Test Report

Product:	Wireless Carplay/Android Auto Adapter
Trade Mark:	N/A
Model Number:	SYY01
FCC ID:	2BFFG-SYY01

Prepared for

Shenzhen Sanyue Yunxiang Industrial Co., Ltd

Rm 305, Bldg 414, Bagualing Industrial Zone, Bagua 4th Rd, Hualin Community, Yuanling St, Futian Dist, Shenzhen

Prepared by

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TEST RESULT CERTIFICATION

Applicant's Name..... :	Shenzhen Sanyue Yunxiang Industrial Co., Ltd
Address ..... :	Rm 305, Bldg 414, Bagualing Industrial Zone, Bagua 4th Rd, Hualin Community, Yuanling St, Futian Dist, Shenzhen
Manufacturer's Name ..... :	Shenzhen Sanyue Yunxiang Industrial Co., Ltd
Address ..... :	Rm 305, Bldg 414, Bagualing Industrial Zone, Bagua 4th Rd, Hualin Community, Yuanling St, Futian Dist, Shenzhen

Product description

Product name ..... :	Wireless Carplay/Android Auto Adapter
Model Number ..... :	SYY01
Standards ..... :	FCC Part 15.247
Test procedure..... :	IEEE/ANSI C63.10-2020

This device described above has been tested by Shenzhen HongBiao Certification& Testing Co., Ltd and the test results show that the equipment under test (EUT) is in compliance with the EMC requirements. And it is applicable only to the tested sample identified in the report.

Date of Test

Date (s) of performance of tests..... :	Mar. 15, 2024~Apr. 15, 2024
Test Result..... :	**Pass**

Testing Engineer : Zoe Su

(Zoe Su)

Technical Manager : Gary Lu

(Gary Lu)

Authorized Signatory : Leo Su

(Leo Su)

Revision History

Revised No.	Date of Issue	Description
01	Apr. 15, 2024	Original

1 General Description

1.1 Description of EUT

Product name:	Wireless Carplay/Android Auto Adapter
Model name:	SYY01
Series Model:	SYY02, SYY03, SYY04, SYY05, SYY06, SYY07, SYY08, SYY09, SYY10
Different of series model:	Except for the model and appearance color, all models have the same circuit and module.
Operation frequency:	IEEE 802.11b/g/n20/ax20: 2412~2462 MHz IEEE 802.11n40/ax40: 2422~2452 MHz
Modulation type::	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ax: OFDMA (1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Bit Rate of transmitter:	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20/HT40: Up to MCS15 IEEE 802.11ax-HE20/ HE40: Up to MCS11
Antenna type:	PCB antenna
Antenna gain:	-12.46dBi
Max. output power:	17.63dBm
Hardware version:	V0.2
Software version:	update_v851se_jiuyangzhou-AutoLink_202403051141_cp
Battery:	N/A
Power supply:	DC 5V from adapter AC 120V/60Hz
Adapter information:	N/A

1.2 Test Mode

Channel List for 802.11b/g/n/ax (20)

Channel	Channel	Frequency (MHz)
Low	01	2412
Middle	06	2437
High	11	2462

Channel List for 802.11n/ax (40)

Channel	Channel	Frequency (MHz)
Low	03	2422
Middle	06	2437
High	09	2452

Note: 802. 11ax mode only support full resource unit size.

1.3 Operation Channel list

Channel List for 802.11b/g/n/ax (20)

Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437	\	\

Channel List for 802.11n/ax (40)

Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	07	2442
04	2427	08	2447
05	2432	09	2452

06	2437	\	\

1.4 Test Setup

See photographs of the test setup in the report for the actual setup and connections between EUT and support equipment.

1.5 Ancillary Equipment

Equipment	Model	S/N	Manufacturer
Notebook	NbDE-WFH9	XYKPM22A130 01799	Huawei Terminal Co., Ltd
Adapter	GST40A12	EN94C51258	SuZhou MEAN WELL Technology Co., Ltd.

2 Summary of Test Result

No.	Standard Section	Test Item	Result	Remark
1	15.203	Antenna Requirement	Pass	
2	15.247 (b)	Peak Output Power	Pass	
3	15.207	Conducted Emission	Pass	
4	15.247 (d) & 15.209	Radiated Spurious Emission	Pass	
5	15.247 (e)	Power Spectral Density	Pass	
6	15.247 (a)(2)	6dB Bandwidth	Pass	
7	558074 D01 15.247 Meas Guidance v05r02 Chapter 6	Duty Cycle	Pass	
8	15.205	Band Edge Emission	Pass	
9	15.247(d)	Spurious RF Conducted Emissions	Pass	

3 Test Facilities and Accreditations

3.1 Test Laboratory

Test Site	Shenzhen HongBiao Certification& Testing Co., Ltd
Test Site Location	Room 102, 201, Building 2, Yuanwanggu RFID Industrial Park, Tongguan Road, Tianliao Community, Yutang Street, Guangming District, Shenzhen, China
Telephone:	(86-755) 2998 9321
Fax:	(86-755) 2998 5110
FCC Registration No.:	CN1341
A2LA Certificate No.:	6765.01

3.2 Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15ºC~35ºC
Relative Humidity:	20%~75%
Air Pressure:	98kPa~101kPa

3.3 Measurement Uncertainty

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

Measurement Frequency Range	U，(dB)	Note
RF frequency	$2x\ 10^{-5}$	
RF power, conducted	± 0.57 dB	
Conducted emission(150kHz~30MHz)	± 2.5 dB	
Radiated emission(9kHz-30MHz)	± 2.5 dB	
Radiated emission(30MHz~1GHz)	± 4.2 dB	
Radiated emission (above 1GHz)	± 4.7 dB	
Occupied Bandwidth	±3%	
Temperature	±1 degree	
Humidity	± 5 %	

3.4 Test Software

Software name	Manufacturer	Model	Version

EMI Measurement	Farad	EZ-EMC	V1.1.4.2
Conducted test system	MWRF-test	MTS 8310	V2.0.0

4 List of Test Equipment

Radiation Emission							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E001	Horn Antenna	Schwarzbeck	BBHA 9120D	02592	2024-04-02	2026-04-01
2	HB-E002	Biconical log-periodic composite antenna	Schwarzbeck	VULB 9168	01340	2024-04-06	2026-04-05
3	HB-E003	SHF-EHF Horn	Schwarzbeck	BBHA 91270	01193	2024-04-02	2026-04-01
4	HB-E004	Preamplifier	Noyetec	LAN-0910	NYCM1420101	2023-05-11	2024-05-10
5	HB-E005	Preamplifier	Noyetec	LAN-0118	NYCM1420102	2023-05-12	2024-05-11
6	HB-E006	Preamplifier	Noyetec	LAN-1840	NYCM1420103	2023-06-11	2024-06-10
7	HB-E007	EMI TEST RECEIVER	R&S	ESR7	102520	2023-05-12	2024-05-11
8	HB-E044	Signal& spectrum Analyzer	R&S	FSV3044	101264	2023-05-11	2024-05-10
9	HB-E009	POSITINAL COTROLLER	Noyetec	N/A	N/A	/	/
10	HB-E013	RF switch	Noyetec	NY-RF4	NY0CM1420204	/	/
11	HB-E066	Illuminance Tester	TASI	TA8121	N/A	2023-05-11	2024-05-10
12	HB-E075	Active loop antenna	Schwarzbeck	FMZB 1519B	1519B-245	2022-07-24	2024-07-23
Conduction emission							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E014	4 Path V-LISN	Schwarzbeck	NNLK 8121	00770	2023-05-12	2024-05-11
2	HB-E015	Pulse Limiter	Schwarzbeck	VTSD 9561-F	00949	2023-05-12	2024-05-11
3	HB-E016	ZN23201	Noyetec	ZN23201	N/A	2023-05-11	2024-05-10
4	HB-E059	Attenuator	Xianghua	TS2-6-1	220215166	2023-05-12	2024-05-11
5	HB-E069	EMI TEST RECEIVER	R&S	ESCI	N/A	2023-05-12	2024-05-11

RF							
Item	Equipment No.	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	HB-E041	MXG Anaiog Signal Generator	Agilent	N5181A	MY47070421	2023-05-11	2024-05-10
2	HB-E042	WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW500	132108	2023-05-11	2024-05-10
3	HB-E043	MXG Anaiog Signal Generator	Agilent	N5182A	US46240335	2023-05-11	2024-05-10
4	HB-E044	Signal& spectrum Analyzer	R&S	FSV3044	101264	2023-05-11	2024-05-10
5	HB-E045	RF Control Box	Noyetec	NY100-RFCB	N/A	/	/
6	HB-E058	Thermometer Clock Humidity Monitor	N/A	HTC-1	N/A	/	/

Note: the calibration interval of the above test instruments is 12&24 months and the calibrations are traceable to international system unit (SI).

5 Test Item And Results

5.1 Antenna Requirement

5.1.1 Standard Requirement

15.203 requirement: For intentional device, according to 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

5.1.2 Test Result

The EUT antenna is PCB Antenna. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used.

5.2 Conducted Emission

5.2.1 Limits

Limits – Class B		
Frequency (MHz)	Limit (dBμV)	
	Quasi-Peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

Note:
1. the tighter limit applies at the band edges.
2. the limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

5.2.2 Test Procedures

a) EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

b) The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

c) 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 equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

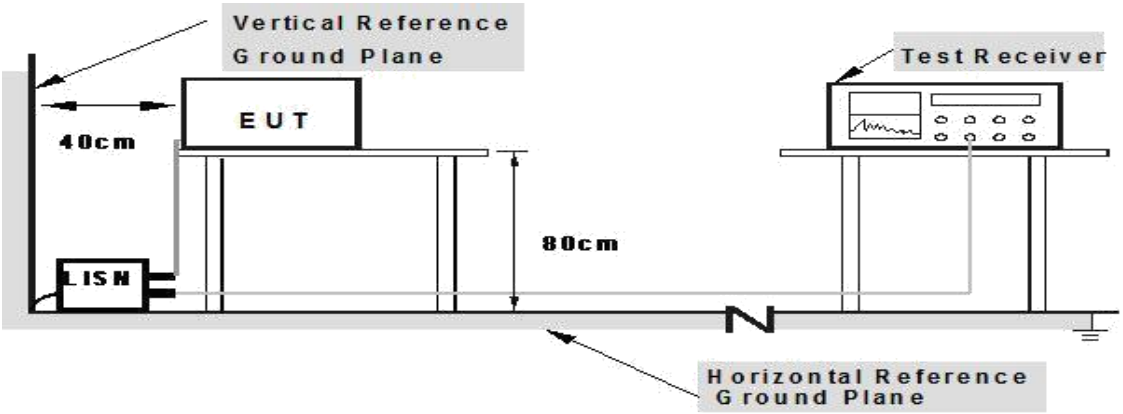
d) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

e) 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.

f) LISN is at least 80 cm from nearest part of EUT chassis.

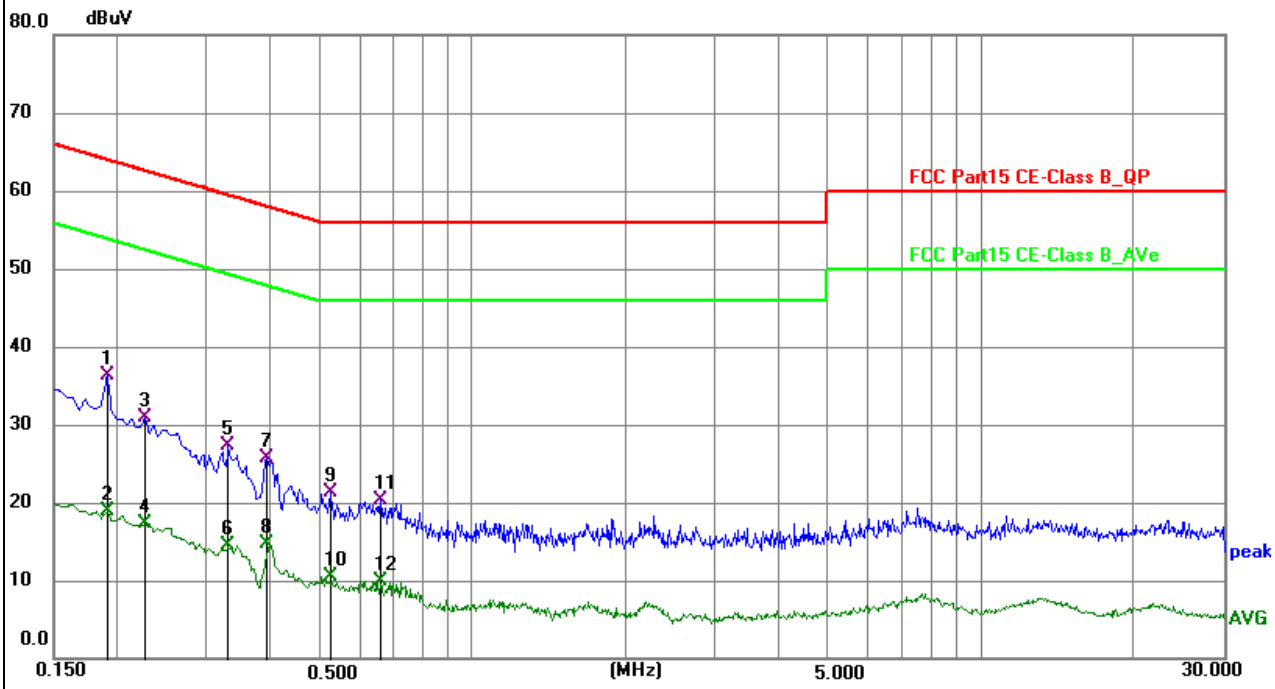
g) For the actual test configuration, please refer to the related Item – photographs of the test setup.

5.2.3 Test Setup



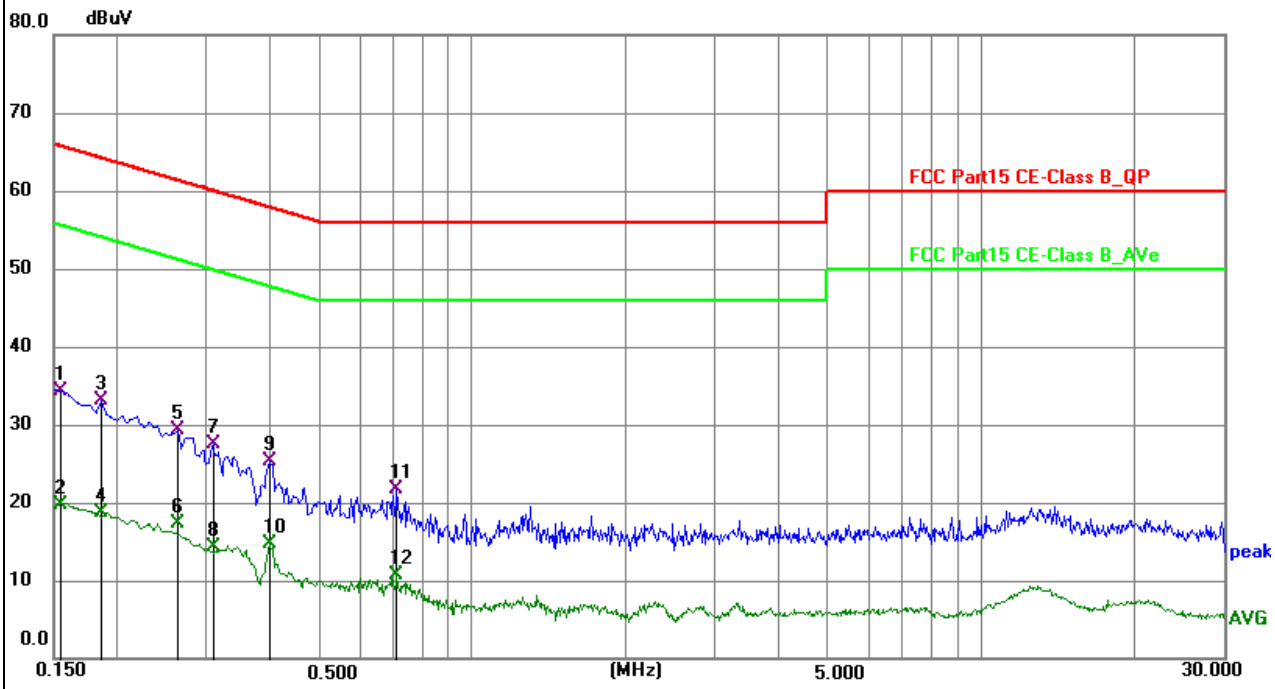
5.2.4 Test Result

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Test Mode:	TX	Phase:	L
Test Voltage:	DC 5V from adapter AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1 *	0.190500	26.18	10.08	36.26	64.01	-27.75	QP
2	0.190500	8.73	10.08	18.81	54.01	-35.20	AVG
3	0.226500	20.73	10.08	30.81	62.58	-31.77	QP
4	0.226500	7.22	10.08	17.30	52.58	-35.28	AVG
5	0.330000	17.24	10.09	27.33	59.45	-32.12	QP
6	0.330000	4.32	10.09	14.41	49.45	-35.04	AVG
7	0.393000	15.51	10.10	25.61	58.00	-32.39	QP
8	0.393000	4.65	10.10	14.75	48.00	-33.25	AVG
9	0.523500	11.15	10.08	21.23	56.00	-34.77	QP
10	0.523500	0.35	10.08	10.43	46.00	-35.57	AVG
11	0.658500	10.17	10.07	20.24	56.00	-35.76	QP
12	0.658500	-0.15	10.07	9.92	46.00	-36.08	AVG

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Test Mode:	TX	Phase:	N
Test Voltage:	DC 5V from adapter AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.154400	24.16	10.14	34.30	65.76	-31.46	QP
2	0.154400	9.66	10.14	19.80	55.76	-35.96	AVG
3 *	0.185900	22.95	10.09	33.04	64.22	-31.18	QP
4	0.185900	8.62	10.09	18.71	54.22	-35.51	AVG
5	0.262500	19.20	10.06	29.26	61.35	-32.09	QP
6	0.262500	7.25	10.06	17.31	51.35	-34.04	AVG
7	0.307400	17.42	10.07	27.49	60.04	-32.55	QP
8	0.307400	4.24	10.07	14.31	50.04	-35.73	AVG
9	0.397500	15.25	10.10	25.35	57.91	-32.56	QP
10	0.397500	4.67	10.10	14.77	47.91	-33.14	AVG
11	0.707900	11.65	10.06	21.71	56.00	-34.29	QP
12	0.707900	0.68	10.06	10.74	46.00	-35.26	AVG

5.3 Radiated Emission

5.3.1 Limits

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

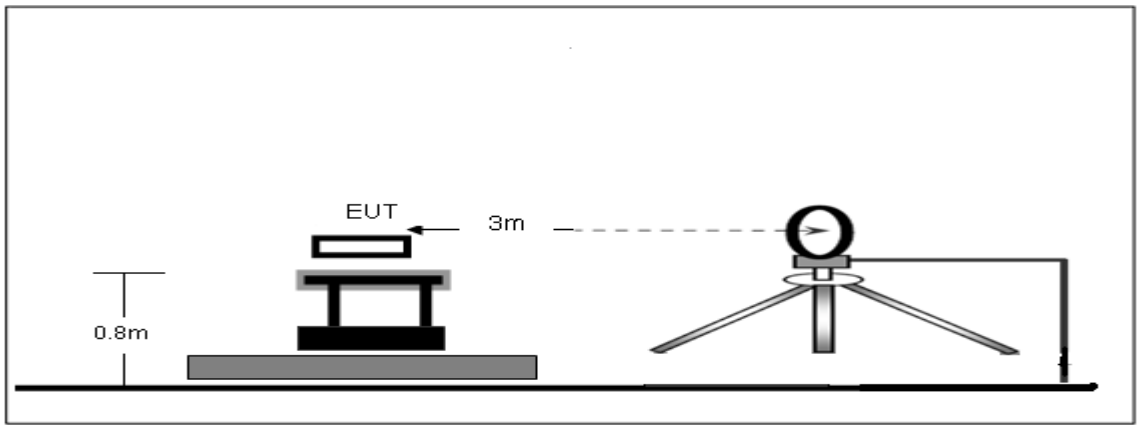
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

5.3.2 Test Procedures

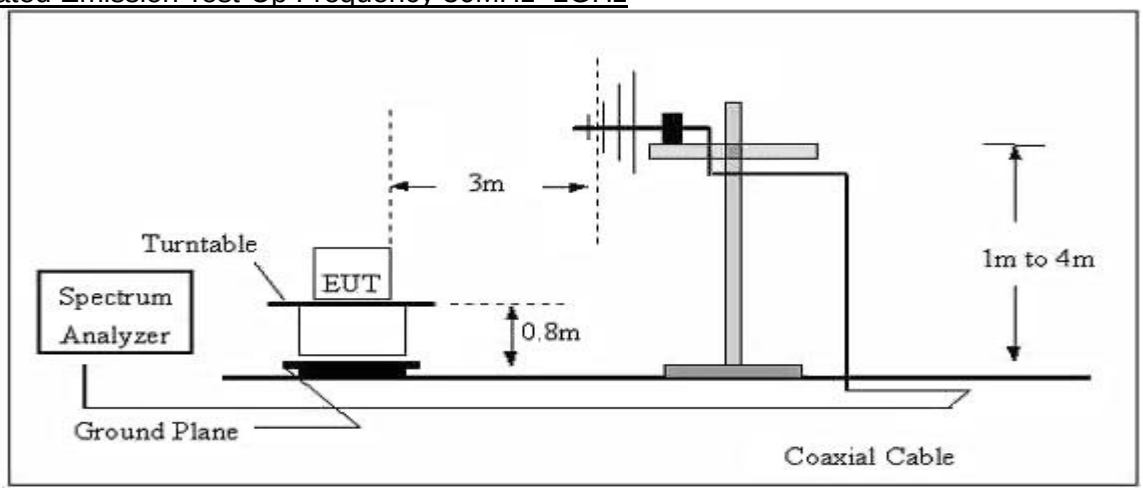
a) The radiated emission tests were performed in the 3 meters.
b) The EUT was placed on the top of a rotating table 0.8 meters above the ground. The table was rotated 360 degrees to determine the position of the highest radiation.
c) The height of the test antenna shall vary between 1m to 4m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d) If the peak mode measured value compliance with and lower than quasi peak mode limit, the EUT shall be deemed to meet QP limits and then no additional QP mode measurement performed.
e) If the peak mode measured value compliance with and lower than average mode limit, the EUT shall be deemed to meet average limits and then no additional average mode measurement performed.
f) For the actual test configuration, please refer to the related item – EUT test photos.

5.3.3 Test Setup

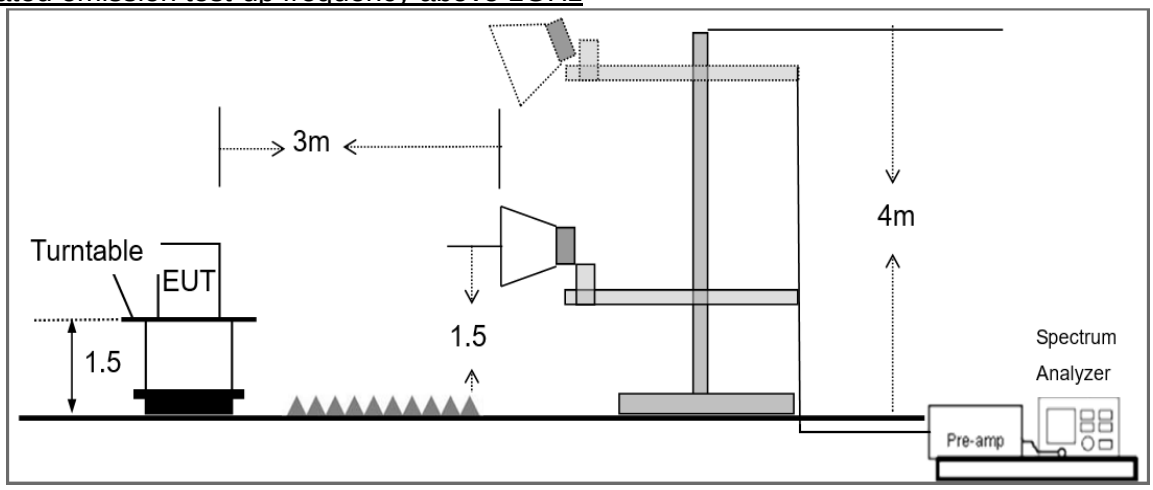
Radiated Emission Test-Up Frequency Below 30MHz



Radiated Emission Test-Up Frequency 30MHz~1GHz



Radiated emission test-up frequency above 1GHz



5.3.4 Test Result

Below 30MHz

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Pressure:	1010 hPa	Test Voltage:	DC 5V from adapter AC 120V/60Hz
Test Mode:	TX	Polarization:	--

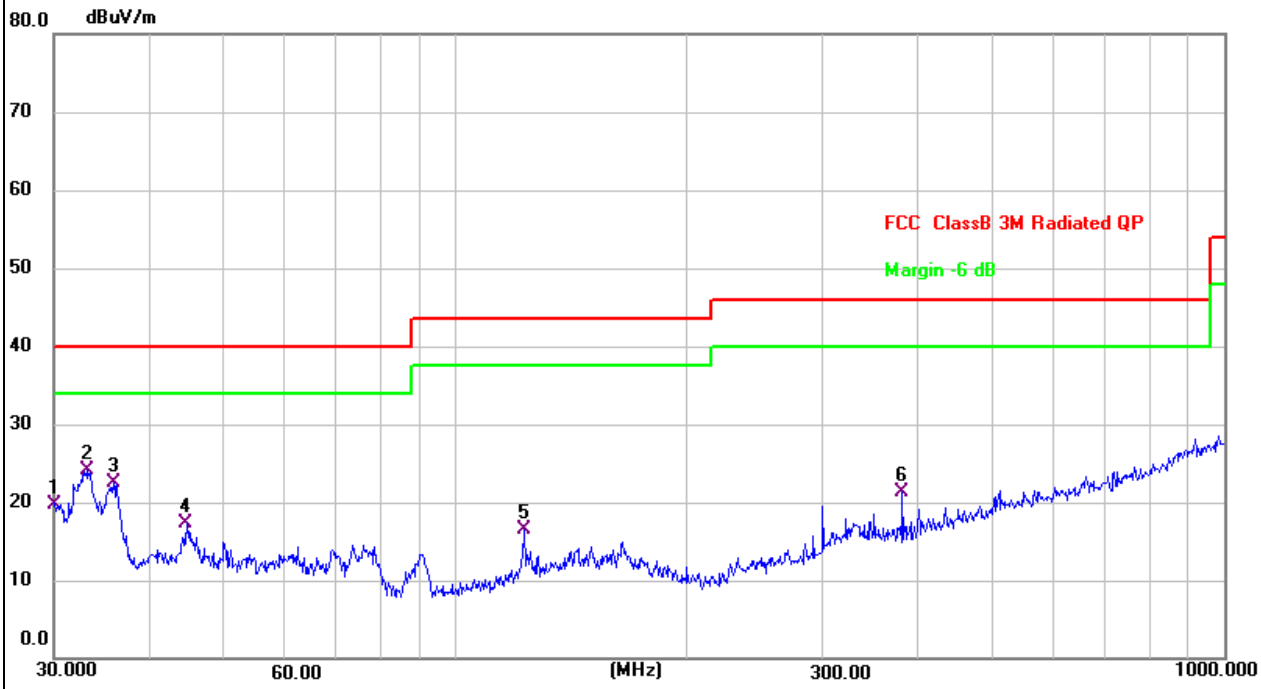
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	Pass
--	--	--	--	Pass

Note:

1. For 9kHz-30MHz, the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Distance extrapolation factor =40 log (specific distance/test distance)(dB);
3. Limit line = specific limits (dBuV) + distance extrapolation factor.

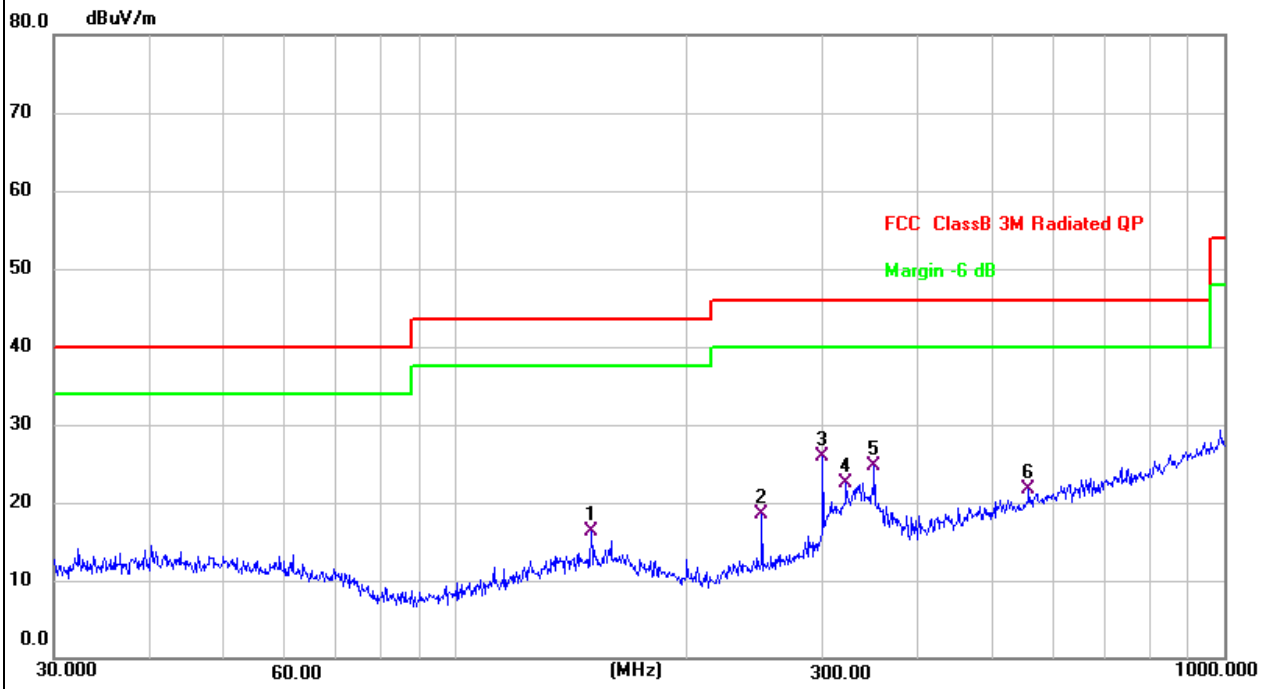
Frequency range (30MHz – 1GHz)

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Test Mode:	TX	Phase:	Vertical
Test Voltage:	DC 5V from adapter AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.1053	35.46	-15.74	19.72	40.00	-20.28	QP
2 *	33.0950	39.40	-15.28	24.12	40.00	-15.88	QP
3	35.8746	37.22	-14.81	22.41	40.00	-17.59	QP
4	44.7433	31.61	-14.23	17.38	40.00	-22.62	QP
5	122.8340	32.44	-16.03	16.41	43.50	-27.09	QP
6	381.2487	32.03	-10.80	21.23	46.00	-24.77	QP

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Test Mode:	TX	Phase:	Horizontal
Test Voltage:	DC 5V from adapter AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	150.0108	30.16	-13.88	16.28	43.50	-27.22	QP
2	250.3012	33.21	-14.71	18.50	46.00	-27.50	QP
3 *	300.3672	39.05	-13.07	25.98	46.00	-20.02	QP
4	322.1886	35.00	-12.45	22.55	46.00	-23.45	QP
5	350.4768	36.25	-11.64	24.61	46.00	-21.39	QP
6	556.7744	27.76	-6.12	21.64	46.00	-24.36	QP

Frequency range (1GHz-25GHz)

Frequency	Read Level	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Remark	Comment
(MHz)	(dBμV)	(dB)	dB/m	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
Low Channel (2412 MHz)(802.11b)--Above 1G									
4824.161	63.26	4.36	32.92	45.53	55.01	74.00	-18.99	Pk	Vertical
4824.161	43.34	4.36	32.92	45.53	35.09	54.00	-18.91	AV	Vertical
7236.396	60.56	5.02	37.63	45.56	57.65	74.00	-16.35	Pk	Vertical
7236.396	41.07	5.02	37.63	45.56	38.16	54.00	-15.84	AV	Vertical
4824.154	62.61	4.36	32.92	45.53	54.36	74.00	-19.64	Pk	Horizontal
4824.154	42.97	4.36	32.92	45.53	34.72	54.00	-19.28	AV	Horizontal
7236.168	63.69	5.02	37.63	45.56	60.78	74.00	-13.22	Pk	Horizontal
7236.168	42.53	5.02	37.63	45.56	39.62	54.00	-14.38	AV	Horizontal
Middle Channel (2437 MHz)(802.11b)--Above 1G									
4874.112	63.22	4.41	33.01	45.76	54.88	74.00	-19.12	Pk	Vertical
4874.112	44.10	4.41	33.01	45.76	35.76	54.00	-18.24	AV	Vertical
7311.247	60.24	5.02	37.68	45.59	57.35	74.00	-16.65	Pk	Vertical
7311.247	40.68	5.02	37.68	45.59	37.79	54.00	-16.21	AV	Vertical
4874.132	62.76	4.41	33.01	45.76	54.42	74.00	-19.58	Pk	Horizontal
4874.132	44.19	4.41	33.01	45.76	35.85	54.00	-18.15	AV	Horizontal
7311.085	61.35	5.02	37.68	45.59	58.46	74.00	-15.54	Pk	Horizontal
7311.085	42.49	5.02	37.68	45.59	39.60	54.00	-14.40	AV	Horizontal
High Channel (2462 MHz)(802.11b)--Above 1G									
4924.169	63.97	4.50	33.26	46.07	55.66	74.00	-18.34	Pk	Vertical
4924.169	43.53	4.50	33.26	46.07	35.22	54.00	-18.78	AV	Vertical
7386.215	61.39	5.02	37.78	45.77	58.42	74.00	-15.58	Pk	Vertical
7386.215	40.27	5.02	37.78	45.77	37.30	54.00	-16.70	AV	Vertical
4924.045	63.89	4.50	33.26	46.07	55.58	74.00	-18.42	Pk	Horizontal
4924.045	44.98	4.50	33.26	46.07	36.67	54.00	-17.33	AV	Horizontal
7386.132	60.92	5.02	37.78	45.77	57.95	74.00	-16.05	Pk	Horizontal
7386.132	42.84	5.02	37.78	45.77	39.87	54.00	-14.13	AV	Horizontal

Note:
1. Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor
2. All other emissions more than 20dB below the limit.
3. The three modulated high, medium and low channels have been tested. The report only shows the worst mode. The worst mode is 802.11b.

5.3.5 Radiated Band Edge

Frequency	Read Level	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Remark	Comment
(MHz)	(dBμV)	(dB)	dB/m	(dB)	(dBμV/m)	(dBμV/m)	(dB)		
802.11b (Channel 01&11)									
2310.00	58.77	2.40	27.70	40.40	48.47	74	-25.53	Pk	Horizontal
2310.00	43.50	2.40	27.70	40.40	33.20	54	-20.80	AV	Horizontal
2310.00	58.68	2.40	27.70	40.40	48.38	74	-25.62	Pk	Vertical
2310.00	41.87	2.40	27.70	40.40	31.57	54	-22.43	AV	Vertical
2390.00	57.57	2.44	28.30	40.10	48.21	74	-25.79	Pk	Vertical
2390.00	41.86	2.44	28.30	40.10	32.50	54	-21.50	AV	Vertical
2390.00	56.46	2.44	28.30	40.10	47.10	74	-26.90	Pk	Horizontal
2390.00	42.15	2.44	28.30	40.10	32.79	54	-21.21	AV	Horizontal
2483.50	57.71	2.48	28.70	39.80	49.09	74	-24.91	Pk	Vertical
2483.50	42.64	2.48	28.70	39.80	34.02	54	-19.98	AV	Vertical
2483.50	58.60	2.48	28.70	39.80	49.98	74	-24.02	Pk	Horizontal
2483.50	41.52	2.48	28.70	39.80	32.90	54	-21.10	AV	Horizontal
802.11g(Channel 01&11)									
2310.00	58.42	2.40	27.70	40.40	48.12	74	-25.88	Pk	Horizontal
2310.00	43.92	2.40	27.70	40.40	33.62	54	-20.38	AV	Horizontal
2310.00	57.09	2.40	27.70	40.40	46.79	74	-27.21	Pk	Vertical
2310.00	42.81	2.40	27.70	40.40	32.51	54	-21.49	AV	Vertical
2390.00	57.85	2.44	28.30	40.10	48.49	74	-25.51	Pk	Vertical
2390.00	41.84	2.44	28.30	40.10	32.48	54	-21.52	AV	Vertical
2390.00	57.93	2.44	28.30	40.10	48.57	74	-25.43	Pk	Horizontal
2390.00	44.03	2.44	28.30	40.10	34.67	54	-19.33	AV	Horizontal
2483.50	58.89	2.48	28.70	39.80	50.27	74	-23.73	Pk	Vertical
2483.50	44.39	2.48	28.70	39.80	35.77	54	-18.23	AV	Vertical
2483.50	58.85	2.48	28.70	39.80	50.23	74	-23.77	Pk	Horizontal
2483.50	41.83	2.48	28.70	39.80	33.21	54	-20.79	AV	Horizontal

802.11n20(Channel 01&11)									
2310.00	57.72	2.40	27.70	40.40	47.42	74	-26.58	Pk	Horizontal
2310.00	43.51	2.40	27.70	40.40	33.21	54	-20.79	AV	Horizontal
2310.00	58.36	2.40	27.70	40.40	48.06	74	-25.94	Pk	Vertical
2310.00	42.63	2.40	27.70	40.40	32.33	54	-21.67	AV	Vertical
2390.00	58.24	2.44	28.30	40.10	48.88	74	-25.12	Pk	Vertical
2390.00	42.06	2.44	28.30	40.10	32.70	54	-21.30	AV	Vertical
2390.00	56.47	2.44	28.30	40.10	47.11	74	-26.89	Pk	Horizontal
2390.00	42.66	2.44	28.30	40.10	33.30	54	-20.70	AV	Horizontal
2483.50	58.50	2.48	28.70	39.80	49.88	74	-24.12	Pk	Vertical
2483.50	42.61	2.48	28.70	39.80	33.99	54	-20.01	AV	Vertical
2483.50	58.73	2.48	28.70	39.80	50.11	74	-23.89	Pk	Horizontal
2483.50	41.68	2.48	28.70	39.80	33.06	54	-20.94	AV	Horizontal
802.11n40(Channel 03&09)									
2310.00	58.64	2.40	27.70	40.40	48.34	74	-25.66	Pk	Horizontal
2310.00	44.45	2.40	27.70	40.40	34.15	54	-19.85	AV	Horizontal
2310.00	57.26	2.40	27.70	40.40	46.96	74	-27.04	Pk	Vertical
2310.00	42.95	2.40	27.70	40.40	32.65	54	-21.35	AV	Vertical
2390.00	57.64	2.44	28.30	40.10	48.28	74	-25.72	Pk	Vertical
2390.00	42.55	2.44	28.30	40.10	33.19	54	-20.81	AV	Vertical
2390.00	58.75	2.44	28.30	40.10	49.39	74	-24.61	Pk	Horizontal
2390.00	43.94	2.44	28.30	40.10	34.58	54	-19.42	AV	Horizontal
2483.50	58.78	2.48	28.70	39.80	50.16	74	-23.84	Pk	Vertical
2483.50	44.38	2.48	28.70	39.80	35.76	54	-18.24	AV	Vertical
2483.50	58.41	2.48	28.70	39.80	49.79	74	-24.21	Pk	Horizontal
2483.50	42.14	2.48	28.70	39.80	33.52	54	-20.48	AV	Horizontal
802.11ax20(Channel 01&11)									
2310.00	58.05	2.40	27.70	40.40	47.75	74	-26.25	Pk	Horizontal
2310.00	43.98	2.40	27.70	40.40	33.68	54	-20.32	AV	Horizontal
2310.00	58.28	2.40	27.70	40.40	47.98	74	-26.02	Pk	Vertical
2310.00	42.31	2.40	27.70	40.40	32.01	54	-21.99	AV	Vertical
2390.00	57.41	2.44	28.30	40.10	48.05	74	-25.95	Pk	Vertical
2390.00	41.82	2.44	28.30	40.10	32.46	54	-21.54	AV	Vertical
2390.00	56.41	2.44	28.30	40.10	47.05	74	-26.95	Pk	Horizontal
2390.00	41.93	2.44	28.30	40.10	32.57	54	-21.43	AV	Horizontal
2483.50	57.93	2.48	28.70	39.80	49.31	74	-24.69	Pk	Vertical
2483.50	42.33	2.48	28.70	39.80	33.71	54	-20.29	AV	Vertical
2483.50	58.99	2.48	28.70	39.80	50.37	74	-23.63	Pk	Horizontal
2483.50	42.08	2.48	28.70	39.80	33.46	54	-20.54	AV	Horizontal

802.11ax40(Channel 03&09)									
2310.00	58.76	2.40	27.70	40.40	48.46	74	-25.54	Pk	Horizontal
2310.00	44.74	2.40	27.70	40.40	34.44	54	-19.56	AV	Horizontal
2310.00	57.38	2.40	27.70	40.40	47.08	74	-26.92	Pk	Vertical
2310.00	43.51	2.40	27.70	40.40	33.21	54	-20.79	AV	Vertical
2390.00	57.73	2.44	28.30	40.10	48.37	74	-25.63	Pk	Vertical
2390.00	42.55	2.44	28.30	40.10	33.19	54	-20.81	AV	Vertical
2390.00	58.33	2.44	28.30	40.10	48.97	74	-25.03	Pk	Horizontal
2390.00	43.69	2.44	28.30	40.10	34.33	54	-19.67	AV	Horizontal
2483.50	58.23	2.48	28.70	39.80	49.61	74	-24.39	Pk	Vertical
2483.50	44.02	2.48	28.70	39.80	35.40	54	-18.60	AV	Vertical
2483.50	58.45	2.48	28.70	39.80	49.83	74	-24.17	Pk	Horizontal
2483.50	42.10	2.48	28.70	39.80	33.48	54	-20.52	AV	Horizontal

Note:

1. All Readings are Peak Value (VBW=3MHz) and AV Value (VBW=10Hz).
2. Emission Level= Antenna Factor + Cable Loss + Read Level - Preamp Factor.
3. All the modulation modes have been tested, and only the worst results are reflected in the report.

5.3.6 Spurious Emission in Restricted Band 1000MHz-25000MHz

All the modulation modes have been tested, and the worst result was report as below:

Frequency	Read Level	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	dB/m	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
3260	60.23	3.27	30.02	38.05	55.47	74	-18.53	Pk	Vertical
3260	39.26	3.27	30.02	38.05	34.50	54	-19.50	AV	Vertical
3260	59.15	3.27	30.02	38.05	54.39	74	-19.61	Pk	Horizontal
3260	36.50	3.27	30.02	38.05	31.74	54	-22.26	AV	Horizontal
3332	61.05	3.31	30.00	37.91	56.45	74	-17.55	Pk	Vertical
3332	39.17	3.31	30.00	37.91	34.57	54	-19.43	AV	Vertical
3332	60.05	3.31	30.00	37.91	55.45	74	-18.55	Pk	Horizontal
3332	35.92	3.31	30.00	37.91	31.32	54	-22.68	AV	Horizontal
17797	43.52	8.63	44.23	39.60	56.78	74	-17.22	Pk	Vertical
17797	29.25	8.63	44.23	39.60	42.51	54	-11.49	AV	Vertical
17788	42.74	8.63	44.23	39.60	56.00	74	-18.00	Pk	Horizontal
17788	28.22	8.63	44.23	39.60	41.48	54	-12.52	AV	Horizontal

5.4 Peak Output Power

5.4.1 Limit

FCC Part15 Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
15.247(b)(3)	Peak output power	1 watt or 30dBm	2400-2483.5

5.4.2 Test Procedure

(1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

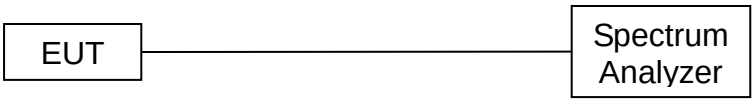
(2) Spectrum Setting:

RBW=1MHz, VBW=3MHz, Detector=Peak (If 20dB BW ≤1 MHz)

RBW=3MHz, VBW=8MHz, Detector=Peak (If 20dB BW > 1 MHz)

(3) The EUT was set to continuously transmitting in the max power during the test.

5.4.3 Test Setup



5.4.4 Test Results

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Test Mode:	TX	Test Voltage:	DC 5V from adapter AC 120V/60Hz

802.11b

Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH01	2412	17.26	30
CH06	2437	16.75	30
CH11	2462	16.5	30

802.11g

Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH01	2412	17.47	30
CH06	2437	16.96	30
CH11	2462	16.81	30

802.11n20

Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH01	2412	17.46	30
CH06	2437	16.98	30
CH11	2462	16.73	30

802.11n40

Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH03	2422	16.82	30
CH06	2437	16.1	30
CH09	2452	16.13	30

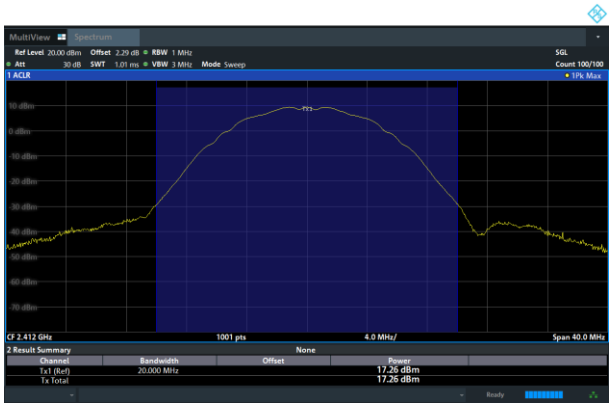
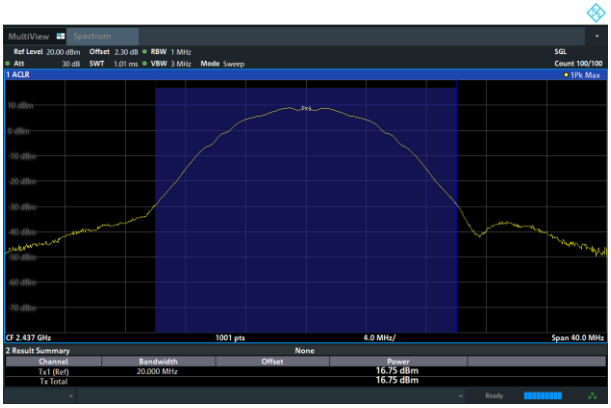
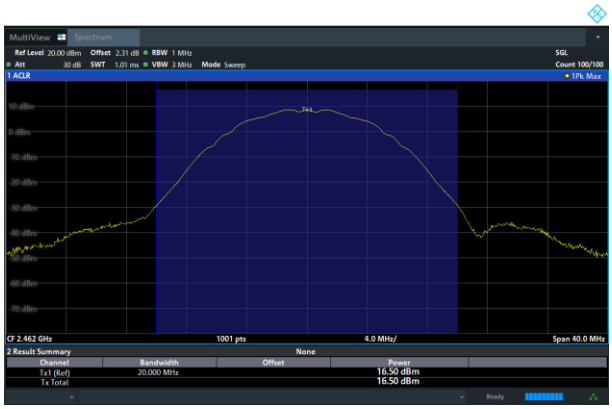
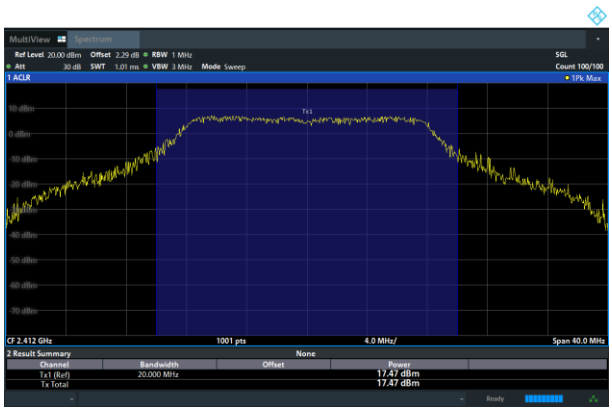
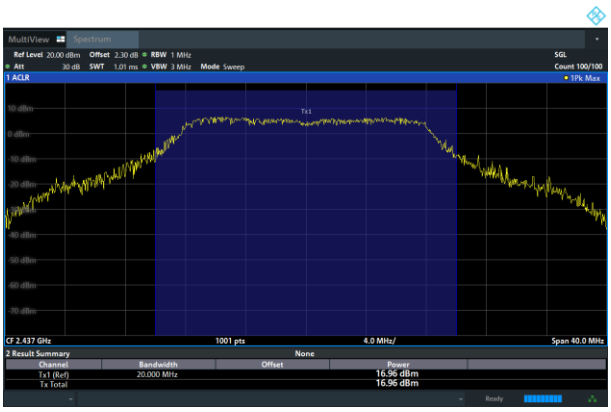
802.11ax20

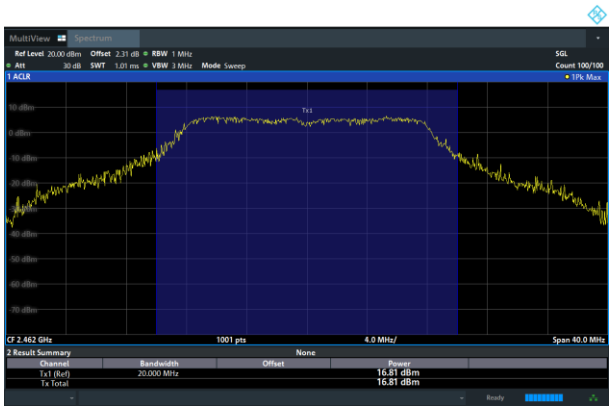
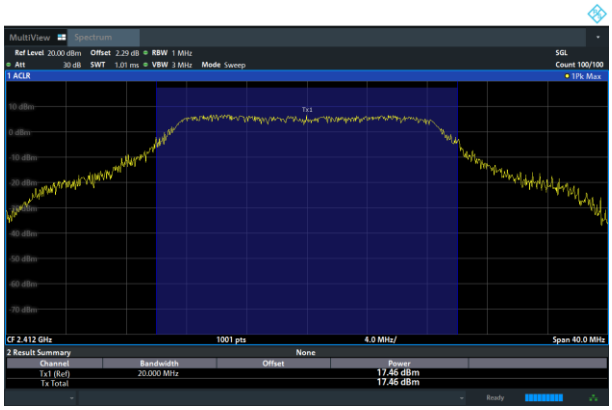
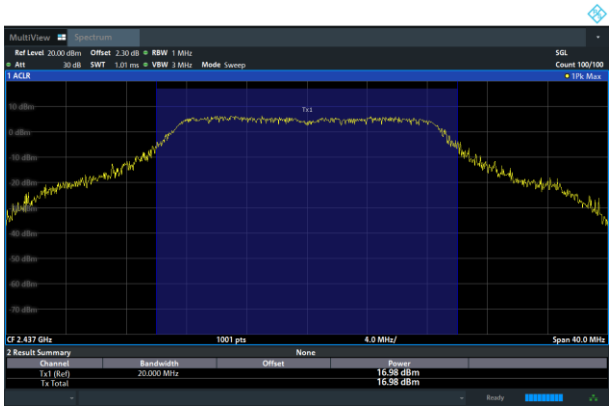
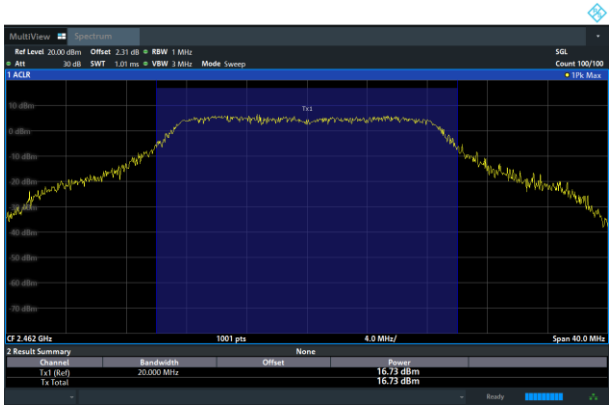
Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH01	2412	16.82	30
CH06	2437	16.1	30
CH11	2462	16.13	30

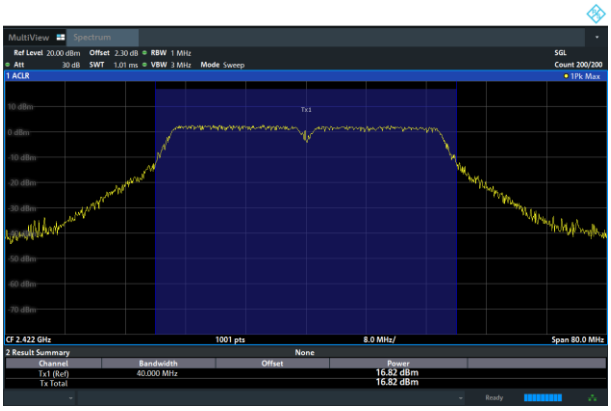
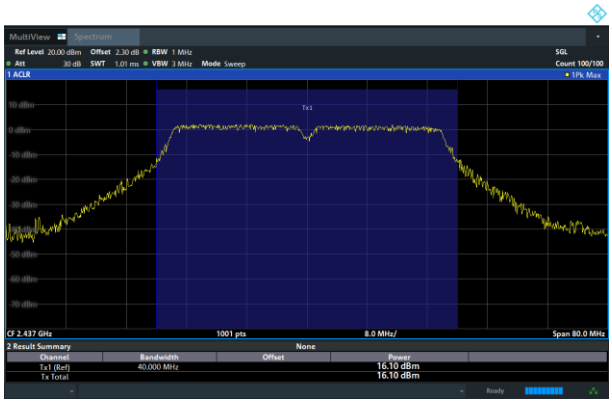
802.11ax40

Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power(dBm)	Limit (dBm)
CH03	2422	17.23	30
CH06	2437	17.02	30
CH09	2452	16.83	30

Test plots

802.11b	
2412(MHz)	2437(MHz)
	
2462(MHz)	/
	/
802.11g	
2412(MHz)	2437(MHz)
	

2462(MHz)	/
	/
802.11n20	
2412(MHz)	2437(MHz)
	
2462(MHz)	/
	/

802.11n40	
2422(MHz)	2437(MHz)
	
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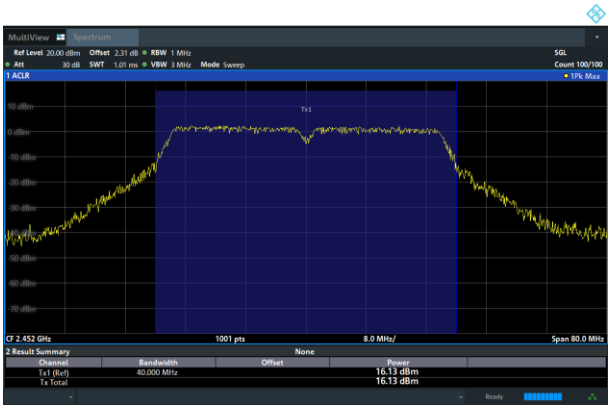
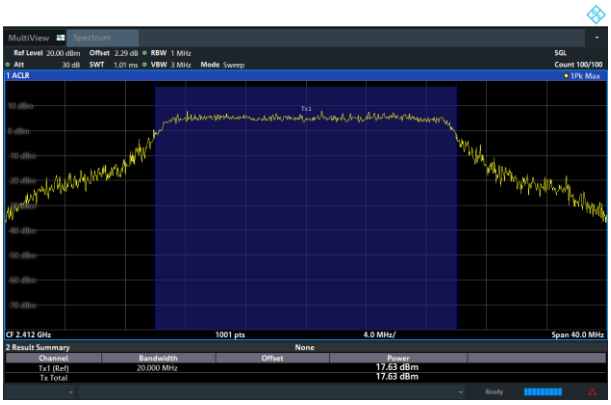
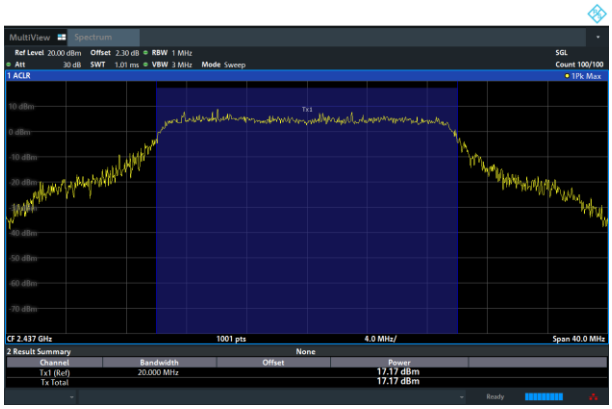
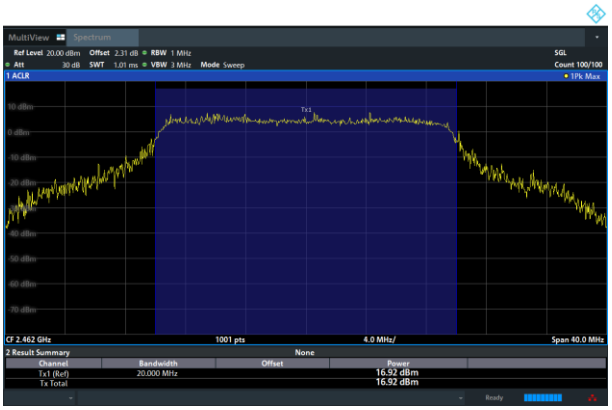
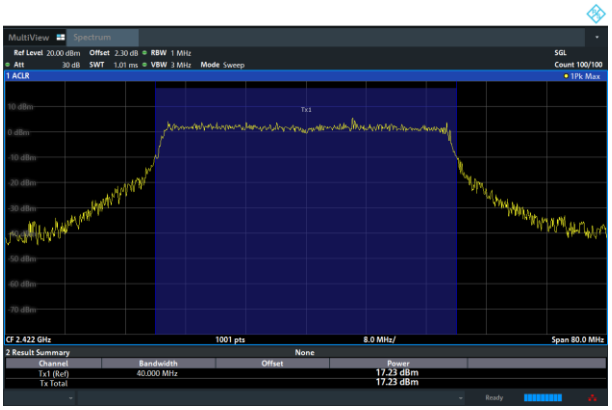
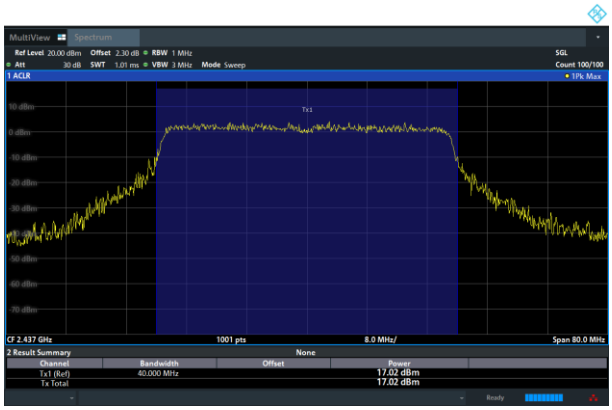
	/
802.11ax20	
2412(MHz)	2437(MHz)
	

2462(MHz)	/
	/

802.11ax40	
2422(MHz)	2437(MHz)
	
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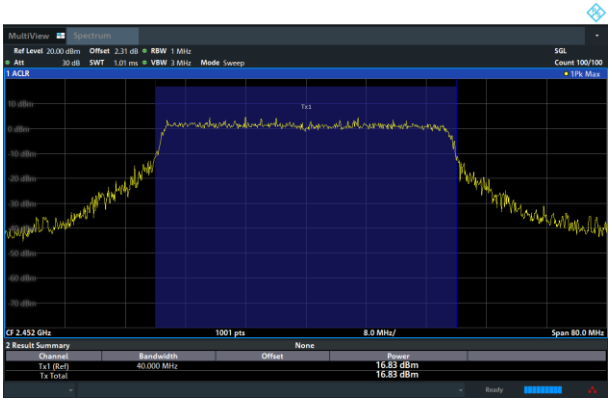
	/

5.5 Power Spectral Density

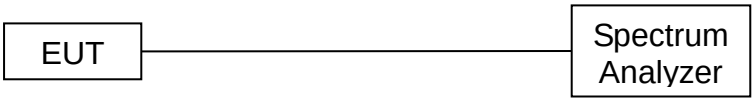
5.5.1 Limit

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
15.247	Power Spectral Density	8 dBm (in any 3kHz)	2400-2483.5

5.5.2 Test Procedure

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW ≥ 3 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

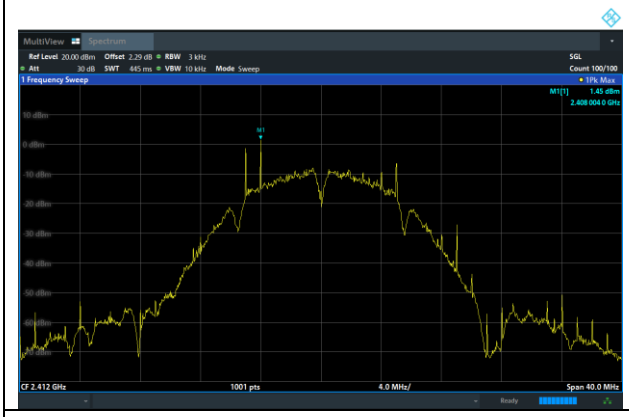
5.5.3 Test Setup



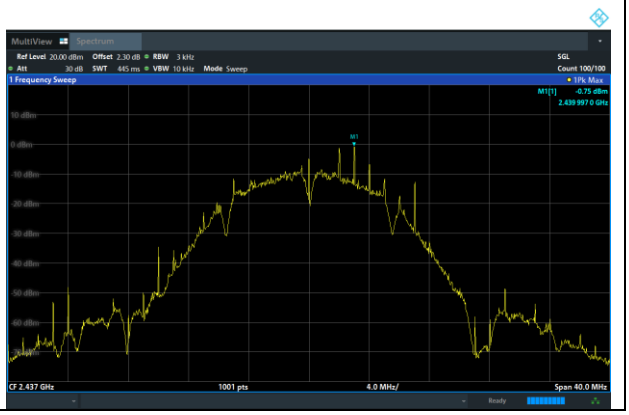
5.5.4 Test Results

802.11b			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	1.45	8	Pass
2437 MHz	-0.75	8	Pass
2462 MHz	-2.04	8	Pass

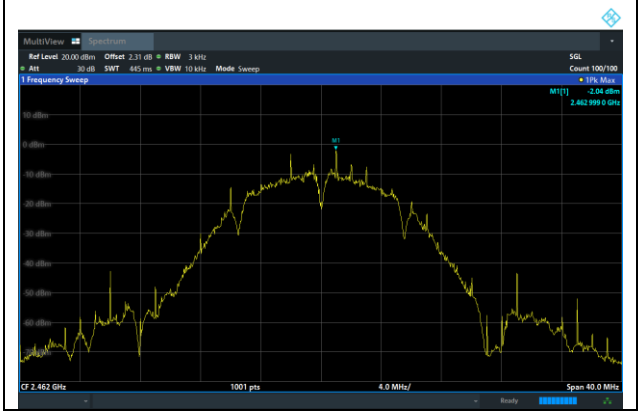
TX CH01



TX CH06

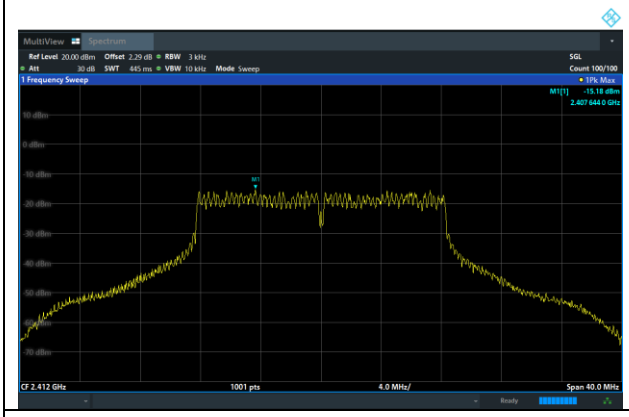


TX CH11

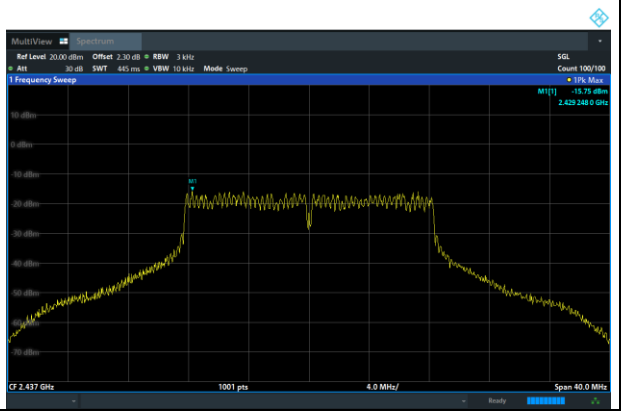


802.11g			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-15.18	8	Pass
2437 MHz	-15.75	8	Pass
2462 MHz	-16.36	8	Pass

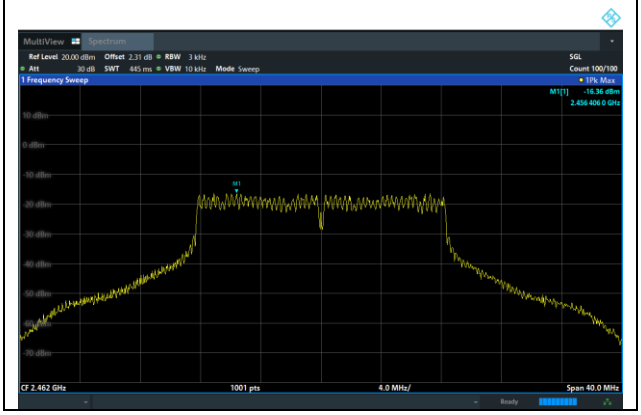
TX CH01



TX CH06

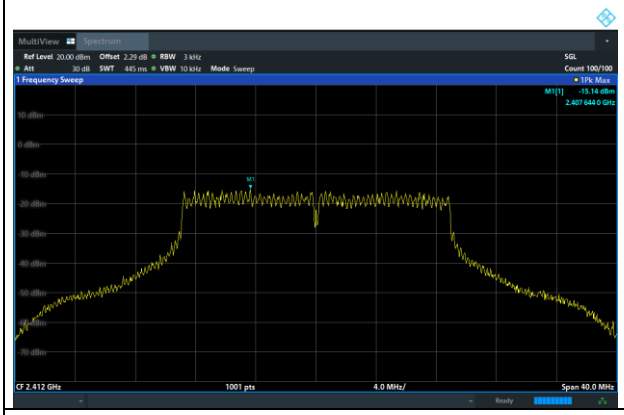


TX CH11

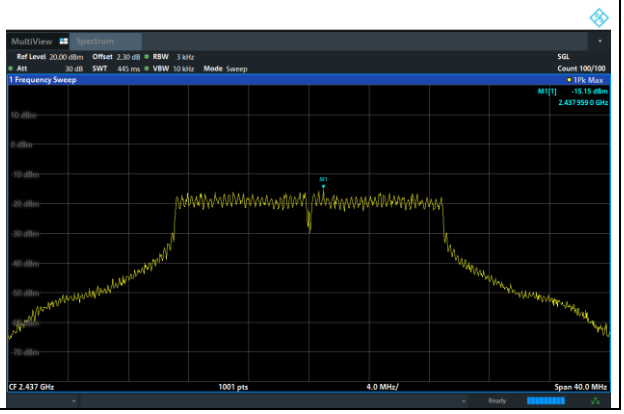


802.11n20			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-15.14	8	Pass
2437 MHz	-15.15	8	Pass
2462 MHz	-16.01	8	Pass

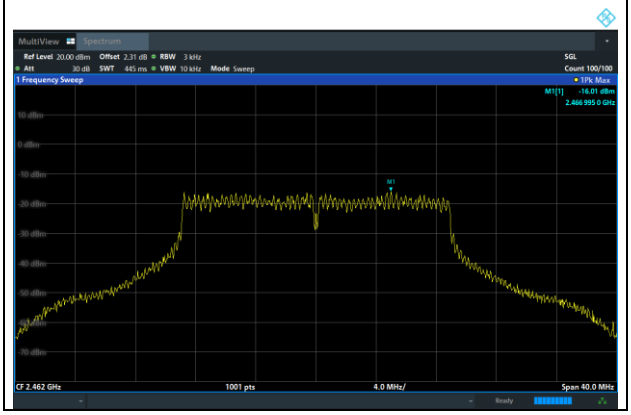
TX CH01



TX CH06

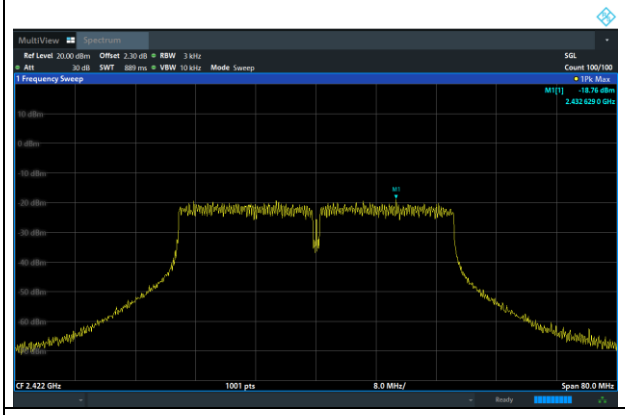


TX CH11

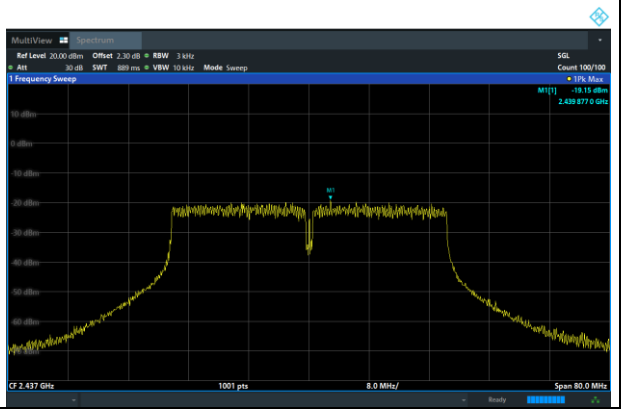


802.11n40			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422 MHz	-18.76	8	Pass
2437 MHz	-19.15	8	Pass
2452 MHz	-19.44	8	Pass

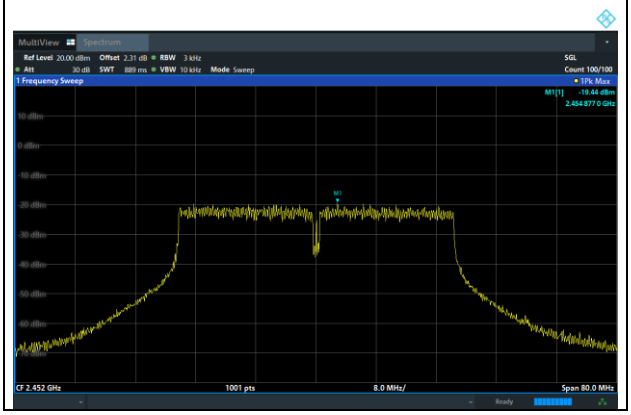
TX CH03



TX CH06

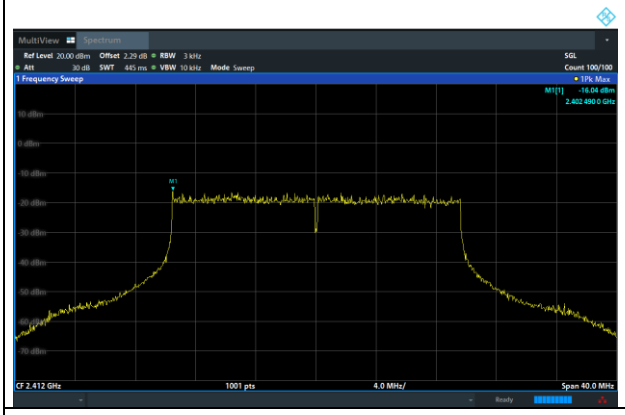


TX CH9

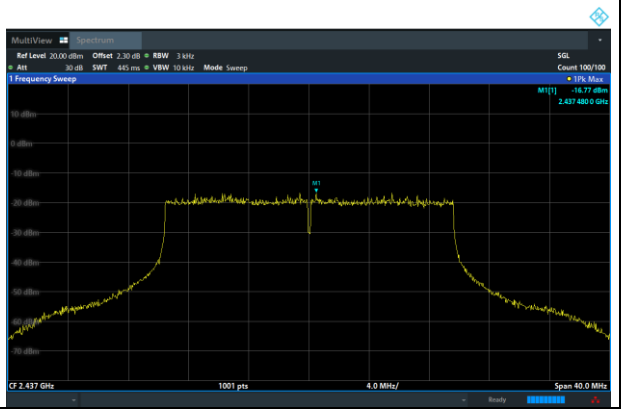


802.11ax20			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-16.04	8	Pass
2437 MHz	-16.77	8	Pass
2462 MHz	-16.27	8	Pass

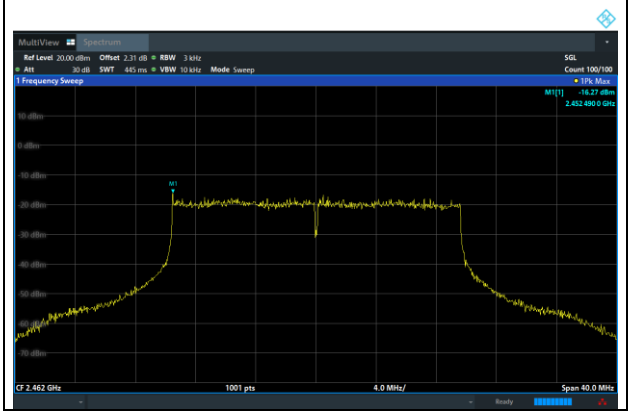
TX CH01



TX CH06

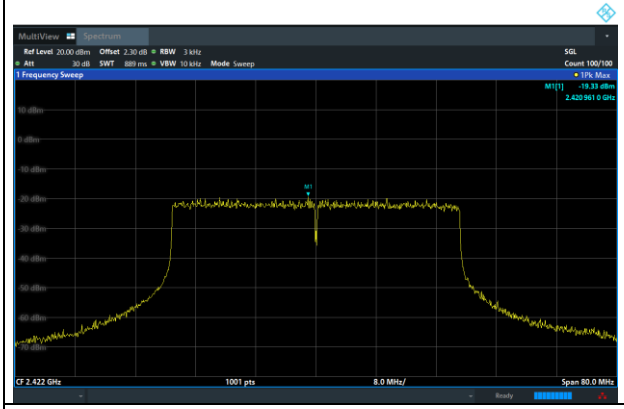


TX CH11

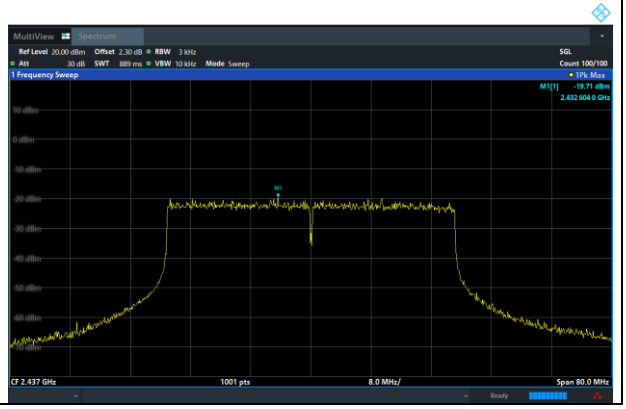


802.11ax40			
Frequency	Power Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422 MHz	-19.33	8	Pass
2437 MHz	-19.71	8	Pass
2452 MHz	-20.32	8	Pass

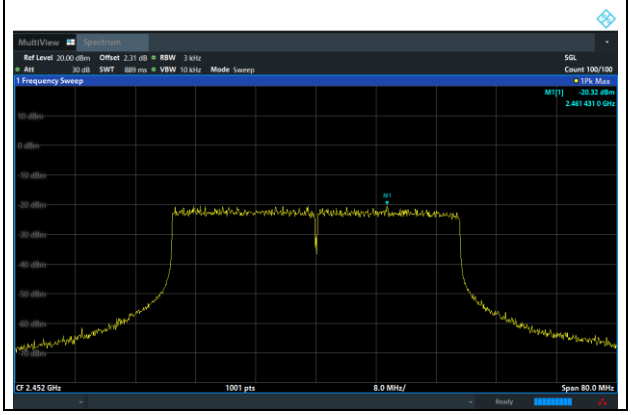
TX CH03



TX CH06



TX CH9



5.6 6dB Bandwidth

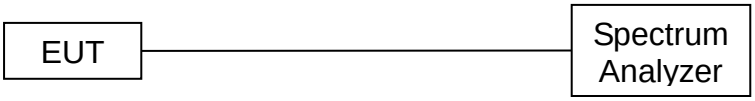
5.6.1 Limit

FCC Part15 (15.247) , Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
15.247(a)(2)	Bandwidth	>= 500kHz (6dB bandwidth)	2400-2483.5

5.6.2 Test Procedure

1. Set RBW= 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

5.6.3 Test Setup

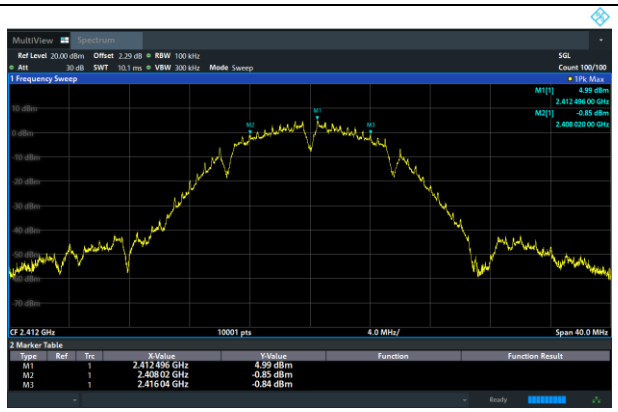
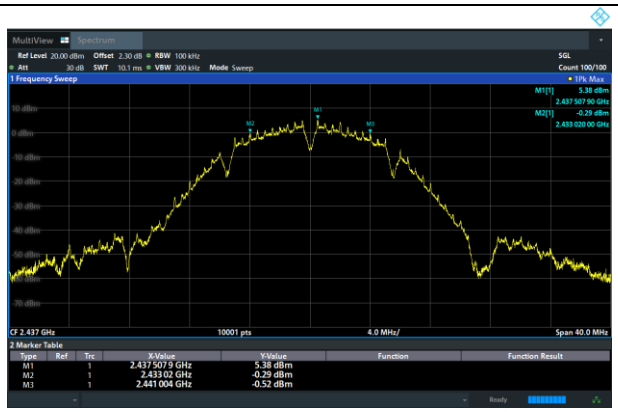
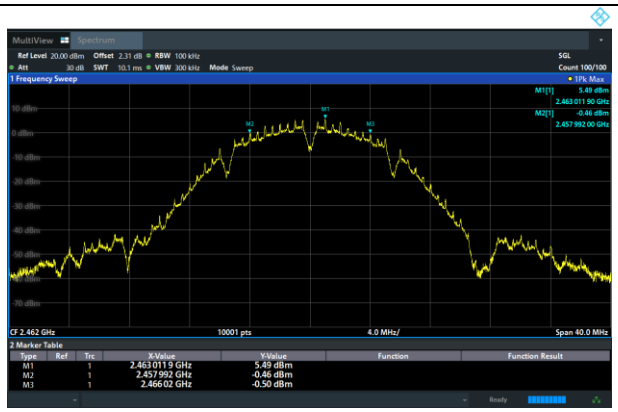


5.6.4 Test Results

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Pressure:	1012 hPa	Test Voltage:	DC 5V from adapter AC 120V/60Hz
Test Mode:	TX b Mode /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	8.02	500	Pass
Middle	2437	7.984	500	Pass
High	2462	8.028	500	Pass

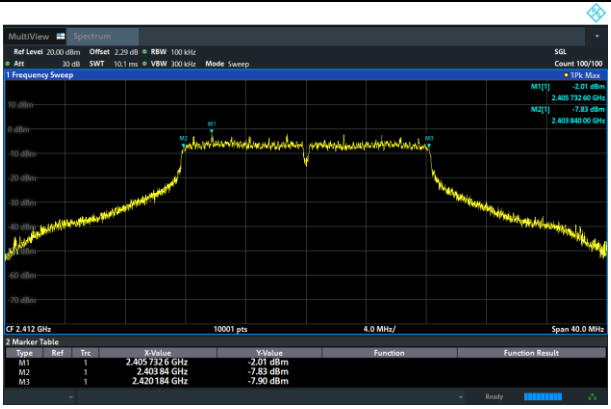
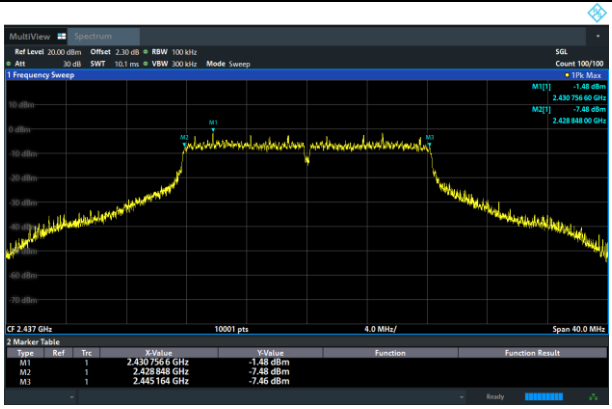
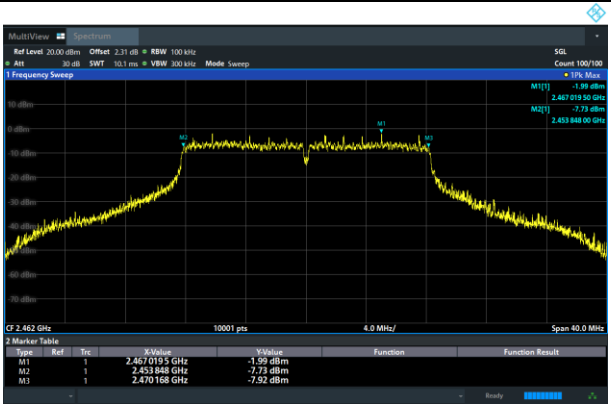
Test plots

TX CH 01	TX CH 06
	
TX CH 11	/
	/

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Pressure:	1012 hPa	Test Voltage:	DC 5V from adapter AC 120V/60Hz
Test Mode:	TX g Mode /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	16.344	500	Pass
Middle	2437	16.316	500	Pass
High	2462	16.32	500	Pass

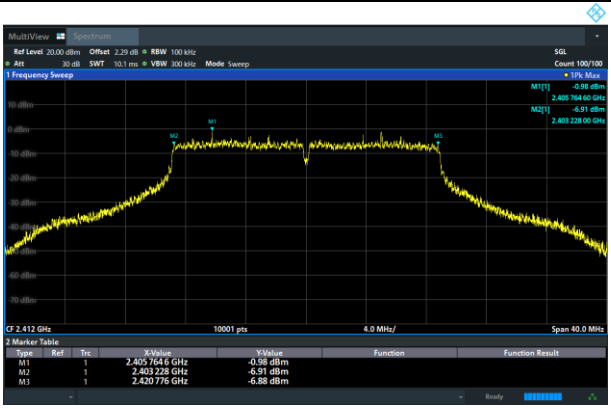
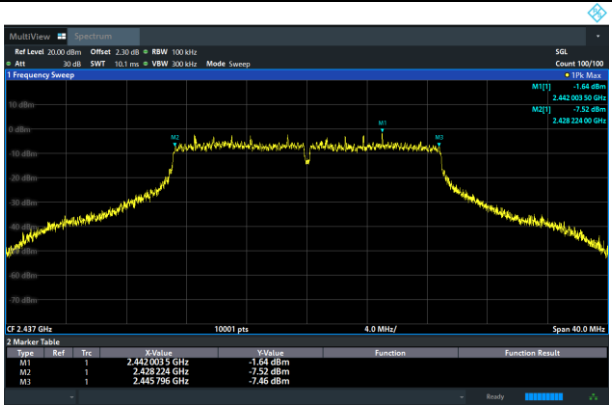
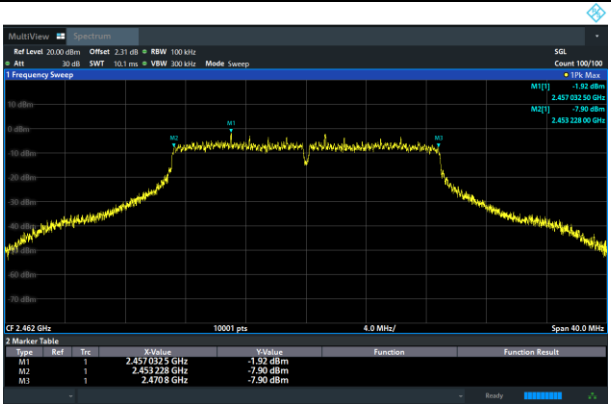
Test plots

TX CH 01	TX CH 06
	
TX CH 11	/
	/

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Pressure:	1012 hPa	Test Voltage:	DC 5V from adapter AC 120V/60Hz
Test Mode:	TX n20 Mode /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.548	500	Pass
Middle	2437	17.572	500	Pass
High	2462	17.572	500	Pass

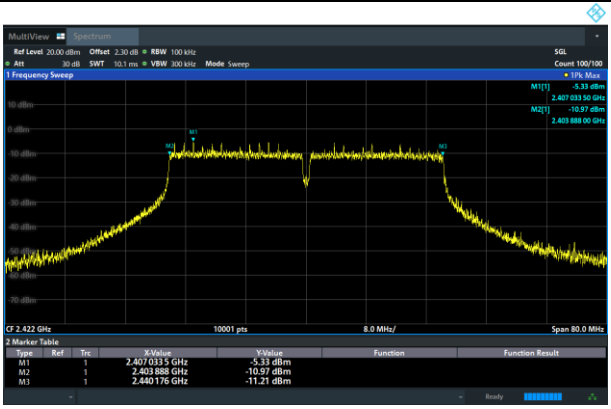
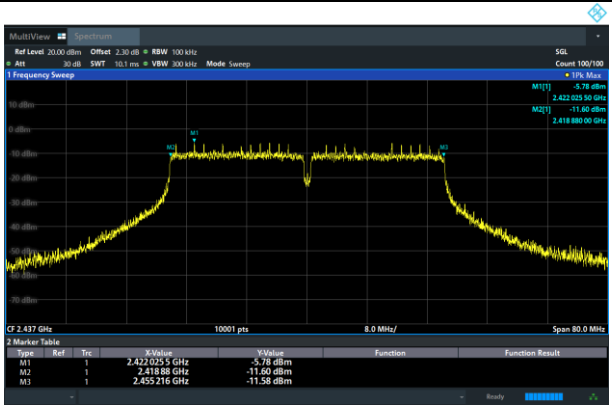
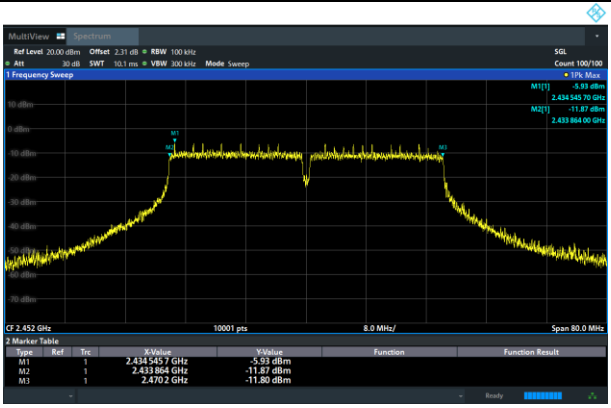
Test plots

TX CH 01	TX CH 06
	
TX CH 11	/
	/

EUT:	Wireless Carplay/Android Auto Adapter	Model Name:	SYY01
Pressure:	1012 hPa	Test Voltage:	DC 5V from adapter AC 120V/60Hz
Test Mode:	TX n40 Mode /CH03, CH06, CH09		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2422	36.288	500	Pass
Middle	2437	36.336	500	Pass
High	2452	36.336	500	Pass

Test plots

TX CH 03	TX CH 06
	
TX CH 09	/
	/