FCC Part 15.231

TEST REPORT

For

MEGALIN SOURCE INTERNATIONAL CO., LTD

3F-6 No. 81 Sec. 1 Xintai 5th Road, Xizhi District, New Taipei City 22101 Taiwan

Report Type:	**Original Report**
FCC Identity:	**FCC ID: 2AXWEML32E**
Brand Name:	**MEGALIN**
Product Name:	**GZ-E32**
Model Name:	**ML-E32**
Report Number:	**RXZ200901001-00A**
Report Date:	**2021/02/17**
Reviewed By:	**Flight Hsieh** Flight Hsieh
Prepared By:	
Bay Area Compliance Laboratories Corp.(Linkou Laboratory)	
No. 6, Wende 2Rd., Guishan Dist., Taoyuan City 33382, Taiwan (R.O.C.)	
Tel: +886 (3)3961072; Fax: +886 (3) 3961027	
www.bacl.com.tw	

Revision History

Revision	Report Number	Issue Date	Description
1.0	RXZ200901001-00A	2021/02/17	Original Report

TABLE OF CONTENTS

1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	**MEGALIN SOURCE INTERNATIONAL** CO., LTD 3F-6 No. 81 Sec. 1 Xintai 5th Road, Xizhi District, New Taipei City 22101 Taiwan
Manufacturer	**MEGALIN SOURCE INTERNATIONAL CO., LTD** 3F-6 No. 81 Sec. 1 Xintai 5th Road, Xizhi District, New Taipei City 22101 Taiwan
Brand Name	MEGALIN
Product (Equipment)	GZ-E32
Model Name	ML-E32
Frequency Range	410-441 MHz
Number of Channels	31 Channel
Field strength	91.90 dBuV/m (Peak)
Modulation Type	GFSK
Power Operation (Voltage Range)	☒ DC Type ☒ From Host System ☒ External USB Cable
Received Date	Oct. 06, 220
Date of Test	Dec. 31, 2020 ~ Jan. 22, 2021

Note: All measurement and test data in this report was gathered from production sample serial number: 201210001. Assigned by Bay Area Compliance Laboratories Corp. (Linkou Laboratory)

1.2 Objective and Test Methodology

The Objective of this Test Report was to document the compliance of the MEGALIN SOURCE INTERNATIONAL CO., LTD . Appliance (Model: ML-E32) to the requirements of the following Standards:

- Part 2, Subpart J, Part 15, Subparts A and C, section 15.231 of the Federal Communication Commission's rules.
- ANSI C63.10-2013 of t American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

1.3 Measurement Uncertainty

Parameter	Expanded Measurement uncertainty
RF output power with Power Meter	± 1.488 dB
Occupied Channel Bandwidth	± 453.927 Hz
RF Conducted test with Spectrum	± 2.77 dB
AC Power Line Conducted Emission	± 2.66 dB
Radiated Below 1G	± 3.57 dB
Radiated Above 1G	± 5.32 dB

The test results with statement of conformity, the decision rules are based on the specifications and standards. The test results will not take the measurement uncertainty into account.

1.4 Environmental Conditions and Test Date

Test Site	Test Date	Temperature (°C)	Relative Humidity (%)	Test Engineer
Radiated (966A)	Jan. 15, 2021	18.3	55	Leo Cheng
Conducted (TH-02)	Jan. 22, 2021	23.5	60	Blake Wang
Conduction (Con-01)	Dec. 31, 2020	22.0	53	Brian Chang

1.5 Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Linkou Laboratory) to collect test data is located on

☒ No.6, Wende 2Rd., Guishan Dist., Taoyuan City 33382, Taiwan (R.O.C.).

Bay Area Compliance Laboratories Corp. (Linkou Laboratory) Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3546) by Mutual Recognition Agreement (MRA). The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database. The FCC Registration No.: 0027578244. Designation No.: TW3546. The Test Firm Registration No.: 181430.

2 System Test Configuration

2.1 Test Channels and Description of Worst Test Configuration

The system was configured for testing in testing mode which was provided by manufacturer. No special accessory, No modification was made to the EUT and No special equipment used during test.

There are totally 32 channels.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	**410**	17	427
1	411	--	--
2	412	--	--
3	413	29	439
--	--	30	440
16	**426**	**31**	**441**

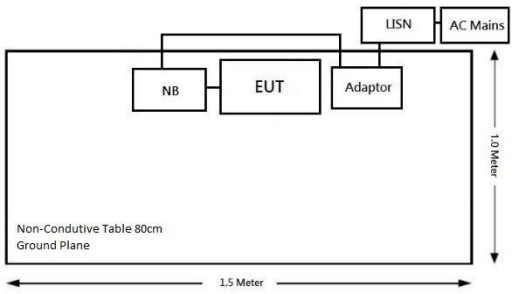
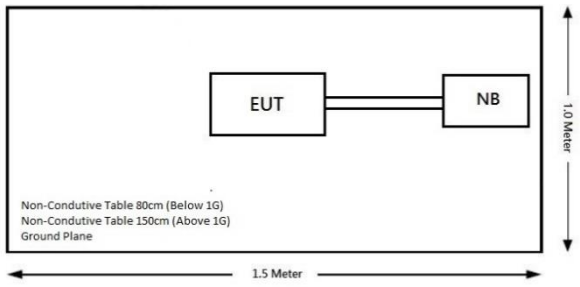
Worst Case of Power Setting				
EUT Exercise Software		RF_Setting_v3.49 and sscom3.2E		
Configuration	**N_{TX}**	**Low CH**	**Mid CH**	**High CH**
410-441 MHz	1	Default	Default	Default

2.2 Support Equipment List and External Cable List

No.	Description	Manufacturer	Model Number	Serial Number
A	NoteBook	DELL	Latitude E6410	PP27LA001

No.	Description	Manufacturer	Model Number
1	USB Cable	BACL	BACL-USB

2.3 Block Diagram of Test Setup

Conduction	Radiation
	

3 Summary of Test Results

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.231 (b)	Radiated Emissions	Compliance
§15.231 (c)	20dB Bandwidth	Compliance
§15.231 (a)	Deactivation Testing	Compliance

4 Test Equipment List and Details

4.1 Applicable Standard

Description	Manufacture	Model	Serial No.	Cal. Date.	Cal. Due.
AC Line Conduction Room (CON-01)					
LISN	Rohde & Schwarz	ENV216	100010	2020/09/14	2021/09/13
EMI Test Receiver	Rohde & Schwarz	ESR3	102430	2020/05/07	2021/05/06
Pulse Limiter	SCHWARZBECK	VSTD 9561-F	00432	2020/09/11	2021/09/10
RF Cable	EMCI	EMCCFD300-BM-BM-8000	180526	2020/08/18	2021/08/17
Software	Audix	e3 v9	E3LK-03	N.C.R	N.C.R
Radiation 3M Room (966B)					
Bilog Antenna/6 dB Attenuator	SUNOL SCIENCES & EMEC /EMCI	JB3/N-6-06	A111513/AT-N0668	2020/03/19	2021/03/18
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV40	101434	2020/05/07	2021/05/06
Horn Antenna	ETS-Lindgren	3115	00109141	2020/07/15	2021/07/14
Preamplifier	A.H. Systems	PAM-0118	478	2020/05/05	2021/05/04
Microflex Cable (1m)	EMCI	EMC102-KM-KM-1000	180524	2020/08/06	2021/08/05
Microflex Cable (2m)	EMCI	EMC106-SM-SM-2000	180516	2020/08/06	2021/08/05
Microflex Cable (8m)	UTIFLEX	UFA210A-1-3149-300300	MFR 64639 232490-002	2020/08/06	2021/08/05
Turn Table	Chaintek	T-200-S-1	003501	N.C.R	N.C.R
Antenna Tower	Chaintek	MBD-400-1	003504	N.C.R	N.C.R
Controller	Chaintek	3000-1	003507	N.C.R	N.C.R
Software	Audix	e3 v9	E3LK-01	N.C.R	N.C.R
Conducted Room(TH-02)					
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV40	101434	2020/05/07	2021/05/06
Cable	MTJ	MT40S	620620-MT40S-100	Each Use	-

***Statement of Traceability:** The testing equipment's listed above have finished the calibration by Electronics Testing Center, Taiwan (ETC) or other laboratories which were accredited by TAF or equivalent organizations. The calibration result could be traceable to the International System of Units (SI).

5 FCC §15.203 - Antenna Requirements

5.1 Applicable Standard

According to § 15.203, 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 user of a standard antenna jack or electrical connector is prohibited.

5.2 Antenna List and Details

Brand	Model	Antenna Type	Antenna Gain	Result
Megalin	TX433-ML-5	Rod Antenna	2.00 dBi	Compliance

The EUT has an External antennas arrangement with SMA-P connector and fulfill the requirement of this section.

6 FCC §15.207 - AC Line Conducted Emissions

6.1 Applicable Standard

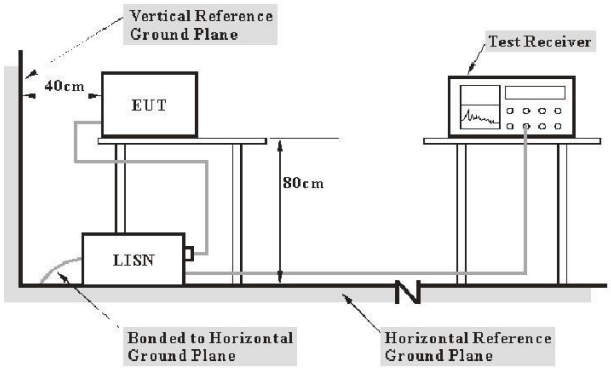
According to FCC §15.207,

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequencies ranges.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56 Note 1	56 to 46 Note 2
0.5-5	56	46
5-30	60	50

Note 1: Decreases with the logarithm of the frequency. Note 2: A linear average detector is required

6.2 EUT Setup and Test Procedure



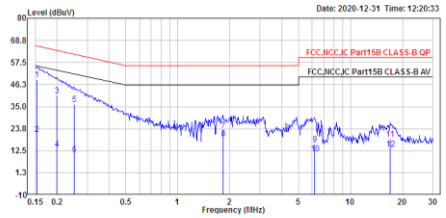
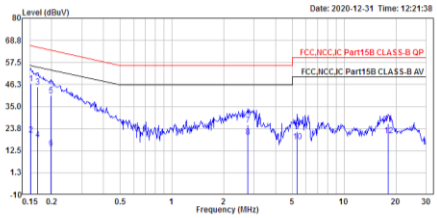
Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits**.** The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz. During the conducted emission test, the EMI test receiver was set with the following configurations

Frequency Range	Receiver RBW
150 kHz - 30 MHz	9 kHz

During the conducted emission test, the adapter was connected to the outlet of the LISN. Maximizing procedure was performed on the six (6) highest emissions of the EUT. All data was recorded in the Quasi-peak and average detection mode.

6.3 Test Result

Line	Neutral
	

	Freq	Read Level	Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	
1	0.152	28.85	48.71	19.86	65.87	-17.16	QP
2	0.152	1.10	20.96	19.86	55.87	-34.91	Average
3	0.200	20.86	40.73	19.87	63.62	-22.89	QP
4	0.200	-6.58	13.29	19.87	53.62	-40.33	Average
5	0.252	16.16	36.03	19.87	61.70	-25.67	QP
6	0.252	-9.27	10.60	19.87	51.70	-41.10	Average
7	1.831	2.86	22.81	19.95	56.00	-33.19	QP
8	1.831	-1.11	18.84	19.95	46.00	-27.16	Average
9	6.194	-4.44	15.68	20.12	60.00	-44.32	QP
10	6.194	-9.17	10.95	20.12	50.00	-39.05	Average
11	16.904	-1.71	18.60	20.31	60.00	-41.40	QP
12	16.904	-6.82	13.49	20.31	50.00	-36.51	Average

	Freq	Read Level	Level	Factor	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	
1	0.151	26.77	46.64	19.87	65.93	-19.29	QP
2	0.151	0.60	20.47	19.87	55.93	-35.46	Average
3	0.165	25.16	45.03	19.87	65.21	-20.18	QP
4	0.165	-1.53	18.34	19.87	55.21	-36.87	Average
5	0.198	20.87	40.75	19.88	63.68	-22.93	QP
6	0.198	-5.94	13.94	19.88	53.68	-39.74	Average
7	2.748	5.58	25.60	20.02	56.00	-30.40	QP
8	2.748	-0.44	19.58	20.02	46.00	-26.42	Average
9	5.324	2.22	22.33	20.11	60.00	-37.67	QP
10	5.324	-3.05	17.06	20.11	50.00	-32.94	Average
11	18.016	5.94	26.36	20.42	60.00	-33.64	QP
12	18.016	-0.23	20.19	20.42	50.00	-29.81	Average

Note:

Level = Read Level + Factor

Over Limit (Margin) = Level – Limit Line

Factor = (LISN, ISN, PLC or current probe) Factor + Cable Loss + Attenuator

7 FCC §15.205, §15.209, §15.231(b) – Spurious Emissions

7.1 Applicable Standard

As per FCC §15.35(d): Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1MHz.

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	13.36-13.41	399.9-410	4.5-5.15
0.495-0.505	16.42-16.423	608-614	5.35-5.46
2.1735-2.1905	16.69475-16.69525	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (micro volts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

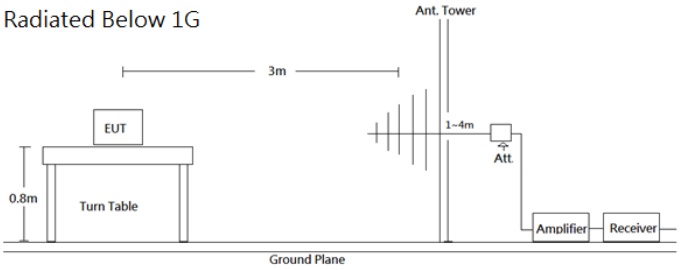
(b) In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental Frequency (MHz)	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (millivolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	Note1 1,250 to 3,750	Note1 125 to 375
174-260	3,750	375
260-470	Note1 3,750 to 12,500	Note1 375 to 1,250
Above 470	12,500	1,250

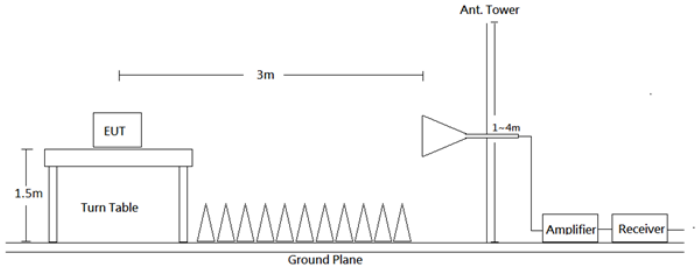
Note1: Linear interpolations.

7.2 EUT Setup and Test Procedure

Radiated Below 1G



Radiated Above 1G



Radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC Part 15.209 and FCC 15.231 Limits.

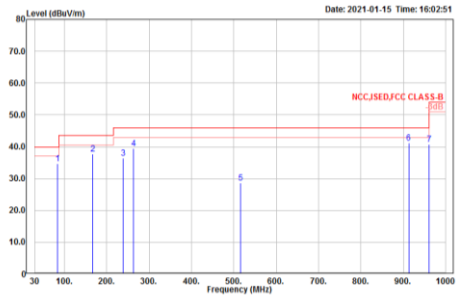
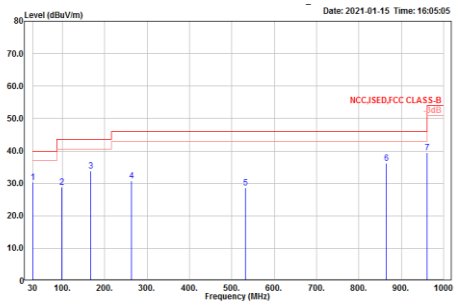
The system was investigated from 30 MHz to 6 GHz. During the radiated emission test, the EMI test receiver was set with the following configurations measurement method 6.3 in ANSI C63.10.

Frequency Range	RBW	VBW	Duty cycle	Measurement method
30-1000 MHz	120 kHz	/	-	QP
Above 1 GHz	1 MHz	3 MHz	-	PK
	1 MHz	10 Hz	>98%	PK

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations. All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

7.3 Test Result

Below 1G (30 MHz-1 GHz) test the output power worst mode (Pre-scan with three orthogonal axis, and worse case as Y axis)

Horizontal	Vertical
	

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	83.350	34.68	40.00	-5.32	59.56	-24.88	Peak
2	167.740	37.71	43.50	-5.79	58.88	-21.17	Peak
3	239.520	36.32	46.00	-9.68	58.00	-21.68	Peak
4	263.770	39.55	46.00	-6.45	60.39	-20.84	Peak
5	515.970	28.56	46.00	-17.44	43.87	-15.31	Peak
6	912.700	41.26	46.00	-4.74	51.05	-9.79	Peak
7	960.230	40.81	54.00	-13.19	49.99	-9.18	Peak

	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
1	30.000	30.25	40.00	-9.75	38.90	-8.65	Peak
2	97.900	28.92	43.50	-14.58	51.96	-23.04	Peak
3	167.740	33.81	43.50	-9.69	54.98	-21.17	Peak
4	263.770	30.84	46.00	-15.16	51.68	-20.84	Peak
5	531.490	28.54	46.00	-17.46	43.62	-15.08	Peak
6	864.200	36.27	46.00	-9.73	46.45	-10.18	Peak
7	960.230	39.53	54.00	-14.47	48.71	-9.18	Peak

Fundamental, Band Edge and Above 1G

Low CH Horizontal	Low CH Vertical

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
397.959	34.78	99.55	-64.77	52.68	-17.90	Peak
397.959	34.66	79.55	-44.89	52.56	-17.90	QP
410.286	91.73	100.00	-8.27	109.29	-17.56	Peak
1230.000	37.06	54.00	-16.94	50.00	-12.94	Average
1230.000	49.43	74.00	-24.57	62.37	-12.94	Peak
1640.000	38.32	54.00	-15.68	49.54	-11.22	Average
1640.000	50.69	74.00	-23.31	61.91	-11.22	Peak
2460.000	32.82	54.00	-21.18	40.44	-7.62	Average
2460.000	45.19	74.00	-28.81	52.81	-7.62	Peak
3690.000	32.07	54.00	-21.93	36.17	-4.10	Average
3690.000	44.44	74.00	-29.56	48.54	-4.10	Peak
5330.000	36.85	54.00	-17.15	37.66	-0.81	Average
5330.000	49.22	74.00	-24.78	50.03	-0.81	Peak

Freq	Level	Limit Line	Over Limit	Read Level	Factor	Remark
MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	
398.274	32.43	99.56	-67.13	50.32	-17.89	Peak
398.274	32.27	79.56	-47.29	50.16	-17.89	QP
410.265	86.08	100.00	-13.92	103.65	-17.57	Peak
1230.000	42.86	54.00	-11.14	55.80	-12.94	Average
1230.000	55.23	74.00	-18.77	68.17	-12.94	Peak
1640.000	45.76	54.00	-8.24	56.98	-11.22	Average
1640.000	58.13	74.00	-15.87	69.35	-11.22	Peak
2460.000	39.67	54.00	-14.33	47.29	-7.62	Average
2460.000	52.04	74.00	-21.96	59.66	-7.62	Peak
2870.000	33.27	54.00	-20.73	39.45	-6.18	Average
2870.000	45.64	74.00	-28.36	51.82	-6.18	Peak
5330.000	48.02	54.00	-5.98	48.83	-0.81	Average
5330.000	60.39	74.00	-13.61	61.20	-0.81	Peak
5740.000	44.16	54.00	-9.84	43.57	0.59	Average
5740.000	56.53	74.00	-17.47	55.94	0.59	Peak

410.286 MHz: 91.73-16.75 = 74.98 dBuV/m (Ave.)	410.265 MHz: 86.08-16.75 = 69.33 dBuV/m (Ave.)

Note:

Result = Reading + Correct Factor; Margin = Result – Limit.

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

Duty Cycle = 14.53 %, Duty Factor = 16.75 dB. Ave.=Peak-Duty Cycle

Middle CH Horizontal	Middle CH Vertical
Freq / Level / Limit Line / Over Limit / Read Level / Factor / Remark MHz / dBuV/m / dBuV/m / dB / dBuV / dB/m 414.250 36.40 100.14 -63.74 53.87 -17.47 Peak 414.250 36.28 80.14 -43.86 53.75 -17.47 QP 425.650 91.90 100.53 -8.63 109.13 -17.23 Peak 444.050 33.59 101.15 -67.56 50.38 -16.79 Peak 444.050 33.41 81.15 -47.74 50.20 -16.79 QP 1275.000 40.58 54.00 -13.42 53.23 -12.65 Average 1275.000 52.95 74.00 -21.05 65.60 -12.65 Peak 1704.000 42.14 54.00 -11.86 53.20 -11.06 Average 1704.000 54.51 74.00 -19.49 65.57 -11.06 Peak 3408.000 33.61 54.00 -20.39 38.46 -4.85 Average 3408.000 45.98 74.00 -28.02 50.83 -4.85 Peak 4686.000 38.81 54.00 -15.19 40.80 -1.99 Average 4686.000 51.18 74.00 -22.82 53.17 -1.99 Peak 5538.000 34.76 54.00 -19.24 34.99 -0.23 Average 5538.000 47.13 74.00 -26.87 47.36 -0.23 Peak	Freq / Level / Limit Line / Over Limit / Read Level / Factor / Remark MHz / dBuV/m / dBuV/m / dB / dBuV / dB/m 414.450 32.37 100.15 -67.78 49.84 -17.47 Peak 414.450 32.23 80.15 -47.92 49.70 -17.47 QP 425.650 86.76 100.53 -13.77 103.99 -17.23 Peak 432.050 35.71 100.75 -65.04 52.79 -17.08 Peak 432.050 35.57 80.75 -45.18 52.65 -17.08 QP 1278.000 47.21 54.00 -6.79 59.85 -12.64 Average 1278.000 59.58 74.00 -14.42 72.22 -12.64 Peak 1704.000 48.07 54.00 -5.93 59.13 -11.06 Average 1704.000 60.44 74.00 -13.56 71.50 -11.06 Peak 2130.000 41.51 54.00 -12.49 49.54 -8.03 Average 2130.000 53.88 74.00 -20.12 61.91 -8.03 Peak 2556.000 35.94 54.00 -18.06 43.30 -7.36 Average 2556.000 48.31 74.00 -25.69 55.67 -7.36 Peak 5112.000 39.41 54.00 -14.59 40.44 -1.03 Average 5112.000 51.78 74.00 -22.22 52.81 -1.03 Peak 5538.000 45.65 54.00 -8.35 45.88 -0.23 Average 5538.000 58.02 74.00 -15.98 58.25 -0.23 Peak 5964.000 41.17 54.00 -12.83 39.78 1.39 Average 5964.000 53.54 74.00 -20.46 52.15 1.39 Peak
425.650 MHz: 91.90-16.75 = 75.15 dBuV/m (Ave.)	425.650 MHz: 86.76-16.75 = 70.01 dBuV/m (Ave.)

High CH Horizontal	High CH Vertical
Freq / Level / Limit Line / Over Limit / Read Level / Factor / Remark MHz / dBuV/m / dBuV/m / dB / dBuV / dB/m 440.630 88.85 101.03 -12.18 105.72 -16.87 Peak 456.020 33.41 101.52 -68.11 49.90 -16.49 Peak 456.020 33.33 81.52 -48.19 49.82 -16.49 QP 1323.000 39.52 54.00 -14.48 51.98 -12.46 Average 1323.000 51.94 74.00 -22.06 64.40 -12.46 Peak 1764.000 38.70 54.00 -15.30 49.44 -10.74 Average 1764.000 51.00 74.00 -23.00 61.74 -10.74 Peak 2646.000 33.25 54.00 -20.75 40.25 -7.00 Average 2646.000 45.62 74.00 -28.38 52.62 -7.00 Peak 3528.000 38.35 54.00 -15.65 42.79 -4.44 Average 3528.000 50.72 74.00 -23.28 55.16 -4.44 Peak 4410.000 42.15 54.00 -11.85 45.03 -2.88 Average 4410.000 54.52 74.00 -19.48 57.40 -2.88 Peak 5733.000 42.96 54.00 -11.04 42.39 0.57 Average 5733.000 55.33 74.00 -18.67 54.76 0.57 Peak	Freq / Level / Limit Line / Over Limit / Read Level / Factor / Remark MHz / dBuV/m / dBuV/m / dB / dBuV / dB/m 440.690 82.32 101.04 -18.72 99.19 -16.87 Peak 463.640 33.34 101.75 -68.41 49.67 -16.33 Peak 463.640 33.22 81.75 -48.53 49.55 -16.33 QP 1323.000 45.80 54.00 -8.20 58.26 -12.46 Average 1323.000 58.17 74.00 -15.83 70.63 -12.46 Peak 1764.000 45.94 54.00 -8.06 56.68 -10.74 Average 1764.000 58.31 74.00 -15.69 69.05 -10.74 Peak 2646.000 40.45 54.00 -13.55 47.45 -7.00 Average 2646.000 52.82 74.00 -21.18 59.82 -7.00 Peak 4851.000 44.68 54.00 -9.32 46.29 -1.61 Average 4851.000 57.05 74.00 -16.95 58.66 -1.61 Peak 5292.000 48.64 54.00 -5.36 49.57 -0.93 Average 5292.000 60.99 74.00 -13.01 61.92 -0.93 Peak 5733.000 49.47 54.00 -4.53 48.90 0.57 Average 5733.000 62.17 74.00 -11.83 61.60 0.57 Peak
440.630 MHz: 88.85-16.75 = 72.10 dBuV/m (Ave.)	440.690 MHz: 82.32-16.75 = 65.57 dBuV/m (Ave.)

Note:

Result = Reading + Correct Factor; Margin = Result – Limit.

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Spurious emissions more than 20 dB below the limit were not reported.

Duty Cycle = 14.53 %, Duty Factor = 16.75 dB. Ave.=Peak-Duty Cycle.

8 FCC §15.231(c) – 20 dB Emission Bandwidth

8.1 Applicable Standard

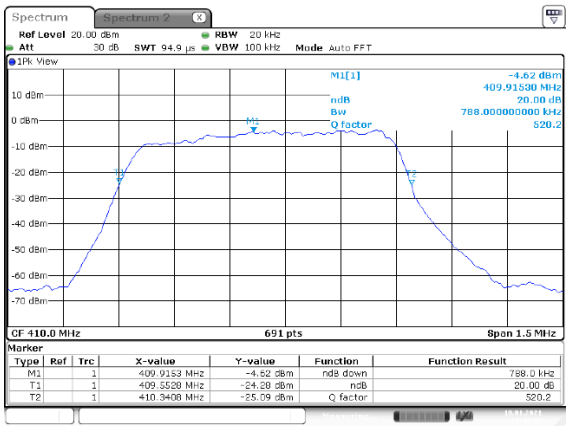
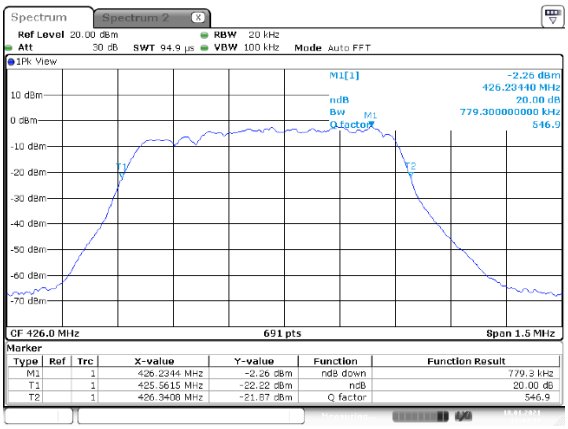
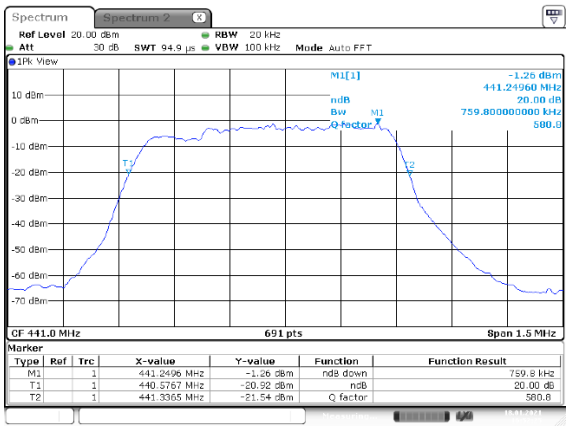
Per 15.231(c), The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

8.2 Test Procedure

The waveform was received by the spectrum analyzer/EMI Test Receiver, plot the 20 dB bandwidth.

8.3 Test Results

Channel	Frequency (MHz)	20 dB BW (kHz)	Limit (MHz)	Result
Low	410.00	788.00	1.03	Compliance
Middle	426.00	779.30	1.07	Compliance
High	441.00	759.80	1.10	Compliance

Low CH	Middle CH
	
High CH	**-**
	-

9 FCC §15.231(a) – Deactivation Testing

9.1 Applicable Standard

Per 15.231(a)

(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

(2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.

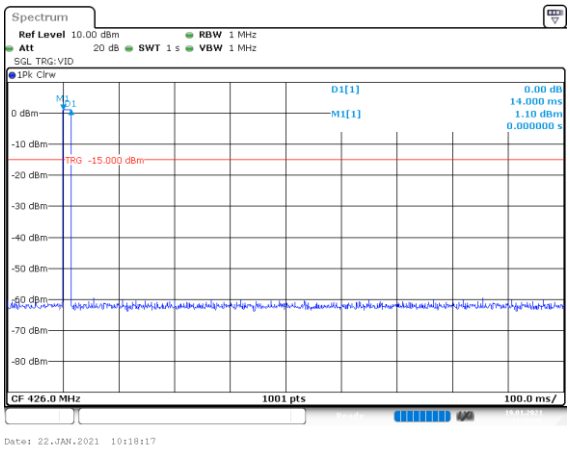
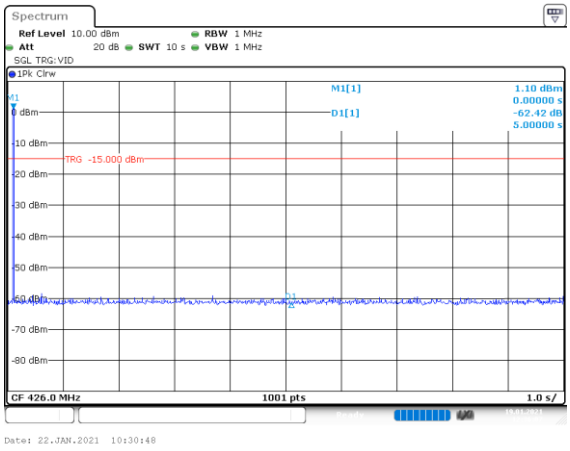
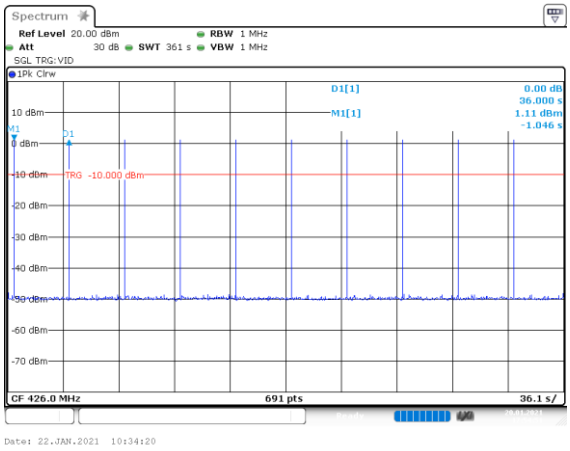
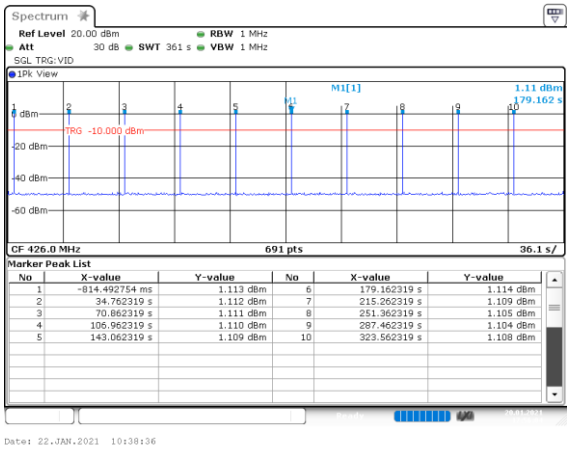
(3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.

9.2 Test Procedure

(1) Place the EUT on a bench and set it in transmitting mode.
(2) Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to measuring equipment.
(3). Add a correction factor to the display.

9.3 Test Results

Operation Condition	Number of Burst	Measure Time (sec)	Number of Burst (in 1 hr)	Burst Duration (ms)	Limit	Result
Automatically	1.00	0.03	-	14.53	5 sec	Compliance
Manually Operated	-	-	-	-	5 sec	N/A
Regular Predetermined	10.00	361.00	100.00	1452.90	2 sec per 1 hours	Compliance

1 sec	5 sec
	
361 sec	**361 sec**
	

----- END OF REPORT -----