



诺检标准
NTT STANDARD

TEST REPORT

FCC ID:2BEGI-CC100

Product : Chessnut Companion
Model Name : CC100
Brand : Chessnut
Report No. : SZNTT26017439E1-1

Prepared for

Shenzhen WISO Technology Co.,Ltd
Rm 815, Bld 10, SZ Bay Sci and Tech Ecological Park, No. 10, Gaoxin S.
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Prepared by

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1 TEST RESULT CERTIFICATION

Applicant : Shenzhen WISO Technology Co.,Ltd
Address : Rm 815, Bld 10, SZ Bay Sci and Tech Ecological Park, No. 10, Gaoxin S.
9th Rd, Nanshan, Shenzhen, China
Manufacturer : Shenzhen Yilanyi Communication Technology Co., Ltd
Address : Room A601, Comprehensive Building, Suojia Science and Technology Park,
Sanwei Community, Hangcheng Subdistrict, Bao'an District, Shenzhen.
Product name : Chessnut Companion
Model name : CC100
Additional model : CC101,CC102,CC103,CC104
Standards : FCC CFR47 Part 15 Section 15.247
Test procedure : ANSI C63.10-2020+Cor 1+2023
KDB 558074 D01 15.247 Meas Guidance v05r02
Date of test : Apr. 22, 2026 to May. 21, 2026
Date of Issue : May. 21, 2026

This device described above has been tested by NTT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Contents

Page

1	TEST RESULT CERTIFICATION.....	2
2	TEST SUMMARY.....	5
3	GENERAL INFORMATION	6
3.1	GENERAL DESCRIPTION OF E.U.T.....	6
3.2	CHANNEL LIST	7
3.3	TEST SITE.....	9
3.4	TEST SETUP CONFIGURATION	10
3.5	TEST MODE	10
4	EQUIPMENT DURING TEST	11
4.1	EQUIPMENTS LIST	11
4.2	MEASUREMENT UNCERTAINTY.....	13
4.3	DESCRIPTION OF SUPPORT UNITS.....	13
5	CONDUCTED EMISSION.....	14
5.1	E.U.T. OPERATION	14
5.2	EUT SETUP	14
5.3	TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	15
5.4	MEASUREMENT PROCEDURE.....	15
5.5	CONDUCTED EMISSION LIMIT.....	15
5.6	MEASUREMENT DESCRIPTION	16
5.7	CONDUCTED EMISSION TEST RESULT.....	16
6	RADIATED SPURIOUS EMISSIONS	22
6.1	EUT OPERATION.....	22
6.2	TEST SETUP	23
6.3	SPECTRUM ANALYZER SETUP	24
6.4	TEST PROCEDURE.....	25
6.5	SUMMARY OF TEST RESULTS	26
7	DUTY CYCLE	39
7.1	LIMIT	39
7.2	TEST SETUP	39



7.3	TEST PROCEDURE.....	39
7.4	TEST RESULT	40
8	CONDUCT BAND EDGE AND SPURIOUS EMISSIONS MEASUREMENT	43
8.1	TEST SETUP	43
8.2	TEST PROCEDURE.....	43
8.3	TEST RESULT	43
9	6DB&99% BANDWIDTH MEASUREMENT	54
9.1	TEST SETUP	54
9.2	TEST PROCEDURE.....	54
9.3	TEST RESULT	55
10	MAXIMUM AVG CONDUCTED OUTPUT POWER	60
10.1	TEST SETUP	60
10.2	TEST PROCEDURE.....	60
10.3	TEST RESULT	61
11	POWER SPECTRAL DENSITY.....	63
11.1	TEST SETUP	63
11.2	TEST PROCEDURE.....	63
11.3	TEST RESULT	63
12	ANTENNA APPLICATION	69
12.1	ANTENNA REQUIREMENT	69
12.2	RESULT	69
13	TEST SETUP AND EUT PHOTOS	70



2 Test Summary

Test Items	Test Requirement	Result
AC Power Line conducted emission	FCC part 15.207	PASS
Radiated Spurious Emissions	FCC part 15.205/15.209	PASS
Duty cycle	ANSI C63.10 Section 11.6	PASS
Conducted Spurious Emission	FCC part 15.205/15.209	PASS
Band edge	FCC part 15.247(d)	PASS
6dB&99% Bandwidth	FCC part 15.247 (a)(2)	PASS
Maximum Conducted Output Power	FCC part 15.247 (b)(3)	PASS
Power Spectral Density	FCC part 15.247 (e)	PASS
Antenna Requirement	FCC part 15.203/15.247 (b)	PASS

Remark:

"N/A" denotes test is not applicable in this Test Report.



3 General Information

3.1 General Description of E.U.T.

Product Name	:	Chessnut Companion
Model Name	:	CC100
Sample ID	:	SZNTT26047440E1-001#
Sample(s) Status:	:	Engineer sample
Series Model	:	CC101,CC102,CC103,CC104
Model Different.:	:	All the models are the same circuit and module, except the model No..
Operation frequency:	:	2.4G WIFI: IEEE 802.11b/g/n20: 2412-2462MHz IEEE 802.11n40: 2422-2452MHz BLE:2402 MHz to 2480 MHz
Modulation type:	:	2.4G WIFI: IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/n (HT20/H40): OFDM (BPSK, QPSK, 16QAM, 64QAM) BLE: GFSK
Bit Rate of transmitter:	:	2.4G WIFI: IEEE 802.11b: 1/2/5.5/11Mbps IEEE 802.11g: 6/9/12/18/24/36/48/54Mbps IEEE 802.11n(20MHz): MCS0-7, up to 150Mbps IEEE 802.11n(40MHz): MCS0-7, up to 300Mbps BLE: 1Mbps
Antenna installation	:	FPC Antenna
Antenna Gain	:	2.4G WIFI: 1.84dBi BLE: 2.02dBi
Power supply	:	DC 3.7V from Battery; Charging input:DC 5V/2A,9V/2A
Remark: the Antenna gain is provided by customer from Antenna spec. and the laboratory will not be responsible for the accumulated calculation results which covers the information provided by the applicant.		



3.2 Channel List

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (802.11b: 1 Mbps; 802.11g: 6 Mbps; 802.11n (HT20); 802.11n (HT40); were used for all test.

Those data rates (BLE:1Mbps); were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Frequency and Channel list for 802.11 b/g/n (HT20/HT40):

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

Test Frequency and Channel for 802.11 b/g/n (HT20/HT40):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	6	2437	11	2462
3	2422	6	2437	9	2452



BLE:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454	/	/
13	2428	27	2456	/	/

Channel List for BLE

Channel	Channel	Frequency (MHz)
Low	00	2402
Middle	19	2440
High	39	2480



3.3 Test Site

Site Description

Designation Number: CN3446

EMC Lab. : Test Firm Registration Number: 129414
Accredited by ANAB, Dec. 19, 2025
The Certificate Registration Number is AT-3446

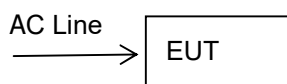
Name of Firm : Shenzhen NTT Testing Technology Co., Ltd.

Site Location : 1B, Building 2, Factory Building & 103, Building 3, Factory Building, Dayang Industrial Park No.4, Industrial Avenue, Tangwei Community, Fuhai Sub-district, Bao'an District, Shenzhen City, China

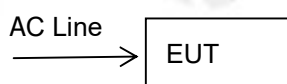


3.4 Test Setup Configuration

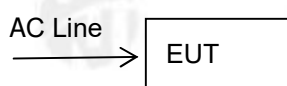
Conducted Emission



Radiated Emission (30MHz-1GHz)



Radiated Emission(above 1GHz)



RF Conducted Test



3.5 Test Mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Test Software	Tera Term
Power level setup	7



4 Equipment During Test

4.1 Equipments List

Conducted emission Test Equipment

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
944 Shielded Room	HSRCE944	/	HTEC	2025/4/30	2028/4/29
EMI Test Receiver	ESCI	/	RS	2025/9/8	2026/9/7
LISN	NNLK 8129	00603	Schwarzbeck	2025/9/8	2026/9/7
LISN	NNHV 8123-400	00694	Schwarzbeck	2025/9/8	2026/9/7
LISN	NNHV 8123-400	00680	Schwarzbeck	2025/9/8	2026/9/7
Cable	RG223-1500MM	NA	RG	2025/9/8	2026/9/7

Radiated emission & Radio Frequency Test Equipment

Name	Model No.	Serial No.	Manufacturer	Date of Cal.	Due Date
966 Shielded Room	966 Room	/	EMToni	2025/7/24	2028/7/23
EMI Test Receiver	ESCI	101018	RS	2025/9/8	2026/9/7
Amplifier (30MHz-1GHz)	BBV 9718D	00042	SCHWARZBECK	2025/9/8	2026/9/7
Bilog Antenna (30MHz-1GHz)	VULB9168	1858	SCHWARZBECK	2025/9/9	2026/9/8
Horn antenna (1GHz-18GHz)	BBHA 9120 D	02622	SCHWARZBECK	2025/9/9	2026/9/8
Preamplifier (1GHz-18GHz)	BBV 9718D	0024	SCHWARZBECK	2025/9/8	2026/9/7
Spectrum Analyzer (10Hz-40GHz)	FSV 40	100952	Rohde & Schwarz	2025/9/8	2026/9/7
Preamplifier (18GHz-40GHz)	BBV 9721	0056	SCHWARZBECK	2025/9/8	2026/9/7



Double Ridge Guide Horn Antenna (18GHz-40GHz)	SAS-574	588	A.H.System	2025/9/8	2026/9/7
Loop Antenna (9KHz-30MHz)	FMZB1519B	014	SCHWARZBECK	2025/9/8	2026/9/7
Amplifier (9KHz-30MHz)	CVP 9222 C	00109	SCHWARZBECK	2025/9/8	2026/9/7
MXG Signal Analyzer	N9020A	MY50510202	Agilent	2025/9/8	2026/9/7
MXG Vector Signal Generator	N5182A	MY50140020	Agilent	2025/9/8	2026/9/7
MXG Analog Signal Generator	N5181A	MY47420919	Agilent	2025/9/8	2026/9/7
Power Sensor	TR1029-2	512364	Techoy	2025/9/8	2026/9/7
RF Swith	TR1029-1	512364	Techoy	2025/9/8	2026/9/7
Cable	DA800- 4000MM	NA	DA	2025/9/8	2026/9/7
Cable	DA800- 11000MM	NA	DA	2025/9/8	2026/9/7
Oven	GX-3020- M150	NA	GAOXIN	2026/03/10	2027/03/09

Other

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ-EMC	Ver.EMC-CON 3A1.1+
2	EMC radiation test system	FALA	EZ-EMC	Ver.FA-03A2 RE+
3	RF test system	TACHOY	RFTest	V1.0.0
4	RF communication test system	TACHOY	RFTest	V1.0.0



4.2 Measurement Uncertainty

Parameter	Uncertainty
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10 ⁻⁶
Bandwidth	± 1.5 x 10 ⁻⁶
Time	±2%
Duty Cycle	±2%
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(9KHz~30MHz)	±4.51dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB
Remark:When making a conformity declaration based on test results for regulations/standards or specifications,the default is to use Clause 4.2.1of ILAC-G8:09/2019 and the guidelines on decision rules and conformity declaration in IEC Guide 115:2023.	

4.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Chessnut Companion	Chessnut	CC100	N/A	EUT
E-2	USB serial port	/	AML6001G	N/A	Auxiliary
E-3	PC	ASUS	U1	N/A	Auxiliary

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.



5 Conducted Emission

Test Requirement:	: FCC CFR 47 Part 15 Section 15.207
Test Method	: ANSI C63.10-2020+Cor 1+2023
Test Result	: PASS
Frequency Range	: 150kHz to 30MHz
Class/Severity	: Class B

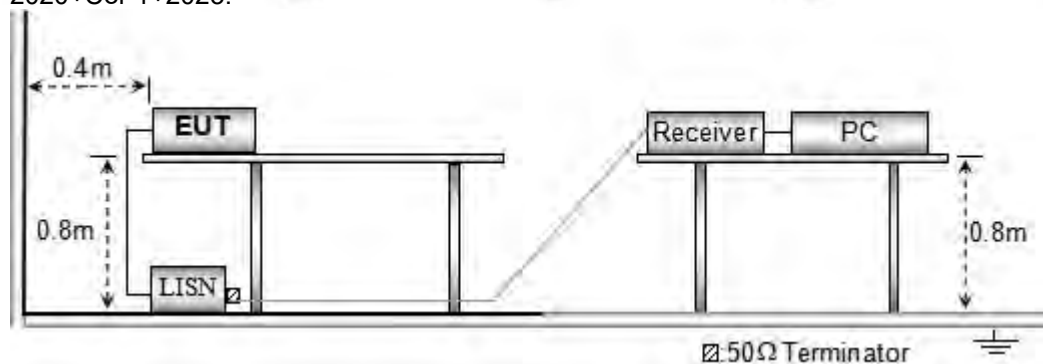
5.1 E.U.T. Operation

Operating Environment :

Temperature	: 26 °C
Humidity	: 54 % RH
Atmospheric Pressure	: 101.11kPa

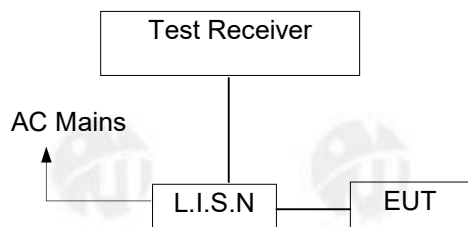
5.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10-2020+Cor 1+2023.





5.3 Test SET-UP (Block Diagram of Configuration)



5.4 Measurement Procedure

1. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
2. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
3. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
4. LISN at least 80 cm from nearest part of EUT chassis.
5. For the actual test configuration, please refer to the related Item - EUT Test Photos.

5.5 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	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.



5.6 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

5.7 Conducted Emission Test Result

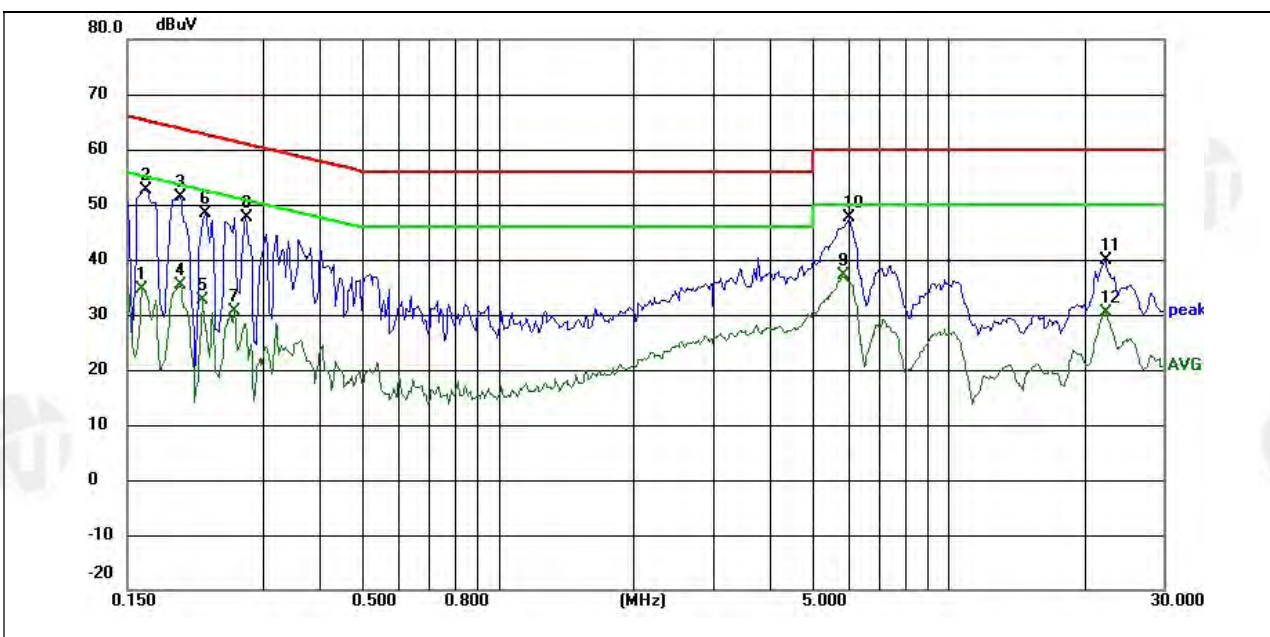
Pass.

Conducted emission at both 120V & 240V is assessed, and emission at 120V represents the worst case. All the modulation modes were tested the data of the worst mode (802.11b, Lowest channel & BLE High channel) are recorded in the following pages and the others modulation methods do not exceed the limits.



BLE

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	L
Test Voltage :	DC 5V from Adapter Inpu AC 120V/60Hz		

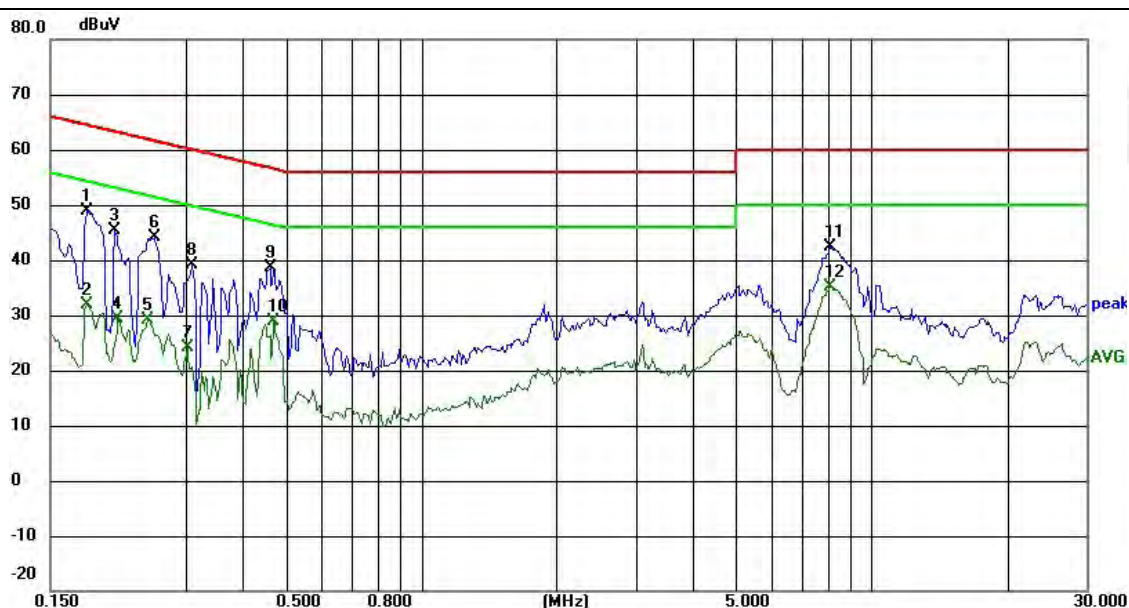


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1617	24.58	10.15	34.73	55.38	-20.65	AVG	P
2	0.1655	42.56	10.15	52.71	65.18	-12.47	peak	P
3 *	0.1968	41.37	10.12	51.49	63.74	-12.25	peak	P
4	0.1968	25.28	10.12	35.40	53.74	-18.34	AVG	P
5	0.2202	22.45	10.14	32.59	52.81	-20.22	AVG	P
6	0.2240	38.14	10.14	48.28	62.67	-14.39	peak	P
7	0.2590	20.54	10.17	30.71	51.46	-20.75	AVG	P
8	0.2747	37.46	10.18	47.64	60.97	-13.33	peak	P
9	5.8274	26.80	10.23	37.03	50.00	-12.97	AVG	P
10	6.0224	37.30	10.22	47.52	60.00	-12.48	peak	P
11	22.2503	7.09	32.71	39.80	60.00	-20.20	peak	P
12	22.2503	-2.26	32.71	30.45	50.00	-19.55	AVG	P



Notes: 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Correct Factor = Insertion loss of LISN + Cable loss.
4. Measurement Level = Reading level + Correct Factor. Margin= Measurement Level - Limit

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	N
Test Voltage :	DC 5V from Adapter Inpu AC 120V/60Hz		



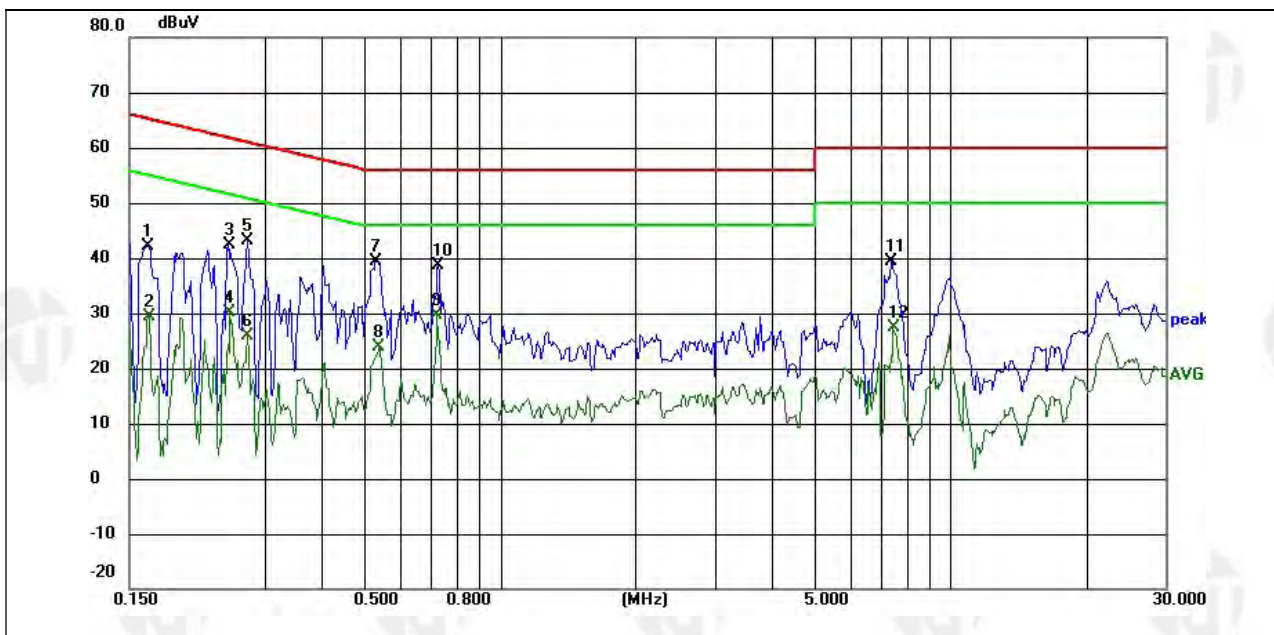
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1811	38.71	10.13	48.84	64.44	-15.60	peak	P
2	0.1811	21.77	10.13	31.90	54.44	-22.54	AVG	P
3	0.2084	35.33	10.13	45.46	63.27	-17.81	peak	P
4	0.2124	19.14	10.13	29.27	53.11	-23.84	AVG	P
5	0.2474	19.04	10.16	29.20	51.84	-22.64	AVG	P
6	0.2553	33.84	10.17	44.01	61.58	-17.57	peak	P
7	0.3020	14.04	10.21	24.25	50.19	-25.94	AVG	P
8	0.3100	28.82	10.22	39.04	59.97	-20.93	peak	P
9	0.4620	28.25	10.35	38.60	56.66	-18.06	peak	P
10	0.4697	18.62	10.35	28.97	46.52	-17.55	AVG	P
11	8.0894	24.07	18.35	42.42	60.00	-17.58	peak	P
12 *	8.0894	16.86	18.35	35.21	50.00	-14.79	AVG	P



Notes: 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
3. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Correct Factor = Insertion loss of LISN + Cable loss.
4. Measurement Level = Reading level + Correct Factor. Margin= Measurement Level - Limit

2.4GWIFI:

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	L
Test Voltage :	DC 5V from Adapter Inpu AC 120V/60Hz		

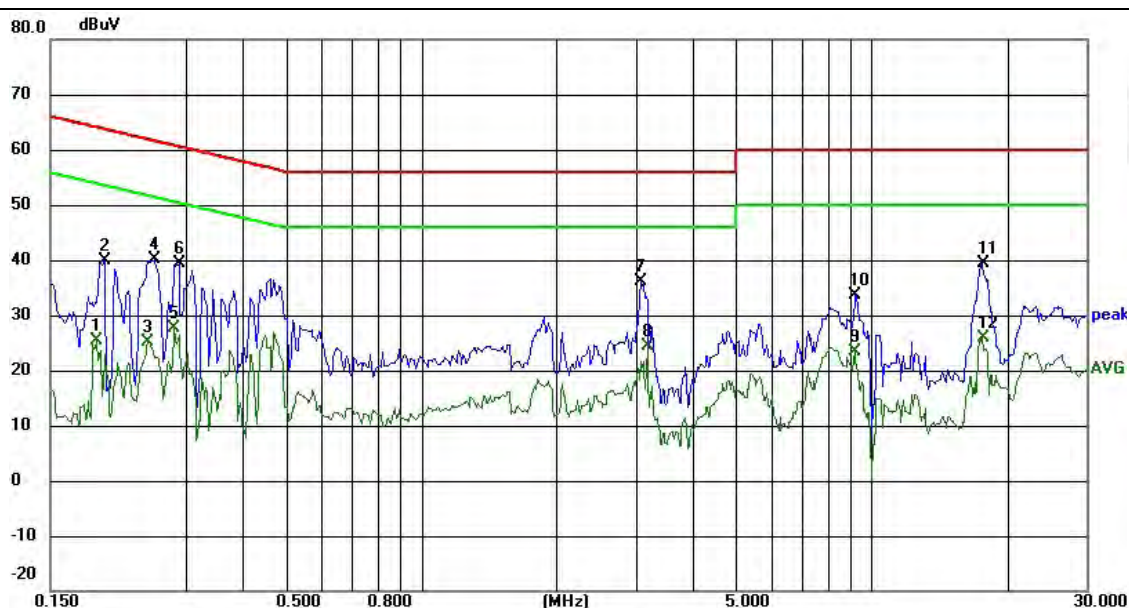


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1655	32.06	10.15	42.21	65.18	-22.97	peak	P
2	0.1658	19.28	10.15	29.43	55.17	-25.74	AVG	P
3	0.2480	32.12	10.16	42.28	61.82	-19.54	peak	P
4	0.2514	19.87	10.16	30.03	51.71	-21.68	AVG	P
5	0.2746	32.96	10.18	43.14	60.98	-17.84	peak	P
6	0.2746	15.68	10.18	25.86	50.98	-25.12	AVG	P
7	0.5292	28.89	10.38	39.27	56.00	-16.73	peak	P
8	0.5400	13.58	10.38	23.96	46.00	-22.04	AVG	P
9 *	0.7235	19.17	10.38	29.55	46.00	-16.45	AVG	P
10	0.7273	28.28	10.38	38.66	56.00	-17.34	peak	P
11	7.3913	21.89	17.61	39.50	60.00	-20.50	peak	P
12	7.4463	9.71	17.67	27.38	50.00	-22.62	AVG	P



Notes: 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
4. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Correct Factor = Insertion loss of LISN + Cable loss.
4. Measurement Level = Reading level + Correct Factor. Margin= Measurement Level - Limit

Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Phase :	N
Test Voltage :	DC 5V from Adapter Inpu AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1901	15.18	10.13	25.31	54.03	-28.72	AVG	P
2	0.1975	29.85	10.12	39.97	63.72	-23.75	peak	P
3	0.2474	15.04	10.16	25.20	51.84	-26.64	AVG	P
4	0.2553	29.84	10.17	40.01	61.58	-21.57	peak	P
5	0.2826	17.39	10.19	27.58	50.74	-23.16	AVG	P
6	0.2903	29.08	10.20	39.28	60.52	-21.24	peak	P
7 *	3.0737	25.77	10.29	36.06	56.00	-19.94	peak	P
8	3.1730	14.08	10.29	24.37	46.00	-21.63	AVG	P
9	9.1555	3.91	19.48	23.39	50.00	-26.61	AVG	P
10	9.2400	14.12	19.57	33.69	60.00	-26.31	peak	P
11	17.5676	11.44	28.02	39.46	60.00	-20.54	peak	P
12	17.5676	-2.12	28.02	25.90	50.00	-24.10	AVG	P



诺检标准

NTT STANDARD

Report No.: SZNTT26017439E1-1

Notes: 1. An initial pre-scan was performed on the line and neutral lines with peak detector.
5. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Correct Factor = Insertion loss of LISN + Cable loss.
4. Measurement Level = Reading level + Correct Factor. Margin = Measurement Level - Limit



6 Radiated Spurious Emissions

Test Requirement : FCC CFR47 Part 15 Section 15.209 & 15.247
 Test Method : ANSI C63.10-2020+Cor 1+2023
 Test Result : PASS
 Measurement Distance : 3m
 Limit : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

6.1 EUT Operation

Operating Environment :

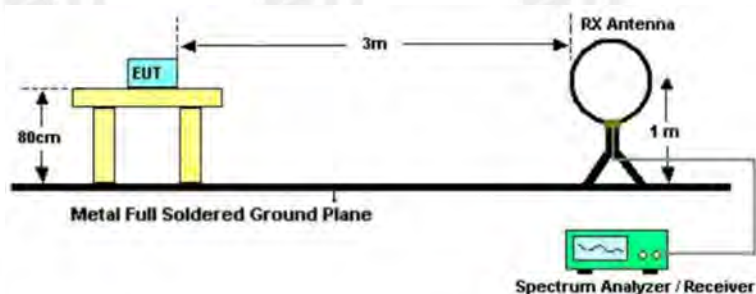
Temperature: : 26°C
 Humidity: : 54 % RH
 Atmospheric Pressure: : 101.11kPa
 Test Voltage : AC 120V/60Hz



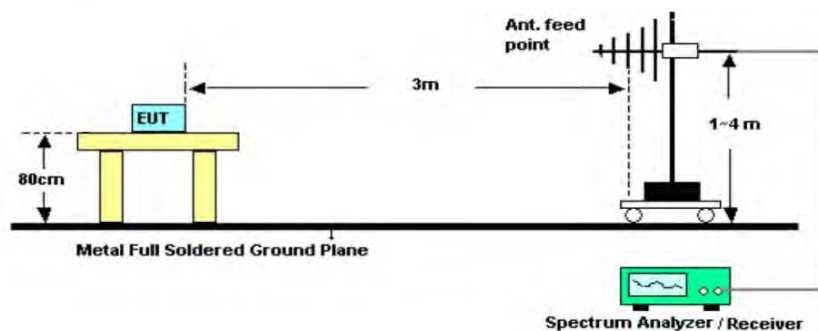
6.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

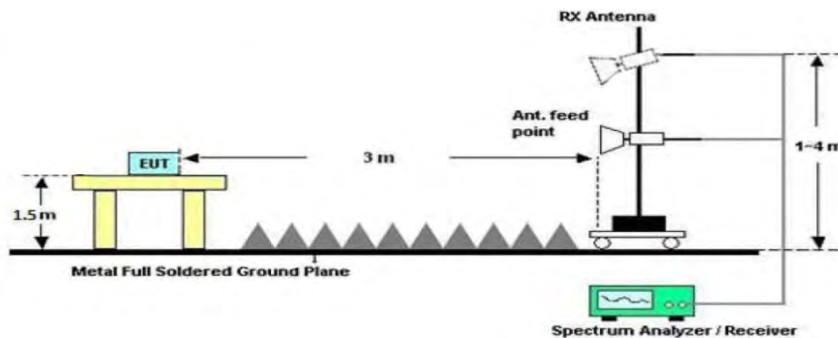
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz





6.3 Spectrum Analyzer Setup

Below 30MHz			
IF Bandwidth	:	10kHz	
Resolution Bandwidth	:	10kHz	
Video Bandwidth	:	10kHz	
30MHz ~ 1GHz			
Detector	:	PK	QP
Resolution Bandwidth	:	100kHz	120kHz
Video Bandwidth	:	300kHz	300kHz
Above 1GHz			
Detector	:	PK	AV
Resolution Bandwidth	:	1MHz	1MHz
Video Bandwidth	:	3MHz	10Hz



6.4 Test Procedure

1. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane, And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
8. The test above 1GHz must be use the fully anechoic room, and the test below 1GHz use the half anechoic room



6.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40\log(\text{Specific distance} / \text{test distance})$ (dB);
Limit line = Specific limits (dBuV) + distance extrapolation factor.

Test Frequency: 30MHz ~ 1GHz

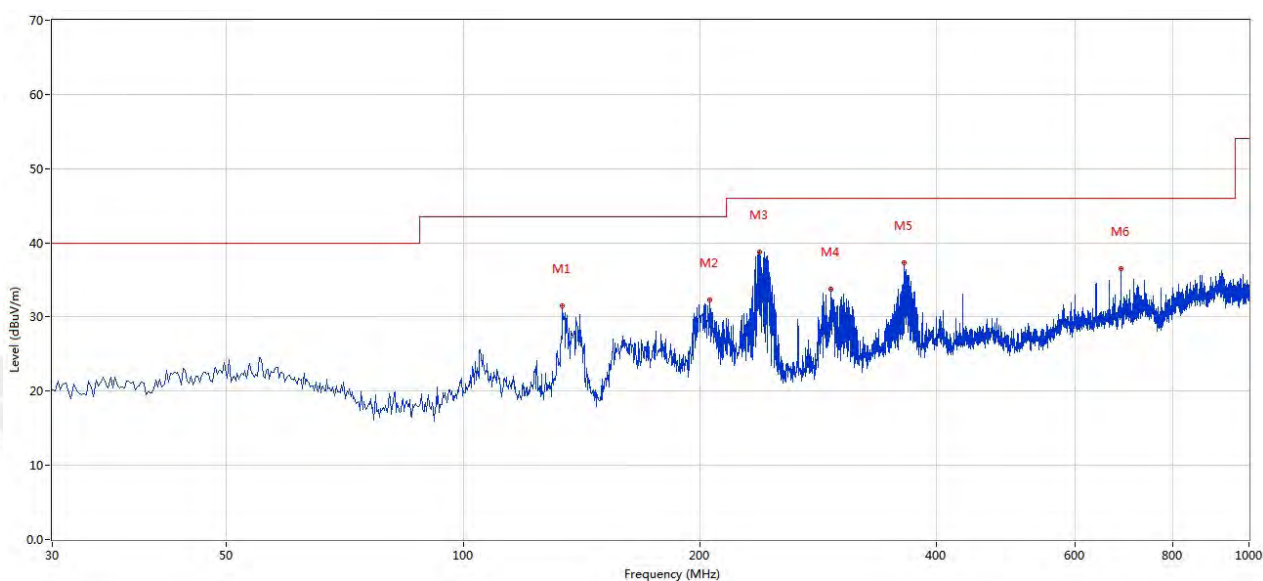
All the modulation modes were tested the data of the worst mode (TX 802.11b Low Channel & TX BLE High Channel) are recorded in the following pages and the others modulation methods do not exceed the limits.

Please refer to the following test plots:



2.4GWIFI:

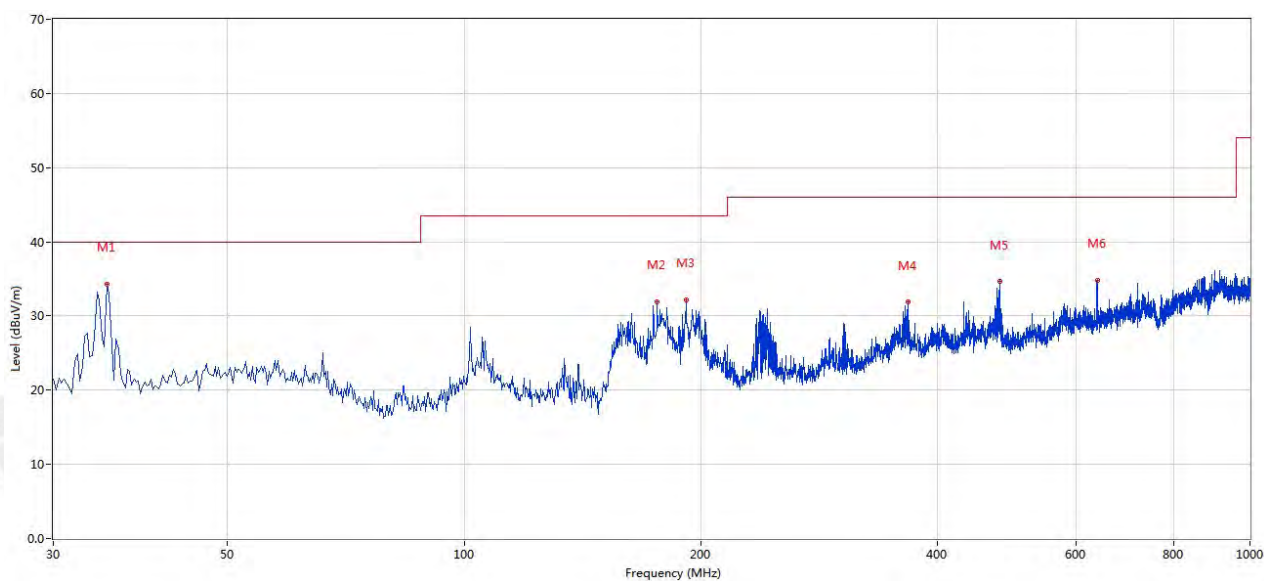
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 5V from Adapter Input AC 120V/60Hz		



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna	Verdict
1	133.764	31.52	-12.12	43.5	11.98	Peak	Horizontal	Pass
2	205.769	32.25	-10.67	43.5	11.25	Peak	Horizontal	Pass
3	238.013	38.82	-8.86	46.0	7.18	Peak	Horizontal	Pass
4	293.774	33.74	-7.50	46.0	12.26	Peak	Horizontal	Pass
5	364.081	37.26	-4.95	46.0	8.74	Peak	Horizontal	Pass
6	687.981	36.52	-1.21	46.0	9.48	Peak	Horizontal	Pass



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 5V from Adapter Input AC 120V/60Hz		



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna	Verdict
1	35.091	34.34	-9.86	40.0	5.66	Peak	Vertical	Pass
2	176.191	31.86	-11.39	43.5	11.64	Peak	Vertical	Pass
3	191.465	32.12	-11.11	43.5	11.38	Peak	Vertical	Pass
4	367.233	31.85	-4.95	46.0	14.15	Peak	Vertical	Pass
5	479.968	34.61	-4.15	46.0	11.39	Peak	Vertical	Pass
6	639.008	34.80	-1.64	46.0	11.20	Peak	Vertical	Pass

Remark: Emission Level = Reading + Cable Loss + ANT Factor - Pre-amplifier.

Margin = Limit - Emission Level



Test Frequency: From 1GHz to 25GHz

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel:2412MHz(802.11b)--Above 1G									
V	4824.00	49.18	34.12	5.03	32.39	52.48	74	-21.52	Pk
V	4824.00	39.29	34.12	5.03	32.39	42.59	54	-11.41	AV
V	7236.00	46.34	32.54	6.29	35.86	55.95	74	-18.05	Pk
V	7236.00	30.74	32.54	6.29	35.86	40.35	54	-13.65	AV
H	4824.00	48.26	34.12	5.03	32.39	51.56	74	-22.44	Pk
H	4824.00	37.14	34.12	5.03	32.39	40.44	54	-13.56	AV
H	7236.00	40.27	32.54	6.29	35.86	49.88	74	-24.12	Pk
H	7236.00	29.04	32.54	6.29	35.86	38.65	54	-15.35	AV

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel:2437MHz(802.11b)--Above 1G									
V	4874.00	50.08	34.07	5.09	32.59	53.69	74	-20.31	Pk
V	4874.00	39.54	34.07	5.09	32.59	43.15	54	-10.85	AV
V	7311.00	46.95	32.63	6.34	35.96	56.62	74	-17.38	Pk
V	7311.00	35.57	32.63	6.34	35.96	45.24	54	-8.76	AV
H	4874.00	48.32	34.07	5.09	32.59	51.93	74	-22.07	Pk
H	4874.00	33.55	34.07	5.09	32.59	37.16	54	-16.84	AV
H	7311.00	42.93	32.63	6.34	35.96	52.60	74	-21.40	Pk
H	7311.00	32.77	32.63	6.34	35.96	42.44	54	-11.56	AV



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz(802.11b)--Above 1G									
V	4924.00	50.68	34.02	5.15	32.80	54.61	74	-19.39	Pk
V	4924.00	36.27	34.02	5.15	32.80	40.2	54	-13.8	AV
V	7386.00	37.44	32.71	6.40	36.05	47.18	74	-26.82	Pk
V	7386.00	28.59	32.71	6.40	36.05	38.33	54	-15.67	AV
H	4924.00	48.02	34.02	5.15	32.80	51.95	74	-22.05	Pk
H	4924.00	38.92	34.02	5.15	32.80	42.85	54	-11.15	AV
H	7386.00	46.83	32.71	6.40	36.05	56.57	74	-17.43	Pk
H	7386.00	31.73	32.71	6.40	36.05	41.47	54	-12.53	AV

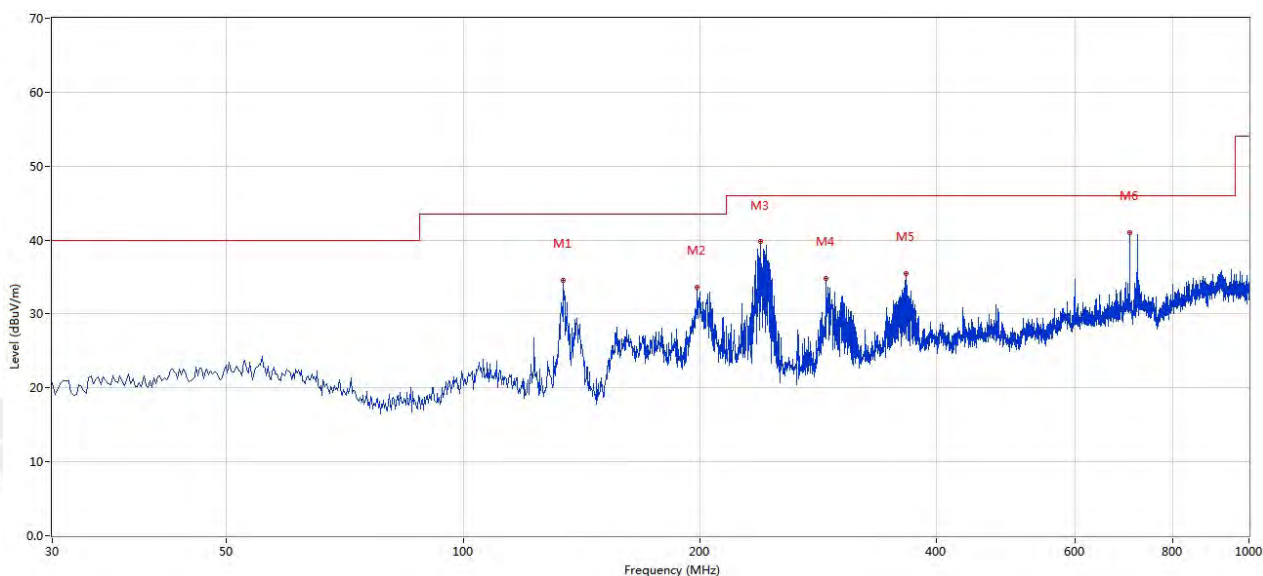
Note:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
4. We test all the mode and recorded the worst mode (802.11b) in the report.



BLE

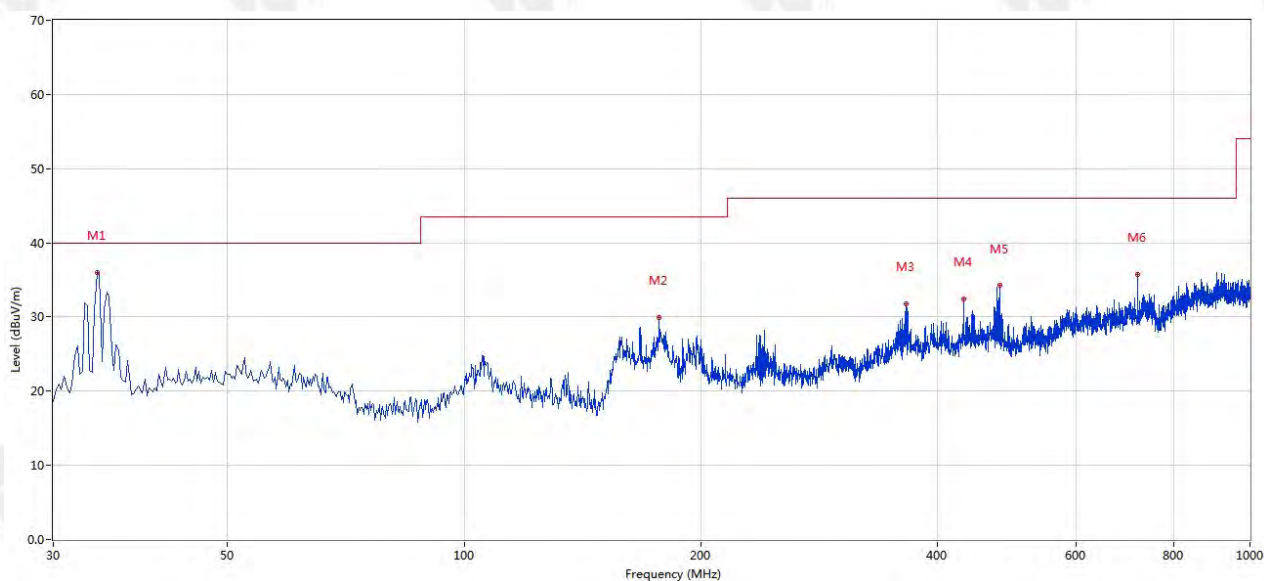
Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 5V from Adapter Input AC 120V/60Hz		



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna	Verdict
1	134.249	34.49	-12.44	43.5	9.01	Peak	Horizontal	Pass
2	198.495	33.64	-10.08	43.5	9.86	Peak	Horizontal	Pass
3	238.983	39.75	-8.90	46.0	6.25	Peak	Horizontal	Pass
4	289.653	34.75	-7.87	46.0	11.25	Peak	Horizontal	Pass
5	366.263	35.45	-4.93	46.0	10.55	Peak	Horizontal	Pass
6	705.194	40.98	-0.24	46.0	5.02	Peak	Horizontal	Pass



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 5V from Adapter Input AC 120V/60Hz		



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna	Verdict
1	34.121	35.96	-10.08	40.0	4.04	Peak	Vertical	Pass
2	177.161	29.88	-11.71	43.5	13.62	Peak	Vertical	Pass
3	365.051	31.76	-4.91	46.0	14.24	Peak	Vertical	Pass
4	431.965	32.40	-4.30	46.0	13.60	Peak	Vertical	Pass
5	479.968	34.21	-4.15	46.0	11.79	Peak	Vertical	Pass
6	719.740	35.67	-1.06	46.0	10.33	Peak	Vertical	Pass

Remark:Emission Level=Reading+Cable Loss+ANT Factor- Pre-amplifier.

Margin= Limit -Emission Level



Test Frequency: From 1GHz to 25GHz

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2402MHz									
V	4804.00	48.55	34.12	5.03	32.39	51.85	74	-22.15	Pk
V	4804.00	39.26	34.12	5.03	32.39	42.56	54	-11.44	AV
V	7206.00	45.68	32.54	6.29	35.86	55.29	74	-18.71	Pk
V	7206.00	31.06	32.54	6.29	35.86	40.67	54	-13.33	AV
H	4804.00	47.78	34.12	5.03	32.39	51.08	74	-22.92	Pk
H	4804.00	37.31	34.12	5.03	32.39	40.61	54	-13.39	AV
H	7206.00	40.18	32.54	6.29	35.86	49.79	74	-24.21	Pk
H	7206.00	29.75	32.54	6.29	35.86	39.36	54	-14.64	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2440MHz									
V	4880.00	50.33	34.07	5.09	32.59	53.94	74	-20.06	Pk
V	4880.00	39.15	34.07	5.09	32.59	42.76	54	-11.24	AV
V	7320.00	47.22	32.63	6.34	35.96	56.89	74	-17.11	Pk
V	7320.00	35.47	32.63	6.34	35.96	45.14	54	-8.86	AV
H	4880.00	49.18	34.07	5.09	32.59	52.79	74	-21.21	Pk
H	4880.00	33.45	34.07	5.09	32.59	37.06	54	-16.94	AV
H	7320.00	42.50	32.63	6.34	35.96	52.17	74	-21.83	Pk
H	7320.00	31.97	32.63	6.34	35.96	41.64	54	-12.36	AV



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2480MHz									
V	4960.00	50.19	34.02	5.15	32.80	54.12	74	-19.88	Pk
V	4960.00	36.78	34.02	5.15	32.80	40.71	54	-13.29	AV
V	7440.00	37.31	32.71	6.40	36.05	47.05	74	-26.95	Pk
V	7440.00	28.42	32.71	6.40	36.05	38.16	54	-15.84	AV
H	4960.00	48.04	34.02	5.15	32.80	51.97	74	-22.03	Pk
H	4960.00	39.20	34.02	5.15	32.80	43.13	54	-10.87	AV
H	7440.00	47.10	32.71	6.40	36.05	56.84	74	-17.16	Pk
H	7440.00	32.15	32.71	6.40	36.05	41.89	54	-12.11	AV

Note:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Radiated Band Emission Measurement:

2.4G WIFI:

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV /m)	Detector Type	Result
802.11b	Low Channel 2412MHz									
	H	2390.00	59.16	35.17	3.48	27.49	54.96	74.00	PK	PASS
	H	2390.00	51.29	35.17	3.48	27.49	47.09	54.00	AV	PASS
	H	2400.00	62.64	35.16	3.49	27.52	58.49	74.00	PK	PASS
	H	2400.00	52.25	35.16	3.49	27.52	48.10	54.00	AV	PASS
	V	2390.00	60.98	35.17	3.48	27.49	56.78	74.00	PK	PASS
	V	2390.00	52.24	35.17	3.48	27.49	48.04	54.00	AV	PASS
	V	2400.00	61.48	35.16	3.49	27.52	57.33	74.00	PK	PASS
	V	2400.00	52.13	35.16	3.49	27.52	47.98	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	60.42	35.11	3.56	27.75	56.62	74.00	PK	PASS
	H	2483.50	50.70	35.11	3.56	27.75	46.90	54.00	AV	PASS
	H	2500.00	61.70	35.1	3.57	27.8	57.97	74.00	PK	PASS
	H	2500.00	51.11	35.1	3.57	27.8	47.38	54.00	AV	PASS
	V	2483.50	60.74	35.11	3.56	27.75	56.94	74.00	PK	PASS
	V	2483.50	53.03	35.11	3.56	27.75	49.23	54.00	AV	PASS
	V	2500.00	59.86	35.1	3.57	27.8	56.13	74.00	PK	PASS
	V	2500.00	52.44	35.1	3.57	27.8	48.71	54.00	AV	PASS
802.11g	Low Channel 2412MHz									
	H	2390.00	59.15	35.17	3.48	27.49	54.95	74.00	PK	PASS
	H	2390.00	51.09	35.17	3.48	27.49	46.89	54.00	AV	PASS
	H	2400.00	60.56	35.16	3.49	27.52	56.41	74.00	PK	PASS



	H	2400.00	51.55	35.16	3.49	27.52	47.40	54.00	AV	PASS
	V	2390.00	58.04	35.17	3.48	27.49	53.84	74.00	PK	PASS
	V	2390.00	51.26	35.17	3.48	27.49	47.06	54.00	AV	PASS
	V	2400.00	60.01	35.16	3.49	27.52	55.86	74.00	PK	PASS
	V	2400.00	50.27	35.16	3.49	27.52	46.12	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	58.67	35.11	3.56	27.75	54.87	74.00	PK	PASS
	H	2483.50	50.41	35.11	3.56	27.75	46.61	54.00	AV	PASS
	H	2500.00	59.66	35.1	3.57	27.8	55.93	74.00	PK	PASS
	H	2500.00	50.70	35.1	3.57	27.8	46.97	54.00	AV	PASS
	V	2483.50	59.19	35.11	3.56	27.75	55.39	74.00	PK	PASS
	V	2483.50	52.17	35.11	3.56	27.75	48.37	54.00	AV	PASS
	V	2500.00	59.77	35.1	3.57	27.8	56.04	74.00	PK	PASS
	V	2500.00	51.61	35.1	3.57	27.8	47.88	54.00	AV	PASS
802.11 n20	Low Channel 2412MHz									
	H	2390.00	59.89	35.17	3.48	27.49	55.69	74.00	PK	PASS
	H	2390.00	51.61	35.17	3.48	27.49	47.41	54.00	AV	PASS
	H	2400.00	62.15	35.16	3.49	27.52	58.00	74.00	PK	PASS
	H	2400.00	51.03	35.16	3.49	27.52	46.88	54.00	AV	PASS
	V	2390.00	59.75	35.17	3.48	27.49	55.55	74.00	PK	PASS
	V	2390.00	51.83	35.17	3.48	27.49	47.63	54.00	AV	PASS
	V	2400.00	61.02	35.16	3.49	27.52	56.87	74.00	PK	PASS
	V	2400.00	50.94	35.16	3.49	27.52	46.79	54.00	AV	PASS
	High Channel 2462MHz									
	H	2483.50	58.81	35.11	3.56	27.75	55.01	74.00	PK	PASS
	H	2483.50	50.75	35.11	3.56	27.75	46.95	54.00	AV	PASS



	H	2500.00	60.53	35.1	3.57	27.8	56.80	74.00	PK	PASS
	H	2500.00	52.41	35.1	3.57	27.8	48.68	54.00	AV	PASS
	V	2483.50	59.92	35.11	3.56	27.75	56.12	74.00	PK	PASS
	V	2483.50	51.12	35.11	3.56	27.75	47.32	54.00	AV	PASS
	V	2500.00	60.12	35.1	3.57	27.8	56.39	74.00	PK	PASS
	V	2500.00	52.03	35.1	3.57	27.8	48.30	54.00	AV	PASS
802.11 n40	Low Channel 2422MHz									
	H	2390.00	58.57	35.17	3.48	27.49	54.37	74.00	PK	PASS
	H	2390.00	48.83	35.17	3.48	27.49	44.63	54.00	AV	PASS
	H	2400.00	58.85	35.16	3.49	27.52	54.70	74.00	PK	PASS
	H	2400.00	50.32	35.16	3.49	27.52	46.17	54.00	AV	PASS
	V	2390.00	59.55	35.17	3.48	27.49	55.35	74.00	PK	PASS
	V	2390.00	51.23	35.17	3.48	27.49	47.03	54.00	AV	PASS
	V	2400.00	60.36	35.16	3.49	27.52	56.21	74.00	PK	PASS
	V	2400.00	51.08	35.16	3.49	27.52	46.93	54.00	AV	PASS
	High Channel 2452MHz									
	H	2483.50	60.37	35.11	3.56	27.75	56.57	74.00	PK	PASS
	H	2483.50	49.77	35.11	3.56	27.75	45.97	54.00	AV	PASS
	H	2500.00	62.10	35.1	3.57	27.8	58.37	74.00	PK	PASS
	H	2500.00	51.32	35.1	3.57	27.8	47.59	54.00	AV	PASS
	V	2483.50	60.67	35.11	3.56	27.75	56.87	74.00	PK	PASS
	V	2483.50	51.91	35.11	3.56	27.75	48.11	54.00	AV	PASS
	V	2500.00	60.28	35.1	3.57	27.8	56.55	74.00	PK	PASS
	V	2500.00	50.35	35.1	3.57	27.8	46.62	54.00	AV	PASS
Remark: 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit										
2. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.										



BLE

	Polar (H/V)	Frequenc y (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV /m)	Detec tor Type	Result
1Mbps	Low Channel 2402MHz									
	H	2390.00	58.94	35.17	3.48	27.49	54.74	74.00	PK	PASS
	H	2390.00	51.67	35.17	3.48	27.49	47.47	54.00	AV	PASS
	H	2400.00	62.44	35.16	3.49	27.52	58.29	74.00	PK	PASS
	H	2400.00	52.58	35.16	3.49	27.52	48.43	54.00	AV	PASS
	V	2390.00	60.94	35.17	3.48	27.49	56.74	74.00	PK	PASS
	V	2390.00	53.02	35.17	3.48	27.49	48.82	54.00	AV	PASS
	V	2400.00	62.14	35.16	3.49	27.52	57.99	74.00	PK	PASS
	V	2400.00	52.07	35.16	3.49	27.52	47.92	54.00	AV	PASS
	High Channel 2480MHz									
	H	2483.50	60.51	35.11	3.56	27.75	56.71	74.00	PK	PASS
	H	2483.50	50.60	35.11	3.56	27.75	46.80	54.00	AV	PASS
	H	2500.00	61.67	35.1	3.57	27.8	57.94	74.00	PK	PASS
	H	2500.00	51.78	35.1	3.57	27.8	48.05	54.00	AV	PASS
	V	2483.50	61.01	35.11	3.56	27.75	57.21	74.00	PK	PASS
	V	2483.50	52.62	35.11	3.56	27.75	48.82	54.00	AV	PASS
	V	2500.00	59.97	35.1	3.57	27.8	56.24	74.00	PK	PASS
	V	2500.00	52.03	35.1	3.57	27.8	48.30	54.00	AV	PASS
Remark:										
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit										
2. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.										

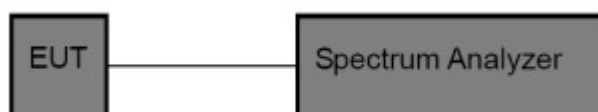


7 Duty cycle

7.1 Limit

Test Requirement: FCC CFR47 Part 15 Section 15.247
Test Method: ANSI C63.10-2020 + Cor.1-2023
KDB 558074 D01 15.247 Meas Guidance v05r02
Test Result: PASS

7.2 Test Setup



7.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:
 - a) Set the center frequency of the instrument to the center frequency of the transmission.
 - b) Set $RBW \geq OBW$ if possible; otherwise, set RBW to the largest available value.
 - c) Set $VBW \geq RBW$. Detector = peak or average.
 - d) Sweep time = auto couple.
 - e) Trace mode = max hold.
 - f) Allow trace to fully stabilize.



7.4 Test Result

EUT:	Chessnut Companion	Model Name:	CC100
Pressure:	1012 hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	TX b/g/n(20) Mode / CH01 TX n(40) Mode / CH03		

Mode	Data rate	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	$10\log(1/x)$ Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
802.11b	1Mbps	8.400	9.000	0.933	93.33%	0.300	0.119
802.11g	6Mbps	1.380	2.016	0.685	68.45%	1.646	0.725
802.11n HT20	MCS0	1.290	1.926	0.670	66.98%	1.741	0.775
802.11n HT40	MCS0	0.308	0.948	0.325	32.49%	4.883	3.247

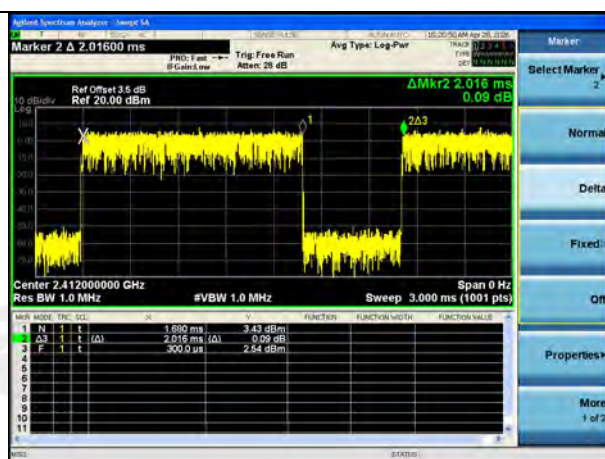


Test plots

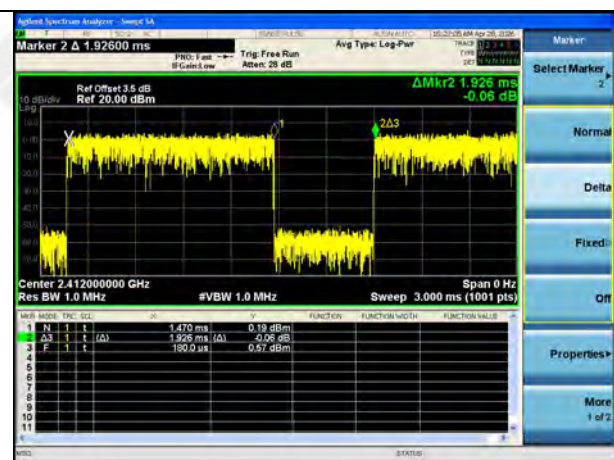
802.11b



802.11g



802.11n20(MHz)



802.11n40(MHz)



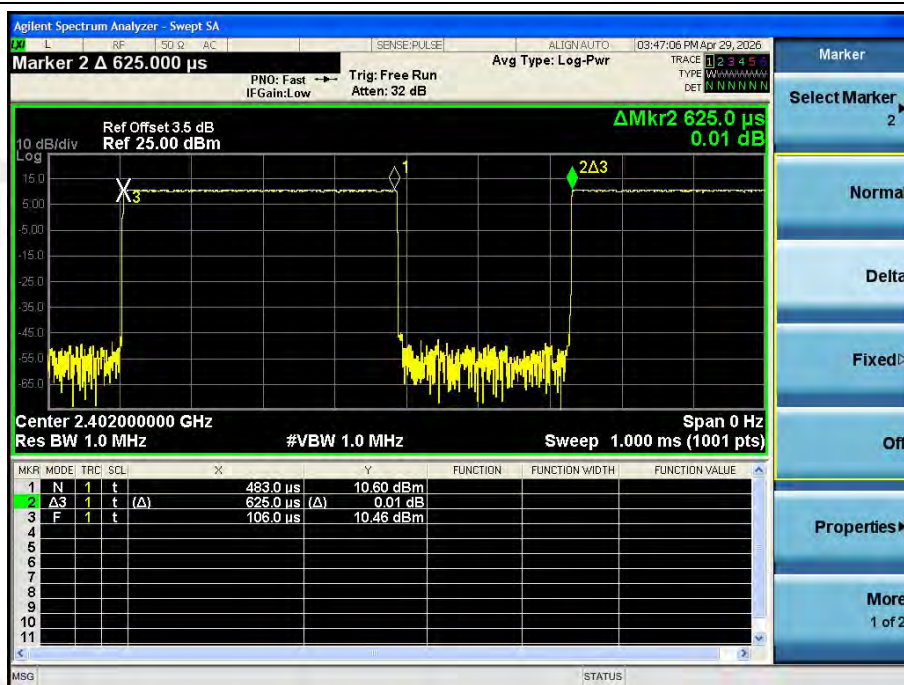


EUT:	Chessnut Companion	Model Name:	CC100
Pressure:	1012 hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	GFSK		

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	10log(1/x)Duty Cycle Correction Factor (dB)	1/B Minimum VBW (kHz)
BLE	0.377	0.625	0.603	60.32%	2.195	2.653

BLE 1M

CH 00

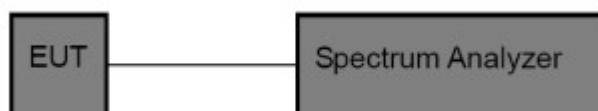




8 Conduct Band Edge And Spurious Emissions Measurement

Test Requirement	:	FCC CFR47 Part 15 Section 15.247
Test Method	:	ANSI C63.10-2020 + Cor.1-2023
Test Limit	:	Regulation 15.247 (d), 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)).

8.1 Test Setup



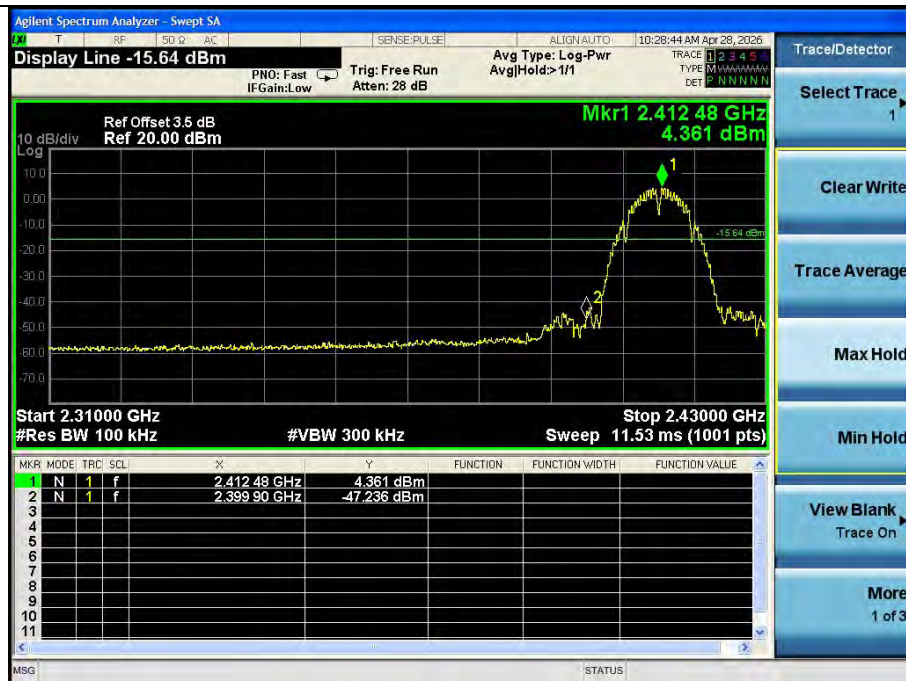
8.2 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector fuNCTion = peak, Trace = max hold

8.3 Test Result



802.11b: Band Edge, Left Side



802.11b: Band Edge, Right Side





802.11g: Band Edge, Left Side

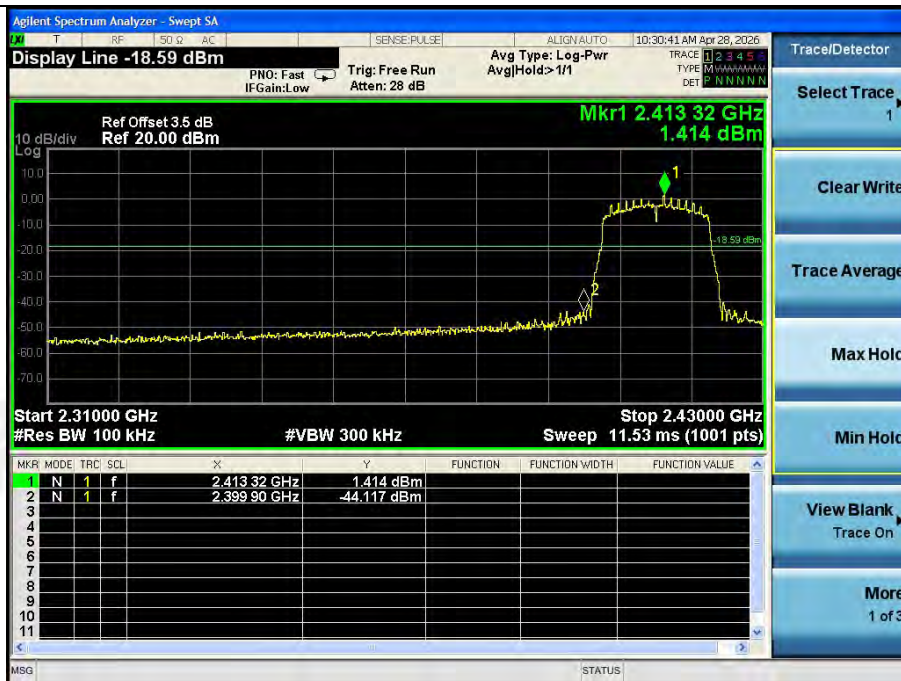


802.11g: Band Edge, Right Side





802.11n20: Band Edge, Left Side



802.11n20: Band Edge, Right Side





802.11n40: Band Edge, Left Side



802.11n40: Band Edge, Right Side

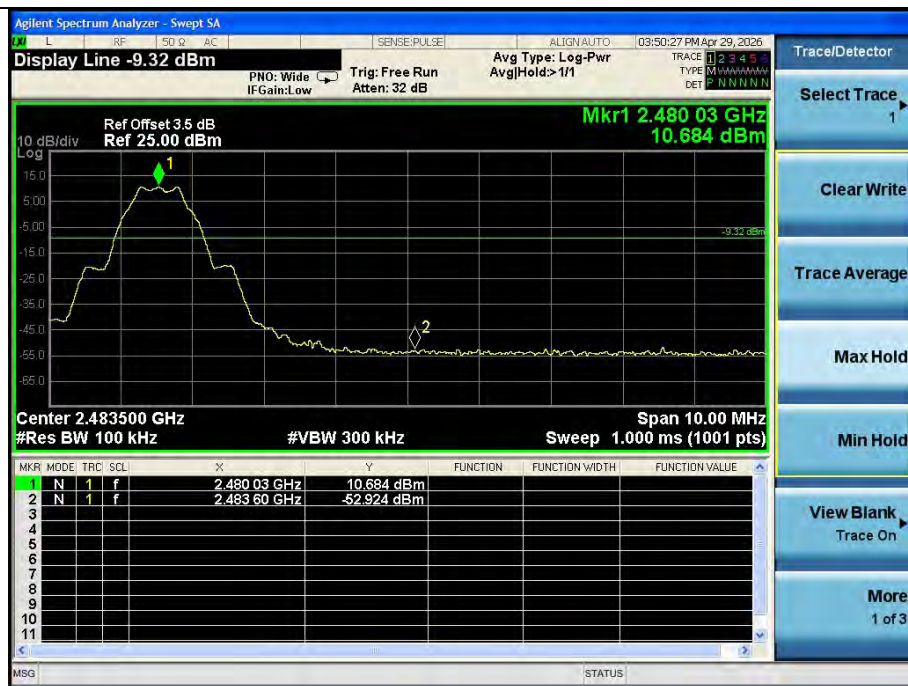




BLE 1M: Band Edge, Left Side



BLE 1M: Band Edge, Right Side





802.11b on Channel 01



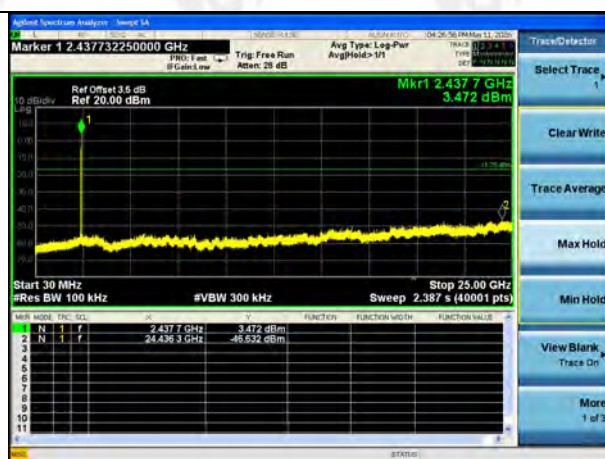
802.11b on Channel 01



802.11b on Channel 06



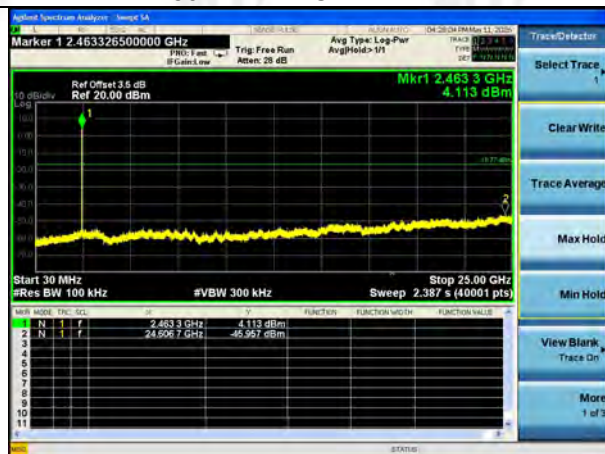
802.11b on Channel 06



802.11b on Channel 11



802.11b on Channel 11

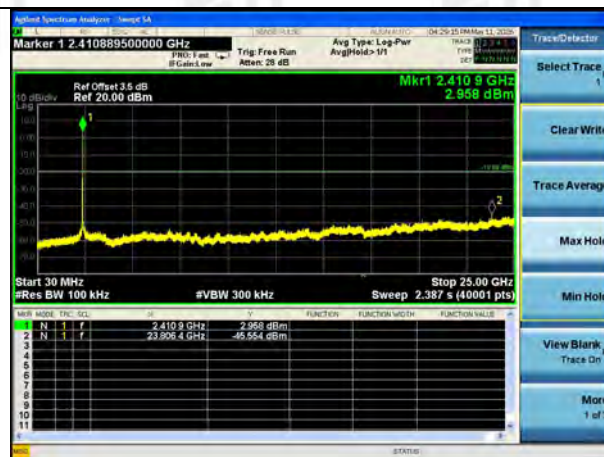


802.11g on Channel 01

802.11g on Channel 01



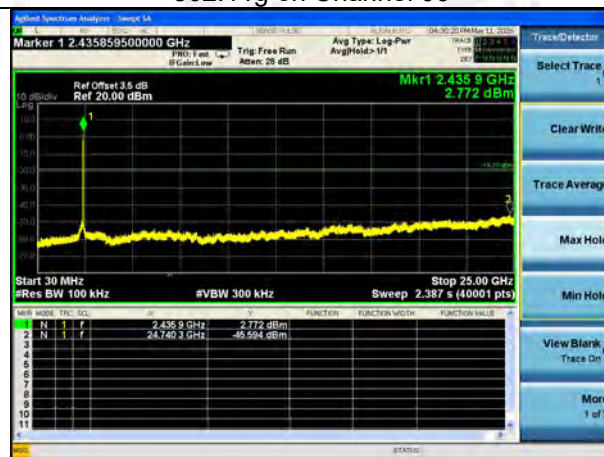
802.11g on Channel 06



802.11g on Channel 06



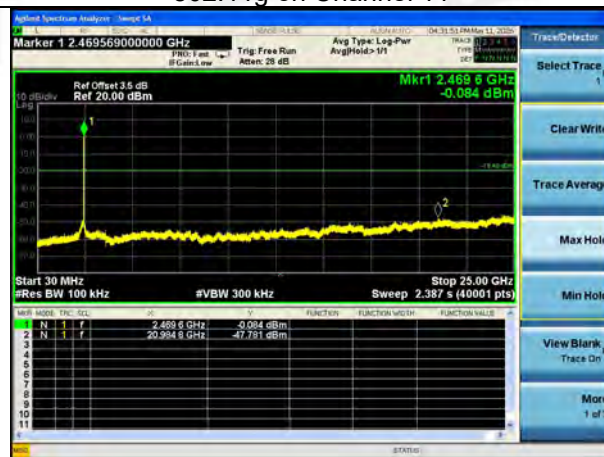
802.11g on Channel 11



802.11g on Channel 11



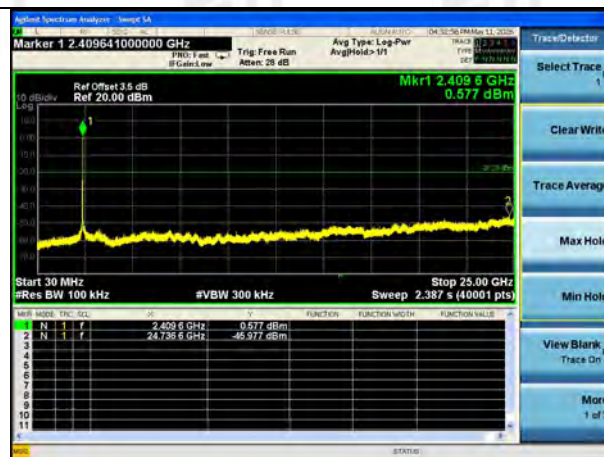
802.11 n20 on Channel 01



802.11 n20 on Channel 01



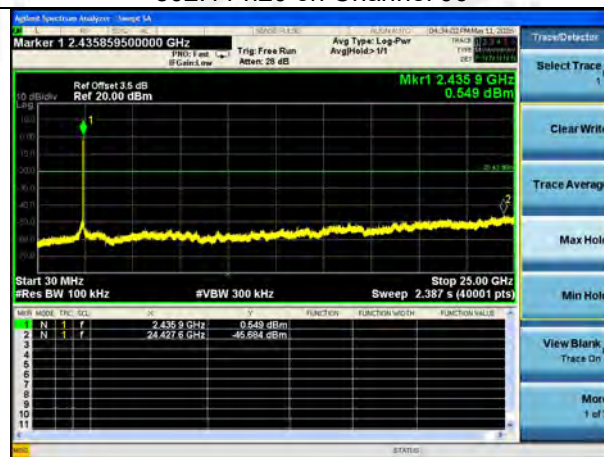
802.11 n20 on Channel 06



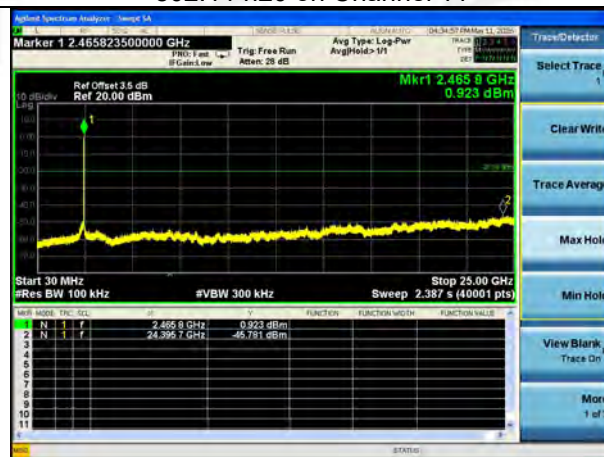
802.11 n20 on Channel 06



802.11n20 on Channel 11



802.11 n20 on Channel 11

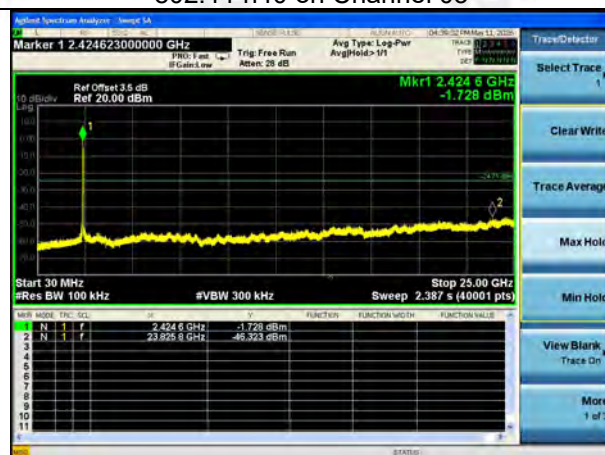




802.11 n40 on Channel 03



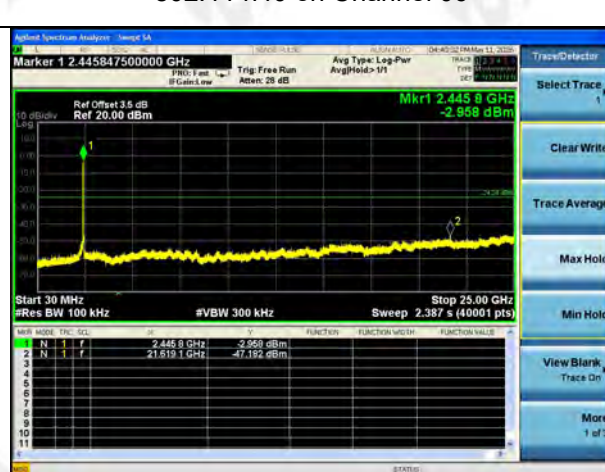
802.11 n40 on Channel 03



802.11 n40 on Channel 06



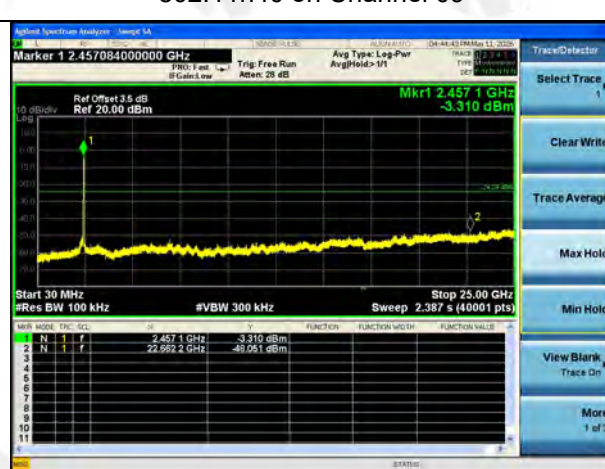
802.11 n40 on Channel 06



802.11n40 on Channel 09



802.11n40 on Channel 09



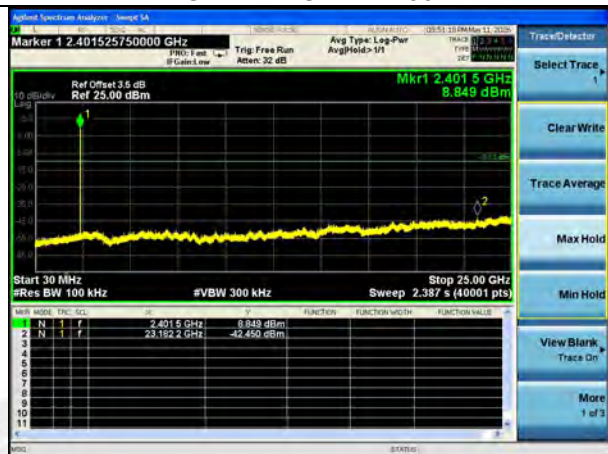


BLE 1M

GFSK on Channel 00



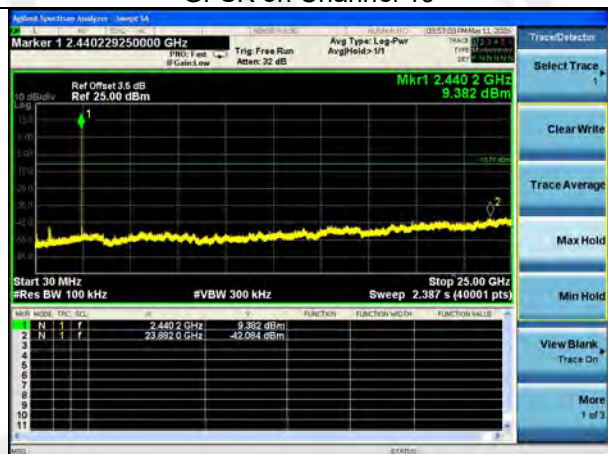
GFSK on Channel 00



GFSK on Channel 19



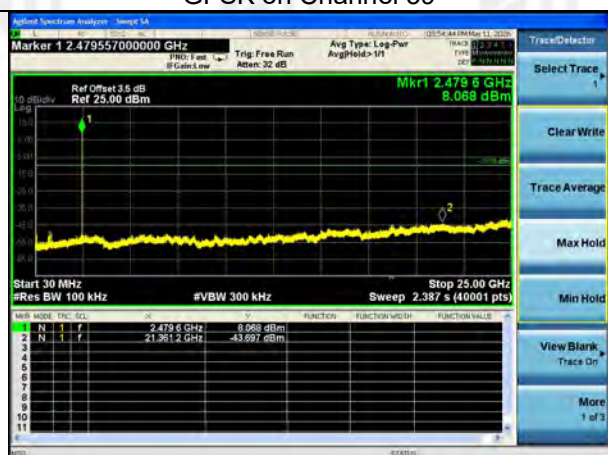
GFSK on Channel 19



GFSK on Channel 39



GFSK on Channel 39





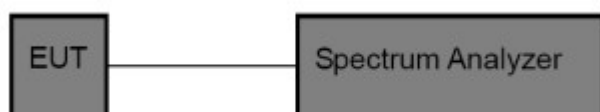
9 6dB&99% Bandwidth Measurement

Test Requirement : FCC CFR47 Part 15 Section 15.247

Test Method : ANSI C63.10-2020+Cor 1+2023

Test Limit Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

9.1 Test Setup



9.2 Test Procedure

For 6dB Bandwidth Measurement

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: $RBW = 1\%-5\% \text{ OBW}$, $VBW \geq 3RBW$

For 99% Bandwidth Measurement

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: $RBW = 1\%-5\% \text{ OBW}$, $VBW \geq 3RBW$



9.3 Test Result

EUT:	Chessnut Companion	Model Name:	CC100
Pressure:	1012 hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	TX b Mode /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
CH01	2412	8.180	500	Pass
CH06	2437	8.188	500	Pass
CH11	2462	8.178	500	Pass

Test plots

TX CH 01 	TX CH 06 
TX CH 11 	/



EUT:	Chessnut Companion	Model Name:	CC100
Pressure:	1012 hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	TX g Mode /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
CH01	2412	15.68	500	Pass
CH06	2437	16.30	500	Pass
CH11	2462	16.37	500	Pass

Test plots





EUT:	Chessnut Companion	Model Name:	CC100
Pressure:	1012 hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	TX n20 Mode /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
CH01	2412	16.82	500	Pass
CH06	2437	17.54	500	Pass
CH11	2462	17.55	500	Pass

Test plots

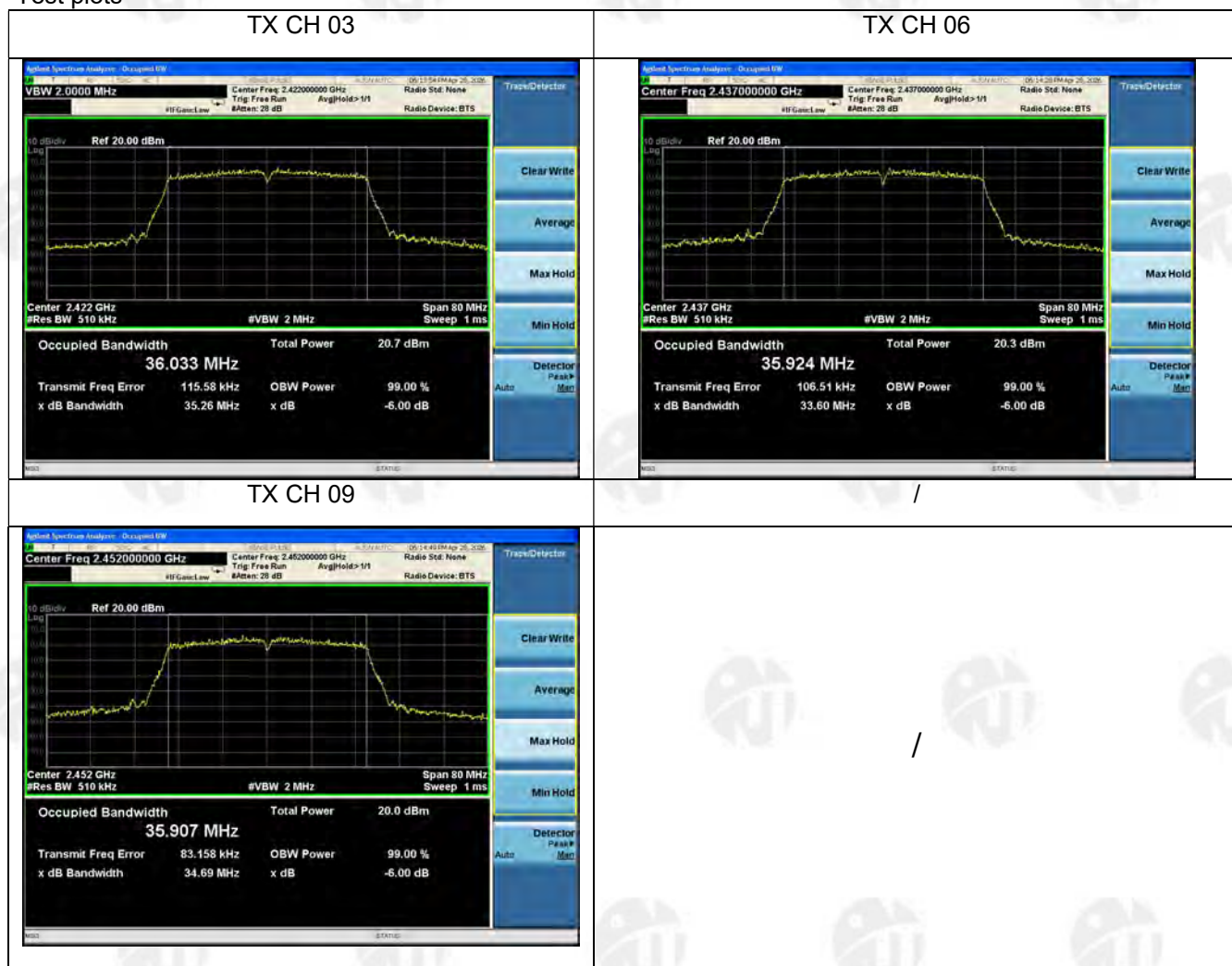
TX CH 01		TX CH 06	
TX CH 11		/	
		/	



EUT:	Chessnut Companion	Model Name:	CC100
Pressure:	1012 hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	TX n40 Mode /CH03, CH06, CH09		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
CH03	2422	35.26	500	Pass
CH06	2437	33.60	500	Pass
CH09	2452	34.69	500	Pass

Test plots





EUT:	Chessnut Companion	Model Name:	CC100
Pressure:	1012 hPa	Test Voltage:	DC 3.7V from battery
Test Mode:	GFSK		

BLE 1M				
Channel	Frequency (MHz)	6dB bandwidth (kHz)	Limit (kHz)	Result
Low	2402	666.3	500	Pass
Middle	2440	668.6	500	Pass
High	2480	663.7	500	Pass

Test plots

GFSK on Channel 00



GFSK on Channel 19



GFSK on Channel 39





10 Maximum Conducted Output Power

Test Requirement	: FCC CFR47 Part 15 Section 15.247
Test Method	: ANSI C63.10-2020+Cor 1+2023
Test Limit	: Regulation 15.247 (b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power.

10.1 Test Setup

2.4G WIFI



BLE:



10.2 Test Procedure

2.4G WIFI : The maximum peak conducted output power may be measured using a broadband peak RF power meter.

The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

BLE:

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously. Measure the conducted output power and record the results in the test report.



10.3 Test Result

2.4 WIFI

EUT:	Chessnut Companion	Model Name:	CC100
Test Mode:	CH01 / CH06 /CH11	Test Voltage:	DC 3.7V from battery

802.11b

Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH01	2412	15.65	30
CH06	2437	15.92	30
CH11	2462	14.98	30

802.11g

Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH01	2412	13.85	30
CH06	2437	14.82	30
CH11	2462	13.61	30

802.11n20

Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH01	2412	12.61	30
CH06	2437	13.25	30
CH11	2462	12.54	30

802.11n40

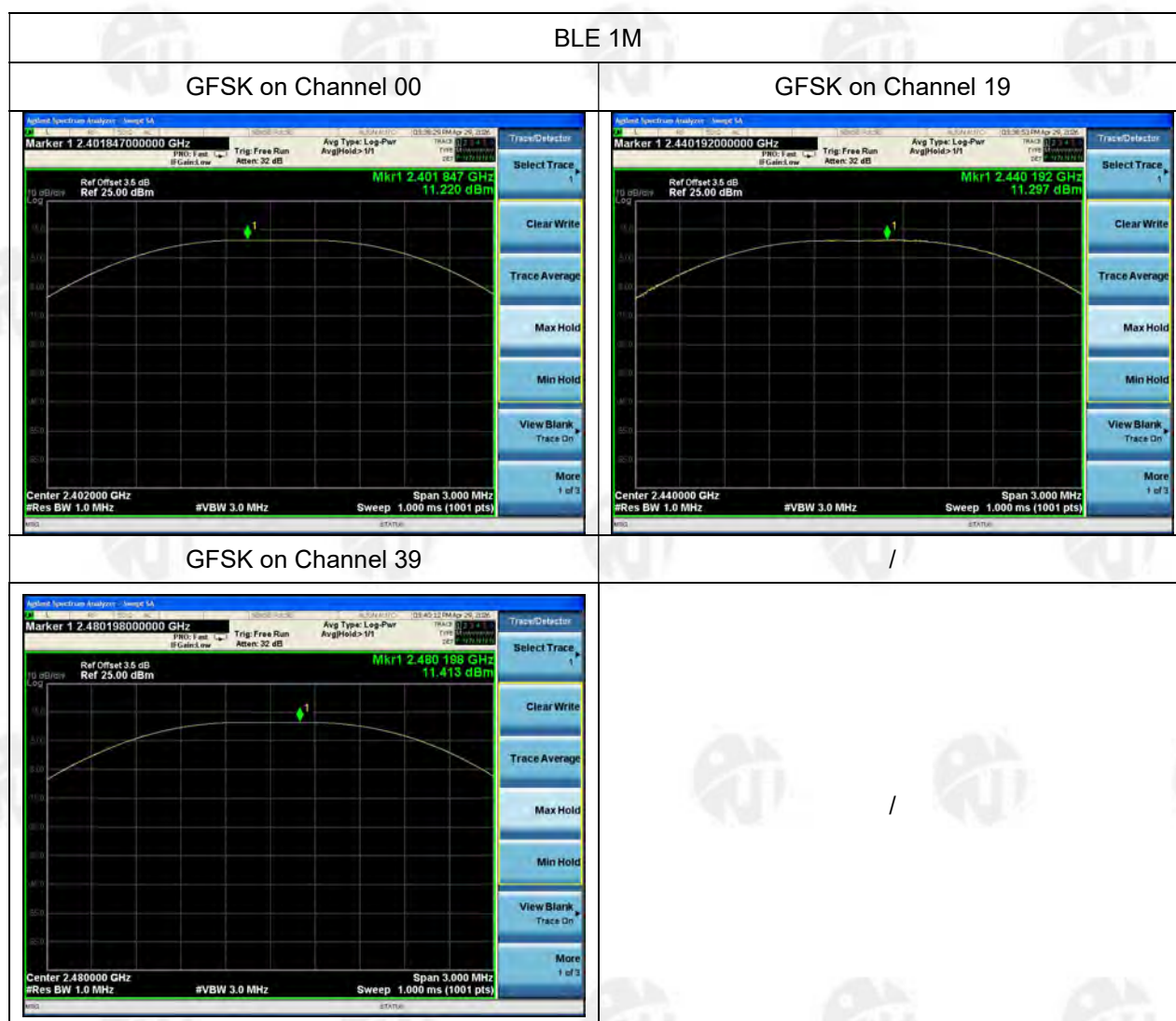
Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH03	2422	12.18	30
CH06	2437	12.81	30
CH09	2452	11.65	30



BLE

EUT:	Chessnut Companion	Model Name:	CC100
Test Mode:	GFSK	Test Voltage:	DC 3.7V from battery

BLE 1M			
Test Channel	Frequency (MHz)	Maximum Peak Output Power(dBm)	Limit (dBm)
CH00	2402	11.220	30
CH19	2440	11.297	30
CH39	2480	11.413	30

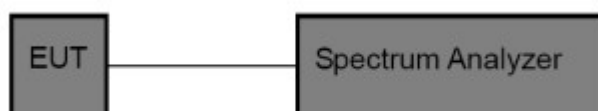




11 Power Spectral density

Test Requirement	: FCC CFR47 Part 15 Section 15.247
Test Method	: ANSI C63.10-2020+Cor 1+2023
Test Limit	: Regulation 15.247(f) The power spectral density conducted from the intentional radiator to the antenna due to the digital modulation operation of the hybrid system, with the frequency hopping operation turned off, shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

11.1 Test Setup



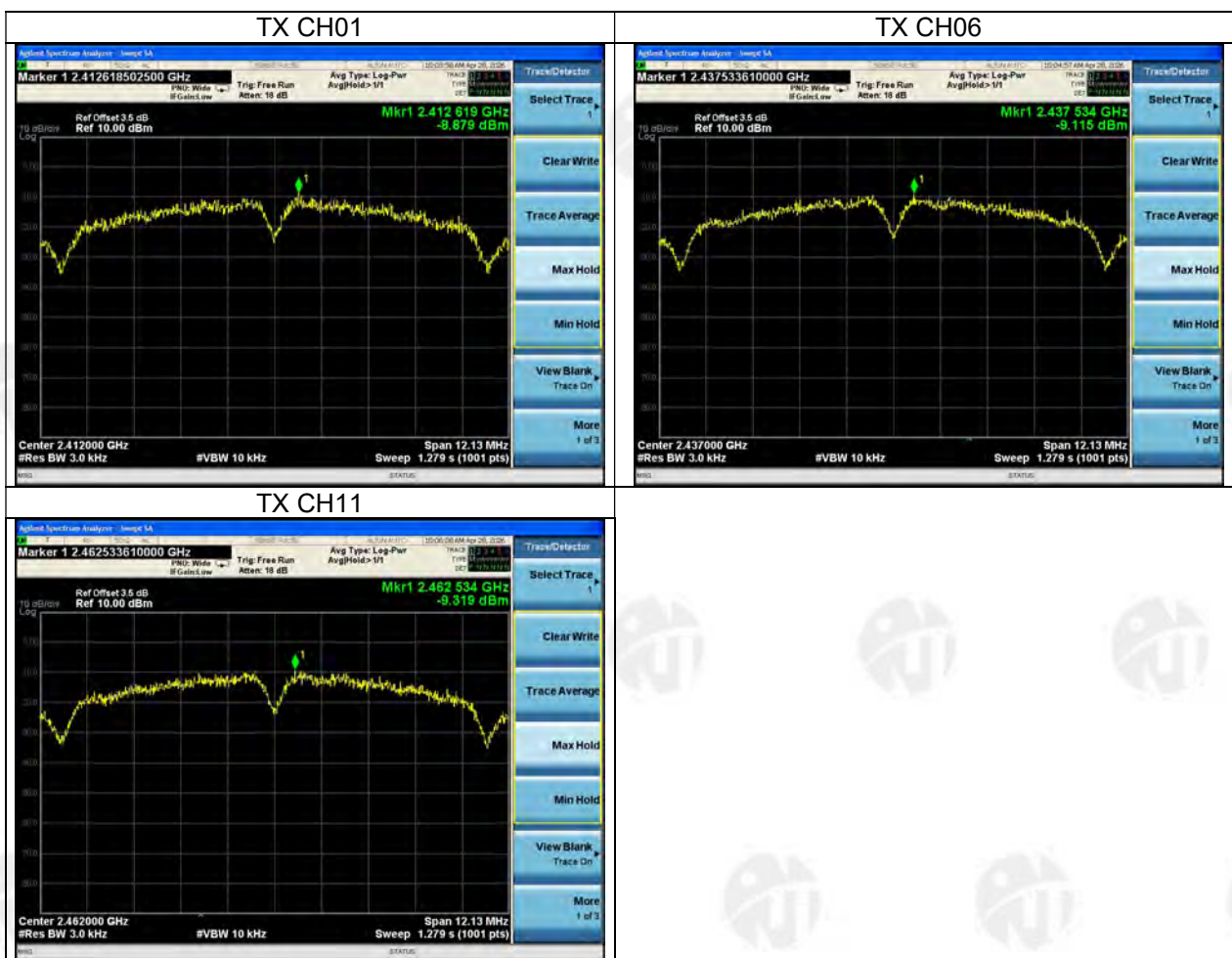
11.2 Test Procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set instrument center frequency to DTS channel center frequency
3. Set span to > 1.5 times the OBW.
4. Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
5. Set VBW $\geq [3 \times \text{RBW}]$
6. Detector = power averaging (rms) or sample detector (when rms not available).
7. Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span} / \text{RBW}]$.
8. Sweep time = auto couple.
9. Employ trace averaging (rms) mode over a minimum of 100 traces.
10. Use the peak marker function to determine the maximum amplitude level.
11. If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat (note that this might require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).
12. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

11.3 Test Result

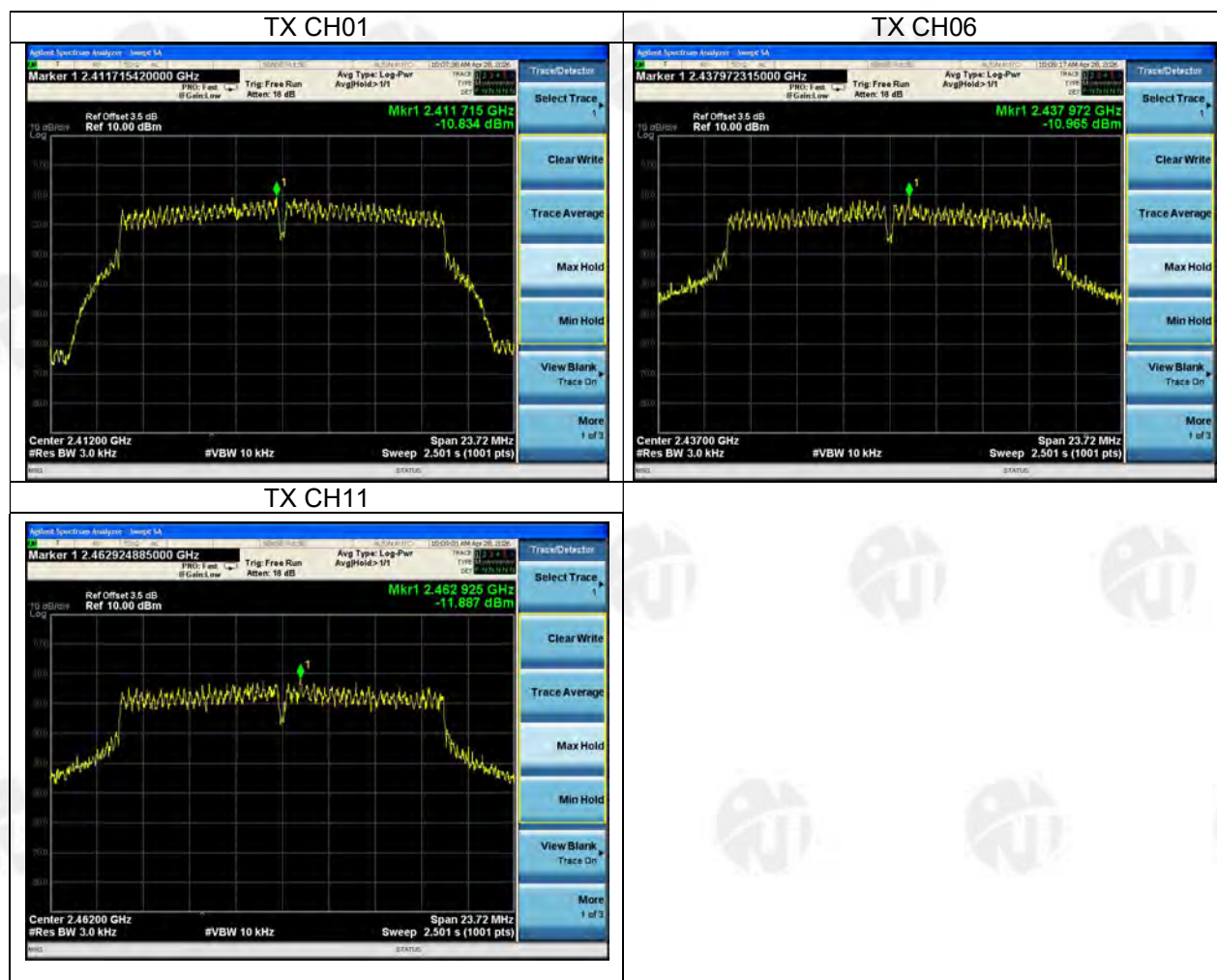


802.11b			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-8.879	8	Pass
2437 MHz	-9.115	8	Pass
2462 MHz	-9.319	8	Pass



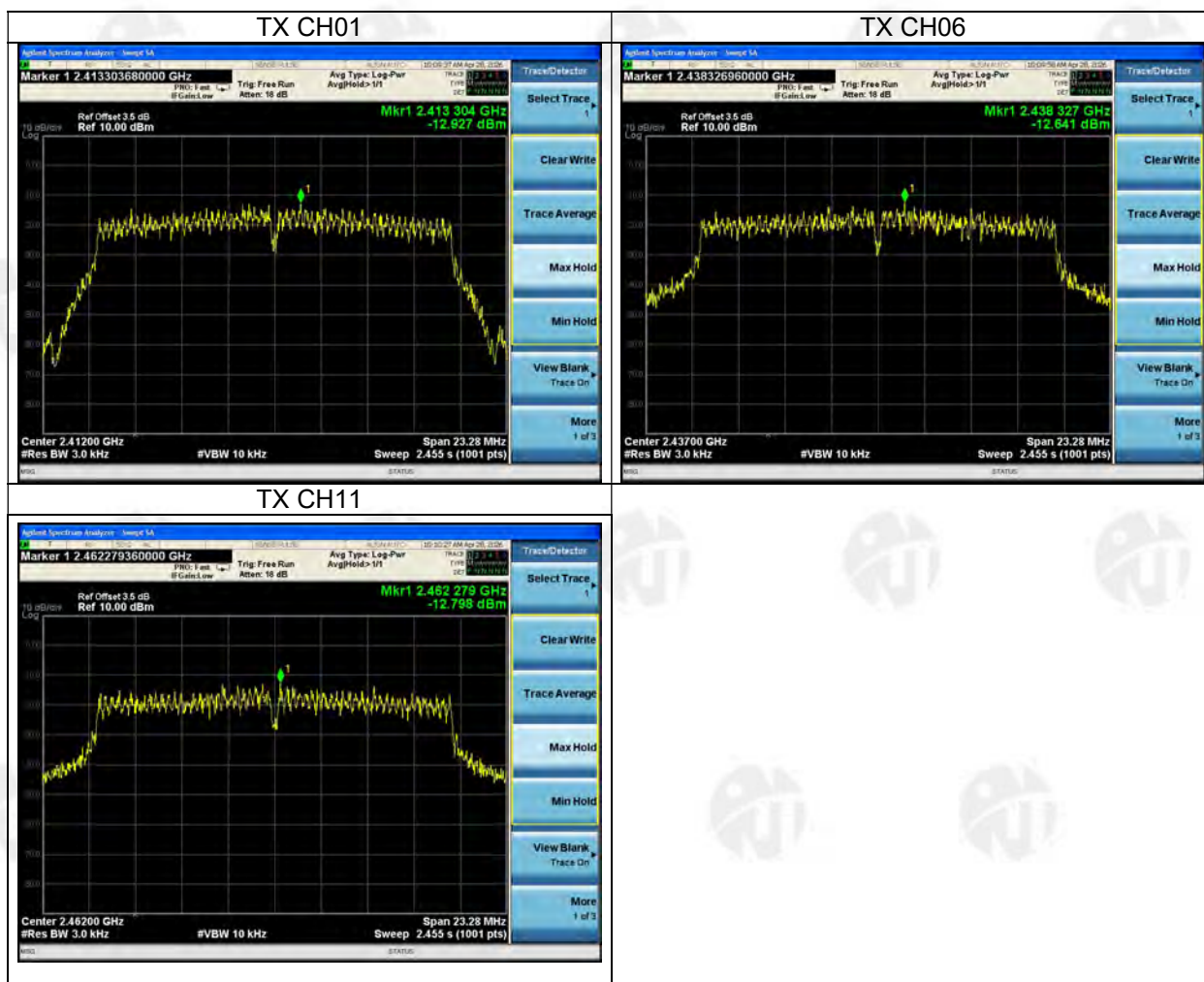


802.11g			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-10.834	8	Pass
2437 MHz	-10.965	8	Pass
2462 MHz	-11.887	8	Pass



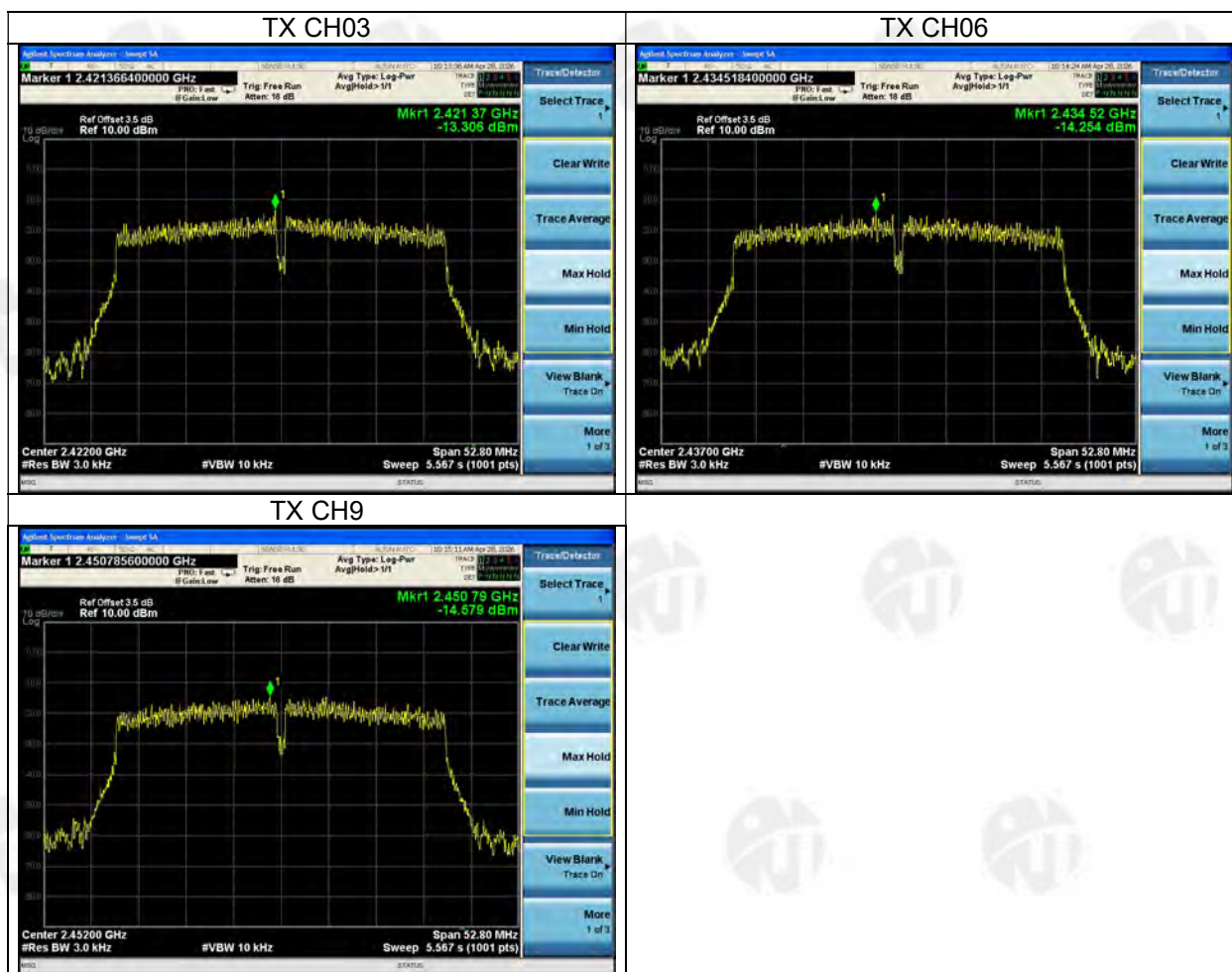


802.11n20			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-12.927	8	Pass
2437 MHz	-12.641	8	Pass
2462 MHz	-12.798	8	Pass





802.11n40			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422 MHz	-13.306	8	Pass
2437 MHz	-14.254	8	Pass
2452 MHz	-14.579	8	Pass



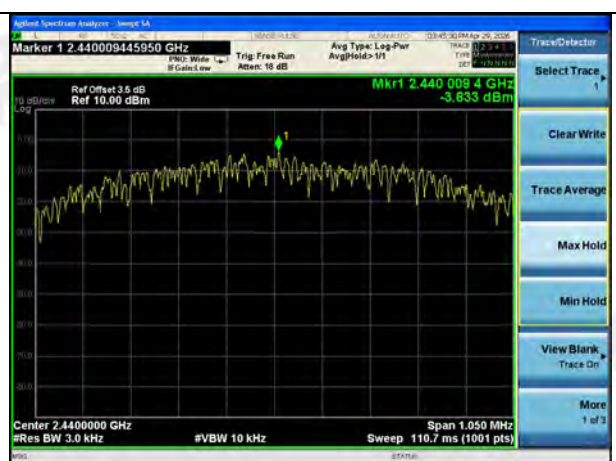


BLE 1M			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2402 MHz	-3.737	8	Pass
2440 MHz	-3.833	8	Pass
2480 MHz	-3.785	8	Pass

GFSK on Channel 00



GFSK on Channel 19



GFSK on Channel 39



/



12 Antenna Application

12.1 Antenna Requirement

For intentional device, according to FCC 47 CFR Section 15.203, 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

12.2 Result

The EUT'S antenna, permanent attached antenna, is FPC Antenna. The antenna's gain is 2.4G WIFI: 1.84dBi, BLE: 2.02dBi dBi and meets the requirement.



13 Test Setup and EUT Photos

Reference to the attachment for details.

*******THE END REPORT*******