



FCC Test Report

Report No.: CMJP-ESH-P23090618B-1

FCC ID: 2BDAX-X-C13SG

Product: Wi-Fi Module

Model: X-C13SG(X-C13SG-1, X-C13SG-0)

Received Date: Oct.09, 2023

Test Date: Oct.09 to Nov.15, 2023

Issued Date: Nov.16, 2023

Applicant: Suzhou RaymonIoT Technology Co., Ltd.

Address: No.16, North Chajiang Road, Xinzhuang Town, Changshu City, Suzhou, China

Manufacturer: Suzhou RaymonIoT Technology Co., Ltd.

Address: No.16, North Chajiang Road, Xinzhuang Town, Changshu City, Suzhou, China

Issued By: BUREAU VERITAS ADT (Shanghai) Corporation

Lab Address: No. 829, Xinzhuang Road, Shanghai, P.R.China (201612)

**FCC Registration /
Designation Number:** 176467/ CN1213



Test Lab
Cert 2343.01

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Test Instruments	7
2.2 Measurement Uncertainty	8
2.3 Modification Record	8
3 General Information.....	9
3.1 General Description of EUT.....	9
3.2 Description of Test Modes	10
3.3 DESCRIPTION OF SYSTEM UNDER TEST	10
3.3.1 Test Mode Applicability:	11
3.3.2 Test Condition:	12
3.4 Duty Cycle of Test Signal	13
3.5 General Description of Applied Standards	17
4 Test Procedure and Results.....	18
4.1 AC Power Conducted Emission.....	18
4.1.1 Limits	18
4.1.2 Test Procedures	18
4.1.3 Deviation from Test Standard.....	18
4.1.4 Test Setup.....	19
4.1.5 EUT Operating Conditions.....	19
4.1.6 Test Results	20
4.2 Minimum 6dB Bandwidth.....	22
4.2.1 Limit.....	22
4.2.2 Test Setup.....	22
4.2.3 Test Procedures	22
4.2.4 Deviation of Test Standard.....	22
4.2.5 Test Results	23
4.3 Conducted Output Power	27
4.3.1 Limit.....	27
4.3.2 Test Setup.....	27
4.3.3 Test Procedures	27
4.3.4 Deviation of Test Standard.....	27
4.3.5 Test Results	28



4.4	Power Spectral Density	32
4.4.1	Limit	32
4.4.2	Test Setup	32
4.4.3	Test Procedures	32
4.4.4	Deviation of Test Standard	32
4.4.5	Test Results	33
4.5	Conducted Band Edges Measurement	37
4.5.1	Limit	37
4.5.2	Test Setup	37
4.5.3	Test Procedures	37
4.5.4	Deviation of Test Standard	37
4.5.5	Test Results	38
4.6	Conducted Spurious Emissions	41
4.6.1	Limit	41
4.6.2	Test Setup	41
4.6.3	Test Procedures	41
4.6.4	Deviation of Test Standard	41
4.6.5	Test Results	42
4.7	Emissions in restricted frequency bands	52
4.7.1	Test Limit	52
4.7.2	Test Procedure Reference	53
4.7.3	Test Procedures	53
4.7.4	Test Setup	54
4.7.5	Test Results	55
4.8	Radiated Emission Measurement	65
4.8.1	Limits	65
4.8.2	Test Procedures	65
4.8.3	Deviation from Test Standard	66
4.8.4	Test Setup	67
4.8.5	EUT Operating Conditions	68
4.8.6	Test Results	68
5	Pictures of Test Arrangements	77



Release Control Record

Issue No.	Description	Date Issued
CMJP-ESH-P23090618B-1	Original release	Nov.16, 2023



1 Certificate of Conformity

Product: Wi-Fi Module

Brand: --

Model: X-C13SG(X-C13SG-1, X-C13SG-0)

Applicant: Suzhou RaymonIoT Technology Co., Ltd.

Test Date: Oct.09 to Nov.15, 2023

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10:2020

The above equipment has been tested by **BUREAU VERITAS ADT (Shanghai) Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :

, Date:

Nov.16, 2023

Yan ZHOU

Project Engineer

Approved by :



Sean YU

RF Supervisor

, Date:

Nov.16, 2023



2 Summary of Test Results

The EUT has been tested according to the following specifications:

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.203	Antenna Requirement	PASS	No antenna connector is used.
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	Minimum 6dB Bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output Power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.247(d)	Conducted Band Edges Measurement	PASS	Meet the requirement of limit.
15.247(d)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
15.247(d)	Emissions in restricted frequency bands	PASS	Meet the requirement of limit.
15.205 / 15.209 / 15.247(d)	Radiated Emissions Measurement	PASS	Meet the requirement of limit.



2.1 Test Instruments

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Hybrid Antenna(30MHz-1GHz)	Schwarzbeck	VULB9168	E1A1012	8/17/2023	8/16/2025
Horn Antenna(1GHz -18GHz)	Schwarzbeck	BBHA9120D	E1A1017	7/25/2022	7/24/2024
Horn Antenna(18GHz-40GHz)	Com-Power	AH-840	E1A1040	7/25/2022	7/24/2024
Pre-Amplifier(0.1MHz~1300MHz)	Agilent	8447D	E1A2001	3/3/2023	3/2/2024
Pre-Amplifier(18GHz-40GHz)	EMC Instruments Corporation	EMC184045SE	E1A2008	8/11/2023	8/10/2024
EMI Test Receiver	R&S	ESR7	E1R1005	3/3/2023	3/2/2024
EMI Test Spectrum	Keysight	N9030B	E1S1003	8/29/2023	8/28/2024
Signal Analyzer	Keysight	N9020A	E1S1004	3/2/2023	3/1/2024
LISN(signle phase)	Rohde&Schwarz	ENV216	E1L1011	9/1/2023	8/31/2024
RF Control Unit	Toscend	JS0806-2	E1C5003	N/A	N/A
Test Software	Toscend	JS32-CE	5.0.0.1	N/A	N/A
Test Software	Toscend	JS32-RE	5.0.0	N/A	N/A
Test Software	Toscend	JS1120-3	V3.2.22	N/A	N/A

2.2 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Measurement	Frequency	Expanded Uncertainty ($k=2$) ($\pm$)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.83 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.36 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	3.47 dB
	6GHz ~ 18GHz	3.75 dB
	18GHz ~ 40GHz	3.30 dB

2.3 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wi-Fi Module
Brand	--
Test Model	X-C13SG(X-C13SG-1, X-C13SG-0)
Power Rating	DC 2.7~3.6V
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Operating Frequency	2412MHz-2462MHz
Number of Channel	802.11b, 802.11g and 802.11n (HT20):11
Antenna Type	PIFA
Antenna Connector	--
Antenna Gain	4.3 dBi

Note:

1. For more details, please refer to the User's manual of the EUT.

Modulation Mode	TX /RX Function
802.11b	1TX / 1RX
802.11g	1TX / 1RX
802.11n (HT20)	1TX / 1RX

3.2 Description of Support Unit

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	RATING
Adaptor	I.T.E. AV POWER SUPPLY	KA06E-0501000US	NA	100-240V~ 50/60Hz 0.25A Max

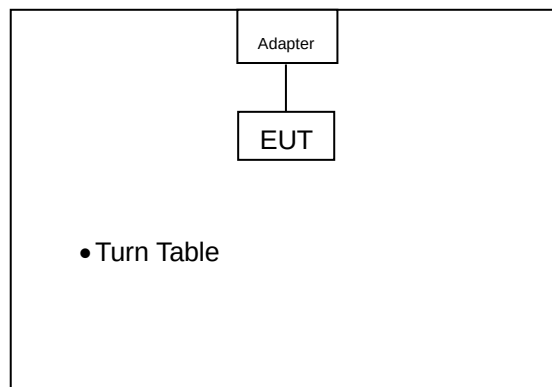
3.3 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20).

Channel	Frequency	Channel	Frequency
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz	-	-

3.4 DESCRIPTION OF SYSTEM UNDER TEST

RADIATED TEST CONFIGURATION



3.4.1 Test Mode Applicability:

EUT Configure Mode	Applicable to				Description
	RE ≥ 1G	RE < 1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G**: Radiated Emission above 1GHz

RE≤1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

Radiated Emission Test (Above 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.
- ☒ For different antenna gain, select high gain antenna for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

Radiated Emission Test (Below 1 GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1	DSSS	DBPSK	1.0

Power Line Conducted Emission Test:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1	DSSS	DBPSK	1.0

Antenna Port Conducted Measurement

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

3.4.2 Test Condition:

Applicable to	Normal Environmental Conditions	Normal Input Power
RE ≥ 1G	25deg. C, 60%RH	DC 3.3V, powered by adaptor
RE < 1G	25deg. C, 60%RH	DC 3.3V, powered by adaptor
PLC	25deg. C, 60%RH	DC 3.3V, powered by adaptor
APCM	25deg. C, 60%RH	DC 3.3V

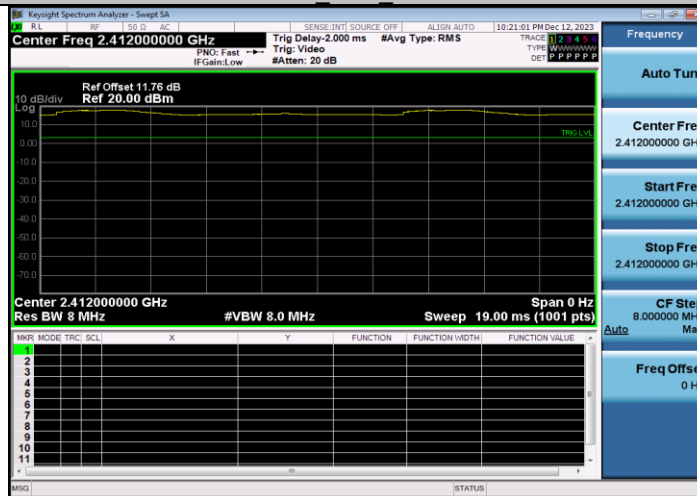
3.5 Duty Cycle of Test Signal

Test Mode	Antenna	Channel [MHz]	Duty Cycle [%]	10log(1/x) Factor[dB]
11B	Ant1	2412	100.00	0.00
		2437	100.00	0.00
		2462	100.00	0.00
11G	Ant1	2412	100.00	0.00
		2437	100.00	0.00
		2462	100.00	0.00
11N20SISO	Ant1	2412	100.00	0.00
		2437	100.00	0.00
		2462	100.00	0.00

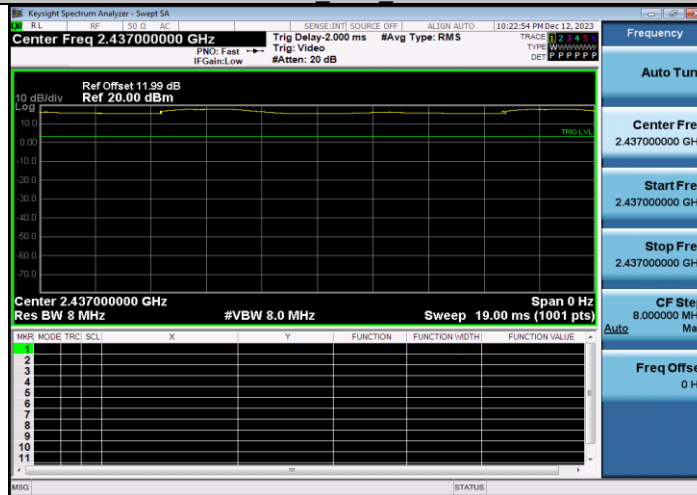


BUREAU
VERITAS

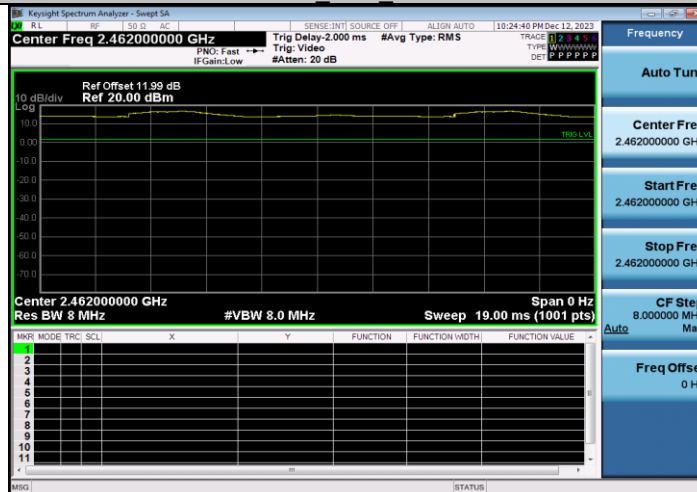
11B Ant1 2412



11B Ant1 2437



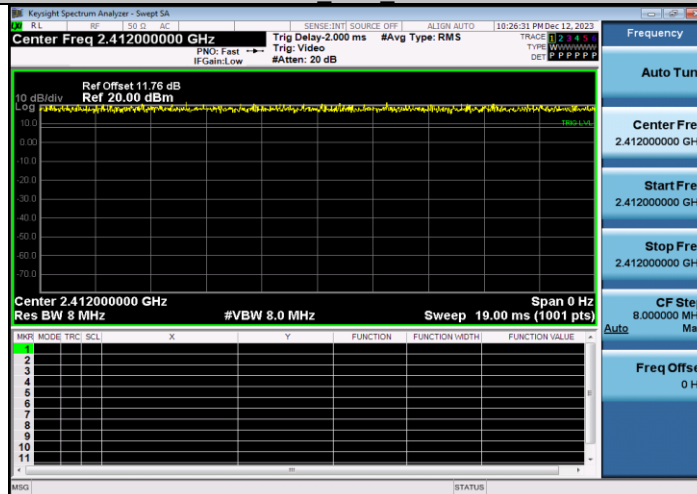
11B Ant1 2462



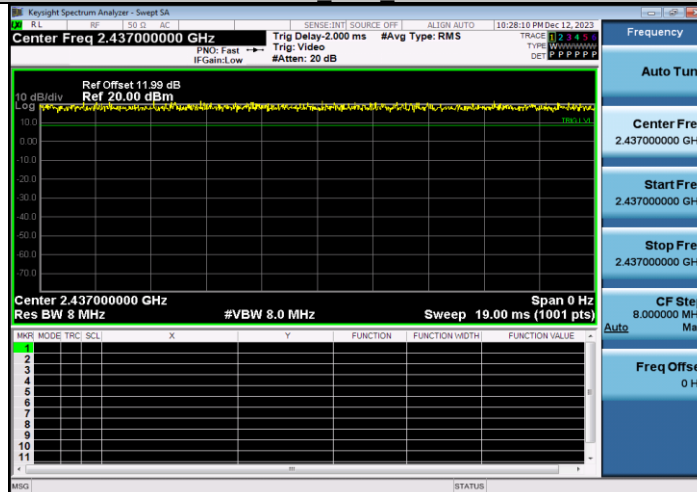


BUREAU
VERITAS

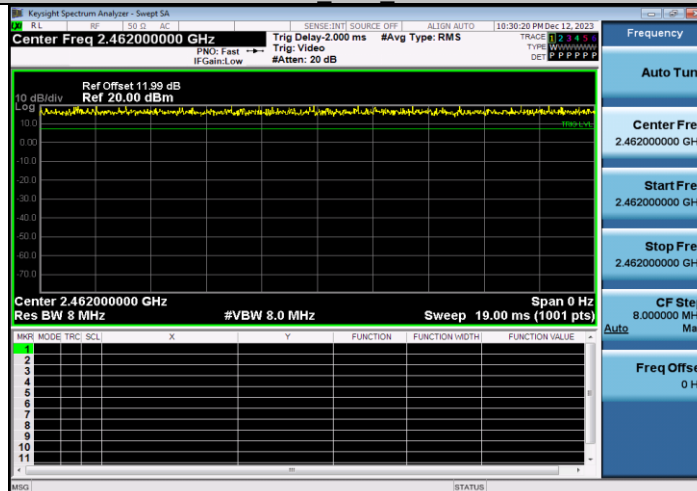
11G Ant1 2412



11G Ant1 2437



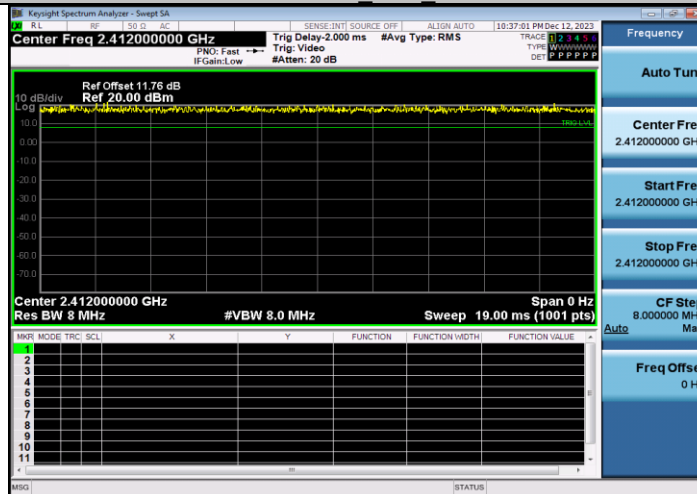
11G Ant1 2462



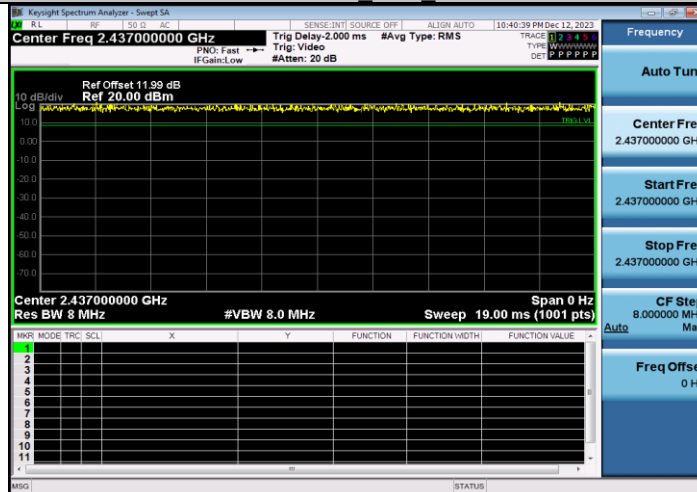


BUREAU
VERITAS

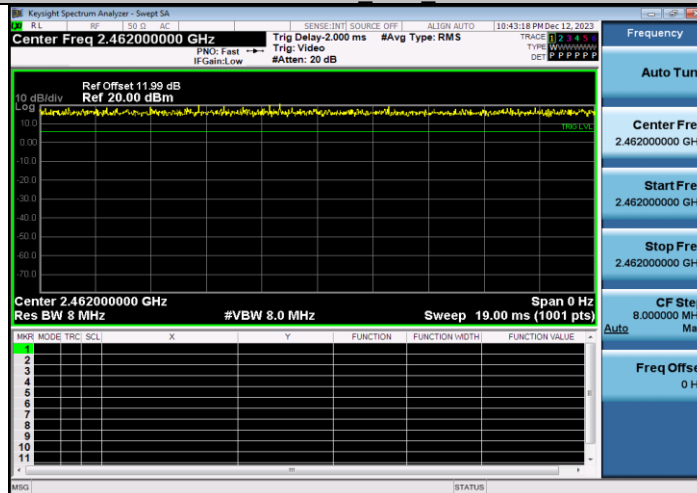
11N20SISO Ant1 2412



11N20SISO Ant1 2437



11N20SISO Ant1 2462



3.6 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standard:

FCC Part 15, Subpart C (15.247)

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10:2020

All related test items have been performed and recorded as per the above standard.

4 Test Procedure and Results

4.1 AC Power Conducted Emission

4.1.1 Limits

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

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

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.1.2 Test Procedures

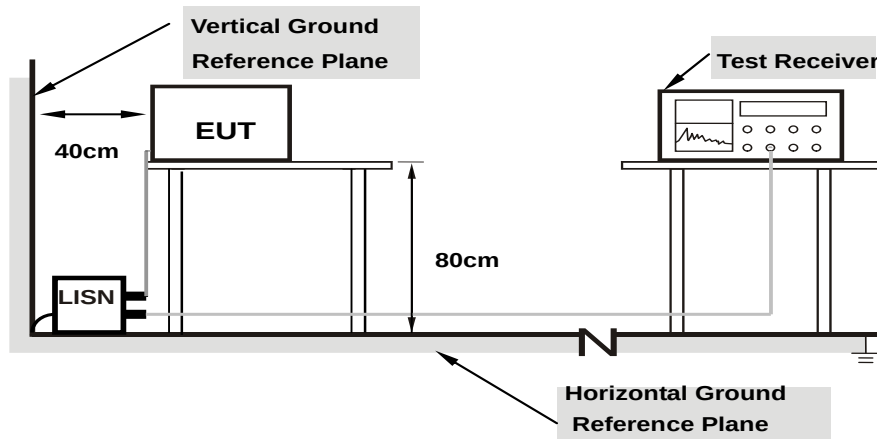
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.1.3 Deviation from Test Standard

No deviation.

4.1.4 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.5 EUT Operating Conditions

Same as 4.1.6.

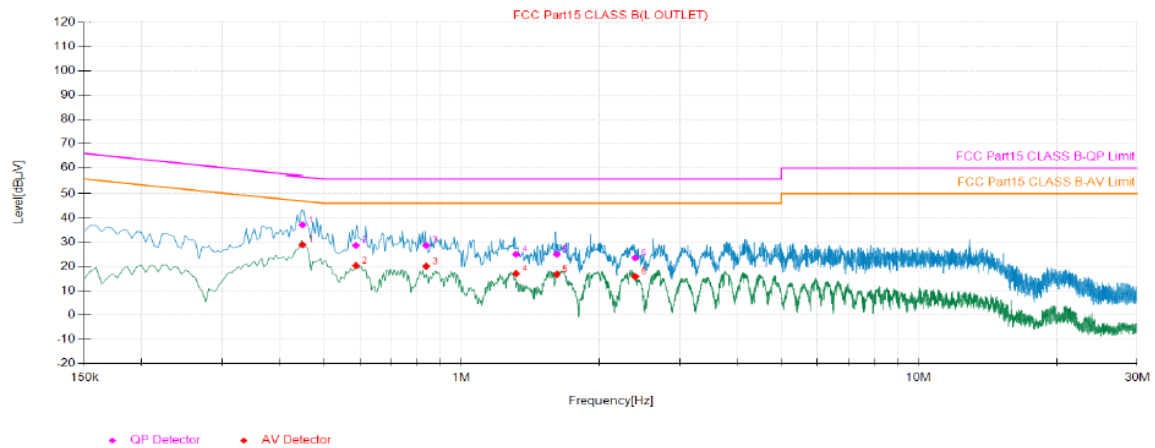
4.1.6 Test Results

Working While Worst case

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	-----------------------------------

Test Plot:

Test Graph



Final Data List

N O.	Freq. [MHz]	Factor [dB]	QP Reading [dB μ V]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dB μ V]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Type	Verdict
1	0.45	9.51	27.61	37.12	56.89	19.77	19.42	28.93	46.89	17.96	L	PASS
2	0.59	9.49	19.14	28.63	56.00	27.37	10.82	20.31	46.00	25.69	L	PASS
3	0.84	9.38	19.28	28.66	56.00	27.34	10.66	20.04	46.00	25.96	L	PASS
4	1.32	9.45	15.52	24.97	56.00	31.03	7.55	17.00	46.00	29.00	L	PASS
5	1.62	9.50	15.53	25.03	56.00	30.97	7.23	16.73	46.00	29.27	L	PASS
6	2.40	9.62	13.92	23.54	56.00	32.46	6.17	15.79	46.00	30.21	L	PASS

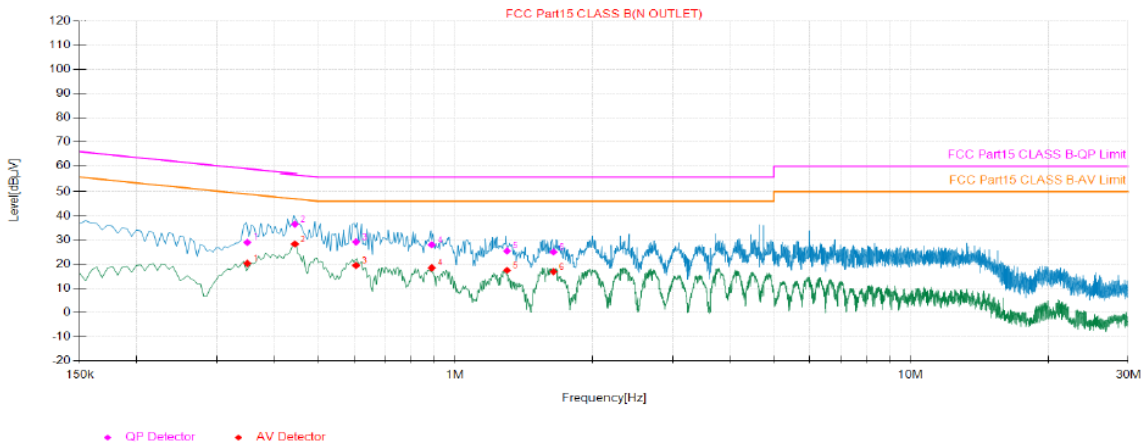
Remarks: 1. Margin=Limit - Final Value, Final Value=Reading + Factor.

2. Factor=AMN/LISN Factor + Cable Loss.

Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	-----------------------------------

Test Plot:

Test Graph



Final Data List

N O.	Freq. [MHz]	Factor [dB]	QP Reading [dB µ V]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dB µ V]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Type	Verdict
1	0.35	9.45	19.57	29.02	58.97	29.95	10.84	20.29	48.97	28.68	N	PASS
2	0.44	9.46	27.06	36.52	56.97	20.45	18.82	28.28	46.97	18.69	N	PASS
3	0.61	9.42	19.78	29.20	56.00	26.80	10.01	19.43	46.00	26.57	N	PASS
4	0.89	9.36	18.60	27.96	56.00	28.04	9.08	18.44	46.00	27.56	N	PASS
5	1.30	9.41	16.00	25.41	56.00	30.59	7.98	17.39	46.00	28.61	N	PASS
6	1.64	9.47	15.54	25.01	56.00	30.99	7.37	16.84	46.00	29.16	N	PASS

Remarks: 1. Margin=Limit - Final Value, Final Value=Reading + Factor.

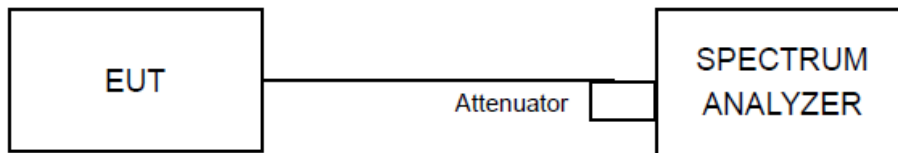
2. Factor=AMN/LISN Factor + Cable Loss.

4.2 Minimum 6dB Bandwidth

4.2.1 Limit

For digital modulation systems, the minimum 6dB bandwidth shall be at least 500 kHz

4.2.2 Test Setup



4.2.3 Test Procedures

The EUT was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance” for compliance to FCC 47CFR 15.247 requirements (clause 8.2).

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described above (i.e., RBW = 100 kHz, VBW $\geq$ 3 RBW, peak detector with maximum hold) is implemented by the instrumentation function.

4.2.4 Deviation of Test Standard

No deviation.

4.2.5 Test Results

DTS Bandwidth

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.560	2407.520	2417.080	0.5	PASS
		2437	9.080	2432.520	2441.600	0.5	PASS
		2462	9.560	2457.040	2466.600	0.5	PASS
11G	Ant1	2412	16.360	2403.880	2420.240	0.5	PASS
		2437	16.280	2428.880	2445.160	0.5	PASS
		2462	16.320	2453.880	2470.200	0.5	PASS
11N20SISO	Ant1	2412	17.040	2403.520	2420.560	0.5	PASS
		2437	17.080	2428.520	2445.600	0.5	PASS
		2462	16.920	2453.520	2470.440	0.5	PASS



BUREAU
VERITAS

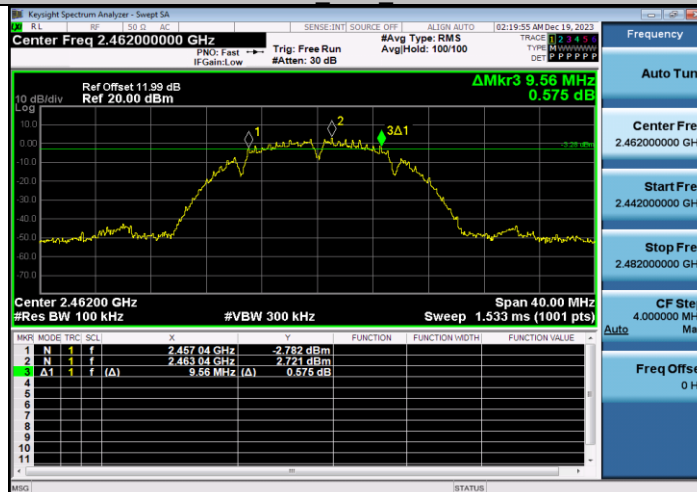
11B Ant1 2412



11B Ant1 2437



11B Ant1 2462





BUREAU
VERITAS

11G Ant1 2412



11G Ant1 2437



11G Ant1 2462





BUREAU
VERITAS

11N20SISO Ant1 2412



11N20SISO Ant1 2437



11N20SISO Ant1 2462

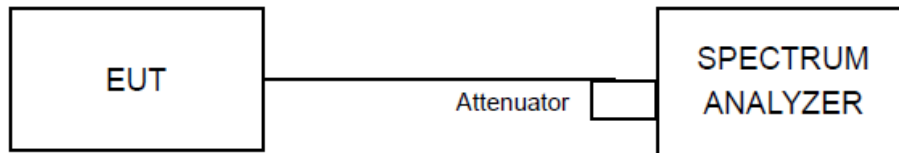


4.3 Conducted Output Power

4.3.1 Limit

For systems using digital modulation in the 2400 – 2483.5 MHz bands: 1 Watt (30 dBm)

4.3.2 Test Setup



4.3.3 Test Procedures

The EUT was tested according to DTS test procedure of “KDB558074 D01 DTS Meas Guidance” for compliance to FCC 47CFR 15.247 requirements (clause 9.2.2.4).

- a) Measure the duty cycle, x , of the transmitter output signal as described in Section 6.0.
- b) Set span to at least 1.5 OBW.
- c) Set RBW = 1 % to 5 % of the OBW, not to exceed 1 MHz.
- d) Set VBW $\geq$ 3 RBW.
- e) Number of points in sweep $\geq$ 2 span / RBW. (This gives bin-to-bin spacing $\leq$ RBW/2, so that narrowband signals are not lost between frequency bins.)
- f) Sweep time = auto.
- g) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- h) Do not use sweep triggering. Allow the sweep to “free run”.
- i) Trace average at least 100 traces in power averaging (i.e., RMS) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the on and off periods of the transmitter.
- j) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- k) Add $10 \log (1/x)$, where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on- and off-times of the transmission). For example, add $10 \log (1/0.25) = 6 \text{ dB}$ if the duty cycle is 25 %.

4.3.4 Deviation of Test Standard

No deviation.

4.3.5 Test Results

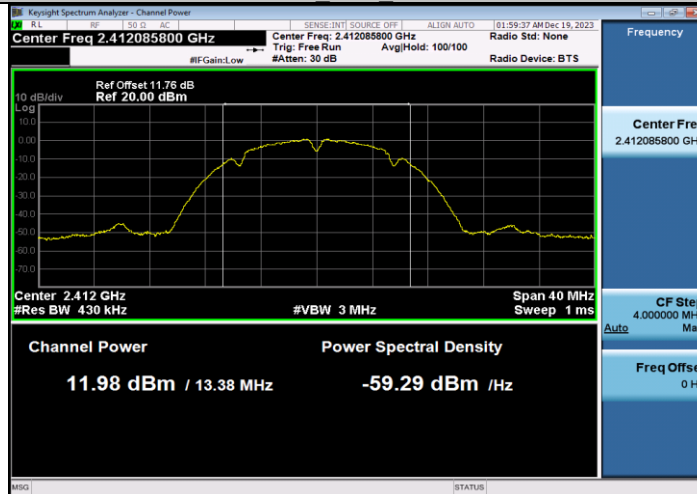
Test Mode	Antenna	Channel [MHz]	Level [dBm]	10log(1/x) Factor[dB]	Power [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	11.98	0.00	11.98	≤30	PASS
		2437	12.23	0.00	12.23	≤30	PASS
		2462	12.16	0.00	12.16	≤30	PASS
11G	Ant1	2412	11.61	0.00	11.61	≤30	PASS
		2437	11.77	0.00	11.77	≤30	PASS
		2462	12.19	0.00	12.19	≤30	PASS
11N20SISO	Ant1	2412	11.56	0.00	11.56	≤30	PASS
		2437	11.85	0.00	11.85	≤30	PASS
		2462	12.06	0.00	12.06	≤30	PASS

Test Mode	Antenna	Channel [MHz]	Power [dBm]	Gain [dBi]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
11B	Ant1	2412	11.98	4.3	16.28	≤36.00	PASS
		2437	12.23	4.3	16.53	≤36.00	PASS
		2462	12.16	4.3	16.46	≤36.00	PASS
11G	Ant1	2412	11.61	4.3	15.91	≤36.00	PASS
		2437	11.77	4.3	16.07	≤36.00	PASS
		2462	12.19	4.3	16.49	≤36.00	PASS
11N20SISO	Ant1	2412	11.56	4.3	15.86	≤36.00	PASS
		2437	11.85	4.3	16.15	≤36.00	PASS
		2462	12.06	4.3	16.36	≤36.00	PASS

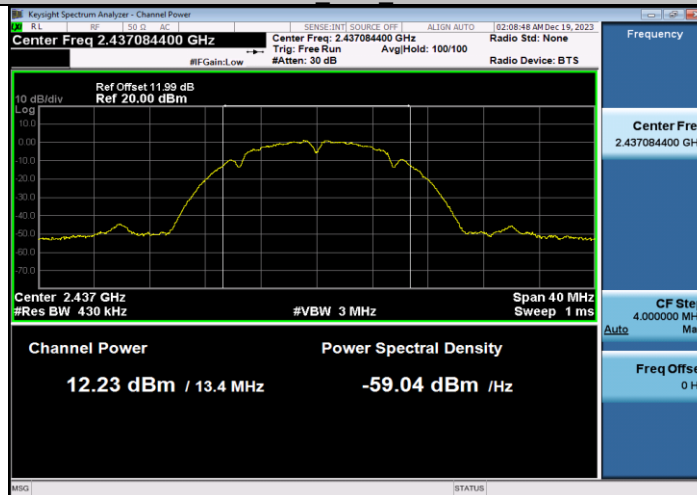


BUREAU
VERITAS

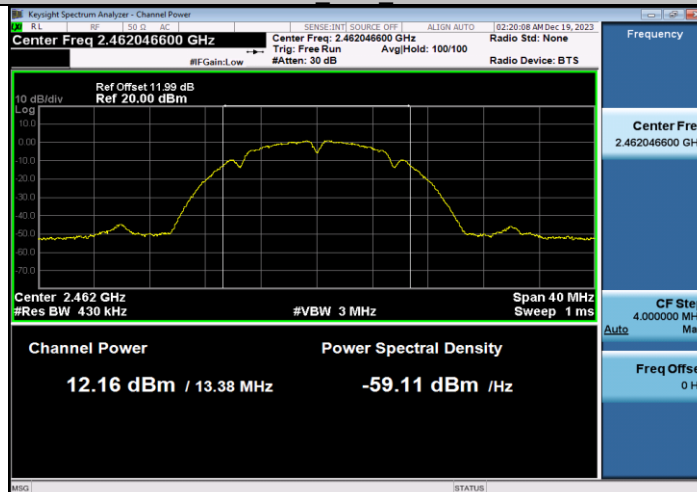
11B Ant1 2412



11B Ant1 2437



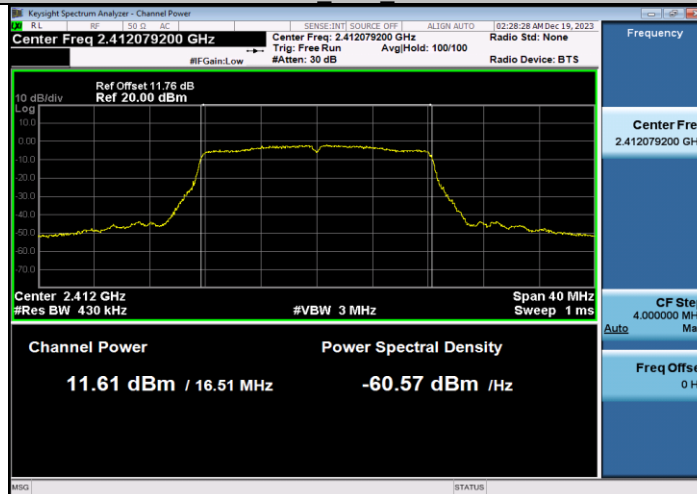
11B Ant1 2462



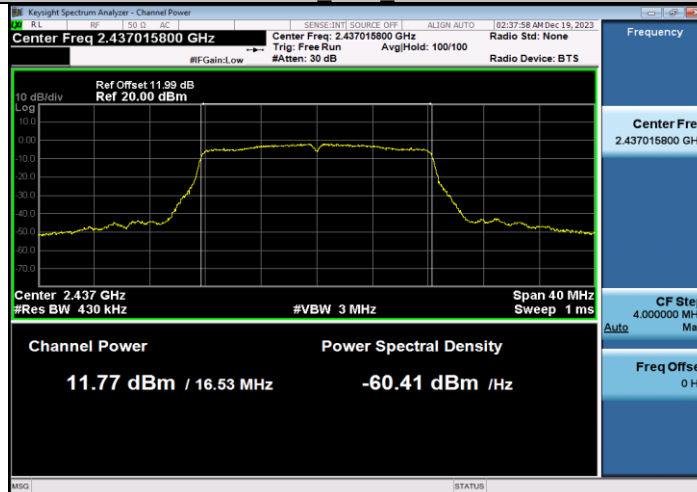


BUREAU
VERITAS

11G Ant1 2412



11G Ant1 2437



11G Ant1 2462

