FCC RADIO TEST REPORT

For

FCC ID: 2ALTX-TFMTKAW01232

Report Reference No..... :	18EFAS10049 81
Date of issue..... :	2018-10-15
Testing Laboratory..... :	DongGuan ShuoXin Electronic Technology Co., Ltd.
Address..... :	Zone A, 1F, No. 6, XinGang Road YuanGang Street, XinAn District, ChangAn Town, DongGuan City, GuangDong, China
Applicant's name ..... :	TrekStor GmbH
Address..... :	Berliner Ring 7, 64625 Bensheim, Germany
Manufacturer..... :	Heyuan Vastking Electronic Co., Ltd.
Test specification:	
Test item description..... :	TrekStor Surftab theatre L15
Trade Mark ..... :	TREKSTOR
Model/Type reference ..... :	TFMTKAW01232
Ratings..... :	INPUT: 100-240V~ 50/60HZ 1.2A, OUTPUT: DC12V 3A DC 7.6V 4800mAh Li-polymer Battery

Responsible Engineer : Smile Wang

Smile Wang

Authorized Signatory: king wang

King Wang

TABLE OF CONTENTS

TEST REPORT DECLARE

Applicant	:	TrekStor GmbH
Address	:	Berliner Ring 7, 64625 Bensheim, Germany
Equipment under Test	:	TrekStor Surftab theatre L15
Model No	:	TFMTKAW01232
Trade Mark	:	TREKSTOR
Manufacturer	:	Heyuan Vastking Electronic Co., Ltd.
Address	:	No.13, Hepu Avenue, Yuancheng District, Heyuan City, Guangdong

Test Standard Used: FCC Part 15E 15.407

Test procedure used: ANSI C63.10-2013 and KDB 789033 D02 General UNII Test Procedures New Rules v02r01 .

We Declare:

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

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

Report No:	18EFAS10049 81		
Date of Test:	2018-10-15	**Date of Report**:	2018-10-17

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of DongGuan ShuoXin Electronic Technology Co., Ltd.

1. SUMMARY OF TEST RESULTS

The EUT have been tested according to the applicable standards as referenced below.		
FCC Part15 (15.407) , Subpart E		
Description of Test Item	**Standard**	**Results**
AC Power Line Conducted Emissions	FCC §15.207/ RSS-Gen	PASS
Spurious Radiated Emissions	FCC §15.209(a), 15.407(b)	PASS
26 dB and 99% Emission Bandwidth	FCC §15.407(a)	PASS
Maximum Conducted Output Power	FCC §407(a)(1)	PASS
Band Edges	FCC §2.1051, §15.407(b)	PASS
Power Spectral Density	FCC §15.407(a)(1)	PASS
Spurious Emissions at Antenna Terminals	FCC §2.1051, §15.407(b)	PASS
Frequency Stability	FCC §15.407(a)(6)	PASS
Antenna Requirement	FCC §15.203	PASS

2. GENERAL TEST INFORMATION

2.1. DESCRIPTION OF EUT

EUT* Name	:	TrekStor Surftab theatre L15
Model Number	:	TFMTKAW01232
EUT function description	:	TrekStor Surftab theatre L15 with WiFi & BT function.
Power supply	:	INPUT: 100-240V~ 50/60HZ 1.2A, OUTPUT: DC12V 3A DC 7.6V 4800mAh Li-polymer Battery
Adaptor		JHD-AP036U-120300AA-A
Operation frequency	:	WiFi: 802.11a/802.11n(HT20) /ac(VHT20): 5180MHz ~ 5240MHz; 802.11n(HT40)/ac(VHT40): 5190MHz ~ 5230MHz
Modulation	:	OFDM with OFDM, BPSK, QPSK, 16QAM, 64QAM, 256QAM for 802.11a/n/ac;
Data Rate	:	802.11 a: 6,9,12,18,24,36,48,54Mbps; 802.11n(HT20):MCS0-MCS7; 802.11n(HT40): MCS0-MCS7; 802.11ac(HT20/HT40):Up to 650Mbps
Antenna Type&Gain	:	FPCB antenna, maximum PK gain: 1dBi
Battery	:	DC 7.6V 4800mAh Li-polymer Battery
Date of Receipt	:	2018/10/19
Sample Type	:	N/A

UNII-1		UNII-1		UNII-1	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	38	5190	42	5210
40	5200	46	5230		
44	5220				
48	5240				

2.2. ACCESSORIES OF EUT

Description of Accessories	Shielded Type	Ferrite Core	Length
Adapter	Shen Zhen Jihongda Power Co., Ltd	/	/

2.3. ASSISTANT EQUIPMENT USED FOR TEST

Description of Assistant equipment	Manufacturer	Model number or Type	EMC Compliance	SN
/	/	/	/	/

2.4. BLOCK DIAGRAM OF EUT CONFIGURATION FOR TEST

2.5. TEST ENVIRONMENT CONDITIONS

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Link Mode
Mode 2	802.11a / n 20/ac20 CH36/ CH40/ CH48
Mode 3	802.11n40/ac40 CH38/ CH 46

For Radiated Emission	
Final Test Mode	Description
Mode 1	Link Mode
Mode 2	802.11a / n 20 CH36/ CH40/ CH48
Mode 3	802.11n40 CH38/ CH 46

Note:

(1) The measurements are performed at the highest, middle, lowest available channels.

(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported

2.6. TEST ENVIRONMENT CONDITIONS

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

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

2.7. MEASUREMENT UNCERTAINTY

Test Item	Uncertainty
Uncertainty for Conduction emission test (9kHz-150kHz)	3.7 dB
Uncertainty for Conduction emission test (150kHz-30MHz)	3.3 dB
Uncertainty for Radiation Emission test (30MHz-200MHz)	4.6 dB (Polarize: V)
	4.6 dB (Polarize: H)
Uncertainty for Radiation Emission test (200MHz-1GHz)	6.0 dB (Polarize: V)
	5.0 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz-6GHz)	5.1 dB (Polarize: V)
	5.1 dB (Polarize: H)
Uncertainty for Radiation Emission test (6GHz-18GHz)	5.4 dB (Polarize: V)
	5.4 dB (Polarize: H)
Uncertainty for Radiation Emission test (18GHz-40GHz)	5.06 dB (Polarize: V)
	5.06 dB (Polarize: H)
Uncertainty for radio frequency	±0.048kHz
Uncertainty for conducted RF Power	±0.32dB

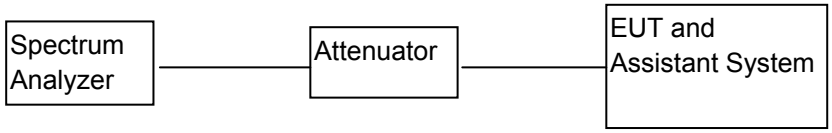
Note：This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. POWER SPECTRAL DENSITY TEST

3.1. TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Due.	Cal. Interval
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	2019/05/25	1 Year
2	Attenuator	Mini-Circuits	BW-S10W2	101109	2018/12/17	1 Year
3	RF Cable	Micable	C10-01-01-1	100309	2018/12/17	1 Year
4	Spectrum analyzer	R&S	FSV40	101470	2019/06/28	1 Year

3.2. BLOCK DIAGRAM OF TEST SETUP



3.3. APPLIED PROCEDURES / LIMIT

According to FCC §15.407(a)(3)

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz

For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi..

3.4. TEST PROCEDURE

（For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

a) Set RBW ≥ 1/T, where T is defined in section II.B.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10log(500kHz/RBW) to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10log(1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since RBW=100 KHZ is available on nearly all spectrum analyzers.

3.5. TEST RESULT

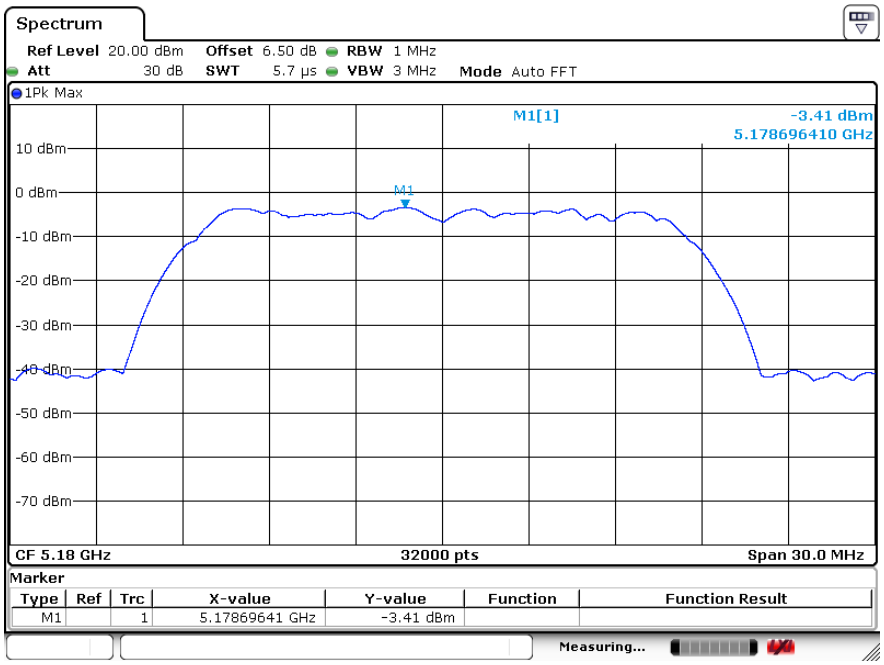
CH. No.	Frequency	Power Density (dBm/MHz)	total power density (dBm/MHz)	Limit (dBm/MHz)	Result
TX 802.11a Mode					
CH36	5180	-3.41	--	11	Pass
CH40	5200	-3.77	--	11	Pass
CH48	5240	-4.29	--	11	Pass
TX 802.11n20 Mode					
CH36	5180	-3.25	--	11	Pass
CH40	5200	-3.89	--	11	Pass
CH48	5240	-3.76	--	11	Pass
TX 802.11n40 Mode					
CH38	5190	-6.23	--	11	Pass
CH46	5230	-6.63	--	11	Pass

CH. No.	Frequency	Power Density ANT A (dBm/MHz)	total power density (dBm/MHz)	Limit (dBm/MHz)	Result
TX 802.11 ac(VHT20) Mode					
CH36	5180	-2.64	--	11	Pass
CH40	5200	-3.47	--	11	Pass
CH48	5240	-3.90	--	11	Pass
TX 802.11 ac(VHT40) Mode					
CH38	5190	-5.78	--	11	Pass
CH46	5230	-6.36	--	11	Pass

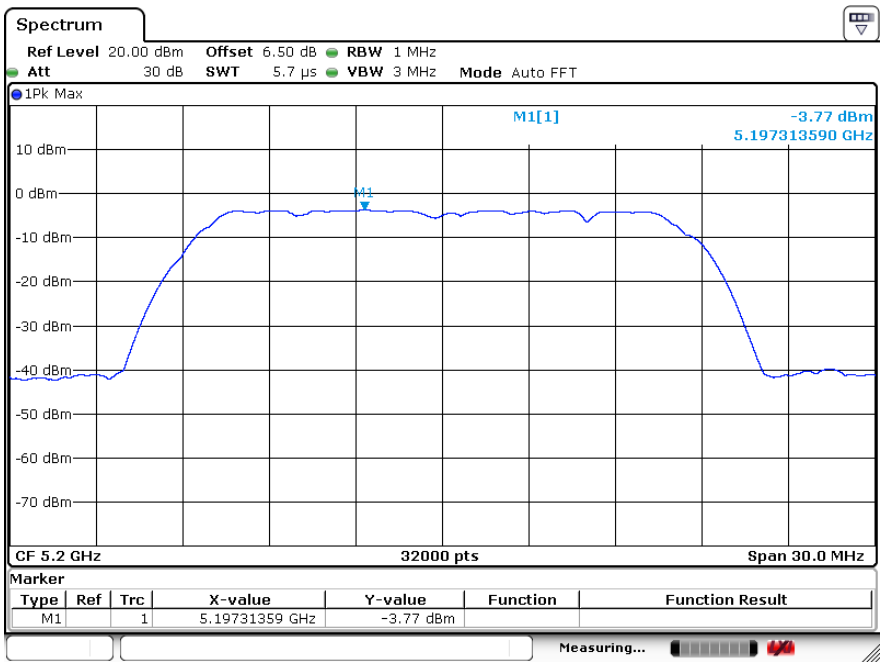
Test plots as followed:

802.11a

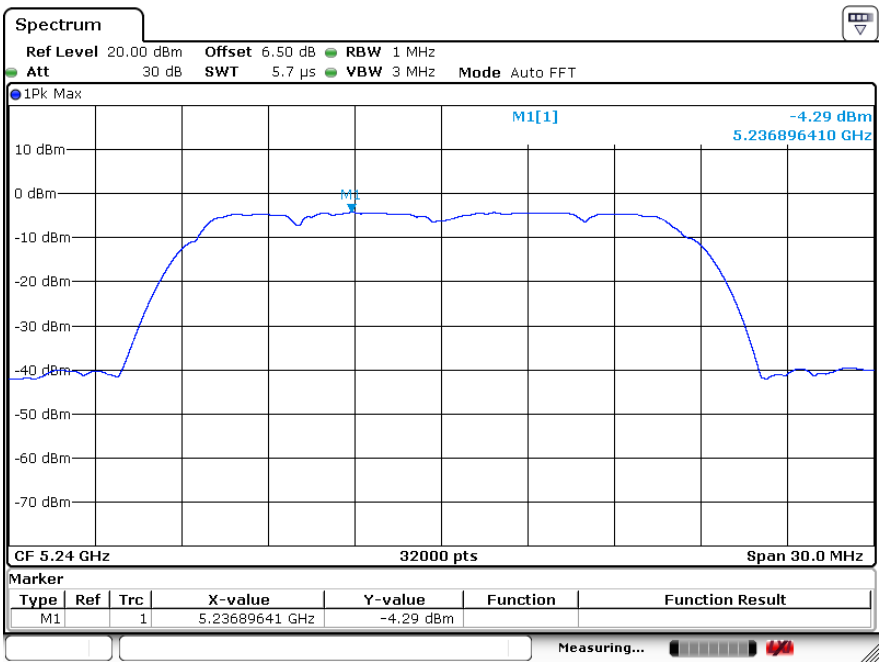
Channel: 36



Channel: 40

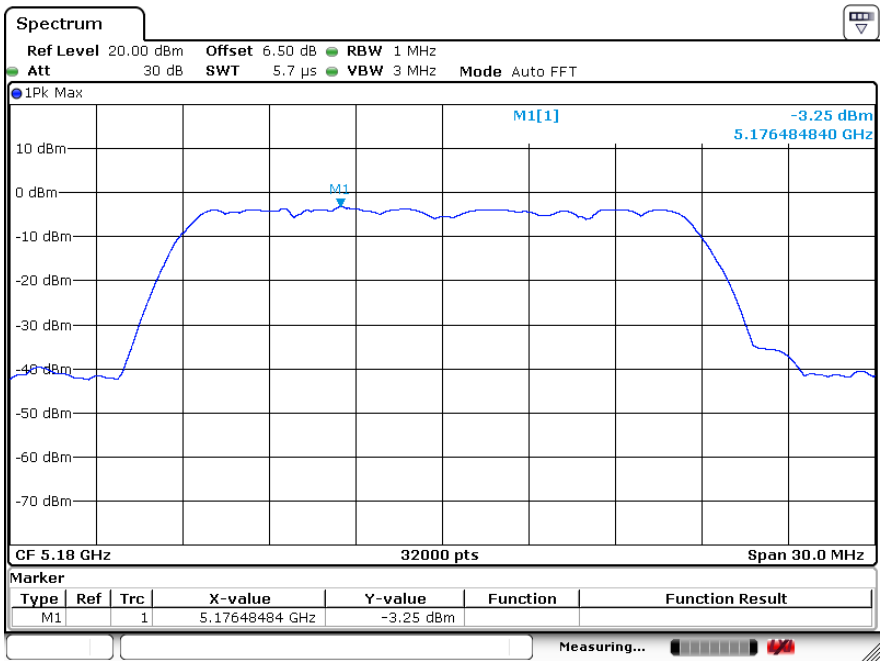


Channel: 48


Spectrum
Ref Level 20.00 dBm Offset 6.50 dB RBW 1 MHz
Att 30 dB SWT 5.7 µs VBW 3 MHz Mode Auto FFT
1Pk Max
M1[1]
-4.29 dBm
5.236896410 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 5.24 GHz
32000 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.23689641 GHz -4.29 dBm
Measuring...

802.11n20

Channel: 36



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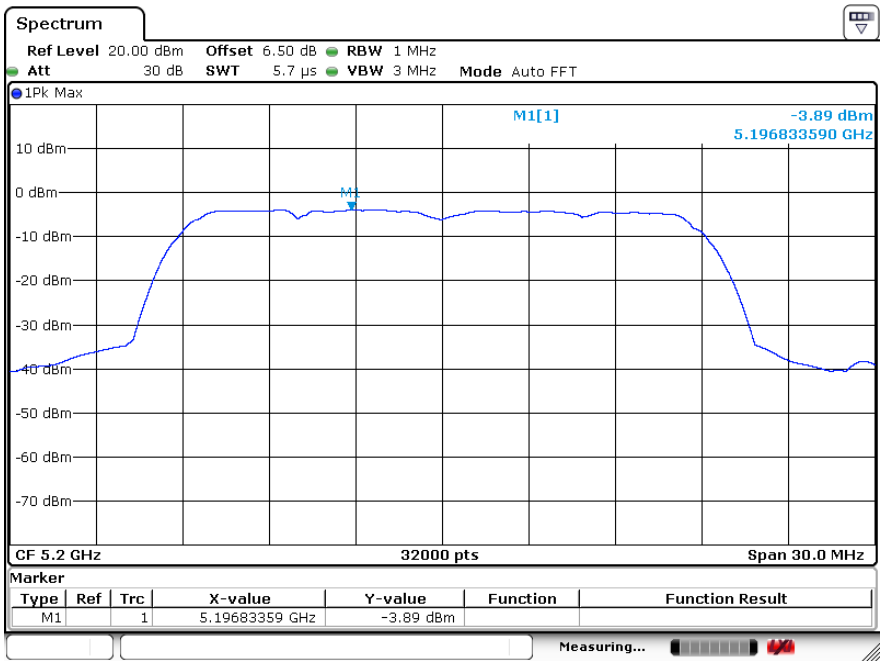
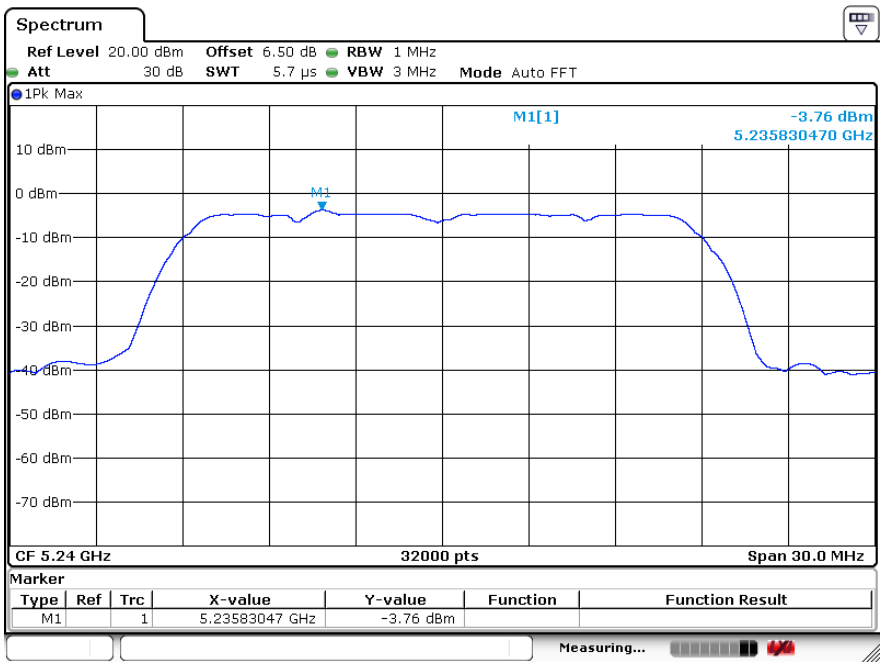
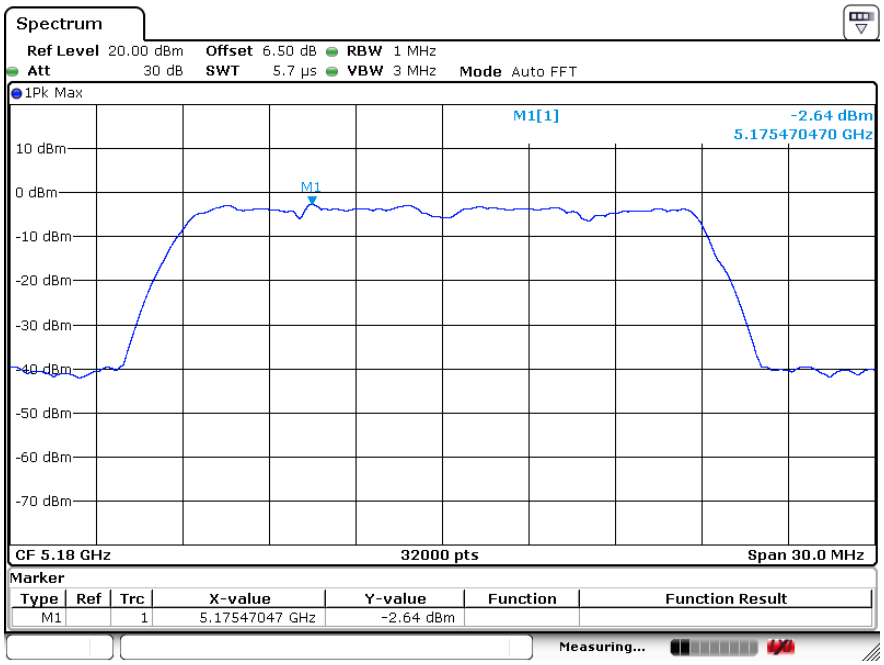


Channel: 48

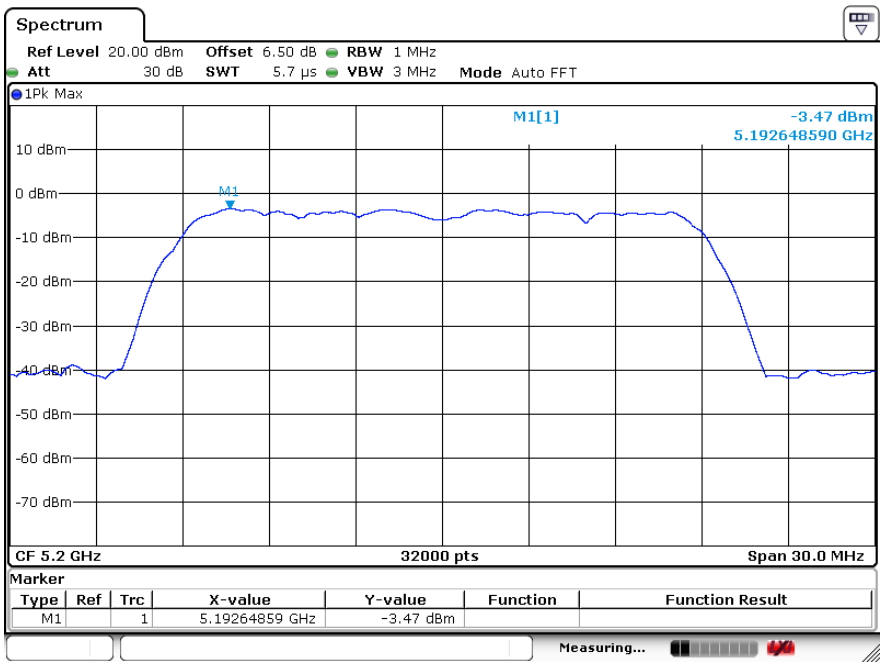

Spectrum
Ref Level 20.00 dBm Offset 6.50 dB RBW 1 MHz
Att 30 dB SWT 5.7 µs VBW 3 MHz Mode Auto FFT
1Pk Max
M1[1]
-3.76 dBm
5.235830470 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 5.24 GHz
32000 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.23583047 GHz -3.76 dBm
Measuring...

802.11ac20

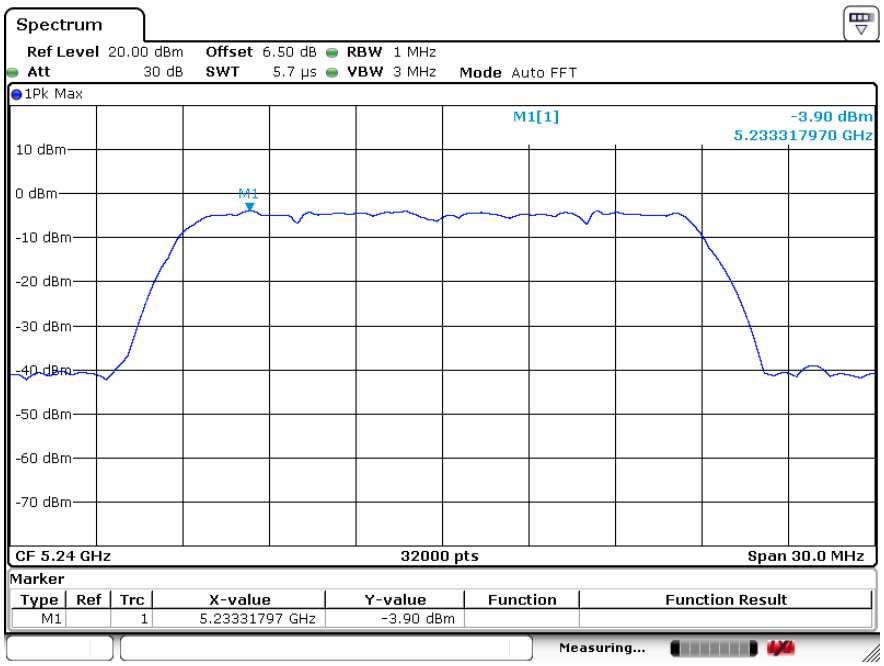
Channel: 36



Channel: 40

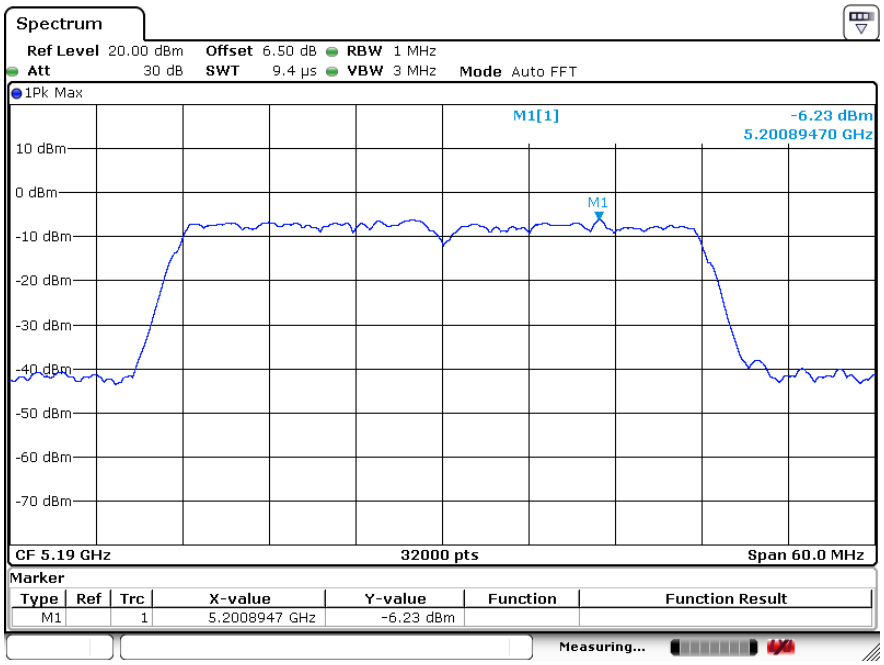


Channel: 48

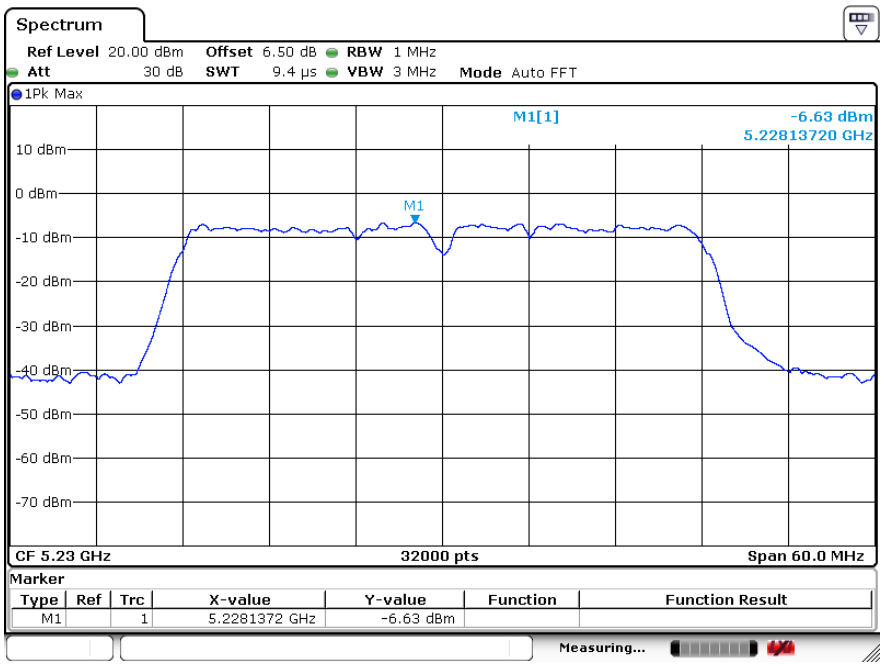

Spectrum
Ref Level 20.00 dBm Offset 6.50 dB RBW 1 MHz
Att 30 dB SWT 5.7 µs VBW 3 MHz Mode Auto FFT
1Pk Max
M1[1]
-3.90 dBm
5.233317970 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
CF 5.24 GHz
32000 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.23331797 GHz -3.90 dBm
Measuring...

802.11n40

Channel: 38

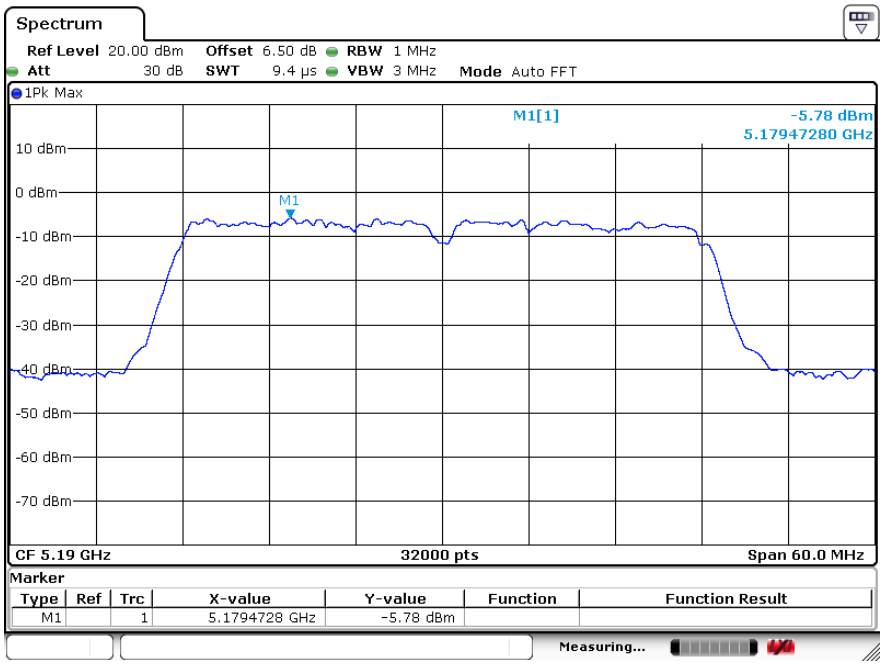


Channel: 46

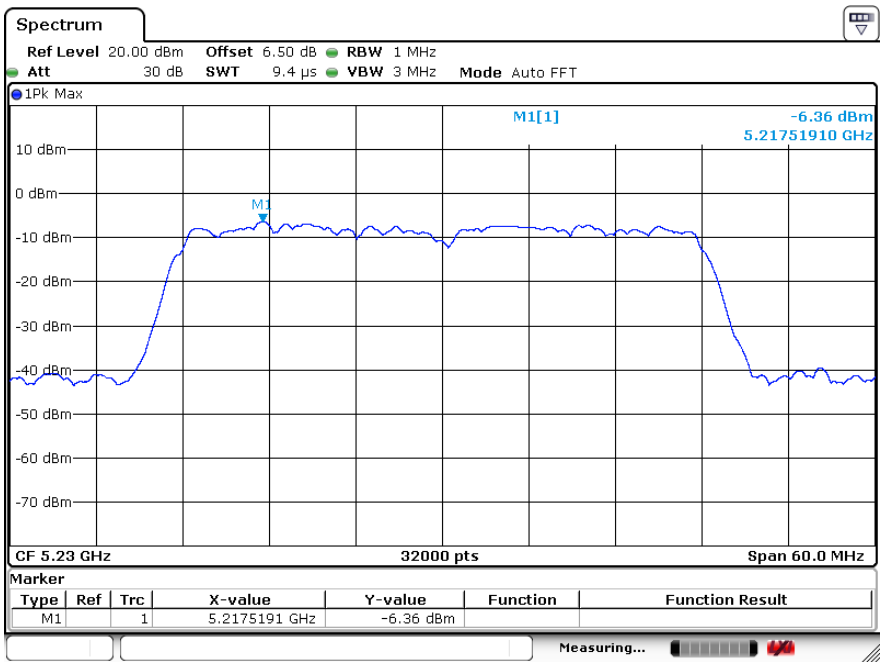


802.11ac40

Channel: 38



Channel: 46

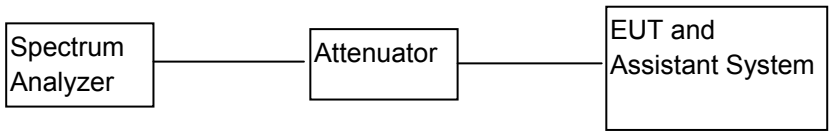


4. 26 dB & 99% Emission Bandwidth

4.1. TEST EQUIPMENT

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Due.	Cal. Interval
1	Spectrum analyzer	KEYSIGHT	N9010A	MY55150427	2019/05/25	1 Year
2	Attenuator	Mini-Circuits	BW-S10W2	101109	2018/12/17	1 Year
3	RF Cable	Micable	C10-01-01-1	100309	2018/12/17	1 Year
4	Spectrum analyzer	R&S	FSV40	101470	2019/06/28	1 Year

4.2. BLOCK DIAGRAM OF TEST SETUP



4.3. APPLIED PROCEDURES / LIMIT

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power
is integrated over the full reference bandwidth.

4.4. TEST PROCEDURE

a) Set RBW = approximately 1% of the emission bandwidth.

b) Set the VBW > RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW ≥ 3 · RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes)

shall be used.

6. Use the 99 % power bandwidth function of the instrument (if available).

7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as

the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

4.5. TEST RESULT

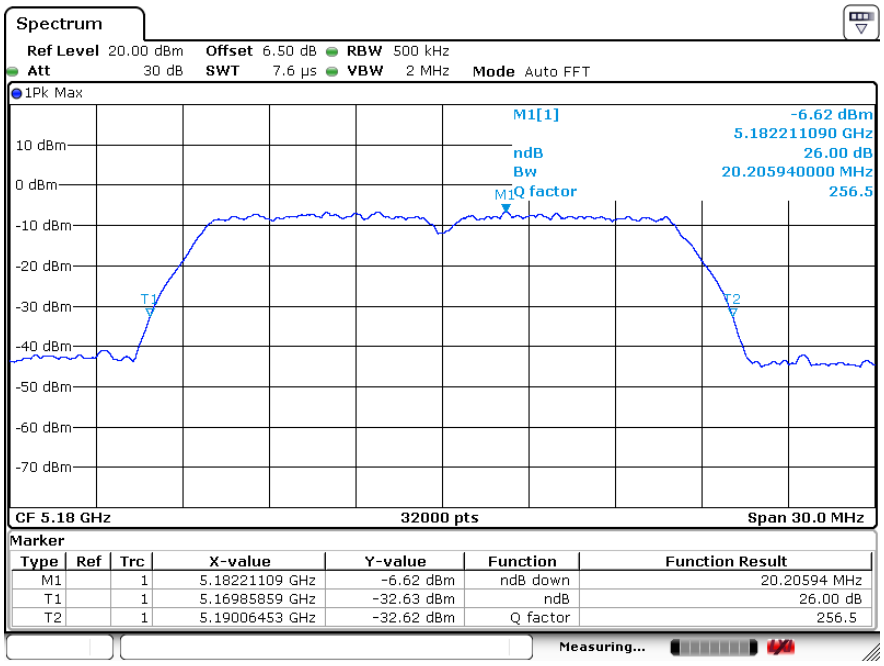
CH. No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)			99% Occupied Bandwidth (MHz)		
		802.11a	802.11n (HT20)	802.11ac (VHT20)	802.11a	802.11n (HT20)	802.11ac (VHT20)
36	5180.00	20.21	20.44	20.47	16.77	17.69	17.68
40	5200.00	20.43	20.48	20.46	16.69	17.69	17.76
48	5240.00	20.38	20.43	20.40	16.69	17.67	17.70

CH. No.	Frequency (MHz)	26dB Occupied Bandwidth (MHz)		99% Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(VHT40)	802.11n(HT40)	802.11ac(VHT40)
38	5190.00	40.03	39.77	36.25	36.15
46	5230.00	40.22	39.74	36.37	36.34

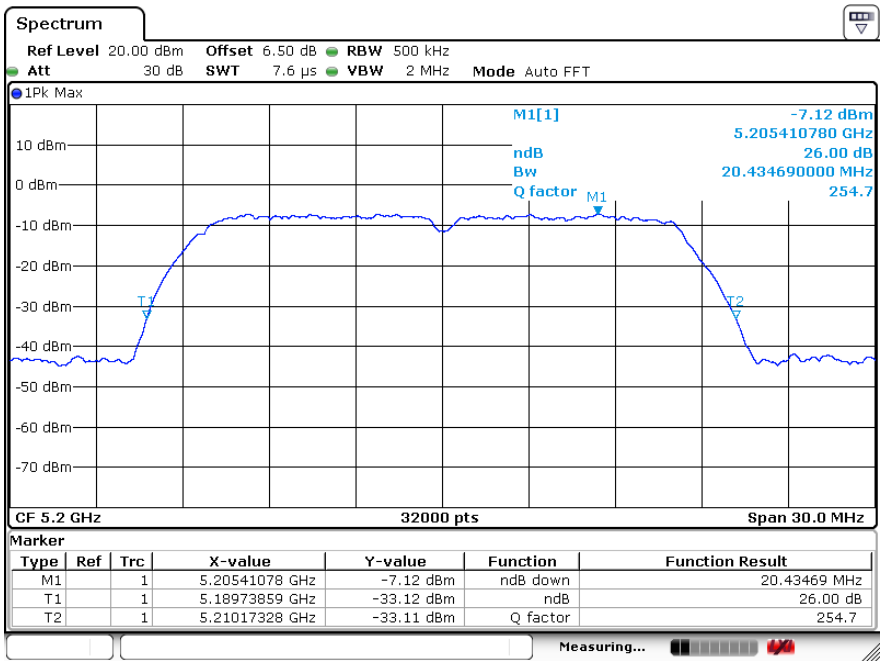
Test plots as followed:

26dB BW 802.11a

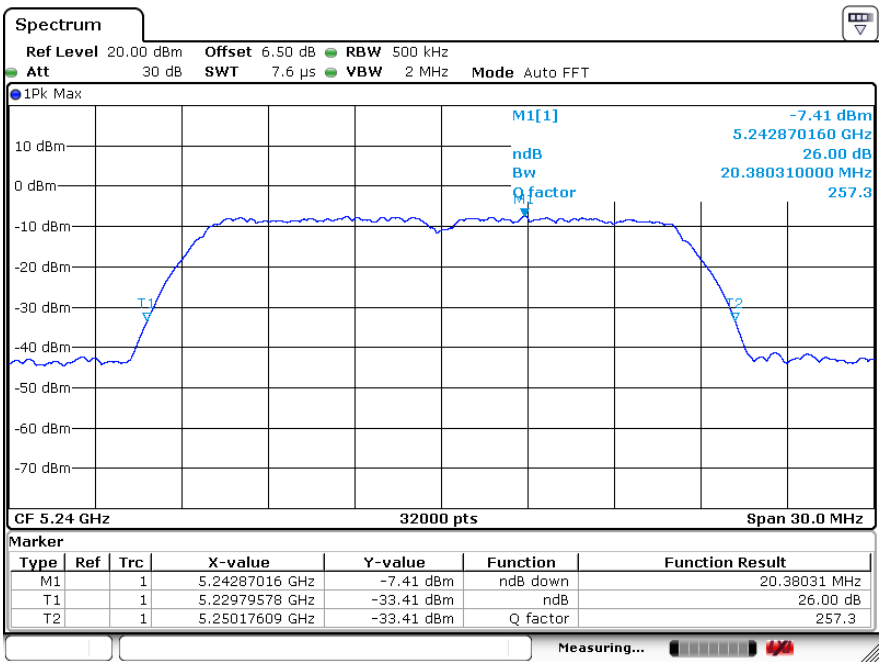
Channel: 36



Channel: 40

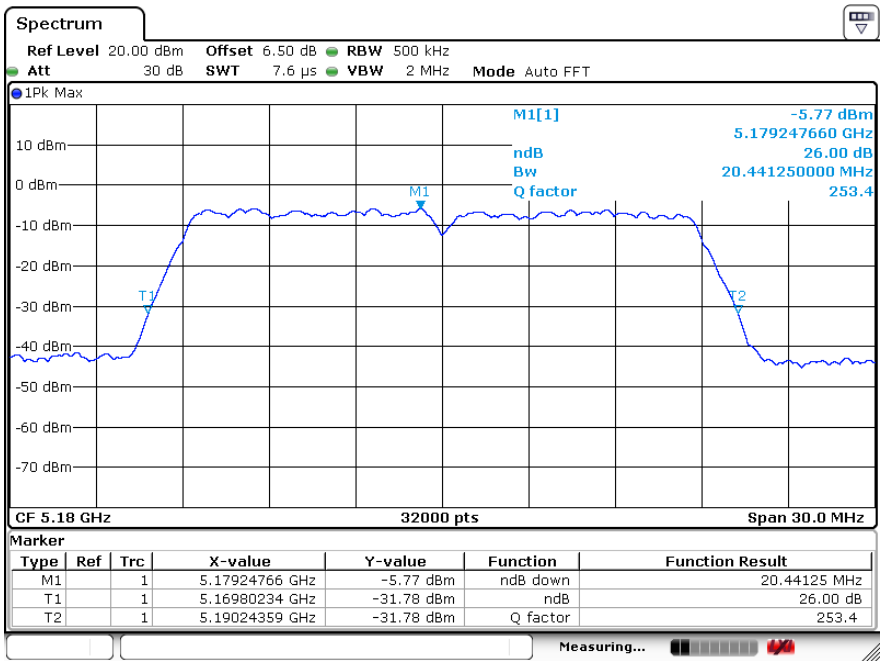


Channel: 48

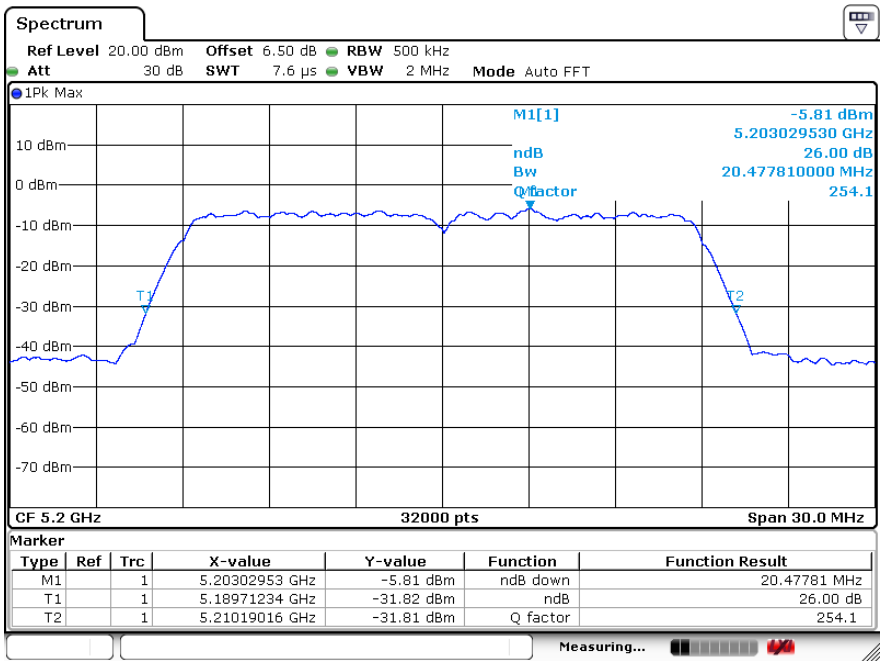

Spectrum
Ref Level 20.00 dBm Offset 6.50 dB RBW 500 kHz
Att 30 dB SWT 7.6 µs VBW 2 MHz Mode Auto FFT
1Pk Max
M1[1] -7.41 dBm
5.242870160 GHz
ndB 26.00 dB
Bw 20.380310000 MHz
Q factor 257.3
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
T1
T2
CF 5.24 GHz
32000 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.24287016 GHz -7.41 dBm ndB down 20.38031 MHz
T1 1 5.22979578 GHz -33.41 dBm ndB 26.00 dB
T2 1 5.25017609 GHz -33.41 dBm Q factor 257.3
Measuring...

26dB BW 802.11n20

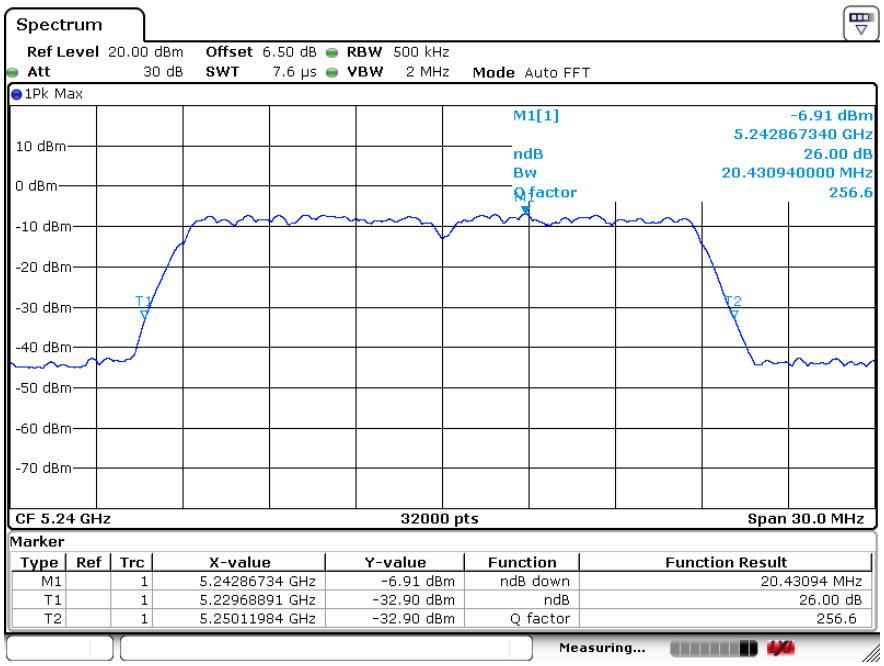
Channel: 36



Channel: 40

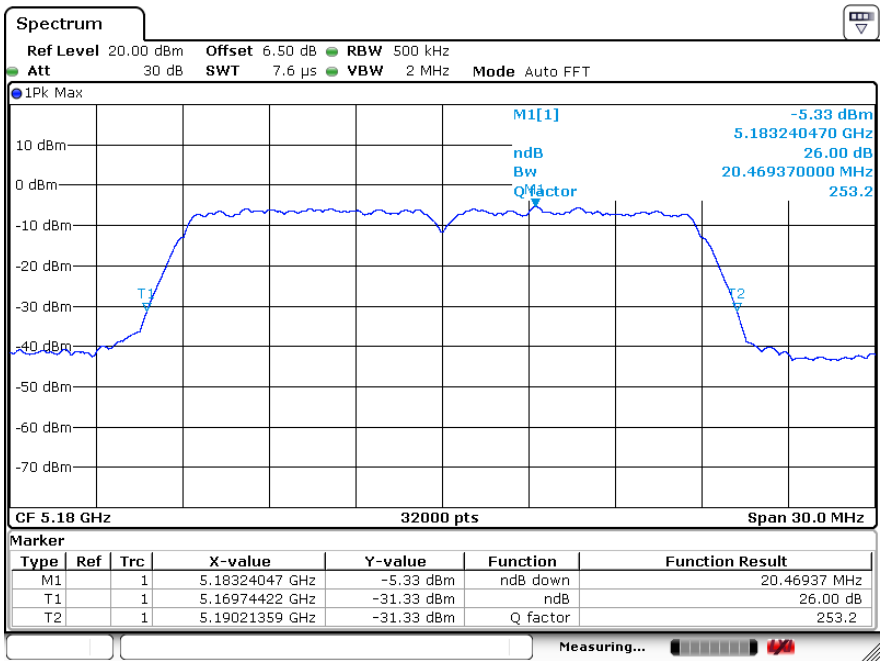


Channel: 48

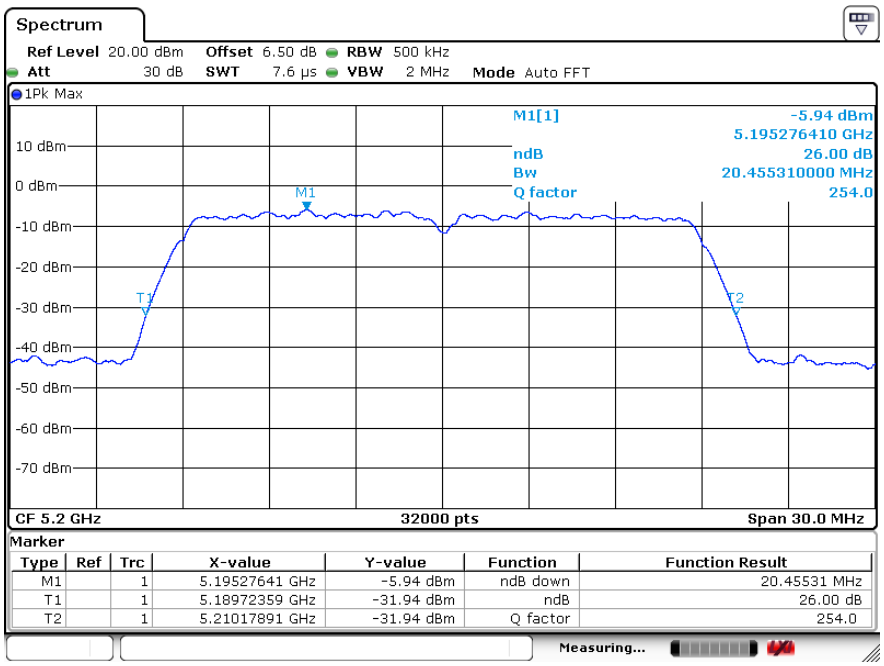

Spectrum
Ref Level 20.00 dBm Offset 6.50 dB RBW 500 kHz
Att 30 dB SWT 7.6 µs VBW 2 MHz Mode Auto FFT
1Pk Max
M1[1] -6.91 dBm
5.242867340 GHz
ndB 26.00 dB
Bw 20.430940000 MHz
Q factor 256.6
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
T1
T2
CF 5.24 GHz
32000 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.24286734 GHz -6.91 dBm ndB down 20.43094 MHz
T1 1 5.22968891 GHz -32.90 dBm ndB 26.00 dB
T2 1 5.25011984 GHz -32.90 dBm Q factor 256.6
Measuring...

802.11ac20

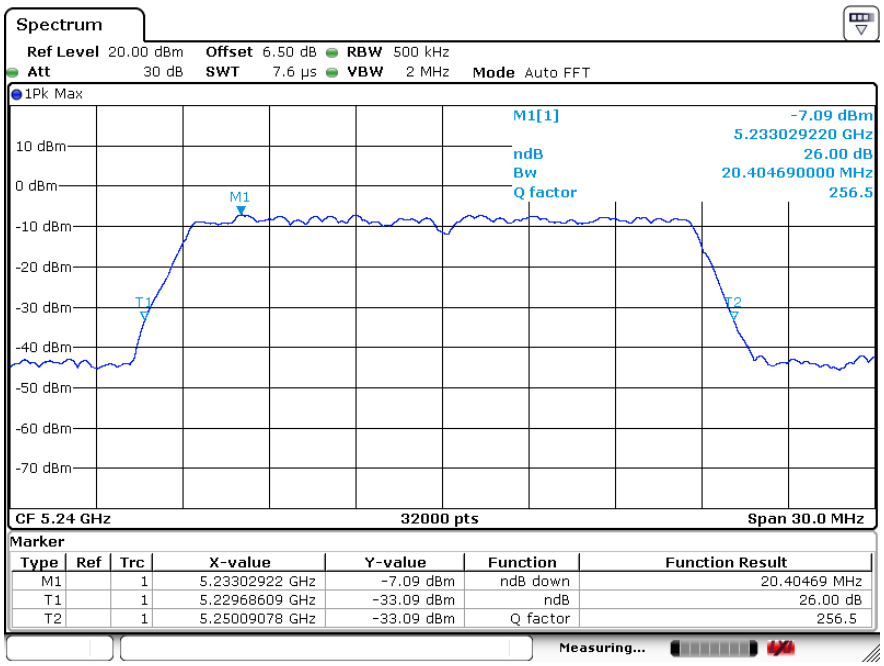
Channel: 36



Channel: 40

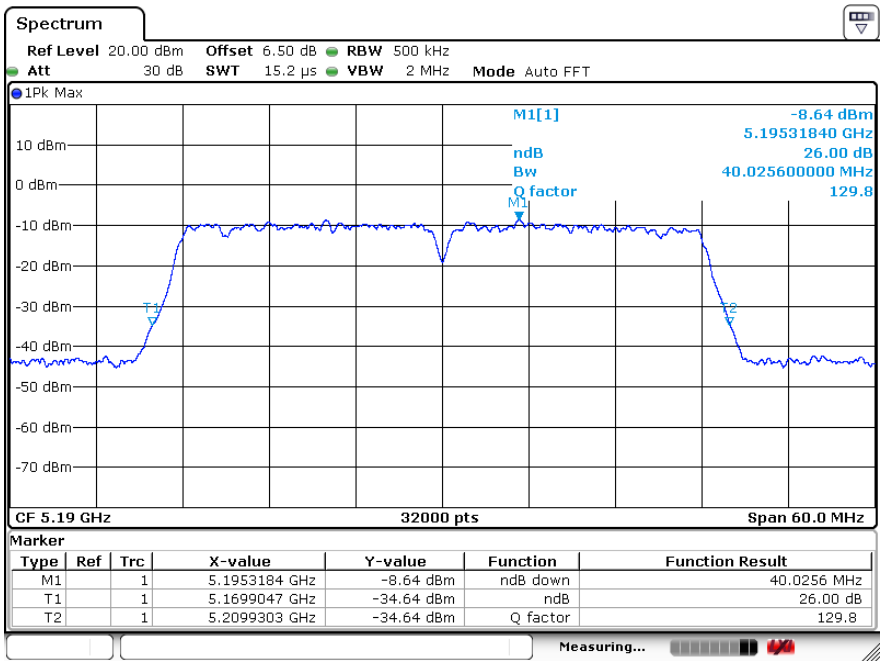


Channel: 48

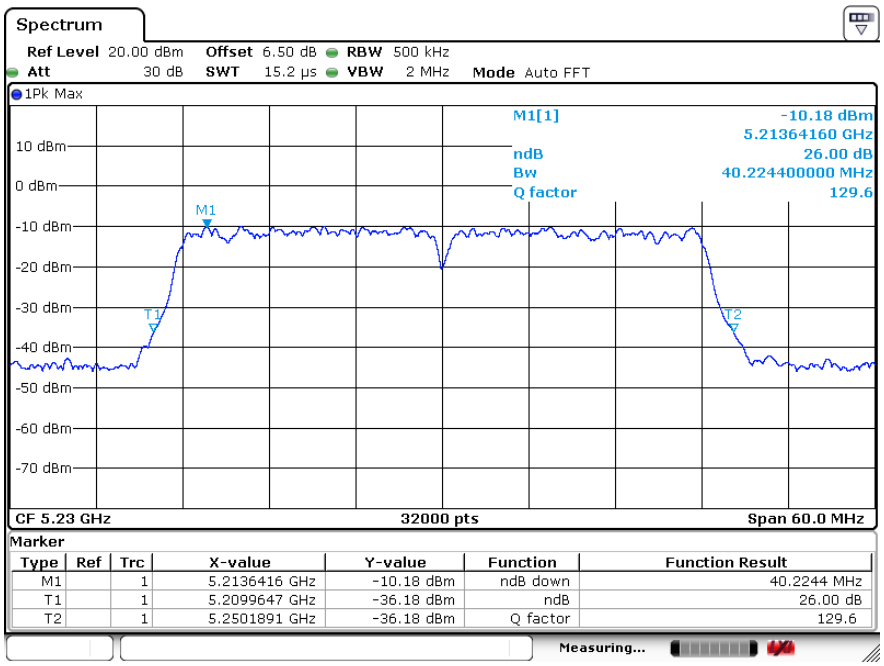

Spectrum
Ref Level 20.00 dBm Offset 6.50 dB RBW 500 kHz
Att 30 dB SWT 7.6 µs VBW 2 MHz Mode Auto FFT
1Pk Max
M1[1] -7.09 dBm
5.233029220 GHz
ndB 26.00 dB
Bw 20.404690000 MHz
Q factor 256.5
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
T1
T2
CF 5.24 GHz
32000 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.23302922 GHz -7.09 dBm ndB down 20.40469 MHz
T1 1 5.22968609 GHz -33.09 dBm ndB 26.00 dB
T2 1 5.25009078 GHz -33.09 dBm Q factor 256.5
Measuring...

26dB BW 802.11n40

Channel: 38

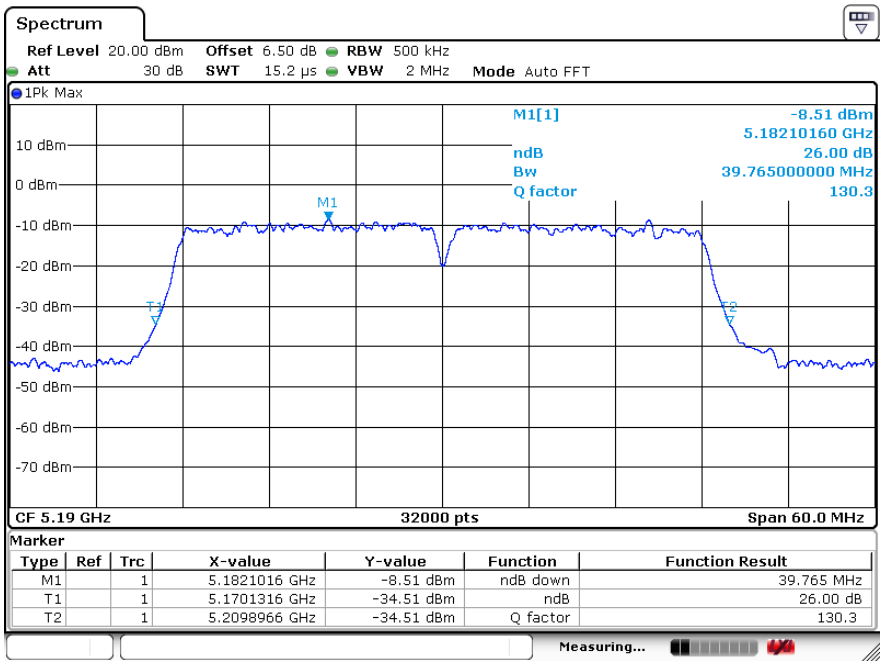


Channel: 46

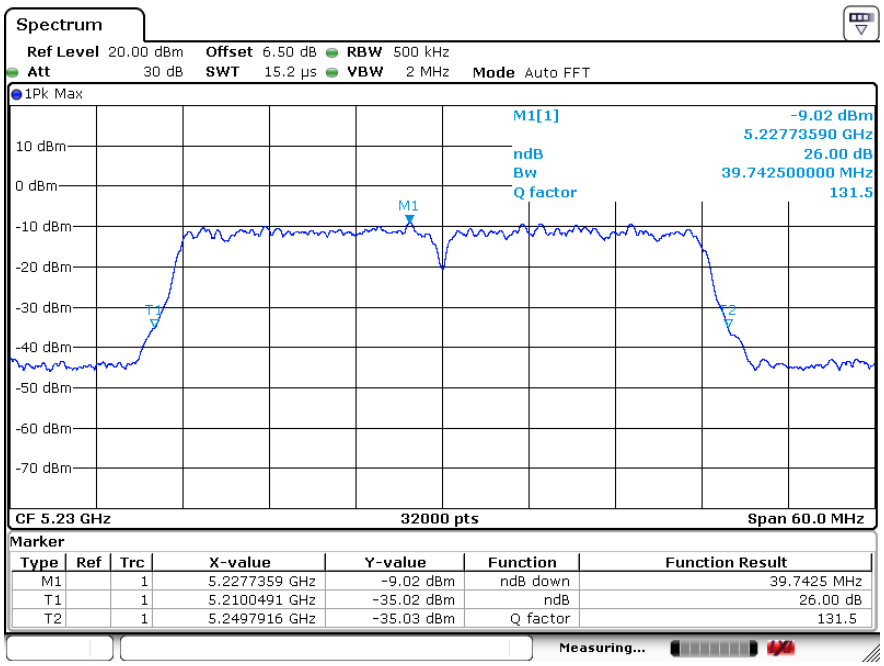


26dB BW 802.11ac40

Channel: 38

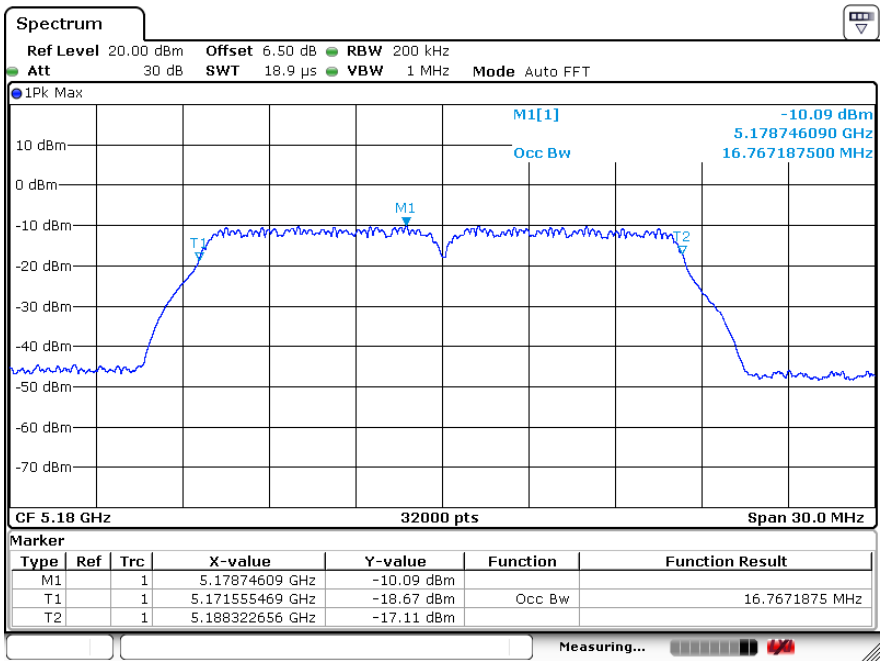


Channel: 46

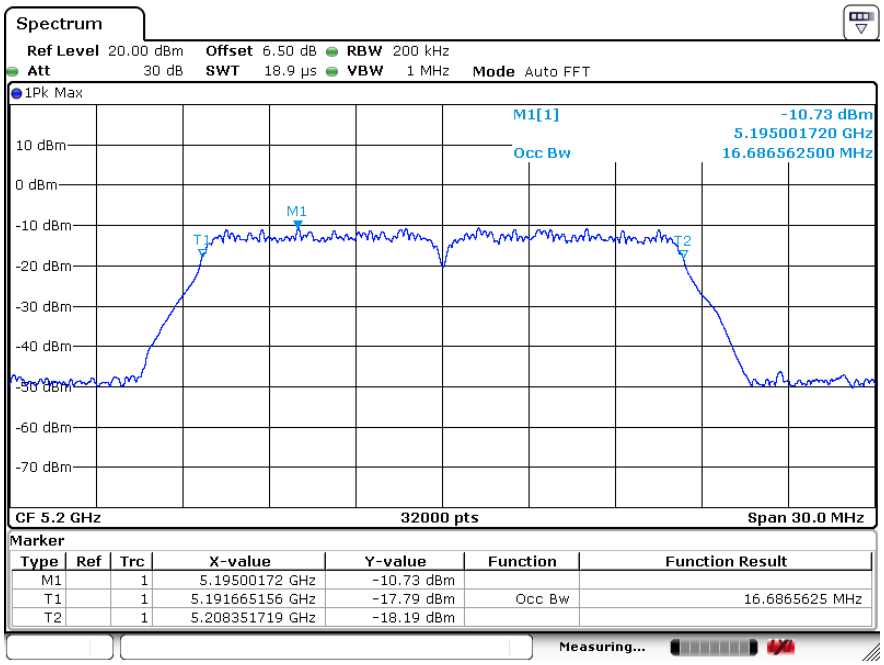


99% OBW 802.11a

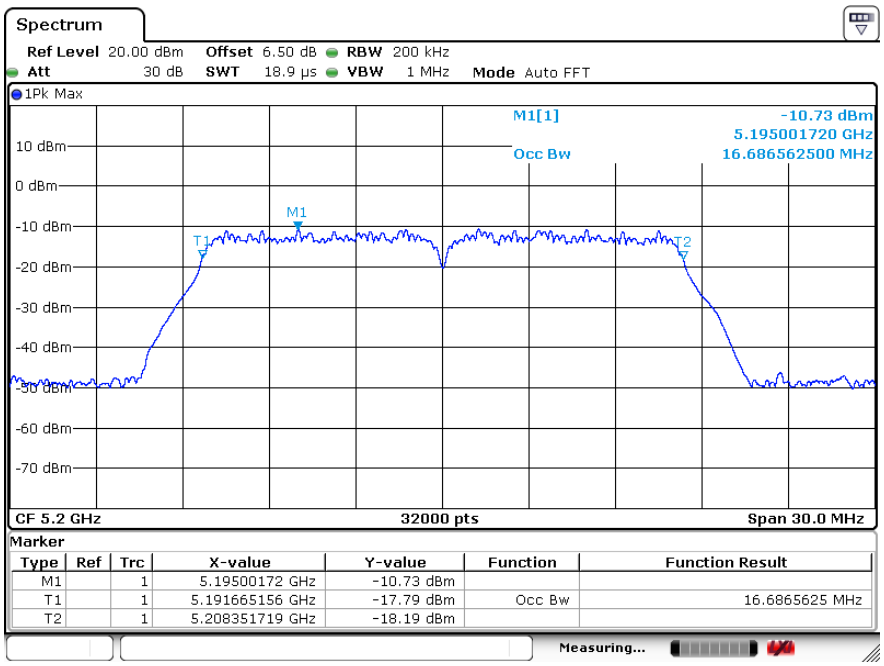
Channel: 36



Channel: 40

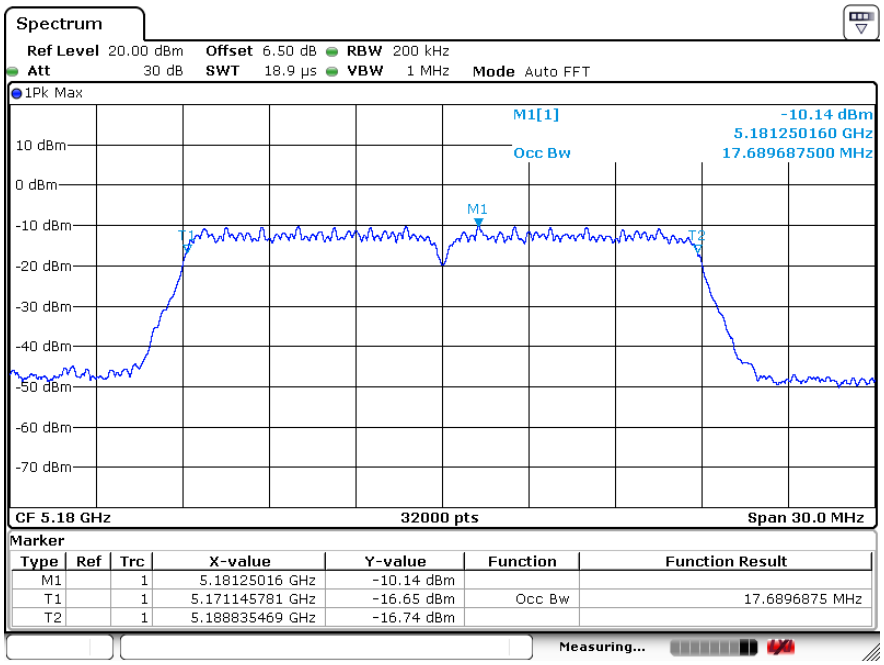


Channel: 48

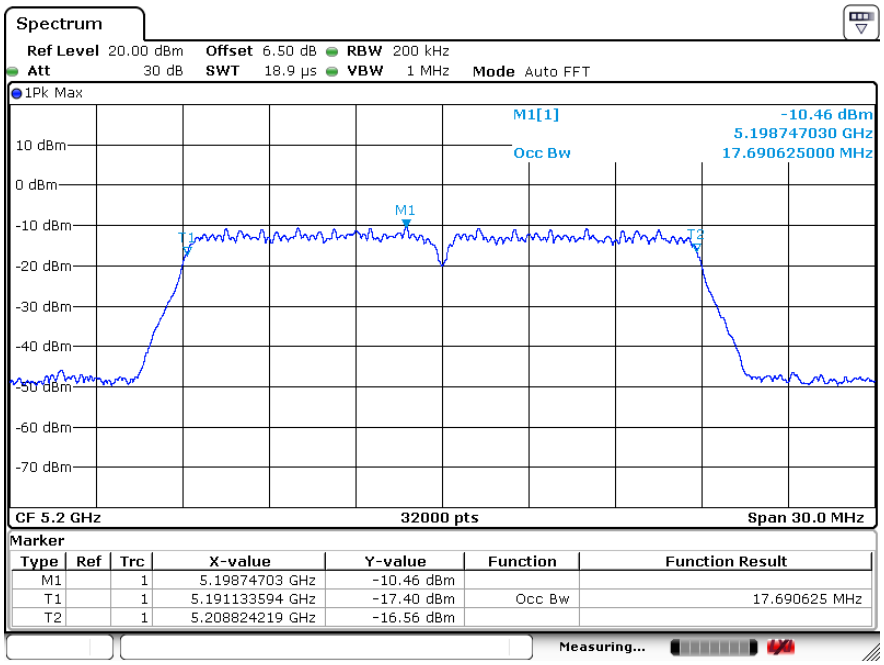

Spectrum
Ref Level 20.00 dBm Offset 6.50 dB RBW 200 kHz
Att 30 dB SWT 18.9 µs VBW 1 MHz Mode Auto FFT
1Pk Max
M1[1] -10.73 dBm
5.195001720 GHz
Occ Bw 16.686562500 MHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
T1
T2
CF 5.2 GHz
32000 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.19500172 GHz -10.73 dBm
T1 1 5.191665156 GHz -17.79 dBm Occ Bw 16.6865625 MHz
T2 1 5.208351719 GHz -18.19 dBm
Measuring...

99% OBW 802.11n20

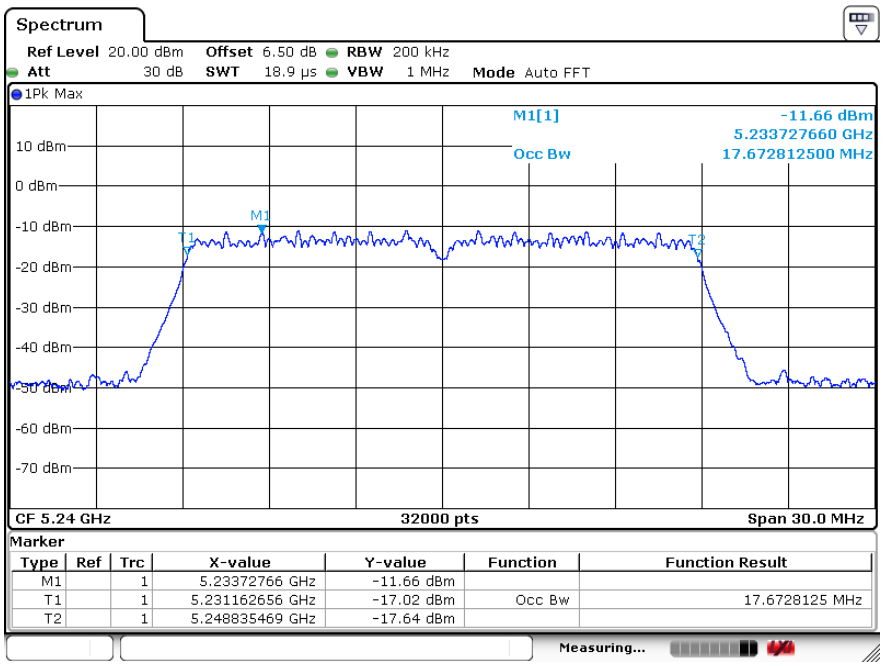
Channel: 36



Channel: 40

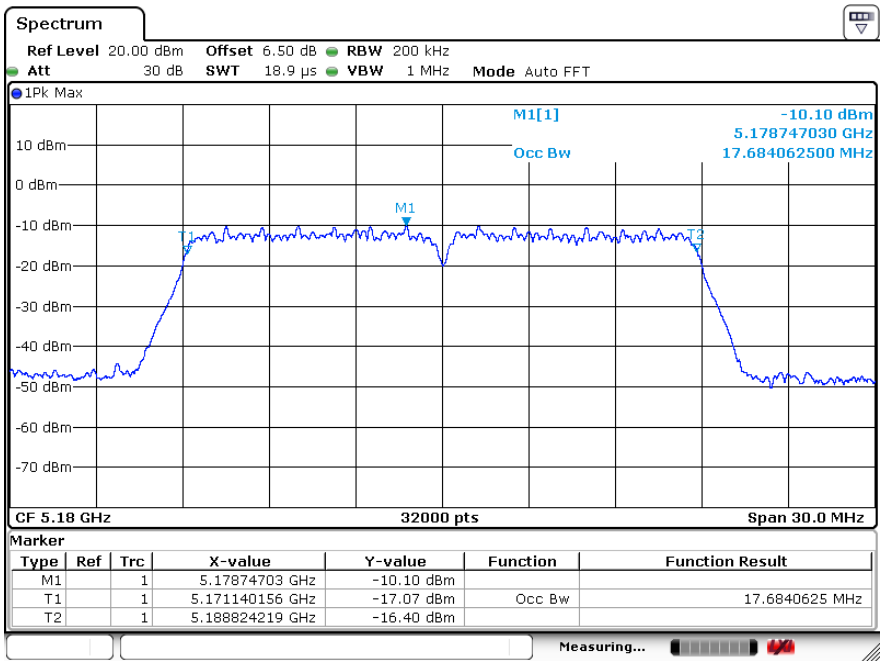


Channel: 48

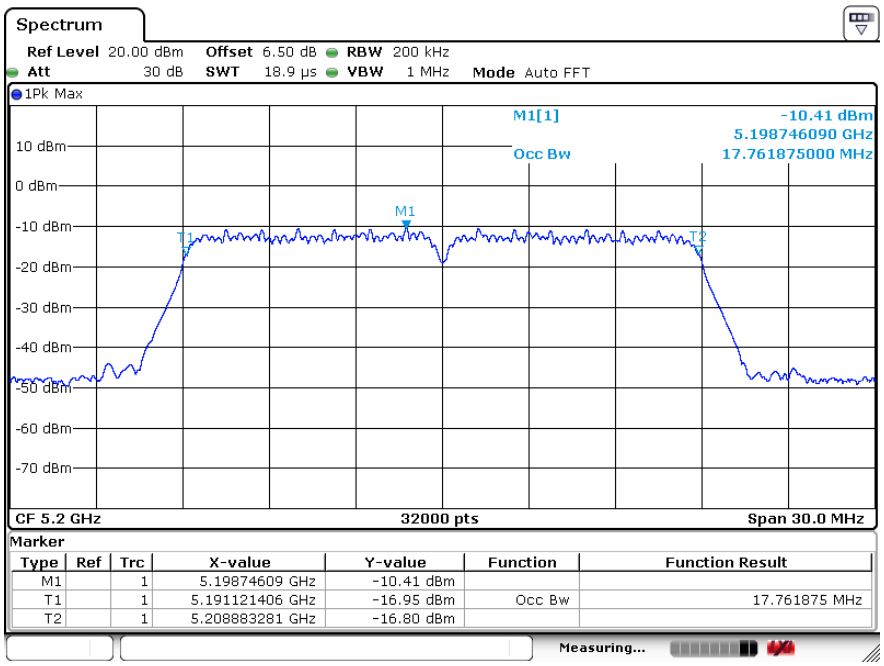

Spectrum
Ref Level 20.00 dBm Offset 6.50 dB RBW 200 kHz
Att 30 dB SWT 18.9 µs VBW 1 MHz Mode Auto FFT
1Pk Max
M1[1] -11.66 dBm
5.233727660 GHz
Occ Bw 17.672812500 MHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
T1
T2
CF 5.24 GHz
32000 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.23372766 GHz -11.66 dBm
T1 1 5.231162656 GHz -17.02 dBm Occ Bw 17.6728125 MHz
T2 1 5.248835469 GHz -17.64 dBm
Measuring...

99% OBW 802.11ac20

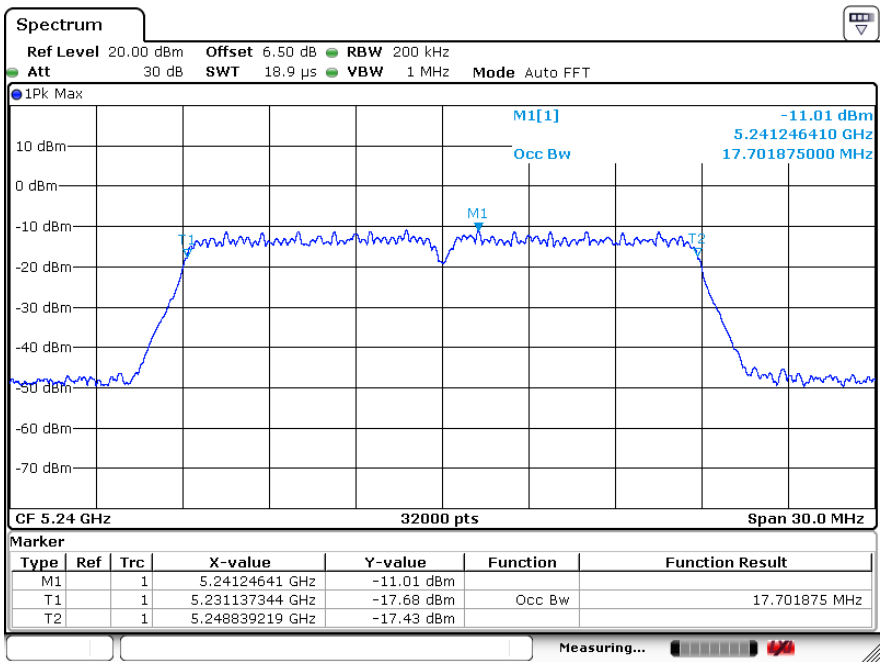
Channel: 36



Channel: 40

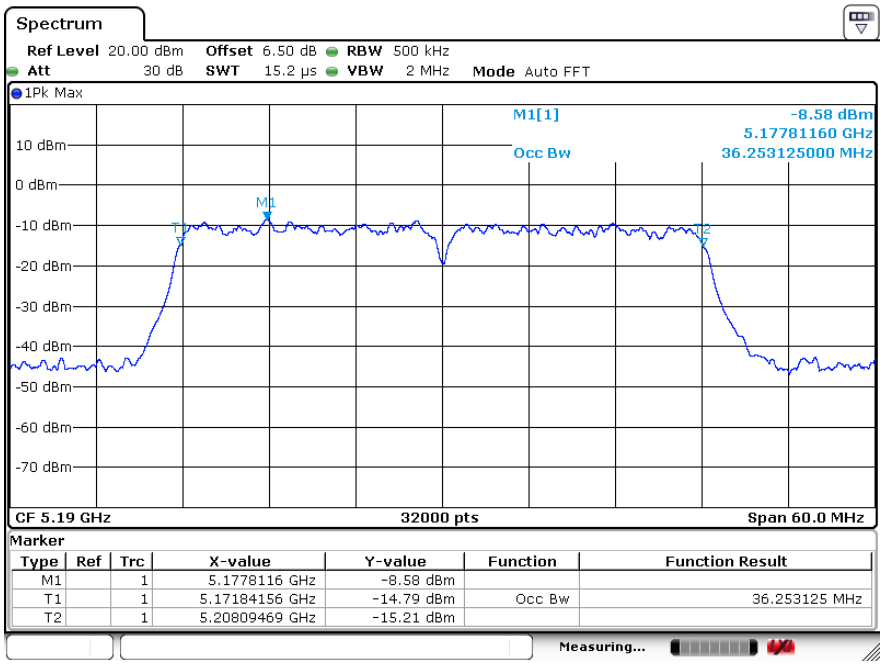


Channel: 48

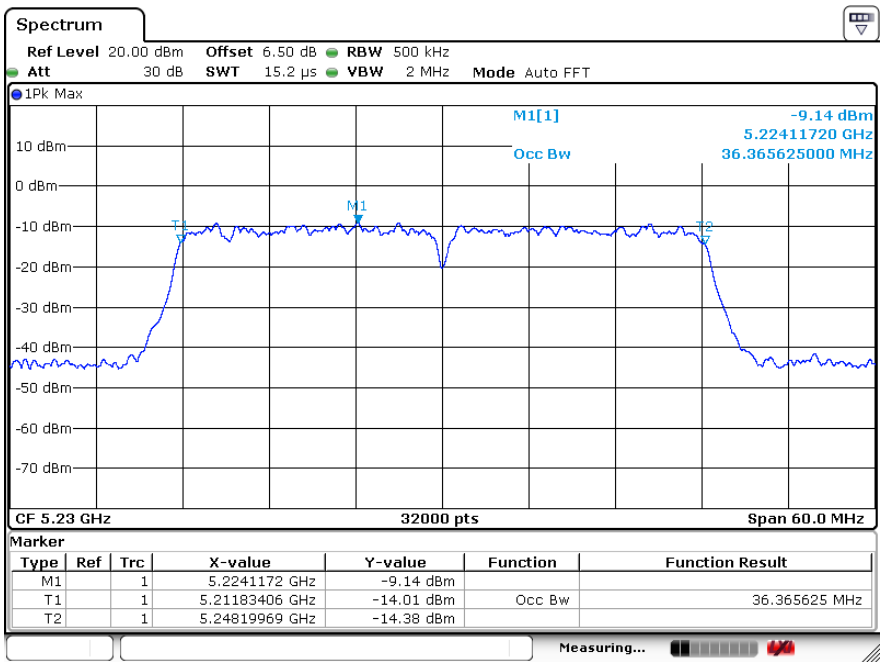

Spectrum
Ref Level 20.00 dBm Offset 6.50 dB RBW 200 kHz
Att 30 dB SWT 18.9 µs VBW 1 MHz Mode Auto FFT
1Pk Max
M1[1] -11.01 dBm
5.241246410 GHz
Occ Bw 17.701875000 MHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
M1
T1
T2
CF 5.24 GHz
32000 pts
Span 30.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 5.24124641 GHz -11.01 dBm
T1 1 5.231137344 GHz -17.68 dBm Occ Bw 17.701875 MHz
T2 1 5.248839219 GHz -17.43 dBm
Measuring...

99% OBW 802.11n40

Channel: 38

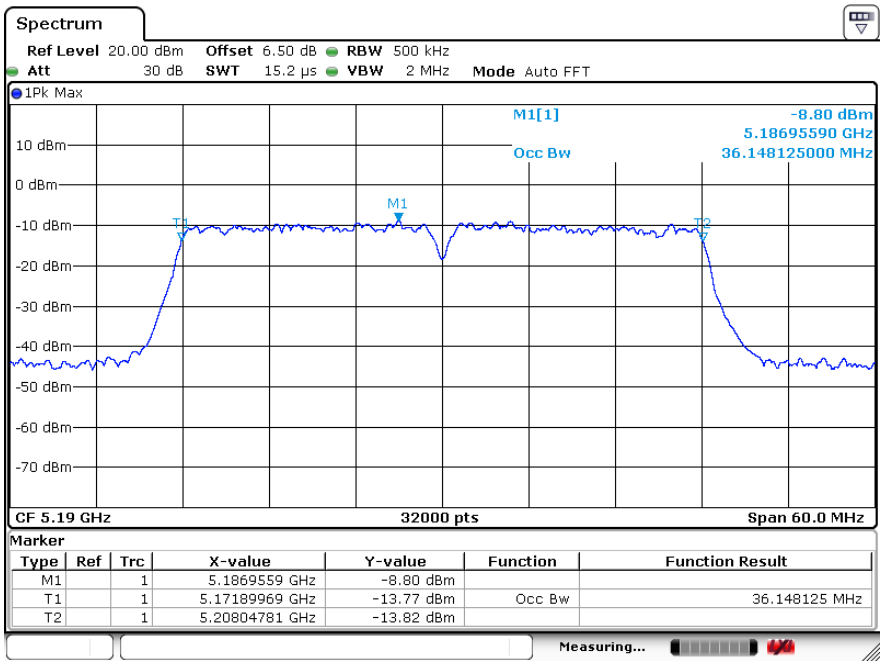


Channel: 46

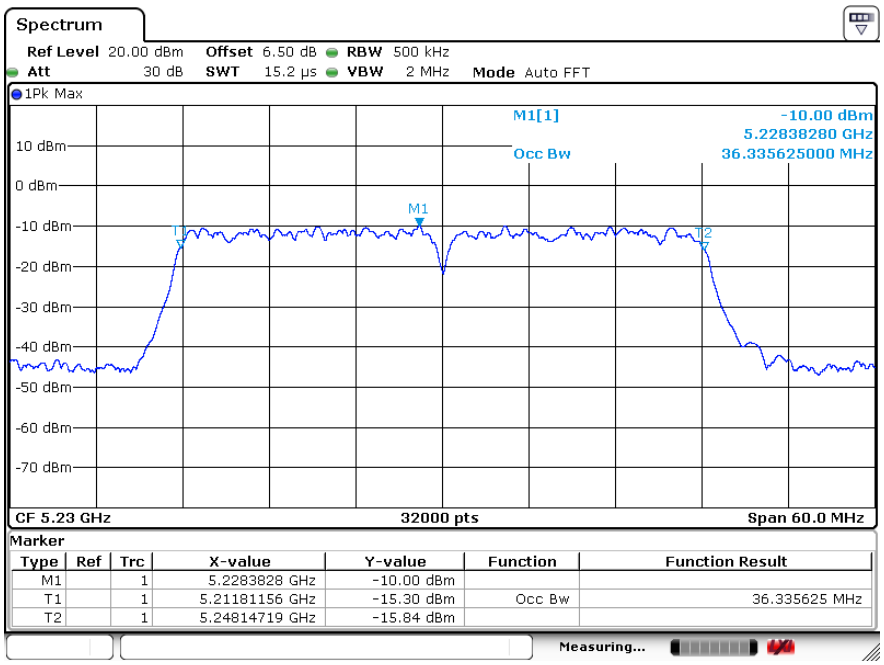


99% OBW 802.11ac40

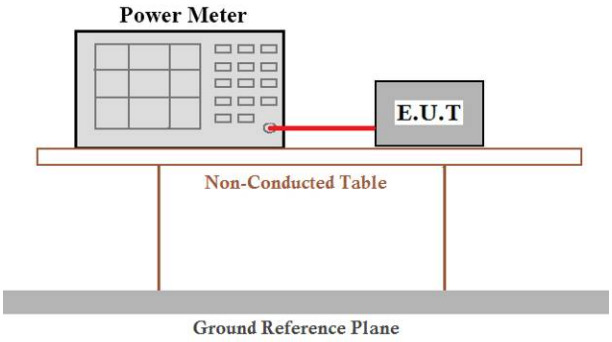
Channel: 38



Channel: 46



5. MAXIMUM CONDUCTED OUTPUT POWER

Test Requirement:	FCC Part15 E Section 15.407
Test Method:	KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Limit:	For the band 5.15-5.25 GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 250mW. For the band 5.745-5.850 GHz, the maximum conducted output power over the frequency bands of operation shall not exceed 30dBm
Test setup:	
Test procedure:	**Measurement using an RF average power meter** (i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied a) The EUT is configured to transmit continuously or to transmit with a constant duty cycle. b) At all times when the EUT is transmitting, it must be transmitting at its maximum power control level. c) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five. (ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B). (iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter. (iv) Adjust the measurement in dBm by adding 10 log(1/x) where x is the duty cycle (e.g., 10log(1/0.25) if the duty cycle is 25 percent).
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details

5.1. TEST RESULT

CH. No.	Frequency (MHz)	Output Power (dBm)			Limit(dBm)	Result
		802.11a	802.11n (HT20)	802.11ac (VHT20)		
36	5180.00	5.13	5.50	5.21	24	Pass
40	5200.00	4.96	5.33	5.33	24	Pass
48	5240.00	5.24	5.45	5.07	24	Pass

CH. No.	Frequency (MHz)	Output Power (dBm)		Limit(dBm)	Result
		802.11n(HT40)	802.11ac(VHT40)		
38	5190.00	5.12	5.55	24	Pass
46	5230.00	5.44	5.38	24	Pass

CH. No.	Frequency (MHz)	Output Power (dBm)	Limit(dBm)	Result
		802.11ac(VHT80)		
42	5210	5.02	24	Pass

6. Band Edges Measurement

Test Requirement:	FCC Part15 E Section 15.407 and 5.205
Test Method:	ANSI C63.10:2013
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Remark
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak Value
Above 1GHz	Peak	1MHz	3MHz	Peak Value
	AV	1MHz	3MHz	Average Value

Limit:

Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
	74.0	Peak Value

Undesirable emission limits:

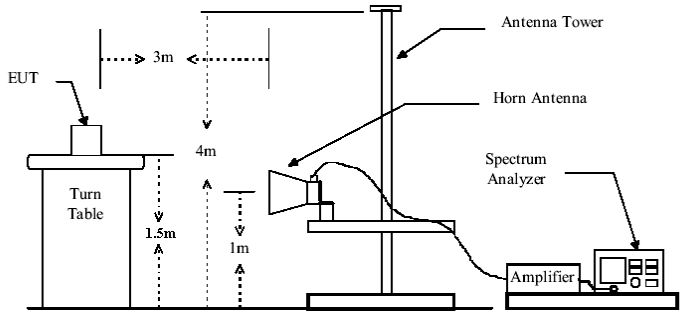
(1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.

(3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.

Test Procedure:

a. The EUT was placed on the top of a rotating table 1.5 m above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a

	data sheet.
Test setup:	Above 1GHz 
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Remark:

According to KDB 789033 D02 v02r01 section G) 1) (d), for For measurements above 1000 MHz @ 3m distance, the limit of field strength is computed as follows:

E[dBuV/m] = EIRP[dBm] + 95.2;

For example, if EIRP = -27dBm

E[dBuV/m] = -27 + 95.2 = 68.2dBuV/m.

6.1. TEST RESULT

Peak value:

Test mode:		802.11a		Test channel:		Lowest	
Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector	Antenna Pol.
5150	44.14	7.18	51.32	68.2	-16.88	PK	H
5150	43.25	7.18	50.43	68.2	-17.77	PK	V
Test mode:		802.11a		Test channel:		Highest	
Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector	Antenna Pol.
5350	43.61	7.2	50.81	68.2	-17.39	PK	H
5350	49.35	7.2	56.55	68.2	-11.65	PK	V

Average:

Test mode:		802.11a		Test channel:		Lowest	
Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector	Antenna Pol.
5150	31.52	7.18	38.7	48.2	-9.5	AV	H
5150	30.36	7.18	37.54	48.2	-10.66	AV	V
Test mode:		802.11a		Test channel:		Highest	
Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector	Antenna Pol.
5350	30.25	7.2	37.45	48.2	-10.75	AV	H
5350	36.33	7.2	43.53	48.2	-4.67	AV	V

Peak value:

Test mode:		802.11n(HT20)		Test channel:		Lowest	
Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector	Antenna Pol.
5150	47.35	7.18	54.53	68.2	-13.67	PK	H
5150	54.02	7.18	61.2	68.2	-7	PK	V
Test mode:		802.11n(HT20)		Test channel:		Highest	
Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector	Antenna Pol.
5350	43.21	7.2	50.41	68.2	-17.79	PK	H
5350	50.11	7.2	57.31	68.2	-10.89	PK	V

Average:

Test mode:		802.11n(HT20)		Test channel:		Lowest	
Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector	Antenna Pol.
5150	33.26	7.18	40.44	48.2	-7.76	AV	H
5150	37.97	7.18	45.15	48.2	-3.05	AV	V
Test mode:		802.11n(HT20)		Test channel:		Highest	
Frequency (MHz)	Reading Level (dBuV)	Factor (dB/m)	Measure Level (dBuV/m)	Limit (dBuV/m)	Over limit(dB)	Detector	Antenna Pol.
5350	30.06	7.2	37.26	48.2	-10.94	AV	H
5350	36.23	7.2	43.43	48.2	-4.77	AV	V

Peak value:

Test mode:		802.11n(HT40)		Test channel:		Lowest	
Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pol.
5150	42.68	7.18	49.86	68.2	-18.34	PK	H
5150	43.25	7.18	50.43	68.2	-17.77	PK	V
Test mode:		802.11n(HT40)		Test channel:		Highest	
Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pol.
5350	43.65	7.2	50.85	68.2	-17.35	PK	H
5350	47.33	7.2	54.53	68.2	-13.67	PK	V

Average:

Test mode:		802.11n(HT40)		Test channel:		Lowest	
Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pol.
5150	30.12	7.18	37.3	48.2	-10.9	AV	H
5150	29.32	7.18	36.5	48.2	-11.7	AV	V
Test mode:		802.11n(HT40)		Test channel:		Highest	
Frequency (MHz)	Reading Level	Factor	Measure Level	Limit (dBuV/m)	Margin (dB)	Detector	Antenna Pol.
5350	30.15	7.2	37.35	48.2	-10.85	AV	H
5350	32.34	7.2	39.54	48.2	-8.66	AV	V

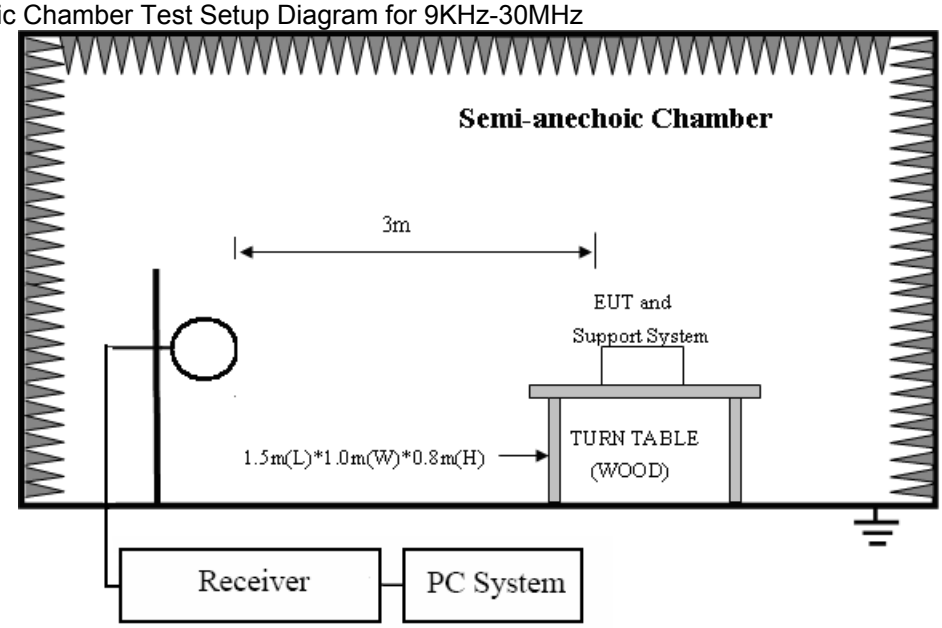
7. RADIATED EMISSION MEASUREMENT

7.1. Test equipment

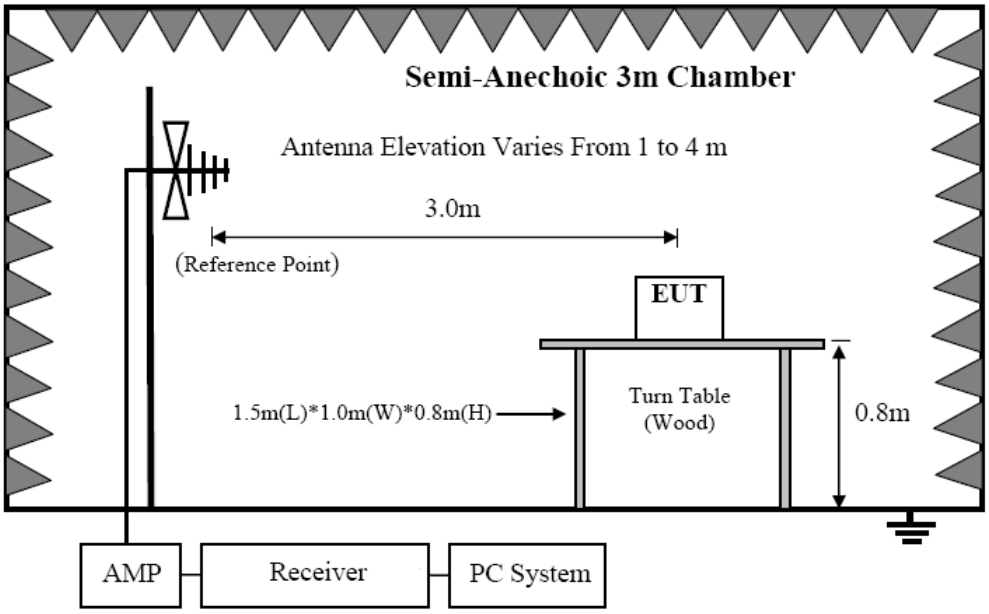
Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until	Calibrated Date
1	EMI Test Receiver	R&S	ESCI	101307	12/17/2018	12/18/2017
2	Spectrum analyzer	Agilent	E4407B	US40240708	07/04/2019	07/05/2018
3	Trilog Broadband Antenna	Schwarzbeck	VULB9168	VULB9168 -192	03/04/2019	03/05/2018
4	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D1065	100276	12/17/2018	12/18/2017
5	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D1065	100546	12/17/2018	12/18/2017
6	Dipole antenna	Schwarzbeck	UHAP	1101	12/17/2018	12/18/2017
7	Dipole antenna	Schwarzbeck	VHAP	1118	12/17/2018	12/18/2017
8	Pre-Amplifier	CY	EMC011830	980136	12/17/2018	12/18/2017
9	Pre-amplifier	HP	8447F	3113A05680	12/17/2018	12/18/2017
10	RF Cable	R&S	R01	10403	12/17/2018	12/18/2017
11	RF Cable	R&S	R02	10512	12/17/2018	12/18/2017
12	RF Cable	R&S	R01	10454	12/17/2018	12/18/2017
13	RF Cable	R&S	R02	10343	12/17/2018	12/18/2017
14	Spectrum analyze	R&S	FSV40	101470	29/06/2019	06/29/2018
15	MeasurementSoftware	Farad	EZ-EMC (Ver.ATT-03A)	N/A	N/A	N/A

7.2. Block diagram of test setup

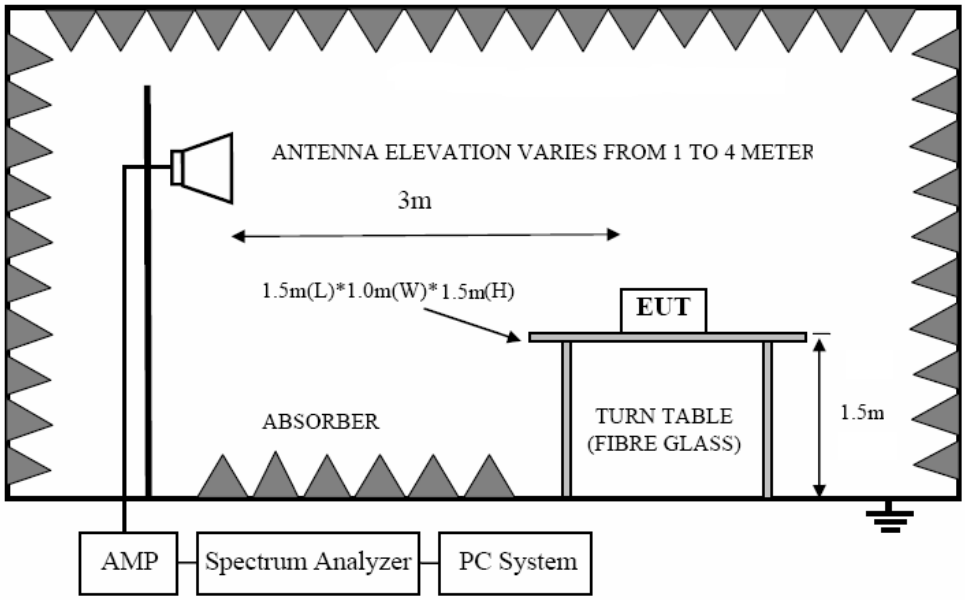
In 3m Anechoic Chamber Test Setup Diagram for 9KHz-30MHz



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



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



Note: For harmonic emissions test a appropriate high pass filter was inserted in the input port of AMP.

7.3. Limit

9.3.1 FCC 15.205 Restricted frequency band

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

9.3.2. FCC 15.209 Limit.

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

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

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

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

9.3.3. Limit for this EUT

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 30dB below the fundamental emissions, or comply with 15.209 limits.

7.4. Test Procedure

(1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.

(2) Setup EUT and assistant system according clause 2.4 and 7.2

(3) Test antenna was located 3m(except 18GHz-40GHz was 1m) from the EUT on an adjustable mast, and the antenna used as below table.

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

According ANSI C63.10:2013 clause 6.4.4.2 and 6,5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical axis for maximum response at each azimuth position around the EUT. And the loop antenna also be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. for measurement above 30MHz, the Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

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

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

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

(c) Change modulation type of device if practicable.

(d) new battery is used during testing

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

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

(5) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10 2013 on Radiated Emission test.

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

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

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

（8）For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RBW is set at 1MHz, VBW is set at 10Hz for Average measure(according ANSI C63.10:2013 clause 4.2.3.2.3 procedure for average measure). Peak detector is used for Peak and AV measurement both.

7.5. Test result(Below 30MHz)

EUT:	TrekStor Surftab theatre L15	**Model No.:**	TFMTKAW01232
Temperature:	24℃	**Relative Humidity:**	55%
Distance:	3m	**Test Power:**	120V 60Hz
Polarization:	--	**Test Result:**	Pass
Test Mode:	Keeping TX mode	**Test By:**	Smile

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	P
--	--	--	--	P

Note:

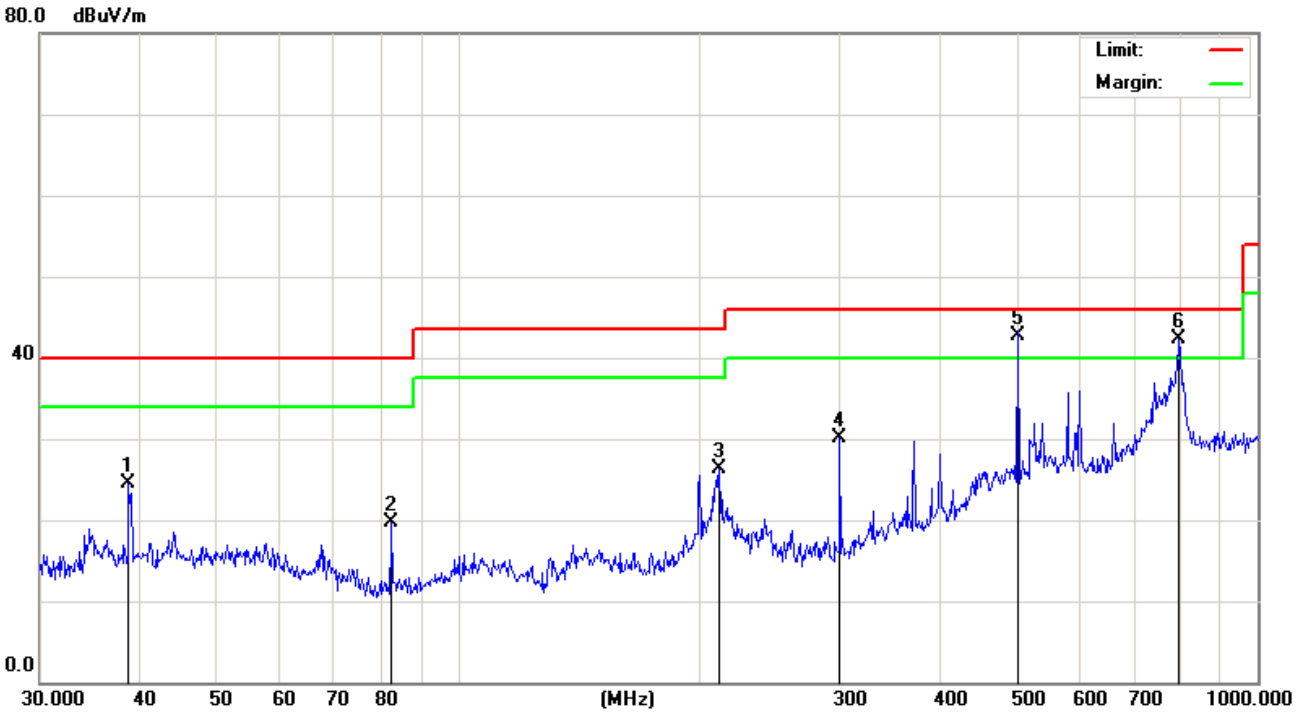
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =20 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

TEST RESULTS (Between 30M – 1000 MHz)

EUT:	TrekStor Surftab theatre L15	Model No.:	TFMTKAW01232
Temperature:	24	Relative Humidity:	55%
Distance:	3m	Test Power:	AC120V/60Hz
Polarization:	Vertical	Test Result:	Pass
Standard:	(RE)FCC PART 15	Test By:	Smile
Test Mode:	Keeping TX mode		

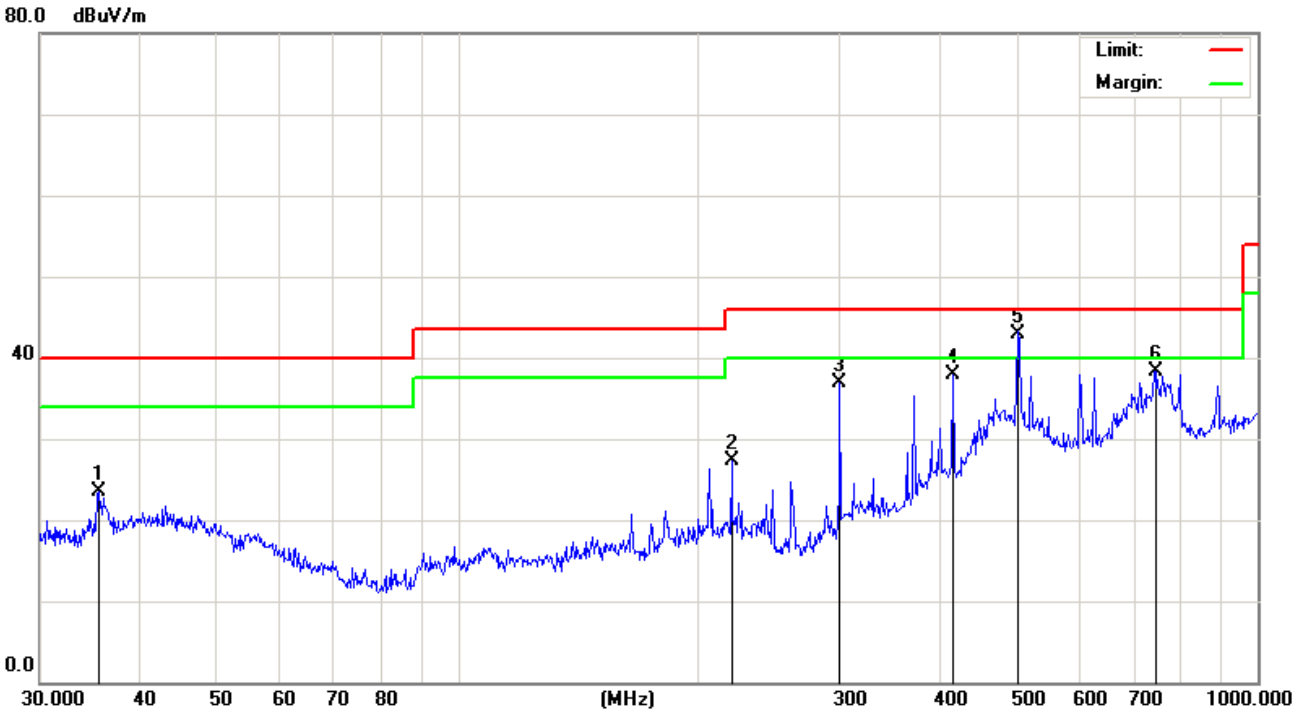


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		38.7518	30.85	-6.35	24.50	40.00	-15.50	QP
2		82.6482	30.61	-10.91	19.70	40.00	-20.30	QP
3		212.2692	30.80	-4.40	26.40	43.50	-17.10	QP
4		300.3672	38.04	-7.94	30.10	46.00	-15.90	QP
5	*	501.1788	44.80	-2.12	42.68	46.00	-3.32	QP
6	!	796.1829	34.60	7.70	42.30	46.00	-3.70	QP

The test result is calculated as the following:

(1) Result = Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
(3) Margin = Result - Limit

EUT:	TrekStor Surftab theatre L15	Model No.:	TFMTKAW01232
Temperature:	24	Relative Humidity:	55%
Distance:	3m	Test Power:	AC120V/60Hz
Polarization:	**Horizontal**	Test Result:	Pass
Standard:	(RE)FCC PART 15	Test By:	Smile
Test Mode:	Keeping TX mode		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		35.4992	27.00	-3.53	23.47	40.00	-16.53	QP
2		219.8446	34.23	-6.83	27.40	46.00	-18.60	QP
3		300.3672	45.35	-8.35	37.00	46.00	-9.00	QP
4		416.1791	39.69	-1.79	37.90	46.00	-8.10	QP
5	*	501.1788	41.40	1.43	42.83	46.00	-3.17	QP
6		747.4825	31.58	6.82	38.40	46.00	-7.60	QP

The test result is calculated as the following:

(1) Result = Reading + Correct Factor
(2) Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator
(3) Margin = Result - Limit

TEST RESULTS (Above 1000 MHz)

EUT:	TrekStor Surftab theatre L15	Model No.:	TFMTKAW01232
Temperature:	24℃	Relative Humidity:	55%
Distance:	3m	Test Power:	120V 60Hz
Polarization:		Test Result:	Pass
Test Mode:	TX-802.11a	Test By:	Smile

Above 1GHz:

Mode	Polar (H/V)	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV/m)	Margin (dB)	Detector (PK/AV)
802.11a-5180MHz	H	10360	34.89	12.56	47.45	74.00	-26.55	PEAK
	H	15540	35.60	16.45	52.05	74.00	-21.95	PEAK
	V	10360	35.14	12.56	47.70	74.00	-26.30	PEAK
	V	15540	36.75	16.45	53.20	74.00	-20.80	PEAK
802.11a-5200 MHz	H	10400	35.58	12.64	48.22	74.00	-25.78	PEAK
	H	15600	36.03	16.53	52.56	74.00	-21.44	PEAK
	V	10400	37.23	12.64	49.87	74.00	-24.13	PEAK
	V	15600	35.57	16.53	52.10	74.00	-21.90	PEAK
802.11a-5240 MHz	H	10480	33.59	12.68	46.27	74.00	-27.73	PEAK
	H	15720	34.85	16.54	51.39	74.00	-22.61	PEAK
	V	10480	36.03	12.68	48.71	74.00	-25.29	PEAK
	V	15720	33.91	16.54	50.45	74.00	-23.55	PEAK

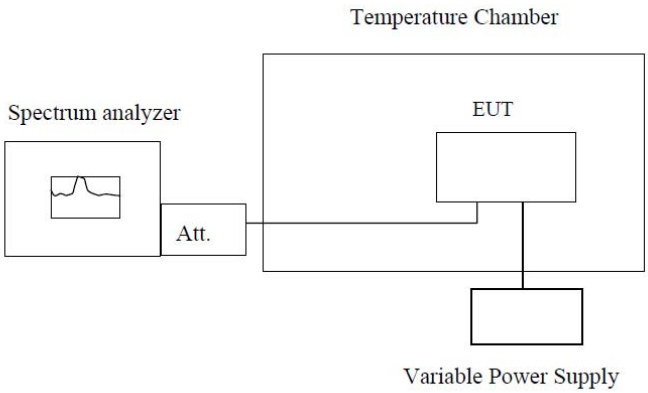
Mode	Polar (H/V)	Frequency (MHz)	Reading (dBμV)	Factor (dB)	Result (dBμV)	Limit (dBμV/m)	Margin (dB)	Detector (PK/AV)
802.11n HT20-5180MHz	H	10360	32.64	12.56	45.20	74.00	-28.80	PEAK
	H	15540	35.37	16.45	51.82	74.00	-22.18	PEAK
	V	10360	35.21	12.56	47.77	74.00	-26.23	PEAK
	V	15540	35.72	16.45	52.17	74.00	-21.83	PEAK
802.11n HT20-5200MHz	H	10400	34.80	12.64	47.44	74.00	-26.56	PEAK
	H	15600	33.04	16.53	49.57	74.00	-24.43	PEAK
	V	10400	36.37	12.64	49.01	74.00	-24.99	PEAK
	V	15600	35.37	16.53	51.90	74.00	-22.10	PEAK
802.11n HT20-5240MHz	H	10480	34.45	12.68	47.13	74.00	-26.87	PEAK
	H	15720	31.85	16.54	48.39	74.00	-25.61	PEAK
	V	10480	34.03	12.68	46.71	74.00	-27.29	PEAK
	V	15720	34.06	16.54	50.60	74.00	-23.40	PEAK

802.11n HT40-5190MHz	H	10380	36.19	12.58	48.77	74.00	-25.23	PEAK
	H	15570	33.93	16.48	50.41	74.00	-23.59	PEAK
	V	10380	37.03	12.58	49.61	74.00	-24.39	PEAK
	V	15570	33.17	16.48	49.65	74.00	-24.35	PEAK

Mode	Polar (H/V)	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV/m)	Margin (dB)	Detector (PK/AV)
802.11n HT40-5230MHz	H	10460	36.75	12.66	49.41	74.00	-24.59	PEAK
	H	15690	34.26	16.53	50.79	74.00	-23.21	PEAK
	V	10460	35.69	12.66	48.35	74.00	-25.65	PEAK
	V	15690	34.34	16.53	50.87	74.00	-23.13	PEAK
802.11ac HT20-5180MHz	H	10360	33.93	12.56	46.49	74.00	-27.51	PEAK
	H	15540	34.27	16.45	50.72	74.00	-23.28	PEAK
	V	10360	32.96	12.56	45.52	74.00	-28.48	PEAK
	V	15540	34.34	16.45	50.79	74.00	-23.21	PEAK
802.11ac HT20-5200MHz	H	10400	33.92	12.64	46.56	74.00	-27.44	PEAK
	H	15600	30.57	16.53	47.10	74.00	-26.90	PEAK
	V	10400	33.09	12.64	45.73	74.00	-28.27	PEAK
	V	15600	31.48	16.53	48.01	74.00	-25.99	PEAK
802.11ac HT20-5240MHz	H	10480	33.98	12.68	46.66	74.00	-27.34	PEAK
	H	15720	32.74	16.54	49.28	74.00	-24.72	PEAK
	V	10480	32.80	12.68	45.48	74.00	-28.52	PEAK
	V	15720	33.90	16.54	50.44	74.00	-23.56	PEAK
802.11ac HT40-5190MHz	H	10380	32.94	12.58	45.52	74.00	-28.48	PEAK
	H	15570	34.45	16.48	50.93	74.00	-23.07	PEAK
	V	10380	34.39	12.58	46.97	74.00	-27.03	PEAK
	V	15570	32.38	16.48	48.86	74.00	-25.14	PEAK
802.11ac HT40-5230MHz	H	10460	34.05	12.66	46.71	74.00	-27.29	PEAK
	H	15690	32.18	16.53	48.71	74.00	-25.29	PEAK
	V	10460	34.30	12.66	46.96	74.00	-27.04	PEAK
	V	15690	32.38	16.53	48.91	74.00	-25.09	PEAK

	The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
	Final Test Level =Receiver Reading + Antenna Factor + Cable Factor –Preamplifier Factor.
	Average measurement was not performed if peak level lower than average limit. No any other emissions level very low which are attenuated less than 20dB below the limit. According to 15.31(o), The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part. Hence there no other emissions have been reported.

8. FREQUENCY STABILITY

Test Requirement:	FCC Part15 C Section 15.407(g)
Test Method:	ANSI C63.10:2013, FCC Part 2.1055
Limit:	Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified
Test Procedure:	The EUT was setup to ANSI C63.4, 2014; tested to 2.1055 for compliance to FCC Part 15.407(g) requirements.
Test setup:	 **Note :** Measurement setup for testing on Antenna connector
Test Instruments:	Refer to section 5.10 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Frequency stability versus Temp.					
Power Supply: DC 7.6V					
Temp. (°C)	Operating Frequency (MHz)	0 minute	2 minute	5 minute	10 minute
		Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)	Measured Frequency (MHz)
-30	5180	5176.1013	5182.8816	5181.1930	5177.8888
	5200	5198.4725	5202.7404	5202.1432	5199.2381
	5220	5219.6745	5220.2195	5221.1132	5219.8586
	5240	5239.9109	5240.5965	5240.0489	5239.7861
-20	5180	5179.9449	5180.3660	5180.5830	5179.8924
	5200	5199.5377	5200.3455	5200.1375	5199.7343
	5220	5219.4826	5220.5974	5220.1213	5219.7008
	5240	5239.2213	5240.1231	5240.5271	5239.1891
-10	5180	5179.0521	5180.2099	5180.1049	5179.1479
	5200	5199.9229	5200.7888	5201.0006	5199.1193
	5220	5219.6977	5220.6717	5220.1813	5219.5465
	5240	5239.4502	5240.5709	5240.8411	5239.3957
0	5180	5180.0046	5180.4152	5180.1735	5179.3794
	5200	5199.2872	5200.5482	5200.7621	5199.8405
	5220	5219.1857	5219.9055	5219.9829	5219.9527
	5240	5239.4259	5240.7886	5240.1973	5239.4632

10	5180	5179.2455	5180.1525	5180.9823	5179.4187
	5200	5199.5162	5200.1431	5200.6787	5199.8115
	5220	5219.0510	5220.2230	5220.0578	5219.9550
	5240	5238.9054	5240.4864	5240.6354	5239.6445
20	5180	5179.9995	5180.0884	5180.4794	5179.3989
	5200	5199.7080	5200.2365	5200.8030	5199.3478
	5220	5219.3765	5220.8369	5220.3169	5219.5284
	5240	5239.2583	5240.8953	5240.3845	5239.2955
30	5180	5179.8402	5180.9117	5180.3664	5179.8111
	5200	5199.3401	5200.3133	5200.3536	5199.5803
	5220	5219.3349	5220.3976	5220.9207	5219.4842
	5240	5239.6867	5240.3578	5240.8557	5240.0233
40	5180	5179.7321	5180.5709	5180.2334	5179.9718
	5200	5199.3607	5200.6498	5200.8999	5199.6888
	5220	5219.4073	5220.6507	5220.6765	5219.6154
	5240	5239.2495	5240.7920	5240.7068	5240.1354
50	5180	5179.4201	5180.4776	5180.4787	5179.1604
	5200	5199.2589	5200.8325	5200.2246	5199.3539
	5220	5219.8556	5220.8470	5220.5757	5219.4582
	5240	5239.4040	5240.2789	5239.8641	5239.1630

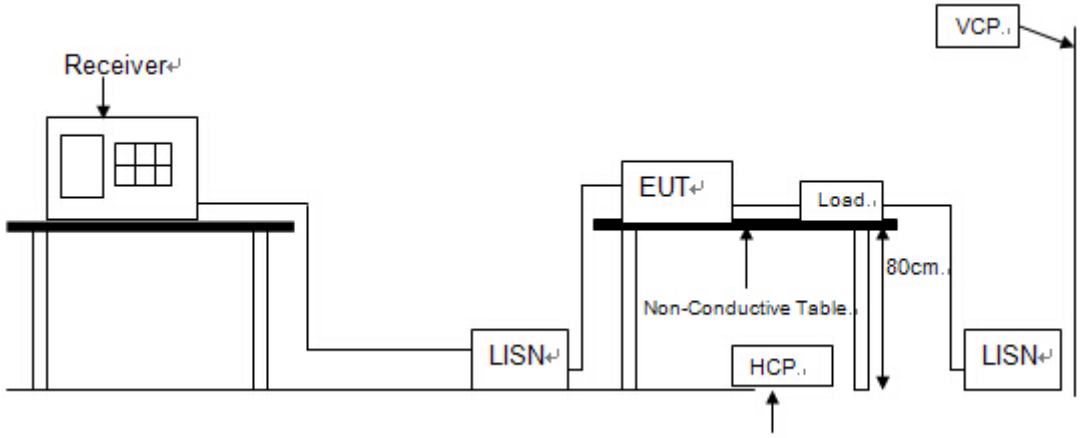
Frequency stability versus Voltage					
Temperature: 25°C					
Power Supply (VDC)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)
6.9	5180	5183.9612	5181.9870	5176.3875	5178.4841
	5200	5203.7069	5200.2900	5196.7153	5197.8718
	5220	5220.7482	5220.2673	5217.4597	5219.9435
	5240	5240.7306	5240.8292	5238.5384	5239.4516
7.6	5180	5181.0200	5180.3314	5179.2821	5179.2696
	5200	5200.2122	5200.5383	5199.7970	5199.1744
	5220	5220.9734	5220.1534	5219.8016	5219.6396
	5240	5240.0318	5240.9333	5239.2794	5239.7512
8.4	5180	5180.2090	5180.5409	5179.2531	5179.2630
	5200	5200.4782	5200.5462	5199.2008	5199.3009
	5220	5220.0016	5220.6453	5219.1181	5219.1949
	5240	5240.7518	5240.4738	5239.4937	5239.0314

POWER LINE CONDUCTED EMISSION

9.1 Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Pulse Limiter	MTS-systemtechnik	MTS-IMP-136	261115-010-0024	12/17/2018
2	EMI Test Receiver	R&S	ESCI	101308	12/17/2018
3	LISN	AFJ	LS16	16011103219	12/17/2018
4	LISN	Schwarzbeck	NSLK 8127	8127-432	12/17/2018
5	Measurement Software	Farad	EZ-EMC (Ver.ATT-03A)	N/A	N/A
6	MeasurementSoftware	Farad	EZ-EMC (Ver.ATT-03A)	N/A	N/A

9.2 Block diagram of test setup



9.3 Power Line Conducted Emission Limits(Class B)

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

Note 1: * Decreasing linearly with logarithm of frequency.

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

9.4 TEST PROCEDURE

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

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 10.2 of this report.

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

All support equipment power received from a second LISN.

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

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

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

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

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

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

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

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

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

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

The bandwidth of test receiver is set at 9 KHz.

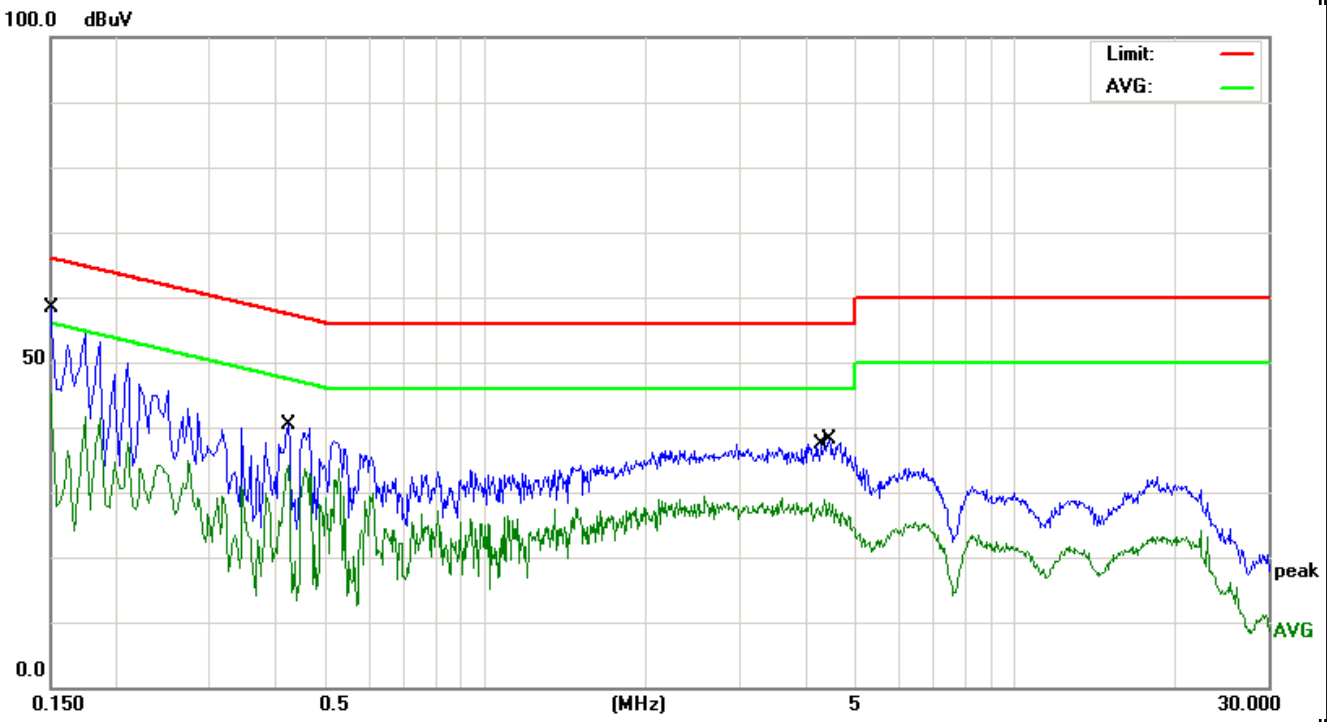
9.5 Test Result

PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.

Note2: “-----” means peak detection; “-----” mans average detection

EUT:	TrekStor Surftab theatre L15	Model No.:	TFMTKAW01232
Temperature:	23℃	Relative Humidity:	52%
Probe:	N	Test Power:	AC 120V/60Hz
Test Time:	2018-10-17	Test Result:	Pass
Standard:	(CE)FCC PART 15 class B_QP		
Test Mode:	TX		
Note:			

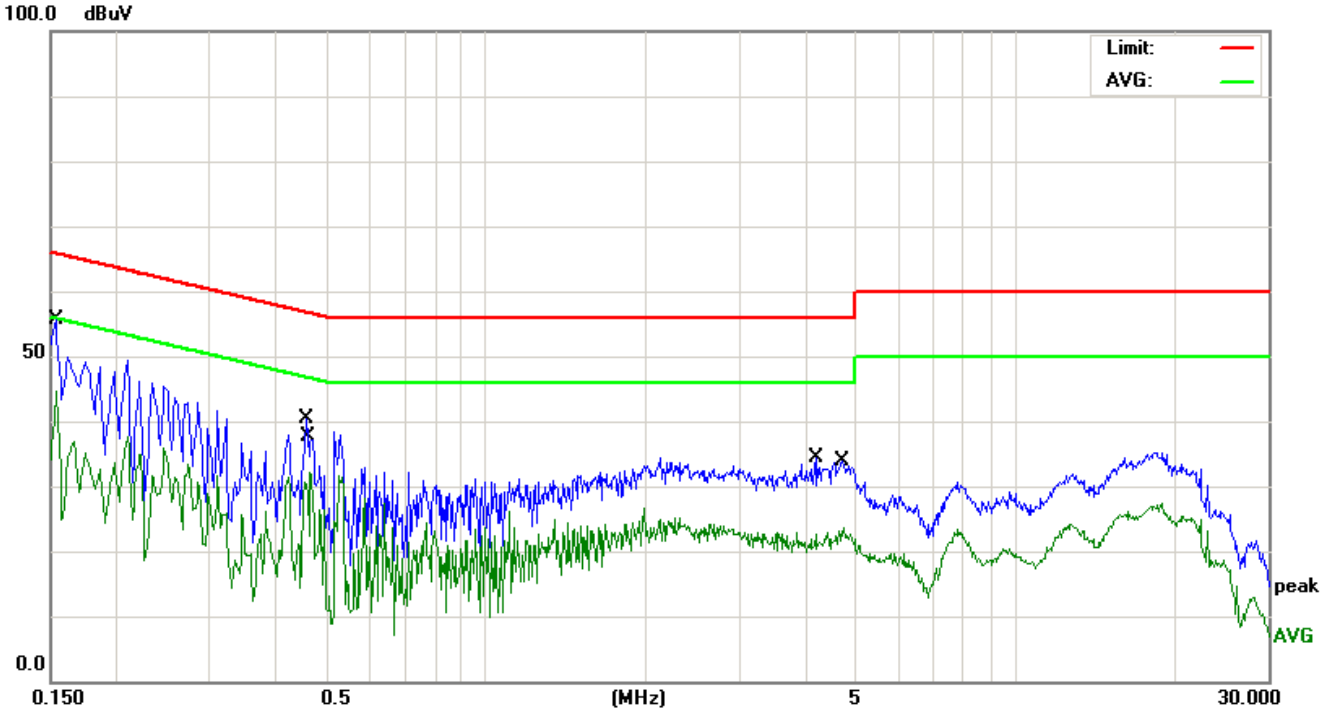


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1499	46.48	11.94	58.42	66.00	-7.58	QP
2		0.1499	33.15	11.94	45.09	56.00	-10.91	AVG
3		0.4220	30.38	10.11	40.49	57.41	-16.92	QP
4		0.4220	23.95	10.11	34.06	47.41	-13.35	AVG
5		4.3379	18.79	10.08	28.87	46.00	-17.13	AVG
6		4.4419	27.97	10.08	38.05	56.00	-17.95	QP

The test result is calculated as the following:

(1) Result = Reading + Correct Factor
(2) Correct Factor = (LISN, ISN, PLC or Current Probe) Factor + Cable Loss +Attenuator
(3) Margin = Result - Limit

EUT:	TrekStor Surftab theatre L15	Model No.:	TFMTKAW01232
Temperature:	23℃	Relative Humidity:	52%
Probe:	L1	Test Power:	AC 120V/60Hz
Test Time:	2018-10-17	Test Result:	Pass
Standard:	(CE)FCC PART 15 class B_QP		
Test Mode:	TX		
Note:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1539	43.75	11.84	55.59	65.78	-10.19	QP
2		0.1539	32.69	11.84	44.53	55.78	-11.25	AVG
3		0.4580	30.31	10.06	40.37	56.73	-16.36	QP
4		0.4660	22.03	10.05	32.08	46.58	-14.50	AVG
5		4.1979	24.26	10.06	34.32	56.00	-21.68	QP
6		4.7460	13.54	10.10	23.64	46.00	-22.36	AVG

The test result is calculated as the following:

(1) Result = Reading + Correct Factor

(2) Correct Factor = (LISN, ISN, PLC or Current Probe) Factor + Cable Loss +Attenuator

(3) Margin = Result - Limit

9. ANTENNA REQUIREMENTS

9.1. Limit

15.203 requirement: For intentional device, according to 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.

9.2. EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.