

# TEST REPORT



**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-2019-02421  
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## 1. Client

- Name : KAONMEDIA Co., Ltd.
- Address : KAONMEDIA Building, 884-3 Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
- Date of Receipt : 2019-5-31

## 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) 
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2019-06-28

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



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## REPORT REVISION HISTORY

Date	Revision	Page No
2019-06-28	Issued (CTK-2019-02421)	all

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## 1. General Product Description

### 1.1 Client Information

<b>Company</b>	KAONMEDIA Co., Ltd.
<b>Contact Point</b>	KAONMEDIA Building, 884-3 Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
<b>Contact Person</b>	Name : Kim tae-Sung E-mail : kkam@kaonmedia.com Tel : +82-31-724-8861

### 1.2 Product Information

<b>FCC ID</b>	WQT-AR1031
<b>Product Description</b>	WiFi Mesh Repeater
<b>Model name</b>	AR1031
<b>Variant Model name</b>	-
<b>Operating Frequency</b>	UNII 2A : 5 260 MHz – 5 320 MHz (20 MHz_BW) 5 270 MHz – 5 310 MHz (40 MHz_BW) 5 290 MHz (80 MHz_BW)  UNII 2C : 5 500 MHZ – 5 720 MHz (20 MHz_BW) 5 510 MHz – 5 710 MHz (40 MHz_BW) 5 530 MHz – 5 690 MHz (80 MHz_BW)
<b>RF Output Power</b>	CDD Mode_802.11a : 20.97 dBm (125.03 mW) CDD Mode_802.11n_HT20 : 21.19 dBm (131.52 mW) CDD Mode_802.11n_HT40 : 23.00 dBm (199.53 mW) CDD Mode_802.11ac_VHT20 : 21.31 dBm (135.21 mW) CDD Mode_802.11ac_VHT40 : 23.32 dBm (214.78 mW) CDD Mode_802.11ac_VHT80 : 22.09 dBm (161.81 mW)  SDM Mode_802.11n_HT20 : 21.34 dBm (136.14 mW) SDM Mode_802.11n_HT40 : 22.52 dBm (178.65 mW) SDM Mode_802.11ac_VHT20 : 21.25 dBm (133.35 mW) SDM Mode_802.11ac_VHT40 : 22.63 dBm (183.23 mW) SDM Mode_802.11ac_VHT80 : 21.99 dBm (158.12 mW)
<b>Antenna Specification</b>	ANT1, ANT2 type : metal Antenna ANT1, ANT2 Peak Gain : 2 dBi
<b>Type of Modulation</b>	OFDM
<b>Data Rate</b>	802.11a : 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6 Mbps 802.11n : up to 300 Mbps 802.11ac : up to 866.7 Gbps
<b>Power Source</b>	DC 12 V (Adapter)
<b>Hardware Rev</b>	Rev 1.0
<b>Software Rev</b>	v.2.00.80



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### 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	-



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## 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. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

### 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.

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### 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	Radiated
15.407 (b)	Undesirable emission	C	
15.205, 15.407 (b)(5),(6)	Radiated Spurious Emission	C	Line Conducted
15.207	AC Conducted Emissions	C	

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

Note 3: The sample was tested according to the following specification: FCC Part 15.247, ANSI C63.10-2013

Note 4: The tests were performed according to the method of measurements prescribed in KDB No.789033.

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### 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
<b>UNII 2A</b>	5 260 MHz	5 300 MHz	5 320 MHz
<b>UNII 2C</b>	5 500 MHz	5 600 MHz	5 720 MHz

- 802.11n\_HT40, 802.11ac\_VHT40

	Lowest channel	Middle channel	Highest channel
<b>UNII 2A</b>	5 270 MHz	-	5 310 MHz
<b>UNII 2C</b>	5 510 MHz	5 590 MHz	5 710 MHz

- 802.11ac\_VHT80

	Lowest channel	Middle channel	Highest channel
<b>UNII 2A</b>	5 290 MHz	-	-
<b>UNII 2C</b>	5 530 MHz	-	5 690 MHz

#### Test mode

- CDD mode

Test mode	Modulation	Data rate	Duty Cycle	Duty Cycle Factor
802.11a	DSSS	6 Mbps	97.4%	0.16 dB
802.11n_HT20	OFDM	MCS 0	96.7%	0.17 dB
802.11n_HT40	OFDM	MCS 0	93.7%	0.33 dB
802.11ac_VHT20	OFDM	MNSS 0	96.1%	0.17 dB
802.11ac_VHT40	OFDM	MNSS 0	92.6%	0.33 dB
802.11ac_VHT80	OFDM	MNSS 0	89.1%	0.63 dB

- SDM mode

Test mode	Modulation	Data rate	Duty Cycle	Duty Cycle Factor
802.11n_HT20	OFDM	MCS 8	93.5%	0.32 dB
802.11n_HT40	OFDM	MCS 8	86.1%	0.60 dB
802.11ac_VHT20	OFDM	MNSS 0	90.9%	0.32 dB
802.11ac_VHT40	OFDM	MNSS 0	87.2%	0.71 dB
802.11ac_VHT80	OFDM	MNSS 0	79.2%	1.25 dB



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### 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	$\pm 1.5$ dB
Power Spectral Density	$\pm 1.5$ dB
Occupied Bandwidth	$\pm 0.1$ MHz
Unwanted Emission(conducted)	$\pm 3.0$ dB
Radiated Emissions ( $f \leq 1$ GHz)	$\pm 4.0$ dB
Radiated Emissions ( $f > 1$ GHz)	$\pm 5.0$ 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



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## 4. Technical Characteristic Test

### 4.1 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:

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NA

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**Test Data:**

**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%
5 260 MHz	22.15	16.62	21.60	17.69	21.11	17.67
5 300 MHz	23.04	16.63	21.61	17.69	21.55	17.74
5 320 MHz	22.37	16.65	21.57	17.69	21.50	17.73
5 500 MHz	20.93	16.62	21.56	17.69	21.50	17.74
5 600 MHz	27.41	16.79	24.79	17.81	29.34	17.91
5 720 MHz	31.13	17.22	31.87	18.14	34.57	18.44
Measurement uncertainty	$\pm 0.1$ MHz					

	26 dB Bandwidth and 99% Bandwidth (MHz)			
Mode	802.11n_HT40		802.11ac_VHT40	
Frequency	26 dB	99 %	26 dB	99 %
5 270 MHz	78.08	37.45	76.78	37.51
5 310 MHz	76.25	37.70	77.03	37.94
5 510 MHz	79.15	39.77	79.59	39.71
5 590 MHz	88.26	49.56	88.68	49.50
5 710 MHz	89.24	56.96	89.63	57.64
Measurement uncertainty	$\pm 0.1$ MHz			

	26 dB Bandwidth and 99% Bandwidth (MHz)	
Mode	802.11ac_VHT80	
Frequency	26 dB	99 %
5 290 MHz	121.1	76.19
5 530 MHz	127.8	76.41
5 690 MHz	169.4	89.29
Measurement uncertainty	$\pm 0.1$ MHz	

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**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%
5 260 MHz	23.08	16.55	20.44	17.61	20.40	17.63
5 300 MHz	23.20	16.57	21.53	17.64	21.14	17.65
5 320 MHz	23.86	16.62	21.04	17.64	21.02	17.64
5 500 MHz	20.74	16.54	20.35	17.58	20.49	17.60
5 600 MHz	23.64	16.58	21.52	17.65	21.57	17.69
5 720 MHz	25.27	16.71	27.33	17.79	27.47	17.83
Measurement uncertainty	$\pm 0.1$ MHz					

	26 dB Bandwidth and 99% Bandwidth (MHz)			
Mode	802.11n_HT40		802.11ac_VHT40	
Frequency	26 dB	99 %	26 dB	99 %
5 270 MHz	73.58	36.92	79.53	40.13
5 310 MHz	74.13	36.97	81.07	41.49
5 510 MHz	64.29	36.69	77.05	37.19
5 590 MHz	74.21	36.94	82.74	41.86
5 710 MHz	78.46	38.75	86.48	48.37
Measurement uncertainty	$\pm 0.1$ MHz			

	26 dB Bandwidth and 99% Bandwidth (MHz)		
Mode	802.11ac_VHT80		
Frequency	26 dB	99 %	
5 290 MHz	125.3		76.10
5 530 MHz	103.3		75.86
5 690 MHz	128.1		76.25
Measurement uncertainty	$\pm 0.1$ MHz		

See next pages for actual measured spectrum plots.



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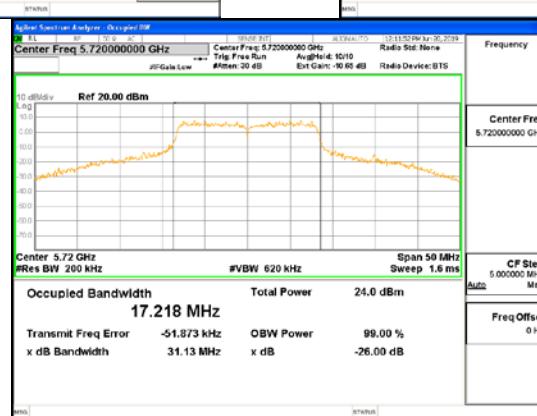
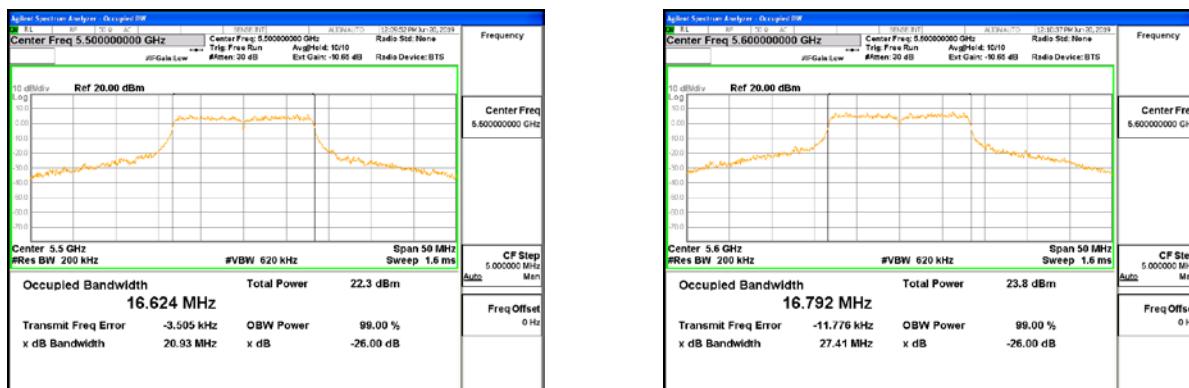
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## ANT1\_802.11a\_UNII 2A



## ANT1\_802.11a\_UNII 2C



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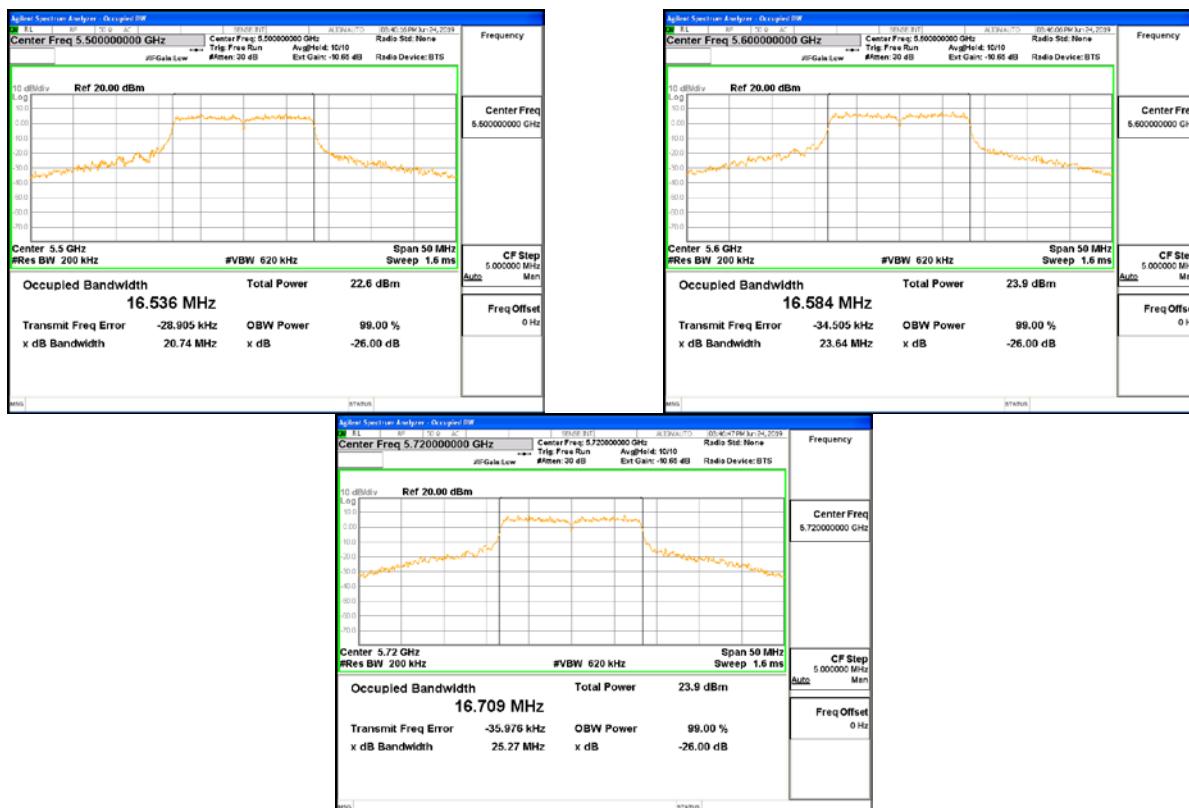
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**ANT2\_802.11a\_UNII 2A**



**ANT2\_802.11a\_UNII 2C**

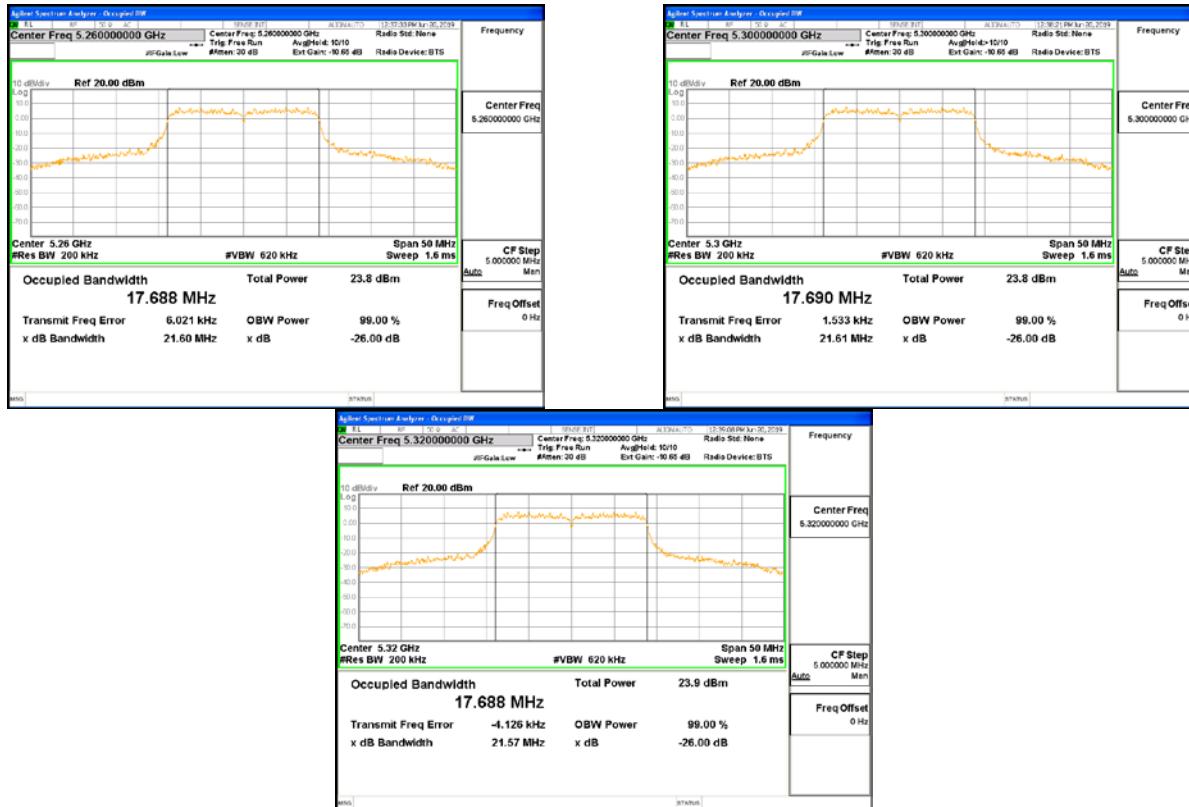


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ANT1\_802.11n\_HT20\_UNII 2A



ANT1\_802.11n\_HT20\_UNII 2C

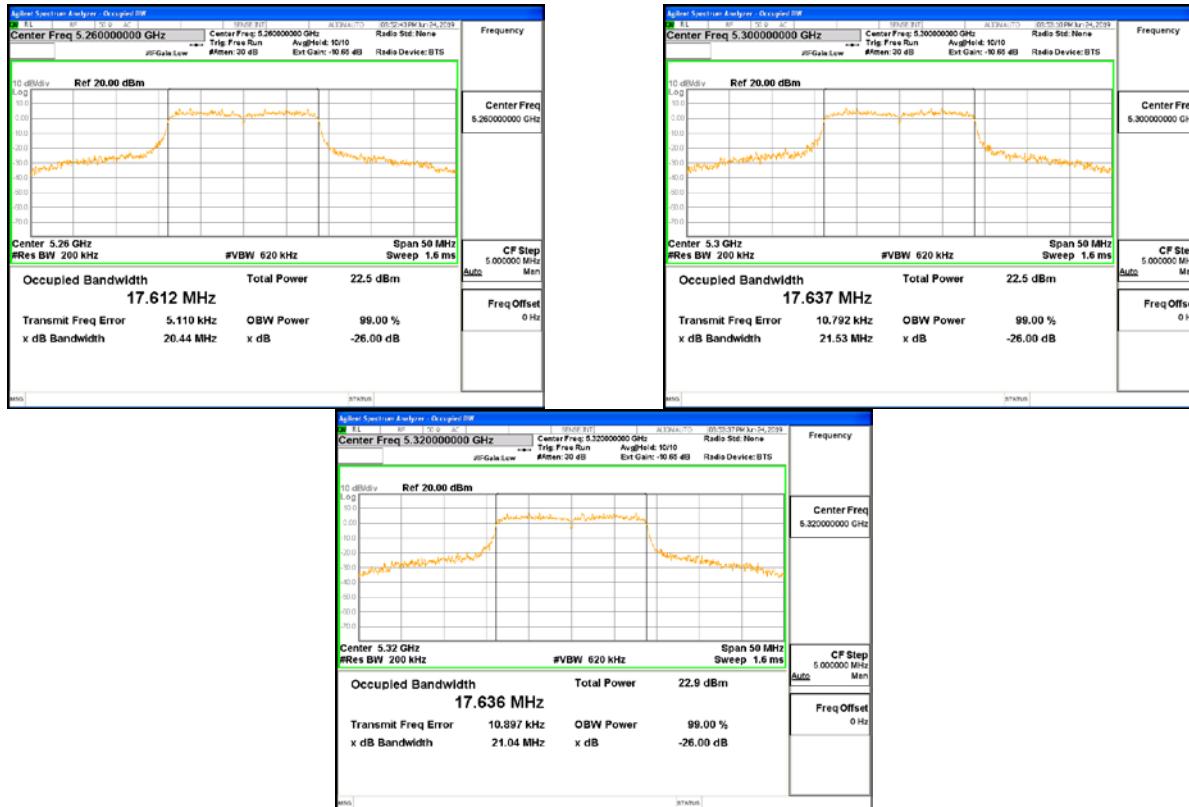


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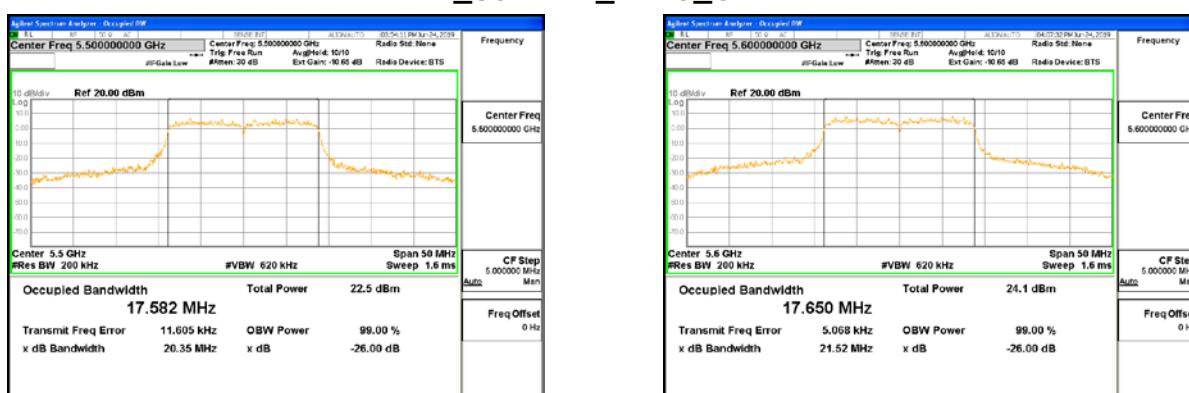
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## ANT2\_802.11n\_HT20\_UNII 2A



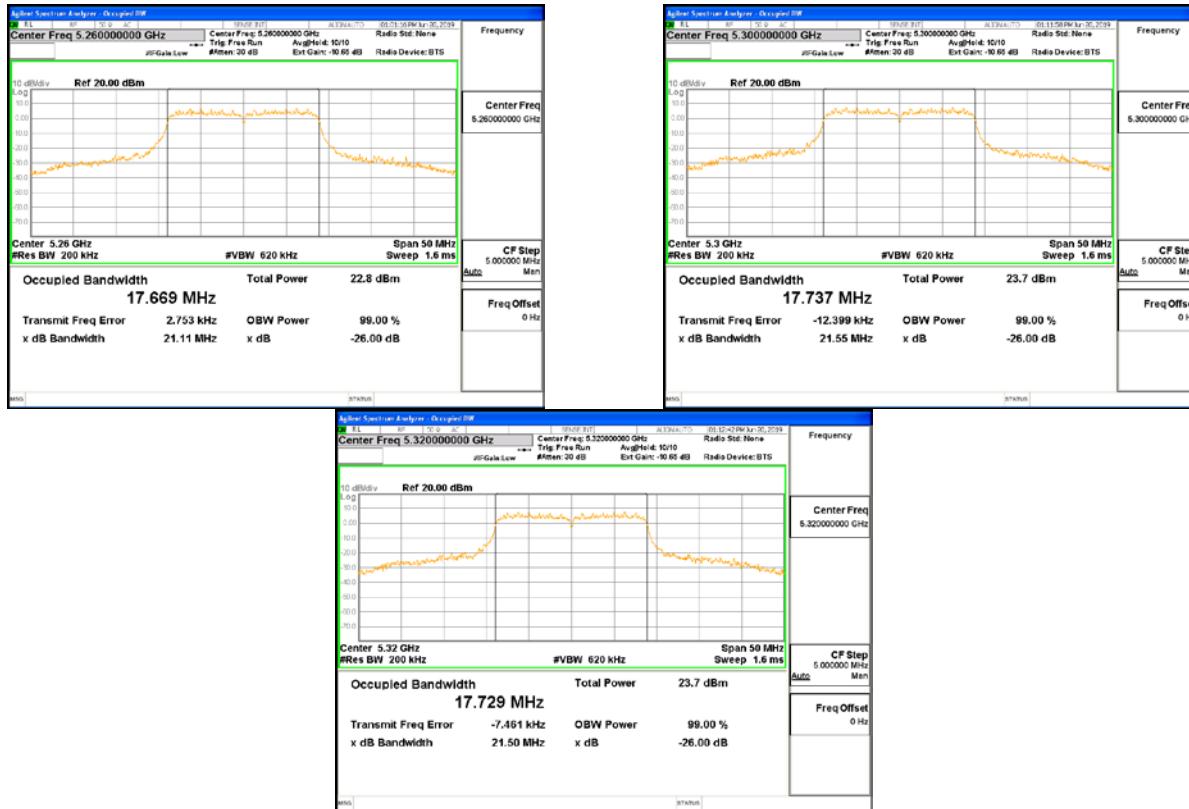
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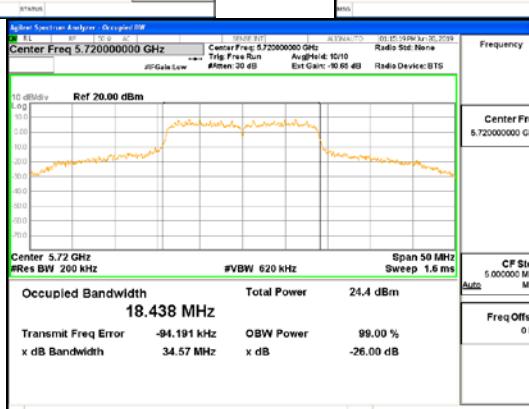
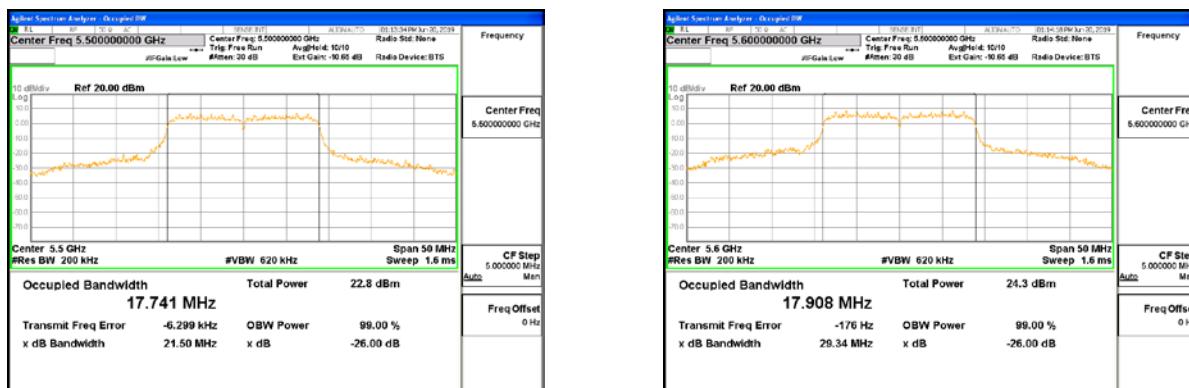
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ANT1\_802.11ac\_VHT20\_UNII 2C

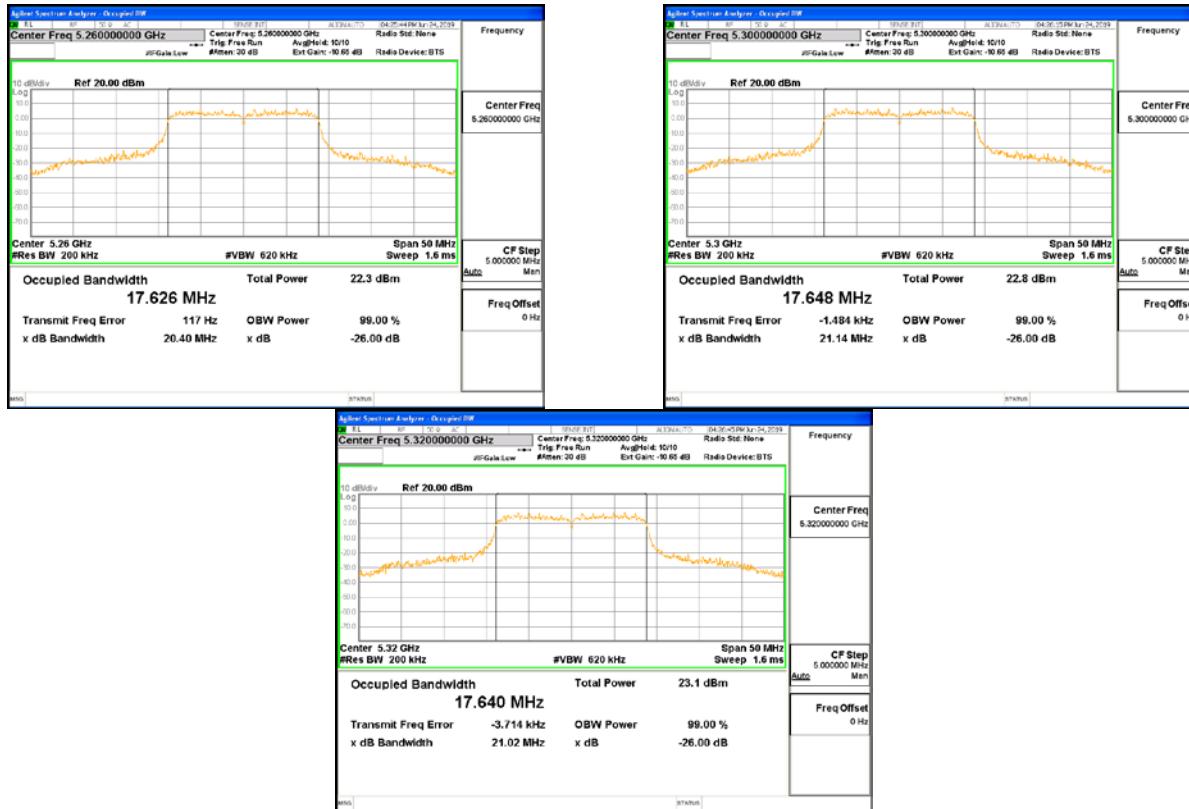


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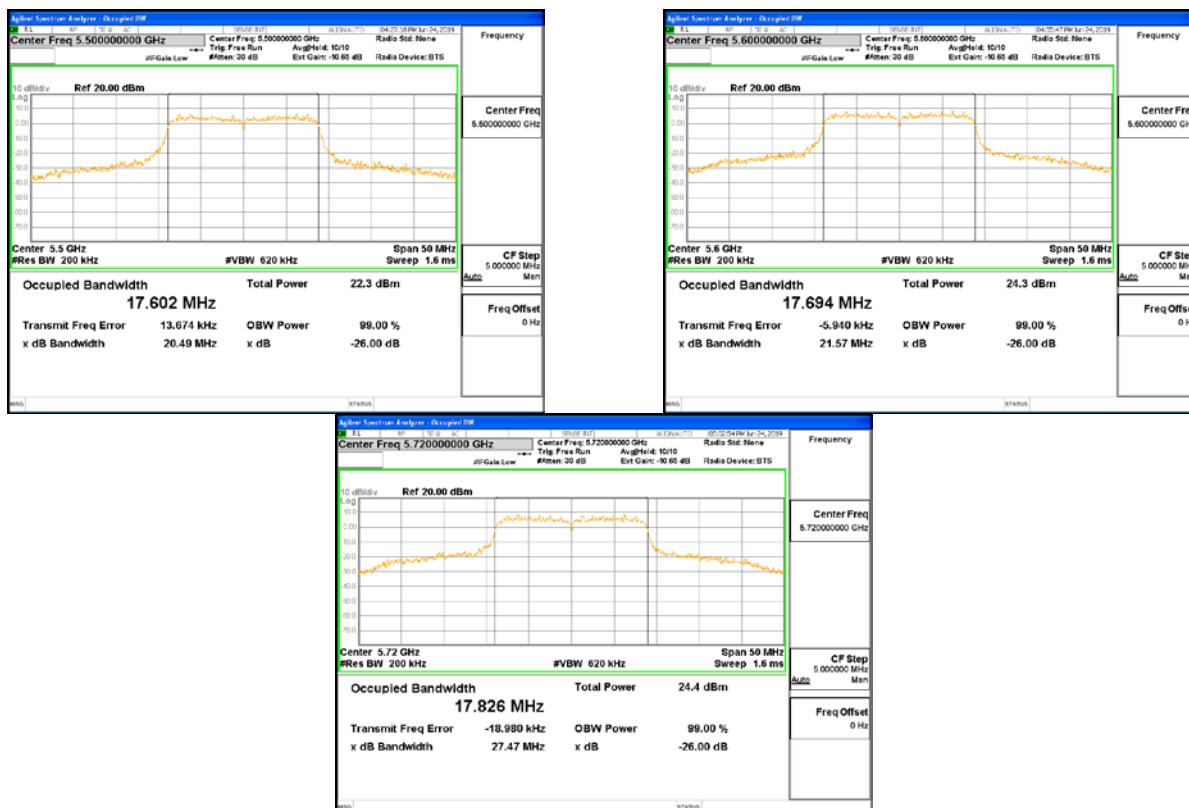
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ANT2\_802.11ac\_VHT20\_UNII 1A



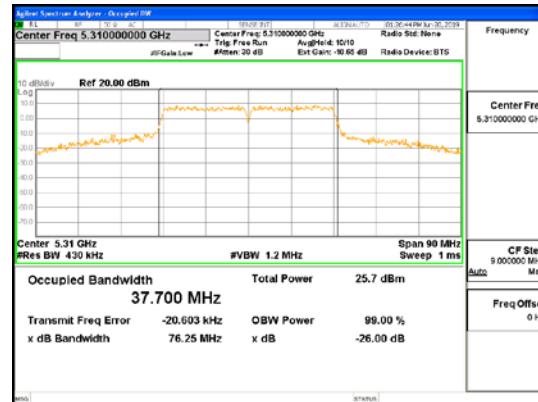
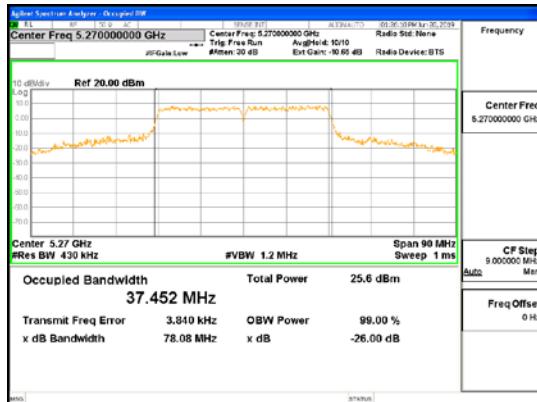
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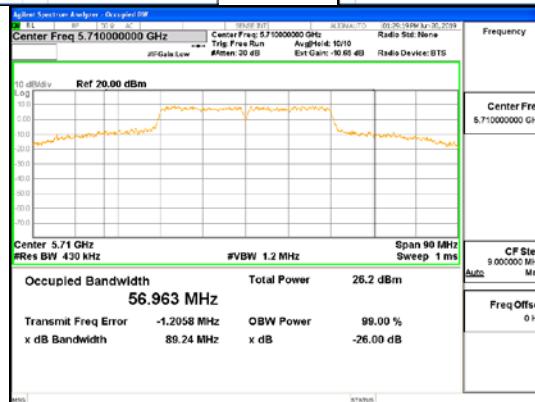
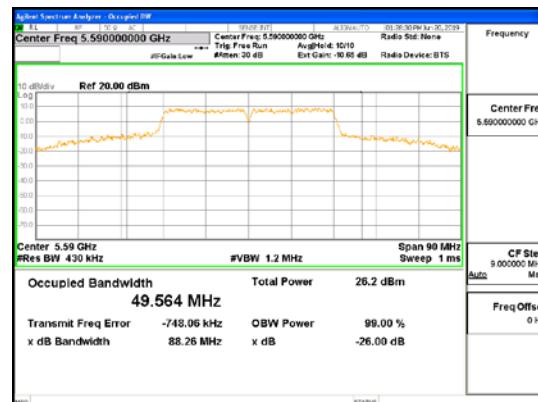
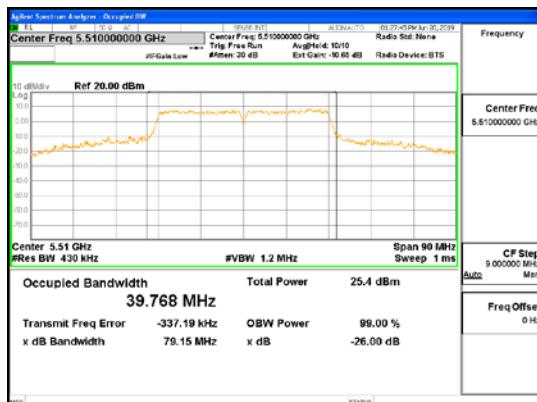
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### ANT1\_802.11n\_HT40\_UNII 2A



### ANT1\_802.11n\_HT40\_UNII 2C

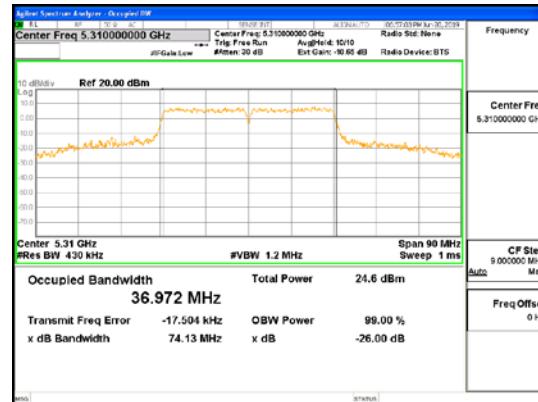
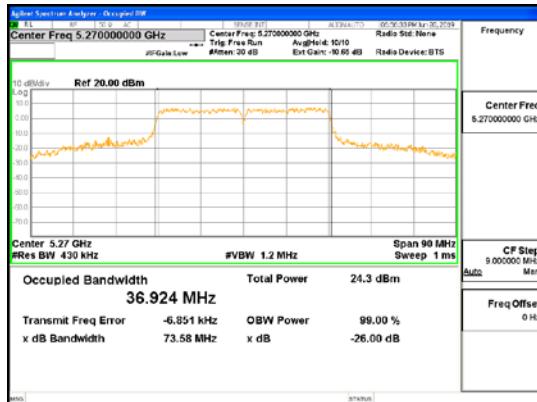


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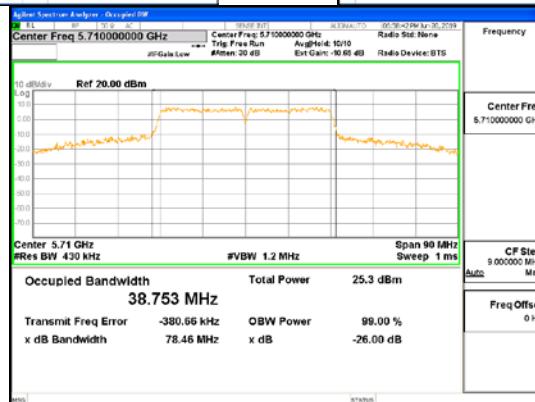
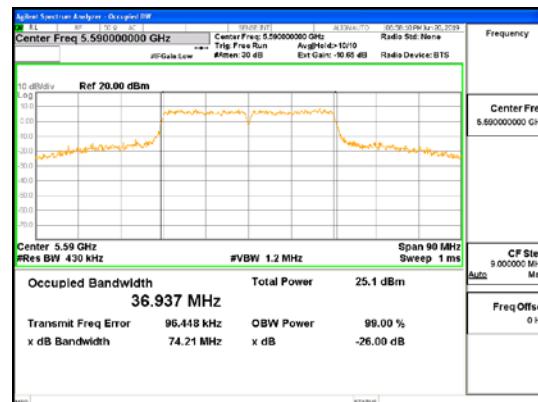
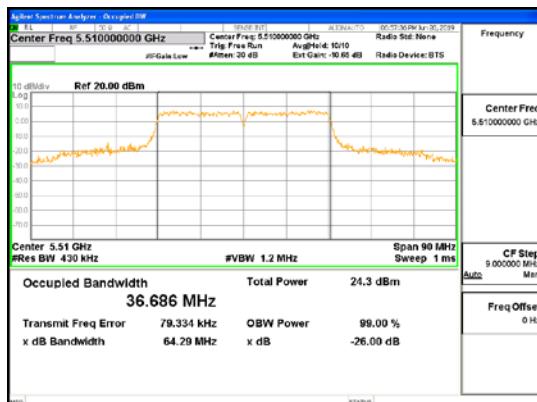
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(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

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## ANT2\_802.11n\_HT40\_UNII 2A



## ANT2\_802.11n\_HT40\_UNII 2C

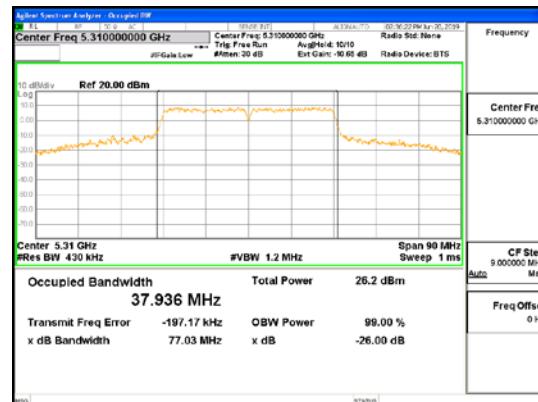
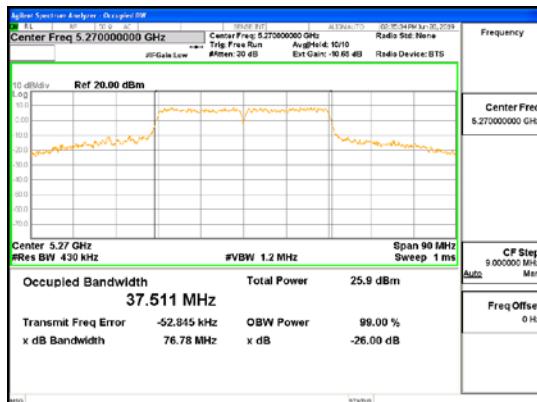


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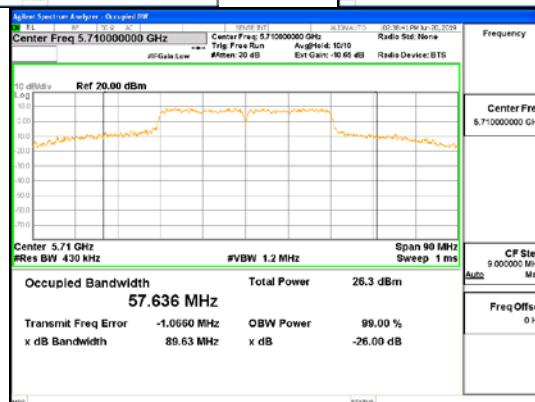
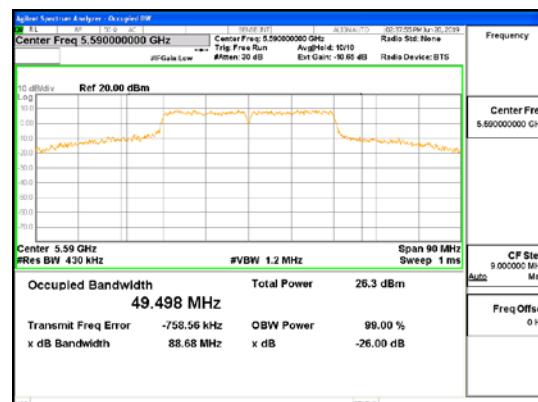
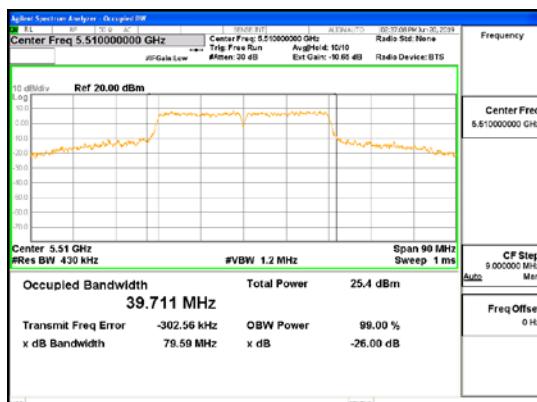
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Yongin-si, Gyeonggi-do, Korea  
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### ANT1\_802.11ac\_VHT40\_UNII 2A



### ANT1\_802.11ac\_VHT40\_UNII 2C

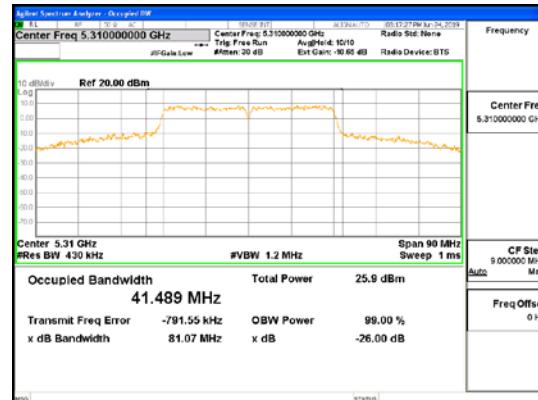
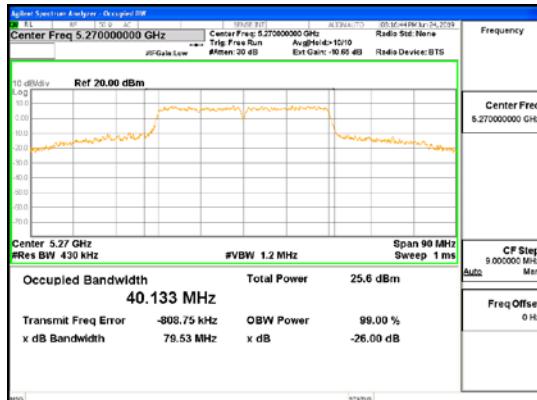


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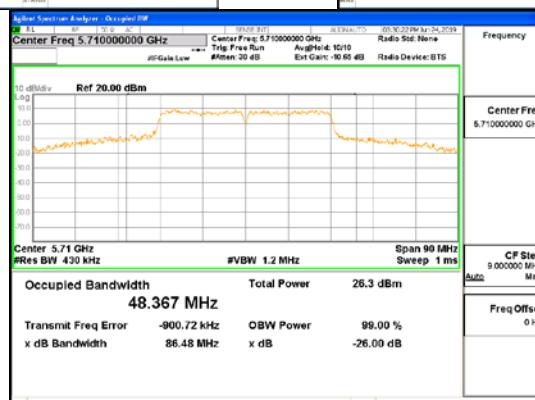
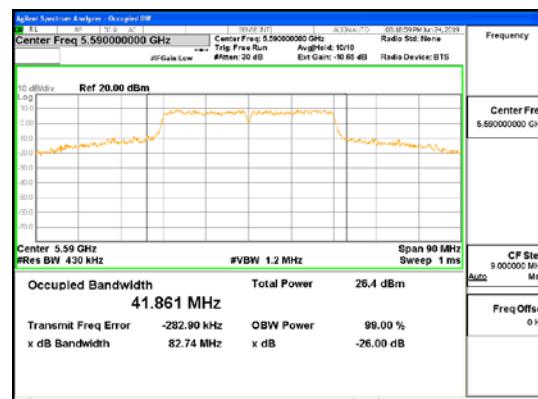
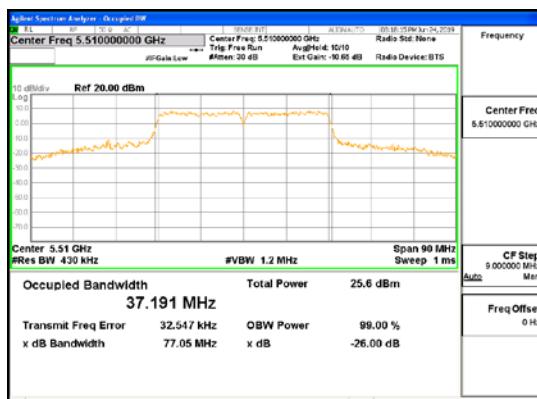
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Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
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## ANT2\_802.11ac\_VHT40\_UNII 2A



## ANT2\_802.11ac\_VHT40\_UNII 2C

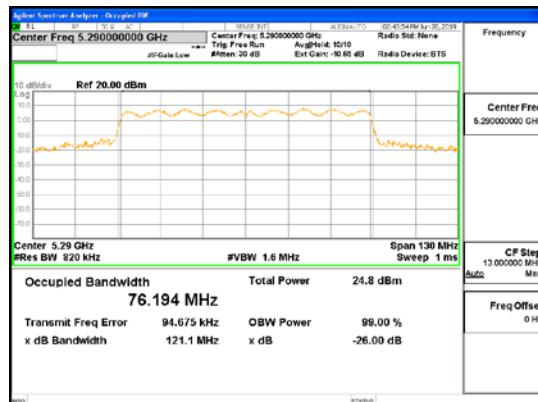


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Tel: +82-31-339-9970  
Fax: +82-31-624-9501

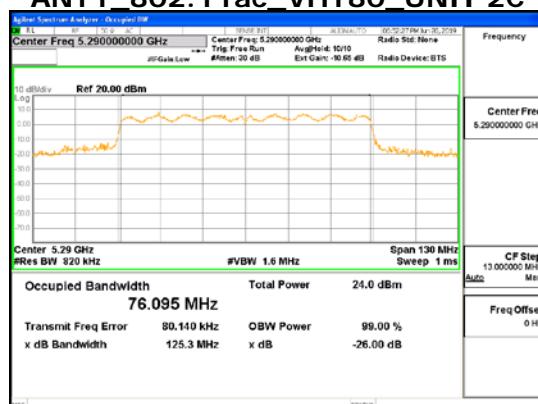
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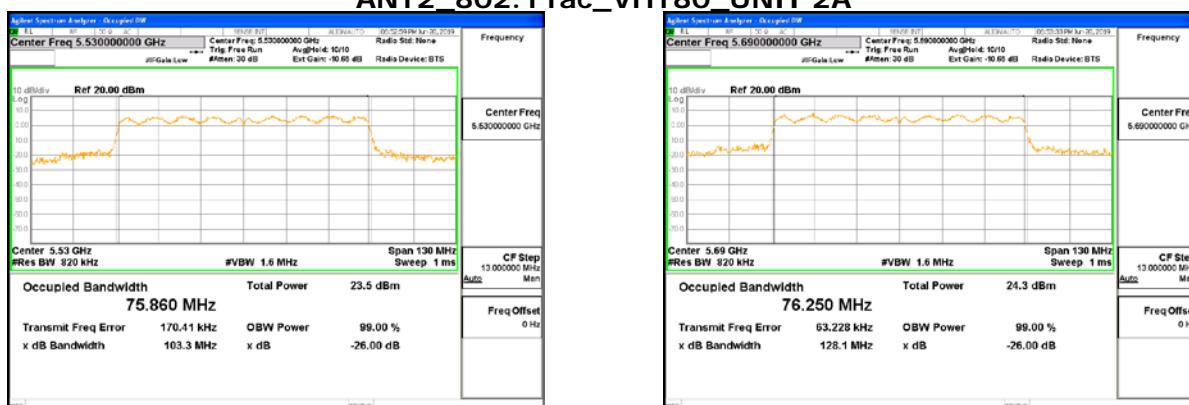
**ANT1\_802.11ac\_VHT80\_UNII\_2A**



**ANT1\_802.11ac\_VHT80\_UNII\_2C**



**ANT2\_802.11ac\_VHT80\_UNII\_2A**



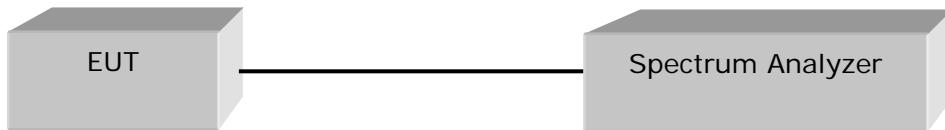
**ANT2\_802.11ac\_VHT80\_UNII\_2C**

## 4.2 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 = $10\log(1/x)$ |                                     |

<b>Test mode</b>		<b>Duty Cycle Factor (dB)</b>
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



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(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
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## Limit

Operating Mode	Band	Mode	ANT Configuration	ANT Gain (dBi)	Limit (dBm)
SISO	UNII 2A	802.11a/n/ac	ANT1, ANT2	2.00	24.00
	UNII 2C				
MIMO (2Tx)	UNII 2A	802.11a/n/ac	ANT1 + ANT2	5.01	24.00
	UNII 2C				

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## 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	5 260	16.88	0.16	17.04	24.00	6.96
	5 300	17.15	0.16	17.31	24.00	6.69
	5 320	17.21	0.16	17.37	24.00	6.63
	5 500	15.99	0.16	16.15	24.00	7.85
	5 600	17.51	0.16	17.67	24.00	6.33
	5 720	17.65	0.16	17.81	24.00	6.19
802.11n _HT20	5 260	17.44	0.17	17.61	24.00	6.39
	5 300	17.61	0.17	17.78	24.00	6.22
	5 320	17.64	0.17	17.81	24.00	6.19
	5 500	16.71	0.17	16.88	24.00	7.12
	5 600	17.80	0.17	17.97	24.00	6.03
	5 720	17.87	0.17	18.04	24.00	5.96
802.11ac _VHT20	5 260	16.59	0.17	16.76	24.00	7.24
	5 300	17.44	0.17	17.61	24.00	6.39
	5 320	17.54	0.17	17.71	24.00	6.29
	5 500	16.66	0.17	16.83	24.00	7.17
	5 600	18.04	0.17	18.21	24.00	5.79
	5 720	18.07	0.17	18.24	24.00	5.76
802.11n _HT40	5 270	19.54	0.33	19.87	24.00	4.13
	5 310	19.85	0.33	20.18	24.00	3.82
	5 510	19.20	0.33	19.53	24.00	4.47
	5 590	20.03	0.33	20.36	24.00	3.64
	5 710	19.90	0.33	20.23	24.00	3.77
802.11ac _VHT40	5 270	19.54	0.33	19.87	24.00	4.13
	5 310	19.83	0.33	20.16	24.00	3.84
	5 510	19.19	0.33	19.52	24.00	4.48
	5 590	19.94	0.33	20.27	24.00	3.73
	5 710	19.85	0.33	20.18	24.00	3.82
802.11ac _VHT80	5 290	18.70	0.63	19.33	24.00	4.67
	5 530	18.06	0.63	18.69	24.00	5.31
	5 690	18.65	0.63	19.28	24.00	4.72
Measurement uncertainty		$\pm 1.5$ dB				

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(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
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**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	5 260	16.47	0.16	16.63	24.00	7.37
	5 300	17.05	0.16	17.21	24.00	6.79
	5 320	17.37	0.16	17.53	24.00	6.47
	5 500	16.77	0.16	16.93	24.00	7.07
	5 600	17.82	0.16	17.98	24.00	6.02
	5 720	17.95	0.16	18.11	24.00	5.89
802.11n _HT20	5 260	16.75	0.17	16.92	24.00	7.08
	5 300	17.21	0.17	17.38	24.00	6.62
	5 320	17.46	0.17	17.63	24.00	6.37
	5 500	16.77	0.17	16.94	24.00	7.06
	5 600	18.05	0.17	18.22	24.00	5.78
	5 720	18.15	0.17	18.32	24.00	5.68
802.11ac _VHT20	5 260	16.57	0.17	16.74	24.00	7.26
	5 300	17.01	0.17	17.18	24.00	6.82
	5 320	17.19	0.17	17.36	24.00	6.64
	5 500	16.60	0.17	16.77	24.00	7.23
	5 600	18.12	0.17	18.29	24.00	5.71
	5 720	18.18	0.17	18.35	24.00	5.65
802.11n _HT40	5 270	18.30	0.33	18.63	24.00	5.37
	5 310	18.66	0.33	18.99	24.00	5.01
	5 510	18.34	0.33	18.67	24.00	5.33
	5 590	19.26	0.33	19.59	24.00	4.41
	5 710	19.30	0.33	19.63	24.00	4.37
802.11ac _VHT40	5 270	19.23	0.33	19.56	24.00	4.44
	5 310	19.60	0.33	19.93	24.00	4.07
	5 510	19.38	0.33	19.71	24.00	4.29
	5 590	20.02	0.33	20.35	24.00	3.65
	5 710	20.02	0.33	20.35	24.00	3.65
802.11ac _VHT80	5 290	18.10	0.63	18.73	24.00	5.27
	5 530	17.61	0.63	18.24	24.00	5.76
	5 690	18.24	0.63	18.87	24.00	5.13
Measurement uncertainty		± 1.5 dB				

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(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
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**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	5 260	19.69	0.16	19.85	24.00	4.15
	5 300	20.11	0.16	20.27	24.00	3.73
	5 320	20.30	0.16	20.46	24.00	3.54
	5 500	19.41	0.16	19.57	24.00	4.43
	5 600	20.68	0.16	20.84	24.00	3.16
	5 720	20.81	0.16	20.97	24.00	3.03
802.11n _HT20	5 260	20.12	0.17	20.29	24.00	3.71
	5 300	20.42	0.17	20.59	24.00	3.41
	5 320	20.56	0.17	20.73	24.00	3.27
	5 500	19.75	0.17	19.92	24.00	4.08
	5 600	20.94	0.17	21.11	24.00	2.89
	5 720	21.02	0.17	21.19	24.00	2.81
802.11ac _VHT20	5 260	19.59	0.17	19.76	24.00	4.24
	5 300	20.24	0.17	20.41	24.00	3.59
	5 320	20.38	0.17	20.55	24.00	3.45
	5 500	19.64	0.17	19.81	24.00	4.19
	5 600	21.09	0.17	21.26	24.00	2.74
	5 720	21.14	0.17	21.31	24.00	2.69
802.11n _HT40	5 270	21.97	0.33	22.30	24.00	1.70
	5 310	22.31	0.33	22.64	24.00	1.36
	5 510	21.80	0.33	22.13	24.00	1.87
	5 590	22.67	0.33	23.00	24.00	1.00
	5 710	22.62	0.33	22.95	24.00	1.05
802.11ac _VHT40	5 270	22.40	0.33	22.73	24.00	1.27
	5 310	22.73	0.33	23.06	24.00	0.94
	5 510	22.30	0.33	22.63	24.00	1.37
	5 590	22.99	0.33	23.32	24.00	0.68
	5 710	22.95	0.33	23.28	24.00	0.72
802.11ac _VHT80	5 290	21.42	0.63	22.05	24.00	1.95
	5 530	20.85	0.63	21.48	24.00	2.52
	5 690	21.46	0.63	22.09	24.00	1.91
Measurement uncertainty		± 1.5 dB				

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### 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	5 260	17.86	0.32	18.18	24.00	5.82
	5 300	18.25	0.32	18.57	24.00	5.43
	5 320	17.67	0.32	17.99	24.00	6.01
	5 500	16.71	0.32	17.03	24.00	6.97
	5 600	17.99	0.32	18.31	24.00	5.69
	5 720	18.01	0.32	18.33	24.00	5.67
802.11ac _VHT20	5 260	17.51	0.32	17.83	24.00	6.17
	5 300	17.68	0.32	18.00	24.00	6.00
	5 320	17.71	0.32	18.03	24.00	5.97
	5 500	16.71	0.32	17.03	24.00	6.97
	5 600	17.98	0.32	18.30	24.00	5.70
	5 720	17.78	0.32	18.10	24.00	5.90
802.11n _HT40	5 270	17.91	0.60	18.51	24.00	5.49
	5 310	18.30	0.60	18.90	24.00	5.10
	5 510	17.73	0.60	18.33	24.00	5.67
	5 590	18.64	0.60	19.24	24.00	4.76
	5 710	18.66	0.60	19.26	24.00	4.74
802.11ac _VHT40	5 270	18.19	0.71	18.90	24.00	5.10
	5 310	18.30	0.71	19.01	24.00	4.99
	5 510	17.63	0.71	18.34	24.00	5.66
	5 590	18.59	0.71	19.30	24.00	4.70
	5 710	18.65	0.71	19.36	24.00	4.64
802.11ac _VHT80	5 290	17.26	1.25	18.51	24.00	5.49
	5 530	16.63	1.25	17.88	24.00	6.12
	5 690	17.43	1.25	18.68	24.00	5.32
Measurement uncertainty		$\pm 1.5$ dB				

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### 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	5 260	17.28	0.32	17.60	24.00	6.40
	5 300	17.41	0.32	17.73	24.00	6.27
	5 320	17.59	0.32	17.91	24.00	6.09
	5 500	16.82	0.32	17.14	24.00	6.86
	5 600	18.03	0.32	18.35	24.00	5.65
	5 720	17.79	0.32	18.11	24.00	5.89
802.11ac _VHT20	5 260	17.55	0.32	17.87	24.00	6.13
	5 300	17.20	0.32	17.52	24.00	6.48
	5 320	17.31	0.32	17.63	24.00	6.37
	5 500	16.65	0.32	16.97	24.00	7.03
	5 600	17.85	0.32	18.17	24.00	5.83
	5 720	17.80	0.32	18.12	24.00	5.88
802.11n _HT40	5 270	17.94	0.60	18.54	24.00	5.46
	5 310	18.38	0.60	18.98	24.00	5.02
	5 510	18.14	0.60	18.74	24.00	5.26
	5 590	19.09	0.60	19.69	24.00	4.31
	5 710	19.14	0.60	19.74	24.00	4.26
802.11ac _VHT40	5 270	18.07	0.71	18.78	24.00	5.22
	5 310	18.48	0.71	19.19	24.00	4.81
	5 510	18.22	0.71	18.93	24.00	5.07
	5 590	19.14	0.71	19.85	24.00	4.15
	5 710	19.16	0.71	19.87	24.00	4.13
802.11ac _VHT80	5 290	17.85	1.25	19.10	24.00	4.90
	5 530	17.35	1.25	18.60	24.00	5.40
	5 690	18.01	1.25	19.26	24.00	4.74
Measurement uncertainty		$\pm 1.5$ dB				

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### 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	5 260	20.59	0.32	20.91	24.00	3.09
	5 300	20.86	0.32	21.18	24.00	2.82
	5 320	20.64	0.32	20.96	24.00	3.04
	5 500	19.78	0.32	20.10	24.00	3.90
	5 600	21.02	0.32	21.34	24.00	2.66
	5 720	20.91	0.32	21.23	24.00	2.77
802.11ac _VHT20	5 260	20.54	0.32	20.86	24.00	3.14
	5 300	20.46	0.32	20.78	24.00	3.22
	5 320	20.52	0.32	20.84	24.00	3.16
	5 500	19.69	0.32	20.01	24.00	3.99
	5 600	20.93	0.32	21.25	24.00	2.75
	5 720	20.80	0.32	21.12	24.00	2.88
802.11n _HT40	5 270	20.94	0.60	21.54	24.00	2.46
	5 310	21.35	0.60	21.95	24.00	2.05
	5 510	20.95	0.60	21.55	24.00	2.45
	5 590	21.88	0.60	22.48	24.00	1.52
	5 710	21.92	0.60	22.52	24.00	1.48
802.11ac _VHT40	5 270	21.14	0.71	21.85	24.00	2.15
	5 310	21.40	0.71	22.11	24.00	1.89
	5 510	20.95	0.71	21.66	24.00	2.34
	5 590	21.88	0.71	22.59	24.00	1.41
	5 710	21.92	0.71	22.63	24.00	1.37
802.11ac _VHT80	5 290	20.58	1.25	21.83	24.00	2.17
	5 530	20.02	1.25	21.27	24.00	2.73
	5 690	20.74	1.25	21.99	24.00	2.01
Measurement uncertainty		$\pm 1.5$ dB				

See next pages for actual measured spectrum plots.

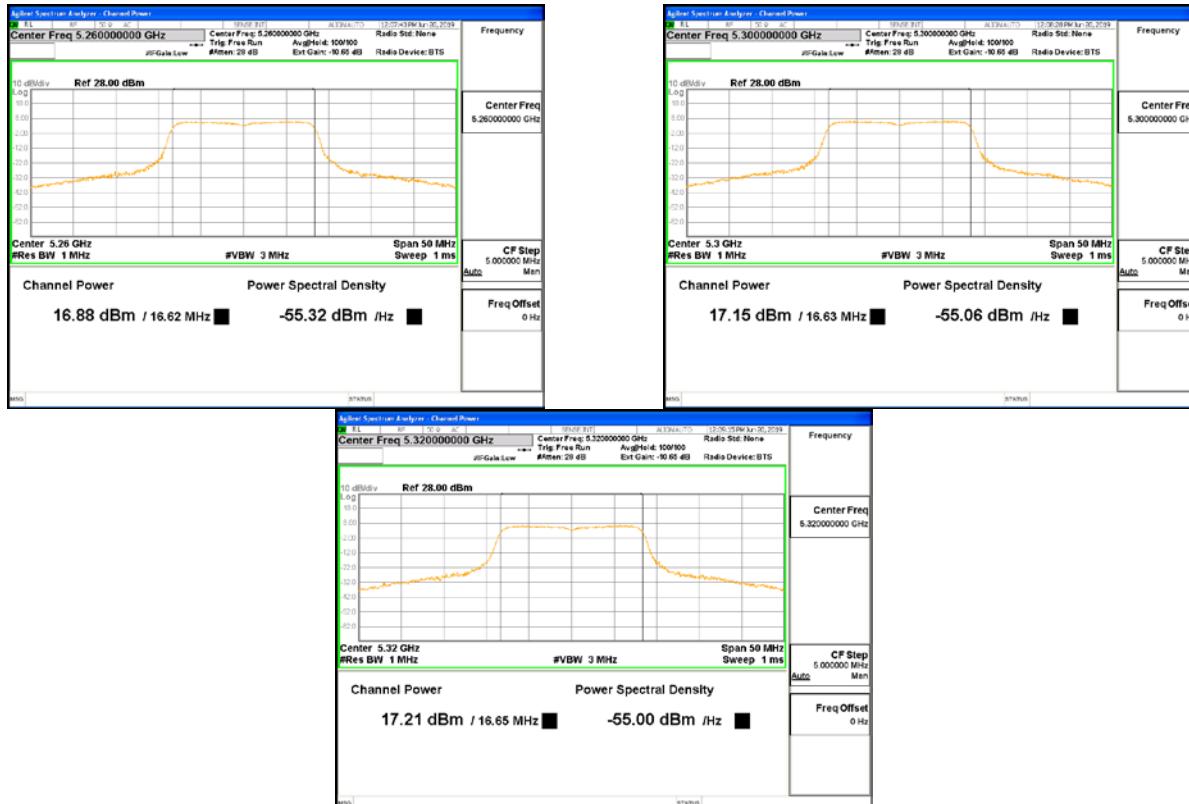


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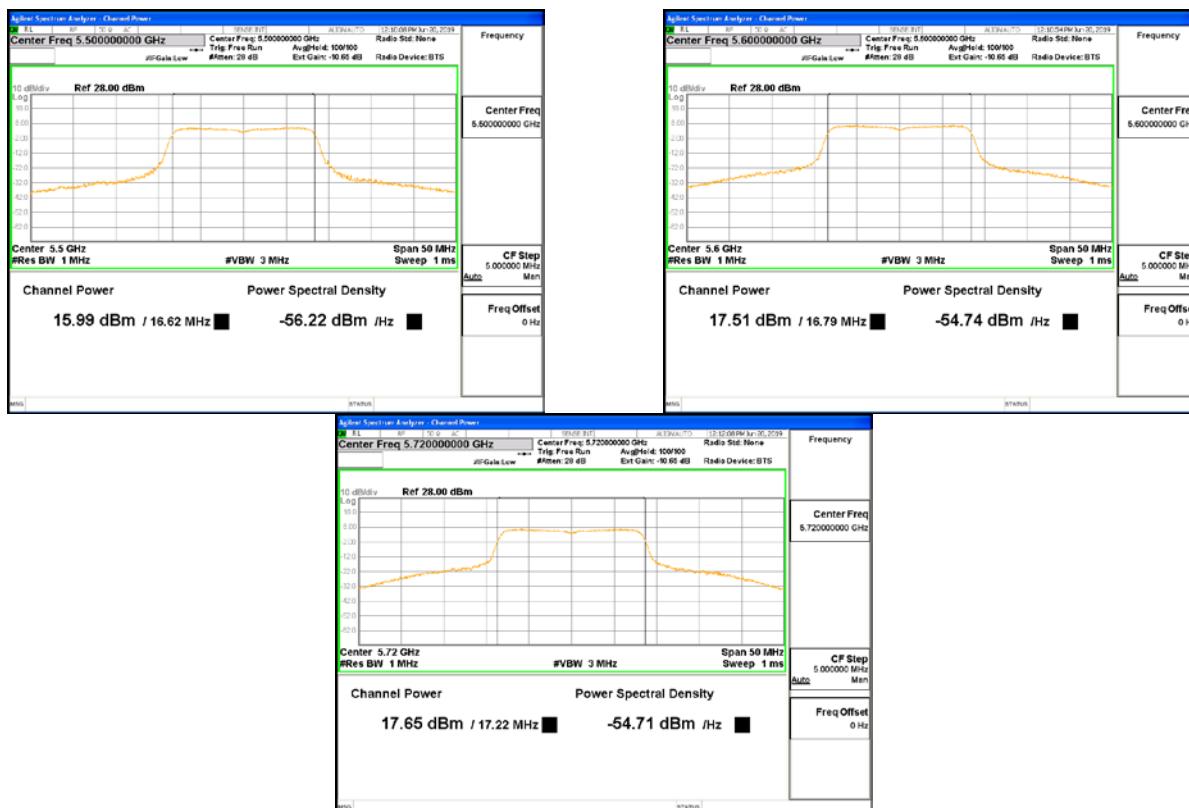
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(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
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CDD Mode\_ANT1\_802.11a\_UNII 2A



CDD Mode\_ANT1\_802.11a\_UNII 2C

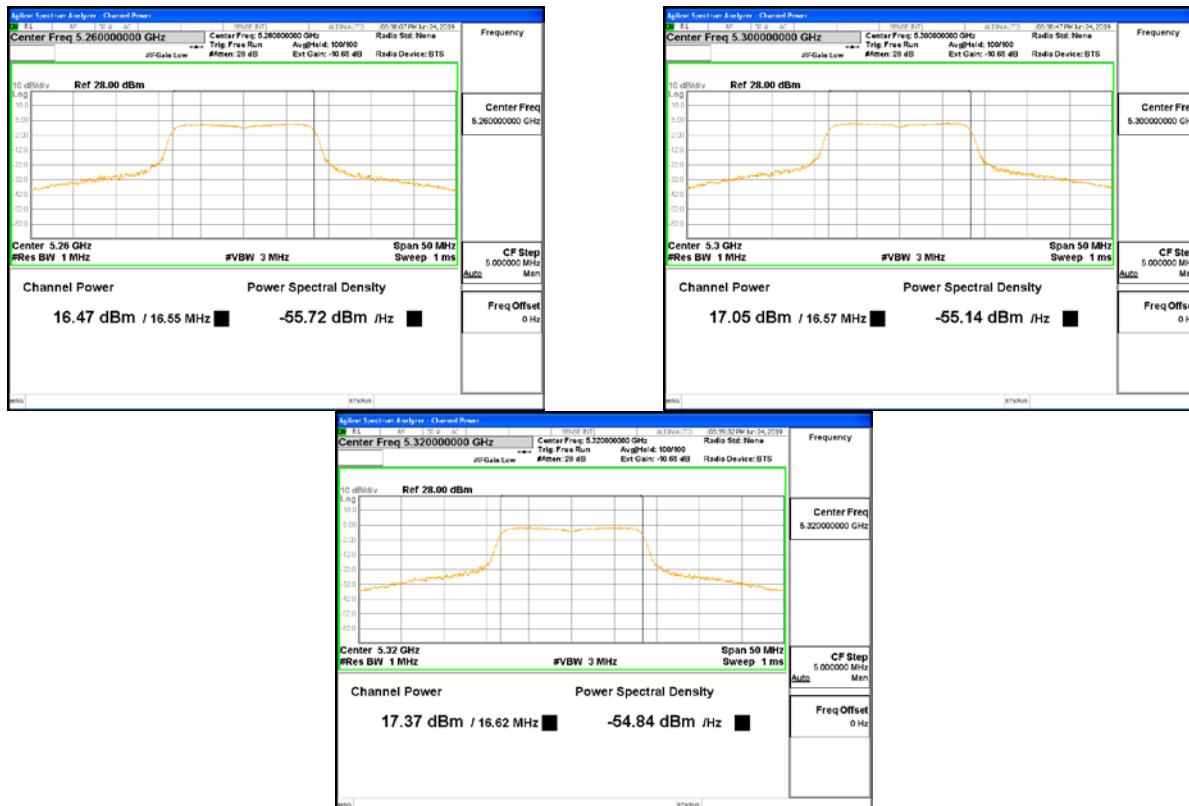


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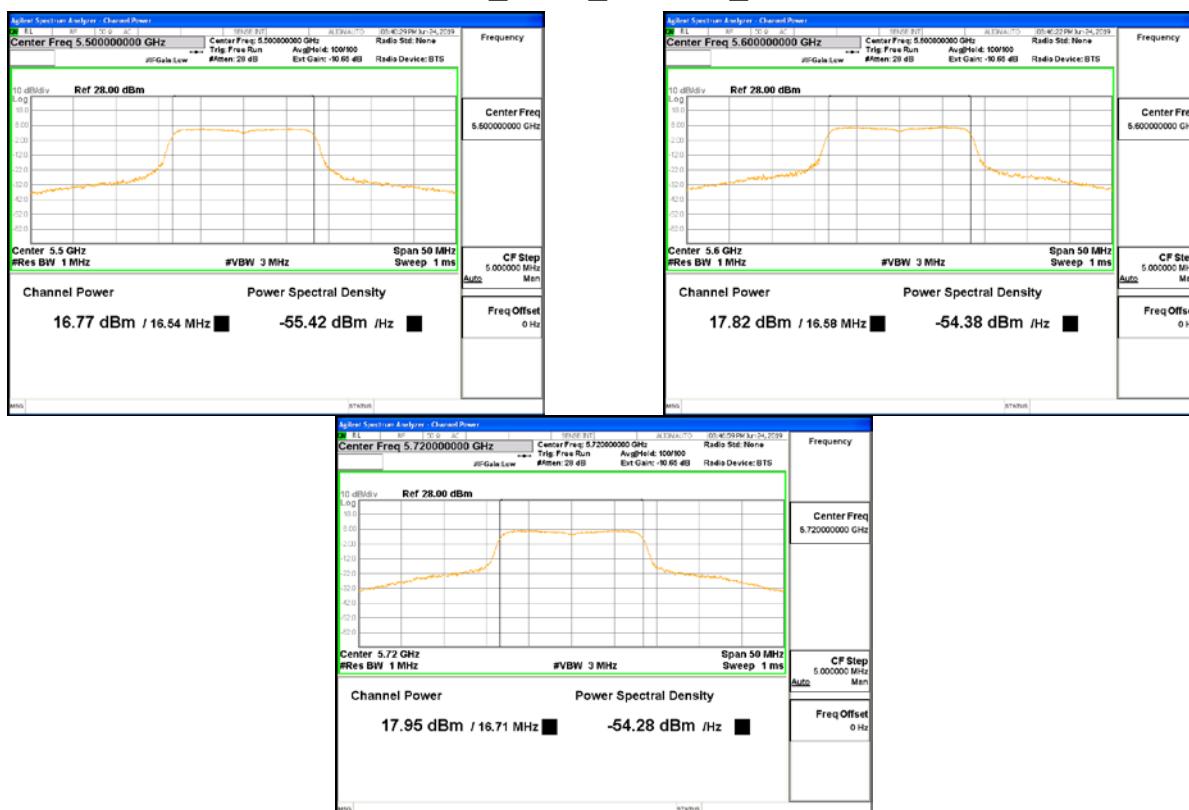
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CDD Mode\_ANT2\_802.11a\_UNII 2A



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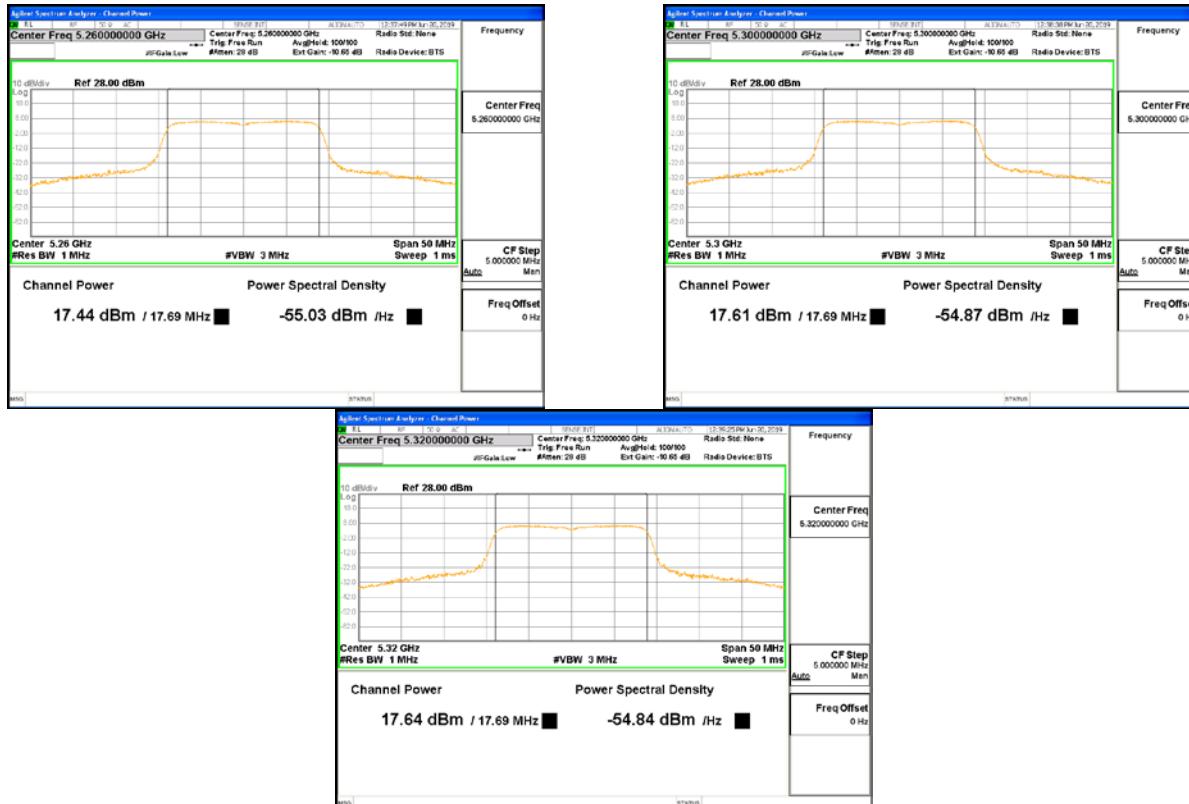


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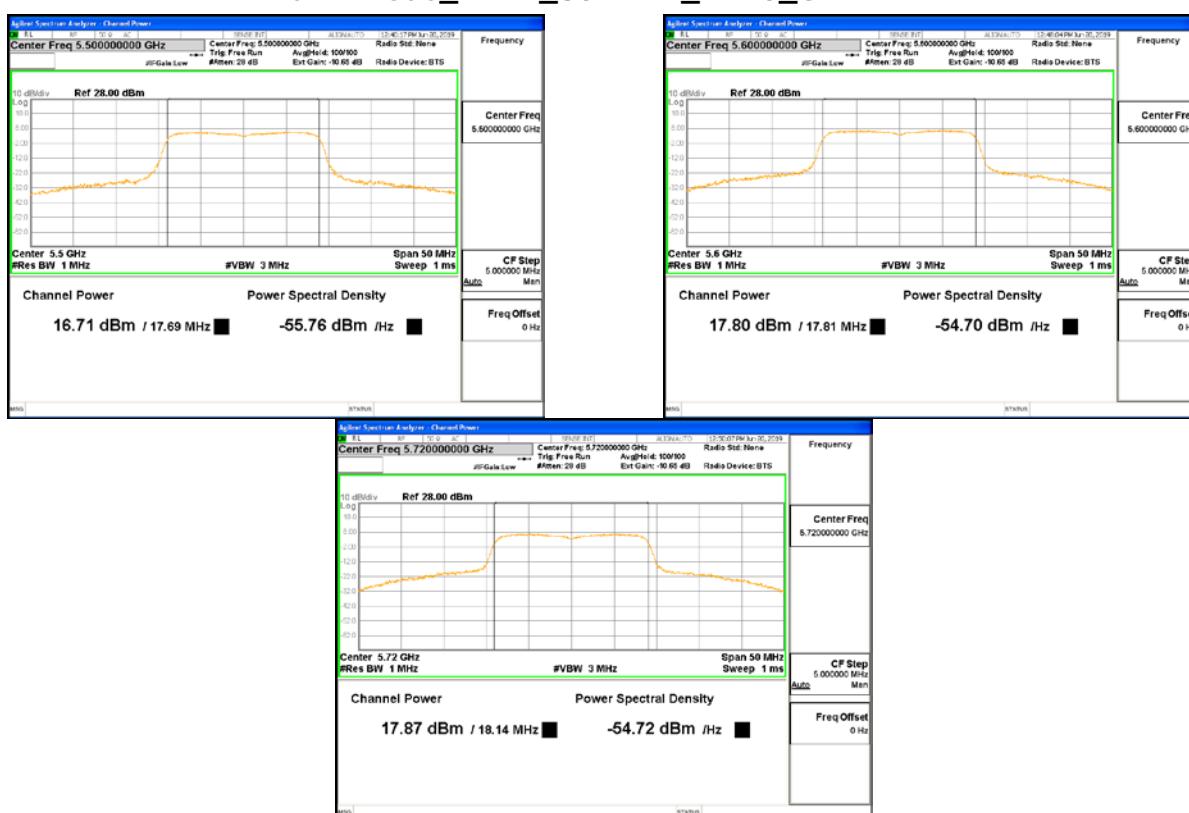
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CDD Mode\_ANT1\_802.11n\_HT20\_UNII 2A



CDD Mode\_ANT1\_802.11n\_HT20\_UNII 2C

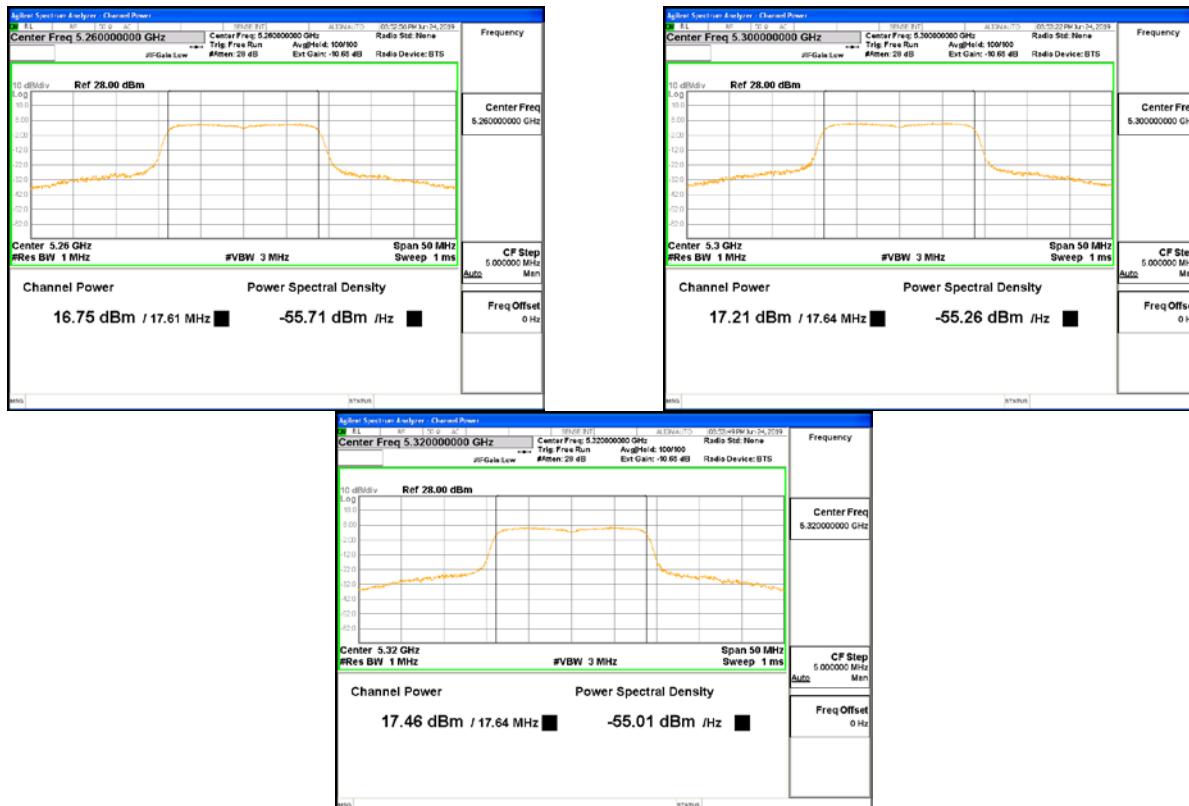


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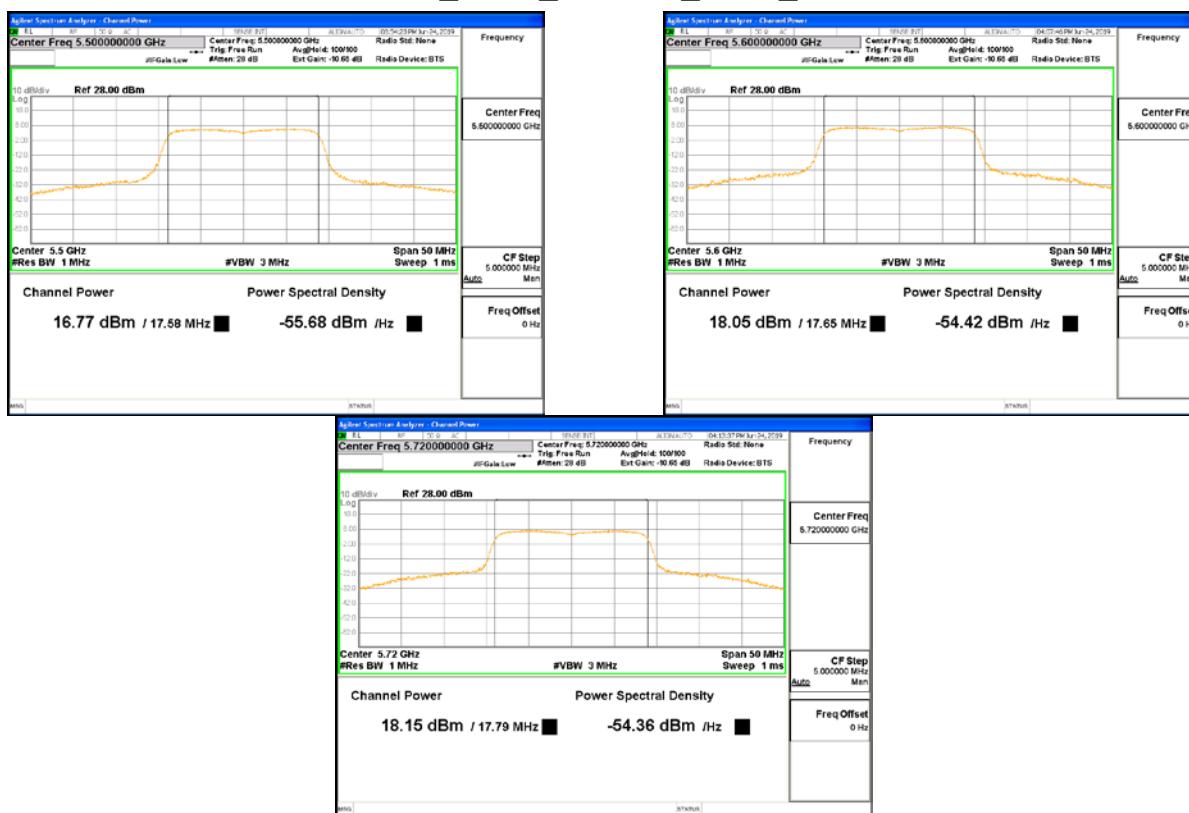
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CDD Mode\_ANT2\_802.11n\_HT20\_UNII 2A



CDD Mode\_ANT2\_802.11n\_HT20\_UNII 2C

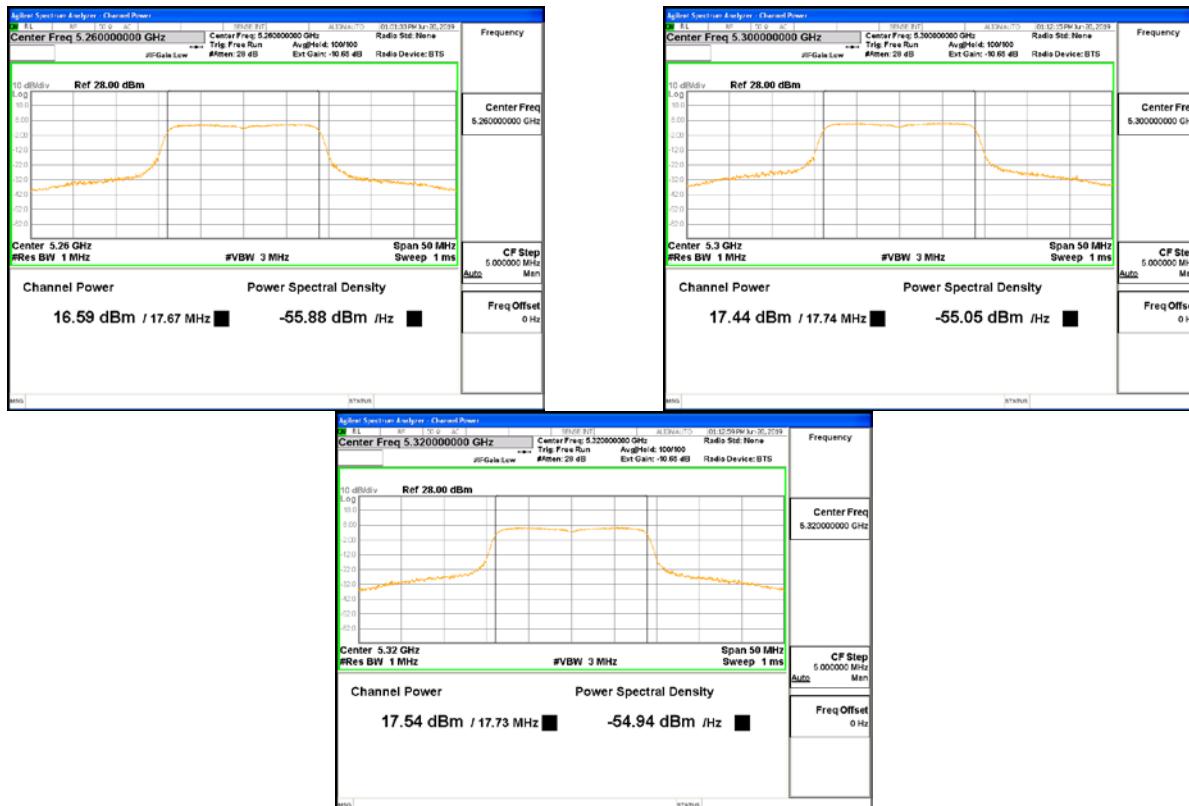


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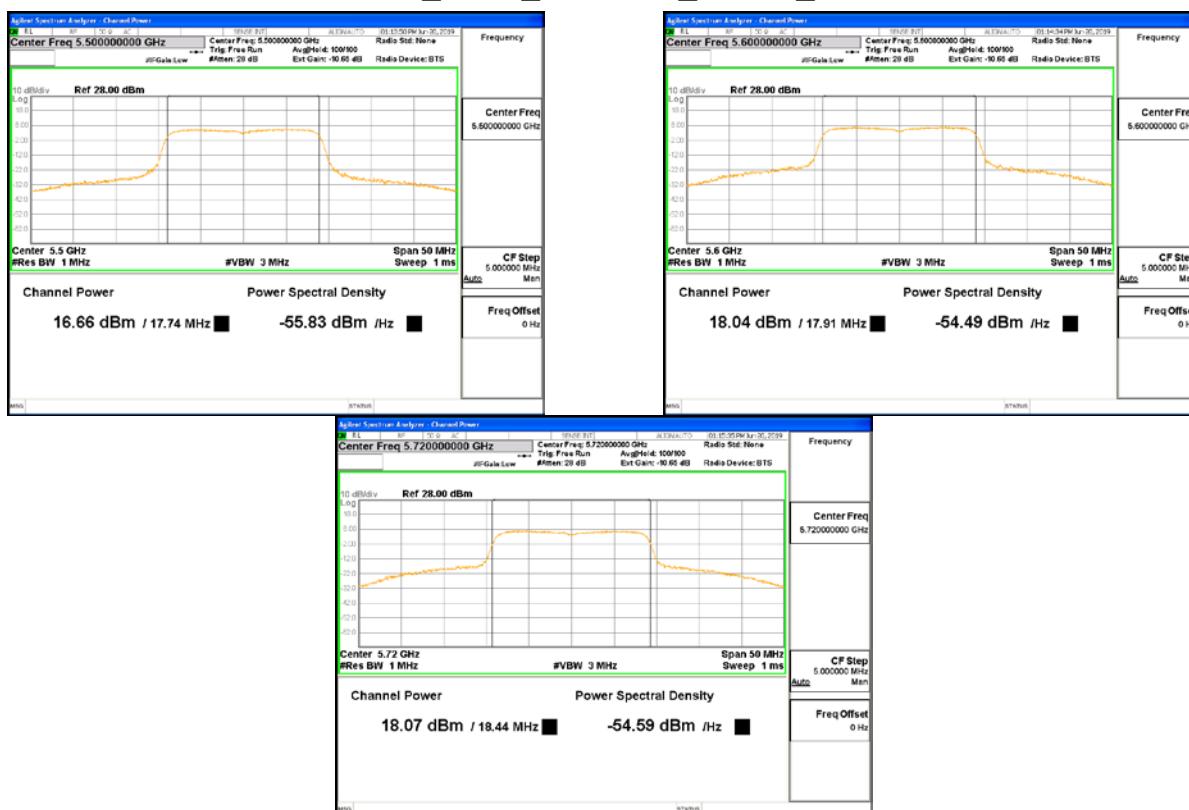
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Yongin-si, Gyeonggi-do, Korea  
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CDD Mode\_ANT1\_802.11ac\_VHT20\_UNII 2A



CDD Mode\_ANT1\_802.11ac\_VHT20\_UNII 2C

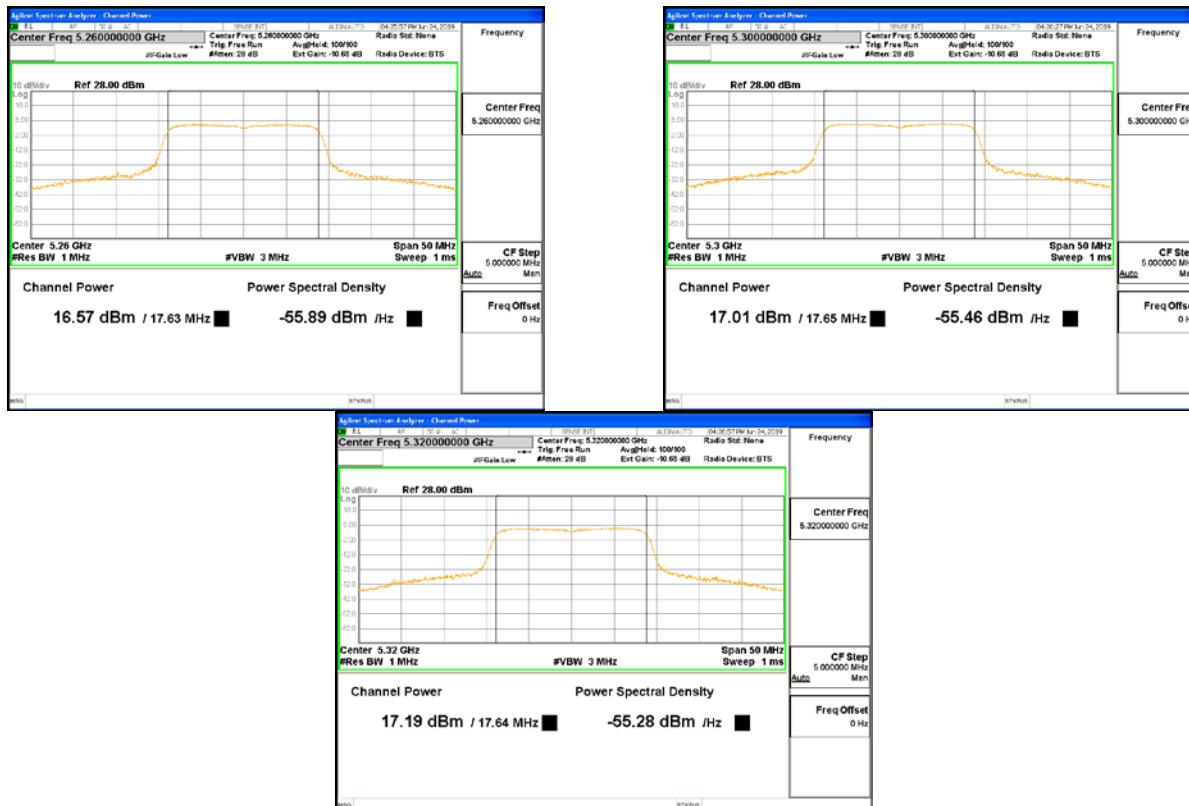


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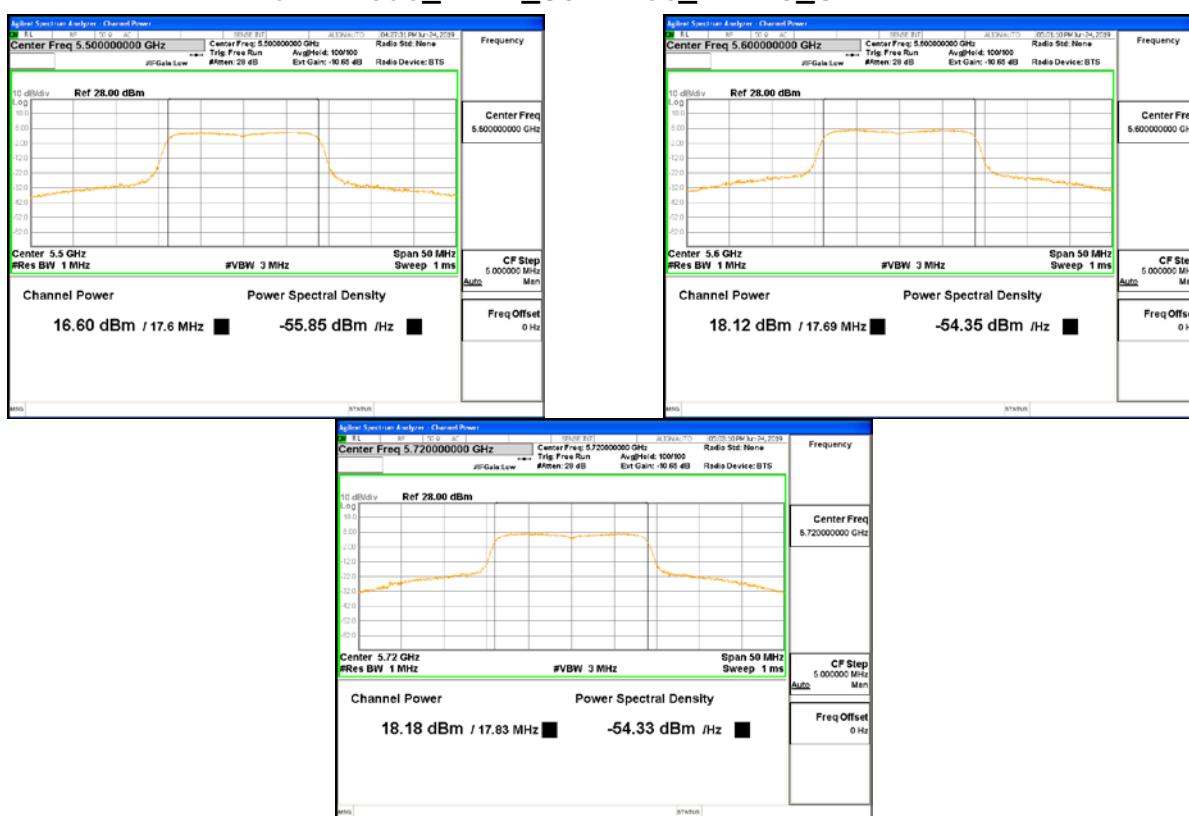
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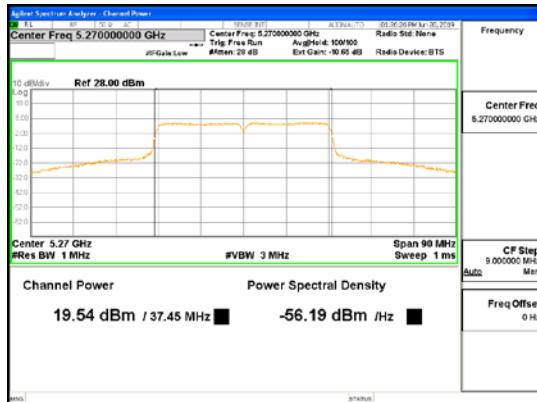
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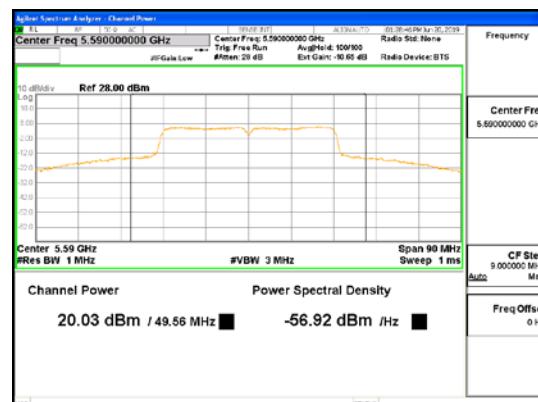
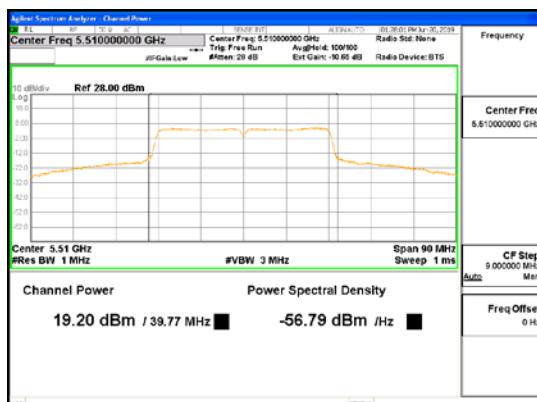
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### CDD Mode\_ANT1\_802.11n\_HT40\_UNII 2A



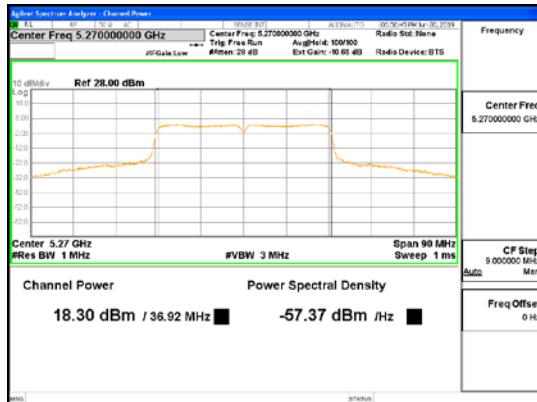
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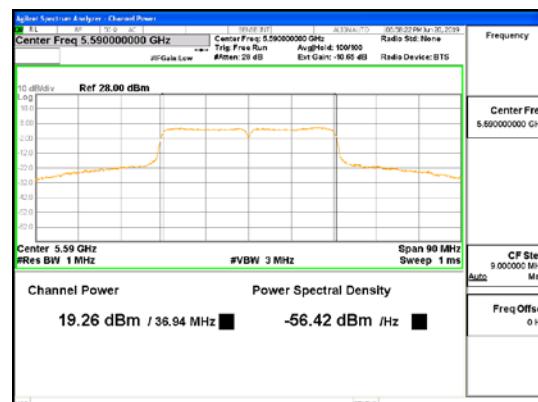
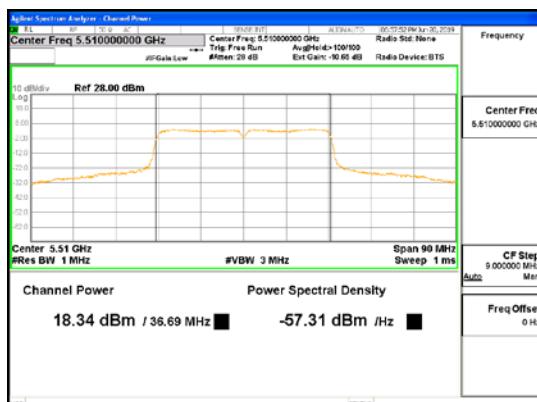
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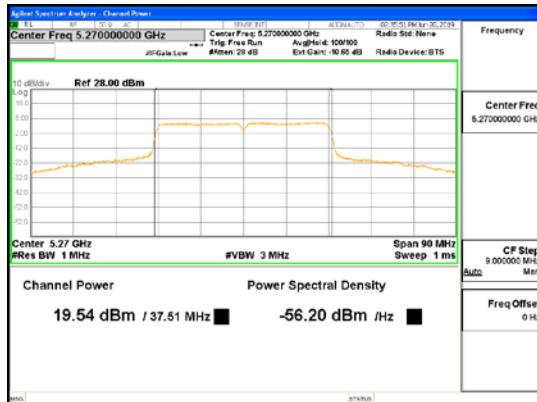
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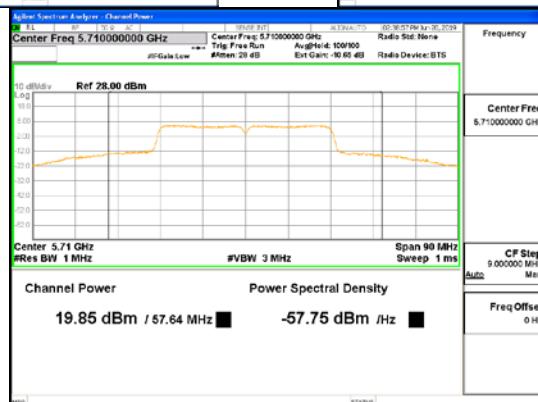
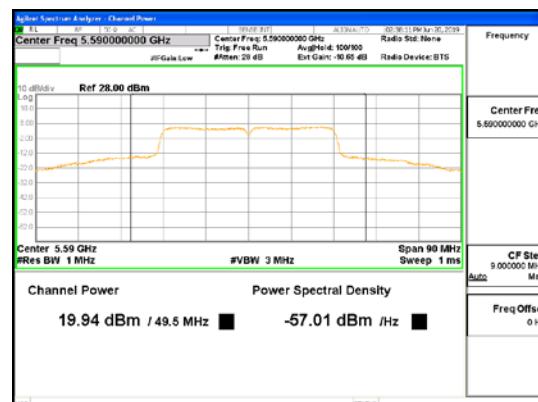
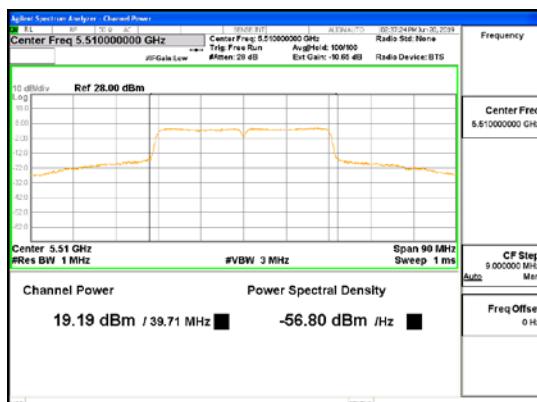
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Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
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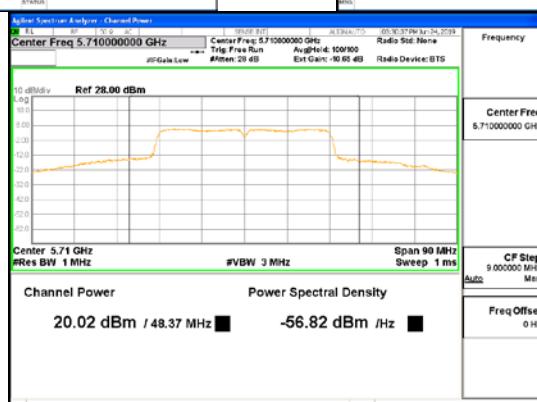
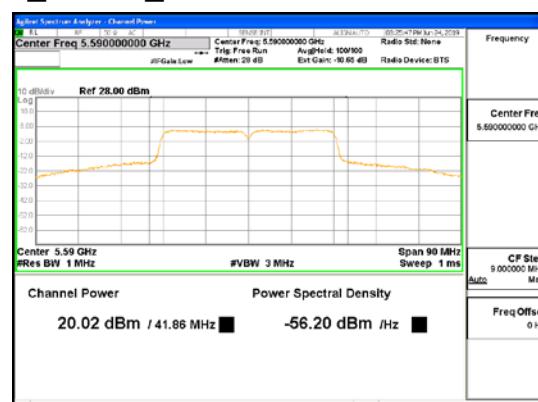
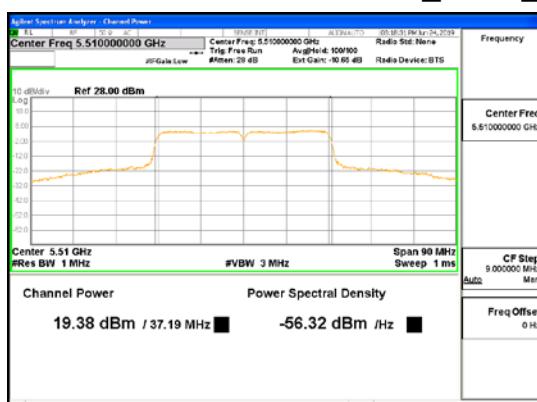
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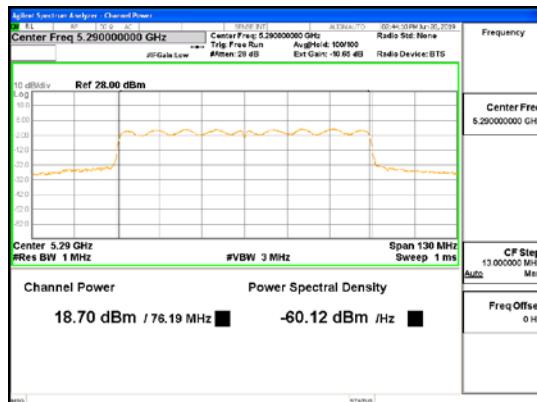


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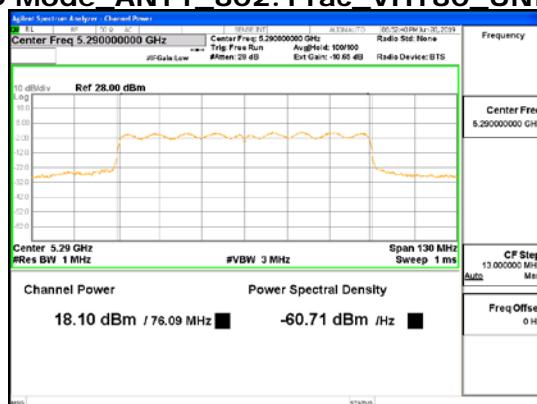
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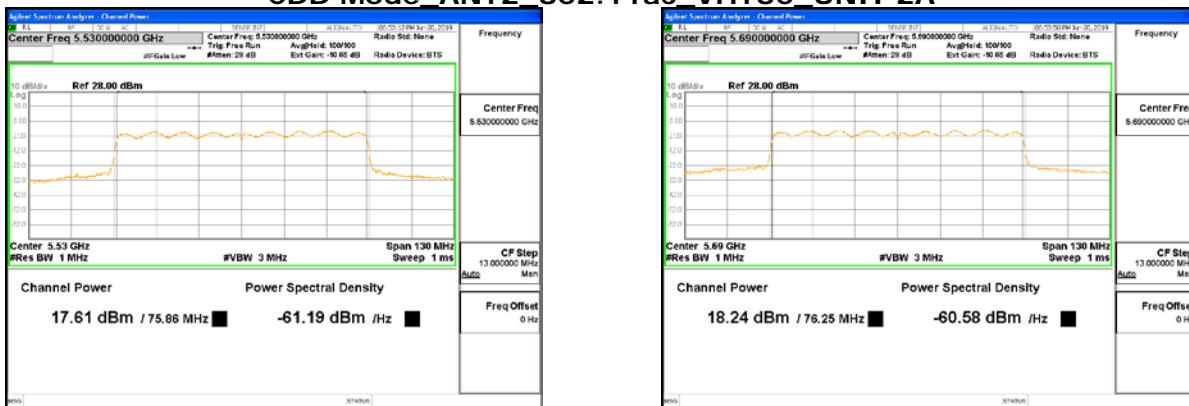
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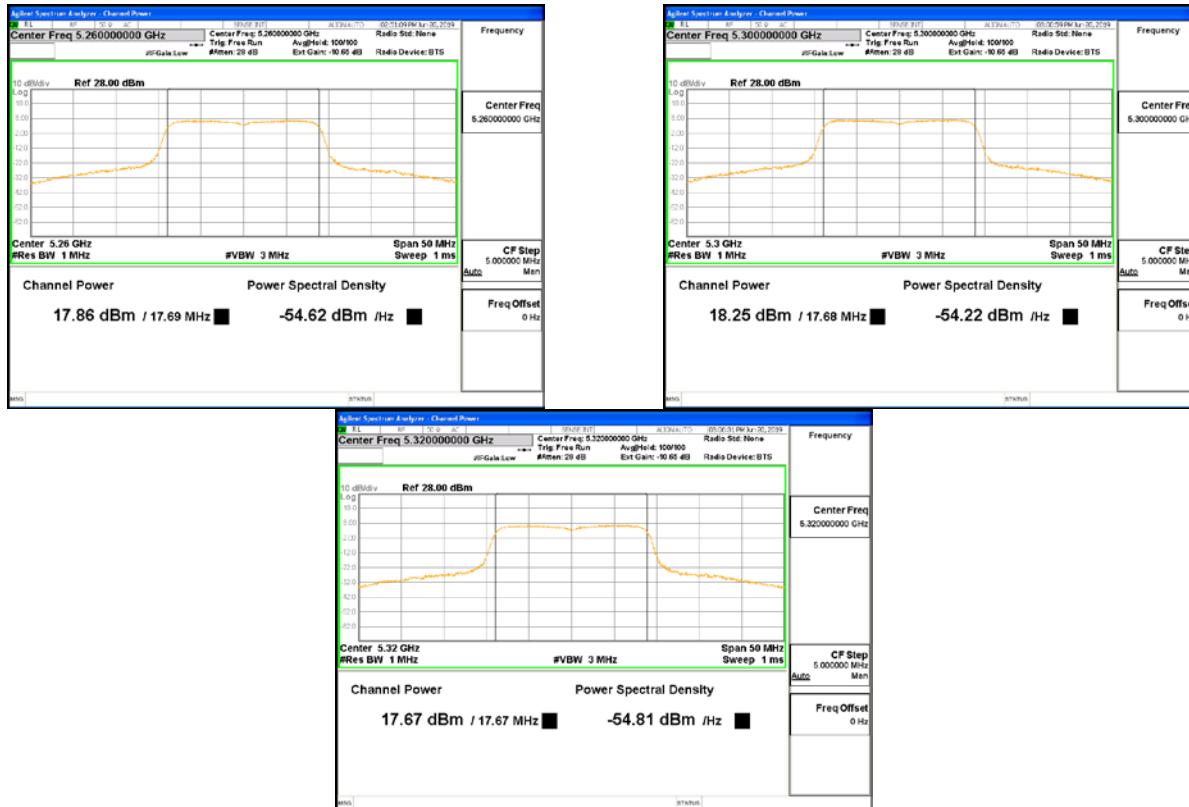


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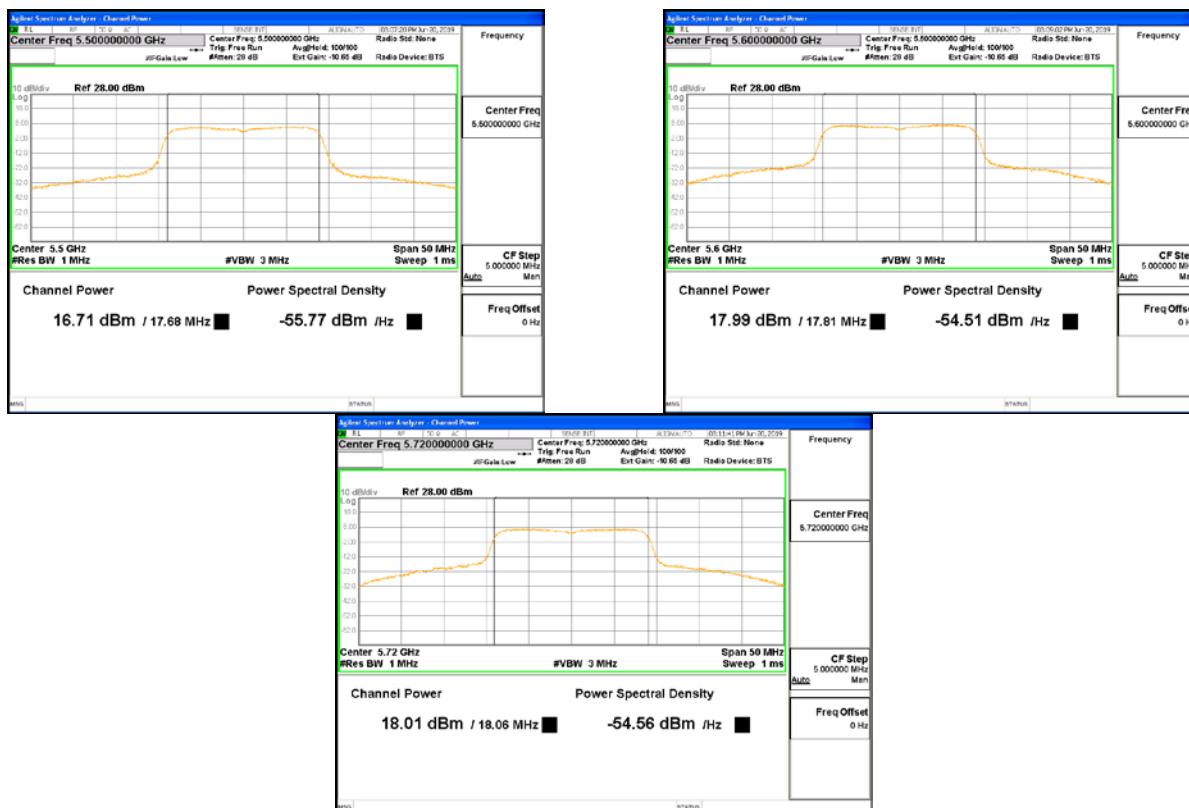
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SDM Mode\_ANT1\_802.11n\_HT20\_UNII 2A



SDM Mode\_ANT1\_802.11n\_HT20\_UNII 2C

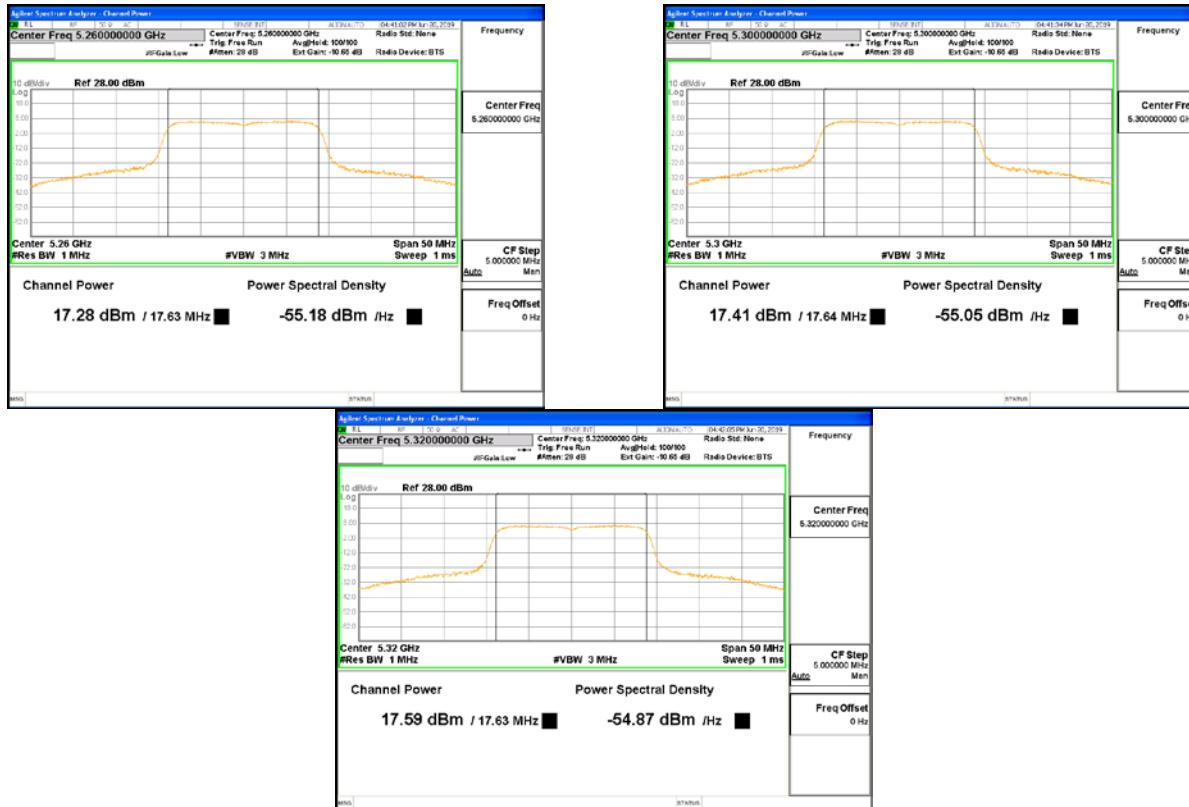


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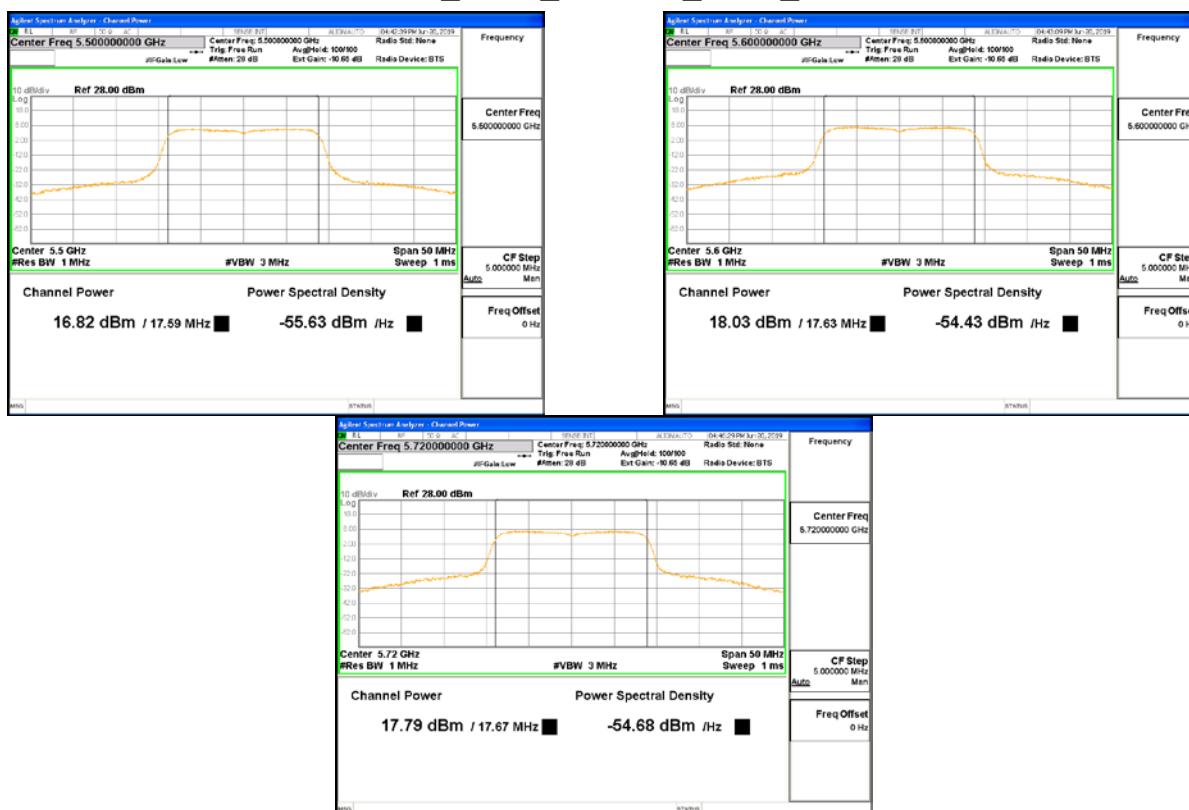
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SDM Mode\_ANT2\_802.11n\_HT20\_UNII 2A



SDM Mode\_ANT2\_802.11n\_HT20\_UNII 2C