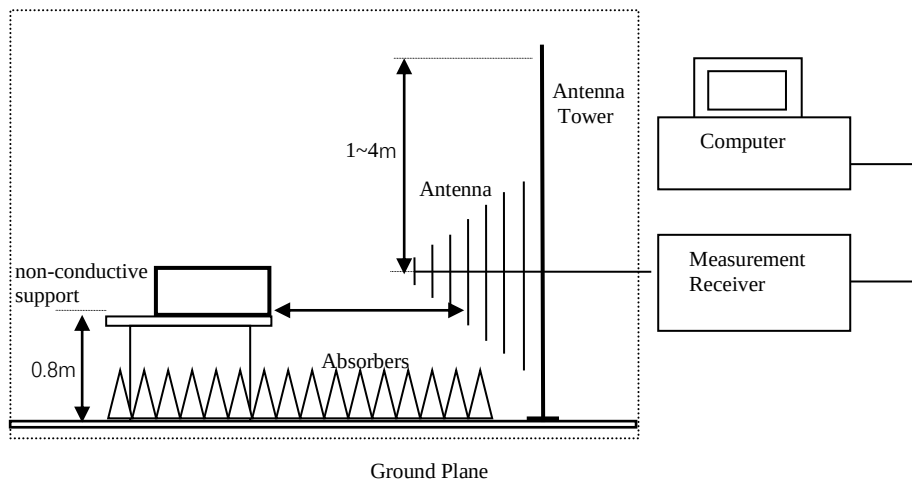
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Spectrum Analyzer Setting:

9KHz – 0.15MHz (Pk)	RBW: 200Hz VBW: 1KHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold
0.15MHz – 30MHz (Pk)	RBW: 10kHz VBW: 30kHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold
30MHz – 1GHz (QP)	RBW: 120kHz VBW: 120kHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold
Above 1GHz (Pk & Av) (PK value with PK detector AV value with AV detector)	RBW: 1MHz VBW: 1MHz Sweep: Auto Span: Fully capture the emissions being measured Trace: Max. hold

Test Setup:



- Absorbers placed on top of the ground plane are for measurements above 1000MHz only.
- Measurements between 30MHz to 1000MHz made with Bi-log antennas, above 1000MHz horn antennas are used.

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Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Remarks:

Calculated measurement uncertainty (9kHz-30MHz): 2.0dB / (30MHz – 1GHz): 4.9dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

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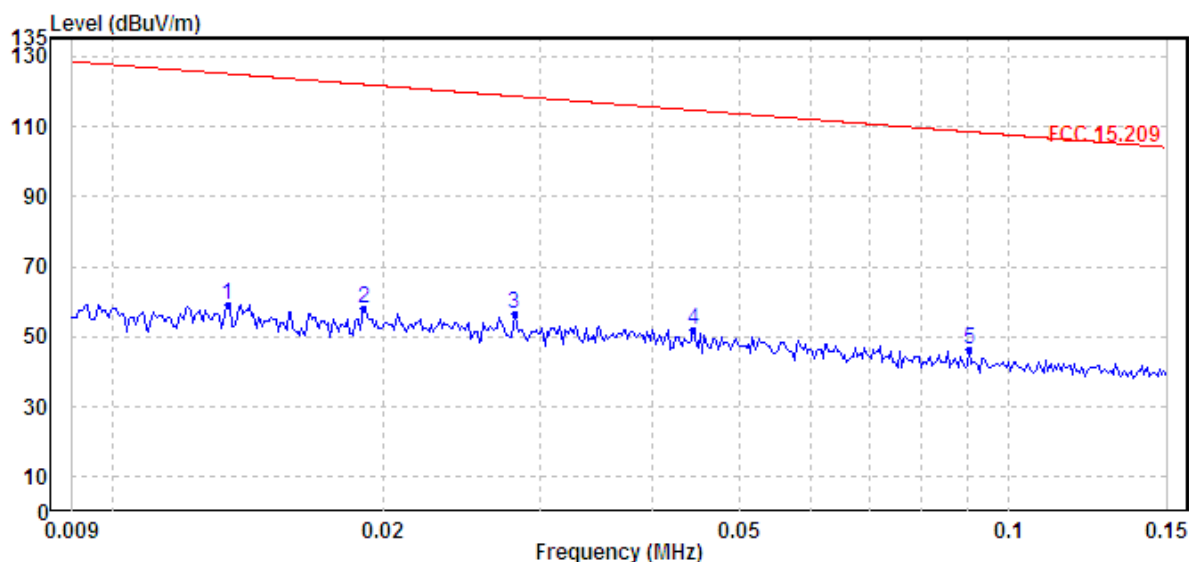
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Results of TX mode (9kHz – 150KHz): PASS

Horizontal (The worst-case)



Ambient Temperature: 26.3C

Relative Humidity : 54.7%

Air Pressure : 100.9kPa

	Freq	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV/m	Line	Limit		
			dBuV/m	dB		
1	0.013	59.32	125.05	-65.73	QP	Horizontal
2	0.019	58.30	122.02	-63.72	QP	Horizontal
3	0.028	56.42	118.65	-62.23	QP	Horizontal
4	0.044	51.92	114.64	-62.72	QP	Horizontal
5	0.090	46.23	108.48	-62.25	QP	Horizontal

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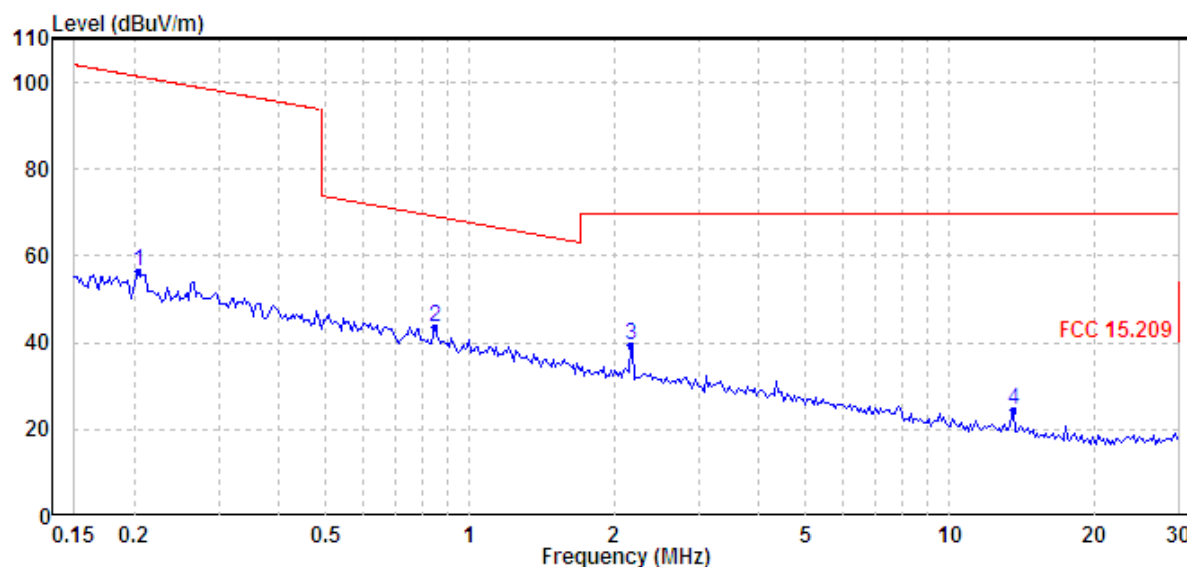


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Results of TX mode (150KHz - 30MHz): PASS
Horizontal (The worst-case)



Ambient Temperature: 26.3C
Relative Humidity : 54.7%
Air Pressure : 100.9kPa

	Freq	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV/m	Line	Limit		
			dBuV/m	dB		
1	0.204	56.59	101.41	-44.82	QP	Horizontal
2	0.844	43.47	69.08	-25.61	QP	Horizontal
3	2.167	39.37	69.54	-30.17	QP	Horizontal
4	13.551	24.44	69.54	-45.10	QP	Horizontal

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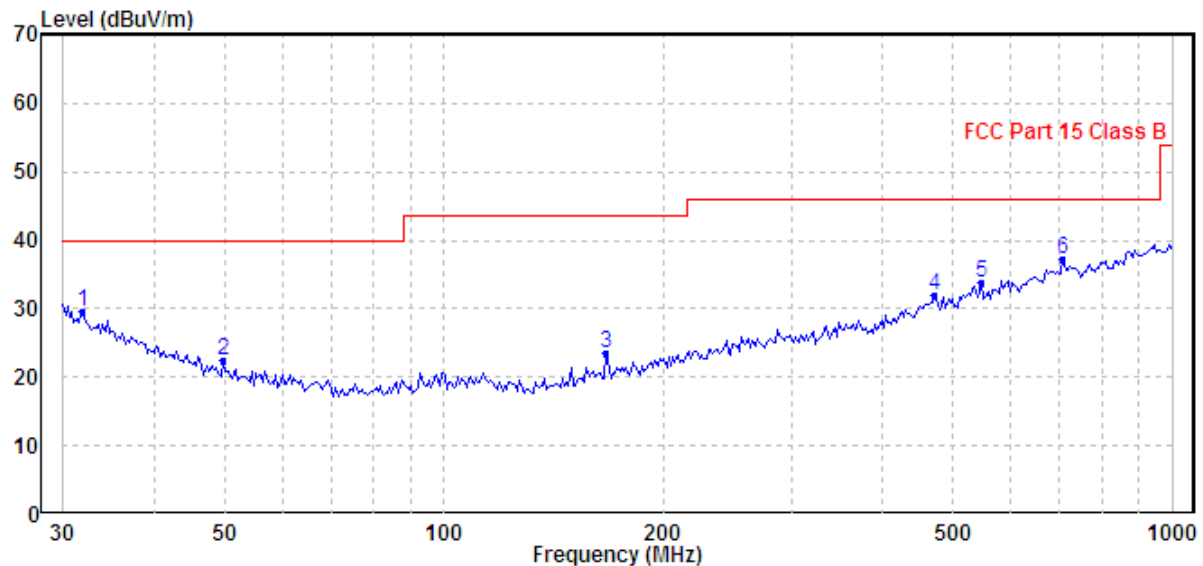
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Results of TX mode (30MHz – 1GHz): PASS

Horizontal



Ambient Temperature: 23.3C
Relative Humidity : 51.7%
Air Pressure : 100.6kPa

	Freq	Level	Limit	Over		
	MHz	dBuV/m	Line	Limit	Remark	Pol/Phase
1	31.955	29.60	40.00	-10.40	QP	Horizontal
2	49.707	22.47	40.00	-17.53	QP	Horizontal
3	167.237	23.39	43.50	-20.11	QP	Horizontal
4	472.176	31.99	46.00	-14.01	QP	Horizontal
5	547.098	33.72	46.00	-12.28	QP	Horizontal
6	709.182	37.21	46.00	-8.79	QP	Horizontal

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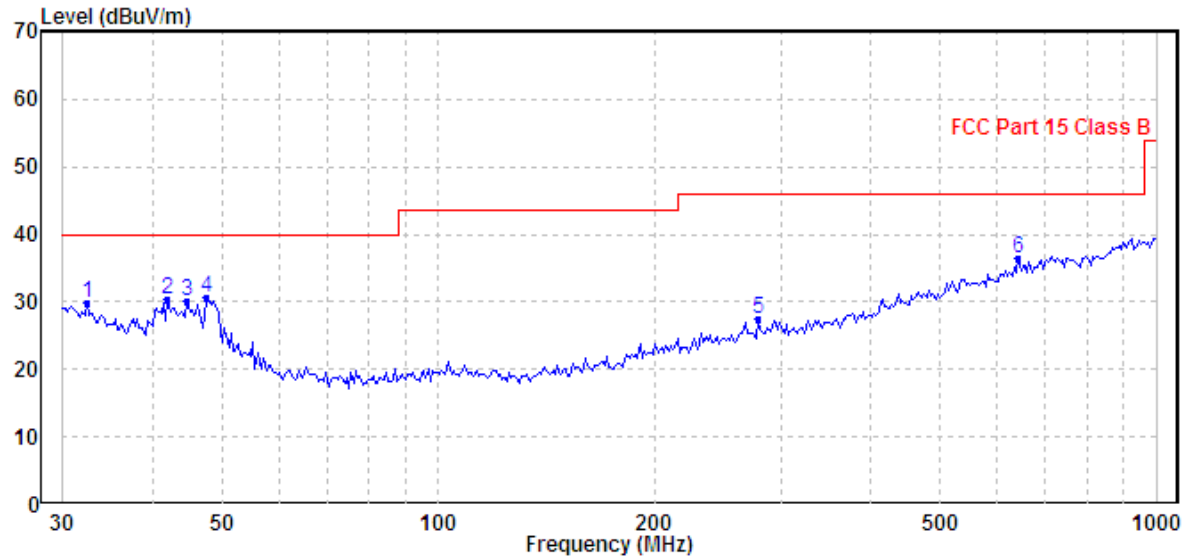
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Results of TX mode (30MHz – 1GHz): PASS

Vertical



Ambient Temperature: 23.3C
Relative Humidity : 51.7%
Air Pressure : 100.6kPa

	Freq	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV/m	dBuV/m	dB		
1	32.406	29.74	40.00	-10.26	QP	Vertical
2	42.007	30.43	40.00	-9.57	QP	Vertical
3	44.743	30.03	40.00	-9.97	QP	Vertical
4	47.659	30.51	40.00	-9.49	QP	Vertical
5	279.044	27.55	46.00	-18.45	QP	Vertical
6	642.861	36.33	46.00	-9.67	QP	Vertical

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3.1.3 AC Mains Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC 47CFR 15.207
Test Method:	ANSI C63.10:2013
Test Date:	2023-09-28
Mode of Operation:	TX mode
Test Voltage:	120Va.c. 60Hz

Ambient Temperature: 25°C	Relative Humidity: 51%	Atmospheric Pressure: 101 kPa
---------------------------	------------------------	-------------------------------

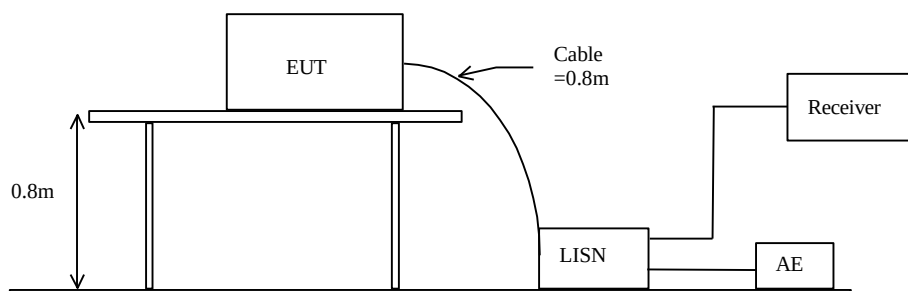
Test Method:

The test was performed in accordance with ANSI C63.10:2013, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Receiver Setting:

Bandw. = 9 kHz, Meas. Time= 10.0 ms, Step Width = 5.0kHz
 Detector = MaxPeak and CISPR AV

Test Setup:



Limits for Conducted Emissions (FCC 47 CFR 15.207):

Frequency Range [MHz]	Quasi-Peak Limits [dBμV]	Average [dBμV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

Remarks:

Calculated measurement uncertainty (0.15MHz – 30MHz): 3.25dB

-*- Emission(s) that is far below the corresponding limit line.

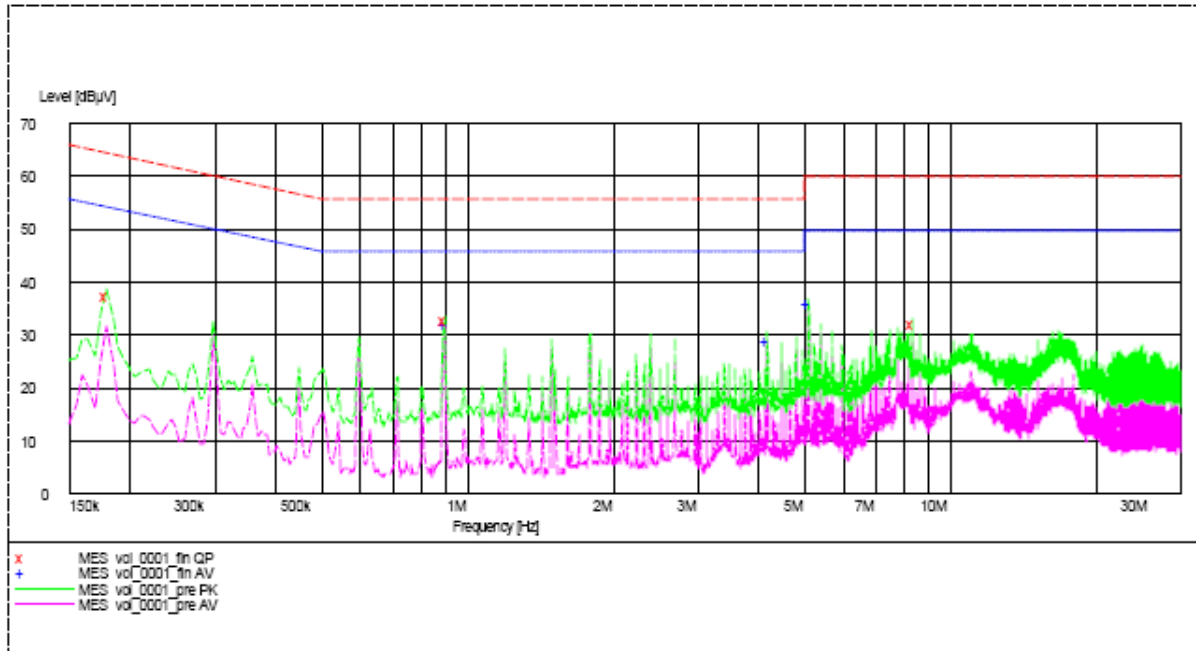
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Results of TX mode (L): PASS

Please refer to the following diagram for individual results.



10/09/2023 7:16PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.900000	32.00	9.7	46	14.0	L1	GND
4.195000	28.80	9.7	46	17.2	L1	GND
5.095000	35.90	9.7	50	14.1	L1	GND

MEASUREMENT RESULT: "vol_0001_fin QP"

10/09/2023 7:16PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.180000	37.30	9.6	65	27.2	L1	GND
0.900000	33.00	9.7	56	23.0	L1	GND
8.395000	32.20	9.8	60	27.8	L1	GND

10/09/2023 7:17PM vol_0001

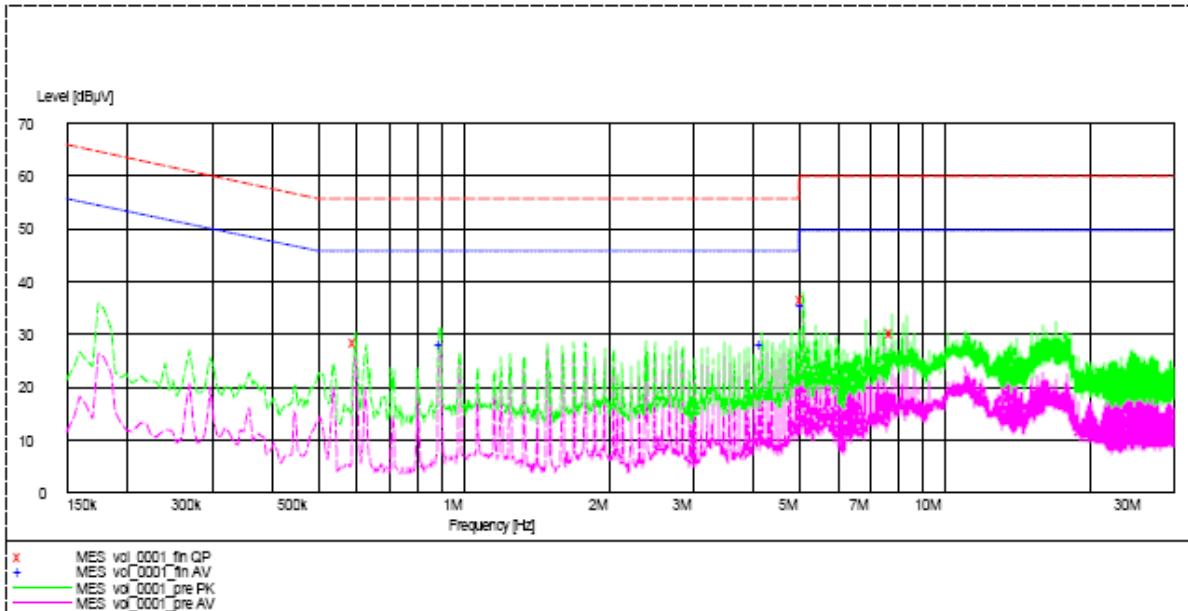
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Results of TX mode (N): PASS

Please refer to the following diagram for individual results.



MEASUREMENT RESULT: "vol_0001_fin AV"

10/09/2023 7:14PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.900000	28.30	9.7	46	17.7	N	GND
4.195000	28.40	9.7	46	17.6	N	GND
5.095000	35.60	9.7	50	14.4	N	GND

MEASUREMENT RESULT: "vol_0001_fin QP"

10/09/2023 7:14PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.600000	28.50	9.7	56	27.5	N	GND
5.095000	36.80	9.7	60	23.2	N	GND
7.790000	30.50	9.8	60	29.5	N	GND

10/09/2023 7:14PM vol_0001



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3.1.4 Antenna Requirement

Ambient temperature 25°C

Relative humidity 57%

Test Requirements: § 15.203

Test Specification:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Test Results:

This is Magnetic loop antenna. There is no external antenna. User is unable to remove or changed the Antenna.

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3.1.5 20dB Bandwidth of Fundamental Emission

Ambient temperature 25°C

Relative humidity 57%

Test Requirement: FCC 47 CFR 15.215(c)
Test Method: ANSI C63.10:2013
Test Date: 2023-10-08
Mode of Operation: Tx mode

Test Method:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

The measurement bandwidth settings are
RBW = 1 kHz
VBW = 3 kHz

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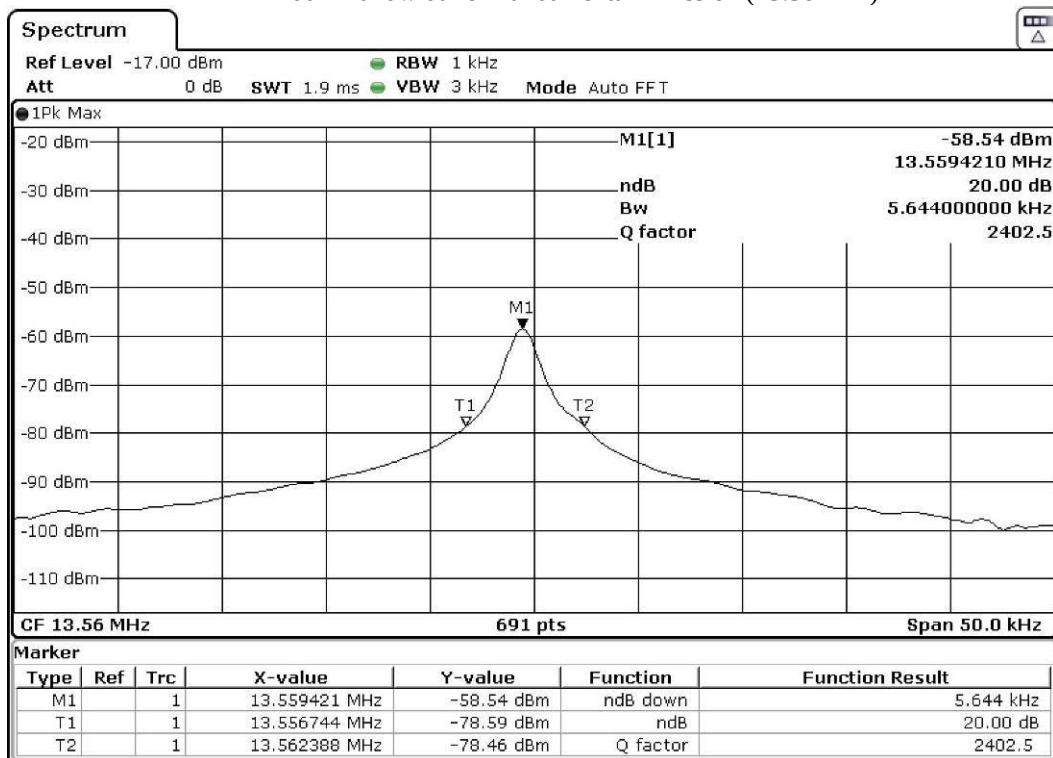
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Limits for 20dB Bandwidth of Fundamental Emission (13.56MHz):

Frequency [MHz]	20dB Bandwidth [kHz]	Flow – 20dB [MHz]	Fhigh – 20dB [MHz]	Limit [MHz]	Result
13.56	5.644	13.556744	13.562388	13.110-14.010	PASS

20dB Bandwidth of Fundamental Emission (13.56MHz)



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3.1.6 The frequency tolerance of the carrier signal

Ambient temperature 20°C

Relative humidity 57%

Test Requirement: FCC 47 CFR 15.215(c)
Test Method: ANSI C63.10:2013
Test Date: 2023-09-27
Mode of Operation: Tx mode

Test Method:

The measurement bandwidth settings are RBW = 1 kHz
VBW = 3 kHz

Limit:

±0.01% of the operating frequency

Test Results:

Operating frequency (MHz)	Test Condition	Measured frequency (MHz)	Frequency Drift (ppm)	Limit (ppm)	
13.56	Tnom:50°C, Unom: 5.0Vd.c.	13.56024	17.699	100	PASS
	Tnom:40°C, Unom: 5.0Vd.c.	13.56029	21.386	100	PASS
	Tnom:30°C, Unom: 5.0Vd.c.	13.56030	22.124	100	PASS
	Tnom:20°C, Unom: 5.0Vd.c.	13.56035	25.811	100	PASS
	Tnom:10°C, Unom: 5.0Vd.c.	13.56031	22.861	100	PASS
	Tnom:0°C, Unom: 5.0Vd.c.	13.56040	29.499	100	PASS
	Tnom:-10°C, Unom: 5.0Vd.c.	13.56033	24.336	100	PASS
	Tnom:-20°C, Unom: 5.0Vd.c.	13.56029	21.386	100	PASS
	Tnom:20°C, Unom: 5.0Vd.c.	13.56036	26.549	100	PASS
	Tnom:20°C, Low: 4.25Vd.c.	13.56032	23.599	100	PASS
	Tnom:20°C, High: 5.5Vd.c.	13.56031	22.861	100	PASS

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Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM215	MULTIDEVICE CONTROLLER	EMCO	2090	00024676	N/A	N/A
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A
EM218	ANECHOIC CHAMBER	ETS-LINDGREN	FACT-3	--	2019-04-16	2024-04-16
EM356	ANTENNA POSITIONING TOWER	ETS-LINDGREN	2171B	00150346	N/A	N/A
EM293	SPECTRUM ANALYZER	AGILENT TECHNOLOGIES	N9020A	MY50510152	2023-03-21	2024-03-21
EM299	BROADBAND HORN ANTENNA	ETS-LINDGREN	3115	00114120	2023-01-25	2024-01-25
EM300	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-09	00130130	2023-01-16	2024-01-16
EM301	PYRAMIDAL STANDARD GAIN HORN ANTENNA	ETS-LINDGREN	3160-10	00130988	2023-02-15	2024-02-15
EM353	LOOP ANTENNA	ETS_LINDGREN	6502	00206533	2022-09-26	2024-09-26
EM355	BICONILOG ANTENNA	ETS-LINDGREN	3143B	00094856	2022-08-26	2024-08-26
EM200	DUAL CHANNEL POWER METER	R & S	NRVD	100592	2023-08-02	2024-08-02

Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL
EM232	LISN	SCHAFFNER	NNB41	04/100082	2023-05-30	2024-05-30
EM181	EMI TEST RECEIVER	R & S	ESIB7	100072	2023-05-22	2024-05-22
EM179	IMPULSE LIMITER	R & S	ESH3-Z2	357.8810.52/54	2023-03-17	2024-03-17
EM154	SHIELDING ROOM	SIEMENS MATSUSHITA COMPONENTS	N/A	803-740-057- 99A	2022-02-06	2027-02-06
N/A	MEASUREMENT AND EVALUATION SOFTWARE	ROHDE & SCHWARZ	BSIB-K1	V1.20	N/A	N/A

Remarks: -

N/A Not Applicable or Not Available

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Appendix B Photographs of EUT

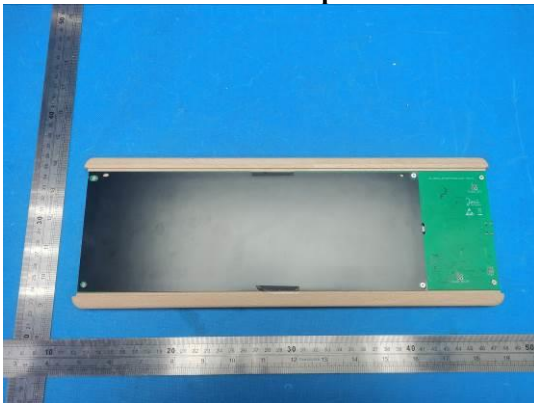
View of the product



View of the product



Inner circuit top view



Inner circuit bottom view



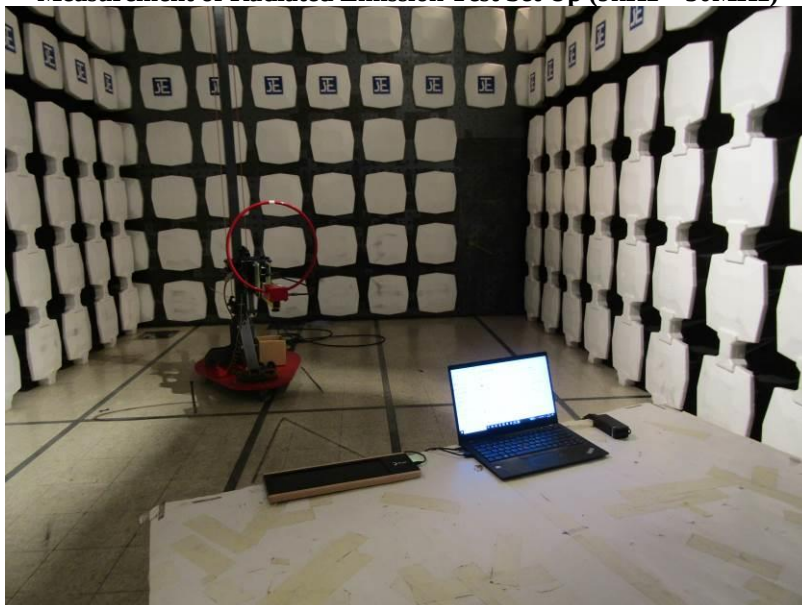
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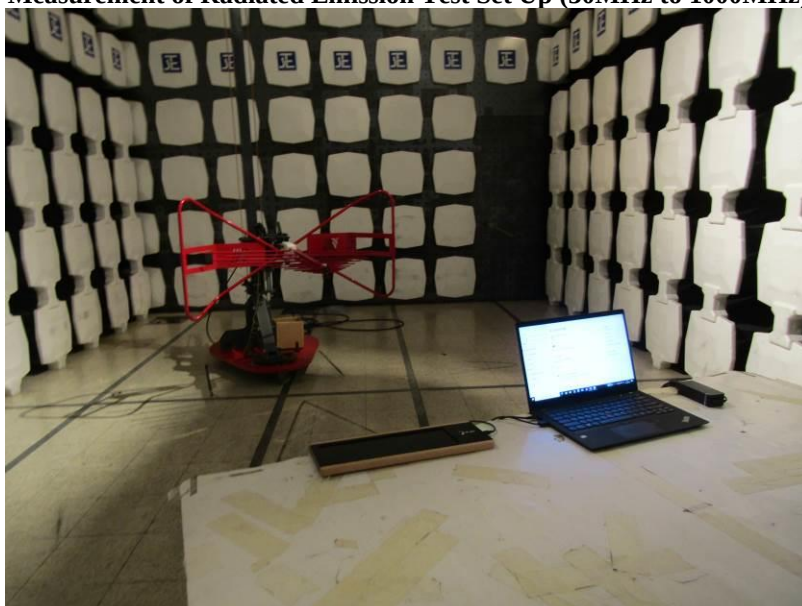
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Photographs of EUT

Measurement of Radiated Emission Test Set Up (9kHz – 30MHz)



Measurement of Radiated Emission Test Set Up (30MHz to 1000MHz)



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Photographs of EUT

Measurement of Conducted Emission Test Set Up



***** End of Test Report *****

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