



Project No: Report No.: TM-2305000094P TMWK2305001723KR

FCC ID: P27-SLIMG01

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RADIO TEST REPORT FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
Product name	Image sensor with LoRa module
Brand Name	Sercomm
Model No.	SL-IMG01
Test Result	Pass
Statements of Conformity	Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:

mil 1

Shawn Wu Supervisor

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June 8, 2023	Initial Issue	ALL	Doris Chu
01	June 16, 2023	See the following Note Rev. (01)	P.4, P.35-40, P.43-48	Doris Chu

Rev. (01)

1. Modify power supply in section 1.1.

2. Added remark in page 35-40.

3. Added Average and remark in page 43-48



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	RADIATION BANDEDGE AND SPURIOUS EMISSION



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1. GENERAL INFORMATION

1.1 EUT INFORMATION

ApplicantSercomm Corporation 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan				
Manufacturer	Sercomm Corporation 8F, No. 3-1, YuanQu St., NanKang, Taipei 115, Taiwan			
Equipment	Image sensor with LoRa module			
Model Name	SL-IMG01			
Model Discrepancy	N/A			
Brand Name	Sercomm			
Received Date	May 9, 2023			
Date of Test	May 15 ~ June 1, 2023			
Power Supply	Power from Battery. (DC 6V)			

Remark:

1. For more details, please refer to the User's manual of the EUT.

2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.



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1.2 EUT CHANNEL INFORMATION

Frequency Range	902.3MHz-914.9MHz
Modulation Type	LoRa
Number of channels	64 Channels

Remark:

Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 for test channels

Number of frequencies to be tested					
Frequency range inNumber ofLocation in frequencywhich device operatesfrequenciesrange of operation					
1 MHz or less	1	Middle			
1 MHz to 10 MHz	2	1 near top and 1 near bottom			
More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom			

1.3 ANTENNA INFORMATION

Antenna Type	CHIP Z PIFA PCB Dipole Coils
Antenna Gain	Gain: -2.8 dBi
Antenna Connector	N/A

Remark:

1. The industrial epoxy adhesive is used making Antenna connection permanently prior to shipping. It complies with rule 15.203.



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1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	± 2.1183
Channel Bandwidth	± 2.1863
RF output power (Power Meter + Power sensor)	± 1.2688
Channel Separation	± 2.1848
Conducted Bandedge	± 2.1866
Conducted Spurious Emission	± 2.1859
Radiated Emission_9kHz-30MHz	± 3.842
Radiated Emission_30MHz-200MHz	± 4.517
Radiated Emission_200MHz-1GHz	± 4.844
Radiated Emission_1GHz-6GHz	± 5.411
Radiated Emission_6GHz-18GHz	± 5.266
Radiated Emission_18GHz-26GHz	± 4.270
Radiated Emission_26GHz-40GHz	± 4.203

Remark:

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

2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan 24803 CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	-	Not applicable, because EUT doesn't connect to AC Main Source direct.
Radiation	Czerny Lin	-
RF Conducted	Jack Chen	-

Remark: The lab has been recognized as the FCC accredited lab. under the KDB 974614 D01 and is listed in the FCC pubic Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309



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1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site						
Equipment	Manufacturer Model Serial Number Calibration Date Calibration I					
Power Sensor	Anritsu	MA2411B	1911386	2022-08-08	2023-08-07	
Power Sensor	Anritsu	MA2411B	1911387	2022-08-08	2023-08-07	
EXA Signal Analyzer	Keysight	N9010B	MY55460167	2022-09-07	2023-09-06	
EXA Signal Analyzer	Keysight	N9010A	MY54200716	2022-10-13	2023-10-12	
Power Meter	Anritsu	ML2496A	2136002	2022-11-24	2023-11-23	
Software	Radio Test Software Ver. 21					

3M 966 Chamber Test Site							
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
Antenna	SHWARZBECK	VULB 9168	1277	2023-01-13	2024-01-12		
Pre-Amplifier	EMCI	EMC118A45SE	980820	2022-12-23	2023-12-22		
Pre-Amplifier	EMCI	EMC330N	980853	2022-12-23	2023-12-22		
Coaxial Cable	EMC	EMC101G-KM-KM-9 000	220407+211228+2302 05	2023-03-21	2024-03-20		
Signal Generator	Agilent	N9010A	MY52220817	2023-03-09	2024-03-08		
Coaxial Cable	EMC	EMCCFD400	211212+211222+2110 20	2023-03-21	2024-03-20		
Thermo-Hygr o Meter	EDSDS	EDS-A49	966D1	2023-05-11	2024-05-10		
Pre-Amplifier	EMCI	EMC184045SE	980872	2023-01-03	2024-01-02		
Horn Antenna	RF SPIN	DRH18-E	210301A18ES	2023-02-03	2024-02-02		
Horn Antenna	SHWARZBECK	BBHA 9170	1134	2022-12-30	2023-12-29		
Loop Antenna	SCHWARZBEC K	FMZB 1513-60	1513-60-028	2022-12-27	2023-12-26		
High Pass Filter	TITAN	T04H10001000060S 01	211215-7-2	2023-02-02	2024-02-01		
Software e3 6.11-20180413							

AC Conducted Emissions Test Site						
Equipment Manufacturer Model S/N Cal Date Cal Due						
N/A						

Remark:

Each piece of equipment is scheduled for calibration once a year.
 N.C.R. = No Calibration Required.



1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

	EUT Accessories Equipment							
No.	Equipment	Brand	Model	Series No.	FCC ID			
	N/A							

	Support Equipment							
No.	Equipment	Brand	Model	Series No.	FCC ID			
1	NB(E)	Lenovo	T460	N/A	N/A			

1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.247.



2. TEST SUMMARY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207(a)	4.1	AC Conducted Emission	N/A
15.247(a)(1)(i)	4.2	20 dB Bandwidth	Pass
-	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)(2)	4.3	Output Power Measurement	Pass
15.247(a)(1)	4.4	Frequency Separation	Pass
15.247(a)(1)(i)	4.5	Number of Hopping	Pass
15.247(d)	4.6	Conducted Band Edge	Pass
15.247(d)	4.6	Conducted Spurious Emission	Pass
15.247(f)	4.7	Time of Occupancy	Pass
15.247(d)	4.8	Radiation Band Edge	Pass
15.247(d)	4.8	Radiation Spurious Emission	Pass



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3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	LoRa with 125kHz Bandwidth					
	1 lowes	t Channe	· 902 3	MHz		
Test Channel Frequencies (MHz)		Channel				
	3.Highe	st Channe	914.9	MHZ		
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
	CH0	902.3	CH22	906.7	CH44	911.1
	CH1	902.5	CH23	906.9	CH45	911.3
	CH2	902.7	CH24	907.1	CH46	911.5
	CH3	902.9	CH25	907.3	CH47	911.7
	CH4	903.1	CH26	907.5	CH48	911.9
	CH5	903.3	CH27	907.7	CH49	912.1
	CH6	903.5	CH28	907.9	CH50	912.3
	CH7	903.7	CH29	908.1	CH51	912.5
	CH8	903.9	CH30	908.3	CH52	912.7
	CH9	904.1	CH31	908.5	CH53	912.9
Channel List	CH10	904.3	CH32	908.7	CH54	913.1
	CH11	904.5	CH33	908.9	CH55	913.3
	CH12	904.7	CH34	909.1	CH56	913.5
	CH13	904.9	CH35	909.3	CH57	913.7
	CH14	905.1	CH36	909.5	CH58	913.9
	CH15	905.3	CH37	909.7	CH59	914.1
	CH16	905.5	CH38	909.9	CH60	914.3
	CH17	905.7	CH39	910.1	CH61	914.5
	CH18	905.9	CH40	910.3	CH62	914.7
	CH19	906.1	CH41	910.5	CH63	914.9
	CH20	906.3	CH42	910.7		
	CH21	906.5	CH43	910.9		

Remark:

1. The device supports hybrid mode.

2. RF output power was measured with Average detector



3.2 THE WORST MODE OF MEASUREMENT

Radiated Emission Measurement Above 1G					
Test Condition	Test Condition Radiated Emission Above 1G				
Power supply Mode Mode 1: EUT power by Battery					
Worst Mode Mode 1 Mode 2 Mode 3 Mode 4					
Worst Position Image: Constraint of the second					

Radiated Emission Measurement Below 1G						
Test Condition	Test Condition Radiated Emission Below 1G					
Power supply Mode Mode 1: EUT power by Battery						
Worst Mode Mode 1 Mode 2 Mode 3 Mode 4						

Remark:

1. The worst mode was record in this test report.

2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(Y-Plane) were recorded in this report



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3.3 EUT DUTY CYCLE

May 15 ~ June 1, 2023 Temperature: **22.8 ~ 26.8**℃ Test date: Humidity: 52 ~ 60% RH Tested by: Jack Chen

Duty Cycle							
Configuration	Duty Cycle (%)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)			
LoRa-125kHz	100.00	0.00	1.00	0.01			

DC	SENSE:INT	ALIGN AUTO	02:23:13 PM May 29, 2023	
	rig: Eree Burn	Avg Type: Voltage		Frequency
			DET P NNNN	
		Δ	Mkr3 1.980 ms	Auto Tune
			-0.03 dB	
				Conton Enor
				Center Freq 902.300000 MHz
34	4			902.300000 MHz
		- · ·		
				Start Freq
				902.300000 MHz
				Stop Freq
				902.300000 MHz
		O		CF Step 8.000000 MHz
		•	,	Auto Man
		JNCTION FUNCTION WIDTH	FUNCTION VALUE	
6.020 ms -2	2.25 dBm			Freq Offset
				0 Hz
0.020 1110	2.20 42		E	0 H2
				Scale Type
				Log <u>Lin</u>
	DC DO MHZ PNO: Fast → TI IFGain:Low 3Δ 5 dB Bm 3Δ 2 2 VBW 8.0 X 1.980 ms (Δ) 6.020 ms -2 1.980 ms (Δ)	DC SENSE:INT DO MHZ PNO: Fast →→ IFGain:Low 3 △4 3 △4 3 △4 3 △4 2 2 2 VBW 8.0 MHZ X 1.980 ms (△) -0.03 dB 6.020 ms -2.2.26 dBm 1.980 ms (△) -0.03 dB	DC SENSE:INT ALIGN AUTO DOO MHZ Trig: Free Run IFGain:Low Avg Type: Voltage odB Δ Bm Δ 3Δ4 Δ 3Δ4 Δ VBW 8.0 MHz Sweep 20 X Y FUNCTION FUNCTION 1.980 ms<(Δ)	DC SENSE:INT ALIGN AUTO 02:23:13 PMMay 29, 2023 DOD MHZ Trig: Free Run IFGain:Low Trig: Free Run Atten: 10 dB Avg Type: Voltage TRACE 2 34.5 6 0 dB ΔMkr3 1.980 ms -0.03 dB -0.03 dB -0.03 dB 3 Δ4 -0.03 dB -0.03 dB -0.03 dB 2 -0.03 dB -0.03 dB -0.03 dB 2 -0.03 dB -0.03 dB -0.03 dB 2 -0.03 dB -0.03 dB -0.03 dB 5.020 ms -0.03 dB -0.03 dB -0.03 dB



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4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a),

Limits(dBµV)		
Quasi-peak	Average	
66 to 56*	56 to 46*	
56	46	
60	50	
	Quasi-peak 66 to 56* 56	

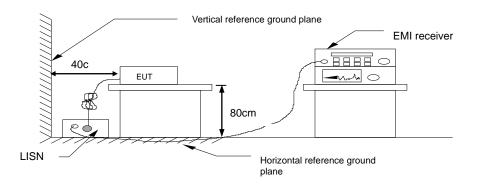
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

- 1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
- 2. EUT connected to the line impedance stabilization network (LISN)
- 3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. Recorded Line for Neutral and Line.

4.1.3 Test Setup



4.1.4 Test Result

Not applicable, because EUT not connect to AC Main Source direct.



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4.220dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a)(1)(i),

<u>20 dB Bandwidth</u> : For reporting purposes only.

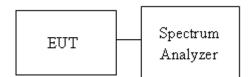
Occupied Bandwidth(99%) : For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 7.8.7,

- 1. The EUT RF output connected to the spectrum analyzer by RF cable.
- 2. Setting maximum power transmit of EUT
- 3. SA set RBW = 3kHz, VBW = 10kHz and Detector = Peak, to measurement 20 dB Bandwidth.
- 4. SA set RBW = 1% ~ 5% OBW, VBW = three times the RBW and Detector = Peak, to measurement 99% Bandwidth
- 5. Measure and record the result of 20 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup





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4.2.4 Test Result

Temperature:	22.8 ~ 26.8 ℃	Test date:	May 15 ~ June 1, 2023
Humidity:	52 ~ 60% RH	Tested by:	Jack Chen

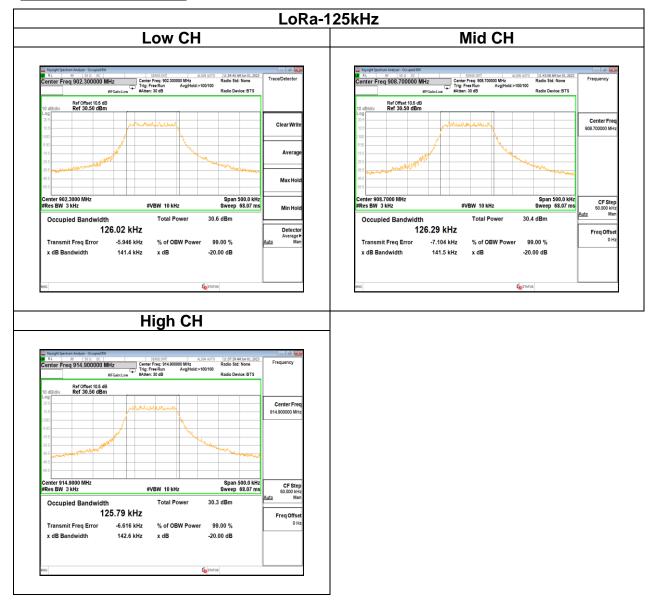
Test mode: LoRa-125kHz / 902.3-914.9 MHz							
Channel	Frequency (MHz)	OBW(99%) (MHz)	20dB BW (MHz)				
Low	902.3	0.12520	0.1414				
Mid	908.7	0.12655	0.1415				
High	914.9	0.12588	0.1426				



Test Data

20dB BANDWIDTH

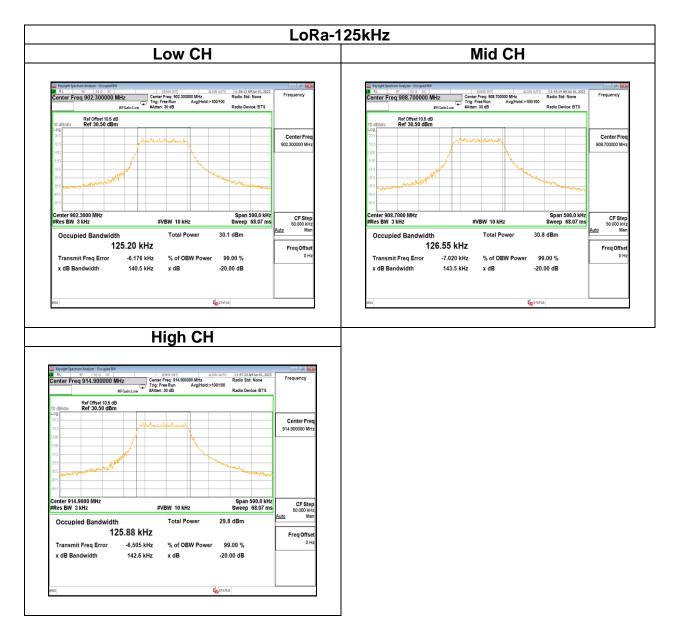






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Test Data BANDWIDTH 99%





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4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

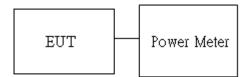
According to §15.247(b)(2)

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.

4.3.2 Test Procedure

- 1. The EUT RF output connected to the power meter by RF cable.
- 2. Setting maximum power transmit of EUT.
- 3. The path loss was compensated to the results for each measurement.
- 4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup





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4.3.4 Test Result

Temperature:	22.8 ~ 26.8 °C	Test date:	May 15 ~ June 1, 2023
Humidity:	52 ~ 60% RH	Tested by:	Jack Chen

LoRa-125kHz:

СН	Freq. (MHz)	Power set	Maximum Output power (dBm)	Output Power (mW)	Limit (mW)
Low	902.3	22	20.34	108.143	1000
Mid	908.7	22	20.23	105.439	1000
High	914.9	22	20.23	105.439	1000



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4.4 FREQUENCY SEPARATION

4.4.1 Test Limit

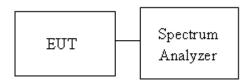
15.247(a)(1)

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.

4.4.2 Test Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. EUT RF output port connected to the SA by RF cable.
- 3. Set the spectrum analyzer as RBW = 10kHz, VBW = 30kHz, Sweep = auto. Max hold, mark 2 peaks of hopping channel and record the 2 peaks frequency

4.4.3 Test Setup





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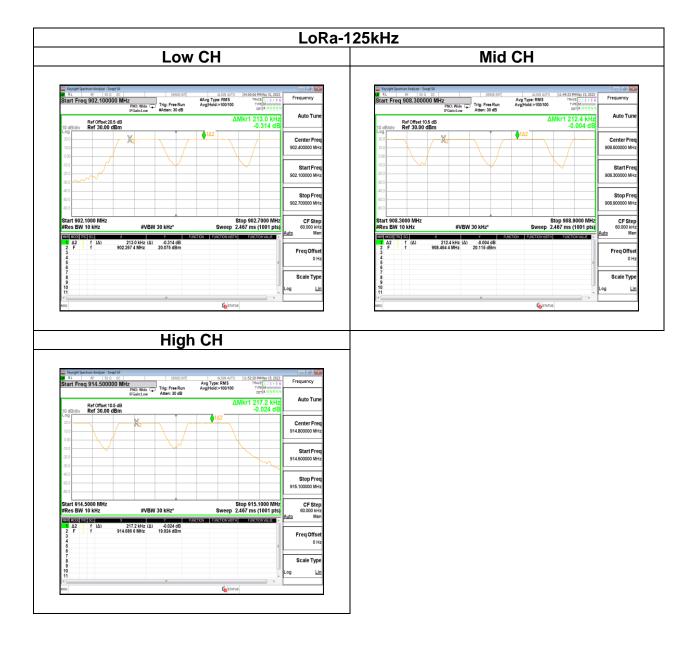
4.4.4 Test Result

Temperature:	22.8 ~ 26.8 °C	Test date:	May 15 ~ June 1, 2023
Humidity:	52 ~ 60% RH	Tested by:	Jack Chen

	Test	mode: LoRa-125kł	lz / 902.3-914.9 MHz	
Channel	Frequency (MHz)	Channel Separation (MHz)	Channel Separation Limits (MHz)	Result
Low	902.3	0.2130	0.1414	PASS
Mid	908.7	0.2124	0.1415	PASS
High	914.9	0.2172	0.1426	PASS



Test Data



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4.5 NUMBER OF HOPPING

4.5.1 Test Limit

According to \$15.247(a)(1)(i)

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.

4.5.2 Test Procedure

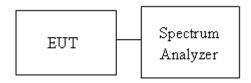
Test method Refer as ANSI C63.10: 2013 clause 7.8.3

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. EUT RF output port connected to the SA by RF cable.

3. Set spectrum analyzer Start Freq. = 902 MHz, Stop Freq. = 928 MHz, RBW

- =100KHz, VBW = 300KHz.
- 4. Max hold, view and count how many channels in the band.

4.5.3 Test Setup





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4.5.4 Test Result

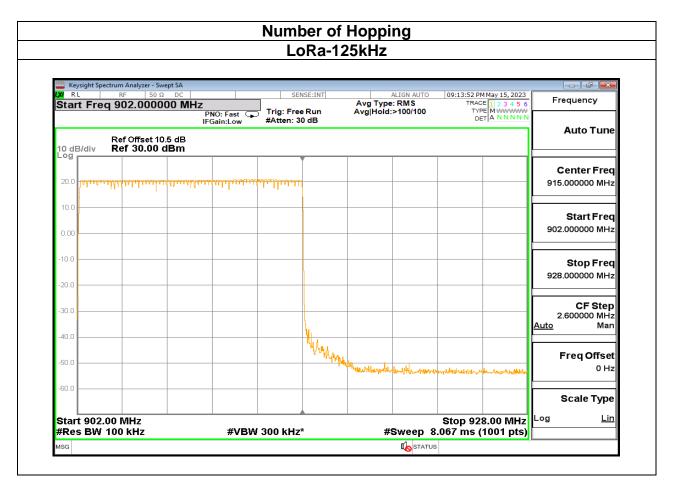
Temperature:	22.8 ~ 26.8 ℃	Test date:	May 15 ~ June 1, 2023
Humidity:	52 ~ 60% RH	Tested by:	Jack Chen

		Number of Hoppin	Ig	
Mode	Frequency (MHz)	Hopping Channel Number	Hopping Channel Number Limits	Result
LoRa-125kHz	902.3-914.9	64	N/A ¹	Pass

Note:

1. Hybrid mode, No minimum number of hopping channels with hybrid system.

Test Data





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4.6 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

According to §15.247(d)

Limit

-30 dBc

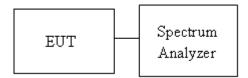
4.6.2 Test Procedure

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.

2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.

3. The Band Edge at 902 MHz and 928 MHz are investigated with both hopping "ON" and "OFF" modes ".

4.6.3 Test Setup





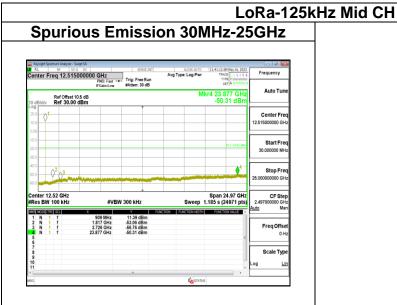
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4.6.4 Test Result

Temperature:	22.8 ~ 26.8 ℃	Test date:	May 15 ~ June 1, 2023
Humidity:	52 ~ 60% RH	Tested by:	Jack Chen

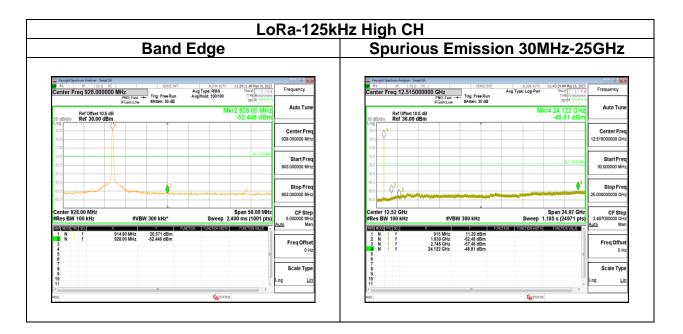
Test Data

Band Edge		Sourious Emi	ssion 30MHz-25	СЦ-
Ballu Euge		Spurious Ellis	551011 JUNITZ-ZD	GHZ
Keysight Spectrum Analyzer - Swept SA		Keysight Spectrum Analyzer - Swept SA		
Rit Stress print Stress print Aug Type: Log-Perr TAGE AND 113321 MM Write 5 A201 Center Freq 902.000000 MHz THIS: First Pres Run Arg Type: Log-Perr The (First Pres Run Trace (First Pres Run	Frequency	Center Freq 12.515000000 GHz PN0: Fast Trig: 1	SENSE:INT ALIGN AUTO 11:37:40 AM May 16, 2023 Avg Type: Log-Pwr TRACE 12:3:4:5:6 Free Run TYPE IN WWWWW UPI A MWWWWW 10:30 dB DET A IN NIN N	Frequency
IFGainLow #Atten: 30 dB Derparation Ref Offset 10.5 dB Mkr2 902.000 MHz 10 dB/dly Ref 30.00 dBm -244.47 dBm	Auto Tune	Ref Offset 10.5 dB	Mkr4 23.650 GHz -49.14 dBm	Auto Tune
	Center Freq 902.000000 MHz			Center Freq
000 001 001 001 001 001 001 001 001 001	Start Freq 889.500000 MHz	10.0 -10.0 -20.0	2.1.1.674.00x	Start Freq 30.000000 MHz
	Stop Freq 914.500000 MHz		22	Stop Freq
Center 902.00 MHz Span 25.00 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.200 ms (1001 pts)		Center 12.52 GHz #Res BW 100 kHz #VBW 300 k	Span 24.97 GHz Hz Sweep 1.185 s (24971 pts)	CF Step 497000000 GHz
D20 D20 <thd20< th=""> <thd20< th=""> <thd20< th=""></thd20<></thd20<></thd20<>	Freq Offset 0 Hz	2 N 1 f 1.805 GHz -52.10 3 N 1 f 2.707 GHz -57.81	FUNCTION FUNCTION WIDTH FUNCTION WILLIE A	Freq Offset 0 Hz
0 7 8 9 10	Scale Type	6 7 8 9 10	Lo	Scale Type
		11 * [€ostatus *	





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4.7 TIME OF OCCUPANCY (DWELL TIME)

4.7.1 Test Limit

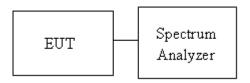
According to §15.247(f)

The frequency hopping operation of the hybrid system, with the direct sequence or digital modulation operation turned-off, shall have 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.

4.7.2 Test Procedure

- 1. EUT RF output port connected to the SA by RF cable.
- 2. Set center frequency of spectrum analyzer = operating frequency.
- 5. 3. Set the spectrum analyzer as RBW=100 kHz, VBW= 300 kHz, Sweep = 500 ms

5.1.1 Test Setup



5.1.2 Test Result

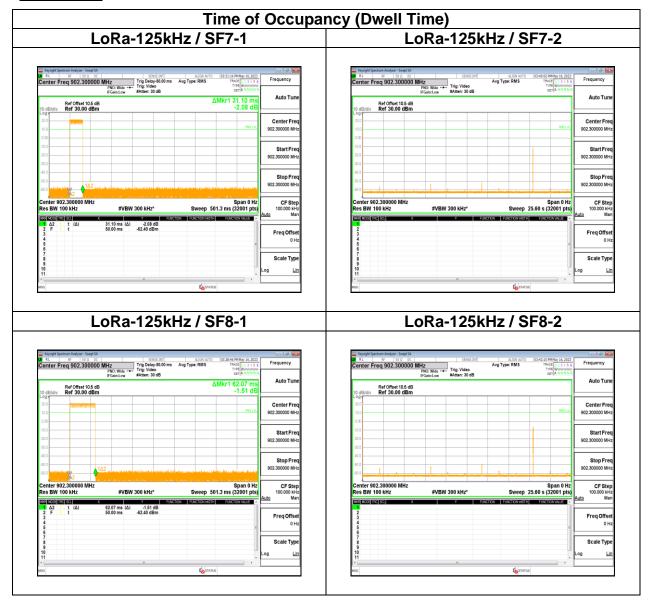
Temperature:	22.8 ~ 26.8 ℃	Test date:	May 15 ~ June 1, 2023
Humidity:	52 ~ 60% RH	Tested by:	Jack Chen

Time of Occu	ıpancy (Dwell Ti	me)			
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	0.0311	1	0.0311	0.4
Lora / 8	902.3	0.06207	1	0.06207	0.4
Lora / 9	902.3	0.124	1	0.124	0.4
Lora / 10	902.3	0.248	1	0.248	0.4



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Test Data





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5.2 RADIATION BANDEDGE AND SPURIOUS EMISSION

5.2.1 Test Limit

FCC according to §15.247(d), §15.209 and §15.205,

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency	Field Stre microvolts/m at 3 metr	
(MHz)	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.



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5.2.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

4. For harmonic, the worst case of output power was BDR-1Mbps. Therefore only BDR-1Mbps record in the report.

- 5. The SA setting following :
 - (1) Below 1G : RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2) Above 1G:
 - (2.1) For Peak measurement : RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.
 - (2.2) For Average measurement : RBW = 1MHz, VBW

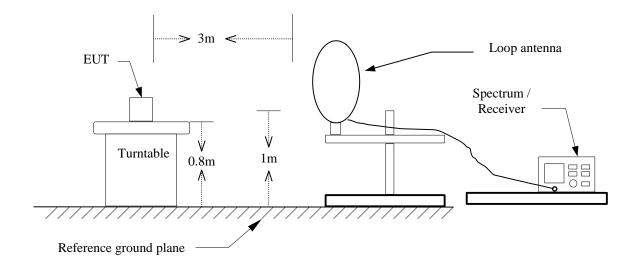
If Duty Cycle \geq 98%, VBW=10Hz.

If Duty Cycle < 98%, VBW≥1/T.

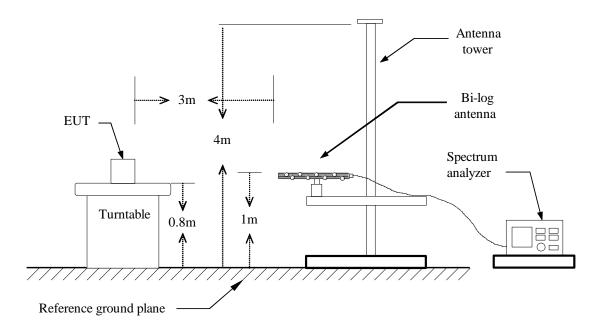


5.2.3 Test Setup

<u>9kHz ~ 30MHz</u>



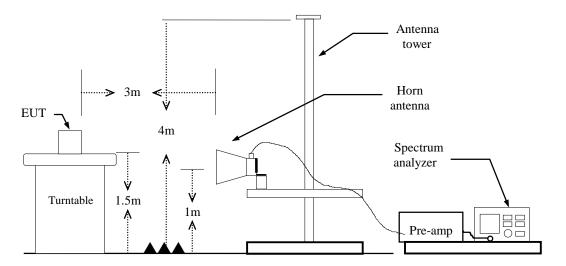
<u>30MHz ~ 1GHz</u>





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Above 1 GHz





5.2.4 Test Result

Band Edge Test Data

1000 101	ode:	Low CH 902.3 MHz		Temp/Hum	25.5(°(C)/ 54%RH
Test It	em	Band Edge		Test Date	May	22, 2023
Polar	ize	Vertical		Test Enginee		erny Lin
Detec	tor	Peak / Avera	ge			
120 Lev	vel (dBuV/m)					
105.0						
90.0						
75.0						
60.0						
45.0			╉──			
30.0	-	and the second second second	January South		ninge with many state	
15.0						
15.0						
0 ^L 825		0. 895				
020	5 86	0. 895 Ero	moncy	930.	965.	1000
023	5 86	0. 895. Fre	quency (965.	1000
023	5 8€ 		quency (965.	1000
Freq.	Detector	Spectrum	quency Facto	(MHz)	Limit	Margin
		Fre	quency	(MHz)		
	Detector	Spectrum	quency	(MHz) r Actual	Limit	
Freq.	Detector Mode	Free Spectrum Reading Level	Facto	(MHz) or Actual FS dBµV/m	Limit @3m	Margin
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Facto dB	(MHz) or Actual FS dBµV/m 5 37.94	Limit @3m dBµV/m	Margin dB
Freq. MHz 870.31	Detector Mode PK/QP/AV Peak	Free Spectrum Reading Level dBµV 39.19	Facto dB -1.25	(MHz) r Actual FS dBµV/m 5 37.94 55.93	Limit @3m dBµV/m 80.66 ¹	Margin dB -42.72
Freq. MHz 870.31 902.00	Detector Mode PK/QP/AV Peak QP	Free Spectrum Reading Level dBµV 39.19 56.77	Facto dB -1.25 -0.84	(MHz) or Actual FS dBµV/m 55.93 63.27	Limit @3m dBμV/m 80.66 ¹ 80.26 ¹	Margin dB -42.72 -24.33
Freq. MHz 870.31 902.00 902.00	Detector Mode PK/QP/AV Peak QP Peak	Free Spectrum Reading Level dBµV 39.19 56.77 64.11	Facto dB -1.25 -0.84 -0.84	(MHz) or Actual FS dBµV/m 55.93 63.27 110.26	Limit @3m dBµV/m 80.66 ¹ 80.26 ¹ 80.66 ¹	Margin dB -42.72 -24.33 -17.39

Remark:

928.01

934.27

Peak

Peak

1. The limit is fundamental signal – 30 dB since the frequency of the unwanted emission was not in restricted band.

34.34

37.83

-0.19

-0.02

34.14

37.80

80.66¹

80.66¹

-46.52

-42.86



Test Mode:			Low CH 902.3 MHz		1	[emp/	Hum	25.5(°∁)/ 54%RH		
Test Item			Band Edge			Test Date			May 22, 2023	
Polarize			lorizontal		Test Engineer			Czerny Lin		
Detec	ctor	Pea	ak / Avera	ge			•		•	
120 Le	vel (dBuV/m	1)								
105.0										
90.0										
75.0										
60.0										
45.0 =		and the second second								
30.0										
15.0										
0 825	5 8	60.	895. Free	quency	93 (MH2	0. z)		965.	1000	
Freq.	Detector	Sp	Free	quency	/ (MH2	z) Ac	tual	Limit	1000 Margin	
Freq.	Detector Mode	Sp Read	Free ectrum ing Level	quency Fact	or	z) Ac F	tual S	Limit @3m	Margin	
Freq. MHz	Detector Mode PK/QP/AV	Sp Read	Free ectrum ing Level dBµV	quency Fact dB	or 3	z) Ac F dBı	tual S IV/m	Limit @3m dBµV/m	Margin n dB	
Freq. MHz 870.31	Detector Mode PK/QP/AV Peak	Read	Free ectrum ing Level dBµV 47.16	Fact dB -1.2	or 3	z) Ac F dBµ 45	tual S IV/m .91	Limit @3m dBµV/m 88.66 ¹	Margin dB -42.75	
Freq. MHz 870.31 902.00	Detector Mode PK/QP/AV Peak QP	Read	Free ectrum ing Level dBµV 47.16 52.21	Fact dB -1.2 -0.8	cor 3 25 34	z) Ac F dBµ 45 61	tual S IV/m .91 .37	Limit @3m dBµV/m 88.66 ¹ 86.36 ¹	Margin dB -42.75 -24.99	
Freq. MHz 870.31 902.00 902.00	Detector Mode PK/QP/AV Peak QP Peak	Read	Free ectrum ing Level dBµV 47.16 52.21 59.84	Fact dB -1.2 -0.8 -0.8	or 3 25 34 34	Z) Ac F dB ₁ 45 61 69	tual S IV/m .91 .37 .00	Limit @3m dBµV/m 88.66 ¹	Margin dB -42.75	
Freq. MHz 870.31 902.00 902.30	Detector Mode PK/QP/AV Peak QP Peak QP	Spo Read	Free ectrum ing Level dBµV 47.16 52.21 59.84 19.20	Fact dB -1.2 -0.8 -0.8 -0.8	or 3 25 34 34 34	Ac F dBµ 45 61 69 118	tual S IV/m .91 .37 .00 3.36	Limit @3m dBµV/m 88.66 ¹ 86.36 ¹	Margin dB -42.75 -24.99	
Freq. MHz 870.31 902.00 902.30 902.30	Detector Mode PK/QP/AV Peak QP Peak	Sp Read 2 6 6 6 1 1	Free ectrum ing Level dBµV 47.16 52.21 59.84 19.20 19.50	Fact dB -1.2 -0.8 -0.8 -0.8 -0.8 -0.8	3 4 34 34 34	Ac F dB ₁ 45 61 69 118 118	tual S IV/m .91 .37 .00 3.36 3.66	Limit @3m dBµV/m 88.66 ¹ 86.36 ¹ 88.66 ¹	Margin dB -42.75 -24.99 -19.66	
Freq. MHz 870.31 902.00 902.30	Detector Mode PK/QP/AV Peak QP Peak QP	Sp Read 2 6 6 6 1 1	Free ectrum ing Level dBµV 47.16 52.21 59.84 19.20	Fact dB -1.2 -0.8 -0.8 -0.8	3 4 34 34 34	Ac F dB ₁ 45 61 69 118 118	tual S IV/m .91 .37 .00 3.36	Limit @3m dBµV/m 88.66 ¹ 86.36 ¹ 88.66 ¹	Margin dB -42.75 -24.99 -19.66 	
Freq. MHz 870.31 902.00 902.30 902.30	Detector Mode PK/QP/AV Peak QP Peak QP Peak	Spo Read 22 66 6 6 7 1 1 1 1	Free ectrum ing Level dBµV 47.16 52.21 59.84 19.20 19.50	Fact dB -1.2 -0.8 -0.8 -0.8 -0.8 -0.8	or 3 25 34 34 34 34 34 34	Z) Ac F dBµ 45 61 61 69 118 118 116	tual S IV/m .91 .37 .00 3.36 3.66	Limit @3m dBµV/m 88.66 ¹ 88.66 ¹ 	Margin dB -42.75 -24.99 -19.66 	

Remark:

1. The limit is fundamental signal – 30 dB since the frequency of the unwanted emission was not in restricted band.



Test N	lode:	Mid CH 908.7 MH	7	Temp/Hum	25.5(°(C)/ 54%R
Test	Item	Band Edg		Test Date	May	22, 2023
Pola		Vertical		Test Enginee		erny Lin
Dete	ctor	Peak / Aver	age			
Le	vel (dBuV/m)					
120						
105.0						
90.0						
75.0						
60.0						
			<u> </u>			
45.0				and the second second		uk Laur
30.0						
15.0						
825	5 86		quency (N	930.	965.	1000
				1112)		
Frea.	Detector	Spectrum	Factor		Limit	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual	Limit @3m	
Freq. MHz		Spectrum Reading Level dBµV	Factor	Actual		
	Mode	Reading Level		Actual FS	@3m	Margin
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	Actual FS dBµV/m	@3m dBµV/m	Margin dB
MHz 876.77	Mode PK/QP/AV Peak	Reading Level dBµV 39.93	dB -1.19	Actual FS dBµV/m 38.74	@3m dBµV/m 80.39 ¹	Margin dB -41.65
MHz 876.77 902.00	Mode PK/QP/AV Peak Peak	Reading Level dBµV 39.93 38.32	dB -1.19 -0.84	Асtual FS dBµV/m 38.74 37.48	@3m dBµV/m 80.39 ¹ 80.39 ¹	Margin dB -41.65 -42.91
MHz 876.77 902.00 908.70	Mode PK/QP/AV Peak Peak QP	Reading Level dBµV 39.93 38.32 110.70	dB -1.19 -0.84 -0.71	Астиаl FS dBµV/m 38.74 37.48 109.99	@3m dBµV/m 80.39 ¹ 80.39 ¹ 	Margin dB -41.65 -42.91
MHz 876.77 902.00 908.70 908.70	Mode PK/QP/AV Peak Peak QP Peak	Reading Level dBµV 39.93 38.32 110.70 111.10	dB -1.19 -0.84 -0.71 -0.71	Actual FS dBμV/m 38.74 37.48 109.99 110.39	@3m dBµV/m 80.39 ¹ 80.39 ¹ 	Margin dB -41.65 -42.91

Remark:



Test M	lode:	Mid CH 908.7 MH	Iz	Temp/Hum	25.5(°(C)/ 54%RH
Test I	tem	Band Edg	je	Test Date	May	22, 2023
Pola	rize	Horizonta		Test Enginee	er Cze	erny Lin
Dete	ctor	Peak / Aver	age			
120	vel (dBuV/m)		L			
105.0						
90.0						
75.0						
60.0			<u> </u>			
45.0		No. of Concession, Name				
30.0						(Analyzer R)
15.0						
15.0 0 825	86		quency (M		965.	1000
0 825	Detector				965. Limit	
		Fre	quency (M	IHz)		1000 Margin
0 825	Detector	Spectrum	quency (M	Actual	Limit	
Freq.	Detector Mode	Spectrum Reading Level	quency (M Factor	Actual FS	Limit @3m	Margin
Freq.	Detector Mode PK/QP/AV	Free Spectrum Reading Level dBµV	quency (M Factor dB	Actual FS dBµV/m	Limit @3m dBµV/m	Margin dB
Freq. MHz 876.70	Detector Mode PK/QP/AV QP	Free Spectrum Reading Level dBµV 45.76	Factor dB -1.19	Actual FS dBµV/m 44.57	Limit @3m dBµV/m 87.65 ¹	Margin dB -43.08
Freq. MHz 876.70 876.70	Detector Mode PK/QP/AV QP Peak	Free Spectrum Reading Level dBµV 45.76 49.45	Factor dB -1.19 -1.19	ннz) Actual FS dBµV/m 44.57 48.26	Limit @3m dBµV/m 87.65 ¹ 87.88 ¹	Margin dB -43.08 -39.62
Freq. MHz 876.70 902.00	Detector Mode PK/QP/AV QP Peak QP	Free Spectrum Reading Level dBµV 45.76 49.45 41.99	Factor dB -1.19 -1.19 -0.84	Hz Actual FS dBμV/m 44.57 48.26 41.15	Limit @3m dBµV/m 87.65 ¹ 87.88 ¹ 87.65 ¹	Margin dB -43.08 -39.62 -46.50
Freq. MHz 876.70 876.70 902.00 902.00	Detector Mode PK/QP/AV QP Peak QP Peak	Spectrum Reading Level dBμV 45.76 49.45 41.99 47.40	Factor dB -1.19 -1.19 -0.84 -0.84	Actual FS dBμV/m 44.57 48.26 41.15 46.56	Limit @3m dBµV/m 87.65 ¹ 87.88 ¹ 87.65 ¹	Margin dB -43.08 -39.62 -46.50

Remark:

908.70

928.00

940.68

Average

Peak

Peak

1. The limit is fundamental signal – 30 dB since the frequency of the unwanted emission was not in restricted band.

116.64

38.26

43.20

-0.71

-0.19

0.16

115.93

38.07

43.36

--

87.88¹

87.88¹

--

-49.81

-44.52



restivi	ode:		gh CH 4.9 MHz			Temp/H	lum	25.5(°C)/ 54%R
Test I	tem		nd Edge			Test D	ate	Мау	/ 22, 2023
Polar			ertical		Te	est Eng	ineer	Cz	zerny Lin
Deteo	ctor	Peak	/ Averaç	ge					
120 Le	vel (dBuV/r	n)							
105.0									
90.0									
75.0									
60.0									
45.0									
30.0		and the second second			-			***	testistist
15.0									
				I II					
825	5	860.	895.			30.	9	65.	1000
0∟⊥ 825			Free	juency Fact	(MH	iz)			
825 Freq.	Detector	Spec	Free	uency Fact	(MH	Iz) Actu	ıal	Limit	1000 Margin
	Detector Mode	Spec Readin	Free strum g Level		or	Actu FS	ial	Limit @3m	Margin
Freq.	Detector	Spec Readin	Free	Fact	or	Iz) Actu	ıal ; //m	Limit	
Freq. MHz	Detector Mode PK/QP/A	V Spec Readin V dB	Free strum g Level	Fact	or 6	Iz) Actu FS dBμ\	ial ; //m 17	Limit @3m dBµV/m	Margin
Freq. MHz 882.84	Detector Mode PK/QP/A Peak	V Spec Readin V dB 41. 34.	Free trum g Level .33	Fact dB -1.1	or 6 44	Actu FS dBµ\ 40.1	ial i/m 17 54	Limit @3m dBµV/m 80.13 ¹	Margin dB -39.96
Freq. MHz 882.84 902.00	Detector Mode PK/QP/A Peak Peak	 Spec Readin V 41. 34. 110 	Free etrum g Level eµV .33 .48	Fact dB -1.1 -0.8	or 6 34 33	Actu FS dBµ\ 40.1 33.6	ial //m 7 64 49	Limit @3m dBµV/m 80.13 ¹ 80.13 ¹	Margin dB -39.96 -46.49
Freq. MHz 882.84 902.00 914.90	Detector Mode PK/QP/A Peak Peak QP	 Spec Readin 41. 34. 110 110 	Free etrum g Level eµV .33 .48 0.12	Fact dB -1.1 -0.8 -0.6	or 6 4 3 3 3	Actu FS dBµ\ 40.1 33.6 109.	ial i//m 17 54 49 13	Limit @3m dBµV/m 80.13 ¹ 80.13 ¹	Margin dB -39.96 -46.49
Freq. MHz 882.84 902.00 914.90 914.90	Detector Mode PK/QP/A Peak Peak QP Peak	 Spec Readin 41. 34. 110 110 109 	Etrum g Level .33 .48 0.12 0.76	Fact dB -1.1 -0.8 -0.6 -0.6	6 6 3 3 3 3 3	Actu FS dBµ\ 40.1 33.6 109. 110.	ial i/m 17 54 49 13 62	Limit @3m dBµV/m 80.13 ¹ 80.13 ¹ 	Margin dB -39.96 -46.49

Remark:



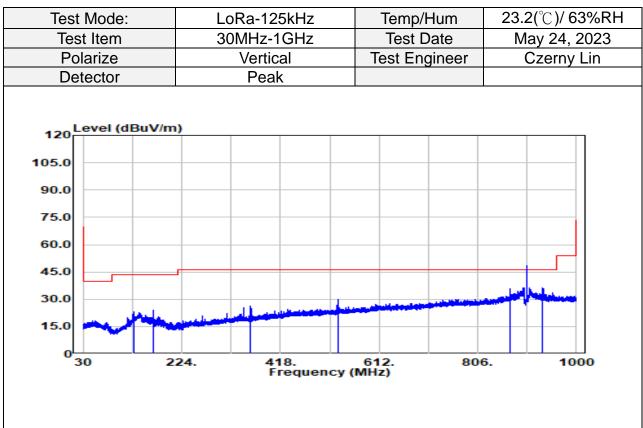
Test M	ode:	High CH 914.9 MHz	2	Temp/Hum	25.5(°C	C)/ 54%RH
Test It	em	Band Edge)	Test Date	May	22, 2023
Polar	ize	Horizontal		est Engineer		erny Lin
Detec	tor	Peak / Avera		¥		•
105.0 - 90.0 - 75.0 - 60.0 -	vel (dBuV/m)					
45.0 =		and the second se		a state of the sta		
30.0						
15.0						
0 825	86	0. 895 Fre	. 9 quency (Mi	30. Hz)	965.	1000
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin

Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
882.91	QP	44.60	-1.16	43.44	87.16 ¹	-43.72
882.91	Peak	48.21	-1.16	47.05	87.56 ¹	-40.51
902.00	Peak	41.81	-0.84	40.98	87.56 ¹	-46.58
914.20	QP	117.80	-0.64	117.16		
914.20	Peak	118.20	-0.64	117.56		
914.20	Average	115.90	-0.64	115.26		
928.00	Peak	38.24	-0.19	38.04	87.56 ¹	-49.52
946.91	Peak	42.04	0.24	42.28	87.56 ¹	-45.28

Remark:



Below 1G Test Data

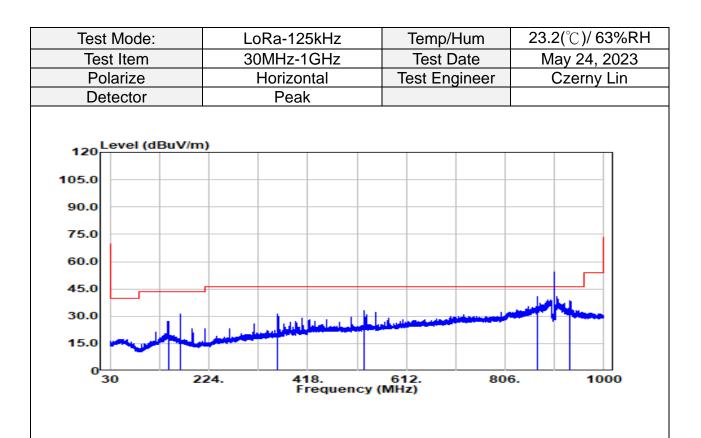


Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
129.52	Peak	37.46	-14.56	22.90	43.50	-20.60
168.03	Peak	37.54	-13.33	24.21	43.50	-19.29
359.99	Peak	37.22	-11.10	26.12	46.00	-19.88
531.39	Peak	36.67	-6.88	29.79	46.00	-16.21
870.31	Peak	36.82	-1.25	35.57	46.00	-10.43
934.23	Peak	36.29	-0.03	36.27	46.00	-9.73

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).



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Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
144.07	Peak	40.48	-13.18	27.30	43.50	-16.20
168.03	Peak	44.65	-13.33	31.33	43.50	-12.17
359.99	Peak	42.35	-11.10	31.25	46.00	-14.75
528.00	Peak	40.07	-7.01	33.06	46.00	-12.94
870.31	Peak	42.21	-1.25	40.97	46.00	-5.03
934.23	Peak	38.39	-0.03	38.36	46.00	-7.64

Note: No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz).



Above 1G Test Data

Test Mo	ode:	Low CH		Temp/Hum	25.5(°(C)/ 54%RI
Test Ite	em	Harmonic		Test Date	May	22, 2023
Polariz	ze	Vertical	Т	est Engineer	· Cze	erny Lin
Detect	tor	Peak / Averag	ge			
Leve	el (dBuV/m)					
120						
105.0						
90.0						
75.0						
60.0						
45.0						
30.0						
15.0						
9	2800	. 4600.	64	00 9	200.	10000
1000	2000	Freq	uency (MH	z)	200.	10000
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
1804.60	Peak	57.17	-7.35	49.83	80.66 ²	-30.83
1804.60	Average	56.43	-7.35	49.09	78.36 ²	-29.27
2706.90	Peak	51.47	-4.41	47.06	74.00	-26.94
2706.90	Average	50.95	-4.41	46.54	54.00	-7.46
	1				1	1

Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. The limit is fundamental signal 30 dB since the frequency of the unwanted emission was not in restricted band.



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Teet M	ada				Tomp/Llum	25 5(° C)/ 5/% DU
Test Mo			Low CH		Temp/Hum		<u>)/ 54%RH</u>
Test It			Harmonic	_	Test Date		22, 2023
Polari			Horizontal		est Engineer	CZE	erny Lin
Detec	lor	Pe	ak / Avera	ge			
120Lev	el (dBuV/m	1)					
105.0							
90.0							
75.0							
60.0							
45.0							
30.0							
15.0							
0 1000	28	B00.	4600.	640 uency (MHz		200.	10000
			rieq		-)		
Freq.	Detecto	or S	Spectrum	Factor	Actual	Limit	Margin
	Mode	Rea	ading Level		FS	@3m	
MHz	PK/QP//	AV	dBµV	dB	dBµV/m	dBµV/m	dB
			55.28	-7.35	47.93	88.66 ²	-40.73
1804.60	Peak		00.20				
	Peak Averag		54.19	-7.35	46.84	86.36 ²	-39.52

Remark:

2706.90

Average

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

-4.41

44.42

54.00

-9.58

2. The limit is fundamental signal – 30 dB since the frequency of the unwanted emission was not in restricted band.

48.83



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Test Mo	ode:	Mid CH		Temp/Hum	25.5(°C)/ 54%R⊦
Test Ite	em	Harmonic		Test Date	May	22, 2023
Polari		Vertical		est Engineer	Cze	erny Lin
Detect	tor	Peak / Avera	ge			
120	el (dBuV/m)					
105.0						
90.0						
75.0						
60.0						
45.0	1 1					
30.0						
15.0						
9 1000	280	0. 4600.	64	00 8	200.	10000
1000	200	Freq	uency (MH	z)	200.	10000
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	•	dB	dBµV/m	dBµV/m	dB
1817.40	Peak	55.91	-7.31	48.60	80.39 ²	-31.79
1817.40	Average	53.69	-7.31	46.38	77.99 ²	-31.61
2726.10	Peak	50.84	-4.30	46.54	74.00	-27.46

Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. The limit is fundamental signal 30 dB since the frequency of the unwanted emission was not in restricted band.



Test Mo	ode:	Mid CH		Temp/Hum	25.5(°C	C)/ 54%RI
Test Ite	em	Harmonic		Test Date		22, 2023
Polariz	ze	Horizontal	Te	est Engineer	Cze	erny Lin
Detect	tor	Peak / Avera	ge			
120 Leve	el (dBuV/m)					
105.0						
90.0						
75.0						
60.0						
45.0						
30.0						
15.0						
9						
1000	2800	4600. Freq	640 uency (MH		200.	10000
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
1817.40	Peak	58.32	-7.31	51.01	87.88 ²	-36.87
1817.40	Average	57.20	-7.31	49.90	85.93 ²	-36.03
						1

Remark:

2726.10

2726.10

Peak

Average

49.34

47.80

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

-4.30

-4.30

45.04

43.50

74.00

54.00

-28.96

-10.50



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Test Mo	de:	High CH		Temp/Hum	25.5(°C	25.5(℃)/ 54%RH	
Test Ite		Harmonic		Test Date		22, 2023	
Polariz		Vertical		est Engineer	· Cze	erny Lin	
Detect	or	Peak / Averag	je				
120Leve	l (dBuV/m)						
05.0							
90.0							
75.0							
60.0							
45.0							
30.0							
15.0							
0 1000	2800.	4600. Frequ	640 Jency (MH)		200.	10000	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margir	
Freq. MHz			Factor			Margir dB	
	Mode	Reading Level		FS	@3m	Margir dB -33.35	
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB	
MHz 1829.80	Mode PK/QP/AV Peak	Reading Level dBµV 54.10	dB -7.32	FS dBµV/m 46.78	@3m dBµV/m 80.13 ²	dB -33.35 -32.77	
MHz 1829.80 1829.80	Mode PK/QP/AV Peak Average	Reading Level dBμV 54.10 53.17	dB -7.32 -7.32	FS dBµV/m 46.78 45.85	@3m dBµV/m 80.13 ² 78.62 ²	dB -33.35 -32.77 -26.56	
MHz 1829.80 1829.80 2744.70	Mode PK/QP/AV Peak Average Peak	Reading Level dBμV 54.10 53.17 51.63	dB -7.32 -7.32 -4.19	FS dBµV/m 46.78 45.85 47.44	 @3m dBμV/m 80.13² 78.62² 74.00 	dB -33.35	

Remark:

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- 2. The limit is fundamental signal 30 dB since the frequency of the unwanted emission was not in restricted band.



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Test Mo		High CH		emp/Hum	25.5(℃)/ 54%RF		
Test Ite		Harmonic	Test Date Test Engineer		May 22, 2023 Czerny Lin		
Polariz		Horizontal					
Detecto	or	Peak / Average	€				
120 Leve	el (dBuV/m)						
105.0							
90.0							
75.0							
60.0							
45.0							
30.0							
15.0							
0 1000	2800				200.	00. 10000	
		Frequ	uency (MHz	2)			
F	Defector	0	Fastan	A . (1 1 14		
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
1829.80	Peak	62.31	-7.32	54.99	87.56 ²	-32.57	
1829.80	Average	61.40	-7.32	54.08	85.26 ²	-31.18	
2744.70	Peak	50.24	-4.19	46.05	74.00	-27.95	
2744.70	Average	46.43	-4.19	42.23	54.00	-11.77	
2144.10	Average	40.43	-4.13	42.25	54.00	-11.77	

Remark:

3659.60

3659.60

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

-2.04

-2.04

44.82

38.74

74.00

54.00

-29.18

-15.26

2. The limit is fundamental signal – 30 dB since the frequency of the unwanted emission was not in restricted band.

46.86

40.78

Peak

Average

- End of Test Report -