FCC Test Report

Report No.:	2405U45453EC
Applicant:	M5Stack Technology Co., Ltd
Address:	5F, Tangwei Stock Commercial BuildingYouli Road, Bao'an District, Shenzhen,Guangdong,China
Product Name:	M5AtomS3R
Product Model:	AtomS3R
Multiple Models:	AtomS3R Lite, AtomS3R Cam, AtomS3R Ext
Trade Mark:	M5STACK
FCC ID:	2AN3WM5ATOMS3R
Standards:	FCC CFR Title 47 Part 15C (§15.247)
Test Date:	2024-06-21to 2024-07-09
Test Result:	Complied
Report Date:	2024-07-10

Reviewed by: Abel chen

Abel Chen
Project Engineer

Approved by: Jacob Gong

Jacob Kong
Manager

Prepared by:

World Alliance Testing & Certification (Shenzhen) Co., Ltd

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NVLAP TESTING NVLAP LAB CODE 600335-0

ilac-MRA

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5. The information marked "#" is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

Revision History

Version No.	Issued Date	Description
00	*2024-07-10*	*Original*

Contents

1 General Information

1.1 Client Information

Applicant:	M5Stack Technology Co., Ltd
Address:	5F, Tangwei Stock Commercial Building Youli Road, Bao'an District, Shenzhen, Guangdong, China
Manufacturer:	M5Stack Technology Co., Ltd
Address:	5F, Tangwei Stock Commercial Building Youli Road, Bao'an District, Shenzhen, Guangdong, China

1.2 Product Description of EUT

The EUT is M5AtomS3R that contains BLE and 2.4G WLAN radios, this report covers the full testing of the 2.4G WLAN radio.

Sample Serial Number	2N9F-1, 2N9F-3, 2N9F-4, 2N9F-5 for CE & RE test, 2N9F-2 for RF test (assigned by WATC)
Sample Received Date	2024-06-20
Sample Status	Good Condition
Frequency Range	2412MHz - 2472MHz(802.11b, g, n-HT20) 2422MHz - 2462MHz(802.11n-HT40)
Maximum Conducted Peak Output Power	21.76dBm
Modulation Technology	DSSS, OFDM
Antenna Gain#	4.23dBi
Spatial Streams#	SISO (1TX, 1RX)
Power Supply	DC 4.5~5.5V from type C port
Adapter Information	N/A
Modification	Sample No Modification by the test lab

1.3 Antenna information

15.203 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.

Device Antenna information:	

The Wi-Fi antenna is an internal antenna which cannot replace by end-user. Please see product internal photos for details.

1.4 Related Submittal(s)/Grant(s)

No Related Submittal(s)/Grant(s)

1.5 Measurement Uncertainty

Parameter		Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))
AC Power Lines Conducted Emissions		±3.14dB
Emissions, Radiated	Below 30MHz	±2.78dB
	Below 1GHz	±4.84dB
	Above 1GHz	±5.44dB
Emissions, Conducted		1.75dB
Conducted Power		0.74dB
Frequency Error		150Hz
Bandwidth		0.34%
Power Spectral Density		0.74dB

Note: *The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.*

1.6 Laboratory Location

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: qa@watc.com.cn

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

1.7 Test Methodology

FCC CFR 47 Part 2

FCC CFR 47 Part 15

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2020

2 Description of Measurement

2.1 Test Configuration

Operating channels:					
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	6	2437	11	2462
2	2417	7	2442	12	2467
3	2422	8	2447	13	2472
4	2427	9	2452	/	/
5	2432	10	2457	/	/
According to ANSI C63.10-2020 chapter 5.6.1 Table 11 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:					
802.11b, 802.11g, 802.11n-HT20					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2412	7	2442	13	2472
802.11n-HT40					
Lowest channel		Middle channel		Highest channel	
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
3	2422	7	2437	11	2462

Test Mode:				
Transmitting mode:	Keep the EUT in continuous transmitting with modulation			
Exercise software[#]:	ESP_RF_Test_CN			
Mode	**Worst-case Data rate**	**Power Level Setting[#]**		
		Low Channel	**Middle Channel**	**High Channel**
802.11b	1Mbps	33	33	33
802.11g	6Mbps	37	37	37
802.11n-HT20	6.5Mbps	35	35	35
802.11n-HT40	13.5Mbps	38	38	38
The exercise software and the maximum power setting that provided by manufacturer.				

Worst-Case Configuration:
For radiated emissions, EUT was investigated in three orthogonal orientation, the worst-case orientation was recorded in report For AC power line conducted emission and radiated emission 9kHz-1GHz and above 18GHz were performed with the EUT transmits at the channel with highest output power as worst-case scenario.

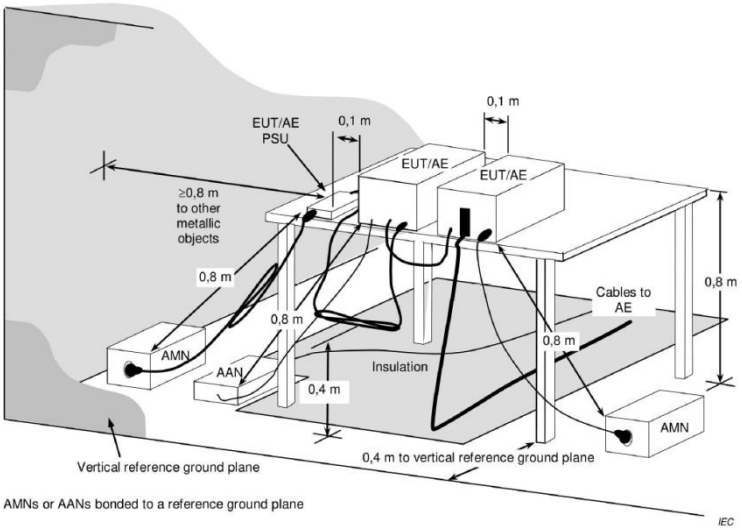
All the multiple models with same RF circuit, there are some difference for non-transmitter portions circuit between them, so the model AtomS3R was selected for full test, other models was checked the AC power line conducted emission and radiated emission of below 1GHz range.

2.2 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
MEIZU	adapter	unknown	unknown
unknown	USB cable	unknown	unknown
DELL	laptop	unknown	unknown

2.3 Test Setup

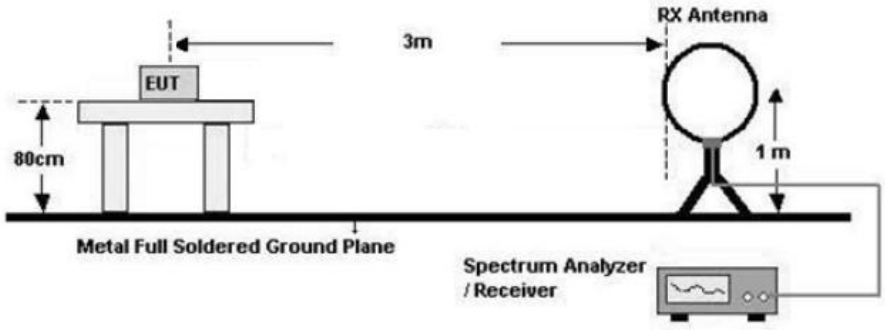
1) Conducted emission measurement:



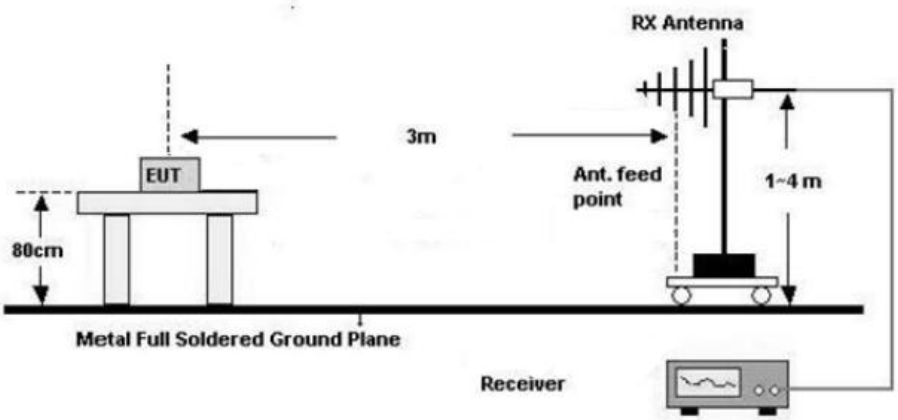
Note: The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

2) Radiated emission measurement:

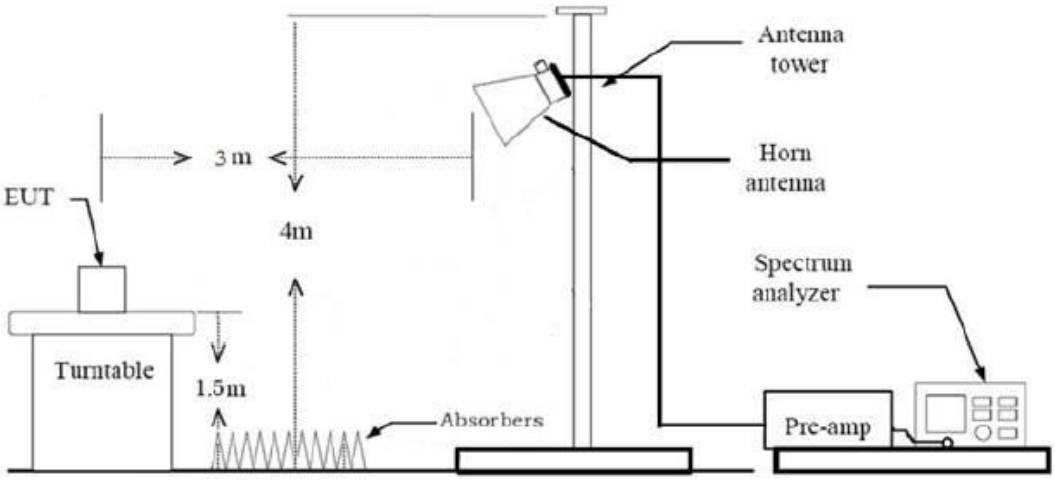
Below 30MHz (3m SAC)



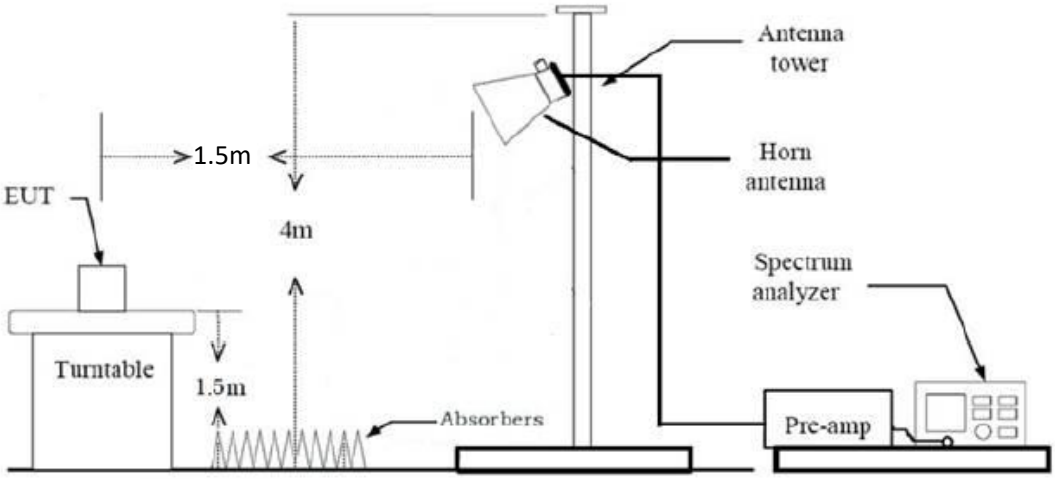
30MHz-1GHz (3m SAC)



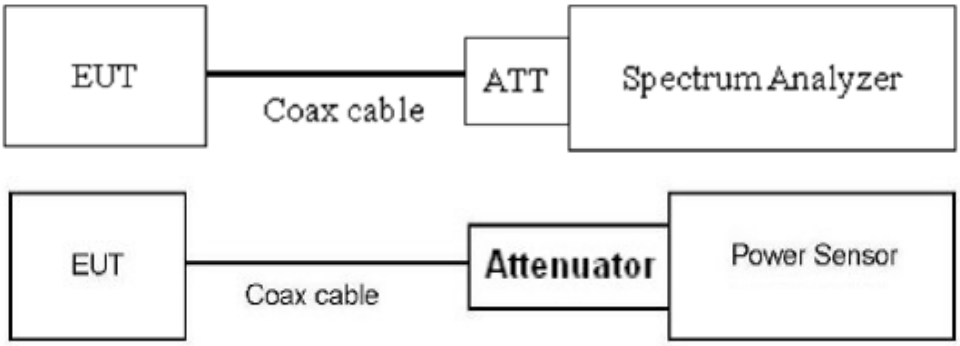
1GHz-18GHz(3m FAC)



Above 18GHz (3m FAC)



3) RF Conducted Test



2.4 Test Procedure

Conducted emission:

1. The E.U.T is placed on a non-conducting table 40cm from the vertical ground plane and 80cm above the horizontal ground plane (Please refer to the block diagram of the test setup and photographs).
2. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
3. Line conducted data is recorded for both Line and Neutral

Radiated Emission Procedure:

a) For below 30MHz

1. All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz- 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were 40*Log (test distance / specification distance).
2. Loop antenna use, investigation was done on the three antenna orientations (parallel, perpendicular, gound-parallel)

b) For 30MHz-1GHz:

1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.

c) For above 1GHz:

1. The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m fully anechoic room. The measurement distance from the EUT to the receiving antenna is 3 m (1-18GHz) and 1.5 m (above 18GHz).

2. EUT works in each mode of operation that needs to be tested，and having the EUT continuously working. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
3. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
4. Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

RF Conducted Test:

1. The antenna port of EUT was connected to the RF port of the test equipment (Power Meter or Spectrum analyzer) through Attenuator and RF cable.
2. The cable assembly insertion loss of 7.0dB (including 6.0 dB Attenuator and 1.0 dB cable) was entered as an offset in the power meter. Note: Actual cable loss was unavailable at the time of testing, therefore a loss of 1.0dB was assumed as worst case. This was later verified to be true by laboratory. (if the RF cable provided by client, the cable loss declared by client)
3. The EUT is keeping in continuous transmission mode and tested in all modulation modes.

2.5 Measurement Method

Description of Test	Measurement Method
AC Line Conducted Emissions	ANSI C63.10-2020 Section 6.2
Maximum Conducted Output Power	ANSI C63.10-2020 Section 11.9.1.2 PKPM1 Peak power meter method or ANSI C63.10-2020 Section 11.9.2.3.2 Method AVGPM-G
Power Spectral Density	ANSI C63.10-2020 Section 11.10.2 Method PKPSD (peak PSD)
6 dB Emission Bandwidth	ANSI C63.10-2020 Section 11.8.1
99% Occupied Bandwidth	ANSI C63.10-2020 Section 6.9.3
100kHz Bandwidth of Frequency Band Edge	ANSI C63.10-2020 Section 6.10
Radiated emission	ANSI C63.10-2020 Section 11.11&11.12
Duty Cycle	ANSI C63.10-2020 Section 11.6

2.6 Measurement Equipment

Manufacturer	Description	Model	Management No.	Calibration Date	Calibration Due Date
AC Line Conducted Emission Test					
ROHDE& SCHWARZ	EMI TEST RECEIVER	ESR	101817	2024/6/4	2025/6/3
R&S	LISN	ENV216	101748	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.12	N/A	2024/6/4	2025/6/3
Farad	Test Software	EZ-EMC	Ver. EMEC-3A1	/	/
Radiated Emission Test					
R&S	EMI test receiver	ESR3	102758	2024/6/4	2025/6/3
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSV40-N	101608	2024/6/4	2025/6/3
SONOMA INSTRUMENT	Low frequency amplifier	310	186014	2024/6/4	2025/6/3
COM-POWER	preamplifier	PAM-118A	18040152	2024/6/4	2025/6/3
COM-POWER	Amplifier	PAM-840A	461306	2023/8/8	2024/8/7
BACL	Loop Antenna	1313-1A	4010611	2024/2/7	2027/2/6
SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2026/7/6
Astro Antenna Ltd	Horn antenna	AHA-118S	3015	2023/7/6	2026/7/5
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2023/7/10	2026/7/9
Oulitong	Band Reject Filter	OBSF-2400-2483.5-50N	OE02103119	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.9	N/A	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.14	N/A	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.15	N/A	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.16	N/A	2024/6/4	2025/6/3
N/A	Coaxial Cable	NO.17	N/A	2024/6/4	2025/6/3
Audix	Test Software	E3	191218 V9	/	/
RF Conducted Test					
ROHDE& SCHWARZ	SPECTRUM ANALYZER	FSU-26	200680/026	2024/6/4	2025/6/3
ANRITSU	USB Power Sensor	MA24418A	12620	2024/6/4	2025/6/3
narda	6dB attenuator	603-06-1	N/A	2024/6/4	2025/6/3

Note: All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or International standards.

3 Test Results

3.1 Test Summary

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.247(b)(3)	Maximum Conducted Output Power	Compliance
§15.247(e)	Power Spectral Density	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
-	99% Occupied Bandwidth	Report only
§15.247(d)	100kHz Bandwidth of Frequency Band Edge	Compliance
§15.205, §15.209, §15.247(d)	Radiated emission	Compliance
-	Duty Cycle	Report only

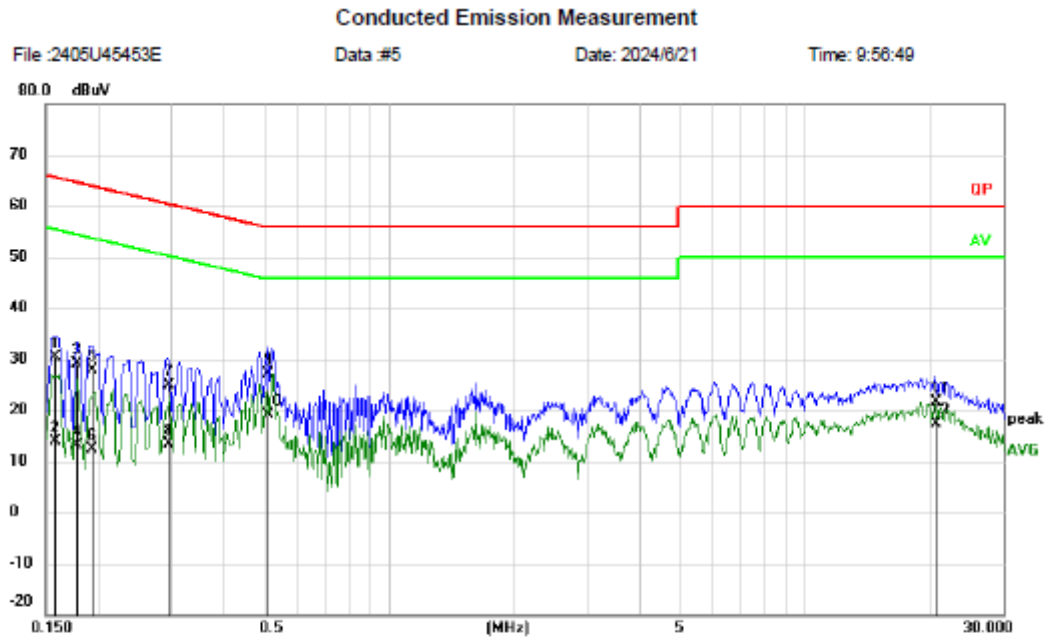
3.2 Limit

Test items	Limit
AC Line Conducted Emissions	See details §15.207 (a)
Conducted Output Power	For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.
6dB Emission Bandwidth	The minimum 6 dB bandwidth shall be at least 500 kHz.
Power Spectral Density	For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
Spurious Emissions, 100kHz Bandwidth of Frequency Band Edge	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)).

3.3 AC Line Conducted Emissions Test Data

Test Date:	2024-06-21	Test By:	Lirou Li
Environment condition:	Temperature: 22.8°C; Relative Humidity:59%; ATM Pressure: 100.9kPa		

Model: AtomS3R



Limit: QP
Mode:transmitting
Note: 2.4g-wifi

Phase: L1
Power: DC 5V

Temperature: 22.8 ℃
Humidity: 59 %
Air Pressure: 1009 hpa

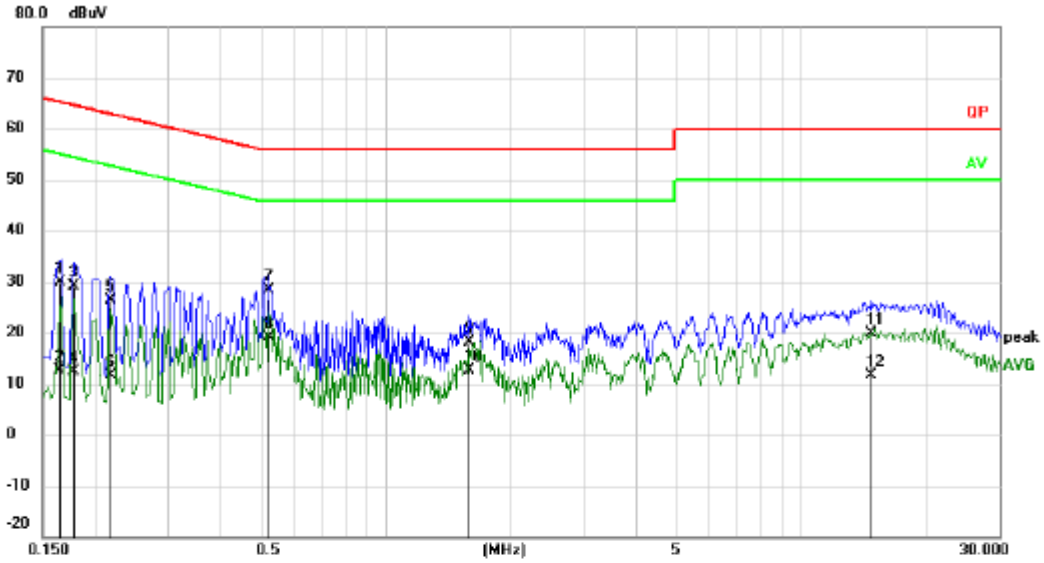
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	19.51	10.78	30.29	65.57	-35.28	QP	
2		0.1580	3.04	10.78	13.82	55.57	-41.75	AVG	
3		0.1780	18.37	10.70	29.07	64.58	-35.51	QP	
4		0.1780	2.42	10.70	13.12	54.58	-41.46	AVG	
5		0.1940	17.27	10.63	27.90	63.86	-35.96	QP	
6		0.1940	1.64	10.63	12.27	53.86	-41.59	AVG	
7		0.2940	14.18	10.70	24.88	60.41	-35.53	QP	
8		0.2940	2.65	10.70	13.35	50.41	-37.06	AVG	
9		0.5140	16.29	10.81	27.10	56.00	-28.90	QP	
10	*	0.5140	8.24	10.81	19.05	46.00	-26.95	AVG	
11		20.6100	11.11	10.53	21.64	60.00	-38.36	QP	
12		20.6100	6.78	10.53	17.31	50.00	-32.69	AVG	

*:Maximum data x:Over limit !:over margin

Engineer Signature: Lirou

Conducted Emission Measurement

File :2405U45453E Data :#6 Date: 2024/6/21 Time: 10:04:48



Limit: QP
Mode:transmitting
Note: 2.4g-wifi

Phase: N
Power: DC 5V

Temperature: 22.8 ℃
Humidity: 59 %
Air Pressure: 1009 hpa

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1650	19.41	10.55	29.96	65.21	-35.25	QP	
2		0.1650	1.97	10.55	12.52	55.21	-42.69	AVG	
3		0.1780	18.56	10.50	29.06	64.58	-35.52	QP	
4		0.1780	1.76	10.50	12.26	54.58	-42.32	AVG	
5		0.2180	15.83	10.44	26.27	62.89	-36.62	QP	
6		0.2180	1.15	10.44	11.59	52.89	-41.30	AVG	
7		0.5260	17.81	10.69	28.50	56.00	-27.50	QP	
8	*	0.5260	8.38	10.69	19.07	46.00	-26.93	AVG	
9		1.5900	7.53	10.68	18.21	56.00	-37.79	QP	
10		1.5900	1.87	10.68	12.55	46.00	-33.45	AVG	
11		14.7020	8.99	10.88	19.87	60.00	-40.13	QP	
12		14.7020	0.84	10.88	11.72	50.00	-38.28	AVG	

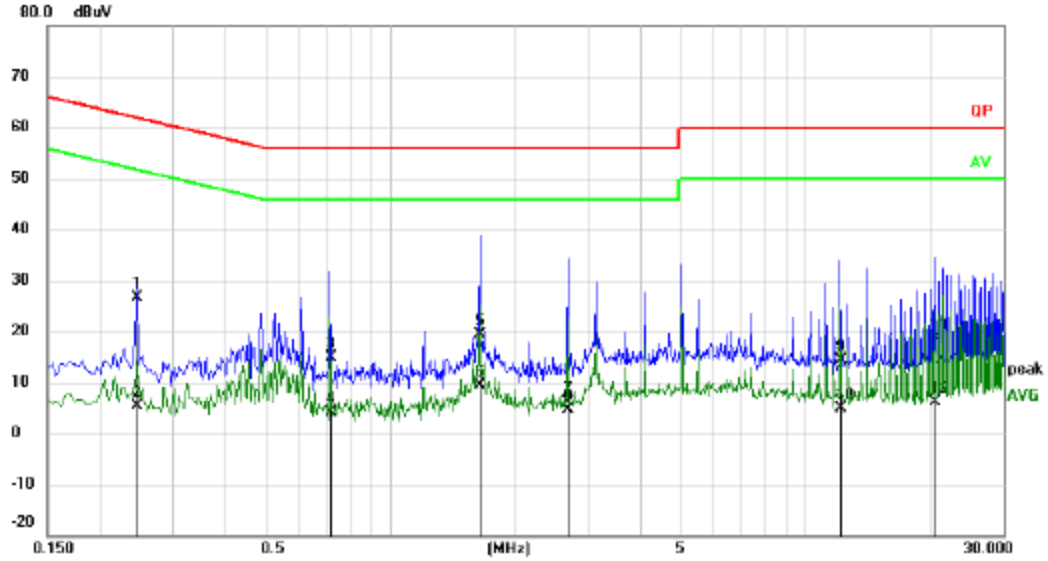
*:Maximum data x:Over limit !:over margin

Engineer Signature: Lirou

Model: AtomS3R Lite

Conducted Emission Measurement

File :2405U45453E Data :#24 Date: 2024/6/21 Time: 14:21:34



Limit: QP
Mode:transmitting
Note: 2.4g-wifi

Phase: L1
Power: DC 5V

Temperature: 22.8 ℃
Humidity: 59 %
Air Pressure: 1009 hpa

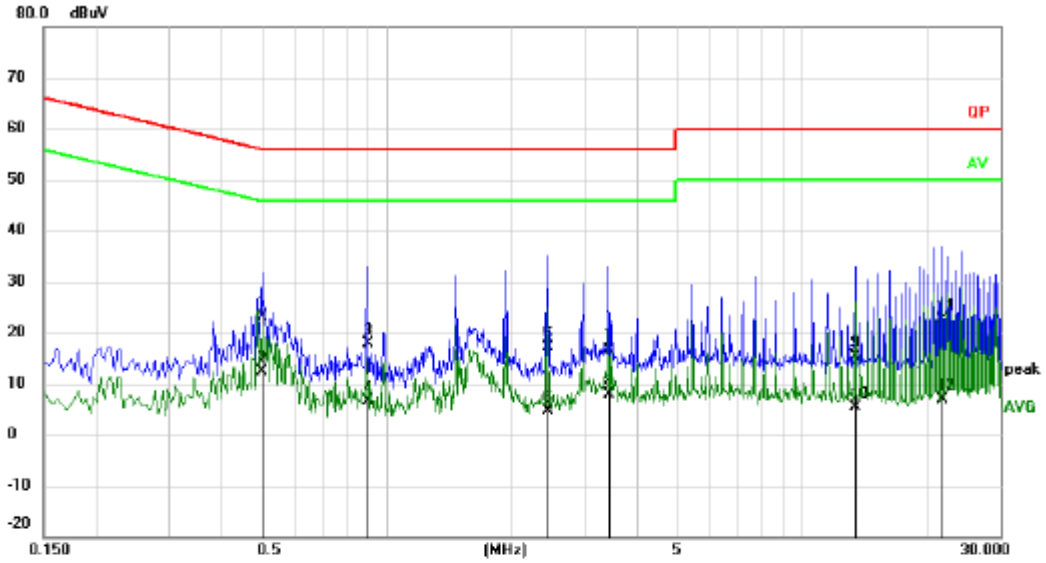
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.2460	16.06	10.65	26.71	61.89	-35.18	QP	
2		0.2460	-5.23	10.65	5.42	51.89	-46.47	AVG	
3		0.7180	4.05	10.87	14.92	56.00	-41.08	QP	
4		0.7180	-6.63	10.87	4.24	46.00	-41.76	AVG	
5		1.6460	8.70	10.69	19.39	56.00	-36.61	QP	
6		1.6460	-1.26	10.69	9.43	46.00	-36.57	AVG	
7		2.6820	-4.45	10.70	6.25	56.00	-49.75	QP	
8		2.6820	-6.18	10.70	4.52	46.00	-41.48	AVG	
9		12.1740	3.88	10.50	14.38	60.00	-45.62	QP	
10		12.1740	-5.62	10.50	4.88	50.00	-45.12	AVG	
11		20.4460	8.07	10.54	18.61	60.00	-41.39	QP	
12		20.4460	-4.48	10.54	6.06	50.00	-43.94	AVG	

*:Maximum data x:Over limit !:over margin

Engineer Signature: Lirou

Conducted Emission Measurement

File :2405U45453E Data :#23 Date: 2024/6/21 Time: 14:06:29



Limit: QP
Mode:transmitting
Note: 2.4g-wifi

Phase: N
Power: DC 5V

Temperature: 22.8 ℃
Humidity: 59 %
Air Pressure: 1009 hpa

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.5020	12.33	10.71	23.04	56.00	-32.96	QP	
2		0.5020	1.71	10.71	12.42	46.00	-33.58	AVG	
3		0.9020	7.26	10.63	17.89	56.00	-38.11	QP	
4		0.9020	-3.99	10.63	6.64	46.00	-39.36	AVG	
5		2.4460	6.56	10.62	17.18	56.00	-38.82	QP	
6		2.4460	-5.97	10.62	4.65	46.00	-41.35	AVG	
7		3.4180	6.26	10.49	16.75	56.00	-39.25	QP	
8		3.4180	-2.58	10.49	7.91	46.00	-38.09	AVG	
9		13.4140	4.43	10.84	15.27	60.00	-44.73	QP	
10		13.4140	-5.55	10.84	5.29	50.00	-44.71	AVG	
11		21.6860	12.00	10.67	22.67	60.00	-37.33	QP	
12		21.6860	-3.83	10.67	6.84	50.00	-43.16	AVG	

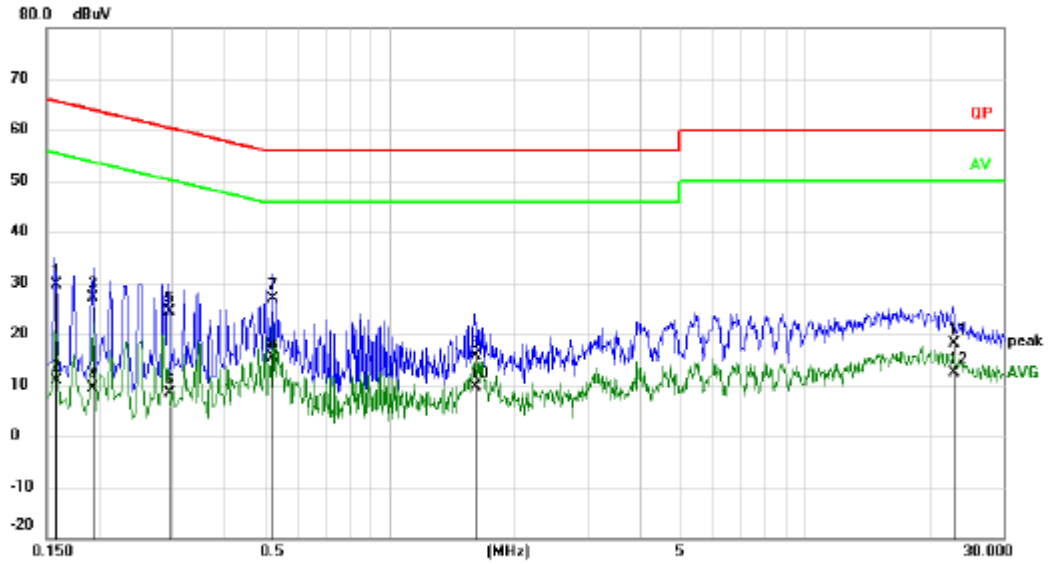
*:Maximum data x:Over limit !:over margin

Engineer Signature: Lirou

Model: AtomS3R Cam

Conducted Emission Measurement

File :2405U45453E Data :#12 Date: 2024/6/21 Time: 10:59:18



Limit: QP
Mode:transmitting
Note: 2.4g-wifi

Phase: L1
Power: DC 5V

Temperature: 22.8 ℃
Humidity: 59 %
Air Pressure: 1009 hpa

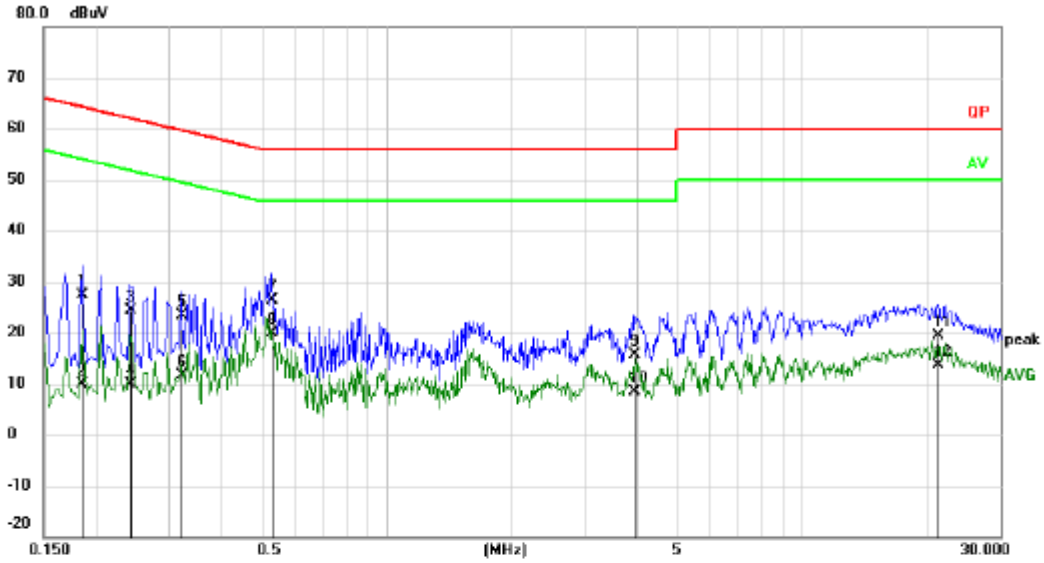
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	18.73	10.78	29.51	65.57	-36.06	QP	
2		0.1580	0.11	10.78	10.89	55.57	-44.68	AVG	
3		0.1940	16.39	10.63	27.02	63.86	-36.84	QP	
4		0.1940	-1.23	10.63	9.40	53.86	-44.46	AVG	
5		0.2940	13.63	10.70	24.33	60.41	-36.08	QP	
6		0.2940	-2.34	10.70	8.36	50.41	-42.05	AVG	
7	*	0.5260	16.01	10.82	26.83	56.00	-29.17	QP	
8		0.5260	4.45	10.82	15.27	46.00	-30.73	AVG	
9		1.6100	4.86	10.71	15.57	56.00	-40.43	QP	
10		1.6100	-1.17	10.71	9.54	46.00	-36.46	AVG	
11		22.7020	7.55	10.52	18.07	60.00	-41.93	QP	
12		22.7020	1.92	10.52	12.44	50.00	-37.56	AVG	

*:Maximum data x:Over limit !:over margin

Engineer Signature: Lirou

Conducted Emission Measurement

File :2405U45453E Data :#11 Date: 2024/6/21 Time: 10:49:17



Limit: QP
Mode:transmitting
Note: 2.4g-wifi

Phase: N
Power: DC 5V

Temperature: 22.8 ℃
Humidity: 59 %
Air Pressure: 1009 hpa

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1860	16.95	10.47	27.42	64.21	-36.79	QP	
2		0.1860	-0.51	10.47	9.96	54.21	-44.25	AVG	
3		0.2420	13.86	10.46	24.32	62.03	-37.71	QP	
4		0.2420	-0.67	10.46	9.79	52.03	-42.24	AVG	
5		0.3220	12.92	10.56	23.48	59.66	-36.18	QP	
6		0.3220	0.97	10.56	11.53	49.66	-38.13	AVG	
7		0.5299	15.59	10.69	26.28	56.00	-29.72	QP	
8	*	0.5299	9.20	10.69	19.89	46.00	-26.11	AVG	
9		3.9500	5.19	10.42	15.61	56.00	-40.39	QP	
10		3.9500	-2.02	10.42	8.40	46.00	-37.60	AVG	
11		21.1580	8.85	10.65	19.50	60.00	-40.50	QP	
12		21.1580	2.94	10.65	13.59	50.00	-36.41	AVG	

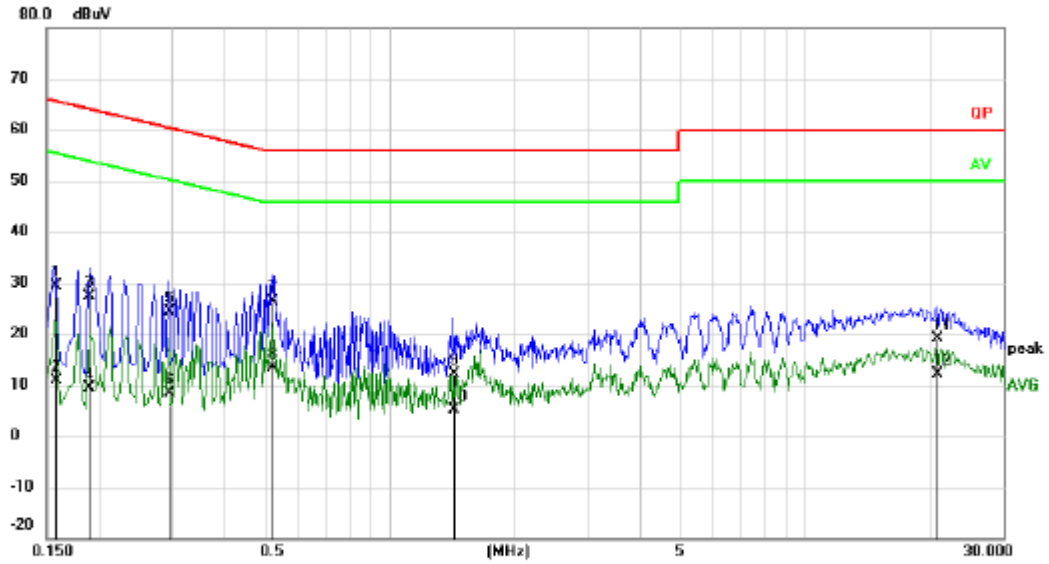
*:Maximum data x:Over limit !:over margin

Engineer Signature: Lirou

Model: AtomS3R Ext

Conducted Emission Measurement

File :2405U45453E Data :#17 Date: 2024/6/21 Time: 11:44:26



Limit: QP
Mode:transmitting
Note: 2.4g-wifi

Phase: L1
Power: DC 5V

Temperature: 22.8 ℃
Humidity: 59 %
Air Pressure: 1009 hpa

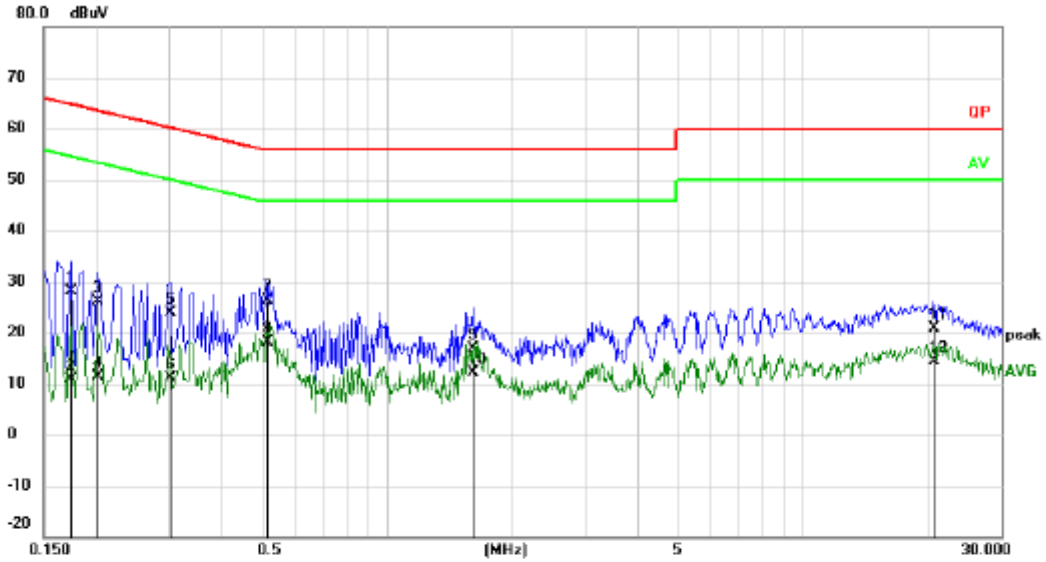
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1580	18.60	10.78	29.38	65.57	-36.19	QP	
2		0.1580	0.12	10.78	10.90	55.57	-44.67	AVG	
3		0.1900	16.69	10.65	27.34	64.04	-36.70	QP	
4		0.1900	-1.15	10.65	9.50	54.04	-44.54	AVG	
5		0.2940	13.66	10.70	24.36	60.41	-36.05	QP	
6		0.2940	-2.26	10.70	8.44	50.41	-41.97	AVG	
7	*	0.5220	15.56	10.82	26.38	56.00	-29.62	QP	
8		0.5220	2.65	10.82	13.47	46.00	-32.53	AVG	
9		1.4260	1.44	10.81	12.25	56.00	-43.75	QP	
10		1.4260	-5.65	10.81	5.16	46.00	-40.84	AVG	
11		20.7340	8.48	10.53	19.01	60.00	-40.99	QP	
12		20.7340	1.70	10.53	12.23	50.00	-37.77	AVG	

*:Maximum data x:Over limit !:over margin

Engineer Signature: Lirou

Conducted Emission Measurement

File :2405U45453E Data :#18 Date: 2024/6/21 Time: 13:15:06



Limit: QP
Mode:transmitting
Note: 2.4g-wifi

Phase: N
Power: DC 5V

Temperature: 22.8 ℃
Humidity: 59 %
Air Pressure: 1009 hpa

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1740	17.72	10.51	28.23	64.77	-36.54	QP	
2		0.1740	0.40	10.51	10.91	54.77	-43.86	AVG	
3		0.2020	15.80	10.41	26.21	63.53	-37.32	QP	
4		0.2020	1.06	10.41	11.47	53.53	-42.06	AVG	
5		0.3020	13.30	10.54	23.84	60.19	-36.35	QP	
6		0.3020	0.53	10.54	11.07	50.19	-39.12	AVG	
7		0.5180	15.68	10.70	26.38	56.00	-29.62	QP	
8	*	0.5180	7.35	10.70	18.05	46.00	-27.95	AVG	
9		1.6180	6.32	10.68	17.00	56.00	-39.00	QP	
10		1.6180	1.46	10.68	12.14	46.00	-33.86	AVG	
11		20.6259	10.21	10.65	20.86	60.00	-39.14	QP	
12		20.6259	3.83	10.65	14.48	50.00	-35.52	AVG	

*:Maximum data x:Over limit !:over margin

Engineer Signature: Lirou

Remark:

Measurement (dBuV)= Reading Level (dBuV) + Correct Factor(dB)

Correct Factor (dB)= LISN Voltage Division Factor (dB)+ Cable loss(dB)

Over Limit = Measurement – Limit

3.4 Radiated emission Test Data

9 kHz-30MHz:

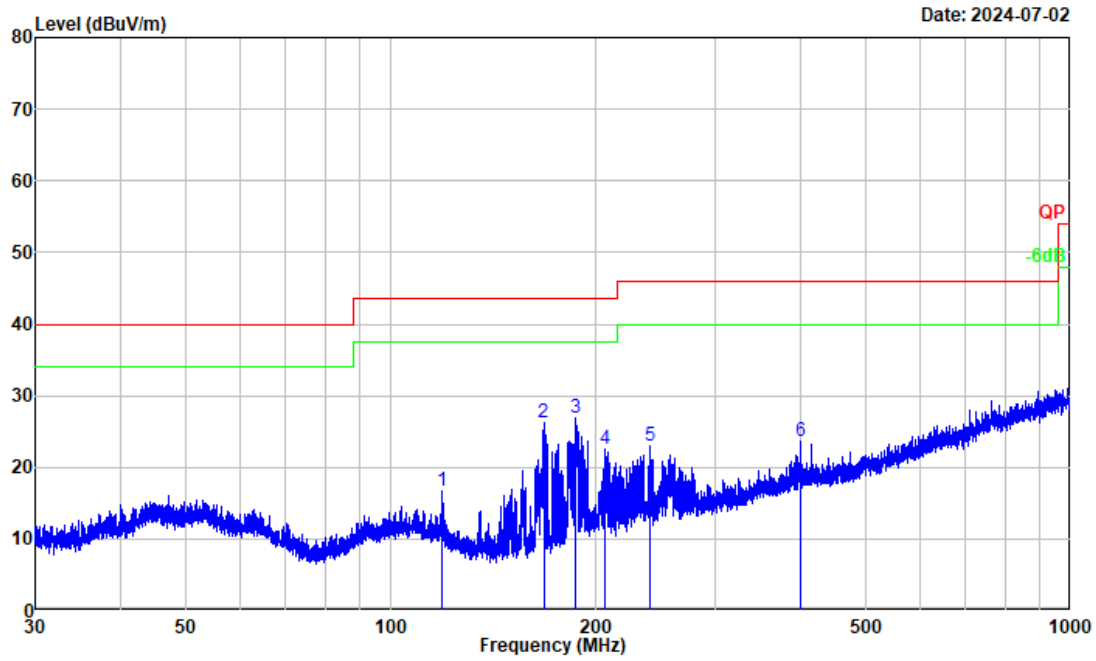
Test Date:	2024-07-02	**Test By:**	Luke Li
Environment condition:	Temperature: 23.4°C; Relative Humidity:65%; ATM Pressure: 99.9kPa		

For radiated emissions below 30MHz, there were no emissions found within 20dB of limit.

30MHz-1GHz:

Test Date:	2024-07-02	**Test By:**	Luke Li
Environment condition:	Temperature: 23.4°C; Relative Humidity:65%; ATM Pressure: 99.9kPa		

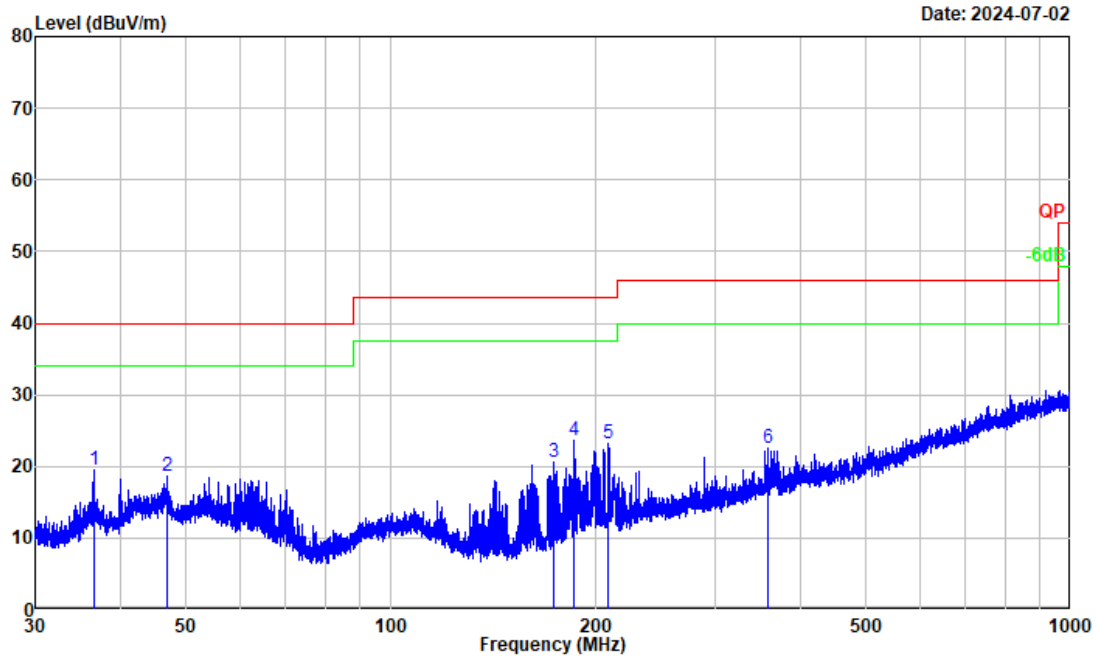
Model: AtomS3R



Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 23.4℃/65%R.H./99.9kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 2.4G-WiFi

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	118.934	31.77	-15.06	16.71	43.50	-26.79	Peak
2	167.860	42.17	-15.99	26.18	43.50	-17.32	Peak
3	186.975	41.26	-14.36	26.90	43.50	-16.60	Peak
4	206.991	35.61	-13.14	22.47	43.50	-21.03	Peak
5	240.893	34.91	-11.93	22.98	46.00	-23.02	Peak
6	400.737	30.96	-7.36	23.60	46.00	-22.40	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain



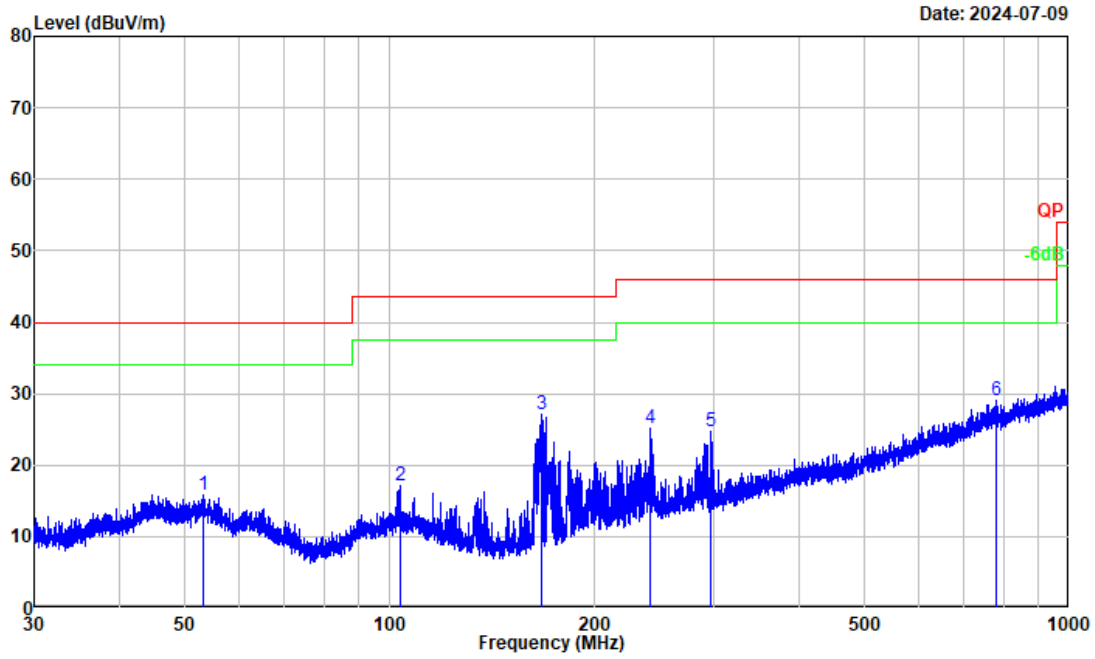
Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 23.4℃/65%R.H./99.9kPa
Tested by : Luke Li
Polarization : vertical
Remark : 2.4G-WiFi

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	36.671	34.05	-14.49	19.56	40.00	-20.44	Peak
2	46.833	30.89	-12.21	18.68	40.00	-21.32	Peak
3	174.004	36.18	-15.62	20.56	43.50	-22.94	Peak
4	186.075	37.99	-14.46	23.53	43.50	-19.97	Peak
5	208.814	36.42	-13.17	23.25	43.50	-20.25	Peak
6	359.455	31.05	-8.46	22.59	46.00	-23.41	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Test Date:	2024-07-09	Test By:	Luke Li
Environment condition:	Temperature: 22.8°C; Relative Humidity:64%; ATM Pressure: 100.1kPa		

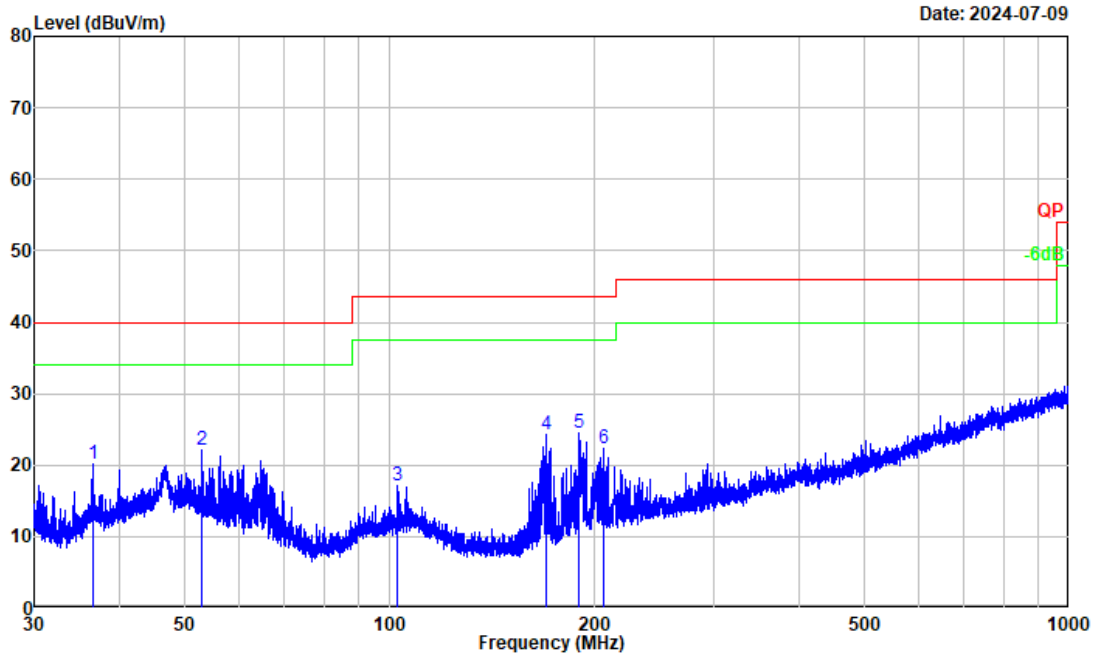
Model: AtomS3R Lite



Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 22.8℃/64%R.H./100.1kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 2.4G-WiFi

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	53.112	28.03	-12.20	15.83	40.00	-24.17	Peak
2	103.504	30.62	-13.59	17.03	43.50	-26.47	Peak
3	167.126	43.12	-16.00	27.12	43.50	-16.38	Peak
4	241.951	37.02	-11.90	25.12	46.00	-20.88	Peak
5	296.528	35.13	-10.51	24.62	46.00	-21.38	Peak
6	781.979	29.34	-0.21	29.13	46.00	-16.87	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

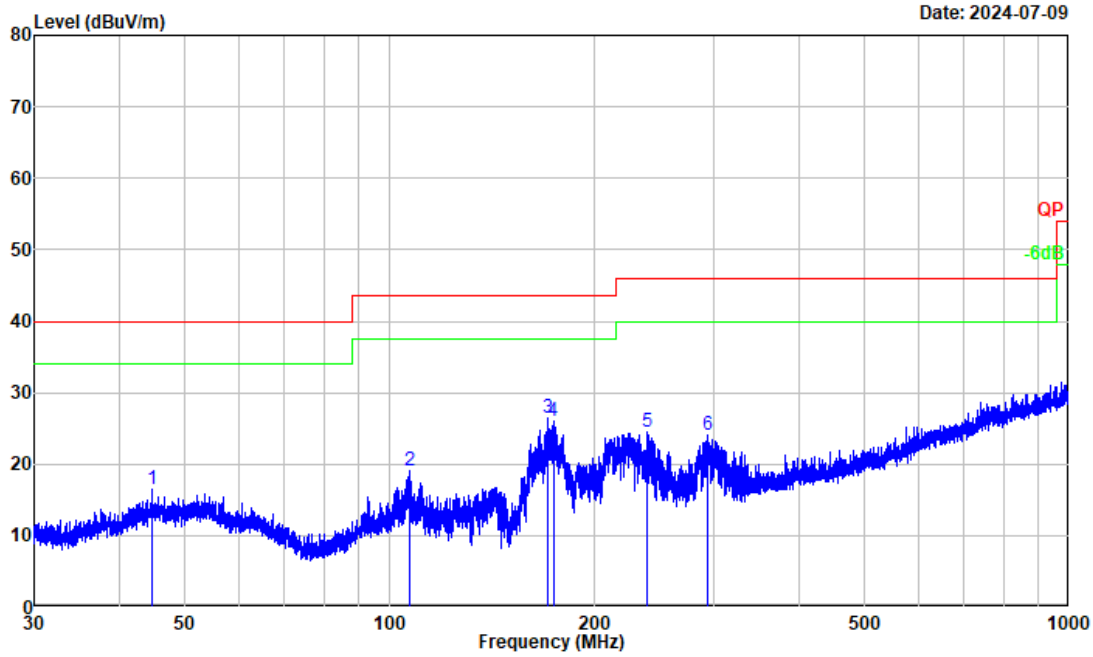


Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 22.8℃/64%R.H./100.1kPa
Tested by : Luke Li
Polarization : vertical
Remark : 2.4G-WiFi

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	36.654	34.76	-14.50	20.26	40.00	-19.74	Peak
2	53.065	34.34	-12.19	22.15	40.00	-17.85	Peak
3	102.465	30.80	-13.67	17.13	43.50	-26.37	Peak
4	170.083	40.24	-15.86	24.38	43.50	-19.12	Peak
5	190.282	38.41	-13.99	24.42	43.50	-19.08	Peak
6	206.176	35.39	-13.12	22.27	43.50	-21.23	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

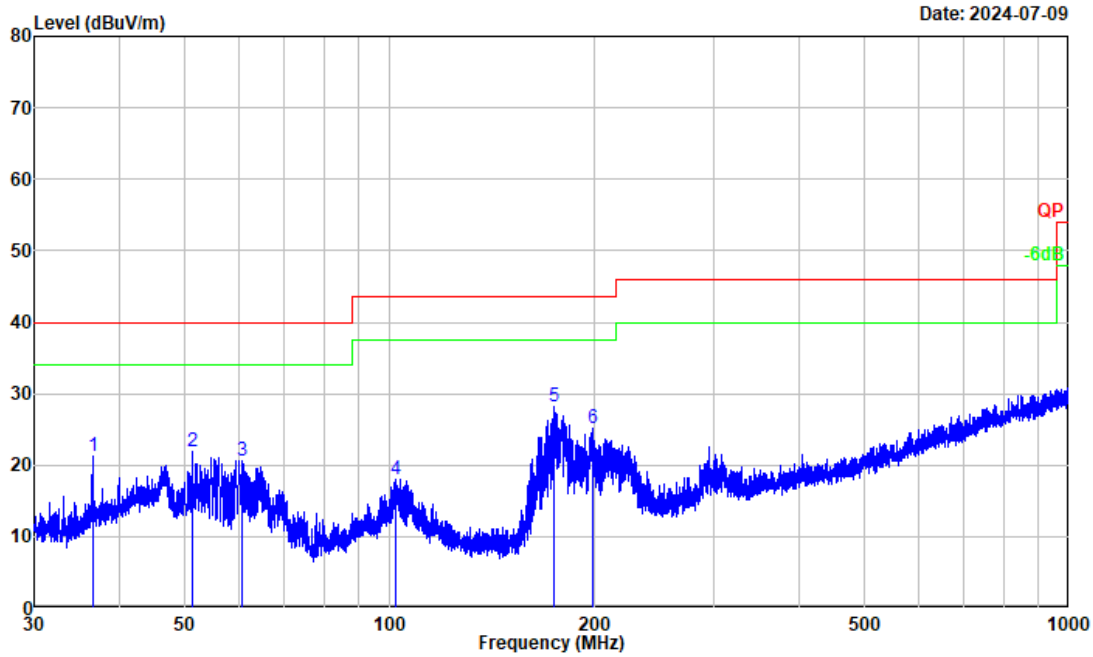
Model: AtomS3R Cam



Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 22.8℃/64%R.H./100.1kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 2.4G-WiFi

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	44.765	28.80	-12.35	16.45	40.00	-23.55	Peak
2	107.151	32.62	-13.54	19.08	43.50	-24.42	Peak
3	170.980	42.39	-15.85	26.54	43.50	-16.96	Peak
4	174.157	41.57	-15.60	25.97	43.50	-17.53	Peak
5	239.839	36.39	-11.98	24.41	46.00	-21.59	Peak
6	294.069	34.70	-10.57	24.13	46.00	-21.87	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

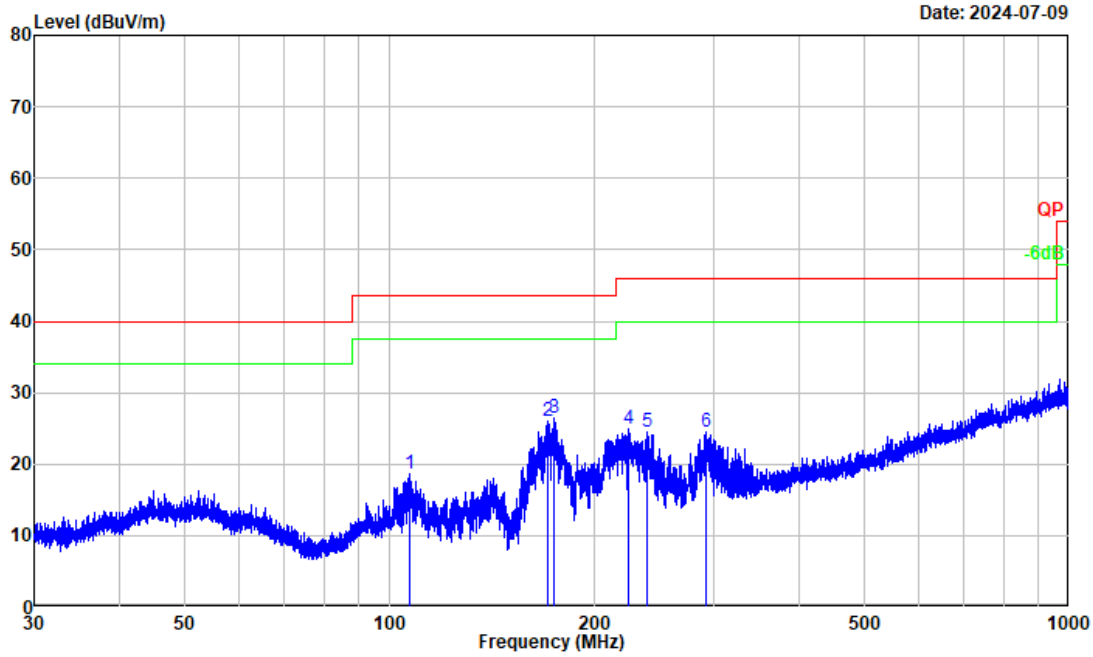


Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 22.8℃/64%R.H./100.1kPa
Tested by : Luke Li
Polarization : vertical
Remark : 2.4G-WiFi

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	36.558	35.87	-14.54	21.33	40.00	-18.67	Peak
2	51.192	33.99	-12.07	21.92	40.00	-18.08	Peak
3	60.816	34.38	-13.73	20.65	40.00	-19.35	Peak
4	102.241	31.57	-13.67	17.90	43.50	-25.60	Peak
5	174.386	43.67	-15.57	28.10	43.50	-15.40	Peak
6	199.333	38.31	-13.16	25.15	43.50	-18.35	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

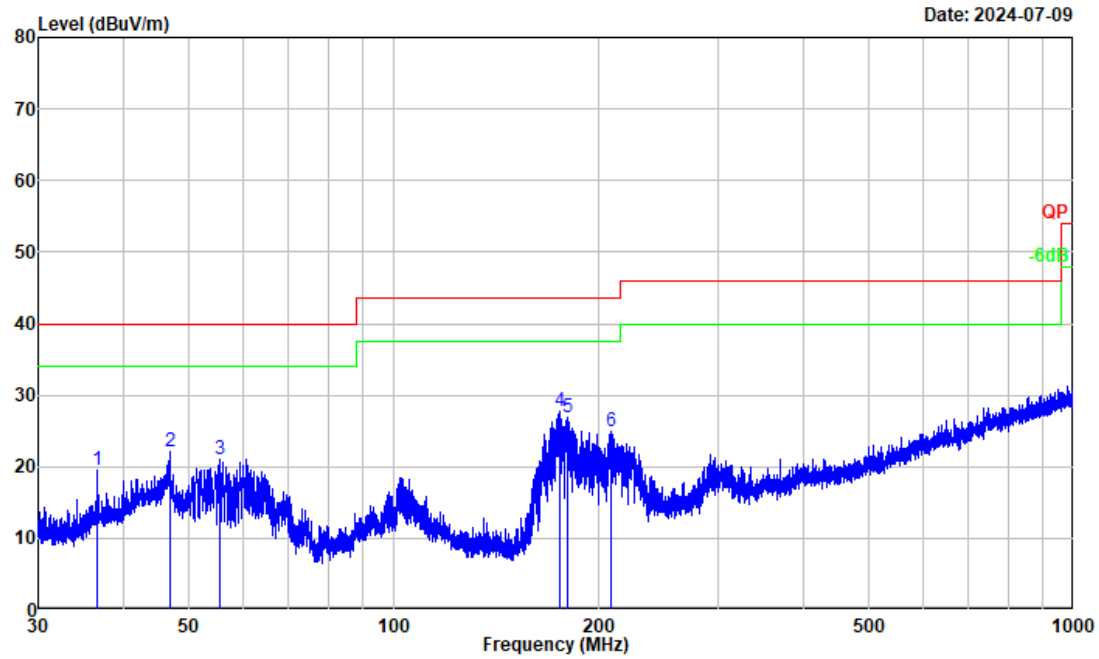
Model: AtomS3R Ext



Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 22.8℃/64%R.H./100.1kPa
Tested by : Luke Li
Polarization : horizontal
Remark : 2.4G-WiFi

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	106.916	32.11	-13.54	18.57	43.50	-24.93	Peak
2	171.055	41.76	-15.84	25.92	43.50	-17.58	Peak
3	174.922	41.93	-15.52	26.41	43.50	-17.09	Peak
4	224.576	37.62	-12.64	24.98	46.00	-21.02	Peak
5	239.105	36.59	-12.01	24.58	46.00	-21.42	Peak
6	292.270	35.12	-10.61	24.51	46.00	-21.49	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain



Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 22.8℃/64%R.H./100.1kPa
Tested by : Luke Li
Polarization : vertical
Remark : 2.4G-WiFi

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	36.687	33.98	-14.49	19.49	40.00	-20.51	Peak
2	46.833	34.29	-12.21	22.08	40.00	-17.92	Peak
3	55.395	33.67	-12.70	20.97	40.00	-19.03	Peak
4	175.613	43.21	-15.51	27.70	43.50	-15.80	Peak
5	180.373	42.05	-15.12	26.93	43.50	-16.57	Peak
6	208.448	38.13	-13.15	24.98	43.50	-18.52	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Remark:

Result = Reading + Factor

Factor = Antenna factor + Cable loss – Amplifier gain

Over Limit = Result – Limit

Above 1GHz:

Test Date:	2024-07-04	Test By:	Bard Huang
Environment condition:	Temperature: 22.8°C; Relative Humidity:63%; ATM Pressure: 100.5kPa		

Frequency (MHz)	Reading level (dBμV)	Polar	Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Remark
802.11b							
Low Channel							
2390.000	38.82	horizontal	7.18	46.00	54.00	-8.00	Average
2390.000	48.76	horizontal	7.18	55.94	74.00	-18.06	Peak
2390.000	38.75	vertical	7.18	45.93	54.00	-8.07	Average
2390.000	48.26	vertical	7.18	55.44	74.00	-18.56	Peak
4824.000	53.97	horizontal	-0.15	53.82	74.00	-20.18	Peak
4824.000	52.24	vertical	-0.15	52.09	74.00	-21.91	Peak
Middle Channel							
4884.000	56.21	horizontal	0.11	56.32	74.00	-17.68	Peak
4884.000	50.33	vertical	0.11	50.44	54.00	-3.56	Average
4884.000	53.68	vertical	0.11	53.79	74.00	-20.21	Peak
High Channel							
2483.500	40.89	horizontal	7.25	48.14	54.00	-5.86	Average
2483.500	51.02	horizontal	7.25	58.27	74.00	-15.73	Peak
2483.500	40.55	vertical	7.25	47.80	54.00	-6.20	Average
2483.500	50.10	vertical	7.25	57.35	74.00	-16.65	Peak
4944.000	50.72	horizontal	0.26	50.98	54.00	-3.02	Average
4944.000	56.30	horizontal	0.26	56.56	74.00	-17.44	Peak
4944.000	52.81	vertical	0.26	53.07	74.00	-20.93	Peak
802.11g							
Low Channel							
2390.000	38.43	horizontal	7.18	45.61	54.00	-8.39	Average
2390.000	50.33	horizontal	7.18	57.51	74.00	-16.49	Peak
2390.000	38.83	vertical	7.18	46.01	54.00	-7.99	Average
2390.000	49.40	vertical	7.18	56.58	74.00	-17.42	Peak
4824.000	50.06	horizontal	-0.15	49.91	74.00	-24.09	Peak
4824.000	48.75	vertical	-0.15	48.60	74.00	-25.40	Peak
Middle Channel							
4884.000	49.97	horizontal	0.11	50.08	74.00	-23.92	Peak
4884.000	48.67	vertical	0.11	48.78	74.00	-25.22	Peak

High Channel							
2483.872	43.28	horizontal	7.25	50.53	54.00	-3.47	Average
2483.872	60.42	horizontal	7.25	67.67	74.00	-6.33	Peak
2483.712	42.13	vertical	7.25	49.38	54.00	-4.62	Average
2483.712	58.13	vertical	7.25	65.38	74.00	-8.62	Peak
4944.000	50.95	horizontal	0.26	51.21	74.00	-22.79	Peak
4944.000	48.81	vertical	0.26	49.07	74.00	-24.93	Peak
802.11n20							
Low Channel							
2390.000	39.32	horizontal	7.18	46.50	54.00	-7.50	Average
2390.000	52.04	horizontal	7.18	59.22	74.00	-14.78	Peak
2390.000	38.43	vertical	7.18	45.61	54.00	-8.39	Average
2390.000	49.15	vertical	7.18	56.33	74.00	-17.67	Peak
4824.000	49.01	horizontal	-0.15	48.86	74.00	-25.14	Peak
4824.000	48.05	vertical	-0.15	47.90	74.00	-26.10	Peak
Middle Channel							
4884.000	49.25	horizontal	0.11	49.36	74.00	-24.64	Peak
4884.000	47.75	vertical	0.11	47.86	74.00	-26.14	Peak
High Channel							
2483.500	43.16	horizontal	7.25	50.41	54.00	-3.59	Average
2483.500	61.19	horizontal	7.25	68.44	74.00	-5.56	Peak
2483.500	42.23	vertical	7.25	49.48	54.00	-4.52	Average
2483.500	58.90	vertical	7.25	66.15	74.00	-7.85	Peak
4944.000	50.65	horizontal	0.26	50.91	74.00	-23.09	Peak
4944.000	48.48	vertical	0.26	48.74	74.00	-25.26	Peak
802.11n40							
Low Channel							
2390.000	38.94	horizontal	7.18	46.12	54.00	-7.88	Average
2390.000	49.55	horizontal	7.18	56.73	74.00	-17.27	Peak
2390.000	38.78	vertical	7.18	45.96	54.00	-8.04	Average
2390.000	48.52	vertical	7.18	55.70	74.00	-18.30	Peak
4844.000	47.31	horizontal	-0.09	47.22	74.00	-26.78	Peak
4844.000	47.35	vertical	-0.09	47.26	74.00	-26.74	Peak
Middle Channel							
4884.000	48.53	horizontal	0.11	48.64	74.00	-25.36	Peak
4884.000	46.88	vertical	0.11	46.99	74.00	-27.01	Peak
High Channel							
2483.500	41.83	horizontal	7.25	49.08	54.00	-4.92	Average

2483.500	62.99	horizontal	7.25	70.24	74.00	-3.76	Peak
2483.500	40.44	vertical	7.25	47.69	54.00	-6.31	Average
2483.500	60.91	vertical	7.25	68.16	74.00	-5.84	Peak
4944.000	48.31	horizontal	0.26	48.57	74.00	-25.43	Peak
4944.000	47.83	vertical	0.26	48.09	74.00	-25.91	Peak

Remark:
Corrected Amplitude= Reading level + corrected Factor
Corrected Factor = Antenna factor + Cable loss – Amplifier gain
Margin = Corrected Amplitude – Limit

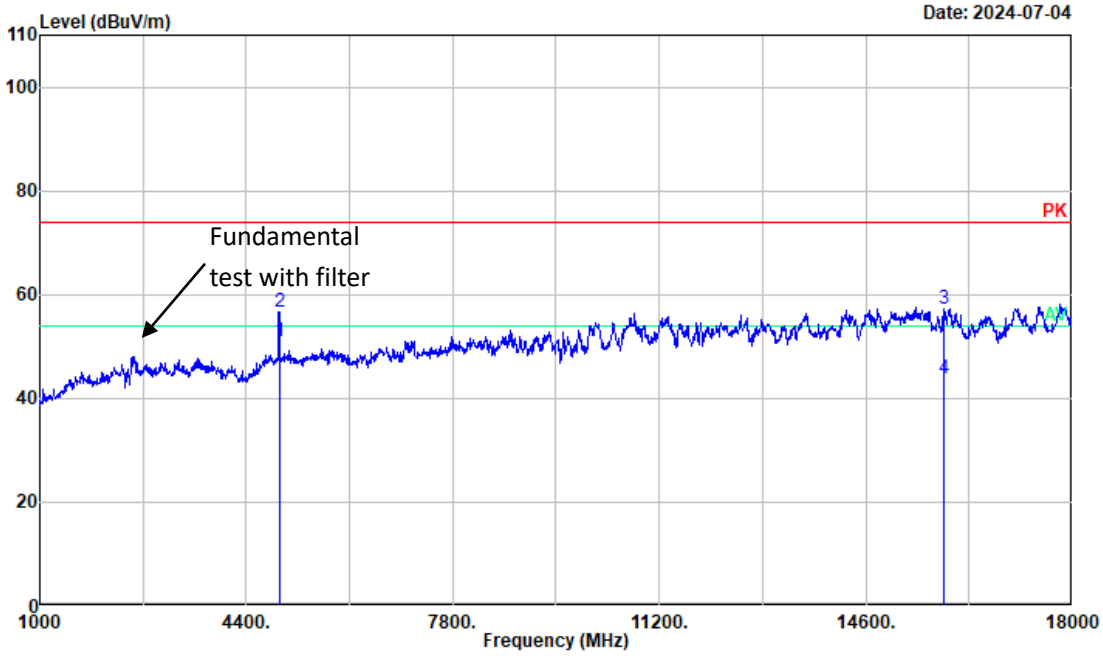
For the test result of Peak below the Peak limit more than 20dB, which can compliance with the average limit, just the Peak level was recorded.

The emission levels of other frequencies that were lower than the limit 20dB not show in test report.

For emissions in 18GHz-25GHz range, all emissions were investigated and in the noise floor level.

Test plot for example as below:

Mode:	802.11b	Channel:	2472MHz

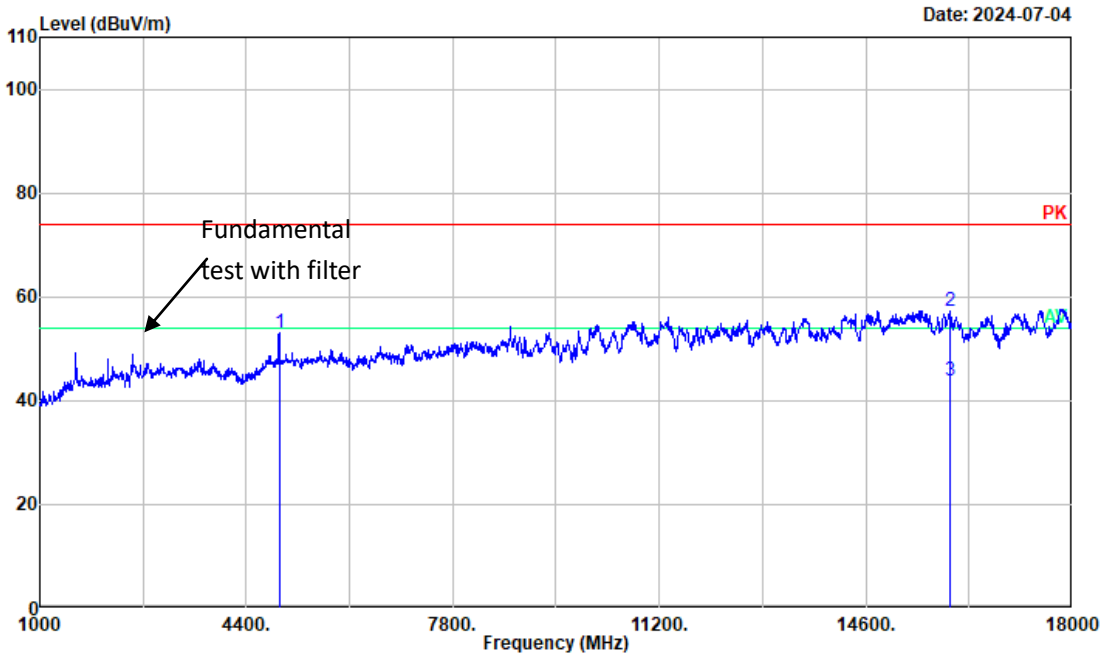


Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 22.8℃/63%R.H./100.5kPa
Tested by : Bard Huang
Polarization : horizontal
Remark : 802.11b high channel

--No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	4944.000	50.72	0.26	50.98	54.00	-3.02	Average
2	4944.000	56.30	0.26	56.56	74.00	-17.44	Peak
3	15890.950	48.96	8.27	57.23	74.00	-16.77	Peak
4	15890.950	35.54	8.27	43.81	54.00	-10.19	Average

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Mode:	802.11b	Channel:	2472MHz



Project No. : 2405U45453E
Test Mode : Transmitting
Test Voltage : DC 5V
Environment : 22.8℃/63%R.H./100.5kPa
Tested by : Bard Huang
Polarization : vertical
Remark : 802.11b high channel

--No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	4944.000	52.81	0.26	53.07	74.00	-20.93	Peak
2	15975.990	48.51	8.60	57.11	74.00	-16.89	Peak
3	15975.990	35.18	8.60	43.78	54.00	-10.22	Average

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

3.5 RF Conducted Test Data

Test Date:	2024-07-04	Test By:	Ryan Zhang
Environment condition:	Temperature: 23.4°C; Relative Humidity:66%; ATM Pressure: 100.8kPa		

3.5.1 6dB Emission Bandwidth

Mode	Value (MHz)	Limit (MHz)	Result
b_2412MHz_Chain 0	8.720	0.5	Pass
b_2442MHz_Chain 0	9.120	0.5	Pass
b_2472MHz_Chain 0	8.760	0.5	Pass
g_2412MHz_Chain 0	16.440	0.5	Pass
g_2442MHz_Chain 0	16.400	0.5	Pass
g_2472MHz_Chain 0	16.440	0.5	Pass
n20_2412MHz_Chain 0	17.080	0.5	Pass
n20_2442MHz_Chain 0	17.080	0.5	Pass
n20_2472MHz_Chain 0	17.040	0.5	Pass
n40_2422MHz_Chain 0	35.280	0.5	Pass
n40_2442MHz_Chain 0	34.080	0.5	Pass
n40_2462MHz_Chain 0	35.280	0.5	Pass

3.5.2 99% Occupied Bandwidth

Mode	99% OBW (MHz)
b_2412MHz_Chain 0	12.920
b_2442MHz_Chain 0	12.920
b_2472MHz_Chain 0	12.840
g_2412MHz_Chain 0	16.480
g_2442MHz_Chain 0	16.480
g_2472MHz_Chain 0	16.480
n20_2412MHz_Chain 0	17.440
n20_2442MHz_Chain 0	17.480
n20_2472MHz_Chain 0	17.440
n40_2422MHz_Chain 0	36.000
n40_2442MHz_Chain 0	36.080
n40_2462MHz_Chain 0	36.080

3.5.3 Maximum Conducted Output Power

Mode	Peak Output Power (dBm)	Average Output Power (dBm)	Limit (dBm)	Result
b_2412MHz_Chain 0	9.65	6.52	30.00	Pass
b_2442MHz_Chain 0	14.83	11.75	30.00	Pass
b_2472MHz_Chain 0	17.92	14.77	30.00	Pass
g_2412MHz_Chain 0	13.64	3.99	30.00	Pass
g_2442MHz_Chain 0	18.60	8.97	30.00	Pass
g_2472MHz_Chain 0	21.66	12.36	30.00	Pass
n20_2412MHz_Chain 0	13.83	4.12	30.00	Pass
n20_2442MHz_Chain 0	18.77	9.14	30.00	Pass
n20_2472MHz_Chain 0	21.76	12.22	30.00	Pass
n40_2422MHz_Chain 0	14.91	4.50	30.00	Pass
n40_2442MHz_Chain 0	18.13	7.84	30.00	Pass
n40_2462MHz_Chain 0	20.80	10.96	30.00	Pass

3.5.4 100 kHz Bandwidth of Frequency Band Edge

Mode	Value (dB)	Limit (dB)	Result
b_2412MHz_Chain 0	43.90	30.00	Pass
b_2472MHz_Chain 0	50.07	30.00	Pass
g_2412MHz_Chain 0	38.80	30.00	Pass
g_2472MHz_Chain 0	39.88	30.00	Pass
n20_2412MHz_Chain 0	37.62	30.00	Pass
n20_2472MHz_Chain 0	40.73	30.00	Pass
n40_2422MHz_Chain 0	36.13	30.00	Pass
n40_2462MHz_Chain 0	32.81	30.00	Pass

3.5.5 Power Spectral Density

Mode	Value (dBm/3kHz)	Limit (dBm/3kHz)	Result
b_2412MHz_Chain 0	-22.55	8.00	Pass
b_2442MHz_Chain 0	-17.52	8.00	Pass
b_2472MHz_Chain 0	-13.94	8.00	Pass
g_2412MHz_Chain 0	-27.51	8.00	Pass
g_2442MHz_Chain 0	-22.65	8.00	Pass
g_2472MHz_Chain 0	-19.25	8.00	Pass
n20_2412MHz_Chain 0	-26.65	8.00	Pass
n20_2442MHz_Chain 0	-21.81	8.00	Pass
n20_2472MHz_Chain 0	-18.55	8.00	Pass
n40_2422MHz_Chain 0	-28.64	8.00	Pass
n40_2442MHz_Chain 0	-24.99	8.00	Pass
n40_2462MHz_Chain 0	-21.79	8.00	Pass

3.5.6 Duty Cycle

Mode	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/T (Hz)	VBW Setting (kHz)
b_2442MHz_Chain 0	32.960	32.987	99.92	/	/	0.010
g_2442MHz_Chain 0	5.481	5.523	99.24	/	/	0.010
n20_2442MHz_Chain 0	5.069	5.110	99.20	/	/	0.010
n40_2442MHz_Chain 0	2.465	2.503	98.48	/	/	0.010

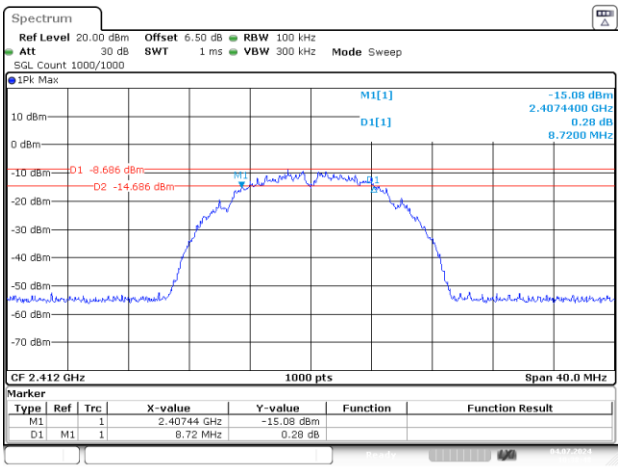
Duty Cycle = Ton/(Ton+Toff)*100%

Test Plots:

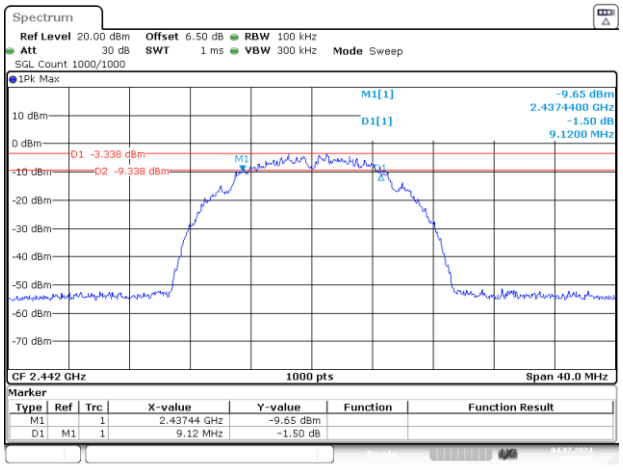
6dB Emission Bandwidth

2412~2472

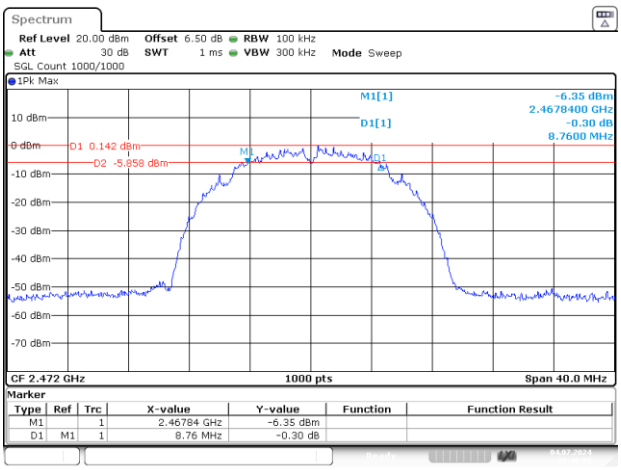
b_2412MHz_Chain 0 8.720MHz



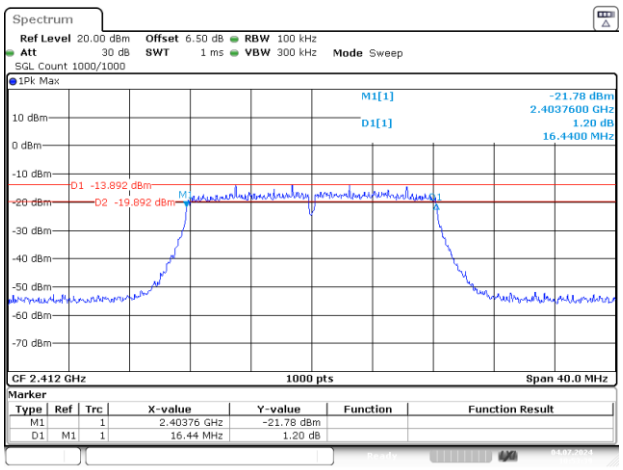
b_2442MHz_Chain 0 9.120MHz



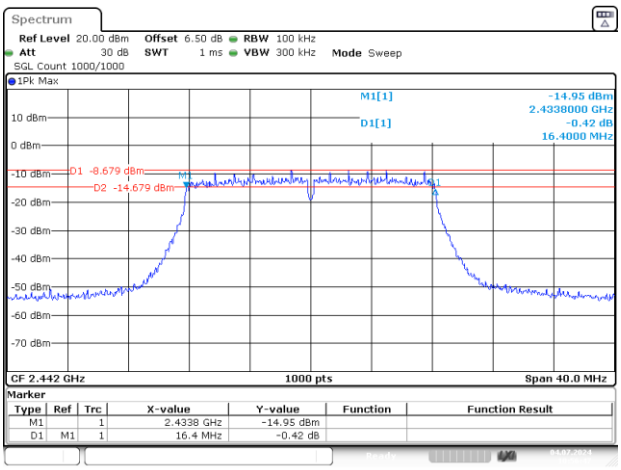
b_2472MHz_Chain 0 8.760MHz



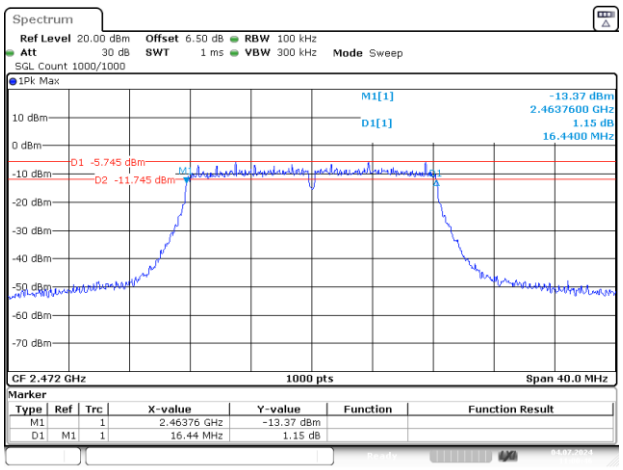
g_2412MHz_Chain 0 16.440MHz



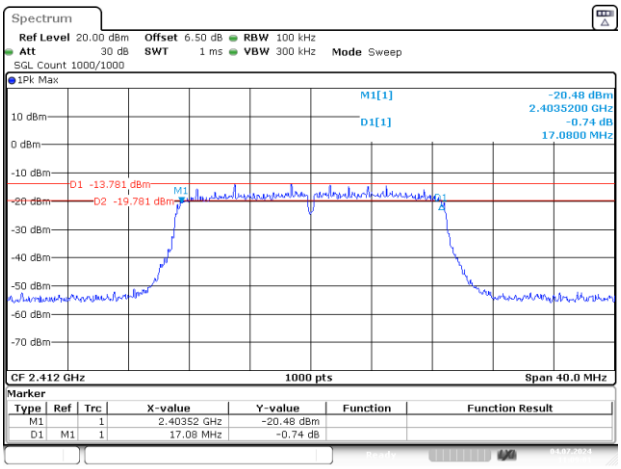
g_2442MHz_Chain 0 16.400MHz



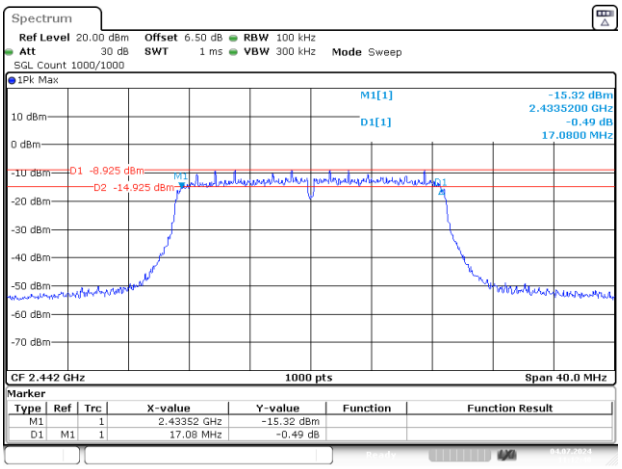
g_2472MHz_Chain 0 16.440MHz



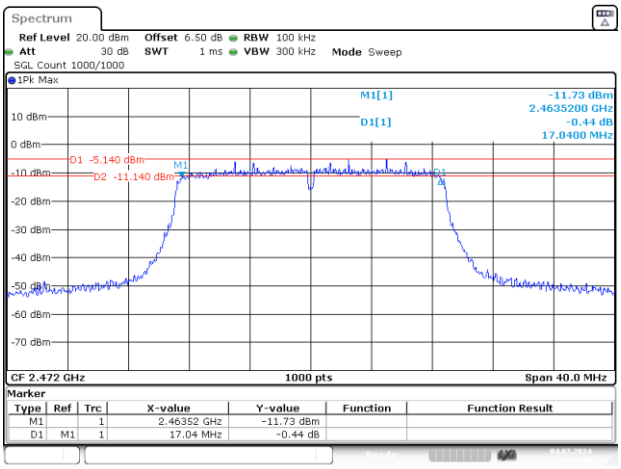
n20_2412MHz_Chain 0 17.080MHz



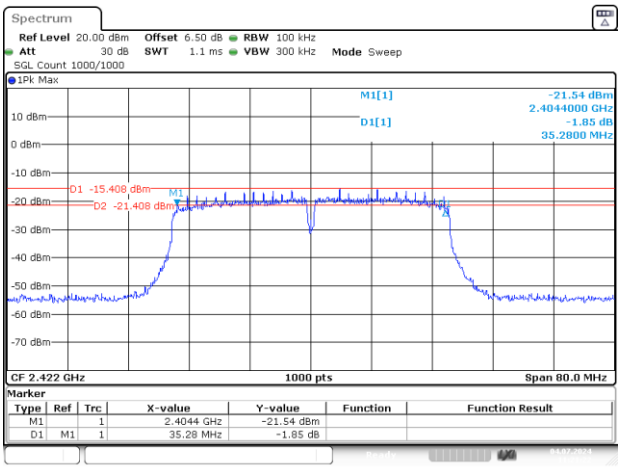
n20_2442MHz_Chain 0 17.080MHz



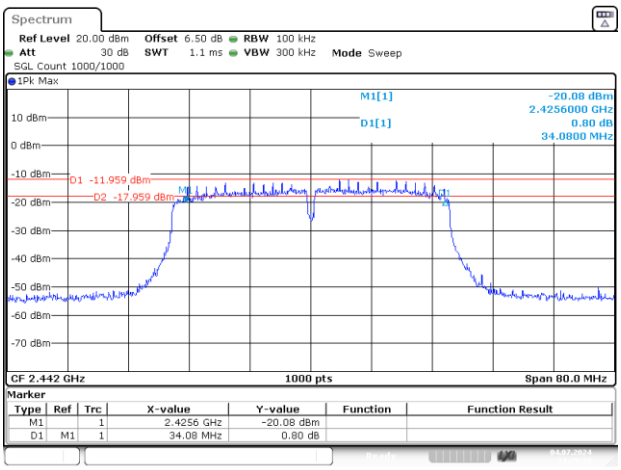
n20_2472MHz_Chain 0 17.040MHz



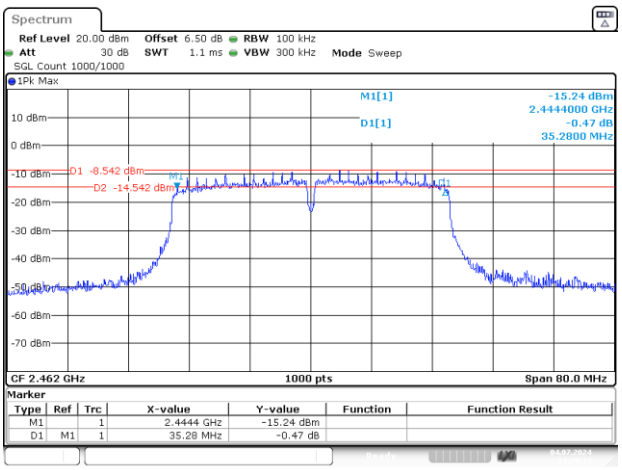
n40_2422MHz_Chain 0 35.280MHz



n40_2442MHz_Chain 0 34.080MHz



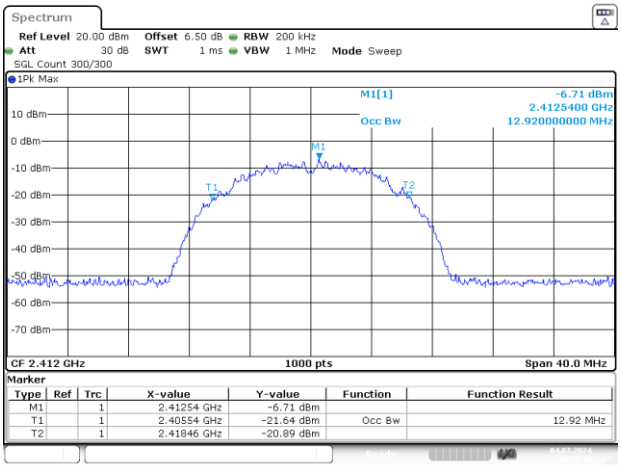
n40_2462MHz_Chain 0 35.280MHz



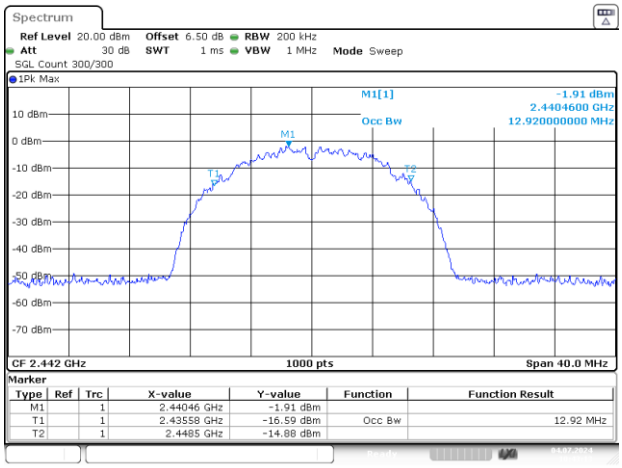
99% Occupied Bandwidth

2412~2472

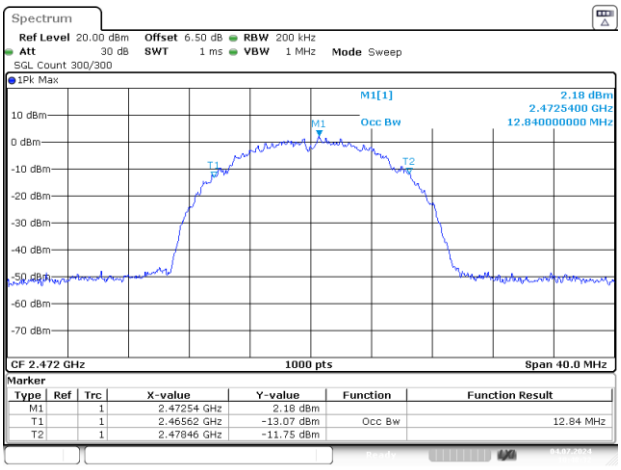
b_2412MHz_Chain 0 12.920MHz



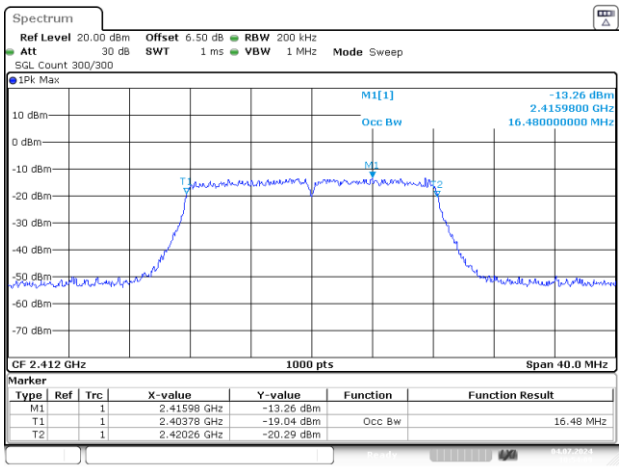
b_2442MHz_Chain 0 12.920MHz



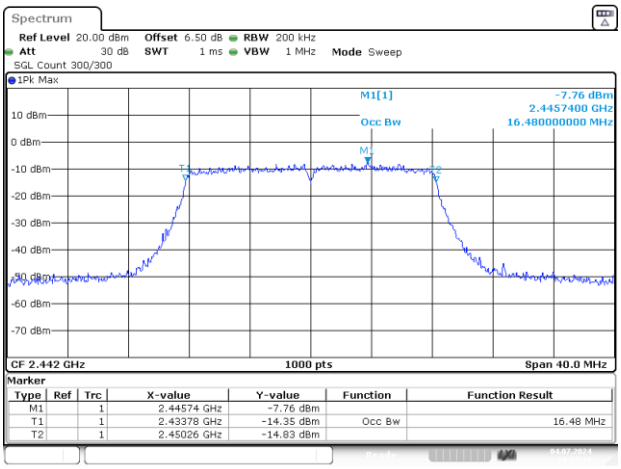
b_2472MHz_Chain 0 12.840MHz



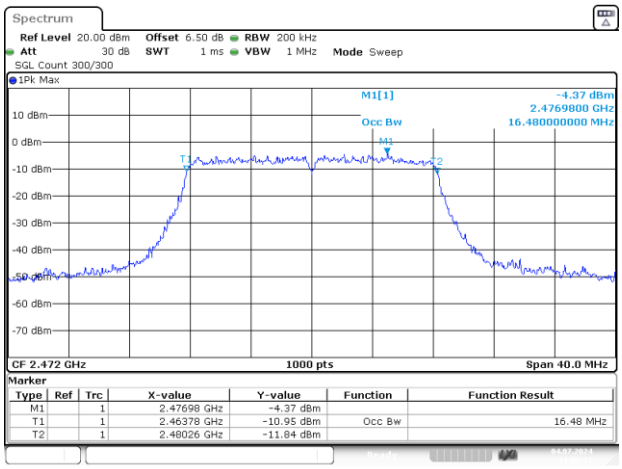
g_2412MHz_Chain 0 16.480MHz



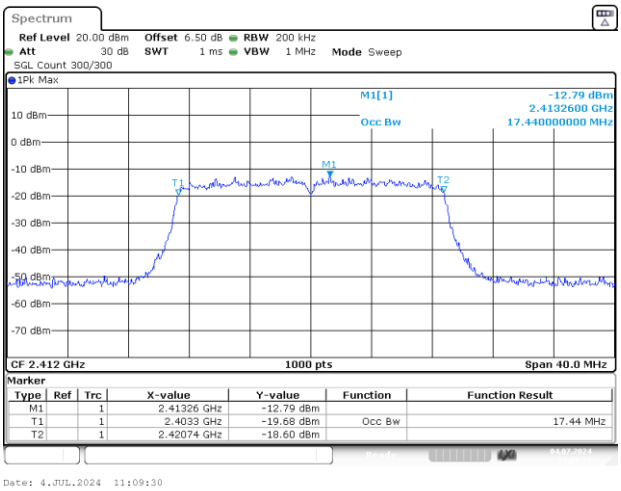
g_2442MHz_Chain 0 16.480MHz



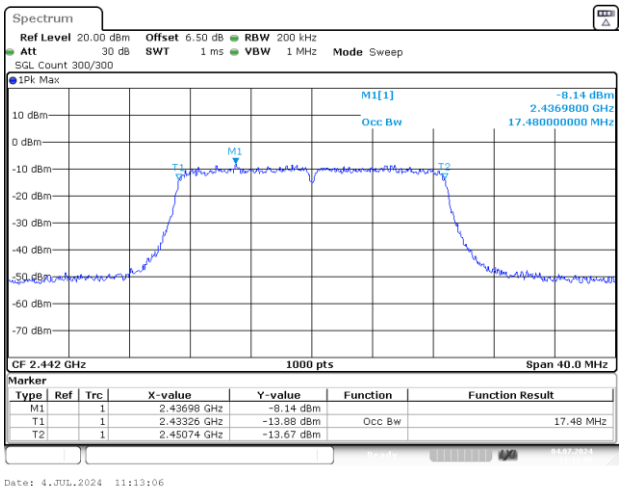
g_2472MHz_Chain 0 16.480MHz



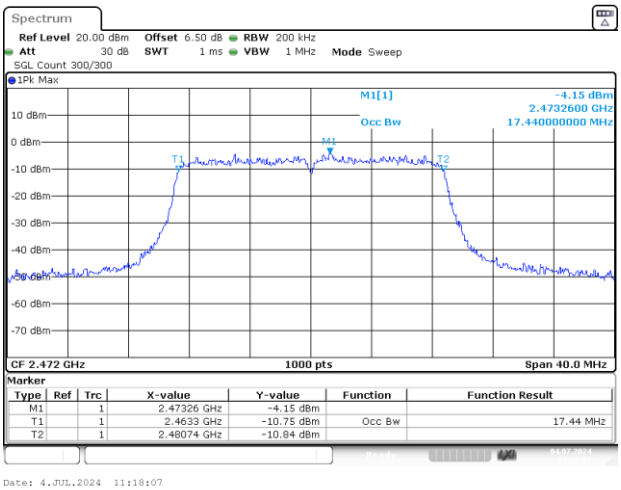
n20_2412MHz_Chain 0 17.440MHz



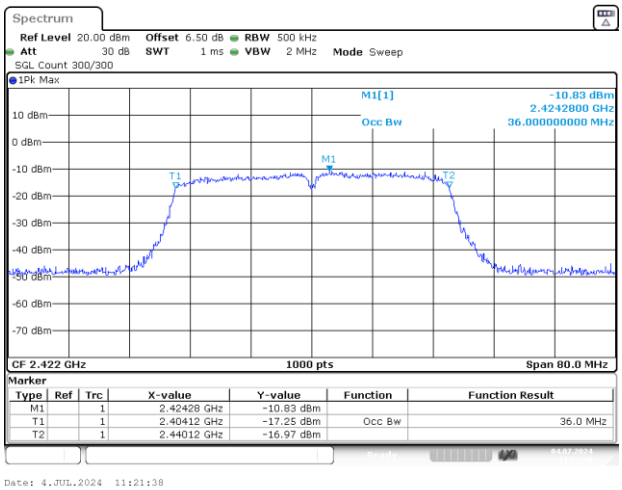
n20_2442MHz_Chain 0 17.480MHz



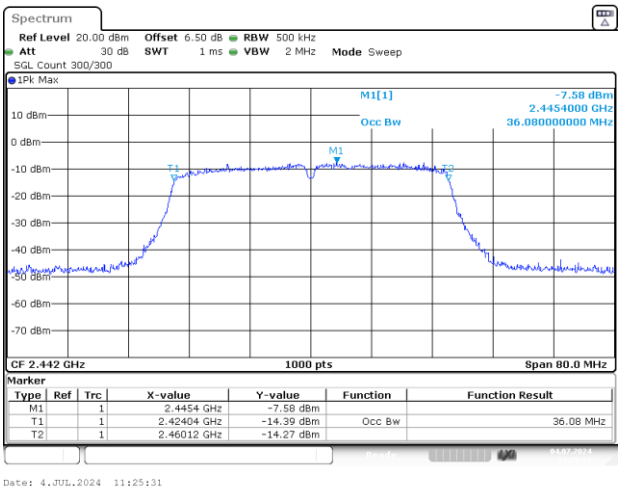
n20_2472MHz_Chain 0 17.440MHz



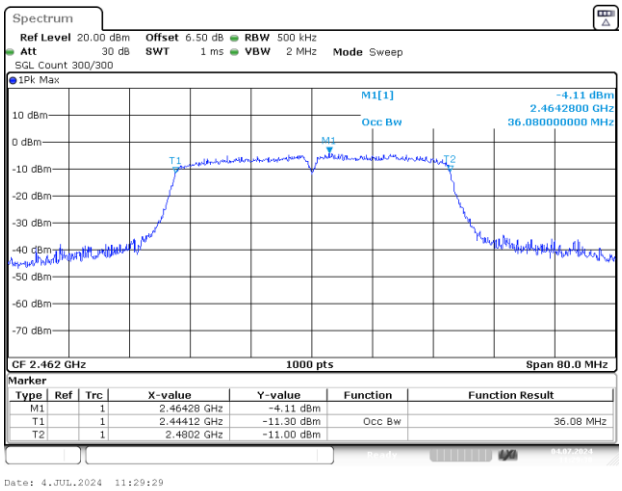
n40_2422MHz_Chain 0 36.000MHz



n40_2442MHz_Chain 0 36.080MHz



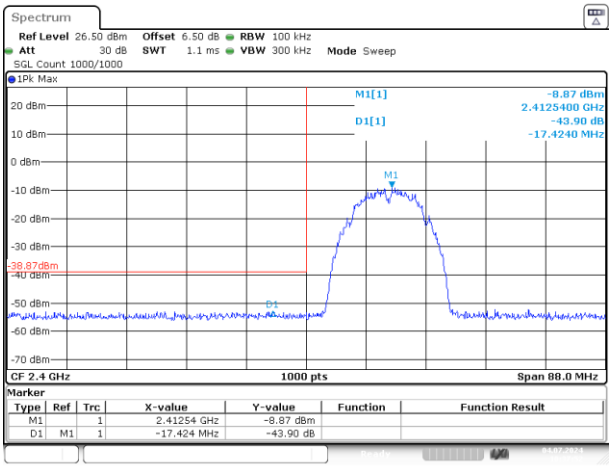
n40_2462MHz_Chain 0 36.080MHz



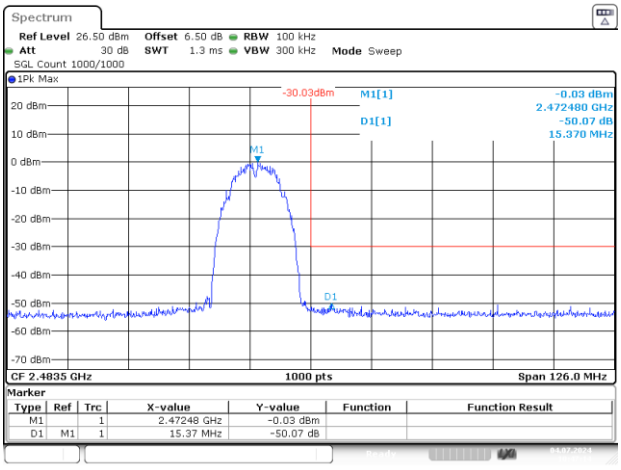
100 kHz Bandwidth of Frequency Band Edge

2412~2472

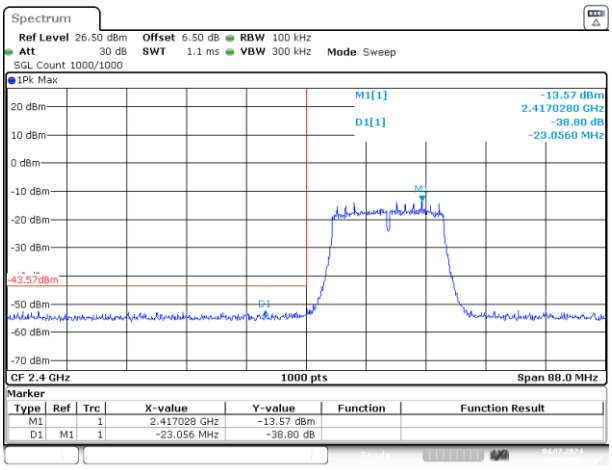
b_2412MHz_Chain 0 43.90dB



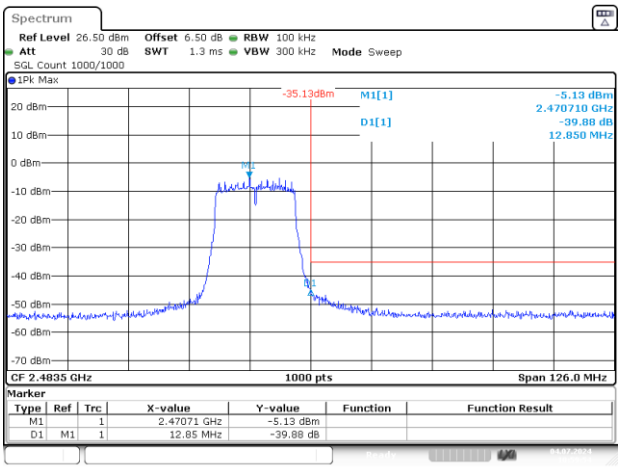
b_2472MHz_Chain 0 50.07dB



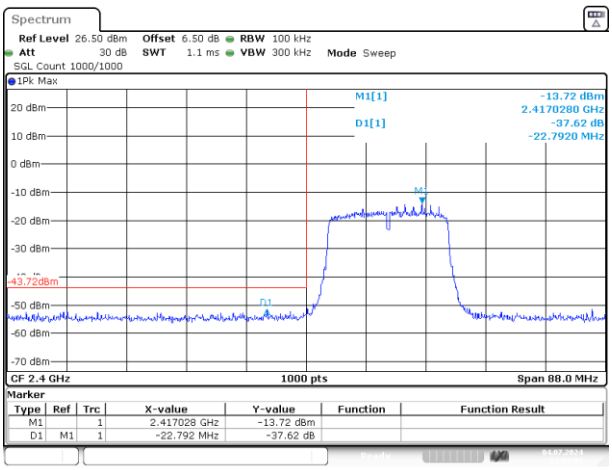
g_2412MHz_Chain 0 38.80dB



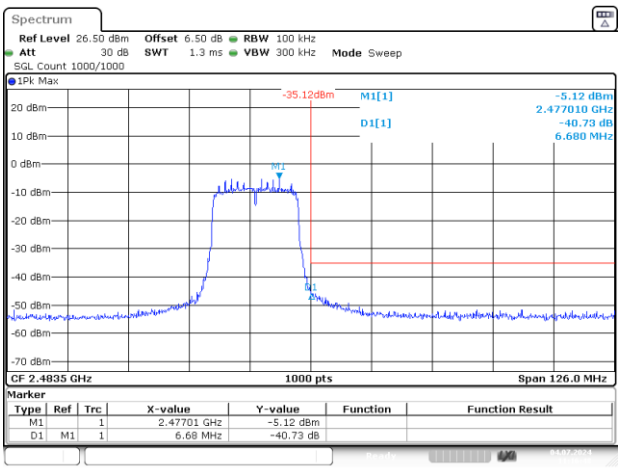
g_2472MHz_Chain 0 39.88dB



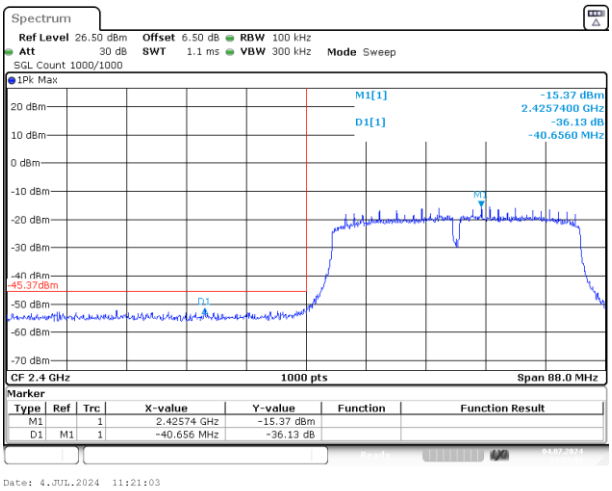
n20_2412MHz_Chain 0 37.62dB



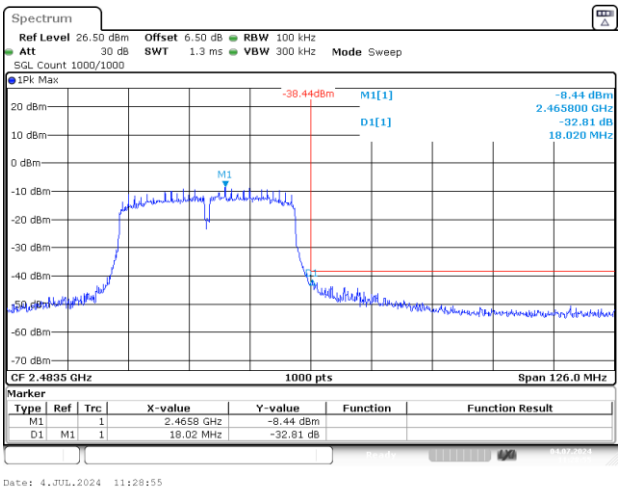
n20_2472MHz_Chain 0 40.73dB



n40_2422MHz_Chain 0 36.13dB



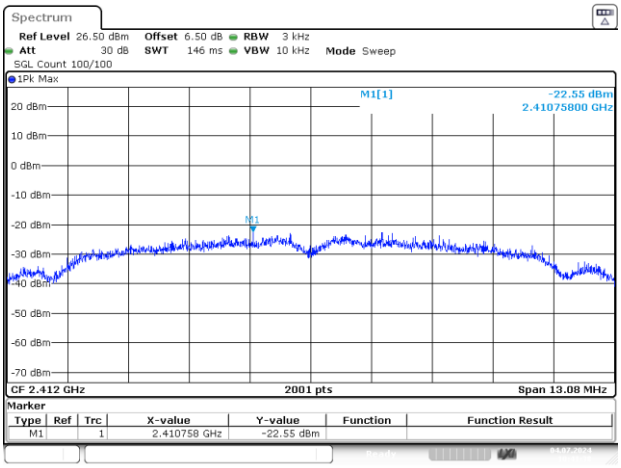
n40_2462MHz_Chain 0 32.81dB



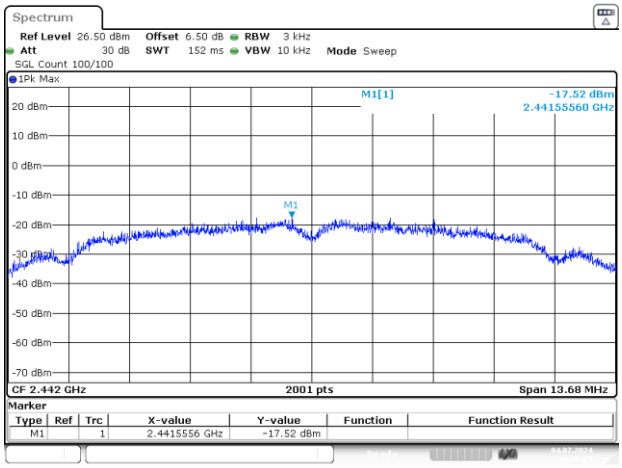
Power Spectral Density

2412~2472

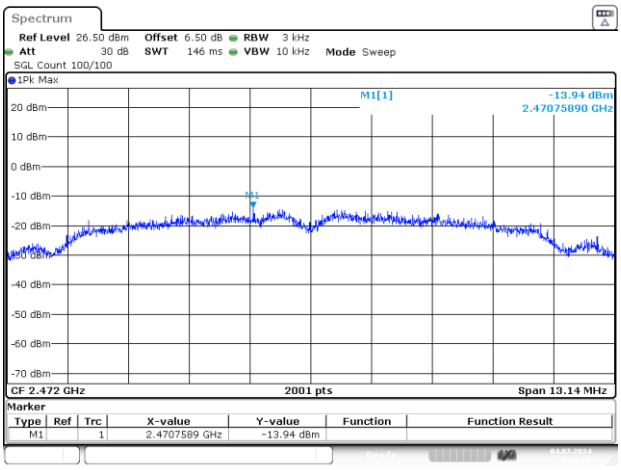
b_2412MHz_Chain 0 -22.55dBm/3kHz



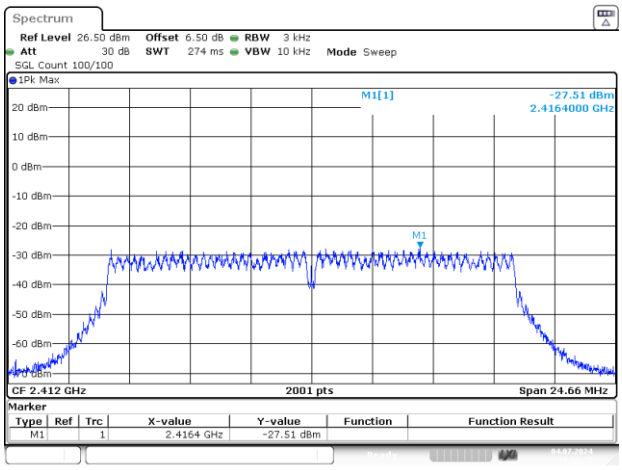
b_2442MHz_Chain 0 -17.52dBm/3kHz



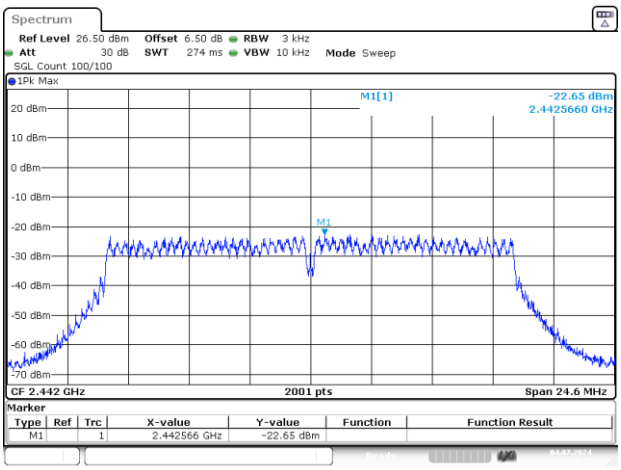
b_2472MHz_Chain 0 -13.94dBm/3kHz



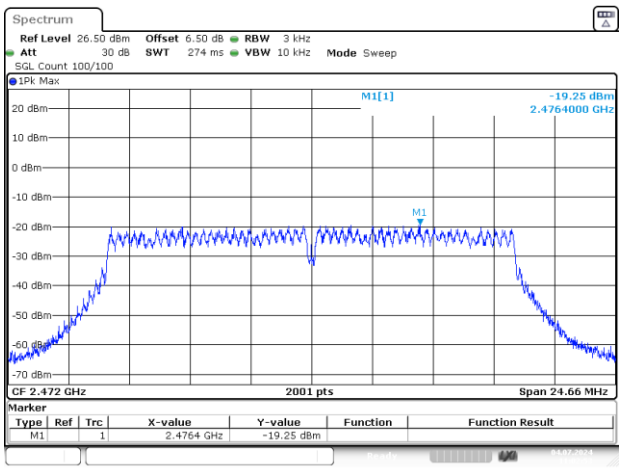
g_2412MHz_Chain 0 -27.51dBm/3kHz



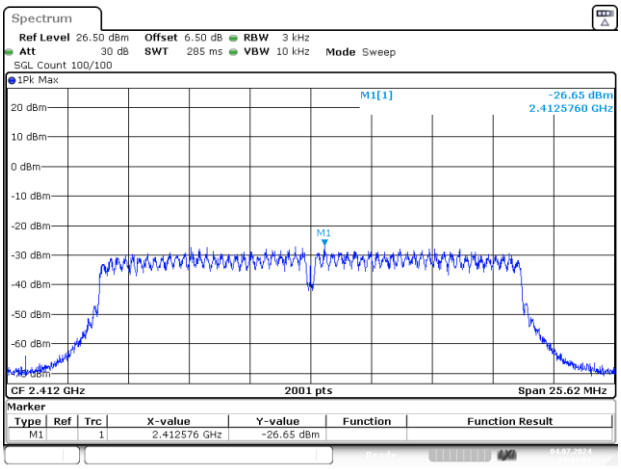
g_2442MHz_Chain 0 -22.65dBm/3kHz



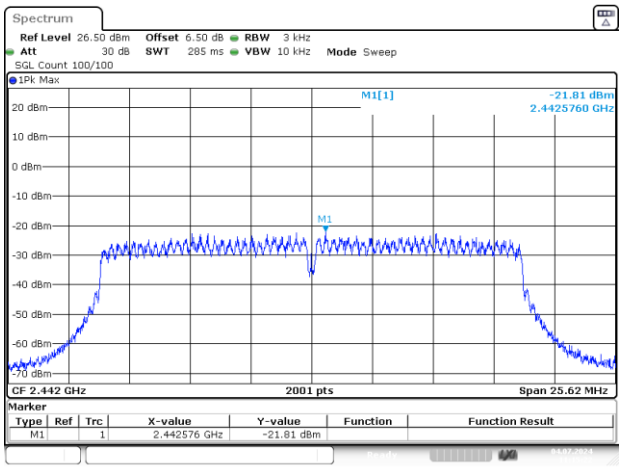
g_2472MHz_Chain 0 -19.25dBm/3kHz



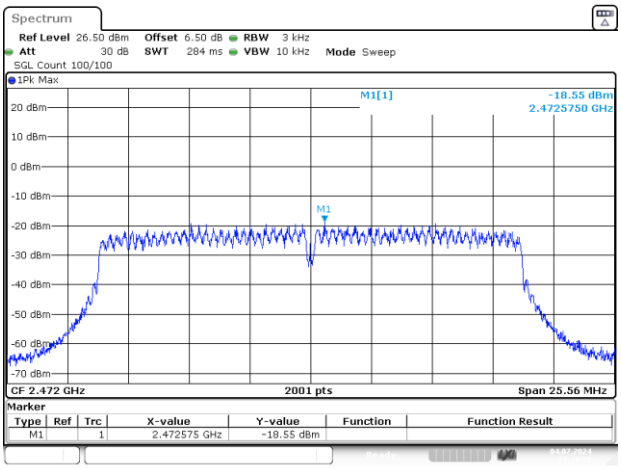
n20_2412MHz_Chain 0 -26.65dBm/3kHz



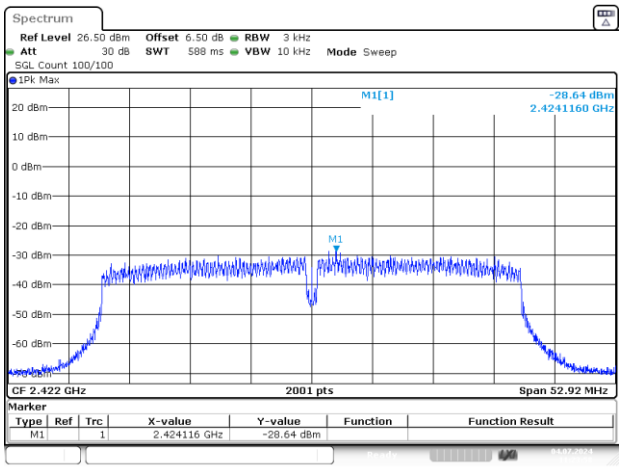
n20_2442MHz_Chain 0 -21.81dBm/3kHz



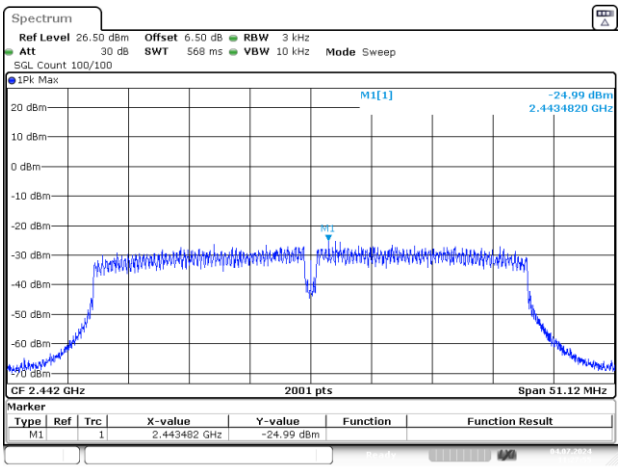
n20_2472MHz_Chain 0 -18.55dBm/3kHz



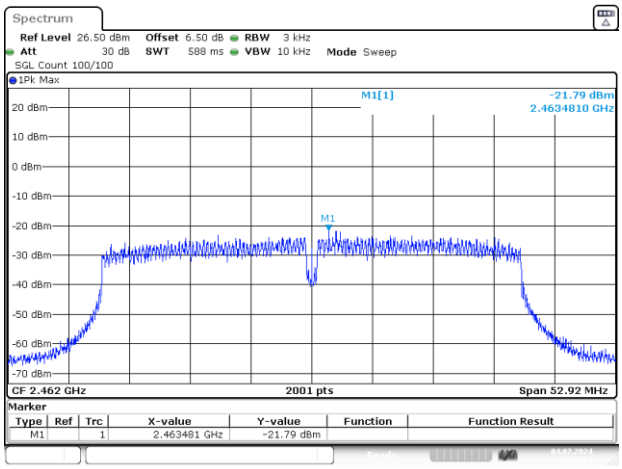
n40_2422MHz_Chain 0 -28.64dBm/3kHz



n40_2442MHz_Chain 0 -24.99dBm/3kHz



n40_2462MHz_Chain 0 -21.79dBm/3kHz

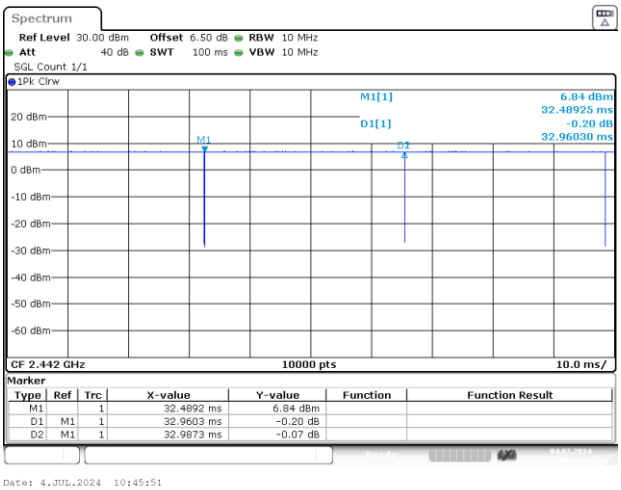


Duty Cycle

2412~2472

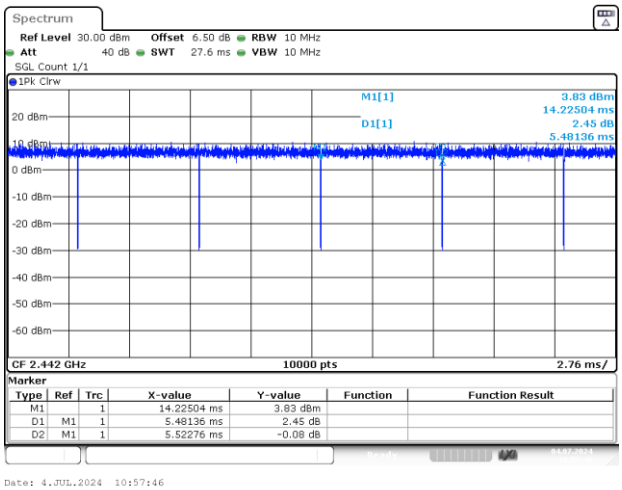
b_2442MHz_Chain 0

32.960ms,32.987ms



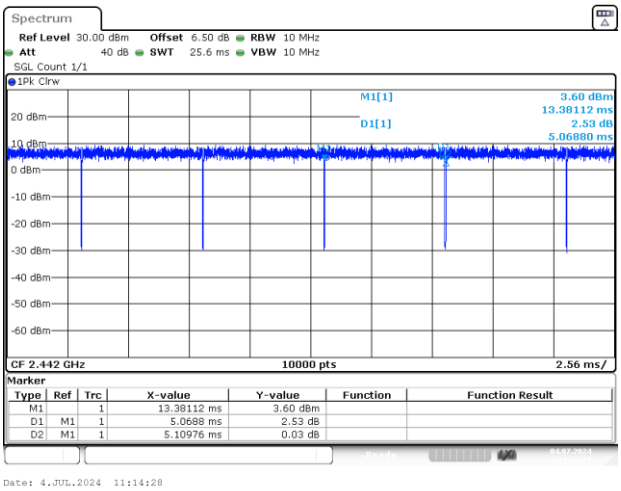
g_2442MHz_Chain 0

5.481ms,5.523ms



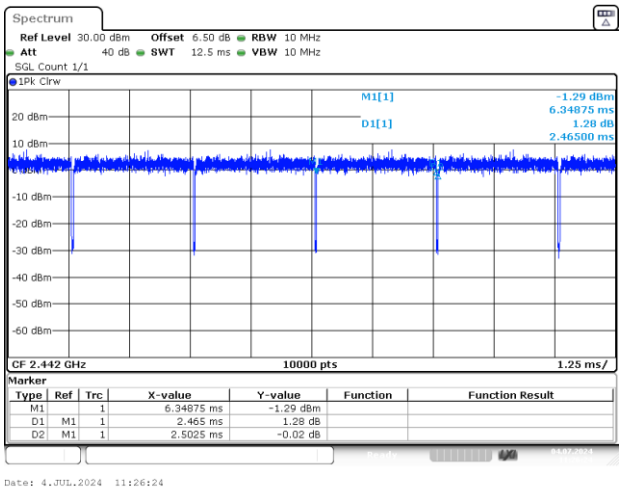
n20_2442MHz_Chain 0

5.069ms,5.110ms



n40_2442MHz_Chain 0

2.465ms,2.503ms



4 Test Setup Photo

Please refer to the attachment 2405U45453E Test Setup photo.

5 E.U.T Photo

Please refer to the attachment 2405U45453E External photo and 2405U45453E Internal photo.

---End of Report---