FCC Part 15.225

TEST REPORT

For

LT Security Inc

17333 Freedom Way, City of Industry, CA 91748 United States

FCC ID: 2A2TG-LXK101BD

Report Type:	**Product Type:**
Original Report	Access Reader

Report Producer : Coco Lin

Report Number : RLK250312040RF02

Report Date : 2025-03-26

Reviewed By: Rory Cheng

Prepared By:

Bay Area Compliance Laboratories Corp.(Linkou Laboratory)

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Revision History

Revision	No.	Report Number	Issue Date	Description	Author/ Revised by
0.0	RLK250312040	RLK250312040RF02	2025-03-26	Original Report	Coco Lin

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1 General Information

1.1 Product Description for Equipment under Test (EUT)

Applicant	LT Security Inc
	17333 Freedom Way, City of Industry, CA 91748 United States
Brand(Trade) Name	LT Security Inc
Product (Equipment) / PMN	Access Reader
Main Model Name	LXK101-BD
Series Model Name	N/A
Frequency Range	13.56 MHz
E-field Strength	63.90 dBuV/m@3m
Modulation Technique	ASK
Power Operation	12Vdc from DC Power Supply
Received Date	2025/03/13

*All measurement and test data in this report was gathered from production sample serial number: RLK250312040-1&2 (Assigned by BACL, New Taipei Laboratory).

1.2 Objective

This report is prepared on behalf of *LT Security Inc* in accordance with Part 2- Subpart J, and Part 15- Subparts A and C of the Federal Communication Commission's rules.

The objective is to determine the compliance of the EUT with FCC rules, sec 15.203, 15.205, 15.207, 15.209 and 15.225.

1.3 Related Submittal(s)/Grant(s)

N/A.

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

1.5 Statement of Compliance

Decision Rule: No, (The test results do not include MU judgment)

The measurement results in this report were performed at Bay Area Compliance Laboratories Corp. (Linkou Laboratory)

Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
The determination of the test results does not require consideration of the uncertainty of the measurement, unless the assessment is required by customer agreement, regulation or standard document specification. Bay Area Compliance Laboratories Corp. (Linkou Laboratory) is not responsible for the authenticity of the information provided by the applicant that affects the test results.

1.6 Measurement Uncertainty

Parameter		Uncertainty
AC Mains		±4.7 (dB)
Frequency stability		±7.85 (ppm)
Occupied Bandwidth		±0.09 (%)
Emissions, radiated	9kHz~30MHz	±3.13 (dB)
	30 MHz~1GHz	±3.09 (dB)
Temperature		±0.04 (%)
Humidity		±0.78 (°C)

1.7 Environmental Conditions

Test Site	Test Data	Temperature (℃)	Relative Humidity (%)	Test Engineer
AC Line Conducted Emissions	2025/03/17	19.5	54	Hank
Radiation Spurious Emissions	2025/03/14	21.4	51	Bruce
Frequency Stability	2025/03/17	23.2	52	Hank
20 dB Bandwidth	2025/03/17	23.2	52	Hank

1.8 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) is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 3546) and the FCC designation No.TW3546 under the Mutual Recognition Agreement (MRA) in FCC Test.

2 System Test Configuration

2.1 Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 Equipment Modifications

No modification was made to the EUT.

2.3 EUT Exercise Software

No test software was used.

2.4 Support Equipment List and Details

Description	Manufacturer	Model Number	S/N
Notebook	DELL	E6410	14478897241
Fixture	LTS	AC02B3	2405007AKJ001547
Fixture2	Telink	TLSRGSOCBK56B	N/A
DC Power Supply	KIKUSUI	PMC35-3	LG000648

2.5 External Cable List and Details

N/A

2.6 Test Mode

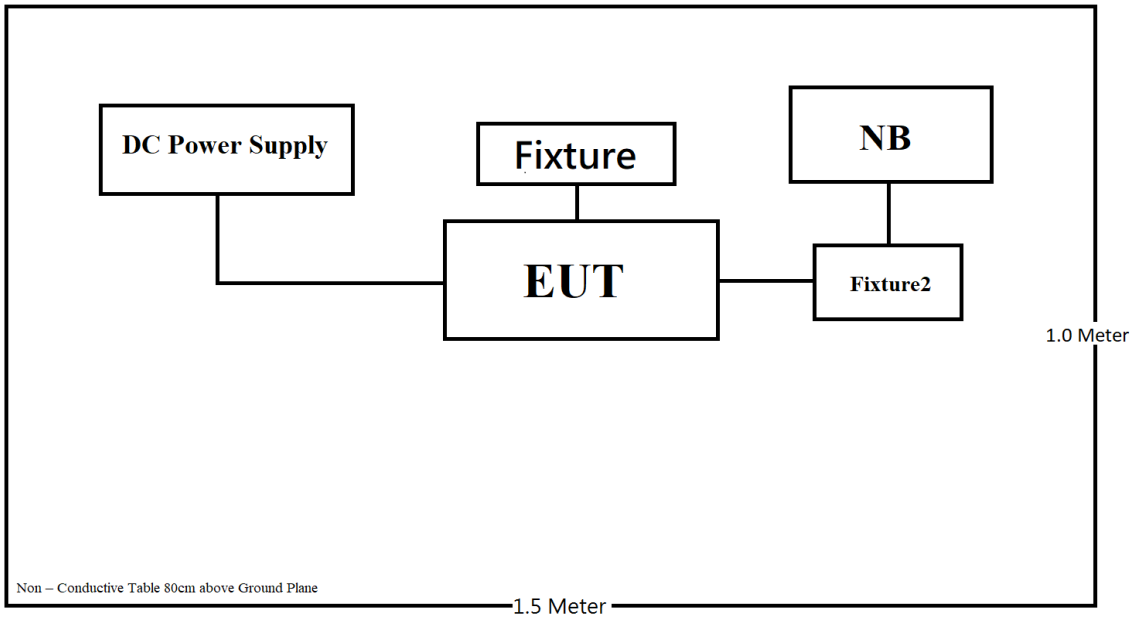
Full System (model: LXK101-BD) for all test item.

2.7 Block Diagram of Test Setup

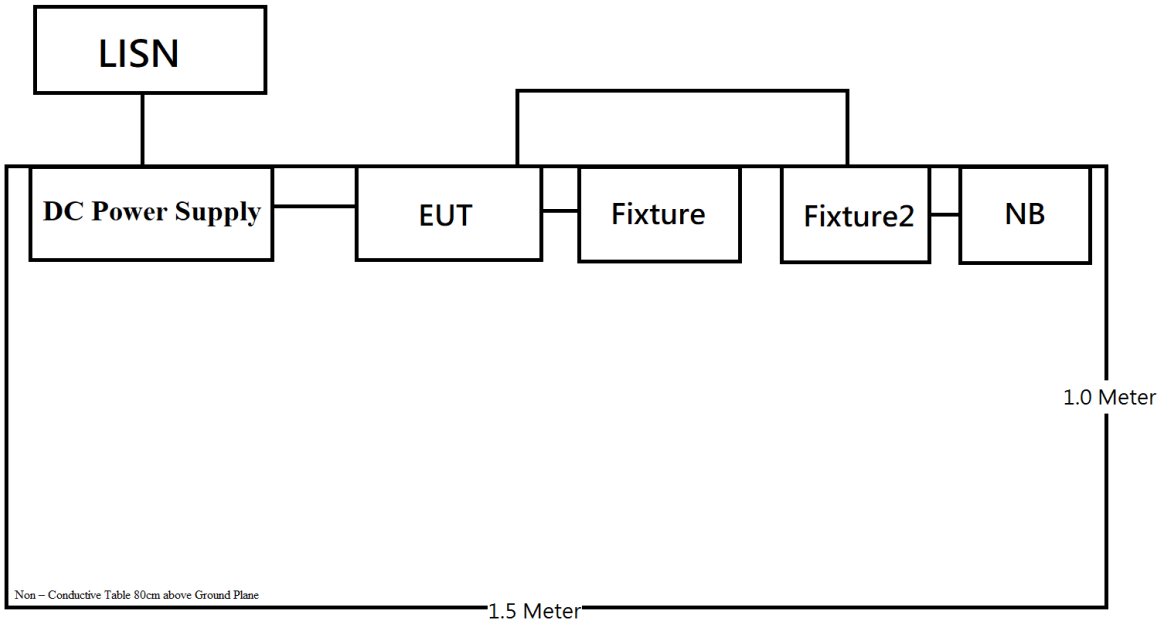
See test photographs attached in setup photos for the actual connections between EUT and support equipment.

Radiation:

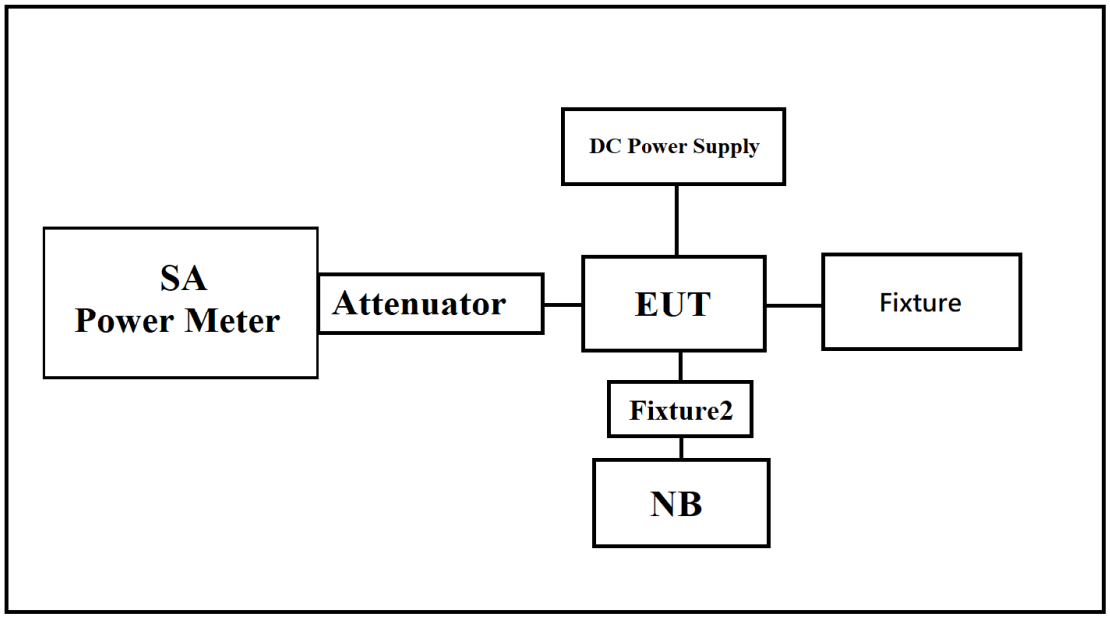
Below 1GHz:



Conduction:



Conducted:


DC Power Supply
SA
Power Meter
Attenuator
EUT
Fixture
Fixture2
NB

3 Summary of Test Results

FCC Rules	Description of Test	Results
FCC §1.1307(b)(3)(i)	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207(a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.225(b)	Radiated Emissions	Compliance
§15.225(e)	Frequency Stability	Compliance
§15.215(c)	20dB Emission Bandwidth Testing	Compliance

4 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conduction Room (CON-A)					
Two-Line V-Network	Rohde & Schwarz	ENV216	100037	2024/09/13	2025/09/13
ESR EMI Test Receiver	Rohde & Schwarz	ESR3	102430	2024/04/23	2025/04/23
Pulse Limiter	SCHWARZBECK	VTSD 9561-F	00432	2024/08/14	2025/08/14
RF Cable	EMCI	EMCCFD300-BM-BM-3000	221013	2024/10/17	2025/10/17
Software	Audix	e3 v9	E3LK-03	N.C.R	N.C.R
Radiation 3M Room (966-C)					
Bilog Antenna & 6 dB Attenuator	SunAR RF Motion	JB1 & N-6-06	A092619 & AT-N0669	2024/12/05	2025/12/05
Active Loop Antenna	ETS-Lindgren	6502	0001-3322	2024/03/27	2025/03/27
Amplifier	Sonoma	310N	250609	2024/09/13	2025/09/13
ESR EMI Test Receiver	Rohde & Schwarz	ESR3	102430	2024/04/23	2025/04/23
MTJ cooperation cable (1m)	MTJ cooperation	H0920	00000-MT26A-100	2024/09/13	2025/09/13
Micro-coax Cable (2m)	Micro-coax	UFA210B-0-0720-300300	99G1475	2024/09/13	2025/09/13
Microflex Cable (3m)	EMCI	EMC106-SM-SM-3000	180518	2024/09/13	2025/09/13
Software	AUDIX	E3 V9	E3LK-02	N.C.R	N.C.R
Conducted Room					
Cable	MTJ	MT40S	620620-MT40S-100	2024/12/21	2025/12/21
Signal and Spectrum Analyzer	Rohde & Schwarz	FSV40	101457	2024/09/04	2025/09/04
Constant Temperature and Humidity Chamber	BACL	BTH-408-60	30073	2024/09/16	2025/09/16

***Statement of Traceability:** BACL Corp. attests that all of the calibrations on the equipment items listed above were traceable to the SI System of Units via the R.O.C. Center for Measurement Standards of the Electronics Testing Center, Taiwan (ETC) or to another internationally recognized National Metrology Institute (NMI), and were compliant with the current Taiwan Accreditation Foundation (TAF) requirements.

5 FCC §1.1307(b)(3)(i) – RF EXPOSURE

5.1 Applicable Standard

According to subpart §1.1307(b)(3)(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

For single RF sources (*i.e.,* any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold *Pth* (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). *Pth* is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^x & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

(C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.

5.2 RF Exposure Evaluation Result

Calculate the EIRP from the radiated field strength in the far field using Equation

EIRP= *EMeas* + 20log (dMeas) - 104.7

EIRP= 63.9 dBμV/m - 95.2 = -31.3 dBm

EIRP Tune-up power = -31 dBm < 1mW

§ 1.1307(b)(3)(i)(A) method is applicable

The available maximum time-averaged power is no more than 1 mW

Band	Freq (MHz)	Result Option A
SRD	13.56	exempt

Note: NFC and BLE can't transmit simultaneously

Result: The device meets the exemption requirement.

6 FCC §15.203 – Antenna Requirements

6.1 Applicable Standard

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.

6.2 Antenna Information

Manufacturer	Model	Type	Antenna Gain	Result
LTS	LXK101-BD	FPC Antenna	N/A	Compliance

7 FCC §15.207(a) – AC Line Conducted Emissions

7.1 Applicable Standard

According to §15.207

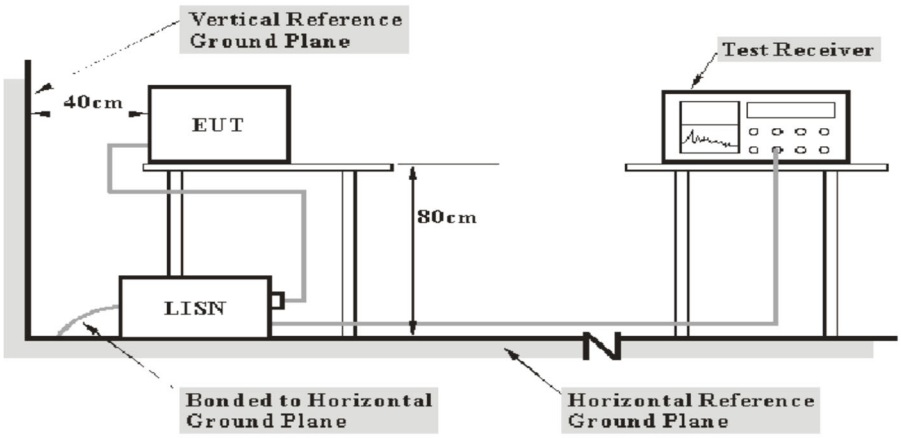
For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured 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 of Emission (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

7.2 EUT Setup



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.

7.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150kHz to 30MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations

Frequency Range	IF B/W
150kHz – 30MHz	9kHz

7.4 Test Procedure

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.

7.5 Factor & Over Limit

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

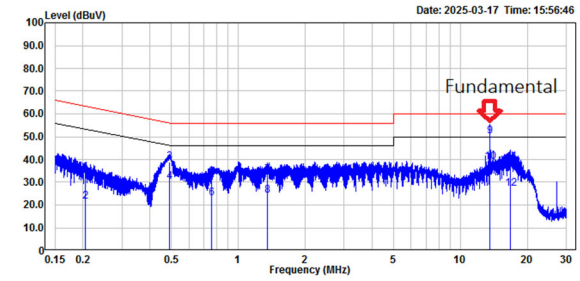
Over Limit = Level – Limit Line

7.6 Test Results

Test Mode: Transmitting

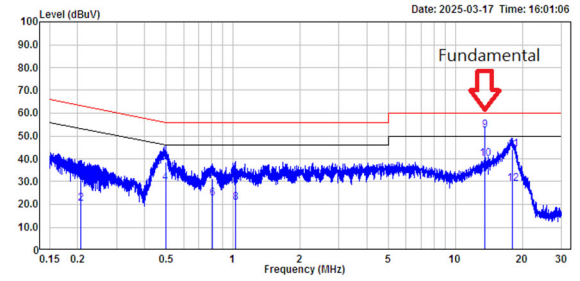
Main: AC120 V, 60 Hz

Line	Neutral



Site : Conduction
Condition: Line
Job No : RLK250312040
Test By : Hank
Power : AC 120V/60Hz
Temp.(℃)/Hum.(%RH): 19.5℃/54%
Mode :

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.2051	14.37	20.03	34.40	63.40	-29.00	QP
2	0.2051	1.48	20.03	21.51	53.40	-31.89	Average
3	0.4923	18.93	20.03	38.96	56.13	-17.17	QP
4	0.4923	10.16	20.03	30.19	46.13	-15.94	Average
5	0.7558	12.10	20.05	32.15	56.00	-23.85	QP
6	0.7558	2.91	20.05	22.96	46.00	-23.04	Average
7	1.3550	13.20	20.06	33.26	56.00	-22.74	QP
8	1.3550	3.95	20.06	24.01	46.00	-21.99	Average
9	13.5529	30.09	20.29	50.38	60.00	-9.62	QP
10	13.5529	18.76	20.29	39.05	50.00	-10.95	Average
11	16.8692	18.29	20.40	38.69	60.00	-21.31	QP
12	16.8692	6.63	20.40	27.03	50.00	-22.97	Average



Site : Conduction
Condition: Neutral
Job No : RLK250312040
Test By : Hank
Power : AC 120V/60Hz
Temp.(℃)/Hum.(%RH): 19.5℃/54%
Mode :

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.2061	14.70	20.01	34.71	63.36	-28.65	QP
2	0.2061	0.22	20.01	20.23	53.36	-33.13	Average
3	0.4972	18.58	19.99	38.57	56.05	-17.48	QP
4	0.4972	9.33	19.99	29.32	46.05	-16.73	Average
5	0.8090	11.38	19.99	31.37	56.00	-24.63	QP
6	0.8090	2.55	19.99	22.54	46.00	-23.46	Average
7	1.0242	9.64	20.00	29.64	56.00	-26.36	QP
8	1.0242	0.58	20.00	20.58	46.00	-25.42	Average
9	13.5529	32.26	20.20	52.46	60.00	-7.54	QP
10	13.5529	19.72	20.20	39.92	50.00	-10.08	Average
11	18.0736	23.80	20.35	44.15	60.00	-15.85	QP
12	18.0736	8.75	20.35	29.10	50.00	-20.90	Average

Note:

Result = Reading + Factor

Over Limit = Result – Limit Line

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

8 FCC §15.209, §15.205 , §15.225(b) – Radiated Emissions

8.1 Applicable Standard

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	16.42 – 16.423	608 – 614	4. 5 – 5. 15
0.495 – 0.505	16.69475 – 16.69525	960 – 1240	5. 35 – 5. 46
2.1735 – 2.1905	16.80425 – 16.80475	1300 – 1427	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1435 – 1626.5	8.025 – 8.5
4.17725 – 4.17775	37.5 – 38.25	1645.5 – 1646.5	9.0 – 9.2
4.20725 – 4.20775	73 – 74.6	1660 – 1710	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1718.8 – 1722.2	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	2200 – 2300	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2310 – 2390	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2483.5 – 2500	15.35 – 16.2
8.362 – 8.366	156.52475 – 156.52525	2690 – 2900	17.7 – 21.4
8.37625 – 8.38675	156.7 – 156.9	3260 – 3267	22.01 – 23.12
8.41425 – 8.41475	162.0125 –167.17	3.332 – 3.339	23.6 – 24.0
12.29 – 12.293	167.72 – 173.2	3 3458 – 3 358	31.2 – 31.8
12.51975 – 12.52025	240 – 285	3.600 – 4.400	36.43 – 36.5
12.57675 – 12.57725	322 – 335.4		Above 38.6
13.36 – 13.41	399.9 – 410		

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 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

As per FCC §15.225,

(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.

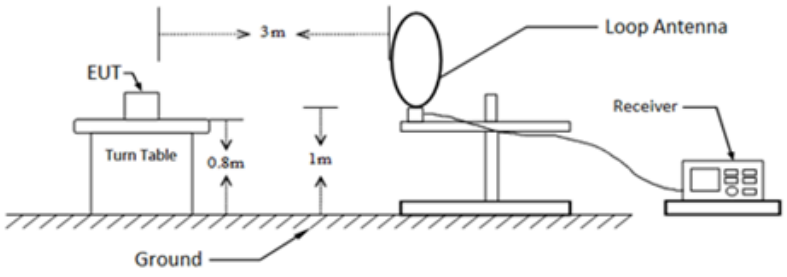
(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.

(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.

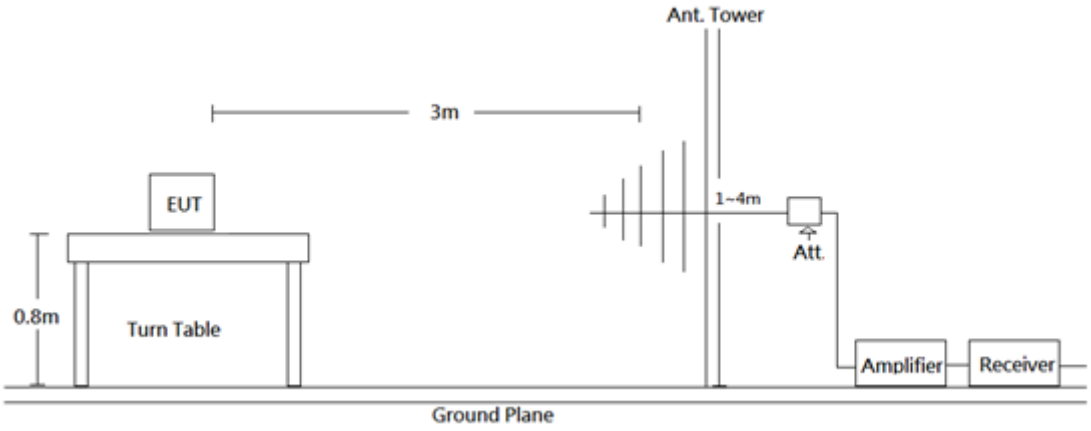
(d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in §15.209.

8.2 EUT Setup

9 kHz to 30 MHz:



30 MHz to 1 GHz:



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 15.225 Limits.

8.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 5 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	Measurement method
9 kHz - 150 kHz	200 Hz/300 Hz	1 kHz	QP/AV
150 kHz - 30 MHz	9 kHz/10 kHz	30 kHz	QP/AV
30-1000 MHz	120 kHz	300 kHz	QP

8.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

8.5 Factor & Over Limit

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Factor = Antenna Factor + Cable Loss – Amplifier Gain

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Level = Read Level + Factor

Over Limit = Level – Limit Line

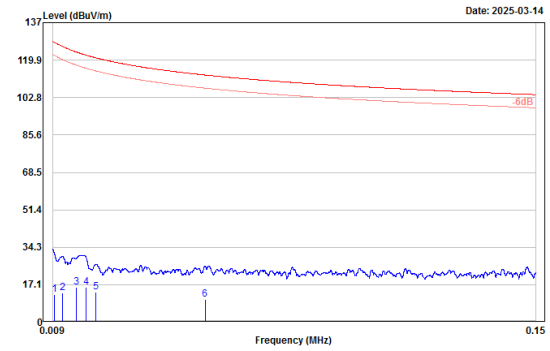
8.6 Test Results

(Pre-scan with three orthogonal axis, and worse case as Z axis.)

9kHz-30MHz:

(Pre-scan using three directional polarities, worst case as parallel.)

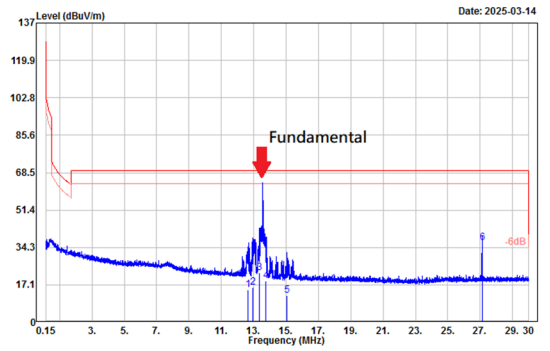
9kHz-150kHz



Site : LK-966A
Condition: 3m
Mode : NFC TX-13.56MHz
Note : Temp/RH:21.4°C/51%
Tester: Bruce

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	0.010	-1.40	13.98	12.58	127.98	-115.40	Average
2	0.012	0.00	13.51	13.51	126.11	-112.60	Average
3	0.016	2.20	13.67	15.87	123.54	-107.67	Average
4	0.019	2.02	13.78	15.80	122.19	-106.39	Average
5	0.022	-0.10	13.71	13.61	120.89	-107.28	Average
6	0.053	-1.90	12.46	10.56	113.05	-102.49	Average

150kHz-30MHz

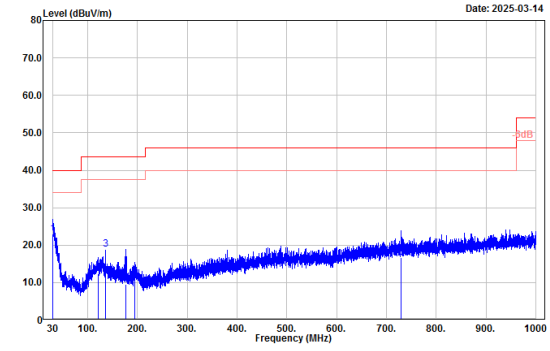


Site : LK-966A
Condition: 3m
Mode : NFC TX-13.56MHz
Note : Temp/RH:21.4°C/51%
Tester: Bruce

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	12.636	2.86	11.92	14.78	69.54	-54.76	QP
2	12.926	4.20	11.80	16.00	69.54	-53.54	QP
3	13.347	10.80	11.74	22.54	69.54	-47.00	QP
4	13.771	7.30	11.70	19.00	69.54	-50.54	QP
5	15.045	0.67	11.70	12.37	69.54	-57.17	QP
6	27.119	25.39	10.91	36.30	69.54	-33.24	QP

30MHz-1GHz:

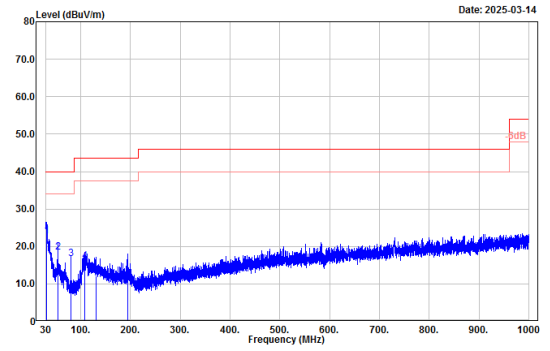
Horizontal



Site : LK-966A
Condition: 3m horizontal
Mode : NFC TX-13.56MHz
Note : Temp/RH:21.4°C/51%
Tester: Bruce

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	30.776	32.18	-9.23	22.95	40.00	-17.05	QP
2	121.277	30.83	-18.43	12.40	43.50	-31.10	QP
3	135.536	37.85	-18.96	18.89	43.50	-24.61	QP
4	176.761	30.72	-21.28	9.44	43.50	-34.06	QP
5	195.288	32.10	-20.70	11.40	43.50	-32.10	QP
6	729.952	28.67	-12.05	16.62	46.00	-29.38	QP

Vertical



Site : LK-966A
Condition: 3m vertical
Mode : NFC TX-13.56MHz
Note : Temp/RH:21.4°C/51%
Tester: Bruce

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	31.552	32.51	-9.83	22.68	40.00	-17.32	QP
2	54.153	41.51	-23.15	18.36	40.00	-21.64	QP
3	81.313	41.07	-24.34	16.73	40.00	-23.27	QP
4	108.958	35.75	-19.79	15.96	43.50	-27.54	QP
5	130.395	30.61	-18.51	12.10	43.50	-31.40	QP
6	194.221	31.35	-20.84	10.51	43.50	-32.99	QP

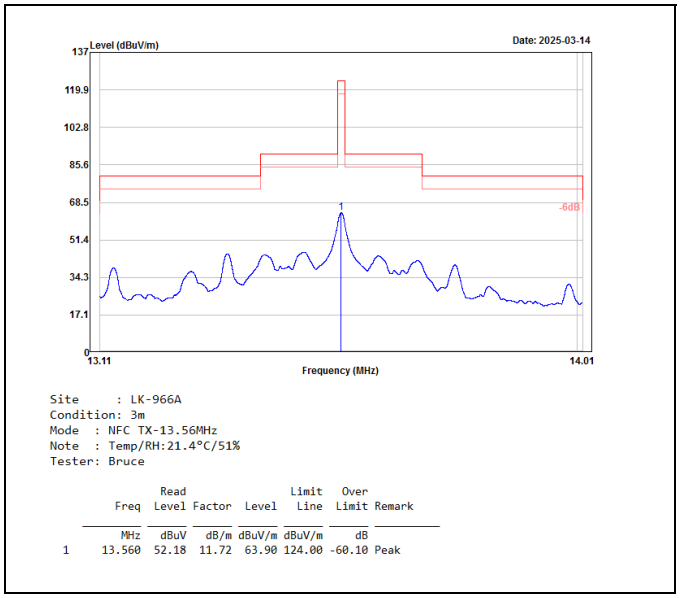
Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

Fundamental:

(Pre-scan using three directional polarities, parallel, perpendicular, and ground-parallel, worst case as parallel.)



Site : LK-966A
Condition: 3m
Mode : NFC TX-13.56MHz
Note : Temp/RH:21.4°C/51%
Tester: Bruce

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	
1	13.560	52.18	11.72	63.90	124.00	-60.10	Peak

Level = Reading + Factor.

Margin = Level – Limit.

Factor = Antenna Factor + Cable Loss – Amplifier Gain.

9 FCC §15.225(e) –FREQUENCY STABILITY

9.1 Applicable Standard

According to FCC §15.225(e),

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to + 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery

9.2 Test Procedure

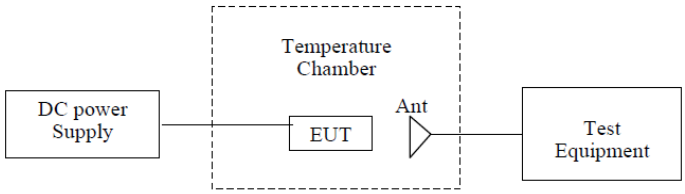
According to ANSI C63.10-2013 Section 6.8

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power.

The EUT was placed inside the temperature chamber.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to the end point of the battery. The output frequency was recorded for each voltage.



9.3 Test Results

Test Mode: Transmitting

Temperature (℃)	Voltage (Vdc)	Measured Frequency (MHz)	Frequency Error (%)	Limit (%)	Result
-20	12	13.56053	0.00391	±0.01	Pass
-10	12	13.56045	0.00332	±0.01	Pass
0	12	13.56047	0.00347	±0.01	Pass
10	12	13.56048	0.00354	±0.01	Pass
20	12	13.56042	0.00310	±0.01	Pass
30	12	13.56034	0.00251	±0.01	Pass
40	12	13.56041	0.00302	±0.01	Pass
50	12	13.56040	0.00295	±0.01	Pass
20	10.2	13.56051	0.00376	±0.01	Pass
	12	13.56042	0.00310	±0.01	Pass
	13.8	13.56041	0.00302	±0.01	Pass

10 FCC §15.215(c) – 20 dB Emission Bandwidth

10.1 Applicable Standard

According to FCC §15.215(c)

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. In the case of intentional radiators operating under the provisions of subpart E, the emission bandwidth may span across multiple contiguous frequency bands identified in that subpart. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

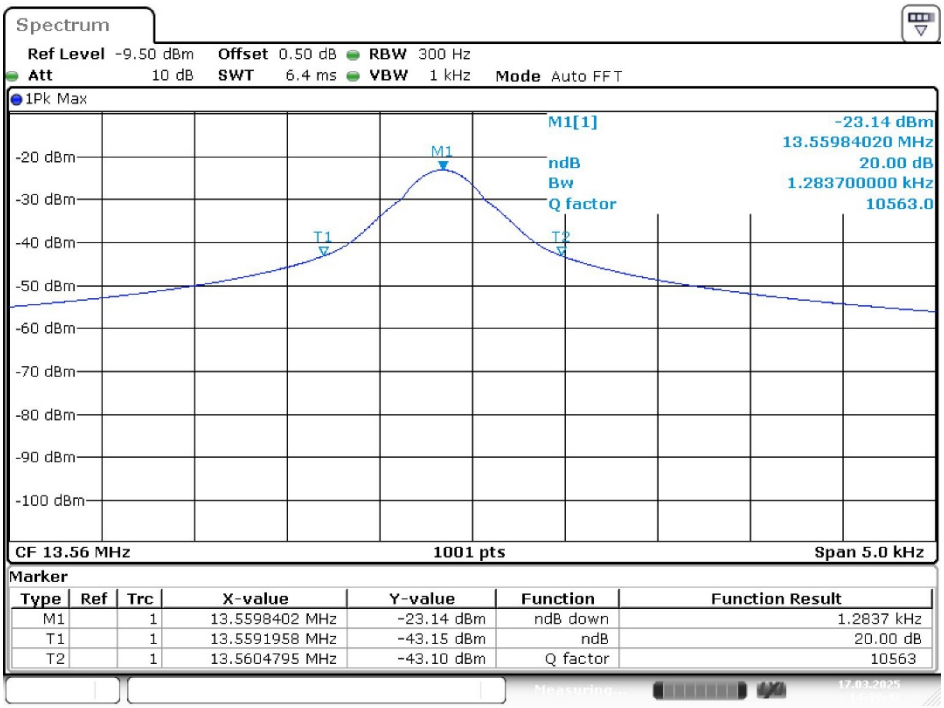
10.2 Test Procedure

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.

10.3 Test Results

Frequency (MHz)	20 dB Emission Bandwidth (kHz)
13.56	1.283

20 dB Emission Bandwidth



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