TEST REPORT

REPORT NUMBER: I21W00014-WLAN_Rev3

ON

Type of Equipment:	Tracker
Model Name:	PA31
Manufacturer:	Micron Electronics LLC.

ACCORDING TO

FCC Part 15, Subpart C, 2019:
15.205 Restricted bands of operation,
15.209 Radiated emission limits; general requirements,
15.247 Operation within the bands 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz
ANSI C63.10-2013:American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

Chongqing Academy of Information and Communications Technology

Month date, year
Jul, 13, 2021

Signature

Xiang Luoyong
Director

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of Chongqing Academy of Information and Communications Technology.

Revision Version

Report Number	Revision	Date	Memo
I21W00014-WLAN	V0.0	2021-06-16	--
I21W00014-WLAN_Rev1	V1.0	2021-07-13	--
I21W00014-WLAN_Rev2	V2.0	2021-07-16	--
I21W00014-WLAN_Rev3	V2.0	2021-07-19	--

FCC ID:	ZKQ-CM911
Report Date:	2021-07-13
Test Firm Name:	Chongqing Academy of Information and Communications Technology
FCC Registration Number:	CN1239

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC Parts 15, subpart C. The sample tested was found to comply with the requirements defined in the applied rules.

CONTENTS

1 General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC Parts 15, subpart C and ANSI C63.10-2013 and FCC KDB 558074.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviation from, additions to, or exclusions from the test specifications have been made. See Annex B.

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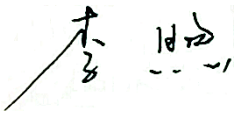
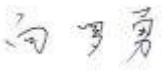
1.2 Testers

Name:	Li Xu
Position:	Engineer
Department:	Department of RF test
Date:	2021-06-01 to 2021-06-16
Signature:	

Editor of this test report:

Name:	Chen Wen
Position:	Engineer
Department:	Department of RF test
Date:	2021-07-13
Signature:	

Technical responsibility for area of testing:

Name:	Xiang Luoyong
Position:	Manager
Department:	Director of the laboratory
Date:	2021-07-13
Signature:	

1.3 Testing Laboratory information

1.3.1 Location

Name:	Chongqing Academy of Information and Communications Technology
Address:	Building B, Technology Innovation Center, No.8, Yuma Road, Chayuan New Area, Nan'an District, Chongqing, People's Republic of China, 401336
Tel:	+86-23-88069965
Fax:	+86-23-88608777
Email:	liqiao@caict.ac.cn

1.3.2 Test location, where different from section 1.3.1

Name:	------
Street:	------
City:	------
Country:	------
Telephone:	------
Fax:	------
Postcode:	------

1.4 Details of applicant or manufacturer

1.4.1 Applicant

Name:	Micron Electronics LLC.
Address:	1001 Yamato Road, Suite 400, Boca Raton, FL 33431, USA
Country:	USA
Telephone:	+18885383489
Fax:	--
Contact:	Ping Cheng
Email:	pcheng@micron-electronics.com

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

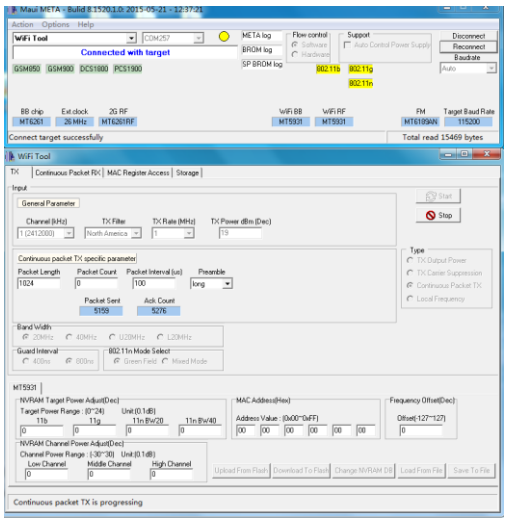
Name:	--
Address:	--
Country:	--
Telephone:	--
Fax:	--
Contact:	--
Email:	--

2 Test Item

2.1 General Information

Manufacturer:	Micron Electronics LLC.
Type of Equipment:	Tracker
Model Name:	PA31
Production Status:	Product
Hardware Version:	A109_PA31_MB_V2.0
Software Version:	PA31V01.01B03_C.I01
Antenna description:	Built in FPC antenna
Antenna Gain:	1.2-1.8dBi
Test SW Version:	8.1520.1.0
frequency range:	2412-2462MHz
Normal Voltages	3.8 V
High Voltages	4.2 V
Low Voltages	3.5 V
Receipt date of test item:	2021-06-01

EUT uses tool to control emission measurement,Change power level, channel, rate and bandwidth.11b transmitter power level set to 19,11g/n transmitter power level set to 16.



Tool

2.2 Outline of Equipment under Test

The PA31, referred to as "EUT" hereafter, is a a multi-Band wireless modem operating on the GSM/CAT-M1/Wi-Fi networks. The table below shows the supported bands for the EUT.

Technology	Freq.(MHz)	Note
2.4G WLAN	2400-2483.5	--

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	Modules	Micron Electronics LLC.	Tracker	866884045647583	None
B	Modules	Micron Electronics LLC.	Tracker	866884045657848	None
C	data line	--	--	--	--

2.5 ANTENNA REQUIREMENT

Standard Applicable

For intentional device , according to FCC 47 FR Section 15.203 , an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device .

Refer to statement below for compliance .

The manufacturer may design the unit so that the user can replace a broken antenna , but the use of a standard antenna jack or electrical connector is prohibited . Further , this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is a Internal Antenna which permanently attached . It conforms to the standard requirements . The directional gains of antenna used for transmitting is 1.2-1.8dBi.

2.6 Other Information

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3 Summary of Test Results

A brief summary of the tests carried out is shown as following.

Name of Test	Result
Maximum Peak Output Power	Pass
Peak Power Spectral Density	Pass
6dB Occupied Bandwidth	Pass
99% Occupied Bandwidth	--
Band Edges Compliance	Pass
Transmitter Spurious Emission-Conducted	Pass
Transmitter Spurious Emission-Radiated	Pass
Power line Conducted Emissions	Pass
Note:--	

4 Test Equipments and Ancillaries Used For Tests

The test equipments and ancillaries used are as follows.

No.	Equipment	Model	SN	Manufacture	Cal. Date	Cal. Due Date
1	EMI Test Receiver	ESU 40	100350	R&S	2021-05-12	2022-06-11
2	Trilog super broad band test antenna	VULB 9163	9163-586	SCHWARZBECK	2020-10-12	2021-11-11
3	Double-Ridged Horn Antenna	BBHA9120D	9120D-1083	SCHWARZBECK	2021-05-12	2022-06-11
4	Double Ridged Guide Antenna	DATE 1152	LM7127	ETS	2020-07-15	2021-08-16
5	Double Ridged Guide Antenna	DATE 1012	LM5945	ETS	2020-07-15	2021-08-16
6	Fully-Anechoic Chamber	FAC	--	TDK	2020-12-23	2024-01-22
7	Spectrum analyzer	FSQ 26	201137/026	R&S		2021-06-25
8	DC Power Supply	N6705B	MY50000919	Agilent		2021-06-25
9	Artificial Power Network	ENV 216	R&S	102368	2021-05-12	2022-06-11
10	Test Receiver	ESR 3	R&S	102477	2021-05-12	2022-06-11
11	Test Receiver	ESW 26	101382	R&S	2021-05-12	2022-06-11
12	anechoic chamber	--	--	TDK		2022-04-01

5 Test Results

5.1 Maximum Peak Output Power

Specifications:	FCC Part 15.247(b)
DUT Serial Number:	866884045647583
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

The maximum peak output power of the intentional radiator shall not exceed the following:

1. For systems using digital modulation in the bands of 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz: 1 watt.

2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Measurement Uncertainty:

Measurement Uncertainty	±1.0dB

Test Method1:

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set the RBW ≥ DTS bandwidth
4. Set VBW ≥ [3 × RBW].
5. Set span ≥ [3 × RBW].
6. Sweep time = auto couple.
7. Detector = peak.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use peak marker function to determine the peak amplitude level.

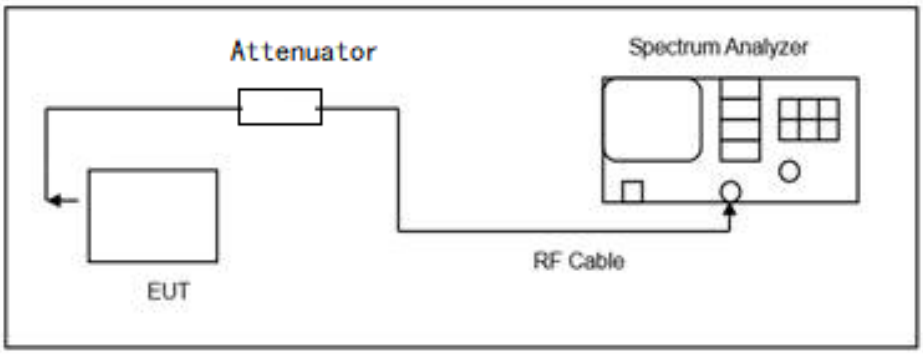
Test Method2:

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set the RBW = 1 MHz.
4. Set the VBW ≥ [3 × RBW].

5. Set the span ≥ [1.5 × DTS bandwidth].
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector). If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

Note: The power test method of 802.11n40 mode adopts test method 2.

Test block diagram:



Measurement Results:

802.11b/g mode

Mode	Data Rate(Mbps)	Teat Result(dBm)			Conclusion
		Ch1	Ch6	Ch11	
802.11b	1	19.42	19.77	19.31	Pass
	2	19.42	19.80	19.47	Pass
	5.5	19.34	19.66	19.22	Pass
	11	19.44	19.54	19.51	Pass
802.11g	6	22.16	23.79	24.08	Pass
	9	22.03	23.55	24.12	Pass
	12	22.23	24.15	23.49	Pass
	18	21.62	23.35	23.65	Pass
	24	22.20	23.60	24.00	Pass
	36	22.32	23.71	23.22	Pass
	48	21.38	23.20	23.77	Pass
	54	21.86	23.56	23.63	Pass

802.11n mode

Mode	Data Rate(Mbps)	Teat Result(dBm)			Conclusion
		Ch1	Ch6	Ch11	
802.11n (20MHz)	MCS0	22.49	23.67	24.00	Pass
	MCS1	22.59	24.04	23.49	Pass
	MCS2	21.87	23.53	23.93	Pass
	MCS3	22.20	23.75	23.92	Pass
	MCS4	21.88	24.24	24.24	Pass
	MCS5	22.16	23.40	23.61	Pass
	MCS6	21.70	23.90	24.02	Pass
	MCS7	22.87	24.38	24.30	Pass

Mode	Data Rate(Mbps)	Teat Result(dBm)			Conclusion
		Ch3	Ch7	Ch9	
802.11n (40MHz)	MCS0	23.25	24.37	24.31	Pass
	MCS1	22.92	24.00	24.44	Pass
	MCS2	23.27	24.59	24.61	Pass
	MCS3	23.36	24.44	24.48	Pass
	MCS4	23.52	24.86	24.32	Pass
	MCS5	23.42	24.54	24.52	Pass
	MCS6	23.81	24.16	24.14	Pass
	MCS7	23.66	24.54	24.49	Pass

Conclusion: PASS

Test figure as below:

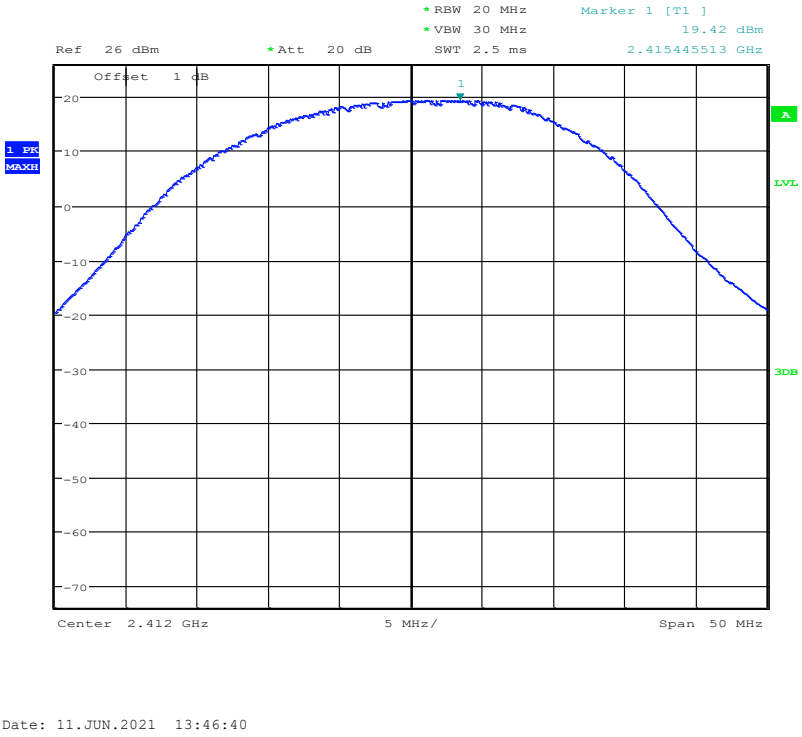


Fig.1 Peak Conducted Output Power CH1, 11b, Rate1

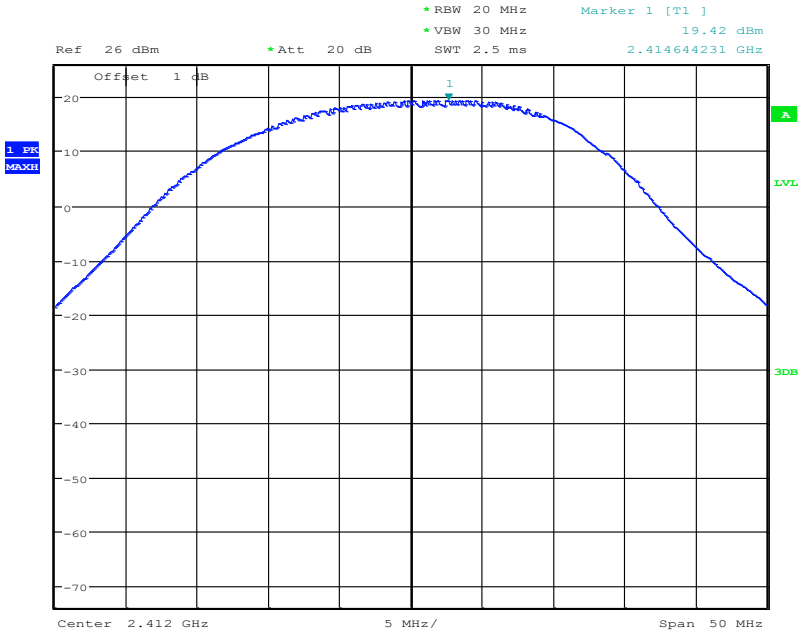


Fig.2 Peak Conducted Output Power CH1, 11b, Rate2

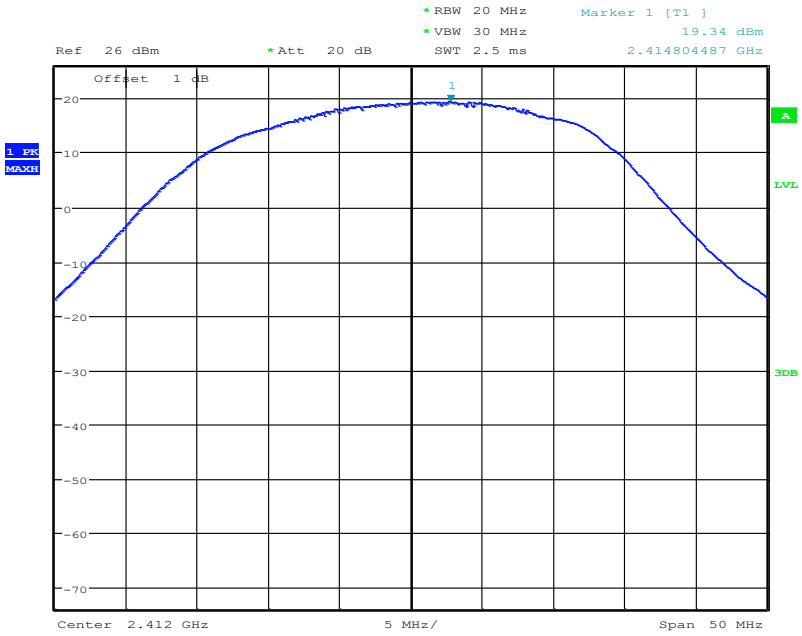


Fig.3 Peak Conducted Output Power CH1, 11b, Rate5.5

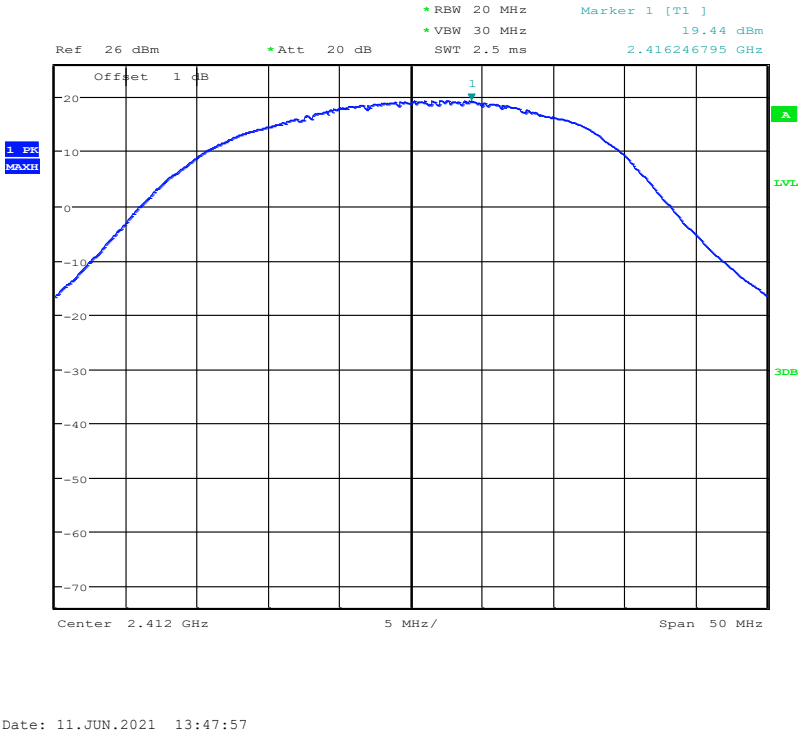


Fig.4 Peak Conducted Output Power CH1, 11b, Rate11

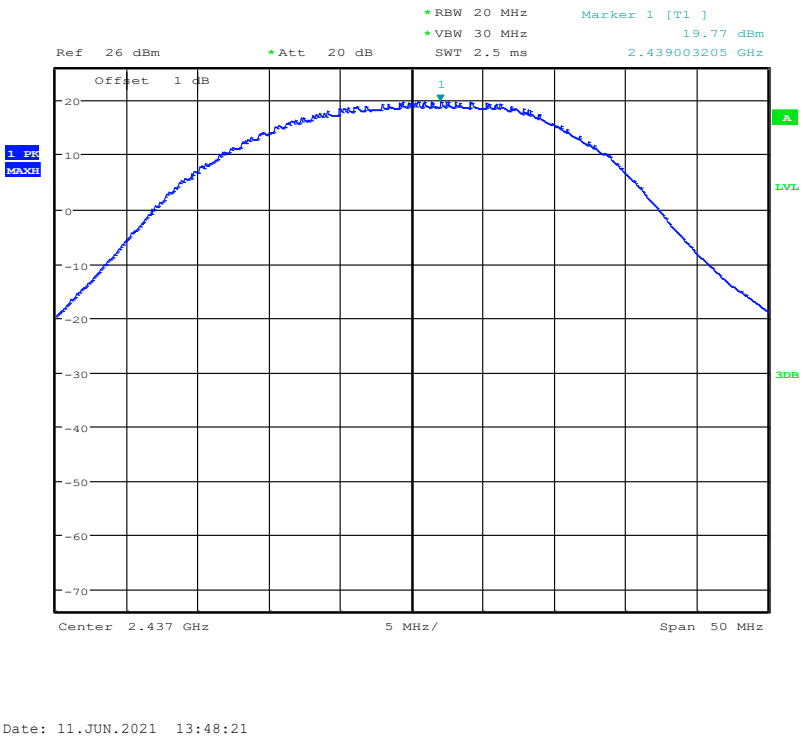


Fig.5 Peak Conducted Output Power CH6, 11b, Rate1

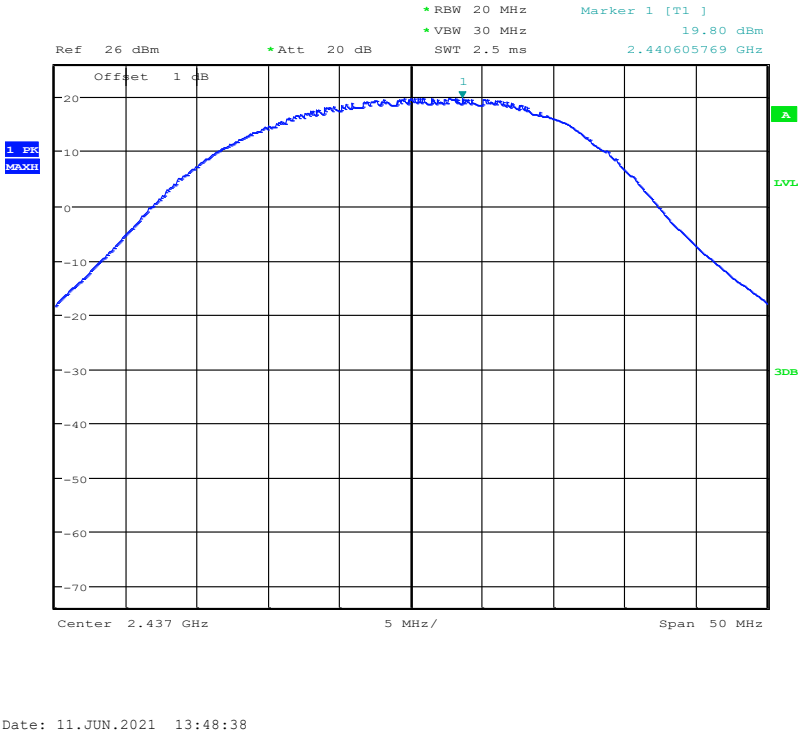


Fig.6 Peak Conducted Output Power CH6, 11b, Rate2

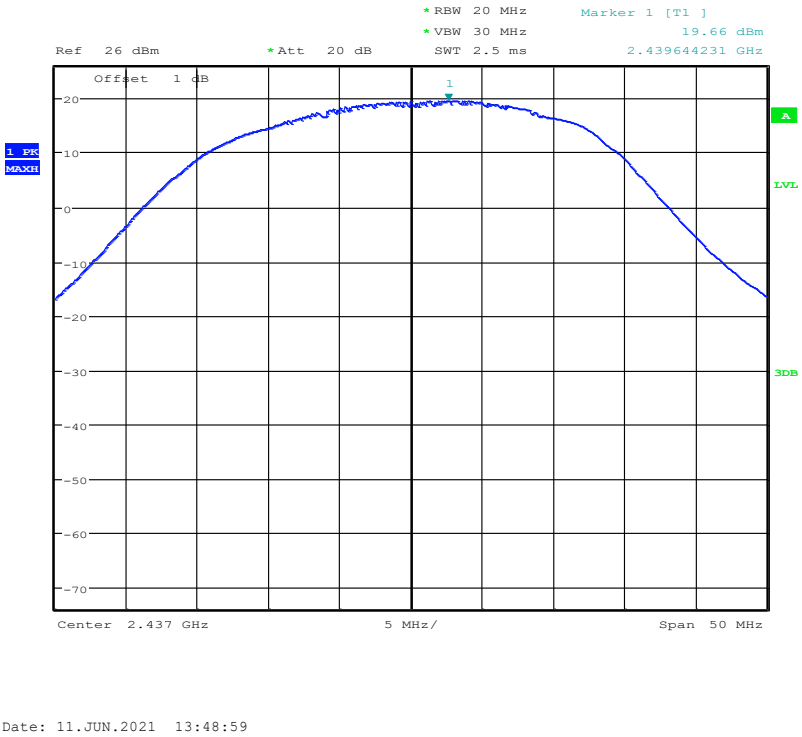


Fig.7 Peak Conducted Output Power CH6, 11b, Rate5.5

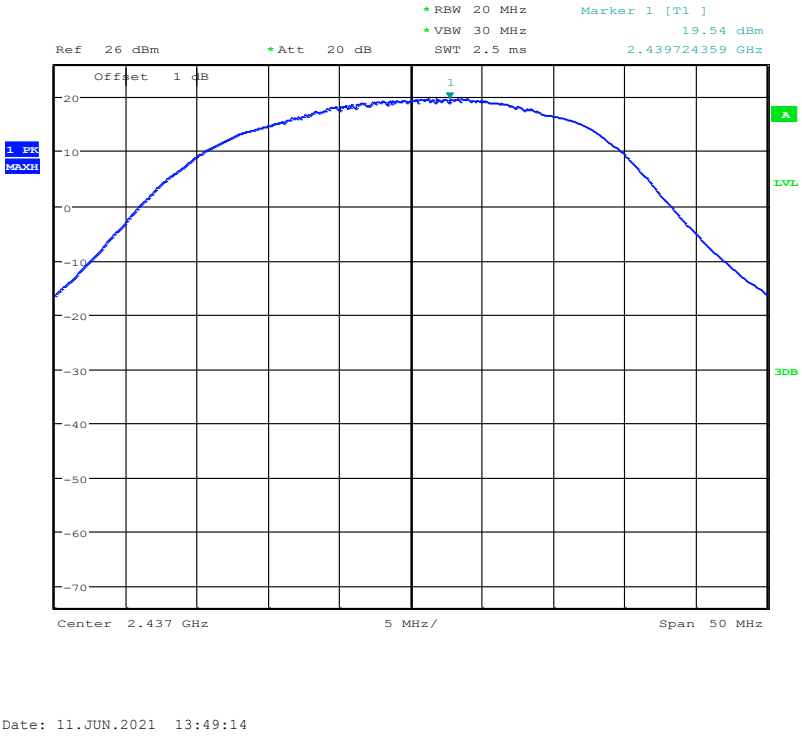


Fig.8 Peak Conducted Output Power CH6, 11b, Rate11

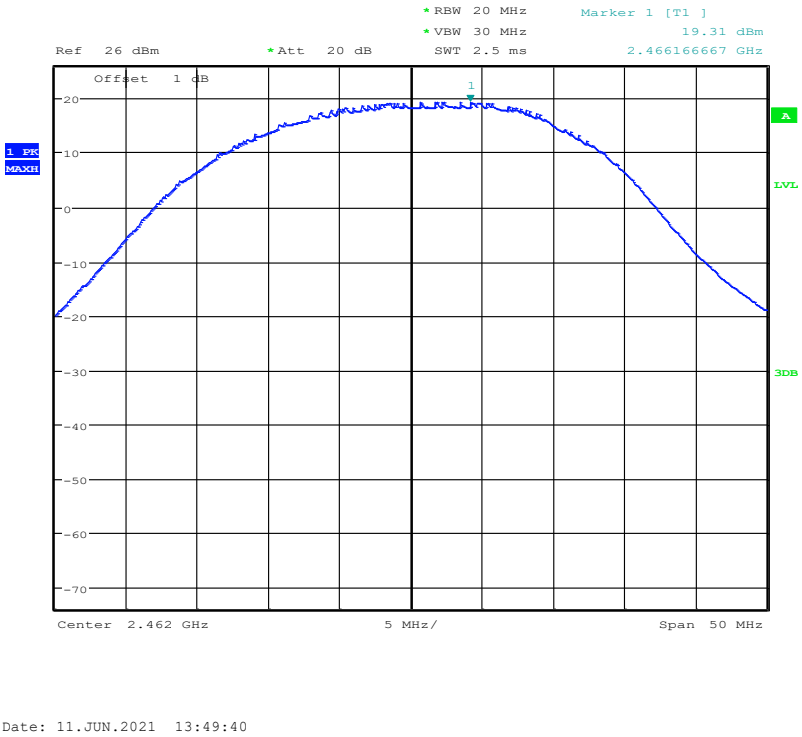


Fig.9 Peak Conducted Output Power CH11, 11b, Rate1

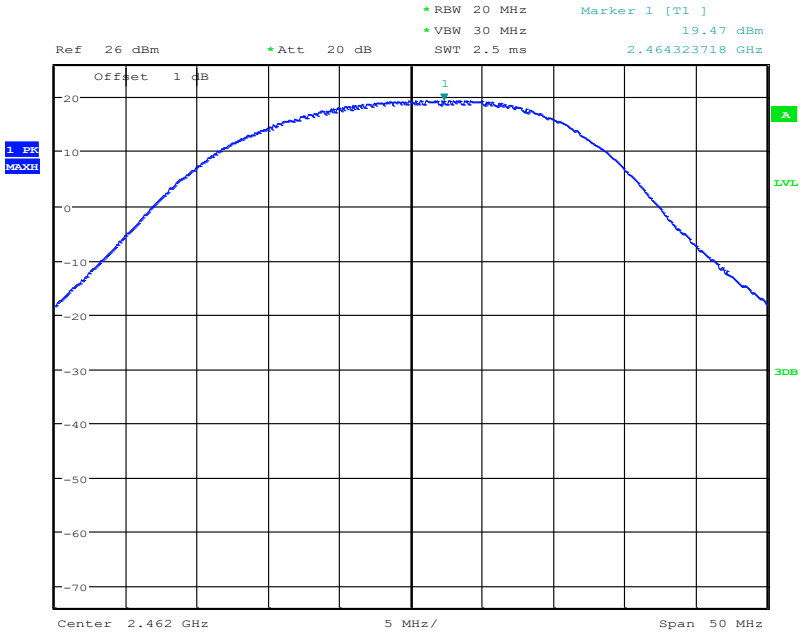


Fig.10 Peak Conducted Output Power CH11, 11b, Rate2

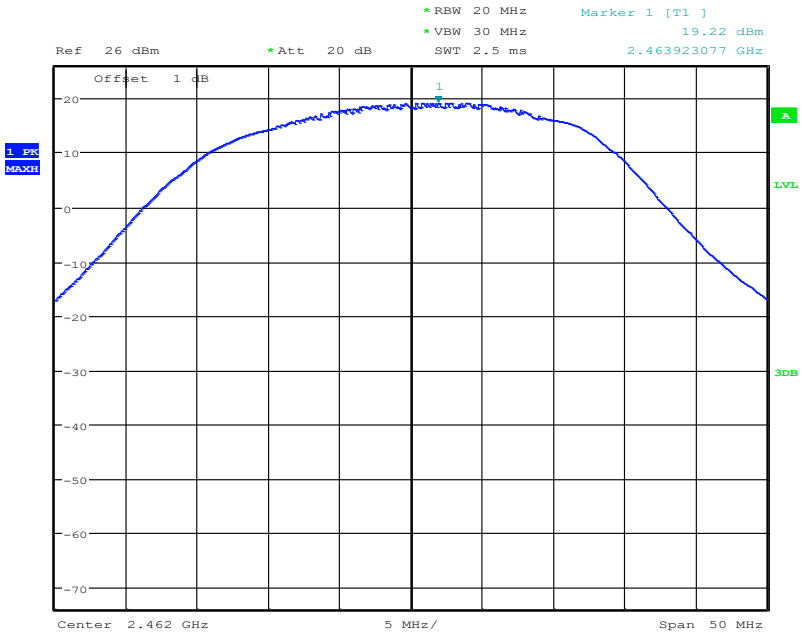


Fig.11 Peak Conducted Output Power CH11, 11b, Rate5.5

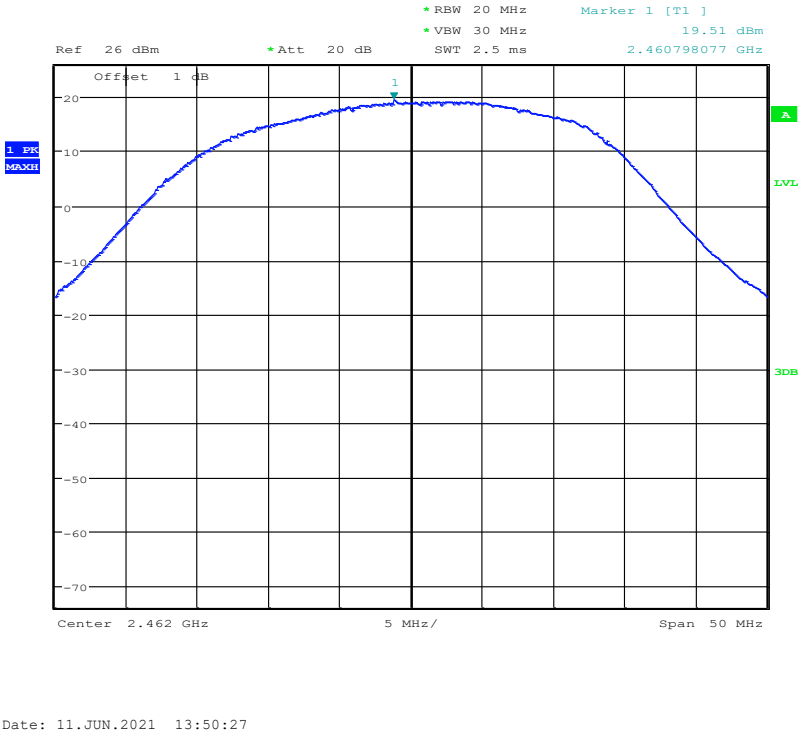


Fig.12 Peak Conducted Output Power CH11, 11b, Rate11

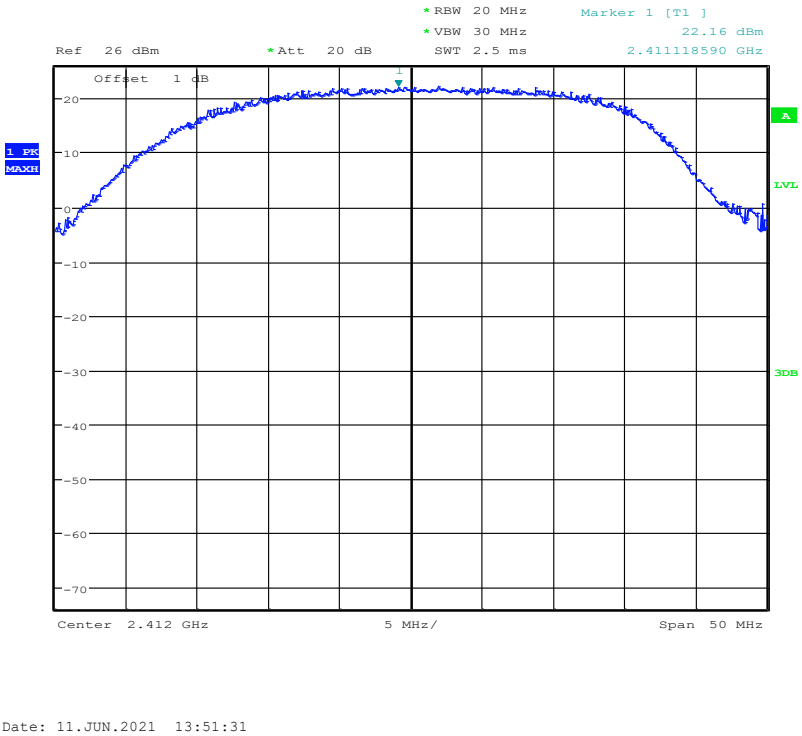


Fig.13 Peak Conducted Output Power CH1, 11g, Rate6

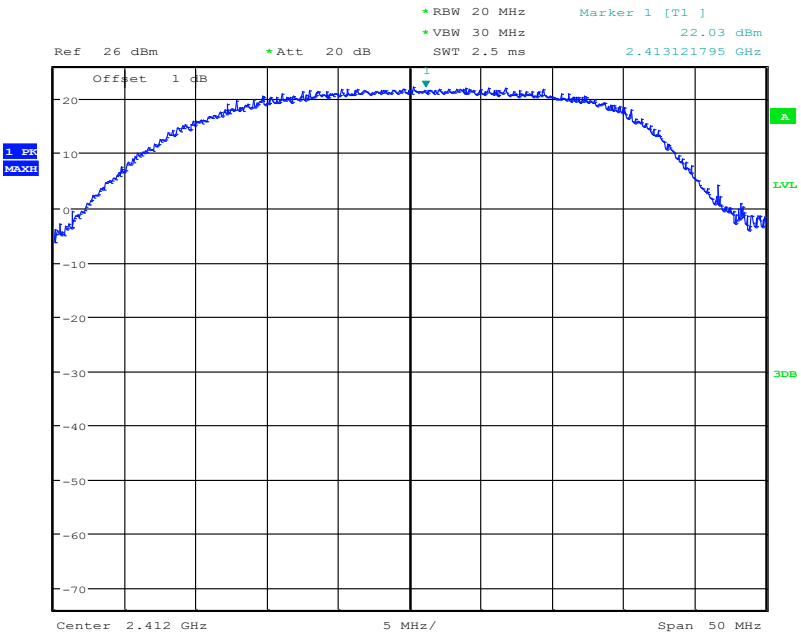


Fig.14 Peak Conducted Output Power CH1, 11g, Rate9

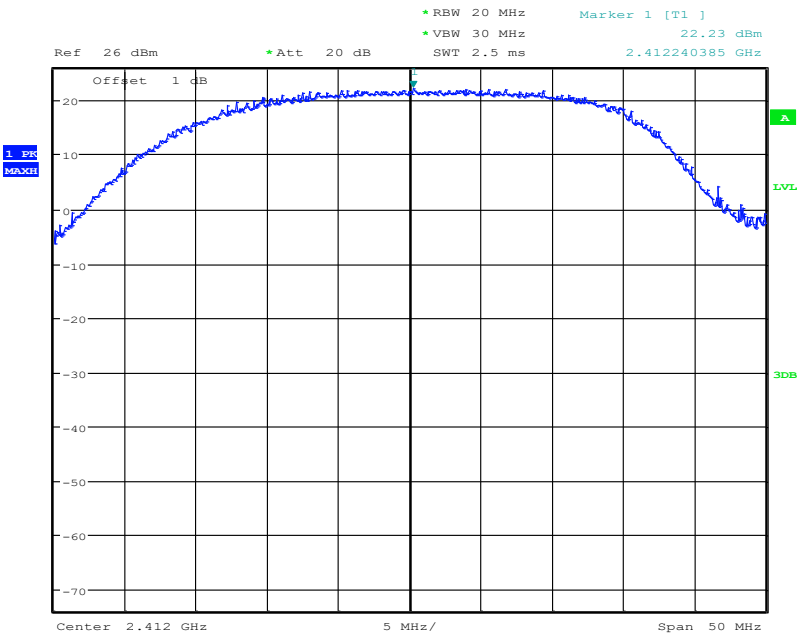


Fig.15 Peak Conducted Output Power CH1, 11g, Rate12

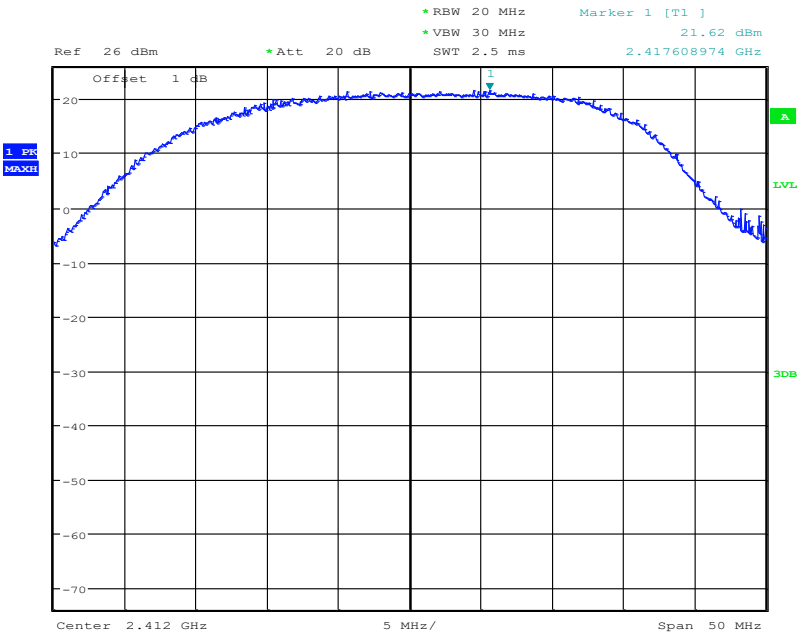


Fig.16 Peak Conducted Output Power CH1, 11g, Rate18

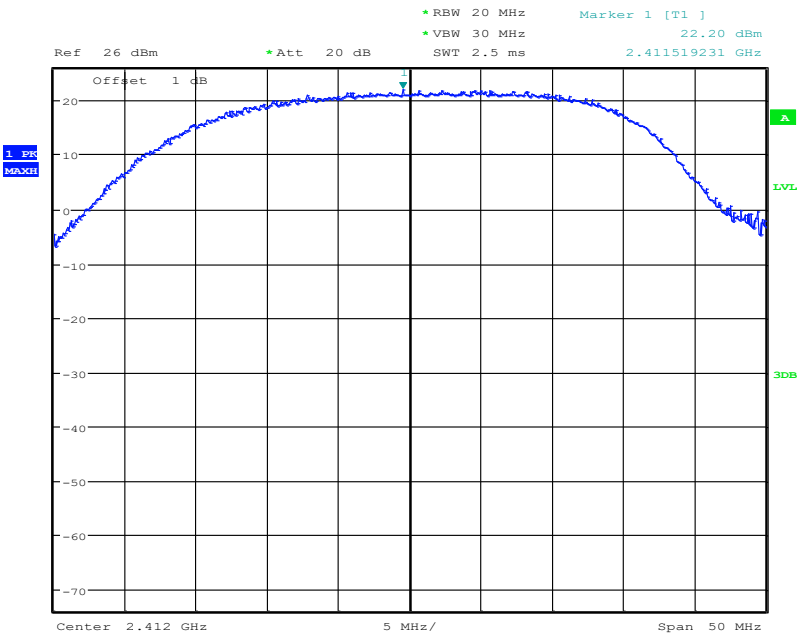


Fig.17 Peak Conducted Output Power CH1, 11g, Rate24

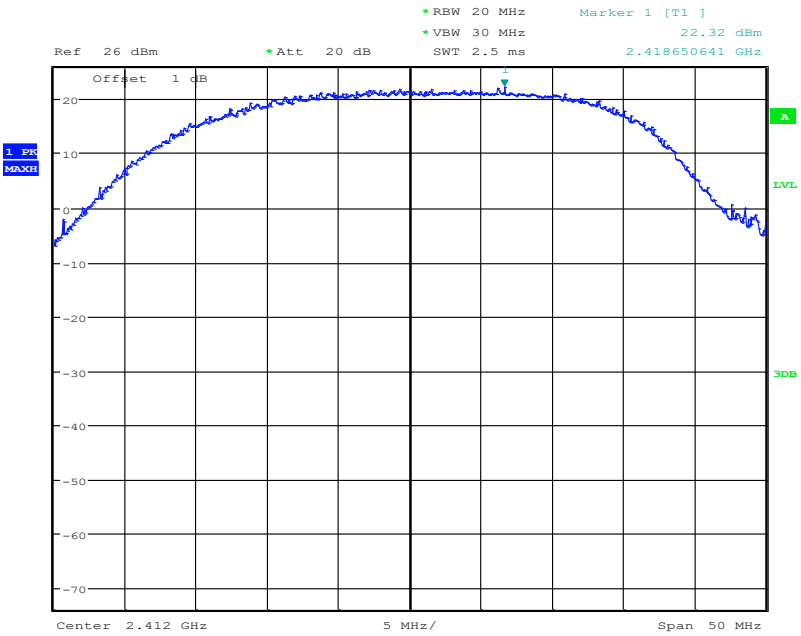


Fig.18 Peak Conducted Output Power CH1, 11g, Rate36

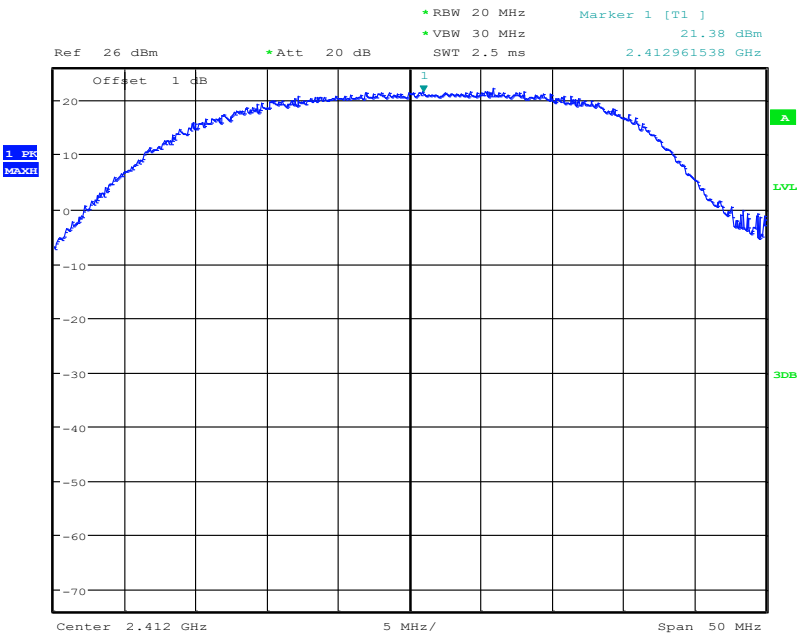


Fig.19 Peak Conducted Output Power CH1, 11g, Rate48

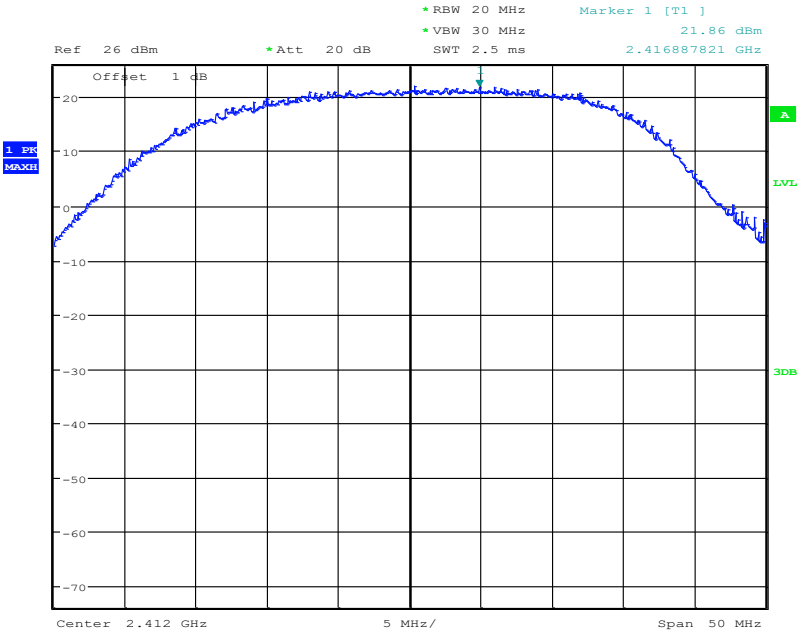


Fig.20 Peak Conducted Output Power CH1, 11g, Rate54

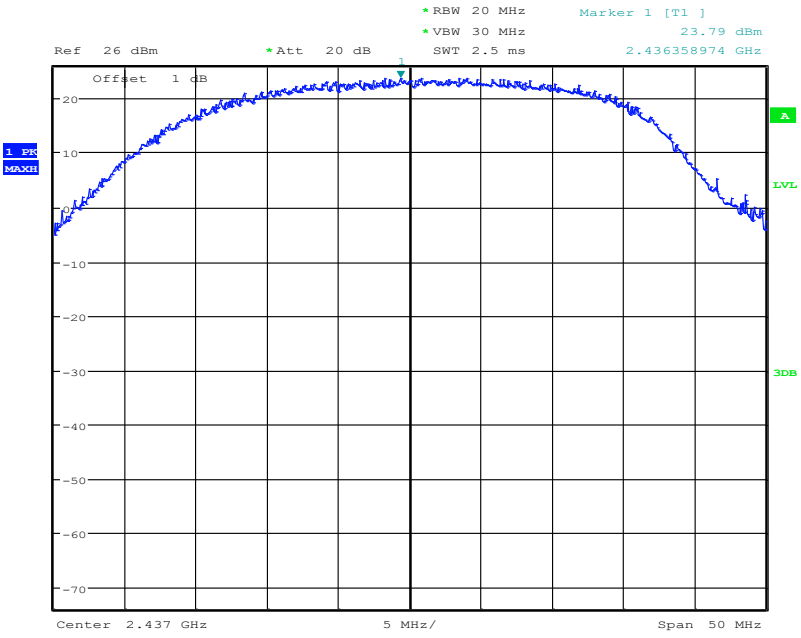


Fig.21 Peak Conducted Output Power CH6, 11g, Rate6

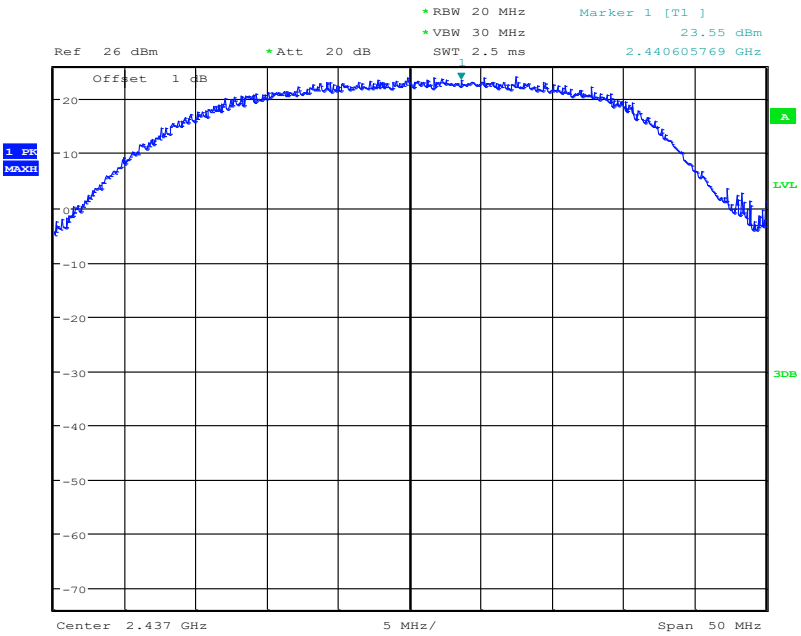


Fig.22 Peak Conducted Output Power CH6, 11g, Rate9

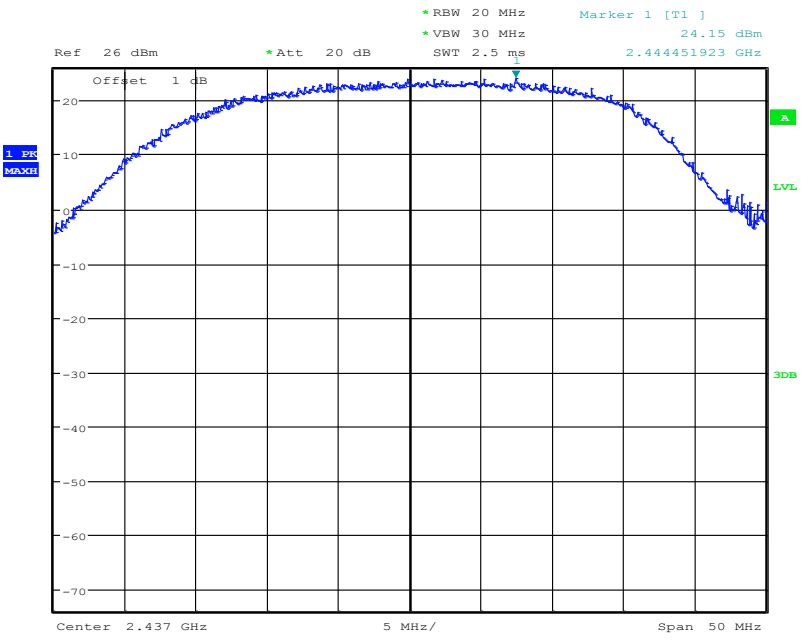


Fig.23 Peak Conducted Output Power CH6, 11g, Rate12

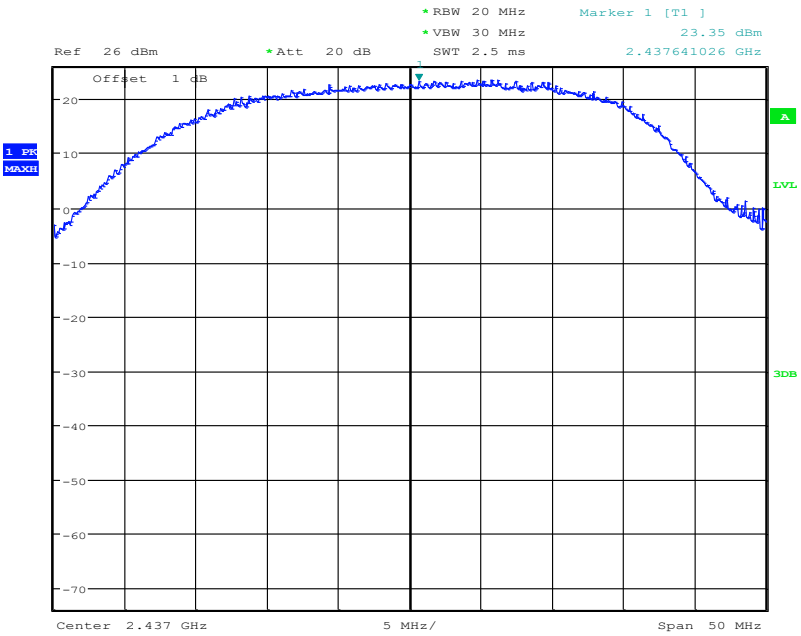


Fig.24 Peak Conducted Output Power CH6, 11g, Rate18

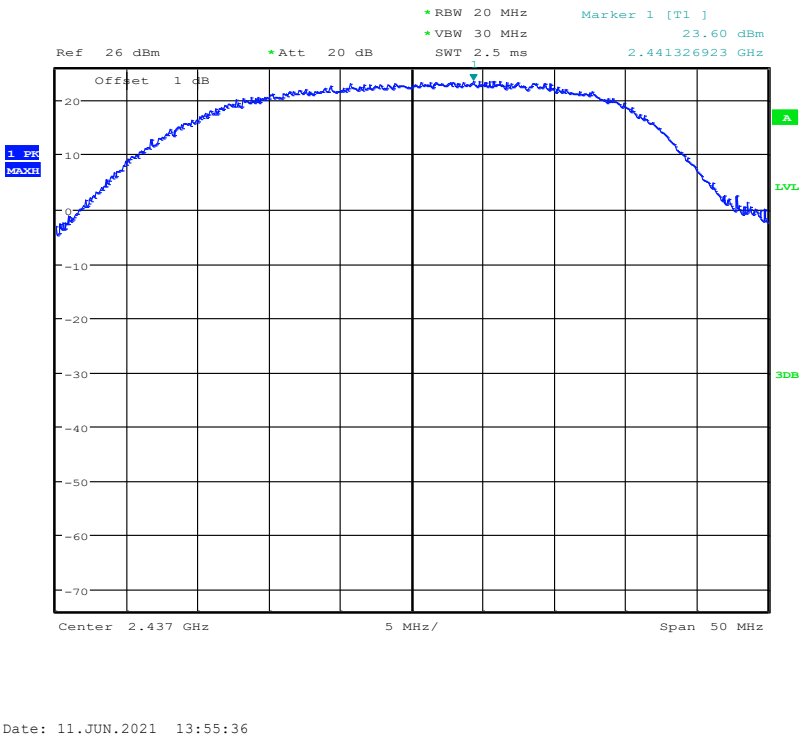
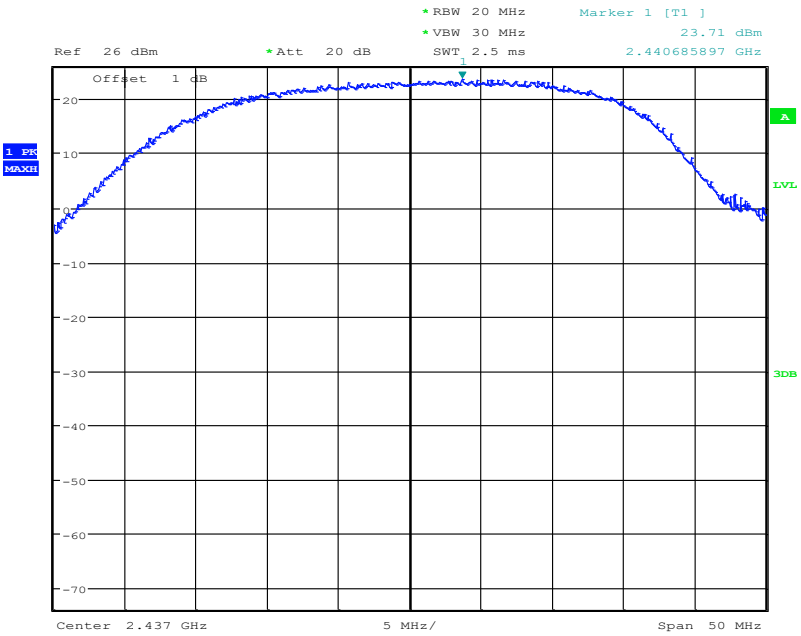
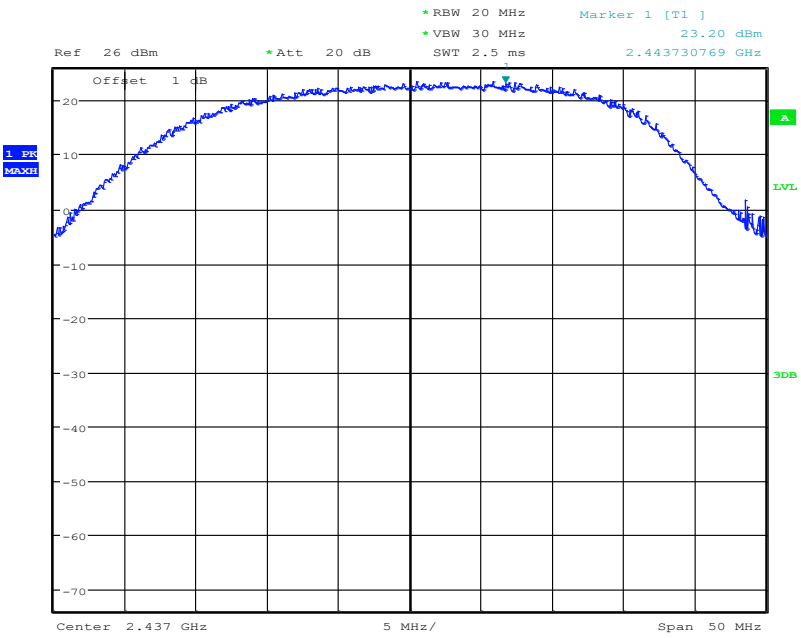


Fig.25 Peak Conducted Output Power CH6, 11g, Rate24



Date: 11.JUN.2021 13:55:50

Fig.26 Peak Conducted Output Power CH6, 11g, Rate36



Date: 11.JUN.2021 13:56:09

Fig.27 Peak Conducted Output Power CH6, 11g, Rate48

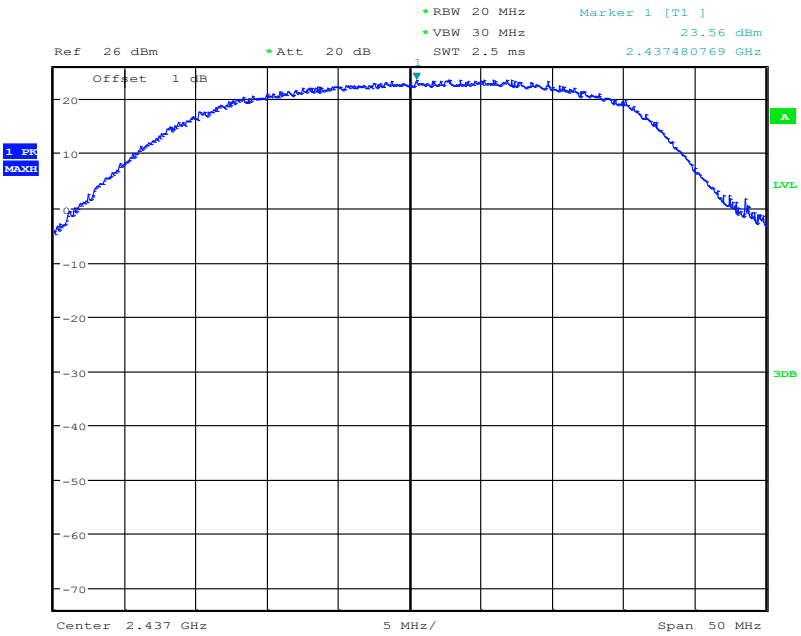


Fig.28 Peak Conducted Output Power CH6, 11g, Rate54

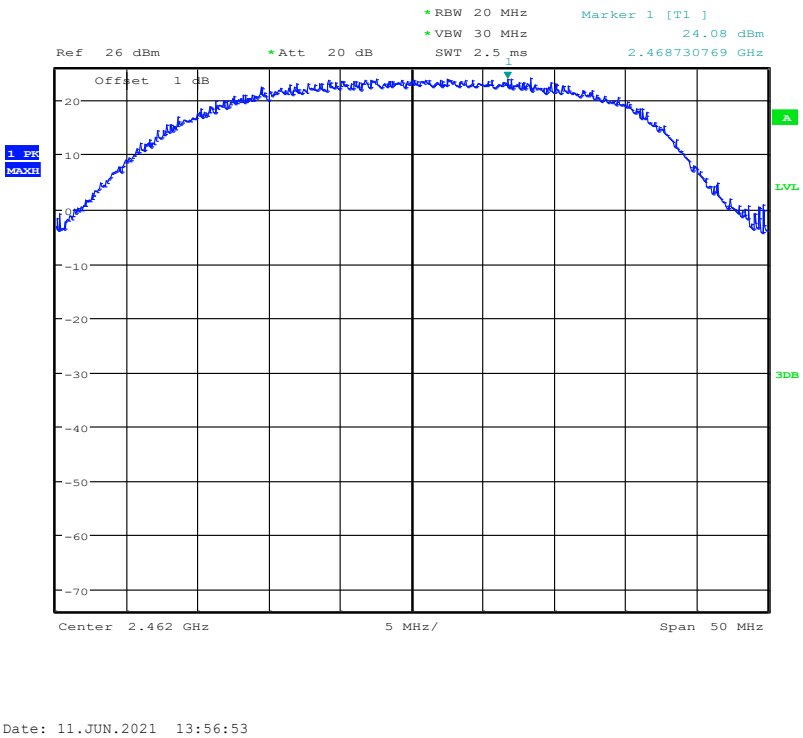


Fig.29 Peak Conducted Output Power CH11, 11g, Rate6

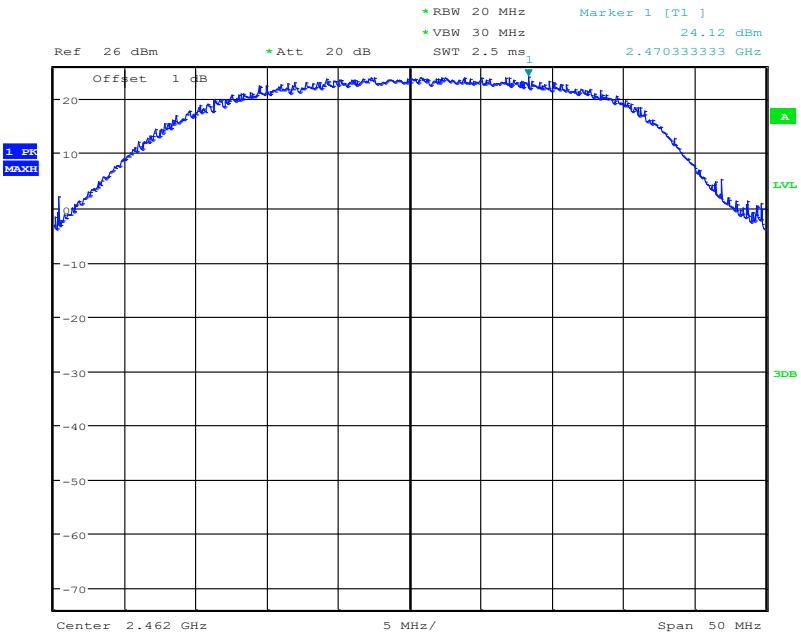


Fig.30 Peak Conducted Output Power CH11, 11g, Rate9

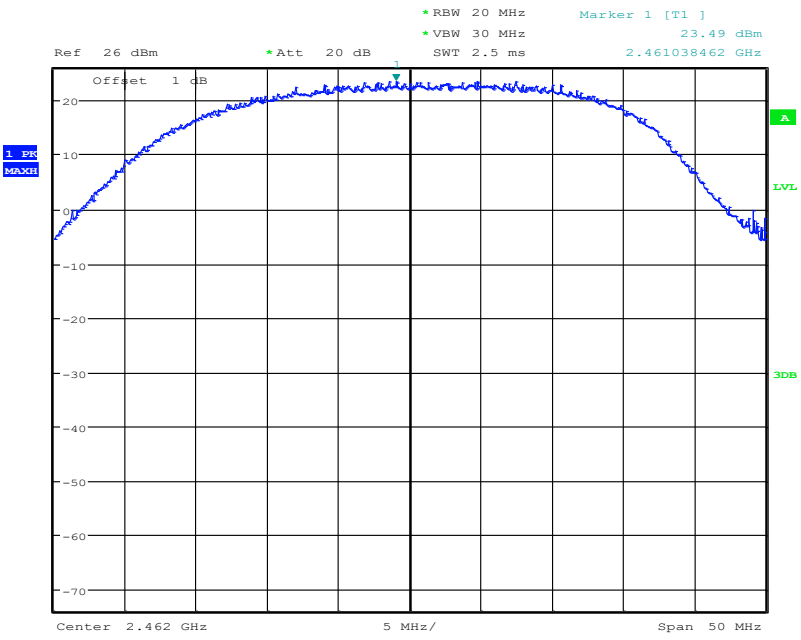


Fig.31 Peak Conducted Output Power CH11, 11g, Rate12

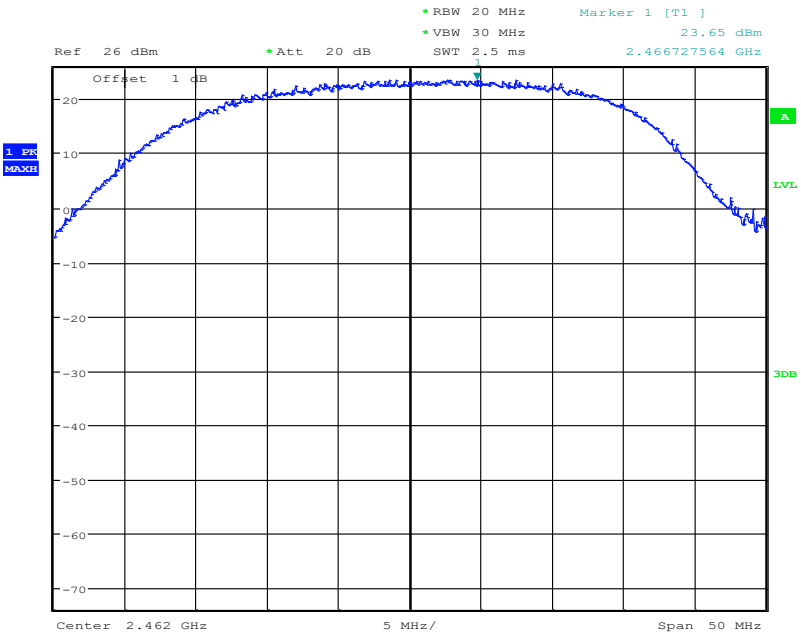


Fig.32 Peak Conducted Output Power CH11, 11g, Rate18

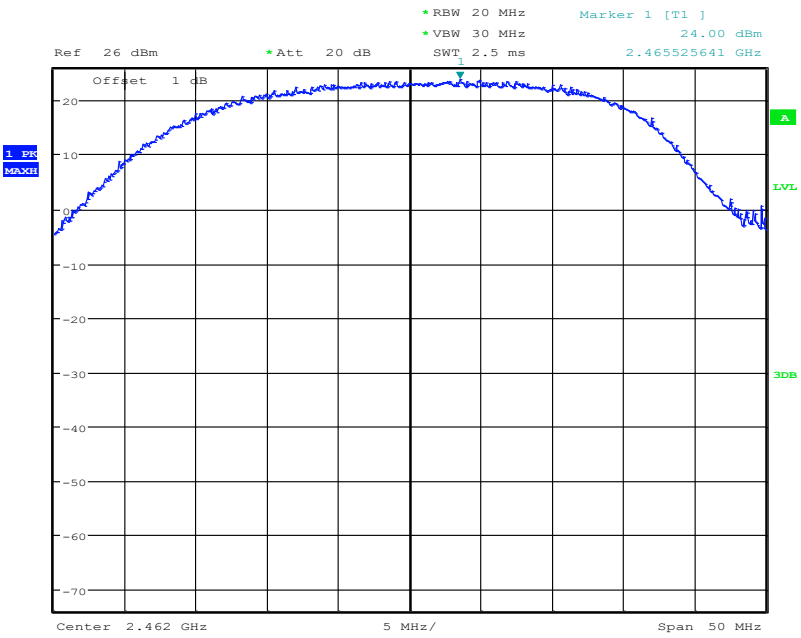


Fig.33 Peak Conducted Output Power CH11, 11g, Rate24

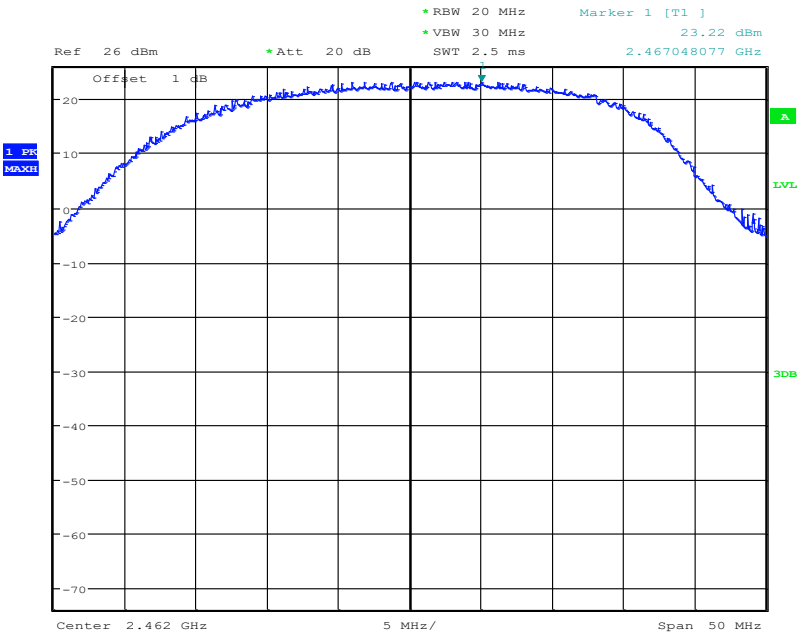


Fig.34 Peak Conducted Output Power CH11, 11g, Rate36

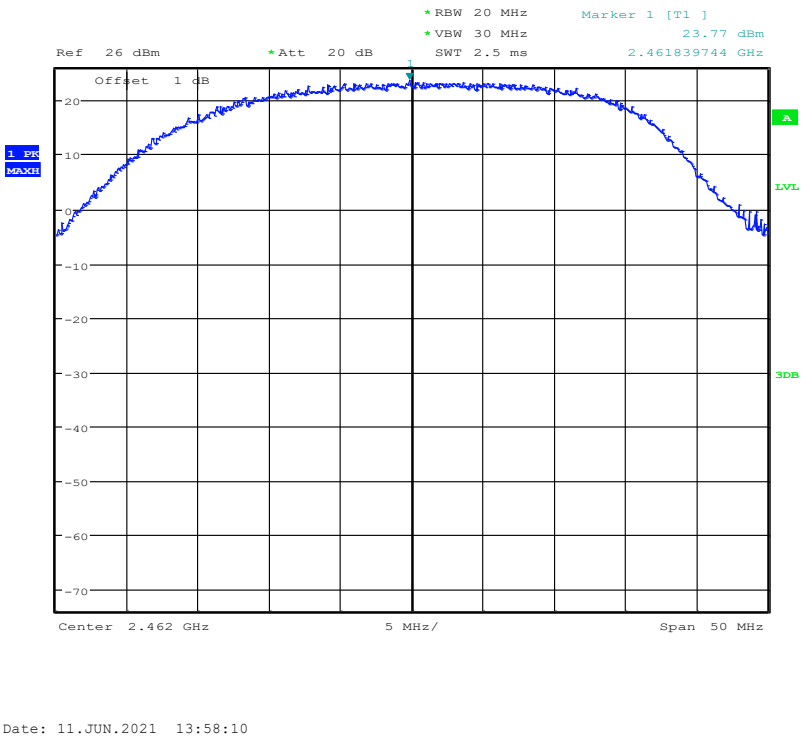


Fig.35 Peak Conducted Output Power CH11, 11g, Rate48

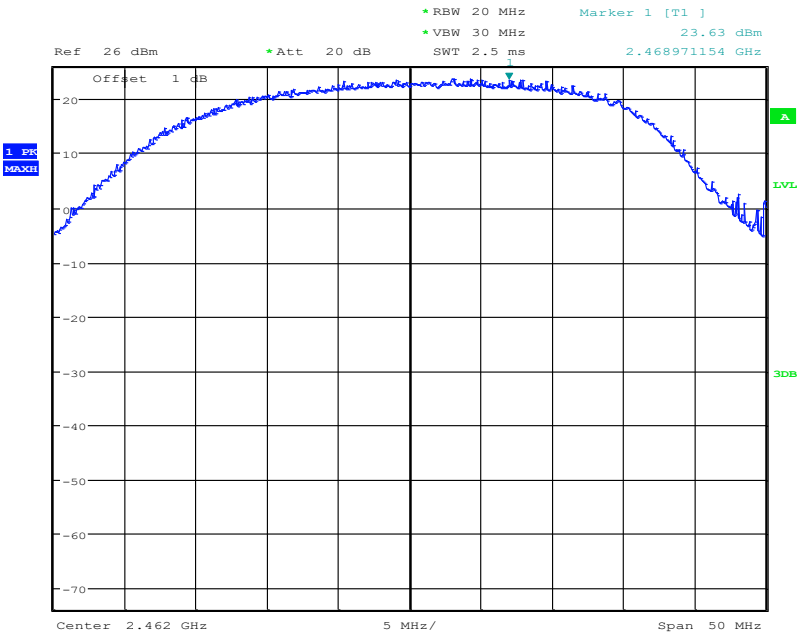


Fig.36 Peak Conducted Output Power CH11, 11g, Rate54

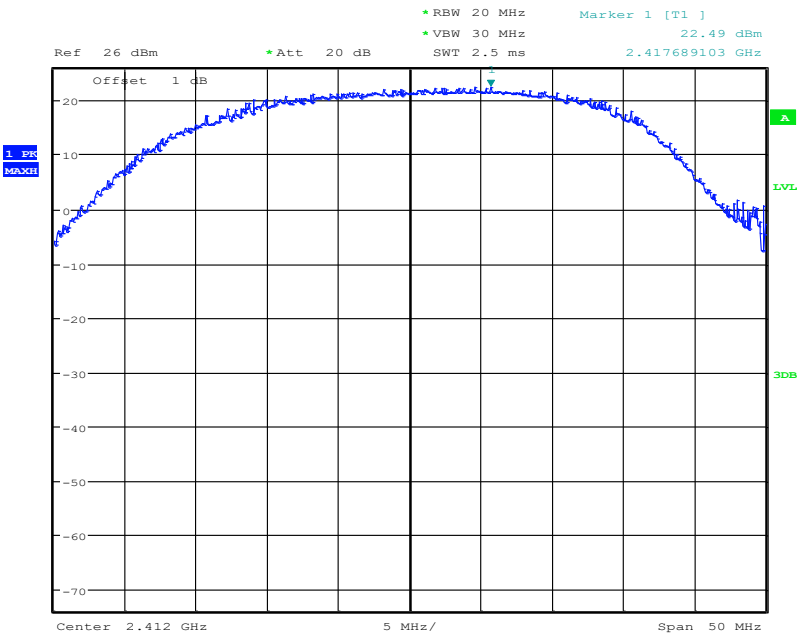


Fig.37 Peak Conducted Output Power CH1, 11n, MCS0

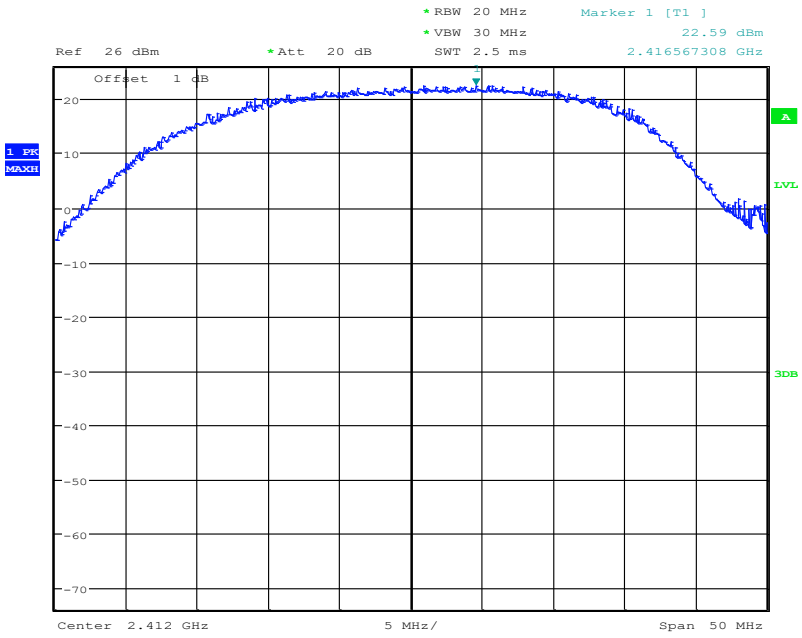


Fig.38 Peak Conducted Output Power CH1, 11n, MCS1

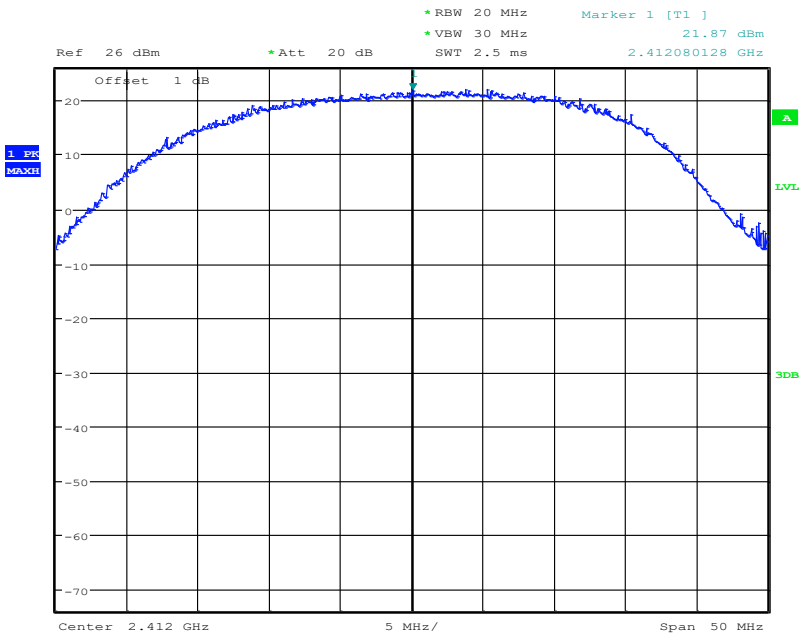


Fig.39 Peak Conducted Output Power CH1, 11n, MCS2

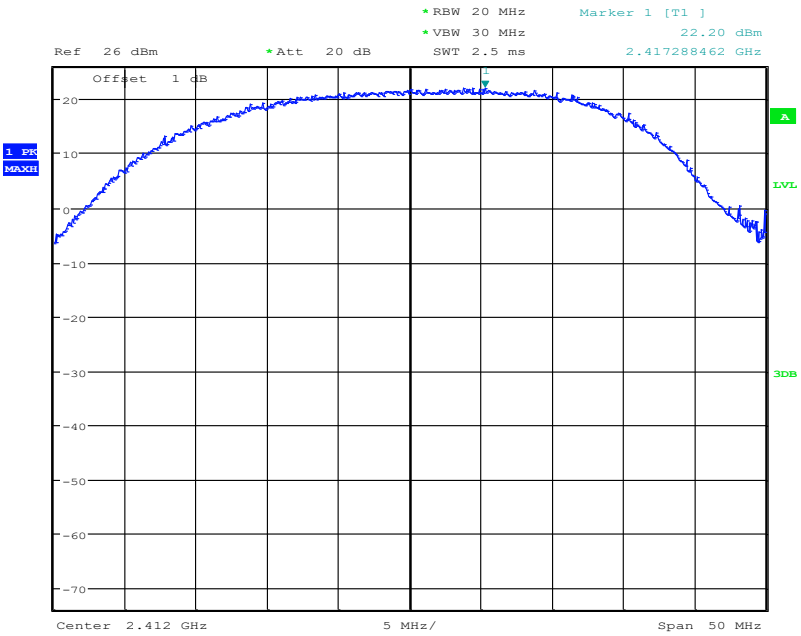


Fig.40 Peak Conducted Output Power CH1, 11n, MCS3

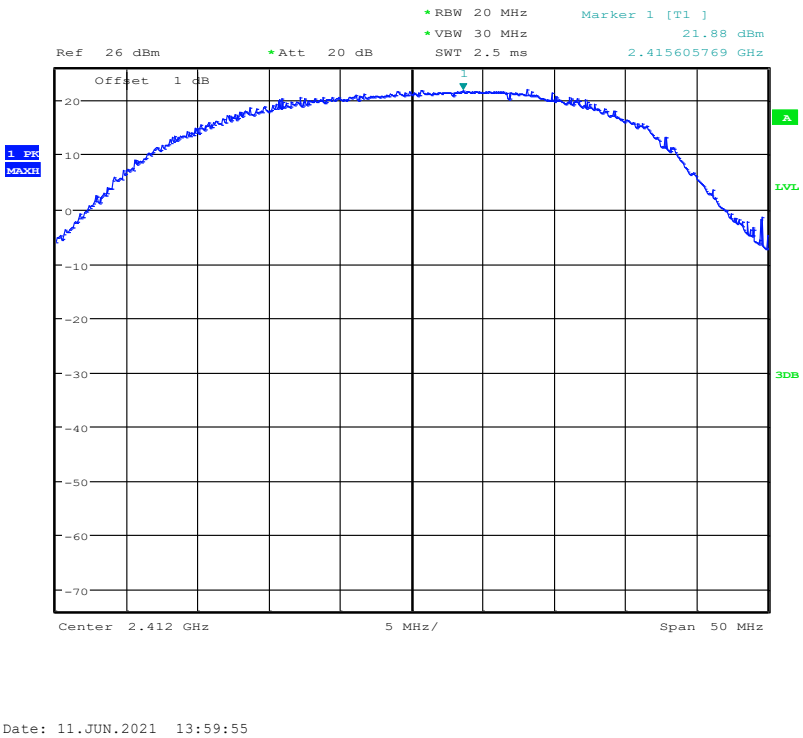


Fig.41 Peak Conducted Output Power CH1, 11n, MCS4

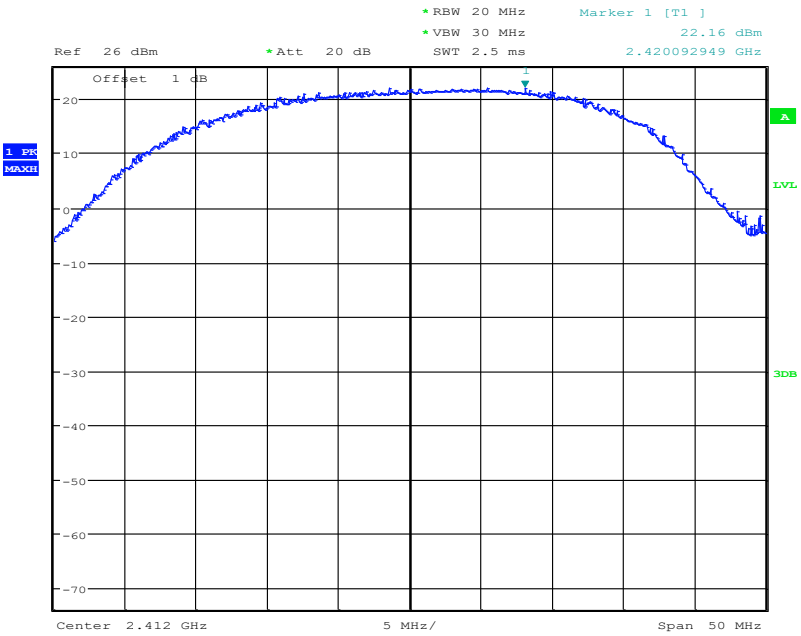


Fig.42 Peak Conducted Output Power CH1, 11n, MCS5

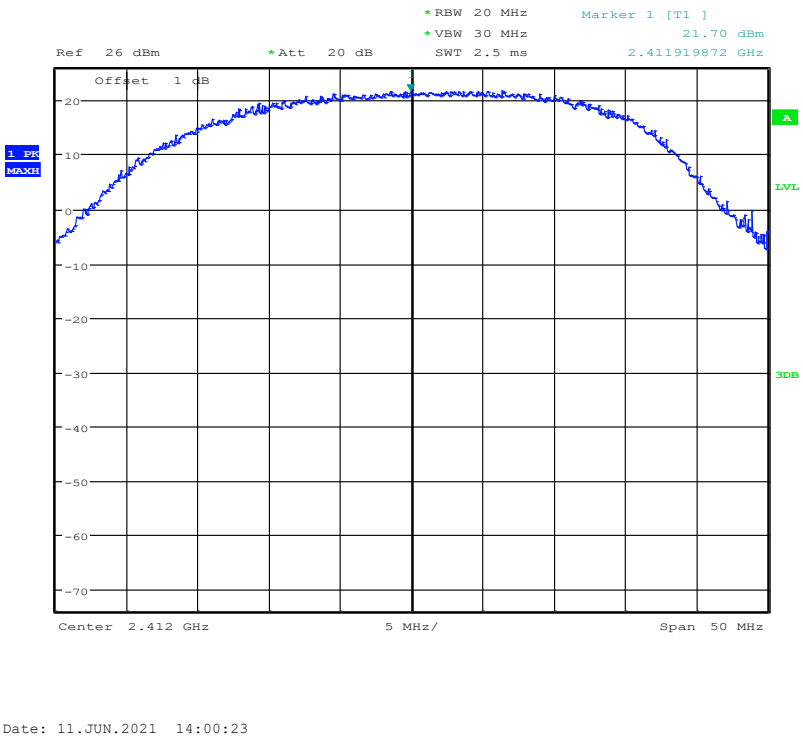


Fig.43 Peak Conducted Output Power CH1, 11n, MCS6

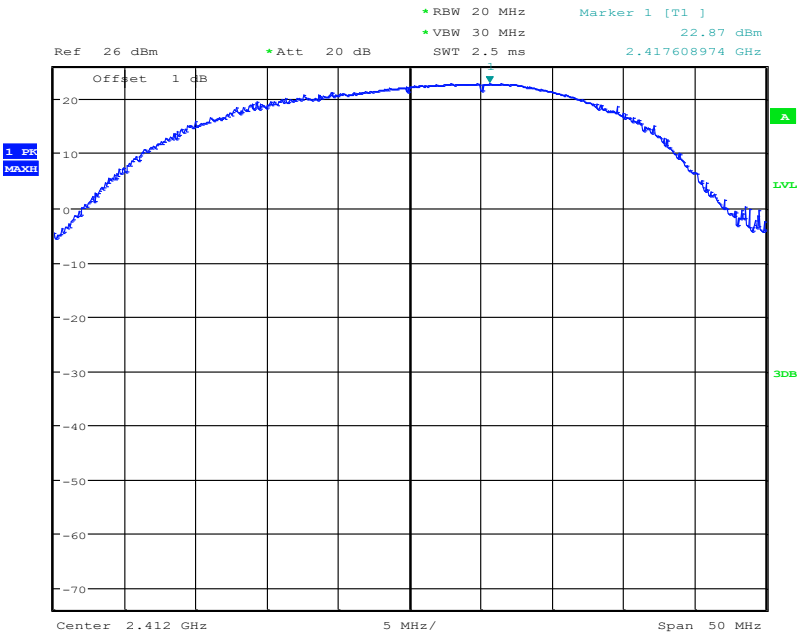


Fig.44 Peak Conducted Output Power CH1, 11n, MCS7

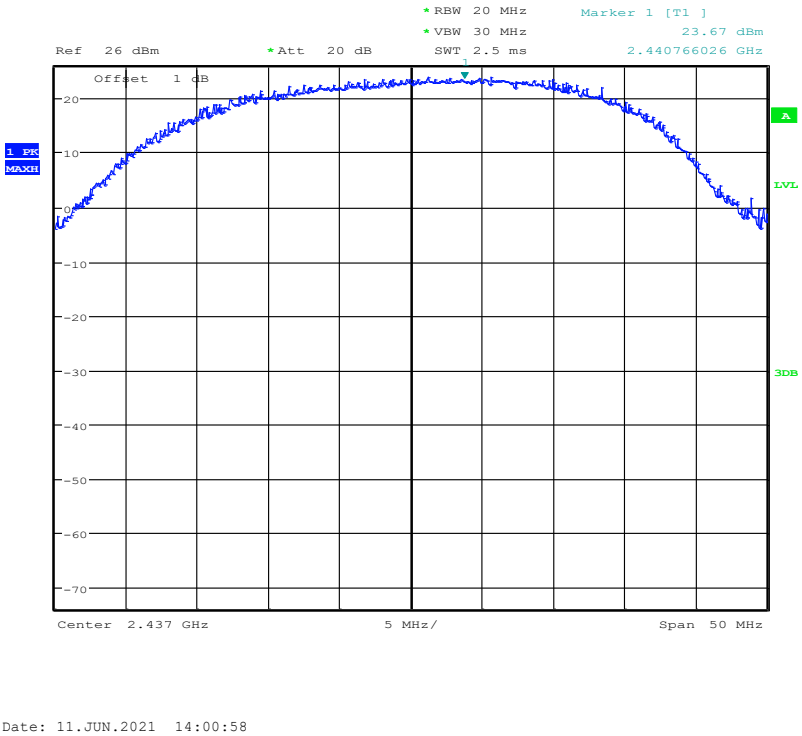


Fig.45 Peak Conducted Output Power CH6, 11n, MCS0

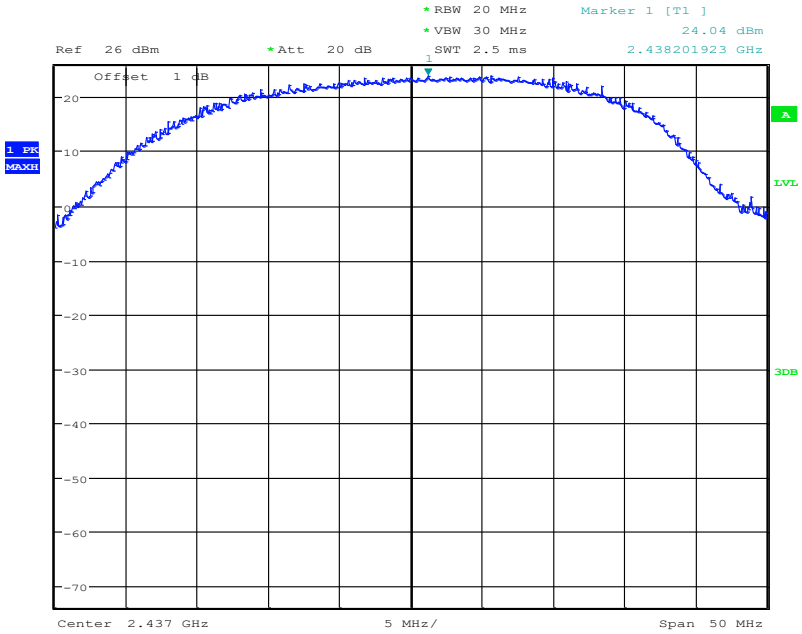


Fig.46 Peak Conducted Output Power CH6, 11n, MCS1

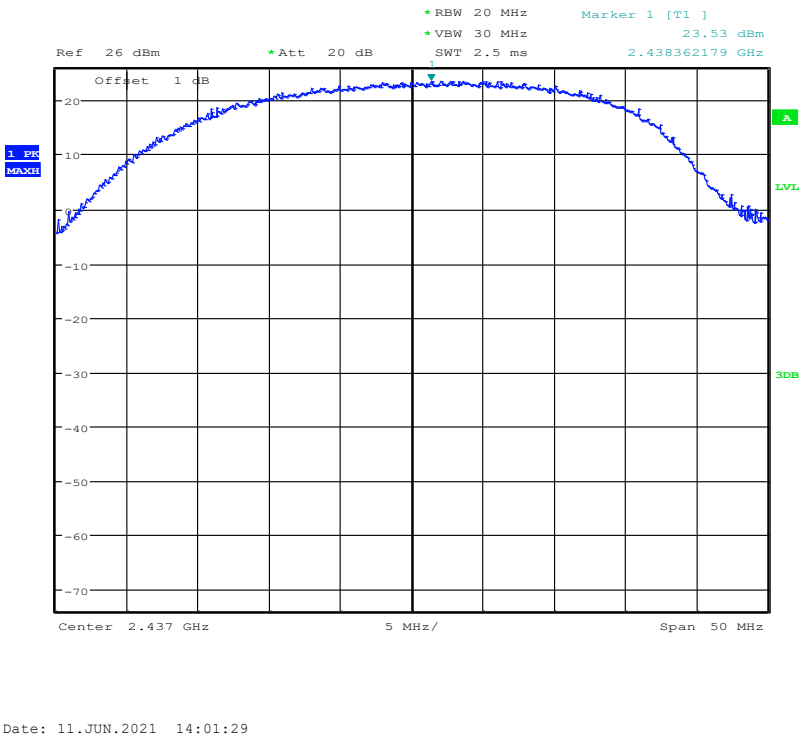


Fig.47 Peak Conducted Output Power CH6, 11n, MCS2

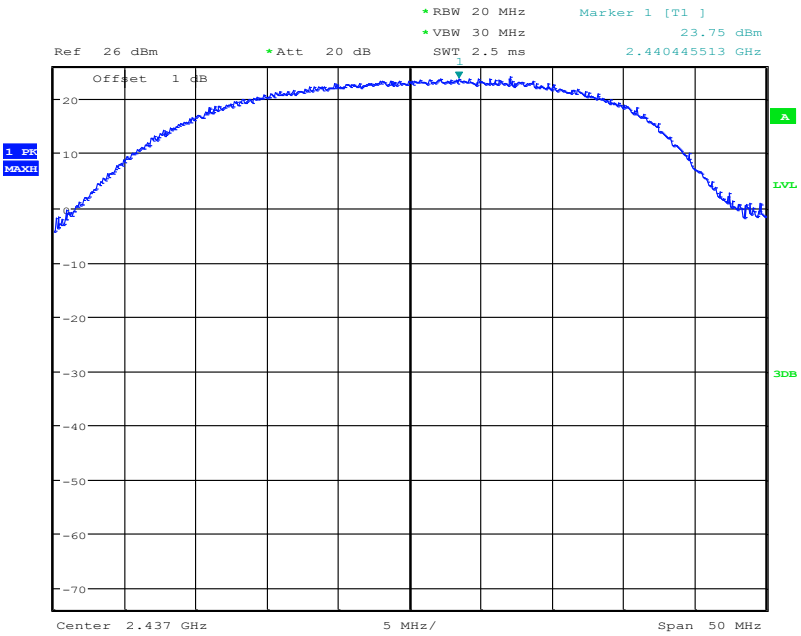


Fig.48 Peak Conducted Output Power CH6, 11n, MCS3

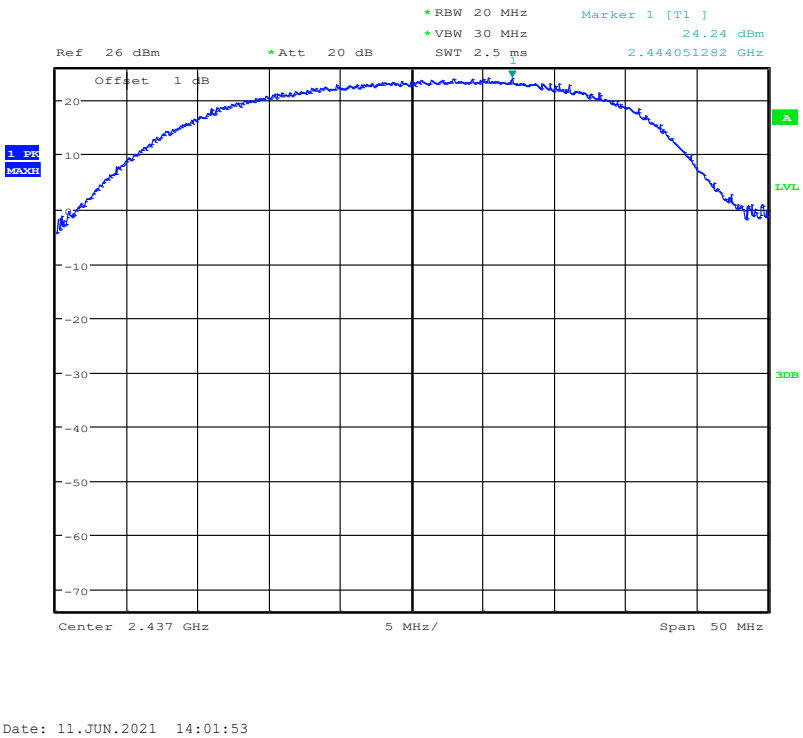


Fig.49 Peak Conducted Output Power CH6, 11n, MCS4

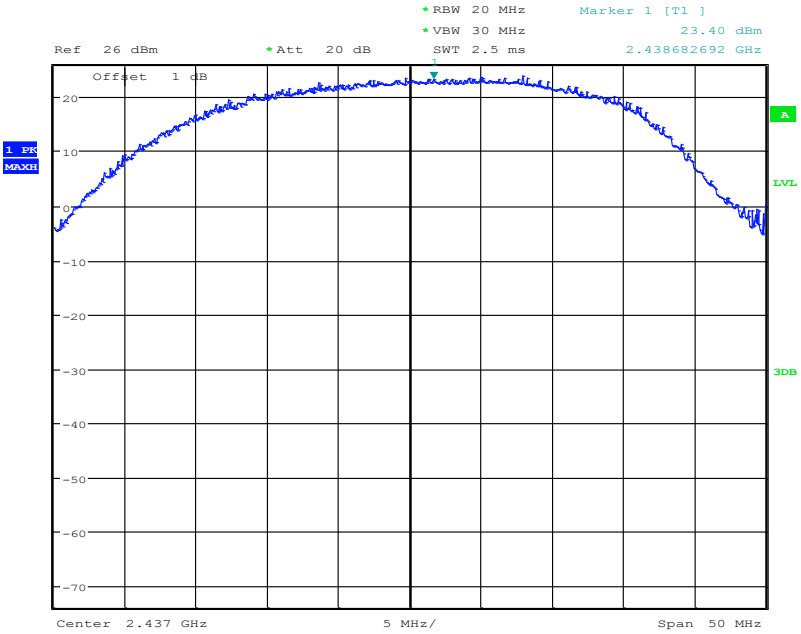


Fig.50 Peak Conducted Output Power CH6, 11n, MCS5

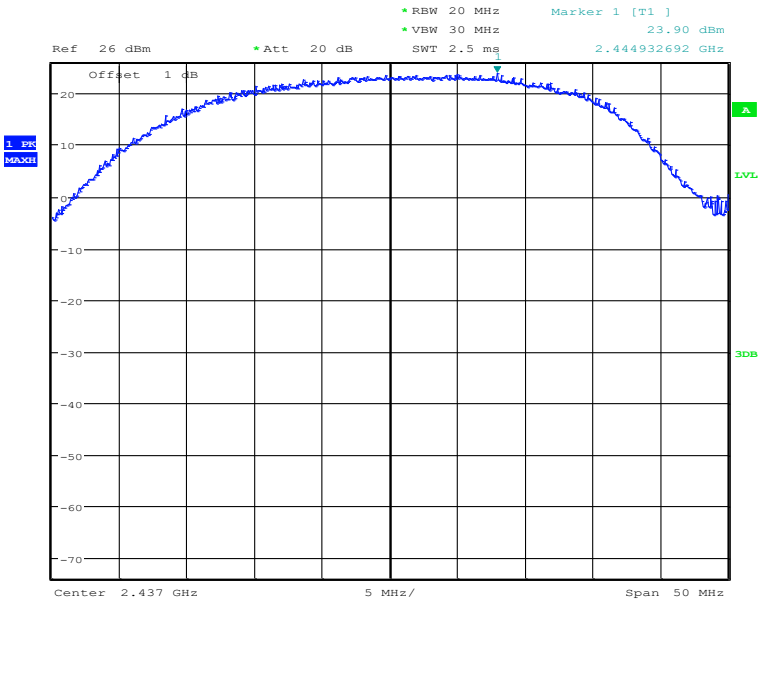


Fig.51 Peak Conducted Output Power CH6, 11n, MCS6

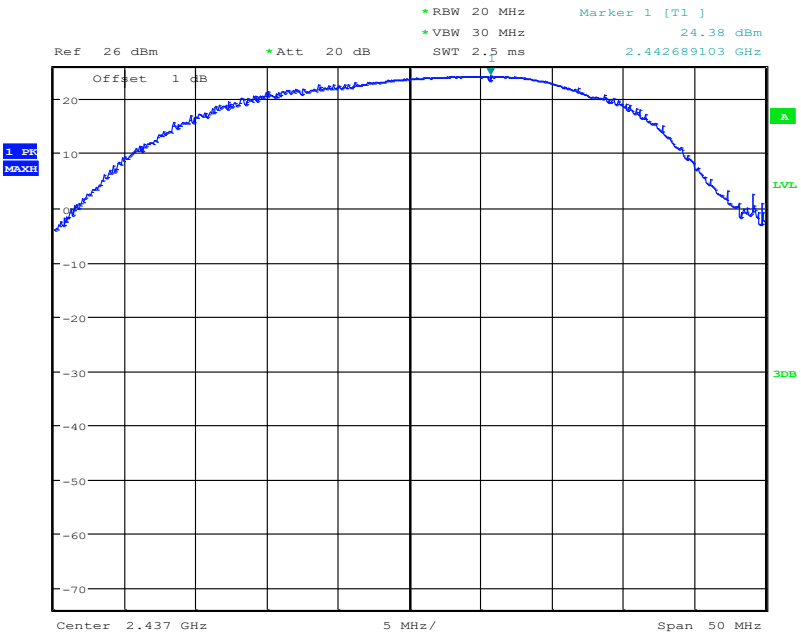


Fig.52 Peak Conducted Output Power CH6, 11n, MCS7

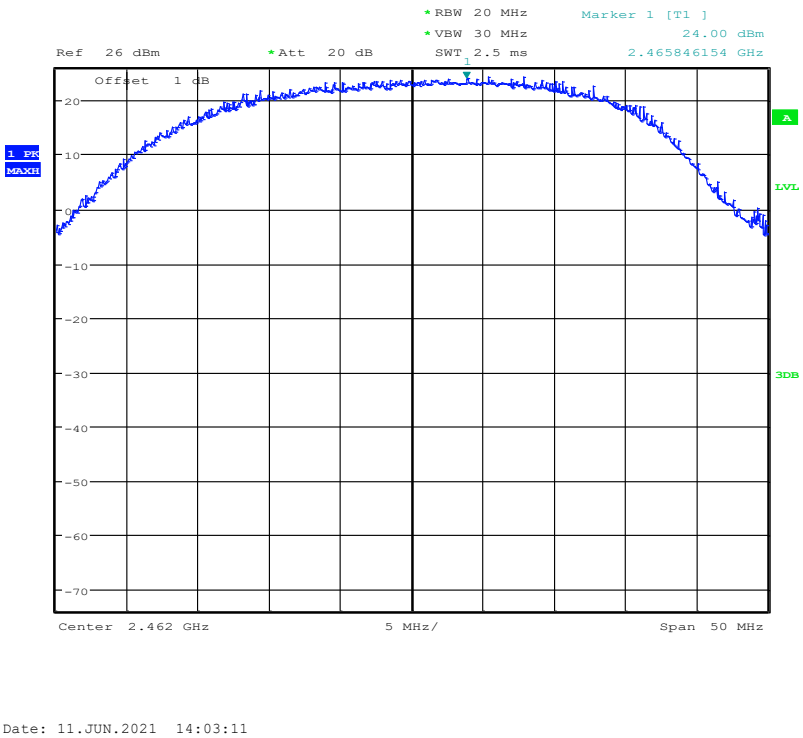


Fig.53 Peak Conducted Output Power CH11, 11n, MCS0

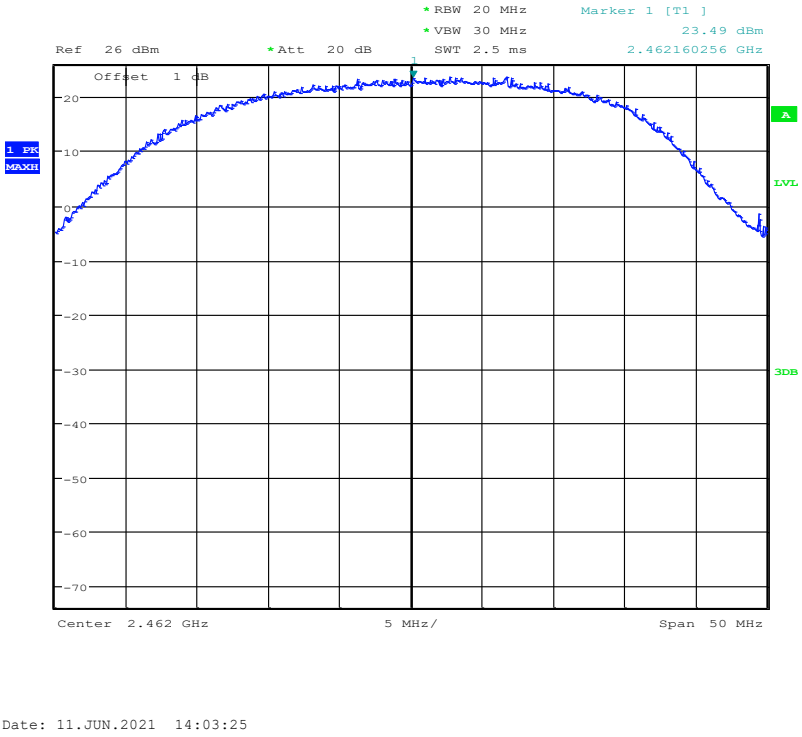


Fig.54 Peak Conducted Output Power CH11, 11n, MCS1

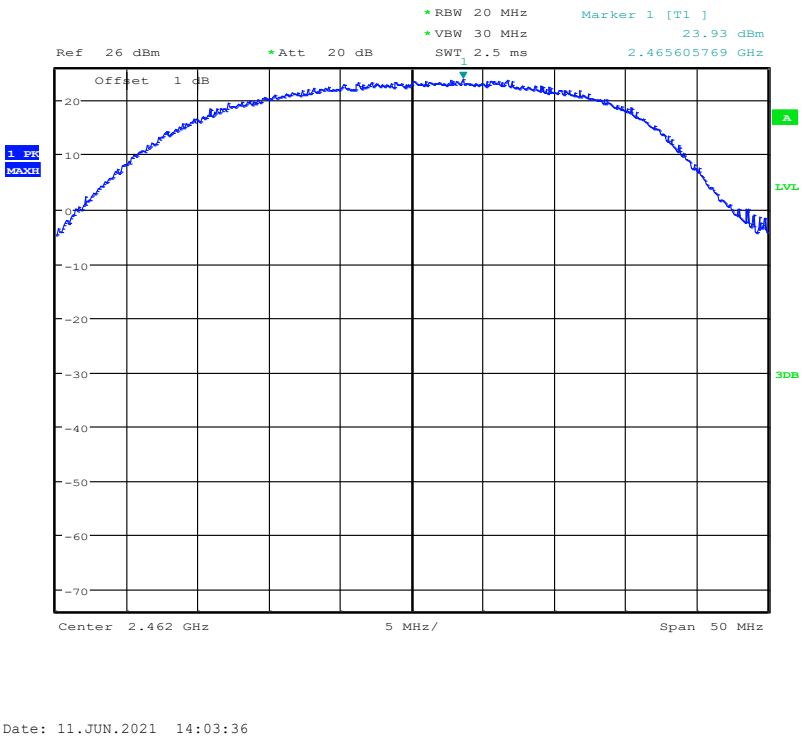


Fig.55 Peak Conducted Output Power CH11, 11n, MCS2

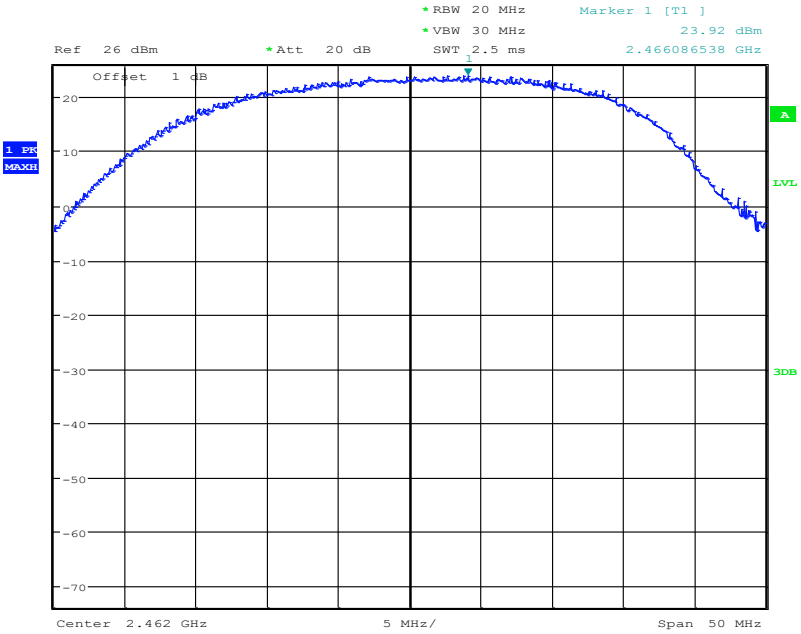


Fig.56 Peak Conducted Output Power CH11, 11n, MCS3

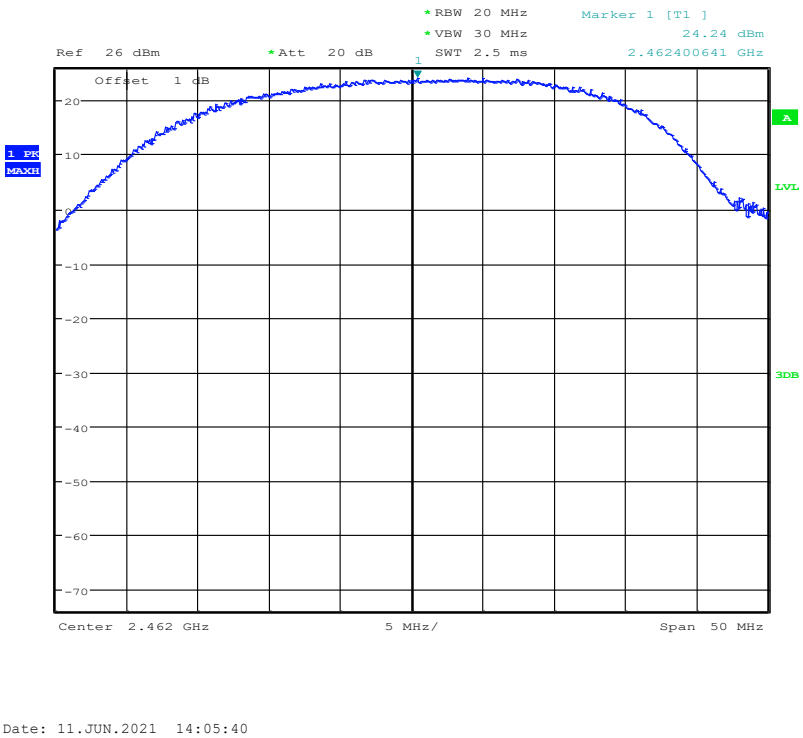


Fig.57 Peak Conducted Output Power CH11, 11n, MCS4

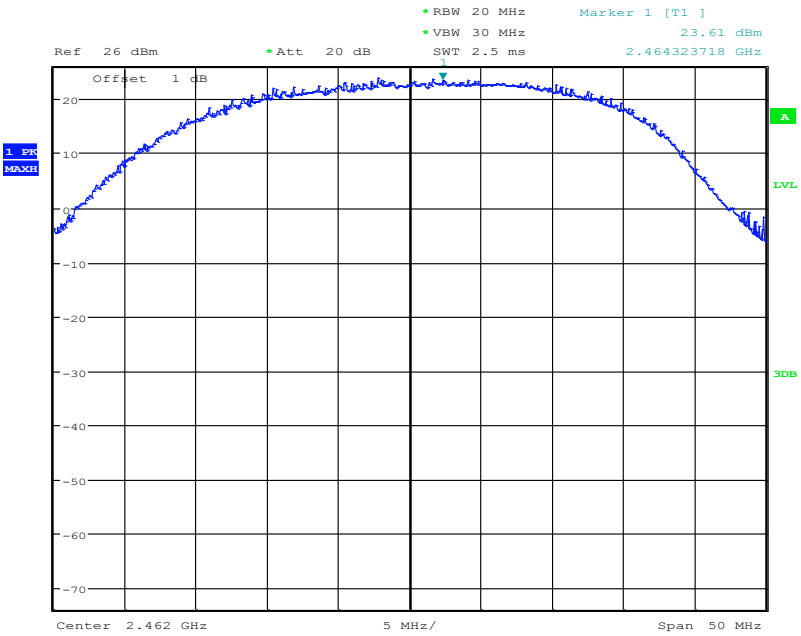


Fig.58 Peak Conducted Output Power CH11, 11n, MCS5

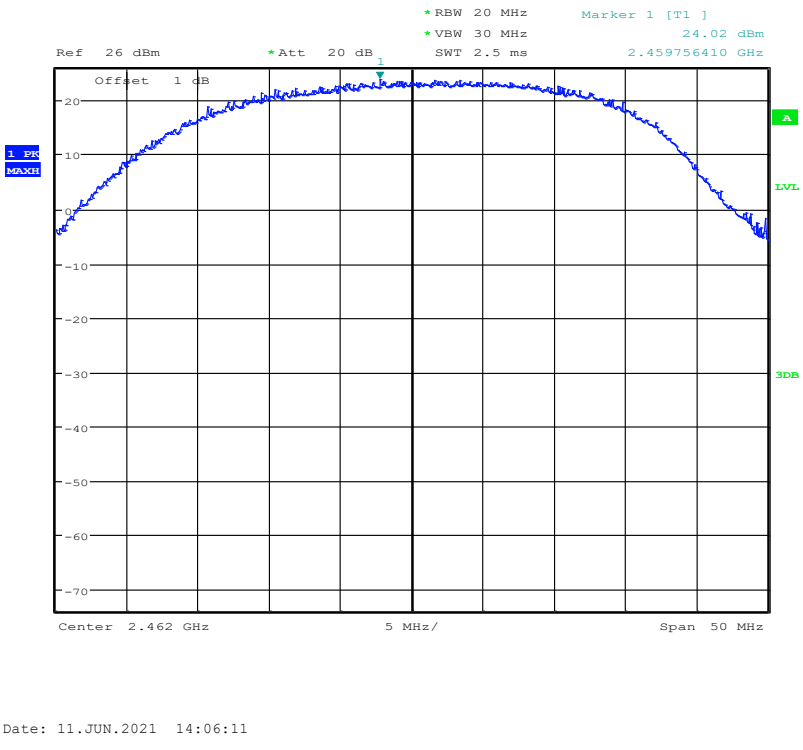


Fig.59 Peak Conducted Output Power CH11, 11n, MCS6

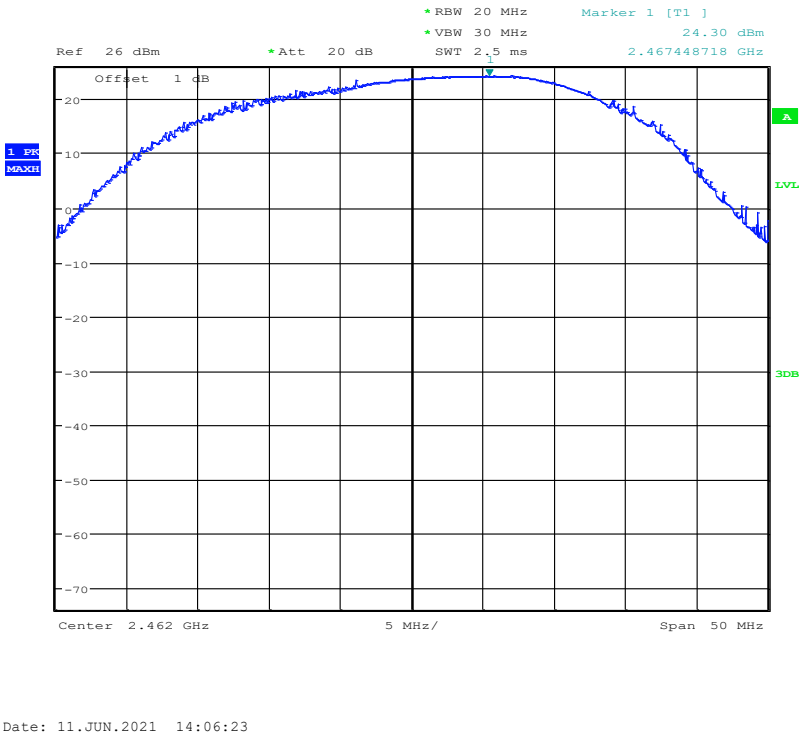


Fig.60 Peak Conducted Output Power CH11, 11n, MCS7

5.2 Peak Power Spectral Density

Specifications:	FCC CFR Part 15.247(e)
DUT Serial Number:	866884045647583
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit
FCC CFR Part 15.247(e)	< 8dBm/3 KHz

Measurement Uncertainty:

Measurement Uncertainty	±0.82dBm/KHz

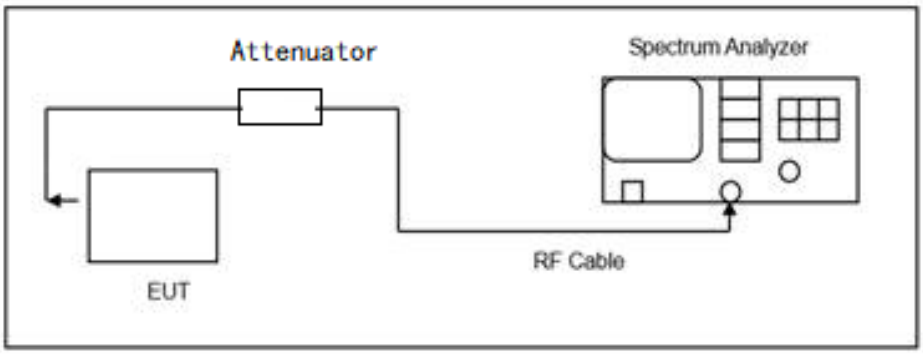
Test procedure:

The measurement is according to ANSI C63.10 clause 11.10.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set analyzer center frequency to DTS channel center frequency.
4. Set the span to 1.5 times the DTS bandwidth.
5. Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.
6. Set the VBW ≥ [3 × RBW].
7. Detector = peak.
8. Sweep time = auto couple.
9. Trace mode = max hold.
10. Allow trace to fully stabilize.
11. Use the peak marker function to determine the maximum amplitude level within the RBW.
12. If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

Note: --

Test block diagram:



Test Results:

802.11b/g/n mode

Mode	Power Spectral Density(dBm/3kHz)			Conclusion
	Ch1	Ch6	Ch11	
802.11b	-10.54	-11.52	-12.29	Pass
802.11g	-12.84	-12.57	-14.07	Pass
802.11n(20MHz)	-12.62	-14.36	-14.46	Pass

Mode	Power Spectral Density(dBm/3kHz)			Conclusion
	Ch3	Ch7	Ch9	
802.11n(40MHz)	-15.99	-16.46	-13.69	Pass

Conclusion: PASS

Test figure as below:

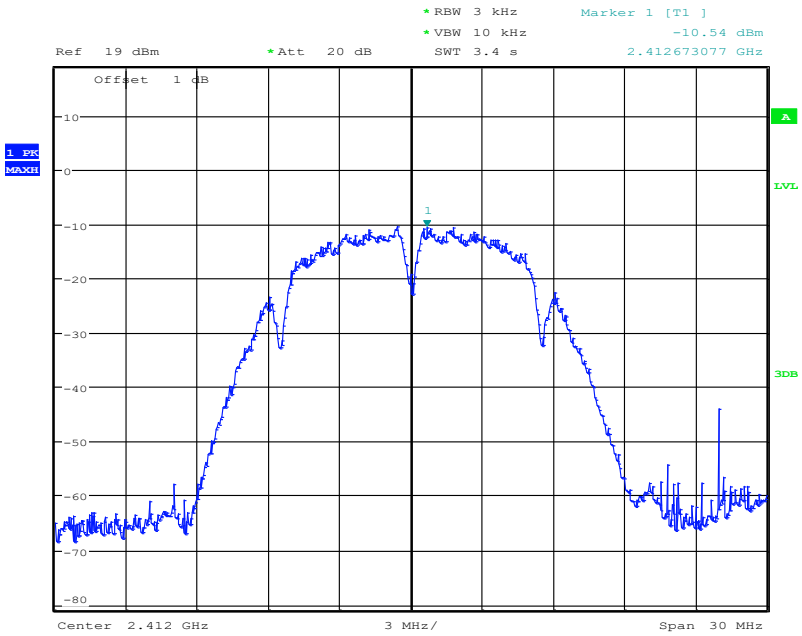


Fig.61 Power spectral density: CH1,11b

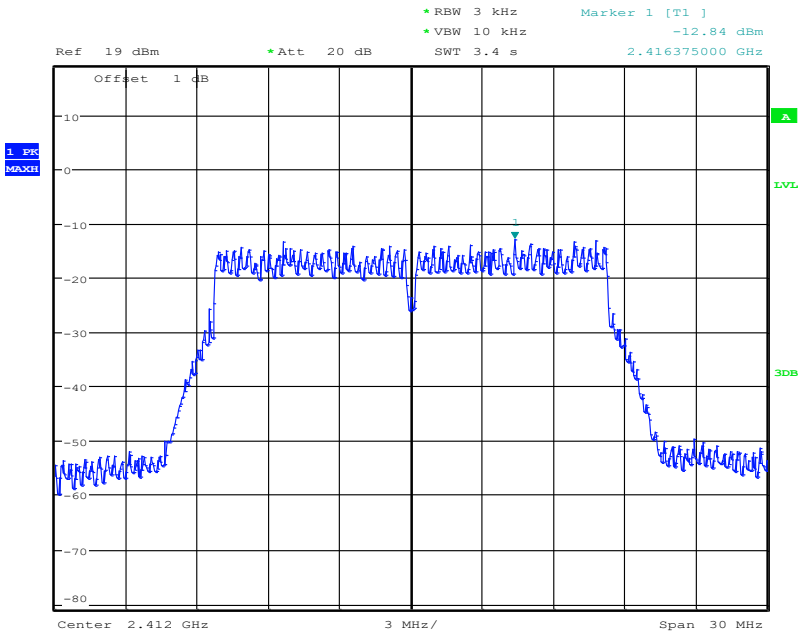


Fig.62 Power spectral density: CH1,11g

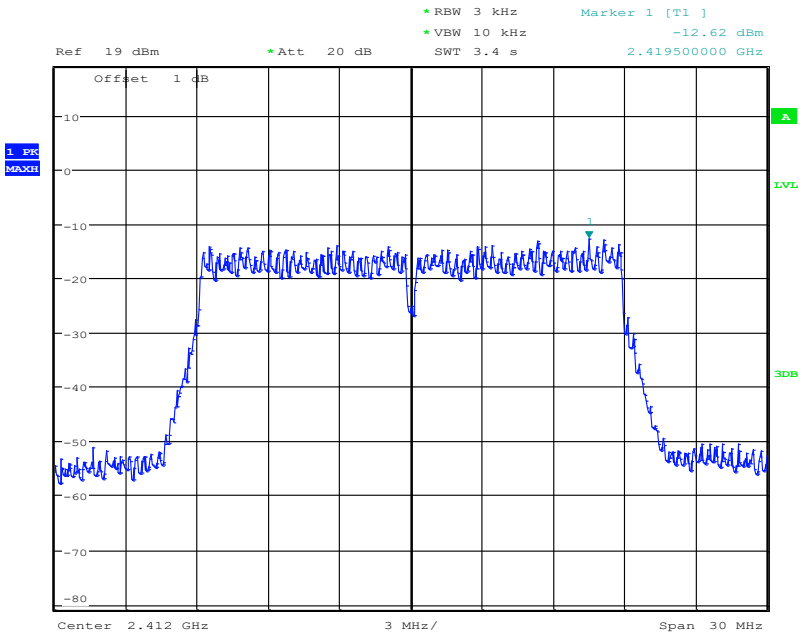


Fig.63 Power spectral density: CH1,11n

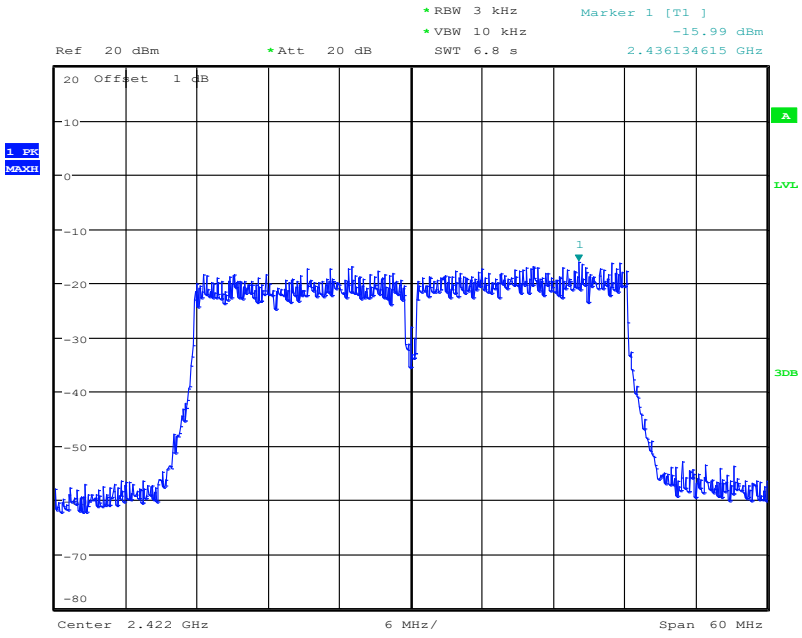


Fig.64 Power spectral density: CH3,11n(40M)

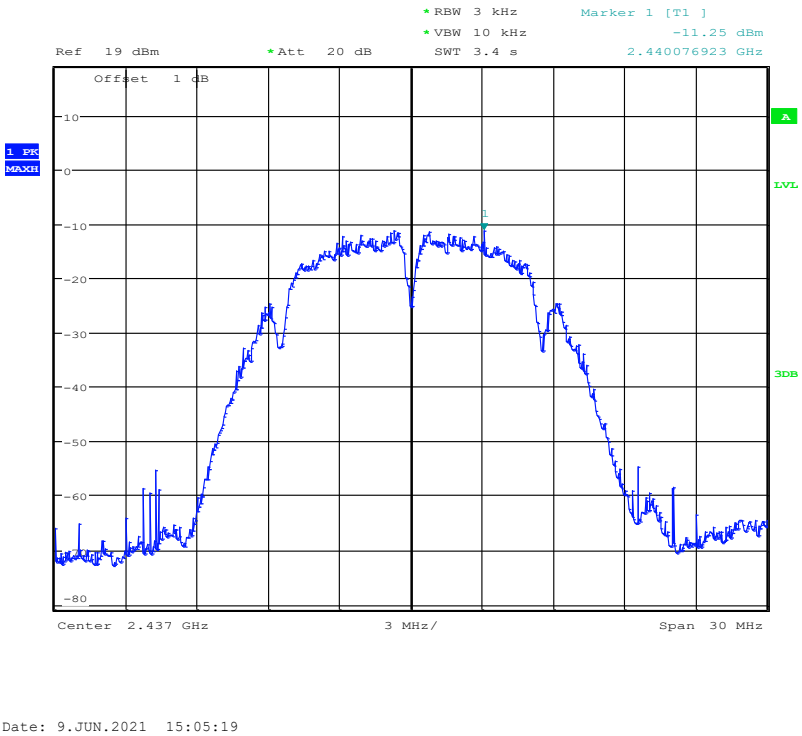


Fig.65 Power spectral density: CH6,11b

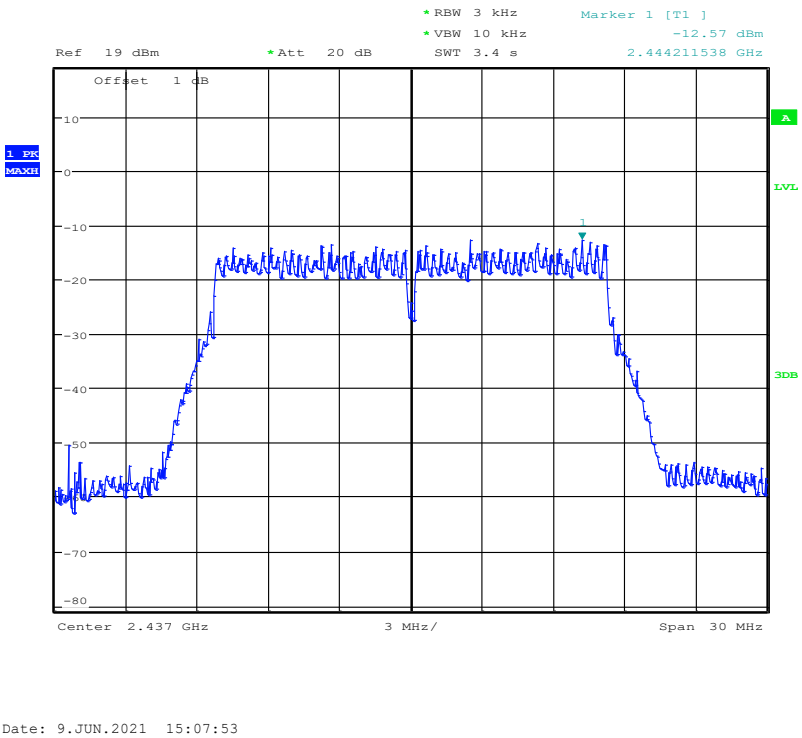


Fig.66 Fig.66 Power spectral density: CH6,11g

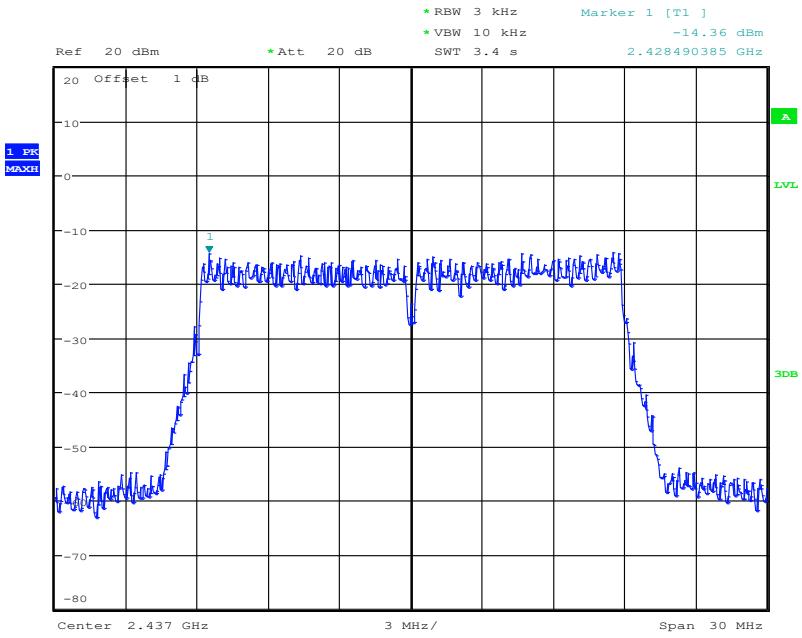


Fig.67 Power spectral density: CH6,11n

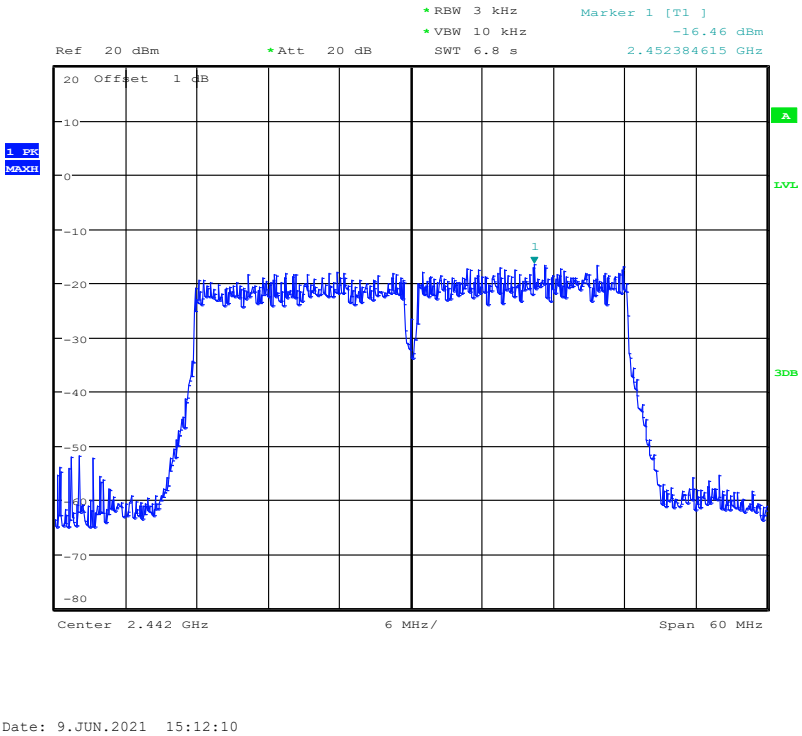


Fig.68 Power spectral density: CH7,11n(40M)

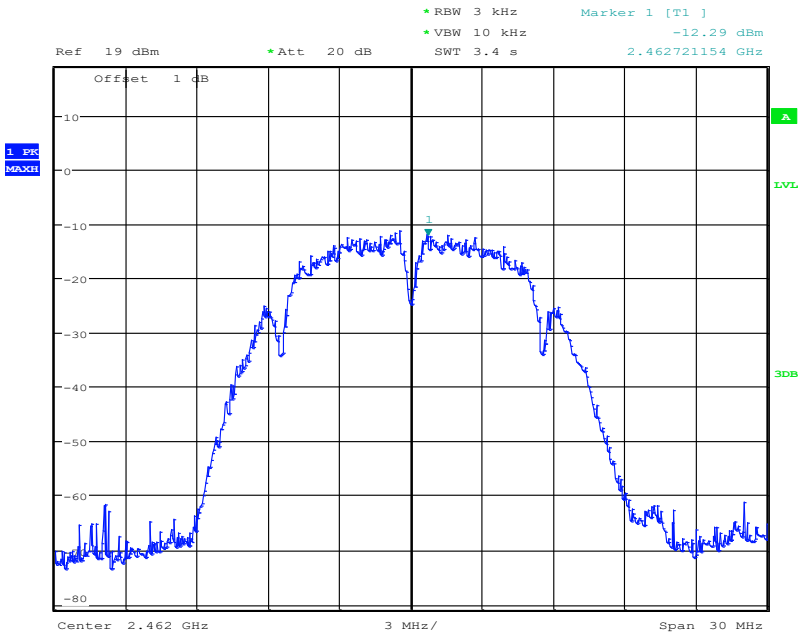


Fig.69 Power spectral density: CH11,11b

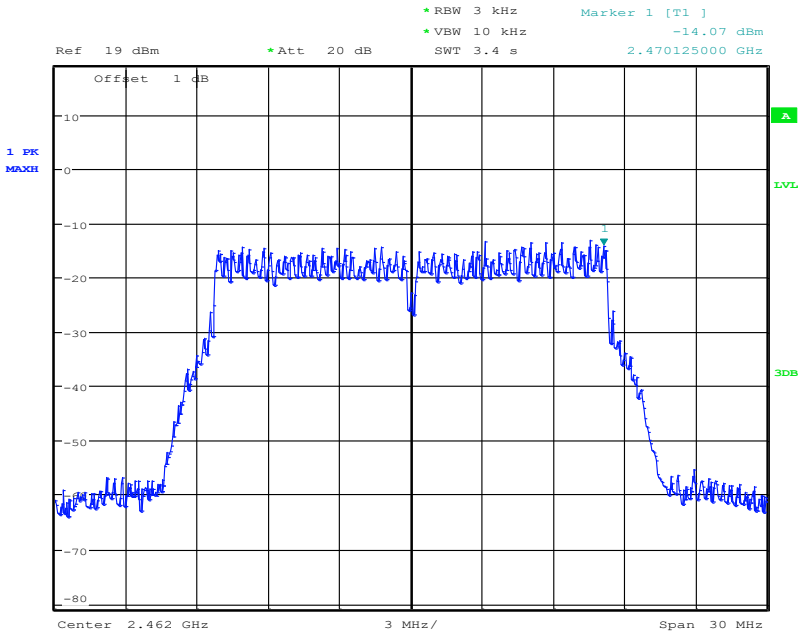


Fig.70 Power spectral density: CH11,11g

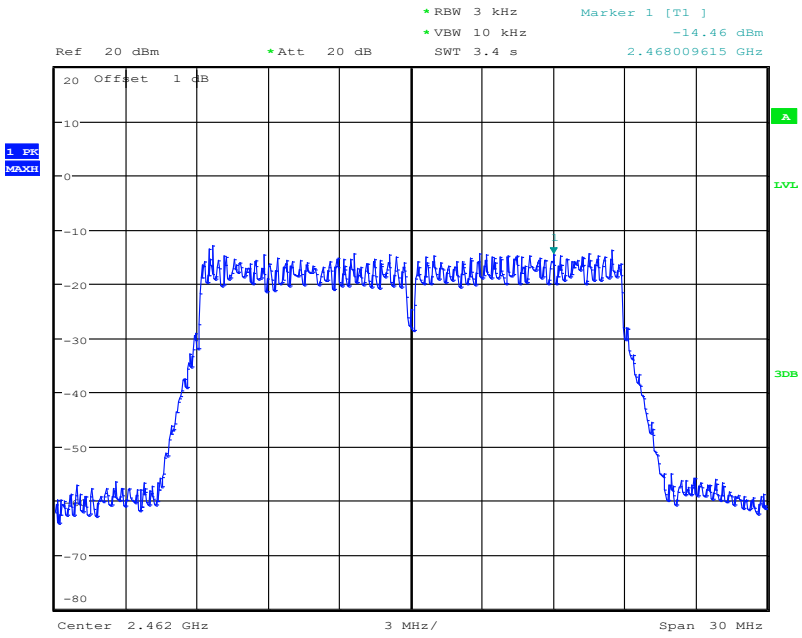


Fig.71 Power spectral density: CH11,11n

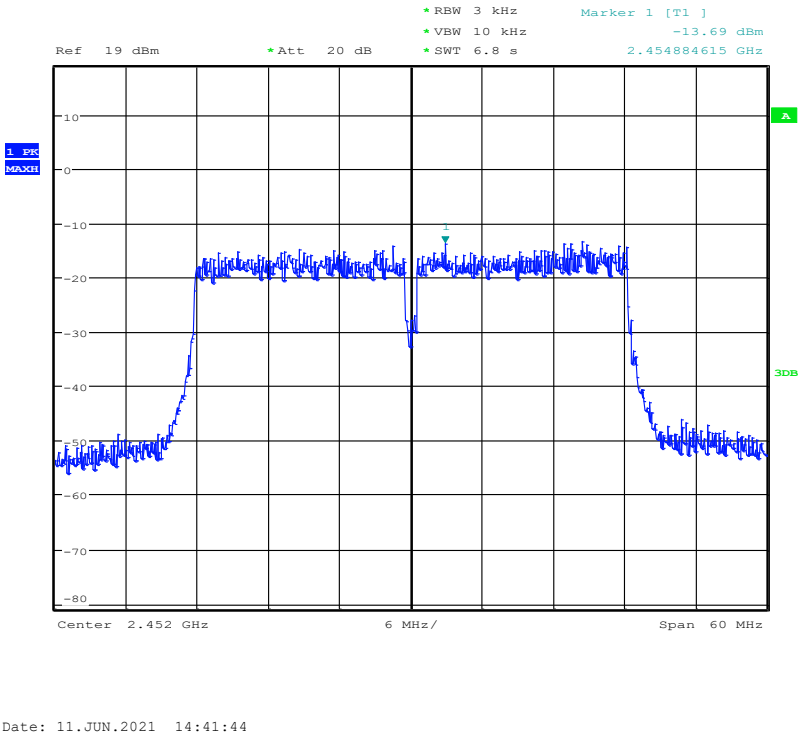


Fig.72 Power spectral density: CH11,11n(40M)

5.3 6dB Occupied Bandwidth

Specifications:	FCC 47 CFR Part 15.247(a)
DUT Serial Number:	866884045647583
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	Limit(KHz)
FCC 47 CFR Part 15.247(a)	≥500

Measurement Uncertainty:

Measurement Uncertainty	±1.1KHz

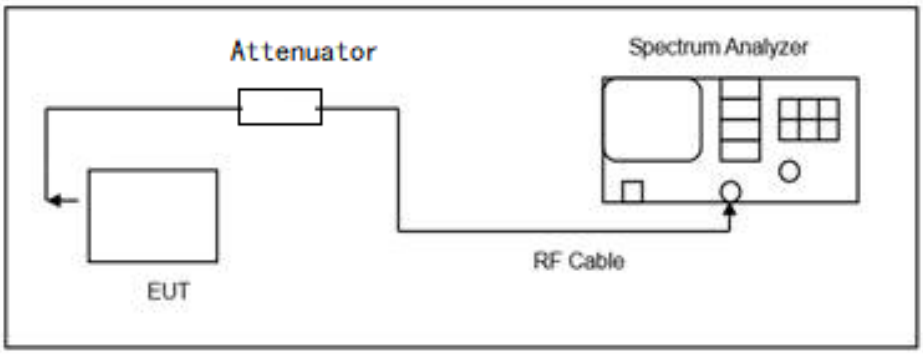
Test Procedure

The measurement is according to ANSI C63.10 clause 11.8.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.
3. Set RBW = 100 kHz.
4. Set the VBW ≥ [3 × RBW].
5. Detector = peak.
6. Trace mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize.
9. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Note: --

Test block diagram:



Test Result:

802.11b/g/n mode

Mode	Occupied 6dB Bandwidth(MHz)			Conclusion
	Ch1	Ch6	Ch11	
802.11b	9.04	9.17	9.17	Pass
802.11g	16.47	16.54	16.53	Pass
802.11n(20MHz)	17.63	17.43	17.56	Pass

Mode	Occupied 6dB Bandwidth(MHz)			Conclusion
	Ch3	Ch7	Ch9	
802.11n(40MHz)	36.03	35.28	36.54	Pass

Conclusion: PASS

Test figure as below:

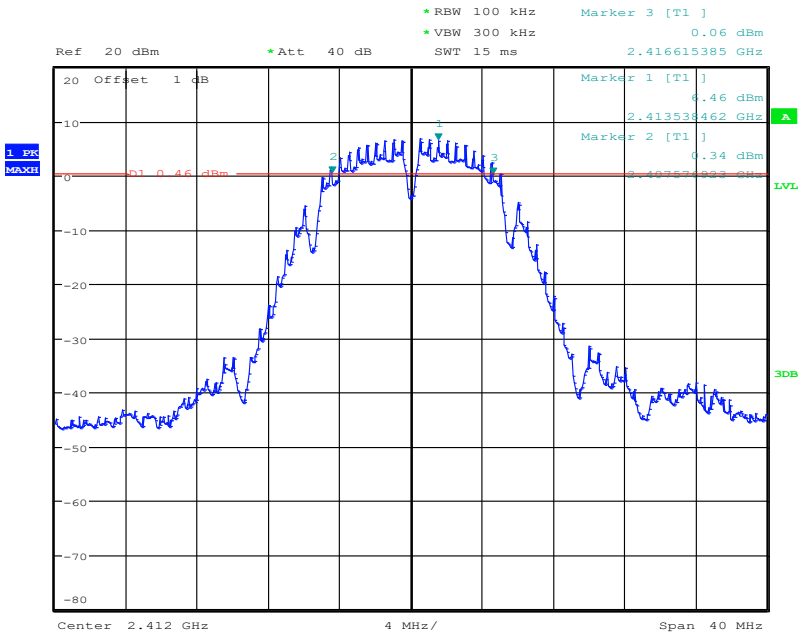


Fig.73 6dB Bandwidth: Ch1,11b

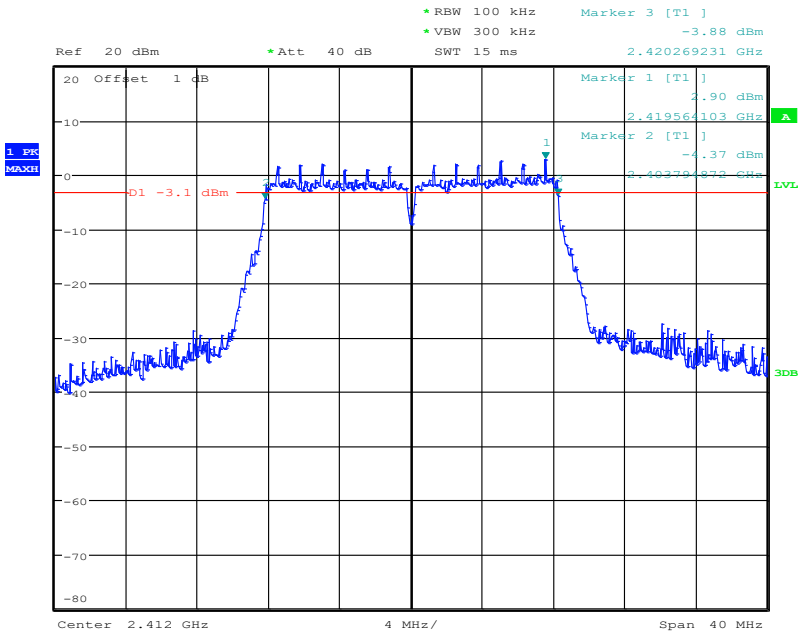


Fig.74 6dB Bandwidth: Ch1,11g

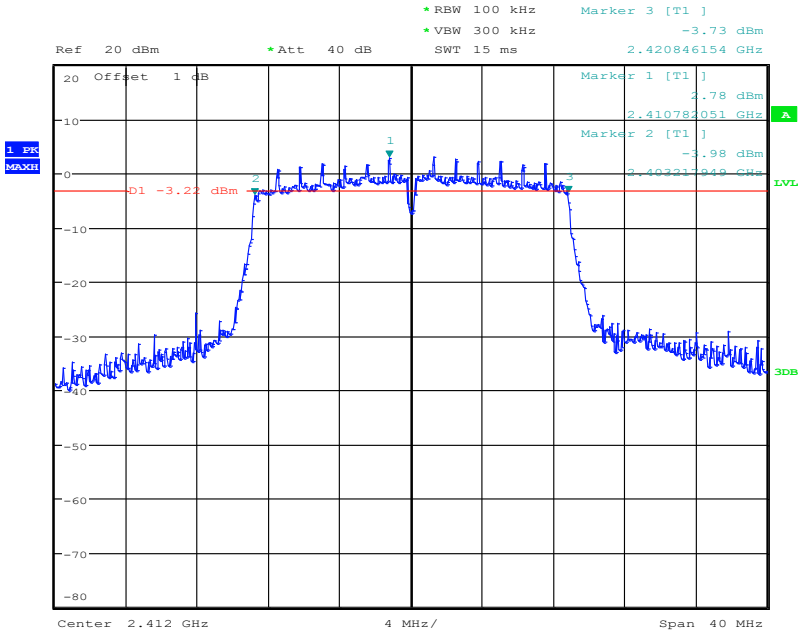


Fig.75 6dB Bandwidth: Ch1,11n

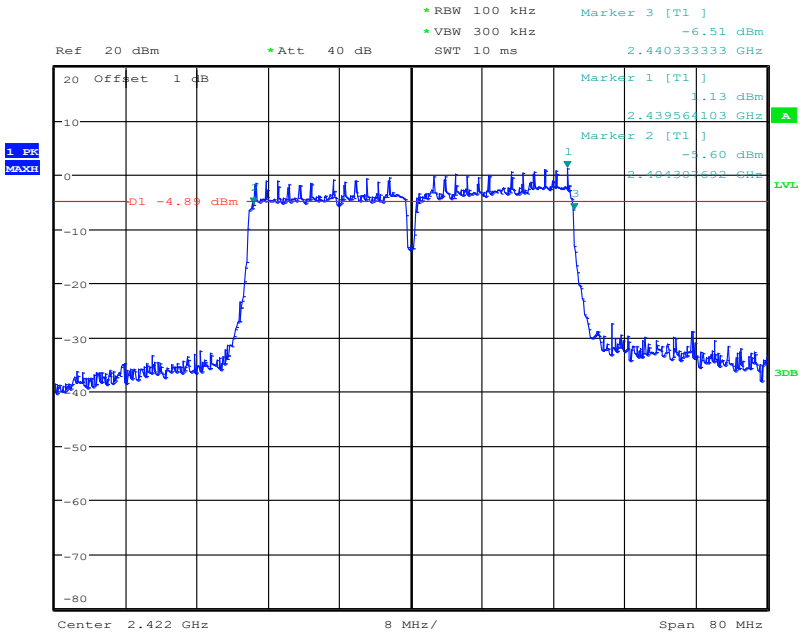


Fig.76 6dB Bandwidth: Ch3,11n(40M)

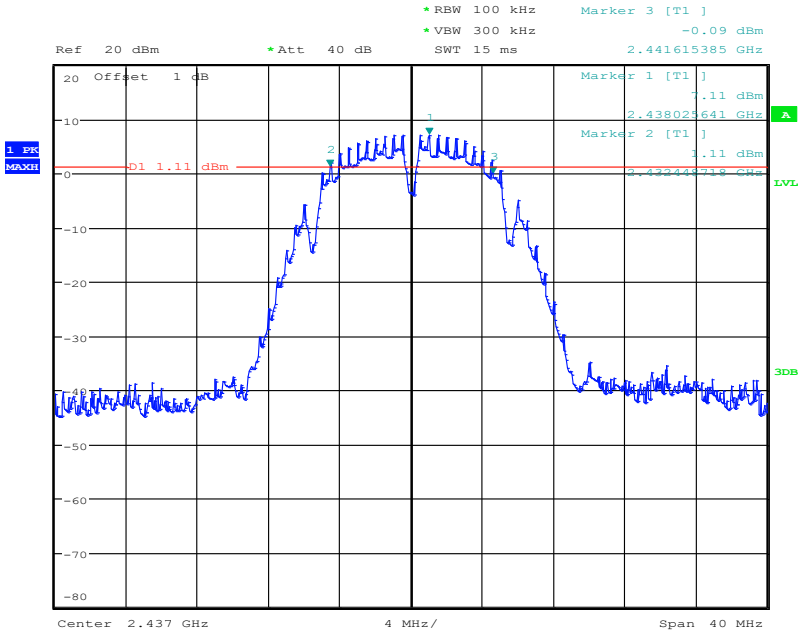


Fig.77 6dB Bandwidth: Ch6,11b

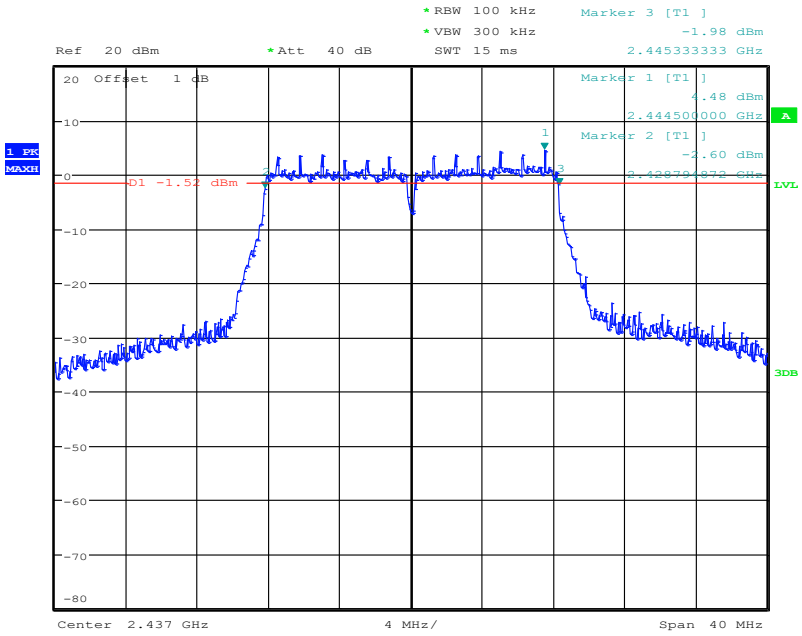


Fig.78 6dB Bandwidth: Ch6,11g

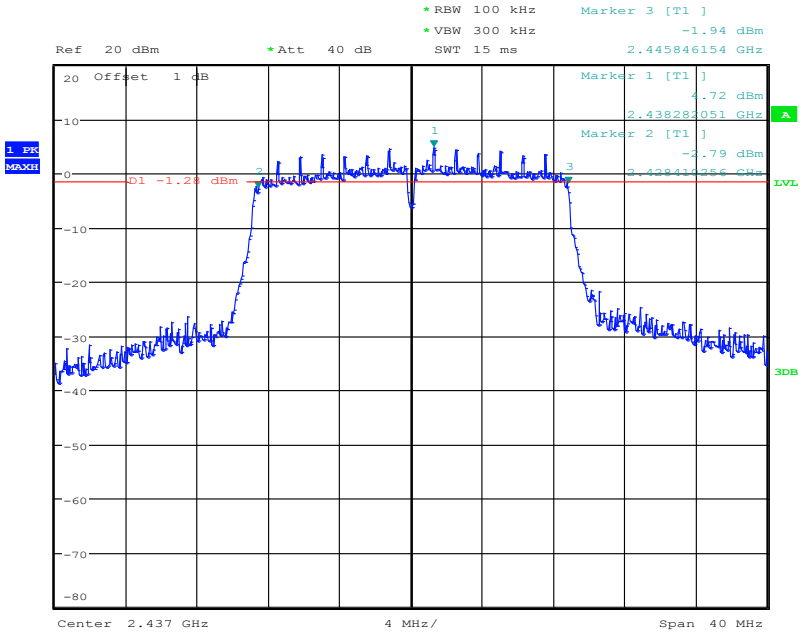


Fig.79 6dB Bandwidth: Ch6,11n

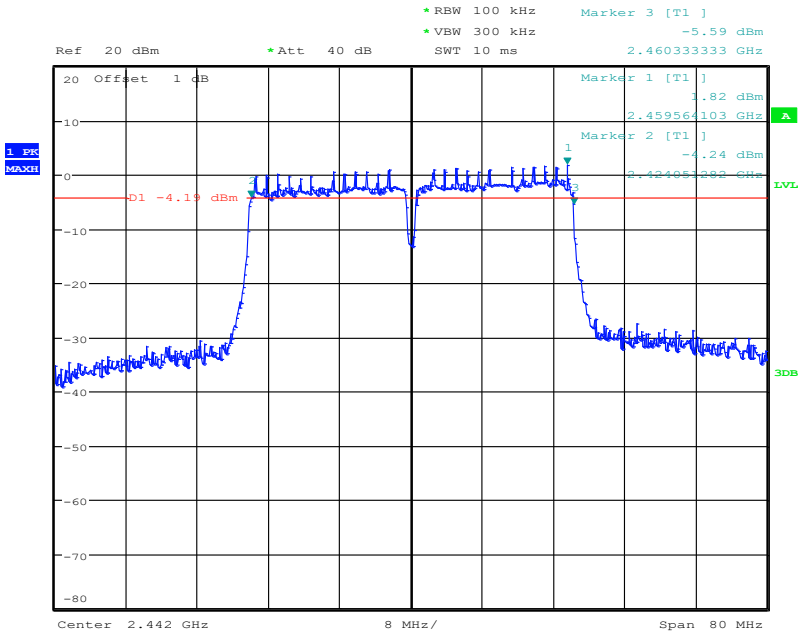


Fig.80 6dB Bandwidth: Ch6,11n(40M)

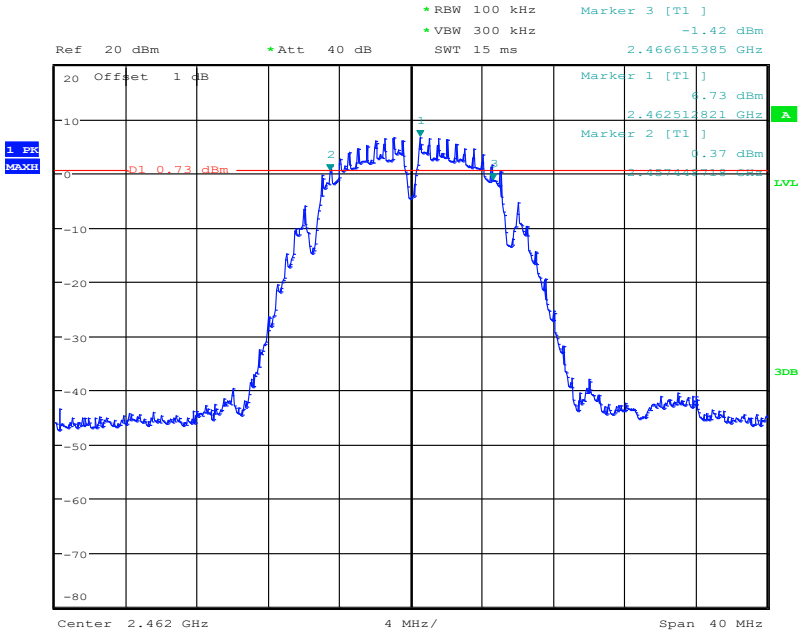


Fig.81 6dB Bandwidth: Ch11,11b

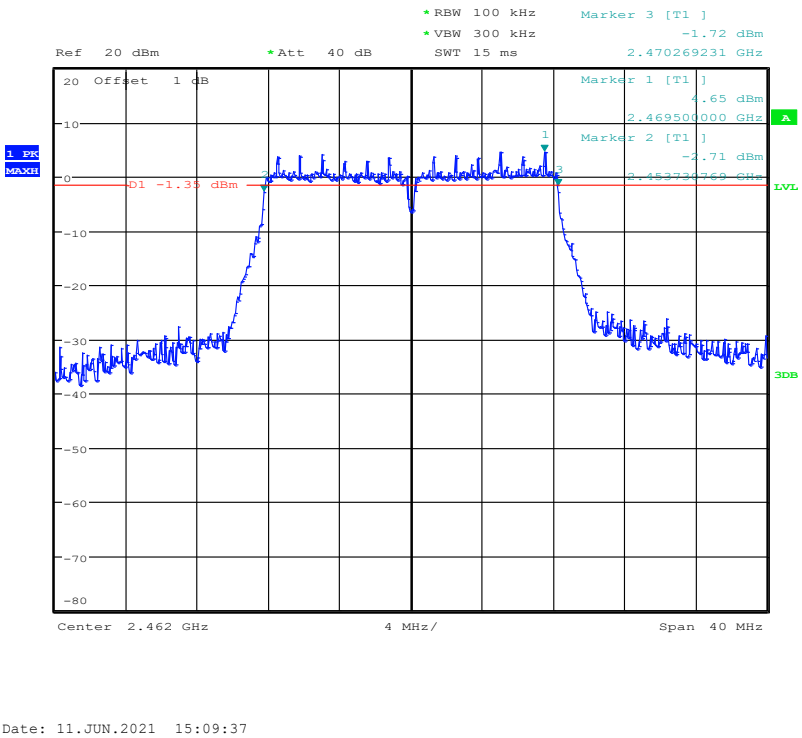


Fig.82 6dB Bandwidth: Ch11,11g

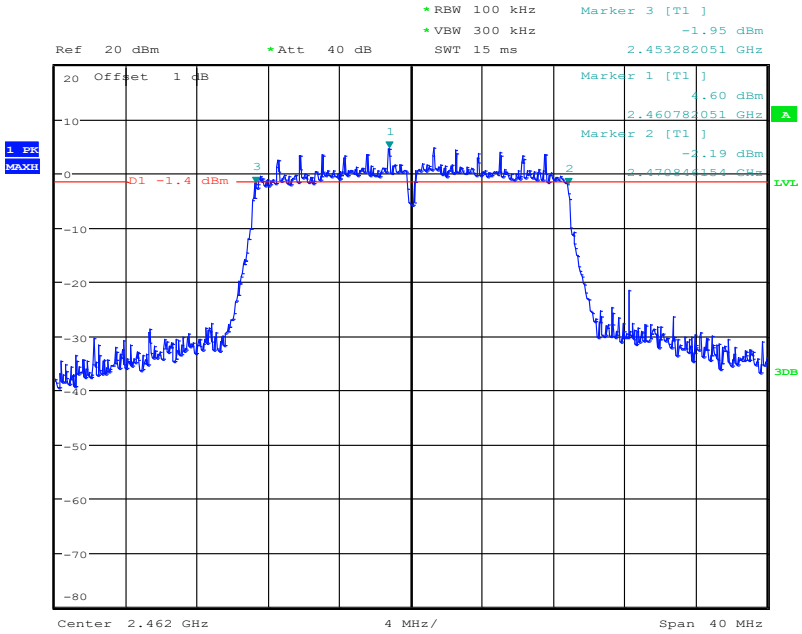


Fig.83 6dB Bandwidth: Ch11,11n

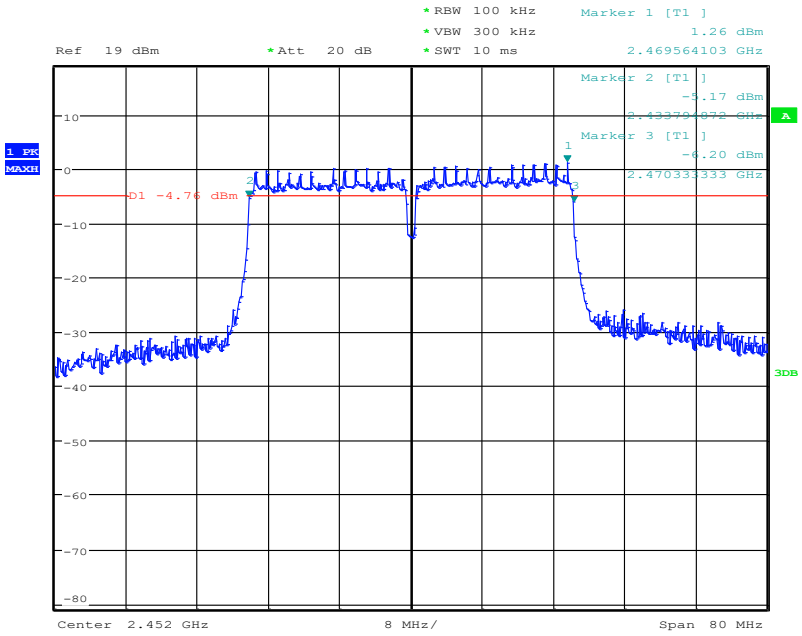


Fig.84 6dB Bandwidth: Ch11,11n(40M)

5.4 99% Occupied Bandwidth

DUT Serial Number:	866884045647583
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	--

Limit Level Construction: --

Measurement Uncertainty:

Measurement Uncertainty	±1.1KHz

Test Procedure

1.The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.

2.Enable EUT transmitter maximum power continuously.

3.Set RBW ≥ 200 kHz.

4.Set the VBW ≥ [3 × RBW].

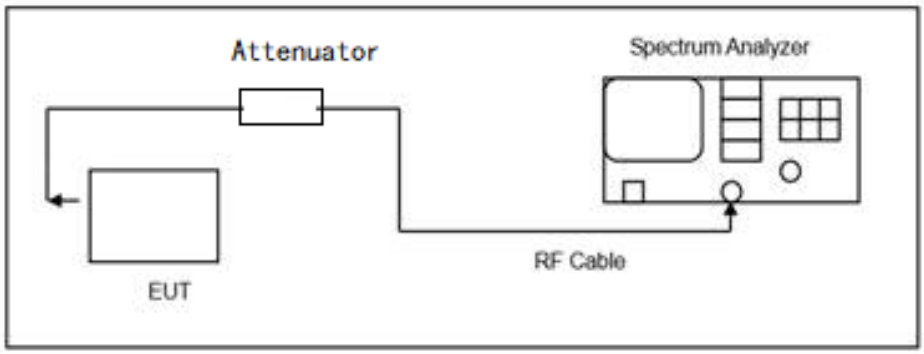
5.Detector = Sample.

6.Trace mode = max hold.

7.Sweep = auto couple.

8.Allow the trace to stabilize.

Test block diagram:



Note: --

Test Result:

802.11b/g/n mode

Mode	99% Occupied Bandwidth(MHz)			Conclusion
	Ch1	Ch6	Ch11	
802.11b	12.02	11.93	11.92	Pass
802.11g	16.73	16.76	16.74	Pass
802.11n(20MHz)	17.64	17.66	17.62	Pass

Mode	99% Occupied Bandwidth(MHz)			Conclusion
	Ch3	Ch7	Ch9	
802.11n(40MHz)	35.64	35.61	35.58	Pass

Conclusion: PASS

Test figure as below:

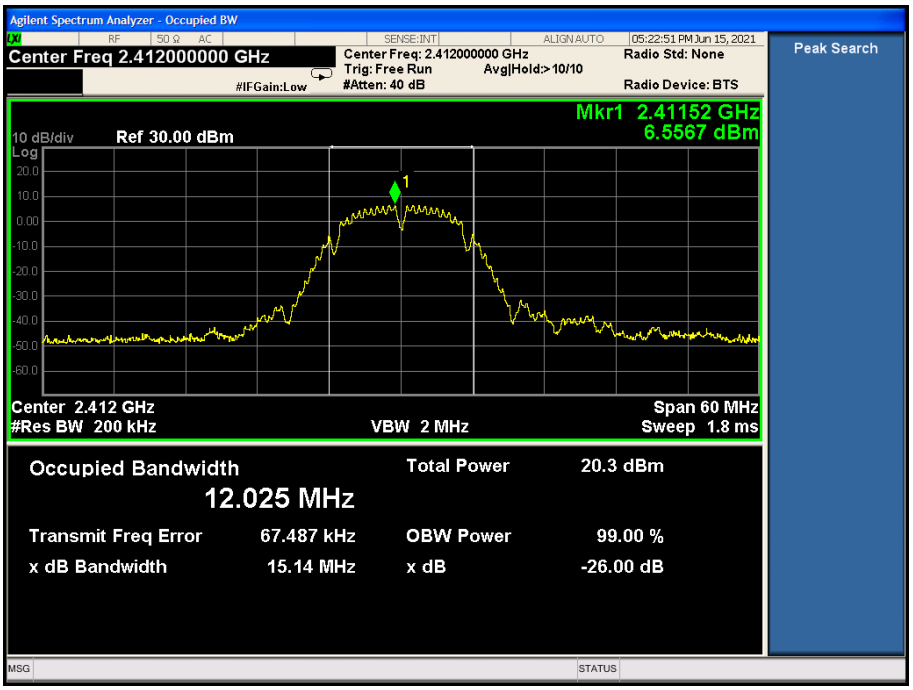


Fig.85 99% Occupied Bandwidth: Ch1,11b

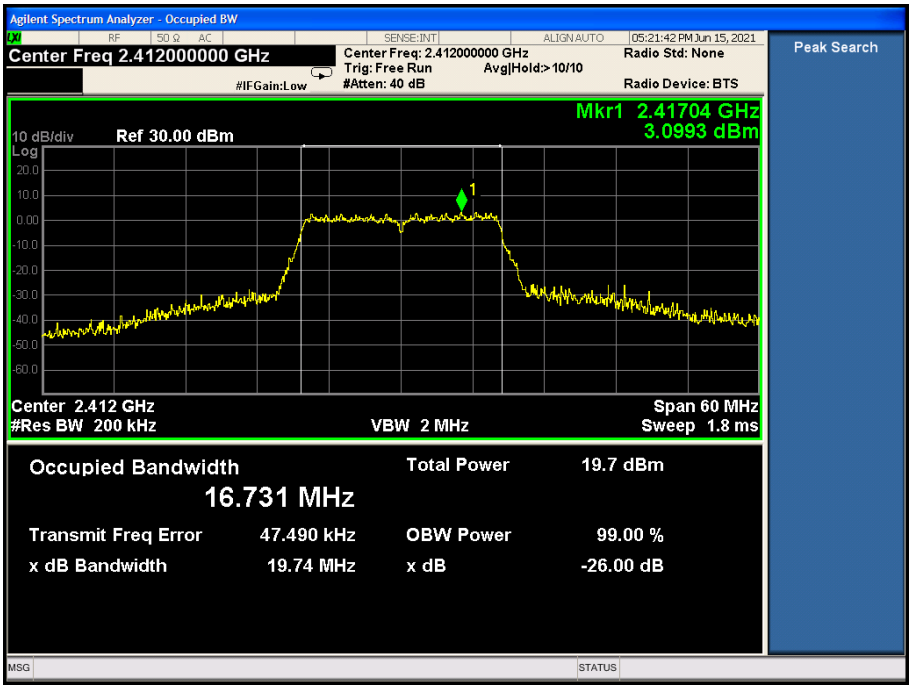


Fig.86 99% Occupied Bandwidth: Ch1,11g

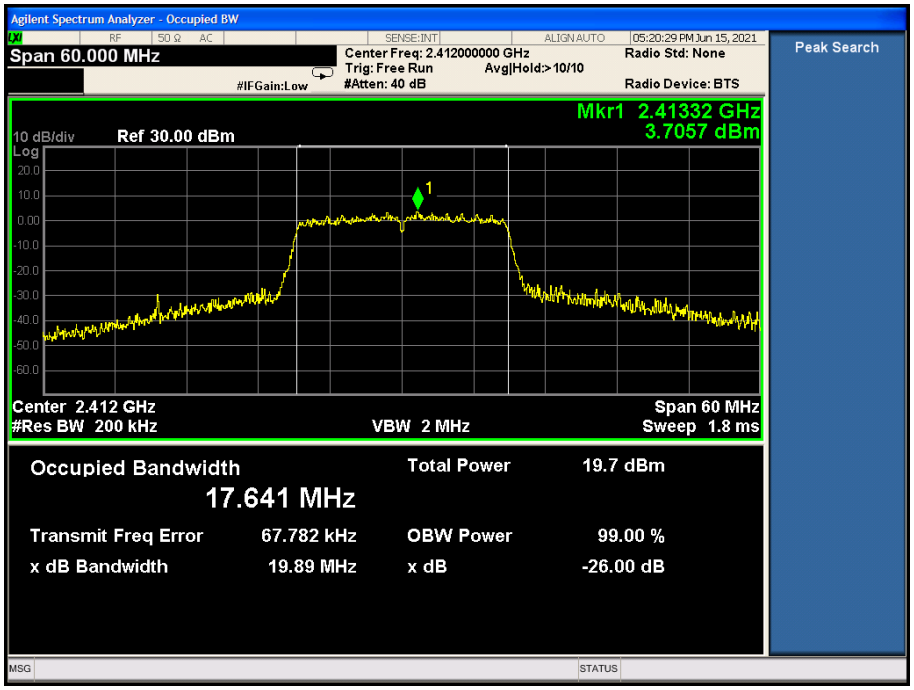


Fig.87 99% Occupied Bandwidth: Ch1,11n

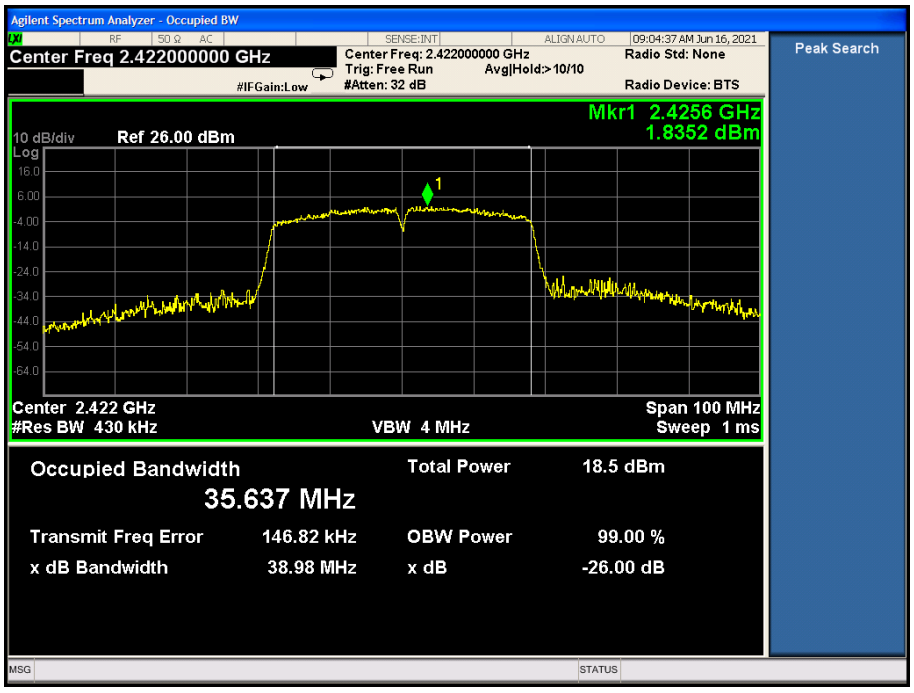


Fig.88 99% Occupied Bandwidth: Ch3,11n(40M)

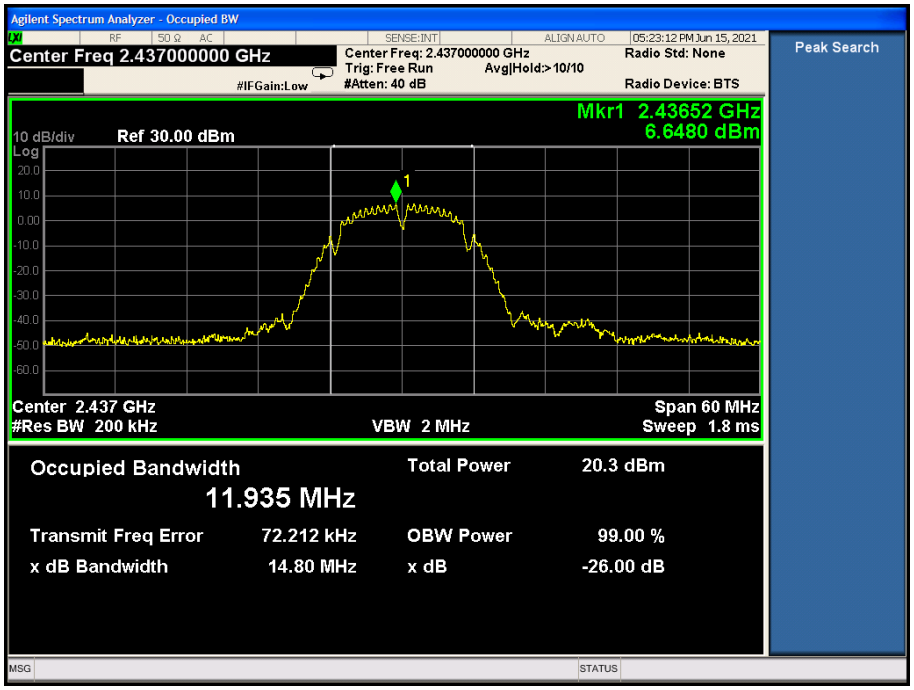


Fig.89 99% Occupied Bandwidth: Ch6,11b

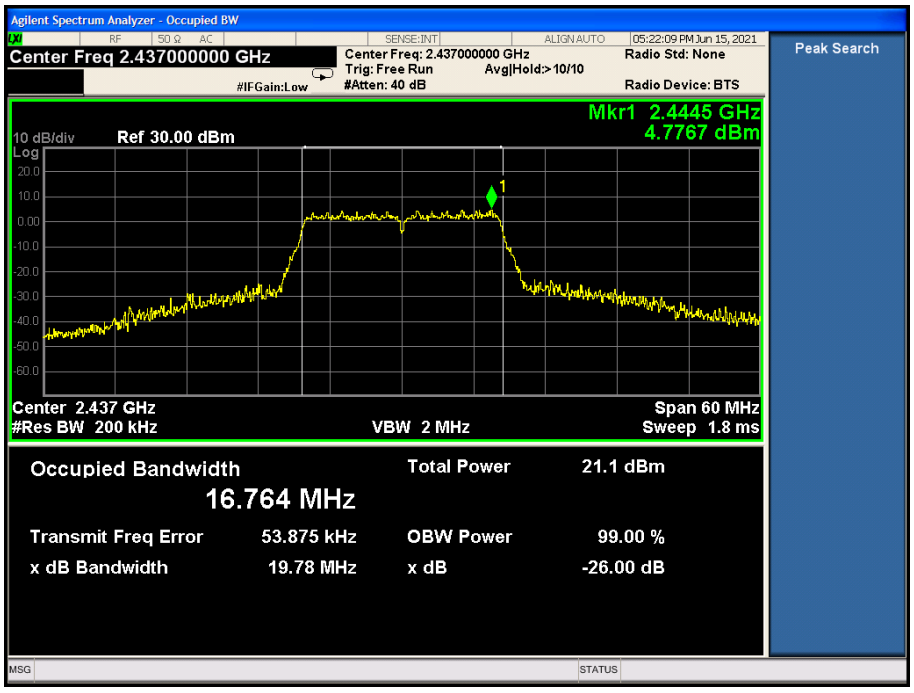


Fig.90 99% Occupied Bandwidth: Ch6,11g

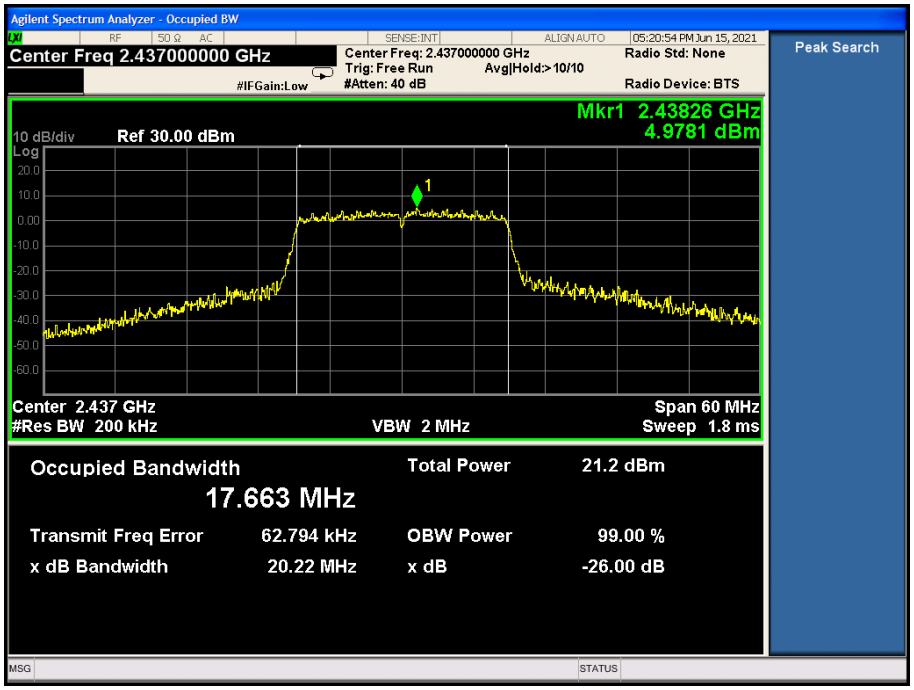


Fig.91 99% Occupied Bandwidth: Ch6,11n

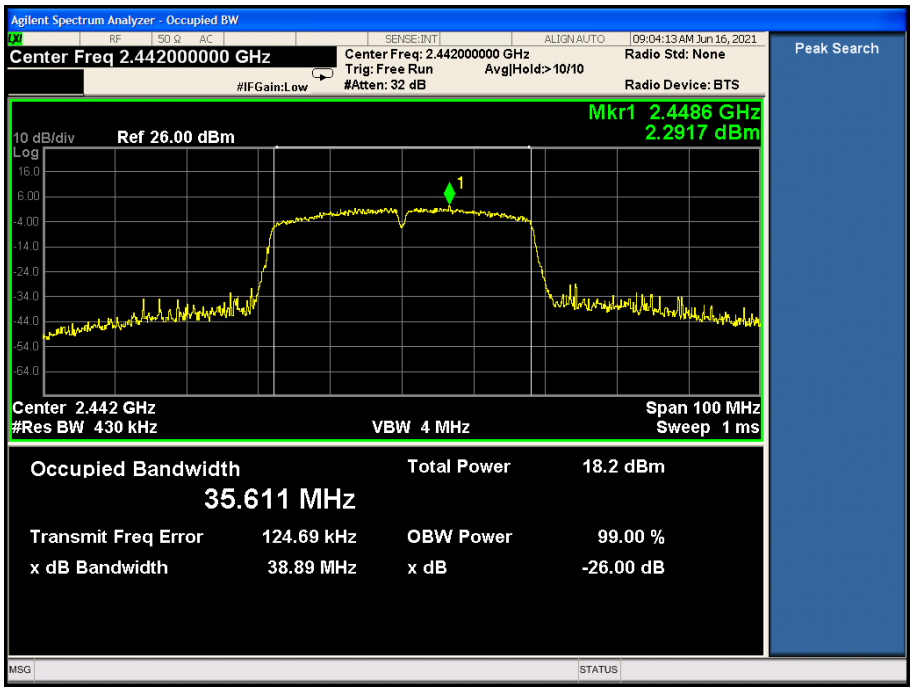


Fig.92 99% Occupied Bandwidth: Ch7,11n(40M)

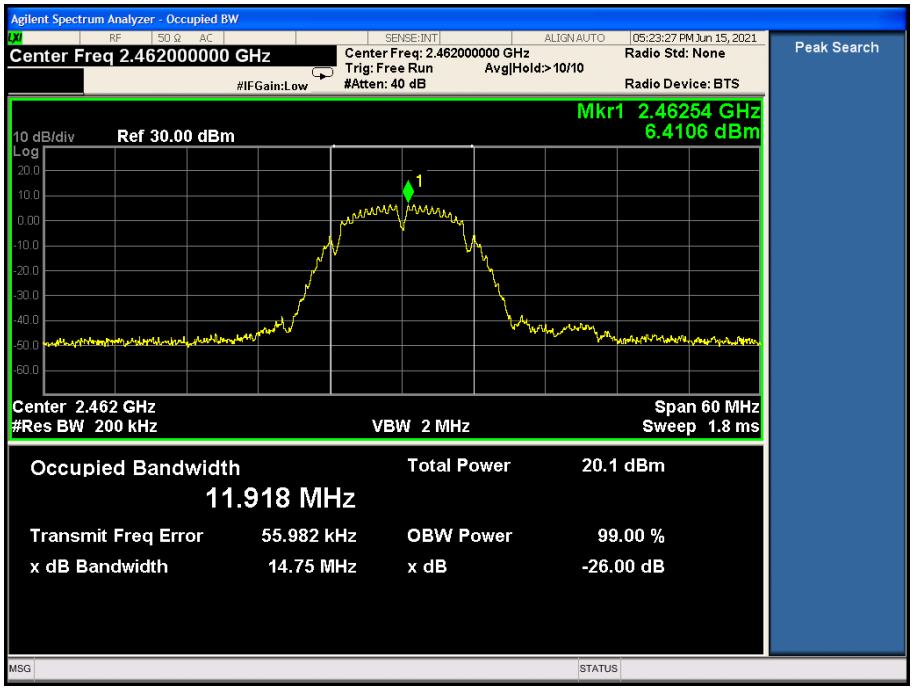


Fig.93 99% Occupied Bandwidth: Ch11,11b

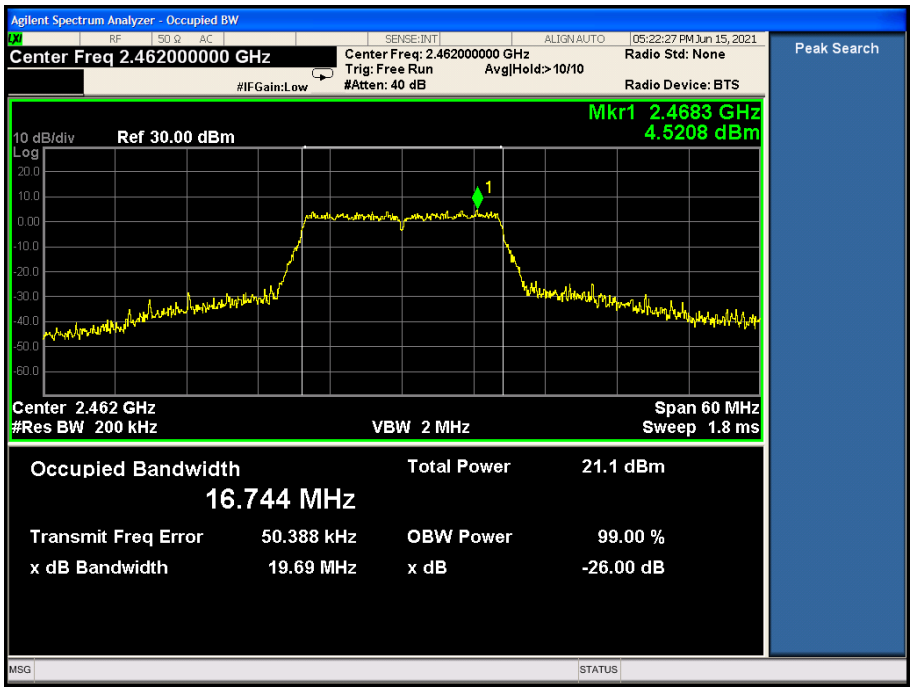


Fig.94 99% Occupied Bandwidth: Ch11,11g

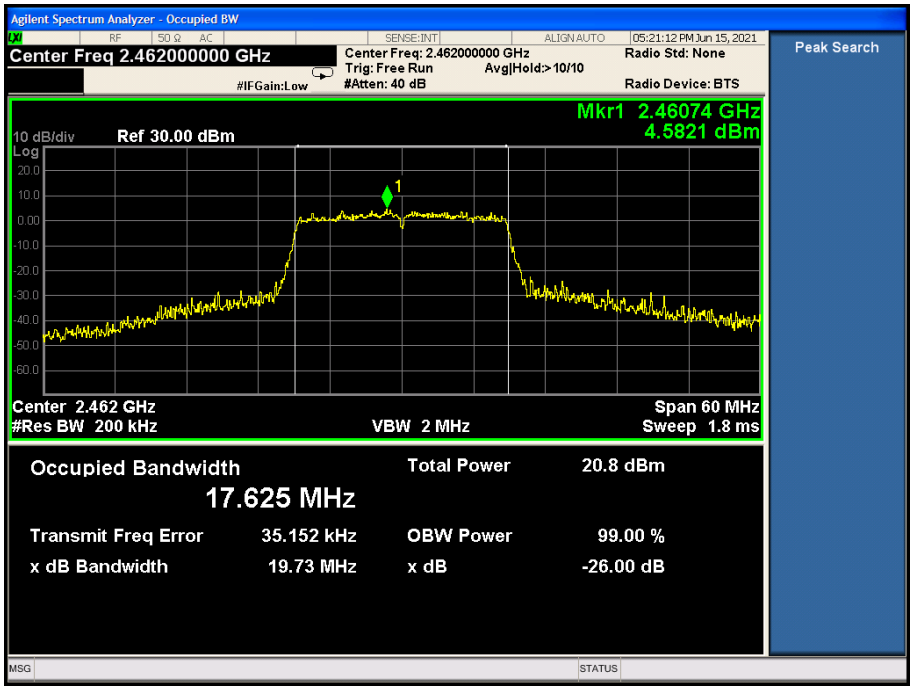


Fig.95 99% Occupied Bandwidth: Ch11,11n

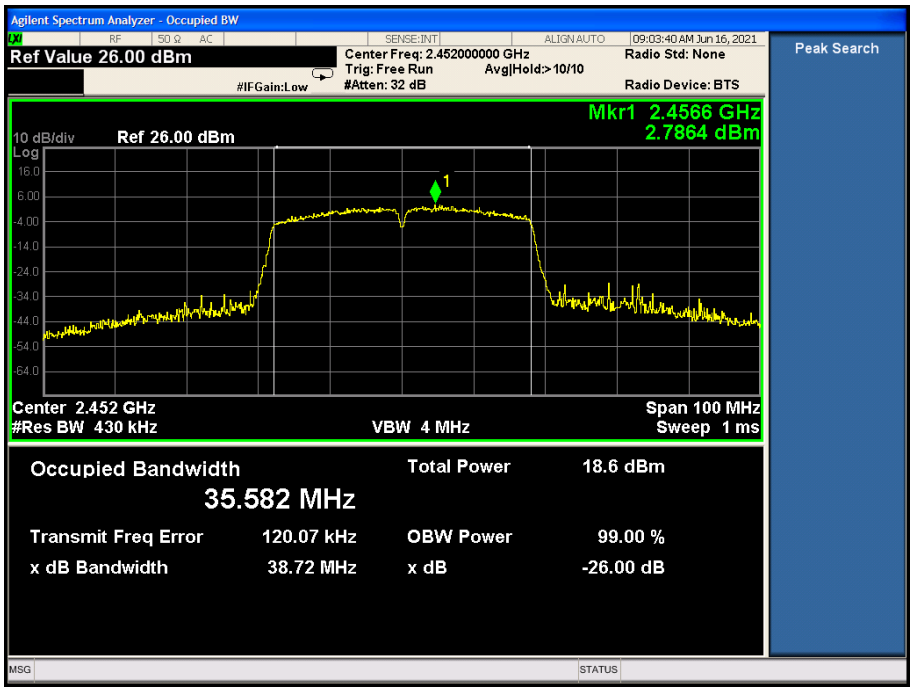


Fig.96 99% Occupied Bandwidth: Ch9,11n(40M)

5.5 Band Edges Compliance

Specifications:	FCC 47 CFR Part 15.205
DUT Serial Number:	866884045657848
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit Level Construction:

Standard	**Limited(**dBuV/m**)**	
FCC 47 CFR Part 15.209	Peak	74
	Average	54

Measurement Uncertainty:

Frequency Range	**Uncertainty**
1 GHz to 6 GHz	4.68

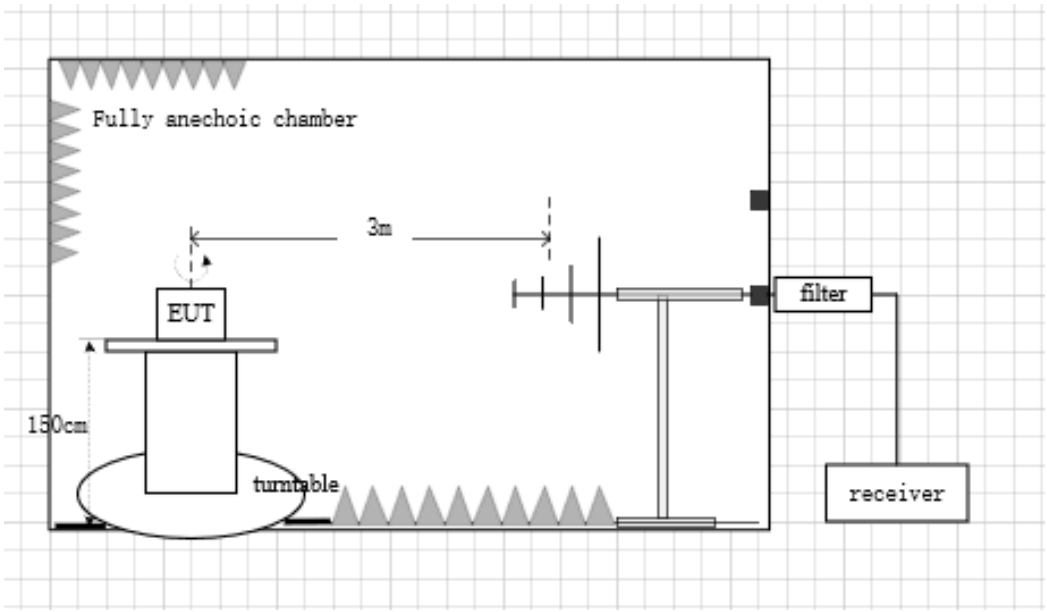
Test Procedure

The measurement is according to ANSI C63.10 clause11.13.

1. Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products that fall outside of the authorized band of operation.
2. Reference level offset: Corrected for gains and losses of test antenna factor, preamp gain and cable loss, so as to indicate field strength, in units of dBµV/m at 3 m, directly on the instrument display. Alternatively, the reference level offset may be set to zero and calculations shall be provided showing the conversion of raw measured data to thefield strength in dBµV/m at 3 m.
3. Reference level: As required to keep the signal from exceeding the maximum spectrum analyzer input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2..
4. Attenuation: Auto (at least 10 dB preferred).
5. Sweep time: Coupled.
6. Resolution bandwidth: Above 1 GHz: 1 MHz
7. Video bandwidth: VBW for Peak, Quasi-peak, or Average Detector Function: 3×RBW
8. Detector (unless specified otherwise): Peak and average above 1 GHz
9. Trace: Max hold for final measurement; a combination of two traces, clear-write and max hold, is recommended for maximizing the emission.

Note: --

Test block diagram:



Test Result:

802.11b/g mode

mode	Channel	Test Results(dBuV/m)	Conclusion
802.11b	1	Fig.109	Pass
	11	Fig.110	Pass
802.11g	1	Fig.111	Pass
	11	Fig.112	Pass

802.11n mode

mode	Channel	Test Results(dBuV/m)	Conclusion
802.11n (20MHz)	1	Fig.113	Pass
	11	Fig.114	Pass
802.11n (40MHz)	3	Fig.115	Pass

	9	Fig.116	Pass

Conclusion: PASS

Test figure as below:

Note: The curve represents V polarization.

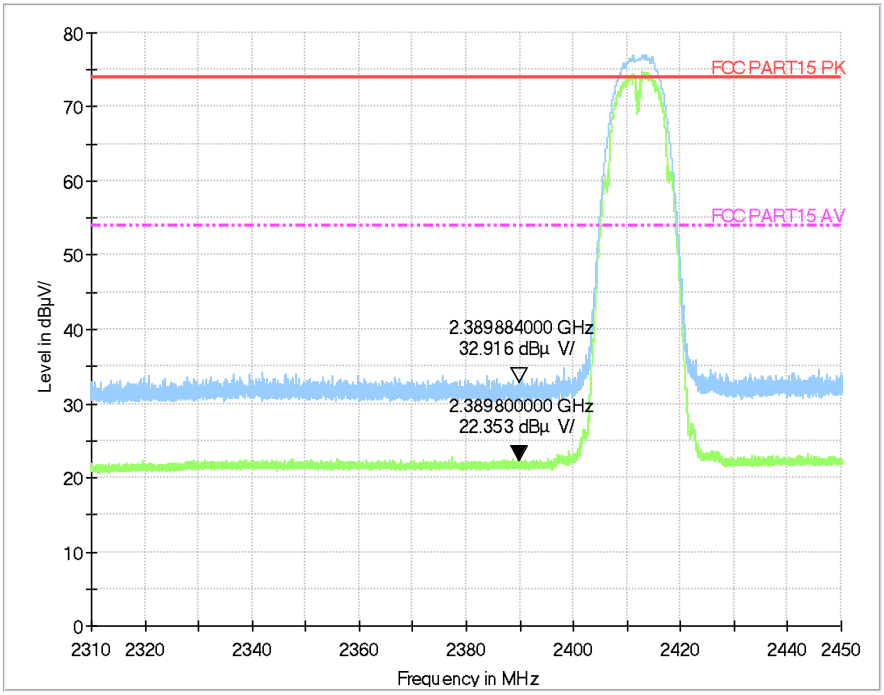


Fig.97 Frequency Band Edge: Ch1,11b

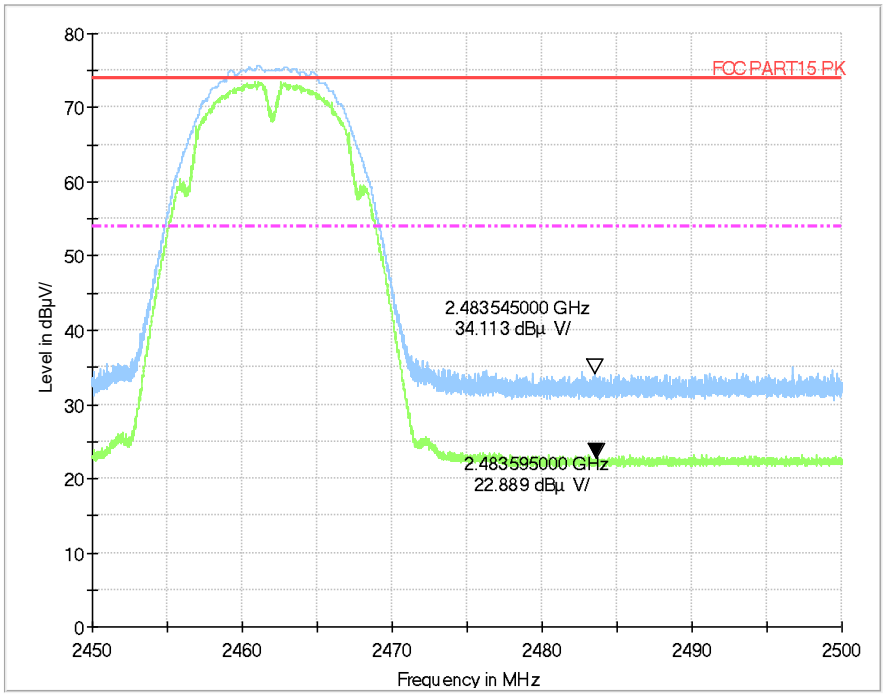


Fig.98 Frequency Band Edge: Ch11,11b

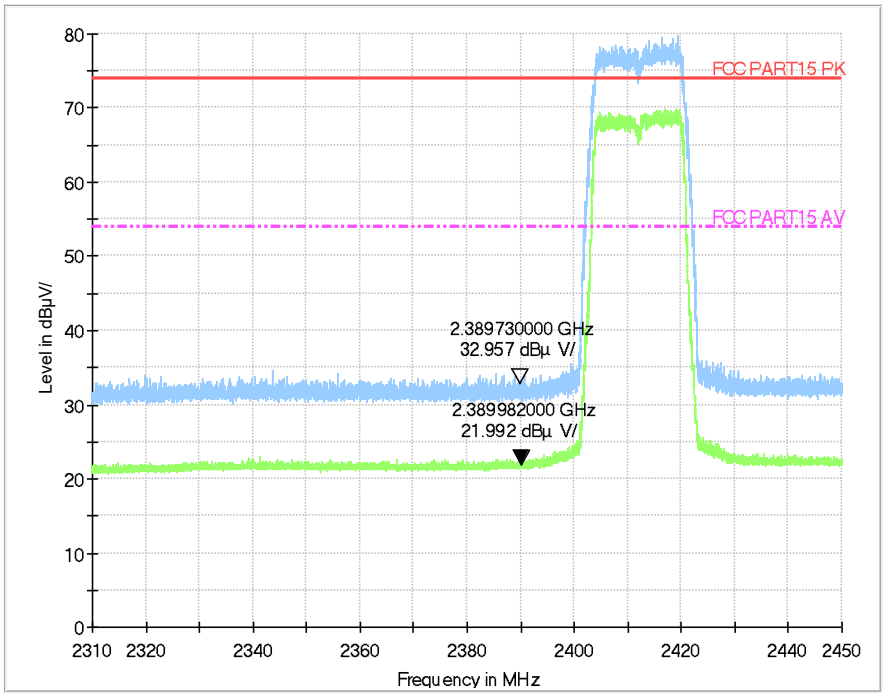


Fig.99 Frequency Band Edge: Ch1,11g

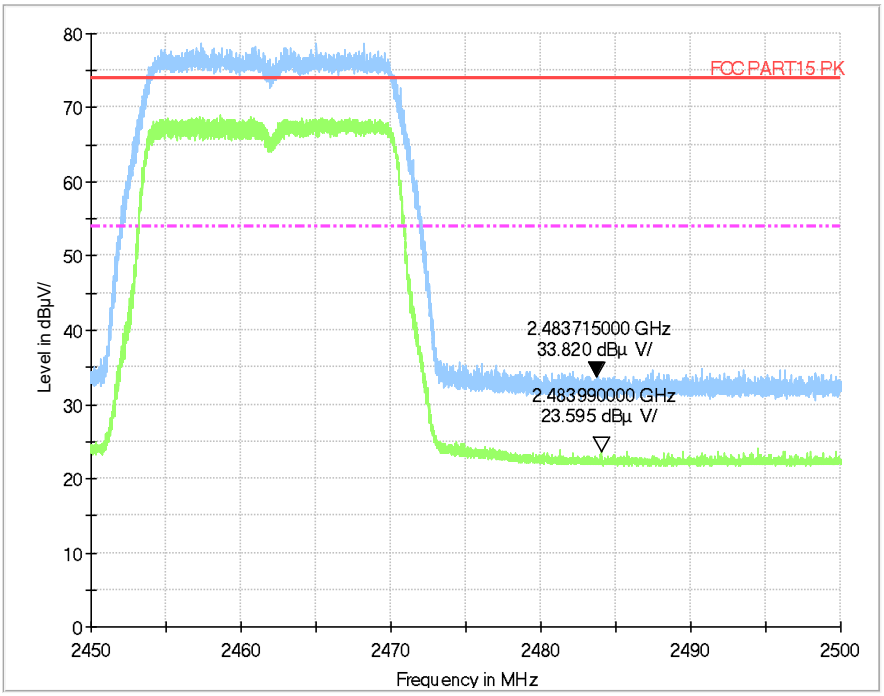


Fig.100 Frequency Band Edge: Ch11,11g

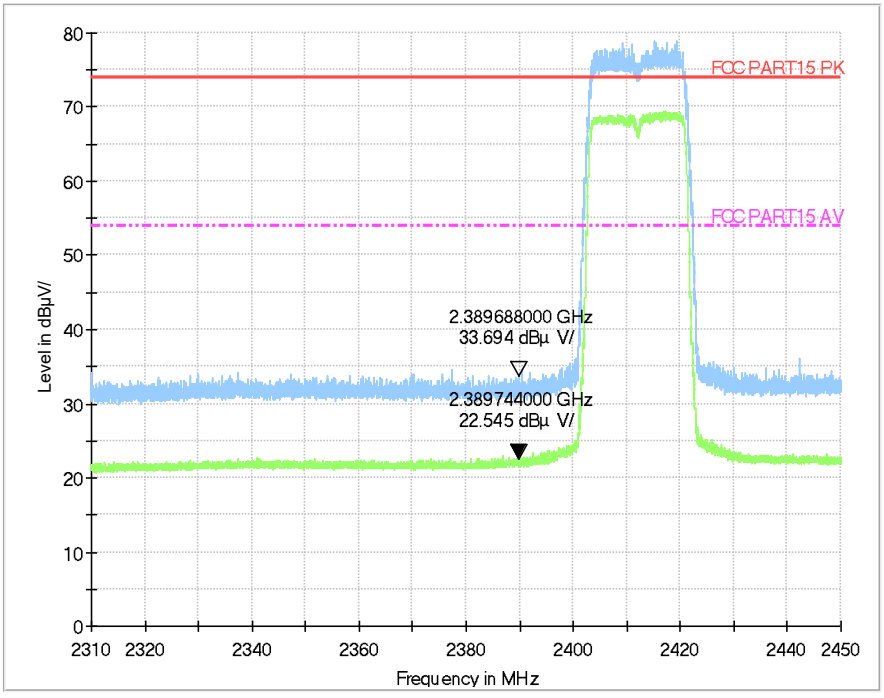


Fig.101 Frequency Band Edge: Ch1,11n(20M)

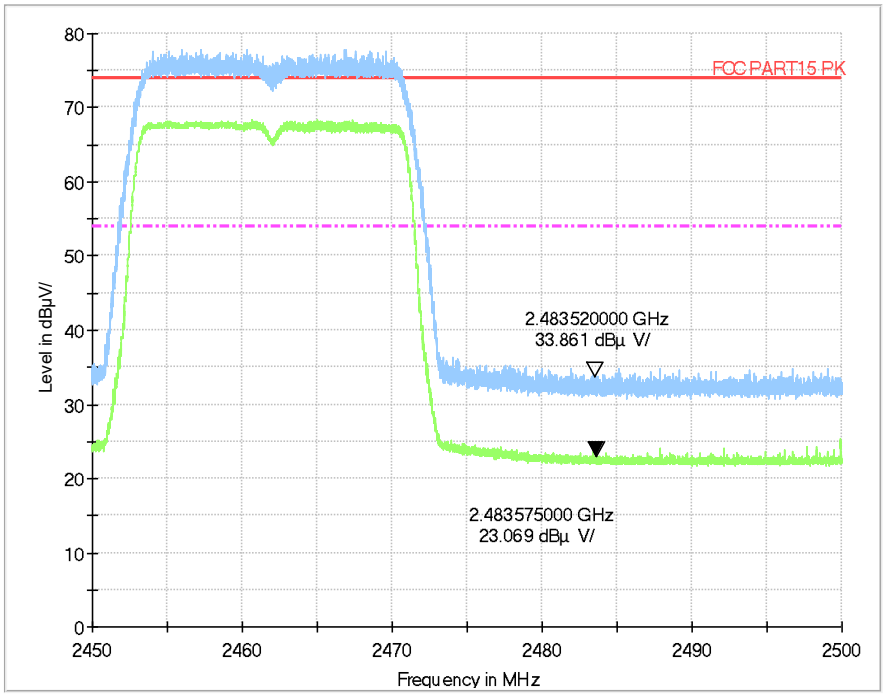


Fig.102 Frequency Band Edge: Ch11,11n(20M)

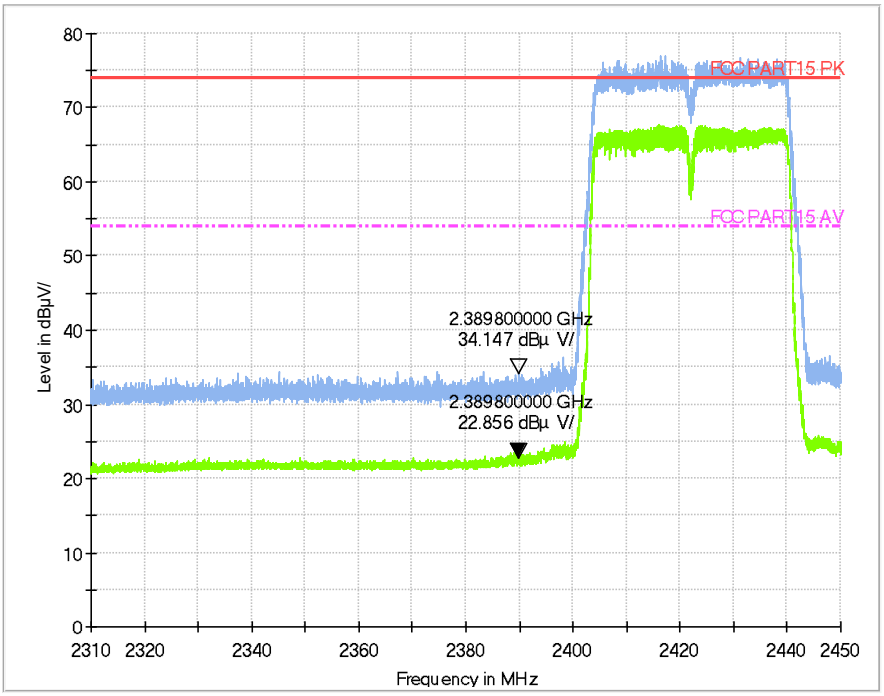


Fig.103 Frequency Band Edge: Ch3,11n(40M)

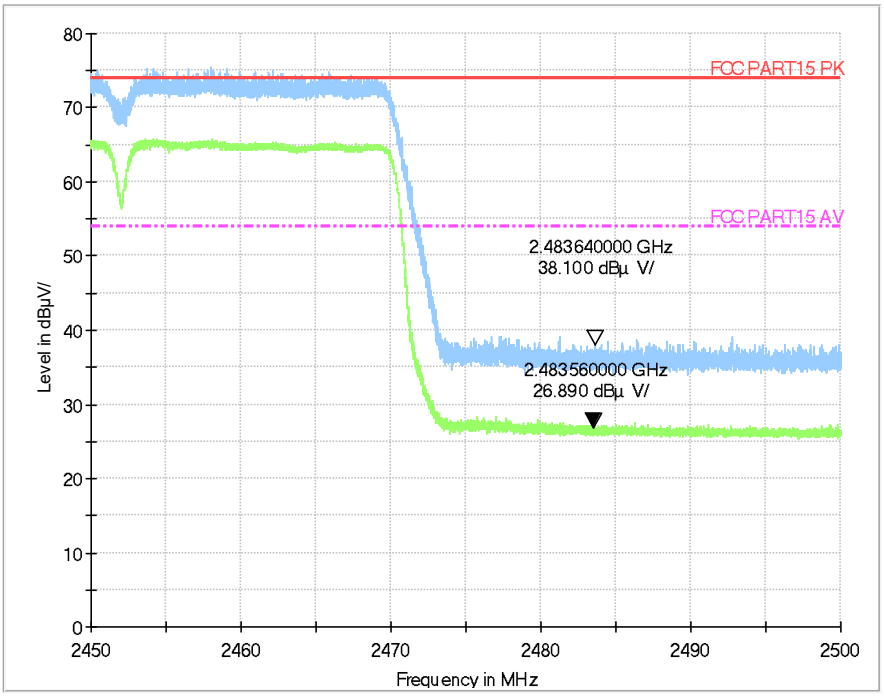


Fig.104 Frequency Band Edge: Ch9,11n(40M)

5.6 Transmitter Spurious Emission-Conducted

Specifications:	FCC 47 CFR Part15.247 (d)
DUT Serial Number:	866884045647583
Test conditions:	Ambient Temperature:15℃-35℃ Relative Humidity:30%-60% Air pressure: 86-106kPa
Test Results:	Pass

Limit

Standard	Limit
FCC 47 CFR Part15.247 (d)	20dB below peak output power in 100KHz bandwidth

Measurement Uncertainty:

Frequency Range	Uncertainty
30MHz ≤ f ≤ 26GHz	±2.7

Test Procedure

This measurement is according to ANSI C63.10 clause 11.11.

1. The output power of EUT was connected to the spectrum analyzer. The path loss was compensated to the results for each measurement.
2. Enable EUT transmitter maximum power continuously.

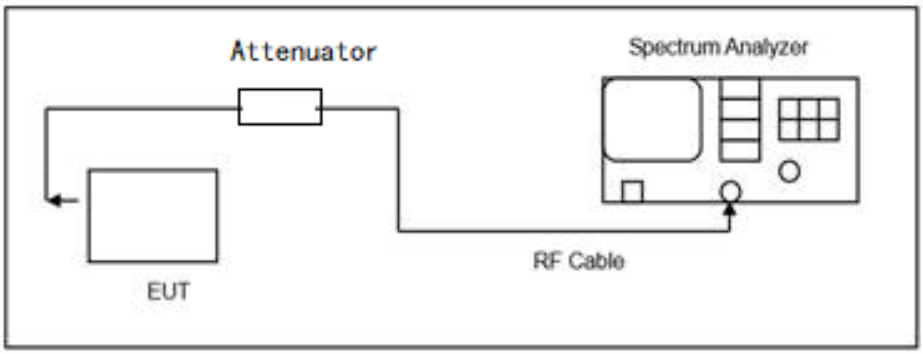
Reference level measurement

3. Set instrument center frequency to DTS channel center frequency.
4. Set the span to ≥ 1.5 times the DTS bandwidth.
5. Set the RBW = 100 kHz.
6. Set the VBW ≥ [3 × RBW].
7. Detector = peak.
8. Sweep time = auto couple.
9. Trace mode = max hold.
10. Allow trace to fully stabilize.
11. Use the peak marker function to determine the maximum PSD level.

Emission level measurement

12. Set the center frequency and span to encompass frequency range to be measured.
13. Set the RBW = 100 kHz.
14. Set the VBW ≥ [3 × RBW].
15. Detector = peak.
16. Sweep time = auto couple.
17. Trace mode = max hold.
18. Allow trace to fully stabilize.
19. Use the peak marker function to determine the maximum amplitude level.

Test block diagram:



Test Result:

802.11b/g mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11b	1	2.412GHz	Fig.117	Pass
		30MHz~26GHz	Fig.118	Pass
	6	2.437GHz	Fig.119	Pass
		30MHz~26GHz	Fig.120	Pass
	11	2.462GHz	Fig.121	Pass
		30MHz~26GHz	Fig.122	Pass
802.11g	1	2.412GHz	Fig.123	Pass
		30MHz~26GHz	Fig.124	Pass
	6	2.437GHz	Fig.125	Pass
		30MHz~26GHz	Fig.126	Pass
	11	2.462GHz	Fig.127	Pass
		30MHz~26GHz	Fig.128	Pass

802.11n mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n (20MHz)	1	2.412GHz	Fig.129	Pass
		30MHz~26GHz	Fig.130	Pass
	6	2.437GHz	Fig.131	Pass
		30MHz~26GHz	Fig.132	Pass
	11	2.462GHz	Fig.133	Pass
		30MHz~26GHz	Fig.134	Pass
802.11n (40MHz)	3	2.422GHz	Fig.135	Pass
		30MHz~26GHz	Fig.136	Pass
	7	2.442GHz	Fig.137	Pass
		30MHz~26GHz	Fig.138	Pass
	11	2.462GHz	Fig.139	Pass
		30MHz~26GHz	Fig.140	Pass

Conclusion: PASS

Test figure as below:

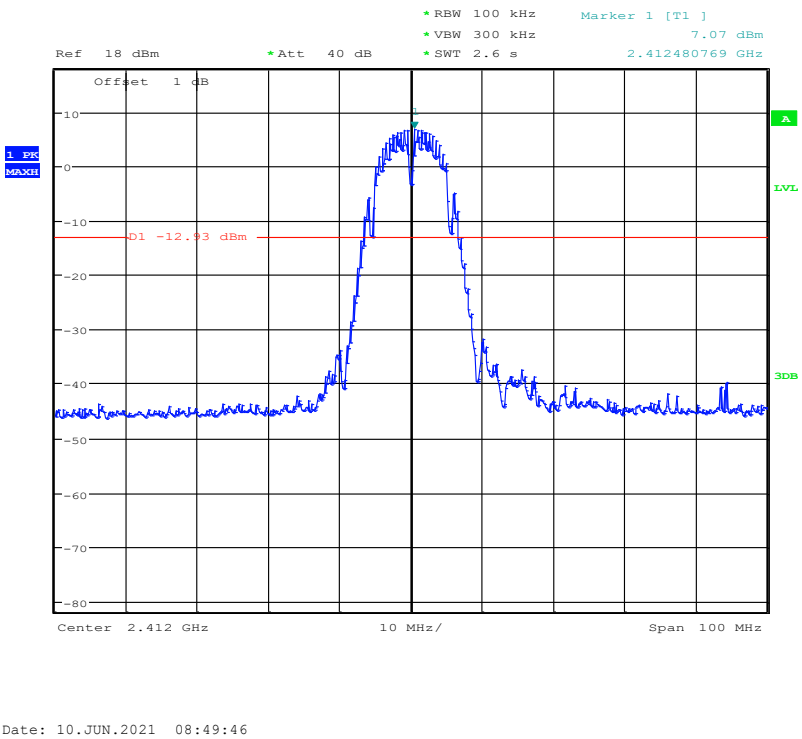


Fig.105 Conducted spurious emission: Ch1,11b,2412MHz

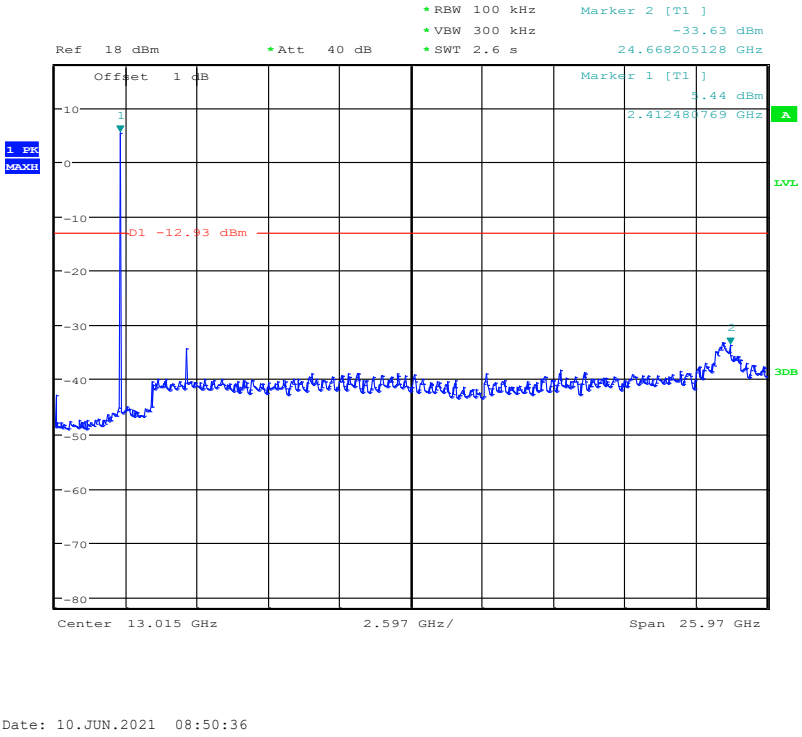


Fig.106 Conducted spurious emission: Ch1,11b,30MHz~26GHz

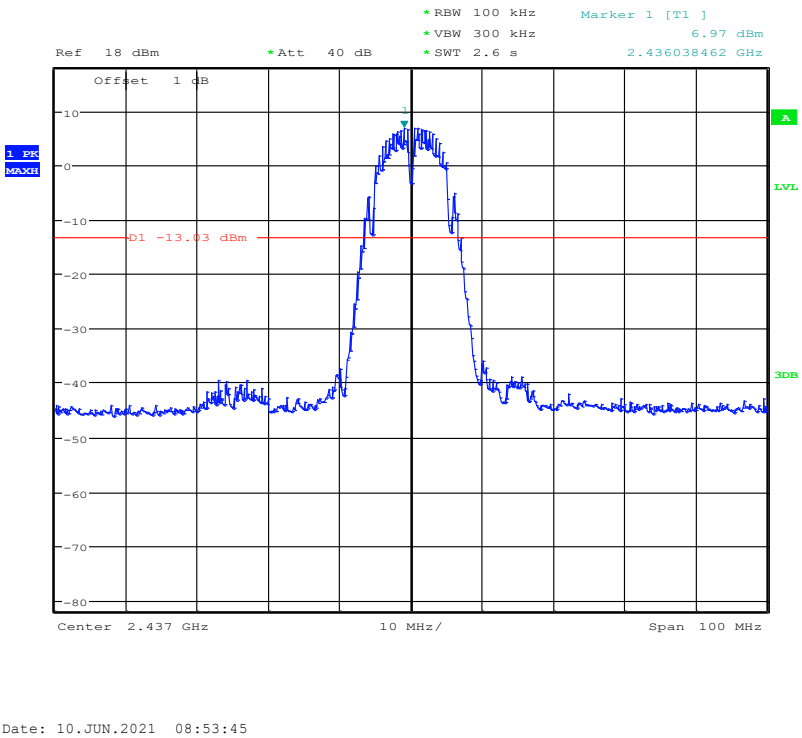


Fig.107 Conducted spurious emission: Ch6,11b,2437MHz

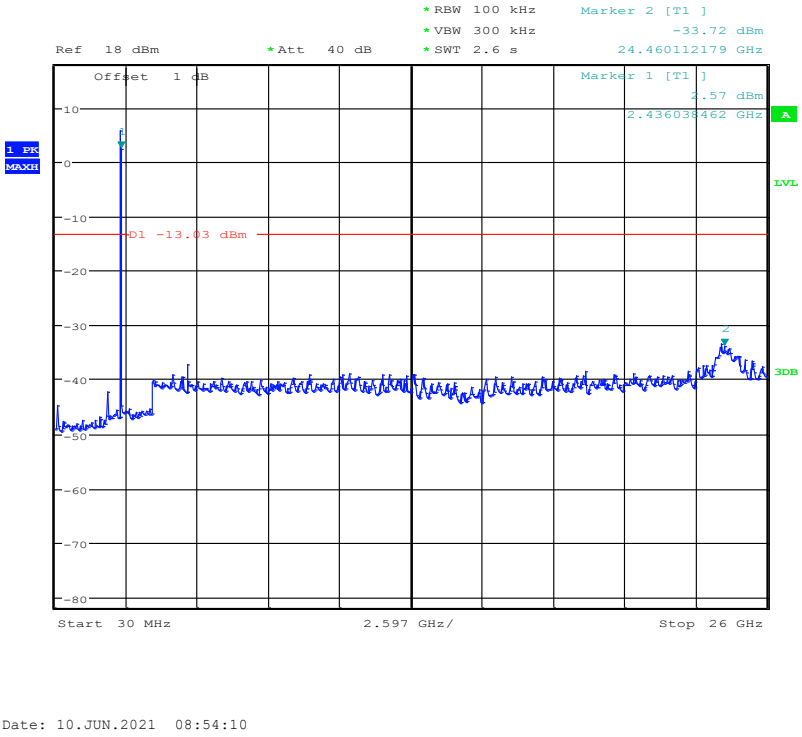


Fig.108 Conducted spurious emission: Ch6,11b,30MHz~26GHz

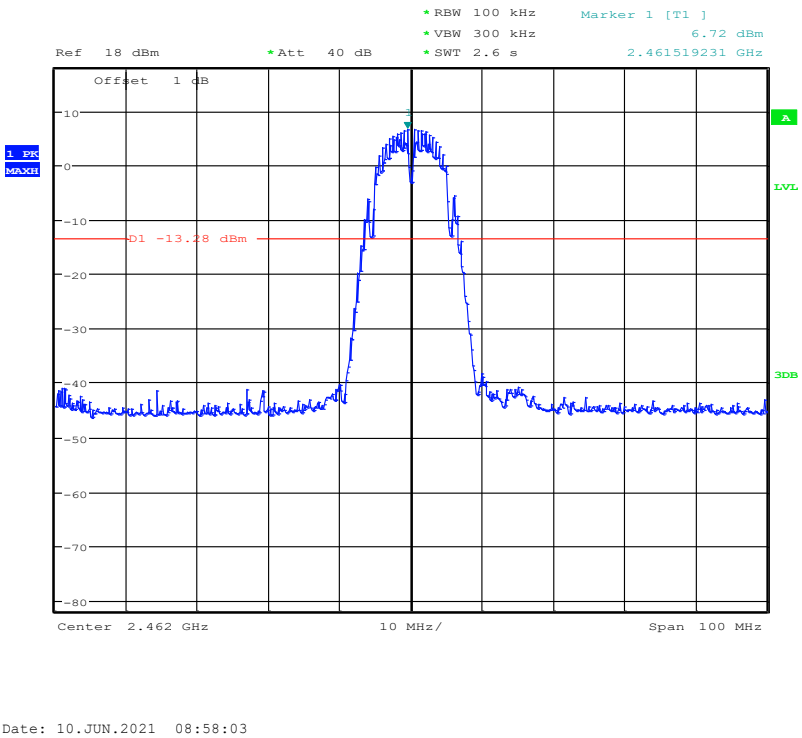


Fig.109 Conducted spurious emission: Ch11,11b,2462MHz

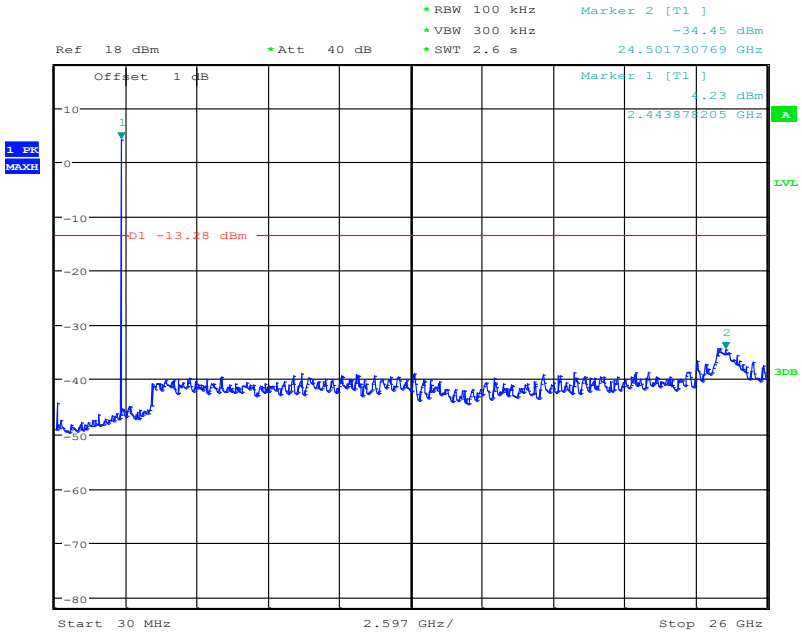


Fig.110 Conducted spurious emission: Ch11,11b,30MHz~26GHz

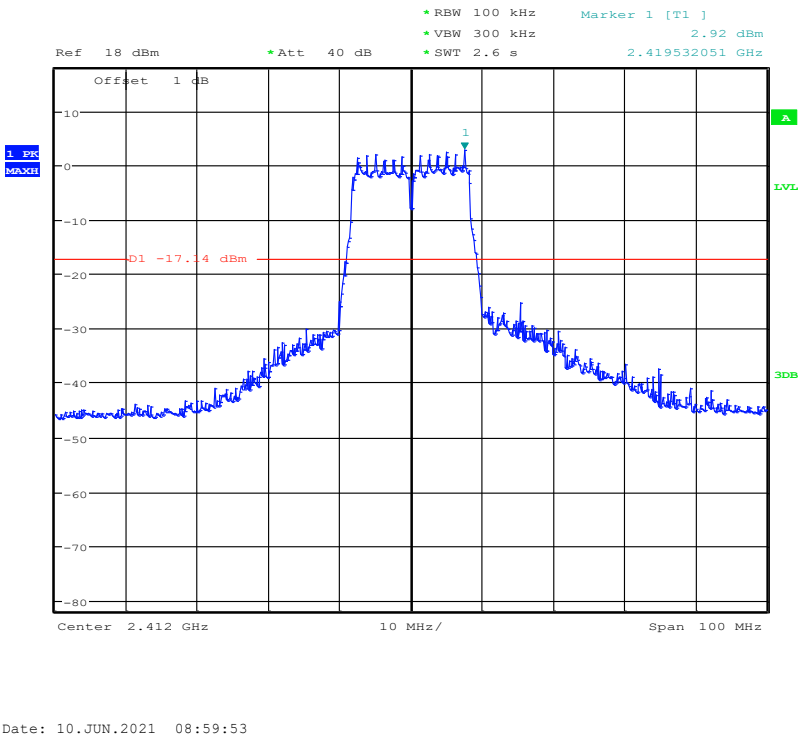


Fig.111 Conducted spurious emission: Ch1,11g,2412MHz

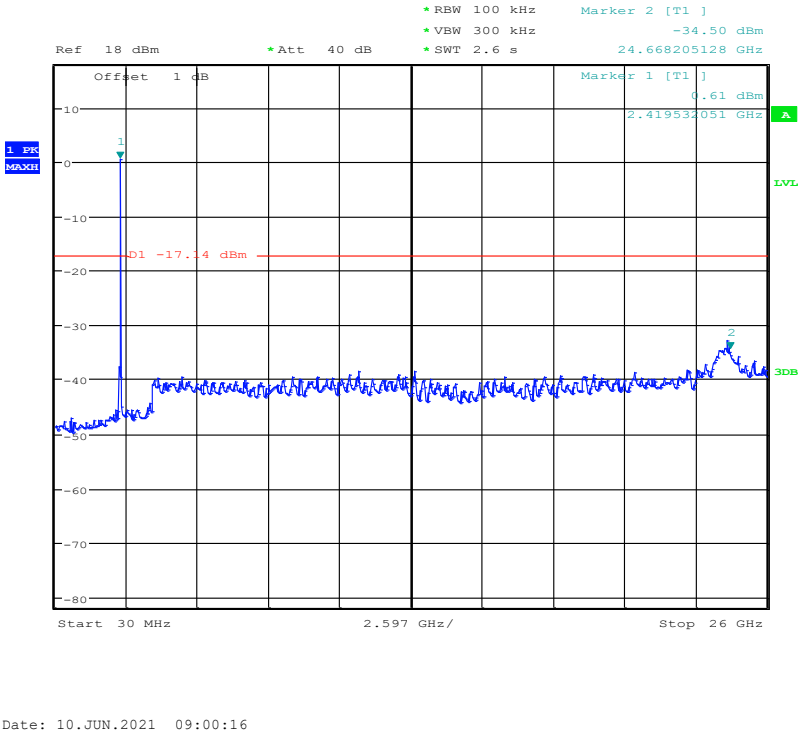


Fig.112 Conducted spurious emission: Ch1,11g,30MHz~26GHz

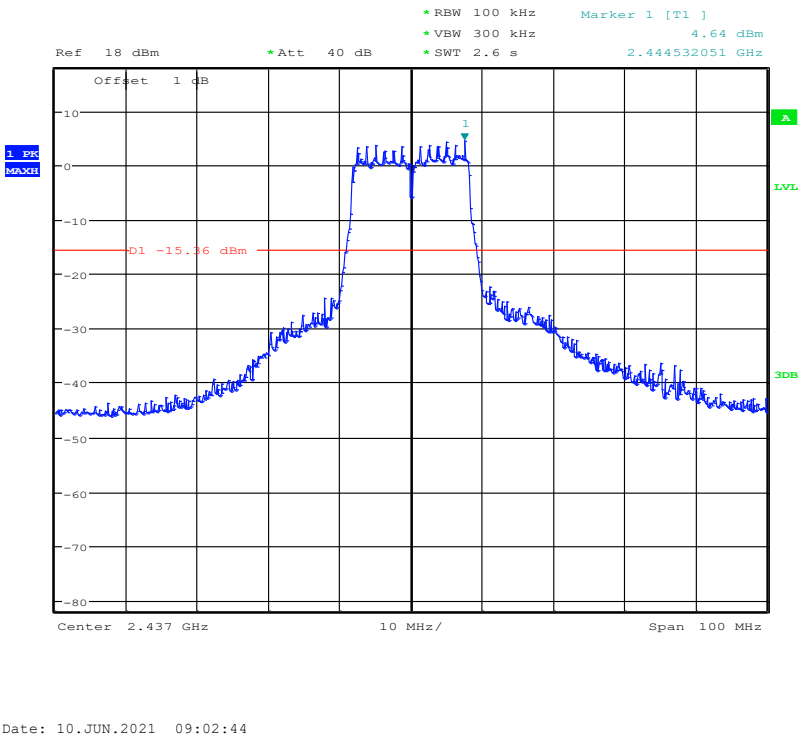


Fig.113 Conducted spurious emission: Ch6,11g,2437MHz

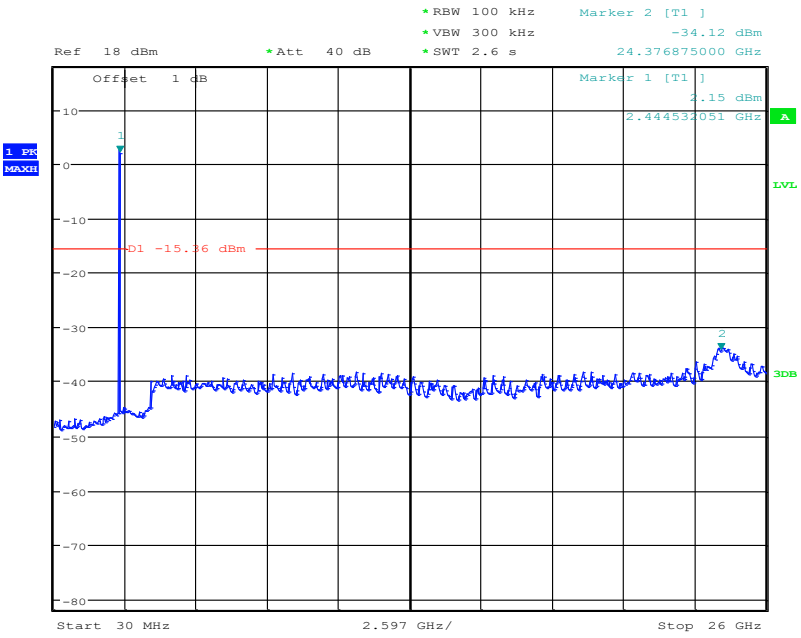


Fig.114 Conducted spurious emission: Ch6,11g,30MHz~26GHz

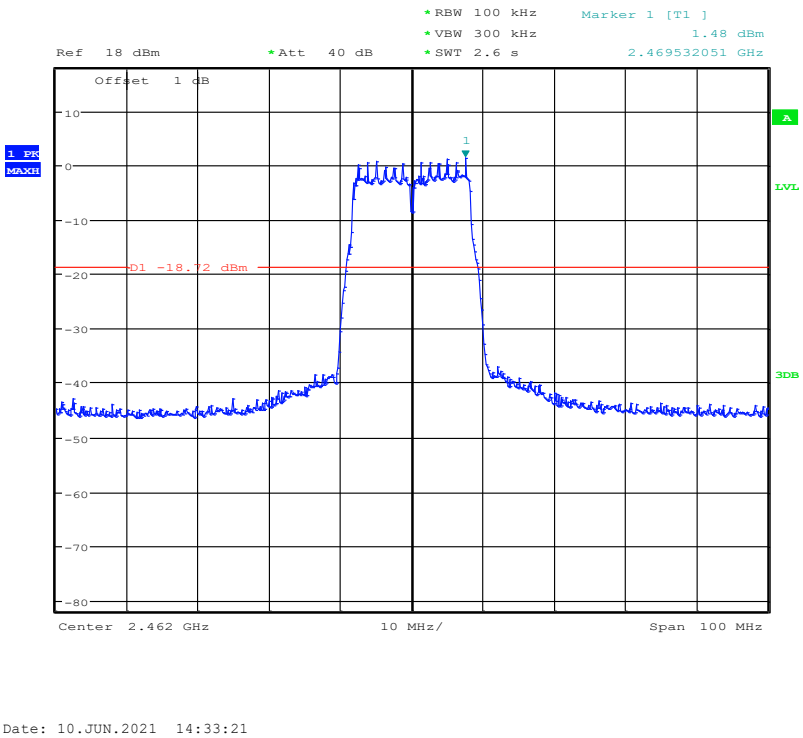
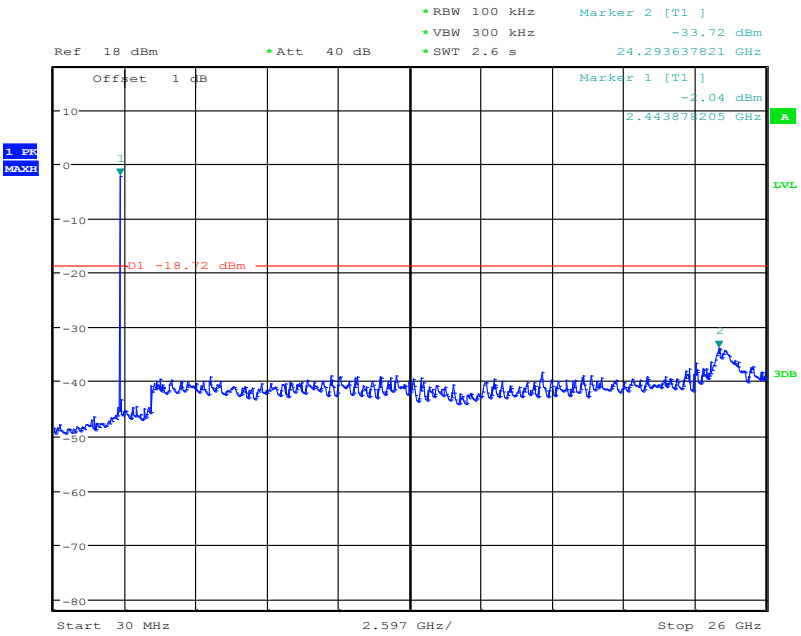
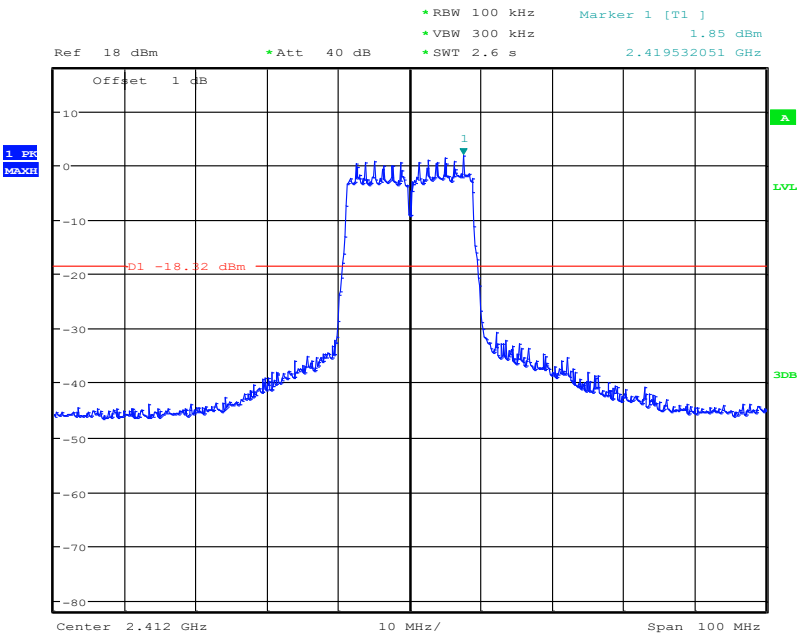


Fig.115 Conducted spurious emission: Ch11,11g,2462MHz



Date: 10.JUN.2021 14:33:44

Fig.116 Conducted spurious emission: Ch11,11g,30MHz~26GHz



Date: 10.JUN.2021 14:31:31

Fig.117 Conducted spurious emission: Ch1,11n,2412MHz

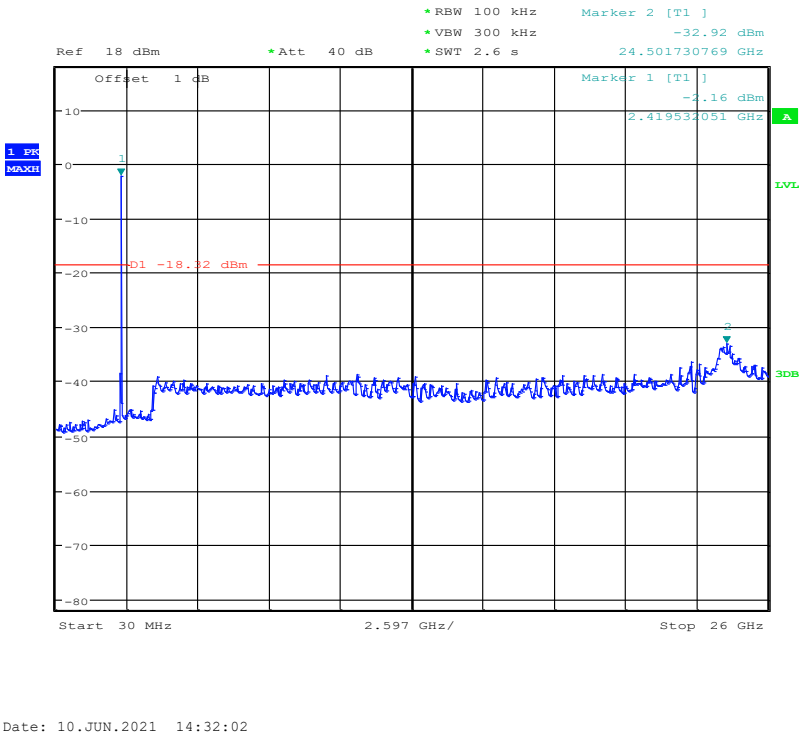


Fig.118 Conducted spurious emission: Ch1,11n,30MHz~26GHz

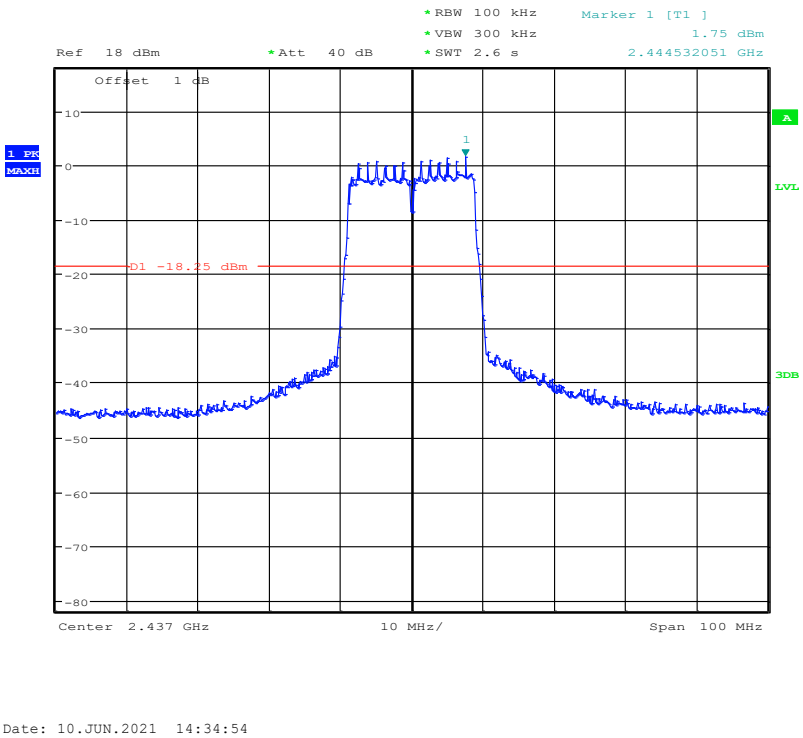


Fig.119 Conducted spurious emission: Ch6,11n,2437MHz

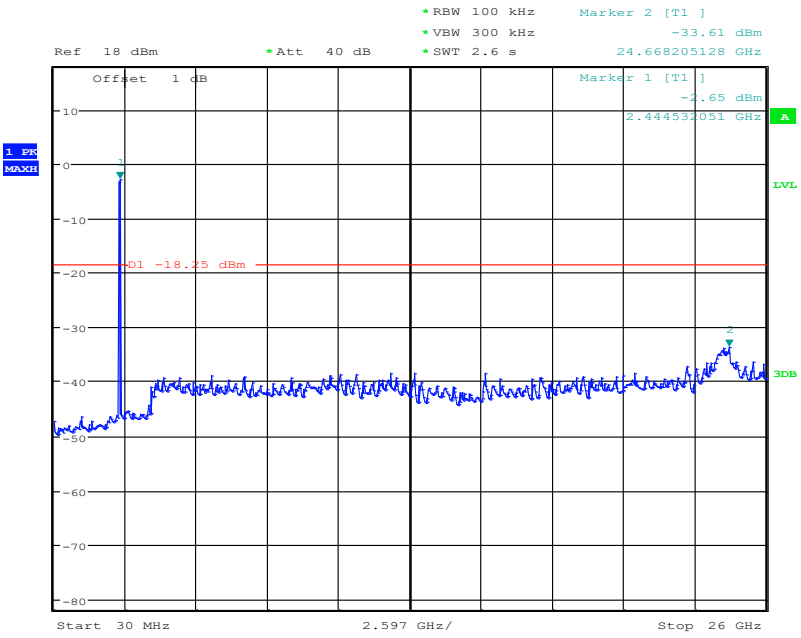


Fig.120 Conducted spurious emission: Ch6,11n,30MHz~26GHz

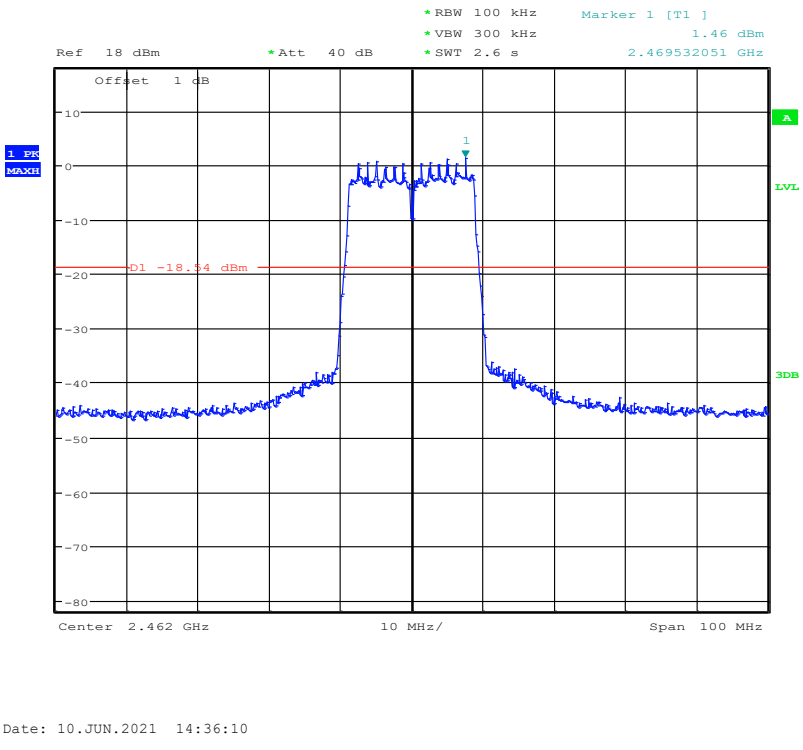


Fig.121 Conducted spurious emission: Ch11,11n,2462MHz

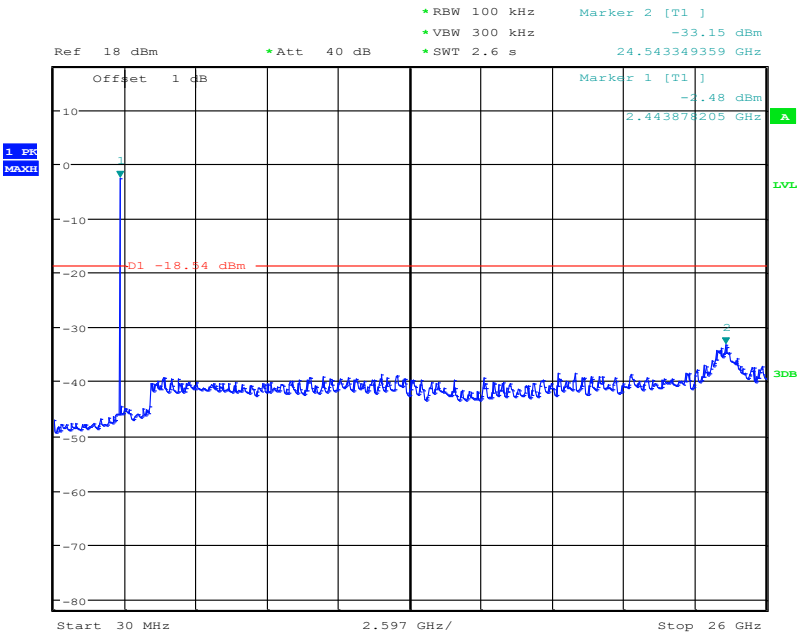


Fig.122 Conducted spurious emission: Ch11,11n,30MHz~26GHz

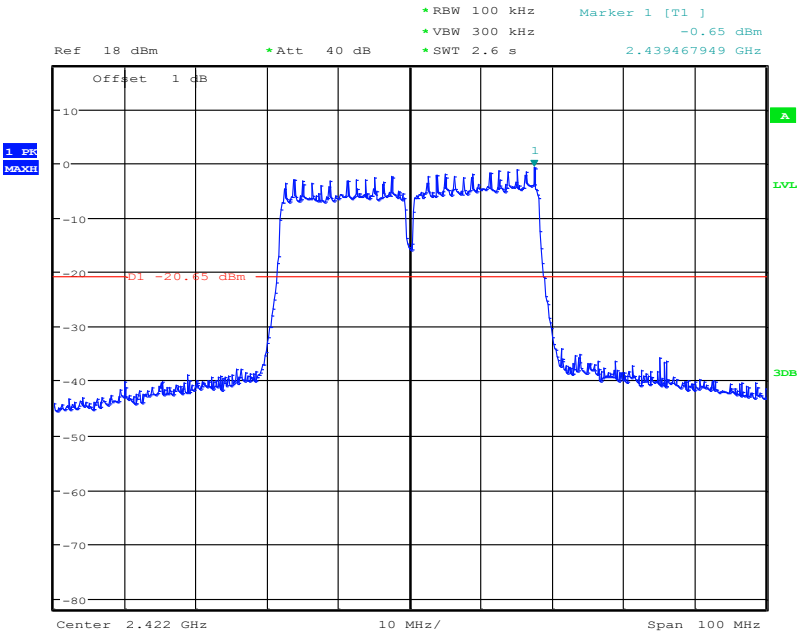


Fig.123 Conducted spurious emission: Ch3,11n(40M),2422MHz