



SGS-CSTC Standards Technical Services Co., Ltd. Guangzhou Branch

EMC-TRF-01 Rev 2.1

Report No.: GZCR260400066002

Page: 1 of 53

FCC ID: 2ASD7-CWT

TEST REPORT

Application No.: GZCR2604000660AT
Applicant: CubeWorks
Address of Applicant: 1600 Huron Pkwy, NCRC 520-2392, Ann Arbor, MI 48109, USA
Manufacturer: Blue Ocean Innovation Limited
Address of Manufacturer: Unit 50, 8/F Wah Lok Industrial Center Phase 2 Blk F, 31-35 Shan Mei Street, Fotan, H.K.
Factory: Blue Ocean Innovation Limited
Address of Factory: Unit 50, 8/F Wah Lok Industrial Center Phase 2 Blk F, 31-35 Shan Mei Street, Fotan, H.K.
Product Name: CubeWorks Tag
Model No.: CWT V1
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2026-04-09
Date of Test: 2026-04-15 to 2026-07-08
Date of Issue: 2026-07-23

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



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Guangzhou Branch Calibration Laboratory

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Revision Record			
Version	Report No.	Date	Remark
01	GZCR260400066002	2026-07-23	Original

Authorized for issue by:			
		Key Liang	
		Key Liang/Project Engineer	
Approved By		Vico Cui	
		Vico Cui/Reviewer	



2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Pass
Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence		N/A	47 CFR Part 15, Subpart C 15.247(a)(1),(g),(h)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10-2020+COR.1-2023 Section 6.10.5 & 7.8.8	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10-2020+COR.1-2023 Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz		ANSI C63.10-2020+COR.1-2023 Section 6.6 & 7.8.8	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Maximum Conducted Output Power		ANSI C63.10-2020+COR.1-2023 Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(2)	Pass
20dB Bandwidth		ANSI C63.10-2020+COR.1-2023 Section 6.9.2	47 CFR Part 15, Subpart C 15.247(a)(1)	Pass
Carrier Frequencies Separation		ANSI C63.10-2020+COR.1-2023 Section 7.8.2	47 CFR Part 15, Subpart C 15.247a(1)	Pass
Hopping Channel Number		ANSI C63.10-2020+COR.1-2023 Section 7.8.3	47 CFR Part 15, Subpart C 15.247a(1)(i)	Pass
Dwell Time		ANSI C63.10-2020+COR.1-2023 Section 7.8.4	47 CFR Part 15, Subpart C 15.247a(1)(i)	Pass
Conducted Band Edges Measurement		ANSI C63.10-2020+COR.1-2023 Section 7.8.7.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10-2020+COR.1-2023 Section 7.8.7	47 CFR Part 15, Subpart C 15.247(d)	Pass



Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

N/A means Not applicable, please find the detailed decision rule in the report relative section.



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4 General Information

4.1 Details of E.U.T.

Power supply: Battery operation: DC 3.0V = 2 x 1.5V with size of "AAA" batteries.
Test voltage: DC 3.0V
Cable(s): None.
Operation Frequency: 902.3MHz to 927.5MHz
Modulation Type: CSS
Number of Channels: 64
Channel Spacing: 400kHz
Antenna Type: PCB Antenna
Antenna Gain: 6 dBi max according to antenna specification
Antenna Number: 1
Test Channel: Low: 902.3MHz,
Middle: 914.7MHz
High: 927.5MHz

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Mobile Phone	SAMSUNG	SM-G9508	R28K110W9JV



4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Radiated Emissions which fall in the restricted bands	$\pm 5.14\text{dB}$ (3m); $\pm 4.90\text{dB}$ (10m); $\pm 4.88\text{dB}$ (1GHz-6GHz); $\pm 5.06\text{dB}$ (6GHz-18GHz); $\pm 5.30\text{dB}$ (18GHz-40GHz)
Radiated Spurious Emissions Below 1GHz	$\pm 3.08\text{dB}$ (9kHz to 150kHz); $\pm 3.19\text{dB}$ (150kHz to 30MHz); $\pm 5.14\text{dB}$ (30MHz-1GHz) (3m); $\pm 4.90\text{dB}$ (30MHz-1GHz) (10m)
Radiated Spurious Emissions Above 1GHz	$\pm 4.88\text{dB}$ (1GHz-6GHz); $\pm 5.06\text{dB}$ (6GHz-18GHz); $\pm 5.30\text{dB}$ (18GHz-40GHz)
Maximum Conducted Output Power	$\pm 0.75\text{dB}$
20dB Bandwidth	$\pm 0.274\%$
Carrier Frequencies Separation	$\pm 7.25 \times 10^{-8}$
Hopping Channel Number	$\pm 7.25 \times 10^{-8}$
Dwell Time	$\pm 0.029\%$
Conducted Band Edges Measurement	$\pm 0.75\text{dB}$
Conducted Spurious Emissions	$\pm 0.75\text{dB}$
Remark: The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty) or U_{ETSI} (ETSI Uncertainty). Emission decision rule: – Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit, marked as Pass in the report. – Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit, marked as Fail in the report.	

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou,
Guangdong, China 510663

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No tests were sub-contracted.



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4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● ACMA

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

● SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● FCC Recognized Accredited Test Firm(Registration No.: 486818)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

● ISED (Registration No.: 4620B, CAB identifier: CN0052)

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

● CBTL (Lab Code: TL129)

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



5 Equipment List

Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2025-08-11	2026-08-10
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2025-08-11	2026-08-10
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2025-05-13	2027-05-12
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2026-06-07	2028-06-06
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2025-08-12	2026-08-11
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2025-08-11	2026-08-10
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2025-03-22	2028-03-21
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Radiated Spurious Emissions Below 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2025-08-13	2028-08-12
Coaxial cable	Mirco-COAX UTIFLEX	311A	EMC0540	2024-08-19	2026-08-18
Amplifier (9kHz-1.3GHz)	HP	8447F	EMC2065	2025-11-25	2026-11-24
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2026-03-28	2028-03-27
EMI Test Receiver (9kHz-7GHz)	Rohde & Schwarz	ESR7	EMC2220	2025-11-18	2026-11-17
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Trilog Broadband Antenna (25MHz-2GHz)	Schwarzbeck Mess-Elektronik	VULB 9168	EMC2174	2025-04-21	2027-04-20



Radiated Spurious Emissions Above 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2025-08-11	2026-08-10
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2025-08-11	2026-08-10
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2025-05-13	2027-05-12
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2026-06-07	2028-06-06
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2025-08-12	2026-08-11
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2025-08-11	2026-08-10
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2025-03-22	2028-03-21
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Preamplifier (1-18GHz)	Shenzhen TST	LNA010180G50	EMC6036	2026-04-14	2027-04-13
Intelligent Coaxial RF Switch (DC-18GHz)	Shenzhen TST	ICS01018	EMC6037	2026-04-14	2027-04-13

RF Conducted Test					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
MI CABLE	SGS-EMC	0.8M	EMC2137	2025-11-02	2026-11-01
4X4 Power sensor Unit	TST	TSPS2023R	EMC2226	2025-08-12	2026-08-11
Test Software	TST	V2.0	GZE100-78	N/A	N/A
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2025-08-12	2026-08-11

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2026-05-14	2027-05-13



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

6.1.2 Conclusion

Standard Requirement: 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, 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.

15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 6 dBi.

Antenna location: Refer to internal photo.



6.2 Other requirements Frequency Hopping Spread Spectrum System Hopping Sequence

6.2.1 Test Requirement:

47 CFR Part 15, Subpart C 15.247(a)(1),(g),(h)

6.2.2 Conclusion

Frequency hopping (FH) is one of the core technologies in the physical layer and MAC layer of Wi-SUN (Wireless Smart Ubiquitous Network). It directly contributes to Wi-SUN's outstanding anti-interference capability, reliability, and scalability in the crowded ISM bands (such as 920–928 MHz).

The essence of pseudo-random frequency hopping is:

Two or more communicating devices switch synchronously among multiple channels based on a pre-negotiated "sequence" that appears random. The term "pseudo-random" means that although the sequence is deterministic and predictable for network members, it appears random to external observers.

1. Channel Plan

Wi-SUN divides its operating band (e.g., 902–928 MHz) into dozens or even more than a hundred independent, equally-spaced channels.

For example, in the North American 900 MHz band, the Wi-SUN FAN specification defines up to 75 channels (50 primary channels + 25 secondary channels).

A large pool of available channels is the foundation of frequency hopping.

2. Generation of the Pseudo-Random Sequence

The core of the hopping mechanism is a pseudo-random sequence generator.

The sequence is generated from several key "seed" parameters:

PAN ID: The identifier of the Personal Area Network.

Network key / master key: Used for security encryption and also as one of the sequence inputs.

Channel-plan parameters: Total channel count, excluded channels (due to regulation or known interference), etc.

Time synchronization information: Usually derived from a globally synchronized timeslot counter.

These parameters are entered into a standard pseudo-random algorithm (such as a hash function) to produce a deterministic, long-period channel index sequence.

All synchronized devices within the same network, using the same seed parameters and algorithm, will compute the exact same hopping sequence.

3. Frequency Hopping and Time Synchronization

Wi-SUN FAN combines TDMA (Time Division Multiple Access) with frequency hopping. Time is divided into superframes, frames, and timeslots.

Timeslot: The smallest communication time unit (e.g., 10 ms). Communication occurs within specific slots.

Hopping clock: Hopping usually occurs every timeslot or every two timeslots. This rhythm is the "hopping clock."

Synchronization: All network devices must maintain strict clock synchronization with the Border Router.

They know the current hopping-clock counter. By feeding this counter into the pseudo-random generator, a device computes the exact channel to listen or transmit on for the current period.



7 Radio Spectrum Matter Test Results

7.1 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
Test Method: ANSI C63.10-2020+COR.1-2023 Section 6.10.5 & 7.8.8
Test Engineer: Lily Kuang
Limit:
Test Distance: 3 m

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.1.1 E.U.T. Operation

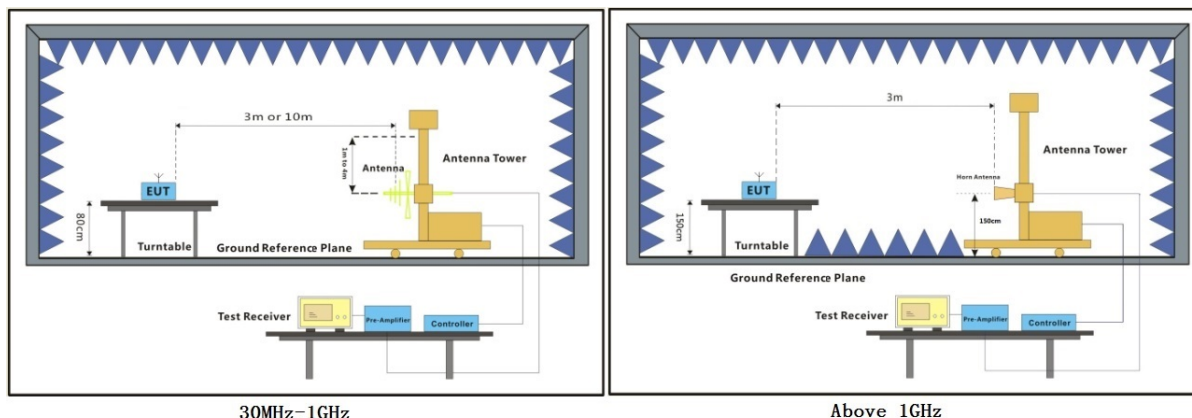
Operating Environment:
Temperature: 26.2 °C Humidity: 51.3 % RH Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with CSS modulation.



7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

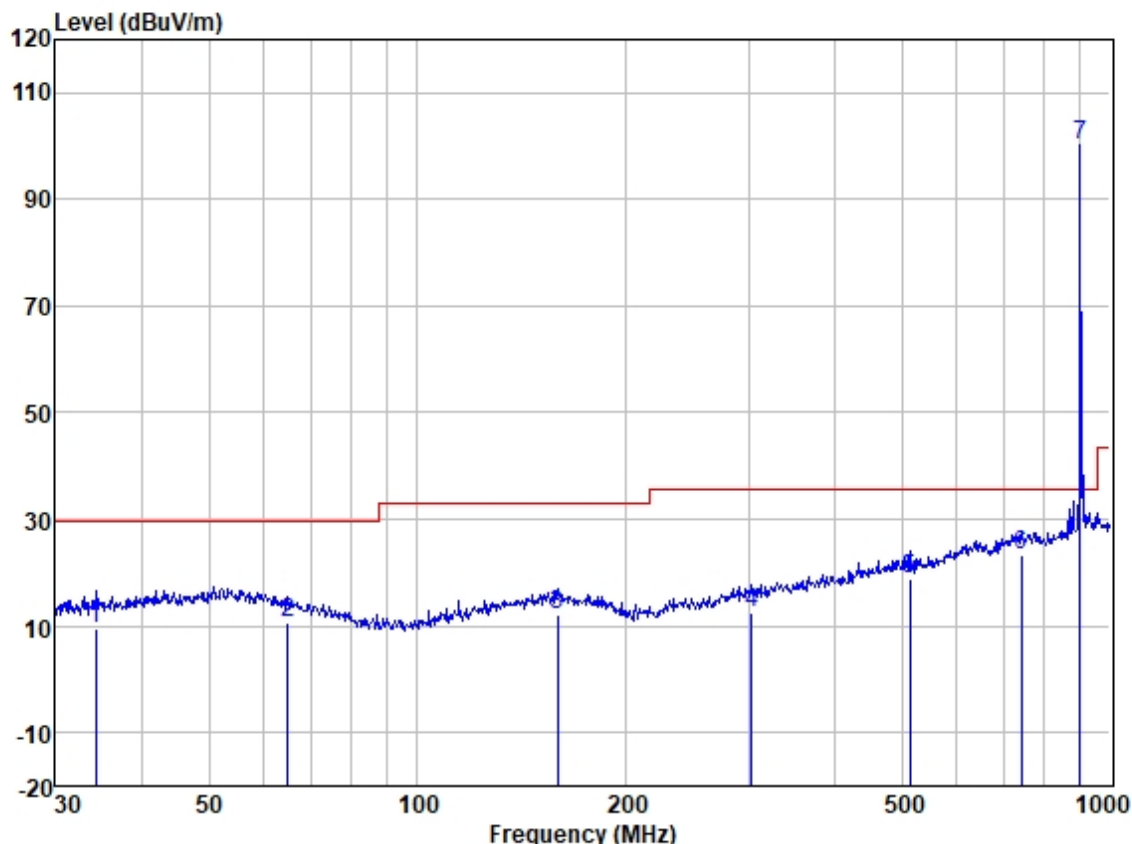
Remark 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.

Remark 4:For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $\leq 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.

Remark 5: The 7th point in each plot was the fundamental frequency of the EUT, please refer to section 7.4 for details



Test Mode: 01; Polarity: Horizontal; Modulation:CSS; Channel:Low

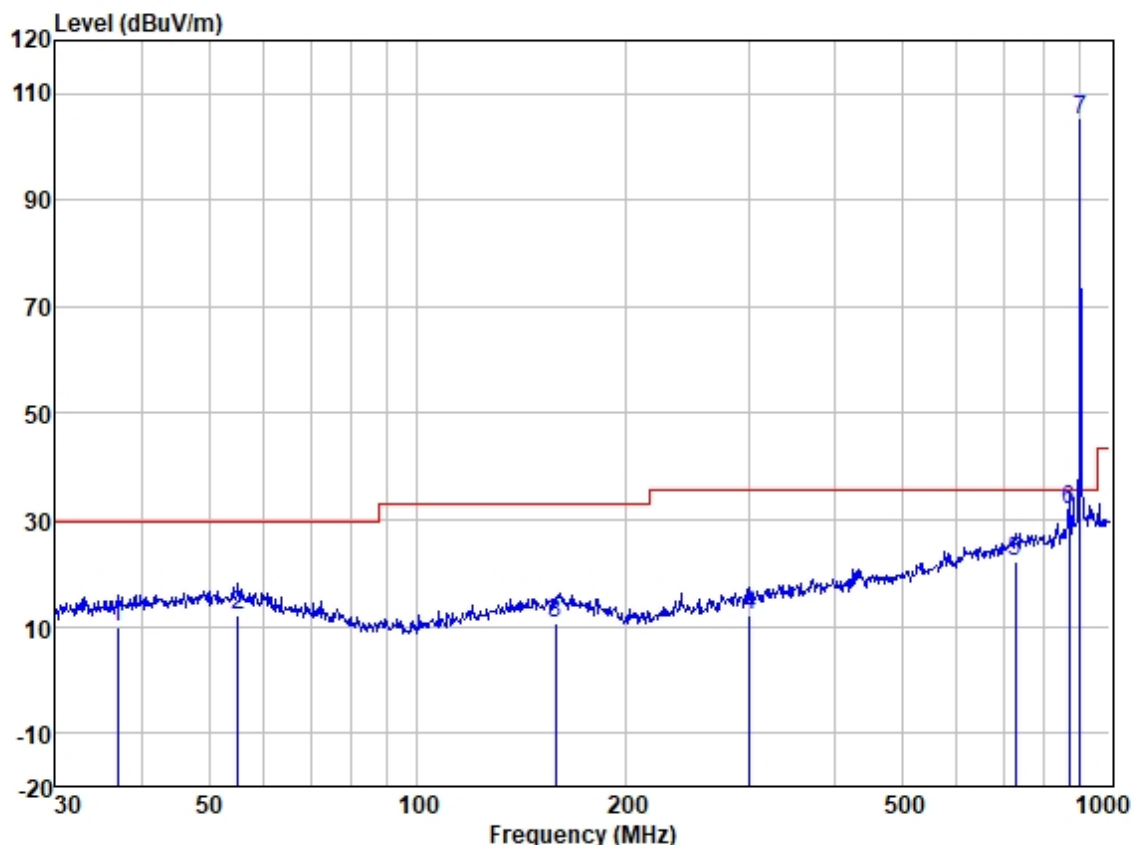


Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	34.276	24.17	12.81	0.62	28.00	9.60	29.50	-19.90	HORIZONTAL	QP
2	64.887	25.34	12.45	0.79	27.95	10.63	29.50	-18.87	HORIZONTAL	QP
3	159.225	25.32	13.44	1.02	27.79	11.99	33.10	-21.11	HORIZONTAL	QP
4	303.544	24.53	13.63	1.69	27.21	12.64	35.60	-22.96	HORIZONTAL	QP
5	513.633	27.45	18.20	1.91	28.60	18.96	35.60	-16.64	HORIZONTAL	QP
6	744.866	26.97	22.31	2.43	28.42	23.29	35.60	-12.31	HORIZONTAL	QP
7	903.309	102.11	23.41	2.64	28.12	100.04	35.60	64.44	HORIZONTAL	Peak



Test Mode: 01; Polarity: Vertical; Modulation:CSS; Channel:Low

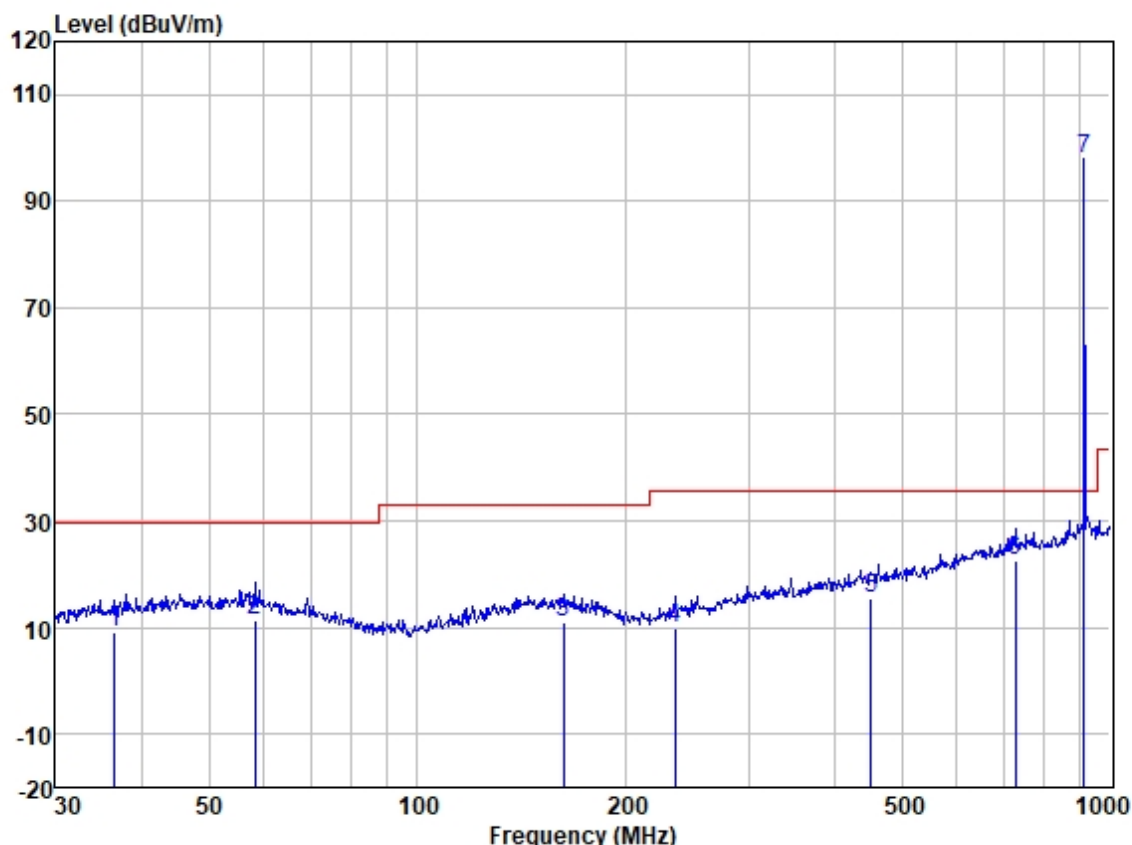


Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	36.895	23.91	13.22	0.65	27.99	9.79	29.50	-19.71	VERTICAL	QP
2	55.027	25.51	13.72	0.76	27.97	12.02	29.50	-17.48	VERTICAL	QP
3	158.112	23.87	13.48	1.01	27.79	10.57	33.10	-22.53	VERTICAL	QP
4	301.422	24.20	13.58	1.69	27.21	12.26	35.60	-23.34	VERTICAL	QP
5	729.358	26.55	21.85	2.38	28.42	22.36	35.60	-13.24	VERTICAL	QP
6	872.183	34.41	23.11	2.61	28.29	31.84	35.60	-3.76	VERTICAL	QP
7	903.309	107.28	23.41	2.64	28.12	105.21	35.60	69.61	VERTICAL	Peak



Test Mode: 01; Polarity: Horizontal; Modulation:CSS; Channel:Middle

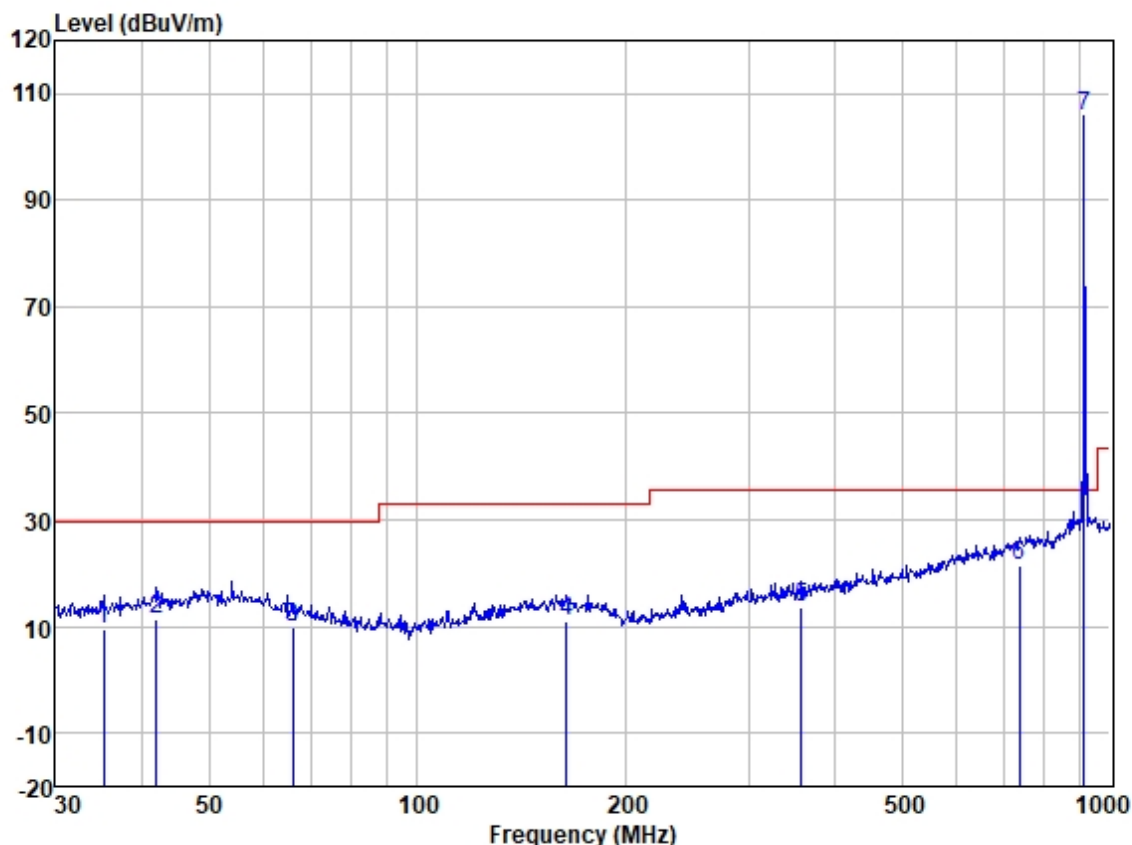


Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	36.509	23.16	13.22	0.65	27.99	9.04	29.50	-20.46	HORIZONTAL	QP
2	58.203	25.17	13.39	0.77	27.97	11.36	29.50	-18.14	HORIZONTAL	QP
3	162.611	24.42	13.39	1.03	27.78	11.06	33.10	-22.04	HORIZONTAL	QP
4	234.991	24.35	11.29	1.45	27.33	9.76	35.60	-25.84	HORIZONTAL	QP
5	451.135	24.66	17.26	1.86	28.43	15.35	35.60	-20.25	HORIZONTAL	QP
6	729.358	26.76	21.85	2.38	28.42	22.57	35.60	-13.03	HORIZONTAL	QP
7	916.069	99.98	23.53	2.65	28.05	98.11	35.60	62.51	HORIZONTAL	Peak



Test Mode: 01; Polarity: Vertical; Modulation:CSS; Channel:Middle

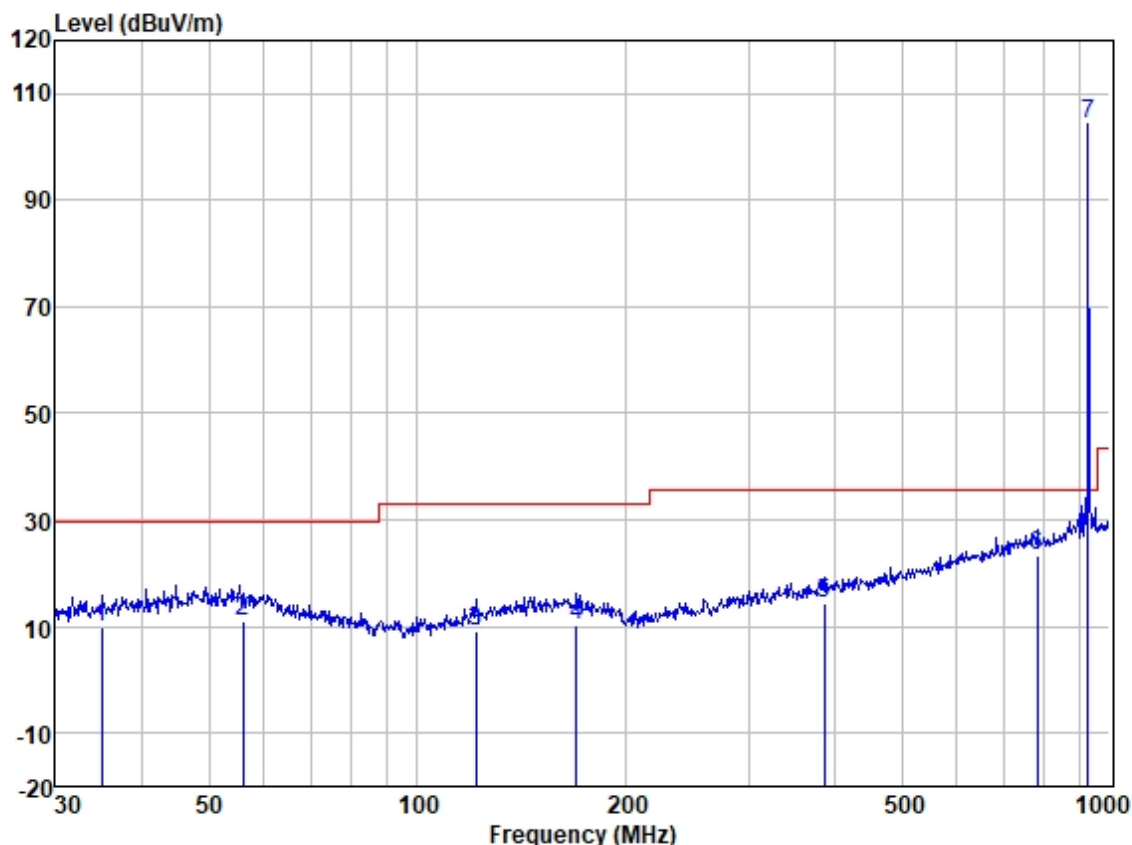


Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	35.251	24.08	12.96	0.63	28.00	9.67	29.50	-19.83	VERTICAL	QP
2	42.007	24.98	13.74	0.70	27.99	11.43	29.50	-18.07	VERTICAL	QP
3	66.034	24.85	12.25	0.79	27.95	9.94	29.50	-19.56	VERTICAL	QP
4	163.755	24.31	13.39	1.03	27.77	10.96	33.10	-22.14	VERTICAL	QP
5	357.929	24.53	14.70	1.78	27.41	13.60	35.60	-22.00	VERTICAL	QP
6	739.661	25.41	22.17	2.41	28.42	21.57	35.60	-14.03	VERTICAL	QP
7	916.069	107.80	23.53	2.65	28.05	105.93	35.60	70.33	VERTICAL	Peak



Test Mode: 01; Polarity: Horizontal; Modulation:CSS; Channel:High

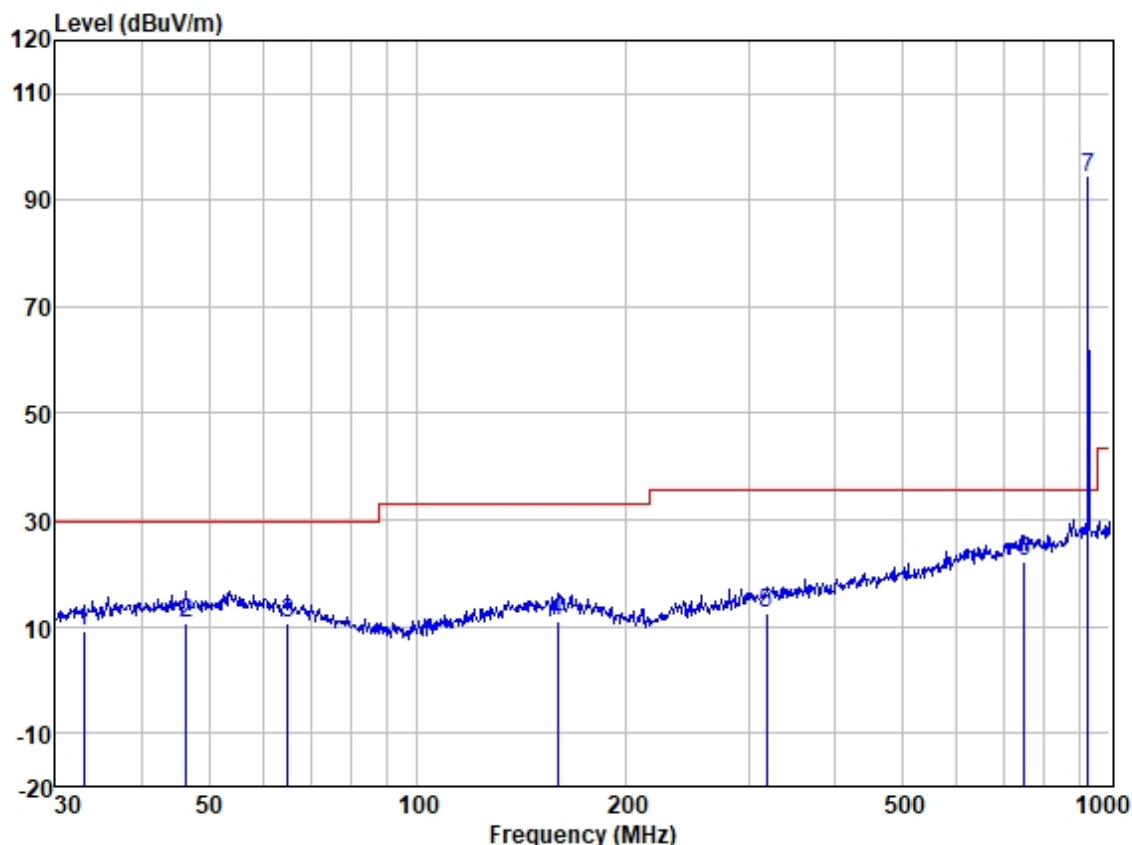


Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	35.005	24.17	12.96	0.63	28.00	9.76	29.50	-19.74	HORIZONTAL	QP
2	56.001	24.63	13.61	0.77	27.97	11.04	29.50	-18.46	HORIZONTAL	QP
3	121.549	24.62	11.42	0.90	27.87	9.07	33.10	-24.03	HORIZONTAL	QP
4	169.599	23.48	13.30	1.05	27.75	10.08	33.10	-23.02	HORIZONTAL	QP
5	386.634	24.58	15.50	1.81	27.65	14.24	35.60	-21.36	HORIZONTAL	QP
6	785.093	26.73	22.31	2.50	28.40	23.14	35.60	-12.46	HORIZONTAL	QP
7	929.008	105.92	23.63	2.67	28.01	104.21	35.60	68.61	HORIZONTAL	Peak



Test Mode: 01; Polarity: Vertical; Modulation:CSS; Channel:High



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	32.979	23.76	12.66	0.59	28.00	9.01	29.50	-20.49	VERTICAL	QP
2	46.340	24.08	13.93	0.73	27.98	10.76	29.50	-18.74	VERTICAL	QP
3	64.887	25.44	12.45	0.79	27.95	10.73	29.50	-18.77	VERTICAL	QP
4	159.225	24.40	13.44	1.02	27.79	11.07	33.10	-22.03	VERTICAL	QP
5	318.817	23.78	14.12	1.72	27.26	12.36	35.60	-23.24	VERTICAL	QP
6	750.108	25.66	22.44	2.43	28.41	22.12	35.60	-13.48	VERTICAL	QP
7	929.008	96.09	23.63	2.67	28.01	94.38	35.60	58.78	VERTICAL	Peak



7.2 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
 Test Method: ANSI C63.10-2020+COR.1-2023 Section 6.4,6.5
 Test Engineer: Bob Qu
 Limit:
 Test Distance: 10m above 30MHz; 3m below 30MHz

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
960-1000	500	3

Note

1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

2. At frequencies below 1GHz, measurements may be performed at a distance different to specified in the regulations.

Limit = The limit above - Aux Factor (if applicable)

Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

The aux factor needs to be added when measurements are performed at a distance other than the limit distance provided.

EX. Below 30MHz, Aux Factor = 40 dB/decade of distance, the aux factor is $40\log(3/300) = -80\text{dB}$ (for 3m test distance).

EX. Above 30MHz, Aux Factor = 20 dB/decade of distance, the aux factor is $20\log(10/3) = 10.46\text{dB}$ (for 10m test distance).

7.2.1 E.U.T. Operation

Operating Environment:

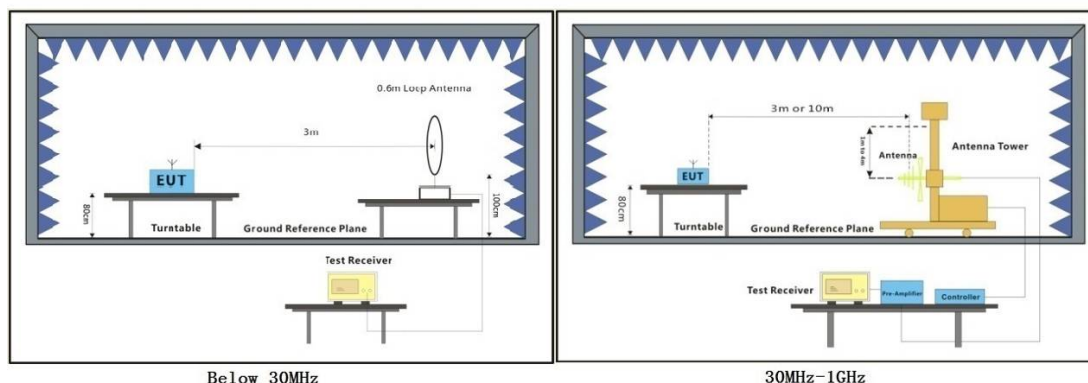
Temperature: 22.9 °C Humidity: 52.3 % RH Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with CSS modulation.



7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8m above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3m or 10m away from the interference-receiving antenna, which was mounted on the variable-height antenna tower.
- c. The antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1m to 4m (for the test frequency of below 30MHz, the antenna was tuned to heights 1m) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using quasi-peak method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1 Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

2. The disturbance below 1GHz was very low and the harmonics were the highest point could be found when testing, so only the worst-case test curve is displayed.

Please refer to section 7.1.4 for test data and plot.



7.3 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209
 Test Method: ANSI C63.10-2020+COR.1-2023 Section 6.6 & 7.8.8
 Test Engineer: Lily Kuang
 Limit:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
Above 1000	500	3

Note:

At Above 18GHz, measurements may be performed at a distance shorter than that specified in the regulations

Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor+ Aux Factor (if applicable)

The aux factor needs to be added when measurements are performed at a distance other than the limit distance provided.

EX. Above 18GHz, Aux Factor = 20 dB/decade of distance, the aux factor is $20\log(1/3) = -9.54\text{dB}$ (for 1m test distance).

7.3.1 E.U.T. Operation

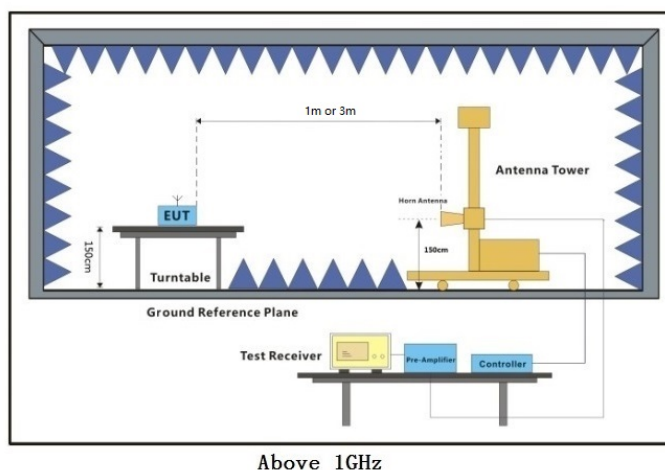
Operating Environment:

Temperature: 26.2 °C Humidity: 51.2 % RH Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with CSS modulation.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

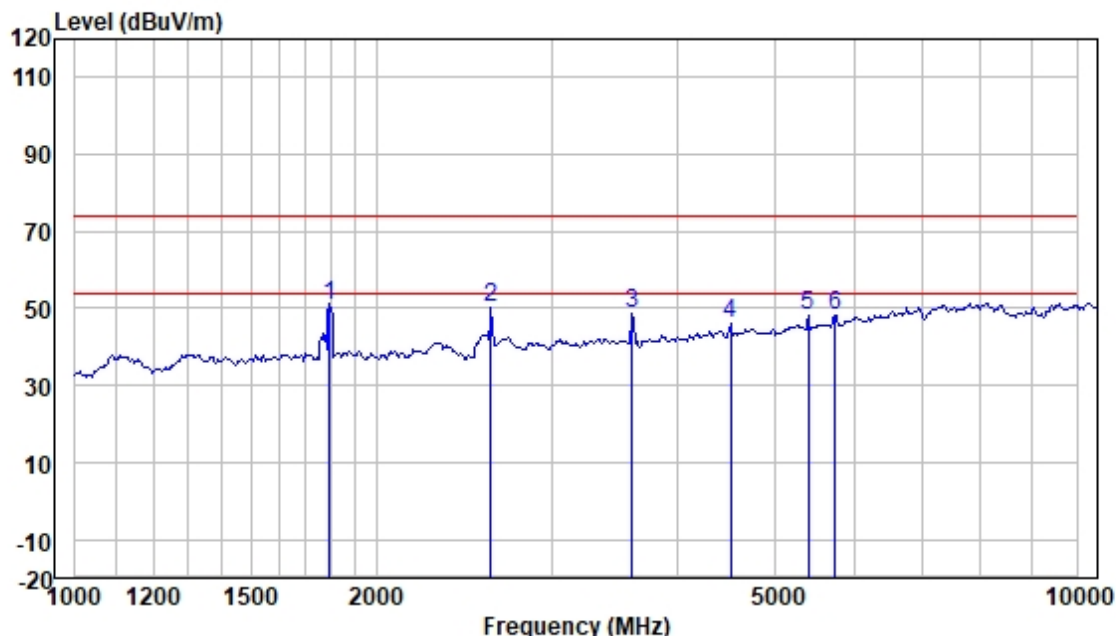
- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5m above the ground at a 3m fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3m away from the interference-receiving antenna from 1GHz to 18GHz, and 1m away from the interference-receiving antenna above 18GHz.
- b. The interference-receiving antenna was mounted on the variable-height antenna tower, with its boresight facing the EUT throughout the test.
- c. The antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1m to 4m and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- g. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- h. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Scan from 1GHz to 10th harmonic of the highest frequency or 40 GHz, whichever is lower.
2. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
3. For the frequency above 18GHz, testing had been executed under all test modes, only the worst-case test curve is displayed in the report.
4. For devices with multiple operating modes, measurements on the middle channel is used to determine the worst-case mode(s).



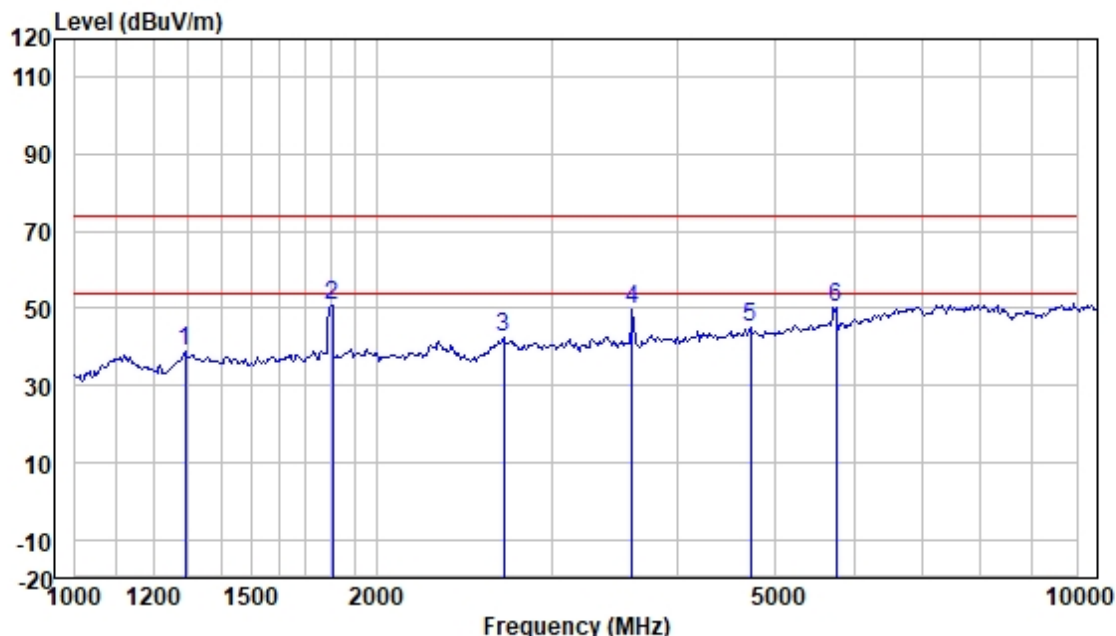
Test Mode: 01; Polarity: Vertical; Modulation:CSS; Channel:Low



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1798.13	59.47	26.45	3.01	38.00	50.93	74.00	-23.07	VERTICAL	Peak
2	2603.13	56.61	27.91	3.54	37.71	50.35	74.00	-23.65	VERTICAL	Peak
3	3598.20	53.05	29.13	4.15	37.56	48.77	74.00	-25.23	VERTICAL	Peak
4	4508.14	48.09	30.93	4.62	37.40	46.24	74.00	-27.76	VERTICAL	Peak
5	5392.92	48.44	32.05	5.12	37.22	48.39	74.00	-25.61	VERTICAL	Peak
6	5730.40	47.88	32.42	5.29	37.15	48.44	74.00	-25.56	VERTICAL	Peak



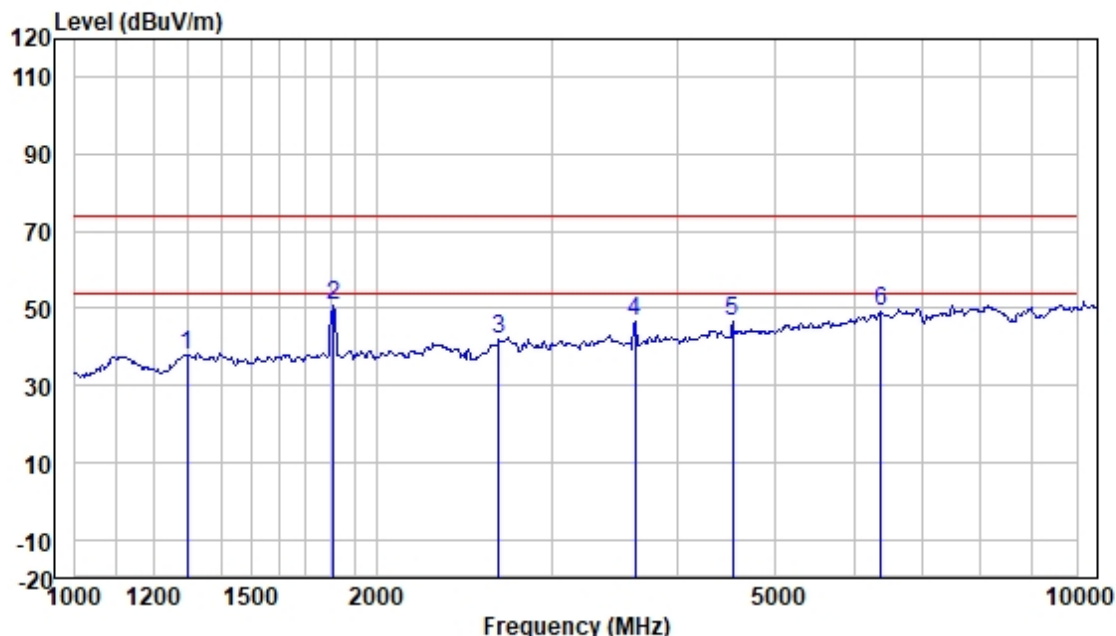
Test Mode: 01; Polarity: Horizontal; Modulation:CSS; Channel:Low



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1289.63	49.04	25.56	2.58	38.51	38.67	74.00	-35.33	HORIZONTAL	Peak
2	1808.55	59.41	26.47	3.02	37.99	50.91	74.00	-23.09	HORIZONTAL	Peak
3	2679.46	48.37	28.06	3.59	37.70	42.32	74.00	-31.68	HORIZONTAL	Peak
4	3598.20	53.81	29.13	4.15	37.56	49.53	74.00	-24.47	HORIZONTAL	Peak
5	4721.52	46.51	31.30	4.75	37.36	45.20	74.00	-28.80	HORIZONTAL	Peak
6	5746.98	49.51	32.46	5.30	37.15	50.12	74.00	-23.88	HORIZONTAL	Peak



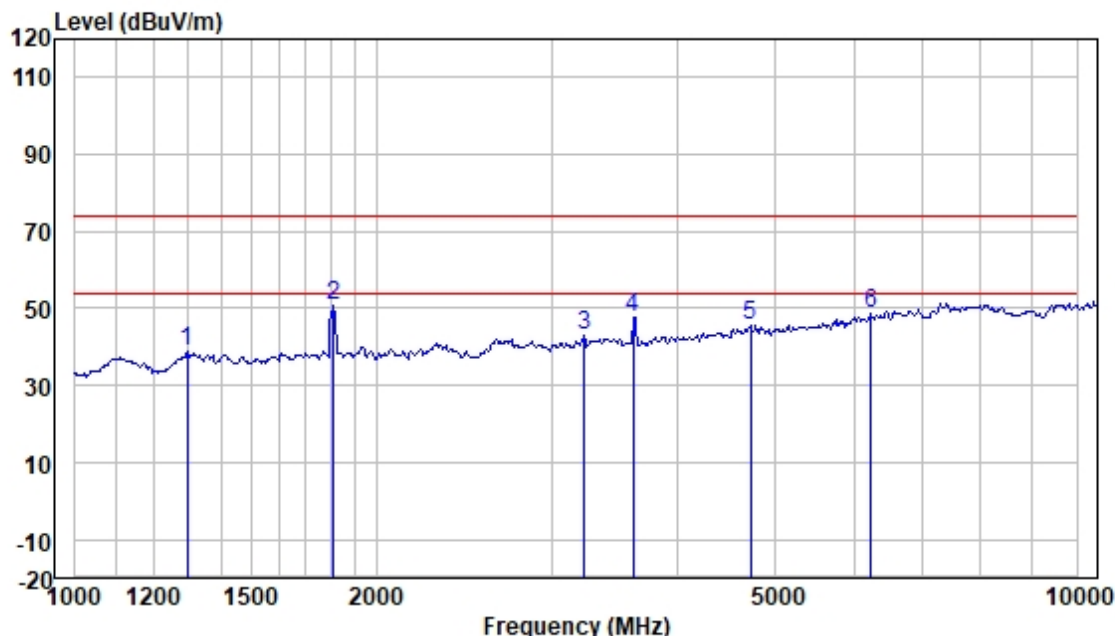
Test Mode: 01; Polarity: Vertical; Modulation:CSS; Channel:middle



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1297.10	48.39	25.59	2.58	38.50	38.06	74.00	-35.94	VERTICAL	Peak
2	1813.79	59.01	26.48	3.02	37.99	50.52	74.00	-23.48	VERTICAL	Peak
3	2648.66	47.91	27.99	3.57	37.70	41.77	74.00	-32.23	VERTICAL	Peak
4	3619.06	51.02	29.16	4.17	37.56	46.79	74.00	-27.21	VERTICAL	Peak
5	4534.27	48.41	30.96	4.64	37.39	46.62	74.00	-27.38	VERTICAL	Peak
6	6377.20	46.66	33.91	5.61	37.12	49.06	74.00	-24.94	VERTICAL	Peak



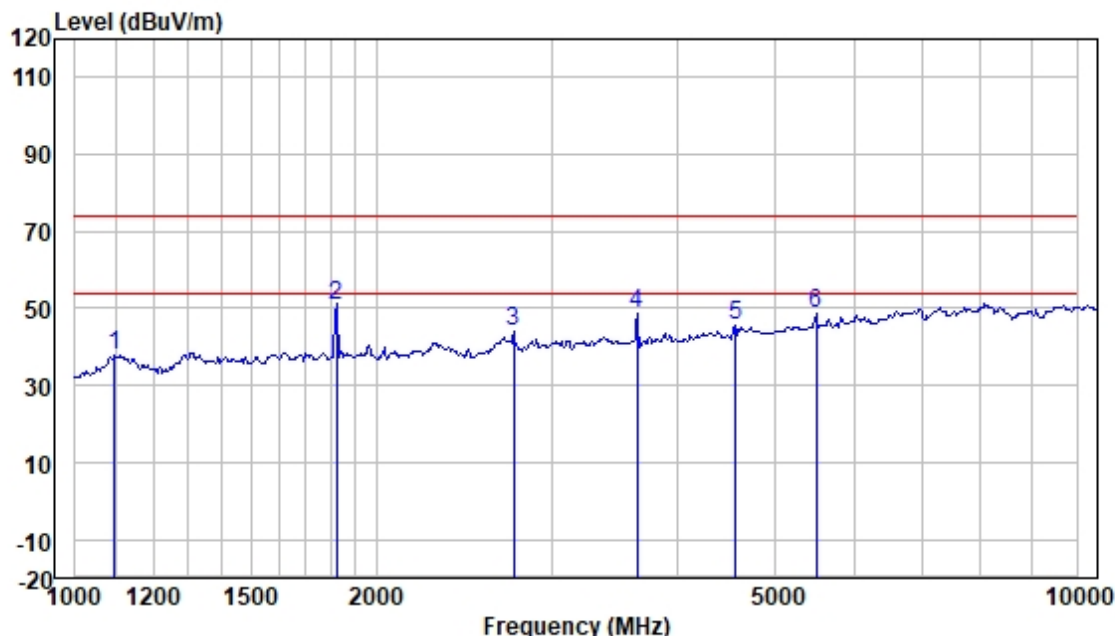
Test Mode: 01; Polarity: Horizontal; Modulation:CSS; Channel:middle



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1297.10	49.00	25.59	2.58	38.50	38.67	74.00	-35.33	HORIZONTAL	Peak
2	1813.79	59.29	26.48	3.02	37.99	50.80	74.00	-23.20	HORIZONTAL	Peak
3	3223.93	47.86	28.82	3.94	37.62	43.00	74.00	-31.00	HORIZONTAL	Peak
4	3608.62	52.01	29.14	4.16	37.56	47.75	74.00	-26.25	HORIZONTAL	Peak
5	4721.52	46.81	31.30	4.75	37.36	45.50	74.00	-28.50	HORIZONTAL	Peak
6	6231.43	46.93	33.43	5.53	37.11	48.78	74.00	-25.22	HORIZONTAL	Peak



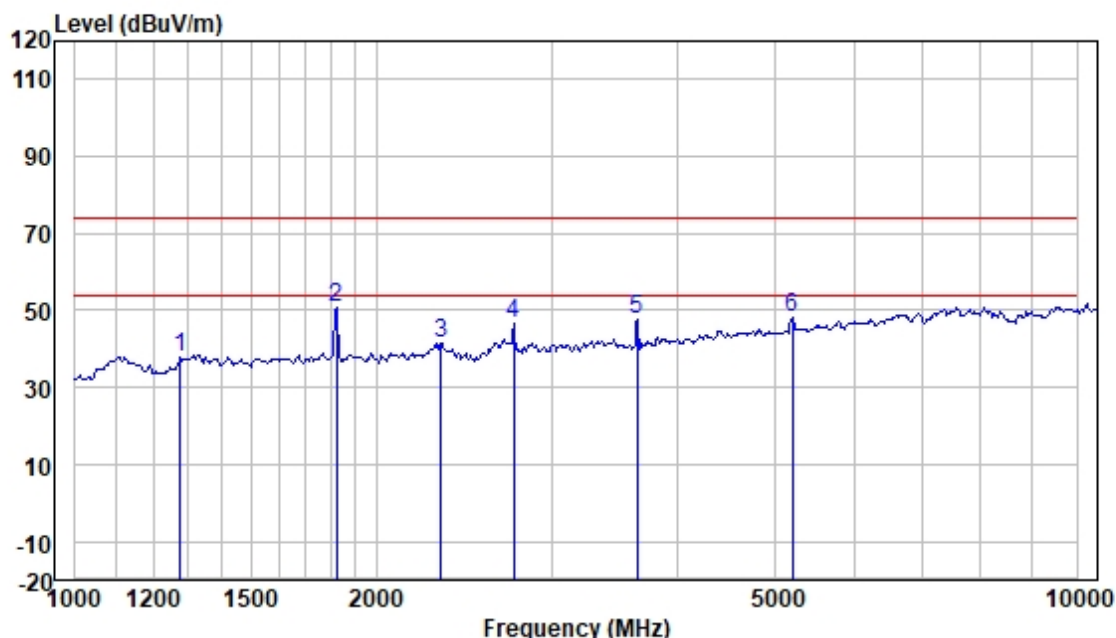
Test Mode: 01; Polarity: Vertical; Modulation:CSS; Channel:High



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1096.90	49.52	24.71	2.27	38.70	37.80	74.00	-36.20	VERTICAL	Peak
2	1824.30	59.33	26.49	3.03	37.98	50.87	74.00	-23.13	VERTICAL	Peak
3	2742.14	49.90	28.26	3.66	37.69	44.13	74.00	-29.87	VERTICAL	Peak
4	3640.05	52.99	29.21	4.18	37.55	48.83	74.00	-25.17	VERTICAL	Peak
5	4560.56	47.43	30.99	4.65	37.39	45.68	74.00	-28.32	VERTICAL	Peak
6	5487.26	48.91	32.09	5.15	37.20	48.95	74.00	-25.05	VERTICAL	Peak



Test Mode: 01; Polarity: Horizontal; Modulation:CSS; Channel:High



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1274.80	48.40	25.51	2.56	38.53	37.94	74.00	-36.06	HORIZONTAL	Peak
2	1824.30	59.01	26.49	3.03	37.98	50.55	74.00	-23.45	HORIZONTAL	Peak
3	2318.91	48.37	27.50	3.40	37.75	41.52	74.00	-32.48	HORIZONTAL	Peak
4	2742.14	52.61	28.26	3.66	37.69	46.84	74.00	-27.16	HORIZONTAL	Peak
5	3640.05	51.81	29.21	4.18	37.55	47.65	74.00	-26.35	HORIZONTAL	Peak
6	5194.04	48.40	31.89	4.99	37.26	48.02	74.00	-25.98	HORIZONTAL	Peak



7.4 Maximum Conducted Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(2)
 Test Method: ANSI C63.10-2020+COR.1-2023 Section 7.8.5
 Test Engineer: Banna Ban
 Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ hopping channels < 50
	1 for digital modulation
2400-2483.5	1 for ≥ 75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 21.2 °C

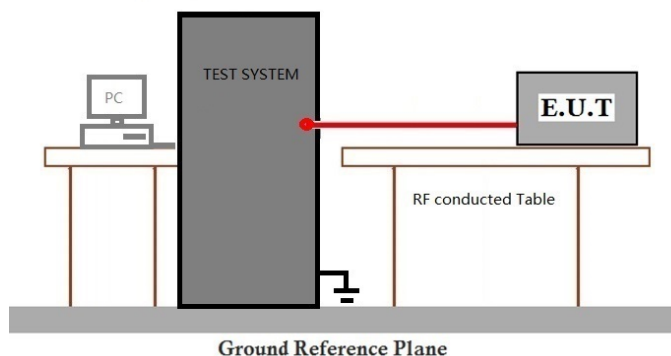
Humidity: 61.6 % RH

Atmospheric Pressure: 1005 mbar

7.4.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with CSS modulation.

7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

Note: Since the verify power the same operating range bandwidth and smaller power can be covered by the higher power.

Please Refer to Appendix for Details



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7.5 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247(a)(1)
 Test Method: ANSI C63.10-2020+COR.1-2023 Section 6.9.2
 Test Engineer: Banna Ban
 Limit:

20 dB bandwidth of the hopping channel	Hopping frequencies	Average time of occupancy
less than 250 kHz	least 50 hopping frequencies	shall not be greater than 0.4 seconds within a 20 second period
250 kHz to 500kHz	least 25 hopping frequencies	shall not be greater than 0.4 seconds within a 10 second period.

7.5.1 E.U.T. Operation

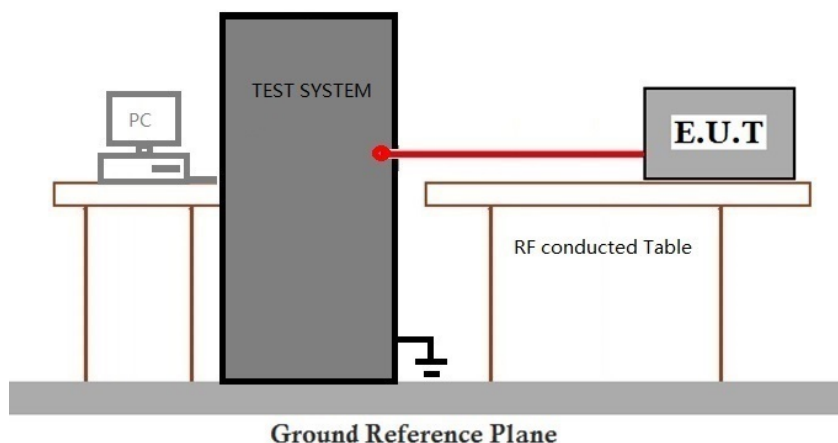
Operating Environment:

Temperature: 21.2 °C Humidity: 61.6 % RH Atmospheric Pressure: 1005 mbar

7.5.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with CSS modulation.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.6 Carrier Frequencies Separation

Test Requirement 47 CFR Part 15, Subpart C 15.247a(1)
 Test Method: ANSI C63.10-2020+COR.1-2023 Section 7.8.2
 Test Engineer: Banna Ban
 Limit:

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. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

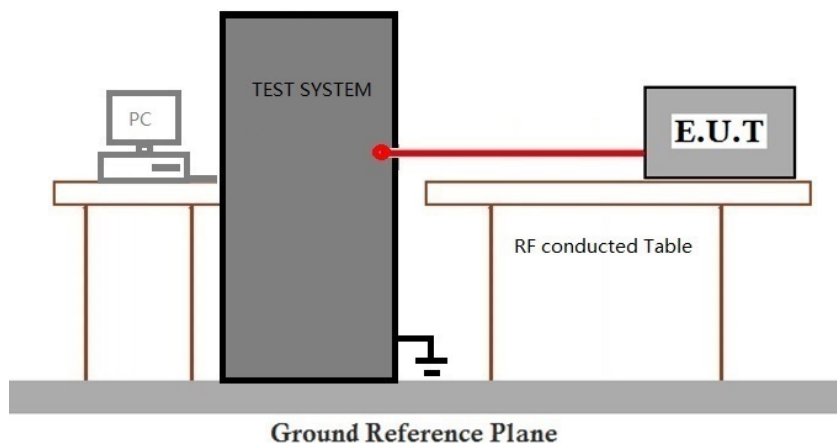
7.6.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.2 °C Humidity: 61.6 % RH Atmospheric Pressure: 1005 mbar

7.6.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	TX_Hop mode_Keep the EUT in frequency hopping mode with CSS modulation.

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.7 Hopping Channel Number

Test Requirement 47 CFR Part 15, Subpart C 15.247a(1)(i)
 Test Method: ANSI C63.10-2020+COR.1-2023 Section 7.8.3
 Test Engineer: Banna Ban
 Limit:

Frequency range(MHz)	Number of hopping channels (minimum)
902-928	50 for 20dB bandwidth <250kHz
	25 for 20dB bandwidth ≥250kHz
2400-2483.5	15
5725-5850	75

7.7.1 E.U.T. Operation

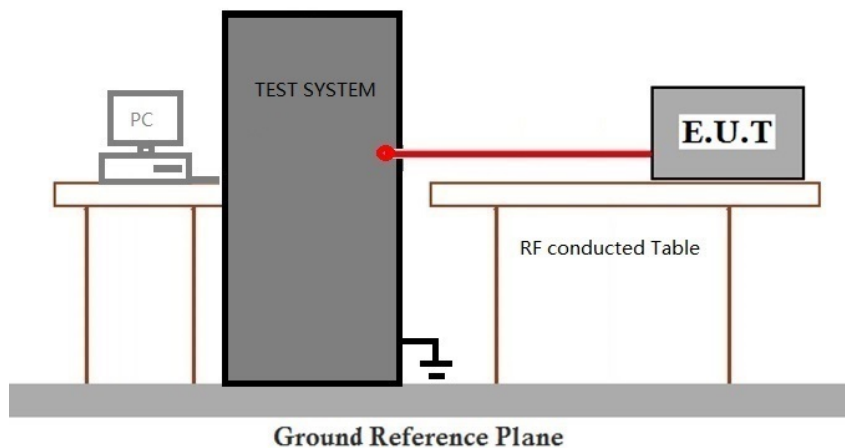
Operating Environment:

Temperature: 21.2 °C Humidity: 61.6 % RH Atmospheric Pressure: 1005 mbar

7.7.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	TX_Hop mode_Keep the EUT in frequency hopping mode with CSS modulation.

7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.8 Dwell Time

Test Requirement 47 CFR Part 15, Subpart C 15.247a(1)(i)
 Test Method: ANSI C63.10-2020+COR.1-2023 Section 7.8.4
 Test Engineer: Banna Ban
 Limit:

Frequency(MHz)	Limit
902-928	0.4S within a 20S period(20dB bandwidth<250kHz)
	0.4S within a 10S period(20dB bandwidth≥250kHz)
2400-2483.5	0.4S within a period of 0.4S multiplied by the number of hopping channels
5725-5850	0.4S within a 30S period

7.8.1 E.U.T. Operation

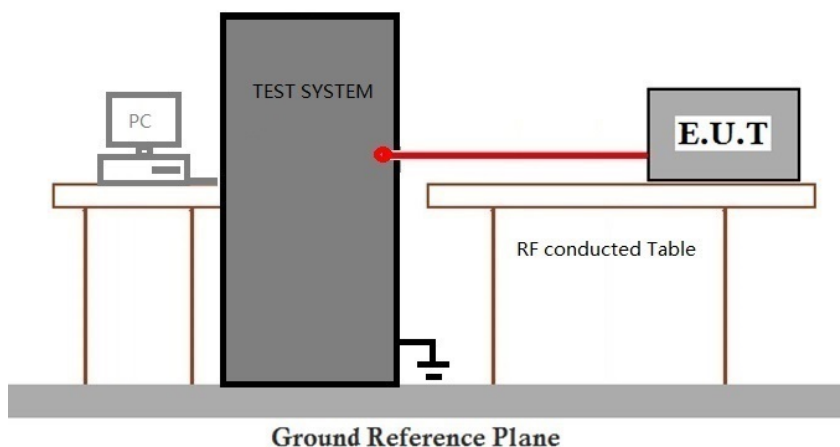
Operating Environment:

Temperature: 21.2 °C Humidity: 61.6 % RH Atmospheric Pressure: 1005 mbar

7.8.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	TX_Hop mode_Keep the EUT in frequency hopping mode with CSS modulation.

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.9 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
 Test Method: ANSI C63.10-2020+COR.1-2023 Section 7.8.7.2
 Test Engineer: Banna Ban
 Limit:

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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

7.9.1 E.U.T. Operation

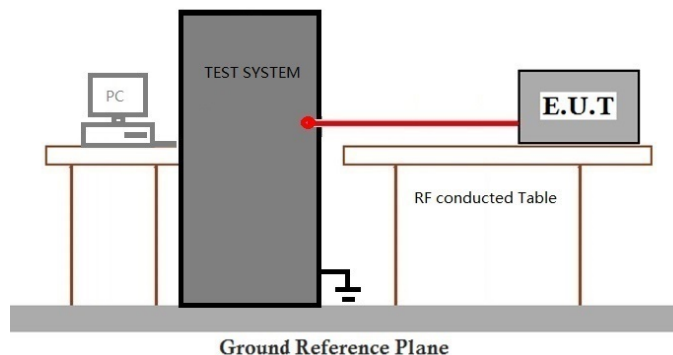
Operating Environment:

Temperature: 21.2 °C Humidity: 61.6 % RH Atmospheric Pressure: 1005 mbar

7.9.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	TX_Hop mode_Keep the EUT in frequency hopping mode with CSS modulation.
Final test 01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with CSS modulation.

7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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7.10 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)
 Test Method: ANSI C63.10-2020+COR.1-2023 Section 7.8.7
 Test Engineer: Banna Ban
 Limit:

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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

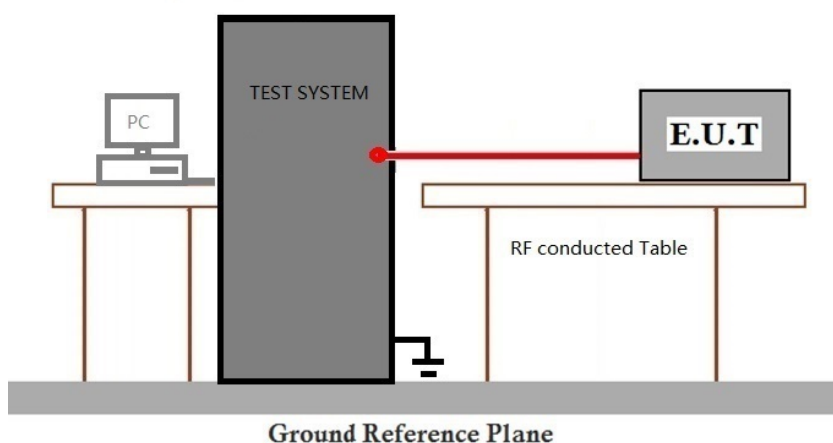
7.10.1 E.U.T. Operation

Operating Environment:
 Temperature: 21.2 °C Humidity: 61.6 % RH Atmospheric Pressure: 1005 mbar

7.10.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 01	TX_non-Hop mode_Keep the EUT in continuously transmitting mode with CSS modulation.

7.10.3 Test Setup Diagram



7.10.4 Measurement Procedure and Data

Please Refer to Appendix for Details



8 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZCR260400066002



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9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for GZCR2604000660AT



10 Appendix

1. Bandwidth

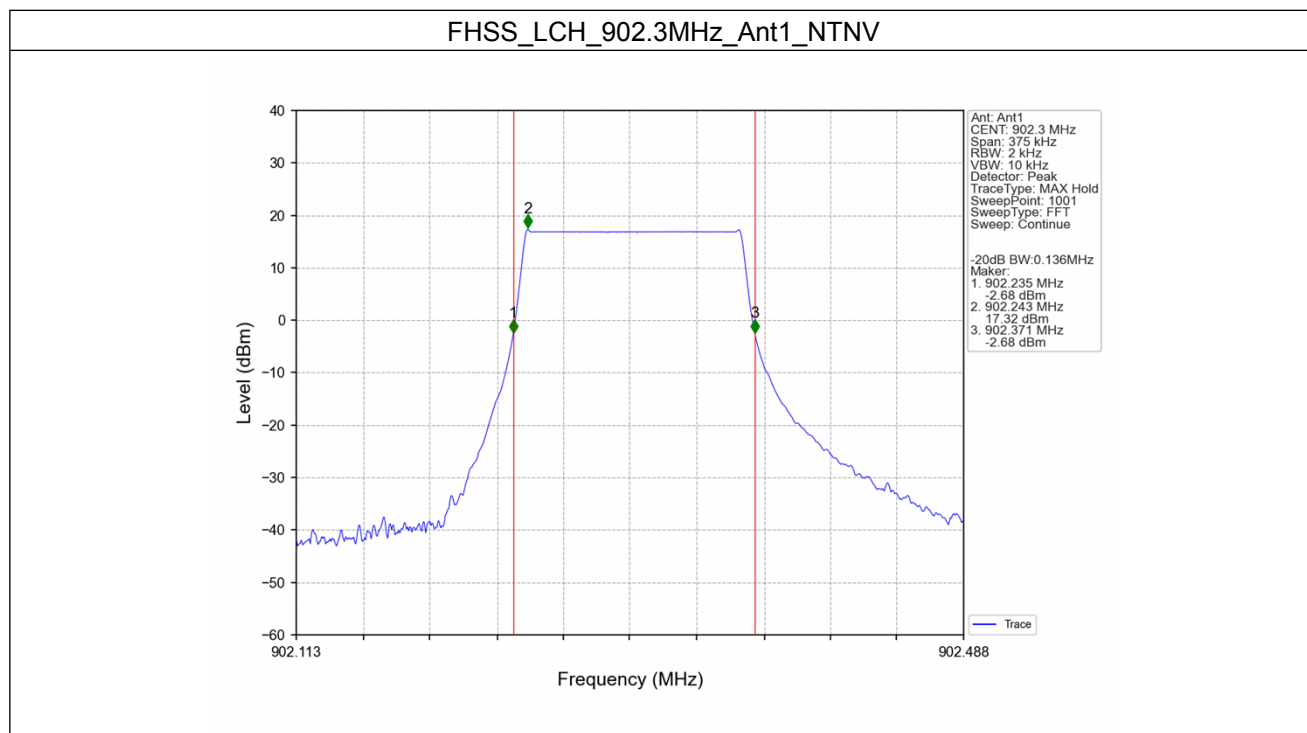
1.1 Test Result

1.1.1 20dB BW

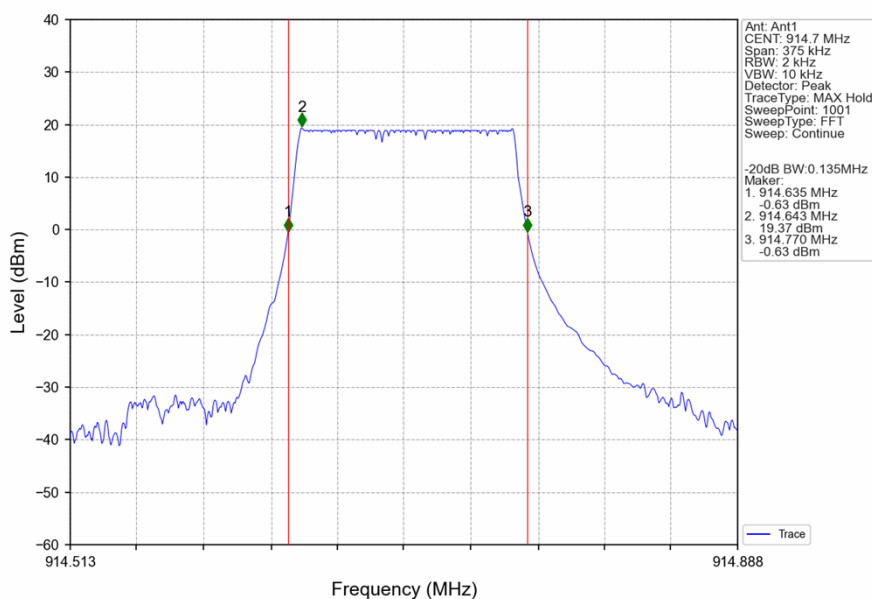
Mode	TX Type	Frequency (MHz)	ANT	20dB Bandwidth (MHz)		Verdict
				Result	Limit	
FHSS	SISO	902.3	1	0.136	/	Pass
		914.7	1	0.135	/	Pass
		927.5	1	0.136	/	Pass

1.2 Test Graph

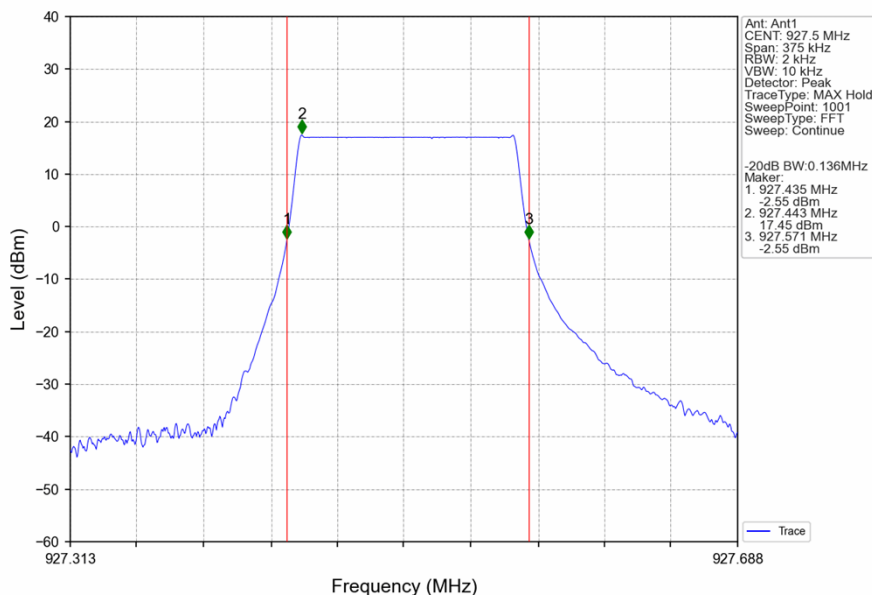
1.2.1 20dB BW



FHSS_MCH_914.7MHz_Ant1_NTNV



FHSS_HCH_927.5MHz_Ant1_NTNV



2. Maximum Conducted Output Power

2.1 Test Result

2.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
FHSS	SISO	902.3	19.88	<=30	Pass
		914.7	21.93	<=30	Pass
		927.5	20.02	<=30	Pass



3. Carrier Frequency Separation

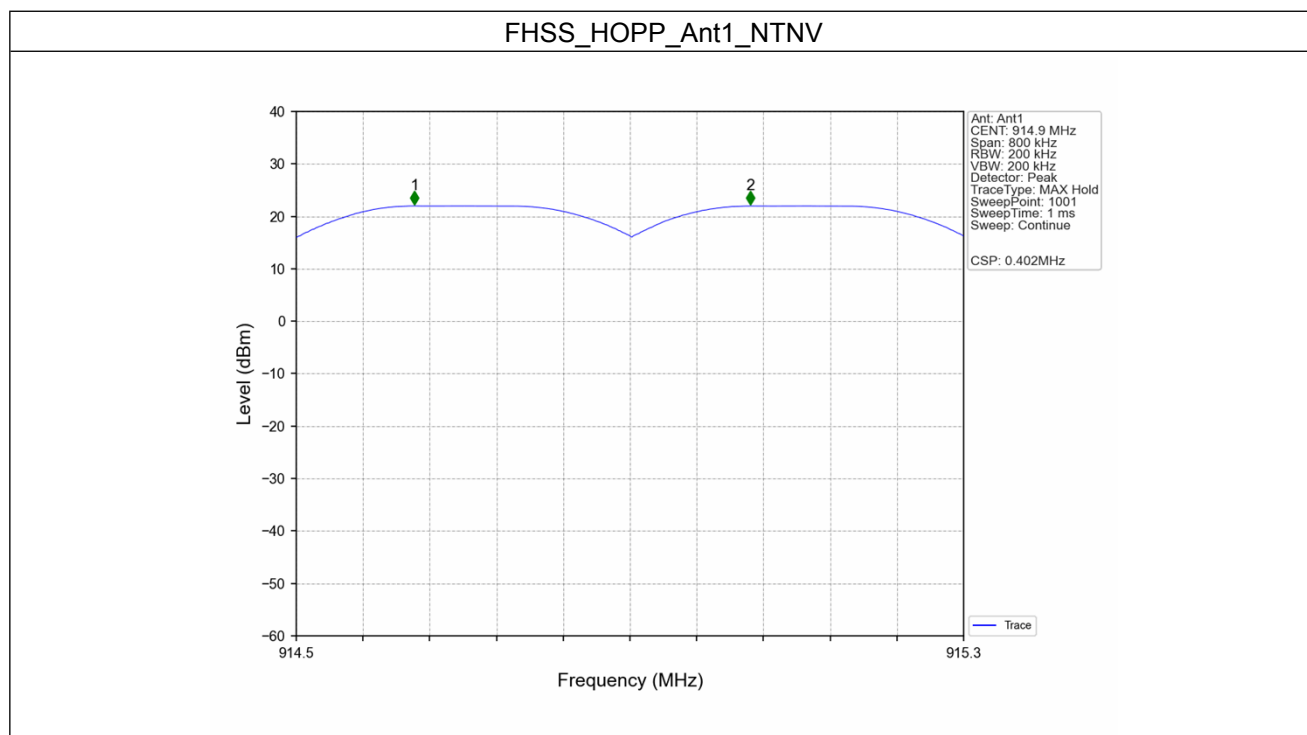
3.1 Test Result

3.1.1 Ant1

Ant1						
Mode	TX Type	Frequency (MHz)	Channel Separation (MHz)	20dB Bandwidth (MHz)	Limit (MHz)	Verdict
FHSS	SISO	HOPP	0.402	0.136	≥ 0.136	Pass

3.2 Test Graph

3.2.1 Ant1



4. Number of Hopping Frequencies

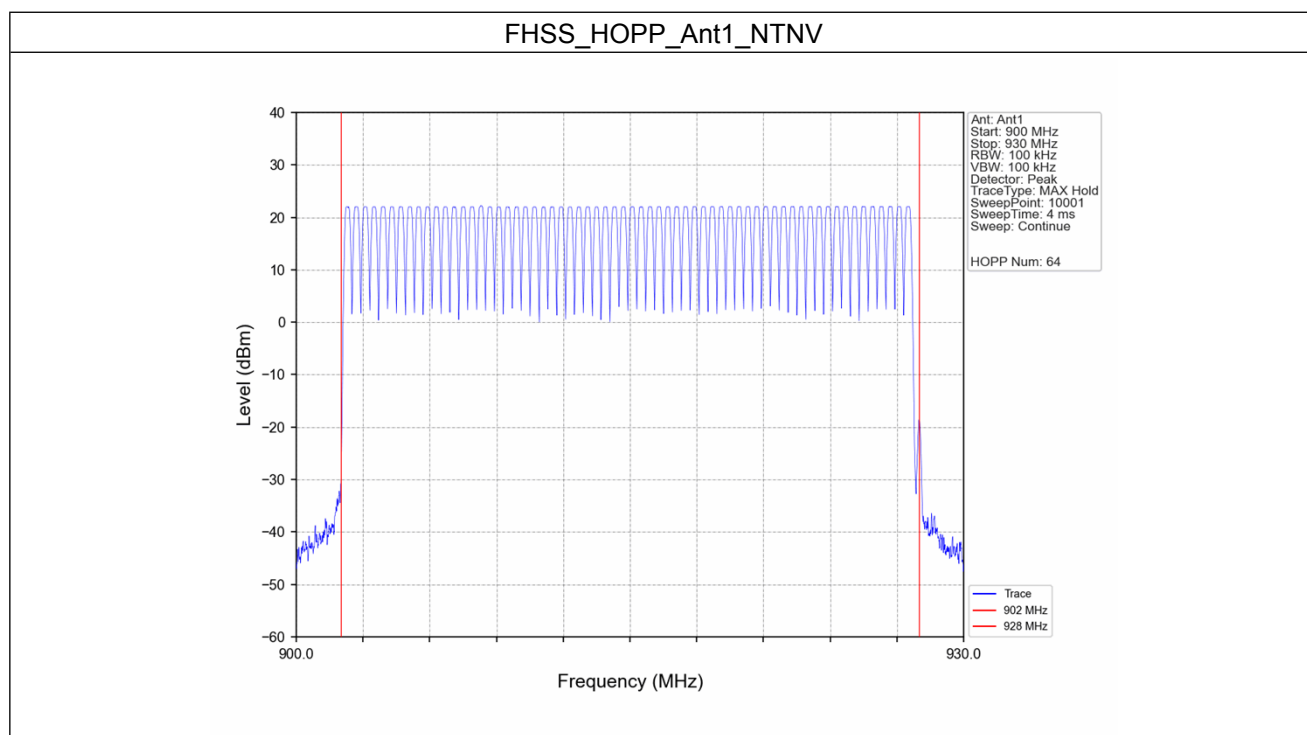
4.1 Test Result

4.1.1 HoppNum

Mode	TX Type	Frequency (MHz)	Num of Hopping Frequencies		Verdict
			ANT1	Limit	
FHSS	SISO	HOPP	64	>=50	Pass

4.2 Test Graph

4.2.1 HoppNum



5. Time of Occupancy (Dwell Time)

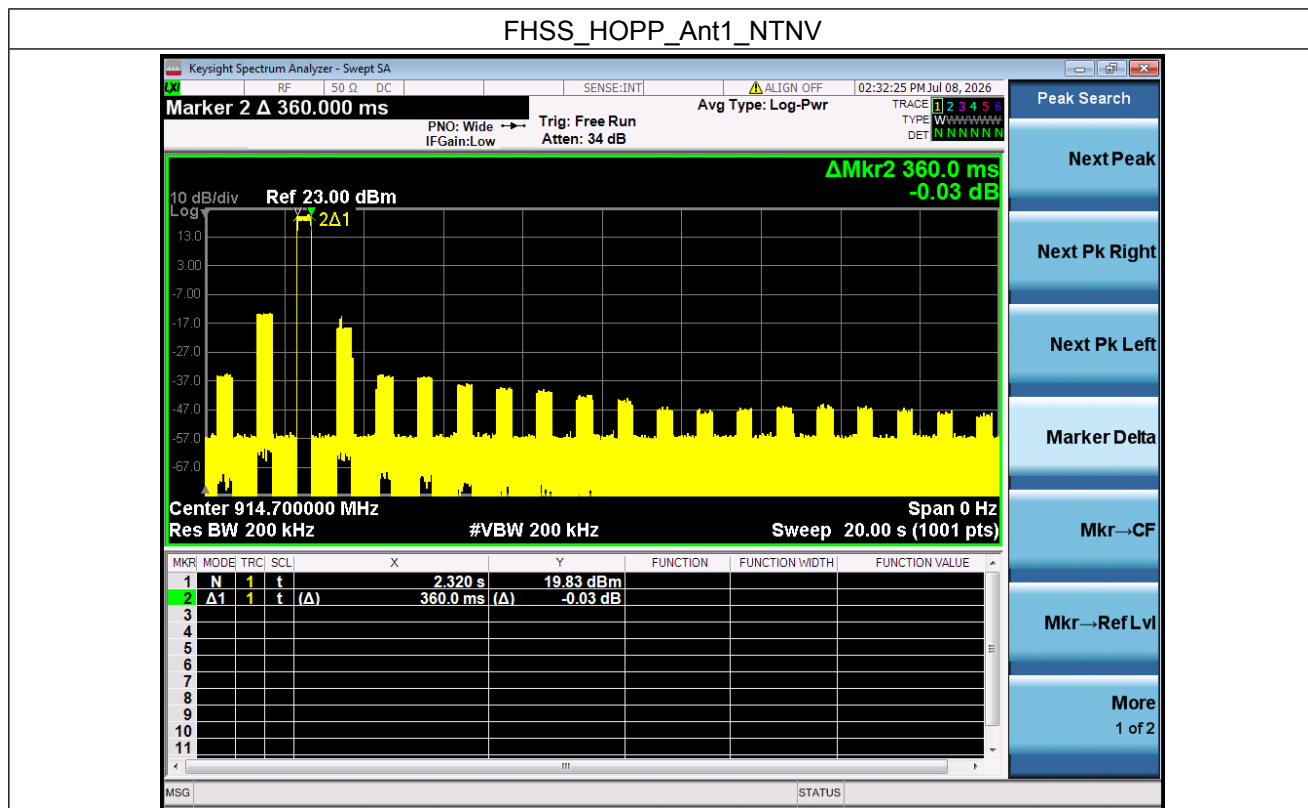
5.1 Test Result

5.1.1 Ant1

Ant1								
Mode	TX Type	Frequency (MHz)	Duration of Single Pulse (ms)	Observation Period (s)	Num of Pulse in Observation Period	Dwell Time (ms)	Limit (ms)	Verdict
FHSS	SISO	HOPP	360	20.000	1	360	<=400	Pass

5.2 Test Graph

5.2.1 Ant1



6. Unwanted Emissions In Non-restricted Frequency Bands

6.1 Test Result

6.1.1 Ref

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
FHSS	SISO	902.3	1	19.90
		914.7	1	21.94
		927.5	1	20.04

6.1.2 CSE and Band Edges

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
FHSS	SISO	902.3	1	21.94	1.94	Pass
		914.7	1	21.94	1.94	Pass
		927.5	1	21.94	1.94	Pass
		HOPP	1	21.94	1.94	Pass
				21.94	1.94	Pass



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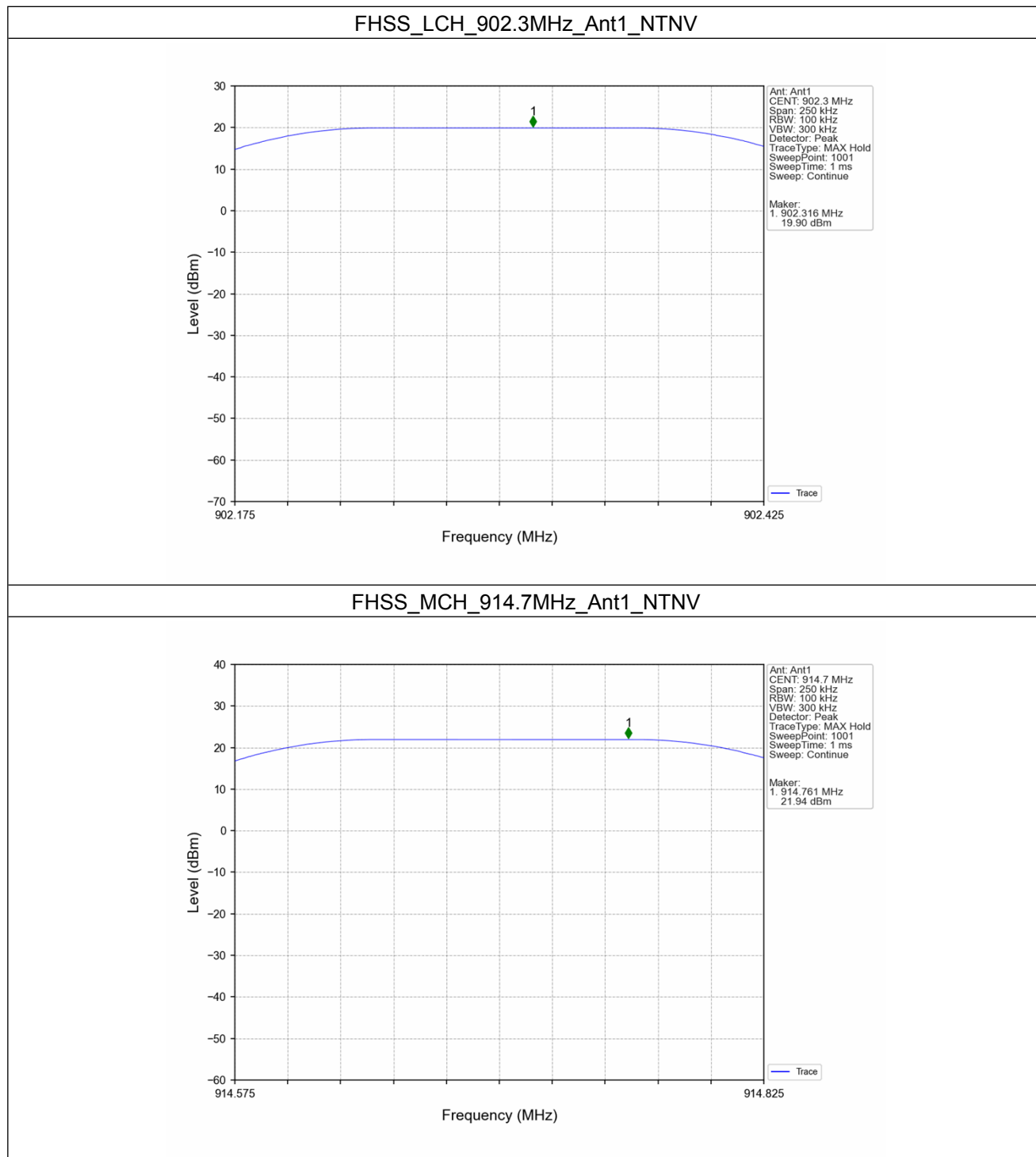
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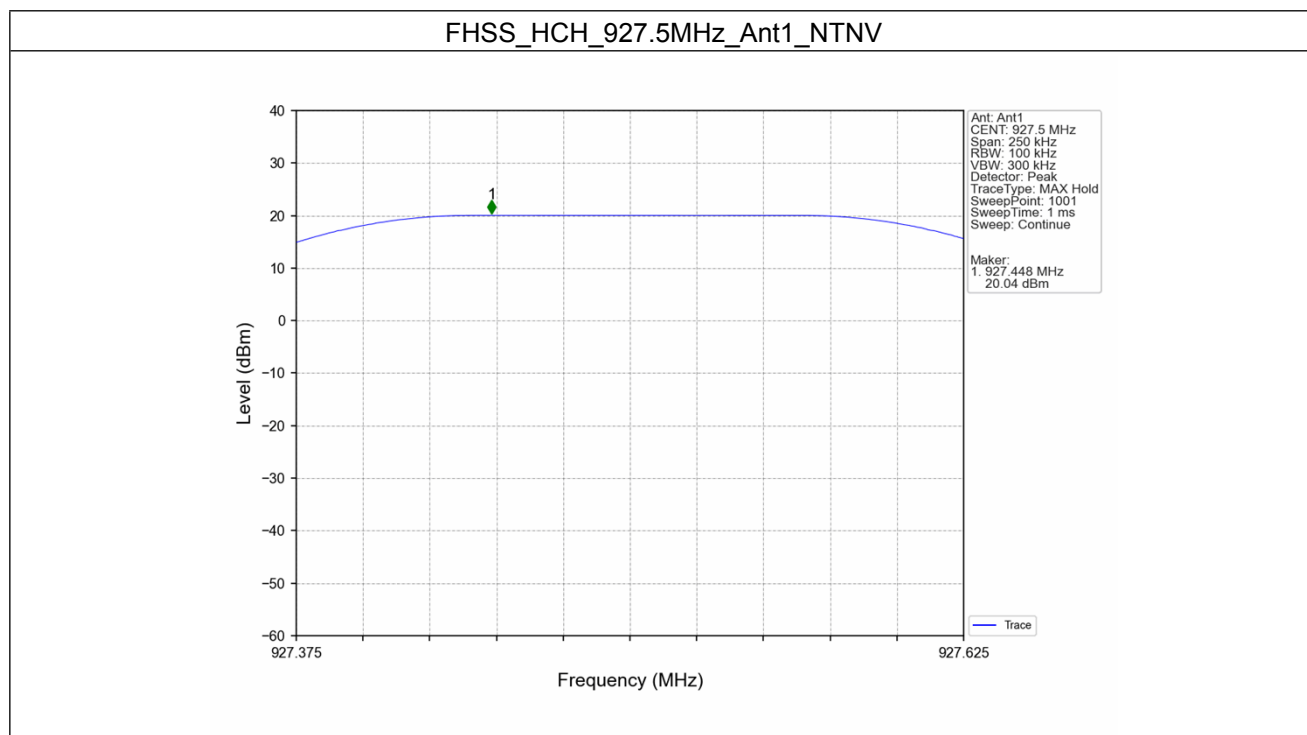
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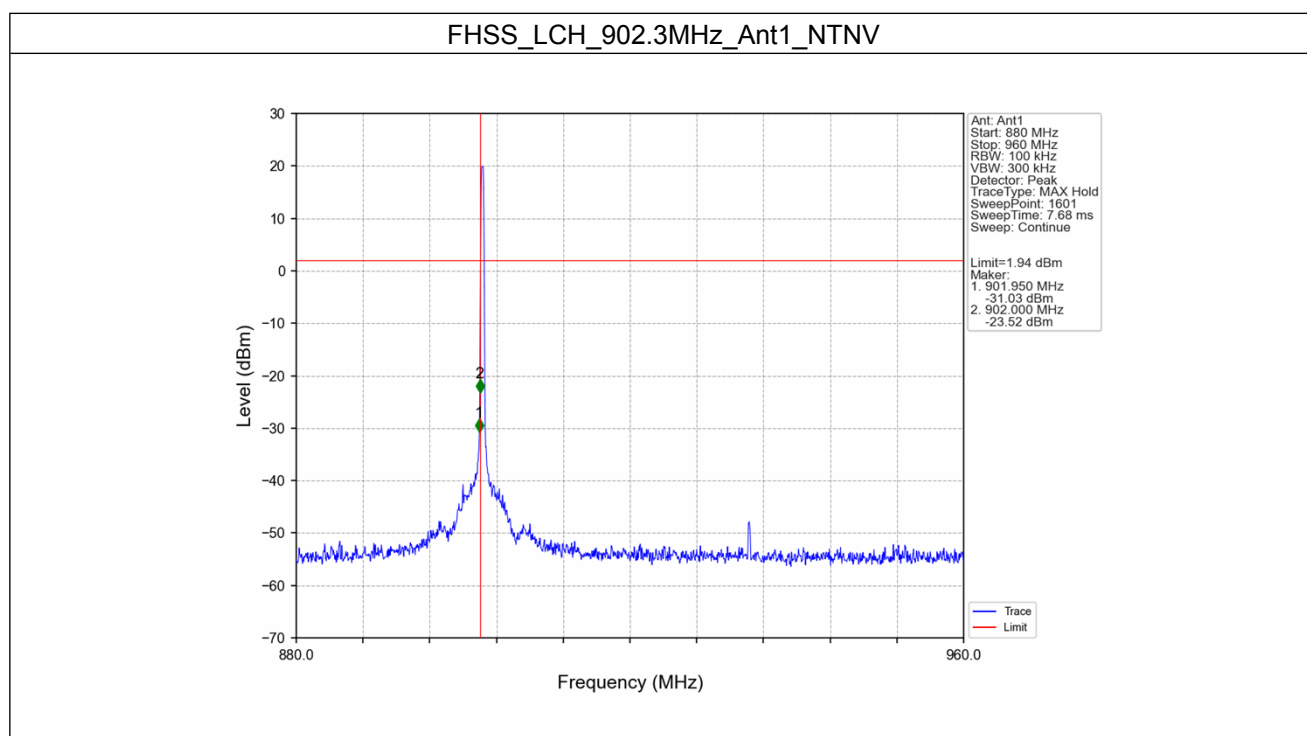
6.2 Test Graph

6.2.1 Ref

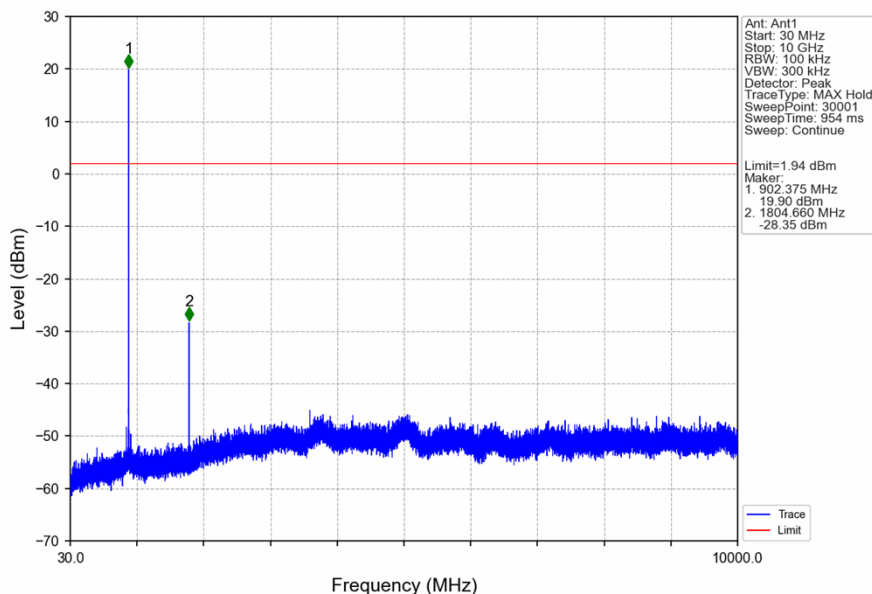




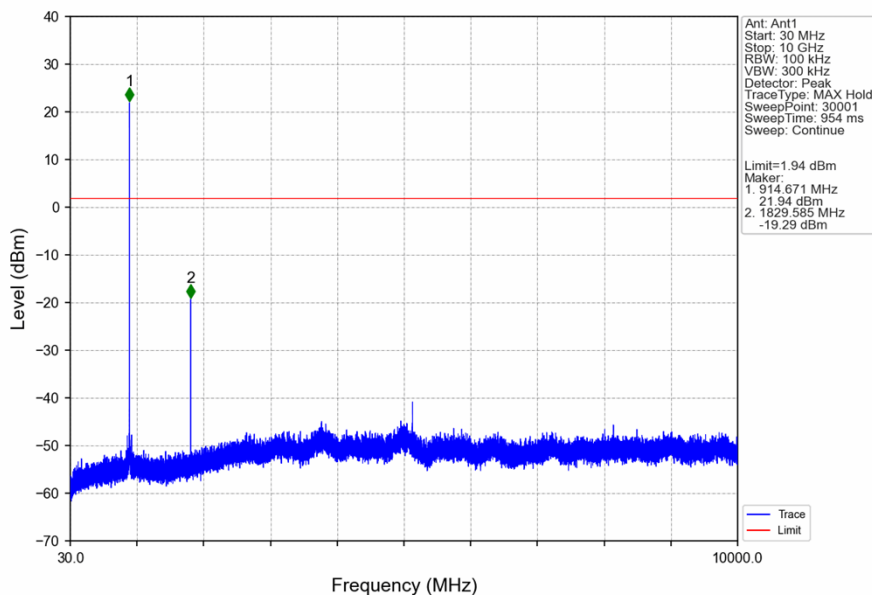
6.2.2 CSE and Band Edges



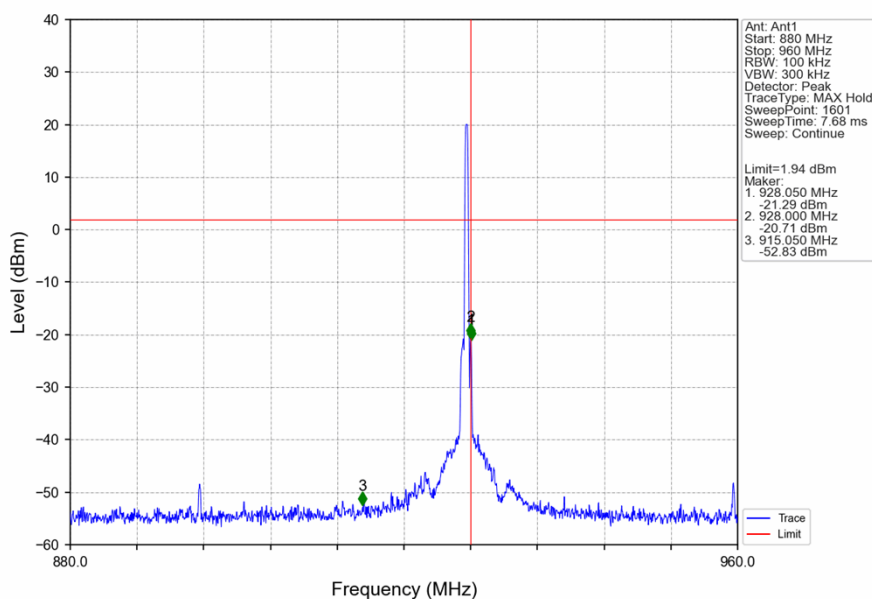
FHSS_LCH_902.3MHz_Ant1_NTNV



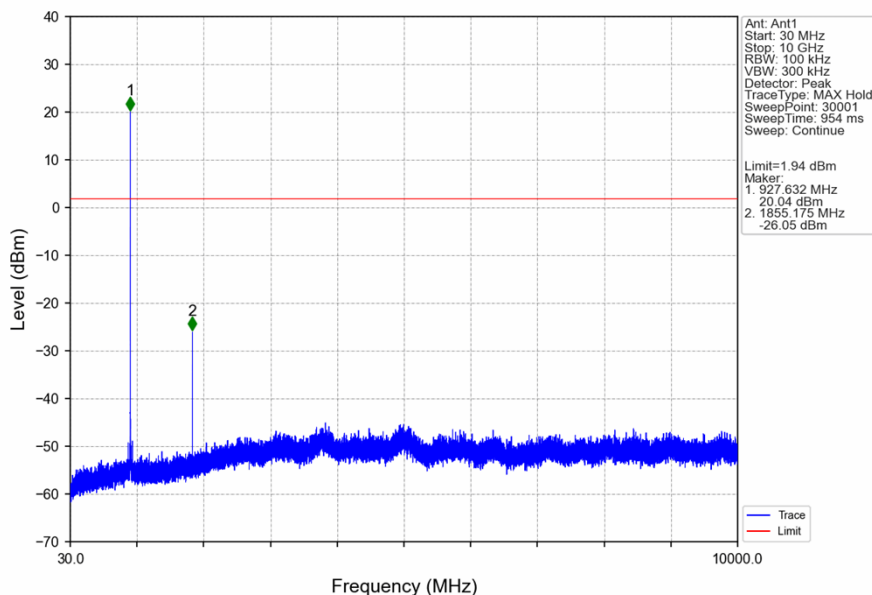
FHSS_MCH_914.7MHz_Ant1_NTNV



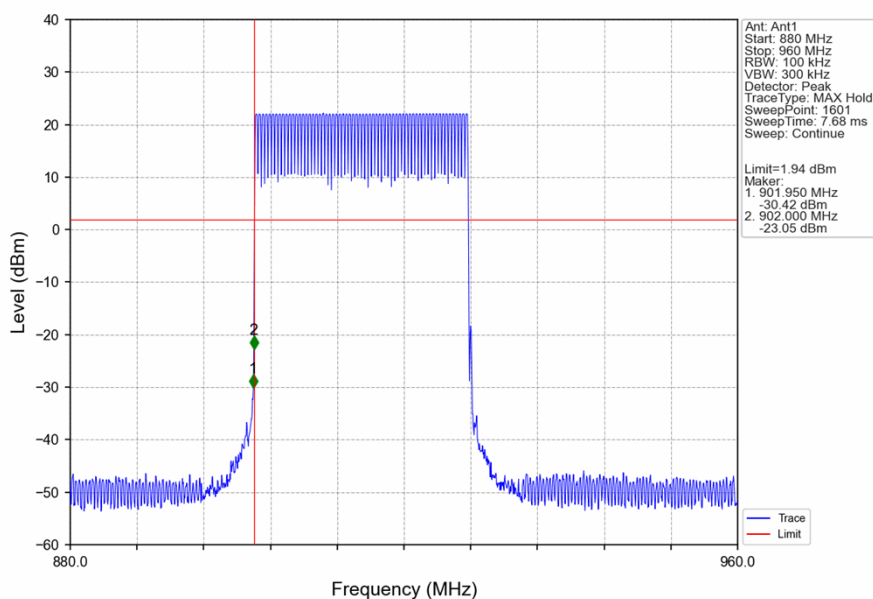
FHSS_HCH_927.5MHz_Ant1_NTNV



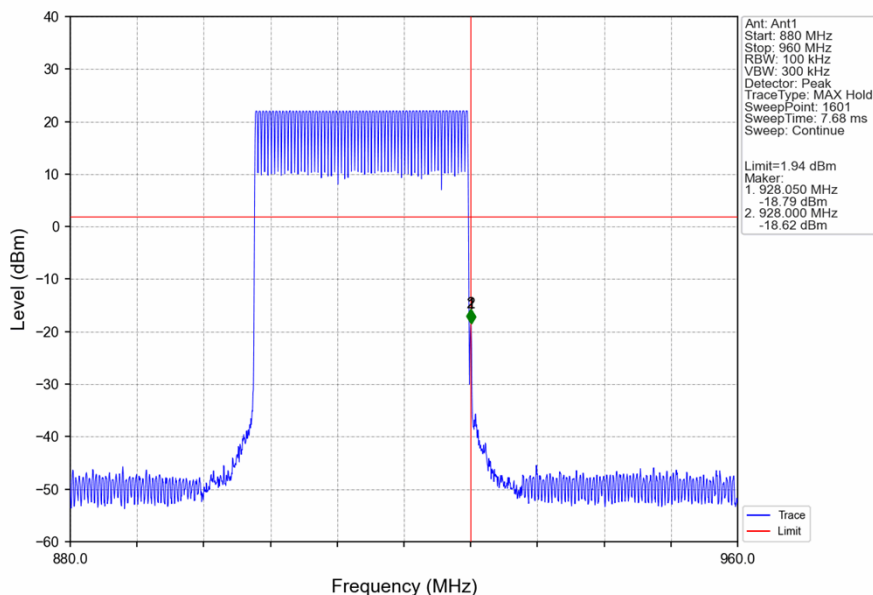
FHSS_HCH_927.5MHz_Ant1_NTNV



FHSS_HOPP_Ant1_NTNV



FHSS_HOPP_Ant1_NTNV



- End of the Report -

