



Report No.: TW2203422-02E  
File reference No.: 2022-05-23

Applicant: Hangzhou Roombanker Technology Co., Ltd

Product: S-Serial Smart Gateway

Model No.: DSGW-034, RFA-Z115-Z2-001, RFA-Z115-Z2-002

Trademark: N/A

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

A handwritten signature in black ink that reads 'Terry Tang'.

Terry Tang

Manager

Dated: May 23, 2022

**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

TEST REPORT



### **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 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 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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## 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: Hangzhou Roombanker Technology Co., Ltd  
Address: A#801 Wantong center, Hangzhou, China  
Telephone: +86-18768289112  
Fax: --

### 1.3 Description of EUT

Product: S-Serial Smart Gateway  
Manufacturer: Hangzhou Roombanker Technology Co., Ltd  
Address: A#801 Wantong center, Hangzhou, China  
Trademark: N/A  
Model Number: DSGW-034  
Additional Model Number: RFA-Z115-Z2-001, RFA-Z115-Z2-002  
Hardware Version: V1.0  
Software Version: V1.0  
Serial No.: DSGW034202205060001  
Rating: DC5V, 1A  
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;  
IEEE 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  
IEEE 802.11g: 54, 48,36, 24, 18, 12, 9, 6 Mbps  
IEEE 802.11n HT20/HT40: mcs0-mcs15

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<b>2.0 Test Equipment</b>					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2021-06-18	2022-06-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2021-06-18	2022-06-17
Loop Antenna	EMCO	6507	00078608	2021-06-18	2024-06-17
Spectrum	R&S	FSIQ26	100292	2021-06-18	2022-06-17
Horn Antenna	A-INFO	LB-180400-KF	ANT01060660	2021-07-02	2024-07-02
Horn Antenna	R&S	BBHA 9120D	9120D-631	2021-07-02	2024-07-02
Power meter	Anritsu	ML2487A	6K00003613	2021-06-18	2022-06-17
Power sensor	Anritsu	MA2491A	32263	2021-06-18	2022-06-17
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2021-07-02	2024-07-01
9*6*6 Anechoic	--	--	N/A	2021-07-02	2022-07-01
EMI Test Receiver	RS	ESVB	826156/011	2021-06-18	2022-06-17
EMI Test Receiver	RS	ESH3	860904/006	2021-06-18	2022-06-17
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2021-06-18	2022-06-17
Spectrum	HP/Agilent	E4407B	MY50441392	2021-06-18	2022-06-17
Spectrum	RS	FSP	1164.4391.38	2022-01-14	2023-01-13
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	--	2021-06-18	2022-06-17
RF Cable	Zhengdi	7m	--	2021-06-18	2022-06-17
RF Switch	EM	EMSW18	060391	2021-06-18	2022-06-17
Pre-Amplifier	Schwarebeck	BBV9743	#218	2021-06-18	2022-06-17
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2021-06-18	2022-06-17
LISN	SCHAFFNER	NNB42	00012	2022-01-05	2023-01-04
2.4G band-pass filter	Micro-Tronics	BRM50701	SN-041	2021-06-18	2022-06-17

## 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: mcs0 data rate (worst case) were chosen for full testing

Note: During the test, the duty cycle was set up to >98%

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### 3.0 Technical Details

#### 3.1 Summary of test results

<b>The EUT has been tested according to the following specifications:</b>			
<b>Standard</b>	<b>Test Type</b>	<b>Result</b>	<b>Notes</b>
<b>FCC Part 15, Paragraph 15.203</b>	<b>Antenna Requirement</b>	<b>Pass</b>	<b>Complies</b>
<b>FCC Part 15, Paragraph 15.207</b>	<b>Conducted Emission Test</b>	<b>Pass</b>	<b>Complies</b>
<b>FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit</b>	<b>Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth &gt; 500kHz</b>	<b>Pass</b>	<b>Complies</b>
<b>FCC Part 15, Paragraph 15.247(b)</b>	<b>Maximum peak output power Limit: max. 30dBm</b>	<b>Pass</b>	<b>Complies</b>
<b>FCC Part 15, Paragraph 15.109, 15.205 &amp; 15.209</b>	<b>Transmitter Radiated Emission Limit: Table 15.209</b>	<b>Pass</b>	<b>Complies</b>
<b>FCC Part 15, Paragraph 15.247(e)</b>	<b>Power Spectral Density Limit: max. 8dBm/3kHz</b>	<b>Pass</b>	<b>Complies</b>
<b>FCC Part 15, Paragraph 15.247(d)</b>	<b>Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209</b>	<b>Pass</b>	<b>Complies</b>

#### 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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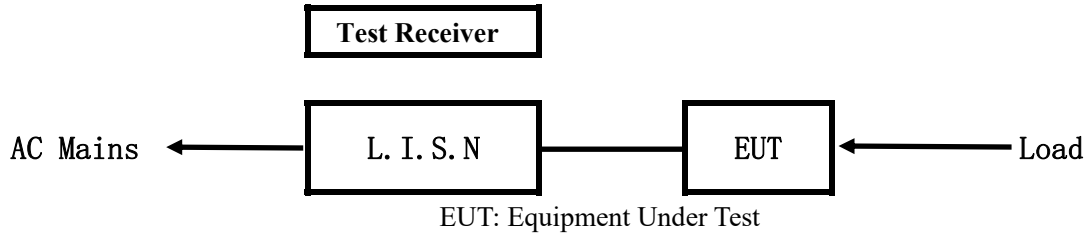
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**5.0 Power Line Conducted Emission Test**

**5.1 Schematics of the test**

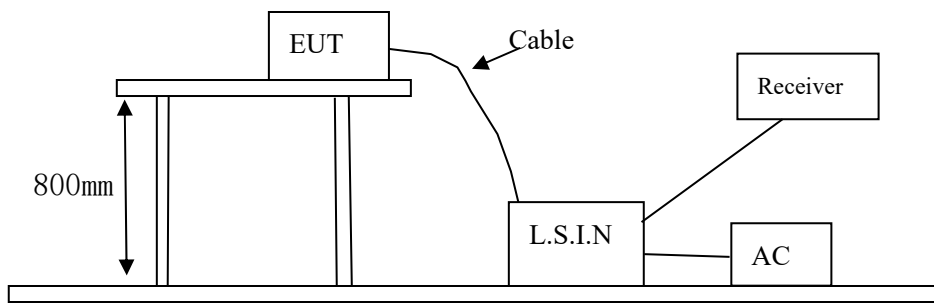


**5.2 Test Method and test Procedure**

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
S-Serial Smart Gateway	Hangzhou Roombanker Technology Co., Ltd	DSGW-034, RFA-Z115-Z2-001, RFA-Z115-Z2-002	2AUXBDSGW-034

**B. Internal Device**

Device	Manufacturer	Model	FCC ID/DOC
N/A			

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C. Peripherals

Device	Manufacturer	Model	Rating
Power Supply	KEYU	KA23-0502000DEU	Input: 100-240V~, 50/60Hz, 0.35A; Output: DC5V, 2A

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)	Limits (dB $\mu$ 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)**

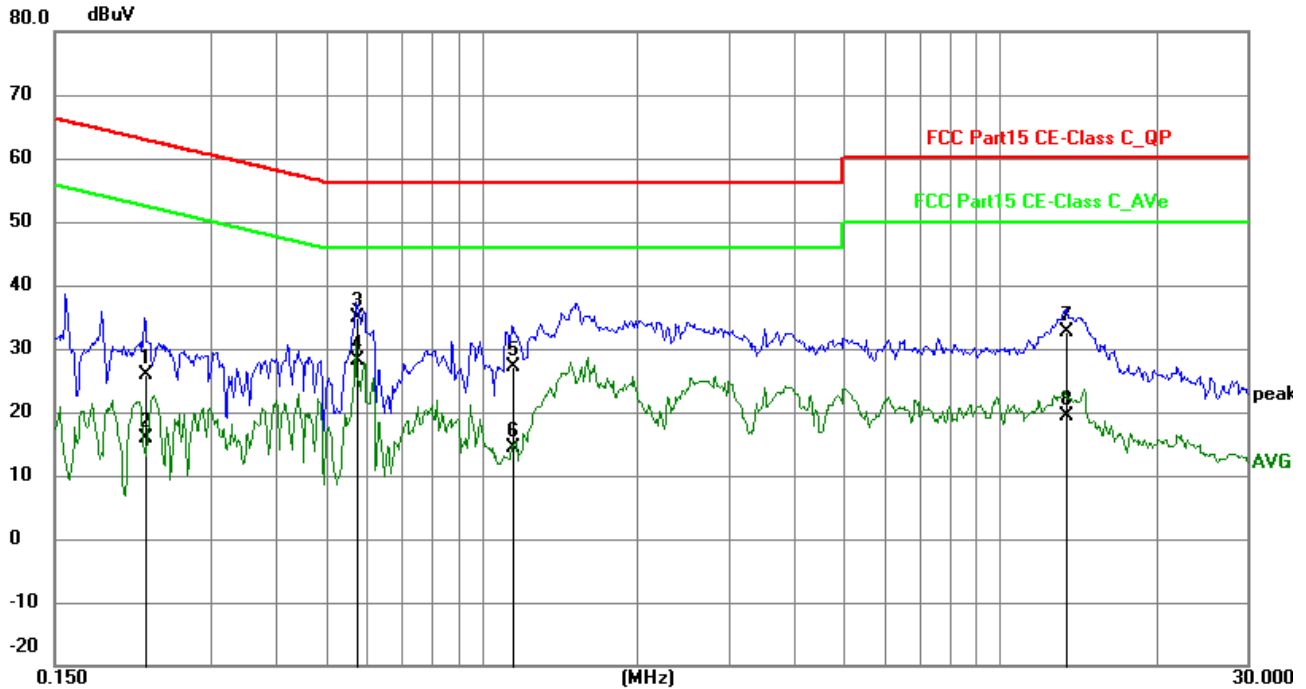
**EUT Operating Environment**

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

**EUT set Condition: Keep WIFI Transmitting**

**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	0.2241	16.20	9.75	25.95	62.67	-36.72	QP	P
2	0.2241	6.15	9.75	15.90	52.67	-36.77	AVG	P
3	0.5751	25.14	9.77	34.91	56.00	-21.09	QP	P
4	0.5751	18.29	9.77	28.06	46.00	-17.94	AVG	P
5	1.1445	17.34	9.79	27.13	56.00	-28.87	QP	P
6	1.1445	4.69	9.79	14.48	46.00	-31.52	AVG	P
7	13.4598	22.34	10.31	32.65	60.00	-27.35	QP	P
8	13.4598	9.17	10.31	19.48	50.00	-30.52	AVG	P

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

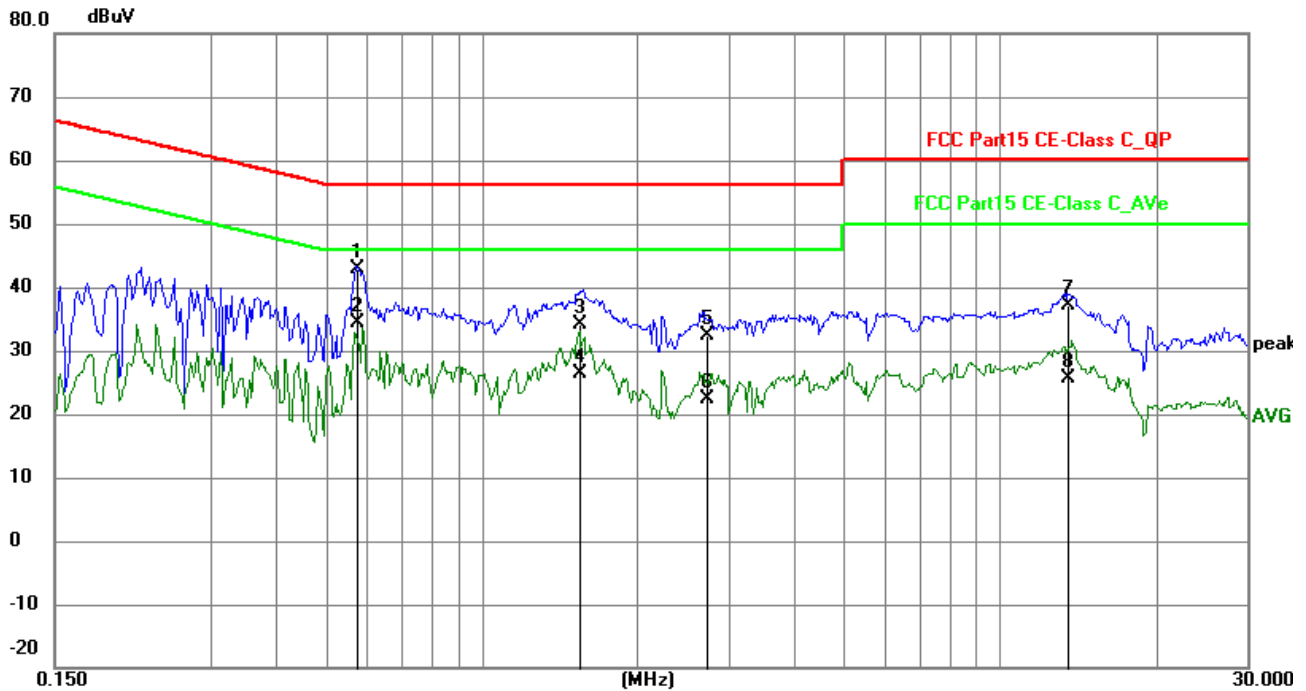
**EUT Operating Environment**

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

**EUT set Condition: Keep WIFI Transmitting**

**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	0.5751	33.18	9.77	42.95	56.00	-13.05	QP	P
2	0.5751	24.54	9.77	34.31	46.00	-11.69	AVG	P
3	1.5489	24.31	9.80	34.11	56.00	-21.89	QP	P
4	1.5489	16.48	9.80	26.28	46.00	-19.72	AVG	P
5	2.7084	22.45	9.83	32.28	56.00	-23.72	QP	P
6	2.7084	12.47	9.83	22.30	46.00	-23.70	AVG	P
7	13.5300	26.76	10.32	37.08	60.00	-22.92	QP	P
8	13.5300	15.24	10.32	25.56	50.00	-24.44	AVG	P

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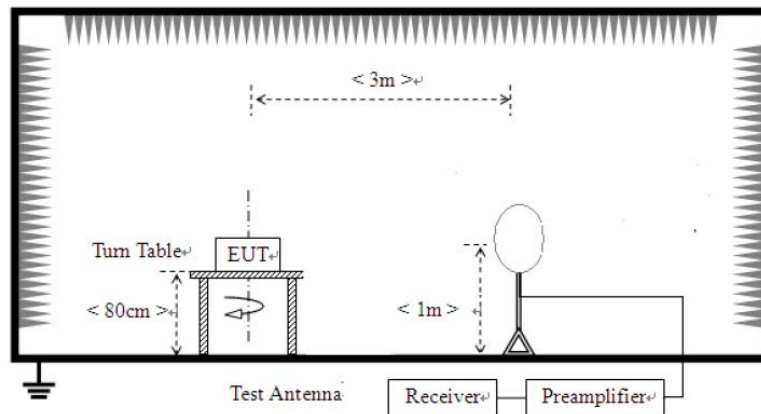
## 6 Radiated Emission Test

### 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

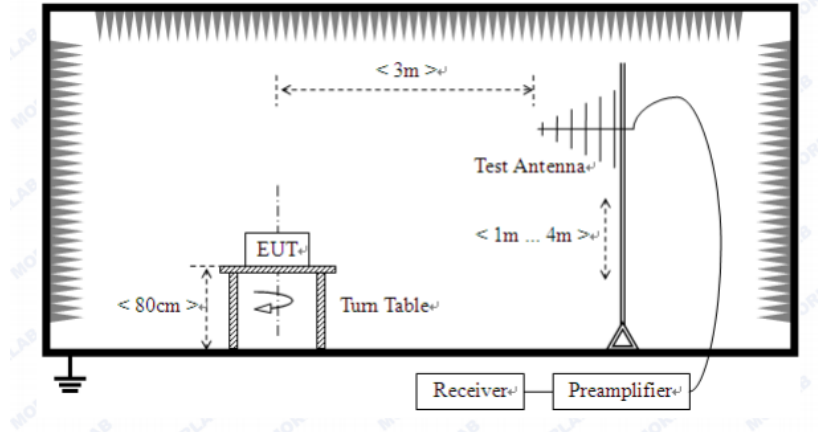


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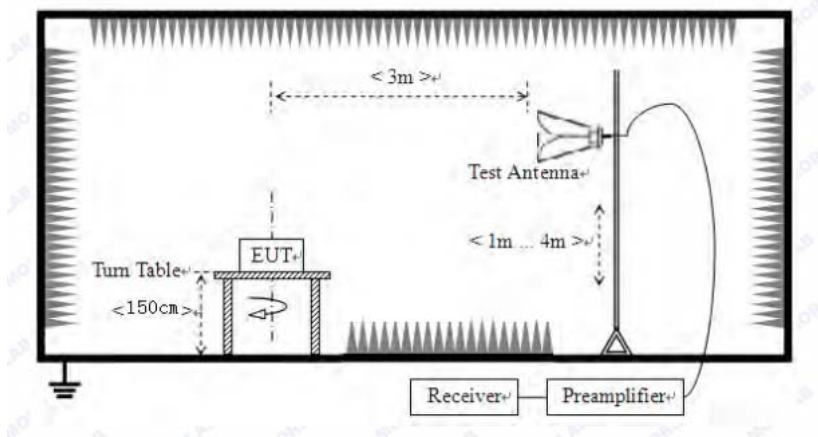
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For radiated emissions from 30MHz to 1GHz



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:

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

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**Frequencies in restricted band are complied to limit on Paragraph 15.209**

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
0.009-0.049	3	$20\log(2400/F(\text{kHz})) + 40\log(300/3)$
0.490-1.705	3	$20\log(24000/F(\text{kHz})) + 40\log(30/3)$
1.705-30	3	69.5
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 (uV)
  2. In the Above Table, the tighter limit applies at the band edges.
  3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
  4. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.
  5. For radiated emissions from 9kHz to 30MHz, the emission level is much less than the limit for more than 20dB. No necessary to take down the record.
  6. **Worse case were recorded in the test report. 802.11g was the worst case.**

**Note: Only the worst case was recorded in the test report.**

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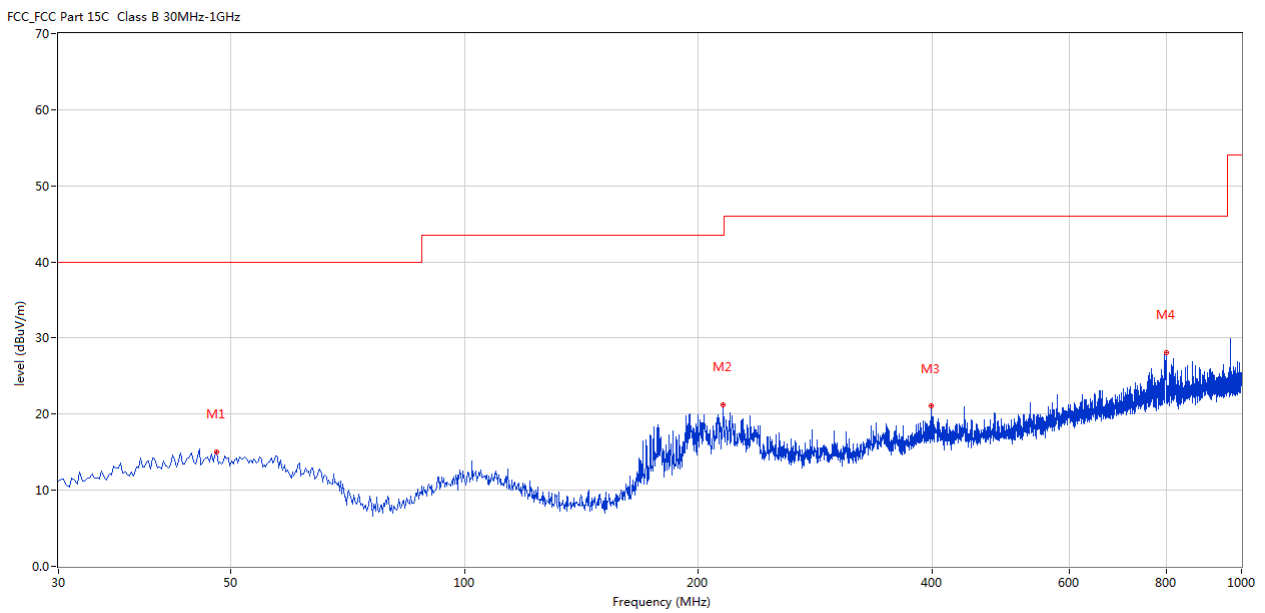
**Test result**

**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	47.941	15.05	-11.30	40.0	-24.95	Peak	179.00	100	Horizontal	Pass
2	215.224	21.28	-13.60	43.5	-22.22	Peak	81.00	100	Horizontal	Pass
3	398.750	21.03	-8.63	46.0	-24.97	Peak	206.00	100	Horizontal	Pass
4	799.745	28.04	-2.97	46.0	-17.96	Peak	101.00	100	Horizontal	Pass

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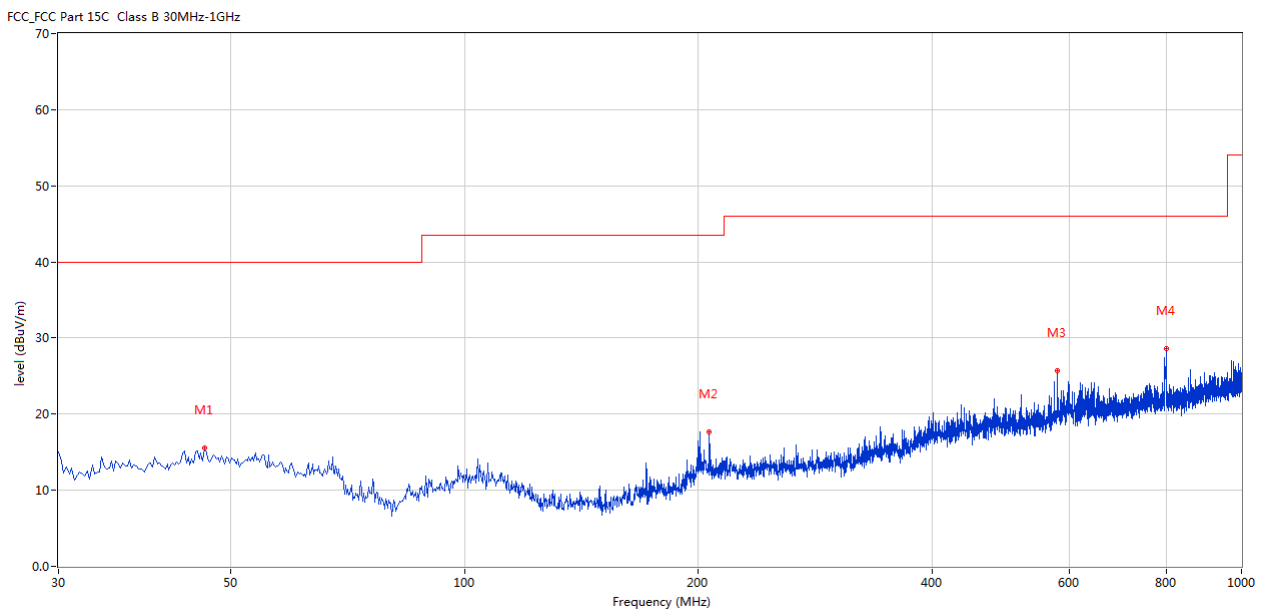
**Test result**

**General Radiated Emission Data and Harmonics Radiated Emission Data**

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

EUT set Condition: **Keep Transmitting**

**Results: Pass**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	46.243	15.54	-11.41	40.0	-24.46	Peak	132.00	100	Vertical	Pass
2	206.496	17.68	-13.65	43.5	-25.82	Peak	163.00	100	Vertical	Pass
3	579.853	25.69	-5.57	46.0	-20.31	Peak	42.00	100	Vertical	Pass
4	799.745	28.55	-2.97	46.0	-17.45	Peak	165.00	100	Vertical	Pass

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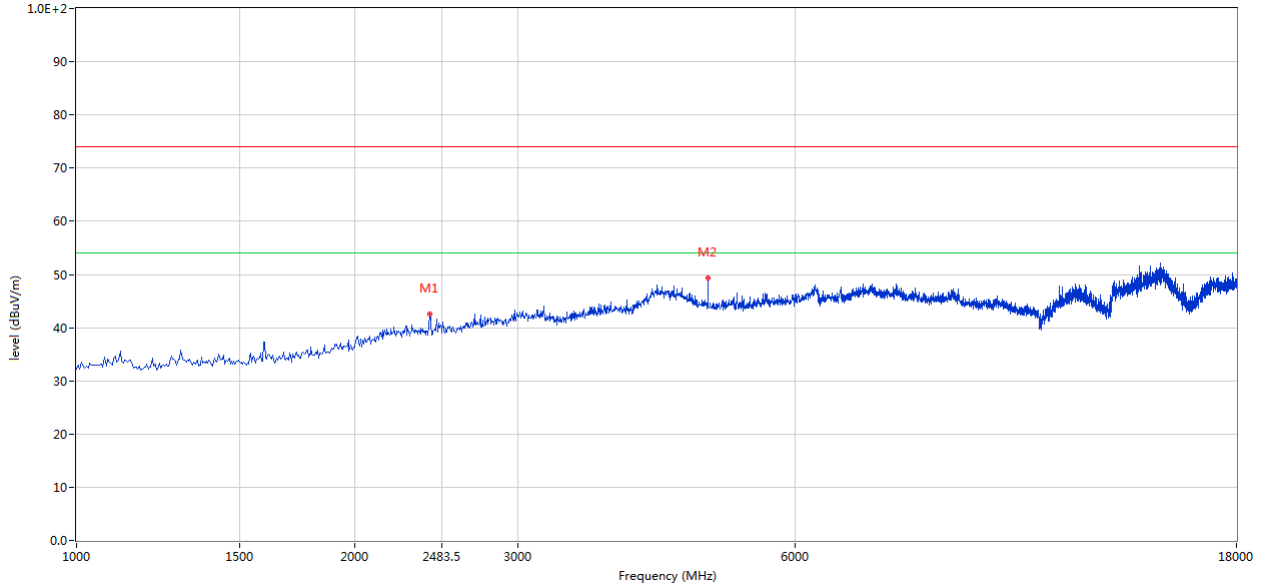
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Please refer to the following test plots for details:

**CH01 for 11g at 6Mbps: Horizontal**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2410.647	42.48	-3.57	74.0	-31.52	Peak	41.00	100	Horizontal	Pass
2	4824.044	49.32	3.14	74.0	-23.68	Peak	212.00	100	Horizontal	Pass

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

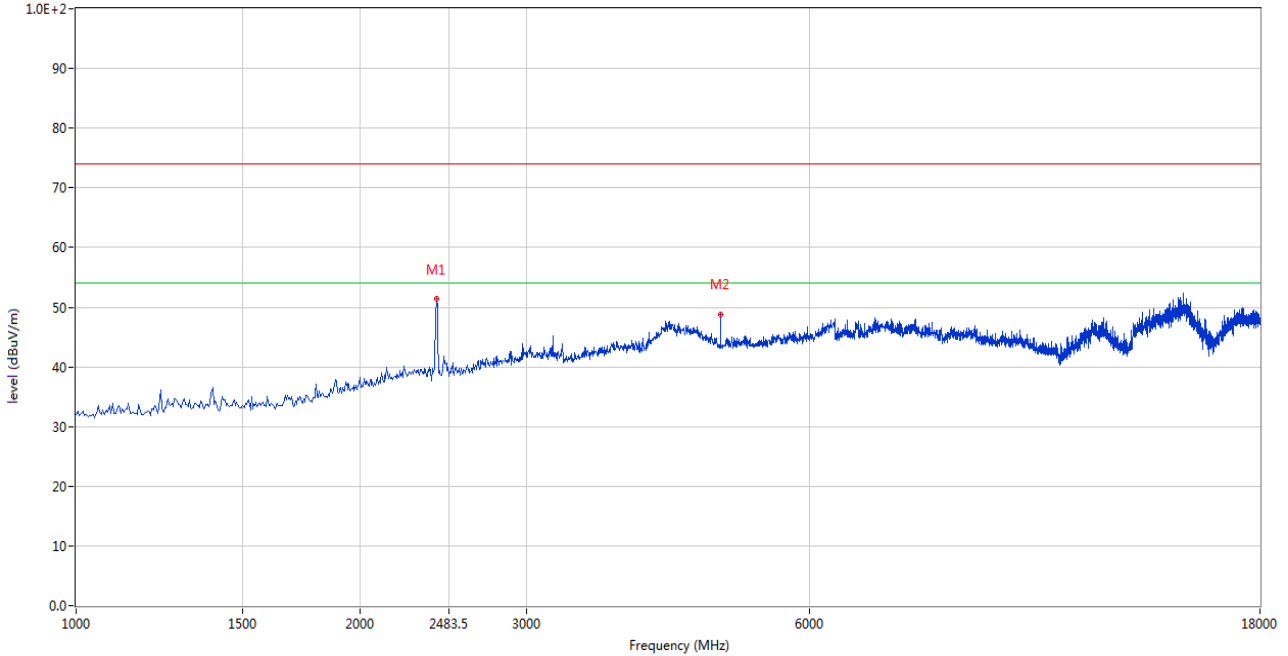
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**CH01 for 11g at 6Mbps: Vertical**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2410.647	50.56	-3.57	74.0	-23.44	Peak	85.00	100	Vertical	Pass
2	4824.044	48.78	3.14	74.0	-25.22	Peak	173.00	100	Vertical	Pass

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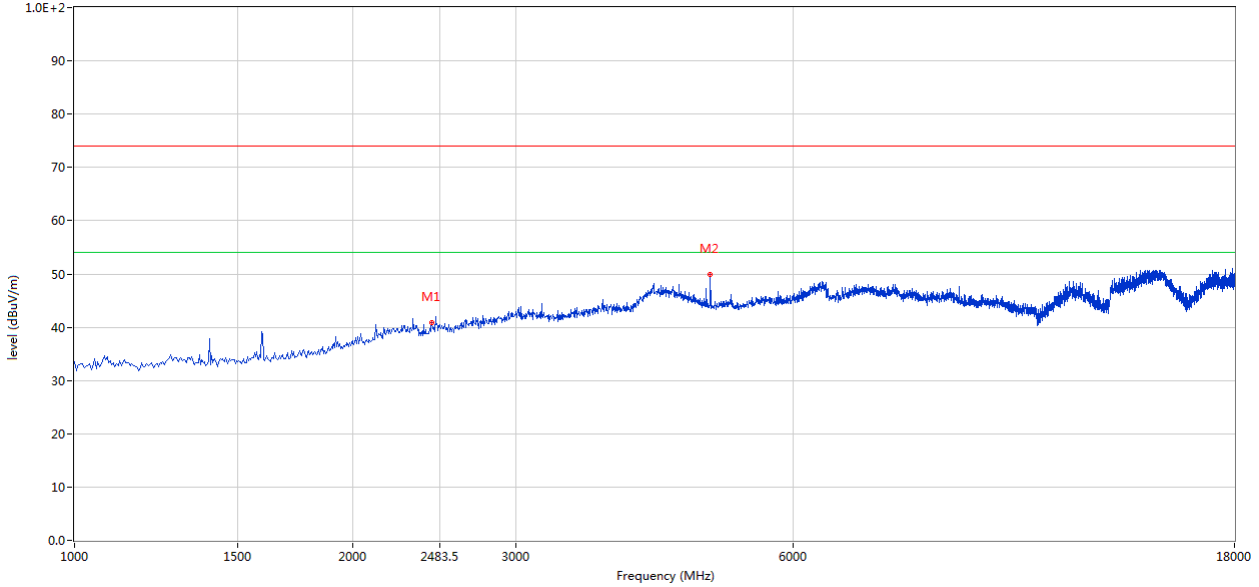
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**CH06 for 11g at 6Mbps: Horizontal**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2436.141	40.91	-3.57	74.0	-33.09	Peak	356.00	100	Horizontal	Pass
2	4875.031	49.84	3.19	74.0	-24.16	Peak	201.00	100	Horizontal	Pass

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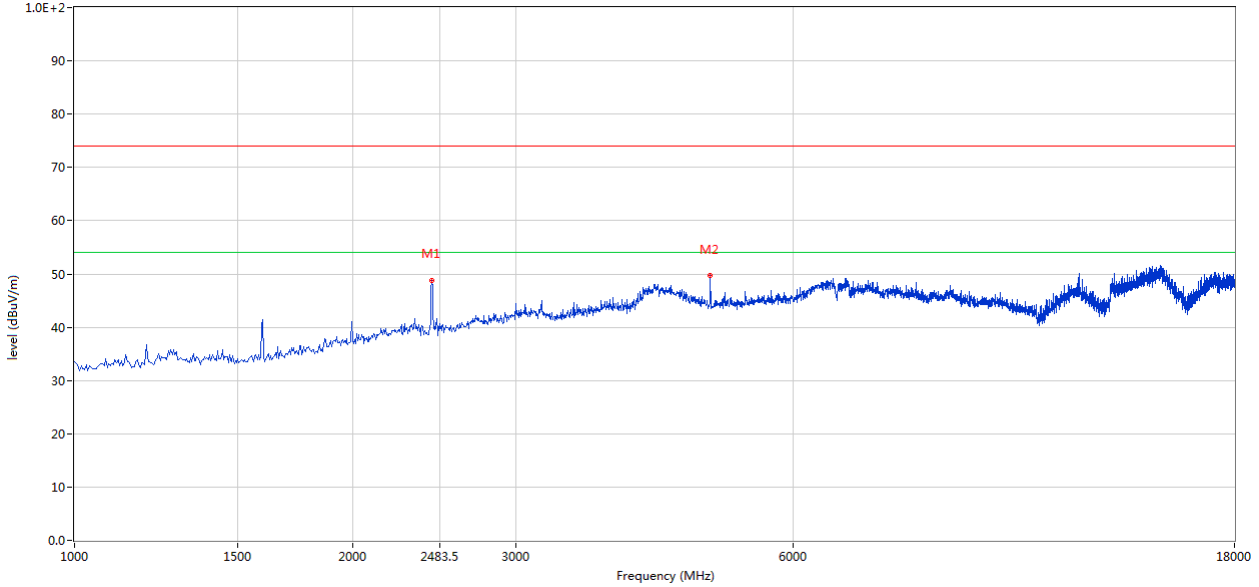
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**CH06 for 11g at 6Mbps: Vertical**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2436.141	48.82	-3.57	74.0	-25.18	Peak	83.00	100	Vertical	Pass
2	4875.031	49.76	3.19	74.0	-24.24	Peak	166.00	100	Vertical	Pass

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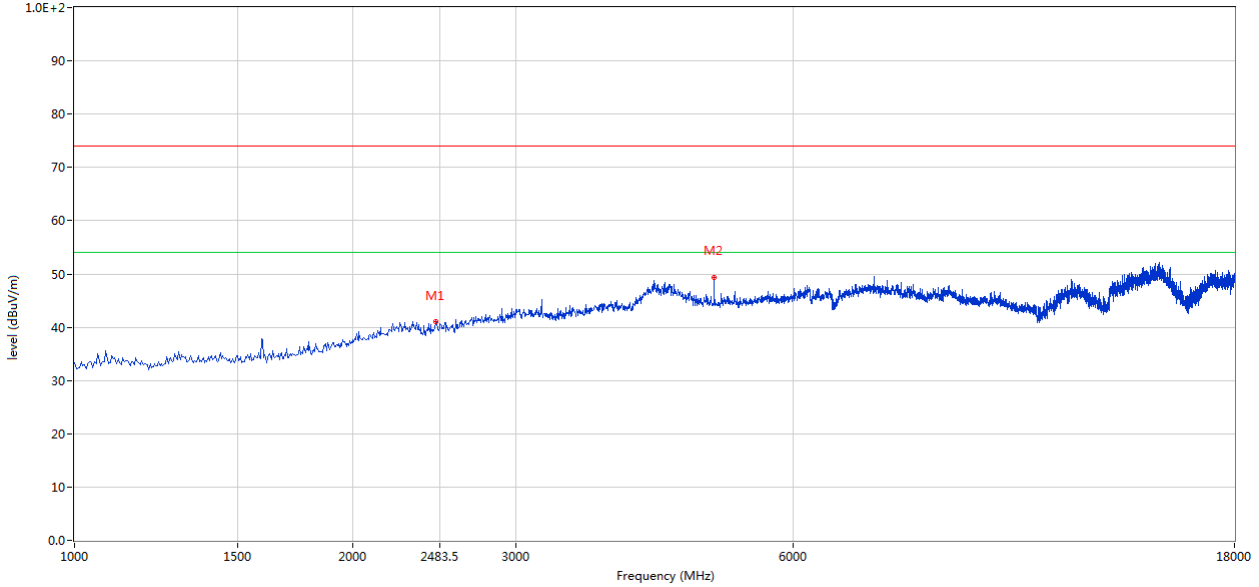
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**CH11 for 11g at 6Mbps: Horizontal**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2461.635	41.02	-3.57	74.0	-32.98	Peak	322.00	100	Horizontal	Pass
2	4921.770	49.34	3.27	74.0	-24.66	Peak	201.00	100	Horizontal	Pass

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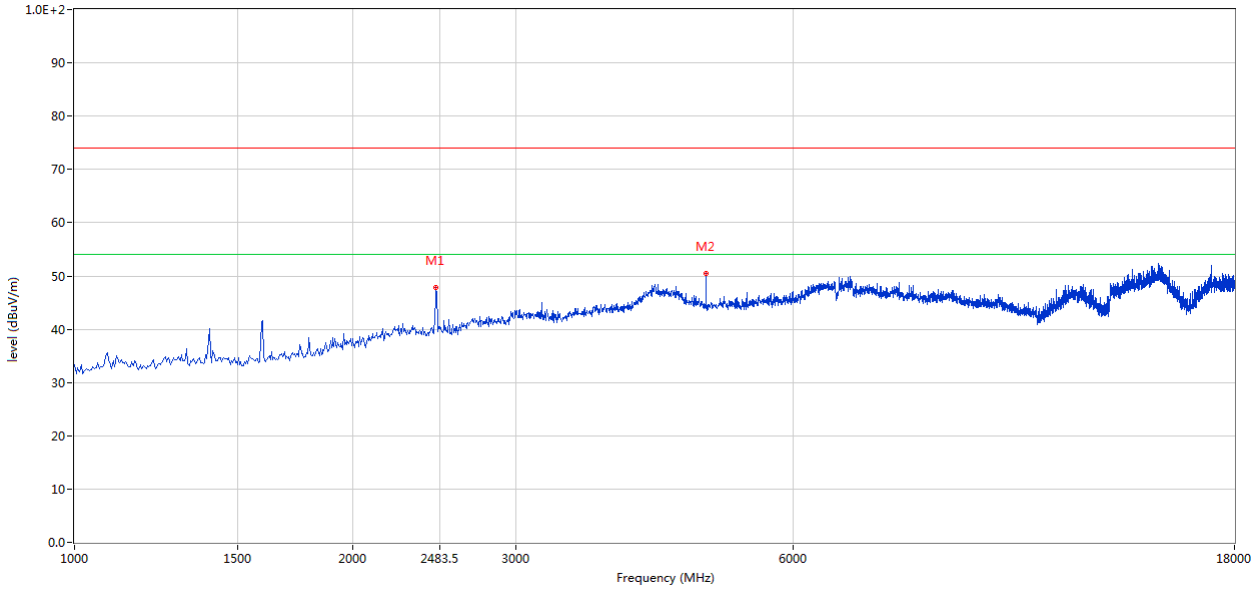
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**CH11 for 11g at 6Mbps: Vertical**

FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2461.635	47.90	-3.57	74.0	-26.10	Peak	130.00	100	Vertical	Pass
2	4921.770	50.62	3.27	74.0	-23.38	Peak	11.00	100	Vertical	Pass

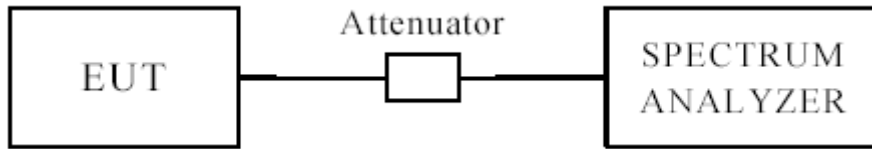
- Note: 1. Result Level = Reading + Factor  
 2. Factor= AF + Cable Loss- Preamp  
 3. Margin = Result- Limit  
 4. For radiated Emissions from 18-25GHz and below 30MHz, it is only the floor noise and less than the limit for more than 20dB. No necessary to take down.  
 5. the final peak measurement results less than the AV limit. No necessary to take down the final AV measurement result  
 6. A 2.4G band-pass filter was used the radiated emissions test.

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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**

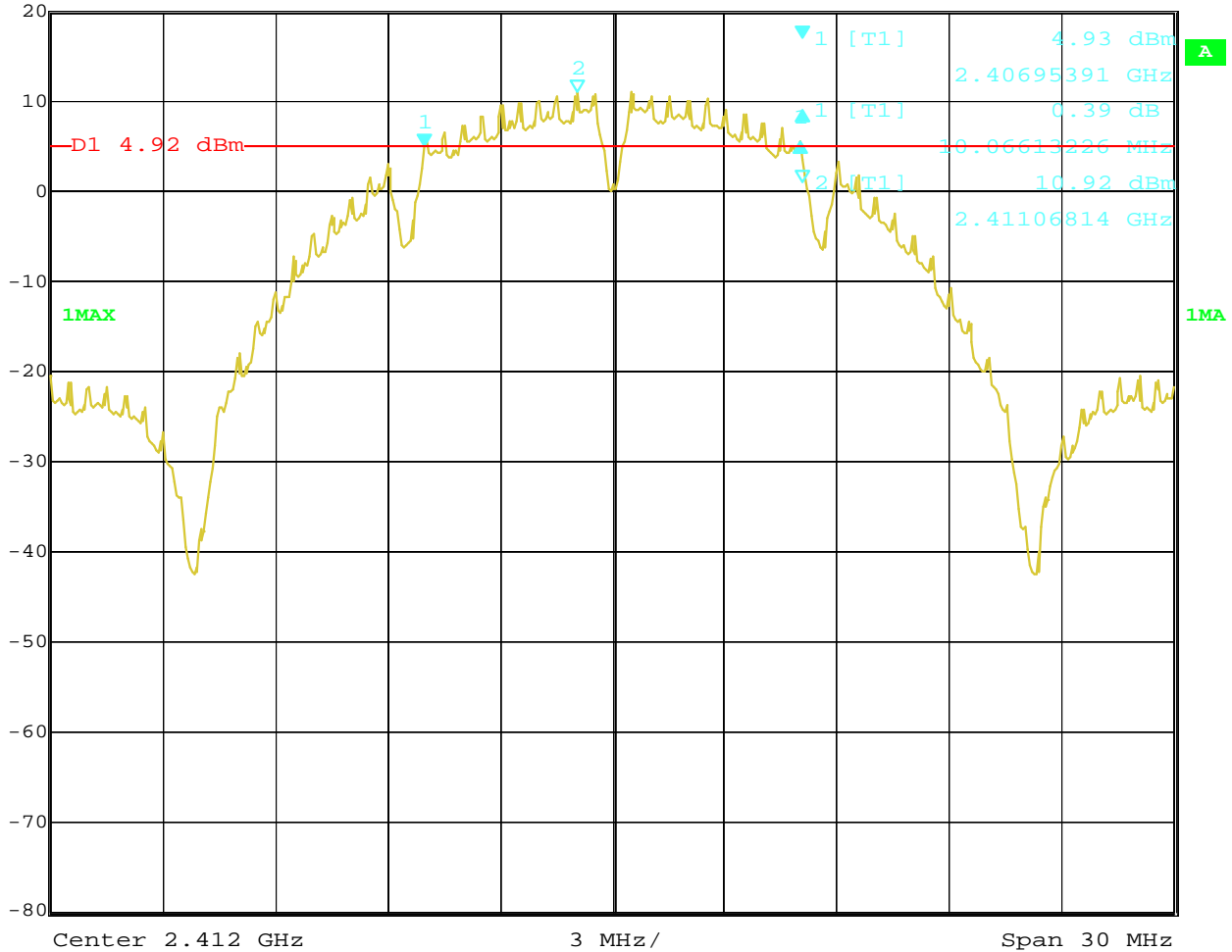
EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11b		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
1	2412	1	10.07	0.5	Pass
6	2437	1	10.04	0.5	Pass
11	2462	1	10.04	0.5	Pass
1	2412	11	9.04	0.5	Pass
6	2437	11	9.08	0.5	Pass
11	2462	11	9.08	0.5	Pass

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1. 802.11b at 1Mbps of CH01

	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
	Ref Lvl	0.39 dB	VBW	300 kHz	
	20 dBm	10.06613226 MHz	SWT	7.5 ms	Unit dBm



Date: 19.MAY.2022 11:52:41

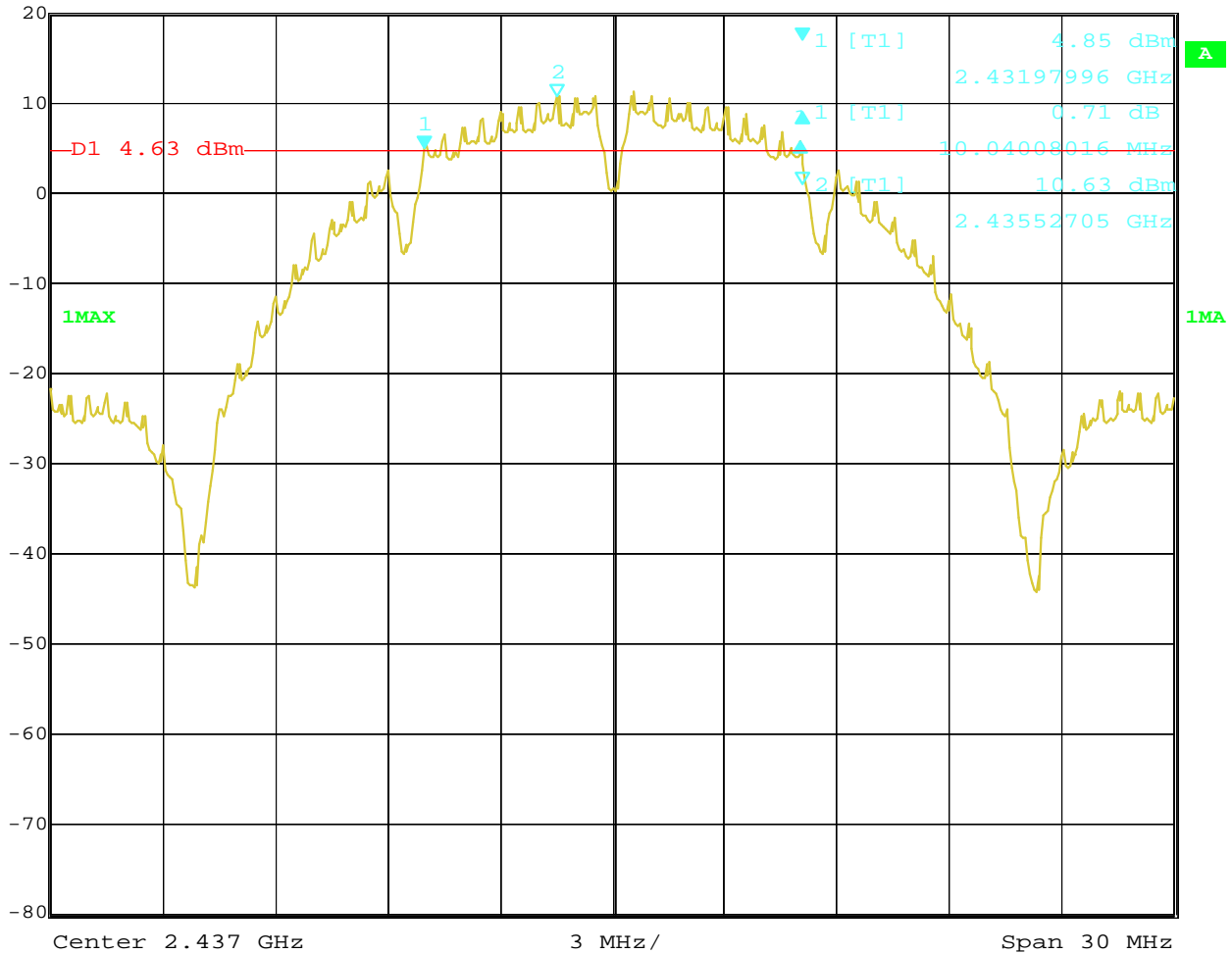
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2. 802.11b at 1Mbps of CH06



Ref Lvl	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
20 dBm	0.71 dB	VBW	300 kHz	Unit	dBm
	10.04008016 MHz	SWT	7.5 ms		



Date: 19.MAY.2022 12:14:06

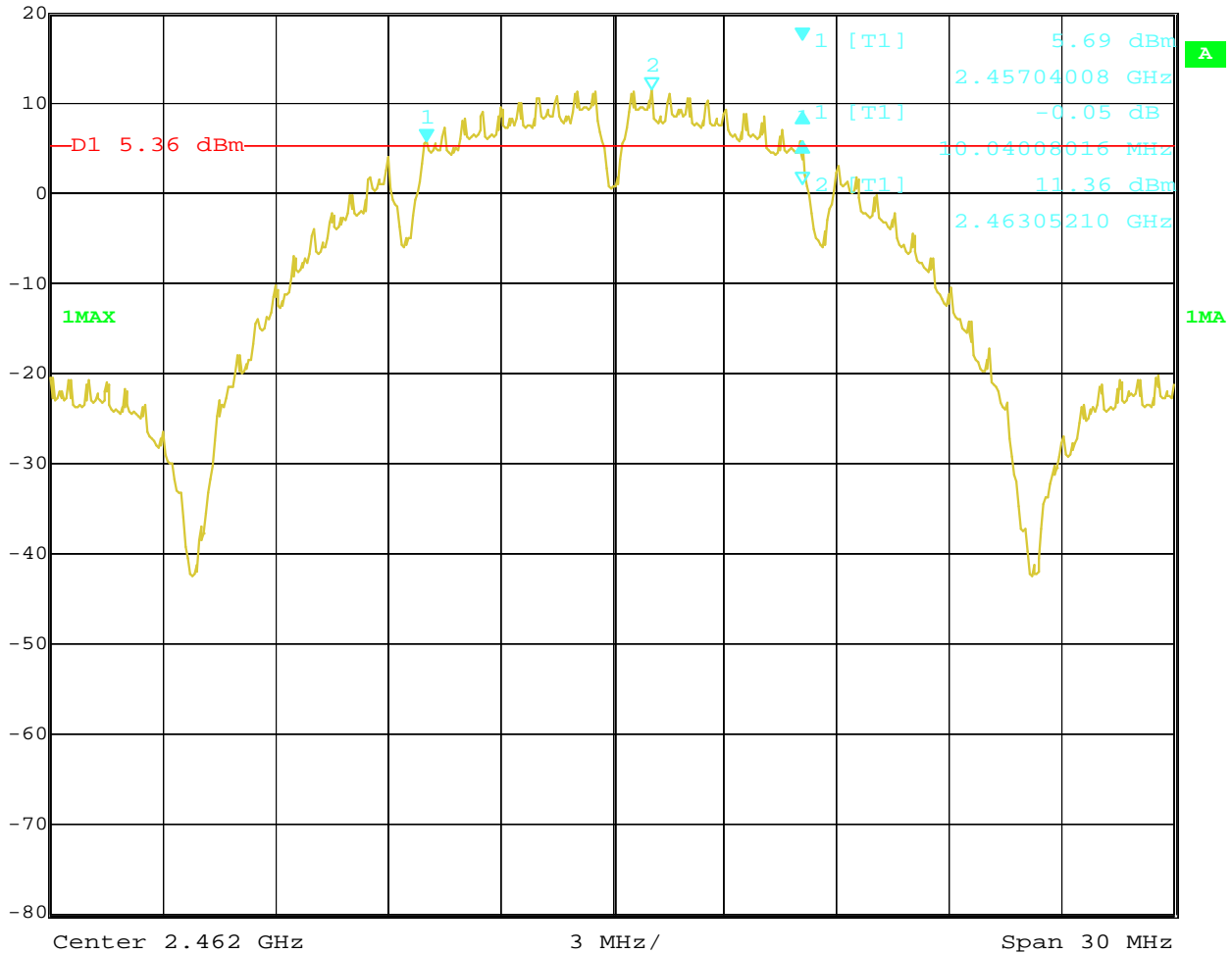
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3. 802.11b at 1Mbps of CH11



Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
Ref Lvl	-0.05 dB	VBW	300 kHz	
20 dBm	10.04008016 MHz	SWT	7.5 ms	Unit dBm



Date: 19.MAY.2022 14:06:37

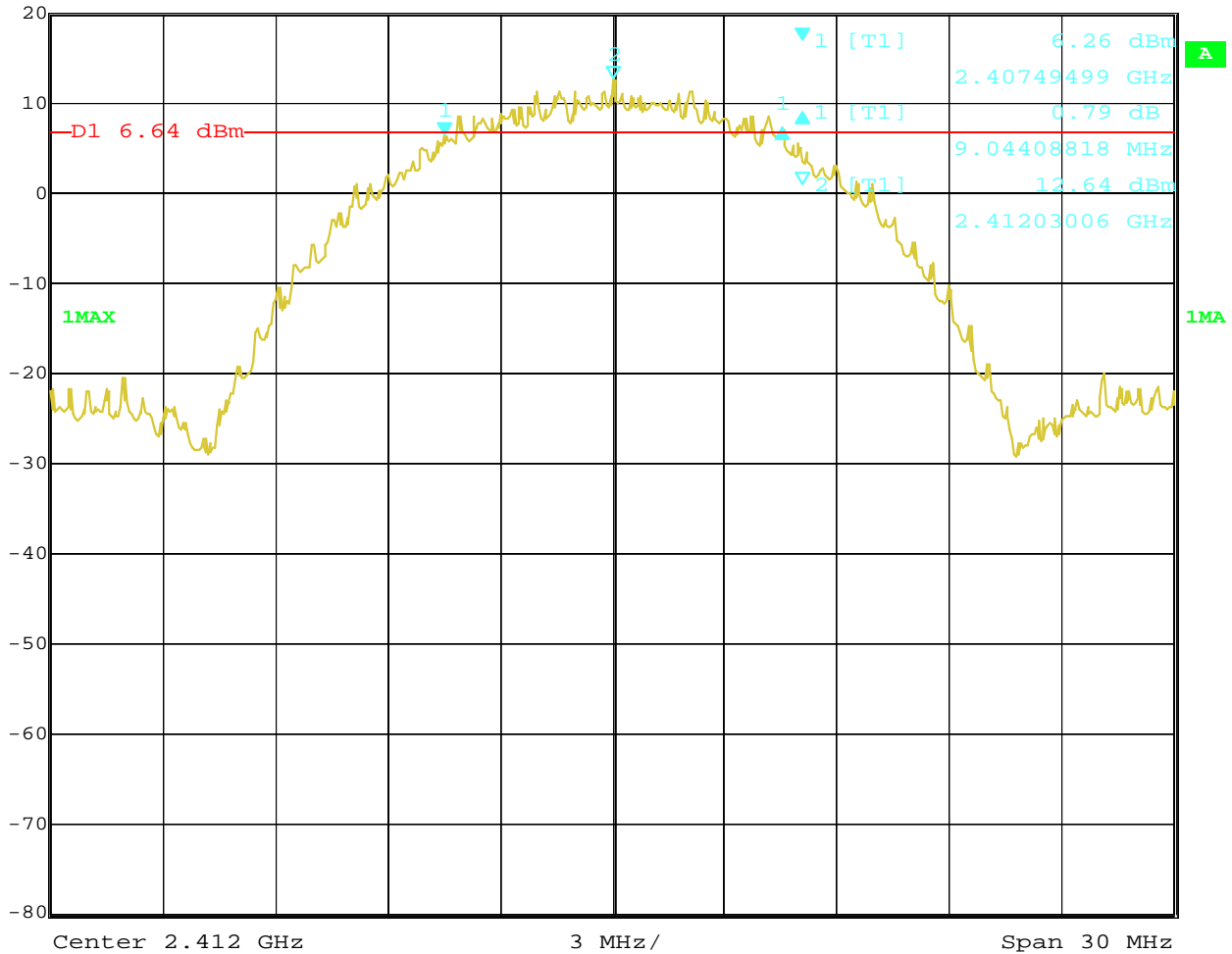
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4. 802.11b at 11Mbps of CH01



Ref Lvl	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
20 dBm	0.79 dB	VBW	300 kHz	Unit	dBm
	9.04408818 MHz	SWT	7.5 ms		



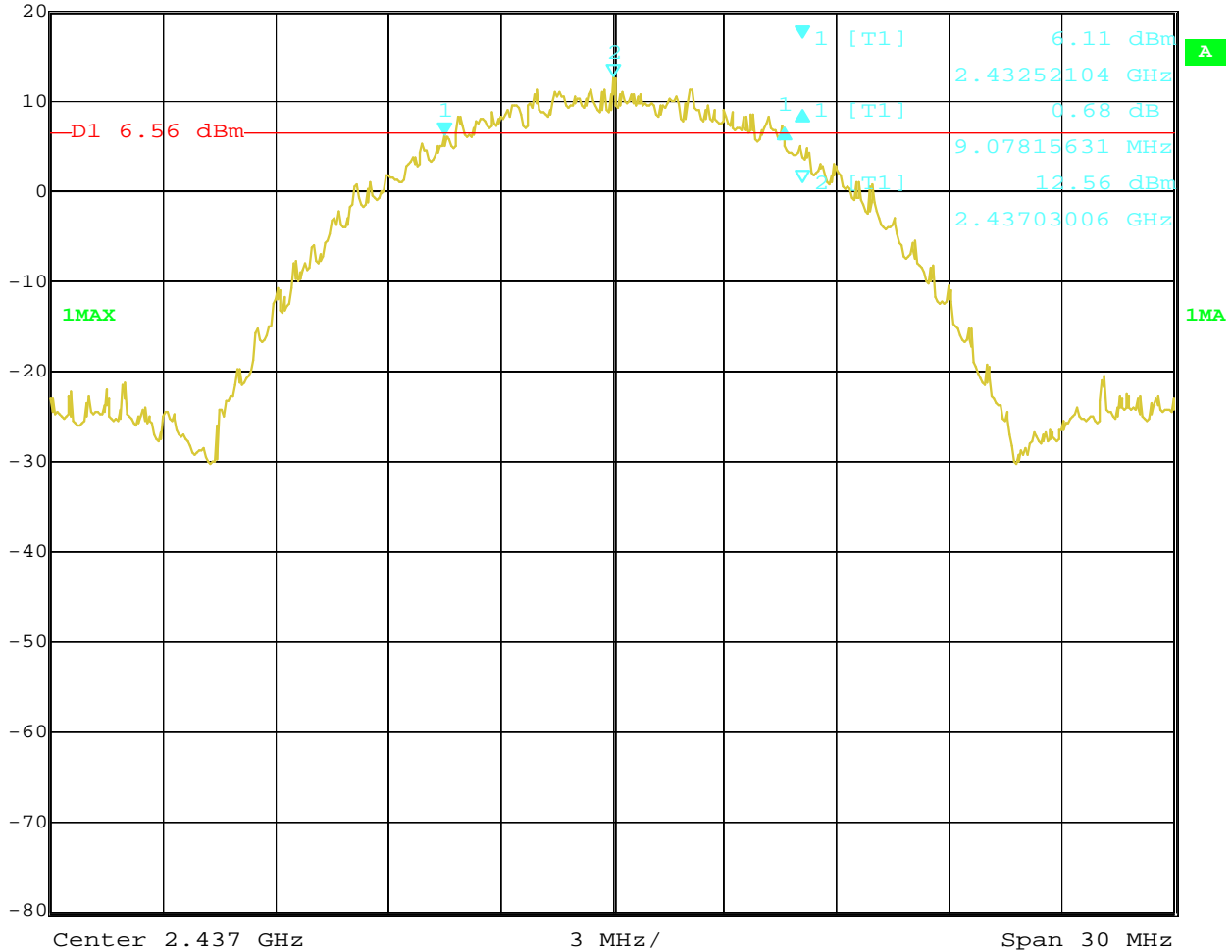
Date: 19.MAY.2022 11:58:17

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5. 802.11b at 11Mbps of CH06

	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
	Ref Lvl	0.68 dB	VBW	300 kHz	
	20 dBm	9.07815631 MHz	SWT	7.5 ms	Unit dBm



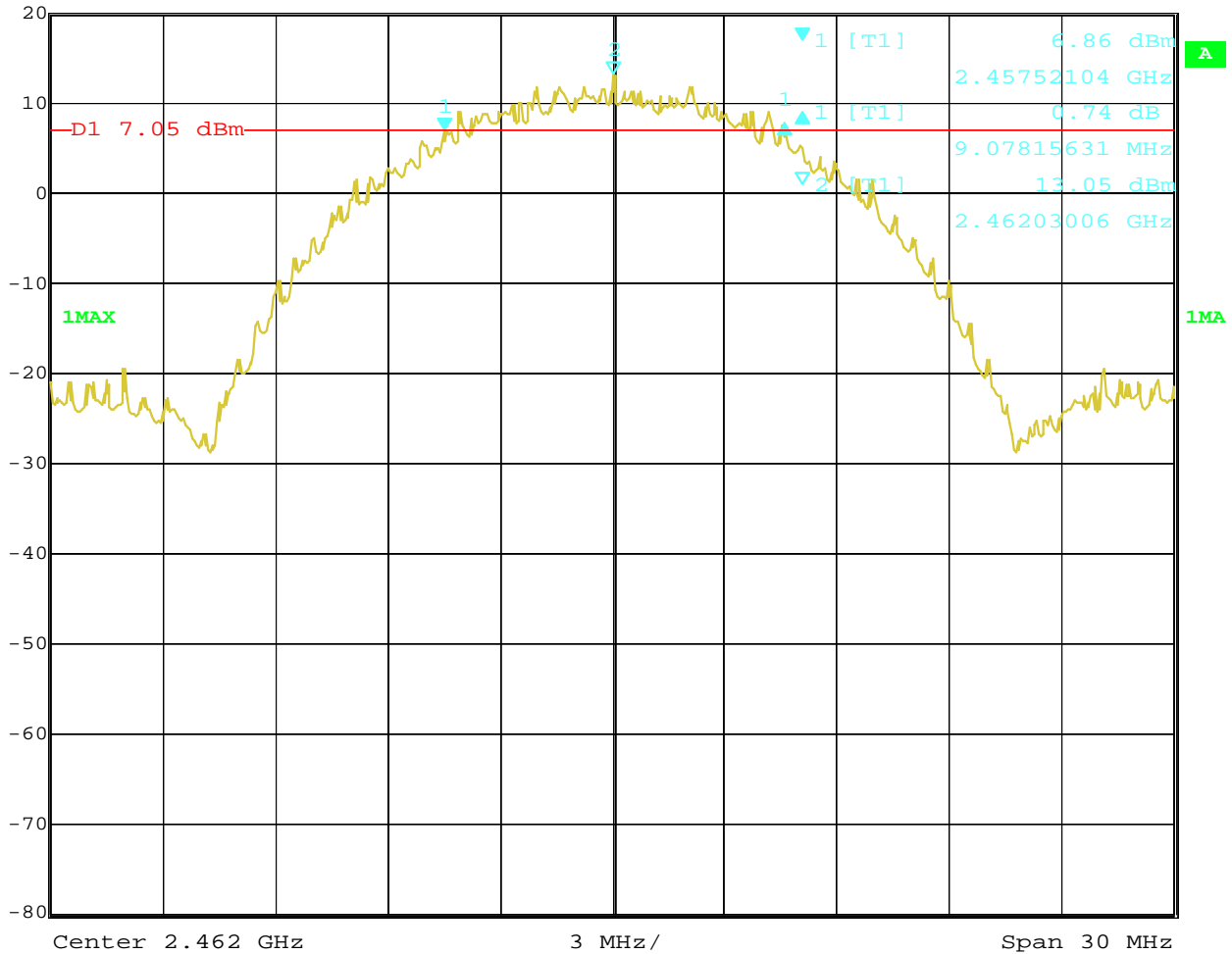
Date: 19.MAY.2022 12:22:08

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6. 802.11b at 11Mbps of CH11

	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
	Ref Lvl	0.74 dB	VBW	300 kHz	
	20 dBm	9.07815631 MHz	SWT	7.5 ms	Unit dBm



Date: 19.MAY.2022 14:01:23

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**6dB Occupied Bandwidth**

EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11g		Test Voltage	DC5.0V
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	15.18	0.5	Pass
6	2437	6	15.15	0.5	Pass
11	2462	6	15.15	0.5	Pass

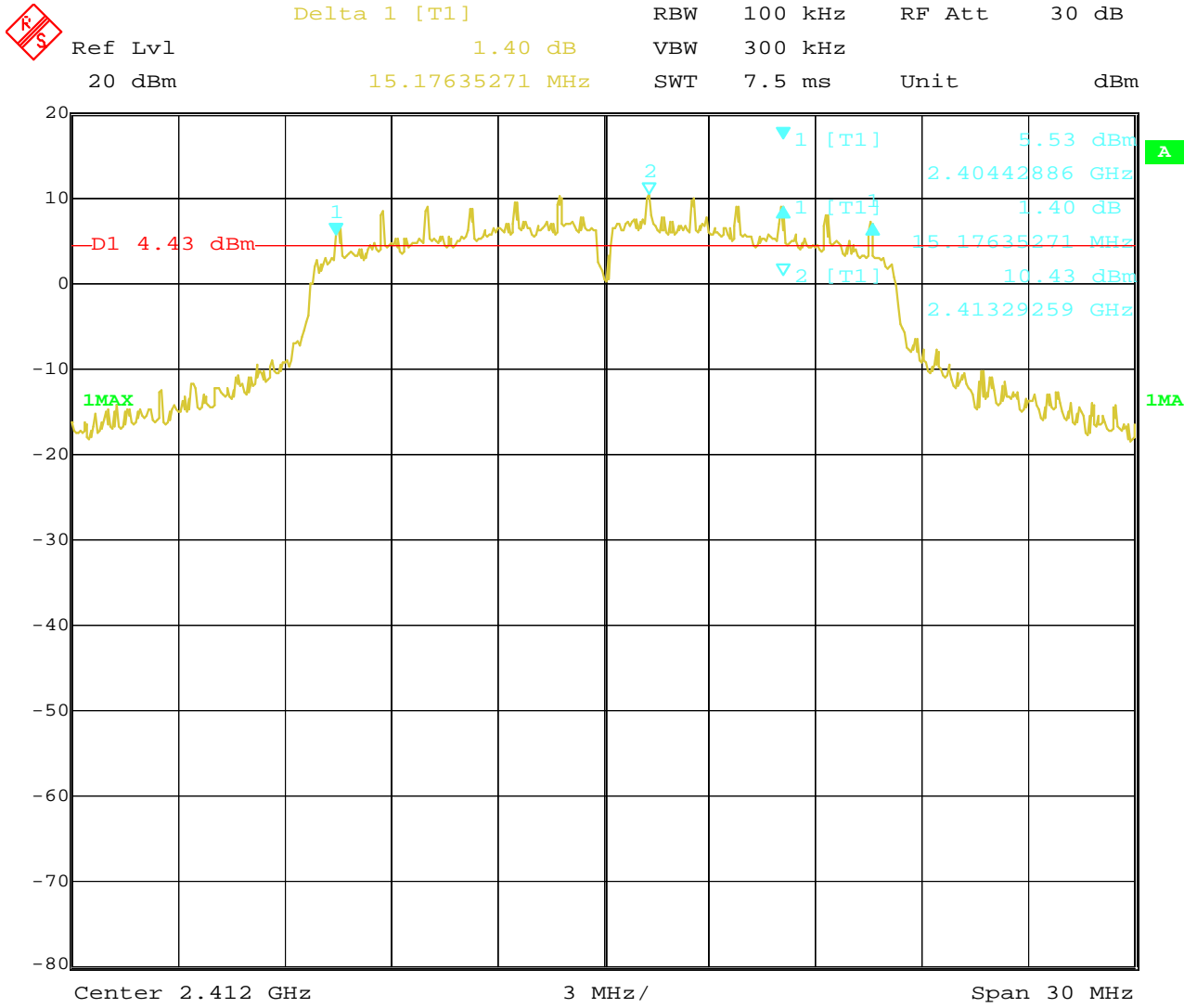
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**Test Plots:**

**1. 802.11g at 6Mbps of CH01**



Date: 19.MAY.2022 12:03:51

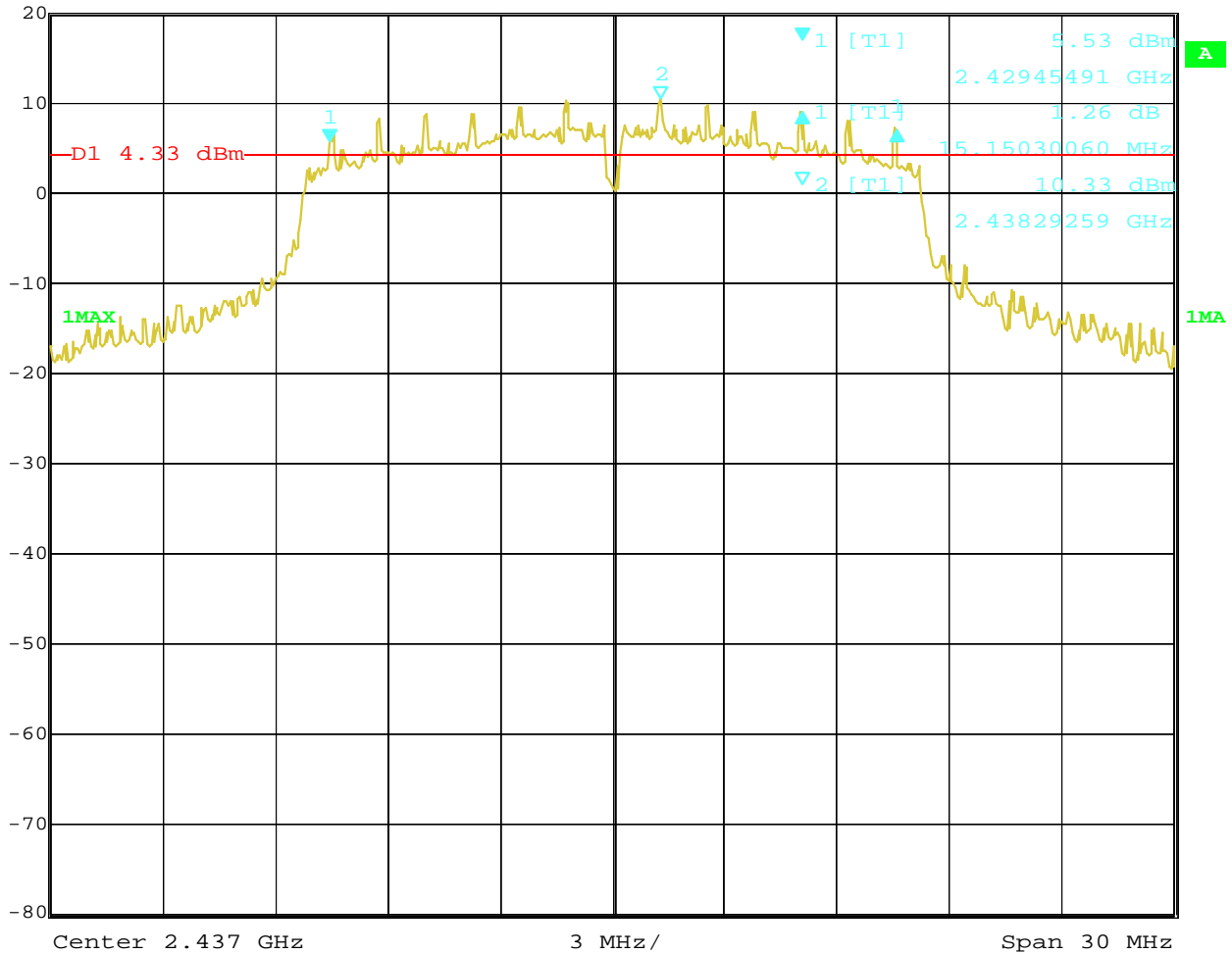
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2. 802.11g at 6Mbps of CH06



	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
Ref Lvl	1.26 dB	VBW	300 kHz		
20 dBm	15.15030060 MHz	SWT	7.5 ms	Unit	dBm



Date: 19.MAY.2022 12:08:16

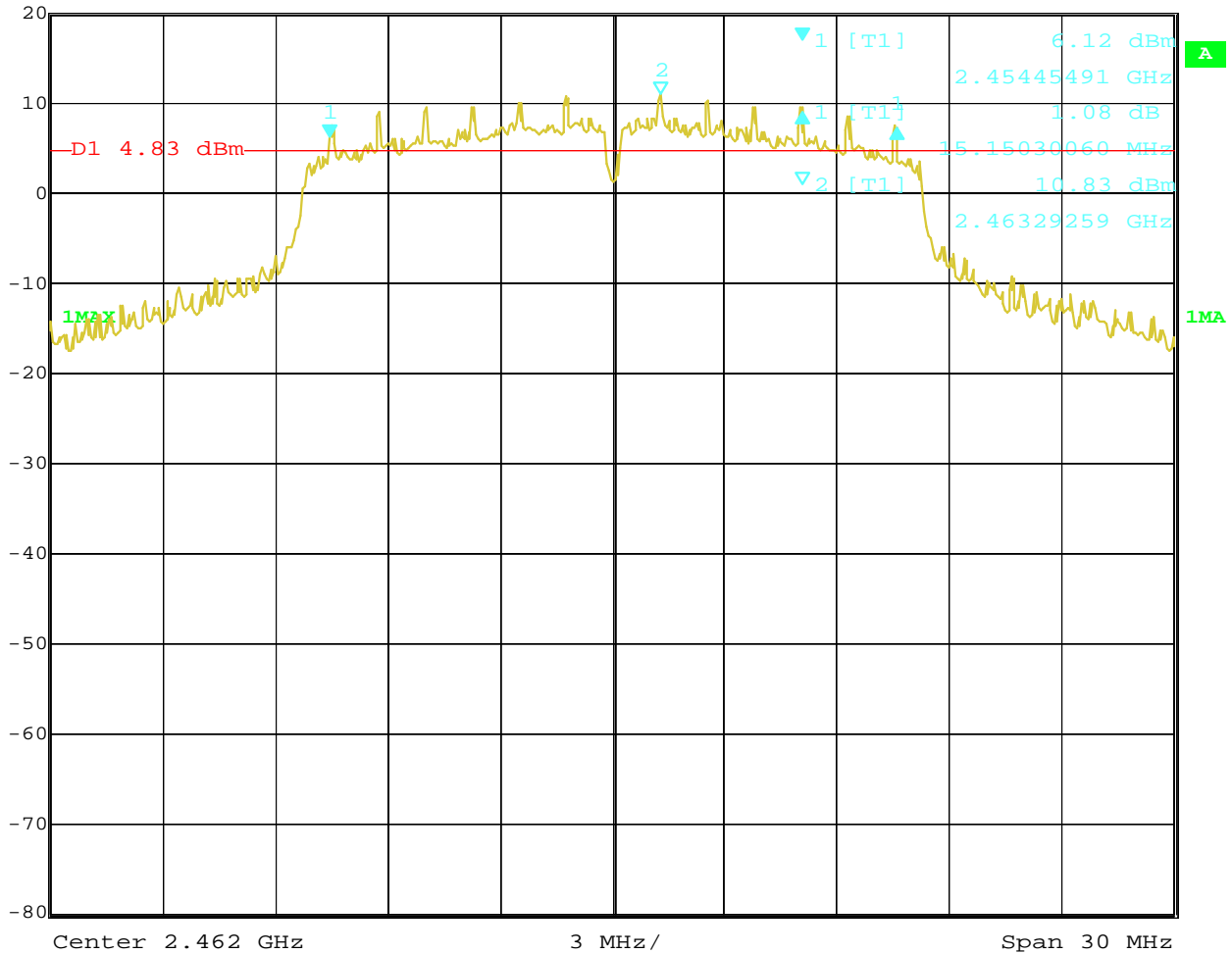
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3. 802.11g at 6Mbps of CH11



	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
Ref Lvl	1.08 dB	VBW	300 kHz		
20 dBm	15.15030060 MHz	SWT	7.5 ms	Unit	dBm



Date: 19.MAY.2022 14:24:48

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**6dB Occupied Bandwidth**

EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11n HT20		Test Voltage	DC5.0V
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	15.15	0.5	Pass
6	2437	mcs0	15.15	0.5	Pass
11	2462	mcs0	15.15	0.5	Pass

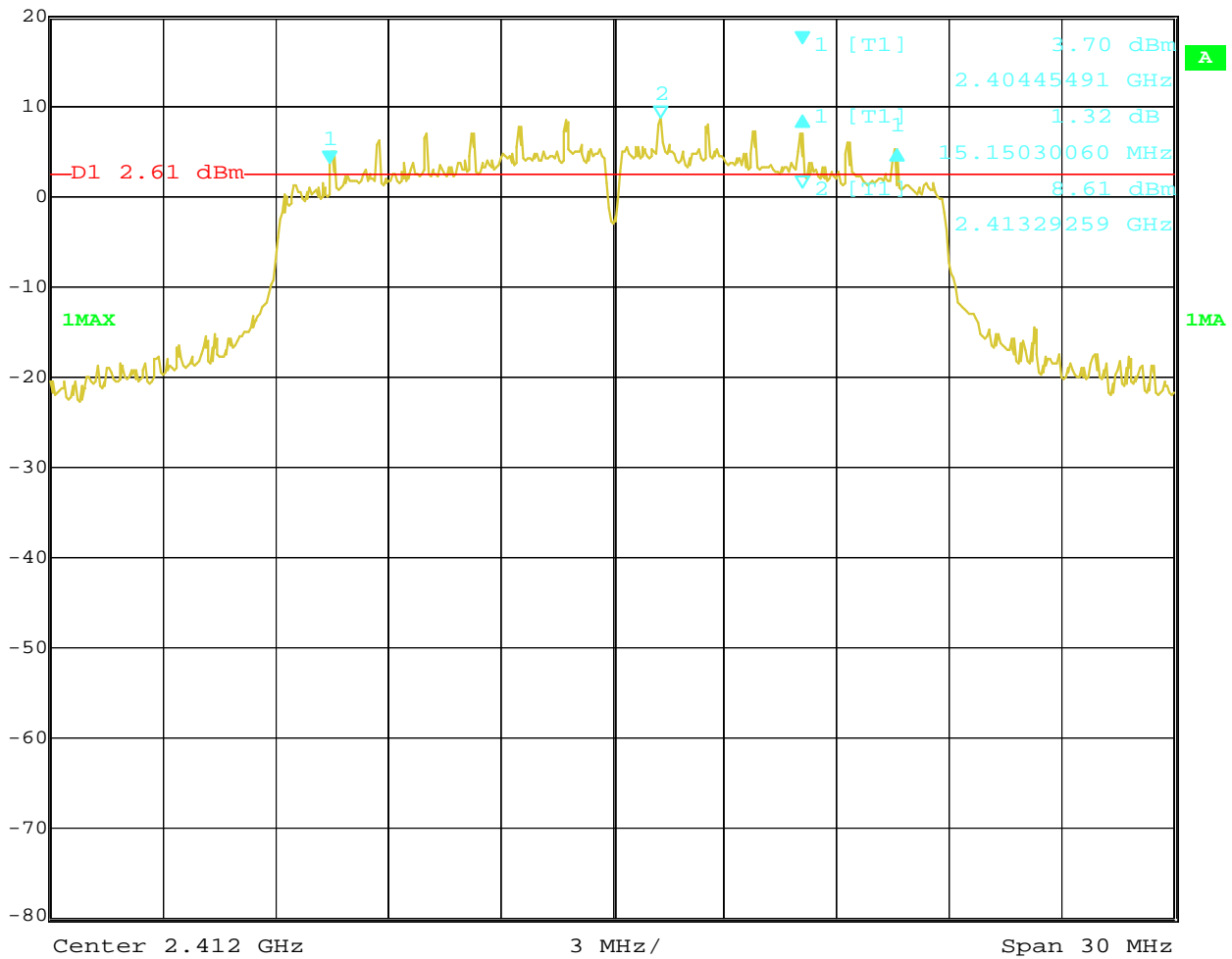
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**Test Plots:**

**1. 802.11n at HT20 of CH01**

	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
	Ref Lvl	1.32 dB	VBW	300 kHz	
	20 dBm	15.15030060 MHz	SWT	7.5 ms	Unit dBm



Date: 19.MAY.2022 14:46:05

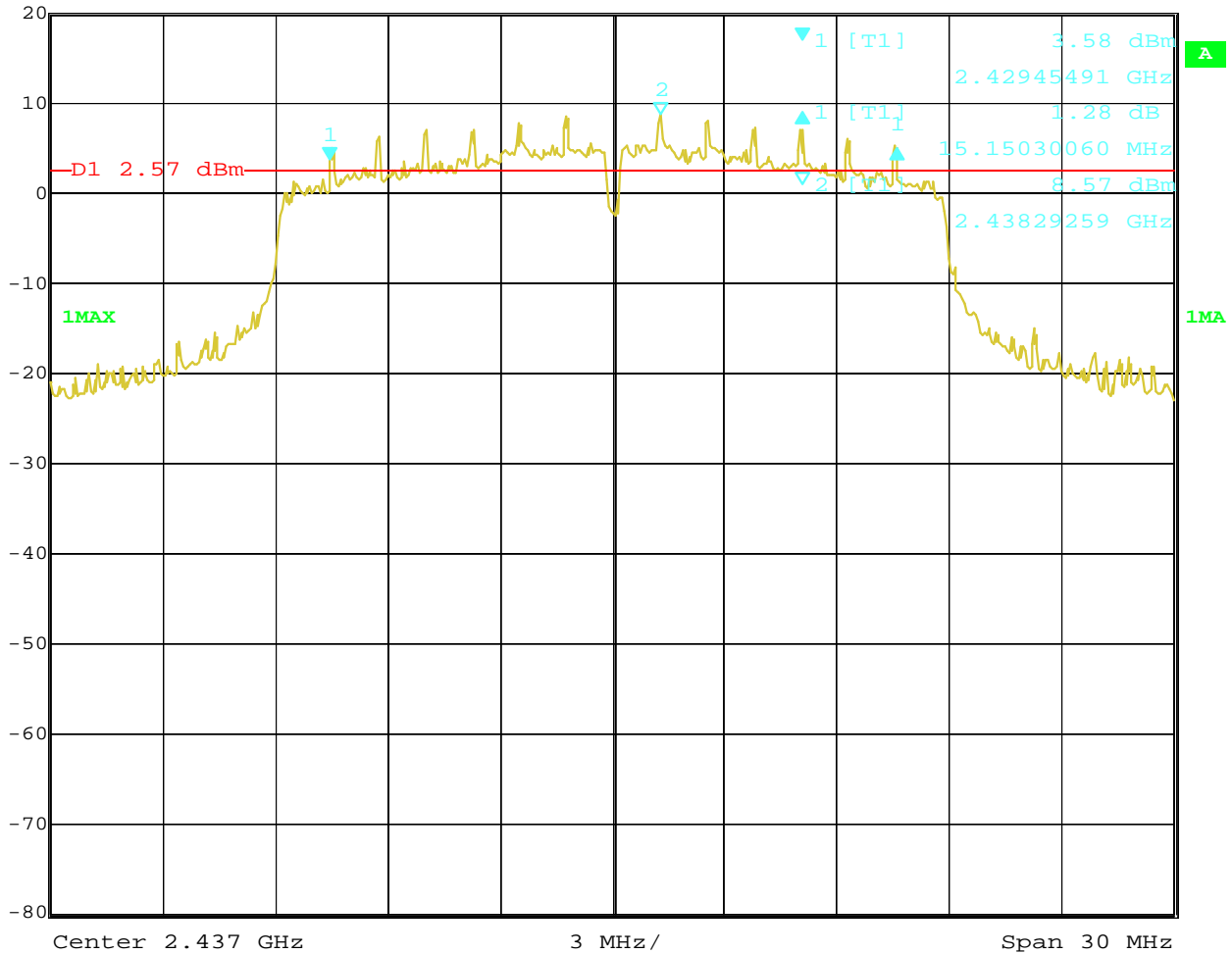
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2. 802.11n at HT20 of CH06



Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
Ref Lvl	1.28 dB	VBW	300 kHz	
20 dBm	15.15030060 MHz	SWT	7.5 ms	Unit dBm



Date: 19.MAY.2022 14:41:32

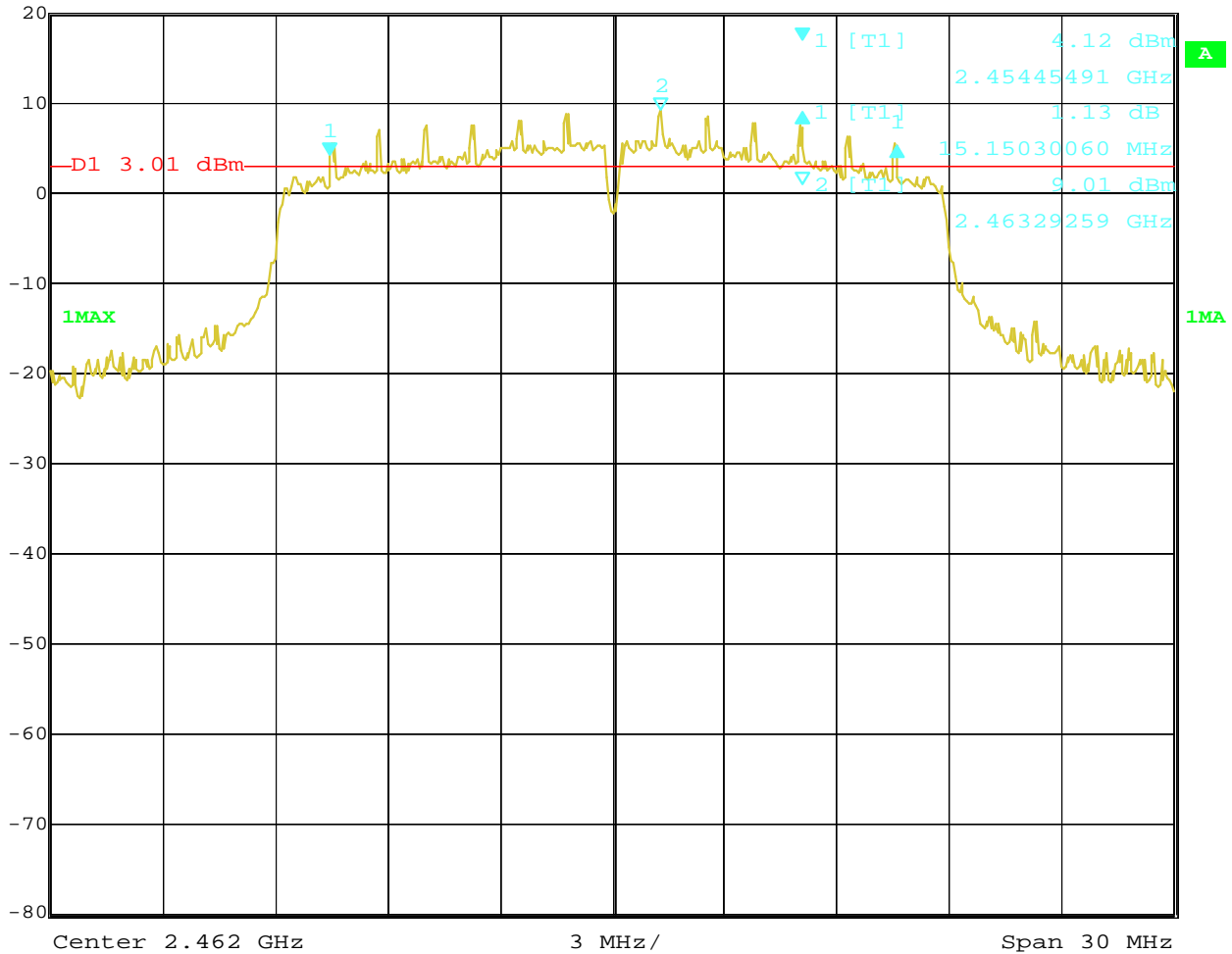
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3. 802.11n at HT20 of CH11



	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
Ref Lvl	1.13 dB	VBW	300 kHz		
20 dBm	15.15030060 MHz	SWT	7.5 ms	Unit	dBm



Date: 19.MAY.2022 14:34:00

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**6dB Occupied Bandwidth**

EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11n HT40		Test Voltage	DC5.0V
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	35.05	0.5	Pass
6	2437	mcs0	35.06	0.5	Pass
9	2452	mcs0	35.09	0.5	Pass


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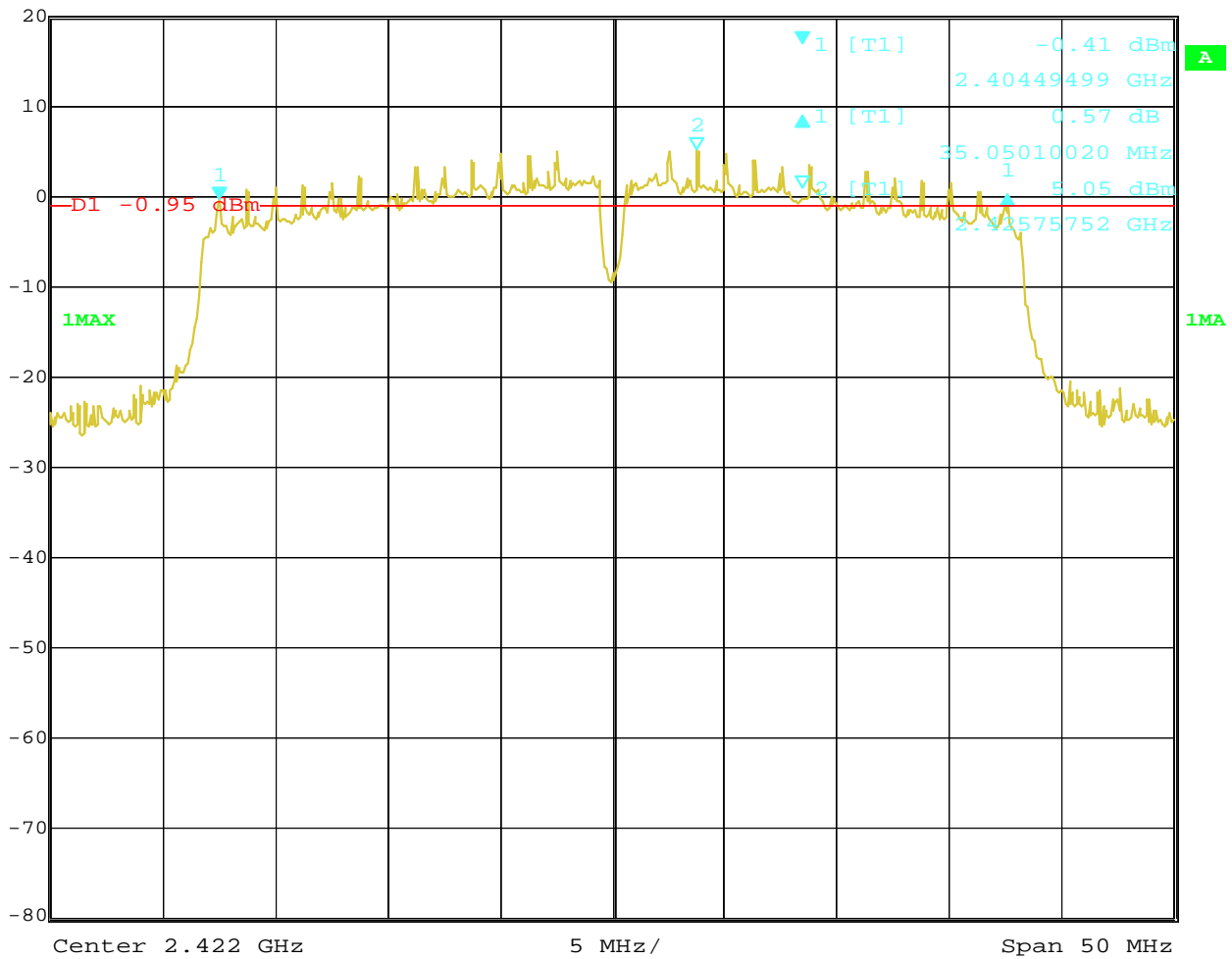




**Test Plots:**

**1. 802.11n at HT40 of CH03**


 Delta 1 [T1]                      RBW    100 kHz    RF Att    30 dB  
 Ref Lvl                                      0.57 dB                      VBW    300 kHz  
 20 dBm                                      35.05010020 MHz                      SWT    12.5 ms                      Unit                      dBm



Date: 19.MAY.2022 14:50:59

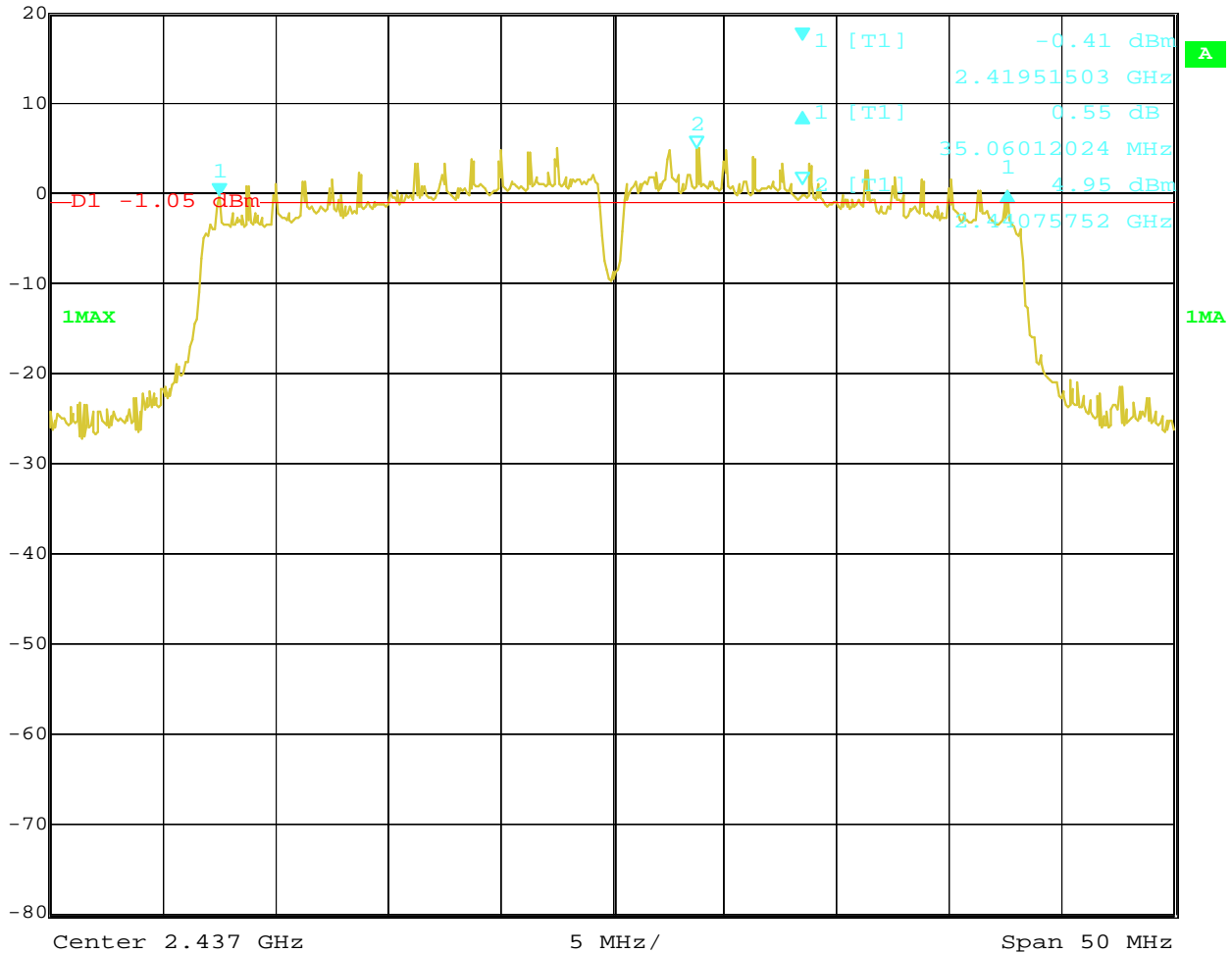
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2. 802.11n at HT40 of CH06



Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
Ref Lvl	0.55 dB	VBW	300 kHz	
20 dBm	35.06012024 MHz	SWT	12.5 ms	Unit dBm



Date: 19.MAY.2022 14:52:40

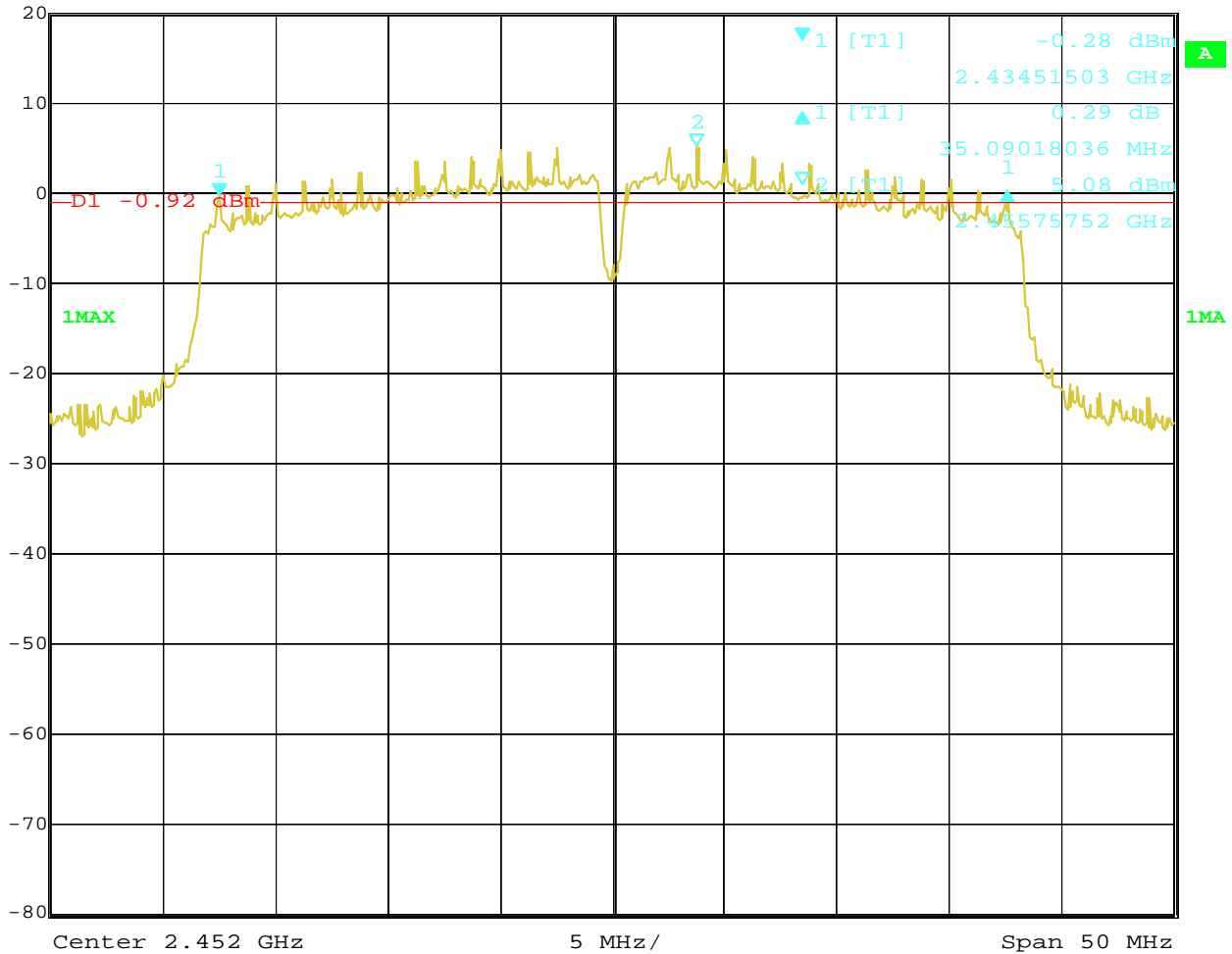
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3. 802.11n at HT40 of CH09



	Delta 1 [T1]	RBW	100 kHz	RF Att	30 dB
Ref Lvl	0.29 dB	VBW	300 kHz		
20 dBm	35.09018036 MHz	SWT	12.5 ms	Unit	dBm



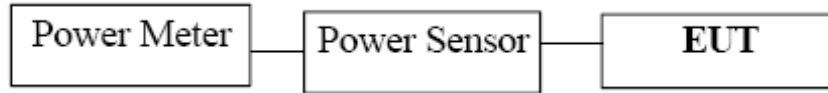
Date: 19.MAY.2022 15:02:19

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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 PK power was measured**

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**8.4 Test Results**

EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11b		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Frequency (MHz)	PK Power (dBm)	Power Limit (dBm)	Pass/ Fail	
1	2412	22.88	30	Pass	
6	2437	22.85	30	Pass	
11	2462	23.26	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		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11g		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Frequency (MHz)	PK Power (dBm)	Power Limit (dBm)	Pass/ Fail	
1	2412	27.78	30	Pass	
6	2437	27.68	30	Pass	
11	2462	28.14	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		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11n (HT20)		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Frequency (MHz)	PK Power (dBm)	Power Limit (dBm)	Pass/ Fail	
1	2412	25.63	30	Pass	
6	2437	25.53	30	Pass	
11	2462	25.99	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:  
 Power Output = Power Reading + Cable loss + Attenuator  
 3. The worse case was recorded

EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11n (HT40)		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Frequency (MHz)	PK Power (dBm)	Power Limit (dBm)	Pass/ Fail	
3	2422	25.39	30	Pass	
6	2437	25.33	30	Pass	
9	2452	25.21	30	Pass	

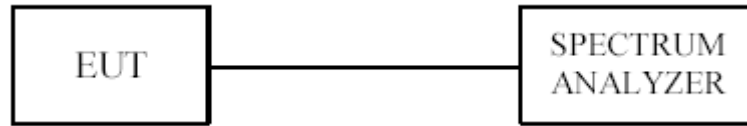
- Note: 1. At final test to get the worst-case emission at msc0 of 11n HT40 for CH03, CH06 and CH09  
 2. The result basic equation calculation as follow:  
 Power Output = Power Reading + Cable loss + Attenuator  
 3. The worse case was recorded

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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		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11b 11Mbps		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Frequency (MHz)	Power Spectral Density (dBm/10kHz)		Limit (dBm/3kHz)	Pass/ Fail
1	2412	1.04		8	Pass
6	2437	1.22		8	Pass
11	2462	1.74		8	Pass

EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11b 1Mbps		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Frequency (MHz)	Power Spectral Density (dBm/10kHz)		Limit (dBm/3kHz)	Pass/ Fail
1	2412	-0.20		8	Pass
6	2437	-0.26		8	Pass
11	2462	0.20		8	Pass

EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11g 6Mbps		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Frequency (MHz)	Power Spectral Density (dBm/10kHz)		Limit (dBm/3kHz)	Pass/ Fail
1	2412	1.13		8	Pass
6	2437	2.14		8	Pass
11	2462	1.55		8	Pass

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EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11n HT20 mcs0		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Frequency (MHz)	Power Spectral Density (dBm/10kHz)		Limit (dBm/3kHz)	Pass/ Fail
1	2412	-0.90		8	Pass
6	2437	-1.63		8	Pass
11	2462	-1.57		8	Pass

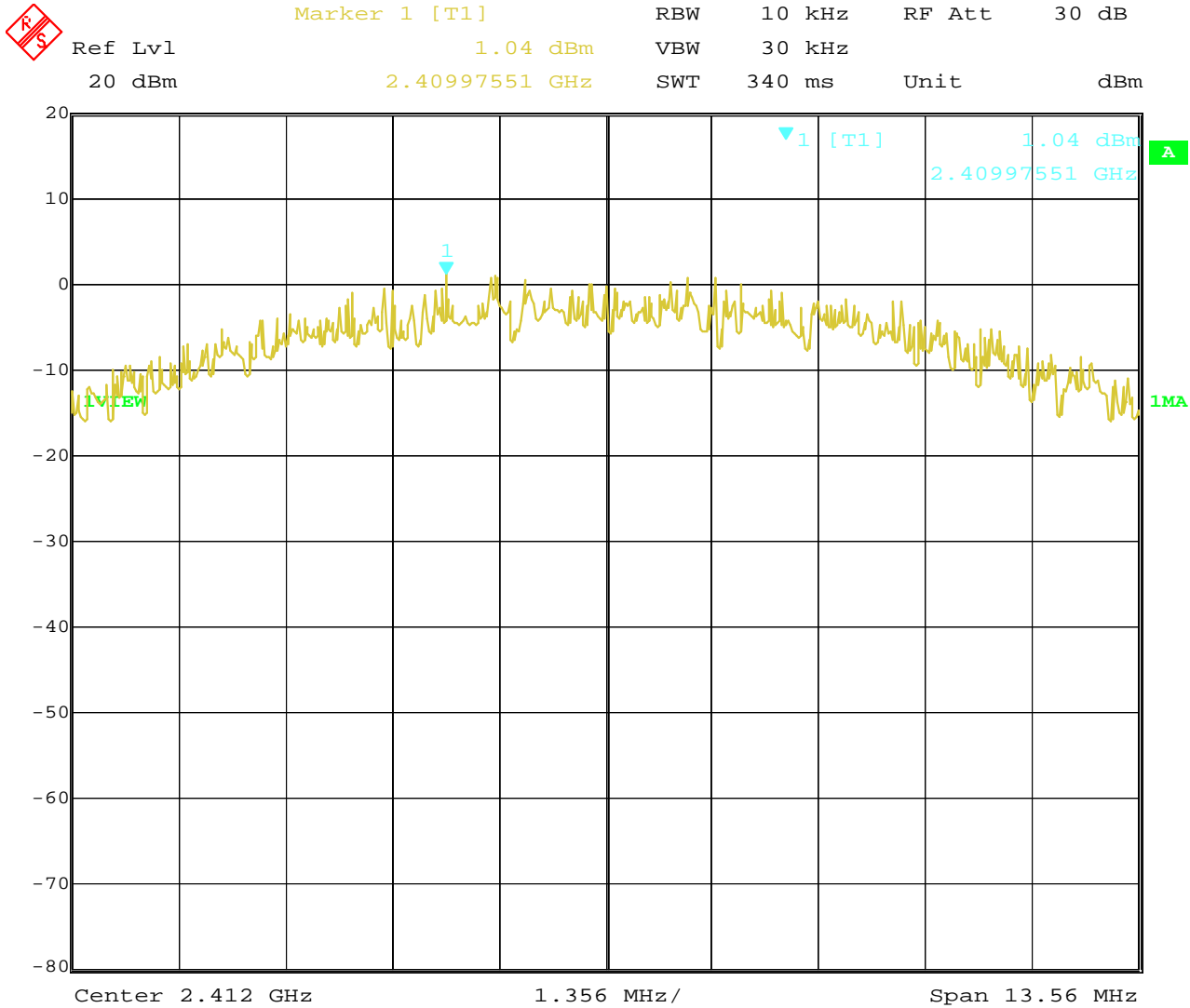
EUT		S-Serial Smart Gateway		Model	DSGW-034
Mode		802.11n HT40 mcs0		Test Voltage	DC5.0V
Temperature		24 deg. C,		Humidity	56% RH
Channel	Frequency (MHz)	Power Spectral Density (dBm/10kHz)		Limit (dBm/3kHz)	Pass/ Fail
3	2422	-5.31		8	Pass
6	2437	-4.55		8	Pass
9	2452	-3.45		8	Pass

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### 9.5 Photo of Power Spectral Density Measurement

1.802.11b at 11Mbps of CH01



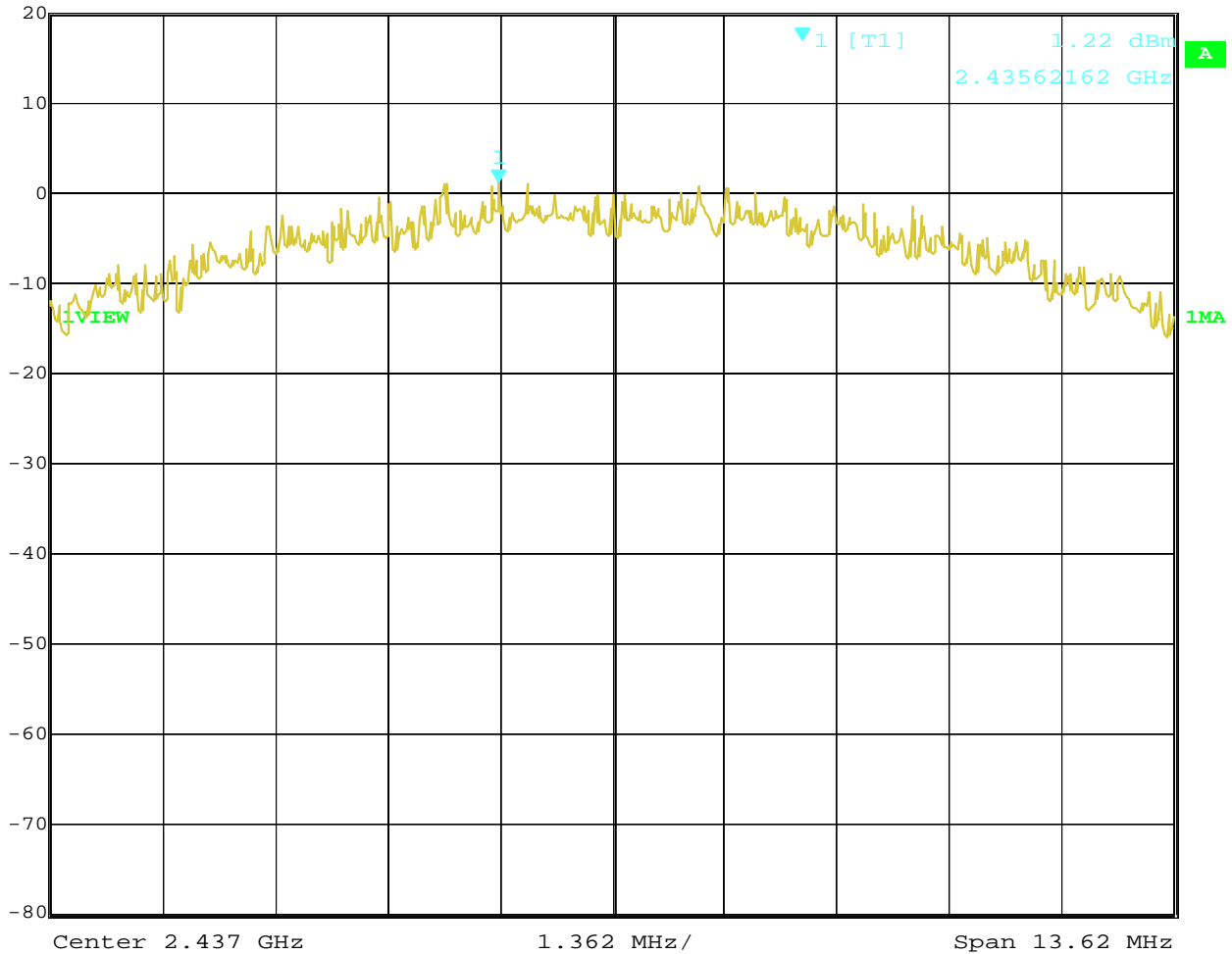
Date: 19.MAY.2022 15:53:21

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2. 802.11b at 11Mbps at CH06

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	1.22 dBm	VBW	30 kHz	
	20 dBm	2.43562162 GHz	SWT	350 ms	Unit dBm



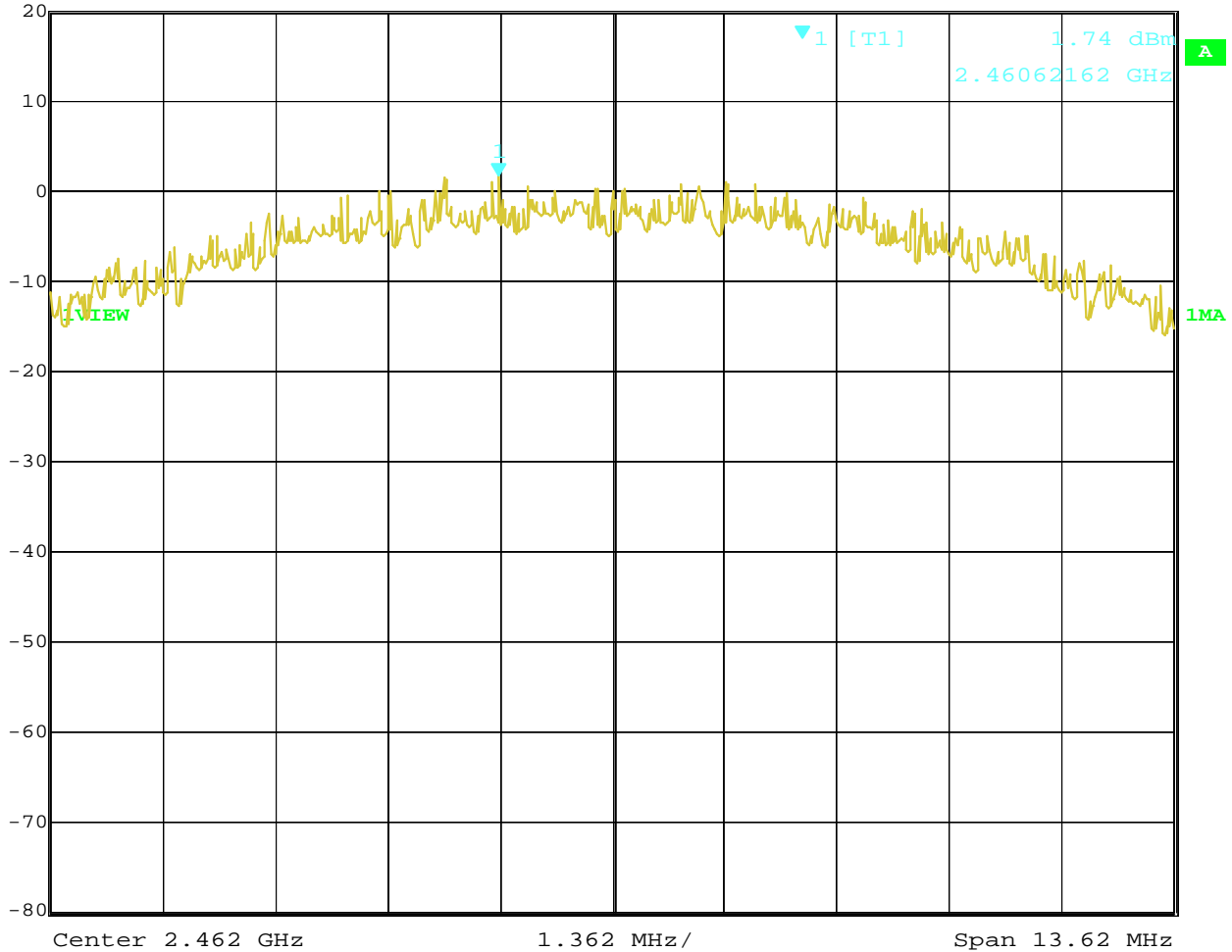
Date: 19.MAY.2022 15:54:22

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3. 802.11b at 11Mbps of CH11

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	1.74 dBm	VBW	30 kHz	
	20 dBm	2.46062162 GHz	SWT	350 ms	Unit dBm



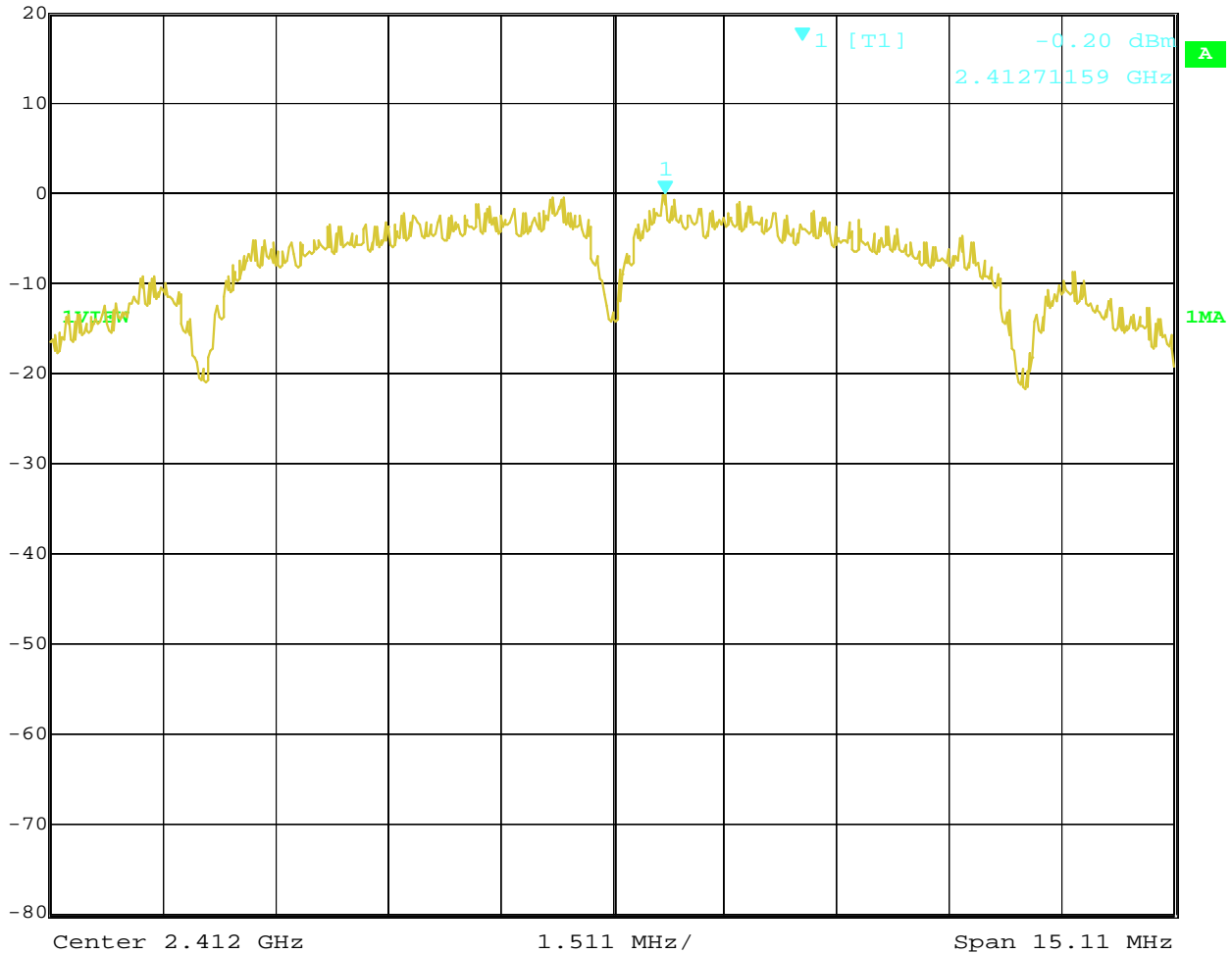
Date: 19.MAY.2022 15:54:59

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4. 802.11b at 1Mbps of CH1

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-0.20 dBm	VBW	30 kHz	
	20 dBm	2.41271159 GHz	SWT	380 ms	Unit dBm



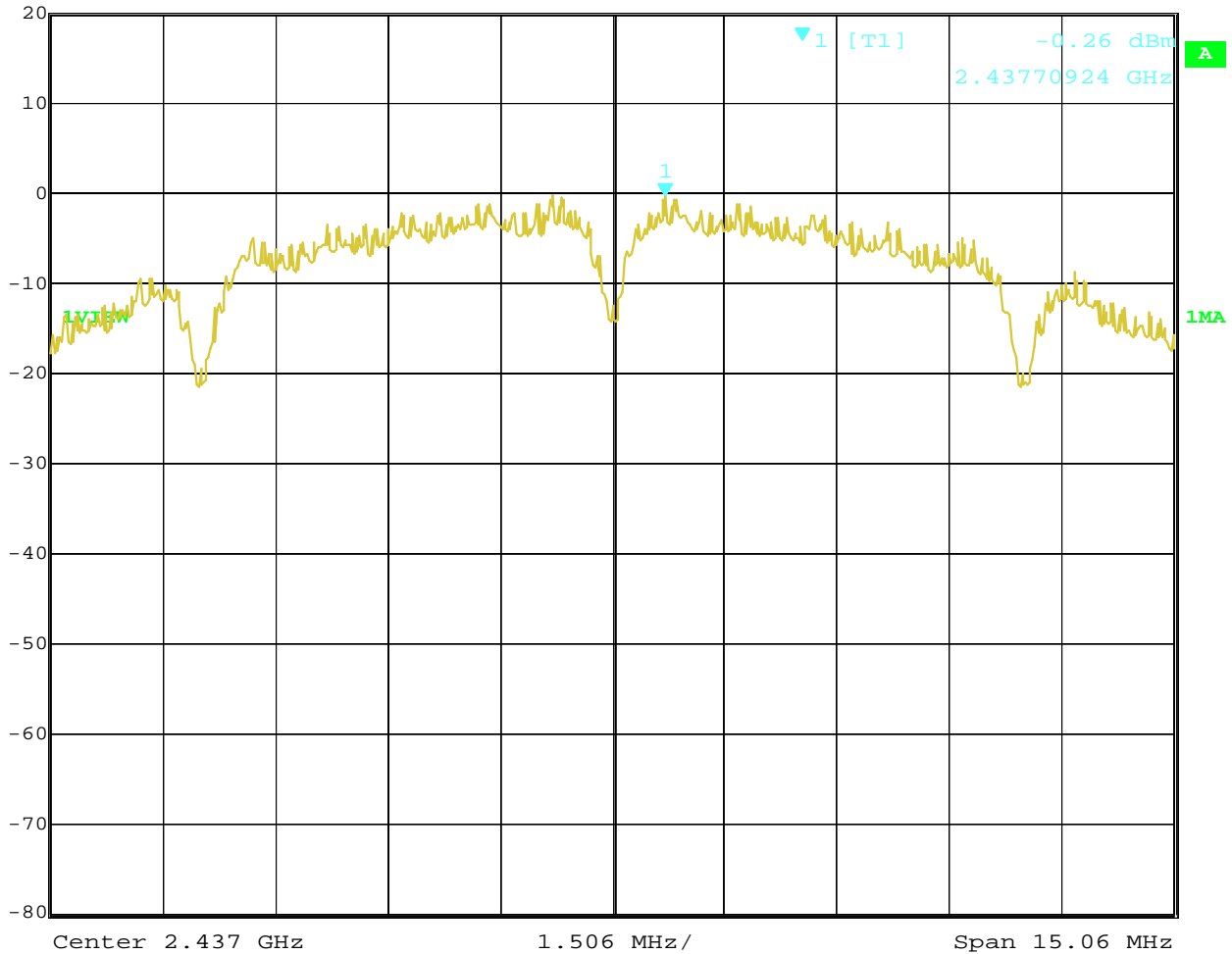
Date: 19.MAY.2022 16:00:30

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5. 802.11b at 1Mbps of CH6

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-0.26 dBm	VBW	30 kHz	
	20 dBm	2.43770924 GHz	SWT	380 ms	Unit dBm



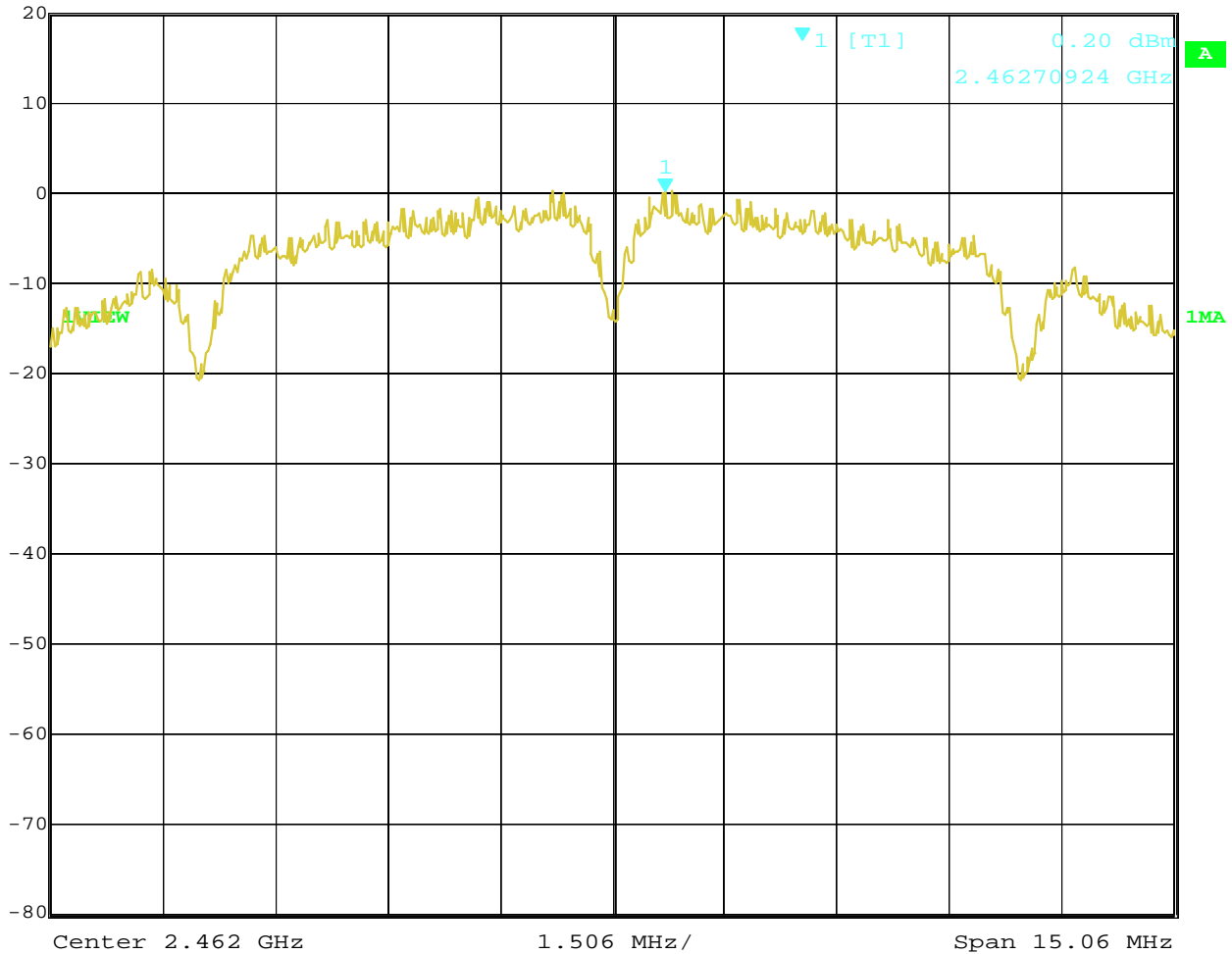
Date: 19.MAY.2022 15:59:34

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6. 802.11b at 1Mbps of CH11

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	0.20 dBm	VBW	30 kHz	
	20 dBm	2.46270924 GHz	SWT	380 ms	Unit dBm



Date: 19.MAY.2022 15:58:35

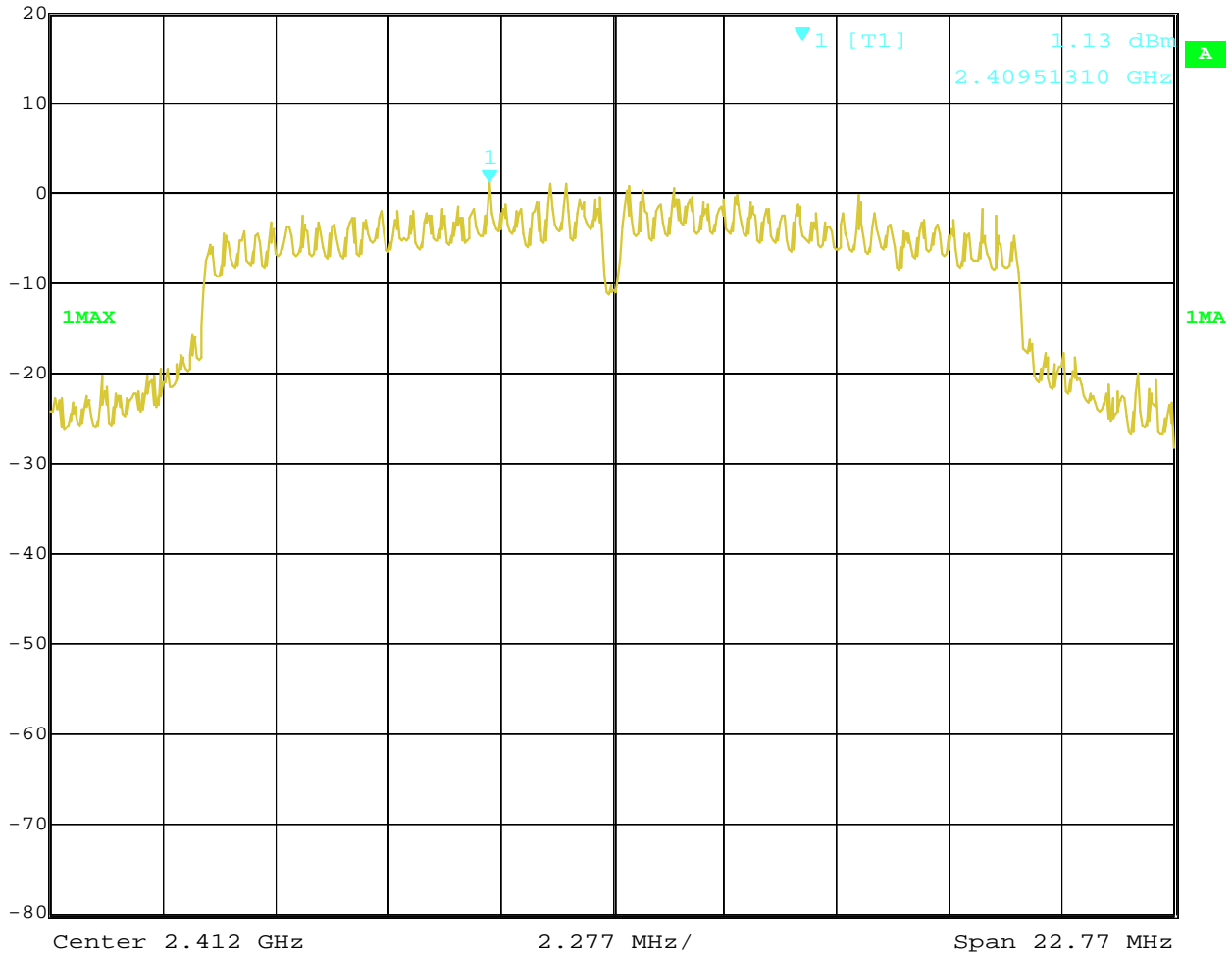
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7. 802.11g at 6Mbps of CH1



Ref Lvl	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
20 dBm	1.13 dBm	VBW	30 kHz	Unit	dBm
	2.40951310 GHz	SWT	580 ms		



Date: 19.MAY.2022 16:04:13

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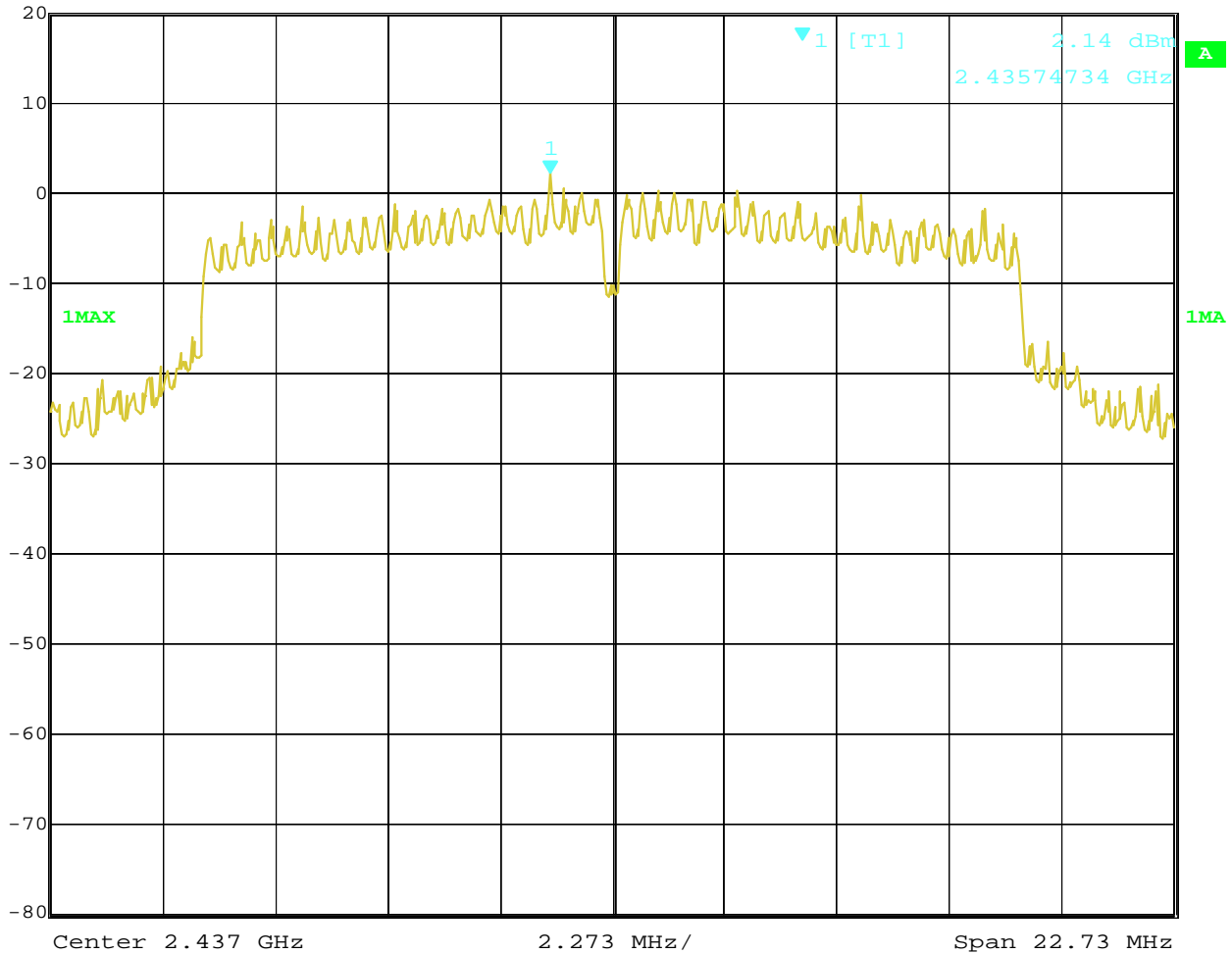




8. 802.11g at 6Mbps of CH6



Ref Lvl	20 dBm	Marker 1 [T1]	2.14 dBm	RBW	10 kHz	RF Att	30 dB
			2.43574734 GHz	VBW	30 kHz	Unit	dBm
				SWT	580 ms		



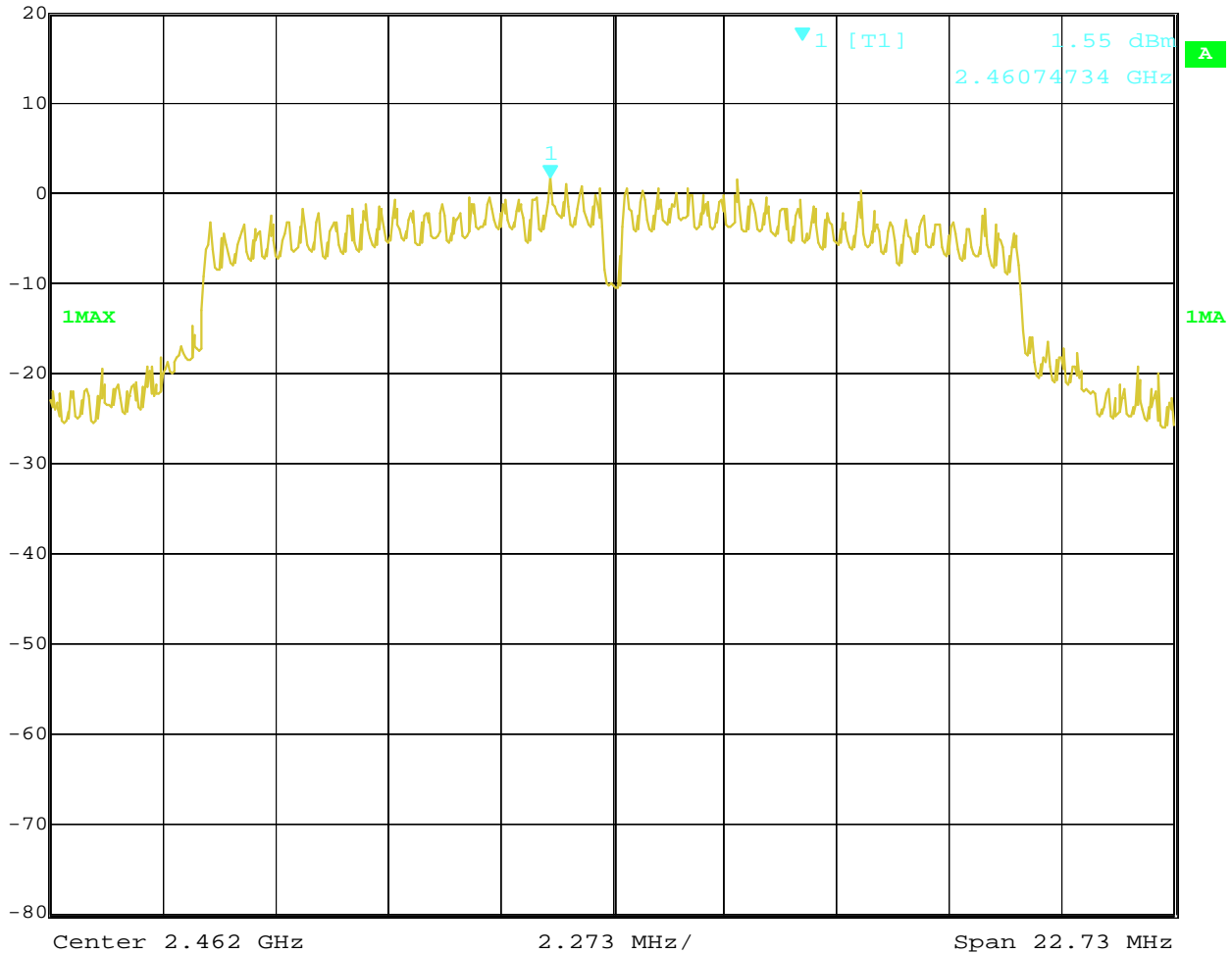
Date: 19.MAY.2022 16:08:57

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9. 802.11g at 6Mbps of CH11

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	1.55 dBm	VBW	30 kHz	
	20 dBm	2.46074734 GHz	SWT	580 ms	Unit dBm



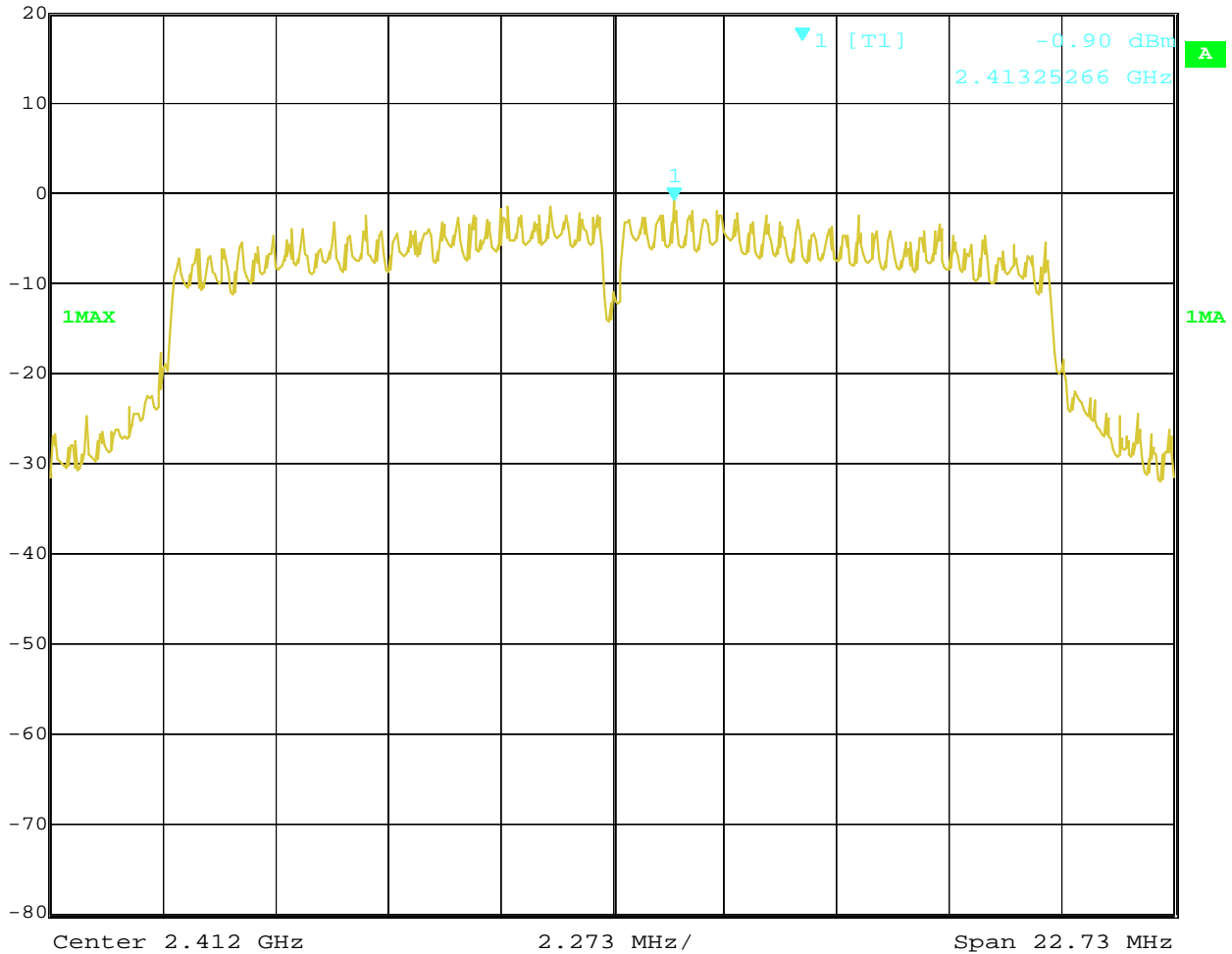
Date: 19.MAY.2022 16:14:07

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10. 802.11n at HT20 of CH01

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-0.90 dBm	VBW	30 kHz	
	20 dBm	2.41325266 GHz	SWT	580 ms	Unit dBm



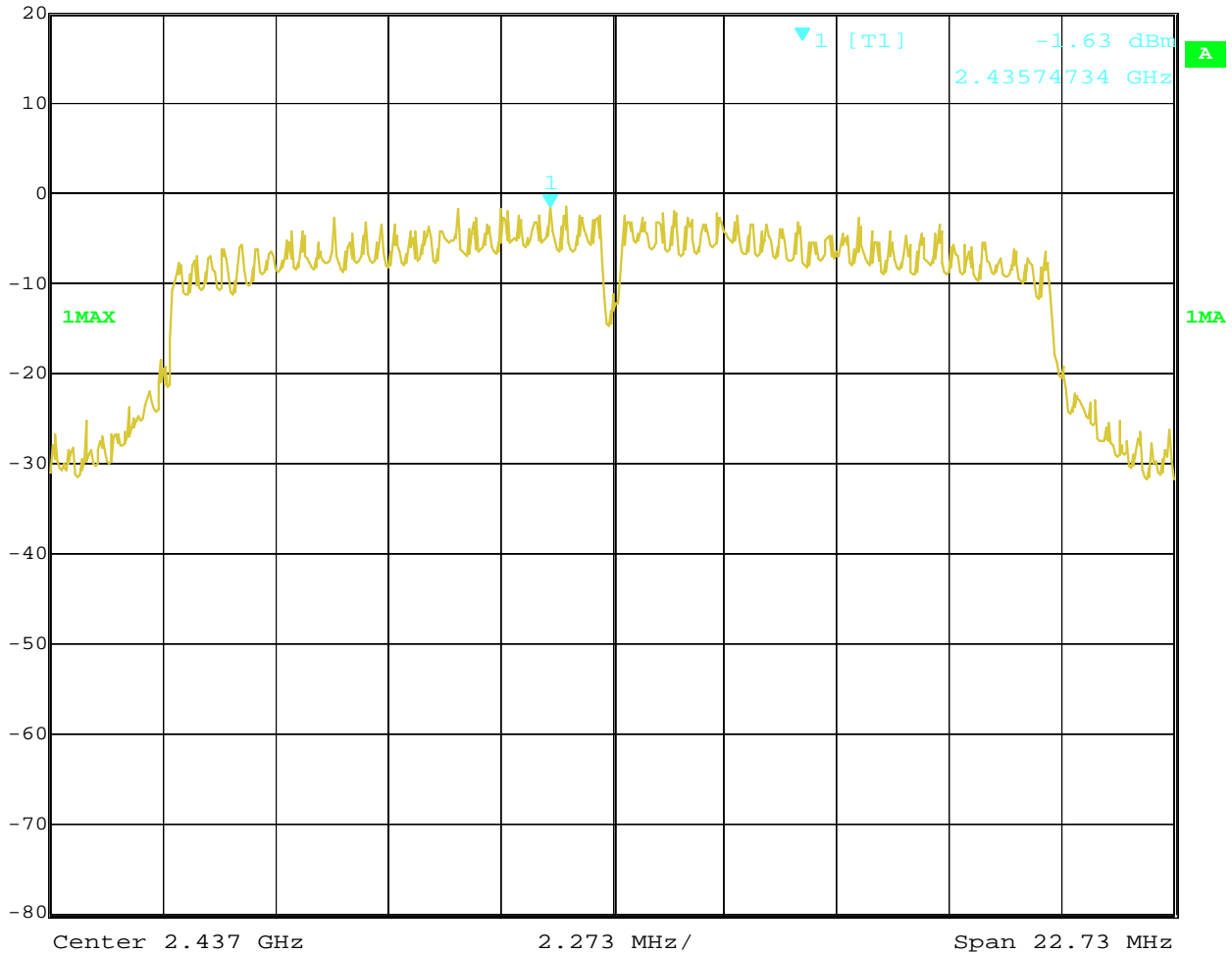
Date: 19.MAY.2022 16:31:20

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11. 802.11n at HT20 of CH06

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-1.63 dBm	VBW	30 kHz	
	20 dBm	2.43574734 GHz	SWT	580 ms	Unit dBm



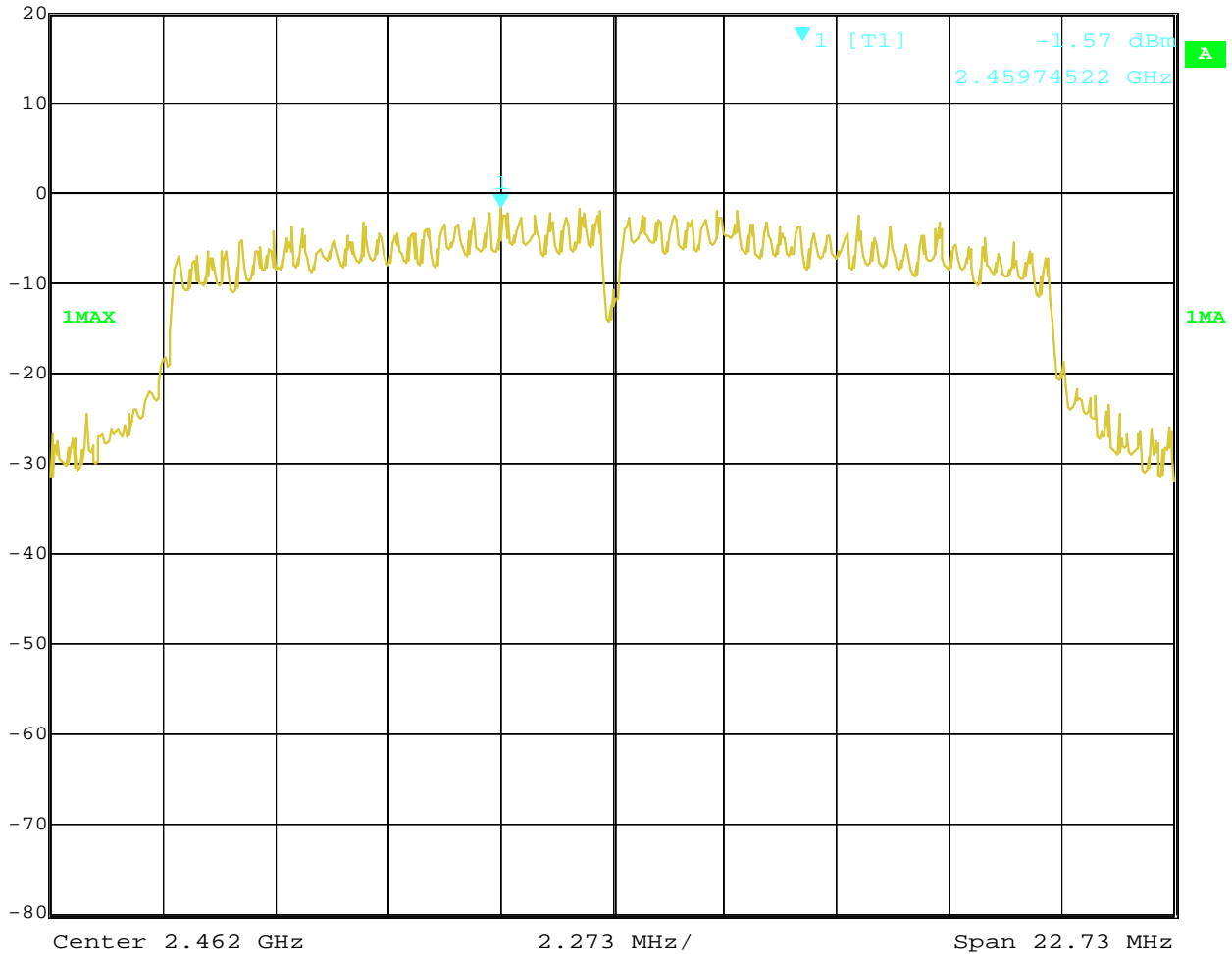
Date: 19.MAY.2022 16:22:26

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12. 802.11n at HT20 of CH11

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-1.57 dBm	VBW	30 kHz	
	20 dBm	2.45974522 GHz	SWT	580 ms	Unit dBm



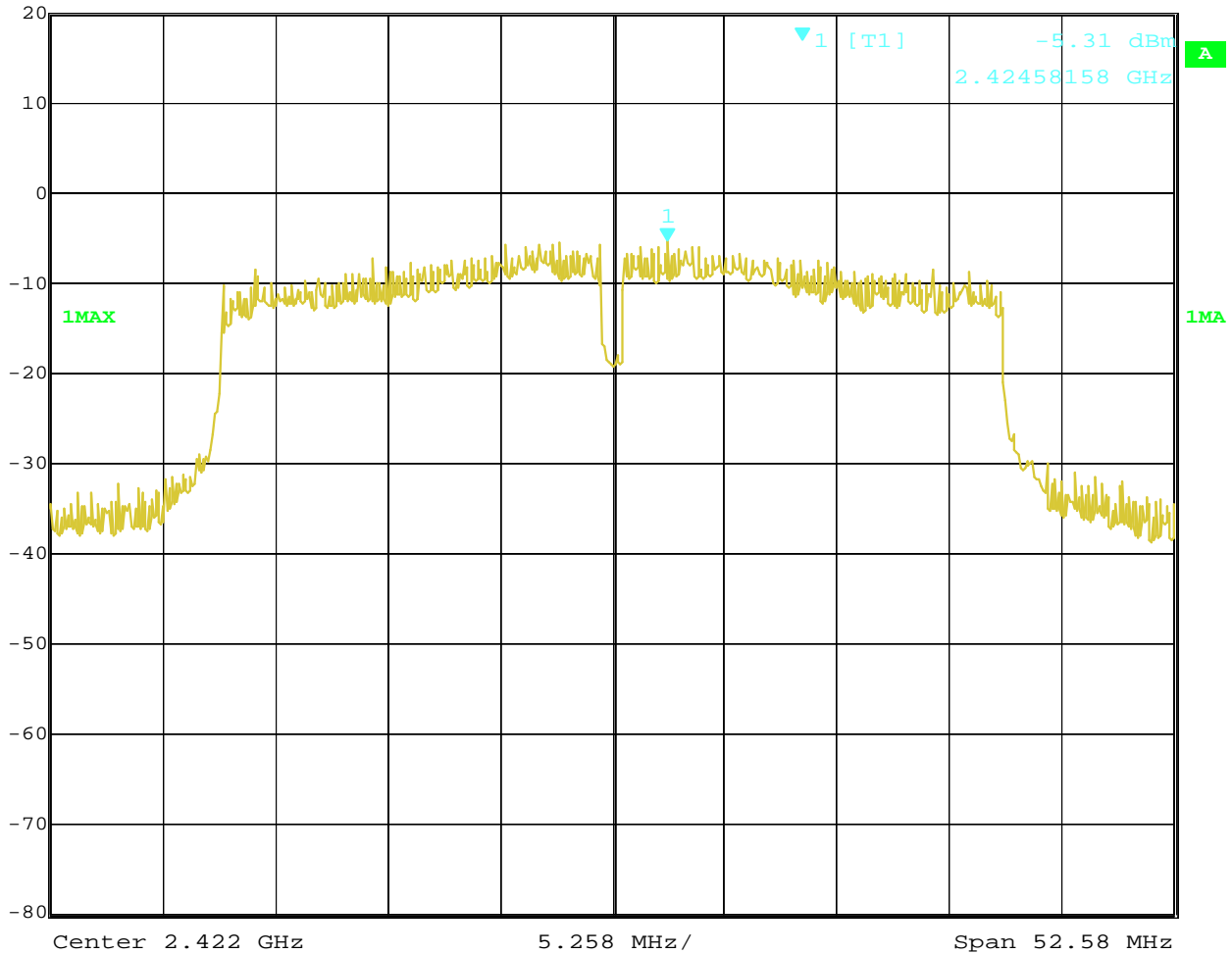
Date: 19.MAY.2022 16:16:32

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13. 802.11n at HT40 of CH03

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-5.31 dBm	VBW	30 kHz	
	20 dBm	2.42458158 GHz	SWT	1.35 s	Unit dBm



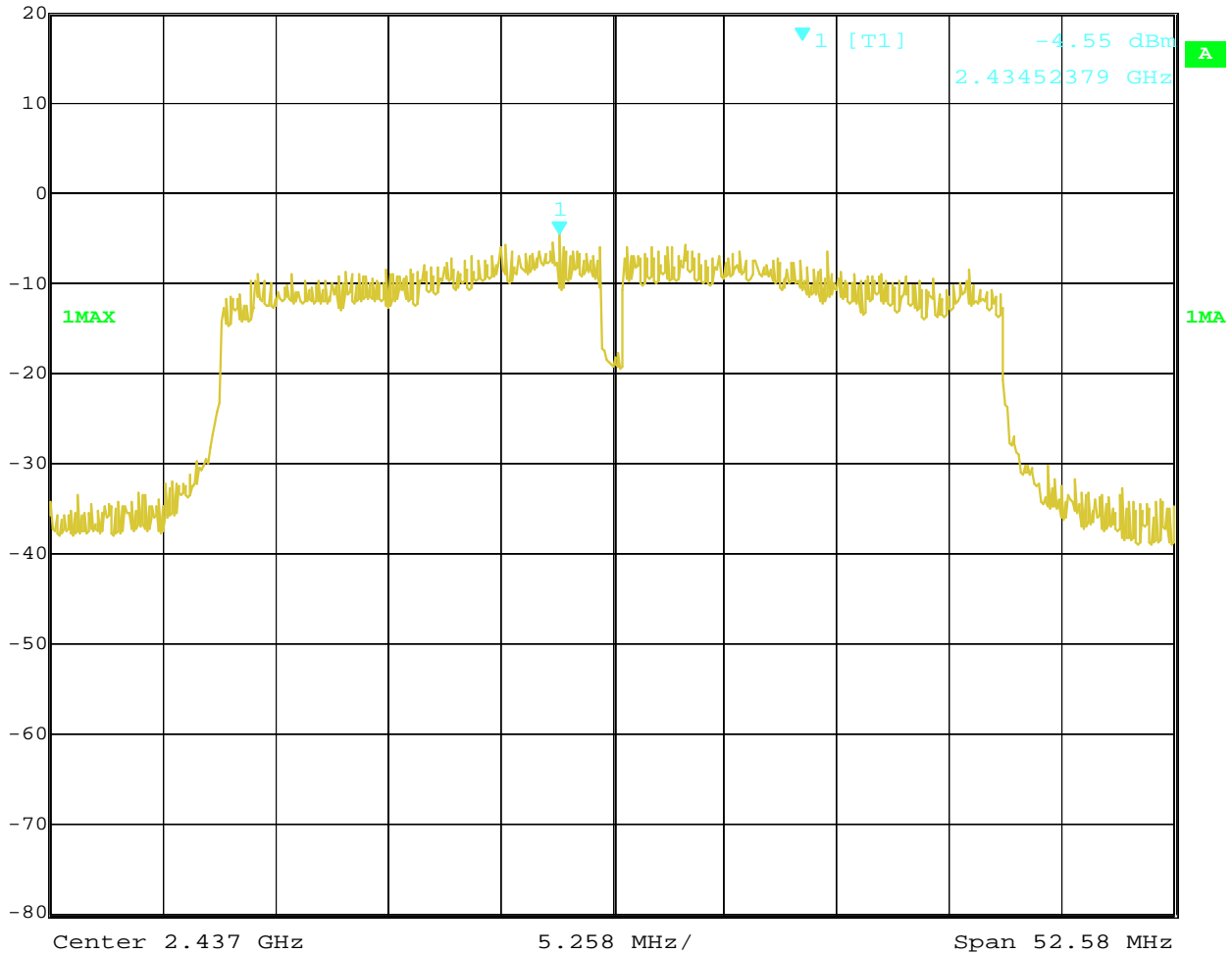
Date: 19.MAY.2022 16:34:11

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14. 802.11n at HT40 of CH06

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-4.55 dBm	VBW	30 kHz	
	20 dBm	2.43452379 GHz	SWT	1.35 s	Unit dBm



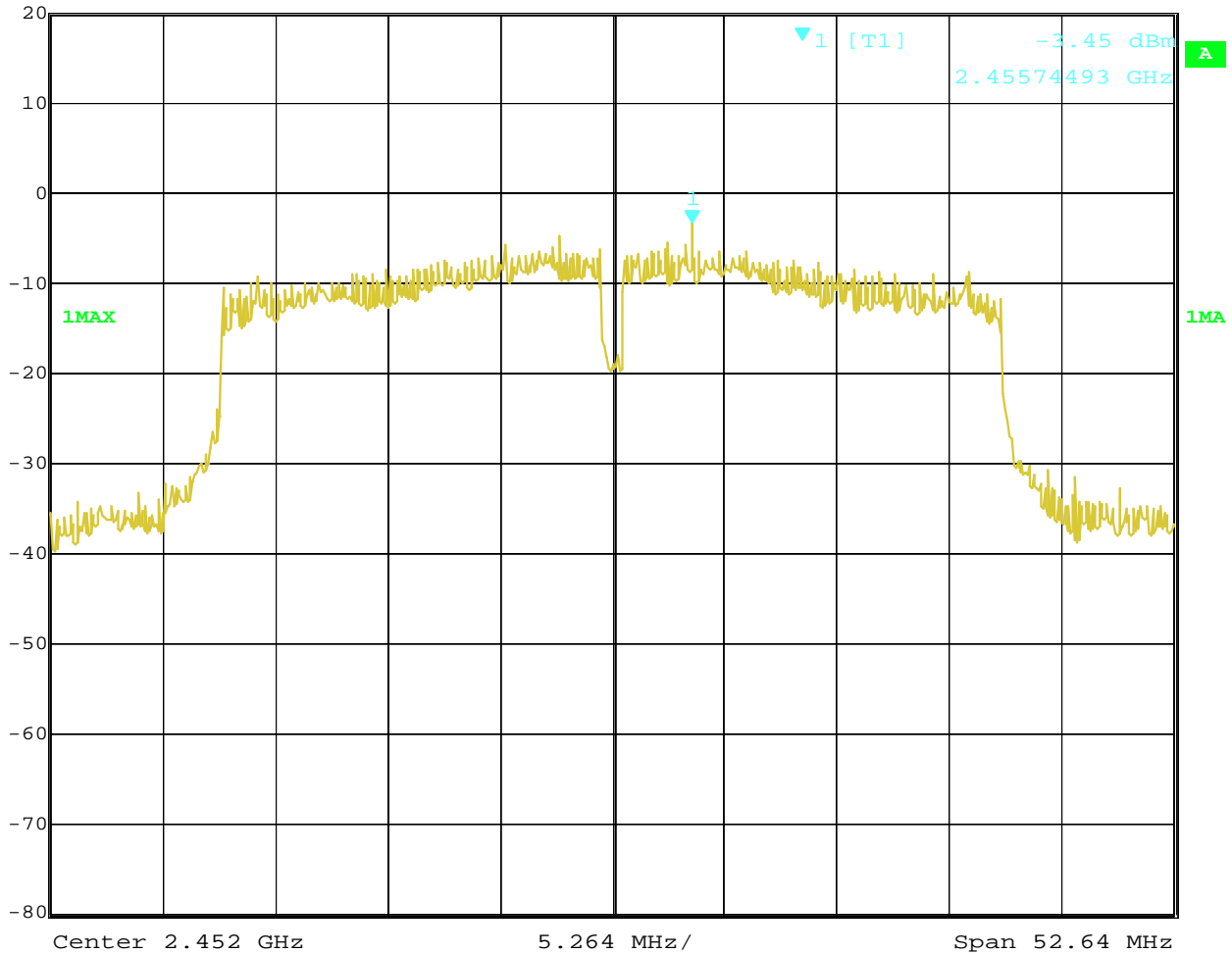
Date: 19.MAY.2022 16:37:07

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15. 802.11n at HT40 of CH09

	Marker 1 [T1]	RBW	10 kHz	RF Att	30 dB
	Ref Lvl	-3.45 dBm	VBW	30 kHz	
	20 dBm	2.45574493 GHz	SWT	1.35 s	Unit dBm



Date: 19.MAY.2022 16:39:11

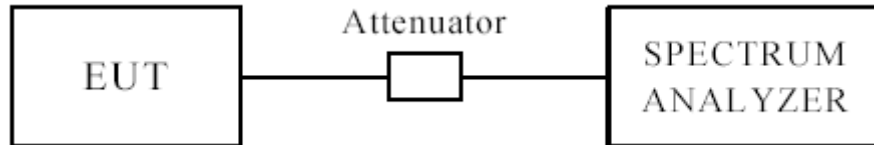
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## 10 Out of Band Measurement

### 10.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

### 10.2 Limits of Out of Band Emissions Measurement

1. Below  $-20\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

### 10.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. (Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

For bandage test, the spectrum set as follows: RBW=100, VBW=300 kHz. A conducted measurement used

### 10.4 Test Result

Please see next pages

Note: 1. for band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

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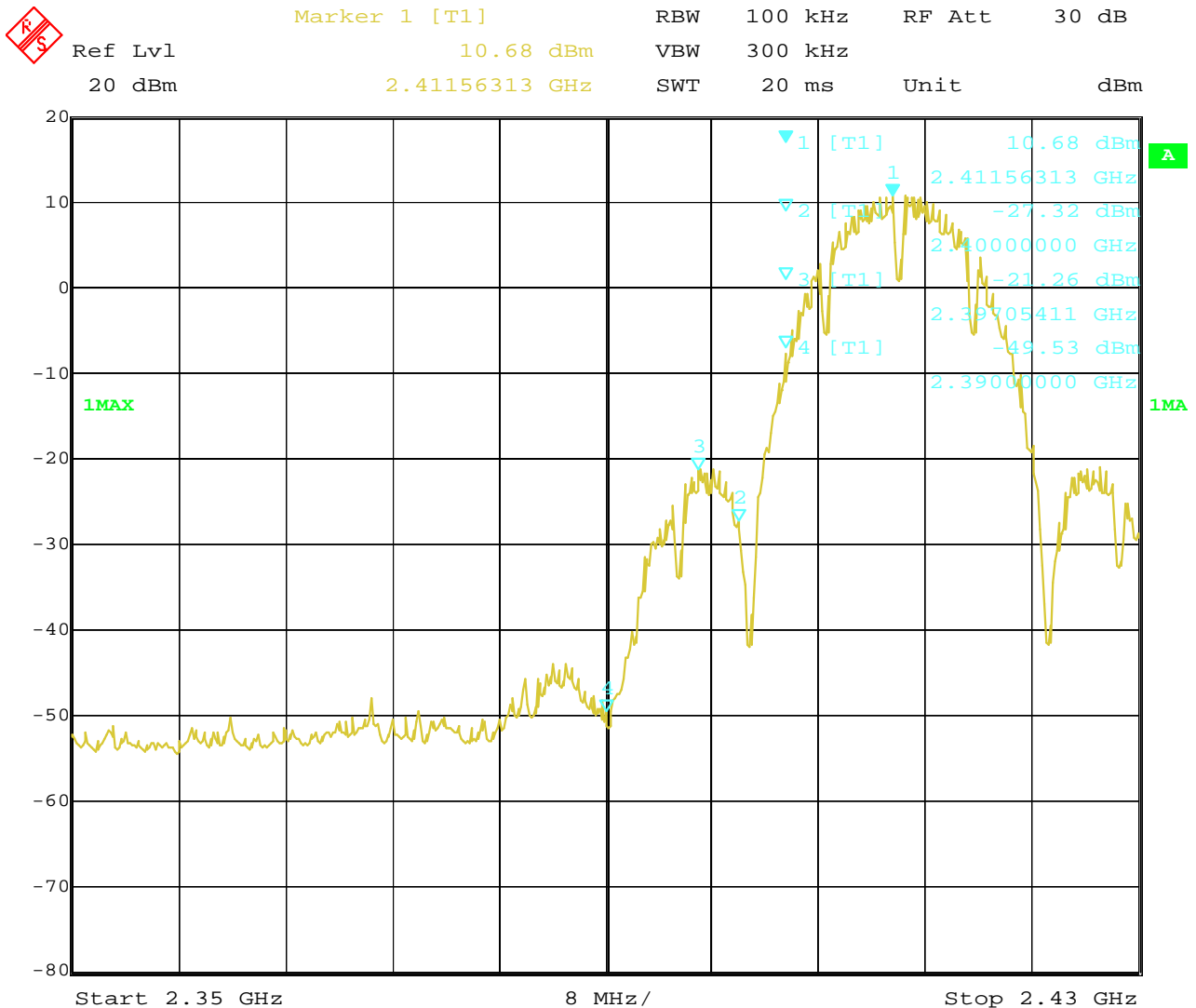
For 802.11b mode

CH01 at 1Mbps

**10.4 Band-edge Measurement**

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

**Test Figure:**



Date: 19.MAY.2022 17:10:08

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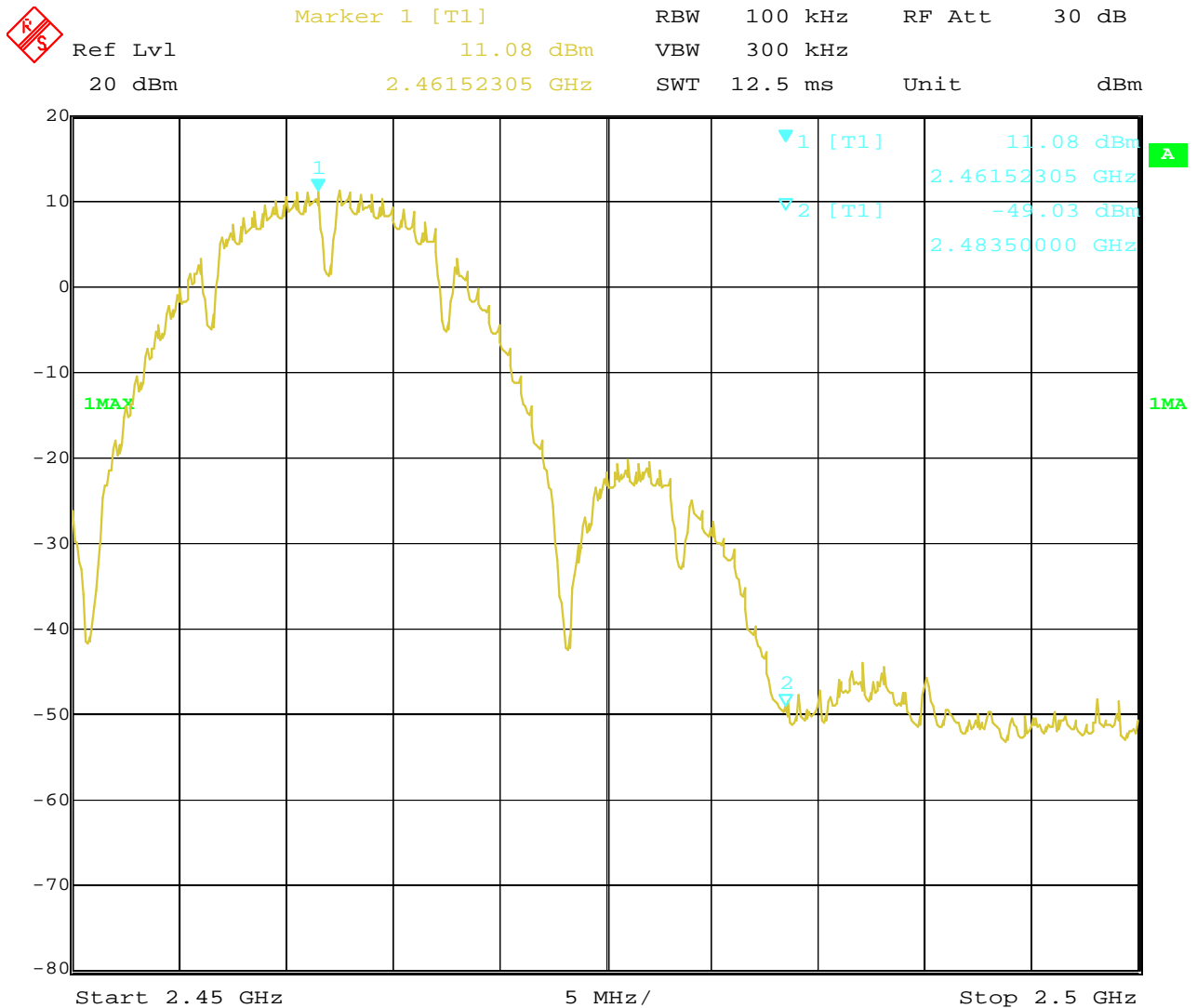


CH11 at 1Mbps

10.4 Band-edge Measurement

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 19.MAY.2022 17:20:10

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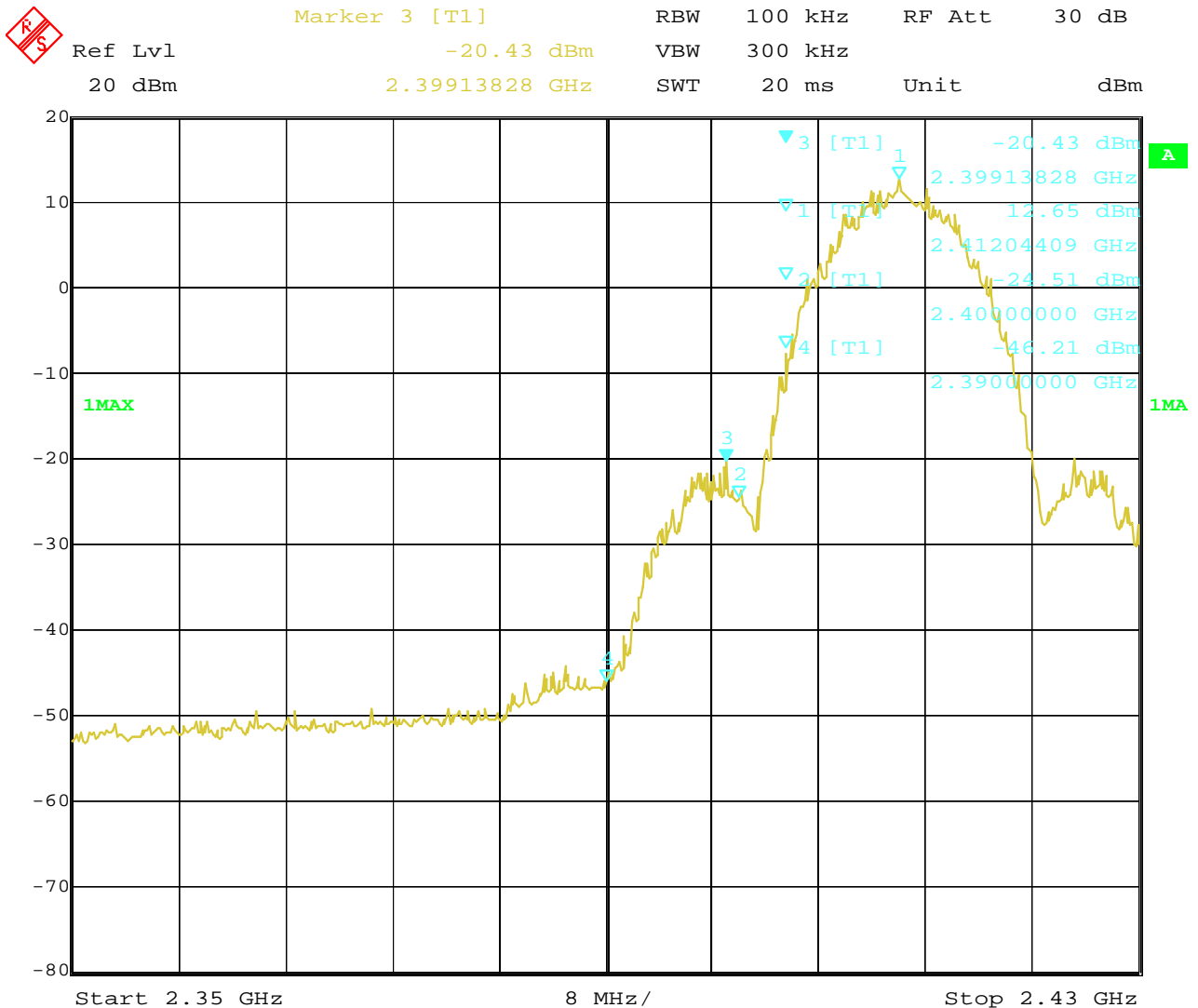
For 802.11b mode

CH01 at 11Mbps

**10.4 Band-edge Measurement**

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

**Test Figure:**



Date: 19.MAY.2022 17:12:57

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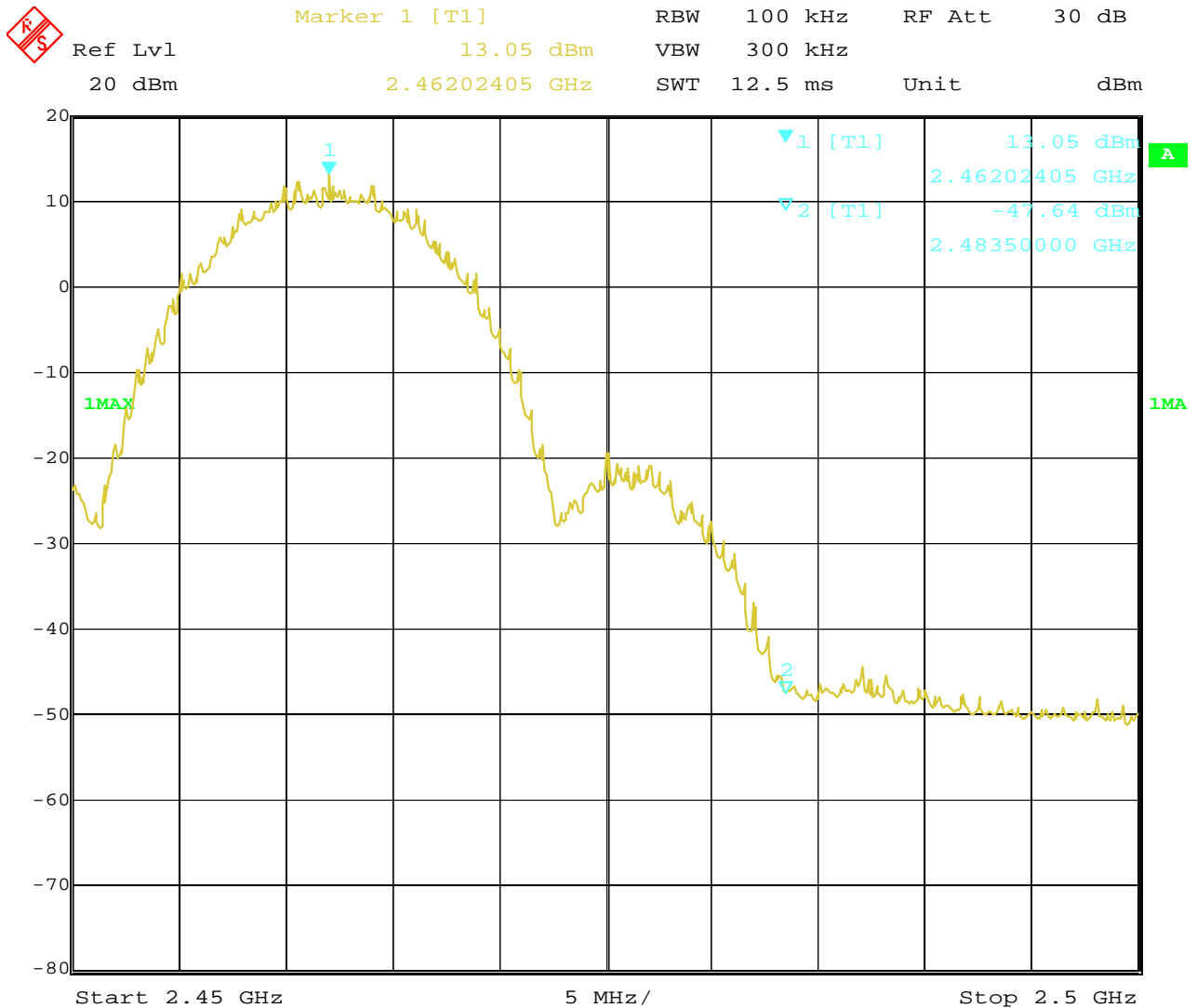


CH11 at 11Mbps

**10.4 Band-edge Measurement**

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

**Test Figure:**



Date: 19.MAY.2022 17:17:08

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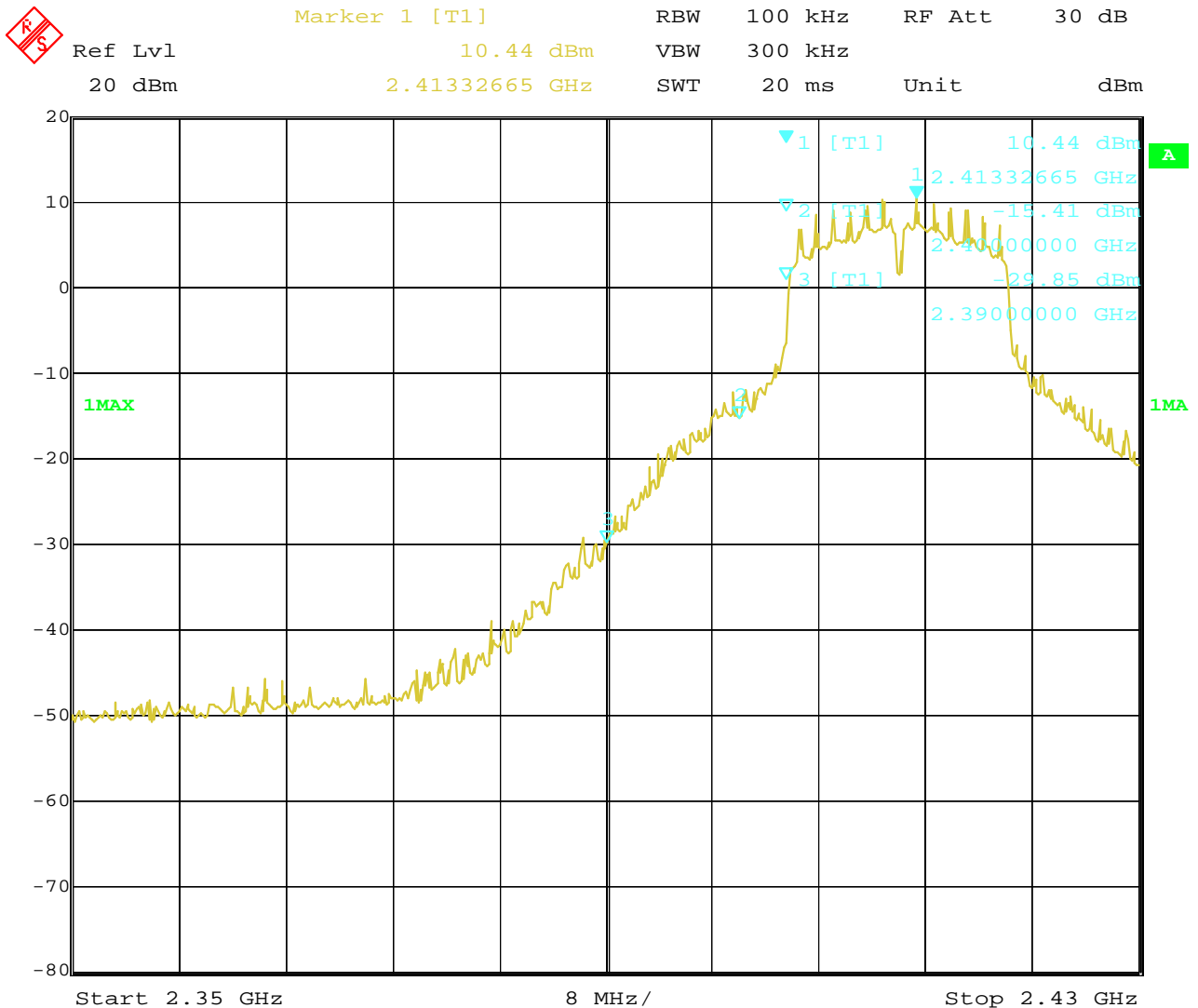
For 802.11g mode

CH01 at 6Mbps

**10.4 Band-edge Measurement**

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

**Test Figure:**



Date: 19.MAY.2022 17:07:16

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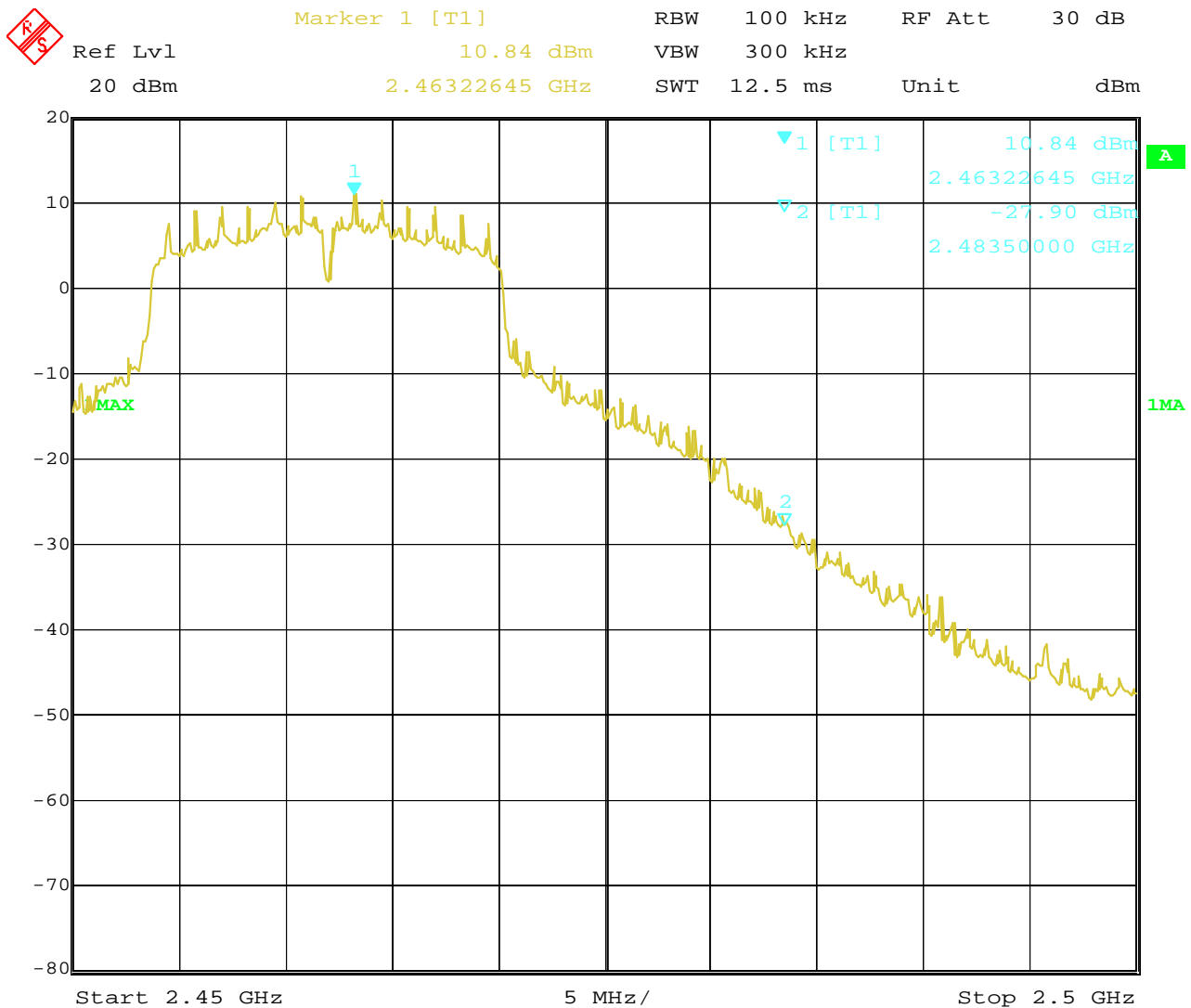


CH11 at 6Mbps

10.4 Band-edge Measurement

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 19.MAY.2022 17:21:40

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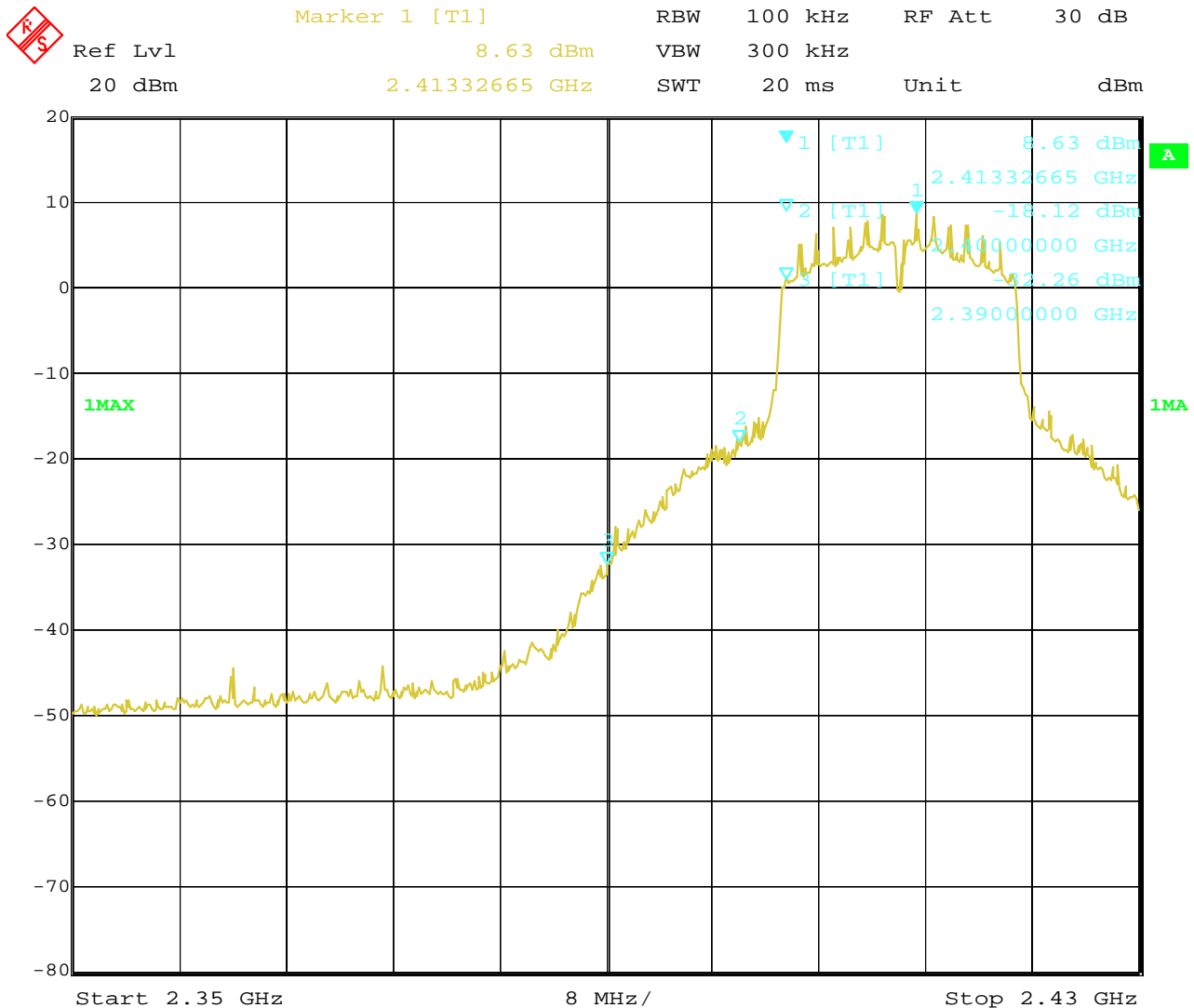
For 802.11n (HT20) mode

CH01 at mcs0

**10.4 Band-edge Measurement**

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

**Test Figure:**



Date: 19.MAY.2022 17:05:06

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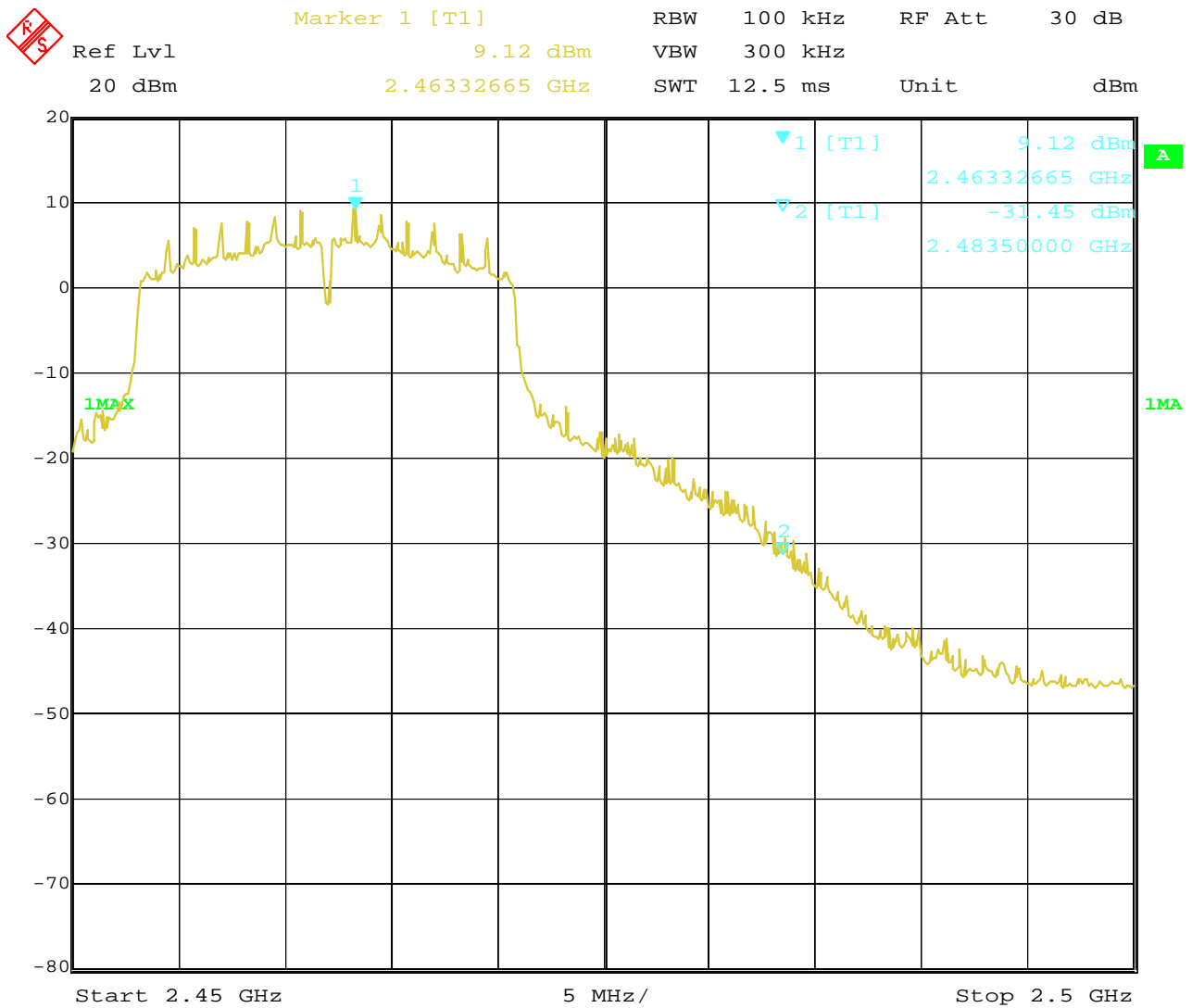


CH11 at mcs0

10.4 Band-edge Measurement

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 19.MAY.2022 17:26:40

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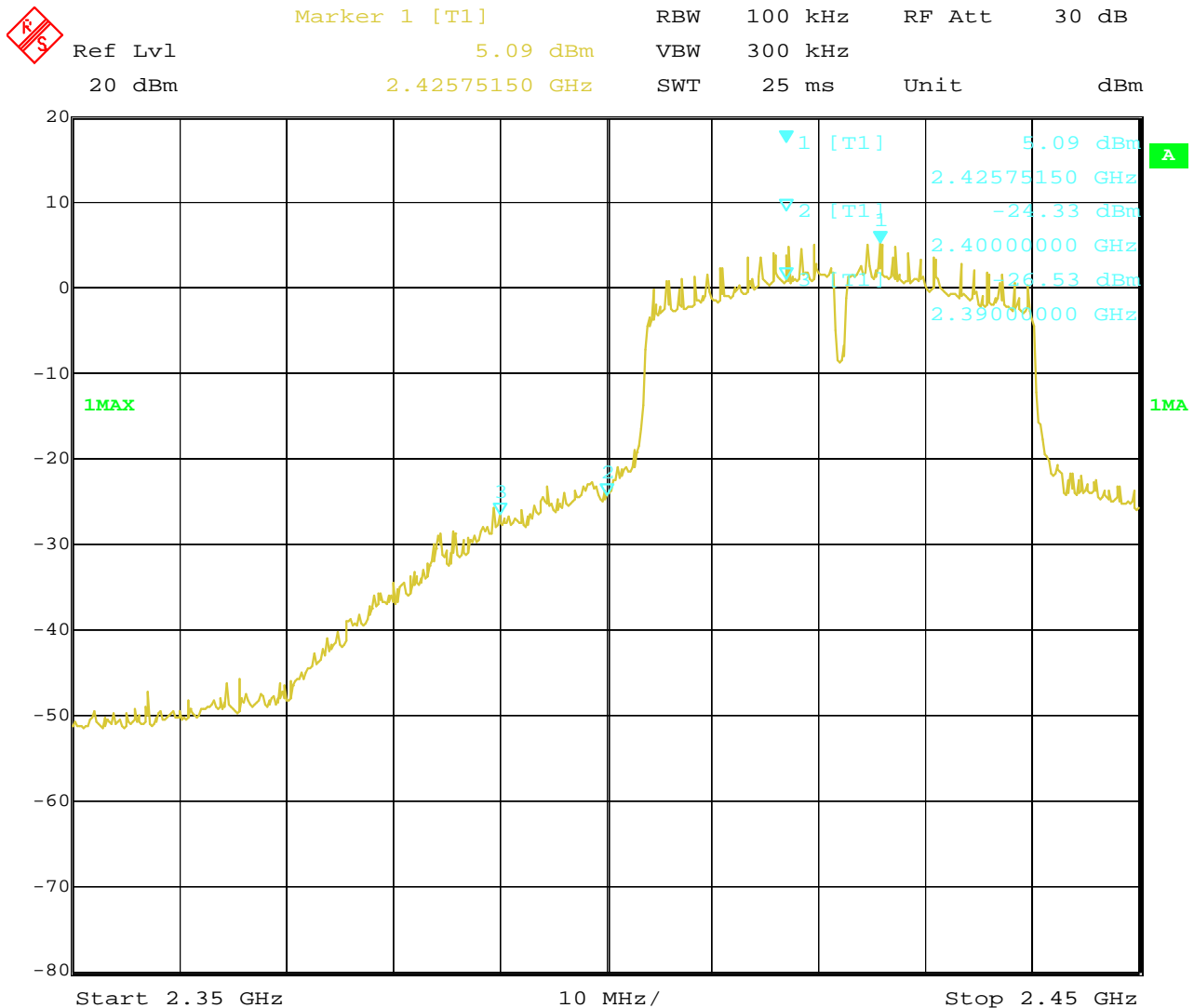
For 802.11n (HT40) mode

CH03 at msc0

**10.4 Band-edge and Restricted band Measurement**

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

**Test Figure:**



Date: 19.MAY.2022 17:02:30

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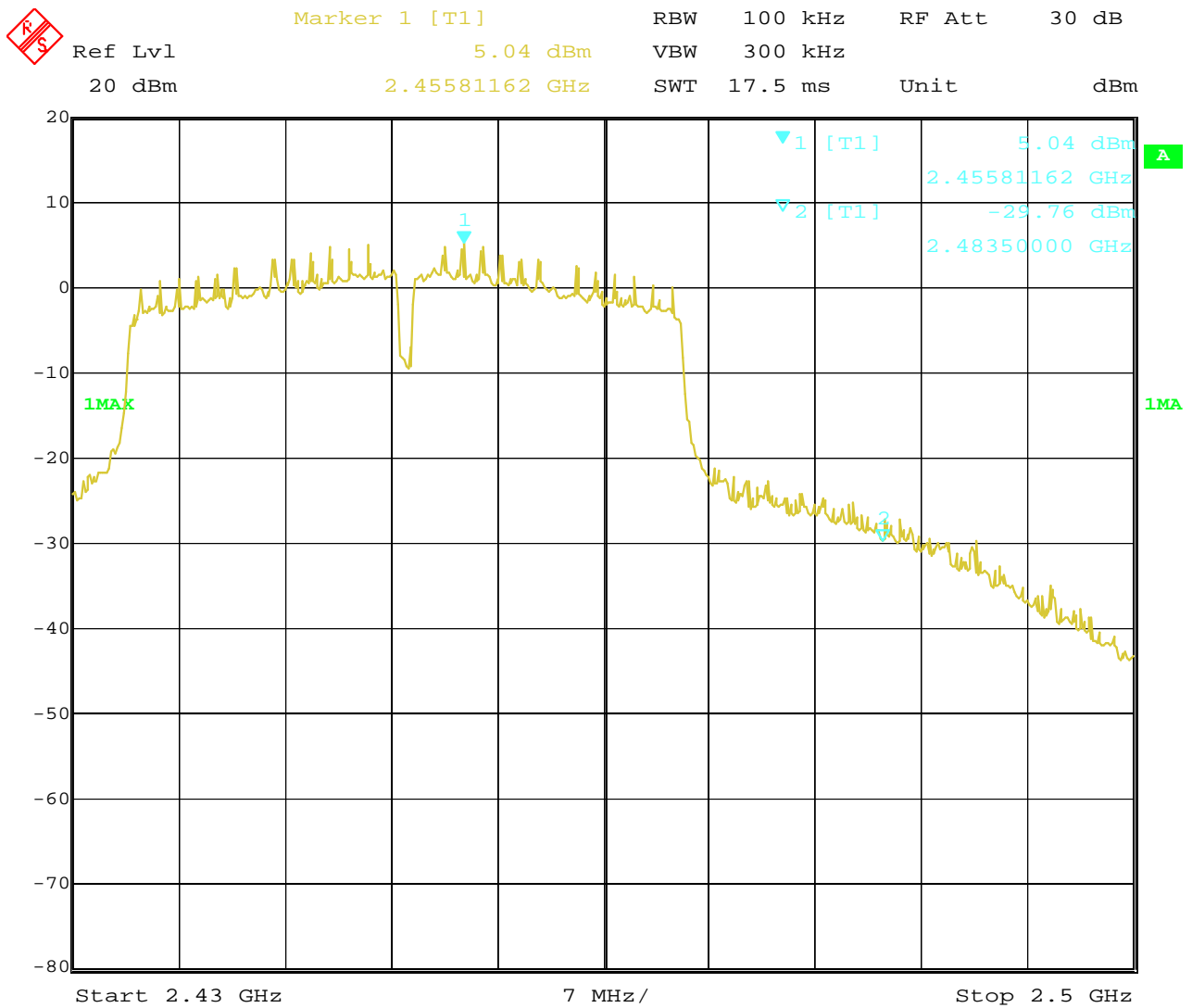


CH09 at msc0

**10.4 Band-edge and Restricted band Measurement**

EUT	S-Serial Smart Gateway	Model	DSGW-034
Mode	Keeping Transmitting	Test Voltage	DC5.0V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

**Test Figure:**



Date: 19.MAY.2022 17:00:37

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**10.5 Restricted band Measurement**

EUT	S-Serial Smart Gateway		Model	DSGW-034
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11b mode, Low Channel, Horizontal				
2390	PK (dB $\mu$ V/m)	58.76	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	39.34		54(dB $\mu$ V/m)
802.11b mode, Low Channel, Vertical				
2390	PK (dB $\mu$ V/m)	55.68	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	37.25		54(dB $\mu$ V/m)

**10.5 Restricted band Measurement**

EUT	S-Serial Smart Gateway		Model	DSGW-034
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11b mode, High Channel, Horizontal				
2483.5	PK (dB $\mu$ V/m)	57.76	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	38.90		54(dB $\mu$ V/m)
802.11b mode, High Channel, Vertical				
2483.5	PK (dB $\mu$ V/m)	55.06	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	38.25		54(dB $\mu$ V/m)

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**10.5 Restricted band Measurement**

EUT	S-Serial Smart Gateway		Model	DSGW-034
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11g mode, Low Channel, Horizontal				
2390	PK (dB $\mu$ V/m)	64.52	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	45.17		54(dB $\mu$ V/m)
802.11g mode, Low Channel, Vertical				
2390	PK (dB $\mu$ V/m)	61.89	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	42.29		54(dB $\mu$ V/m)

**10.5 Restricted band Measurement**

EUT	S-Serial Smart Gateway		Model	DSGW-034
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11g mode, High Channel, Horizontal				
2483.5	PK (dB $\mu$ V/m)	62.37	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	43.49		54(dB $\mu$ V/m)
802.11g mode, High Channel, Vertical				
2483.5	PK (dB $\mu$ V/m)	60.39	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	40.85		54(dB $\mu$ V/m)

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**10.5 Restricted band Measurement**

EUT	S-Serial Smart Gateway		Model	DSGW-034
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11n HT20 mode, Low Channel, Horizontal				
2390	PK (dB $\mu$ V/m)	66.36	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	47.58		54(dB $\mu$ V/m)
802.11n HT20 mode, Low Channel, Vertical				
2390	PK (dB $\mu$ V/m)	63.64	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	45.03		54(dB $\mu$ V/m)

**10.5 Restricted band Measurement**

EUT	S-Serial Smart Gateway		Model	DSGW-034
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11n HT20 mode, High Channel, Horizontal				
2483.5	PK (dB $\mu$ V/m)	65.68	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	46.35		54(dB $\mu$ V/m)
802.11n HT20 mode, High Channel, Vertical				
2483.5	PK (dB $\mu$ V/m)	63.25	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	44.78		54(dB $\mu$ V/m)

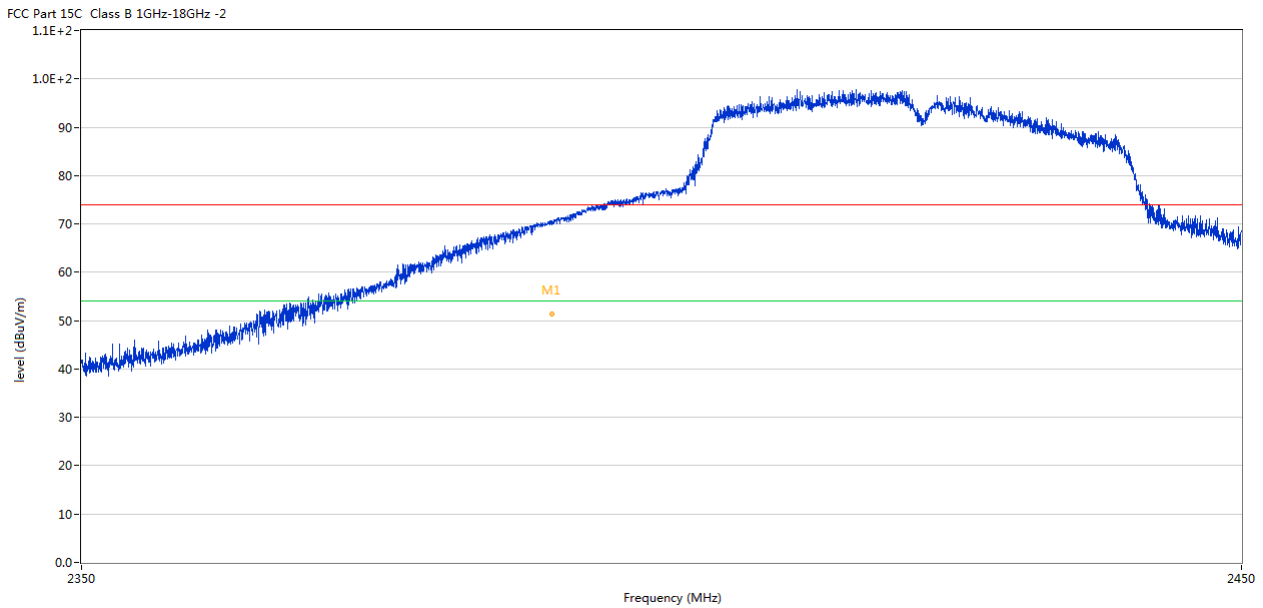
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**10.5 Restricted band Measurement**

EUT	S-Serial Smart Gateway		Model	DSGW-034
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11n HT40 mode, Low Channel, Horizontal				
2390	PK (dBμV/m)	70.64	Limit	74(dBμV/m)
	AV (dBμV/m)	51.33		54(dBμV/m)
802.11n HT40 mode, Low Channel Vertical				
2390	PK (dBμV/m)	70.10	Limit	74(dBμV/m)
	AV (dBμV/m)	50.62		54(dBμV/m)

**Test Plots**



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2390.040	70.64	-3.53	74.0	-3.36	Peak	273.00	100	Horizontal	Pass
1**	2390.040	51.33	-3.53	54.0	-2.67	AV	273.00	100	Horizontal	Pass

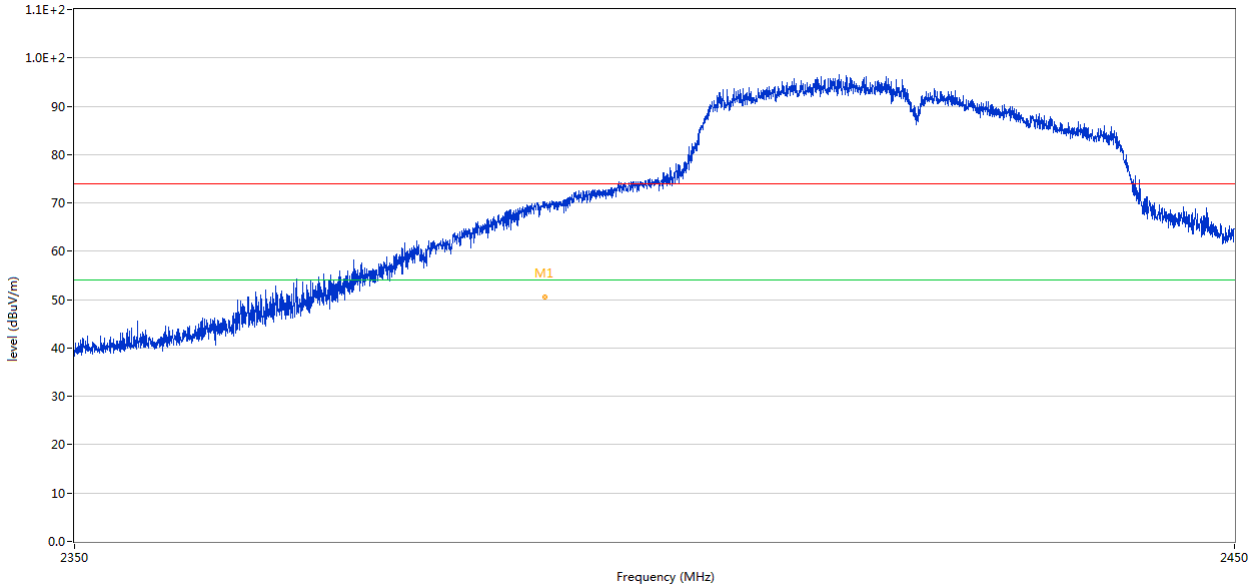
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FCC Part 15C Class B 1GHz-18GHz -2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2390.070	70.10	-3.54	74.0	-3.90	Peak	169.00	100	Vertical	Pass
1**	2390.070	50.62	-3.54	54.0	-3.38	AV	169.00	100	Vertical	Pass

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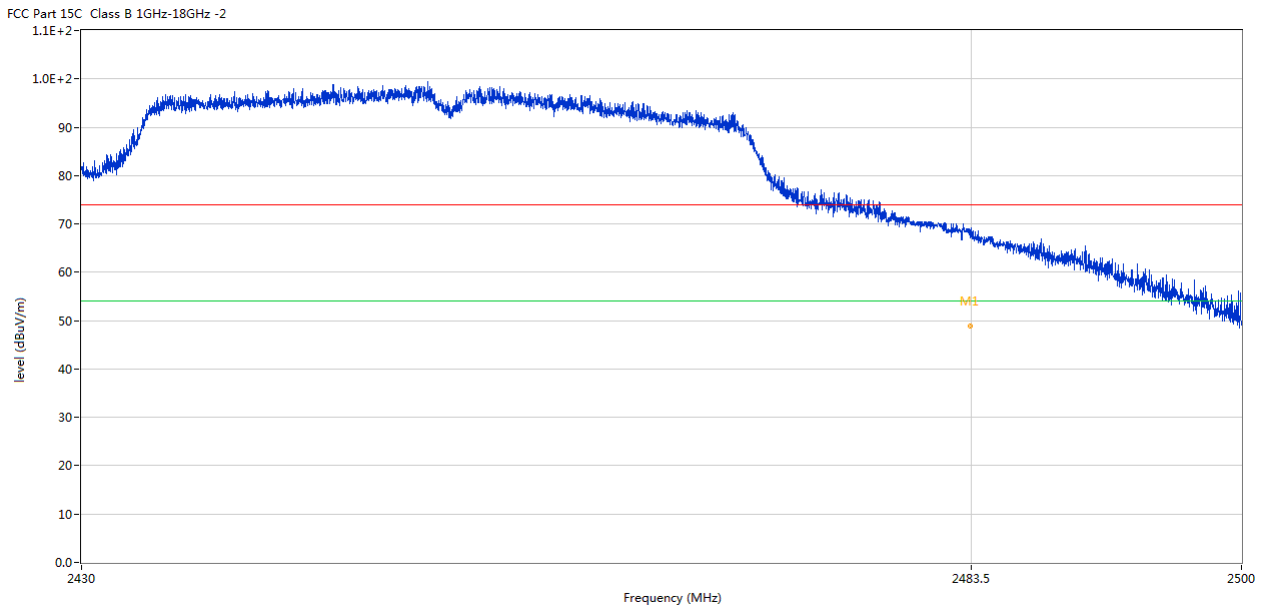
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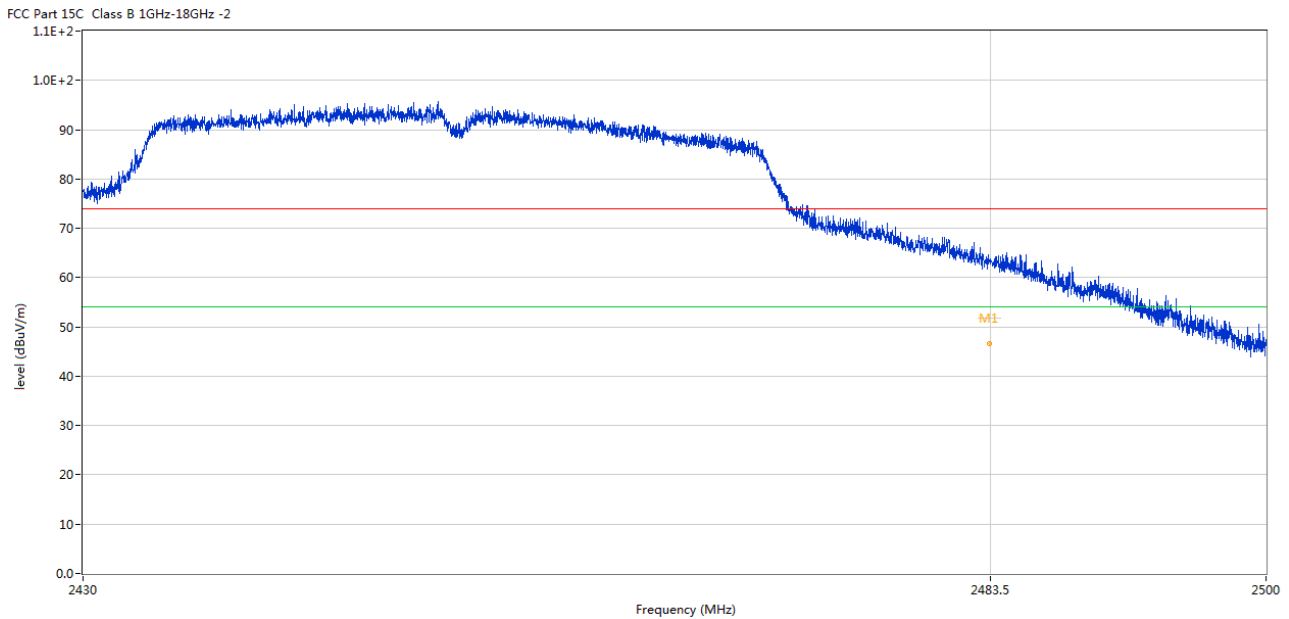
**10.5 Restricted band Measurement**

EUT	S-Serial Smart Gateway		Model	DSGW-034
Mode	Keeping Transmitting		Test Voltage	DC5.0V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
802.11n HT40 mode, High Channel, Horizontal				
2483.5	PK (dB $\mu$ V/m)	68.73	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	48.89		54(dB $\mu$ V/m)
802.11n HT40 mode, High Channel, Vertical				
2483.5	PK (dB $\mu$ V/m)	65.00	Limit	74(dB $\mu$ V/m)
	AV (dB $\mu$ V/m)	46.83		54(dB $\mu$ V/m)



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2483.451	68.73	-3.57	74.0	-5.27	Peak	118.00	100	Horizontal	Pass
1**	2483.451	48.89	-3.57	54.0	-5.11	AV	118.00	100	Horizontal	Pass

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No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	2483.464	65.00	-3.57	74.0	-9.00	Peak	297.00	100	Vertical	Pass
1**	2483.464	46.83	-3.57	54.0	-7.17	AV	297.00	100	Vertical	Pass

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## **11.0 Antenna Requirement**

### **11.1 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 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **11.2 Antenna Connected construction**

PCB antenna used. The gain of the antennas is 1.5dBi (Declared by the applicant)

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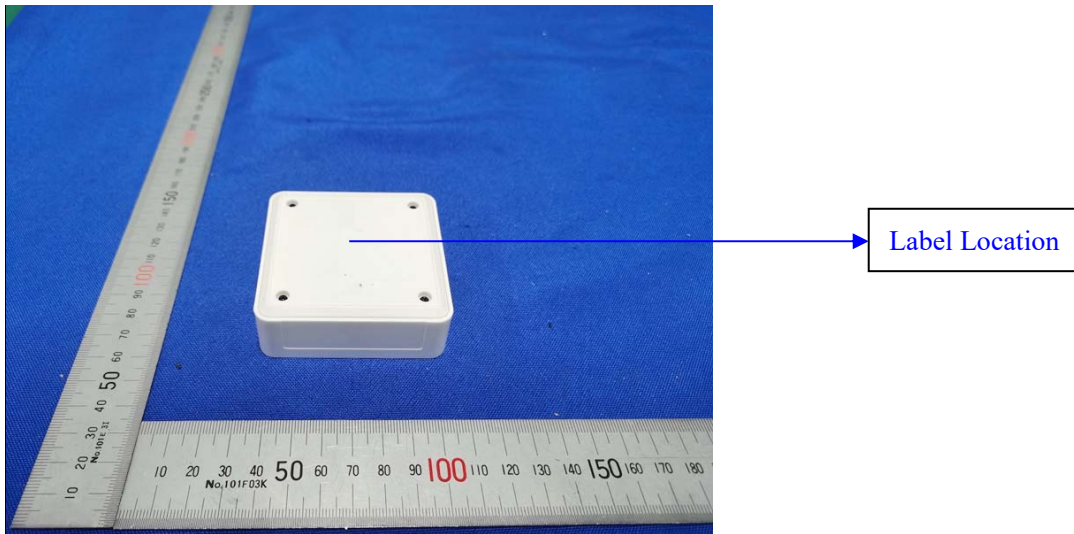


## 12.0 FCC ID Label

### FCC ID: 2AUXBDSGW-034

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

#### Mark Location:



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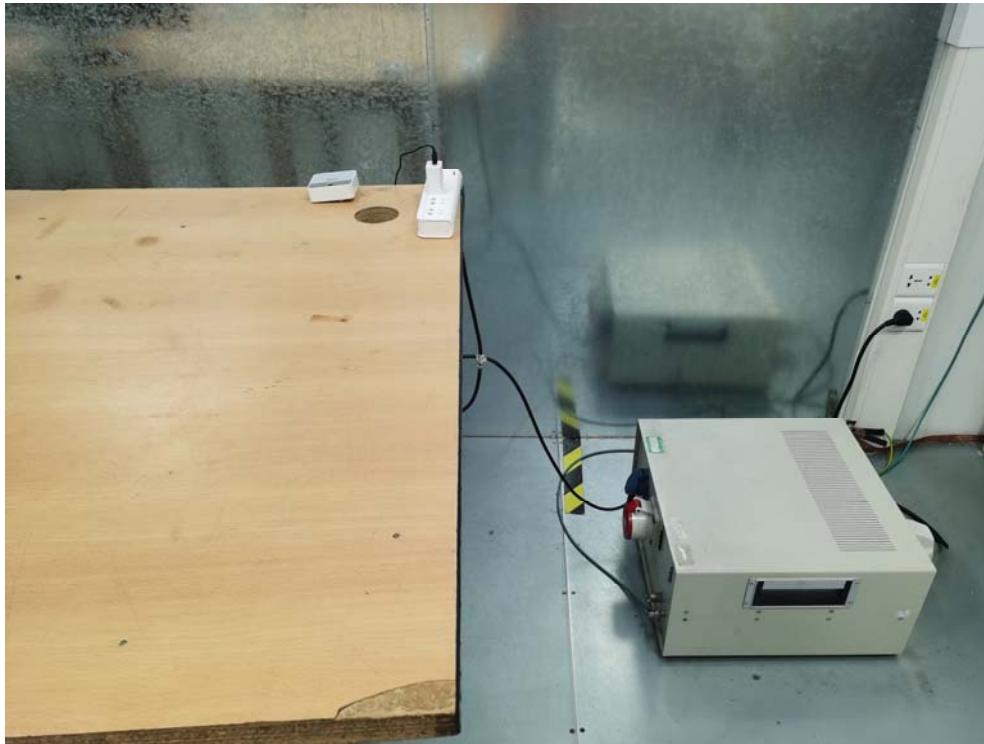
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### 13.0 Photo of testing

Conducted Emission Test Setup:



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Radiated Emission Test Setup:



**Photographs – EUT**

Please refer test report TW2203422-01E

**-End of the report-**

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