Report No: DDT-R15Q0604-1E6

Issued Date: June 5, 2015

FCC CERTIFICATION TEST REPORT

FOR

Applicant	:	SHENZHEN HUBSAN INTELLIGENT COMPANY LIMITED
Address	:	13th Floor, Bldg 1C, Shenzhen Software Industry Base, X uefu Road, Nanshan District, Shenzhen, China. 518054
Equipment under Test	:	FPV Smart Transmitter
Model No	:	H7000
Trade Mark	:	HUBSAN
FCC ID	:	2AEXY7000TX
Manufacturer	:	DONGGUAN TENGSHENG INDUSTIAL CO., LTD
Address	:	A22# Luyi Street, Tianxin Village, Tangxia Town, Dong guan, China

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel: +86-0769-22891499 Http://www.dgddt.com

REPORT

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TEST REPORT DECLARE

Applicant	:	SHENZHEN HUBSAN INTELLIGENT COMPANY LIMITED
Address	:	13th Floor, Bldg 1C, Shenzhen Software Industry Base, Xuefu Road, Nanshan District, Shenzhen, China. 518054
Equipment under Test	:	FPV Smart Transmitter
Model No	:	H7000
Trade Mark	:	HUBSAN
Manufacturer	:	DONGGUAN TENGSHENG INDUSTIAL CO., LTD
Address	:	A22# Luyi Street, Tianxin Village, Tangxia Town, Dong guan, China

Test Standard Used: FCC Rules and Regulations Part 15 Subpart C: 2015

Test procedure used: ANSI C63.10:2009, ANSI C63.4:2009, KDB558074 D01 DTS Meas Guidance V03r02.

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	DDT-R15Q0604-1E6		
Date of Test:	June 1, 2015~June 4, 2015	**Date of Report:**	June 5, 2015

Prepared By: ***Approved By:***

Leo Liu/Engineer ***Kevin Feng/EMC Manager***

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

1. Summary of test results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	**Standard**	**Results**
6dB Bandwidth	FCC Part 15: 15.247 KDB558074	PASS
Peak Output Power	FCC Part 15: 15.247 KDB558074	PASS
Power Spectral Density	FCC Part 15: 15.247 KDB558074	PASS
Emissions in non-restricted frequency bands	FCC Part 15: 15.247 KDB558074	PASS
Emissions in restricted frequency bands	FCC Part 15: 15.209 FCC Part 15: 15.247 ANSI C63.10: 2009 ANSI C63.4:2009 KDB558074	PASS
Band Edge Compliance	FCC Part 15: 15.209 FCC Part 15: 15.247 ANSI C63.10: 2009 ANSI C63.4:2009 KDB558074	PASS
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10: 2009 ANSI C63.4:2009	N/A
Antenna requirement	FCC Part 15: 15.203	PASS
Note: N/A is an abbreviation for Not Applicable.		

2. General test information

2.1. Description of EUT

EUT* Name	:	FPV Smart Transmitter
Model Number	:	H7000
EUT function description	:	Please reference user manual of this device
Power supply	:	DC 8.4V from battery
Radio Technology	:	IEEE802.11b/g/n
FCC 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,DQPSK,DBPSK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK,BPSK)
Antenna Type	:	Integrated PCB antenna, maximum PK gain:2dBi
Date of Receipt	:	2015/6/1
Sample Type	:	Series production

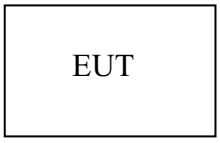
Note1: EUT is the ab.of equipment under test.

Channle information							
CH	Frequency	CH	Frequency	CH	Frequency	CH	Frequency
1	2412	5	2432	9	2452	/	/
2	2417	6	2437	10	2457	/	/
3	2422	7	2442	11	2462	/	/
4	2427	8	2447	/	/	/	/

2.2. Assistant equipment used for test

Description of Assistant equipment	Manufacturer	Model number or Type	EMC Compliance	SN
Notebook	DELL	Latitude D610	FCC DOC	00045-534-136-300
Mouse	HP	M-SBF96	FCC DOC	417441-001
HDD	Click-free	HD425	FCC DOC	/

2.3. Block diagram of EUT configuration for test



The test software provided by manufacturer to control EUT work in Continuous TX mode (>98% duty cycle), and select test channel, wireless mode and data rate.

Tested mode, channel, and data rate information			
Mode	data rate (Mpbs) (see Note)	Channel	Frequency (MHz)
IEEE 802.11b	11	Low :CH1	2412
	11	Middle: CH6	2437
	11	High: CH11	2462
IEEE 802.11g	6	Low :CH1	2412
	6	Middle: CH6	2437
	6	High: CH11	2462
IEEE 802.11n HT20	MCS 0	Low :CH1	2412
	MCS 0	Middle: CH6	2437
	MCS 0	High: CH11	2462
IEEE 802.11n HT40	MCS 0	Low :CH3	2422
	MCS 0	Middle: CH6	2437
	MCS 0	High: CH9	2452
Note: According exploratory test, EUT will have maximum output power in those data rate, so those data rate were used for all test.			

2.4. Test environment conditions

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

Temperature range:	21-25℃
Humidity range:	40-75%
Pressure range:	86-106kPa

2.5. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808 Tel: +86-0769-22891499 http://www.dgddt.com

FCC Registration Number: 270092 Industry Canada site registration number: 10288A-1

2.6. Measurement uncertainty

Test Item	Uncertainty
Occupied Channel Bandwidth	±1%
Uncertainty for radio frequency	1×10^{-9}
RF Output power, conducted	±0.6dB
Power Spectral Density, Conducted	±1.2dB
Unwanted Emissions, Conducted	±0.6dB
Temperature	±0.2℃
Humidity	±1%
DC and Low frequency voltage	±0.5%
Time	±1%
Duty Cycle	±1%
Uncertainty for Radiation Emission test (30MHz-1GHz)	3.14 dB (Polarize: V)
	3.16 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz to 25GHz)	2.08dB(Polarize: V)
	2.56dB (Polarize: H)
Uncertainty for Conduction emission test(150KHz-30MHz)	2.44dB
Uncertainty for Radiation Emission test (9KHz-150KHz)	3.89dB
Uncertainty for Radiation Emission test (150KHz-30MHz)	3.21dB

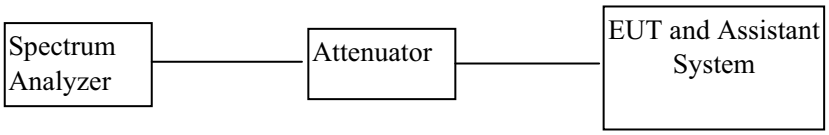
Note：This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. 6dB Bandwidth

3.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum analyzer	R&S	FSU	1166.1660.26	2014/10/25	1 Year
2	Attenuator	Mini-Circuits	BW-S10W2	101109	2014/10/25	1 Year
3	RF Cable	Micable	C10-01-01-1	100309	2014/10/25	1 Year

3.2. Block diagram of test setup



3.3. Limits

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

3.4. Test Procedure

(1) Configure EUT and assistant system according clause 2.3 and 3.2

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

(3) Configure EUT work in test mode as stated in clause 2.3.

(4) Set the spectrum analyzer as follows:

RBW:	100KHz
VBW:	300KHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold

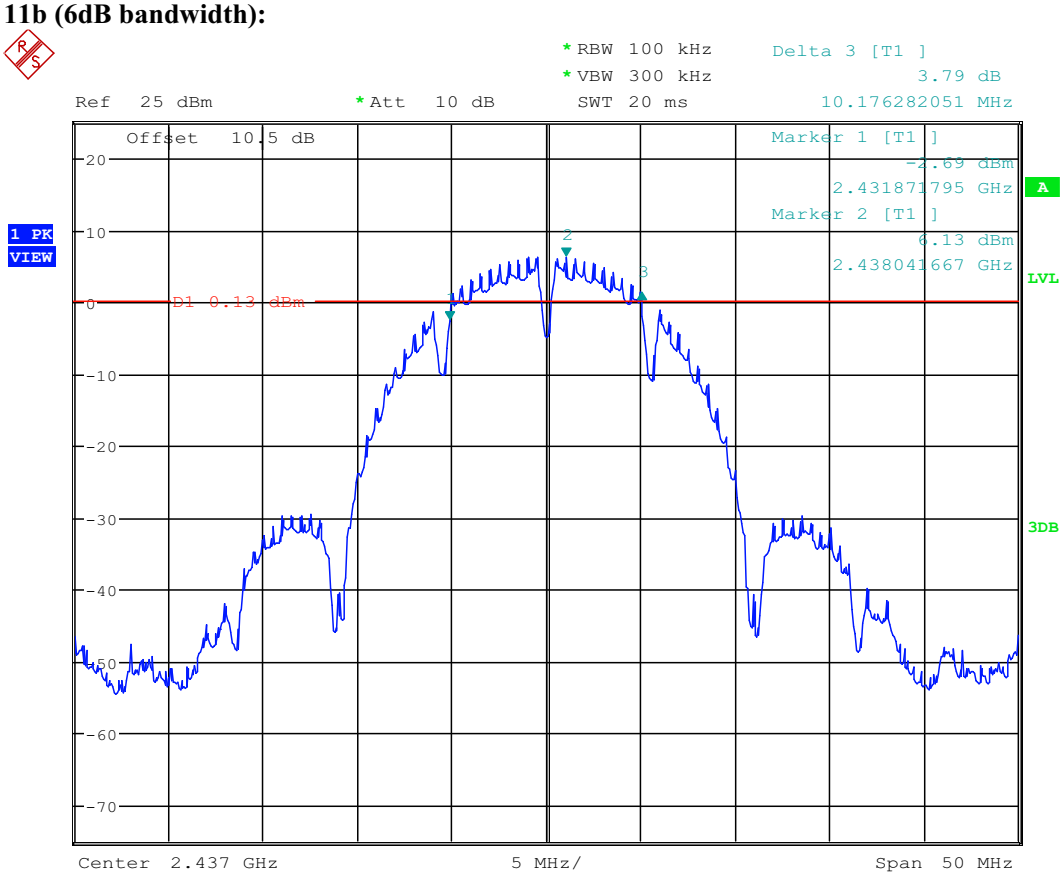
(5) Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

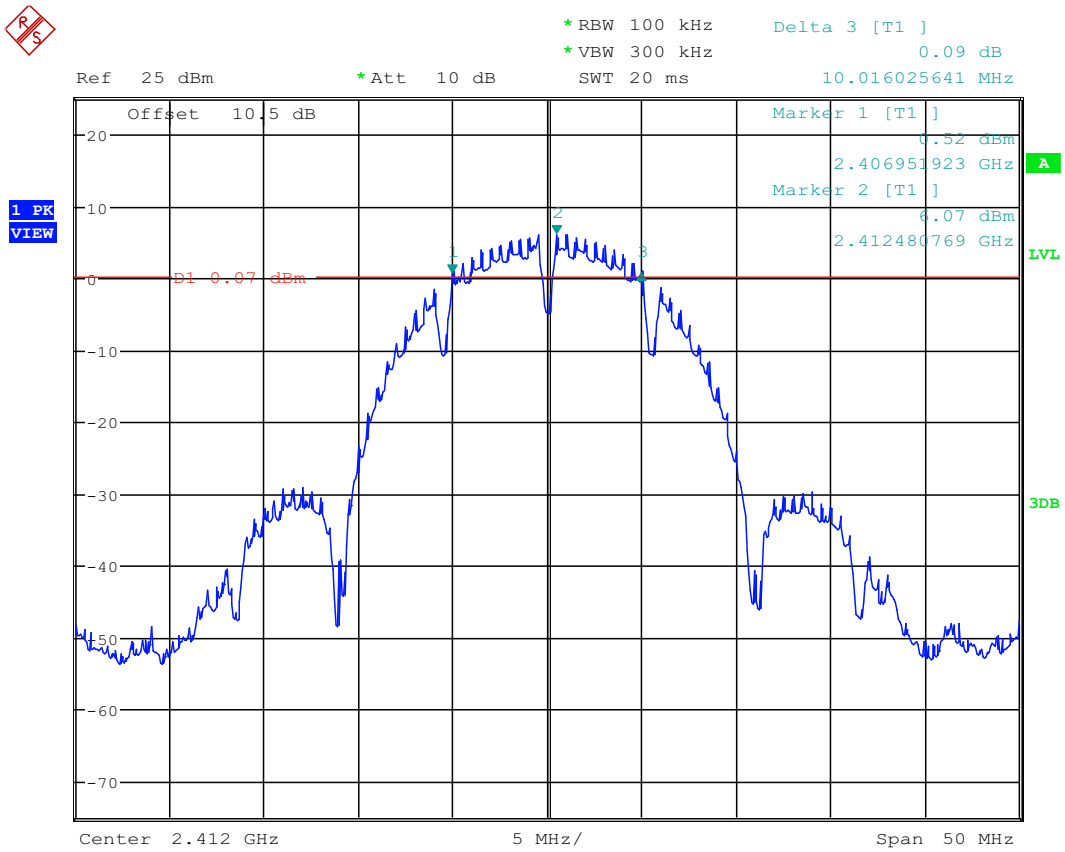
3.5. Test Result

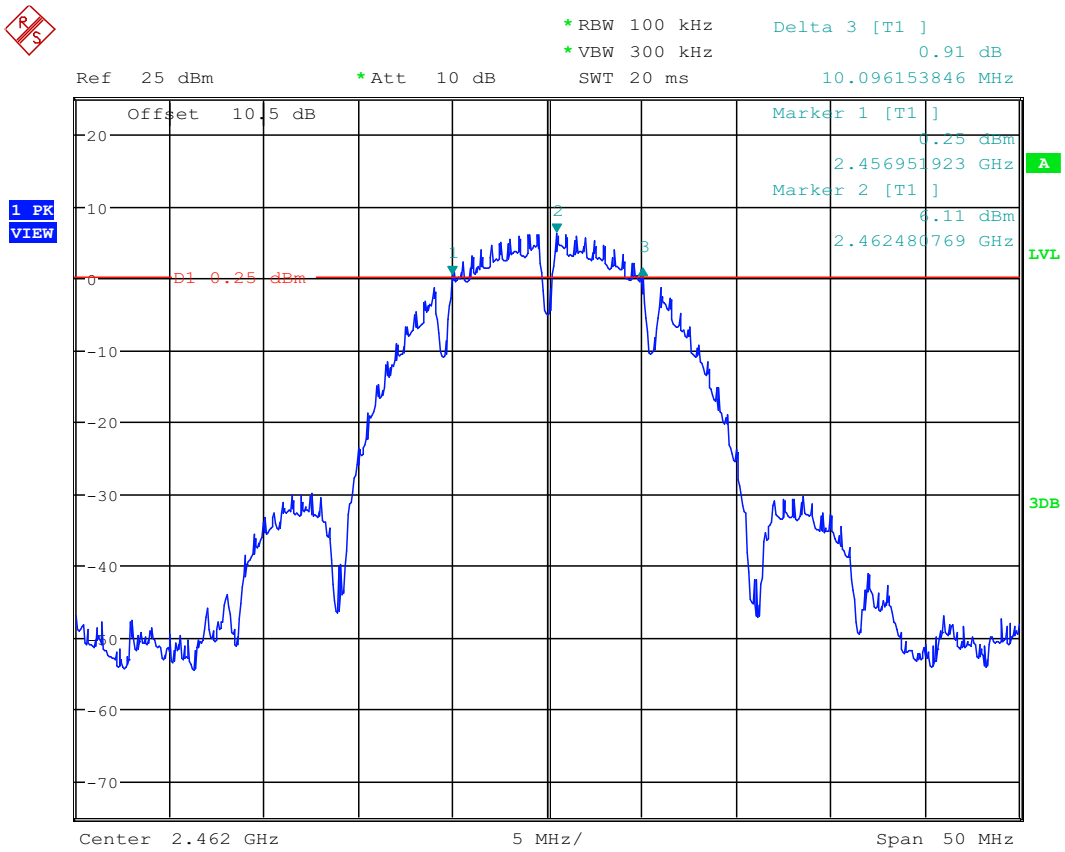
Mode	CH or Frequency	6dB bandwidth Result (MHz)	Mode	CH or Frequency	6dB bandwidth Result (MHz)
11b	CH1	10.02	11g	CH1	16.67
	CH6	10.18		CH6	16.59
	CH11	10.10		CH11	16.59
11n HT 20	CH1	17.87	11n HT 40	CH3	36.54
	CH6	17.87		CH6	36.86
	CH11	17.87		CH9	36.70
Limit: >500KHz			Conclusion: PASS		
Test Date : 2015/6/2			Test Engineer : Leo Liu		

3.6. Original test data

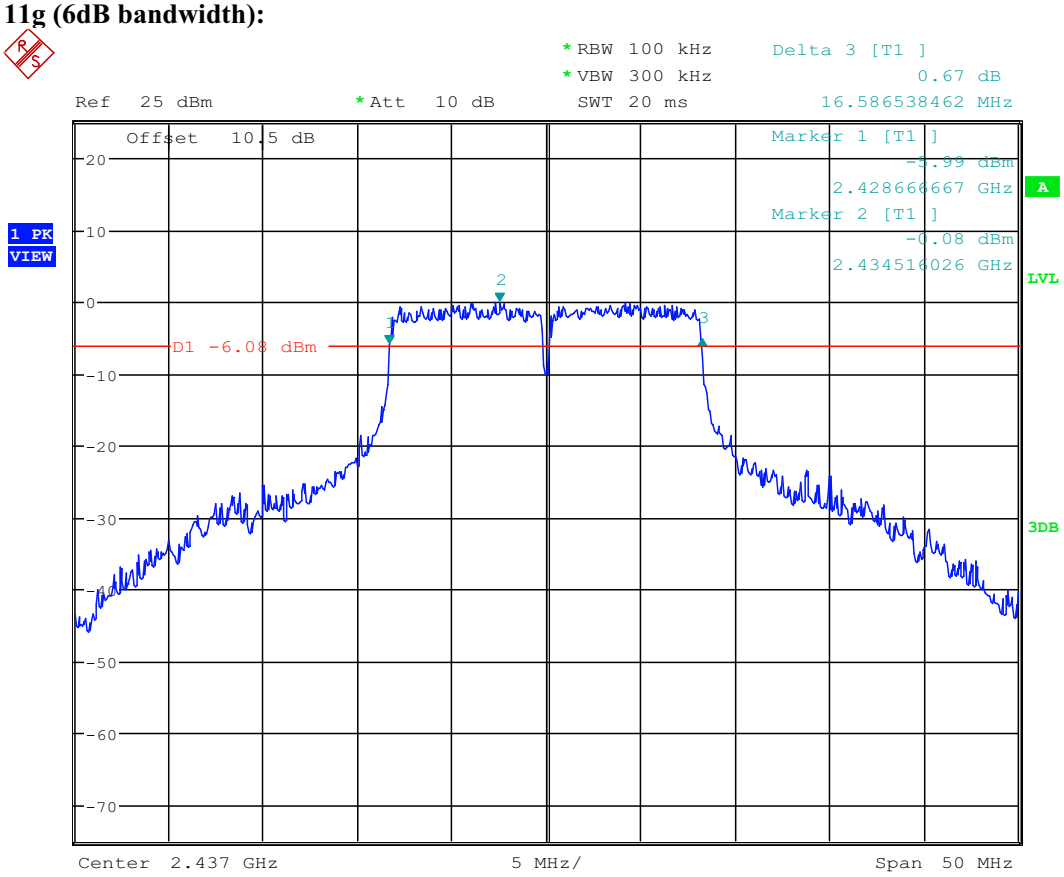
11b (6dB bandwidth):

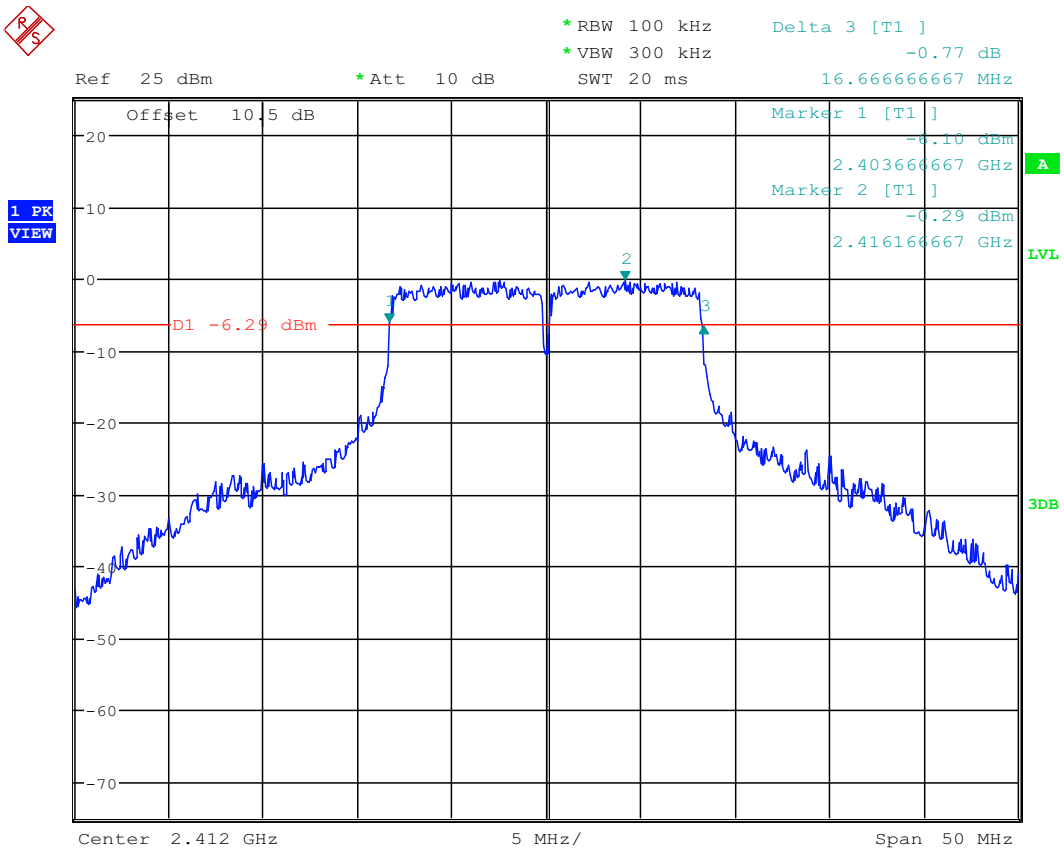


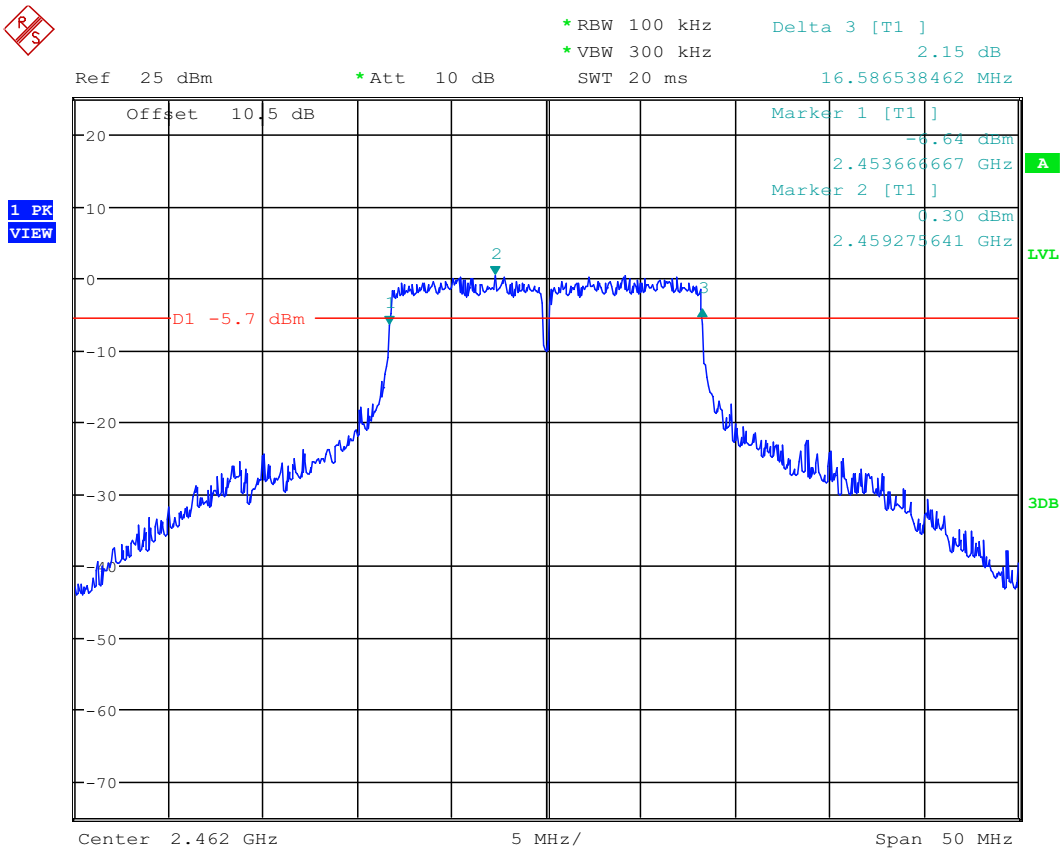

* RBW 100 kHz
* VBW 300 kHz
SWT 20 ms
Delta 3 [T1]
0.09 dB
10.016025641 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
0.52 dBm
2.406951923 GHz
Marker 2 [T1]
6.07 dBm
2.412480769 GHz
1 PK
VIEW
A
LVL
3DB
D1 0.07 dBm
Center 2.412 GHz
5 MHz/
Span 50 MHz


* RBW 100 kHz
* VBW 300 kHz
SWT 20 ms
Delta 3 [T1]
0.91 dB
10.096153846 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
0.25 dBm
2.456951923 GHz
Marker 2 [T1]
6.11 dBm
2.462480769 GHz
1 PK
VIEW
A
LVL
3DB
D1 0.25 dBm
Center 2.462 GHz
5 MHz/
Span 50 MHz

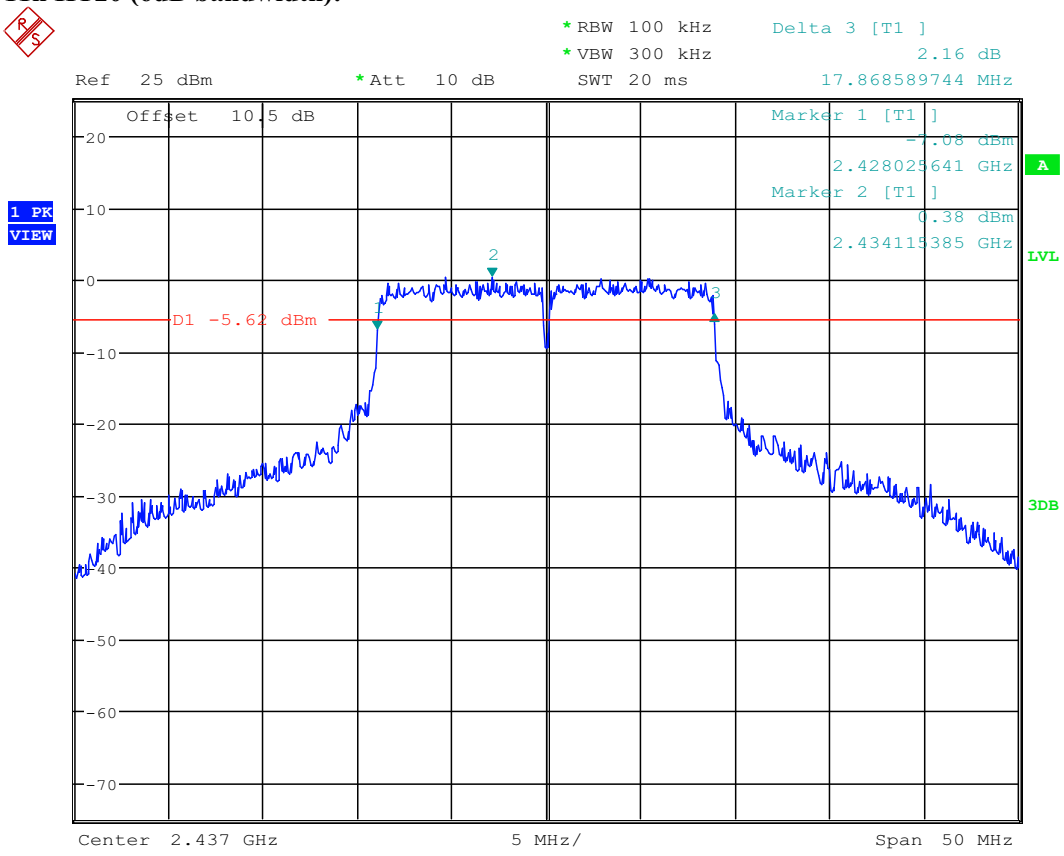
11g (6dB bandwidth):

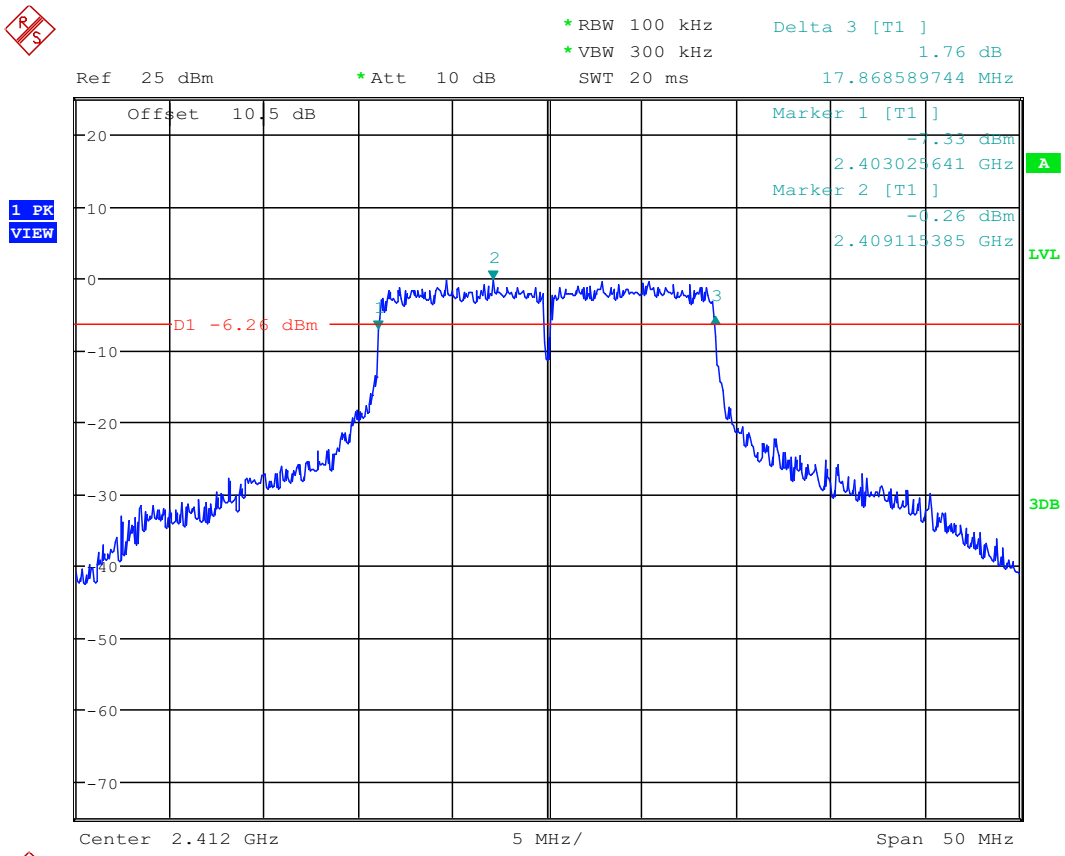


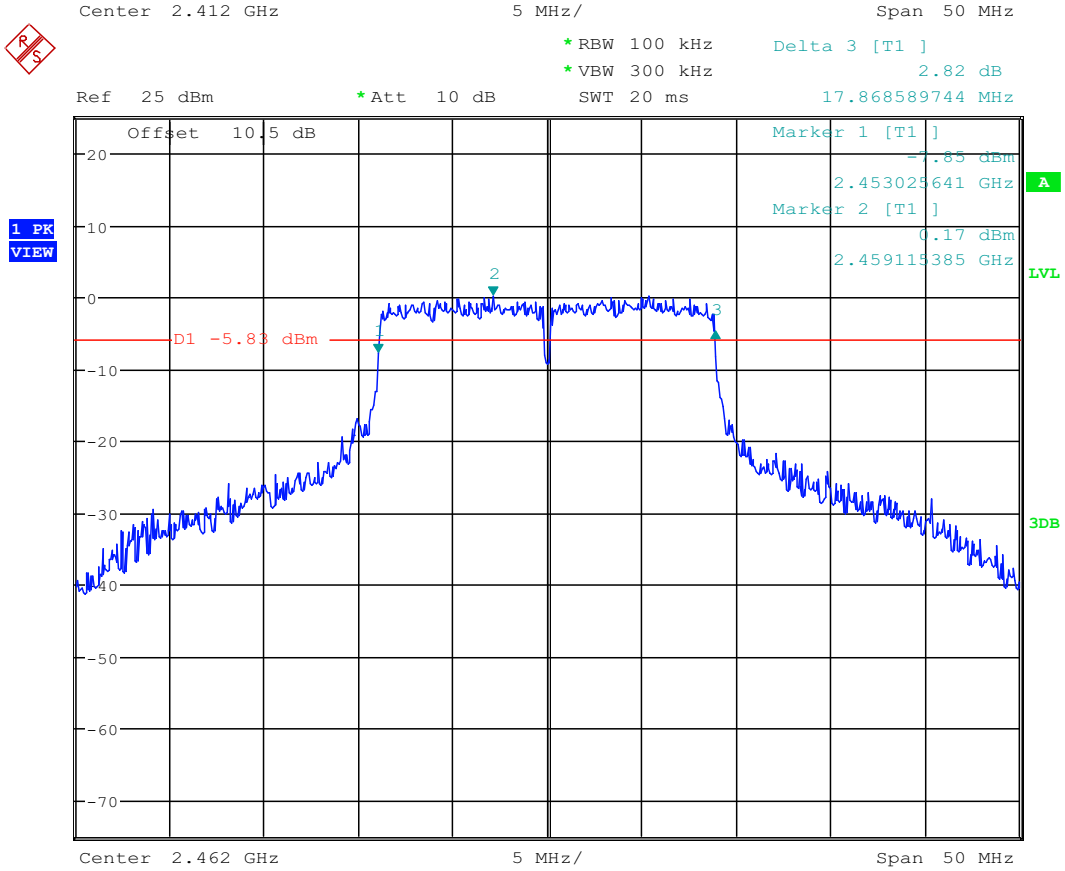




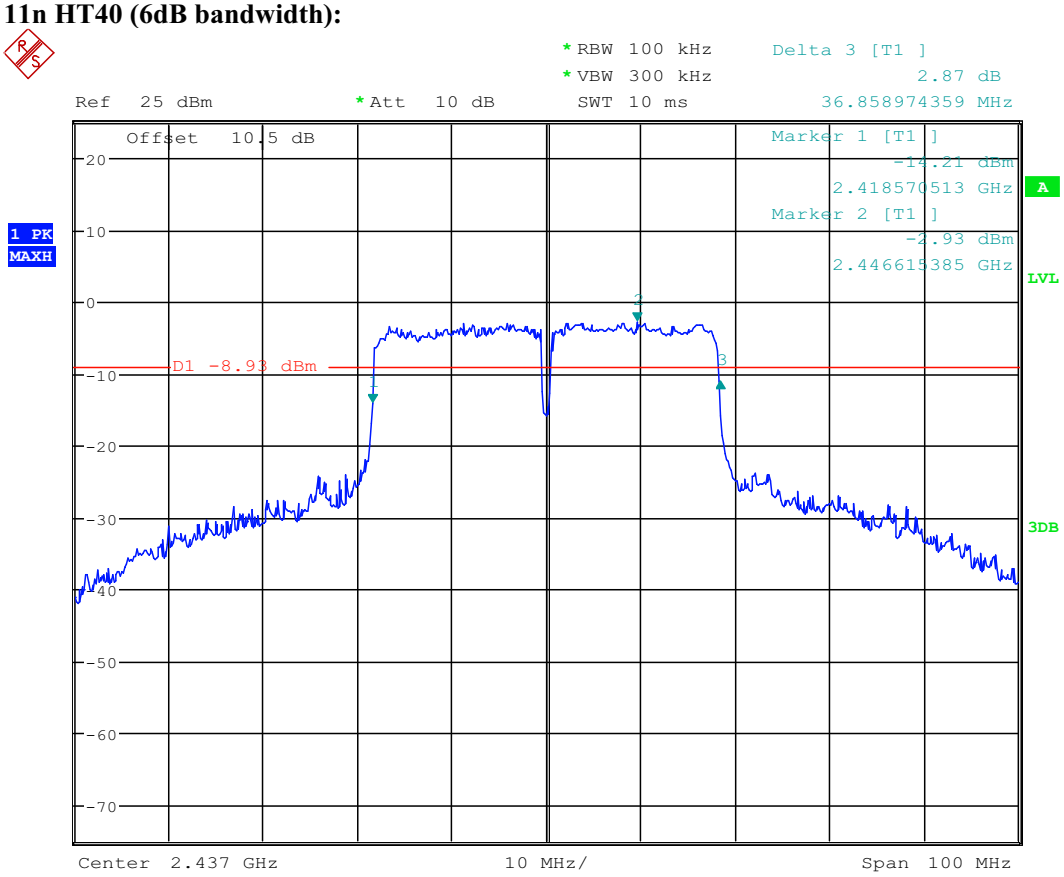
11n HT20 (6dB bandwidth):

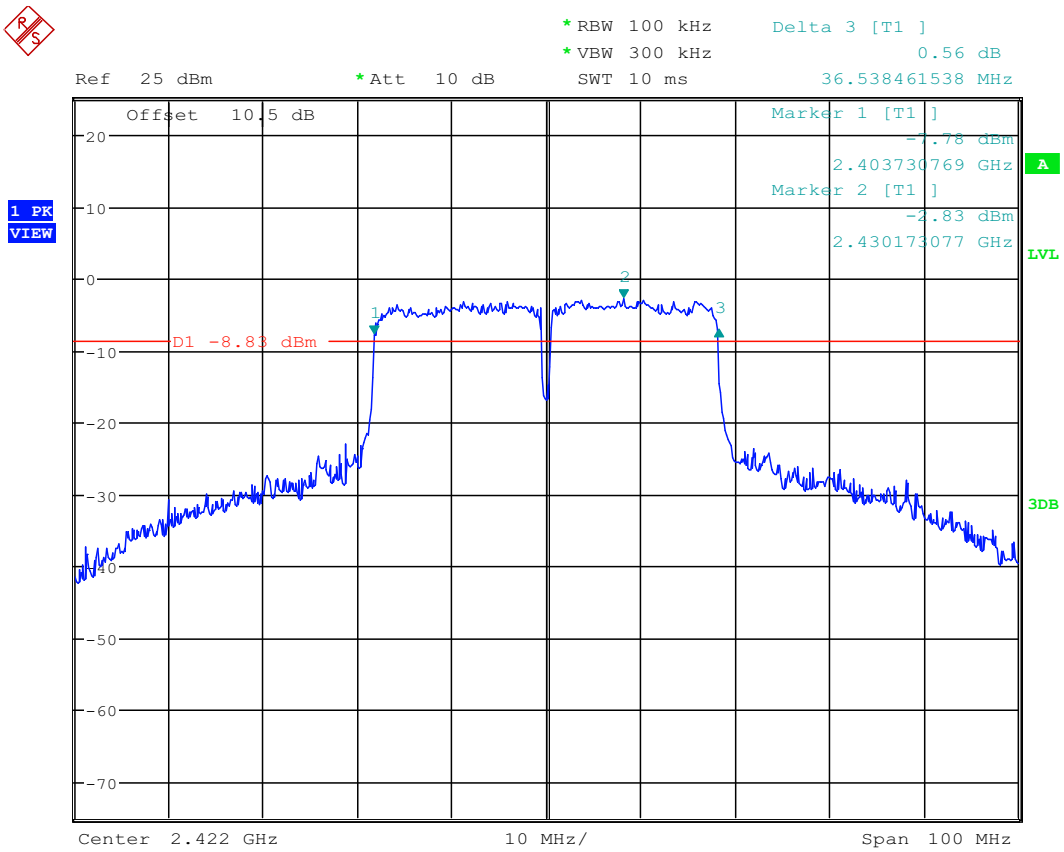


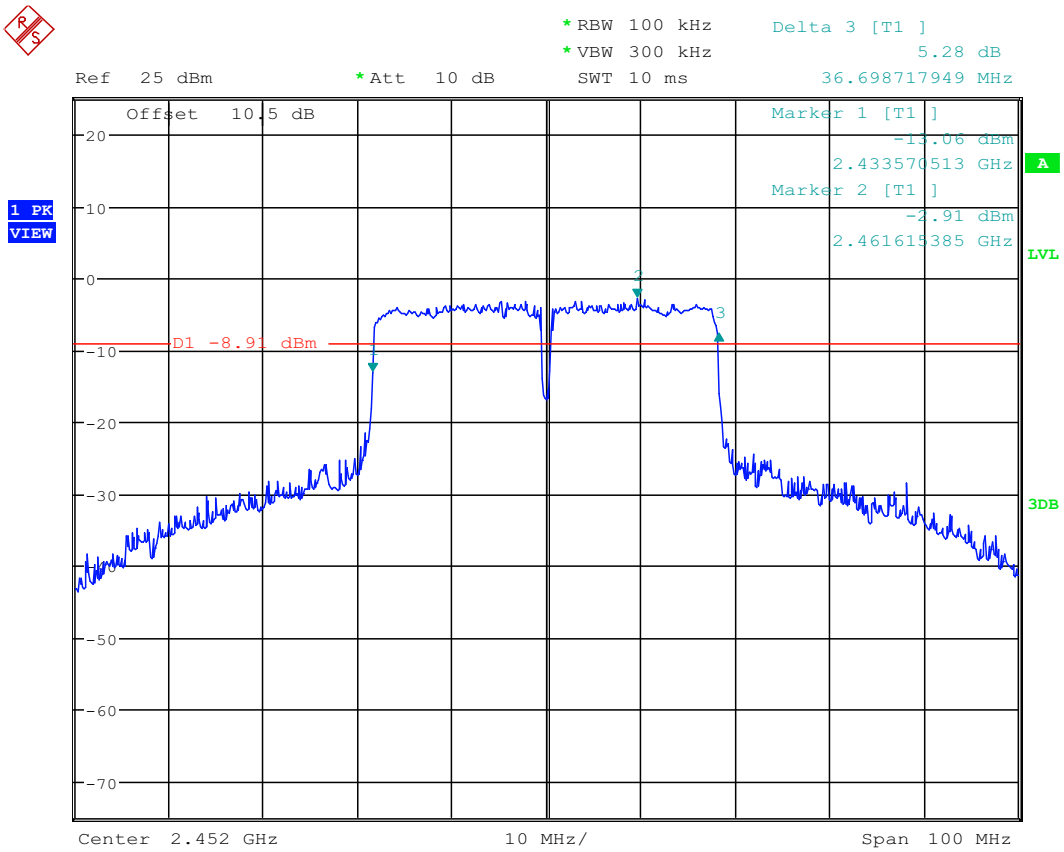

* RBW 100 kHz
* VBW 300 kHz
SWT 20 ms
Delta 3 [T1]
1.76 dB
17.868589744 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-7.33 dBm
2.403025641 GHz
Marker 2 [T1]
-0.26 dBm
2.409115385 GHz
1 PK
VIEW
A
LVL
3DB
D1 -6.26 dBm
Center 2.412 GHz
5 MHz/
Span 50 MHz


* RBW 100 kHz
* VBW 300 kHz
SWT 20 ms
Delta 3 [T1]
2.82 dB
17.868589744 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-7.85 dBm
2.453025641 GHz
Marker 2 [T1]
0.17 dBm
2.459115385 GHz
1 PK
VIEW
A
LVL
3DB
D1 -5.83 dBm
Center 2.462 GHz
5 MHz/
Span 50 MHz

11n HT40 (6dB bandwidth):





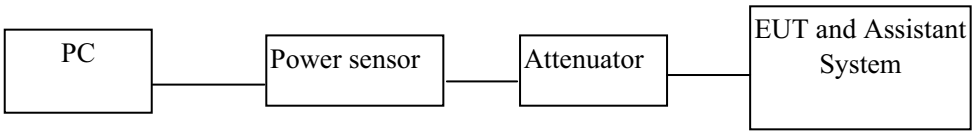


4. Maximum Peak Output Power

4.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Power sensor	Agilent Technologies Inc	U2021XA	1457313	2014/10/25	1 Year
2	Attenuator	Mini-Circuits	BW-S10W2	101109	2014/10/25	1 Year
3	RF Cable	Micable	C10-01-01-1	100309	2014/10/25	1 Year

4.2. Block diagram of test setup



4.3. Limits

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.

4.4. Test Procedure

(1) Configure EUT and assistant system according clause 2.3 and 4.2.

(2) Connect each EUT's antenna output to power sensor by RF cable and attenuator

(3) Configure EUT work in test mode as stated in clause 2.3.

(4) Measure out the Average and PK output power of each antenna port

(5) Add each antenna port's results to get the total output power of EUT.

4.5. Test Result

Mode: 11b		
CH	Type	Result (dBm)
CH1	PK	18.58
	Average	15.41
CH6	PK	18.96
	Average	16.01
CH11	PK	19.55
	Average	16.40
Mode: 11g		
CH	Type	Result (dBm)
CH1	PK	21.65
	Average	15.01
CH6	PK	22.04
	Average	15.73
CH11	PK	22.54
	Average	15.96
Mode 11n HT 20		
CH	Type	Result (dBm)
CH1	PK	21.62
	Average	15.24
CH6	PK	22.31
	Average	15.48
CH11	PK	22.66
	Average	16.04
Mode 11n HT 40		
CH	Type	Result (dBm)
CH 3	PK	22.37
	Average	15.62
CH 6	PK	22.37

	Average	15.89
CH 9	PK	22.82
	Average	16.00
Limit: 30dBm		Conclusion: PASS
Test Date :2015/6/2		Test Engineer : Leo Liu

5. Power Spectral Density

5.1. Test equipment

Same with 3.1

5.2. Block diagram of test setup

Same with 3.2

5.3. Limits

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.

5.4. Test Procedure

(1) Configure EUT and assistant system according clause 2.3 and 5.2

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

(3) Configure EUT work in test mode as stated in clause 2.3.

(4) Set the spectrum analyzer as follows:

Center frequency	DTS Channel center frequency
RBW:	3 kHz ≤ RBW ≤ 100 kHz
VBW:	≥ 3RBW
Span	1.5times the DTS bandwidth
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 level within the RBW.

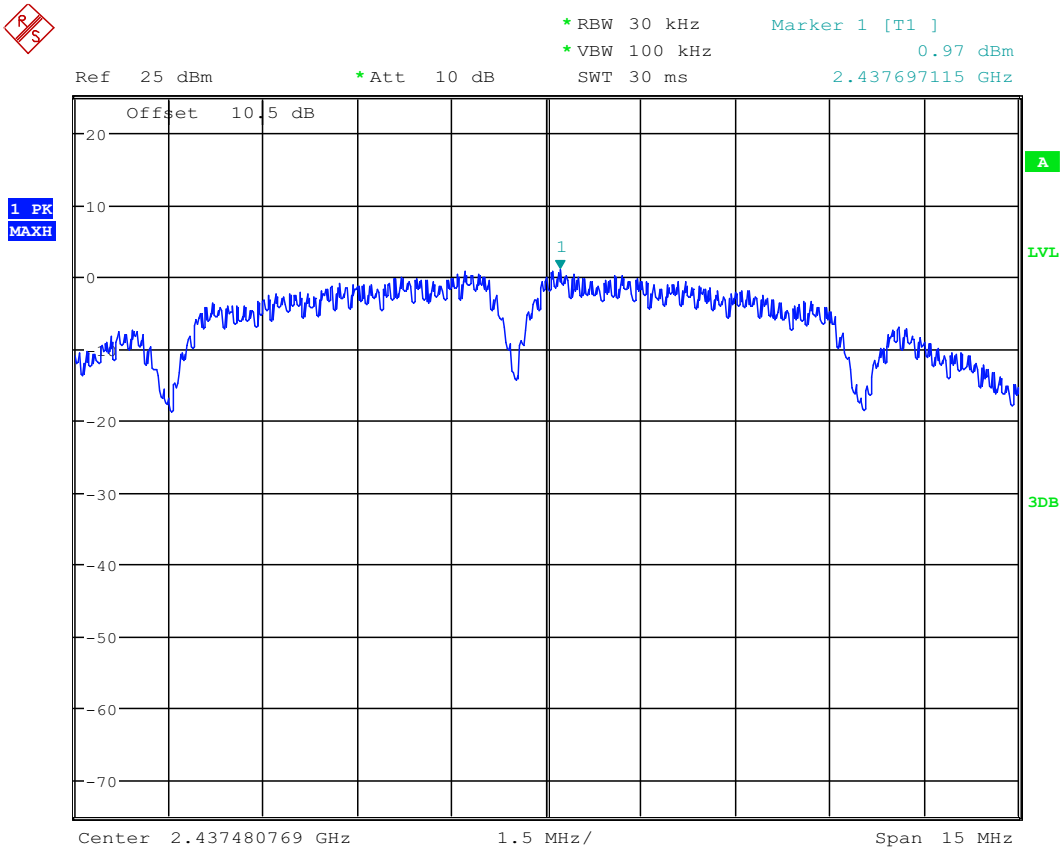
(6) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

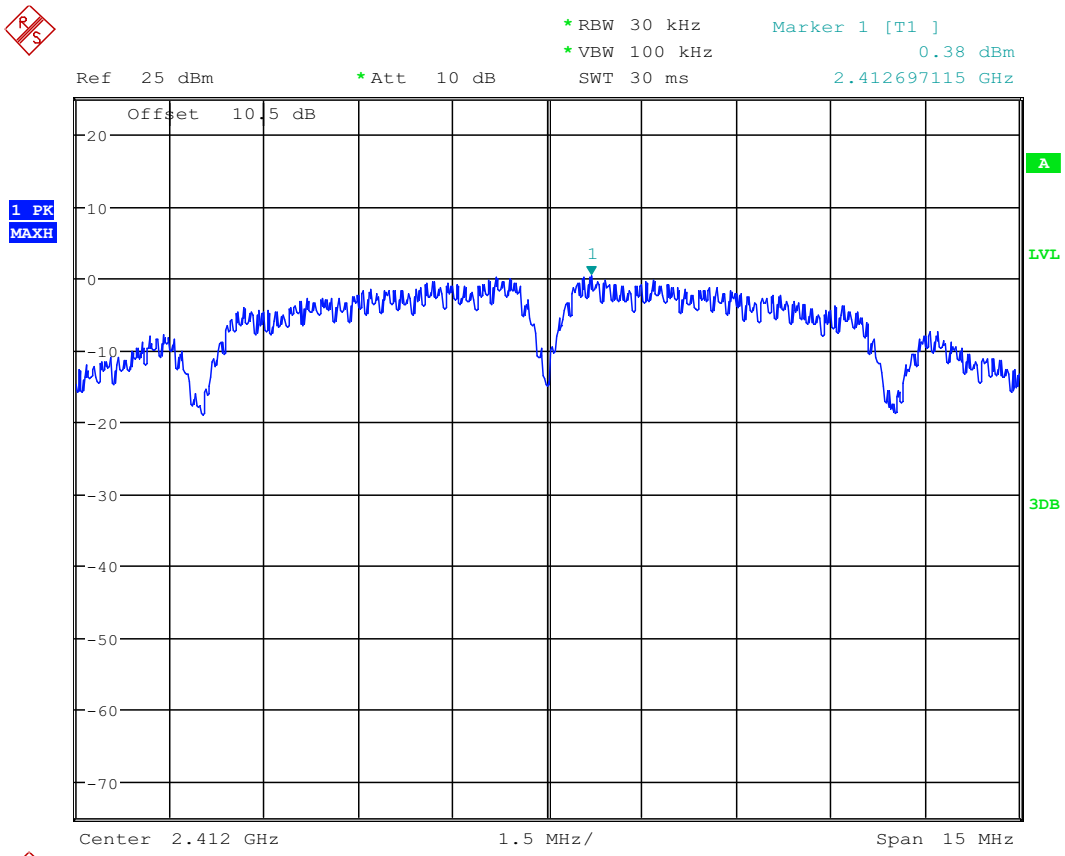
5.5. Test Result

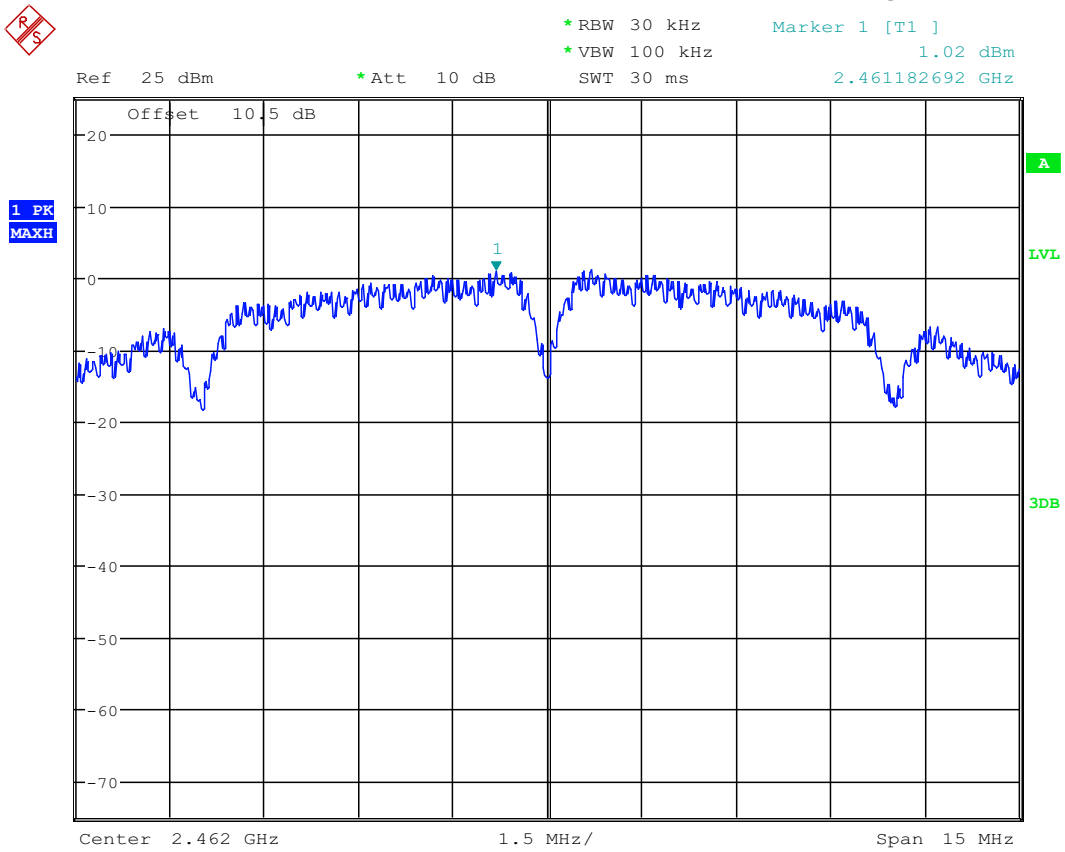
Mode: 11b		**Mode: 11g**	
CH	Result (dBm/30KHz)	CH	Result (dBm/30KHz)
CH1	0.38	CH1	-3.41
CH6	0.97	CH6	-3.04
CH11	1.02	CH11	-2.71
Mode: 11n HT20		**Mode: 11n HT40**	
CH	Result (dBm/30KHz)	CH	Result (dBm/30KHz)
CH1	-3.36	CH3	-5.74
CH6	-2.83	CH6	-5.97
CH11	-2.46	CH9	-5.85
Limit: 8dBm/3KHz			Conclusion: PASS
Test Date : 2015/6/2			Test Engineer : Leo Liu

5.6. Original test data

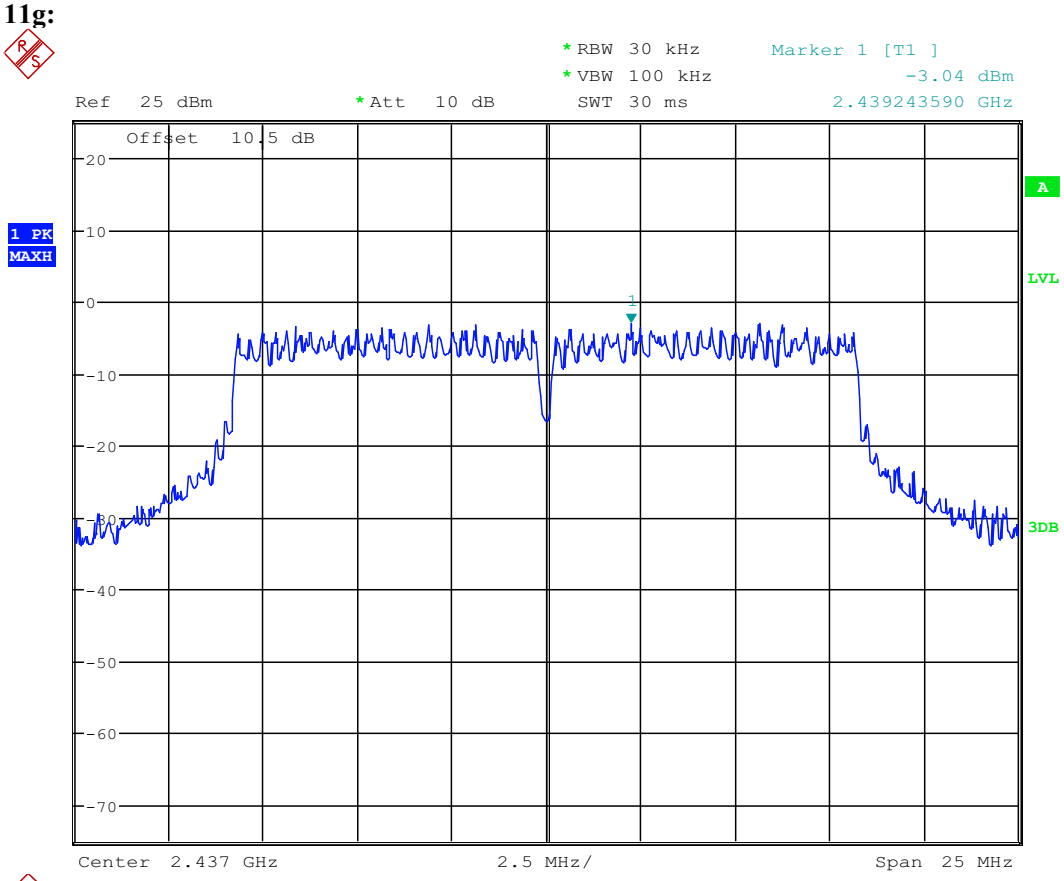
11b:

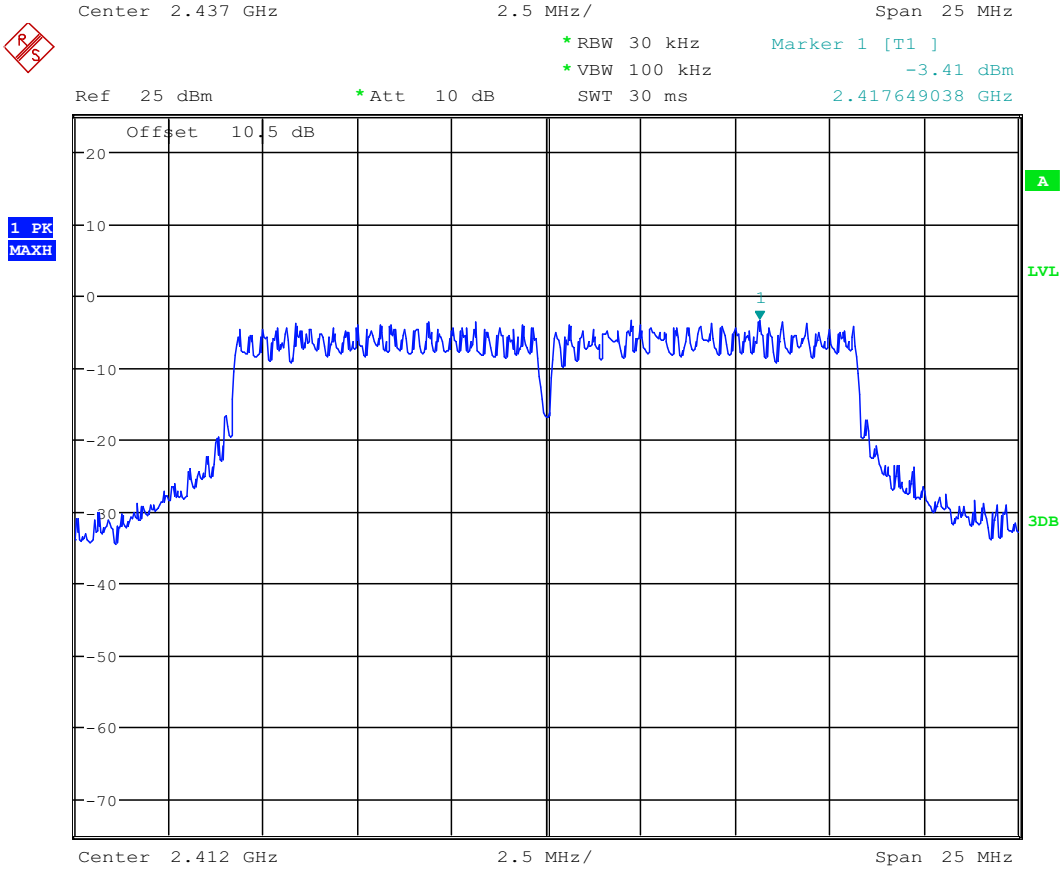


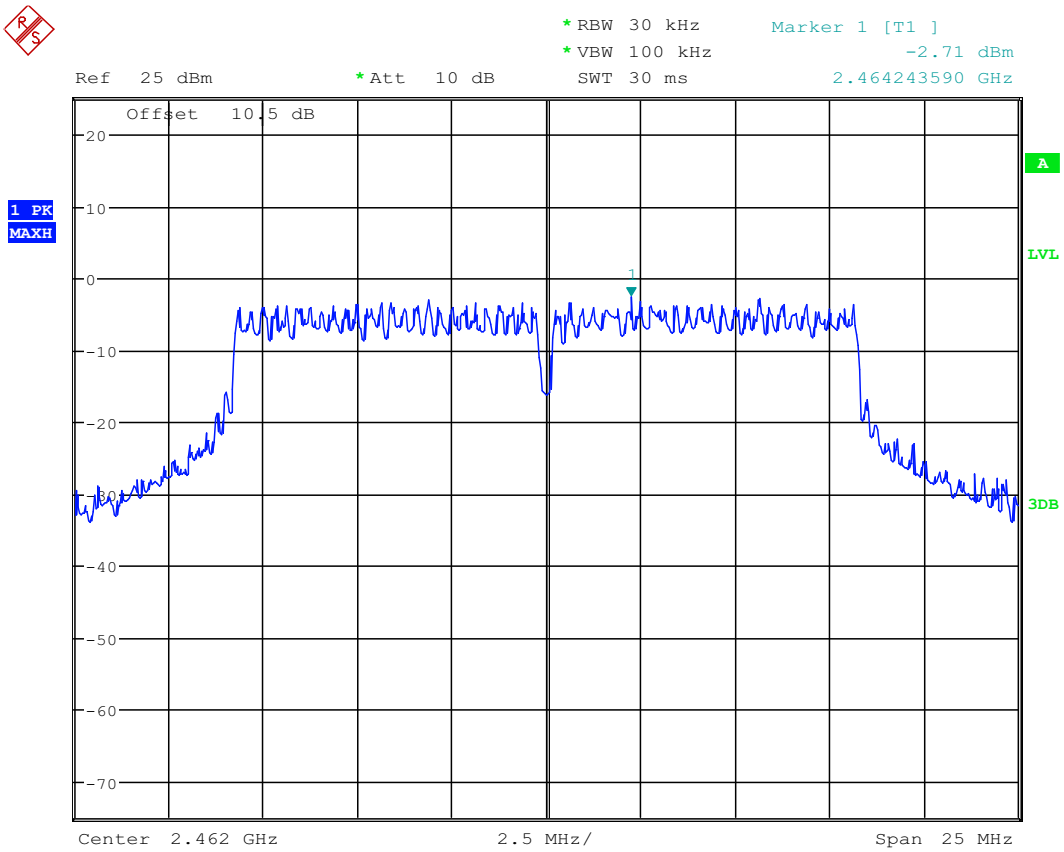

* RBW 30 kHz
* VBW 100 kHz
SWT 30 ms
Marker 1 [T1]
0.38 dBm
2.412697115 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.412 GHz
1.5 MHz/
Span 15 MHz


* RBW 30 kHz
* VBW 100 kHz
SWT 30 ms
Marker 1 [T1]
1.02 dBm
2.461182692 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.462 GHz
1.5 MHz/
Span 15 MHz

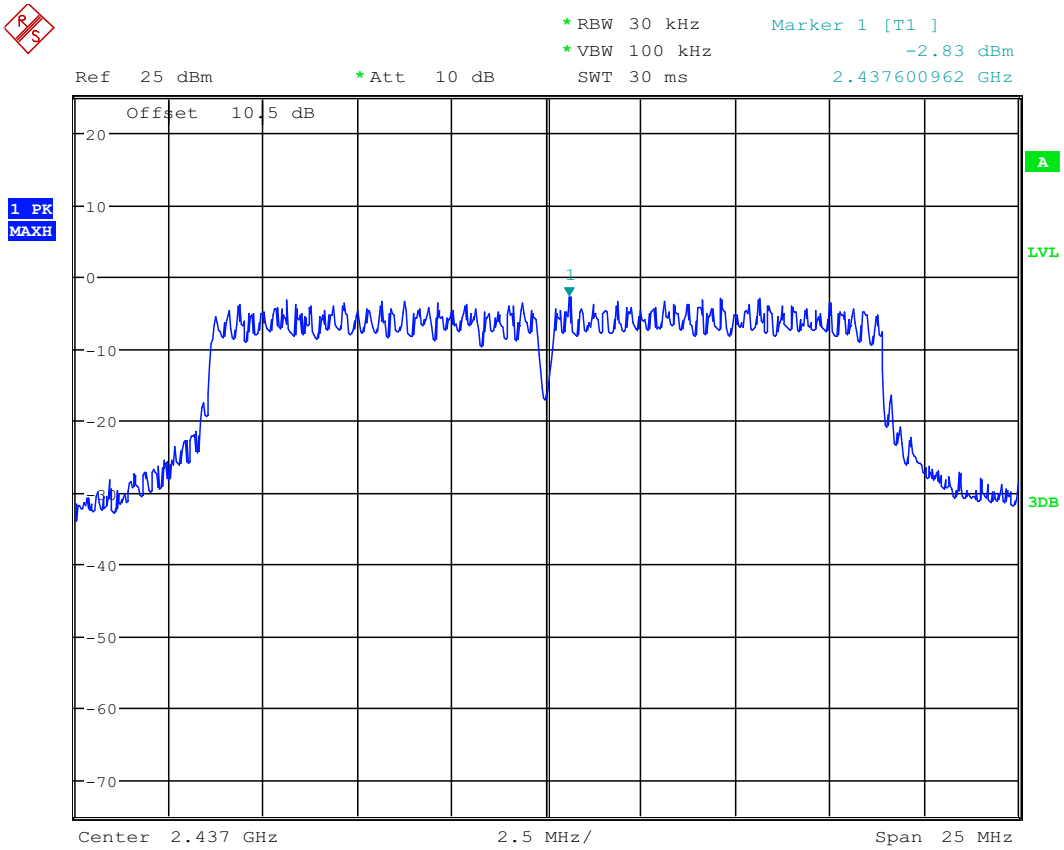
11g:

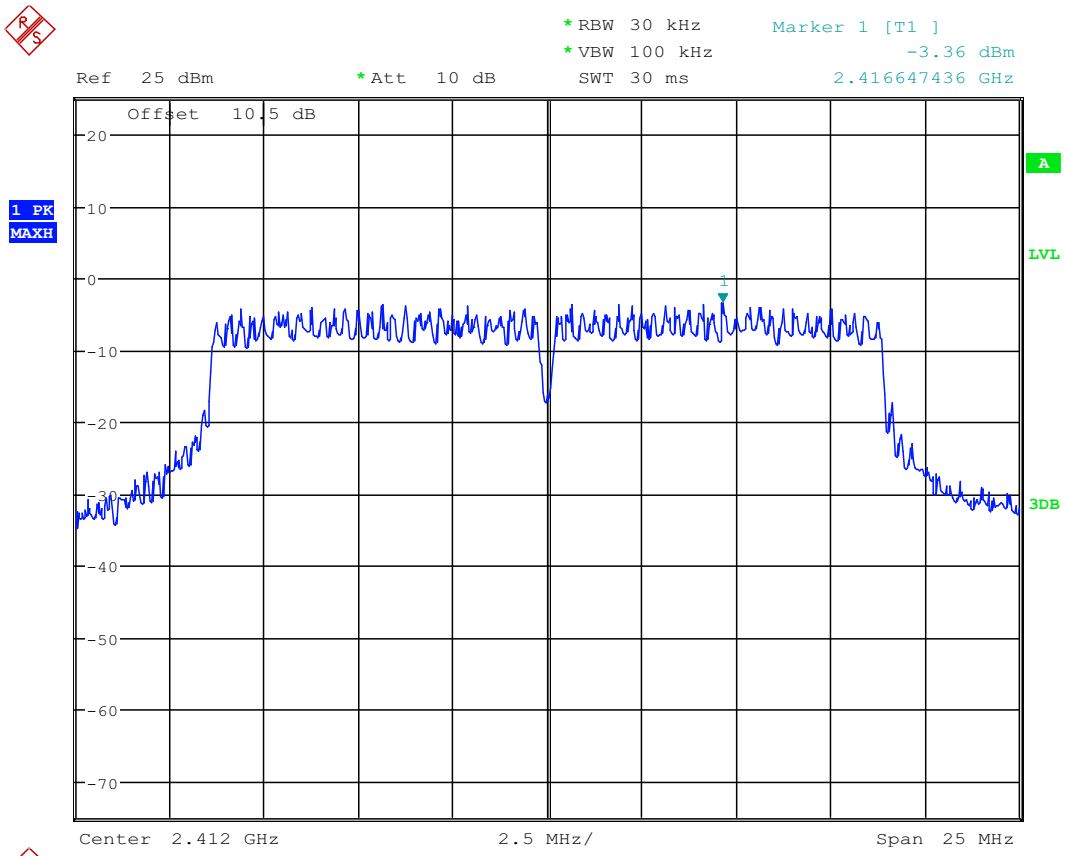

RBW 30 kHz
VBW 100 kHz
SWT 30 ms
Marker 1 [T1]
-3.04 dBm
2.439243590 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.437 GHz
2.5 MHz/
Span 25 MHz

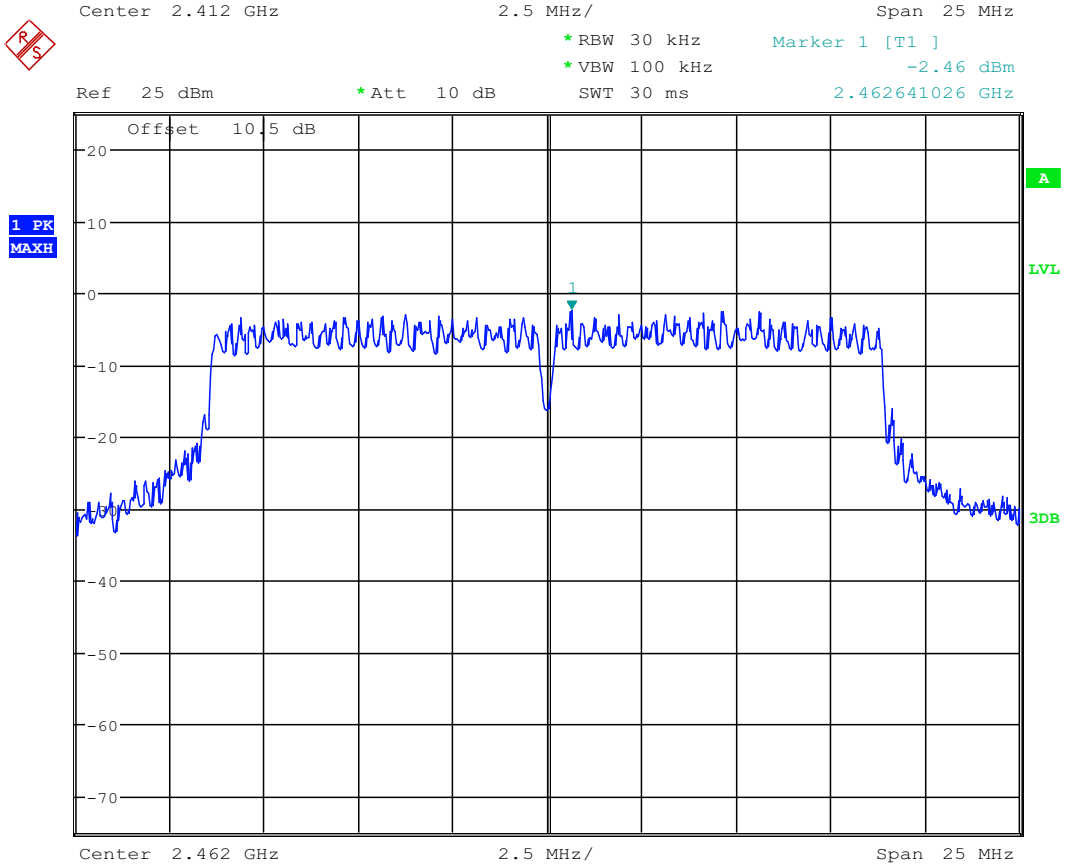

RBW 30 kHz
VBW 100 kHz
SWT 30 ms
Marker 1 [T1]
-3.41 dBm
2.417649038 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.412 GHz
2.5 MHz/
Span 25 MHz


* RBW 30 kHz
* VBW 100 kHz
SWT 30 ms
Marker 1 [T1]
-2.71 dBm
2.464243590 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.462 GHz
2.5 MHz/
Span 25 MHz

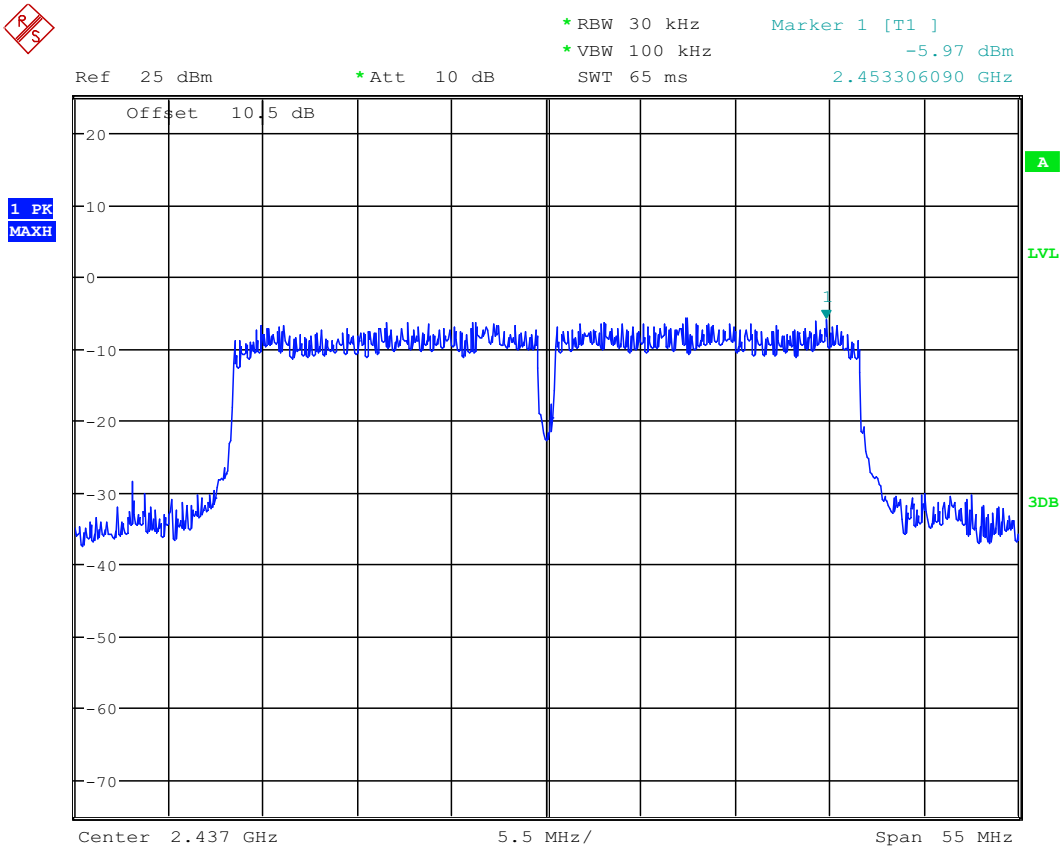
11n HT20

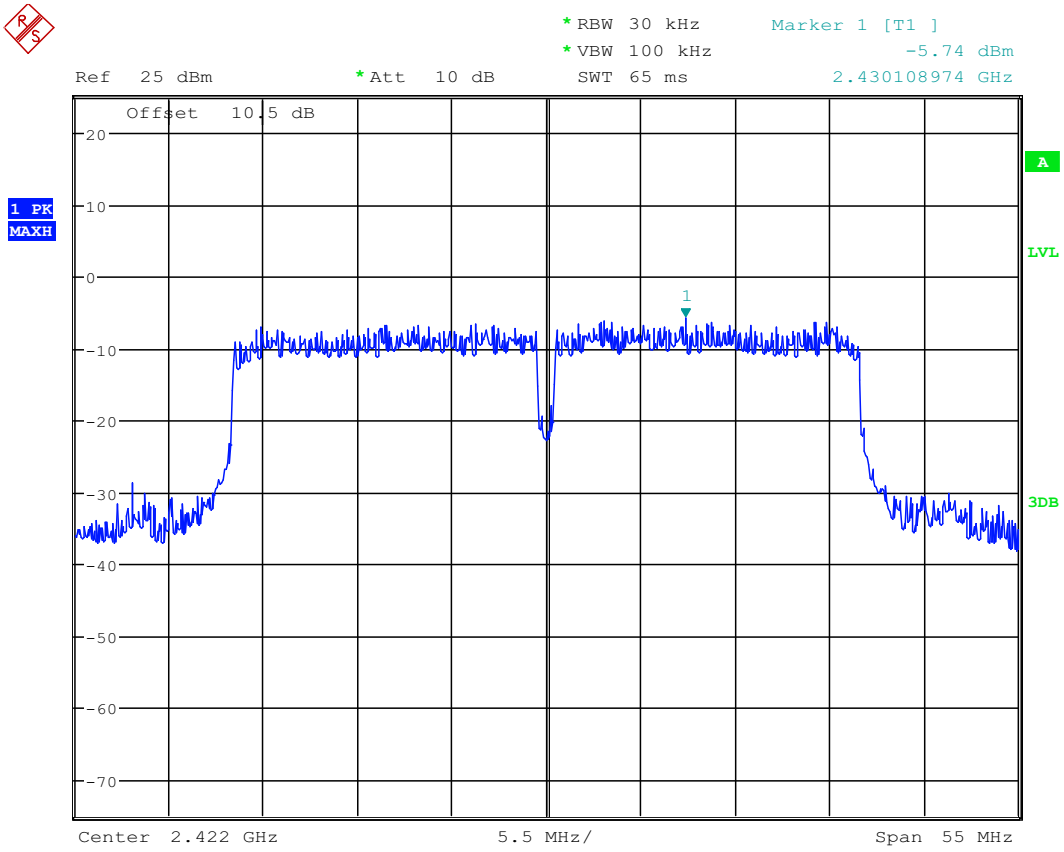

* RBW 30 kHz
* VBW 100 kHz
SWT 30 ms
Marker 1 [T1]
-2.83 dBm
2.437600962 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.437 GHz
2.5 MHz/
Span 25 MHz

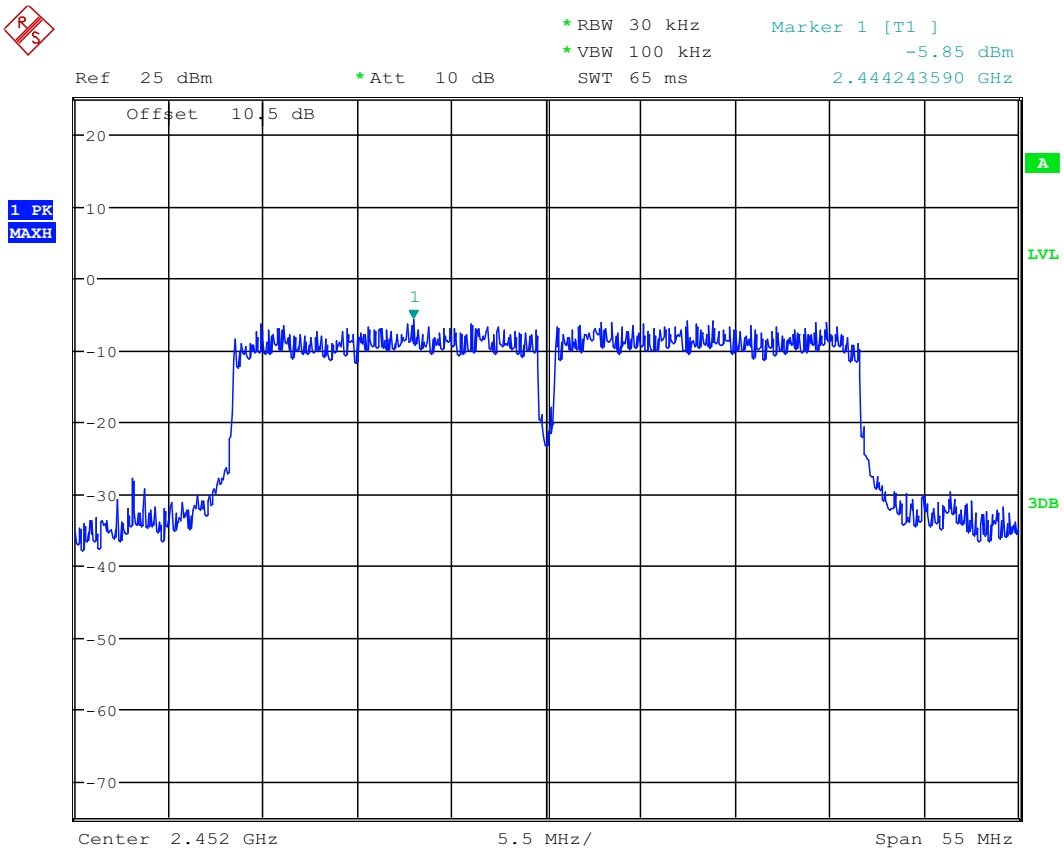

* RBW 30 kHz
* VBW 100 kHz
SWT 30 ms
Marker 1 [T1]
-3.36 dBm
2.416647436 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.412 GHz
2.5 MHz/
Span 25 MHz


* RBW 30 kHz
* VBW 100 kHz
SWT 30 ms
Marker 1 [T1]
-2.46 dBm
2.462641026 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.462 GHz
2.5 MHz/
Span 25 MHz

11n HT40


* RBW 30 kHz
* VBW 100 kHz
SWT 65 ms
Marker 1 [T1]
-5.97 dBm
2.453306090 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.437 GHz
5.5 MHz/
Span 55 MHz


* RBW 30 kHz
* VBW 100 kHz
SWT 65 ms
Marker 1 [T1]
-5.74 dBm
2.430108974 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.422 GHz
5.5 MHz/
Span 55 MHz



6. Emissions in non-restricted frequency bands

6.1. Test equipment

Same with 3.1

6.2. Block diagram of test setup

Same with 3.2

6.3. Limits

In any 100kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

6.4. Test Procedure

(1) Configure EUT and assistant system according clause 2.3 and 6.2

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

(3) Configure EUT work in test mode as stated in clause 2.3.

(4) 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

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

(6) Set the spectrum analyzer as follows:

RBW: 100KHz
VBW: 300KHz
Span Encompass frequency range to be measured
Number of measurement points ⩾ span/RBW
Detector Mode: Peak
Sweep time: auto
Trace mode Max hold

(7) 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

(8) All the emissions except fundamental emission from 9KHz to 25GHz were measured, and no any obvious emission were detected from 9KHz to 30MHz, so the final test was performed with frequency range from 30MHz to 18GHz and recored in bleow.

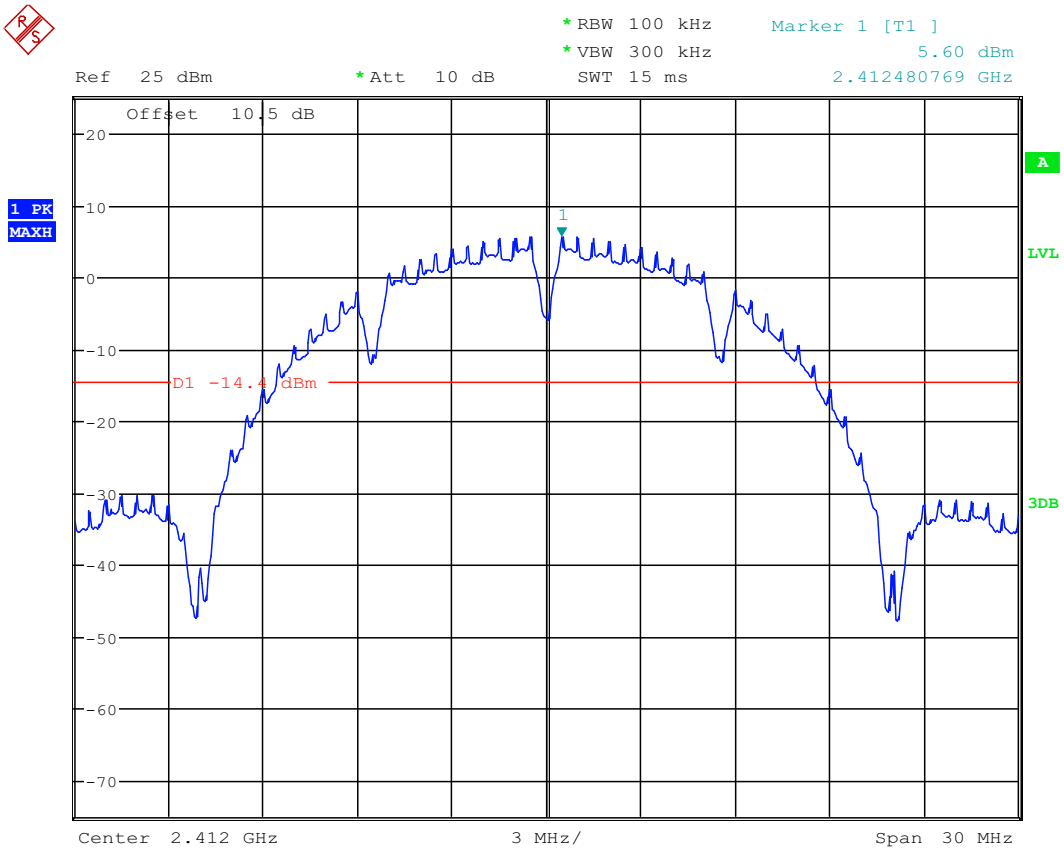
6.5. Test Result

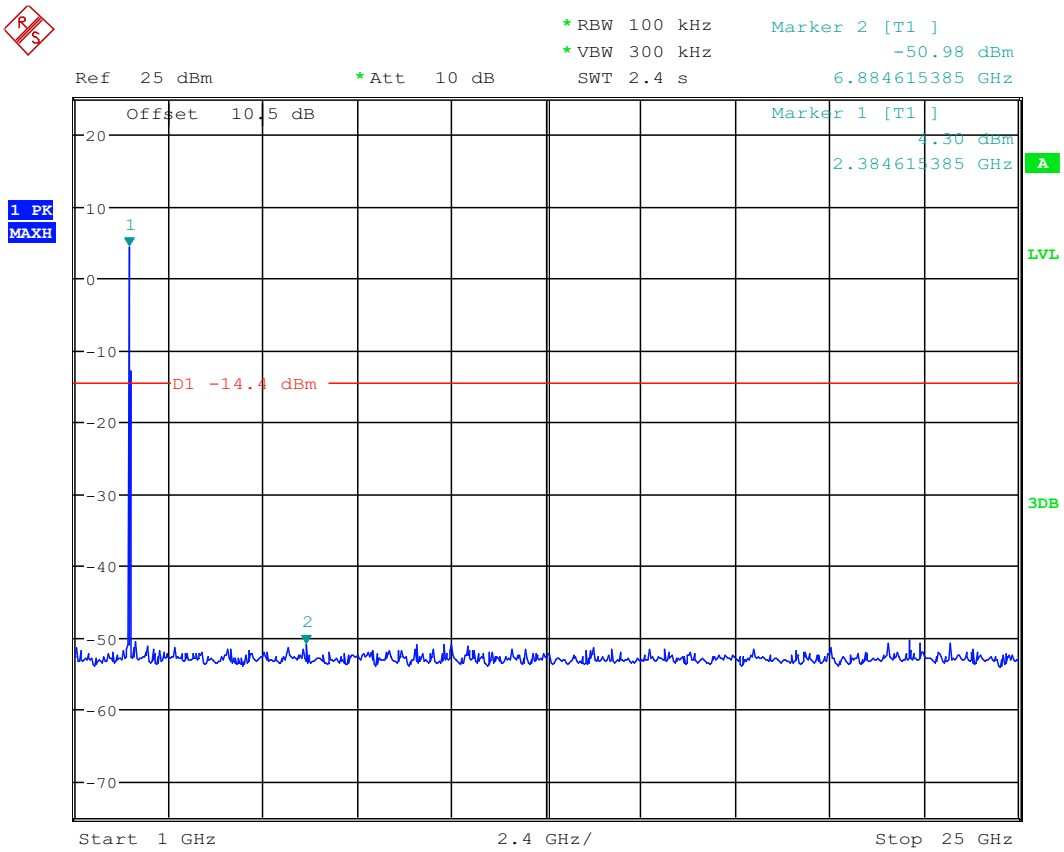
EUT Set Mode	CH or Frequency	Measured Range	Result (dBm)	EUT Set Mode	CH or Frequency	Measured Range	Result (dBm)
11b	CH1	30MHz-1GHz	PASS	11g	CH1	30MHz-1GHz	PASS
		1GHz-25GHz	PASS			1GHz-25GHz	PASS
		2.3GHz-2.43GHz	PASS			2.3GHz-2.43GHz	PASS
	CH6	30MHz-1GHz	PASS		CH6	30MHz-1GHz	PASS
		1GHz-25GHz	PASS			1GHz-25GHz	PASS
	CH11	30MHz-1GHz	PASS		CH11	30MHz-1GHz	PASS
		1GHz-25GHz	PASS			1GHz-25GHz	PASS
		2.45GHz-2.6GHz	PASS			2.45GHz-2.6GHz	PASS
11n HT20	CH1	30MHz-1GHz	PASS	11n HT40	CH3	30MHz-1GHz	PASS
		1GHz-25GHz	PASS			1GHz-25GHz	PASS
		2.3GHz-2.43GHz	PASS			2.3GHz-2.43GHz	PASS
	CH6	30MHz-1GHz	PASS		CH6	30MHz-1GHz	PASS
		1GHz-25GHz	PASS			1GHz-25GHz	PASS
	CH11	30MHz-1GHz	PASS		CH9	30MHz-1GHz	PASS
		1GHz-25GHz	PASS			1GHz-25GHz	PASS
		2.45GHz-2.6GHz	PASS			2.45GHz-2.6GHz	PASS

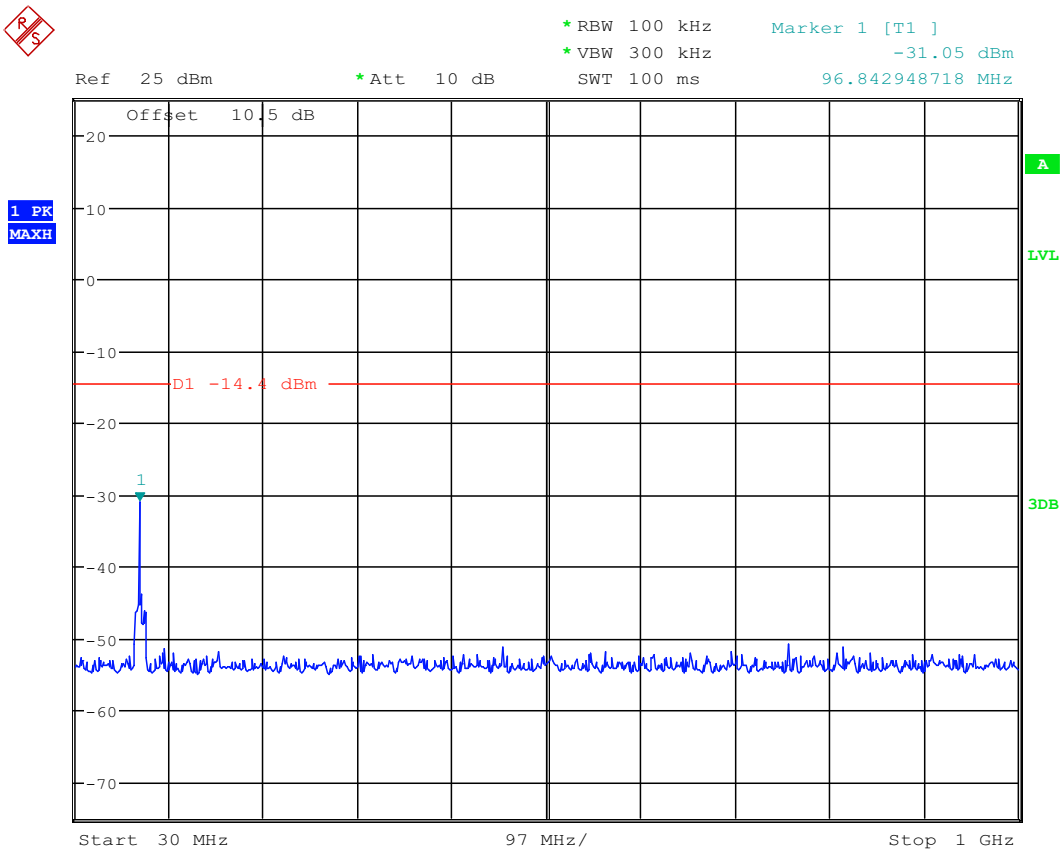
EUT Set Mode	CH or Frequency	Measured Range	Result (dBm)	EUT Set Mode	CH or Frequency	Measured Range	Result (dBm)
Test Date : 2015/6/2				Test Engineer : Leo			

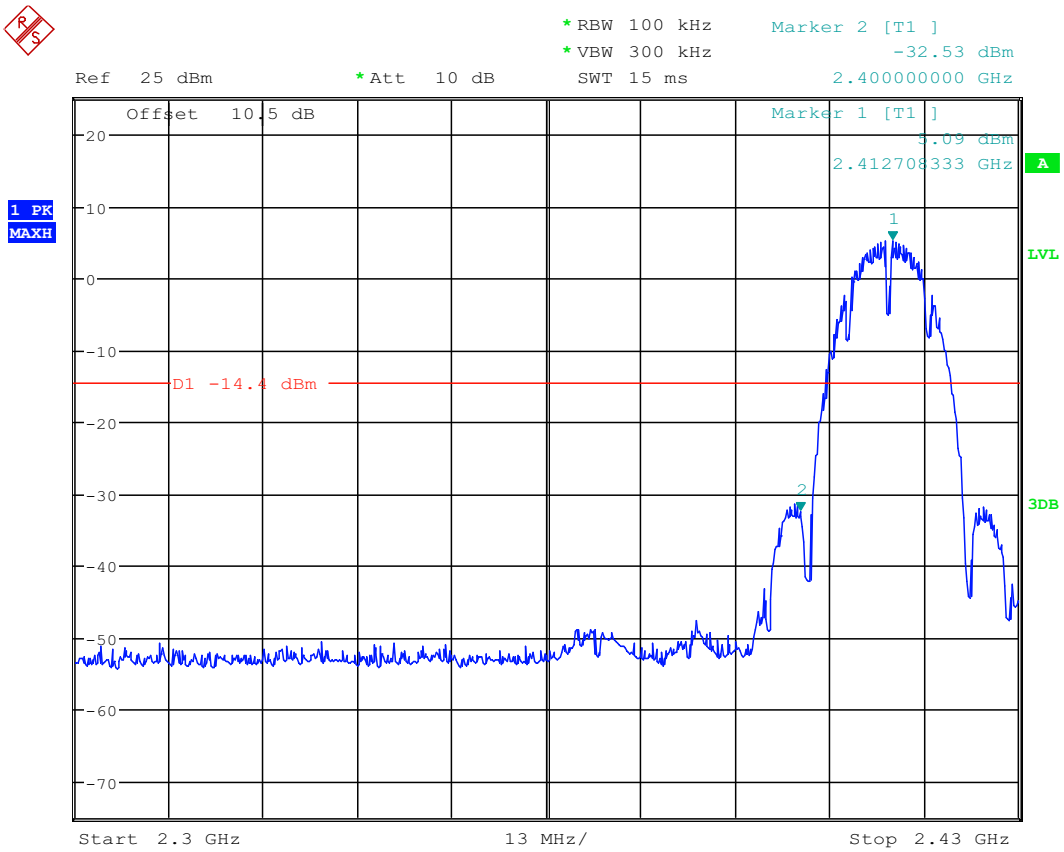
6.6. Original test data

11b CH1:

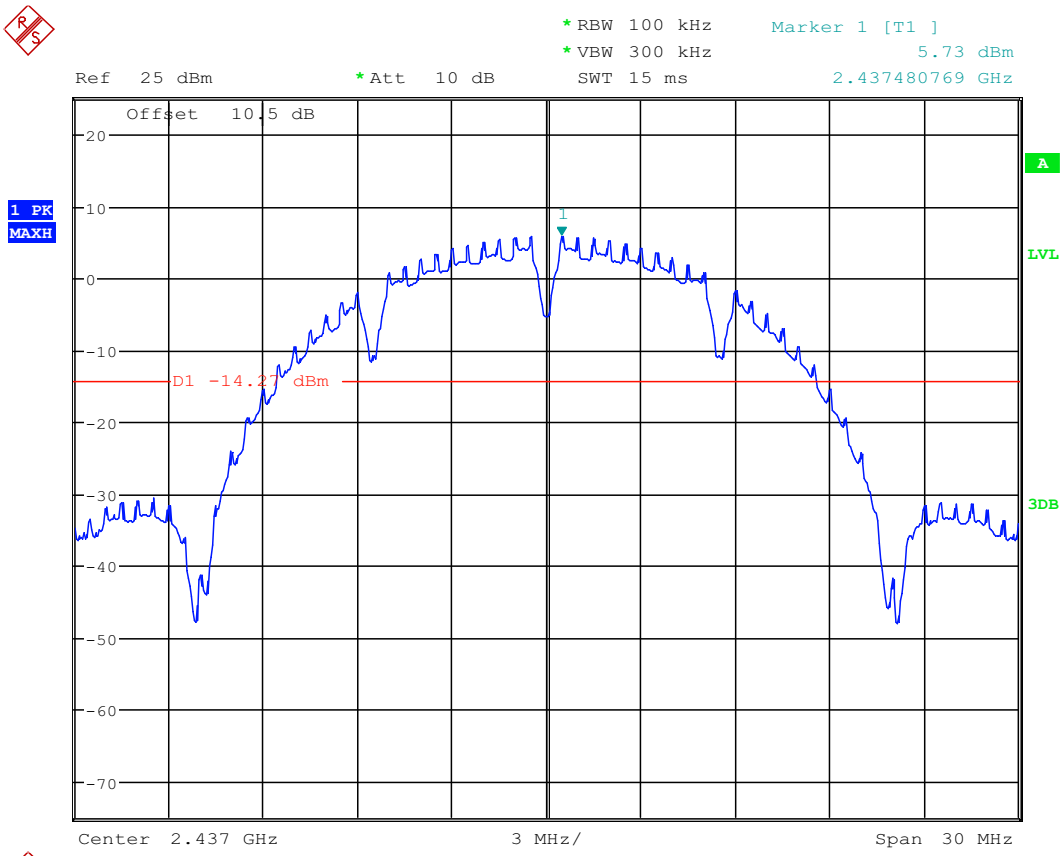


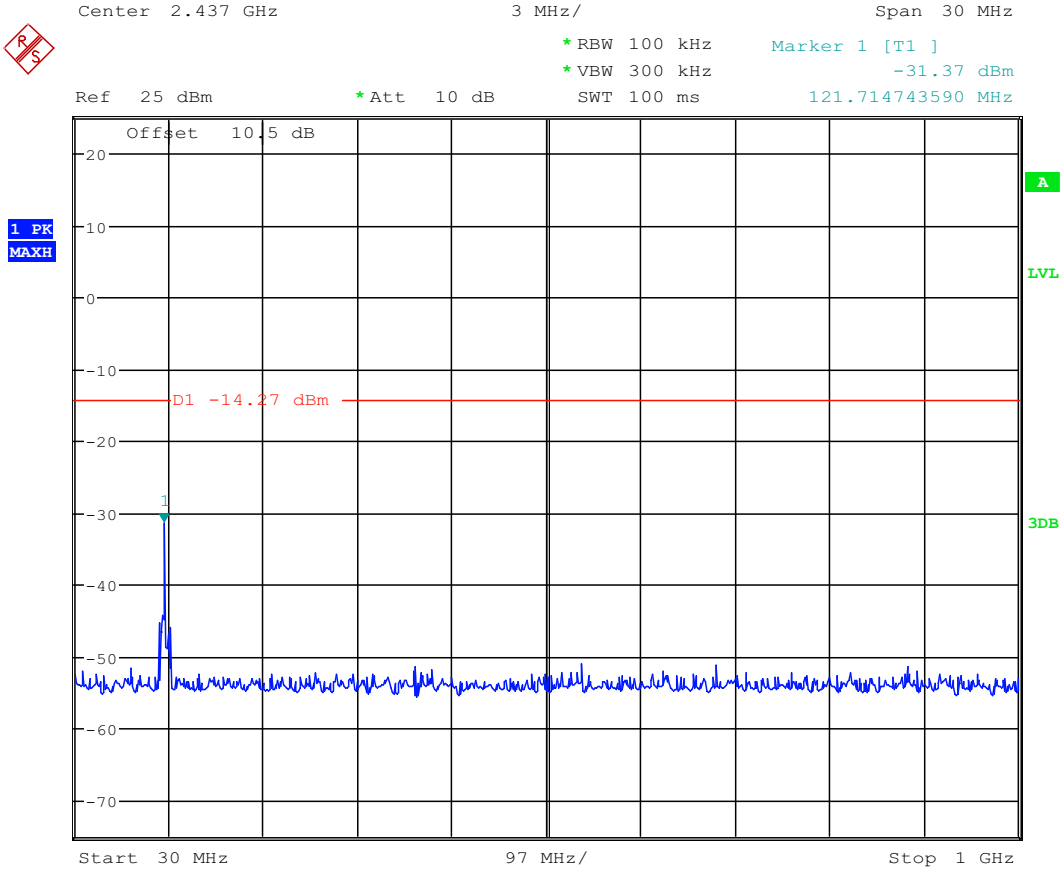

* RBW 100 kHz
* VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-50.98 dBm
6.884615385 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
4.30 dBm
2.384615385 GHz
1 PK
MAXH
A
LVL
3DB
D1 -14.4 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

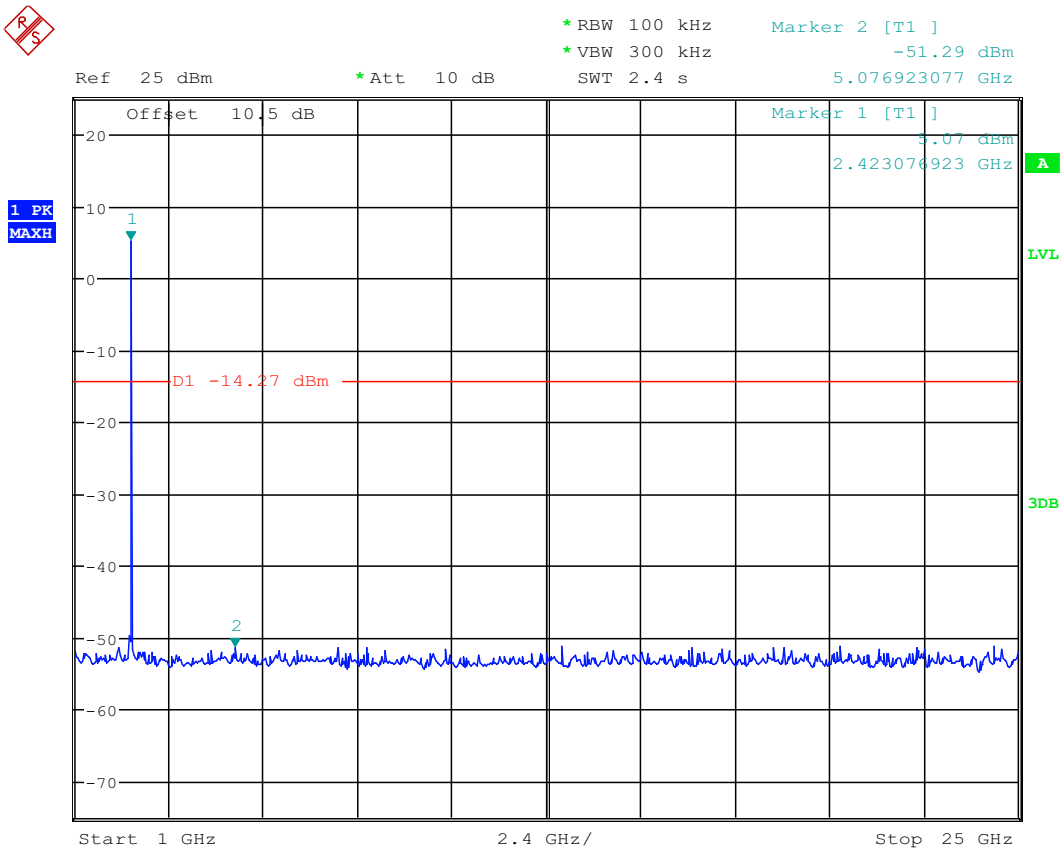

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-31.05 dBm
96.842948718 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -14.4 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz


* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 2 [T1]
-32.53 dBm
2.400000000 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
5.09 dBm
2.412708333 GHz
1 PK
MAXH
A
LVL
3DB
D1 -14.4 dBm
20
10
0
-10
-20
-30
-40
-50
-60
-70
Start 2.3 GHz
13 MHz/
Stop 2.43 GHz

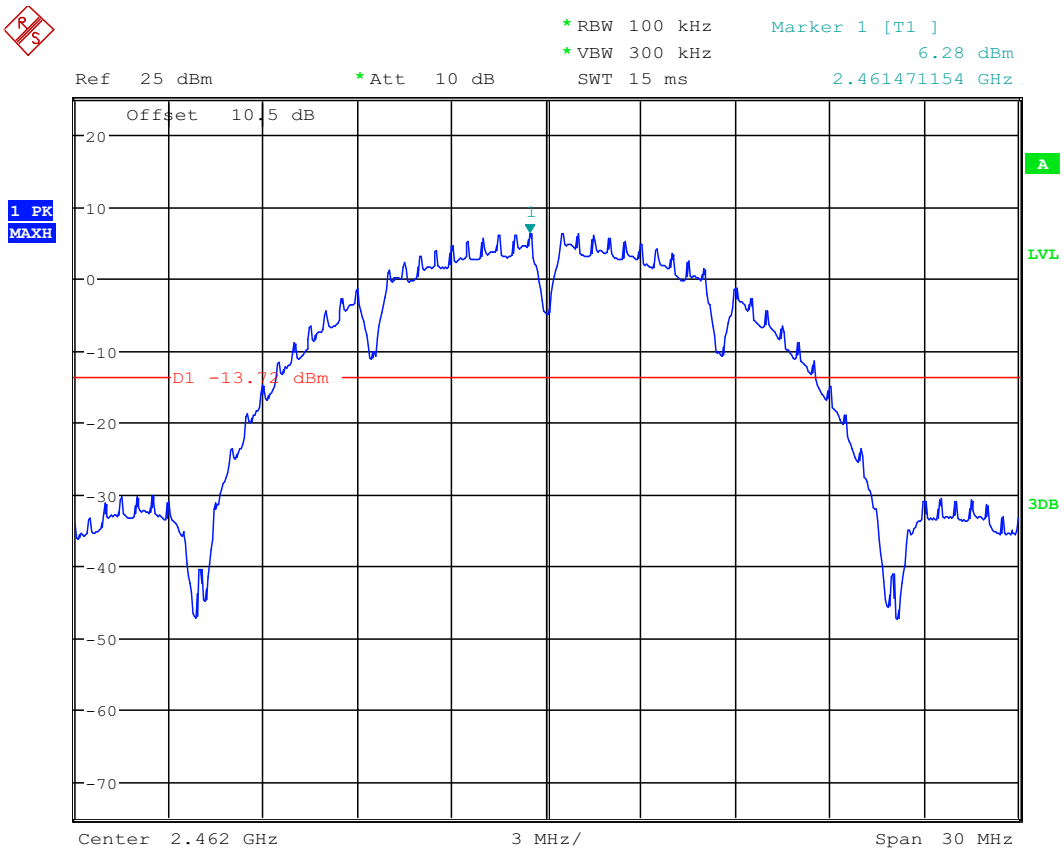
11b CH6:

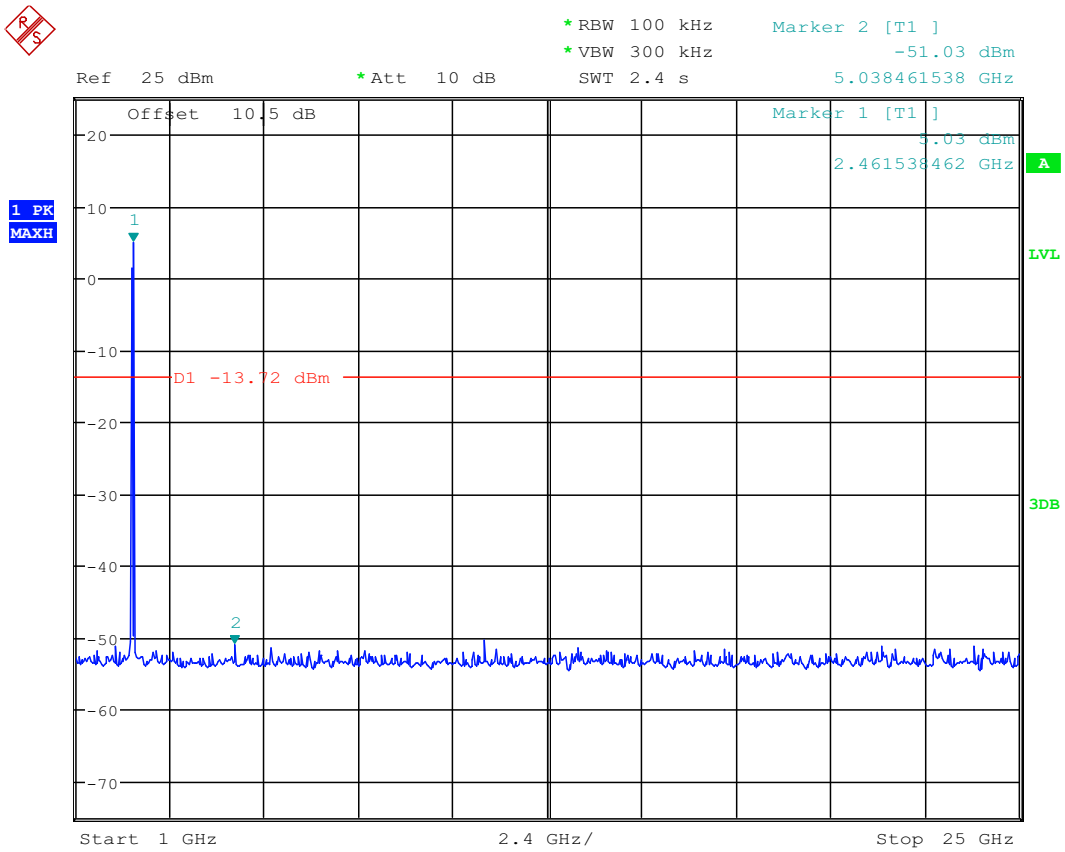

* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 1 [T1]
5.73 dBm
2.437480769 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -14.27 dBm
Center 2.437 GHz
3 MHz/
Span 30 MHz

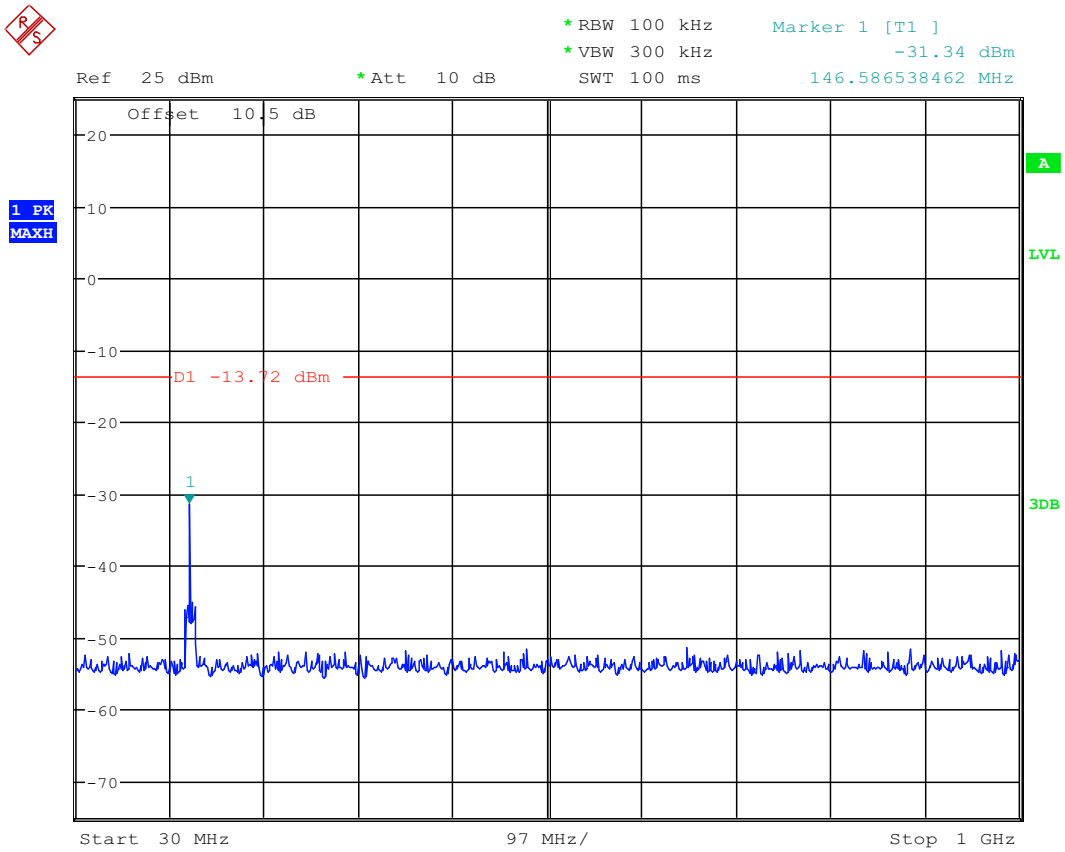

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-31.37 dBm
121.714743590 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -14.27 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz

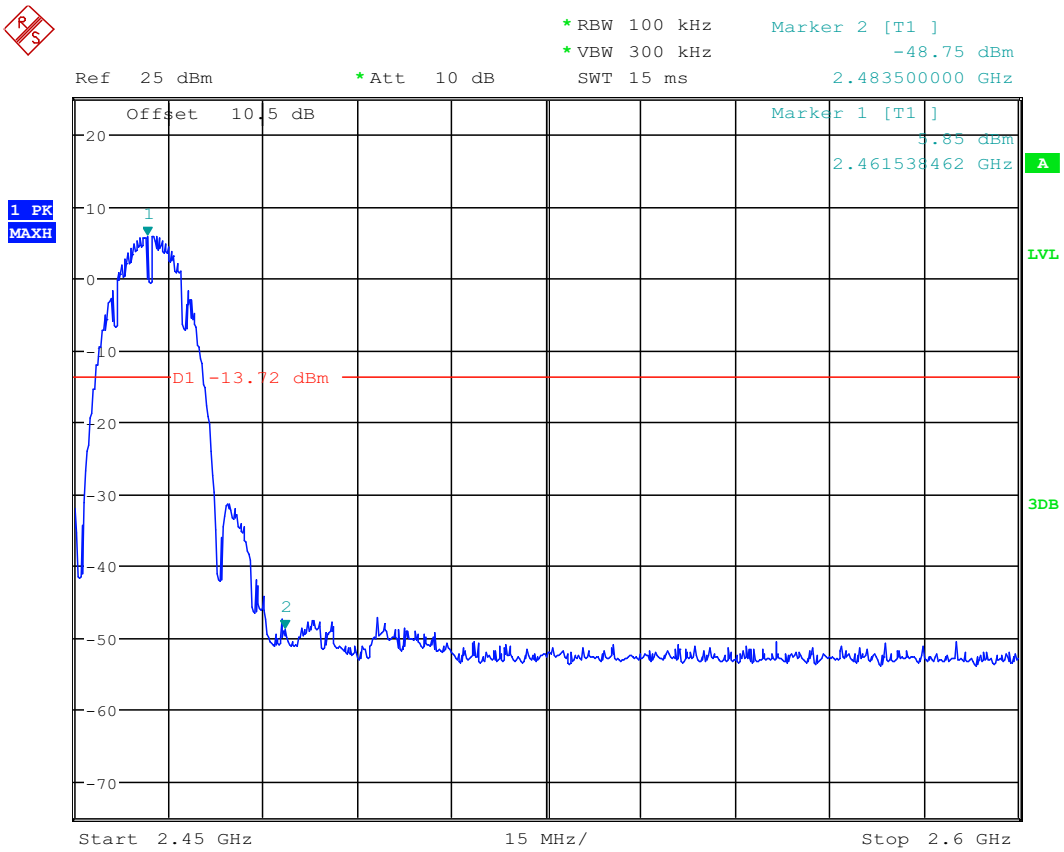

RBW 100 kHz
VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-51.29 dBm
5.076923077 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
5.07 dBm
2.423076923 GHz
1 PK
MAXH
A
LVL
3DB
D1 -14.27 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

11b CH11:

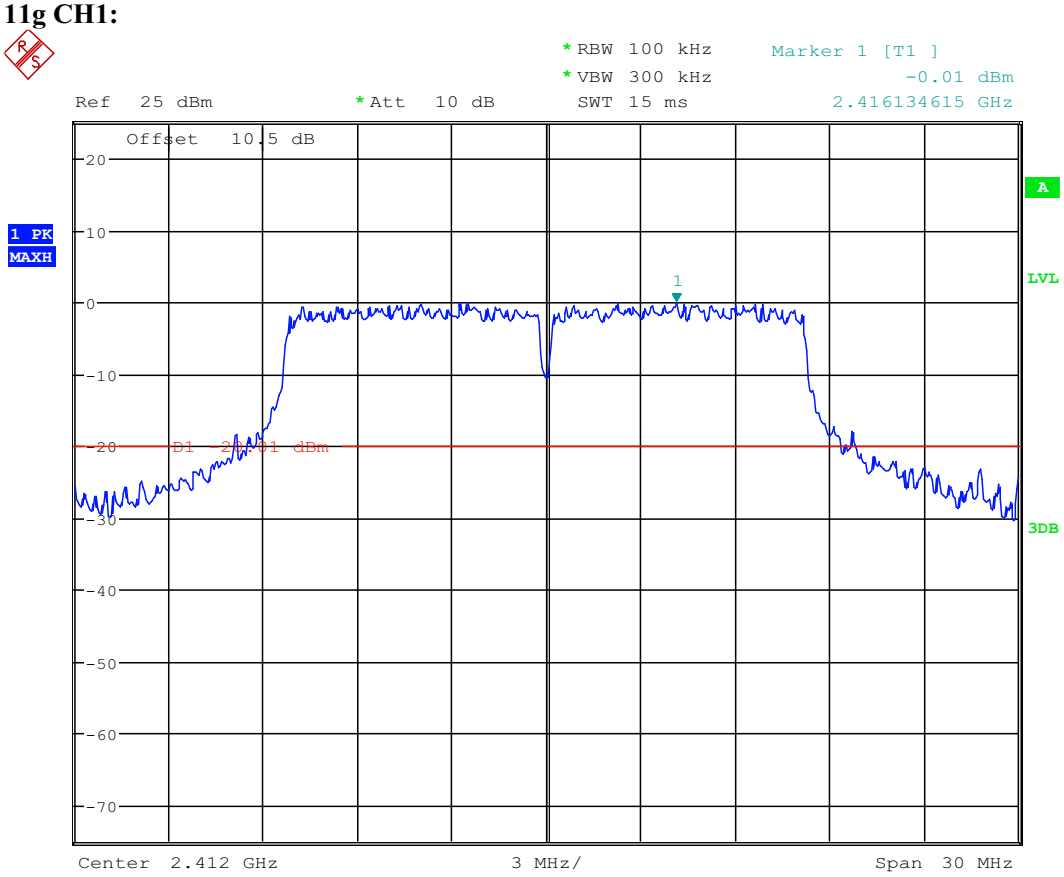

RBW 100 kHz
VBW 300 kHz
SWT 15 ms
Marker 1 [T1]
6.28 dBm
2.461471154 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -13.72 dBm
Center 2.462 GHz
3 MHz/
Span 30 MHz

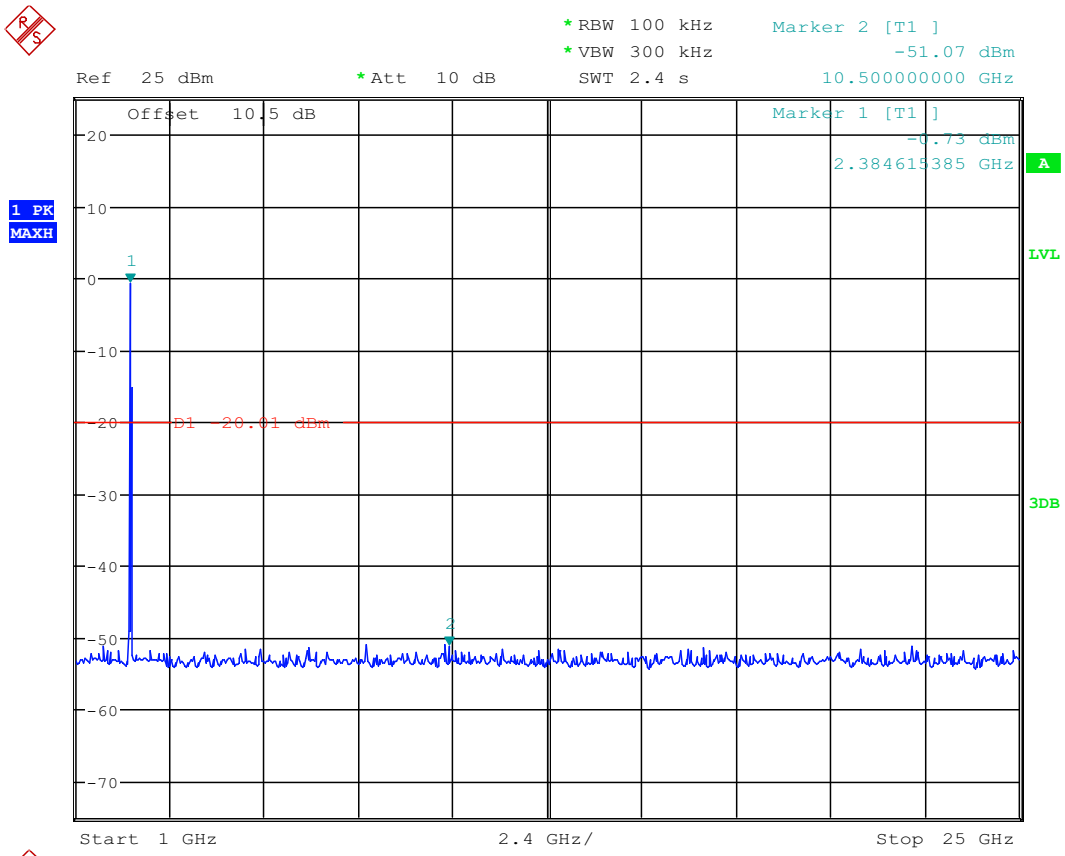

RBW 100 kHz
VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-51.03 dBm
5.038461538 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
5.03 dBm
2.461538462 GHz
1 PK
MAXH
A
LVL
3DB
D1 -13.72 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

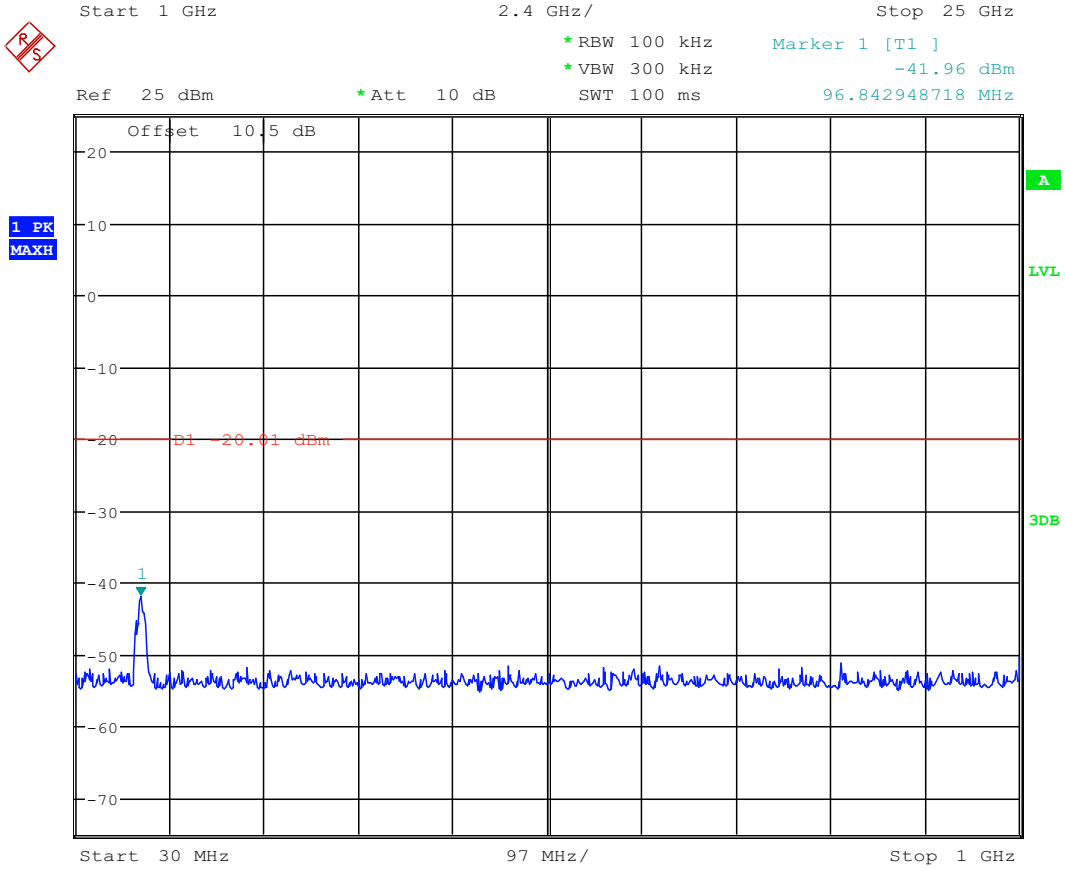

RBW 100 kHz
VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-31.34 dBm
146.586538462 MHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -13.72 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz

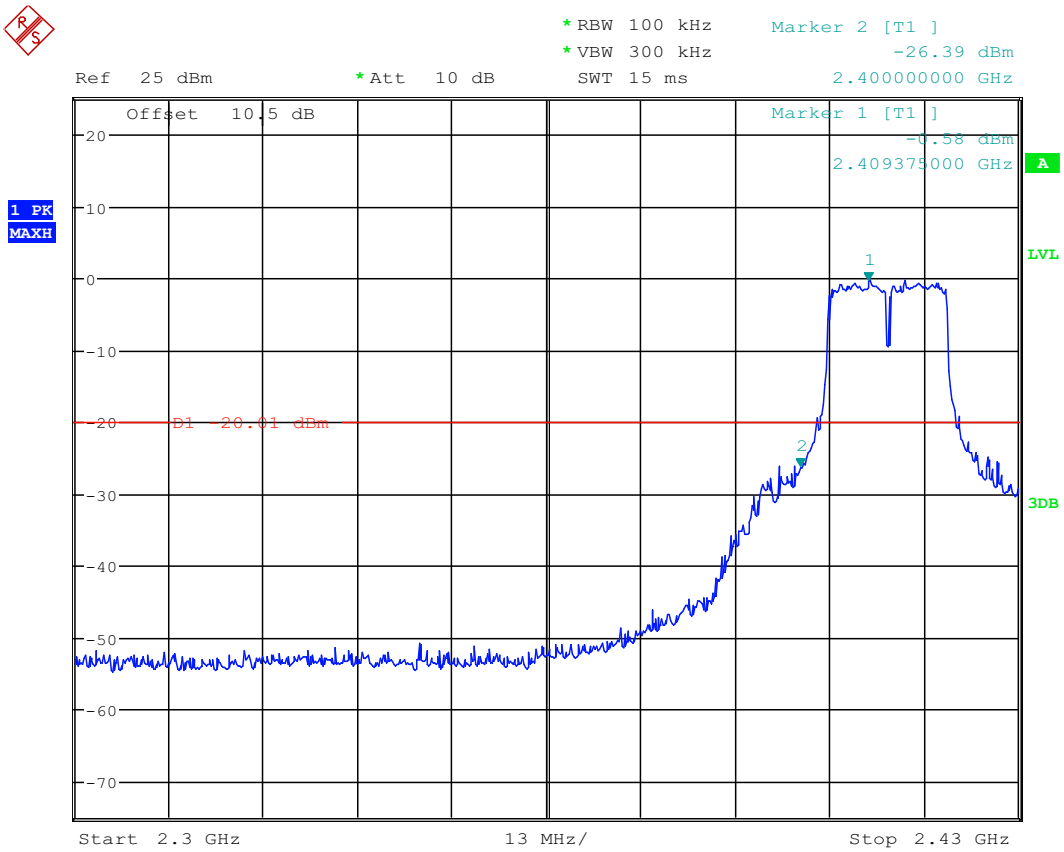

* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 2 [T1]
-48.75 dBm
2.483500000 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
5.85 dBm
2.461538462 GHz
1 PK
MAXH
A
LVL
3DB
D1 -13.72 dBm
Start 2.45 GHz
15 MHz/
Stop 2.6 GHz

11g CH1:

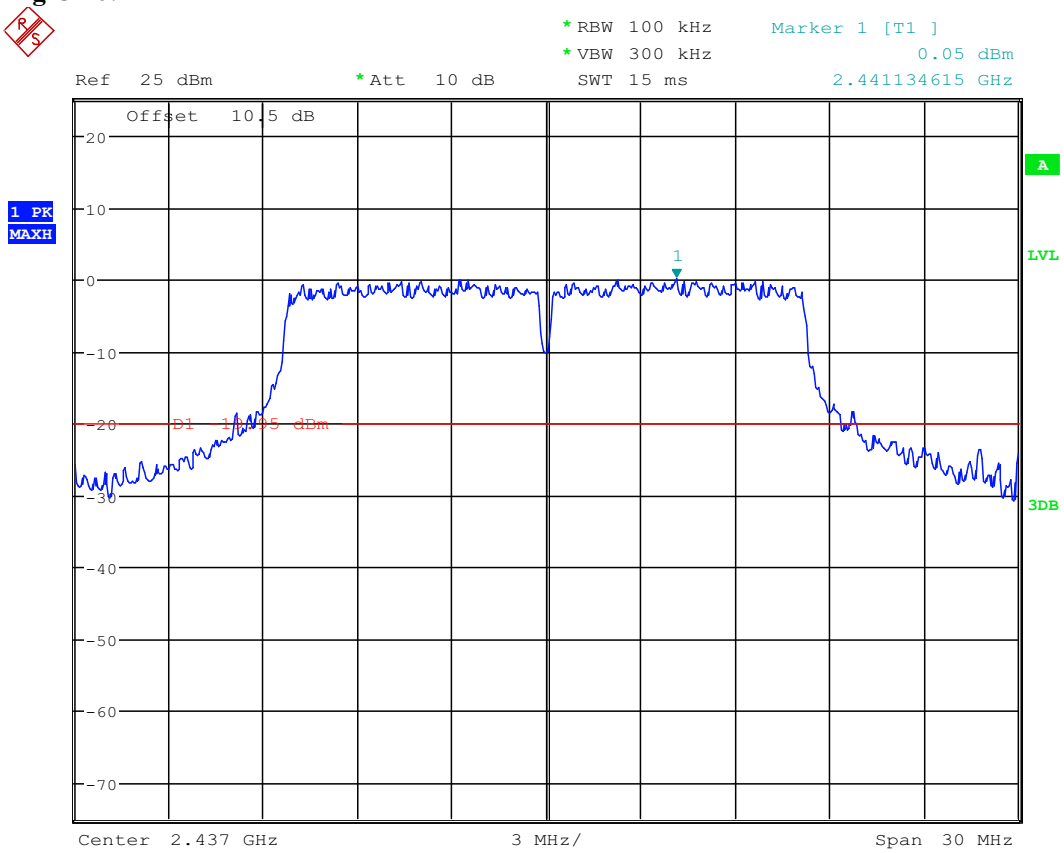

* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 1 [T1]
-0.01 dBm
2.416134615 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.412 GHz
3 MHz/
Span 30 MHz

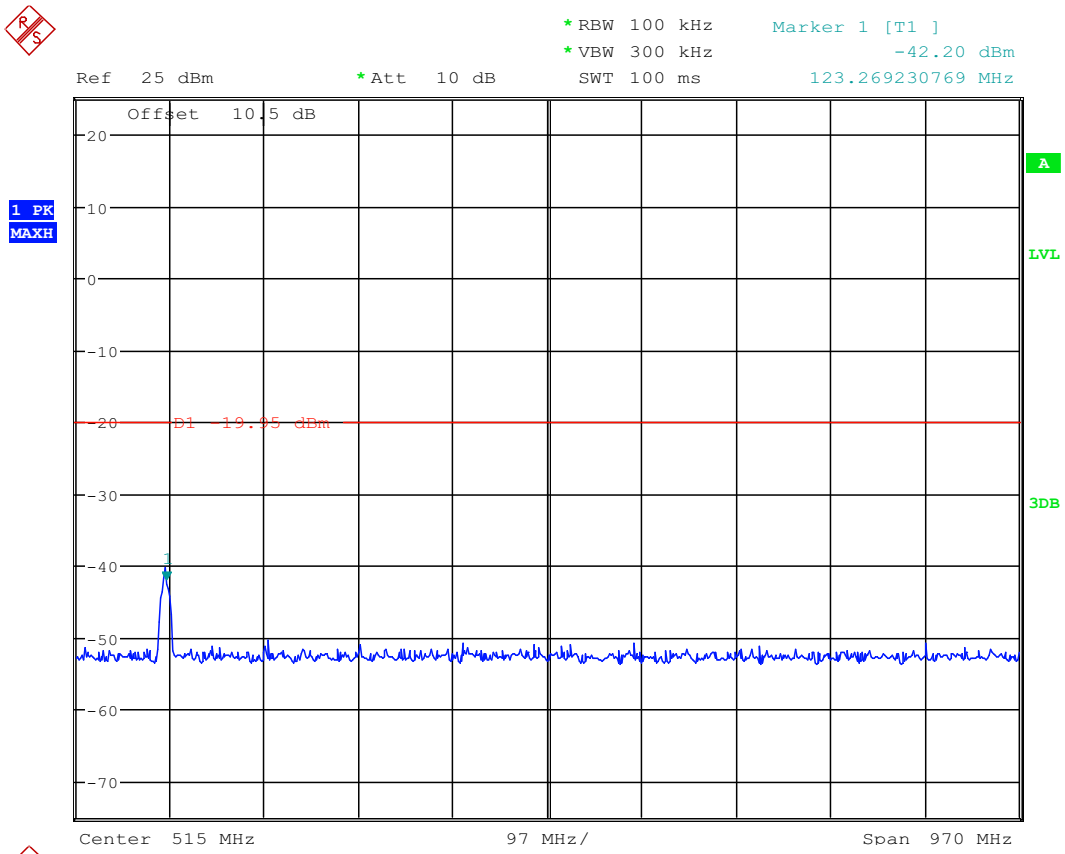

RBW 100 kHz
VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-51.07 dBm
10.500000000 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-0.73 dBm
2.384615385 GHz
1 PK
MAXH
A
LVL
3DB
D1 -20.01 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

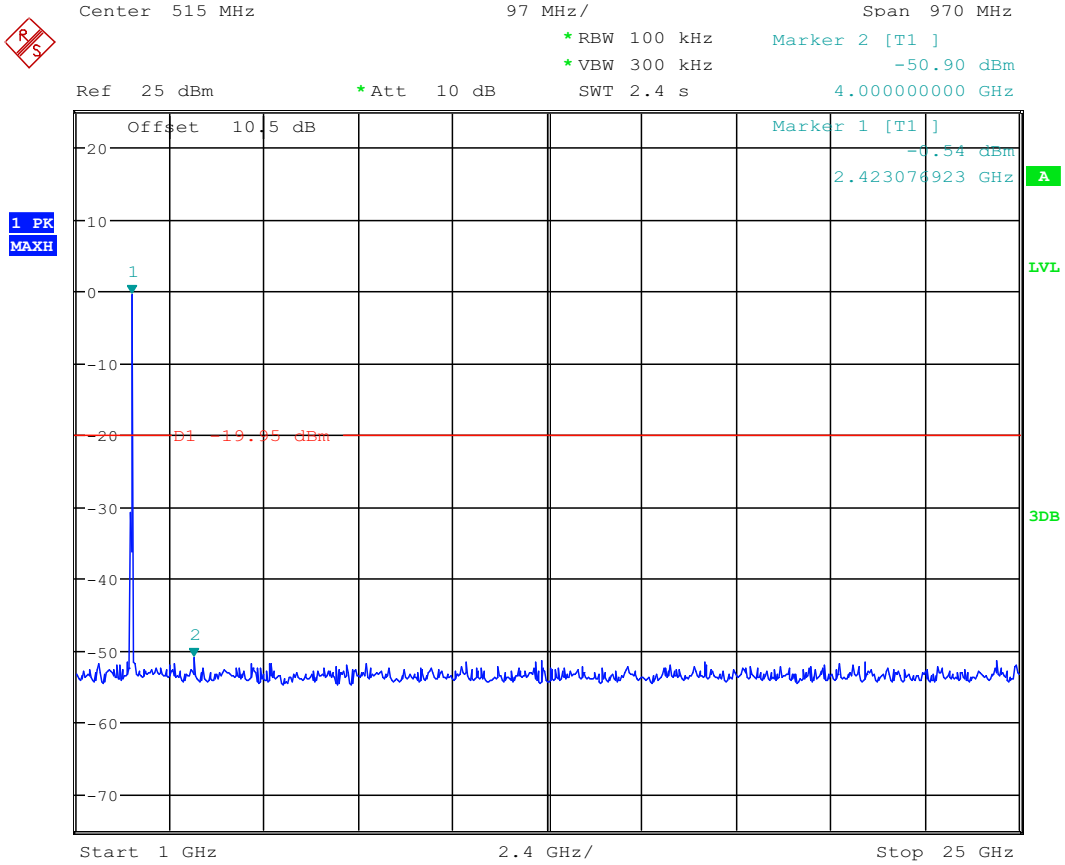

RBW 100 kHz
VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-41.96 dBm
96.842948718 MHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -20.01 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz


* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 2 [T1]
-26.39 dBm
2.400000000 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-0.58 dBm
2.409375000 GHz
1 PK
MAXH
A
LVL
3DB
D1 -20.01 dBm
Start 2.3 GHz
13 MHz/
Stop 2.43 GHz

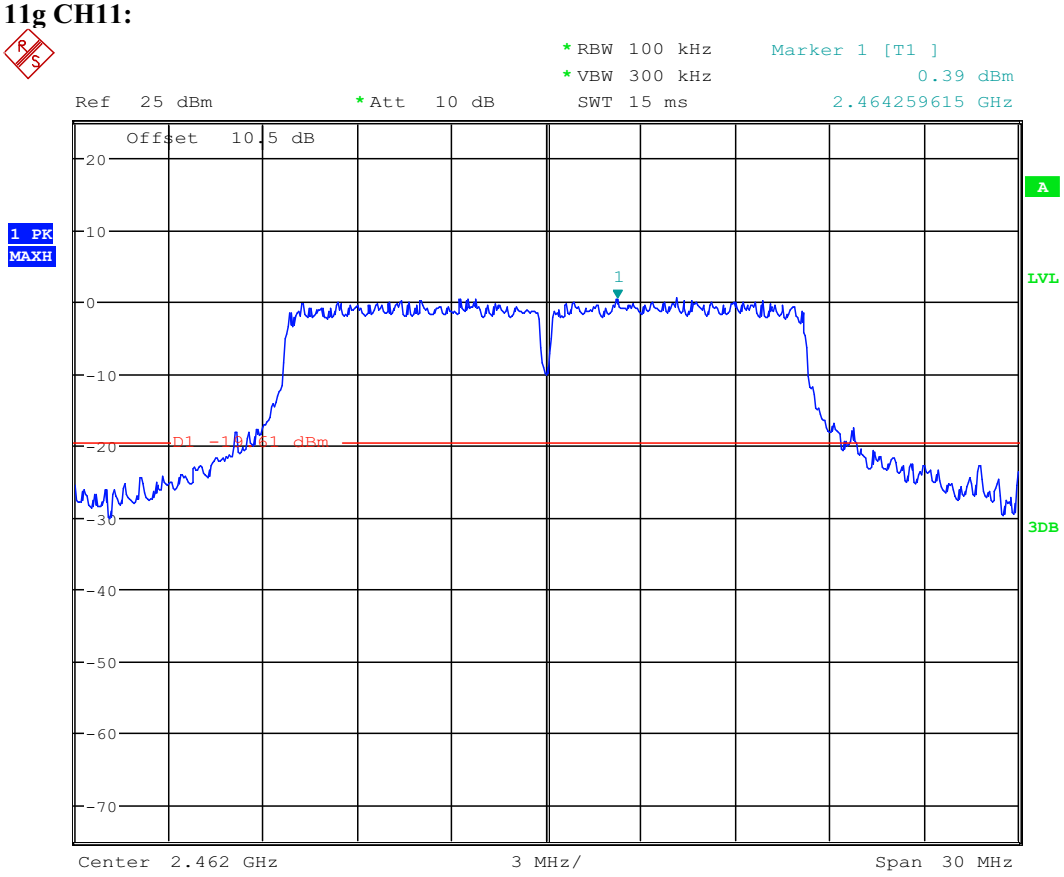
11g CH6:

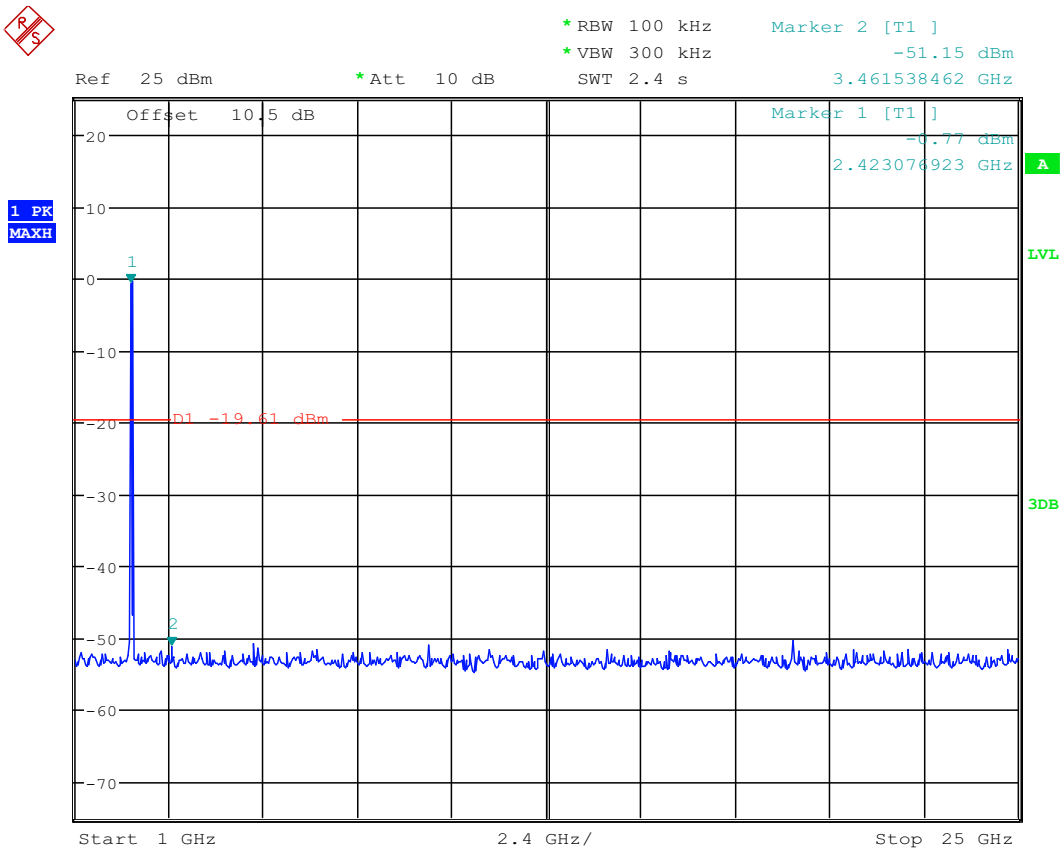

* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 1 [T1]
0.05 dBm
2.441134615 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
Center 2.437 GHz
3 MHz/
Span 30 MHz

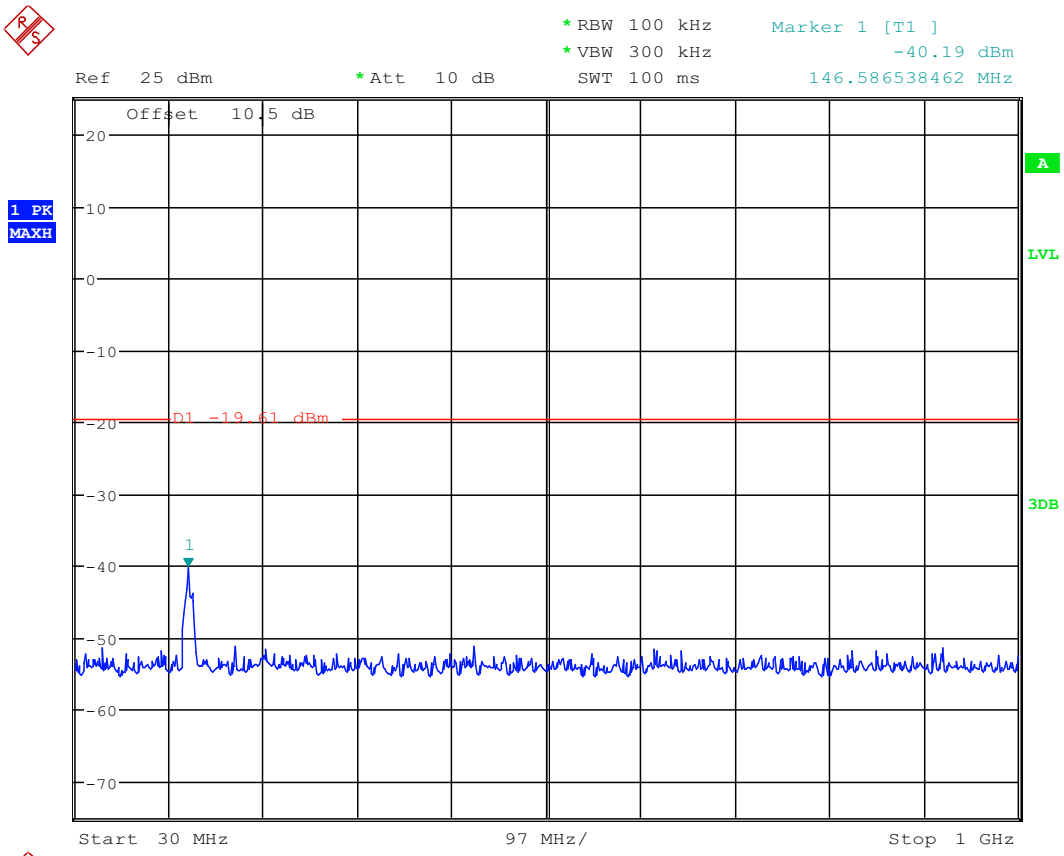

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-42.20 dBm
123.269230769 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -19.95 dBm
Center 515 MHz
97 MHz/
Span 970 MHz

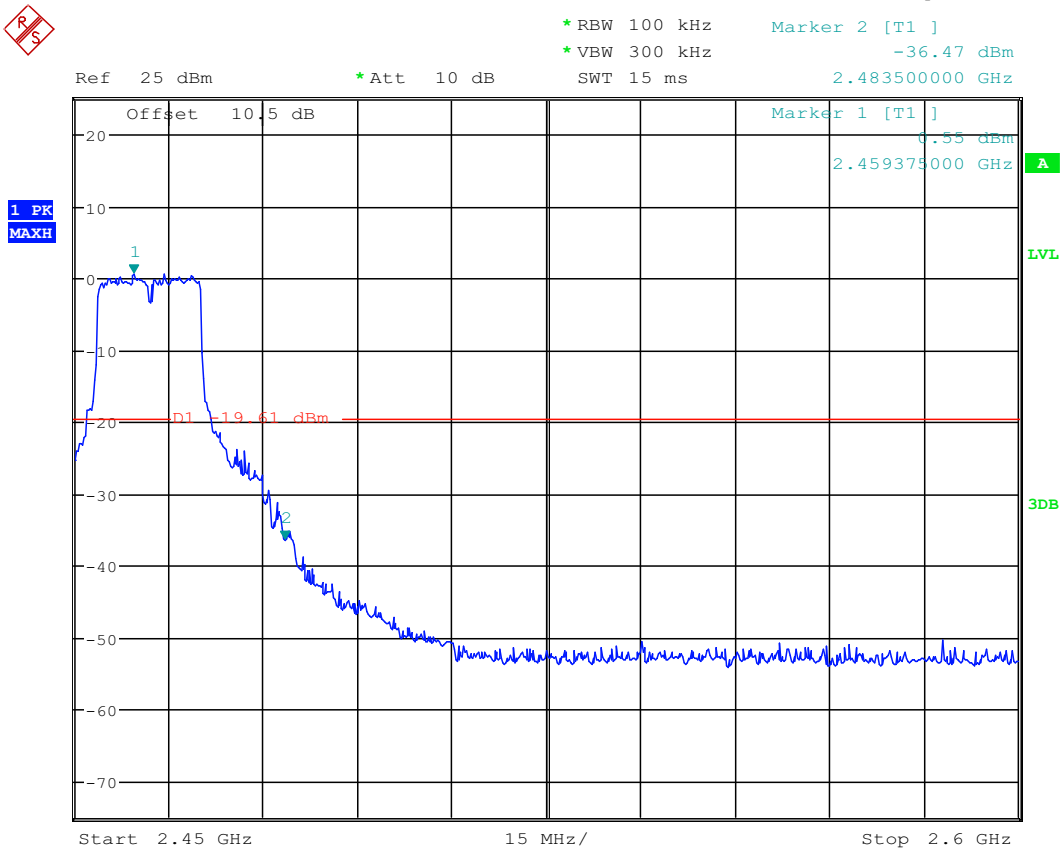

* RBW 100 kHz
* VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-50.90 dBm
4.000000000 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-0.54 dBm
2.423076923 GHz
1 PK
MAXH
A
LVL
3DB
D1 -19.95 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

11g CH11:

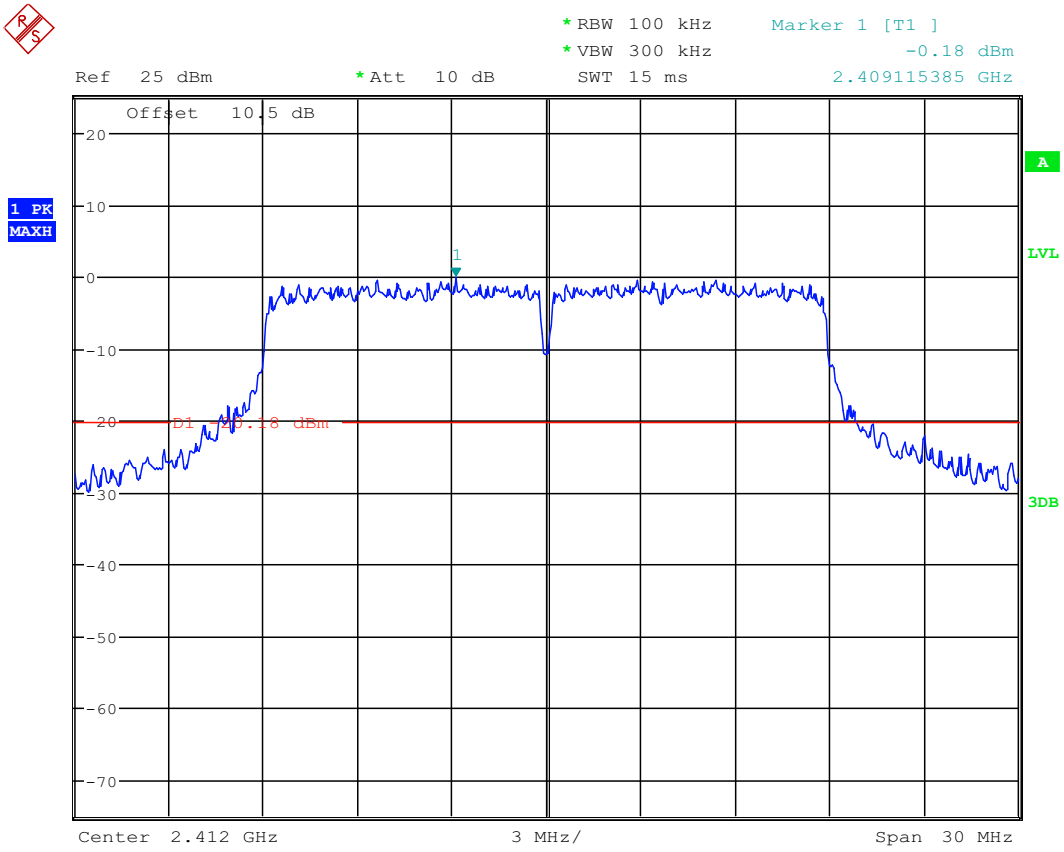

* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 1 [T1]
0.39 dBm
2.464259615 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -19.61 dBm
Center 2.462 GHz
3 MHz/
Span 30 MHz

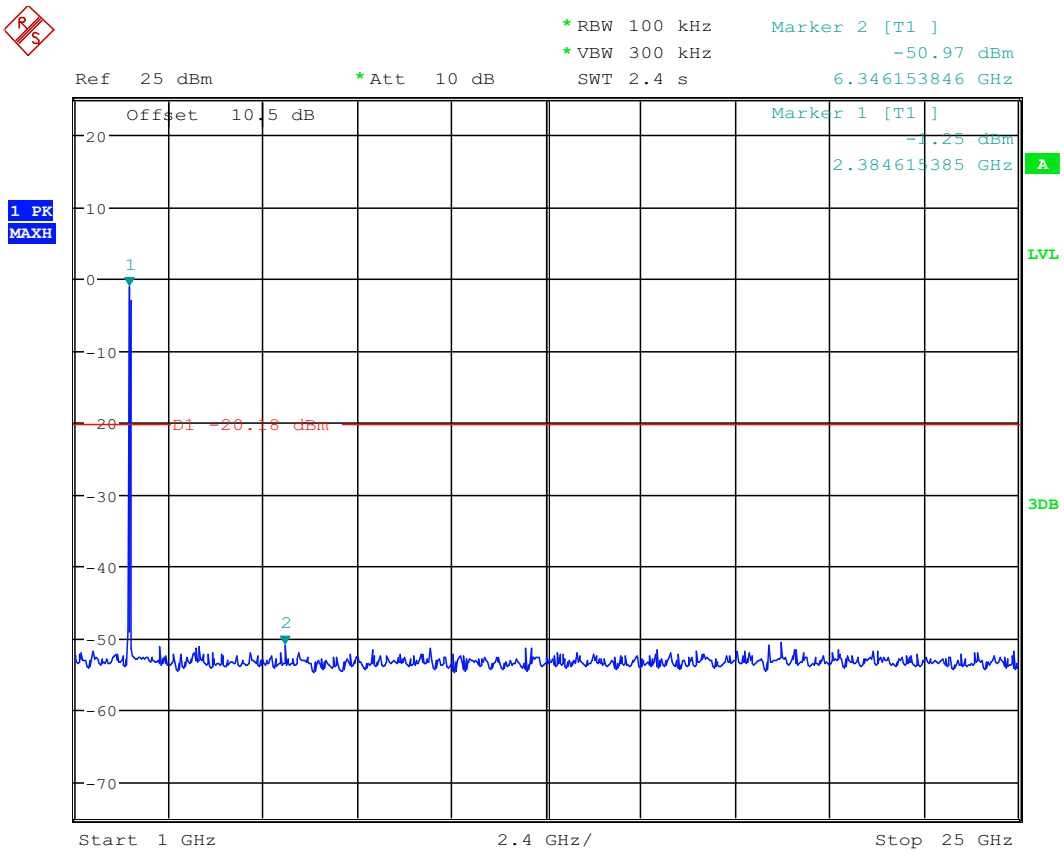

* RBW 100 kHz
* VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-51.15 dBm
3.461538462 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-0.77 dBm
2.423076923 GHz
1 PK
MAXH
A
LVL
3DB
D1 -19.61 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

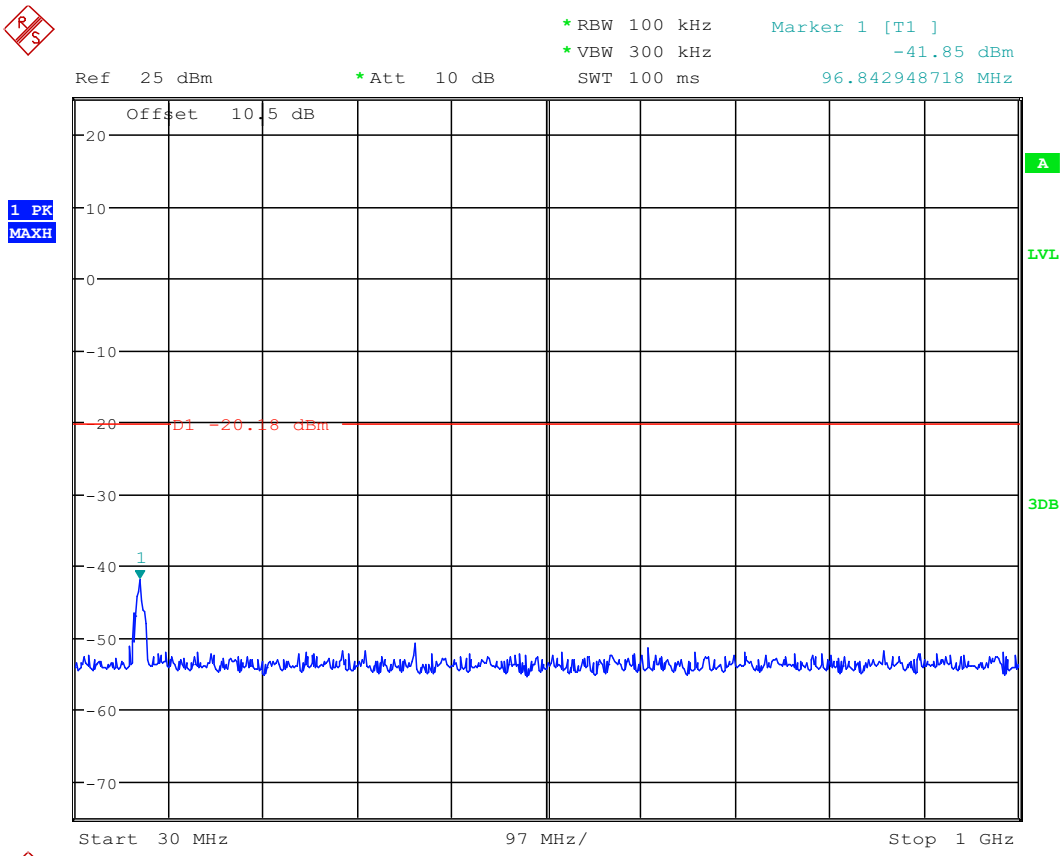

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-40.19 dBm
146.586538462 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -19.61 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz

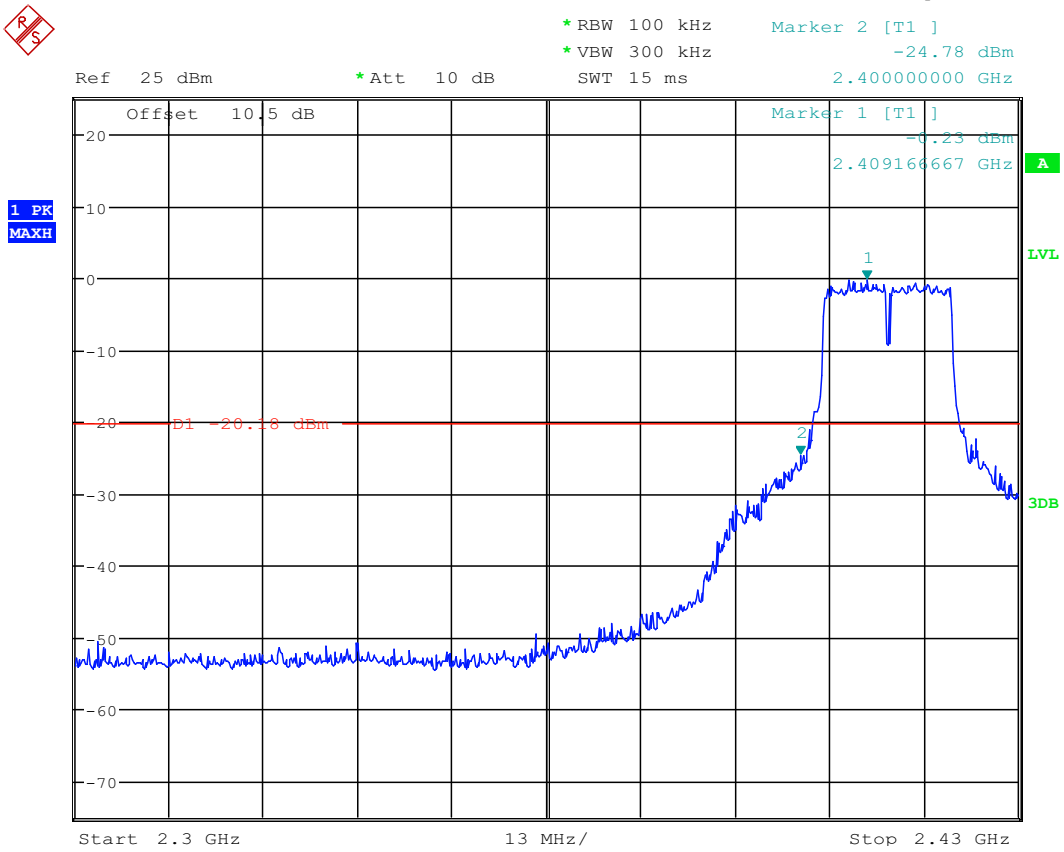

* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 2 [T1]
-36.47 dBm
2.483500000 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
0.55 dBm
2.459375000 GHz
1 PK
MAXH
A
LVL
3DB
D1 -19.61 dBm
Start 2.45 GHz
15 MHz/
Stop 2.6 GHz

11n HT20 CH1:

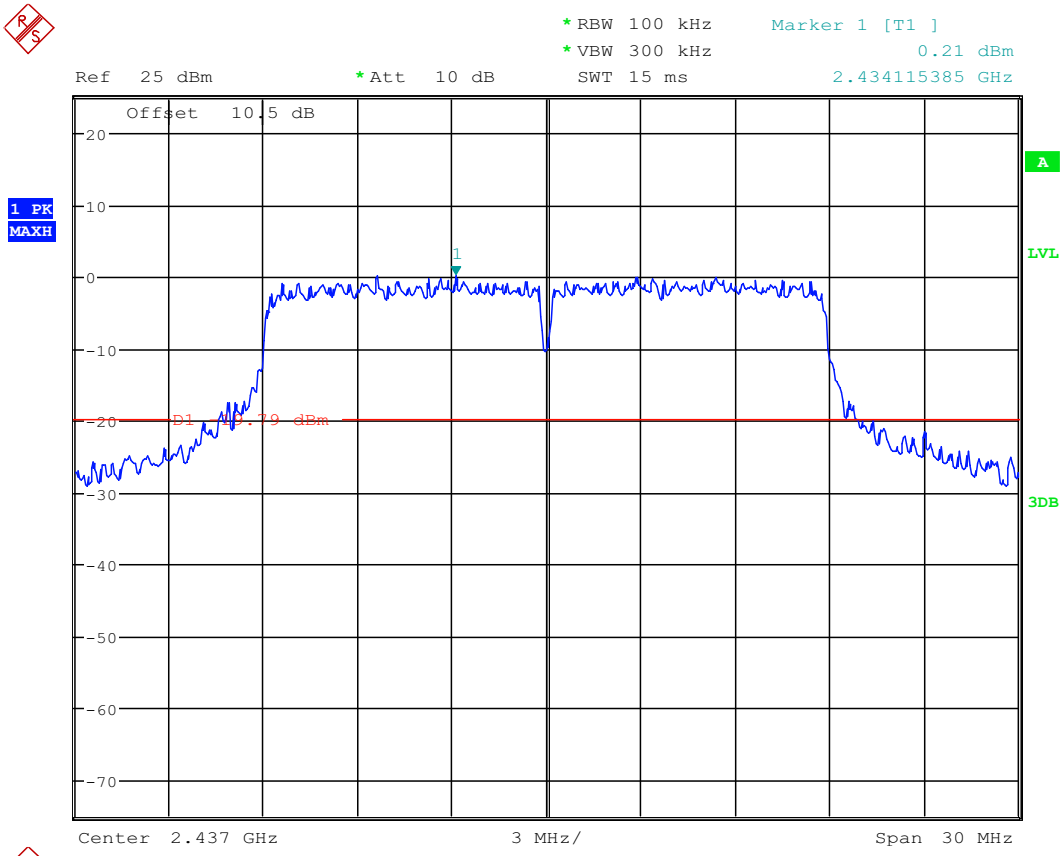

RBW 100 kHz
VBW 300 kHz
SWT 15 ms
Marker 1 [T1]
-0.18 dBm
2.409115385 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -20.18 dBm
Center 2.412 GHz
3 MHz/
Span 30 MHz

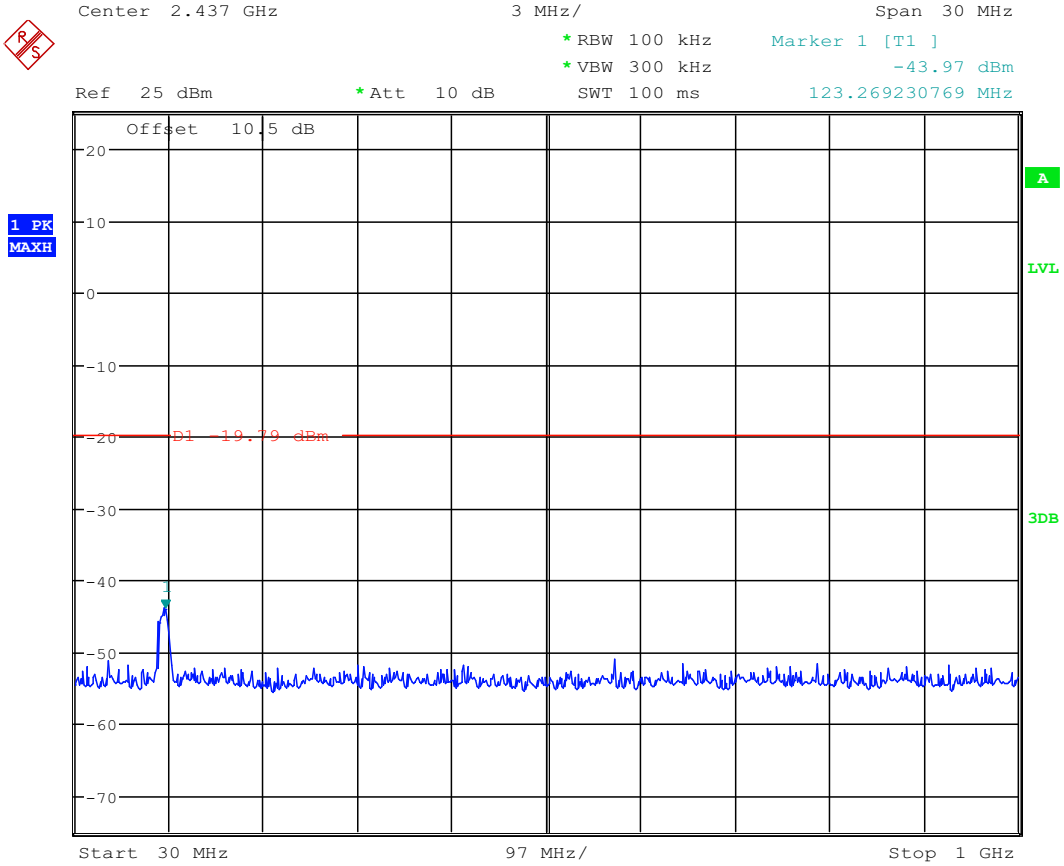

RBW 100 kHz
VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-50.97 dBm
6.346153846 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-1.25 dBm
2.384615385 GHz
1 PK
MAXH
A
LVL
3DB
D1 -20.18 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

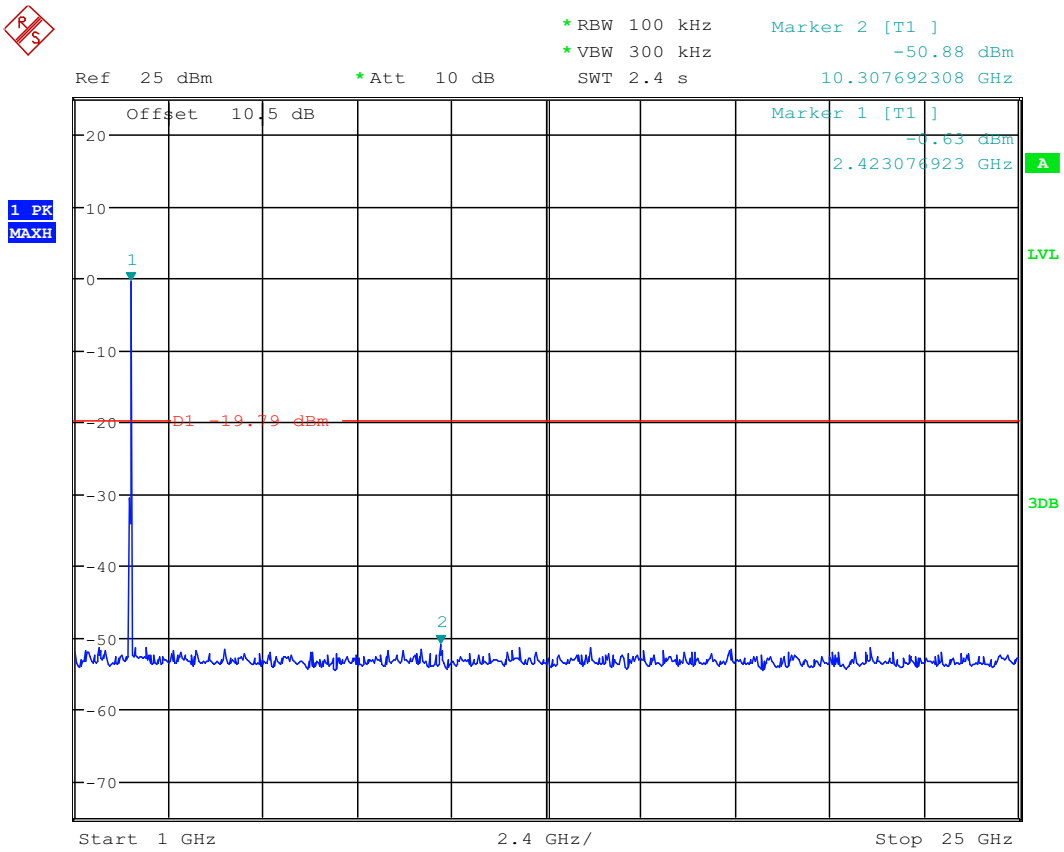

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-41.85 dBm
96.842948718 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -20.18 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz


* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 2 [T1]
-24.78 dBm
2.400000000 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-0.23 dBm
2.409166667 GHz
1 PK
MAXH
A
LVL
3DB
D1 -20.18 dBm
Start 2.3 GHz
13 MHz/
Stop 2.43 GHz

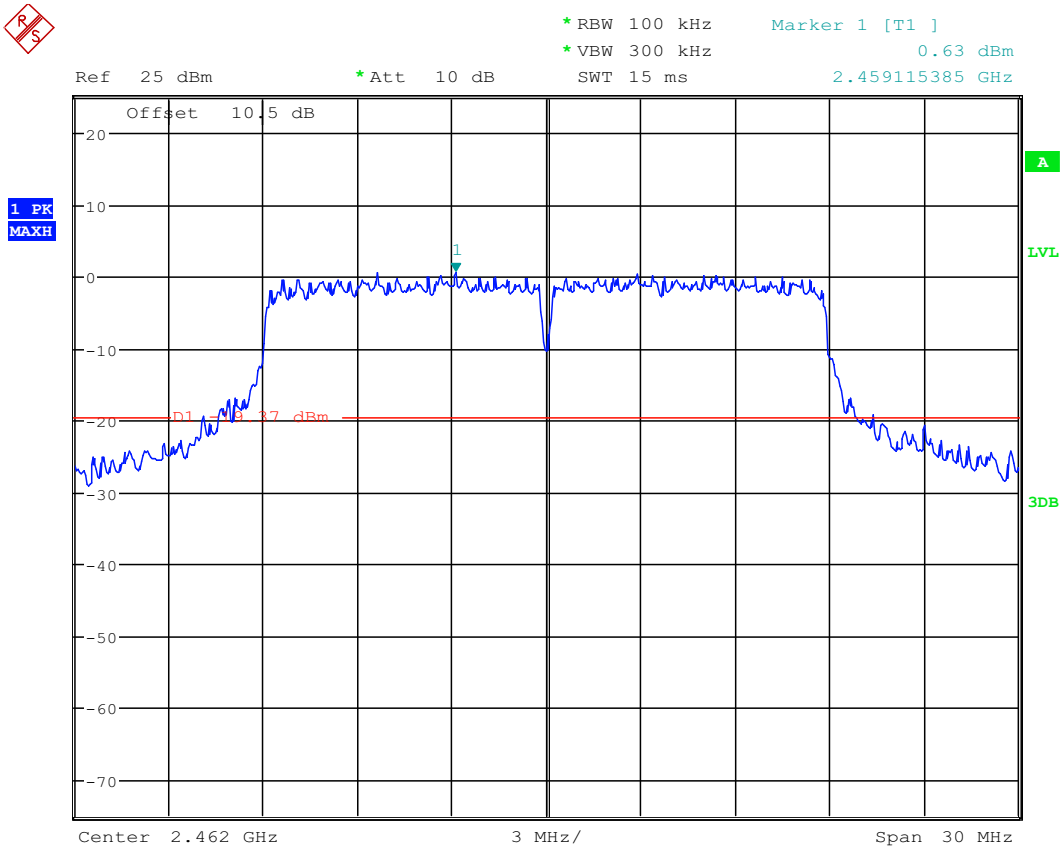
11n HT20 CH6:

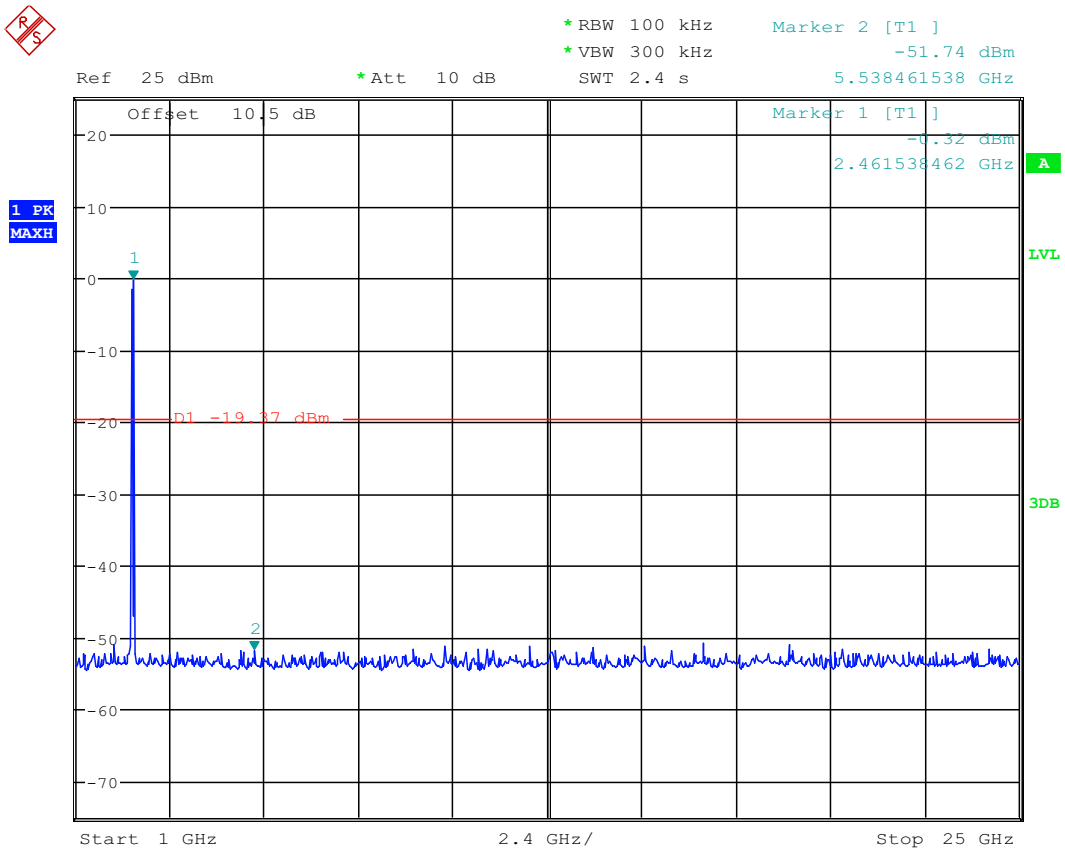

* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 1 [T1]
0.21 dBm
2.434115385 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -19.79 dBm
Center 2.437 GHz
3 MHz/
Span 30 MHz

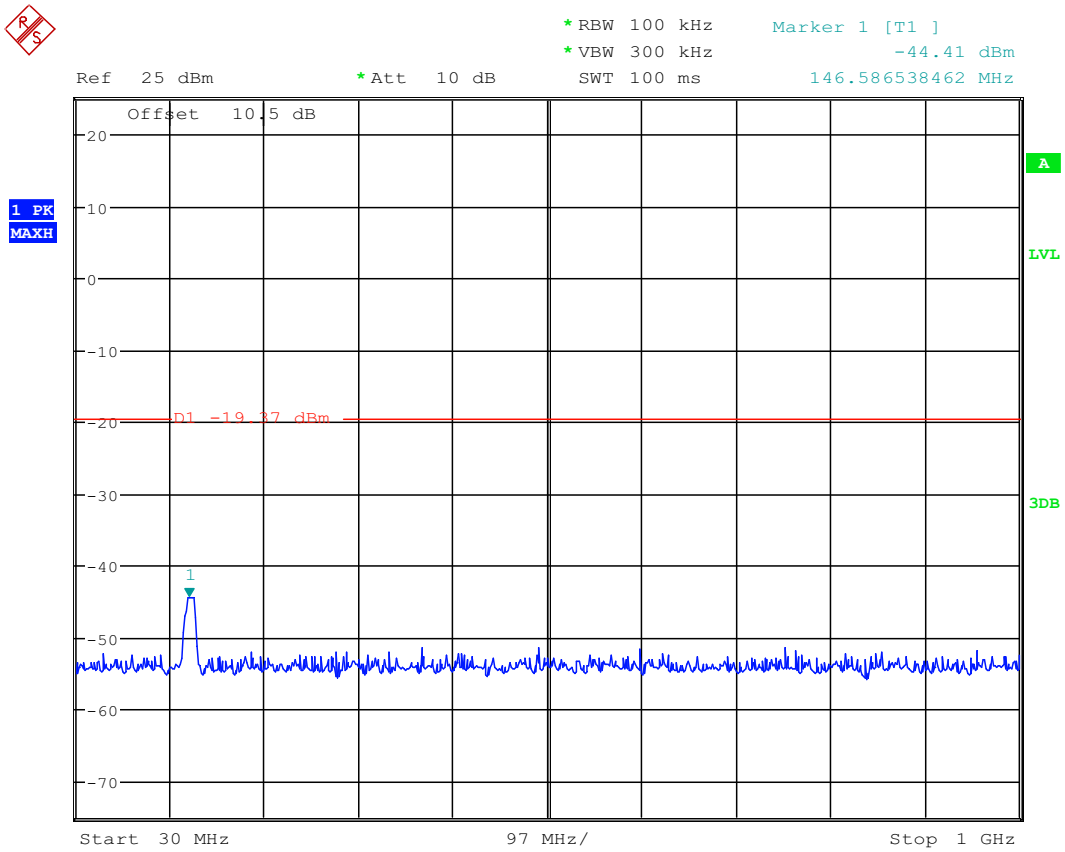

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-43.97 dBm
123.269230769 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -19.79 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz

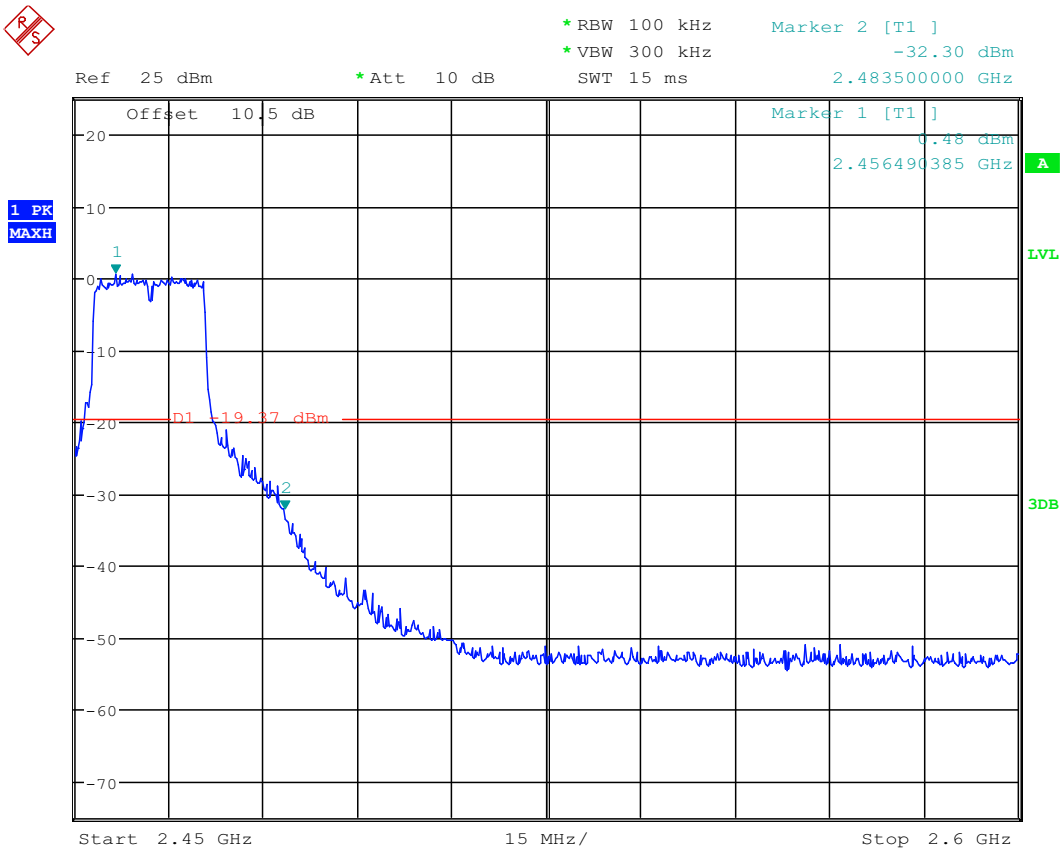


11n HT20 CH11:

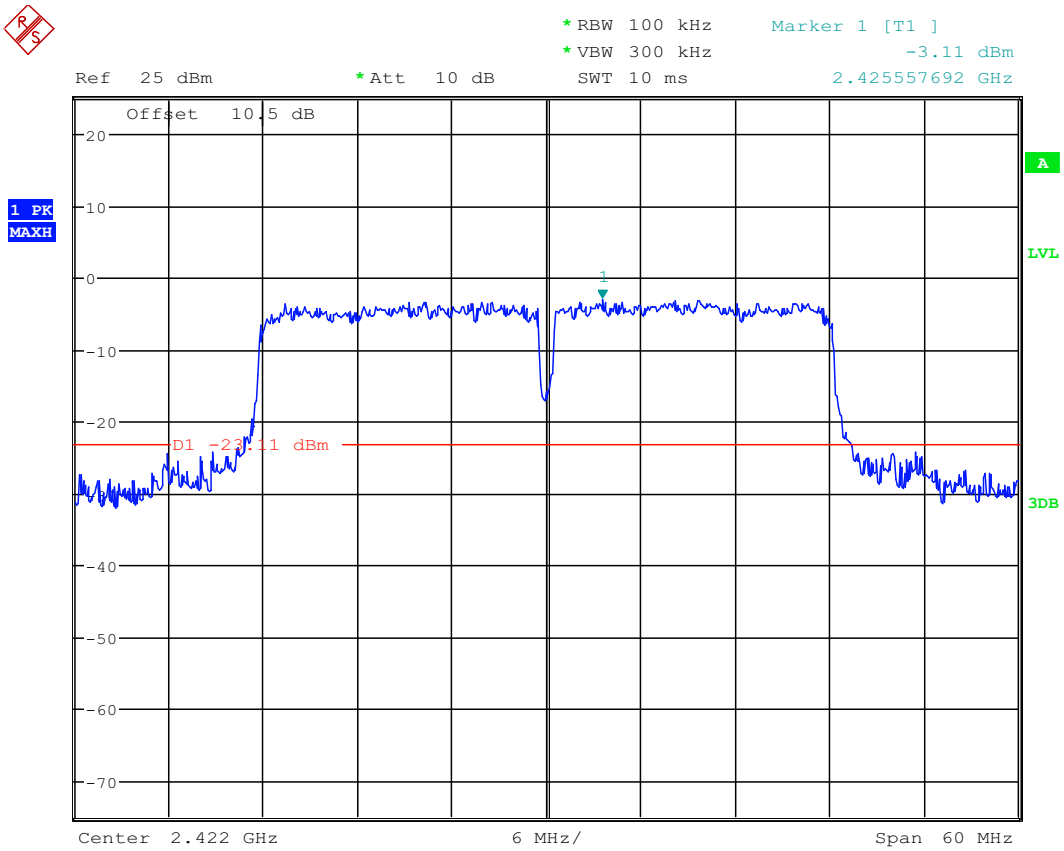


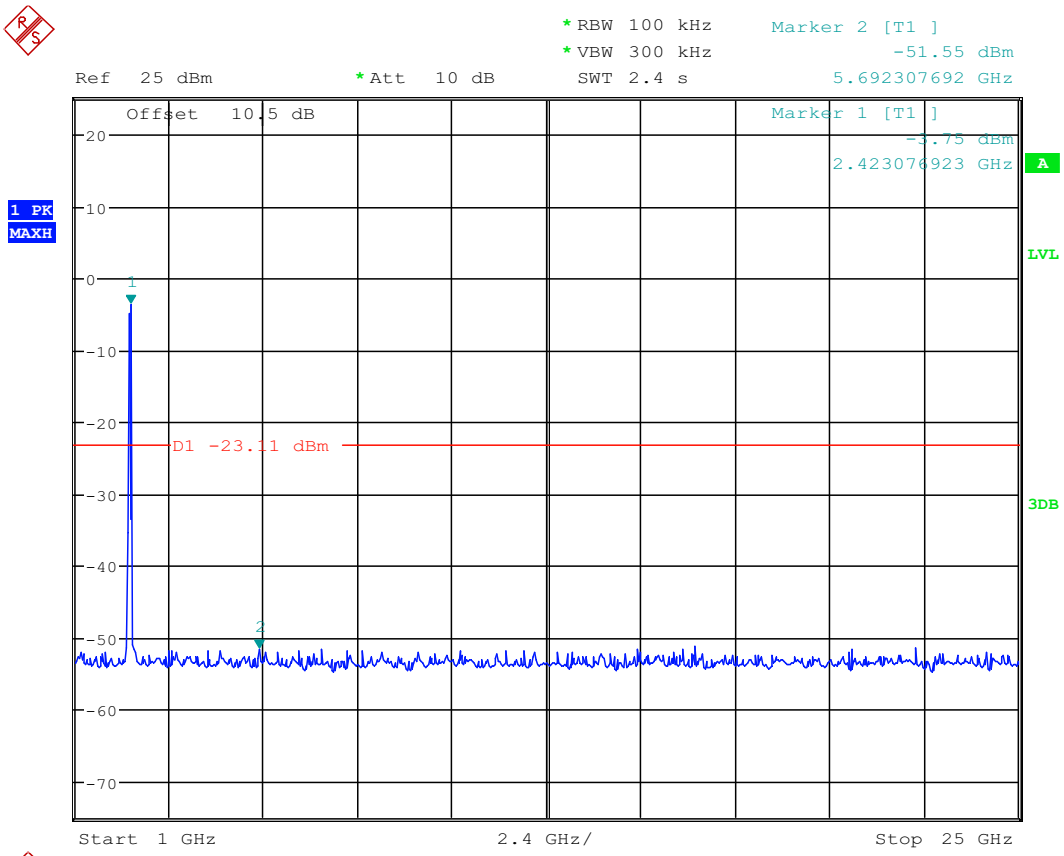

* RBW 100 kHz
* VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-51.74 dBm
5.538461538 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-0.32 dBm
2.461538462 GHz
1 PK
MAXH
A
LVL
3DB
D1 -19.37 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

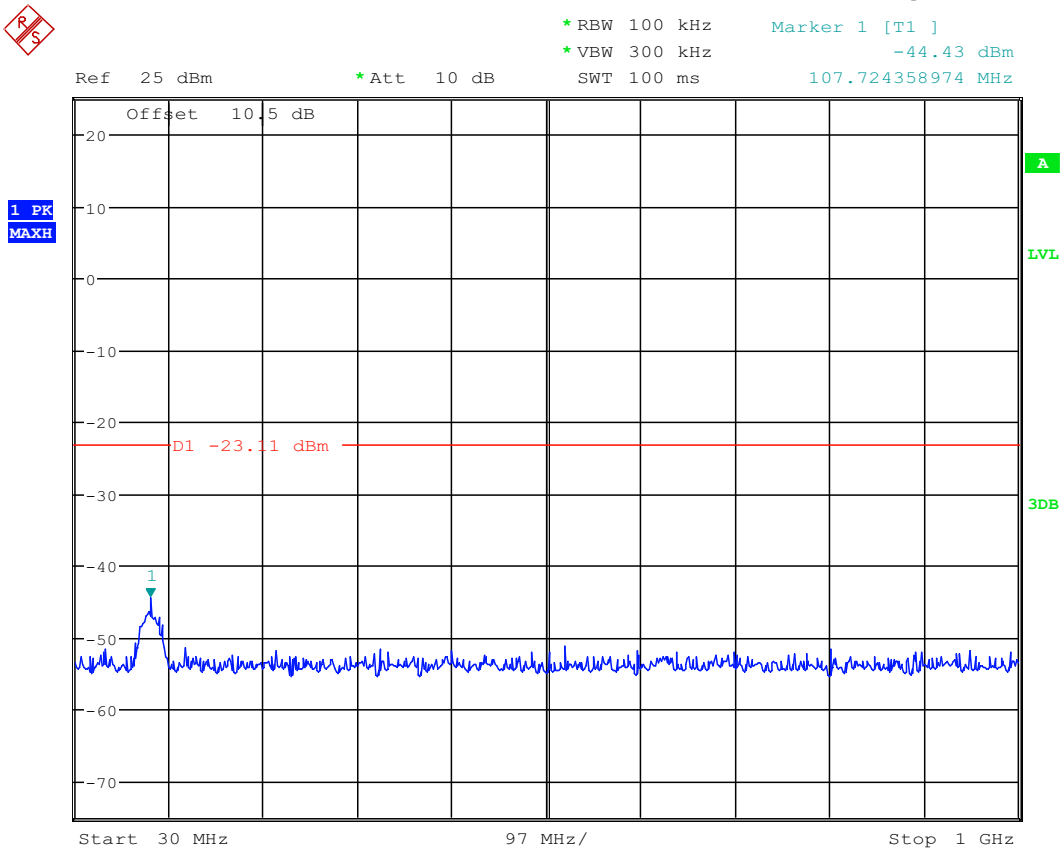

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-44.41 dBm
146.586538462 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -19.37 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz

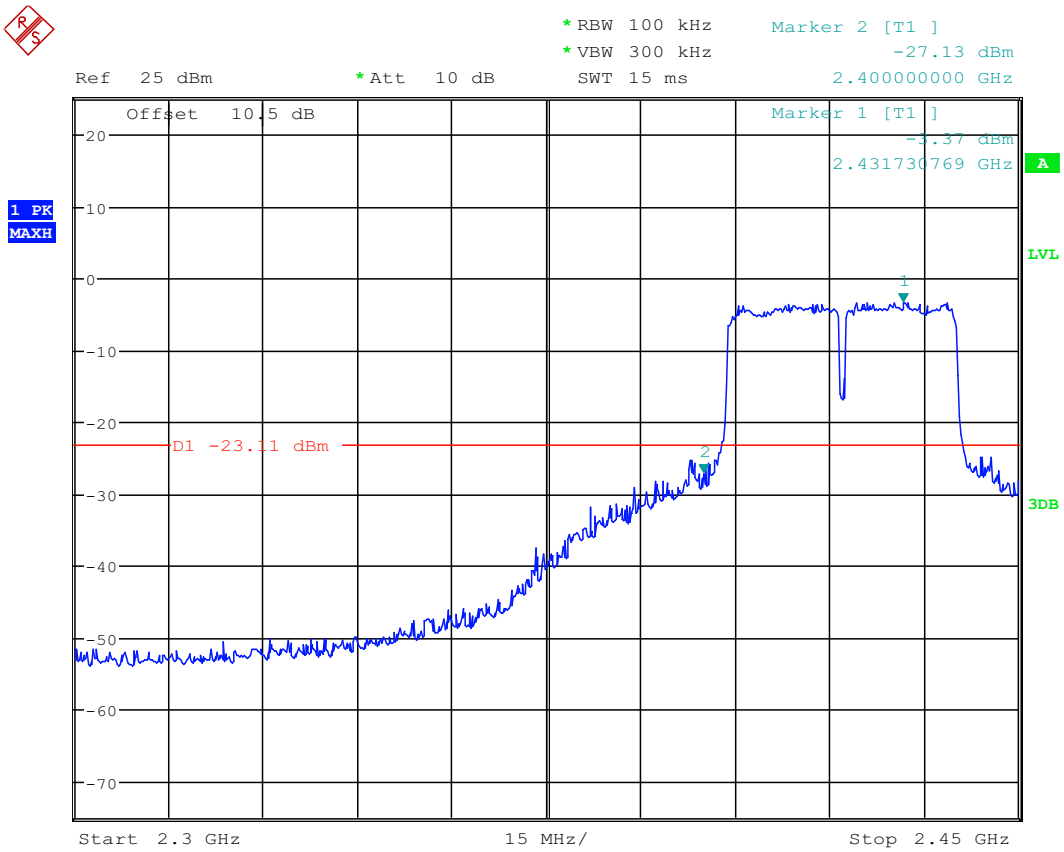

* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 2 [T1]
-32.30 dBm
2.483500000 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
0.48 dBm
2.456490385 GHz
1 PK
MAXH
A
LVL
3DB
D1 -19.37 dBm
Start 2.45 GHz
15 MHz/
Stop 2.6 GHz

11n HT40 CH3:

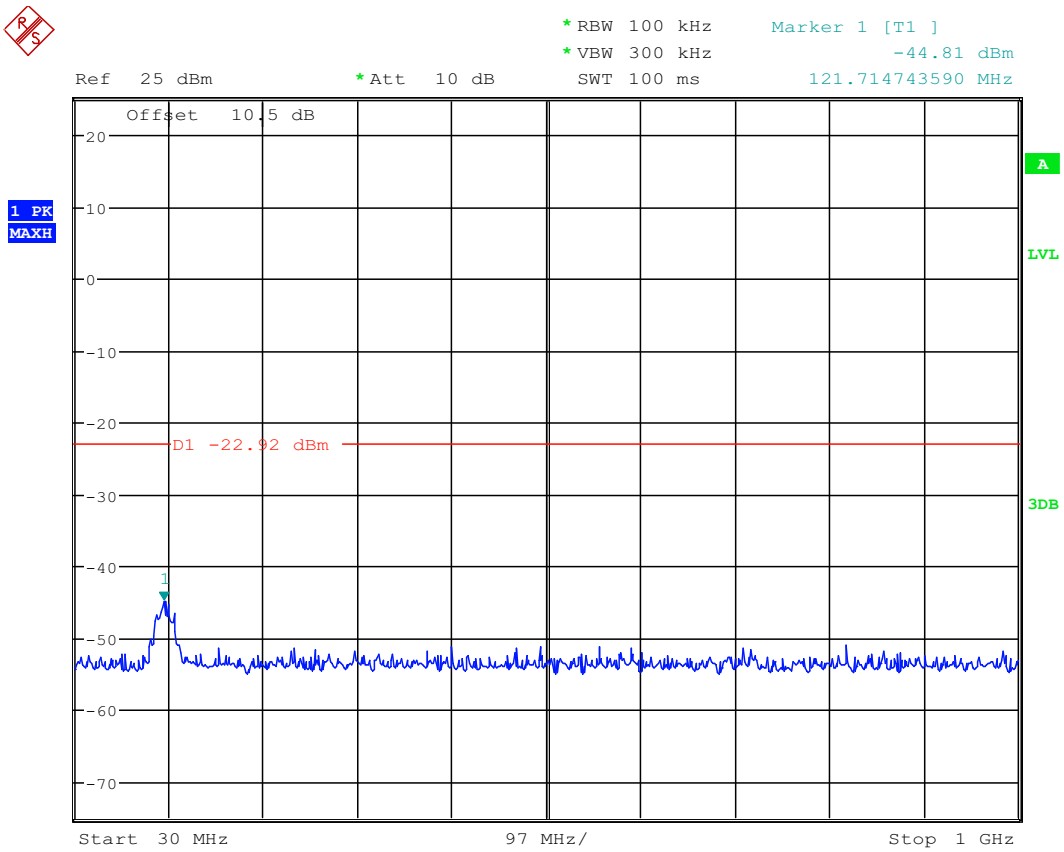

* RBW 100 kHz
* VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
-3.11 dBm
2.425557692 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -23.11 dBm
Center 2.422 GHz
6 MHz/
Span 60 MHz

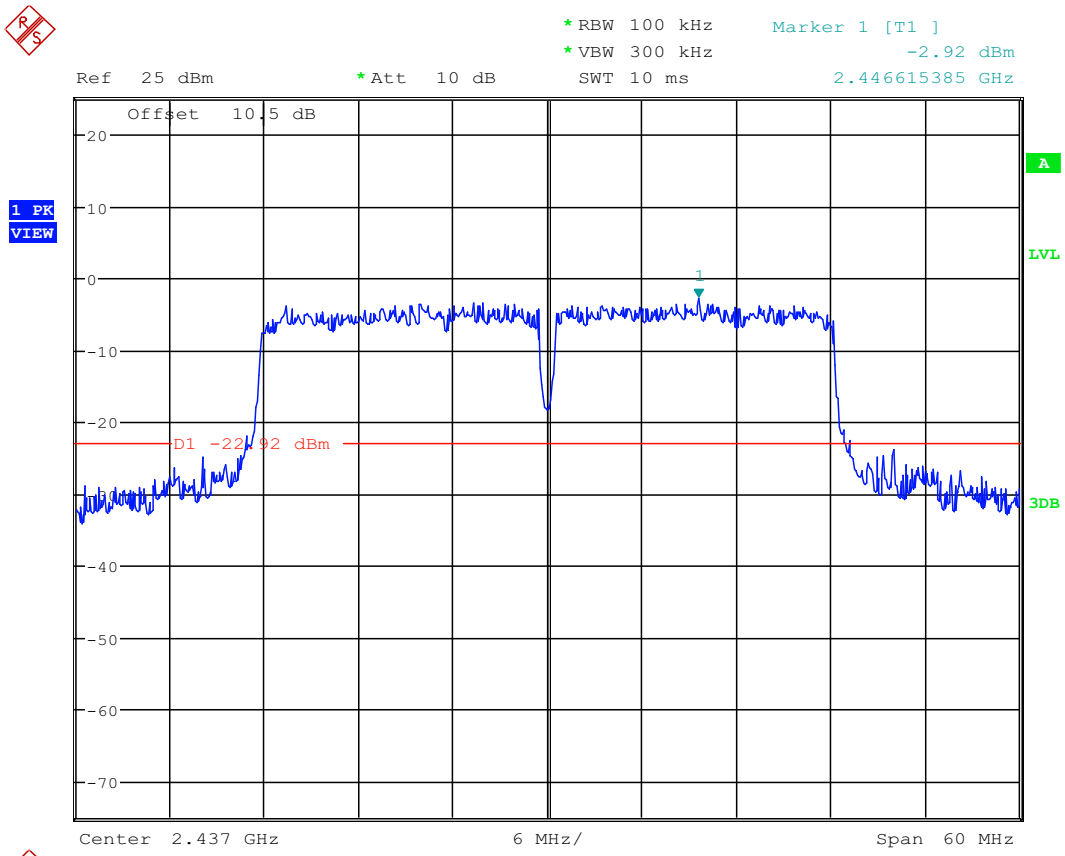

* RBW 100 kHz
* VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-51.55 dBm
5.692307692 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-3.75 dBm
2.423076923 GHz
1 PK
MAXH
A
LVL
3DB
D1 -23.11 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

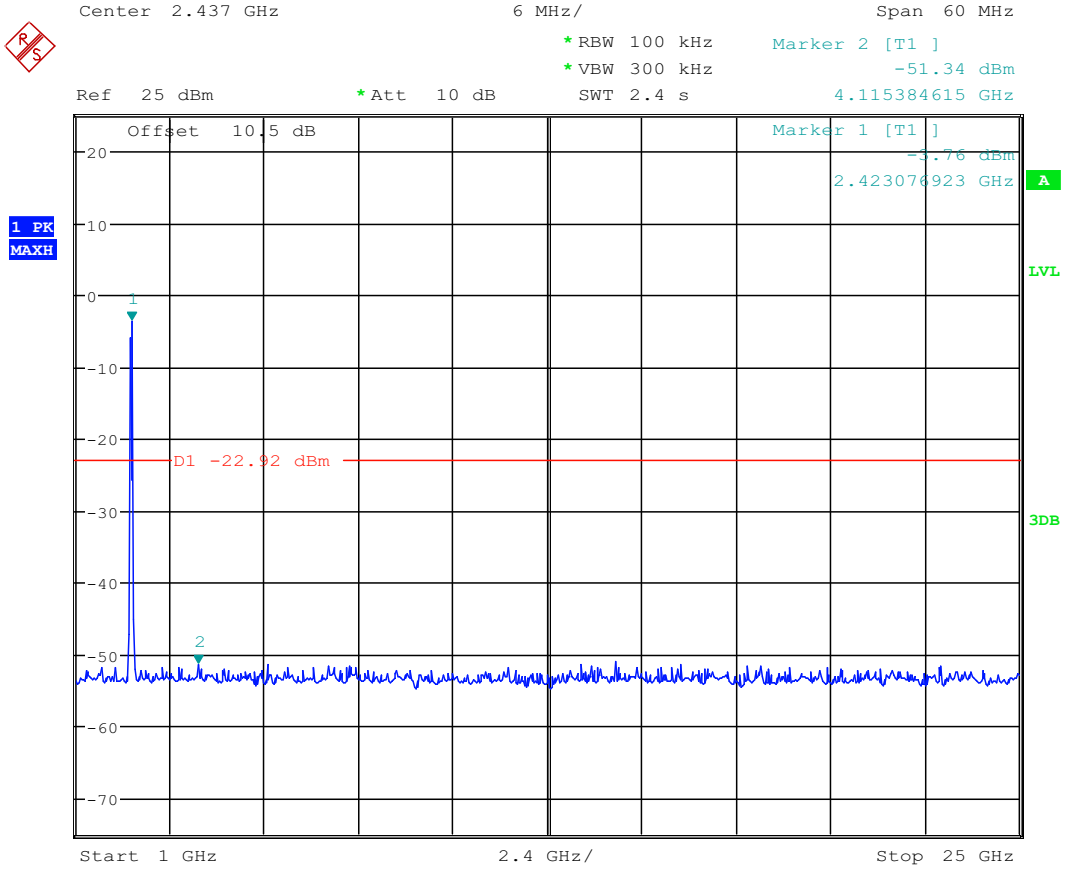

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-44.43 dBm
107.724358974 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -23.11 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz


* RBW 100 kHz
* VBW 300 kHz
SWT 15 ms
Marker 2 [T1]
-27.13 dBm
2.400000000 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-3.37 dBm
2.431730769 GHz
1 PK
MAXH
A
LVL
3DB
D1 -23.11 dBm
Start 2.3 GHz
15 MHz/
Stop 2.45 GHz

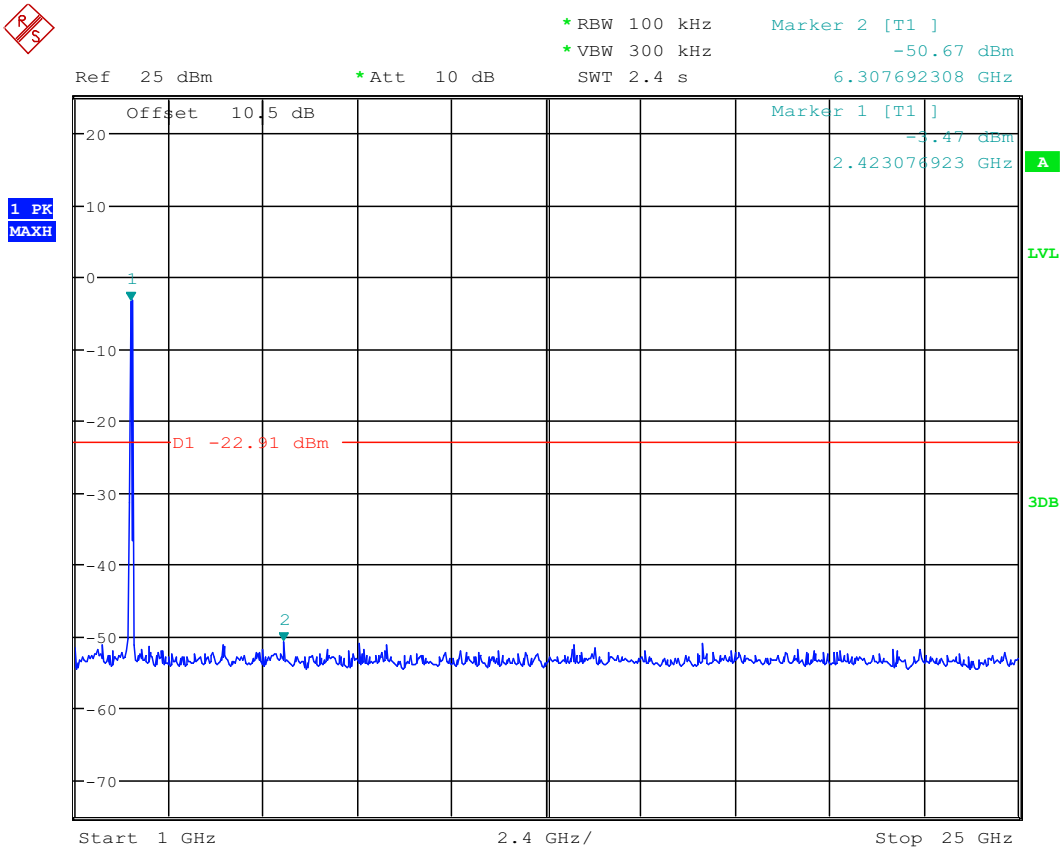
11n HT40 CH6:

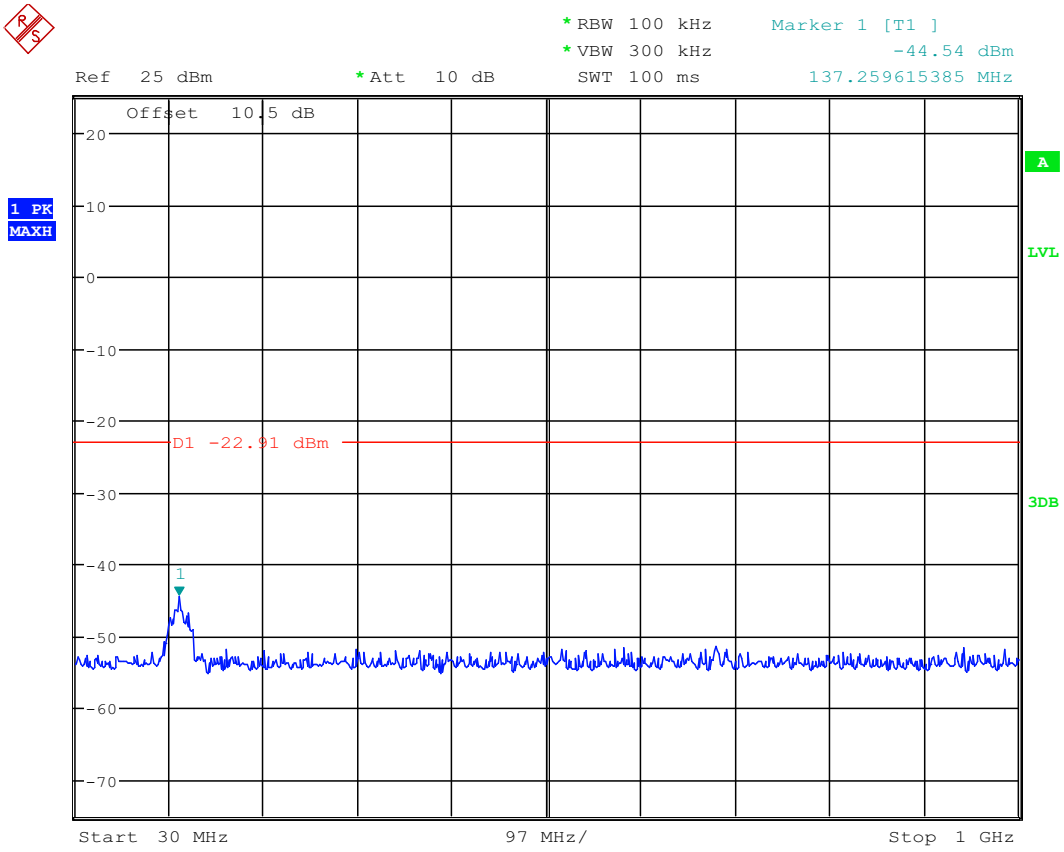

* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-44.81 dBm
121.714743590 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -22.92 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz

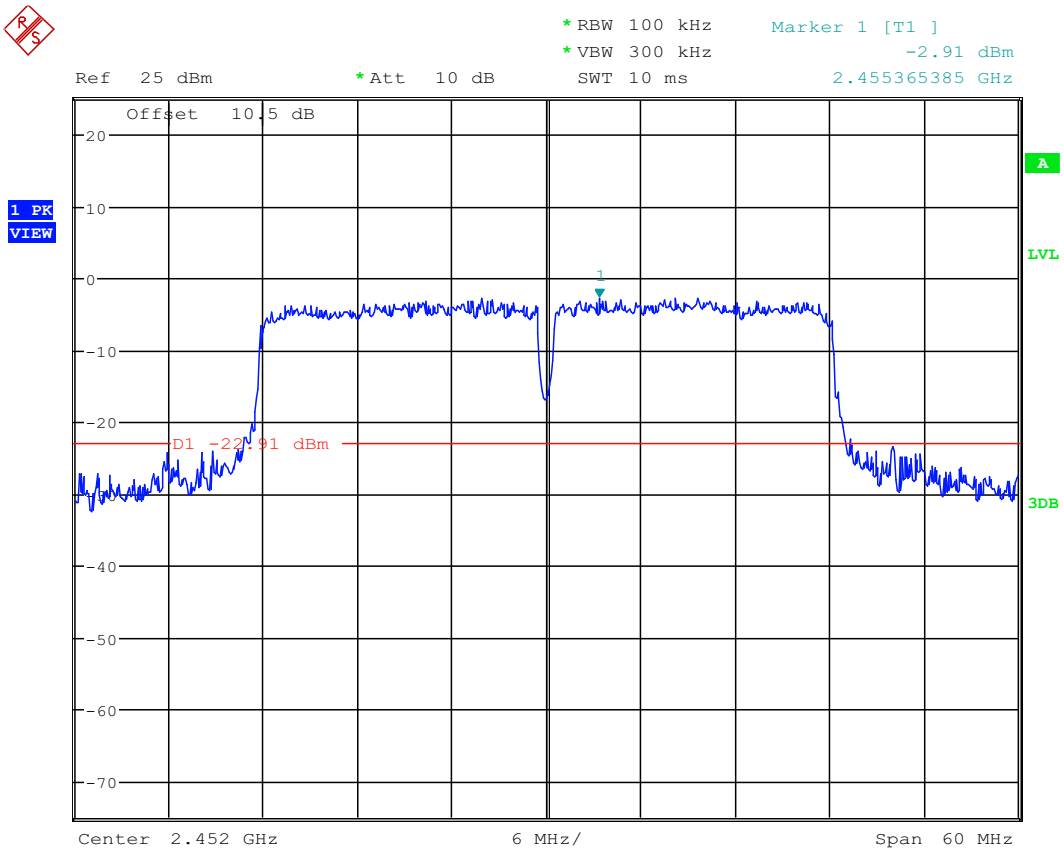

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
-2.92 dBm
2.446615385 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
1 PK
VIEW
A
LVL
3DB
D1 -22.92 dBm
Center 2.437 GHz
6 MHz/
Span 60 MHz

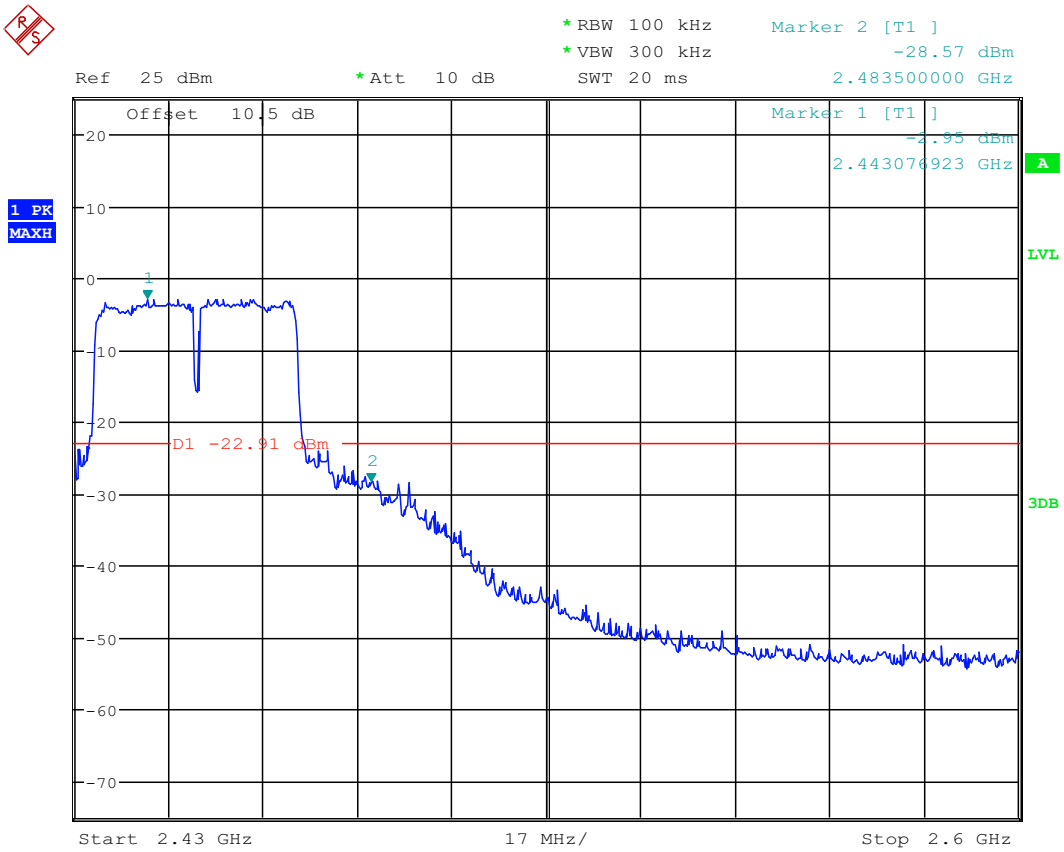

RBW 100 kHz
VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-51.34 dBm
4.115384615 GHz
Ref 25 dBm
Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-3.76 dBm
2.423076923 GHz
1 PK
MAXH
A
LVL
3DB
D1 -22.92 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz

11n HT40 CH9:


* RBW 100 kHz
* VBW 300 kHz
SWT 2.4 s
Marker 2 [T1]
-50.67 dBm
6.307692308 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-3.47 dBm
2.423076923 GHz
1 PK
MAXH
A
LVL
3DB
D1 -22.91 dBm
Start 1 GHz
2.4 GHz/
Stop 25 GHz


* RBW 100 kHz
* VBW 300 kHz
SWT 100 ms
Marker 1 [T1]
-44.54 dBm
137.259615385 MHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
MAXH
A
LVL
3DB
D1 -22.91 dBm
Start 30 MHz
97 MHz/
Stop 1 GHz


* RBW 100 kHz
* VBW 300 kHz
SWT 10 ms
Marker 1 [T1]
-2.91 dBm
2.455365385 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
1 PK
VIEW
A
LVL
3DB
D1 -22.91 dBm
Center 2.452 GHz
6 MHz/
Span 60 MHz


* RBW 100 kHz
* VBW 300 kHz
SWT 20 ms
Marker 2 [T1]
-28.57 dBm
2.483500000 GHz
Ref 25 dBm
* Att 10 dB
Offset 10.5 dB
Marker 1 [T1]
-2.95 dBm
2.443076923 GHz
1 PK
MAXH
A
LVL
3DB
D1 -22.91 dBm
Start 2.43 GHz
17 MHz/
Stop 2.6 GHz

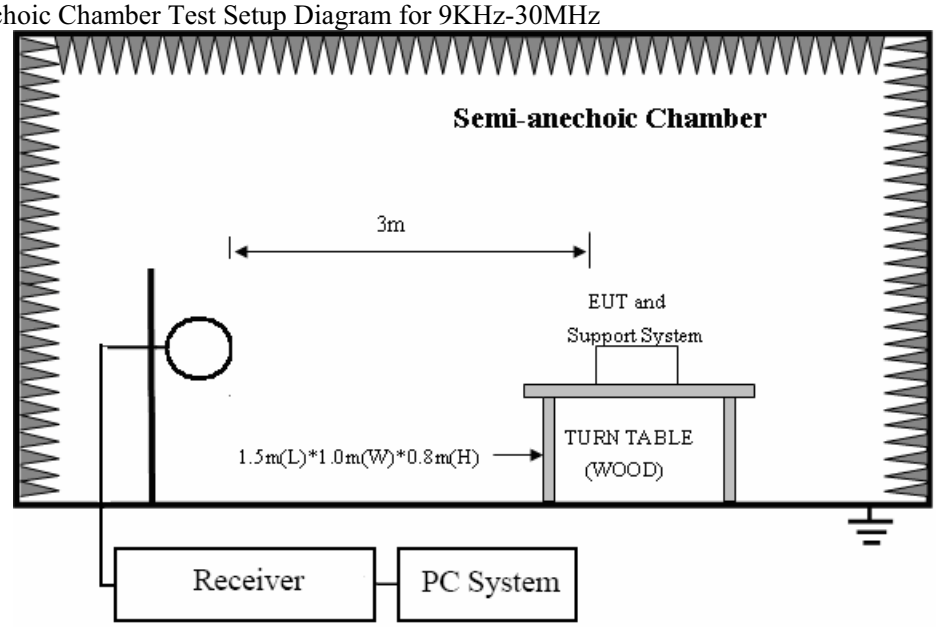
7. Emissions in restricted frequency bands

7.1. Test equipment

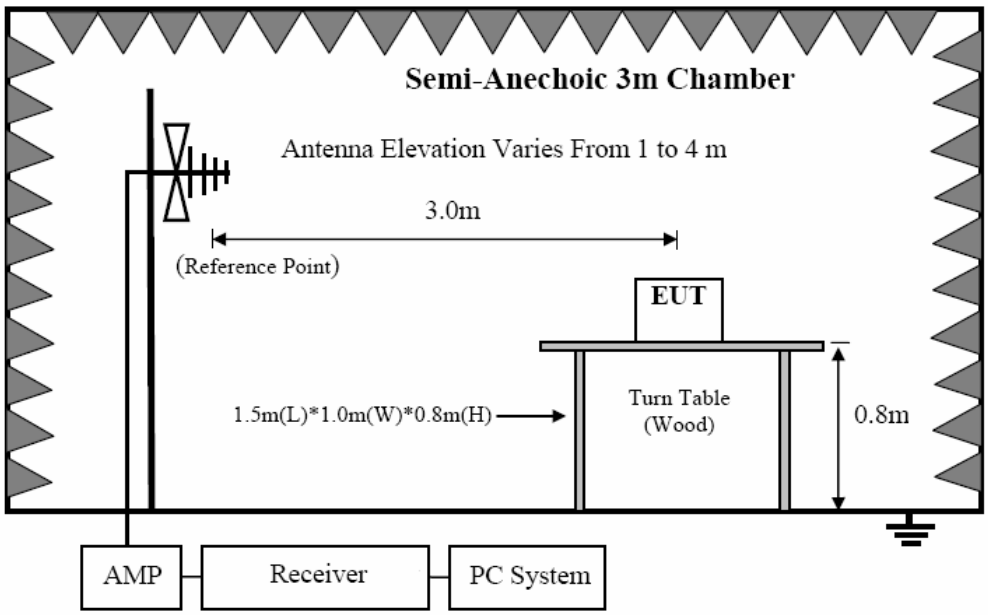
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESU8	100316	2014/10/25	1 Year
2	Spectrum analyzer	R&S	FSU	1166.1660.26	2014/10/25	1 Year
3	Active Loop antenna	Schwarzbeck	FMZB 1519	1519-038	2014/11/01	1 Year
4	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	2015/04/12	1 Year
5	Double Ridged Horn Antenna	R&S	HF907	100276	2014/11/01	1 Year
6	Horn Antenna	EMCO	3116	00060095	2014/11/01	1 Year
7	Pre-amplifier	A.H.	PAM-1840VH	562	2014/10/25	1 Year
8	RF Cable	R&S	R01	10403	2014/10/25	1 Year
9	RF Cable	R&S	R02	10512	2014/10/25	1 Year
10	Testing software	Audix	E3	6.111111	/	/

7.2. Block diagram of test setup

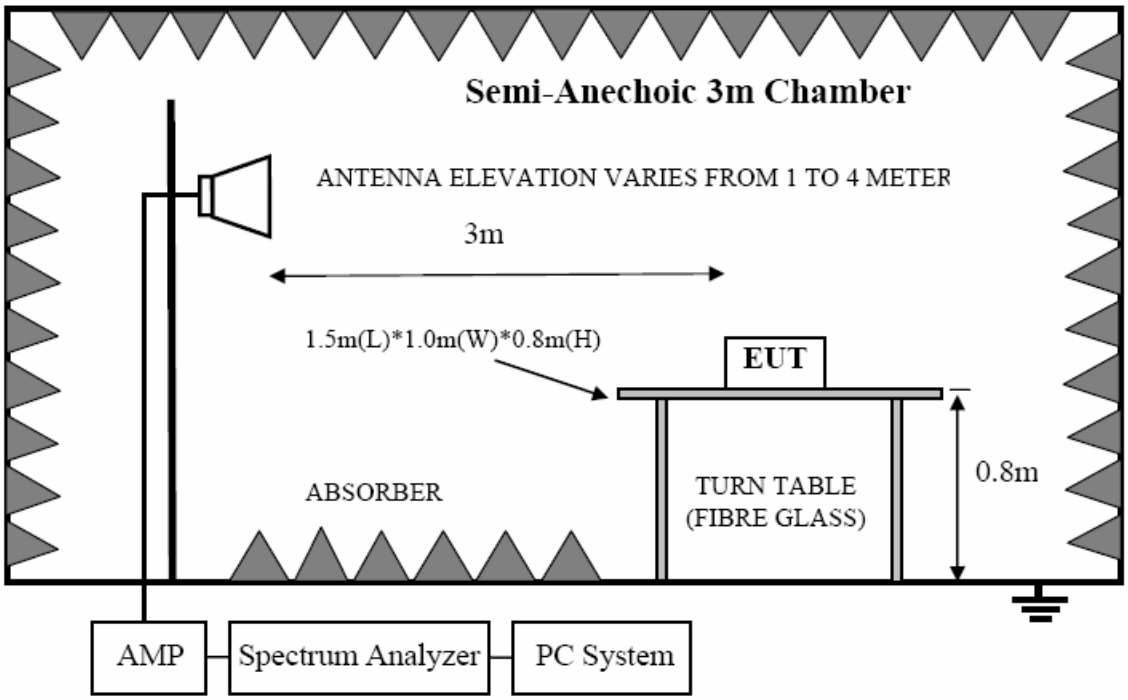
In 3m Anechoic Chamber Test Setup Diagram for 9KHz-30MHz



In 3m Anechoic Chamber Test Setup Diagram for 30MHz-1GHz



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1GHz



7.3. Limit

8.3.1 FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	([2])

8.3.2 FCC 15.209 Limit.

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(KHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(KHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Note: (1)The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz.Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30MHz, measurement may be performed at a distance closer then that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$Limit_{3m}(dBuV/m)= Limit_{30m}(dBuV/m) + 40Log(30m/3m)$$

8.3.3 Limit for this EUT

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

7.4. Test Procedure

(1) EUT height should be 0.8m for below 1GHz at a semi - anechoic chamber while EUT height should be 0.8m for above 1GHz at full chamber or semi - anechoic chamber ground with absorbers.

(2) Setup EUT and assistant system according clause 2.3 and 7.2

(3) The antenna used as below table.

Test frequency range	Test antenna used	Measuring distance
9KHz-30MHz	Active Loop antenna	3 m
30MHz-1GHz	Trilog Broadband Antenna	3 m
1GHz-18GHz	Double Ridged Horn Antenna(1GHz-18GHz)	3 m
18GHz-40GHz	Horn Antenna(18GHz-40GHz)	1 m

According ANSI C63.10:2009 clause 6.4.4.2 and 6,5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. for measurement above 30MHz, the Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(4) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9KHz to 25GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1m to 4m(Except loop antenna, it's fixed 1m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9KHz to 25GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9KHz to 30MHz and 18GHz to 25GHz, so below final test was performed with frequency range from 30MHz to 18GHz.

(5) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2009 on Radiated Emission test.

(6) The emissions from 9KHz to 1GHz were measured based on CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz, for emissions from 9KHz-90KHz,110KHz-490KHz and above 1GHz were measured based on average detector, for emissions above 1GHz, peak emissions also be measured and need comply with Peak limit.

(7) The emissions from 9KHz to 1GHz, QP or average values were measured with EMI receiver with below RBW

Frequency band	RBW
9KHz-150KHz	200Hz
150KHz-30MHz	9KHz
30MHz-1GHz	120KHz

(8) For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure(according ANSI C63.10:2009 clause 4.2.3.2.3 procedure for average measure). Peak detector is used for Peak and AV measurement both.

7.5. Test result

PASS. (See below detailed test result)

All the emissions except fundamental emission from 9KHz to 25GHz were comply with 15.209 limit.

Note1: According exploratory test no any obvious emission were detected from 9KHz to 30MHz and 18GHz to 25GHz, so the final test was performed with frequency range from 30MHz to 18GHz and recorded in below.

Note2: For emissions below 1GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1GHz, the final test was only performed with EUT working in 11b, Tx CH6 mode.

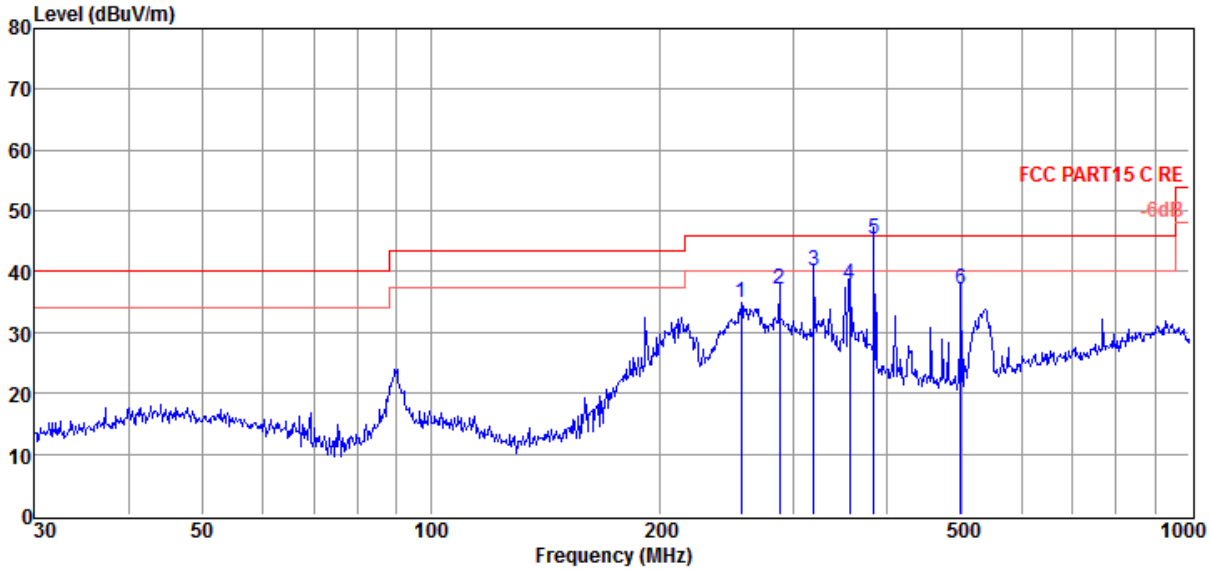
Note3: For below test data, when the limit tabular marked "/" means this frequency point is the fundamental emission and no need comply with this limit.

Radiated Emission test (below 1GHz)

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\H7000 RE .EM6	
Test Date	: 2015-06-02	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: TX Mode
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 VULB 9163/3m/VERTICAL
Memo	:		

Data: 1



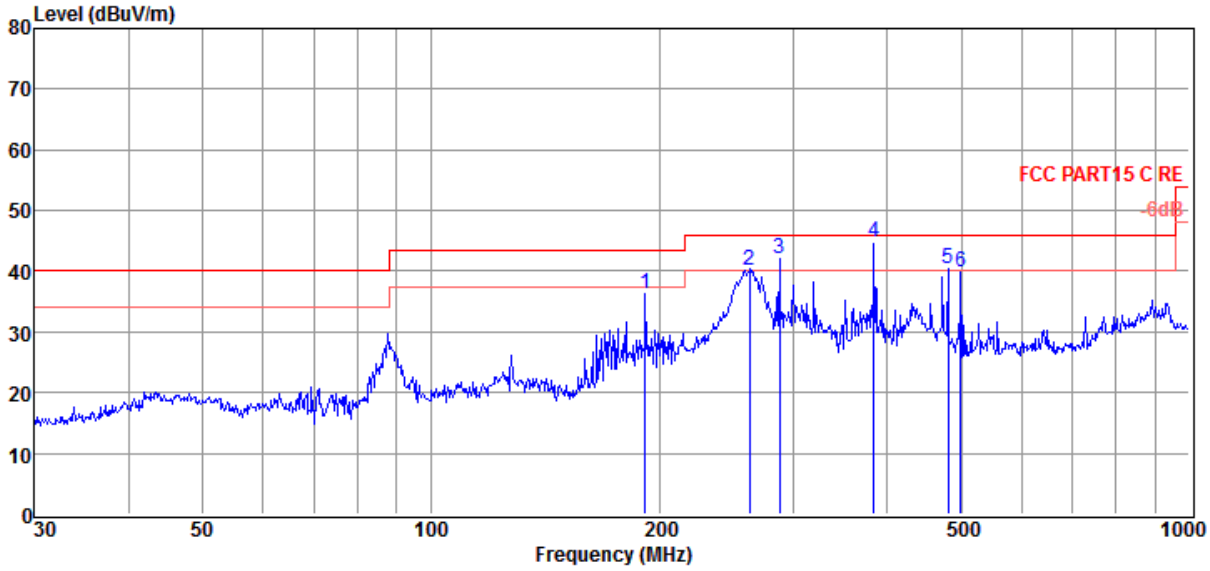
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	256.52	20.40	11.90	2.51	34.81	46.00	-11.19	QP	VERTICAL
2	287.99	20.11	14.25	2.67	37.03	46.00	-8.97	QP	VERTICAL
3	319.94	23.58	13.78	2.76	40.12	46.00	-5.88	QP	VERTICAL
4	356.68	19.89	14.88	3.04	37.81	46.00	-8.19	QP	VERTICAL
5	384.03	26.71	15.58	3.18	45.47	46.00	-0.53	QP	VERTICAL
6	499.43	17.49	16.00	3.67	37.16	46.00	-8.84	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\H7000 RE .EM6	
Test Date	: 2015-05-17	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: TX Mode
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 VULB 9163/3m/HORIZONTAL
Memo	:		

Data: 2



Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	191.75	23.69	10.53	2.12	36.34	43.50	-7.16	QP	HORIZONTAL
2	262.90	24.98	12.73	2.55	40.26	46.00	-5.74	QP	HORIZONTAL
3	287.99	25.23	14.25	2.67	42.15	46.00	-3.85	QP	HORIZONTAL
4	384.02	26.09	15.58	3.18	44.85	46.00	-1.15	QP	HORIZONTAL
5	480.53	20.84	15.99	3.62	40.45	46.00	-5.55	QP	HORIZONTAL
6	499.43	20.15	16.00	3.67	39.82	46.00	-6.18	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

Result: Pass.

Radiated Emission test (above 1GHz)

Freq (MHz)	Read level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector type	Polarization
Tx mode 11b CH1									
4824.00	44.17	35.42	29.13	8.09	58.55	74.00	-15.45	Peak	HORIZONTAL
4824.00	32.11	35.42	29.13	8.09	46.49	54.00	-7.51	Average	HORIZONTAL
7236.00	32.82	37.24	29.74	9.95	50.27	74.00	-23.73	Peak	HORIZONTAL
4824.00	44.70	35.42	29.13	8.09	59.08	74.00	-14.92	Peak	VERTICAL
4824.00	32.11	35.42	29.13	8.09	46.49	54.00	-7.51	Average	VERTICAL
7236.00	31.95	37.24	29.74	9.95	49.40	74.00	-24.60	Peak	VERTICAL
Tx mode 11b CH6									
4874.00	51.73	35.51	29.08	8.14	66.30	74.00	-7.70	Peak	HORIZONTAL
4874.00	33.09	35.51	29.08	8.14	47.66	54.00	-6.34	Average	HORIZONTAL
7311.00	34.35	37.29	29.81	9.97	51.80	74.00	-22.20	Peak	HORIZONTAL
4874.00	43.31	35.51	29.08	8.14	57.88	74.00	-16.12	Peak	VERTICAL
4874.00	30.59	35.51	29.08	8.14	45.16	54.00	-8.84	Average	VERTICAL
7311.00	31.34	37.29	29.81	9.97	48.79	74.00	-25.21	Peak	VERTICAL
Tx mode 11b CH11									
4924.00	48.39	35.59	29.06	8.16	63.08	74.00	-10.92	Peak	HORIZONTAL
4924.00	34.10	35.59	29.06	8.16	48.79	54.00	-5.21	Average	HORIZONTAL
7386.00	31.36	37.24	29.74	9.95	48.81	74.00	-25.19	Peak	HORIZONTAL
4924.00	49.36	35.59	29.06	8.16	64.05	74.00	-9.95	Peak	VERTICAL
4924.00	32.60	35.59	29.06	8.16	47.29	54.00	-6.71	Average	VERTICAL
7386.00	31.50	37.34	29.95	10.01	48.90	74.00	-25.10	Peak	VERTICAL
Tx mode 11g CH1									
4824.00	47.77	35.42	29.13	8.09	62.15	74.00	-11.85	Peak	HORIZONTAL
4824.00	32.61	35.42	29.13	8.09	46.99	54.00	-7.01	Average	HORIZONTAL
7236.00	31.86	37.24	29.74	9.95	49.31	74.00	-24.69	Peak	HORIZONTAL
4824.00	50.77	35.42	29.13	8.09	65.15	74.00	-8.85	Peak	VERTICAL
4824.00	34.11	35.42	29.13	8.09	48.49	54.00	-5.51	Average	VERTICAL
7236.00	31.87	37.24	29.74	9.95	49.32	74.00	-24.68	Peak	VERTICAL
Tx mode 11g CH6									
4874.00	48.50	35.51	29.08	8.14	63.07	74.00	-10.93	Peak	HORIZONTAL
4874.00	32.59	35.51	29.08	8.14	47.16	54.00	-6.84	Average	HORIZONTAL
7311.00	31.81	37.29	29.81	9.97	49.26	74.00	-24.74	Peak	HORIZONTAL
4874.00	46.74	35.51	29.08	8.14	61.31	74.00	-12.69	Peak	VERTICAL
4874.00	32.09	35.51	29.08	8.14	46.66	54.00	-7.34	Average	VERTICAL
7311.00	31.03	37.29	29.81	9.97	48.48	74.00	-25.52	Peak	VERTICAL
Tx mode 11g CH11									
4924.00	48.61	35.59	29.06	8.16	63.30	74.00	-10.70	Peak	HORIZONTAL
4924.00	32.90	35.59	29.06	8.16	47.59	54.00	-6.41	Average	HORIZONTAL
7386.00	30.68	37.34	29.95	10.01	48.08	74.00	-25.92	Peak	HORIZONTAL
4924.00	48.54	35.59	29.06	8.16	63.23	74.00	-10.77	Peak	VERTICAL
4924.00	32.90	35.59	29.06	8.16	47.59	54.00	-6.41	Average	VERTICAL
7386.00	31.19	37.34	29.95	10.01	48.59	74.00	-25.41	Peak	VERTICAL

Freq (MHz)	Read level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector type	Polarization
Tx mode 11n HT20 CH1									
4824.00	54.09	35.42	29.13	8.09	68.47	74.00	-5.53	Peak	HORIZONTAL
4824.00	33.91	35.42	29.13	8.09	48.29	54.00	-5.71	Average	HORIZONTAL
7236.00	32.19	37.24	29.74	9.95	49.64	74.00	-24.36	Peak	HORIZONTAL
4824.00	41.44	35.42	29.13	8.09	55.82	74.00	-18.18	Peak	VERTICAL
4824.00	30.61	35.42	29.13	8.09	44.99	54.00	-9.01	Average	VERTICAL
7236.00	31.17	37.24	29.74	9.95	48.62	74.00	-25.38	Peak	VERTICAL
Tx mode 11n HT20 CH6									
4874.00	52.27	35.51	29.08	8.14	66.84	74.00	-7.16	Peak	HORIZONTAL
4874.00	33.89	35.51	29.08	8.14	48.46	54.00	-5.54	Average	HORIZONTAL
7311.00	31.41	37.29	29.81	9.97	48.86	74.00	-25.14	Peak	HORIZONTAL
4874.00	45.06	35.51	29.08	8.14	59.63	74.00	-14.37	Peak	VERTICAL
4874.00	30.09	35.51	29.08	8.14	44.66	54.00	-9.34	Average	VERTICAL
7311.00	31.59	37.29	29.81	9.97	49.04	74.00	-24.96	Peak	VERTICAL
Tx mode 11n HT20 CH11									
4924.00	47.16	35.59	29.06	8.16	61.85	74.00	-12.15	Peak	HORIZONTAL
4924.00	31.00	35.59	29.06	8.16	45.69	54.00	-8.31	Average	HORIZONTAL
7386.00	30.59	37.34	29.95	10.01	47.99	74.00	-26.01	Peak	HORIZONTAL
4924.00	48.76	35.59	29.06	8.16	63.45	74.00	-10.55	Peak	VERTICAL
4924.00	32.40	35.59	29.06	8.16	47.09	54.00	-6.91	Average	VERTICAL
7386.00	32.02	37.34	29.95	10.01	49.42	74.00	-24.58	Peak	VERTICAL
Tx mode 11n HT40 CH3									
4844.00	48.25	35.45	29.10	8.11	62.71	74.00	-11.29	Peak	HORIZONTAL
4844.00	32.10	35.45	29.10	8.11	46.56	54.00	-7.44	Average	HORIZONTAL
7266.00	31.08	37.27	29.74	9.95	48.56	74.00	-25.44	Peak	HORIZONTAL
4844.00	40.60	35.45	29.10	8.11	55.06	74.00	-18.94	Peak	VERTICAL
4844.00	28.50	35.45	29.10	8.11	42.96	54.00	-11.04	Average	VERTICAL
7266.00	31.72	37.27	29.74	9.95	49.20	74.00	-24.80	Peak	VERTICAL
Tx mode 11n HT40 CH6									
4874.00	46.53	35.51	29.08	8.14	61.10	74.00	-12.90	Peak	HORIZONTAL
4874.00	32.89	35.51	29.08	8.14	47.46	54.00	-6.54	Average	HORIZONTAL
7311.00	31.51	37.29	29.81	9.97	48.96	74.00	-25.04	Peak	HORIZONTAL
4874.00	42.24	35.51	29.08	8.14	56.81	74.00	-17.19	Peak	VERTICAL
4874.00	30.09	35.51	29.08	8.14	44.66	54.00	-9.34	Average	VERTICAL
7311.00	30.47	37.29	29.81	9.97	47.92	74.00	-26.08	Peak	VERTICAL
Tx mode 11n HT40 CH9									
4904.00	49.94	35.56	29.08	8.14	64.56	74.00	-9.44	Peak	HORIZONTAL
4904.00	34.30	35.56	29.08	8.14	48.92	54.00	-5.08	Average	HORIZONTAL
7356.00	31.90	37.32	29.95	10.01	49.28	74.00	-24.72	Peak	HORIZONTAL
4904.00	43.47	35.56	29.08	8.14	58.09	74.00	-15.91	Peak	VERTICAL
4904.00	30.10	35.56	29.08	8.14	44.72	54.00	-9.28	Average	VERTICAL
7356.00	29.97	37.32	29.95	10.01	47.35	74.00	-26.65	Peak	VERTICAL

Note: Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

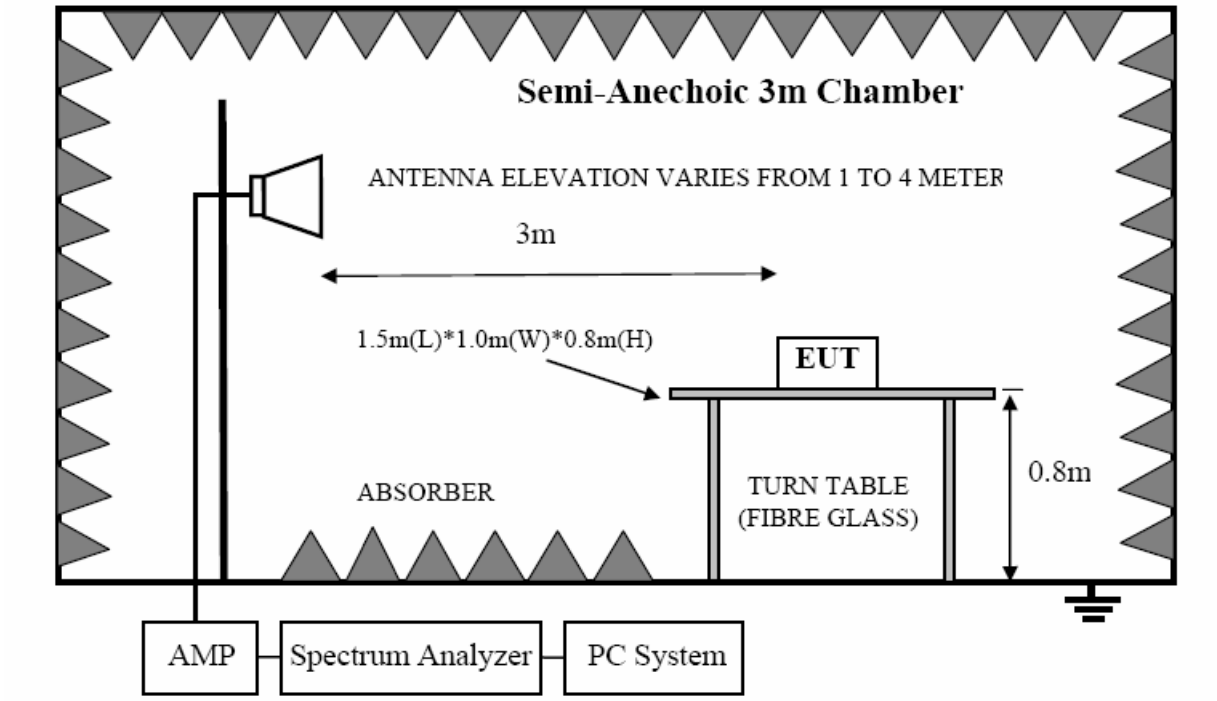
Result: Pass.

8. Band Edge Compliance

8.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESU8	100316	2014/10/25	1 Year
2	Spectrum analyzer	R&S	FSU	1166.1660.26	2014/10/25	1 Year
3	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	2015/04/12	1 Year
4	Double Ridged Horn Antenna	R&S	HF907	100276	2014/11/01	1 Year
5	Pre-amplifier	A.H.	PAM0-0118	360	2014/10/25	1 Year
6	RF Cable	R&S	R01	10403	2014/10/25	1 Year
7	RF Cable	R&S	R02	10512	2014/10/25	1 Year
8	Testing software	Audix	E3	6.111111	/	/

8.2. Block diagram of test setup



8.3. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

8.4. Test Procedure

Same with clause 8.4 except change investigated frequency range from 2100MHz to 2450MHz and 2450MHz to 2500MHz.

Remark: All restriction band have been tested, and only the worse case is shown in report.

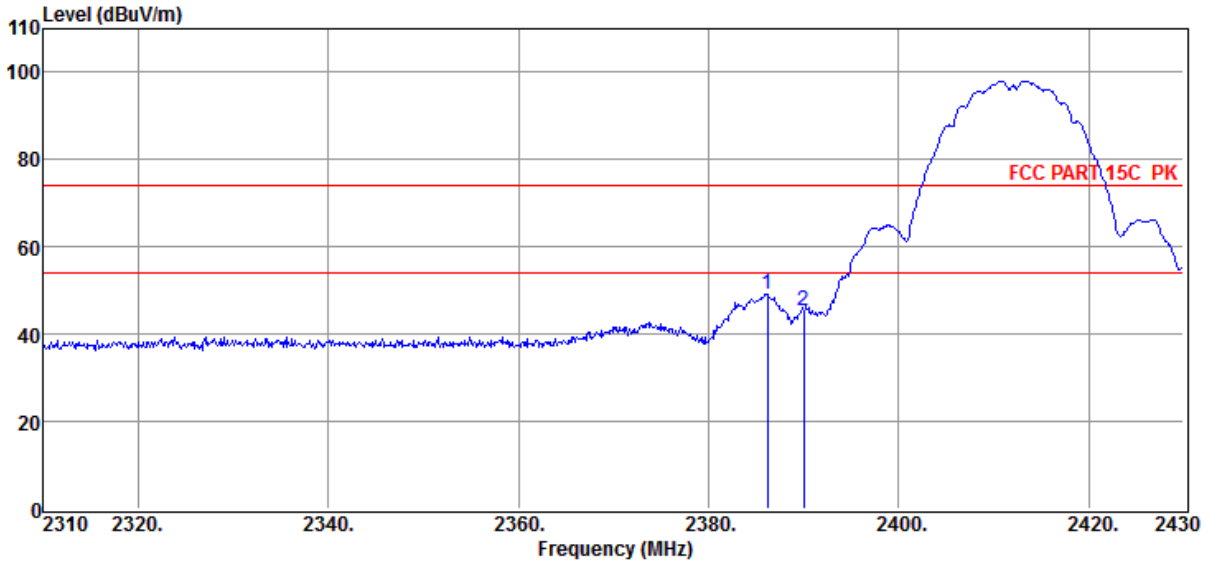
8.5. Test result

PASS. (See below detailed test result)

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11b CH1
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/HORIZONTAL
Memo	:		

Data: 5



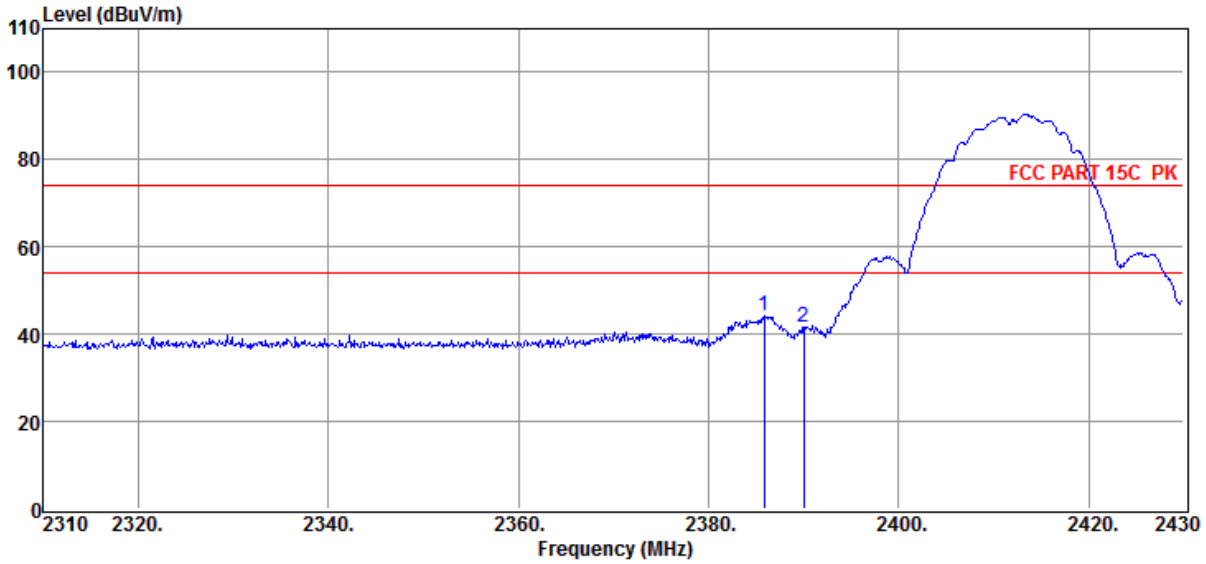
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2386.20	44.31	29.99	30.21	5.17	49.26	74.00	-24.74	Peak	HORIZONTAL
2	2390.00	40.46	29.99	30.21	5.17	45.41	74.00	-28.59	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11b CH1
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/VERTICAL
Memo	:		

Data: 6



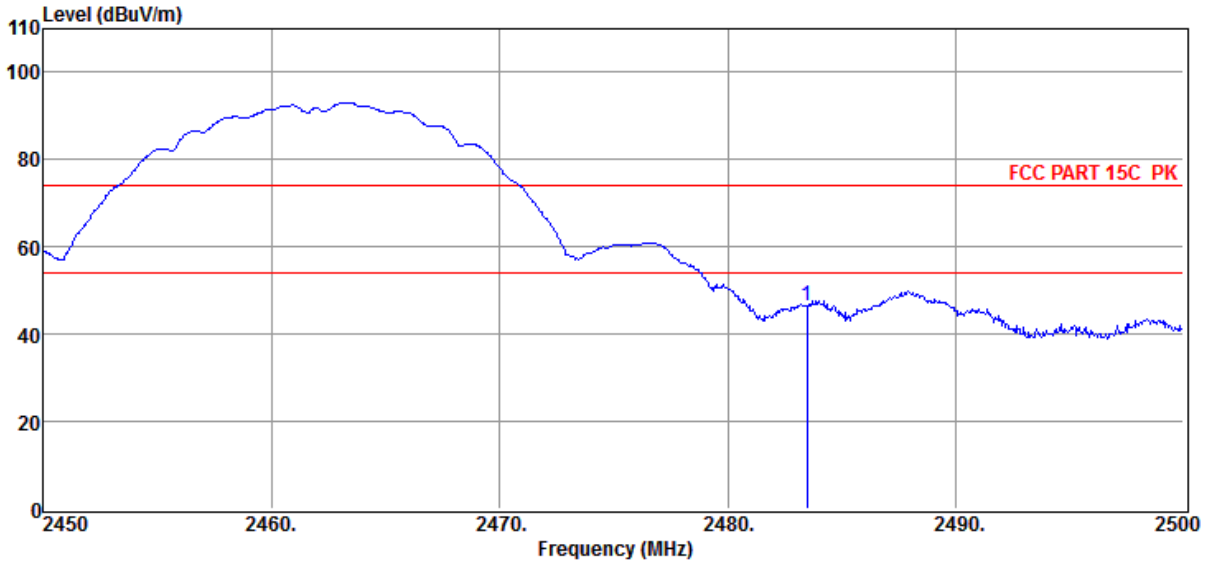
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2385.84	39.23	29.99	30.21	5.17	44.18	74.00	-29.82	Peak	VERTICAL
2	2390.00	36.77	29.99	30.21	5.17	41.72	74.00	-32.28	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11b CH11
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/VERTICAL
Memo	:		

Data: 11



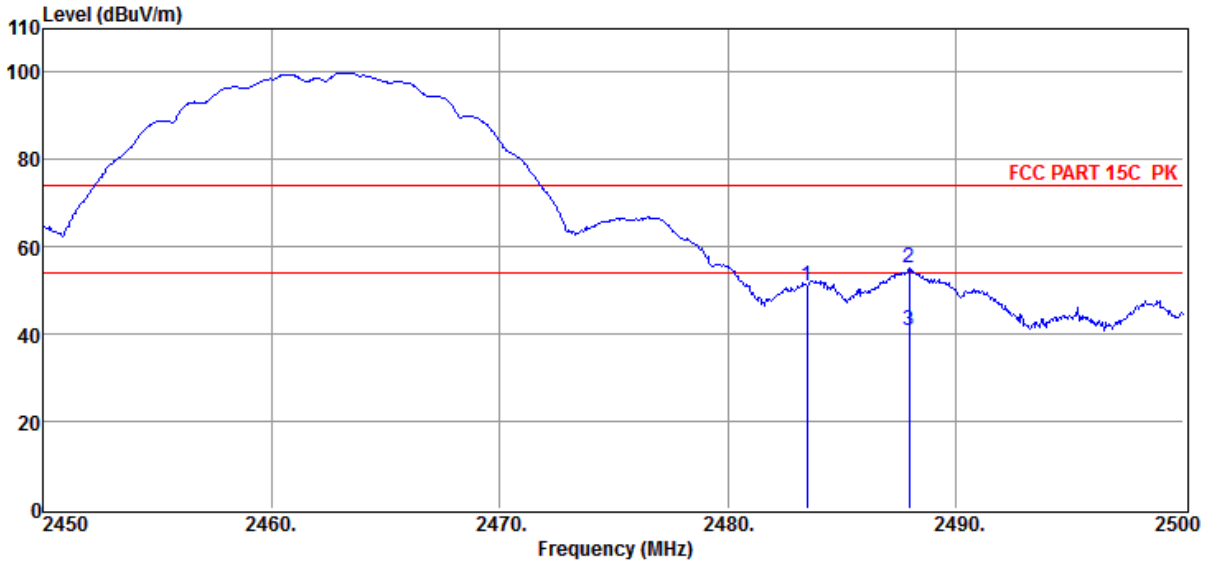
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	41.21	30.25	30.25	5.31	46.52	74.00	-27.48	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11b CH11
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/HORIZONTAL
Memo	:		

Data: 12



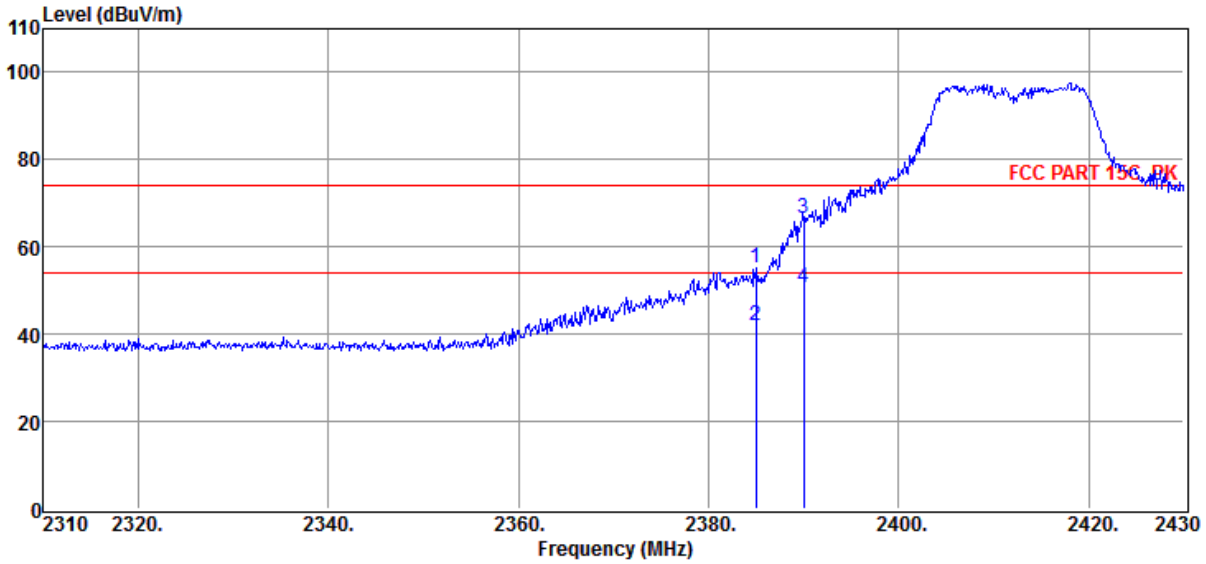
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	45.89	30.25	30.25	5.31	51.20	74.00	-22.80	Peak	HORIZONTAL
2	2487.95	49.65	30.30	30.25	5.31	55.01	74.00	-18.99	Peak	HORIZONTAL
3	2487.95	35.60	30.30	30.25	5.31	40.96	54.00	-13.04	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11g CH1
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/HORIZONTAL
Memo	:		

Data: 15



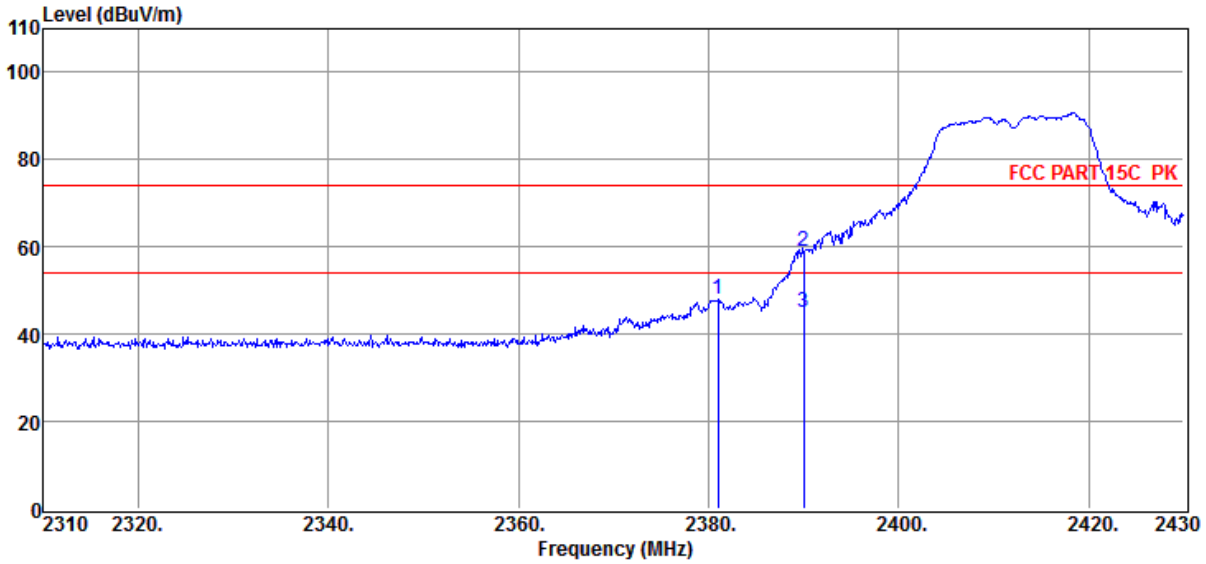
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2385.00	50.17	29.94	30.21	5.17	55.07	74.00	-18.93	Peak	HORIZONTAL
2	2385.00	36.90	29.94	30.21	5.17	41.80	54.00	-12.20	Average	HORIZONTAL
3	2390.00	61.51	29.99	30.21	5.17	66.46	74.00	-7.54	Peak	HORIZONTAL
4	2390.00	45.60	29.99	30.21	5.17	50.55	54.00	-3.45	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11g CH1
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/VERTICAL
Memo	:		

Data: 16



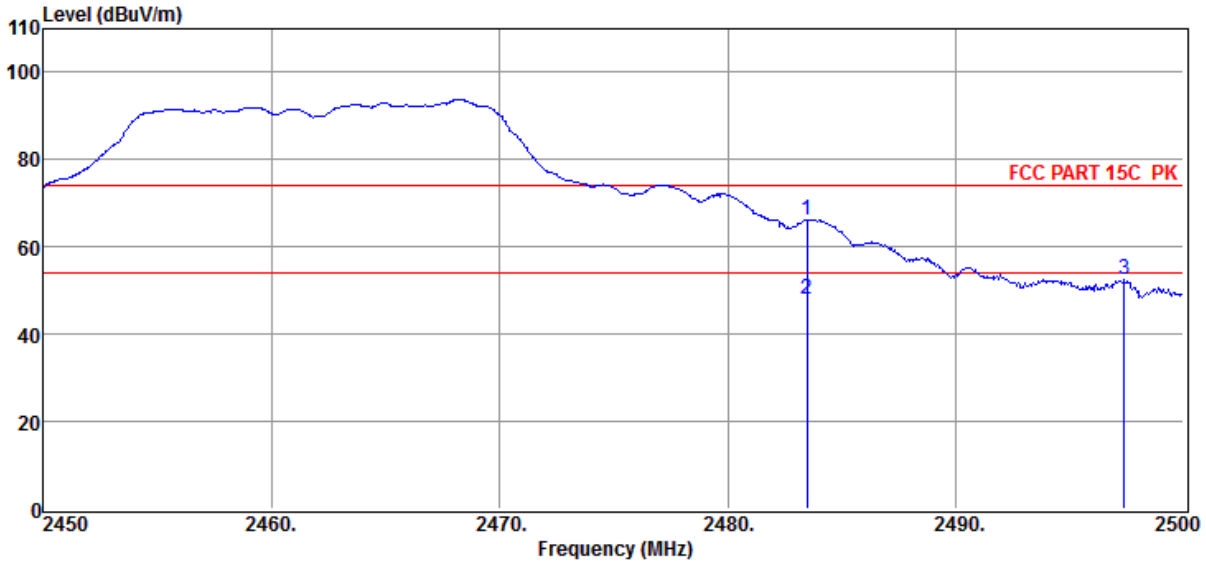
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2381.04	42.94	29.94	30.21	5.17	47.84	74.00	-26.16	Peak	VERTICAL
2	2390.00	53.99	29.99	30.21	5.17	58.94	74.00	-15.06	Peak	VERTICAL
3	2390.00	40.10	29.99	30.21	5.17	45.05	54.00	-8.95	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11g CH11
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/VERTICAL
Memo	:		

Data: 21



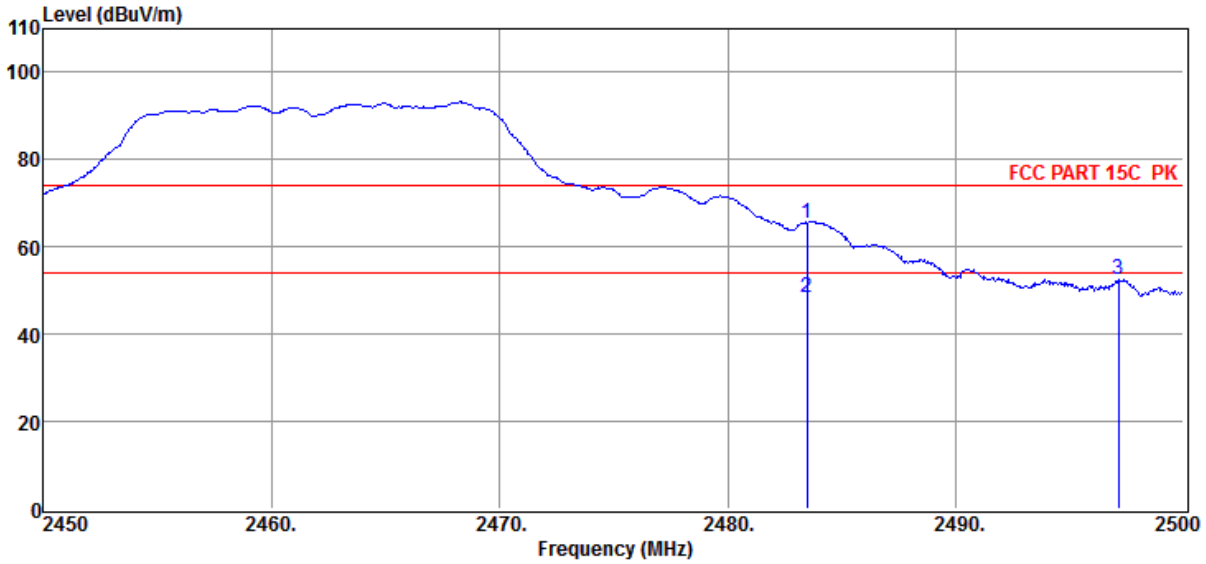
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	60.78	30.25	30.25	5.31	66.09	74.00	-7.91	Peak	VERTICAL
2	2483.50	42.60	30.25	30.25	5.31	47.91	54.00	-6.09	Average	VERTICAL
3	2497.40	47.31	30.30	30.27	5.38	52.72	74.00	-21.28	Peak	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11g CH11
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/HORIZONTAL
Memo	:		

Data: 22



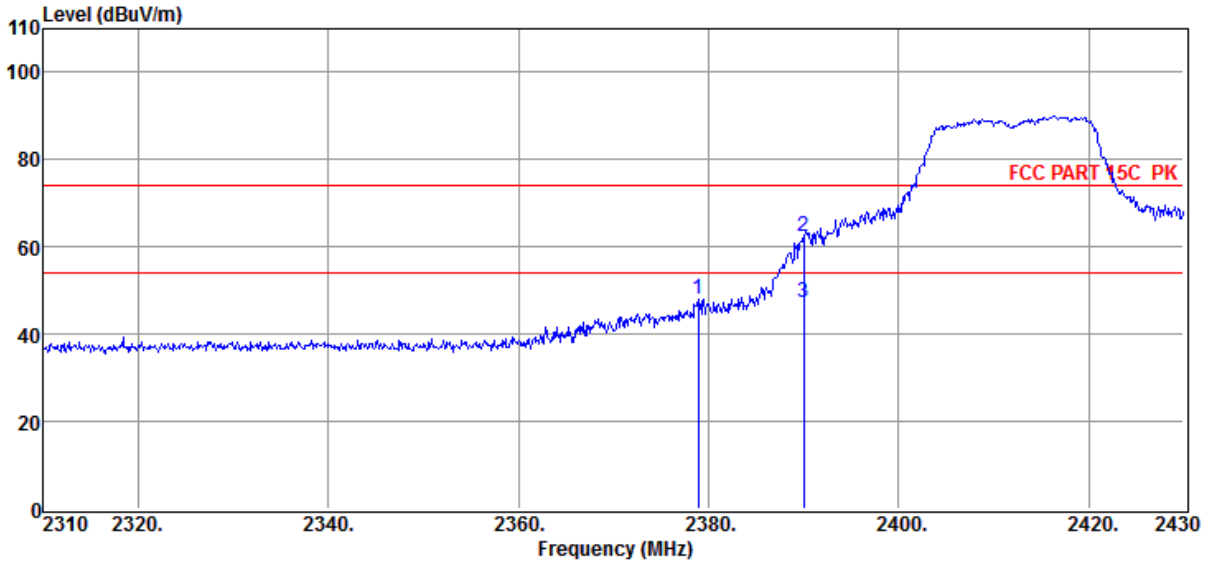
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	60.25	30.25	30.25	5.31	65.56	74.00	-8.44	Peak	HORIZONTAL
2	2483.50	42.90	30.25	30.25	5.31	48.21	54.00	-5.79	Average	HORIZONTAL
3	2497.15	47.24	30.30	30.27	5.38	52.65	74.00	-21.35	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11n HT20 CH1
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/VERTICAL
Memo	:		

Data: 25



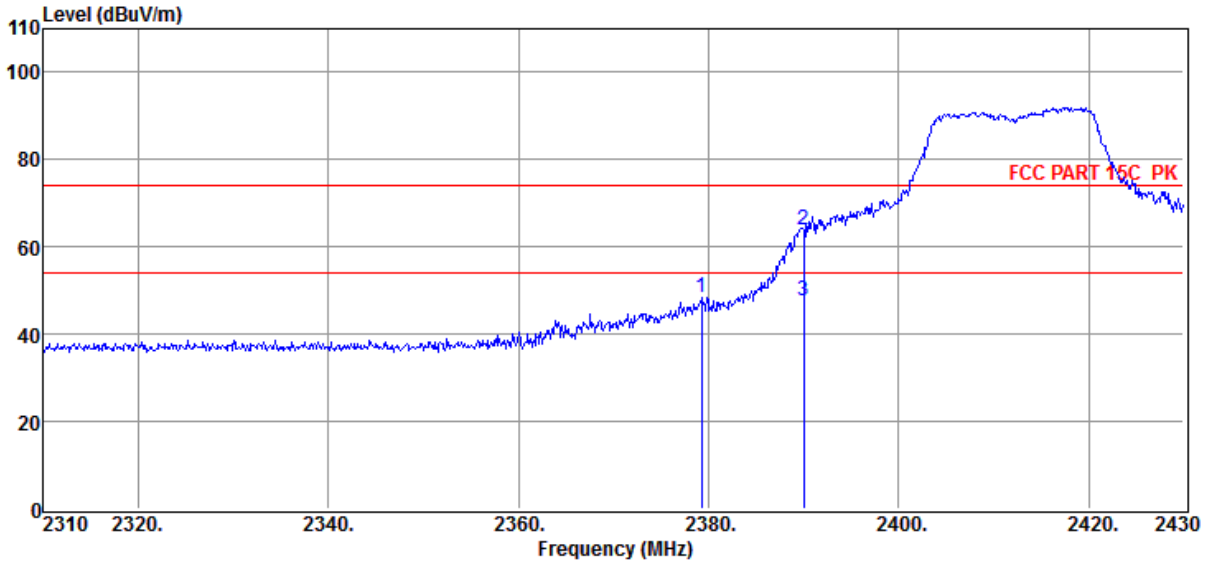
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2378.88	43.15	29.94	30.21	5.17	48.05	74.00	-25.95	Peak	VERTICAL
2	2390.00	57.26	29.99	30.21	5.17	62.21	74.00	-11.79	Peak	VERTICAL
3	2390.00	42.20	29.99	30.21	5.17	47.15	54.00	-6.85	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11n HT20 CH1
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/HORIZONTAL
Memo	:		

Data: 26



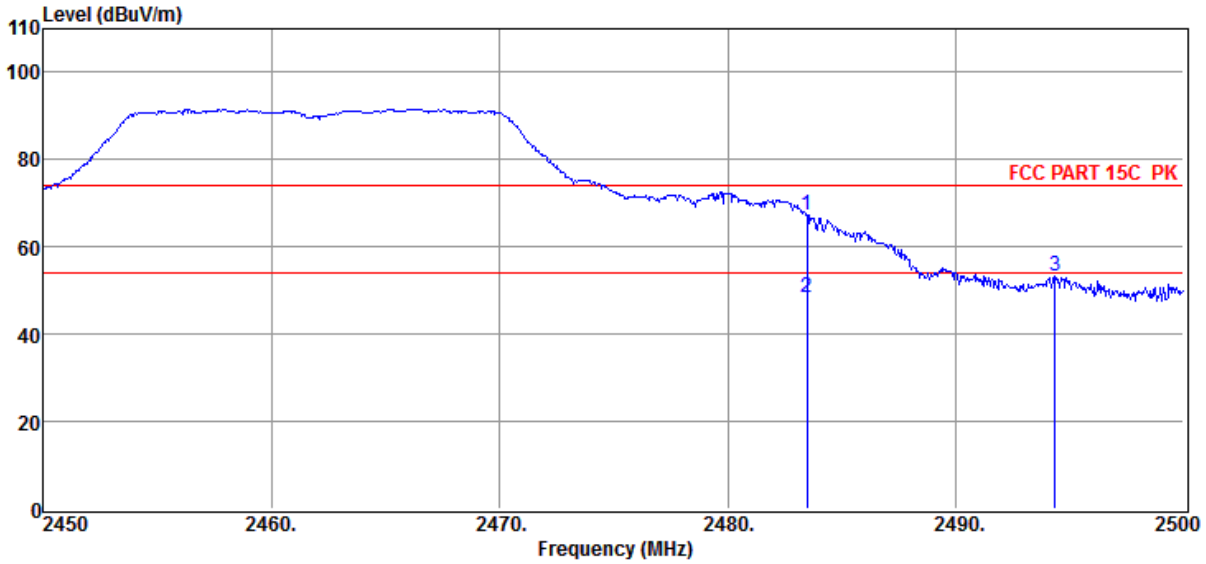
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2379.24	43.54	29.94	30.21	5.17	48.44	74.00	-25.56	Peak	HORIZONTAL
2	2390.00	58.81	29.99	30.21	5.17	63.76	74.00	-10.24	Peak	HORIZONTAL
3	2390.00	42.80	29.99	30.21	5.17	47.75	54.00	-6.25	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11n HT20 CH11
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/HORIZONTAL
Memo	:		

Data: 31



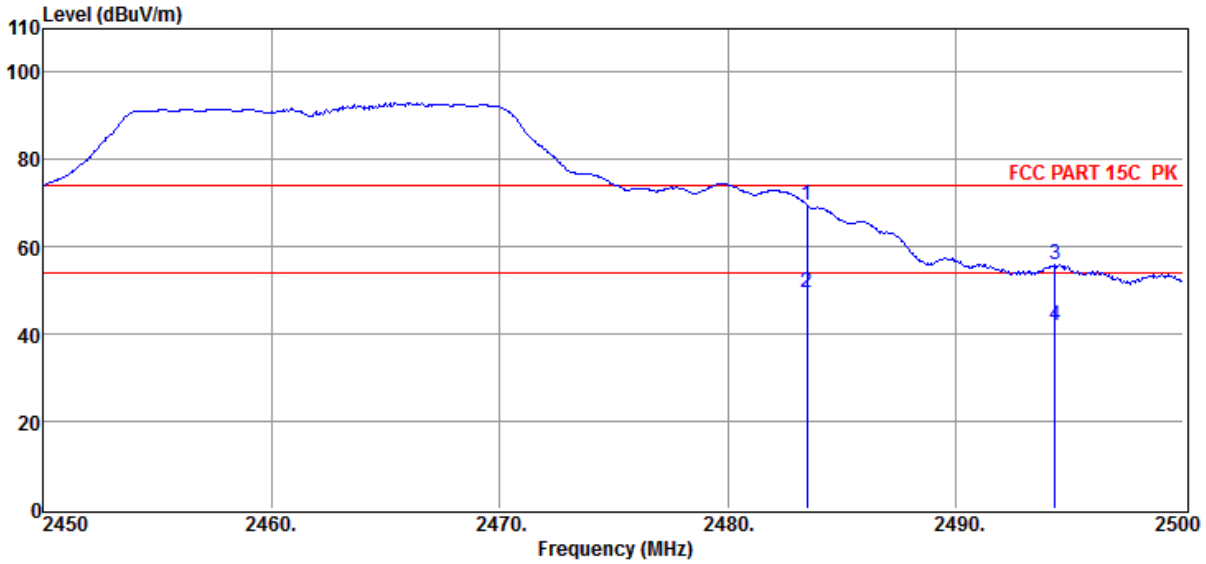
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	61.87	30.25	30.25	5.31	67.18	74.00	-6.82	Peak	HORIZONTAL
2	2483.50	43.10	30.25	30.25	5.31	48.41	54.00	-5.59	Average	HORIZONTAL
3	2494.35	47.78	30.30	30.25	5.31	53.14	74.00	-20.86	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11n HT20 CH11
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/VERTICAL
Memo	:		

Data: 32



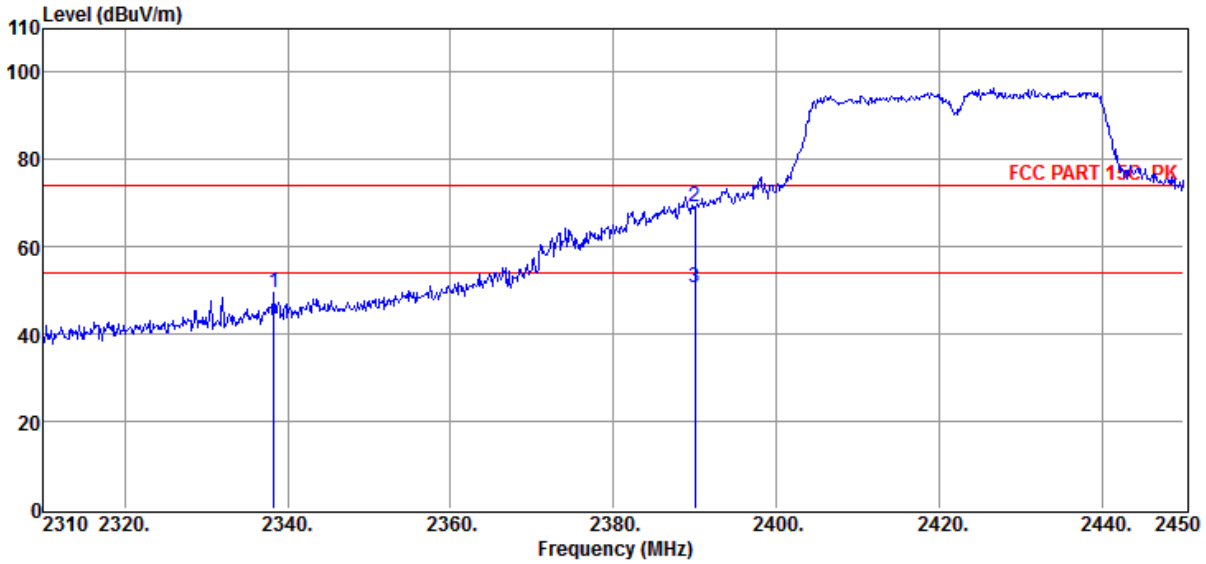
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	64.26	30.25	30.25	5.31	69.57	74.00	-4.43	Peak	VERTICAL
2	2483.50	44.10	30.25	30.25	5.31	49.41	54.00	-4.59	Average	VERTICAL
3	2494.35	50.47	30.30	30.25	5.31	55.83	74.00	-18.17	Peak	VERTICAL
4	2494.35	36.60	30.30	30.25	5.31	41.96	54.00	-12.04	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11n HT40 CH3
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/HORIZONTAL
Memo	:		

Data: 35



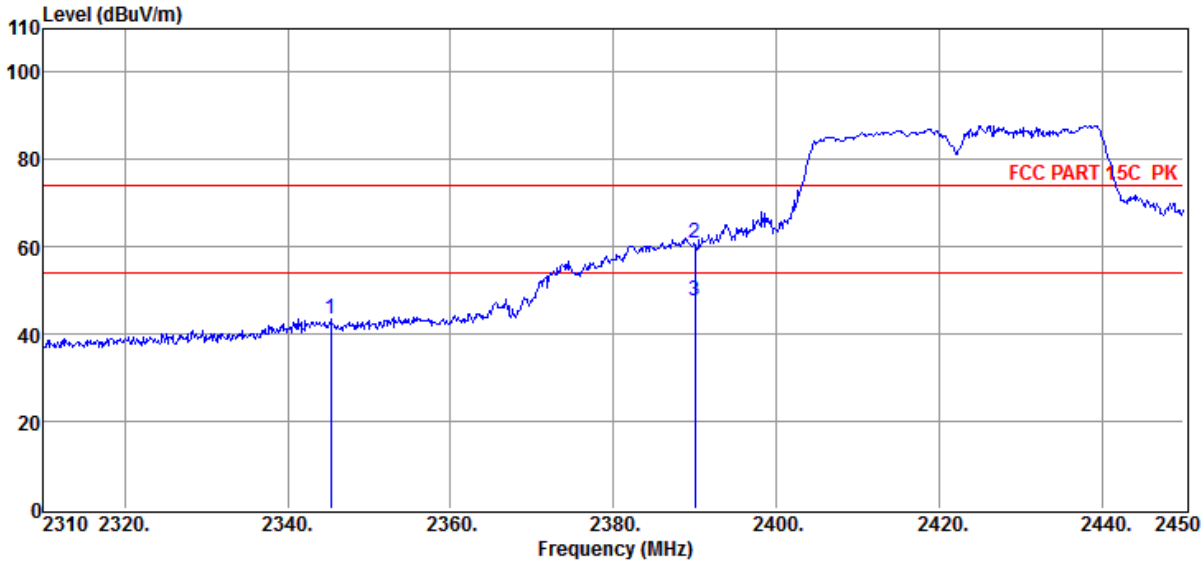
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2338.28	44.77	29.83	30.19	5.11	49.52	74.00	-24.48	Peak	HORIZONTAL
2	2390.00	64.27	29.99	30.21	5.17	69.22	74.00	-4.78	Peak	HORIZONTAL
3	2390.00	45.60	29.99	30.21	5.17	50.55	54.00	-3.45	Average	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11n HT40 CH3
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/VERTICAL
Memo	:		

Data: 36



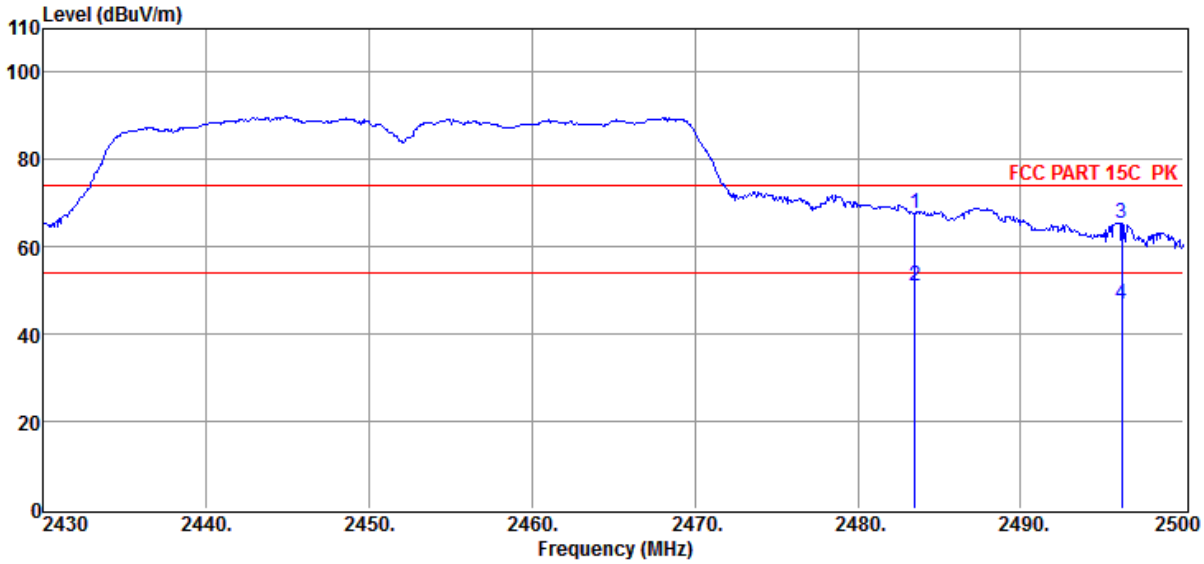
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2345.28	38.69	29.83	30.19	5.11	43.44	74.00	-30.56	Peak	VERTICAL
2	2390.00	55.84	29.99	30.21	5.17	60.79	74.00	-13.21	Peak	VERTICAL
3	2390.00	42.60	29.99	30.21	5.17	47.55	54.00	-6.45	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11n HT40 CH9
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/VERTICAL
Memo	:		

Data: 41



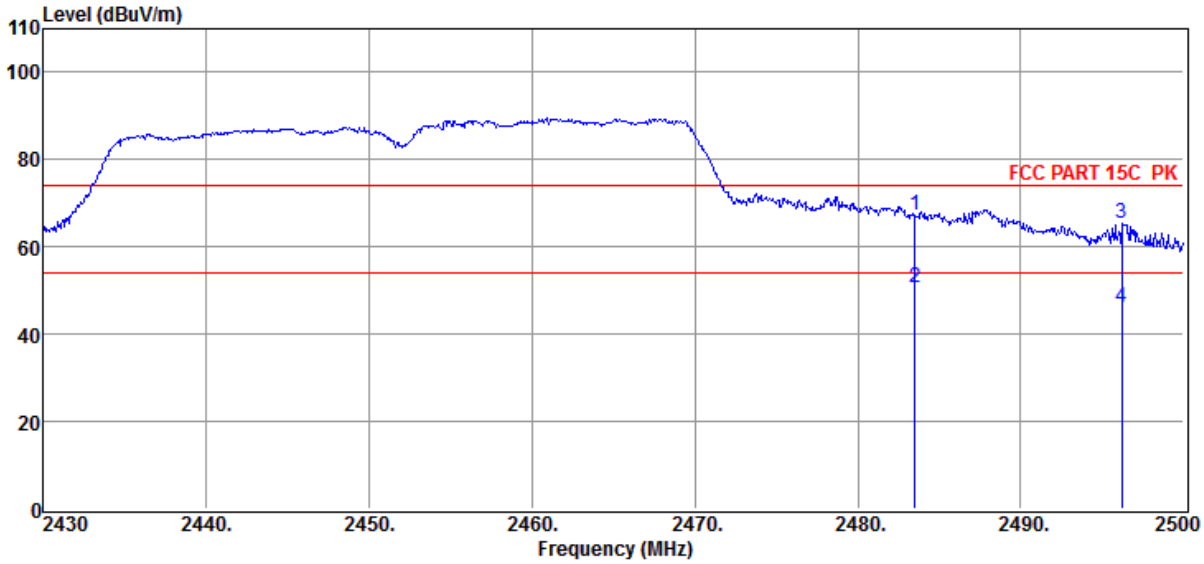
Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.48	62.52	30.25	30.25	5.31	67.83	74.00	-6.17	Peak	VERTICAL
2	2483.48	45.60	30.25	30.25	5.31	50.91	54.00	-3.09	Average	VERTICAL
3	2496.22	60.11	30.30	30.27	5.38	65.52	74.00	-8.48	Peak	VERTICAL
4	2496.22	41.60	30.30	30.27	5.38	47.01	54.00	-6.99	Average	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber	E:\2015 Report Data\h7000WIFI RE .EM6	
Test Date	: 2015-06-03	**Tested By**	: Jerry
EUT	: FPV Smart Transmitter	**Model Number**	: H7000
Power Supply	: DC 8.4V from battery	**Test Mode**	: 11n HT40 CH9
Condition	: Temp:24.5'C,Humi:55%, Press:100.1kPa	**Antenna/Distance**	: 2014 HF907/3m/HORIZONTAL
Memo	:		

Data: 42



Item (Mark)	Freq (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	PRM Factor dB	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	62.09	30.25	30.25	5.31	67.40	74.00	-6.60	Peak	HORIZONTAL
2	2483.50	45.30	30.25	30.25	5.31	50.61	54.00	-3.39	Average	HORIZONTAL
3	2496.22	59.80	30.30	30.27	5.38	65.21	74.00	-8.79	Peak	HORIZONTAL
4	2496.22	40.60	30.30	30.27	5.38	46.01	54.00	-7.99	Average	HORIZONTAL

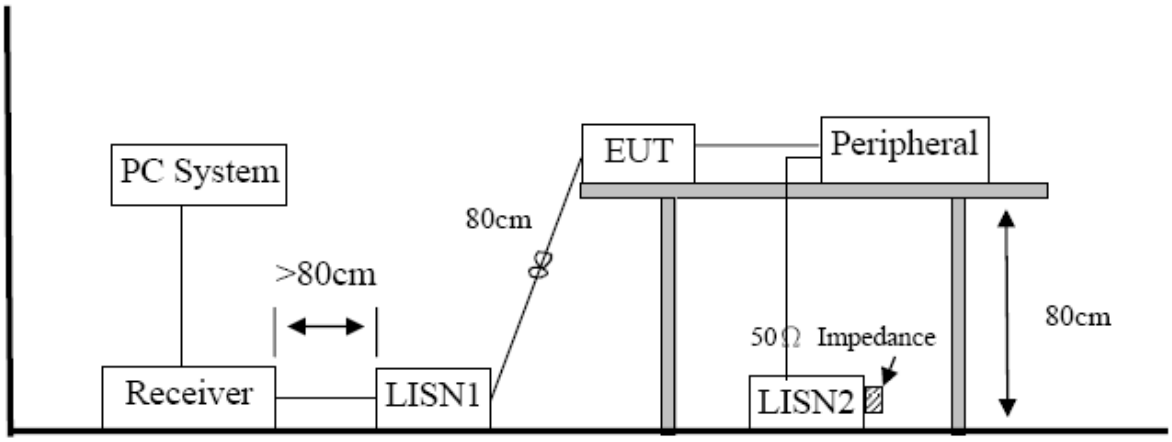
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

9. Power Line Conducted Emission

9.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Test Receiver	R&S	ESU8	100316	2014/10/25	1 Year
2	LISN 1	R&S	ENV216	101109	2014/10/25	1 Year
3	LISN 2	R&S	ESH2-Z5	100309	2014/10/25	1 Year
. 4	Pulse Limiter	R&S	ESH3-Z2	101242	2014/10/25	1 Year

9.2. Block diagram of test setup



9.3. Power Line Conducted Emission Limits(Class B)

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

9.4. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.3 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 KHz.

9.5. Test Result

Not Applicable

10. Antenna Requirements

10.1. Standard Applicable

For intentional device, according to FCC 47 CFR 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.

And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2. 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.

10.3. Measurement

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal WiFi2450 devices, the DSSS mode is used.

Measurement parameter	
Detector:	Peak
Sweep time:	Auto
Resolution bandwidth:	1MHz
Video bandwidth:	3MHz
Trace-Mode:	Max hold

10.4. Limits

Antenna Gain
6 dBi

10.5. Results

T_{nom}	V_{nom}	Lowest Channel 2412 MHz	Middle Channel 2437 MHz	Highest Channel 2462 MHz
Conducted power [dBm] Measured with DSSS modulation		10.40	11.20	11.30
Radiated power [dBm] Measured with DSSS modulation		12.10	13.20	13.20
Gain [dBi] Calculated		1.70	2.0	1.90
Measurement uncertainty		± 0.6 dB (cond.) / ± 2.2 dB (rad.)		