FCC PART 15
TEST REPORT
No. I17Z62005-IOT05

for

TCL Communication Ltd.

Mobile Phone

6062W

With

FCC ID: 2ACCJBT09

Hardware Version: 06

Software Version: v1A65

Issued Date: 2018-04-10

TESTING
NVLAP LAB CODE 600118-0

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

Test Laboratory:

CTTL, Telecommunication Technology Labs, CAICT

No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China 100191.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I17Z62005-IOT05	Rev.0	1st edition	2018-04-10

CONTENTS

1. TEST LATORATORY

1.1. TestingLocation

Conducted testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China100191

Radiated testing Location: CTTL(BDA)

Address: No.18A, Kangding Street, Beijing Economic-Technology Development Area, Beijing, P. R. China 100176

1.2. TestingEnvironment

Normal Temperature: 15-35℃

Extreme Temperature: -20/+60℃

Relative Humidity: 20-75%

1.3. Project data

Testing Start Date: 2017-10-31

Testing End Date: 2018-04-10
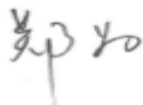
1.4. Signature

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Jiang Xue
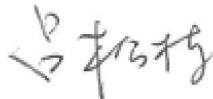
(Prepared this test report)

_____

Zheng Wei

(Reviewed this test report)

_____

Lv Songdong

(Approved this test report)

2. CLIENT INFORMATION

2.1. Applicant Information

Company Name:	TCL Communication Ltd.
Address:	7/F, Block F4, TCL Communication Technology Building, TCL International E City, Zhong Shan Yuan Road, Nanshan District, Shenzhen, Guangdong, P.R. China 518052
City:	Shenzhen
Postal Code:	/
Country:	China
Telephone:	0086-755-36611722
Fax:	0086-75536612000-81722

2.2. Manufacturer Information

Company Name:	TCL Communication Ltd.
Address:	7/F, Block F4, TCL Communication Technology Building, TCL International E City, Zhong Shan Yuan Road, Nanshan District, Shenzhen, Guangdong, P.R. China 518052
City:	Shenzhen
Postal Code:	/
Country:	China
Telephone:	0086-755-36611722
Fax:	0086-75536612000-81722

3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARYEQUIPMENT(AE)

3.1. About EUT

Description	Mobile Phone
Model name	6062W
FCC ID	2ACCJBT09
IC ID	/
WLAN Frequency Range	ISM Bands:
	-5150MHz~5350MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Voltage	3.8V DC by Battery

Note: Photographs of EUT are shown in ANNEX C of this test report. Components list, please refer to documents of the manufacturer.

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	015126000202941	06	v1A65
EUT2	015126000205332/015126000202990	06	v1A65

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	Type	SN
AE1	Battery	/	/
AE2	Charger	/	/
AE3	USB Cable	/	/

AE1
Model	CAC3860010C1
Manufacturer	BYD
Capacitance	4000 mAh
Nominal voltage	3.85V

AE2
Model	QC11US
Manufacturer	TIANPAO
Length of cable	/

AE3
Model	CDA0000103CF
Manufacturer	LUXSHARE
Length of cable	80cm

*AE ID: is used to identify the test sample in the lab internally.

3.4. General Description

The Equipment under Test (EUT) is a model of Mobile Phone with integrated antennaand inbuilt battery.

It has Bluetooth (EDR)function.

It consists of normal options: travel charger, USB cable and Phone.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

3.5. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor k=2.

Measurement Uncertainty

Parameter	Uncertainty
temperature	0.48°C
humidity	2 %
DC voltages	0.003V

4. REFERENCE DOCUMENTS

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

FCC Part15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices	2016
ANSI C63.10	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz	2013
UNII: KDB 789033	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices - Part 15, Subpart E	2014-06

5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

6. SUMMARY OF TEST RESULTS

6.1. Summary of Test Results

SUMMARY OF MEASUREMENT RESULTS	Sub-clause of Part15E	Sub-clause of IC	Verdict
Maximum Output Power	15.407	/	**P**
Power Spectral Density	15.407	/	**P**
Occupied 26dB Bandwidth	15.403	/	**P**
Band edge compliance	15.209	/	**P**
Transmitter spurious emissions radiated	15.407	/	**P**
Spurious emissions radiated < 30 MHz	15.407	/	**P**
Spurious emissions conducted < 30 MHz	15.407	/	**P**
Frequency Stability	15.407	/	**P**
Transmit Power Control	15.407	/	**NA**

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

P	Pass, The EUT complies with the essential requirements in the standard.
NM	Not measured, The test was not measured by CTTL
NA	Not Applicable, The test was not applicable
F	Fail, The EUT does not comply with the essential requirements in the standard

6.2. Statements

CTTL has evaluated the test cases requested by the client/manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.1.

This report only deals with the WLAN function among the features described in section 3.

6.3. Test Conditions

For this report, all the test cases are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

Temperature	26℃
Voltage	3.8V
Humidity	44%

7. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2018-06-01
2	Test Receiver	ESCI	100766	Rohde & Schwarz	1 year	2018-05-06
3	LISN	ESH2-Z5	829991/012	Rohde & Schwarz	1 year	2018-05-10
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration date	Calibration Due date
1	Test Receiver	ESU26	100235	Rohde & Schwarz	2018-02-27	2019-02-28
2	Loop antenna	HFH2-Z2	829324/007	Rohde & Schwarz	2017-12-04	2018-12-03
3	BiLog Antenna	VULB9163	301	Schwarzbeck	2018-01-04	2019-01-03
4	Dual-Ridge Waveguide Horn Antenna	3115	00167250	ETS-Lindgren	2017-05-22	2020-05-21
5	Dual-Ridge Waveguide Horn Antenna	3116	2661	ETS-Lindgren	2017-07-28	2020-07-27
6	Vector Signal Analyzer	FSV40	101047	Rohde & Schwarz	2017-06-23	2018-07-22
7	Semi-anechoic chamber	/	CT000332-1074	Frankonia German	/	/

Test Software Utilized

Test Item	Test Software and Version	Software Vendor
Radiated Continuous Emission	EMC32 V9.01.00	R&S
Conducted Continuous Emission	EMC32 V8.52.0	R&S

8. Measurement Uncertainty

8.1. Transmitter Output Power

Measurement Uncertainty: 0.339dB,k=1.96

8.2. Peak Power Spectral Density

Measurement Uncertainty: 0.705dBm/MHz,k=1.96

8.3. Occupied Channel Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

8.4. Band Edges Compliance

Measurement Uncertainty : 0.62dBm,k=1.96

8.5. Spurious Emissions

Conducted (k=1.96)

Frequency Range	Uncertainty(dBm)
30MHz ≤ f ≤ 2GHz	1.22
2GHz ≤ f ≤3.6GHz	1.22
3.6GHz ≤ f ≤8GHz	1.22
8GHz ≤ f ≤12.75GHz	1.51
12.75GHz ≤ f ≤26GHz	1.51
26GHz ≤ f ≤40GHz	1.59

Radiated (k=2)

Frequency Range	Uncertainty(dBm)
9kHz-30MHz	
30MHz ≤ f ≤ 1GHz	4.86
1GHz ≤ f ≤18GHz	5.26
18GHz ≤ f ≤40GHz	5.28

ANNEX A: MEASUREMENT RESULTS

A.1. Measurement Method

A.1.1. Conducted Measurements

1). Connect the EUT to the test system correctly.

2). Set the EUT to the required work mode.

3). Set the EUT to the required channel.

4). Set the spectrum analyzer to start measurement.

5). Record the values. Vector Signal Analyzer

```
+-------------------------------------------------------------------+
|                                                                   |
|                                          +------------------+     |
|                                          | Vector    Signal |     |
|   +--------+        +------------+        | Analyzer         |     |
|   |  EUT   |--------| Attenuator |--------|                  |     |
|   +--------+        +------------+        +------------------+     |
|                                                                   |
|                        Shielding room                             |
+-------------------------------------------------------------------+
```
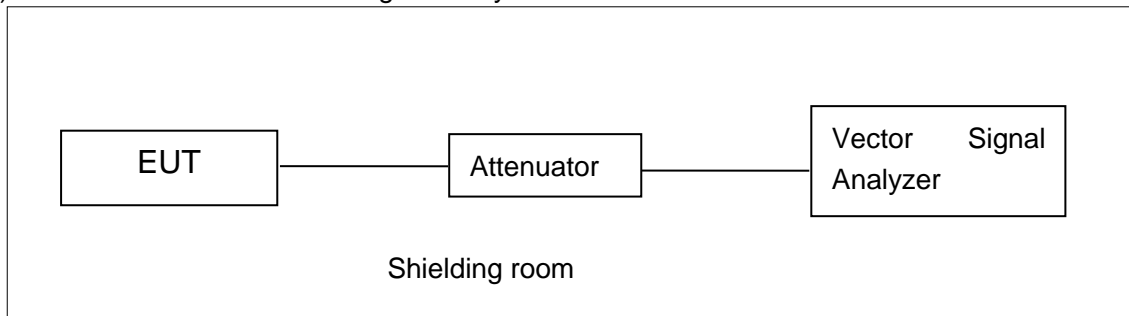
A.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,

Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;

Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 10Hz;

```
+-----------------------------------------------------------+
|                                                           |
|         Antenna              Antenna                       |
|            Y                    Y        +--------------+ |
|   +--------+                    |        | Vector Signal| |
|   |  EUT   |                    +--------| Analyzer (Test| |
|   +--------+                             | Receiver)    | |
|                                          +--------------+ |
|               Anechoic Chamber                            |
+-----------------------------------------------------------+
```
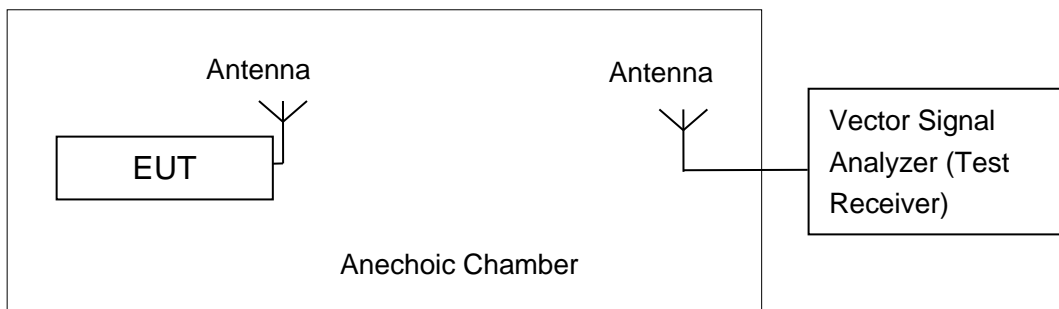
The measurement is made according to KDB 789033

The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

A.2. Maximum output Power

Measurement Limit and Method:

Standard	Frequency (MHz)	Limit (dBm)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	24dBm
	5250MHz~5350MHz	24dBm or 11+10logB

Limit use the less value, and B is the 26dB bandwidth.

The measurementmethod SA-1 is made according to KDB 789033

Measurement Results:

802.11a mode

Mode	Channel	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz (Ch36)	17.97	16.23	16.21	15.98	15.78	16.01	16.03	15.89
	5200MHz (Ch40)	17.80	/	/	/	/	/	/	/
	5240MHz(Ch48)	18.41	/	/	/	/	/	/	/
	5260MHz(Ch52)	18.45	/	/	/	/	/	/	/
	5280MHz(Ch56)	18.43	/	/	/	/	/	/	/
	5320MHz(Ch64)	18.28	/	/	/	/	/	/	/

The data rate 6Mbps is selected as worse condition, and the following cases are performed with this condition.

802.11n-HT20 mode

Mode	Channel	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5180MHz (Ch36)	17.21	/	/	/	/	17.73	/	/
	5200MHz (Ch40)	17.58	/	/	/	/	18.09	/	/
	5240MHz(Ch48)	17.88	/	/	/	/	18.23	/	/
	5260MHz(Ch52)	17.79	/	/	/	/	18.19	/	/
	5280MHz(Ch56)	17.66	/	/	/	/	17.98	/	/
	5320MHz(Ch64)	17.85	17.05	17.14	17.08	17.07	18.25	17.82	17.81

The data rate MCS5 s selected as worse condition, and the following cases are performed with this condition.

802.11acT20 mode

Mode	Channel	Test Result (dBm)								
		Data Rate								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
802.11ac (HT20)	5180MHz (Ch36)	17.15	16.86	16.01	16.11	16.21	17.97	17.89	17.96	16.71
	5200MHz (Ch40)	/	/	/	/	/	18.21	/	/	/
	5240MHz(Ch48)	/	/	/	/	/	18.46	/	/	/
	5260MHz(Ch52)	/	/	/	/	/	18.96	/	/	/
	5280MHz(Ch56)	/	/	/	/	/	18.98	/	/	/
	5320MHz(Ch64)	/	/	/	/	/	18.89	/	/	/

The data rate MCS5 selected as worse condition, and the following cases are performed with this condition.

802.11n-HT40 mode

Mode	Channel	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz (Ch38)	16.41	15.56	15.35	15.37	15.43	16.69	16.79	16.45
	5230MHz(Ch46)	/	/	/	/	/	/	16.18	/
	5270MHz(Ch54)	/	/	/	/	/	/	16.35	/
	5310MHz(Ch62)	/	/	/	/	/	/	16.23	/

The data rate MCS6 s selected as worse condition, and the following cases are performed with this condition.

802.11ac-HT40 mode

Mode	Channel	Test Result (dBm)								
		Data Rate								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
802.11ac (HT40)	5190MHz (Ch38)	16.47	15.70	15.83	15.79	15.75	16.74	16.76	16.21	15.73
	5230MHz(Ch46)	/	/	/	/	/	/	16.67	/	/
	5270MHz(Ch54)	/	/	/	/	/	/	16.98	/	/
	5310MHz(Ch62)	/	/	/	/	/	/	17.23	/	/

The data rate MCS6 s selected as worse condition, and the following cases are performed with this condition.

802.11ac-HT80 mode

Mode	Channel	Test Result (dBm)								
		Data Rate								
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	MCS8
802.11 ac (HT80)	5210MHz (Ch42)	16.36	15.75	15.68	15.76	15.87	16.76	16.68	16.78	16.74
	5290MHz (Ch58)	/	/	/	/	/	17.92	/	/	/

The data rate MCS5 s selected as worse condition, and the following cases are performed with this condition.

A.3. Peak Power Spectral Density (conducted)

Measurement Limit:

Standard	Frequency (MHz)	Limit (dBm/MHz)
FCC CRF Part 15.407(a)	5150MHz~5250MHz	11
	5250MHz~5350MHz	11

The output power measurement method SA-1 is made according to KDB 789033

Measurement Results:

Mode	Channel	Power Spectral Density (dBm/1MHz)	Conclusion
802.11a	5180 MHz	7.98	P
	5200 MHz	7.65	P
	5240 MHz	8.34	P
	5260 MHz	8.33	P
	5280 MHz	8.62	P
	5320 MHz	4.16	P
802.11n HT20	5180 MHz	7.73	P
	5200 MHz	7.83	P
	5240 MHz	7.92	P
	5260 MHz	7.67	P
	5280 MHz	6.91	P
	5320 MHz	7.77	P
802.11ac HT20	5180 MHz	7.66	P
	5200 MHz	7.56	P
	5240 MHz	7.47	P
	5260 MHz	7.97	P
	5280 MHz	7.22	P
	5320 MHz	8.01	P
802.11n HT40	5190 MHz	6.40	P
	5230 MHz	6.51	P
	5270 MHz	5.08	P
	5310 MHz	7.69	P
802.11ac HT40	5190 MHz	6.35	P
	5230 MHz	6.64	P
	5270 MHz	5.27	P
	5310 MHz	7.79	P
802.11ac HT80	5210 MHz	3.06	P
	5290 MHz	4.39	P

Conclusion: PASS

A.4. Occupied 26dB Bandwidth(conducted)

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.403 (i)	/

The measurement is made according to KDB 789033

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

Measurement Result:

Mode	Channel	Occupied 26dB Bandwidth (MHz)		conclusion
802.11a	5180 MHz	Fig.1	21.90	P
	5200 MHz	Fig.2	38.50	P
	5240 MHz	Fig.3	38.95	P
	5260 MHz	Fig.4	40.85	P
	5280 MHz	Fig.5	41.60	P
	5320 MHz	Fig.6	25.75	P
802.11n HT20	5180 MHz	Fig.7	24.25	P
	5200 MHz	Fig.8	43.65	P
	5240 MHz	Fig.9	45.40	P
	5260 MHz	Fig.10	45.35	P
	5280 MHz	Fig.11	47.40	P
	5320 MHz	Fig.12	26.8	P
802.11ac HT20	5180 MHz	Fig.13	20.25	P
	5200 MHz	Fig.14	36.15	P
	5240 MHz	Fig.15	22.10	P
	5260 MHz	Fig.16	27.15	P
	5280 MHz	Fig.17	26.05	P
	5320 MHz	Fig.18	20.45	P
802.11n HT40	5190 MHz	Fig.19	40.08	P
	5230 MHz	Fig.20	66.56	P
	5270 MHz	Fig.21	69.12	P
	5310 MHz	Fig.22	40.56	P
802.11ac HT40	5190 MHz	Fig.23	40.24	P
	5230 MHz	Fig.24	55.92	P
	5270 MHz	Fig.25	56.32	P
	5310 MHz	Fig.26	40.80	P
802.11ac HT80	5210MHz	Fig.27	81.28	P
	5290MHz	Fig.28	81.12	P

Conclusion: PASS

Test graphs as below:

Fig. 1   Occupied 26dB Bandwidth (802.11a, 5180MHz)

Fig. 2   Occupied 26dB Bandwidth (802.11a, 5200MHz)

Fig. 3   Occupied 26dB Bandwidth (802.11a, 5240MHz)

Fig. 4   Occupied 26dB Bandwidth (802.11a, 5260MHz)

Fig. 5   Occupied 26dB Bandwidth (802.11a, 5280MHz)

Fig. 6   Occupied 26dB Bandwidth (802.11a, 5320MHz)
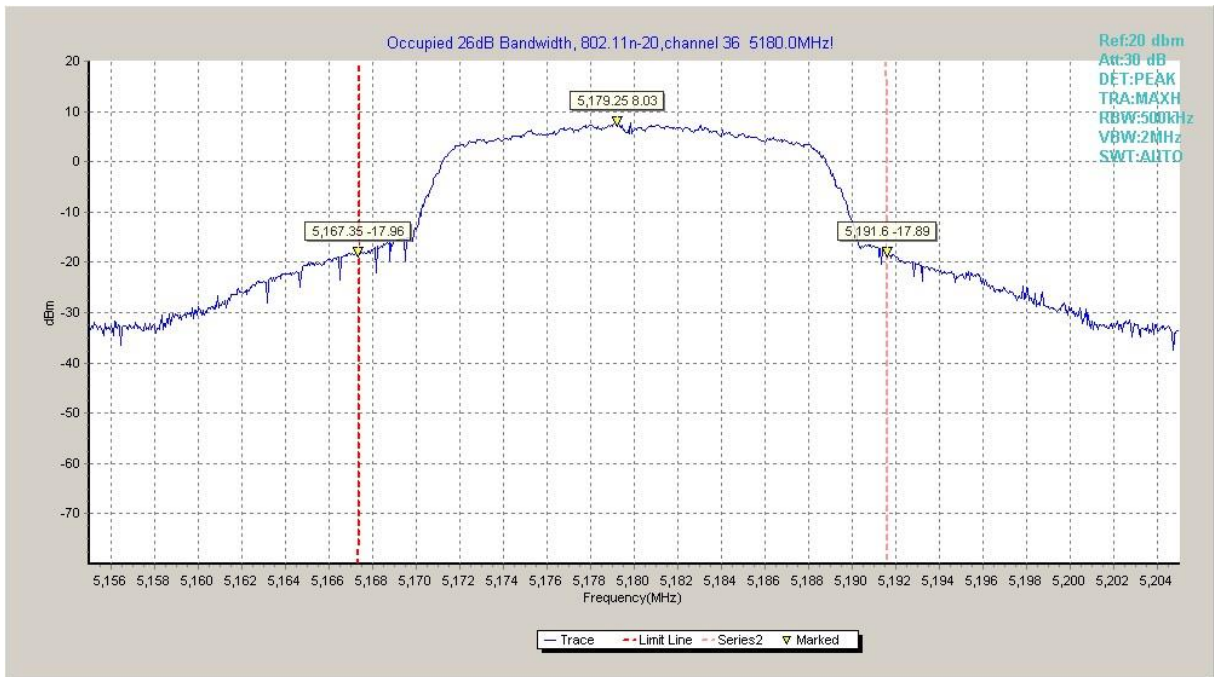
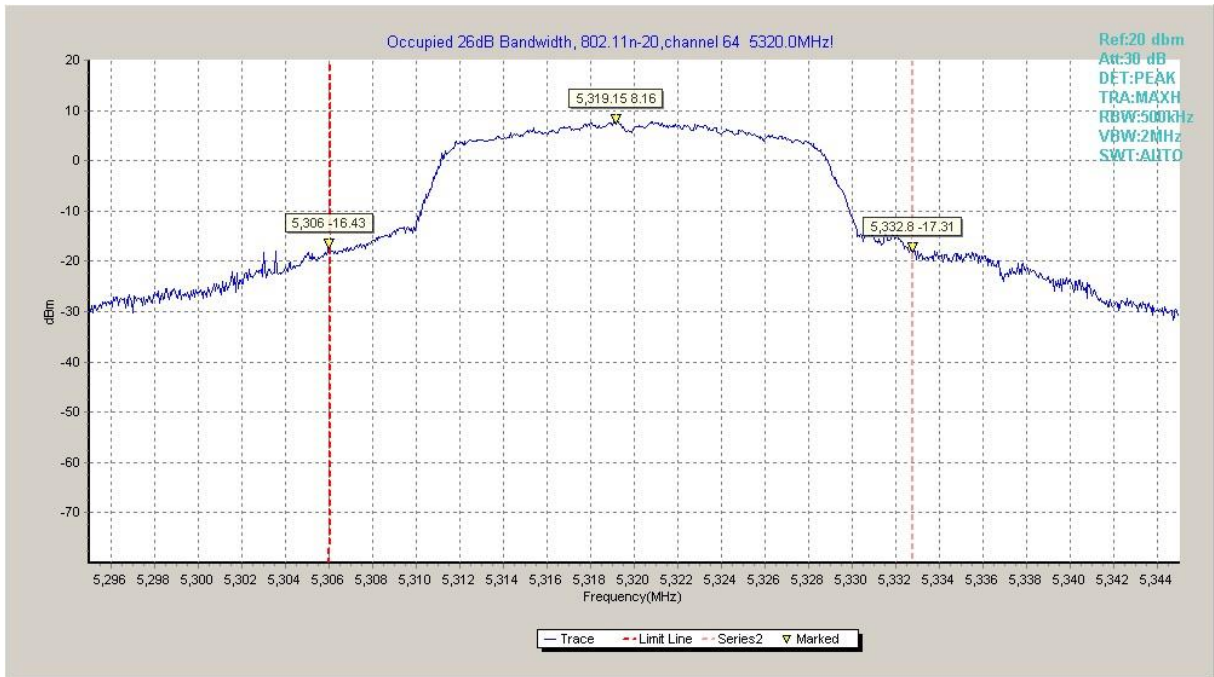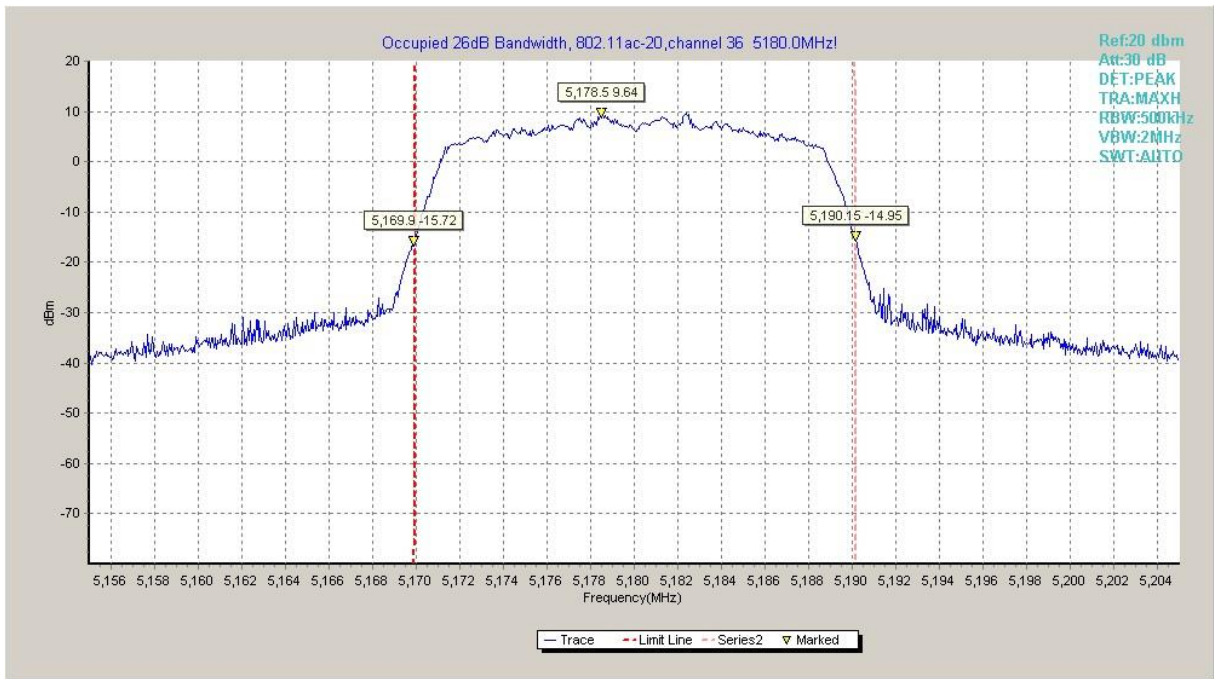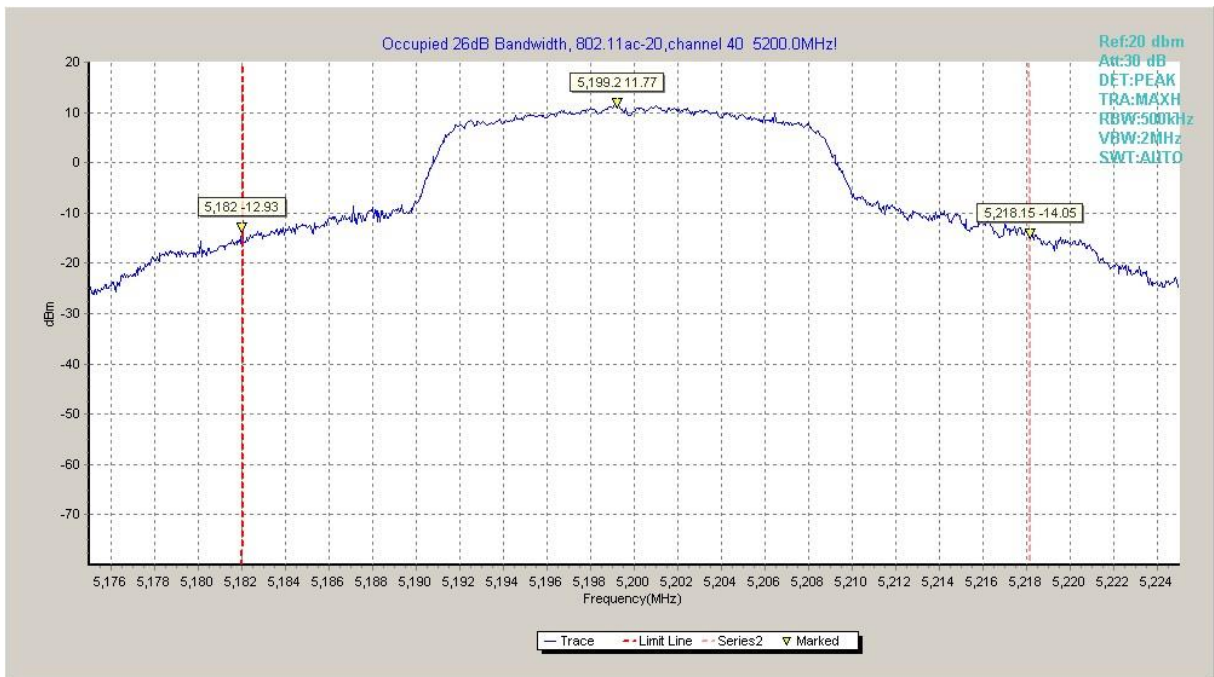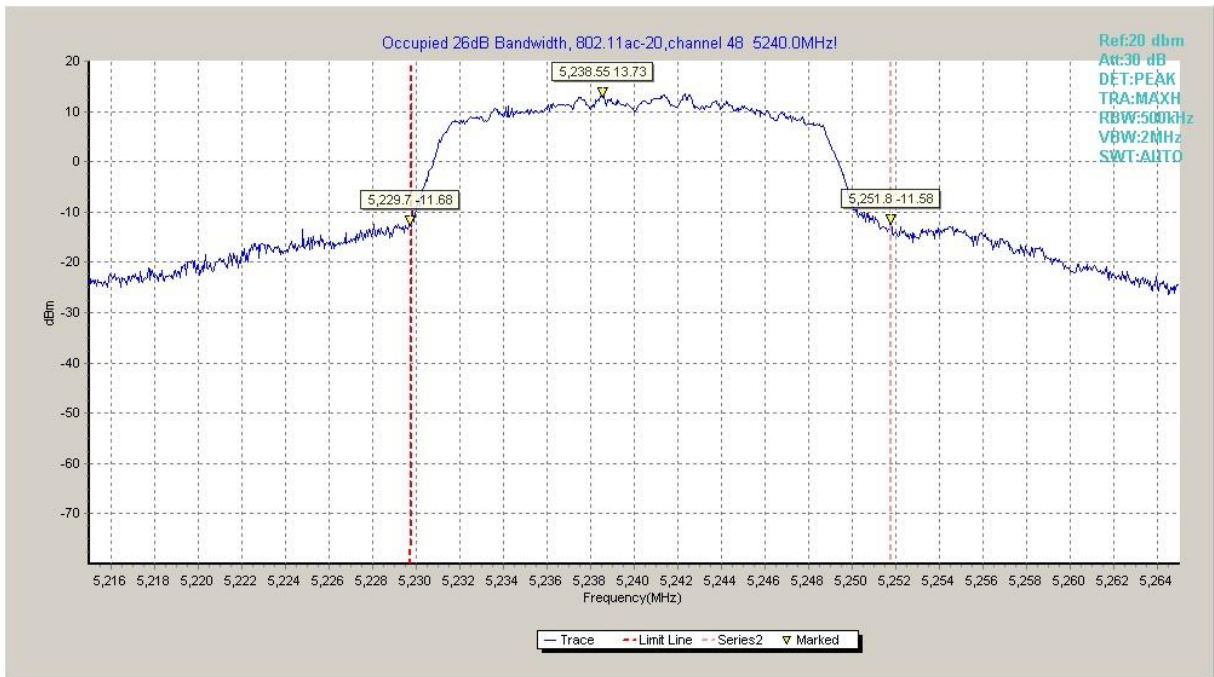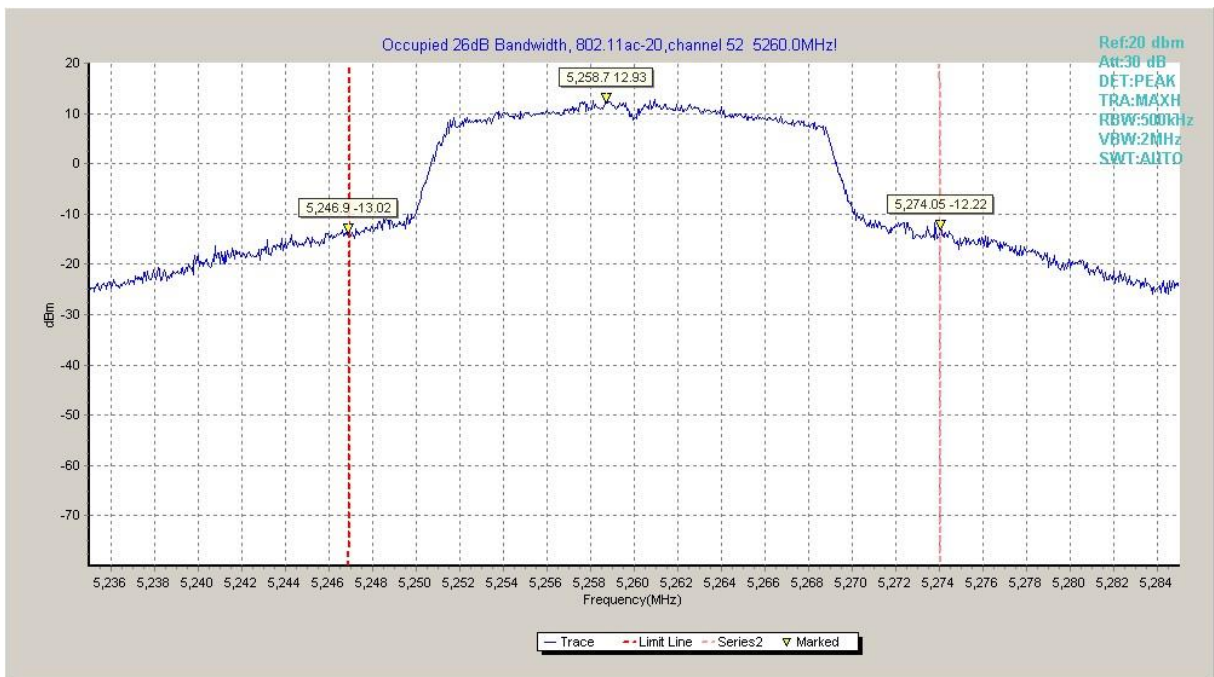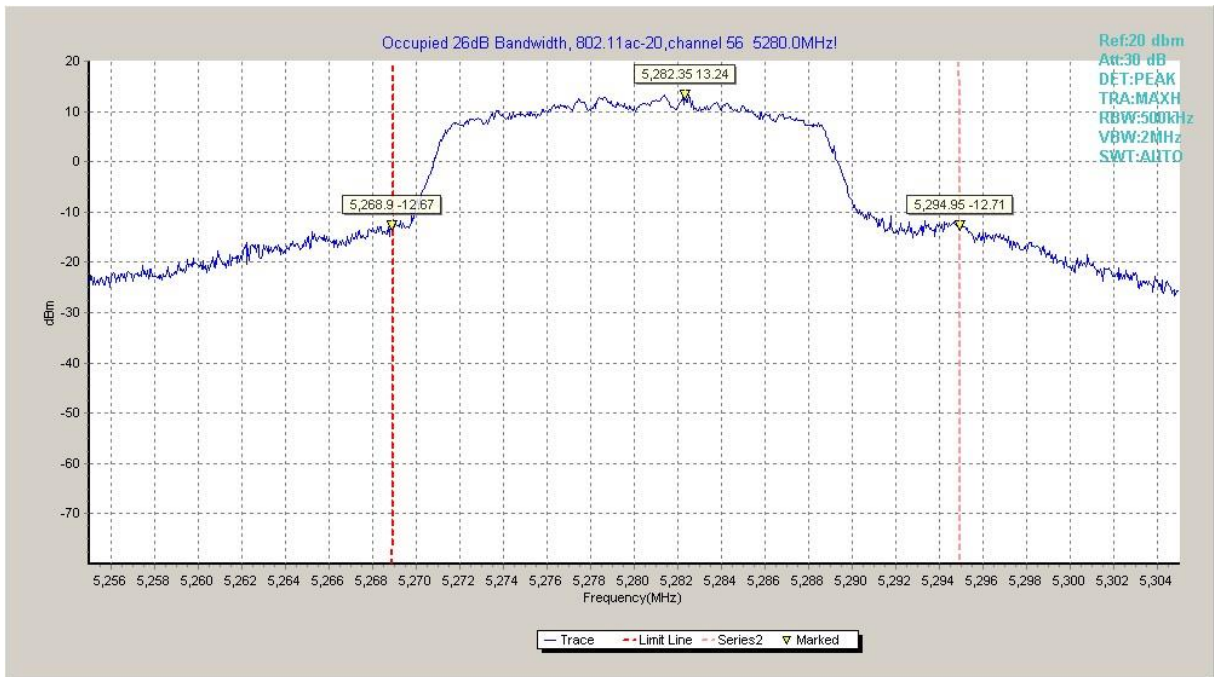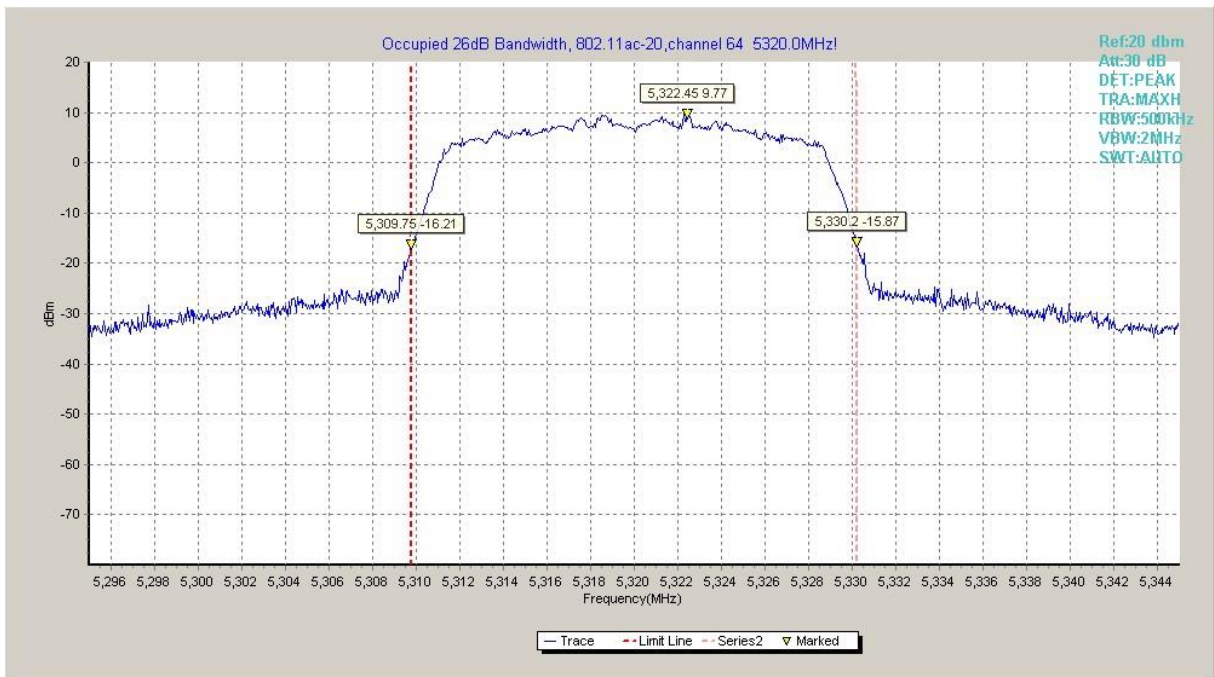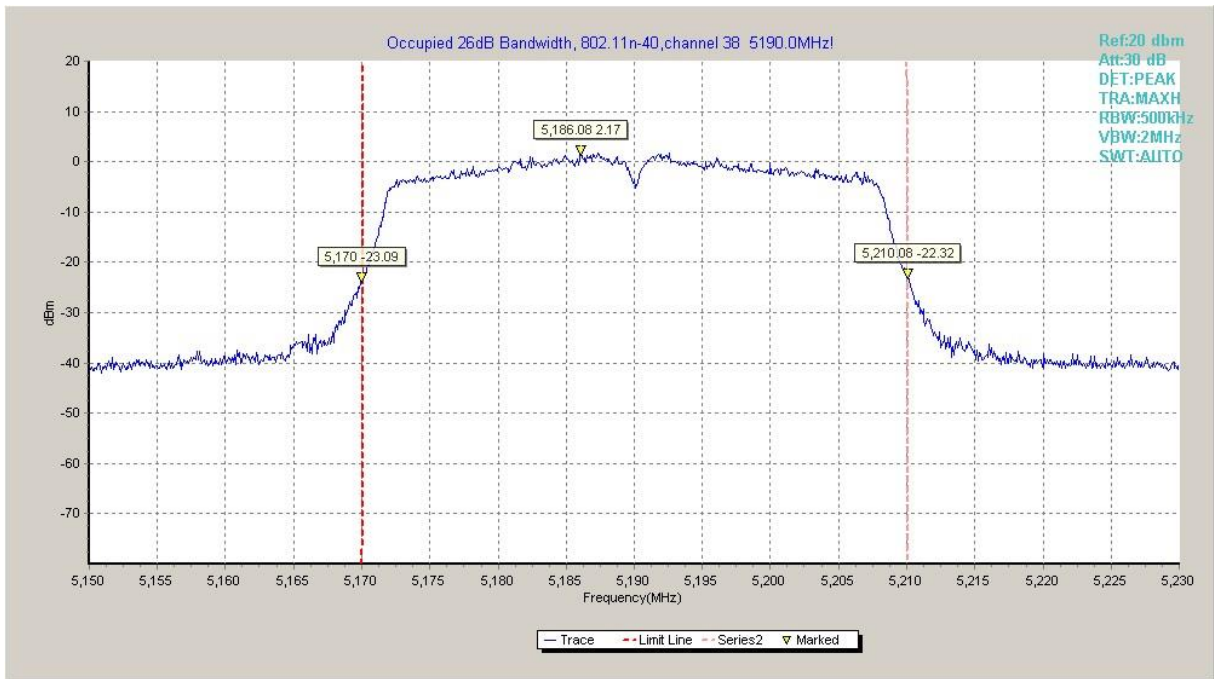**Fig. 7   Occupied 26dB Bandwidth (802.11n-HT20, 5180MHz)**

Fig. 8   Occupied 26dB Bandwidth (802.11n-HT20, 5200MHz)
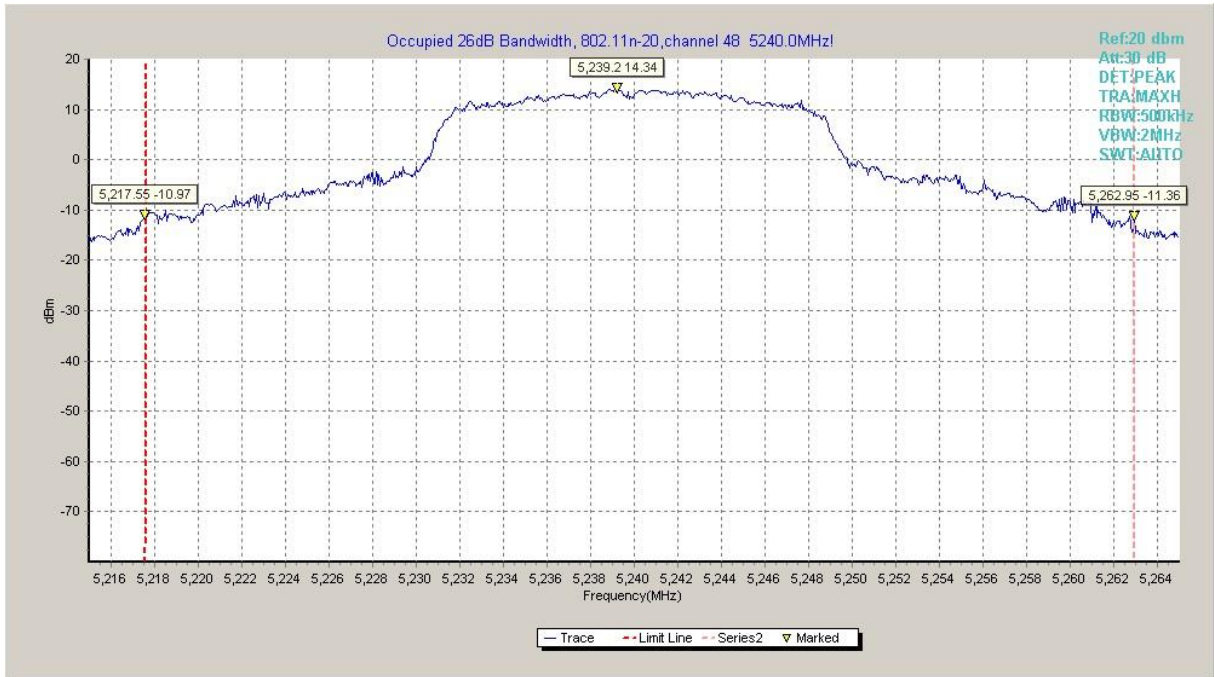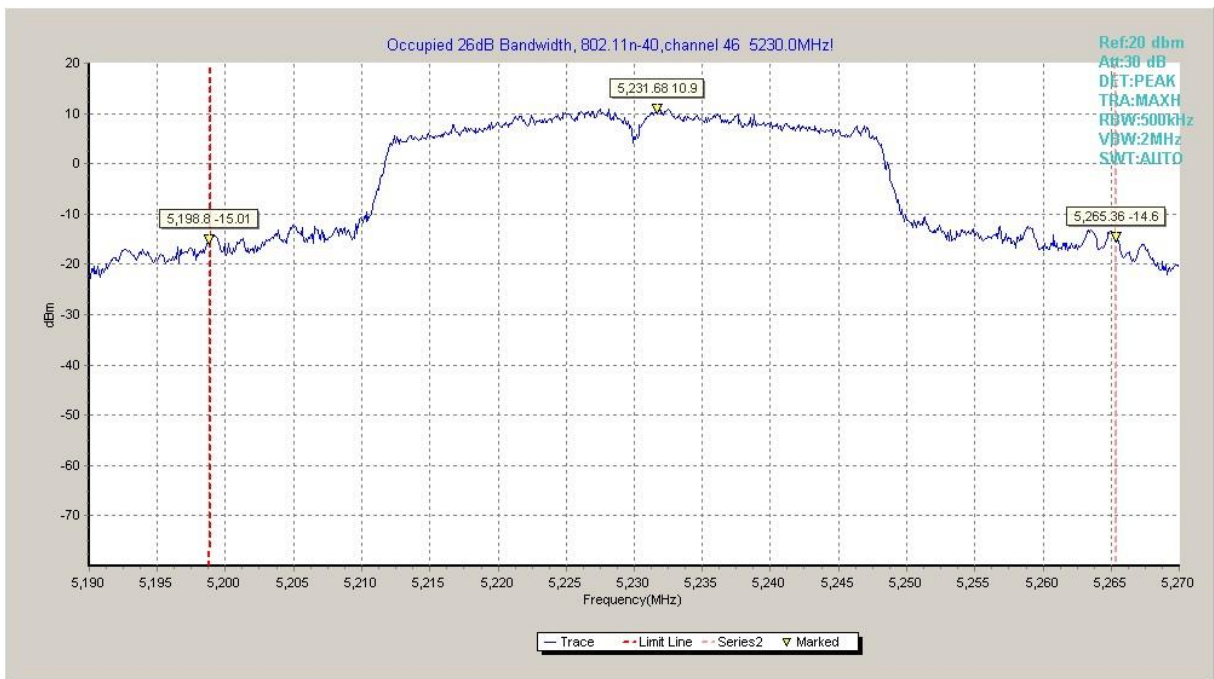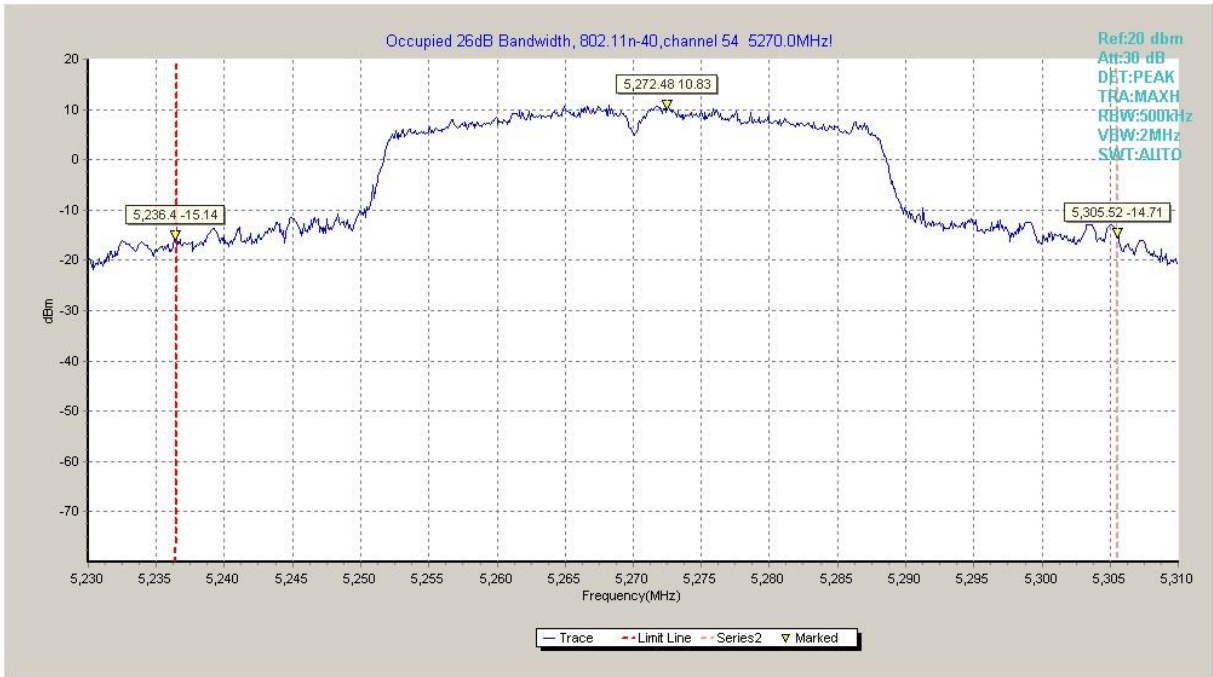
Fig. 9   Occupied 26dB Bandwidth (802.11n-HT20, 5240MHz)

Fig. 10   Occupied 26dB Bandwidth (802.11n-HT20, 5260MHz)

Fig. 11   Occupied 26dB Bandwidth (802.11n-HT20, 5280MHz)
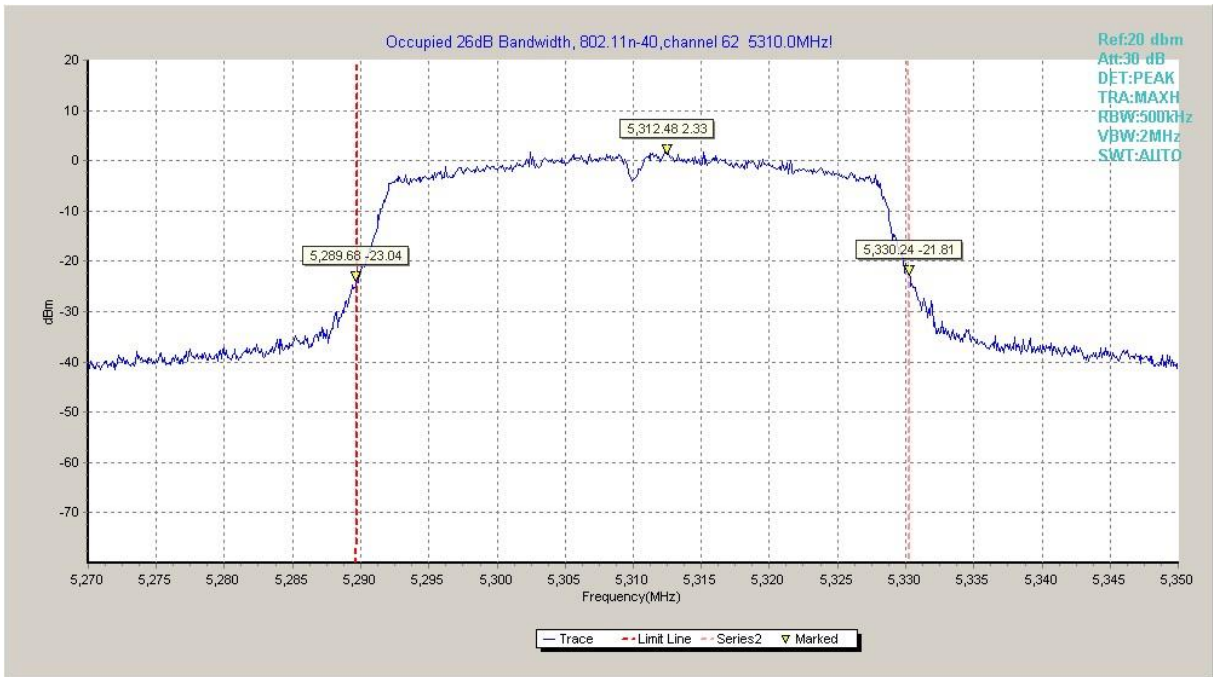

Fig. 12   Occupied 26dB Bandwidth (802.11n-HT20, 5320MHz)
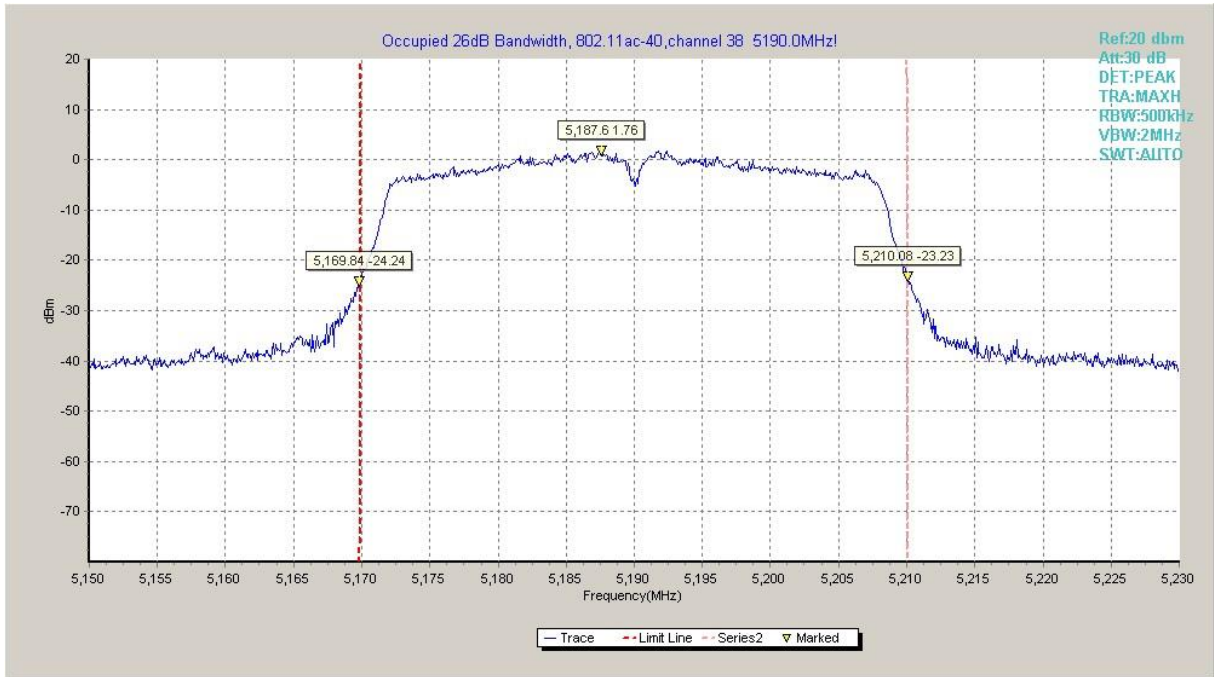
Fig. 13 Occupied 26dB Bandwidth (802.11ac-HT20, 5180MHz)

Fig. 14 Occupied 26dB Bandwidth (802.11ac-HT20, 5200MHz)

Fig. 15   Occupied 26dB Bandwidth (802.11ac-HT20, 5240MHz)
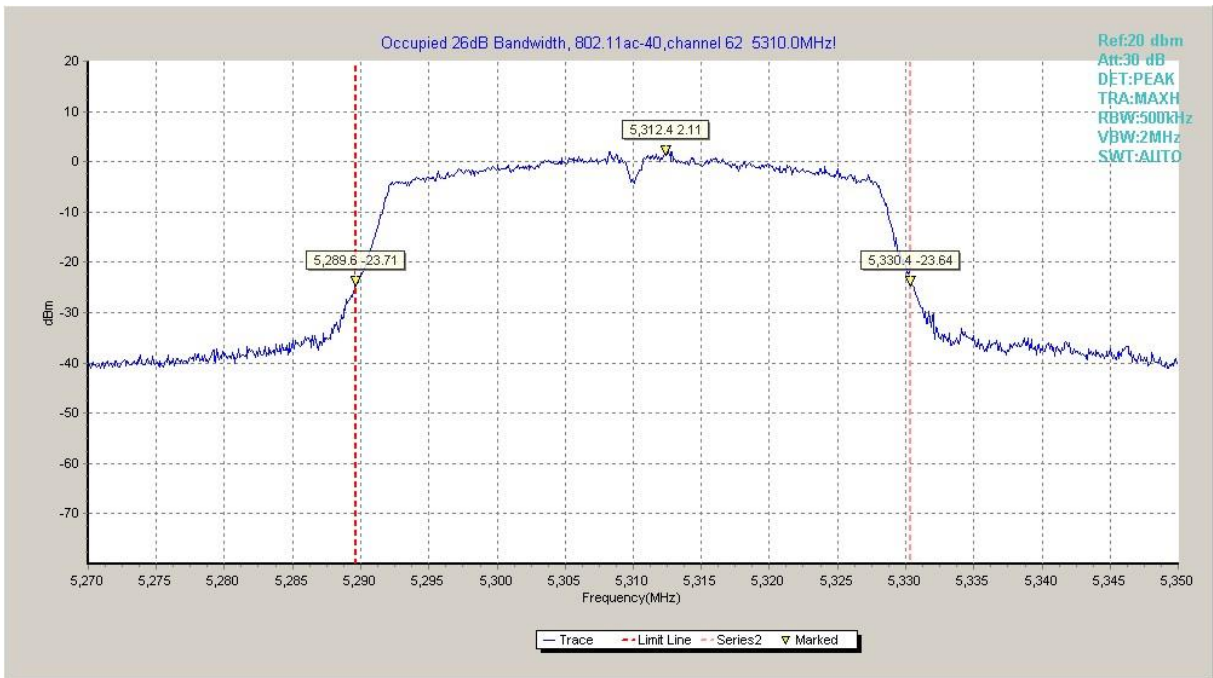

Fig. 16   Occupied 26dB Bandwidth (802.11ac-HT20, 5260MHz)

Fig. 17   Occupied 26dB Bandwidth (802.11ac-HT20,5280MHz)

Fig. 18   Occupied 26dB Bandwidth (802.11ac-HT20,5320MHz)

Fig. 19   Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)

Fig. 20   Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)

Fig. 21 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)

Fig. 22 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)

Fig. 23 Occupied 26dB Bandwidth (802.11ac-HT40, 5190MHz)

Fig. 24 Occupied 26dB Bandwidth (802.11ac-HT40,5230MHz)

Fig. 25   Occupied 26dB Bandwidth (802.11ac-HT40,5270MHz)
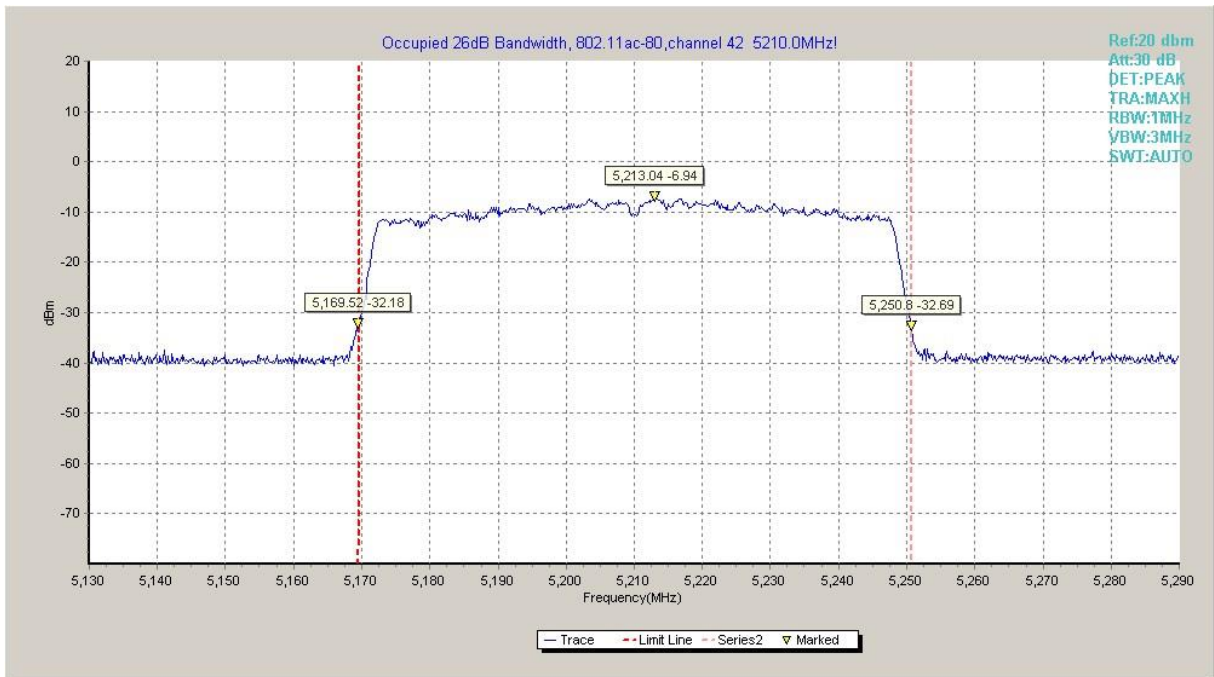

Fig. 26   Occupied 26dB Bandwidth (802.11ac-HT40, 5310MHz)
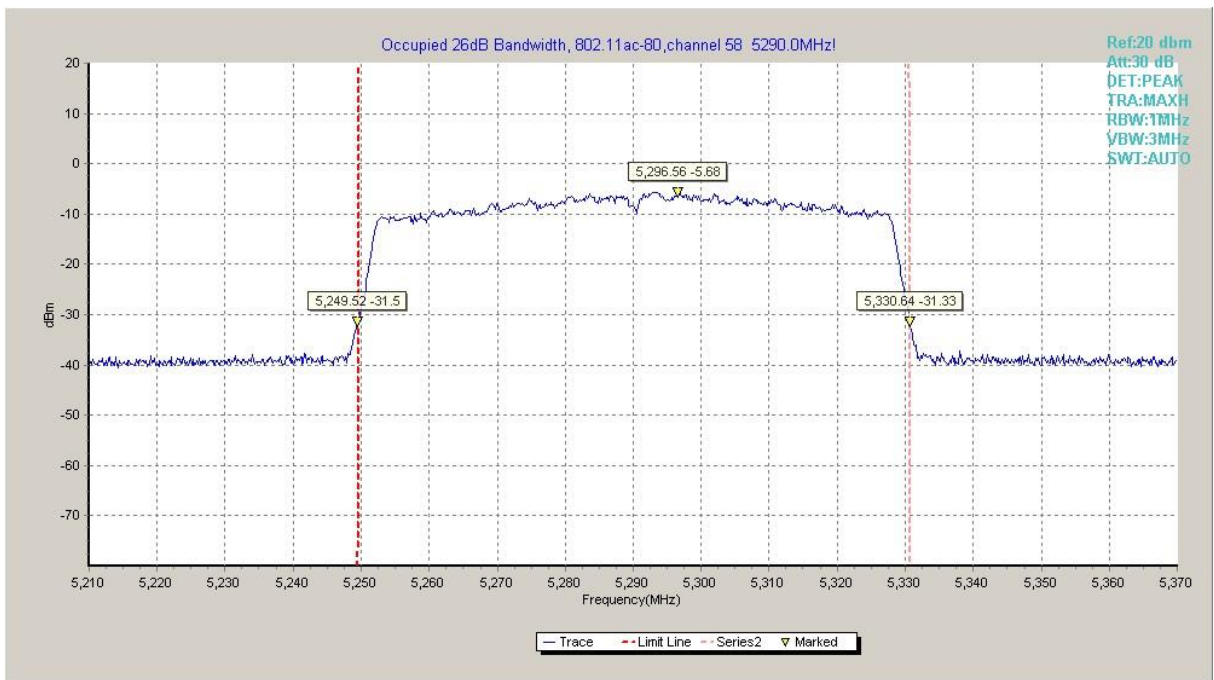
Fig. 27   Occupied 26dB Bandwidth (802.11ac-HT80,5210MHz)

Fig. 28   Occupied 26dB Bandwidth (802.11ac-HT80, 5290MHz)

A.5. Band Edges Compliance

A5.1 Band Edges - Radiated

Measurement Limit:

Standard	Limit (dB μ V/m)	
FCC 47 CFR Part 15.209	Peak	74
	Average	54

The measurement is made according to KDB 789033

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Measurement Uncertainty:

Measurement Uncertainty	0.75dB

Measurement Result:

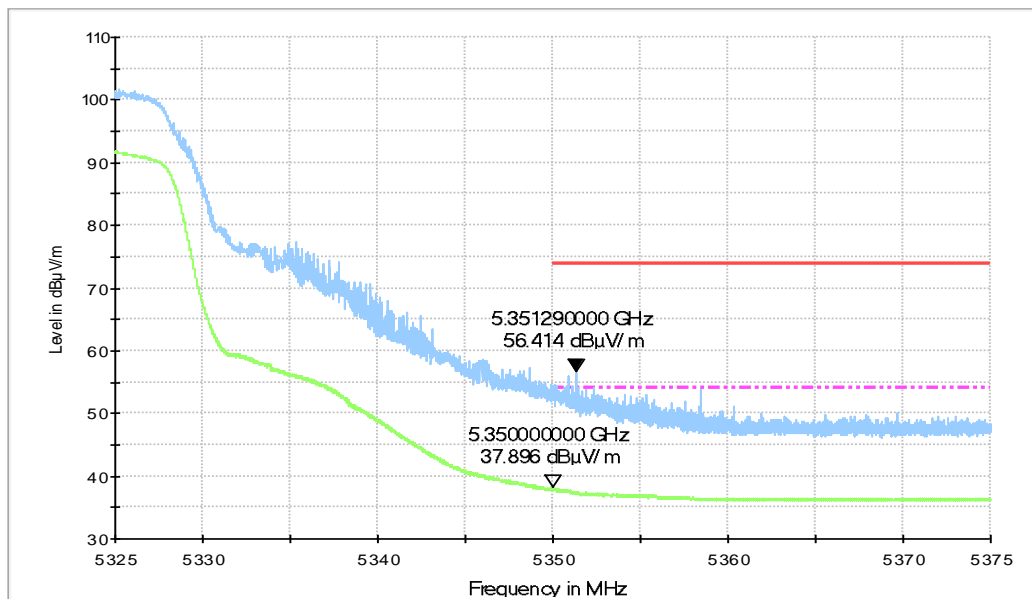| Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.29	P
	5320 MHz	Fig.30	P
802.11n HT20	5180 MHz	Fig.31	P
	5320 MHz	Fig.32	P
802.11n HT40	5190 MHz	Fig.33	P
	5310 MHz	Fig.34	P
802.11ac HT80	5210MHz	Fig.35	P
	5290MHz	Fig.36	P

Conclusion: PASS

Test graphs as below:
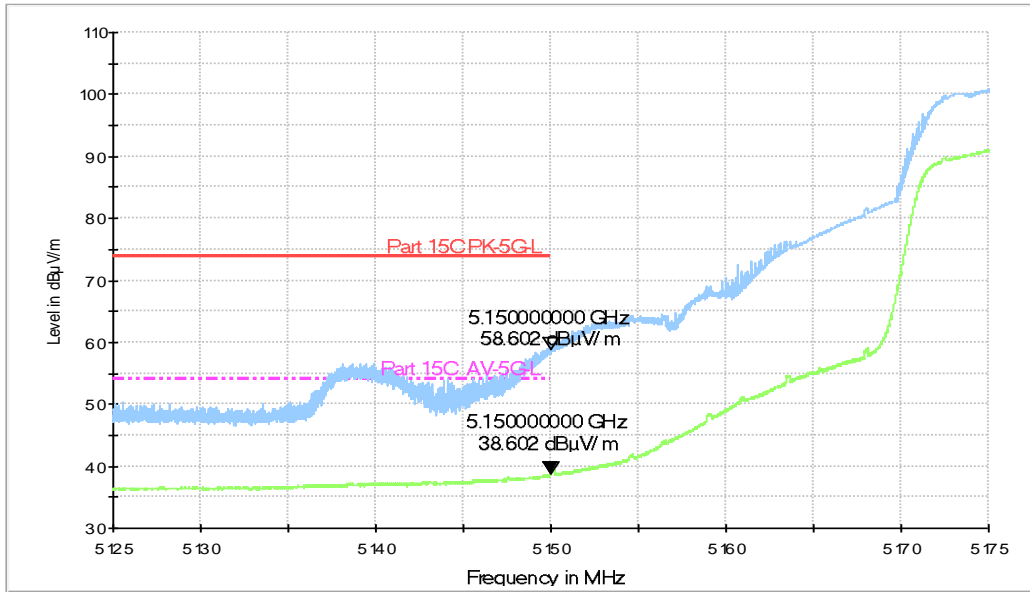
RE - Power-5.125GHz-5.175GHz
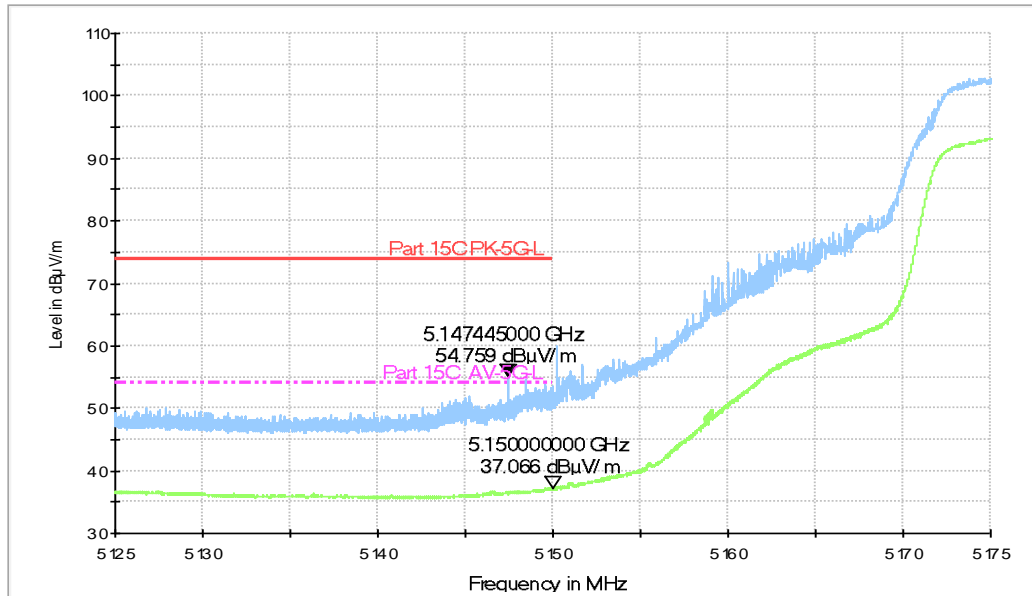
Fig. 29　Band Edges (802.11a, 5180MHz)

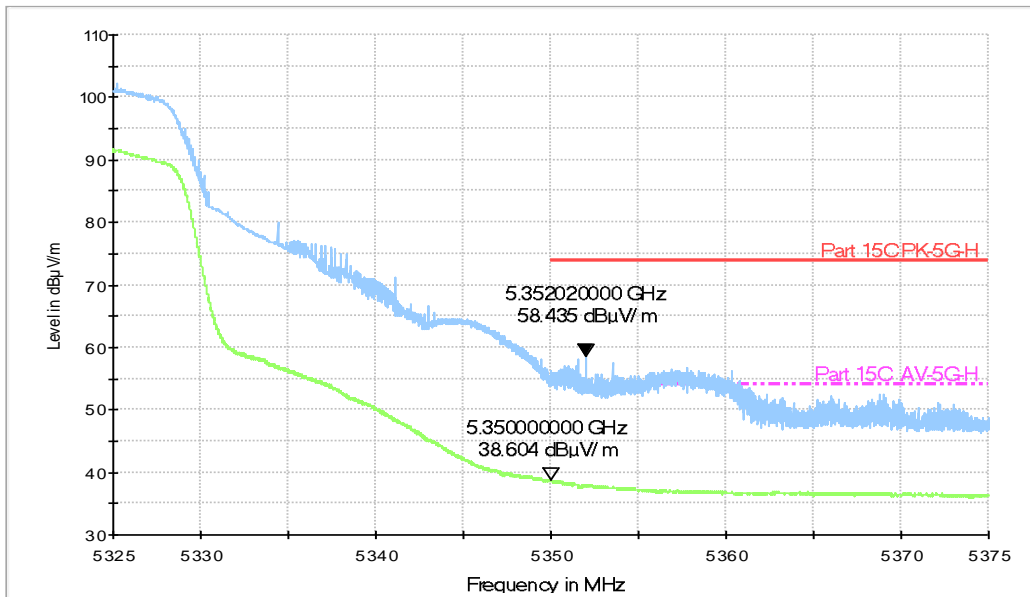RE - Power-5.325GHz-5.375GHz

Fig. 30　Band Edges (802.11a, 5320MHz)

RE - Power-5.125GHz-5.175GHz

Fig. 31   Band Edges (802.11n-HT20, 5180MHz)

RE - Power-5.325GHz-5.375GHz

Fig. 32   Band Edges (802.11n-HT20, 5320MHz)