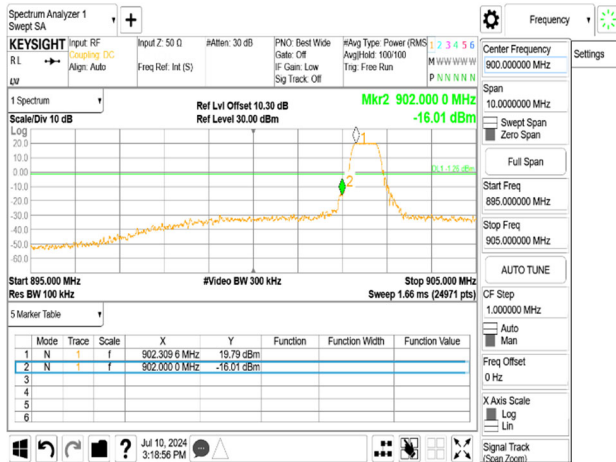
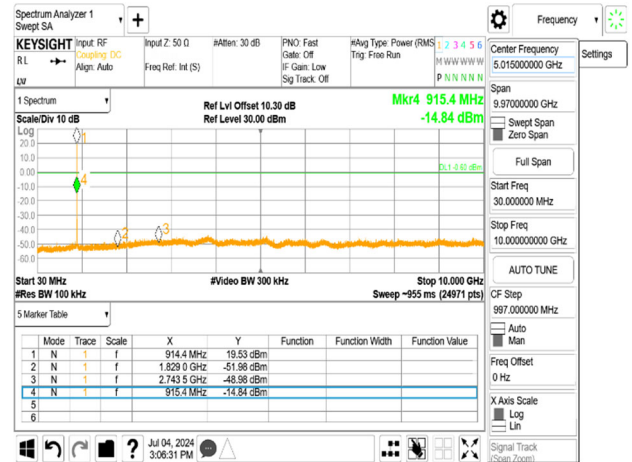


Band Edge_ LoRa_LowCH-902.5MHz



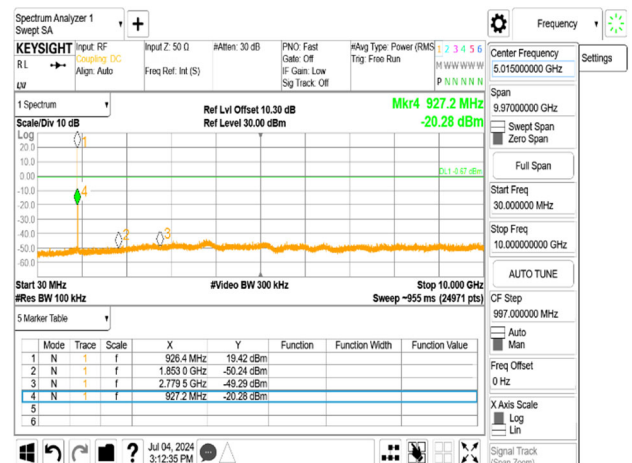
Spurious Emission_ LoRa_MidCH-914.5MHz



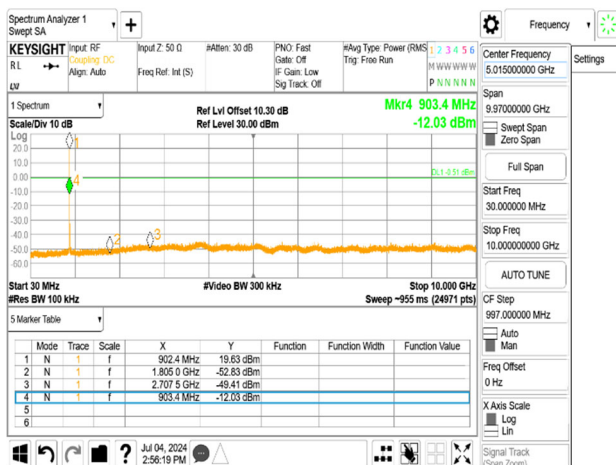
Band Edge_ LoRa_HighCH-926.5MHz



Spurious Emission_ LoRa_HighCH-926.5MHz



Spurious Emission_ LoRa_LowCH-902.5MHz



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t (886-2) 2299-3279

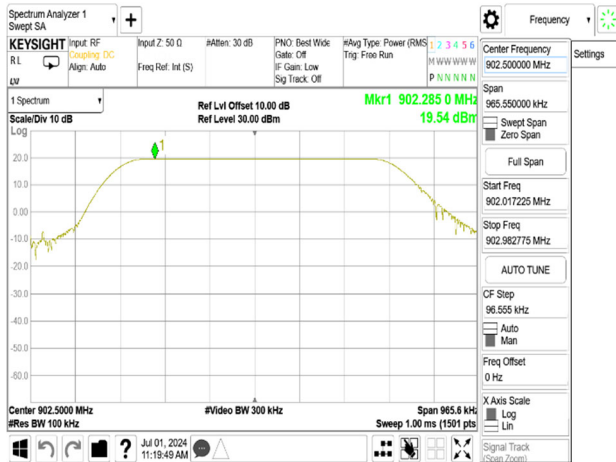
f (886-2) 2298-0488

www.sgs.com.tw

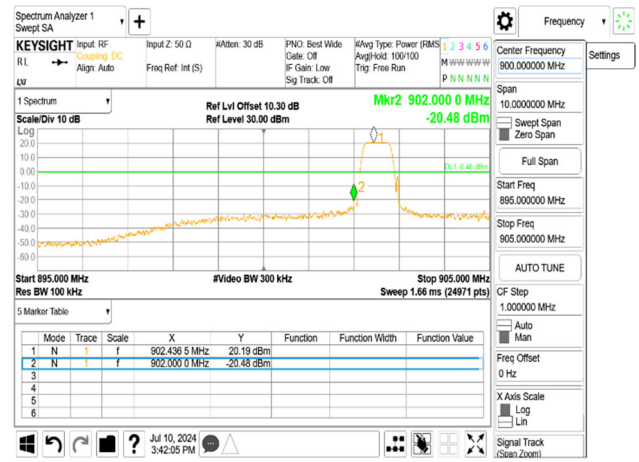
Member of SGS Group

LoRa SF11 Internal antenna

Reference Level_LoRa_LowCH-902.5MHz



Band Edge_LoRa_LowCH-902.5MHz



Reference Level_LoRa_MidCH-914.5MHz



Band Edge_LoRa_HighCH-926.5MHz



Reference Level_LoRa_HighCH-926.5MHz



Spurious Emission_LoRa_LowCH-902.5MHz



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LoRa SF11 External antenna

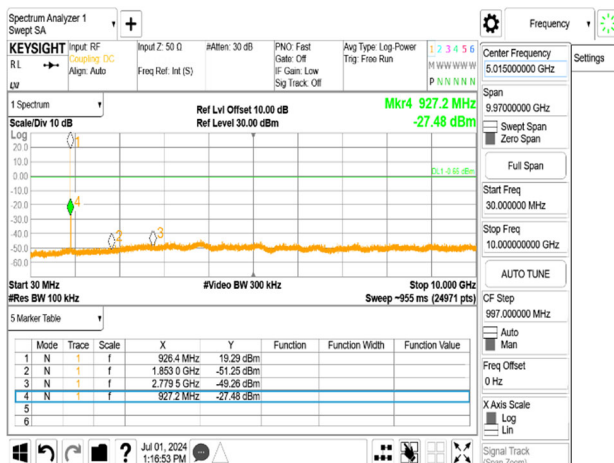
Spurious Emission_ LoRa_MidCH-914.5MHz



Reference Level_ LoRa_LowCH-902.5MHz



Spurious Emission_ LoRa_HighCH-926.5MHz



Reference Level_ LoRa_MidCH-914.5MHz



Reference Level_ LoRa_HighCH-926.5MHz



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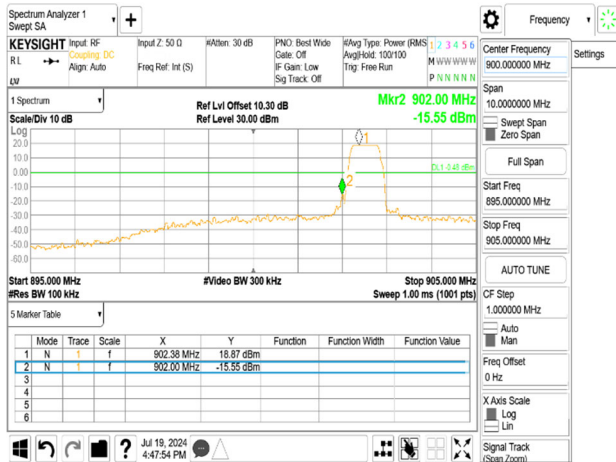
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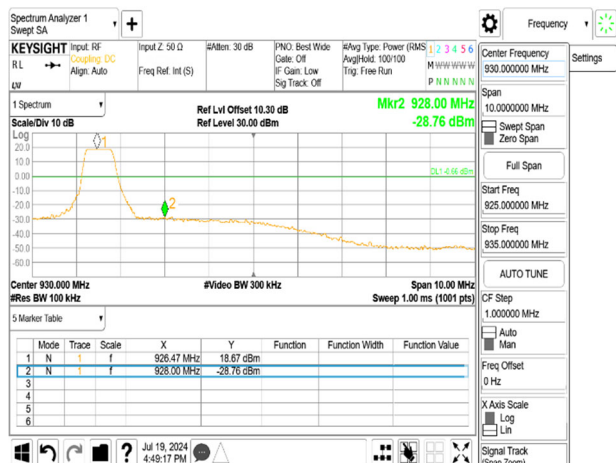
Band Edge_ LoRa_LowCH-902.5MHz



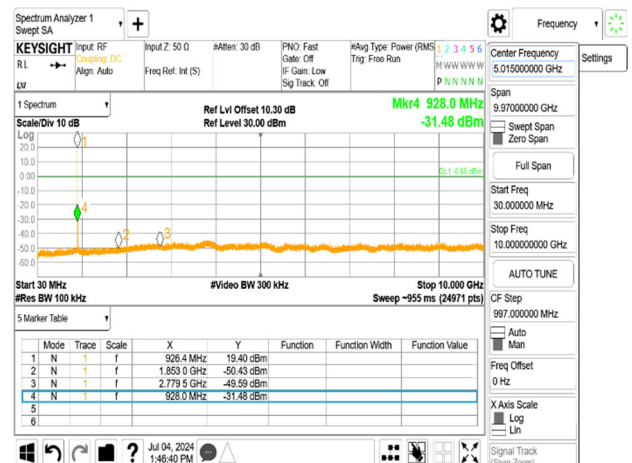
Spurious Emission_ LoRa_MidCH-914.5MHz



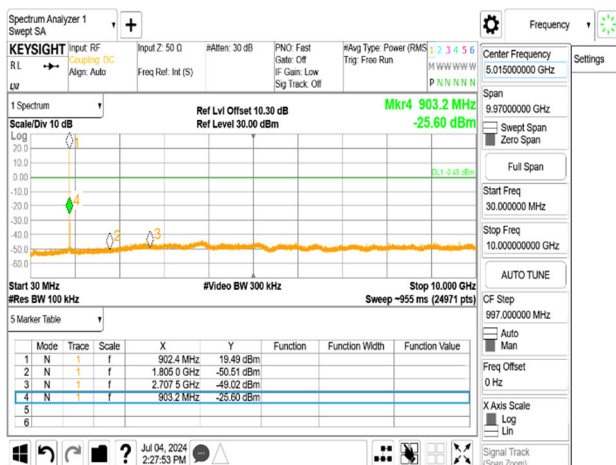
Band Edge_ LoRa_HighCH-926.5MHz



Spurious Emission_ LoRa_HighCH-926.5MHz



Spurious Emission_ LoRa_LowCH-902.5MHz



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11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

11.1 Standard Applicable

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 and RSS-Gen §8.9 Table 5 and 6 limit as below.

And according to §15.33(a) (1) & RSS-Gen §6.13.2.a, for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

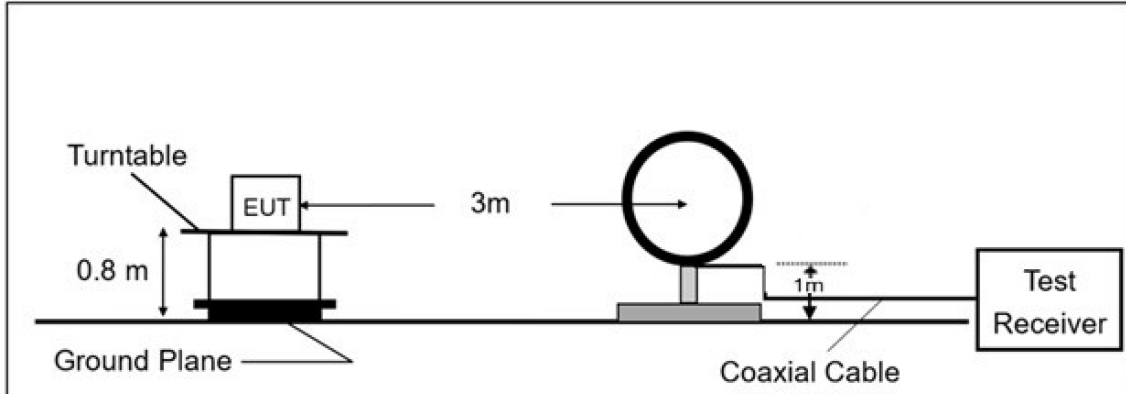
1. The lower limit shall apply at the transition frequencies.

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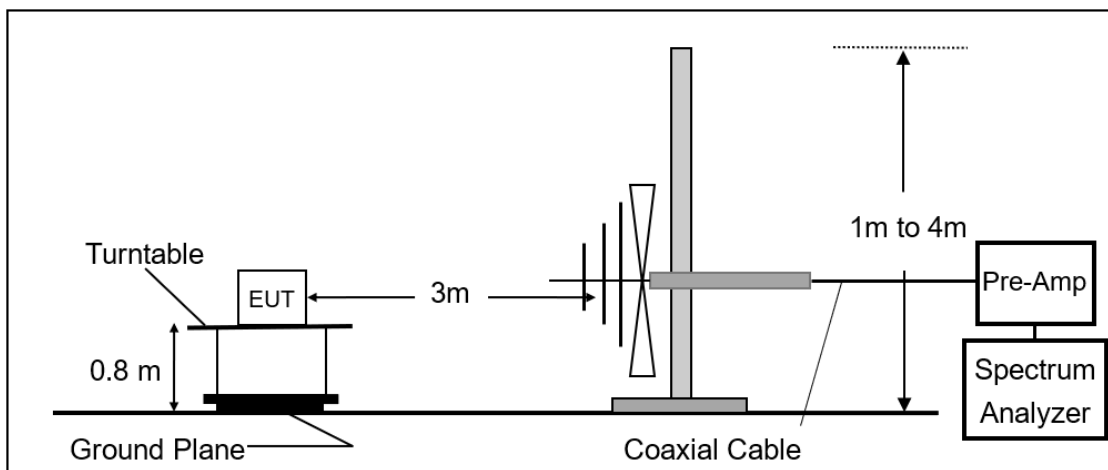
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11.2 Test Setup

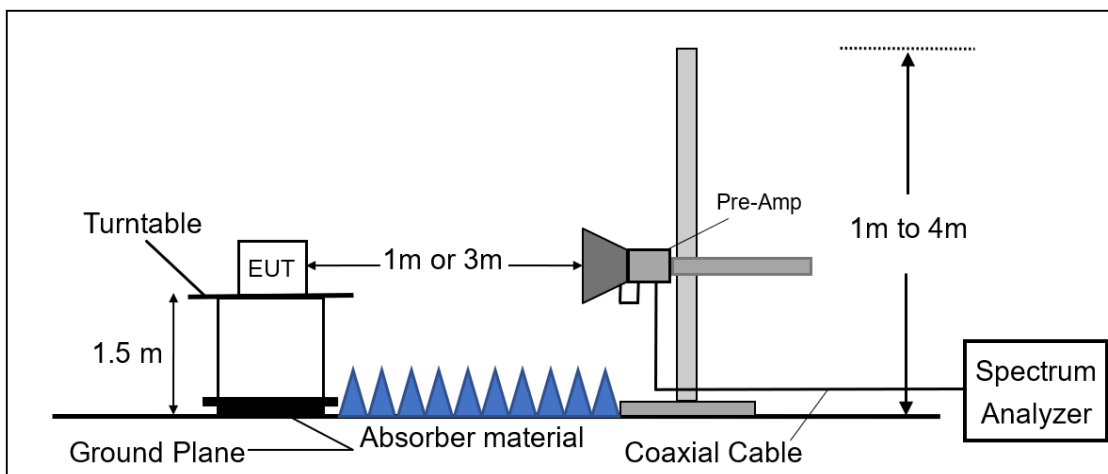
(A) Radiated Emission Test Set-Up, Frequency Below 30MHz.



(B) Radiated Emission Test Set-Up, Frequency From 30MHz to 1000MHz.



(C) Radiated Emission Test Set-Up, Frequency Above 1GHz.



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11.3 Measurement Procedure

1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
2. The EUT was placed on a turn table with 0.8m for frequency < 1GHz and 1.5m for frequency > 1GHz above ground plane.
3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
5. Set the spectrum analyzer as RBW=100 kHz and VBW=300 kHz for Peak Detector (PK) at frequency between 30MHz and 1 GHz.
6. Use receiver mode as RBW=120 kHz for Quasi-peak (QP) at frequency between 30MHz and 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Maximum Emission Measurements at frequency above 1 GHz.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Emission Measurements at frequency above 1 GHz.
9. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.
10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
12. Repeat above procedures until all default test channel measured were complete.

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11.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where *FS* = Field Strength

RA = Reading Amplitude

AF = Antenna Factor

CL = Cable Attenuation Factor (Cable Loss)

AG = Amplifier Gain

The limit of the emission level is expressed in dBuV/m, which converts $20 \cdot \log(uV/m)$

Actual FS(dBuV/m) = SPA. Reading level(dBuV) + Factor(dB)

Factor(dB) = Antenna Factor(dBuV/m) + Cable Loss(dB) – Pre_Amplifier Gain(dB)

11.5 Test Results of Radiated Spurious Emissions from 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) & RSS-GEN §6.13.2 was not reported.

11.6 Measurement Result:

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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11.6.1 Radiated Main Measurement Result

LoRa SF7 Internal antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :902.5 MHz

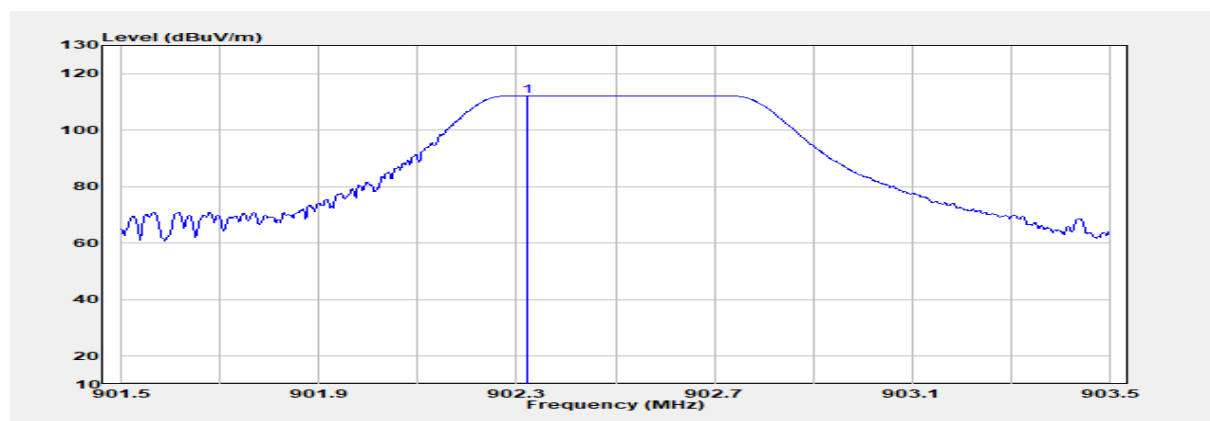
Temp./Humi. :22.1°C/53%

Test Mode :Main

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.320	Peak	117.86	-5.81	112.05	-	-

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :902.5 MHz

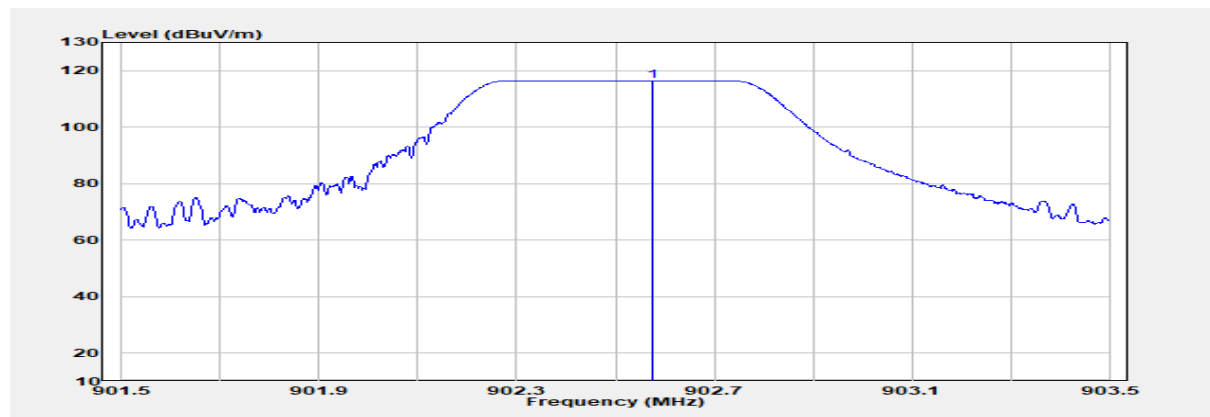
Temp./Humi. :22.1°C/53%

Test Mode :Main

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.576	Peak	122.30	-5.80	116.50	-	-

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LoRa SF7 External antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :926.5 MHz

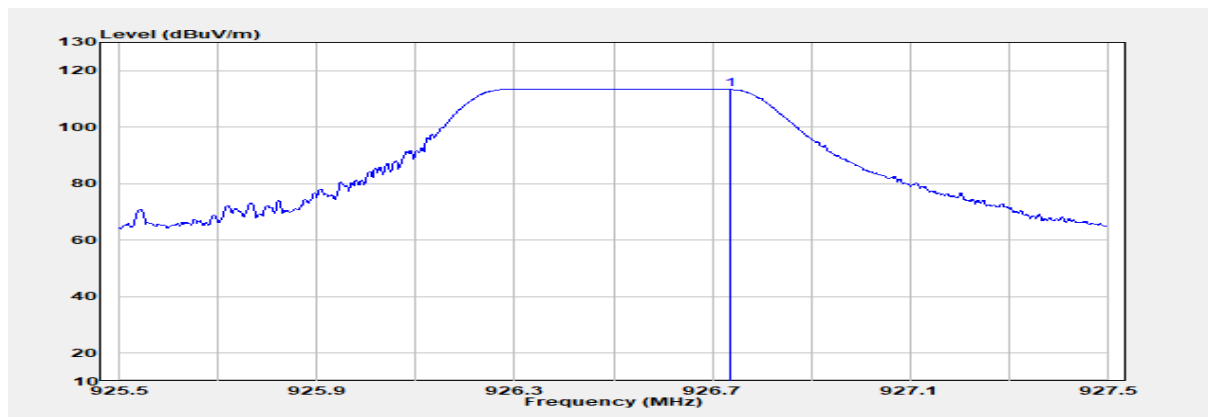
Temp./Humi. :22.4°C/54%

Test Mode :Main

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
926.738	Peak	118.18	-4.87	113.31	-	-

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :926.5 MHz

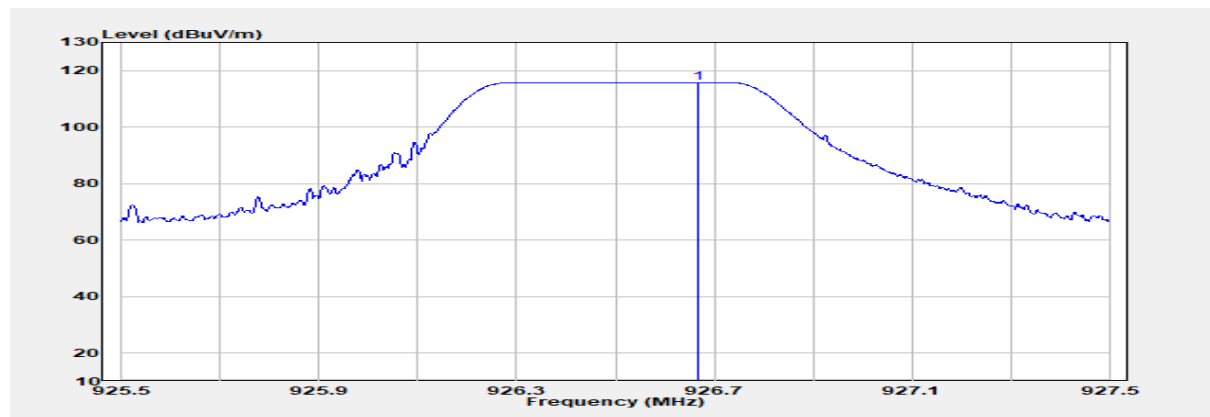
Temp./Humi. :22.4°C/54%

Test Mode :Main

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
926.666	Peak	120.53	-4.87	115.66	-	-

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SGS Taiwan Ltd.

No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan/新北市五股區新北產業園區五工路 134 號

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LoRa SF11 Internal antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :902.5 MHz

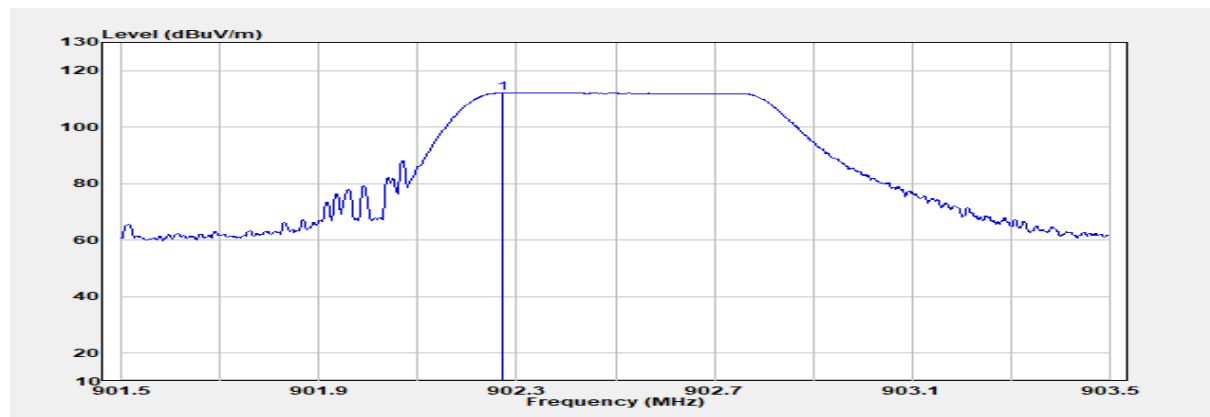
Temp./Humi. :22.1°C/53%

Test Mode :Main

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.270	Peak	117.79	-5.81	111.98	-	-

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :902.5 MHz

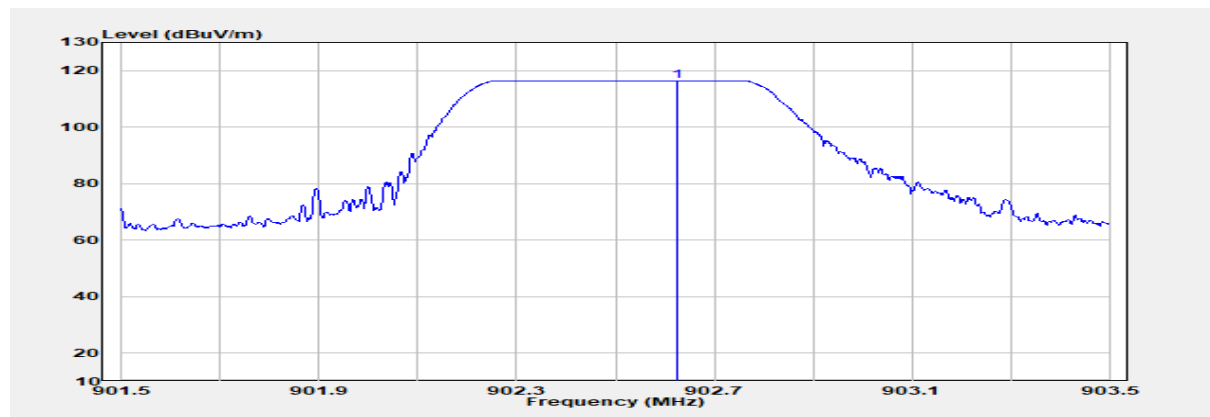
Temp./Humi. :22.1°C/53%

Test Mode :Main

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.626	Peak	122.26	-5.80	116.46	-	-

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LoRa SF11 External antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :926.5 MHz

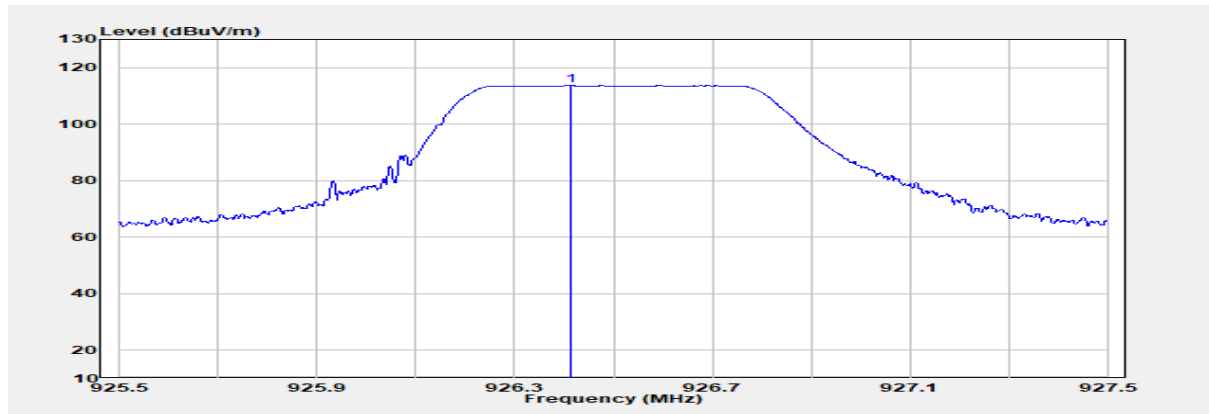
Temp./Humi. :22.4°C/54%

Test Mode :Main

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
926.414	Peak	118.48	-4.87	113.61	-	-

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :926.5 MHz

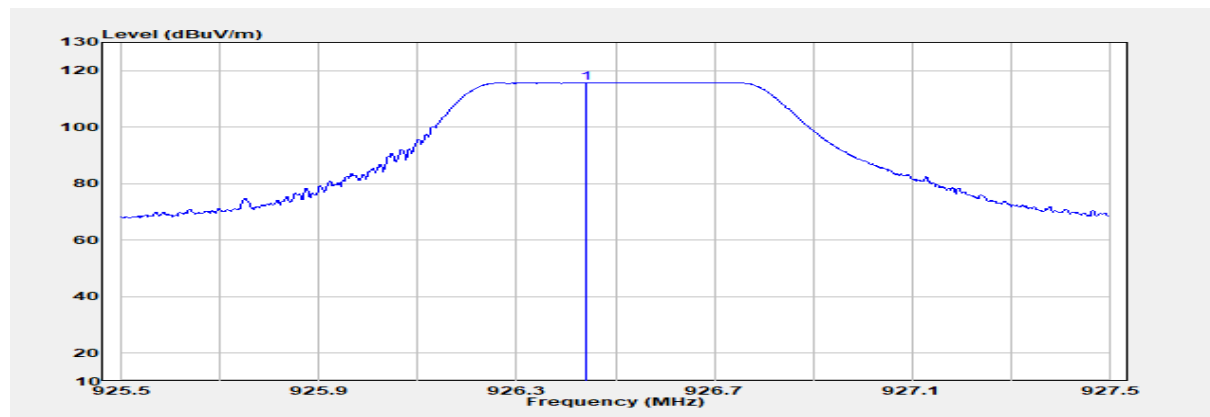
Temp./Humi. :22.4°C/54%

Test Mode :Main

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
926.440	Peak	120.53	-4.87	115.65	-	-

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11.6.2 Band Edge Measurement Result

LoRa SF7 Internal antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :902.5 MHz

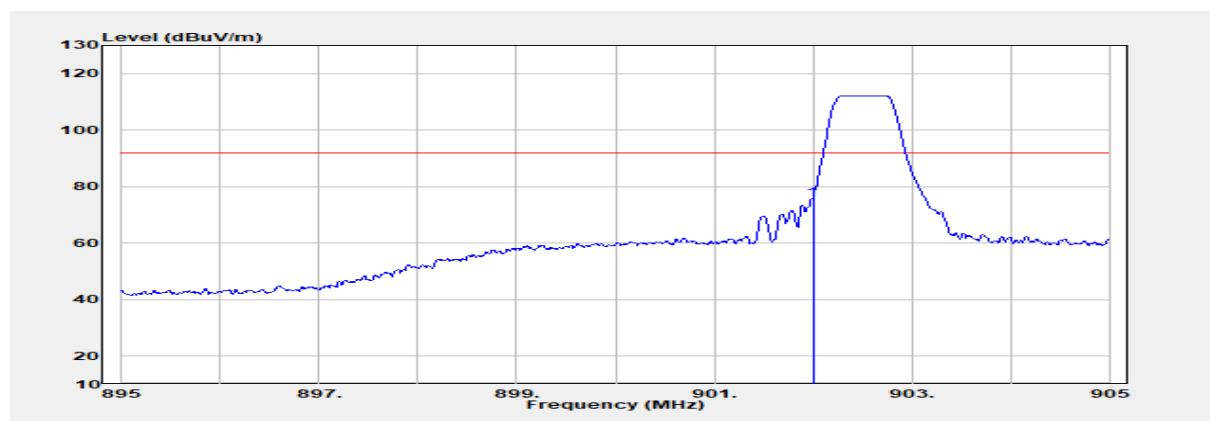
Temp./Humi. :22.1°C/53%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dB μ V	dB	dB μ V/m	dB μ V/m	dB
902.000	Peak	81.36	-5.82	75.54	92.05	-16.51

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :902.5 MHz

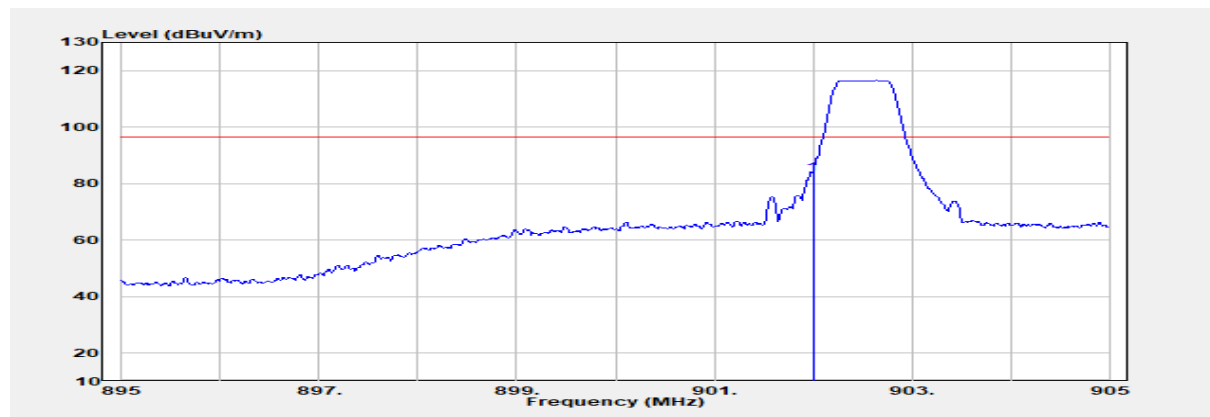
Temp./Humi. :22.1°C/53%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.000	Peak	89.33	-5.82	83.50	96.50	-13.00

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

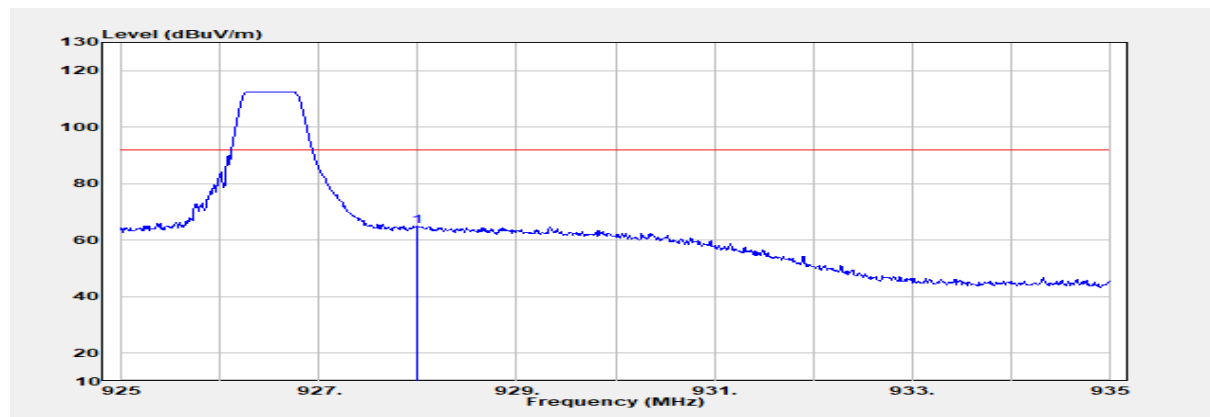
Temp./Humi. :22.1°C/53%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dB μ V	dB	dB μ V/m	dB μ V/m	dB
928.000	Peak	69.91	-4.86	65.06	92.05	-26.99

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

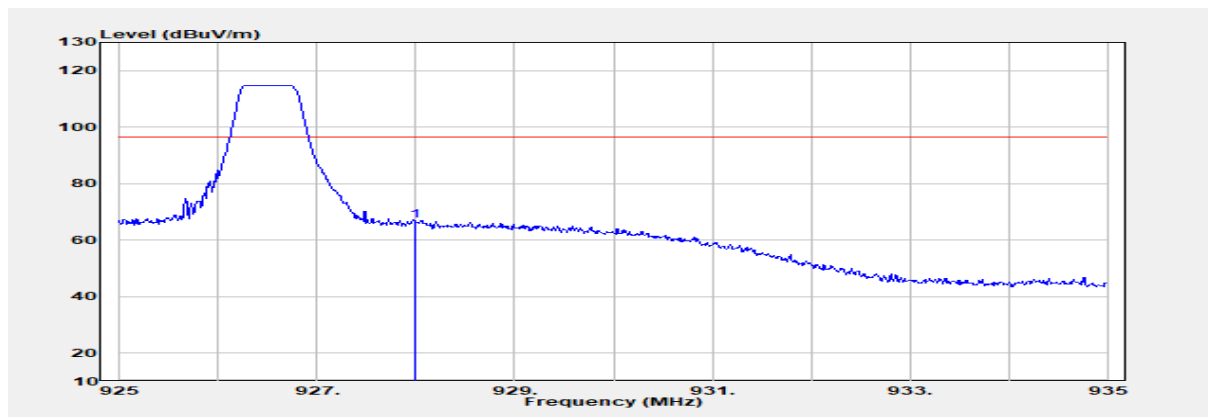
Temp./Humi. :22.1°C/53%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	71.76	-4.86	66.91	96.50	-29.59

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LoRa SF7 External antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :902.5 MHz

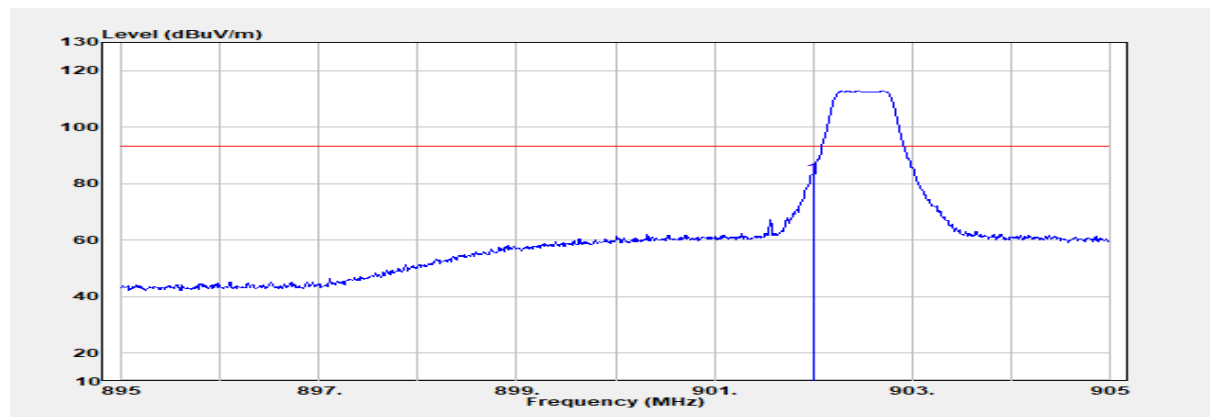
Temp./Humi. :22.4°C/54%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dB μ V	dB	dB μ V/m	dB μ V/m	dB
902.000	Peak	89.06	-5.82	83.24	93.31	-10.07

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :902.5 MHz

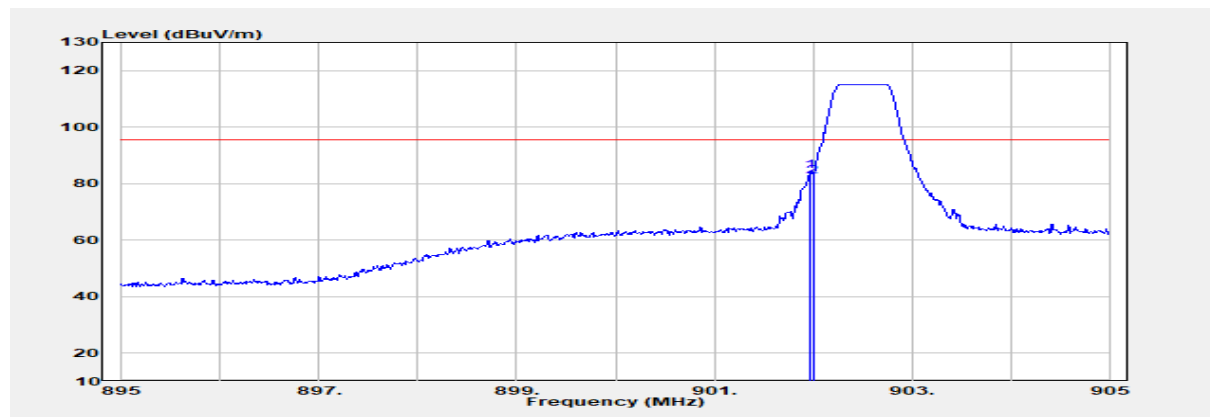
Temp./Humi. :22.4°C/54%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
901.980	Peak	90.41	-5.82	84.59	95.66	-11.07
902.000	Peak	88.20	-5.82	82.37	95.66	-13.29

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :926.5 MHz

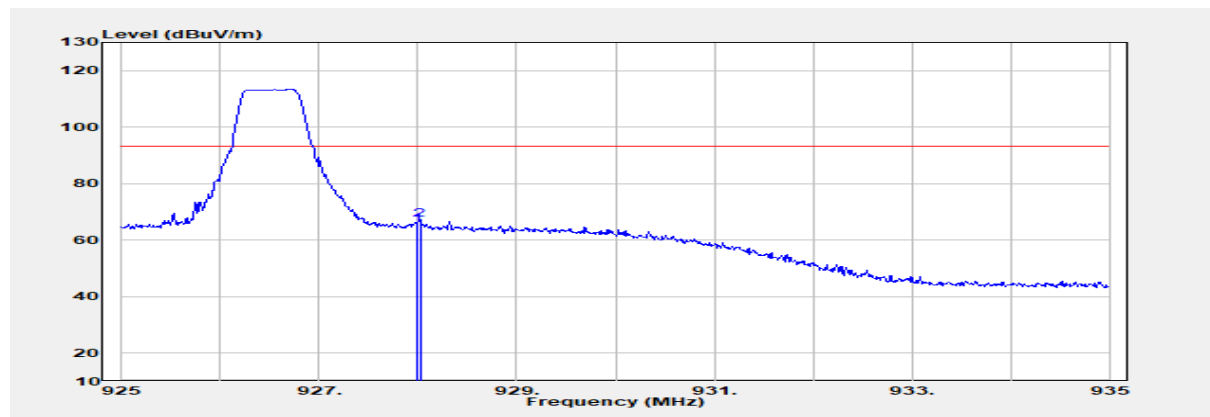
Temp./Humi. :22.4°C/54%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
928.000	Peak	70.26	-4.86	65.40	93.31	-27.91
928.020	Peak	72.25	-4.86	67.40	93.31	-25.91

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :926.5 MHz

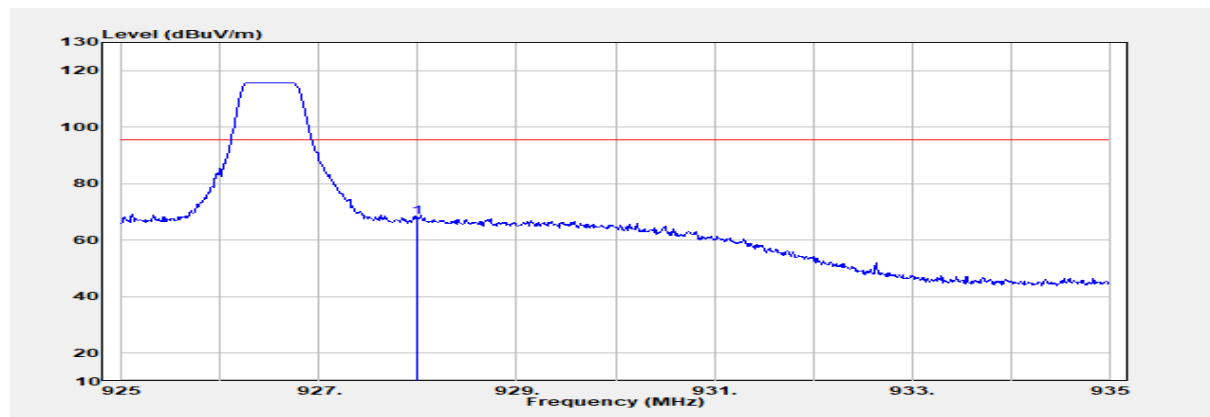
Temp./Humi. :22.4°C/54%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	73.07	-4.86	68.22	95.66	-27.44

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LoRa SF11 Internal antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :902.5 MHz

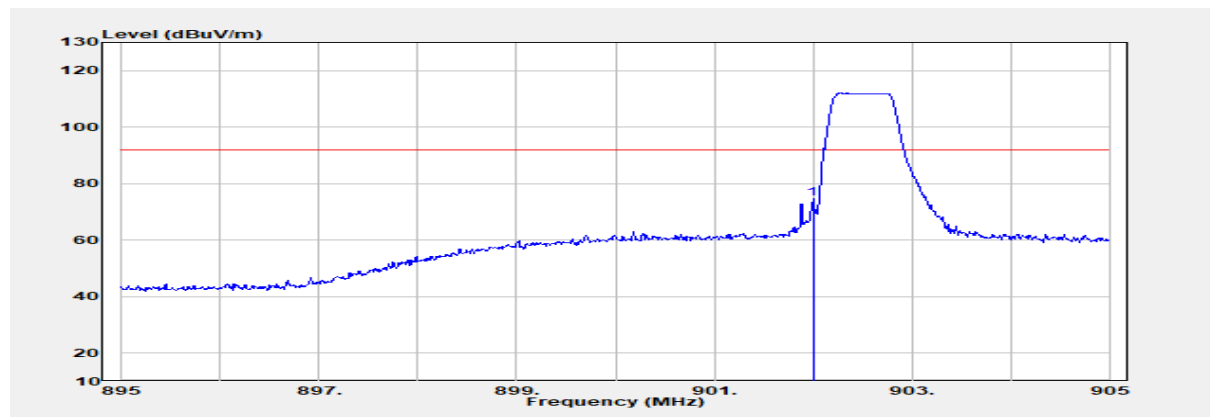
Temp./Humi. :22.1°C/53%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.000	Peak	80.54	-5.82	74.72	91.98	-17.26

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :902.5 MHz

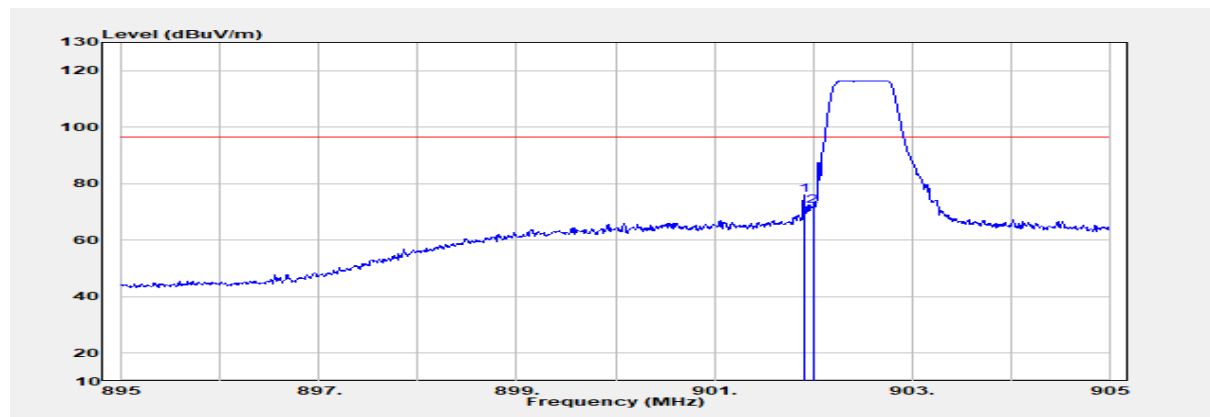
Temp./Humi. :22.1°C/53%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
901.910	Peak	81.84	-5.83	76.01	96.46	-20.45
902.000	Peak	77.81	-5.82	71.99	96.46	-24.47

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

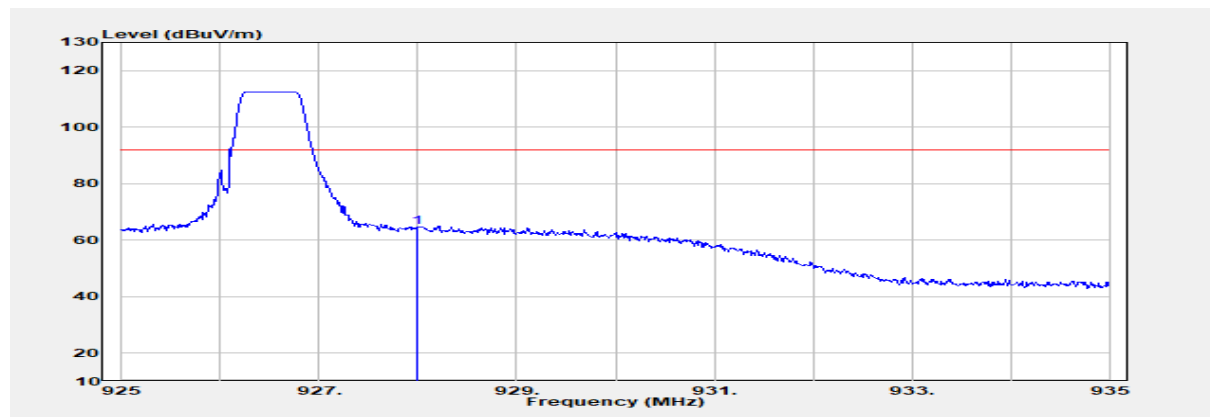
Temp./Humi. :22.1°C/53%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	69.54	-4.86	64.68	91.98	-27.30

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

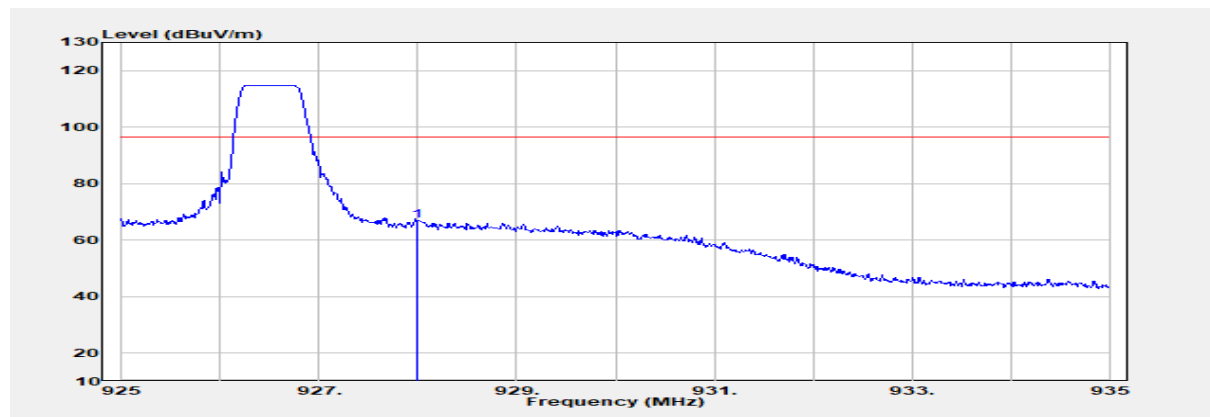
Temp./Humi. :22.1°C/53%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	71.74	-4.86	66.88	96.46	-29.58

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SGS Taiwan Ltd.

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Member of SGS Group

LoRa SF11 External antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :902.5 MHz

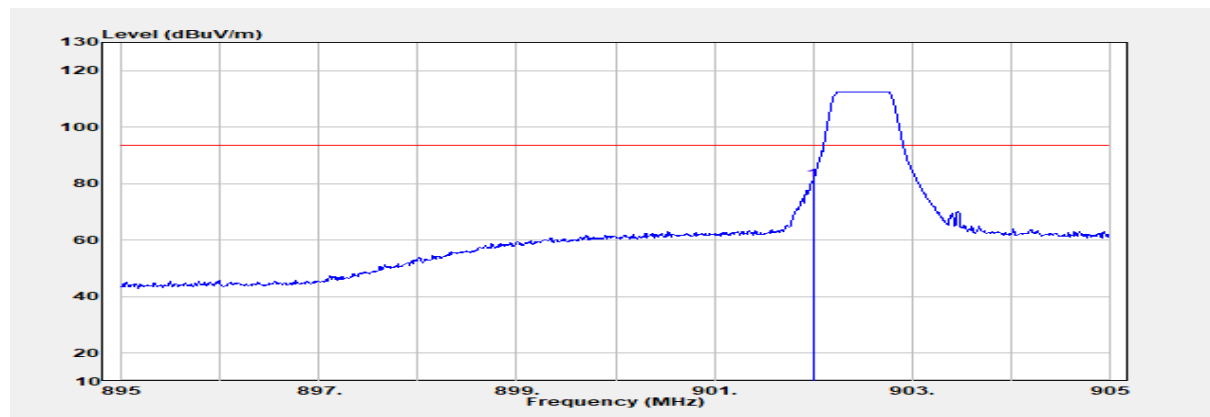
Temp./Humi. :22.4°C/54%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.000	Peak	86.98	-5.82	81.15	93.61	-12.46

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :902.5 MHz

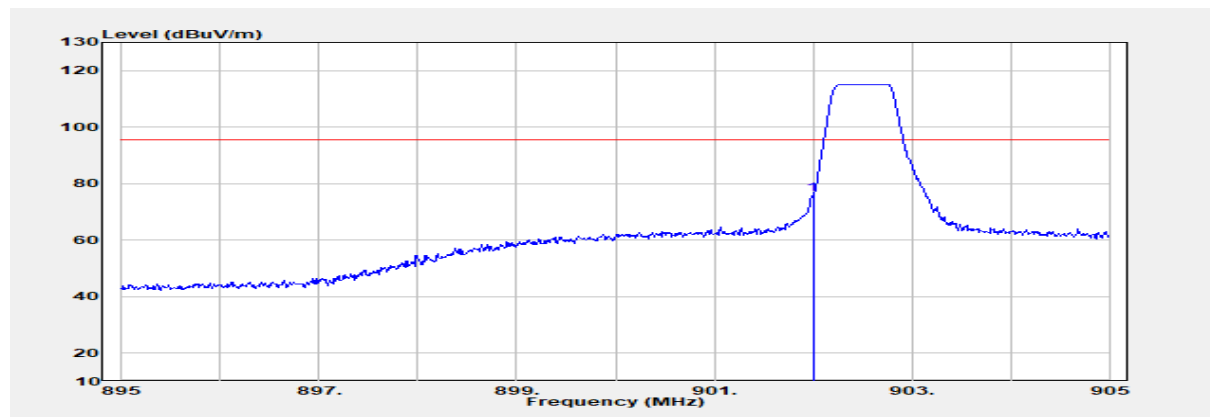
Temp./Humi. :22.4°C/54%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
902.000	Peak	82.02	-5.82	76.20	95.65	-19.45

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :926.5 MHz

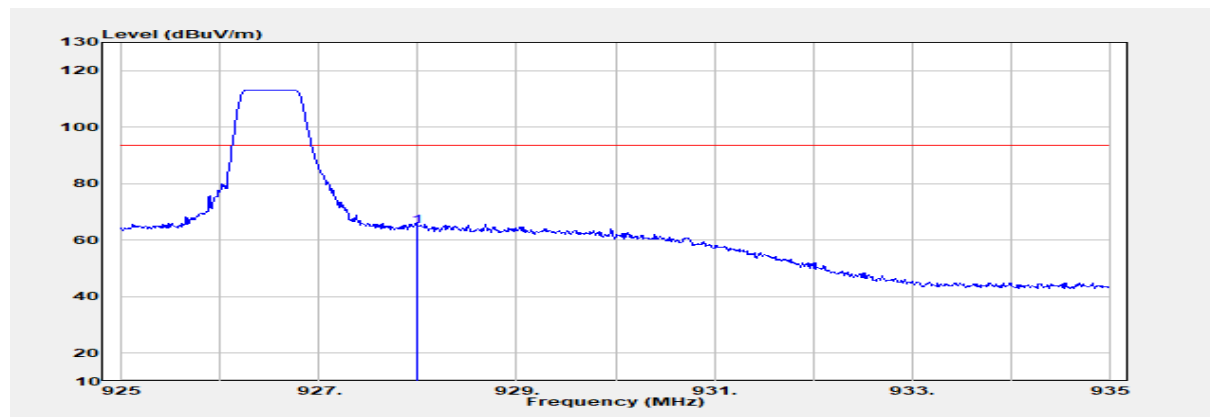
Temp./Humi. :22.4°C/54%

Test Mode :Bandedge

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	69.96	-4.86	65.10	93.61	-28.51

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :926.5 MHz

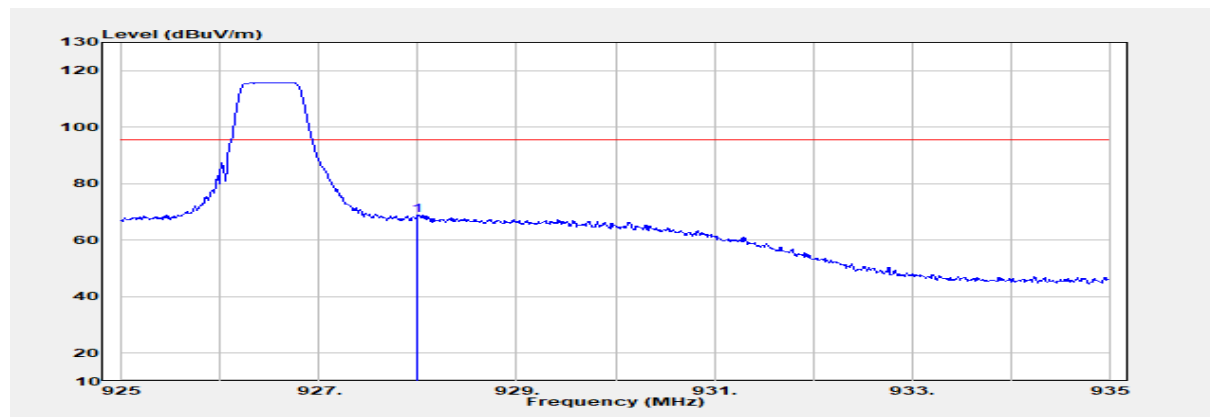
Temp./Humi. :22.4°C/54%

Test Mode :Bandedge

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
928.000	Peak	73.73	-4.86	68.87	95.65	-26.78

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11.6.3 Radiated Spurious Emission

LoRa SF7 Internal antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

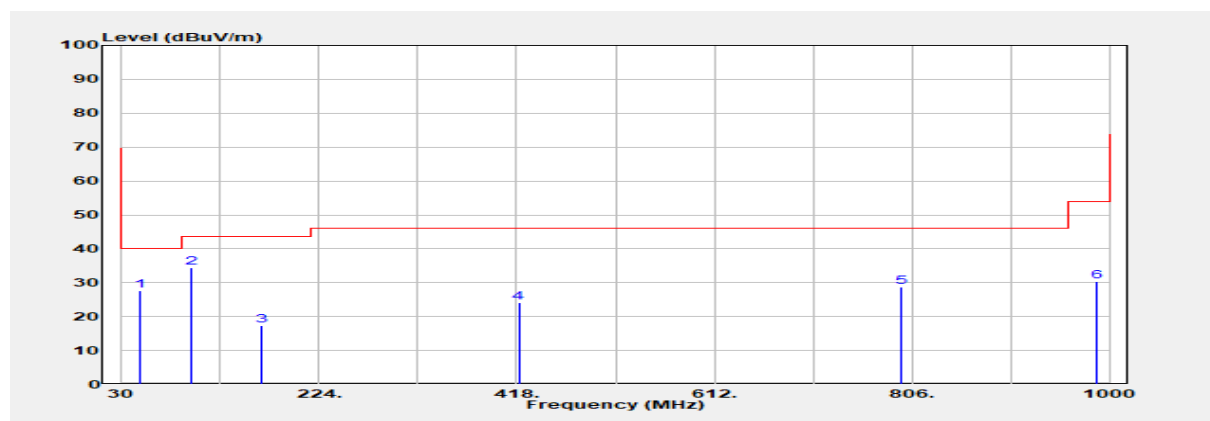
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
47.460	Peak	44.60	-17.09	27.51	40.00	-12.49
98.870	Peak	56.62	-22.25	34.38	43.50	-9.12
167.740	Peak	34.30	-17.06	17.24	43.50	-26.26
419.940	Peak	37.26	-13.06	24.20	46.00	-21.80
795.330	Peak	35.53	-6.71	28.82	46.00	-17.18
987.390	Peak	35.23	-4.81	30.42	54.00	-23.58

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

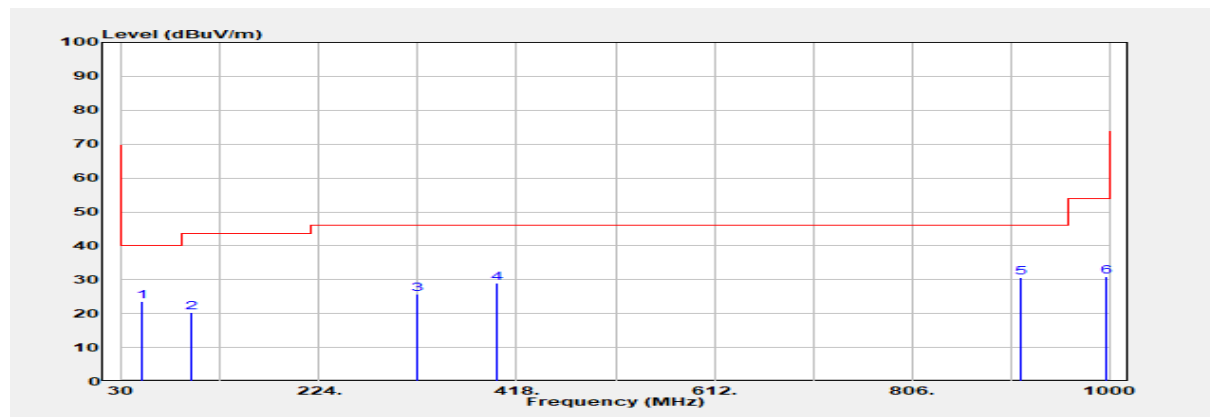
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
50.370	Peak	40.47	-16.96	23.51	40.00	-16.49
98.870	Peak	42.57	-22.25	20.32	43.50	-23.18
320.030	Peak	40.94	-15.13	25.81	46.00	-20.19
397.630	Peak	42.52	-13.62	28.90	46.00	-17.10
912.700	Peak	36.00	-5.39	30.61	46.00	-15.39
997.090	Peak	35.33	-4.54	30.79	54.00	-23.21

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-01

Test Frequency :902.5 MHz

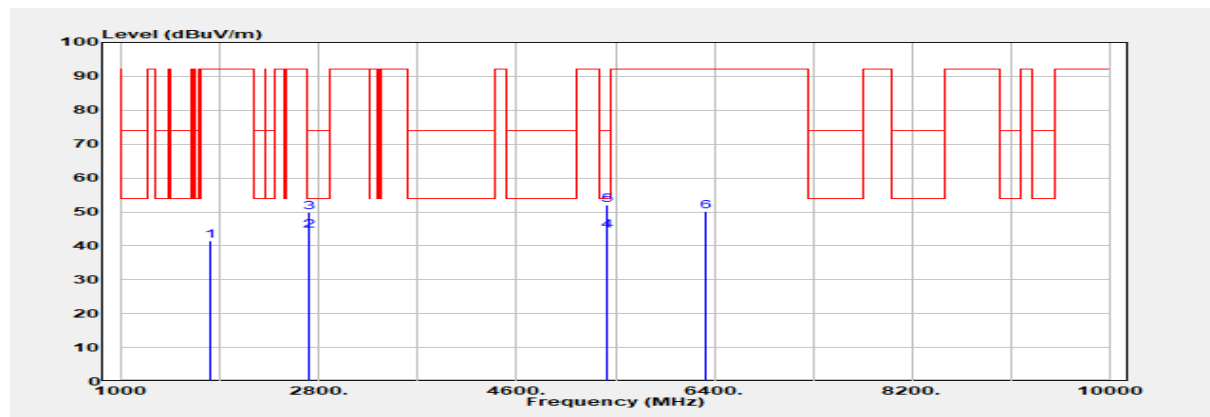
Temp./Humi. :21.7°C/52%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1805.000	Peak	49.34	-7.91	41.43	92.05	-50.62
2707.500	Average	48.00	-3.61	44.39	54.00	-9.61
2707.500	Peak	53.42	-3.61	49.81	74.00	-24.19
5415.000	Average	41.72	2.79	44.51	54.00	-9.49
5415.000	Peak	49.16	2.79	51.95	74.00	-22.05
6317.500	Peak	45.09	5.04	50.13	92.05	-41.92

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-01

Test Frequency :902.5 MHz

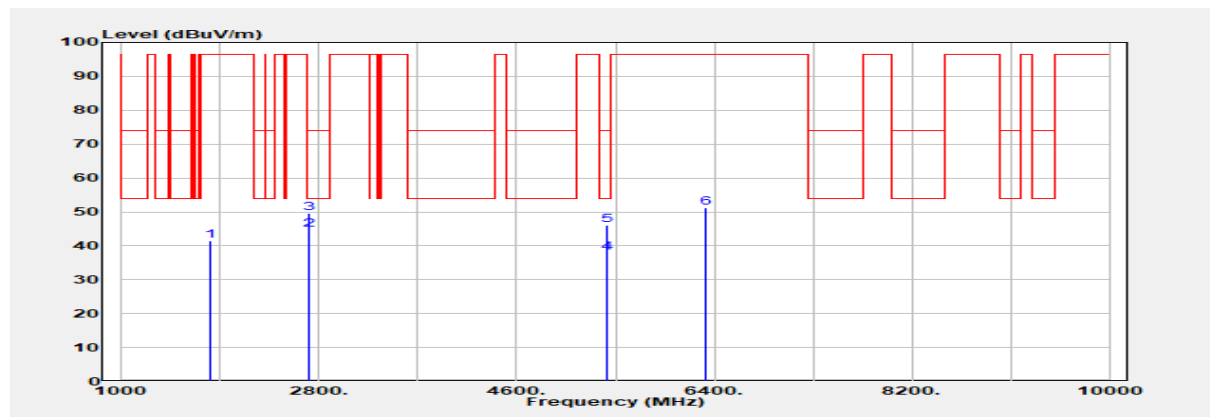
Temp./Humi. :21.7°C/52%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
1805.000	Peak	49.40	-7.91	41.49	96.50	-55.01
2707.500	Average	48.33	-3.61	44.72	54.00	-9.28
2707.500	Peak	53.29	-3.61	49.68	74.00	-24.32
5415.000	Average	35.04	2.79	37.83	54.00	-16.17
5415.000	Peak	43.38	2.79	46.17	74.00	-27.83
6317.500	Peak	46.15	5.04	51.19	96.50	-45.31

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

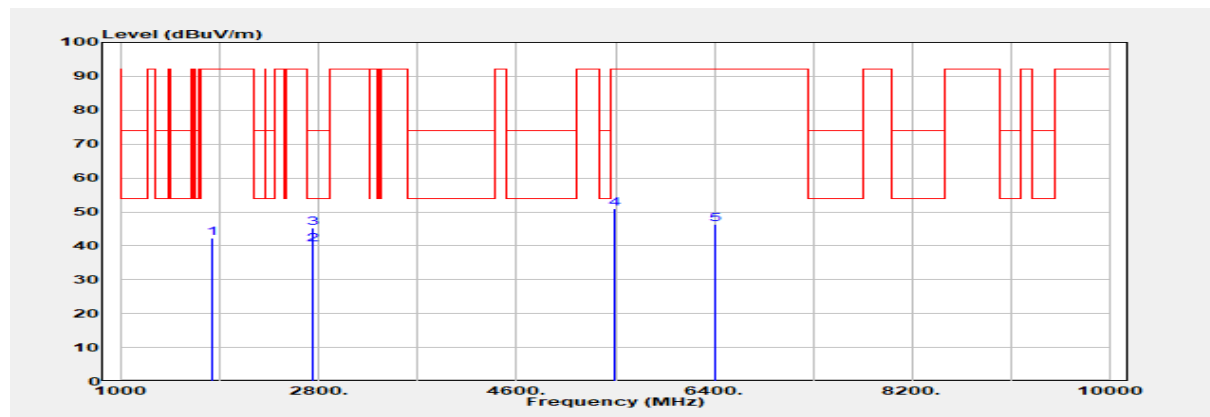
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1829.000	Peak	50.06	-7.87	42.19	92.05	-49.86
2743.500	Average	44.46	-3.95	40.51	54.00	-13.49
2743.500	Peak	49.24	-3.95	45.29	74.00	-28.71
5487.000	Peak	48.79	2.10	50.89	92.05	-41.16
6401.500	Peak	40.34	6.01	46.34	92.05	-45.71

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

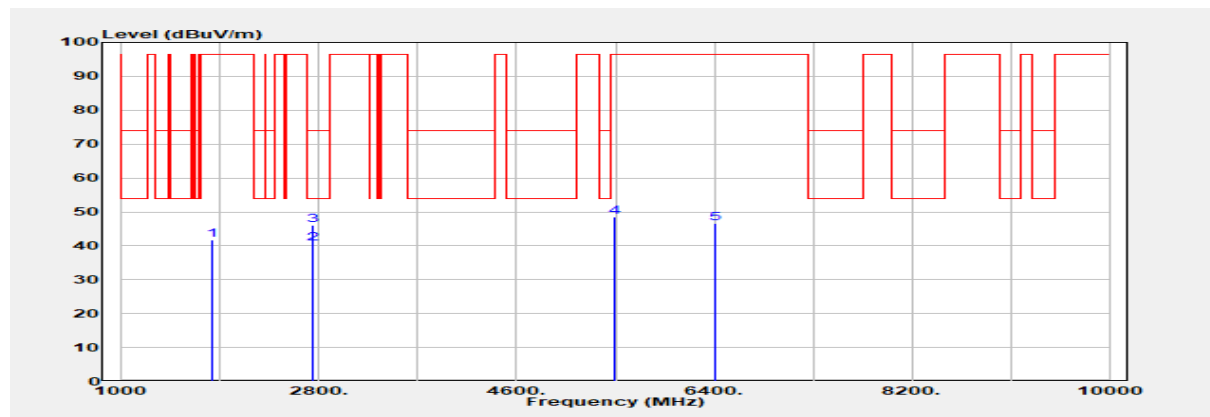
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
1829.000	Peak	49.66	-7.87	41.78	96.50	-54.72
2743.500	Average	44.55	-3.95	40.60	54.00	-13.40
2743.500	Peak	50.07	-3.95	46.12	74.00	-27.88
5487.000	Peak	46.36	2.10	48.46	96.50	-48.04
6401.500	Peak	40.54	6.01	46.55	96.50	-49.95

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

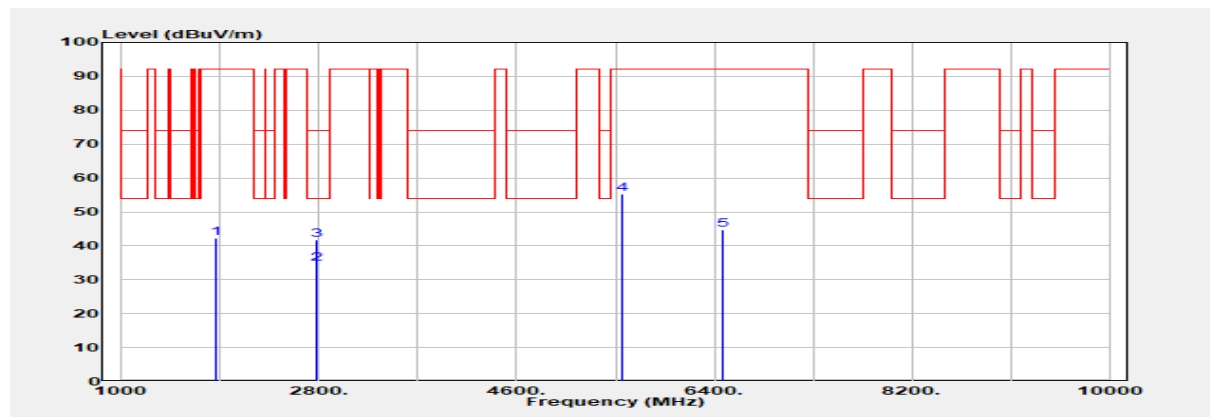
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1853.000	Peak	50.05	-7.84	42.21	92.05	-49.84
2779.500	Average	38.72	-4.08	34.64	54.00	-19.36
2779.500	Peak	45.89	-4.08	41.80	74.00	-32.20
5559.000	Peak	53.38	2.02	55.41	92.05	-36.64
6485.500	Peak	39.28	5.38	44.66	92.05	-47.39

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

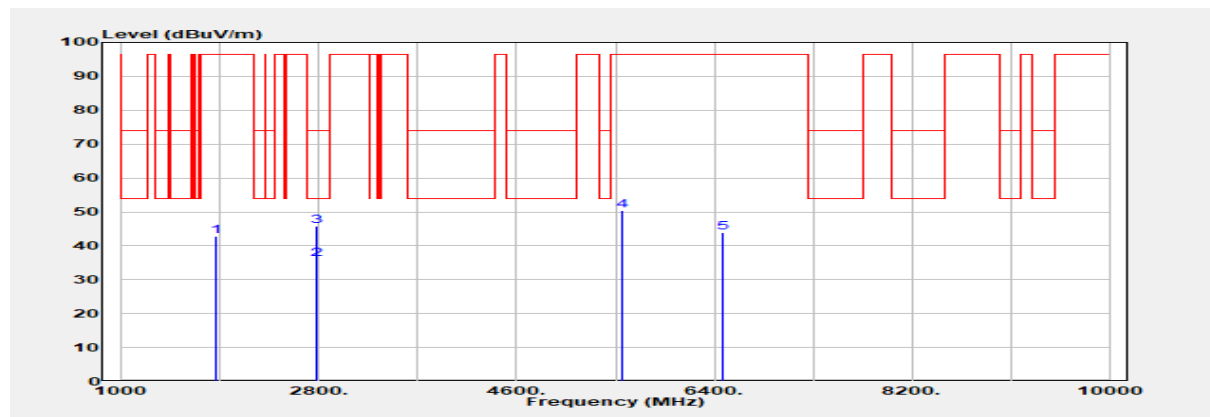
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
1853.000	Peak	50.79	-7.84	42.95	96.50	-53.55
2779.500	Average	40.16	-4.08	36.08	54.00	-17.92
2779.500	Peak	49.83	-4.08	45.75	74.00	-28.25
5559.000	Peak	48.51	2.02	50.54	96.50	-45.96
6485.500	Peak	38.56	5.38	43.94	96.50	-52.56

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LoRa SF7 External antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :914.5 MHz

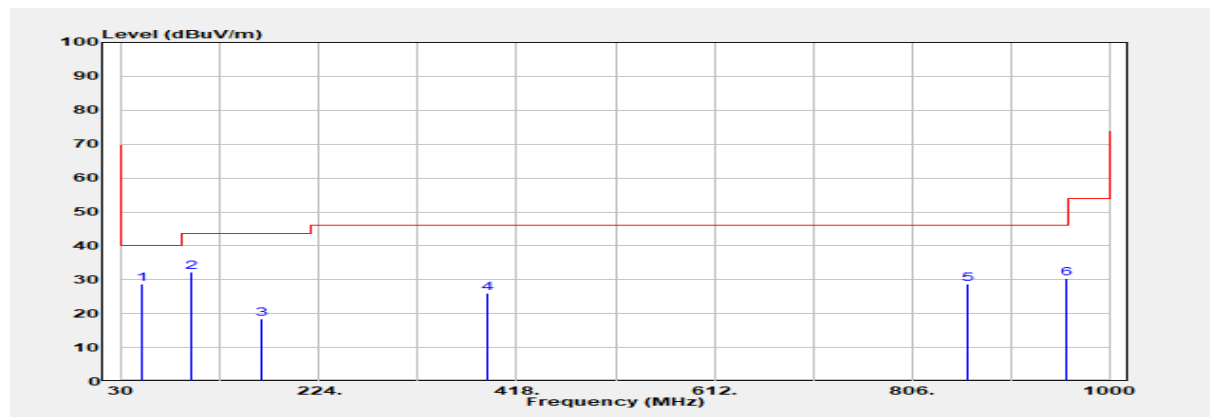
Temp./Humi. :22.4°C/54%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
50.370	Peak	45.64	-16.96	28.68	40.00	-11.32
97.900	Peak	54.66	-22.37	32.29	43.50	-11.21
167.740	Peak	35.51	-17.06	18.45	43.50	-25.05
389.870	Peak	39.85	-13.76	26.09	46.00	-19.91
861.290	Peak	35.02	-6.19	28.83	46.00	-17.17
958.290	Peak	34.78	-4.31	30.47	46.00	-15.53

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :914.5 MHz

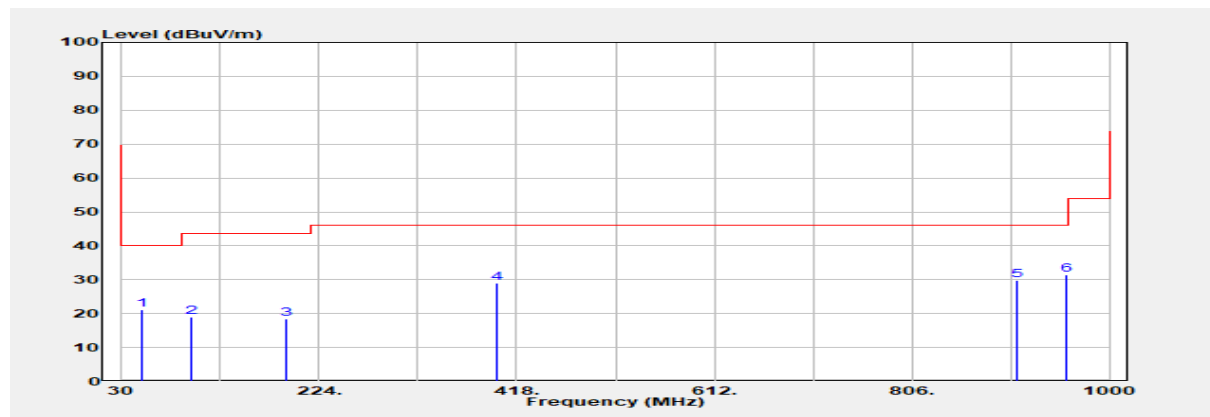
Temp./Humi. :22.4°C/54%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
50.370	Peak	38.05	-16.96	21.09	40.00	-18.91
97.900	Peak	41.34	-22.37	18.97	43.50	-24.53
191.990	Peak	37.71	-19.37	18.34	43.50	-25.16
397.630	Peak	42.57	-13.62	28.94	46.00	-17.06
909.790	Peak	35.47	-5.54	29.93	46.00	-16.07
957.320	Peak	35.68	-4.35	31.33	46.00	-14.67

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-01

Test Frequency :902.5 MHz

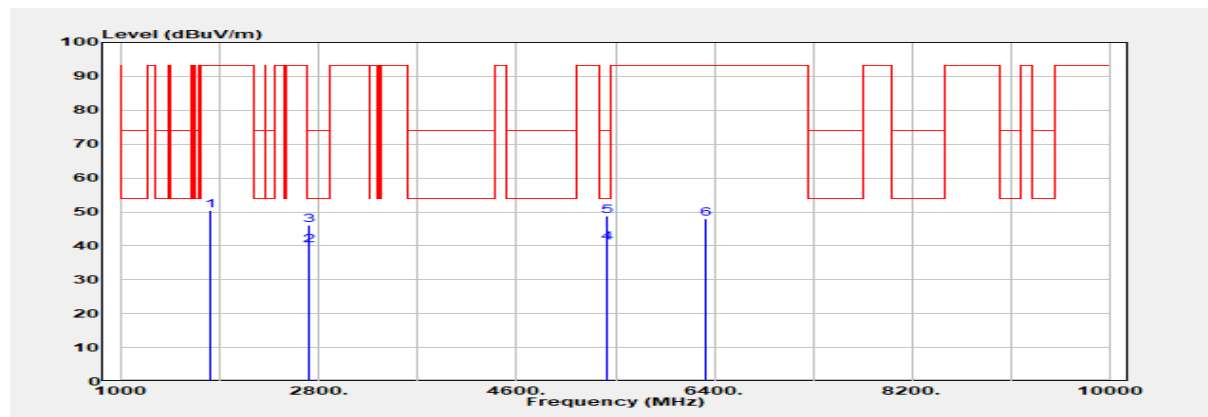
Temp./Humi. :21.7°C/52%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1805.000	Peak	58.31	-7.91	50.40	93.31	-42.91
2707.500	Average	43.82	-3.61	40.21	54.00	-13.79
2707.500	Peak	49.81	-3.61	46.20	74.00	-27.80
5415.000	Average	38.15	2.79	40.95	54.00	-13.05
5415.000	Peak	45.99	2.79	48.78	74.00	-25.22
6317.500	Peak	42.95	5.04	47.98	93.31	-45.33

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-01

Test Frequency :902.5 MHz

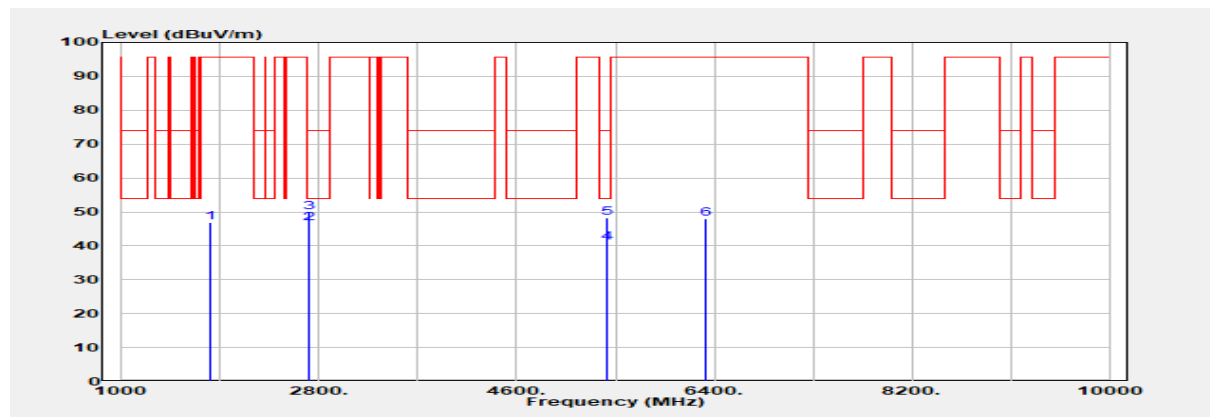
Temp./Humi. :21.7°C/52%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1805.000	Peak	54.84	-7.91	46.92	95.66	-48.74
2707.500	Average	50.27	-3.61	46.66	54.00	-7.34
2707.500	Peak	53.43	-3.61	49.82	74.00	-24.18
5415.000	Average	38.09	2.79	40.88	54.00	-13.12
5415.000	Peak	45.50	2.79	48.29	74.00	-25.71
6317.500	Peak	43.04	5.04	48.08	95.66	-47.58

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

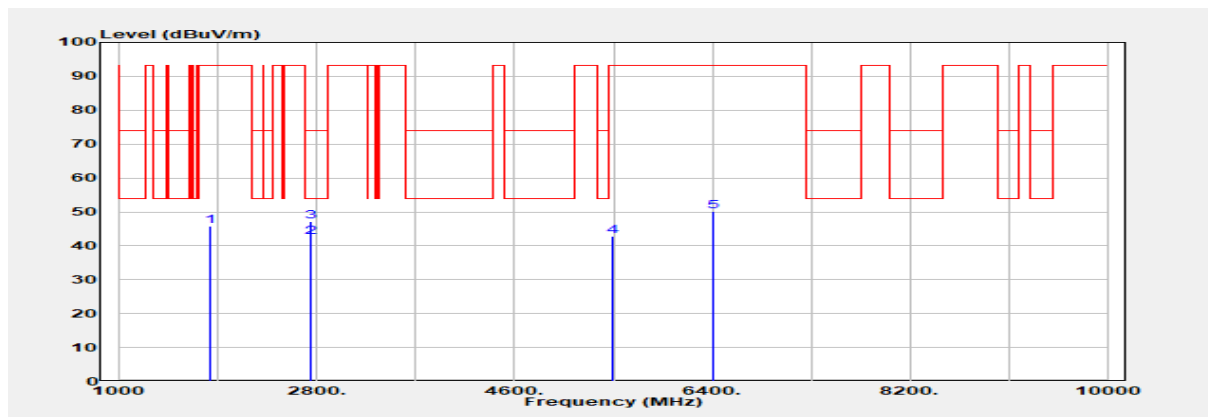
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1829.000	Peak	53.55	-7.87	45.67	93.31	-47.64
2743.500	Average	46.56	-3.95	42.61	54.00	-11.39
2743.500	Peak	51.16	-3.95	47.20	74.00	-26.80
5487.000	Peak	40.85	2.10	42.95	93.31	-50.36
6401.500	Peak	44.07	6.01	50.08	93.31	-43.23

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

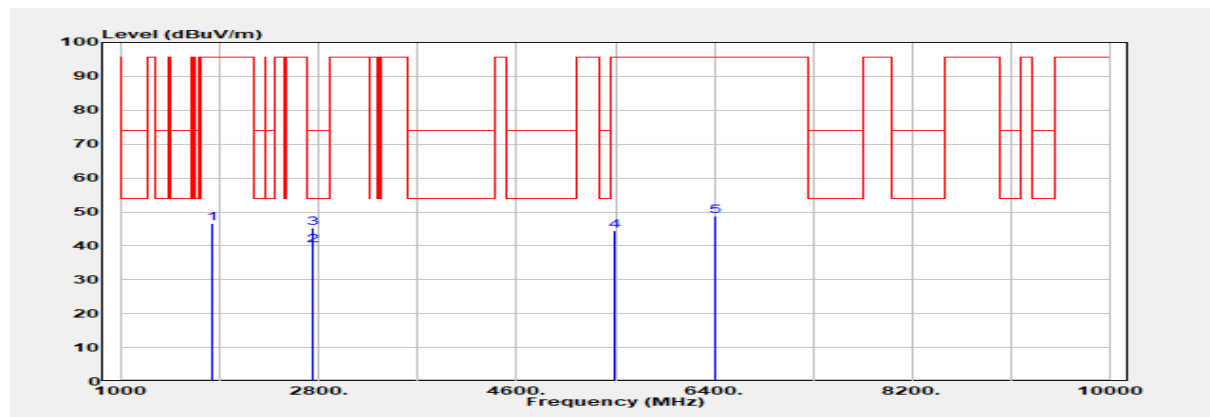
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1829.000	Peak	54.40	-7.87	46.53	95.66	-49.13
2743.500	Average	44.17	-3.95	40.22	54.00	-13.78
2743.500	Peak	49.11	-3.95	45.16	74.00	-28.84
5487.000	Peak	42.30	2.10	44.40	95.66	-51.26
6401.500	Peak	42.85	6.01	48.86	95.66	-46.80

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

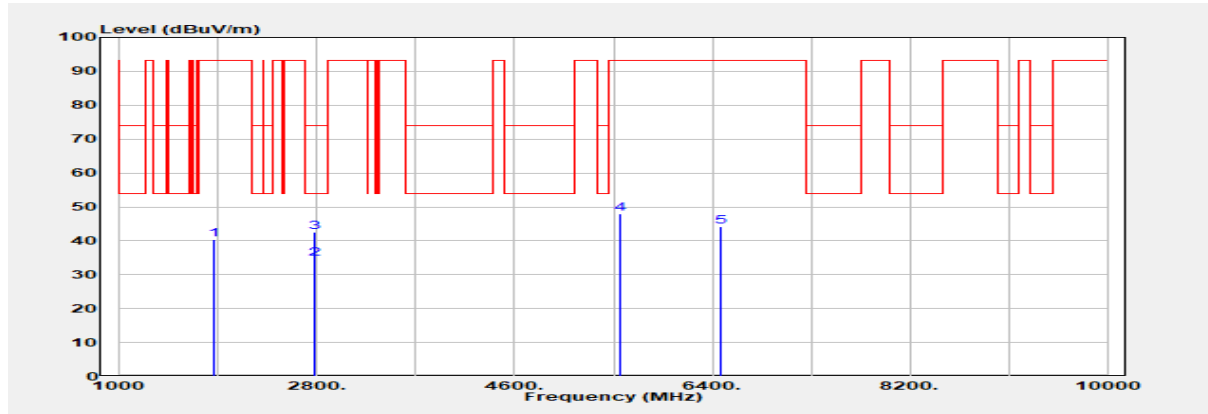
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1853.000	Peak	48.16	-7.84	40.32	93.31	-52.99
2779.500	Average	38.87	-4.08	34.79	54.00	-19.21
2779.500	Peak	46.66	-4.08	42.58	74.00	-31.42
5559.000	Peak	46.04	2.02	48.06	93.31	-45.25
6485.500	Peak	38.72	5.38	44.10	93.31	-49.21

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

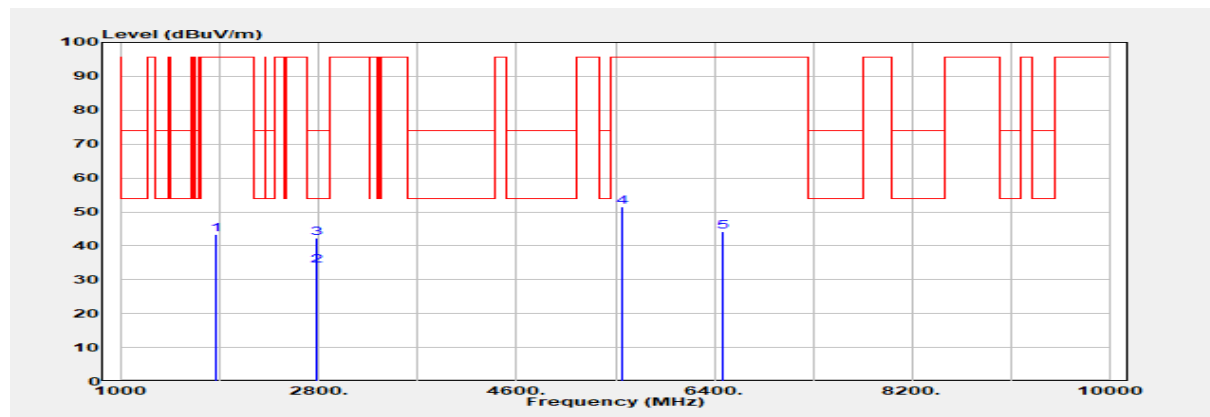
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dB μ V	dB	dB μ V/m	dB μ V/m	dB
1853.000	Peak	51.12	-7.84	43.28	95.66	-52.38
2779.500	Average	38.34	-4.08	34.26	54.00	-19.74
2779.500	Peak	46.43	-4.08	42.35	74.00	-31.65
5559.000	Peak	49.50	2.02	51.52	95.66	-44.14
6485.500	Peak	38.77	5.38	44.15	95.66	-51.51

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LoRa SF11 Internal antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

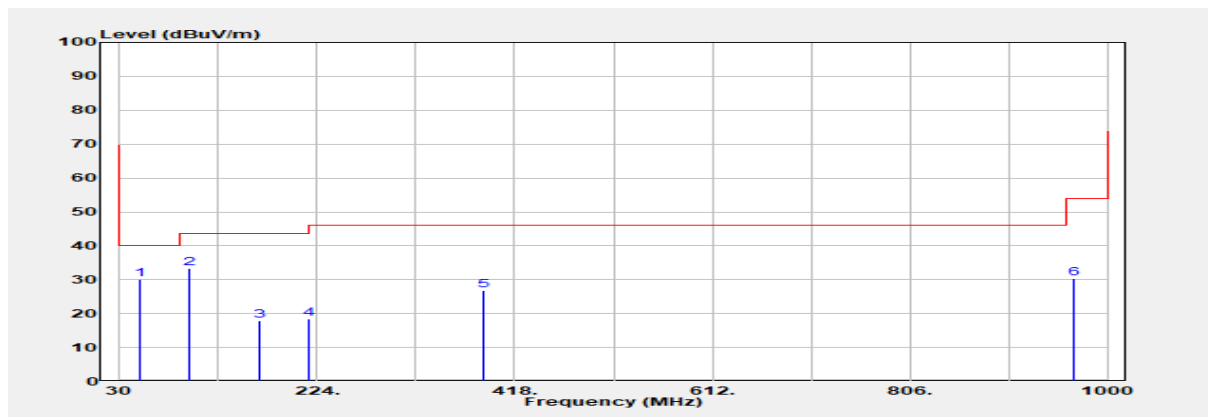
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
50.370	Peak	47.08	-16.96	30.12	40.00	-9.88
98.870	Peak	55.71	-22.25	33.47	43.50	-10.03
167.740	Peak	34.97	-17.06	17.91	43.50	-25.59
216.240	Peak	38.10	-19.75	18.36	46.00	-27.64
387.930	Peak	40.62	-13.74	26.88	46.00	-19.12
967.990	Peak	34.91	-4.58	30.33	54.00	-23.67

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

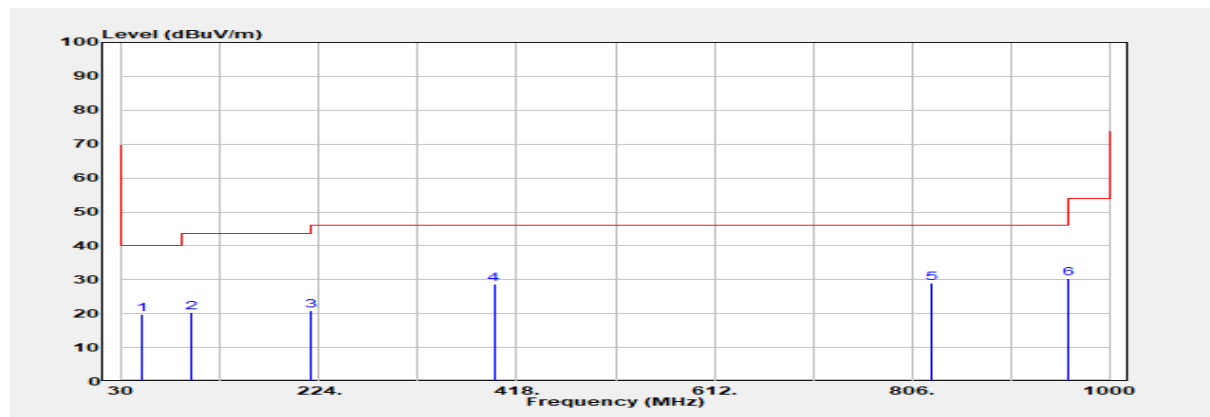
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
50.370	Peak	36.81	-16.96	19.85	40.00	-20.15
98.870	Peak	42.67	-22.25	20.42	43.50	-23.08
216.240	Peak	40.64	-19.75	20.89	46.00	-25.11
395.690	Peak	42.21	-13.61	28.61	46.00	-17.39
825.400	Peak	35.37	-6.30	29.07	46.00	-16.93
960.230	Peak	34.53	-4.25	30.28	54.00	-23.72

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-01

Test Frequency :902.5 MHz

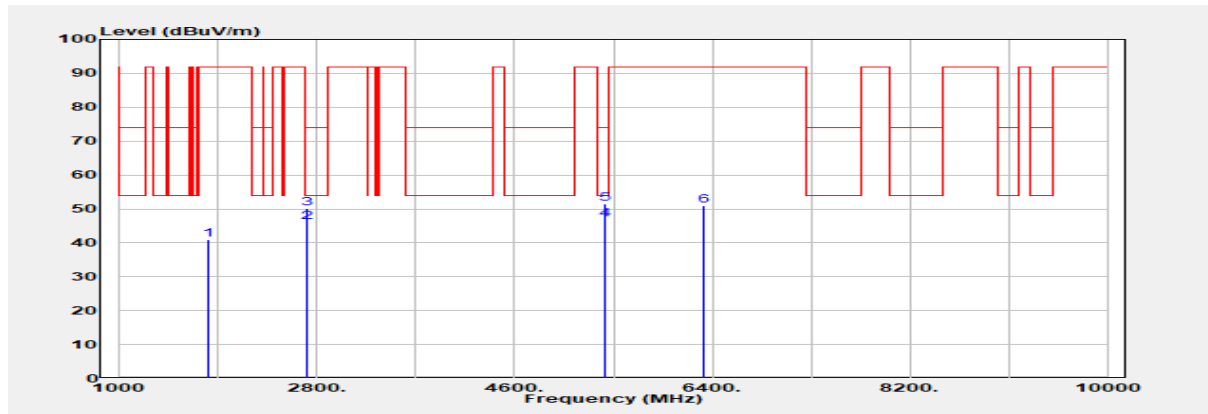
Temp./Humi. :21.7°C/52%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1805.000	Peak	48.76	-7.91	40.85	91.98	-51.13
2707.500	Average	49.73	-3.61	46.12	54.00	-7.88
2707.500	Peak	53.64	-3.61	50.03	74.00	-23.97
5415.000	Average	44.01	2.79	46.80	54.00	-7.20
5415.000	Peak	48.74	2.79	51.53	74.00	-22.47
6317.500	Peak	45.82	5.04	50.85	91.98	-41.13

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-01

Test Frequency :902.5 MHz

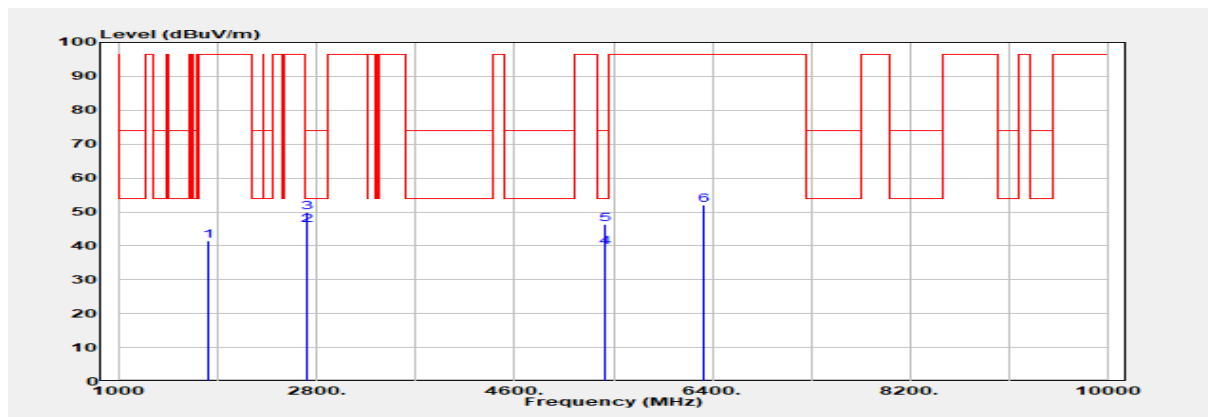
Temp./Humi. :21.7°C/52%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
1805.000	Peak	49.46	-7.91	41.55	96.46	-54.91
2707.500	Average	49.71	-3.61	46.10	54.00	-7.90
2707.500	Peak	53.48	-3.61	49.87	74.00	-24.13
5415.000	Average	36.86	2.79	39.65	54.00	-14.35
5415.000	Peak	43.51	2.79	46.30	74.00	-27.70
6317.500	Peak	46.98	5.04	52.01	96.46	-44.45

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

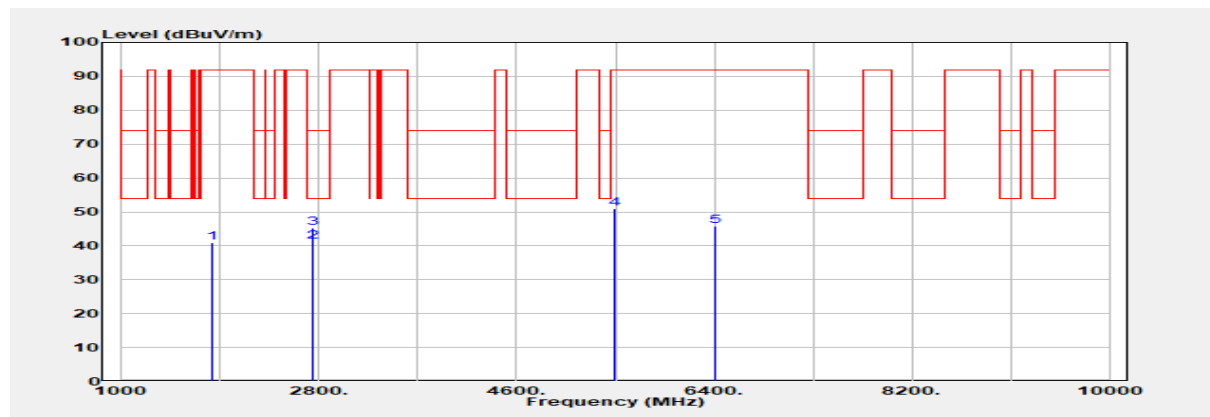
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1829.000	Peak	48.85	-7.87	40.98	91.98	-51.00
2743.500	Average	45.02	-3.95	41.06	54.00	-12.94
2743.500	Peak	49.11	-3.95	45.15	74.00	-28.85
5487.000	Peak	48.84	2.10	50.93	91.98	-41.05
6401.500	Peak	39.82	6.01	45.82	91.98	-46.16

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

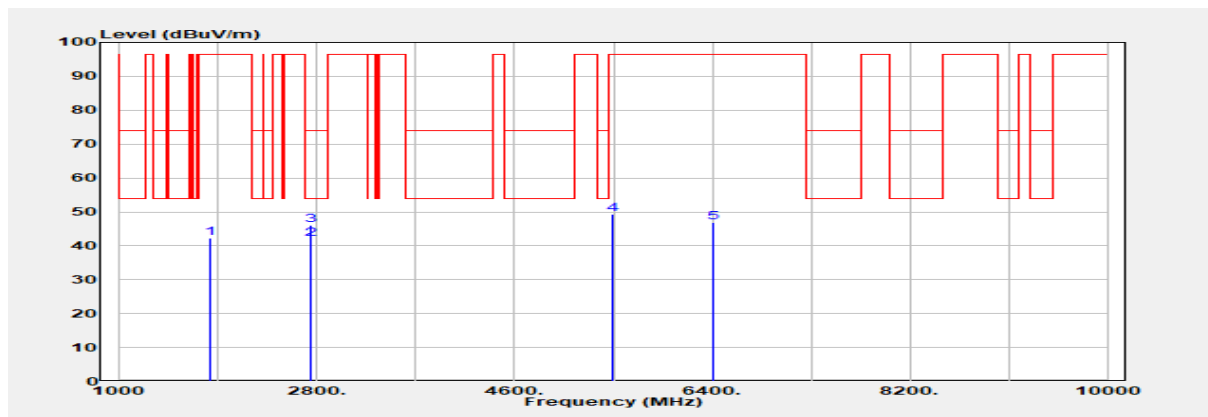
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
1829.000	Peak	50.10	-7.87	42.23	96.46	-54.23
2743.500	Average	46.03	-3.95	42.07	54.00	-11.93
2743.500	Peak	50.04	-3.95	46.09	74.00	-27.91
5487.000	Peak	47.16	2.10	49.26	96.46	-47.20
6401.500	Peak	40.99	6.01	46.99	96.46	-49.47

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

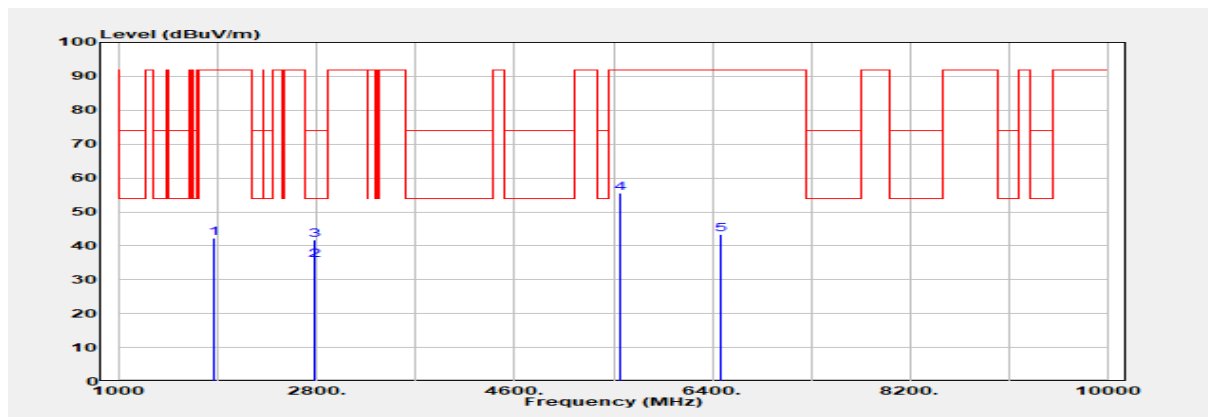
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
1853.000	Peak	50.10	-7.84	42.27	91.98	-49.71
2779.500	Average	39.75	-4.08	35.67	54.00	-18.33
2779.500	Peak	45.89	-4.08	41.81	74.00	-32.19
5559.000	Peak	53.43	2.02	55.46	91.98	-36.52
6485.500	Peak	38.08	5.38	43.47	91.98	-48.51

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

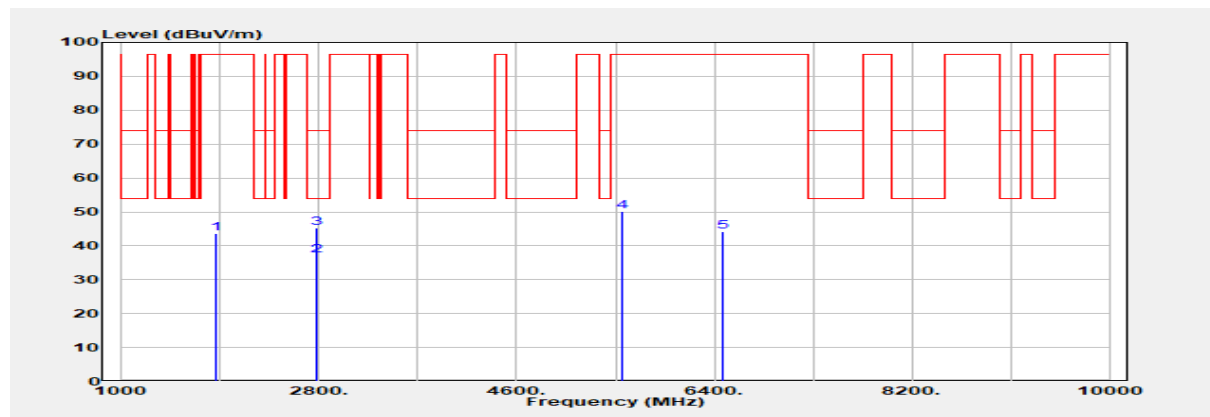
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
1853.000	Peak	51.37	-7.84	43.53	96.46	-52.93
2779.500	Average	41.22	-4.08	37.14	54.00	-16.86
2779.500	Peak	49.28	-4.08	45.19	74.00	-28.81
5559.000	Peak	48.02	2.02	50.04	96.46	-46.42
6485.500	Peak	38.68	5.38	44.06	96.46	-52.40

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LoRa SF11 External antenna

Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-04

Test Frequency :914.5 MHz

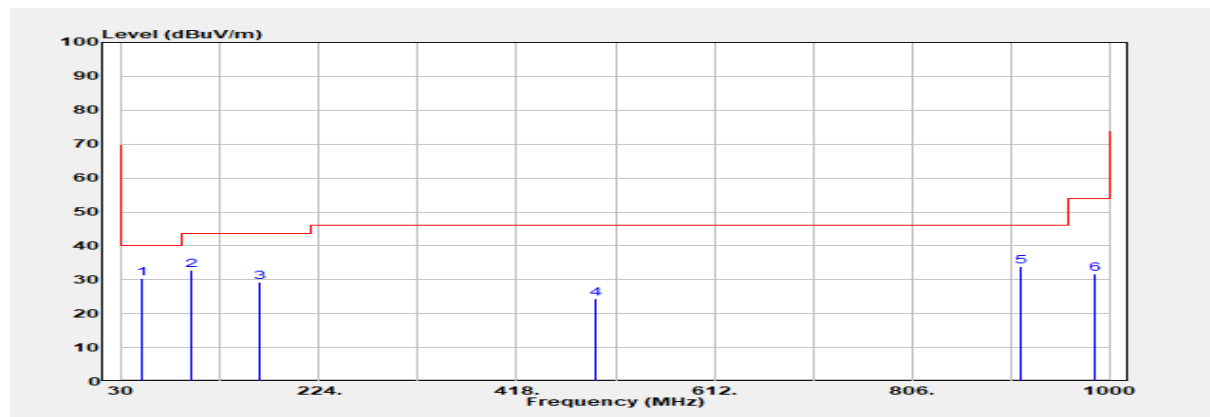
Temp./Humi. :22.4°C/54%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
50.370	Peak	47.44	-16.96	30.48	40.00	-9.52
98.870	Peak	54.91	-22.25	32.67	43.50	-10.83
165.800	Peak	46.20	-16.90	29.30	43.50	-14.20
494.630	Peak	36.14	-11.66	24.48	46.00	-21.52
913.670	Peak	39.28	-5.34	33.95	46.00	-12.05
985.450	Peak	36.52	-4.79	31.74	54.00	-22.26

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :22.4°C/54%

Test Frequency :914.5 MHz

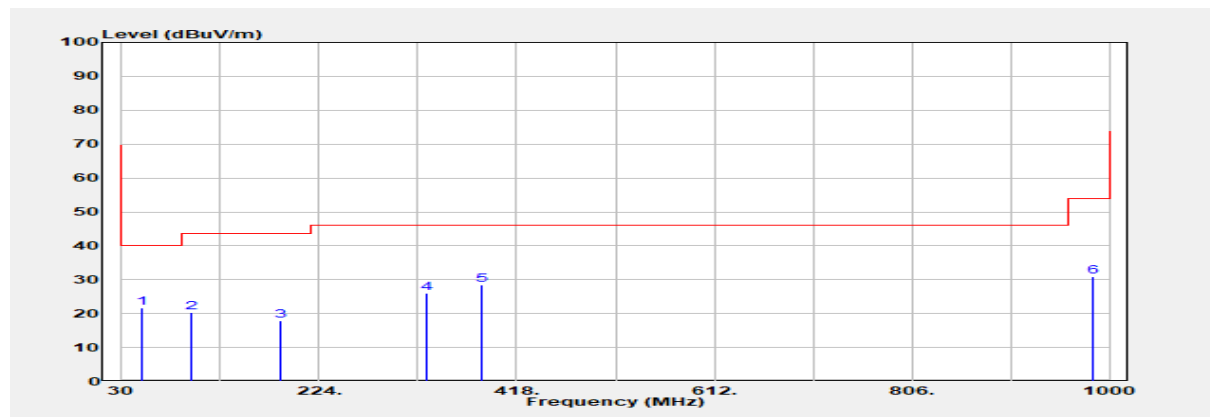
Temp./Humi. :21.7°C/52%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dBμV	Factor dB	Actual FS dBμV/m	Limit @3m dBμV/m	Margin dB
50.370	Peak	38.60	-16.96	21.64	40.00	-18.36
98.870	Peak	42.69	-22.25	20.44	43.50	-23.06
185.200	Peak	36.73	-18.86	17.87	43.50	-25.63
329.730	Peak	41.10	-15.00	26.09	46.00	-19.91
384.050	Peak	42.11	-13.70	28.41	46.00	-17.59
984.480	Peak	35.54	-4.77	30.77	54.00	-23.23

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-01

Test Frequency :902.5 MHz

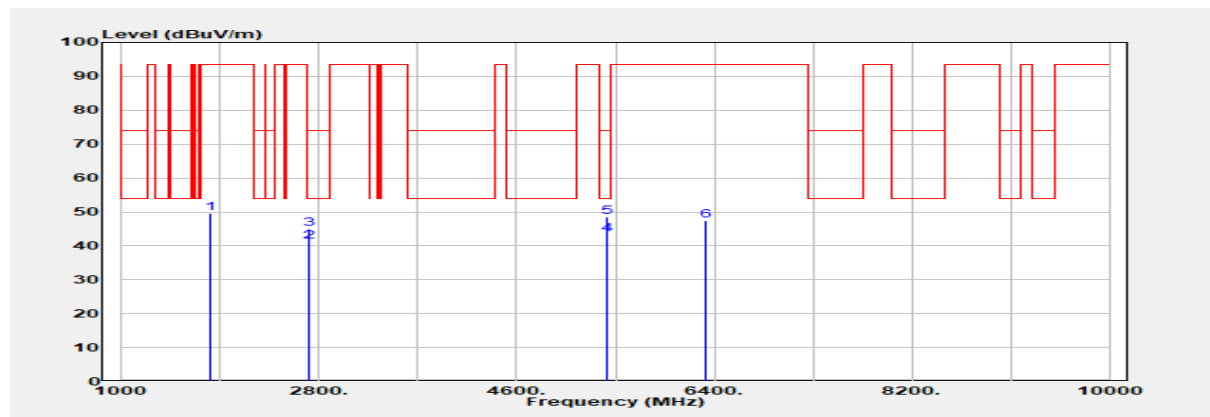
Temp./Humi. :21.7°C/52%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1805.000	Peak	57.43	-7.91	49.52	93.61	-44.09
2707.500	Average	44.68	-3.61	41.07	54.00	-12.93
2707.500	Peak	48.63	-3.61	45.02	74.00	-28.98
5415.000	Average	40.44	2.79	43.23	54.00	-10.77
5415.000	Peak	45.74	2.79	48.53	74.00	-25.47
6317.500	Peak	42.32	5.04	47.35	93.61	-46.26

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-01

Test Frequency :902.5 MHz

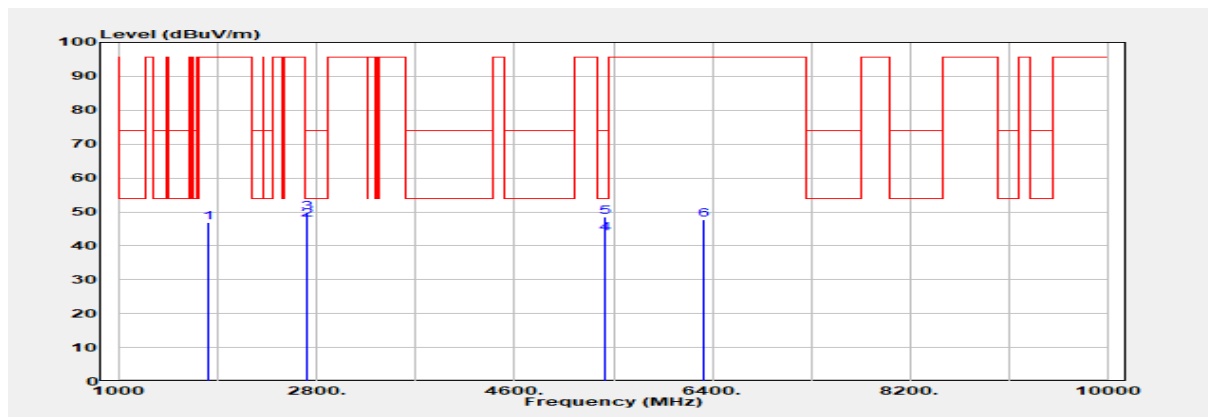
Temp./Humi. :21.7°C/52%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1805.000	Peak	54.77	-7.91	46.86	95.65	-48.79
2707.500	Average	51.41	-3.61	47.80	54.00	-6.20
2707.500	Peak	53.54	-3.61	49.93	74.00	-24.07
5415.000	Average	40.92	2.79	43.71	54.00	-10.29
5415.000	Peak	45.65	2.79	48.44	74.00	-25.56
6317.500	Peak	42.72	5.04	47.76	95.65	-47.89

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

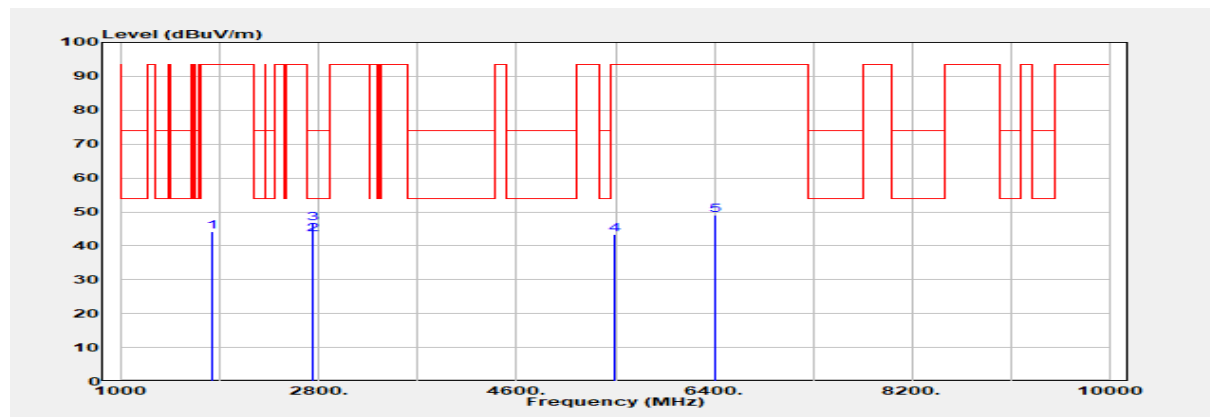
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1829.000	Peak	52.18	-7.87	44.30	93.61	-49.31
2743.500	Average	47.20	-3.95	43.25	54.00	-10.75
2743.500	Peak	50.55	-3.95	46.59	74.00	-27.41
5487.000	Peak	41.19	2.10	43.29	93.61	-50.32
6401.500	Peak	43.12	6.01	49.12	93.61	-44.49

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :914.5 MHz

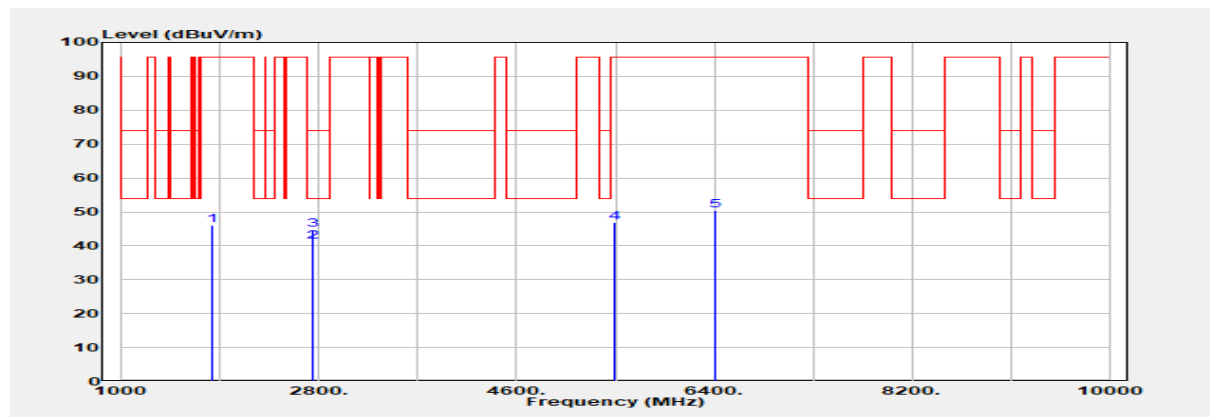
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1829.000	Peak	53.84	-7.87	45.96	95.65	-49.69
2743.500	Average	45.07	-3.95	41.12	54.00	-12.88
2743.500	Peak	48.72	-3.95	44.77	74.00	-29.23
5487.000	Peak	44.69	2.10	46.79	95.65	-48.86
6401.500	Peak	44.49	6.01	50.50	95.65	-45.15

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

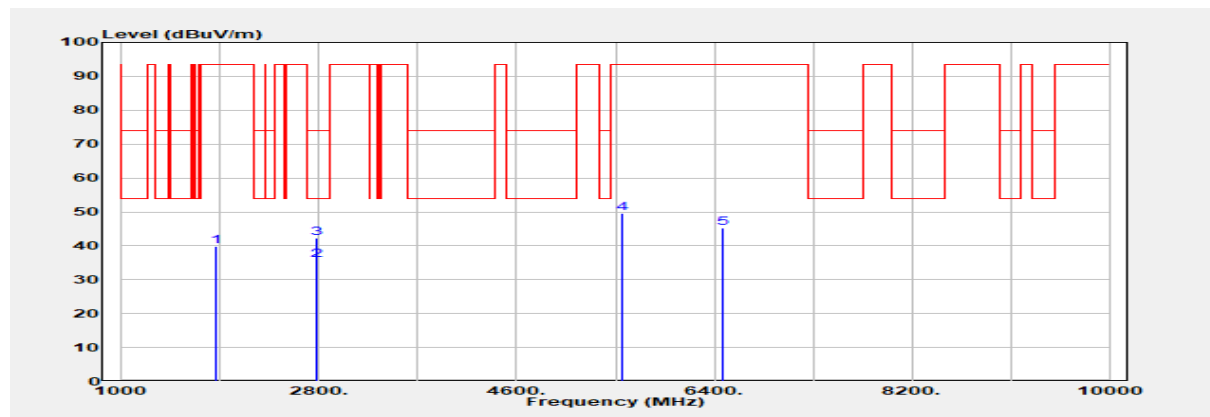
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Vertical

EUT Pol :H Plane

Engineer :Sam Huang



Freq. MHz	Detector Mode PK/QP/AV	Spectrum Reading Level dB μ V	Factor dB	Actual FS dB μ V/m	Limit @3m dB μ V/m	Margin dB
1853.000	Peak	47.72	-7.84	39.88	93.61	-53.73
2779.500	Average	39.91	-4.08	35.83	54.00	-18.17
2779.500	Peak	46.34	-4.08	42.26	74.00	-31.74
5559.000	Peak	47.70	2.02	49.72	93.61	-43.89
6485.500	Peak	39.78	5.38	45.16	93.61	-48.45

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Report Number :TERF2406001609E2

Test Site :SAC D

Operation Mode :802.11ah 1M

Test Date :2024-07-03

Test Frequency :926.5 MHz

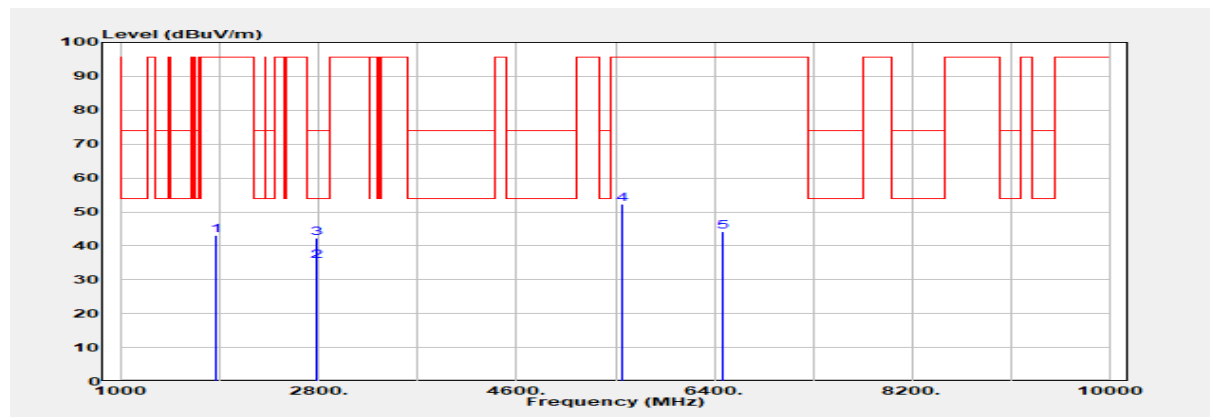
Temp./Humi. :22.1°C/53%

Test Mode :Tx

Antenna Pol. :Horizontal

EUT Pol :H Plane

Engineer :Sam Huang



Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode	Reading Level		FS	@3m	
	PK/QP/AV	dBμV	dB	dBμV/m	dBμV/m	dB
1853.000	Peak	50.80	-7.84	42.97	95.65	-52.68
2779.500	Average	39.57	-4.08	35.49	54.00	-18.51
2779.500	Peak	46.28	-4.08	42.20	74.00	-31.80
5559.000	Peak	50.18	2.02	52.20	95.65	-43.45
6485.500	Peak	38.77	5.38	44.16	95.65	-51.49

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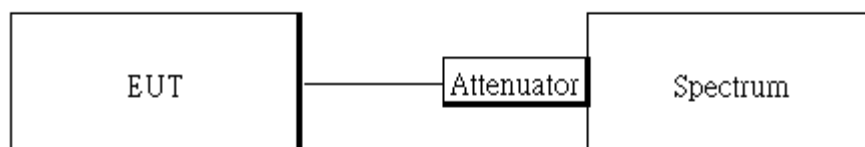
12 POWER SPECTRAL DENSITY

12.1 Standard Applicable:

Per Part 15.247 (e) & RSS-247 section 5.2 b

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

12.2 Test Setup



12.3 Measurement Procedure:

1. Set analyzer center frequency to DTS channel center frequency.
2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW = 3 kHz. & the VBW = 10 kHz
5. Set Detector = 4M & 8M Detector = peak
6. Sweep time = auto couple.
7. Set Trace mode = 1M & 2M trace mode = average
4M & 8M trace mode = max hold
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.

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12.4 Measurement Result:

12.4.1 Peak Power Spectral Density

LoRa SF7 Internal antenna

LoRa 500k mode(Payload S=2)

Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
902.5	6.94	8	PASS
914.5	7.60	8	PASS
926.5	7.43	8	PASS

***Note:**

1.cable loss as 10dB that offsets in the spectrum

LoRa SF7 External antenna

LoRa 500k mode(Payload S=2)

Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
902.5	7.45	8	PASS
914.5	7.18	8	PASS
926.5	7.36	8	PASS

***Note:**

1.cable loss as 10.3dB that offsets in the spectrum

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LoRa SF11 Internal antenna

LoRa 500k mode(Payload S=2)

Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
902.5	-0.941	8	PASS
914.5	1.425	8	PASS
926.5	0.526	8	PASS

***Note:**

1.cable loss as 10dB that offsets in the spectrum

LoRa SF11 External antenna

LoRa 500k mode(Payload S=2)

Frequency (MHz)	RF Power Density (dBm/3kHz)	Maximum Limit (dBm/3kHz)	Result
902.5	0.520	8	PASS
914.5	0.657	8	PASS
926.5	0.38	8	PASS

***Note:**

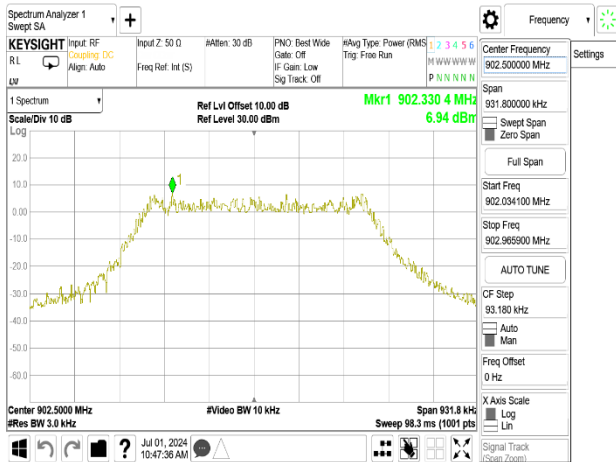
1.cable loss as 10.3dB that offsets in the spectrum

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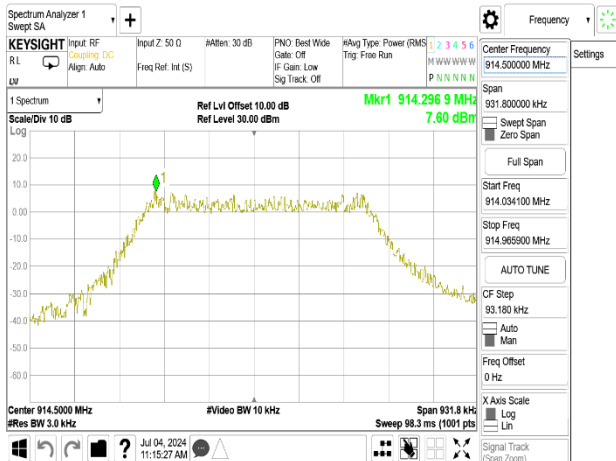
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LoRa SF7 Internal antenna

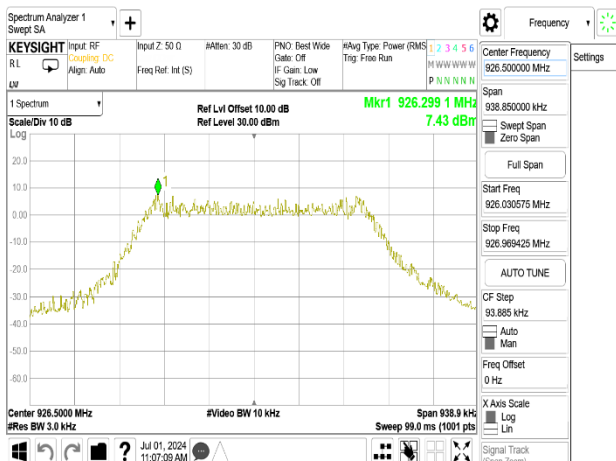
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PSD_LoRa_MidCH-914.5MHz

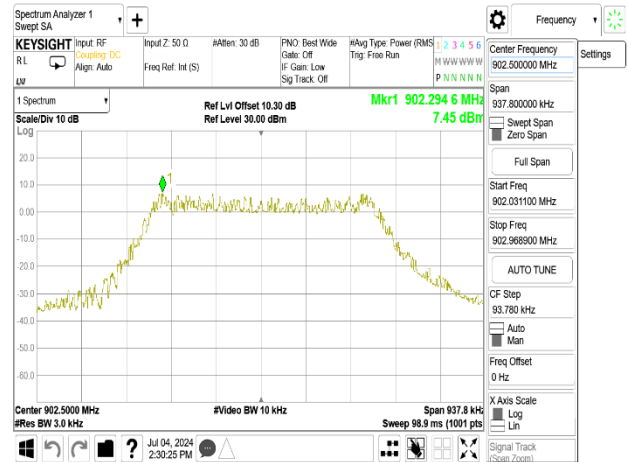


PSD_LoRa_HighCH-926.5MHz

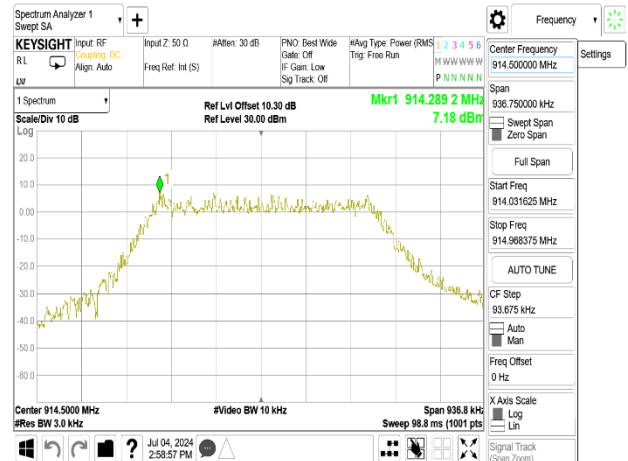


LoRa SF7 External antenna

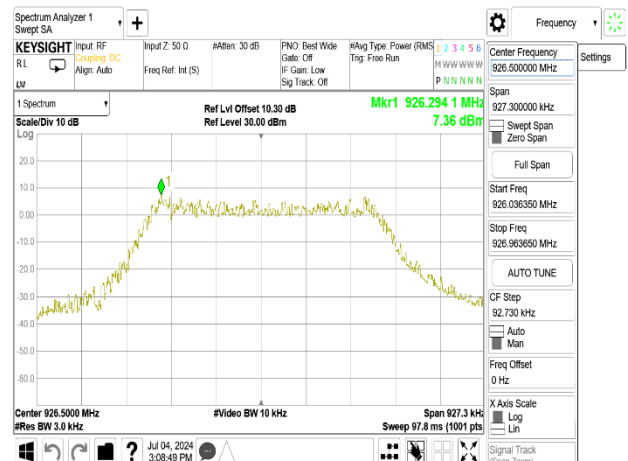
PSD_LoRa_LowCH-902.5MHz



PSD_LoRa_MidCH-914.5MHz



PSD_LoRa_HighCH-926.5MHz



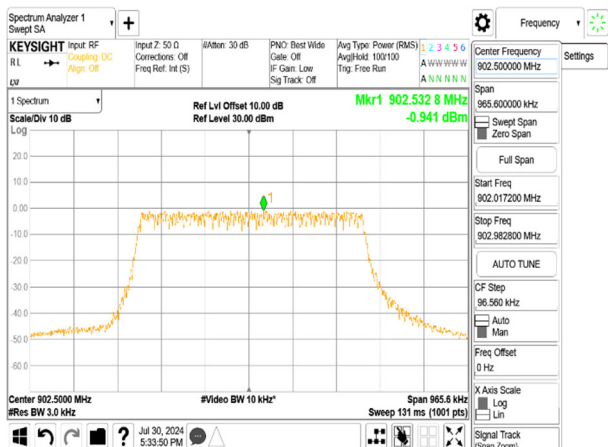
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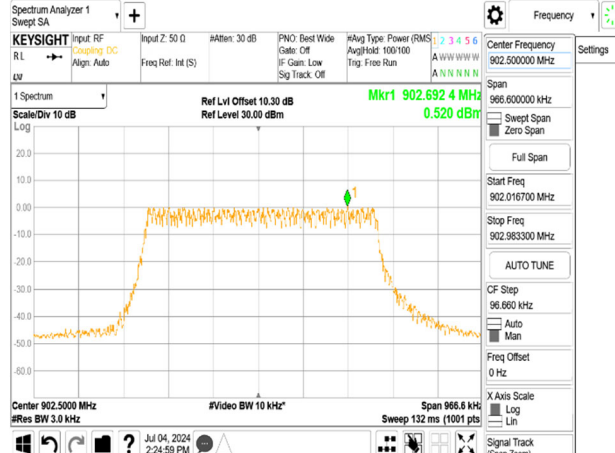
LoRa SF11 Internal antenna

PSD_LoRa_LowCH-902.5MHz

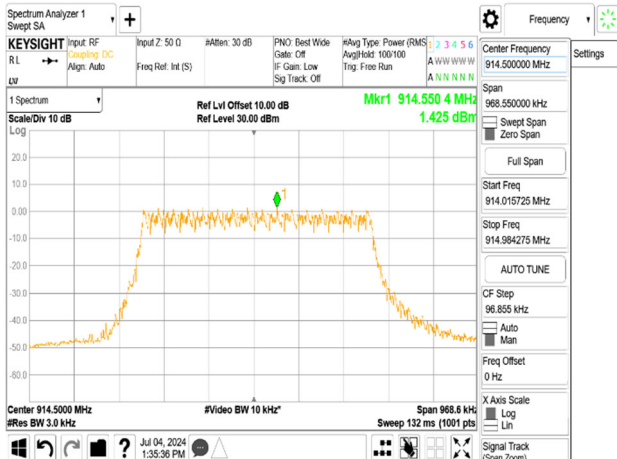


LoRa SF11 External antenna

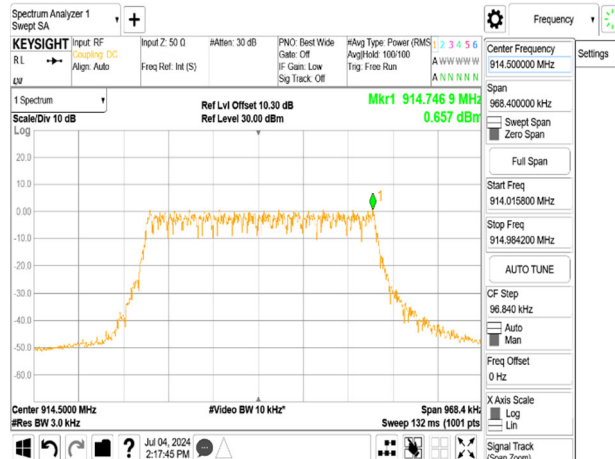
PSD_LoRa_LowCH-902.5MHz



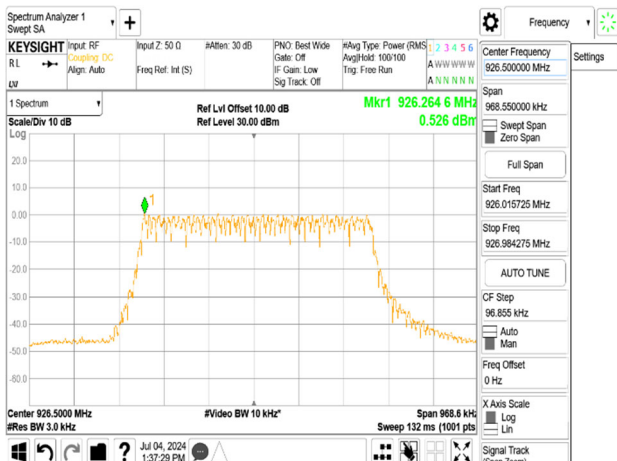
PSD_LoRa_MidCH-914.5MHz



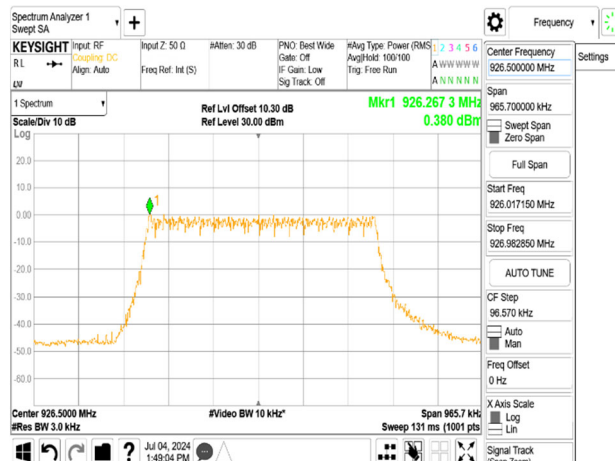
PSD_LoRa_MidCH-914.5MHz



PSD_LoRa_HighCH-926.5MHz



PSD_LoRa_HighCH-926.5MHz



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13 ANTENNA REQUIREMENT

13.1 Standard Applicable:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

13.2 Antenna Connected Construction:

The antenna complies with this requirement and no consideration of replacement. Please see EUT photo for details.

~ End of Report ~

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