FCC RADIO TEST REPORT

FCC ID	:	**SWX-USLGGH**
Equipment	:	**SuperLink Gateway HA**
Brand Name	:	**UBIQUITI**
Model Name	:	**USL-G2-Gateway-HA**
Applicant	:	**Ubiquiti Inc.** **685 Third Avenue, New York, New York 10017, USA**
Manufacturer	:	**Ubiquiti Inc.** **685 Third Avenue, New York, New York 10017, USA**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on Sep. 16, 2025 and testing was performed from Sep. 18, 2025 to Oct. 13, 2025. We, Sporton International Inc. EMC & Wireless Communications Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issue Date
FR581203B	01	Initial issue of report	Jul. 01, 2026

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(a)(1)	Number of Channels	Pass	-
3.2	15.247(a)(1)	Hopping Channel Separation	Pass	-
3.3	15.247(a)(1)	Dwell Time of Each Channel	Pass	-
3.4	15.247(a)(1)	20dB Bandwidth	Pass	-
3.4	2.1049	99% Occupied Bandwidth	Pass	-
3.5	15.247(b)(2)	Output Power	Pass	-
3.6	15.247(d)	Conducted Band Edges	Pass	-
3.7	15.247(d)	Conducted Spurious Emission	Pass	-
3.8	15.247(d)	Radiated Spurious Emission	Pass	-
3.9	15.207	AC Conducted Emission	Pass	-
3.10	15.203 15.247(b)	Antenna Requirement	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Danny Lee

Report Producer: Shannon Huang

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature
General Specs LTE, Bluetooth LE, LoRa, and Thread. **Antenna Type** LoRa: Monopole Antenna

Antenna information		
915 MHz ~ 928 MHz	Peak Gain (dBi)	1.0

Remark: The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

Specification of Accessory		
Battery	**Brand Name**	Mic-power
	Model Name	MT24J01

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	CO05-HY, 03CH07-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	TH05-HY (TAF Code: 3786)
Remark	The Conducted test items subcontracted to Sporton International Inc. Wensan Laboratory

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190 and TW3786

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02
- FCC KDB 414788 D01 Radiated Test Site v01r01
- FCC Part 15 Subpart C §15.247
- ANSI C63.10-2020 + Cor.1-2023

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.
3. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
915 – 928 MHz	1	915.2	33	921.6
	2	915.4	34	921.8
	3	915.6	35	922.0
	4	915.8	36	922.2
	5	916.0	37	922.4
	6	916.2	38	922.6
	7	916.4	39	922.8
	8	916.6	40	923.0
	9	916.8	41	923.2
	10	917.0	42	923.4
	11	917.2	43	923.6
	12	917.4	44	923.8
	13	917.6	45	924.0
	14	917.8	46	924.2
	15	918.0	47	924.4
	16	918.2	48	924.6
	17	918.4	49	924.8
	18	918.6	50	925.0
	19	918.8	51	925.2
	20	919.0	52	925.4
	21	919.2	53	925.6
	22	919.4	54	925.8
	23	919.6	55	926.0
	24	919.8	56	926.2
	25	920.0	57	926.4
	26	920.2	58	926.6
	27	920.4	59	926.8
	28	920.6	60	927.0
	29	920.8	61	927.2
	30	921.0	62	927.4
	31	921.2	63	927.6
	32	921.4	64	927.8

2.2 Test Mode

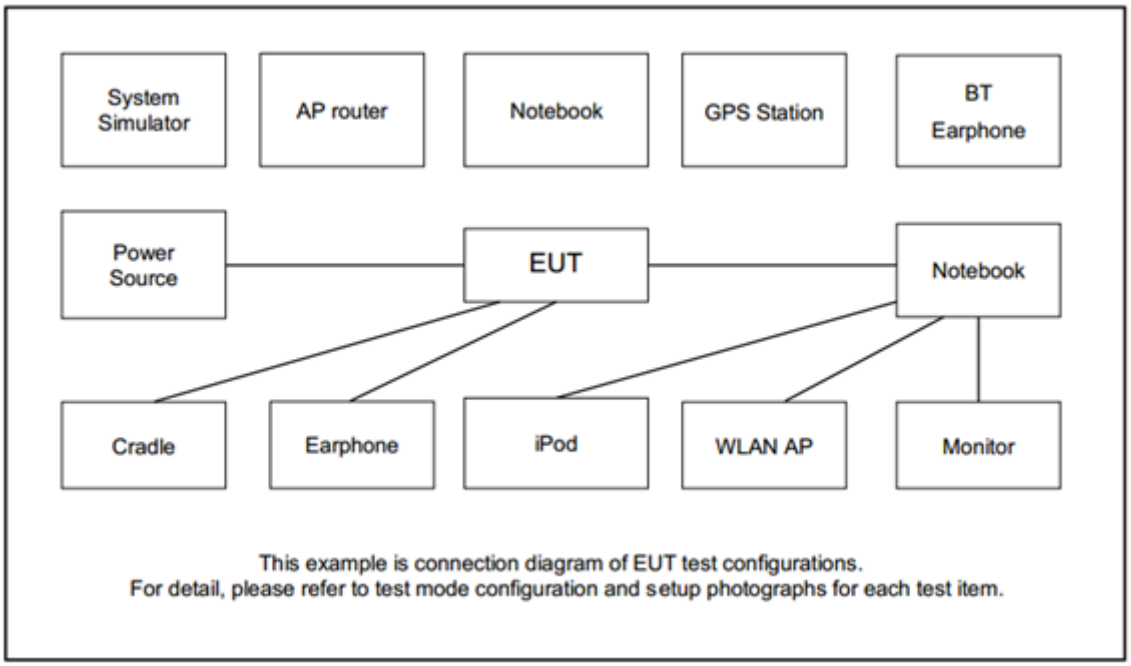
a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and only the worst case emissions were reported in this report.

b. AC power line Conducted Emission was tested under maximum output power.

The following summary table is showing all test modes to demonstrate in compliance with the standard.

Summary table of Test Cases		
Test Item	**Feature**	**LoRa / GFSK**
Conducted Test Cases	**LoRa 125 kHz FHSS**	Mode 1: CH01 Tx_915.20 MHz Mode 2: CH33 Tx_921.60 MHz Mode 3: CH64 Tx_927.80 MHz
Radiated Test Cases	**LoRa 125 kHz FHSS**	Mode 1: CH01 Tx_915.20 MHz Mode 2: CH33 Tx_921.60 MHz Mode 3: CH64 Tx_927.80 MHz
AC Conducted Emission	Mode 1: LoRa 125 kHz Tx + LAN Link + AC Adapter	

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	AC Adapter	UBIQUITI	E005-1I050100VU	FCC DoC	N/A	Shielded, 1.5m
2.	Notebook	Dell	Latitude 3400	FCC DoC	N/A	AC I/P：Unshielded, 1.2m DC O/P：Shielded, 1.8m
3.	Notebook	Dell	E3340	FCC DoC	N/A	AC I/P：Unshielded, 1.2m DC O/P：Shielded, 1.8m

2.5 EUT Operation Test Setup

The RF test items, utility “Tera Term v4.95” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

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

Example:
The spectrum analyzer offset is derived from RF cable loss and attenuator factor.
Offset = RF cable loss + attenuator factor.
Following shows an offset computation example with cable loss 4.2 dB and 10 dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).
= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

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; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.

3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.3 Test Procedure

1. The testing follows ANSI C63.10 clause 7.8.3.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = the frequency band of operation;
   RBW = 50kHz; VBW ≥ RBW; Sweep = No faster than coupled (auto) time; Detector function = peak; Trace = max hold. for LoRa 125kHz FHSS and FSK 50Kbps FHSS.
   RBW = 100kHz; VBW ≥ RBW; Sweep = No faster than coupled (auto) time; Detector function = peak; Trace = max hold. for FSK 150Kbps FHSS and FSK 250Kbps FHSS.
6. The number of hopping frequency used is defined as the number of total channel.
7. Record the measurement data derived from spectrum analyzer.

3.1.4 Test Setup

3.1.5 Test Result of Number of Hopping Frequency

Please refer to Appendix A.

3.2 Hopping Channel Separation Measurement

3.2.1 Limit of Hopping Channel Separation

Frequency hopping systems operating in the 902 – 928 MHz band 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.

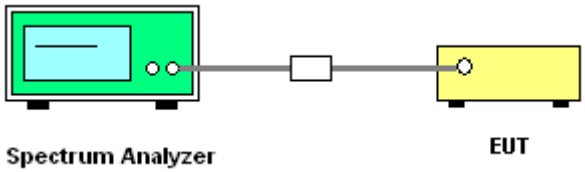
3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.2.3 Test Procedures

1. The testing follows ANSI C63.10 clause 7.8.2.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels;
   RBW = 50kHz for; VBW ≥ RBW; Sweep = No faster than coupled (auto) time.; Detector function = peak; Trace = max hold for LoRa 125KHz FHSS and FSK 50Kbps FHSS.
   RBW = 100kHz for; VBW ≥ RBW; Sweep = No faster than coupled (auto) time.; Detector function = peak; Trace = max hold for FSK 150Kbps FHSS and FSK 250Kbps FHSS.
6. Measure and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Hopping Channel Separation

Please refer to Appendix A.

3.3 Dwell Time Measurement

3.3.1 Limit of Dwell Time

If the 20 dB bandwidth of the hopping channel is less than 250 kHz, 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 average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period.

3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.3.3 Test Procedures

1. The testing follows ANSI C63.10 clause 7.8.4.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 100kHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
6. Measure and record the results in the test report.

3.3.4 Test Setup

3.3.5 Test Result of Dwell Time

Please refer to Appendix A.

3.4 20dB and 99% Bandwidth Measurement

3.4.1 Limit of 20dB and 99% Bandwidth

The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

99% Bandwidth is reporting only.

3.4.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.4.3 Test Procedures

1. The testing follows ANSI C63.10 clause 6.9.2 and 6.9.3.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Use the following spectrum analyzer settings for 20 dB Bandwidth measurement.
   Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel;
   RBW ≥ 1% of the 20 dB bandwidth, VBW ≥ 3 * RBW; Sweep = auto; Detector function = peak;
   Trace = max hold.
5. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
   Span = approximately 1.5 to 5 times the 99% bandwidth, centered on a hopping channel;
   RBW ≥ 1-5% of the 99% bandwidth, VBW ≥ 3 * RBW; Sweep = auto; Detector function = peak;
   Trace = max hold.
6. Measure and record the results in the test report.

3.4.4 Test Setup

3.4.5 Test Result of 20dB Bandwidth

Please refer to Appendix A.

3.4.6 Test Result of 99% Occupied Bandwidth

Please refer to Appendix A.

3.5 Output Power Measurement

3.5.1 Limit of Output Power

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.

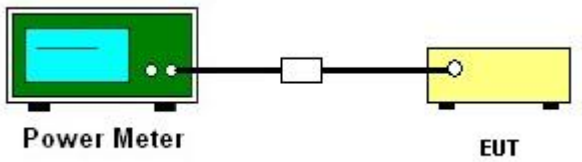
3.5.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.5.3 Test Procedures

1. The testing follows ANSI C63.10 clause 7.8.5.
2. The RF output of EUT is connected to the power meter by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure and record the results in the test report.

3.5.4 Test Setup



3.5.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.5.6 Test Result of Average Output Power (Reporting Only)

Please refer to Appendix A.

3.6 Conducted Band Edges Measurement

3.6.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

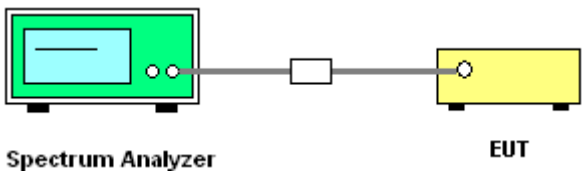
3.6.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.6.3 Test Procedures

1. The testing follows ANSI C63.10 clause 6.10.
2. Set the maximum power setting and enable the EUT to transmit continuously.
3. Set RBW = 100 kHz, VBW = 300 kHz. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
4. Enable hopping function of the EUT and then repeat step 2 and 3.
5. Measure and record the results in the test report.

3.6.4 Test Setup



3.6.5 Test Result of Conducted Band Edges

Please refer to Appendix A.

3.6.6 Test Result of Conducted Hopping Mode Band Edges

Please refer to Appendix A.

3.7 Conducted Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

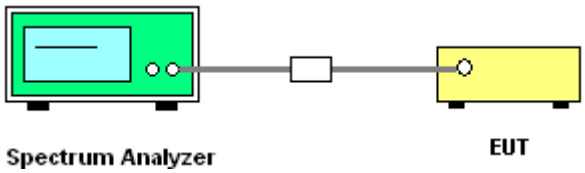
3.7.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.7.3 Test Procedure

1. The testing follows ANSI C63.10 clause 7.8.7.
2. The RF output of EUT is connected to the spectrum analyzer by RF cable and attenuator. The path loss is compensated to the results for each measurement.
3. Set the maximum power setting and enable the EUT to transmit continuously.
4. Set RBW = 100 kHz, VBW = 300 kHz, scan up through 10th harmonic. All harmonics / spurious must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.7.4 Test Setup



3.7.5 Test Result of Conducted Spurious Emission

Please refer to Appendix A.

3.8 Radiated Spurious Emission Measurement

3.8.1 Limit of Radiated Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics / spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/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

3.8.2 Measuring Instruments

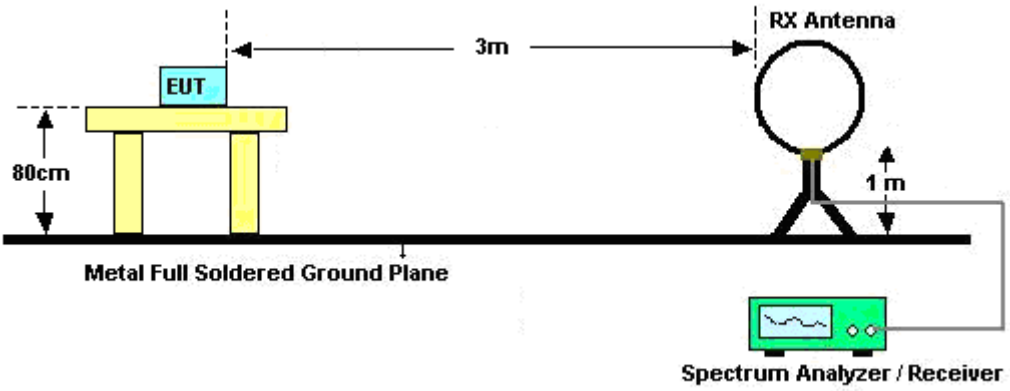
Please refer to the measuring equipment list in this test report.

3.8.3 Test Procedures

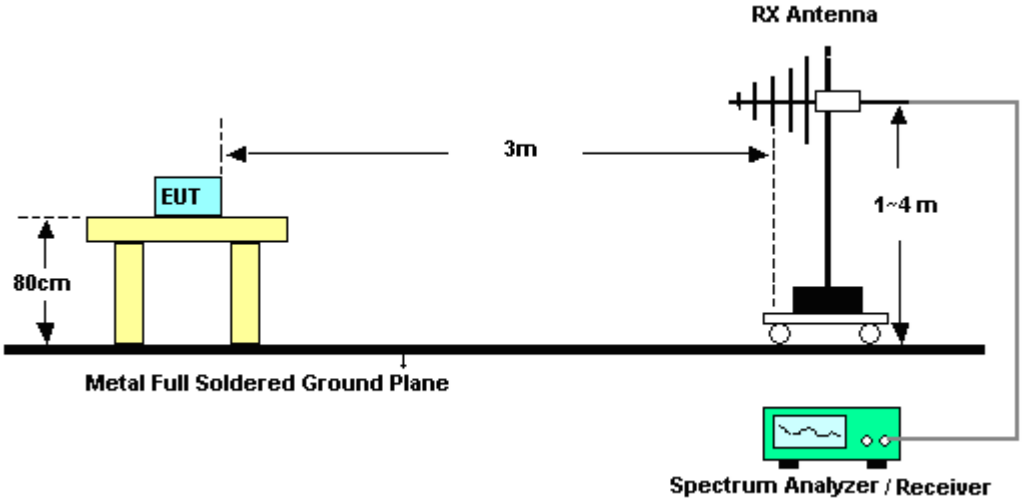
1. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
2. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT is arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set the maximum power setting and enable the EUT to transmit continuously.
5. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW = 100 kHz for f < 1 GHz, RBW = 1 MHz for f>1 GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement: use duty cycle correction factor method per 15.35(c).
   Duty cycle = On time/100 milliseconds
   On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*LN_{n-1}+N_n*L_n$
   Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
   Average Emission Level = Peak Emission Level + 20*log (Duty cycle)
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as "-".
8. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".

3.8.4 Test Setup

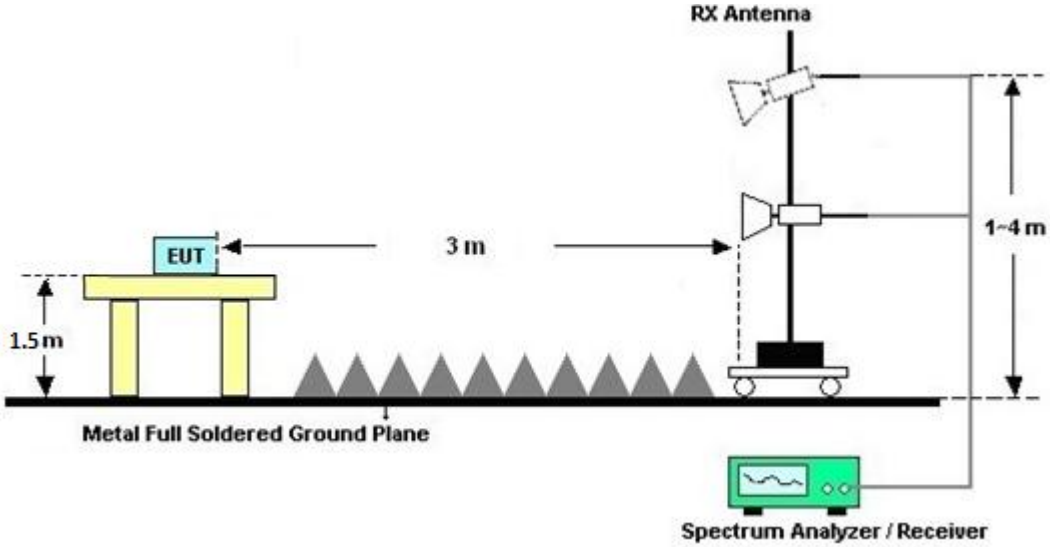
For radiated test below 30MHz



For radiated test from 30MHz to 1GHz



For radiated test above 1GHz



3.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site **v01r01**, and the result comes out very similar.

3.8.6 Test Result of Radiated Spurious Emission (30 MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

3.8.7 Duty Cycle

Please refer to Appendix E.

3.9 AC Conducted Emission Measurement

3.9.1 Limit of AC Conducted Emission

For equipment 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.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

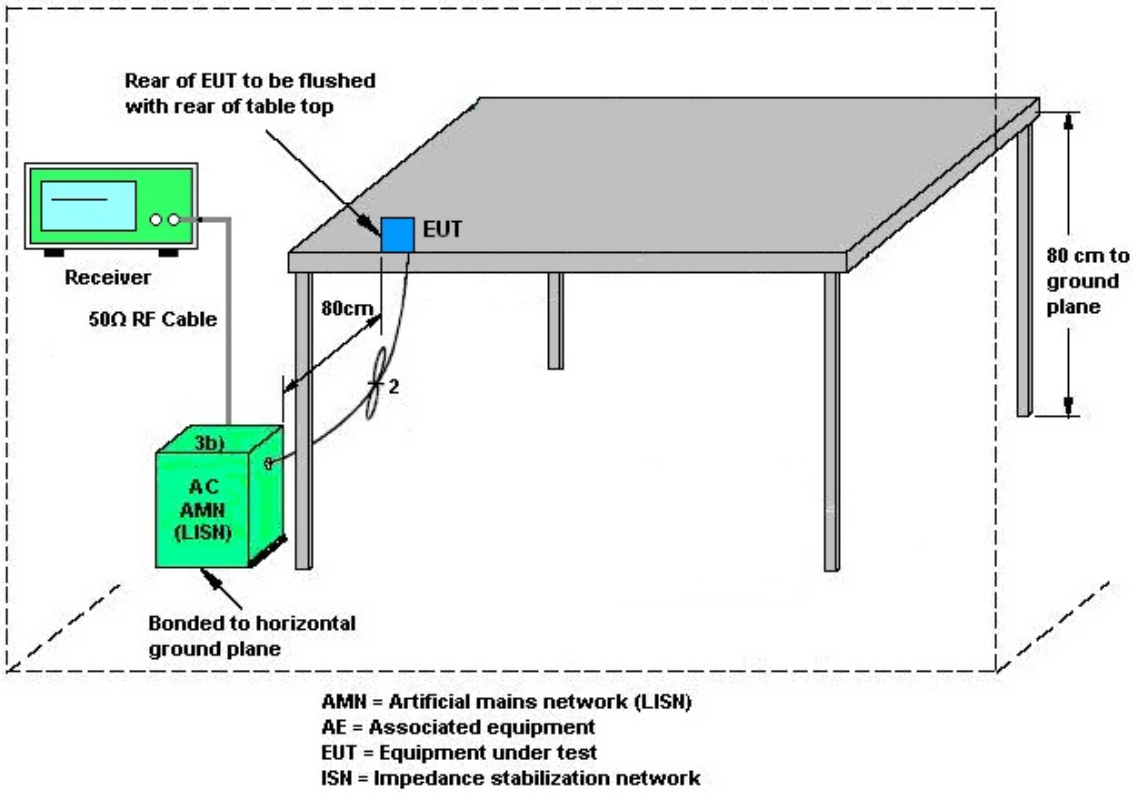
3.9.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.9.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9 kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.9.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.9.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.10 Antenna Requirements

3.10.1 Standard Applicable

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, 15.221, or § 15.236. 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.

3.10.2 Antenna Anti-Replacement Construction

Unique (non-standard) antenna connector.

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	35419 & 03	30MHz~1GHz	Apr. 21, 2025	Oct. 02, 2025~ Oct. 03, 2025	Apr. 20, 2026	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00075962	1GHz ~ 18GHz	Nov. 28, 2024	Oct. 02, 2025~ Oct. 03, 2025	Nov. 27, 2025	Radiation (03CH07-HY)
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Mar. 06, 2025	Oct. 02, 2025~ Oct. 03, 2025	Mar. 05, 2026	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00101800-30-10P	1590075	1GHz~18GHz	Apr. 18, 2025	Oct. 02, 2025~ Oct. 03, 2025	Apr. 17, 2026	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10MHz~1GHz	Sep. 30, 2025	Oct. 02, 2025~ Oct. 03, 2025	Sep. 29, 2026	Radiation (03CH07-HY)
Spectrum Analyzer	Agilent	N9030A	MY52350276	3Hz~44GHz	Mar. 28, 2025	Oct. 02, 2025~ Oct. 03, 2025	Mar. 27, 2026	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4 MY24971/4 MY15682/4	30MHz to 18GHz	Feb. 20, 2025	Oct. 02, 2025~ Oct. 03, 2025	Feb. 19, 2026	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 104	MY28655/4 MY24971/4	9kHz to 30MHz	Feb. 20, 2025	Oct. 02, 2025~ Oct. 03, 2025	Feb. 19, 2026	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126	532078/126E	30MHz~18GHz	Sep. 13, 2025	Oct. 02, 2025~ Oct. 03, 2025	Sep. 12, 2026	Radiation (03CH07-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	801606/2	9KHz ~ 40GHz	Apr. 23, 2025	Oct. 02, 2025~ Oct. 03, 2025	Apr. 22, 2026	Radiation (03CH07-HY)
Controller	EMEC	EM1000	N/A	Control Ant Mast	N/A	Oct. 02, 2025~ Oct. 03, 2025	N/A	Radiation (03CH07-HY)
Controller	MF	MF-7802	N/A	Control Turn table	N/A	Oct. 02, 2025~ Oct. 03, 2025	N/A	Radiation (03CH07-HY)
Antenna Mast	EMEC	AM-BS-4500E	N/A	Boresight mast 1M~4M	N/A	Oct. 02, 2025~ Oct. 03, 2025	N/A	Radiation (03CH07-HY)
Turn Table	ChainTek	Chaintek 3000	N/A	0~360 Degree	N/A	Oct. 02, 2025~ Oct. 03, 2025	N/A	Radiation (03CH07-HY)
Software	Audix	E3	N/A	N/A	N/A	Oct. 02, 2025~ Oct. 03, 2025	N/A	Radiation (03CH07-HY)
USB Data Logger	TECPEL	TR-32	HE17XB2495	N/A	Feb. 24, 2025	Oct. 02, 2025~ Oct. 03, 2025	Feb. 23, 2026	Radiation (03CH07-HY)
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Oct. 02, 2025	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	N/A	Dec. 10, 2024	Oct. 02, 2025	Dec. 09, 2025	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP210031	N/A	Jun. 26, 2025	Oct. 02, 2025	Jun. 25, 2026	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	N/A	Jul. 25, 2025	Oct. 02, 2025	Jul. 24, 2026	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Oct. 02, 2025	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Jul. 29, 2025	Oct. 02, 2025	Jul. 28, 2026	Conduction (CO05-HY)
LISN Cable	MVE	RG-400	MQT24082501	N/A	Oct. 15, 2024	Oct. 02, 2025	Oct. 14, 2025	Conduction (CO05-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 01, 2024	Sep. 18, 2025~ Oct. 13, 2025	Oct. 31, 2025	Conducted (TH05-HY)
Power Sensor	DARE	RPR3006W	13I00030SNO 31 (NO:182)	9kHz~6GHz	Jan. 09, 2025	Sep. 18, 2025~ Oct. 13, 2025	Jan. 08, 2026	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV3044	101467	10HZ~44GHZ	Jan. 14, 2025	Sep. 18, 2025~ Oct. 13, 2025	Jan. 13, 2026	Conducted (TH05-HY)
Switch Control Mainframe	E-Instrument	ETF-1405-0	EC1900157 (BOX6)	N/A	Feb. 10, 2025	Sep. 18, 2025~ Oct. 13, 2025	Feb. 09, 2026	Conducted (TH05-HY)
Software	Sporton	BTWIFI_Final_ version_24051 3	N/A	Conducted Other Test Item	N/A	Sep. 18, 2025~ Oct. 13, 2025	N/A	Conducted (TH05-HY)

5 Measurement Uncertainty

Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.7 dB**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.3 dB**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.7 dB**

Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.5 dB**

Report Number : FR581203B

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Jay Chen	Temperature:	23~25	°C
Test Date:	2025/9/18~2025/10/13	Relative Humidity:	54~58	%

TEST RESULTS DATA
20dB and 99% Occupied Bandwidth

Mod.	NTX	CH.	Freq. (MHz)	99% Bandwidth (kHz)	20dB BW (kHz)	20dB BW Limit (kHz)	Pass/Fail
Lora 125kHz	1	1	915.2	114.616	128.087	< 500	Pass
Lora 125kHz	1	33	921.6	114.361	124.635	< 500	Pass
Lora 125kHz	1	64	927.8	114.724	122.526	< 500	Pass

TEST RESULTS DATA
Hopping Channel Separation

Mod.	NTX	CH.	Freq. (MHz)	Hopping Channel Separation (kHz)	Hopping Channel Separation Limit (kHz)	Pass/Fail
Lora 125kHz	1	1~2	915.2	267.004	> 128.087	Pass
Lora 125kHz	1	33~34	921.6	200.430	> 124.635	Pass
Lora 125kHz	1	63~64	927.8	210.560	> 122.526	Pass

TEST RESULTS DATA
Dwell Time

Operation Band	Hops Over Occupancy Time(hops)	Package Transfer Time (msec)	Dwell Time (sec)	Limits (sec)	Pass/Fail
Hopping	1	15.93	0.02	0.40	Pass

TEST RESULTS DATA
Peak Power Table

Mod.	NTX	CH.	Peak Conducted Power (dBm)	Conducted Power Limit (dBm)	DG (dBi)	EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail
Lora 125kHz	1	1	27.30	30.00	1.00	28.30	36.00	Pass
Lora 125kHz	1	33	27.90	30.00	1.00	28.90	36.00	Pass
Lora 125kHz	1	64	27.08	30.00	1.00	28.08	36.00	Pass

TEST RESULTS DATA
Average Power Table
(Reporting Only)

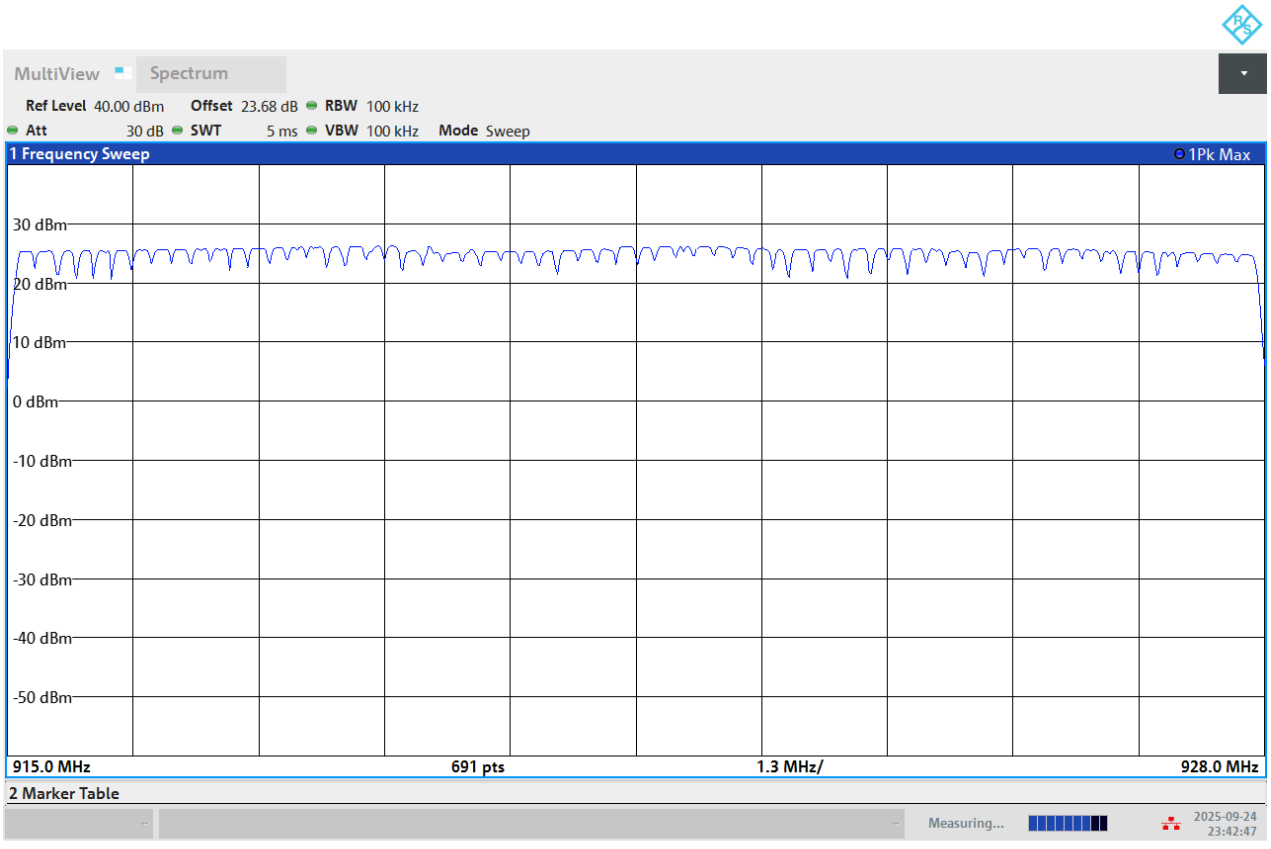
Mod.	NTX	CH.	Average Conducted Power (dBm)	Duty Factor (dB)
Lora 125kHz	1	1	25.40	3.85
Lora 125kHz	1	33	26.10	3.85
Lora 125kHz	1	64	25.16	3.85

TEST RESULTS DATA
Number of Hopping Frequency

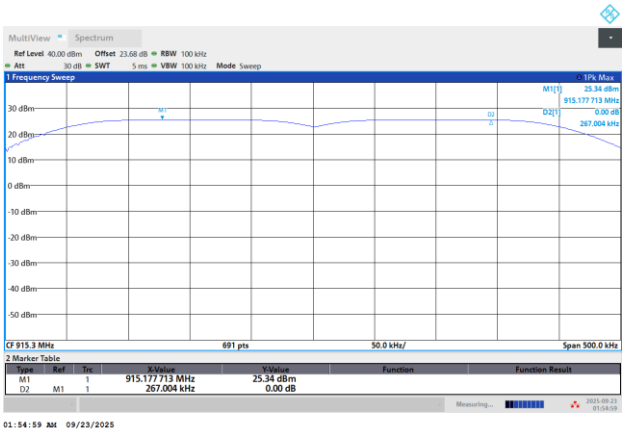
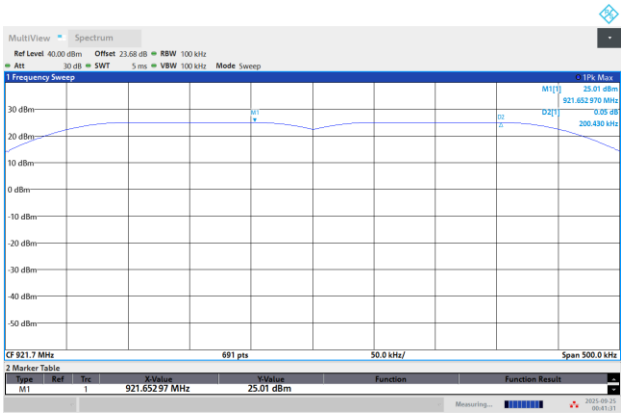
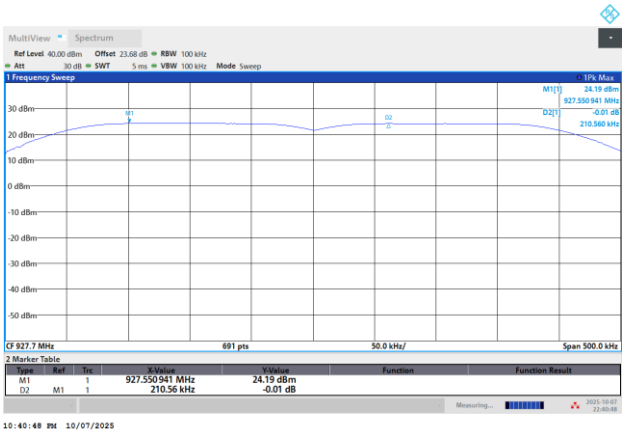
Number of Hopping (Channel)	Limits (Channel)	Pass/Fail
64	≧ 50	Pass

Number of Hopping Frequency

Number of Hopping Channel Plot on Channel 01 - 64

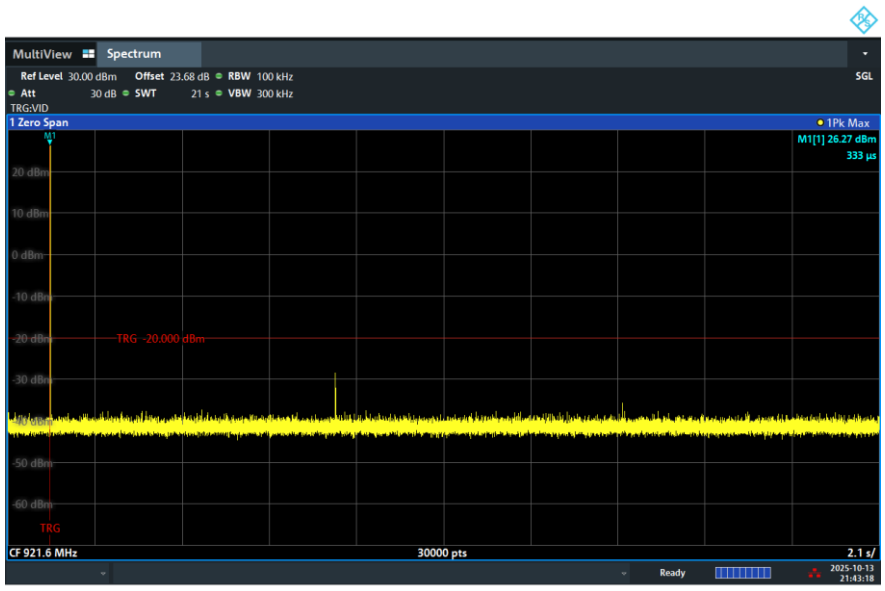


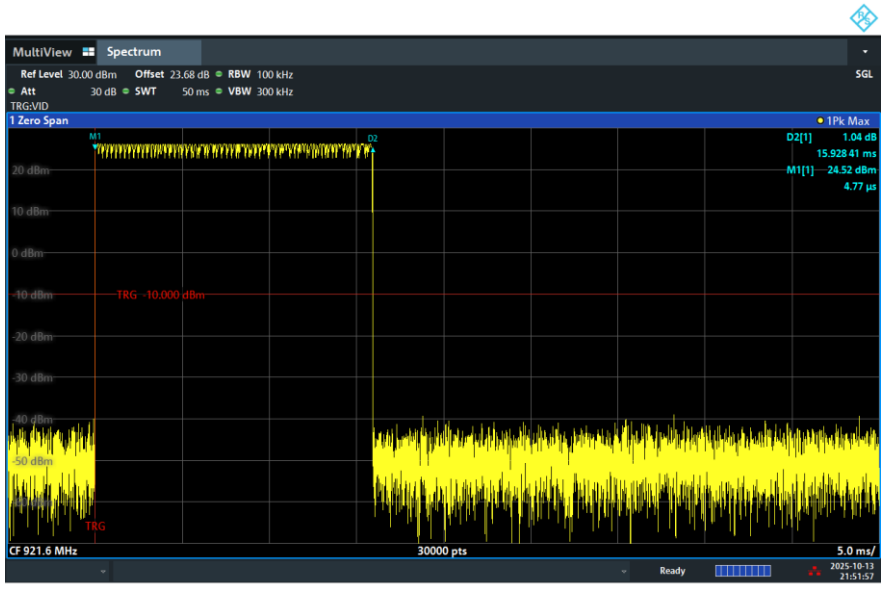
Hopping Channel Separation

Channel Separation Plot on Channel 01 - 02	Channel Separation Plot on Channel 33 - 34
	
Channel Separation Plot on Channel 63 - 64	
	

Dwell Time

Package Transfer Time Plot



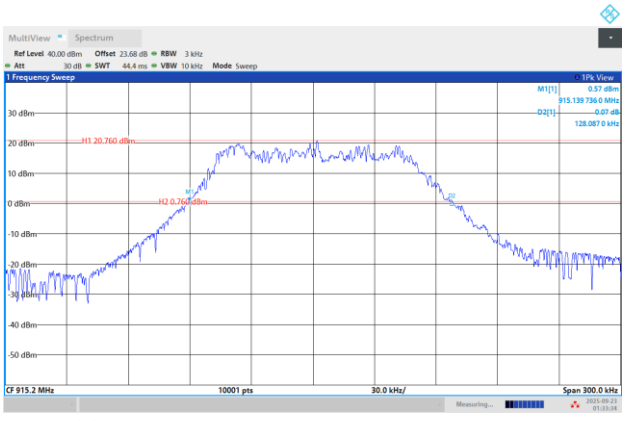
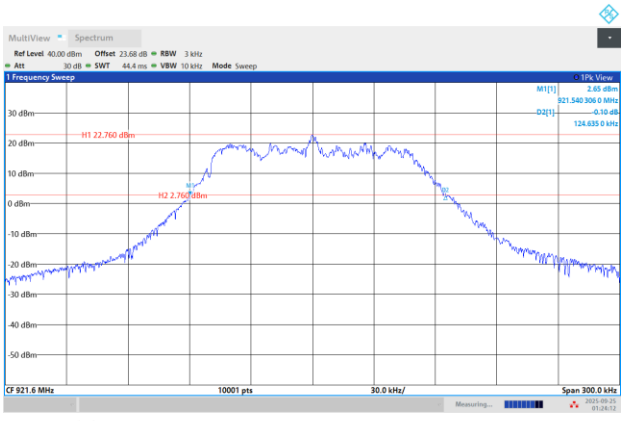
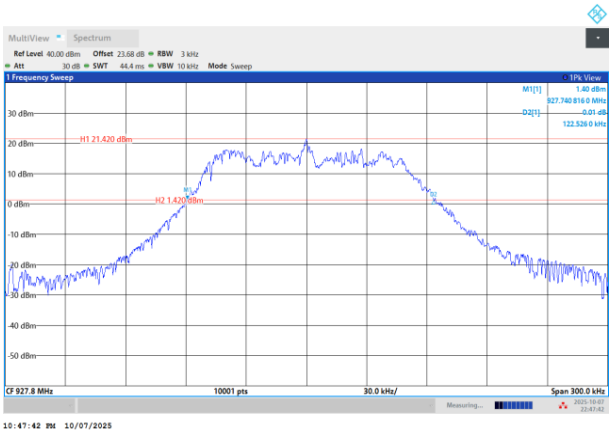


Remark: Dwell Time(s) = Hops Over Occupancy Time (hops) x Package Transfer Time

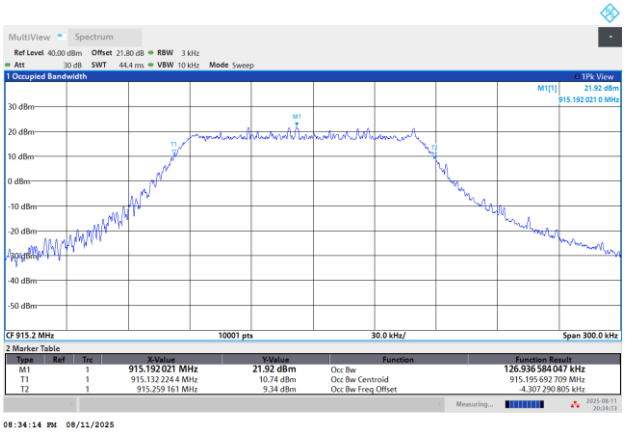
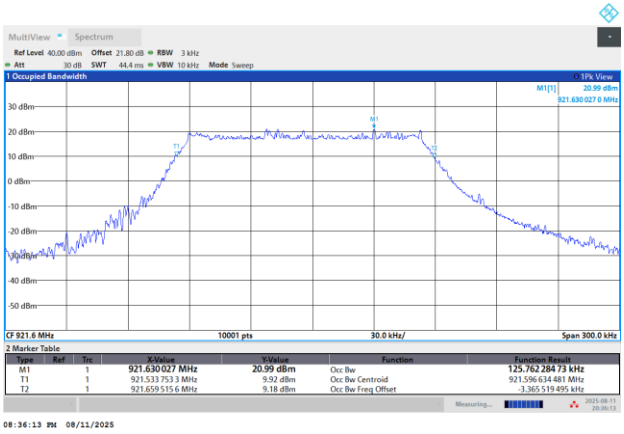
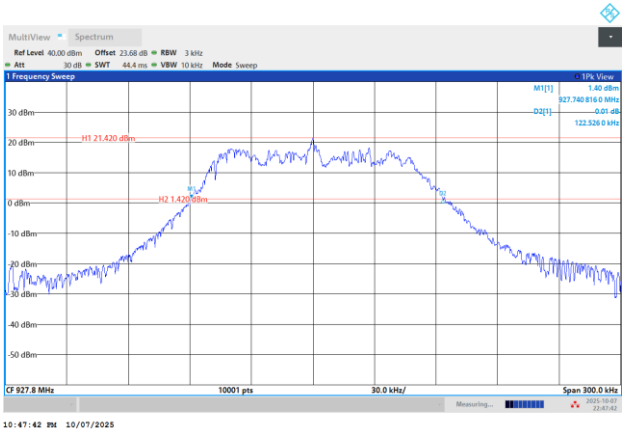
= 1 x 15.93 ms

= 0.0015 s

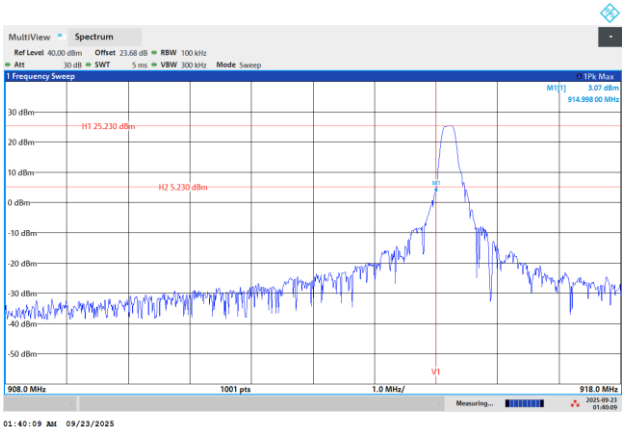
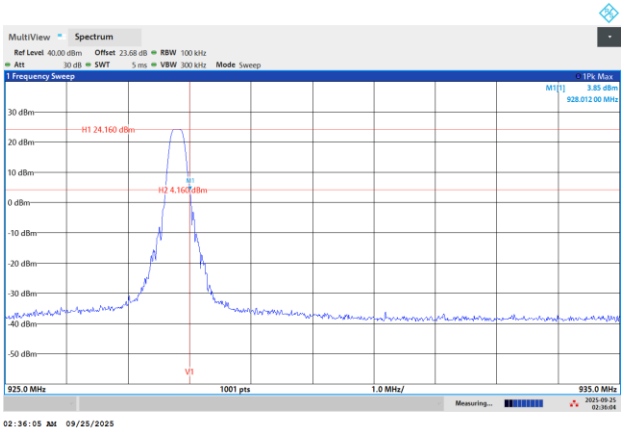
20dB Bandwidth

20 dB Bandwidth Plot on Channel 01	20 dB Bandwidth Plot Channel 33
	
20 dB Bandwidth Plot Channel 64	
	

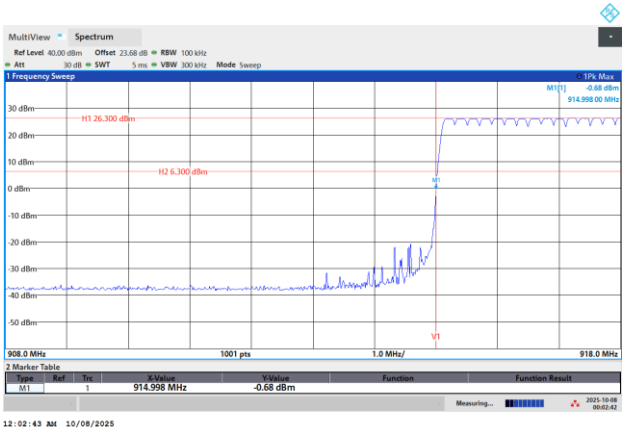
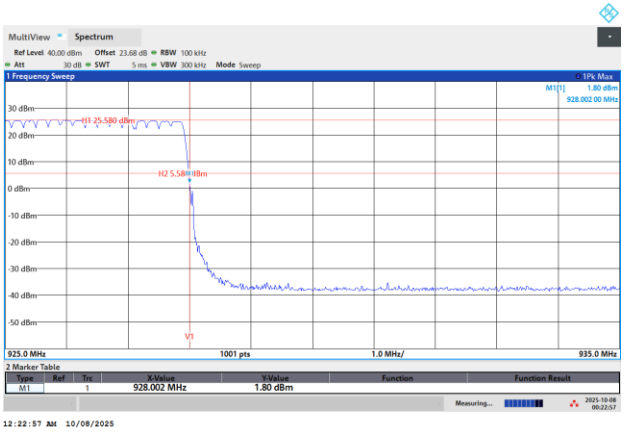
99% Occupied Bandwidth

99% Occupied Bandwidth on Channel 01	99% Occupied Bandwidth on Channel 33
	
99% Occupied Bandwidth on Channel 64	
	

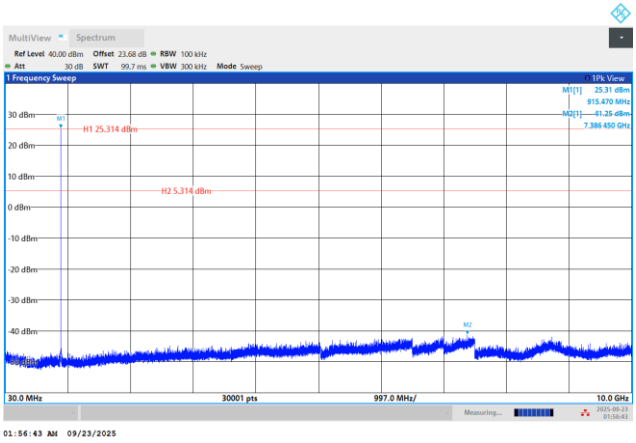
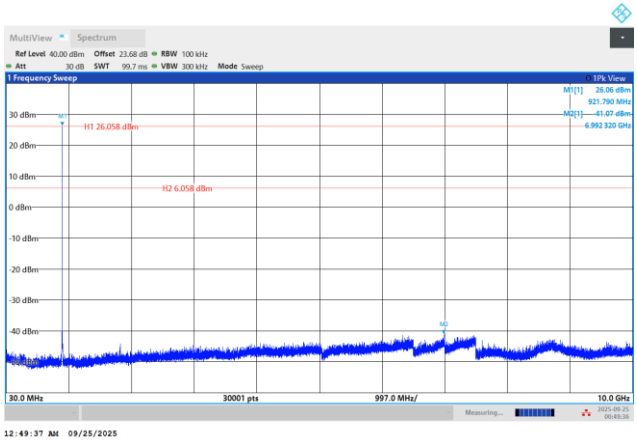
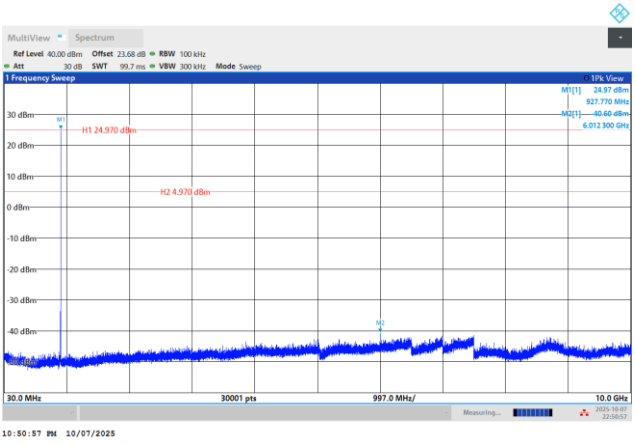
Band Edges

Low Band Edge Plot on Channel 01	High Band Edge Plot on Channel 64
	

Hopping Mode Band Edges

Hopping Mode Low Band Edge Plot	Hopping Mode High Band Edge Plot
	

Conducted Spurious Emission

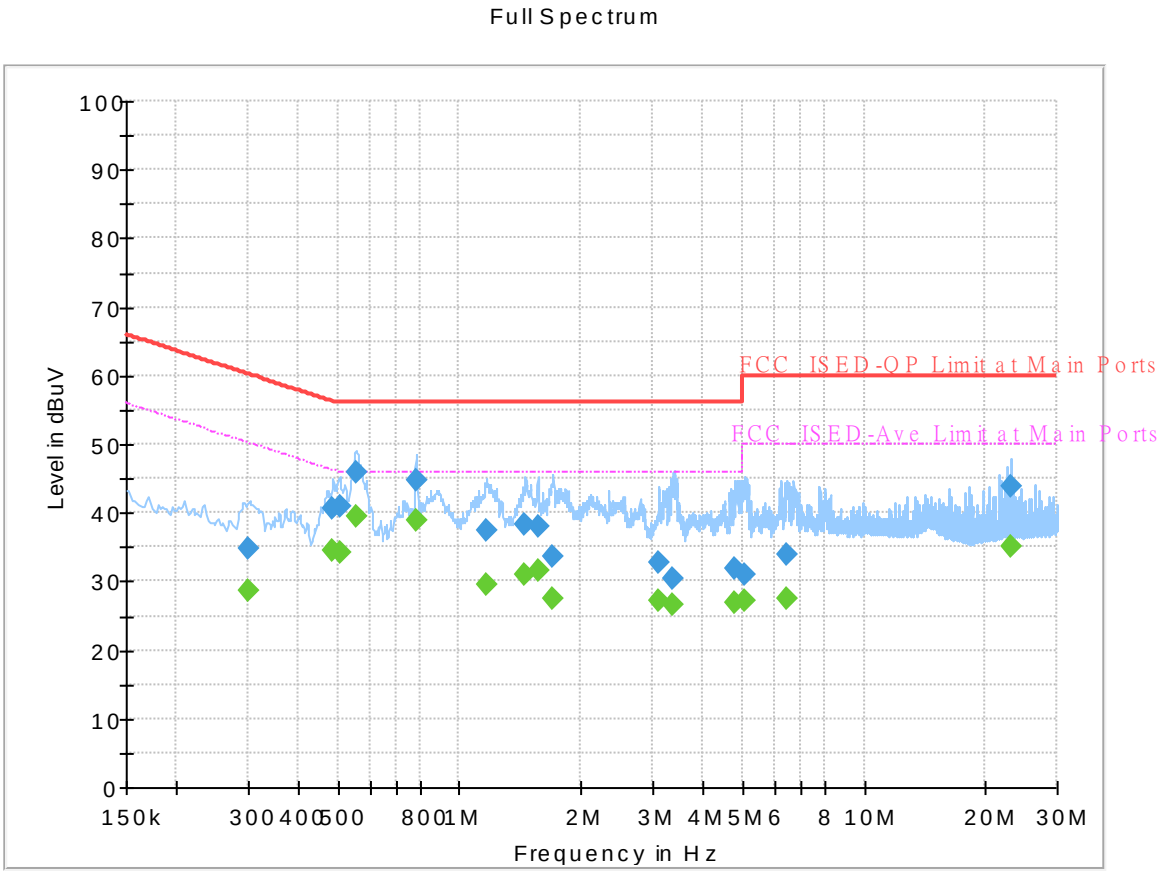
CSE Plot on Ch 01 between 30MHz ~ 10GHz	CSE Plot on Ch 33 between 30MHz ~ 10GHz
	
CSE Plot on Ch 64 between 30MHz ~ 10GHz	
	

Appendix B. AC Conducted Emission Test Results

Test Engineer :	Brian Chen	**Temperature :**	23 ~ 26℃
		Relative Humidity :	45 ~ 55%

EUT Information

Report NO :	581203
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line



Final_Result

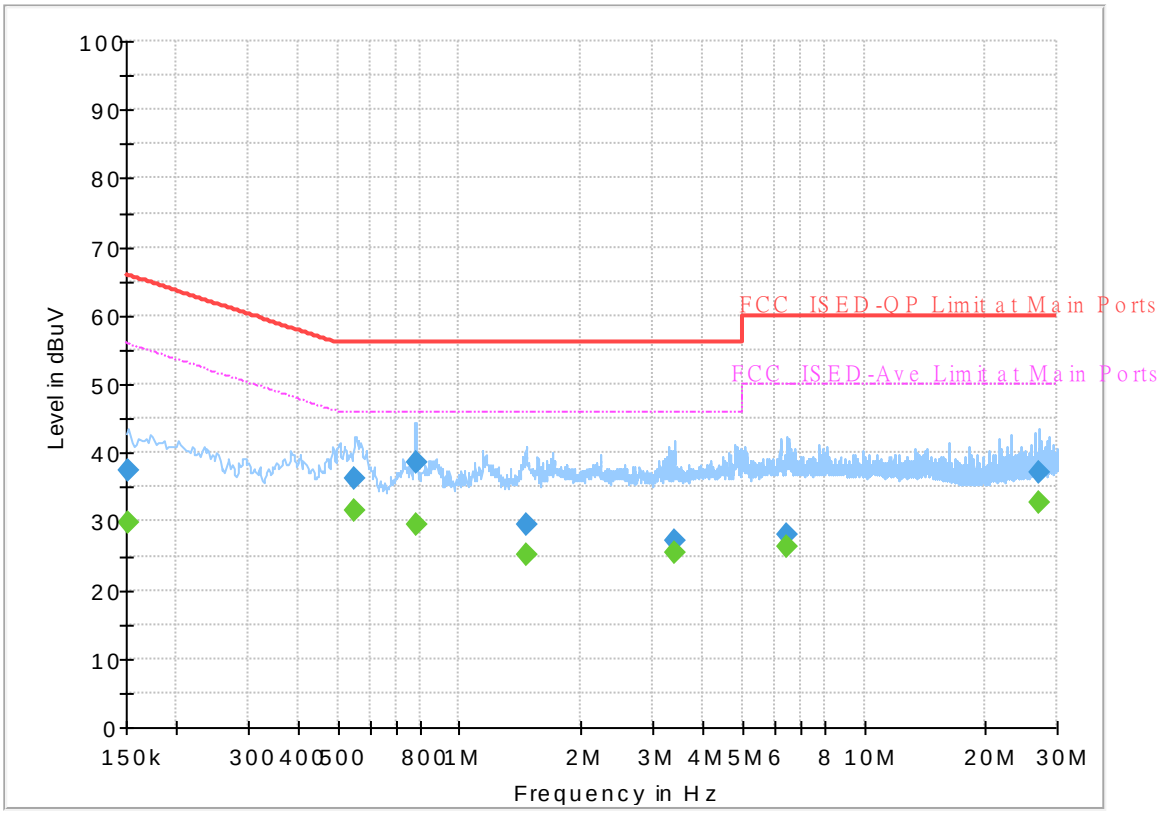
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.300750	---	28.57	50.22	21.65	L1	OFF	19.8
0.300750	34.82	---	60.22	25.40	L1	OFF	19.8
0.487500	---	34.46	46.21	11.75	L1	OFF	19.8
0.487500	40.77	---	56.21	15.44	L1	OFF	19.8
0.505500	---	34.29	46.00	11.71	L1	OFF	19.8
0.505500	41.04	---	56.00	14.96	L1	OFF	19.8
0.555000	---	39.48	46.00	6.52	L1	OFF	19.8
0.555000	46.05	---	56.00	9.95	L1	OFF	19.8
0.782250	---	38.95	46.00	7.05	L1	OFF	19.9
0.782250	44.75	---	56.00	11.25	L1	OFF	19.9
1.167000	---	29.66	46.00	16.34	L1	OFF	19.9
1.167000	37.46	---	56.00	18.54	L1	OFF	19.9
1.455000	---	31.13	46.00	14.87	L1	OFF	19.9
1.455000	38.36	---	56.00	17.64	L1	OFF	19.9
1.560750	---	31.65	46.00	14.35	L1	OFF	19.9
1.560750	38.15	---	56.00	17.85	L1	OFF	19.9
1.700250	---	27.41	46.00	18.59	L1	OFF	19.9
1.700250	33.63	---	56.00	22.37	L1	OFF	19.9
3.099750	---	27.28	46.00	18.72	L1	OFF	20.0
3.099750	32.89	---	56.00	23.11	L1	OFF	20.0
3.351750	---	26.58	46.00	19.42	L1	OFF	20.0

3.351750	30.40	---	56.00	25.60	L1	OFF	20.0
4.800750	---	26.98	46.00	19.02	L1	OFF	20.1
4.800750	31.86	---	56.00	24.14	L1	OFF	20.1
5.084250	---	27.24	50.00	22.76	L1	OFF	20.1
5.084250	31.00	---	60.00	29.00	L1	OFF	20.1
6.432000	---	27.56	50.00	22.44	L1	OFF	20.3
6.432000	33.88	---	60.00	26.12	L1	OFF	20.3
23.129250	---	35.04	50.00	14.96	L1	OFF	20.6
23.129250	43.81	---	60.00	16.19	L1	OFF	20.6

EUT Information

Report NO :	581203
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.152250	---	29.88	55.88	26.00	N	OFF	19.8
0.152250	37.41	---	65.88	28.47	N	OFF	19.8
0.552750	---	31.72	46.00	14.28	N	OFF	19.8
0.552750	36.26	---	56.00	19.74	N	OFF	19.8
0.780000	---	29.58	46.00	16.42	N	OFF	19.9
0.780000	38.64	---	56.00	17.36	N	OFF	19.9
1.459500	---	25.14	46.00	20.86	N	OFF	19.9
1.459500	29.48	---	56.00	26.52	N	OFF	19.9
3.401250	---	25.36	46.00	20.64	N	OFF	20.0
3.401250	27.12	---	56.00	28.88	N	OFF	20.0
6.443250	---	26.32	50.00	23.68	N	OFF	20.3
6.443250	28.21	---	60.00	31.79	N	OFF	20.3
27.159000	---	32.77	50.00	17.23	N	OFF	20.8
27.159000	37.24	---	60.00	22.76	N	OFF	20.8

Appendix C. Radiated Spurious Emission

Test Engineer :	Stan Hsieh and Ken Wu	Temperature :	24.1 ~ 26.9°C
		Relative Humidity :	56.1 ~ 63.5%

915 MHz ~ 928 MHz

(30 MHz ~ 1GHz @ 3m)

Mode	Note	Frequency	Level	Margin	Limit Line	Read Level	Antenna Factor	Path Loss	Preamp Factor	Ant Pos	Table Pos	Peak Avg.	Pol.
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
Lora_125kHz 915.2MHz		78.06	33.43	-6.57	40	48.45	13.3	1.6	29.92	-	-	P	H
		98.31	32.23	-11.27	43.5	44.56	15.83	1.78	29.94	-	-	P	H
		250.05	39.17	-6.83	46	47.88	18.37	2.77	29.85	-	-	P	H
		328	24.75	-21.25	46	31.81	19.65	3.16	29.87	-	-	P	H
		560.4	27.26	-18.74	46	26.77	26.17	4.09	29.77	-	-	P	H
	*	915.2	118.3	-	-	113.03	29.08	5.19	29	100	268	P	H
		962.2	34.92	-19.08	54	27.23	31.01	5.36	28.68	-	-	P	H
													H
													H
		30	30.62	-9.38	40	36.35	23.68	0.58	29.99	-	-	P	V
		58.62	31.61	-8.39	40	48.26	11.93	1.4	29.98	-	-	P	V
		250.05	33.53	-12.47	46	42.24	18.37	2.77	29.85	-	-	P	V
		311.9	23.96	-22.04	46	31.41	19.3	3.08	29.83	-	-	P	V
		605.2	27.65	-18.35	46	27.53	25.69	4.26	29.83	-	-	P	V
	*	915.2	116.85	-	-	111.58	29.08	5.19	29	100	8	P	V
		975.5	35.65	-18.35	54	27.87	30.97	5.41	28.6	-	-	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Mode	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Lora_125kHz 921.6MHz		40.53	28.56	-11.44	40	38.1	19.3	1.18	30.02	-	-	P	H
		98.58	30.09	-13.41	43.5	42.38	15.87	1.78	29.94	-	-	P	H
		250.05	39.11	-6.89	46	47.82	18.37	2.77	29.85	-	-	P	H
		311.9	24.18	-21.82	46	31.63	19.3	3.08	29.83	-	-	P	H
		596.8	27.3	-18.7	46	27.09	25.8	4.24	29.83	-	-	P	H
	*	921.6	117.99	-	-	112.46	29.27	5.21	28.95	100	270	P	H
		988.1	33.98	-20.02	54	26.37	30.67	5.46	28.52	-	-	P	H
													H
													H
		42.96	30.35	-9.65	40	41.12	18.05	1.21	30.03	-	-	P	V
		94.26	30.55	-12.95	43.5	43.51	15.24	1.76	29.96	-	-	P	V
		250.05	33.24	-12.76	46	41.95	18.37	2.77	29.85	-	-	P	V
		336.4	22.2	-23.8	46	28.93	19.95	3.2	29.88	-	-	P	V
		564.6	28.01	-17.99	46	27.49	26.19	4.11	29.78	-	-	P	V
	*	921.6	117.85	-	-	112.32	29.27	5.21	28.95	100	8	P	V
		981.8	35.04	-18.96	54	27.41	30.76	5.43	28.56	-	-	P	V
													V
													V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Mode	Note	Frequency (MHz)	Level (dBμV/m)	Margin (dB)	Limit Line (dBμV/m)	Read Level (dBμV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
Lora_125kHz 927.8MHz		30.27	30.05	-9.95	40	35.76	23.67	0.61	29.99	-	-	P	H
		49.17	24.89	-15.11	40	38.78	14.83	1.28	30	-	-	P	H
		250.05	33.21	-12.79	46	41.92	18.37	2.77	29.85	-	-	P	H
		498.8	29.52	-16.48	46	31.79	23.8	3.87	29.94	-	-	P	H
		624.8	29.41	-16.59	46	28.68	26.24	4.3	29.81	-	-	P	H
	*	927.8	119.2	-	-	113.37	29.5	5.24	28.91	251	224	P	H
		988.1	34.9	-19.1	54	27.29	30.67	5.46	28.52	-	-	P	H
													H
													H
		30	33.5	-6.5	40	39.23	23.68	0.58	29.99	-	-	P	V
		58.62	28.31	-11.69	40	44.96	11.93	1.4	29.98	-	-	P	V
		250.05	28.92	-17.08	46	37.63	18.37	2.77	29.85	-	-	P	V
		500.2	27.82	-18.18	46	30.09	23.8	3.87	29.94	-	-	P	V
		624.8	29.06	-16.94	46	28.33	26.24	4.3	29.81	-	-	P	V
	*	927.8	113.49	-	-	107.66	29.5	5.24	28.91	163	282	P	V
		976.2	35.42	-18.58	54	27.63	30.97	5.41	28.59	-	-	P	V
													V
													V
Remark	1. No other spurious found. 2. All results are PASS against Peak and Average limit line. 3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.												

915 MHz ~ 928 MHz

(1GHz ~ 10GHz @ 3m)

Mode	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		2745.6	43.26	-30.74	74	60.35	32.36	9.64	59.09	-	-	P	H
		3660.8	40.38	-33.62	74	55.37	33.26	10.97	59.22	-	-	P	H
		4576	42.39	-31.61	74	54.68	34.05	12.54	58.88	-	-	P	H
		7321.6	41.87	-32.13	74	48.49	35.7	15.38	57.7	-	-	P	H
		8236.8	41.52	-32.48	74	46.86	35.83	16.47	57.64	-	-	P	H
		9152	42.36	-31.64	74	47.13	36.3	17.96	59.03	-	-	P	H
Lora_125kHz													
915.2MHz		2745.6	39.83	-34.17	74	56.92	32.36	9.64	59.09	-	-	P	V
		3660.8	40.41	-33.59	74	55.4	33.26	10.97	59.22	-	-	P	V
		4576	41.99	-32.01	74	54.28	34.05	12.54	58.88	-	-	P	V
		7321.6	42.2	-31.8	74	48.82	35.7	15.38	57.7	-	-	P	V
		8236.8	41.61	-32.39	74	46.95	35.83	16.47	57.64	-	-	P	V
		9152	42.81	-31.19	74	47.58	36.3	17.96	59.03	-	-	P	V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Mode	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		2764.8	50.16	-23.84	74	67.15	32.4	9.7	59.09	400	311	P	H
		2764.8	45.84	-8.16	54	62.83	32.4	9.7	59.09	400	311	A	H
		3686.4	41.78	-32.22	74	56.82	33.15	11.03	59.22	-	-	P	H
		4608	42.9	-31.1	74	54.99	34.12	12.61	58.82	-	-	P	H
		7372.8	42.09	-31.91	74	48.79	35.7	15.39	57.79	-	-	P	H
		8294.4	43.95	-30.05	74	49.29	35.8	16.49	57.63	-	-	P	H
Lora_125kHz													
921.6MHz		2764.8	50.8	-23.2	74	67.79	32.4	9.7	59.09	355	59	P	V
		2764.8	46.16	-7.84	54	63.15	32.4	9.7	59.09	355	59	A	V
		3686.4	39.44	-34.56	74	54.48	33.15	11.03	59.22	-	-	P	V
		4608	47.51	-26.49	74	59.6	34.12	12.61	58.82	300	268	P	V
		4608	43.18	-10.82	54	55.27	34.12	12.61	58.82	300	268	A	V
		7372.8	47.7	-26.3	74	54.4	35.7	15.39	57.79	100	113	P	V
		7372.8	43.6	-10.4	54	50.3	35.7	15.39	57.79	100	113	A	V
		8294.4	49.01	-24.99	74	54.35	35.8	16.49	57.63	100	101	P	V
		8294.4	45	-9	54	50.34	35.8	16.49	57.63	100	101	A	V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Mode	Note	Frequency (MHz)	Level (dBµV/m)	Margin (dB)	Limit Line (dBµV/m)	Read Level (dBµV)	Antenna Factor (dB/m)	Path Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Peak Avg. (P/A)	Pol. (H/V)
		2783.4	40.43	-33.57	74	57.25	32.53	9.75	59.1	-	-	P	H
		3711.2	38.78	-35.22	74	53.8	33.12	11.09	59.23	-	-	P	H
		4639	39.86	-34.14	74	51.81	34.18	12.62	58.75	-	-	P	H
		7422.4	40.69	-33.31	74	47.42	35.7	15.44	57.87	-	-	P	H
		8350.2	40.77	-33.23	74	45.97	35.9	16.52	57.62	-	-	P	H
Lora_125kHz													
927.8MHz		2783.4	39.94	-34.06	74	56.76	32.53	9.75	59.1	-	-	P	V
		3711.2	39.87	-34.13	74	54.89	33.12	11.09	59.23	-	-	P	V
		4639	39.91	-34.09	74	51.86	34.18	12.62	58.75	-	-	P	V
		7422.4	41.11	-32.89	74	47.84	35.7	15.44	57.87	-	-	P	V
		8350.2	41.67	-32.33	74	46.87	35.9	16.52	57.62	-	-	P	V

Remark

1. No other spurious found.
2. All results are PASS against Peak and Average limit line.
3. The emission position marked as "-" means no suspected emission found with sufficient margin against limit line or noise floor only.

Note symbol

*	**Fundamental Frequency** which can be ignored. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
!	Test result is **Margin** line.
P/A	**P**eak or **A**verage
H/V	**H**orizontal or **V**ertical

A calculation example for radiated spurious emission is shown as below:

Mode	Note	Frequency	Level	Over	Limit	Read	Antenna	Path	Preamp	Ant	Table	Peak	Pol.
				Limit	Line	Level	Factor	Loss	Factor	Pos	Pos	Avg.	
		(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV)	(dB/m)	(dB)	(dB)	(cm)	(deg)	(P/A)	(H/V)
CH 00 2402MHz		2390	55.45	-18.55	74	54.51	32.22	4.58	35.86	103	308	P	H
		2390	43.54	-10.46	54	42.6	32.22	4.58	35.86	103	308	A	H

1. Path Loss(dB) = Cable loss(dB) + Filter loss(dB) + Attenuator loss(dB)
2. Level(dBμV/m) =

Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

3. Over Limit(dB) = Level(dBμV/m) – Limit Line(dBμV/m)

For Peak Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 54.51(dBμV) – 35.86 (dB)

= 55.45 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 55.45(dBμV/m) – 74(dBμV/m)

= -18.55(dB)

For Average Limit @ 2390MHz:

1. Level(dBμV/m)

= Antenna Factor(dB/m) + Path Loss(dB) + Read Level(dBμV) - Preamp Factor(dB)

= 32.22(dB/m) + 4.58(dB) + 42.6(dBμV) – 35.86 (dB)

= 43.54 (dBμV/m)

2. Over Limit(dB)

= Level(dBμV/m) – Limit Line(dBμV/m)

= 43.54(dBμV/m) – 54(dBμV/m)

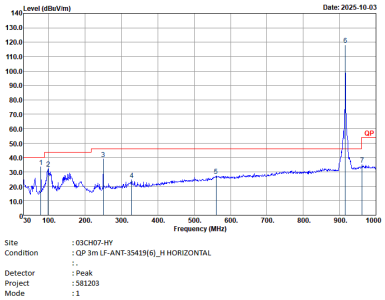
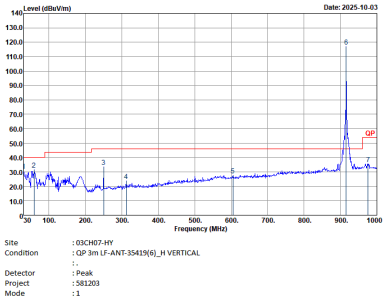
= -10.46(dB)

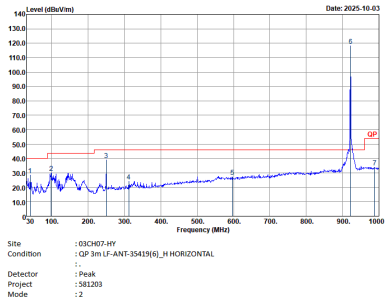
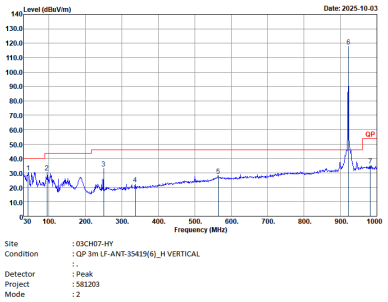
Both peak and average measured complies with the limit line, so test result is "PASS".

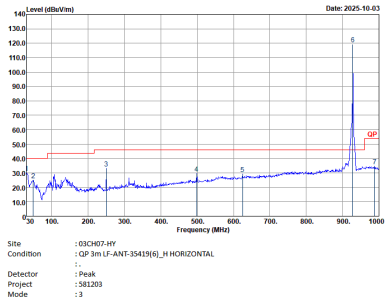
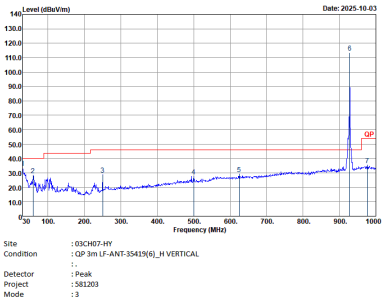
Appendix D. Radiated Spurious Emission Plots

915 MHz ~ 928 MHz

(30 MHz ~ 1 GHz @ 3m)

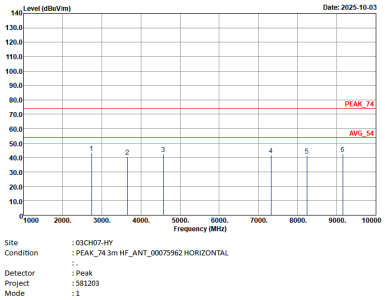
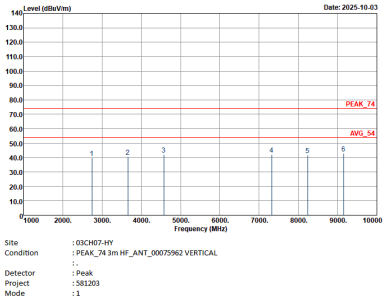
ANT	LoRa_125kHz 915.2MHz	
1	Horizontal	Vertical
QP / Peak		

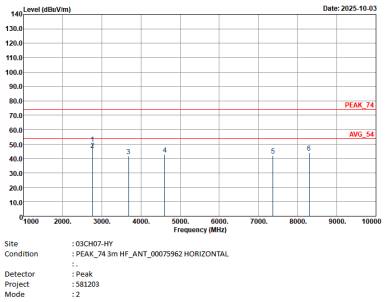
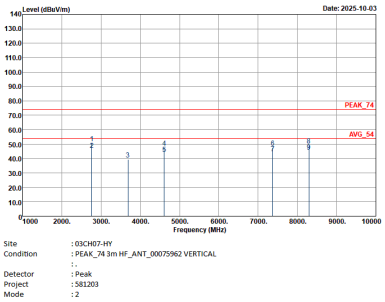
ANT	LoRa_125kHz 921.6MHz	
1	Horizontal	Vertical
QP / Peak		

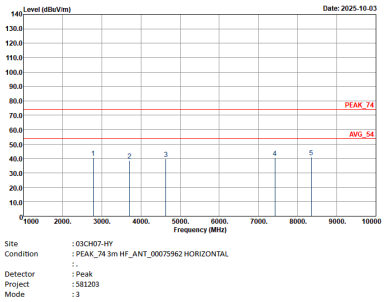
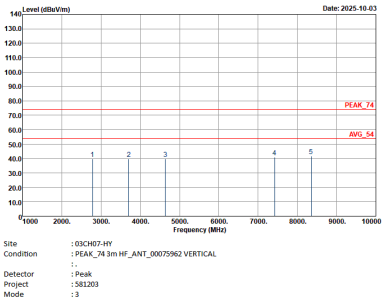
ANT	LoRa_125kHz 927.8MHz	
1	Horizontal	Vertical
QP / Peak		

915 MHz ~ 928 MHz

(30 MHz ~ 1 GHz @ 3m)

ANT	LoRa_125kHz 915.2MHz	
1	Horizontal	Vertical
Peak Avg.		

ANT	LoRa_125kHz 921.6MHz	
1	Horizontal	Vertical
Peak Avg.		

ANT	LoRa_125kHz 927.8MHz	
1	Horizontal	Vertical
Peak Avg.		

Appendix E. Duty Cycle Plots

Band	Duty Cycle (%)	T(us)	1/T(kHz)	VBW Setting
LoRa 125 kHz	40.45	14900	0.07	100Hz

LoRa 125 kHz