



FCC PART 15 TEST REPORT No.I22Z60568-IOT10

for

TCL Communication Ltd.

GSM/UMTS/LTE mobile phone

4058P

With

FCC ID: 2ACCJN064

Hardware Version: 03

Software Version: RL3W

Issued Date: 2022-05-17

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.

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REPORT HISTORY

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1. TEST LABORATORY

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

1.2. Testing Location

Conducted testing Location: CTTL(Huayuan North Road)

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

1.3. Testing Environment

Normal Temperature: 15-35°C

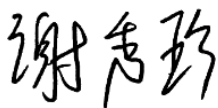
Relative Humidity: 20-75%

1.4. Project date

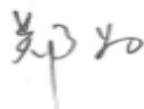
Testing Start Date: 2022-03-25

Testing End Date: 2022-05-10

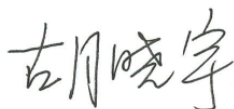
1.5. Signature



Xie Xiuzhen
(Prepared this test report)



Zheng Wei
(Reviewed this test report)



Hu Xiaoyu
(Approved this test report)



2. CLIENT INFORMATION

2.1 Applicant Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Telephone: 0086-755-36614 5759
Fax: 0086-755-36612000-81722

2.2 Manufacturer Information

Company Name: TCL Communication Ltd.
Address: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Telephone: 0086-755-36614 5759
Fax: 0086-755-36612000-81722

3. EQUIPMENT UNDER TEST (EUT) AND **ANCILLARY EQUIPMENT (AE)**

3.1. About EUT

Description	GSM/UMTS/LTE mobile phone
Model name	4058P
FCC ID	2ACCJN064
WLAN Frequency Band	ISM Bands: -5150MHz~5250MHz -5250MHz~5350MHz -5470MHz~5725MHz
Type of modulation	OFDM
Antenna	Integral Antenna
Voltage	3.8V

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
EUT1	01621000212154	03	RL3W
EUT2	016211000210638	03	RL3W

*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	SN
AE1	Battery	/

*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 GSM/UMTS/LTE mobile phone with integrated antenna and inbuilt battery.

It has Bluetooth (EDR)function.

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

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	2018
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 D02	General U-NII Test Procedures New Rules v02r01	2017-12

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
Peak Power Spectral Density	15.407	/	P
Occupied 26dB Bandwidth	15.403	/	P
Band edge compliance (Radiated)	15.209	/	P
Transmitter spurious emissions (Radiated)	15.407	/	P
AC Powerline Conducted Emission (150kHz- 30MHz)	15.407	/	P
Frequency Stability	15.407	/	P
99% Occupied bandwidth	/	/	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°C
Voltage	3.8V
Humidity	44%

7. TEST EQUIPMENTS UTILIZED

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Vector Signal Analyzer	FSQ40	200089	Rohde & Schwarz	1 year	2022-05-24
2	LISN	ENV216	101200	R&S	1 year	2022-05-03
3	Test Receiver	ESCI3	100344	R&S	1 year	2023-02-21
4	Shielding Room	S81	/	ETS-Lindgren	/	/

Note: the LISN(101200) was in calibration due date when used for testing.

Radiated emission test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Period	Calibration Due date
1	Test Receiver	ESW44	103023	R&S	1 year	2022-10-28
2	BiLog Antenna	VULB9163	302	Schwarzbeck	1 year	2022-12-28
3	EMI Antenna	3115	0016725	ETS-Lindgren	1 year	2022-07-01

8. Measurement Uncertainty

8.1 Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

8.2 Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

8.3 Occupied Channel Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

8.4 Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

8.5 Spurious Emissions

Conducted (k=1.96)

Frequency Range	Uncertainty(dB)
$30\text{MHz} \leq f \leq 2\text{GHz}$	1.22
$2\text{GHz} \leq f \leq 3.6\text{GHz}$	1.22
$3.6\text{GHz} \leq f \leq 8\text{GHz}$	1.22
$8\text{GHz} \leq f \leq 12.75\text{GHz}$	1.51
$12.75\text{GHz} \leq f \leq 26\text{GHz}$	1.51
$26\text{GHz} \leq f \leq 40\text{GHz}$	1.59

Radiated (k=2)

Frequency Range	Uncertainty(dB)
9kHz-30MHz	/
$30\text{MHz} \leq f \leq 1\text{GHz}$	5.16
$1\text{GHz} \leq f \leq 18\text{GHz}$	5.44
$18\text{GHz} \leq f \leq 40\text{GHz}$	5.28

8.6. AC Power-line Conducted Emission

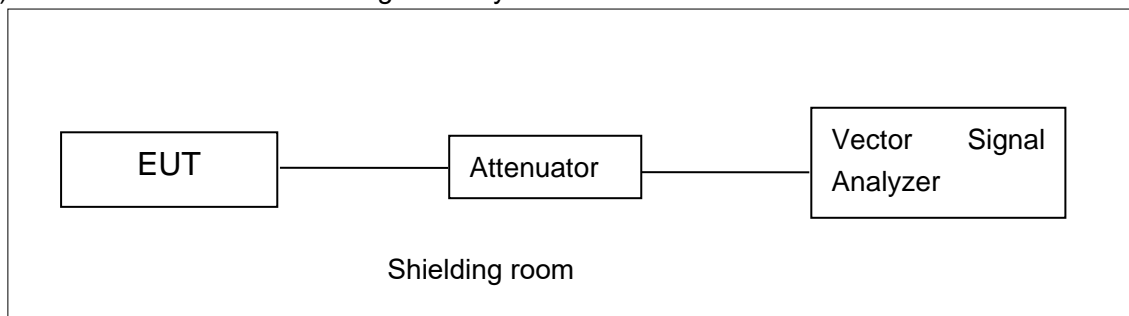
Measurement Uncertainty : 3.08,k=2

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

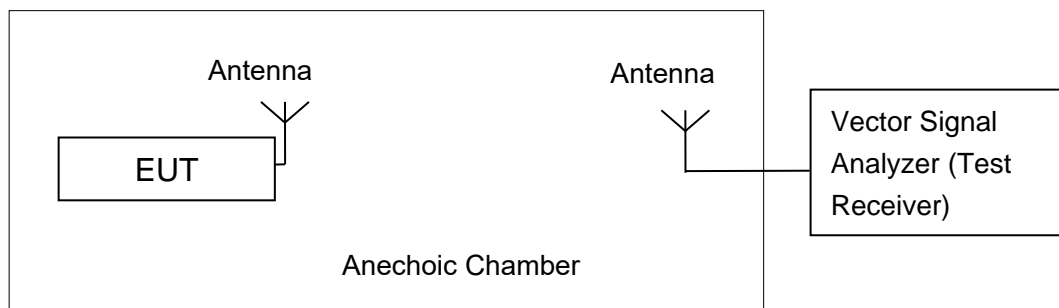


A.1.2. Radiated Emission Measurements

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;



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
	5470MHz~5725MHz	24dBm or 11+10logB

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

The measurement method SA-2 is made according to KDB 789033

Note:

For straddle channel 20MHz Bandwidth 5720MHz, Conducted Output Power Limit:

802.11a=11+10*log(B)=23.43, B=25.00/2+5=17.50MHz,

802.11n-HT20=11+10*log(B)=27.71, B=25.70/2+5=17.85MHz,

For straddle channel 40/80MHz Bandwidth, conducted output power limit=24 dBm

802.11n-HT40: B=46.88/2+15=38.44MHz,

Measurement Results:

802.11a mode

Mode	Frequency	Test Result (dBm)							
		Data Rate (Mbps)							
		6	9	12	18	24	36	48	54
802.11a	5180MHz	18.05	/	/	/	/	/	/	/
	5200MHz	18.10	/	/	/	/	/	/	/
	5240MHz	18.26	/	/	/	/	/	/	/
	5260MHz	18.24	/	/	/	/	/	/	/
	5280MHz	18.59	/	/	/	/	/	/	/
	5320MHz	18.76	/	/	/	/	/	/	/
	5500MHz	18.30	/	/	/	/	/	/	/
	5580MHz	18.12	/	/	/	/	/	/	/
	5700MHz	18.40	/	/	/	/	/	/	/
	5720MHz	18.09	/	/	/	/	/	/	/

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

802.11n-HT20 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT20)	5180MHz	18.35	/	/	/	/	/	/	/
	5200MHz	18.38	/	/	/	/	/	/	/
	5240MHz	18.05	/	/	/	/	/	/	/
	5260MHz	17.83	/	/	/	/	/	/	/
	5280MHz	17.56	/	/	/	/	/	/	/
	5320MHz	17.78	/	/	/	/	/	/	/
	5500MHz	17.83	/	/	/	/	/	/	/
	5580MHz	17.31	/	/	/	/	/	/	/
	5700MHz	17.23	/	/	/	/	/	/	/
	5720MHz	17.12	/	/	/	/	/	/	/

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

802.11n-HT40 mode

Mode	Frequency	Test Result (dBm)							
		Data Rate							
		MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
802.11n (HT40)	5190MHz	17.86	/	/	/	/	/	/	/
	5230MHz	17.97	/	/	/	/	/	/	/
	5270MHz	17.93	/	/	/	/	/	/	/
	5310MHz	17.65	/	/	/	/	/	/	/
	5510MHz	17.94	/	/	/	/	/	/	/
	5550MHz	17.90	/	/	/	/	/	/	/
	5670MHz	17.91	/	/	/	/	/	/	/
	5710MHz	17.75	/	/	/	/	/	/	/

The data rate MCS0 is 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
	5470MHz~5725MHz	11

The output power measurement method Section F is made according to KDB 789033

Measurement Results:

Mode	Frequency	Power Spectral Density (dBm/MHz)	Conclusion
802.11a	5180 MHz	7.81	P
	5200 MHz	7.47	P
	5240 MHz	7.52	P
	5260 MHz	7.55	P
	5280 MHz	7.70	P
	5320 MHz	7.67	P
	5500 MHz	7.53	P
	5580 MHz	7.06	P
	5700 MHz	6.99	P
	5720 MHz	6.98	P
802.11n HT20	5180 MHz	7.28	P
	5200 MHz	7.13	P
	5240 MHz	7.21	P
	5260 MHz	7.49	P
	5280 MHz	7.42	P
	5320 MHz	7.63	P
	5500 MHz	6.93	P
	5580 MHz	6.97	P
	5700 MHz	6.87	P
	5720 MHz	6.11	P
802.11n HT40	5190 MHz	3.61	P
	5230 MHz	3.20	P
	5270 MHz	3.17	P
	5310 MHz	3.08	P
	5510 MHz	3.88	P
	5550 MHz	3.45	P
	5670 MHz	3.48	P
	5710 MHz	3.23	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
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Measurement Result:

Mode	Frequency	Occupied 26dB Bandwidth (MHz)		conclusion
		Fig.	Value	
802.11a	5180 MHz	Fig.1	25.50	P
	5200 MHz	Fig.2	25.05	P
	5240 MHz	Fig.3	22.05	P
	5260 MHz	Fig.4	23.20	P
	5280 MHz	Fig.5	25.90	P
	5320 MHz	Fig.6	27.15	P
	5500 MHz	Fig.7	24.05	P
	5580 MHz	Fig.8	23.75	P
	5700 MHz	Fig.9	24.05	P
	5720 MHz	Fig.10	25.00	P
802.11n HT20	5180 MHz	Fig.11	23.30	P
	5200 MHz	Fig.12	24.30	P
	5240 MHz	Fig.13	24.50	P
	5260 MHz	Fig.14	22.15	P
	5280 MHz	Fig.15	24.45	P
	5320 MHz	Fig.16	22.15	P
	5500 MHz	Fig.17	24.90	P
	5580 MHz	Fig.18	23.55	P
	5700 MHz	Fig.19	25.00	P
	5720 MHz	Fig.20	25.70	P
802.11n HT40	5190 MHz	Fig.21	46.32	P
	5230 MHz	Fig.22	43.68	P
	5270 MHz	Fig.23	40.32	P
	5310 MHz	Fig.24	40.32	P
	5510 MHz	Fig.25	40.48	P
	5550 MHz	Fig.26	40.56	P
	5670 MHz	Fig.27	44.40	P
	5710 MHz	Fig.28	46.88	P

Conclusion: PASS
Test graphs as below:

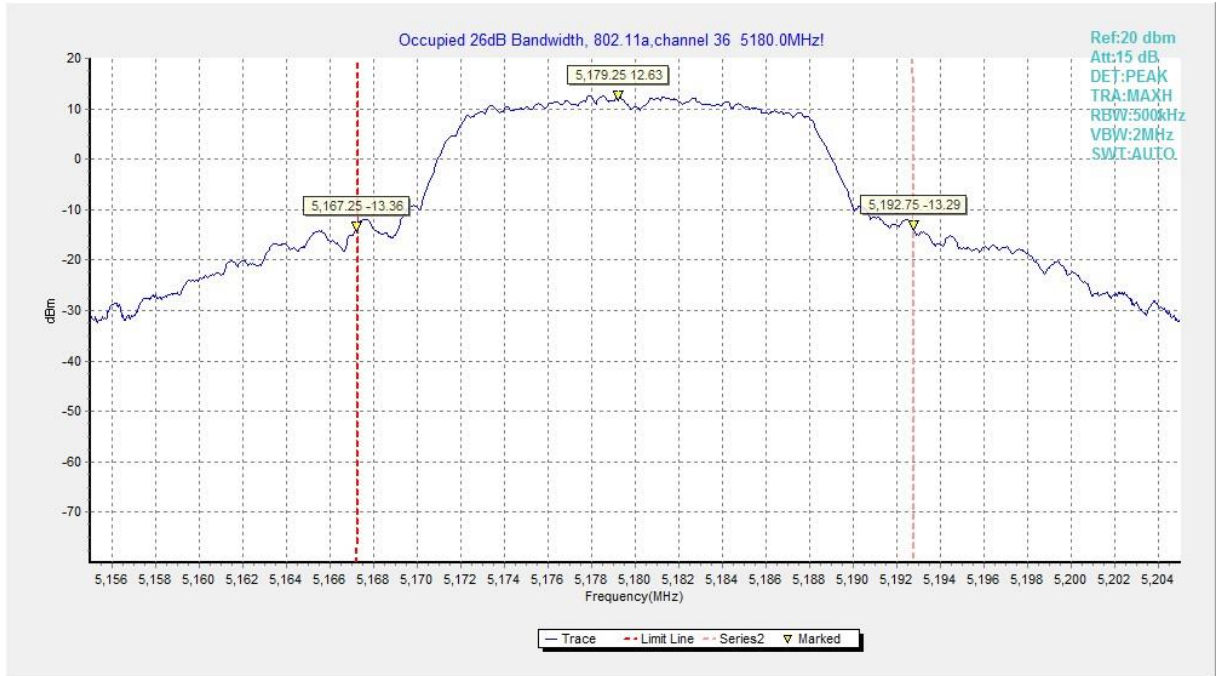


Fig.1 Occupied 26dB Bandwidth (802.11a, 5180MHz)

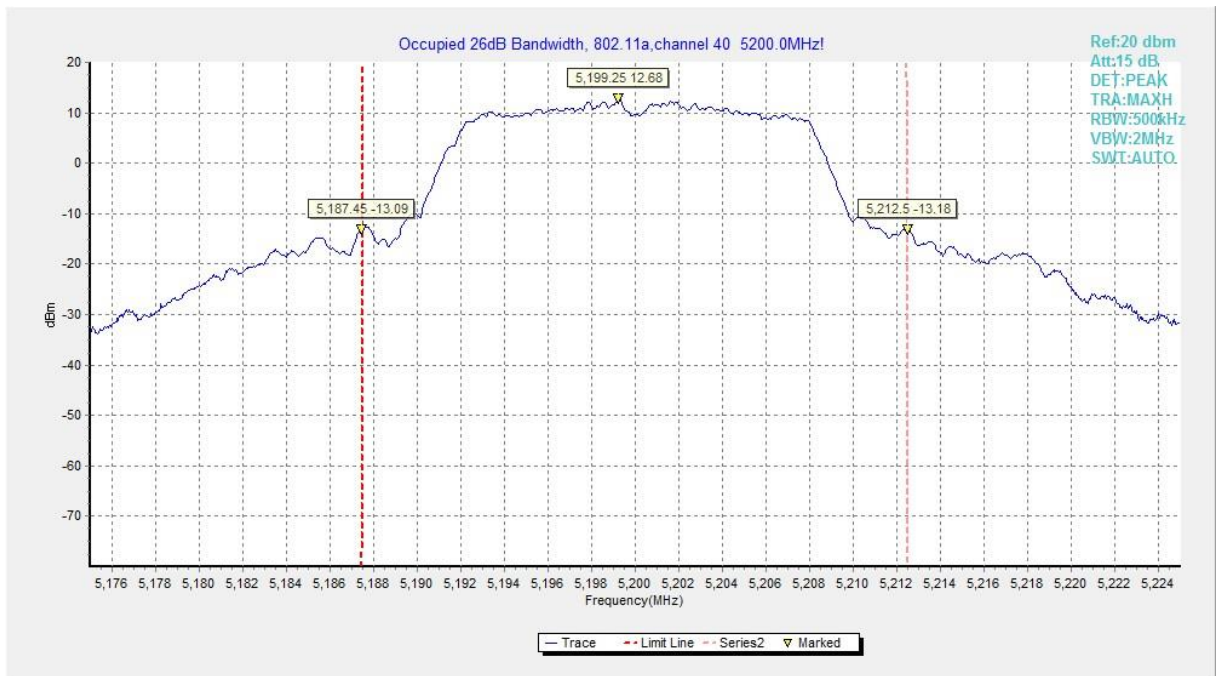


Fig.2 Occupied 26dB Bandwidth (802.11a, 5200MHz)

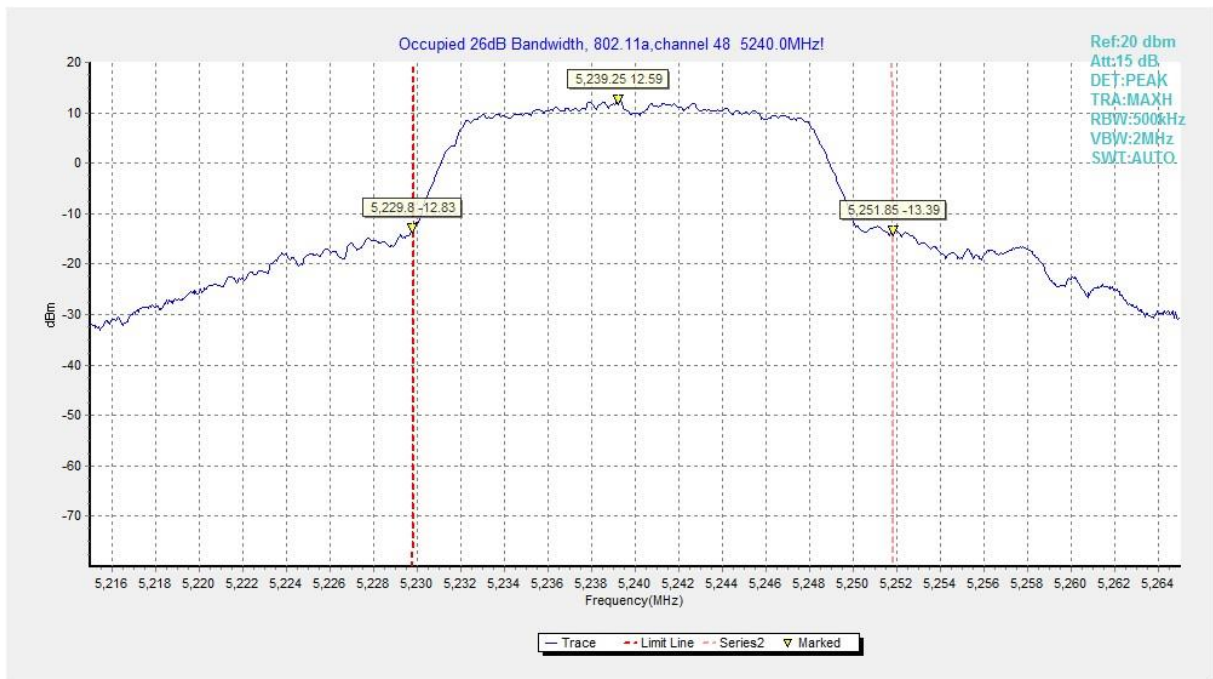


Fig.3 Occupied 26dB Bandwidth (802.11a, 5240MHz)

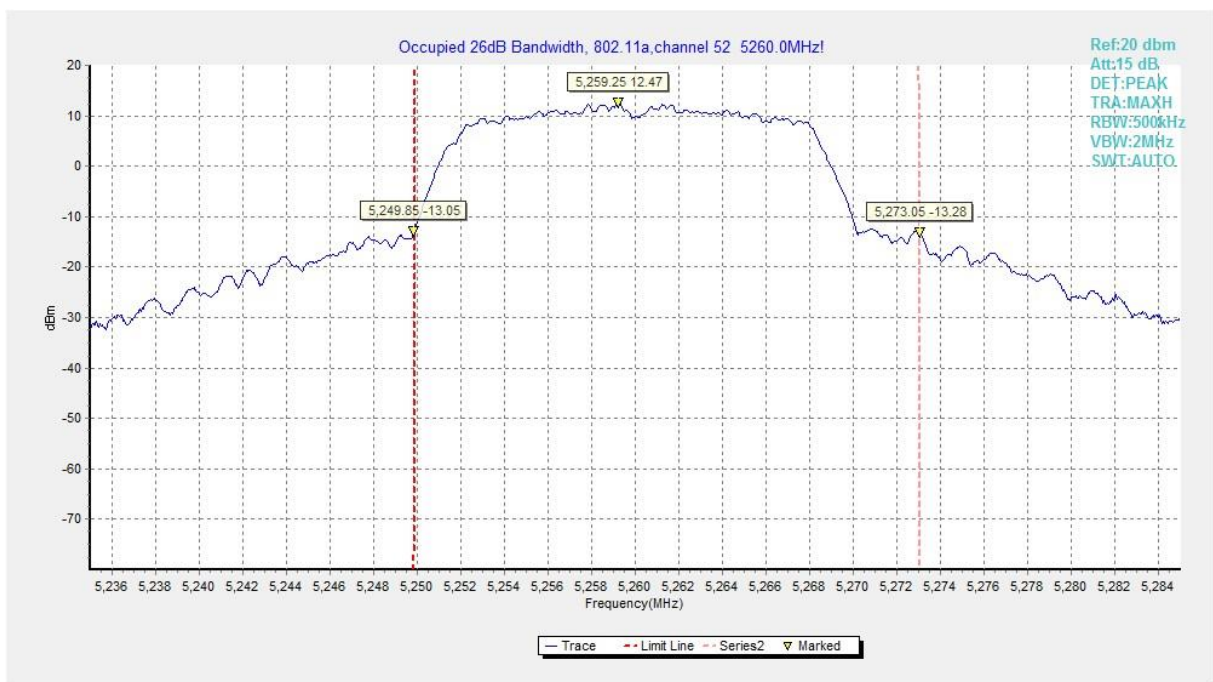


Fig.4 Occupied 26dB Bandwidth (802.11a, 5260MHz)

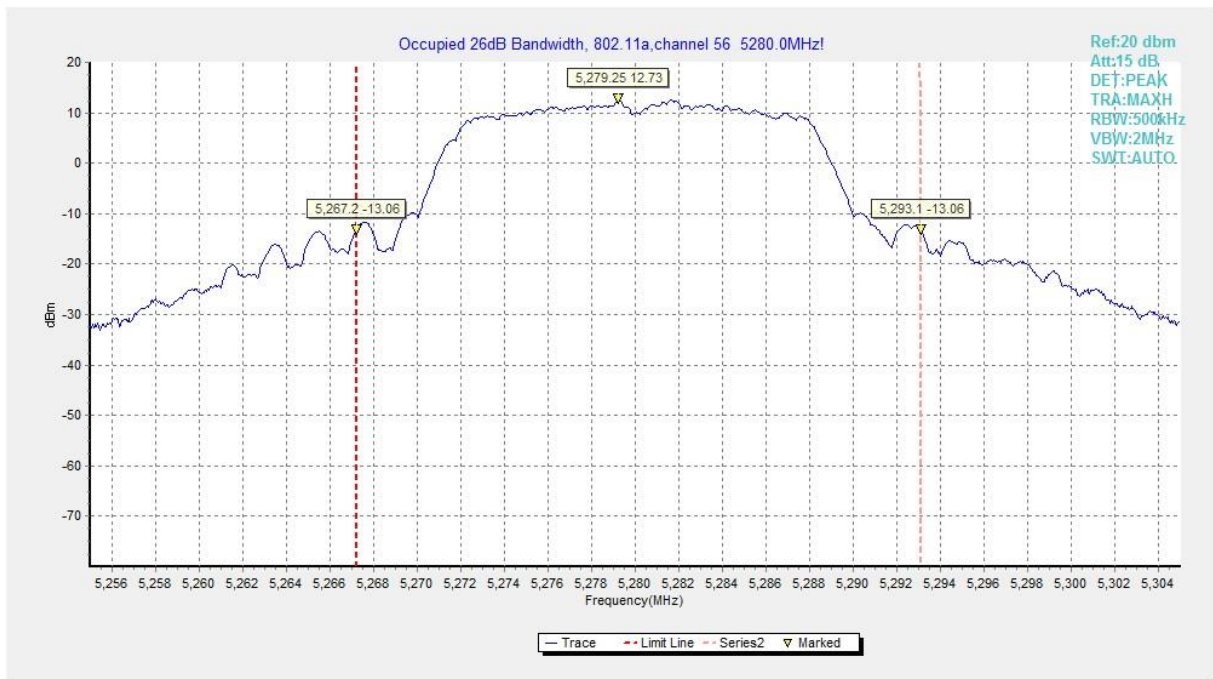


Fig.5 Occupied 26dB Bandwidth (802.11a, 5280MHz)

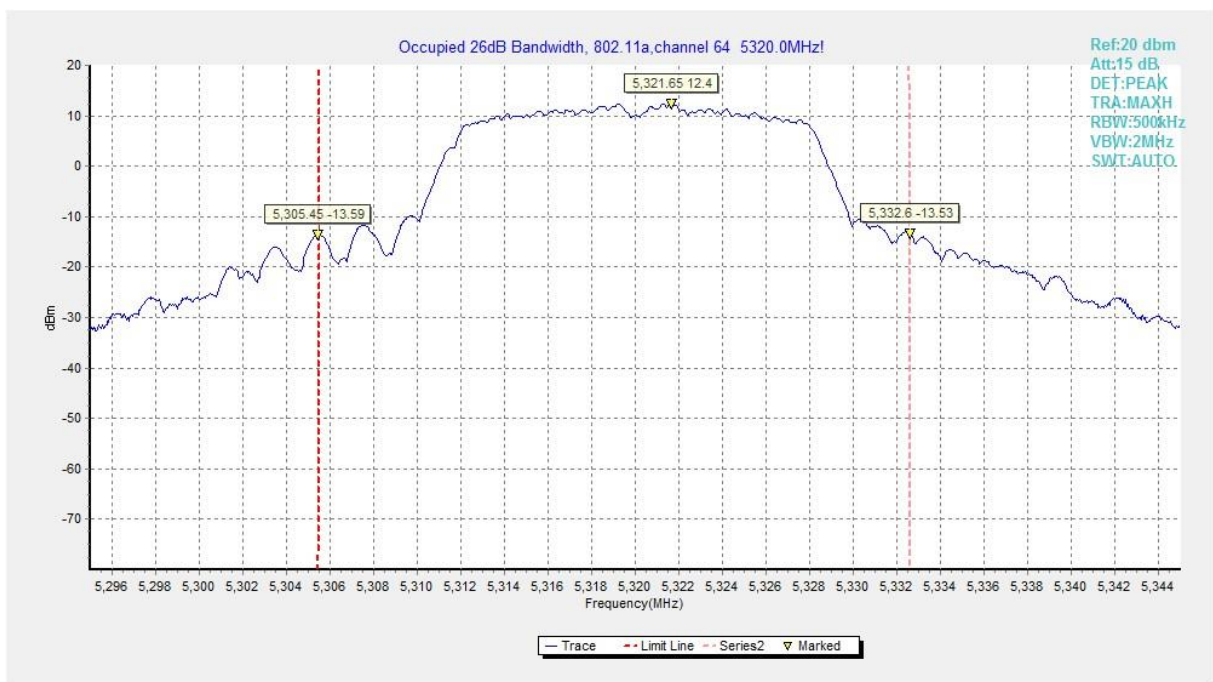


Fig.6 Occupied 26dB Bandwidth (802.11a, 5320MHz)



Fig.7 Occupied 26dB Bandwidth (802.11a, 5500MHz)

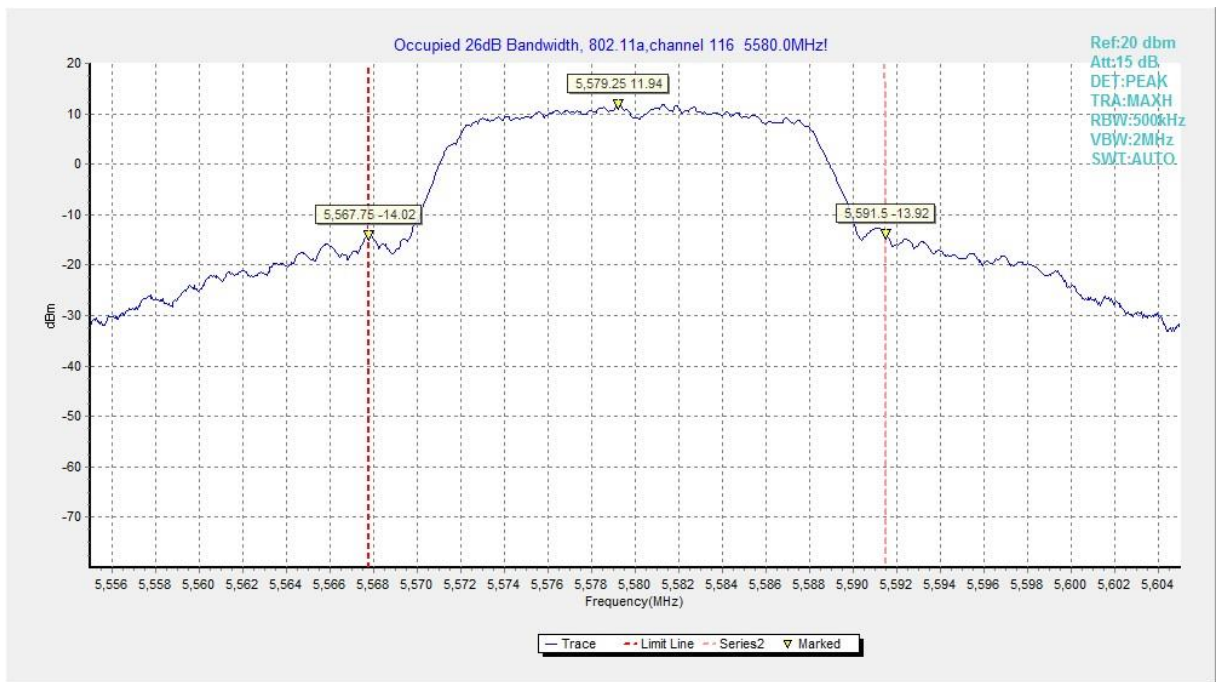


Fig.8 Occupied 26dB Bandwidth (802.11a, 5580MHz)



Fig.9 Occupied 26dB Bandwidth (802.11a, 5700MHz)

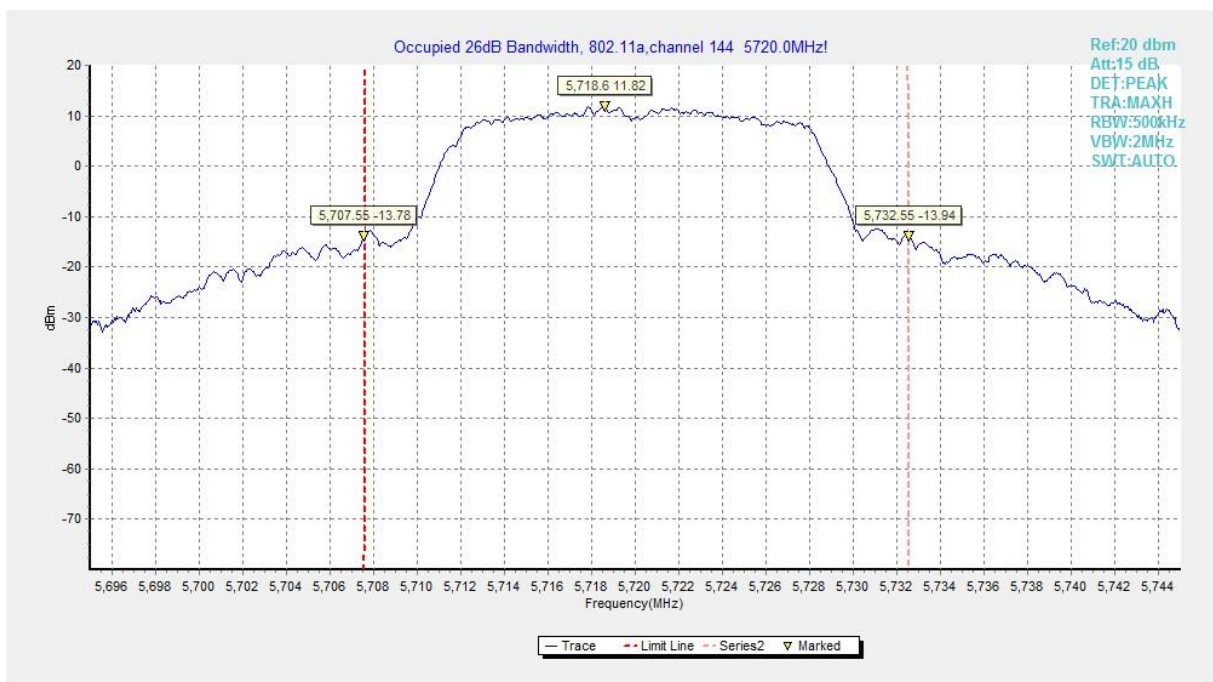


Fig.10 Occupied 26dB Bandwidth (802.11a, 5720MHz)

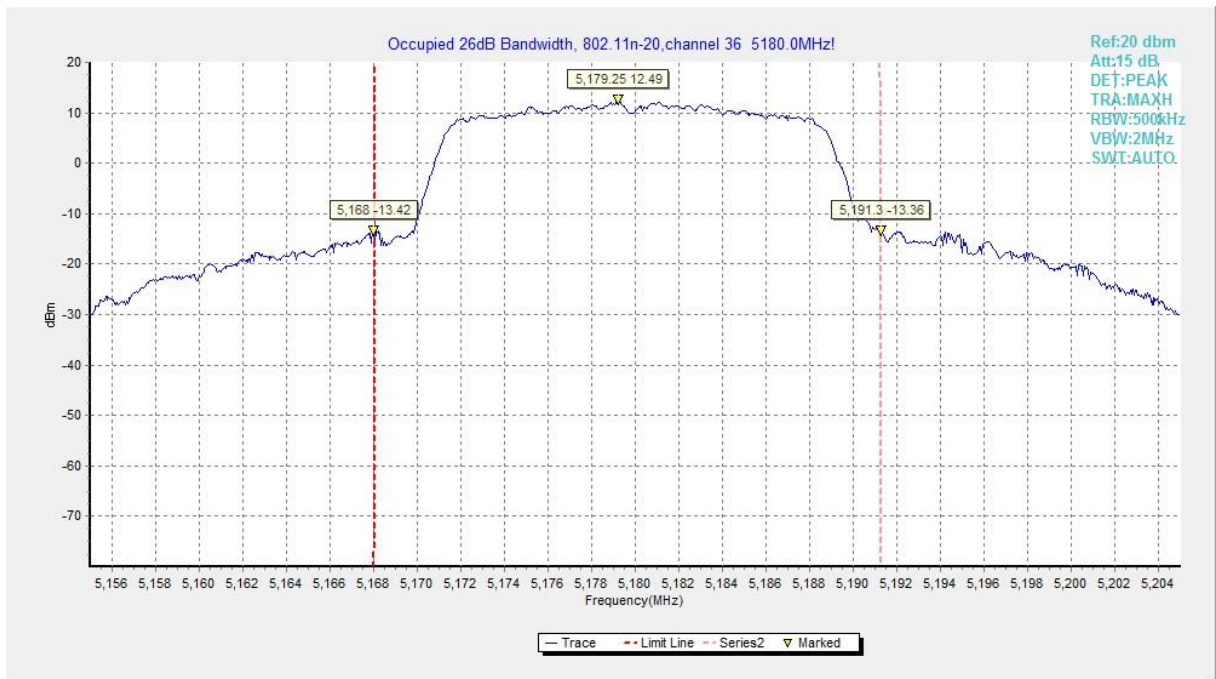


Fig.11 Occupied 26dB Bandwidth (802.11n-HT20, 5180MHz)

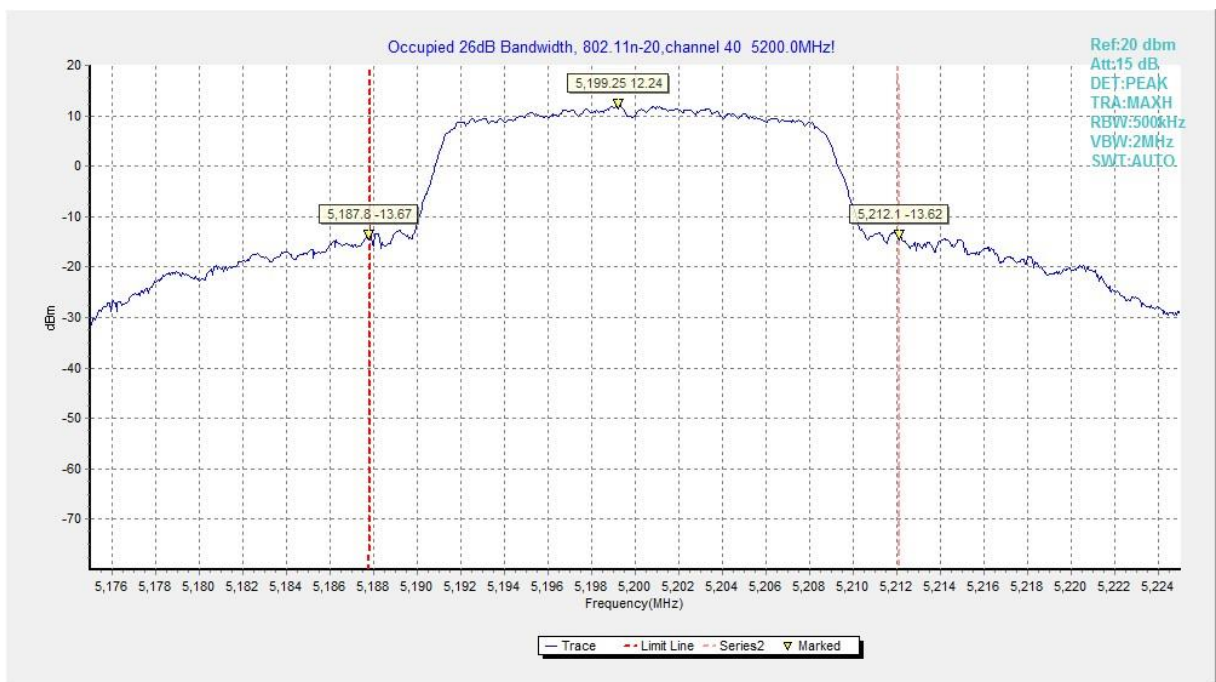


Fig.12 Occupied 26dB Bandwidth (802.11n-HT20, 5200MHz)

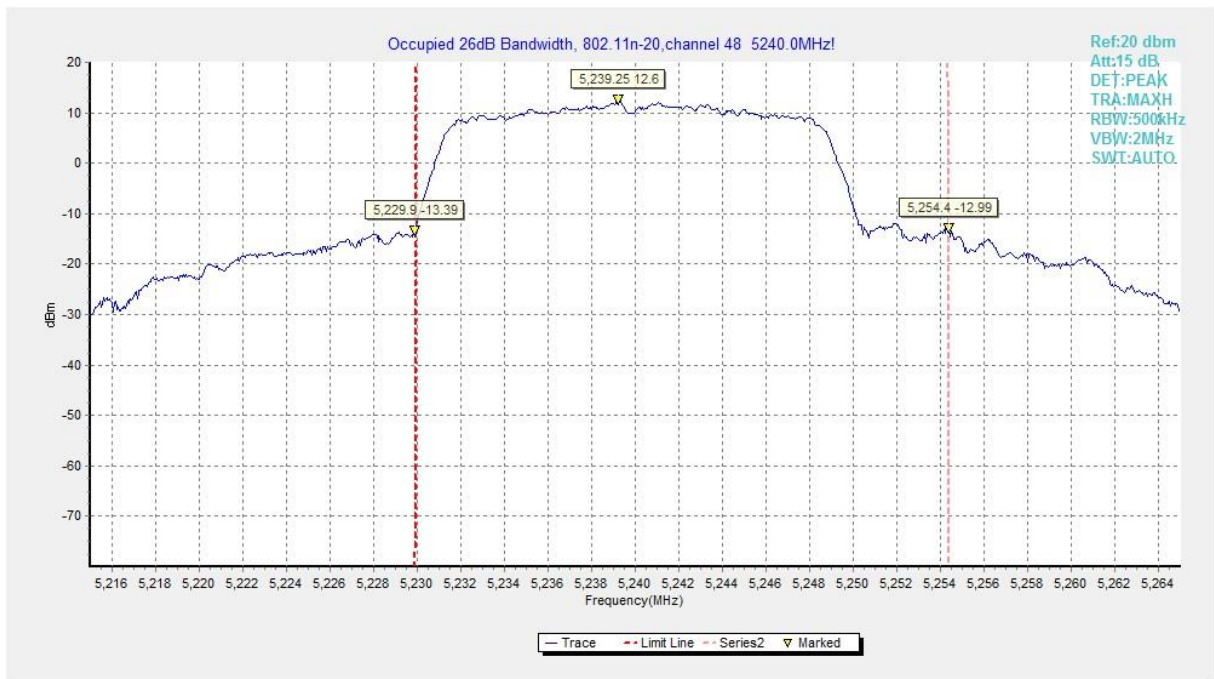


Fig.13 Occupied 26dB Bandwidth (802.11n-HT20, 5240MHz)

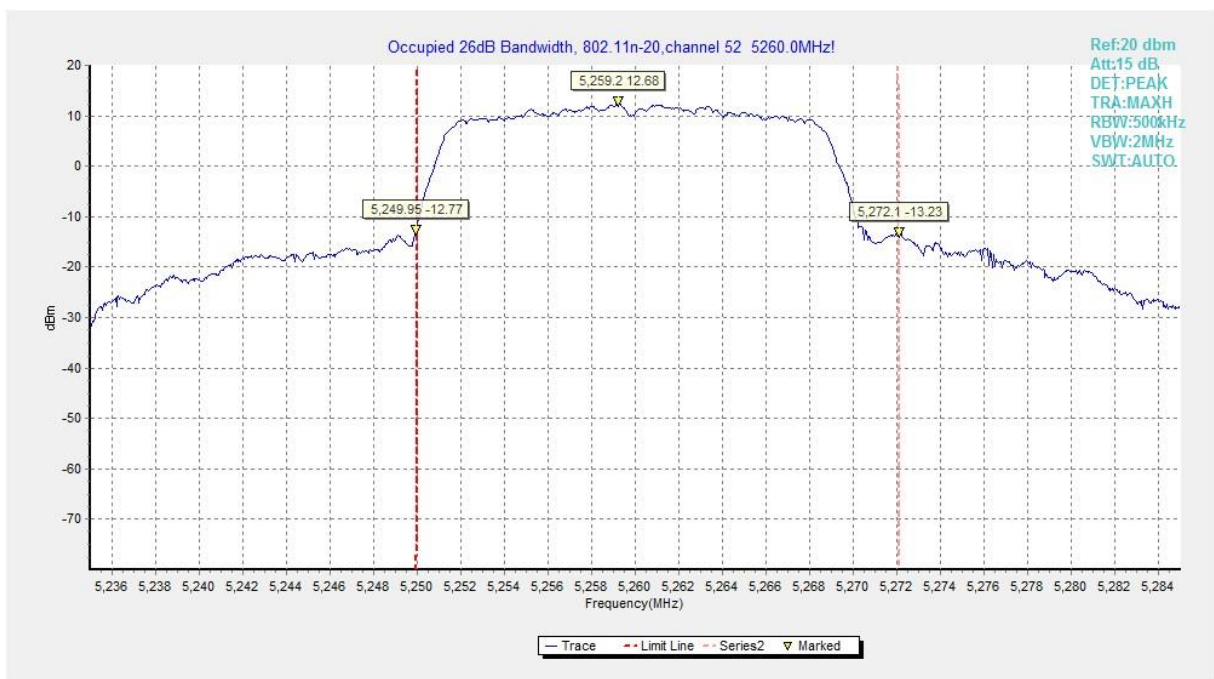


Fig.14 Occupied 26dB Bandwidth (802.11n-HT20, 5260MHz)

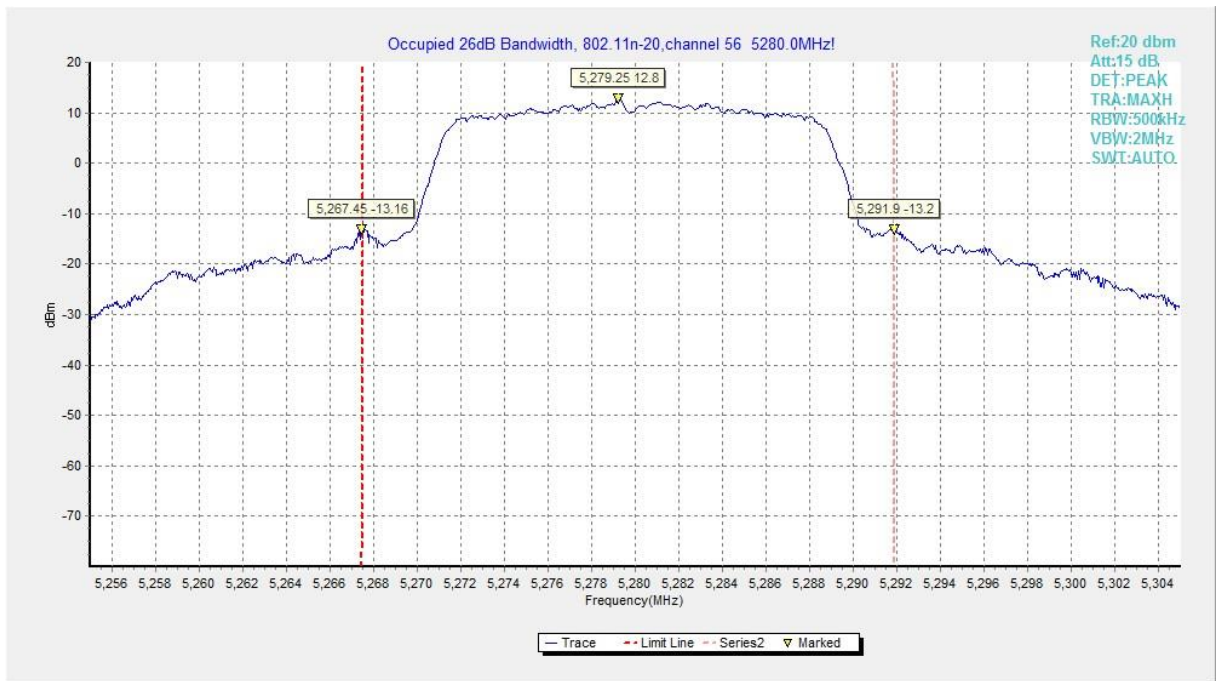


Fig.15 Occupied 26dB Bandwidth (802.11n-HT20, 5280MHz)

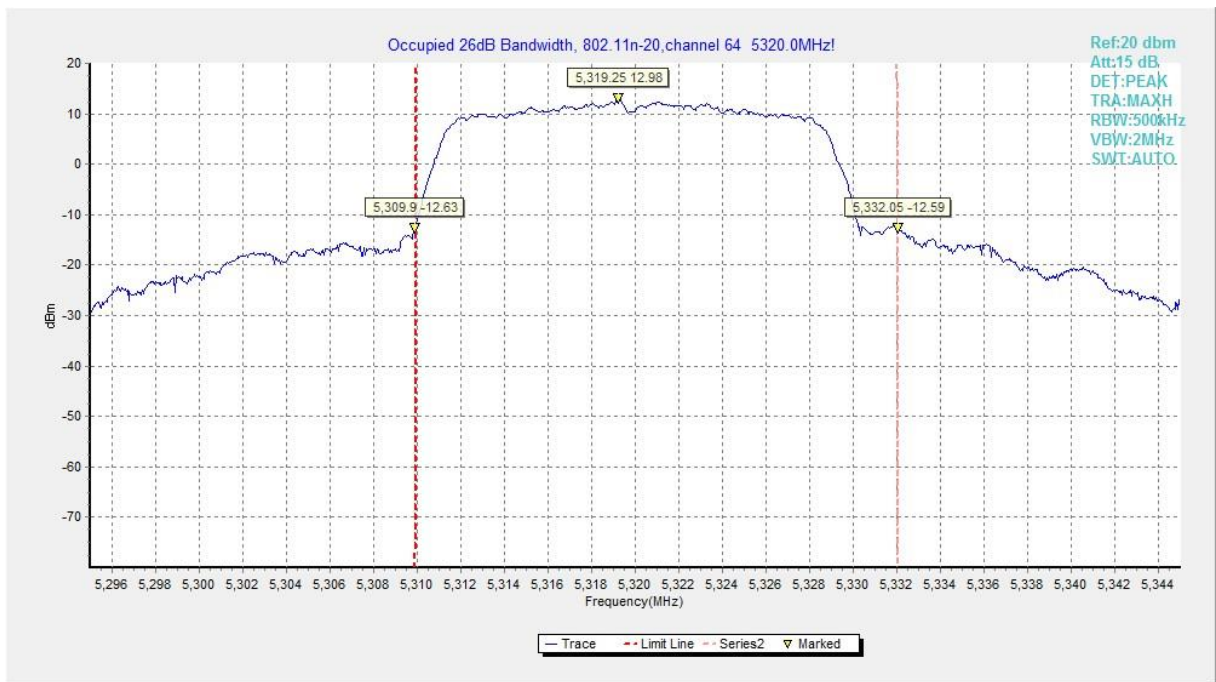


Fig.16 Occupied 26dB Bandwidth (802.11n-HT20, 5320MHz)

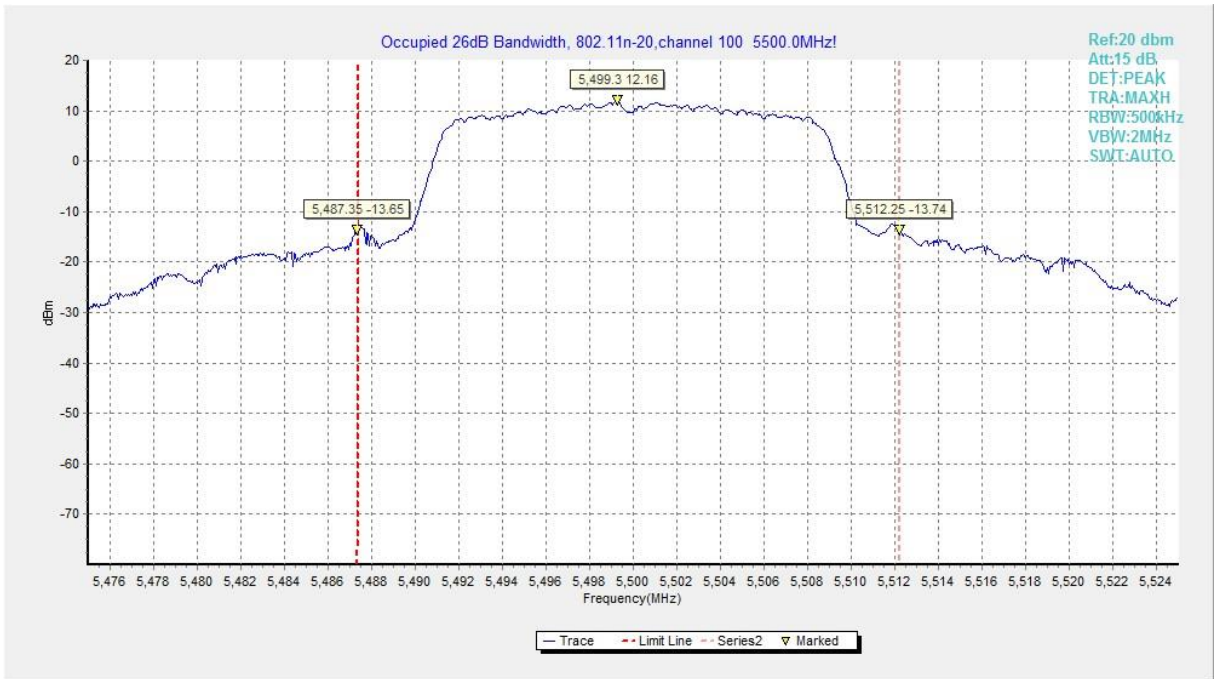


Fig.17 Occupied 26dB Bandwidth (802. 11n-HT20, 5500MHz)



Fig.18 Occupied 26dB Bandwidth (802. 11n-HT20, 5580MHz)

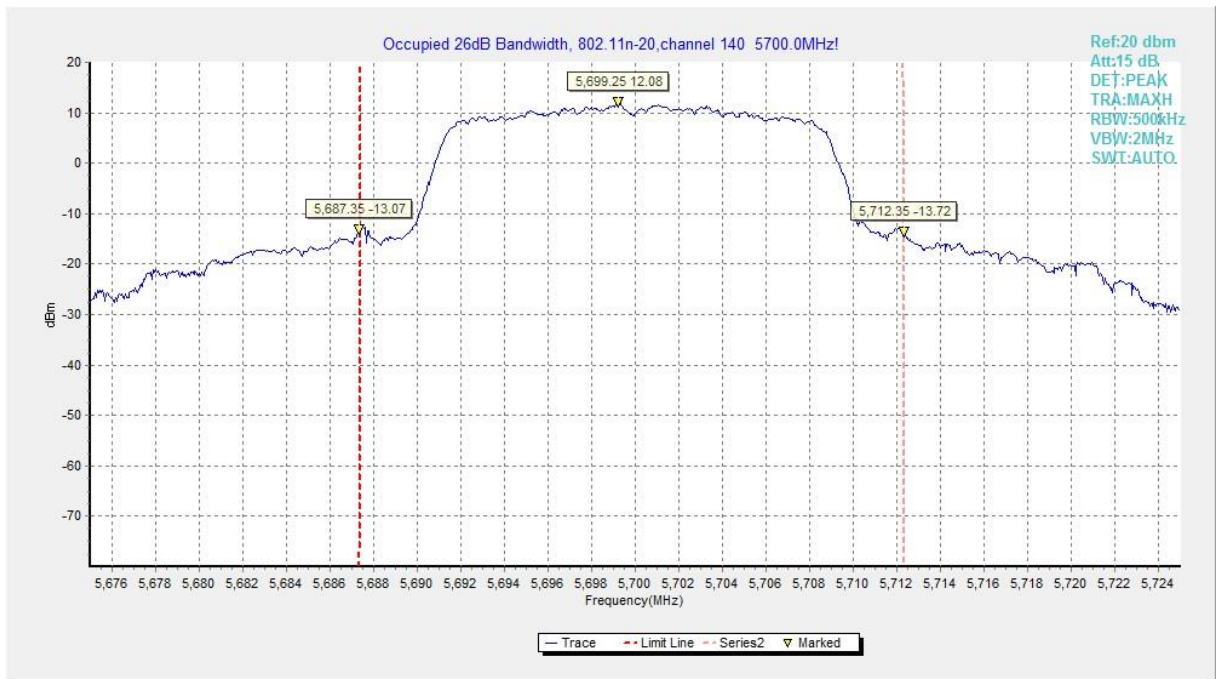


Fig.19 Occupied 26dB Bandwidth (802. 11n-HT20, 5700MHz)

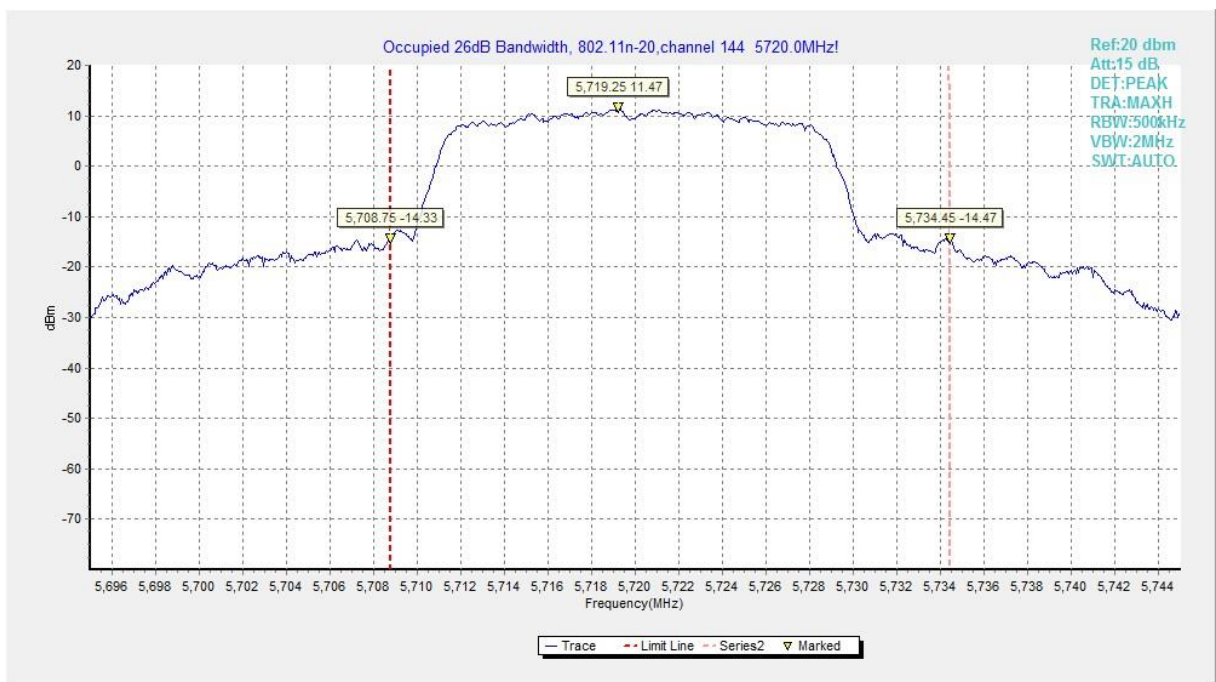


Fig.20 Occupied 26dB Bandwidth (802.11n-HT20, 5720MHz)

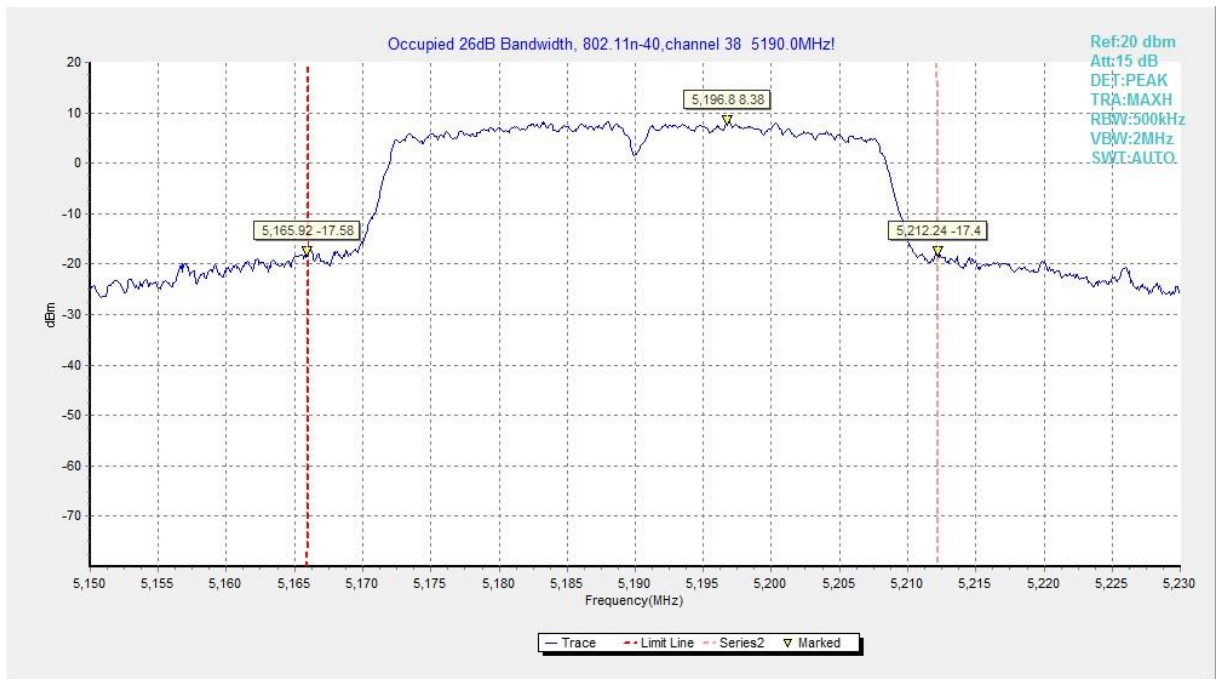


Fig.21 Occupied 26dB Bandwidth (802.11n-HT40, 5190MHz)

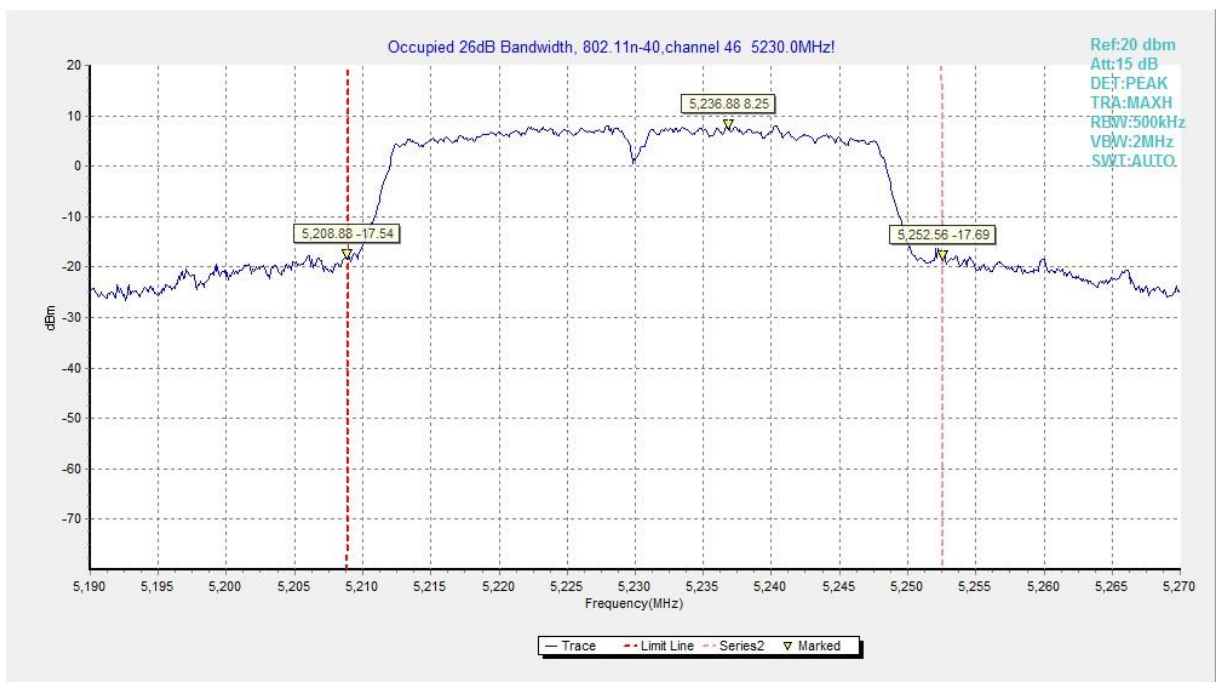


Fig.22 Occupied 26dB Bandwidth (802.11n-HT40, 5230MHz)

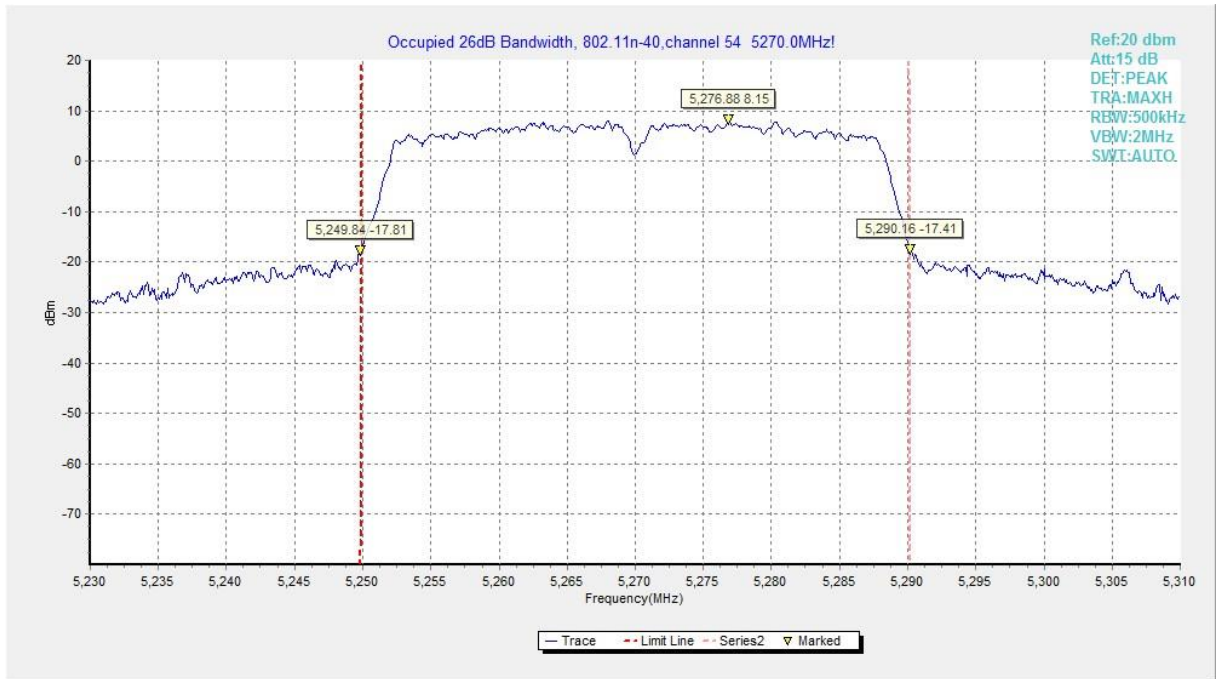


Fig.23 Occupied 26dB Bandwidth (802.11n-HT40, 5270MHz)

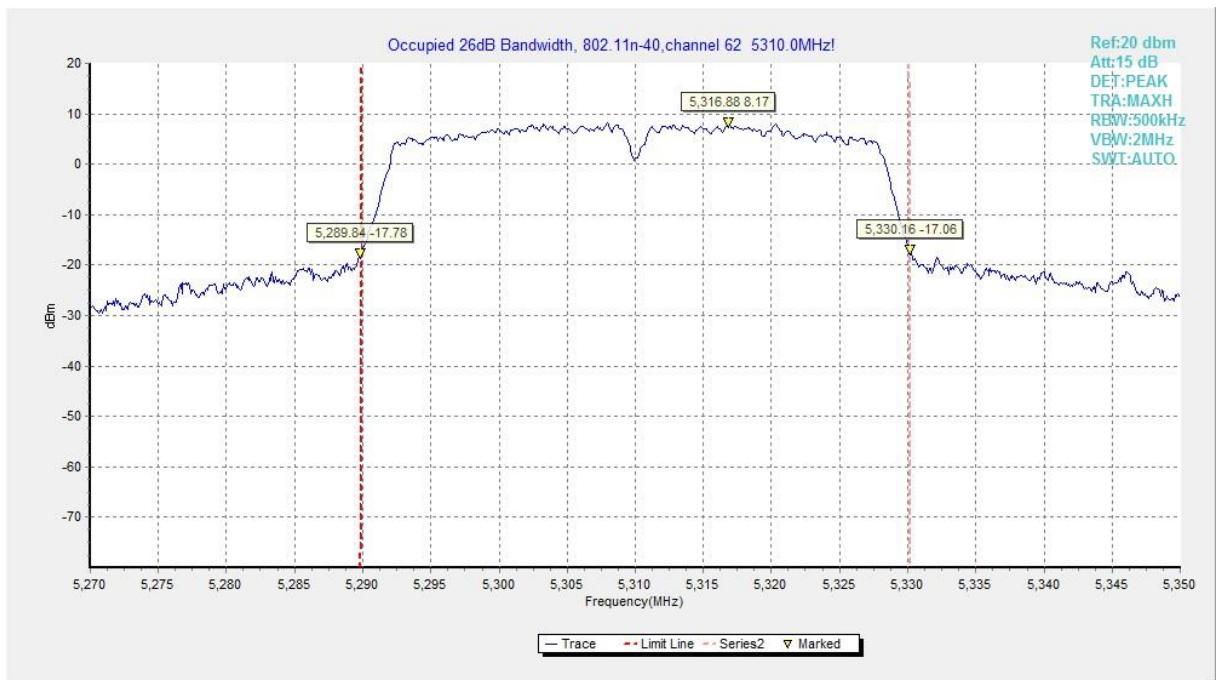


Fig.24 Occupied 26dB Bandwidth (802.11n-HT40, 5310MHz)

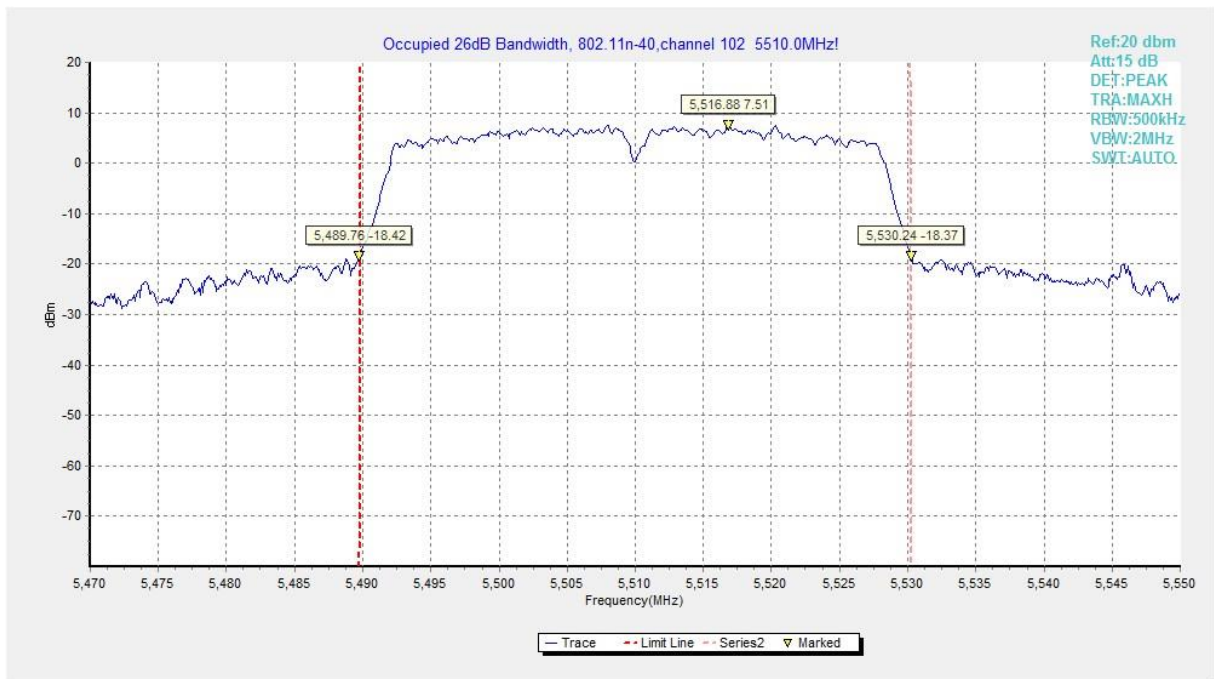


Fig.25 Occupied 26dB Bandwidth (802. 11n-HT40, 5510MHz)

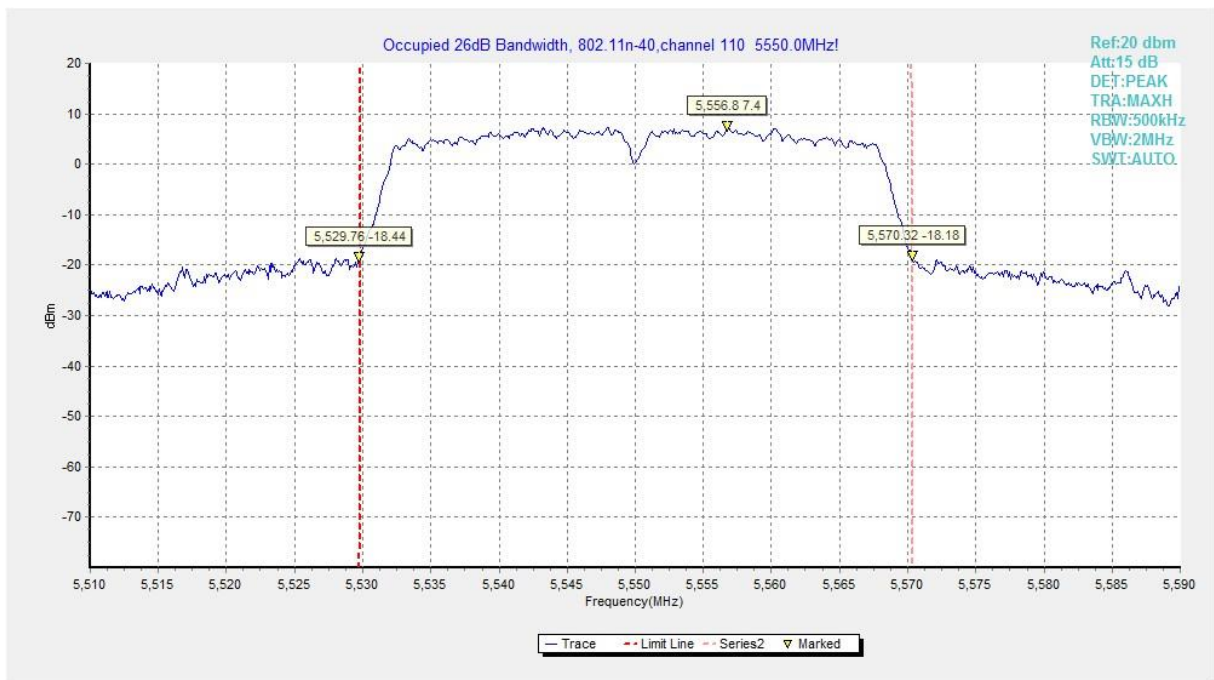


Fig.26 Occupied 26dB Bandwidth (802. 11n-HT40, 5590MHz)

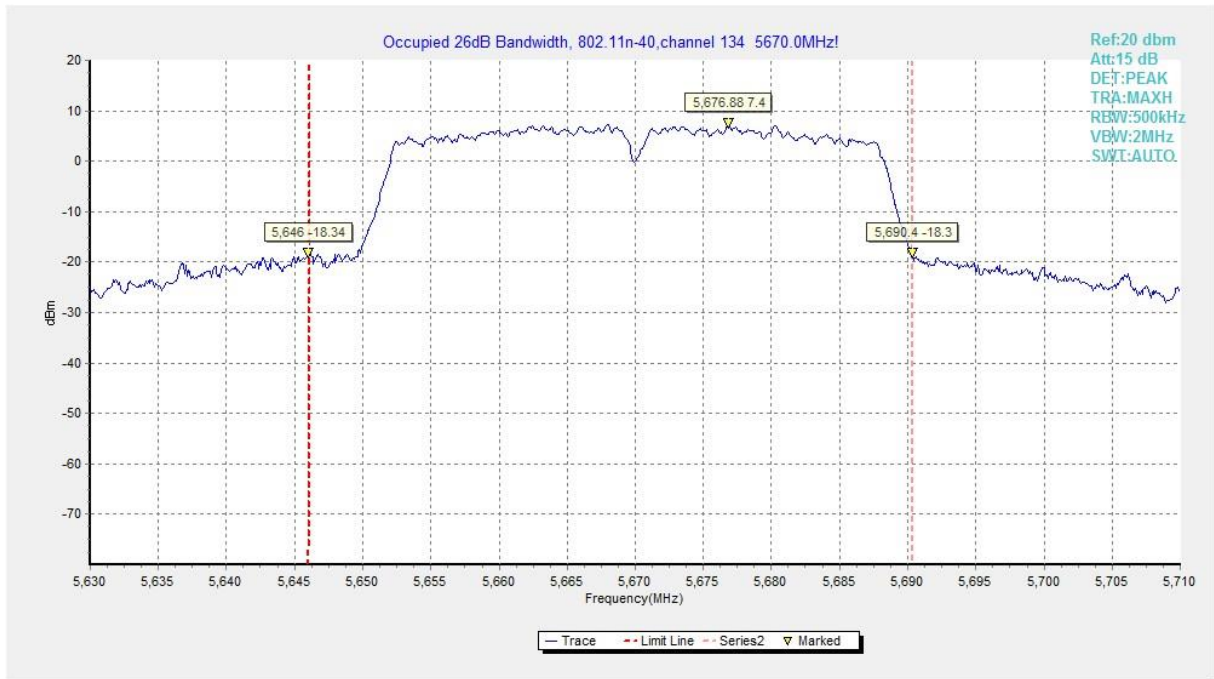


Fig.27 Occupied 26dB Bandwidth (802.11n-HT40, 5670MHz)

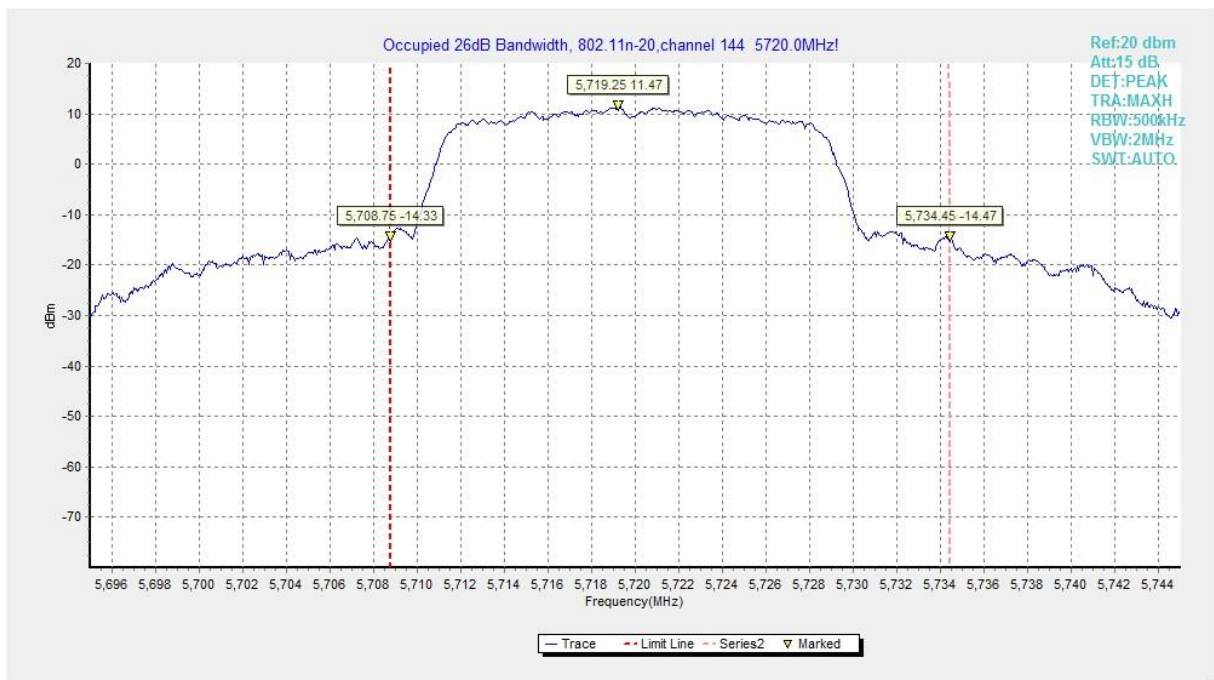


Fig.28 Occupied 26dB Bandwidth (802.11n-HT40, 5710MHz)

A.5. Band Edges Compliance

A5.1 Band Edges - Radiated

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407	-27 dBm/MHz

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)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)	Measurement distance(m)
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

The measurement is made according to ANSI C63.10-2013 and KDB 789033

Measurement Result:

Mode	Channel	Test Results	Conclusion
802.11a	5180 MHz	Fig.29	P
	5320 MHz	Fig.30	P
	5500 MHz	Fig.31	P
	5700 MHz	Fig.32	P
802.11n HT20	5180 MHz	Fig.33	P
	5320 MHz	Fig.34	P
	5500 MHz	Fig.35	P
	5700 MHz	Fig.36	P
802.11n HT40	5190 MHz	Fig.37	P
	5310 MHz	Fig.38	P
	5510 MHz	Fig.39	P
	5670 MHz	Fig.40	P

Conclusion: PASS

Test graphs as below:

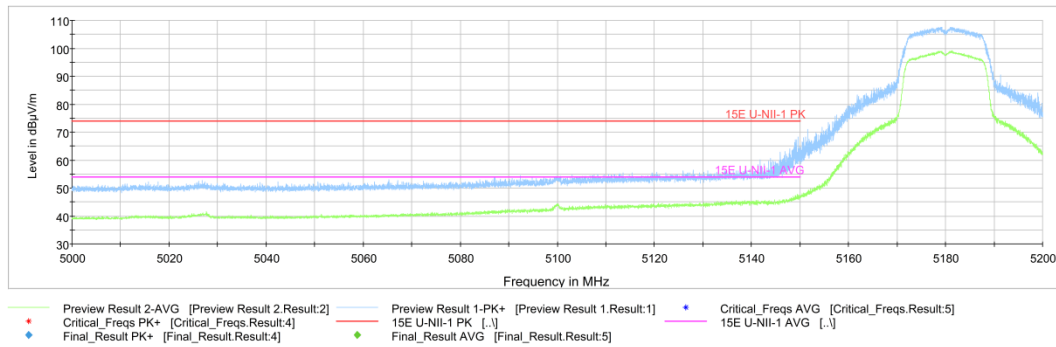


Fig.29 Band Edges (802.11a Ch36, 5180MHz)

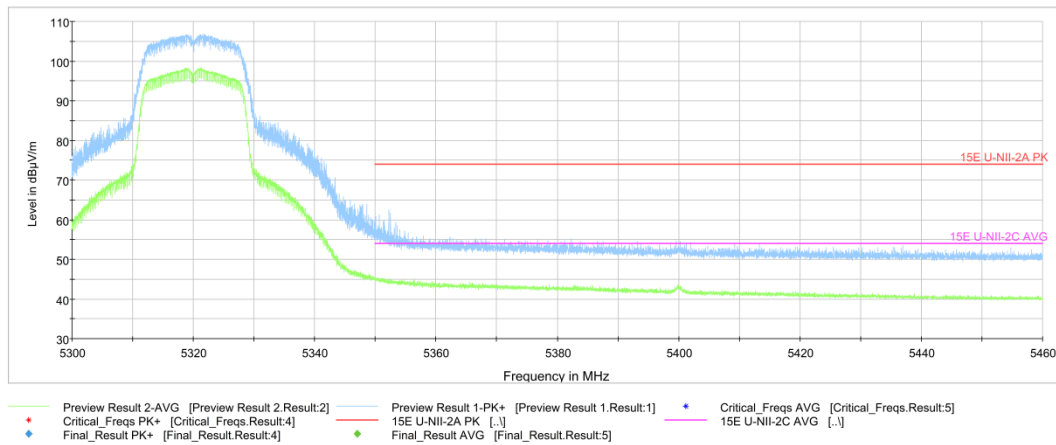


Fig.30 Band Edges (802.11a Ch64, 5320MHz)

Full Spectrum

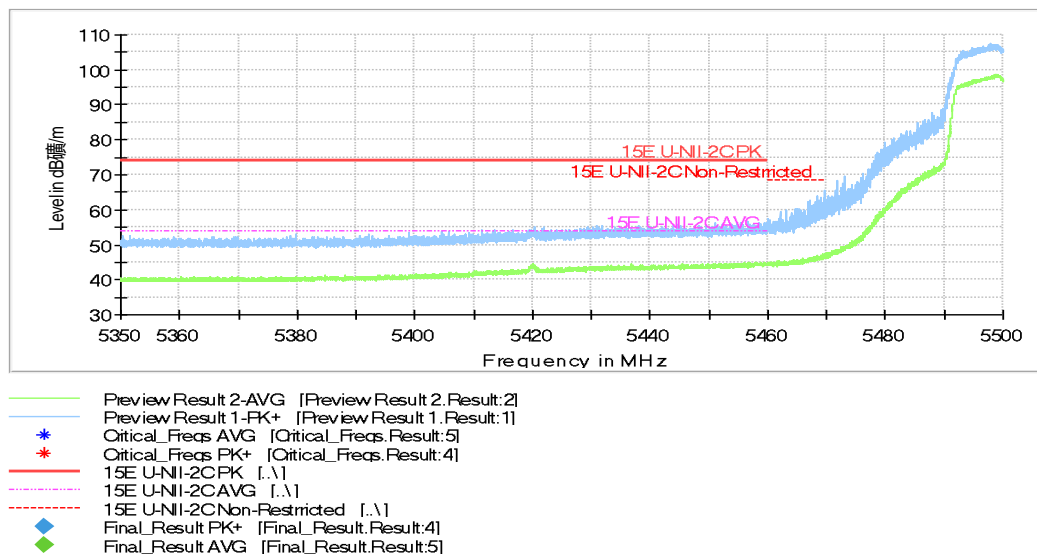


Fig.31 Band Edges (802.11a Ch100, 5500MHz)

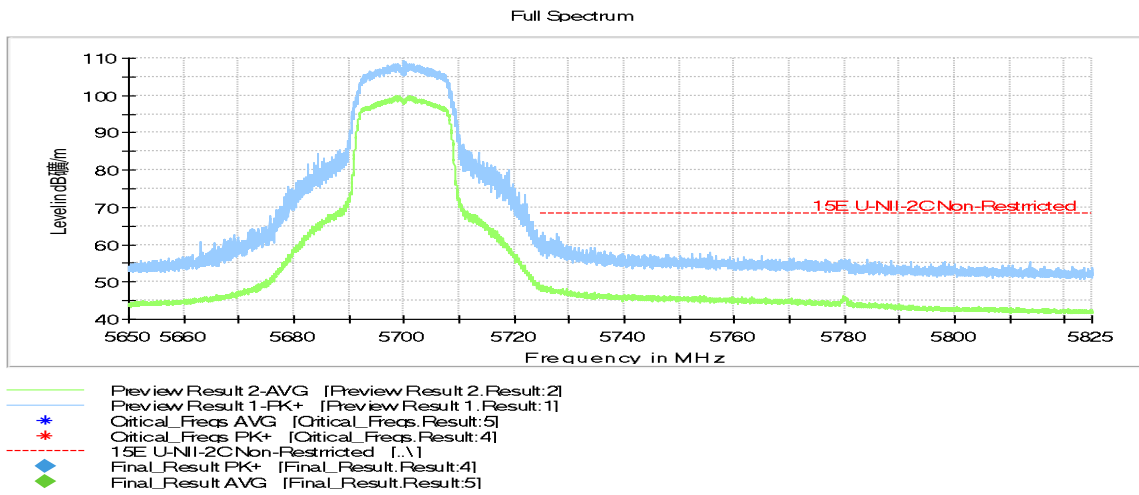


Fig.32 Band Edges (802.11a Ch140, 5700MHz)

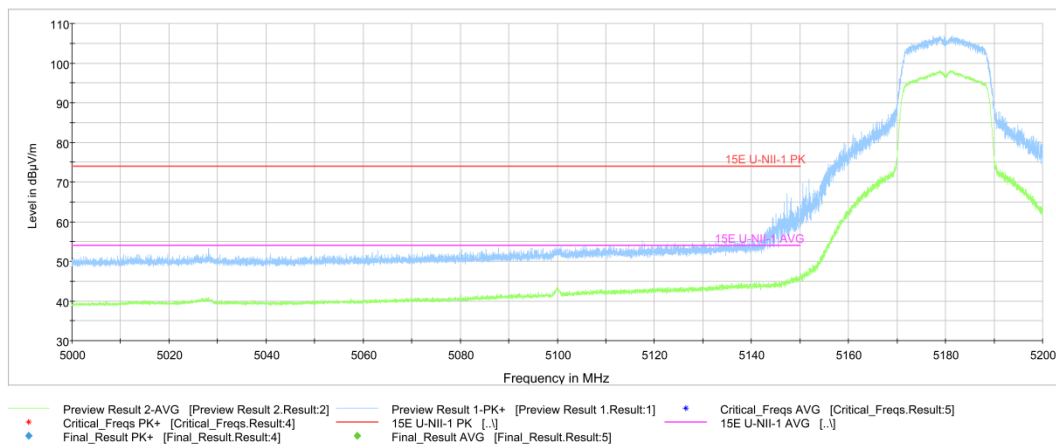


Fig.33 Band Edges (802.11n-HT20 Ch36, 5180MHz)

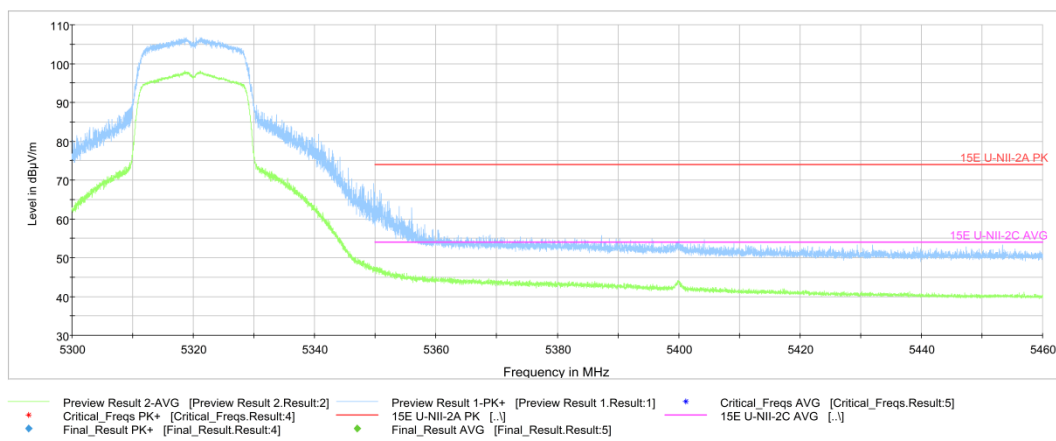


Fig.34 Band Edges (802.11n-HT20 Ch64, 5320MHz)

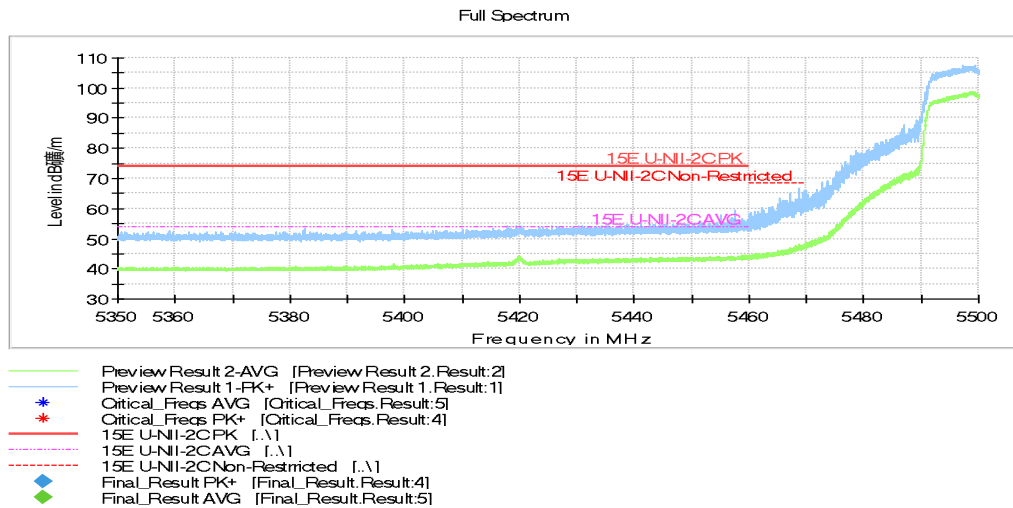


Fig.35 Band Edges (802.11n-HT20 Ch100, 5500MHz)

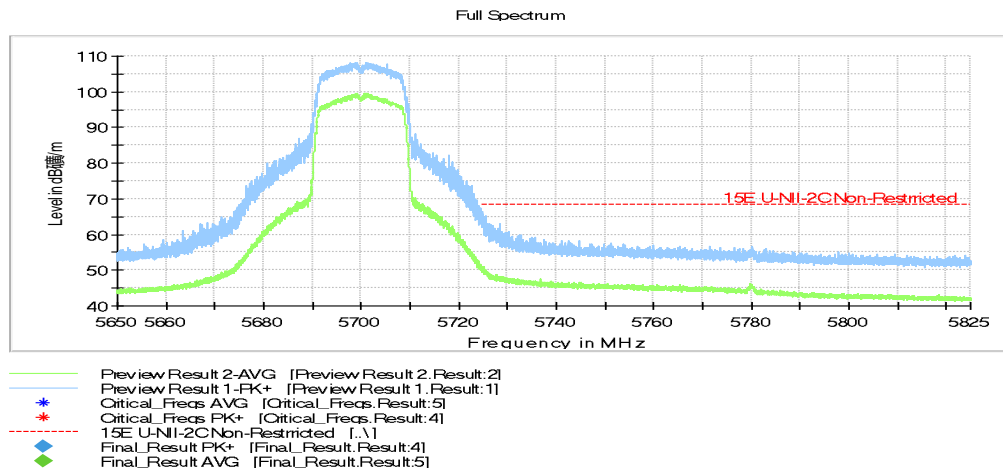


Fig.36 Band Edges (802.11n-HT20 Ch140, 5700MHz)

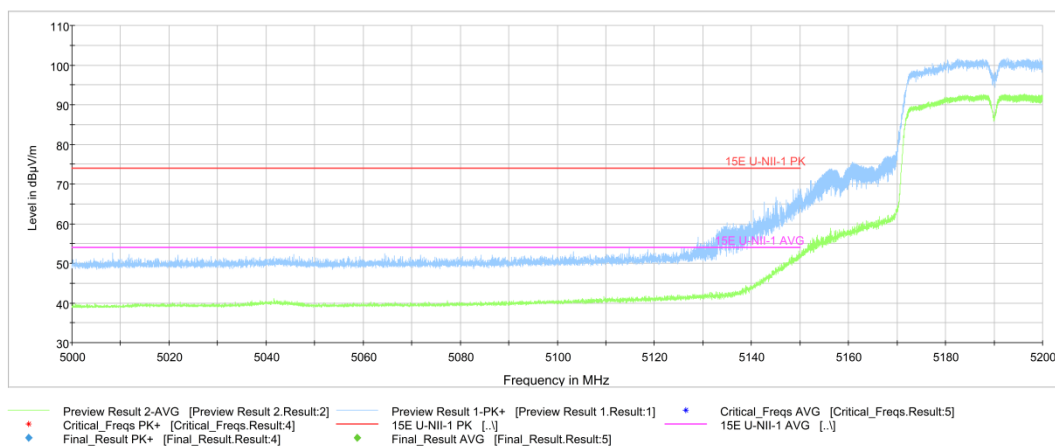


Fig.37 Band Edges (802.11n-HT40 Ch38, 5190MHz)

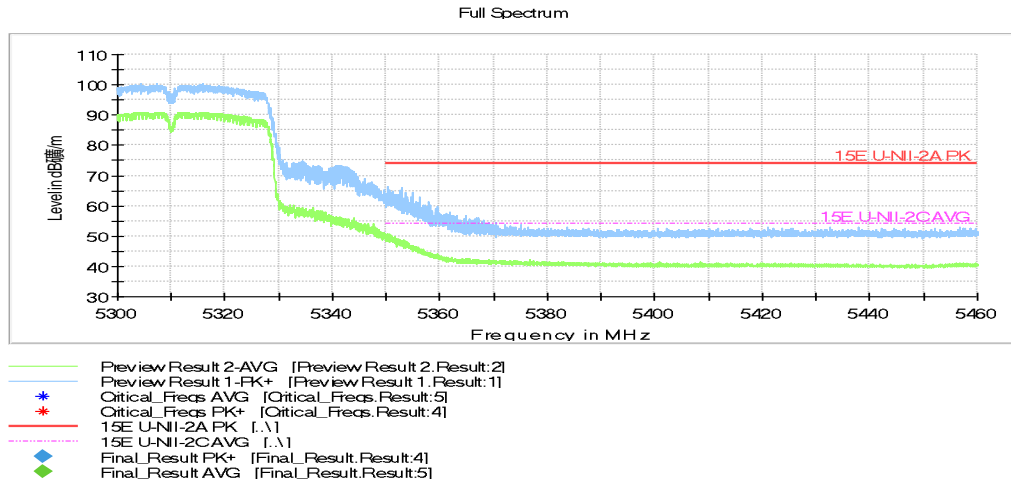


Fig.38 Band Edges (802.11n-HT40 Ch62, 5310MHz)

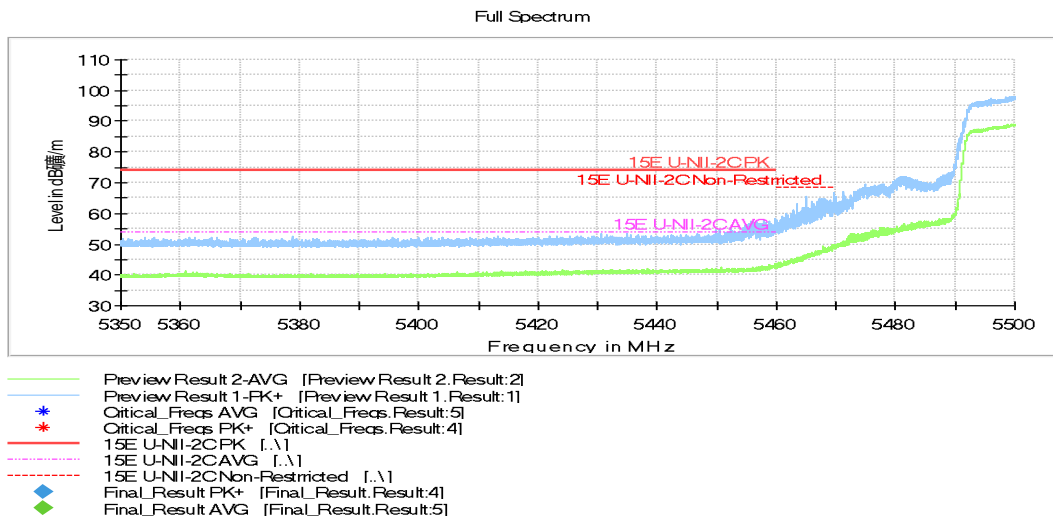


Fig.39 Band Edges (802.11n-HT40 Ch102, 5510MHz)

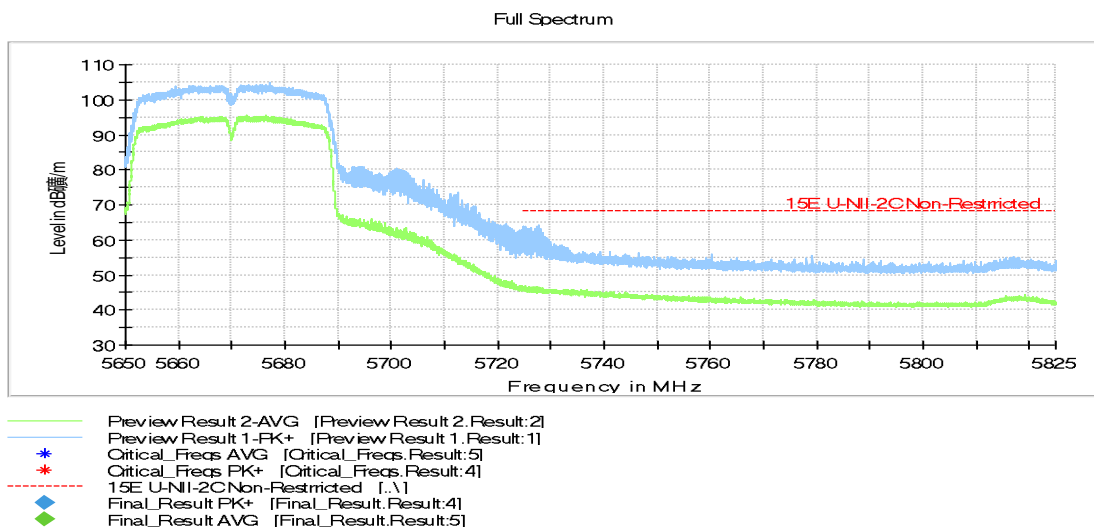


Fig.40 Band Edges (802.11n-HT40 Ch134, 5670MHz)

A.6. Transmitter Spurious Emission

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.407	-27 dBm/MHz

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)).

Limit in restricted band:

Frequency of emission (MHz)	Field strength(uV/m)	Field strength(dBuV/m)	Measurement distance(m)
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

The measurement is made according to ANSI C63.10-2013 and KDB 789033

Measurement Results:

802.11a mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11a	36(5180MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	40(5200MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
		48(5240MHz)	1 GHz ~ 3 GHz	---
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	52(5260MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	56(5280MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
	64(5320MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	100(5500MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	120(5600MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
	140(5700MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

802.11n-HT20 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n -HT20	36(5180MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	40(5200MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
		48(5240MHz)	1 GHz ~ 3 GHz	---
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	52(5260MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	56(5280MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
	64(5320MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	100(5500MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	120(5600MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
	140(5700MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P

802.11n-HT40 mode

Mode	Channel	Frequency Range	Test Results	Conclusion
802.11n HT40	38(5190MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
	46(5230MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
	54(5270MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
	62(5310MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
	102(5510MHz)	30 MHz ~1 GHz	---	P
		1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
		18 GHz ~ 26.5 GHz	---	P
		26.5 GHz ~ 40 GHz	---	P
	118(5590MHz)	1 GHz ~ 3 GHz	---	P
		3 GHz ~ 7 GHz	---	P
		7 GHz ~ 18 GHz	---	P
134(5670MHz)	30 MHz ~1 GHz	---	P	
	1 GHz ~ 3 GHz	---	P	
	3 GHz ~ 7 GHz	---	P	
	7 GHz ~ 18 GHz	---	P	
	18 GHz ~ 26.5 GHz	---	P	
	26.5 GHz ~ 40 GHz	---	P	

Conclusion: PASS

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and

including the gain of receive antenna, the gain of the preamplifier, the cable loss.

P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

$$\text{Result} = P_{Mea} + A_{Rpl} = P_{Mea} + \text{Cable Loss} + \text{Antenna Factor}$$

AVERAGE Results:

802.11a

Channel 36

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15540.4	44.38	-27.36	38.73	33.01	54	9.62	V
15539.3	44.28	-27.36	38.73	32.91	54	9.72	V
14484.4	37.88	-28.59	42.46	24.01	54	16.12	V
13317.9	37.78	-29.49	39.71	27.56	54	16.22	V
5149.6	47.45	-27.61	33.67	41.39	54	6.55	H
5149	47.3	-27.61	33.67	41.24	54	6.7	H

Channel 40

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15598.7	45.63	-27.23	38.61	34.25	54	8.37	V
15600.9	45.03	-27.23	38.61	33.65	54	8.97	V
14497	38.05	-28.59	42.46	24.18	54	15.95	V
14496.5	37.84	-28.59	42.46	23.97	54	16.16	H
11470.4	36.2	-32.26	38.84	29.63	54	17.8	V
11454.5	36.18	-32.26	38.84	29.61	54	17.82	H

Channel 48

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15722.5	42.15	-27.23	38.61	30.77	54	11.85	V
17990.7	42.11	-25.5	46.66	20.95	54	11.89	V
13343.1	38.23	-29.49	39.71	28.01	54	15.77	V
14499.8	38.07	-28.59	42.46	24.2	54	15.93	H
11048.5	36.27	-32.49	38.72	30.03	54	17.73	H
11040.3	36.16	-32.49	38.72	29.92	54	17.84	V

Channel 52

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15776.4	46.56	-26.97	38.48	35.05	54	7.44	V
15781.9	46.36	-26.97	38.48	34.85	54	7.64	V
14495.4	38.17	-28.59	42.46	24.3	54	15.83	V
13345.9	38.01	-29.49	39.71	27.79	54	15.99	H
11041.4	36.58	-32.49	38.72	30.34	54	17.42	H
11988	36.32	-31.48	39.09	28.71	54	17.68	H

Channel 56

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15842.4	46.45	-26.97	38.48	34.94	54	7.55	V
15841.2	46.27	-26.97	38.48	34.76	54	7.73	V
13346.5	37.87	-29.49	39.71	27.65	54	16.13	H
13342.6	37.85	-29.49	39.71	27.63	54	16.15	H
11034.8	36.2	-32.49	38.72	29.96	54	17.8	V
11044.7	36.06	-32.49	38.72	29.82	54	17.94	H

Channel 64

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15961.1	48.05	-27.35	38.54	36.86	54	5.95	V
15962.8	47.76	-27.35	38.54	36.57	54	6.24	V
14499.8	38.21	-28.59	42.46	24.34	54	15.79	H
13332.7	37.82	-29.49	39.71	27.6	54	16.18	V
5350.3	45.31	-27.43	34.01	38.73	54	8.69	H
5350.3	45.28	-27.43	34.01	38.7	54	8.72	H

Channel 100

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17971.4	41.77	-25.5	46.66	20.61	54	12.23	V
17720.6	41.74	-25.74	45.95	21.53	54	12.26	V
14493.2	38.17	-28.59	42.46	24.3	54	15.83	V
13341	37.99	-29.49	39.71	27.77	54	16.01	V
5460	45.05	-27.18	34.17	38.06	54	8.95	H
5458.1	45.04	-27.18	34.17	38.05	54	8.96	H

Channel 120

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17955.5	42.24	-25.5	46.66	21.08	54	11.76	V
17940	41.85	-25.5	46.66	20.69	54	12.15	H
14493.2	38.02	-28.59	42.46	24.15	54	15.98	H
14497.6	37.9	-28.59	42.46	24.03	54	16.1	H
11040.3	36.24	-32.49	38.72	30	54	17.76	V
11459.4	36.18	-32.26	38.84	29.61	54	17.82	V

Channel 140

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17964.2	41.76	-25.5	46.66	20.6	54	12.24	H
17969.8	41.75	-25.5	46.66	20.59	54	12.25	H
14497.6	38.23	-28.59	42.46	24.36	54	15.77	V
13327.2	37.94	-29.49	39.71	27.72	54	16.06	V
11053.5	36.27	-32.49	38.72	30.03	54	17.73	H
11908.8	36.25	-31.85	39.05	29.05	54	17.75	H

802.11n-HT20

Channel 36

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15541.5	43.81	-27.36	38.73	32.44	54	10.19	V
15542	43.46	-27.36	38.73	32.09	54	10.54	V
13342	38.12	-29.49	39.71	27.9	54	15.88	V
13329.4	38.01	-29.49	39.71	27.79	54	15.99	H
5149.2	46.3	-27.61	33.67	40.24	54	7.7	H
5149.9	46.22	-27.61	33.67	40.16	54	7.78	H

Channel 40

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15598.1	44.73	-27.23	38.61	33.35	54	9.27	V
15605.3	44.48	-27.23	38.61	33.1	54	9.52	V
13349.8	38.02	-29.49	39.71	27.8	54	15.98	H
13332.7	37.69	-29.49	39.71	27.47	54	16.31	H
11472	36.2	-32.26	38.84	29.63	54	17.8	V
11918.6	36.17	-31.48	39.09	28.56	54	17.83	H

Channel 48

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15721.9	42.27	-27.23	38.61	30.89	54	11.73	V
15724.1	42.12	-27.23	38.61	30.74	54	11.88	V
13334.9	37.87	-29.49	39.71	27.65	54	16.13	V
13349.2	37.84	-29.49	39.71	27.62	54	16.16	V
11042.5	36.31	-32.49	38.72	30.07	54	17.69	H
11027.6	36.26	-32.49	38.72	30.02	54	17.74	V

Channel 52

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15778.5	46.34	-26.97	38.48	34.83	54	7.66	V
15779.1	46.06	-26.97	38.48	34.55	54	7.94	V
14493.8	38.02	-28.59	42.46	24.15	54	15.98	H
13343.7	37.93	-29.49	39.71	27.71	54	16.07	V
11045.2	36.37	-32.49	38.72	30.13	54	17.63	H
11045.8	36.16	-32.49	38.72	29.92	54	17.84	H

Channel 56

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15842.9	46.69	-26.97	38.48	35.18	54	7.31	V
15835.8	46.01	-26.97	38.48	34.5	54	7.99	V
13345.4	37.93	-29.49	39.71	27.71	54	16.07	H
14496	37.81	-28.59	42.46	23.94	54	16.19	V
11043	36.1	-32.49	38.72	29.86	54	17.9	H
11538.6	36.08	-32.26	38.84	29.51	54	17.92	H

Channel 64

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15956.2	47.65	-27.35	38.54	36.46	54	6.35	V
15962.8	47.41	-27.35	38.54	36.22	54	6.59	V
13350.3	37.93	-29.49	39.71	27.71	54	16.07	V
13348.1	37.75	-29.49	39.71	27.53	54	16.25	V
5350.3	47.64	-27.43	34.01	41.06	54	6.36	H
5350.2	47.61	-27.43	34.01	41.03	54	6.39	H

Channel 100

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17954.3	41.8	-25.5	46.66	20.64	54	12.2	H
17772.3	41.78	-25.5	46.66	20.62	54	12.22	H
14499.8	37.96	-28.59	42.46	24.09	54	16.04	V
13345.4	37.86	-29.49	39.71	27.64	54	16.14	H
5459.1	44.46	-27.18	34.17	37.47	54	9.54	H
5458.8	44.36	-27.18	34.17	37.37	54	9.64	H

Channel 120

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17944.5	41.83	-25.5	46.66	20.67	54	12.17	H
17775	41.68	-25.5	46.66	20.52	54	12.32	H
13340.4	37.92	-29.49	39.71	27.7	54	16.08	V
13350.3	37.92	-29.49	39.71	27.7	54	16.08	V
11987.4	36.44	-31.48	39.09	28.83	54	17.56	V
11941.8	36.33	-31.48	39.09	28.72	54	17.67	V

Channel 140

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17990.7	41.91	-25.5	46.66	20.75	54	12.09	H
17758	41.76	-25.5	46.66	20.6	54	12.24	V
14493.2	37.89	-28.59	42.46	24.02	54	16.11	H
13350.3	37.8	-29.49	39.71	27.58	54	16.2	V
11039.8	36.37	-32.49	38.72	30.13	54	17.63	V
11961.5	36.2	-31.48	39.09	28.59	54	17.8	V

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Channel 38

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15572.9	43.09	-27.36	38.73	31.72	54	10.91	V
15569.5	42.72	-27.36	38.73	31.35	54	11.28	V
13342.6	38.03	-29.49	39.71	27.81	54	15.97	V
14488.2	37.85	-28.59	42.46	23.98	54	16.15	H
5149.8	53.18	-27.61	33.67	47.12	54	0.82	H
5149.9	52.48	-27.61	33.67	46.42	54	1.52	H

Channel 46

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15682.9	45.38	-27.23	38.61	34	54	8.62	V
15681.2	43.78	-27.23	38.61	32.4	54	10.22	V
14497	37.9	-28.59	42.46	24.03	54	16.1	V
14485	37.87	-28.59	42.46	24	54	16.13	V
11052.4	36.27	-32.49	38.72	30.03	54	17.73	V
11136	36.17	-32.6	38.75	30.03	54	17.83	H

Channel 54

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15806.6	44.15	-26.97	38.48	32.64	54	9.85	V
15816	43.68	-26.97	38.48	32.17	54	10.32	V
14482.2	37.76	-28.59	42.46	23.89	54	16.24	V
13348.1	37.71	-29.49	39.71	27.49	54	16.29	H
11045.8	36.54	-32.49	38.72	30.3	54	17.46	H
11046.4	36.3	-32.49	38.72	30.06	54	17.7	H

Channel 62

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15941.4	44.14	-27.35	38.54	32.95	54	9.86	V
15938.6	43.99	-27.35	38.54	32.8	54	10.01	V
13332.1	37.8	-29.49	39.71	27.58	54	16.2	V
13348.6	37.76	-29.49	39.71	27.54	54	16.24	V
5350.1	53.58	-27.43	34.01	47	54	0.42	H
5350.3	53.29	-27.43	34.01	46.71	54	0.71	H

Channel 102

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17958.8	41.98	-25.5	46.66	20.82	54	12.02	H
17991.2	41.8	-25.5	46.66	20.64	54	12.2	V
13331	37.9	-29.49	39.71	27.68	54	16.1	V
13339.9	37.85	-29.49	39.71	27.63	54	16.15	H
5459.9	43.57	-27.18	34.17	36.58	54	10.43	V
5460	43.48	-27.18	34.17	36.49	54	10.52	H

Channel 118

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17941.2	41.75	-25.5	46.66	20.59	54	12.25	H
17996.7	41.71	-25.5	46.66	20.55	54	12.29	H
14498.1	38	-28.59	42.46	24.13	54	16	H
14496	37.83	-28.59	42.46	23.96	54	16.17	H
11045.2	36.18	-32.49	38.72	29.94	54	17.82	V
11921.4	36.15	-31.48	39.09	28.54	54	17.85	V

Channel 134

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17789.3	41.82	-25.5	46.66	20.66	54	12.18	V
17953.8	41.64	-25.5	46.66	20.48	54	12.36	H
14497.6	38.06	-28.59	42.46	24.19	54	15.94	H
13349.8	37.89	-29.49	39.71	27.67	54	16.11	V
11461	36.52	-32.26	38.84	29.95	54	17.48	V
11043.6	36.31	-32.49	38.72	30.07	54	17.69	V



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Channel 36

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15547	53.89	-27.36	38.73	42.52	74	20.11	V
17906.5	53.51	-25.5	46.66	32.35	74	20.49	H
13651.1	51.03	-29.5	40.43	40.1	68.3	17.27	V
13747.4	50.3	-29.1	40.86	38.53	68.3	18	H
5149.6	68.19	-27.61	33.67	62.13	74	5.81	H
5149.3	67.35	-27.61	33.67	61.29	74	6.65	H

Channel 40

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15597.6	55.99	-27.23	38.61	44.61	74	18.01	V
15590.5	55.35	-27.23	38.61	43.97	74	18.65	V
13537.9	50.06	-29.56	39.99	39.63	68.3	18.24	V
13730.9	49.92	-29.1	40.86	38.15	68.3	18.38	H
11058.5	47.06	-32.49	38.72	40.82	74	26.94	V
10466.6	46.52	-33.22	38.19	41.55	68.3	21.78	V

Channel 48

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17958.2	52.38	-25.5	46.66	31.22	74	21.62	V
17992.8	52.33	-25.5	46.66	31.17	74	21.67	V
13765.5	50.76	-29.1	40.86	38.99	68.3	17.54	H
13617.6	50.64	-29.5	40.43	39.71	68.3	17.66	H
10478.8	46.98	-32.99	38.27	41.69	68.3	21.32	H
10046.5	46.76	-33.63	38.11	42.28	68.3	21.54	H

Channel 52

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15773	55.83	-26.97	38.48	44.32	74	18.17	V
15782.4	55.57	-26.97	38.48	44.06	74	18.43	V
13651.7	50.41	-29.5	40.43	39.48	68.3	17.89	H
13650	50.29	-29.5	40.43	39.36	68.3	18.01	V
10579.4	47.75	-32.76	38.38	42.13	68.3	20.55	H
11467.1	47.04	-32.26	38.84	40.47	74	26.96	H

Channel 56

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15836.9	55.63	-26.97	38.48	44.12	74	18.37	V
15847.9	55.62	-26.97	38.48	44.11	74	18.38	V
13653.4	49.83	-29.5	40.43	38.9	68.3	18.47	H
13551	49.79	-29.56	39.99	39.36	68.3	18.51	H
11892.2	47.56	-31.85	39.05	40.36	74	26.44	H
10681.1	47.02	-32.77	38.49	41.3	74	26.98	V

Channel 64

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15961.1	58.07	-27.35	38.54	46.88	74	15.93	V
15962.8	57.38	-27.35	38.54	46.19	74	16.62	V
13526.3	50.48	-29.56	39.99	40.05	68.3	17.82	V
13701.8	50.24	-29.1	40.86	38.47	68.3	18.06	H
5352.3	62.59	-27.43	34.01	56.01	74	11.41	H
5352.5	61.68	-27.43	34.01	55.1	74	12.32	H

Channel 100

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17674.4	52.65	-25.74	45.95	32.44	68.3	15.65	H
17995.6	52.65	-25.5	46.66	31.49	74	21.35	H
13768.9	50.76	-29.1	40.86	38.99	68.3	17.54	H
13668.2	50.1	-29.5	40.43	39.17	68.3	18.2	V
5456.7	56.53	-27.18	34.17	49.54	74	17.47	H
5469.7	65.74	-27.18	34.17	58.75	68.3	2.56	H

Channel 120

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17937.3	52.97	-25.5	46.66	31.81	74	21.03	H
17992.3	52.68	-25.5	46.66	31.52	74	21.32	V
13605.5	50.39	-29.5	40.43	39.46	68.3	17.91	H
13655.5	50.34	-29.5	40.43	39.41	68.3	17.96	V
11812.5	47.39	-31.85	39.05	40.19	74	26.61	H
11849.9	46.55	-31.85	39.05	39.35	74	27.45	H

Channel 140

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17500.6	52.88	-26.85	45.25	34.48	68.3	15.42	V
17309.8	52.72	-25.95	44.35	34.31	68.3	15.58	V
13672	50.62	-29.5	40.43	39.69	68.3	17.68	V
13630.2	50.29	-29.5	40.43	39.36	68.3	18.01	V
5725.1	63.45	-27.07	34.31	56.21	68.3	4.85	H
5727.6	62.93	-27.07	34.31	55.69	68.3	5.37	H

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Channel 36

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15537.6	52.94	-27.36	38.73	41.57	74	21.06	V
15541.5	52.9	-27.36	38.73	41.53	74	21.1	V
13607.7	51.6	-29.5	40.43	40.67	68.3	16.7	V
13643.5	50.21	-29.5	40.43	39.28	68.3	18.09	V
5147.4	67.03	-27.61	33.67	60.97	74	6.97	H
5148.2	65.95	-27.61	33.67	59.89	74	8.05	H

Channel 40

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15608.6	55.1	-27.23	38.61	43.72	74	18.9	V
15605.3	53.85	-27.23	38.61	42.47	74	20.15	V
13640.1	50.29	-29.5	40.43	39.36	68.3	18.01	V
14711	50.1	-28.32	41.35	37.08	68.3	18.2	V
11995.1	46.69	-31.48	39.09	39.08	74	27.31	H
10657	46.48	-32.76	38.38	40.86	74	27.52	H

Channel 48

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15707.6	52.64	-27.23	38.61	41.26	74	21.36	V
15715.3	52.22	-27.23	38.61	40.84	74	21.78	V
13528	50.42	-29.56	39.99	39.99	68.3	17.88	H
13660.5	50.09	-29.5	40.43	39.16	68.3	18.21	H
10955	47.26	-32.82	38.7	41.38	74	26.74	V
10477.6	46.71	-32.99	38.27	41.42	68.3	21.59	H

Channel 52

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15775.8	55.84	-26.97	38.48	44.33	74	18.16	V
15778.5	55.15	-26.97	38.48	43.64	74	18.85	V
13729.8	50.83	-29.1	40.86	39.06	68.3	17.47	V
13581.3	50.19	-29.5	40.43	39.26	68.3	18.11	H
10972.6	46.73	-32.82	38.7	40.85	74	27.27	H
11465.5	46.53	-32.26	38.84	39.96	74	27.47	H

Channel 56

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15846.2	57.55	-26.97	38.48	46.04	74	16.45	V
15844.5	55.92	-26.97	38.48	44.41	74	18.08	V
13541.1	50.59	-29.56	39.99	40.16	68.3	17.71	H
13628.6	50.56	-29.5	40.43	39.63	68.3	17.74	V
11928.5	47.33	-31.48	39.09	39.72	74	26.67	V
11054.6	46.95	-32.49	38.72	40.71	74	27.05	H

Channel 64

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15962.8	57.98	-27.35	38.54	46.79	74	16.02	V
15966.6	57.62	-27.35	38.54	46.43	74	16.38	V
13549.4	50.75	-29.56	39.99	40.32	68.3	17.55	H
14640.6	50.39	-27.29	41.9	35.78	68.3	17.91	H
5350.7	67.31	-27.43	34.01	60.73	74	6.69	H
5350.8	67.19	-27.43	34.01	60.61	74	6.81	H

Channel 100

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17963.2	52.88	-25.5	46.66	31.72	74	21.12	H
17852	52.39	-25.5	46.66	31.23	74	21.61	V
13646.8	50.52	-29.5	40.43	39.59	68.3	17.78	H
13548.3	50.2	-29.56	39.99	39.77	68.3	18.1	V
5457.5	59.62	-27.18	34.17	52.63	74	14.38	H
5468.6	66.57	-27.18	34.17	59.58	68.3	1.73	H

Channel 120

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17377.4	52.33	-25.95	44.35	33.92	68.3	15.97	V
17979.7	51.97	-25.5	46.66	30.81	74	22.03	V
13622.5	50.55	-29.5	40.43	39.62	68.3	17.75	H
13767.8	50.46	-29.1	40.86	38.69	68.3	17.84	V
11904.4	46.67	-31.85	39.05	39.47	74	27.33	V
10575	46.58	-32.76	38.38	40.96	68.3	21.72	V

Channel 140

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17800.3	52.5	-25.5	46.66	31.34	74	21.5	V
17875.2	52.45	-25.5	46.66	31.29	74	21.55	H
13624.8	50.37	-29.5	40.43	39.44	68.3	17.93	H
13650.6	50.11	-29.5	40.43	39.18	68.3	18.19	V
5725.5	65.07	-27.07	34.31	57.83	68.3	3.23	H
5725.3	64.98	-27.07	34.31	57.74	68.3	3.32	H

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Channel 38

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17325.2	52.32	-25.95	44.35	33.91	68.3	15.98	H
17627.1	52.24	-25.74	45.95	32.03	68.3	16.06	H
13627.5	50.9	-29.5	40.43	39.97	68.3	17.4	H
13596.1	50.01	-29.5	40.43	39.08	68.3	18.29	V
5149.5	68.7	-27.61	33.67	62.64	74	5.3	H
5148.7	68.57	-27.61	33.67	62.51	74	5.43	H

Channel 46

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15675.1	53.59	-27.23	38.61	42.21	74	20.41	V
15701	53.37	-27.23	38.61	41.99	74	20.63	V
14103.2	50.4	-29.44	41.66	38.18	68.3	17.9	V
13699.5	50.04	-29.1	40.86	38.27	68.3	18.26	V
11048	46.66	-32.49	38.72	40.42	74	27.34	V
10941.3	46.58	-32.82	38.7	40.7	74	27.42	V

Channel 54

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15817.6	54.59	-26.97	38.48	43.08	74	19.41	V
15824.2	53.03	-26.97	38.48	41.52	74	20.97	V
13677	51.04	-29.5	40.43	40.11	68.3	17.26	V
13646.2	50.41	-29.5	40.43	39.48	68.3	17.89	V
10871.5	46.9	-32.33	38.59	40.64	74	27.1	V
11888.4	46.8	-31.85	39.05	39.6	74	27.2	V

Channel 62

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
15938	53.01	-27.35	38.54	41.82	74	20.99	V
17956.5	52.63	-25.5	46.66	31.47	74	21.37	V
13578	51.16	-29.5	40.43	40.23	68.3	17.14	H
13552.1	50.24	-29.56	39.99	39.81	68.3	18.06	H
5350.1	68.82	-27.43	34.01	62.24	74	5.18	H
5352.3	68.49	-27.43	34.01	61.91	74	5.51	H

Channel 102

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
16505.1	52.48	-26.96	39.82	39.62	68.3	15.82	V
17764	52.39	-25.5	46.66	31.23	74	21.61	H
13648.4	50.66	-29.5	40.43	39.73	68.3	17.64	V
13639	50.19	-29.5	40.43	39.26	68.3	18.11	V
5459.8	58.21	-27.18	34.17	51.22	74	15.79	V
5469.8	66.93	-27.18	34.17	59.94	68.3	1.37	V

Channel 118

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17812.5	52.76	-25.5	46.66	31.6	74	21.24	H
17855.3	52.56	-25.5	46.66	31.4	74	21.44	V
13573.6	50.66	-29.5	40.43	39.73	68.3	17.64	H
13732	50.19	-29.1	40.86	38.42	68.3	18.11	V
11894.5	47.27	-31.85	39.05	40.07	74	26.73	H
11880.7	47	-31.85	39.05	39.8	74	27	H

Channel 134

Frequency (MHz)	Measurement Result (dBuV/m)	Cable Loss (dB)	Antenna Factor (dB/m)	Receiver Reading (dBuV)	Limit (dBuV/m)	Margin (dB)	Antenna Pol. (H/V)
17529.2	52.33	-26.85	45.25	33.93	68.3	15.97	H
17953.8	52.27	-25.5	46.66	31.11	74	21.73	H
13629.7	50.08	-29.5	40.43	39.15	68.3	18.22	V
13735.9	50.08	-29.1	40.86	38.31	68.3	18.22	H
5727.6	64.1	-27.07	34.31	56.86	68.3	4.2	H
5725.3	63.77	-27.07	34.31	56.53	68.3	4.53	H

A.7. AC Powerline Conducted Emission (150kHz- 30MHz)

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement uncertainty:

Expanded measurement uncertainty for this test item is $U = 3.10\text{dB}$, $k=2$.

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger AE1		
		802.11a	Idle	
0.15 to 0.5	66 to 56	Fig.41	Fig.42	P
0.5 to 5	56			
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

WLAN (Average Limit)

Frequency range (MHz)	Average Limit (dB μ V)	Result (dB μ V)		Conclusion
		With charger AE1		
		802.11a	Idle	
0.15 to 0.5	67 56 to 46	Fig.41	Fig.42	P
0.5 to 5	46			
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Conclusion: PASS

Test graphs as below:

Traffic:

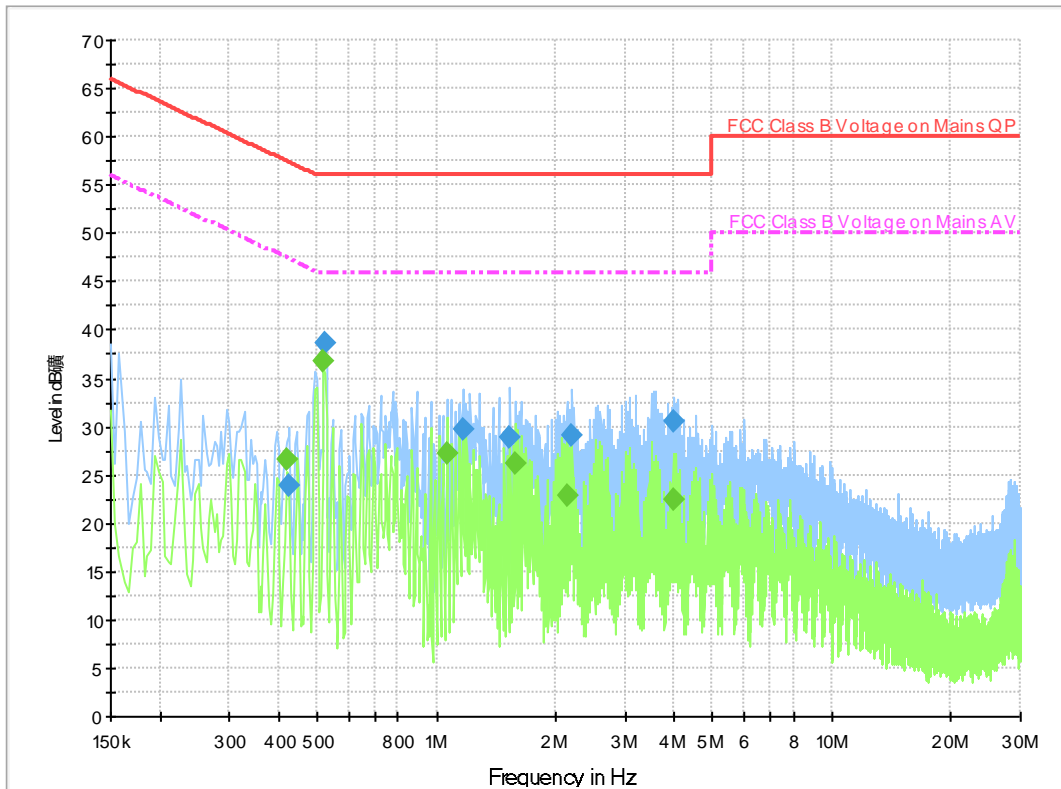


Fig.41 Conducted Emission (802.11a, Ch36, TX)

Note1: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.426000	23.9	5000.0	9.000	On	N	19.9	33.5	57.3
0.522000	38.6	5000.0	9.000	On	L1	19.9	17.4	56.0
1.170000	29.8	5000.0	9.000	On	N	19.8	26.2	56.0
1.538000	28.8	5000.0	9.000	On	N	19.8	27.2	56.0
2.206000	29.1	5000.0	9.000	On	N	19.7	26.9	56.0
3.990000	30.6	5000.0	9.000	On	N	19.7	25.4	56.0

Final Result 2

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	26.6	5000.0	9.000	On	L1	19.9	20.9	47.5
0.518000	36.7	5000.0	9.000	On	L1	19.9	9.3	46.0
1.066000	27.2	5000.0	9.000	On	L1	19.6	18.8	46.0
1.586000	26.2	5000.0	9.000	On	N	19.8	19.8	46.0
2.134000	22.8	5000.0	9.000	On	N	19.8	23.2	46.0
3.962000	22.4	5000.0	9.000	On	N	19.7	23.6	46.0

Note2: The measurement results showed here are worst cases of the combinations of different cables and chargers if applicable.

Idle:

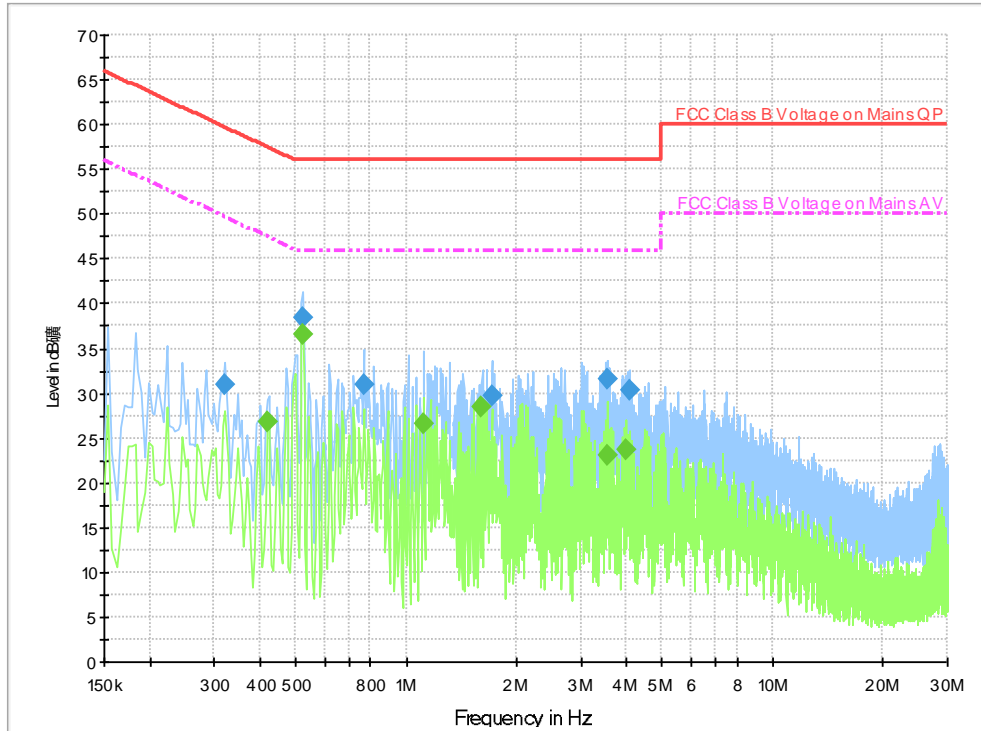


Fig.42 Conducted Emission(802.11a, IDLE)

Note1: The graphic result above is the maximum of the measurements for both phase line and neutral line.

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.322000	30.8	5000.0	9.000	On	N	19.8	28.8	59.7
0.522000	38.4	5000.0	9.000	On	L1	19.9	17.6	56.0
0.766000	31.0	5000.0	9.000	On	N	19.8	25.0	56.0
1.710000	29.7	5000.0	9.000	On	N	19.7	26.3	56.0
3.542000	31.5	5000.0	9.000	On	N	19.7	24.5	56.0
4.058000	30.3	5000.0	9.000	On	N	19.7	25.7	56.0

Final Result 2

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418000	26.8	5000.0	9.000	On	L1	19.9	20.7	47.5
0.522000	36.5	5000.0	9.000	On	L1	19.9	9.5	46.0
1.114000	26.5	5000.0	9.000	On	N	19.8	19.5	46.0
1.610000	28.5	5000.0	9.000	On	L1	19.5	17.5	46.0
3.542000	23.0	5000.0	9.000	On	N	19.7	23.0	46.0
3.986000	23.8	5000.0	9.000	On	L1	19.6	22.2	46.0

Note2: The measurement results showed here are worst cases of the combinations of different cables and chargers if applicable.

A.8. 99% Occupied bandwidth

Method of Measurement: See ANSI C63.10-2013-clause 12.4.2.

- a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
- b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
- c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level. Specific guidance is given in 4.1.5.2.
- d) Step a) through step c) might require iteration to adjust within the specified range.
- e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
- f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
- g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
- h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz
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Measurement Result:

Mode	Frequency	99% Occupied bandwidth (MHz)		conclusion
802.11a	5180 MHz	Fig.43	17.40	P
	5200 MHz	Fig.44	17.60	P
	5240 MHz	Fig.45	17.52	P
802.11n HT20	5180 MHz	Fig.46	18.00	P
	5200 MHz	Fig.47	18.04	P
	5240 MHz	Fig.48	18.00	P
802.11n HT40	5190 MHz	Fig.49	36.24	P
	5230 MHz	Fig.50	36.16	P

Conclusion: PASS

Test graphs as below:

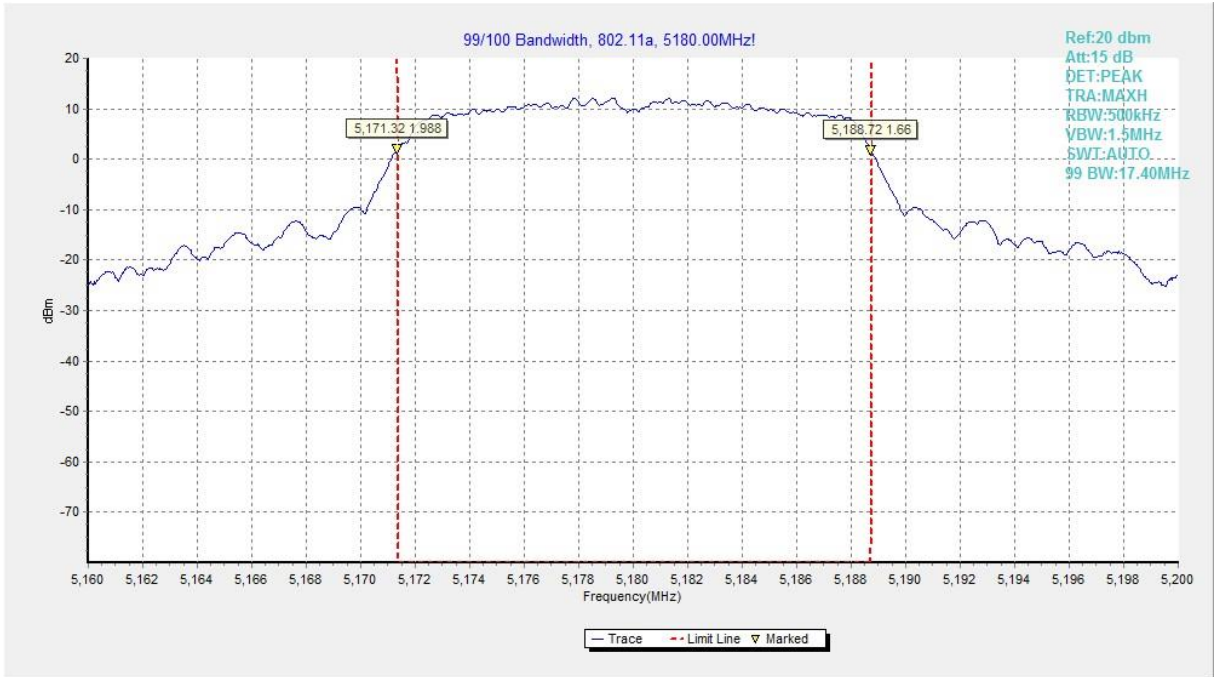


Fig.43 99% Occupied bandwidth (802.11a, 5180MHz)

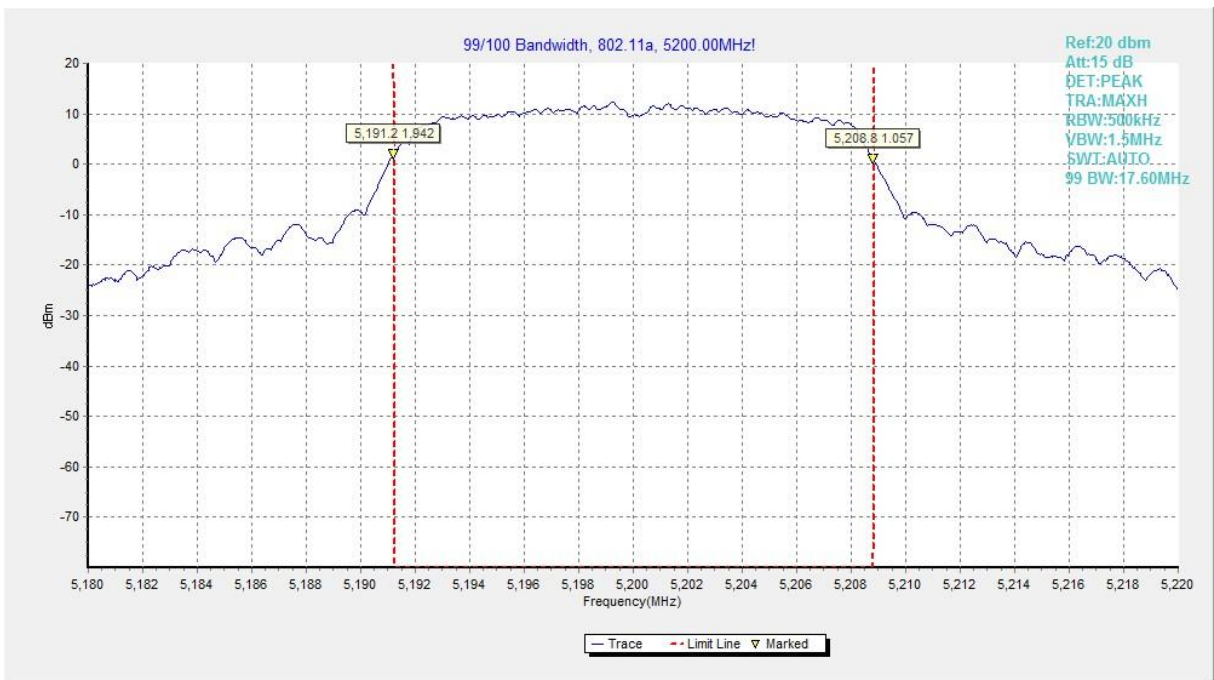


Fig.44 99% Occupied bandwidth (802.11a, 5200MHz)

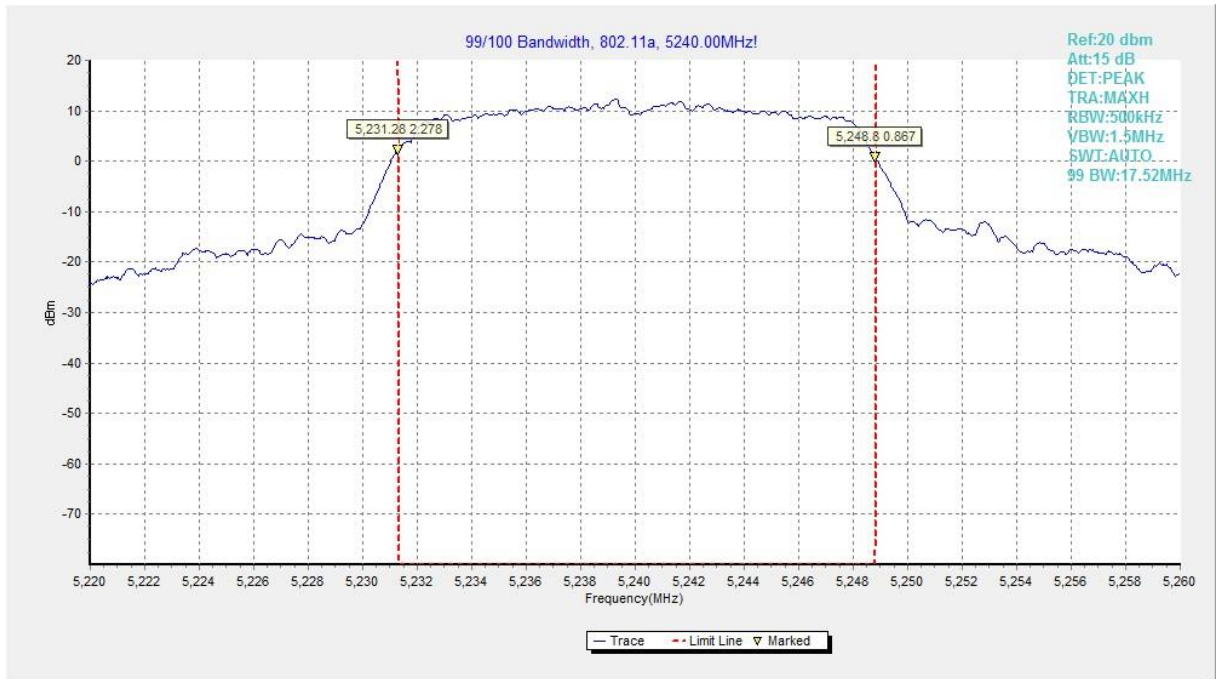


Fig.45 99% Occupied bandwidth (802.11a, 5240MHz)

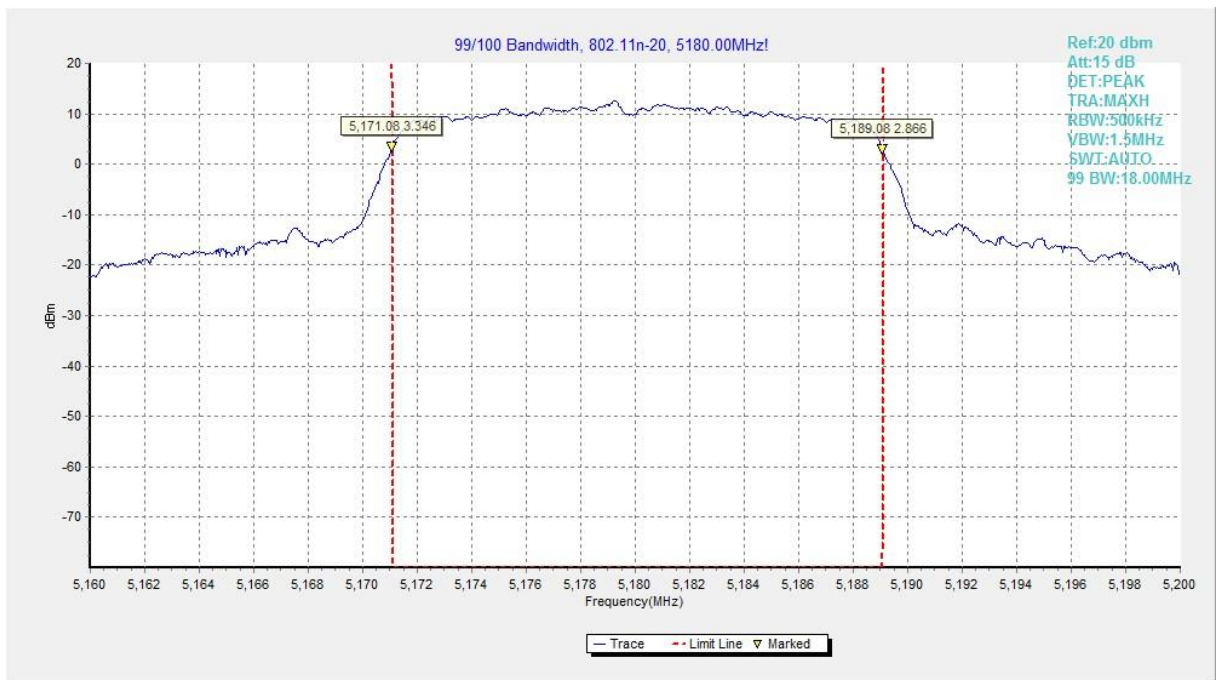


Fig.46 99% Occupied bandwidth (802.11n-HT20, 5180MHz)

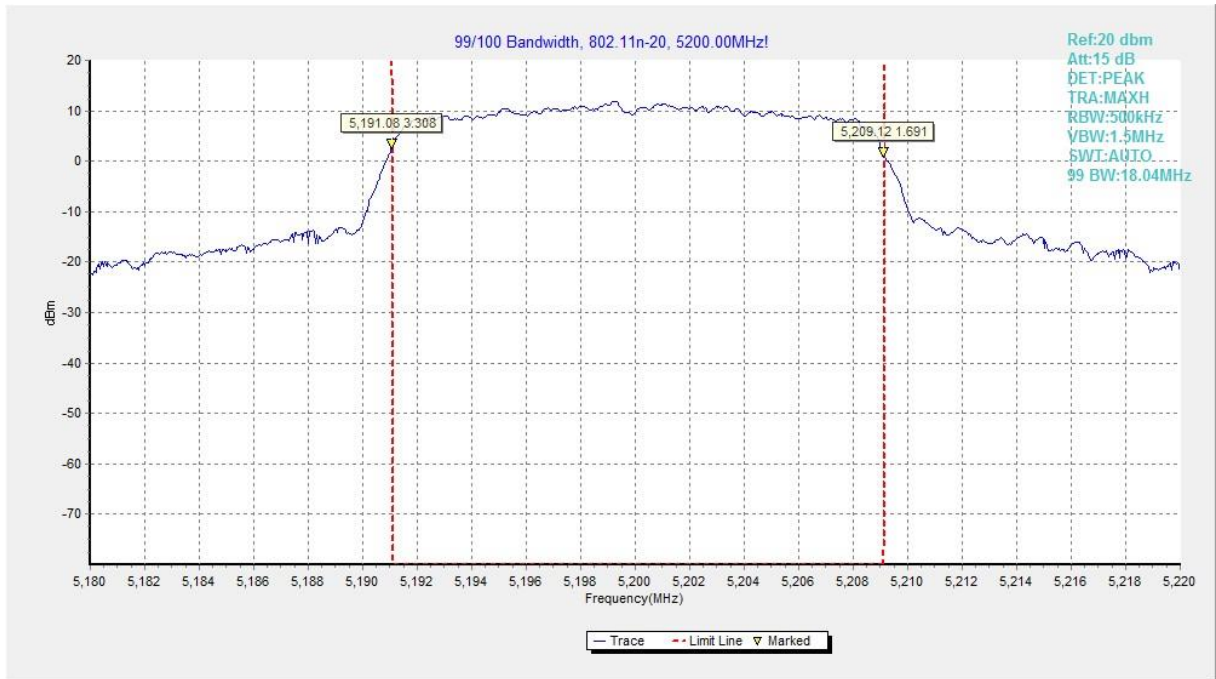


Fig.47 99% Occupied bandwidth (802.11n-HT20, 5200MHz)

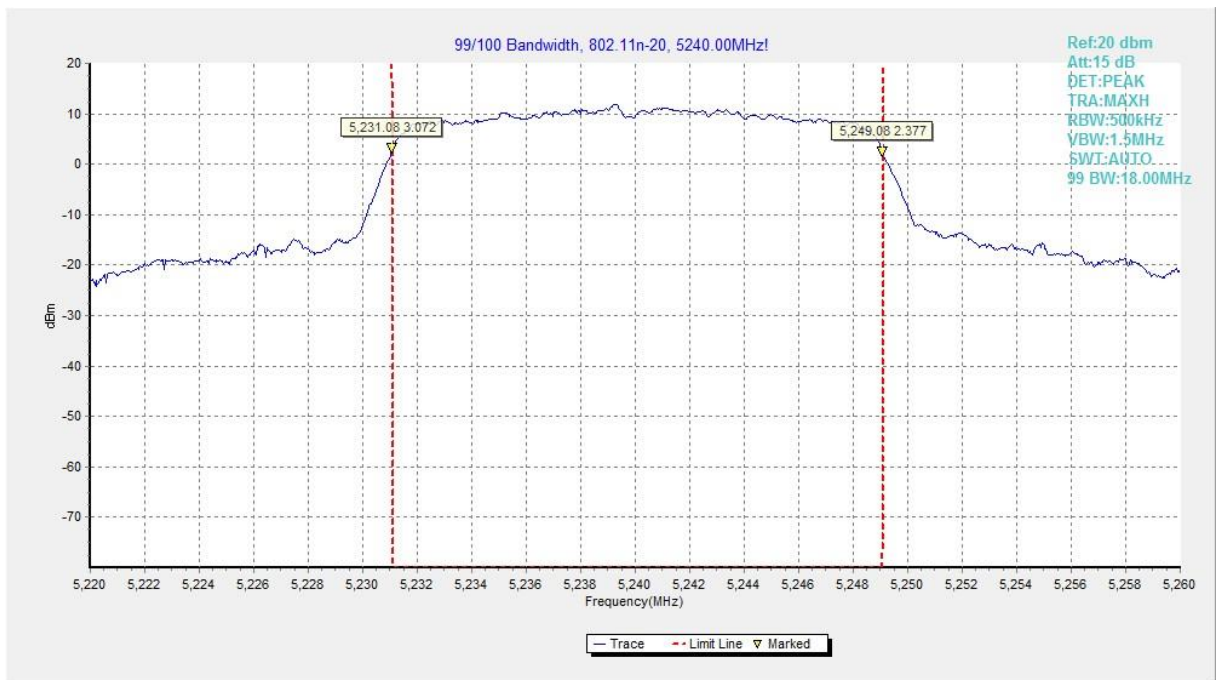


Fig.48 99% Occupied bandwidth (802.11n-HT20, 5240MHz)

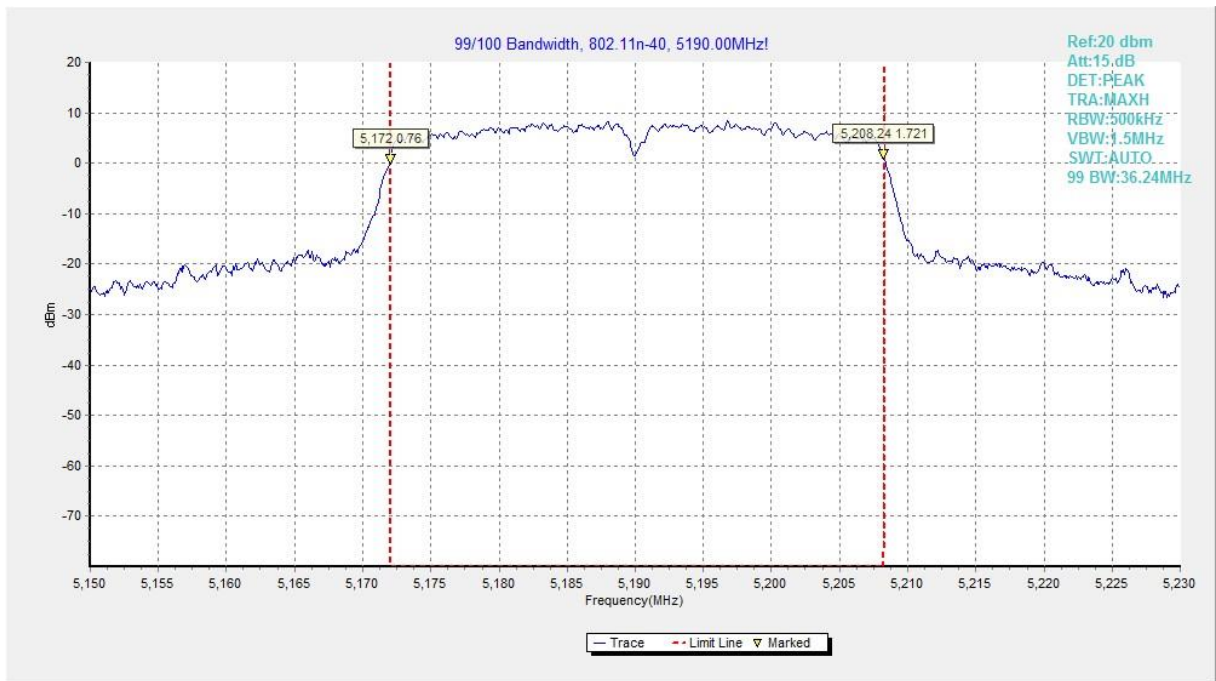


Fig.49 99% Occupied bandwidth (802.11n-HT40, 5190MHz)

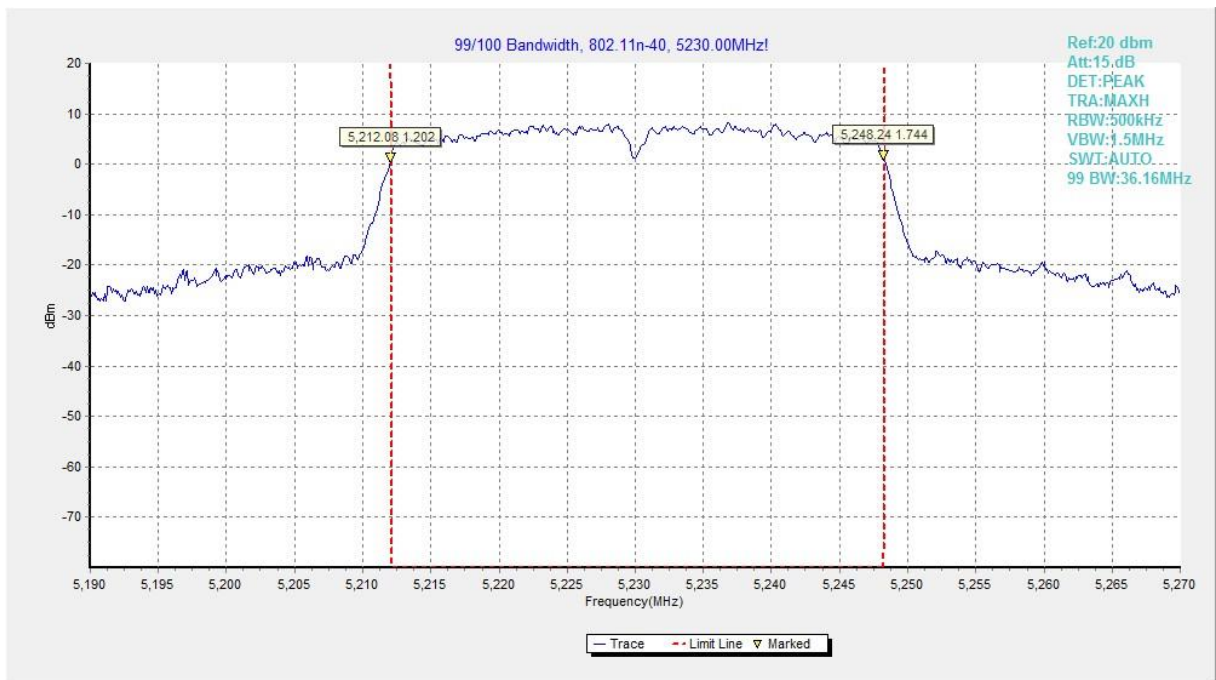


Fig.50 99% Occupied bandwidth (802.11n-HT40, 5230MHz)

A.9. Power control

A Transmission Power Control mechanism is not required for systems with an e.i.r.p. of less than 27dBm (500 mW).

ANNEX B: EUT parameters

Disclaimer: The worse case provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

ANNEX C: Accreditation Certificate

<p>United States Department of Commerce National Institute of Standards and Technology</p>  	
<hr/> Certificate of Accreditation to ISO/IEC 17025:2017 <hr/>	
NVLAP LAB CODE: 600118-0	
Telecommunication Technology Labs, CAICT Beijing China	
<i>is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:</i>	
Electromagnetic Compatibility & Telecommunications	
<i>This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).</i>	
<hr/> 2021-09-29 through 2022-09-30 Effective Dates	
	 For the National Voluntary Laboratory Accreditation Program

*** END OF REPORT BODY ***