TEST REPORT

Applicant:	Jiangmen Dascom Computer Peripherals Co., Ltd.
Address:	No 399, Jin Xing Road, Jiang Hai District, Jiangmen City Guang Dong Province, China
Equipment Type:	Professional Thermal Printer
Model Name:	DL-2000 (refer to section 2.3)
Brand Name:	Tally DASCOM DASCOM
FCC ID:	Z7ODL2110
Test Standard:	47 CFR Part 15 Subpart C (refer to section 3.1)
Sample Arrival Date:	Mar. 07, 2025
Test Date:	Aug. 26, 2025 - Sep. 02, 2025
Date of Issue:	Nov. 28, 2025

ISSUED BY:

Shenzhen BALUN Technology Co., Ltd.

Tested by: Li Ganming	**Checked by:** Ye Hongji	**Approved by:** Sunny Zou (Technical Director)
Li Ganming	Ye Hongji	Sunny Zou

Revision History

Version	Issue Date	Revisions
Rev. 01	Nov. 28, 2025	Updated the FCC ID. This report replaces BL-SZ2510959-601 which issued by BALUN on Oct. 22, 2025, the original report is invalid.

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1 GENERAL INFORMATION

1.1 Test Laboratory

Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Test Location

Name	Shenzhen BALUN Technology Co., Ltd.
Location	☑ Block B, 1/F, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
	☐ 1/F, Building B, Ganghongji High-tech Intelligent Industrial Park, No. 1008, Songbai Road, Yangguang Community, Xili Sub-district, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1352.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Jiangmen Dascom Computer Peripherals Co., Ltd.
Address	No 399, Jin Xing Road, Jiang Hai District, Jiangmen City Guang Dong Province, China

2.2 Manufacturer Information

Manufacturer	Jiangmen Dascom Computer Peripherals Co., Ltd.
Address	No 399, Jin Xing Road, Jiang Hai District, Jiangmen City Guang Dong Province, China

2.3 General Description for Equipment under Test (EUT)

EUT Name	Professional Thermal Printer
Model Name Under Test	DL-2000
Series Model Name	DL-2100, DL-2110, DL-2100R, DL-2110R
Description of Model name differentiation	All models are same with electrical parameters and internal circuit structure, but only differ in model name. (this information provided by the applicant)
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.4 Technical Information

Network and Wireless connectivity	RFID

The requirement for the following technical information of the EUT was tested in this report:

Modulation Technology	Frequency hopping system
Modulation Type	RFID
Product Type	☒ Mobile ☐ Portable ☐ Fix Location
Frequency Range	The frequency range used is 902 MHz to 928 MHz.
Number of channel	50
Tested Channel	1 (902.75 MHz), 25 (914.75 MHz), 50 (927.25 MHz)
Antenna Type	PCB Antenna
Antenna Gain	-35.0 dBi
Antenna System (MIMO Smart Antenna)	N/A

All channel was listed on the following table:

Channel Number	Freq. (MHz)	Channel Number	Freq. (MHz)	Channel Number	Freq. (MHz)	Channel Number	Freq. (MHz)
1	**902.75**	14	909.25	27	915.75	40	922.25
2	903.25	15	909.75	28	916.25	41	922.75
3	903.75	16	910.25	29	916.75	42	923.25
4	904.25	17	910.75	30	917.25	43	923.75
5	904.75	18	911.25	31	917.75	44	924.25
6	905.25	19	911.75	32	918.25	45	924.75
7	905.75	20	912.25	33	918.75	46	925.25
8	906.25	21	912.75	34	919.25	47	925.75
9	906.75	22	913.25	35	919.75	48	926.25
10	907.25	23	913.75	36	920.25	49	926.75
11	907.75	24	914.25	37	920.75	**50**	**927.25**
12	908.25	**25**	**914.75**	38	921.25	/	/
13	908.75	26	915.25	39	921.75	/	/

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C	Intentional radiators of radio frequency equipment
2	KDB Publication 558074 D01v05r02	GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Test Verdict

No.	Description	FCC Part No.	Modulation Technology	Channel	Test Result	Verdict
1	Antenna Requirement	15.203	N/A	N/A	--	Pass[Note]
2	Number of Hopping Frequencies	15.247(a)	Frequency hopping system	Hopping Mode	ANNEX A.1	Pass
3	Peak Output Power	15.247(b)	Frequency hopping system	Low/Middle/High	ANNEX A.2	Pass
4	Occupied Bandwidth	15.247(a)	Frequency hopping system	Low/Middle/High	ANNEX A.3	Pass
5	Carrier Frequency Separation	15.247(a)	Frequency hopping system	Hopping Mode	ANNEX A.4	Pass
6	Time of Occupancy (Dwell time)	15.247(a)	Frequency hopping system	Hopping Mode	ANNEX A.5	Pass
7	Conducted Spurious Emission & Authorized-band band-edge	15.247(d)	Frequency hopping system	Low/Middle/High, Hopping Mode	ANNEX A.6	Pass
8	Conducted Emission	15.207	Frequency hopping system	Low/Middle/High	ANNEX A.7	Pass
9	Radiated Spurious Emission	15.209 15.247(d)	Frequency hopping system	Low/Middle/High, Hopping Mode	ANNEX A.8	Pass
10	Band Edge(Restricted-band band-edge)	15.209 15.247(d)	Frequency hopping system	Low/Middle/High, Hopping Mode	ANNEX A.9	Pass
Note: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.						

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	46% to 69%	
Atmospheric Pressure	98 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+20.9℃ to +24.9℃
Working Voltage of the EUT	NV (Normal Voltage)	24.0 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	KEYSIGHT	N9020A	MY50330200	2025.04.28	2026.04.27
Power Sensor	KEYSIGHT	U2063XA	MY58000247	2025.06.16	2026.06.15
Signaling Unit	ROHDE&SCHWARZ	CMW500	171150	2025.04.28	2026.04.27
Test Antenna-Horn	SCHWARZBECK	BBHA 9120D	01631	2025.02.22	2028.02.21
Test Antenna-Horn	A-INFO	LB-180400KF	J211060273	2024.06.15	2027.06.14
Anechoic Chamber	RAINFORD	9m*6m*6m	144	2022.02.19	2025.09.03
Amplifier	COM-MV	LSCX_LNA1-12G-01	180602	2025.06.17	2026.06.16
Amplifier	COM-MV	XKu_LNA7-18G-01	180601	2025.06.17	2026.06.16
Amplifier	COM-MV	KA LNA18 40G-01	18050001	2024.12.05	2025.12.04
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2025.06.16	2026.06.15
Test Antenna-Bi-Log	SCHWARZBECK	VULB 9168	9168-01162	2023.08.04	2026.08.03
Test Antenna-Loop	SCHWARZBECK	FMZB 1519	1519-037	2024.01.23	2027.01.22
Amplifier	COM-MV	ZT30-1000M	B2018054558	2024.11.28	2025.11.27
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60*7.35m	130	2024.07.13	2027.07.12
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2025.06.16	2026.06.15
LISN	SCHWARZBECK	NSLK 8127	8127-687	2025.04.29	2026.04.28
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.5m*3.1m*2.8m	112	2025.02.14	2028.02.13

4.3 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

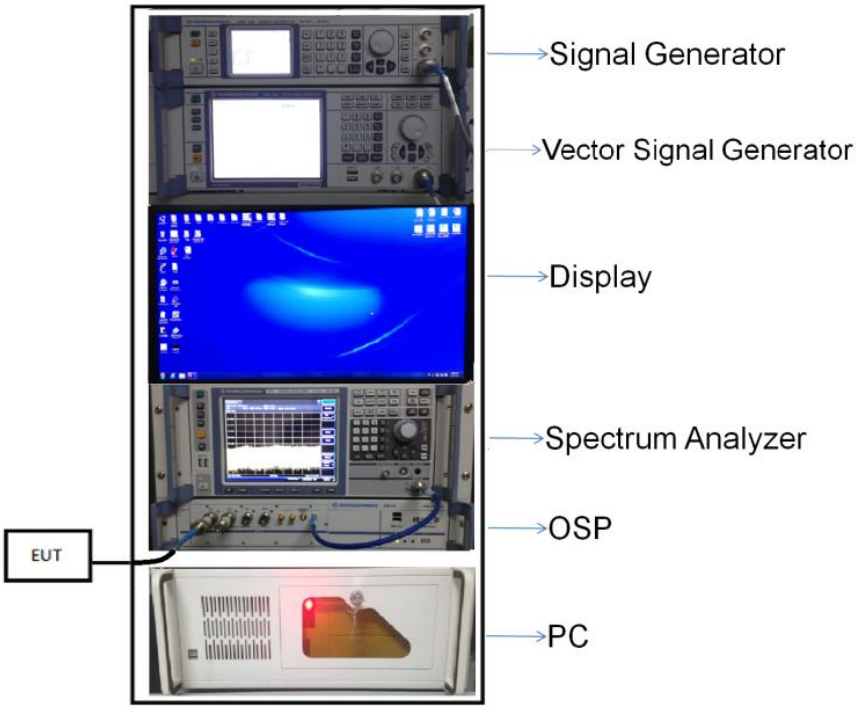
Parameters	Uncertainty
Occupied Channel Bandwidth	2.8%
RF output power, conducted	1.28 dB
Power Spectral Density, conducted	1.30 dB
Unwanted Emissions, conducted	1.84 dB
All emissions, radiated	5.36 dB
Temperature	0.8°C
Humidity	4%

4.4 Description of Test Setup

4.4.1 For Antenna Port Test

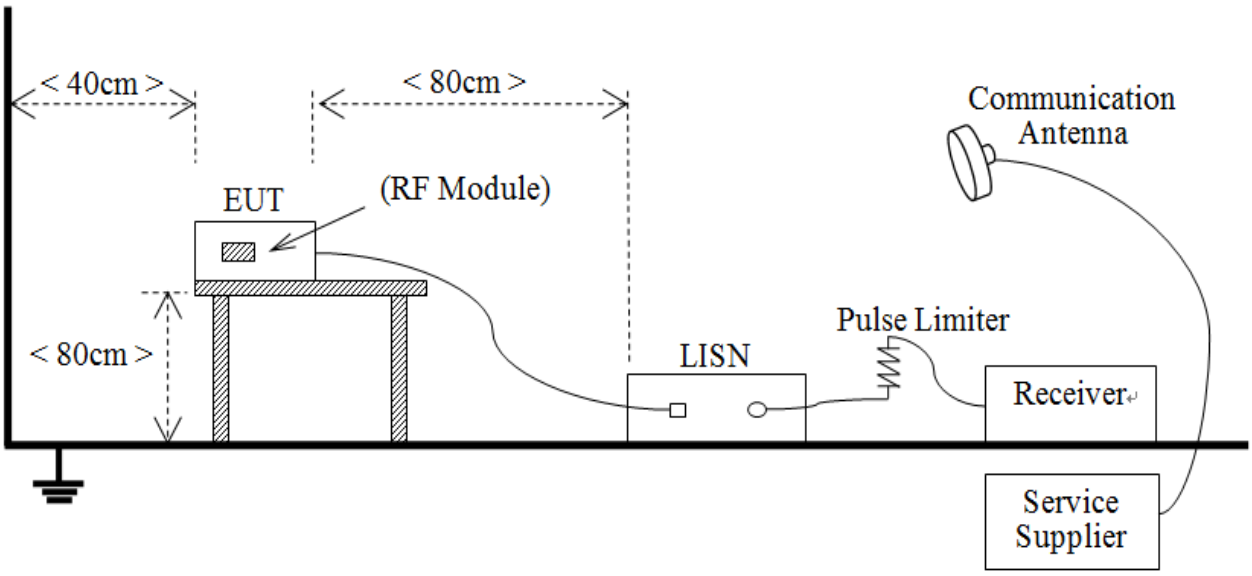
Conducted value (dBm) = Measurement value (dBm) + cable loss (dB)

For example: the measurement value is 10 dBm and the cable 0.5dBm used, then the final result of EUT:
Conducted value (dBm) = 10 dBm + 0.5 dB = 10.5 dBm



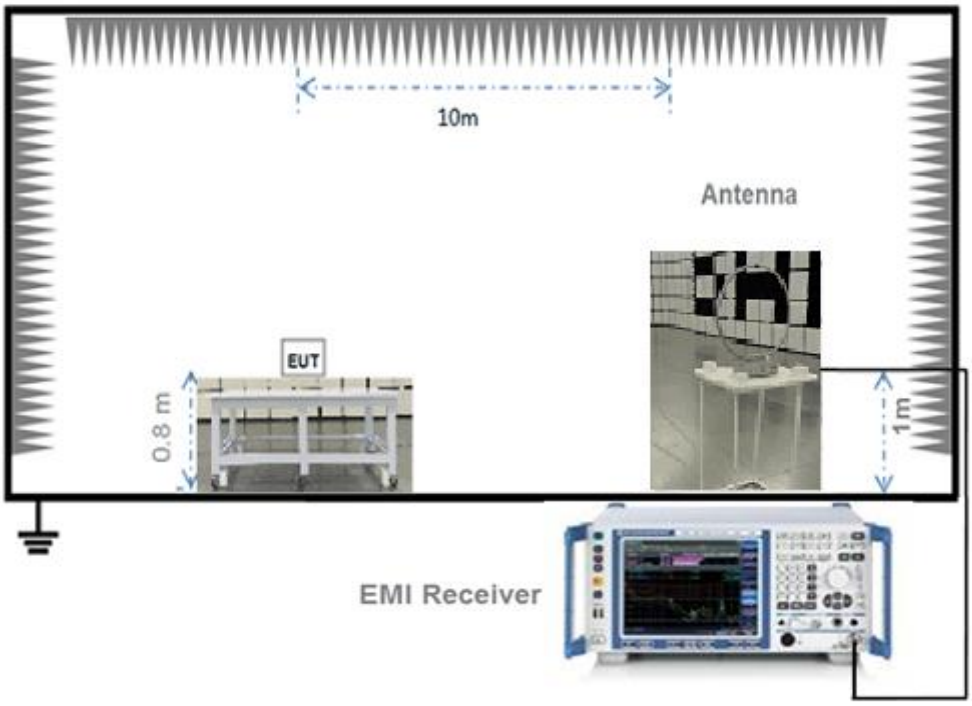
(Diagram 1)

4.4.2 For AC Power Supply Port Test



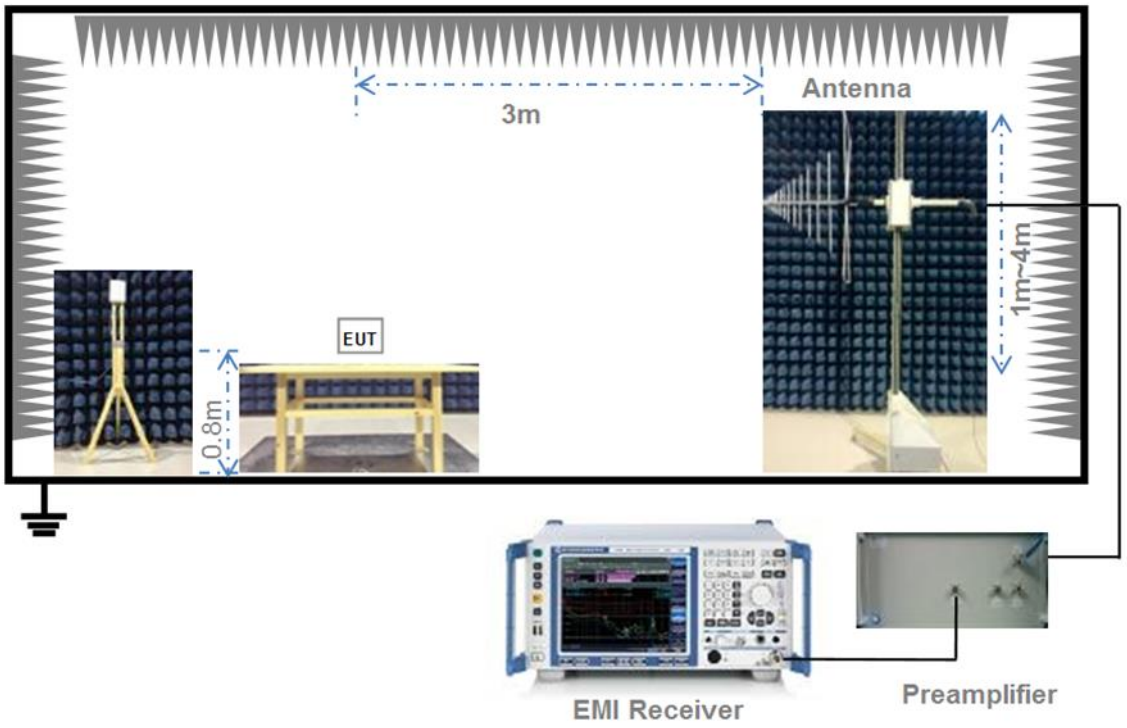
(Diagram 2)

4.4.3 For Radiated Test (Below 30 MHz)



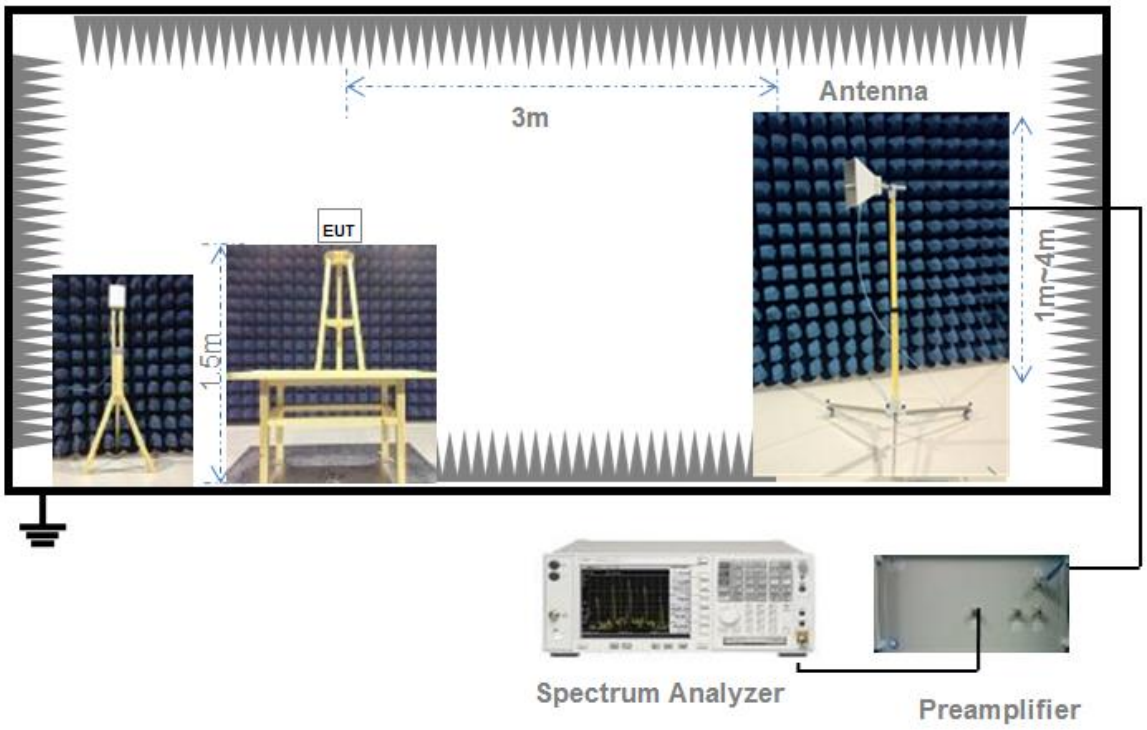
(Diagram 3)

4.4.4 For Radiated Test (30 MHz-1 GHz)



(Diagram 4)

4.4.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

4.5 Measurement Results Explanation Example

4.5.1 For conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Relevant Standards

FCC §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 use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product	The antenna is welded on the mainboard, can’t be replaced by the consumer

Reference Documents	Item
Photo	Please refer to the EUT Photo documents.

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 Number of Hopping Frequencies

5.2.1 Limit

FCC §15.247(a)

For FHSs in the band 902-928 MHz: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 20-second period. If the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping channels and the average time of occupancy on any channel shall not be greater than 0.4 seconds within a 10-second period. The maximum 20 dB bandwidth of the hopping channel shall be 500 kHz.

5.2.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW ≥ 1% of the span

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize

5.2.4 Test Result

Please refer to ANNEX A.1.

5.3 Peak Output Power

5.3.1 Test Limit

FCC § 15.247(b)

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

5.3.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

The Module operates at hopping-off test mode. The lowest, middle and highest channels are selected to perform testing to verify the conducted RF output peak power of the Module.

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW > the 20 dB bandwidth of the emission being measured

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize.

5.3.4 Test Result

Please refer to ANNEX A.2.

5.4 Occupied Bandwidth

5.4.1 Limit

FCC §15.247(a)

5.4.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW = in the range of 1% to 5% of the OBW

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

The EUT should be transmitting at its maximum data rate, Allow the trace to stabilize.

5.4.4 Test Result

Please refer to ANNEX A.3.

5.5 Carrier Frequency Separation

5.5.1 Limit

FCC §15.247(a)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

5.5.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = wide enough to capture the peaks of two adjacent channels

Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span

Video (or Average) Bandwidth (VBW) ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

5.5.4 Test Result

Please refer to ANNEX A.4.

5.6 Time of Occupancy (Dwell time)

5.6.1 Limit

FCC §15.247(a)

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

5.6.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.6.3 Test Procedure

The lowest, middle and highest channels are selected to perform testing to record the dwell time of each occupation measured in this channel, which is called Pulse Time here.

5.6.4 Test Result

Please refer to ANNEX A.5.

5.7 Conducted Spurious Emission & Authorized-band band-edge

5.7.1 Limit

FCC §15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

5.7.2 Test Setup

See section 4.4.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.7.3 Test Procedure

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
RBW = 100 kHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize

5.7.4 Test Result

Please refer to ANNEX A.6.

5.8 Conducted Emission

5.8.1 Limit

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 within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.8.2 Test Setup

See section 4.4.2 for test setup description for the AC power supply port. The photo of test setup please refer to ANNEX B.

5.8.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.
Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.8.4 Test Result

Please refer to ANNEX A.7.

5.9 Radiated Spurious Emission

5.9.1 Limit

FCC §15.209&15.247(d)

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

According to FCC section 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 (μV/m)	Measurement Distance (m)
0.009 - 0.490	902/F(kHz)	300
0.490 - 1.705	9020/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

Note:

1. Field Strength (dBμV/m) = 20*log[Field Strength (μV/m)].
2. In the emission tables above, the tighter limit applies at the band edges.
3. For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.
4. For above 1000 MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.9.2 Test Setup

See section 4.4.3 to 4.4.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.9.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

5.9.4 Test Result

Please refer to ANNEX A.8.

5.10 Band Edge (Restricted-band band-edge)

5.10.1 Limit

FCC §15.209&15.247(d)

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

5.10.2 Test Setup

See section 4.4.3 to 4.4.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.10.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

5.10.4 Test Result

Please refer to ANNEX A.9.

ANNEX A TEST RESULT

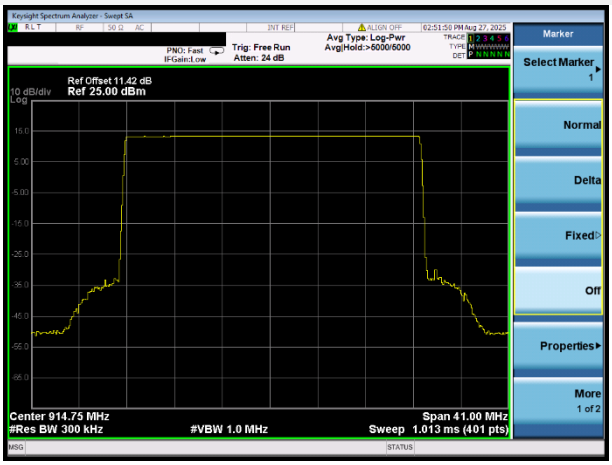
A.1 Number of Hopping Frequency

Test Data

Test Mode	Frequency Block (MHz)	Measured Channel Numbers	Min. Limit	Verdict
RFID	902-928	50	50	Pass

Test Plots

RFID



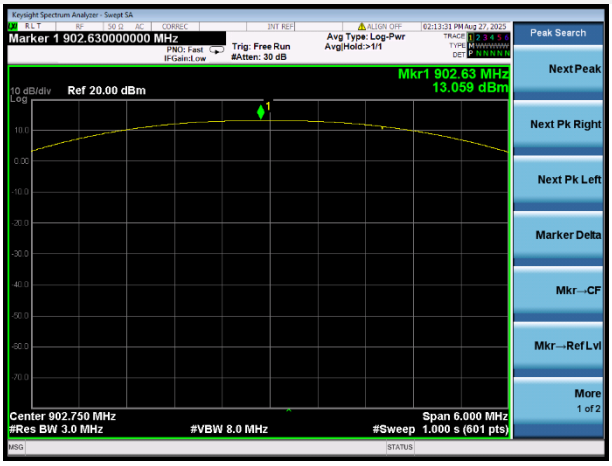
A.2 Peak Output Power

Peak Power Test Data

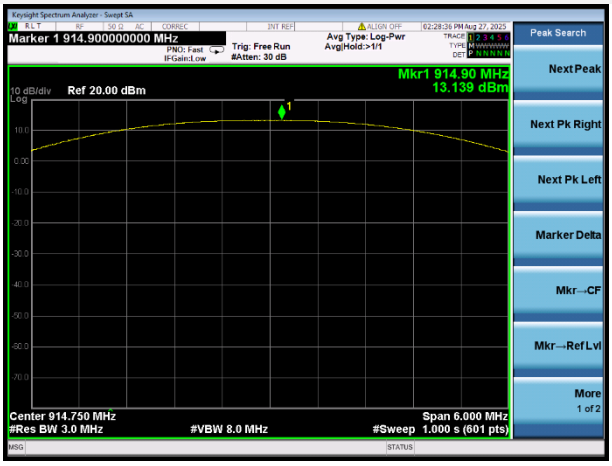
Channel	Measured Output Peak Power		Limit		Verdict
	RFID		dBm	mW	
	dBm	mW			
Low	13.06	20.23	30	1000	Pass
Middle	13.14	20.60			Pass
High	13.23	21.04			Pass

Test Plots

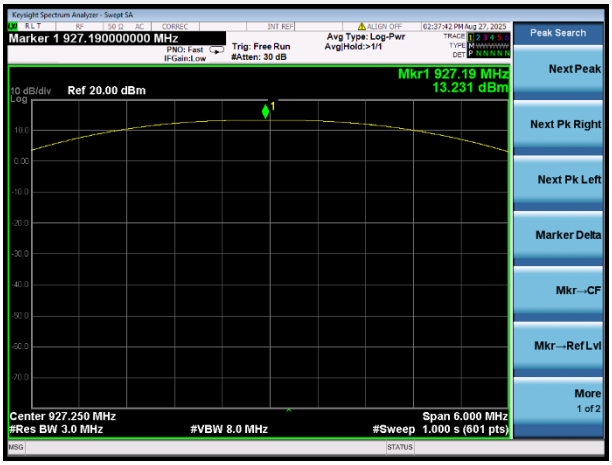
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL



A.3 20 dB and 99% bandwidth

Test Data

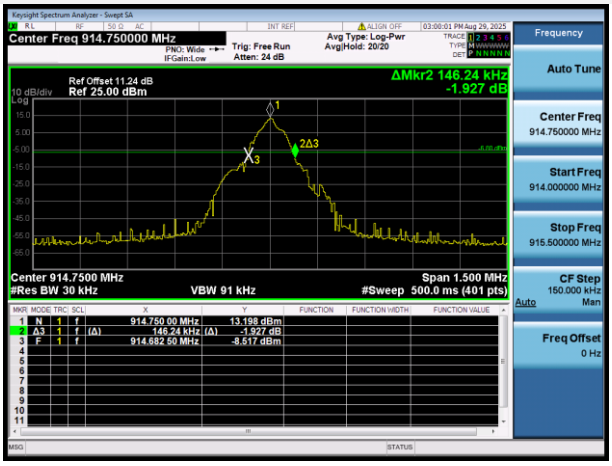
RFID				
Channel	20 dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)	Verdict
Low	0.146240	0.140820	0.250	Pass
Middle	0.146240	0.128070	0.250	Pass
High	0.131230	0.128760	0.250	Pass

Test Plots

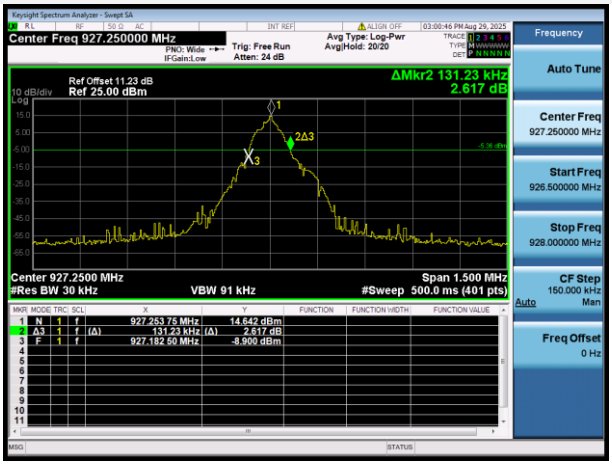
20 dB Bandwidth

LOW CHANNEL

MIDDLE CHANNEL

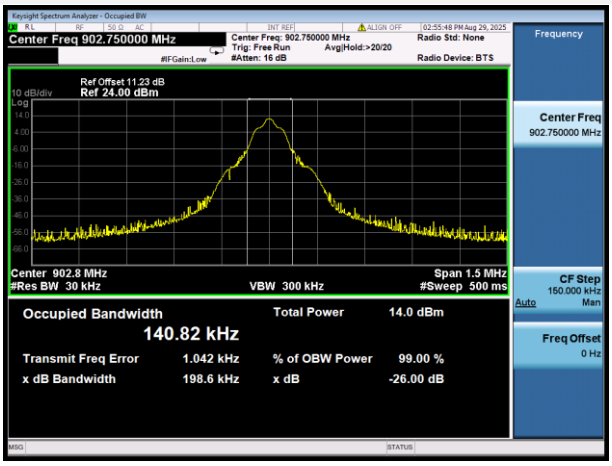


HIGH CHANNEL

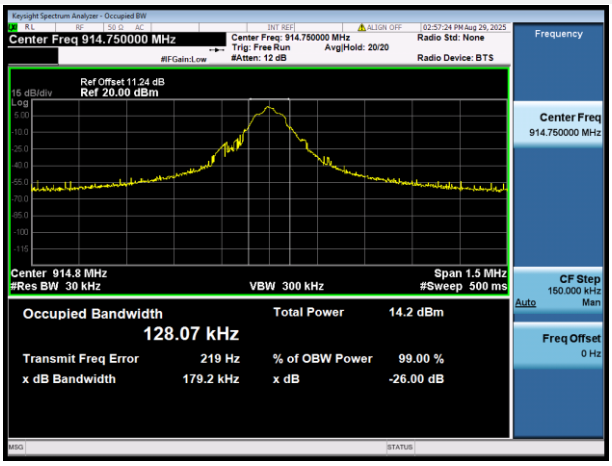


99% Bandwidth

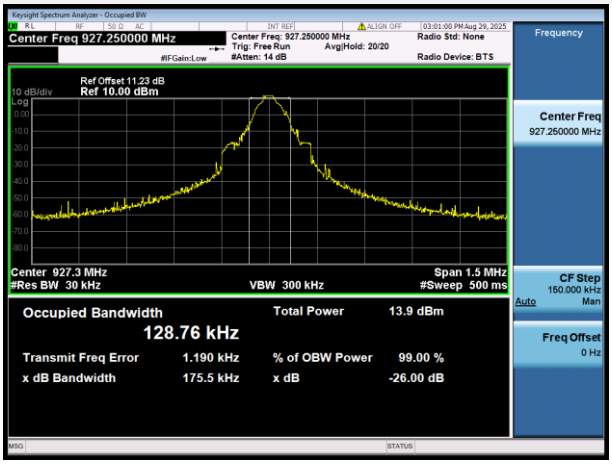
LOW CHANNEL



MIDDLE CHANNEL



HIGH CHANNEL



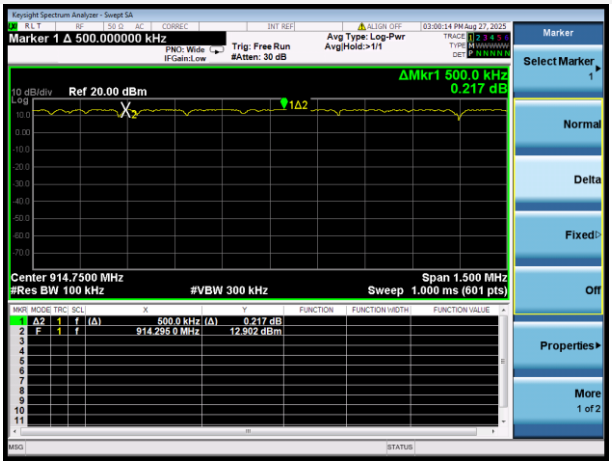
A.4 Hopping Frequency Separation

Test Data

Mode	Frequency separation (MHz)	Max 20 dB Bandwidth (MHz)	Verdict
RFID	0.5	0.146240	Pass

Test Plots

RFID



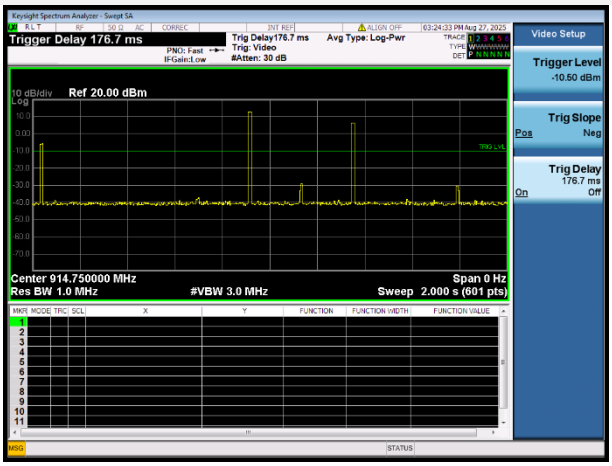
A.5 Average Time of Occupancy

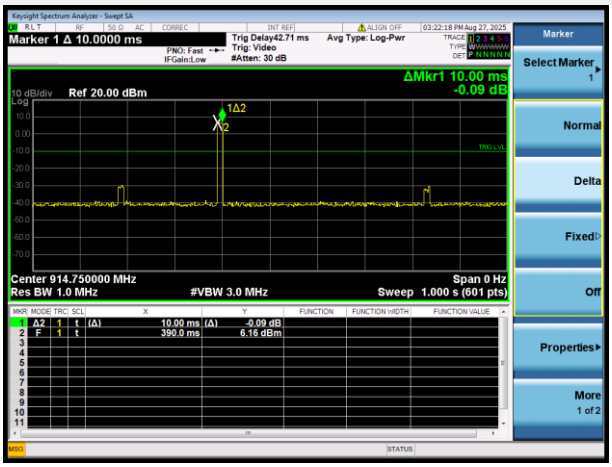
Test Data

Total of Dwell (ms)	Limit (sec)	Verdict
300.000	0.4	Pass

Test Plots

RFID





A.6 Conducted Spurious Emissions & Authorized-band band-edge

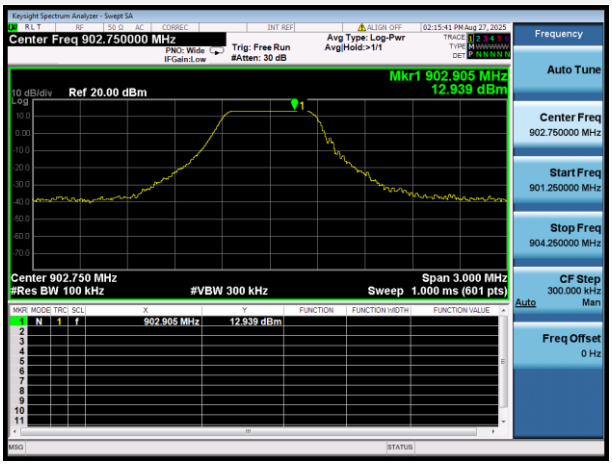
Test Data

RFID				
Channel	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Low	-32.70	12.94	-7.06	Pass
Middle	-31.85	12.96	-7.04	Pass
High	-33.27	13.01	-6.99	Pass

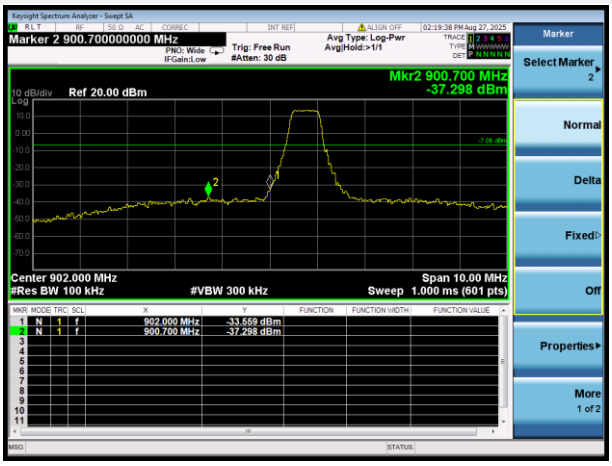
RFID				
Mode	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated 20 dBc Limit	
Hopping	-30.40	13.55	-6.45	Pass

Test Plots

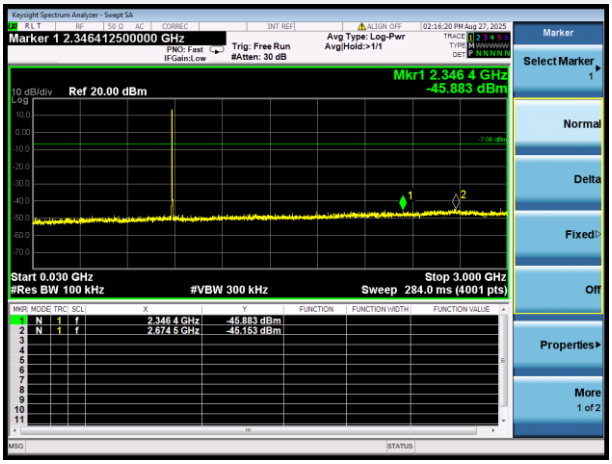
LOW CHANNEL, CARRIER LEVEL



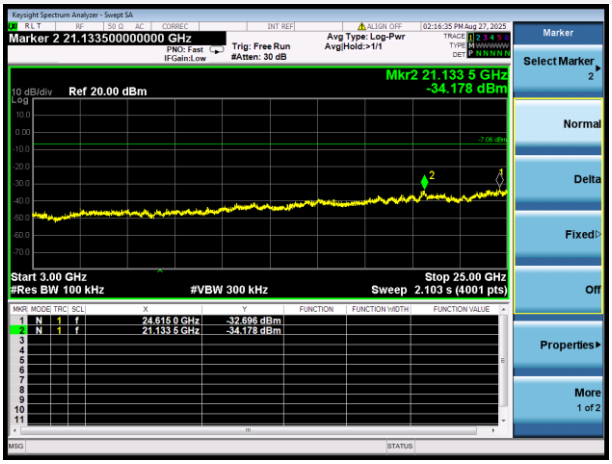
LOW CHANNEL, BAND EDGE



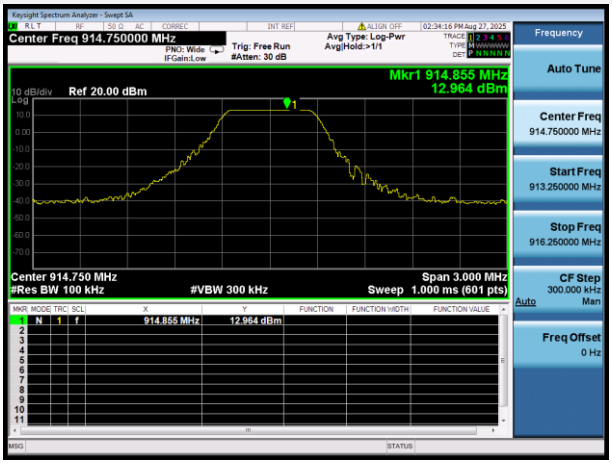
LOW CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



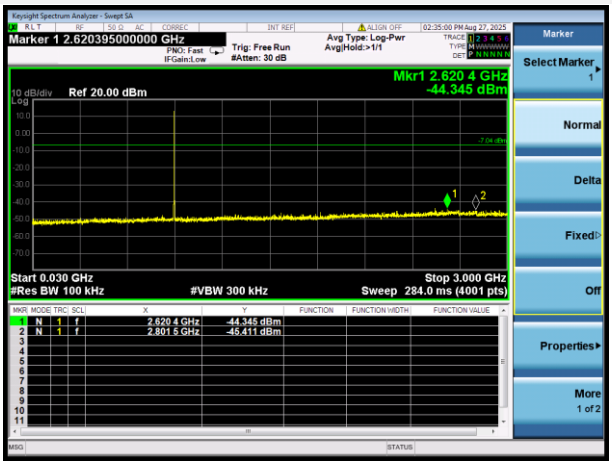
LOW CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



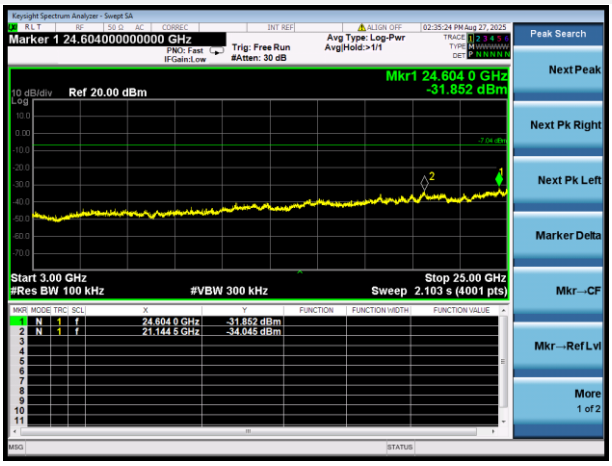
MIDDLE CHANNEL, CARRIER LEVEL



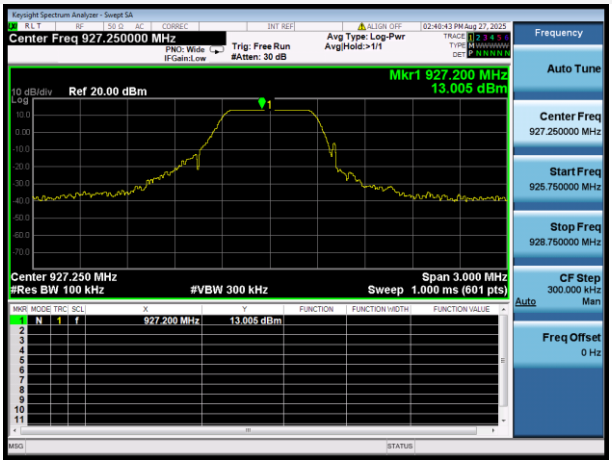
MIDDLE CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



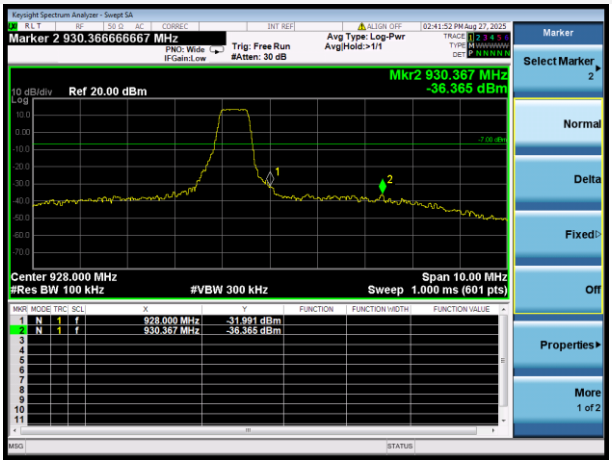
MIDDLE CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



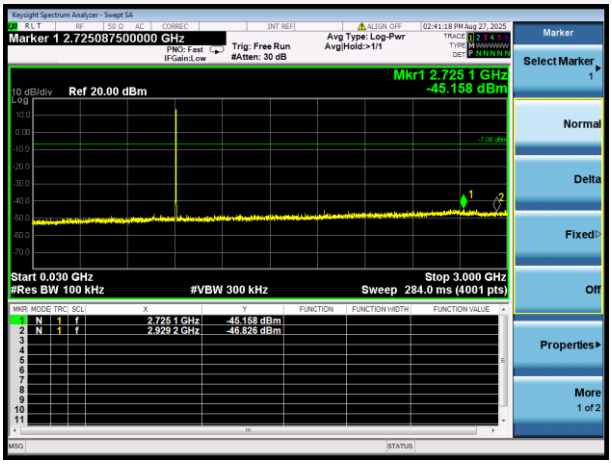
HIGH CHANNEL, CARRIER LEVEL



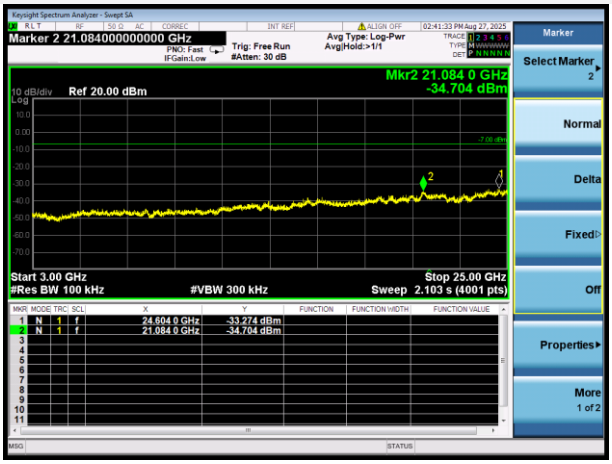
HIGH CHANNEL, BAND EDGE



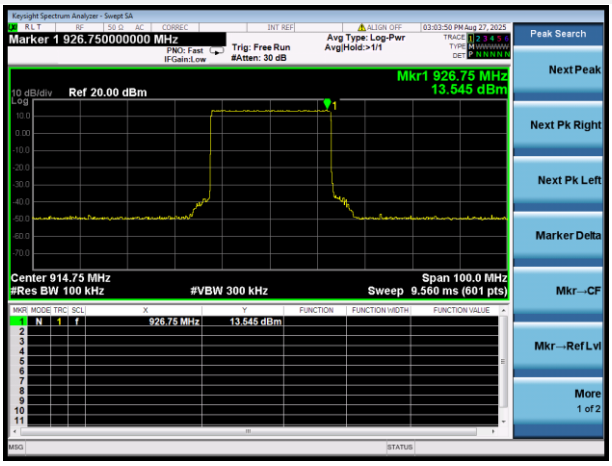
HIGH CHANNEL, SPURIOUS 30 MHz ~ 3 GHz



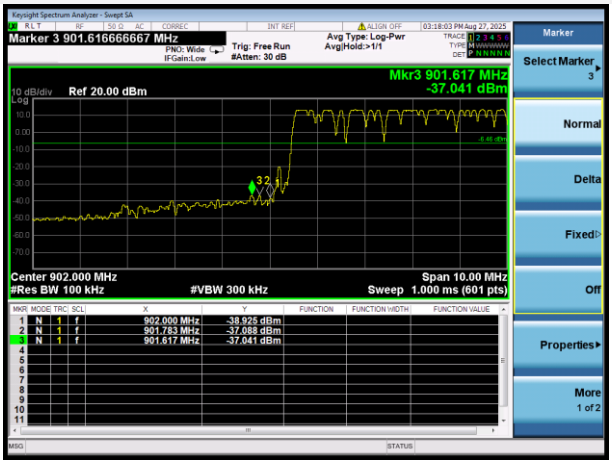
HIGH CHANNEL, SPURIOUS 3 GHz ~ 25 GHz



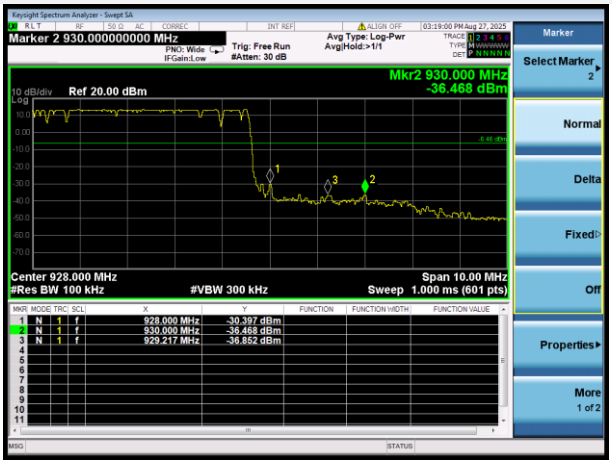
HOPPING, CARRIER LEVEL



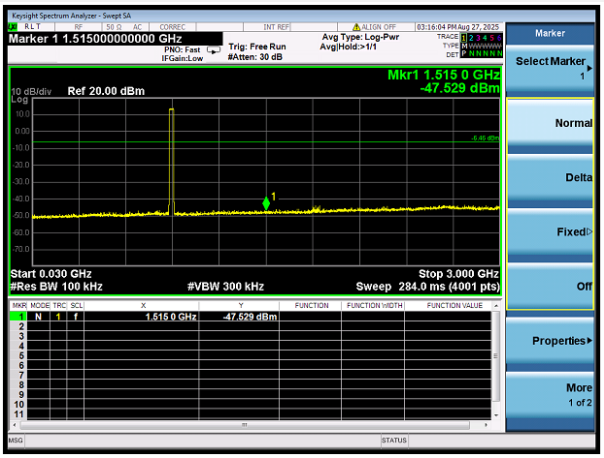
HOPPING BAND EDGE (LOW)



HOPPING BAND EDGE (HIGH)



Hopping Mode, SPURIOUS 30 MHz ~ 3 GHz



Hopping Mode, SPURIOUS 3GHz ~ 25 GHz

A.7 Conducted Emissions

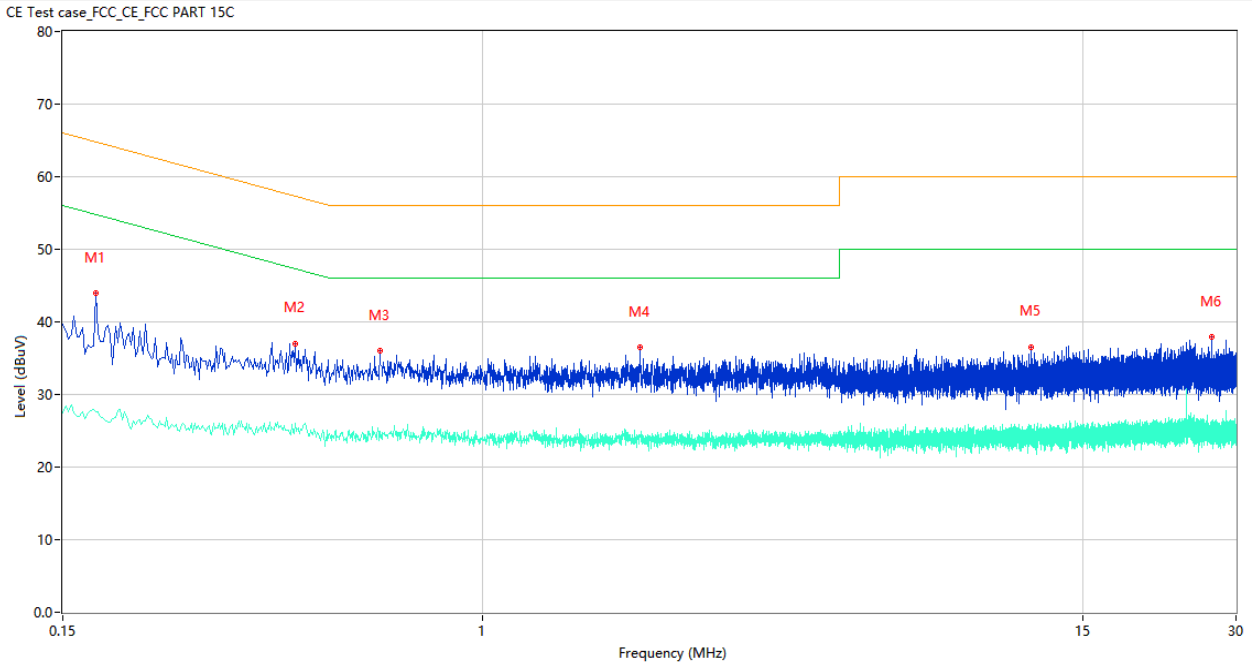
Note [1]: The EUT is working in the Normal link mode. All modes have been tested and normal link mode is worst.

Note [2]: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Note [3]: Results (dBuV) = Original reading level of Spectrum Analyzer (dBuV) + Factor (dB)

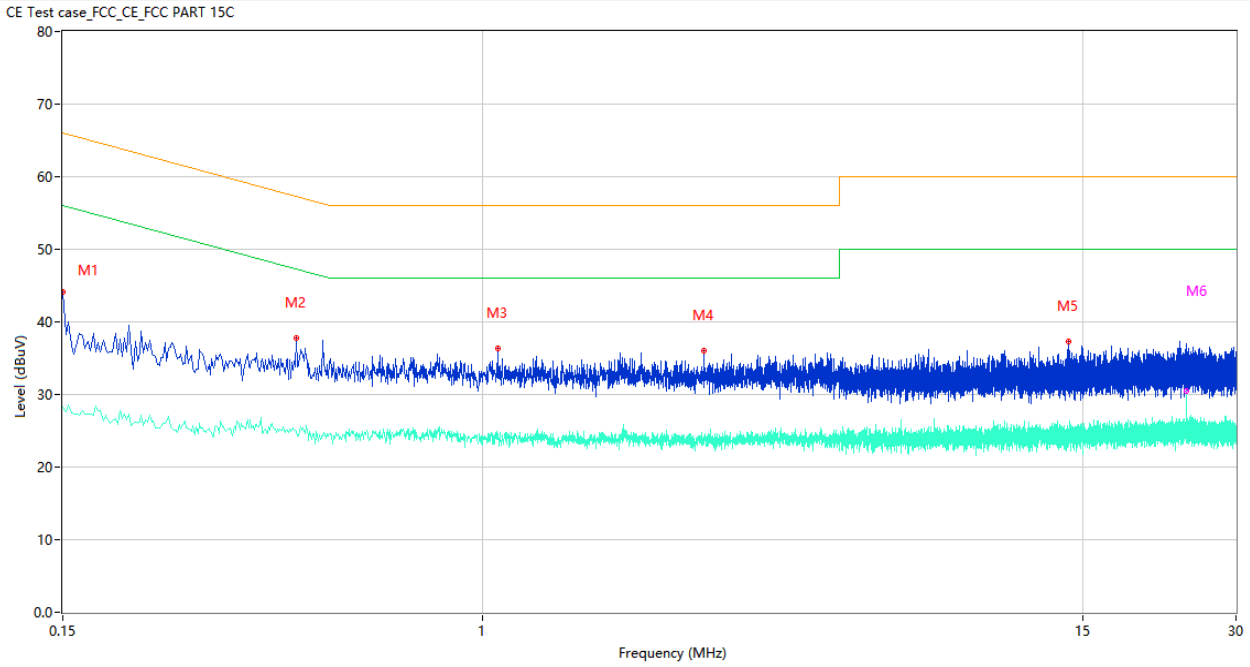
Test Data and Plots

PHASE L



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.174	43.91	9.78	64.77	20.86	Peak	L	Pass
1**	0.174	27.67	9.78	54.77	27.10	AV	L	Pass
2	0.428	37.02	10.26	57.29	20.27	Peak	L	Pass
2**	0.428	25.98	10.26	47.29	21.31	AV	L	Pass
3	0.628	36.03	10.19	56.00	19.97	Peak	L	Pass
3**	0.628	24.37	10.19	46.00	21.63	AV	L	Pass
4	2.038	36.48	10.44	56.00	19.52	Peak	L	Pass
4**	2.038	24.47	10.44	46.00	21.53	AV	L	Pass
5	11.888	36.43	10.77	60.00	23.57	Peak	L	Pass
5**	11.888	25.11	10.77	50.00	24.89	AV	L	Pass
6	26.872	37.92	10.87	60.00	22.08	Peak	L	Pass
6**	26.872	25.01	10.87	50.00	24.99	AV	L	Pass

PHASE N



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.150	44.07	9.78	66.00	21.93	Peak	N	Pass
1**	0.150	28.21	9.78	56.00	27.79	AV	N	Pass
2	0.430	37.72	10.24	57.25	19.53	Peak	N	Pass
2**	0.430	24.86	10.24	47.25	22.39	AV	N	Pass
3	1.068	36.31	10.10	56.00	19.69	Peak	N	Pass
3**	1.068	23.88	10.10	46.00	22.12	AV	N	Pass
4	2.714	35.99	10.09	56.00	20.01	Peak	N	Pass
4**	2.714	23.63	10.09	46.00	22.37	AV	N	Pass
5	14.110	37.24	10.62	60.00	22.76	Peak	N	Pass
5**	14.110	24.19	10.62	50.00	25.81	AV	N	Pass
6	24.026	35.94	10.88	60.00	24.06	Peak	N	Pass
6**	24.026	30.44	10.88	50.00	19.56	AV	N	Pass

A.8 Radiated Spurious Emission

Note [1]: The symbol of "--" in the table which means not application.

Note [2]: For the test data above 1 GHz, according the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note [3]: Results (dBuV/m) = Original reading level of Spectrum Analyzer (dBuV/m) + Factor (dB)

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

Test Data

LOW CHANNEL 30 MHz to 1 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	53.083	21.69	40.0	18.31	Peak	221.00	100	Horizontal	Pass
2	138.440	22.32	43.5	21.18	Peak	221.00	100	Horizontal	Pass
3	220.957	33.26	43.5	10.24	Peak	25.00	200	Horizontal	Pass
4	254.327	22.55	43.5	20.95	Peak	25.00	200	Horizontal	Pass
5	458.400	29.60	46.0	16.40	Peak	230.00	200	Horizontal	Pass
6	743.556	34.10	46.0	11.90	Peak	230.00	200	Horizontal	Pass

LOW CHANNEL 30 MHz to 1 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	57.526	20.90	40.0	19.10	Peak	176.00	400	Vertical	Pass
2	138.639	29.50	43.5	14.00	Peak	176.00	400	Vertical	Pass
3	156.957	24.93	43.5	18.57	Peak	210.00	400	Vertical	Pass
4	409.405	28.42	46.0	17.58	Peak	210.00	400	Vertical	Pass
5	639.956	30.99	46.0	15.01	Peak	259.00	200	Vertical	Pass
6	777.729	39.48	46.0	6.52	Peak	259.00	200	Vertical	Pass

MIDDLE CHANNEL 30 MHz to 1 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	51.832	20.83	40.0	19.17	Peak	125.00	400	Horizontal	Pass
2	138.747	23.61	43.5	19.89	Peak	125.00	400	Horizontal	Pass
3	221.748	35.05	43.5	8.45	Peak	59.00	300	Horizontal	Pass
4	260.499	24.93	43.5	18.57	Peak	59.00	300	Horizontal	Pass
5	459.343	27.72	46.0	18.28	Peak	334.00	200	Horizontal	Pass
6	748.031	32.18	46.0	13.82	Peak	334.00	200	Horizontal	Pass

MIDDLE CHANNEL 30 MHz to 1 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	56.400	23.66	40.0	16.34	Peak	298.00	200	Vertical	Pass
2	143.030	30.94	43.5	12.56	Peak	298.00	200	Vertical	Pass
3	155.148	27.80	43.5	15.70	Peak	106.00	300	Vertical	Pass
4	411.083	26.57	46.0	19.43	Peak	106.00	300	Vertical	Pass
5	638.409	29.96	46.0	16.04	Peak	8.00	200	Vertical	Pass
6	775.943	38.60	46.0	7.40	Peak	8.00	200	Vertical	Pass

HIGH CHANNEL 30 MHz to 1 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	51.758	19.83	40.0	20.17	Peak	73.00	400	Horizontal	Pass
2	134.473	23.73	43.5	19.77	Peak	73.00	400	Horizontal	Pass
3	218.441	30.77	43.5	12.73	Peak	317.00	400	Horizontal	Pass
4	258.928	24.08	43.5	19.42	Peak	317.00	400	Horizontal	Pass
5	456.802	28.68	46.0	17.32	Peak	335.00	200	Horizontal	Pass
6	748.073	35.36	46.0	10.64	Peak	335.00	200	Horizontal	Pass

HIGH CHANNEL 30 MHz to 1 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	54.594	21.63	40.0	18.37	Peak	201.00	300	Vertical	Pass
2	143.267	26.05	43.5	17.45	Peak	201.00	300	Vertical	Pass
3	155.684	26.60	43.5	16.90	Peak	349.00	100	Vertical	Pass
4	405.842	24.78	46.0	21.22	Peak	349.00	100	Vertical	Pass
5	636.071	33.33	46.0	12.67	Peak	255.00	200	Vertical	Pass
6	773.309	36.66	46.0	9.34	Peak	255.00	200	Vertical	Pass

Note [1]: The marked spikes near 2400 MHz with circle should be ignored because they are Fundamental signal.

Note [2]: The spurious from 18GHz-25GHz is noise only, do not show on the report.

LOW CHANNEL 1 GHz to 18 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1332.909	40.79	74.0	33.21	Peak	299.00	400	Horizontal	Pass
1**	1332.909	27.67	54.0	26.33	AV	299.00	400	Horizontal	Pass
2	2971.707	49.49	74.0	24.51	Peak	221.00	200	Horizontal	Pass
2**	2971.707	43.28	54.0	10.72	AV	221.00	200	Horizontal	Pass
3	4913.248	50.30	74.0	23.70	Peak	132.00	200	Horizontal	Pass
3**	4913.248	44.45	54.0	9.55	AV	132.00	200	Horizontal	Pass
4	7627.843	55.96	74.0	18.04	Peak	195.00	400	Horizontal	Pass
4**	7627.843	39.12	54.0	14.88	AV	195.00	400	Horizontal	Pass
5	12471.618	50.07	74.0	23.93	Peak	230.00	300	Horizontal	Pass
5**	12471.618	45.33	54.0	8.67	AV	230.00	300	Horizontal	Pass
6	16855.536	53.71	74.0	20.29	Peak	1.00	100	Horizontal	Pass
6**	16855.536	45.21	54.0	8.79	AV	1.00	100	Horizontal	Pass

LOW CHANNEL 1 GHz to 18 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1463.275	42.55	74.0	31.45	Peak	313.00	200	Vertical	Pass
1**	1463.275	32.59	54.0	21.41	AV	313.00	200	Vertical	Pass
2	2990.188	52.12	74.0	21.88	Peak	270.00	200	Vertical	Pass
2**	2990.188	42.23	54.0	11.77	AV	270.00	200	Vertical	Pass
3	4922.581	49.98	74.0	24.02	Peak	134.00	200	Vertical	Pass
3**	4922.581	41.11	54.0	12.89	AV	134.00	200	Vertical	Pass
4	7963.742	55.10	74.0	18.90	Peak	14.00	400	Vertical	Pass
4**	7963.742	43.09	54.0	10.91	AV	14.00	400	Vertical	Pass
5	12441.786	49.82	74.0	24.18	Peak	300.00	100	Vertical	Pass
5**	12441.786	41.01	54.0	12.99	AV	300.00	100	Vertical	Pass
6	17457.009	57.10	74.0	16.90	Peak	55.00	300	Vertical	Pass
6**	17457.009	48.48	54.0	5.52	AV	55.00	300	Vertical	Pass

MIDDLE CHANNEL 1 GHz to 18 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1335.450	43.77	74.0	30.23	Peak	177.00	100	Horizontal	Pass
1**	1335.450	30.27	54.0	23.73	AV	177.00	100	Horizontal	Pass
2	2973.064	49.99	74.0	24.01	Peak	66.00	100	Horizontal	Pass
2**	2973.064	40.06	54.0	13.94	AV	66.00	100	Horizontal	Pass
3	4914.719	49.02	74.0	24.98	Peak	190.00	200	Horizontal	Pass
3**	4914.719	40.71	54.0	13.29	AV	190.00	200	Horizontal	Pass
4	7628.321	55.84	74.0	18.16	Peak	163.00	100	Horizontal	Pass
4**	7628.321	37.46	54.0	16.54	AV	163.00	100	Horizontal	Pass
5	12470.713	55.39	74.0	18.61	Peak	303.00	400	Horizontal	Pass
5**	12470.713	44.69	54.0	9.31	AV	303.00	400	Horizontal	Pass
6	16859.014	57.10	74.0	16.90	Peak	198.00	100	Horizontal	Pass
6**	16859.014	40.47	54.0	13.53	AV	198.00	100	Horizontal	Pass

MIDDLE CHANNEL 1 GHz to 18 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1465.009	44.97	74.0	29.03	Peak	12.00	300	Vertical	Pass
1**	1465.009	28.63	54.0	25.37	AV	12.00	300	Vertical	Pass
2	2989.343	50.07	74.0	23.93	Peak	56.00	100	Vertical	Pass
2**	2989.343	41.95	54.0	12.05	AV	56.00	100	Vertical	Pass
3	4920.855	51.04	74.0	22.96	Peak	197.00	200	Vertical	Pass
3**	4920.855	40.10	54.0	13.90	AV	197.00	200	Vertical	Pass
4	7970.657	57.59	74.0	16.41	Peak	283.00	100	Vertical	Pass
4**	7970.657	44.71	54.0	9.29	AV	283.00	100	Vertical	Pass
5	12445.024	50.31	74.0	23.69	Peak	35.00	300	Vertical	Pass
5**	12445.024	45.60	54.0	8.40	AV	35.00	300	Vertical	Pass
6	17455.666	53.58	74.0	20.42	Peak	153.00	200	Vertical	Pass
6**	17455.666	45.40	54.0	8.60	AV	153.00	200	Vertical	Pass

HIGH CHANNEL 1 GHz to 18 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1337.706	43.33	74.0	30.67	Peak	325.00	100	Horizontal	Pass
1**	1337.706	31.00	54.0	23.00	AV	325.00	100	Horizontal	Pass
2	2972.635	51.13	74.0	22.87	Peak	172.00	200	Horizontal	Pass
2**	2972.635	42.47	54.0	11.53	AV	172.00	200	Horizontal	Pass
3	4913.267	51.89	74.0	22.11	Peak	356.00	200	Horizontal	Pass
3**	4913.267	42.69	54.0	11.31	AV	356.00	200	Horizontal	Pass
4	7629.316	53.80	74.0	20.20	Peak	103.00	300	Horizontal	Pass
4**	7629.316	41.23	54.0	12.77	AV	103.00	300	Horizontal	Pass
5	12472.347	55.57	74.0	18.43	Peak	214.00	100	Horizontal	Pass
5**	12472.347	43.54	54.0	10.46	AV	214.00	100	Horizontal	Pass
6	16858.398	57.01	74.0	16.99	Peak	213.00	200	Horizontal	Pass
6**	16858.398	41.93	54.0	12.07	AV	213.00	200	Horizontal	Pass

HIGH CHANNEL 1 GHz to 18 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1464.006	44.68	74.0	29.32	Peak	359.00	200	Vertical	Pass
1**	1464.006	27.95	54.0	26.05	AV	359.00	200	Vertical	Pass
2	2994.717	50.19	74.0	23.81	Peak	68.00	300	Vertical	Pass
2**	2994.717	40.92	54.0	13.08	AV	68.00	300	Vertical	Pass
3	4921.068	51.86	74.0	22.14	Peak	319.00	200	Vertical	Pass
3**	4921.068	40.02	54.0	13.98	AV	319.00	200	Vertical	Pass
4	7968.884	54.95	74.0	19.05	Peak	120.00	200	Vertical	Pass
4**	7968.884	42.49	54.0	11.51	AV	120.00	200	Vertical	Pass
5	12446.447	51.93	74.0	22.07	Peak	18.00	200	Vertical	Pass
5**	12446.447	44.80	54.0	9.20	AV	18.00	200	Vertical	Pass
6	17460.624	58.43	74.0	15.57	Peak	304.00	400	Vertical	Pass
6**	17460.624	46.27	54.0	7.73	AV	304.00	400	Vertical	Pass

A.9 Band Edge (Restricted-band band-edge)

Note [1]: The lowest and highest channels are tested to verify the band edge emissions. Please refer to the following the plots for emissions values.

Note [2]: The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.

Note [3]: According the ANSI C63.10-2013, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Note [4]: The Level (dBuV/m) has been corrected by factor.

Test Data

608 MHz to 614 MHz

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	610.570	43.08	54.0	10.92	Peak	82.00	200	Horizontal	Pass
2	612.780	41.47	54.0	12.53	Peak	255.00	100	Horizontal	Pass

960 MHz to 1 GHz

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	959.851	43.05	54.0	10.95	Peak	267.00	200	Horizontal	Pass
2	962.013	46.62	54.0	7.38	Peak	100.00	300	Horizontal	Pass

1 GHz to 1.24 GHz

No.	Frequency (MHz)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1008.237	44.59	54.0	9.41	Peak	86.00	100	Horizontal	Pass
2	1163.720	46.91	54.0	7.09	Peak	326.00	200	Horizontal	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2510959-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2510959-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2510959-AI.PDF”.

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