



Test Report No.:
FCC2023-0049-RF2

RF Test Report

EUT : **Micro Music System**

MODEL : **TAM8905/37**

ADDITIONAL MODEL : **See section 2.1**

BRAND NAME : **PHILIPS**

APPLICANT : **MMD Hong Kong Holding Limited**

Classification Of Test : **N/A**

CVC Testing Technology Co., Ltd.



CVC Testing Technology Co., Ltd.

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Applicant		Name : MMD Hong Kong Holding Limited	
		Address : Units 1208-11, 12th Floor, C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong	
Manufacturer		Name : MMD Hong Kong Holding Limited	
		Address : Units 1208-11, 12th Floor, C-Bons International Center, 108 Wai Yip Street, Kwun Tong, Kowloon, Hong Kong	
Equipment Under Test		Name : Micro Music System	
		Model/Type: TAM8905/37	
		Additional Model: See section 2.1	
		Brand : PHILIPS	
		Serial NO.: N/A	
		Sample NO.: HS2306280027	
Date of Receipt.	2023-06-28	Date of Testing	2023-07-01 ~ 2023-07-20
Test Specification		Test Result	
FCC Part 15, Subpart C, Section 15.247		PASS	
Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied.		
	Seal of CVC Issue Date: 2023-07-21		
Tested by:	Reviewed by:	Approved by:	
Lu Wei Ji Name Signature	Xu Zhen Fei Name Signature	Chen Hua Wen Name Signature	
Other Aspects: NONE.			
Abbreviations:OK, Pass= passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested			

This test report relates only to the EUT, and shall not be reproduced except in full, without written approval of CVC.



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FCC2023-0049-RF2	Original release	2023-07-21



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15 Subpart C			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
FCC Part 15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
FCC Part 15.247(d) FCC Part 15.209	Radiated Emission and Restricted bands Measurements	PASS	Meet the requirement of limit.
FCC Part 15.247(d)	Out of band Emission and Band edge measurements	PASS	Meet the requirement of limit.
FCC Part 15.247(a)(2)	6dB Bandwidth Measurement	PASS	Meet the requirement of limit.
---	Occupied Channel Bandwidth	N/A	For reference
FCC Part 15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
FCC Part 15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
FCC Part 15.203 FCC Part 15.247(b)	Antenna Requirement	PASS	No antenna connector is used.



1.1 LIST OF TEST AND MEASUREMENT INSTRUMENTS

Test Equipment	Type/Mode	SERIAL NO.	Equipment No.	Manufacturer	Cal. interval	Cal. Due
WIFI & Bluetooth Test System 1						
Communication Shielded Room 3	4m*3m*3m	CRTDSWKS 44301	VGDS-0702	CRT	3 year	2024/04/24
Bluetooth BQB test system	/	/	DZ-000338	CTTL	1 year	/
Bluetooth system integration	/	/	-	Tonscend	1 year	/
Wifi radiation system upgrade	/	/	-	Tonscend	1 year	/
Spectrum Analyzer	N9030A	MY53310374	EM-000395	Agilent	1 year	2024/04/22
Comprehensive Test Instrument	CMW270	100659	EM-000491	R&S	1 year	2023/12/06
Analog Signal Generator	N5173B	MY53270588	EM-000487-2	KEYSIGHT	1 year	2023/12/06
Vector Signal Generator	N5172B	MY53051933	EM-000487-1	KEYSIGHT	1 year	2023/12/06
Radiation Spurious Test System						
3m Semi-Anechoic Chamber	FACT-4	ST08035	WKNA-0024	ETS	3 year	2024/12/12
Spectrum Analyzer	N9010B	MY57470323	DZ-000174	KEYSIGHT	1 year	2024/02/22
EMI Test Receiver	N9038A-508	MY532290079	EM-000397	Agilent	1 year	2024/02/22
Broadband Antenna	VULB 9163	9163-530	EM-000342	SCHWARZBECK	1 year	2024/06/10
Waveguide Horn Antenna	HF906	360306/008	EM-000093	R&S	1 year	2024/02/24
Waveguide Horn Antenna	BBHA9170	00949	DZ-000209-2	SCHWARZBECK	1 year	2023/07/31
Preamplifier	BBV 9721	9721-050	DZ-000209-1	SCHWARZBECK	1 year	2024/06/04
5G Bandstop Filters	WRCJV12-4900-5100-5900-6100-50EE	851770	DZ-000186	WI	1 year	2023/12/06
Comprehensive tester	CMW500	159000	DZ-000240-2	R&S	1 year	2023/12/06
Conducted emission						
EMI Test Receiver	ESW44	103123	EM-000698	R&S	1 year	2024-02-22
EMI Test Receiver	ESR3	102394	VG DY-0705	R&S	1 year	2024-02-22
LISN	NSLK 8127	8127644	VG DY-0150	SCHWARZBECK	1 year	2023-09-03
LISN	NSLK 8128	8128-316	VG DY-0149	SCHWARZBECK	1 year	2023-09-03
DC LISN	PVDC8301-017	PVDC8301#17	VG DY-0692	SCHWARZBECK	1 year	2023-10-07
LISN	NSLK 8129	8129-268	EM-000388	SCHWARZBECK	1 year	2024-02-22
Plus Limiter (#1)	VTSD 9561 F-N	00515	VG DY-0808	SCHWARZBECK	1 year	2024-03-03
Plus Limiter (#2)	VTSD 9561	9561-F017	VG DY-0152	SCHWARZBECK	1 year	2024-09-03
Impedance Stabilization Network	ISN T800	27095	WKNE-0195	TESEQ	1 year	2023-09-03
Impedance Stabilization Network	NTFM8158	8158-0092	VG DY-0356	SCHWARZBECK	1 year	2024-05-29
Impedance Stabilization Network	NTFM8131	#184	EM-000498	SCHWARZBECK	1 year	2024-05-29
Voltage Probe	TK9420	9420-499	VG DY-0128	SCHWARZBECK	1 year	2024-02-22
Power Divider	4901.17.B	22643830	DB-0016	HUBER+SUHNER	1 year	2023-08-31
Video Signal Generator	GV-798+	151064920001	VG DS-0215	PROMAX	1 year	2024-05-23
Audio Signal Generator	GAG-810	EK871591	EM-000309	GW	1 year	2023-12-06
Shielding Room(#1)	GP1A	001	WKNF-0001	LEINING	3 year	2024-08-07
Shielding Room(#2)	GP1A	002	WKNF-0006	LEINING	3 year	2024-08-07
Current probe	EZ-17	0816.2063.02	EM-000567	R&S	1 year	2024-01-07
LISN	NNHV8123-200	8123200-020	EM-000385	SCHWARZBECK	1 year	2024-02-22
LISN	NNHV8123-200	8123200-021	EM-000386	SCHWARZBECK	1 year	2024-02-22



1.2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

No.	ITEM	FREQUENCY	UNCERTAINTY
1	Conducted emissions	9kHz~30MHz	±2.66dB
2	Radiated emissions	9KHz ~ 30MHz	±0.769dB
		30MHz ~ 1GMHz	±0.877dB
		1GHz ~ 18GHz	±0.777dB
		18GHz ~ 40GHz	±1.315dB

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

1.3 TEST LOCATION

The tests and measurements refer to this report were performed by EMC testing Lab. of CVC Testing Technology Co., Ltd.

Address: No.3,TiantaiyiRoad,KaitaiAvenue,ScienceCity,Guangzhou,China
Post Code: 510663 Tel: 020-32293888
FAX: 020-32293889 E-mail: office@cvc.org.cn



2 GENERAL INFORMATION

2.1 GENERAL PRODUCT INFORMATION

PRODUCT	Micro Music System
MODEL	TAM8905/37
ADDITIONAL MODEL	TAM8905,M8905,TAM8905/10,TAM8905/12,TAM8905/98,TAM8905/67,M8905/37,TAM8905x/yy, M8905x/yy (x = A-Z or blank, for different color or package; yy = 00 - 99, for country code)
FCC ID	2AR2STAM8905
STATUS OF EUT	Engineering Prototype
POWER SUPPLY	AC 120V,60Hz
MODULATIONTECHNOLOGY	DSSS, OFDM
MODULATION TYPE	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
OPERATING FREQUENCY	2412MHz ~ 2462MHz for 11b/g/n(HT20) 2422MHz ~ 2452MHz for 11n(HT40)
NUMBER OF CHANNEL	802.11b/g/n (HT20): 11 802.11n (HT40): 7
PEAK OUTPUT POWER	20.30dBm (Maximum)
ANTENNA TYPE AND GAIN (Remark 4)	PIFA Antenna, with 2.50dBi gain
HW	VER 0.0
SW	FS2340-0000-0501
I/O PORTS	Refer to user's manual
ACCESSORY DEVICE	Remote Control*1, subwoofer*2

Remark:

- For more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- Please refer to the EUT photo document for detailed product photo. (Report NO.: FCC2023-0043-EUT)
- Please refer to the antenna report.
- Model difference: All models are identical except model name and country destination for marketing purpose.
- The EUT have SISO function, provides 1 completed transmitter and 1 receiver.

MODULATION MODE	TX FUNCTION
802.11b	1TX/1RX
802.11g	1TX/1RX
802.11n (HT20)	1TX/1RX
802.11n (HT40)	1TX/1RX



2.2 OTHER INFORMATION

Operating frequency of each channel

2.4G WIFI					
802.11b/g/n (HT20)					
CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
1	2412	5	2432	9	2452
2	2417	6	2437	10	2457
3	2422	7	2442	11	2462
4	2427	8	2447		
802.11n (HT40)					
CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
3	2422	6	2437	9	2452
4	2427	7	2442		
5	2432	8	2447		

The channels which were indicated in bold type of the above channel list were selected as representative test channel. Therefore, only the data of the test channels were recorded in this report.



2.3 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, xyz axis and antenna ports

EUT CONFIGURE MODE	APPLICABLE TEST ITEMS				DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	√	√	2.4G WIFI Function

Where **RE < 1G**: Radiated Emission below 1GHz **RE ≥ 1G**: Radiated Emission above 1GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

RADIATED EMISSION TEST (BELOW 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
- The worst case was found when positioned on x axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

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

For the test results, only the worst case was shown in test report.

RADIATED EMISSION TEST (ABOVE 1 GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, XYZ axis, antenna ports (if EUT with antenna diversity architecture) and packet type.
- The worst case was found when positioned on x axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE PARAMETER
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0 Mbps
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0 Mbps
A	802.11n(HT20)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
A	802.11n(HT40)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0



POWER LINE CONDUCTED EMISSION TEST:

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

EUT CONFIGURE MODE	TESTED CONDITION
A	WIFI (2.4G) Link

ANTENNA PORT CONDUCTED MEASUREMENT:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE PARAMETER
A	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0 Mbps
A	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0 Mbps
A	802.11n(HT20)	1 to 11	1, 6, 11	OFDM	BPSK	MCS0
A	802.11n(HT40)	3 to 9	3, 6, 9	OFDM	BPSK	MCS0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE (SYSTEM)	TESTED BY
RSE<1G	25.3deg. C, 59%RH	AC 120V,60Hz	Li YueAo
RSE≥1G	25.3deg. C, 59%RH	AC 120V,60Hz	Li YueAo
PLC	25.7deg. C, 54%RH	AC 120V,60Hz	Li YueAo
APCM	25.7deg. C, 54%RH	AC 120V,60Hz	Li YueAo



2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC PART 15, Subpart C. Section 15.247

KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards

2.5 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.

Support Equipment							
NO	Description	Brand	Model No.	Serial Number	Supplied by		
1	N/A	N/A	N/A	N/A	N/A		
Support Cable							
NO	Description	Quantity (Number)	Length (cm)	Detachable (Yes/ No)	Shielded (Yes/ No)	Cores (Number)	Supplied by
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 Limit

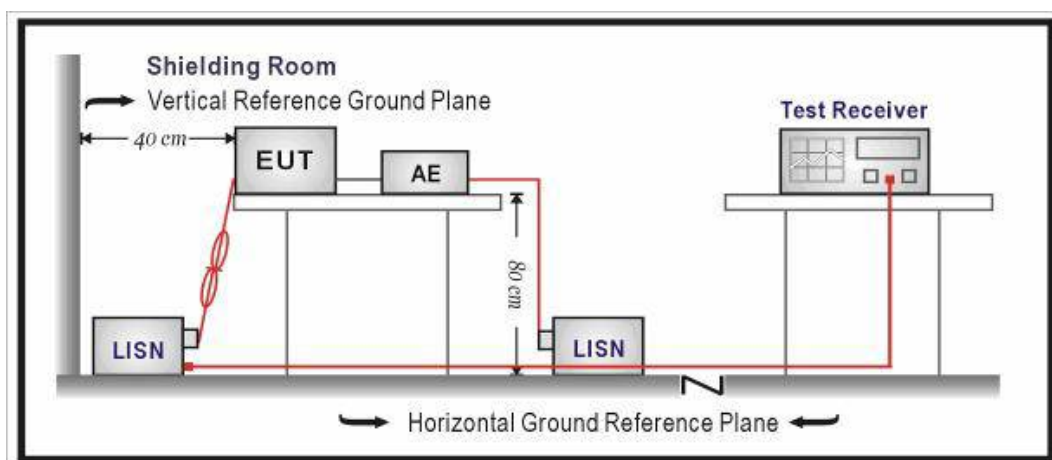
Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46*
0.5 - 5	56	46
5 - 30	60	50

NOTE: 1. The lower limit shall apply at the transition frequencies.
 NOTE: 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3.1.2 Measurement procedure

- The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the Test photographs) Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source. The equipment under test shall be placed on a support of non-metallic material, the height of which shall be 1.5m above the ground,
- The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

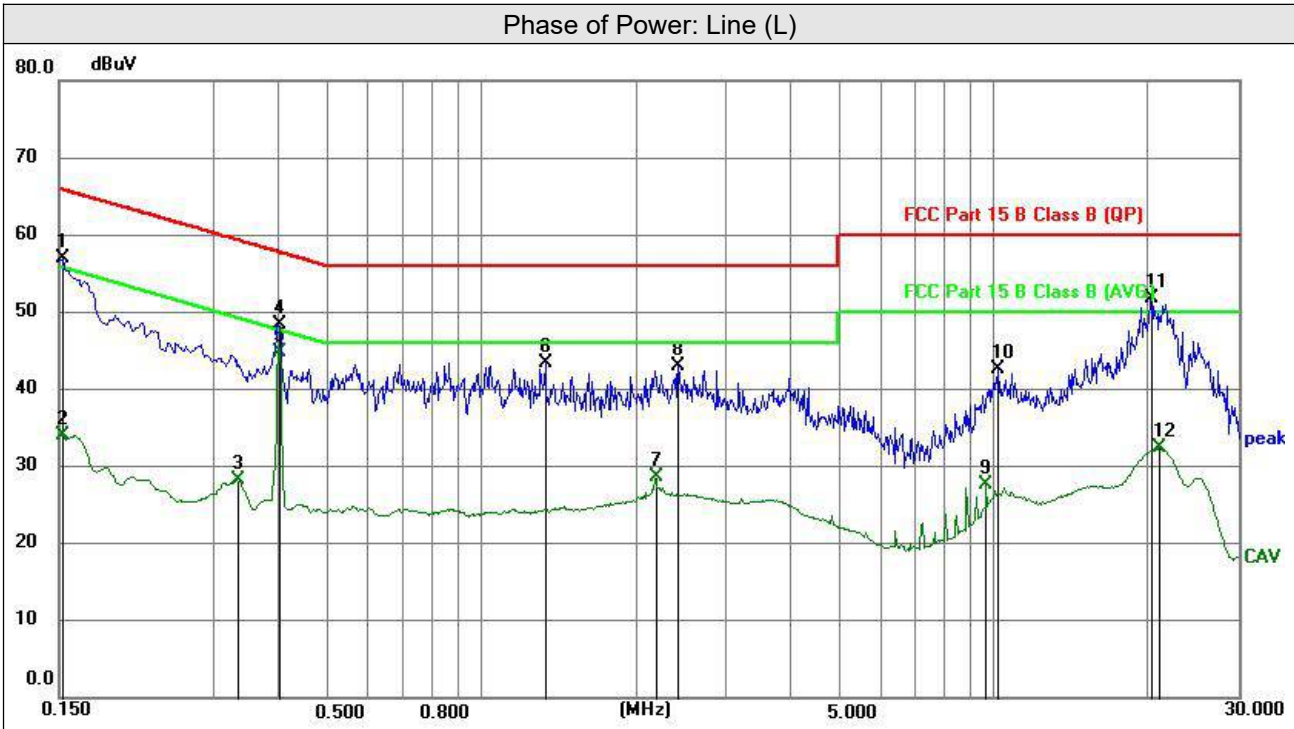
3.1.3 Test setup





3.1.4 Test results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / CISPR Average (AVG), 9kHz
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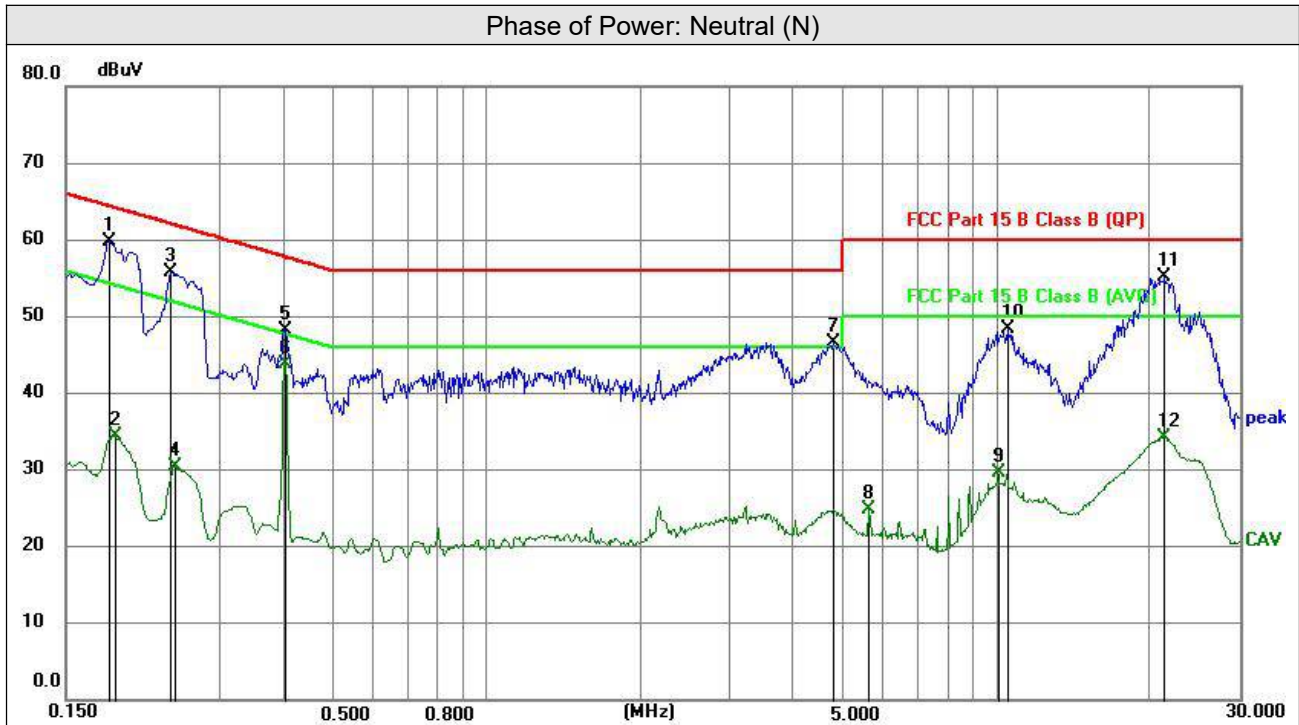
No.	Frequency	Reading	Correction Factor	Emissions Level	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	Detector
1	0.1522	46.73	10.18	56.91	65.88	-8.97	peak
2	0.1522	23.91	10.18	34.09	55.88	-21.79	AVG
3	0.3344	18.04	10.17	28.21	49.34	-21.13	AVG
4	0.4019	38.26	10.11	48.37	57.81	-9.44	peak
5	0.4042	34.74	10.11	44.85	47.77	-2.92	AVG
6	1.3312	33.36	10.05	43.41	56.00	-12.59	peak
7	2.1885	18.44	10.09	28.53	46.00	-17.47	AVG
8	2.4315	32.83	10.09	42.92	56.00	-13.08	peak
9	9.6720	17.44	10.10	27.54	50.00	-22.46	AVG
10	10.2299	32.39	10.11	42.50	60.00	-17.50	peak
11	20.2110	41.46	10.39	51.85	60.00	-8.15	peak
12	21.0006	22.07	10.37	32.44	50.00	-17.56	AVG

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / CISPR Average (AVG), 9kHz
-----------------	----------------	--	---



No.	Frequency	Reading	Correction Factor	Emissions Level	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	Detector
1	0.1815	49.69	10.15	59.84	64.42	-4.58	peak
2	0.1860	24.31	10.15	34.46	54.21	-19.75	AVG
3	0.2400	45.70	10.16	55.86	62.10	-6.24	peak
4	0.2445	20.19	10.16	30.35	51.94	-21.59	AVG
5	0.4020	38.12	10.09	48.21	57.81	-9.60	peak
6	0.4042	33.78	10.09	43.87	47.77	-3.90	AVG
7	4.8029	36.61	10.06	46.67	56.00	-9.33	peak
8	5.6490	14.77	10.01	24.78	50.00	-25.22	AVG
9	10.0883	19.45	10.11	29.56	50.00	-20.44	AVG
10	10.5090	38.28	10.13	48.41	60.00	-11.59	peak
11	21.4755	44.71	10.39	55.10	60.00	-4.90	peak
12	21.4755	23.85	10.39	34.24	50.00	-15.76	AVG

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value.



3.2 RADIATED EMISSION AND RESTRICTED BANDS MEASUREMENTS

3.2.1 Limit

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (Microvolts/Meter)	MEASUREMENT DISTANCE (Meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE: 1. The lower limit shall apply at the transition frequencies.
NOTE: 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
NOTE: 3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

3.2.2 Measurement procedure

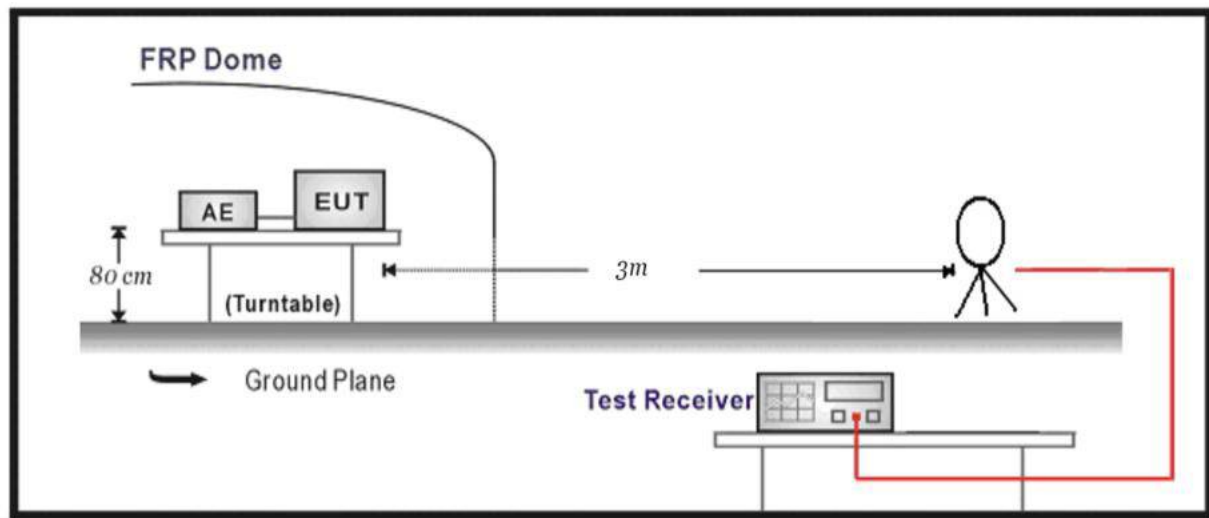
- The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.
- During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

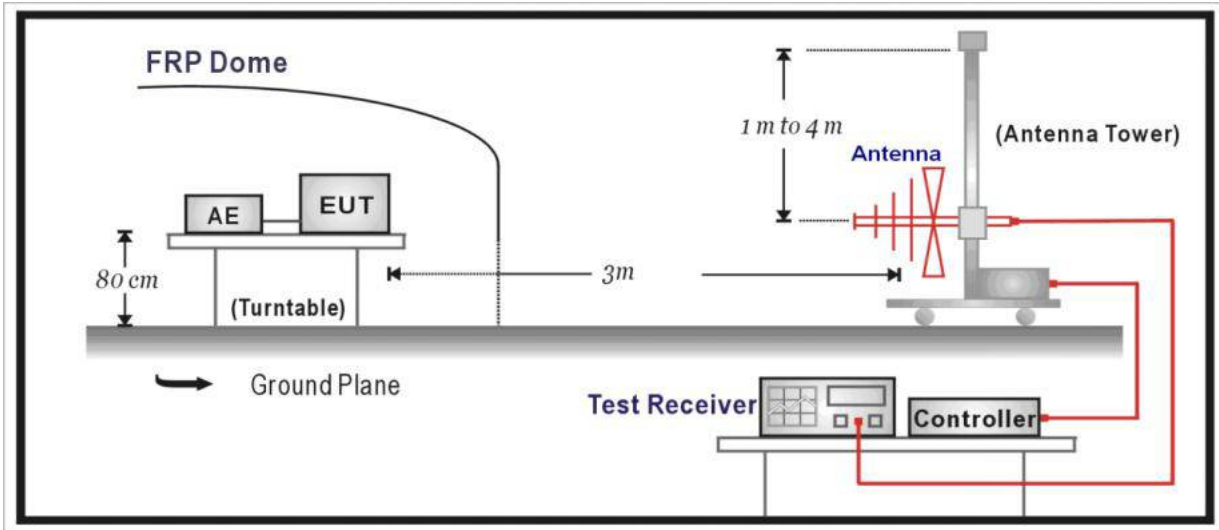
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz(Duty cycle > 98%) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

3.2.3 Test setup

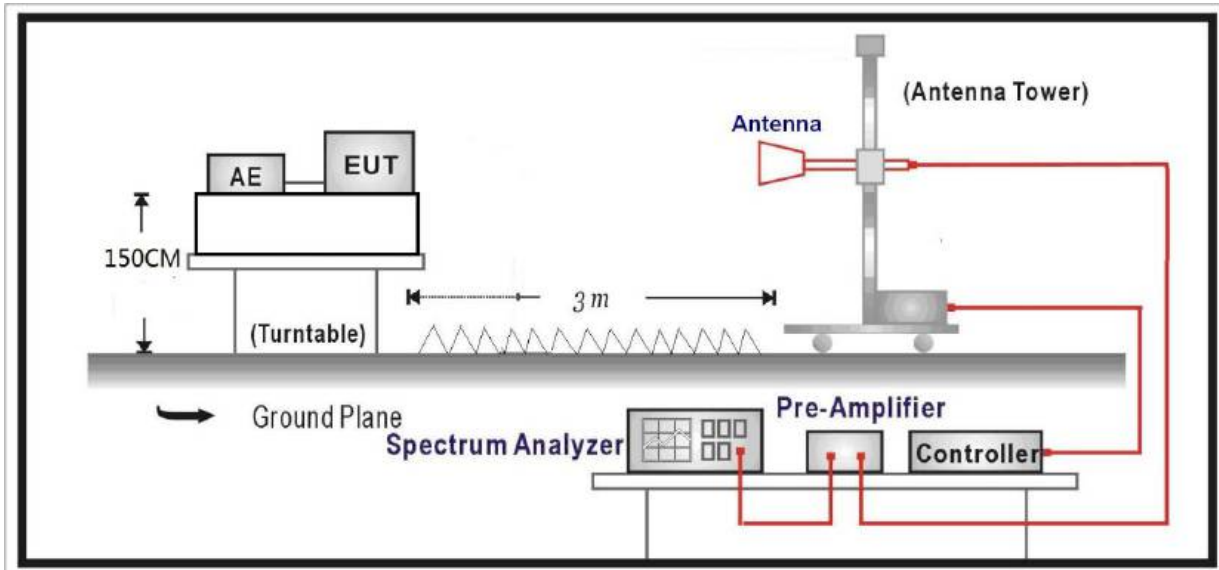
Below 30MHz Test Setup:



Below 1GHz Test Setup:



Above 1GHz Test Setup:





3.2.4 Test results

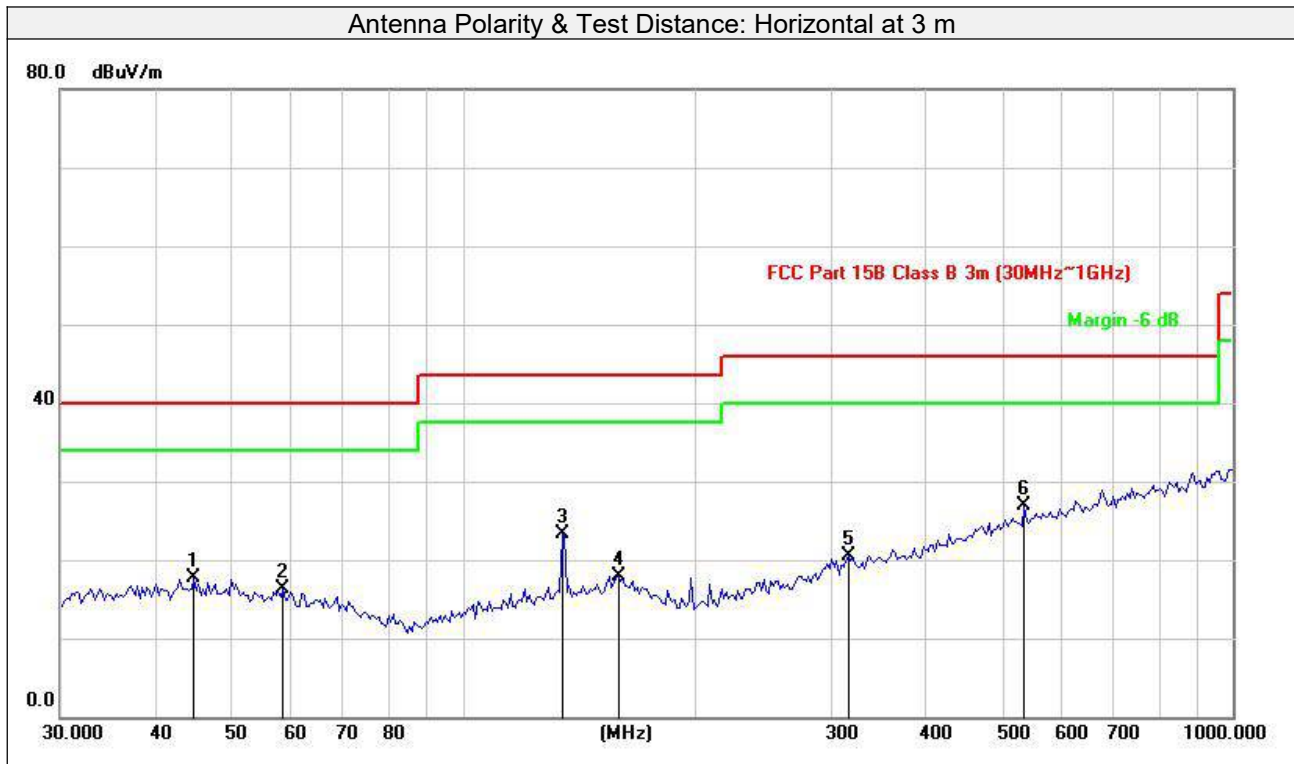
9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1GHz Worst-Case Data:

802.11n40

Frequency Range	30MHz ~ 1GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Channel	Channel 3		



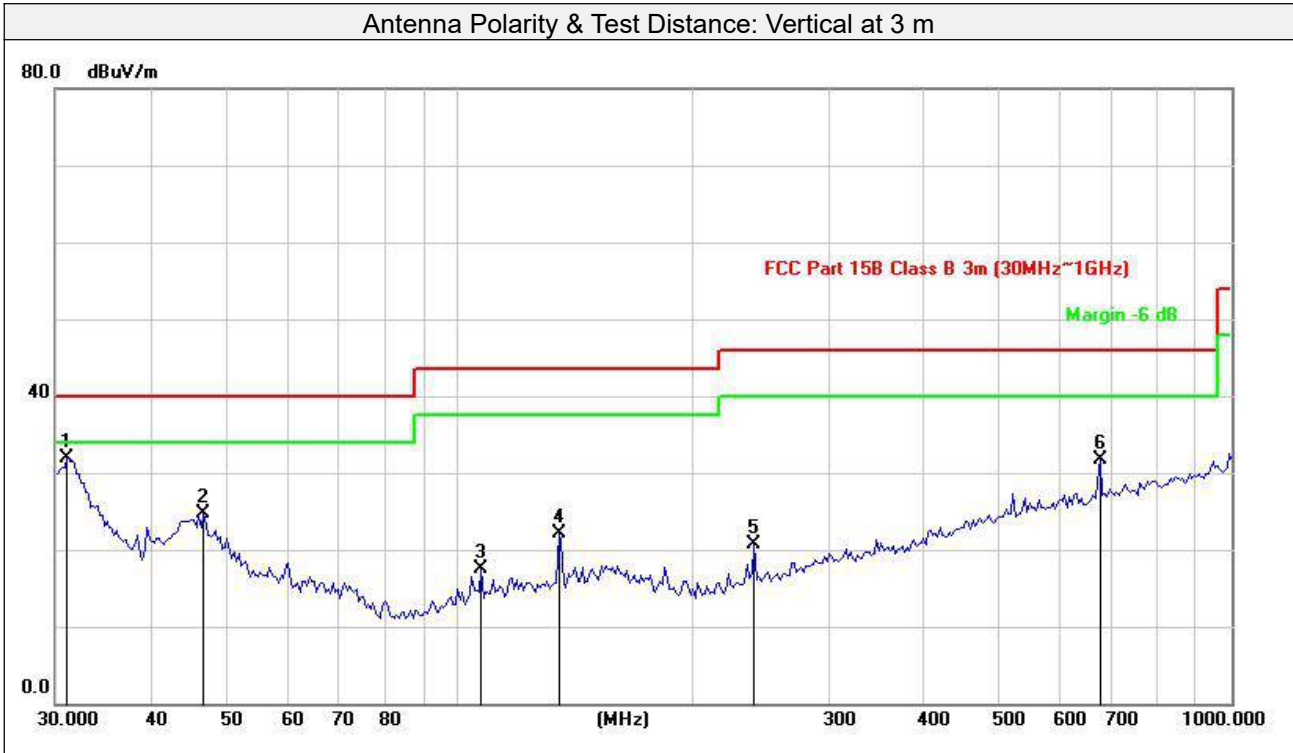
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	44.7433	33.12	-15.42	17.70	40.00	-22.30	peak	221	279
2	58.4074	32.83	-16.52	16.31	40.00	-23.69	peak	185	354
3	134.5592	39.26	-15.88	23.38	43.50	-20.12	peak	216	59
4	159.2250	32.74	-14.75	17.99	43.50	-25.51	peak	227	117
5	316.5889	33.47	-13.05	20.42	46.00	-25.58	peak	206	87
6 *	535.7073	33.33	-6.45	26.88	46.00	-19.12	peak	200	275

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Frequency Range	30MHz ~ 1GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Channel	Channel 3		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1 *	31.0706	48.66	-16.76	31.90	40.00	-8.10	peak	125	356
2	46.6664	40.26	-15.47	24.79	40.00	-15.21	peak	134	283
3	106.7587	35.48	-17.96	17.52	43.50	-25.98	peak	116	99
4	134.5592	37.92	-15.88	22.04	43.50	-21.46	peak	110	315
5	240.8304	35.95	-15.33	20.62	46.00	-25.38	peak	129	198
6	675.2080	35.83	-4.03	31.80	46.00	-14.20	peak	132	249

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Frequency Range	30MHz ~ 1GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Channel	Channel 9		

Antenna Polarity & Test Distance: Horizontal at 3 m



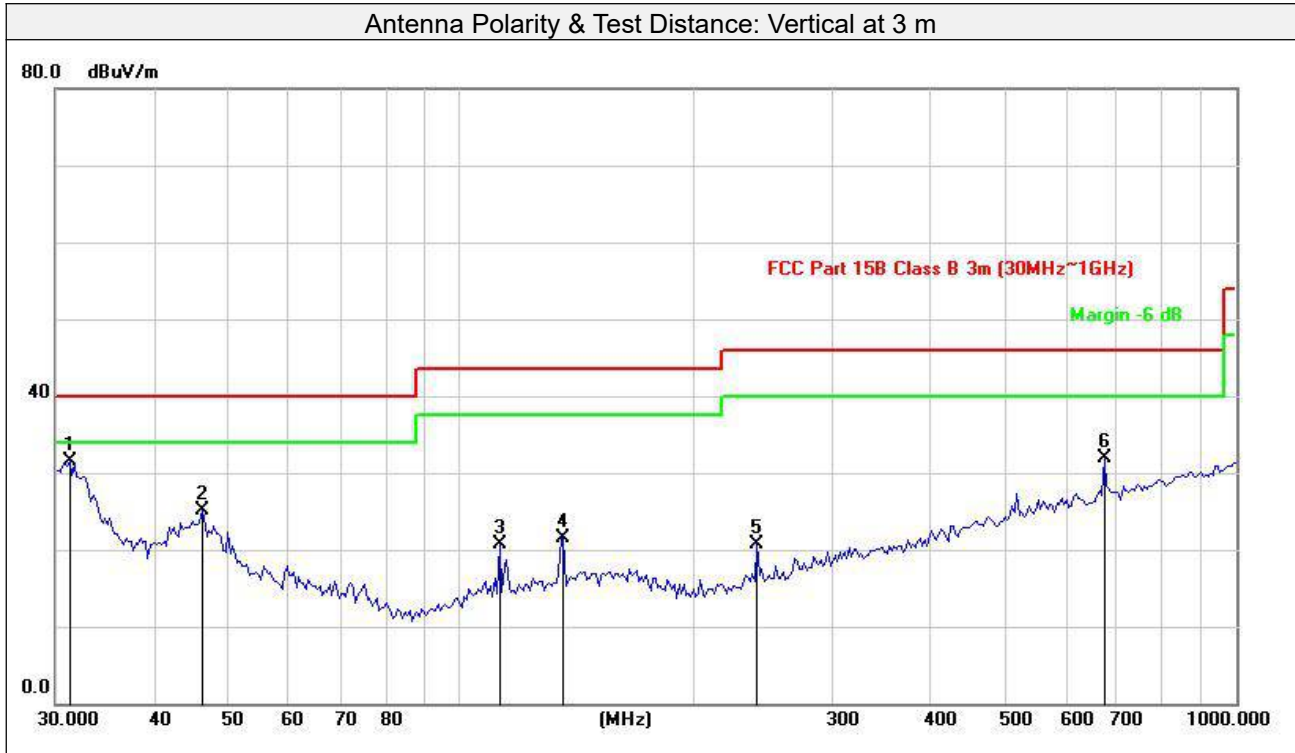
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	46.9948	32.60	-15.48	17.12	40.00	-22.88	peak	221	171
2	59.2325	33.15	-16.62	16.53	40.00	-23.47	peak	185	157
3	135.5062	39.02	-15.82	23.20	43.50	-20.30	peak	196	215
4	239.1473	33.75	-15.40	18.35	46.00	-27.65	peak	213	117
5	346.8092	32.99	-12.08	20.91	46.00	-25.09	peak	220	151
6 *	675.2080	32.55	-4.03	28.52	46.00	-17.48	peak	185	186

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Frequency Range	30MHz ~ 1GHz	Detector Function	Peak (PK) Quasi-peak (QP)
Test Channel	Channel 9		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1 *	31.2893	48.16	-16.71	31.45	40.00	-8.55	peak	125	188
2	46.3402	40.50	-15.46	25.04	40.00	-14.96	peak	114	280
3	112.1305	38.14	-17.46	20.68	43.50	-22.82	peak	136	168
4	135.5062	37.41	-15.82	21.59	43.50	-21.91	peak	100	73
5	240.8304	36.13	-15.33	20.80	46.00	-25.20	peak	150	260
6	675.2080	35.96	-4.03	31.93	46.00	-14.07	peak	127	254

Remarks:

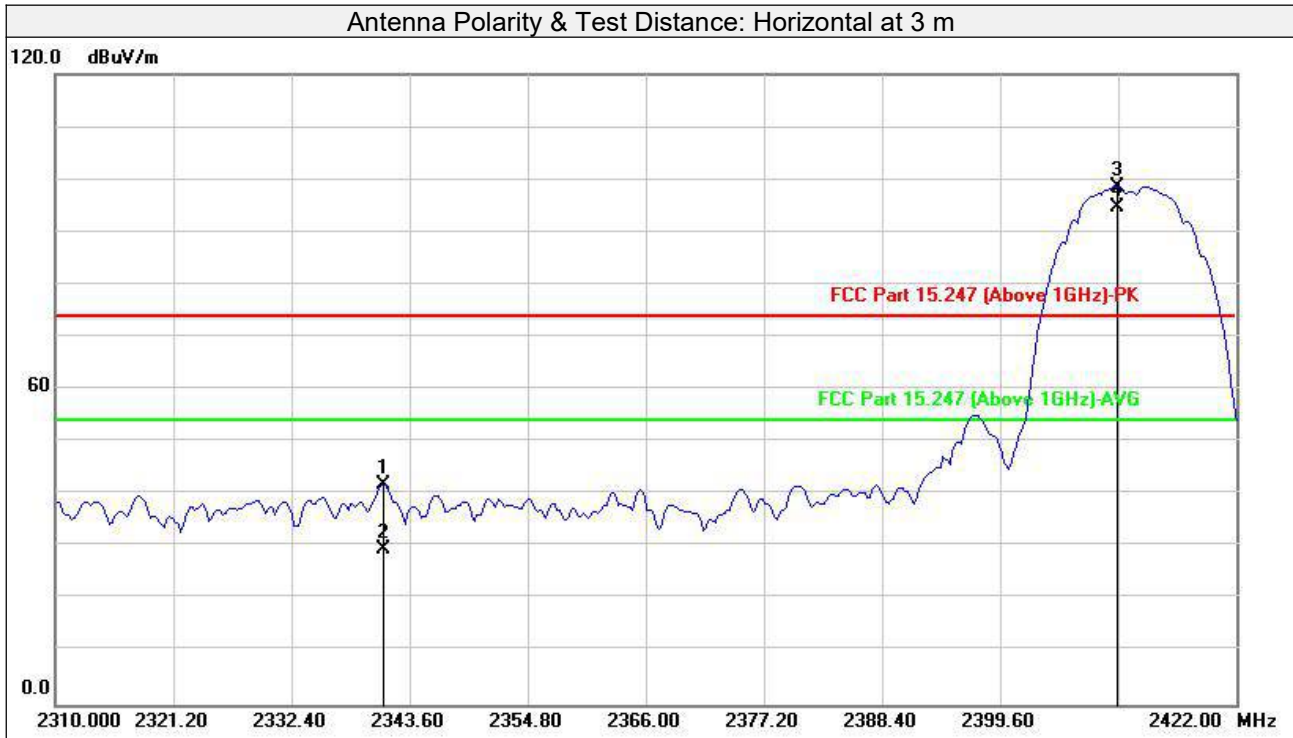
1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor)
2. Margin value = Emission level – Limit value



Above 1GHz Data:

802.11b

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 1		



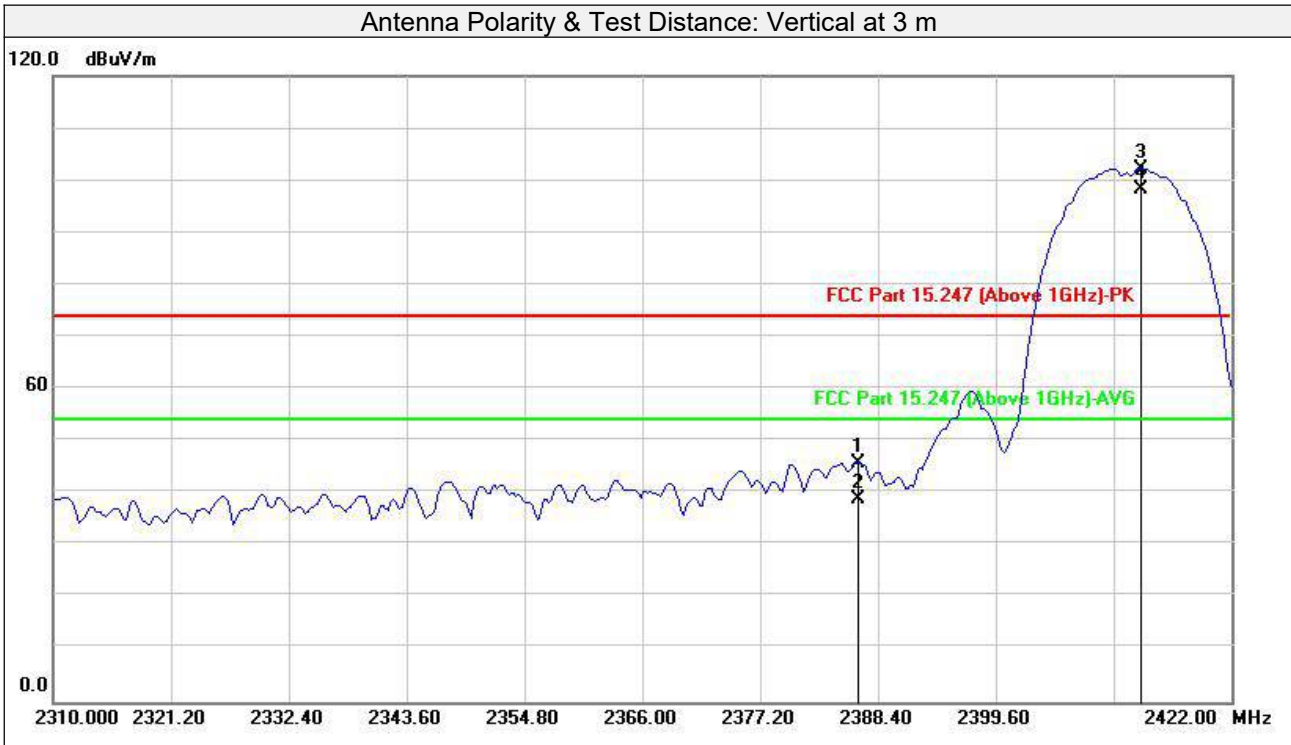
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	2341.198	41.18	0.80	41.98	74.00	-32.02	peak	114	231
2	2341.198	28.90	0.80	29.70	54.00	-24.30	AVG	114	231
3 #	2410.778	97.78	0.83	98.61			peak	114	231
4 #	2410.778	93.81	0.83	94.64			AVG	114	231
5	4824.000	46.03	6.65	52.68	74.00	-21.32	peak	351	188
6	4824.000	40.61	6.65	47.26	54.00	-6.74	AVG	351	188
7	7236.000	40.91	10.15	51.06	74.00	-22.94	peak	124	337
8	7236.000	28.50	10.15	38.65	54.00	-15.35	AVG	124	337

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 1		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	2386.537	44.96	0.83	45.79	74.00	-28.21	peak	155	176
2	2386.537	38.02	0.83	38.85	54.00	-15.15	AVG	155	176
3 #	2413.471	101.44	0.83	102.27			peak	155	176
4 #	2413.471	97.45	0.83	98.28			AVG	155	176
5	4824.000	44.66	6.65	51.31	74.00	-22.69	peak	100	224
6	4824.000	39.12	6.65	45.77	54.00	-8.23	AVG	100	224
7	7236.000	41.10	10.15	51.25	74.00	-22.75	peak	110	241
8	7236.000	28.48	10.15	38.63	54.00	-15.37	AVG	110	241

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



CVC Testing Technology Co., Ltd.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 6		

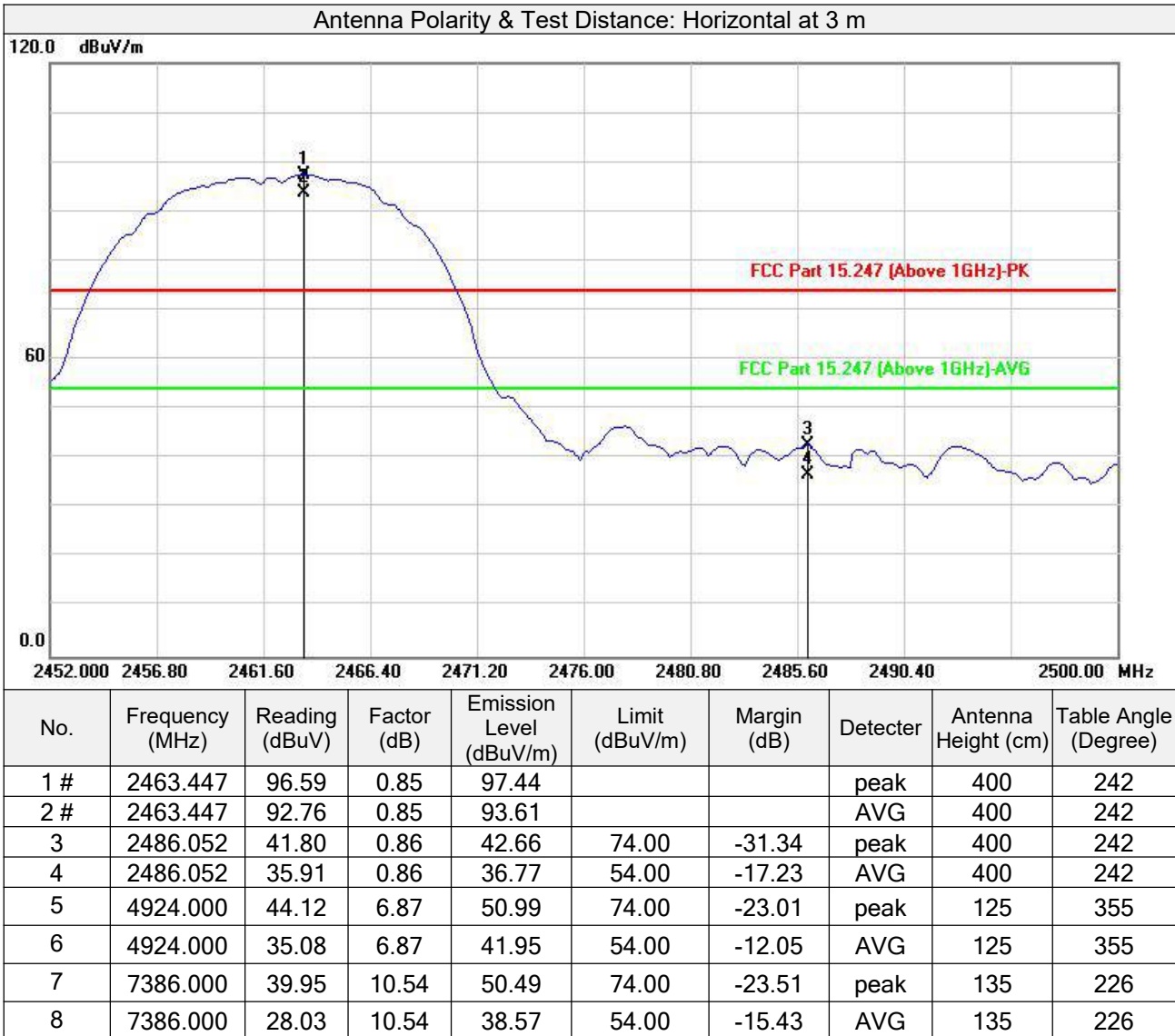
Antenna Polarity & Test Distance: Horizontal at 3 m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	4874.000	44.46	6.75	51.21	74.00	-22.79	peak	100	135
2	4874.000	35.80	6.75	42.55	54.00	-11.45	AVG	100	135
3	7311.000	40.78	10.35	51.13	74.00	-22.87	peak	100	117
4	7311.000	28.67	10.35	39.02	54.00	-14.98	AVG	100	117
Antenna Polarity & Test Distance: Vertical at 3 m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	4874.000	45.43	6.75	52.18	74.00	-21.82	peak	100	234
2	4874.000	39.98	6.75	46.73	54.00	-7.27	AVG	100	234
3	7311.000	40.79	10.35	51.14	74.00	-22.86	peak	100	304
4	7311.000	28.63	10.35	38.98	54.00	-15.02	AVG	100	304

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 11		

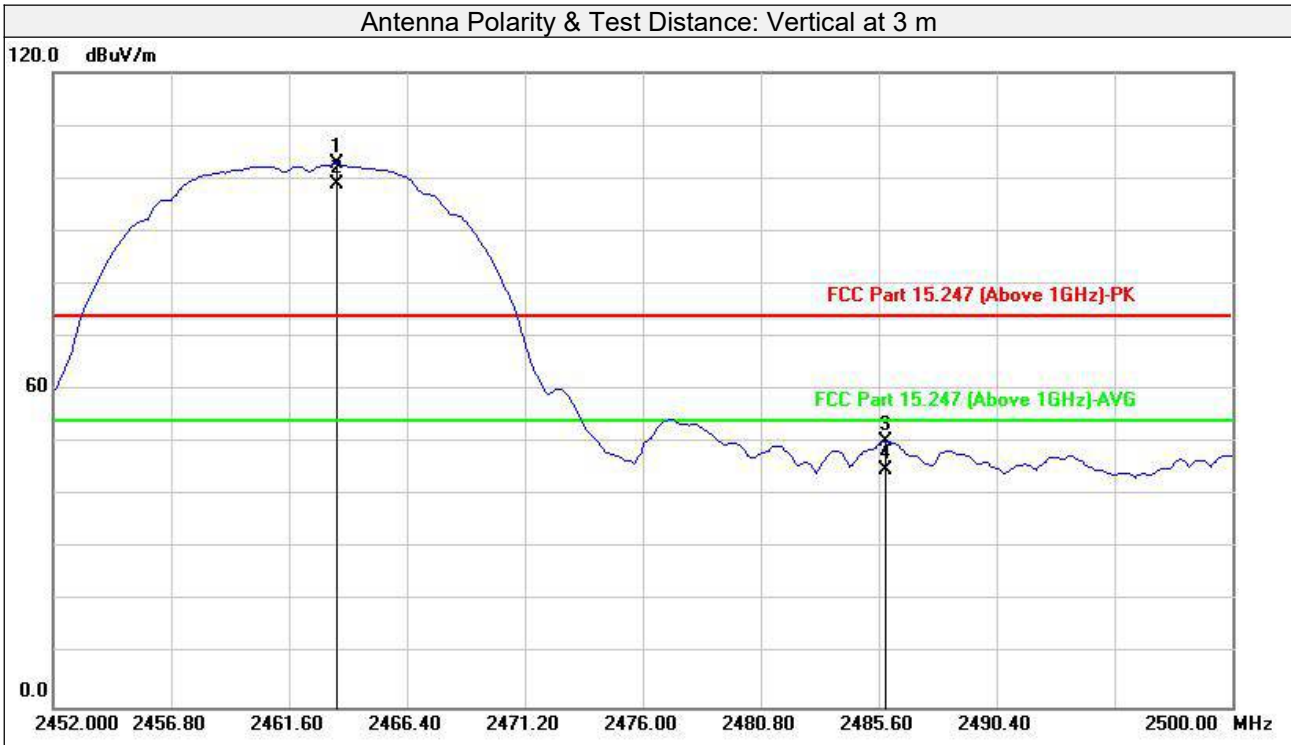


Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 11		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1 #	2463.543	101.79	0.84	102.63			peak	194	187
2 #	2463.543	97.88	0.84	98.72			AVG	194	187
3	2485.860	49.52	0.86	50.38	74.00	-23.62	peak	194	187
4	2485.860	44.14	0.86	45.00	54.00	-9.00	AVG	194	187
5	4924.000	45.15	6.87	52.02	74.00	-21.98	peak	239	215
6	4924.000	38.19	6.87	45.06	54.00	-8.94	AVG	239	215
7	7386.000	41.26	10.54	51.80	74.00	-22.20	peak	100	307
8	7386.000	28.02	10.54	38.56	54.00	-15.44	AVG	100	307

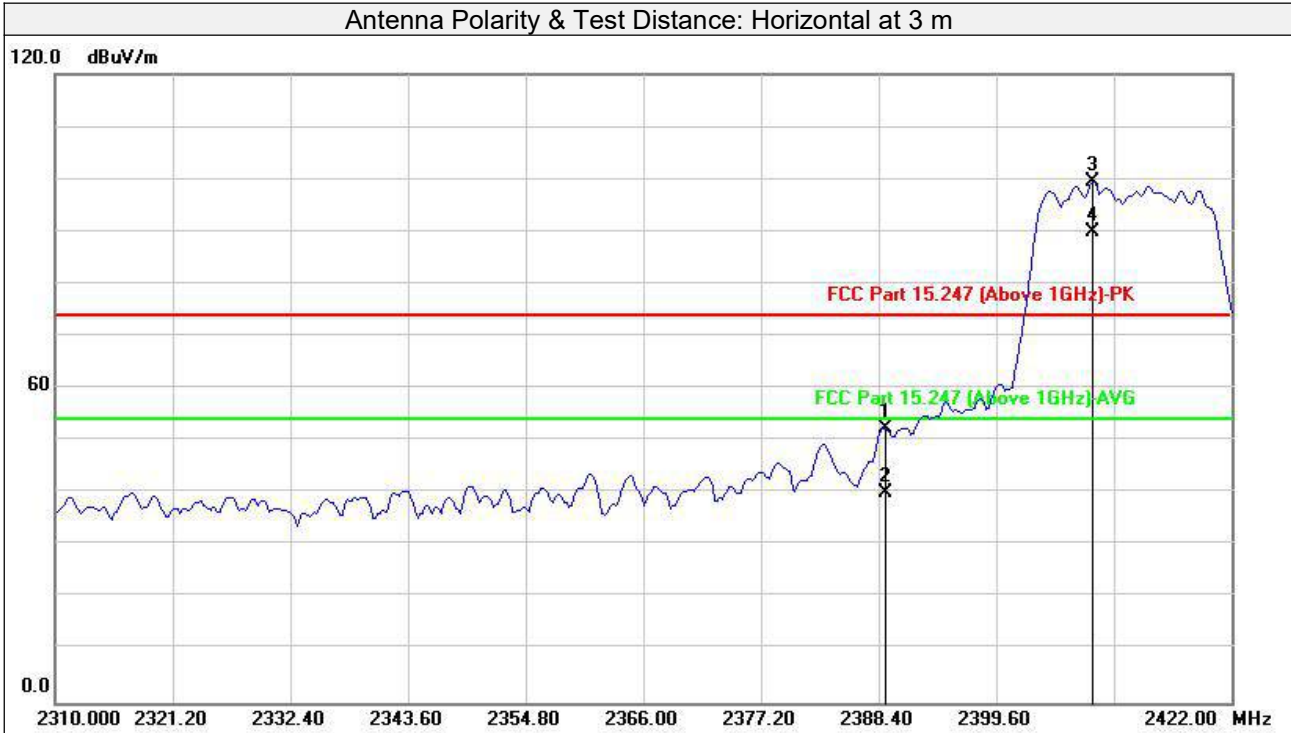
Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



802.11g

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 1		



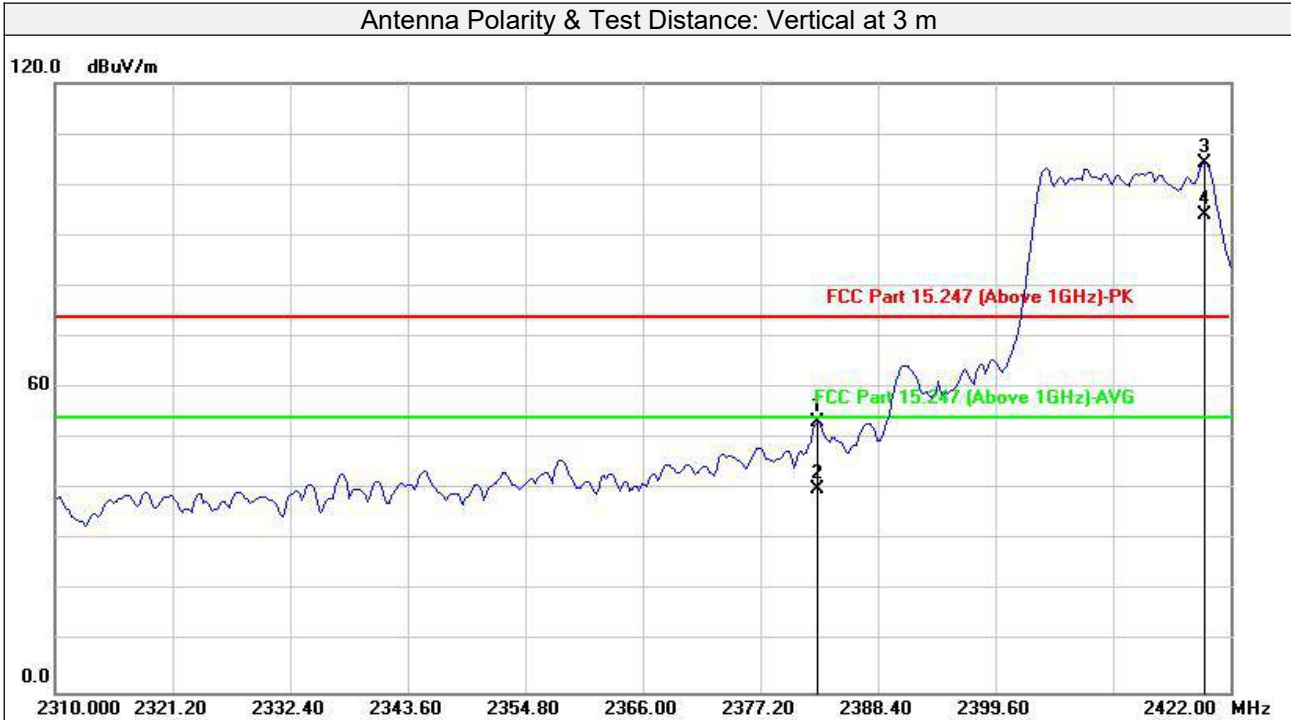
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	2389.006	51.66	0.83	52.49	74.00	-21.51	peak	111	231
2	2389.006	39.12	0.83	39.95	54.00	-14.05	AVG	111	231
3 #	2408.758	98.66	0.83	99.49			peak	111	231
4 #	2408.758	88.88	0.83	89.71			AVG	111	231
5	4824.000	42.70	6.65	49.35	74.00	-24.65	peak	100	326
6	4824.000	29.36	6.65	36.01	54.00	-17.99	AVG	100	326
7	7236.000	40.99	10.15	51.14	74.00	-22.86	peak	210	108
8	7236.000	28.53	10.15	38.68	54.00	-15.32	AVG	210	108

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 1		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	2382.721	52.53	0.82	53.35	74.00	-20.65	peak	117	181
2	2382.721	39.35	0.82	40.17	54.00	-13.83	AVG	117	181
3 #	2419.531	103.44	0.83	104.27			peak	117	181
4 #	2419.531	93.28	0.83	94.11			AVG	117	181
5	4824.000	41.38	6.65	48.03	74.00	-25.97	peak	122	239
6	4824.000	28.67	6.65	35.32	54.00	-18.68	AVG	122	239
7	7236.000	39.59	10.15	49.74	74.00	-24.26	peak	136	337
8	7236.000	28.53	10.15	38.68	54.00	-15.32	AVG	136	337

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



CVC Testing Technology Co., Ltd.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 6		

Antenna Polarity & Test Distance: Horizontal at 3 m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	4874.000	42.06	6.75	48.81	74.00	-25.19	peak	106	237
2	4874.000	28.93	6.75	35.68	54.00	-18.32	AVG	106	237
3	7311.000	41.87	10.35	52.22	74.00	-21.78	peak	100	315
4	7311.000	28.67	10.35	39.02	54.00	-14.98	AVG	100	315

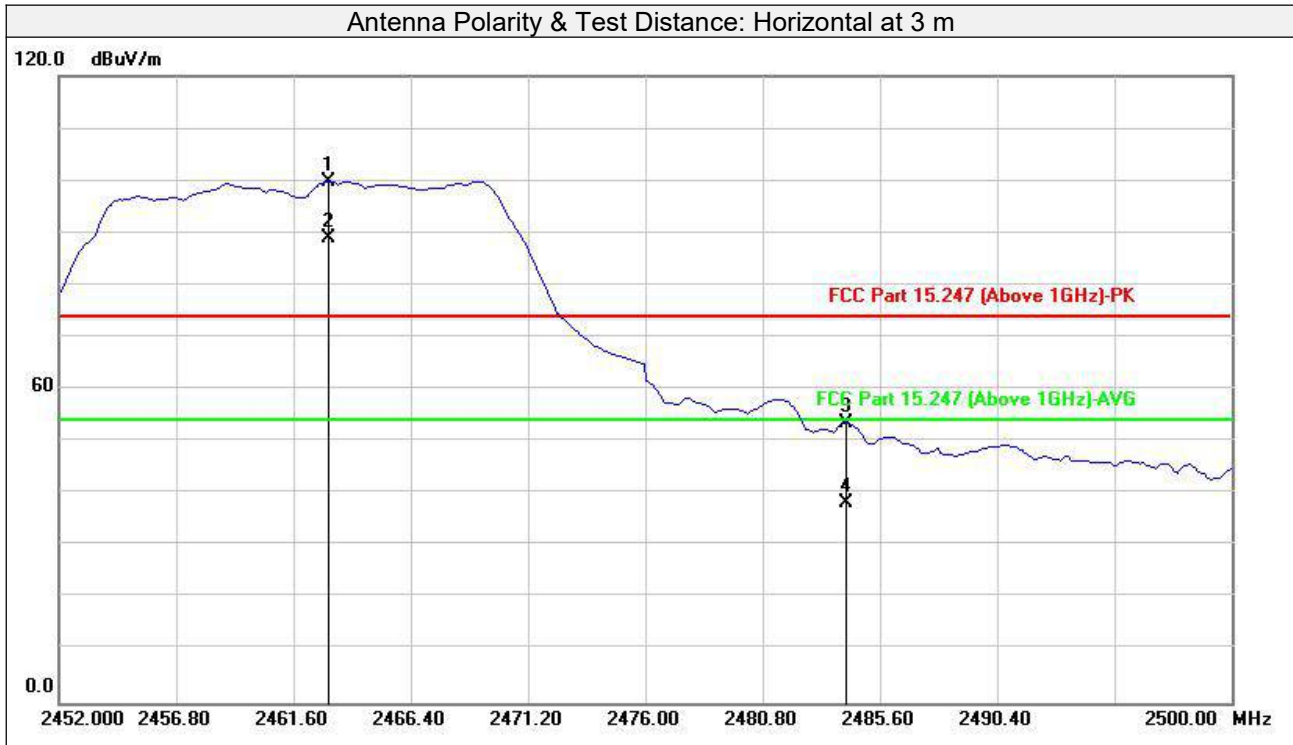
Antenna Polarity & Test Distance: Vertical at 3 m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	4874.000	41.83	6.75	48.58	74.00	-25.42	peak	113	105
2	4874.000	28.57	6.75	35.32	54.00	-18.68	AVG	113	105
3	7311.000	41.37	10.35	51.72	74.00	-22.28	peak	134	227
4	7311.000	28.65	10.35	39.00	54.00	-15.00	AVG	134	227

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 11		



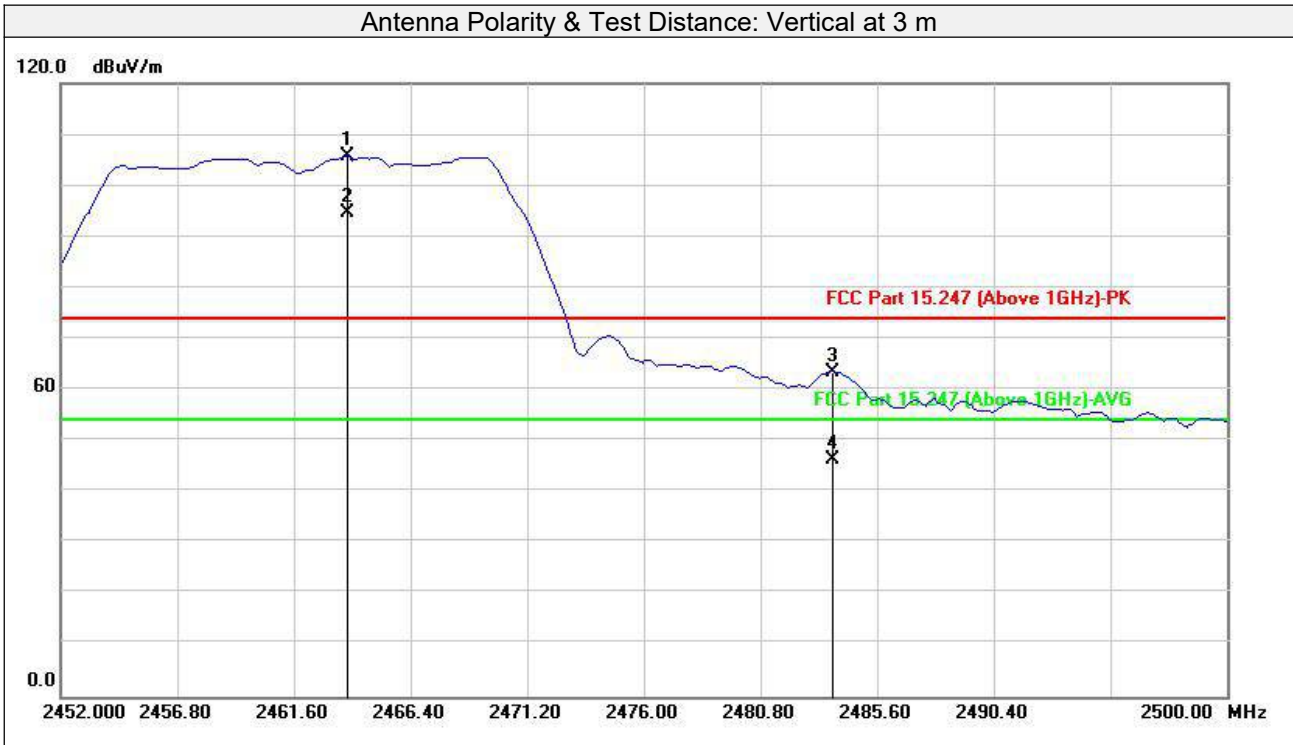
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1 #	2463.062	99.01	0.85	99.86			peak	394	236
2 #	2463.062	87.97	0.85	88.82			AVG	394	236
3	2484.224	52.66	0.86	53.52	74.00	-20.48	peak	394	236
4	2484.224	37.33	0.86	38.19	54.00	-15.81	AVG	394	236
5	4924.000	41.10	6.87	47.97	74.00	-26.03	peak	117	231
6	4924.000	28.70	6.87	35.57	54.00	-18.43	AVG	117	231
7	7386.000	39.83	10.54	50.37	74.00	-23.63	peak	204	246
8	7386.000	27.97	10.54	38.51	54.00	-15.49	AVG	204	246

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 11		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1 #	2463.832	104.94	0.84	105.78			peak	218	180
2 #	2463.832	93.87	0.84	94.71			AVG	218	180
3	2483.744	62.75	0.85	63.60	74.00	-10.40	peak	218	180
4	2483.744	45.48	0.85	46.33	54.00	-7.67	AVG	218	180
5	4924.000	42.79	6.87	49.66	74.00	-24.34	peak	148	199
6	4924.000	29.57	6.87	36.44	54.00	-17.56	AVG	148	199
7	7386.000	40.00	10.54	50.54	74.00	-23.46	peak	110	204
8	7386.000	27.96	10.54	38.50	54.00	-15.50	AVG	110	204

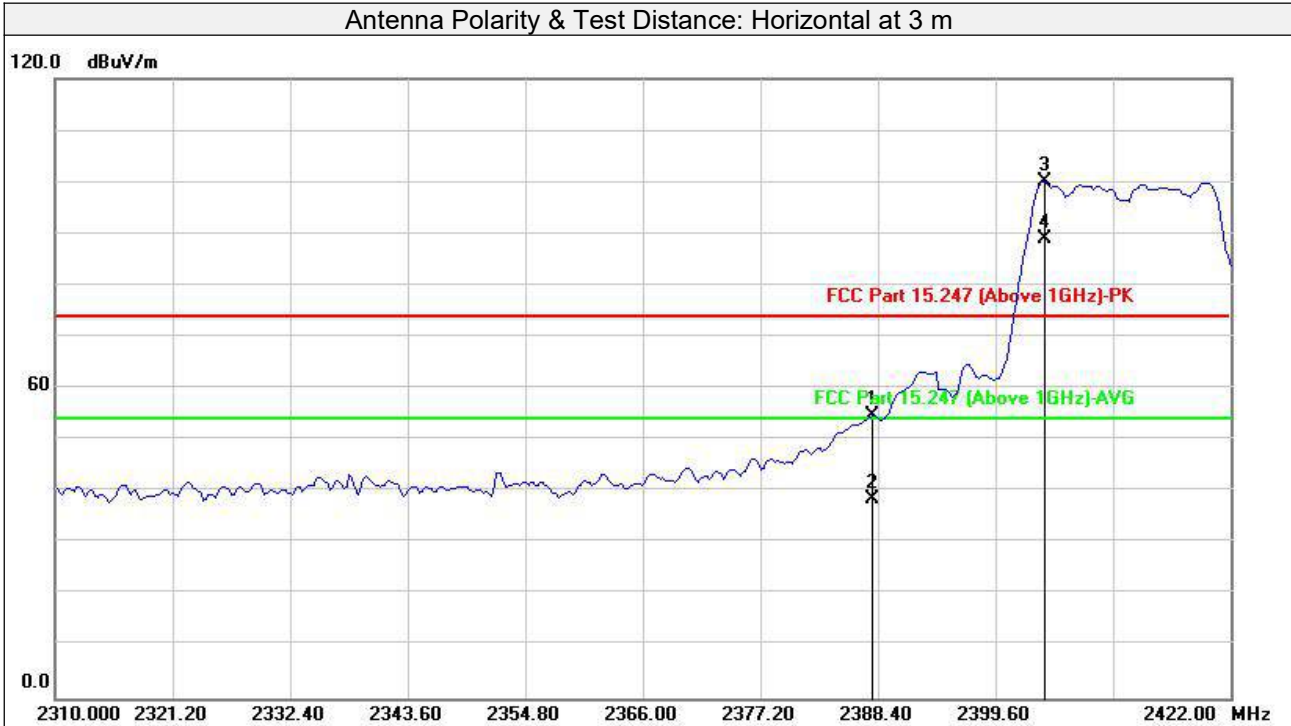
Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency.
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



802.11n20

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 1		



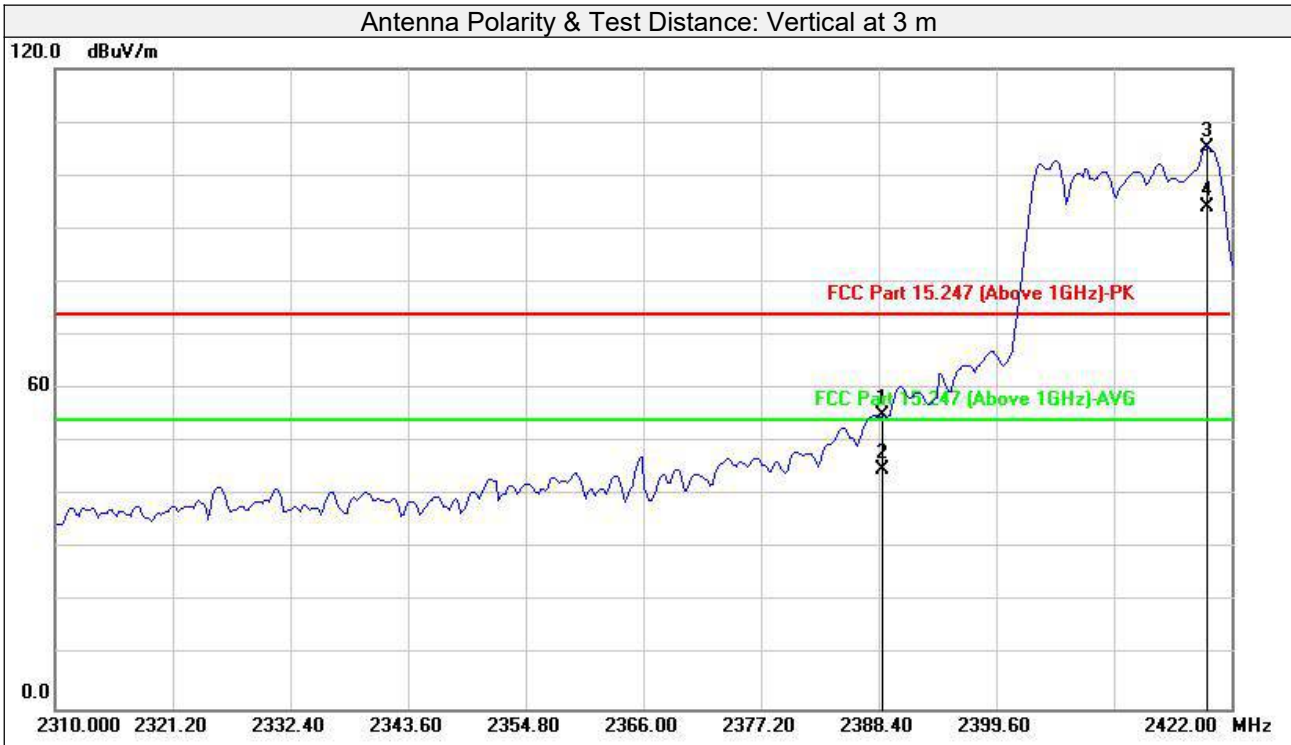
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	2387.884	53.84	0.83	54.67	74.00	-19.33	peak	110	231
2	2387.884	37.86	0.83	38.69	54.00	-15.31	AVG	110	231
3 #	2404.269	99.20	0.83	100.03			peak	110	231
4 #	2404.269	88.27	0.83	89.10			AVG	110	231
5	4824.000	42.37	6.65	49.02	74.00	-24.98	peak	106	208
6	4824.000	29.57	6.65	36.22	54.00	-17.78	AVG	106	208
7	7236.000	41.73	10.15	51.88	74.00	-22.12	peak	160	114
8	7236.000	28.64	10.15	38.79	54.00	-15.21	AVG	160	114

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency.
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 1		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	2388.782	54.24	0.83	55.07	74.00	-18.93	peak	155	182
2	2388.782	44.16	0.83	44.99	54.00	-9.01	AVG	155	182
3 #	2419.756	104.32	0.84	105.16			peak	155	182
4 #	2419.756	93.20	0.84	94.04			AVG	155	182
5	4824.000	41.97	6.65	48.62	74.00	-25.38	peak	100	330
6	4824.000	28.77	6.65	35.42	54.00	-18.58	AVG	100	330
7	7236.000	40.82	10.15	50.97	74.00	-23.03	peak	118	91
8	7236.000	28.64	10.15	38.79	54.00	-15.21	AVG	118	91

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



CVC Testing Technology Co., Ltd.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 6		

Antenna Polarity & Test Distance: Horizontal at 3 m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	4874.000	42.30	6.75	49.05	74.00	-24.95	peak	100	267
2	4874.000	29.14	6.75	35.89	54.00	-18.11	AVG	100	267
3	7311.000	42.32	10.35	52.67	74.00	-21.33	peak	100	185
4	7311.000	28.66	10.35	39.01	54.00	-14.99	AVG	100	185

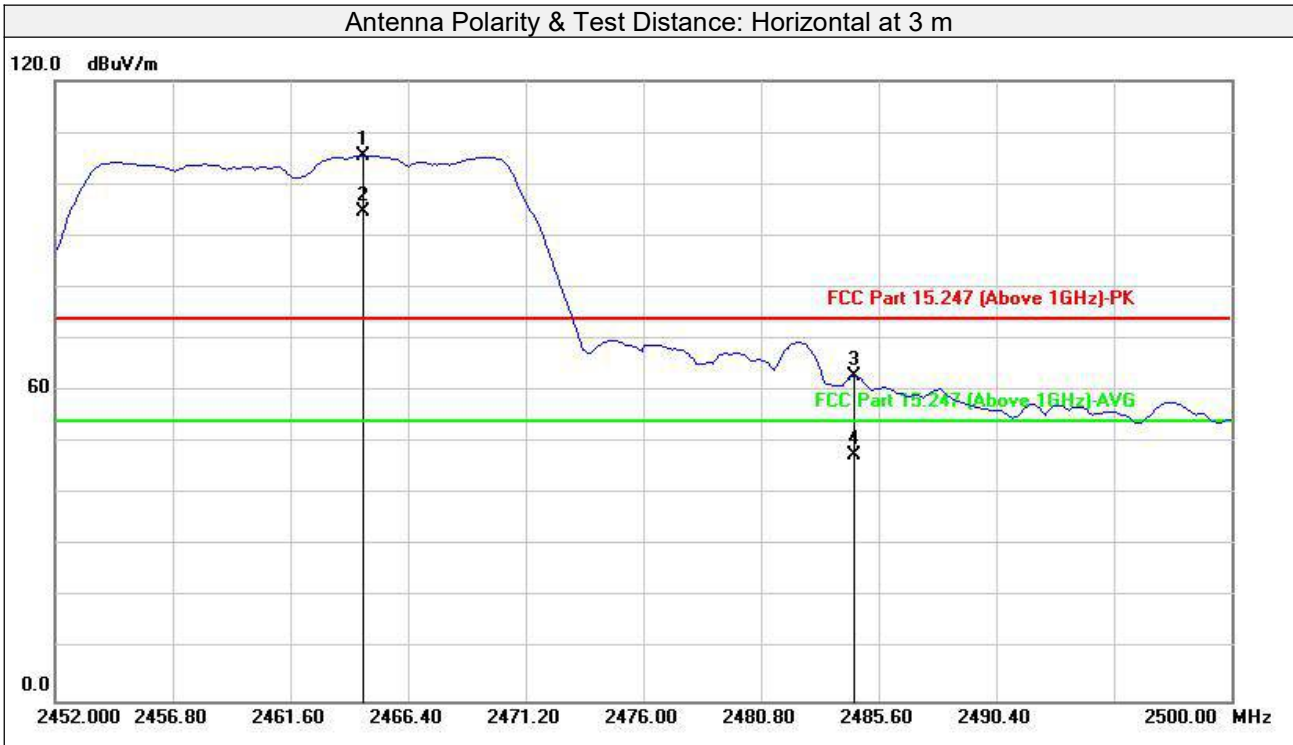
Antenna Polarity & Test Distance: Vertical at 3 m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	4874.000	41.48	6.75	48.23	74.00	-25.77	peak	103	119
2	4874.000	28.66	6.75	35.41	54.00	-18.59	AVG	103	119
3	7311.000	41.77	10.35	52.12	74.00	-21.88	peak	100	27
4	7311.000	28.66	10.35	39.01	54.00	-14.99	AVG	100	27

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 11		



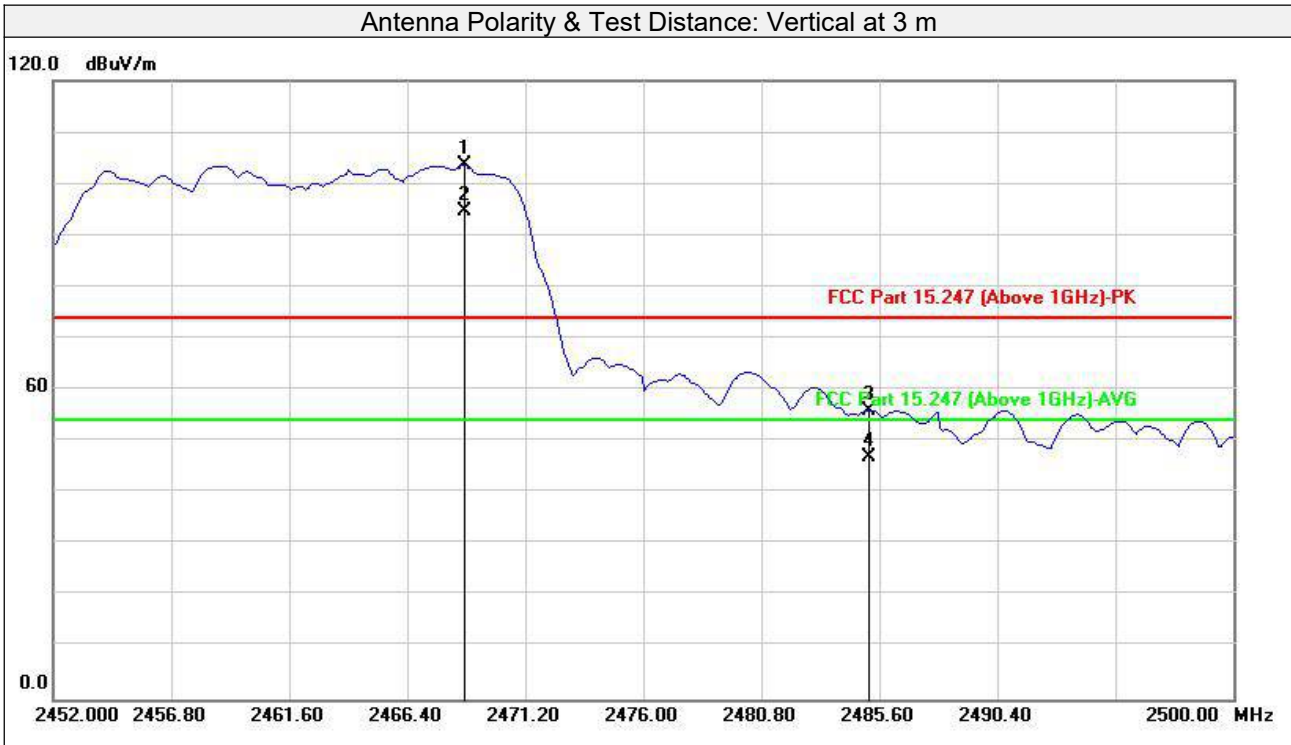
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1 #	2464.601	104.58	0.84	105.42			peak	215	186
2 #	2464.601	93.71	0.84	94.55			AVG	215	186
3	2484.609	62.07	0.86	62.93	74.00	-11.07	peak	215	186
4	2484.609	46.58	0.86	47.44	54.00	-6.56	AVG	215	186
5	4924.000	42.20	6.87	49.07	74.00	-24.93	peak	134	329
6	4924.000	28.82	6.87	35.69	54.00	-18.31	AVG	134	329
7	7386.000	40.01	10.54	50.55	74.00	-23.45	peak	150	51
8	7386.000	28.06	10.54	38.60	54.00	-15.40	AVG	150	51

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 11		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1 #	2468.738	102.73	0.84	103.57			peak	191	186
2 #	2468.738	93.79	0.84	94.63			AVG	191	186
3	2485.186	55.22	0.86	56.08	74.00	-17.92	peak	191	186
4	2485.186	46.24	0.86	47.10	54.00	-6.90	AVG	191	186
5	4924.000	41.77	6.87	48.64	74.00	-25.36	peak	124	27
6	4924.000	28.47	6.87	35.34	54.00	-18.66	AVG	124	27
7	7386.000	39.78	10.54	50.32	74.00	-23.68	peak	228	307
8	7386.000	28.03	10.54	38.57	54.00	-15.43	AVG	228	307

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



802.11n40

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 3		



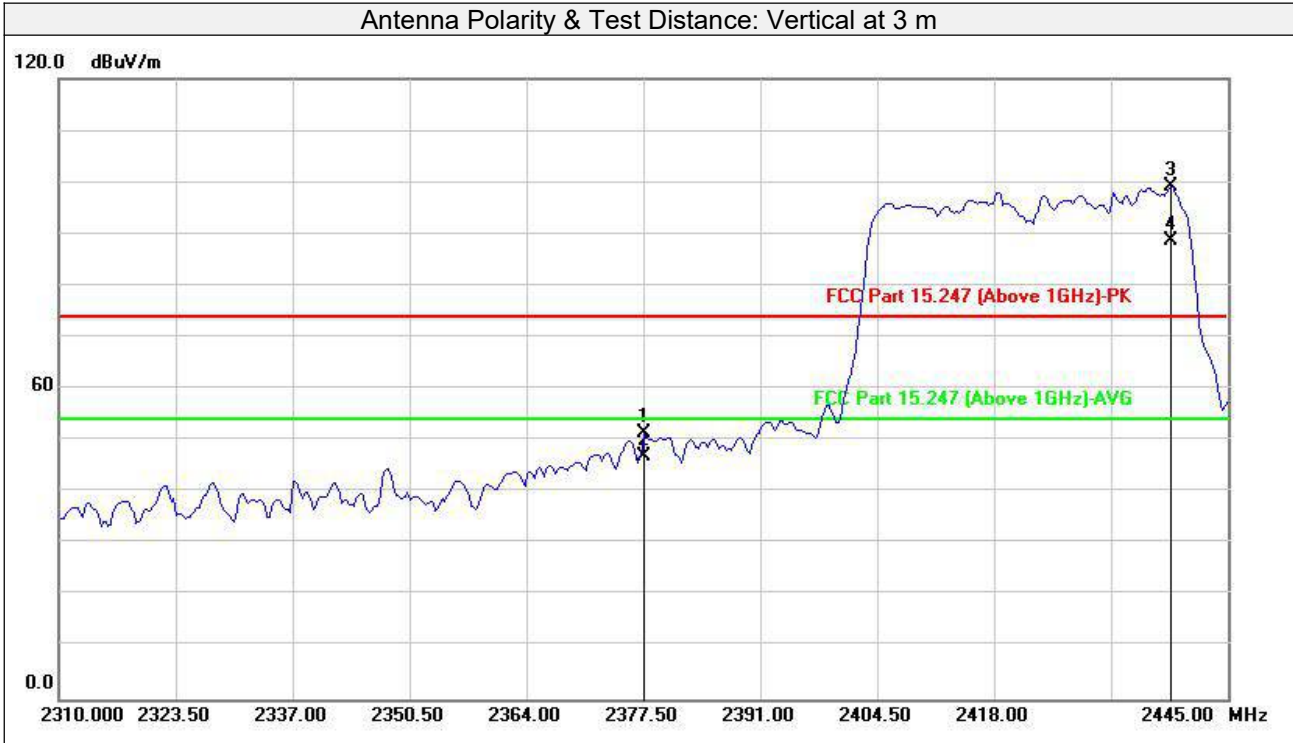
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	2384.669	53.85	0.83	54.68	74.00	-19.32	peak	119	49
2	2384.669	39.79	0.83	40.62	54.00	-13.38	AVG	119	49
3 #	2405.771	97.30	0.83	98.13			peak	119	49
4 #	2405.771	85.05	0.83	85.88			AVG	119	49
5	4844.000	40.71	6.69	47.40	74.00	-26.60	peak	121	47
6	4844.000	28.69	6.69	35.38	54.00	-18.62	AVG	121	47
7	7266.000	40.12	10.22	50.34	74.00	-23.66	peak	134	253
8	7266.000	28.54	10.22	38.76	54.00	-15.24	AVG	134	253

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency.
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 1		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	2377.635	50.76	0.82	51.58	74.00	-22.42	peak	119	360
2	2377.635	46.05	0.82	46.87	54.00	-7.13	AVG	119	360
3 #	2438.507	98.21	0.84	99.05			peak	119	360
4 #	2438.507	87.79	0.84	88.63			AVG	119	360
5	4844.000	41.10	6.69	47.79	74.00	-26.21	peak	100	307
6	4844.000	28.64	6.69	35.33	74.00	-38.67	peak	100	307
7	7266.000	28.54	10.22	38.76	74.00	-35.24	peak	100	105
8	7266.000	39.35	10.22	49.57	74.00	-24.43	peak	100	105

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



CVC Testing Technology Co., Ltd.

Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 6		

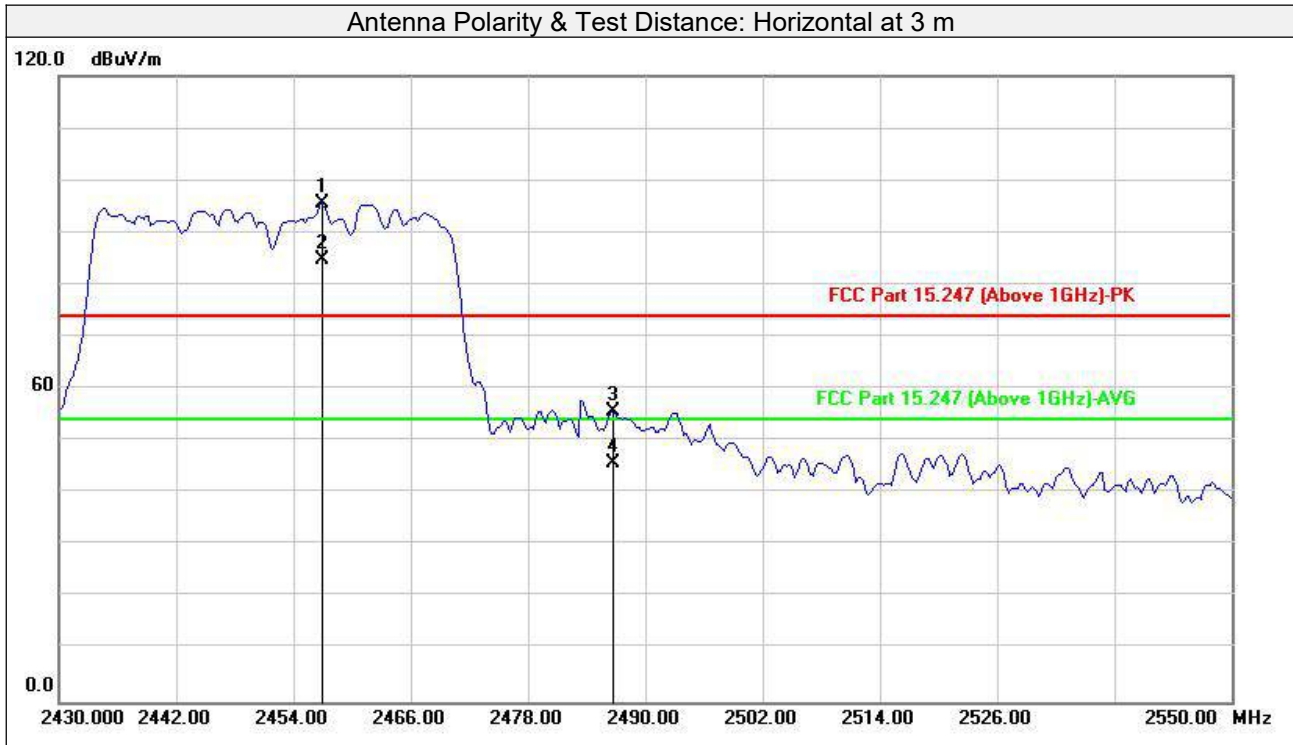
Antenna Polarity & Test Distance: Horizontal at 3 m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	4874.000	41.50	6.75	48.25	74.00	-25.75	peak	215	313
2	4874.000	28.62	6.75	35.37	54.00	-18.63	AVG	215	313
3	7311.000	39.77	10.35	50.12	74.00	-23.88	peak	200	185
4	7311.000	28.66	10.35	39.01	54.00	-14.99	AVG	200	185
Antenna Polarity & Test Distance: Vertical at 3 m									
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1	4874.000	40.72	6.75	47.47	74.00	-26.53	peak	100	28
2	4874.000	28.44	6.75	35.19	54.00	-18.81	AVG	100	28
3	7311.000	40.34	10.35	50.69	74.00	-23.31	peak	100	236
4	7311.000	28.69	10.35	39.04	54.00	-14.96	AVG	100	236

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 9		



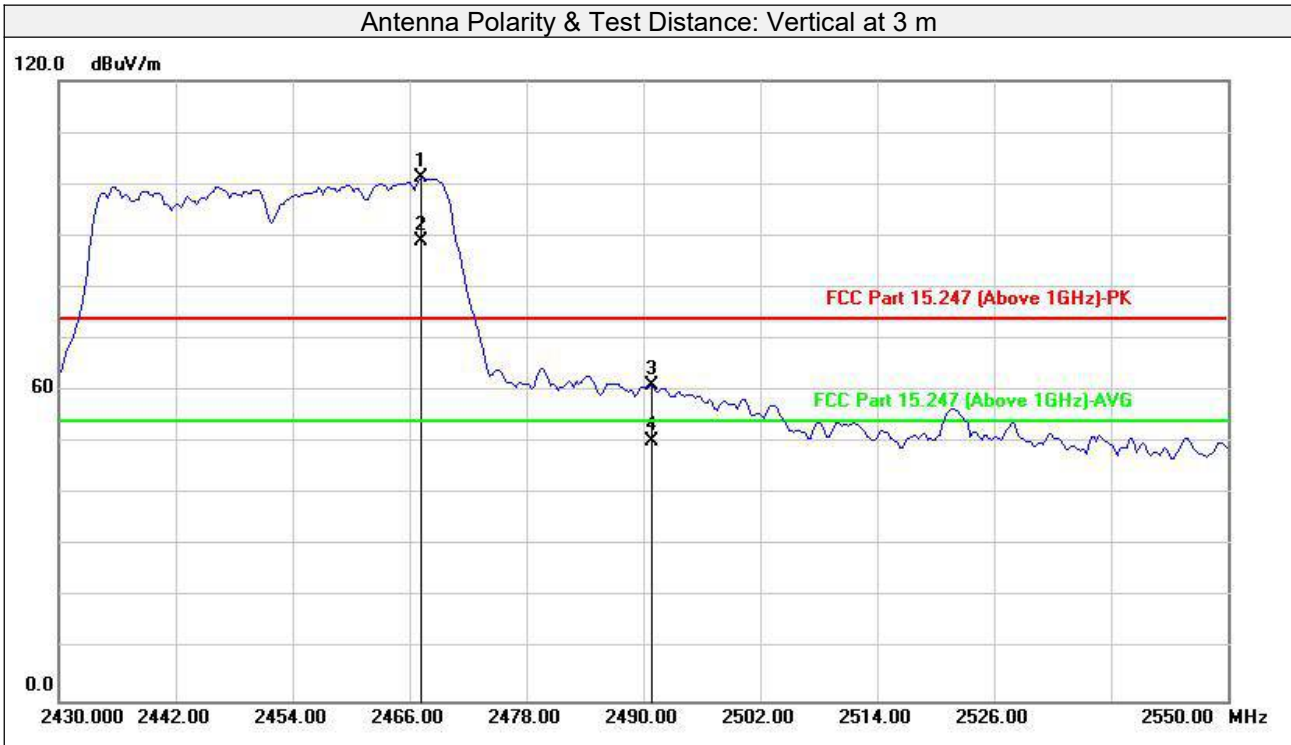
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1 #	2456.934	94.56	0.84	95.40			peak	100	84
2 #	2456.934	83.81	0.84	84.65			AVG	100	84
3	2486.753	54.77	0.85	55.62	74.00	-18.38	peak	100	84
4	2486.753	44.82	0.85	45.67	54.00	-8.33	AVG	100	84
5	4904.000	41.86	6.82	48.68	74.00	-25.32	peak	248	29
6	4904.000	29.34	6.82	36.16	54.00	-17.84	AVG	248	29
7	7356.000	40.42	10.46	50.88	74.00	-23.12	peak	130	248
8	7356.000	28.28	10.46	38.74	54.00	-15.26	AVG	130	248

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.



Frequency Range	1GHz ~ 25GHz	Detector Function	Peak (PK) Average (AVG)
Test Channel	Channel 9		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Height (cm)	Table Angle (Degree)
1 #	2467.274	100.41	0.85	101.26			peak	213	360
2 #	2467.274	88.25	0.85	89.10			AVG	213	360
3	2490.842	60.14	0.85	60.99	74.00	-13.01	peak	213	360
4	2490.842	49.55	0.85	50.40	54.00	-3.60	AVG	213	360
5	4904.000	41.74	6.82	48.56	74.00	-25.44	peak	100	227
6	4904.000	29.33	6.82	36.15	54.00	-17.85	AVG	100	227
7	7356.000	40.22	10.46	50.68	74.00	-23.32	peak	100	123
8	7356.000	28.30	10.46	38.76	54.00	-15.24	AVG	100	123

Remarks:

1. Emission Level = Read Level + Factor (Antenna Factor + Cable Loss - Preamp Factor) Margin value = Emission level – Limit value
2. # stands for Fundamental frequency
3. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

3.3 6dB BANDWIDTH MEASUREMENT

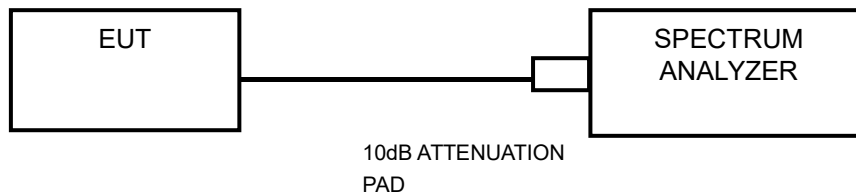
3.3.1 Limits

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

3.3.2 Measurement procedure

- a. Set resolution bandwidth (RBW) = 100KHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

3.3.3 Test setup



3.3.4 Test result

Please refer Annex A

3.4 CONDUCTED OUTPUT POWER

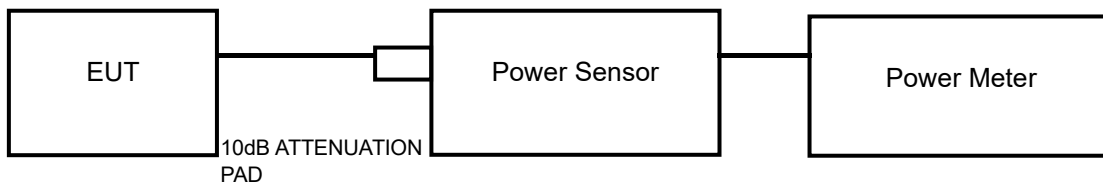
3.4.1 Limits

Forsystems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm).

3.4.2 Measurement procedure

- a. A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor and set the detector to PEAK. Record the power level.
- b. An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor and set the detector to AVERAGE. Record the power level.

3.4.3 Test setup



3.4.4 Test result

Please refer Annex A.



3.5 POWER SPECTRAL DENSITY MEASUREMENT

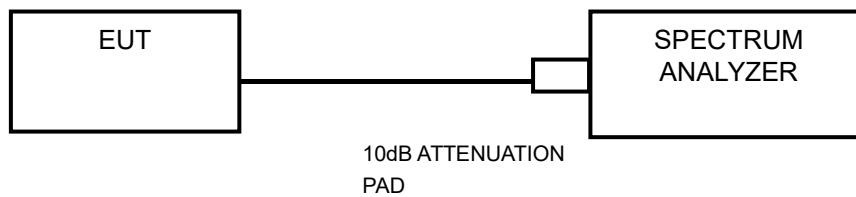
3.5.1 Limits

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

3.5.2 Measurement procedure

- a. Set instrument center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set RBW to: 3KHz
- d. Set VBW $\geq 3 \times$ RBW.
- e. Detector = peak
- f. Ensure that the number of measurement points in the sweep $\geq 2 \times$ span/RBW.
- g. Sweep time = auto couple.
- h. Use the peak marker function to determine the maximum amplitude level.

3.5.3 Test setup



3.5.4 Test result

Please refer Annex A.

3.6 OUT OF BAND EMISSION AND BAND EDGE MEASUREMENTS

3.6.1 Limits

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

3.6.2 Measurement procedure

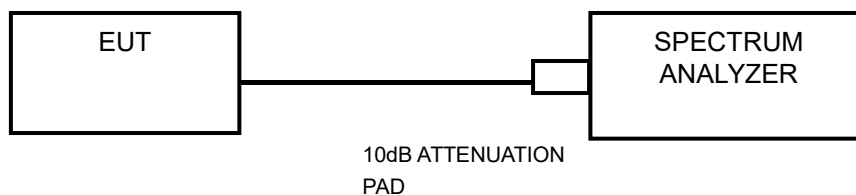
Measurement Procedure -Reference Level

- a. Set the RBW = 100 kHz.
- b. Set the VBW \geq 300 kHz.
- c. Detector = peak.
- d. Sweep time = auto couple.
- e. Trace mode = max hold.
- f. Allow trace to fully stabilize.
- g. Use the peak marker function to determine the maximum power level in any 100 kHzband segment within the fundamental EBW.

Measurement Procedure –Unwanted Emission Level

- a. Set RBW = 100 kHz.
- b. Set VBW \geq 300 kHz.
- c. Set span to encompass the spectrum to be examined
- d. Detector = peak.
- e. Trace Mode = max hold.
- f. Sweep = auto couple.

3.6.3 Test setup



3.6.4 Test result

Please refer Annex A.

3.7 OCCUPIED BANDWIDTH MEASUREMENT

3.7.1 Measurement procedure

The transmitter antenna output was connected to the spectrum analyzer through an attenuator. The resolution bandwidth shall be set to the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth. below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

3.7.2 Test setup



3.7.3 Test result

Please refer Annex A.



4 PHOTOGRAPHS OF TEST SETUP

Please refer to the attached file (Test Setup Photo).



5 PHOTOGRAPHS OF THE EUT

Please refer to the attached file (External Photos report and Internal Photos).



6 Appendix A (Please refer to the following pages for test results.)

6.1 6DB BANDWIDTH MEASUREMENT

6.1.1 Test Result

802.11b			
Operation Channel	Frequency MHz	Occupied Bandwidth (MHz)	
		Result	Limit
1	2412	10.08	>0.5
6	2437	10.08	>0.5
11	2462	10.40	>0.5

802.11g			
Operation Channel	Frequency	Occupied Bandwidth (MHz)	
		Result	Limit
1	2412	16.32	>0.5
6	2437	16.36	>0.5
11	2462	16.44	>0.5

802.11n HT20			
Operation Channel	Frequency MHz	Occupied Bandwidth (MHz)	
		Result	Limit
1	2412	17.32	>0.5
6	2437	17.56	>0.5
11	2462	17.40	>0.5

802.11n HT40			
Operation Channel	Frequency MHz	Occupied Bandwidth (MHz)	
		Result	Limit
3	2422	36.08	>0.5
6	2437	35.60	>0.5
9	2452	35.36	>0.5

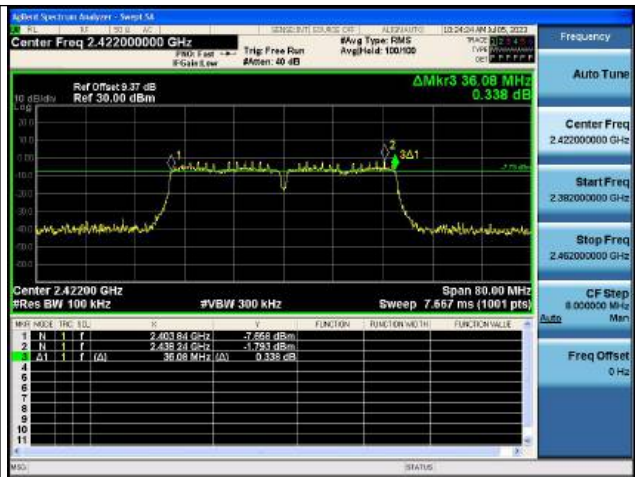


6.1.2 Test Graphs





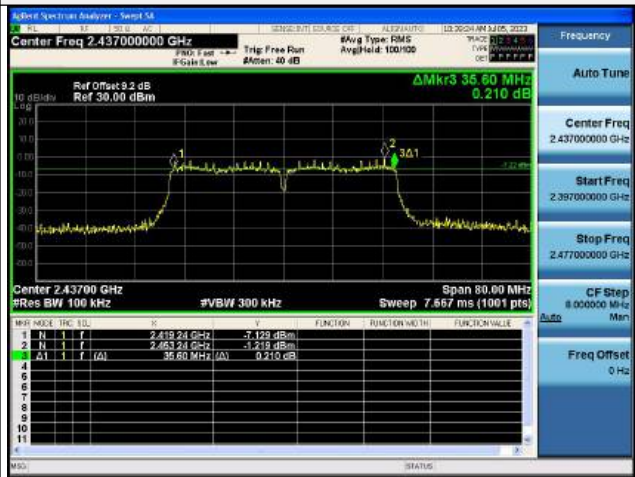
CH1



CH3



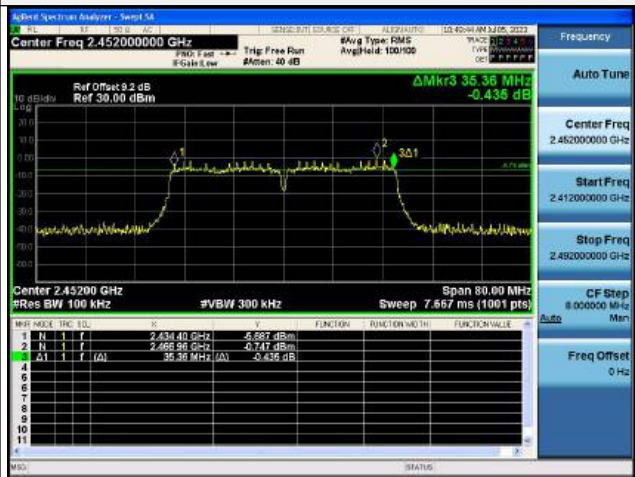
CH6



CH6



CH11



CH9



6.2 OCCUPIED CHANNEL BANDWIDTH (FOR REFERENCE)

6.2.1 Test Result

802.11b			
Operation Channel	Frequency MHz	Occupied Bandwidth (MHz)	
		Result	Limit
1	2412	13.554	2400~2483.5
6	2437	13.497	2400~2483.5
11	2462	13.548	2400~2483.6

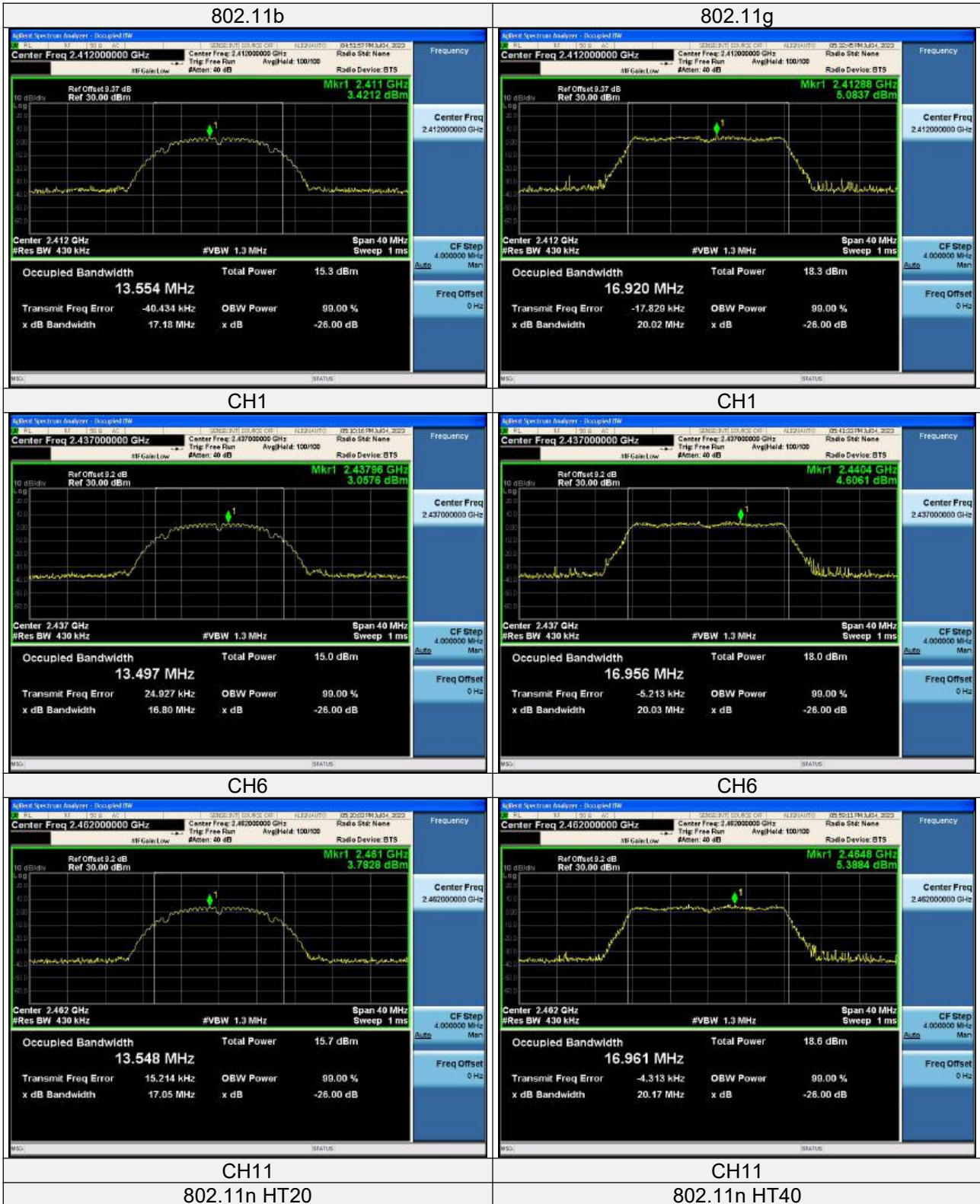
802.11g			
Operation Channel	Frequency	Occupied Bandwidth (MHz)	
		Result	Limit
1	2412	16.920	2400~2483.5
6	2437	16.956	2400~2483.5
11	2462	16.961	2400~2483.6

802.11n HT20			
Operation Channel	Frequency	Occupied Bandwidth (MHz)	
		Result	Limit
1	2412	17.856	2400~2483.5
6	2437	17.852	2400~2483.5
11	2462	17.850	2400~2483.6

802.11n HT40			
Operation Channel	Frequency	Occupied Bandwidth (MHz)	
		Result	Limit
3	2422	36.370	2400~2483.5
6	2437	36.552	2400~2483.5
9	2452	36.348	2400~2483.6

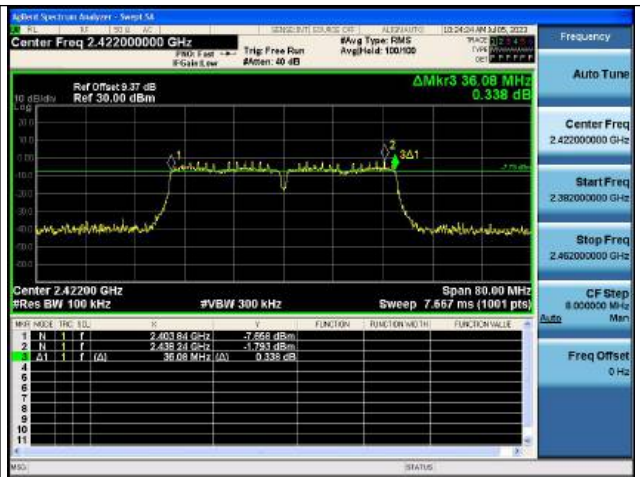


6.2.2 Test Graphs





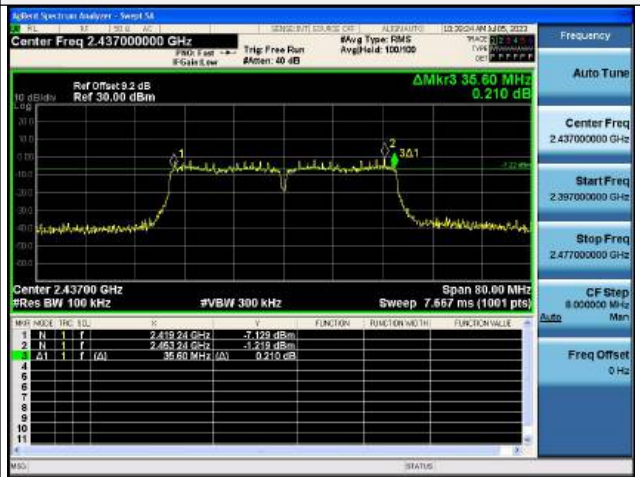
CH1



CH3



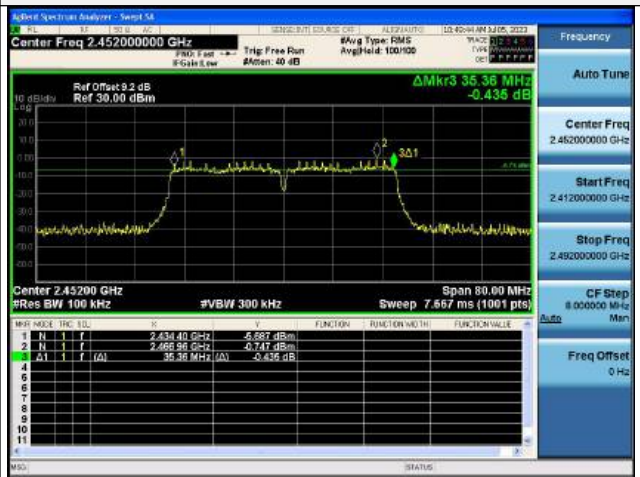
CH6



CH6



CH11



CH9



6.3 CONDUCTED OUTPUT POWER

6.3.1 Test Result Peak

802.11b					
Peak Power					
Channel	Freq.	RF Output Power		Power Limit	Verdict
No.	(MHz)	(dBm)	(mW)	(dBm)	
1	2412	15.33	34.11929116	≤30.00	Pass
6	2437	15.04	31.91537855	≤30.00	Pass
11	2462	15.16	32.80952931	≤30.00	Pass

802.11g					
Peak Power					
Channel	Freq.	RF Output Power		Power Limit	Verdict
No.	(MHz)	(dBm)	(mW)	(dBm)	
1	2412	19.80	95.4992586	≤30.00	Pass
6	2437	19.52	89.53647655	≤30.00	Pass
11	2462	19.68	92.89663868	≤30.00	Pass

802.11n HT20					
Peak Power					
Channel	Freq.	RF Output Power		Power Limit	Verdict
No.	(MHz)	(dBm)	(mW)	(dBm)	
1	2412	20.30	107.1519305	≤30.00	Pass
6	2437	19.76	94.62371614	≤30.00	Pass
11	2462	19.76	94.62371614	≤30.00	Pass

802.11n HT40					
Peak Power					
Channel	Freq.	RF Output Power		Power Limit	Verdict
No.	(MHz)	(dBm)	(mW)	(dBm)	
3	2422	17.33	54.07543229	≤30.00	Pass
6	2437	19.77	94.84184633	≤30.00	Pass
9	2452	19.77	94.84184633	≤30.00	Pass



6.3.2 Test Result Average

802.11b					
Average Power					
Channel	Freq.	RF Output Power		Power Limit	Verdict
No.	(MHz)	(dBm)	(mW)	(dBm)	
1	2412	12.36	17.21868575	≤36.00	Pass
6	2437	11.99	15.81248039	≤36.00	Pass
11	2462	12.62	18.28100216	≤36.00	Pass

802.11g					
Average Power					
Channel	Freq.	RF Output Power		Power Limit	Verdict
No.	(MHz)	(dBm)	(mW)	(dBm)	
1	2412	12.27	16.86553025	≤36.00	Pass
6	2437	11.97	15.73982864	≤36.00	Pass
11	2462	12.52	17.86487575	≤36.00	Pass

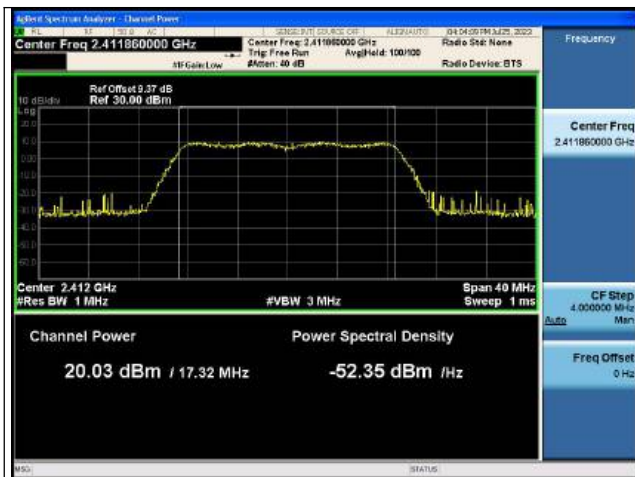
802.11n HT20					
Average Power					
Channel	Freq.	RF Output Power		Power Limit	Verdict
No.	(MHz)	(dBm)	(mW)	(dBm)	
1	2412	12.43	17.49846689	≤36.00	Pass
6	2437	12.13	16.33051948	≤36.00	Pass
11	2462	12.66	18.45015419	≤36.00	Pass

802.11n HT40					
Average Power					
Channel	Freq.	RF Output Power		Power Limit	Verdict
No.	(MHz)	(dBm)	(mW)	(dBm)	
3	2422	12.30	16.98243652	≤36.00	Pass
6	2437	12.15	16.40589773	≤36.00	Pass
9	2452	12.41	17.41806873	≤36.00	Pass

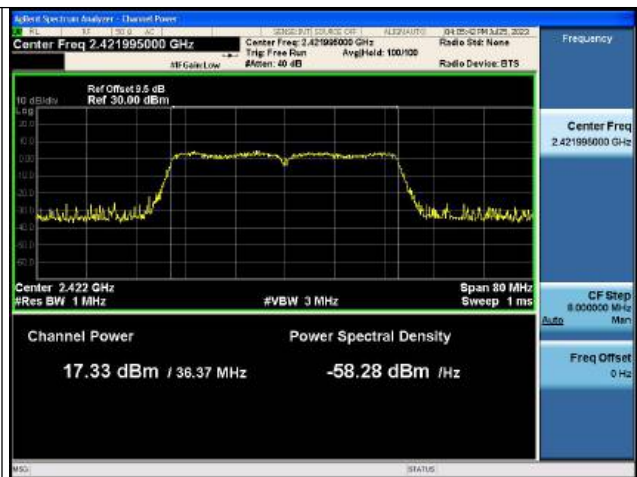


6.3.3 Test Graphs Peak

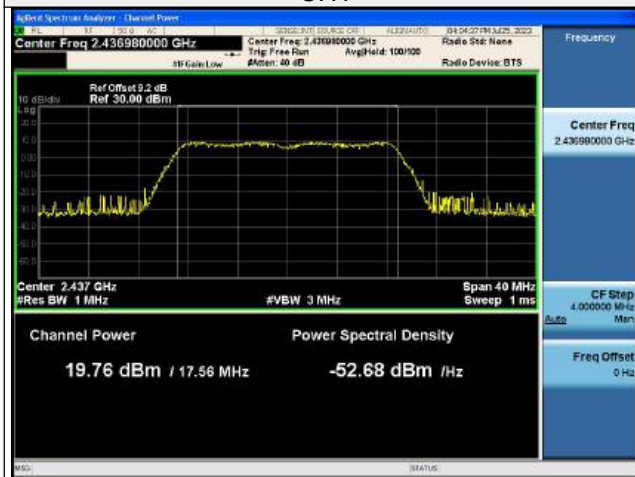




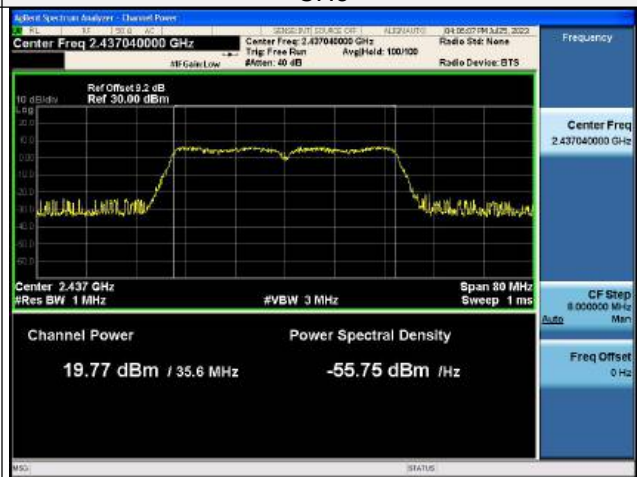
CH1



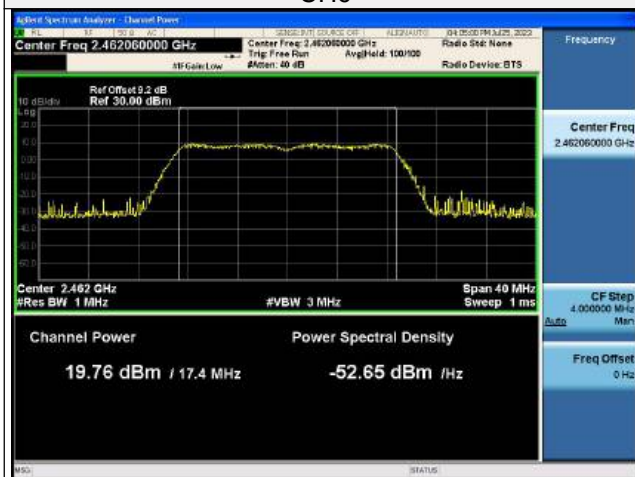
CH3



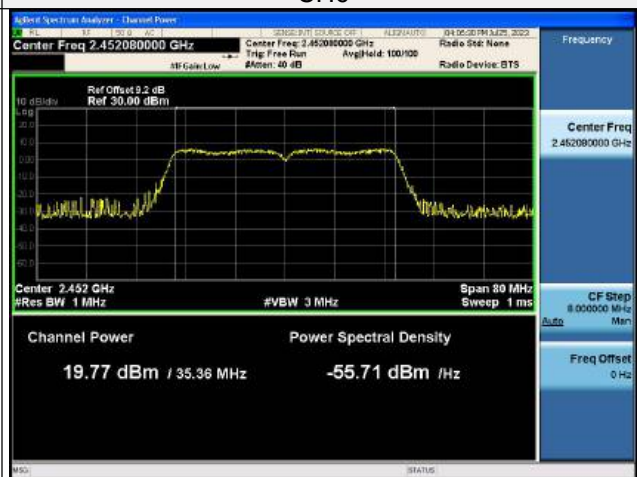
CH6



CH6



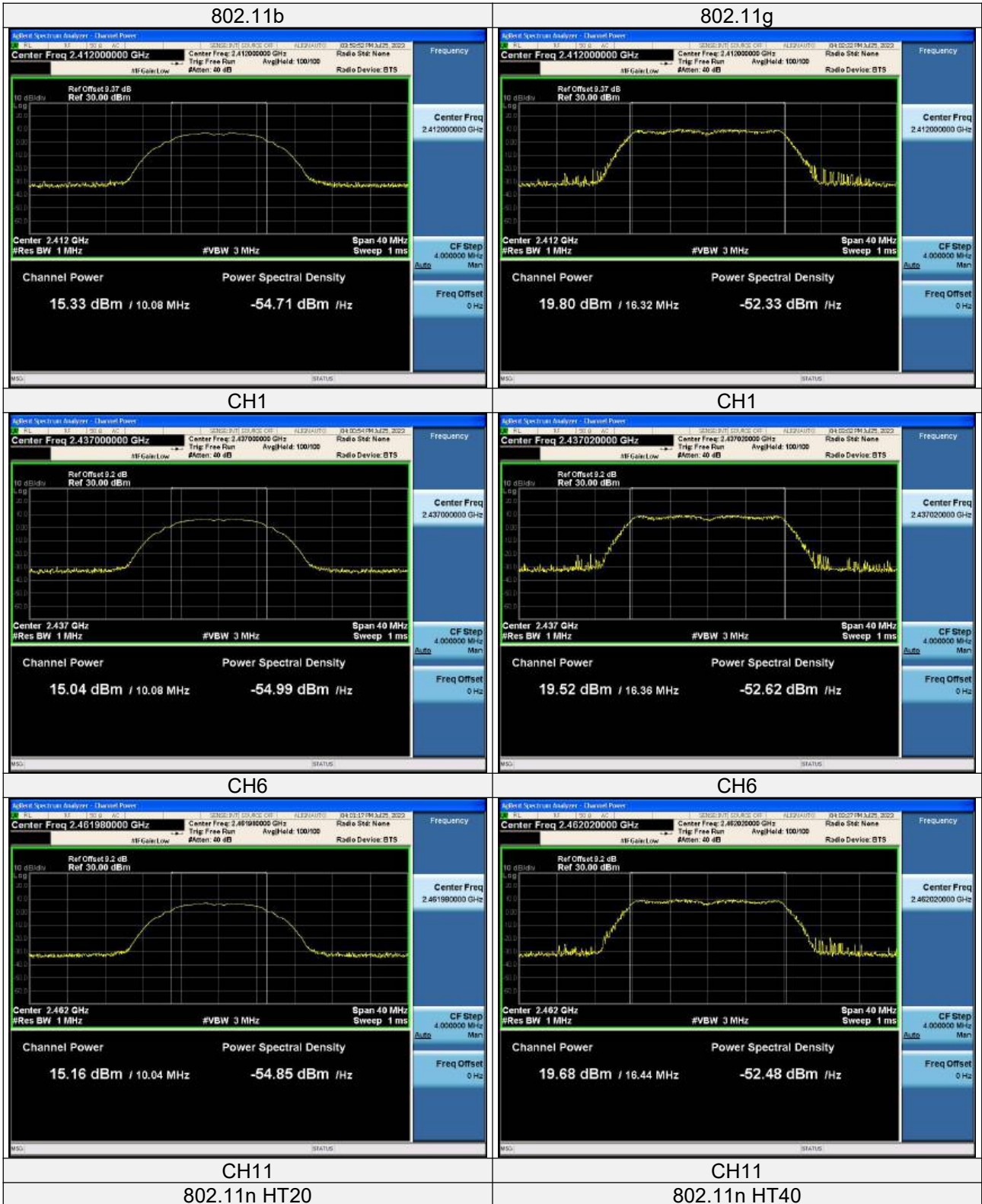
CH11

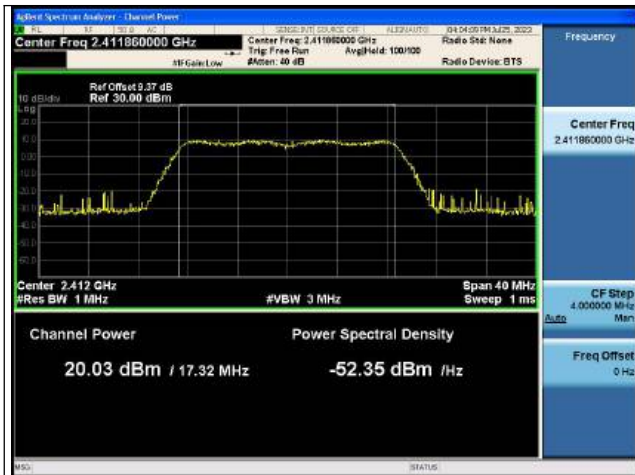


CH9

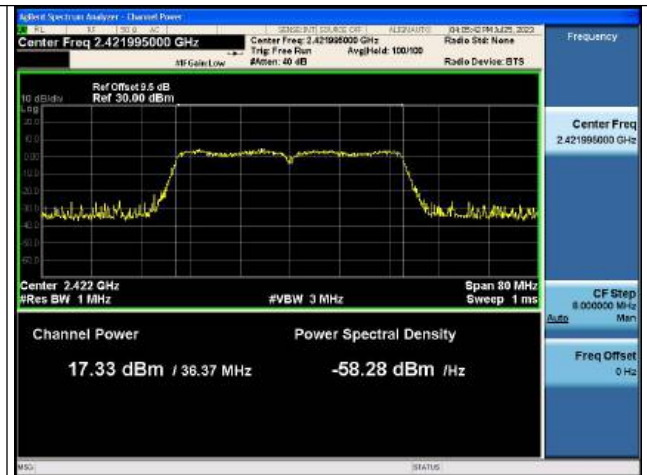


6.3.4 Test Graphs Average

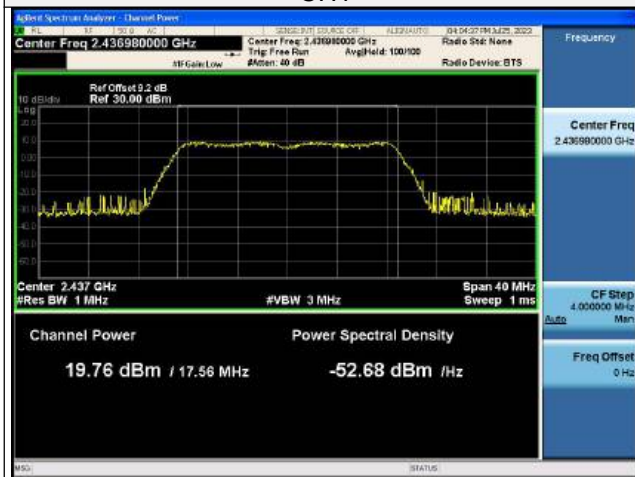




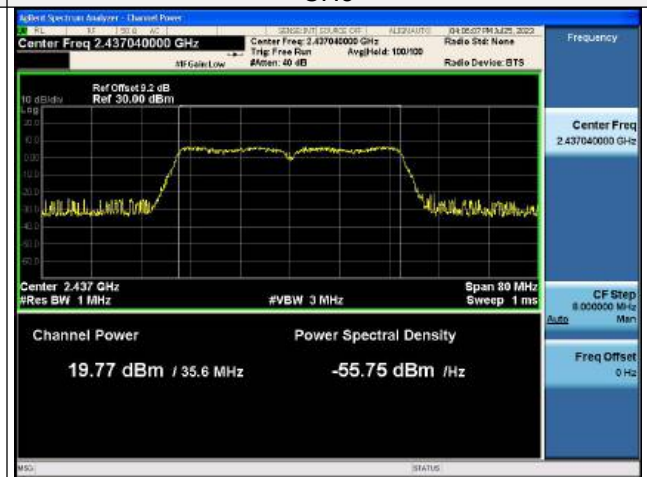
CH1



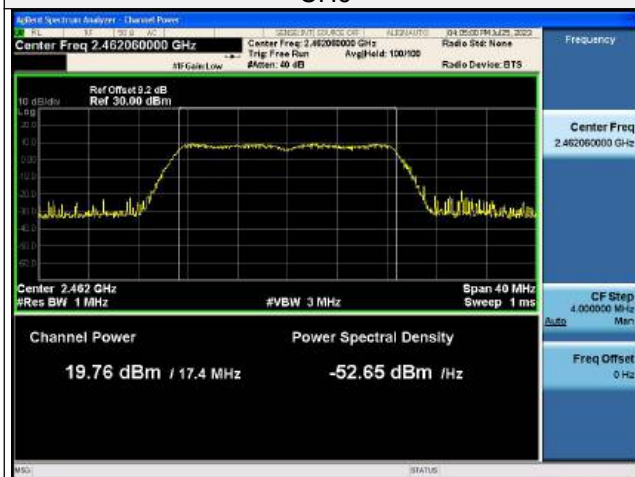
CH3



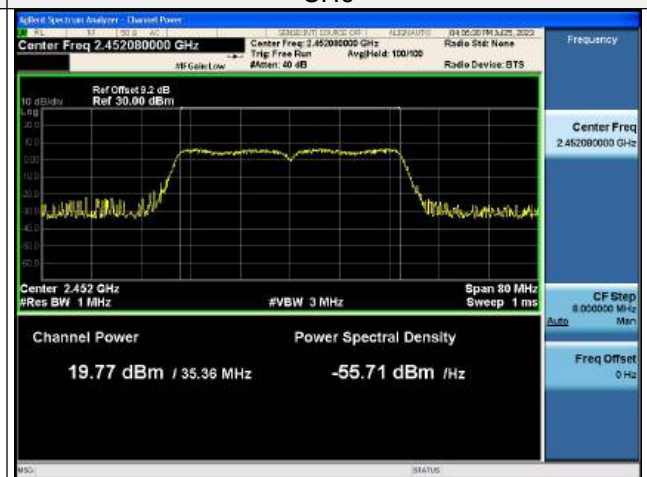
CH6



CH6



CH11



CH9



6.4 POWER SPECTRAL DENSITY MEASUREMENT

6.4.1 Test Result

802.11b			
Operation Channel	Frequency MHz	Power Density	
		Test Result (dBm/3kHz)	Limit (dBm/3kHz)
1	2412	-18.635	<8
6	2437	-19.526	<8
11	2462	-19.049	<8

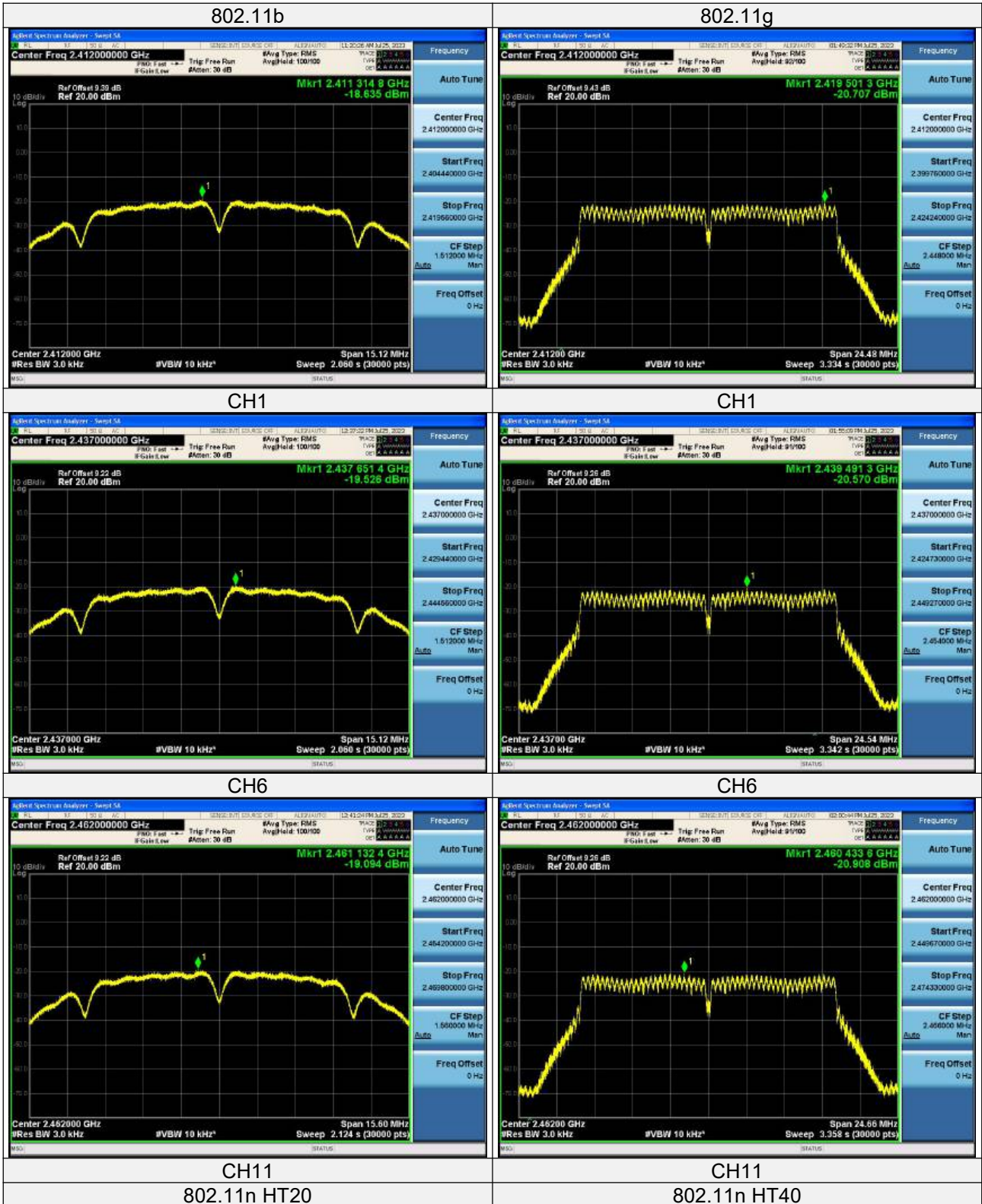
802.11g			
Operation Channel	Frequency MHz	Power Density	
		Test Result (dBm/3kHz)	Limit (dBm/3kHz)
1	2412	-20.707	<8
6	2437	-20.57	<8
11	2462	-20.908	<8

802.11n HT20			
Operation Channel	Frequency MHz	Power Density	
		Test Result (dBm/3kHz)	Limit (dBm/3kHz)
1	2412	-20.984	<8
6	2437	-21.199	<8
11	2462	-21.063	<8

802.11n HT40			
Operation Channel	Frequency MHz	Power Density	
		Test Result (dBm/3kHz)	Limit (dBm/3kHz)
3	2422	-22.118	<8
6	2437	-23.109	<8
9	2452	-22.284	<8

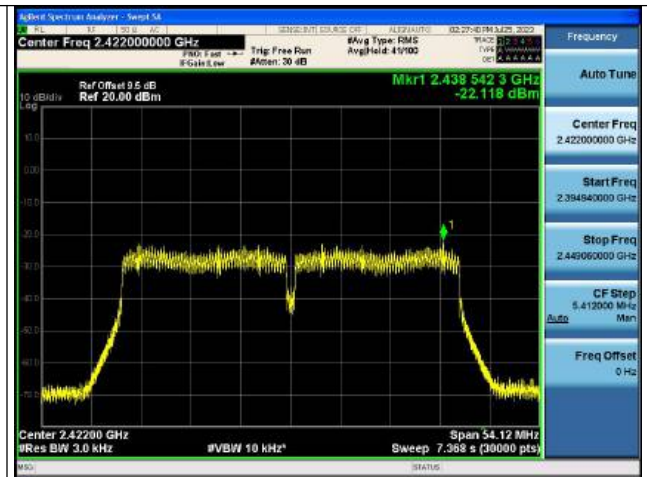


6.4.2 Test Graphs





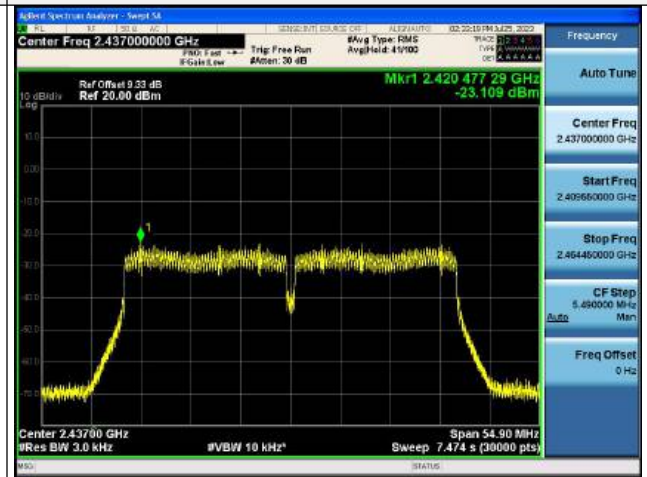
CH1



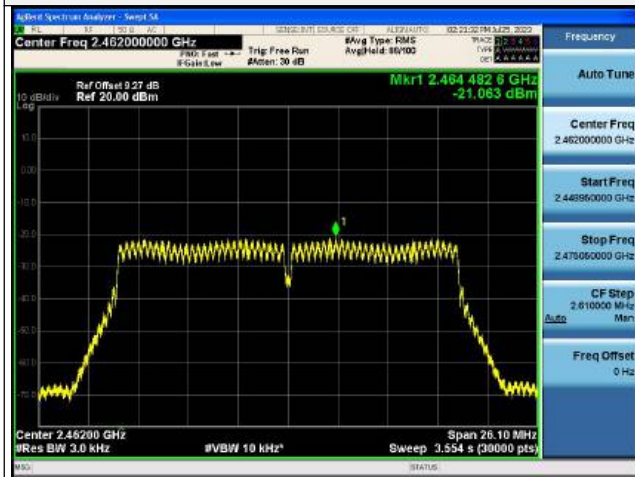
CH3



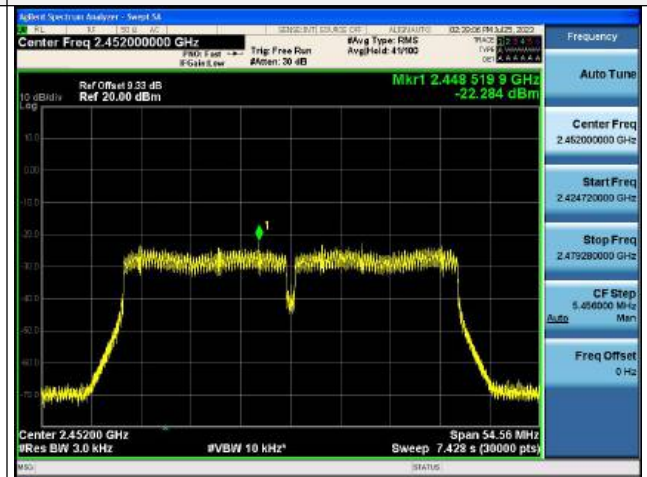
CH6



CH6



CH11

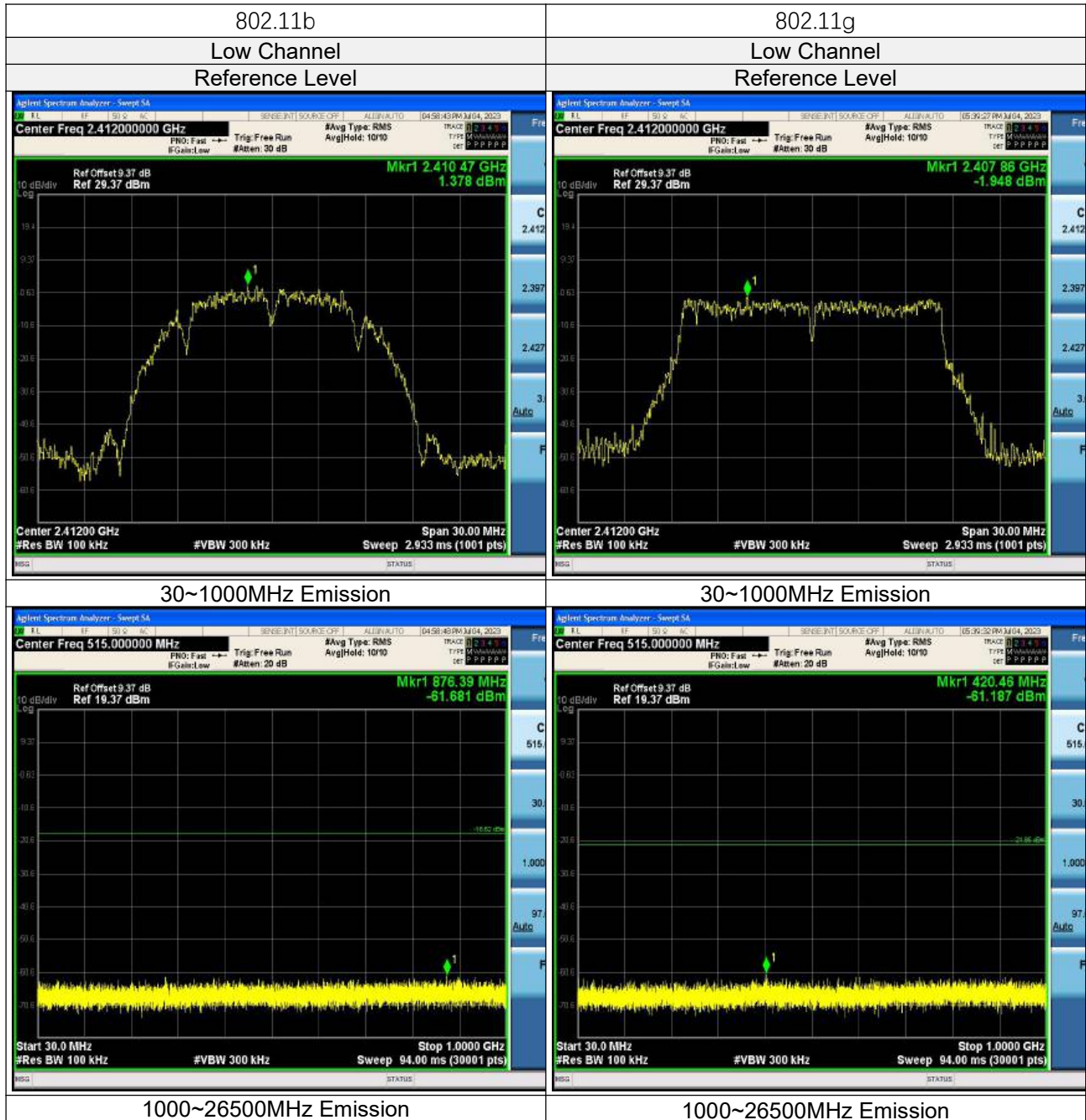


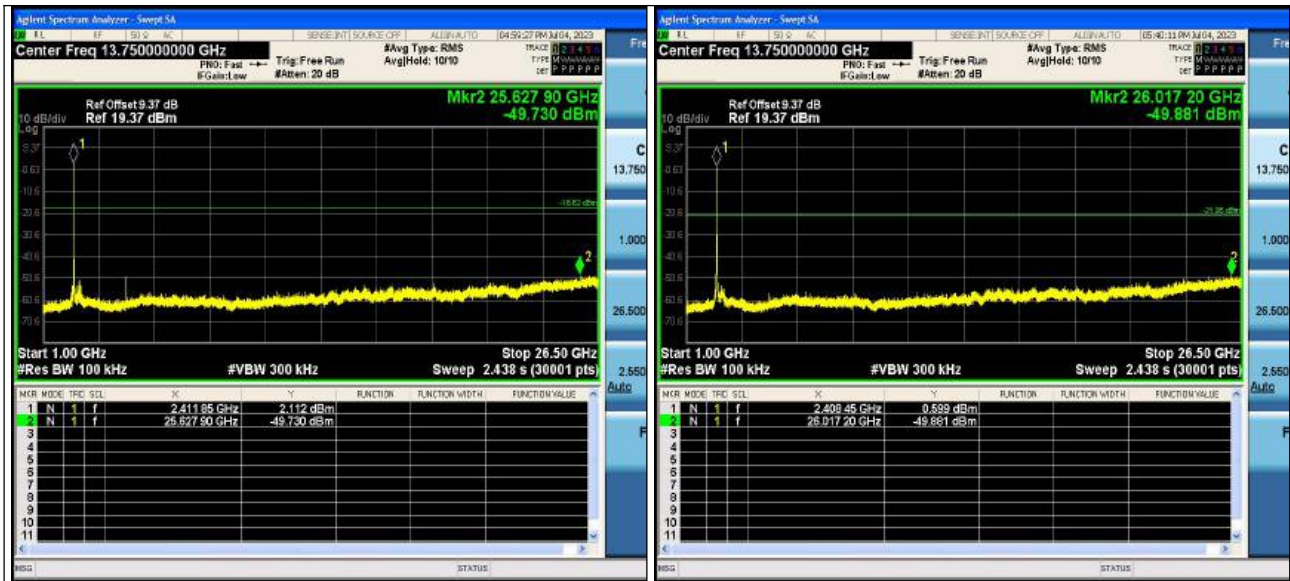
CH9



6.5 OUT OF BAND EMISSION AND BAND EDGE MEASUREMENTS

6.5.1 Test Result



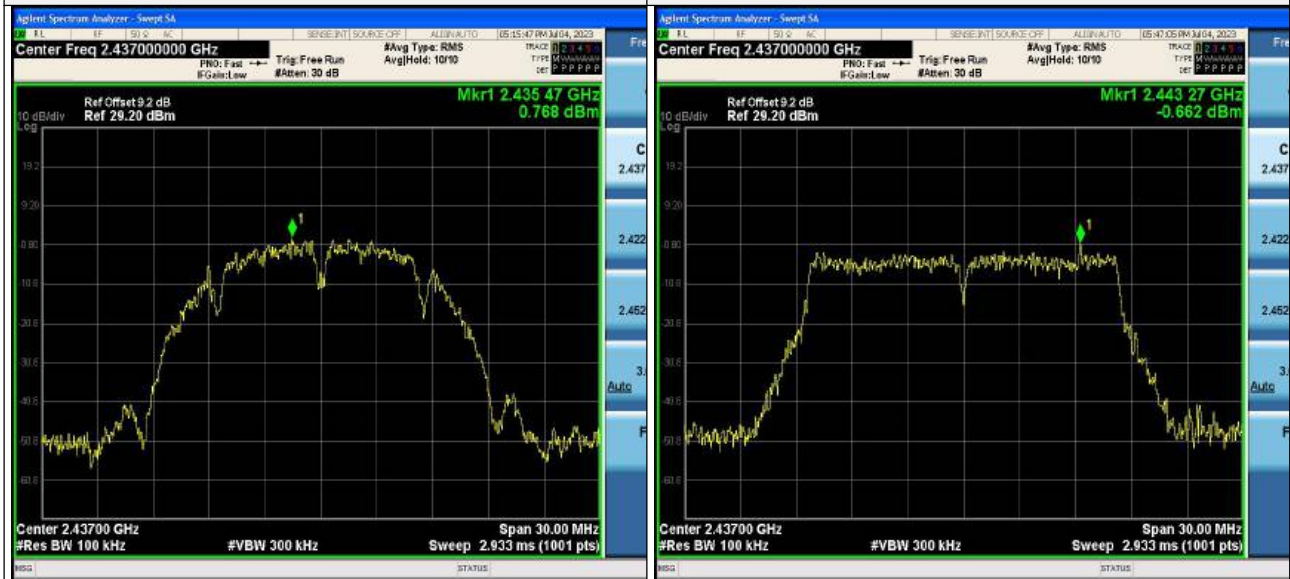


802.11b

802.11g

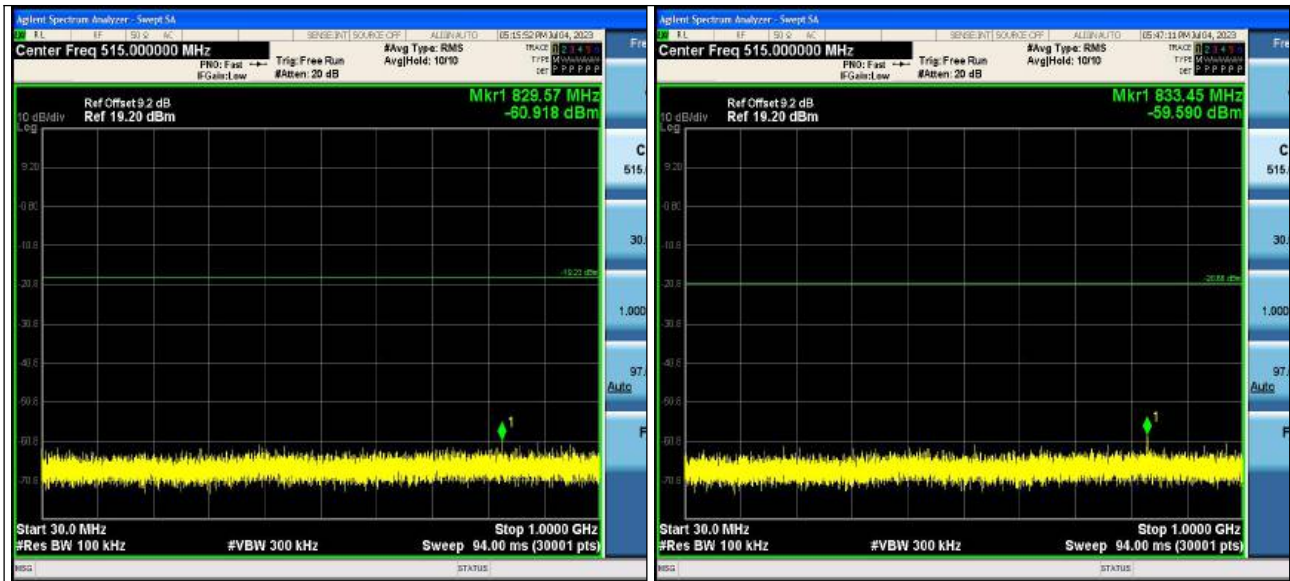
Middle Channel
Reference Level

Middle Channel
Reference Level



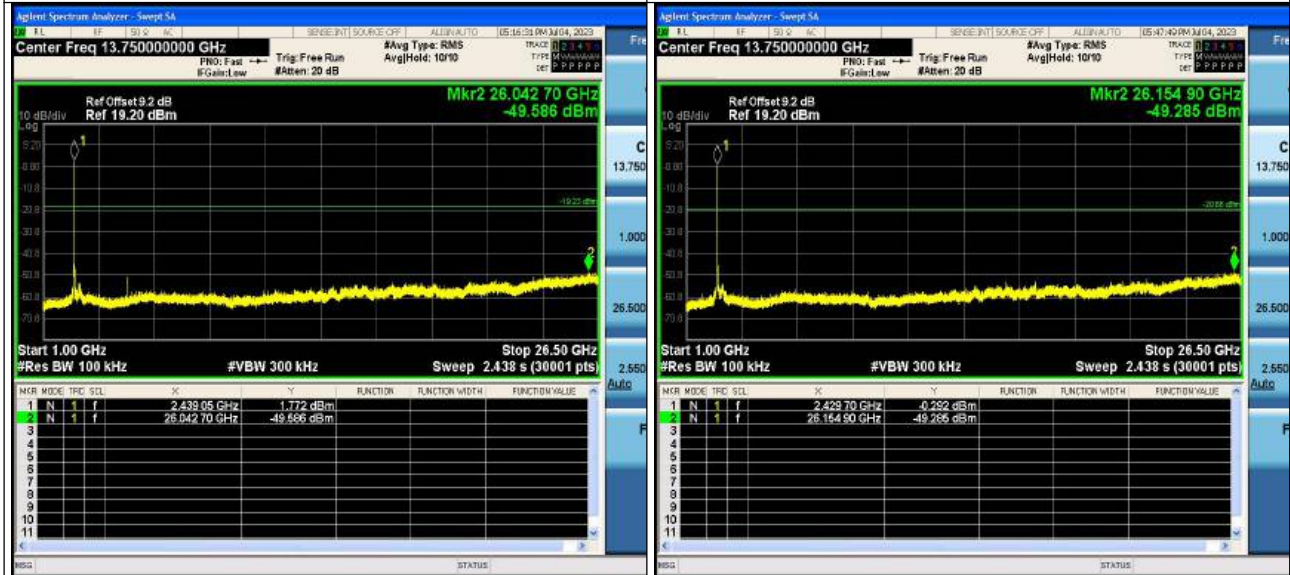
30~1000MHz Emission

30~1000MHz Emission



1000~26500MHz Emission

1000~26500MHz Emission

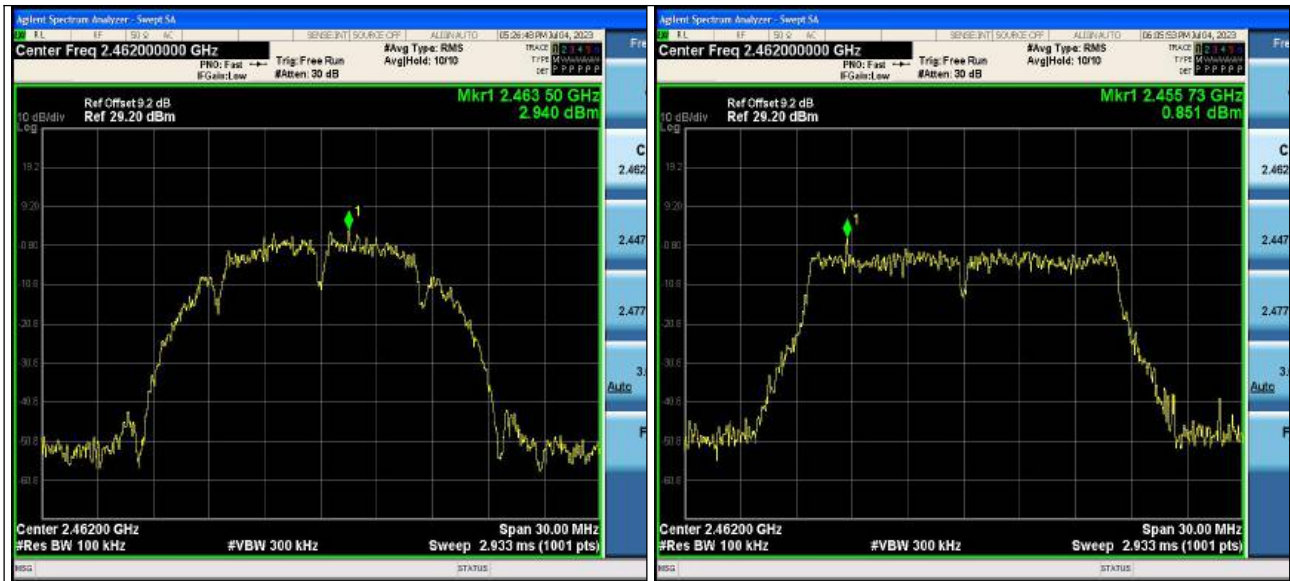


802.11b

802.11g

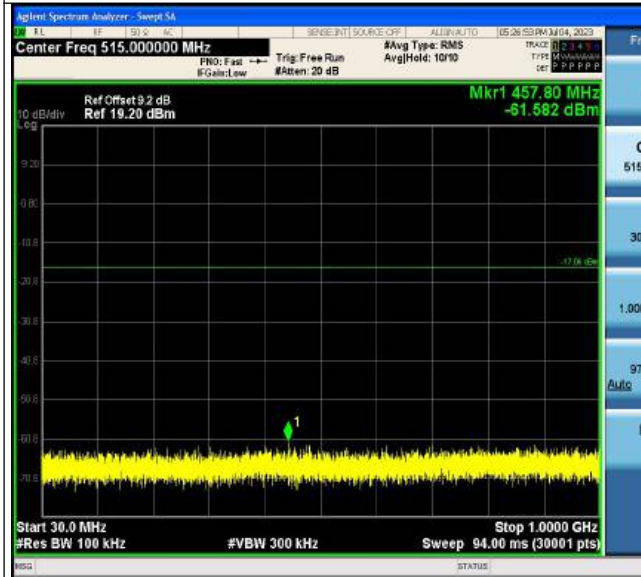
High Channel
Reference Level

High Channel
Reference Level

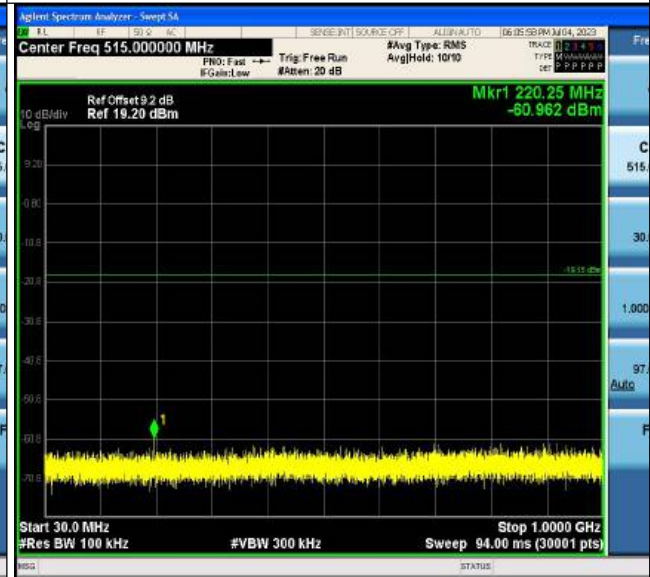


30~1000MHz Emission

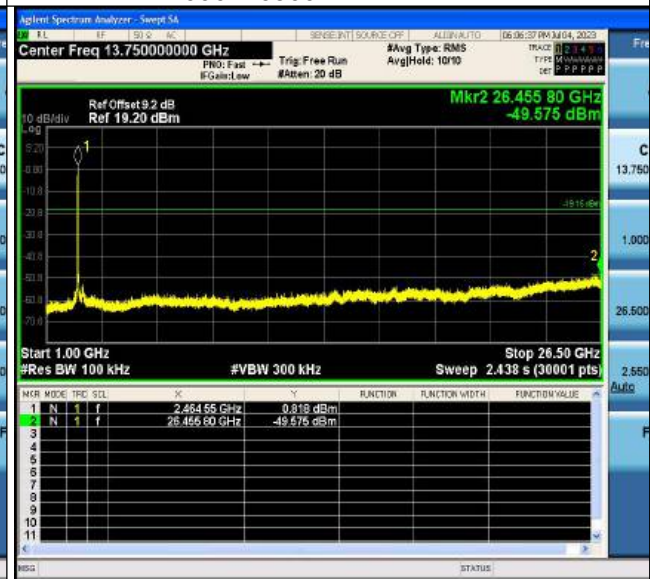
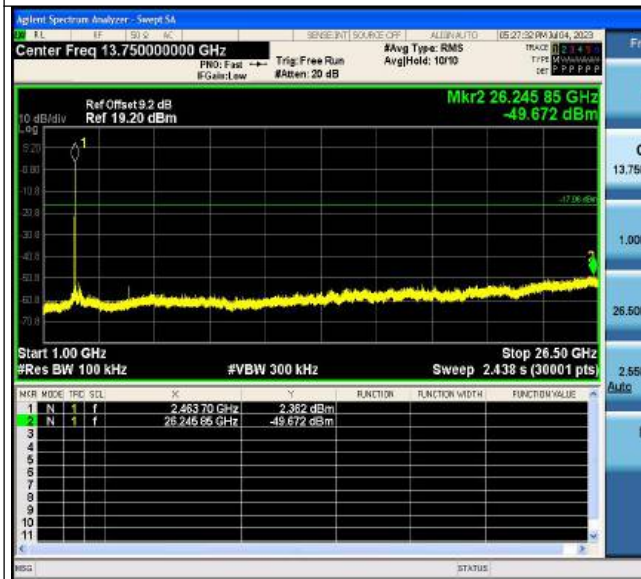
30~1000MHz Emission

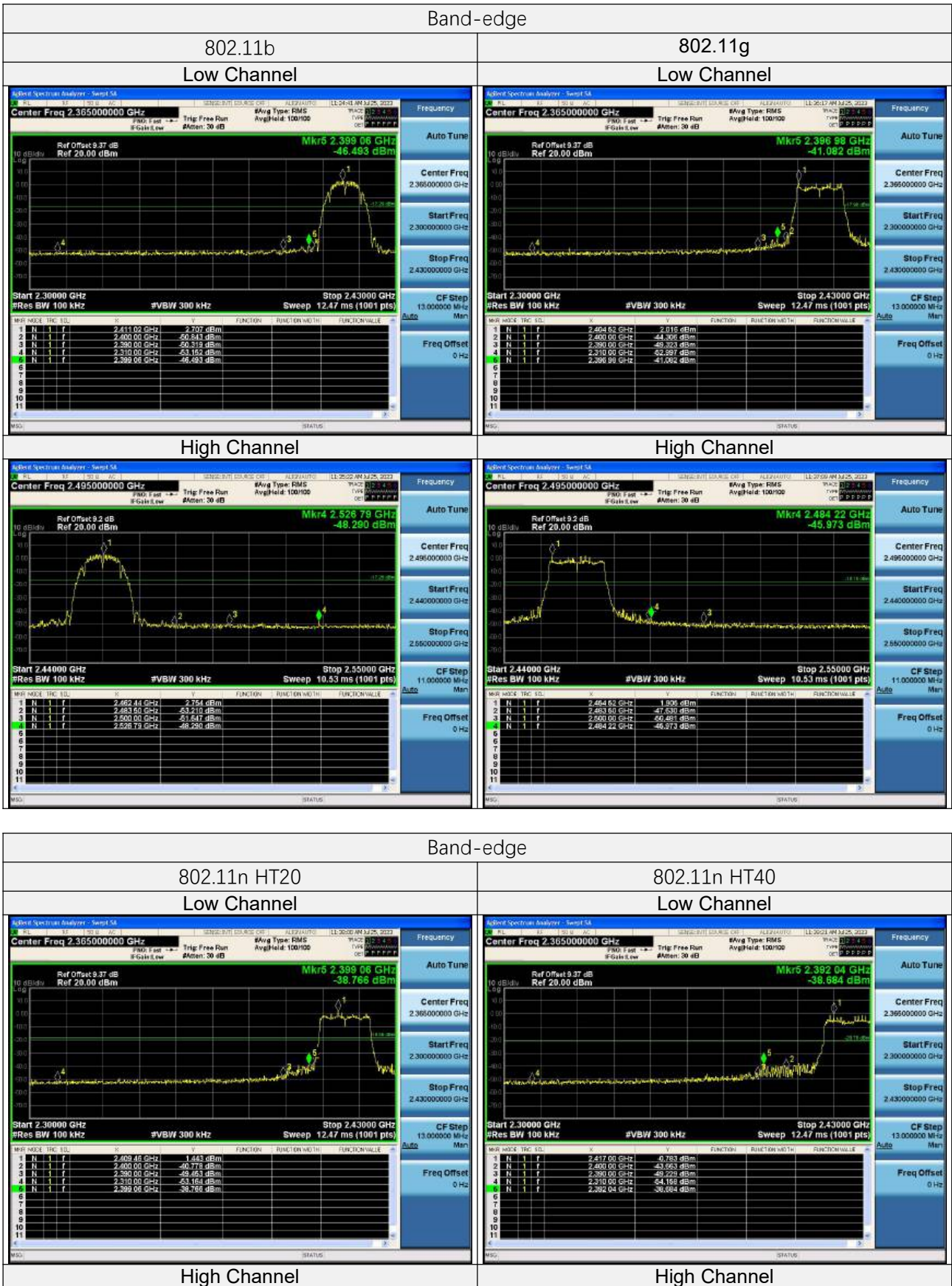


1000~26500MHz Emission



1000~26500MHz Emission



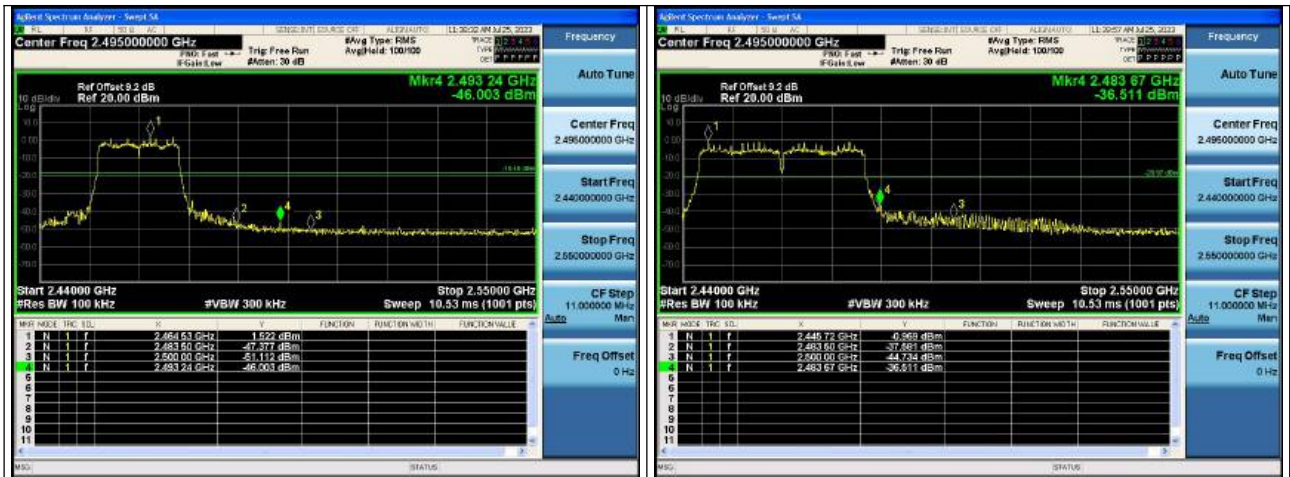




CVC Testing Technology Co., Ltd.

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----- End of the Report -----



Important

- (1) The test report is valid without the official stamp of CVC;
- (2) Any part photocopies of the test report are forbidden without the written permission from CVC;
- (3) The test report is invalid without the signatures of Approval and Reviewer;
- (4) The test report is invalid if altered;
- (5) Objections to the test report must be submitted to CVC within 15 days.
- (6) Generally, commission test is responsible for the tested samples only.
- (7) As for the test result “-” or “N” means “not applicable”, “/” means “not test”, “P” means “pass” and “F” means “fail”

The test data and test results given in this test report should only be used for purposes of scientific research, teaching and internal quality control when the CMA symbol is not presented.

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