

FCC Part 15C
Measurement And Test Report

For

ProcessingPoint, Inc

2796 Loker Avenue W.Suite 111, Carlsbad, CA 92010

FCC ID: SPLMB3000

Sep. 02, 2015

This Report Concerns: ☒ Original Report	Equipment Type: MB3000
Report Number:	MTI150630001RF-1
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Test Date:	Aug. 23, 2015 - Aug. 30, 2015
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1. General Information about EUT

1.1 Client Information

Applicant	:	ProcessingPoint, Inc
Address	:	2796 Loker Avenue W.Suite 111, Carlsbad, CA 92010
Manufacturer	:	QINGDAO WINTEC SYSTEM CO., LTD
Address	:	Wintec Park, Xinye Road, High-Tech Zone, Qingdao, China
Trade	:	uAccept
EUT Name	:	pos terminal
Model No.	:	MB3000
Serial No.	:	MB1500, MB1750, MB4000
Model Difference	:	All the models above are identical in interior structure, electrical circuits and components; just model names are different for marking requirement.
Standards	:	FCC Part 15, Subpart C (15.247:2014)
Test Method	:	ANSI C63.4: 2009
Conclusions	:	PASS

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	pos terminal
Models No.	:	MB3000
Product Description	:	Operation Frequency: 802.11b/g/n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
	:	Number of Channel: 802.11b/g/n(HT20):11 channels see note(3) 802.11n(HT40): 7 channels see note(3)
	:	Antenna Gain: 2 dBi (Integral Antenna)
	:	Modulation Type: 802.11b: DSSS 802.11g: OFDM 802.11n: OFDM
	:	Bit Rate of Transmitter: 802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6 Mbps
	:	

		802.11n:up to 150Mbps
Power Supply	:	DC power supplied by AC/DC Adapter DC power by Li-ion Battery
Adapter Information:	:	MODEL: EA10521F-240 INPUT: 100V-240V~ 50/60Hz 1.8A. Output: 24V $\overline{=}$ 2.5A

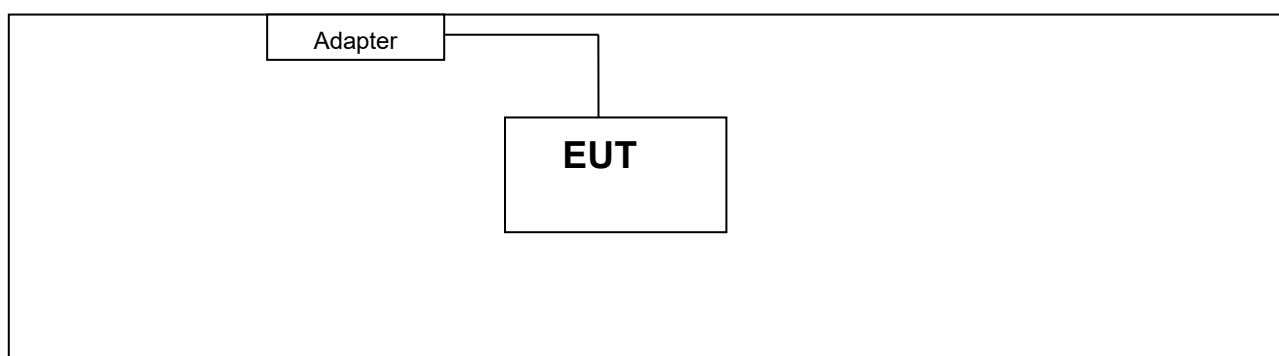
Note:

- (1) This Test Report is FCC Part 15.247 for 802.11b/g/n, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v03r03.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (3) Channel List:

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

Note:CH 01~CH 11 for 802.11b/g/n(HT20)
CH 03~CH 09 for 802.11n(HT40)

1.3 Block Diagram Showing the Configuration of System Tested

TX Mode

1.4 Description of Support Units

Equipment Information				
Name	Model	S/N	Manufacturer	Used “√”
/	/	/	/	/
Cable Information				
Number	Shielded Type	Ferrite Core	Length	Note
Adapter DC line	No	YES	0.8M	/

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

For Conducted Test	
Final Test Mode	Description
Mode 1	TX Mode

For Radiated Test	
Final Test Mode	Description
Mode 1	TX Mode

Note:

- (1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.4 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

- 802.11b Mode: CCK (1 Mbps)
- 802.11g Mode: OFDM (6 Mbps)
- 802.11n (HT20) Mode: MCS 0 (6.5 Mbps)
- 802.11n (HT40) Mode: MCS 0 (13 Mbps)

1.6 Description of Test Software Setting

During testing channel & Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be

fixed on the firmware of the final end product power parameters of WLAN.

Test Software:	AccessPort		
Channel	CH 01	CH 06	CH 11
IEEE 802.11b DSSS	28	28	28
IEEE 802.11g OFDM	30	30	30
IEEE 802.11n (HT20)	33	33	33
Channel	CH 03	CH 06	CH 09
IEEE 802.11n (HT40)	32	32	32

1.7 Measurement Uncertainty

Measurement Uncertainty for a Level of Confidence of 95 %, $U=2 \times U_c(y)$

RF frequency	1×10^{-7}
RF power, conducted	± 1 dB
Conducted emission of receivers	± 1 dB
Radiated emission of transmitter	± 6 dB
Radiated emission of receiver	± 6 dB
Temperature	± 1 degree
Humidity	± 5 %

1.8 Test Facility

Shenzhen Toby Technology Co., Ltd.

Add.: 1 A/F., Bldg.6, Yusheng Industrial Zone The National Road No.107 Xixiang Section 467

FCC Registration No.:811562

2. Test Summary

FCC Part 15 Subpart C(15.247)		
Standard Section	Description	Result
15.203	Antenna Requirement	Pass
15.207	Conducted Emission	Pass
15.247(a)(2)	6dB Bandwidth	Pass
15.247(b)	Peak Output Power	Pass
15.247(e)	Power Spectral Density	Pass
15.247(d), 15.209	Transmitter Radiated Spurious Emission	Pass
15.247(d)	Band edge spurious emission	Pass

3. Test Equipment

For AC power line conducted emission:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
LISN	R&S	ENV216	101313	2015.12.06
LISN	SCHWARZBECK	NNLK 8129	8129245	2015.12.25
Pulse Limiter	SCHWARZBECK	VTSD 9561F	9716	2015.12.25
Test Cable	N/A	N/A	C01	2015.12.06
EMI Test Receiver	R&S	ESCI	101160	2015.12.06

For Radiated emission:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
Log-Bicon Antenna	MESS-ELEKTRO NIK	VULB 9160	3058	2015.12.11
Horn Antenna	Schwarzbeck	BBHA 9120D	631	2015.12.05
Horn Antenna	Schwarzbeck	BBHA 9170	373	2015.12.05
Test Cable	United Microwave	57793	1m	2015.12.05
Test Cable	United Microwave	A30A30-5006	10M	2015.12.05
Microwave Pre_amplifier	Agilent	8449B	3008A01714	2015.12.05
Pre-Amplifier	Anritsu	MH648A	M09961	2015.12.05
EMI Test Receiver	R&S	ESCI-7	101318	2015.12.05

For RF conducted emission:

Equipment	Manufacturer	Model	Serial No.	Calibration Due
Spectrum analyzer	Agilent	E4470B	MY41441082	2016.06.01

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

4. Conducted Emission Test

4.1 Limit

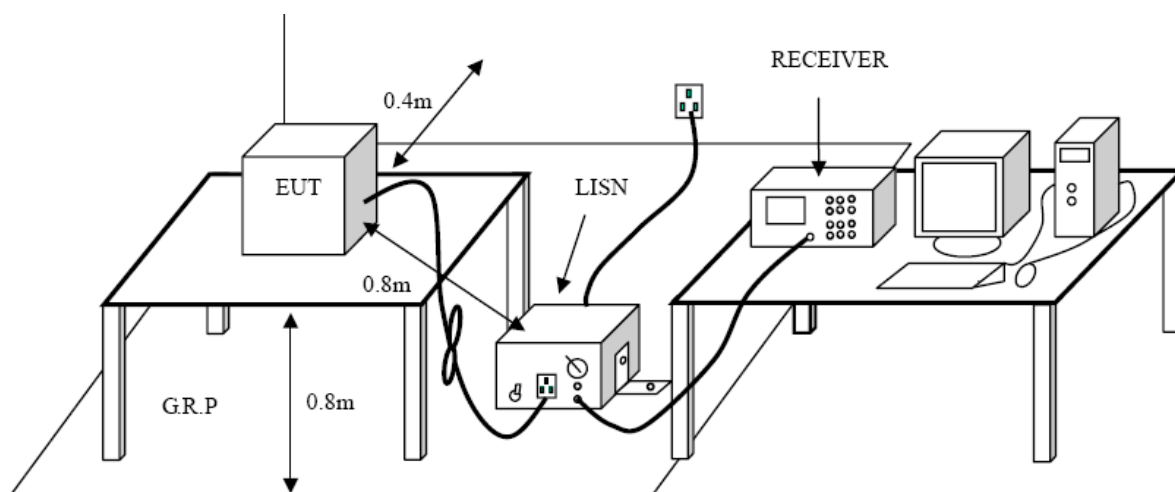
Conducted Emission Test Limit

Frequency	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

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.

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.

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

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

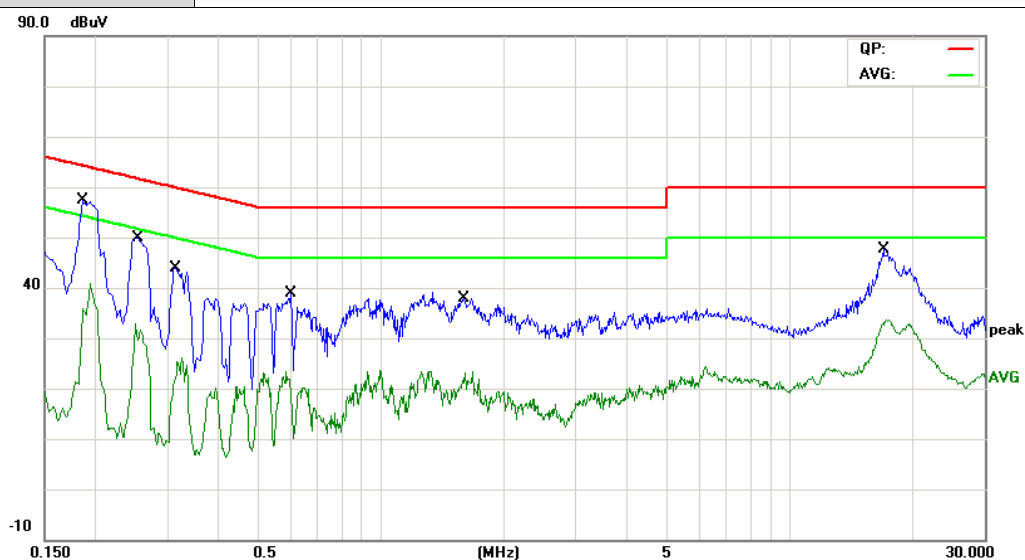
4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Please see the next page.

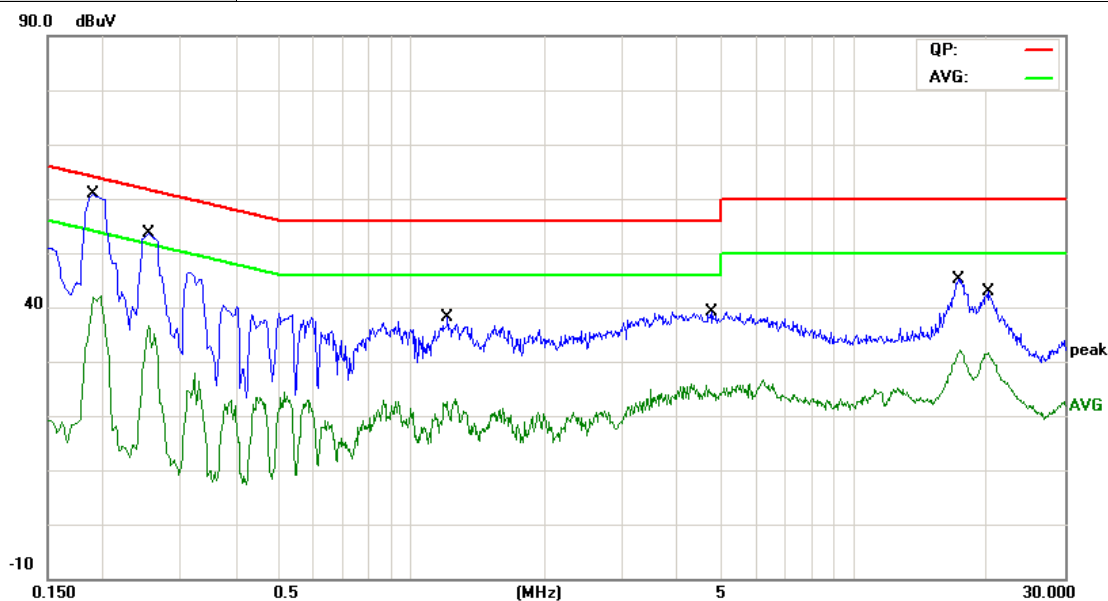
EUT:	Pos terminal	Model Name :	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Terminal:	Line		
Test Mode:	AC Charging with TX 802.11b Mode		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1860	43.24	9.99	53.23	64.21	-10.98	QP
2		0.1860	23.38	9.99	33.37	54.21	-20.84	AVG
3		0.2540	35.55	10.02	45.57	61.62	-16.05	QP
4		0.2540	20.31	10.02	30.33	51.62	-21.29	AVG
5		0.3140	28.90	10.02	38.92	59.86	-20.94	QP
6		0.3140	12.60	10.02	22.62	49.86	-27.24	AVG
7		0.6020	25.68	10.07	35.75	56.00	-20.25	QP
8		0.6020	9.37	10.07	19.44	46.00	-26.56	AVG
9		1.5980	24.95	10.06	35.01	56.00	-20.99	QP
10		1.5980	10.84	10.06	20.90	46.00	-25.10	AVG
11		16.9700	30.11	10.22	40.33	60.00	-19.67	QP
12		16.9700	22.06	10.22	32.28	50.00	-17.72	AVG

Emission Level= Read Level+ Correct Factor

EUT:	Pos terminal	Model Name :	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Terminal:	Neutral		
Test Mode:	AC Charging with TX 802.11b Mode		
Remark:	Only worse case is reported		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1900	46.24	10.12	56.36	64.03	-7.67	QP
2		0.1900	29.19	10.12	39.31	54.03	-14.72	AVG
3		0.2540	38.55	10.10	48.65	61.62	-12.97	QP
4		0.2540	22.07	10.10	32.17	51.62	-19.45	AVG
5		1.2059	24.47	10.14	34.61	56.00	-21.39	QP
6		1.2059	12.00	10.14	22.14	46.00	-23.86	AVG
7		4.7619	24.16	10.06	34.22	56.00	-21.78	QP
8		4.7619	14.52	10.06	24.58	46.00	-21.42	AVG
9		17.2820	28.94	10.06	39.00	60.00	-21.00	QP
10		17.2820	20.91	10.06	30.97	50.00	-19.03	AVG
11		20.0580	27.36	10.06	37.42	60.00	-22.58	QP
12		20.0580	20.41	10.06	30.47	50.00	-19.53	AVG

Emission Level= Read Level+ Correct Factor

5. Radiated Emission Test

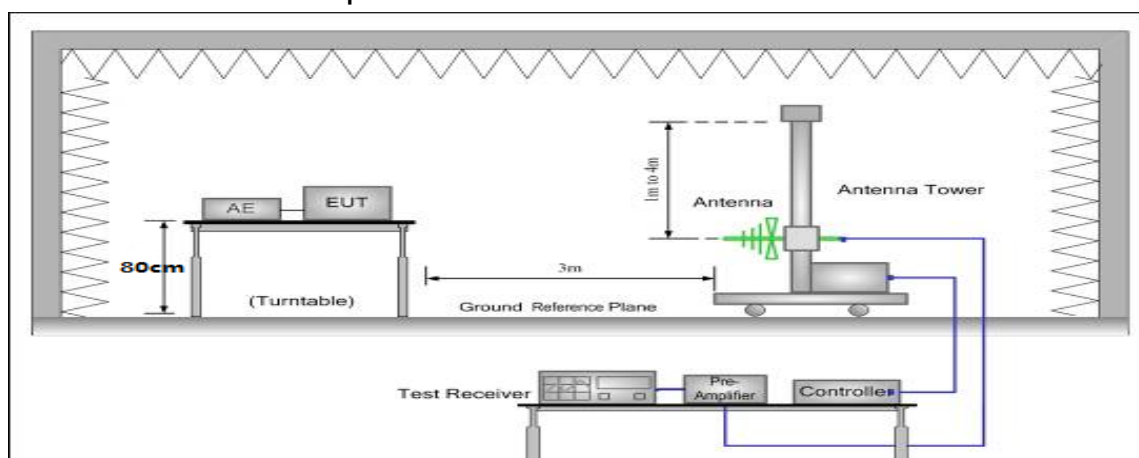
5.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

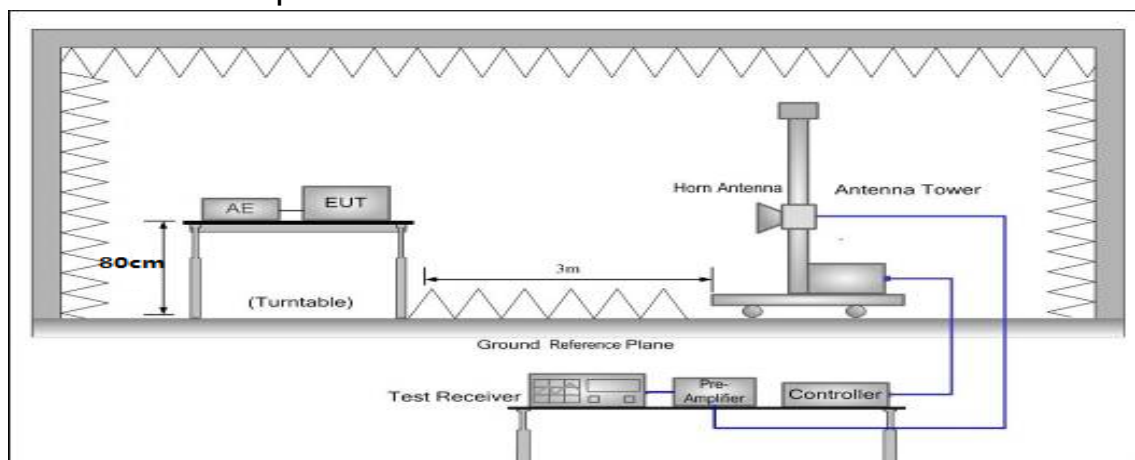
Frequency (MHz)	Field strength $\mu\text{V/m}$	Field strength $\text{dB}\mu\text{V/m}$	Detector	Measurement distance
30-88	100	40	QP	3m
88-216	150	43.5	QP	
216-960	200	46	QP	
960-1000	500	46	QP	
Above 1000	500	54	AV	
Above 1000	5000	74	PK	

5.2 Test Setup

Bellow 1000MHz Test Setup



Above 1GHz Test Setup



5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

5.5 Test Data

Test data please refer the following pages.

Mode: 802.11b					
Low channel: 2412 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4824	H	59.52	74	14.48	PK
4824	H	47.26	54	6.74	AV
4824	V	59.5	74	14.5	PK
4824	V	50.75	54	3.25	AV
2390	H	52.82	74	21.18	PK
2390	V	53.64	74	20.36	PK
240	H	40.8	46	5.2	QP
216.24	V	37.2	46	8.8	QP
Middle channel: 2437 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4874	H	60.13	74	13.87	PK
4874	V	49.46	54	4.54	AV
4874	H	59.68	74	14.32	PK
4874	V	51.38	54	2.62	AV
240	H	40.6	46	5.4	QP
216.24	V	37.4	46	8.6	QP
High channel: 2462 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4924	H	58.63	74	15.37	PK
4924	H	49.50	54	4.5	AV
4924	V	56.49	74	17.51	PK
4924	V	47.69	54	6.31	AV
2483.5	H	51.28	74	22.72	PK
2483.5	V	52.36	74	21.64	PK
240	H	40.9	46	5.1	QP
216.24	V	37.6	46	8.4	QP

Mode: 802.11g					
Low channel: 2412 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4824	H	56.49	74	17.51	PK
4824	H	47.69	54	6.31	AV
4824	V	58.34	74	15.66	PK
4824	V	49.65	54	4.35	AV
2390	H	66.56	74	7.44	PK
2390	H	46.99	54	7.01	AV
2390	V	65.36	74	8.64	PK
2390	V	44.49	54	9.51	AV
Middle channel: 2437 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4874	H	57.34	74	16.66	PK
4874	V	48.35	54	5.65	AV
4874	H	57.43	74	16.57	PK
4874	V	47.98	54	6.02	AV
High channel: 2462 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4924	H	56.98	74	17.02	PK
4924	H	47.66	54	6.34	AV
4924	V	56.42	74	17.58	PK
4924	V	46.89	54	7.11	AV
2483.5	H	60.43	74	13.57	PK
2483.5	H	43.35	54	10.65	AV
2483.5	V	61.24	74	12.76	PK
2483.5	V	43.95	54	10.05	AV

Mode: 802.11n20					
Low channel: 2412 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4824	H	55.38	74	18.62	PK
4824	H	46.78	54	7.22	AV
4824	V	55.87	74	18.13	PK
4824	V	47.12	54	6.88	AV
2390	H	62.62	74	11.38	PK
2390	H	47	54	7	AV
2390	V	61.34	74	12.66	PK
2390	V	46.5	54	7.5	AV
Middle channel: 2437 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4874	H	55.64	74	18.36	PK
4874	V	46.32	54	7.68	AV
4874	H	54.99	74	19.01	PK
4874	V	46.52	54	7.48	AV
High channel: 2462 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4924	H	55.16	74	18.84	PK
4924	H	47.06	54	6.94	AV
4924	V	54.88	74	19.12	PK
4924	V	46.12	54	7.88	AV
2483.5	H	60	74	14	PK
2483.5	H	43.77	54	10.23	AV
2483.5	V	62.31	74	11.69	PK
2483.5	V	44.27	54	9.73	AV

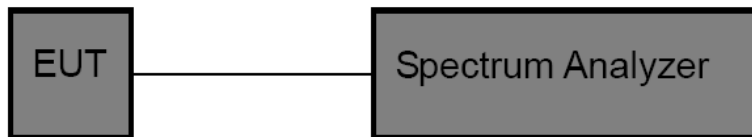
Mode: 802.11n40					
Low channel: 2422 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4844	H	53.97	74	20.03	PK
4844	H	44.65	54	9.35	AV
4844	V	54.12	74	19.88	PK
4844	V	45.31	54	8.69	AV
2390	H	64.85	74	9.15	PK
2390	H	52.47	54	1.53	AV
2390	V	64.85	74	9.15	PK
2390	V	51.47	54	2.53	AV
Middle channel: 2437 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4874	H	54.22	74	19.78	PK
4874	V	45.09	54	8.91	AV
4874	H	54.69	74	19.31	PK
4874	V	45.23	54	8.77	AV
High channel: 2452 MHz					
Frequency (MHz)	Ant. Pol. H/V	Emission level	Limit	Margin (dB)	Detector
4904	H	54.83	74	19.17	PK
4904	H	44.89	54	9.11	AV
4904	V	55.21	74	18.79	PK
4904	V	45.39	54	8.61	AV
2483.5	H	66.55	74	7.45	PK
2483.5	H	51.43	54	2.57	AV
2483.5	V	67.54	74	6.46	PK
2483.5	V	50.43	54	3.57	AV

6. Band edge spurious emission

6.1 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

6.2 Test Setup



6.3 Test Procedure

Use the following spectrum analyzer settings:

Set RBW=100 kHz. VBW $\geq$ 3RBW. Detector =peak, Sweep time = auto couple, Trace mode = max hold.

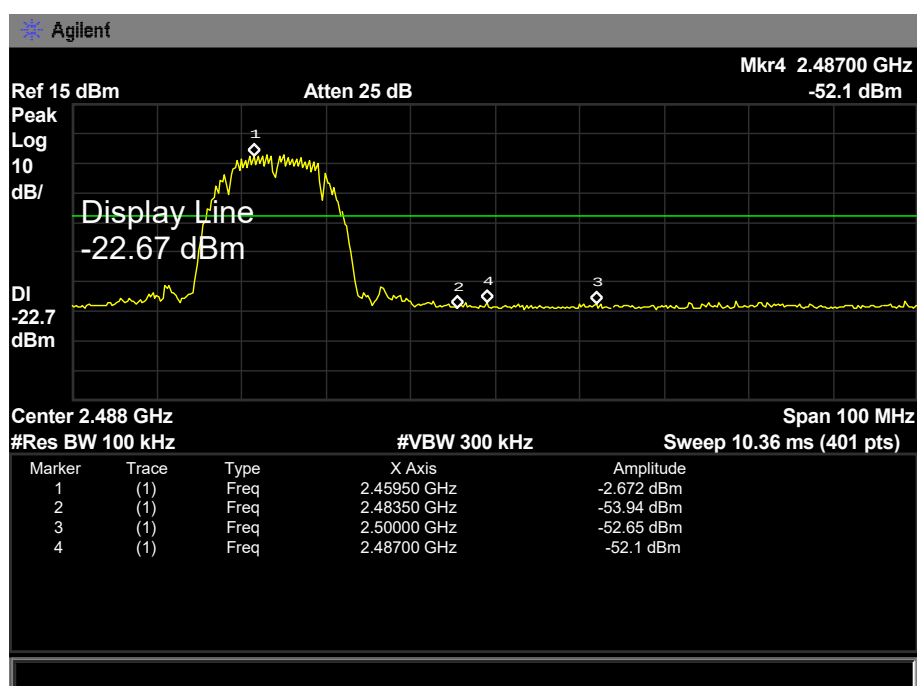
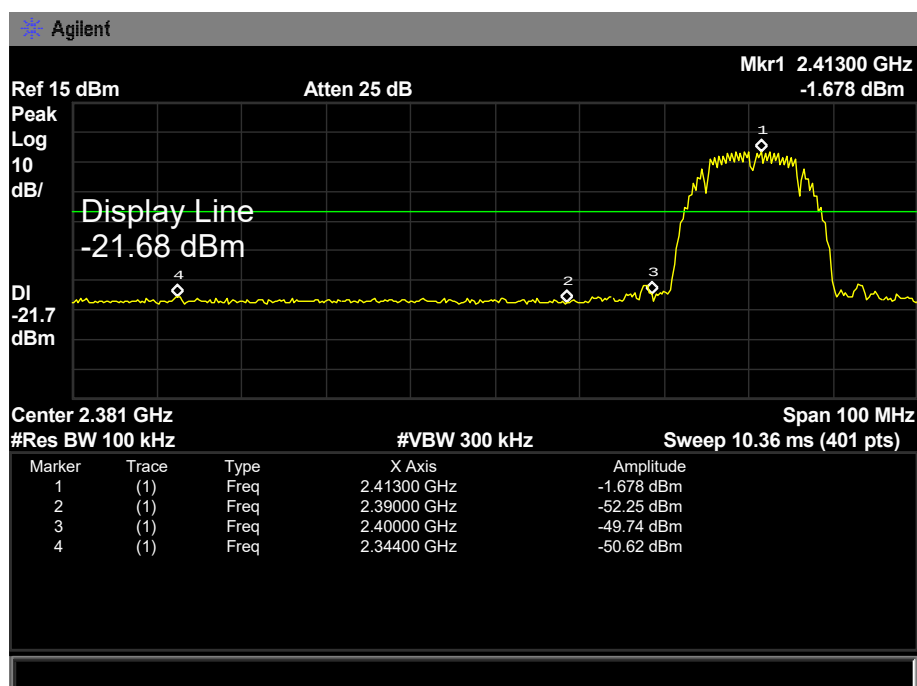
6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

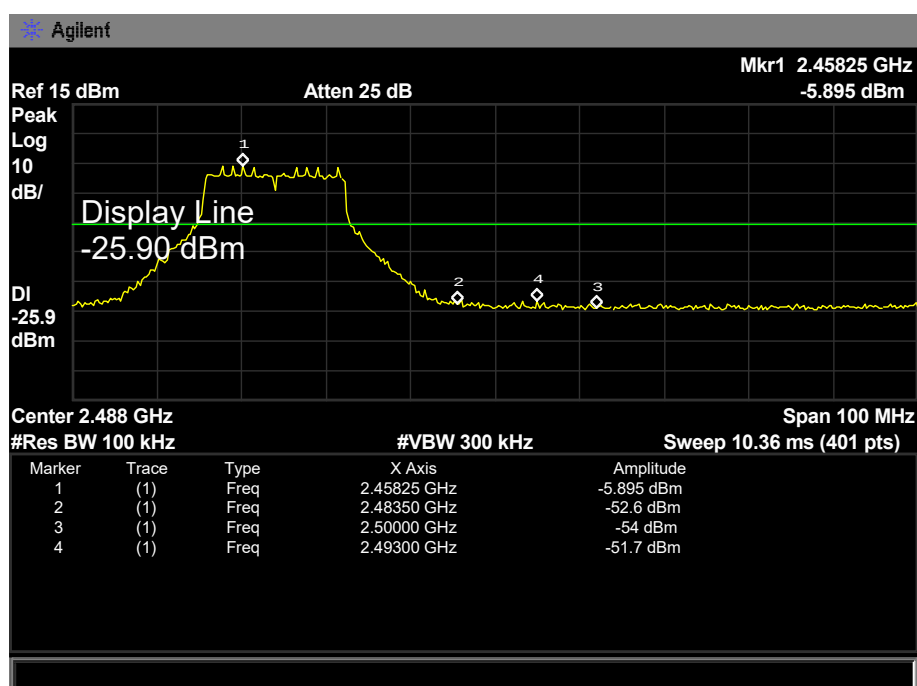
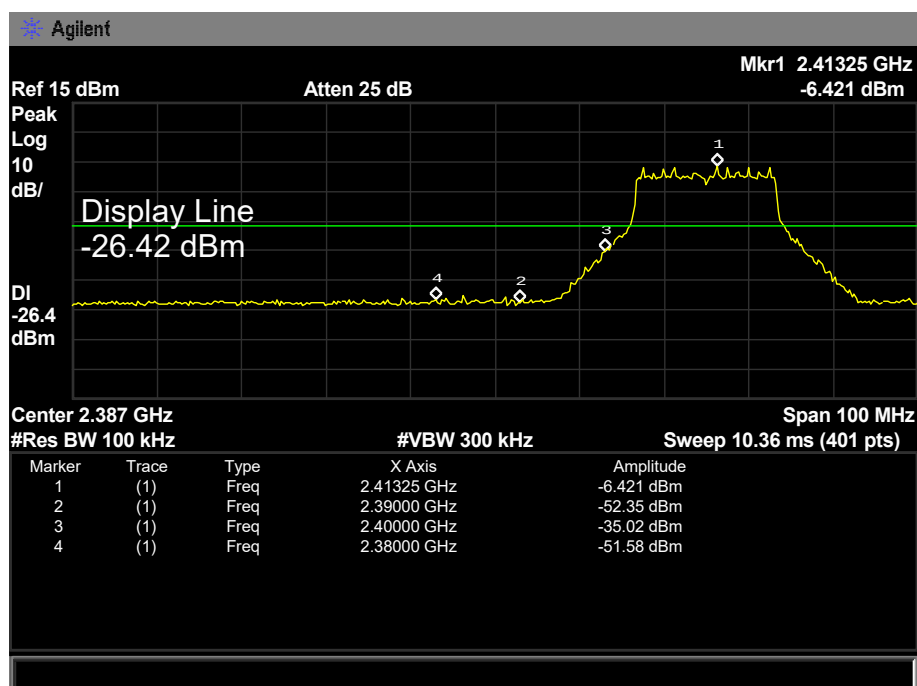
6.5 Test Data

Please see the next page.

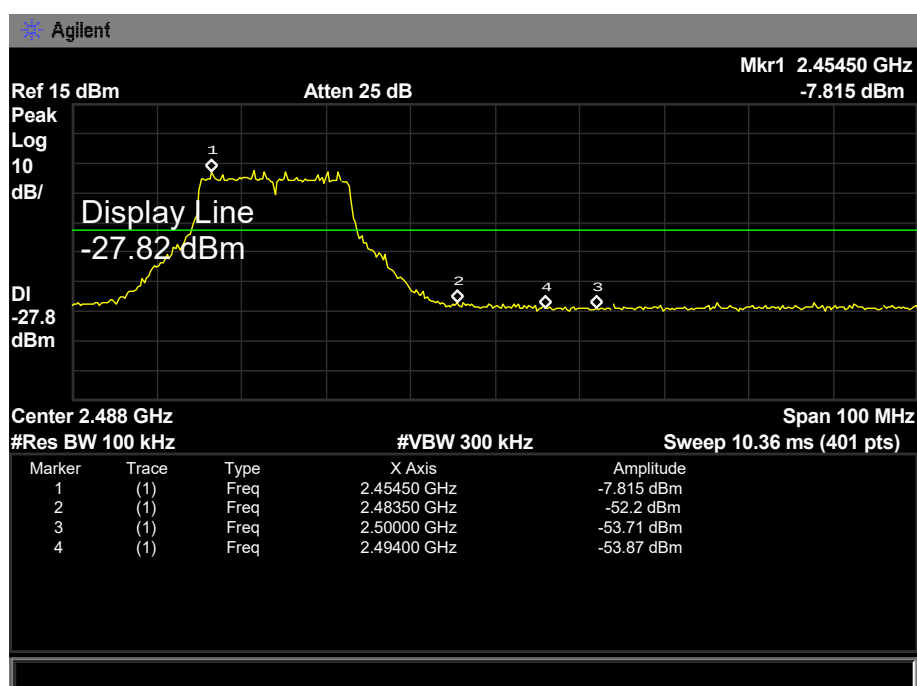
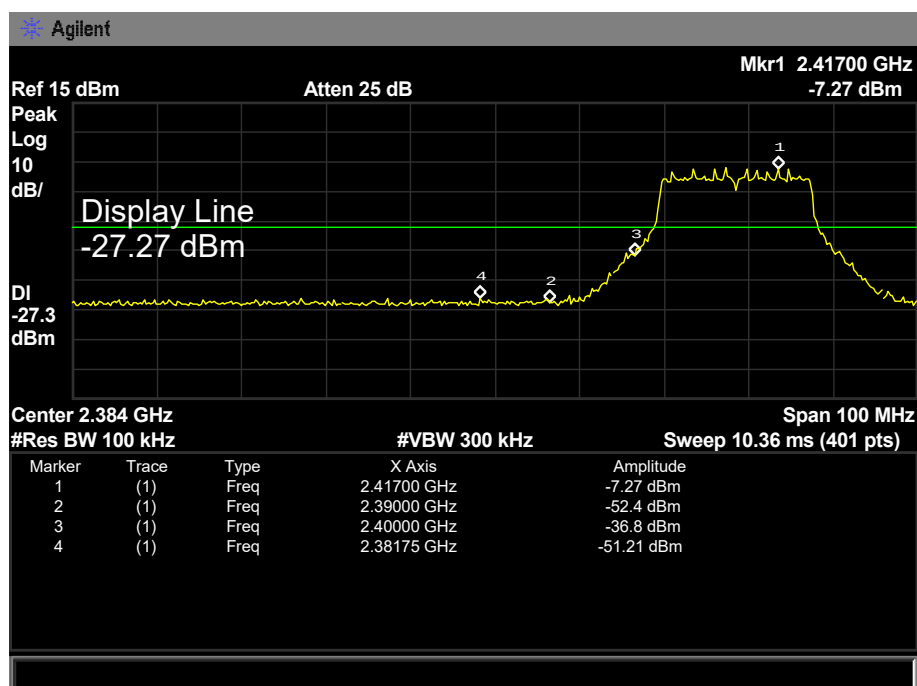
EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX B Mode 2412MHz / TX B Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



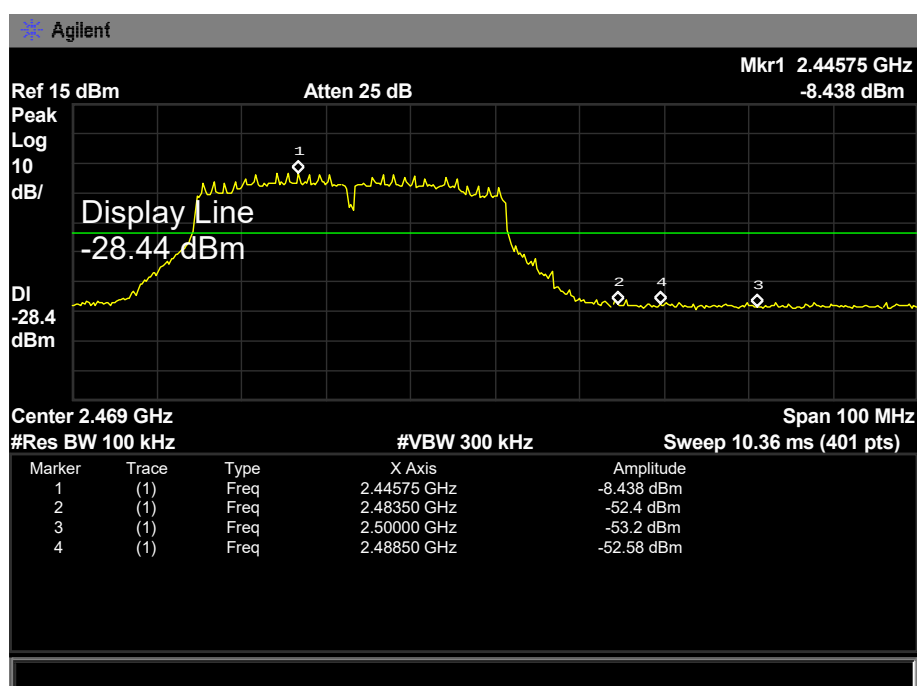
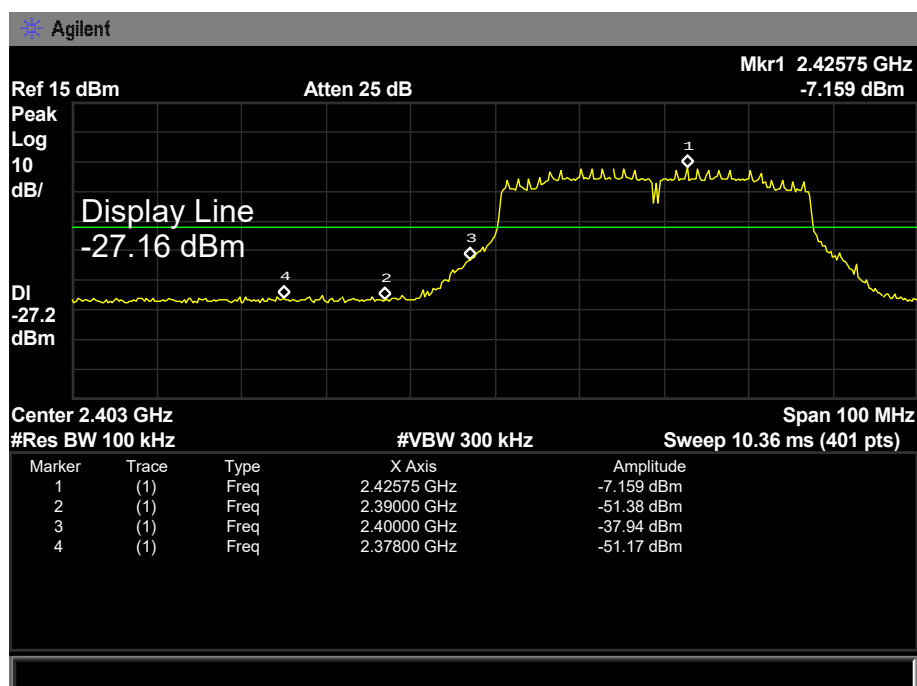
EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX G Mode 2412MHz / TX G Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX N(HT20) Mode 2412MHz / TX N(HT20) Mode 2462MHz		
Remark:	The EUT is programed in continuously transmitting mode		



EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX N(HT40) Mode 2422MHz / TX N(HT40) Mode 2452MHz		
Remark:	The EUT is programed in continuously transmitting mode		



7. Bandwidth Test

7.1 Test Standard and Limit

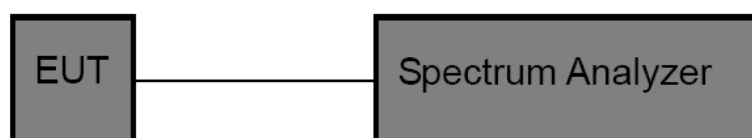
7.1.1 Test Standard

FCC Part 15.247 (a)(2)

7.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range(MHz)
Bandwidth	≥ 500 KHz (6dB bandwidth)	2400~2483.5

7.2 Test Setup



7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
- (3) Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:300 kHz, Detector: Peak, Sweep Time set auto.

7.4 EUT Operating Condition

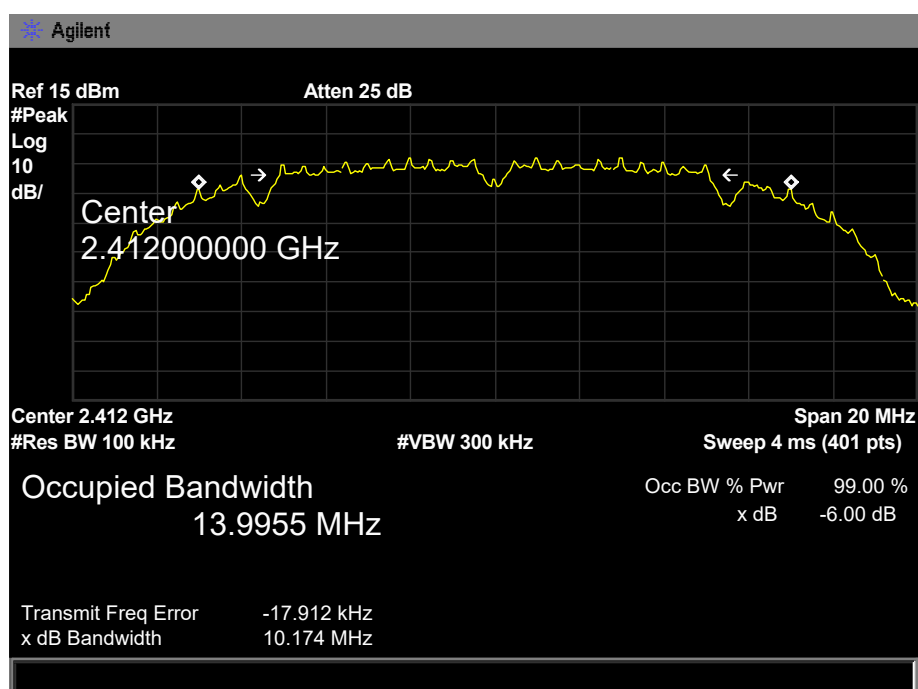
The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.

7.5 Test Data

EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11B Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	10.174	13.9955	>=0.5
2437	10.170	13.9536	
2462	11.092	13.9991	

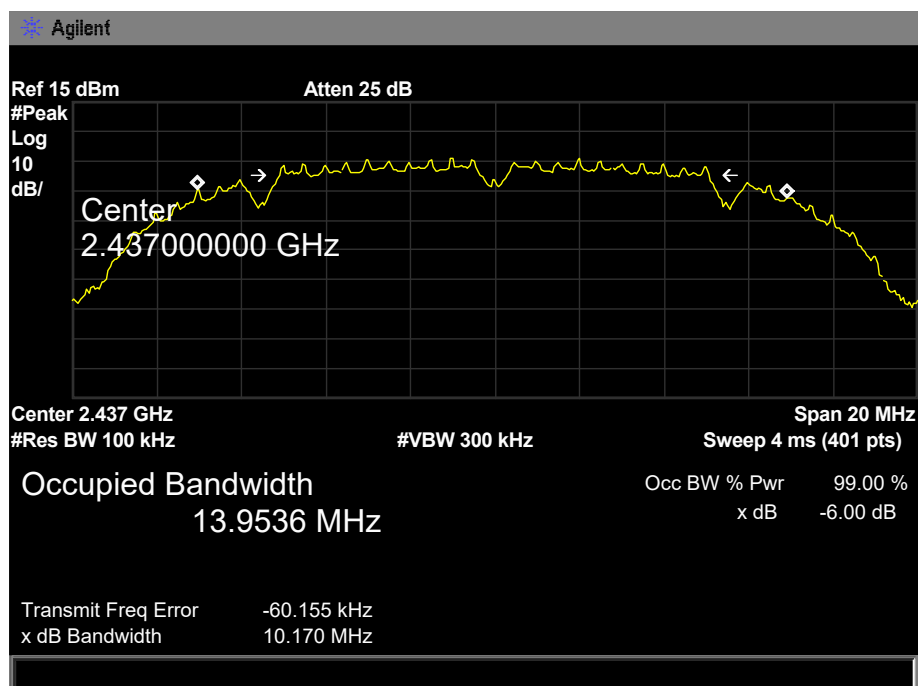
802.11B Mode

2412 MHz



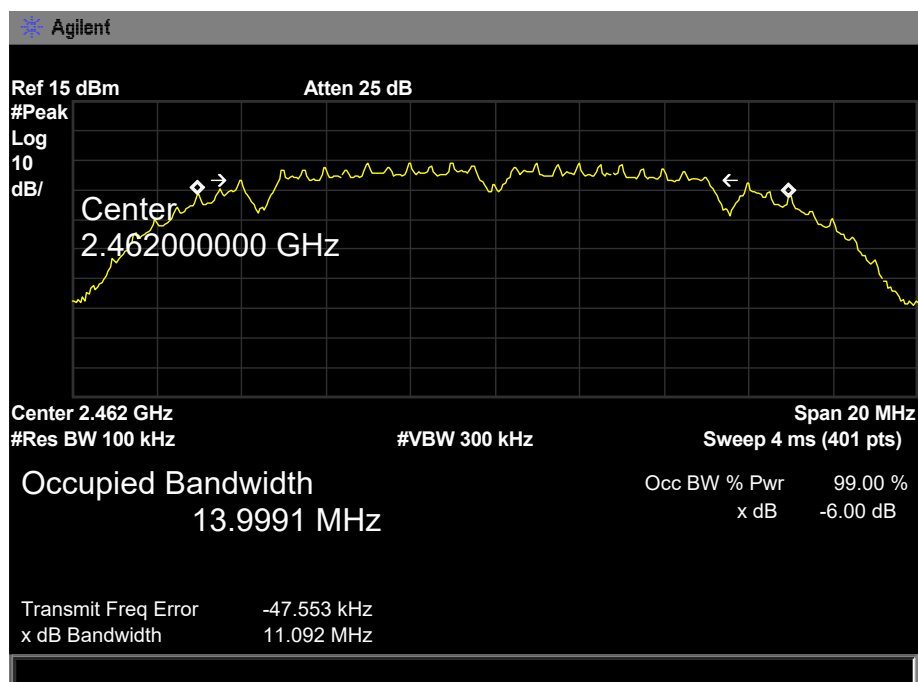
802.11B Mode

2437 MHz

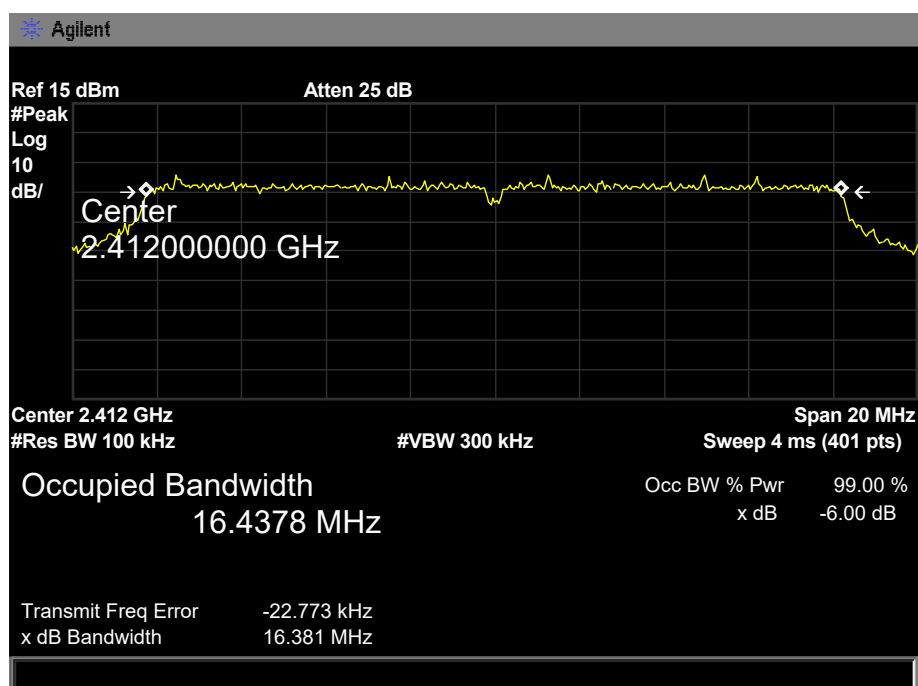


802.11B Mode

2462 MHz

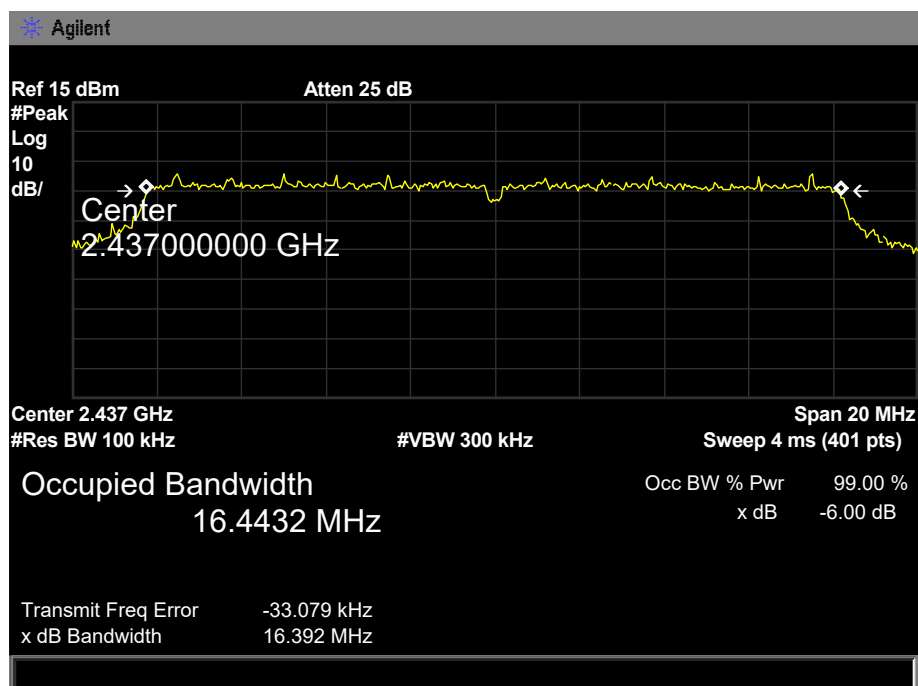


EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11G Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	16.381	16.4378	>=0.5
2437	16.392	16.4432	
2462	16.383	16.4582	

802.11G Mode**2412 MHz**

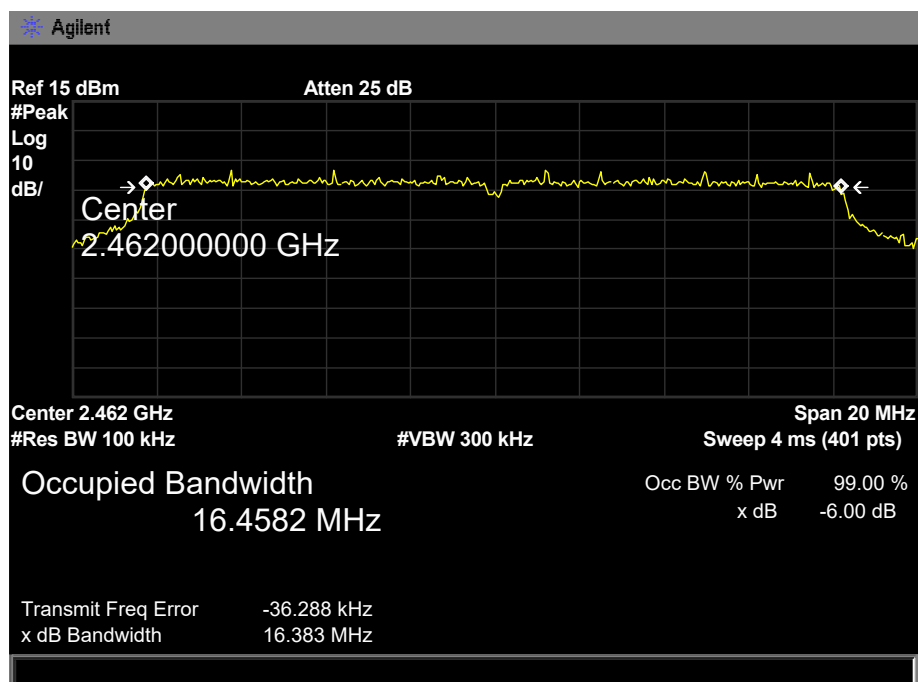
802.11G Mode

2437 MHz

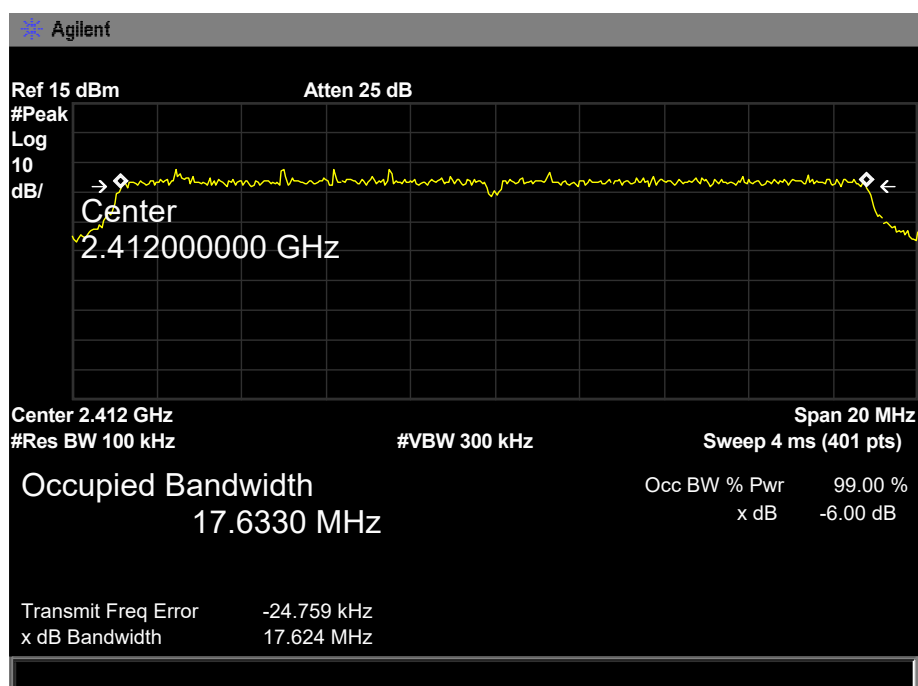


802.11G Mode

2462 MHz

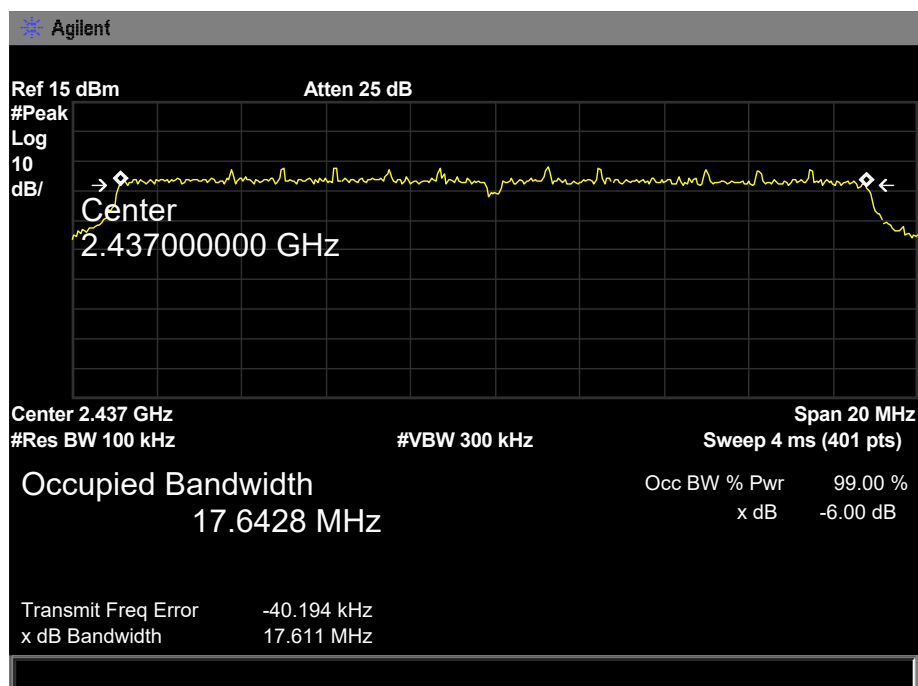


EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11N(HT20) Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	17.624	17.6330	>=0.5
2437	17.611	17.6428	
2462	17.587	17.6285	

802.11N(HT20) Mode**2412 MHz**

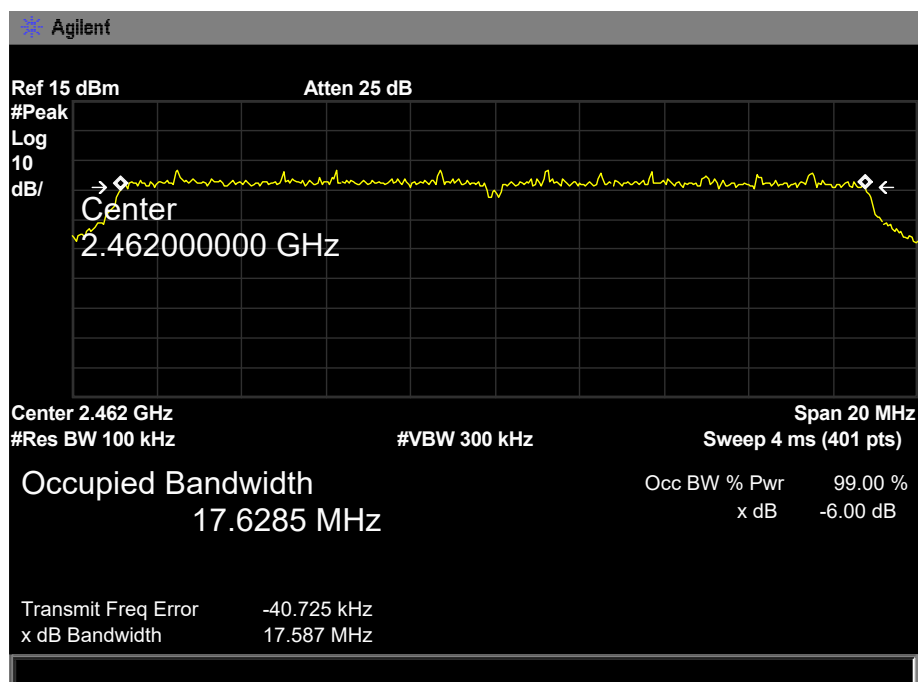
802.11N(HT20) Mode

2437 MHz

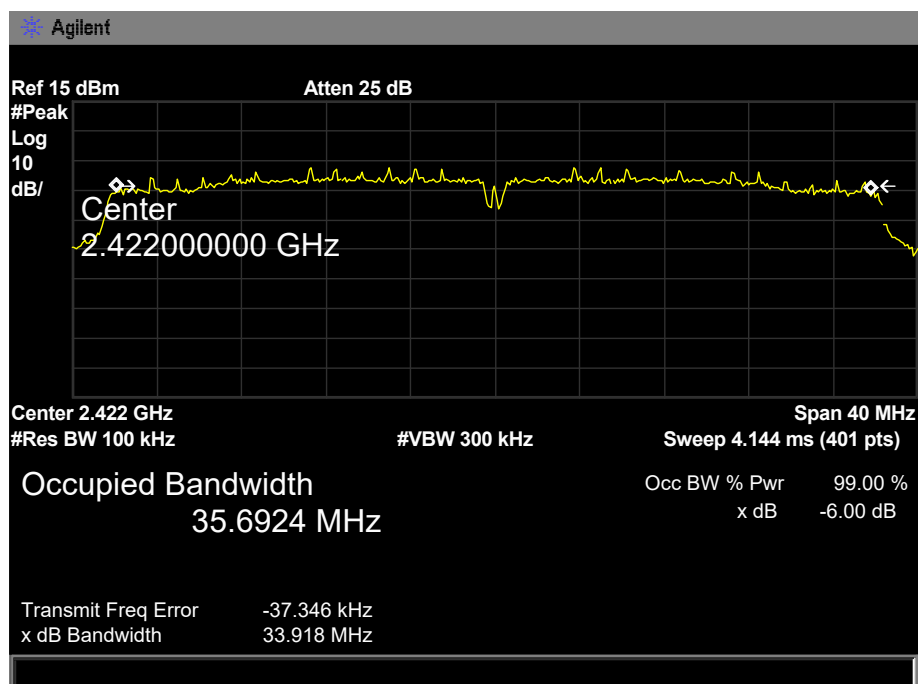


802.11N(HT20) Mode

2462 MHz

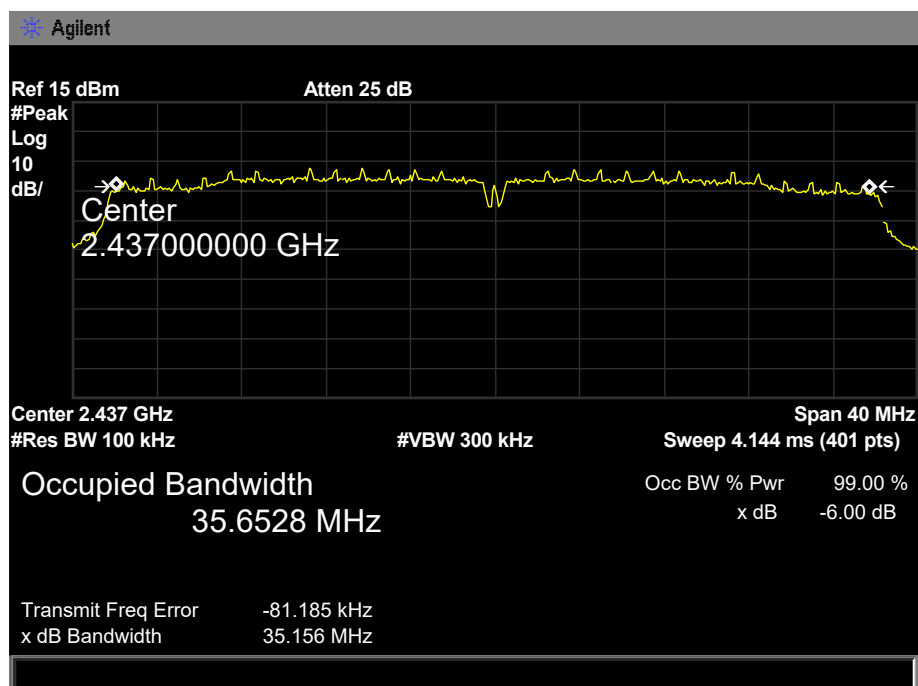


EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11N(HT40) Mode		
Channel frequency (MHz)	6dB Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
2412	33.918	35.6924	>=0.5
2437	35.156	35.6528	
2462	35.160	35.6970	

802.11N(HT40) Mode**2422 MHz**

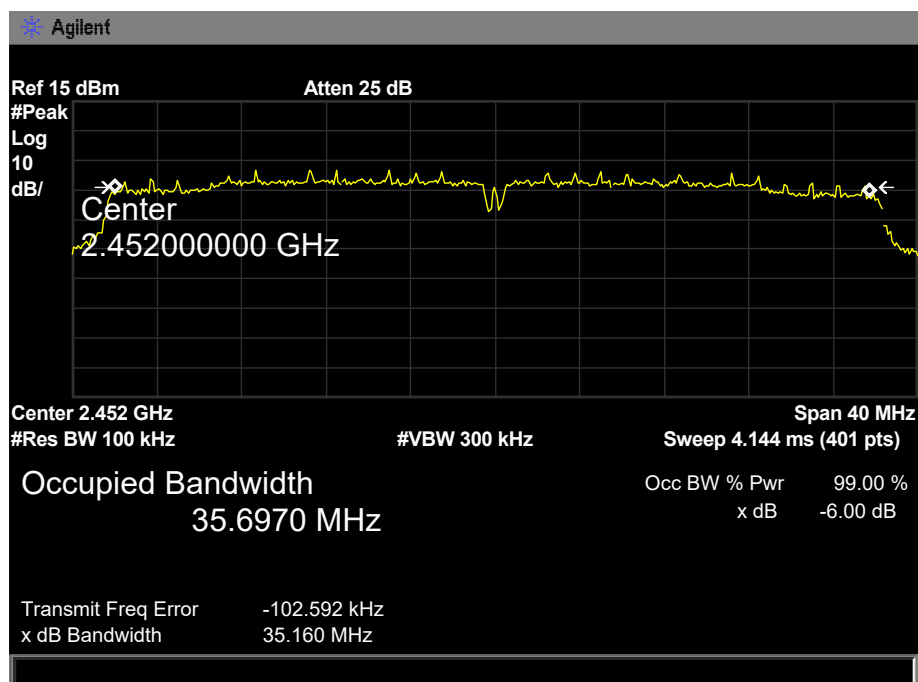
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



8. Peak Output Power Test

8.1 Test Standard and Limit

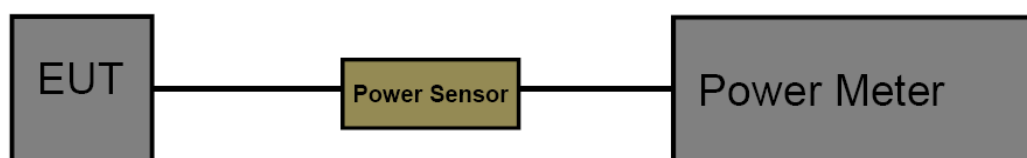
8.1.1 Test Standard

FCC Part 15.247 (b)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range(MHz)
Peak Output Power	1 Watt or 30 dBm	2400~2483.5

8.2 Test Setup



8.3 Test Procedure

The measurement is according to section 9.1.2 of KDB 558074 D01 DTS Meas Guidance v03r02.

The EUT was connected to RF power meter via a broadband power sensor as show the block above. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

8.4 EUT Operating Condition

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

8.5 Test Data

EUT:	Pos terminal	Model Name :	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)
802.11b	2412	9.21	30
	2437	8.62	
	2462	9.25	
802.11g	2412	9.00	
	2437	9.58	
	2462	9.35	
802.11n (HT20)	2412	9.12	
	2437	9.05	
	2462	8.94	
802.11n (HT40)	2422	9.24	
	2437	8.79	
	2452	9.38	
Result: PASS			

9. Power Spectral Density Test

9.1 Test Standard and Limit

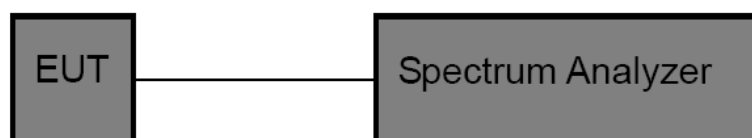
9.1.1 Test Standard

FCC Part 15.247 (e)

9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)		
Test Item	Limit	Frequency Range(MHz)
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5

9.2 Test Setup



9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v03r02.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser center frequency to DTS channel center frequency.
- (3) Set the span to 1.5 times the DTS bandwidth.
- (4) Set the RBW to: 3 kHz
- (5) Set the VBW to: 10 kHz
- (6) Detector: peak
- (7) Sweep time: auto
- (8) Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

9.4 EUT Operating Condition

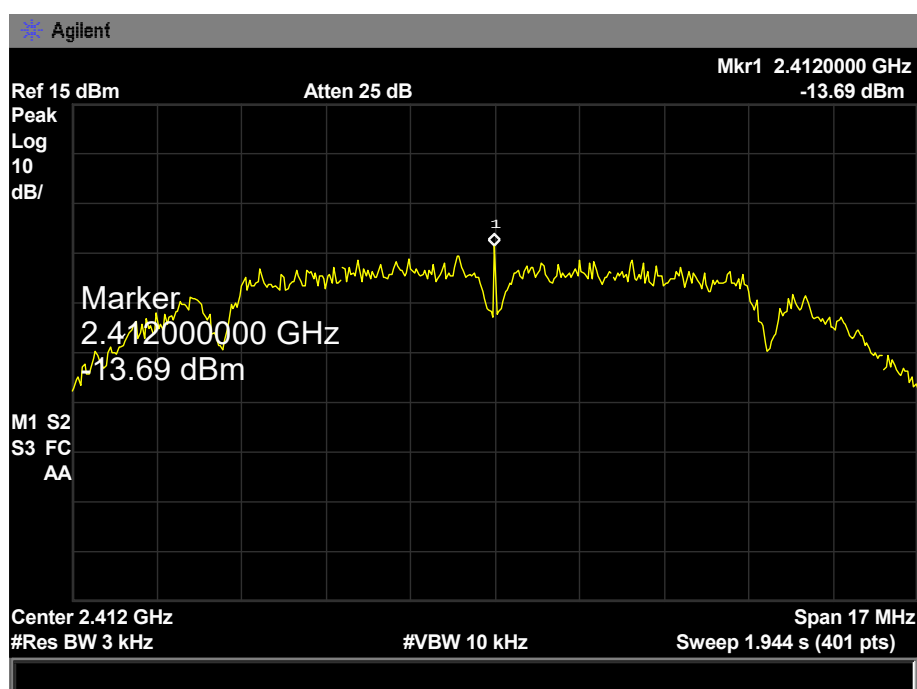
The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.

9.5 Test Data

EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11B Mode		
Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)	
2412	-13.69	8	
2437	-14.54		
2462	-15.17		

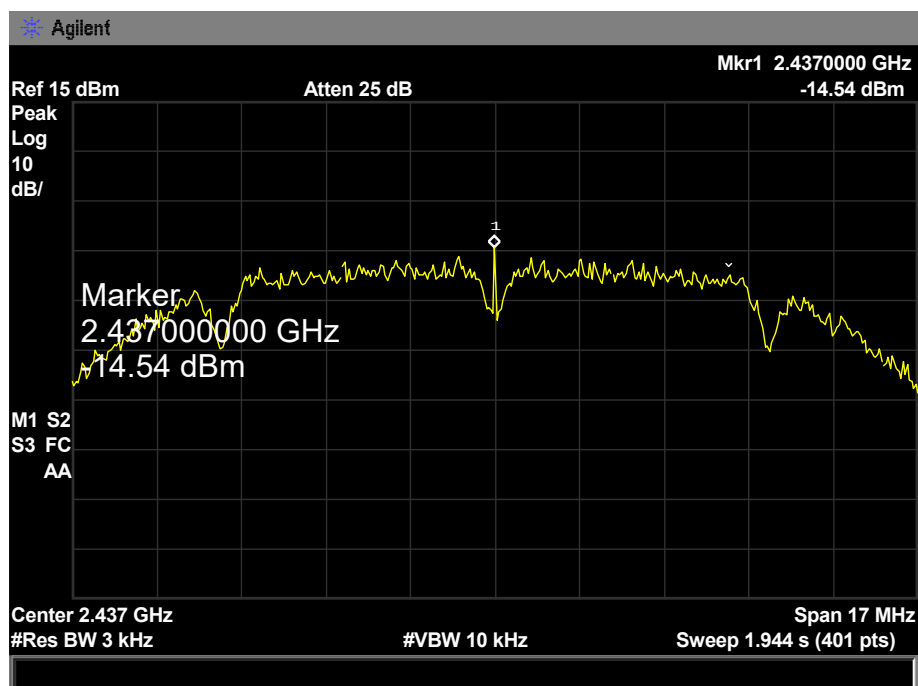
802.11B Mode

2412 MHz



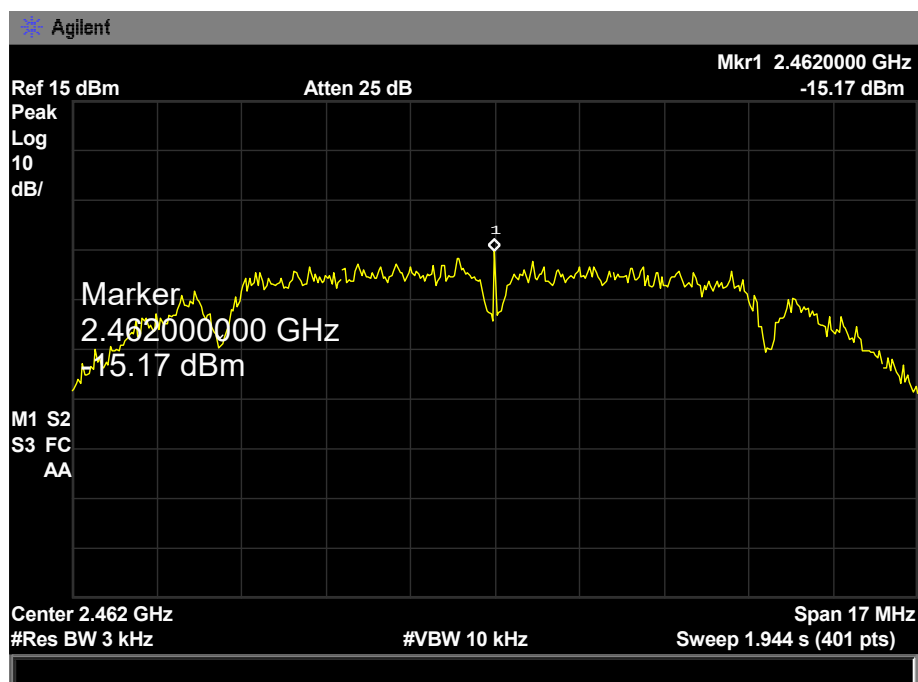
802.11B Mode

2437 MHz



802.11B Mode

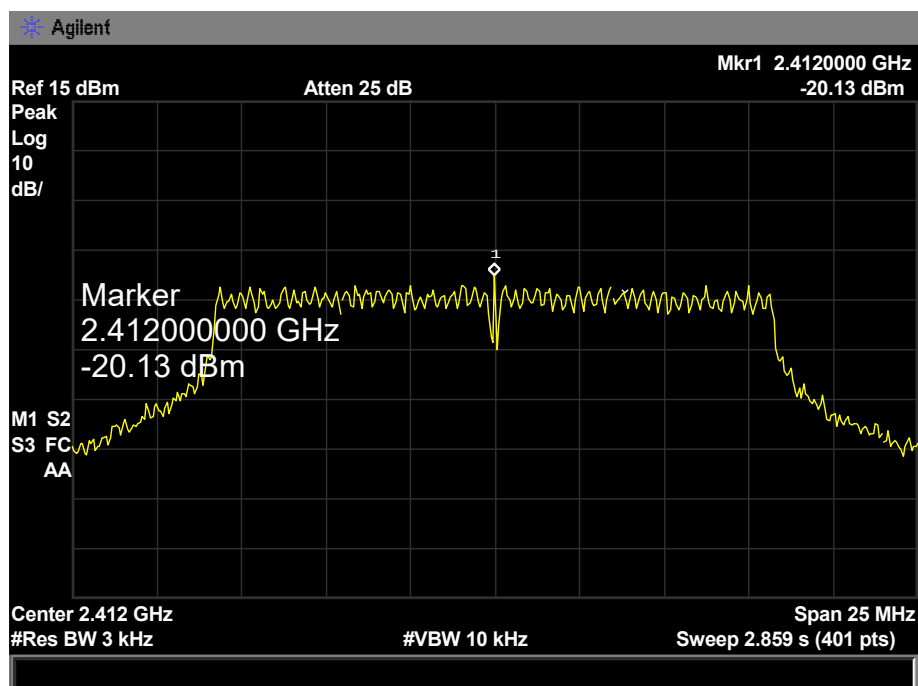
2462 MHz



EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Temperature:	25 °C
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11G Mode		
Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)	
2412	-20.13	8	
2437	-20.43		
2462	-21.03		

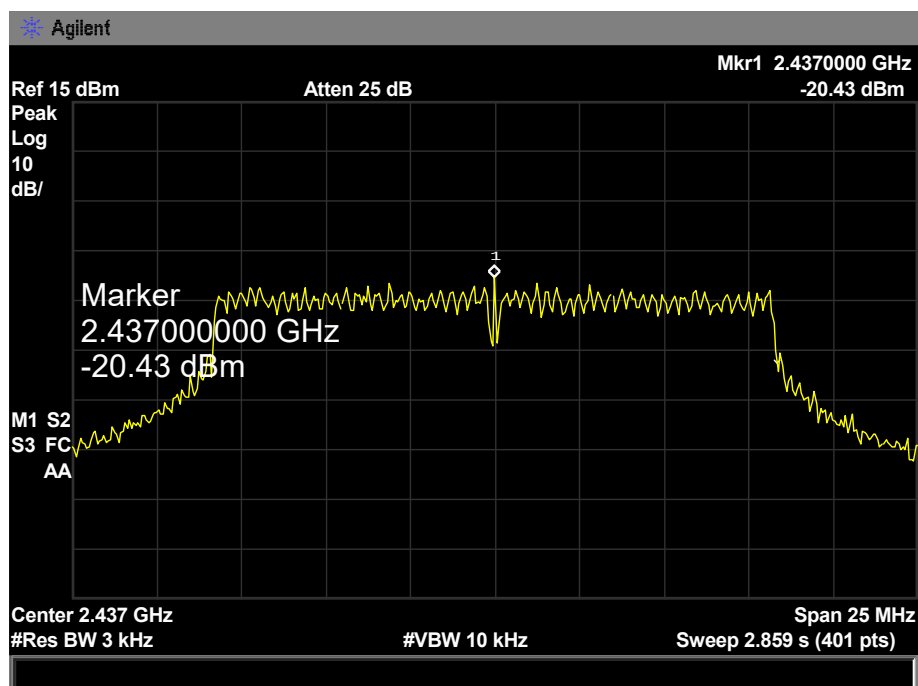
802.11G Mode

2412 MHz



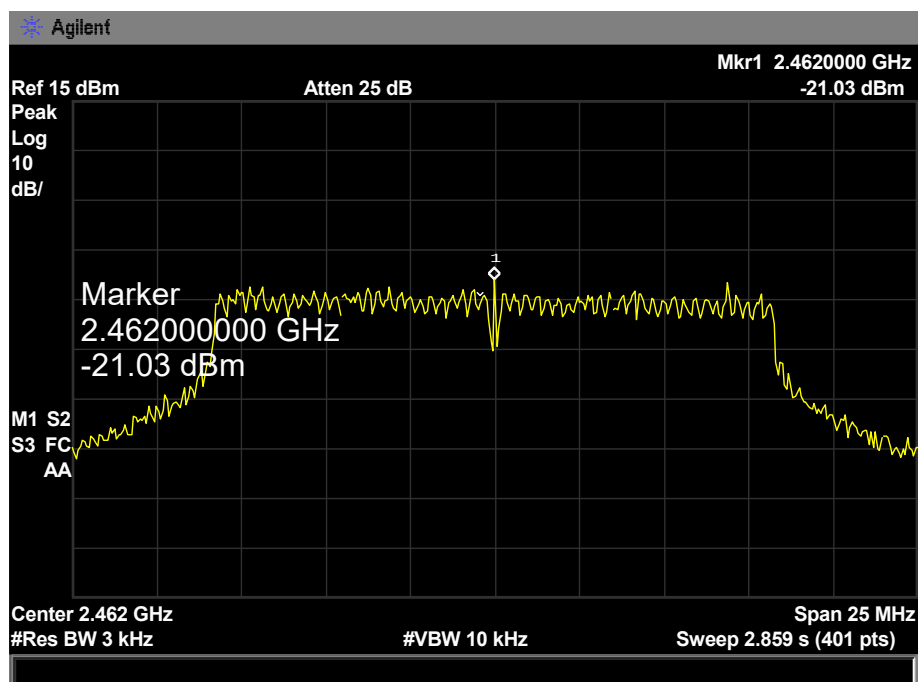
802.11G Mode

2437 MHz



802.11G Mode

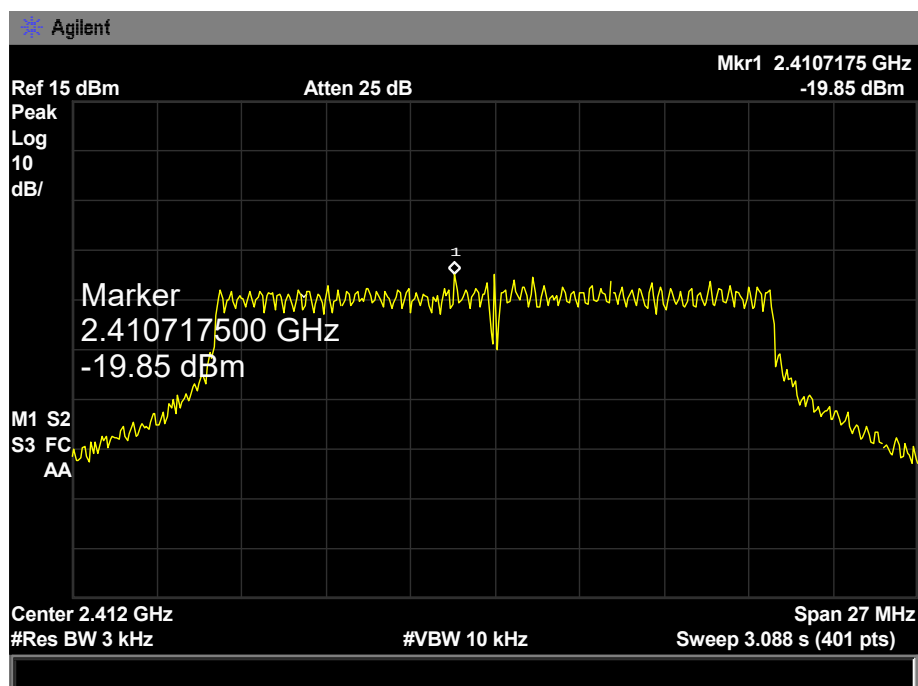
2462 MHz



EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Temperature:	25 °C
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11N(HT20) Mode		
Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)	
2412	-19.85	8	
2437	-20.39		
2462	-21.34		

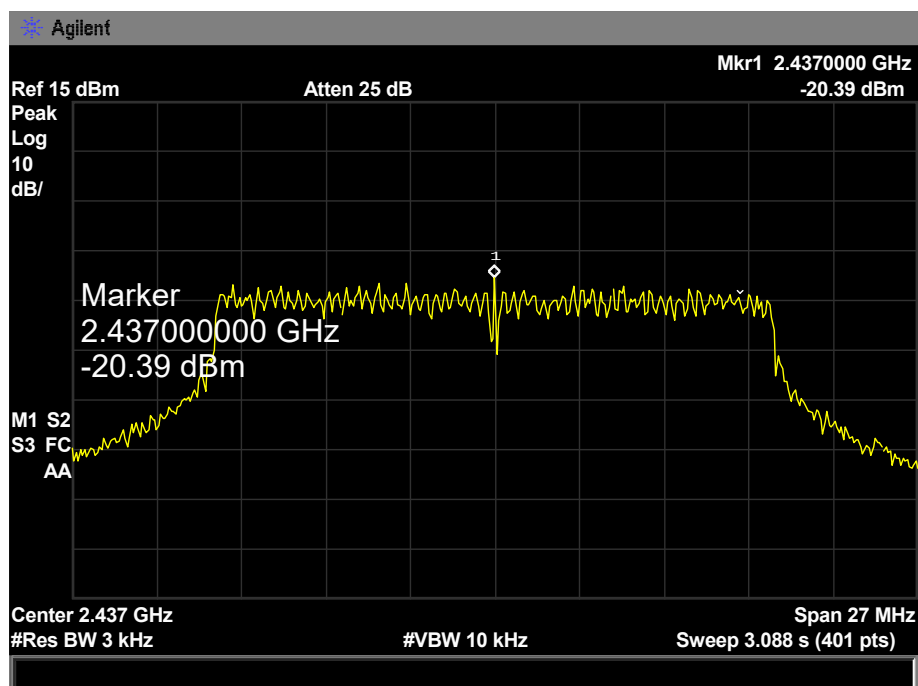
802.11N(HT20) Mode

2412 MHz



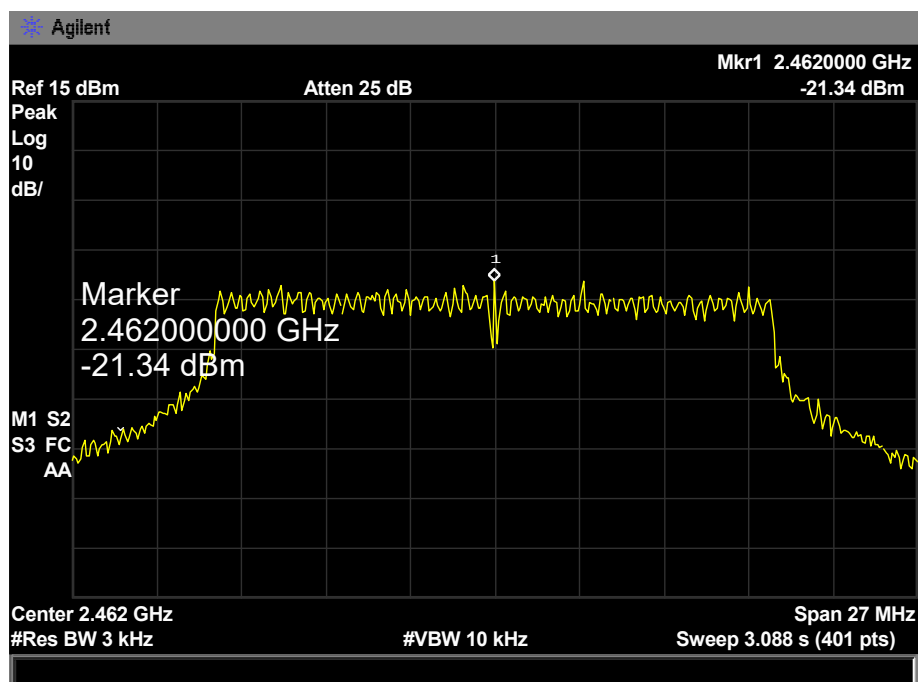
802.11N(HT20) Mode

2437 MHz



802.11N(HT20) Mode

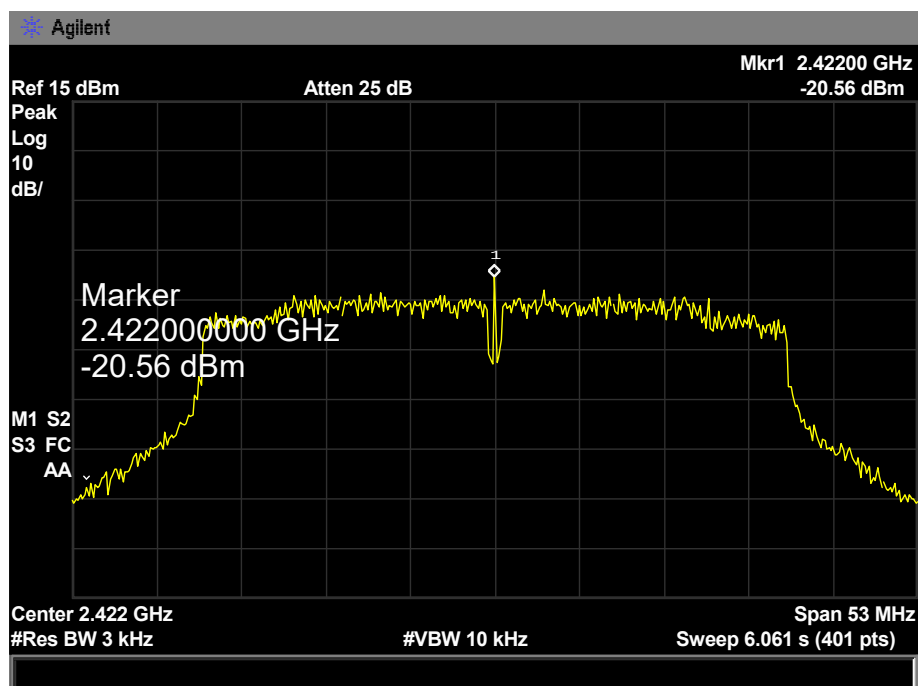
2462 MHz



EUT:	Pos terminal	Model:	MB3000
Temperature:	25 °C	Temperature:	25 °C
Test Voltage:	AC 120V/60Hz		
Test Mode:	TX 802.11N(HT40) Mode		
Channel Frequency (MHz)	Power Density (3 kHz/dBm)	Limit (dBm)	
2412	-20.56	8	
2437	-20.36		
2462	-21.79		

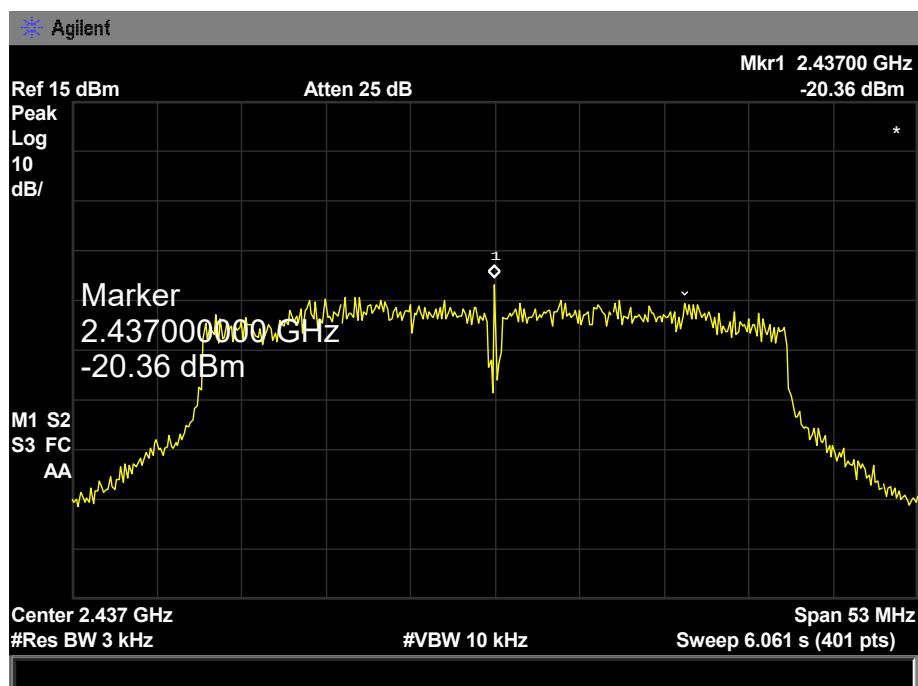
802.11N(HT40) Mode

2422 MHz



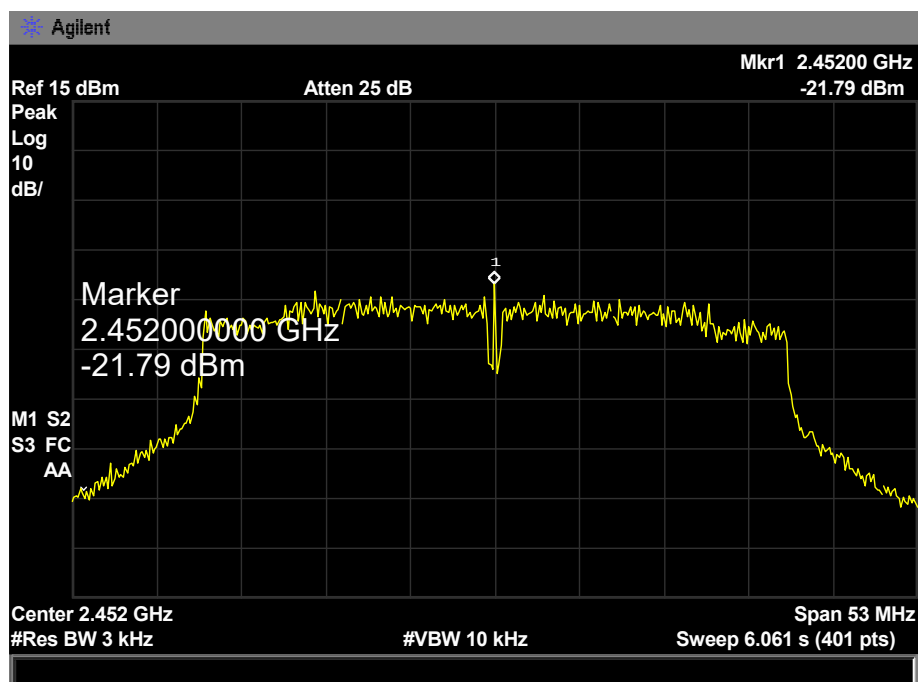
802.11N(HT40) Mode

2437 MHz



802.11N(HT40) Mode

2452 MHz



10. Antenna Requirement

10.1 Standard Requirement

10.1.1 Standard

FCC Part 15.203

10.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

10.2 Result

The EUT antenna is an integral Antenna, the antenna gain is 2dBi. It complies with the standard requirement.

