

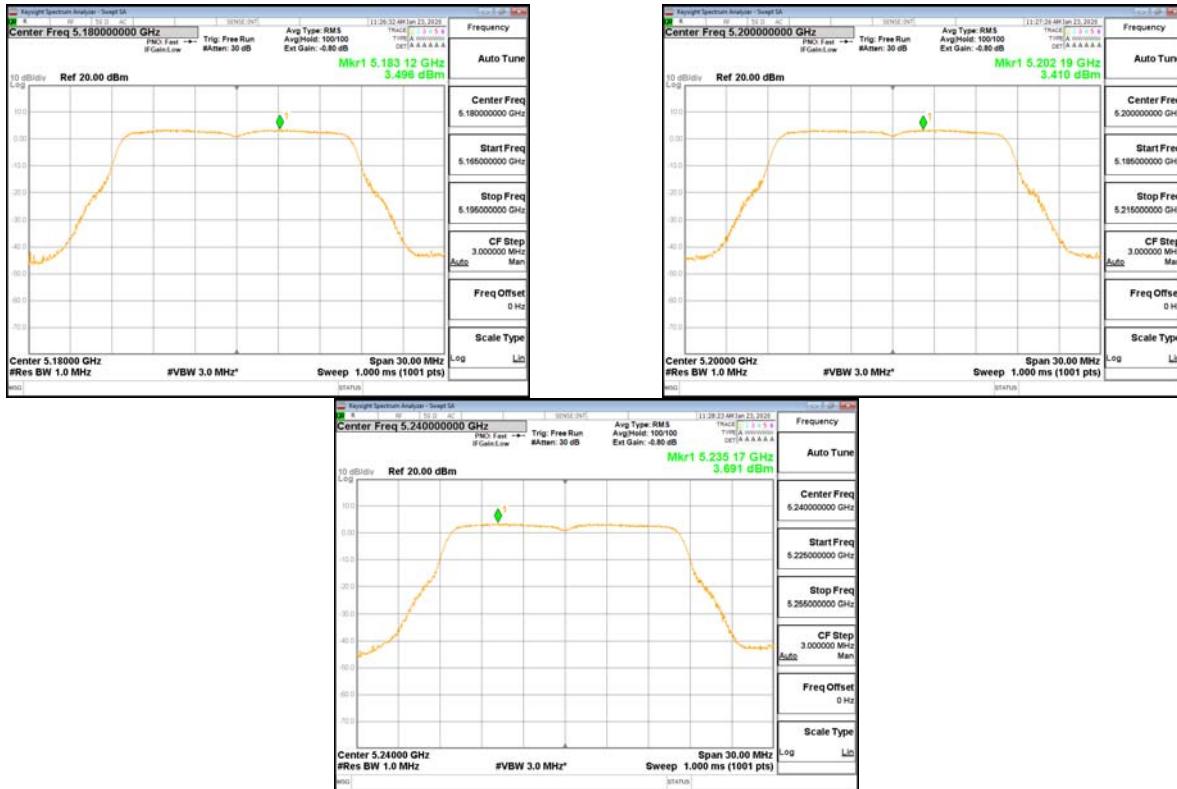


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

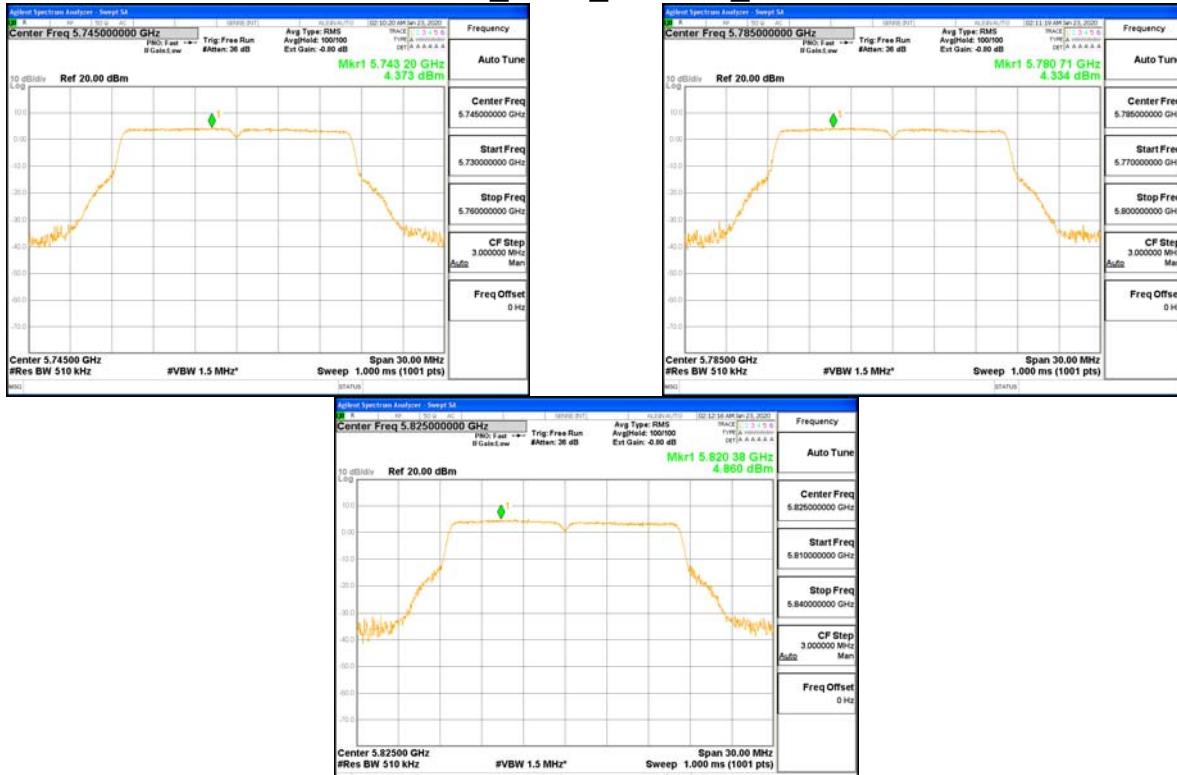
CTK Co., Ltd.

(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-2020-00483
Page (105) / (176) Pages



CDD Mode_ANT4_802.11a_UNII-1



CDD Mode_ANT4_802.11a_UNII-3

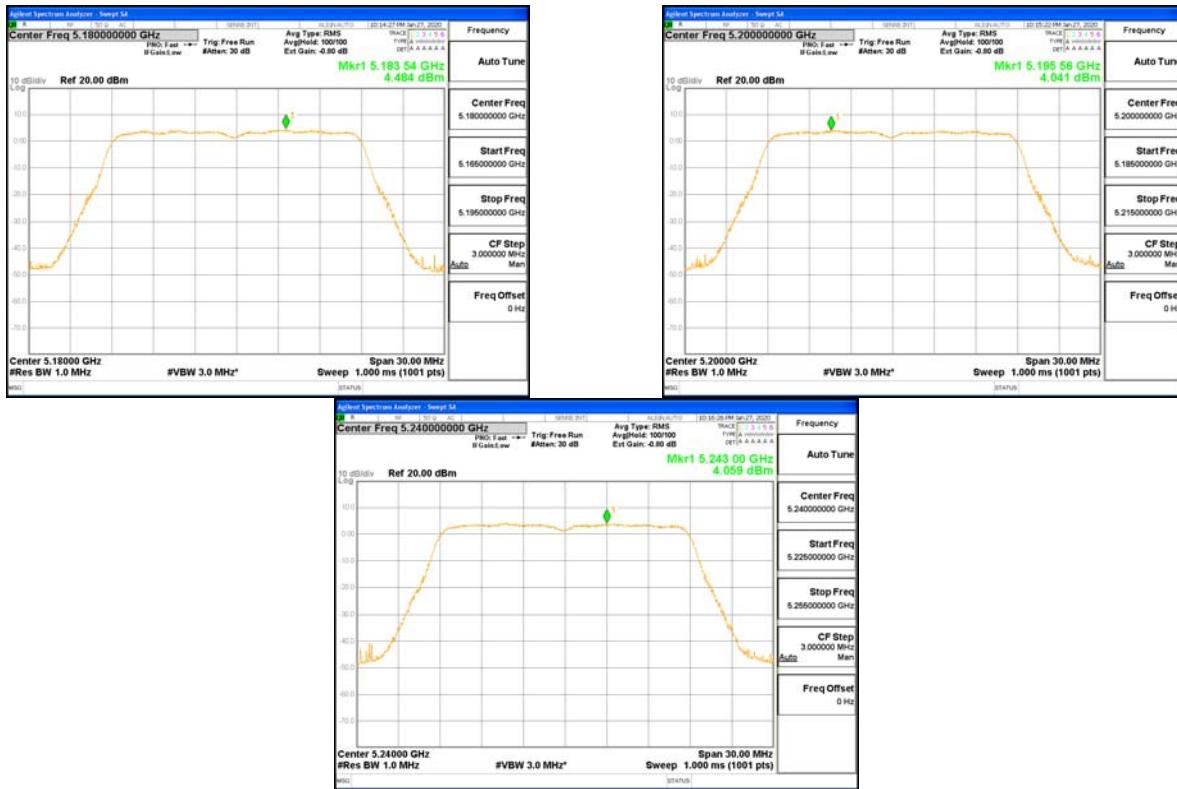


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

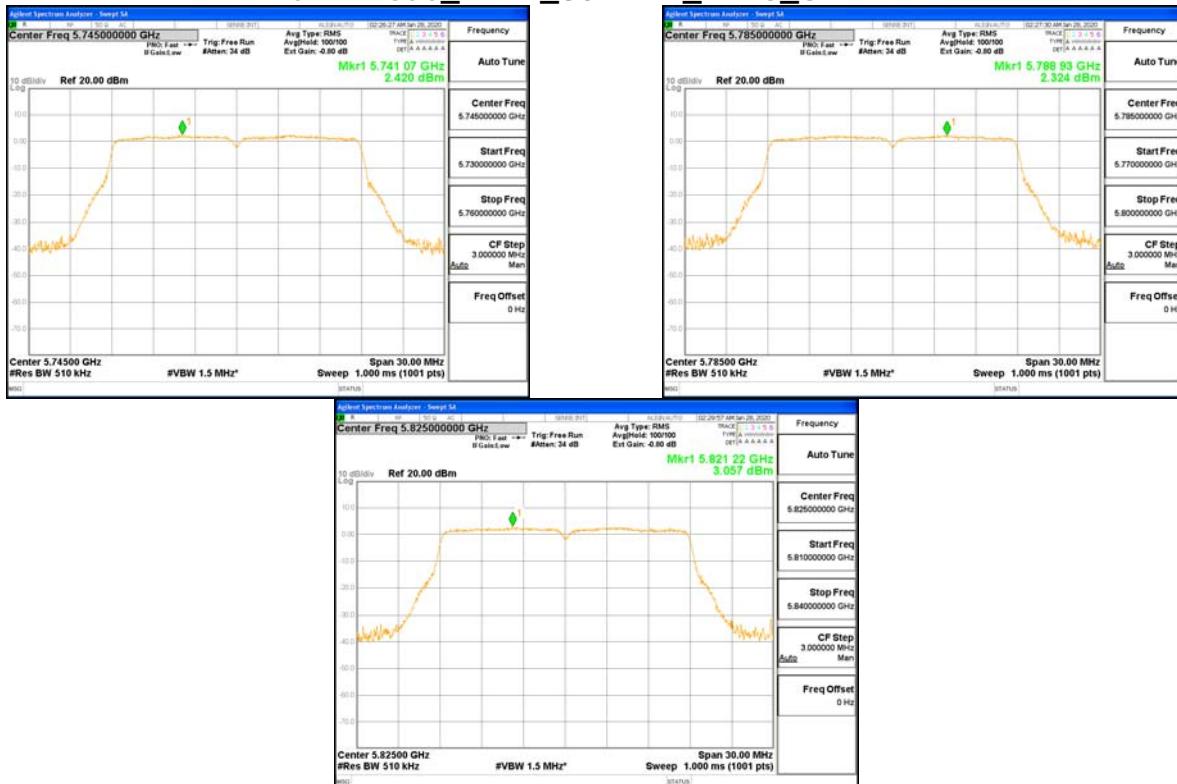
CTK Co., Ltd.

(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-2020-00483
Page (106) / (176) Pages



CDD Mode_ANT1_802.11n_HT20_UNII-1



CDD Mode_ANT1_802.11n_HT20_UNII-3

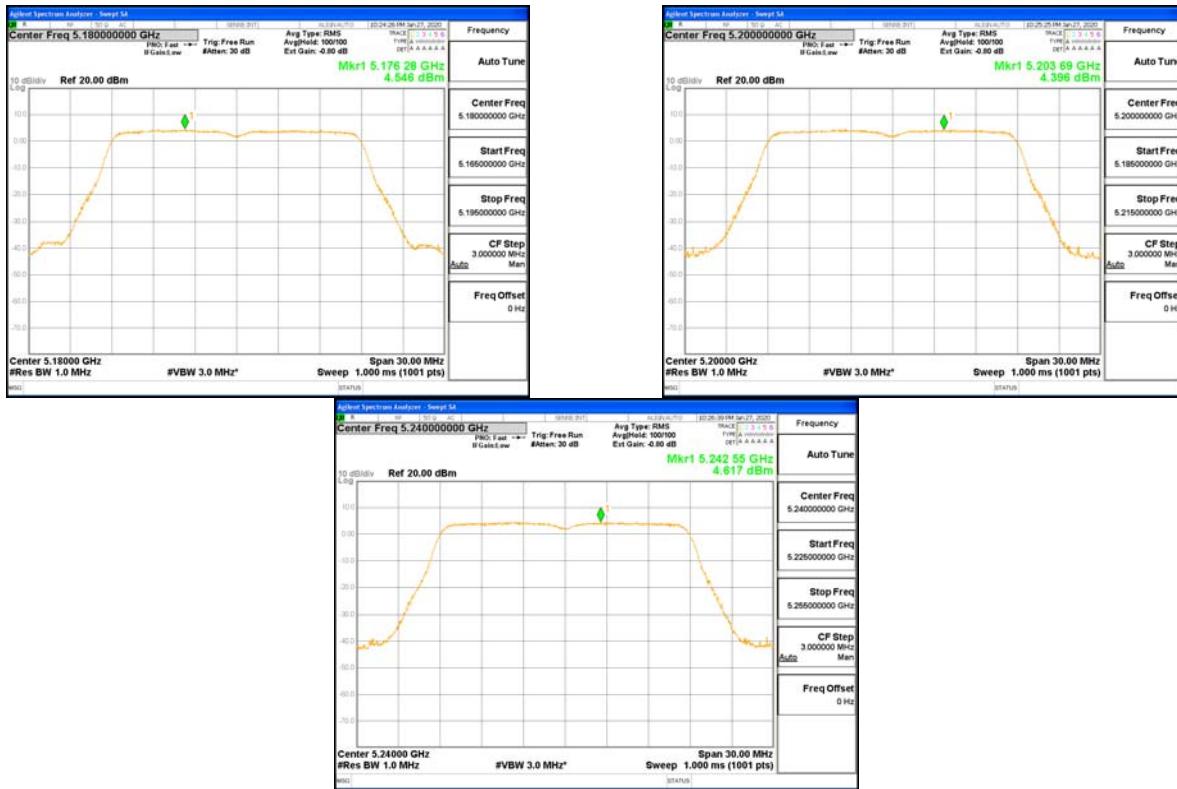


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

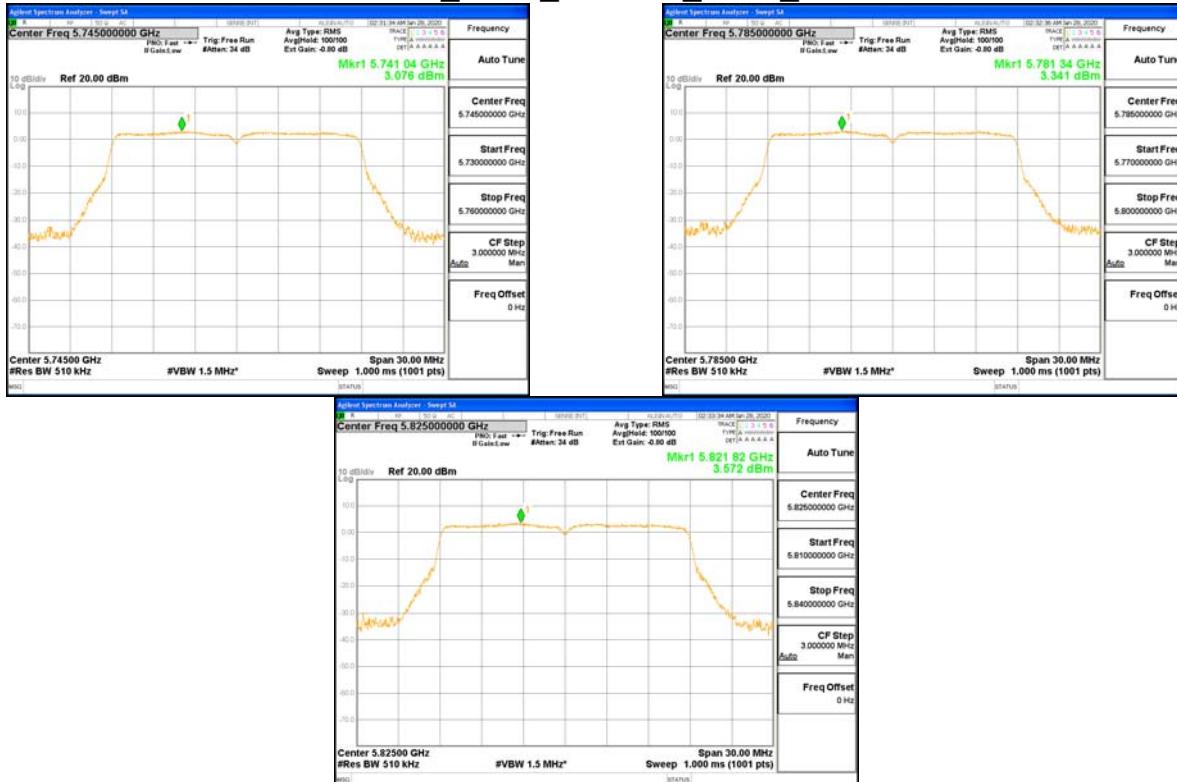
CTK Co., Ltd.

(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-2020-00483
Page (107) / (176) Pages



CDD Mode_ANT2_802.11n_HT20_UNII-1



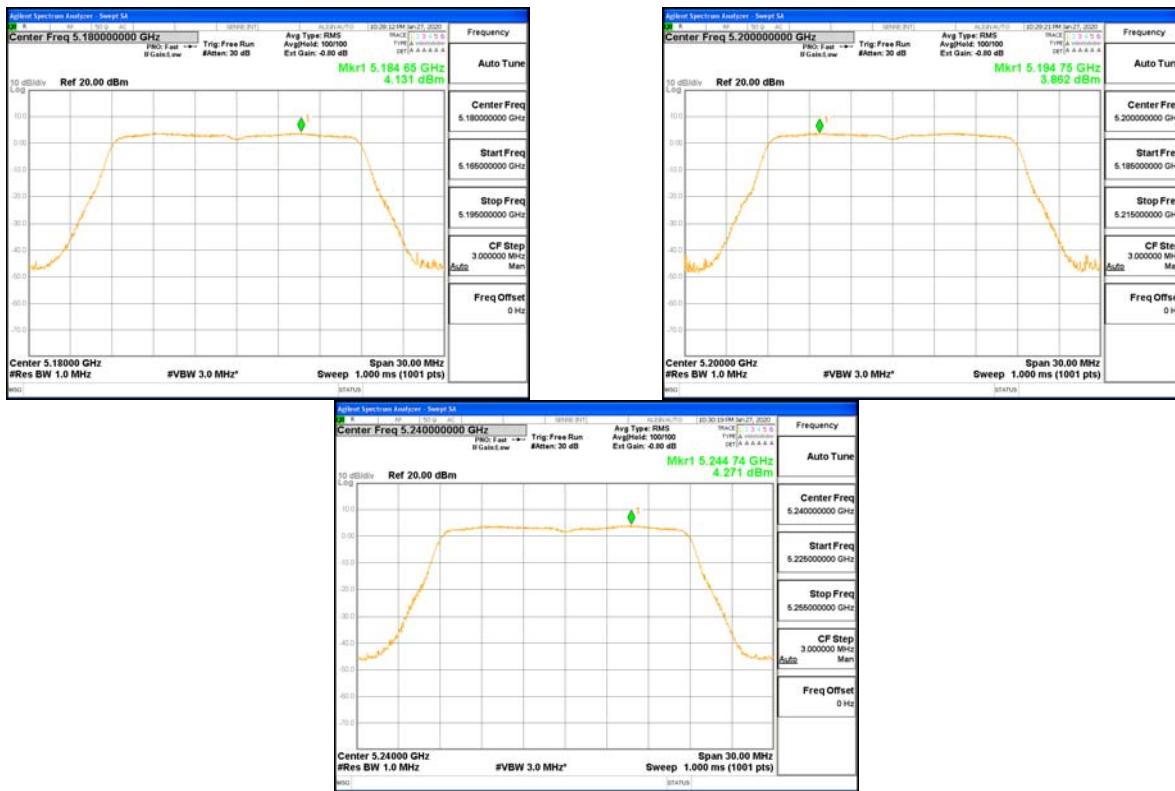
CDD Mode_ANT2_802.11n_HT20_UNII-3



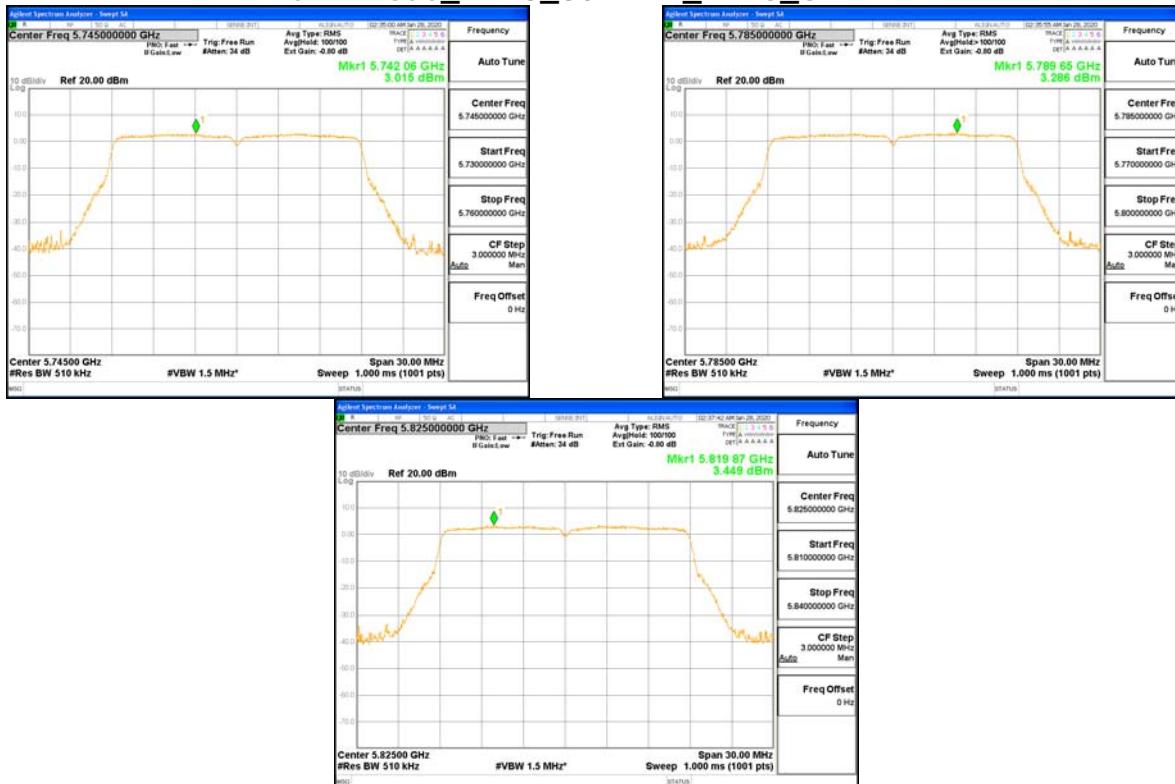
CTK Co., Ltd.

(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-2020-00483
Page (108) / (176) Pages



CDD Mode_ANT3_802.11n_HT20_UNII-1



CDD Mode_ANT3_802.11n_HT20_UNII-3

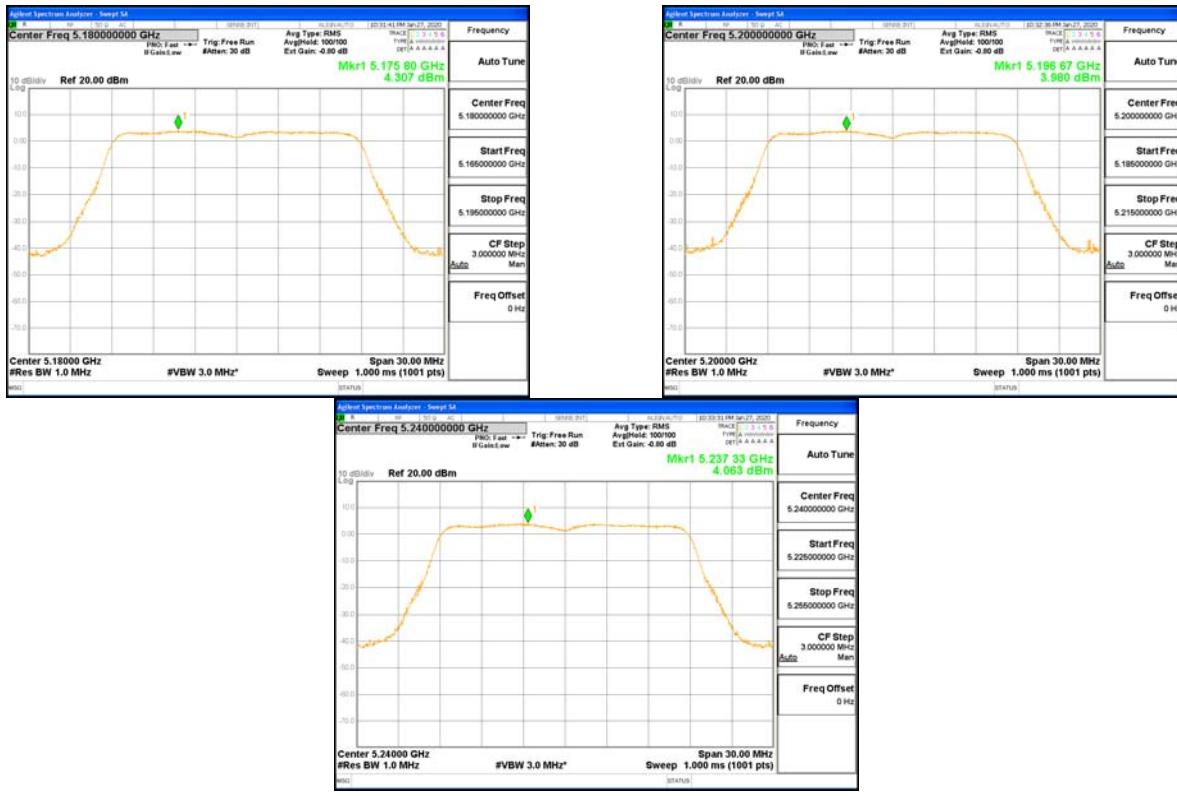


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

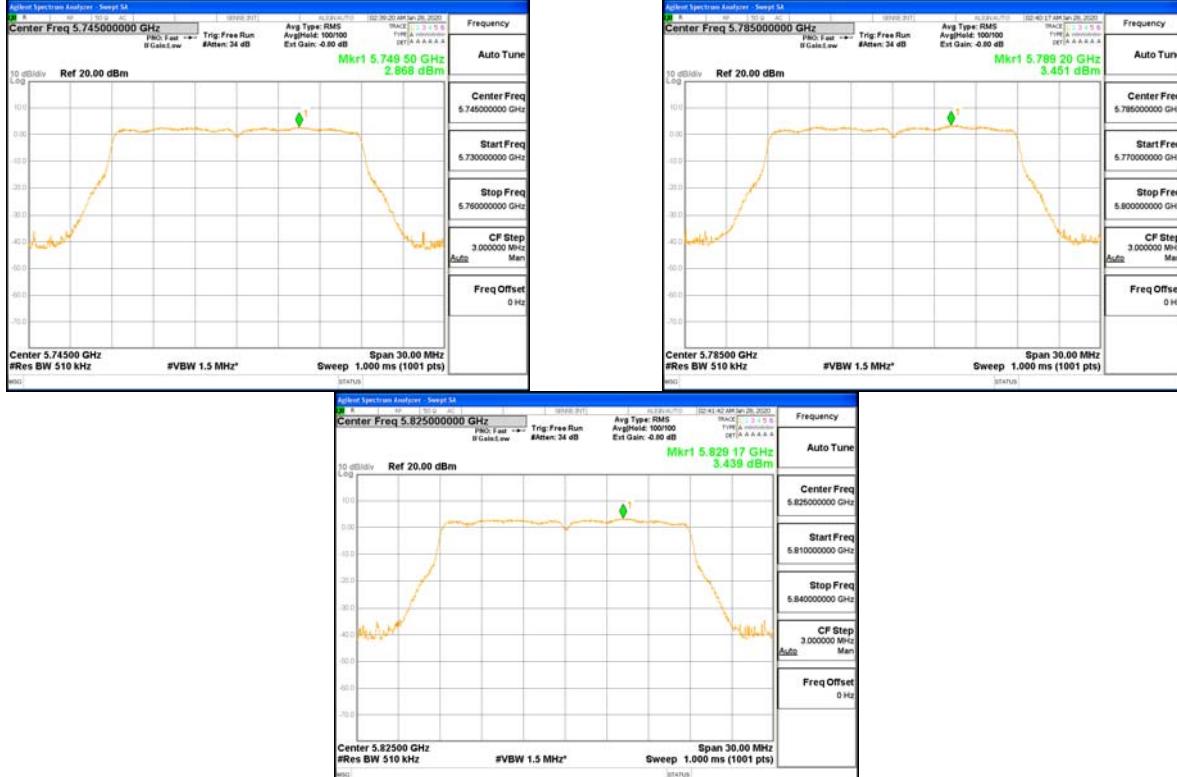
CTK Co., Ltd.

(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-2020-00483
Page (109) / (176) Pages



CDD Mode_AN4_802.11n_HT20_UNII-1



CDD Mode_AN4_802.11n_HT20_UNII-3

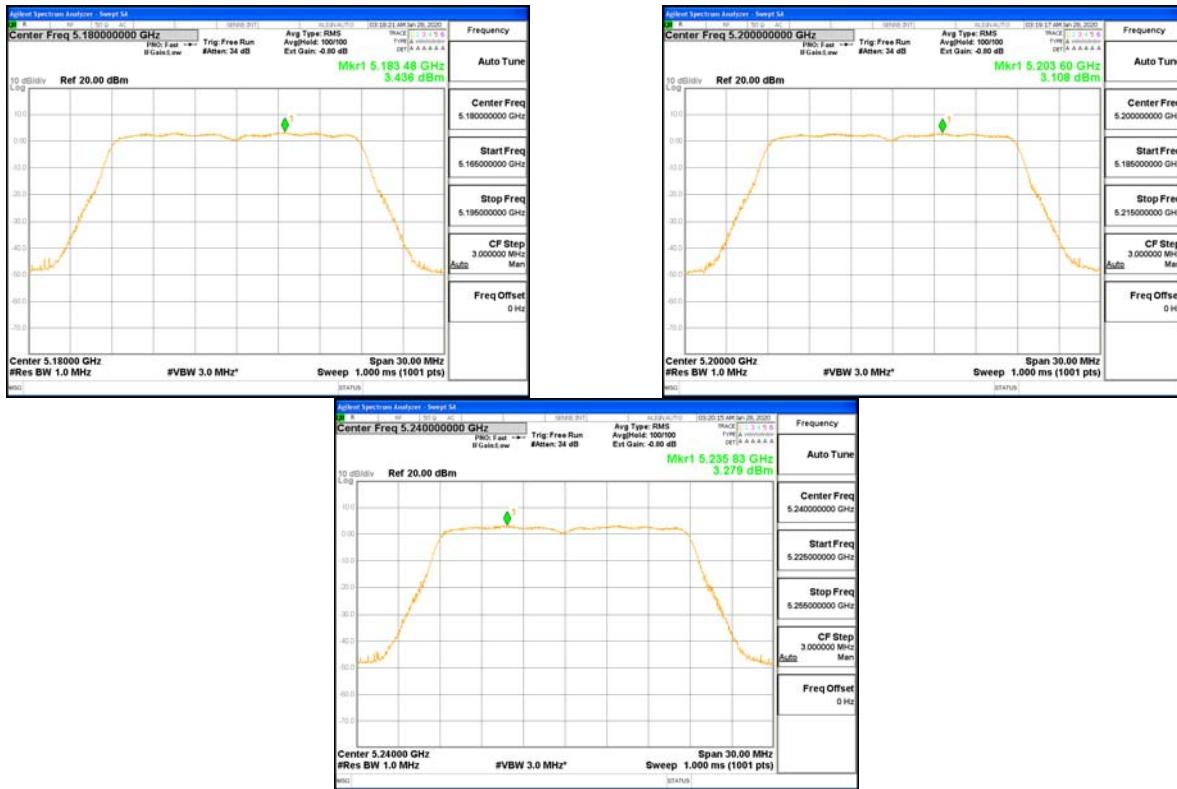


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

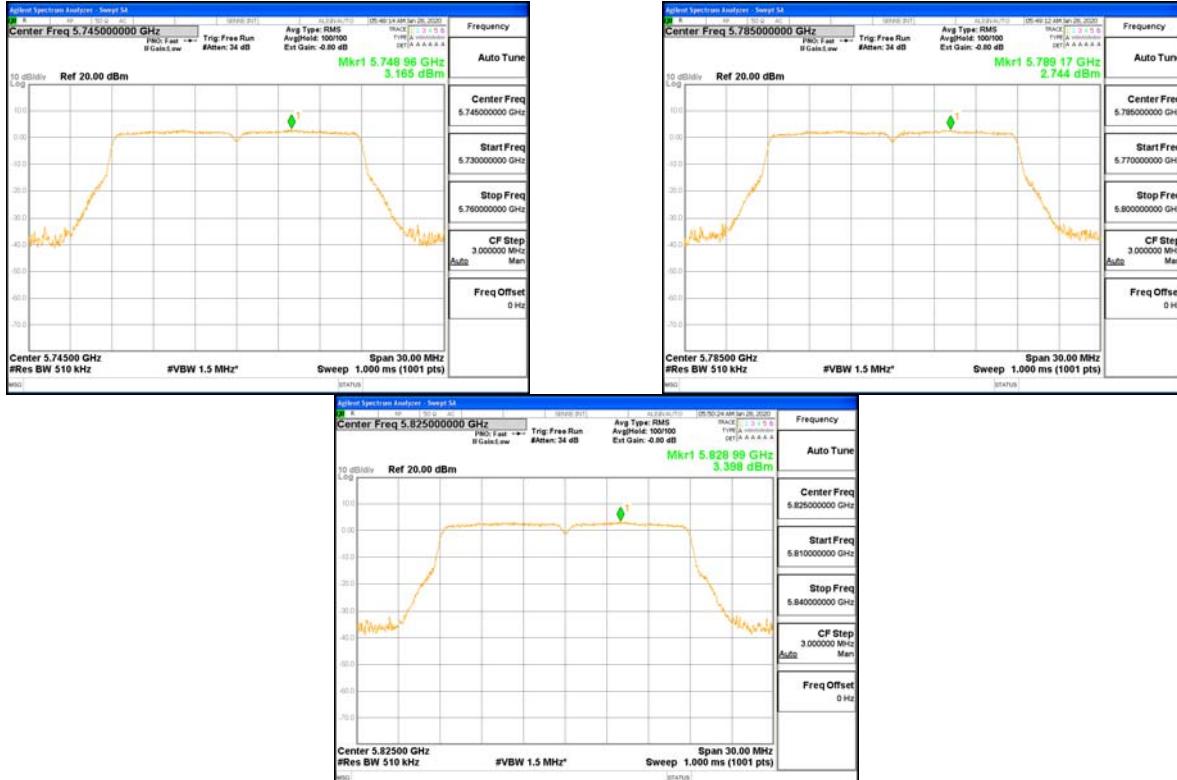
CTK Co., Ltd.

(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-2020-00483
Page (110) / (176) Pages



CDD Mode_ANT1_802.11ac_VHT20_UNII-1



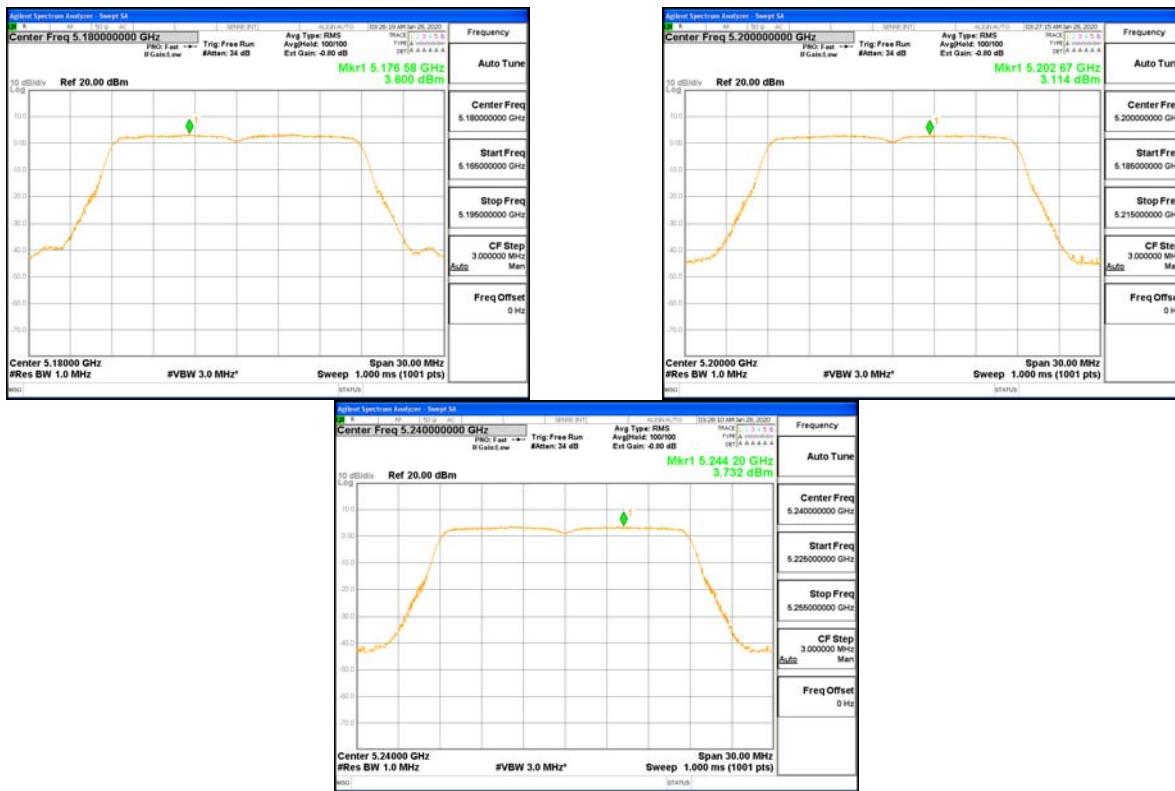
CDD Mode_ANT1_802.11ac_VHT20_UNII-3



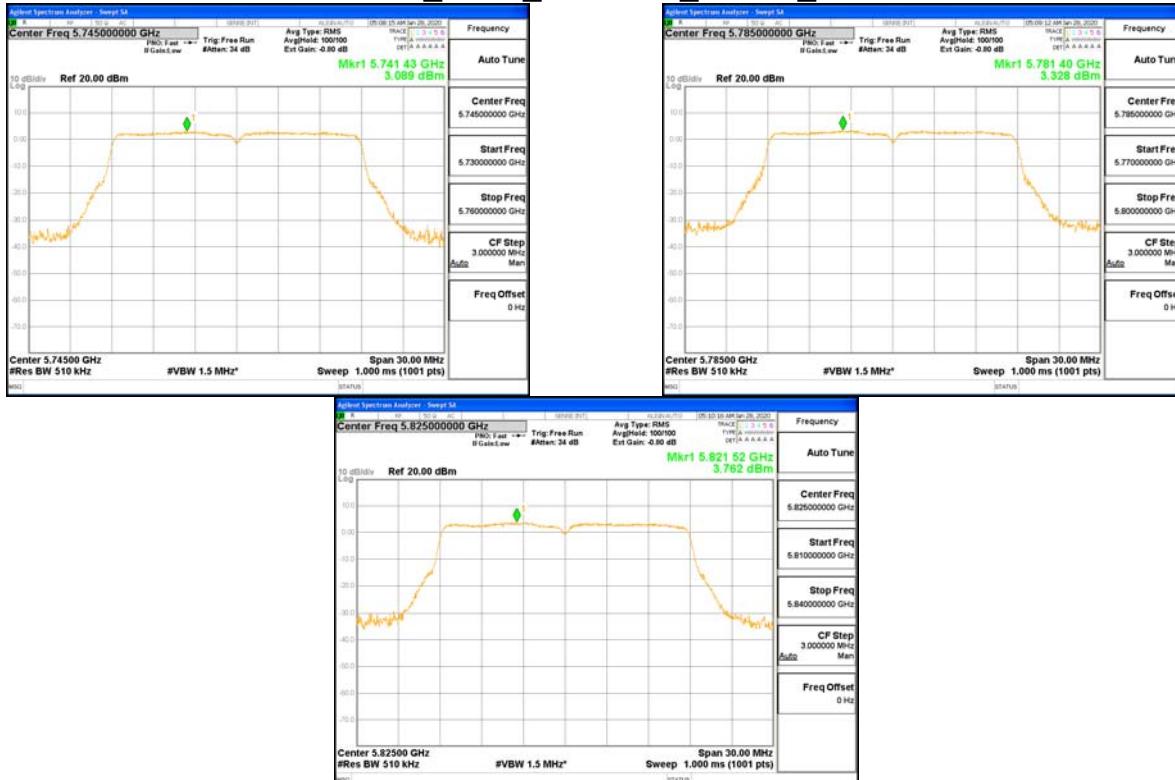
CTK Co., Ltd.

(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-2020-00483
Page (111) / (176) Pages



CDD Mode_ANT2_802.11ac_VHT20_UNII-1



CDD Mode_ANT2_802.11ac_VHT20_UNII-3

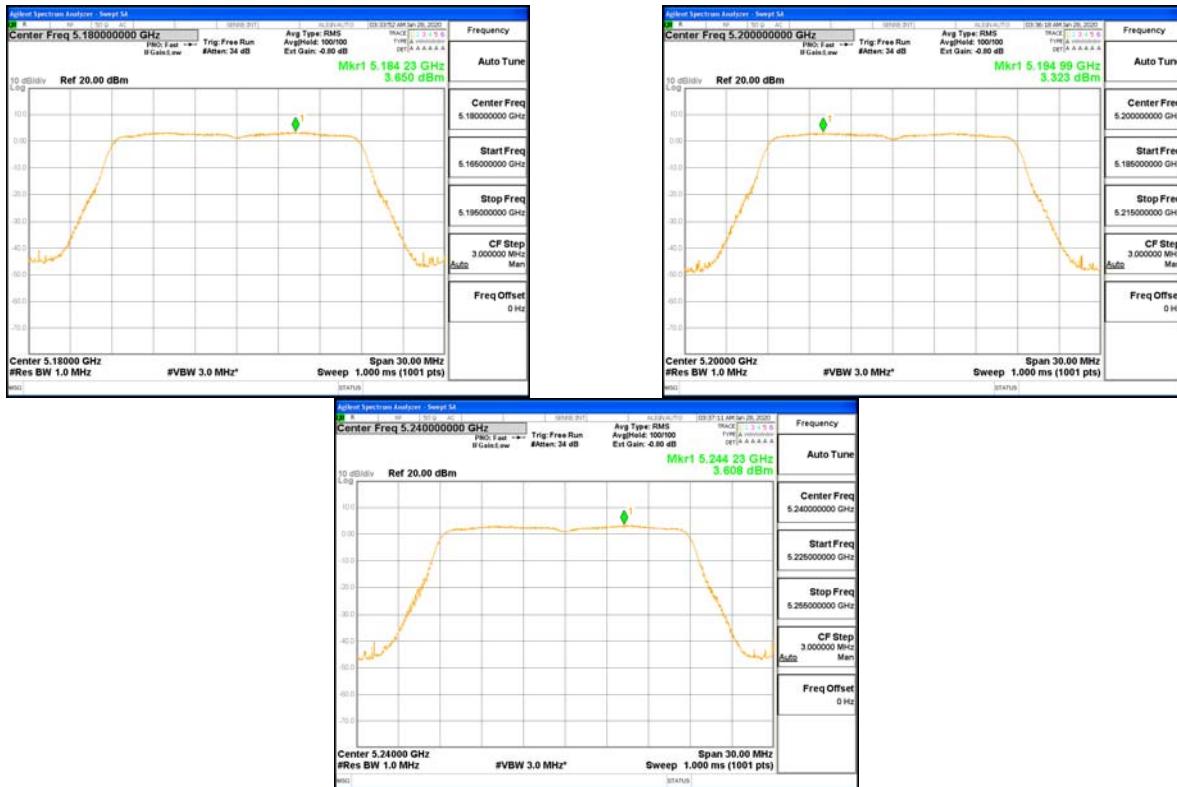


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

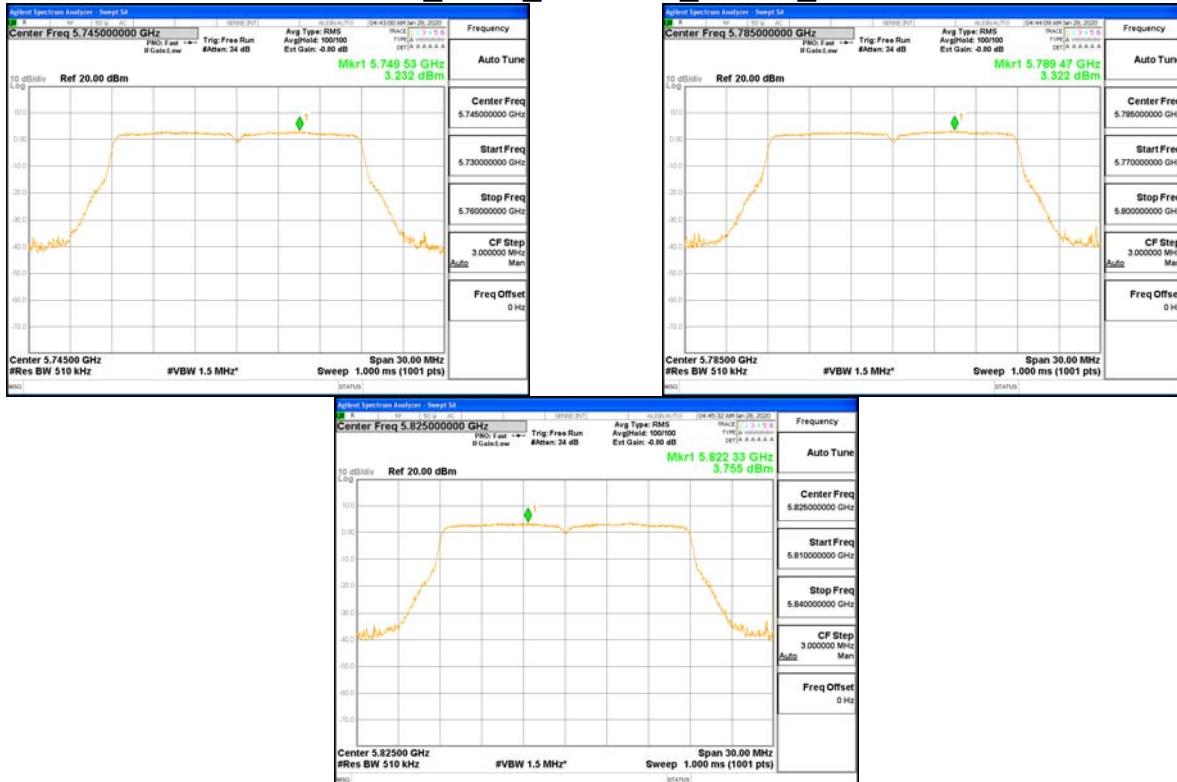
CTK Co., Ltd.

(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-2020-00483
Page (112) / (176) Pages



CDD Mode_ANT3_802.11ac_VHT20_UNII-1



CDD Mode_ANT3_802.11ac_VHT20_UNII-3

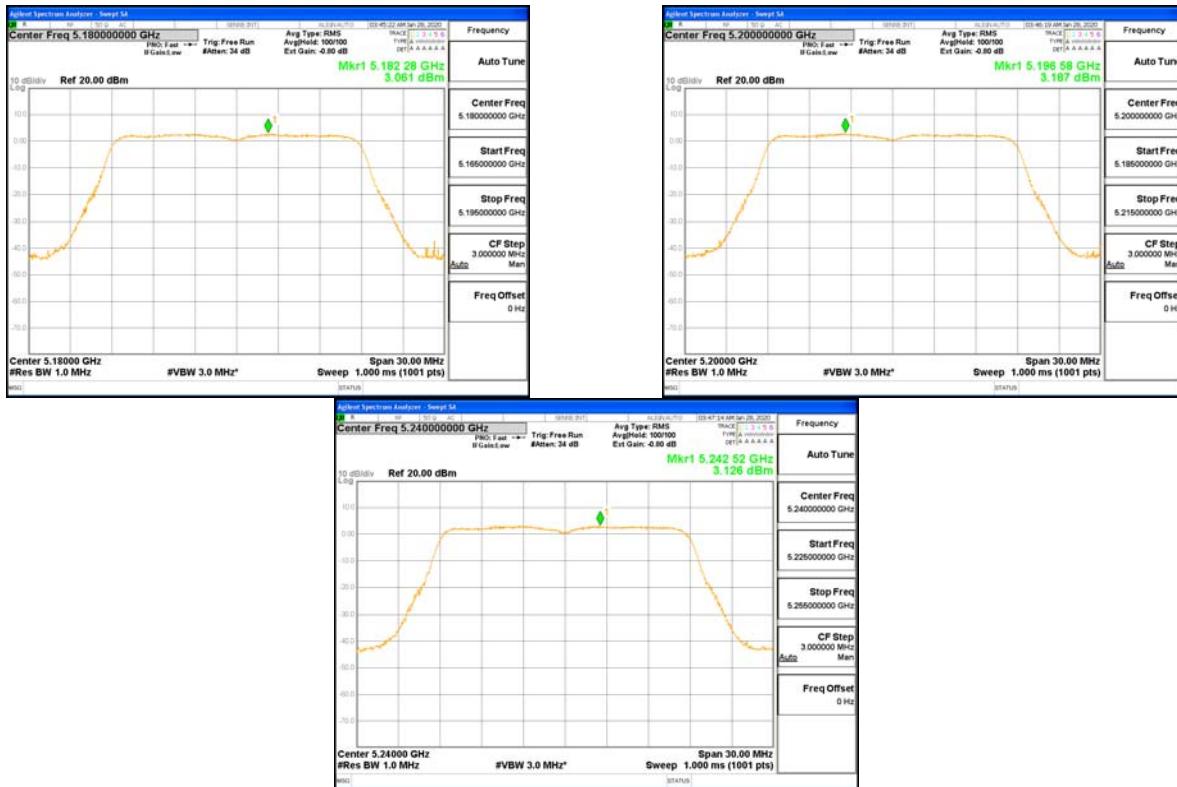


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

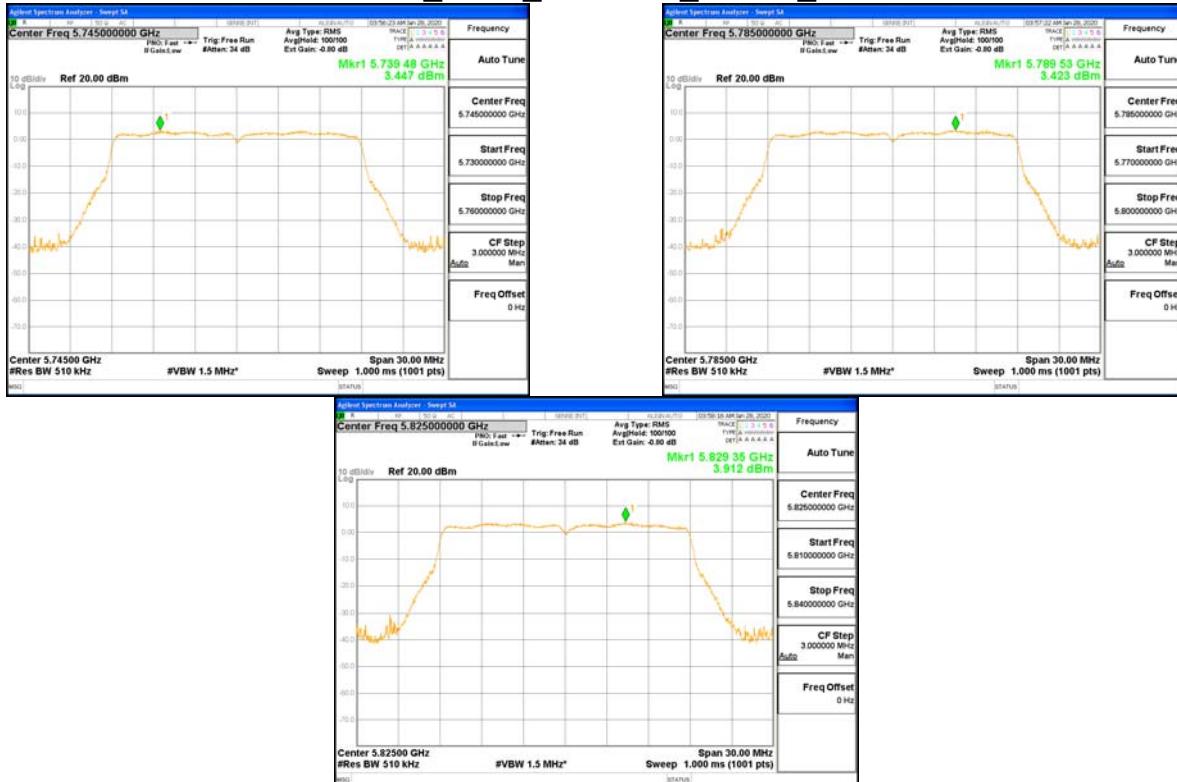
CTK Co., Ltd.

(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-2020-00483
Page (113) / (176) Pages



CDD Mode_ANT4_802.11ac_VHT20_UNII-1



CDD Mode_ANT4_802.11ac_VHT20_UNII-3

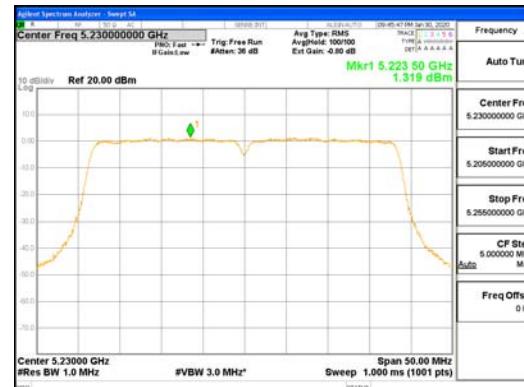
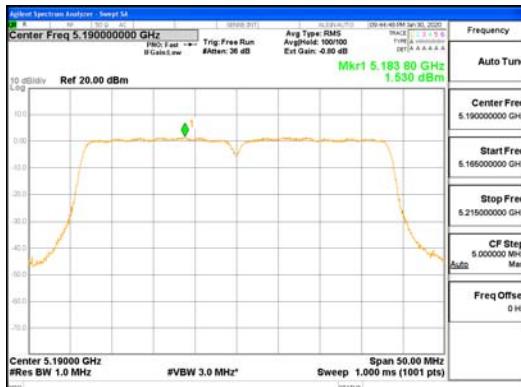


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

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-2020-00483
Page (114) / (176) Pages



CDD Mode_ANT1_802.11n_HT40_UNII-1



CDD Mode_ANT1_802.11n_HT40_UNII-3



CDD Mode_ANT2_802.11n_HT40_UNII-1



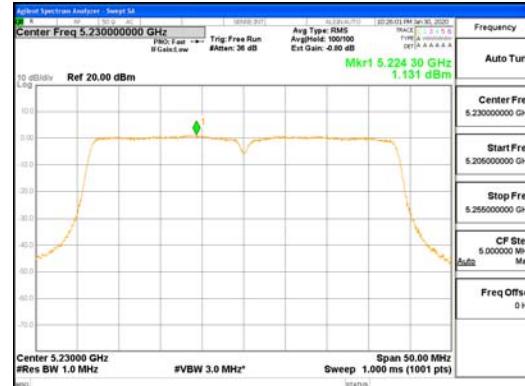
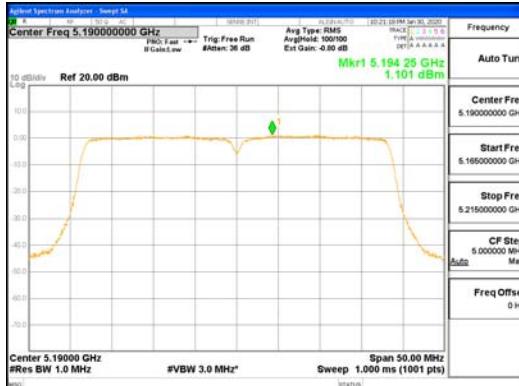
CDD Mode_ANT2_802.11n_HT40_UNII-3



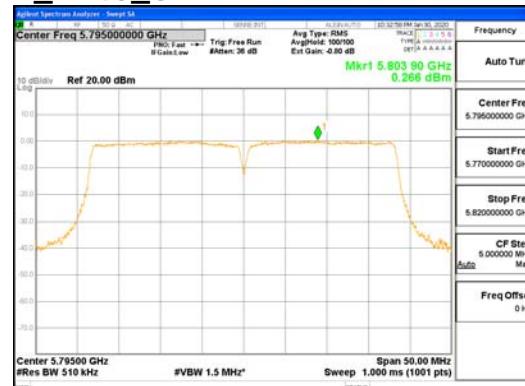
CTK Co., Ltd.

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

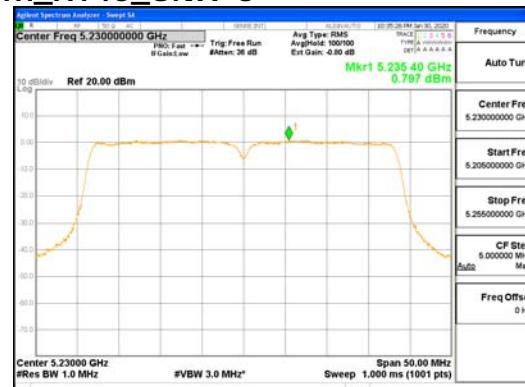
Report No.:
CTK-2020-00483
Page (115) / (176) Pages



CDD Mode_ANT3_802.11n_HT40_UNI1-1



CDD Mode_ANT3_802.11n_HT40_UNI1-3



CDD Mode_ANT4_802.11n_HT40_UNI1-1



CDD Mode_ANT4_802.11n_HT40_UNI1-3

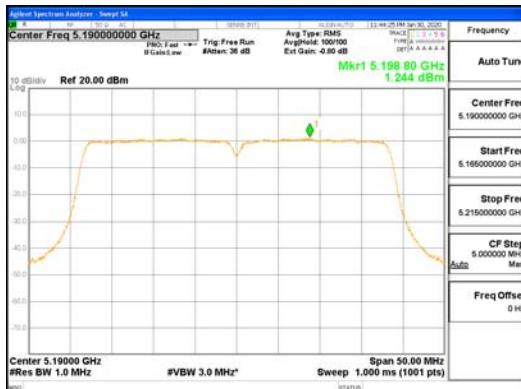


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

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

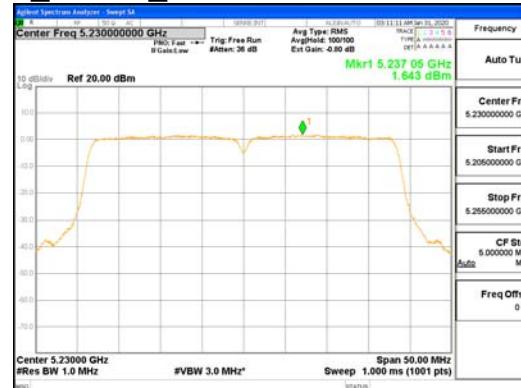
Report No.:
CTK-2020-00483
Page (116) / (176) Pages



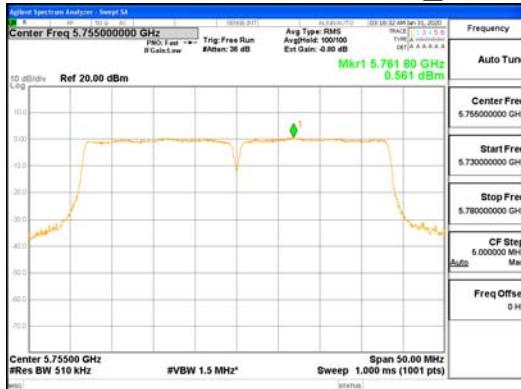
CDD Mode_ANT1_802.11ac_VHT40_UNII-1



CDD Mode_ANT1_802.11ac_VHT40_UNII-3



CDD Mode_ANT2_802.11ac_VHT40_UNII-1



CDD Mode_ANT2_802.11ac_VHT40_UNII-3

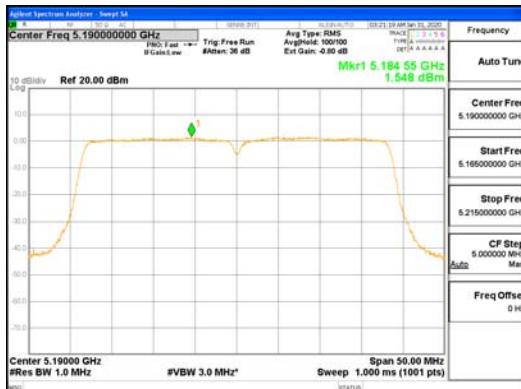


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

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

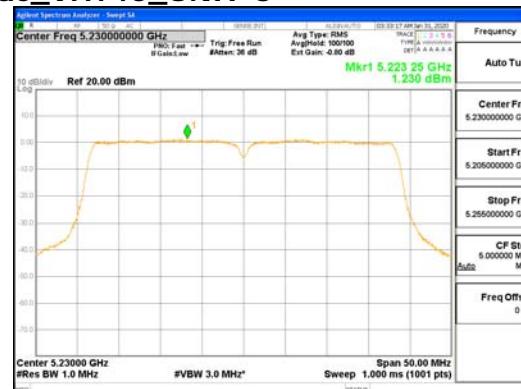
Report No.:
CTK-2020-00483
Page (117) / (176) Pages



CDD Mode_ANT3_802.11ac_VHT40_UNII-1



CDD Mode_ANT3_802.11ac_VHT40_UNII-3



CDD Mode_ANT4_802.11ac_VHT40_UNII-1



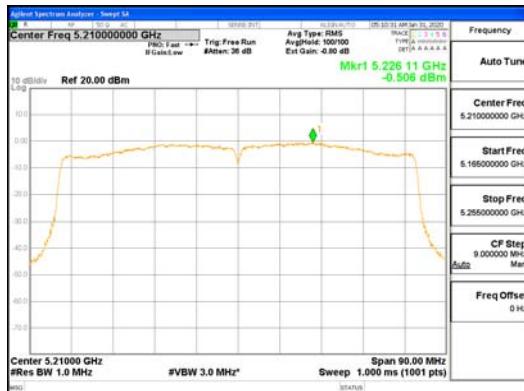
CDD Mode_ANT4_802.11ac_VHT40_UNII-3



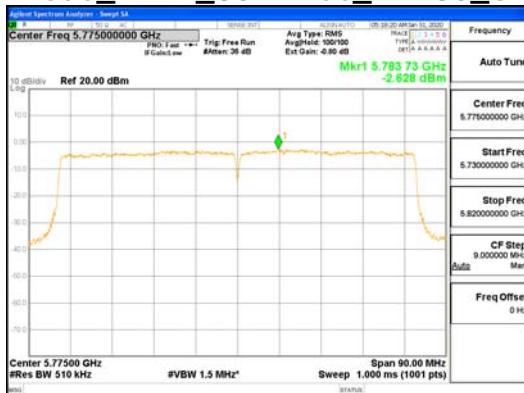
CTK Co., Ltd.

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

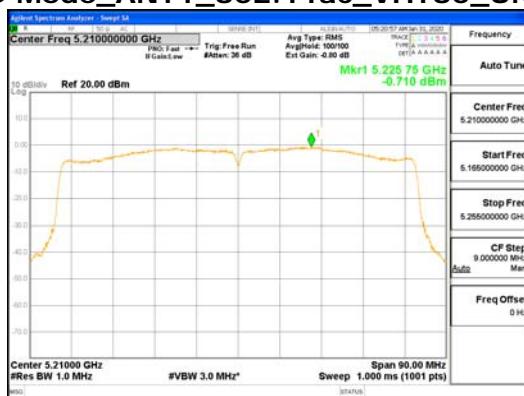
Report No.:
CTK-2020-00483
Page (118) / (176) Pages



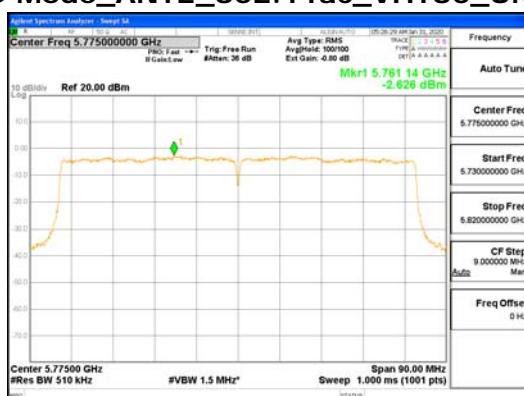
CDD Mode_ANT1_802.11ac_VHT80_UNII-1



CDD Mode_ANT1_802.11ac_VHT80_UNII-3



CDD Mode_ANT2_802.11ac_VHT80_UNII-1



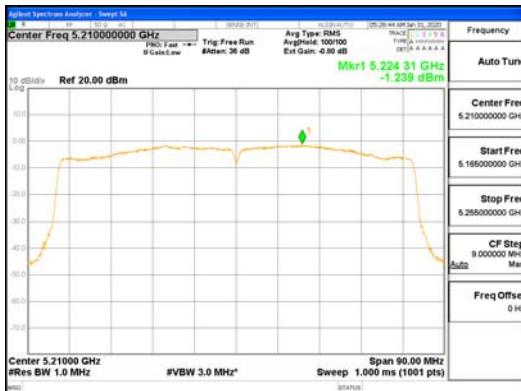
CDD Mode_ANT2_802.11ac_VHT80_UNII-3



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-2020-00483
Page (119) / (176) Pages



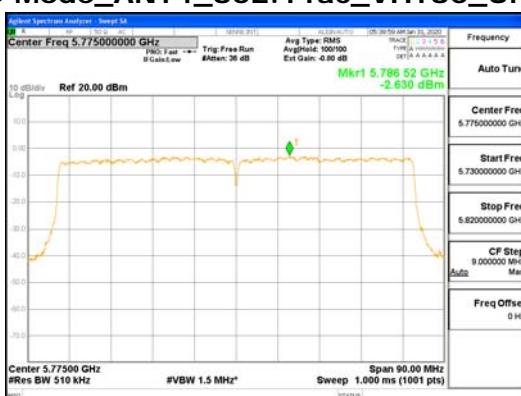
CDD Mode_ANT3_802.11ac_VHT80_UNII-1



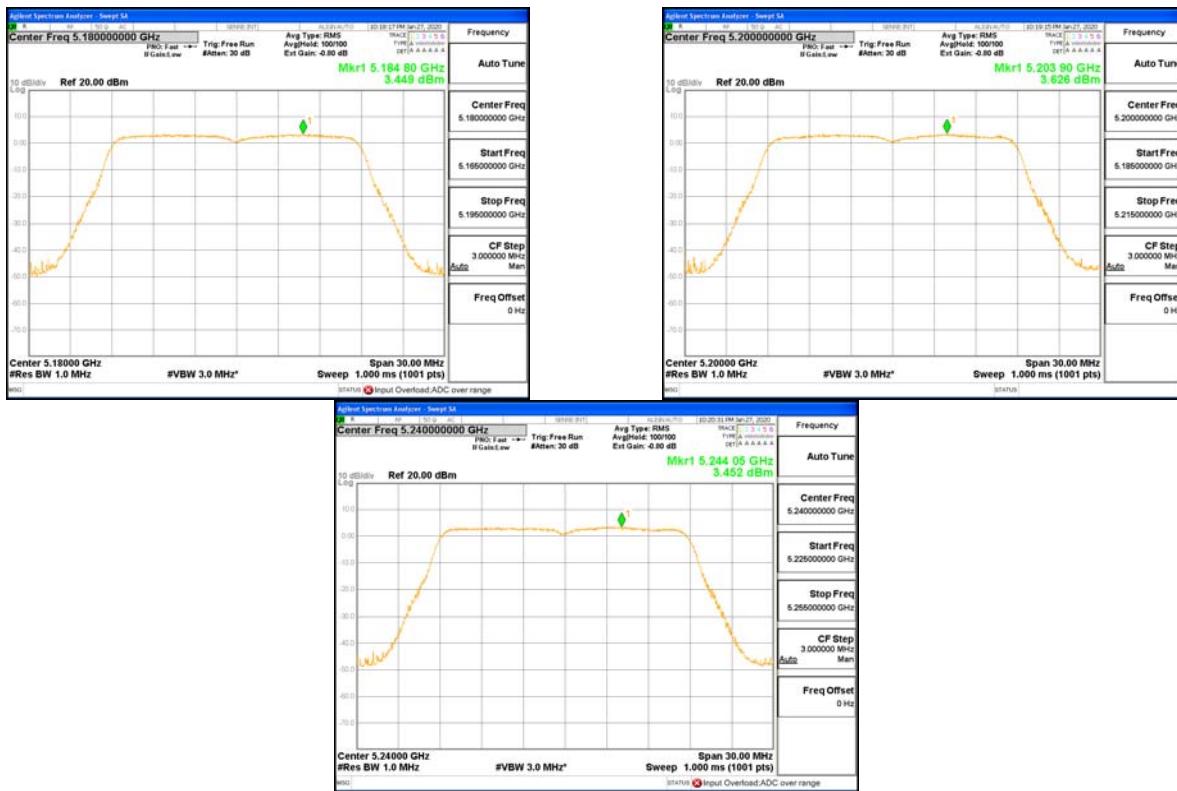
CDD Mode_ANT3_802.11ac_VHT80_UNII-3



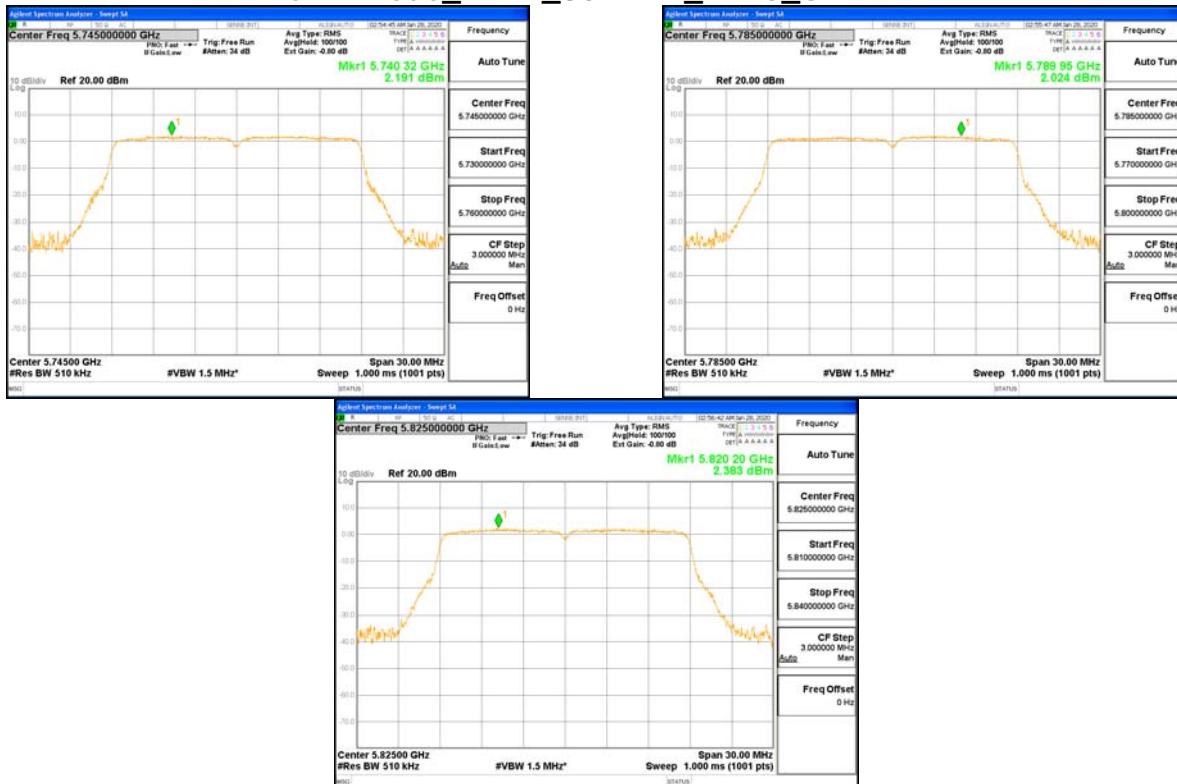
CDD Mode_ANT4_802.11ac_VHT80_UNII-1



CDD Mode_ANT4_802.11ac_VHT80_UNII-3



SDM Mode_AN1_802.11n_HT20_UNI1-1



SDM Mode_AN1_802.11n_HT20_UNI1-3

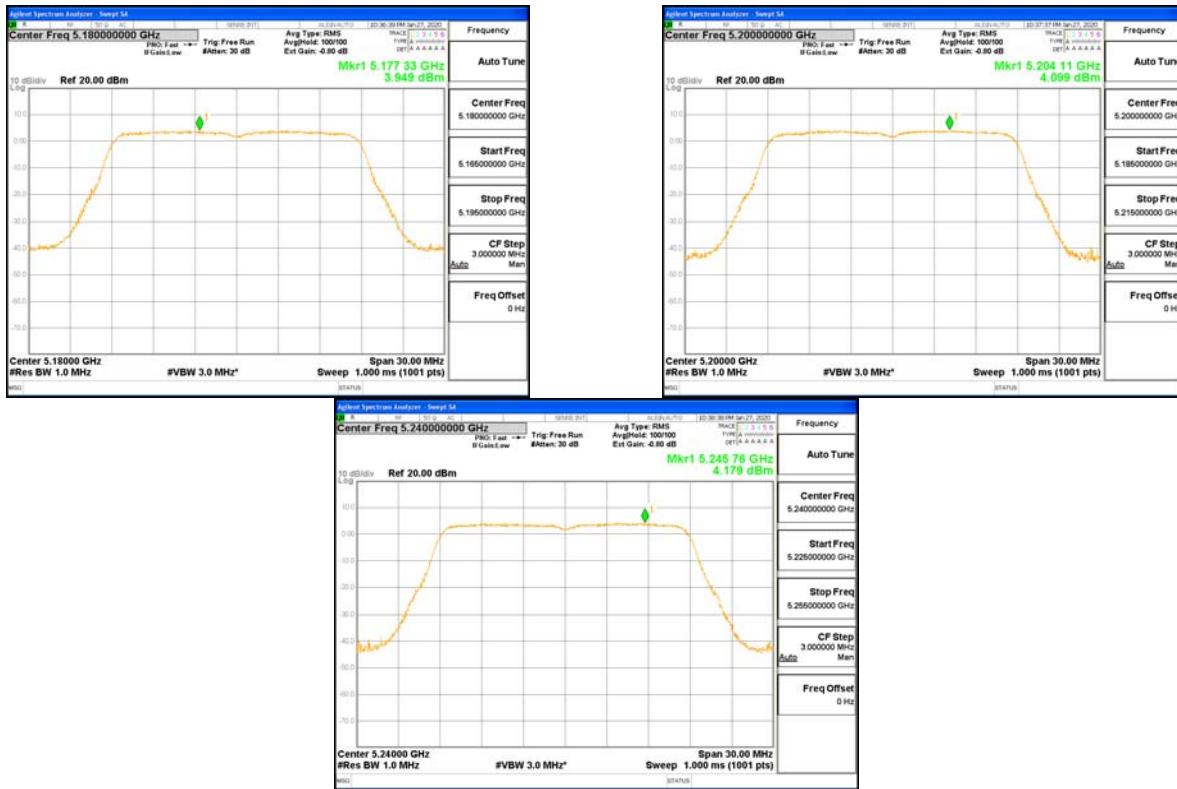


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

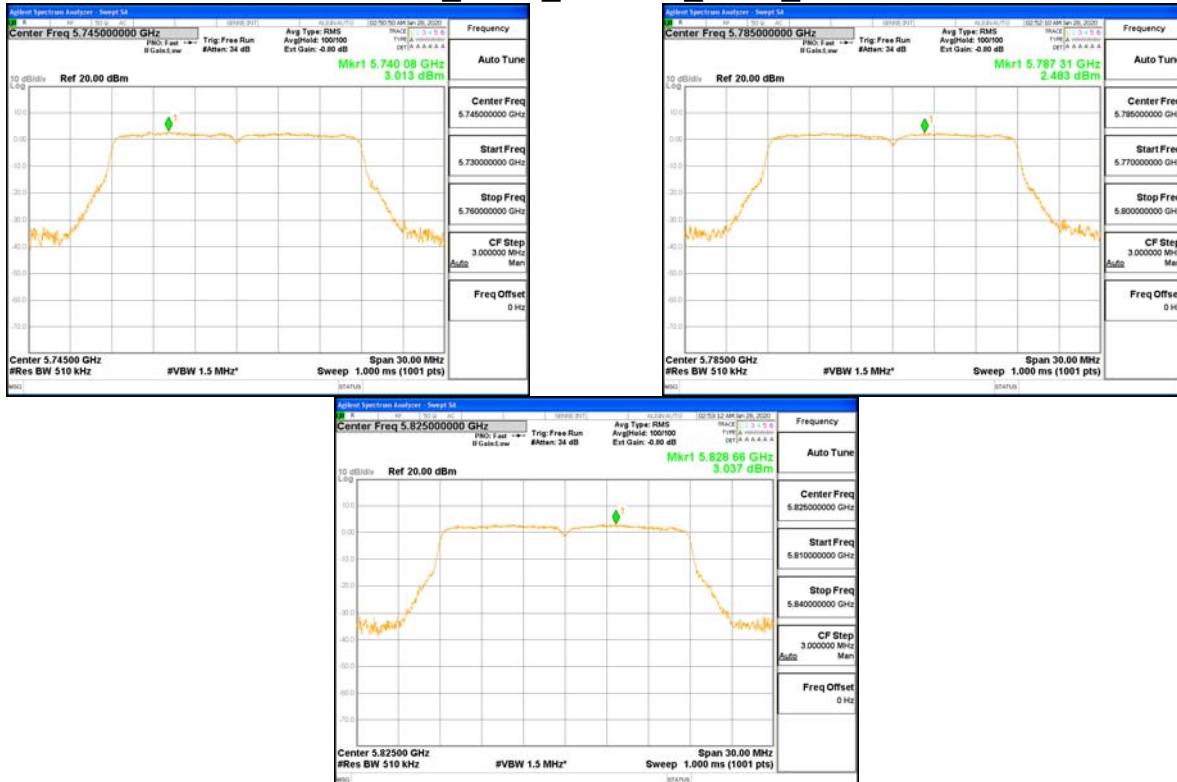
CTK Co., Ltd.

(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-2020-00483
Page (121) / (176) Pages



SDM Mode_AN2_802.11n_HT20_UNII-1



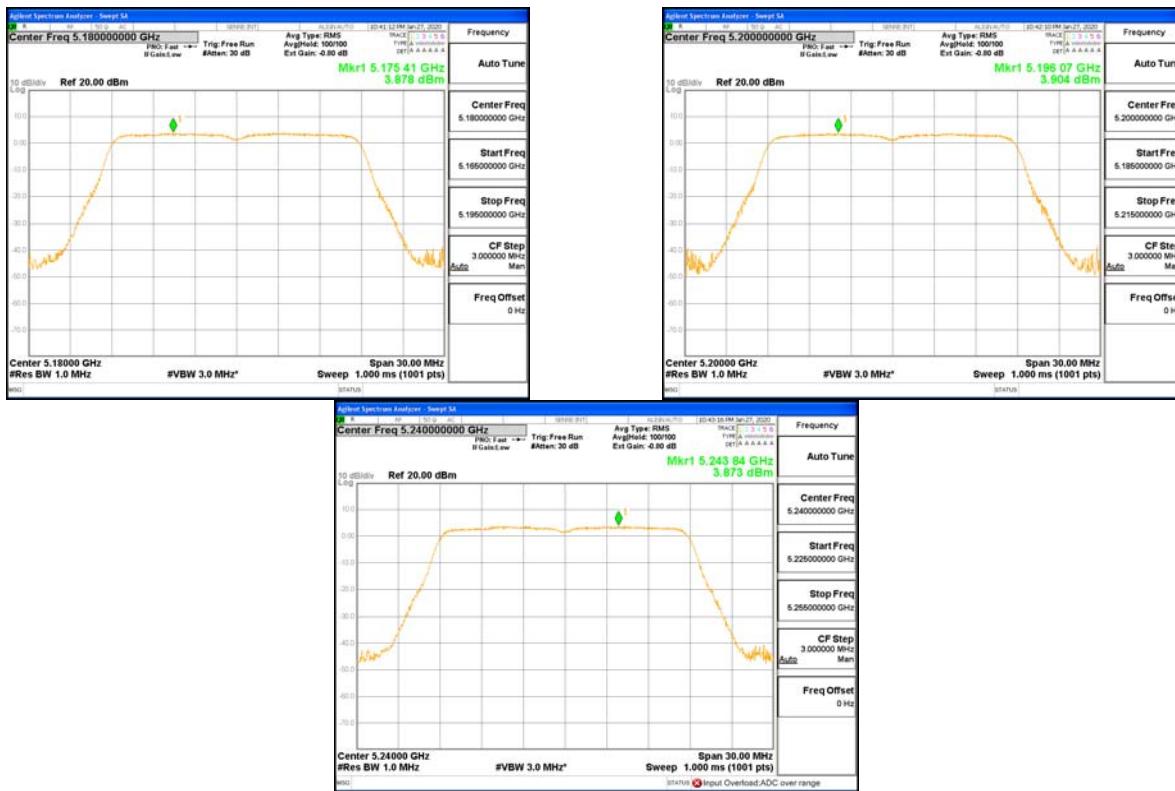
SDM Mode_AN2_802.11n_HT20_UNII-3



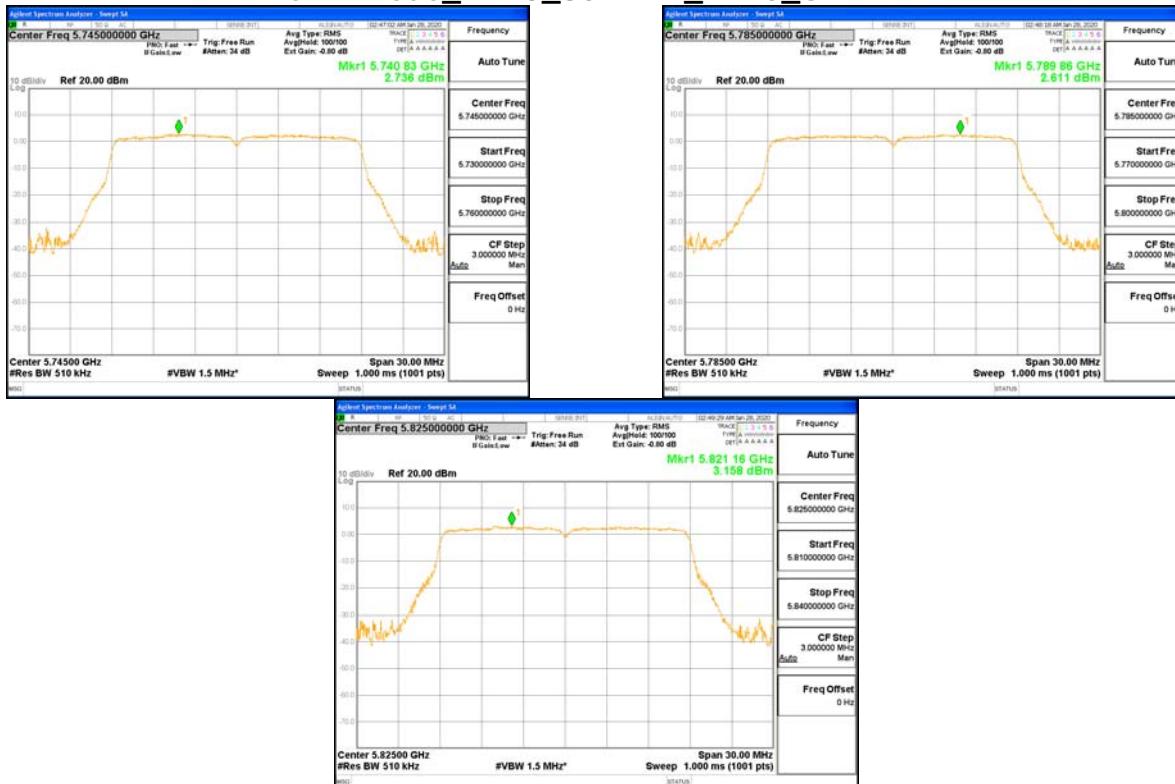
CTK Co., Ltd.

(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-2020-00483
Page (122) / (176) Pages



SDM Mode_AN3_802.11n_HT20_UNI1-1



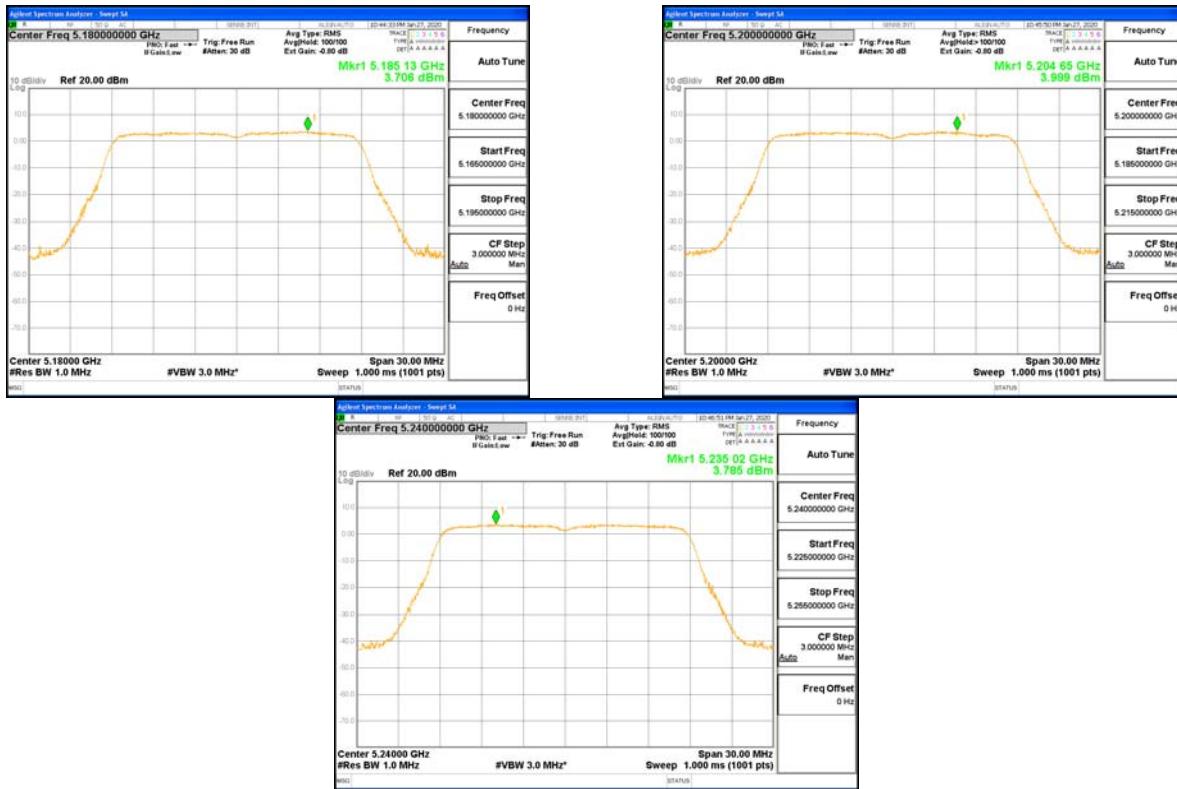
SDM Mode_AN3_802.11n_HT20_UNI1-3



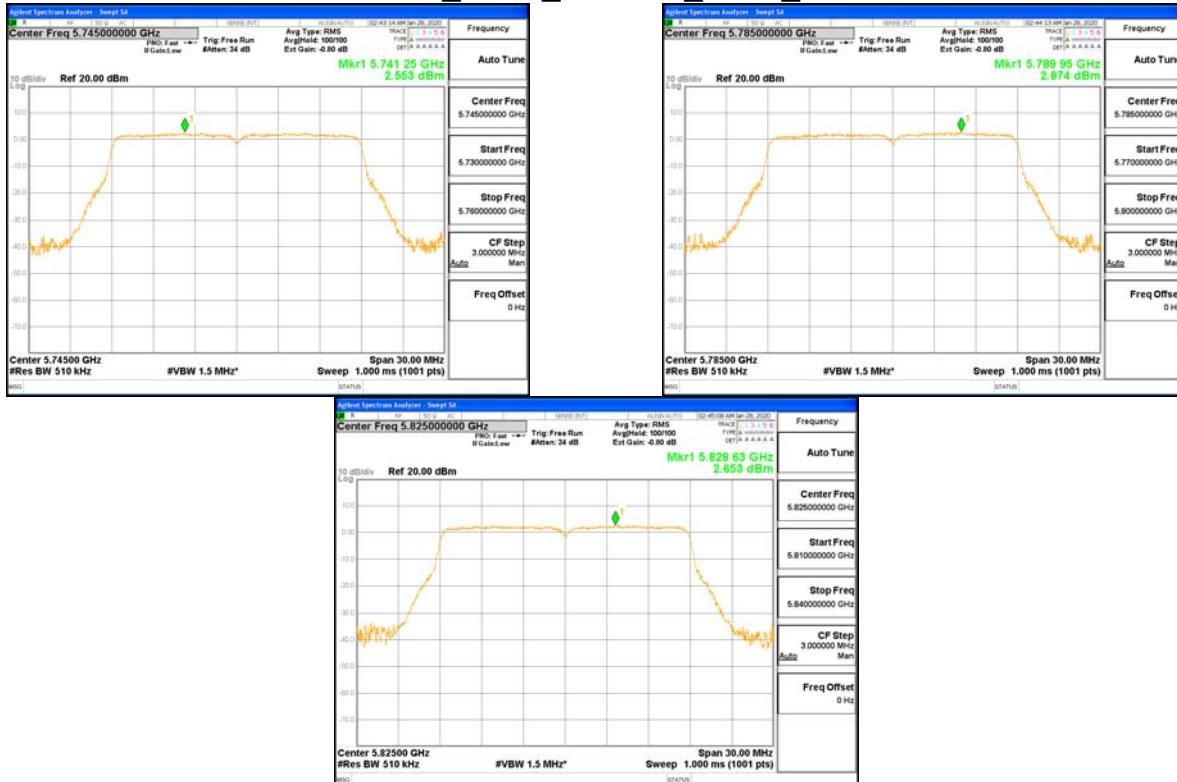
CTK Co., Ltd.

(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-2020-00483
Page (123) / (176) Pages



SDM Mode_AN4_802.11n_HT20_UNI1-1



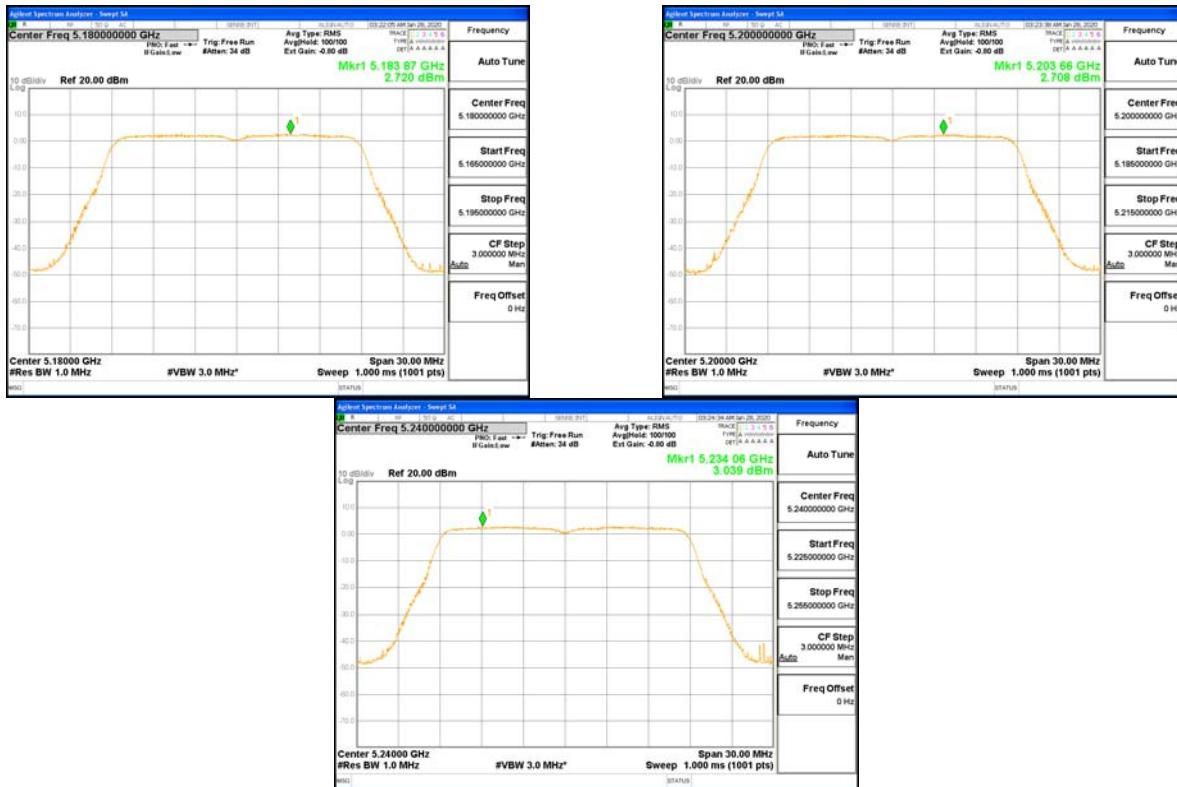
SDM Mode_AN4_802.11n_HT20_UNI1-3



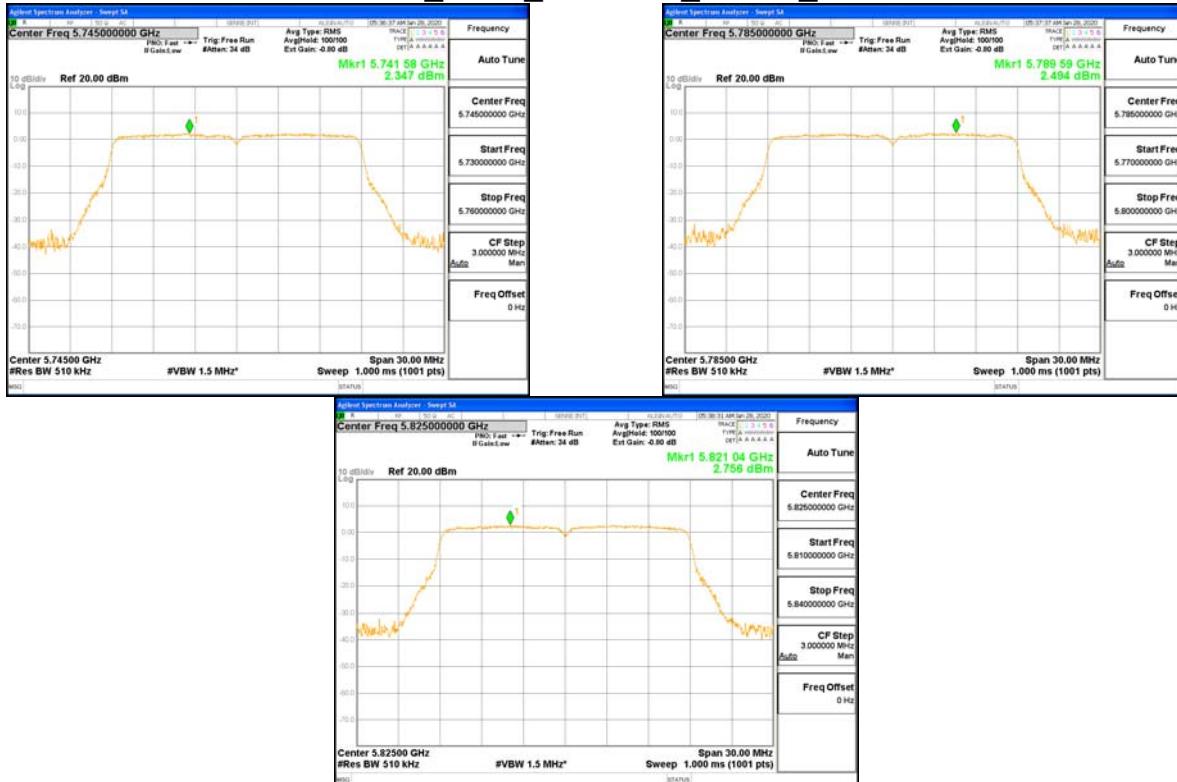
CTK Co., Ltd.

(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-2020-00483
Page (124) / (176) Pages



SDM Mode_ANT1_802.11ac_VHT20_UNII-1



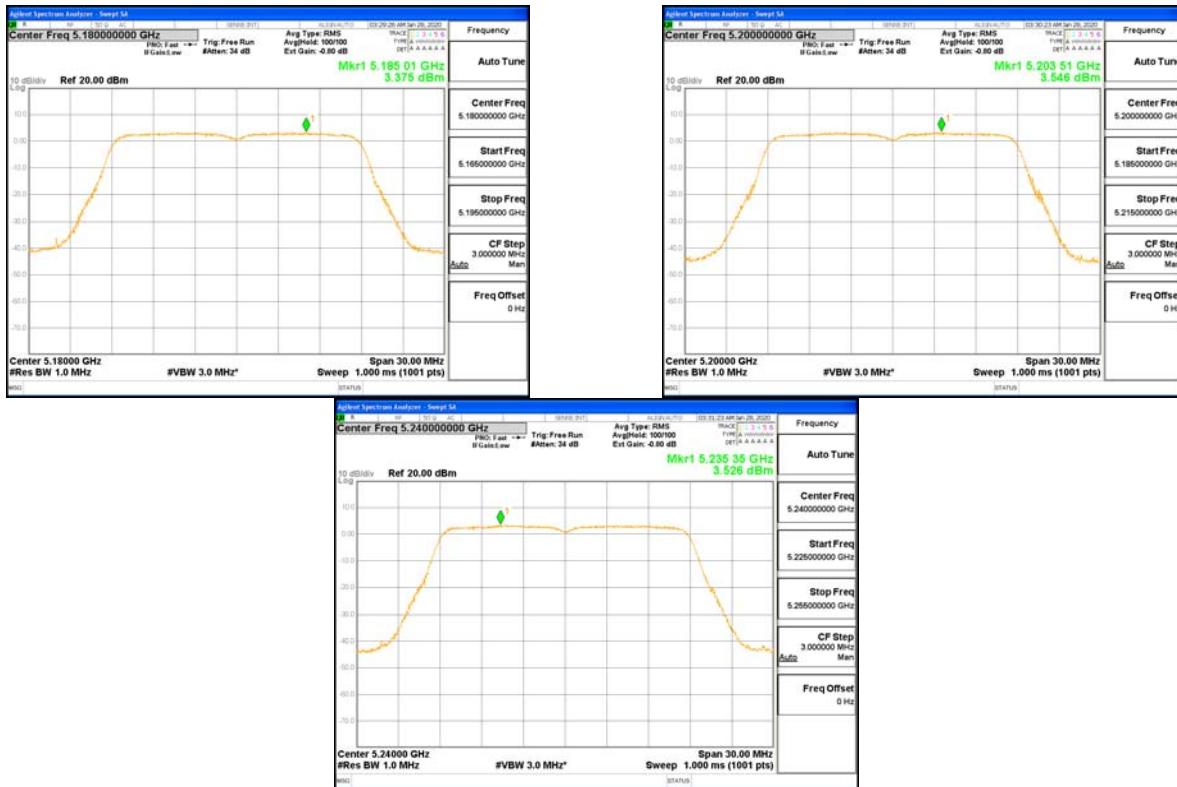
SDM Mode_ANT1_802.11ac_VHT20_UNII-3



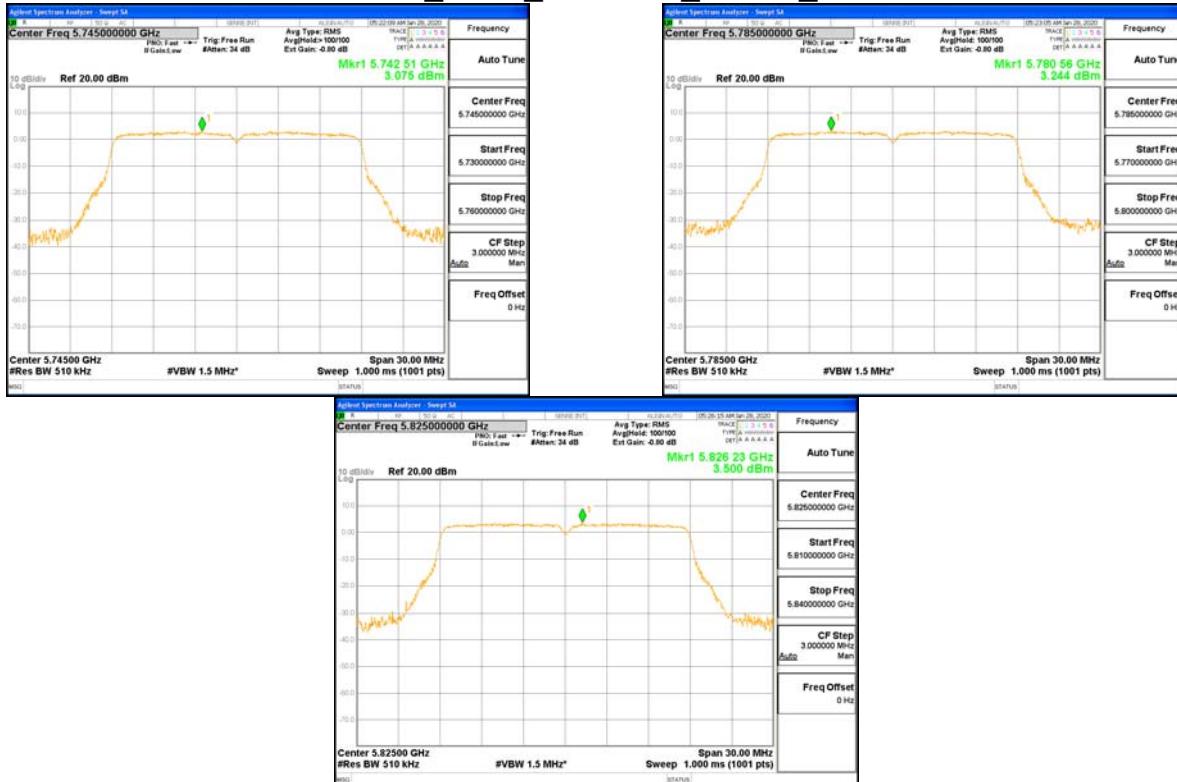
CTK Co., Ltd.

(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-2020-00483
Page (125) / (176) Pages



SDM Mode_ANT2_802.11ac_VHT20_UNII-1



SDM Mode_ANT2_802.11ac_VHT20_UNII-3

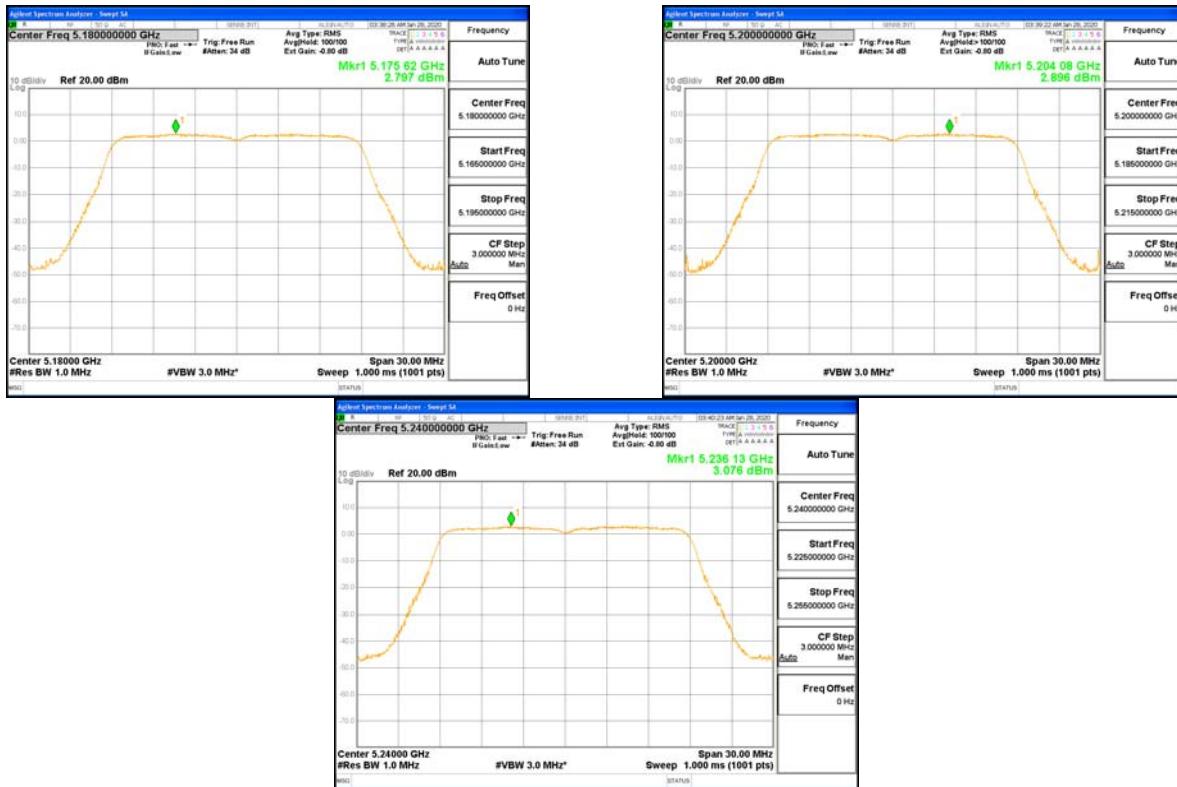


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

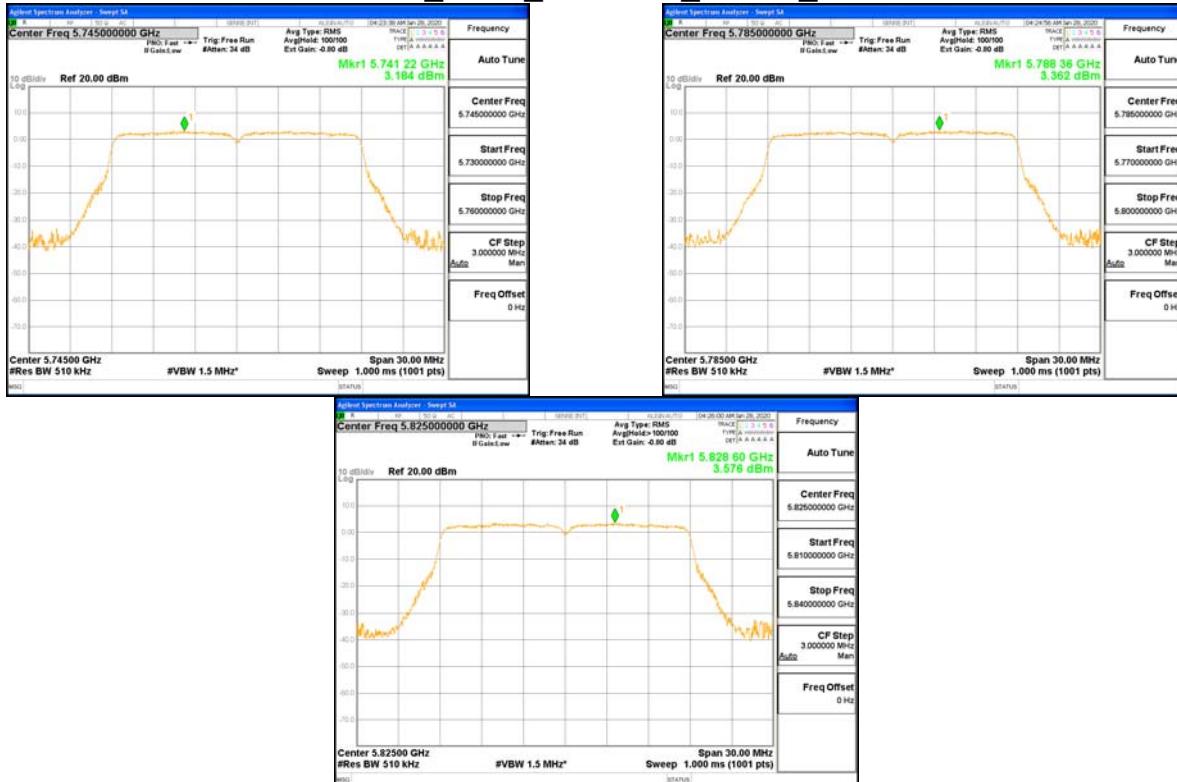
CTK Co., Ltd.

(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-2020-00483
Page (126) / (176) Pages



SDM Mode_ANT3_802.11ac_VHT20_UNII-1



SDM Mode_ANT3_802.11ac_VHT20_UNII-3

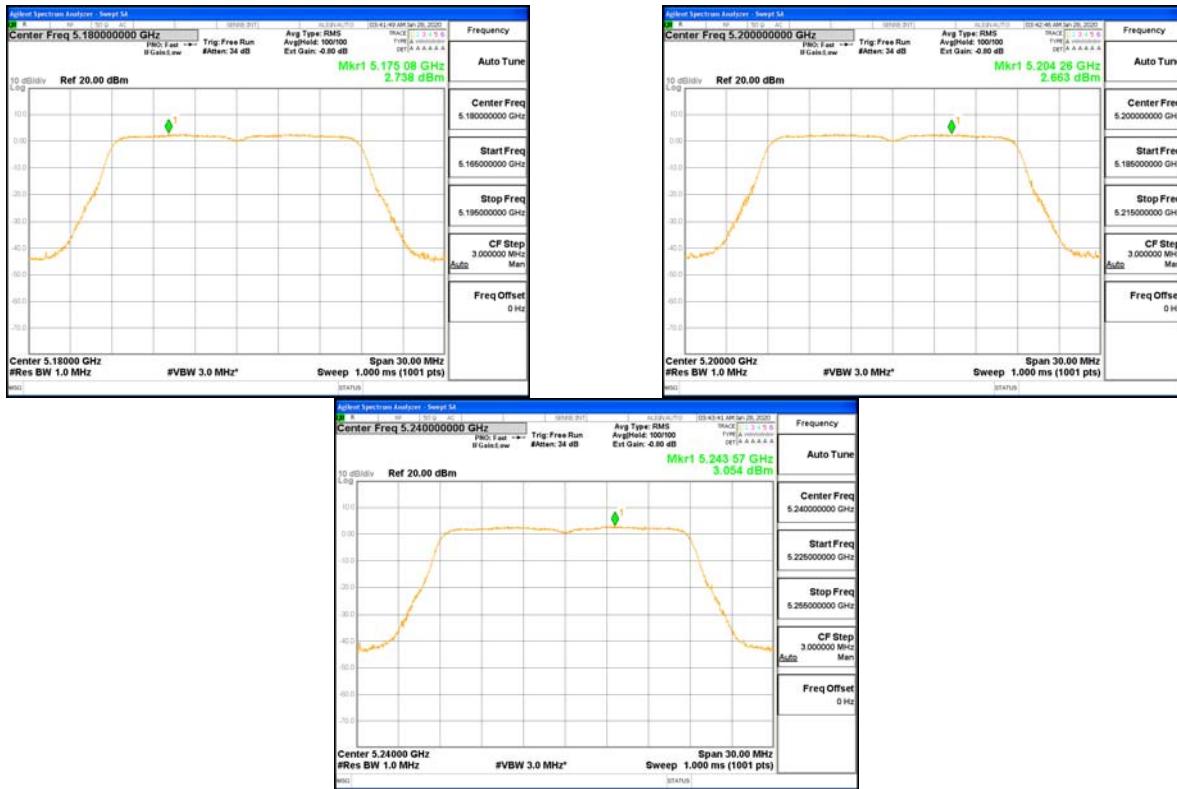


CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

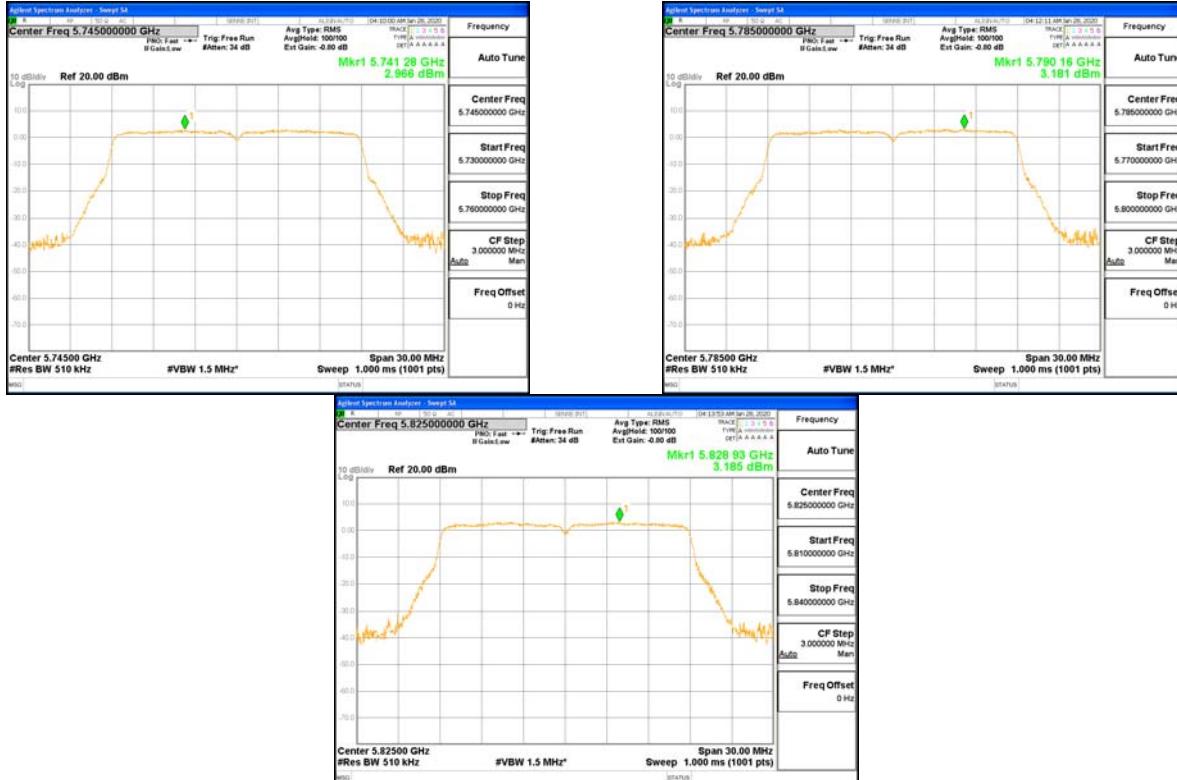
CTK Co., Ltd.

(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-2020-00483
Page (127) / (176) Pages



SDM Mode_ANT4_802.11ac_VHT20_UNII-1



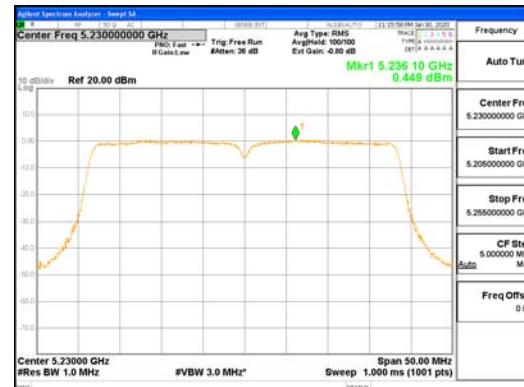
SDM Mode_ANT4_802.11ac_VHT20_UNII-3



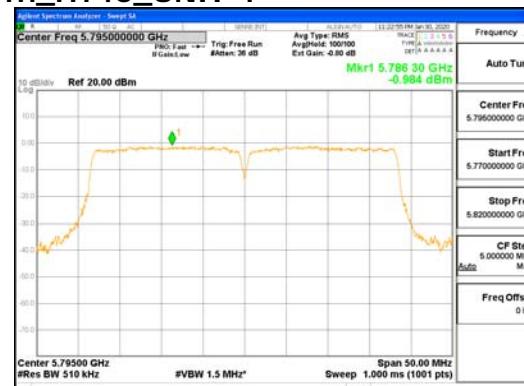
CTK Co., Ltd.

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

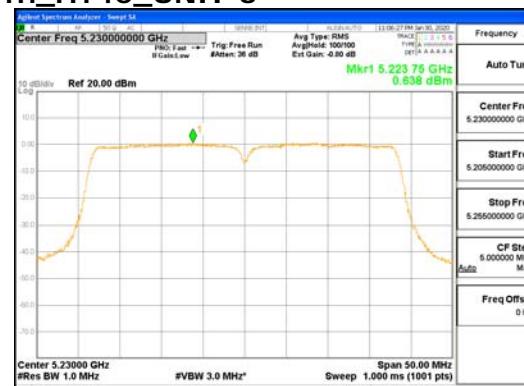
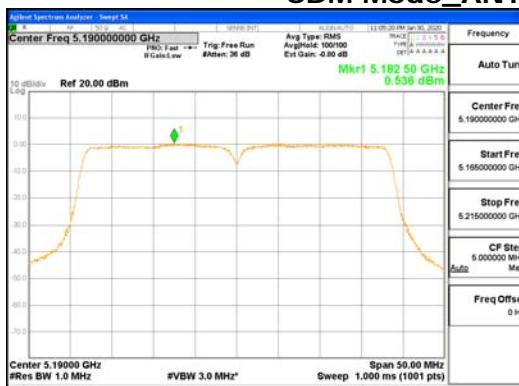
Report No.:
CTK-2020-00483
Page (128) / (176) Pages



SDM Mode_AN1_802.11n_HT40_UNI1-1



SDM Mode_AN1_802.11n_HT40_UNI1-3



SDM Mode_AN2_802.11n_HT40_UNI1-1



SDM Mode_AN2_802.11n_HT40_UNI1-3



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

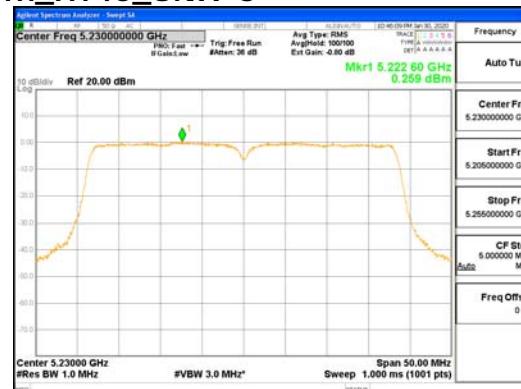
Report No.:
CTK-2020-00483
Page (129) / (176) Pages



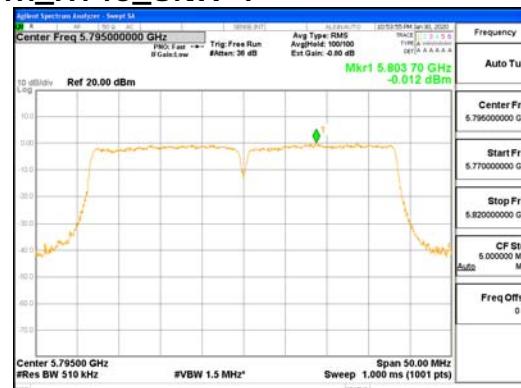
SDM Mode_AN3_802.11n_HT40_UNII-1



SDM Mode_AN3_802.11n_HT40_UNII-3



SDM Mode_AN4_802.11n_HT40_UNII-1



SDM Mode_AN4_802.11n_HT40_UNII-3



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

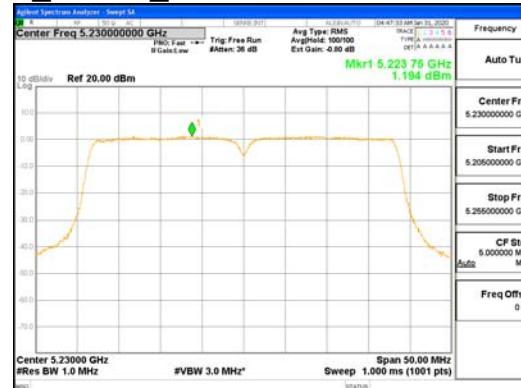
Report No.:
CTK-2020-00483
Page (130) / (176) Pages



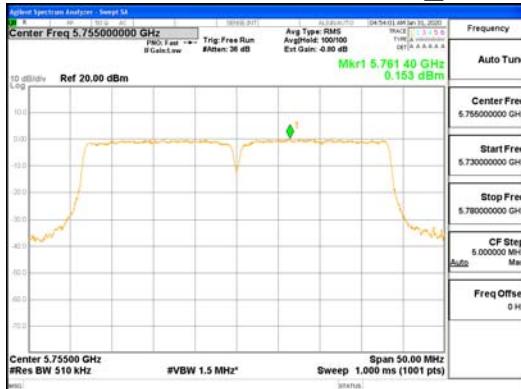
SDM Mode_ANT1_802.11ac_VHT40_UNII-1



SDM Mode_ANT1_802.11ac_VHT40_UNII-3



SDM Mode_ANT2_802.11ac_VHT40_UNII-1



SDM Mode_ANT2_802.11ac_VHT40_UNII-3



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

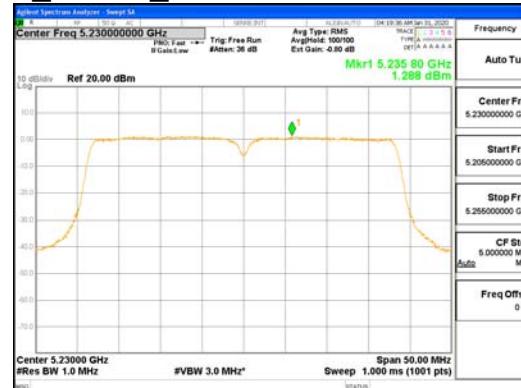
Report No.:
CTK-2020-00483
Page (131) / (176) Pages



SDM Mode_ANT3_802.11ac_VHT40_UNII-1



SDM Mode_ANT3_802.11ac_VHT40_UNII-3



SDM Mode_ANT4_802.11ac_VHT40_UNII-1



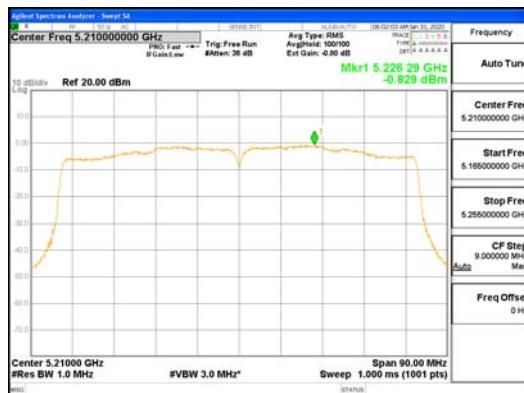
SDM Mode_ANT4_802.11ac_VHT40_UNII-3



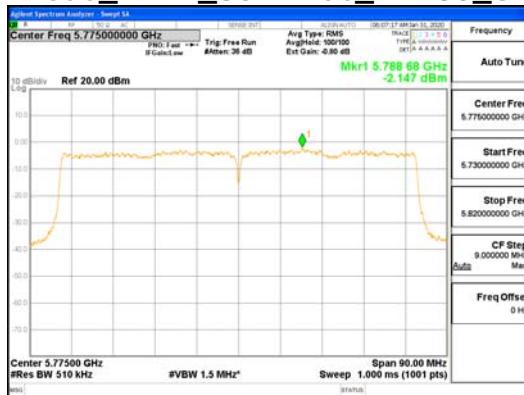
CTK Co., Ltd.

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

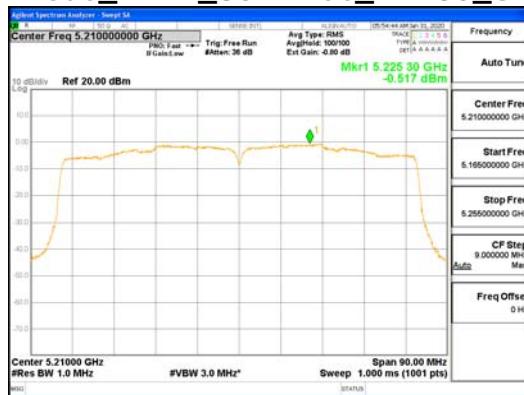
Report No.:
CTK-2020-00483
Page (132) / (176) Pages



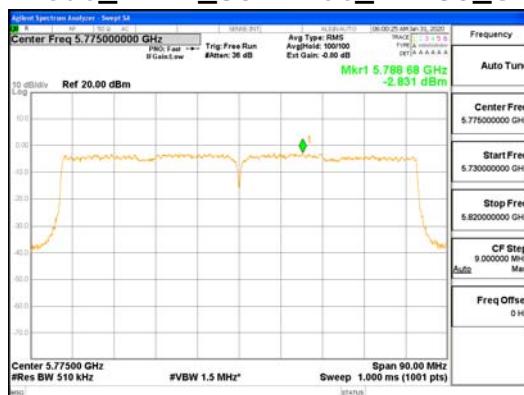
SDM Mode_ANT1_802.11ac_VHT80_UNII-1



SDM Mode_ANT1_802.11ac_VHT80_UNII-3



SDM Mode_ANT2_802.11ac_VHT80_UNII-1



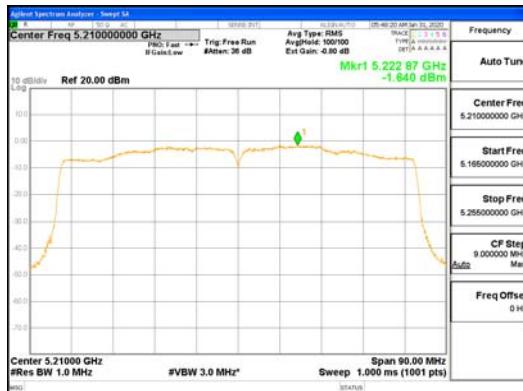
SDM Mode_ANT2_802.11ac_VHT80_UNII-3



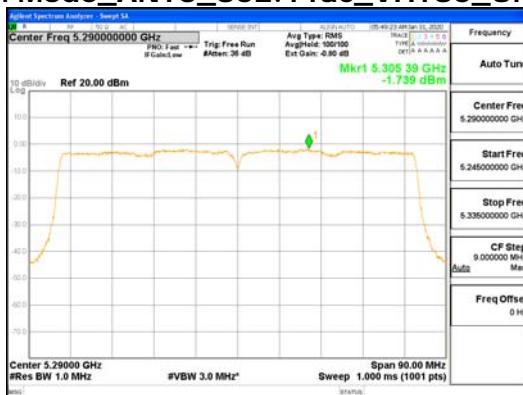
CTK Co., Ltd.

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

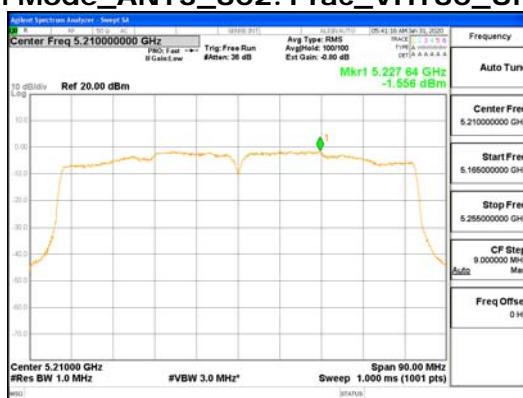
Report No.:
CTK-2020-00483
Page (133) / (176) Pages



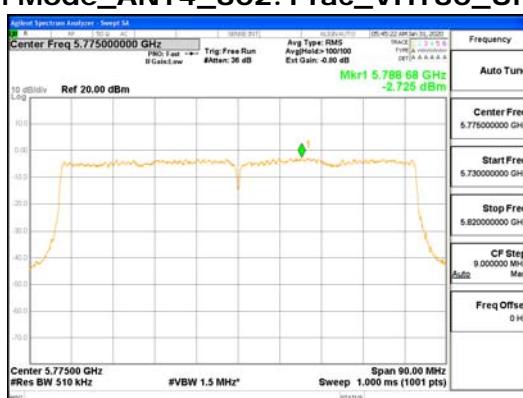
SDM Mode_ANT3_802.11ac_VHT80_UNII-1



SDM Mode_ANT3_802.11ac_VHT80_UNII-3



SDM Mode_ANT4_802.11ac_VHT80_UNII-1



SDM Mode_ANT4_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 <small>The Prime Leader of Global Regulatory Certification</small>	Report No.: CTK-2020-00483 Page (134) / (176) Pages	
--	---	--

4.5 Frequency Stability

Test Procedures

The EUT was placed inside of an environmental chamber as the temperature in the chamber was varied between 0 °C and +40 °C(Declaration by the Manufacturer). The temperature was incremented by 10 °C(5 °C) intervals and the unit was allowed to stabilize at each temperature before each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channel's center frequency was recorded.

Data for the worst case channel is shown below.

Temperature (°C)	0	10	20	30	40
Frequency	Measured Frequency Error (kHz)				
5 180 MHz	44.027	27.240	10.617	-9.925	-20.918
5 200 MHz	26.111	10.941	-8.198	-14.948	-33.183
5 240 MHz	25.362	-1.976	-1.080	-30.787	-32.930
5 745 MHz	67.946	-35.107	-45.988	-80.880	-64.929
5 785 MHz	38.417	2.439	-8.502	-53.831	-61.080
5 825 MHz	23.263	3.159	-26.958	-30.026	-59.442

Note :

Based on the results of the frequency stability test shown above the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature range as tested.



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-2020-00483
Page (135) / (176) Pages

4.6 Unwanted Emissions

Test Location

- 10 m SAC (test distance : 10 m, 3 m)
- 3 m SAC (test distance : 3 m)

Test Procedures

- 1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
- 2) In the frequency range above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emissions levels at both horizontal and vertical polarizations should be tested.

Test Settings:

Frequency Range = 9 kHz ~ 1 GHz

- a) RBW = 100 kHz for f < 1 GHz, 9 kHz for f < 30 MHz
- b) VBW \geq RBW
- c) Detector = CISPR Quasi-peak
- d) Sweep time = auto couple

- Peak

Frequency Range = 1 GHz ~ 40 GHz

- a) RBW = 1 MHz
- b) VBW \geq 3 x RBW
- c) Detector = Peak
- d) Sweep time = auto
- e) Trace mode = max hold

- Average (duty cycle \geq 98%)

Frequency Range = 1 GHz ~ 40 GHz

- a) RBW = 1 MHz
- b) VBW \geq 3 x RBW
- c) Detector = RMS
- d) Sweep time = auto
- e) Averaging type = power (i.e., RMS)
- f) Trace mode = average (at least 100 traces)

 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-2020-00483 Page (136) / (176) Pages	
--	---	--

- Average (duty cycle < 98%)

Frequency Range = 1 GHz ~ 40 GHz

a) RBW = 1 MHz

b) VBW \geq 3 x RBW

c) Detector = RMS

d) Sweep time = auto

e) Averaging type = power (i.e., RMS)

f) Trace mode = average (at least 100 traces)

If power averaging (RMS) mode, then the applicable correction factor is $10 \log(1/x)$, where x is the duty cycle.

Test mode	Duty Cycle Factor (dB)
CDD Mode	802.11a
	0.22
	802.11n_HT20
	0.21
	802.11n_HT40
	0.20
SDM Mode	802.11ac_VHT20
	0.41
	802.11ac_VHT40
	0.12
	802.11ac_VHT80
	0.24

Limit

- 15.209(a)

Frequency(MHz)	Field Strength uV/m@3m	Field Strength dBuV/m@3m	Deasurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46	3
Above 960	500	54	3

** Except as provided in 15.209(g). fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

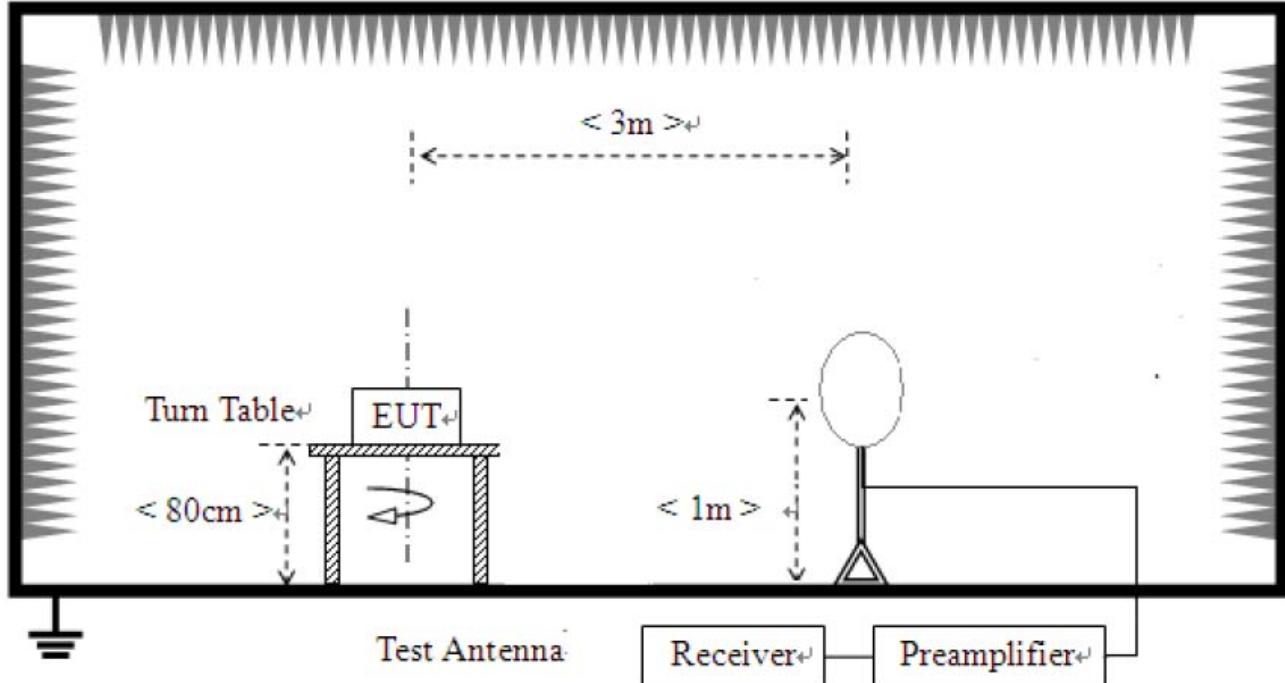
- 15.407, KDB 789033

E.I.R.P -27 dBm/MHz

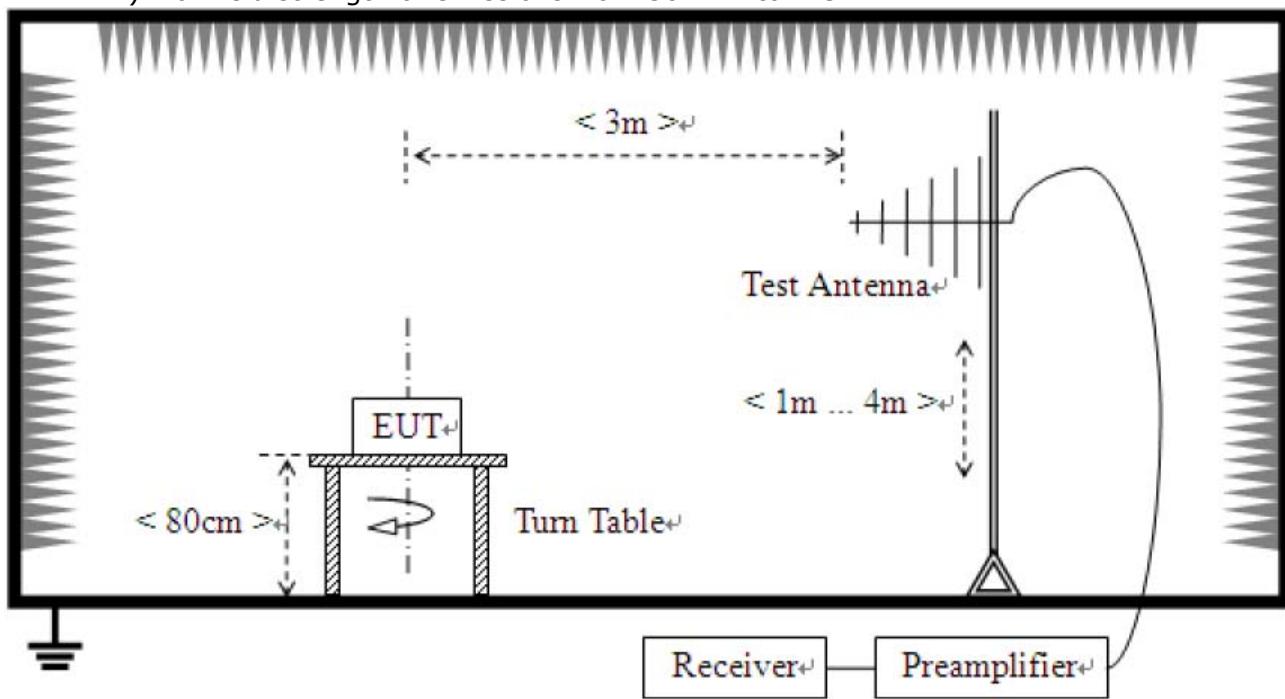
$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2, \text{ for } d = 3\text{m}$$

Test Setup:

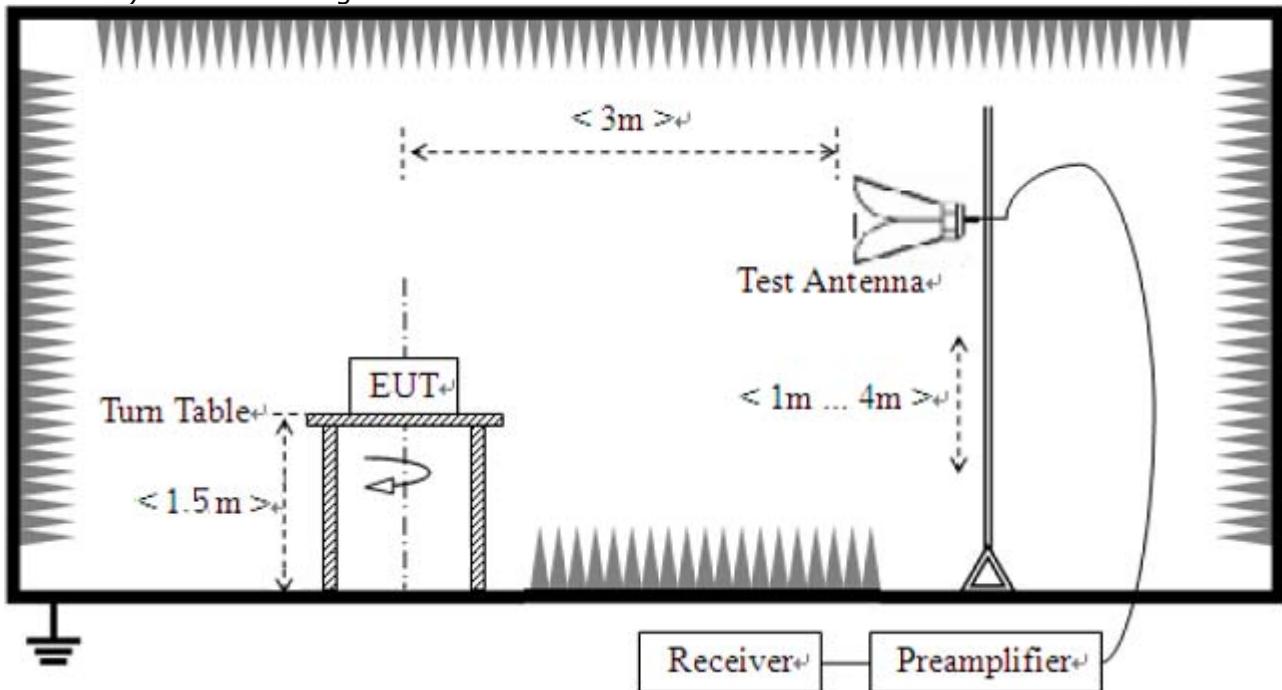
- 1) For field strength of emissions from 9 kHz to 30 MHz



- 2) For field strength of emissions from 30 MHz to 1 GHz



3) For field strength of emissions above 1 GHz



Test Mode

We have done all test mode.

The worst case antenna configuration and Test mode are determined to be as follows.

802.11a mode : ANT1 + ANT2 + ANT3 + ANT4 (MIMO)

802.11n SDM mode : ANT1 + ANT2 + ANT3 + ANT4 (MIMO)

802.11ac SDM mode : ANT1 + ANT2 + ANT3 + ANT4 (MIMO)

So the results are only attached worst cases.



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-2020-00483
Page (139) / (176) Pages

Test Results

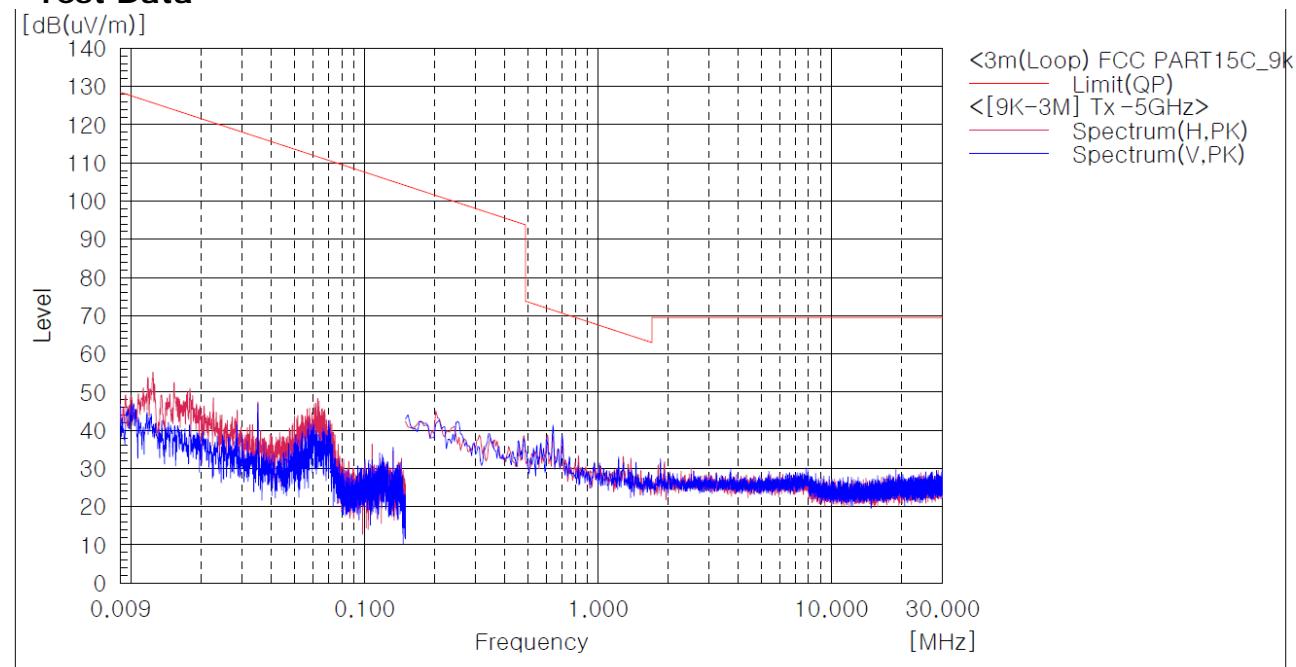
1) 9 kHz to 30 MHz

Test mode : Transmitter (Worst Case)

The requirements are:

Complies

Test Data



Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
The emissions 9 kHz to 30 MHz were 20 dB lower than the limit.			

Remark :

1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in stand-up position(Z axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.

**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-2020-00483
Page (140) / (176) Pages

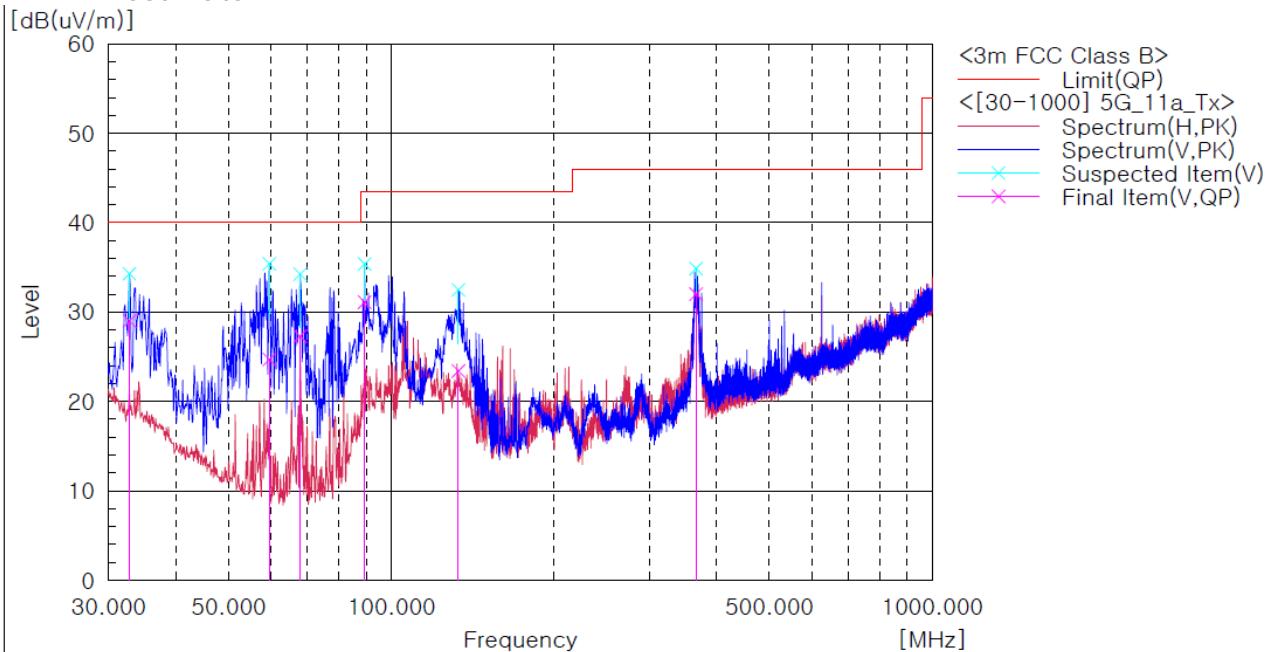
2) 30 MHz to 1 GHz

Test mode : Transmitter (Worst Case)

The requirements are:

Complies

Test Data



Final Result

No.	Frequency (P) [MHz]	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Height [cm]	Angle [deg]
1	59.464	V 42.9	-18.2	24.7	40.0	15.3	100.0	298.0
2	32.789	V 36.6	-7.6	29.0	40.0	11.0	100.0	235.0
3	67.830	V 44.9	-17.6	27.3	40.0	12.7	191.0	158.0
4	89.291	V 45.9	-14.8	31.1	43.5	12.4	191.0	171.0
5	133.063	V 34.8	-11.4	23.4	43.5	20.1	100.0	52.0
6	366.105	V 38.4	-6.4	32.0	46.0	14.0	100.0	322.0

Remark :

1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in stand-up position(Z axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain



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

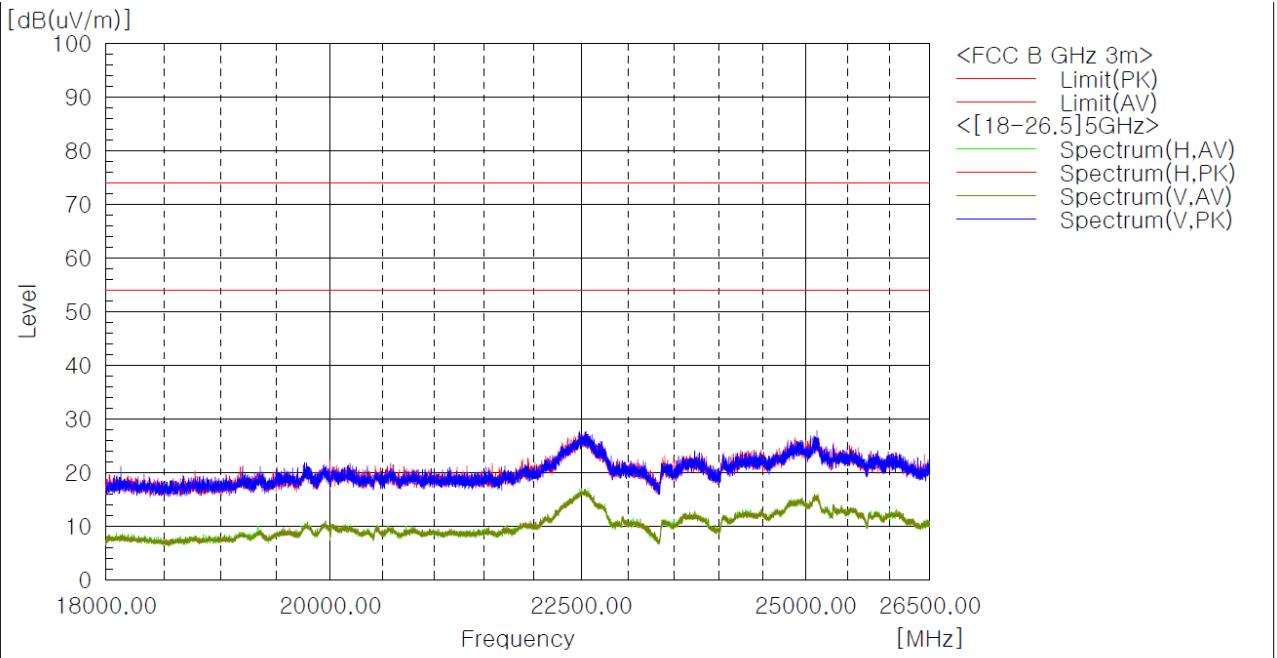
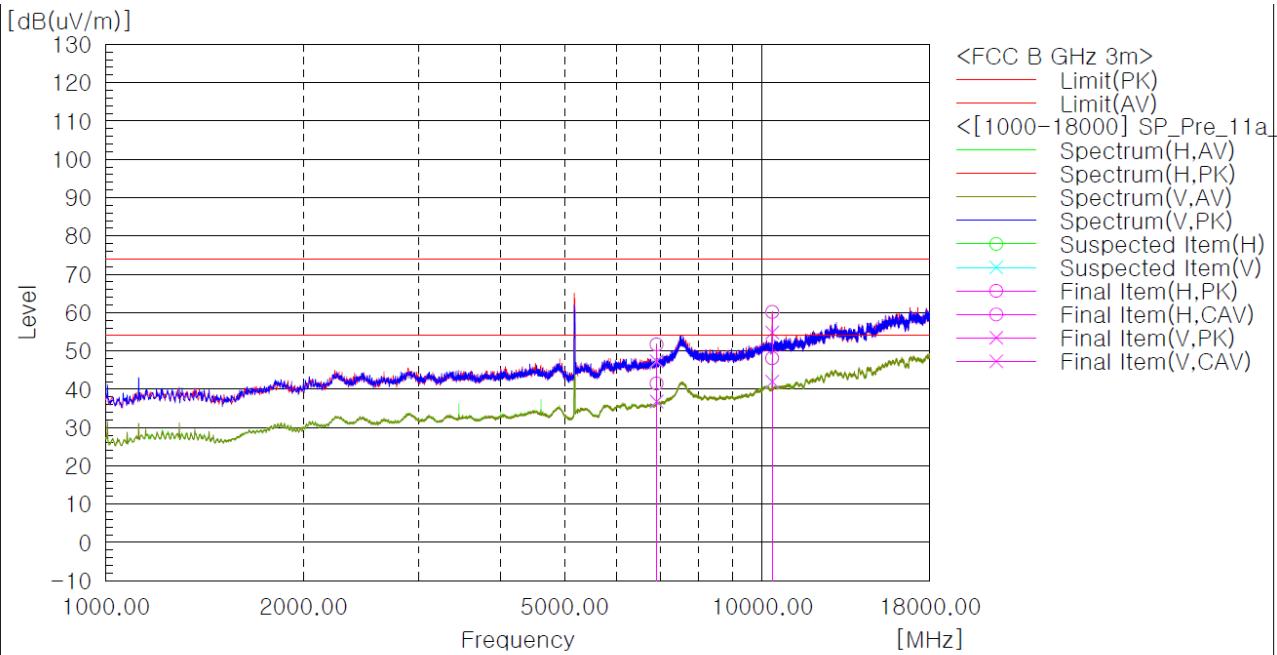
Report No.:
CTK-2020-00483
Page (141) / (176) Pages

3) above 1 GHz

The requirements are:

Complies

Test Data

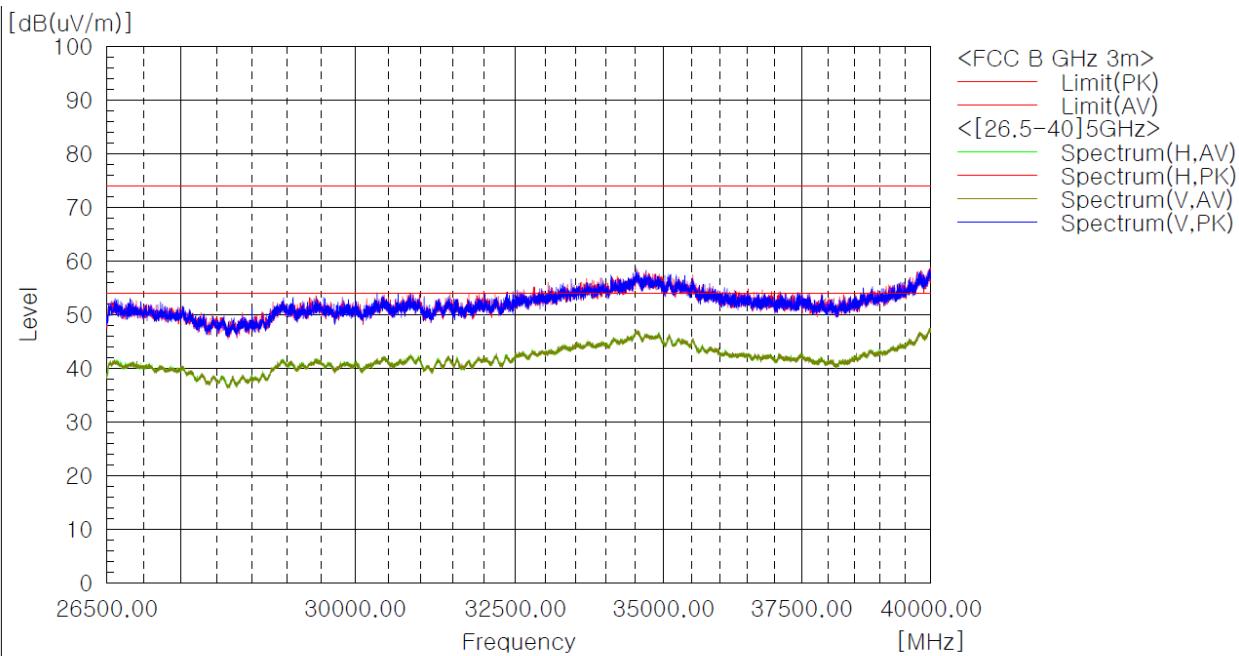




CTK Co., Ltd.

(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-2020-00483
Page (142) / (176) 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 <small>The Prime Leader of Global Regulatory Certification</small>	Report No.: CTK-2020-00483 Page (143) / (176) Pages	
--	---	--

Test mode : Transmitter, 802.11a

The requirements are:

- Complies

Test Data

Ch.36(5 180 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
6 906.82	H	53.8	-----	74.0	-----	20.2	-----
6 906.73	H	-----	42.1	-----	54.0	-----	11.9
6 907.03	V	51.6	-----	74.0	-----	22.4	-----
6 906.87	V	-----	39.2	-----	54.0	-----	14.8
10 358.74	H	63.6	-----	74.0	-----	10.4	-----
10 357.67	H	-----	48.2	-----	54.0	-----	5.8
10 358.13	V	55.0	-----	74.0	-----	19.0	-----
10 366.15	V	-----	41.4	-----	54.0	-----	12.6

Ch.40(5 200 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
6 933.58	H	56.3	-----	74.0	-----	17.7	-----
6 933.41	H	-----	43.8	-----	54.0	-----	10.2
6 933.20	V	52.6	-----	74.0	-----	21.4	-----
6 933.44	V	-----	40.4	-----	54.0	-----	13.6
10 398.75	H	62.7	-----	74.0	-----	11.3	-----
10 399.72	H	-----	47.4	-----	54.0	-----	6.6
10 397.04	V	54.4	-----	74.0	-----	19.6	-----
10 406.97	V	-----	40.8	-----	54.0	-----	13.2

**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-2020-00483
Page (144) / (176) Pages

Ch.48(5 240 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
6 986.81	H	52.3	-----	74.0	-----	21.7	-----
6 986.73	H	-----	41.1	-----	54.0	-----	12.9
6 986.41	V	50.8	-----	74.0	-----	23.2	-----
6 986.84	V	-----	38.7	-----	54.0	-----	15.3
10 479.01	H	62.3	-----	74.0	-----	11.7	-----
10 481.42	H	-----	48.1	-----	54.0	-----	5.9
10 481.42	V	51.1	-----	74.0	-----	22.9	-----
10 487.76	V	-----	41.4	-----	54.0	-----	12.6

Ch.52(5 260 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
10 518.81	H	59.5	-----	74.0	-----	14.5	-----
10 523.08	H	-----	45.5	-----	54.0	-----	8.5
10 521.85	V	54.4	-----	74.0	-----	19.6	-----
10 532.31	V	-----	41.0	-----	54.0	-----	13.0

Ch.149(5 745 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
11 488.91	H	61.5	-----	74.0	-----	12.5	-----
11 491.86	H	-----	47.6	-----	54.0	-----	6.4
11 490.47	V	59.6	-----	74.0	-----	14.4	-----
11 503.65	V	-----	42.3	-----	54.0	-----	11.7

Ch.157(5 785 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
11 572.23	H	65.2	-----	74.0	-----	8.8	-----
11 571.54	H	-----	49.1	-----	54.0	-----	4.9
11 569.61	V	60.8	-----	74.0	-----	13.2	-----
11 569.69	V	-----	43.0	-----	54.0	-----	11.0

 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-2020-00483 Page (145) / (176) Pages	
--	---	---	--

Ch.165(5 825 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
11 648.61	H	66.7	-----	74.0	-----	7.3	-----
11 647.84	H	-----	49.1	-----	54.0	-----	4.9
11 651.94	V	62.0	-----	74.0	-----	12.0	-----
11 657.58	V	-----	43.8	-----	54.0	-----	10.2

Remarks

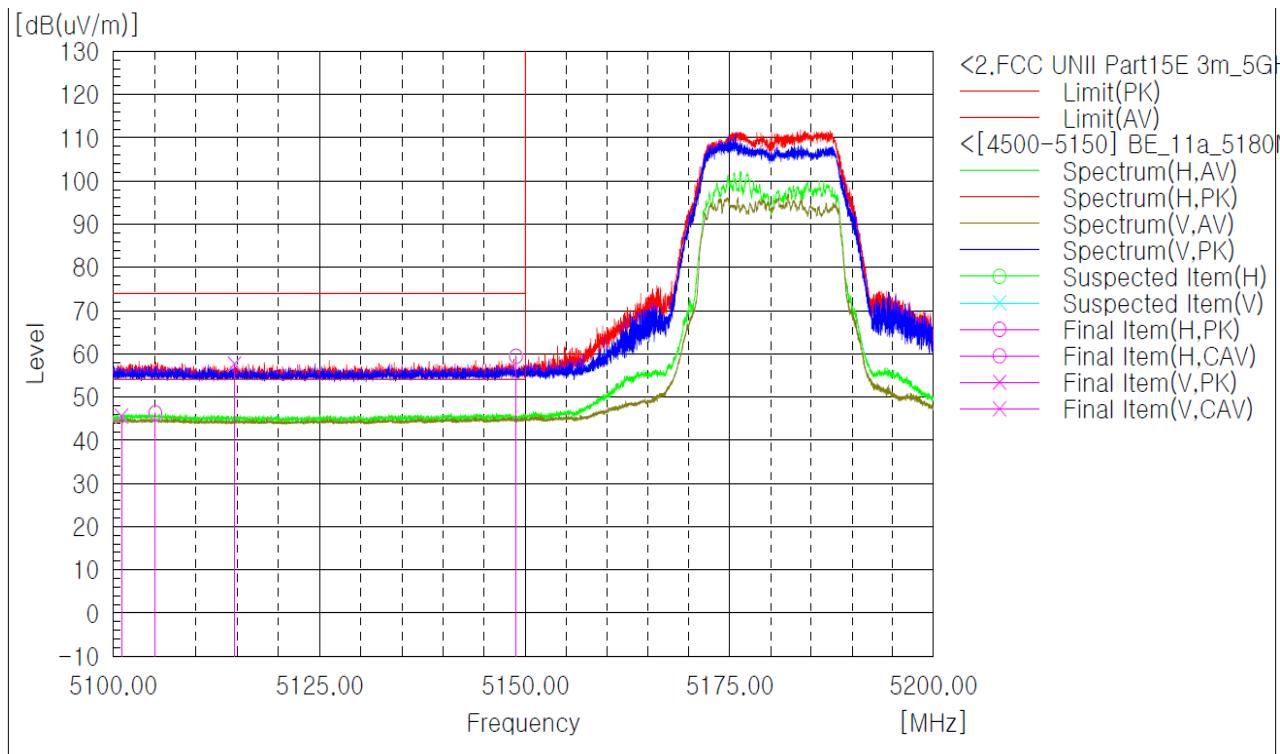
1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in stand-up position(Z axis) and the worst case was recorded.
2. Correction factor = Antenna factor + Cable loss - Amp Gain

**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-2020-00483
Page (146) / (176) Pages

Worst Case Mode :	802.11a
Worst Case Transfer Rate :	6 Mbps
Distance of Measurements :	3 Meters
Operating Frequency :	5 180 MHz
Channel :	36



Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
5 148.88	H	59.4	-----	74.0	-----	14.6	-----
5 105.11	H	-----	46.3	-----	54.0	-----	7.7
5 114.68	V	57.7	-----	74.0	-----	16.3	-----
5 101.01	V	-----	45.6	-----	54.0	-----	8.4

Radiated Restricted Band Edge Plot

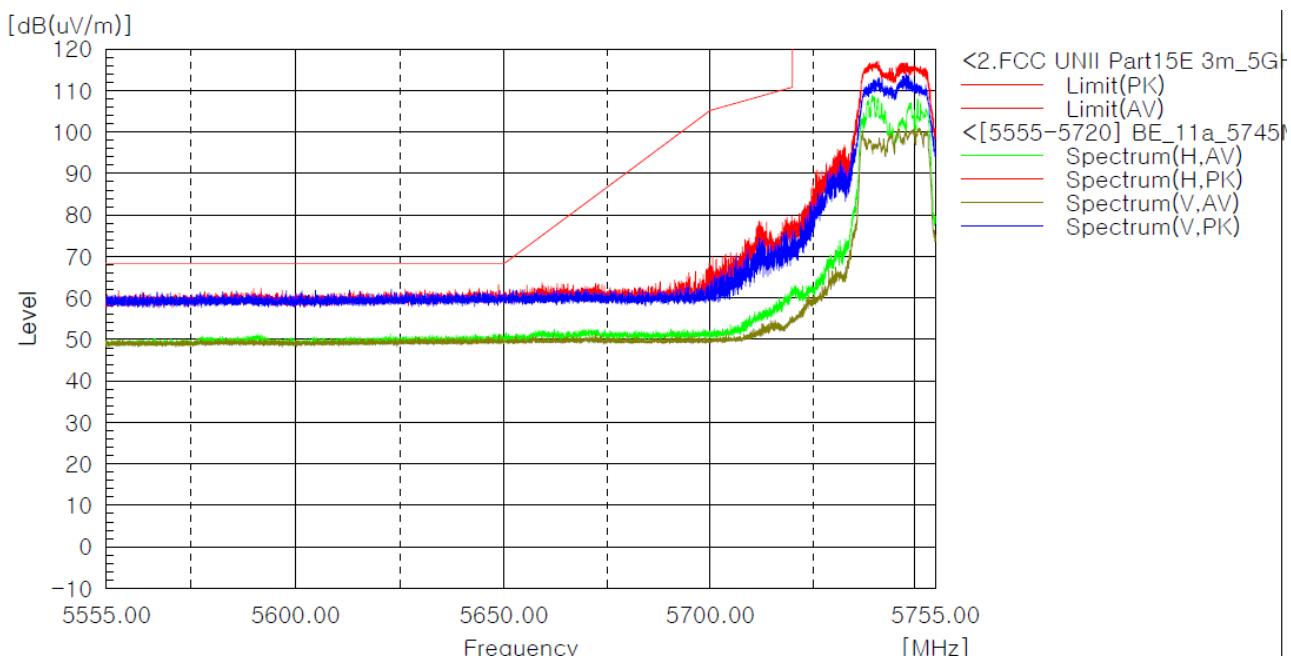


CTK Co., Ltd.

(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-2020-00483
Page (147) / (176) Pages

Worst Case Mode :	802.11a
Worst Case Transfer Rate :	6 Mbps
Distance of Measurements :	3 Meters
Operating Frequency :	5 745 MHz
Channel :	149



Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
-----------------	-----	---------------------	---------------------	---------------------	---------------------	----------------	----------------

The emissions above 1 GHz were 20 dB lower than the limit.

Radiated Restricted Band Edge Plot

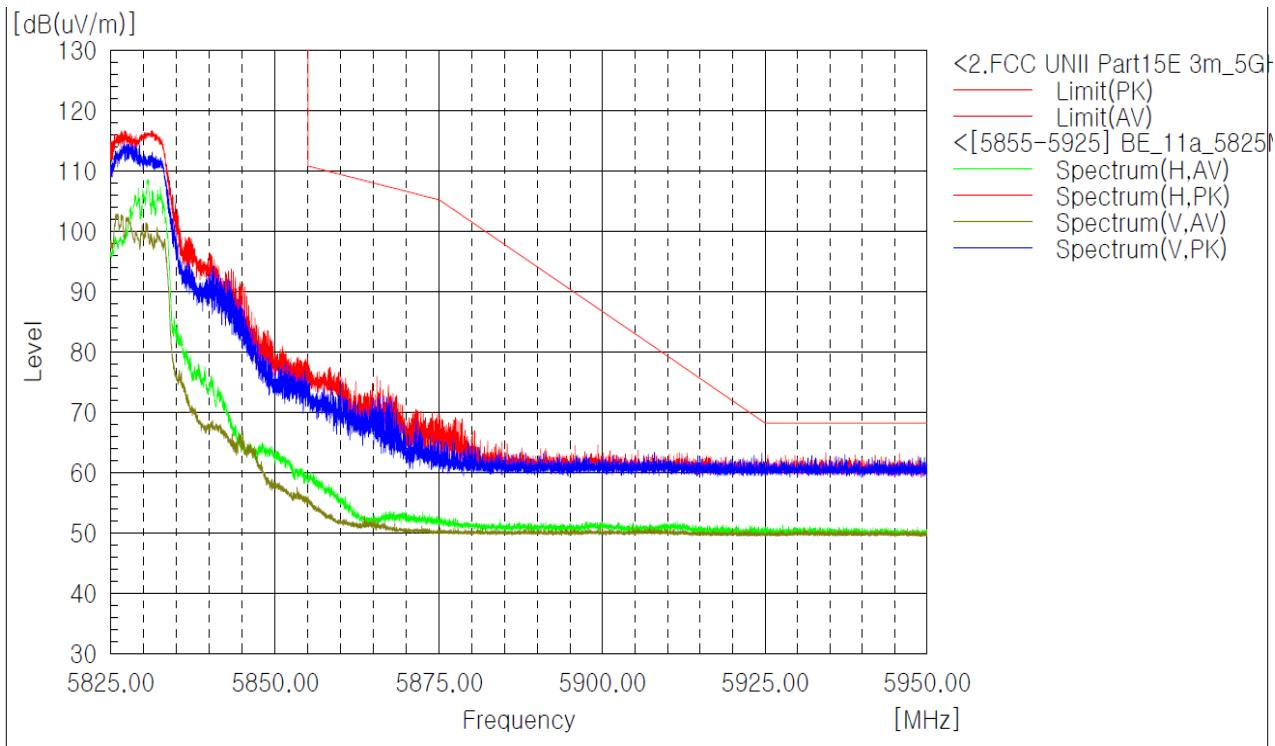


CTK Co., Ltd.

(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-2020-00483
Page (148) / (176) Pages

Worst Case Mode :	802.11a
Worst Case Transfer Rate :	6 Mbps
Distance of Measurements :	3 Meters
Operating Frequency :	5 825 MHz
Channel :	165



Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
-----------------	-----	---------------------	---------------------	---------------------	---------------------	----------------	----------------

The emissions above 1 GHz were 20 dB lower than the limit.

Radiated Restricted Band Edge Plot

 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-2020-00483 Page (149) / (176) Pages	
--	---	--

Test mode : Transmitter, 802.11n_HT20

The requirements are:

Complies

Test Data

Ch.36(5 180 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
10 360.59	H	63.1	-----	74.0	-----	10.9	-----
10 357.29	H	-----	48.2	-----	54.0	-----	5.8
10 362.49	V	55.3	-----	74.0	-----	18.7	-----
10 360.11	V	-----	41.3	-----	54.0	-----	12.7

Ch.40(5 200 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
6 933.19	H	59.9	-----	74.0	-----	14.1	-----
6 933.31	H	-----	45.2	-----	54.0	-----	8.8
6 933.32	V	53.5	-----	74.0	-----	20.5	-----
6 933.36	V	-----	41.0	-----	54.0	-----	13.0
10 400.92	H	57.7	-----	74.0	-----	9.3	-----
10 400.92	H	-----	48.4	-----	54.0	-----	5.6
10 400.32	V	48.8	-----	74.0	-----	18.2	-----
10 402.62	V	-----	41.5	-----	54.0	-----	12.5

Ch.48(5 240 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
10 480.49	H	65.9	-----	74.0	-----	8.1	-----
10 482.01	H	-----	49.3	-----	54.0	-----	4.7
10 482.20	V	56.4	-----	74.0	-----	17.6	-----
10 479.36	V	-----	42.0	-----	54.0	-----	12.0

 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	Report No.: CTK-2020-00483 Page (150) / (176) Pages	
--	---	--

Ch.149(5 745 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
11 488.91	H	61.5	-----	74.0	-----	12.5	-----
11 491.86	H	-----	47.6	-----	54.0	-----	6.4
11 490.47	V	59.6	-----	74.0	-----	14.4	-----
11 503.65	V	-----	42.3	-----	54.0	-----	11.7

Ch.157(5 785 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
11 570.72	H	66.8	-----	74.0	-----	7.2	-----
11 570.90	H	-----	46.9	-----	54.0	-----	7.1
11 582.97	V	61.5	-----	74.0	-----	12.5	-----
11 562.10	V	-----	43.2	-----	54.0	-----	10.8

Ch.165(5 825 MHz)

Frequency [MHz]	(P)	Level PK [dB(uV/m)]	Level AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Margin PK [dB]	Margin AV [dB]
11 647.58	H	66.8	-----	74.0	-----	7.2	-----
11 651.79	H	-----	47.0	-----	54.0	-----	7.0
11 650.58	V	64.4	-----	74.0	-----	9.6	-----
11 649.81	V	-----	43.3	-----	54.0	-----	10.7

Remarks

1. The unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down positon(X,Y axis). The worst emission was found in stand-up position(Z axis) and the worst case was recorded.
2. Correction factor = Antenna factor + Cable loss - Amp Gain