




TEST REPORT

Report No......: **CHTEW19050131** Report Verification: 

Project No......: **SHT1904069805EW**

FCC ID.....: **2AK4CPP20US**

Applicant's name.....: **Petcube, Inc.**

Address.....: 2711 Centerville Road,Suite 400,Wilmington Delaware United States 19808

Manufacturer.....: Petcube, Inc.

Address.....: 2711 Centerville Road,Suite 400,Wilmington Delaware United States 19808

Test item description: **Petcube Play 2**

Trade Mark: Petcube

Model/Type reference.....: PP20US

Listed Model(s): -

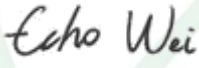
Standard: **FCC CFR Title 47 Part 15 Subpart E Section 15.407**


Date of receipt of test sample.....: May 13, 2019


Date of testing.....: May 13, 2019- May 29, 2019

Date of issue.....: May 30, 2019

Result.....: **PASS**

Compiled by
 (position+printedname+signature)....: File administrators Echo Wei 

Supervised by
 (position+printedname+signature)....: Project Engineer Jerry Zhao 

Approved by
 (position+printedname+signature)....: RF Manager Hans Hu 

Testing Laboratory Name: **Shenzhen Huatongwei International Inspection Co., Ltd**

Address.....: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Shenzhen Huatongwei International Inspection Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Huatongwei International Inspection Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Huatongwei International Inspection Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

The test report merely correspond to the test sample.

Contents

1.	<u>TEST STANDARDS AND REPORT VERSION</u>	3
1.1.	Test Standards	3
1.2.	Report Version	3
2.	<u>TEST DESCRIPTION</u>	4
3.	<u>SUMMARY</u>	5
3.1.	Client Information	5
3.2.	Product Description	5
3.3.	Operation state	6
3.4.	EUT configuration	7
3.5.	Modifications	7
4.	<u>TEST ENVIRONMENT</u>	8
4.1.	Address of the test laboratory	8
4.2.	Test Facility	8
4.3.	Environmental conditions	9
4.4.	Statement of the measurement uncertainty	9
4.5.	Equipments Used during the Test	10
5.	<u>TEST CONDITIONS AND RESULTS</u>	12
5.1.	Antenna requirement	12
5.2.	Conducted Emissions (AC Main)	13
5.3.	Maximum Conducted Output Power	16
5.4.	Maximum Power Spectral Density	19
5.5.	26dB bandwidth and 99% Occupy bandwidth	43
5.6.	6dB Bandwidth	62
5.7.	Band edge	69
5.8.	Radiated Spurious Emissions	74
5.9.	Frequency stability	83
5.10.	Dynamic Frequency Selection(DFS)	87
6.	<u>TEST SETUP PHOTOS OF THE EUT</u>	97
7.	<u>EXTERNAL AND INTERNAL PHOTOS OF THE EUT</u>	98

1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:

[FCC Rules Part 15.407](#): General technical requirements.

[ANSI C63.10-2013](#): American National Standard for Testing Unlicensed Wireless Devices

[KDB789033 D02 v02r01](#): GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E

1.2. Report Version

Revision No.	Date of issue	Description
N/A	2019-05-30	Original

2. TEST DESCRIPTION

Test Item	FCC Rule	Result	Test Engineer
Antenna Requirement	15.203	PASS	JiongSheng.Feng
Line Conducted Emissions (AC Main)	15.207	PASS	Zhiwei Liu
Maximum Conducted Output Power	15.407(a)	PASS	JiongSheng.Feng
Maximum Power Spectral Density	15.407(a)	PASS	JiongSheng.Feng
26dB Bandwidth and 99% Occupy bandwidth	15.407(a)	PASS	JiongSheng.Feng
6dB Bandwidth	15.407(a)	PASS	JiongSheng.Feng
Band edge	15.407(b)	PASS	JiongSheng.Feng
Radiated Spurious Emissions	15.209	PASS	Tony Duan
Frequency Stability	15.407(g)	PASS	JiongSheng.Feng

Remark: The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	Petcube, Inc.
Address:	2711 Centerville Road,Suite 400,Wilmington Delaware United States 19808
Manufacturer:	Petcube, Inc.
Address:	2711 Centerville Road,Suite 400,Wilmington Delaware United States 19808

3.2. Product Description

Name of EUT	Petcube Play 2		
Trade Mark:	Petcube		
Model No.:	PP20US		
Listed Model(s):	-		
Power supply:	DC 5V, 2A		
Adapter information 1:	-		
Adapter information 2:	-		
5G WIFI			
Supported type:	<input checked="" type="checkbox"/> 802.11a	<input checked="" type="checkbox"/> 802.11n(HT20)	<input checked="" type="checkbox"/> 802.11n(HT40)
	<input checked="" type="checkbox"/> 802.11ac(HT20)	<input checked="" type="checkbox"/> 802.11ac(HT40)	<input checked="" type="checkbox"/> 802.11ac(HT80)
Function:	<input type="checkbox"/> Outdoor AP	<input type="checkbox"/> Indoor AP	<input type="checkbox"/> Fixed P2P
	<input checked="" type="checkbox"/> Client		
DFS type:	<input type="checkbox"/> master devices	<input type="checkbox"/> Slave devices with radar detection	<input checked="" type="checkbox"/> Slave devices without radar detection
Modulation:	BPSK, QPSK, 16QAM, 64QAM		
Operation frequency:	<input checked="" type="checkbox"/> Band I:	5150MHz~5250MHz	
	<input checked="" type="checkbox"/> Band II:	5250MHz~5350MHz	
	<input checked="" type="checkbox"/> Band III:	5470MHz~5725MHz	
	<input checked="" type="checkbox"/> Band IV:	5725MHz~5850MHz	
Supported Bandwidth	20MHz:	802.11ac, 802.11n, 802.11a	
	40MHz:	802.11ac, 802.11n	
	80MHz:	802.11ac	
Antenna type:	1 Transmit, 1 Receive		
Antenna gain:	0.5dB		

3.3. Operation state

➤ Frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Band	Test Channel	20MHz		40MHz		80MHz	
		Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
I	CH _L	36	5180	38	5190	-	-
	CH _M	44	5220	-	-	42	5210
	CH _H	48	5240	46	5230	-	-
II	CH _L	52	5260	54	5270	-	-
	CH _M	56	5280	-	-	58	5290
	CH _H	64	5320	62	5310	-	-
III	CH _L	100	5500	102	5510	106	5530
	CH _M	120	5600	118	5590	122	5610
	CH _H	140	5700	134	5670	138	5690
IV	CH _L	149	5745	151	5755	-	-
	CH _M	157	5785	-	-	155	5775
	CH _H	165	5825	159	5795	-	-

➤ Data Rated

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Mode	Data rate (worst mode)
802.11a	6Mbps
802.11n(HT20)/ 802.11ac(HT20)	MCS0
802.11n(HT40)/ 802.11ac(HT40)	MCS0
802.11ac(HT80)	MCS0

➤ Test mode

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit (duty cycle>98%).
For AC power line conducted emissions:
The EUT was set to connect with the WLAN AP under large package sizes transmission.
For Radiated suprious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit(duty cycle>98%). The EUT in each of three orthogonal axis emissions had been tested ,but only the worst case (X axis) data Recorded in the report.

3.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- - supplied by the manufacturer
- - supplied by the lab

○	-	Manufacturer :	-
		Model No. :	-
○	-	Manufacturer :	-
		Model No. :	-

3.5. Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.

Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Phone: 86-755-26748019 Fax: 86-755-26748089

4.2. Test Facility

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. 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.

IC-Registration No.:5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No.: 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Environmental conditions

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

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors in calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd. quality system according to ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Here after the best measurement capability for Shenzhen Huatongwei International Inspection Co., Ltd. is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.51 dB	(1)
Conducted spurious emissions 9kHz~40GHz	0.63 dB	(1)
Conducted Disturbance 150kHz~30MHz	3.02 dB	(1)
Radiated Emissions below 1GHz	4.90 dB	(1)
Radiated Emissions above 1GHz	4.96 dB	(1)
Occupied Bandwidth	70 Hz	(1)
Frequency error	70 Hz	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.5. Equipments Used during the Test

● Conducted Emission						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Shielded Room	Albatross projects	N/A	N/A	2018/09/28	2023/09/27
●	EMI Test Receiver	R&S	ESCI	101247	2018/10/27	2019/10/26
●	Artificial Mains	SCHWARZBECK	NNLK 8121	573	2018/10/27	2019/10/26
●	Pulse Limiter	R&S	ESH3-Z2	100499	2018/10/27	2019/10/26
●	RF Connection Cable	HUBER+SUHNER	EF400	N/A	2018/11/15	2019/11/14
●	Test Software	R&S	ES-K1	N/A	N/A	N/A
○	Single Balanced Telecom Pair ISN	FCC	FCC-TLISN-T2-02	20371	2018/10/28	2019/10/27
○	Two Balanced Telecom Pairs ISN	FCC	FCC-TLISN-T4-02	20373	2018/10/28	2019/10/27
○	Four Balanced Telecom Pairs ISN	FCC	FCC-TLISN-T8-02	20375	2018/10/28	2019/10/27
○	V-Network	R&S	ESH3-Z6	100211	2018/10/27	2019/10/26
○	V-Network	R&S	ESH3-Z6	100210	2018/10/27	2019/10/26
○	2-Line V-Network	R&S	ESH3-Z5	100049	2018/10/27	2019/10/26
● Radiated Emission-6th test site						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	SAC-3m-02	N/A	2018/09/30	2021/09/29
●	EMI Test Receiver	R&S	ESCI	100900	2018/10/28	2019/10/27
●	Loop Antenna	R&S	HFH2-Z2	100020	2017/11/20	2020/11/19
●	Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	546	2017/04/05	2020/04/04
●	Pre-Amplifier	SCHWARZBECK	BBV 9742	N/A	2018/11/15	2019/11/14
●	RF Connection Cable	HUBER+SUHNER	N/A	N/A	2018/09/28	2019/09/27
●	RF Connection Cable	HUBER+SUHNER	SUCOFLEX104	501184/4	2018/09/28	2019/09/27
●	Test Software	R&S	ES-K1	N/A	N/A	N/A
●	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
●	Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A	N/A
● Radiated emission-7th test site						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Semi-Anechoic Chamber	Albatross projects	SAC-3m-01	N/A	2018/09/30	2021/09/29
●	Spectrum Analyzer	R&S	FSP40	100597	2018/10/27	2019/10/26
●	Horn Antenna	SCHWARZBECK	9120D	1011	2017/03/27	2020/03/26
●	Pre-amplifier	BONN	BLWA0160-2M	1811887	2018/11/14	2019/11/13
●	Pre-amplifier	CD	PAP-0102	12004	2018/11/14	2019/11/13
●	Broadband Pre-amplifier	SCHWARZBECK	BBV 9718	9718-248	2019/04/28	2020/04/27
●	RF Connection Cable	HUBER+SUHNER	RE-7-FH	N/A	2018/11/15	2019/11/14
●	RF Connection Cable	HUBER+SUHNER	RE-7-FL	N/A	2018/11/15	2019/11/14
●	Test Software	Audix	E3	N/A	N/A	N/A
●	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
●	Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A	N/A

● RF Conducted Method						
Used	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
●	Signal and spectrum Analyzer	R&S	FSV40	100048	2018/10/28	2019/10/27
●	Spectrum Analyzer	Agilent	N9020A	MY50510187	2018/09/29	2019/09/28
●	OSP	R&S	OSP120	101317	N/A	N/A
○	Radio communication tester	R&S	CMW500	137688-Lv	2018/09/29	2019/09/28
○	Test software	Tonscend	JS1120-1(LTE)	N/A	N/A	N/A
○	Test software	Tonscend	JS1120-2(WIFI)	N/A	N/A	N/A
○	Test software	Tonscend	JS1120-3(WCDMA)	N/A	N/A	N/A
○	Test software	Tonscend	JS1120-4(GSM)	N/A	N/A	N/A

5. TEST CONDITIONS AND RESULTS

5.1. Antenna requirement

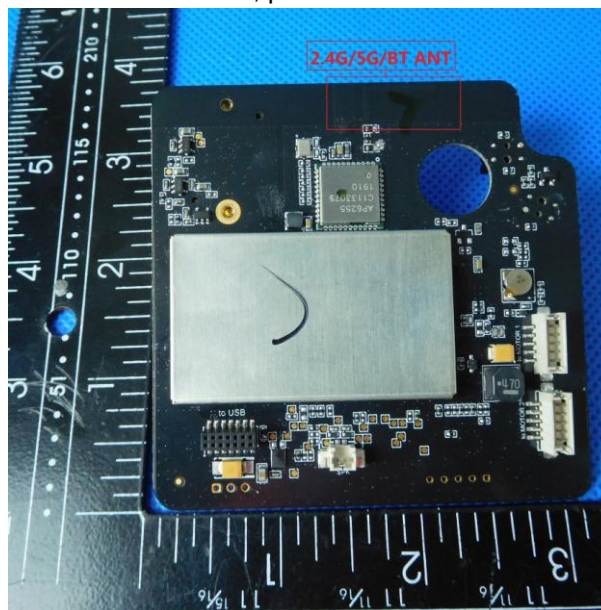
Requirement

FCC CFR Title 47 Part 15 Subpart C 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Test Result:

The directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



5.2. Conducted Emissions (AC Main)

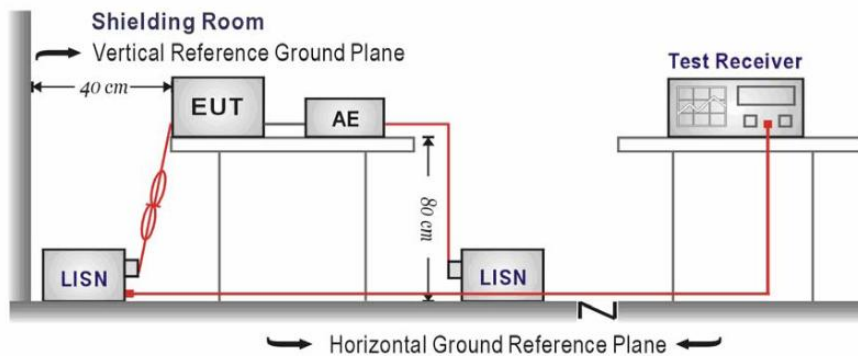
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

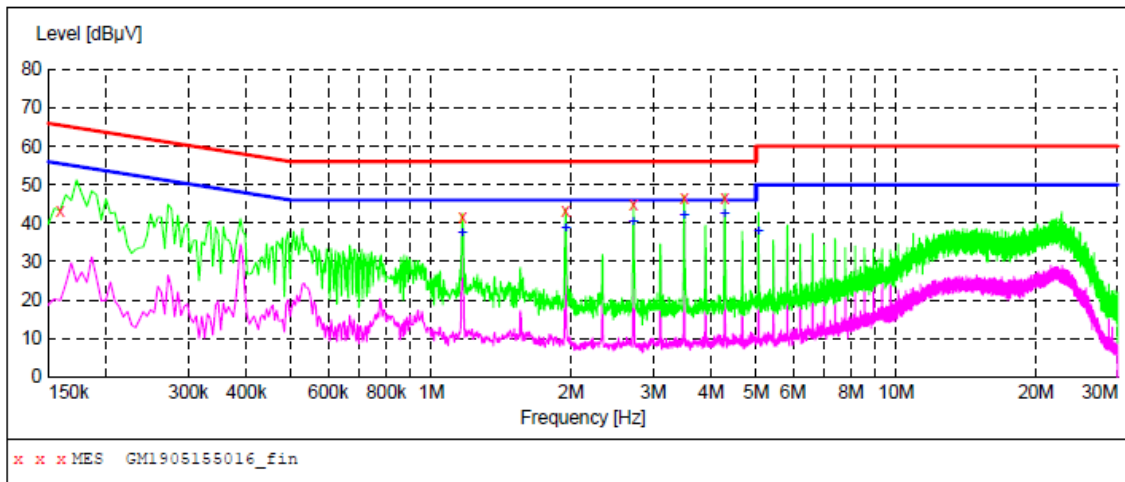
Passed Not Applicable

Note:

- 1) Transd=Cable lose+ Pulse Limiter Factor + Artificial Mains Factor
- 2) Margin= Limit -Level

Test Line:

L



MEASUREMENT RESULT: "GM1905155016_fin"

5/15/2019 1:32PM

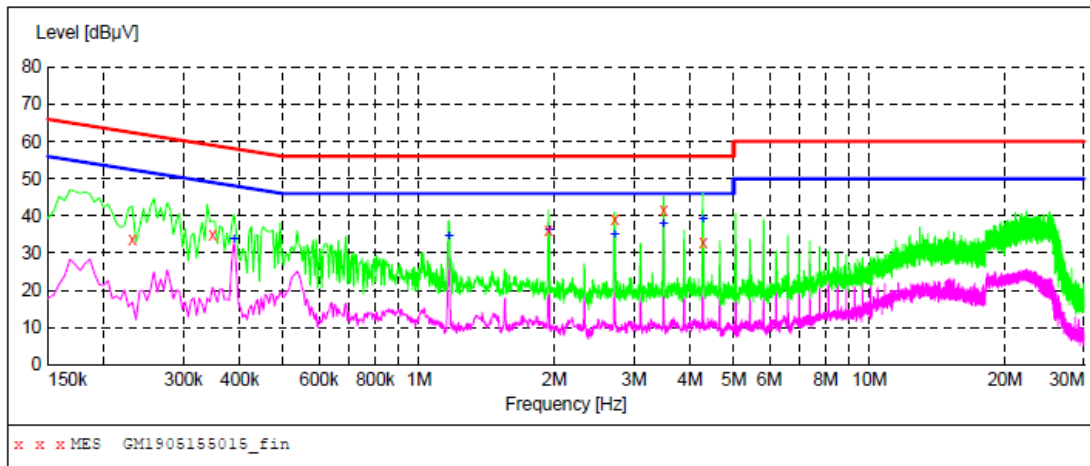
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.159000	43.30	9.9	66	22.2	QP	L1	GND
1.167000	41.70	9.9	56	14.3	QP	L1	GND
1.945500	43.10	9.9	56	12.9	QP	L1	GND
2.724000	44.80	9.9	56	11.2	QP	L1	GND
3.502500	46.50	9.9	56	9.5	QP	L1	GND
4.281000	46.70	9.9	56	9.3	QP	L1	GND

MEASUREMENT RESULT: "GM1905155016_fin2"

5/15/2019 1:32PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
1.167000	37.40	9.9	46	8.6	AV	L1	GND
1.945500	38.70	9.9	46	7.3	AV	L1	GND
2.724000	40.30	9.9	46	5.7	AV	L1	GND
3.502500	42.20	9.9	46	3.8	AV	L1	GND
4.281000	42.40	9.9	46	3.6	AV	L1	GND
5.059500	37.80	10.0	50	12.2	AV	L1	GND

Test Line: N



MEASUREMENT RESULT: "GM1905155015_fin"

5/15/2019 1:29PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.231000	33.80	9.9	62	28.6	QP	N	GND
0.348000	34.80	9.9	59	24.2	QP	N	GND
1.941000	36.10	9.9	56	19.9	QP	N	GND
2.719500	38.90	9.9	56	17.1	QP	N	GND
3.498000	41.50	9.9	56	14.5	QP	N	GND
4.272000	32.90	9.9	56	23.1	QP	N	GND

MEASUREMENT RESULT: "GM1905155015_fin2"

5/15/2019 1:29PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.388500	33.50	9.9	48	14.6	AV	N	GND
1.167000	34.70	9.9	46	11.3	AV	N	GND
1.945500	36.10	9.9	46	9.9	AV	N	GND
2.719500	34.90	9.9	46	11.1	AV	N	GND
3.498000	37.90	9.9	46	8.1	AV	N	GND
4.276500	39.00	9.9	46	7.0	AV	N	GND

5.3. Maximum Conducted Output Power

LIMIT

FCC CFR Title 47 Part 15 Subpart E Section 15.407(a):

For the 5.15~5.25GHz band:

- Outdoor AP
The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
if $G_{TX} > 6\text{dBi}$, then $P_{out} = 30 - (G_{TX} - 6)$. e.i.r.p. at any elevation angle above 30 degrees $\leq 125\text{mW}$ (21dBm)
- Indoor AP
The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
if $G_{TX} > 6\text{dBi}$, then $P_{out} = 30 - (G_{TX} - 6)$.
- Point-to-point AP
The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
if $G_{TX} > 23\text{dBi}$, then $P_{out} = 30 - (G_{TX} - 23)$.
- Client devices
The maximum conducted output power (P_{out}) shall not exceed the lesser of 250W (24dBm).
if $G_{TX} > 6\text{dBi}$, then $P_{out} = 24 - (G_{TX} - 6)$.

For the 5.25~5.35GHz band:

The maximum conducted output power (P_{out}) shall not exceed the lesser of 250mW (24dBm) or 11dBm+10 log B, where B is the 26dB emission bandwidth in MHz.
if $G_{TX} > 6\text{dBi}$, then $P_{out} = 24 - (G_{TX} - 6)$.

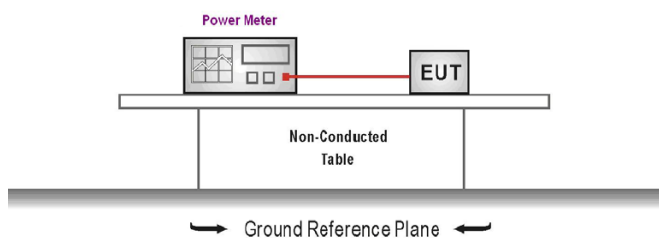
For the 5.47~5.725GHz band:

The maximum conducted output power (P_{out}) shall not exceed the lesser of 250mW (24dBm) or 11dBm+10 log B, where B is the 26dB emission bandwidth in MHz.
if $G_{TX} > 6\text{dBi}$, then $P_{out} = 24 - (G_{TX} - 6)$.

For the 5.725~5.85GHz band:

- Point-to-multipoint systems (P2M)
The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
if $G_{TX} > 6\text{dBi}$, then $P_{out} = 30 - (G_{TX} - 6)$.
- Point-to-point systems (P2P)
The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was tested according to KDB789033 Section E-3-b)
2. The maximum conducted output power may be measured using a broadband AVG RF power meter.
3. Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor.
4. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
5. Record the measurement data.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed Not Applicable

Band	Bandwidth (MHz)	Type	Channel	Conducted Output Power (dBm)	Limit (dBm)	Result
I	20	802.11ac	CH _L	15.35	24.00	Pass
			CH _M	15.37		
			CH _H	15.78		
		802.11n	CH _L	15.07	24.00	Pass
			CH _M	15.00		
			CH _H	15.65		
		802.11a	CH _L	14.83	24.00	Pass
			CH _M	14.79		
			CH _H	15.28		
	40	802.11ac	CH _L	15.58	24.00	Pass
			CH _H	15.69		
		802.11n	CH _L	15.06	24.00	Pass
CH _H			15.94			
80	802.11ac	CH _M	15.88	24.00	Pass	
II	20	802.11ac	CH _L	15.57	24.00	Pass
			CH _M	15.38		
			CH _H	16.16		
		802.11n	CH _L	15.71	24.00	Pass
			CH _M	15.37		
			CH _H	16.07		
		802.11a	CH _L	15.42	24.00	Pass
			CH _M	15.04		
			CH _H	15.83		
	40	802.11ac	CH _L	15.86	24.00	Pass
			CH _H	16.09		
		802.11n	CH _L	15.78	24.00	Pass
			CH _H	15.86		
	80	802.11ac	CH _M	15.91	24.00	Pass

Band	Bandwidth (MHz)	Type	Channel	Conducted Output Power (dBm)	Limit (dBm)	Result
III	20	802.11ac	CH _L	16.09	24.00	Pass
			CH _M	16.22		
			CH _H	15.74		
		802.11n	CH _L	15.49	24.00	Pass
			CH _M	16.25		
			CH _H	15.45		
		802.11a	CH _L	15.41	24.00	Pass
			CH _M	15.91		
			CH _H	15.24		
	40	802.11ac	CH _L	14.68	24.00	Pass
			CH _M	14.95		
			CH _H	14.53		
		802.11n	CH _L	15.33	24.00	Pass
			CH _M	15.71		
			CH _H	15.41		
80	802.11ac	CH _L	15.47	24.00	Pass	
		CH _M	15.39			
		CH _H	14.57			
IV	20	802.11ac	CH _L	15.15	30.00	Pass
			CH _M	13.84		
			CH _H	14.03		
		802.11n	CH _L	15.22	30.00	Pass
			CH _M	13.83		
			CH _H	13.99		
		802.11a	CH _L	14.94	30.00	Pass
			CH _M	13.63		
			CH _H	12.66		
	40	802.11ac	CH _L	15.99	30.00	Pass
			CH _H	14.60		
		802.11n	CH _L	15.47	30.00	Pass
CH _H			14.32			
80	802.11ac	CH _M	15.44	30.00	Pass	

5.4. Maximum Power Spectral Density

LIMIT

FCC CFR Title 47 Part 15 Subpart E Section 15.407(a):

For the 5.15~5.25GHz band:

- Outdoor AP
The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
if $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 17 - (G_{TX} - 6)$.
- Indoor AP
The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
if $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 17 - (G_{TX} - 6)$.
- Point-to-point AP
The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
if $G_{TX} > 23\text{dBi}$, then $\text{PSD} = 17 - (G_{TX} - 23)$.
- Client devices
The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
if $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 11 - (G_{TX} - 6)$.

For the 5.25~5.35GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
if $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 11 - (G_{TX} - 6)$.

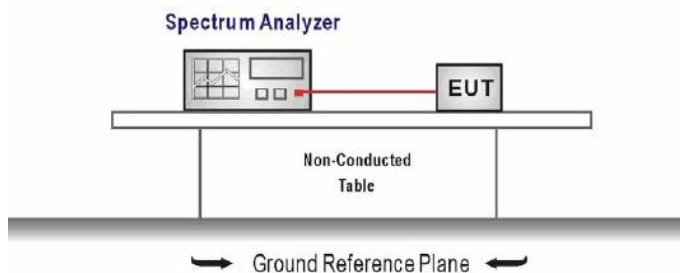
For the 5.47~5.725GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
if $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 11 - (G_{TX} - 6)$.

For the 5.725~5.85GHz band:

- Point-to-multipoint systems (P2M)
The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.
if $G_{TX} > 6\text{dBi}$, then $\text{PSD} = 30 - (G_{TX} - 6)$.
- Point-to-point systems (P2P)
The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.

TEST CONFIGURATION



TEST PROCEDURE

1. According KDB 789033 D02 – Section F
2. Analyzer was setting as follow:
Center frequenel: test channel
Span was set to encompass the entire emission bandwidth of the signal
RBW=1MHz for devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz
RBW=500kHz for devices operating in the band 5.725-5.85 GHz
VBW \geq 3 RBW
Number of sweep points $>$ 2 x (span/RBW)
Sweep time = auto
Detector = Peak
Trigger was set to free run for all modes, trace was averaged over 100 sweeps
3. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

TEST MODE:

Please refer to the clause 3.3

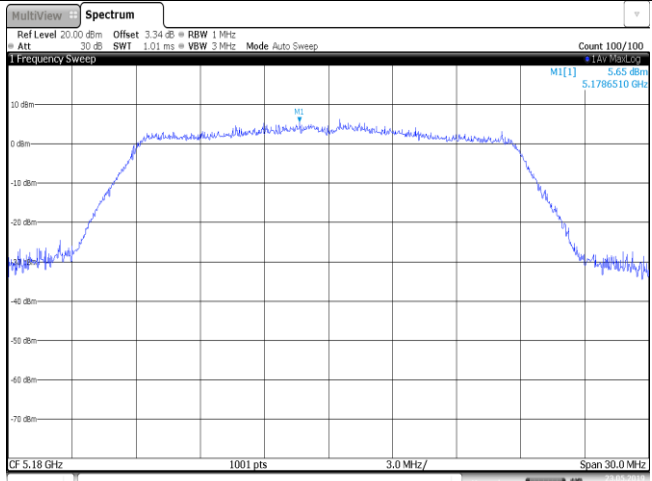
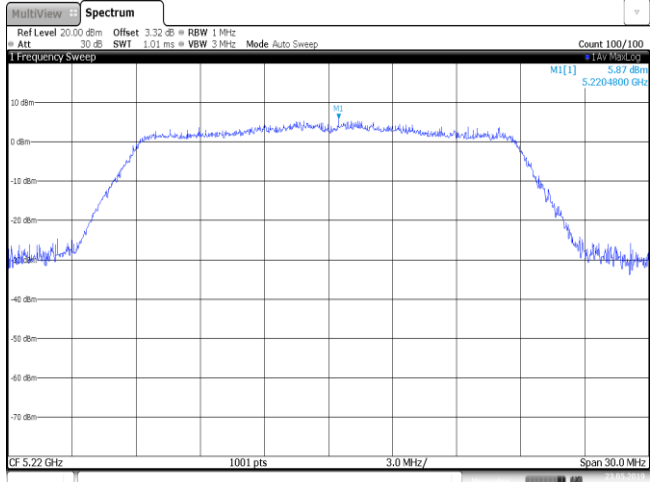
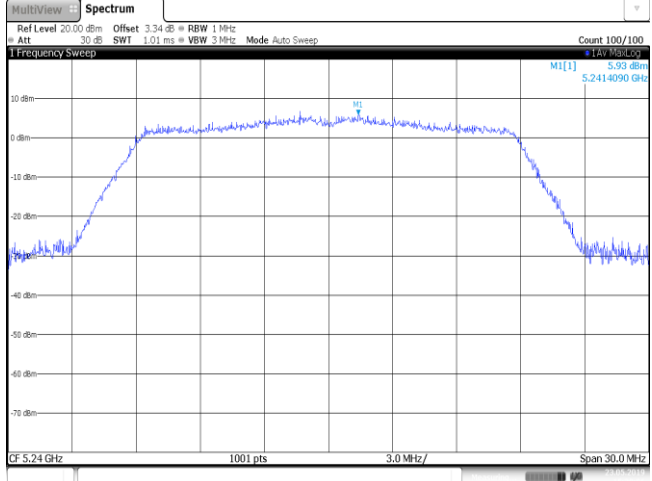
TEST RESULTS

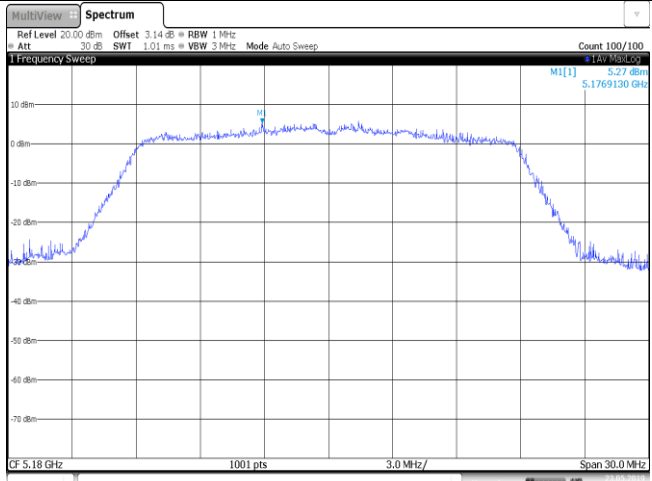
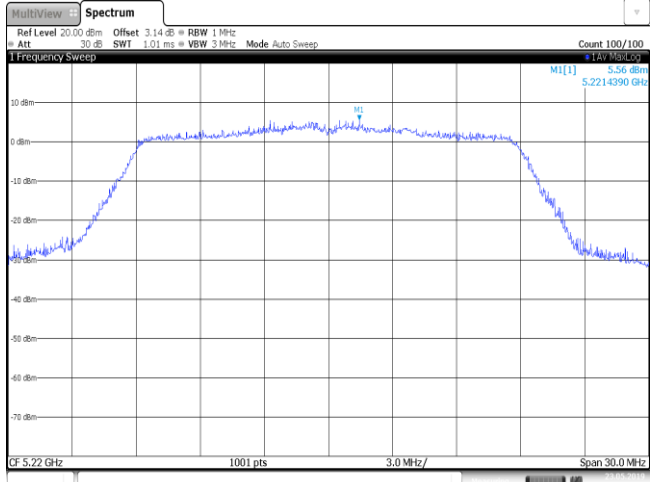
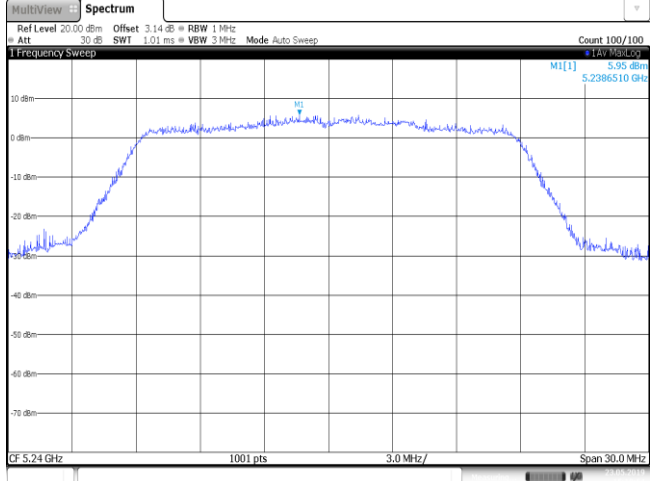
Passed Not Applicable

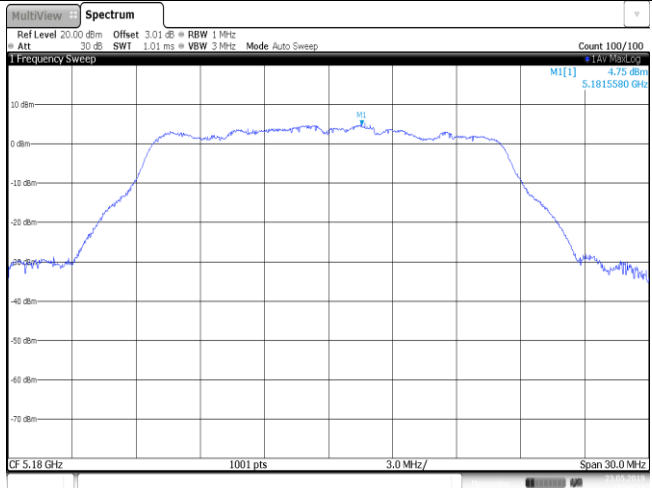
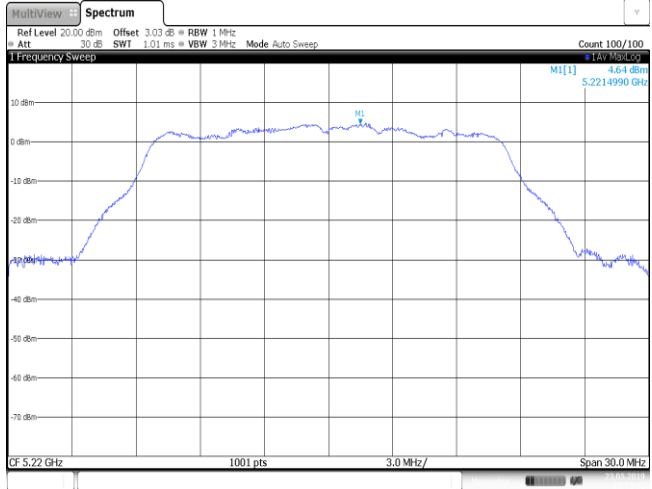
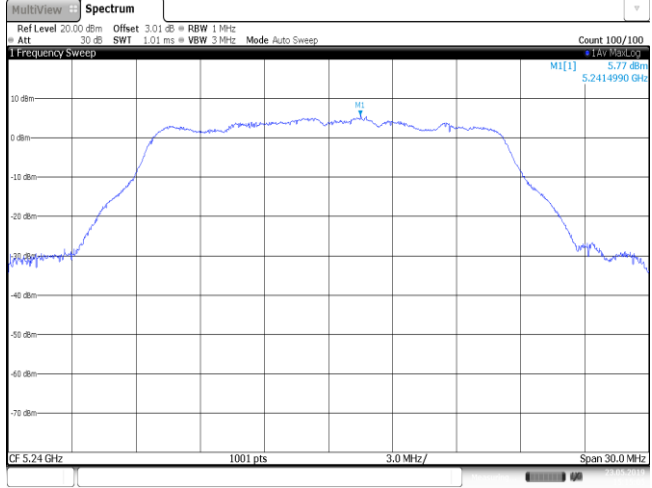
Band	Bandwidth (MHz)	Type	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
I	20	802.11ac	CH _L	5.65	11.00	Pass
			CH _M	5.87		
			CH _H	5.93		
		802.11n	CH _L	5.27	11.00	Pass
			CH _M	5.56		
			CH _H	5.95		
		802.11a	CH _L	4.75	11.00	Pass
			CH _M	4.64		
			CH _H	5.77		
	40	802.11ac	CH _L	4.02	11.00	Pass
			CH _H	4.14		
		802.11n	CH _L	2.70	11.00	Pass
CH _H			2.71			
80	802.11ac	CH _M	0.77	11.00	Pass	
II	20	802.11ac	CH _L	6.75	11.00	Pass
			CH _M	5.57		
			CH _H	5.84		
		802.11n	CH _L	6.22	11.00	Pass
			CH _M	6.22		
			CH _H	6.23		
		802.11a	CH _L	5.93	11.00	Pass
			CH _M	5.18		
			CH _H	6.01		
	40	802.11ac	CH _L	3.05	11.00	Pass
			CH _H	3.29		
		802.11n	CH _L	3.18	11.00	Pass
			CH _H	3.10		
	80	802.11ac	CH _M	0.29	11.00	Pass

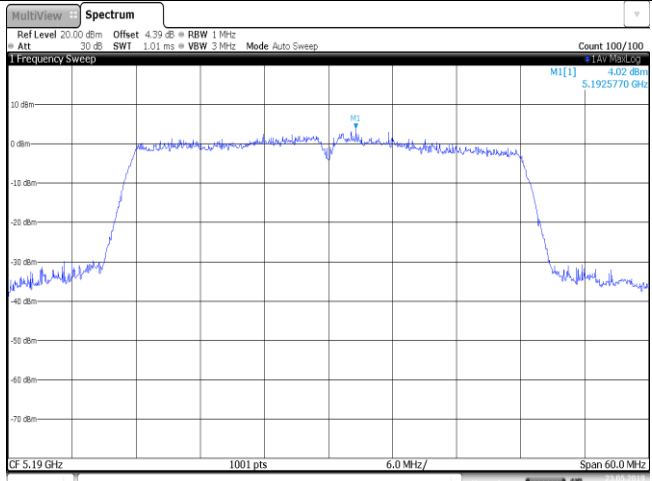
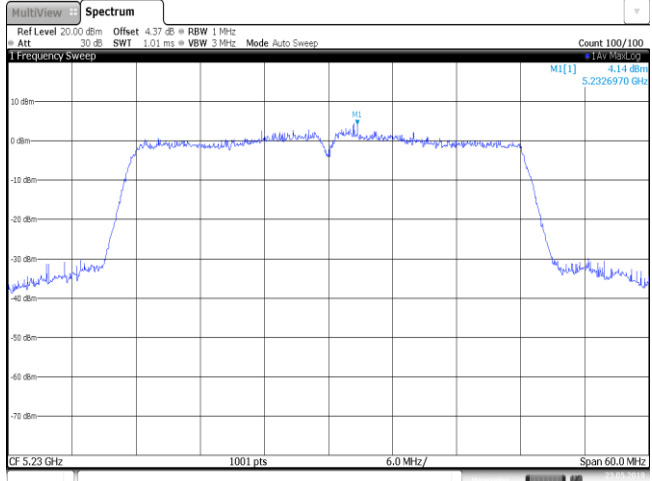
Band	Bandwidth (MHz)	Type	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
III	20	802.11ac	CH _L	6.33	11.00	Pass
			CH _M	6.40		
			CH _H	5.66		
		802.11n	CH _L	6.13	11.00	Pass
			CH _M	6.41		
			CH _H	5.84		
		802.11a	CH _L	6.04	11.00	Pass
			CH _M	6.27		
			CH _H	5.77		
	40	802.11ac	CH _L	3.18	11.00	Pass
			CH _M	3.38		
			CH _H	2.08		
		802.11n	CH _L	3.27	11.00	Pass
			CH _M	2.79		
			CH _H	2.72		
80	802.11ac	CH _L	-0.37	11.00	Pass	
		CH _M	-0.56			
		CH _H	0.35			
Band	Bandwidth (MHz)	Type	Channel	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)	Result
IV	20	802.11ac	CH _L	3.87	30.00	Pass
			CH _M	2.78		
			CH _H	2.17		
		802.11n	CH _L	3.84	30.00	Pass
			CH _M	1.74		
			CH _H	2.40		
		802.11a	CH _L	3.06	30.00	Pass
			CH _M	1.61		
			CH _H	0.74		
	40	802.11ac	CH _L	1.22	30.00	Pass
			CH _H	0.72		
		802.11n	CH _L	1.28	30.00	Pass
			CH _H	-0.49		
	80	802.11ac	CH _M	-1.85	30.00	Pass

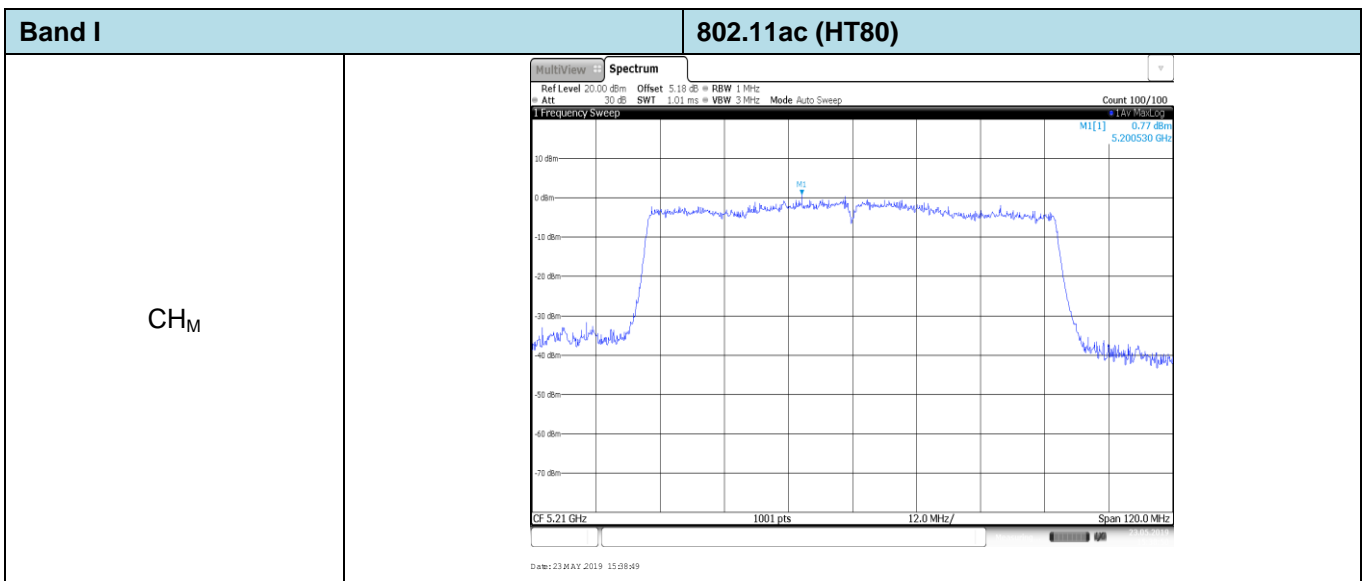
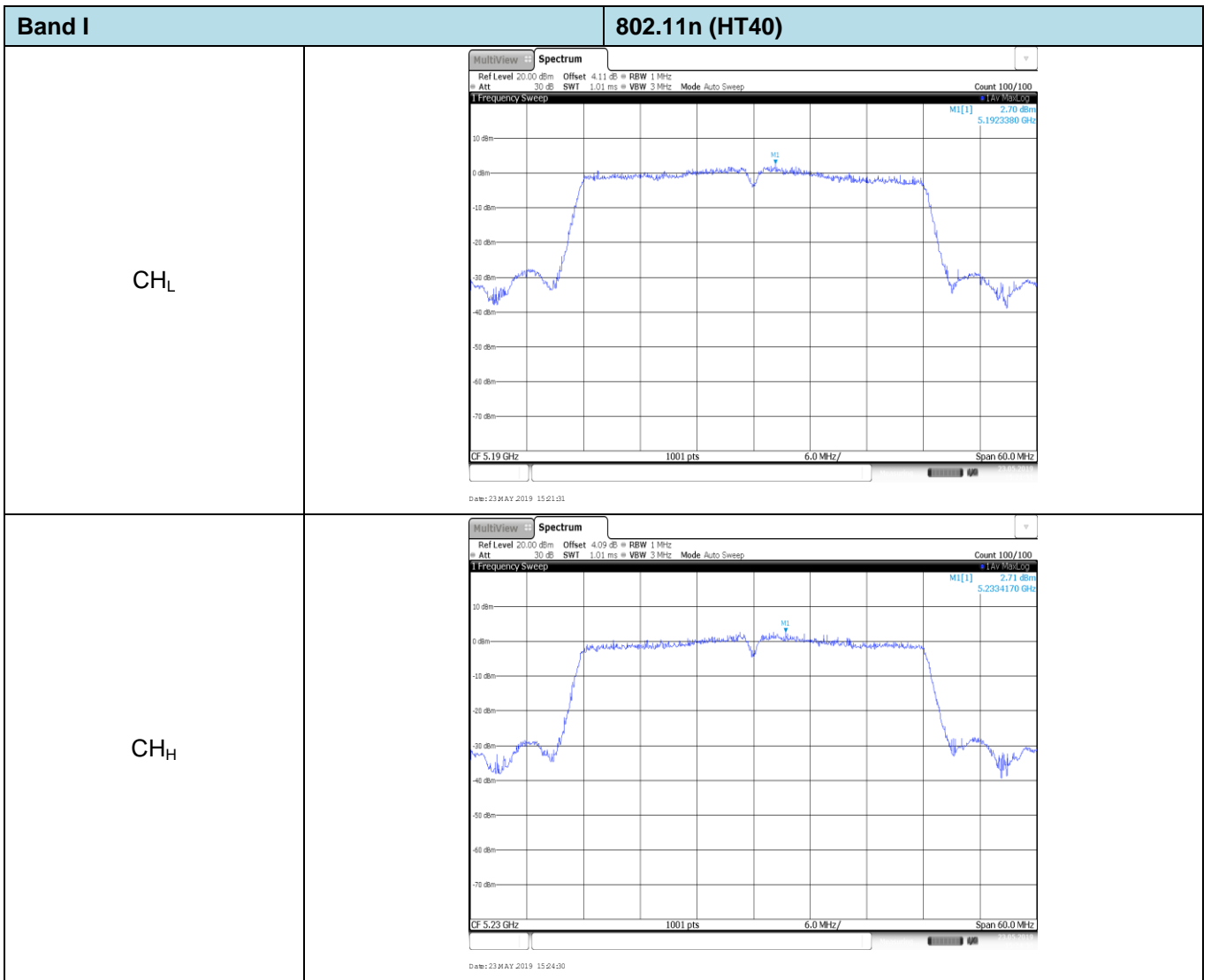
Test plot as follows:

Band I		802.11ac (HT20)
CH _L	 <p>Ref Level 20.00 dBm Offset 3.34 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.65 dBm 5.1786510 GHz CF 5.18 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 15:06:01</p>	
CH _M	 <p>Ref Level 20.00 dBm Offset 3.32 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.87 dBm 5.2204800 GHz CF 5.22 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 15:07:26</p>	
CH _H	 <p>Ref Level 20.00 dBm Offset 3.34 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.93 dBm 5.2414090 GHz CF 5.24 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 15:09:56</p>	

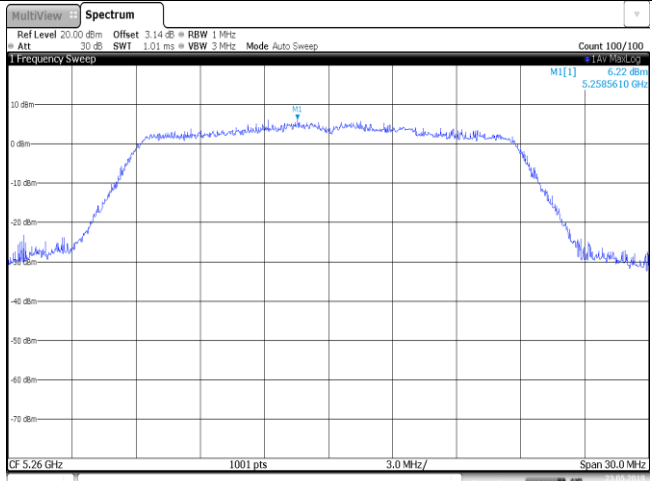
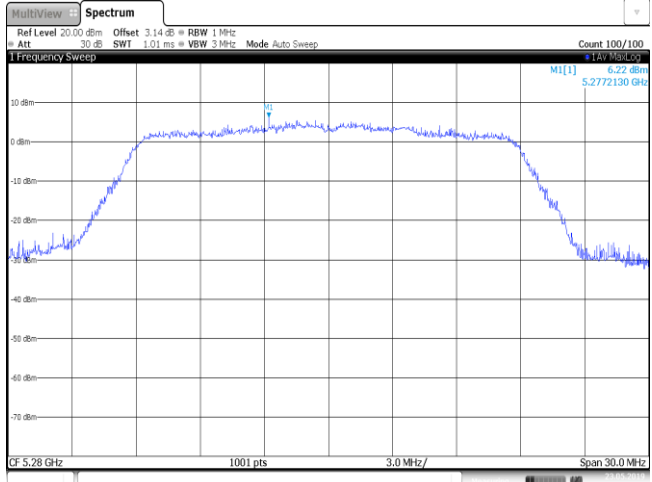
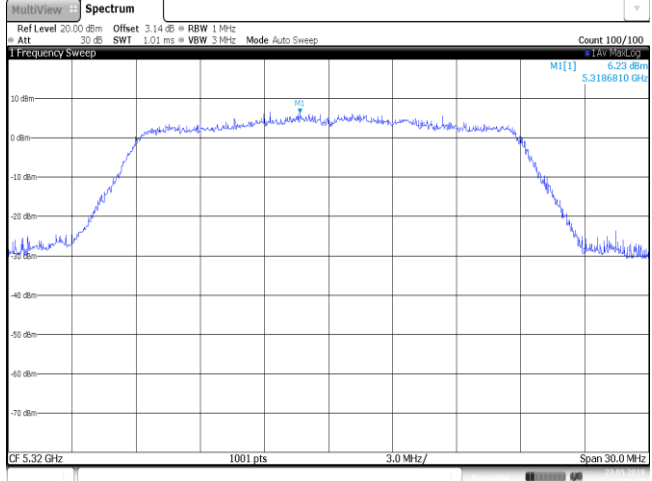
Band I		802.11n (HT20)
CH _L	 <p>Ref Level 20.00 dBm Offset 3.14 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M[1] 5.27 dBm 5.1769130 GHz CF 5.18 GHz 1001 pts 3.0 MHz/pt Span 30.0 MHz Date: 23 MAY 2019 15:46:52</p>	
CH _M	 <p>Ref Level 20.00 dBm Offset 3.14 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M[1] 5.56 dBm 5.2214390 GHz CF 5.22 GHz 1001 pts 3.0 MHz/pt Span 30.0 MHz Date: 23 MAY 2019 15:48:29</p>	
CH _H	 <p>Ref Level 20.00 dBm Offset 3.14 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M[1] 5.95 dBm 5.2386510 GHz CF 5.24 GHz 1001 pts 3.0 MHz/pt Span 30.0 MHz Date: 23 MAY 2019 15:49:54</p>	

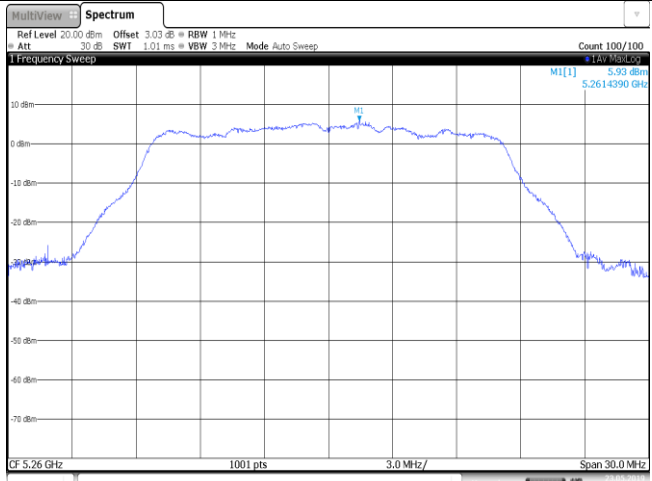
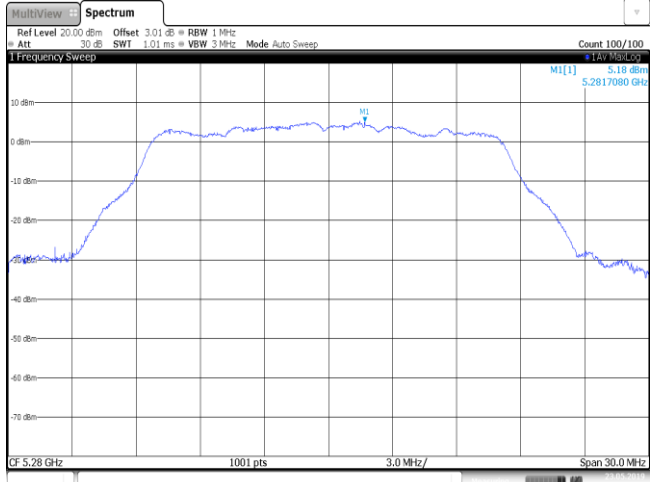
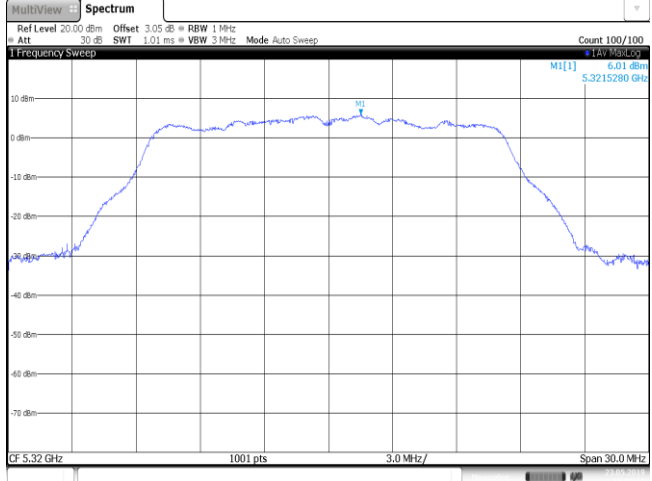
Band I		802.11a
CH _L	 <p>Ref Level 20.00 dBm Offset 3.01 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 4.75 dBm 5.1815580 GHz CF 5.18 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 15:09:22</p>	
CH _M	 <p>Ref Level 20.00 dBm Offset 3.03 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 4.64 dBm 5.2214990 GHz CF 5.22 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 15:03:20</p>	
CH _H	 <p>Ref Level 20.00 dBm Offset 3.01 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.77 dBm 5.2414990 GHz CF 5.24 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 15:05:06</p>	

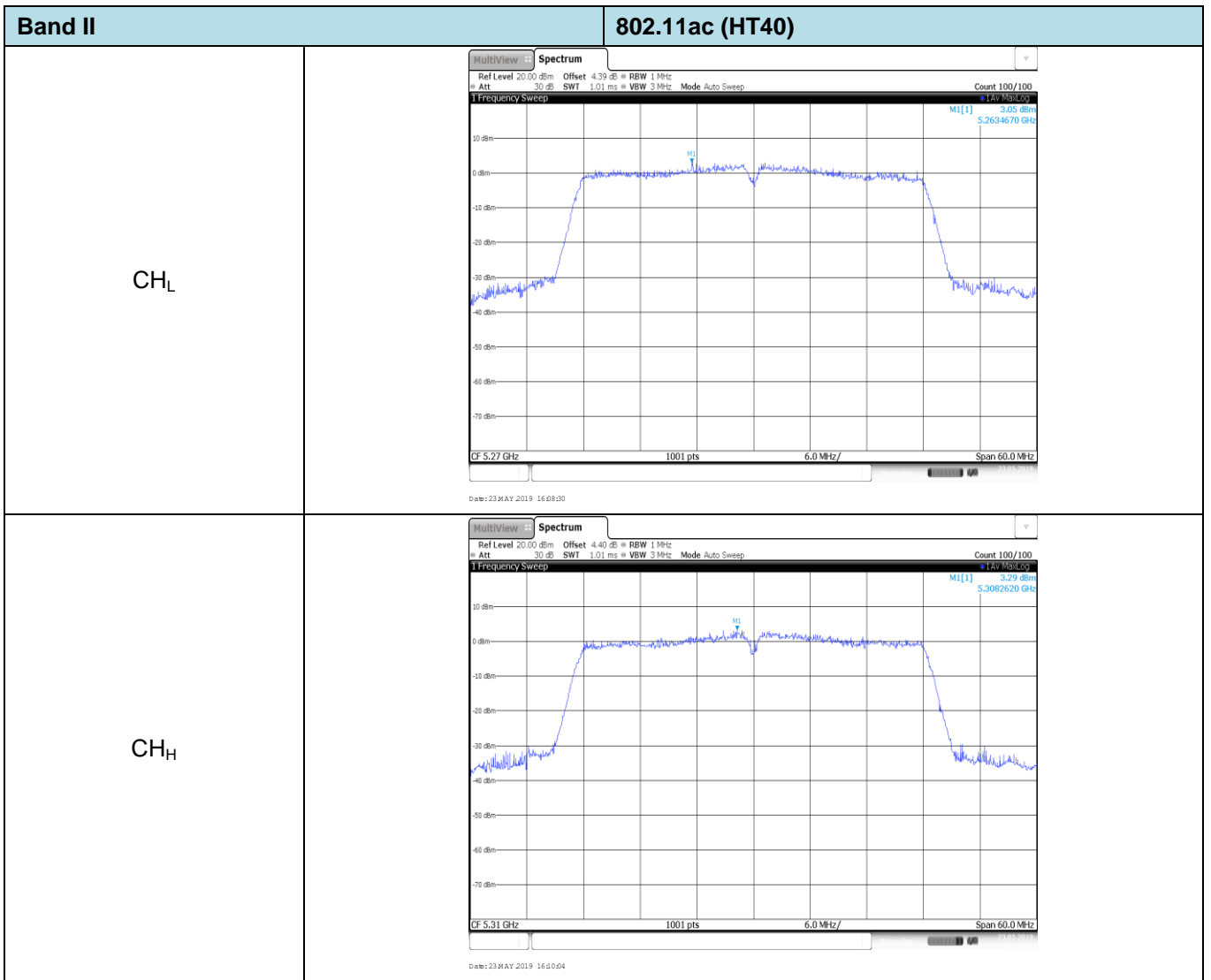
Band I		802.11ac (HT40)
CH _L		
CH _H		

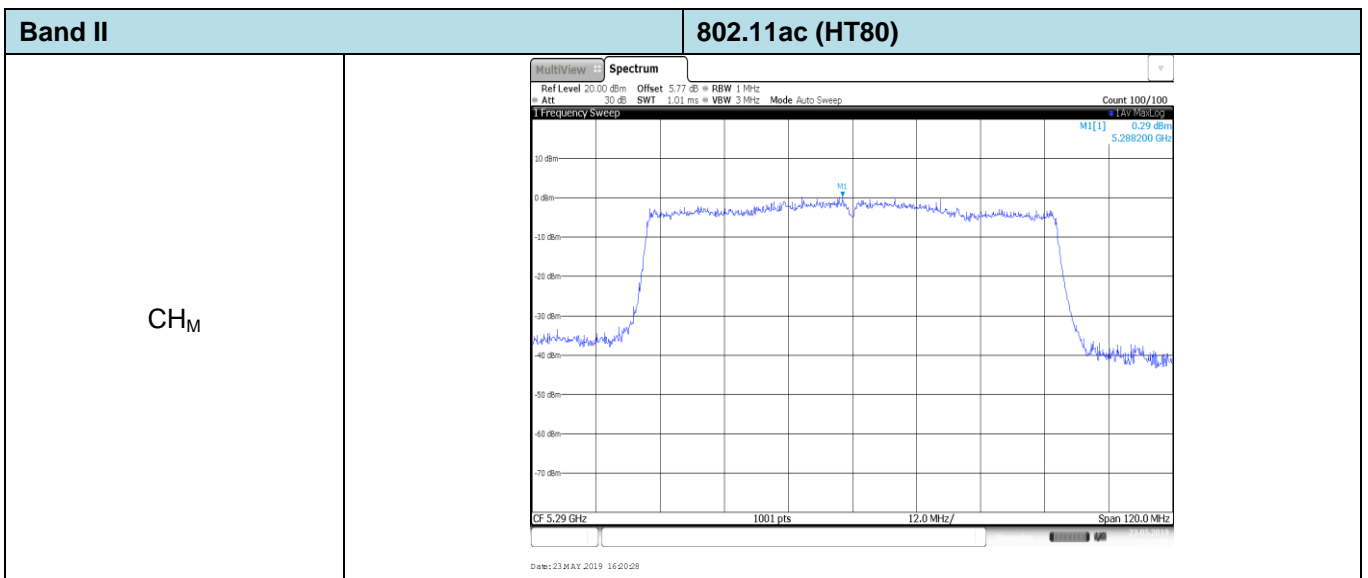
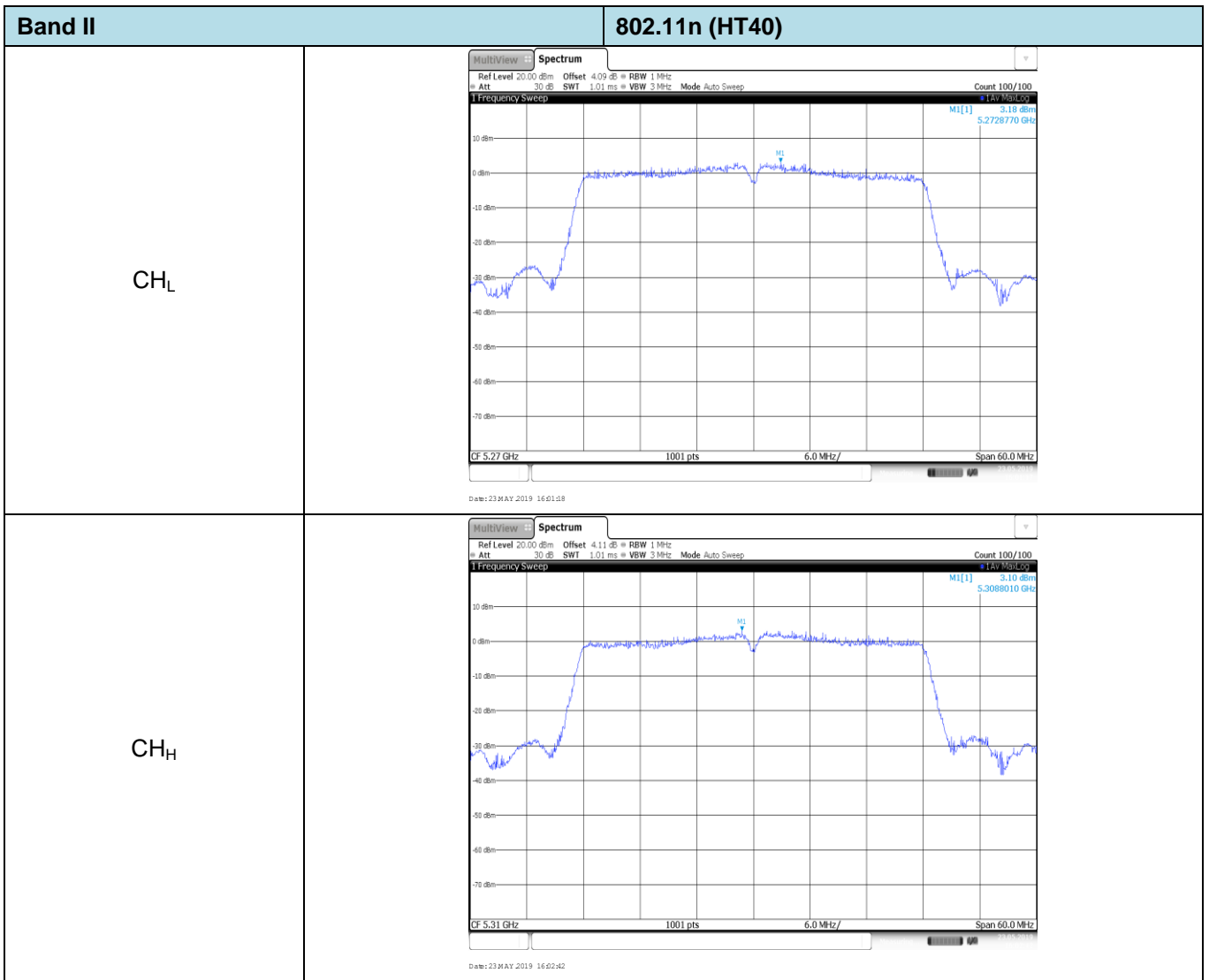


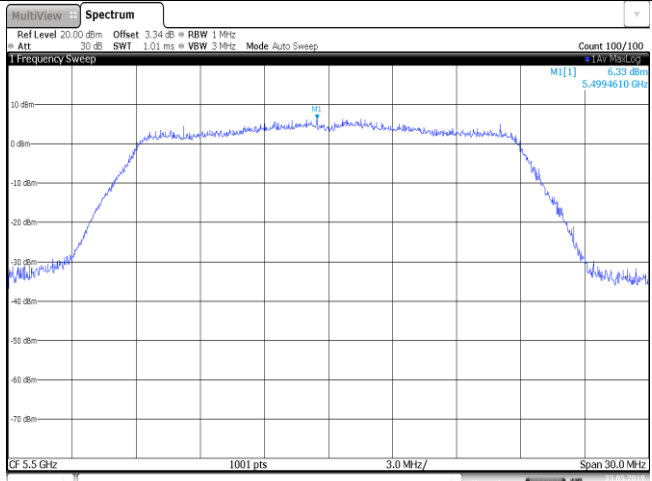
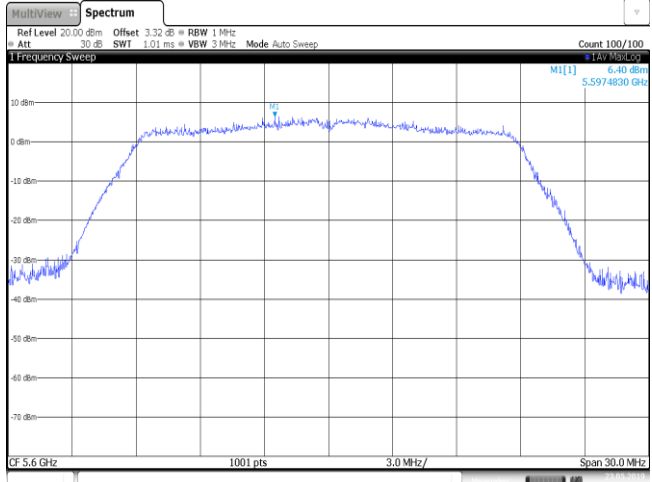
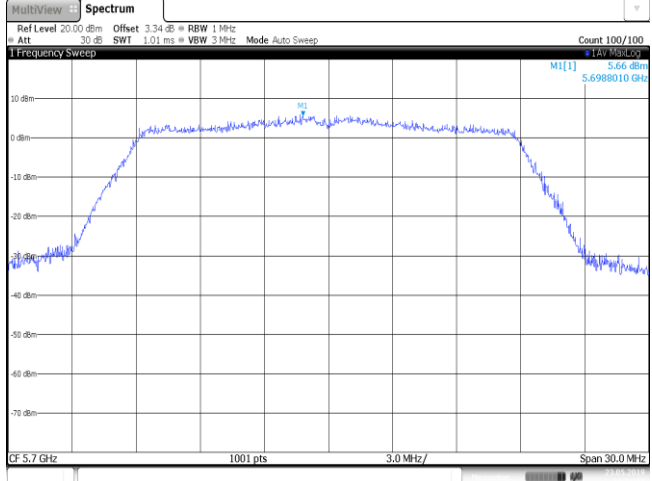
Band II		802.11ac (HT20)
CH _L	<p>Ref Level 20.00 dBm Offset 3.34 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 6.75 dBm 5.2584720 GHz CF 5.26 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 16:04:33</p>	
CH _M	<p>Ref Level 20.00 dBm Offset 3.32 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.57 dBm 5.2774230 GHz CF 5.28 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 16:05:49</p>	
CH _H	<p>Ref Level 20.00 dBm Offset 3.32 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.84 dBm 5.3213490 GHz CF 5.32 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 16:07:01</p>	

Band II		802.11n (HT20)
CH _L	 <p>Ref Level 20.00 dBm Offset 3.14 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 6.22 dBm 5.2585610 GHz CF 5.26 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 15:57:16</p>	
CH _M	 <p>Ref Level 20.00 dBm Offset 3.14 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 6.22 dBm 5.2772130 GHz CF 5.28 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 15:59:26</p>	
CH _H	 <p>Ref Level 20.00 dBm Offset 3.14 dB RBW 1 MHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 6.23 dBm 5.3186810 GHz CF 5.32 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 15:59:41</p>	

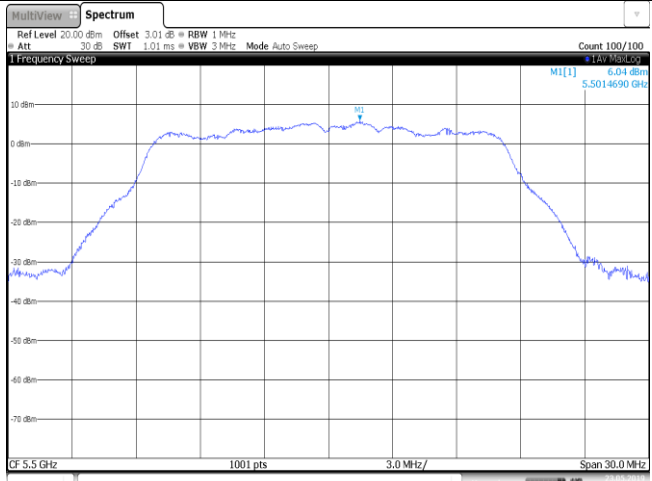
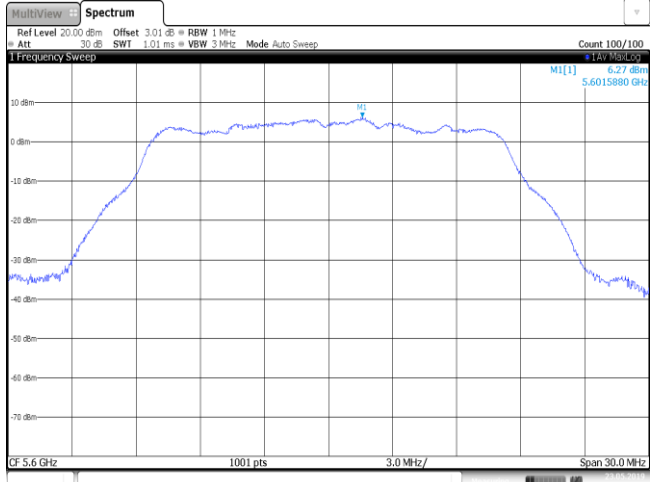
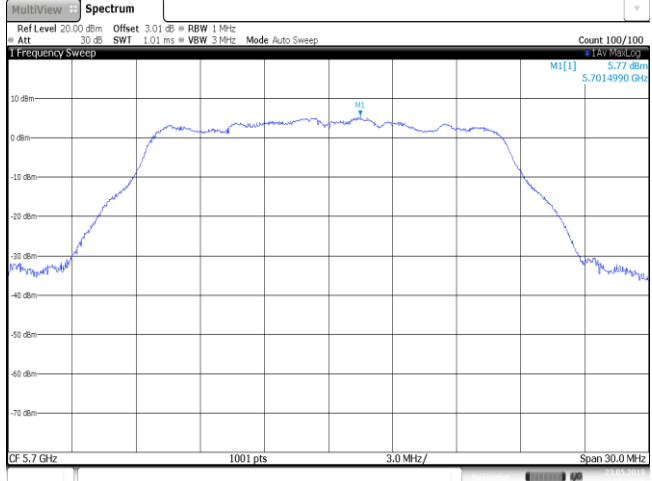
Band II		802.11a
CH _L	 <p>Date: 23 MAY 2019 15:51:09</p>	
CH _M	 <p>Date: 23 MAY 2019 15:54:08</p>	
CH _H	 <p>Date: 23 MAY 2019 15:55:17</p>	



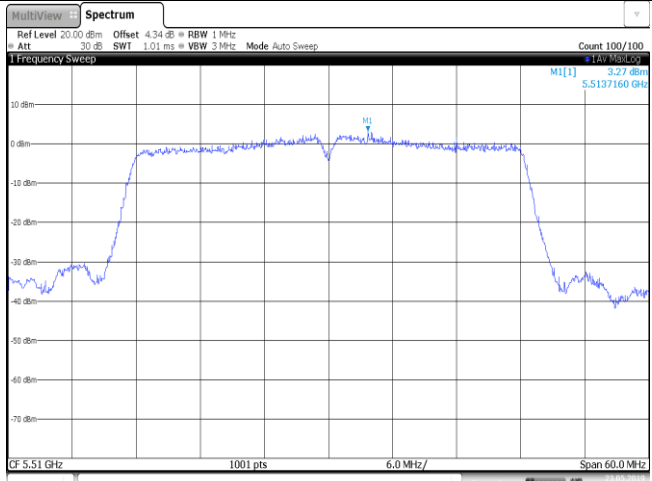
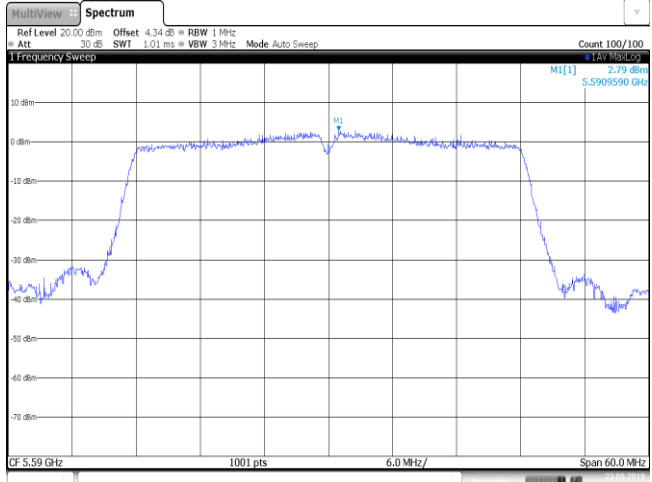
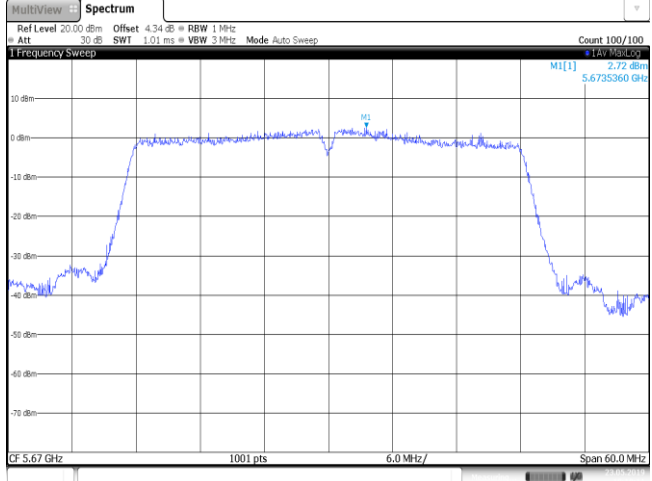


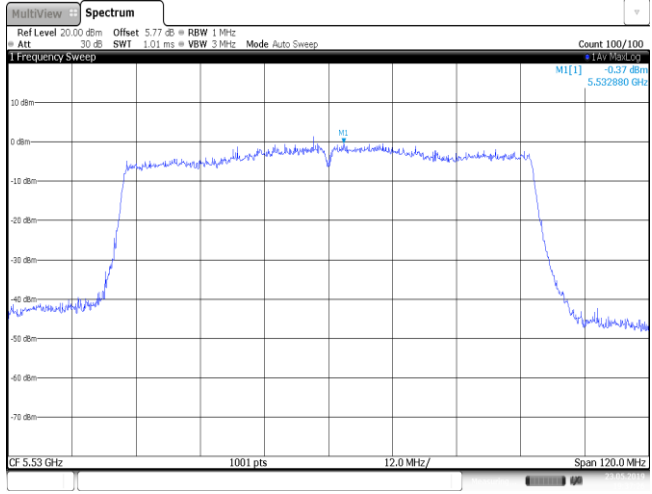
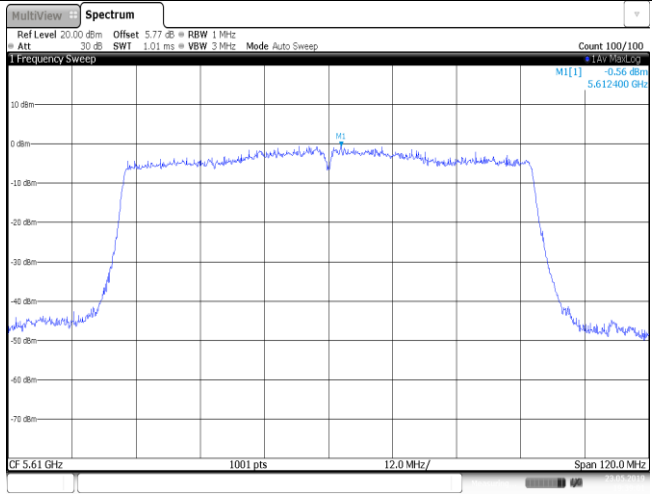
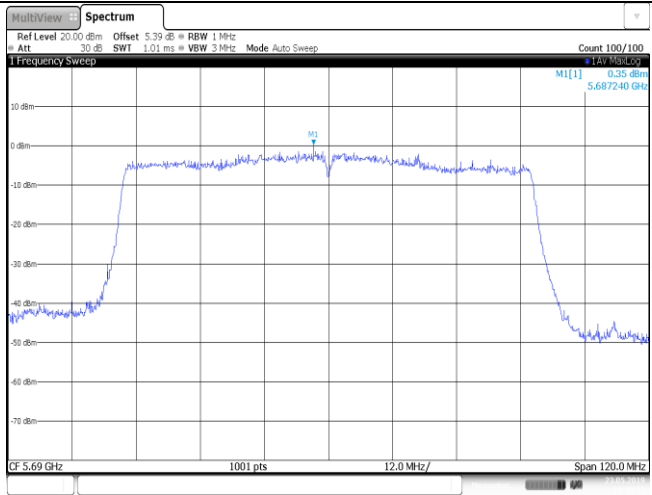
Band III		802.11ac (HT20)
CH _L	 <p>Date: 23 MAY 2019 19:49:54</p>	
CH _M	 <p>Date: 23 MAY 2019 19:42:54</p>	
CH _H	 <p>Date: 23 MAY 2019 19:44:04</p>	

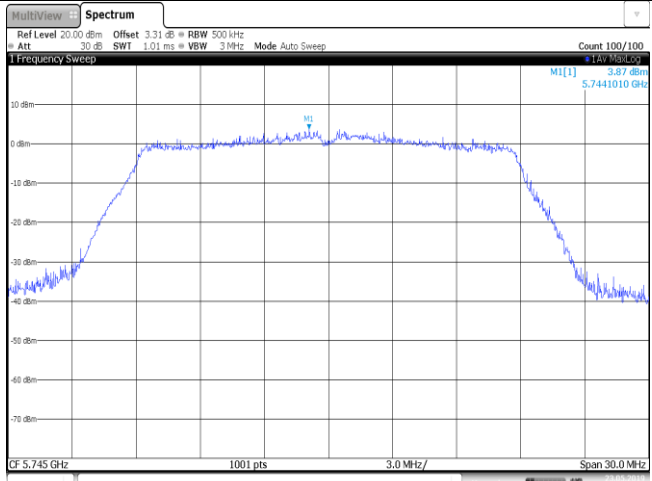
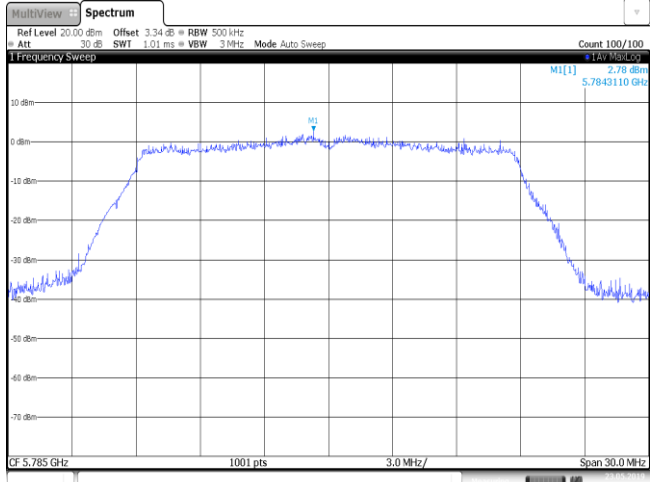
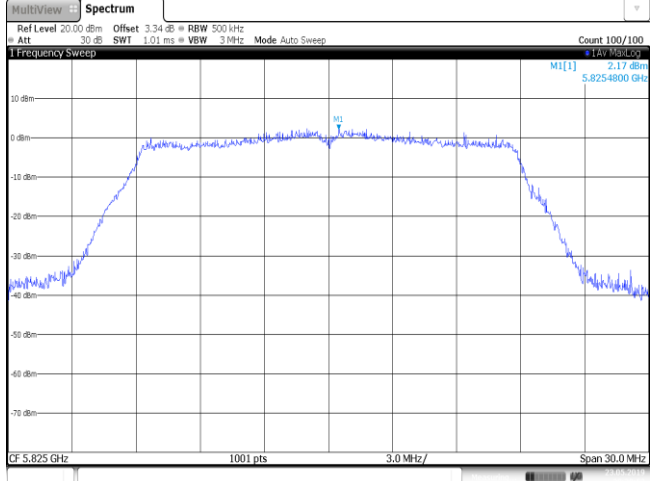
Band III		802.11n (HT20)
CH _L	<p>The spectrum plot for channel CH_L shows a signal centered around 5.5 GHz. The y-axis represents power in dBm, ranging from -80 to 10. The x-axis represents frequency in GHz, ranging from 5.5 to 5.8. A peak is observed at 5.5013490 GHz with a power level of 6.13 dBm. The plot includes technical parameters: Ref Level 20.00 dBm, Offset 3.14 dB, RBW 1 MHz, Att 30 dB, SWT 1.01 ms, VBW 3 MHz, Mode Auto Sweep, Count 100/100, and Span 30.0 MHz.</p>	
CH _M	<p>The spectrum plot for channel CH_M shows a signal centered around 5.6 GHz. The y-axis represents power in dBm, ranging from -80 to 10. The x-axis represents frequency in GHz, ranging from 5.6 to 5.9. A peak is observed at 5.5989210 GHz with a power level of 6.41 dBm. The plot includes technical parameters: Ref Level 20.00 dBm, Offset 3.14 dB, RBW 1 MHz, Att 30 dB, SWT 1.01 ms, VBW 3 MHz, Mode Auto Sweep, Count 100/100, and Span 30.0 MHz.</p>	
CH _H	<p>The spectrum plot for channel CH_H shows a signal centered around 5.7 GHz. The y-axis represents power in dBm, ranging from -80 to 10. The x-axis represents frequency in GHz, ranging from 5.7 to 6.0. A peak is observed at 5.7011390 GHz with a power level of 5.84 dBm. The plot includes technical parameters: Ref Level 20.00 dBm, Offset 3.14 dB, RBW 1 MHz, Att 30 dB, SWT 1.01 ms, VBW 3 MHz, Mode Auto Sweep, Count 100/100, and Span 30.0 MHz.</p>	

Band III		802.11a
CH _L	 <p>Ref Level 20.00 dBm Offset 3.01 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 6.04 dBm 5.5014690 GHz CF 5.5 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 16:03:54</p>	
CH _M	 <p>Ref Level 20.00 dBm Offset 3.01 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 6.27 dBm 5.6015880 GHz CF 5.6 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 16:07:17</p>	
CH _H	 <p>Ref Level 20.00 dBm Offset 3.01 dB RBW 1 MHz Att 30 dB SWT 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 M1[1] 5.77 dBm 5.7014990 GHz CF 5.7 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 16:08:25</p>	

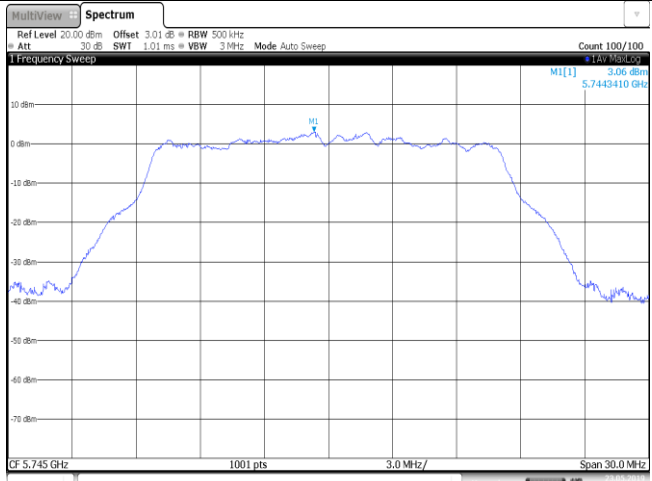
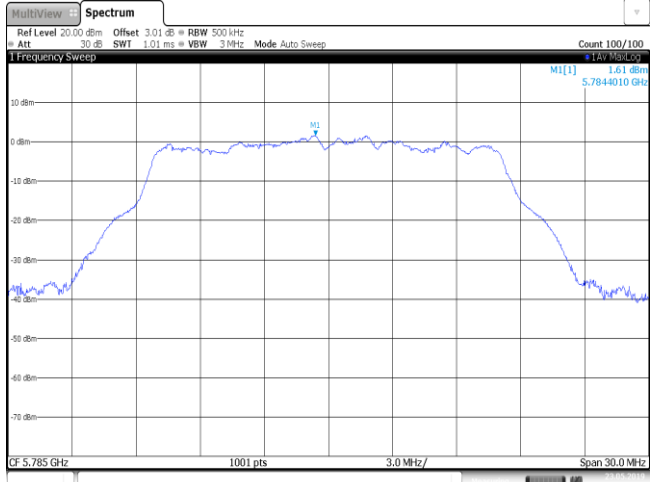
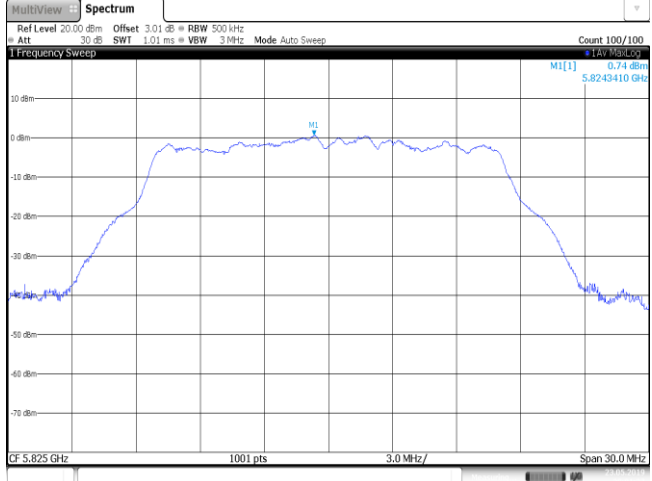
Band III		802.11ac (HT40)
CH _L	<p>The plot shows a signal spectrum for channel CH_L. The frequency range is from 5.51 GHz to 5.58 GHz. The signal level is approximately 0 dBm. A peak is observed at 5.5083820 GHz with a power of 3.18 dBm. The plot includes parameters: Ref Level 20.00 dBm, Offset 4.76 dB, RBW 1 MHz, Att 30 dB, SWF 1.01 ms, VBW 3 MHz, Mode Auto Sweep, Count 100/100, and Date: 23 MAY 2019 19:27:40.</p>	
CH _M	<p>The plot shows a signal spectrum for channel CH_M. The frequency range is from 5.59 GHz to 5.66 GHz. The signal level is approximately 0 dBm. A peak is observed at 5.5889210 GHz with a power of 3.38 dBm. The plot includes parameters: Ref Level 20.00 dBm, Offset 4.76 dB, RBW 1 MHz, Att 30 dB, SWF 1.01 ms, VBW 3 MHz, Mode Auto Sweep, Count 100/100, and Date: 23 MAY 2019 19:28:52.</p>	
CH _H	<p>The plot shows a signal spectrum for channel CH_H. The frequency range is from 5.67 GHz to 5.74 GHz. The signal level is approximately 0 dBm. A peak is observed at 5.6638860 GHz with a power of 2.08 dBm. The plot includes parameters: Ref Level 20.00 dBm, Offset 4.76 dB, RBW 1 MHz, Att 30 dB, SWF 1.01 ms, VBW 3 MHz, Mode Auto Sweep, Count 100/100, and Date: 23 MAY 2019 19:30:21.</p>	

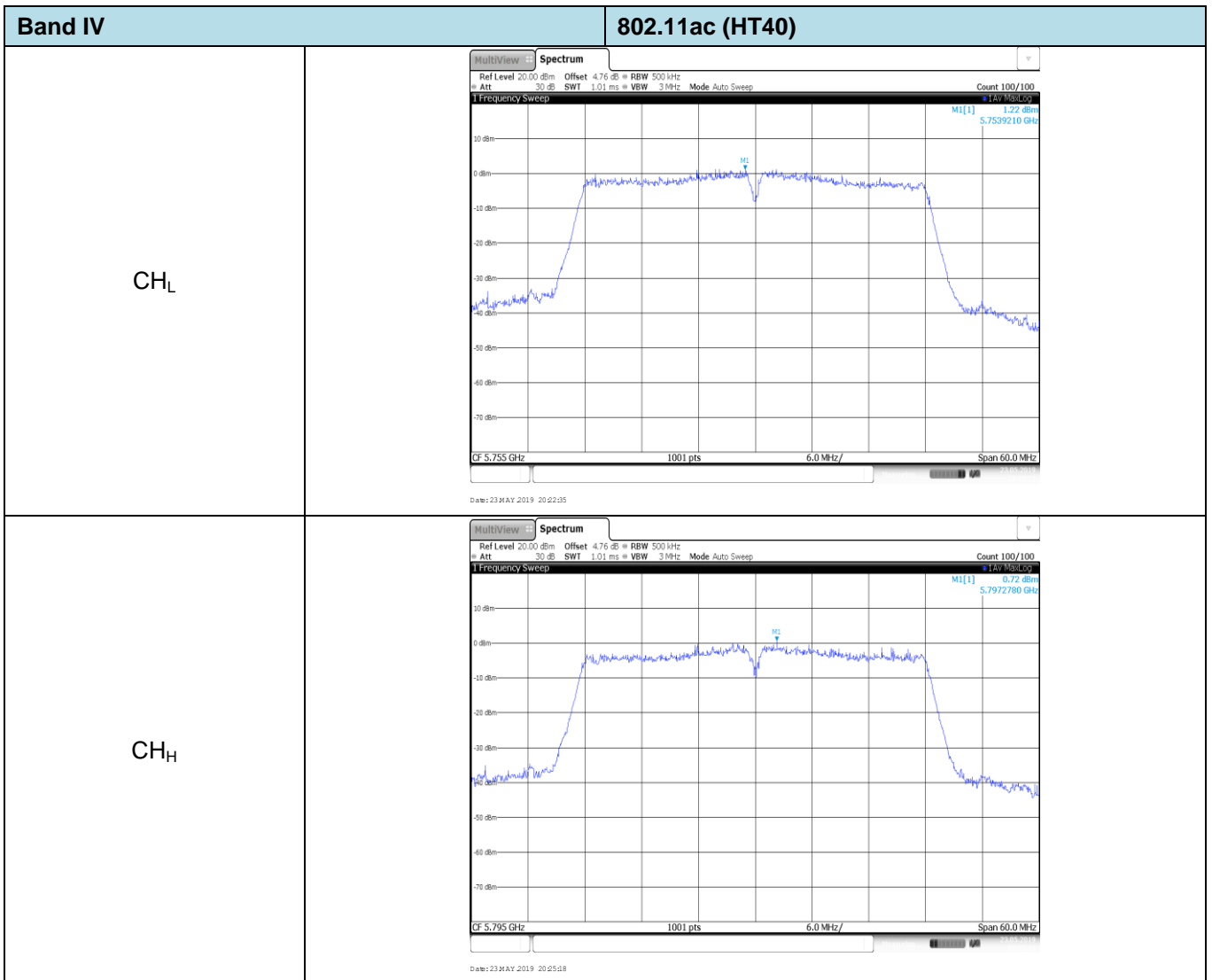
Band III		802.11n (HT40)
CH _L	 <p>Date: 23 MAY 2019 19:45:00</p>	
CH _M	 <p>Date: 23 MAY 2019 19:46:09</p>	
CH _H	 <p>Date: 23 MAY 2019 19:48:11</p>	

Band III		802.11ac (HT80)
CH _L	 <p>Ref Level 20.00 dBm Offset 5.77 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI[1] -0.37 dBm 5.532880 GHz CF 5.53 GHz 1001 pts 12.0 MHz/ Span 120.0 MHz Date: 23 MAY 2019 19:37:26</p>	
CH _M	 <p>Ref Level 20.00 dBm Offset 5.77 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI[1] -0.56 dBm 5.612400 GHz CF 5.61 GHz 1001 pts 12.0 MHz/ Span 120.0 MHz Date: 23 MAY 2019 19:39:01</p>	
CH _H	 <p>Ref Level 20.00 dBm Offset 5.39 dB RBW 1 MHz Att 30 dB SWI 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI[1] -0.35 dBm 5.687240 GHz CF 5.69 GHz 1001 pts 12.0 MHz/ Span 120.0 MHz Date: 23 MAY 2019 19:46:11</p>	

Band IV		802.11ac (HT20)
CH _L	 <p>MultiView Spectrum Ref Level 20.00 dBm Offset 3.31 dB RBW 500 kHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1(1) 3.87 dBm 5.7441010 GHz CF 5.745 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 20:18:09</p>	
CH _M	 <p>MultiView Spectrum Ref Level 20.00 dBm Offset 3.34 dB RBW 500 kHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1(1) 2.78 dBm 5.7843110 GHz CF 5.785 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 20:19:07</p>	
CH _H	 <p>MultiView Spectrum Ref Level 20.00 dBm Offset 3.34 dB RBW 500 kHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1(1) 2.17 dBm 5.8254800 GHz CF 5.825 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 20:20:54</p>	

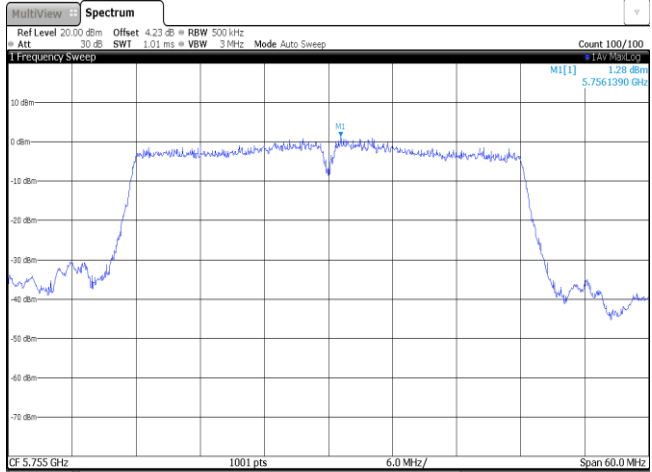
Band IV		802.11n (HT20)
CH _L	<p>MultiView Spectrum Ref Level 20.00 dBm Offset 3.14 dB RBW 500 kHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] 3.84 dBm 5.7443110 GHz CF 5.745 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 20:03:18</p>	
CH _M	<p>MultiView Spectrum Ref Level 20.00 dBm Offset 3.16 dB RBW 500 kHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] 1.74 dBm 5.7845500 GHz CF 5.785 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 20:04:28</p>	
CH _H	<p>MultiView Spectrum Ref Level 20.00 dBm Offset 3.16 dB RBW 500 kHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 1 Frequency Sweep M1[1] 2.40 dBm 5.8262890 GHz CF 5.825 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 20:07:42</p>	

Band IV		802.11a
CH _L	 <p>Ref Level 20.00 dBm Offset 3.01 dB RBW 500 kHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI(1) 3.06 dBm 5.743410 GHz CF 5.745 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 19:57:54</p>	
CH _M	 <p>Ref Level 20.00 dBm Offset 3.01 dB RBW 500 kHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI(1) 1.61 dBm 5.7844010 GHz CF 5.785 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 19:59:32</p>	
CH _H	 <p>Ref Level 20.00 dBm Offset 3.01 dB RBW 500 kHz Att 30 dB SWF 1.01 ms VBW 3 MHz Mode Auto Sweep Count 100/100 MI(1) 0.74 dBm 5.8243410 GHz CF 5.825 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz Date: 23 MAY 2019 20:01:27</p>	

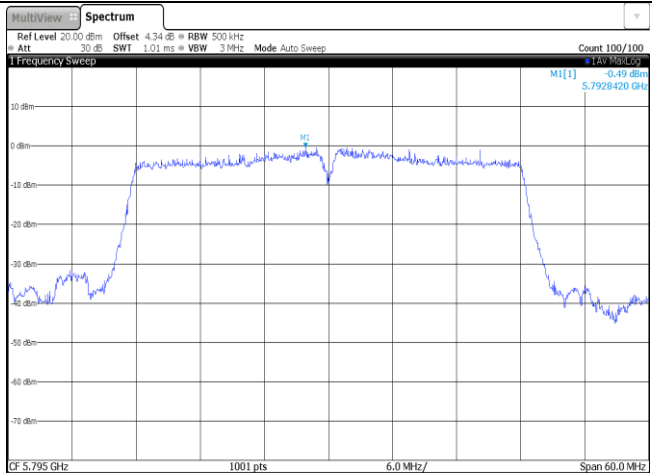


Band IV **802.11n (HT40)**

CH_L

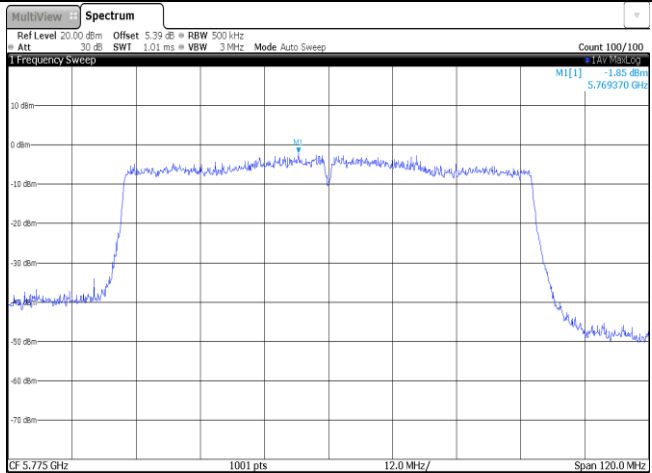


CH_H



Band IV **802.11ac (HT80)**

CH_M

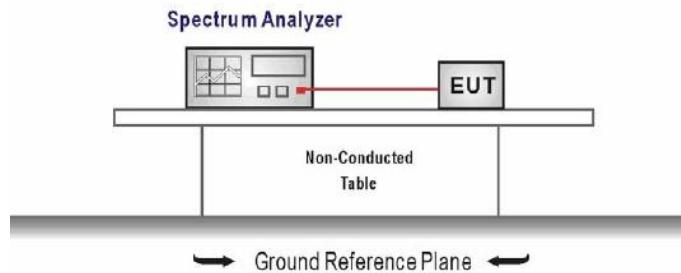


5.5. 26dB bandwidth and 99% Occupancy bandwidth

LIMIT

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 , and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

TEST CONFIGURATION



TEST PROCEDURE

1. According KDB 789033 D02 – Section C
2. Connect the antenna port(s) to the spectrum analyzer input.
3. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).
 - Center Frequency = Channel center frequency
 - Span = 2 x emission bandwidth
 - RBW = 1% to 5% of the emission bandwidth
 - VBW > 3 x RBW
 - Sweep time = auto couple
 - Detector = Peak
 - Trace mode = max hold
4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission, and use the 99 % power bandwidth function of the instrument

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

Passed Not Applicable

Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	26dB bandwidth (MHz)	Result
I	20	802.11ac	CH _L	17.71	21.24	Pass
			CH _M	17.71	21.06	
			CH _H	17.71	21.15	
		802.11n	CH _L	17.71	21.00	Pass
			CH _M	17.74	21.24	
			CH _H	17.71	21.06	
		802.11a	CH _L	16.42	20.43	Pass
			CH _M	16.45	20.37	
			CH _H	16.42	20.31	
	40	802.11ac	CH _L	36.44	40.20	Pass
			CH _H	36.38	39.96	
		802.11n	CH _L	36.26	39.60	Pass
CH _H			36.26	39.66		
80	802.11ac	CH _M	75.64	81.24	Pass	
II	20	802.11ac	CH _L	17.71	21.09	Pass
			CH _M	17.71	21.15	
			CH _H	17.71	21.27	
		802.11n	CH _L	17.68	21.30	Pass
			CH _M	17.71	21.21	
			CH _H	17.74	21.03	
		802.11a	CH _L	16.42	20.37	Pass
			CH _M	16.42	20.40	
			CH _H	16.42	20.31	
	40	802.11ac	CH _L	36.50	40.02	Pass
			CH _H	36.44	40.02	
		802.11n	CH _L	36.32	39.60	Pass
CH _H			36.26	39.90		
80	802.11ac	CH _M	75.52	81.12	Pass	

Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwidth (MHz)	26dB bandwidth (MHz)	Result
III	20	802.11ac	CH _L	17.74	21.18	Pass
			CH _M	17.71	20.73	
			CH _H	17.71	20.91	
		802.11n	CH _L	17.71	21.30	Pass
			CH _M	17.71	21.18	
			CH _H	17.74	21.18	
		802.11a	CH _L	16.42	20.40	Pass
			CH _M	16.42	20.31	
			CH _H	16.42	20.37	
	40	802.11ac	CH _L	36.38	40.26	Pass
			CH _M	36.36	40.04	
			CH _H	36.38	40.14	
		802.11n	CH _L	36.20	39.78	Pass
			CH _M	36.20	39.42	
			CH _H	36.20	39.66	
80	802.11ac	CH _L	75.40	81.60	Pass	
		CH _M	75.52	81.36		
		CH _H	75.64	81.48		

Band I		802.11ac (HT20)																																										
CH _L	<p>2 Marker Table</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.16935 GHz</td> <td>-28.16 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.1710689 GHz</td> <td>-9.51 dBm</td> <td>Occ Bw</td> <td>17.712287712 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.1888112 GHz</td> <td>-9.08 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.18087 GHz</td> <td>-2.15 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.24 MHz</td> <td>-1.32 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 15:05:08</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.16935 GHz	-28.16 dBm			T1	1		5.1710689 GHz	-9.51 dBm	Occ Bw	17.712287712 MHz	T2	1		5.1888112 GHz	-9.08 dBm			M2	1		5.18087 GHz	-2.15 dBm			D3	M1	1	21.24 MHz	-1.32 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.16935 GHz	-28.16 dBm																																								
T1	1		5.1710689 GHz	-9.51 dBm	Occ Bw	17.712287712 MHz																																						
T2	1		5.1888112 GHz	-9.08 dBm																																								
M2	1		5.18087 GHz	-2.15 dBm																																								
D3	M1	1	21.24 MHz	-1.32 dB																																								
CH _M	<p>2 Marker Table</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.20938 GHz</td> <td>-28.38 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.2111289 GHz</td> <td>-7.77 dBm</td> <td>Occ Bw</td> <td>17.712287712 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.2288412 GHz</td> <td>-8.74 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.2209 GHz</td> <td>-1.99 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.06 MHz</td> <td>0.22 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 15:06:42</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.20938 GHz	-28.38 dBm			T1	1		5.2111289 GHz	-7.77 dBm	Occ Bw	17.712287712 MHz	T2	1		5.2288412 GHz	-8.74 dBm			M2	1		5.2209 GHz	-1.99 dBm			D3	M1	1	21.06 MHz	0.22 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.20938 GHz	-28.38 dBm																																								
T1	1		5.2111289 GHz	-7.77 dBm	Occ Bw	17.712287712 MHz																																						
T2	1		5.2288412 GHz	-8.74 dBm																																								
M2	1		5.2209 GHz	-1.99 dBm																																								
D3	M1	1	21.06 MHz	0.22 dB																																								
CH _H	<p>2 Marker Table</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.22944 GHz</td> <td>-27.52 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.2311289 GHz</td> <td>-8.35 dBm</td> <td>Occ Bw</td> <td>17.712287712 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.2488412 GHz</td> <td>-7.69 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.24048 GHz</td> <td>-1.16 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.15 MHz</td> <td>0.20 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 15:08:23</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.22944 GHz	-27.52 dBm			T1	1		5.2311289 GHz	-8.35 dBm	Occ Bw	17.712287712 MHz	T2	1		5.2488412 GHz	-7.69 dBm			M2	1		5.24048 GHz	-1.16 dBm			D3	M1	1	21.15 MHz	0.20 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.22944 GHz	-27.52 dBm																																								
T1	1		5.2311289 GHz	-8.35 dBm	Occ Bw	17.712287712 MHz																																						
T2	1		5.2488412 GHz	-7.69 dBm																																								
M2	1		5.24048 GHz	-1.16 dBm																																								
D3	M1	1	21.15 MHz	0.20 dB																																								

Band I		802.11n (HT20)																																										
CH _L	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>Occupied Bandwidth</p> <p>CF 5.18 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.16947 GHz</td> <td>-27.81 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.1711289 GHz</td> <td>-8.33 dBm</td> <td>Occ Bw</td> <td>17.712287712 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.1888412 GHz</td> <td>-8.91 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.17928 GHz</td> <td>-1.77 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.0 MHz</td> <td>-0.78 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 15:46:09</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.16947 GHz	-27.81 dBm			T1	1		5.1711289 GHz	-8.33 dBm	Occ Bw	17.712287712 MHz	T2	1		5.1888412 GHz	-8.91 dBm			M2	1		5.17928 GHz	-1.77 dBm			D3	M1	1	21.0 MHz	-0.78 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.16947 GHz	-27.81 dBm																																								
T1	1		5.1711289 GHz	-8.33 dBm	Occ Bw	17.712287712 MHz																																						
T2	1		5.1888412 GHz	-8.91 dBm																																								
M2	1		5.17928 GHz	-1.77 dBm																																								
D3	M1	1	21.0 MHz	-0.78 dB																																								
CH _M	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>Occupied Bandwidth</p> <p>CF 5.22 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.20938 GHz</td> <td>-29.01 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.2111289 GHz</td> <td>-7.97 dBm</td> <td>Occ Bw</td> <td>17.742257742 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.2289711 GHz</td> <td>-8.53 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.22111 GHz</td> <td>-2.55 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.24 MHz</td> <td>-0.95 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 15:47:45</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.20938 GHz	-29.01 dBm			T1	1		5.2111289 GHz	-7.97 dBm	Occ Bw	17.742257742 MHz	T2	1		5.2289711 GHz	-8.53 dBm			M2	1		5.22111 GHz	-2.55 dBm			D3	M1	1	21.24 MHz	-0.95 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.20938 GHz	-29.01 dBm																																								
T1	1		5.2111289 GHz	-7.97 dBm	Occ Bw	17.742257742 MHz																																						
T2	1		5.2289711 GHz	-8.53 dBm																																								
M2	1		5.22111 GHz	-2.55 dBm																																								
D3	M1	1	21.24 MHz	-0.95 dB																																								
CH _H	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>Occupied Bandwidth</p> <p>CF 5.24 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.22944 GHz</td> <td>-27.81 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.2311289 GHz</td> <td>-8.56 dBm</td> <td>Occ Bw</td> <td>17.712287712 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.2488412 GHz</td> <td>-8.35 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.24063 GHz</td> <td>-1.53 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.06 MHz</td> <td>-0.40 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 15:49:11</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.22944 GHz	-27.81 dBm			T1	1		5.2311289 GHz	-8.56 dBm	Occ Bw	17.712287712 MHz	T2	1		5.2488412 GHz	-8.35 dBm			M2	1		5.24063 GHz	-1.53 dBm			D3	M1	1	21.06 MHz	-0.40 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.22944 GHz	-27.81 dBm																																								
T1	1		5.2311289 GHz	-8.56 dBm	Occ Bw	17.712287712 MHz																																						
T2	1		5.2488412 GHz	-8.35 dBm																																								
M2	1		5.24063 GHz	-1.53 dBm																																								
D3	M1	1	21.06 MHz	-0.40 dB																																								

Band I		802.11a																																										
CH _L	<p>Ref Level 20.50 dBm Offset 1.00 dB BW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.1698 GHz</td> <td>-27.65 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.171782 GHz</td> <td>-8.82 dBm</td> <td>Occ Bw</td> <td>16.423576424 MHz</td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.1881818 GHz</td> <td>-9.45 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>5.18051 GHz</td> <td>-1.56 dBm</td> <td></td> <td></td> </tr> </tbody> </table> <p>CF 5.18 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <p>Date: 23 MAY 2019 15:08:38</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.1698 GHz	-27.65 dBm			T1	1		5.171782 GHz	-8.82 dBm	Occ Bw	16.423576424 MHz	M2	1		5.1881818 GHz	-9.45 dBm			D3	M1	1	5.18051 GHz	-1.56 dBm									
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.1698 GHz	-27.65 dBm																																								
T1	1		5.171782 GHz	-8.82 dBm	Occ Bw	16.423576424 MHz																																						
M2	1		5.1881818 GHz	-9.45 dBm																																								
D3	M1	1	5.18051 GHz	-1.56 dBm																																								
CH _M	<p>Ref Level 20.50 dBm Offset 1.00 dB BW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.20986 GHz</td> <td>-27.62 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.211782 GHz</td> <td>-8.95 dBm</td> <td>Occ Bw</td> <td>16.453546454 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.2292118 GHz</td> <td>-9.72 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.22051 GHz</td> <td>-1.57 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>5.2037 MHz</td> <td>0.01 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>CF 5.22 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <p>Date: 23 MAY 2019 15:12:37</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.20986 GHz	-27.62 dBm			T1	1		5.211782 GHz	-8.95 dBm	Occ Bw	16.453546454 MHz	T2	1		5.2292118 GHz	-9.72 dBm			M2	1		5.22051 GHz	-1.57 dBm			D3	M1	1	5.2037 MHz	0.01 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.20986 GHz	-27.62 dBm																																								
T1	1		5.211782 GHz	-8.95 dBm	Occ Bw	16.453546454 MHz																																						
T2	1		5.2292118 GHz	-9.72 dBm																																								
M2	1		5.22051 GHz	-1.57 dBm																																								
D3	M1	1	5.2037 MHz	0.01 dB																																								
CH _H	<p>Ref Level 20.50 dBm Offset 1.00 dB BW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.22989 GHz</td> <td>-27.18 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.231782 GHz</td> <td>-8.05 dBm</td> <td>Occ Bw</td> <td>16.423576424 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.2492118 GHz</td> <td>-9.14 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.24051 GHz</td> <td>-1.02 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>5.2031 MHz</td> <td>0.10 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>CF 5.24 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <p>Date: 23 MAY 2019 15:14:22</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.22989 GHz	-27.18 dBm			T1	1		5.231782 GHz	-8.05 dBm	Occ Bw	16.423576424 MHz	T2	1		5.2492118 GHz	-9.14 dBm			M2	1		5.24051 GHz	-1.02 dBm			D3	M1	1	5.2031 MHz	0.10 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.22989 GHz	-27.18 dBm																																								
T1	1		5.231782 GHz	-8.05 dBm	Occ Bw	16.423576424 MHz																																						
T2	1		5.2492118 GHz	-9.14 dBm																																								
M2	1		5.24051 GHz	-1.02 dBm																																								
D3	M1	1	5.2031 MHz	0.10 dB																																								

Band I **802.11ac (HT40)**

CH_L



Date: 23 MAY 2019 15:09:49

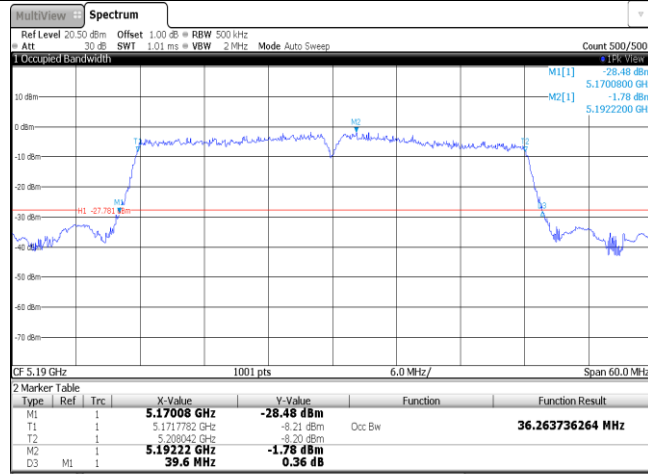
CH_H



Date: 23 MAY 2019 15:03:03

Band I **802.11n (HT40)**

CH_L



Date: 23 MAY 2019 15:00:48

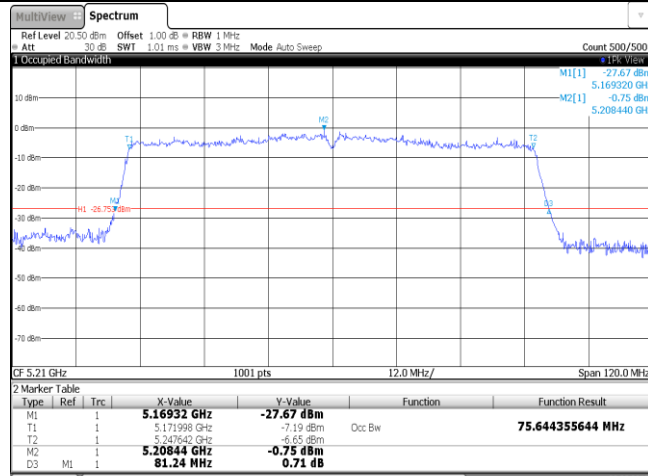
CH_H



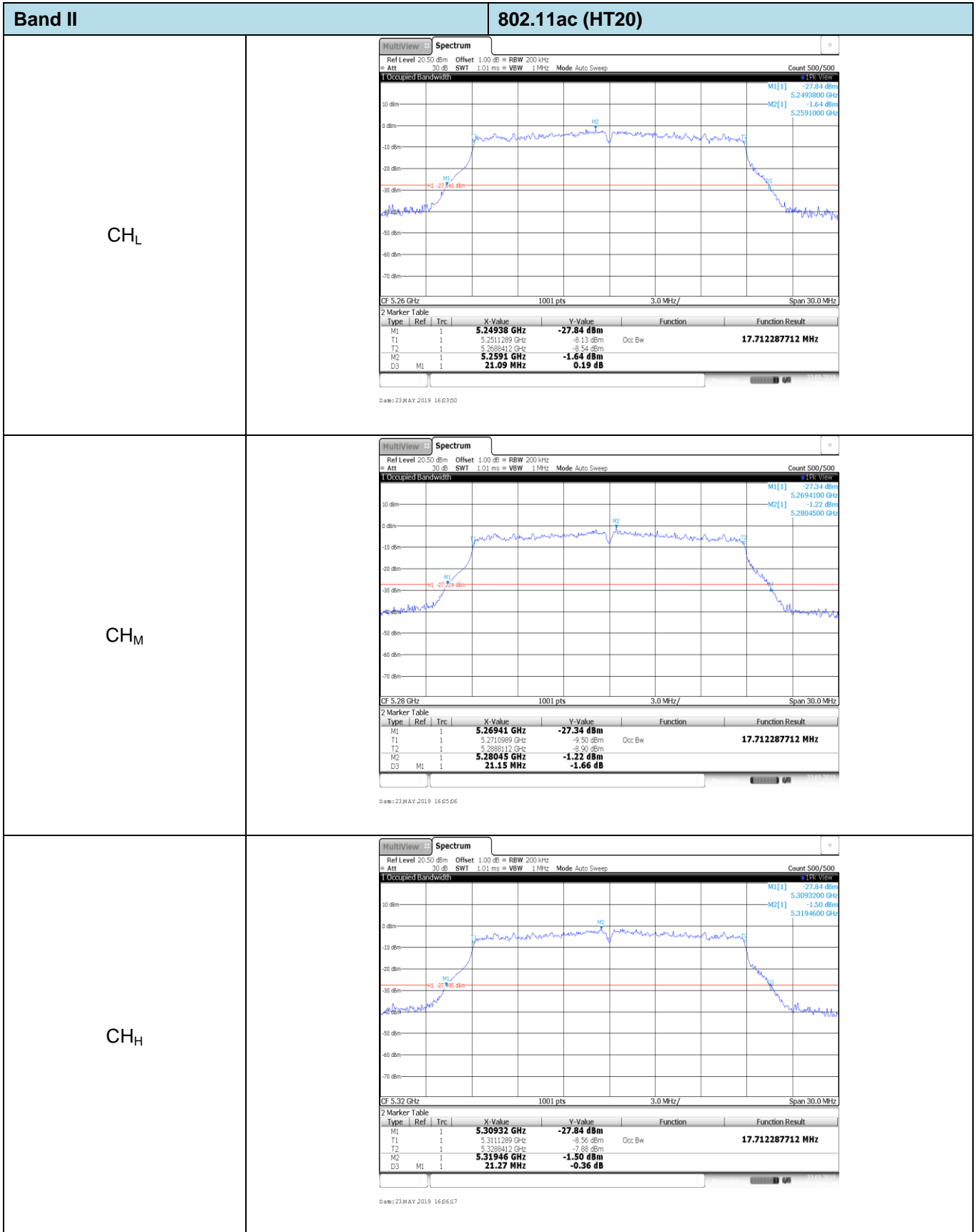
Date: 23 MAY 2019 15:03:14

Band I **802.11ac (HT80)**

CH_M

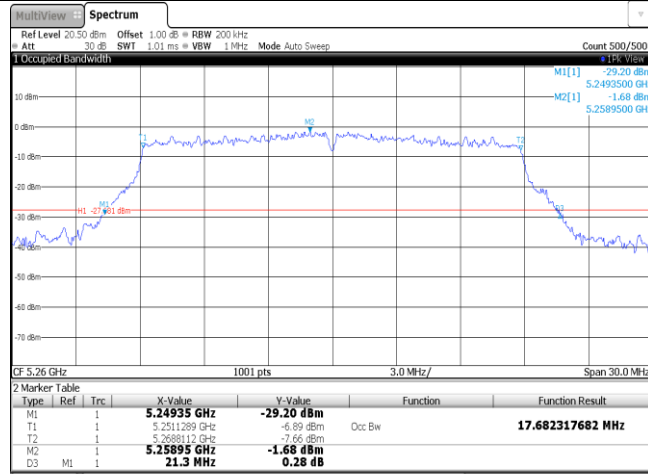


Date: 23 MAY 2019 15:08:06



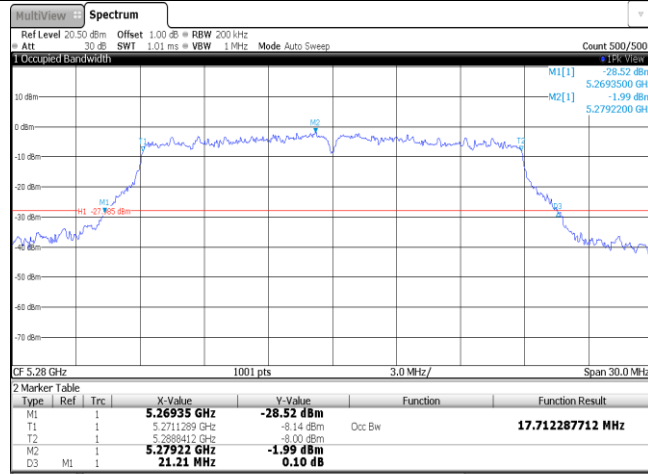
Band II **802.11n (HT20)**

CH_L



Date: 23 MAY 2019 15:56:32

CH_M

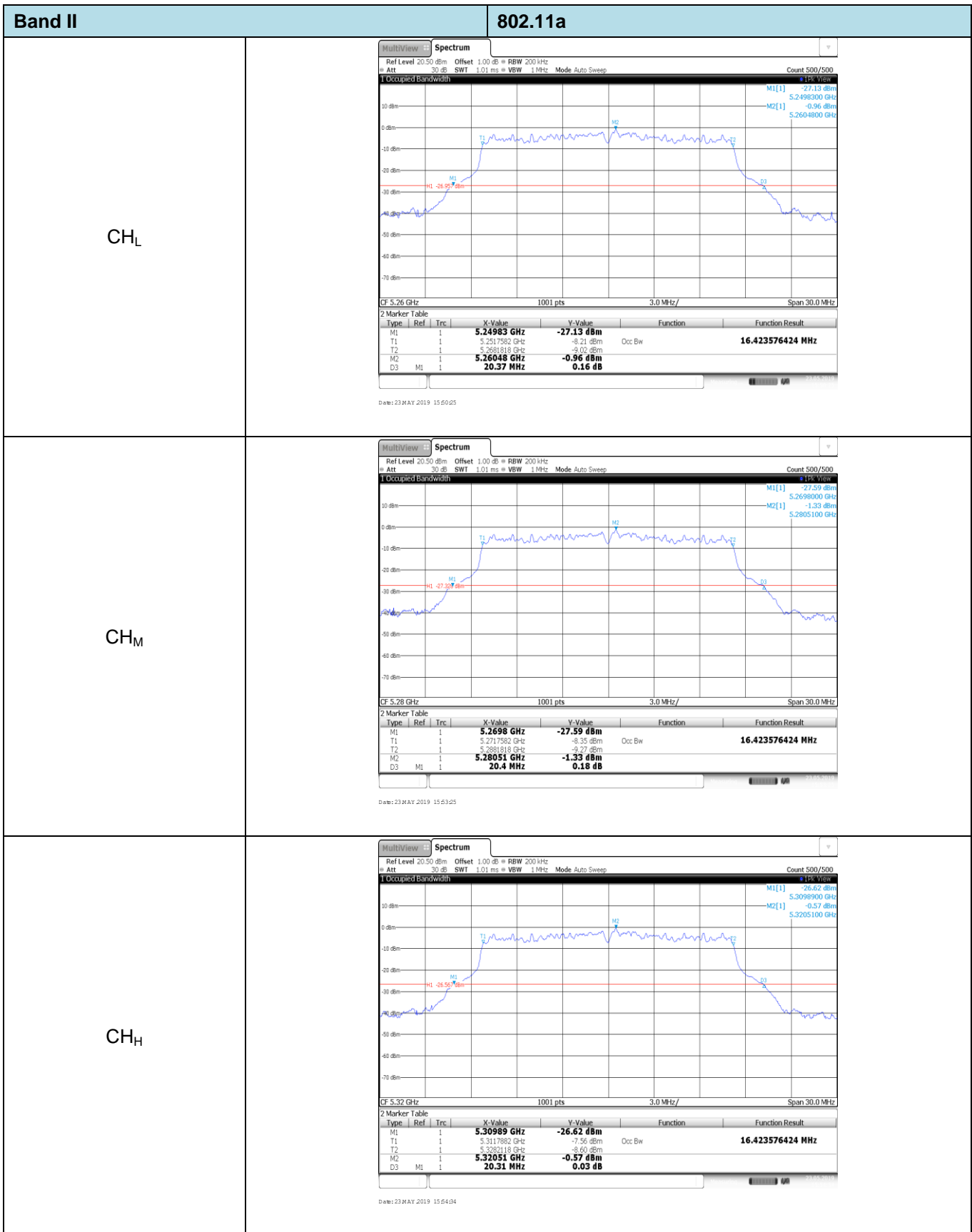


Date: 23 MAY 2019 15:57:43

CH_H

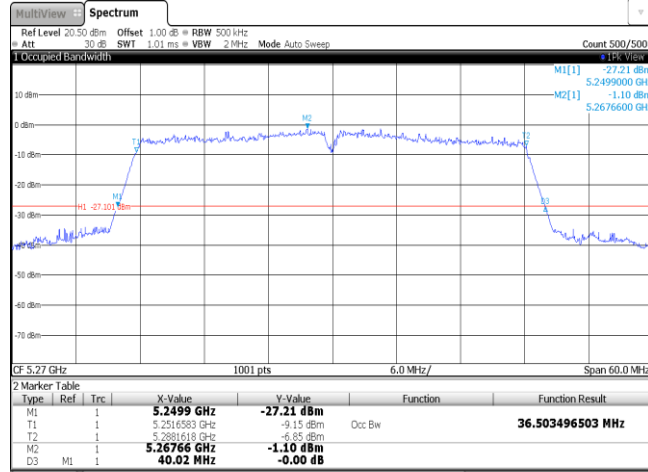


Date: 23 MAY 2019 15:58:57



Band II **802.11ac (HT40)**

CH_L



Date: 23 MAY 2019 16:07:47

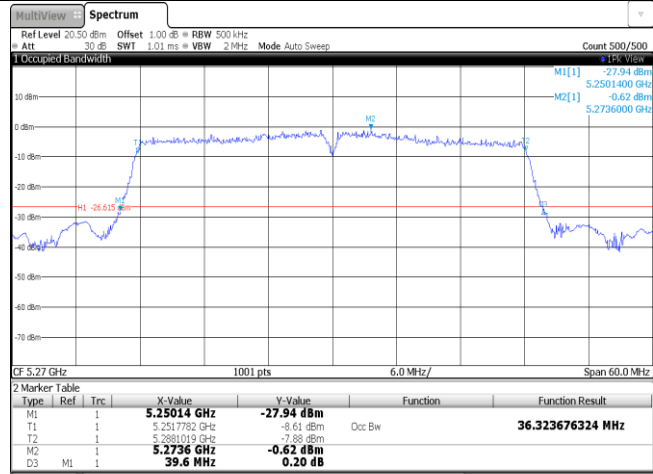
CH_H



Date: 23 MAY 2019 16:09:21

Band II **802.11n (HT40)**

CH_L



Date: 23 MAY 2019 16:00:25

CH_H



Date: 23 MAY 2019 16:01:59

Band II **802.11ac (HT80)**

CH_M



Date: 23 MAY 2019 16:09:45

Band III		802.11ac (HT20)																																										
CH _L	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <p>CF 5.5 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.48944 GHz</td> <td>-27.61 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.491289 GHz</td> <td>-7.81 dBm</td> <td>Occ Bw</td> <td>17.742257742 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.508871 GHz</td> <td>-7.98 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.50312 GHz</td> <td>-1.54 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.18 MHz</td> <td>-0.63 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 19:19:11</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.48944 GHz	-27.61 dBm			T1	1		5.491289 GHz	-7.81 dBm	Occ Bw	17.742257742 MHz	T2	1		5.508871 GHz	-7.98 dBm			M2	1		5.50312 GHz	-1.54 dBm			D3	M1	1	21.18 MHz	-0.63 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.48944 GHz	-27.61 dBm																																								
T1	1		5.491289 GHz	-7.81 dBm	Occ Bw	17.742257742 MHz																																						
T2	1		5.508871 GHz	-7.98 dBm																																								
M2	1		5.50312 GHz	-1.54 dBm																																								
D3	M1	1	21.18 MHz	-0.63 dB																																								
CH _M	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <p>CF 5.6 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.58959 GHz</td> <td>-25.37 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.591289 GHz</td> <td>-7.26 dBm</td> <td>Occ Bw</td> <td>17.712287712 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.608842 GHz</td> <td>-7.66 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.59937 GHz</td> <td>0.64 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>20.73 MHz</td> <td>-0.01 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 19:22:11</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.58959 GHz	-25.37 dBm			T1	1		5.591289 GHz	-7.26 dBm	Occ Bw	17.712287712 MHz	T2	1		5.608842 GHz	-7.66 dBm			M2	1		5.59937 GHz	0.64 dBm			D3	M1	1	20.73 MHz	-0.01 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.58959 GHz	-25.37 dBm																																								
T1	1		5.591289 GHz	-7.26 dBm	Occ Bw	17.712287712 MHz																																						
T2	1		5.608842 GHz	-7.66 dBm																																								
M2	1		5.59937 GHz	0.64 dBm																																								
D3	M1	1	20.73 MHz	-0.01 dB																																								
CH _H	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <p>CF 5.7 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.68956 GHz</td> <td>-26.10 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.691289 GHz</td> <td>-8.49 dBm</td> <td>Occ Bw</td> <td>17.712287712 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.708842 GHz</td> <td>-7.98 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.6994 GHz</td> <td>-0.10 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>20.91 MHz</td> <td>-1.31 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 19:23:21</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.68956 GHz	-26.10 dBm			T1	1		5.691289 GHz	-8.49 dBm	Occ Bw	17.712287712 MHz	T2	1		5.708842 GHz	-7.98 dBm			M2	1		5.6994 GHz	-0.10 dBm			D3	M1	1	20.91 MHz	-1.31 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.68956 GHz	-26.10 dBm																																								
T1	1		5.691289 GHz	-8.49 dBm	Occ Bw	17.712287712 MHz																																						
T2	1		5.708842 GHz	-7.98 dBm																																								
M2	1		5.6994 GHz	-0.10 dBm																																								
D3	M1	1	20.91 MHz	-1.31 dB																																								

Band III		802.11n (HT20)																																										
CH _L	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <p>CF 5.5 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.48941 GHz</td> <td>-27.84 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.4911289 GHz</td> <td>-7.90 dBm</td> <td>Occ Bw</td> <td>17.712287712 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.5088412 GHz</td> <td>-8.15 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.49928 GHz</td> <td>-1.47 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.3 MHz</td> <td>-0.37 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 16:39:30</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.48941 GHz	-27.84 dBm			T1	1		5.4911289 GHz	-7.90 dBm	Occ Bw	17.712287712 MHz	T2	1		5.5088412 GHz	-8.15 dBm			M2	1		5.49928 GHz	-1.47 dBm			D3	M1	1	21.3 MHz	-0.37 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.48941 GHz	-27.84 dBm																																								
T1	1		5.4911289 GHz	-7.90 dBm	Occ Bw	17.712287712 MHz																																						
T2	1		5.5088412 GHz	-8.15 dBm																																								
M2	1		5.49928 GHz	-1.47 dBm																																								
D3	M1	1	21.3 MHz	-0.37 dB																																								
CH _M	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <p>CF 5.6 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.58938 GHz</td> <td>-27.67 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.5911289 GHz</td> <td>-6.69 dBm</td> <td>Occ Bw</td> <td>17.712287712 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.6088412 GHz</td> <td>-6.30 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.59888 GHz</td> <td>-0.86 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.18 MHz</td> <td>0.67 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 16:40:53</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.58938 GHz	-27.67 dBm			T1	1		5.5911289 GHz	-6.69 dBm	Occ Bw	17.712287712 MHz	T2	1		5.6088412 GHz	-6.30 dBm			M2	1		5.59888 GHz	-0.86 dBm			D3	M1	1	21.18 MHz	0.67 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.58938 GHz	-27.67 dBm																																								
T1	1		5.5911289 GHz	-6.69 dBm	Occ Bw	17.712287712 MHz																																						
T2	1		5.6088412 GHz	-6.30 dBm																																								
M2	1		5.59888 GHz	-0.86 dBm																																								
D3	M1	1	21.18 MHz	0.67 dB																																								
CH _H	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <p>CF 5.7 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.68938 GHz</td> <td>-28.06 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.6910989 GHz</td> <td>-8.37 dBm</td> <td>Occ Bw</td> <td>17.742257742 MHz</td> </tr> <tr> <td>T2</td> <td>1</td> <td></td> <td>5.7088412 GHz</td> <td>-8.65 dBm</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.7006 GHz</td> <td>-1.72 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>21.18 MHz</td> <td>0.22 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>Date: 23 MAY 2019 16:41:59</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.68938 GHz	-28.06 dBm			T1	1		5.6910989 GHz	-8.37 dBm	Occ Bw	17.742257742 MHz	T2	1		5.7088412 GHz	-8.65 dBm			M2	1		5.7006 GHz	-1.72 dBm			D3	M1	1	21.18 MHz	0.22 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																																						
M1	1		5.68938 GHz	-28.06 dBm																																								
T1	1		5.6910989 GHz	-8.37 dBm	Occ Bw	17.742257742 MHz																																						
T2	1		5.7088412 GHz	-8.65 dBm																																								
M2	1		5.7006 GHz	-1.72 dBm																																								
D3	M1	1	21.18 MHz	0.22 dB																																								

Band III		802.11a																																			
CH _L	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.48983 GHz</td> <td>-27.44 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.4917882 GHz</td> <td>-8.12 dBm</td> <td>Occ Bw</td> <td>16.423576424 MHz</td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.50051 GHz</td> <td>-0.97 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>20.4 MHz</td> <td>0.26 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>CF 5.5 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <p>Date: 23 MAY 2019 16:03:11</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.48983 GHz	-27.44 dBm			T1	1		5.4917882 GHz	-8.12 dBm	Occ Bw	16.423576424 MHz	M2	1		5.50051 GHz	-0.97 dBm			D3	M1	1	20.4 MHz	0.26 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																															
M1	1		5.48983 GHz	-27.44 dBm																																	
T1	1		5.4917882 GHz	-8.12 dBm	Occ Bw	16.423576424 MHz																															
M2	1		5.50051 GHz	-0.97 dBm																																	
D3	M1	1	20.4 MHz	0.26 dB																																	
CH _M	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.58986 GHz</td> <td>-26.52 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.5917582 GHz</td> <td>-7.81 dBm</td> <td>Occ Bw</td> <td>16.423576424 MHz</td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.60048 GHz</td> <td>-0.50 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>20.31 MHz</td> <td>-0.08 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>CF 5.6 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <p>Date: 23 MAY 2019 16:06:24</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.58986 GHz	-26.52 dBm			T1	1		5.5917582 GHz	-7.81 dBm	Occ Bw	16.423576424 MHz	M2	1		5.60048 GHz	-0.50 dBm			D3	M1	1	20.31 MHz	-0.08 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																															
M1	1		5.58986 GHz	-26.52 dBm																																	
T1	1		5.5917582 GHz	-7.81 dBm	Occ Bw	16.423576424 MHz																															
M2	1		5.60048 GHz	-0.50 dBm																																	
D3	M1	1	20.31 MHz	-0.08 dB																																	
CH _H	<p>Ref Level 20.50 dBm Offset 1.00 dB RBW 200 kHz Att 30 dB SWF 1.01 ms VBW 1 MHz Mode Auto Sweep Count 500/500</p> <p>1 Occupied Bandwidth</p> <table border="1"> <thead> <tr> <th>Type</th> <th>Ref</th> <th>Trc</th> <th>X-Value</th> <th>Y-Value</th> <th>Function</th> <th>Function Result</th> </tr> </thead> <tbody> <tr> <td>M1</td> <td>1</td> <td></td> <td>5.6898 GHz</td> <td>-27.36 dBm</td> <td></td> <td></td> </tr> <tr> <td>T1</td> <td>1</td> <td></td> <td>5.6917582 GHz</td> <td>-8.51 dBm</td> <td>Occ Bw</td> <td>16.423576424 MHz</td> </tr> <tr> <td>M2</td> <td>1</td> <td></td> <td>5.70051 GHz</td> <td>-1.28 dBm</td> <td></td> <td></td> </tr> <tr> <td>D3</td> <td>M1</td> <td>1</td> <td>20.37 MHz</td> <td>-0.01 dB</td> <td></td> <td></td> </tr> </tbody> </table> <p>CF 5.7 GHz 1001 pts 3.0 MHz/ Span 30.0 MHz</p> <p>Date: 23 MAY 2019 16:07:41</p>		Type	Ref	Trc	X-Value	Y-Value	Function	Function Result	M1	1		5.6898 GHz	-27.36 dBm			T1	1		5.6917582 GHz	-8.51 dBm	Occ Bw	16.423576424 MHz	M2	1		5.70051 GHz	-1.28 dBm			D3	M1	1	20.37 MHz	-0.01 dB		
Type	Ref	Trc	X-Value	Y-Value	Function	Function Result																															
M1	1		5.6898 GHz	-27.36 dBm																																	
T1	1		5.6917582 GHz	-8.51 dBm	Occ Bw	16.423576424 MHz																															
M2	1		5.70051 GHz	-1.28 dBm																																	
D3	M1	1	20.37 MHz	-0.01 dB																																	

