



FCC Test Report

Report No: FCS202010013W01

Issued for

Javoda Technology Co.,Ltd

501 Floor 5, Building B, YingBo Industrial Zone,
East Central Road,LongHua Dist, Shenzhen, China

Product Name:	Projector
Brand Name:	NA
Model Name:	D40S
Series Model:	CS03 E400 E400S E400H E400W E401 E401S E401H E401W E420 E420S E420H E431 E431S E431H E431W E500 E500S E420W E421 E421S E421H E421W D40W E500H E450 E450S E450 E450W E452 E452S E452H E452W E460 E460S E460H E460W E462 E462S E462H E462W E600 E600S E600H E600W E601 E601S E601H E601W E602 E602S E602H E660 E660S E660H E660W H5 H6 H7 H8 H9 H10 D30 D30W D30A D30S D30H D40 D40H D40W
FCC ID:	2ANBA-D40S
Test Standard:	FCC Part 15.247
Issued By: Flux Compliance Service Laboratory Add: Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan Tel: 769-27280901 Fax:769-27280901 http://www.FCS-lab.com	

TEST RESULT CERTIFICATION

Applicant's Name: Javoda Technology Co.,Ltd
Address: 501 Floor 5, Building B, YingBo Industrial Zone,
East Central Road,LongHua Dist, Shenzhen, China
Manufacture's Name: Javoda Technology Co.,Ltd
Address: 501 Floor 5, Building B, YingBo Industrial Zone,
East Central Road,LongHua Dist, Shenzhen, China

Product Description

Product Name: Projector
Model Name.....: D40S
Series Model: CS03 E400 E400S E400H E400W E401 E401S E401H E401W
E420 E420S E420H E431 E431S E431H E431W E500 E500S
E420W E421 E421S E421H E421W D40W E500H E450 E450S
E450 E450W E452 E452S E452H E452W E460 E460S E460H
E460W E462 E462S E462H E462W E600 E600S E600H E600W
E601 E601S E601H E601W E602 E602S E602H E660 E660S
E660H E660W H5 H6 H7 H8 H9 H10 D30 D30W D30A D30S
D30H D40 D40H D40W

Test Standards: FCC Part15.247

Test Procedure: ANSI C63.10-2013

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

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Date of Test.....:

Date (s) of performance of tests.: Oct 13, 2020 to Oct 28, 2020

Date of Issue: Oct 28, 2020

Test Result: Pass

Tested by : Scott Shen
(Scott Shen)
Reviewed by : Duke Qian
(Duke Qian)
Approved by : Kait Chen
(Kait Chen)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	Oct 28, 2020	FCS202010013W01	ALL	Initial Issue

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:
KDB 558074 D01 15.247 Meas Guidance v05r02

FCC Part 15.247, Subpart C			
Standard Section	Test Item	Judgment	Remark
FCC 15.247 (a) (2)	6dB Bandwidth	PASS	--
FCC 15.247 (b) (3)	Conducted Output Power	PASS	--
FCC 15.247 (e)	Power Spectral Density	PASS	--
FCC 15.247 (d)	Band-edge and Spurious Emissions (Conducted)	PASS	--
FCC 15.247 (d) FCC 15.209 FCC 15.205	Radiated Spurious Emissions	PASS	--
FCC 15.247 (d) FCC 15.209 FCC 15.205	Radiated Band Edge Compliance	PASS	--
FCC 15.207	Power Line Conducted Emission	PASS	--
FCC 15.203	Antenna requirement	PASS	--
15.205	Restricted Band Edge Emission	PASS	--

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report
- (2) All tests are according to ANSI C63.10-2013

1.1 TEST FACTORY

Company Name:	Flux Compliance Service Laboratory
Address:	Room 105 Floor Bao hao Technology Building 1 NO.15 Gong ye West Road Hi-Tech Industrial, Song shan lake Dongguan
Telephone:	+86-769-27280901
Fax:	+86-769-27280901
FCC Test Firm Registration Number: 514908 Designation number: CN0127 A2LA accreditation number: 5545.01	

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	RF output power, conducted	± 0.71 dB
2	Unwanted Emissions, conducted	± 2.988 dB
3	Conducted Emission (9KHz-150KHz)	± 4.13 dB
4	Conducted Emission (150KHz-30MHz)	± 4.74 dB
5	All emissions, radiated (<1G) 30MHz-1000MHz	± 5.2 dB
6	All emissions, radiated 1GHz -18GHz	± 4.66 dB
7	All emissions, radiated 18GHz -40GHz	± 4.31 dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Projector
Trade Name	NA
Model Name	D40S
Series Model	CS03 E400 E400S E400H E400W E401 E401S E401H E401W E420 E420S E420H E431 E431S E431H E431W E500 E500S E420W E421 E421S E421H E421W D40W E500H E450 E450S E450 E450W E452 E452S E452H E452W E460 E460S E460H E460W E462 E462S E462H E462W E600 E600S E600H E600W E601 E601S E601H E601W E602 E602S E602H E660 E660S E660H E660W H5 H6 H7 H8 H9 H10 D30 D30W D30A D30S D30H D40 D40H D40W
Model Difference	All models are electrically identical , only model no and appearance color are different.
Channel List	Please refer to the Note 2.2.
Operation frequency	IEEE 802.11b: 2412MHz-2462MHz IEEE 802.11g: 2412MHz-2462MHz IEEE 802.11n HT20: 2412MHz-2462MHz IEEE 802.11n HT40: 2422MHz-2452MHz
Modulation:	IEEE 802.11b: DSSS (CCK, QPSK, BPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK)
Transmitter rate:	IEEE 802.11b: 1, 2, 5.5, 11 Mbps IEEE 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps IEEE 802.11n HT20: upto 65Mbps, HT40: up to 150Mbps
Power supply	DC 3.3V
Hardware version number	N/A
Software version number	N/A
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

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		

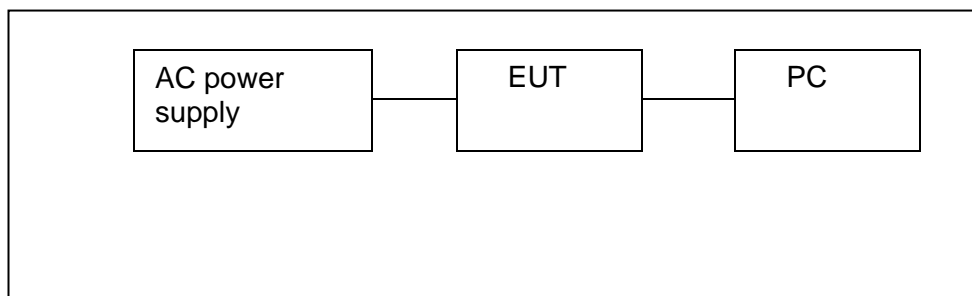
3. Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	FC	PCB antenna	N/A	1.0 dBi	Antenna

2.2 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

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.

Block diagram of EUT configuration for test



Test software: the FCC tool

The test software was used to control EUT work in continuous TX mode, and select test channel, Wireless mode as below table

Tested mode, channel, and data rate information				
Mode	Setting Tx Power	data rate (Mbps) (see Note)	Channel	Frequency (MHz)
IEEE 802.11b	8	1	LCH: CH1	2412
	8	1	MCH: CH6	2437
	8	1	HCH: CH11	2462
IEEE 802.11g	20	6	LCH: CH1	2412
	20	6	MCH: CH6	2437
	20	6	HCH: CH11	2462
IEEE 802.11n HT20	20	MCS 8	LCH: CH1	2412
	20	MCS 8	MCH: CH6	2437
	20	MCS 8	HCH: CH11	2462
IEEE 802.11n HT40	20	MCS 8	LCH: CH3	2422
	20	MCS 8	MCH: CH6	2437
	20	MCS 8	HCH: CH9	2452

Note:

(1) According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test,

(2) During the test, the dutycycle>98%, the test voltage was tuned from 85% to 115% of the Nominal rate supply votage, and found that the worst case was the nominal rated supply condition, So the report just shows that condition's data

2.3 DESCRIPTION OF NECESSARY ACCESSORIES AND 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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
1	AC Adapter	HW	200	/	/
2	PC	IBM	R50	/	/

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.4 EQUIPMENTS LIST

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESRP 3	FCS-E001	2020. 06.26	2021. 06.25
Signal Analyzer	R&S	FSV40-N	FCS-E012	2020.06.05	2021.06.04
Active loop Antenna	ZHINAN	ZN30900C	FCS-E013	2020.08.09	2021.08.10
Bilog Antenna	SCHWARZBECK	VULB 9168	FCS-E002	2020.08.26	2021.08.25
Horn Antenna	SCHWARZBECK	BBHA 9120D	FCS-E003	2020.08.26	2021.08.25
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	FCS-E018	2020.06.26	2021.06.25
Pre-Amplifier(0.1M-3G Hz)	EMCI	EM330N	FCS-E004	2020.06.26	2021.06.25
Pre-Amplifier (1G-18GHz)	N/A	TSAMP-0518SE	FCS-E014	2020.06.03	2021.06.02
Pre-Amplifier (18G-40GHz)	TERA-MW	TRLA-0400	FCS-E019	2020.08.08	2021.08.07
Temperature & Humidity	HTC-1	victor	FCS-E005	2020.08.26	2021.08.25

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESPI	FCS-E020	2020.06.03	2021.06.02
LISN	R&S	ENV216	FCS-E007	2020.08.08	2021.08.07
LISN	ETS	3810/2NM	FCS-E009	2020.06.03	2021.06.02
Temperature & Humidity	HTC-1	victor	FCS-E008	2020.08.08	2021.08.07

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Company No.	Last calibration	Calibrated until
MXA SIGNAL Analyzer	Keysight	N9020A	FCS-E015	2020.06.03	2021.06.02
Spectrum Analyzer	Agilent	E4447A	MY50180039	2020.08.08	2021.08.07
Spectrum Analyzer	R&S	FSV-40	101499	2020.08.26	2021.08.25

3. 6DB BANDWIDTH

3.1 Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500 kHz

3.2 Test Procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Set the spectrum analyzer as follows

RBW: 100kHz

VBW: 300kHz

Detector Mode: Peak

Sweep time: auto

Trace mode Max hold

(3) Allow the trace to stabilize, 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

3.3 Test setup

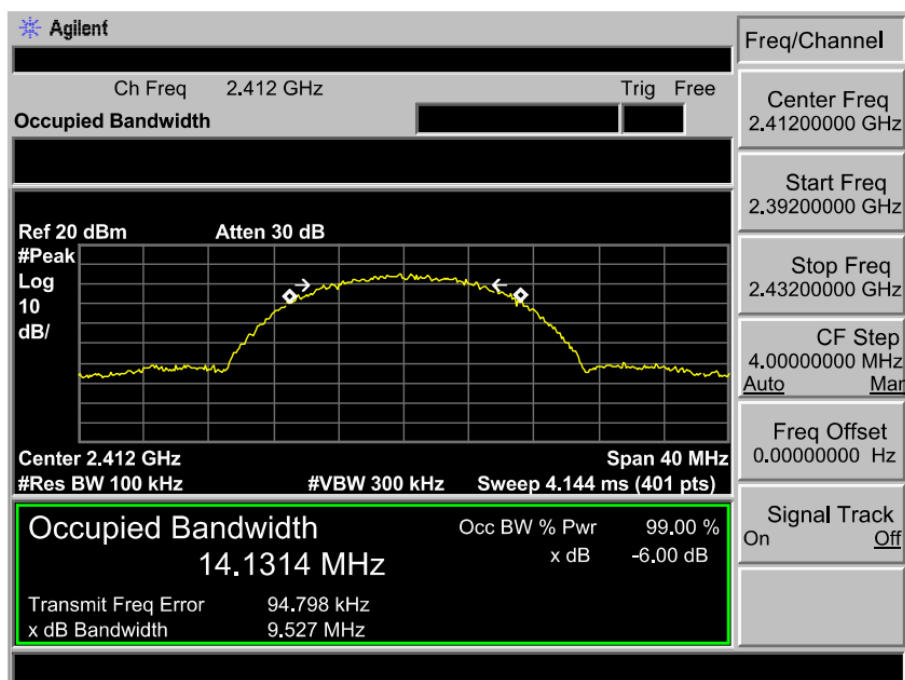


3.4 Test results

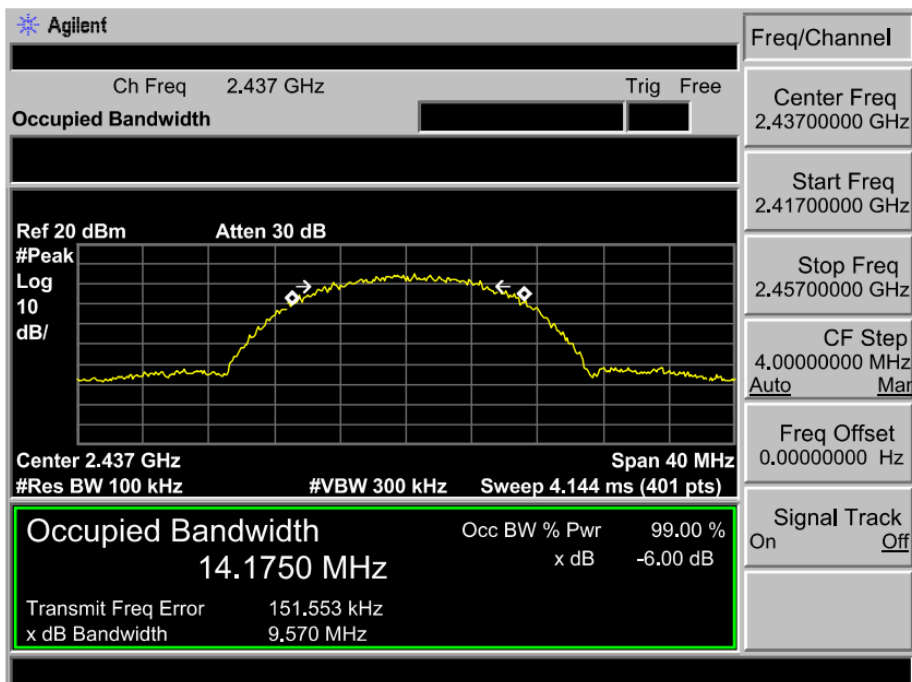
Test Mode	Channel (MHz)	6dB Bandwidth (MHz)	Limit [MHz]	Verdict
802.11b	2412MHz	9.173	0.5	Pass
802.11b	2437MHz	9.107	0.5	Pass
802.11b	2462MHz	9.140	0.5	Pass
802.11g	2412MHz	16.379	0.5	Pass
802.11g	2437MHz	16.394	0.5	Pass
802.11g	2462MHz	16.381	0.5	Pass
802.11n 20	2412MHz	17.645	0.5	Pass
802.11n 20	2437MHz	17.658	0.5	Pass
802.11n 20	2462MHz	17.655	0.5	Pass
802.11n 40	2422MHz	36.268	0.5	Pass
802.11n 40	2437MHz	35.921	0.5	Pass
802.11n 40	2452MHz	36.056	0.5	Pass

3.5 Original Test Data

802.11b-CH2412MHZ



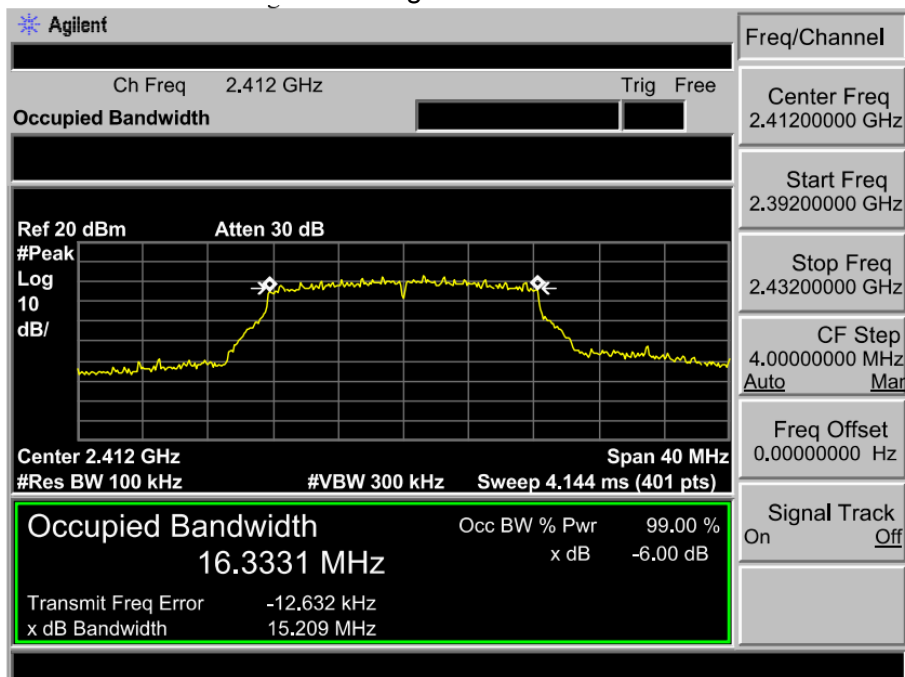
802.11b-CH237MHz



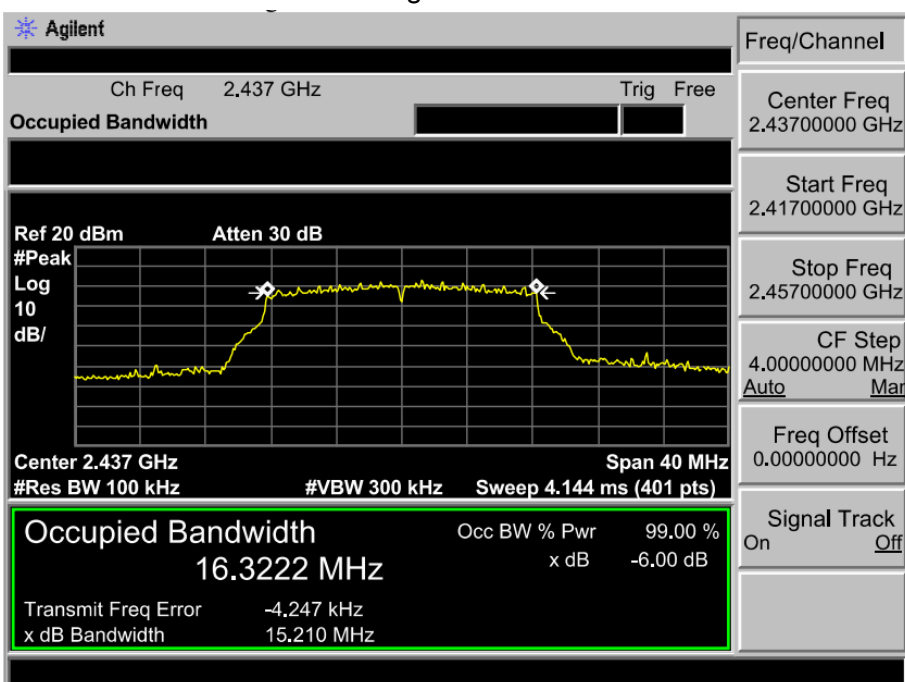
802.11b-CH2462MHz



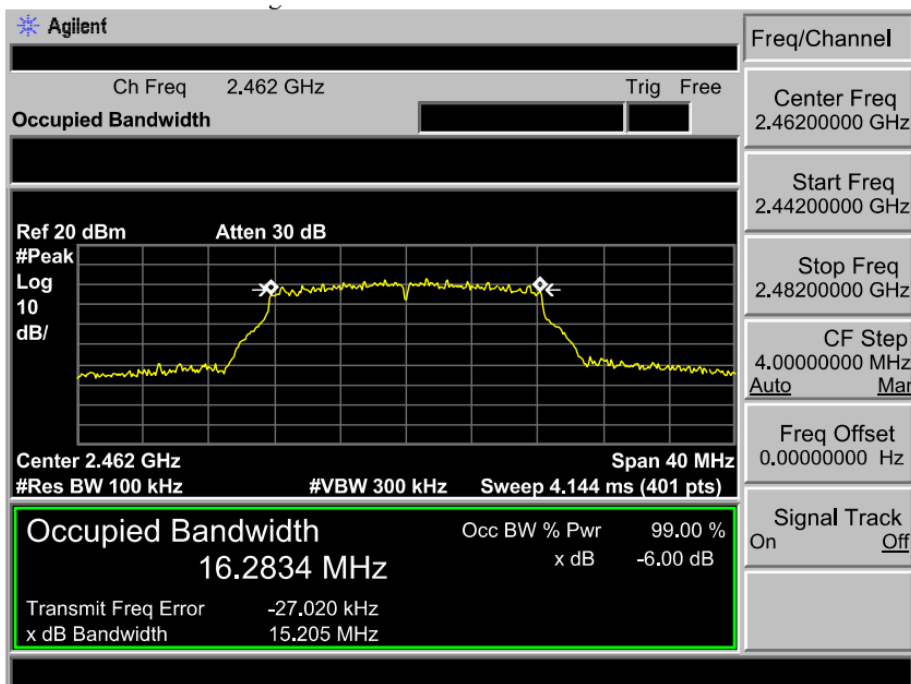
802.11g CH2412MHZ



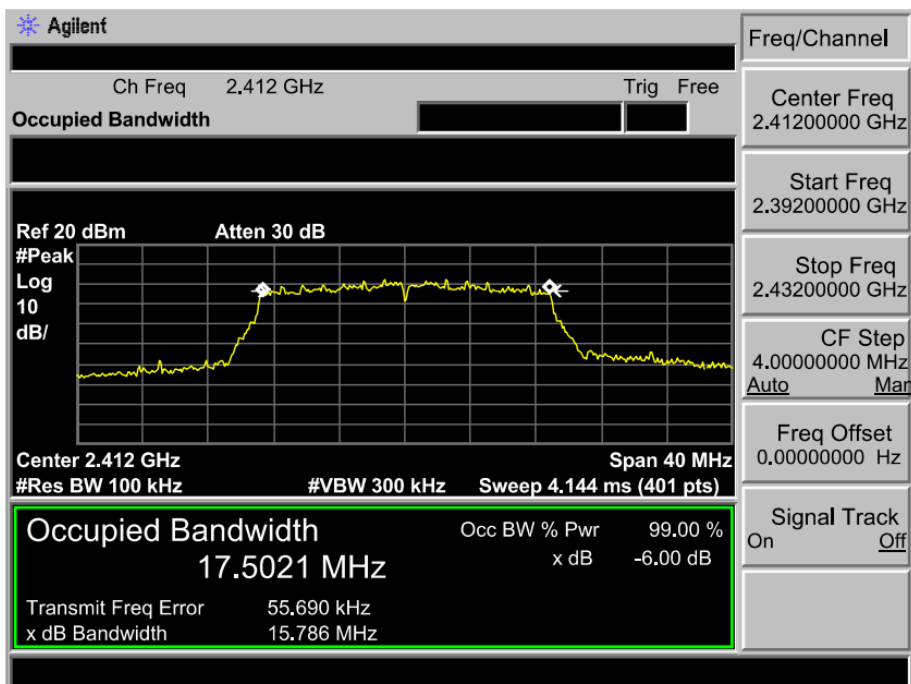
802.11g CH2437MHZ



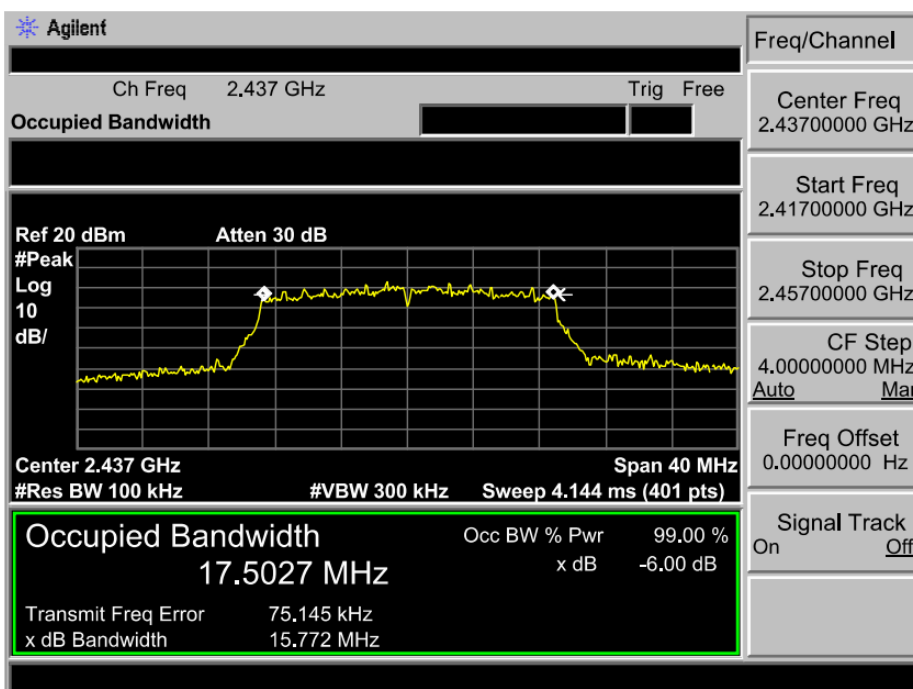
802.11g CH2462MHZ



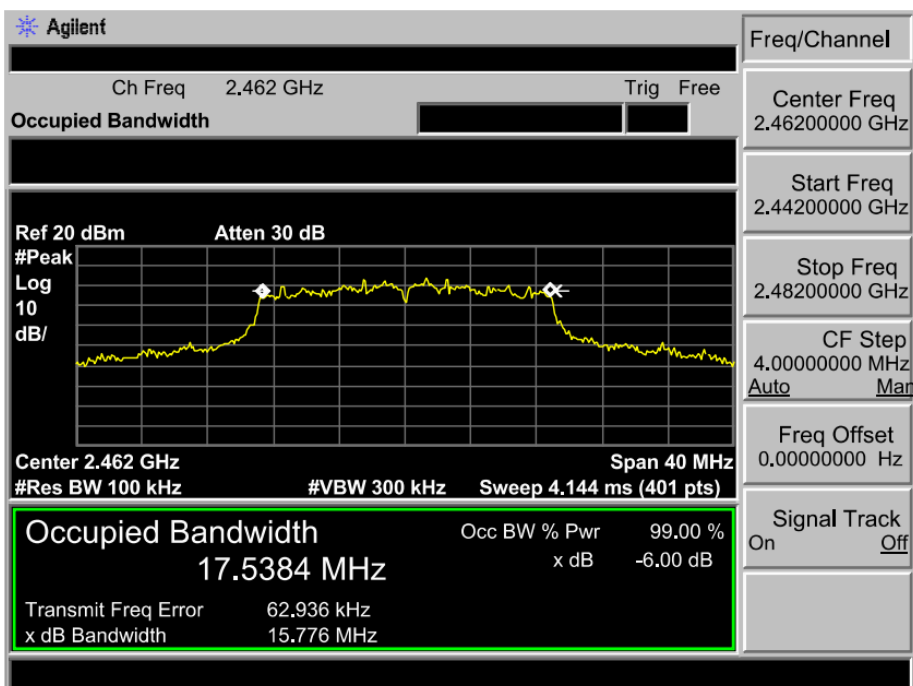
802.11n 20-2412MHz



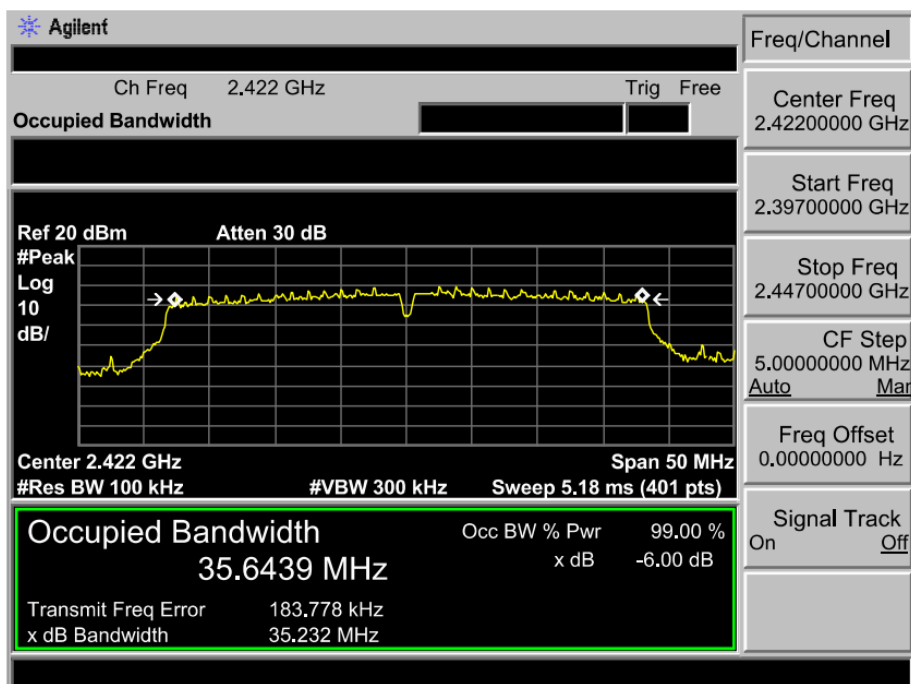
802.11n 20-2437MHz



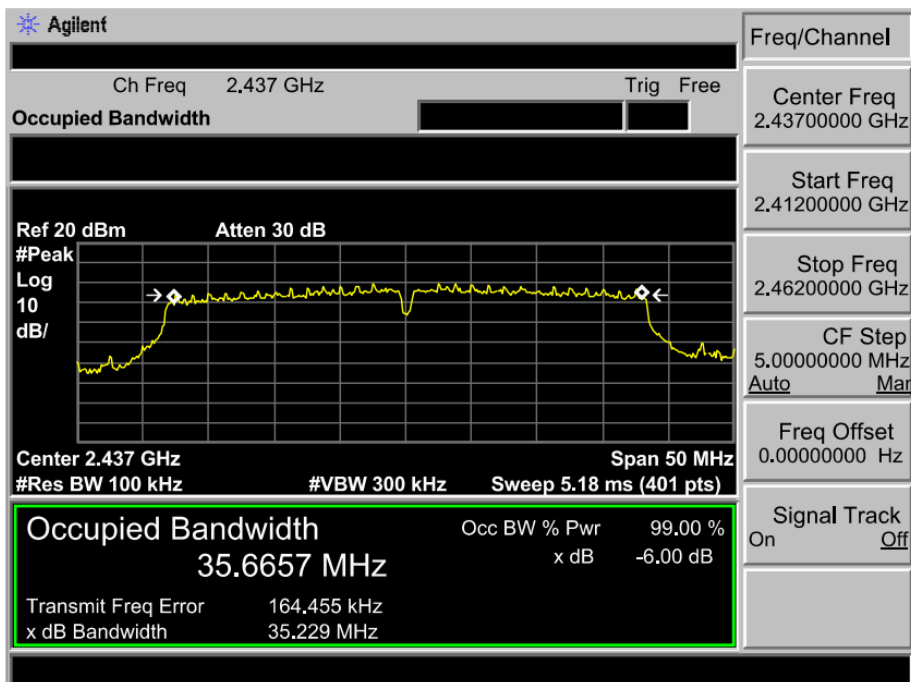
802.11n 20-2462MHz



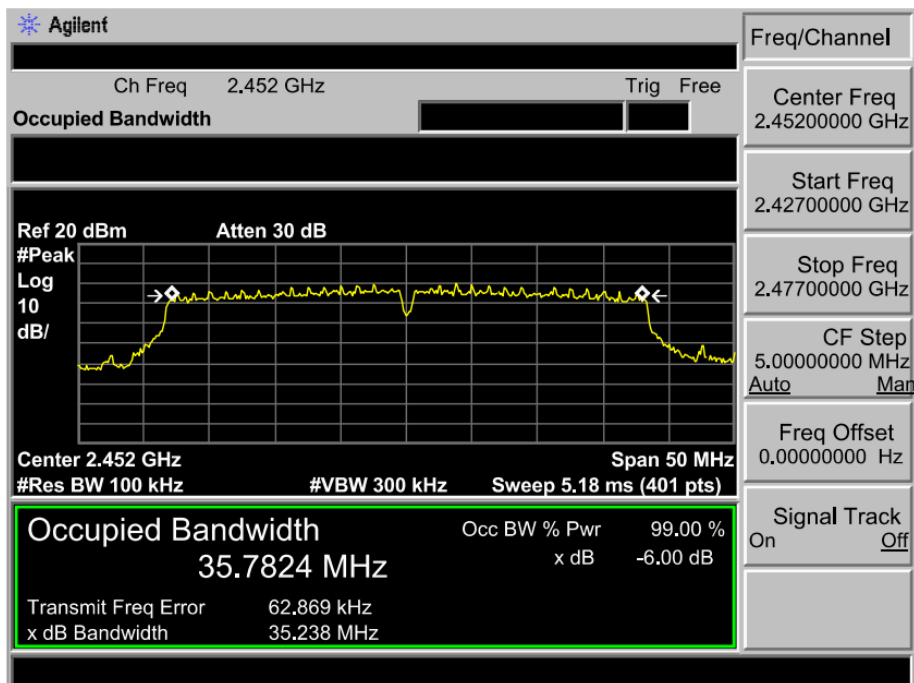
802.11n 40-2422MHz



802.11n 40-2437MHz



802.11n 40-2452MHz



4 CONDUCTED OUTPUT POWER (AVERAGE)

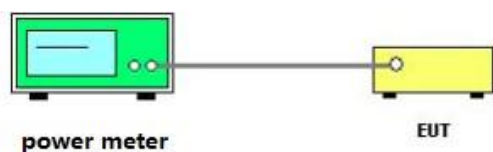
4.1 limit

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

4.2 test procedure

- a. Connect each EUT's antenna output to power sensor by RF cable and attenuator

4.3 TEST SETUP



4.5 test results

TestMode	Channel (MHz)	AV Result (dBm)	Limit (dBm)	Verdict
802.11b	2412MHz	13.35	30	Pass
802.11b	2437MHz	13.46	30	Pass
802.11b	2462MHz	13.38	30	Pass
802.11g	2412MHz	11.51	30	Pass
802.11g	2437MHz	11.31	30	Pass
802.11g	2462MHz	11.61	30	Pass
802.11n 20	2412MHz	10.81	30	Pass
802.11n 20	2437MHz	10.58	30	Pass
802.11n 20	2462MHz	11.29	30	Pass
802.11n 40	2422MHz	11.58	30	Pass
802.11n 40	2437MHz	11.61	30	Pass
802.11n 40	2452MHz	11.30	30	Pass

5. POWER SPECTRAL DENSITY

5.1 LIMIT

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission.

5.2 TEST PROCEDURE

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

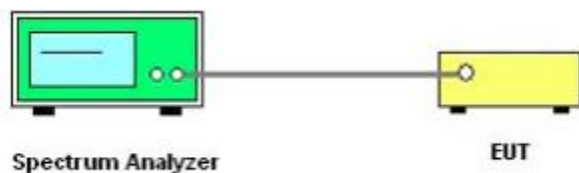
(2) Set the spectrum analyzer as follows:

Center frequency	DTS Channel center frequency
RBW:	$3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
VBW:	$\geq 3\text{RBW}$
Span	1.5 times the DTS bandwidth
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(3) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude level within the RBW

(4) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

5.3 TEST SETUP

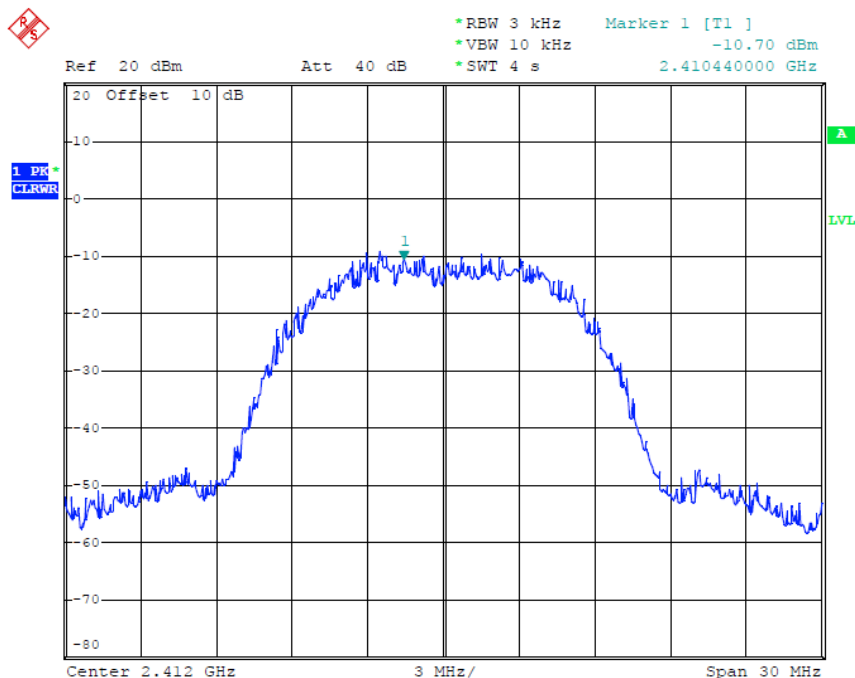


5.5 TEST RESULTS

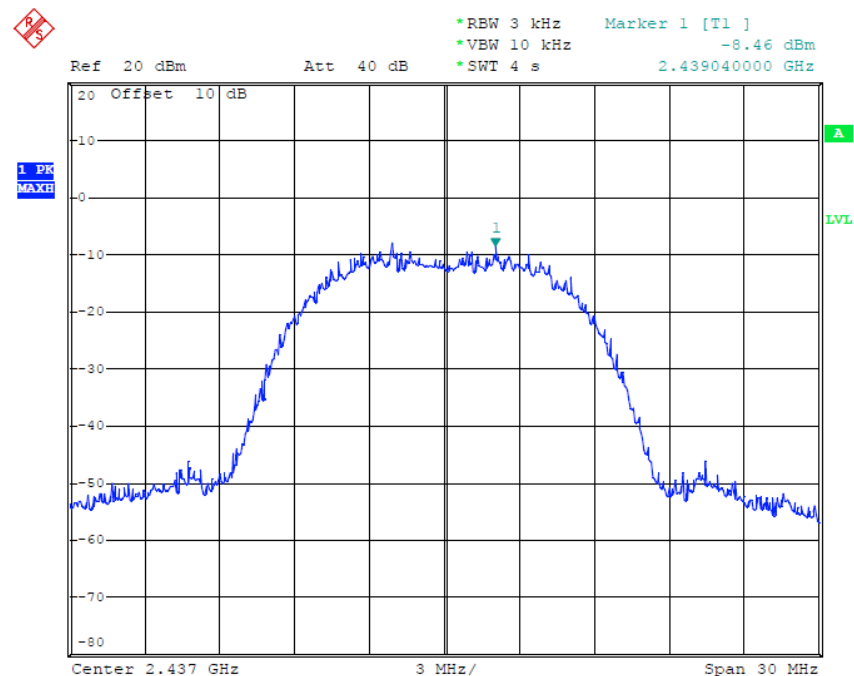
TestMode	Channel (MHz)	Peak Result (dBm/3KHz)	Limit (dBm/3KHz)	Verdict
802.11b	2412MHz	-10.70	8	Pass
802.11b	2437MHz	-8.46	8	Pass
802.11b	2462MHz	-8.77	8	Pass
802.11g	2412MHz	-13.50	8	Pass
802.11g	2437MHz	-13.42	8	Pass
802.11g	2462MHz	-14.65	8	Pass
802.11n 20	2412MHz	-13.03	8	Pass
802.11n 20	2437MHz	-13.42	8	Pass
802.11n 20	2462MHz	-14.65	8	Pass
802.11n 40	2422MHz	-18.20	8	Pass
802.11n 40	2437MHz	-19.33	8	Pass
802.11n 40	2452MHz	-19.03	8	Pass

5.6 original test data

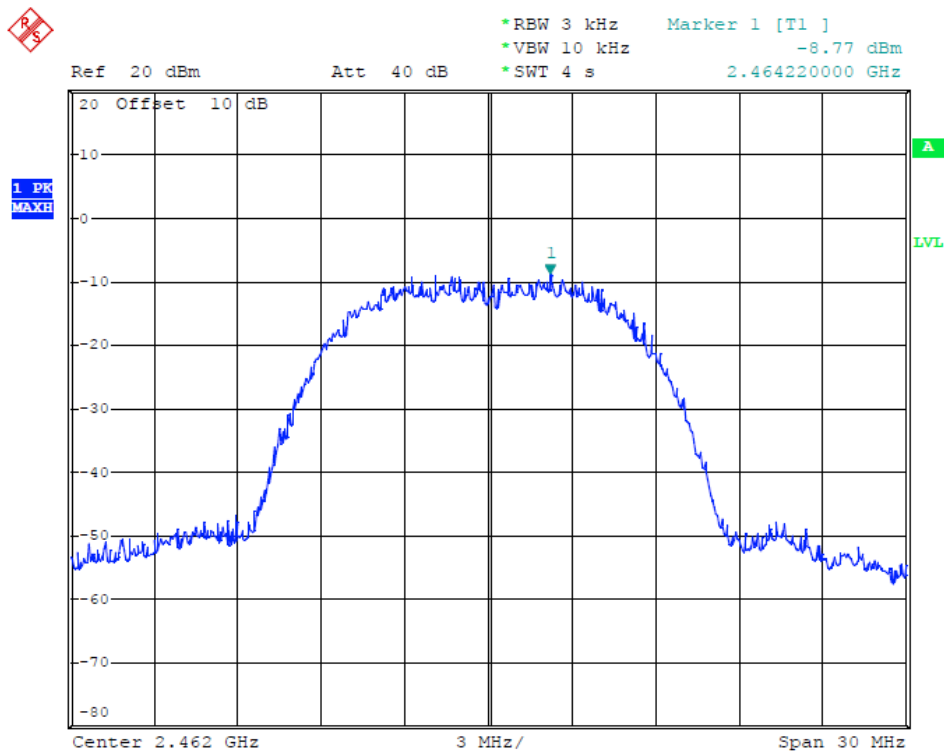
802.11b-2412MHz



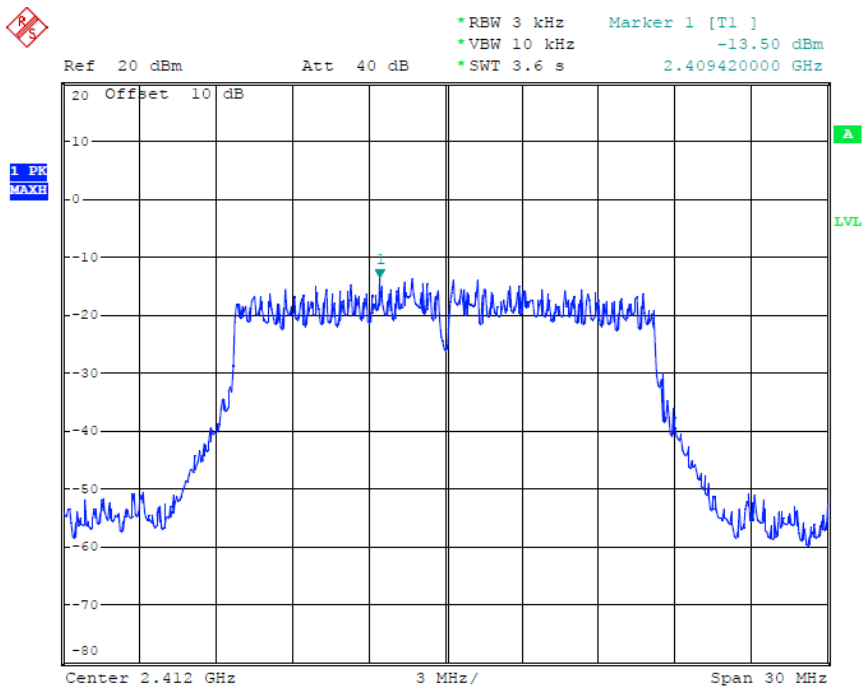
802.11b-2412MHz



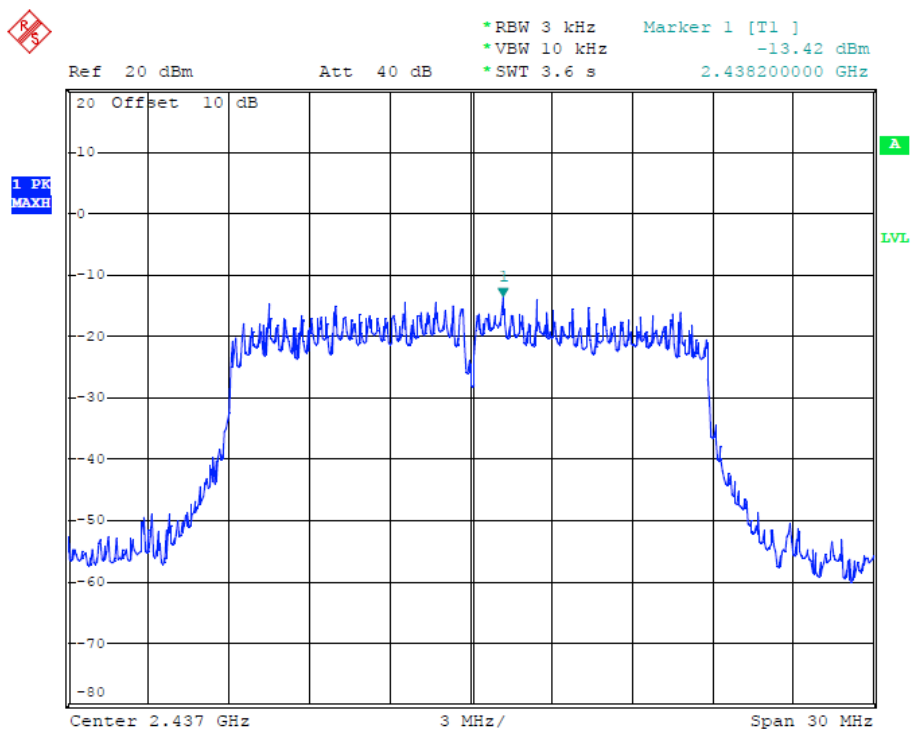
802.11b-2462MHz



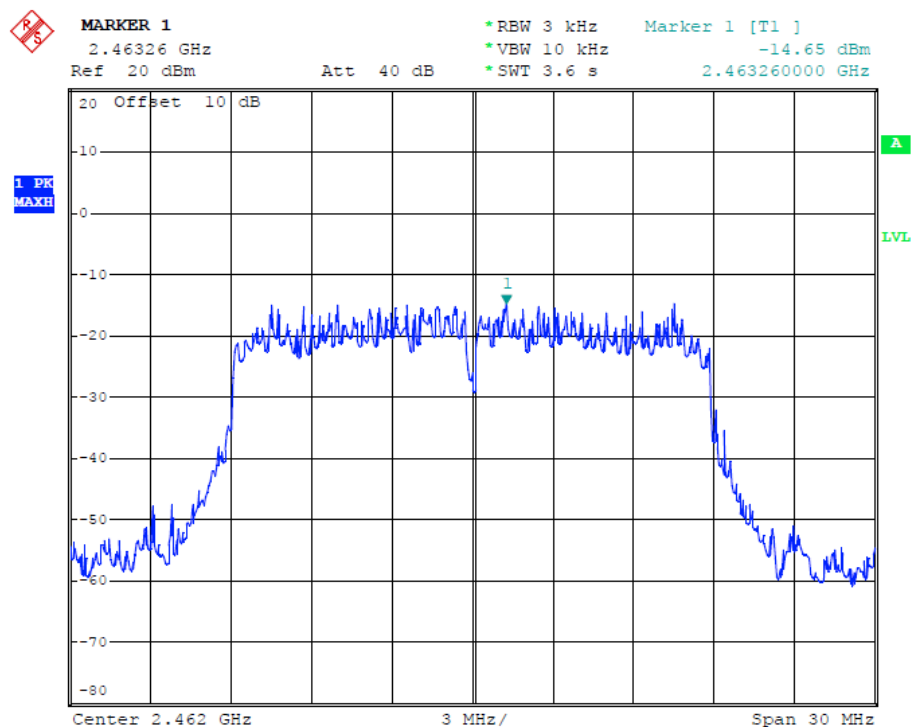
802.11g-2412MHz



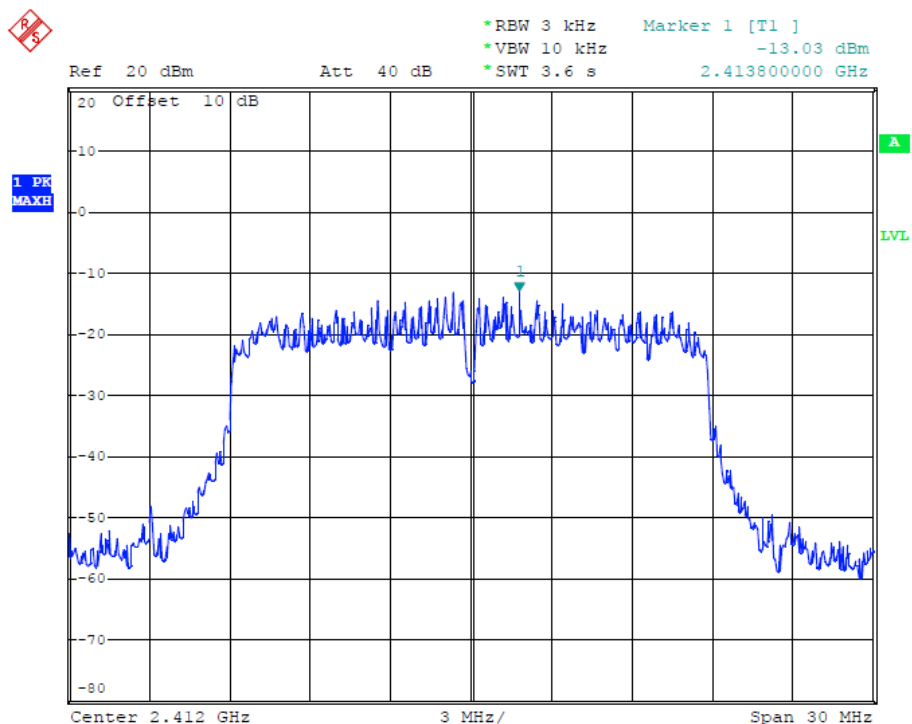
802.11g-2437MHz



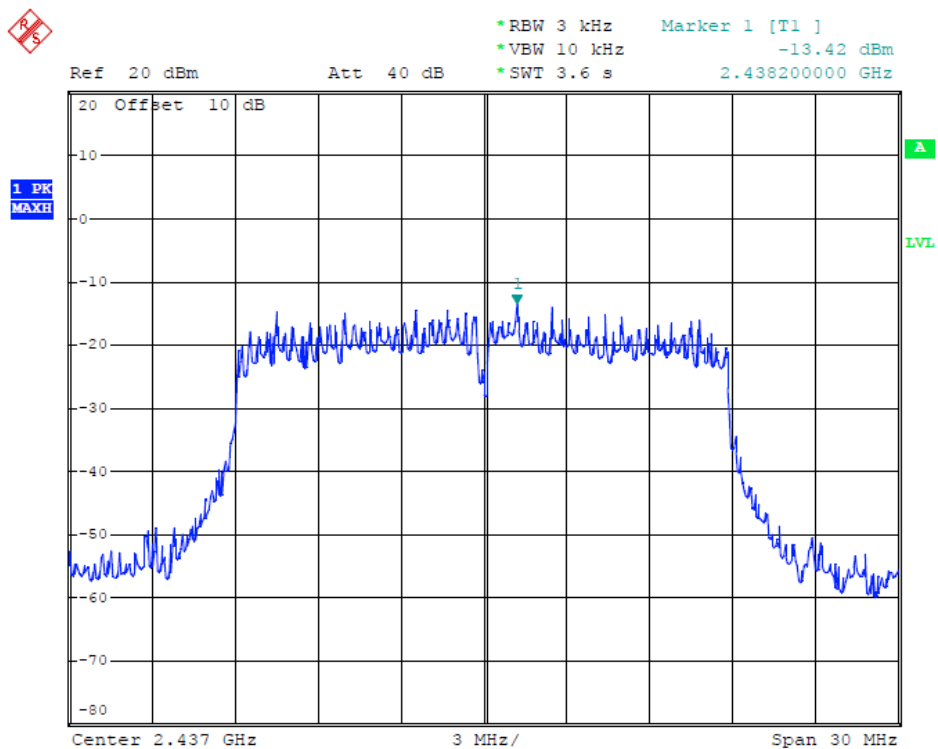
802.11g-2462MHz



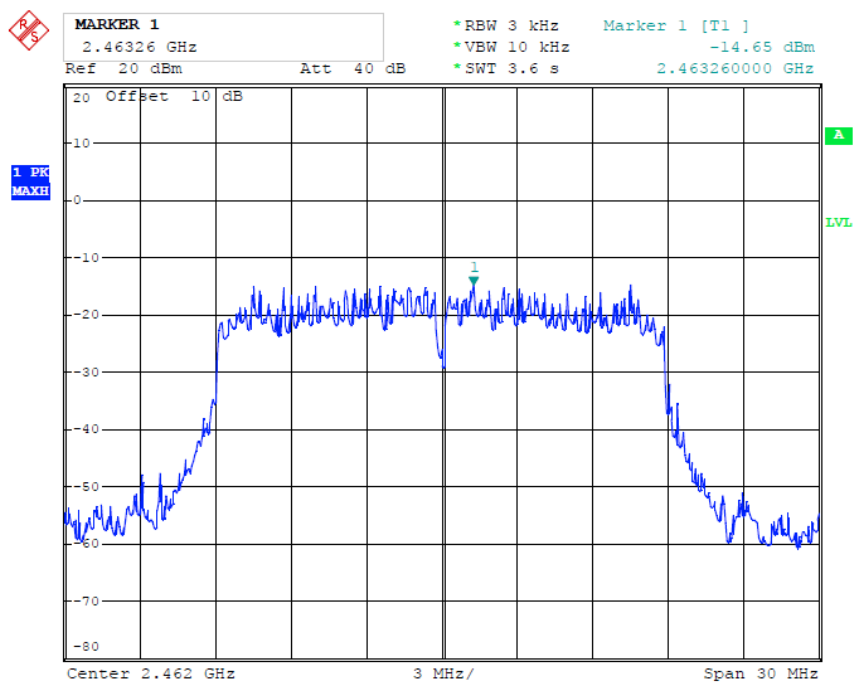
802.11n 20-2412MHz



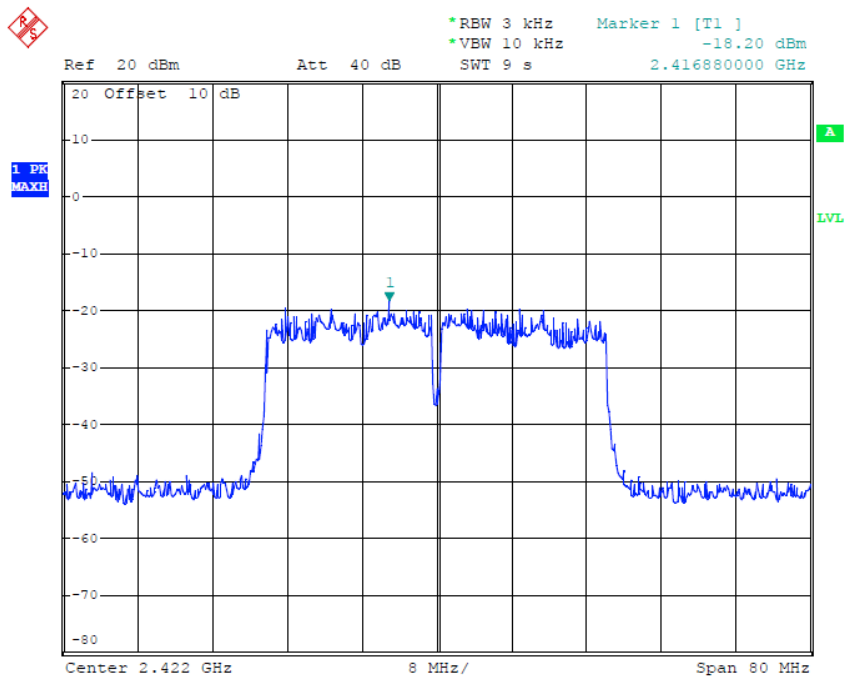
802.11n 20-2437MHz



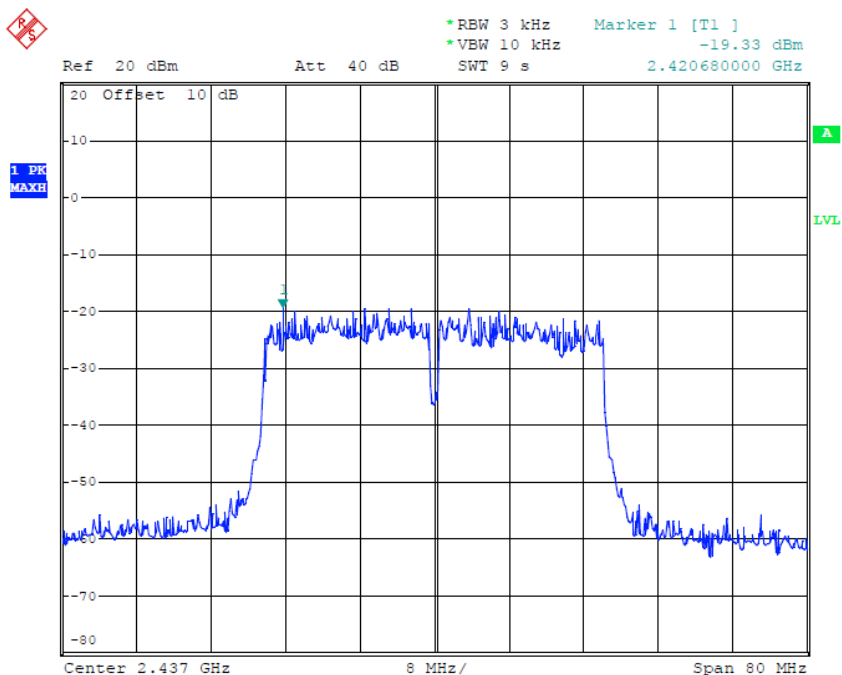
802.11n 20-2462MHz



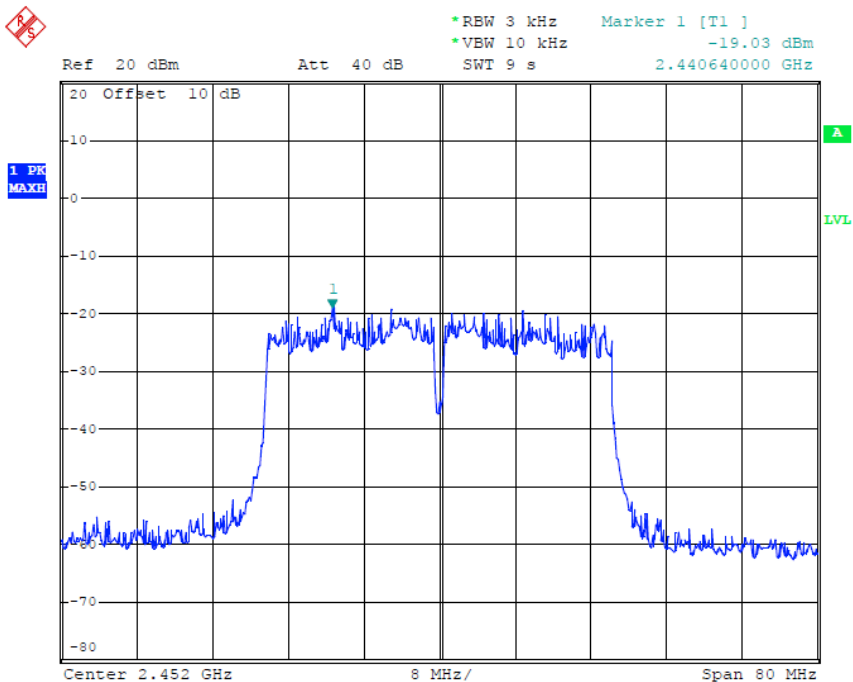
802.11n 40-2422MHz



802.11n 40-2437MHz



802.11n 40-2452MHz



6. Band edge and spurious(conducted)

6.1 LIMIT

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30Db below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

6.2 TEST PROCEDURE

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

(2) Establish a reference level by using the following procedure:

Center frequency	DTS Channel center frequency
RBW:	100kHz
VBW:	300kHz
Span	1.5times the DTS bandwidth
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

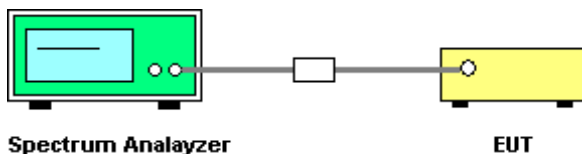
(3) Establish Allow the trace to stabilize, use the peak marker function to determine the maximum peak power level to establish the reference level.

(4) Set the spectrum analyzer as follows:

RBW:	100kHz
VBW:	300kHz
Span	Encompass frequency range to be measured
Number of measurement points	$\geq \text{span}/\text{RBW}$
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

(5) Allow the trace to stabilize, use the peak marker function to determine the maximum amplitude of all unwanted emissions outside of the authorized frequency band

6.3 TEST SETUP

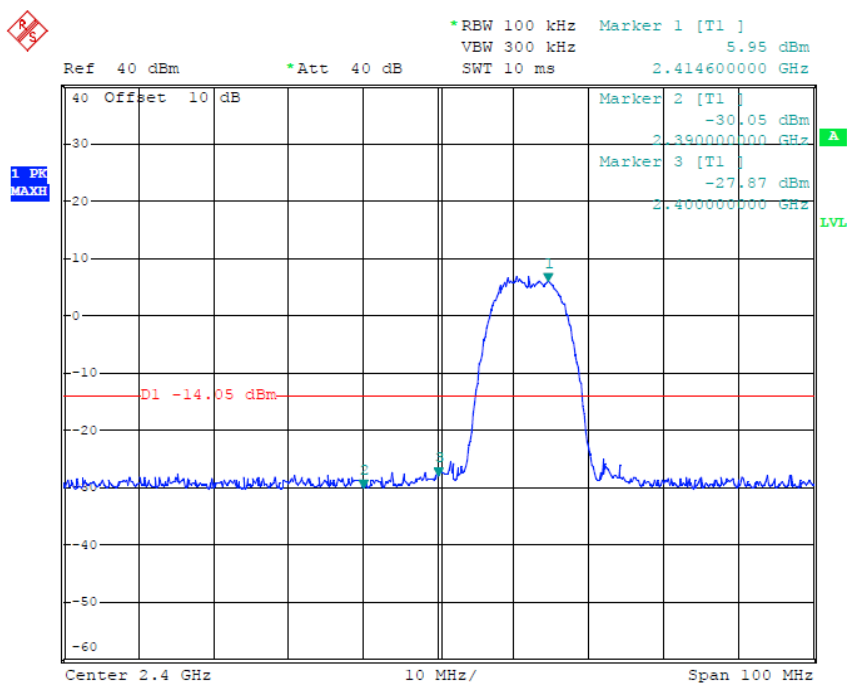


6.5 TEST RESULTS

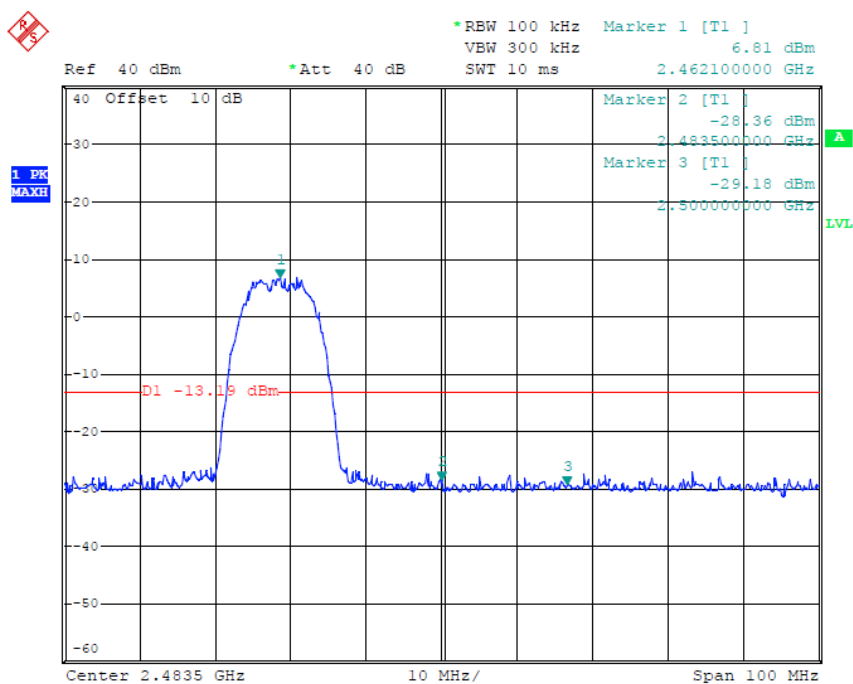
EuT set mode	CH or Frequency	Result
802.11b	CH1	Pass
	CH11	Pass
802.11g	CH1	Pass
	CH11	Pass
802.11n 20	CH1	Pass
	CH11	Pass
802.11n 40	CH3	Pass
	CH9	Pass

6.5 Original test data

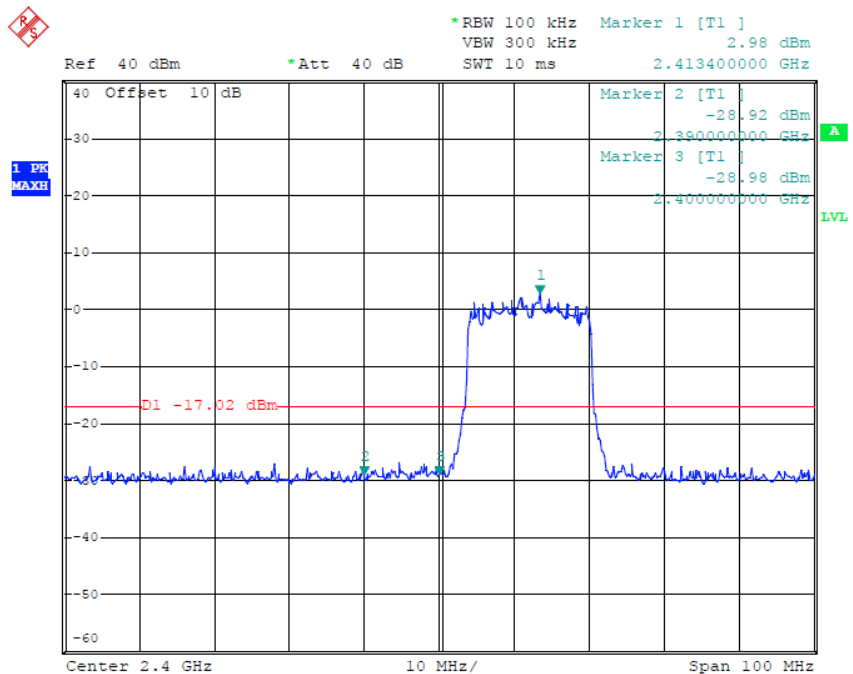
802.11b Low CH



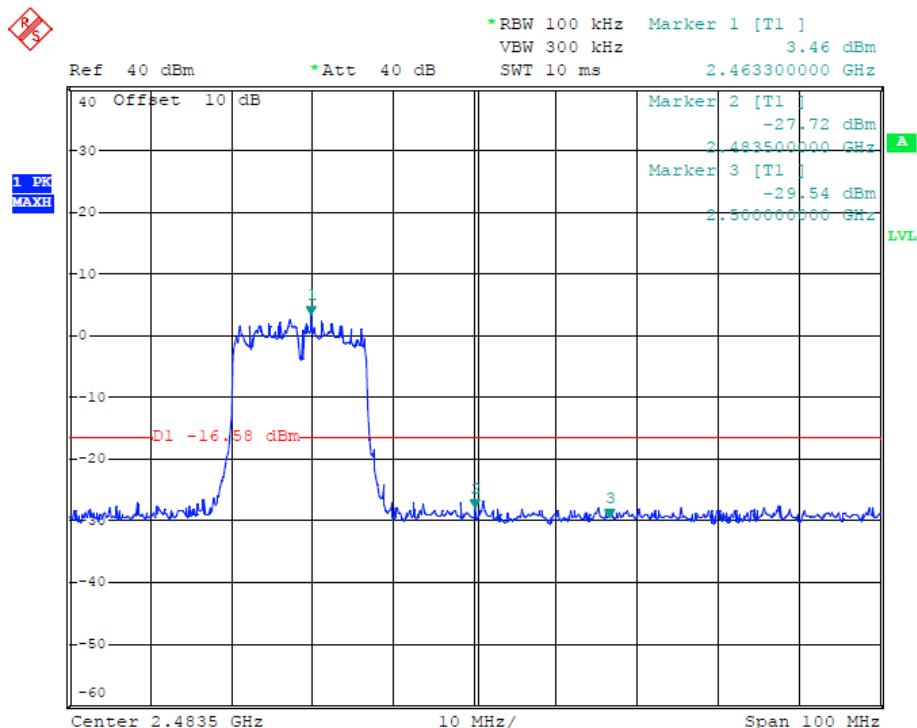
802.11b High CH



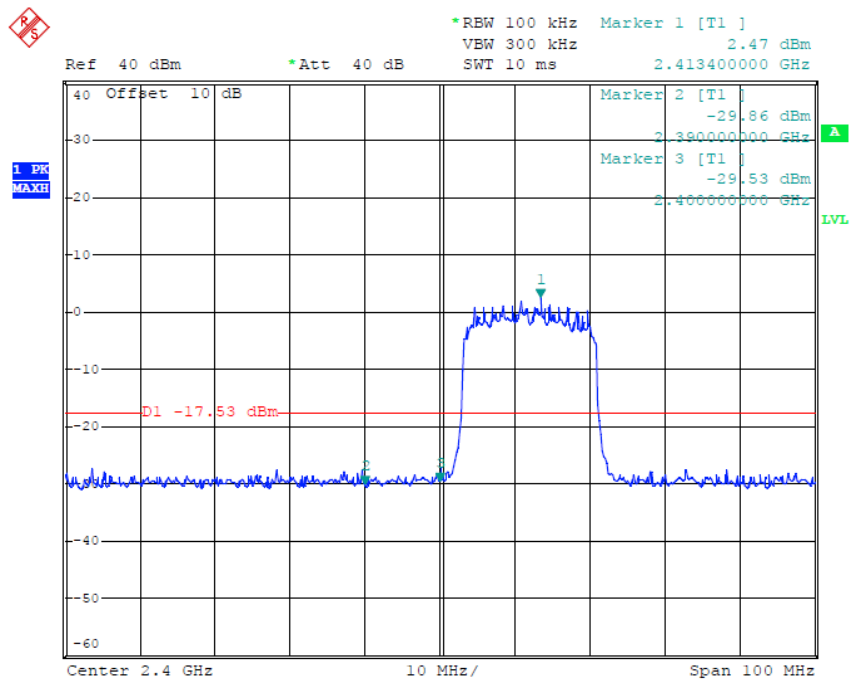
802.11g low CH



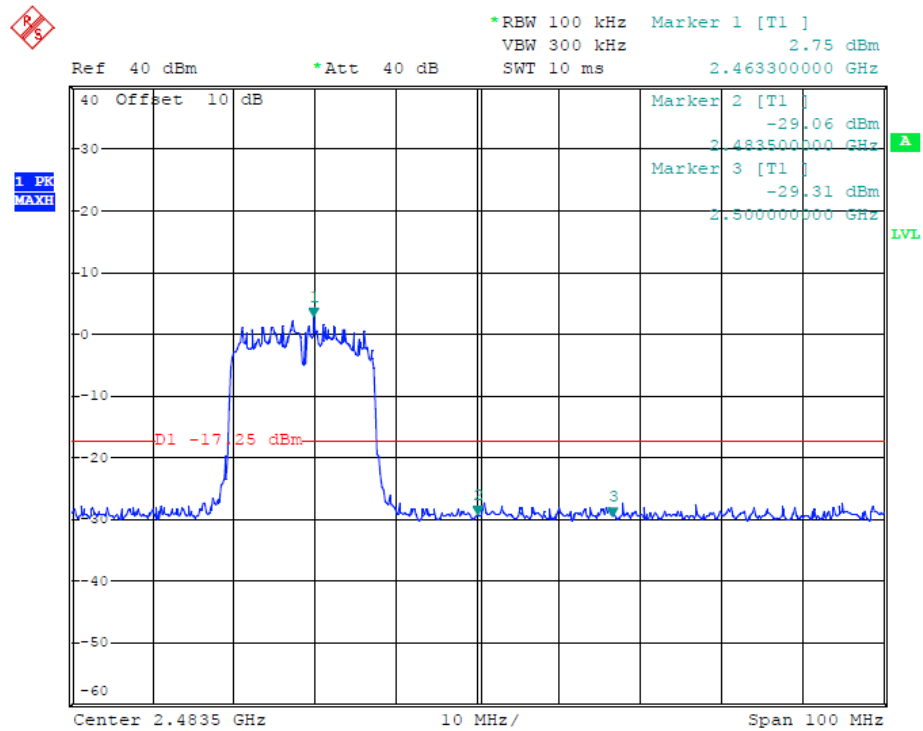
802.11g High CH



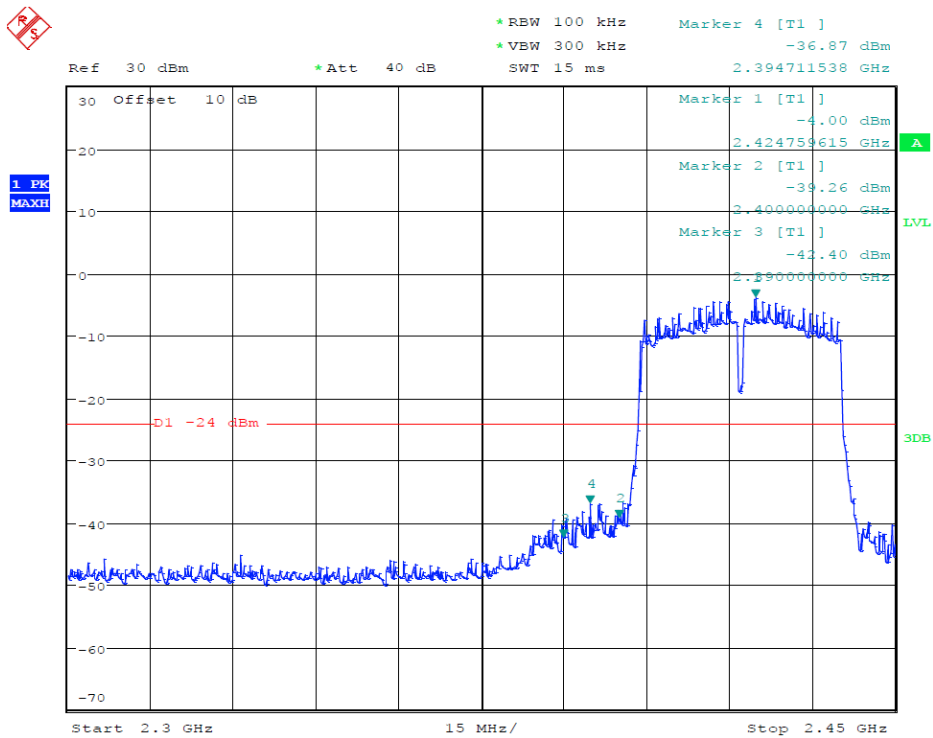
802.11n20 Low CH



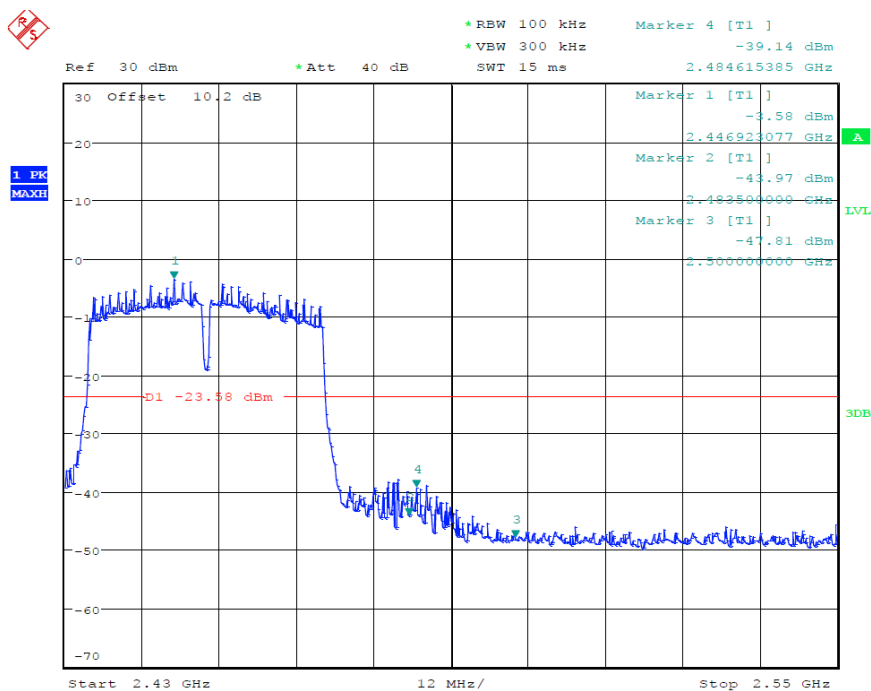
802.11n20 High CH



802.11n40 Low CH

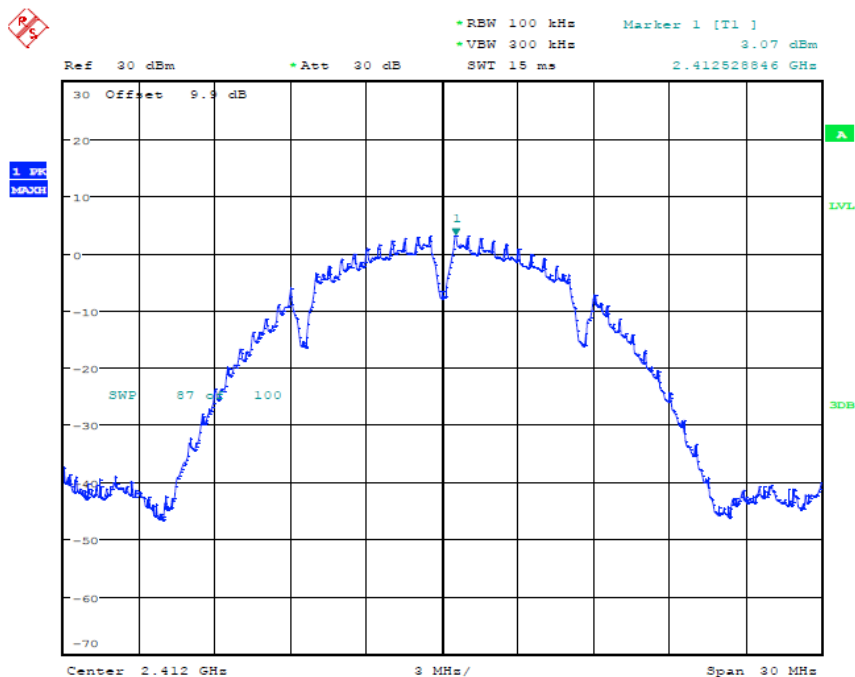


802.11n40 High CH

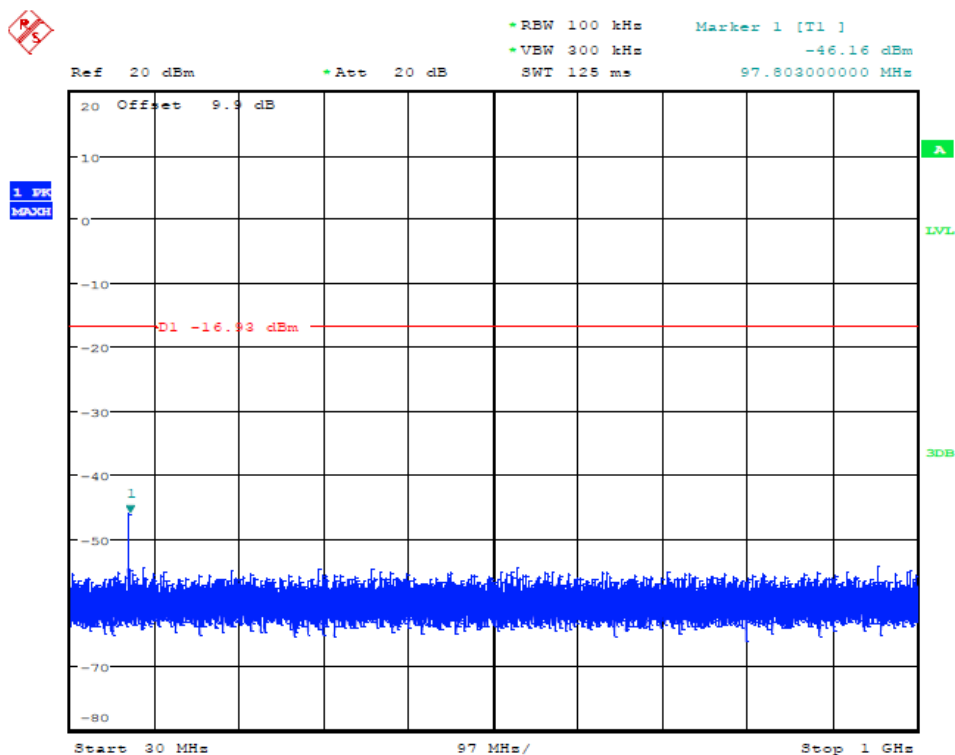


Spurious emissions (802.11b)

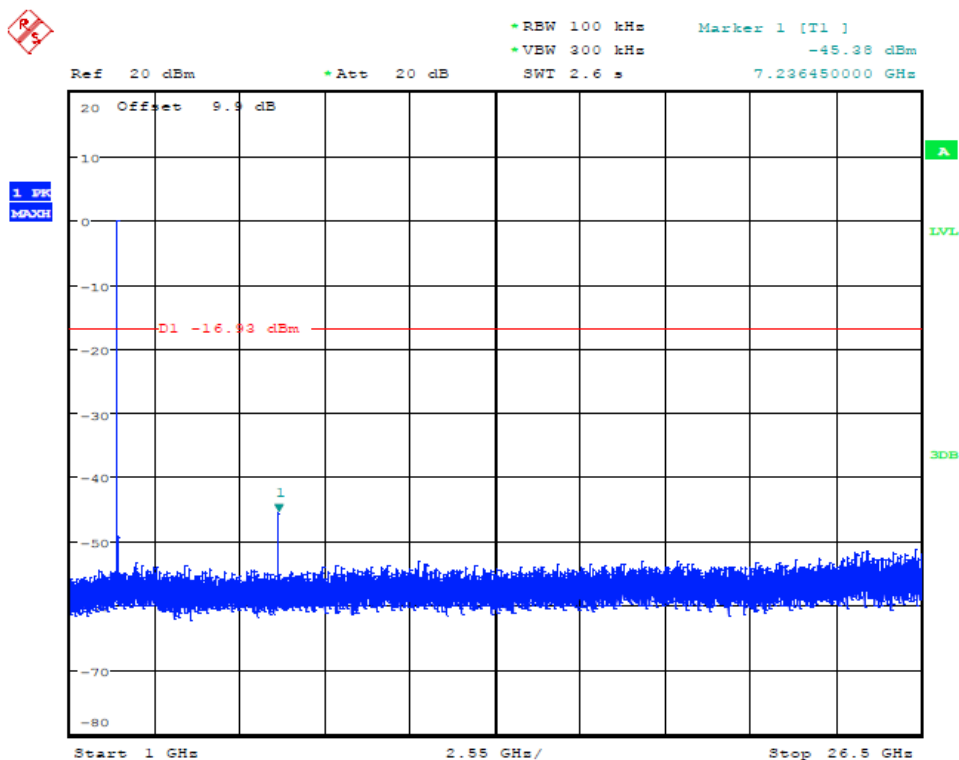
802.11b low CH, 2412MHz



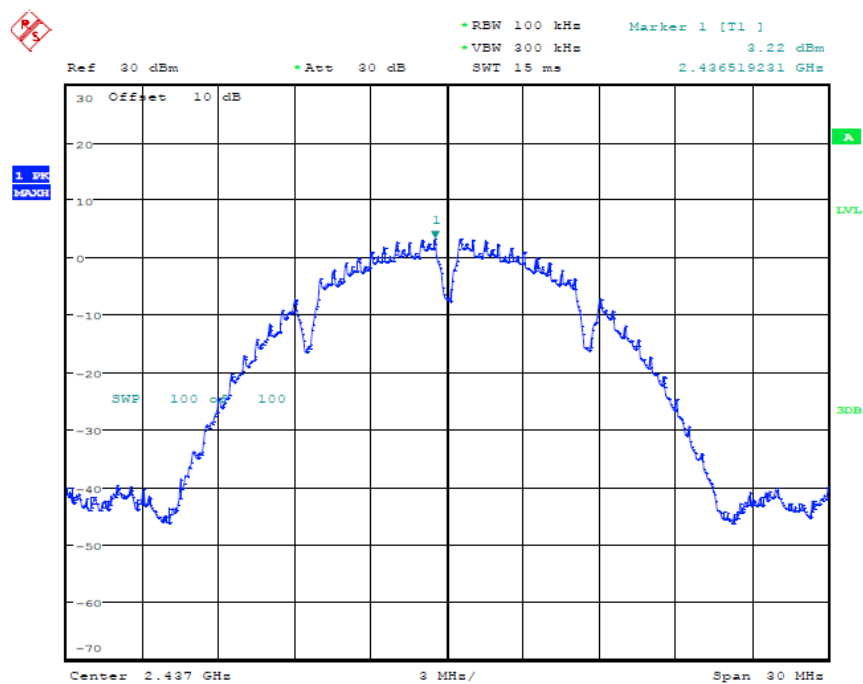
30MHz-1000MHz



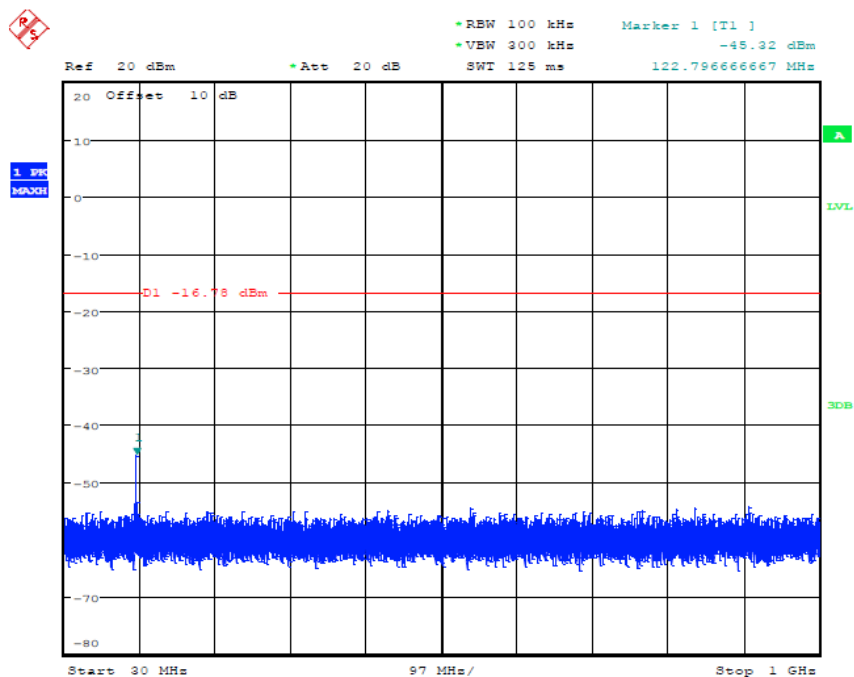
1000MHz-26500MHz



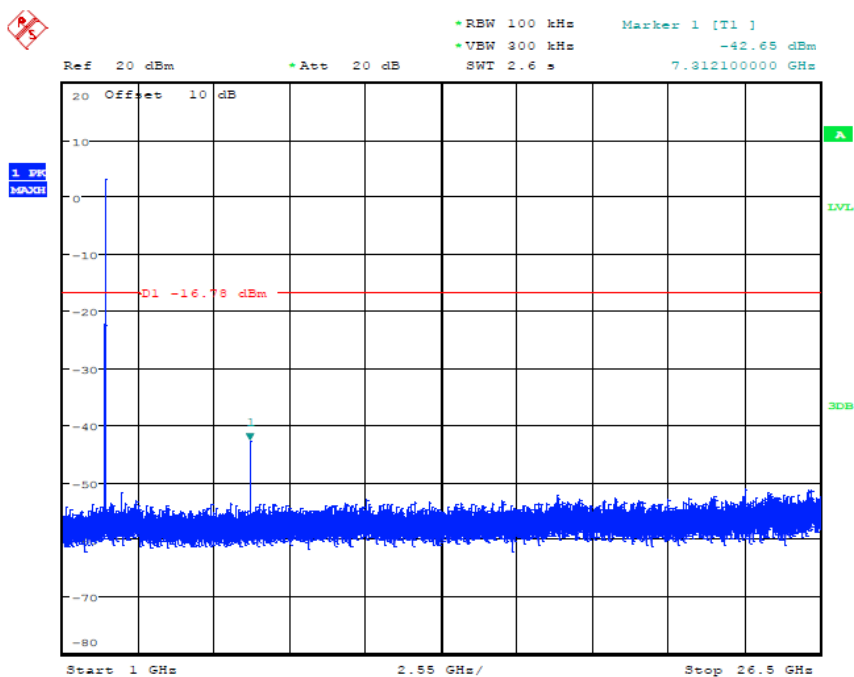
802.11b Middle CH, 2437MHz



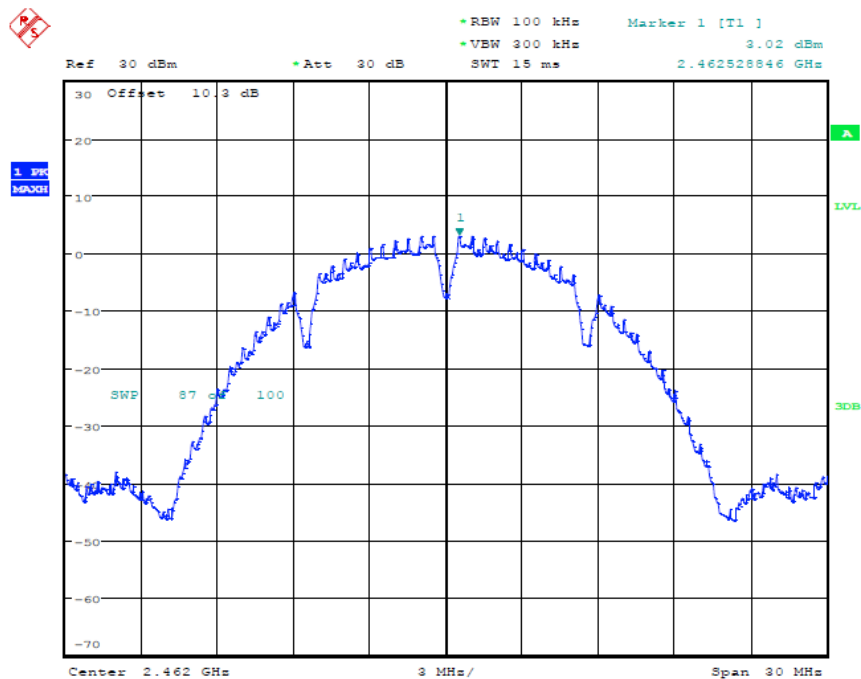
30MHz-1000MHz



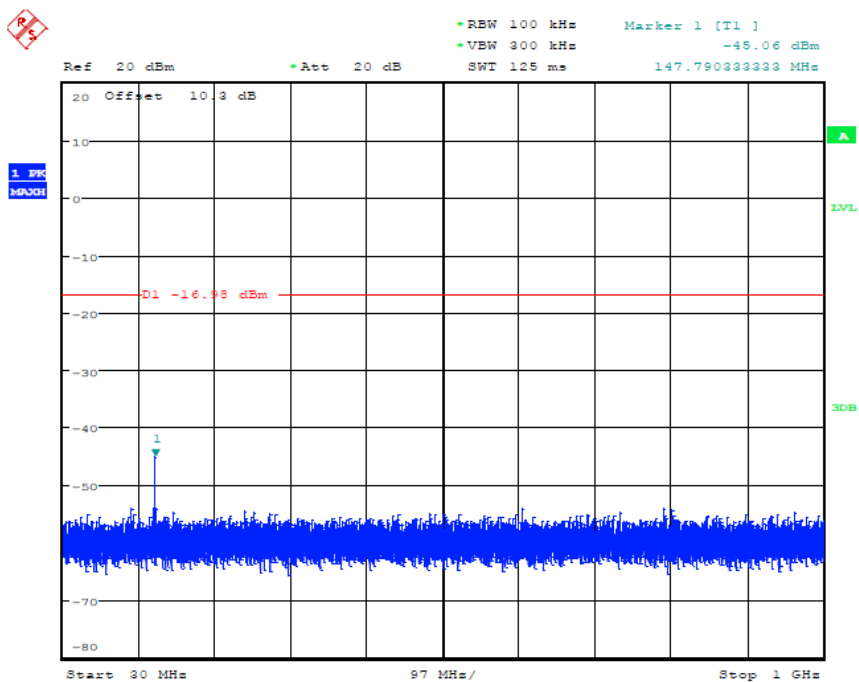
1000MHz-26500MHz



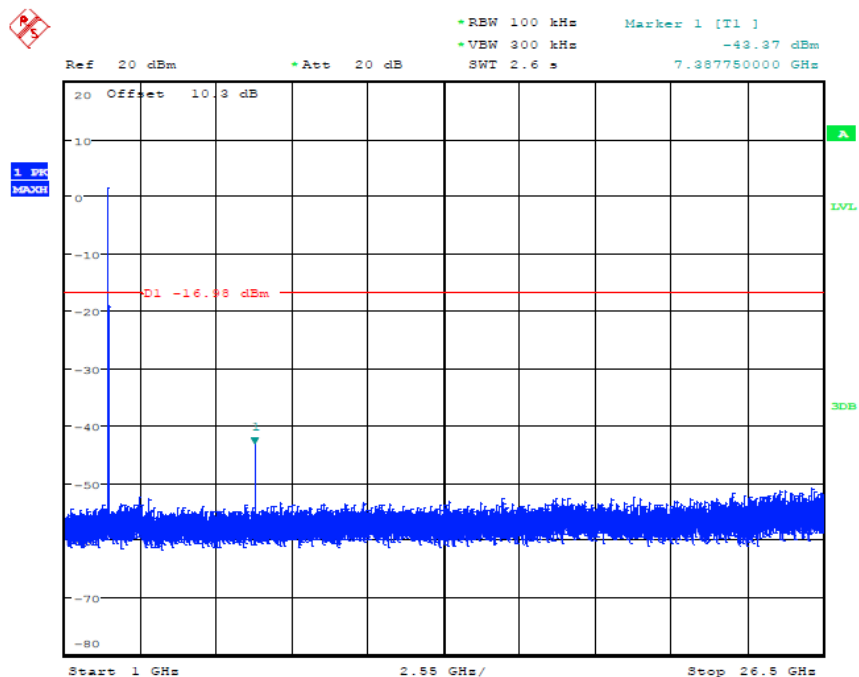
802.11b High CH, 2462MHz



30MHZ-1000MHZ



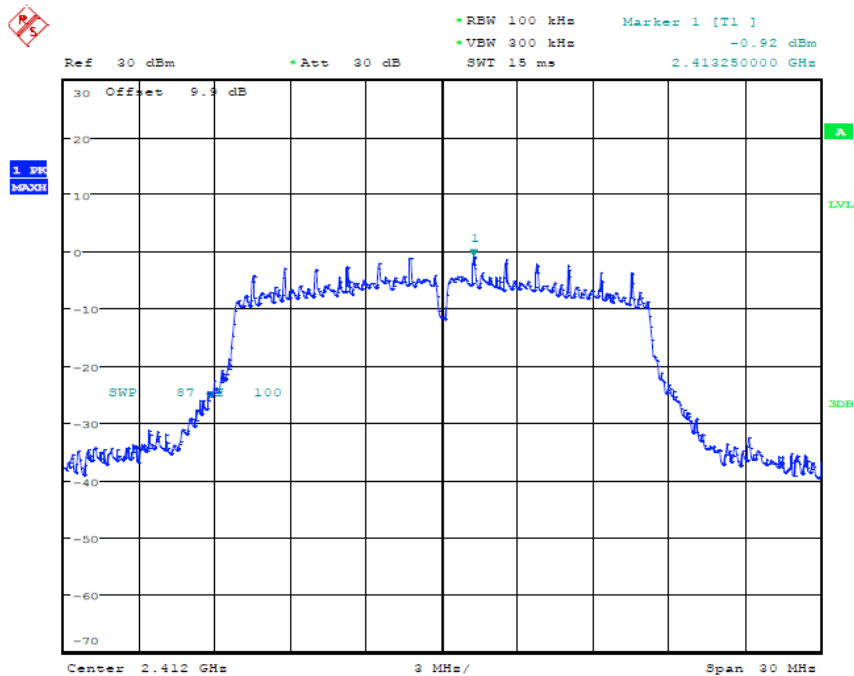
1000MHZ-26500MHZ



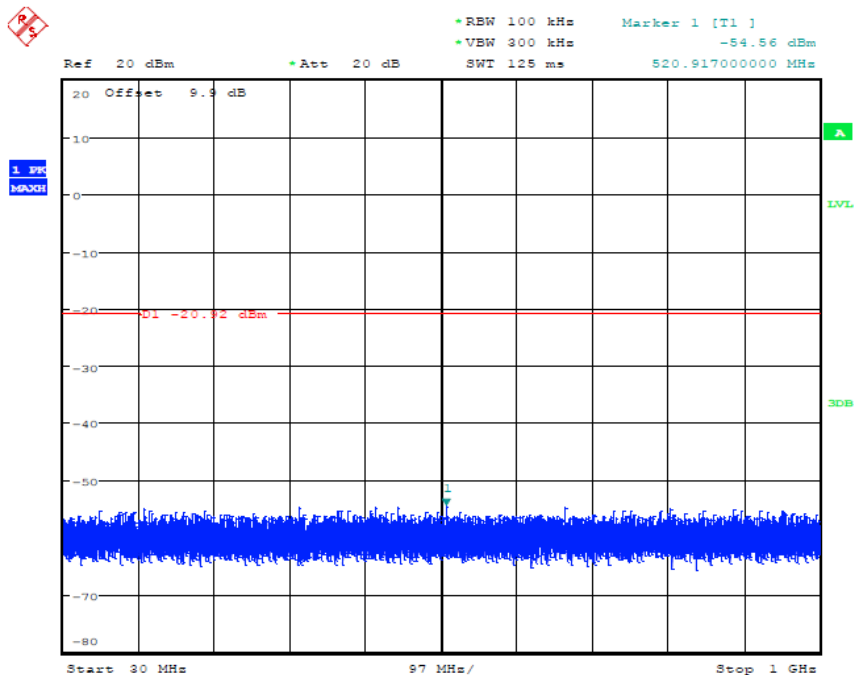
(802.11g)

802.11g Low CH, 2412MHz

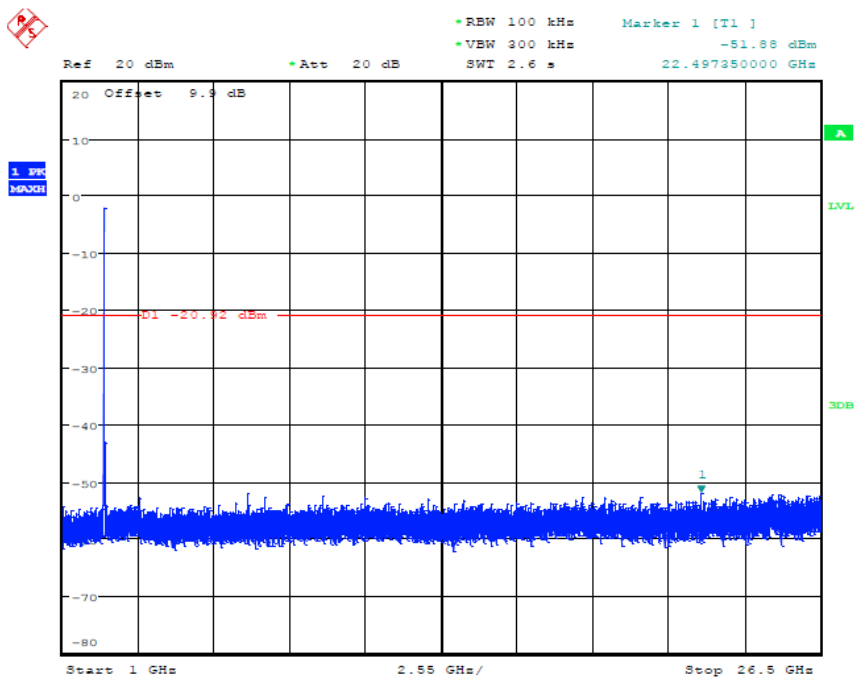
Ref.



30MHz-1000MHz

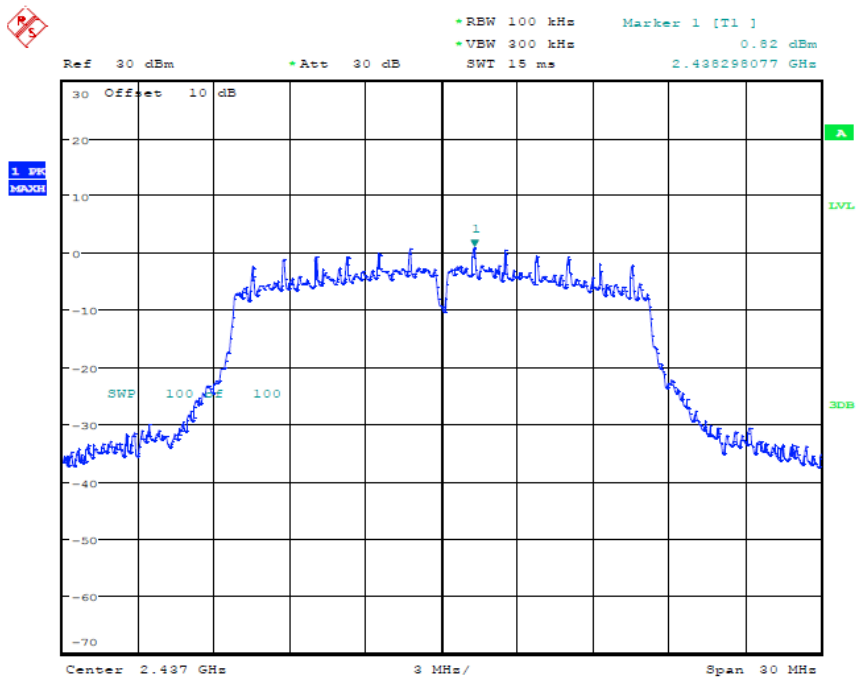


1GHZ-26.5GHZ

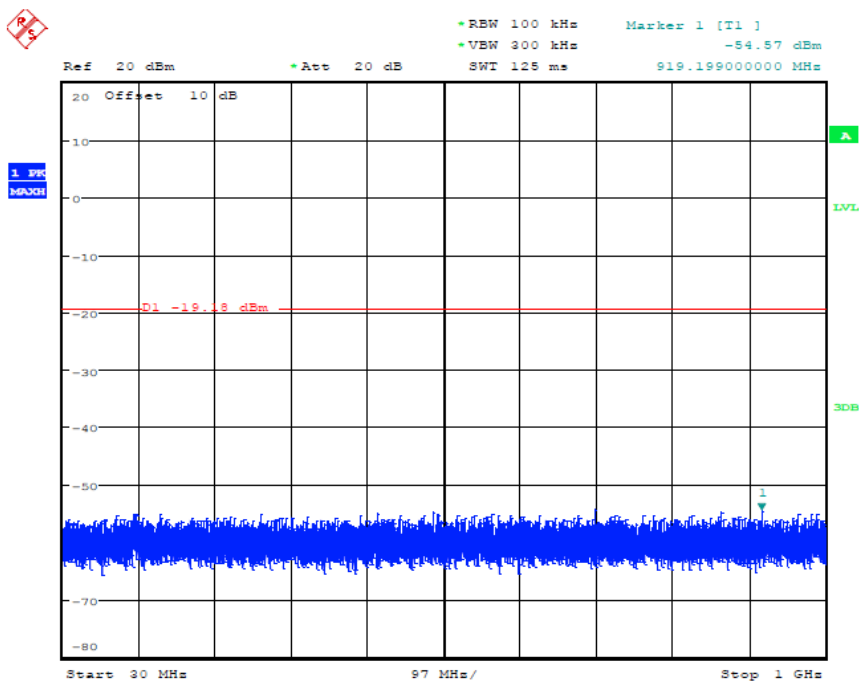


802.11g Middle CH, 2437MHz

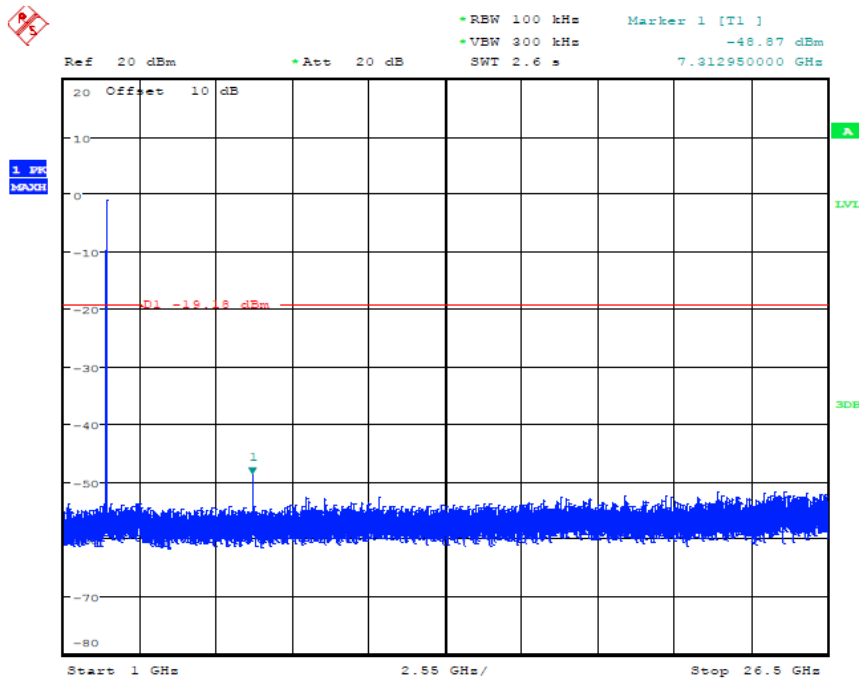
Ref.



30MHz-1000MHz

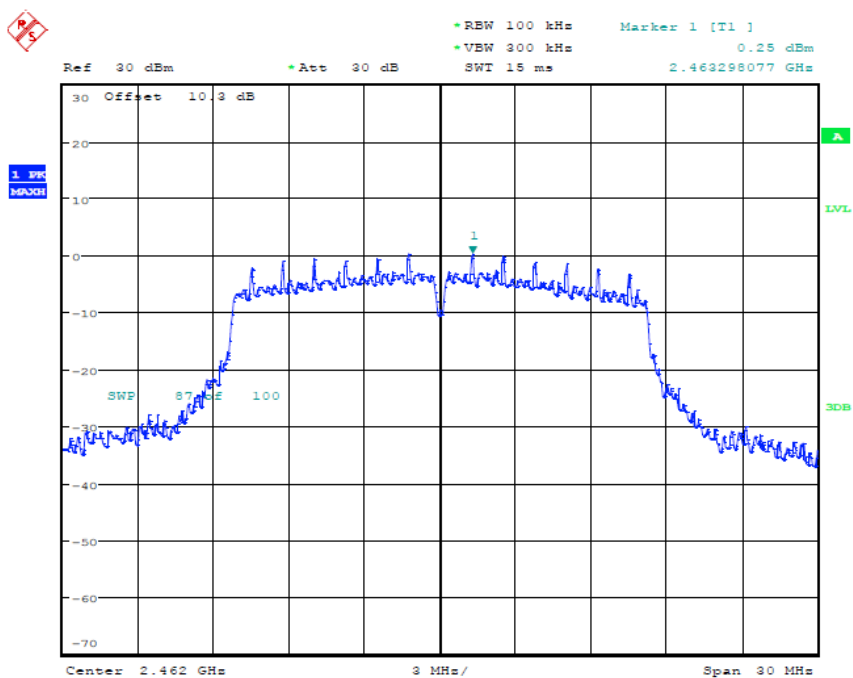


1GHZ-26.5GHZ

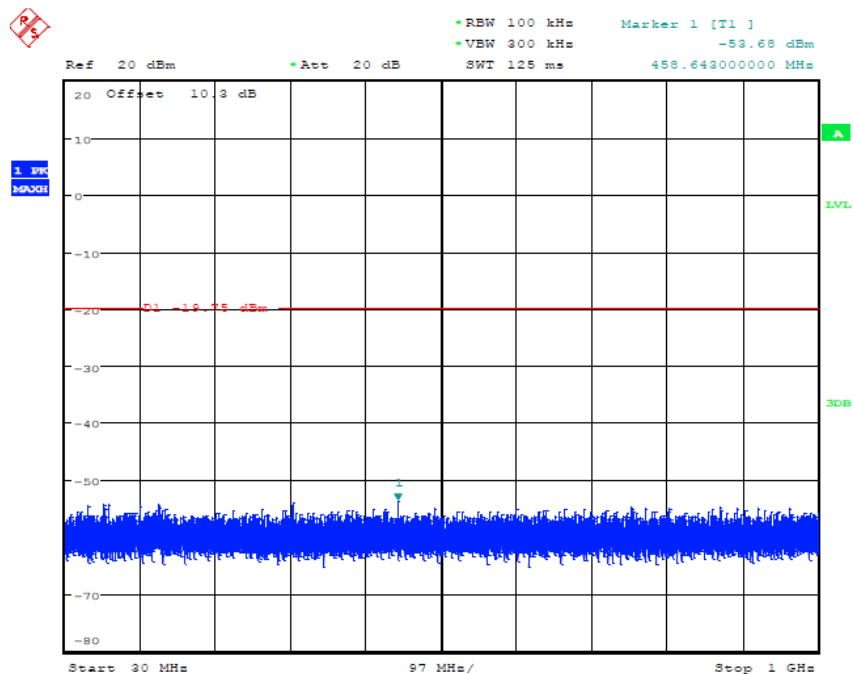


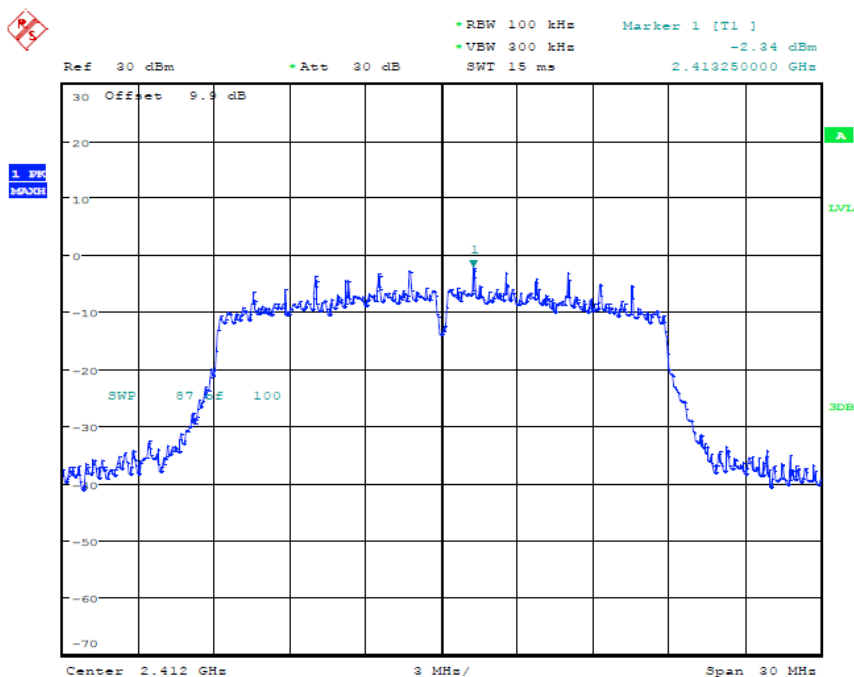
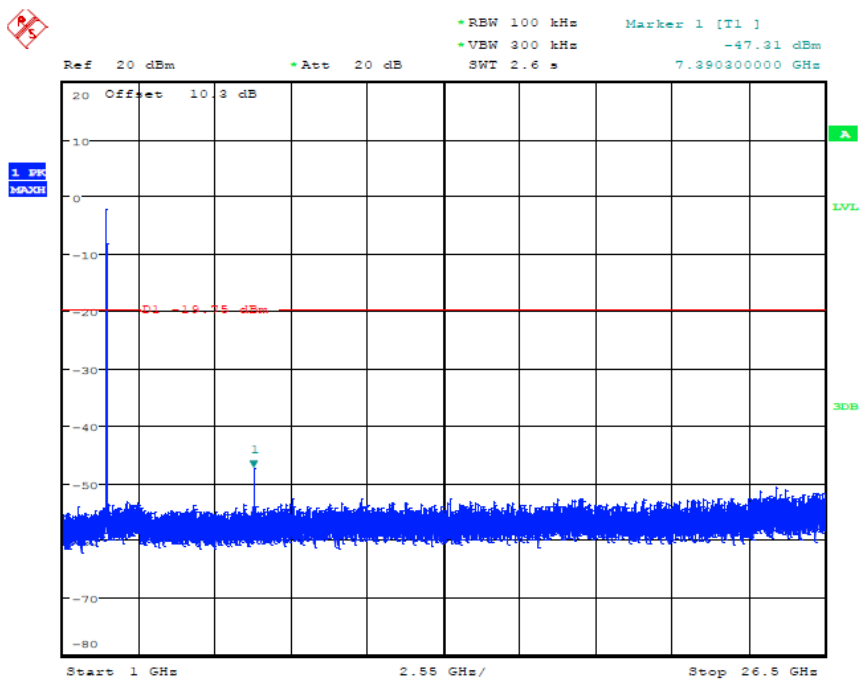
802.11g High CH, 2462MHz

Ref.

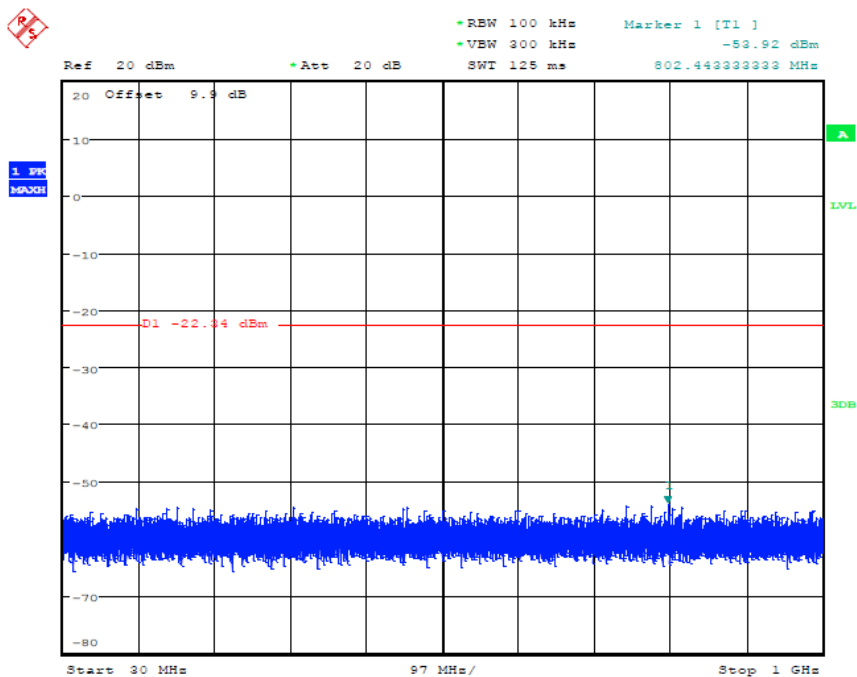


30MHZ-1000MHZ

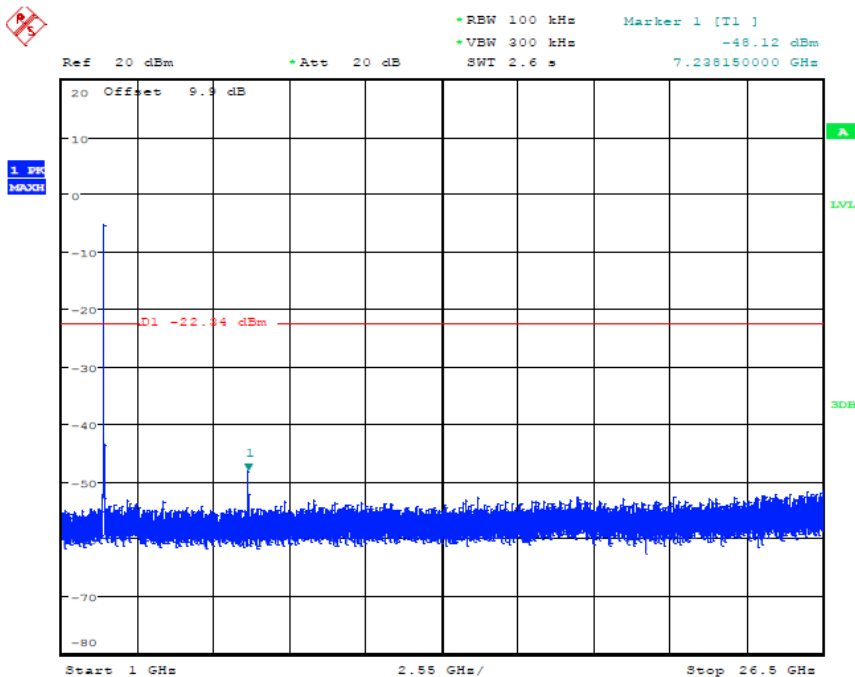




30MHZ-1000MHZ

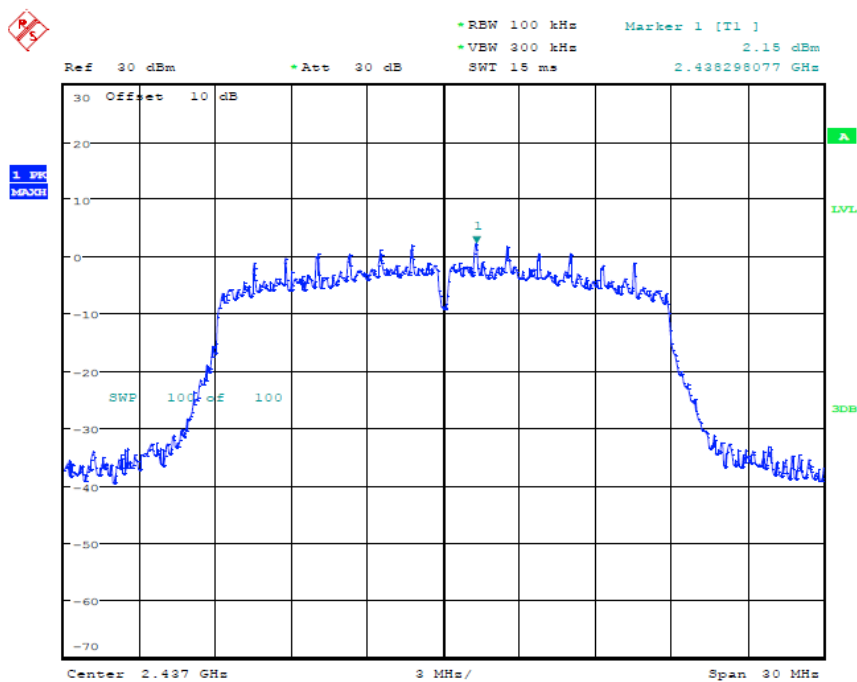


1GHZ-26.5GHZ

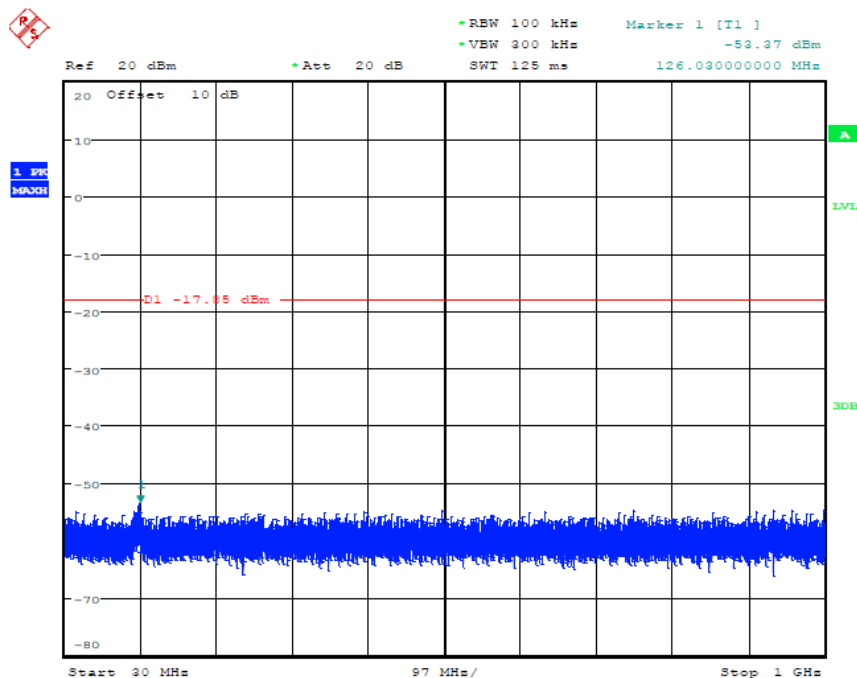


802.11n 20 Middle CH, 2437MHz

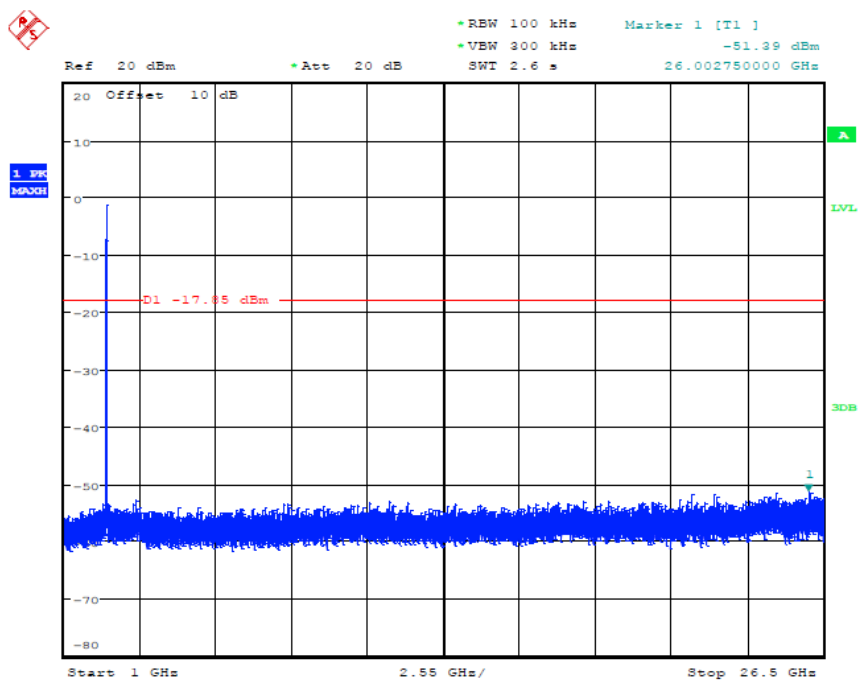
Ref.



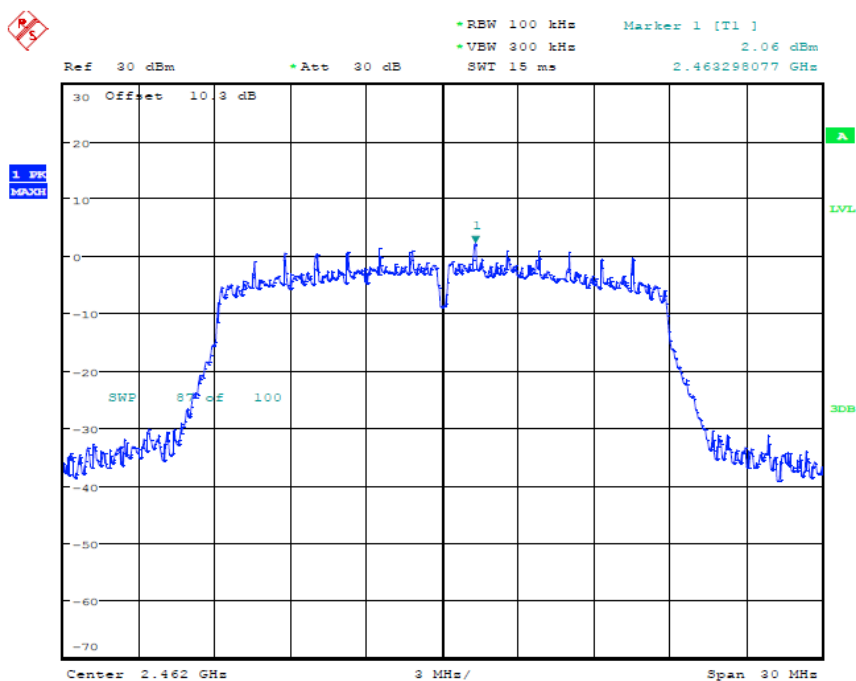
30MHZ-1000MHZ



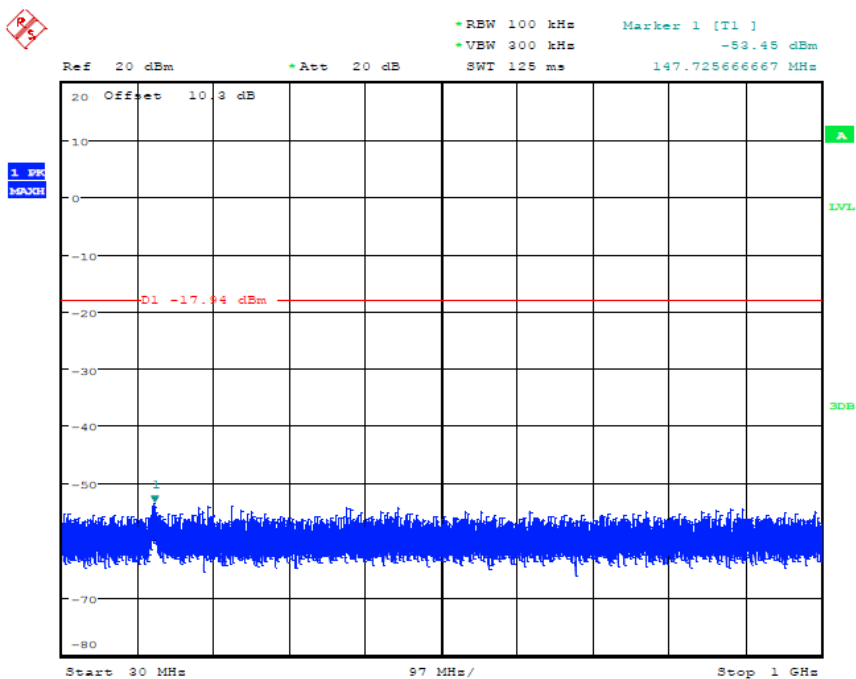
1GHZ-26.5GHZ



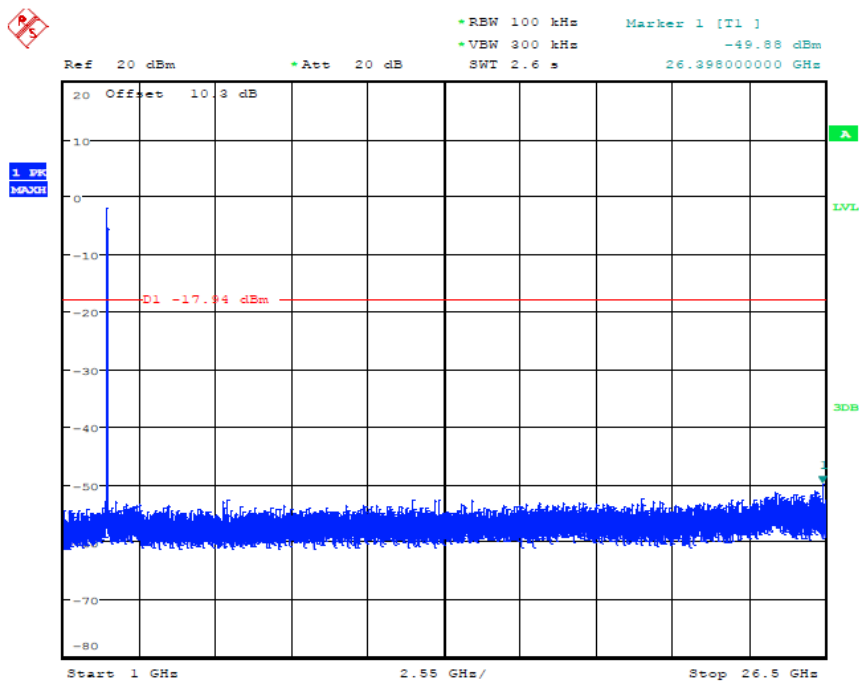
802.11n 20 High CH, 2462MHz Ref.



30MHZ-1000MHZ

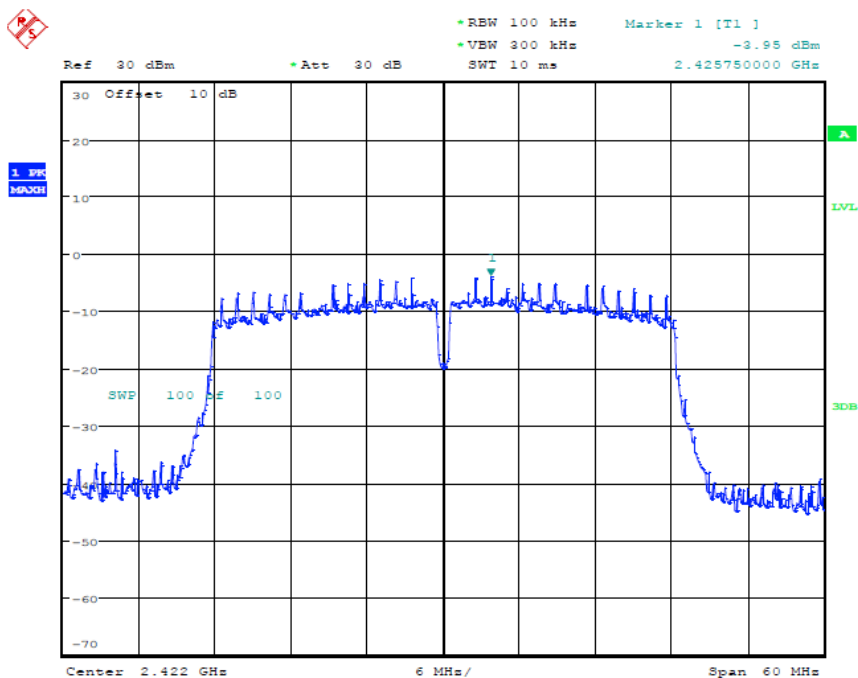


1GHZ-26.5GHZ

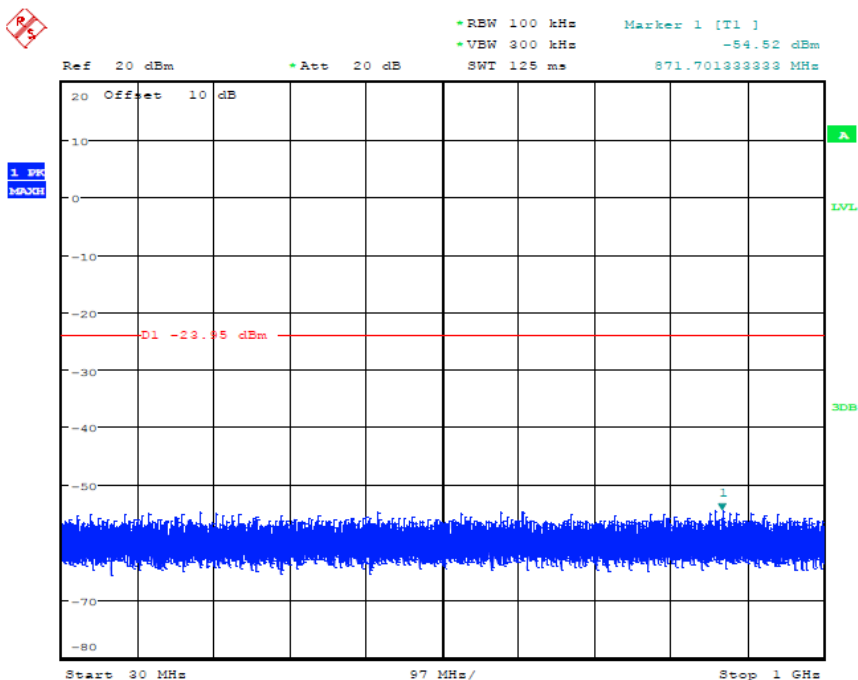


802.11n 40 Low CH, 2422MHz

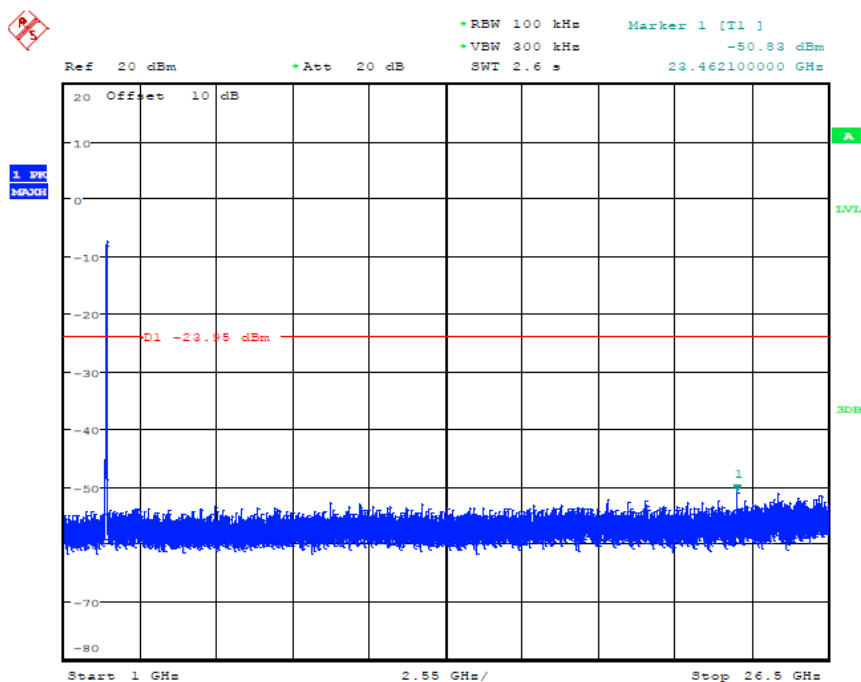
Ref.



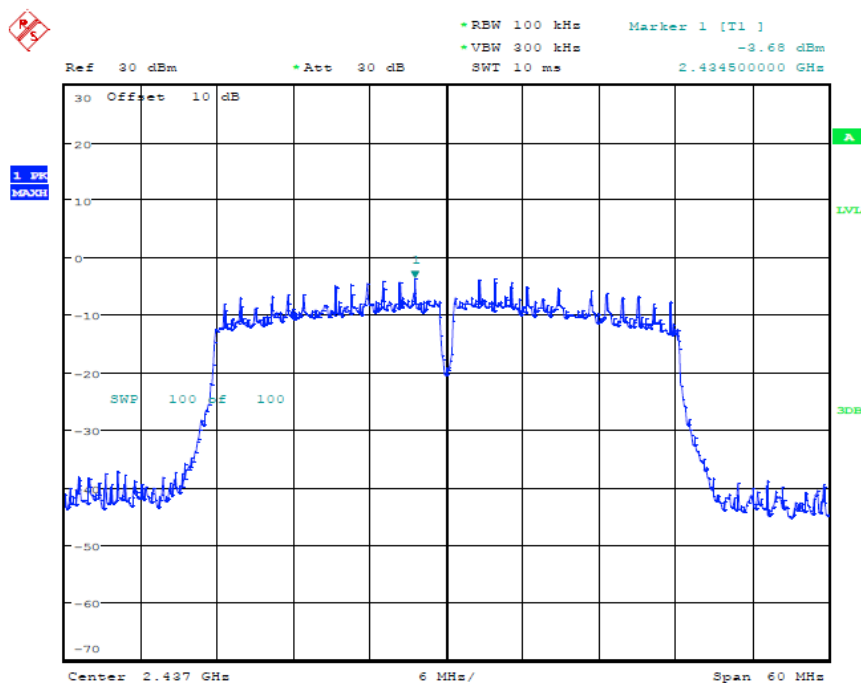
30MHZ-1000MHZ



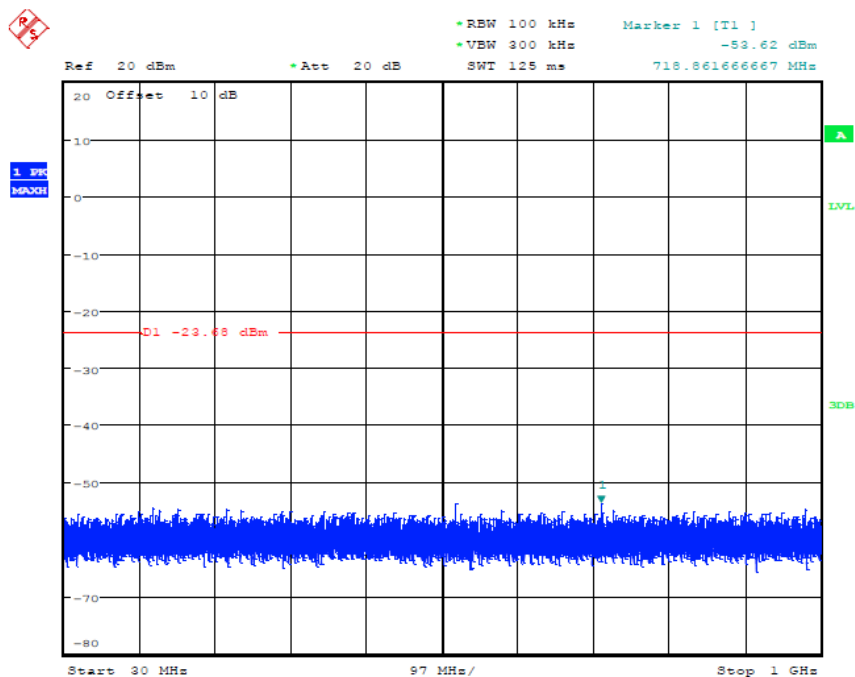
1GHz-26.5GHz



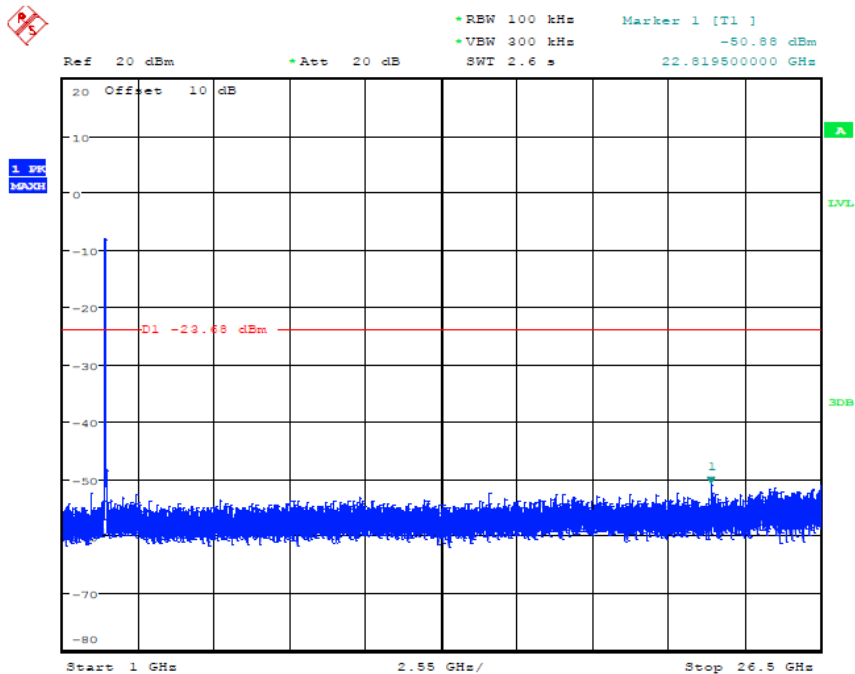
802.11n 40 Middle CH, 2437MHz Ref.



30MHZ-1000MHZ

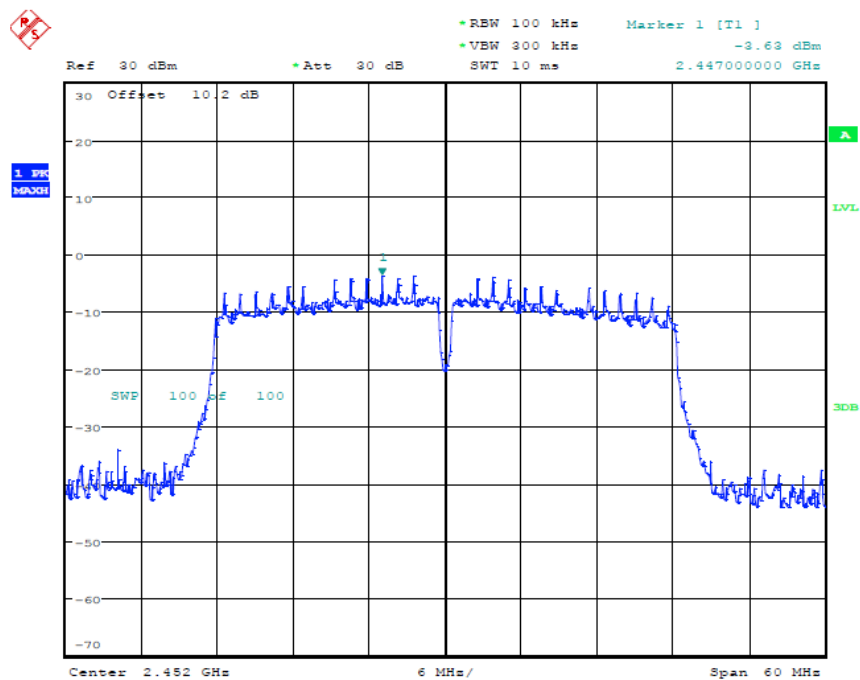


1GHZ-26.5GHZ

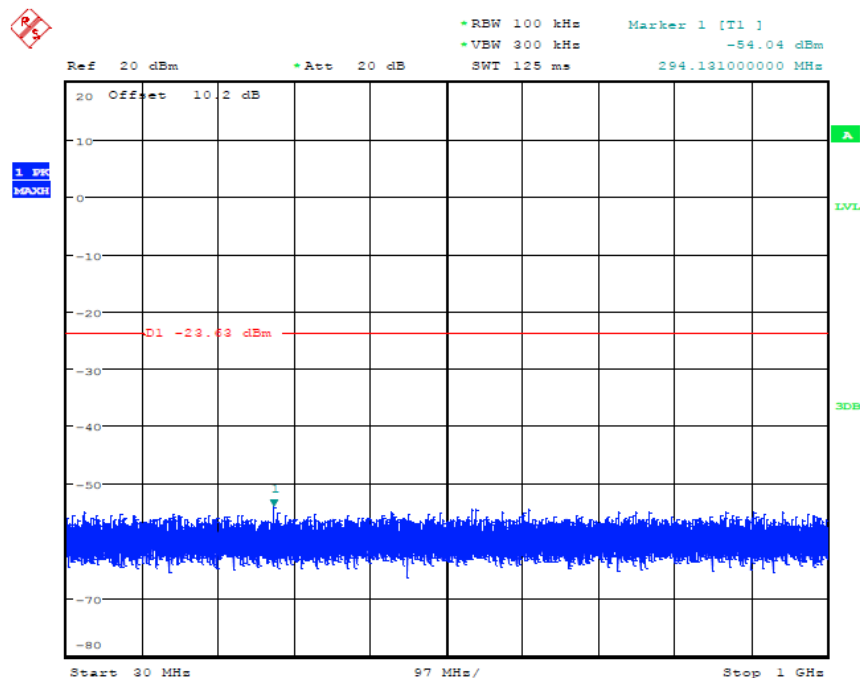


802.11n 40 High CH, 2452MHz

Ref.



30MHZ-1000MHZ



1GHZ-26.5GHZ

