TEST REPORT FOR RF TESTING

Report No.: SRTC2020-9004(J)-20072801(A)

Product Name: Notification Pager Transmitter

Product Model: P0004930100T

Applicant: SoftBank Robotics Corp.

Manufacturer: SoftBank Robotics Corp.

Specification: ARIB STD-T108 Version 1.2

MIC Notification No.88:2004 Annex 22

ORRE, art 49.1

The State Radio_monitoring_center Testing Center (SRTC)

15th Building, No.30, Shixing Street, Shijingshan District,

Beijing, P.R.China

Tel: 86-10-57996183 Fax: 86-10-57996388

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1. GENERAL INFORMATION

1.1 Notes of the test report

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1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	15th Building, No.30 Shixing Street, Shijingshan District
City:	Beijing
Country or Region:	P.R.China
Contacted person:	Liu Jia
Tel:	+86 10 57996183
Fax:	+86 10 57996388
Email:	liujiaf@srtc.org.cn

1.3 Applicant's details

Company:	SoftBank Robotics Corp.
Address:	1-9-2 Higashi-shimbashi, Minato-ku, Tokyo
City:	Tokyo
Country or Region:	Japan
Contacted person:	Huijun Wang
Tel:	81-3-6889-2450
Fax:	---
Email:	huijun.wang@g.softbank.co.jp

1.4 Manufacturer's details

Company:	SoftBank Robotics Corp.
Address:	1-9-2 Higashi-shimbashi, Minato-ku, Tokyo
City:	Tokyo
Country or Region:	Japan
Contacted person:	Huijun Wang
Tel:	81-3-6889-2450
Fax:	---
Email:	huijun.wang@g.softbank.co.jp

1.5 Test Environment

Date of Receipt of test sample at SRTC:	2020.07.28
Testing Start Date:	2020.07.28
Testing End Date:	2020.08.07

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	25.0	35.0
Maximum Extreme	45.0	80.0
Minimum Extreme	0.0	10.0

Normal Supply Voltage (V d.c.):	5.00
Maximum Supply Voltage (+10%) (V d.c.):	5.25
Minimum Supply Voltage (-10%) (V d.c.):	4.75

複製禁止

2 DESCRIPTION OF THE DEVICE UNDER TEST

2.1 Final Equipment Build Status

Frequency Band	920.5MHz~928.1MHz
Number of Channel	38
Channel Spacing	200kHz
Modulation Type	FSK
Antenna Type	Spring Antenna
Antenna Gain	-1.25dBi
Power Supply	Charger
Working Voltage	5.0V
HW Version	V1.1.0
SW Version	1.1
SN:	7240114X1A70000059
Declared output power	10mW

2.2 Description of Test Modes

38 channels are provided to this EUT：

Channel	Freq.(MHz)	channel	Freq.(MHz)	channel	Freq.(MHz)
24	920.6	37	923.2	50	925.8
25	920.8	38	923.4	51	926.0
26	921.0	39	923.6	52	926.2
27	921.2	40	923.8	53	926.4
28	921.4	41	924.0	54	926.6
29	921.6	42	924.2	55	926.8
30	921.8	43	924.4	56	927.0
31	922.0	44	924.6	57	927.2
32	922.2	45	924.8	58	927.4
33	922.4	46	925.0	59	927.6
34	922.6	47	925.2	60	927.8
35	922.8	48	925.4	61	928.0
36	923.0	49	925.6	---	---

2.3 Housing Requirement

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily. Please reference Construction Protection Confirmation.

2.4 Antenna Description

The antenna provides to the EUT, please refer to the following table:

Brand	Model	Antenna gain	Frequency range (GHz)	Antenna type	Connecter Type
N/A	N/A	-1.25	920.5MHz~928.1MHz	Spring Antenna	N/A

3 REFERENCE SPECIFICATION

Specification	Version	Title
ARIB STD-T108	V1.2	920MHz-BAND TELEMETER, TELECONTROL AND DATA TRANSMISSION RADIO EQUIPMENT
MIC Notification No.88:2004	Annex 22	Method for testing the characteristics of radio equipment listed in Article 2, Paragraph 1, Item 8 of Certification Rules

4 KEY TO NOTES AND RESULT CODES

Code	Meaning
PASS	Test result shows that the requirements of the relevant specification have been met.
FAIL	Test result shows that the requirements of the relevant specification have not been met.
N/T	Test case is not tested.
NTC	Nominal voltage, Normal Temperature

5 RESULT SUMMARY

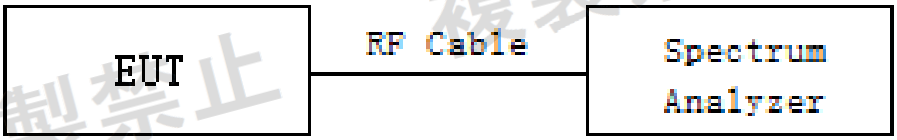
No.	Test case	Verdict
1	Frequency allocation	Pass
2	Frequency tolerance	Pass
3	Occupied Bandwidth	Pass
4	Antenna power	Pass
5	Antenna power tolerance	Pass
6	Adjacent Channel Leakage Power	Pass
7	Unwanted emission strength	Pass
8	Carrier sensing function	Pass
9	Transmission time restriction	Pass
10	Secondary radiated emission strength	Pass

This Test Report Is Issued by: Mr. Peng Zhen	Checked by: Mr. Li Bin
Tested by: Mr. He Dengshun	Issued date: 20200916

6 TEST RESULT

6.1 Frequency Tolerance Measurement

6.1.1 Test Setup



6.1.2 Test limit

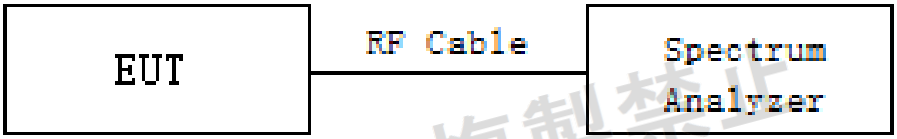
Frequency Tolerance: $20x10^{-6}$

6.1.3 Test result

Channel	Freq.(MHz)	Test Condition	$Voltage_{normal}$		$Voltage_{+10\%}$		$Voltage_{-10\%}$	
			Measure Freq. (MHz)	Frequency Tolerance(ppm)	Measure Freq. (MHz)	Frequency Tolerance(ppm)	Measure Freq. (MHz)	Frequency Tolerance(ppm)
24	920.6	35°C,50%	920.60238	2.58	920.60446	4.85	920.60381	4.13
41	924.0	35°C,50%	924.00382	4.13	924.00189	2.05	924.00330	3.57
61	928.0	35°C,50%	928.00343	3.70	928.00202	2.18	928.00340	3.66
24	920.6	-10°C	920.60255	2.77	920.60172	1.87	920.60158	1.71
41	924.0	-10°C	924.00099	1.07	924.00224	2.43	924.00164	1.77
61	928.0	-10°C	928.00351	3.78	928.00096	1.04	928.00211	2.28
24	920.6	60°C,50%	920.60163	1.78	920.60418	4.54	920.60260	2.82
41	924.0	60°C,50%	924.00164	1.77	924.00226	2.44	924.00101	1.09
61	928.0	60°C,50%	928.00295	3.17	928.00402	4.33	928.00232	2.50
24	920.6	35°C,90%	920.60281	3.05	920.60302	3.28	920.60247	2.68
41	924.0	35°C,90%	924.00178	1.92	924.00322	3.49	924.00134	1.45
61	928.0	35°C,90%	928.00235	2.53	928.00095	1.03	928.00334	3.60
24	920.6	Vibration	920.60196	2.13	920.60443	4.81	920.60419	4.55
41	924.0	Vibration	924.00330	3.57	924.00231	2.50	924.00446	4.83
61	928.0	Vibration	928.00202	2.18	928.00231	2.49	928.00452	4.88

6.2 Occupied Bandwidth Measurement

6.2.1 Test Setup



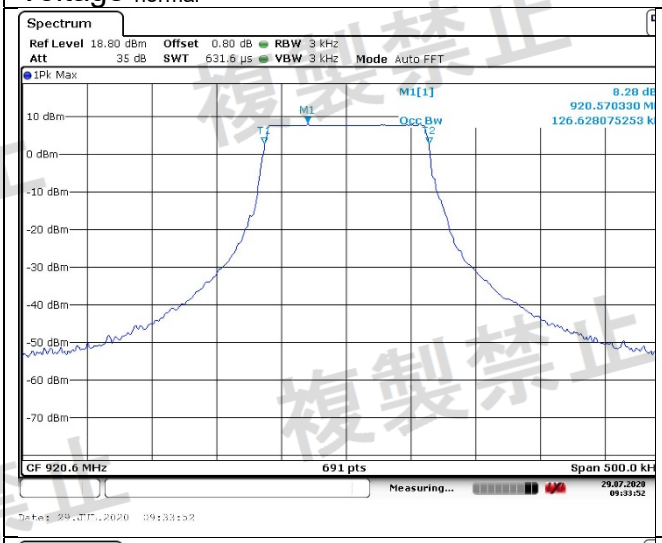
6.2.2 Test limit

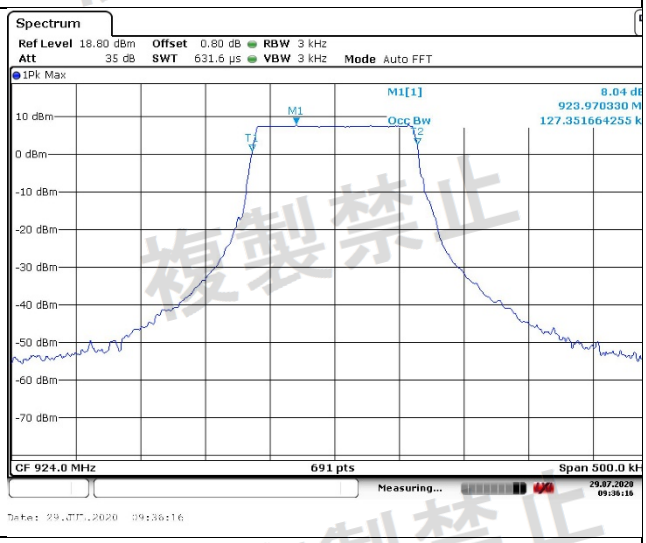
Occupied Bandwidth: 200 kHz or less

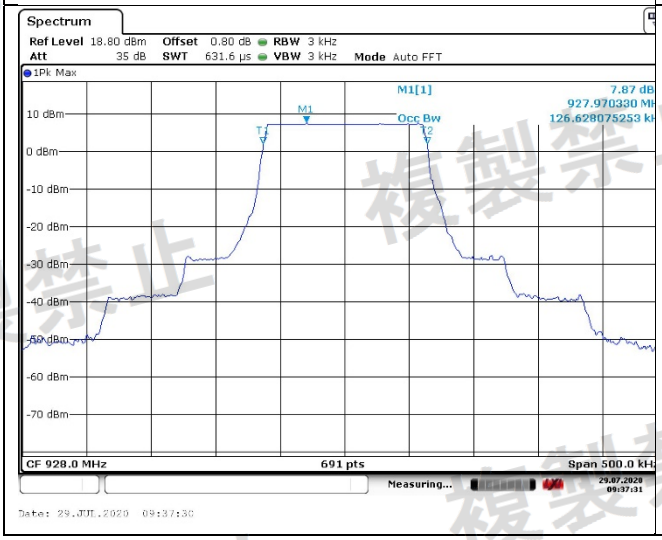
6.2.3 Test result

Channel	Freq. (MHz)	Voltage normal 99%Occupied Bandwidth(kHz)	Voltage+10% 99%Occupied Bandwidth(kHz)	Voltage-10% 99%Occupied Bandwidth(kHz)	Verdict
24	920.6	126.628	126.628	126.628	Pass
41	924.0	127.352	126.628	126.628	Pass
61	928.0	126.628	126.628	126.628	Pass

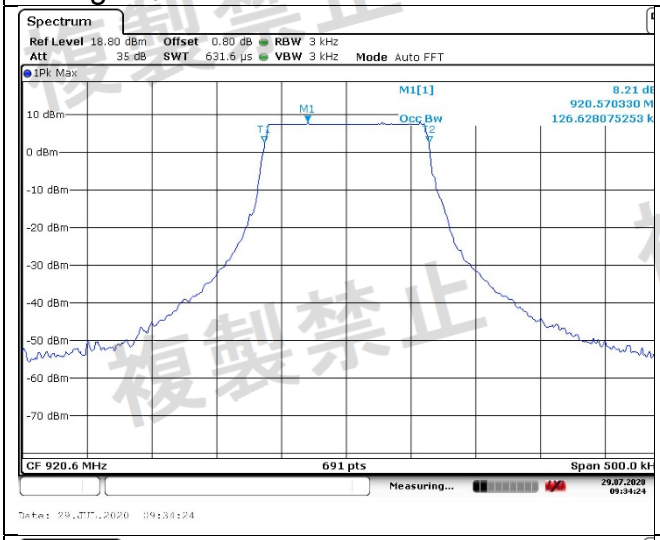
Voltage normal

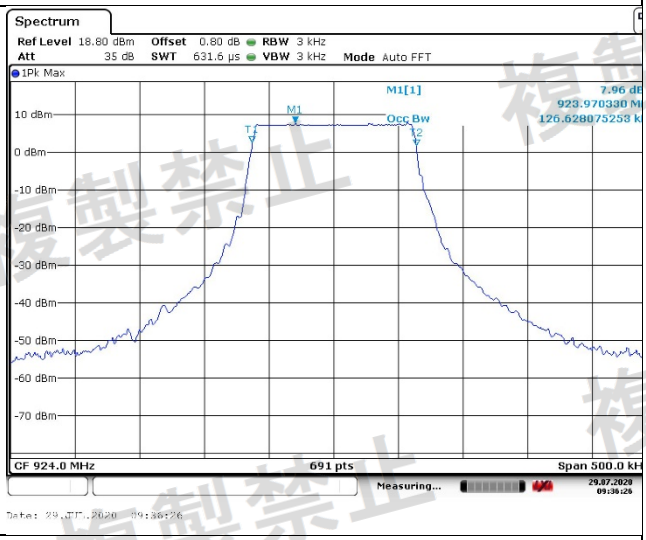


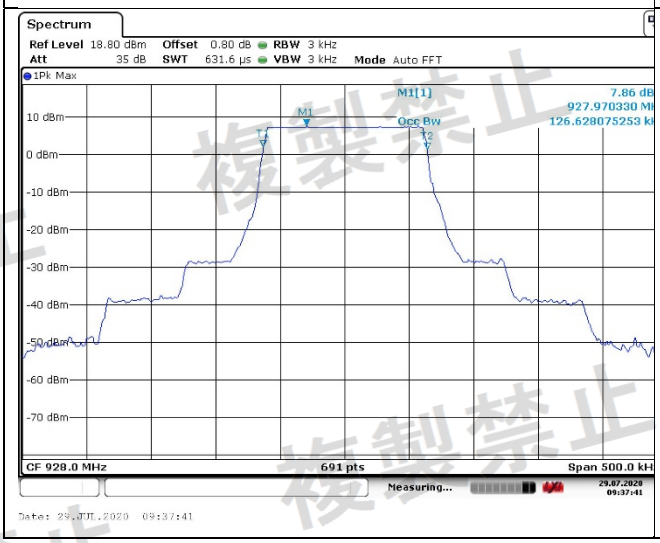




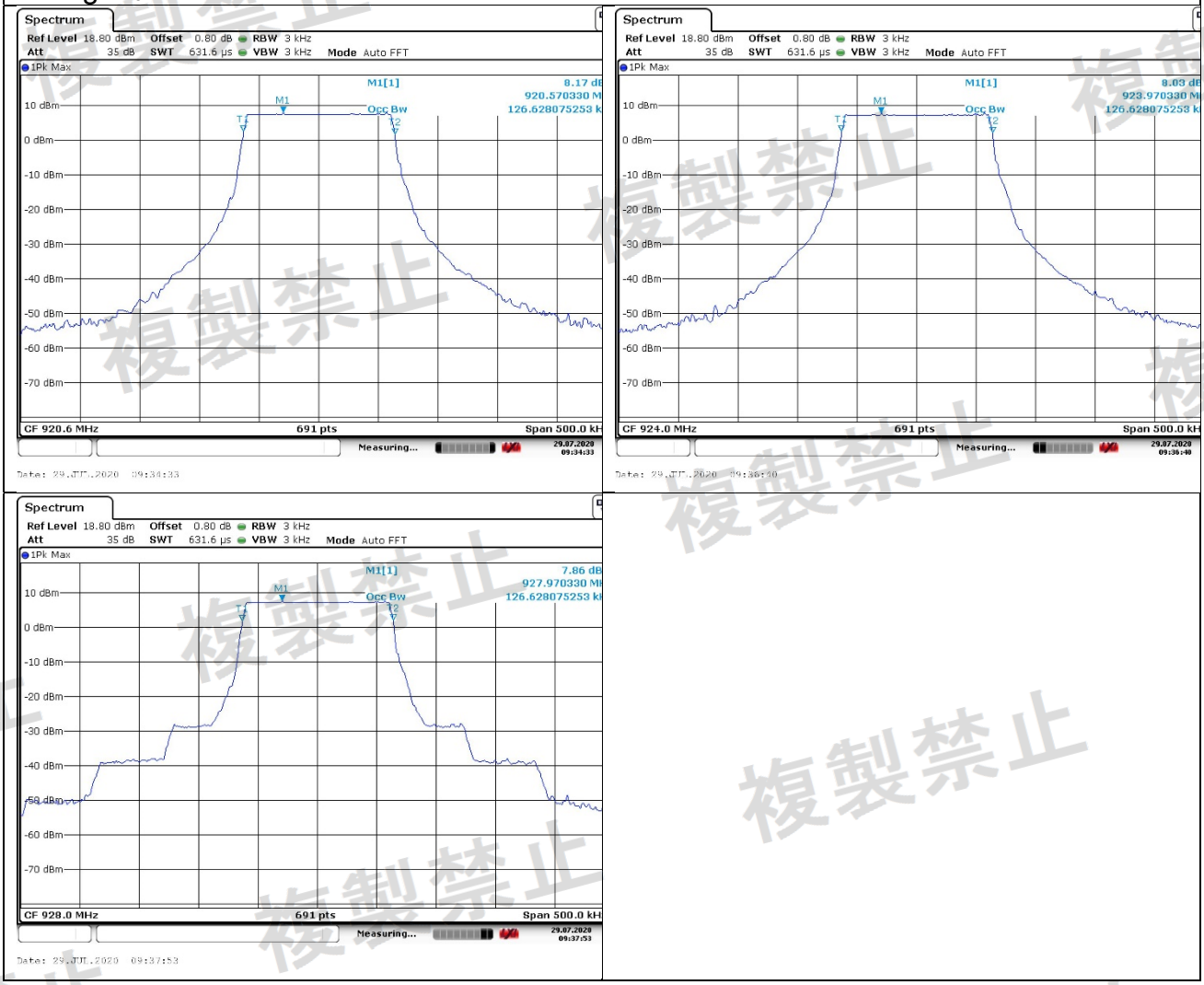
Voltage+10%


Spectrum
Ref Level 18.80 dBm Offset 0.80 dB RBW 3 kHz
Att 35 dB SWT 631.6 µs VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1]
8.21 dB
920.570330 M
126.628075253 k
Occ Bw
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 920.6 MHz
691 pts
Span 500.0 kH
Measuring...
29.07.2020
09:34:24


Spectrum
Ref Level 18.80 dBm Offset 0.80 dB RBW 3 kHz
Att 35 dB SWT 631.6 µs VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1]
7.96 dB
923.970330 M
126.628075253 k
Occ Bw
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 924.0 MHz
691 pts
Span 500.0 kH
Measuring...
29.07.2020
09:36:26

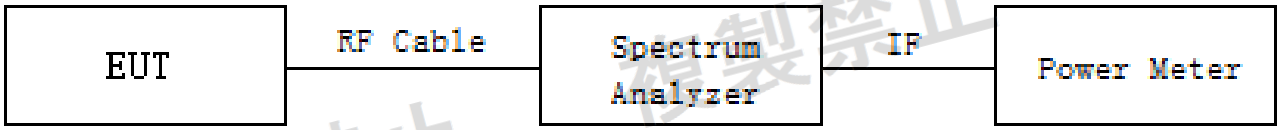

Spectrum
Ref Level 18.80 dBm Offset 0.80 dB RBW 3 kHz
Att 35 dB SWT 631.6 µs VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1]
7.86 dB
927.970330 M
126.628075253 k
Occ Bw
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 928.0 MHz
691 pts
Span 500.0 kH
Measuring...
29.07.2020
09:37:41

Voltage-10%


Spectrum
Ref Level 18.80 dBm Offset 0.80 dB RBW 3 kHz
Att 35 dB SWT 631.6 µs VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1] 8.17 dB
920.570330 MHz
Occ Bw 126.628075253 kHz
CF 920.6 MHz 691 pts Span 500.0 kHz
Measuring...
29.07.2020 09:34:33
Spectrum
Ref Level 18.80 dBm Offset 0.80 dB RBW 3 kHz
Att 35 dB SWT 631.6 µs VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1] 8.03 dB
923.970330 MHz
Occ Bw 126.628075253 kHz
CF 924.0 MHz 691 pts Span 500.0 kHz
Measuring...
29.07.2020 09:36:40
Spectrum
Ref Level 18.80 dBm Offset 0.80 dB RBW 3 kHz
Att 35 dB SWT 631.6 µs VBW 3 kHz Mode Auto FFT
1Pk Max
M1[1] 7.86 dB
927.970330 MHz
Occ Bw 126.628075253 kHz
CF 928.0 MHz 691 pts Span 500.0 kHz
Measuring...
29.07.2020 09:37:53

6.3 Antenna Power and Antenna Power Tolerance

6.3.1 Test Setup



6.3.2 Test limit

Antenna Power: 20mW or less
Antenna Power Tolerance: +20% to –80%

6.3.3 Test result

Cable Loss=0.8dB / EUT Antenna Gain=-1.25dBi						
Voltage Mode	Frequency (MHz)	Reading Value (dBm)	Output Power (mW)	Limit (mW)	ERP (dBm)	Limit (EIRP) (dBm)
Voltage normal	920.6	9.65	9.23	20.0	8.40	16.0
	924.0	9.57	9.06	20.0	8.32	16.0
	928.0	9.41	8.73	20.0	8.16	16.0
Voltage +10%	920.6	9.63	9.18	20.0	8.38	16.0
	924.0	9.54	8.99	20.0	8.29	16.0
	928.0	9.41	8.73	20.0	8.16	16.0
Voltage -10%	920.6	9.64	9.20	20.0	8.39	16.0
	924.0	9.55	9.02	20.0	8.30	16.0
	928.0	9.41	8.73	20.0	8.16	16.0

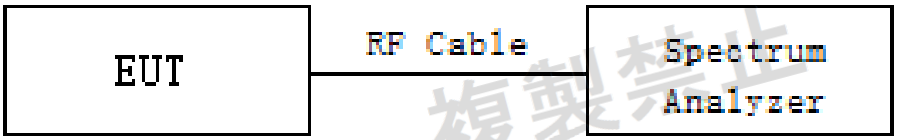
EIRP= Reading + Antenna Gain

Voltage Mode	Frequency (MHz)	Output Power (mW)	Declared Output Power (mW)	Tolerance (%)	Limit
Voltage normal	920.6	9.23	10.0	-7.70	–80% to +20%
	924.0	9.06	10.0	-9.40	
	928.0	8.73	10.0	-12.70	
Voltage +10%	920.6	9.18	10.0	-8.20	–80% to +20%
	924.0	8.99	10.0	-10.10	
	928.0	8.73	10.0	-12.70	
Voltage - 10%	920.6	9.20	10.0	-8.00	–80% to +20%
	924.0	9.02	10.0	-9.80	
	928.0	8.73	10.0	-12.70	

Deviation = (Channel Power - Declared Output Power) / Declared Output Power * 100%

6.4 Adjacent Channel Leakage Power

6.4.1 Test Setup



6.4.2 Test limit

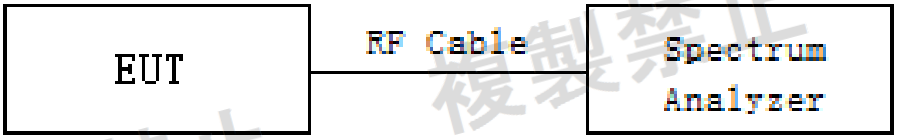
Adjacent unit channel: -15dBm or less

6.4.3 Test result

Test Conditions	Freq. (MHz)	920.6MHz	924.0MHz	928.0MHz	Limit (dBm)
Voltage normal	Mean Power of carrier(dBm)	8.47	8.32	8.16	---
	Mean Power+0.2MHz distance of carrier(dBm)	-45.23	-45.38	-45.49	-15.0
	Mean Power-0.2MHz distance of carrier(dBm)	-45.31	-45.42	-45.51	-15.0
Voltage+10%	Mean Power of carrier(dBm)	8.36	8.27	8.13	---
	Mean Power+0.2MHz distance of carrier(dBm)	-45.46	-45.37	-45.68	-15.0
	Mean Power-0.2MHz distance of carrier(dBm)	-45.57	-45.53	-45.71	-15.0
Voltage-10%	Mean Power of carrier(dBm)	8.36	8.42	8.24	---
	Mean Power+0.2MHz distance of carrier(dBm)	-45.38	-45.41	-45.61	-15.0
	Mean Power-0.2MHz distance of carrier(dBm)	-45.35	-45.43	-45.72	-15.0

6.5 Unwanted emission strength

6.5.1 Test Setup



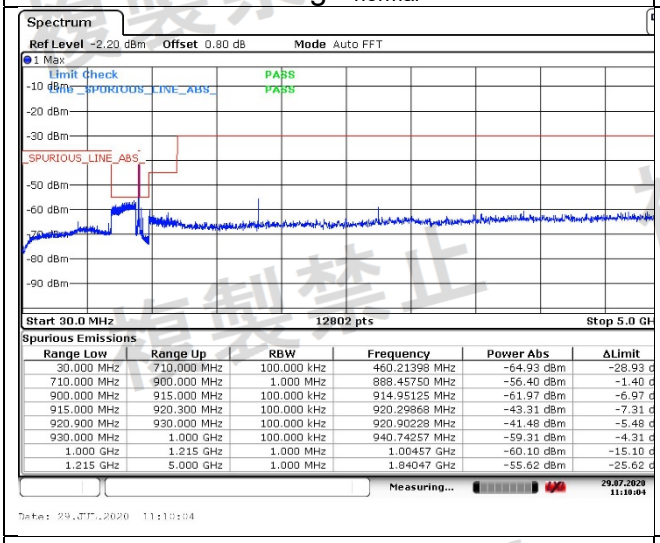
6.5.2 Test limit

Frequency band	Spurious emission / Unwanted Emission Intensity (average power)	Reference bandwidth
f <= 710 MHz	−36 dBm	100 kHz
710 MHz < f <= 900 MHz	−55 dBm	1M Hz
900 MHz < f <= 915 MHz	−55 dBm	100 kHz
915 MHz < f <= 930 MHz (Except for |f-fc| <= (200+100×n) kHz if bandwidth of unit channel is 200 kHz, except for |f-fc| <= (100+50×n) kHz if bandwidth of unit channel is 100 kHz. Except for |f-fc| <= (100+100×n)kHz if frequency band is 915.9MHz <= f <= 916.9MHz and 920.5MHz <= 922.3MHz. Where n is a number of unit channels constituting the radio channel and is an integer from 1 to 5)	−36 dBm	100 kHz
930 MHz < f <= 1000 MHz	−55 dBm	100 kHz
1000MHz < f <= 1,215 MHz	−45 dBm	1M Hz
1,215 MHz < f	−30 dBm	1M Hz

6.5.3 Test result

Test Channel		CH24/920.6MHz			
Test Condition	Frequency Range	Frequency (MHz)	Test Result (dBm)	Limit (dBm)	Verdict
Voltage normal	30 MHz ~710 MHz	460.21398	-64.93	-36	Pass
	710 MHz ~900 MHz	888.45750	-56.40	-55	Pass
	900 MHz ~915 MHz	914.95125	-61.97	-55	Pass
	915 MHz ~920.3 MHz	920.29868	-43.31	-36	Pass
	920.9 MHz ~930 MHz	920.90228	-41.48	-36	Pass
	930 MHz ~1000 MHz	940.74257	-59.31	-55	Pass
	1000 MHz ~1215 MHz	1004.57	-60.10	-45	Pass
	1215 MHz ~5000 MHz	1840.47	-55.62	-30	Pass
Voltage+10%	30 MHz ~710 MHz	460.21398	-67.03	-36	Pass
	710 MHz ~900 MHz	831.93250	-57.56	-55	Pass
	900 MHz ~915 MHz	914.33625	-66.32	-55	Pass
	915 MHz ~920.3 MHz	920.29868	-48.60	-36	Pass
	920.9 MHz ~930 MHz	920.90228	-49.26	-36	Pass
	930 MHz ~1000 MHz	940.74257	-60.26	-55	Pass
	1000 MHz ~1215 MHz	1030.48	-62.88	-45	Pass
	1215 MHz ~5000 MHz	1840.47	-56.54	-30	Pass
Voltage-10%	30 MHz ~710 MHz	476.70471	-67.73	-36	Pass
	710 MHz ~900 MHz	847.89250	-59.17	-55	Pass
	900 MHz ~915 MHz	913.98375	-66.58	-55	Pass
	915 MHz ~920.3 MHz	920.21123	-48.41	-36	Pass
	920.9 MHz ~930 MHz	920.90228	-46.30	-36	Pass
	930 MHz ~1000 MHz	940.74257	-60.60	-55	Pass
	1000 MHz ~1215 MHz	1198.82	-64.13	-45	Pass
	1215 MHz ~5000 MHz	1840.47	-56.36	-30	Pass

Voltage normal

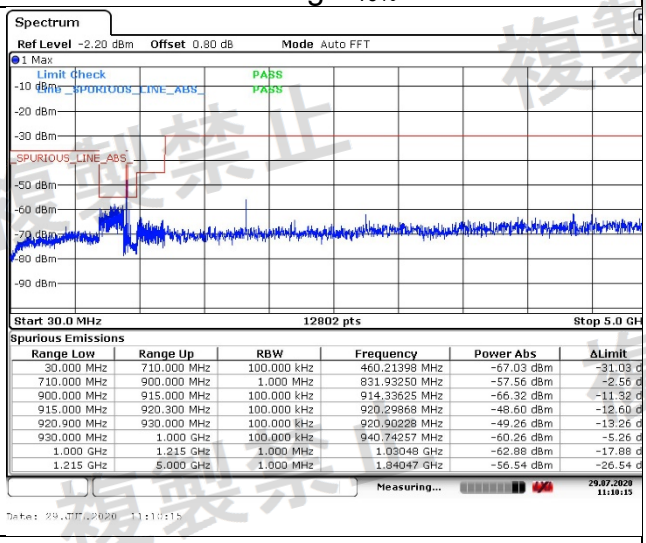


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	710.000 MHz	100.000 kHz	460.21398 MHz	-64.93 dBm	-28.93 d
710.000 MHz	900.000 MHz	1.000 MHz	888.45750 MHz	-56.40 dBm	-1.40 d
900.000 MHz	915.000 MHz	100.000 kHz	914.95125 MHz	-61.97 dBm	-6.97 d
915.000 MHz	920.300 MHz	100.000 kHz	920.29868 MHz	-43.31 dBm	-7.31 d
920.900 MHz	930.000 MHz	100.000 kHz	920.90228 MHz	-41.48 dBm	-5.48 d
930.000 MHz	1.000 GHz	100.000 kHz	940.74257 MHz	-59.31 dBm	-4.31 d
1.000 GHz	1.215 GHz	1.000 MHz	1.00457 GHz	-60.10 dBm	-15.10 d
1.215 GHz	5.000 GHz	1.000 MHz	1.84047 GHz	-55.62 dBm	-25.62 d

Date: 29.JUL.2020 11:10:04

Voltage+10%

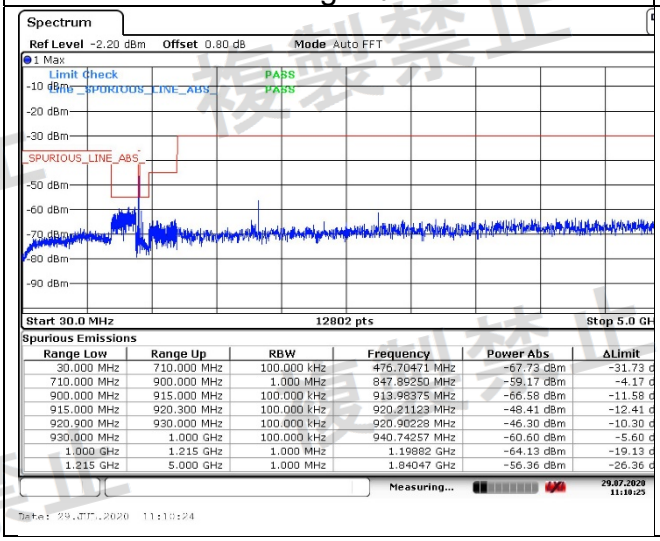


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	710.000 MHz	100.000 kHz	460.21398 MHz	-67.03 dBm	-31.03 d
710.000 MHz	900.000 MHz	1.000 MHz	831.93250 MHz	-57.56 dBm	-2.56 d
900.000 MHz	915.000 MHz	100.000 kHz	914.33625 MHz	-66.32 dBm	-11.32 d
915.000 MHz	920.300 MHz	100.000 kHz	920.29868 MHz	-48.60 dBm	-12.60 d
920.900 MHz	930.000 MHz	100.000 kHz	920.90228 MHz	-49.26 dBm	-13.26 d
930.000 MHz	1.000 GHz	100.000 kHz	940.74257 MHz	-60.26 dBm	-5.26 d
1.000 GHz	1.215 GHz	1.000 MHz	1.03048 GHz	-62.88 dBm	-17.88 d
1.215 GHz	5.000 GHz	1.000 MHz	1.84047 GHz	-56.54 dBm	-26.54 d

Date: 29.JUL.2020 11:10:15

Voltage-10%



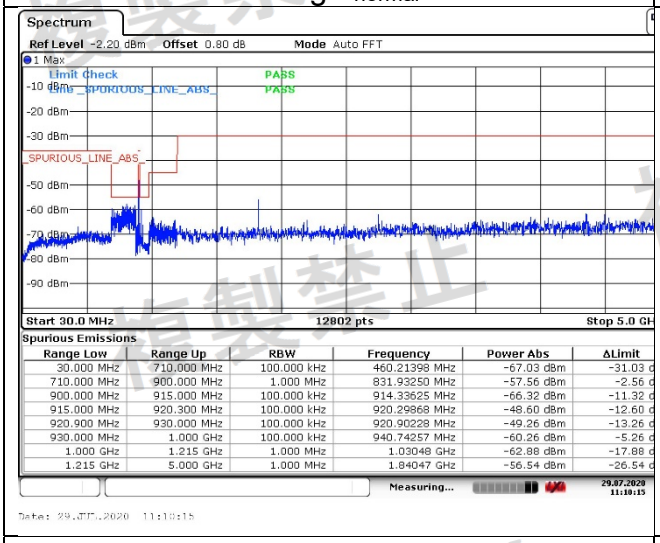
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	710.000 MHz	100.000 kHz	476.70471 MHz	-67.73 dBm	-31.73 d
710.000 MHz	900.000 MHz	1.000 MHz	847.89250 MHz	-59.17 dBm	-4.17 d
900.000 MHz	915.000 MHz	100.000 kHz	913.98375 MHz	-66.58 dBm	-11.58 d
915.000 MHz	920.300 MHz	100.000 kHz	920.21123 MHz	-48.41 dBm	-12.41 d
920.900 MHz	930.000 MHz	100.000 kHz	920.90228 MHz	-46.30 dBm	-10.30 d
930.000 MHz	1.000 GHz	100.000 kHz	940.74257 MHz	-60.60 dBm	-5.60 d
1.000 GHz	1.215 GHz	1.000 MHz	1.19882 GHz	-64.13 dBm	-19.13 d
1.215 GHz	5.000 GHz	1.000 MHz	1.84047 GHz	-56.36 dBm	-26.36 d

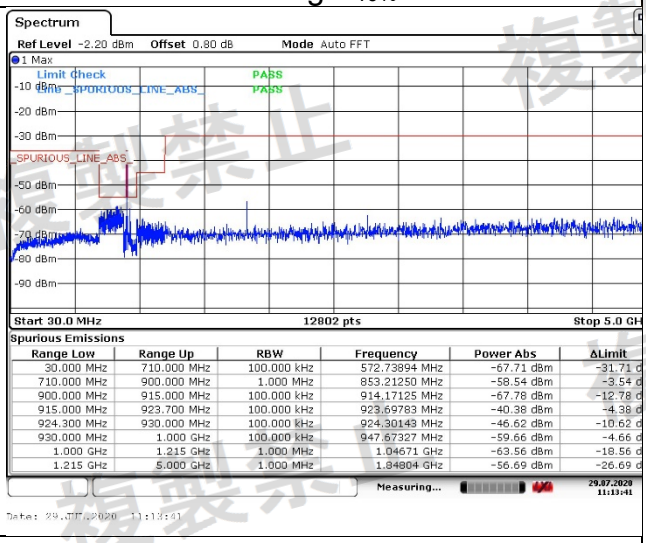
Date: 29.JUL.2020 11:10:24

Test Channel		CH41/924.0MHz			
Test Condition	Frequency Range	Frequency (MHz)	Test Result (dBm)	Limit (dBm)	Verdict
Voltage normal	30 MHz ~710 MHz	455.36377	-68.41	-36	Pass
	710 MHz ~900 MHz	809.22750	-57.42	-55	Pass
	900 MHz ~915 MHz	912.54375	-64.11	-55	Pass
	915 MHz ~923.7 MHz	923.69783	-46.65	-36	Pass
	924.3 MHz ~930 MHz	924.34703	-44.35	-36	Pass
	930 MHz ~1000 MHz	947.67327	-61.09	-55	Pass
	1000 MHz ~1215 MHz	1056.60	-64.47	-45	Pass
	1215 MHz ~5000 MHz	1848.04	-56.30	-30	Pass
Voltage+10%	30 MHz ~710 MHz	572.73894	-67.71	-36	Pass
	710 MHz ~900 MHz	853.21250	-58.54	-55	Pass
	900 MHz ~915 MHz	914.17125	-67.78	-55	Pass
	915 MHz ~923.7 MHz	923.69783	-40.38	-36	Pass
	924.3 MHz ~930 MHz	924.30143	-46.62	-36	Pass
	930 MHz ~1000 MHz	947.67327	-59.66	-55	Pass
	1000 MHz ~1215 MHz	1046.71	-63.56	-45	Pass
	1215 MHz ~5000 MHz	1848.04	-56.69	-30	Pass
Voltage-10%	30 MHz ~710 MHz	462.15407	-67.29	-36	Pass
	710 MHz ~900 MHz	870.21750	-58.88	-55	Pass
	900 MHz ~915 MHz	900.74625	-68.38	-55	Pass
	915 MHz ~923.7 MHz	923.69783	-41.03	-36	Pass
	924.3 MHz ~930 MHz	924.33563	-49.11	-36	Pass
	930 MHz ~1000 MHz	947.67327	-61.04	-55	Pass
	1000 MHz ~1215 MHz	1089.49	-63.47	-45	Pass
	1215 MHz ~5000 MHz	1848.04	-56.91	-30	Pass

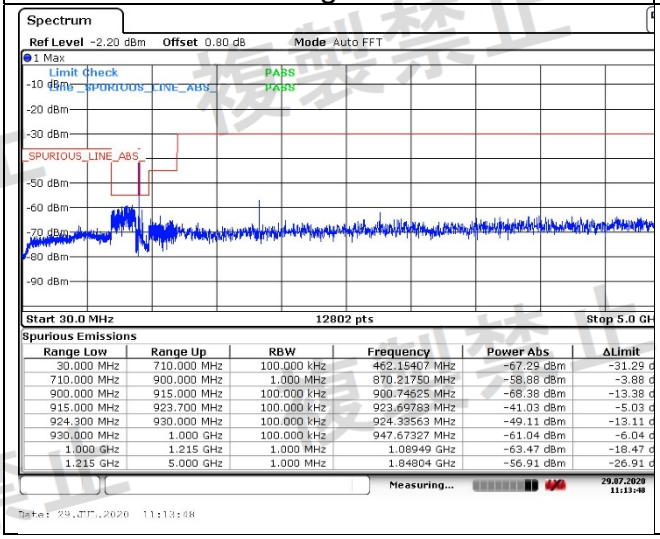
Voltage normal



Voltage+10%

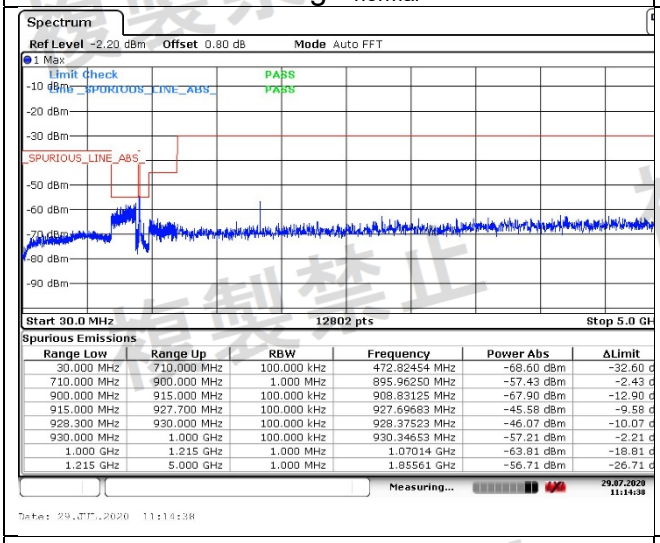


Voltage-10%



Test Channel		CH61/928.0MHz			
Test Condition	Frequency Range	Frequency (MHz)	Test Result (dBm)	Limit (dBm)	Verdict
Voltage normal	30 MHz ~710 MHz	472.82454	-68.60	-36	Pass
	710 MHz ~900 MHz	895.96250	-57.43	-55	Pass
	900 MHz ~915 MHz	908.83125	-67.90	-55	Pass
	915 MHz ~927.7 MHz	927.69683	-45.58	-36	Pass
	928.3 MHz ~930 MHz	928.37523	-46.07	-36	Pass
	930 MHz ~1000 MHz	930.34653	-57.21	-55	Pass
	1000 MHz ~1215 MHz	1070.14	-63.81	-45	Pass
	1215 MHz ~5000 MHz	1855.61	-56.71	-30	Pass
Voltage+10%	30 MHz ~710 MHz	454.39372	-67.56	-36	Pass
	710 MHz ~900 MHz	890.45250	-58.07	-55	Pass
	900 MHz ~915 MHz	900.16875	-67.61	-55	Pass
	915 MHz ~927.7 MHz	927.69683	-48.08	-36	Pass
	928.3 MHz ~930 MHz	928.30043	-43.46	-36	Pass
	930 MHz ~1000 MHz	930.34653	-59.07	-55	Pass
	1000 MHz ~1215 MHz	1143.46	-63.98	-45	Pass
	1215 MHz ~5000 MHz	1855.61	-56.48	-30	Pass
Voltage-10%	30 MHz ~710 MHz	505.80599	-68.55	-36	Pass
	710 MHz ~900 MHz	859.67250	-58.77	-55	Pass
	900 MHz ~915 MHz	901.95375	-69.43	-55	Pass
	915 MHz ~927.7 MHz	927.64603	-47.69	-36	Pass
	928.3 MHz ~930 MHz	928.30043	-47.58	-36	Pass
	930 MHz ~1000 MHz	930.34653	-58.99	-55	Pass
	1000 MHz ~1215 MHz	1167.65	-64.85	-45	Pass
	1215 MHz ~5000 MHz	1855.61	-57.87	-30	Pass

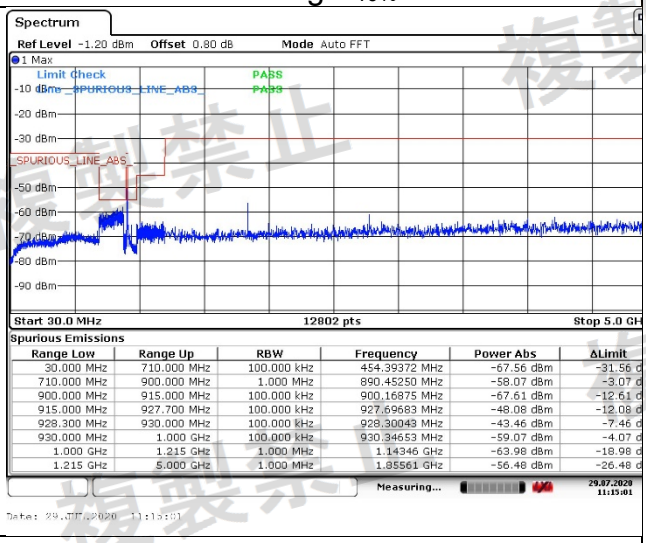
Voltage normal



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	710.000 MHz	100.000 kHz	472.82454 MHz	-68.60 dBm	-32.60 d
710.000 MHz	900.000 MHz	1.000 MHz	895.96250 MHz	-57.43 dBm	-2.43 d
900.000 MHz	915.000 MHz	100.000 kHz	908.83125 MHz	-67.90 dBm	-12.90 d
915.000 MHz	927.700 MHz	100.000 kHz	927.69683 MHz	-45.58 dBm	-9.58 d
928.300 MHz	930.000 MHz	100.000 kHz	928.37523 MHz	-46.07 dBm	-10.07 d
930.000 MHz	1.000 GHz	100.000 kHz	930.34653 MHz	-57.21 dBm	-2.21 d
1.000 GHz	1.215 GHz	1.000 MHz	1.07014 GHz	-63.81 dBm	-18.81 d
1.215 GHz	5.000 GHz	1.000 MHz	1.85561 GHz	-56.71 dBm	-26.71 d

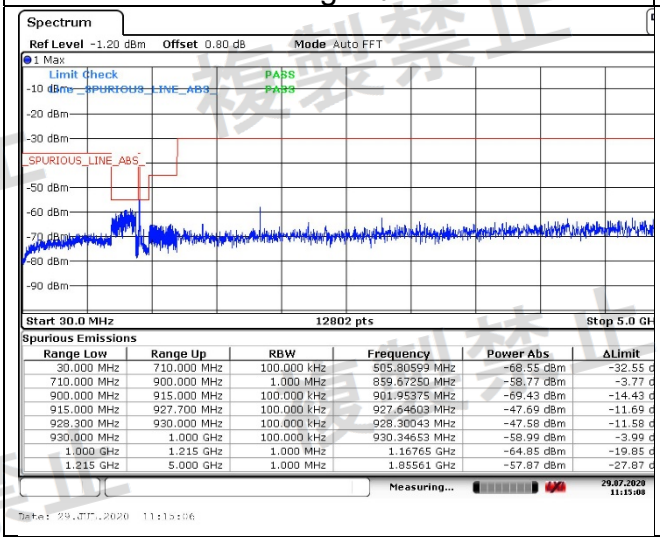
Voltage+10%



Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	710.000 MHz	100.000 kHz	454.39372 MHz	-67.56 dBm	-31.56 d
710.000 MHz	900.000 MHz	1.000 MHz	890.45250 MHz	-58.07 dBm	-3.07 d
900.000 MHz	915.000 MHz	100.000 kHz	900.16875 MHz	-67.61 dBm	-12.61 d
915.000 MHz	927.700 MHz	100.000 kHz	927.69683 MHz	-48.08 dBm	-12.08 d
928.300 MHz	930.000 MHz	100.000 kHz	928.30043 MHz	-43.46 dBm	-7.46 d
930.000 MHz	1.000 GHz	100.000 kHz	930.34653 MHz	-59.07 dBm	-4.07 d
1.000 GHz	1.215 GHz	1.000 MHz	1.14346 GHz	-63.98 dBm	-18.98 d
1.215 GHz	5.000 GHz	1.000 MHz	1.85561 GHz	-56.48 dBm	-26.48 d

Voltage-10%

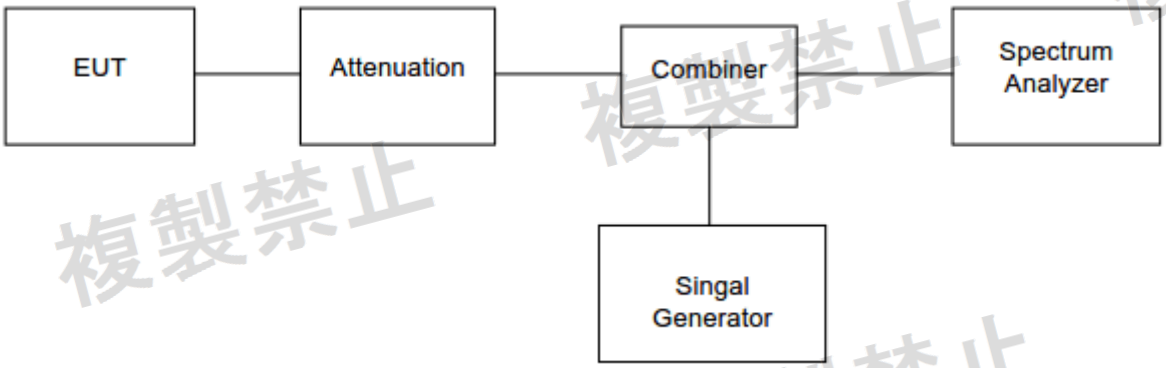


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	710.000 MHz	100.000 kHz	505.80599 MHz	-68.55 dBm	-32.55 d
710.000 MHz	900.000 MHz	1.000 MHz	859.67250 MHz	-58.77 dBm	-3.77 d
900.000 MHz	915.000 MHz	100.000 kHz	901.95375 MHz	-69.43 dBm	-14.43 d
915.000 MHz	927.700 MHz	100.000 kHz	927.64603 MHz	-47.69 dBm	-11.69 d
928.300 MHz	930.000 MHz	100.000 kHz	928.30043 MHz	-47.58 dBm	-11.58 d
930.000 MHz	1.000 GHz	100.000 kHz	930.34653 MHz	-58.99 dBm	-3.99 d
1.000 GHz	1.215 GHz	1.000 MHz	1.16765 GHz	-64.85 dBm	-19.85 d
1.215 GHz	5.000 GHz	1.000 MHz	1.85561 GHz	-57.87 dBm	-27.87 d

6.6 Carrier sensing function

6.6.1 Test Setup



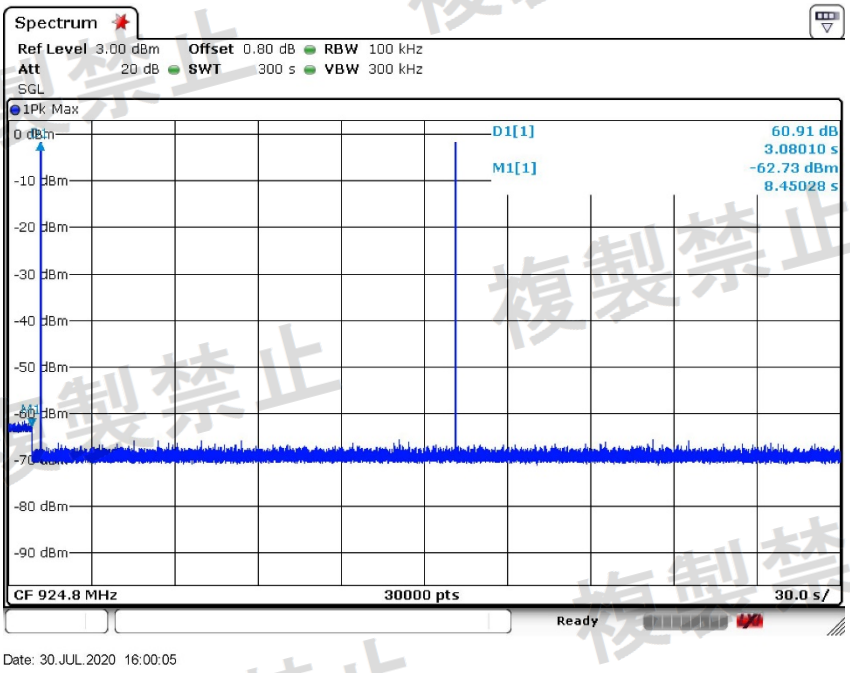
6.6.2 Test limit

Antenna power(Note5)	Applied CH number	Unit CH bandwidth	CH used in a bundle	Carrier sense time	Sending duration	Pause duration	The sum of transmission time per arbitrary one hour	Conditions of response to skip carrier sense (Note 4)	
								Completion time	Start time
1mW or less	1-5 33-61	200kHz	1～5ch	None	100ms or less(Note2)	100ms	3.6sec or less	—	—
	62-77	100kHz	1～5ch		50ms or less(Note3)	50ms	None	—	—
More than 1mW and less than or equal to 20mW	24-38	200kHz	1～5ch	5ms or more	4s(Note1)	50ms	None	—	—
	33-61	200kHz	1ch	128μs or more	More than 200ms, and 400ms or less	Ten times or more of the former transmission time or 2ms (Note6)	360sec or less	50ms or less	2ms or less
					More than 6ms, and 200ms or less	2ms			
					6ms or less	None			
			2ch		More than 3ms, and 200ms or less	2ms		5ms or less	
					3ms or less	None			
			3～5ch		More than 2ms, and 100ms or less	2ms			
					2ms or less	None			

6.6.3 Test result

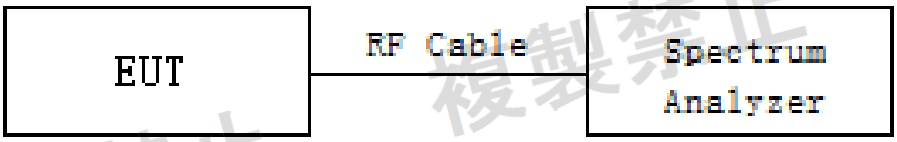
Channel	Freq.(MHz)	Carrier Sense Level(dBm)	Verdict
45	924.8	-80	Pass

Carrier Sense	CH45/924.8MHz



6.7 Transmission time restriction

6.7.1 Test Setup



6.7.2 Test limit

Antenna power(Note5)	Applied CH number	Unit CH bandwidth	CH used in a bundle	Carrier sense time	Sending duration	Pause duration	The sum of transmission time per arbitrary one hour	Conditions of response to skip carrier sense (Note 4)	
								Completion time	Start time
1mW or less	1-5 33-61	200kHz	1～5ch	None	100ms or less(Note2)	100ms	3.6sec or less	—	—
	62-77	100kHz	1～5ch		50ms or less(Note3)	50ms	None	—	—
More than 1mW and less than or equal to 20mW	24-38	200kHz	1～5ch	5ms or more	4s(Note1)	50ms	None	—	—
	33-61	200kHz	1ch	128μs or more	More than 200ms, and 400ms or less	Ten times or more of the former transmission time or 2ms (Note6)	360sec or less	50ms or less	2ms or less
					More than 6ms, and 200ms or less	2ms			
					6ms or less	None			
			2ch		More than 3ms, and 200ms or less	2ms		5ms or less	
					3ms or less	None			
			3～5ch		More than 2ms, and 100ms or less	2ms			
					2ms or less	None			

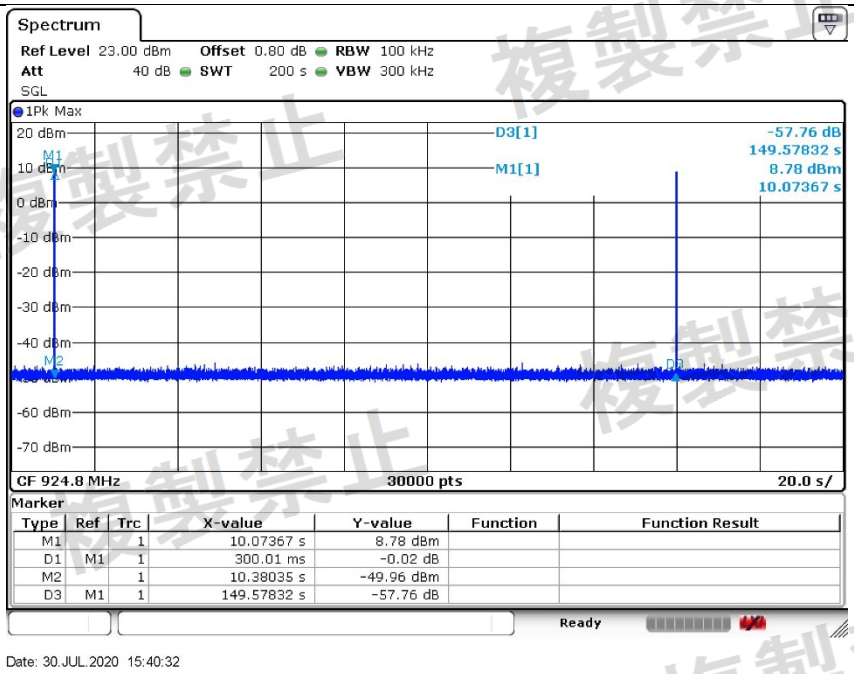
6.7.3 Test result

Channel	Freq.(MHz)	Sending Duration		Pause Duration		Verdict
		Test Result	Limit	Test Result	Limit	
45	924.8	300.01ms	400ms or less	149.57832s	3.0001s	Pass
		Note: Pause Duration Limit=10*Sending Duration Time =10*300.01ms=3.0001s				

Channel	Freq.(MHz)	The sum of emission time per arbitrary one hour		Verdict
		Test Result(s)	Limit	
45	924.8	7.207sec	360sec or less	Pass

CH45/924.8MHz

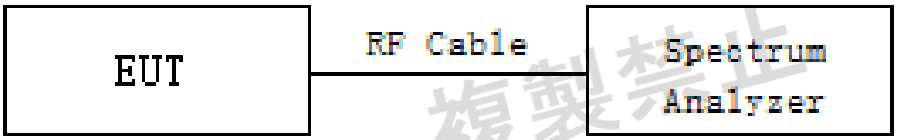
Transmission time control



Emission time in 1 hour(3600 sec): (0.30001/(0.30001+149.57832))*3600sec=7.207sec

6.8 Secondary radiated emission strength

6.8.1 Test Setup



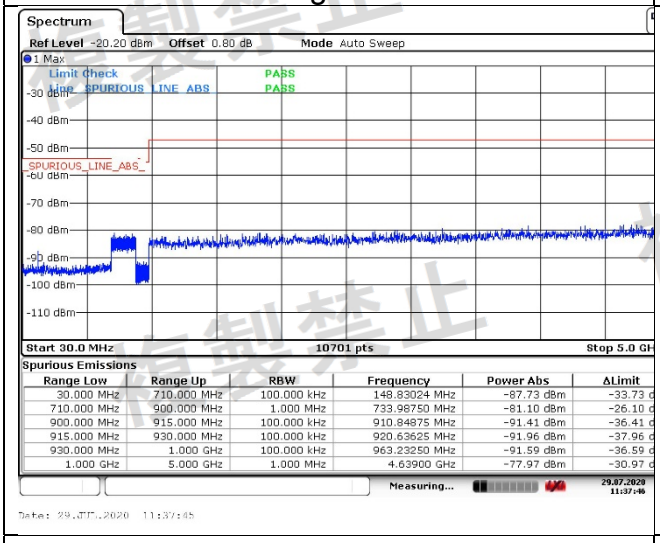
6.8.2 Test limit

Frequency band	Limit on Secondary Radiated Emissions (Antenna input)	Reference bandwidth
f <= 710 MHz	−54 dBm	100 kHz
710 MHz < f <= 900 MHz	−55 dBm	1 MHz
900 MHz < f <= 915 MHz	−55 dBm	100 kHz
915 MHz < f <= 930 MHz	−54 dBm	100 kHz
930 MHz < f <= 1000 MHz	−55 dBm	100 kHz
1000MHz < f	−47 dBm	1 MHz

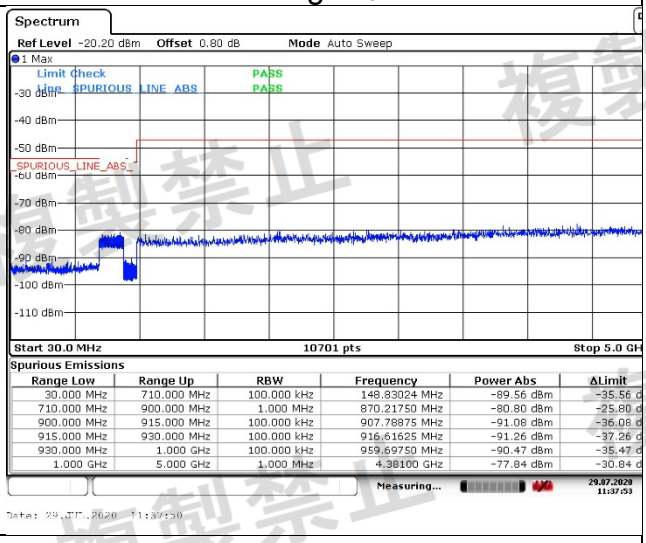
6.8.3 Test result

Test Channel		CH24/920.6MHz			
Test Condition	Frequency Range	Frequency (MHz)	Test Result (dBm)	Limit (dBm)	Verdict
Voltage normal	30 MHz ~710 MHz	119.3770	-78.24	-54	Pass
	710 MHz ~900 MHz	861.3290	-68.60	-55	Pass
	900 MHz ~915 MHz	903.04240	-78.20	-55	Pass
	915 MHz ~930 MHz	915.51520	-78.41	-54	Pass
	930 MHz ~1000 MHz	950.37150	-77.42	-55	Pass
	1000 MHz ~5000 MHz	4374.660	-66.56	-47	Pass
Voltage+10%	30 MHz ~710 MHz	673.0460	-79.59	-54	Pass
	710 MHz ~900 MHz	711.0350	-68.22	-55	Pass
	900 MHz ~915 MHz	913.27890	-78.43	-55	Pass
	915 MHz ~930 MHz	926.07410	-77.20	-54	Pass
	930 MHz ~1000 MHz	987.99270	-77.52	-55	Pass
	1000 MHz ~5000 MHz	4073.490	-67.02	-47	Pass
Voltage-10%	30 MHz ~710 MHz	658.3590	-79.23	-54	Pass
	710 MHz ~900 MHz	715.7090	-68.88	-55	Pass
	900 MHz ~915 MHz	907.79400	-77.96	-55	Pass
	915 MHz ~930 MHz	916.84710	-77.73	-54	Pass
	930 MHz ~1000 MHz	958.82910	-78.62	-55	Pass
	1000 MHz ~5000 MHz	4985.800	-66.99	-47	Pass

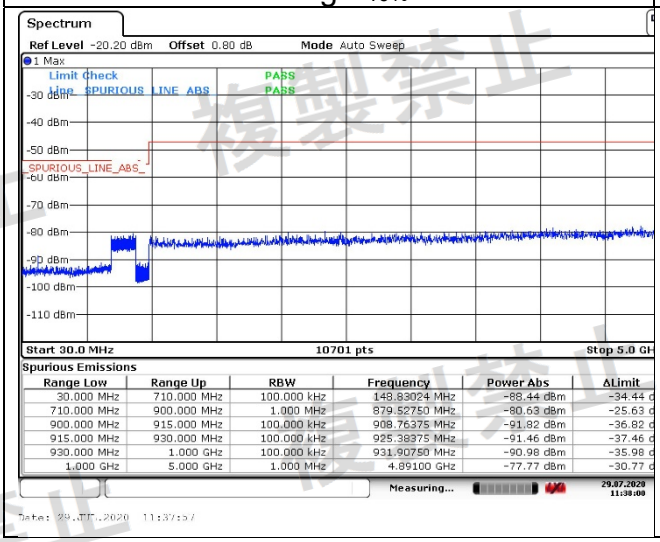
Voltage normal



Voltage+10%

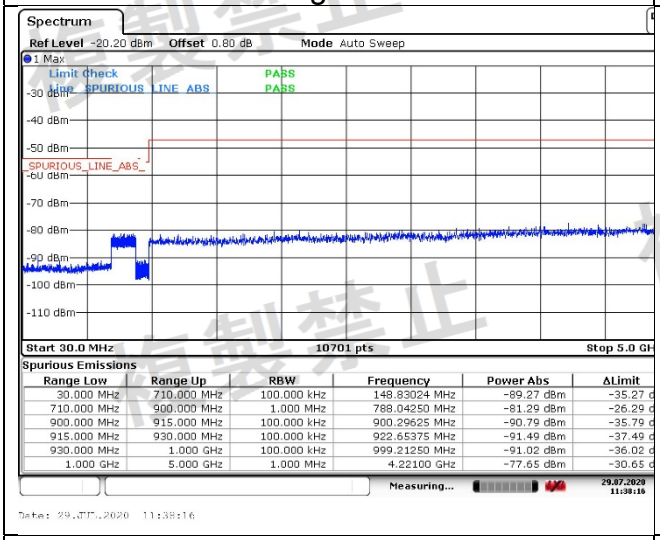


Voltage-10%

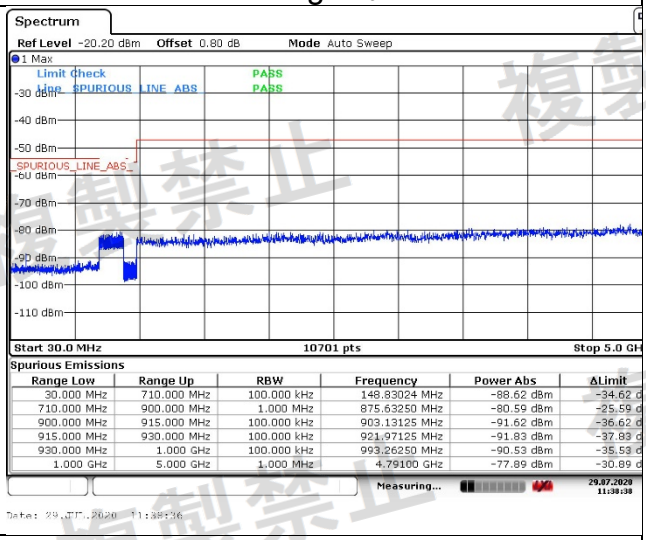


Test Channel		CH41/924.0MHz			
Test Condition	Frequency Range	Frequency (MHz)	Test Result (dBm)	Limit (dBm)	Verdict
Voltage normal	30 MHz ~710 MHz	123.1170	-78.96	-54	Pass
	710 MHz ~900 MHz	777.1870	-69.84	-55	Pass
	900 MHz ~915 MHz	905.40470	-78.31	-55	Pass
	915 MHz ~930 MHz	918.43990	-78.53	-54	Pass
	930 MHz ~1000 MHz	951.08540	-77.75	-55	Pass
	1000 MHz ~5000 MHz	2402.460	-62.53	-47	Pass
Voltage+10%	30 MHz ~710 MHz	596.6210	-78.91	-54	Pass
	710 MHz ~900 MHz	712.0800	-68.48	-55	Pass
	900 MHz ~915 MHz	912.78400	-78.68	-55	Pass
	915 MHz ~930 MHz	925.60170	-77.88	-54	Pass
	930 MHz ~1000 MHz	950.80540	-77.76	-55	Pass
	1000 MHz ~5000 MHz	4367.460	-67.38	-47	Pass
Voltage-10%	30 MHz ~710 MHz	661.1470	-79.03	-54	Pass
	710 MHz ~900 MHz	843.8890	-69.91	-55	Pass
	900 MHz ~915 MHz	914.79080	-77.28	-55	Pass
	915 MHz ~930 MHz	929.71580	-78.29	-54	Pass
	930 MHz ~1000 MHz	949.38460	-77.84	-55	Pass
	1000 MHz ~5000 MHz	4314.670	-66.66	-47	Pass

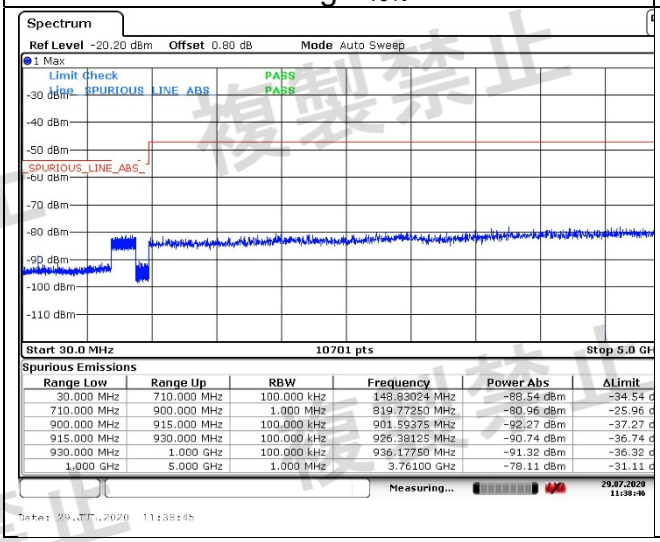
Voltage normal



Voltage+10%



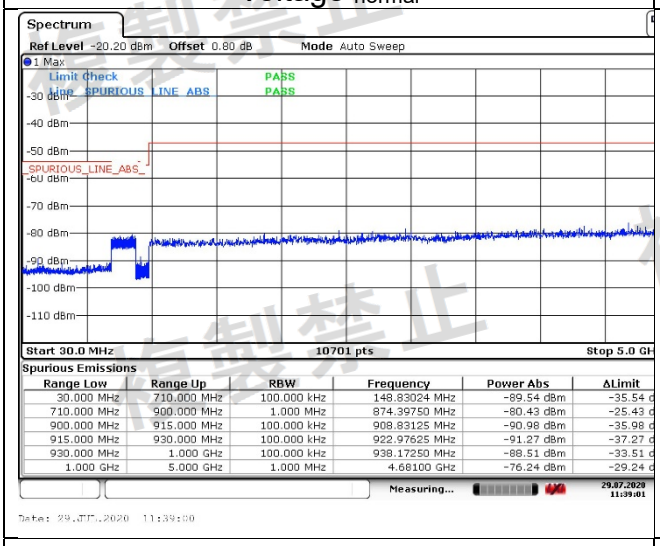
Voltage-10%



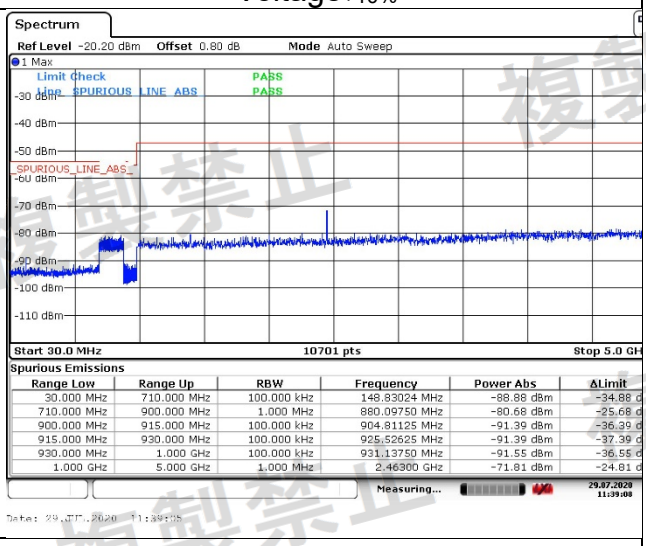
Test Channel		CH61/928.0MHz			
Test Condition	Frequency Range	Frequency (MHz)	Test Result (dBm)	Limit (dBm)	Verdict
Voltage normal	30 MHz ~710 MHz	118.6970	-79.18	-54	Pass
	710 MHz ~900 MHz	710.9210	-70.09	-55	Pass
	900 MHz ~915 MHz	914.87030	-77.90	-55	Pass
	915 MHz ~930 MHz	929.50730	-77.82	-54	Pass
	930 MHz ~1000 MHz	960.21250	-78.59	-55	Pass
	1000 MHz ~5000 MHz	4427.860	-66.91	-47	Pass
Voltage+10%	30 MHz ~710 MHz	66.8180	-77.80	-54	Pass
	710 MHz ~900 MHz	865.3380	-69.79	-55	Pass
	900 MHz ~915 MHz	910.65870	-78.58	-55	Pass
	915 MHz ~930 MHz	919.23780	-78.50	-54	Pass
	930 MHz ~1000 MHz	954.48710	-78.04	-55	Pass
	1000 MHz ~5000 MHz	4293.870	-67.31	-47	Pass
Voltage-10%	30 MHz ~710 MHz	658.7670	-79.05	-54	Pass
	710 MHz ~900 MHz	710.5410	-68.43	-55	Pass
	900 MHz ~915 MHz	909.12580	-78.67	-55	Pass
	915 MHz ~930 MHz	925.42470	-78.68	-54	Pass
	930 MHz ~1000 MHz	984.59800	-78.37	-55	Pass
	1000 MHz ~5000 MHz	4723.830	-67.72	-47	Pass

複製禁止

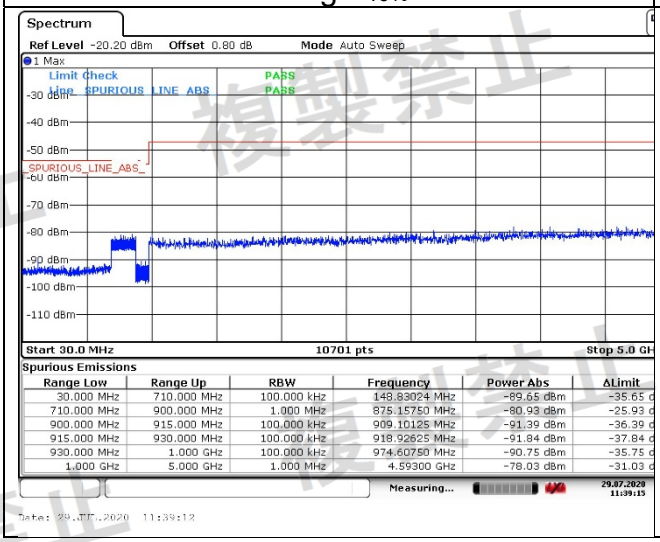
Voltage normal



Voltage+10%



Voltage-10%



6.9 Interference Prevention Function

6.9.1 Test Procedure

The EUT is connected to the TX device it is paired with, and the RX can automatically send/receive the identification code.

1. Connect the EUT to the TX devices.
2. Press the power button for five second.
   We can get the information as follows:
   7240114X1A70000059

6.9.2 Test limit

The radio equipment shall automatically transmit/receive identification codes.

6.9.3 Test result

Test Conditions	Test Result
Normal	Pass

7 MEASUREMENT UNCERTAINTIES

Items	Uncertainty
Occupied Bandwidth	150.41Hz
Output Power	1.16dB
Frequency Tolerance	150.41Hz
Transmitter Spurious Emissions	1.21dB
Receiver Spurious Emissions	1.21dB
Transmission Time	1.58ms
Adjacent Channel Leakage Power	0.46dB

複製禁止

8 TEST EQUIPMENTS

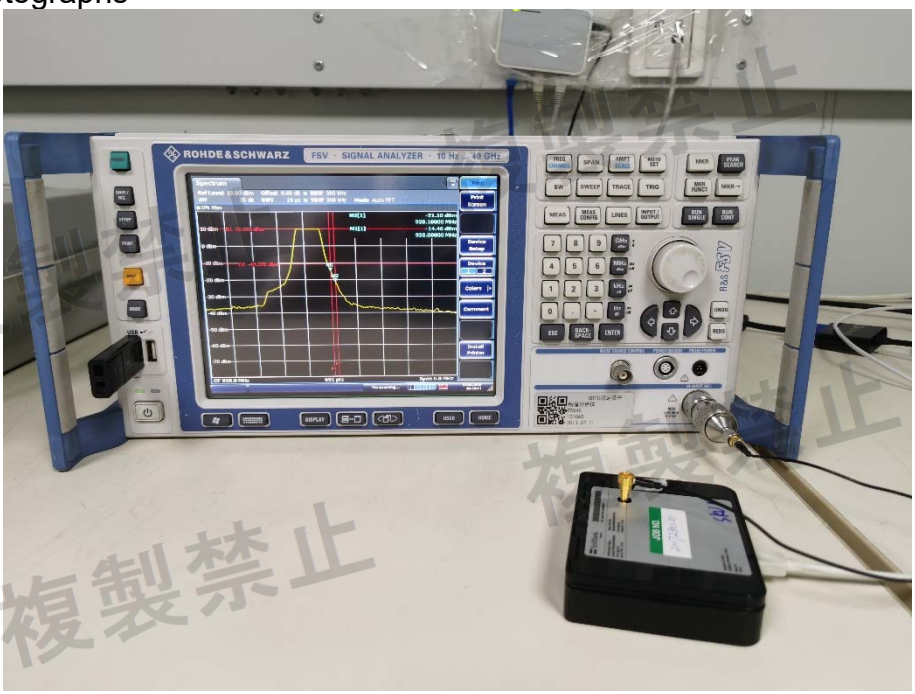
No.	Name/ Model	Manufacturer	S/N	Cal ORG	Cal date	Cal Due date
1.	Spectrum Analyzer FSV40	ROHDE&SCHWARZ	101065	NIM	2019.08.20	2020.08.19
2.	Power Meter E4416A	Agilent	MY52370013	TMC	2020.03.01	2021.02.28
3.	Power Sensor E9327A	Agilent	MY52420006	TMC	2020.03.01	2021.02.28
4.	Power Splitters 6007	Aeroflex/Weinschel	6007-GJ-1	NIM	2019.08.20	2020.08.19
5.	Cable 104EA	SUCOFLEX	9266/4EA	TMC	2020.03.01	2021.02.28
6.	Signal Generator SMBV100A	ROHDE&SCHWARZ	260910	NIM	2019.08.20	2020.08.19
7.	Temperature chamber SH241	ESPEC	92013758	NIM	2019.08.20	2020.08.19

Note：
The National Institute of Metrology (NIM) is China’s national metrology institute (NMI) and a state-level legal metrology institute. TMC is China Telecommunications Technology Labs.

複製禁止

APPENDIX A

EUT Test Photographs



Spectrum Measurement Photograph

---End of Test Report---