



Project No: Report No.: TM-2305000205P F TMWK2305001724KR

FCC ID: P27-SLMOD0

Page: 1 / 48 Rev.: 02

RADIO TEST REPORT FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
Product name	Multi sensor Module
Brand Name	Sercomm
Model No.	SLMOD0
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:

mul 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。

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City , Taiwan /新北市五股區五工六路 11 號 t:(886-2) 2299-9720 f:(886-2) 2299-9721 www.sgs.com.tw

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at http://www.sgs.com.tw/Terms-and-Conditions and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com.tw/Terms-and-Conditions and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at http://www.sgs.com.tw/Terms-and-Conditions and, for electronic format documents, subject to Terms and Conditions for Electronic Document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction form exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Page: 2 / 48 Rev.: 02

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	June 21, 2023	Initial Issue	ALL	Doris Chu
01	July 7, 2023	See the following Note Rev. (01)	P.5	Doris Chu
02	July 21, 2023	See the following Note Rev. (02)	P.24	Doris Chu

Rev. (01)

1. Modify Antenna type in section 1.3

Rev. (02)

1. Added note 2 in section 4.5.4.



Page: 3 / 48 Rev.: 02

Table of contents

1.	GENERAL INFORMATION
1.1	EUT INFORMATION
1.2	EUT CHANNEL INFORMATION 5
1.3	ANTENNA INFORMATION
1.4	MEASUREMENT UNCERTAINTY 6
1.5	FACILITIES AND TEST LOCATION
1.6	INSTRUMENT CALIBRATION7
1.7	SUPPORT AND EUT ACCESSORIES EQUIPMENT
1.8	TEST METHODOLOGY AND APPLIED STANDARDS
2.	TEST SUMMARY9
3.	DESCRIPTION OF TEST MODES 10
3.1	THE WORST MODE OF OPERATING CONDITION 10
3.2	THE WORST MODE OF MEASUREMENT11
3.3	EUT DUTY CYCLE 12
4.	TEST RESULT
4.1	AC POWER LINE CONDUCTED EMISSION 13
4.2	20DB BANDWIDTH AND OCCUPIED BANDWIDTH (99%) 14
4.3	OUTPUT POWER MEASUREMENT 18
4.4	FREQUENCY SEPARATION
4.5	NUMBER OF HOPPING
4.6	CONDUCTED BANDEDGE AND SPURIOUS EMISSION
4.7	TIME OF OCCUPANCY (DWELL TIME)
	RADIATION BANDEDGE AND SPURIOUS EMISSION



Page: 4 / 48 Rev.: 02

Report No.: TMWK2305001724KR

1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Sercomm 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	Multi sensor Module
Model Name	SLMOD0
Model Discrepancy	N/A
Brand Name	Sercomm
Received Date	May 12, 2023
Date of Test	May 17 ~ June 7, 2023
Power Supply	Power from Battery. (DC 3V)

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.



Page: 5 / 48 Rev.: 02

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 □ PCB □ Dipole ⊠ PIFA
Antenna Gain	Gain: -4.8 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.



Page: 6 / 48 Rev.: 02

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	± 2.213 dB
Channel Bandwidth	± 2.7 %
RF output power (Power Meter + Power sensor)	± 0.243 dB
Channel Separation	± 2.738 kHz
Conducted Bandedge	± 2.739 dB
Conducted Spurious Emission	± 2.742 dB
Radiated Emission_9kHz-30MHz	± 3.115 dB
Radiated Emission_30MHz-200MHz	± 4.071 dB
Radiated Emission_200MHz-1GHz	± 4.419 dB
Radiated Emission_1GHz-6GHz	± 5.023 dB
Radiated Emission_6GHz-18GHz	± 5.068 dB
Radiated Emission_18GHz-26GHz	± 3.349 dB
Radiated Emission_26GHz-40GHz	± 3.229 dB

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



1.6 INSTRUMENT CALIBRATION

RF Conducted Test Site									
Equipmen	t	Manufactu	rer	Model	Serial Number	Calibrat	ion Date	Cali	ibration Due
Power Sens	or	Anritsu		MA2411B	1911386	2022-	08-08 2023-08		023-08-07
Power Sens	or	Anritsu		MA2411B	1911387	2022-	-08-08 2		023-08-07
EXA Signa Analyzer	l	Keysight	t	N9010B	MY60242460	2023-	02-02	2	024-02-01
Power Mete	er	Anritsu		ML2496A	2136002	2022-	11-24	2	023-11-23
DC Power Su	pply	GWINSTE	K	SPS-3610	GPE880163	2022-	12-02	2	023-12-01
Software				Radi	o Test Software	Ver. 21			
				3M 966 Cham	ber Test Site				
Equipment	Mar	nufacturer		Model	Serial Nu	mber	Calibrat Date		Calibration Due
Antenna	SHV	VARZBECK		VULB 9168	1277	,	2023-01	-13	2024-01-12
Pre-Amplifier		EMCI	E	MC118A45SE	98082	0	2022-12-23		2023-12-22
Pre-Amplifier		EMCI		EMC330N	980853		2022-12-23		2023-12-22
Coaxial Cable		EMC		C101G-KM-KM-9 000	220407+211228+2302 05		2023-03-21		2024-03-20
Signal Generator		Agilent		N9010A	MY52220	MY52220817		8-09	2024-03-08
Coaxial Cable				EMCCFD400	211212+2112 20	22+2110	2023-03	8-21	2024-03-20
Thermo-Hygr o Meter	gr EDSDS			EDS-A49	966D	1	2023-05	5-11	2024-05-10
Pre-Amplifier		EMCI	E	MC184045SE	98087	2	2023-01-03		2024-01-02
Horn Antenna	F	RF SPIN		DRH18-E	210301A	18ES	2023-02-03		2024-02-02
Horn Antenna	SHV	VARZBECK		BBHA 9170	1134	1134		2-30	2023-12-29
Loop Antenna	SCH	IWARZBEC K	F	MZB 1513-60	1513-60-	028	2022-12	2-27	2023-12-26
High Pass Filter		TITAN	T04	T04H10001000060S 211215-7-2 20		2023-02	2-02	2024-02-01	
Software				ea	6.11-20180413	3			

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

Remark:

1. Each piece of equipment is scheduled for calibration once a year.

2. N.C.R. = No Calibration Required.



1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

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

Support Equipment									
No.	Equipment	Brand	Model	Series No.	FCC ID				
1	DC Power Source	ABM	9603D	N/A	N/A				
2	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



Г

Report No.: TMWK2305001724KR

Page: 10 / 48 Rev.: 02

٦

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	t Condition Radiated Emission Above 1G				
Power supply Mode Mode 1: EUT power by Battery					
Worst Mode	☑ Mode 1				
Worst Position	 Placed in fixed position. Placed in fixed position at X-Plane (E2-Plane) Placed in fixed position at Y-Plane (E1-Plane) Placed in fixed position at Z-Plane (H-Plane) 				

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



Page: 12 / 48 Rev.: 02

3.3 EUT DUTY CYCLE

 Temperature:
 $22.8 \sim 26.8^{\circ}$ Test date:
 May 17 ~ June 1, 2023

 Humidity:
 $52 \sim 60\%$ 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				

Spectru Swept \$		zer 1	•	+										₿.	Frequenc	y 、 段
KEYS RL	ight ⊶	Input: F Couplir Align: A	ig: DC	Cor	ut Z: 50 Ω r CCorr q Ref: Int (S)	Atten: 40 d	В	PNO: F Gate: C IF Gain Sig Tra)ff : Low	Avg Type: ' Trig: Free I		v	1 2 3 4 5 6 V W W W W P N N N N N	Center Fr 902.3000		Settings
1 Spect Scale/I		в	T			Ref LvI Offs Ref Level 33					Δ		505.0 μs 0.01 dB	Span 0.000000 Swej	000 Hz pt Span	
Log 23.5							-v-		3∆4					Zero	Span	
13.5 3.50							_∧ <u>a</u>							Ful	ll Span	
-6.50 -16.5														Start Fred 902.3000		
-26.5 -36.5 -46.5 -56.5														Stop Fred 902.3000		
Center	002 20	000 M	u-,			Video BW	/ 0 0 1	AU-7					Span 0 Hz		O TUNE	
Res BV			nz			VIGEO BV	0.01	VINZ		S	weep	5.00 ms	s (1001 pts)	CF Step		
5 Marke	r Table		•											8.000000		
1	Mode ∆2	Trace	Scale	(Δ)	X 505.0 u	Υ s (Δ) 0.0117	6 dB	Functio	n I	Function Widt	h	Functio	n Value	Auto Man		
2	F	1	t		2.500 m	20.18	dBm							Freq Offs	et	
3 4 5 6	<u>Δ4</u> F	1	t	<u>(Δ)</u>	505.0 μ: 2.500 m:	s <u>(Δ)</u> 0.0117 s 20.18								0 Hz X Axis Sc Log Lin	ale	Local
	5	2		? M	ay 29, 2023 :35:29 PM	$\bigcirc \triangle$								Signal Tra		



Page: 13 / 48 Rev.: 02

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			

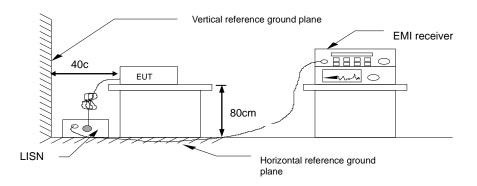
* Decreases with the logarithm of the frequency.

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.



Page: 14 / 48 Rev.: 02

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.

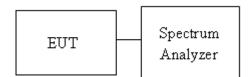
Occupied Bandwidth(99%) : For reporting purposes only.

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





Page: 15 / 48 Rev.: 02

4.2.4 Test Result

Temperature:	22.8 ~ 26.8 °C	Test date:	May 17 ~ 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	0.12593	0.1429							
Mid	908.7	0.12612	0.1411							
High	914.9	0.12613	0.1417							



Test Data

20dB BANDWIDTH

ි ි I ? Jun 01, 2023

.: 🖹

М

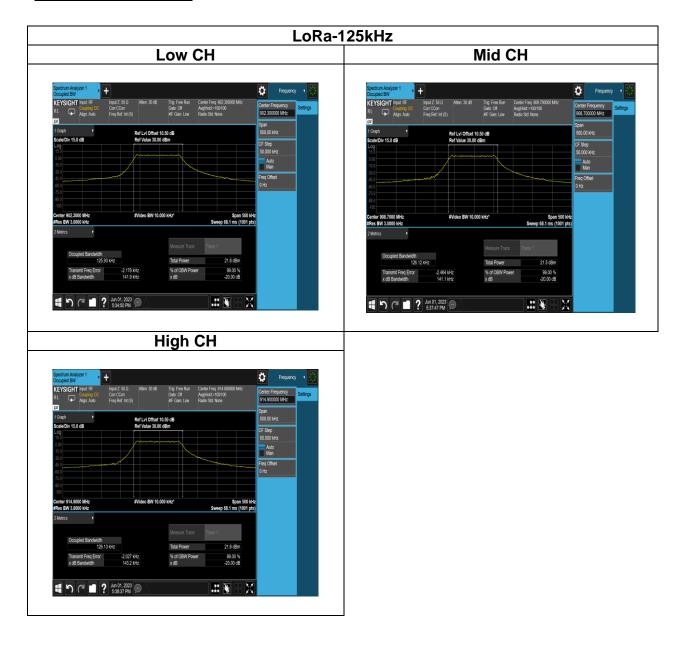
LoRa-125kHz Low CH Mid CH \$ 0 + KEYSIGHT Input Trig. Free Run Center Freq. 902.3 Gate: Off Avg/Hold.>100100 #IF Gain: Low Radio Std: None Trig: Free Run Center Freq: 908 Gate: Off Avg[Hold > 100/1 #E Gain: Low Radio Skt None Corr CCorr Freq Ref: Int (S Corr CCorr Freg Ref: Int (902.3 Alian: Auto Span 500.00 kHz Ref LvI Offset 10.50 dB Ref LvI Offset 10.50 dB CF Step 50.000 kHz Auto Man CF Step 50.000 kHz Auto Man req Offset 21.6 dBr Loca 50 ? Jun 01, 2023 **H** 🐺 M .: 💐 じつ ? Jun 01, 2023 5:37:30 PM High CH ö Trig: Free Run Center Freq 914. Gate: Off Avg|Hold > 100/10 #IF Gain: Low Radio Std: None Corr CCorr Freq Ref: Int (S 00 MH :pan 500.00 kH: Ref LvI Offset 10.50 dB Ref Value 30.00 dBm 15.0 di CF Step 50.000 kHz Auto Man ea Offse #Video BW 10.000 kHz

Page: 16 / 48 Rev.: 02



Page: 17 / 48 Rev.: 02

Test Data BANDWIDTH 99%





Page: 18 / 48 Rev.: 02

4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

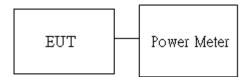
According to §15.247(b)(2)

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





Page: 19 / 48 Rev.: 02

4.3.4 Test Result

Temperature:	22.8 ~ 26.8 ℃	Test date:	May 17 ~ 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	21.48	140.605	1000
Mid	908.7	22	21.39	137.721	1000
High	914.9	22	21.35	136.458	1000



Page: 20 / 48 Rev.: 02

Report No.: TMWK2305001724KR

4.4 FREQUENCY SEPARATION

4.4.1 Test Limit

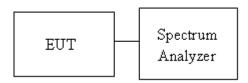
15.247(a)(1)

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





Page: 21 / 48 Rev.: 02

4.4.4 Test Result

Temperature:	22.8 ~ 26.8 °C	Test date:	May 17 ~ 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	0.2286	0.1429	PASS
Mid	908.7	0.2256	0.1411	PASS
High	914.9	0.2046	0.1417	PASS



Test Data



Page: 22 / 48 Rev.: 02



Page: 23 / 48 Rev.: 02

Report No.: TMWK2305001724KR

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

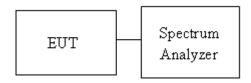
Test method Refer as ANSI C63.10: 2013 clause 7.8.3

- 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





Page: 24 / 48 Rev.: 02

4.5.4 Test Result

Temperature:	22.8 ~ 26.8 ℃	Test date:	May 17 ~ June 1, 2023
Humidity:	52 ~ 60% RH	Tested by:	Jack Chen

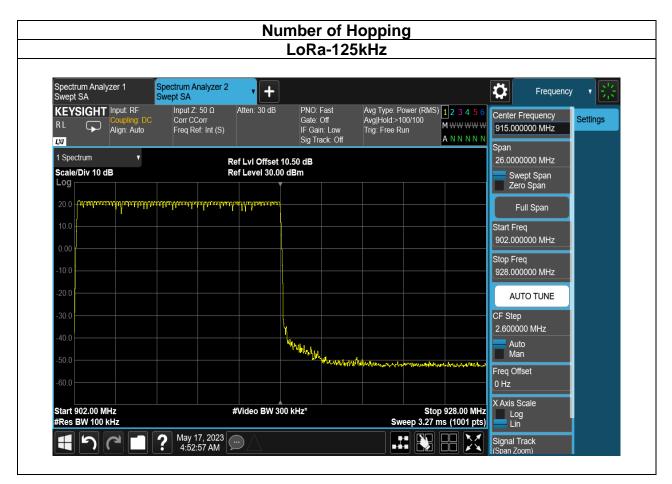
		Number of Hoppin	Ig	
Mode	Frequency (MHz)	Hopping Channel Number	Hopping Channel Number Limits	Result
LoRa-125kHz	902.3-914.9	64	N/A ¹	Pass

Note:

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

2. The hop sequence is appeared as pseudorandom

<u>Test Data</u>





Page: 25 / 48 Rev.: 02

4.6 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

According to §15.247(d)

Limit

-30 dBc

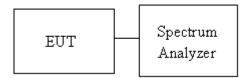
4.6.2 Test Procedure

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





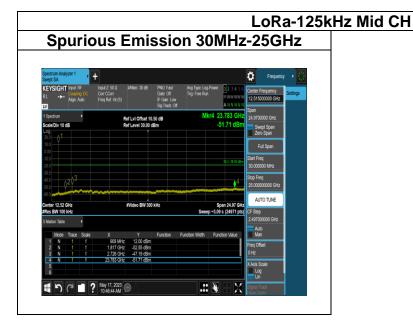
Page: 26 / 48 Rev.: 02

4.6.4 Test Result

Temperature:	22.8 ~ 26.8 °C	Test date:	May 17 ~ June 1, 2023
Humidity:	52 ~ 60% RH	Tested by:	Jack Chen

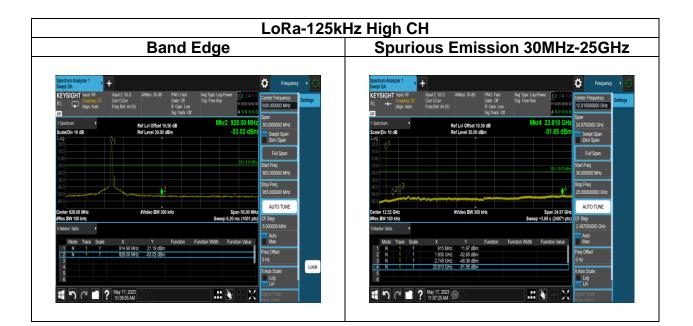
Test Data

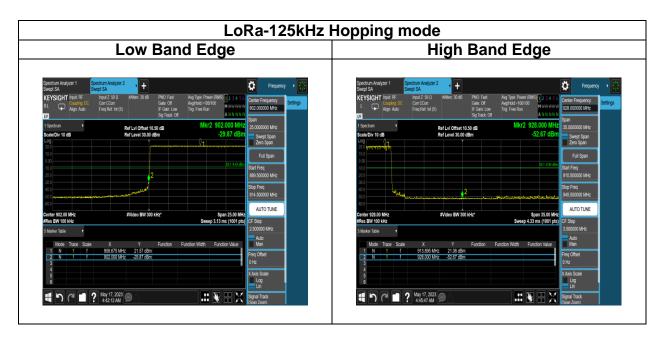
	LoRa-125k		
Band Edge		Spurious Emission	on 30MHz-25GHz
Conclum Analyzer 1 + + + + + + + + + + + + + + + + + +	Prequency •	Concourter Analyzer 1 Canada SA KEVSIGHT Next RF RL →→ Canada C Torr Com RL →→ Com RL →	
1 Spectrum Ref Lvi Offset 10.50 dB Mkr2 902	A NA NA NA A 250000000 MHz 7.84 dBm Swept Span Swept Span	CO Sig Track O Sig Tr	or ANNINN Span Mkr4 22,958 GHz -52.08 dBm Swept Span zero Span
200 100 100 100 100 100 100 100 100 100	Ful Span Start Freq 889.500000 MHz		Full Span
	Stop Freq 914.500000 MHz	300 400 500 600	\$top Freq 25.00000000 GHz
Res BW 100 HHz Sweep 3.13 m 5 Marker Table • INdde Trace Scale X Y Function Function With Funct	n 25.00 MHz s (1001 pts) CF Step 2.50000 MHz Auto on Value	Center 12.52 CHz #Video BW 300 KHz Bete BW 100 HHz 5 Marker Table + Mode Table X Y Function	Spin 24.97 GHz AUTO TUNE Sweep -1.09 s (24.97 GHz) CF Step 2.49700000 GHz Function Weth Function Wate
1 N 1 f 902300 MHz 2146 56m 2 N 1 f 902700 MHz -2754 65m 3 4	Freq Offset 0 Hz X Axis Scale Local	1 N 1 f 920 MHz 122 98 dbm 2 N 1 f 1805 GHz 52 18 dbm 3 N 1 f 200 GHz 70 GHz 70 dbm 7 7 70 dbm 5 5 5 5 5 5 5 5 5 5 5 5 7 <th7< th=""> <th7< th=""> <th7< th=""> <th< td=""><td>Fieq Offset 0 Hz X.Axis Scale Lip</td></th<></th7<></th7<></th7<>	Fieq Offset 0 Hz X.Axis Scale Lip
📲 🗅 🏲 🗖 ? May 17, 2023	Signal Track Signal Track	📲 🖒 (? 🖬 ? May 17, 2023	En





Page: 27 / 48 Rev.: 02







Page: 28 / 48 Rev.: 02

4.7 TIME OF OCCUPANCY (DWELL TIME)

4.7.1 Test Limit

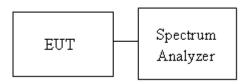
According to §15.247(f)

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.
- 3. Set the spectrum analyzer as RBW=100 kHz, VBW= 300 kHz, Sweep = 500 ms

4.7.3 Test Setup



4.7.4 Test Result

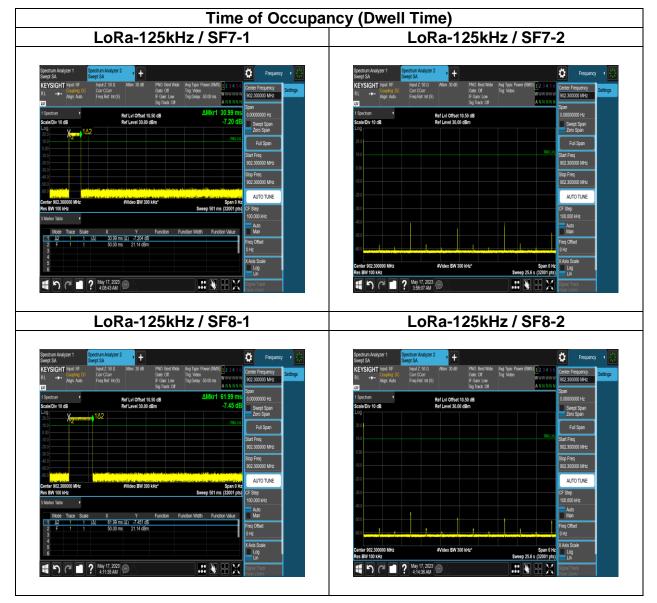
Temperature:	22.8 ~ 26.8 ℃	Test date:	May 17 ~ June 1, 2023
Humidity:	52 ~ 60% RH	Tested by:	Jack Chen

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	0.03099	1	0.03099	0.4
Lora / 8	902.3	0.06199	1	0.06199	0.4
Lora / 9	902.3	0.124	1	0.124	0.4
Lora / 10	902.3	0.2479	1	0.2479	0.4



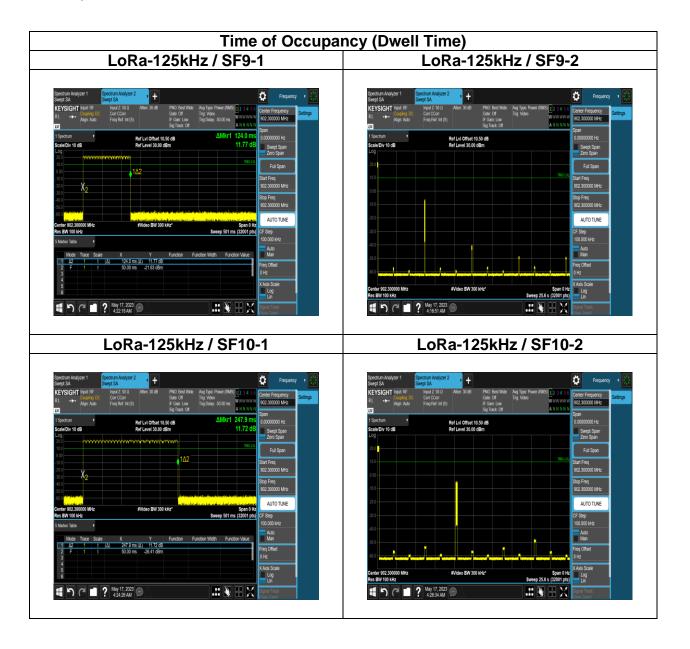
Page: 29 / 48 Rev.: 02

Test Data





Page: 30 / 48 Rev.: 02





Page: 31 / 48 Rev.: 02

4.8 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.8.1 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.



Page: 32 / 48 Rev.: 02

4.8.2 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.



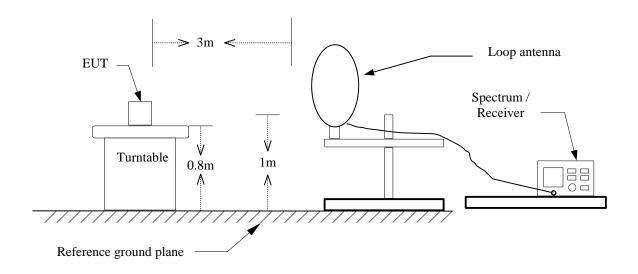
ŀ

Page: 33 / 48 Rev.: 02

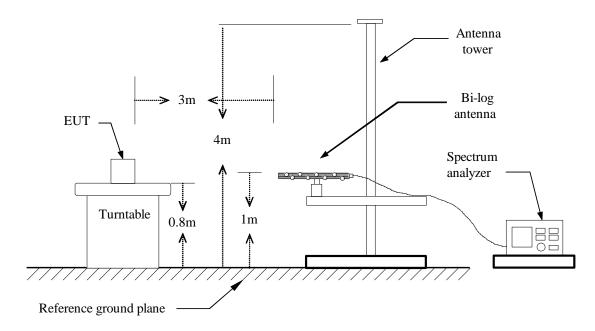
Report No.: TMWK2305001724KR

4.8.3 Test Setup

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



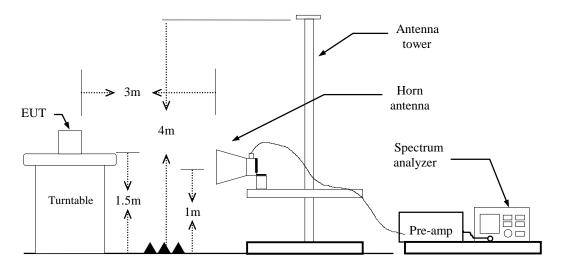
<u>30MHz ~ 1GHz</u>





Page: 34 / 48 Rev.: 02

Above 1 GHz





4.8.4 Test Result

Band Edge Test Data

Test M	lode:	Low 902.3		Temp/Hu	um	22.4(°(C)/ 64%RH
Test I	tem	Band B		Test Da	te	May	25, 2023
Pola	rize	Verti		Test Engi	neer		erny Lin
Dete	ctor	Peak / A	verage				
Lee	vel (dBuV/r	n)					
120							
105.0							
90.0							
75.0							
60.0							
45.0			- <u>A</u>				
30.0		in a star and	~~~		Render		F-spitel
15.0							
	5	0.09	905	030	06	5	1000
0 829			895. Frequency		96		1000
	Detector	Spectru	Frequency m Facto	(MHz) or Actua		Limit	1000 Margin
o 829 Freq.	Detector Mode	Spectrue Reading Lo	m Facto	(MHz) or Actua FS	al	Limit @3m	Margin
Freq.	Detector Mode PK/QP/A	Spectrue Reading Lo dBµV	m Facto evel dB	(MHz) or Actua FS dBµV/	n	Limit @3m dBµV/m	Margin dB
082 Freq. MHz 870.27	Detector Mode PK/QP/A Peak	 Spectrum Reading Log dBµV 40.08 	m Factor evel dB	(MHz) or Actua FS dBµV/ 5 38.83	m 3	Limit @3m dBµV/m 79.80 ¹	Margin dB -40.97
0822 Freq. MHz 870.27 902.00	Detector Mode PK/QP/A Peak QP	 Spectrum Reading Log dBµV 40.08 58.35 	m Factor evel dB -1.23 -0.84	(MHz) or Actua FS dBµV/ 5 38.83 4 57.5 ⁴	al m	Limit @3m dBμV/m 79.80 ¹ 79.36 ¹	Margin dB -40.97 -21.85
Freq. MHz 870.27 902.00 902.00	Detector Mode PK/QP/A Peak QP Peak	 Spectrum Reading Lo dBµV 40.08 58.35 63.49 	Frequency m Factor evel dB -1.23 -0.84 -0.84	(MHz) or Actua FS dBµV/ 5 38.83 4 57.5 ² 4 62.65	n m 3	Limit @3m dBμV/m 79.80 ¹ 79.36 ¹ 79.80 ¹	Margin dB -40.97
Freq. MHz 870.27 902.00 902.00 902.30	Detector Mode PK/QP/A Peak QP Peak QP	 Spectrue Reading Lo / dBµV 40.08 58.35 63.49 110.20 	Frequency m Factor evel dB -1.2 -0.8 -0.8 -0.8	(MHz) or Actua FS dBµV/ 5 38.83 4 57.57 4 62.65 4 109.3	nl m 3 1 5 6	Limit @3m dBμV/m 79.80 ¹ 79.36 ¹	Margin dB -40.97 -21.85
MHz 870.27 902.00 902.30 902.30	Detector Mode PK/QP/A Peak QP Peak	 Spectrue Reading Lo / dBµV 40.08 58.35 63.49 110.20 110.64 	Frequency m Factor evel dB -1.2 -0.8 -0.8 -0.8 -0.8 -0.8	(MHz) or Actua FS dBµV/ 5 38.83 4 57.57 4 62.65 4 109.3	nl m 3 1 5 6	Limit @3m dBμV/m 79.80 ¹ 79.36 ¹ 79.80 ¹	Margin dB -40.97 -21.85 -17.15
Freq. MHz 870.27 902.00 902.00 902.30	Detector Mode PK/QP/A Peak QP Peak QP	 Spectrue Reading Lo / dBµV 40.08 58.35 63.49 110.20 110.64 	Frequency m Factor evel dB -1.2 -0.8 -0.8 -0.8 -0.8 -0.8	(MHz) or Actua FS dBµV/ 5 38.83 4 57.57 4 62.65 4 109.3 4 109.8	al m 33	Limit @3m dBµV/m 79.80 ¹ 79.36 ¹ 79.80 ¹	Margin dB -40.97 -21.85 -17.15

Remark:

934.31

Peak

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

42.00

-0.02

41.98

79.80¹

-37.82



Test M	ode:	Low CH 902.3 MHz		Te	emp/H	um	22.4	•(°C)/ 64%R
Test It	tem	Band Edge		Т	Test Da	ate	Ma	ay 25, 2023
Polar		Horizontal		Tes	st Engi	ineer		Zerny Lin
Detec	ctor	Peak / Averag	ge					
120	vel (dBuV/m)							
105.0								
90.0								
75.0								
60.0								
45.0								
30.0					-			
15.0								
0 825	5 86			930 MHz).	9	65.	1000
0825 825	Detector		quency (MHZ).) Actu		65. Limit	1000 Margir
		Fred	quency (MHZ)	al		
	Detector	Spectrum	quency (MHZ) Actu	al	Limit	Margir
Freq.	Detector Mode	Spectrum Reading Level	Factor	MHZ) Actu FS	al /m	Limit @3m	Margir
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor	MHZ) Actu FS dBµV	al /m 2	Limit @3m dBµV/m	Margir dB
Freq. MHz 870.33	Detector Mode PK/QP/AV Peak	Free Spectrum Reading Level dBµV 46.07	Factor dB -1.25	MHZ	Actu FS dBμV 44.8	al /m 2 6	Limit @3m dBµV/m 86.07 ¹	Margir dB -41.25
Freq. MHz 870.33 902.00	Detector Mode PK/QP/AV Peak QP	Free Spectrum Reading Level dBµV 46.07 64.40	Factor dB -1.25 -0.84	MHZ) Actu FS dBμV 44.8 63.5	al /m 2 6 9	Limit @3m dBµV/m 86.07 ¹ 85.26 ¹	Margir dB -41.25 -21.70
Freq. MHz 870.33 902.00 902.00	Detector Mode PK/QP/AV Peak QP Peak	Free Spectrum Reading Level dBµV 46.07 64.40 69.23	Factor dB -1.25 -0.84 -0.84	MHZ) Actu FS dBµV 44.8 63.5 68.3	al /m 2 6 9 26	Limit @3m dBµV/m 86.07 ¹ 85.26 ¹ 86.07 ¹	Margir dB -41.25 -21.70 -17.68
Freq. MHz 870.33 902.00 902.00 902.30	Detector Mode PK/QP/AV Peak QP Peak QP	Spectrum Reading Level dBµV 46.07 64.40 69.23 116.10	Factor dB -1.25 -0.84 -0.84 -0.84	MHZ	Actu FS dBµV 44.8 63.5 68.3 115.2	al /m 2 6 9 26 07	Limit @3m dBµV/m 86.07 ¹ 85.26 ¹ 86.07 ¹	Margir dB -41.25 -21.70 -17.68
Freq. MHz 870.33 902.00 902.30 902.30	Detector Mode PK/QP/AV Peak QP Peak QP Peak	Spectrum Reading Level dBμV 46.07 64.40 69.23 116.10 116.91	Factor dB -1.25 -0.84 -0.84 -0.84 -0.84	MHZ	Асти FS dBµV 44.8 63.5 68.3 115.2 116.0	al /m 2 2 2 6 2 2 6 2 6 2 7 5 2	Limit @3m dBµV/m 86.07 ¹ 85.26 ¹ 86.07 ¹ 	Margir dB -41.25 -21.70 -17.68

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	22.4(°(C)/ 64%R
Test	Item	Band Edg		Test Date	May	25, 2023
Pola	rize	Vertical		Test Enginee		erny Lin
Dete	ctor	Peak / Avera	age			
Le	vel (dBuV/m)					
105.0						
90.0						
75.0						
60.0						
45.0						
30.0		An open set of the set	* \		-	-
15.0						
825	5 86			930.		
		Free	quency (N	/Hz)	965.	1000
Frea.	Detector		Factor		Limit	
Freq.	Detector Mode	Spectrum		AHz) Actual FS		
Freq. MHz				Actual	Limit	
	Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor	Actual FS dBμV/m	Limit @3m dBµV/m	Margin dB
MHz 876.73	Mode PK/QP/AV Peak	Spectrum Reading Level dBµV 40.86	Factor dB -1.19	Actual FS dBμV/m 39.67	Limit @3m dBµV/m 79.25 ¹	Margin dB -39.58
MHz 876.73 902.00	Mode PK/QP/AV Peak Peak	Spectrum Reading Level dBµV 40.86 38.81	Factor dB -1.19 -0.84	Actual FS dBμV/m 39.67 37.98	Limit @3m dBµV/m 79.25 ¹ 79.25 ¹	Margin dB -39.58 -41.27
MHz 876.73 902.00 908.70	Mode PK/QP/AV Peak Peak QP	Spectrum Reading Level dBµV 40.86 38.81 109.12	Factor dB -1.19 -0.84 -0.71	Actual FS dBμV/m 39.67 37.98 108.41	Limit @3m dBµV/m 79.25 ¹ 79.25 ¹ 	Margin dB -39.58 -41.27
MHz 876.73 902.00 908.70 908.70	Mode PK/QP/AV Peak Peak QP Peak	Spectrum Reading Level dBµV 40.86 38.81 109.12 109.96	Factor dB -1.19 -0.84 -0.71 -0.71	Actual FS dBμV/m 39.67 37.98 108.41 109.25	Limit @3m dBµV/m 79.25 ¹ 79.25 ¹ 	Margin dB -39.58 -41.27

Remark:



rest N	/lode:	Mid CH 908.7 MH	z	Temp	/Hum	22.4(°	°C)/ 64%R
Test	Item	Band Edg		Test	Date	May	/ 25, 2023
Pola	rize	Horizonta		Test E	ngineer		erny Lin
Dete	ctor	Peak / Avera	age				
120	vel (dBuV/m)						
105.0							
90.0							
75.0							
60.0							
45.0	ate barren ar and a				1		
30.0							
15.0							
oL							
825	5 86	0. 895. Free	quency (N	930. /Hz)	9	65.	1000
825 Freq.	5 86	0. 895. Free Spectrum	quency (N Factor	/Hz)	94 stual	65. Limit	1000 Margin
		Free	quency (N	AHZ)			
	Detector	Spectrum	quency (N	AHZ)	tual	Limit	
Freq.	Detector Mode	Free Spectrum Reading Level	quency (N Factor	AHz)	tual FS	Limit @3m	Margin
Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBµV	Factor dB	AHZ)	tual =S μV/m	Limit @3m dBµV/m	Margin dB
Freq. MHz 876.70	Detector Mode PK/QP/AV Peak	Spectrum Reading Level dBµV 46.33	Factor dB -1.19	AHZ)	FS µV/m 5.14	Limit @3m dBµV/m 86.91 ¹	Margin dB -41.77
Freq. MHz 876.70 902.00	Detector Mode PK/QP/AV Peak Peak	Free Spectrum Reading Level dBµV 46.33 42.71	Factor dB -1.19 -0.84	AHz)	5 .14 5 .14	Limit @3m dBµV/m 86.91 ¹ 86.91 ¹	Margin dB -41.77 -45.04
Freq. MHz 876.70 902.00 908.70	Detector Mode PK/QP/AV Peak Peak QP	Free Spectrum Reading Level dBµV 46.33 42.71 117.21	Factor dB -1.19 -0.84 -0.71	AHz)	stual FS μV/m 5.14 1.87 6.50	Limit @3m dBµV/m 86.91 ¹ 86.91 ¹	Margin dB -41.77 -45.04
Freq. MHz 876.70 902.00 908.70 908.70	Detector Mode PK/QP/AV Peak Peak QP Peak	Spectrum Reading Level dBµV 46.33 42.71 117.21 117.62	Factor dB -1.19 -0.84 -0.71 -0.71	AHz)	5.14 6.50 6.91	Limit @3m dBµV/m 86.91 ¹ 86.91 ¹ 	Margin dB -41.77 -45.04

Remark:



rest M	ode:	High CH 914.9 MHz		Temp/	Hum	22.4(°(C)/ 64%R
Test I	tem	Band Edge		Test D	Date	May	25, 2023
Polar	ize	Vertical		Test Eng	gineer	Cze	erny Lin
Deteo	ctor	Peak / Avera	ge				
420 Le	vel (dBuV/n	1)					
105.0							
90.0							
75.0							
60.0							
45.0			<u> </u>				
30.0	alles pire believetet		~~ ^		-	****	
15.0					1		
15.0							
15.0 0 825	5 8	60. 895		930.	96	5.	1000
0 825		Fre	quency ((MHz)			
	Detector	Spectrum		r Act	ual	Limit	1000 Margin
0 825	Detector Mode	Spectrum Reading Level	quency (r Act	ual S	Limit @3m	Margin
Freq.	Detector	Spectrum Reading Level	quency (Facto	r Act F dBµ	ual S V/m	Limit	
Freq.	Detector Mode PK/QP/AV	Free Spectrum Reading Level dBµV	Facto dB	r Act F dBµ	ual S V/m 64	Limit @3m dBµV/m	Margin dB
Freq. MHz 882.96	Detector Mode PK/QP/AV Peak	Free Spectrum Reading Level dBµV 40.80	Facto dB -1.16	r Act F dBµ 39.	ual S V/m 64 88	Limit @3m dBμV/m 79.45 ¹	Margin dB -39.81
Freq. MHz 882.96 902.00	Detector Mode PK/QP/AV Peak Peak	Free Spectrum Reading Level dBµV 40.80 34.71	Facto dB -1.16 -0.84	r Act F dBµ 39. 33. 109	ual S V/m 64 88 .17	Limit @3m dBμV/m 79.45 ¹ 79.45 ¹	Margin dB -39.81 -45.57
Freq. MHz 882.96 902.00 914.90	Detector Mode PK/QP/AV Peak Peak QP	Spectrum Reading Level ν 40.80 34.71 109.80	Facto dB -1.16 -0.84 -0.63	r Act F dBµ 39. 33. 109 109	ual S V/m 64 88 .17 .45	Limit @3m dBµV/m 79.45 ¹ 79.45 ¹	Margin dB -39.81 -45.57
Freq. MHz 882.96 902.00 914.90 914.90	Detector Mode PK/QP/AV Peak Peak QP Peak	Free Spectrum Reading Level dBµV 40.80 34.71 109.80 110.08	Facto dB -1.16 -0.84 -0.63 -0.63	r Act F dBµ 39. 33. 109 109 107	ual S V/m 64 88 .17 .45 .90	Limit @3m dBµV/m 79.45 ¹ 	Margin dB -39.81 -45.57

Remark:

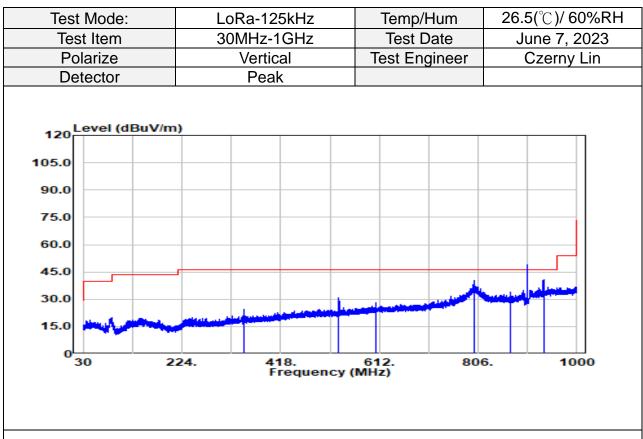


Iest M	ode:	High CF 914.9 MF		Te	emp/H	um	22.4(℃)/ 64%RI
Test It	tem	Band Edg		Т	est Da	ate	May	/ 25, 2023
Polar	ize	Horizonta	al	Tes	st Engi	ineer		zerny Lin
Deteo	ctor	Peak / Aver	age					
120 Le	vel (dBuV/m	1)						
105.0								
90.0								
75.0								
60.0								
			Λ					
45.0	ul in alger anythe las	uquun a nort					interestation,	
30.0								
15.0								
0 825	5 8	60. 89 Fr	5. equency	930 (MHz)		96	55.	1000
Freq.	5 8 Detector	60. 89 Fr	5. equency Facto	(MHz)			55. Limit	1000 Margin
		Fr	Facto	(MHz))	al		-
	Detector	Fr Spectrum Reading Leve	Facto	(MHz)	Actu	al	Limit	-
Freq.	Detector Mode	Fr Spectrum Reading Leve	Equency Facto	(MHz)) Actu FS	al //m	Limit @3m	Margin
Freq. MHz	Detector Mode PK/QP/AV	Fr Spectrum Reading Leve dBµV	Facto Facto	(MHz)	Actu FS dBμV	al //m	Limit @3m dBµV/m	Margin dB
Freq. MHz 882.94	Detector Mode PK/QP/AV Peak	Fr Spectrum Reading Leve dBµV 45.87	Factor I dB -1.10	(MHz)	Actu FS dBμV 44.7	al //m ///m ////////////////////////////	Limit @3m dBµV/m 86.82 ¹	Margin dB -42.11
Freq. MHz 882.94 902.00	Detector Mode PK/QP/AV Peak Peak	Fr Spectrum Reading Leve dBµV 45.87 41.98	Factor Factor I -1.16 -0.84	(MHz)	Асти FS dBµV 44.7 41.1	al //m 1 4 51	Limit @3m dBµV/m 86.82 ¹ 86.82 ¹	Margin dB -42.11
Freq. MHz 882.94 902.00 914.90	Detector Mode PK/QP/AV Peak Peak QP	Fr Spectrum Reading Leve dBµV 45.87 41.98 117.14	Factor I -1.16 -0.84 -0.63	(MHz)	Асти FS dBµV 44.7 41.1 116.5	al /m //m /// //////////////////////////	Limit @3m dBµV/m 86.82 ¹ 86.82 ¹	Margin dB -42.11 -45.68
Freq. MHz 882.94 902.00 914.90 914.90	Detector Mode PK/QP/AV Peak Peak QP Peak	Fr Spectrum Reading Leve dBµV 45.87 41.98 117.14 117.45	Factor Factor B -1.16 -0.84 -0.63 -0.63	(MHz)	Actu FS dBµV 44.7 41.1 116.8 116.8	al //m ///m ////////////////////////////	Limit @3m dBµV/m 86.82 ¹ 86.82 ¹	Margin dB -42.11 -45.68

Remark:



Below 1G Test Data

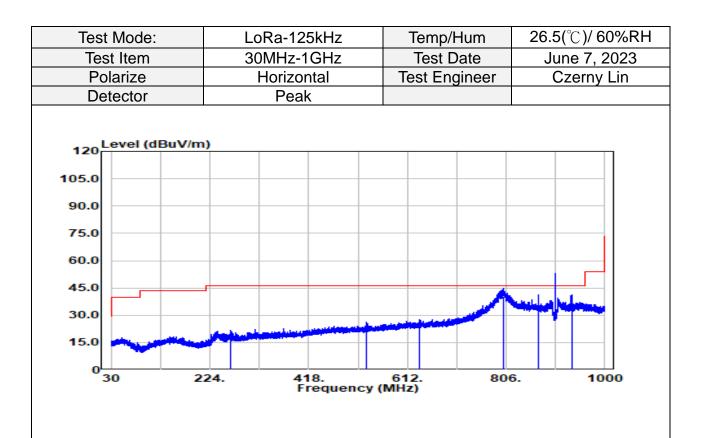


Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
Peak	35.71	-11.18	24.53	46.00	-21.47
Peak	37.71	-6.88	30.82	46.00	-15.18
Peak	32.77	-4.85	27.92	46.00	-18.08
Peak	42.29	-2.04	40.25	46.00	-5.75
Peak	35.19	-1.25	33.94	46.00	-12.06
Peak	40.61	-0.02	40.58	46.00	-5.42
	Mode PK/QP/AV Peak Peak Peak Peak Peak	Mode PK/QP/AVReading Level dBµVPeak35.71Peak37.71Peak32.77Peak42.29Peak35.19	Mode Reading Level PK/QP/AV dBµV dB Peak 35.71 -11.18 Peak 37.71 -6.88 Peak 32.77 -4.85 Peak 42.29 -2.04 Peak 35.19 -1.25	Mode Reading Level AB FS PK/QP/AV dBµV dB dBµV/m Peak 35.71 -11.18 24.53 Peak 37.71 -6.88 30.82 Peak 32.77 -4.85 27.92 Peak 42.29 -2.04 40.25 Peak 35.19 -1.25 33.94	Mode PK/QP/AV Reading Level dBµV FS @3m Peak 35.71 dB dBµV/m dBµV/m Peak 35.71 -11.18 24.53 46.00 Peak 37.71 -6.88 30.82 46.00 Peak 32.77 -4.85 27.92 46.00 Peak 42.29 -2.04 40.25 46.00 Peak 35.19 -1.25 33.94 46.00

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



Page: 42 / 48 Rev.: 02



Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
263.96	Peak	35.35	-13.53	21.82	46.00	-24.18
531.68	Peak	33.02	-6.87	26.15	46.00	-19.85
634.60	Peak	32.11	-4.56	27.55	46.00	-18.45
800.18	QP	42.30	-2.04	40.26	46.00	-5.74
870.31	Peak	42.66	-1.25	41.41	46.00	-4.59
934.33	Peak	41.07	-0.02	41.05	46.00	-4.95

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	22.4(°()/ 64%RI
Test Ite		Harmonic		Test Date		25, 2023
Polari		Vertical	Т	est Engineer		erny Lin
Detec	tor	Peak		U		3
120 Leve 105.0 90.0 75.0 60.0 45.0 30.0	el (dBuV/m)					
15.0						
0 1000	2800). 4600. Freq	64 uency (MH	00. 8 z)	200.	10000
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
1804.60	Peak	52.52	-7.35	45.17	79.80 ²	-34.63
1804.60	Average	50.48	-7.35	43.13	77.85 ²	-34.72
2706.90	Peak	58.53	-4.41	54.12	74.00	-19.88

Remark:

2706.90

Average

56.78

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

-4.41

52.38

54.00

-1.62



Page: 44 / 48 Rev.: 02

T N				T /	20 4/%	
Test Mo		Low CH		Temp/Hum		<u>)/ 64%R</u> F
Test It		Harmonic		Test Date		25, 2023
Polari		Horizonta	I	lest Engineer	- Cze	erny Lin
Detec	tor	Peak				
120 Lev	el (dBuV/m))				
105.0						
90.0						
75.0						
60.0						
45.0						
30.0						
15.0						
0 1000	28	00. 4600 Fred	64 Juency (MH	00. 8 iz)	200.	10000
Freq.	Detecto	r Spectrum	Factor	Actual	Limit	Margin
1109.	Mode	Reading Leve		FS	@3m	ina giri
MHz	PK/QP/A	-	dB	dBµV/m	dBµV/m	dB
1804.60	Peak	51.22	-7.35	43.87	86.07 ²	-42.20
1804.60	Average	e 49.35	-7.35	42.00	83.75 ²	-41.75
2706.90	Peak	60.36	-4.41	55.95	74.00	-18.05

Remark:

2706.90

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

-4.41

53.36

54.00

-0.64

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

57.77

Average



Page: 45 / 48 Rev.: 02

Test Mo	ode:	Mid CH		Temp/Hum	22.4(°C	c)/ 64%RI
Test Ite	em	Harmonic		Test Date	May	25, 2023
Polari		Vertical	Т	est Engineer	Cze	erny Lin
Detec	tor	Peak				
120 Leve	el (dBuV/m)					
105.0						
90.0						
75.0						
60.0						
45.0						
30.0						
15.0						
0 1000						
1000	280		640 ency (MH	z) 8	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	53.24	-7.31	45.93	79.25 ²	-33.32
1817.40	Average	51.04	-7.31	43.73	78.28 ²	-34.55
2726.10	Peak	57.96	-4.30	53.66	74.00	-20.34
						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.



Test Mo	ode:	Mid CH	-	Temp/Hum	22.4(°C)/ 64%RF
Test Ite		Harmonic		Test Date		25, 2023
Polari		Horizontal		est Engineer		erny Lin
Detec	tor	Peak		U		
Lev	el (dBuV/m)					
120						
105.0						
90.0						
75.0						
60.0						
45.0						
30.0						
15.0						
0 1000	280	00. 4600. Frequ	640 uency (MHz		200.	10000
				-		
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
Freq.	Detector Mode	Spectrum Reading Level		Actual FS	Limit @3m	Margin
Freq. MHz		Reading Level				Margin dB
	Mode	Reading Level		FS	@3m	-
MHz	Mode PK/QP/A	Reading Level / dBµV 53.09	dB	FS dBµV/m	@3m dBµV/m	dB

Remark:

2726.10

Average

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

-4.30

52.83

54.00

-1.17

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

57.14



Page: 47 / 48 Rev.: 02

Test Mo	de:	High CH		Temp/Hum	22.4(°C	C)/ 64%RI
Test Ite	em	Harmonic		Test Date	May	25, 2023
Polariz		Vertical	Т	est Engineer	Cze	erny Lin
Detect	or	Peak				
120 Leve	l (dBuV/m)					
105.0						
90.0						
75.0						
60.0						
45.0						
30.0						
15.0						
0 1000	2800		64		200.	10000
		Frequ	uency (MH	Z)		
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
1829.80	Peak	52.10	-7.32	44.79	79.45 ²	-34.66
1829.80	Average	50.85	-7.32	43.53	77.90 ²	-34.37
2744.70	Peak	57.63	-4.19	53.43	74.00	-20.57
2744.70	Average	55.15	-4.19	50.95	54.00	-3.05

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.



Page: 48 / 48 Rev.: 02

Test Mo	de:	High CH	Т	emp/Hum	22.4(℃)/ 64%Rł
Test Ite		Harmonic		Test Date		25, 2023
Polariz		Horizontal	Te	st Engineer	Cze	rny Lin
Detect	or	Peak				
Lev	el (dBuV/m)					
120						
105.0						
90.0						
75.0						
60.0						
45.0						
30.0						
15.0						
9	2800	4600.	640		200.	10000
1000	2800	. 4600. Frequ	uency (MHz	10. 8. 1)	200.	10000
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
i i cq.	Mode	Reading Level	1 dotor	FS	@3m	margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
1829.80	Peak	51.41	-7.32	44.09	86.82 ²	-42.73
1829.80	Average	48.07	-7.32	40.75	82.29 ²	-41.54
0744 70	Peak	59.07	-4.19	F 4 00	74.00	10.10
2744.70	Peak	59.07	-4.19	54.88	74.00	-19.12

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.

- End of Test Report -