

TEST REPORT



CTK Co., Ltd.

CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (1) / (117)
Pages

1. Client

- Name : KAONMEDIA Co., Ltd.
- Address : KAONMEDIA Building, 884-3 Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
- Date of Receipt : 2019-05-31

2. Manufacturer

- Name : KAONMEDIA Co., Ltd.
- Address : KAONMEDIA Building, 884-3 Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea

3. Use of Report : For FCC Certification

4. Test Sample / Model: WiFi Mesh Repeater / AR1031

5. Date of Test : 2019-06-11 to 2019-06-25

6. Test Standard(method) used : FCC 47 CFR part 15 subpart E 15.407

7. Testing Environment: Temp.: (25 ± 5) °C, Humidity: (50 ± 3) % R.H.

8. Test Results : Compliance

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Affirmation	Tested by Ji-Hye Kim: (Signature)	Technical Manager Won-Jae, Hwang: (Signature)
-------------	--	--

2019-06-28

Republic of KOREA **CTK Co., Ltd.**



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (2) / (117)
Pages

REPORT REVISION HISTORY

Date	Revision	Page No
2019-06-28	Issued (CTK-2019-02420)	all

This report shall not be reproduced except in full, without the written approval of CTK Co., Ltd. This document may be altered or revised by CTK Co., Ltd. personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by CTK Co., Ltd. will constitute fraud and shall nullify the document.



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (3) / (117)
Pages

CONTENTS

1. General Product Description	4
1.1 Client Information	4
1.2 Product Information.....	4
1.3 Peripheral Devices	5
2. Facility and Accreditations.....	6
2.1 Test Facility.....	6
2.2 Laboratory Accreditations and Listings	6
2.3 Calibration Details of Equipment Used for Measurement	6
3. Test Specifications	7
3.1 Standards.....	7
3.2 Mode of operation during the test.....	8
3.3 Maximum Measurement Uncertainty	9
3.4 Test Software.....	9
4. Technical Characteristic Test.....	10
4.1 6dB Bandwidth.....	10
4.2 26 dB Bandwidth and 99% Bandwidth.....	18
4.3 OUTPUT POWER	30
4.4 Power Spectral Density	54
4.5 Frequency Stability	78
4.6 Unwanted Emissions	79
4.7 AC Conducted Emissions	114
APPENDIX A – Test Equipment Used For Tests	117

 CTK Co., Ltd. <i>The Prime Leader of Global Inspection Certification</i>	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-02420 Page (4) / (117) Pages	
---	---	--	--

1. General Product Description

1.1 Client Information

Company	KAONMEDIA Co., Ltd.
Contact Point	KAONMEDIA Building, 884-3 Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
Contact Person	Name : Kim Tae-Yong E-mail : tykim@kaonmedia.com Tel : +82-31-724-8904

1.2 Product Information

FCC ID	WQT-AR1031
Product Description	WiFi Mesh Repeater
Model name	AR1031
Variant Model name	-
Operating Frequency	UNII 1 : 5 180 MHz – 5 240 MHz (20 MHz_BW) 5 190 MHz – 5 230 MHz (40 MHz_BW) 5 210 MHz (80 MHz_BW) UNII 3 : 5 745 MHz – 5 825 MHz (20 MHz_BW) 5 755 MHz – 5 795 MHz (40 MHz_BW) 5 775 MHz (80 MHz)
RF Output Power	CDD Mode_802.11a : 25.58 dBm (361.41 mW) CDD Mode_802.11n_HT20 : 25.53 dBm (357.27 mW) CDD Mode_802.11n_HT40 : 24.19 dBm (262.42 mW) CDD Mode_802.11ac_VHT20 : 25.57 dBm (360.58 mW) CDD Mode_802.11ac_VHT40 : 24.27 dBm (267.30 mW) CDD Mode_802.11ac_VHT80 : 22.58 dBm (181.134 mW) SDM Mode_802.11n_HT20 : 25.63 dBm (365.59 mW) SDM Mode_802.11n_HT40 : 24.01 dBm (251.77 mW) SDM Mode_802.11ac_VHT20 : 25.28 dBm (337.29 mW) SDM Mode_802.11ac_VHT40 : 23.99 dBm (250.61 mW) SDM Mode_802.11ac_VHT80 : 22.43 dBm (174.98 mW)
Antenna Specification	ANT1, ANT2 type : metal Antenna ANT1, ANT2 Peak Gain : 2 dBi
Type of Modulation	OFDM
Data Rate	802.11a : 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6 Mbps 802.11n : up to 300 Mbps 802.11ac : up to 866.7 Mbps
Power Source	DC 12 V (Adapter)
Hardware Rev	Rev 1.0
Software Rev	v.2.00.80

 CTK Co., Ltd. <i>The Prime Leader of Global Respiratory Certification</i>	<p style="text-align: center;">CTK Co., Ltd.</p> <p>(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501</p>	<p style="text-align: center;">Report No.: CTK-2019-02420 Page (5) / (117) Pages</p>	
--	---	--	--

1.3 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Note Computer	HP	15-bs563TU	CND7253R6N
AC/DC Adapter	HP	HSTNN-CA40	-
AD/DC Adapter	SHENZHEN FRECOM ELECTRONICS CO., LTD.	F12L33-120100SPAU	-



CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (6) / (117)
Pages

2. Facility and Accreditations

2.1 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea.

2.2 Laboratory Accreditations and Listings

Country	Agency	Registration Number
USA	FCC	805871
CANADA	ISED	8737A-2
KOREA	NRRA	KR0025

2.3 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

 CTK Co., Ltd. The Prime Leader of Global Acceptancy Certification	<p style="text-align: center;">CTK Co., Ltd.</p> <p>(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea</p> <p>Tel: +82-31-339-9970 Fax: +82-31-624-9501</p>	<p style="text-align: center;">Report No.: CTK-2019-02420 Page (7) / (117) Pages</p>	
--	--	--	--

3. Test Specifications

3.1 Standards

FCC Part Section(s)	Requirement(s)	Status (Note 1)	Test Condition
15.407(e)	6 dB Bandwidth	C	Conducted
15.407(a)	26 dB Bandwidth and 99% Bandwidth	C	
15.407(a)(1)	Conducted Output Power	C	
15.407(a)(1)	Power Spectral Density	C	
15.407(g)	Frequency Stability	C	
15.407 (b)	Undesirable emission	C	Radiated
15.205, 15.407 (b)(5),(6)	Radiated Spurious Emission	C	
15.207	AC Conducted Emissions	C	Line Conducted
<i>Note 1:</i> C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable			
<i>Note 2:</i> The data in this test report are traceable to the national or international standards.			
<i>Note 3:</i> The sample was tested according to the following specification: FCC Part 15.247, ANSI C63.10-2013			
<i>Note 4:</i> The tests were performed according to the method of measurements prescribed in KDB No.789033.			

 CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501 <small>The Prime Leader of Global Respiratory Certification</small>	Report No.: CTK-2019-02420 Page (8) / (117) Pages	
---	--	--

3.2 Mode of operation during the test

The EUT is operated in a manner representative of the typical of the equipments.
 During at testing, system components were manipulated within the confines of typical usage to maximize each emission.
 For WLAN function, the engineering test program was provided and enabled to make EUT continuous transmit.
 All modulation modes were tests. The results are only attached worst cases.

Test Frequency

- 802.11a, 802.11n_HT20, 802.11ac_VHT20

	Lowest channel	Middle channel	Highest channel
UNII 1	5 180 MHz	5 200 MHz	5 240 MHz
UNII 3	5 745 MHz	5 785 MHz	5 825 MHz

- 802.11n_HT40, 802.11ac_VHT40

	Lowest channel	Middle channel	Highest channel
UNII 1	5 190 MHz	-	5 230 MHz
UNII 3	5 755 MHz	-	5 795 MHz

- 802.11ac_VHT80

	Lowest channel	Middle channel	Highest channel
UNII 1	5 210 MHz	-	-
UNII 3	5 775 MHz	-	-

Test mode

- CDD mode

Test mode	Modulation	Data rate	Duty Cycle	Duty Cycle Factor
802.11a	DSSS	6 Mbps	96.5%	0.16 dB
802.11n_HT20	OFDM	MCS 0	96.2%	0.17 dB
802.11n_HT40	OFDM	MCS 0	92.6%	0.33 dB
802.11ac_VHT20	OFDM	MNSS 0	96.2%	0.17 dB
802.11ac_VHT40	OFDM	MNSS 0	92.8%	0.33 dB
802.11ac_VHT80	OFDM	MNSS 0	86.5%	0.63 dB

- SDM mode

Test mode	Modulation	Data rate	Duty Cycle	Duty Cycle Factor
802.11n_HT20	OFDM	MCS 8	93.0%	0.32 dB
802.11n_HT40	OFDM	MCS 8	87.2%	0.60 dB
802.11ac_VHT20	OFDM	MNSS 0	93.0%	0.32 dB
802.11ac_VHT40	OFDM	MNSS 0	85.0%	0.71 dB
802.11ac_VHT80	OFDM	MNSS 0	75.0%	1.25 dB



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (9) / (117)
Pages

3.3 Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.
Coverage factor $k = 2$, Confidence levels of 95 %

Description	Uncertainty
Conducted RF Output Power	± 1.5 dB
Power Spectral Density	± 1.5 dB
Occupied Bandwidth	± 0.1 MHz
Unwanted Emission(conducted)	± 3.0 dB
Radiated Emissions ($f \leq 1$ GHz)	± 4.0 dB
Radiated Emissions ($f > 1$ GHz)	± 5.0 dB

3.4 Test Software

Conducted Test	Ics Pro Ver. 6.0.3
Radiated Test	TOYO EMI software EP5RE Ver. 5.1.0
Line Conducted Test	ESCI7, ESCI3 : EMC32 Ver. 8.50.0 ESR7 : EMC32 Ver. 8.53.0

 CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501 <small>The Prime Leader of Global Regulatory Certification</small>	Report No.: CTK-2019-02420 Page (10) / (117) Pages	
--	---	--

4. Technical Characteristic Test

4.1 6dB Bandwidth

Test Procedures

KDB 789033 – Section C.2
 ANSI C63.10-2013 - Section 6.9.2

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 100 kHz
- b) VBW $\geq 3 \times$ RBW
- c) Detector = peak
- d) Trace mode = Max hold
- e) Sweep = auto couple
- f) Allow trace to fully stabilize
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Minimum Standard:

6 dB Bandwidth > 500 kHz



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (11) / (117)
Pages

Test Data:

ANT1

	6 dB Bandwidth (MHz)		
Mode	802.11a	802.11n_HT20	802.11ac_VHT20
Frequency			
5 745 MHz	16.41	17.56	17.64
5 785 MHz	15.84	17.59	17.26
5 825 MHz	16.35	17.31	17.60
Measurement uncertainty	± 0.1 MHz		

	6 dB Bandwidth (MHz)	
Mode	802.11n_HT40	802.11ac_VHT40
Frequency		
5 755 MHz	36.39	36.23
5 795 MHz	36.07	36.28
Measurement uncertainty	± 0.1 MHz	

	6 dB Bandwidth (MHz)	
Mode	802.11ac_VHT80	
Frequency		
5 775 MHz	75.31	
Measurement uncertainty	± 0.1 MHz	

ANT2

	6 dB Bandwidth (MHz)		
Mode	802.11a	802.11n_HT20	802.11ac_VHT20
Frequency			
5 745 MHz	15.58	17.36	17.66
5 785 MHz	15.51	17.62	17.62
5 825 MHz	16.04	17.30	17.59
Measurement uncertainty	± 0.1 MHz		



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (12) / (117)
Pages

	6 dB Bandwidth (MHz)	
Mode	802.11n_HT40	802.11ac_VHT40
Frequency		
5 755 MHz	36.34	36.34
5 795 MHz	36.03	36.41
Measurement uncertainty	± 0.1 MHz	

	6 dB Bandwidth (MHz)
Mode	802.11ac_VHT80
Frequency	
5 775 MHz	75.34
Measurement uncertainty	± 0.1 MHz

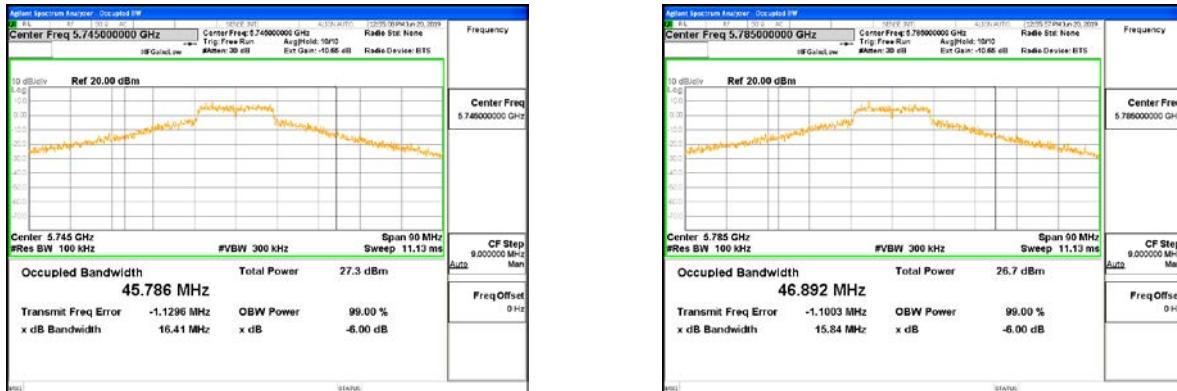
See next pages for actual measured spectrum plots.



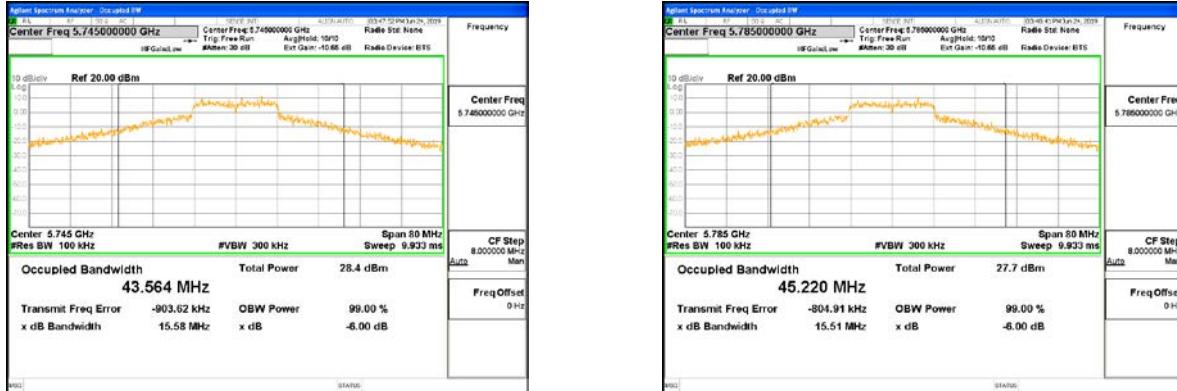
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (13) / (117)
Pages



ANT1_802.11a



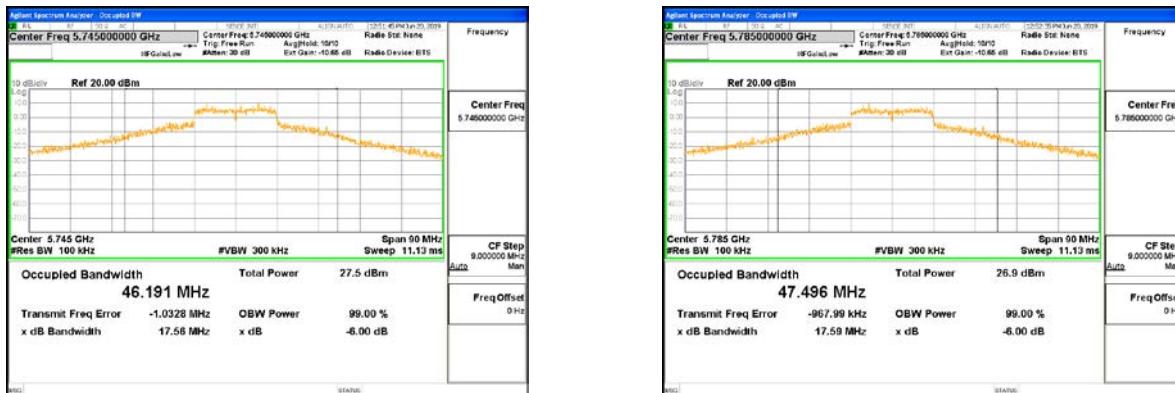
ANT2_802.11a



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (14) / (117)
Pages



ANT1_802.11n_HT20



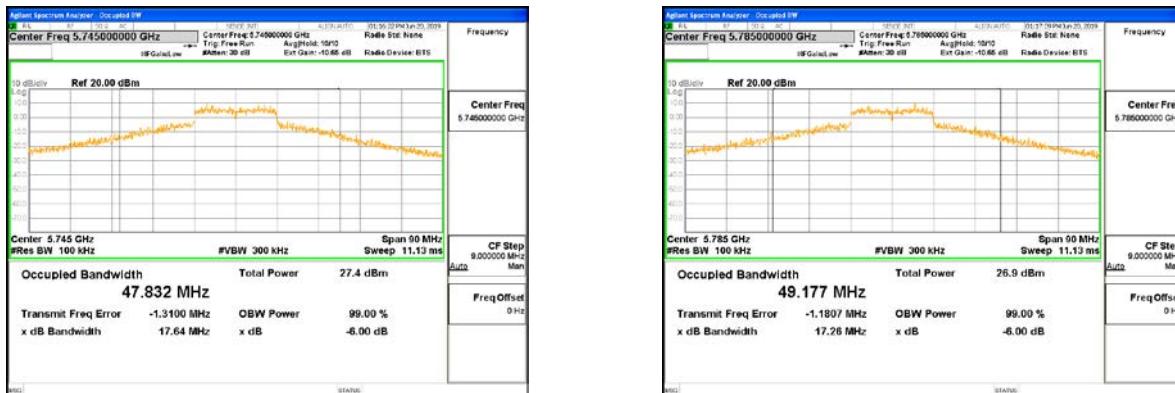
ANT2_802.11n_HT20



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (15) / (117)
Pages



ANT1_802.11ac_VHT20



ANT2_802.11ac_VHT20

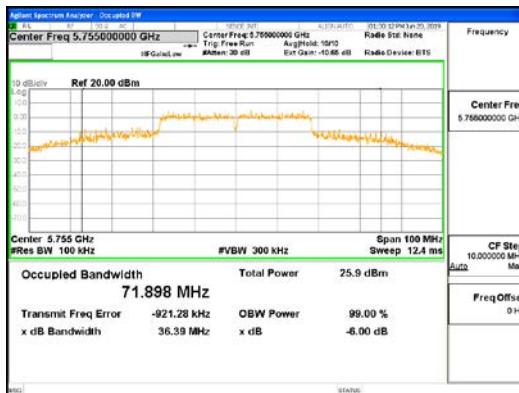


CTK Co., Ltd.
The Prime Leader of Global Inspection Certification

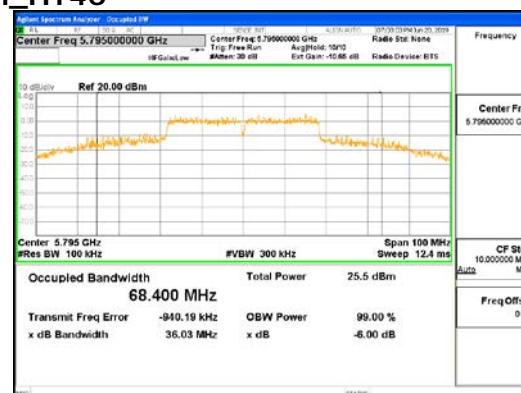
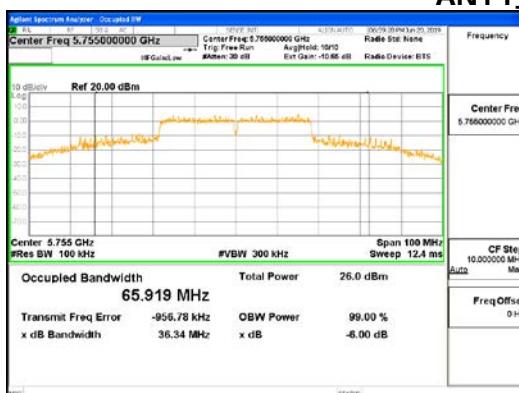
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

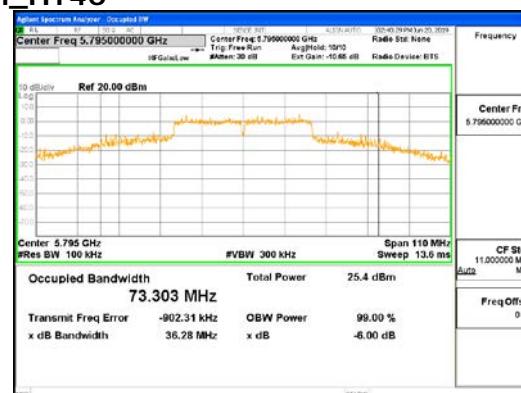
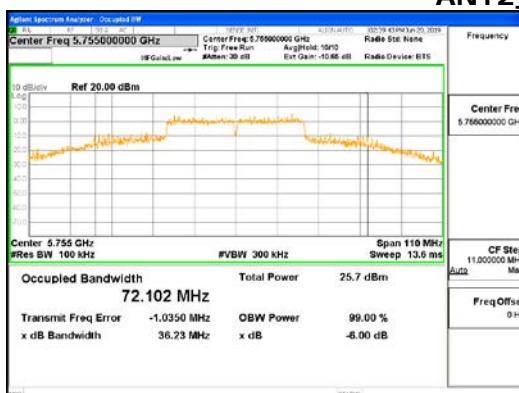
Report No.:
CTK-2019-02420
Page (16) / (117)
Pages



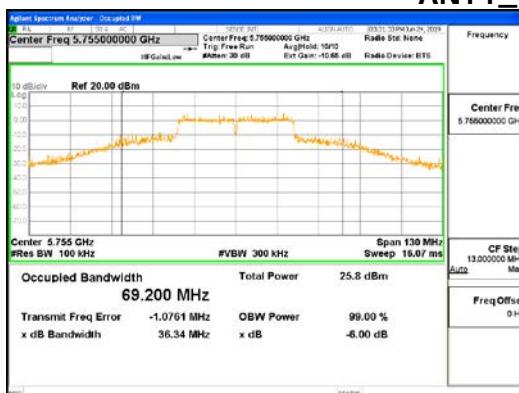
ANT1_802.11n_HT40



ANT2_802.11n_HT40



ANT1_802.11ac_VHT40



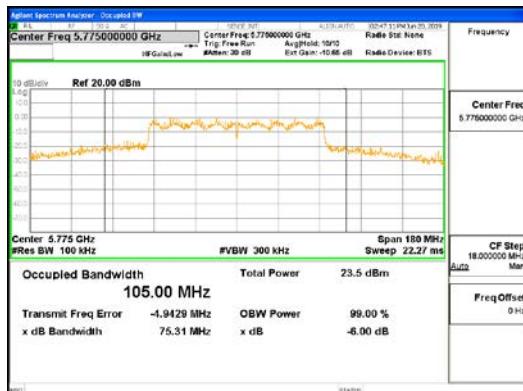
ANT2_802.11ac_VHT40



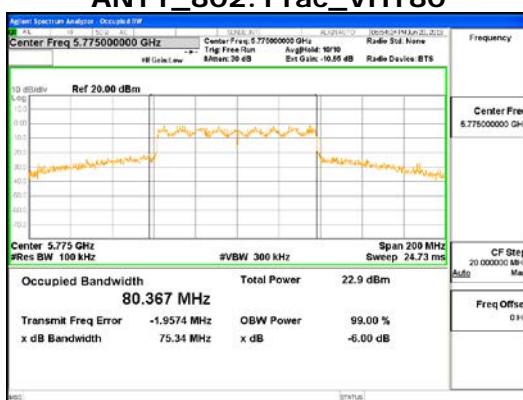
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (17) / (117)
Pages



ANT1_802.11ac_VHT80



ANT2_802.11ac_VHT80



CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (18) / (117)
Pages

4.2 26 dB Bandwidth and 99% Bandwidth

Test Procedures

KDB 789033 – Section C.1
ANSI C63.10-2013 - Section 6.9.2

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

Test Procedures

KDB 789033 – Section C.1
ANSI C63.10-2013 - Section 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = approximately 1 % of the emission bandwidth
- b) VBW \geq RBW
- c) Detector = peak
- d) Trace mode = Max hold
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

Minimum Standard:

NA

Test Data:

 CTK Co., Ltd. <i>The Prime Leader of Global Respiratory Certification</i>	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-02420 Page (19) / (117) Pages
--	---	--

ANT1

	26 dB Bandwidth and 99% Bandwidth (MHz)					
Mode	802.11a		802.11n_HT20		802.11ac_VHT20	
Frequency	26 dB	99%	26 dB	99%	26 dB	99%
5 180 MHz	43.83	32.04	46.23	33.58	46.33	33.28
5 200 MHz	45.56	32.65	46.31	33.68	46.47	33.64
5 240 MHz	46.13	33.74	46.85	34.54	46.74	34.46
5 745 MHz	78.82	50.74	76.55	51.03	81.19	51.71
5 785 MHz	76.04	51.07	77.27	51.60	81.42	52.48
5 825 MHz	75.95	52.23	82.36	52.88	81.93	53.49
Measurement uncertainty	± 0.1 MHz					

	26 dB Bandwidth and 99% Bandwidth (MHz)			
Mode	802.11n_HT40		802.11ac_VHT40	
Frequency	26 dB	99 %	26 dB	99 %
5 190 MHz	81.30	41.08	88.63	48.09
5 230 MHz	82.12	46.21	88.64	50.74
5 755 MHz	99.92	73.81	108.3	74.36
5 795 MHz	108.5	76.40	108.5	75.93
Measurement uncertainty	± 0.1 MHz			

	26 dB Bandwidth and 99% Bandwidth (MHz)		
Mode	802.11ac_VHT80		
Frequency	26 dB	99 %	
5 210 MHz	129.9	76.65	
5 775 MHz	178.1	116.26	
Measurement uncertainty	± 0.1 MHz		

 CTK Co., Ltd. <i>The Prime Leader of Global Respiratory Certification</i>	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-02420 Page (20) / (117) Pages
--	---	--

ANT2

	26 dB Bandwidth and 99% Bandwidth (MHz)					
Mode	802.11a		802.11n_HT20		802.11ac_VHT20	
Frequency	26 dB	99%	26 dB	99%	26 dB	99%
5 180 MHz	47.85	34.84	48.58	35.87	48.45	35.82
5 200 MHz	47.77	34.90	49.59	35.95	48.92	36.10
5 240 MHz	48.54	35.63	49.72	36.63	48.95	36.77
5 745 MHz	73.92	47.44	75.10	48.06	70.54	48.03
5 785 MHz	72.06	49.23	75.11	49.36	73.62	49.34
5 825 MHz	76.08	49.87	75.42	50.00	73.70	49.68
Measurement uncertainty	± 0.1 MHz					

	26 dB Bandwidth and 99% Bandwidth (MHz)			
Mode	802.11n_HT40		802.11ac_VHT40	
Frequency	26 dB	99 %	26 dB	99 %
5 190 MHz	82.39	75.75	89.45	56.23
5 230 MHz	82.13	48.70	89.46	58.10
5 755 MHz	99.01	66.94	107.6	72.39
5 795 MHz	98.44	69.48	108.6	74.35
Measurement uncertainty	± 0.1 MHz			

	26 dB Bandwidth and 99% Bandwidth (MHz)		
Mode	802.11ac_VHT80		
Frequency	26 dB	99 %	
5 210 MHz	129.8	76.74	
5 775 MHz	178.2	94.96	
Measurement uncertainty	± 0.1 MHz		

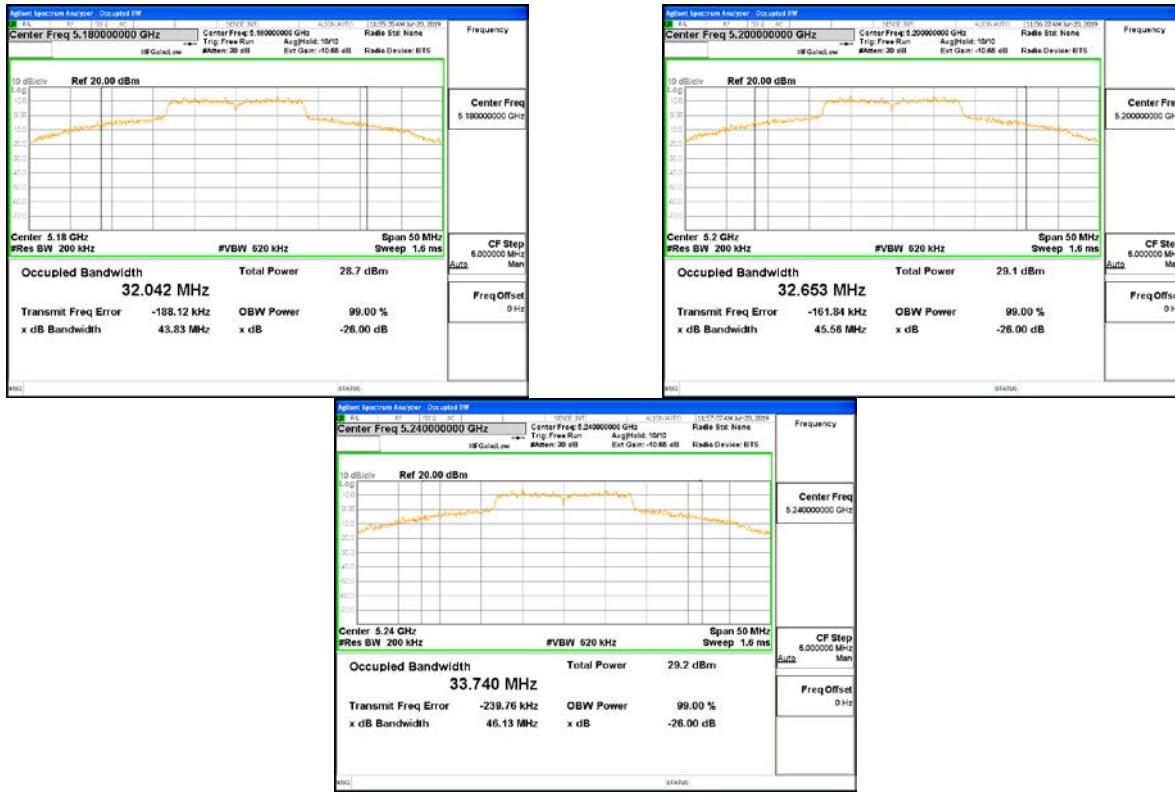
See next pages for actual measured spectrum plots.



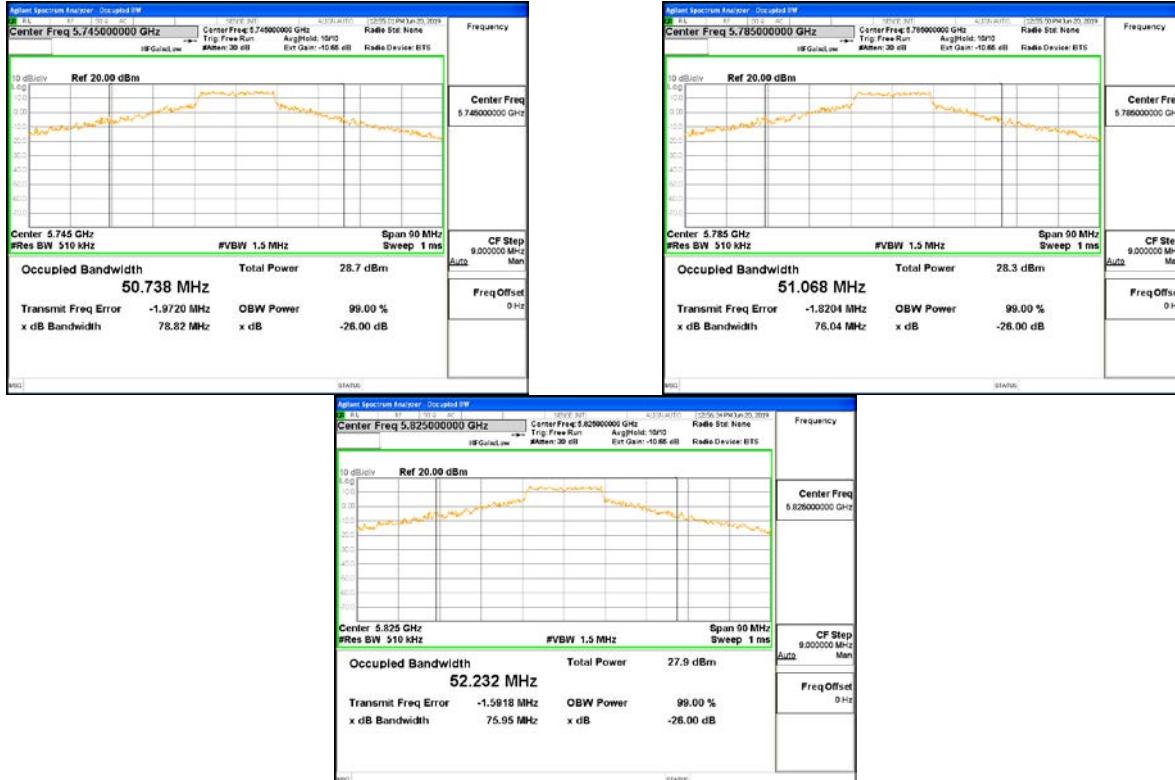
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (21) / (117)
Pages



ANT1_802.11a_UNII-1



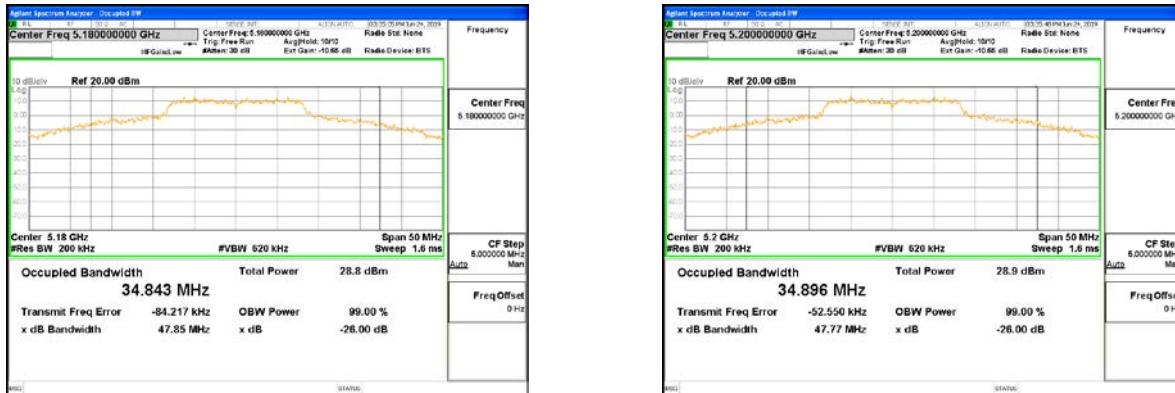
ANT1_802.11a_UNII-3



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (22) / (117)
Pages



ANT2_802.11a_UNII-1



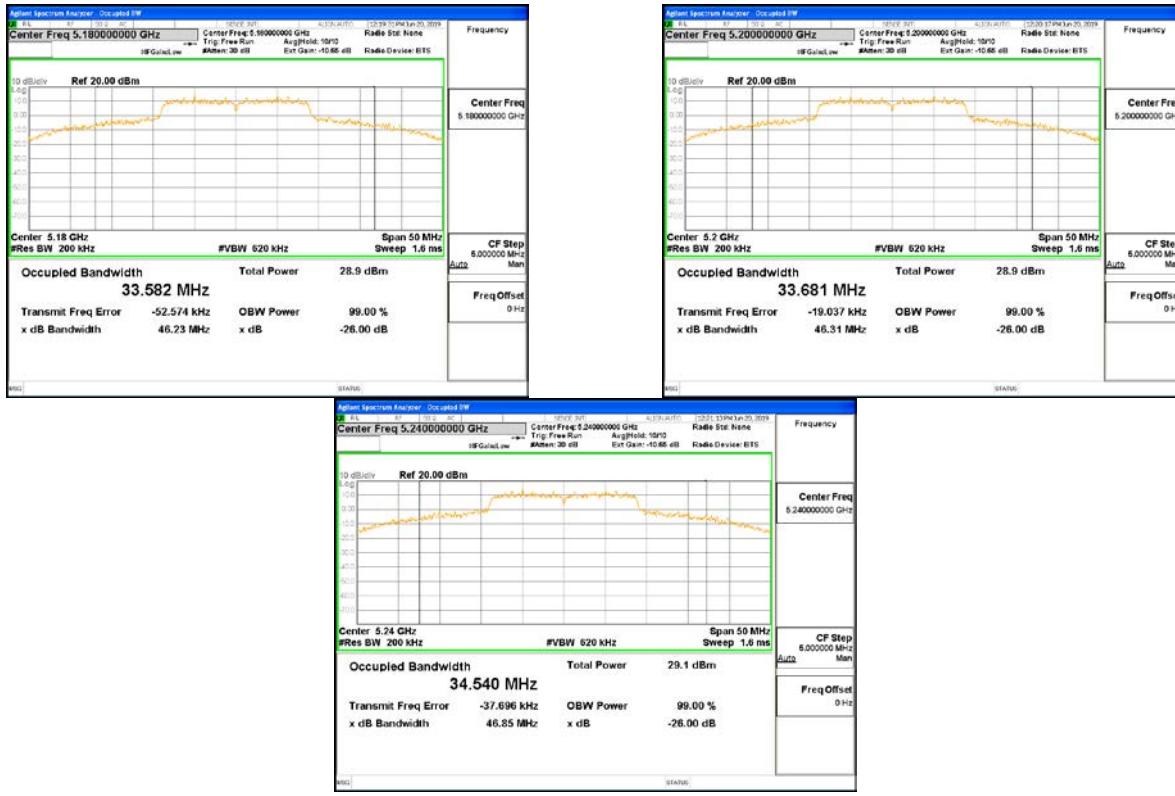
ANT2_802.11a_UNII-3



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (23) / (117)
Pages



ANT1_802.11n_HT20_UNII-1



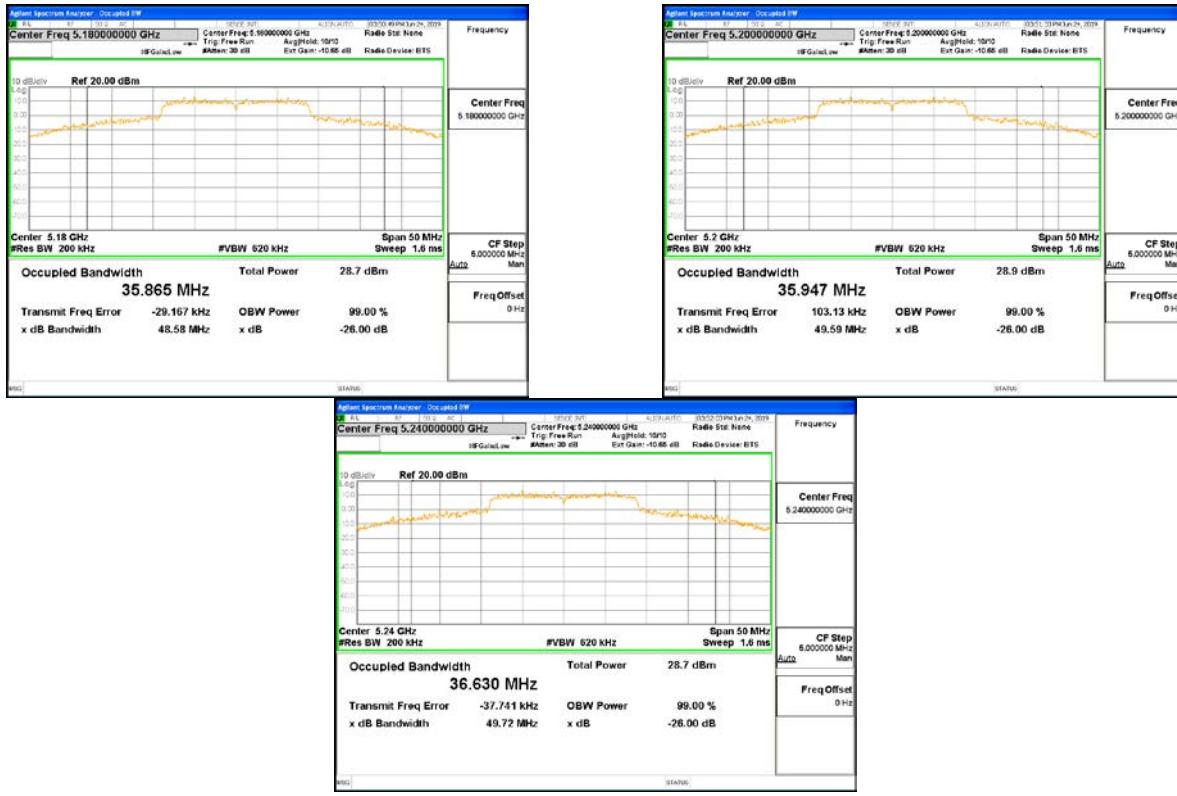
ANT1_802.11n_HT20_UNII-3



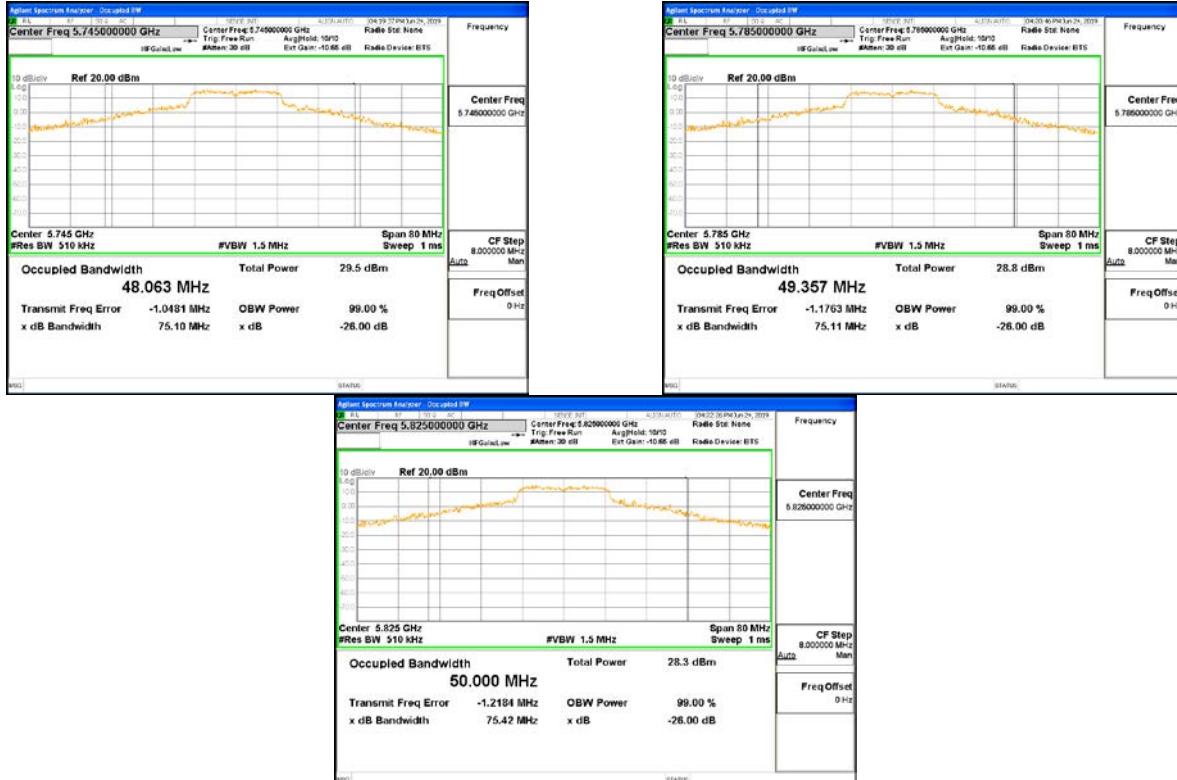
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (24) / (117)
Pages



ANT2_802.11n_HT20_UNII-1



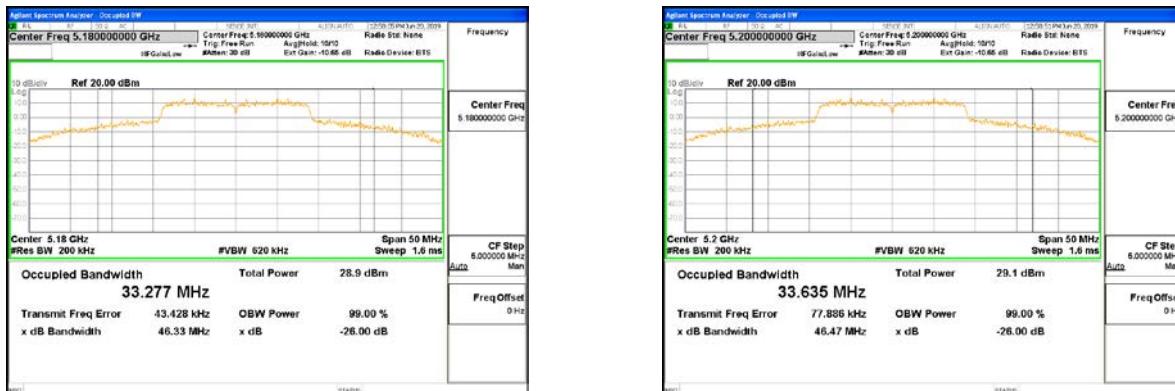
ANT2_802.11n_HT20_UNII-3



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (25) / (117)
Pages



ANT1_802.11ac_VHT20_UNII-1



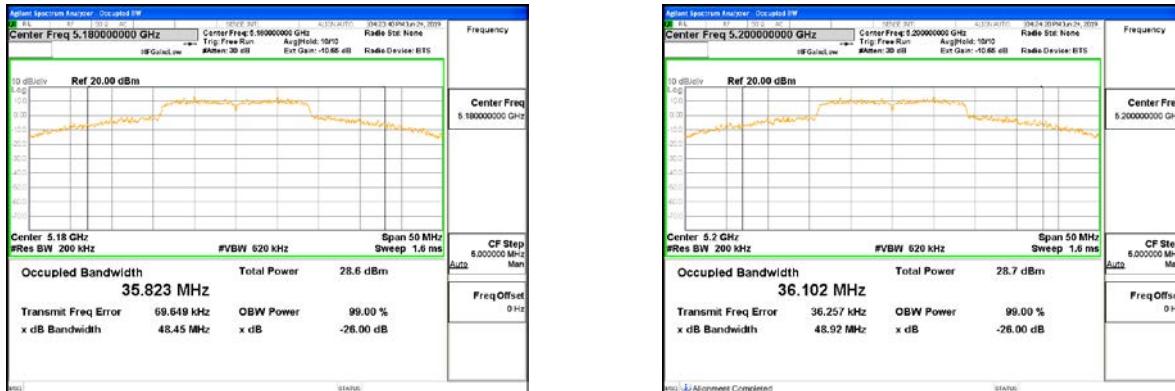
ANT1_802.11ac_VHT20_UNII-3



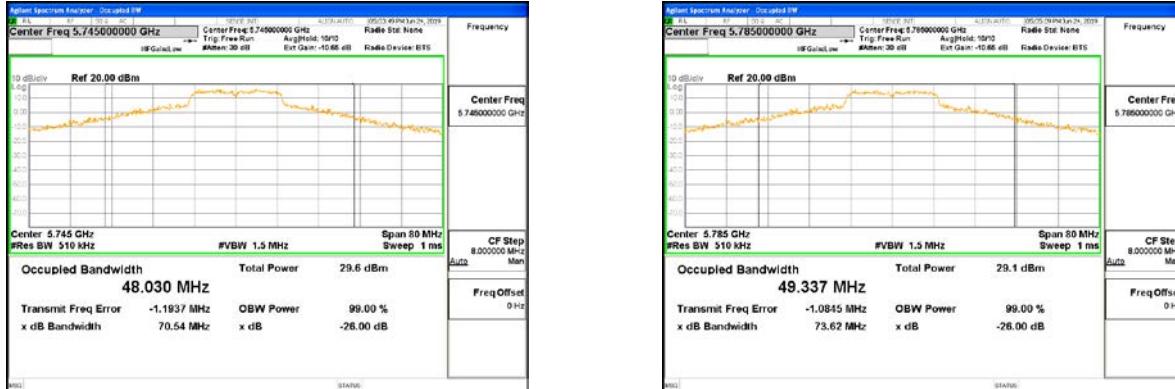
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (26) / (117)
Pages



ANT2_802.11ac_VHT20_UNII-1



ANT2_802.11ac_VHT20_UNII-3

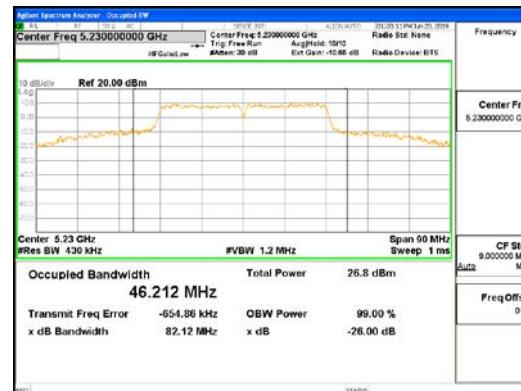
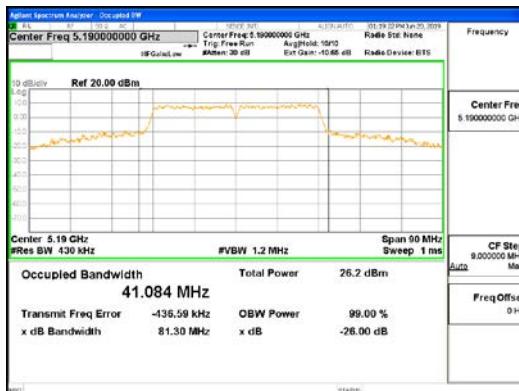


CTK Co., Ltd.
The Prime Leader of Global Inspection Certification

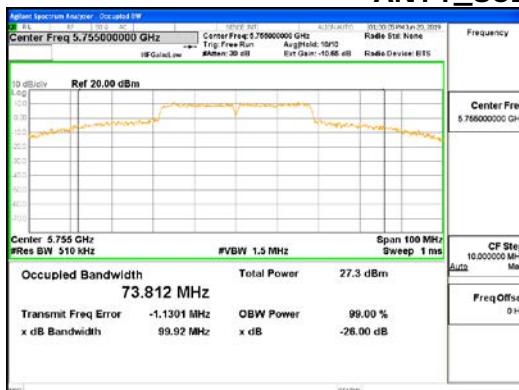
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

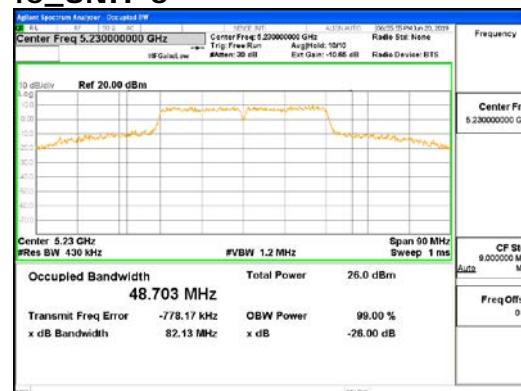
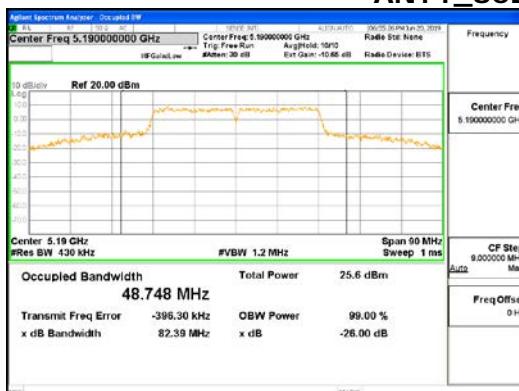
Report No.:
CTK-2019-02420
Page (27) / (117)
Pages



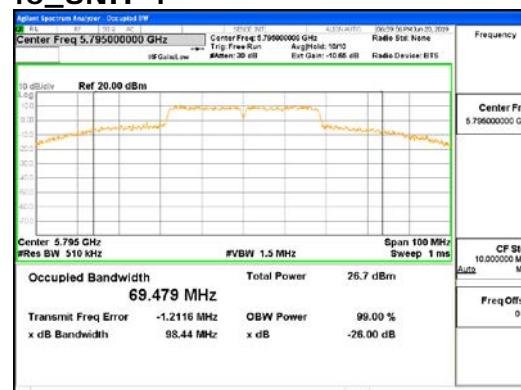
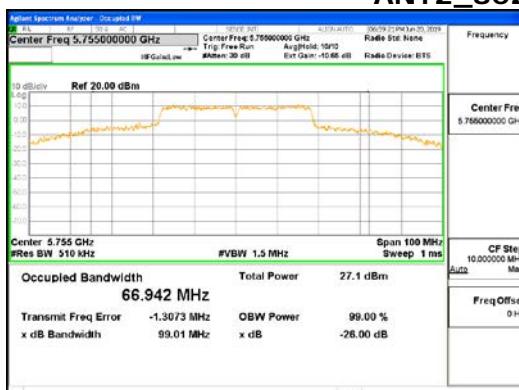
ANT1_802.11n_HT40_UNI1-1



ANT1_802.11n_HT40_UNI1-3



ANT2_802.11n_HT40_UNI1-1



ANT2_802.11n_HT40_UNI1-3

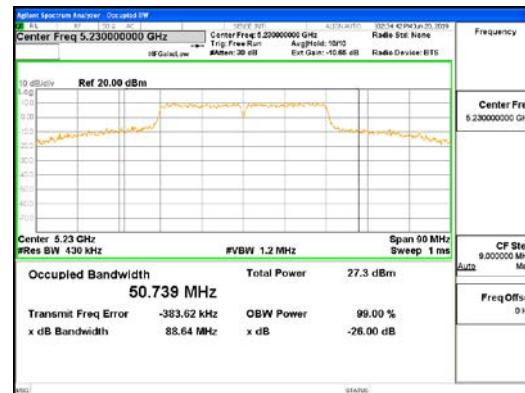
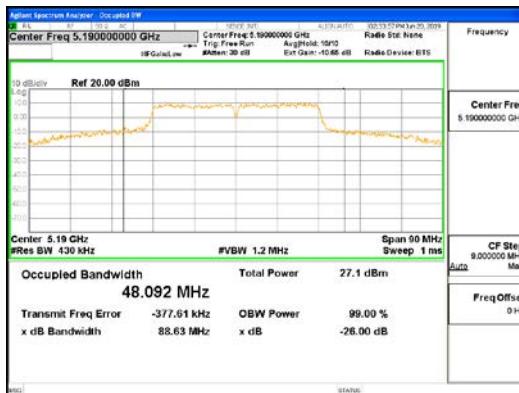


CTK Co., Ltd.
The Prime Leader of Global Inspection Certification

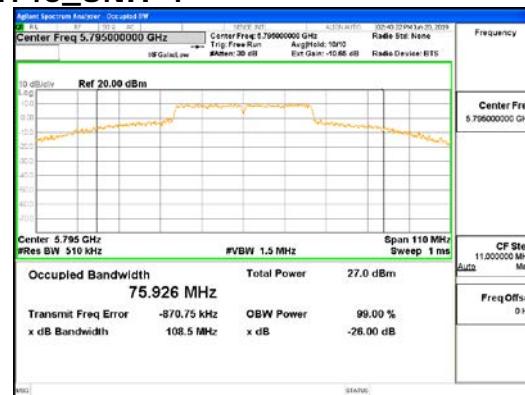
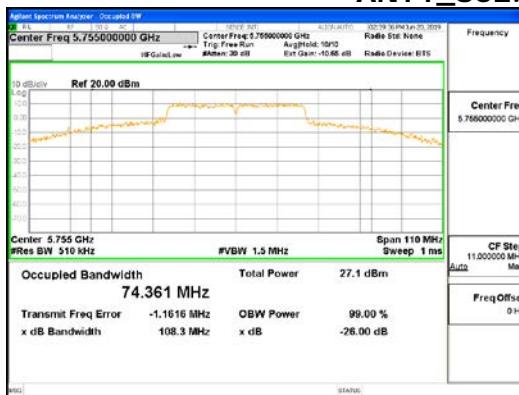
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

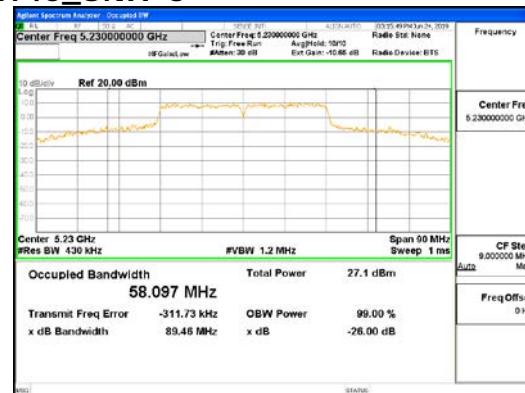
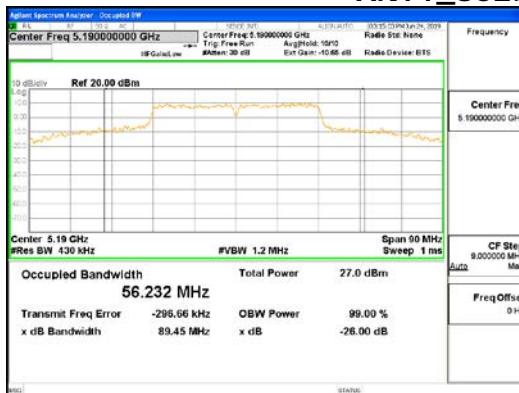
Report No.:
CTK-2019-02420
Page (28) / (117)
Pages



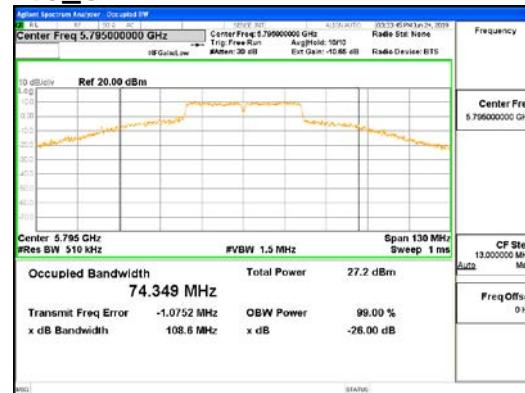
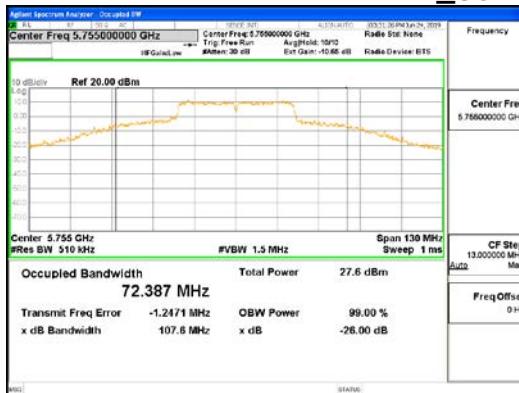
ANT1_802.11ac_VHT40_UNII-1



ANT1_802.11ac_VHT40_UNII-3



ANT2_802.11ac_VHT40_UNII-1



ANT2_802.11ac_VHT40_UNII-3

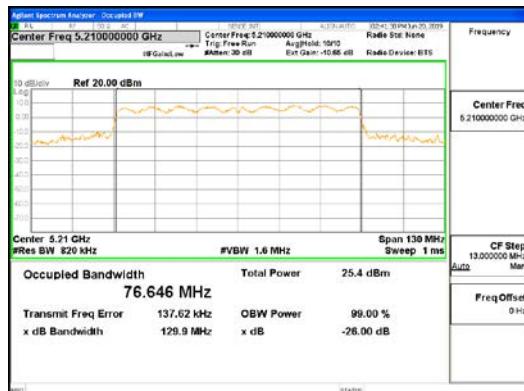


CTK Co., Ltd.
The Prime Leader of Global Radiotesting Certification

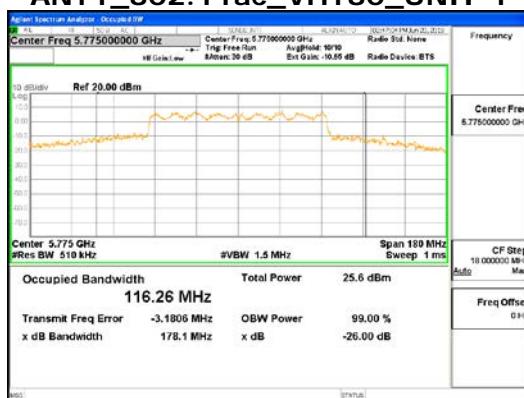
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

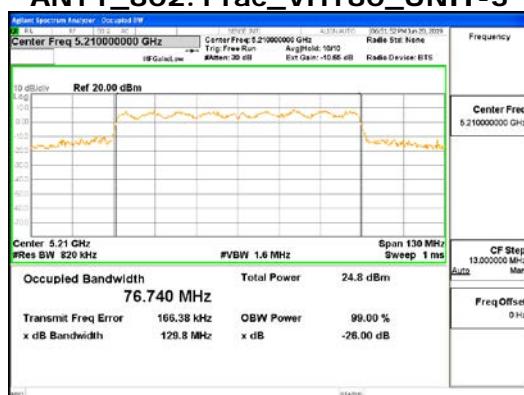
Report No.:
CTK-2019-02420
Page (29) / (117)
Pages



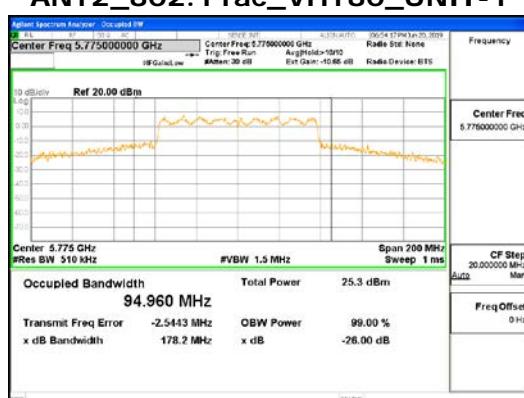
ANT1_802.11ac_VHT80_UNII-1



ANT1_802.11ac_VHT80_UNII-3



ANT2_802.11ac_VHT80_UNII-1



ANT2_802.11ac_VHT80_UNII-3



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

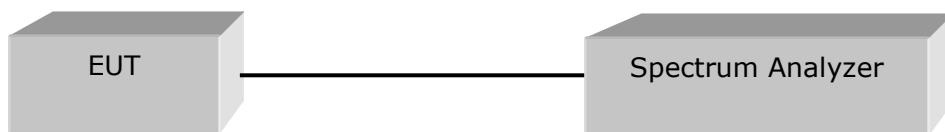
Report No.:
CTK-2019-02420
Page (30) / (117)
Pages

4.3 OUTPUT POWER

Test Procedures

KDB 789033 – Section E.2.d (Method SA-2, Maximum Conducted Output Power)
KDB 662911 D01, D02 (Multiple Transmitter Output)

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.



Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 1 MHz
- b) VBW \geq 3 x RBW
- c) Sweep time = auto
- d) Detector = power averaging (rms)
- e) Trace mode = Average at least 100
- f) Duty cycle factor = $10\log(1/x)$

Test mode		Duty Cycle Factor (dB)
CDD Mode	802.11a	0.16
	802.11n_HT20	0.17
	802.11n_HT40	0.33
	802.11ac_VHT20	0.17
	802.11ac_VHT40	0.33
	802.11ac_VHT80	0.63
SDM Mode	802.11n_HT20	0.32
	802.11n_HT40	0.60
	802.11ac_VHT20	0.32
	802.11ac_VHT40	0.71
	802.11ac_VHT80	1.25



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (31) / (117)
Pages

Limit

Operating Mode	Band	Mode	ANT Configuration	ANT Gain (dBi)	Limit (dBm)
SISO	UNII 1	802.11a/n/ac	ANT1, ANT2	2.00	30.00
	UNII 3				
MIMO (2Tx)	UNII 1	802.11a/n/ac	ANT1 + ANT2	5.01	30.00
	UNII 3				

 CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501 <small>The Prime Leader of Global Respiratory Certification</small>	Report No.: CTK-2019-02420 Page (32) / (117) Pages	
---	--	--

Test Data

CDD Mode_ANT1

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	22.01	0.16	22.17	30.00	7.83
	5 200	22.19	0.16	22.35	30.00	7.65
	5 240	22.39	0.16	22.55	30.00	7.45
	5 745	21.87	0.16	22.03	30.00	7.97
	5 785	21.41	0.16	21.57	30.00	8.43
	5 825	21.00	0.16	21.16	30.00	8.84
802.11n _HT20	5 180	22.04	0.17	22.21	30.00	7.79
	5 200	22.16	0.17	22.33	30.00	7.67
	5 240	22.34	0.17	22.51	30.00	7.49
	5 745	21.88	0.17	22.05	30.00	7.95
	5 785	21.34	0.17	21.51	30.00	8.49
	5 825	20.99	0.17	21.16	30.00	8.84
802.11ac _VHT20	5 180	22.14	0.17	22.31	30.00	7.69
	5 200	22.30	0.17	22.47	30.00	7.53
	5 240	22.48	0.17	22.65	30.00	7.35
	5 745	21.81	0.17	21.98	30.00	8.02
	5 785	21.33	0.17	21.50	30.00	8.50
	5 825	20.90	0.17	21.07	30.00	8.93
802.11n _HT40	5 190	20.03	0.33	20.36	30.00	9.64
	5 230	20.53	0.33	20.86	30.00	9.14
	5 755	20.77	0.33	21.10	30.00	8.90
	5 795	20.44	0.33	20.77	30.00	9.23
802.11ac _VHT40	5 190	20.59	0.33	20.92	30.00	9.08
	5 230	20.93	0.33	21.26	30.00	8.74
	5 755	20.68	0.33	21.01	30.00	8.99
	5 795	20.34	0.33	20.67	30.00	9.33
802.11ac _VHT80	5 210	19.24	0.63	19.87	30.00	10.13
	5 775	18.93	0.63	19.56	30.00	10.44
Measurement uncertainty		± 1.5 dB				

 CTK Co., Ltd. <i>The Prime Leader of Global Reciprocity Certification</i>	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-02420 Page (33) / (117) Pages
--	---	--

CDD Mode_ANT2

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	22.03	0.16	22.19	30.00	7.81
	5 200	22.18	0.16	22.34	30.00	7.66
	5 240	22.42	0.16	22.58	30.00	7.42
	5 745	22.86	0.16	23.02	30.00	6.98
	5 785	22.19	0.16	22.35	30.00	7.65
	5 825	21.51	0.16	21.67	30.00	8.33
802.11n _HT20	5 180	21.92	0.17	22.09	30.00	7.91
	5 200	22.05	0.17	22.22	30.00	7.78
	5 240	22.35	0.17	22.52	30.00	7.48
	5 745	22.72	0.17	22.89	30.00	7.11
	5 785	22.10	0.17	22.27	30.00	7.73
	5 825	21.39	0.17	21.56	30.00	8.44
802.11ac _VHT20	5 180	21.82	0.17	21.99	30.00	8.01
	5 200	21.93	0.17	22.10	30.00	7.90
	5 240	22.21	0.17	22.38	30.00	7.62
	5 745	22.90	0.17	23.07	30.00	6.93
	5 785	22.19	0.17	22.36	30.00	7.64
	5 825	21.57	0.17	21.74	30.00	8.26
802.11n _HT40	5 190	19.62	0.33	19.95	30.00	10.05
	5 230	19.97	0.33	20.30	30.00	9.70
	5 755	20.93	0.33	21.26	30.00	8.74
	5 795	20.46	0.33	20.79	30.00	9.21
802.11ac _VHT40	5 190	20.19	0.33	20.52	30.00	9.48
	5 230	20.64	0.33	20.97	30.00	9.03
	5 755	21.17	0.33	21.50	30.00	8.50
	5 795	20.74	0.33	21.07	30.00	8.93
802.11ac _VHT80	5 210	18.61	0.63	19.24	30.00	10.76
	5 775	18.53	0.63	19.16	30.00	10.84
Measurement uncertainty		± 1.5 dB				

 CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501 <small>The Prime Leader of Global Respiratory Certification</small>	Report No.: CTK-2019-02420 Page (34) / (117) Pages
---	--

CDD Mode_ANT1 + ANT2

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11a	5 180	25.03	0.16	25.19	30.00	4.81
	5 200	25.20	0.16	25.36	30.00	4.64
	5 240	25.42	0.16	25.58	30.00	4.42
	5 745	25.40	0.16	25.56	30.00	4.44
	5 785	24.83	0.16	24.99	30.00	5.01
	5 825	24.27	0.16	24.43	30.00	5.57
802.11n _HT20	5 180	24.99	0.17	25.16	30.00	4.84
	5 200	25.12	0.17	25.29	30.00	4.71
	5 240	25.36	0.17	25.53	30.00	4.47
	5 745	25.33	0.17	25.50	30.00	4.50
	5 785	24.75	0.17	24.92	30.00	5.08
	5 825	24.20	0.17	24.37	30.00	5.63
802.11ac _VHT20	5 180	24.99	0.17	25.16	30.00	4.84
	5 200	25.13	0.17	25.30	30.00	4.70
	5 240	25.36	0.17	25.53	30.00	4.47
	5 745	25.40	0.17	25.57	30.00	4.43
	5 785	24.79	0.17	24.96	30.00	5.04
	5 825	24.26	0.17	24.43	30.00	5.57
802.11n _HT40	5 190	22.84	0.33	23.17	30.00	6.83
	5 230	23.27	0.33	23.60	30.00	6.40
	5 755	23.86	0.33	24.19	30.00	5.81
	5 795	23.46	0.33	23.79	30.00	6.21
802.11ac _VHT40	5 190	23.40	0.33	23.73	30.00	6.27
	5 230	23.80	0.33	24.13	30.00	5.87
	5 755	23.94	0.33	24.27	30.00	5.73
	5 795	23.55	0.33	23.88	30.00	6.12
802.11ac _VHT80	5 210	21.95	0.63	22.58	30.00	7.42
	5 775	21.74	0.63	22.37	30.00	7.63
Measurement uncertainty		± 1.5 dB				

 CTK Co., Ltd. <i>The Prime Leader of Global Respiratory Certification</i>	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-02420 Page (35) / (117) Pages	
--	---	--	--

SDM Mode_ANT1

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11n _HT20	5 180	22.37	0.32	22.69	30.00	7.31
	5 200	22.32	0.32	22.64	30.00	7.36
	5 240	22.6	0.32	22.92	30.00	7.08
	5 745	21.55	0.32	21.87	30.00	8.13
	5 785	21.03	0.32	21.35	30.00	8.65
	5 825	20.43	0.32	20.75	30.00	9.25
802.11ac _VHT20	5 180	21.65	0.32	21.97	30.00	8.03
	5 200	21.79	0.32	22.11	30.00	7.89
	5 240	22.02	0.32	22.34	30.00	7.66
	5 745	21.49	0.32	21.81	30.00	8.19
	5 785	21.06	0.32	21.38	30.00	8.62
	5 825	20.56	0.32	20.88	30.00	9.12
802.11n _HT40	5 190	18.92	0.60	19.52	30.00	10.48
	5 230	19.52	0.60	20.12	30.00	9.88
	5 755	20	0.60	20.6	30.00	9.40
	5 795	19.64	0.60	20.24	30.00	9.76
802.11ac _VHT40	5 190	19.41	0.71	20.12	30.00	9.88
	5 230	19.75	0.71	20.46	30.00	9.54
	5 755	19.89	0.71	20.6	30.00	9.40
	5 795	19.55	0.71	20.26	30.00	9.74
802.11ac _VHT80	5 210	17.94	1.25	19.19	30.00	10.81
	5 775	17.97	1.25	19.22	30.00	10.78
Measurement uncertainty		± 1.5 dB				

 CTK Co., Ltd. <i>The Prime Leader of Global Respiratory Certification</i>	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-02420 Page (36) / (117) Pages	
--	---	--	--

SDM Mode_ANT2

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11n _HT20	5 180	21.62	0.32	21.94	30.00	8.06
	5 200	21.76	0.32	22.08	30.00	7.92
	5 240	21.97	0.32	22.29	30.00	7.71
	5 745	22.38	0.32	22.70	30.00	7.30
	5 785	21.75	0.32	22.07	30.00	7.93
	5 825	21.1	0.32	21.42	30.00	8.58
802.11ac _VHT20	5 180	21.34	0.32	21.66	30.00	8.34
	5 200	21.5	0.32	21.82	30.00	8.18
	5 240	21.81	0.32	22.13	30.00	7.87
	5 745	22.37	0.32	22.69	30.00	7.31
	5 785	21.61	0.32	21.93	30.00	8.07
	5 825	21.08	0.32	21.40	30.00	8.60
802.11n _HT40	5 190	19.16	0.60	19.76	30.00	10.24
	5 230	19.66	0.60	20.26	30.00	9.74
	5 755	20.76	0.60	21.36	30.00	8.64
	5 795	20.29	0.60	20.89	30.00	9.11
802.11ac _VHT40	5 190	19.31	0.71	20.02	30.00	9.98
	5 230	19.79	0.71	20.50	30.00	9.50
	5 755	20.62	0.71	21.33	30.00	8.67
	5 795	20.17	0.71	20.88	30.00	9.12
802.11ac _VHT80	5 210	18.28	1.25	19.53	30.00	10.47
	5 775	18.36	1.25	19.61	30.00	10.39
Measurement uncertainty		± 1.5 dB				

 CTK Co., Ltd. <i>The Prime Leader of Global Respiratory Certification</i>	CTK Co., Ltd. (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2019-02420 Page (37) / (117) Pages	
--	---	--	--

SDM Mode_ANT1 + ANT2

Test Mode	Frequency (MHz)	Measured Output Power (dBm)	Duty cycle Factor (dB)	Result Output Power (dBm)	Limit (dBm)	Margin (dB)
802.11n _HT20	5 180	25.02	0.32	25.34	30.00	4.66
	5 200	25.06	0.32	25.38	30.00	4.62
	5 240	25.31	0.32	25.63	30.00	4.37
	5 745	25.00	0.32	25.32	30.00	4.68
	5 785	24.42	0.32	24.74	30.00	5.26
	5 825	23.79	0.32	24.11	30.00	5.89
802.11ac _VHT20	5 180	24.51	0.32	24.83	30.00	5.17
	5 200	24.66	0.32	24.98	30.00	5.02
	5 240	24.93	0.32	25.25	30.00	4.75
	5 745	24.96	0.32	25.28	30.00	4.72
	5 785	24.35	0.32	24.67	30.00	5.33
	5 825	23.84	0.32	24.16	30.00	5.84
802.11n _HT40	5 190	22.05	0.60	22.65	30.00	7.35
	5 230	22.60	0.60	23.20	30.00	6.80
	5 755	23.41	0.60	24.01	30.00	5.99
	5 795	22.99	0.60	23.59	30.00	6.41
802.11ac _VHT40	5 190	22.37	0.71	23.08	30.00	6.92
	5 230	22.78	0.71	23.49	30.00	6.51
	5 755	23.28	0.71	23.99	30.00	6.01
	5 795	22.88	0.71	23.59	30.00	6.41
802.11ac _VHT80	5 210	21.12	1.25	22.37	30.00	7.63
	5 775	21.18	1.25	22.43	30.00	7.57
Measurement uncertainty		± 1.5 dB				

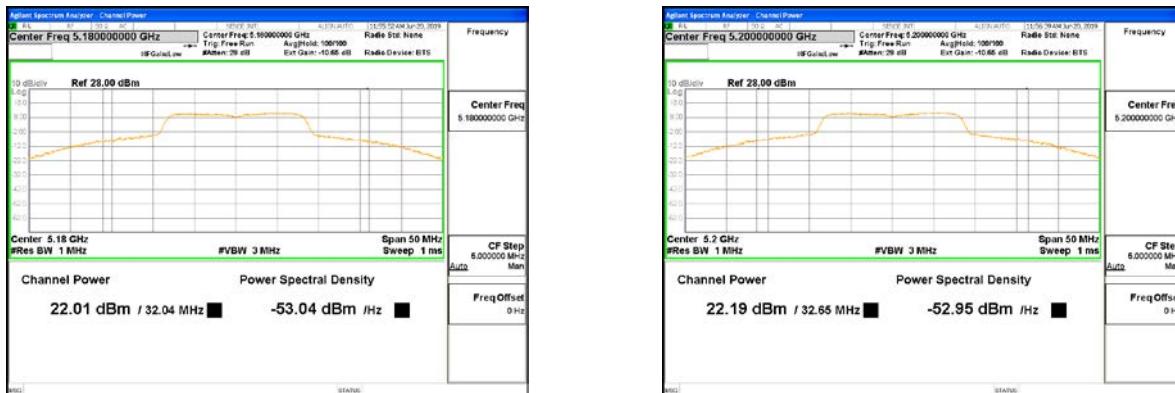
See next pages for actual measured spectrum plots.



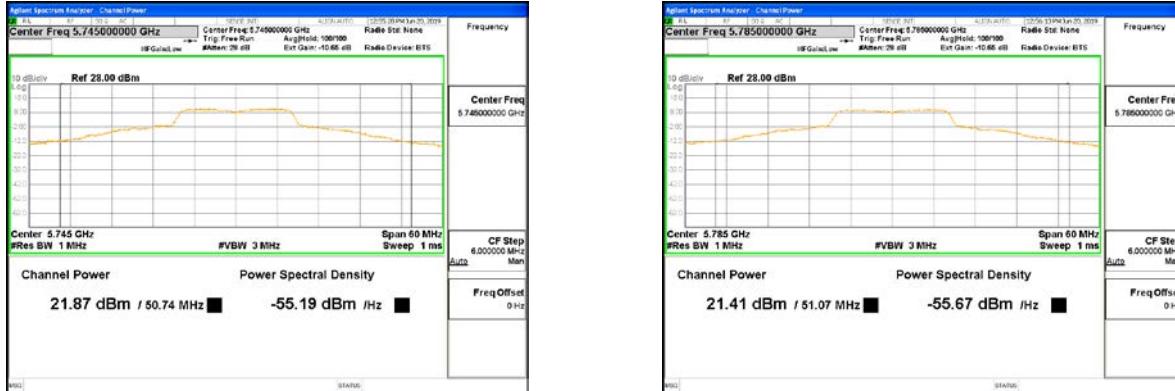
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (38) / (117)
Pages



CDD Mode_ANT1_802.11a_UNII-1



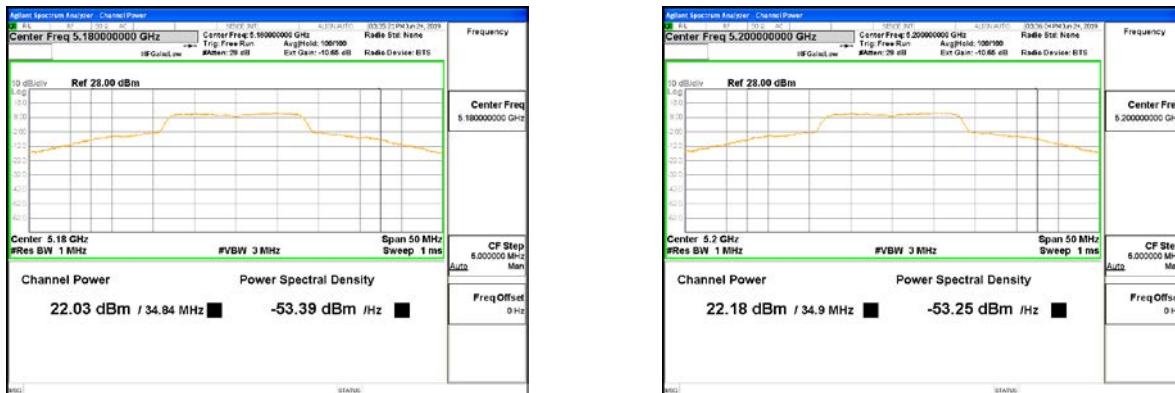
CDD Mode_ANT1_802.11a_UNII-3



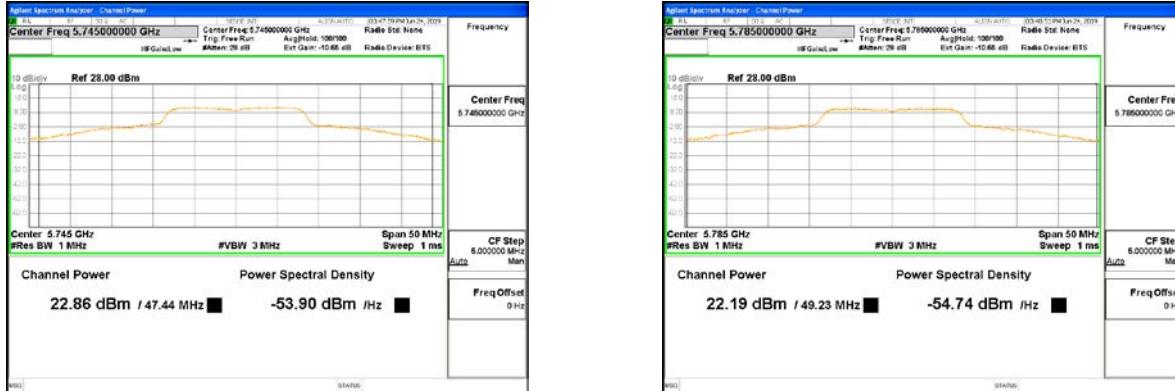
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (39) / (117)
Pages



CDD Mode_ANT2_802.11a_UNII-1



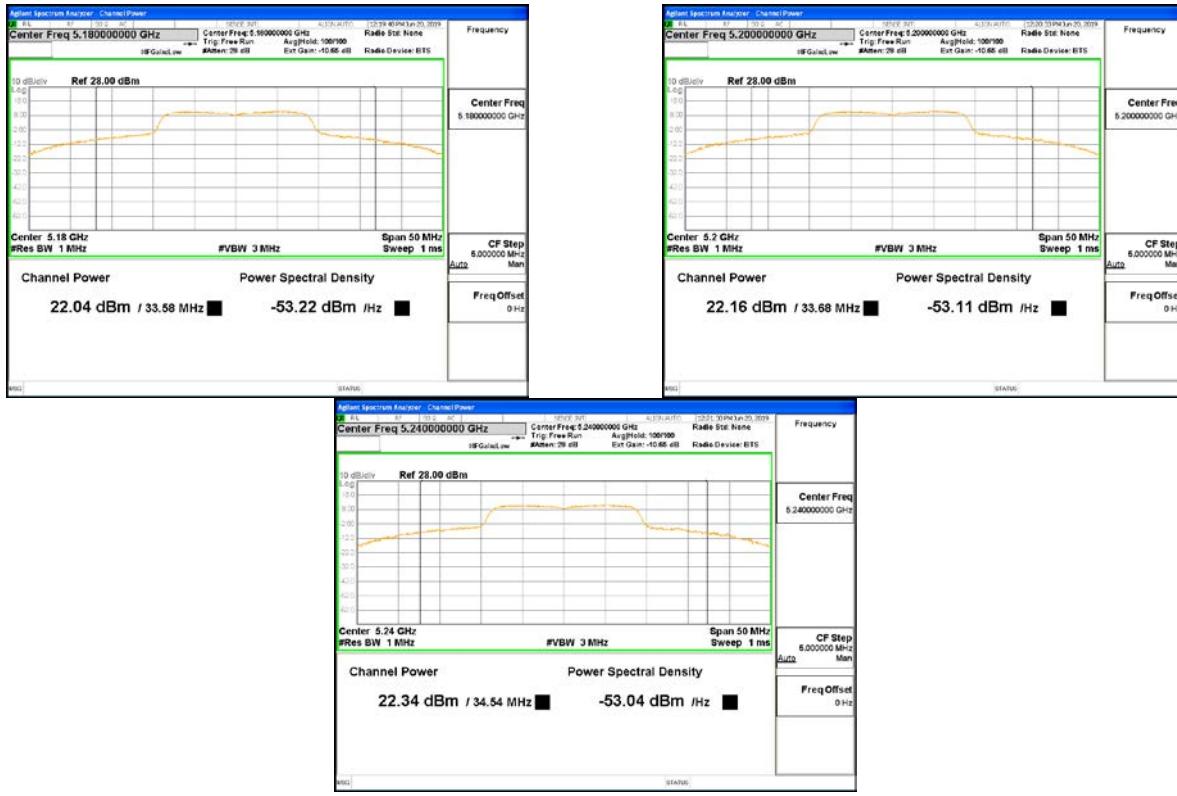
CDD Mode_ANT2_802.11a_UNII-3



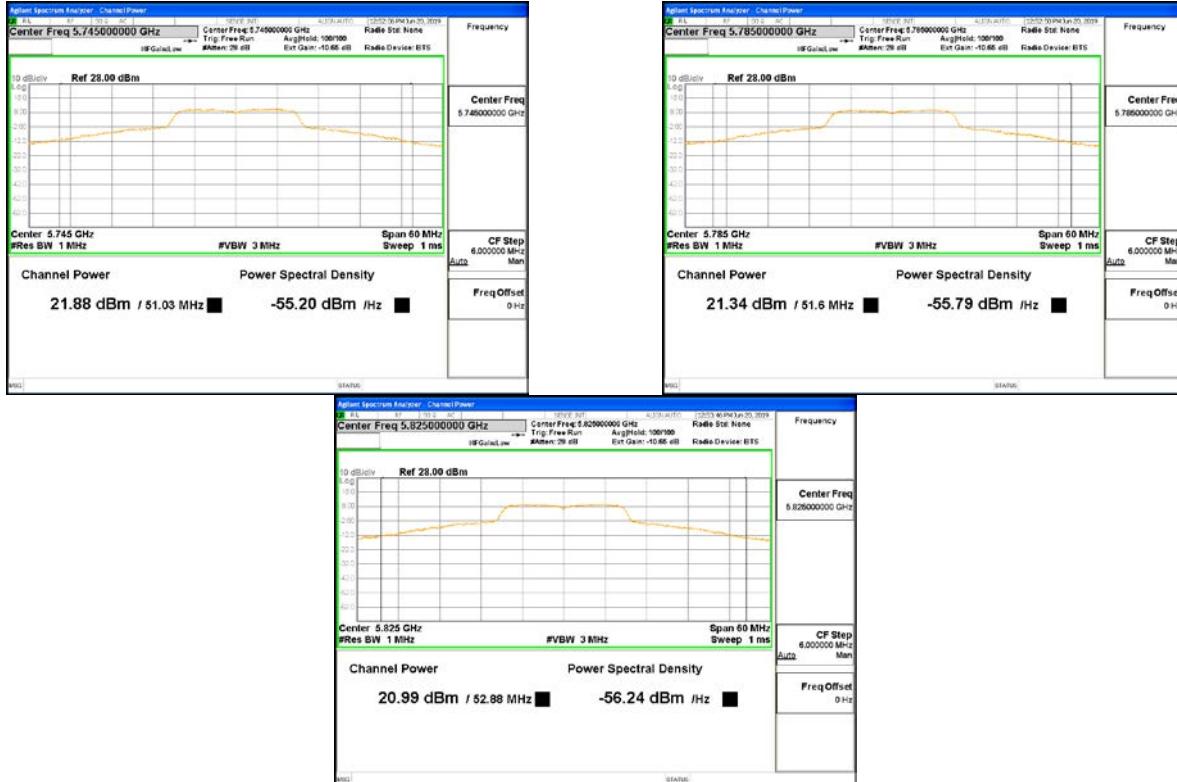
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (40) / (117)
Pages



CDD Mode_ANT1_802.11n_HT20_UNII-1



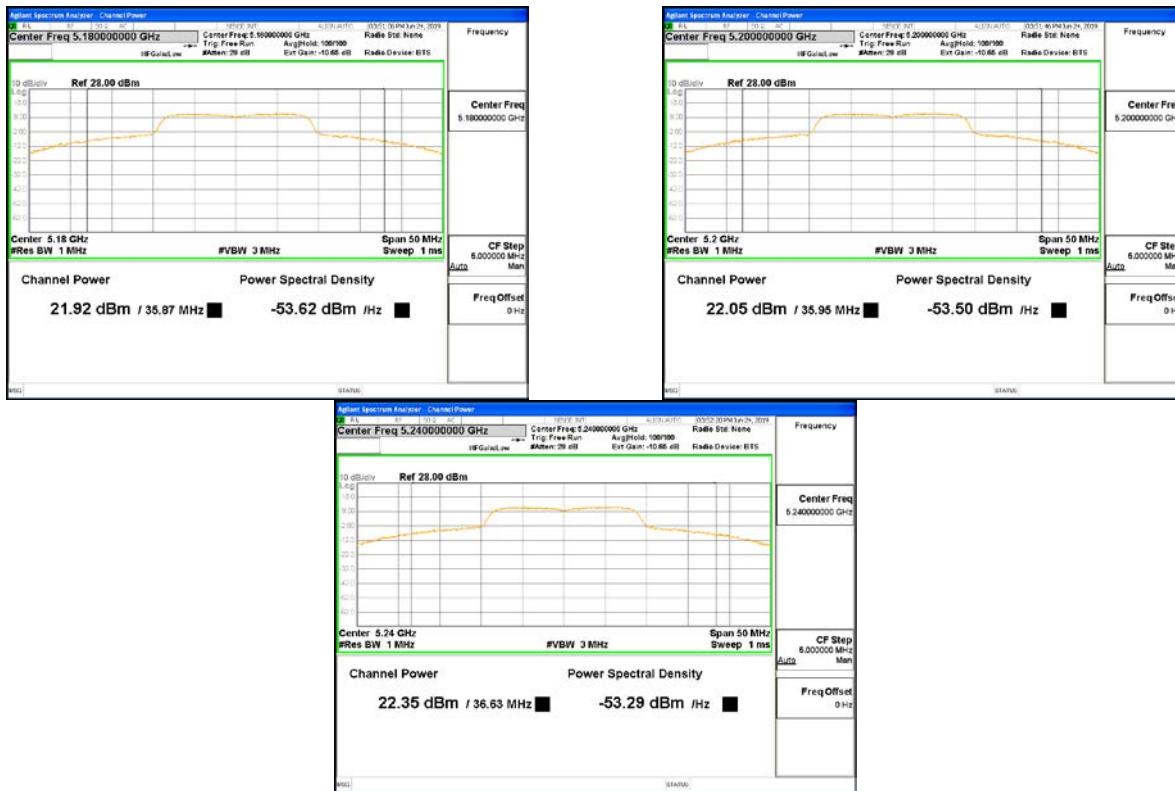
CDD Mode_ANT1_802.11n_HT20_UNII-3



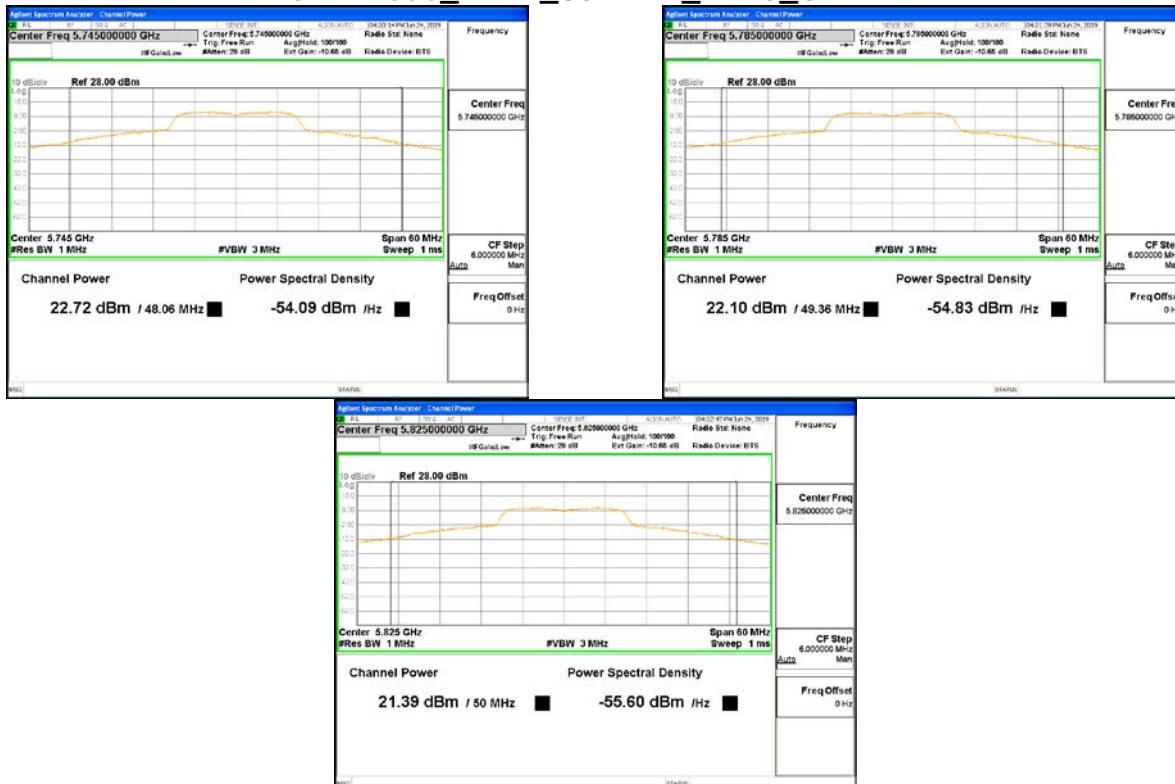
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (41) / (117)
Pages



CDD Mode_ANT2_802.11n_HT20_UNII-1



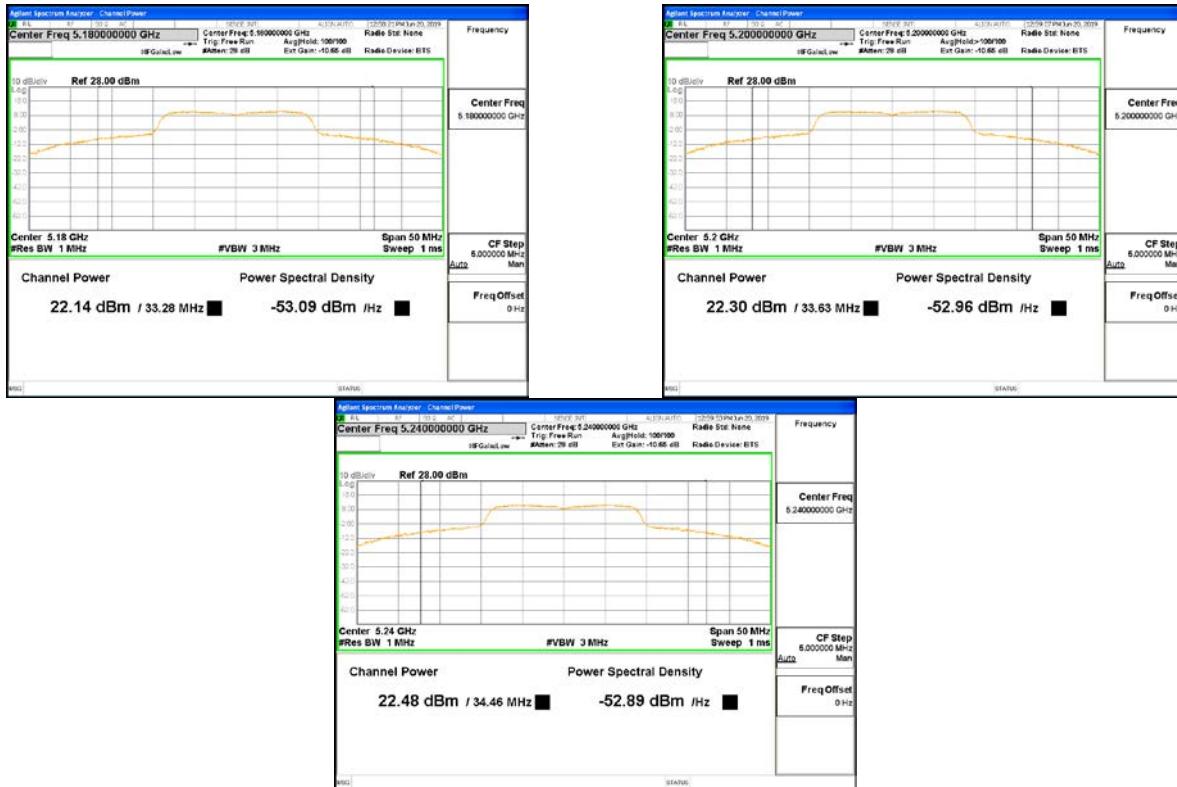
CDD Mode_ANT2_802.11n_HT20_UNII-3



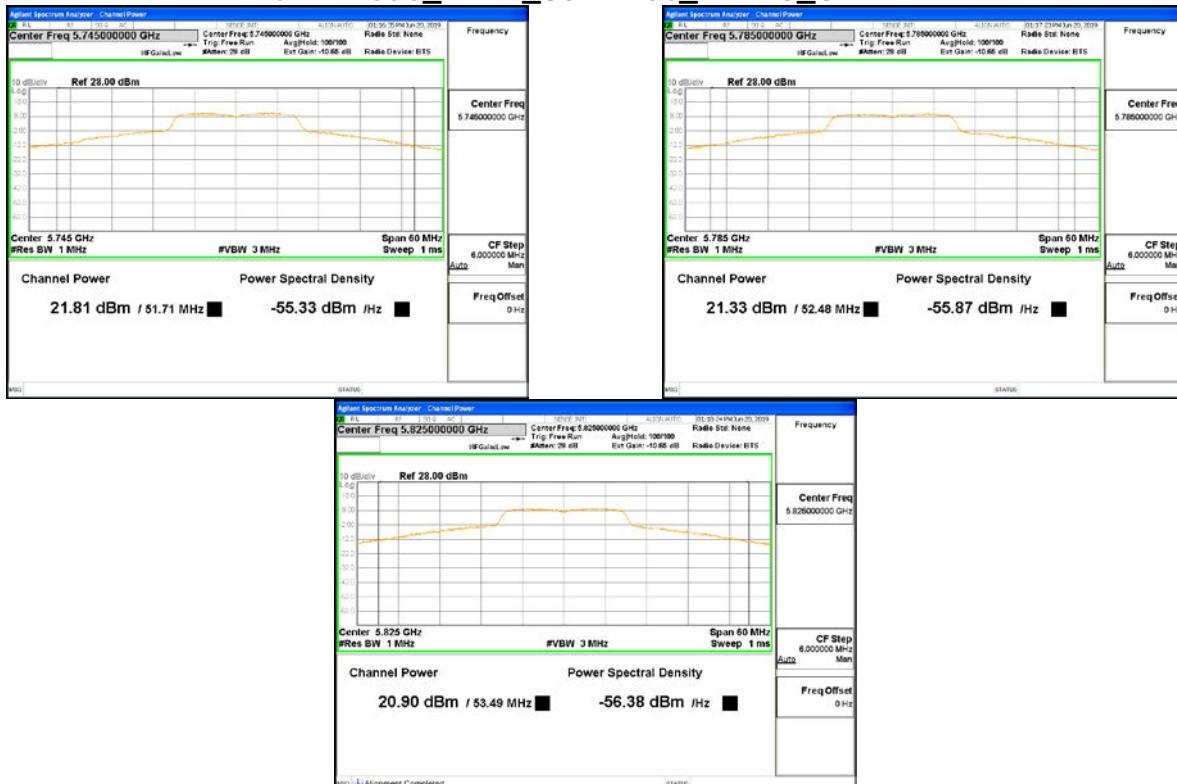
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (42) / (117)
Pages



CDD Mode_ANT1_802.11ac_VHT20_UNII-1



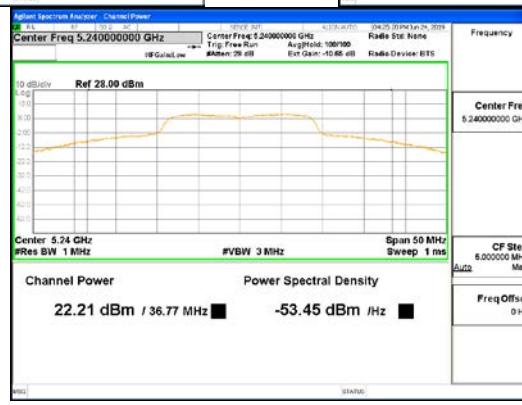
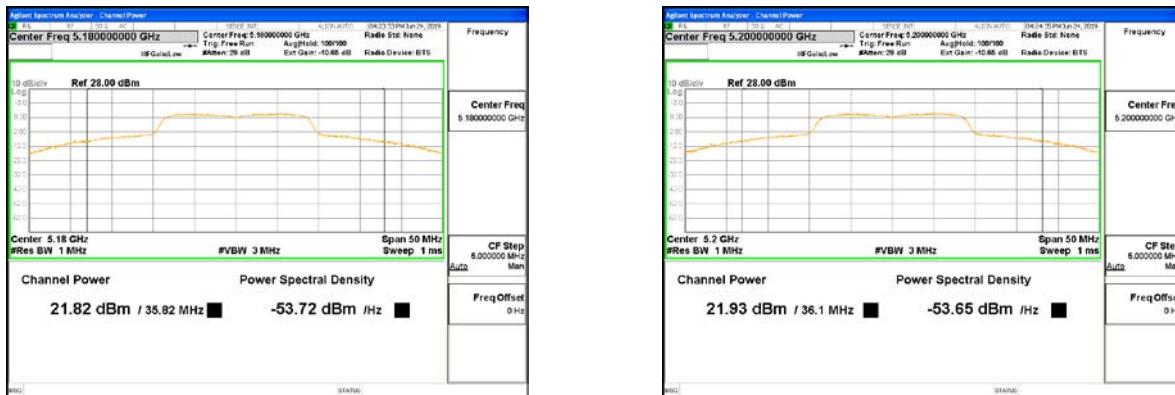
CDD Mode_ANT1_802.11ac_VHT20_UNII-3



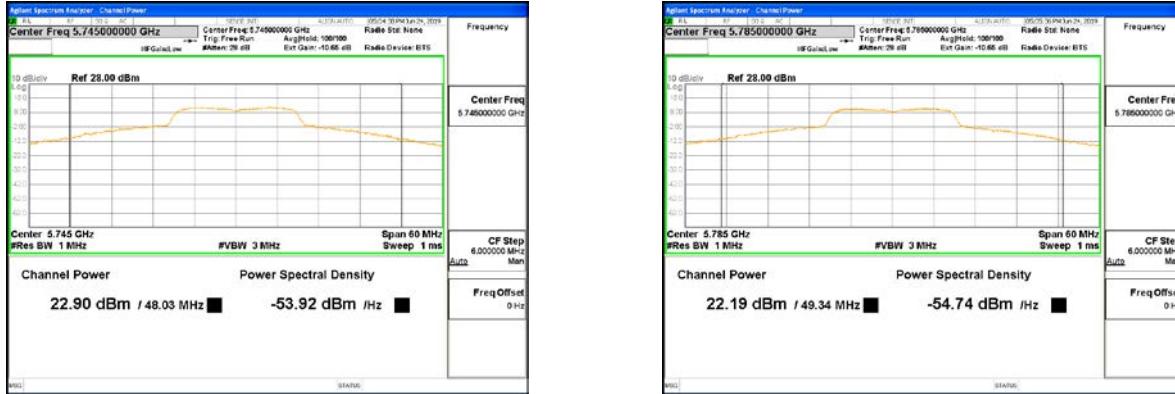
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (43) / (117)
Pages



CDD Mode_ANT2_802.11ac_VHT20_UNII-1



CDD Mode_ANT2_802.11ac_VHT20_UNII-3

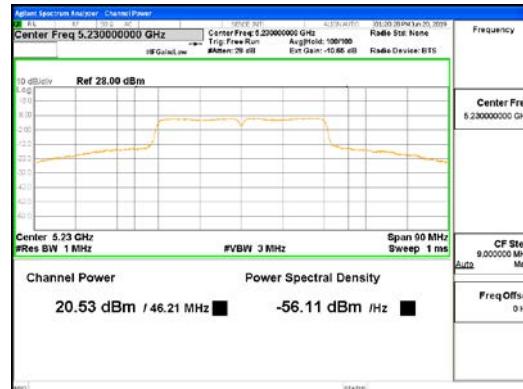
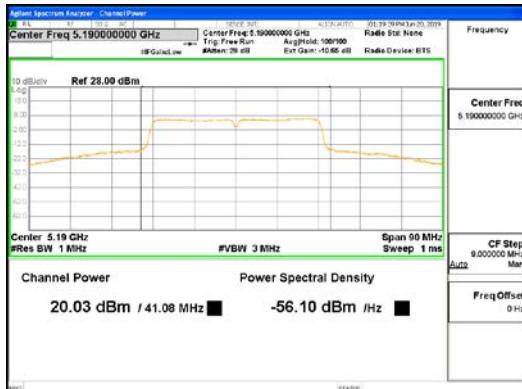


CTK Co., Ltd.
The Prime Leader of Global Antenna Certification

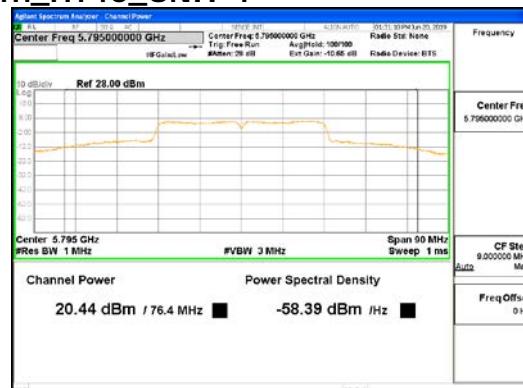
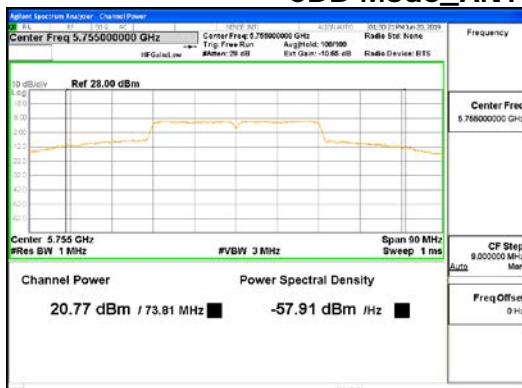
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

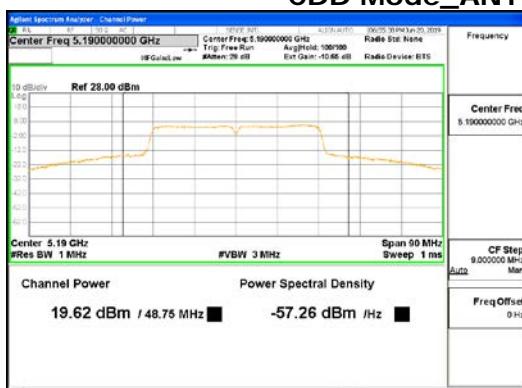
Report No.:
CTK-2019-02420
Page (44) / (117)
Pages



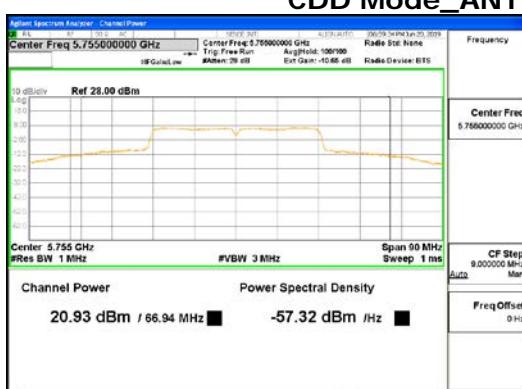
CDD Mode_ANT1_802.11n_HT40_UNII-1



CDD Mode_ANT1_802.11n_HT40_UNII-1



CDD Mode_ANT1_802.11n_HT40_UNII-3



CDD Mode_ANT2_802.11n_HT40_UNII-1

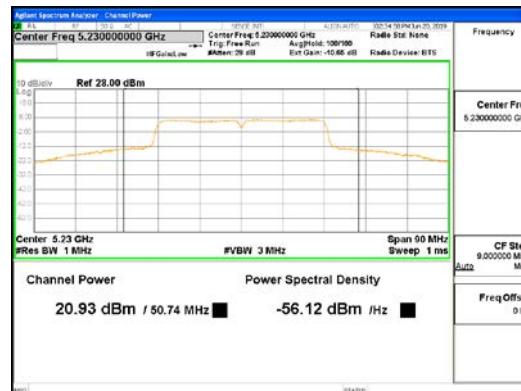
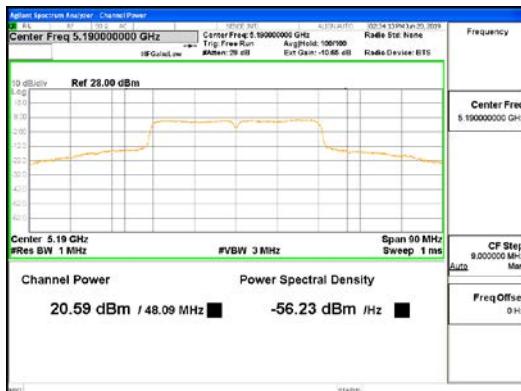


CTK Co., Ltd.
The Prime Leader of Global Inspection Certification

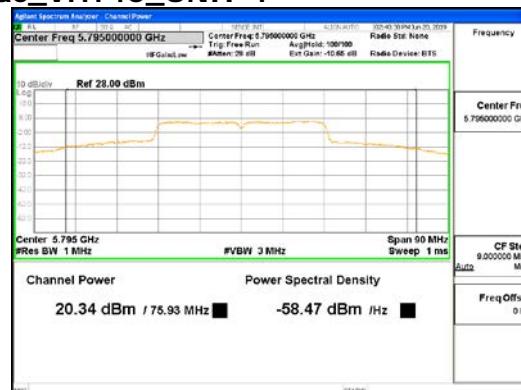
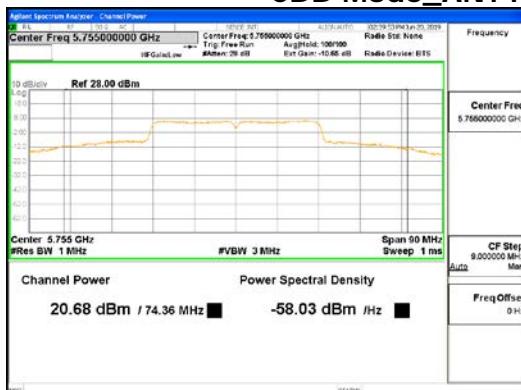
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

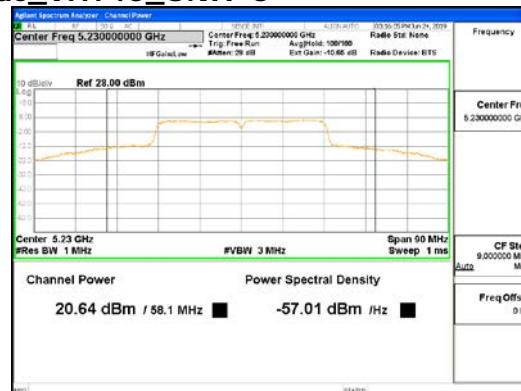
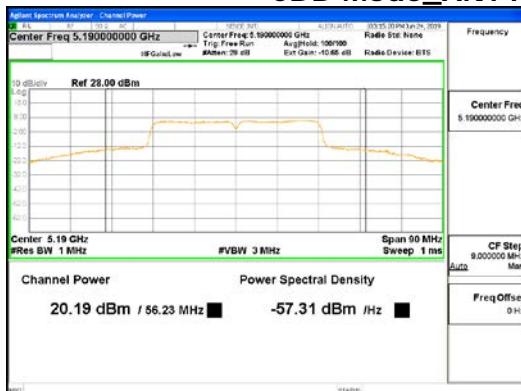
Report No.:
CTK-2019-02420
Page (45) / (117)
Pages



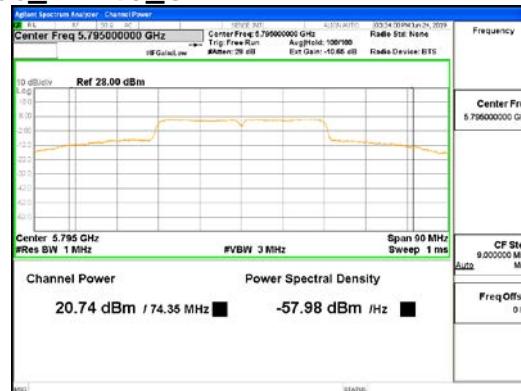
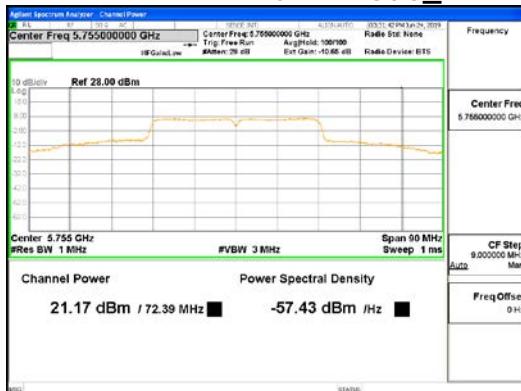
CDD Mode_ANT1_802.11ac_VHT40_UNII-1



CDD Mode_ANT1_802.11ac_VHT40_UNII-3



CDD Mode_ANT2_802.11ac_VHT40_UNII-1



CDD Mode_ANT2_802.11ac_VHT40_UNII-3

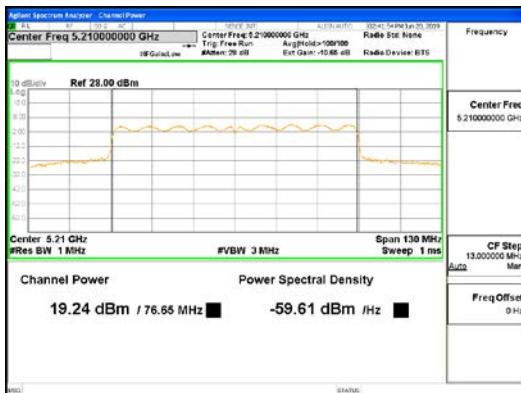


CTK Co., Ltd.
The Prime Leader of Global Radiotests Certification

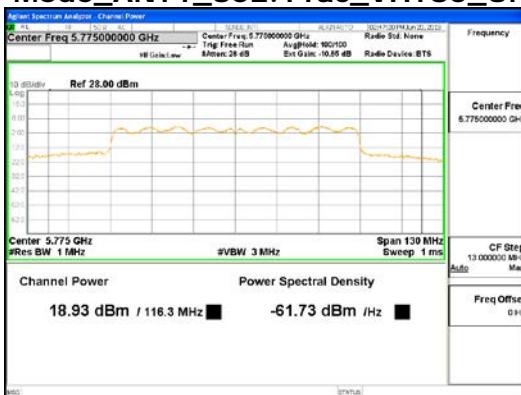
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

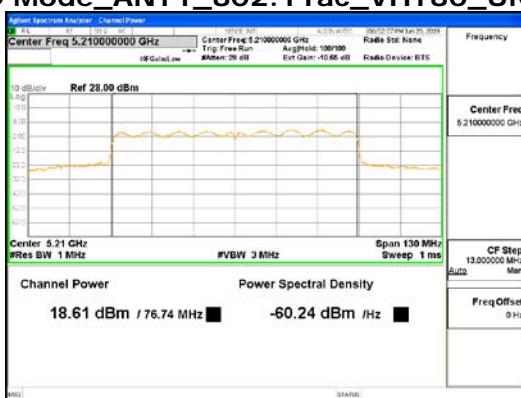
Report No.:
CTK-2019-02420
Page (46) / (117)
Pages



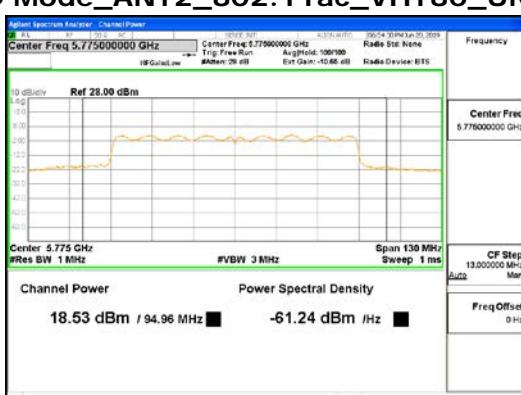
CDD Mode_ANT1_802.11ac_VHT80_UNII-1



CDD Mode_ANT1_802.11ac_VHT80_UNII-3



CDD Mode_ANT2_802.11ac_VHT80_UNII-1



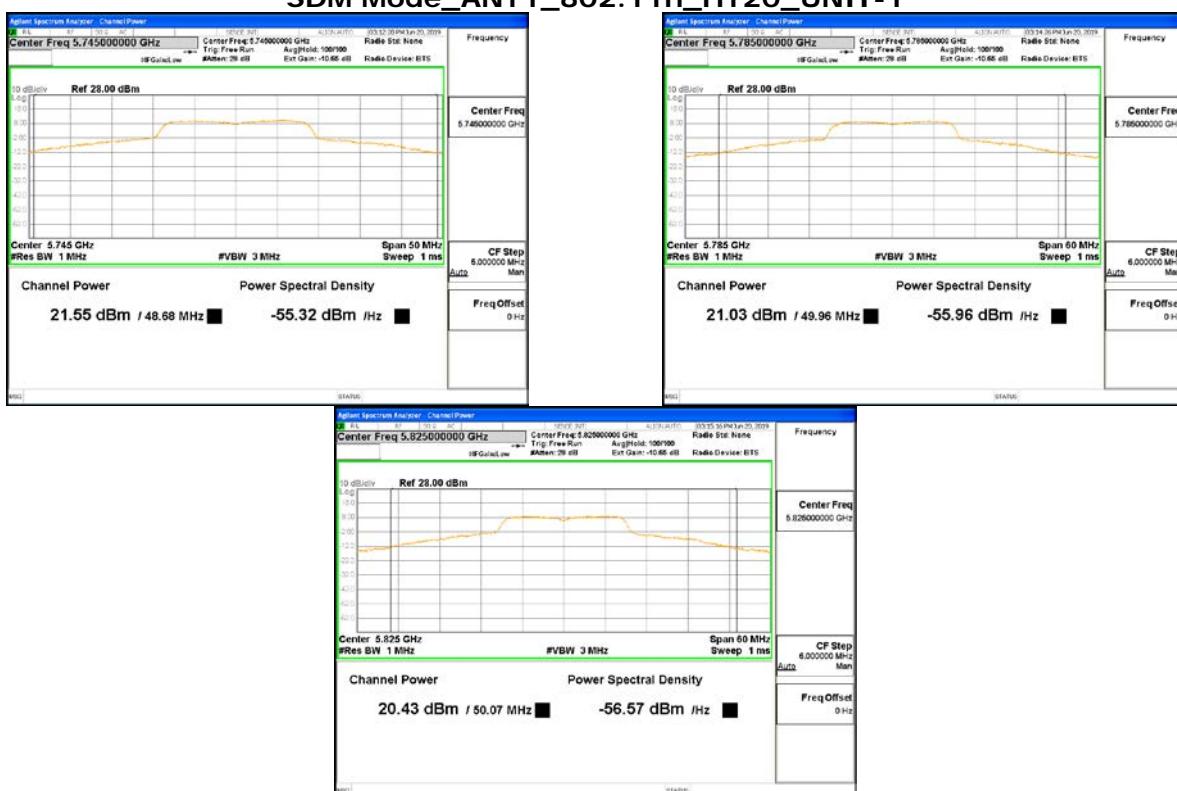
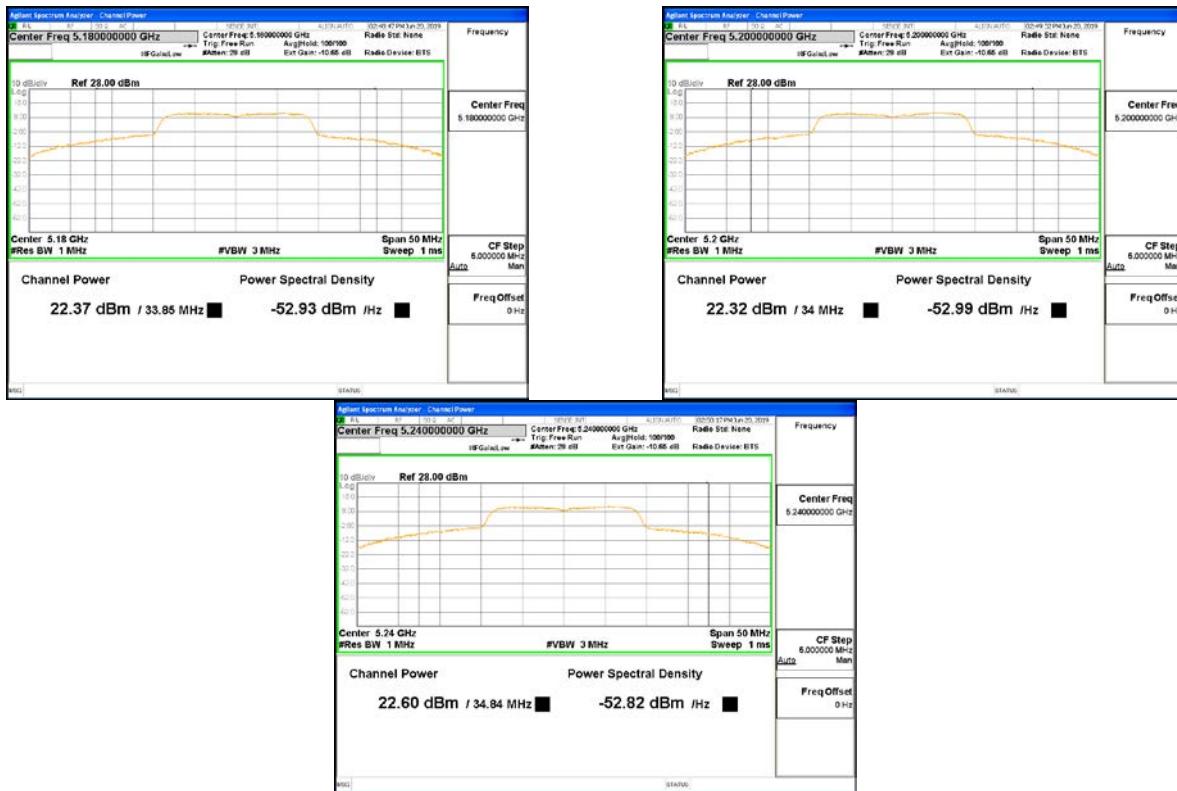
CDD Mode_ANT2_802.11ac_VHT80_UNII-3



CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (47) / (117)
Pages

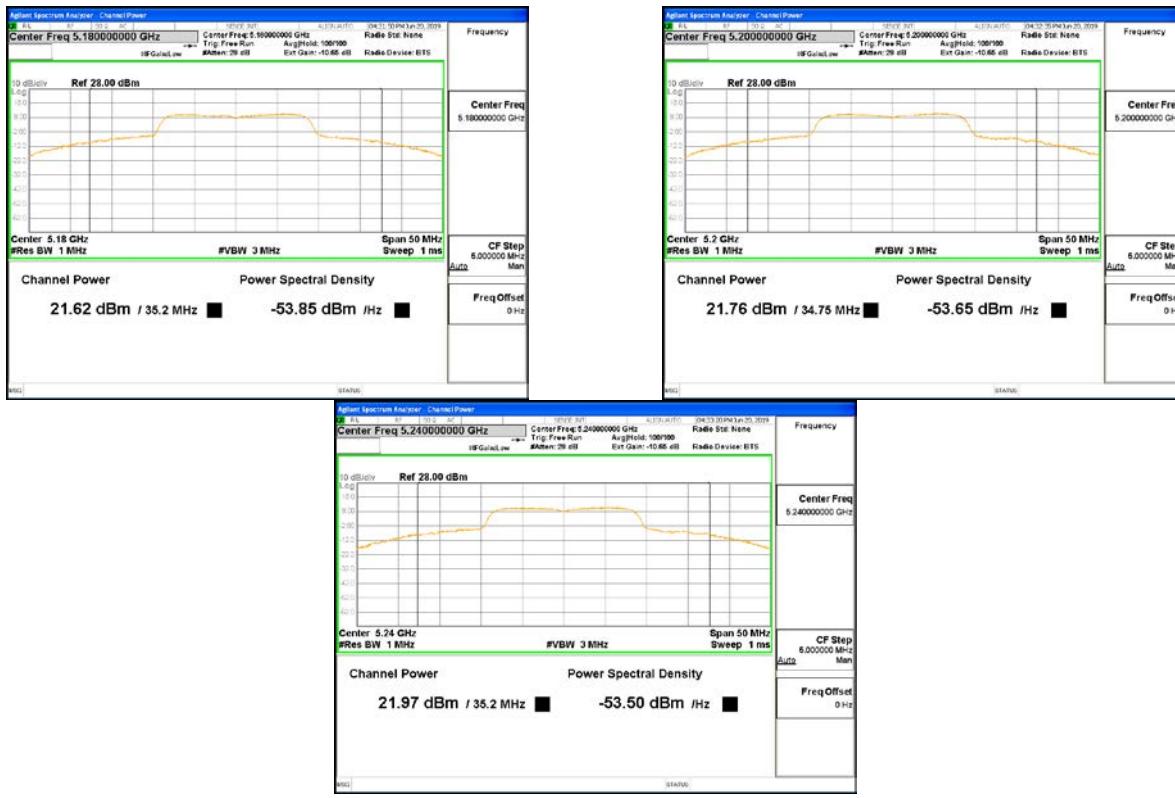




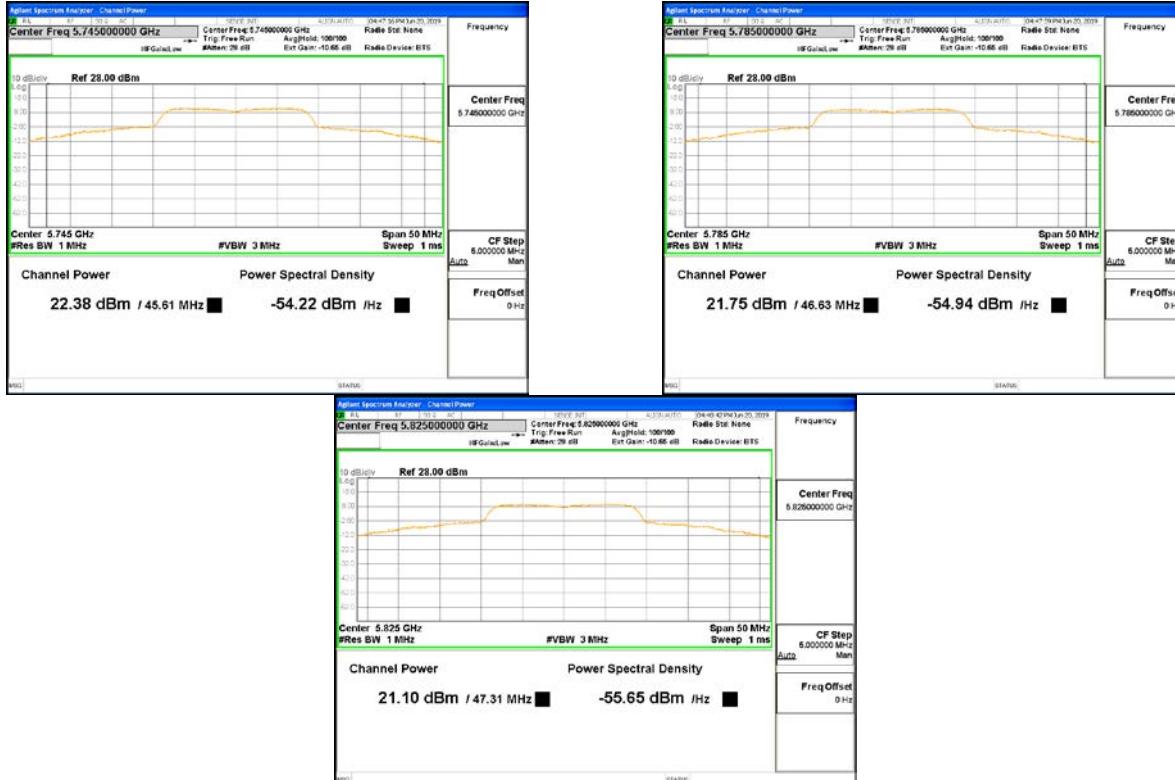
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (48) / (117)
Pages



SDM Mode_ANT2_802.11n_HT20_UNII-1



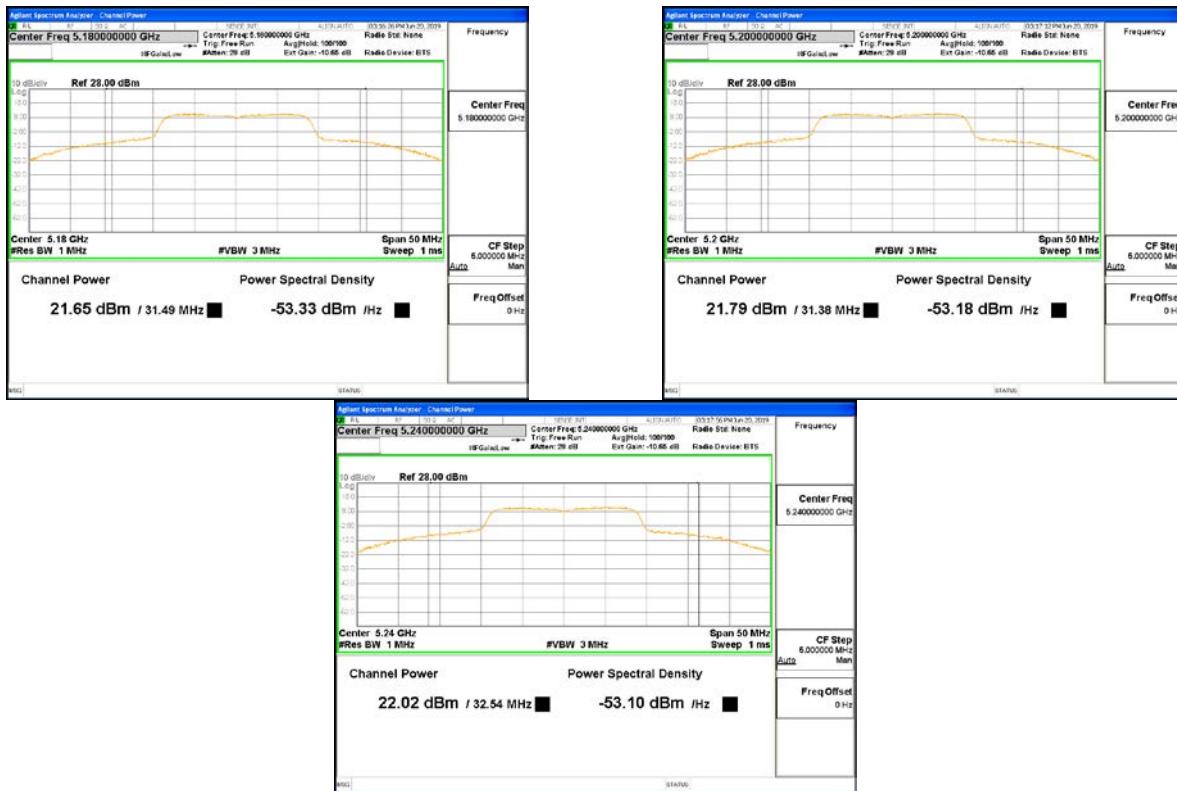
SDM Mode_ANT2_802.11n_HT20_UNII-3



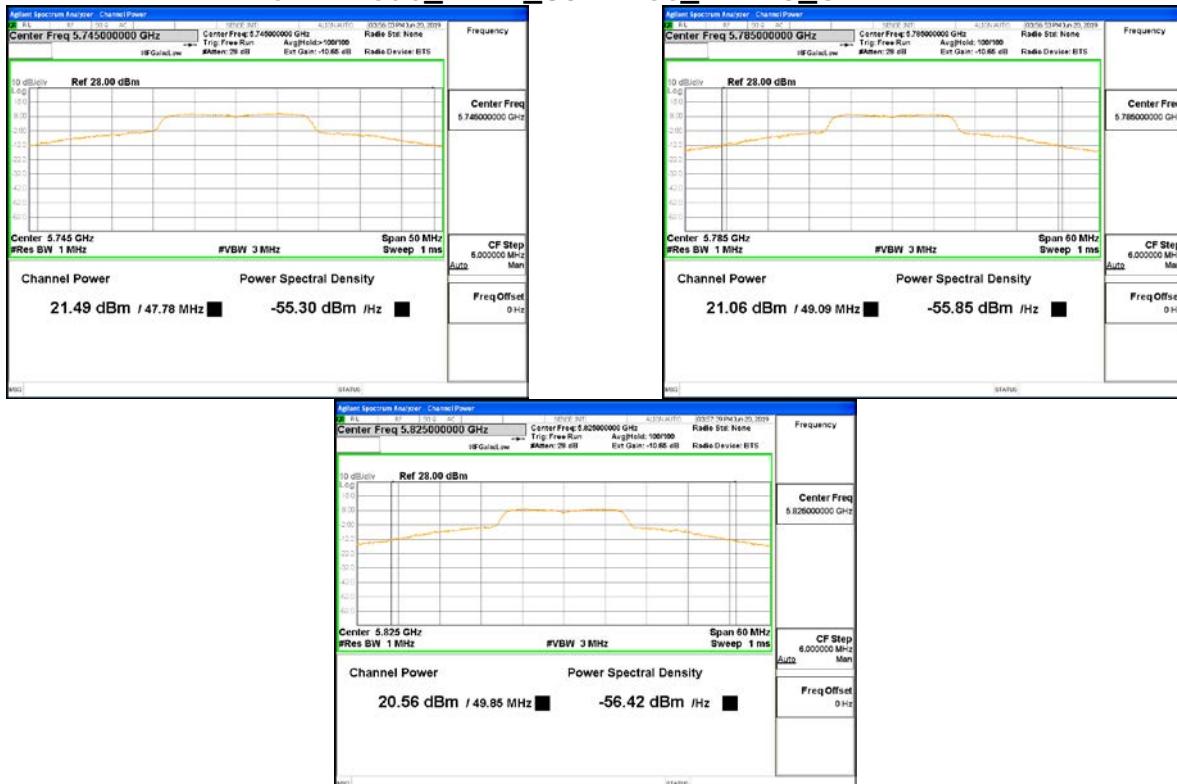
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (49) / (117)
Pages



SDM Mode_ANT1_802.11ac_VHT20_UNII-1



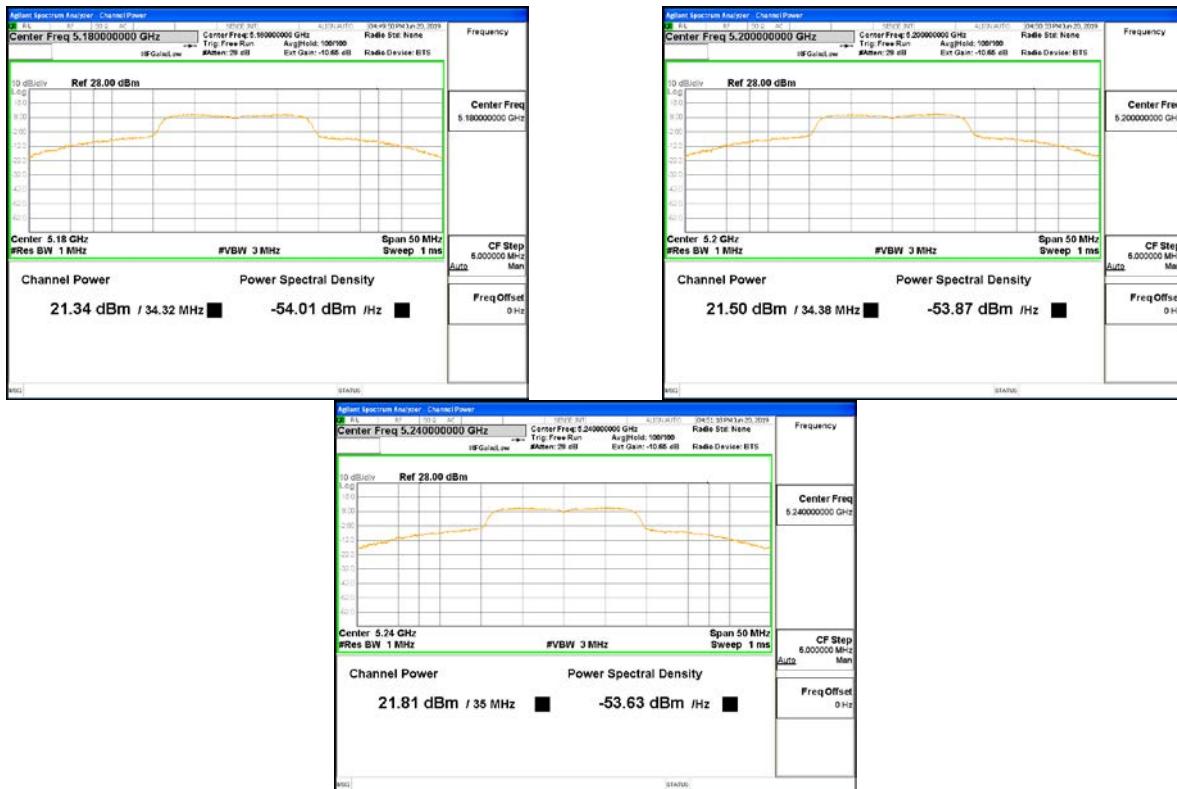
SDM Mode_ANT1_802.11ac_VHT20_UNII-3



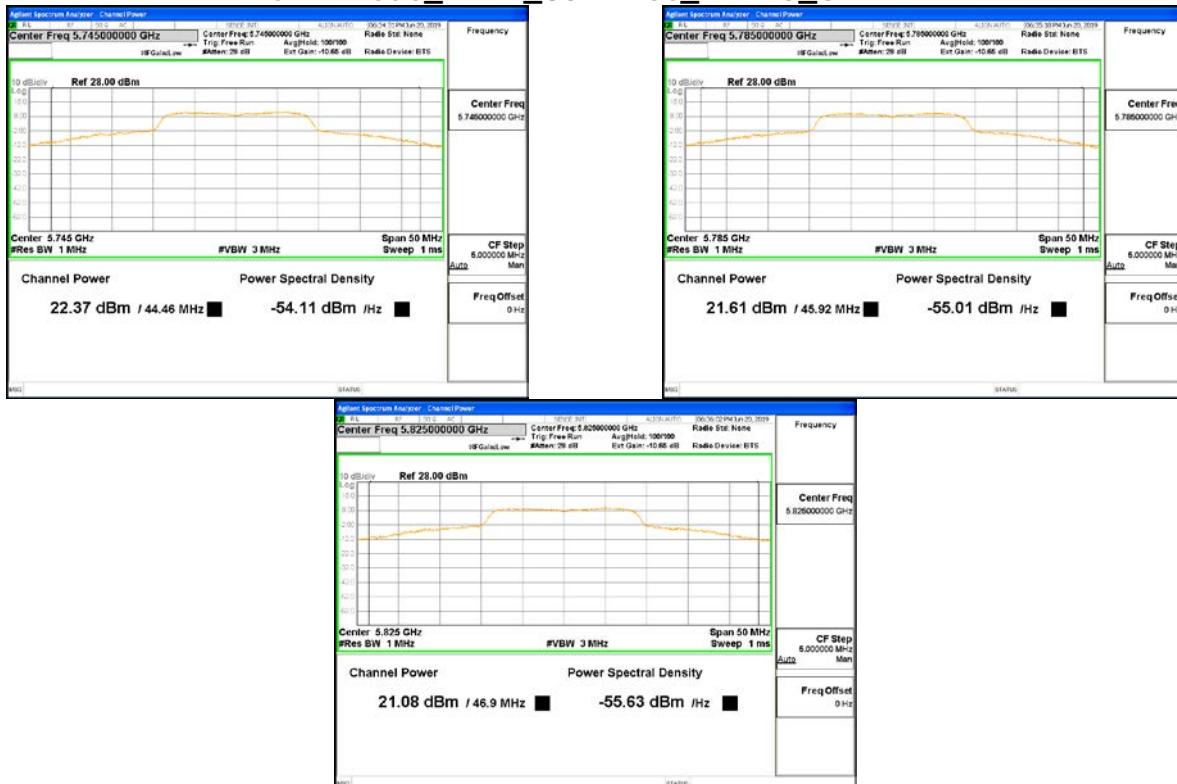
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (50) / (117)
Pages



SDM Mode_ANT2_802.11ac_VHT20_UNII-1



SDM Mode_ANT2_802.11ac_VHT20_UNII-3



CTK Co., Ltd.
The Prime Leader of Global Antenna Certification

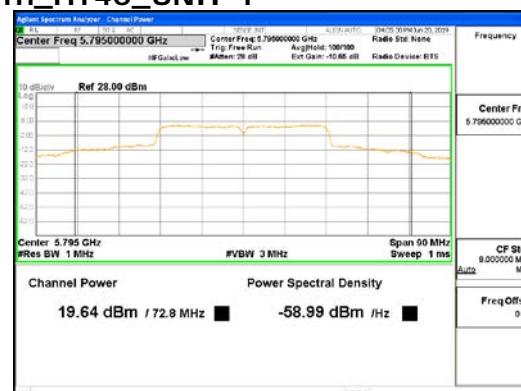
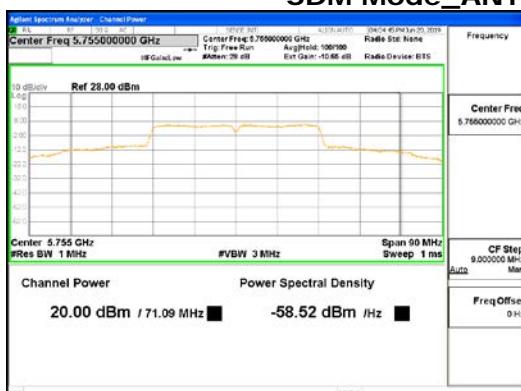
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

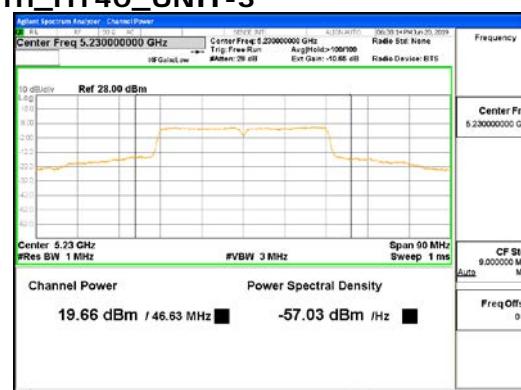
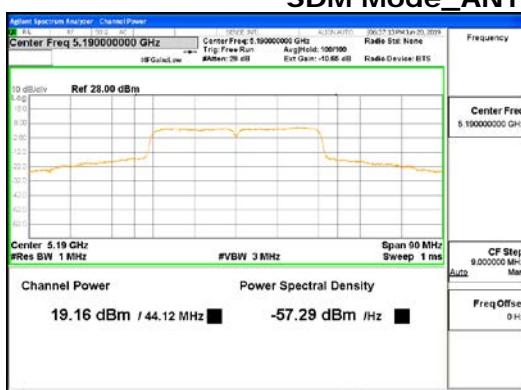
Report No.:
CTK-2019-02420
Page (51) / (117)
Pages



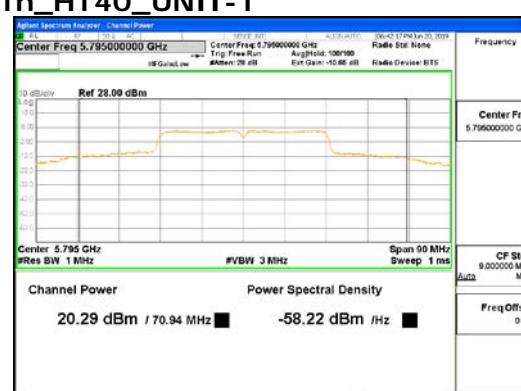
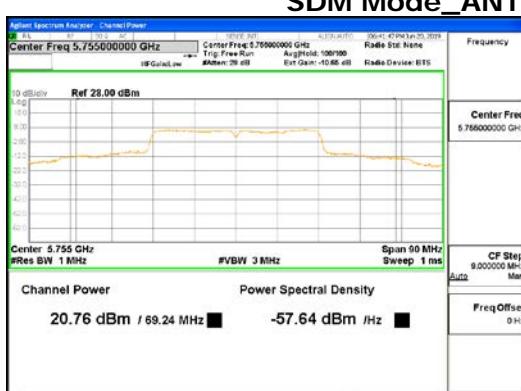
SDM Mode_AN1_802.11n_HT40_UNII-1



SDM Mode_AN1_802.11n_HT40_UNII-3



SDM Mode_AN2_802.11n_HT40_UNII-1



SDM Mode_AN2_802.11n_HT40_UNII-3



CTK Co., Ltd.
The Prime Leader of Global Industry Certification

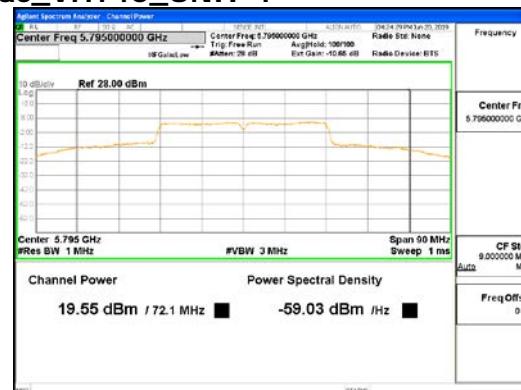
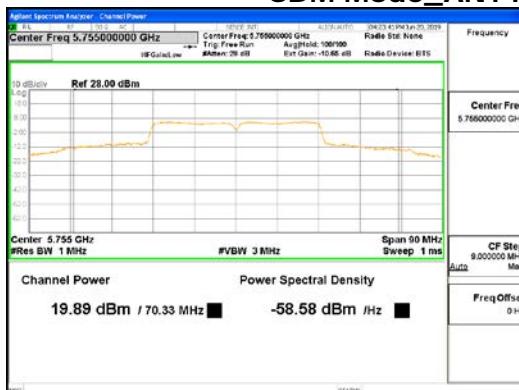
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

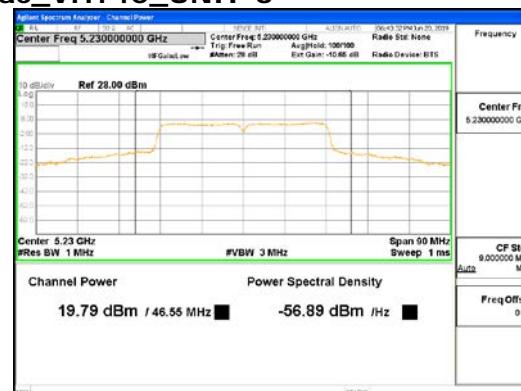
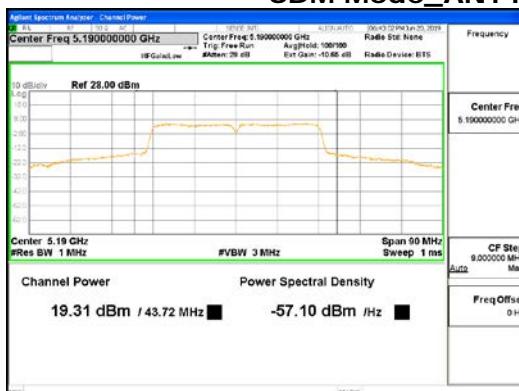
Report No.:
CTK-2019-02420
Page (52) / (117)
Pages



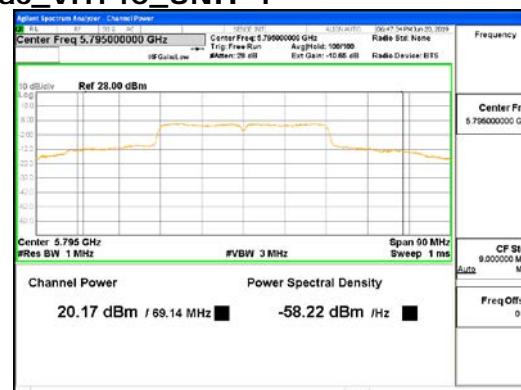
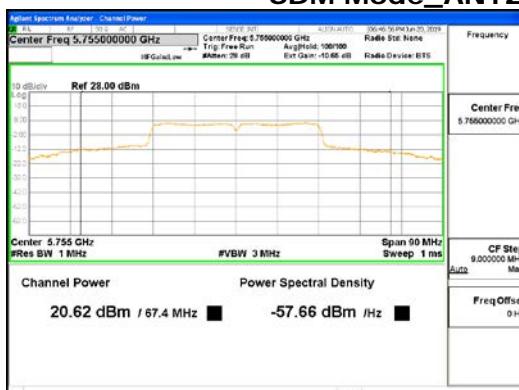
SDM Mode_ANT1_802.11ac_VHT40_UNII-1



SDM Mode_ANT1_802.11ac_VHT40_UNII-1



SDM Mode_ANT1_802.11ac_VHT40_UNII-3



SDM Mode_ANT2_802.11ac_VHT40_UNII-1



CTK Co., Ltd.
The Prime Leader of Global Radiotesting Certification

CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2019-02420
Page (53) / (117)
Pages

