FCC Test Report

FCC ID	:	**P27LORAAREAV2**
Equipment	:	**MachineQ Area 8C V2 LoRaWAN Gateway**
Model No.	:	**GII-AD-B**
Brand Name	:	**Sercomm, Comcast, MachineQ** **(For marketing purpose.)**
Applicant	:	**Sercomm Corporation**
Address	:	**8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan, R.O.C.**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**May 15, 2024**
Tested Date	:	**May 20 ~ Jun. 04, 2024**

We, International Certification Corporation, would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by:	**Approved by:**
Along Chen / Assistant Manager	**Gary Chang / Manager**

Table of Contents

Release Record

Report No.	Version	Description	Issued Date
FR451502LR	Rev. 01	Initial issue	Jul. 19, 2024

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emission	[dBuV]: 0.402MHz 42.50 (Margin -5.31dB) - AV	Pass
15.247(d) 15.209	Unwanted Emissions	[dBuV/m at 3m]: 42.61MHz 33.68 (Margin -6.32dB) - PK	Pass
15.247(d)	Band Edge	Meet the requirement of limit	Pass
15.247(b)(2)(3)	Conducted Output Power	Power [dBm]: 27.31	Pass
15.247(a)(1)(i)	Number of Hopping Channels	Meet the requirement of limit	Pass
15.247(a)(1)	Hopping Channel Separation	Meet the requirement of limit	Pass
15.247(f)	Dwell Time	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information					
Frequency Range (MHz)	**Ch. Freq. (MHz)**	**Channel List**	**Data Rate (bit/sec)**	**Spread Factor**	**Channel Bandwidth (kHz)**
902 ~ 928	902.3 ~ 914.9	64 channels	5.47-980kbps	7 ~ 10	125
Note 1: RF output power specifies that Maximum Conducted (Average) Output Power. Note 2: The device uses FHSS modulation.					

1.1.2 Antenna Details

Brand	Model	Type	Connector	Gain (dBi)	Remarks
Sercomm	61723000SG	Dipole	R-SMA	0.70	External Antenna
Sercomm	61720009WA	PIFA	NA	2.30	Internal Antenna

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	48Vdc from adapter 54Vdc from PoE

Note: The above PoE power supply is not bundled in market.

1.1.4 Accessories

Accessories		
No.	**Equipment**	**Description**
1	Adapter	Brand: MASS POWER Model: S024-1E480050VU-H I/P: 100-240Vac, 50/60Hz, 0.6A O/P: 48.0Vdc, 0.5A Power Line: 2.95m non-shielded without core
2	RJ45 cable	3m non-shielded without core

1.1.5 Channel List

Channel Bandwidth: 125kHz							
Channel	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**	**Channel**	**Frequency (MHz)**
0	902.3	16	905.5	32	908.7	48	911.9
1	902.5	17	905.7	33	908.9	49	912.1
2	902.7	18	905.9	34	909.1	50	912.3
3	902.9	19	906.1	35	909.3	51	912.5
4	903.1	20	906.3	36	909.5	52	912.7
5	903.3	21	906.5	37	909.7	53	912.9
6	903.5	22	906.7	38	909.9	54	913.1
7	903.7	23	906.9	39	910.1	55	913.3
8	903.9	24	907.1	40	910.3	56	913.5
9	904.1	25	907.3	41	910.5	57	913.7
10	904.3	26	907.5	42	910.7	58	913.9
11	904.5	27	907.7	43	910.9	59	914.1
12	904.7	28	907.9	44	911.1	60	914.3
13	904.9	29	908.1	45	911.3	61	914.5
14	905.1	30	908.3	46	911.5	62	914.7
15	905.3	31	908.5	47	911.7	63	914.9

1.1.6 Test Tool and Duty Cycle

Test Tool	Tera Term, V4.66	
Mode	**Duty Cycle (%)**	**Duty Factor (dB)**
LoRa (125kHz)	100.00	0.00

1.1.7 Power Index of Test Tool

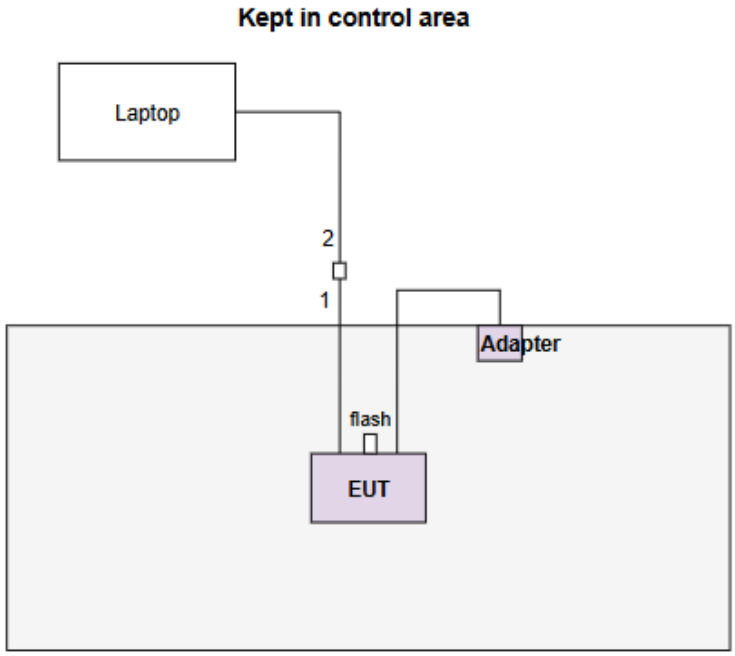
Channel Bandwidth: 125KHz	
Test Frequency (MHz)	**Power Index**
902.3	pa 1 -- pwid 12
908.5	pa 1 -- pwid 12
914.9	pa 1 -- pwid 12

1.2 Local Support Equipment List

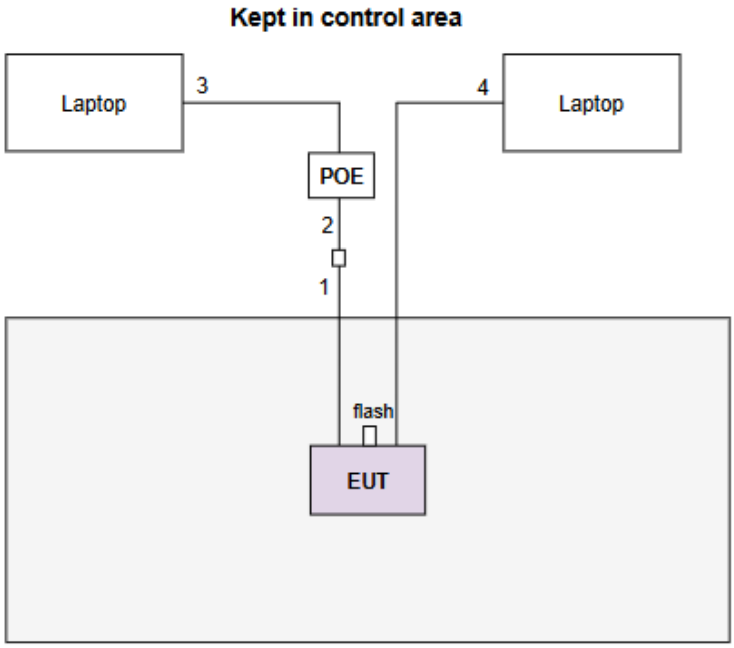
Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Remarks**
1	Laptop	DELL	Latitude 3440	DoC	---
2	Laptop	DELL	Latitude 5400	DoC	---
3	USB 3.1 Type-C OTG Flash	pqi	Connect 313	---	---
4	PoE	UBIQUITI	POE-54V-80W	---	Provided by applicant.

1.3 Test Setup Chart

Test Setup Diagram (Adapter mode)



No.	Signal cable / Length (m)
1	RJ45, 3m non-shielded.
2	RJ45, 10m non-shielded.

Test Setup Diagram (PoE mode)


No.	Signal cable / Length (m)
1	RJ45, 3m non-shielded.
2	RJ45, 10m non-shielded.
3	RJ45, 1.3m non-shielded.
4	RJ45, 10m non-shielded.

1.4 The Equipment List

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Tested Date	Jun. 04, 2024				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101658	Feb. 23, 2024	Feb. 22, 2025
LISN	R&S	ENV216	101579	May 09, 2024	May 08, 2025
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Oct. 11, 2023	Oct. 10, 2024
LISN (Support Unit)	SCHWARZBECK	Schwarzbeck 8127	8127666	Mar. 05, 2024	Mar. 04, 2025
50 ohm terminal (Support Unit)	NA	50	01	Jun. 14, 2023	Jun. 13, 2024
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber3 / (03CH03-WS)				
Tested Date	May 20 ~ May 21, 2024				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Receiver	R&S	ESR3	101657	Mar. 05, 2024	Mar. 04, 2025
Spectrum Analyzer	R&S	FSV40	101499	Apr. 02, 2024	Apr. 01, 2025
Loop Antenna	R&S	HFH2-Z2	100330	Oct. 31, 2023	Oct. 30, 2024
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Jul. 04, 2023	Jul. 03, 2024
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Dec. 14, 2023	Dec. 13, 2024
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 30, 2023	Oct. 29, 2024
Preamplifier	EMC	EMC02325	980187	Jul. 10, 2023	Jul. 09, 2024
Preamplifier	EMC	EMC118A45SE	980897	Aug. 01, 2023	Jul. 31, 2024
Preamplifier	EMC	EMC184045SE	980903	Jul. 17, 2023	Jul. 16, 2024
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Oct. 03, 2023	Oct. 02, 2024
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800 -001	Sep. 22, 2023	Sep. 21, 2024
LF cable-3M	EMC	EMC8D-NM-NM-300 0	131103	Sep. 22, 2023	Sep. 21, 2024
LF cable-13M	EMC	EMC8D-NM-NM-130 00	131104	Sep. 22, 2023	Sep. 21, 2024
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Sep. 22, 2023	Sep. 21, 2024
RF cable-8M	EMC	EMC104-SM-SM-80 00	181107	Sep. 22, 2023	Sep. 21, 2024
Attenuator	Pasternack	PE7005-10	10-3	Sep. 27, 2023	Sep. 26, 2024
HIGHPASS FILTER	WI	WHK3.1-18G-10SS	43	Sep. 27, 2023	Sep. 26, 2024
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Tested Date	Jun. 03, 2024				
Instrument	**Brand**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV3044	101516	Jun. 27, 2023	Jun. 26, 2024
Spectrum Analyzer	R&S	FSV40	101910	Apr. 18, 2024	Apr. 17, 2025
Power Meter	Anritsu	ML2495A	1241002	Nov. 21, 2023	Nov. 20, 2024
Power Sensor	Anritsu	MA2411B	1207366	Nov. 21, 2023	Nov. 20, 2024
Attenuator	Pasternack	PE7005-20	20-1	Oct. 05, 2023	Oct. 04, 2024
Measurement Software	Sporton	SENSE-15247_FS	V5.10.8	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

47 CFR FCC Part 15.247
ANSI C63.10-2013

1.6 Reference Guidance

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

1.7 Deviation from Test Standard and Measurement Procedure

None

1.8 Measurement Uncertainty

The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)).

Measurement Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.130 Hz
Conducted power	±0.808 dB
Power density	±0.583 dB
Unwanted Emission ≤ 1GHz	±3.96 dB
Unwanted Emission > 1GHz	±4.51 dB

2 Test Configuration

2.1 Testing Facility

Test Laboratory	International Certification Corporation
Test Site	CO01-WS, TH01-WS
Address of Test Site	No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)
Test Site	03CH03-WS
Address of Test Site	No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

- FCC Designation No.: TW0009
- FCC site registration No.: 207696
- ISED#: 10807C
- CAB identifier: TW2732

2.2 The Worst Test Modes and Channel Details

Test item	Channel Bandwidth (kHz)	Test Frequency (MHz)	Separating Factor	Test Configuration
AC Power Line Conducted Emission	125	902.3 / 908.5 / 914.9	SF10	1, 2
Unwanted Emissions ≤ 1GHz	125	902.3 / 908.5 / 914.9	SF10	1, 2, 3, 4
Unwanted Emissions > 1GHz	125	902.3 / 908.5 / 914.9	SF10	2, 4
Conducted Output Power Hopping Channel Separation 20dB and Occupied bandwidth Channel Separation	125	902.3 / 908.5 / 914.9	SF10	2
Number of Hopping Channels	125	902.3 ~ 914.9	SF10	2
Dwell Time	125	902.3	SF10, 9, 8, 7	2

NOTE:
1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** results were found as the worst case and were shown in this report.
2. Test Configurations are listed as below:
   1) Test Configuration 1: External antenna, adapter mode
   2) Test Configuration 2: External antenna, POE mode
   3) Test Configuration 3: Internal antenna, adapter mode
   4) Test Configuration 4: Internal antenna, POE mode

3 Transmitter Test Results

3.1 Unwanted Emissions into Restricted Frequency Bands

3.1.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.1.2 Test Procedures

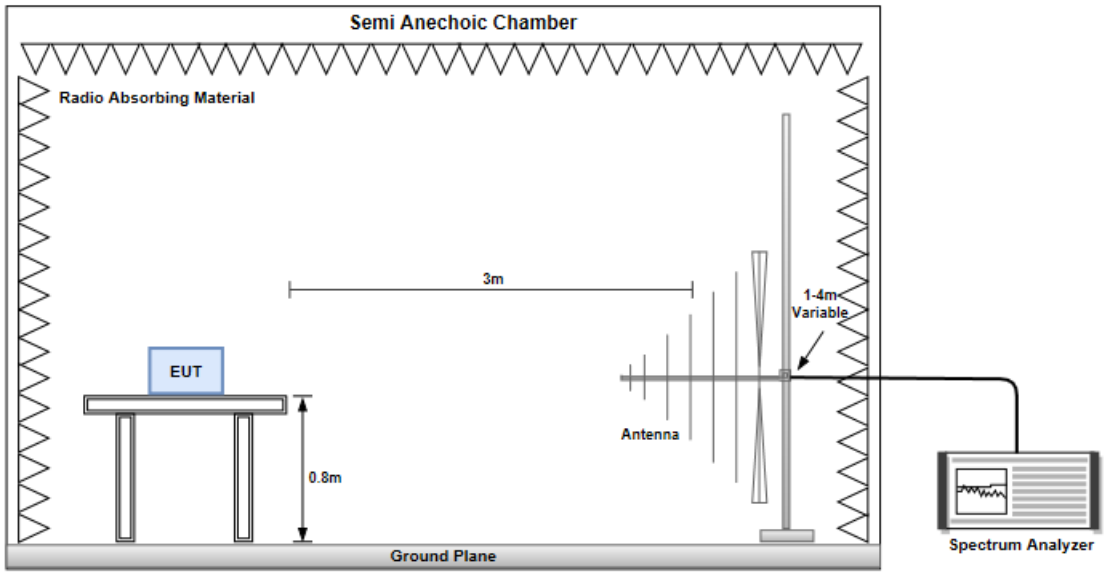
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

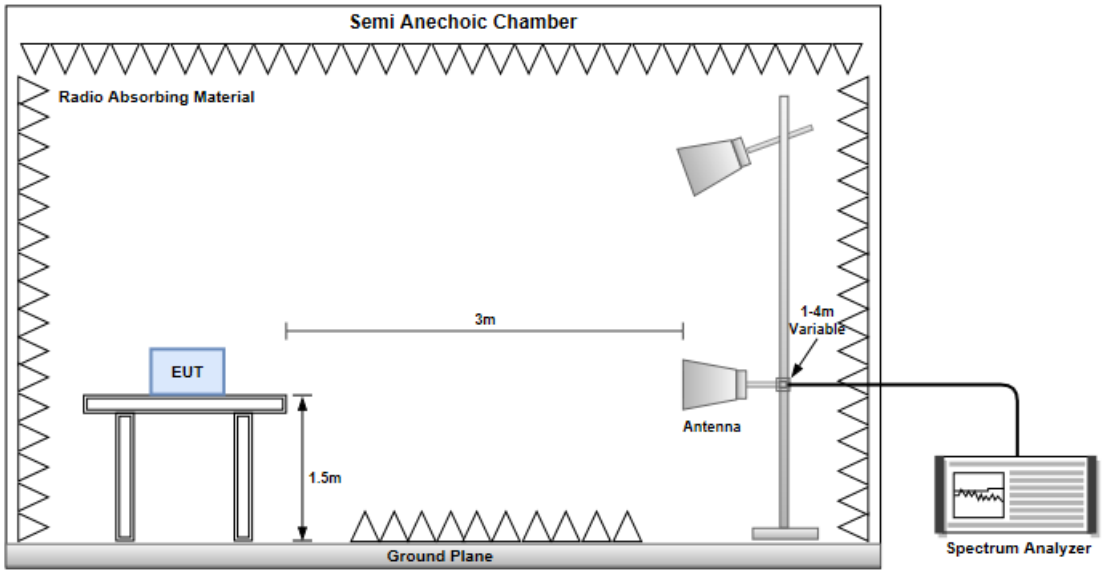
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.1.3 Test Setup

Radiated Emissions below 1 GHz



Radiated Emissions above 1 GHz



3.1.4 Test Results

Refer to Appendix A.

3.2 Unwanted Emissions into Non-Restricted Frequency Bands

3.2.1 Limit of Unwanted Emissions into Non-Restricted Frequency Bands

The peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.2.2 Test Procedures

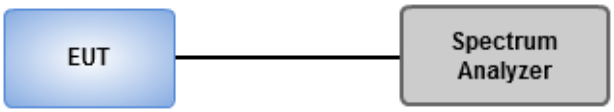
Reference Level Measurement

1. Set the RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Set Sweep time = auto couple, Trace mode = max hold.
3. Allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

Unwanted Emissions Level Measurement

1. Set RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Trace Mode = max hold, Sweep = auto couple.
3. Allow the trace to stabilize.
4. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

3.2.3 Test Setup



3.2.4 Test Results

Ambient Condition	24°C / 65%	Tested By	Roger Lu

Refer to Appendix B.

3.3 Conducted Output Power

3.3.1 Limit of Conducted Output Power

1W

3.3.2 Test Procedures

1. A wideband power meter is used for power measurement. Bandwidth of power senor and meter is 50MHz
2 If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power

3.3.3 Test Setup

3.3.4 Test Results

Ambient Condition	24°C / 65%	**Tested By**	Roger Lu

Refer to Appendix C.

3.4 Number of Hopping Frequency

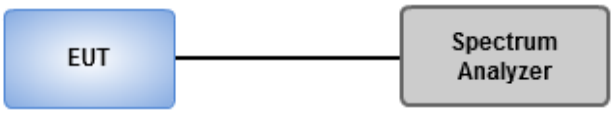
3.4.1 Limit of Number of Hopping Frequency

Number of Hopping Frequencies Limit for Frequency Hopping Systems		
☒	902-928 MHz Band:	
	☒	N ≥ 50, 20 dB bandwidth of the hopping channel is less than 250 kHz
	☐	N ≥ 25, 20 dB bandwidth of the hopping channel is 250 kHz or greater
	☐	Hybrid mode, No minimum number of hopping channels associated with hybrid system.
N: Number of Hopping Frequencies		

3.4.2 Test Procedures

1. Set RBW = 100kHz, VBW = 300kHz, Sweep time = Auto, Detector = Peak Trace max hold.
2 Allow trace to stabilize.

3.4.3 Test Setup



3.4.4 Test Results

Ambient Condition	24°C / 65%	**Tested By**	Roger Lu

Refer to Appendix D.

3.5 20dB and Occupied Bandwidth

3.5.1 Test Procedures

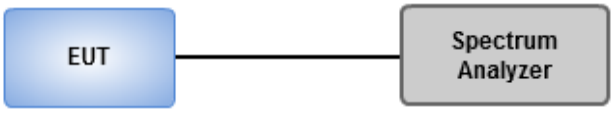
20dB Bandwidth

1. Set RBW=3kHz, VBW=10kHz, Sweep time=Auto, Detector=Peak Trace max hold.
2 Allow trace to stabilize.
3 Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 20 dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

1. Set RBW=3kHz, VBW=10kHz, Sweep time = Auto, Detector=Peak, Trace max hold
2 Allow trace to stabilize
3. Use Occupied bandwidth function of spectrum analyzer to measuring 99% occupied bandwidth

3.5.2 Test Setup



3.5.3 Test Results

Ambient Condition	24°C / 65%	**Tested By**	Roger Lu

Refer to Appendix E.

3.6 Channel Separation

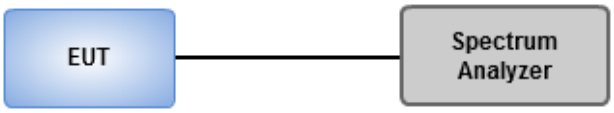
3.6.1 Limit of Channel Separation

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.

3.6.2 Test Procedures

1. Set RBW=10kHz, VBW=30kHz, Sweep time=Auto, Detector=Peak Trace max hold.
2 Allow trace to stabilize.
3 Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The EUT shall show compliance with the appropriate regulatory limit

3.6.3 Test Setup



3.6.4 Test Results

Ambient Condition	24°C / 65%	**Tested By**	Roger Lu

Refer to Appendix F.

3.7 Number of Dwell Time

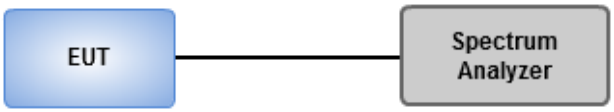
3.7.1 Limit of Dwell time

Time of Occupancy (Dwell Time) Limit for Frequency Hopping Systems		
☒	902-928 MHz Band:	
	☒	≤ 0.4 second within a 20 second period, 20 dB bandwidth of the hopping channel is less than 250 kHz
	☐	≤ 0.4 second within a 10 second period, 20 dB bandwidth of the hopping channel is 250 kHz or greater
	☐	Hybrid mode ,an average time of occupancy on any frequency not to exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4

3.7.2 Test Procedures

1. Set RBW=200kHz, VBW=1000kHz, Sweep time=3.2s / 500ms, Detector=Peak, Span=0Hz, Trace max hold for 8 hopping channels.
2. Set RBW=200kHz, VBW=1000kHz, Sweep time=6.4s / 500ms, Detector=Peak, Span=0Hz, Trace max hold for 16 hopping channels.
3. Set RBW=200kHz, VBW=1000kHz, Sweep time=25.6s / 500ms, Detector=Peak, Span=0Hz, Trace max hold for 64 hopping channels.
4. Measure and record the burst on time.

3.7.3 Test Setup



3.7.4 Test Results

Ambient Condition	24°C / 65%	Tested By	Roger Lu

Refer to Appendix G.

3.8 AC Power Line Conducted Emissions

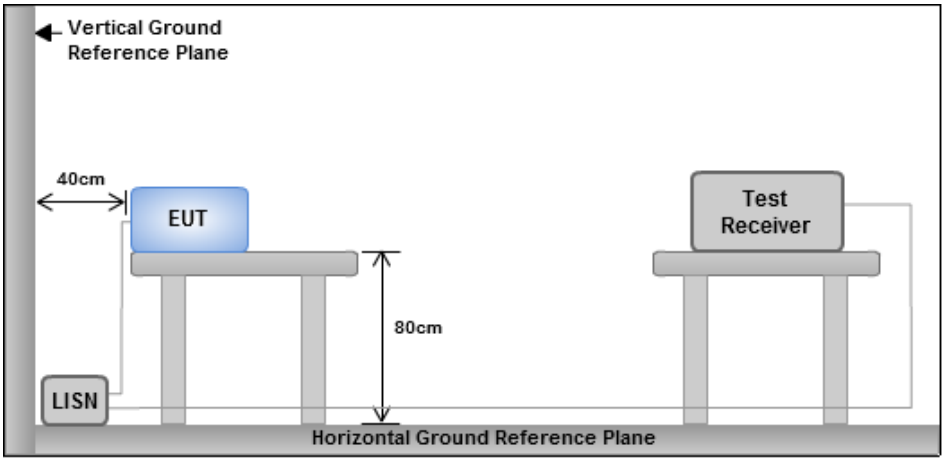
3.8.1 Limit of AC Power Line Conducted Emissions

Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.8.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V / 60Hz.

3.8.3 Test Setup



Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.8.4 Test Results

Refer to Appendix G.

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corporation (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website http://www.icertifi.com.tw.

Linkou

Tel: 886-2-2601-1640

No.30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan (R.O.C.)

Kwei Shan

Tel: 886-3-271-8666

No.3-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

No.2-1, Lane 6, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

Kwei Shan Site II

Tel: 886-3-271-8640

No.14-1, Lane 19, Wen San 3rd St., Kwei Shan Dist., Tao Yuan City 33381, Taiwan (R.O.C.)

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666
Fax: 886-3-318-0345
Email: ICC_Service@icertifi.com.tw

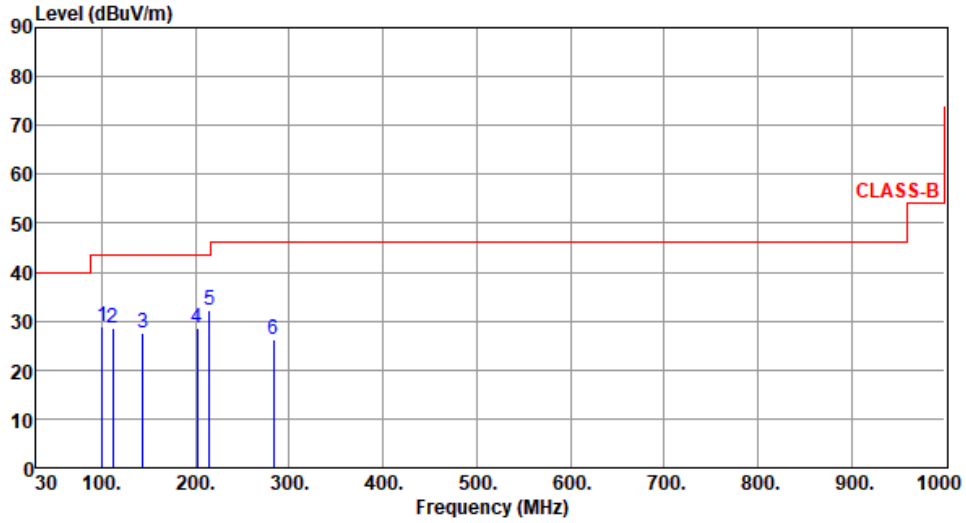
==END==

Test configuration 1: External antenna, adapter mode

Unwanted Emissions (Below 1GHz)

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

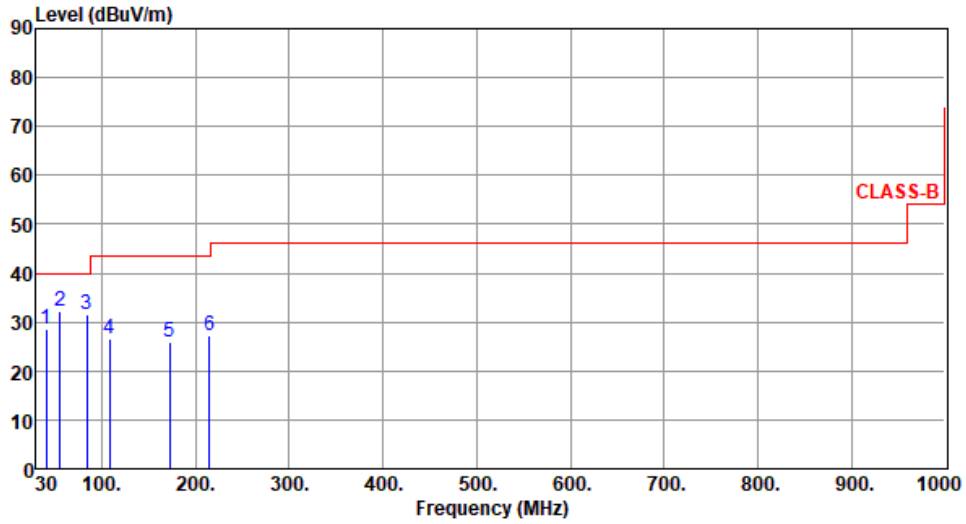


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	100.26	28.97	43.50	-14.53	41.89	-12.92	Peak	---	---
2	111.57	28.62	43.50	-14.88	40.05	-11.43	Peak	---	---
3	143.48	27.63	43.50	-15.87	36.29	-8.66	Peak	---	---
4	201.77	28.44	43.50	-15.06	40.22	-11.78	Peak	---	---
5	215.27	32.18	43.50	-11.32	44.07	-11.89	Peak	---	---
6	283.17	26.11	46.00	-19.89	34.50	-8.39	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

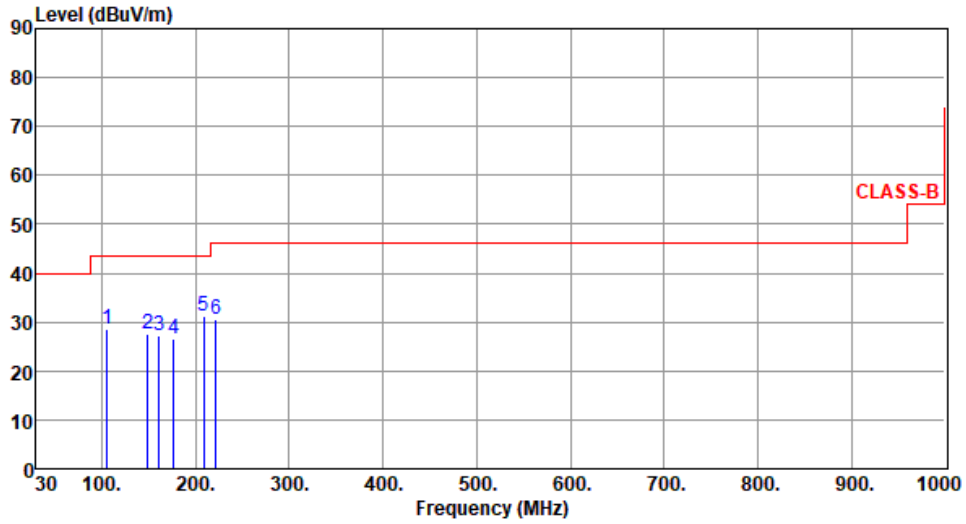


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	28.52	40.00	-11.48	37.22	-8.70	QP	100	343
2	55.22	32.06	40.00	-7.94	40.41	-8.35	Peak	---	---
3	83.76	31.48	40.00	-8.52	45.66	-14.18	Peak	---	---
4	108.57	26.40	43.50	-17.10	38.00	-11.60	Peak	---	---
5	172.59	26.02	43.50	-17.48	35.23	-9.21	Peak	---	---
6	215.27	27.33	43.50	-16.17	39.22	-11.89	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

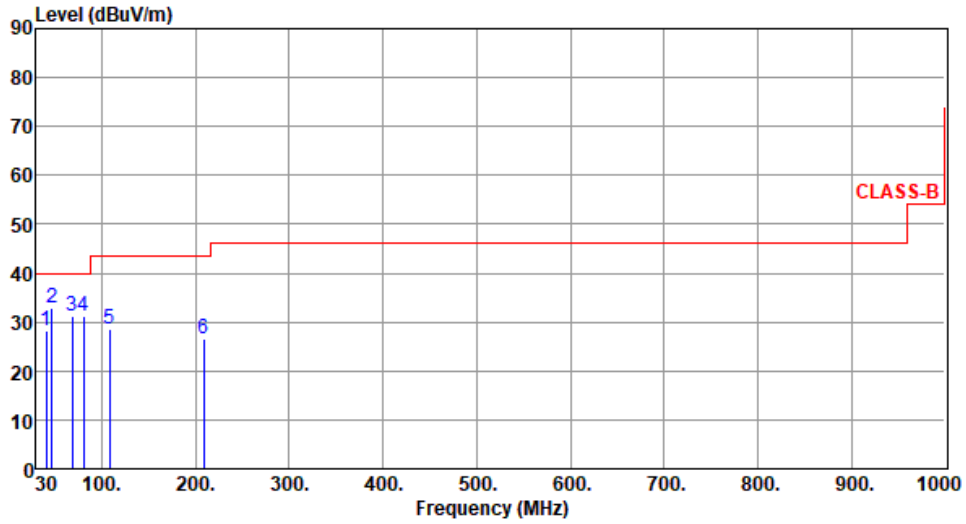


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	105.66	28.57	43.50	-14.93	40.65	-12.08	Peak	---	---
2	149.31	27.50	43.50	-16.00	35.97	-8.47	Peak	---	---
3	160.95	27.24	43.50	-16.26	35.82	-8.58	Peak	---	---
4	176.47	26.72	43.50	-16.78	36.30	-9.58	Peak	---	---
5	208.48	31.05	43.50	-12.45	42.86	-11.81	Peak	---	---
6	222.06	30.53	46.00	-15.47	42.67	-12.14	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

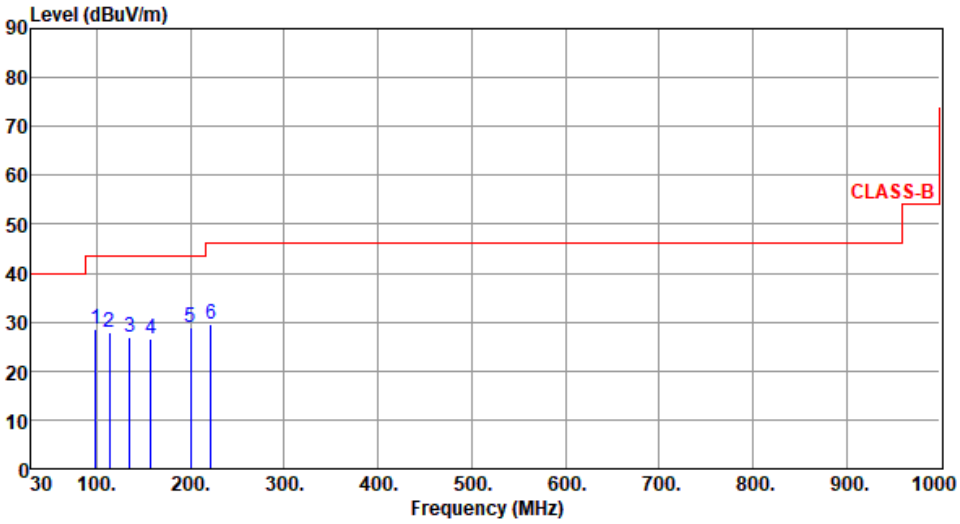


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	28.19	40.00	-11.81	36.89	-8.70	QP	100	341
2	46.49	32.85	40.00	-7.15	40.92	-8.07	Peak	---	---
3	68.80	31.08	40.00	-8.92	41.50	-10.42	Peak	---	---
4	80.44	31.19	40.00	-8.81	44.55	-13.36	Peak	---	---
5	108.57	28.40	43.50	-15.10	40.00	-11.60	Peak	---	---
6	208.48	26.67	43.50	-16.83	38.48	-11.81	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

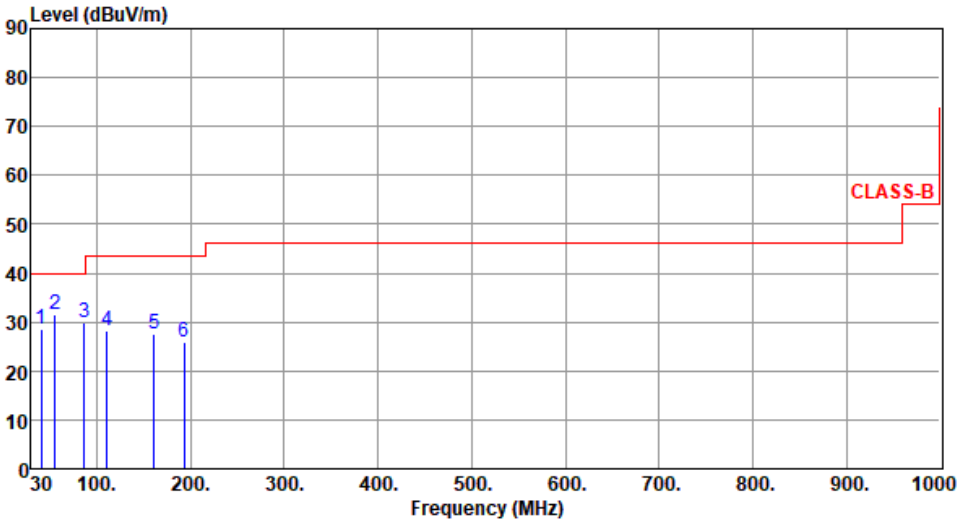


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	98.87	28.46	43.50	-15.04	41.51	-13.05	Peak	---	---
2	113.42	27.75	43.50	-15.75	39.22	-11.47	Peak	---	---
3	134.76	26.81	43.50	-16.69	36.40	-9.59	Peak	---	---
4	158.04	26.60	43.50	-16.90	35.10	-8.50	Peak	---	---
5	199.75	28.87	43.50	-14.63	40.62	-11.75	Peak	---	---
6	222.06	29.53	46.00	-16.47	41.67	-12.14	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	28.49	40.00	-11.51	37.19	-8.70	QP	100	344
2	55.48	31.43	40.00	-8.57	39.78	-8.35	Peak	---	---
3	86.26	29.76	40.00	-10.24	44.15	-14.39	Peak	---	---
4	110.51	28.15	43.50	-15.35	39.81	-11.66	Peak	---	---
5	160.95	27.49	43.50	-16.01	36.07	-8.58	Peak	---	---
6	192.96	25.83	43.50	-17.67	37.31	-11.48	Peak	---	---

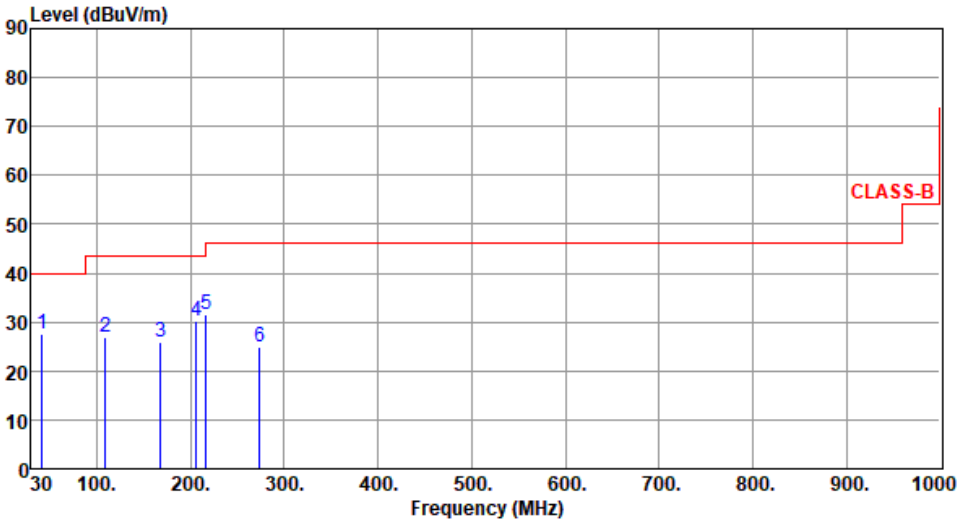
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Test configuration 2: External antenna, POE mode

Unwanted Emissions (Below 1GHz)

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

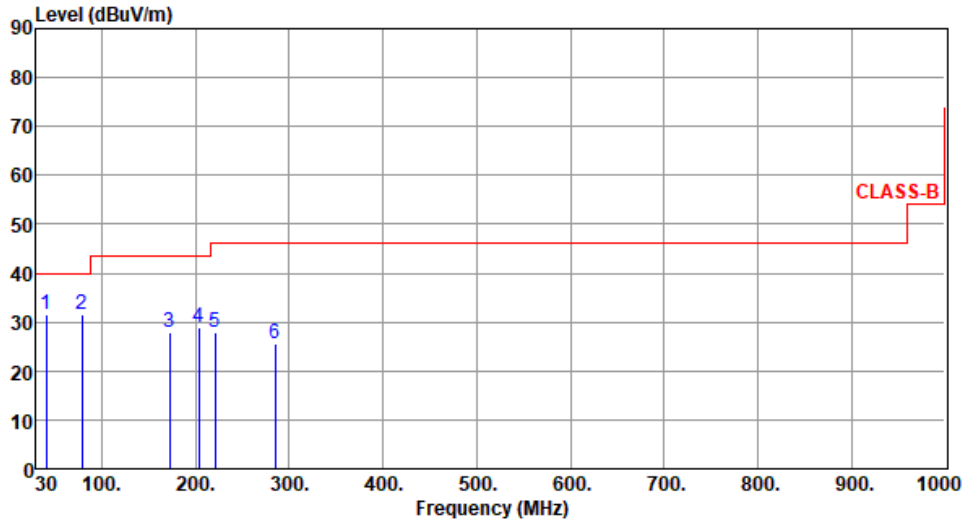


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	41.64	27.48	40.00	-12.52	36.04	-8.56	Peak	---	---
2	109.54	27.00	43.50	-16.50	38.58	-11.58	Peak	---	---
3	168.46	25.77	43.50	-17.73	34.62	-8.85	Peak	---	---
4	206.54	30.14	43.50	-13.36	41.96	-11.82	Peak	---	---
5	216.24	31.65	46.00	-14.35	43.59	-11.94	Peak	---	---
6	273.47	24.81	46.00	-21.19	33.58	-8.77	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

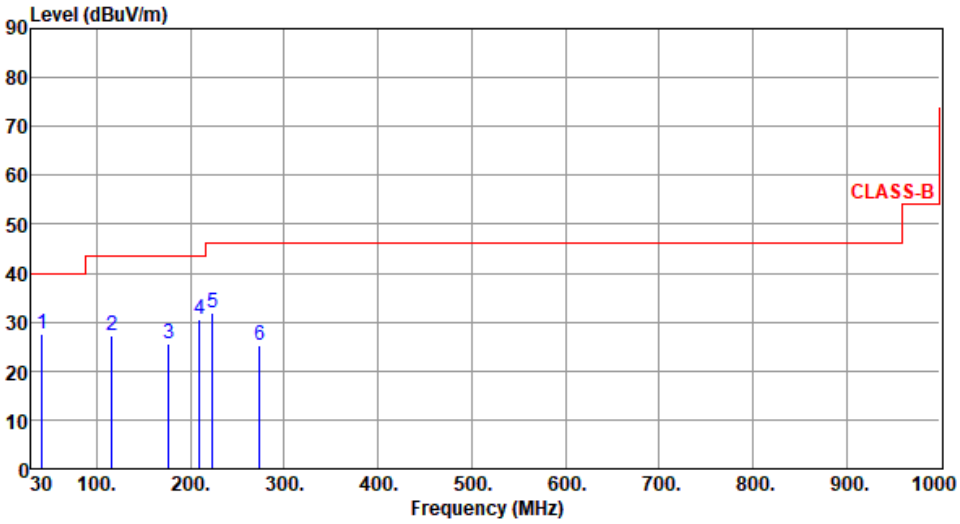


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	31.59	40.00	-8.41	40.29	-8.70	QP	100	5
2	78.50	31.57	40.00	-8.43	44.45	-12.88	Peak	---	---
3	172.48	27.87	43.50	-15.63	37.07	-9.20	Peak	---	---
4	203.63	29.03	43.50	-14.47	40.83	-11.80	Peak	---	---
5	221.09	27.76	46.00	-18.24	39.91	-12.15	Peak	---	---
6	285.11	25.63	46.00	-20.37	33.98	-8.35	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

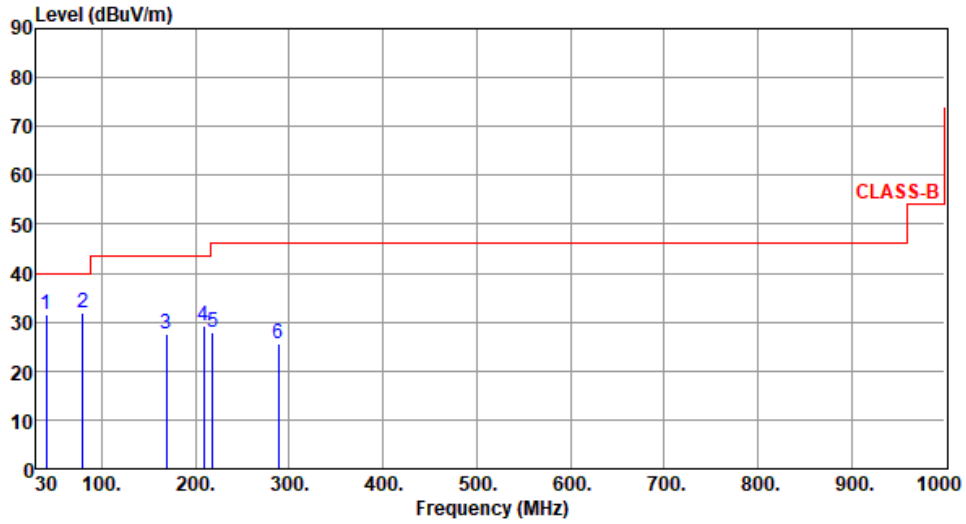


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	41.64	27.59	40.00	-12.41	36.15	-8.56	Peak	---	---
2	115.68	27.16	43.50	-16.34	38.54	-11.38	Peak	---	---
3	177.00	25.58	43.50	-17.92	35.21	-9.63	Peak	---	---
4	209.64	30.57	43.50	-12.93	42.38	-11.81	Peak	---	---
5	223.55	31.77	46.00	-14.23	43.91	-12.14	Peak	---	---
6	273.66	25.19	46.00	-20.81	33.95	-8.76	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

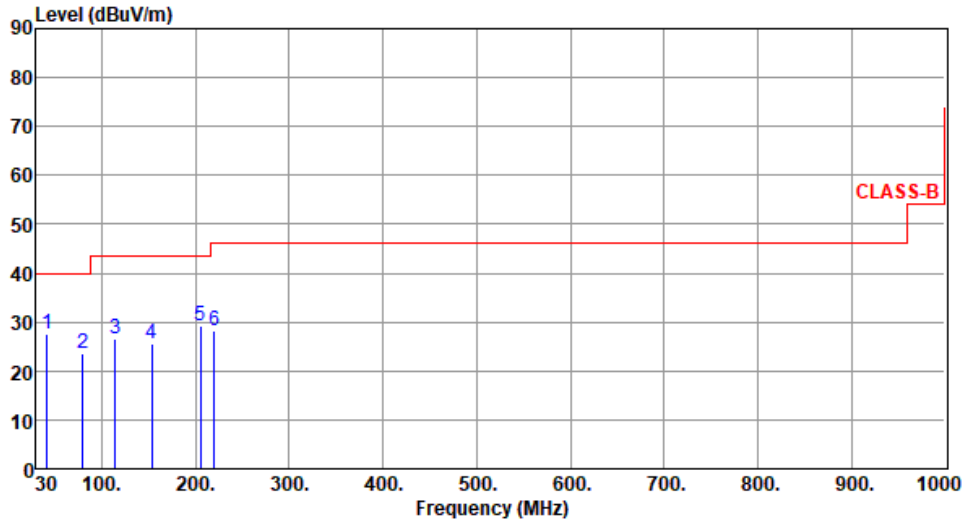


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	31.66	40.00	-8.34	40.36	-8.70	QP	100	1
2	79.64	31.77	40.00	-8.23	44.93	-13.16	Peak	---	---
3	168.94	27.55	43.50	-15.95	36.49	-8.94	Peak	---	---
4	208.64	29.33	43.50	-14.17	41.14	-11.81	Peak	---	---
5	218.57	27.81	46.00	-18.19	39.88	-12.07	Peak	---	---
6	288.36	25.73	46.00	-20.27	33.93	-8.20	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

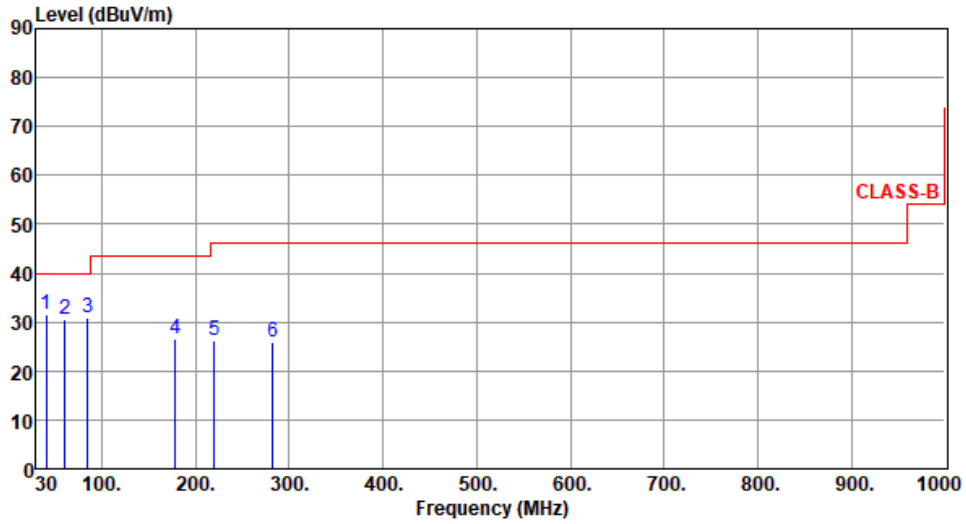


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	41.64	27.66	40.00	-12.34	36.22	-8.56	Peak	---	---
2	79.47	23.50	40.00	-16.50	36.61	-13.11	Peak	---	---
3	114.39	26.64	43.50	-16.86	37.95	-11.31	Peak	---	---
4	153.19	25.73	43.50	-17.77	34.30	-8.57	Peak	---	---
5	205.57	29.24	43.50	-14.26	41.07	-11.83	Peak	---	---
6	220.12	28.28	46.00	-17.72	40.43	-12.15	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66



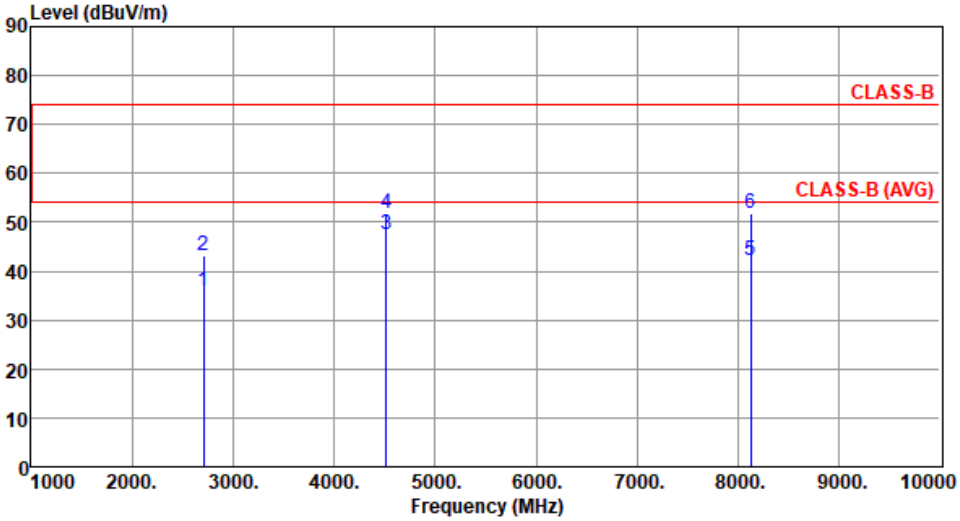
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	31.62	40.00	-8.38	40.32	-8.70	QP	100	7
2	61.04	30.51	40.00	-9.49	39.55	-9.04	Peak	---	---
3	85.29	30.86	40.00	-9.14	45.08	-14.22	Peak	---	---
4	178.41	26.42	43.50	-17.08	36.39	-9.97	Peak	---	---
5	220.12	26.18	46.00	-19.82	38.33	-12.15	Peak	---	---
6	282.20	25.79	46.00	-20.21	34.21	-8.42	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Unwanted Emissions (Above 1GHz)

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

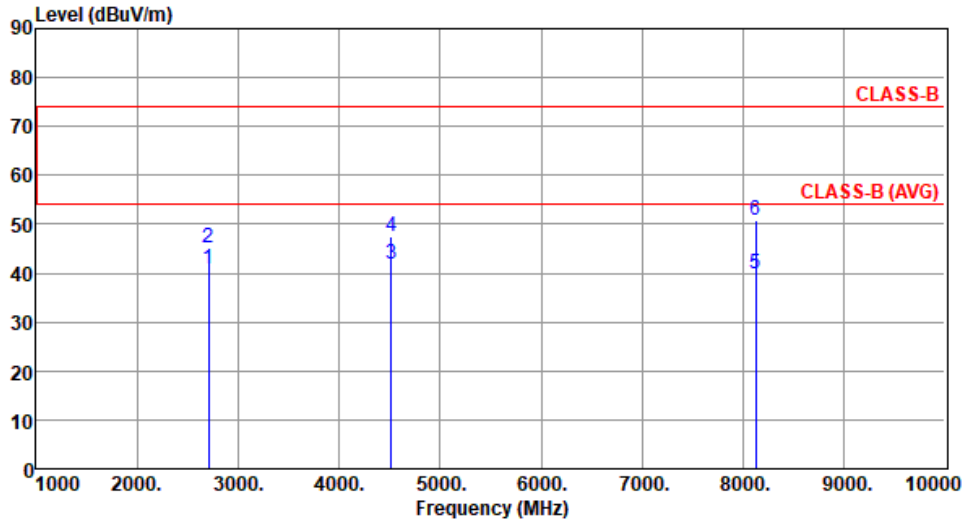


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2706.90	35.99	54.00	-18.01	39.48	-3.49	Average	186	276
2	2706.90	43.10	74.00	-30.90	46.59	-3.49	Peak	186	276
3	4511.50	47.55	54.00	-6.45	47.99	-0.44	Average	138	30
4	4511.50	51.85	74.00	-22.15	52.29	-0.44	Peak	138	30
5	8120.70	42.02	54.00	-11.98	36.02	6.00	Average	121	357
6	8120.70	51.94	74.00	-22.06	45.94	6.00	Peak	121	357

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

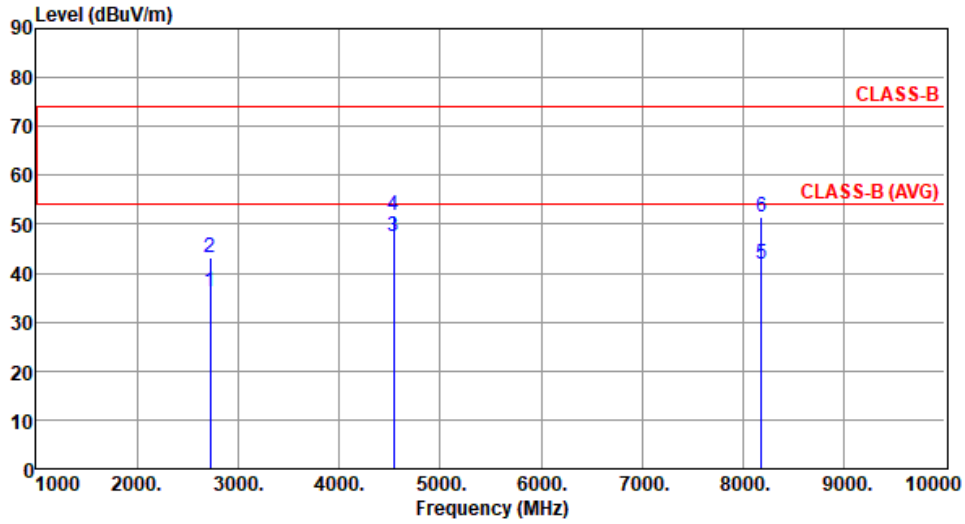


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2706.90	40.83	54.00	-13.17	44.32	-3.49	Average	273	3
2	2706.90	45.25	74.00	-28.75	48.74	-3.49	Peak	273	3
3	4511.50	41.72	54.00	-12.28	42.16	-0.44	Average	100	86
4	4511.50	47.55	74.00	-26.45	47.99	-0.44	Peak	100	86
5	8120.70	39.94	54.00	-14.06	33.94	6.00	Average	100	16
6	8120.70	50.76	74.00	-23.24	44.76	6.00	Peak	100	16

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

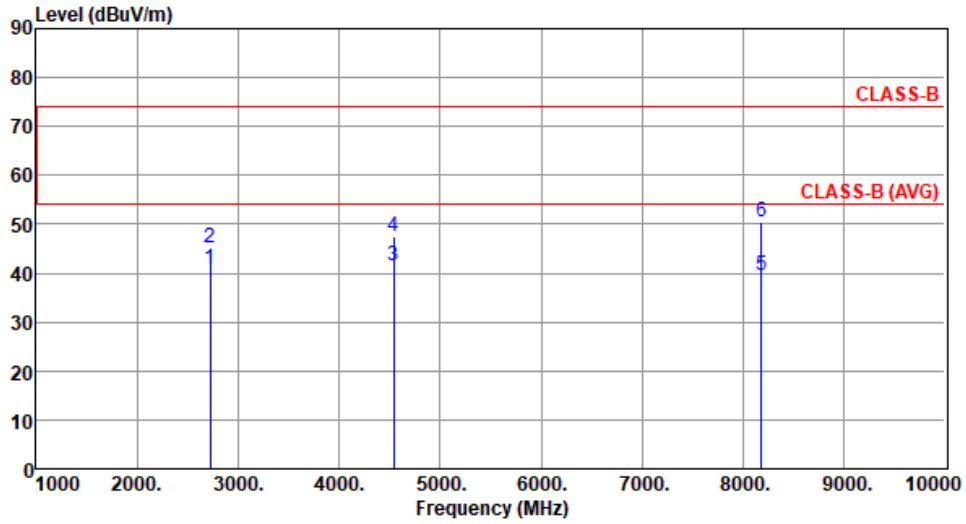


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2725.50	36.09	54.00	-17.91	39.43	-3.34	Average	191	280
2	2725.50	43.08	74.00	-30.92	46.42	-3.34	Peak	191	280
3	4542.50	47.58	54.00	-6.42	47.89	-0.31	Average	151	28
4	4542.50	51.74	74.00	-22.26	52.05	-0.31	Peak	151	28
5	8176.50	41.71	54.00	-12.29	35.95	5.76	Average	118	351
6	8176.50	51.53	74.00	-22.47	45.77	5.76	Peak	118	351

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2725.50	40.90	54.00	-13.10	44.24	-3.34	Average	276	1
2	2725.50	45.29	74.00	-28.71	48.63	-3.34	Peak	276	1
3	4542.50	41.61	54.00	-12.39	41.92	-0.31	Average	100	74
4	4542.50	47.45	74.00	-26.55	47.76	-0.31	Peak	100	74
5	8176.50	39.61	54.00	-14.39	33.85	5.76	Average	100	10
6	8176.50	50.33	74.00	-23.67	44.57	5.76	Peak	100	10

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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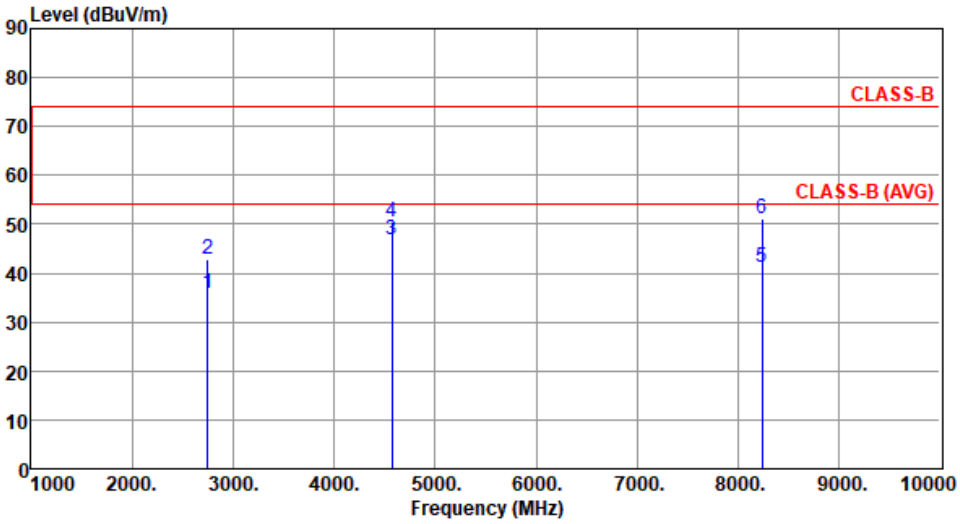
Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

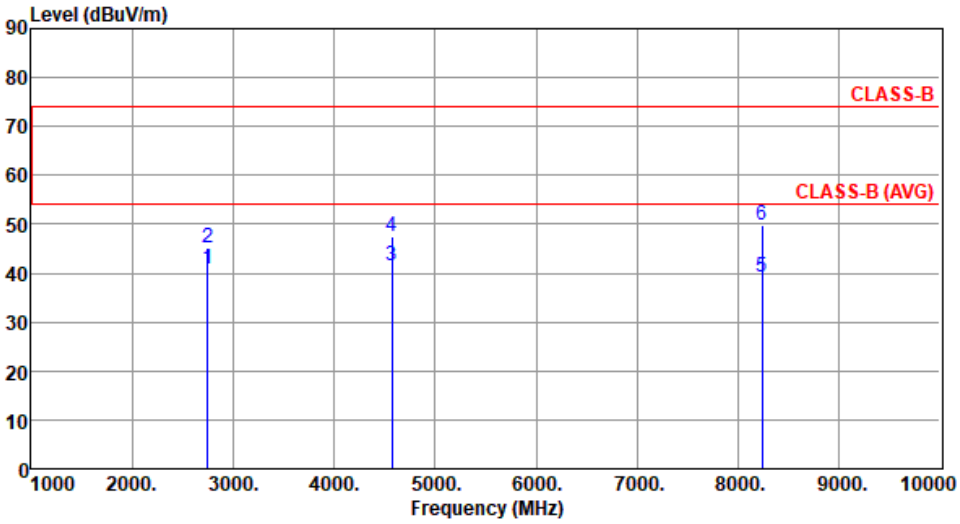


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2744.70	35.93	54.00	-18.07	39.26	-3.33	Average	186	283
2	2744.70	42.94	74.00	-31.06	46.27	-3.33	Peak	186	283
3	4574.50	46.99	54.00	-7.01	47.26	-0.27	Average	132	26
4	4574.50	50.58	74.00	-23.42	50.85	-0.27	Peak	132	26
5	8234.10	41.24	54.00	-12.76	35.77	5.47	Average	121	348
6	8234.10	50.99	74.00	-23.01	45.52	5.47	Peak	121	348

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2744.70	40.84	54.00	-13.16	44.17	-3.33	Average	274	1
2	2744.70	45.15	74.00	-28.85	48.48	-3.33	Peak	274	1
3	4574.50	41.48	54.00	-12.52	41.75	-0.27	Average	100	80
4	4574.50	47.35	74.00	-26.65	47.62	-0.27	Peak	100	80
5	8234.10	39.25	54.00	-14.75	33.78	5.47	Average	100	7
6	8234.10	49.90	74.00	-24.10	44.43	5.47	Peak	100	7

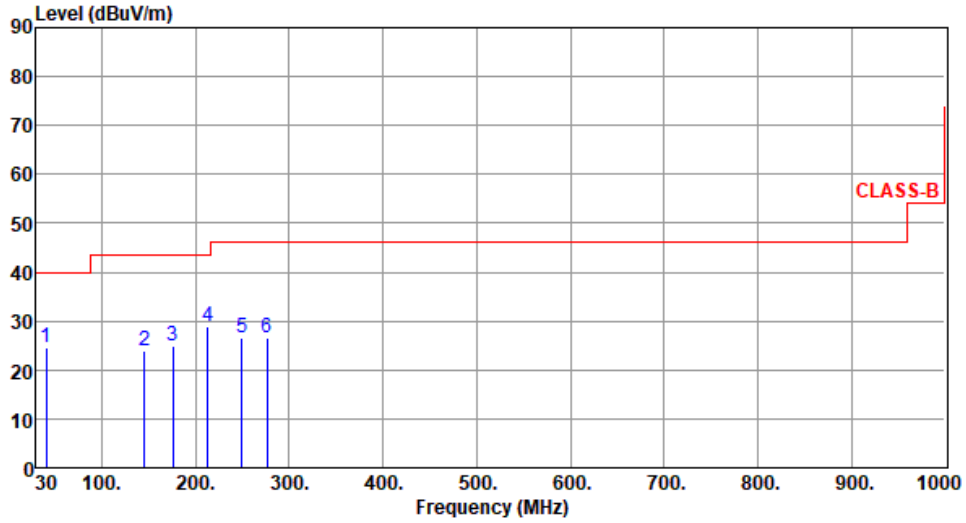
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Test configuration 3: Internal antenna, adapter mode

Unwanted Emissions (Below 1GHz)

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

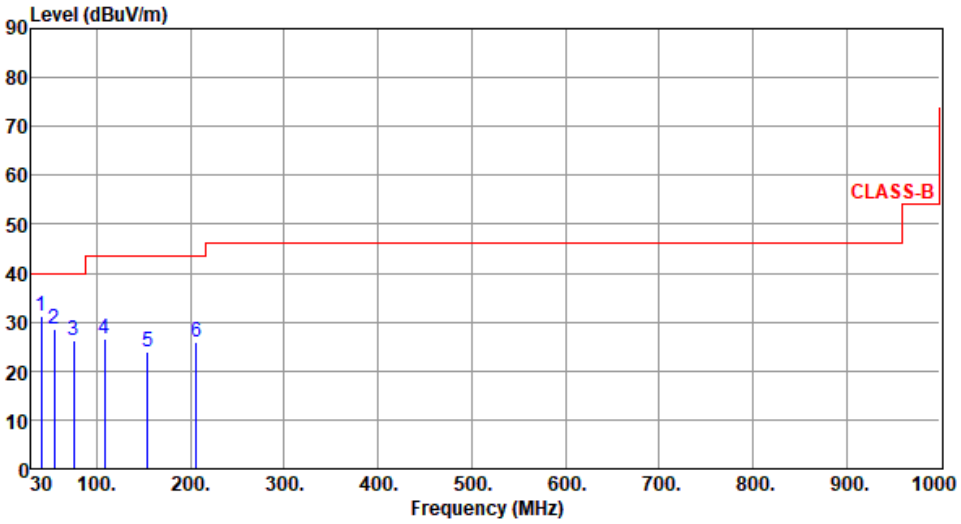


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	24.68	40.00	-15.32	33.38	-8.70	Peak	---	---
2	145.43	24.04	43.50	-19.46	32.70	-8.66	Peak	---	---
3	175.50	24.85	43.50	-18.65	34.39	-9.54	Peak	---	---
4	213.33	28.79	43.50	-14.71	40.65	-11.86	Peak	---	---
5	249.86	26.62	46.00	-19.38	36.33	-9.71	Peak	---	---
6	276.38	26.43	46.00	-19.57	35.06	-8.63	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

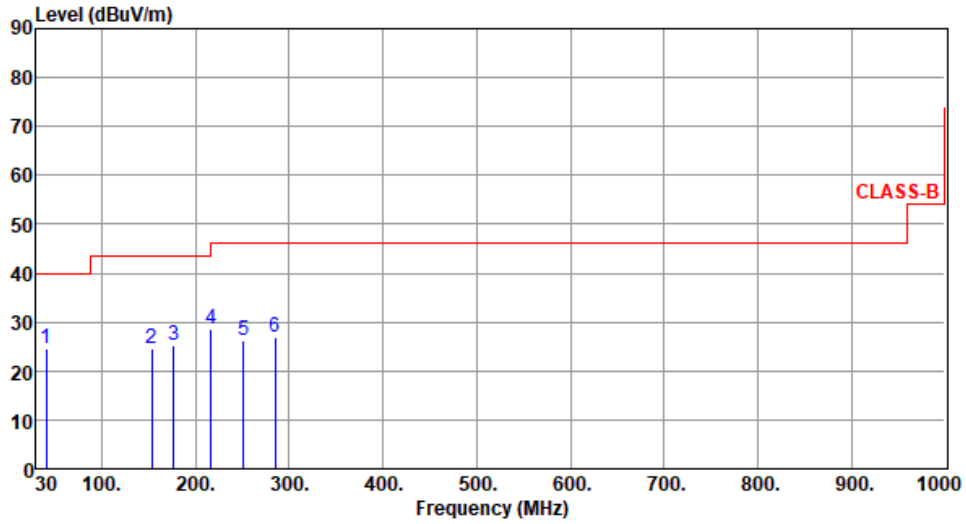


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	31.23	40.00	-8.77	39.93	-8.70	QP	100	321
2	54.25	28.59	40.00	-11.41	36.64	-8.05	Peak	---	---
3	75.59	26.14	40.00	-13.86	38.36	-12.22	Peak	---	---
4	108.57	26.47	43.50	-17.03	38.07	-11.60	Peak	---	---
5	154.16	24.05	43.50	-19.45	32.43	-8.38	Peak	---	---
6	206.54	25.86	43.50	-17.64	37.68	-11.82	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

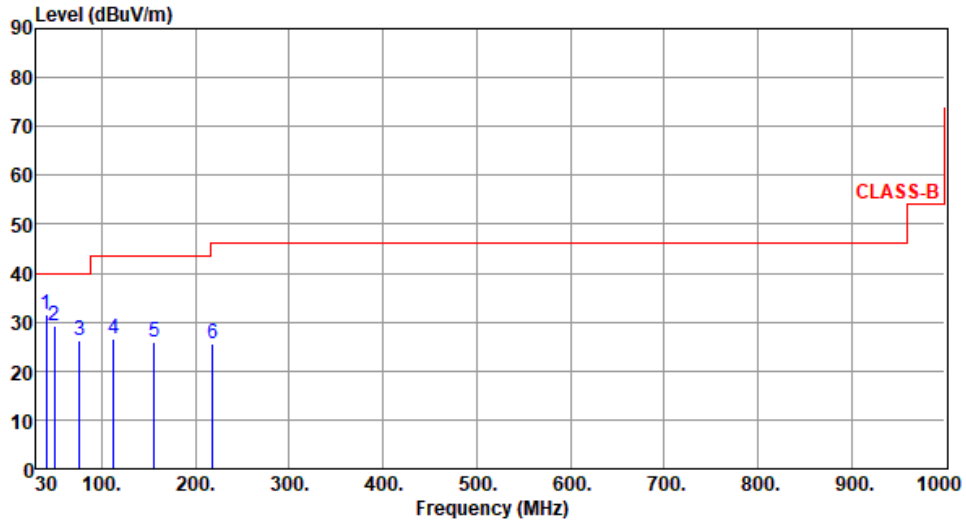


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	24.72	40.00	-15.28	33.42	-8.70	Peak	---	---
2	153.59	24.58	43.50	-18.92	33.07	-8.49	Peak	---	---
3	176.84	25.11	43.50	-18.39	34.72	-9.61	Peak	---	---
4	216.57	28.67	46.00	-17.33	40.63	-11.96	Peak	---	---
5	251.26	26.33	46.00	-19.67	36.00	-9.67	Peak	---	---
6	284.59	26.75	46.00	-19.25	35.11	-8.36	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

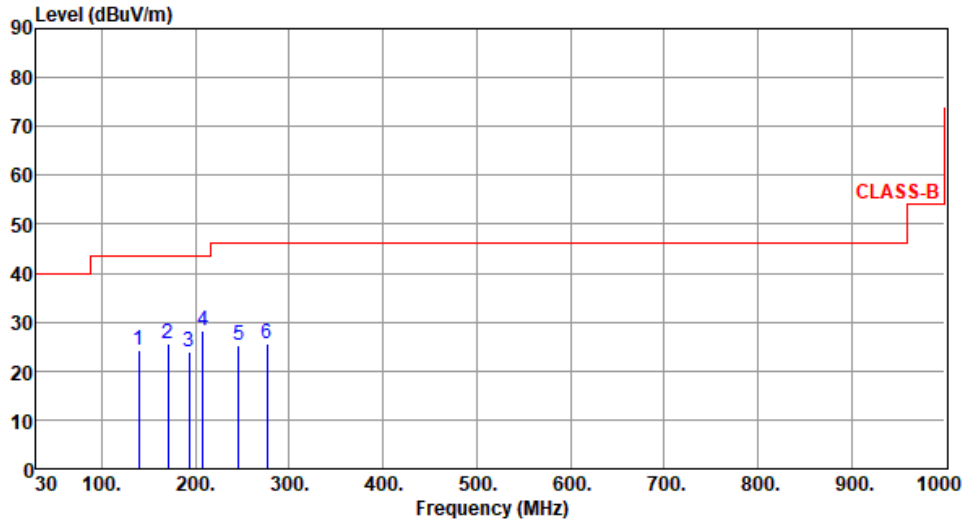


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	31.43	40.00	-8.57	40.13	-8.70	QP	100	325
2	48.96	29.11	40.00	-10.89	37.17	-8.06	Peak	---	---
3	76.48	26.33	40.00	-13.67	38.61	-12.28	Peak	---	---
4	112.43	26.57	43.50	-16.93	37.95	-11.38	Peak	---	---
5	155.64	25.87	43.50	-17.63	34.26	-8.39	Peak	---	---
6	218.64	25.46	46.00	-20.54	37.54	-12.08	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

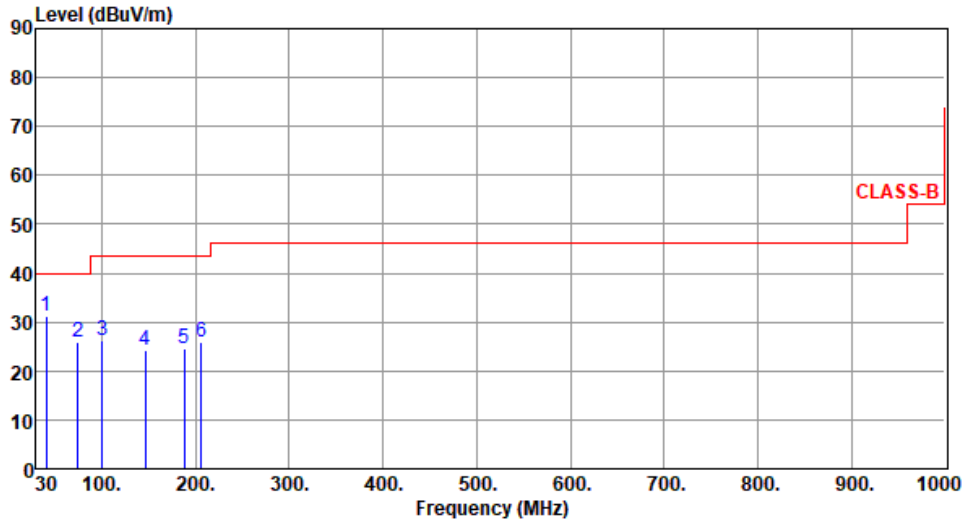


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	139.61	24.35	43.50	-19.15	33.48	-9.13	Peak	---	---
2	170.65	25.63	43.50	-17.87	34.72	-9.09	Peak	---	---
3	192.96	23.90	43.50	-19.60	35.38	-11.48	Peak	---	---
4	207.51	28.08	43.50	-15.42	39.90	-11.82	Peak	---	---
5	246.31	25.14	46.00	-20.86	34.94	-9.80	Peak	---	---
6	276.38	25.67	46.00	-20.33	34.30	-8.63	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	40.67	31.27	40.00	-8.73	39.97	-8.70	QP	100	327
2	74.62	25.87	40.00	-14.13	37.67	-11.80	Peak	---	---
3	100.81	26.15	43.50	-17.35	38.91	-12.76	Peak	---	---
4	146.40	24.39	43.50	-19.11	32.86	-8.47	Peak	---	---
5	188.11	24.68	43.50	-18.82	35.78	-11.10	Peak	---	---
6	206.54	25.86	43.50	-17.64	37.68	-11.82	Peak	---	---

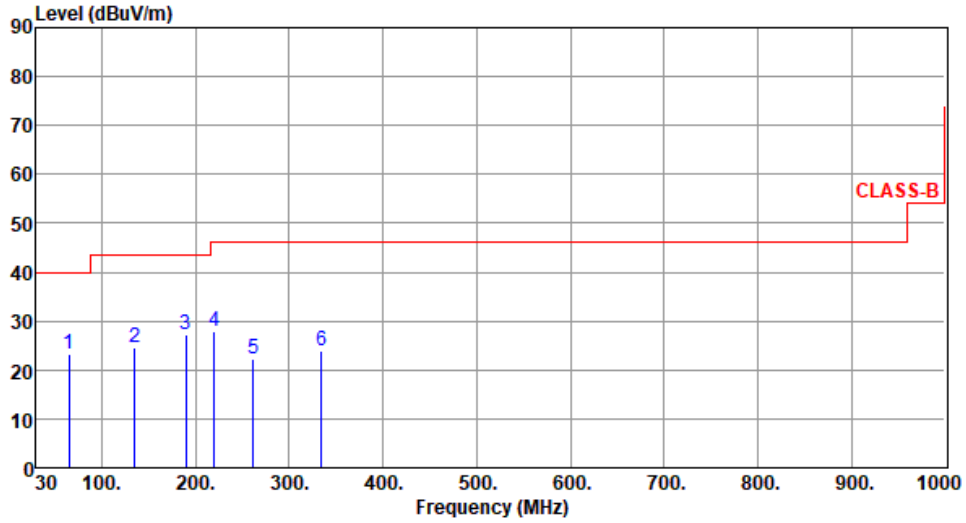
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Test configuration 4: Internal antenna, POE mode

Unwanted Emissions (Below 1GHz)

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

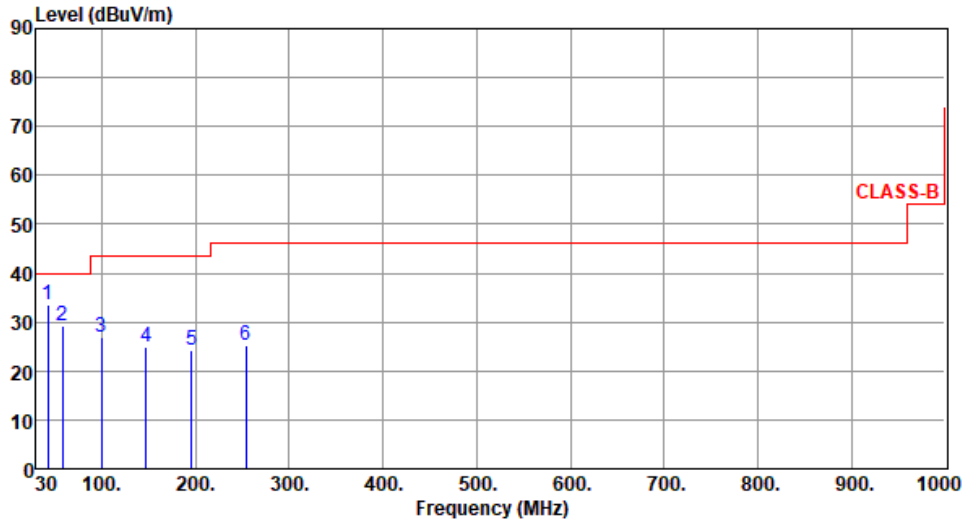


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	64.92	23.23	40.00	-16.77	32.78	-9.55	Peak	---	---
2	134.76	24.63	43.50	-18.87	34.22	-9.59	Peak	---	---
3	190.05	27.21	43.50	-16.29	38.50	-11.29	Peak	---	---
4	220.12	27.97	46.00	-18.03	40.12	-12.15	Peak	---	---
5	261.83	22.15	46.00	-23.85	31.44	-9.29	Peak	---	---
6	334.58	24.01	46.00	-21.99	30.79	-6.78	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

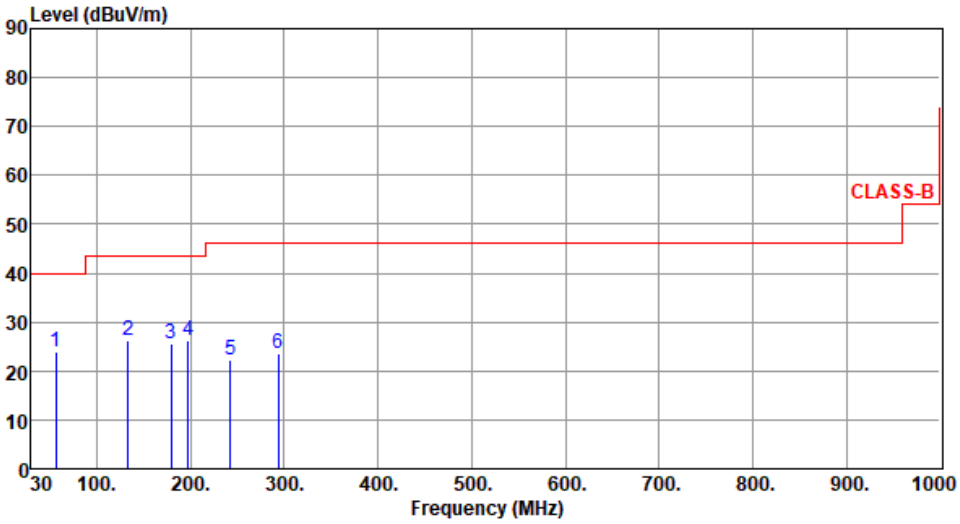


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	42.61	33.48	40.00	-6.52	41.77	-8.29	Peak	---	---
2	58.13	29.16	40.00	-10.84	37.61	-8.45	Peak	---	---
3	99.84	26.88	43.50	-16.62	39.88	-13.00	Peak	---	---
4	147.37	24.90	43.50	-18.60	33.35	-8.45	Peak	---	---
5	195.87	24.26	43.50	-19.24	35.93	-11.67	Peak	---	---
6	254.07	25.09	46.00	-20.91	34.70	-9.61	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

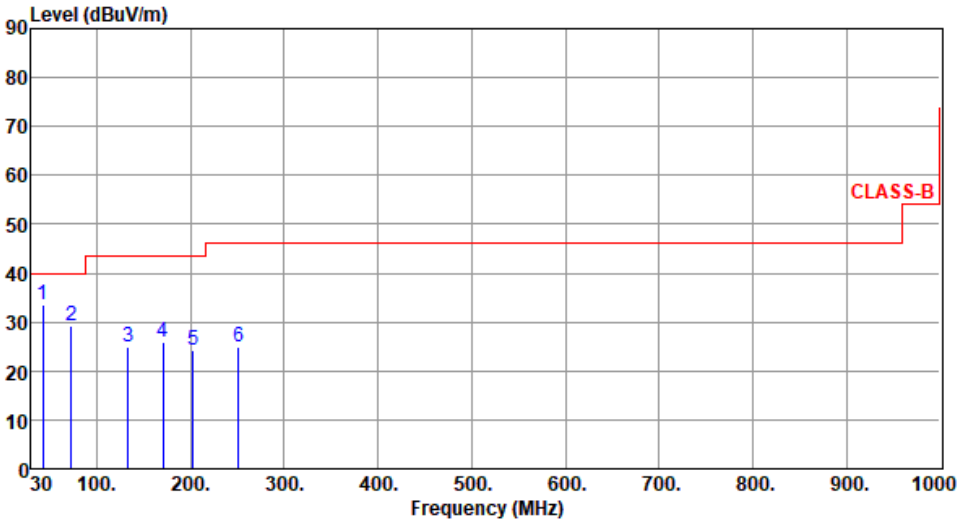


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	56.19	24.08	40.00	-15.92	32.40	-8.32	Peak	---	---
2	133.79	26.40	43.50	-17.10	36.01	-9.61	Peak	---	---
3	179.38	25.61	43.50	-17.89	35.63	-10.02	Peak	---	---
4	197.81	26.21	43.50	-17.29	37.85	-11.64	Peak	---	---
5	242.43	22.11	46.00	-23.89	32.06	-9.95	Peak	---	---
6	293.84	23.43	46.00	-22.57	31.46	-8.03	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

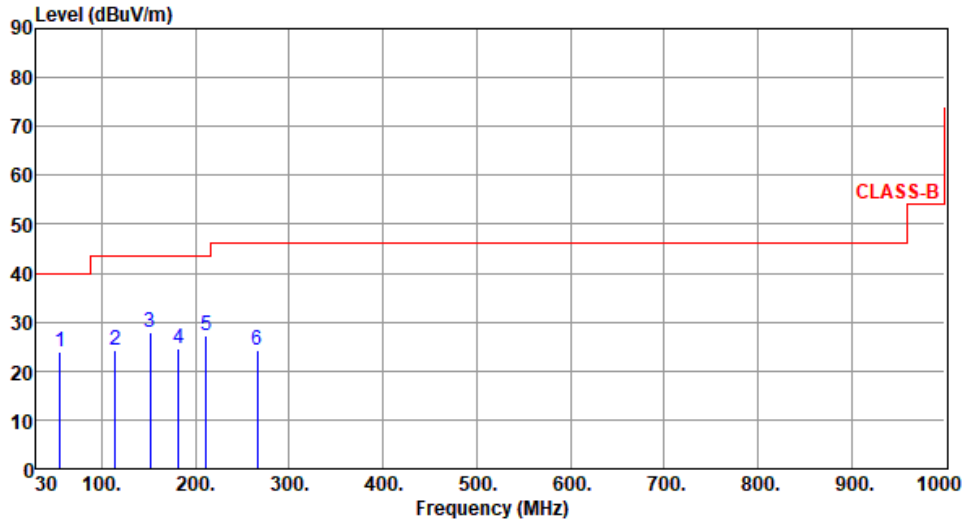


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	42.61	33.68	40.00	-6.32	41.97	-8.29	Peak	---	---
2	72.68	29.12	40.00	-10.88	40.35	-11.23	Peak	---	---
3	133.79	24.76	43.50	-18.74	34.37	-9.61	Peak	---	---
4	170.65	25.98	43.50	-17.52	35.07	-9.09	Peak	---	---
5	202.66	24.14	43.50	-19.36	35.93	-11.79	Peak	---	---
6	251.16	24.97	46.00	-21.03	34.65	-9.68	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Horizontal		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66

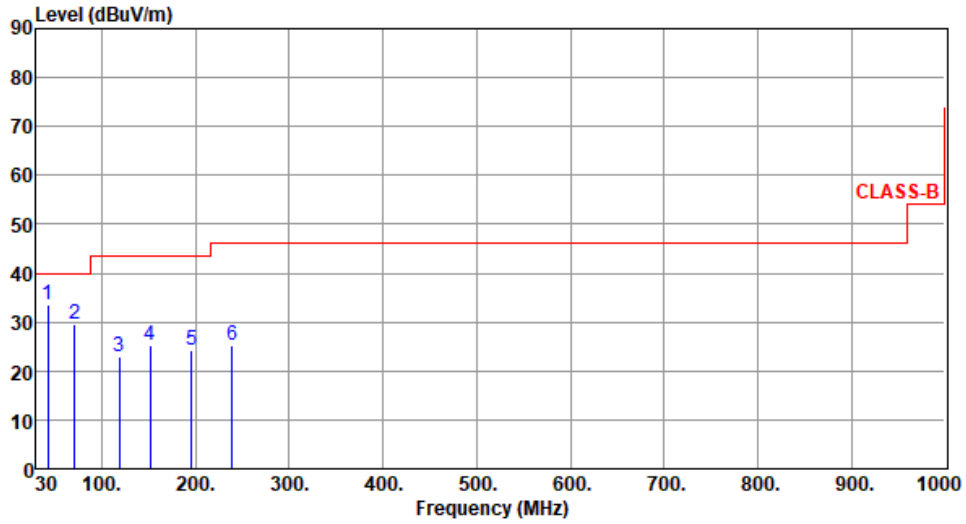


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	55.22	24.01	40.00	-15.99	32.36	-8.35	Peak	---	---
2	114.39	24.16	43.50	-19.34	35.47	-11.31	Peak	---	---
3	151.25	27.77	43.50	-15.73	36.19	-8.42	Peak	---	---
4	182.29	24.69	43.50	-18.81	35.16	-10.47	Peak	---	---
5	211.39	27.38	43.50	-16.12	39.21	-11.83	Peak	---	---
6	265.71	24.32	46.00	-21.68	33.43	-9.11	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Vertical		

Test By :Sean Yu Temperature(℃):22 Humidity(%):66



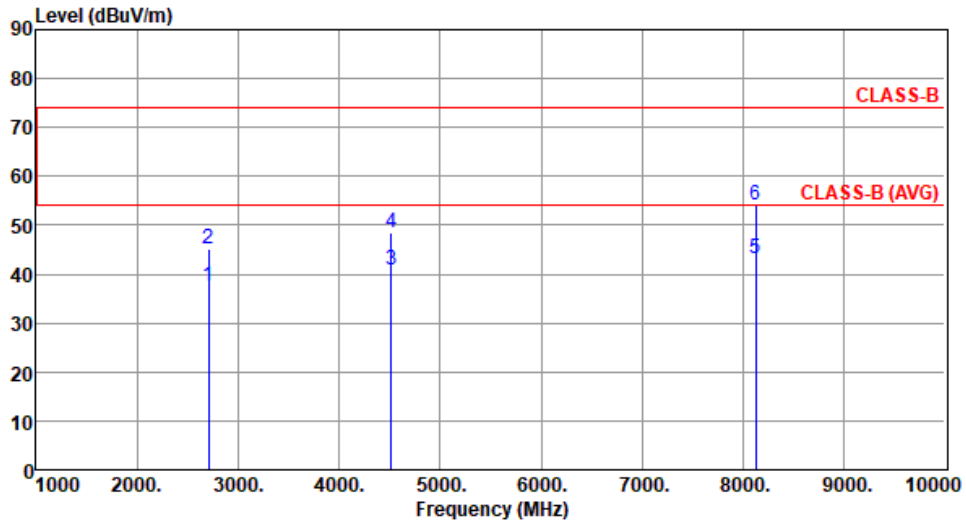
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	42.61	33.58	40.00	-6.42	41.87	-8.29	Peak	---	---
2	70.74	29.68	40.00	-10.32	40.53	-10.85	Peak	---	---
3	118.27	23.06	43.50	-20.44	34.27	-11.21	Peak	---	---
4	151.25	25.36	43.50	-18.14	33.78	-8.42	Peak	---	---
5	195.87	24.26	43.50	-19.24	35.93	-11.67	Peak	---	---
6	239.52	25.21	46.00	-20.79	35.32	-10.11	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Unwanted Emissions (Above 1GHz)

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):66

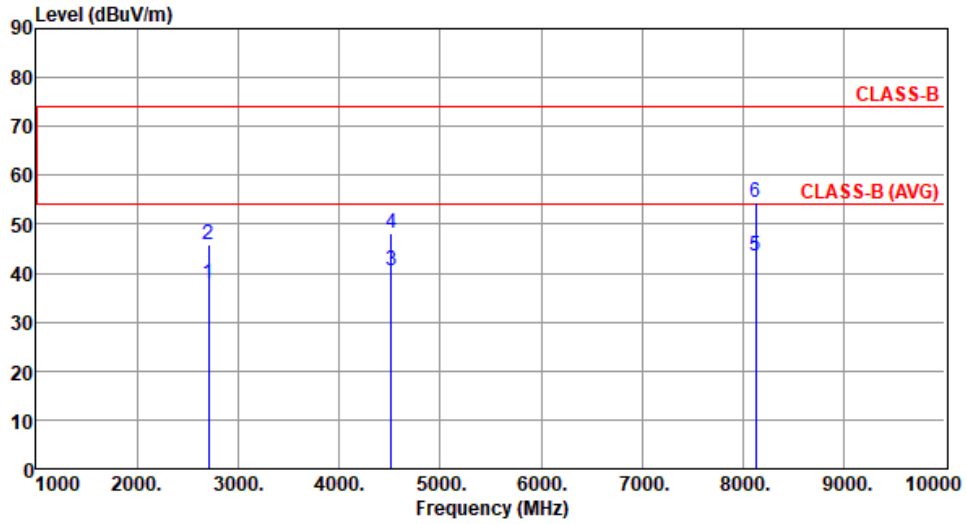


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2706.90	37.39	54.00	-16.61	40.88	-3.49	Average	104	231
2	2706.90	45.07	74.00	-28.93	48.56	-3.49	Peak	104	231
3	4511.50	40.89	54.00	-13.11	41.33	-0.44	Average	103	235
4	4511.50	48.58	74.00	-25.42	49.02	-0.44	Peak	103	235
5	8120.70	43.11	54.00	-10.89	37.11	6.00	Average	100	233
6	8120.70	54.22	74.00	-19.78	48.22	6.00	Peak	100	233

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	902.3
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):66

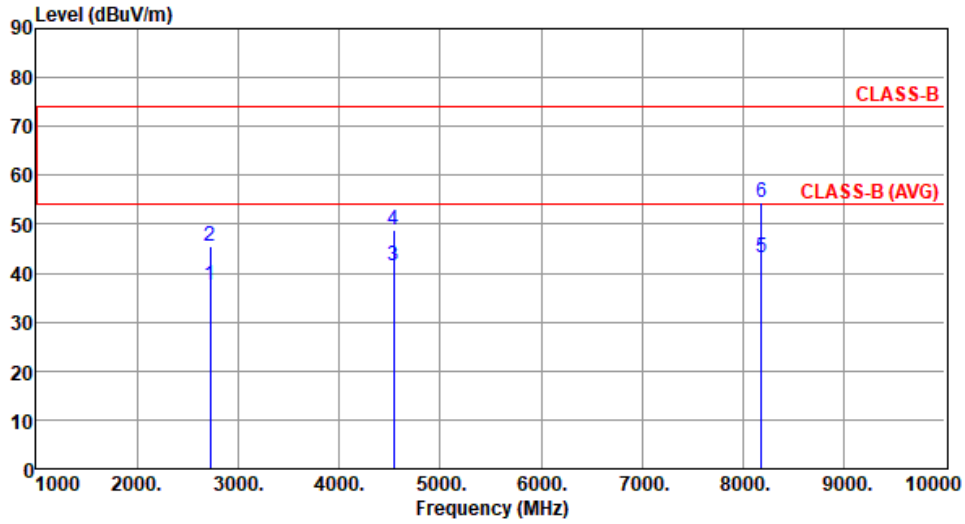


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2706.90	37.97	54.00	-16.03	41.46	-3.49	Average	261	292
2	2706.90	45.73	74.00	-28.27	49.22	-3.49	Peak	261	292
3	4511.50	40.64	54.00	-13.36	41.08	-0.44	Average	100	233
4	4511.50	48.08	74.00	-25.92	48.52	-0.44	Peak	100	233
5	8120.70	43.44	54.00	-10.56	37.44	6.00	Average	228	224
6	8120.70	54.55	74.00	-19.45	48.55	6.00	Peak	228	224

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):66

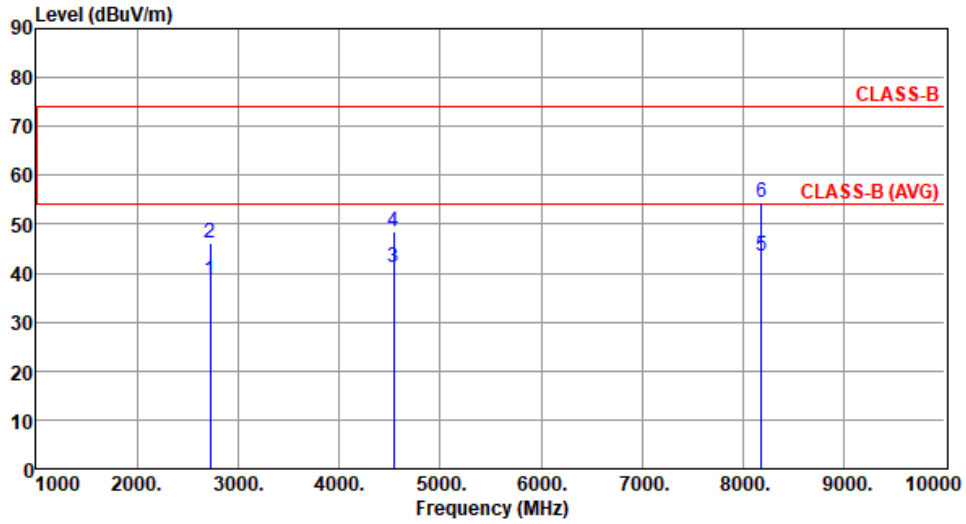


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2725.50	37.67	54.00	-16.33	41.01	-3.34	Average	105	232
2	2725.50	45.35	74.00	-28.65	48.69	-3.34	Peak	105	232
3	4542.50	41.35	54.00	-12.65	41.66	-0.31	Average	102	233
4	4542.50	48.96	74.00	-25.04	49.27	-0.31	Peak	102	233
5	8176.50	43.25	54.00	-10.75	37.49	5.76	Average	102	230
6	8176.50	54.34	74.00	-19.66	48.58	5.76	Peak	102	230

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	908.5
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):66



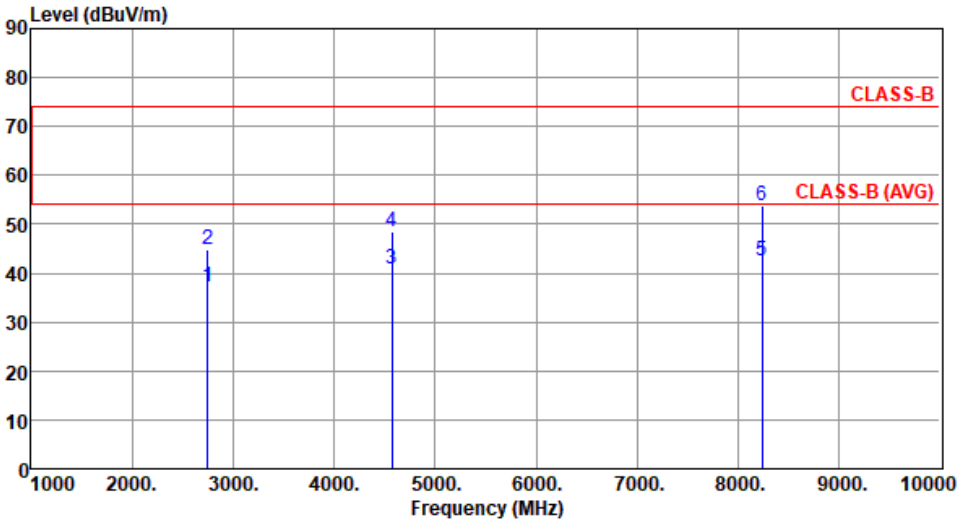
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2725.50	38.45	54.00	-15.55	41.79	-3.34	Average	258	294
2	2725.50	46.21	74.00	-27.79	49.55	-3.34	Peak	258	294
3	4542.50	41.03	54.00	-12.97	41.34	-0.31	Average	100	230
4	4542.50	48.54	74.00	-25.46	48.85	-0.31	Peak	100	230
5	8176.50	43.49	54.00	-10.51	37.73	5.76	Average	225	225
6	8176.50	54.60	74.00	-19.40	48.84	5.76	Peak	225	225

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

T

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Horizontal		

Test By :Akun Chung Temperature(℃):23 Humidity(%):66

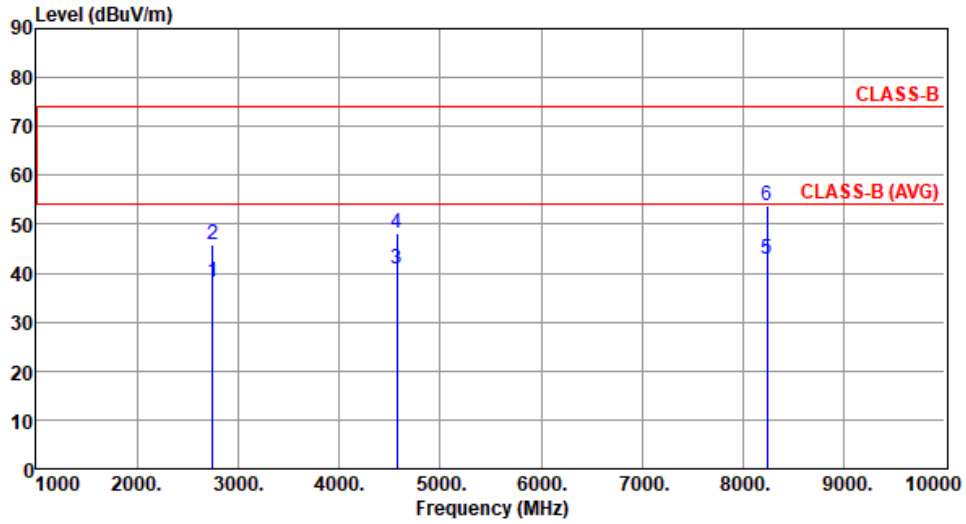


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2744.70	37.31	54.00	-16.69	40.64	-3.33	Average	104	228
2	2744.70	44.97	74.00	-29.03	48.30	-3.33	Peak	104	228
3	4574.50	40.94	54.00	-13.06	41.21	-0.27	Average	104	239
4	4574.50	48.55	74.00	-25.45	48.82	-0.27	Peak	104	239
5	8234.10	42.62	54.00	-11.38	37.15	5.47	Average	100	235
6	8234.10	53.69	74.00	-20.31	48.22	5.47	Peak	100	235

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Mode	LoRa (125kHz)	**Test Freq. (MHz)**	914.9
Polarization	Vertical		

Test By :Akun Chung Temperature(℃):23 Humidity(%):66

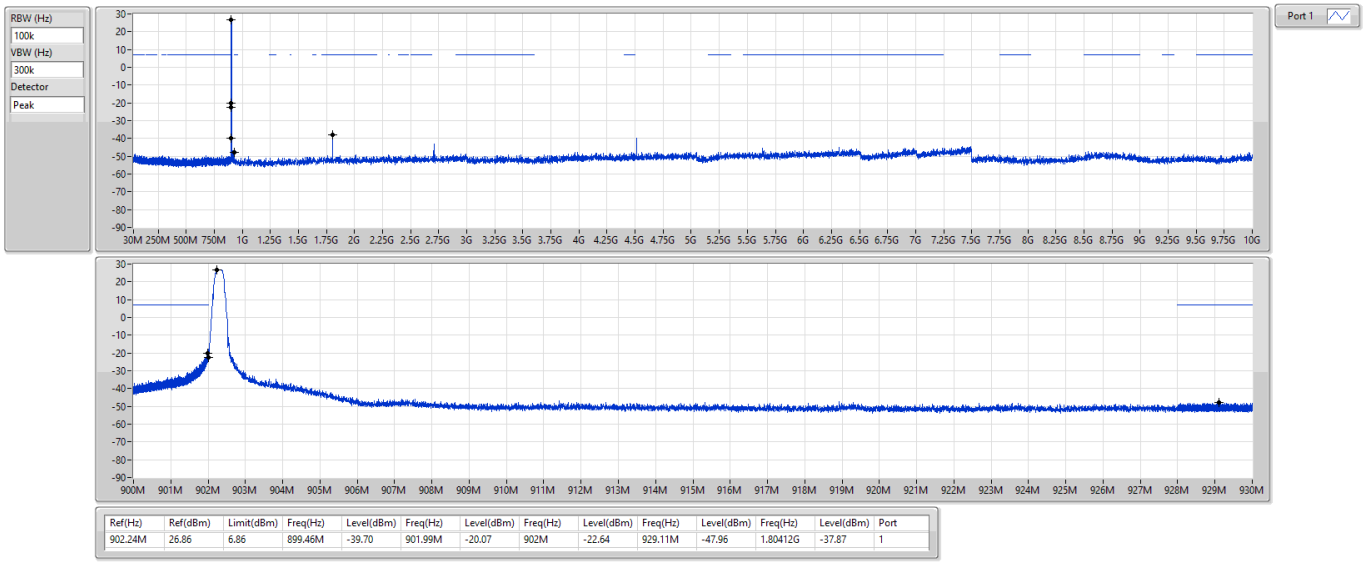


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB/m	Remark	ANT High cm	Turn Table deg
1	2744.70	38.07	54.00	-15.93	41.40	-3.33	Average	254	293
2	2744.70	45.79	74.00	-28.21	49.12	-3.33	Peak	254	293
3	4574.50	40.71	54.00	-13.29	40.98	-0.27	Average	100	227
4	4574.50	48.12	74.00	-25.88	48.39	-0.27	Peak	100	227
5	8234.10	42.83	54.00	-11.17	37.36	5.47	Average	217	229
6	8234.10	53.88	74.00	-20.12	48.41	5.47	Peak	217	229

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

902-928MHz_LoRa (125kHz) **CSENdB-FS**

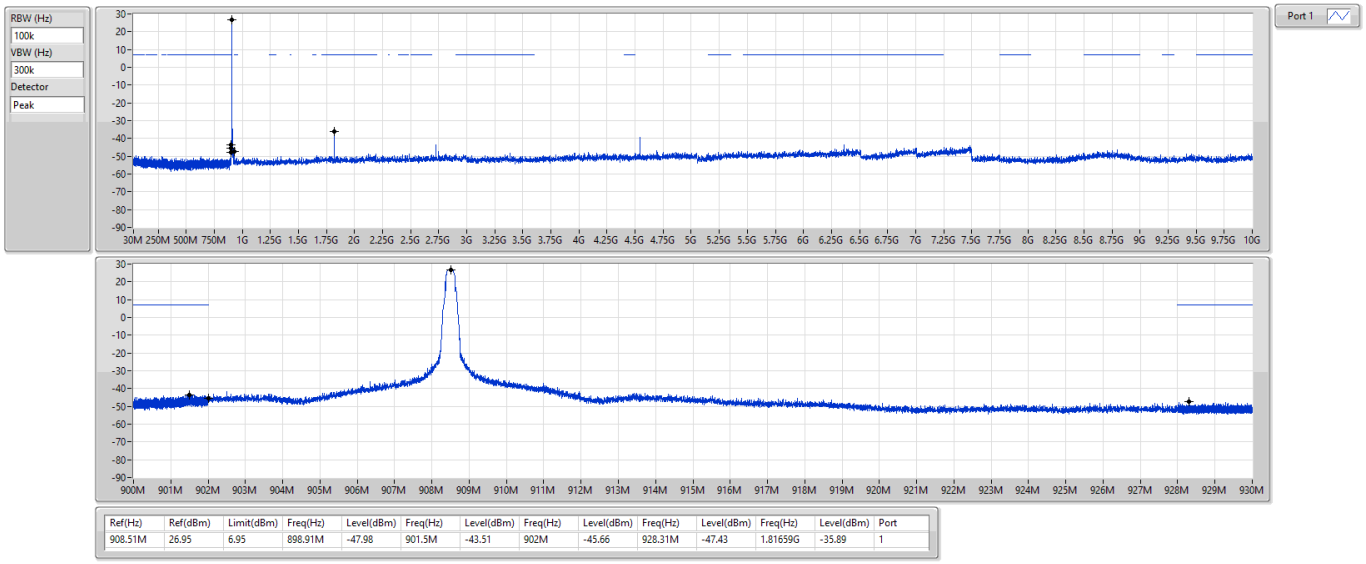
902.3MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
902.24M	26.86	6.86	899.46M	-39.70	901.99M	-20.07	902M	-22.64	929.11M	-47.96	1.80412G	-37.87	1

902-928MHz_LoRa (125kHz) **CSENdB-FS**

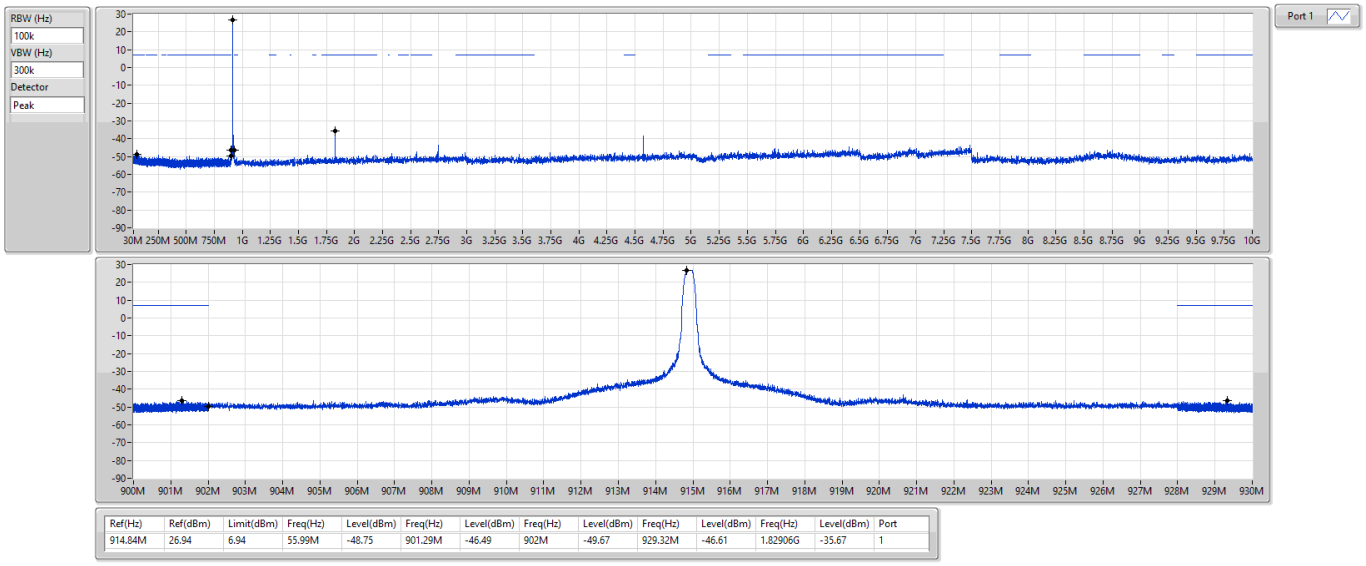
908.5MHz



Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
908.51M	26.95	6.95	898.91M	-47.98	901.5M	-43.51	902M	-45.66	928.31M	-47.43	1.81659G	-35.89	1

902-928MHz_LoRa (125kHz) CSENdB-FS

914.9MHz

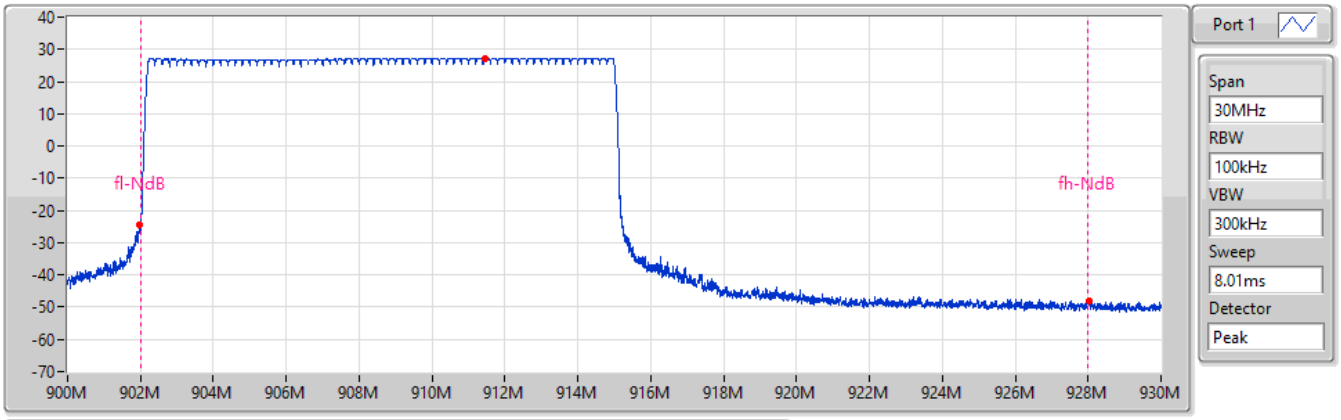


Ref(Hz)	Ref(dBm)	Limit(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Freq(Hz)	Level(dBm)	Port
914.84M	26.94	6.94	55.99M	-48.75	901.29M	-46.49	902M	-49.67	929.32M	-46.61	1.82906G	-35.67	1

902-928MHz_LoRa (125kHz)

902.3MHz-Hopping OnMHz

Hopping Ch Bandedge (Non-restricted Band)



Limit(dBm)	Ref(Hz)	Ref(dBm)	BE-l(Hz)	BE-l(dBm)	BE-h(Hz)	BE-h(dBm)
7.2	911.46M	27.2	901.965M	-24.38	928.0425M	-48.15

Summary

Mode	Total Power (dBm)	Power (W)
902-928MHz	-	-
LoRa (125kHz)	27.31	0.53827

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
LoRa (125kHz)	-	-	-	-	-	-
902.3MHz	Pass	2.30	27.17	30.00	29.47	36.00
908.5MHz	Pass	2.30	27.25	30.00	29.55	36.00
914.9MHz	Pass	2.30	27.31	30.00	29.61	36.00

Summary

Mode	Total Power (dBm)	Power (W)
902-928MHz	-	-
LoRa (125kHz)	27.27	0.53333

Result

Mode	Result	Antenna Gain (dBi)	Total Power (dBm)	Power Limit (dBm)	EIRP (dBm)	EIRP Limit (dBm)
LoRa (125kHz)	-	-	-	-	-	-
902.3MHz	Pass	2.30	27.13	-	29.43	-
908.5MHz	Pass	2.30	27.23	-	29.53	-
914.9MHz	Pass	2.30	27.27	-	29.57	-

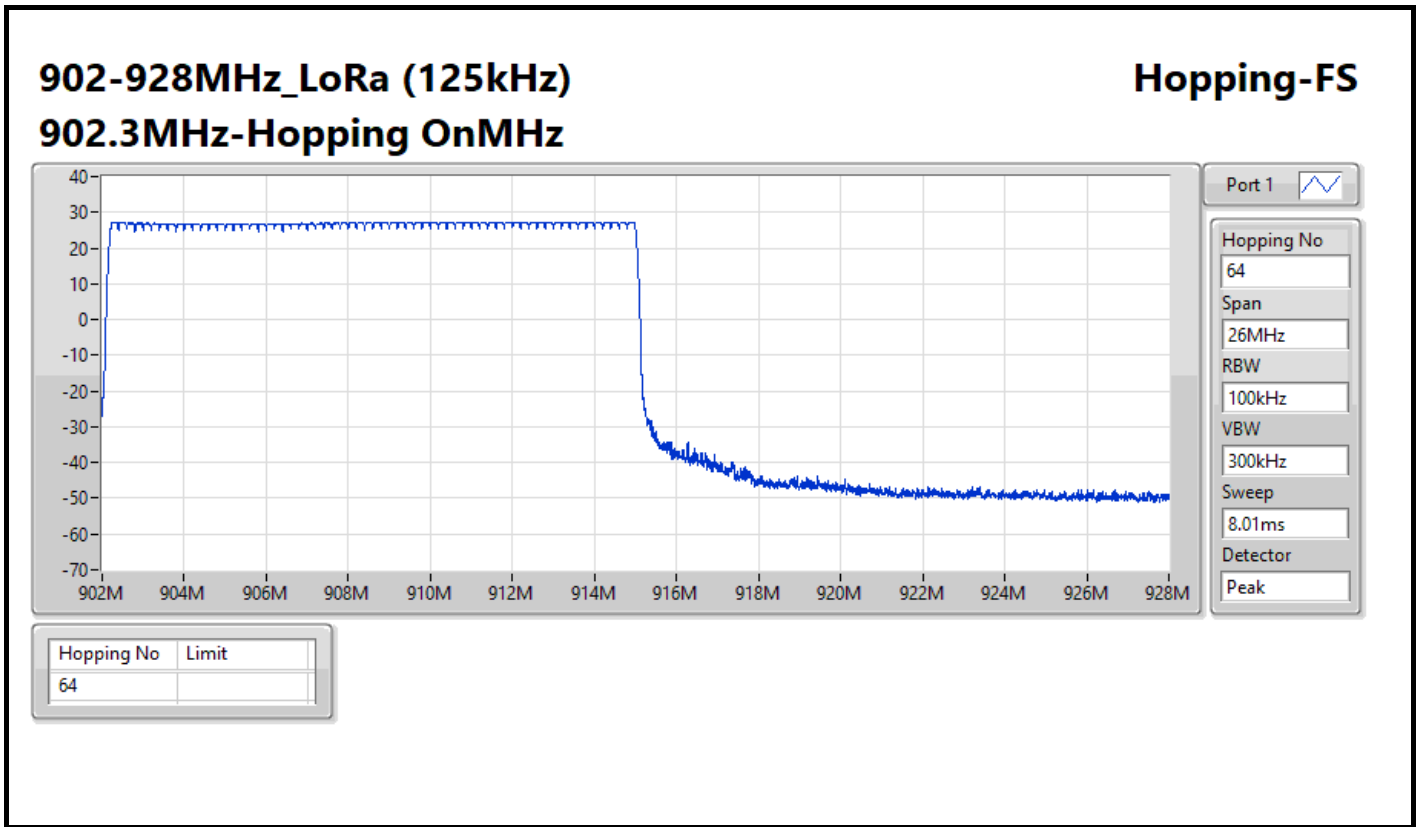
Note: Average power is for reference only.

Summary

Mode	Max-Hop No
902-928MHz	-
LoRa (125kHz)	64

Result

Mode	Result	Hopping No	Limit
LoRa (125kHz)	-	-	-
902.3MHz-Hopping OnMHz	Pass	64	



Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
902-928MHz	-	-	-	-	-
LoRa (125kHz)	133.1k	122.566k	123KF1D	131.45k	122.037k

Max-N dB = Maximum 20dB down bandwidth; Max-OBW = Maximum 99% occupied bandwidth;
Min-N dB = Minimum 20dB down bandwidth; Min-OBW = Minimum 99% occupied bandwidth

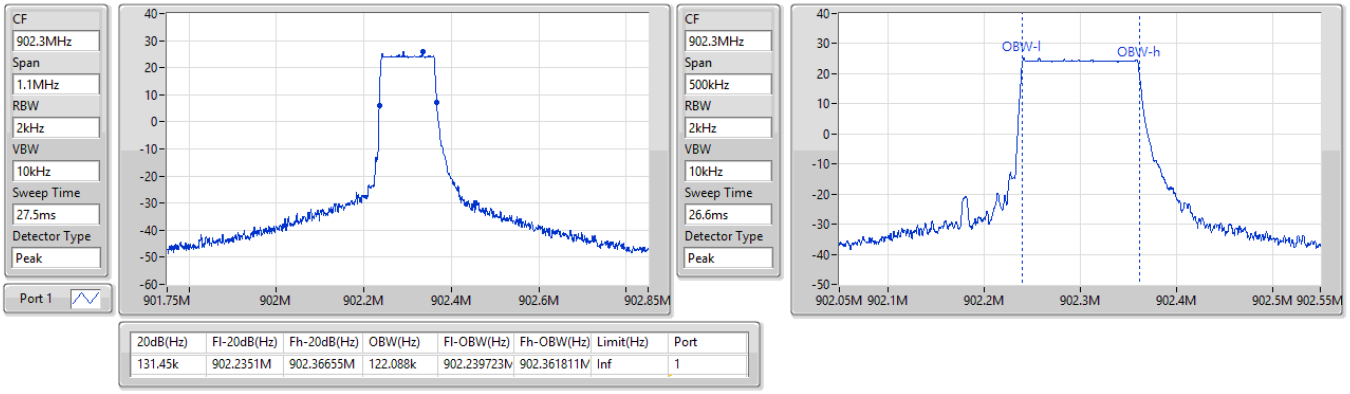
Result

Mode	Result	Limit (Hz)	Port 1-N dB (Hz)	Port 1-OBW (Hz)
LoRa (125kHz)	-	-	-	-
902.3MHz	Pass	Inf	131.45k	122.088k
908.5MHz	Pass	Inf	133.1k	122.566k
914.9MHz	Pass	Inf	132k	122.037k

Port X-N dB = Port X 20dB down bandwidth;
Port X-OBW = Port X 99% occupied bandwidth

902-928MHz_LoRa (125kHz) **EBW-FS**

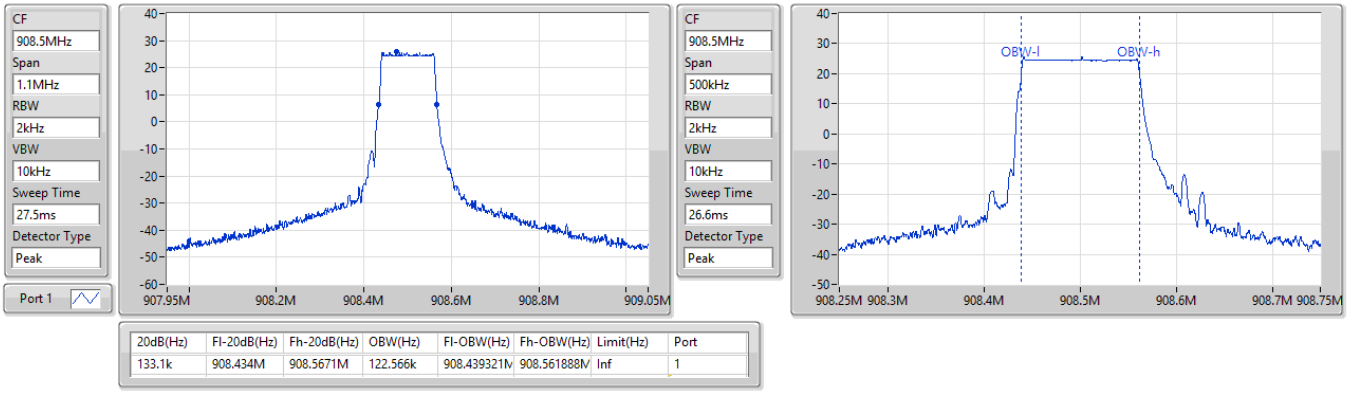
902.3MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
131.45k	902.2351M	902.36655M	122.088k	902.239723M	902.361811M	Inf	1

902-928MHz_LoRa (125kHz) **EBW-FS**

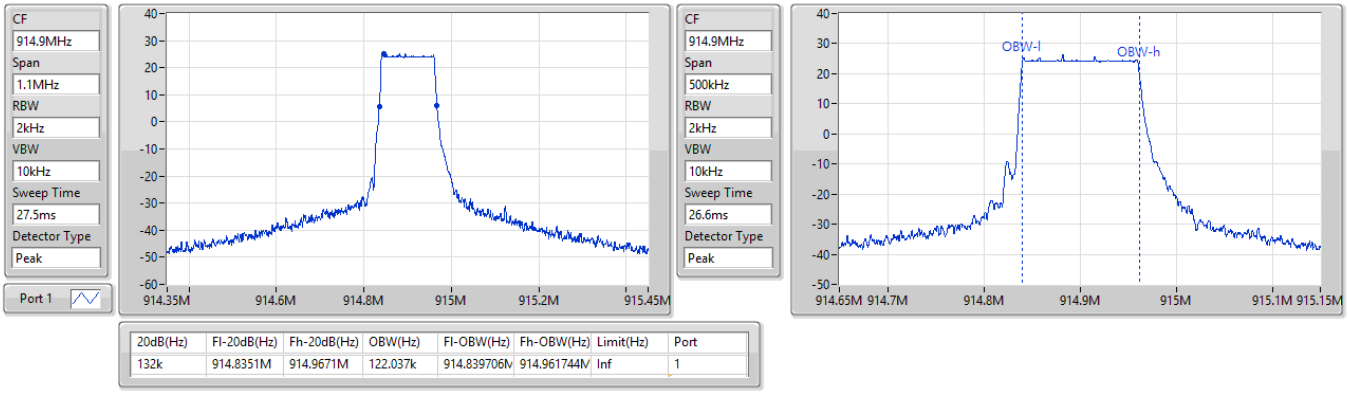
908.5MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
133.1k	908.434M	908.5671M	122.566k	908.439321M	908.561888M	Inf	1

902-928MHz_LoRa (125kHz) **EBW-FS**

914.9MHz



20dB(Hz)	Fl-20dB(Hz)	Fh-20dB(Hz)	OBW(Hz)	Fl-OBW(Hz)	Fh-OBW(Hz)	Limit(Hz)	Port
132k	914.8351M	914.9671M	122.037k	914.839706M	914.961744M	Inf	1

Summary

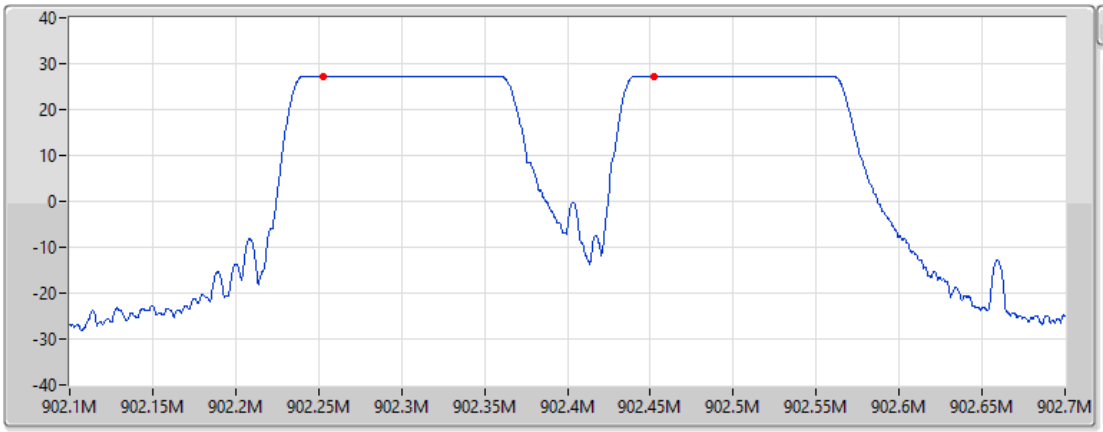
Mode	Max-Space (Hz)	Min-Space (Hz)
902-928MHz	-	-
LoRa (125kHz)	200k	200k

Result

Mode	Result	Fl (Hz)	Fh (Hz)	Ch.Space (Hz)	Limit (Hz)
LoRa (125kHz)	-	-	-	-	-
902.3MHz	Pass	902.2527M	902.4547M	200k	131.45k
908.5MHz	Pass	908.4401M	908.6401M	200k	133.1k
914.9MHz	Pass	914.6668M	914.8668M	200k	132k

902-928MHz_LoRa (125kHz) Channel Separation-FS

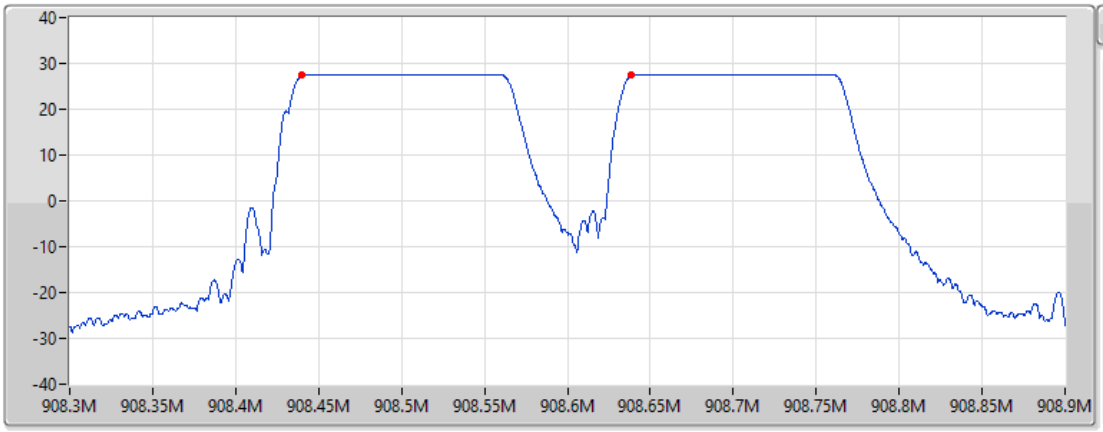
902.3M/902.5MHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
902.2527M	902.4527M	200k	131.45k

902-928MHz_LoRa (125kHz) Channel Separation-FS

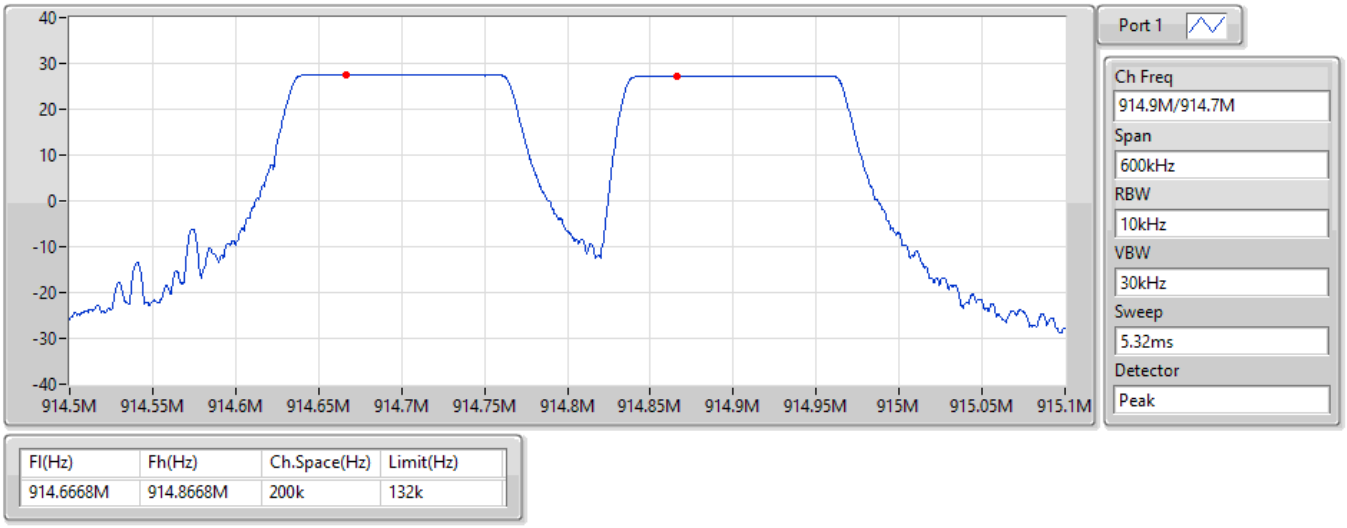
908.5M/908.7MHz



Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
908.4401M	908.6401M	200k	133.1k

902-928MHz_LoRa (125kHz) **Channel Separation-FS**

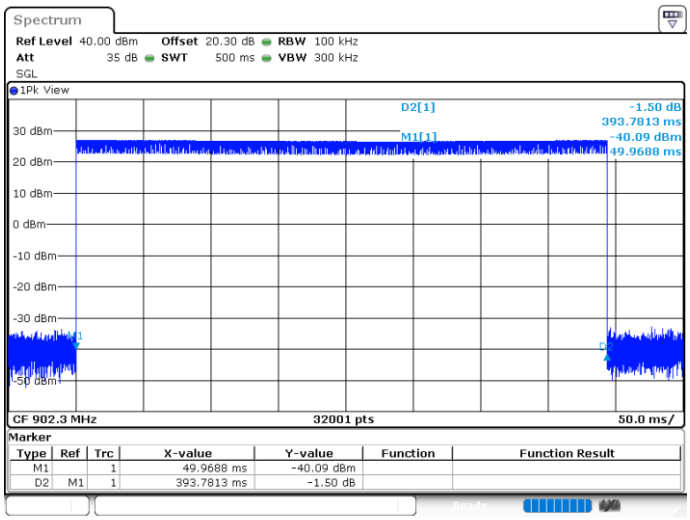
914.9M/914.7MHz

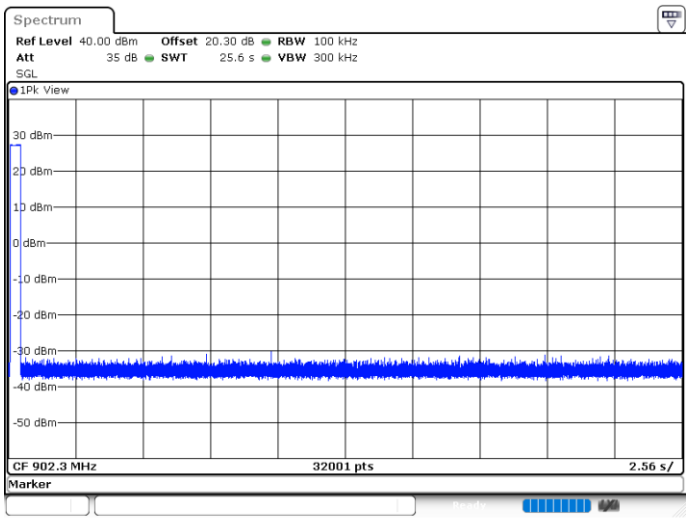


Fl(Hz)	Fh(Hz)	Ch.Space(Hz)	Limit(Hz)
914.6668M	914.8668M	200k	132k

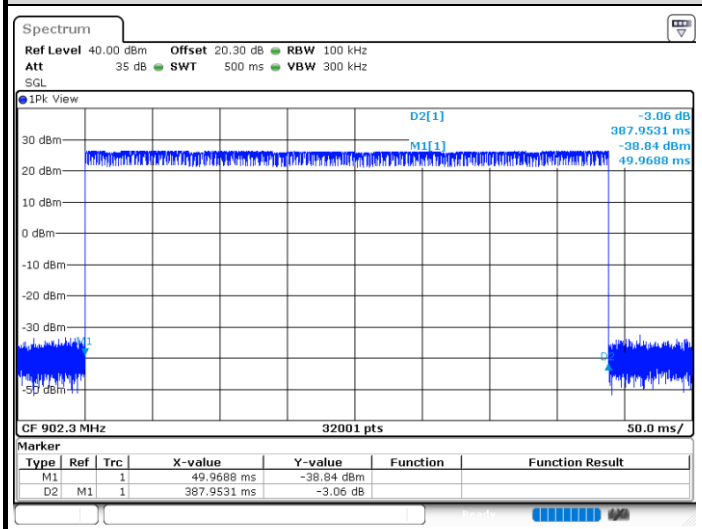
Mode / SF	Freq. (MHz)	Length of Transmission Time (sec)	Number of Transmission in a 25.6 s (64 Hopping*0.4s)	Result (s)	Limit (s)
LoRa / 7	902.3	0.3937813	1	0.393781	0.4
LoRa / 8	902.3	0.3879531	1	0.387953	0.4
LoRa / 9	902.3	0.3863906	1	0.386391	0.4
LoRa / 10	902.3	0.3628125	1	0.362813	0.4

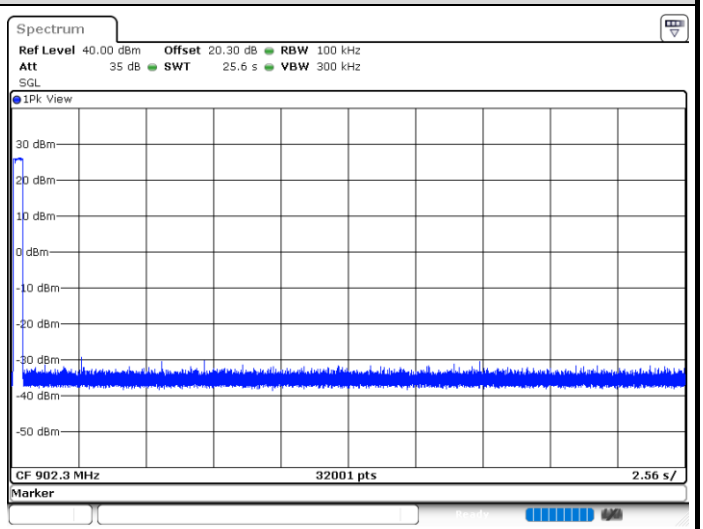
SF 7



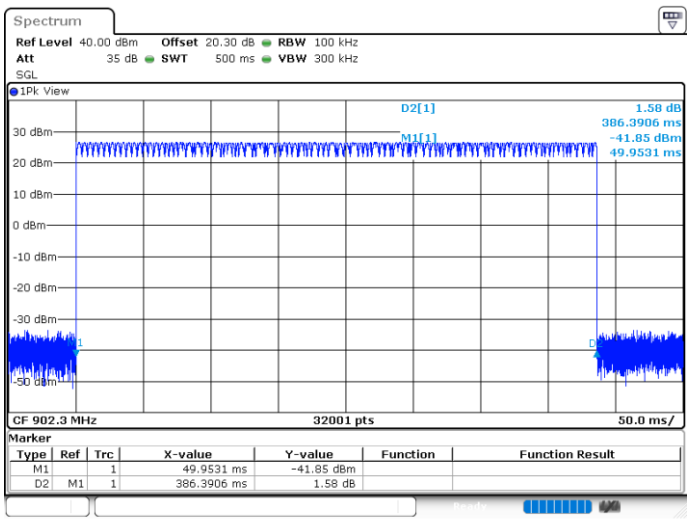


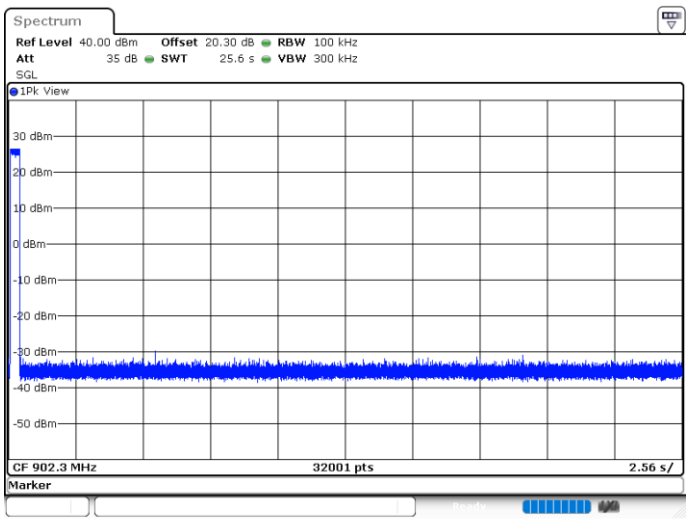
SF 8



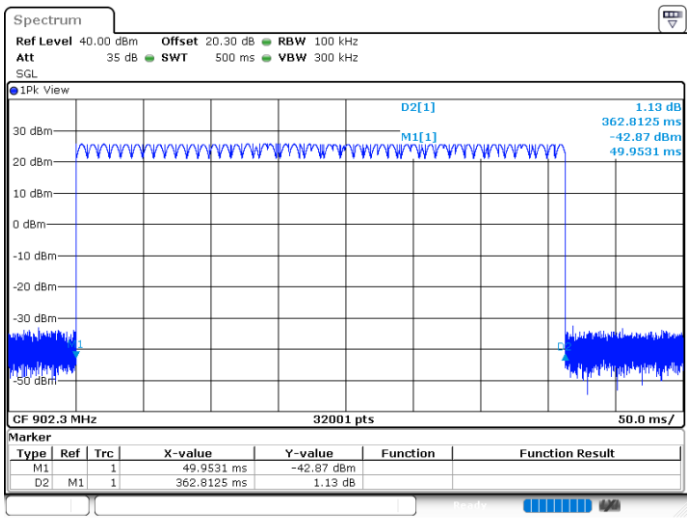


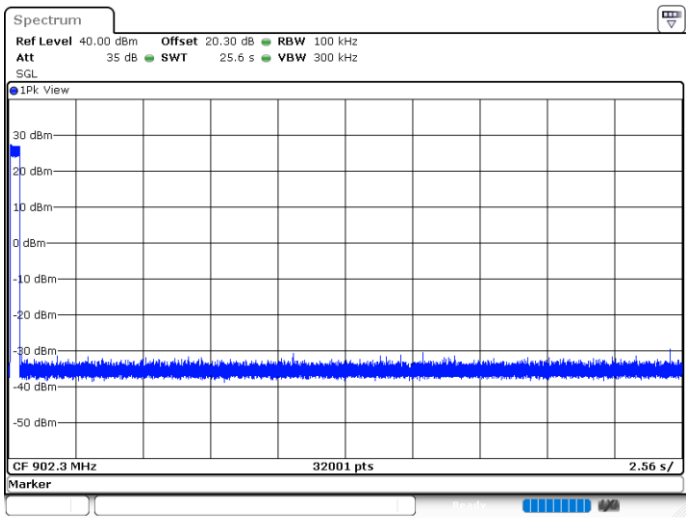
SF 9


Spectrum
Ref Level 40.00 dBm Offset 20.30 dB RBW 100 kHz
Att 35 dB SWT 500 ms VBW 300 kHz
SGL
1Pk View
D2[1] 1.58 dB
386.3906 ms
M1[1] -41.85 dBm
49.9531 ms
CF 902.3 MHz 32001 pts 50.0 ms/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 49.9531 ms -41.85 dBm
D2 M1 1 386.3906 ms 1.58 dB


Spectrum
Ref Level 40.00 dBm Offset 20.30 dB RBW 100 kHz
Att 35 dB SWT 25.6 s VBW 300 kHz
SGL
1Pk View
CF 902.3 MHz 32001 pts 2.56 s/
Marker

SF 10

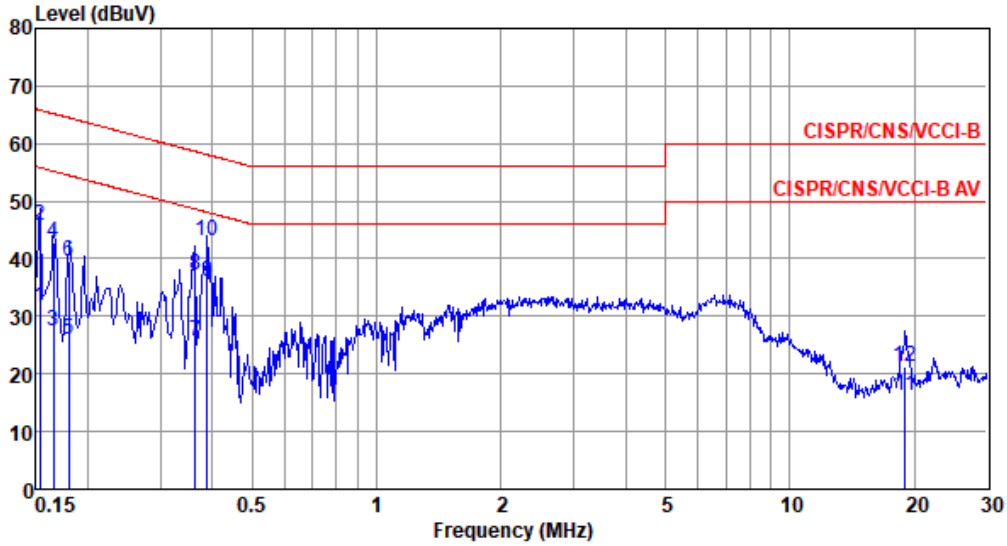

Spectrum
Ref Level 40.00 dBm Offset 20.30 dB RBW 100 kHz
Att 35 dB SWT 500 ms VBW 300 kHz
SGL
1Pk View
D2[1] 1.13 dB
362.8125 ms
M1[1] -42.87 dBm
49.9531 ms
CF 902.3 MHz 32001 pts 50.0 ms/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 49.9531 ms -42.87 dBm
D2 M1 1 362.8125 ms 1.13 dB


Spectrum
Ref Level 40.00 dBm Offset 20.30 dB RBW 100 kHz
Att 35 dB SWT 25.6 s VBW 300 kHz
SGL
1Pk View
CF 902.3 MHz 32001 pts 2.56 s/
Marker

Test configuration 1: External antenna, adapter mode

Power Phase	Line	Test Freq. (MHz)	902.3

Test by : Joe Liao Temperature: 23°C Humidity: 63%

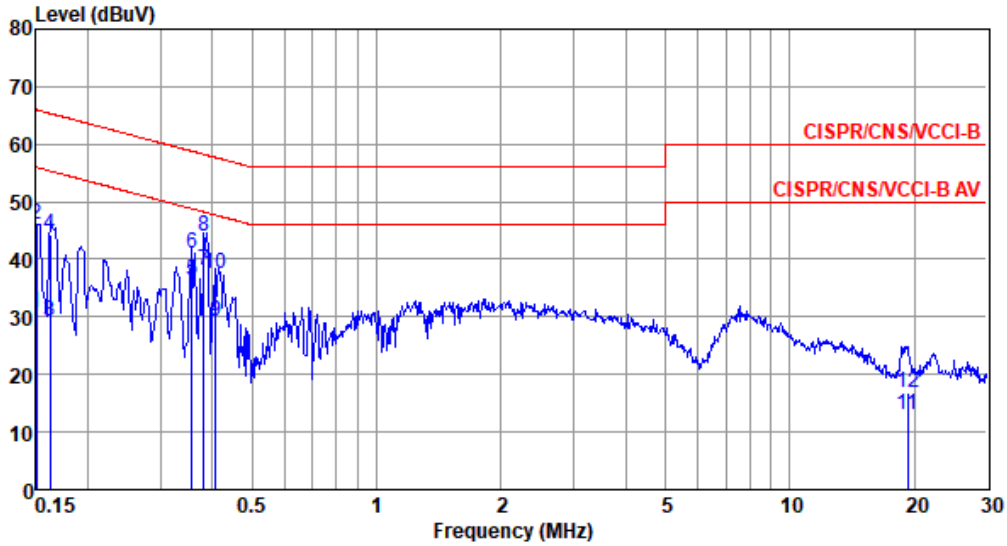


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.153	31.64	55.82	-24.18	21.71	9.65	0.08	0.20	Average
2	0.153	45.66	65.82	-20.16	35.73	9.65	0.08	0.20	QP
3	0.165	27.47	55.21	-27.74	17.53	9.65	0.07	0.22	Average
4	0.165	42.79	65.21	-22.42	32.85	9.65	0.07	0.22	QP
5	0.180	25.90	54.50	-28.60	15.95	9.65	0.07	0.23	Average
6	0.180	39.64	64.50	-24.86	29.69	9.65	0.07	0.23	QP
7	0.363	25.80	48.65	-22.85	15.76	9.64	0.08	0.32	Average
8	0.363	37.31	58.65	-21.34	27.27	9.64	0.08	0.32	QP
9*	0.389	36.02	48.08	-12.06	25.97	9.64	0.08	0.33	Average
10	0.389	43.15	58.08	-14.93	33.10	9.64	0.08	0.33	QP
11	19.021	16.30	50.00	-33.70	5.54	9.68	0.50	0.58	Average
12	19.021	21.17	60.00	-38.83	10.41	9.68	0.50	0.58	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Neutral	**Test Freq. (MHz)**	902.3

Test by : Joe Liao Temperature: 23°C Humidity: 63%

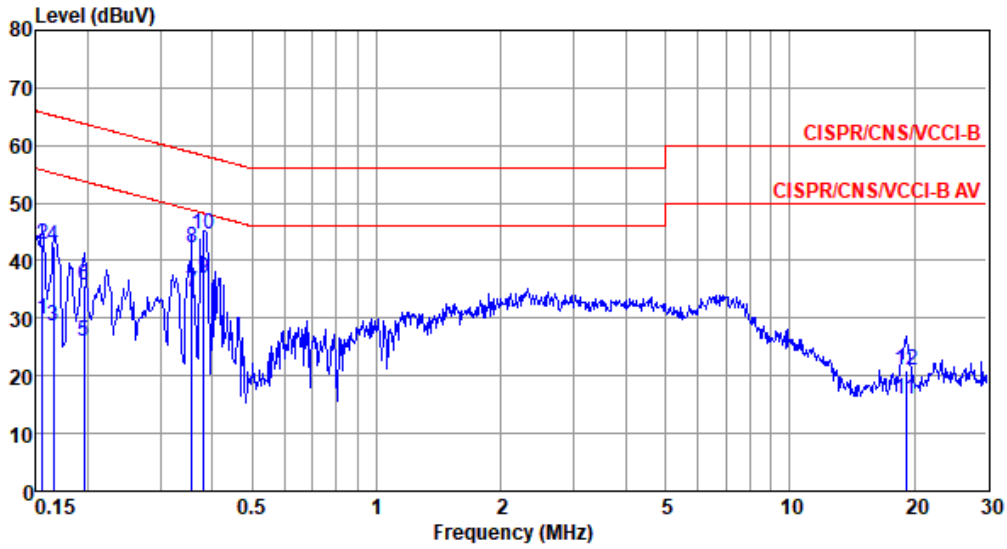


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.150	30.76	56.00	-25.24	20.90	9.66	0.08	0.12	Average
2	0.150	45.96	66.00	-20.04	36.10	9.66	0.08	0.12	QP
3	0.162	29.19	55.34	-26.15	19.33	9.66	0.07	0.13	Average
4	0.162	44.33	65.34	-21.01	34.47	9.66	0.07	0.13	QP
5	0.358	36.24	48.78	-12.54	26.28	9.64	0.08	0.24	Average
6	0.358	41.01	58.78	-17.77	31.05	9.64	0.08	0.24	QP
7*	0.381	37.98	48.25	-10.27	28.02	9.64	0.08	0.24	Average
8	0.381	44.11	58.25	-14.14	34.15	9.64	0.08	0.24	QP
9	0.408	29.11	47.68	-18.57	19.14	9.64	0.08	0.25	Average
10	0.408	37.41	57.68	-20.27	27.44	9.64	0.08	0.25	QP
11	19.326	12.88	50.00	-37.12	1.97	9.83	0.50	0.58	Average
12	19.326	16.86	60.00	-43.14	5.95	9.83	0.50	0.58	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Line	**Test Freq. (MHz)**	908.5

Test by : Joe Liao Temperature: 23°C Humidity: 63%

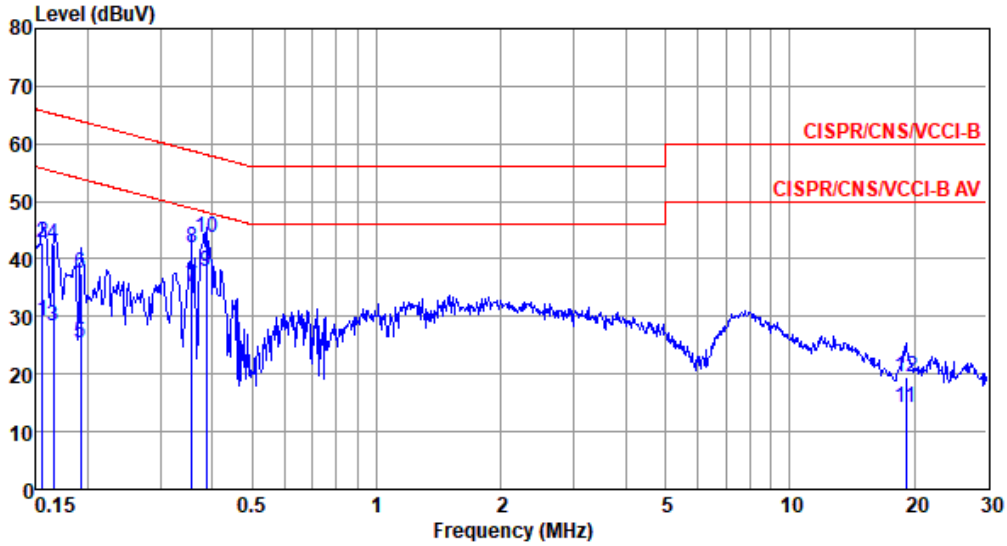


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.156	29.94	55.69	-25.75	20.00	9.65	0.08	0.21	Average
2	0.156	42.74	65.69	-22.95	32.80	9.65	0.08	0.21	QP
3	0.165	28.50	55.21	-26.71	18.56	9.65	0.07	0.22	Average
4	0.165	42.49	65.21	-22.72	32.55	9.65	0.07	0.22	QP
5	0.195	25.95	53.80	-27.85	15.99	9.65	0.06	0.25	Average
6	0.195	35.61	63.80	-28.19	25.65	9.65	0.06	0.25	QP
7	0.358	34.68	48.78	-14.10	24.64	9.64	0.08	0.32	Average
8	0.358	42.14	58.78	-16.64	32.10	9.64	0.08	0.32	QP
9*	0.381	37.01	48.25	-11.24	26.97	9.64	0.08	0.32	Average
10	0.381	44.50	58.25	-13.75	34.46	9.64	0.08	0.32	QP
11	19.122	15.92	50.00	-34.08	5.16	9.68	0.50	0.58	Average
12	19.122	20.87	60.00	-39.13	10.11	9.68	0.50	0.58	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Neutral	**Test Freq. (MHz)**	908.5

Test by : Joe Liao Temperature: 23°C Humidity: 63%

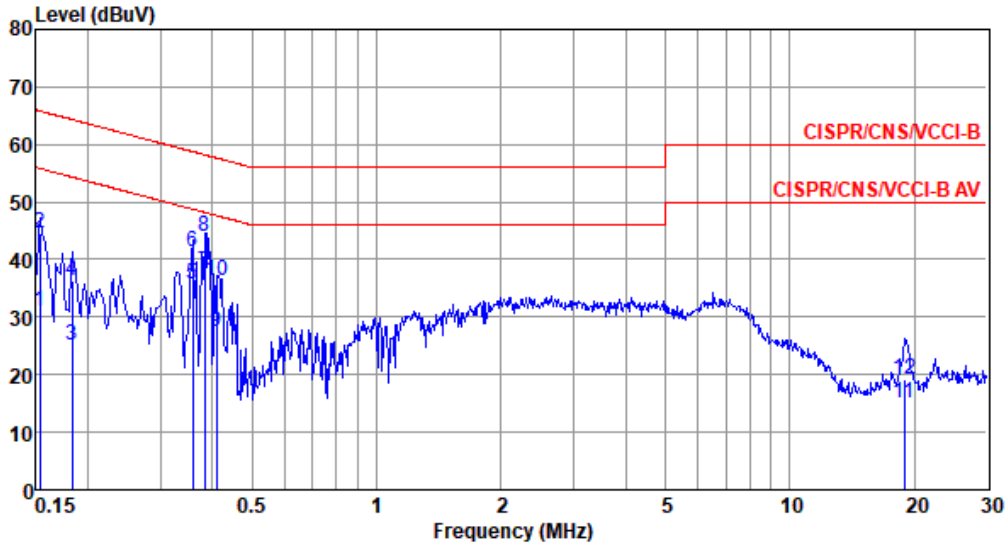


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.156	29.28	55.69	-26.41	19.41	9.66	0.08	0.13	Average
2	0.156	42.86	65.69	-22.83	32.99	9.66	0.08	0.13	QP
3	0.165	28.42	55.21	-26.79	18.55	9.66	0.07	0.14	Average
4	0.165	42.54	65.21	-22.67	32.67	9.66	0.07	0.14	QP
5	0.192	25.51	53.93	-28.42	15.64	9.65	0.06	0.16	Average
6	0.192	37.38	63.93	-26.55	27.51	9.65	0.06	0.16	QP
7	0.358	35.23	48.78	-13.55	25.27	9.64	0.08	0.24	Average
8	0.358	42.03	58.78	-16.75	32.07	9.64	0.08	0.24	QP
9*	0.387	37.78	48.12	-10.34	27.81	9.64	0.08	0.25	Average
10	0.387	43.76	58.12	-14.36	33.79	9.64	0.08	0.25	QP
11	19.122	14.09	50.00	-35.91	3.20	9.82	0.50	0.57	Average
12	19.122	19.50	60.00	-40.50	8.61	9.82	0.50	0.57	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Line	**Test Freq. (MHz)**	914.9

Test by : Joe Liao Temperature: 23°C Humidity: 63%

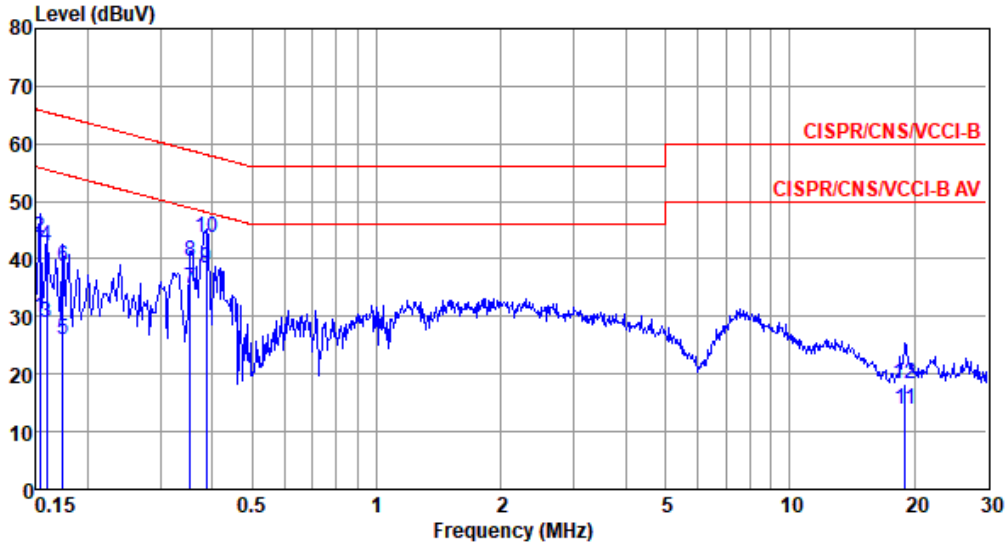


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.153	31.12	55.82	-24.70	21.19	9.65	0.08	0.20	Average
2	0.153	44.66	65.82	-21.16	34.73	9.65	0.08	0.20	QP
3	0.183	25.05	54.33	-29.28	15.09	9.65	0.07	0.24	Average
4	0.183	36.24	64.33	-28.09	26.28	9.65	0.07	0.24	QP
5	0.360	35.61	48.74	-13.13	25.57	9.64	0.08	0.32	Average
6	0.360	41.28	58.74	-17.46	31.24	9.64	0.08	0.32	QP
7*	0.383	37.88	48.21	-10.33	27.84	9.64	0.08	0.32	Average
8	0.383	44.03	58.21	-14.18	33.99	9.64	0.08	0.32	QP
9	0.410	27.45	47.64	-20.19	17.40	9.64	0.08	0.33	Average
10	0.410	36.25	57.64	-21.39	26.20	9.64	0.08	0.33	QP
11	18.920	15.06	50.00	-34.94	4.30	9.68	0.50	0.58	Average
12	18.920	19.29	60.00	-40.71	8.53	9.68	0.50	0.58	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Neutral	**Test Freq. (MHz)**	914.9

Test by : Joe Liao Temperature: 23°C Humidity: 63%



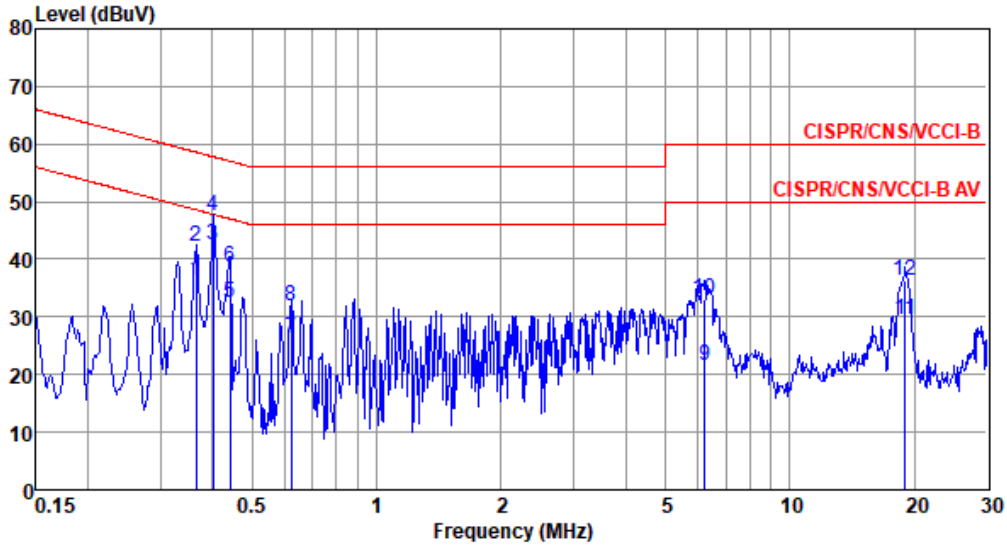
	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.153	29.88	55.82	-25.94	20.02	9.66	0.08	0.12	Average
2	0.153	43.84	65.82	-21.98	33.98	9.66	0.08	0.12	QP
3	0.159	28.92	55.52	-26.60	19.05	9.66	0.08	0.13	Average
4	0.159	42.23	65.52	-23.29	32.36	9.66	0.08	0.13	QP
5	0.174	26.00	54.77	-28.77	16.13	9.65	0.07	0.15	Average
6	0.174	38.55	64.77	-26.22	28.68	9.65	0.07	0.15	QP
7	0.354	34.89	48.87	-13.98	24.93	9.64	0.08	0.24	Average
8	0.354	39.47	58.87	-19.40	29.51	9.64	0.08	0.24	QP
9*	0.387	38.46	48.12	-9.66	28.49	9.64	0.08	0.25	Average
10	0.387	43.60	58.12	-14.52	33.63	9.64	0.08	0.25	QP
11	19.021	13.89	50.00	-36.11	3.00	9.82	0.50	0.57	Average
12	19.021	18.42	60.00	-41.58	7.53	9.82	0.50	0.57	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Test configuration 2: External antenna, POE mode

Power Phase	Line	Test Freq. (MHz)	902.3

Test by : Joe Liao Temperature: 23°C Humidity: 63%

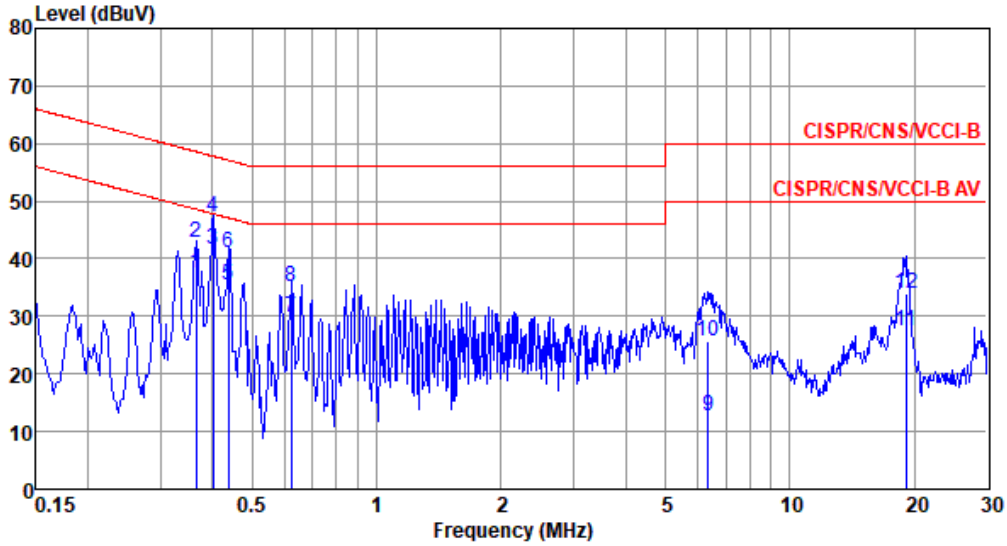


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.365	36.43	48.61	-12.18	26.39	9.64	0.08	0.32	Average
2	0.365	42.14	58.61	-16.47	32.10	9.64	0.08	0.32	QP
3*	0.402	42.50	47.81	-5.31	32.45	9.64	0.08	0.33	Average
4	0.402	47.57	57.81	-10.24	37.52	9.64	0.08	0.33	QP
5	0.442	32.40	47.02	-14.62	22.35	9.64	0.08	0.33	Average
6	0.442	38.56	57.02	-18.46	28.51	9.64	0.08	0.33	QP
7	0.621	26.41	46.00	-19.59	16.35	9.64	0.08	0.34	Average
8	0.621	31.98	56.00	-24.02	21.92	9.64	0.08	0.34	QP
9	6.219	21.67	50.00	-28.33	11.29	9.69	0.26	0.43	Average
10	6.219	32.98	60.00	-27.02	22.60	9.69	0.26	0.43	QP
11	19.021	29.66	50.00	-20.34	18.90	9.68	0.50	0.58	Average
12	19.021	36.22	60.00	-23.78	25.46	9.68	0.50	0.58	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Neutral	**Test Freq. (MHz)**	902.3

Test by : Joe Liao Temperature: 23°C Humidity: 63%

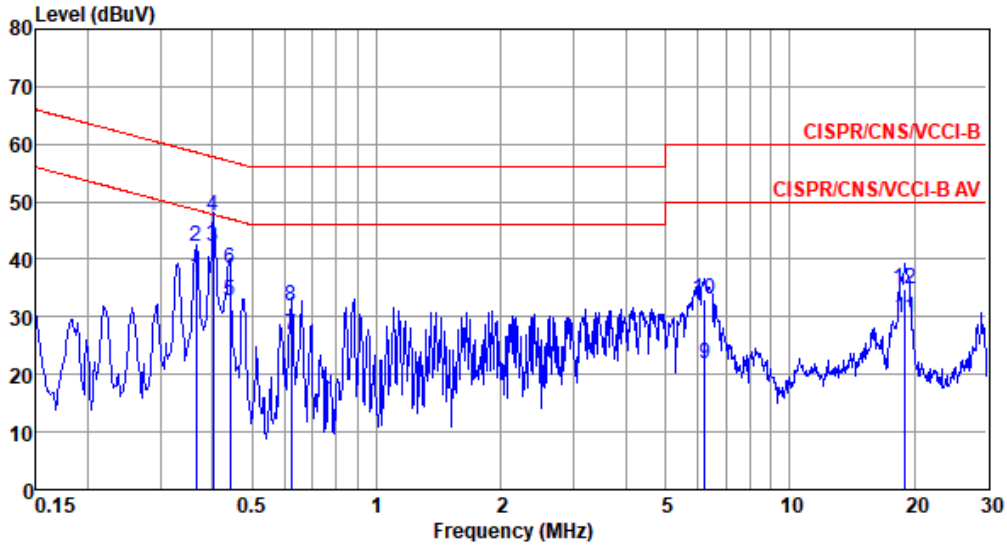


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.365	37.63	48.61	-10.98	27.67	9.64	0.08	0.24	Average
2	0.365	42.78	58.61	-15.83	32.82	9.64	0.08	0.24	QP
3*	0.402	41.68	47.81	-6.13	31.71	9.64	0.08	0.25	Average
4	0.402	47.29	57.81	-10.52	37.32	9.64	0.08	0.25	QP
5	0.437	35.31	47.11	-11.80	25.34	9.64	0.08	0.25	Average
6	0.437	41.14	57.11	-15.97	31.17	9.64	0.08	0.25	QP
7	0.621	29.69	46.00	-16.31	19.70	9.64	0.08	0.27	Average
8	0.621	35.14	56.00	-20.86	25.15	9.64	0.08	0.27	QP
9	6.352	12.73	50.00	-37.27	2.34	9.71	0.27	0.41	Average
10	6.352	25.75	60.00	-34.25	15.36	9.71	0.27	0.41	QP
11	19.122	27.49	50.00	-22.51	16.60	9.82	0.50	0.57	Average
12	19.122	33.83	60.00	-26.17	22.94	9.82	0.50	0.57	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Line	**Test Freq. (MHz)**	908.5

Test by : Joe Liao Temperature: 23°C Humidity: 63%

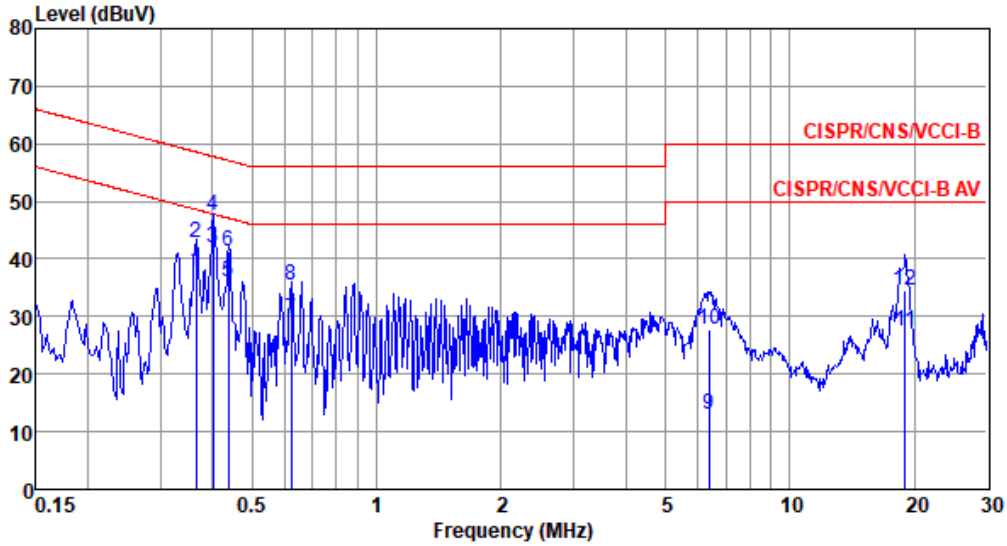


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.365	36.92	48.61	-11.69	26.88	9.64	0.08	0.32	Average
2	0.365	42.15	58.61	-16.46	32.11	9.64	0.08	0.32	QP
3*	0.402	42.36	47.81	-5.45	32.31	9.64	0.08	0.33	Average
4	0.402	47.63	57.81	-10.18	37.58	9.64	0.08	0.33	QP
5	0.442	32.86	47.02	-14.16	22.81	9.64	0.08	0.33	Average
6	0.442	38.50	57.02	-18.52	28.45	9.64	0.08	0.33	QP
7	0.621	26.95	46.00	-19.05	16.89	9.64	0.08	0.34	Average
8	0.621	32.03	56.00	-23.97	21.97	9.64	0.08	0.34	QP
9	6.219	21.83	50.00	-28.17	11.45	9.69	0.26	0.43	Average
10	6.219	33.11	60.00	-26.89	22.73	9.69	0.26	0.43	QP
11	19.021	29.85	50.00	-20.15	19.09	9.68	0.50	0.58	Average
12	19.021	34.73	60.00	-25.27	23.97	9.68	0.50	0.58	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Neutral	**Test Freq. (MHz)**	908.5

Test by : Joe Liao Temperature: 23°C Humidity: 63%

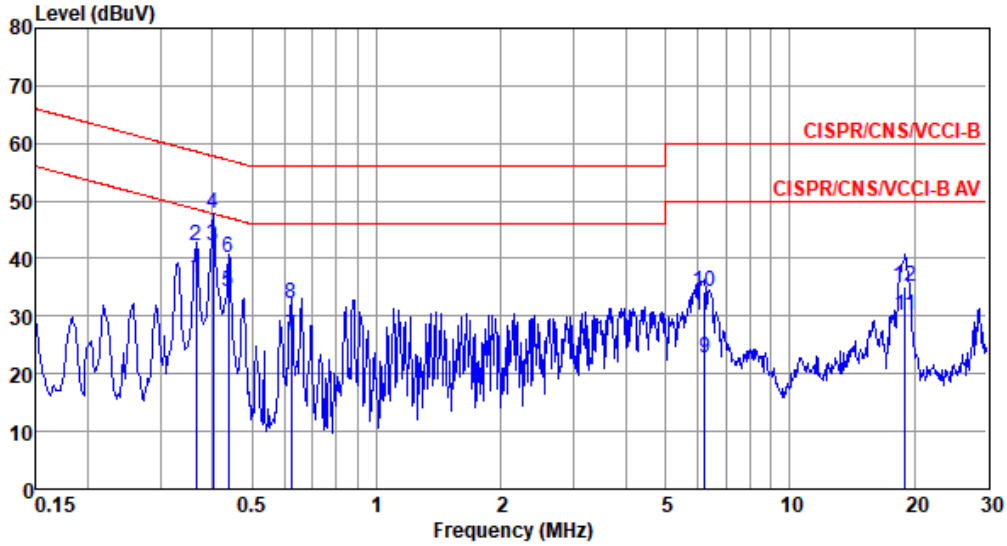


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.365	37.73	48.61	-10.88	27.77	9.64	0.08	0.24	Average
2	0.365	42.87	58.61	-15.74	32.91	9.64	0.08	0.24	QP
3*	0.402	41.80	47.81	-6.01	31.83	9.64	0.08	0.25	Average
4	0.402	47.43	57.81	-10.38	37.46	9.64	0.08	0.25	QP
5	0.437	36.02	47.11	-11.09	26.05	9.64	0.08	0.25	Average
6	0.437	41.32	57.11	-15.79	31.35	9.64	0.08	0.25	QP
7	0.621	29.62	46.00	-16.38	19.63	9.64	0.08	0.27	Average
8	0.621	35.34	56.00	-20.66	25.35	9.64	0.08	0.27	QP
9	6.386	12.99	50.00	-37.01	2.60	9.71	0.27	0.41	Average
10	6.386	27.77	60.00	-32.23	17.38	9.71	0.27	0.41	QP
11	19.021	27.44	50.00	-22.56	16.55	9.82	0.50	0.57	Average
12	19.021	34.67	60.00	-25.33	23.78	9.82	0.50	0.57	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Line	Test Freq. (MHz)	914.9

Test by : Joe Liao Temperature: 23°C Humidity: 63%

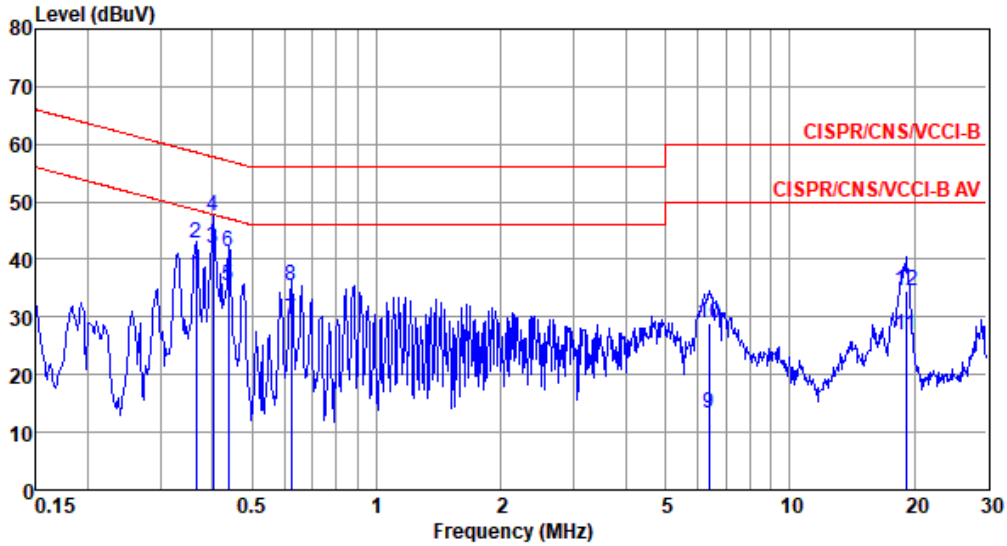


	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.365	36.59	48.61	-12.02	26.55	9.64	0.08	0.32	Average
2	0.365	42.32	58.61	-16.29	32.28	9.64	0.08	0.32	QP
3*	0.402	42.12	47.81	-5.69	32.07	9.64	0.08	0.33	Average
4	0.402	47.78	57.81	-10.03	37.73	9.64	0.08	0.33	QP
5	0.437	34.21	47.11	-12.90	24.16	9.64	0.08	0.33	Average
6	0.437	40.07	57.11	-17.04	30.02	9.64	0.08	0.33	QP
7	0.621	26.64	46.00	-19.36	16.58	9.64	0.08	0.34	Average
8	0.621	32.21	56.00	-23.79	22.15	9.64	0.08	0.34	QP
9	6.219	22.67	50.00	-27.33	12.29	9.69	0.26	0.43	Average
10	6.219	34.25	60.00	-25.75	23.87	9.69	0.26	0.43	QP
11	19.021	30.03	50.00	-19.97	19.27	9.68	0.50	0.58	Average
12	19.021	35.12	60.00	-24.88	24.36	9.68	0.50	0.58	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Power Phase	Neutral	Test Freq. (MHz)	914.9

Test by : Joe Liao Temperature: 23°C Humidity: 63%



	Freq	Level	Limit Line	Over Limit	Read Level	Factor	Cable loss	Aux	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	dB	
1	0.365	37.10	48.61	-11.51	27.14	9.64	0.08	0.24	Average
2	0.365	42.93	58.61	-15.68	32.97	9.64	0.08	0.24	QP
3*	0.402	41.83	47.81	-5.98	31.86	9.64	0.08	0.25	Average
4	0.402	47.44	57.81	-10.37	37.47	9.64	0.08	0.25	QP
5	0.437	35.45	47.11	-11.66	25.48	9.64	0.08	0.25	Average
6	0.437	41.40	57.11	-15.71	31.43	9.64	0.08	0.25	QP
7	0.621	29.64	46.00	-16.36	19.65	9.64	0.08	0.27	Average
8	0.621	35.38	56.00	-20.62	25.39	9.64	0.08	0.27	QP
9	6.386	13.42	50.00	-36.58	3.03	9.71	0.27	0.41	Average
10	6.386	28.93	60.00	-31.07	18.54	9.71	0.27	0.41	QP
11	19.122	27.01	50.00	-22.99	16.12	9.82	0.50	0.57	Average
12	19.122	34.66	60.00	-25.34	23.77	9.82	0.50	0.57	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB) + Aux (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).