



Report No.: TW2010177-01E
File reference No.: 2020-12-15

Applicant: Shenzhen Jingwah Information Technology Co., Ltd.

Product: Laptop

Model No.: NP11A-C, N11250, N11260

Trademark: PACKARD BELL

Test Standards: FCC Part 15.247

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10, FCC Part 15.247 for the evaluation of electromagnetic compatibility

Approved By



Jack Chung

Manager

Dated: December 15, 2020

Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



Special Statement:

The testing quality ability of our laboratory meet with “Quality Law of People’s Republic of China” Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAL-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

Industry Canada (IC) —Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

A2LA (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.
Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China
Telephone: (755) 83448688
Fax: (755) 83442996
Site Listed with Federal Communications commission (FCC)
Registration Number: 744189
For 3m Anechoic Chamber
Site Listed with Industry Canada of Ottawa, Canada
Registration Number: IC: 5205A
For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Shenzhen Jingwah Information Technology Co., Ltd.
Address: 6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community, Huaqiangbei, Futian District, Shenzhen
Telephone: 0755-84688843
Fax: --

1.3 Description of EUT

Product: Laptop
Manufacturer: Shenzhen Jingwah Information Technology Co., Ltd.
Address: 6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community, Huaqiangbei, Futian District, Shenzhen
Brand Name: PACKARD BELL
Model Number: NP11A-C, N11250, N11260
Test Model No.: NP11A-C
Remark: These models are identical in interior structure, electrical circuits and components, different model names for the marketing requirement.
Hardware Version: EM_IA118_200B_ENE_V1.0R
Software Version: windows
Serial No.: 112502011000001~ 112502011005080
Type of Modulation IEEE 802.11b : DSSS (CCK, QPSK, DBPSK)
IEEE 802.11g/n (HT20, HT40) : OFDM(64QAM, 16QAM, QPSK, BPSK)
Frequency range IEEE 802.11b/g/n (HT20) : 2412-2462MHz; 802.11n HT40: 2422-2452MHz
Channel Spacing 5MHz for IEEE 802.11b/g/n HT20, HT40
Air Data Rate IEEE 802.11b : 11, 5.5, 2, 1 Mbps

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IEEE 802.11g : 54, 48, 36, 24, 18, 12, 9, 6 Mbps
IEEE 802.11n HT20/HT40: mcs0-mcs9
Frequency Selection By software
Channel Number IEEE 802.11b/g/n (HT20) : 11 Channels; IEEE 802.11n (HT40) : 7 Channels;
Antenna: Two FPC antennas used. The gain of the antennas is 0dBi for each one. (get from the antenna specification provided the applicant)
MIMO mode for all modulation
Input Voltage: DC12V, 2A
Power Adapter Model: FJ-SW1202000U;
Input: 100-240V~50/60Hz 0.6A Max; Output: DC12V, 2000mA

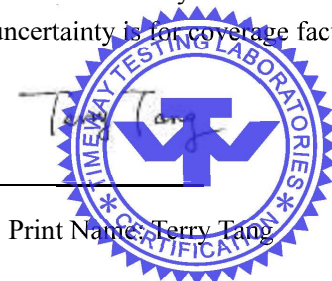
1.4 Submitted Sample: 1 Samples

1.5 Test Duration
2020-10-27 to 2020-12-15

1.6 Test Uncertainty
Conducted Emissions Uncertainty =3.6dB
Radiated Emissions below 1GHz Uncertainty =4.7dB
Radiated Emissions above 1GHz Uncertainty =6.0dB
Conducted Power Uncertainty =6.0dB
Occupied Channel Bandwidth Uncertainty =5%
Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by



Remark:

WIFI Test Software:

Name: MPTool

Power Setting: Level 25

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2020-06-23	2021-06-22
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2020-06-23	2021-06-22
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2020-06-23	2021-06-22
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2020-06-23	2021-06-22
Loop Antenna	EMCO	6507	00078608	2020-06-23	2021-06-22
Spectrum	R&S	FSIQ26	100292	2020-06-23	2021-06-22
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2020-06-23	2021-06-22
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-07-09	2021-07-08
Power meter	Anritsu	ML2487A	6K00003613	2020-06-23	2021-06-22
Power sensor	Anritsu	MA2491A	32263	2020-06-23	2021-06-22
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2021-07-03
9*6*6 Anechoic	--	--	N/A	2018-02-07	2021-02-06
EMI Test Receiver	RS	ESVB	826156/011	2020-06-23	2021-06-22
EMI Test Receiver	RS	ESH3	860904/006	2020-06-23	2021-06-22
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2020-06-23	2021-06-22
Spectrum	HP/Agilent	E4407B	MY50441392	2020-06-23	2021-06-22
Spectrum	RS	FSP	1164.4391.38	2020-01-18	2021-01-17
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	--	2020-06-23	2021-06-22
RF Cable	Zhengdi	7m	--	2020-06-23	2021-06-22
RF Switch	EM	EMSW18	060391	2020-06-23	2021-06-22
Pre-Amplifier	Schwarebeck	BBV9743	#218	2020-06-23	2021-06-22
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2020-06-23	2021-06-22
LISN	SCHAFFNER	NNB42	00012	2020-01-07	2021-01-06

2.2 Automation Test Software

For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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3. DESCRIPTION OF TEST MODES

IEEE 802.11b, 802.11g, 802.11n (HT20) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 1Mbps data rate (worst case) was chosen for full testing. IEEE 802.11g mode: 6Mbps data rate (worst case) was chosen for full testing. IEEE 802.11n (HT20) mode: mcs0 (worst case) were chosen for full testing

IEEE 802.11n (HT40) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2422
Middle	2437
High	2452

IEEE 802.11n (HT40) mode: msc0 data rate (worst case) were chosen for full testing

Note: during the test, the duty cycle was set up to 100%.

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3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107 & 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	PASS	Complies
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power Limit: max. 30dBm	PASS	Complies
FCC Part 15, Paragraph 15.109,15.205 & 15.209	Transmitter Radiated Emission Limit: Table 15.209	PASS	Complies
FCC Part 15, Paragraph 15.247(e)	Power Spectral Density Limit: max. 8dBm	PASS	Complies
FCC Part 15, Paragraph 15.247(d)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	PASS	Complies

3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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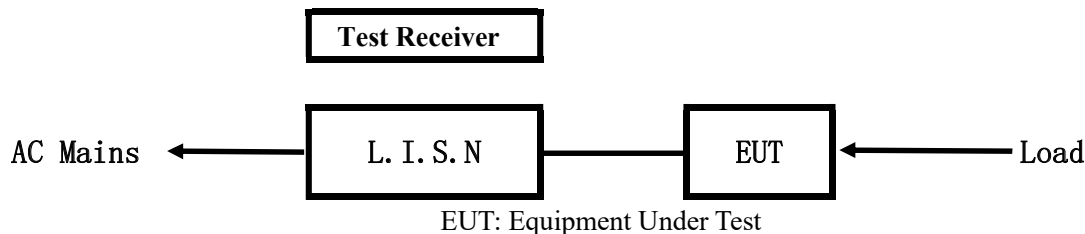
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5.0 Power Line Conducted Emission Test

5.1 Schematics of the test

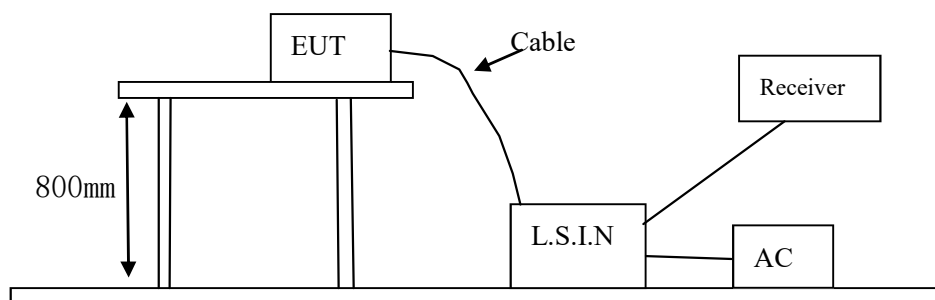


5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10 –2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT

Device	Manufacturer	Model	FCC ID
Laptop	Shenzhen Jingwah Information Technology Co., Ltd.	NP11A-C, N11250, N11260	RBD-NP11AC

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
--	--	--	--	--

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5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency (MHz)	Class B Limits (dB μ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*
0.50 ~ 5 00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

- Notes:
1. *Decreasing linearly with logarithm of frequency.
 2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

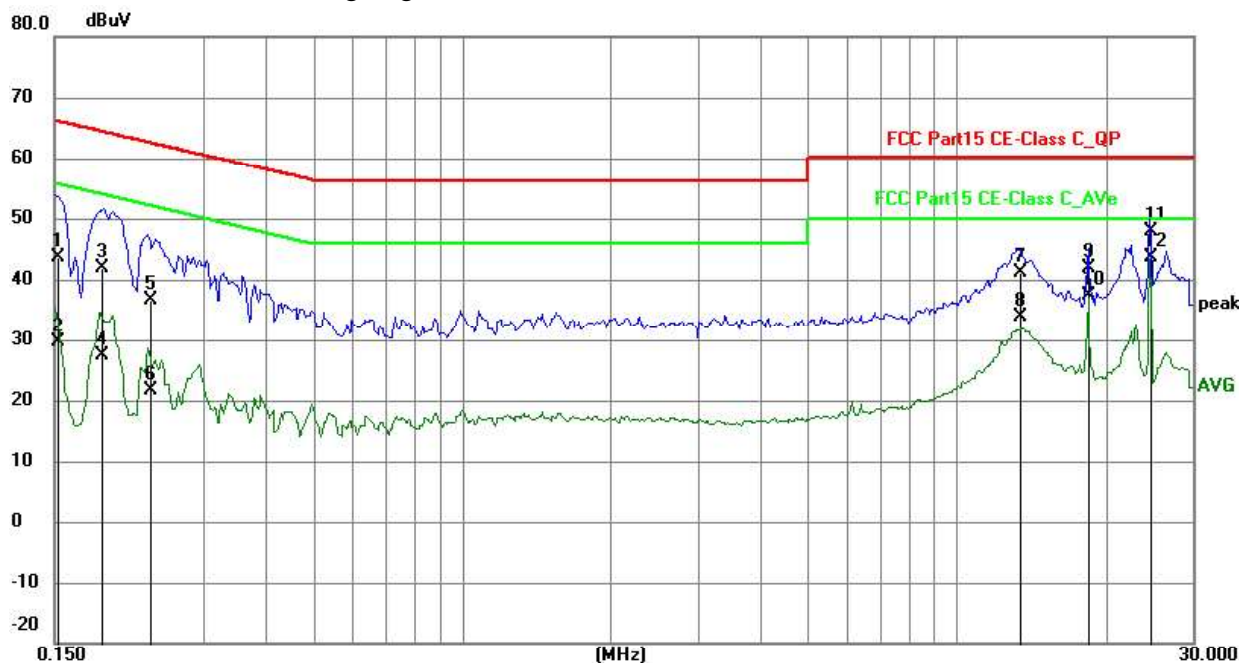
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep WIFI Transmitting

Equipment Level: Class B

Results: PASS

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1516	33.87	9.78	43.65	65.91	-22.26	QP	P
2	0.1516	19.76	9.78	29.54	55.91	-26.37	AVG	P
3	0.1864	32.11	9.76	41.87	64.20	-22.33	QP	P
4	0.1864	17.73	9.76	27.49	54.20	-26.71	AVG	P
5	0.2341	26.97	9.75	36.72	62.30	-25.58	QP	P
6	0.2341	11.83	9.75	21.58	52.30	-30.72	AVG	P
7	13.3372	30.73	10.31	41.04	60.00	-18.96	QP	P
8	13.3372	23.53	10.31	33.84	50.00	-16.16	AVG	P
9	18.4323	31.25	10.59	41.84	60.00	-18.16	QP	P
10	18.4323	26.87	10.59	37.46	50.00	-12.54	AVG	P
11	24.5748	36.92	10.96	47.88	60.00	-12.12	QP	P
12	24.5748	32.69	10.96	43.65	50.00	-6.35	AVG	P

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

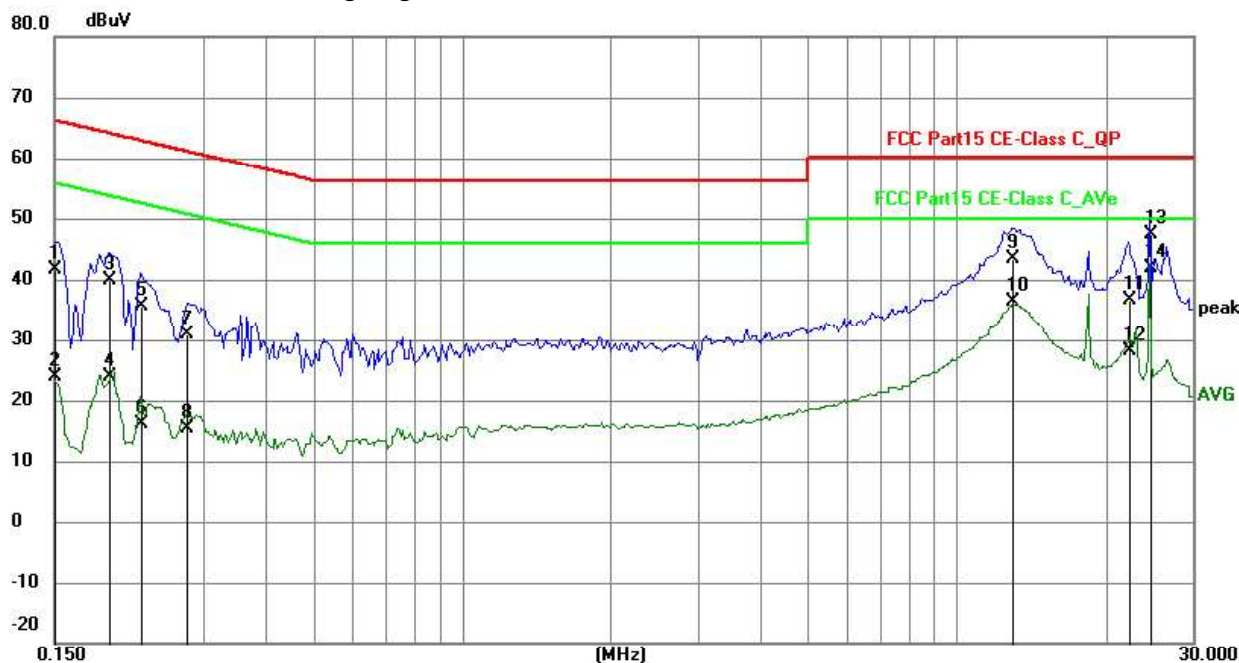
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keep WIFI Transmitting

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1500	31.80	9.79	41.59	66.00	-24.41	QP	P
2	0.1500	14.15	9.79	23.94	56.00	-32.06	AVG	P
3	0.1929	30.18	9.75	39.93	63.91	-23.98	QP	P
4	0.1929	14.05	9.75	23.80	53.91	-30.11	AVG	P
5	0.2241	25.96	9.75	35.71	62.67	-26.96	QP	P
6	0.2241	6.42	9.75	16.17	52.67	-36.50	AVG	P
7	0.2787	21.11	9.76	30.87	60.85	-29.98	QP	P
8	0.2787	5.61	9.76	15.37	50.85	-35.48	AVG	P
9	12.9840	33.04	10.29	43.33	60.00	-16.67	QP	P
10	12.9840	25.99	10.29	36.28	50.00	-13.72	AVG	P
11	22.2621	25.85	10.82	36.67	60.00	-23.33	QP	P
12	22.2621	17.33	10.82	28.15	50.00	-21.85	AVG	P
13	24.5748	36.31	10.96	47.27	60.00	-12.73	QP	P
14	24.5748	31.03	10.96	41.99	50.00	-8.01	AVG	P

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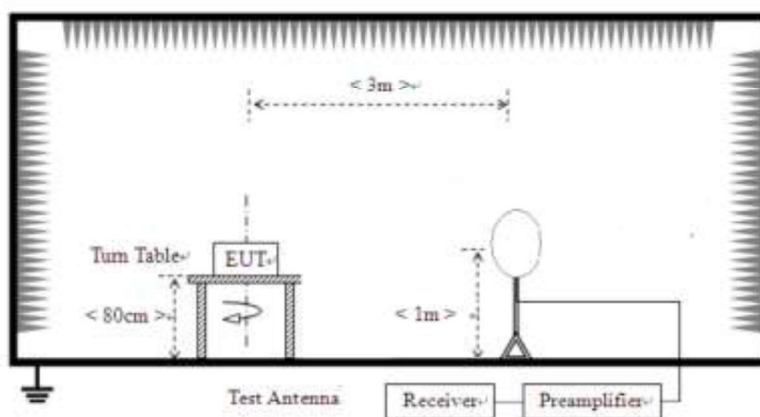
6 Radiated Emission Test

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a “QP” in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup

For radiated emissions from 9kHz to 30MHz



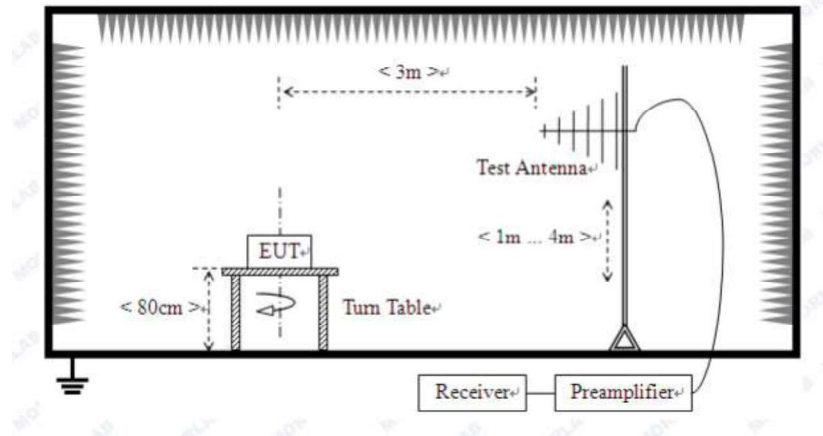
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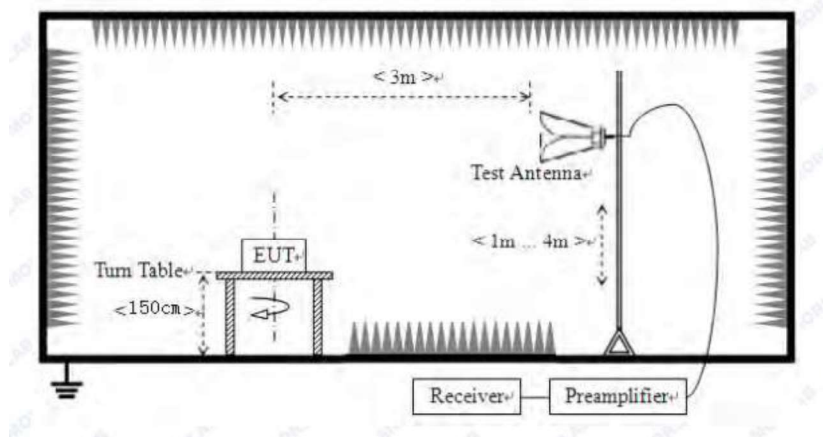
In the event of the improper use of the report. The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

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Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- Note:
1. RF Voltage (dBuV) = 20 log RF Voltage (μ V)
 2. In the Above Table, the higher limit applies at the band edges.
 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
 4. **Worse case were recorded in the test report, MIMO mode for all modulation.**
802.11g was the worst case.

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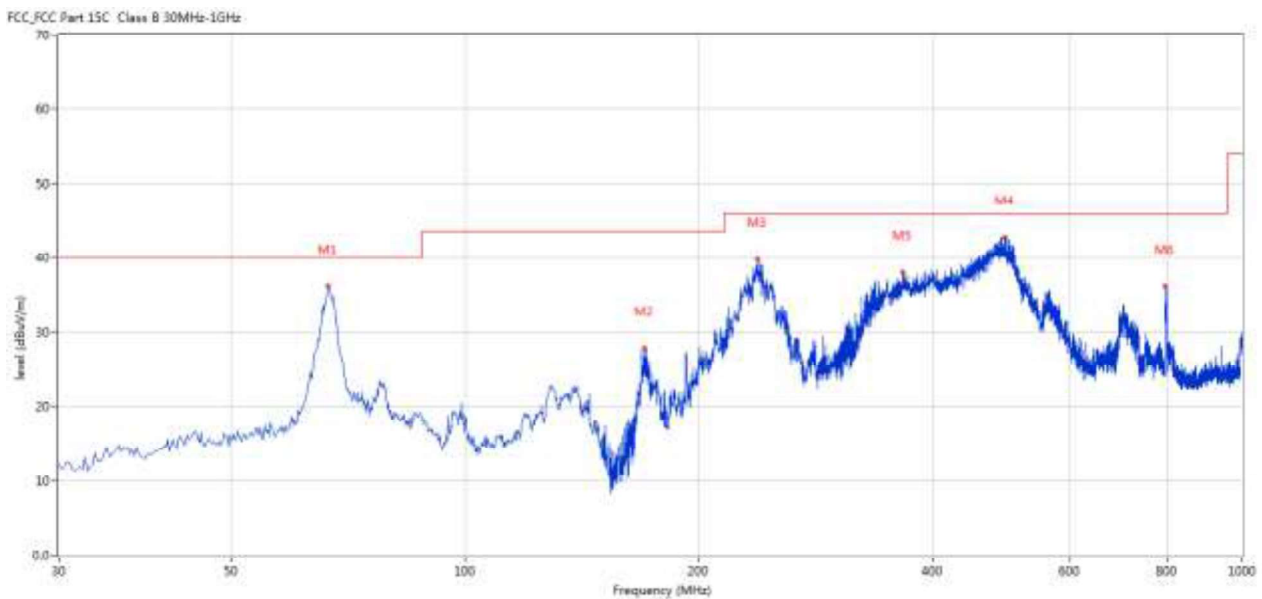
Test result

General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**

Results: **Pass**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	66.608	36.08	-14.16	40.0	-3.92	Peak	84.00	200	Horizontal	Pass
2	170.372	27.82	-15.95	43.5	-15.68	Peak	10.00	200	Horizontal	Pass
3	238.255	39.75	-12.48	46.0	-6.25	Peak	70.00	100	Horizontal	Pass
4	495.726	42.75	-7.13	46.0	-3.25	Peak	360.00	200	Horizontal	Pass
5	366.021	38.00	-9.47	46.0	-8.00	Peak	101.00	100	Horizontal	Pass
6	796.351	36.18	-3.09	46.0	-9.82	Peak	354.00	100	Horizontal	Pass

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Test result

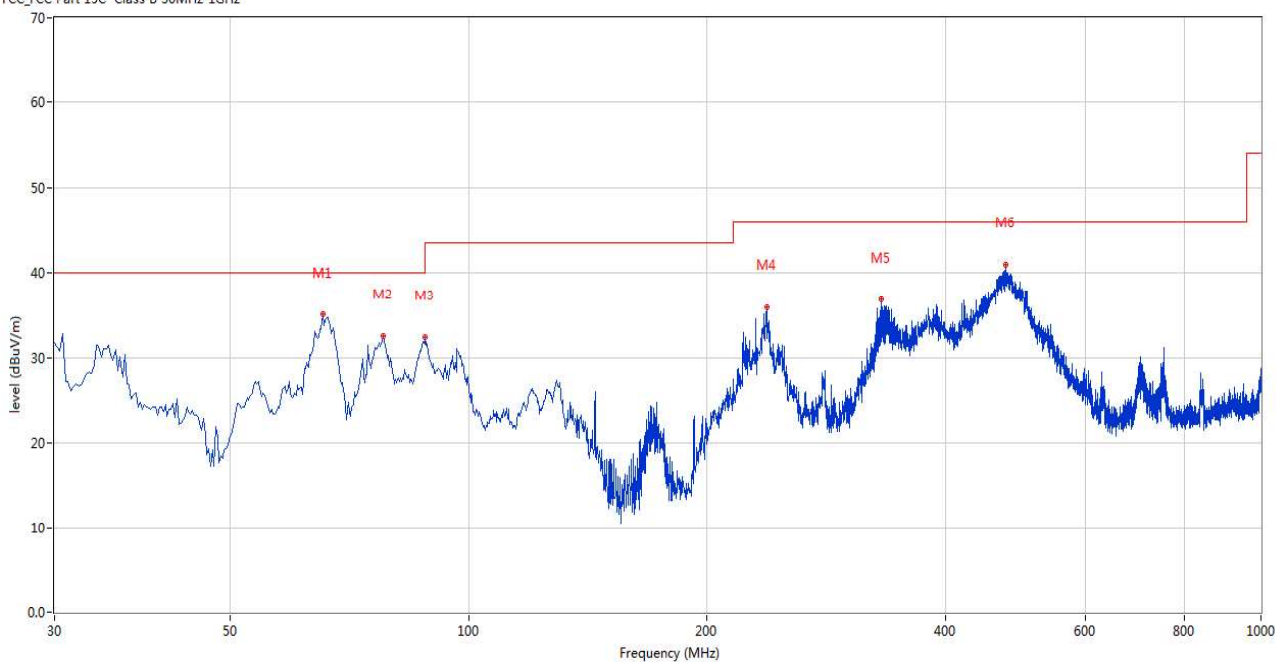
General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting**

Results: Pass

FCC_FCC Part 15C Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	65.396	35.03	-13.71	40.0	-4.97	Peak	309.00	100	Vertical	Pass
2	78.003	32.46	-17.52	40.0	-7.54	Peak	322.00	100	Vertical	Pass
3	88.185	32.41	-15.59	43.5	-11.09	Peak	0.00	100	Vertical	Pass
4	237.771	35.81	-12.44	46.0	-10.19	Peak	29.00	100	Vertical	Pass
5	331.837	36.84	-10.12	46.0	-9.16	Peak	360.00	200	Vertical	Pass
6	476.088	40.98	-7.47	46.0	-5.02	Peak	24.00	200	Vertical	Pass

The report refers only to the sample tested and does not apply to the bulk.

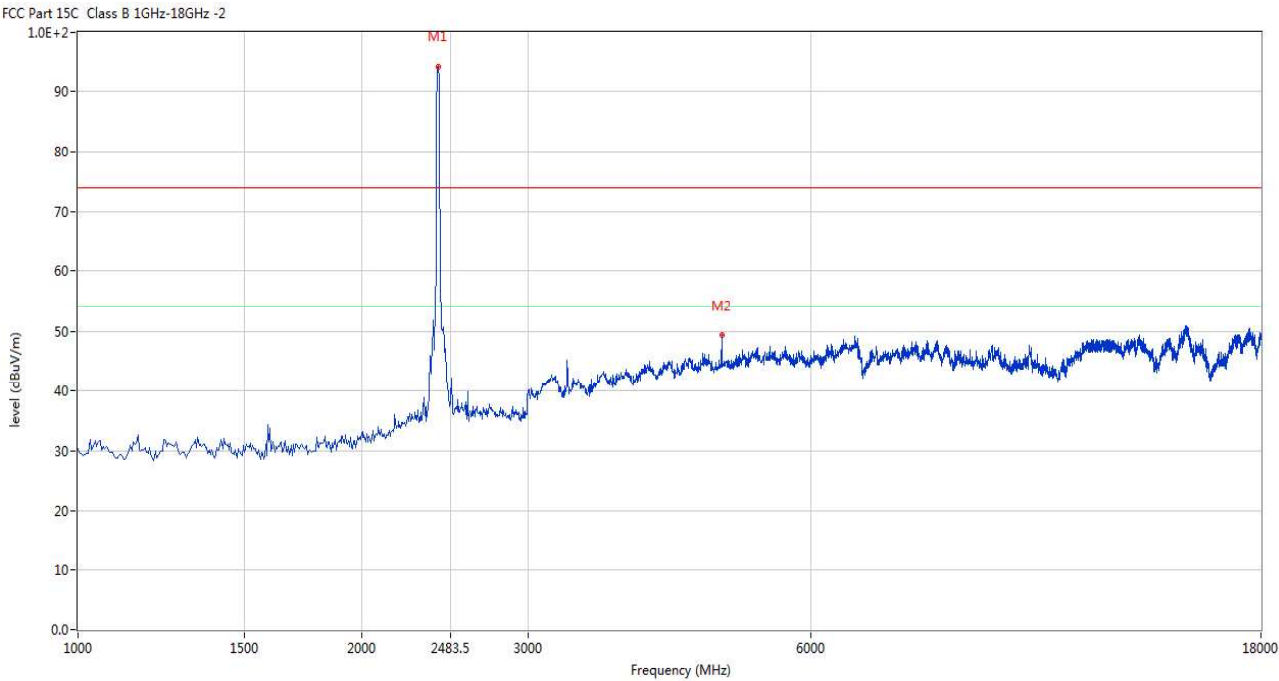
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Please refer to the following test plots for details:

CH01 for 11g at 6Mbps: Horizontal

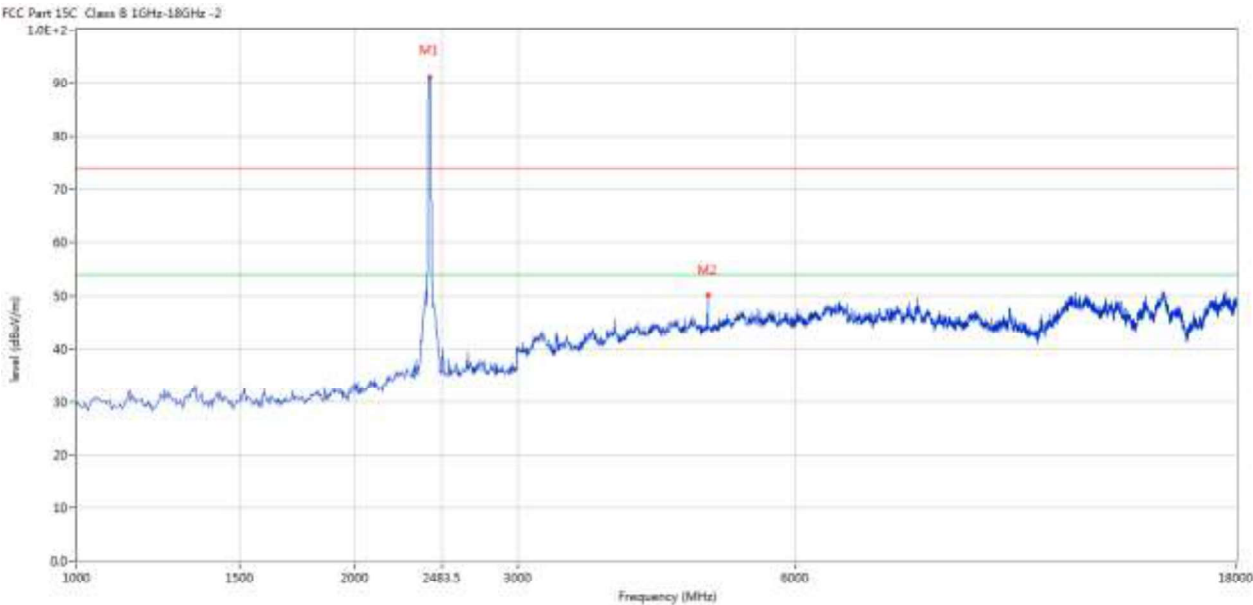


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4825.000	49.35	3.15	54.0	-4.65	Peak	322.00	100	Horizontal	Pass

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CH01 for 11g at 6Mbps: Vertical

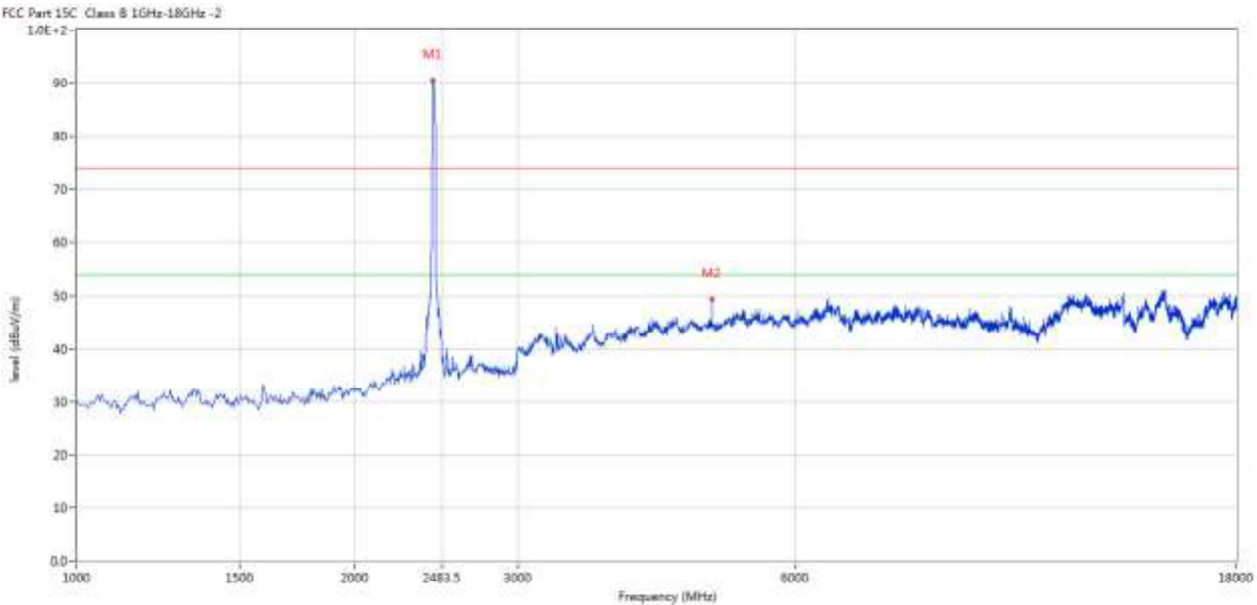


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4825.000	50.19	3.15	54.0	-3.81	Peak	244.00	100	Vertical	Pass

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CH06 for 11g at 6Mbps: Vertical

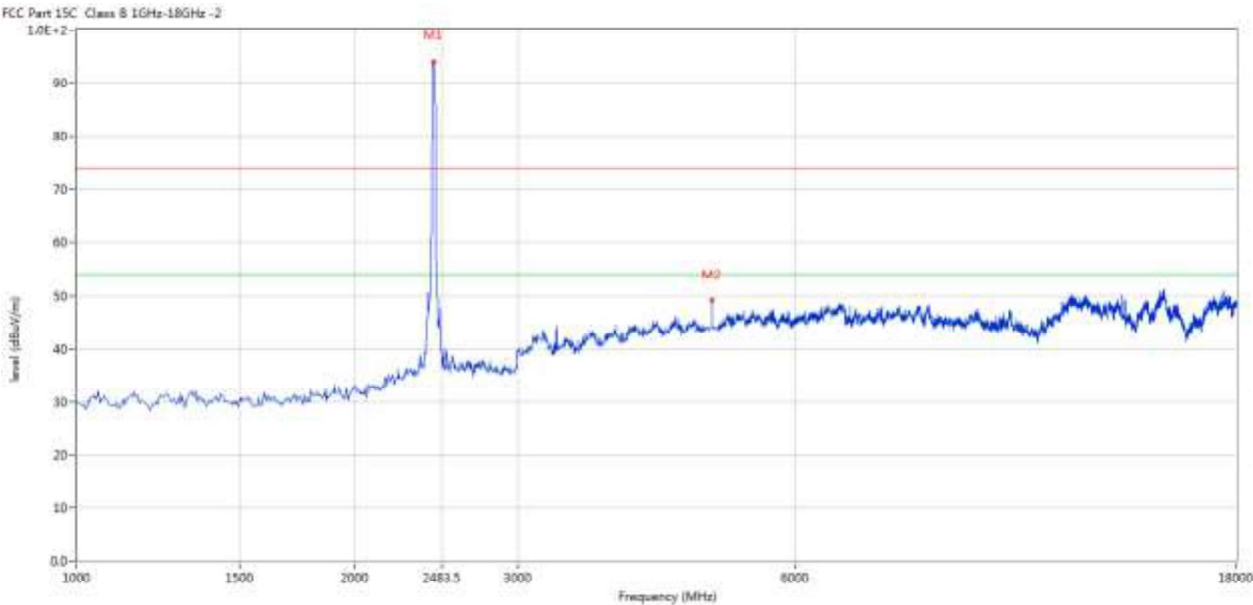


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4871.750	49.34	3.19	54.0	-4.66	Peak	159.00	100	Vertical	Pass

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CH06 for 11g at 6Mbps: Horizontal

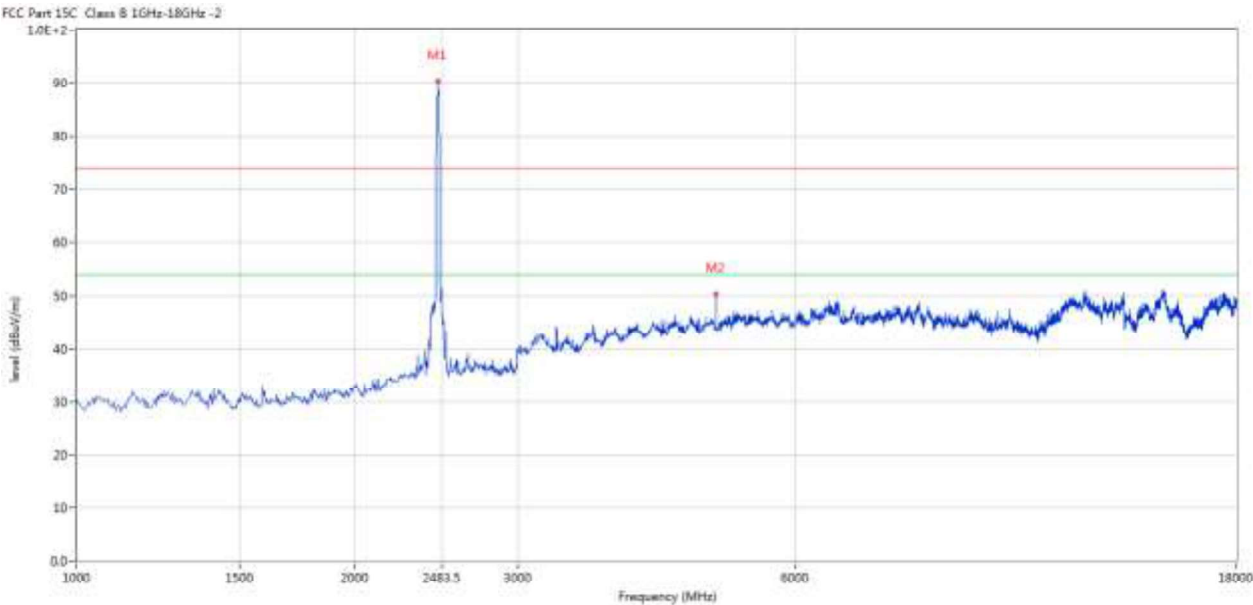


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4871.750	49.07	3.19	54.0	-4.93	Peak	313.00	100	Horizontal	Pass

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CH11 for 11g at 6Mbps: Vertical

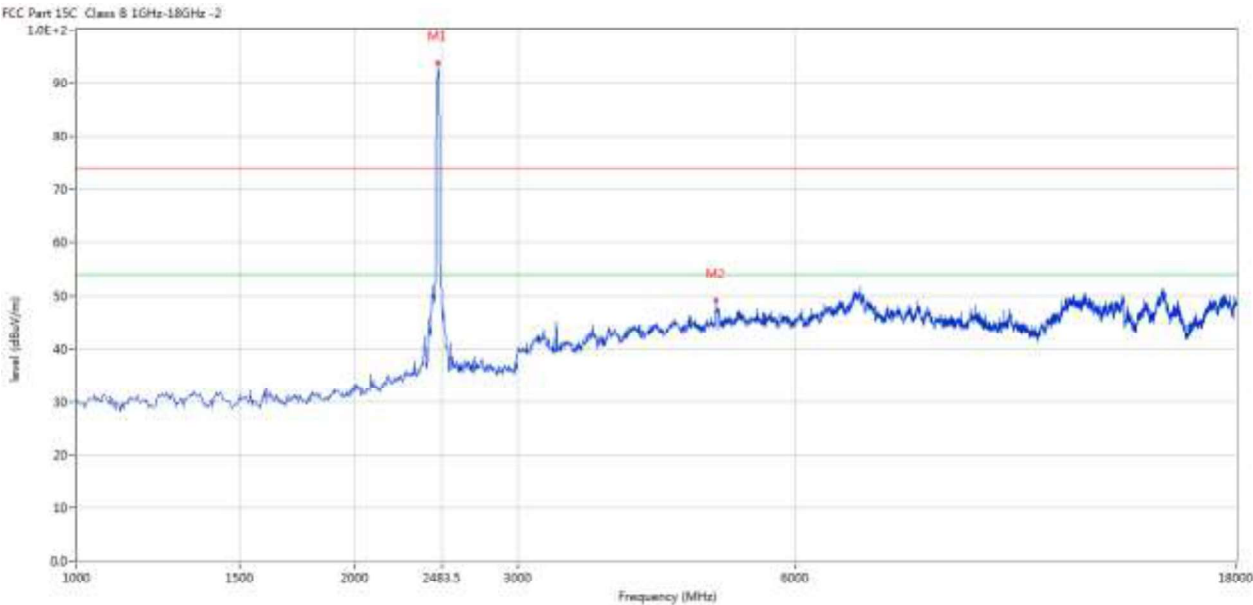


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4922.750	50.22	3.27	54.0	-3.78	Peak	144.00	100	Vertical	Pass

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CH11 for 11g at 6Mbps: Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
2	4922.750	49.23	3.27	54.0	-4.77	Peak	318.00	100	Horizontal	Pass

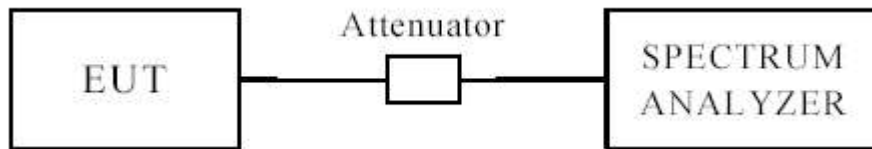
- Note: 1. Result Level = Reading + Factor
2. Factor= AF + Cable Loss- Preamp
3. Margin = Result– Limit
4. For radiated Emissions from 18-25GHz and below 30MHz, it is only the floor noise.
5. The peak value less than the AV limit, no necessary to take down the AV measurement result.

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7.0 6dB Bandwidth Measurement

7.1 Test Setup



7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

7.3 Test Procedure

1. Set resolution bandwidth (RBW) = 100 kHz
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.4 Test Result

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6dB Occupied Bandwidth

EUT	Laptop		Model	NP11A-C	
Mode	802.11b		Test Voltage	DC7.6V	
Temperature	24 deg. C,		Humidity	56% RH	
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
1	2412	1	10.16	0.5	Pass
6	2437	1	10.16	0.5	Pass
11	2462	1	10.16	0.5	Pass
1	2412	11	10.64	0.5	Pass
6	2437	11	11.18	0.5	Pass
11	2462	11	10.40	0.5	Pass

Note: Two antennas were tested and only the worst case was recorded in the test report. Ant 1 was the worst case.

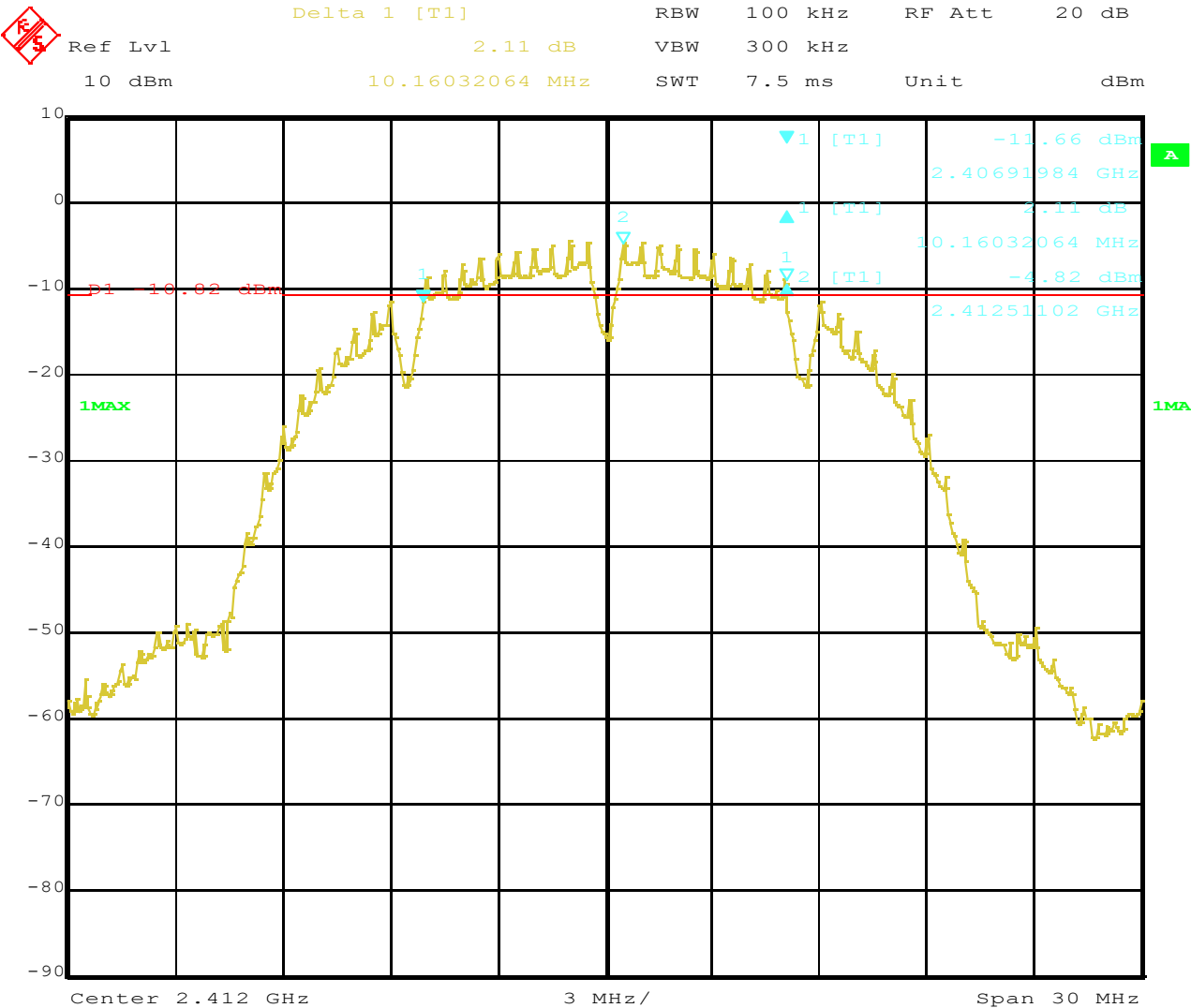
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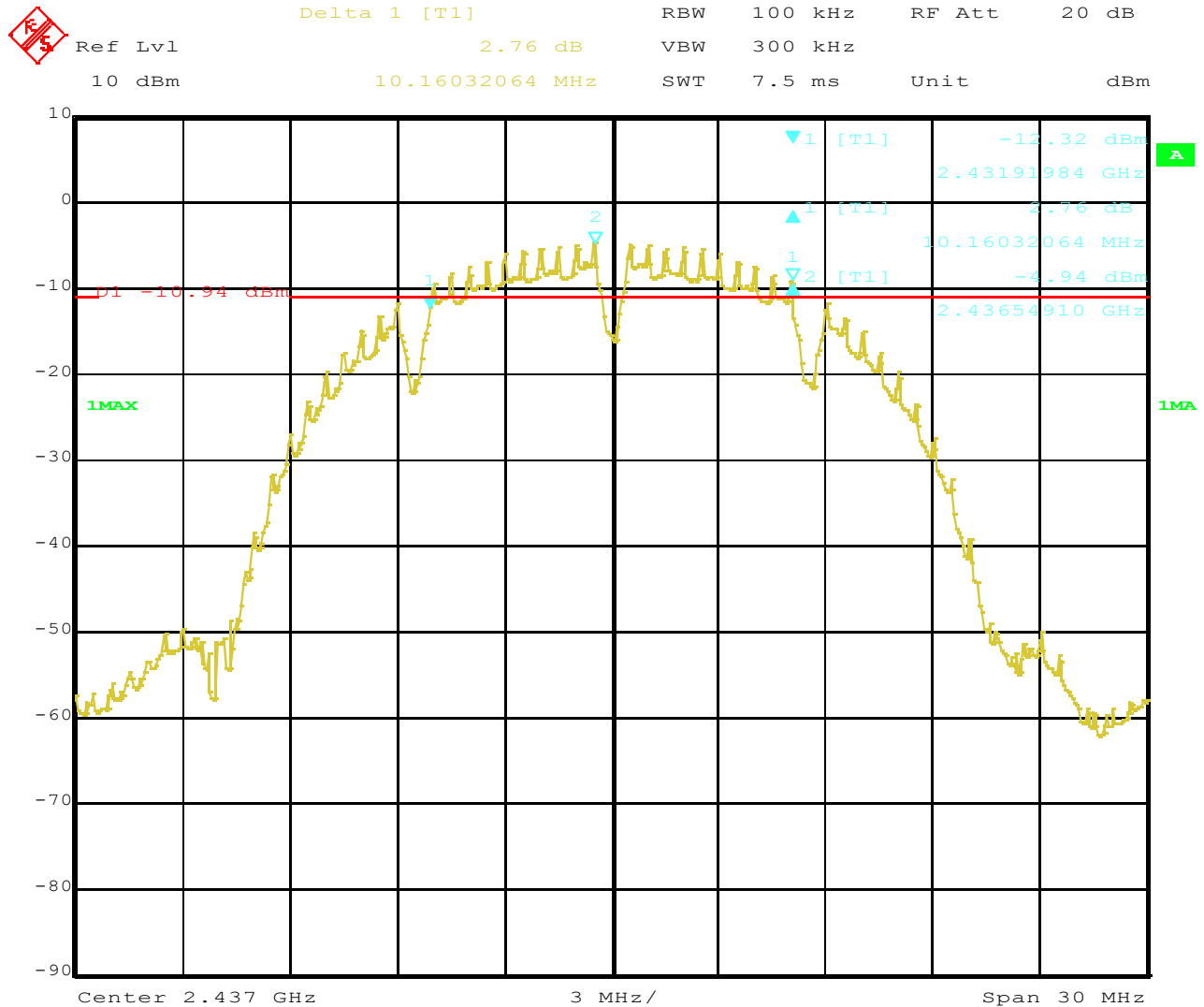
1. 802.11b at 1Mbps of CH01



Date: 18.NOV.2020 10:12:44

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2. 802.11b at 1Mbps of CH06



Date: 18.NOV.2020 10:14:27

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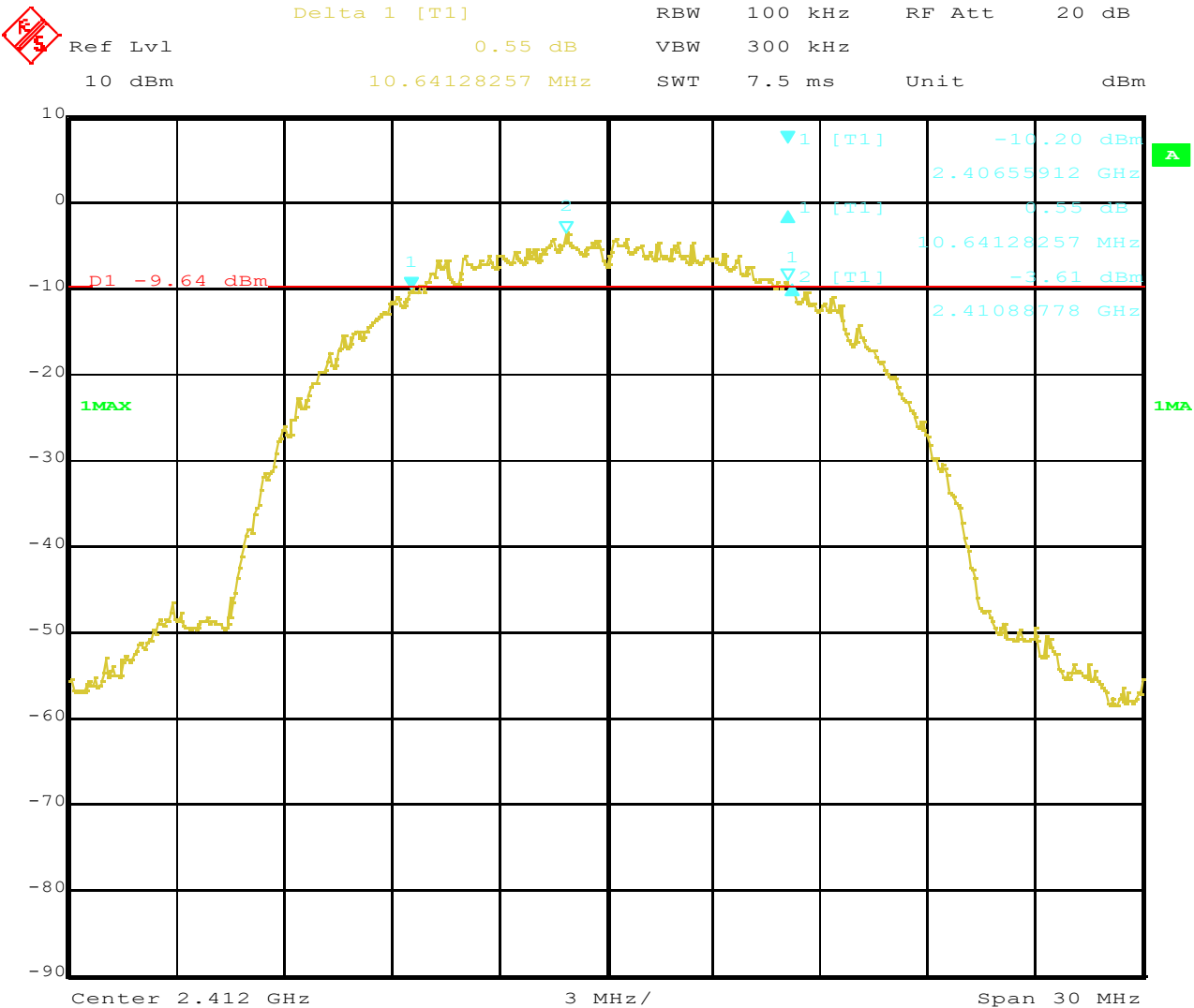
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES. reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

Center 2.462 GHz 3 MHz/ Span 30 MHz

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4. 802.11b at 11Mbps of CH01



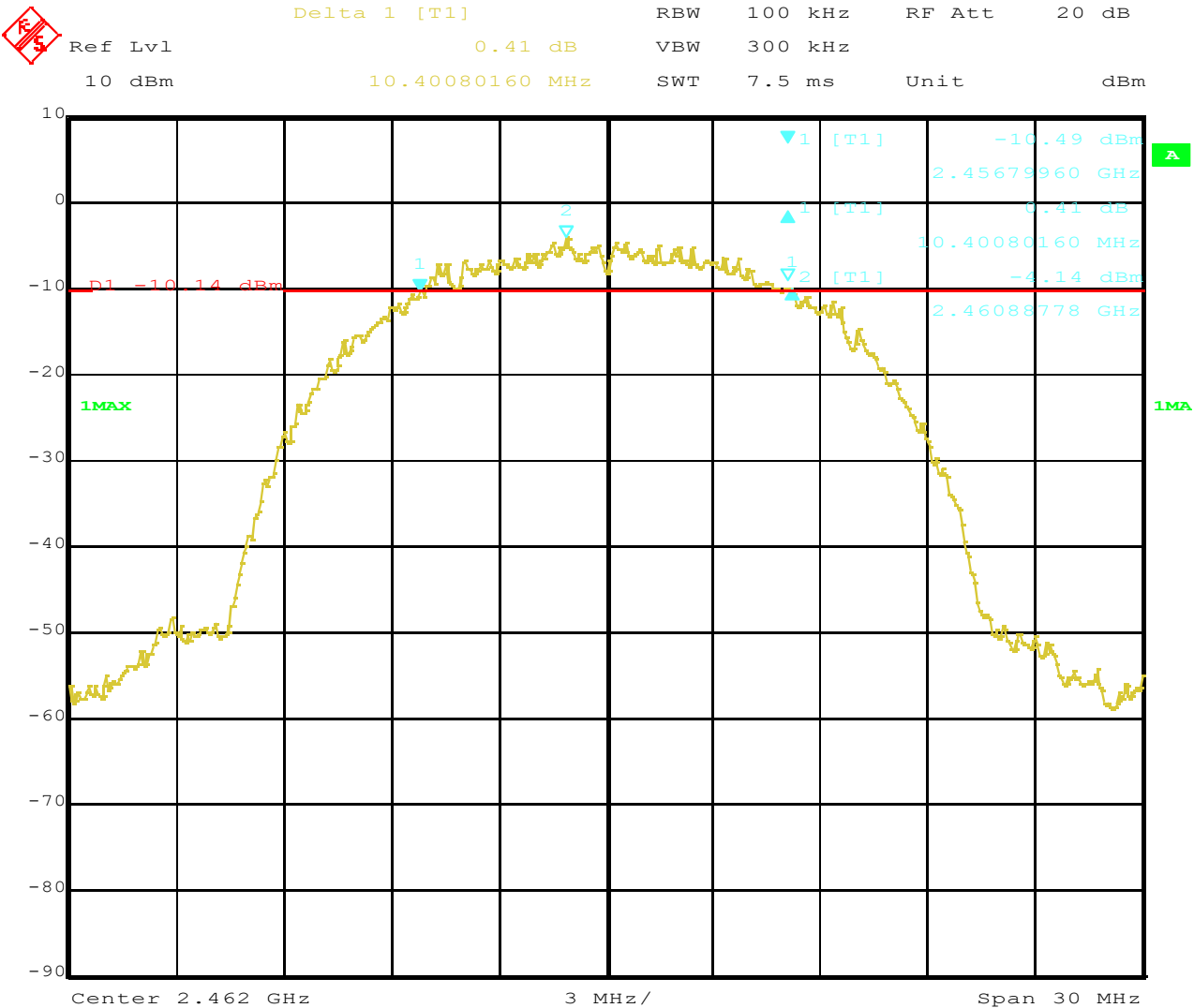
Date: 18.NOV.2020 10:22:29

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6. 802.11b at 11Mbps of CH11



Date: 18.NOV.2020 10:17:02

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6dB Occupied Bandwidth

EUT		Laptop		Model	NP11A-C
Mode		802.11g		Test Voltage	DC7.6V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
1	2412	6	16.41	0.5	Pass
6	2437	6	16.41	0.5	Pass
11	2462	6	16.41	0.5	Pass

Note: Two antennas were tested and only the worst case was recorded in the test report. Ant 1 was the worst case.

The report refers only to the sample tested and does not apply to the bulk.

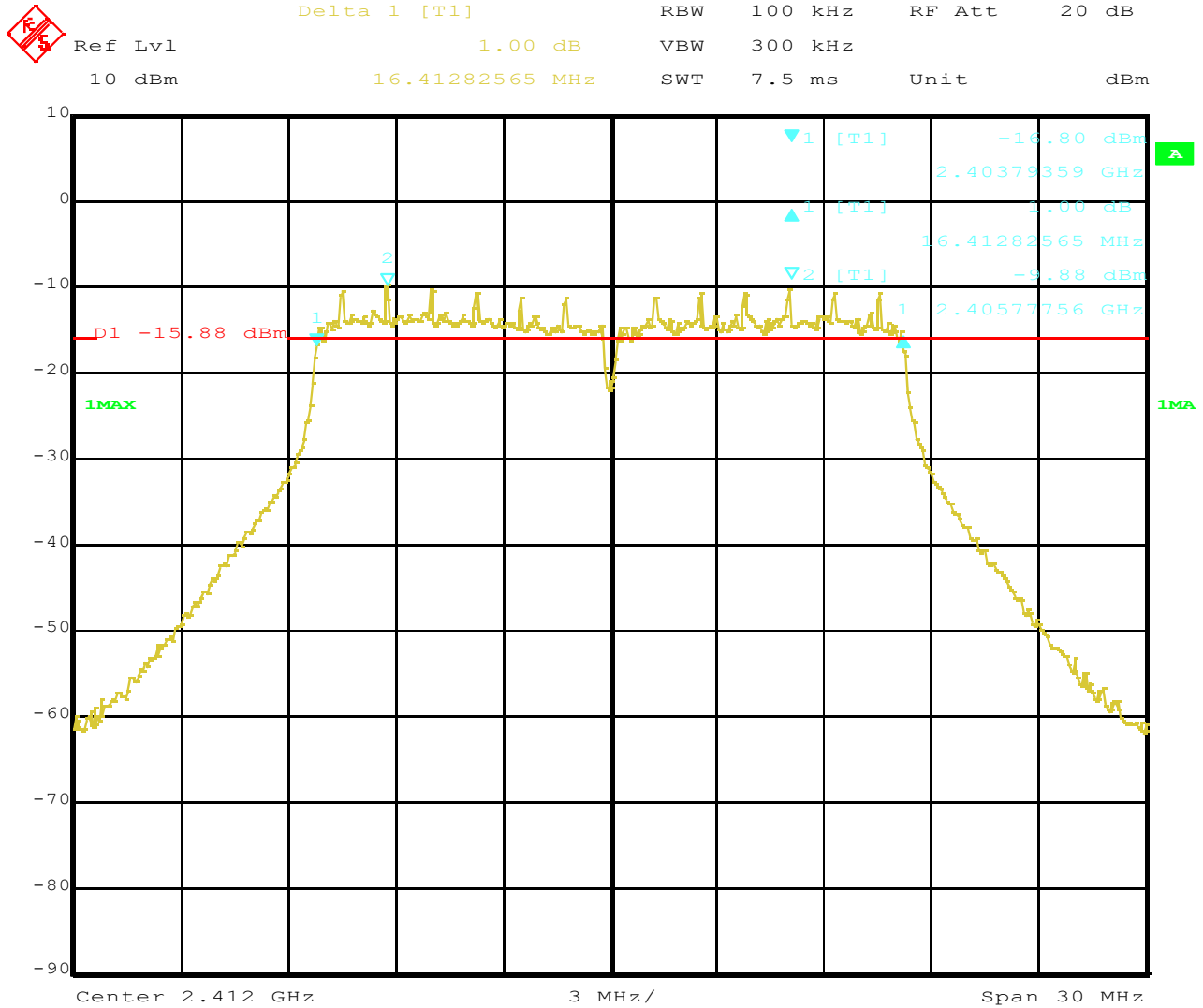
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Test Plots:

1. 802.11g at 6Mbps of CH01



Date: 18.NOV.2020 10:23:59

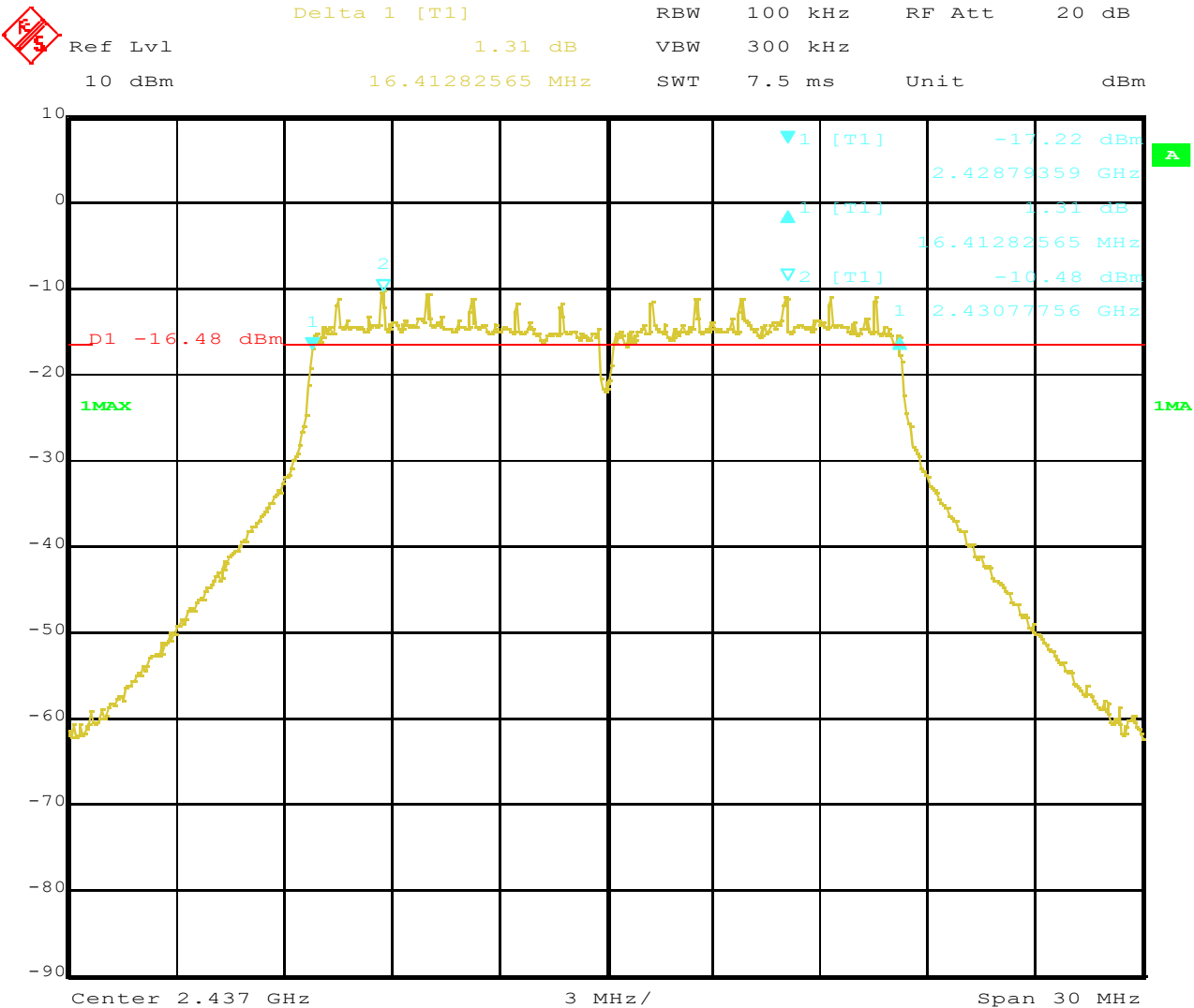
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2. 802.11g at 6Mbps of CH06

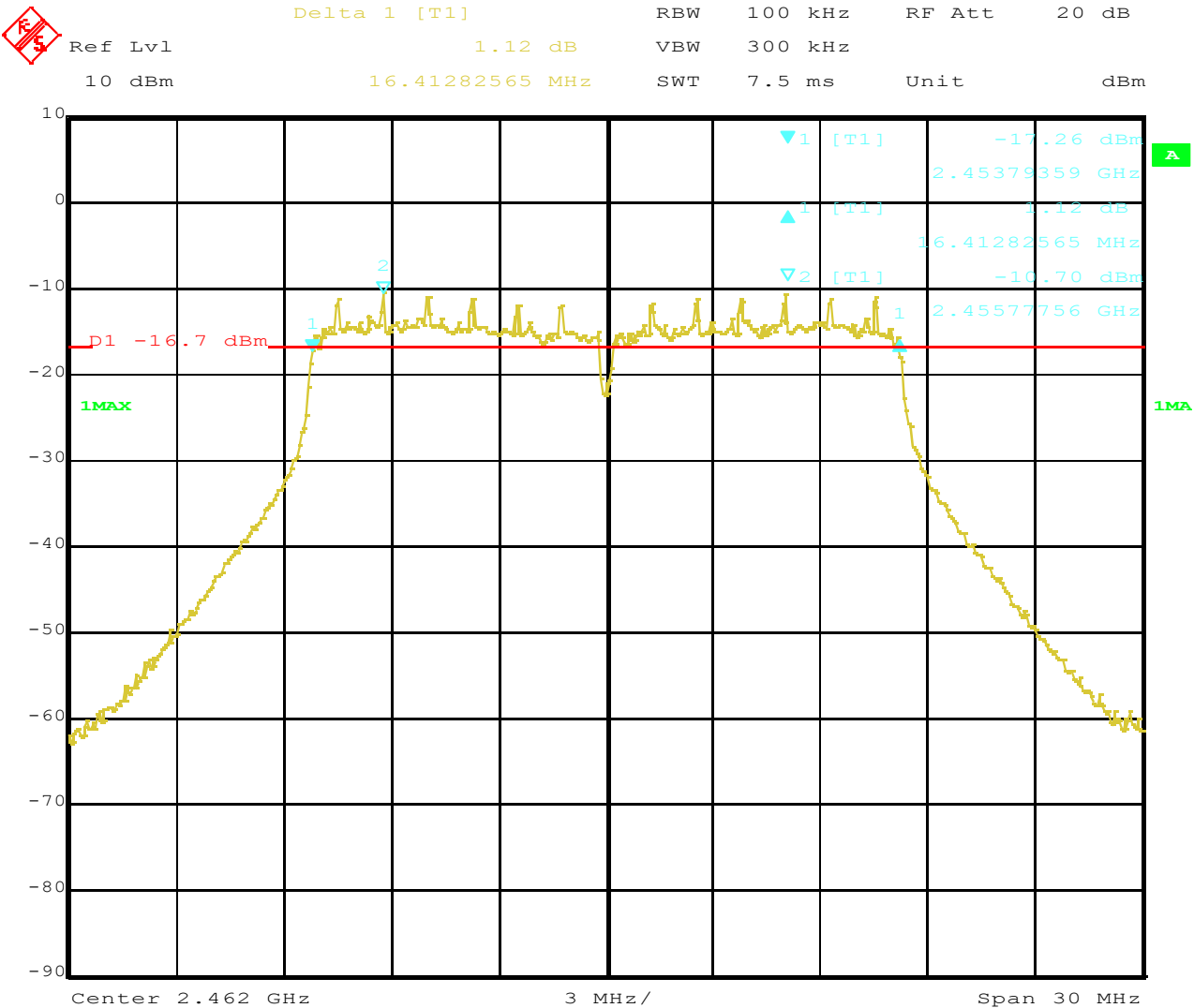


Date: 18.NOV.2020 10:25:18

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3. 802.11g at 6Mbps of CH11



Date: 18.NOV.2020 10:26:41

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6dB Occupied Bandwidth

EUT	Laptop		Model	NP11A-C	
Mode	802.11n HT20		Test Voltage	DC7.6V	
Temperature	24 deg. C,		Humidity	56% RH	
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
1	2412	mcs0	17.31	0.5	Pass
6	2437	mcs0	17.56	0.5	Pass
11	2462	mcs0	17.56	0.5	Pass

Note: Two antennas were tested and only the worst case was recorded in the test report. Ant 1 was the worst case.

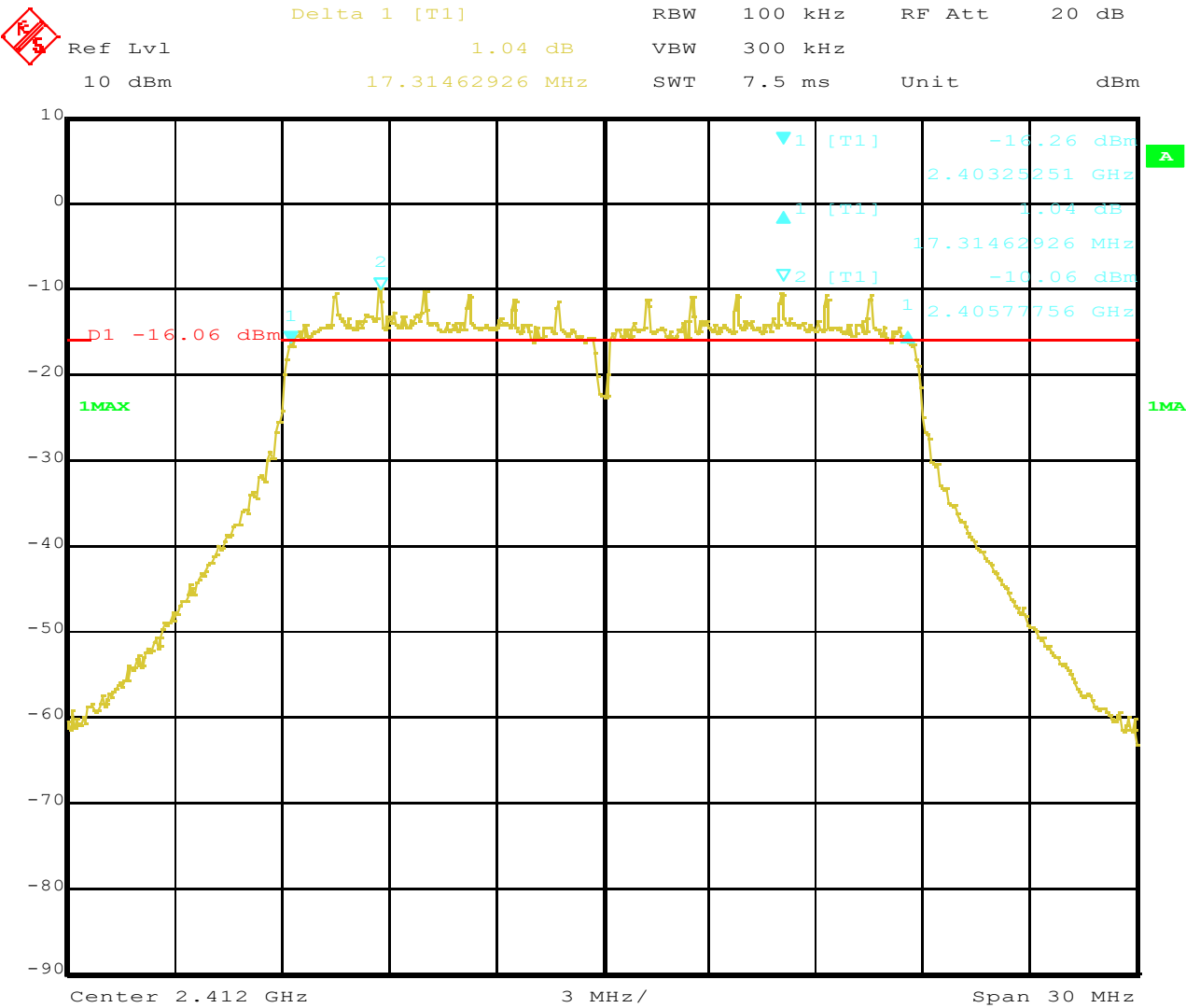
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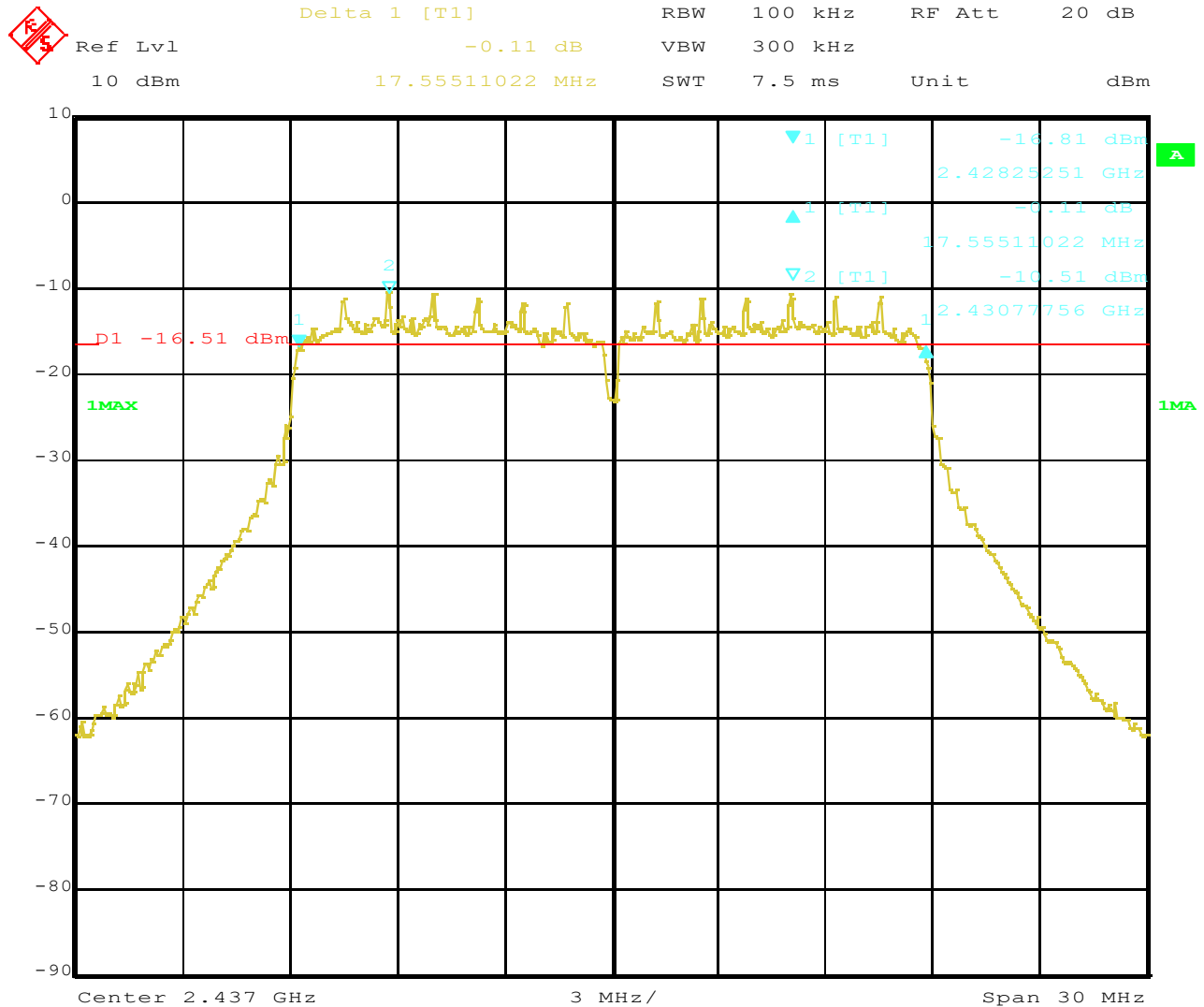
Test Plots:
1. 802.11n at HT20 of CH01



Date: 18.NOV.2020 10:32:53

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2. 802.11n at HT20 of CH06



Date: 18.NOV.2020 10:29:27

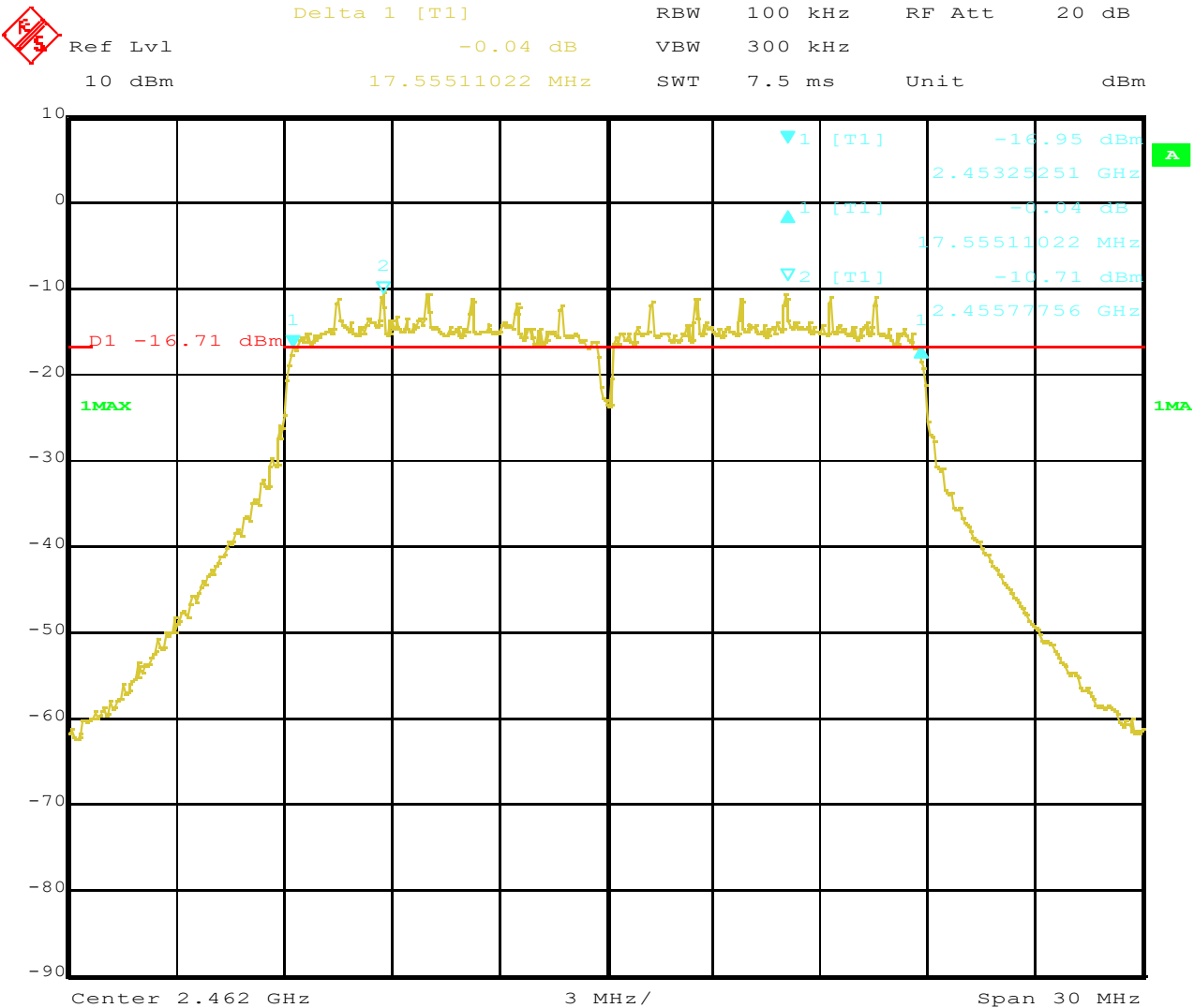
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3. 802.11n at HT20 of CH11



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6dB Occupied Bandwidth

EUT		Laptop		Model	NP11A-C
Mode		802.11n HT40		Test Voltage	DC7.6V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
3	2422	mcs0	36.01	0.5	Pass
6	2437	mcs0	36.02	0.5	Pass
9	2452	mcs0	35.95	0.5	Pass

Note: Two antennas were tested and only the worst case was recorded in the test report. Ant 1 was the worst case.

The report refers only to the sample tested and does not apply to the bulk.

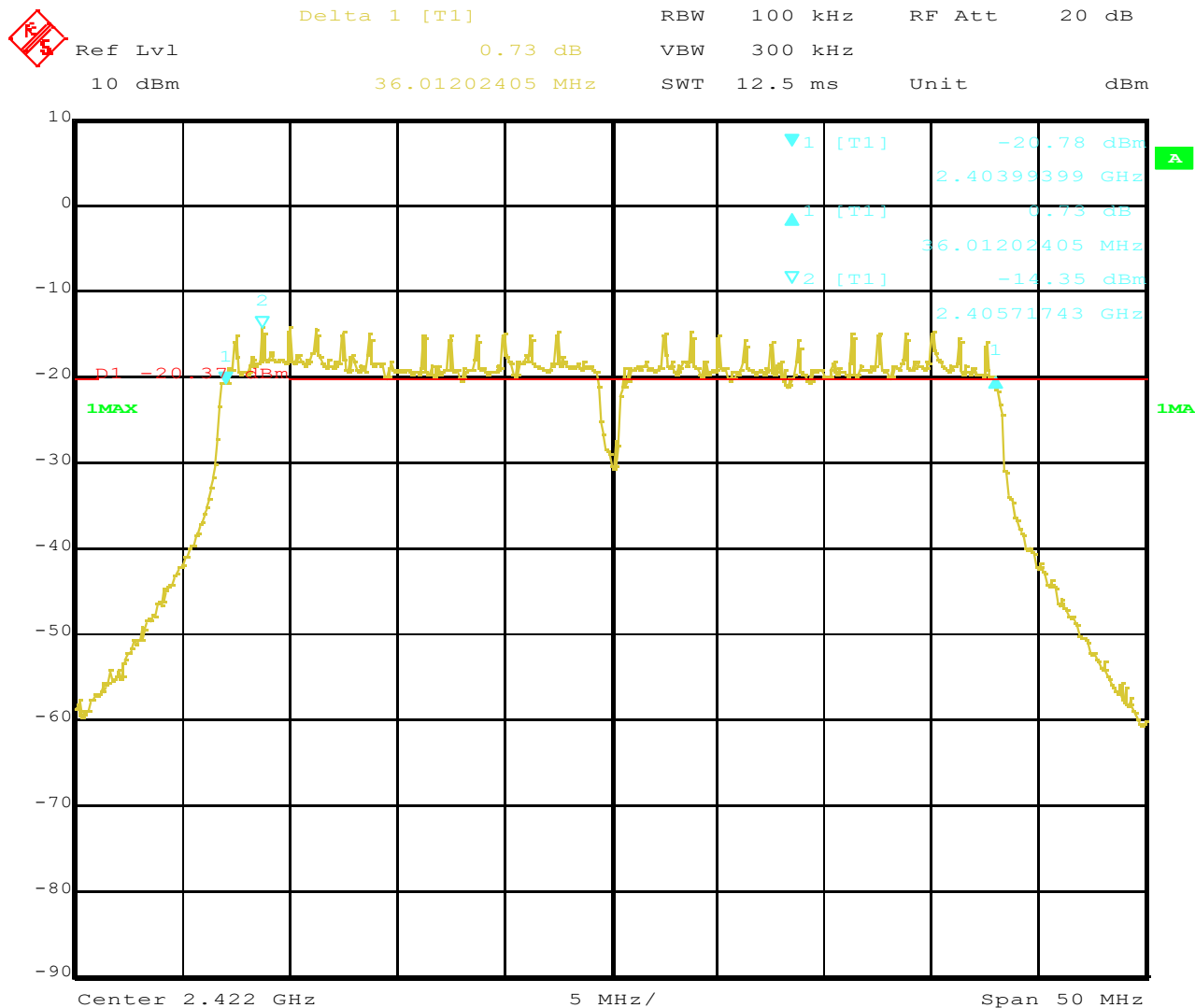
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Test Plots:

1. 802.11n at HT40 of CH03



Date: 18.NOV.2020 10:35:09

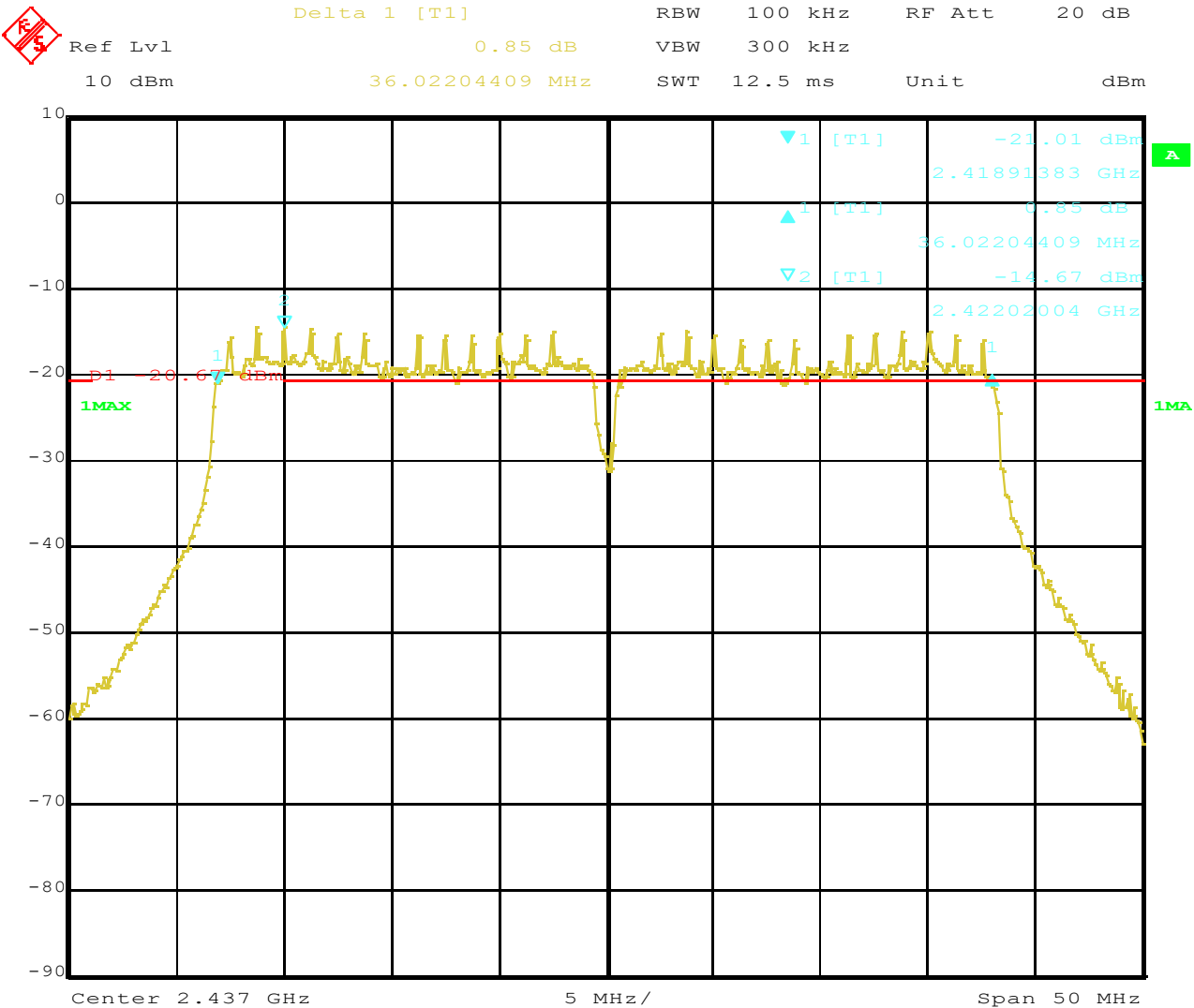
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2. 802.11n at HT40 of CH06

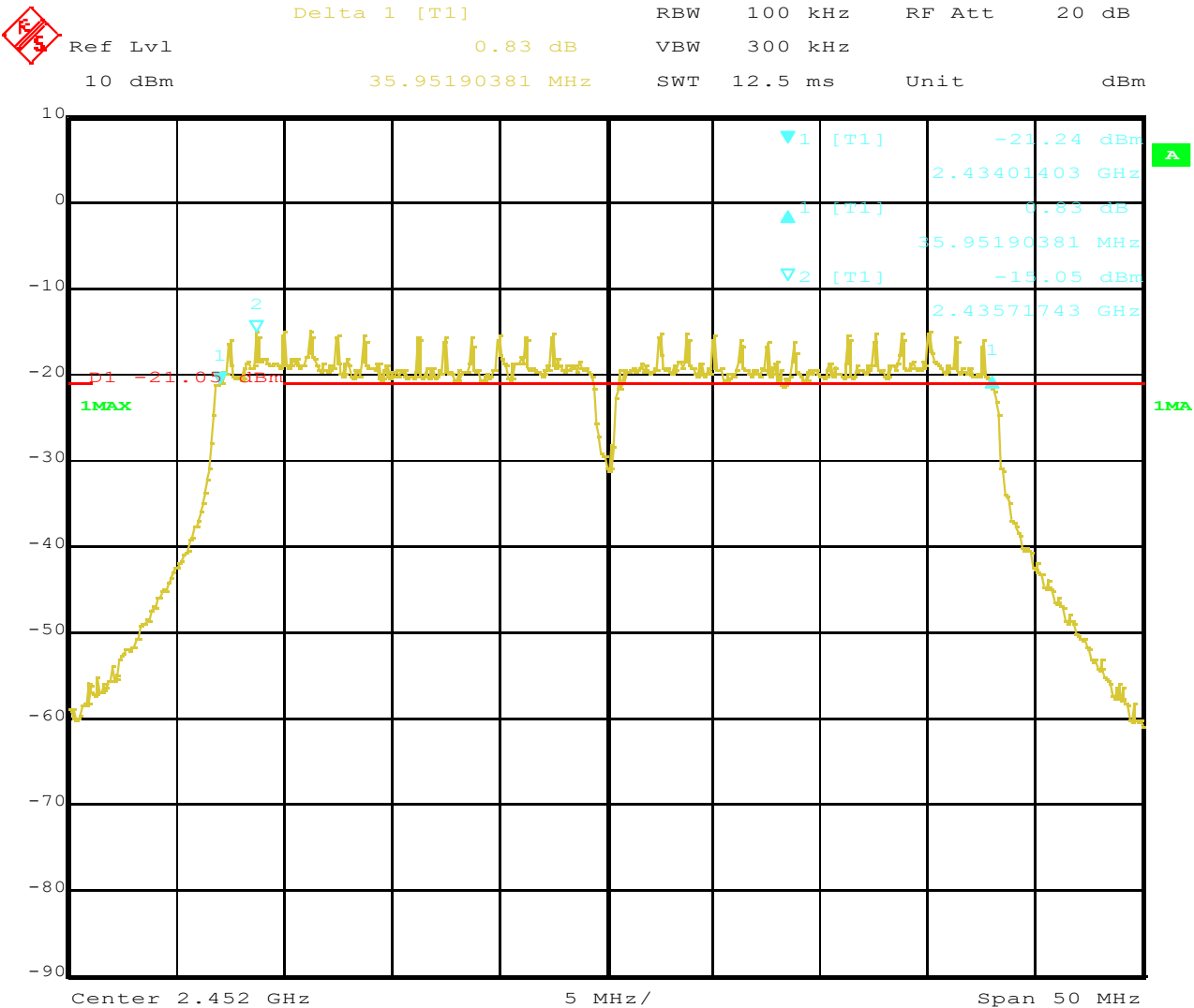


Date: 18.NOV.2020 10:37:05

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3. 802.11n at HT40 of CH09



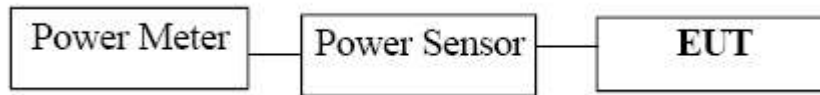
Date: 18.NOV.2020 10:38:42

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8. Maximum Output Power

8.1 Test Setup



8.2 Limits of Maximum Output Power

The Maximum Output Power Measurement is 30dBm.

8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: The Average power was measured

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8.4 Test Results

EUT	Laptop		Model		NP11A-C			
Mode	802.11b		Test Voltage		DC7.6V			
Temperature	24 deg. C,		Humidity		56% RH			
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Max. Power Output (dBm)	Power Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
1	2412	-0.05	0.99	-0.26	0.94	2.86	30	Pass
6	2437	-0.29	0.94	-0.43	0.91	2.65	30	Pass
11	2462	-0.37	0.92	-0.60	0.87	2.53	30	Pass

- Note: 1. At final test to get the worst-case emission at 1Mbps for CH01, CH06 and CH11
2. The result basic equation calculation as follow:
Power Output = Power Reading + Cable loss + Attenuator
3. The worse case was recorded

EUT	Laptop		Model		NP11A-C			
Mode	802.11g		Test Voltage		DC7.6V			
Temperature	24 deg. C,		Humidity		56% RH			
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Max. Power Output (dBm)	Power Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
1	2412	-1.93	0.64	-2.18	0.61	0.96	30	Pass
6	2437	-2.40	0.58	-2.56	0.55	0.53	30	Pass
11	2462	-2.51	0.56	-2.74	0.53	0.39	30	Pass

- Note: 1. At final test to get the worst-case emission at 6Mbps for CH01, CH06 and CH11
2. The result basic equation calculation as follow:
Power Output = Power Reading + Cable loss + Attenuator
3. The worse case was recorded

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EUT	Laptop		Model		NP11A-C			
Mode	802.11n (HT20)		Test Voltage		DC7.6V			
Temperature	24 deg. C,		Humidity		56% RH			
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Max. Power Output (dBm)	Power Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
1	2412	-2.16	0.61	-2.33	0.58	0.77	30	Pass
6	2437	-2.56	0.55	-2.79	0.53	0.34	30	Pass
11	2462	-2.64	0.54	-2.87	0.52	0.26	30	Pass

Note: 1. At final test to get the worst-case emission at mcs0 of 11n HT20 for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

$$\text{Power Output} = \text{Power Reading} + \text{Cable loss} + \text{Attenuator}$$

3. The worse case was recorded

EUT	Laptop		Model		NP11A-C			
Mode	802.11n (HT40)		Test Voltage		DC7.6V			
Temperature	24 deg. C,		Humidity		56% RH			
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Max. Power Output (dBm)	Power Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
3	2422	-4.97	0.32	-5.20	0.30	-2.07	30	Pass
6	2437	-5.26	0.30	-5.45	0.29	-2.34	30	Pass
9	2452	-5.47	0.28	-5.66	0.27	-2.55	30	Pass

Note: 1. At final test to get the worst-case emission at msc0 of 11n HT40 for CH03, CH06 and CH09

2. The result basic equation calculation as follow:

$$\text{Power Output} = \text{Power Reading} + \text{Cable loss} + \text{Attenuator}$$

3. The worse case was recorded

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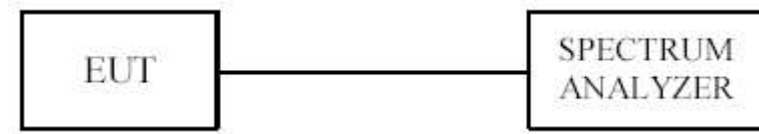
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9. Power Spectral Density Measurement

9.1 Test Setup



9.2 Limits of Power Spectral Density Measurement

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

9.3 Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 10 kHz.
3. Set the VBW $\geq$ 30 kHz.
4. Set the span to 1.5 times the DTS channel bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11. The resulting peak PSD level must be $\leq$ 8 dBm/3kHz.

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9.4 Test Result

EUT	Laptop		Model	NP11A-C		
Mode	802.11b 11Mbps		Test Voltage	DC7.6V		
Temperature	24 deg. C,		Humidity	56% RH		
Channel	Frequency (MHz)	Ant1 Power Spectral Density	Factor	Total Power Spectral Density (dBm/10kHz)	Limit (dBm/3kHz)	Pass/ Fail
1	2412	-14.29	3.01	-11.28	8	Pass
6	2437	-14.02	3.01	-11.01	8	Pass
11	2462	-14.16	3.01	-11.15	8	Pass

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

EUT	Laptop		Model	NP11A-C		
Mode	802.11b 1Mbps		Test Voltage	DC7.6V		
Temperature	24 deg. C,		Humidity	56% RH		
Channel	Frequency (MHz)	Ant1 Power Spectral Density	Factor	Total Power Spectral Density (dBm/10kHz)	Limit (dBm/3kHz)	Pass/ Fail
1	2412	-12.76	3.01	-9.75	8	Pass
6	2437	-13.18	3.01	-10.17	8	Pass
11	2462	-13.67	3.01	-10.66	8	Pass

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

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EUT	Laptop		Model		NP11A-C	
Mode	802.11g 6Mbps		Test Voltage		DC7.6V	
Temperature	24 deg. C,		Humidity		56% RH	
Channel	Frequency (MHz)	Ant1 Power Spectral Density	Factor	Total Power Spectral Density (dBm/10kHz)	Limit (dBm/3kHz)	Pass/ Fail
1	2412	-20.50	3.01	-17.49	8	Pass
6	2437	-20.91	3.01	-17.90	8	Pass
11	2462	-21.00	3.01	-17.99	8	Pass

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

EUT	Laptop		Model		NP11A-C	
Mode	802.11n HT20 mcs0		Test Voltage		DC7.6V	
Temperature	24 deg. C,		Humidity		56% RH	
Channel	Frequency (MHz)	Ant1 Power Spectral Density	Factor	Total Power Spectral Density (dBm/10kHz)	Limit (dBm/3kHz)	Pass/ Fail
1	2412	-18.77	3.01	-15.76	8	Pass
6	2437	-19.27	3.01	-16.26	8	Pass
11	2462	-19.27	3.01	-16.26	8	Pass

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

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EUT		Laptop		Model		NP11A-C	
Mode		802.11n HT40 mcs0		Test Voltage		DC7.6V	
Temperature		24 deg. C,		Humidity		56% RH	
Channel	Frequency (MHz)	Ant1 Power Spectral Density	Factor	Total Power Spectral Density (dBm/10kHz)	Limit (dBm/3kHz)	Pass/ Fail	
3	2422	-23.93	3.01	-20.92	8	Pass	
6	2437	-23.44	3.01	-20.43	8	Pass	
9	2452	-23.50	3.01	-20.49	8	Pass	

Note: 1. Total Power Spectral Density = Ant1 Power Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

The report refers only to the sample tested and does not apply to the bulk.

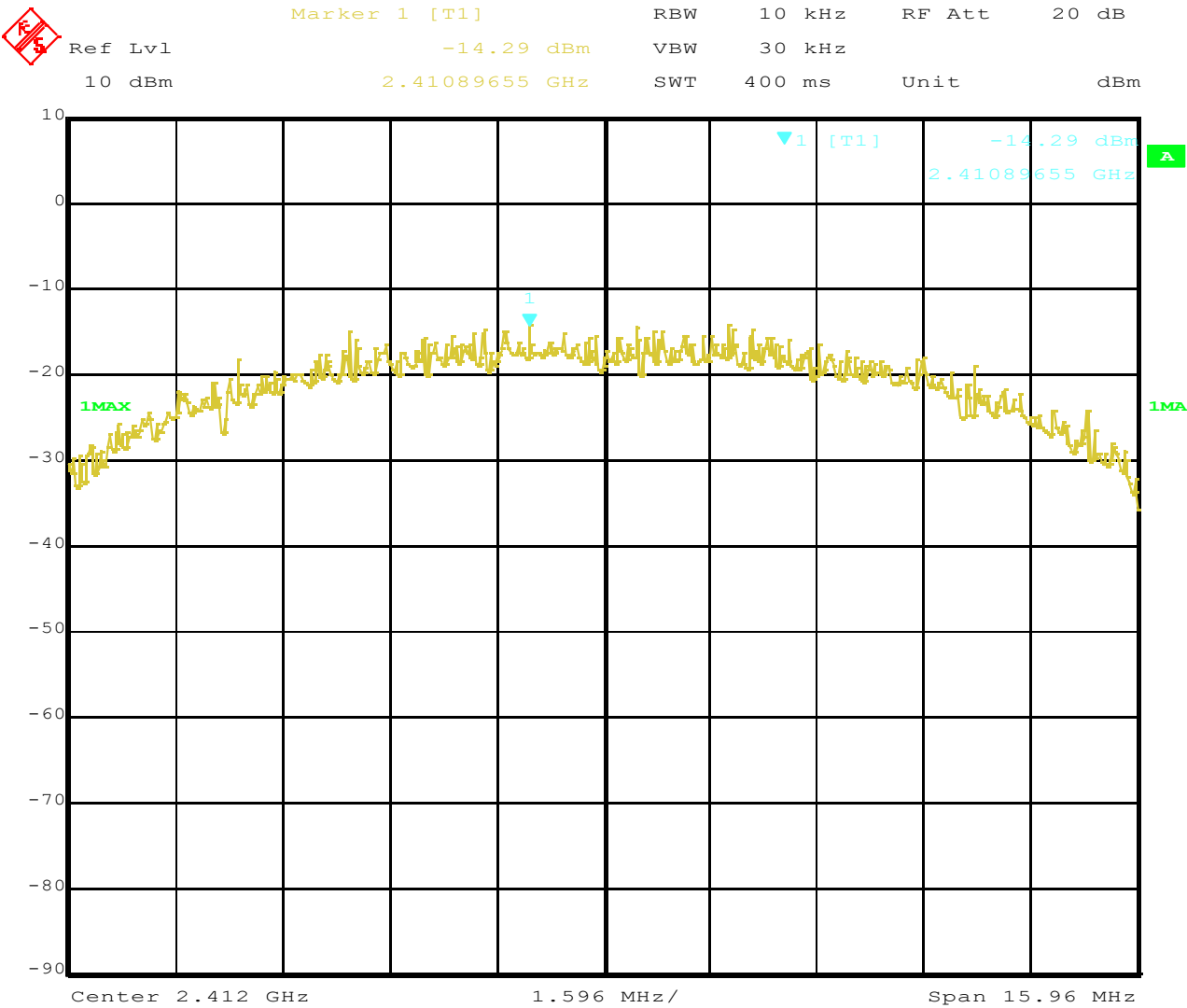
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9.5 Photo of Power Spectral Density Measurement

1.802.11b at 11Mbps of CH01

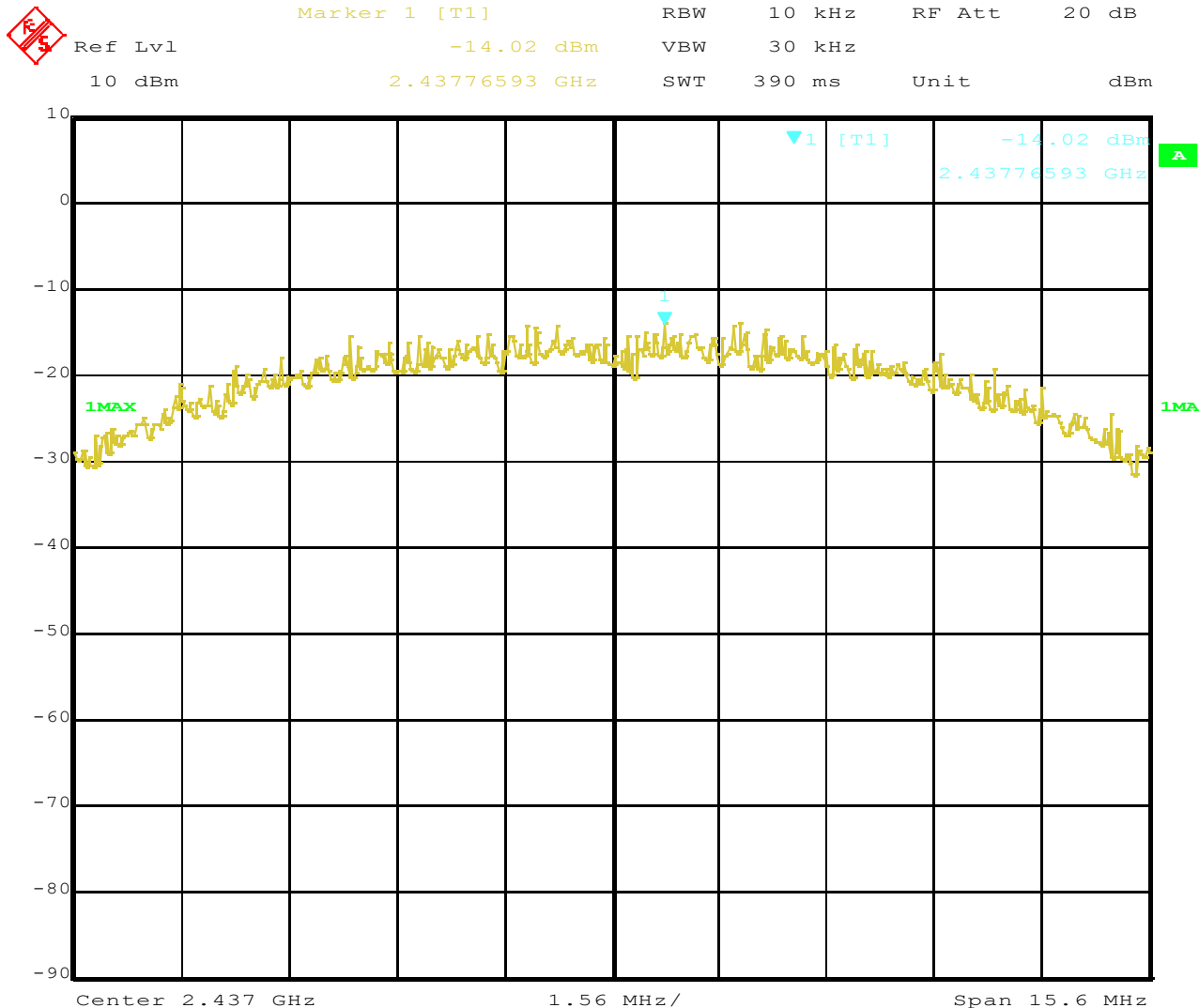


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2. 802.11b at 11Mbps at CH06



Date: 18.NOV.2020 11:25:31

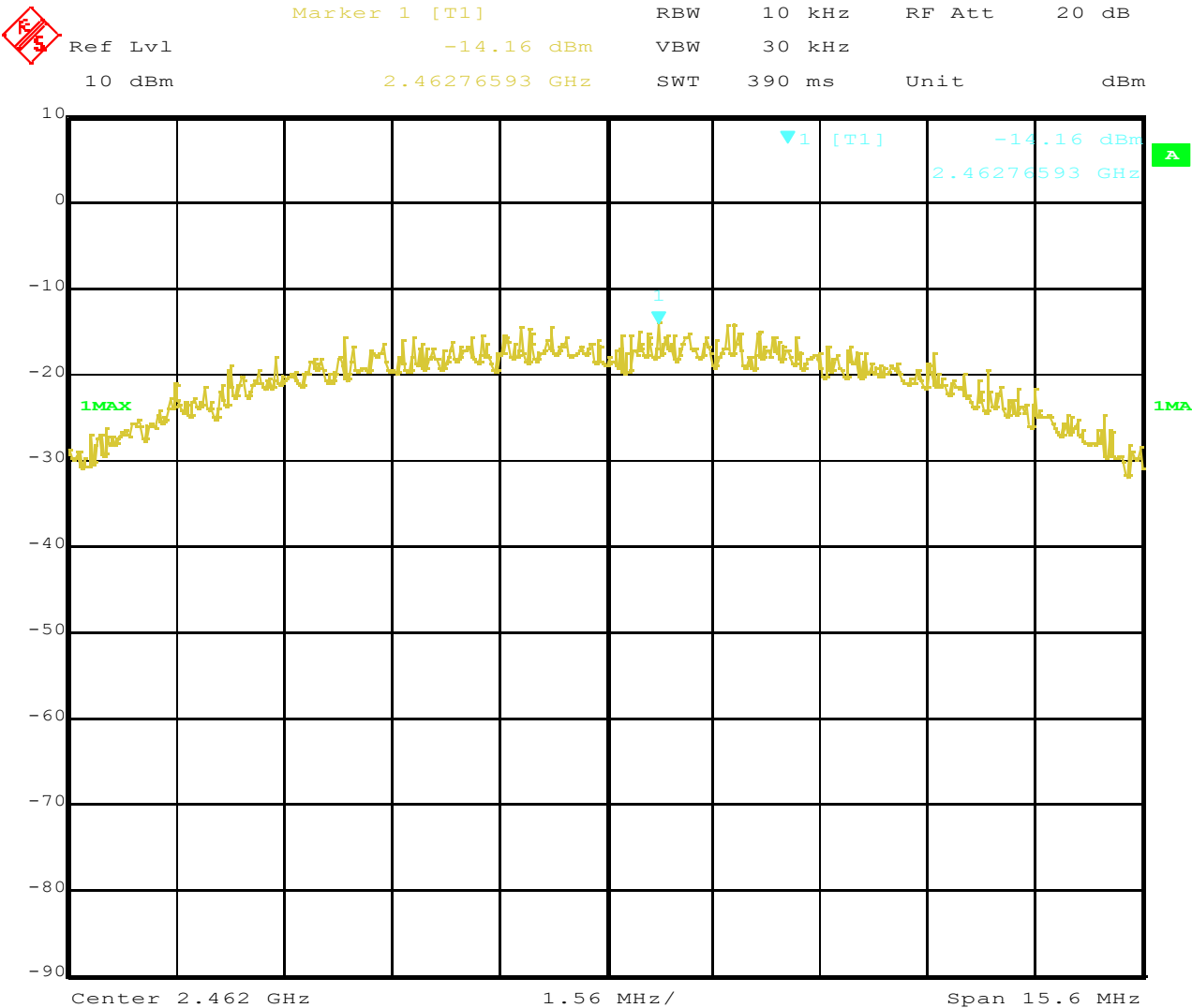
The report refers only to the sample tested and does not apply to the bulk.

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3. 802.11b at 11Mbps of CH11

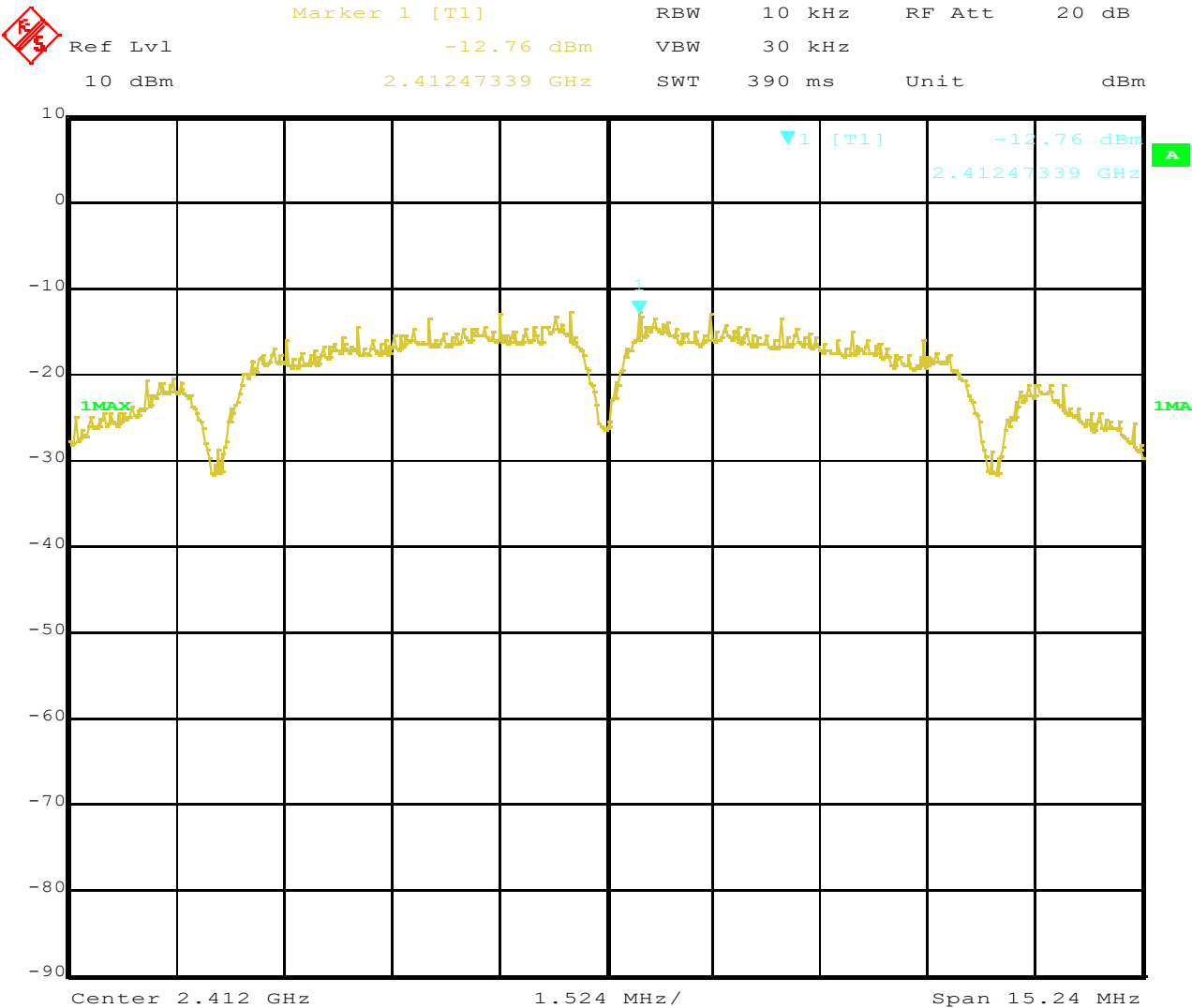


Date: 18.NOV.2020 11:24:33

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4. 802.11b at 1Mbps of CH1

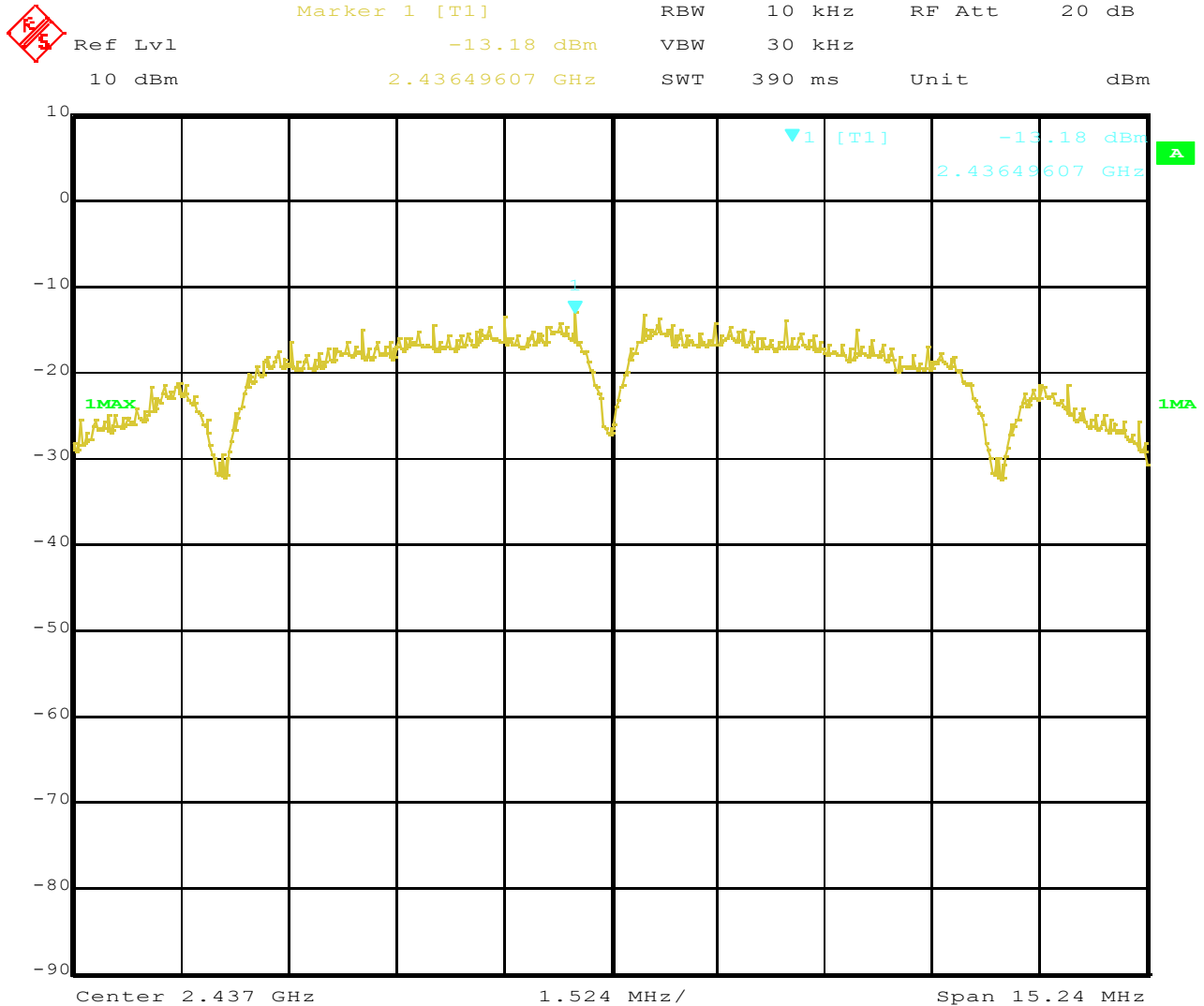


Date: 18.NOV.2020 11:20:54

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5. 802.11b at 1Mbps of CH6



Date: 18.NOV.2020 11:21:46

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