



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
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4.4 Power Spectral Density

Test Procedures

KDB 789033 – Section F (Method SA-2, Maximum Power Spectral Density)
KDB 662911 D01, D02 (Multiple Transmitter Output)

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- | | |
|--------------------------------------|-------------------------------------|
| a) RBW = 1 MHz, 500 KHz (UNII 3) | b) VBW = 3 MHz, 1.5 MHz (UNII 3) |
| 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
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Limit

| Operating Mode | Band | Mode | ANT Configuration | ANT Gain (dBi) | Limit (dBm) |
|----------------|--------|--------------|-------------------|----------------|-------------|
| SISO | UNII 1 | 802.11a/n/ac | ANT1, ANT2 | 2.00 | 17.00 |
| | UNII 3 | | | | 30.00 |
| MIMO (2Tx) | UNII 1 | 802.11a/n/ac | ANT1 + ANT2 | 5.01 | 17.00 |
| | UNII 3 | | | | 30.00 |

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Test Data

CDD Mode_ANT1

| Test Mode | Frequency (MHz) | Measured Power Density (dBm) | Duty cycle Factor (dB) | Result Output Power (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------------------------|------------------------|---------------------------|-------------|-------------|
| 802.11a | 5 180 | 11.13 | 0.16 | 11.29 | 17.00 | 5.71 |
| | 5 200 | 11.12 | 0.16 | 11.28 | 17.00 | 5.72 |
| | 5 240 | 11.30 | 0.16 | 11.46 | 17.00 | 5.54 |
| | 5 745 | 7.85 | 0.16 | 8.01 | 30.00 | 21.99 |
| | 5 785 | 7.57 | 0.16 | 7.73 | 30.00 | 22.27 |
| | 5 825 | 6.83 | 0.16 | 6.99 | 30.00 | 23.01 |
| 802.11n _HT20 | 5 180 | 10.69 | 0.17 | 10.86 | 17.00 | 6.14 |
| | 5 200 | 10.99 | 0.17 | 11.16 | 17.00 | 5.84 |
| | 5 240 | 11.15 | 0.17 | 11.32 | 17.00 | 5.68 |
| | 5 745 | 7.81 | 0.17 | 7.98 | 30.00 | 22.02 |
| | 5 785 | 7.27 | 0.17 | 7.44 | 30.00 | 22.56 |
| | 5 825 | 6.67 | 0.17 | 6.84 | 30.00 | 23.16 |
| 802.11ac _VHT20 | 5 180 | 11.03 | 0.17 | 11.20 | 17.00 | 5.80 |
| | 5 200 | 10.97 | 0.17 | 11.14 | 17.00 | 5.86 |
| | 5 240 | 11.12 | 0.17 | 11.29 | 17.00 | 5.71 |
| | 5 745 | 7.71 | 0.17 | 7.88 | 30.00 | 22.12 |
| | 5 785 | 7.09 | 0.17 | 7.26 | 30.00 | 22.74 |
| | 5 825 | 7.05 | 0.17 | 7.22 | 30.00 | 22.78 |
| 802.11n _HT40 | 5 190 | 5.88 | 0.33 | 6.21 | 17.00 | 10.79 |
| | 5 230 | 6.56 | 0.33 | 6.89 | 17.00 | 10.11 |
| | 5 755 | 3.67 | 0.33 | 4.00 | 30.00 | 26.00 |
| | 5 795 | 3.02 | 0.33 | 3.35 | 30.00 | 26.65 |
| 802.11ac _VHT40 | 5 190 | 6.67 | 0.33 | 7.00 | 17.00 | 10.00 |
| | 5 230 | 6.64 | 0.33 | 6.97 | 17.00 | 10.03 |
| | 5 755 | 3.36 | 0.33 | 3.69 | 30.00 | 26.31 |
| | 5 795 | 3.09 | 0.33 | 3.42 | 30.00 | 26.58 |
| 802.11ac _VHT80 | 5 210 | 3.43 | 0.63 | 4.06 | 17.00 | 12.94 |
| | 5 775 | 0.02 | 0.63 | 0.65 | 30.00 | 29.35 |
| Measurement uncertainty | | ± 1.5 dB | | | | |

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CDD Mode_ANT2

| Test Mode | Frequency (MHz) | Measured Power Density (dBm) | Duty cycle Factor (dB) | Result Output Power (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------------------------|------------------------|---------------------------|-------------|-------------|
| 802.11a | 5 180 | 10.86 | 0.16 | 11.02 | 17.00 | 5.98 |
| | 5 200 | 11.30 | 0.16 | 11.46 | 17.00 | 5.54 |
| | 5 240 | 11.23 | 0.16 | 11.39 | 17.00 | 5.61 |
| | 5 745 | 8.79 | 0.16 | 8.95 | 30.00 | 21.05 |
| | 5 785 | 8.11 | 0.16 | 8.27 | 30.00 | 21.73 |
| | 5 825 | 7.44 | 0.16 | 7.60 | 30.00 | 22.40 |
| 802.11n _HT20 | 5 180 | 10.77 | 0.17 | 10.94 | 17.00 | 6.06 |
| | 5 200 | 10.81 | 0.17 | 10.98 | 17.00 | 6.02 |
| | 5 240 | 11.12 | 0.17 | 11.29 | 17.00 | 5.71 |
| | 5 745 | 8.56 | 0.17 | 8.73 | 30.00 | 21.27 |
| | 5 785 | 7.96 | 0.17 | 8.13 | 30.00 | 21.87 |
| | 5 825 | 7.24 | 0.17 | 7.41 | 30.00 | 22.59 |
| 802.11ac _VHT20 | 5 180 | 10.71 | 0.17 | 10.88 | 17.00 | 6.12 |
| | 5 200 | 10.86 | 0.17 | 11.03 | 17.00 | 5.97 |
| | 5 240 | 10.95 | 0.17 | 11.12 | 17.00 | 5.88 |
| | 5 745 | 8.77 | 0.17 | 8.94 | 30.00 | 21.06 |
| | 5 785 | 8.13 | 0.17 | 8.30 | 30.00 | 21.70 |
| | 5 825 | 7.27 | 0.17 | 7.44 | 30.00 | 22.56 |
| 802.11n _HT40 | 5 190 | 5.44 | 0.33 | 5.77 | 17.00 | 11.23 |
| | 5 230 | 5.76 | 0.33 | 6.09 | 17.00 | 10.91 |
| | 5 755 | 3.71 | 0.33 | 4.04 | 30.00 | 25.96 |
| | 5 795 | 3.28 | 0.33 | 3.61 | 30.00 | 26.39 |
| 802.11ac _VHT40 | 5 190 | 6.20 | 0.33 | 6.53 | 17.00 | 10.47 |
| | 5 230 | 6.46 | 0.33 | 6.79 | 17.00 | 10.21 |
| | 5 755 | 4.04 | 0.33 | 4.37 | 30.00 | 25.63 |
| | 5 795 | 3.27 | 0.33 | 3.60 | 30.00 | 26.40 |
| 802.11ac _VHT80 | 5 210 | 2.39 | 0.63 | 3.02 | 17.00 | 13.98 |
| | 5 775 | -0.52 | 0.63 | 0.11 | 30.00 | 29.89 |
| Measurement uncertainty | | ± 1.5 dB | | | | |

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CDD Mode_ANT1 + ANT2

| Test Mode | Frequency (MHz) | Measured Power Density (dBm) | Duty cycle Factor (dB) | Result Output Power (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------------------------|------------------------|---------------------------|-------------|-------------|
| 802.11a | 5 180 | 14.01 | 0.16 | 14.17 | 17.00 | 2.83 |
| | 5 200 | 14.22 | 0.16 | 14.38 | 17.00 | 2.62 |
| | 5 240 | 14.28 | 0.16 | 14.44 | 17.00 | 2.56 |
| | 5 745 | 11.36 | 0.16 | 11.52 | 30.00 | 18.48 |
| | 5 785 | 10.86 | 0.16 | 11.02 | 30.00 | 18.98 |
| | 5 825 | 10.16 | 0.16 | 10.32 | 30.00 | 19.68 |
| 802.11n _HT20 | 5 180 | 13.74 | 0.17 | 13.91 | 17.00 | 3.09 |
| | 5 200 | 13.91 | 0.17 | 14.08 | 17.00 | 2.92 |
| | 5 240 | 14.15 | 0.17 | 14.32 | 17.00 | 2.68 |
| | 5 745 | 11.21 | 0.17 | 11.38 | 30.00 | 18.62 |
| | 5 785 | 10.64 | 0.17 | 10.81 | 30.00 | 19.19 |
| | 5 825 | 9.97 | 0.17 | 10.14 | 30.00 | 19.86 |
| 802.11ac _VHT20 | 5 180 | 13.88 | 0.17 | 14.05 | 17.00 | 2.95 |
| | 5 200 | 13.93 | 0.17 | 14.10 | 17.00 | 2.90 |
| | 5 240 | 14.05 | 0.17 | 14.22 | 17.00 | 2.78 |
| | 5 745 | 11.28 | 0.17 | 11.45 | 30.00 | 18.55 |
| | 5 785 | 10.65 | 0.17 | 10.82 | 30.00 | 19.18 |
| | 5 825 | 10.17 | 0.17 | 10.34 | 30.00 | 19.66 |
| 802.11n _HT40 | 5 190 | 8.68 | 0.33 | 9.01 | 17.00 | 7.99 |
| | 5 230 | 9.19 | 0.33 | 9.52 | 17.00 | 7.48 |
| | 5 755 | 6.70 | 0.33 | 7.03 | 30.00 | 22.97 |
| | 5 795 | 6.16 | 0.33 | 6.49 | 30.00 | 23.51 |
| 802.11ac _VHT40 | 5 190 | 9.45 | 0.33 | 9.78 | 17.00 | 7.22 |
| | 5 230 | 9.56 | 0.33 | 9.89 | 17.00 | 7.11 |
| | 5 755 | 6.72 | 0.33 | 7.05 | 30.00 | 22.95 |
| | 5 795 | 6.19 | 0.33 | 6.52 | 30.00 | 23.48 |
| 802.11ac _VHT80 | 5 210 | 5.95 | 0.63 | 6.58 | 17.00 | 10.42 |
| | 5 775 | 2.77 | 0.63 | 3.40 | 30.00 | 26.60 |
| Measurement uncertainty | | ± 1.5 dB | | | | |

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SDM Mode_ANT1

| Test Mode | Frequency (MHz) | Measured Power Density (dBm) | Duty cycle Factor (dB) | Result Output Power (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------------------------|------------------------|---------------------------|-------------|-------------|
| 802.11n _HT20 | 5 180 | 11.20 | 0.32 | 11.52 | 17.00 | 5.48 |
| | 5 200 | 11.49 | 0.32 | 11.81 | 17.00 | 5.19 |
| | 5 240 | 11.38 | 0.32 | 11.70 | 17.00 | 5.30 |
| | 5 745 | 7.19 | 0.32 | 7.51 | 30.00 | 22.49 |
| | 5 785 | 6.88 | 0.32 | 7.20 | 30.00 | 22.80 |
| | 5 825 | 6.35 | 0.32 | 6.67 | 30.00 | 23.33 |
| 802.11ac _VHT20 | 5 180 | 10.50 | 0.32 | 10.82 | 17.00 | 6.18 |
| | 5 200 | 10.61 | 0.32 | 10.93 | 17.00 | 6.07 |
| | 5 240 | 10.72 | 0.32 | 11.04 | 17.00 | 5.96 |
| | 5 745 | 7.36 | 0.32 | 7.68 | 30.00 | 22.32 |
| | 5 785 | 6.58 | 0.32 | 6.90 | 30.00 | 23.10 |
| | 5 825 | 6.49 | 0.32 | 6.81 | 30.00 | 23.19 |
| 802.11n _HT40 | 5 190 | 4.82 | 0.60 | 5.42 | 17.00 | 11.58 |
| | 5 230 | 5.42 | 0.60 | 6.02 | 17.00 | 10.98 |
| | 5 755 | 2.95 | 0.60 | 3.55 | 30.00 | 26.45 |
| | 5 795 | 2.73 | 0.60 | 3.33 | 30.00 | 26.67 |
| 802.11ac _VHT40 | 5 190 | 5.21 | 0.71 | 5.92 | 17.00 | 11.08 |
| | 5 230 | 5.64 | 0.71 | 6.35 | 17.00 | 10.65 |
| | 5 755 | 3.02 | 0.71 | 3.73 | 30.00 | 26.27 |
| | 5 795 | 2.52 | 0.71 | 3.23 | 30.00 | 26.77 |
| 802.11ac _VHT80 | 5 210 | 1.93 | 1.25 | 3.18 | 17.00 | 13.82 |
| | 5 775 | -0.83 | 1.25 | 0.42 | 30.00 | 29.58 |
| Measurement uncertainty | | ± 1.5 dB | | | | |

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SDM Mode_ANT2

| Test Mode | Frequency (MHz) | Measured Power Density (dBm) | Duty cycle Factor (dB) | Result Output Power (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------------------------|------------------------|---------------------------|-------------|-------------|
| 802.11n _HT20 | 5 180 | 10.65 | 0.32 | 10.97 | 17.00 | 6.03 |
| | 5 200 | 10.76 | 0.32 | 11.08 | 17.00 | 5.92 |
| | 5 240 | 10.86 | 0.32 | 11.18 | 17.00 | 5.82 |
| | 5 745 | 8.47 | 0.32 | 8.79 | 30.00 | 21.21 |
| | 5 785 | 7.64 | 0.32 | 7.96 | 30.00 | 22.04 |
| | 5 825 | 7.22 | 0.32 | 7.54 | 30.00 | 22.46 |
| 802.11ac _VHT20 | 5 180 | 10.15 | 0.32 | 10.47 | 17.00 | 6.53 |
| | 5 200 | 10.33 | 0.32 | 10.65 | 17.00 | 6.35 |
| | 5 240 | 10.49 | 0.32 | 10.81 | 17.00 | 6.19 |
| | 5 745 | 8.14 | 0.32 | 8.46 | 30.00 | 21.54 |
| | 5 785 | 7.48 | 0.32 | 7.80 | 30.00 | 22.20 |
| | 5 825 | 7.00 | 0.32 | 7.32 | 30.00 | 22.68 |
| 802.11n _HT40 | 5 190 | 4.97 | 0.60 | 5.57 | 17.00 | 11.43 |
| | 5 230 | 5.53 | 0.60 | 6.13 | 17.00 | 10.87 |
| | 5 755 | 3.85 | 0.60 | 4.45 | 30.00 | 25.55 |
| | 5 795 | 3.31 | 0.60 | 3.91 | 30.00 | 26.09 |
| 802.11ac _VHT40 | 5 190 | 5.26 | 0.71 | 5.97 | 17.00 | 11.03 |
| | 5 230 | 5.61 | 0.71 | 6.32 | 17.00 | 10.68 |
| | 5 755 | 4.07 | 0.71 | 4.78 | 30.00 | 25.22 |
| | 5 795 | 2.94 | 0.71 | 3.65 | 30.00 | 26.35 |
| 802.11ac _VHT80 | 5 210 | 2.25 | 1.25 | 3.50 | 17.00 | 13.50 |
| | 5 775 | -0.06 | 1.25 | 1.19 | 30.00 | 28.81 |
| Measurement uncertainty | | ± 1.5 dB | | | | |

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SDM Mode_ANT1 + ANT2

| Test Mode | Frequency (MHz) | Measured Power Density (dBm) | Duty cycle Factor (dB) | Result Output Power (dBm) | Limit (dBm) | Margin (dB) |
|-------------------------|-----------------|------------------------------|------------------------|---------------------------|-------------|-------------|
| 802.11n _HT20 | 5 180 | 13.94 | 0.32 | 14.26 | 17.00 | 2.74 |
| | 5 200 | 14.15 | 0.32 | 14.47 | 17.00 | 2.53 |
| | 5 240 | 14.14 | 0.32 | 14.46 | 17.00 | 2.54 |
| | 5 745 | 10.89 | 0.32 | 11.21 | 30.00 | 18.79 |
| | 5 785 | 10.29 | 0.32 | 10.61 | 30.00 | 19.39 |
| | 5 825 | 9.82 | 0.32 | 10.14 | 30.00 | 19.86 |
| 802.11ac _VHT20 | 5 180 | 13.34 | 0.32 | 13.66 | 17.00 | 3.34 |
| | 5 200 | 13.48 | 0.32 | 13.80 | 17.00 | 3.20 |
| | 5 240 | 13.62 | 0.32 | 13.94 | 17.00 | 3.06 |
| | 5 745 | 10.78 | 0.32 | 11.10 | 30.00 | 18.90 |
| | 5 785 | 10.06 | 0.32 | 10.38 | 30.00 | 19.62 |
| | 5 825 | 9.76 | 0.32 | 10.08 | 30.00 | 19.92 |
| 802.11n _HT40 | 5 190 | 7.91 | 0.60 | 8.51 | 17.00 | 8.49 |
| | 5 230 | 8.49 | 0.60 | 9.09 | 17.00 | 7.91 |
| | 5 755 | 6.43 | 0.60 | 7.03 | 30.00 | 22.97 |
| | 5 795 | 6.04 | 0.60 | 6.64 | 30.00 | 23.36 |
| 802.11ac _VHT40 | 5 190 | 8.25 | 0.71 | 8.96 | 17.00 | 8.04 |
| | 5 230 | 8.64 | 0.71 | 9.35 | 17.00 | 7.65 |
| | 5 755 | 6.59 | 0.71 | 7.30 | 30.00 | 22.70 |
| | 5 795 | 5.75 | 0.71 | 6.46 | 30.00 | 23.54 |
| 802.11ac _VHT80 | 5 210 | 5.10 | 1.25 | 6.35 | 17.00 | 10.65 |
| | 5 775 | 2.58 | 1.25 | 3.83 | 30.00 | 26.17 |
| Measurement uncertainty | | ± 1.5 dB | | | | |

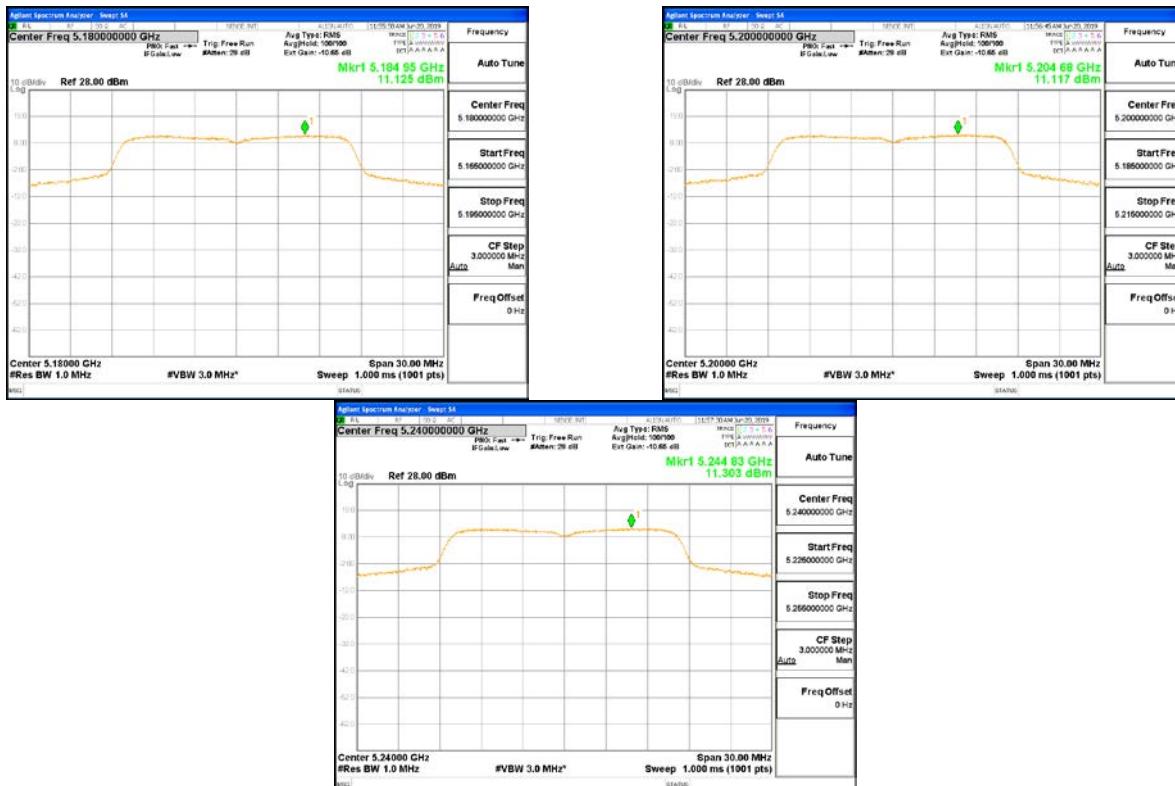
See next pages for actual measured spectrum plots.



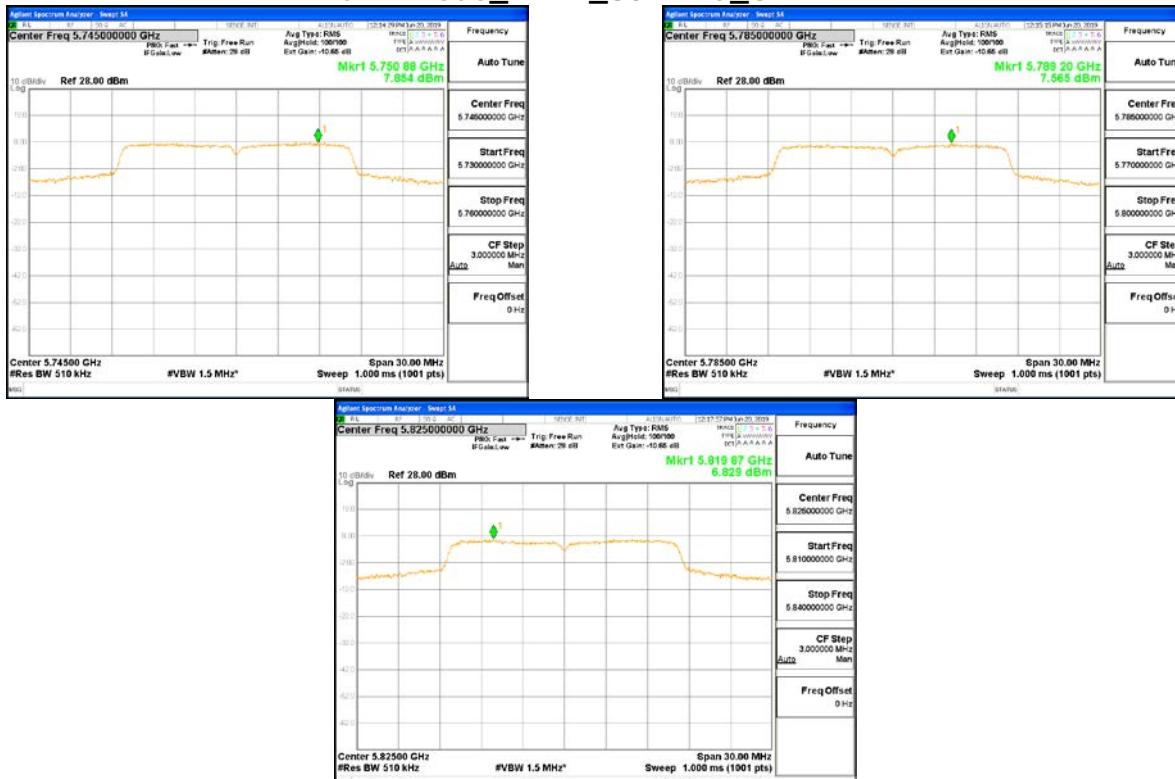
CTK Co., Ltd.

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

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CDD Mode_ANT1_802.11a_UNII-1



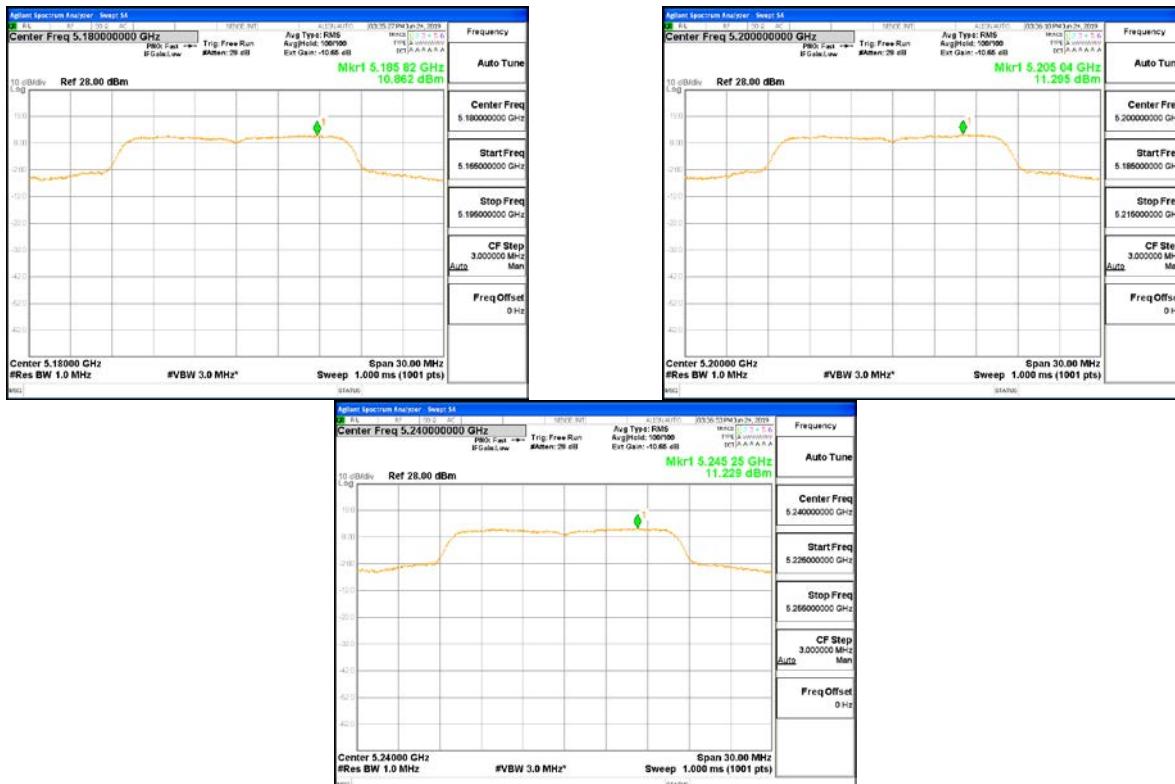
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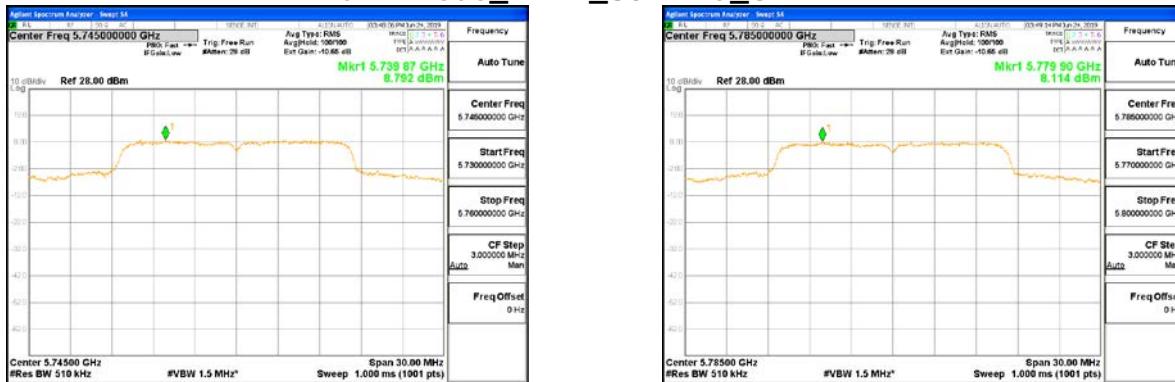
CTK Co., Ltd.

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

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CDD Mode_ANT2_802.11a_UNII-1



CDD Mode_ANT2_802.11a_UNII-1



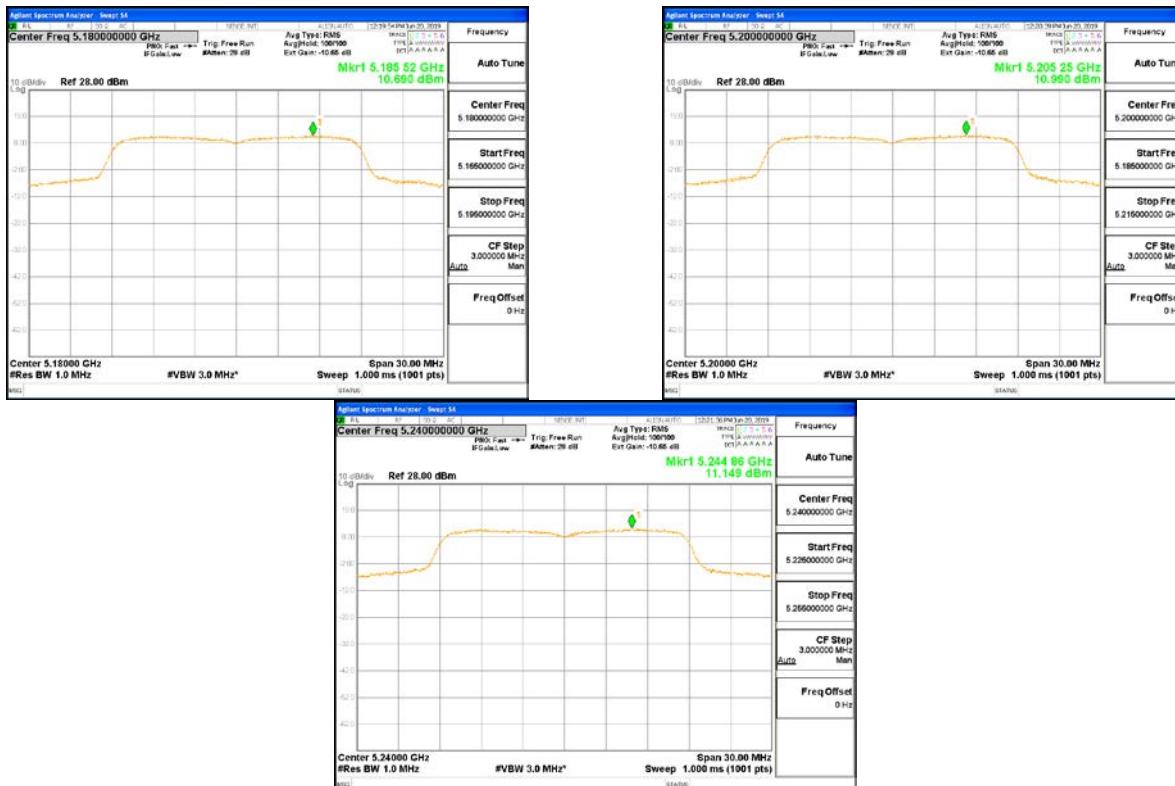
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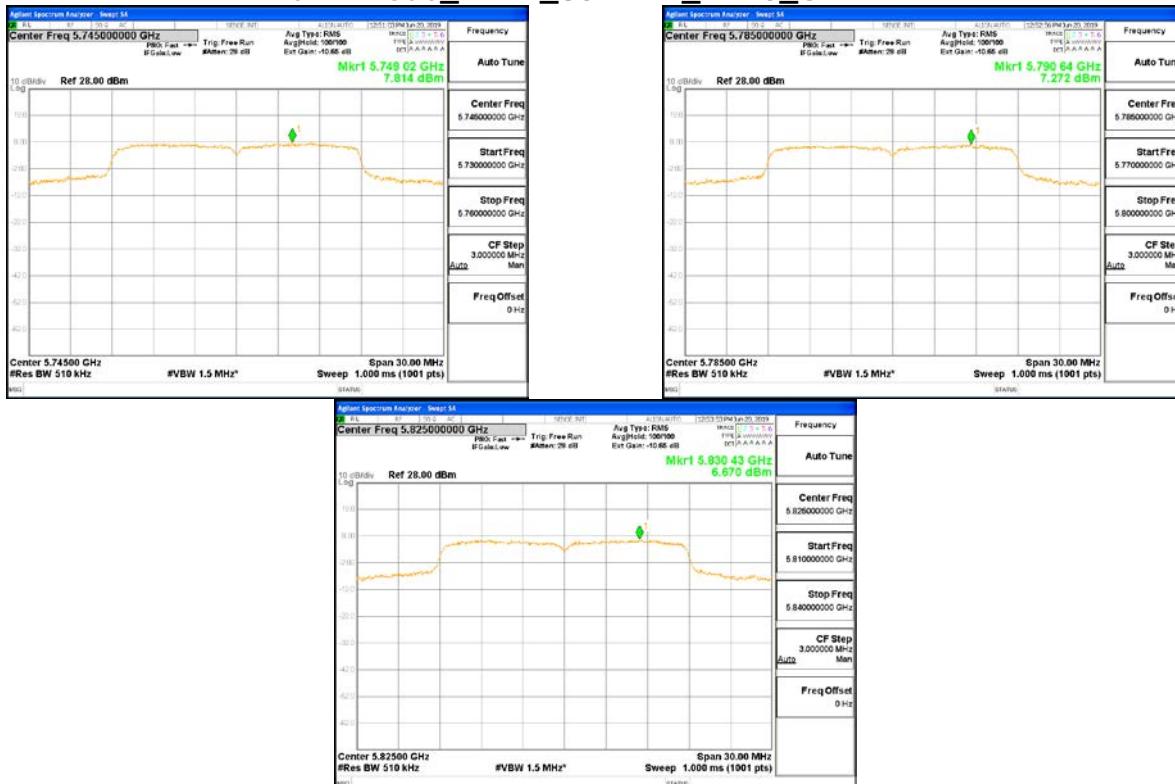
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
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CDD Mode_ANT1_802.11n_HT20_UNI1-1



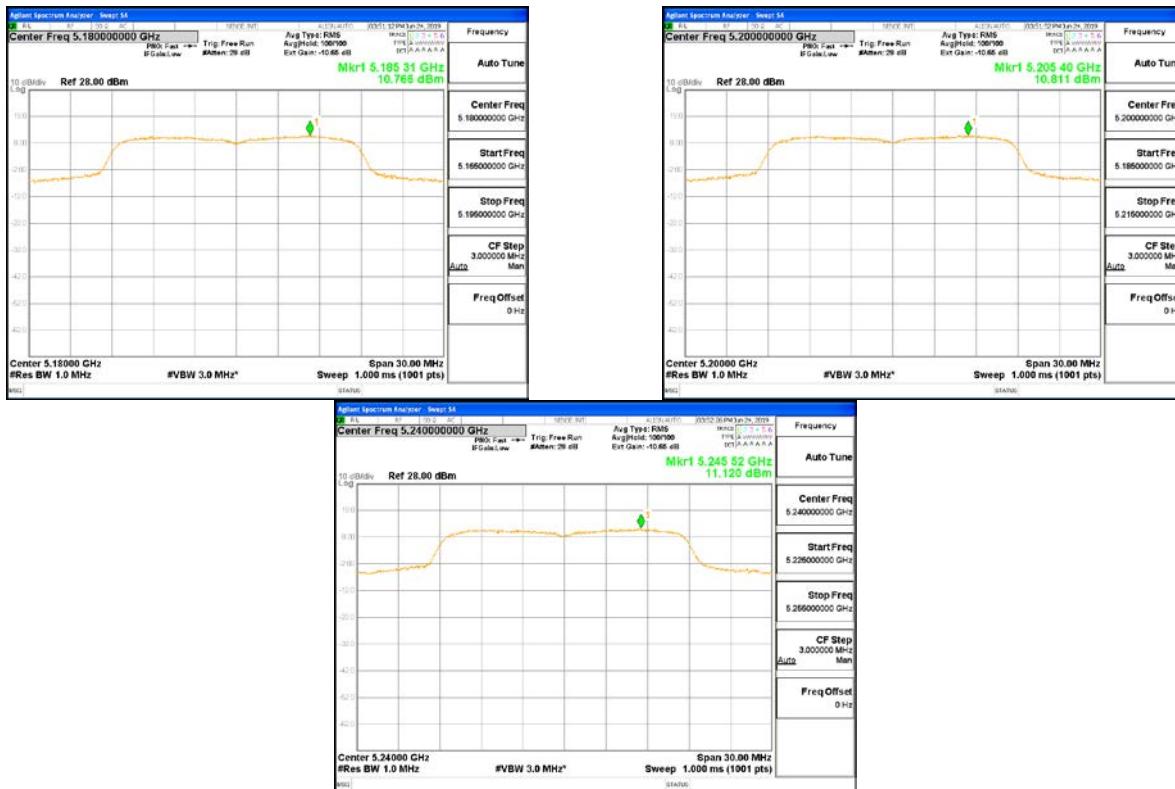
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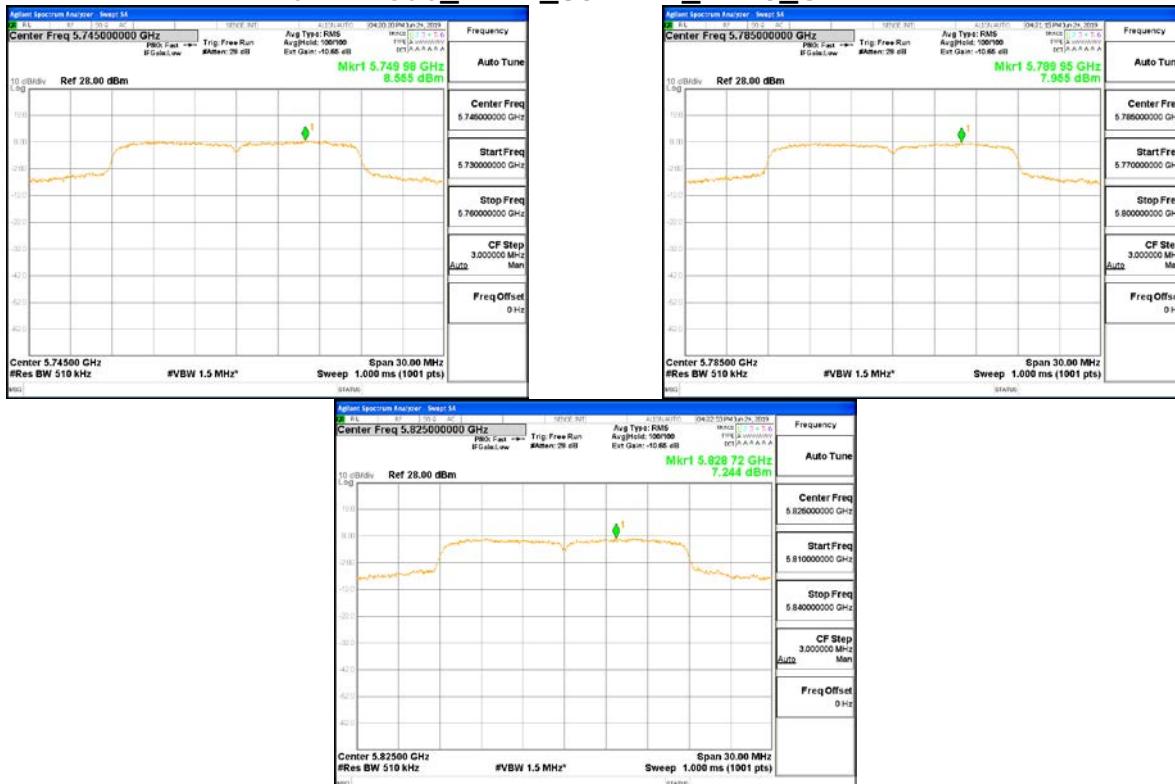
CTK Co., Ltd.

(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
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CDD Mode_ANT2_802.11n_HT20_UNII-1



CDD Mode_ANT2_802.11n_HT20_UNII-3

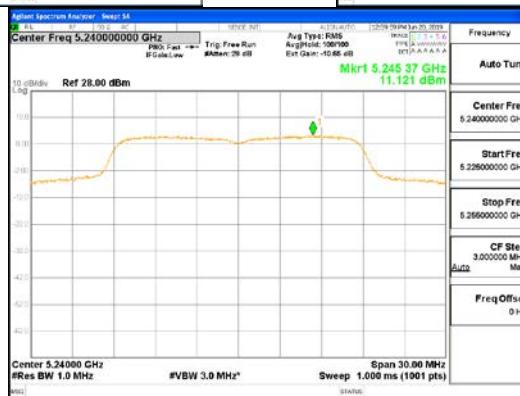
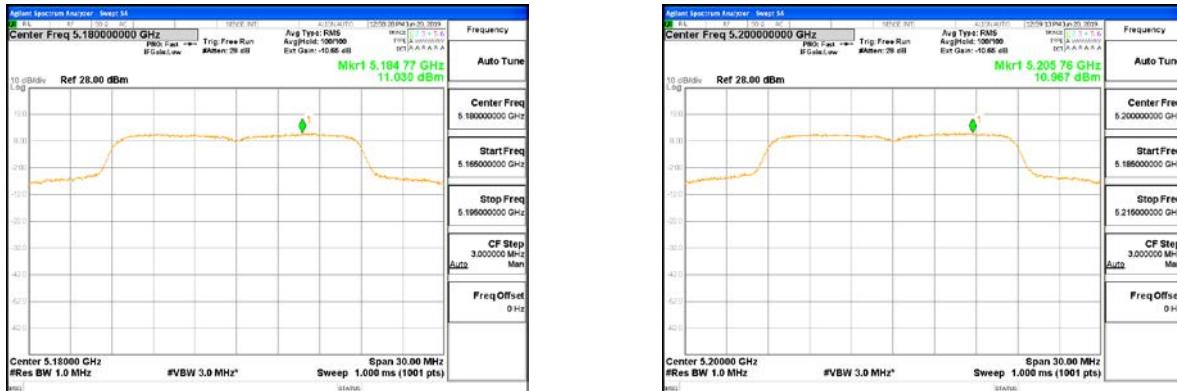


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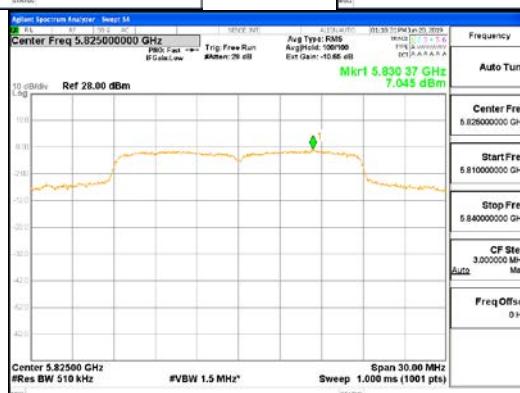
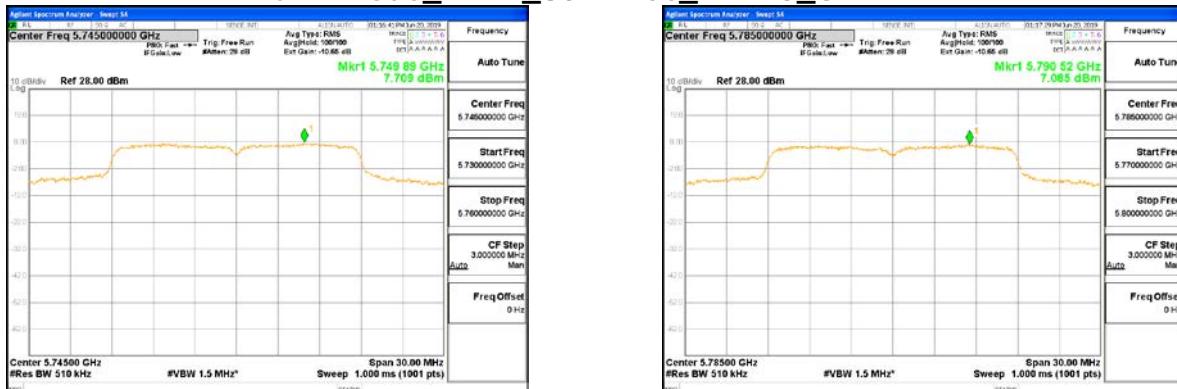
CTK Co., Ltd.

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

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CDD Mode_ANT1_802.11ac_VHT20_UNII-1



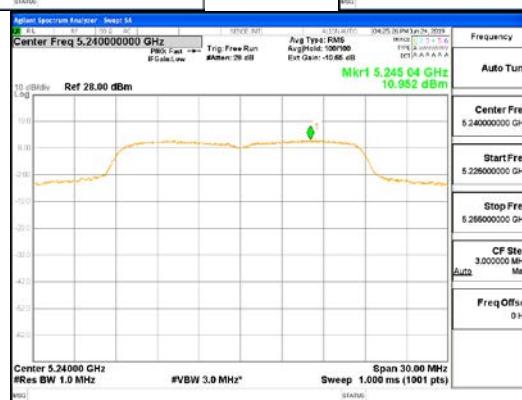
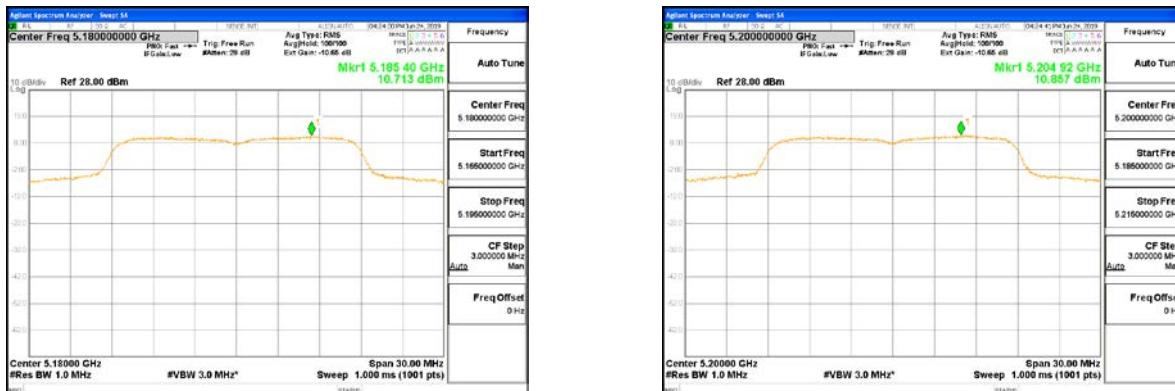
CDD Mode_ANT1_802.11ac_VHT20_UNII-3



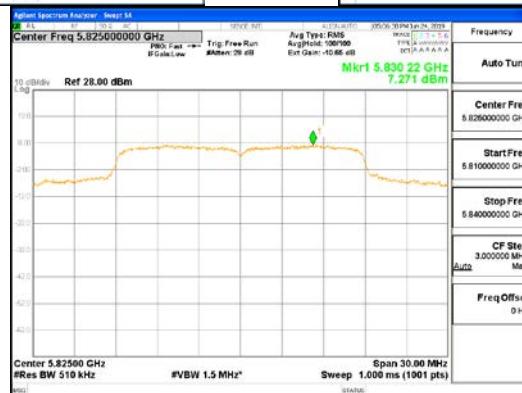
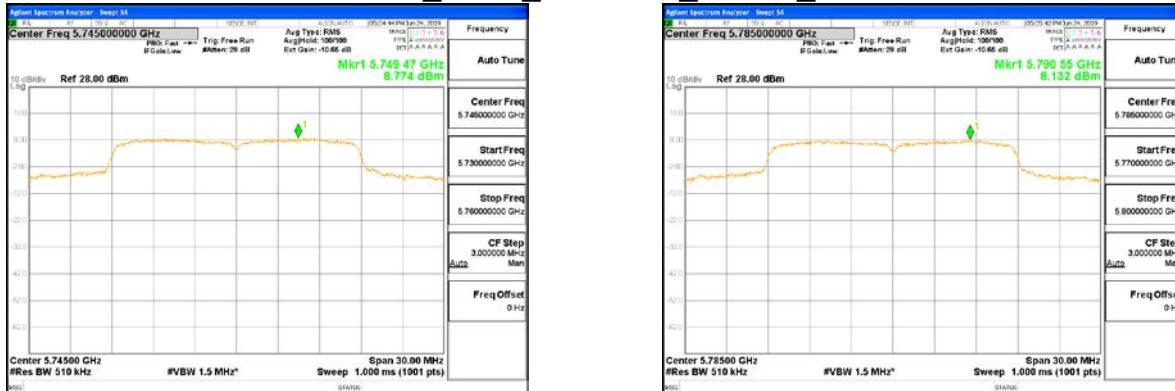
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(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

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CDD Mode_ANT2_802.11ac_VHT20_UNII-1



CDD Mode_ANT2_802.11ac_VHT20_UNII-3



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Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

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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



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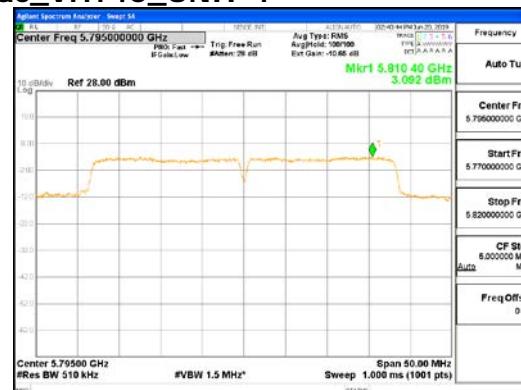
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(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

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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



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Yongin-si, Gyeonggi-do, Korea
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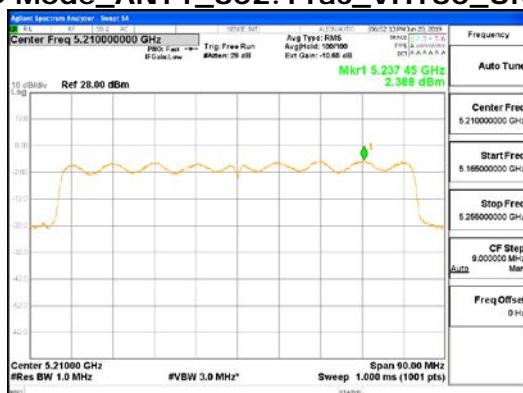
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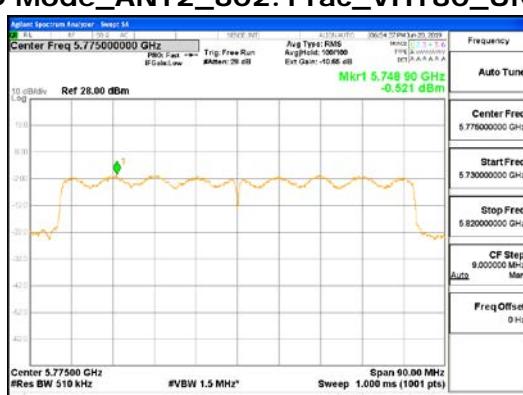
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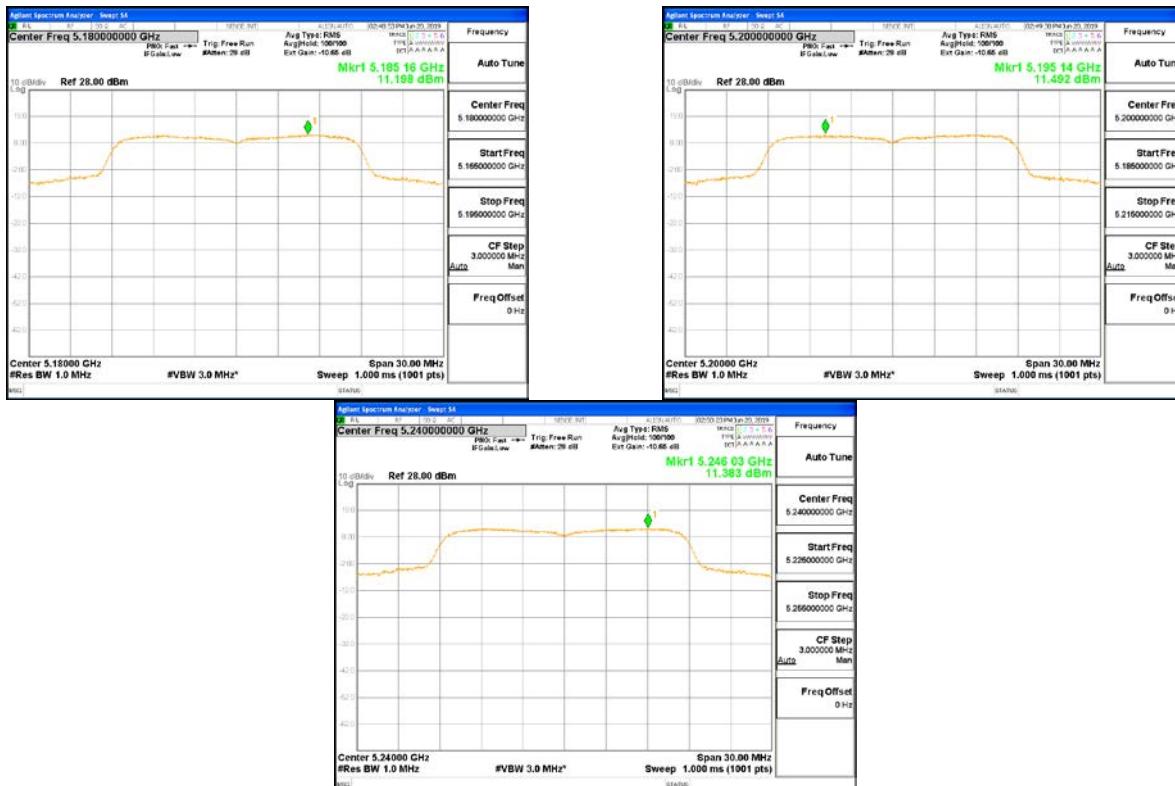
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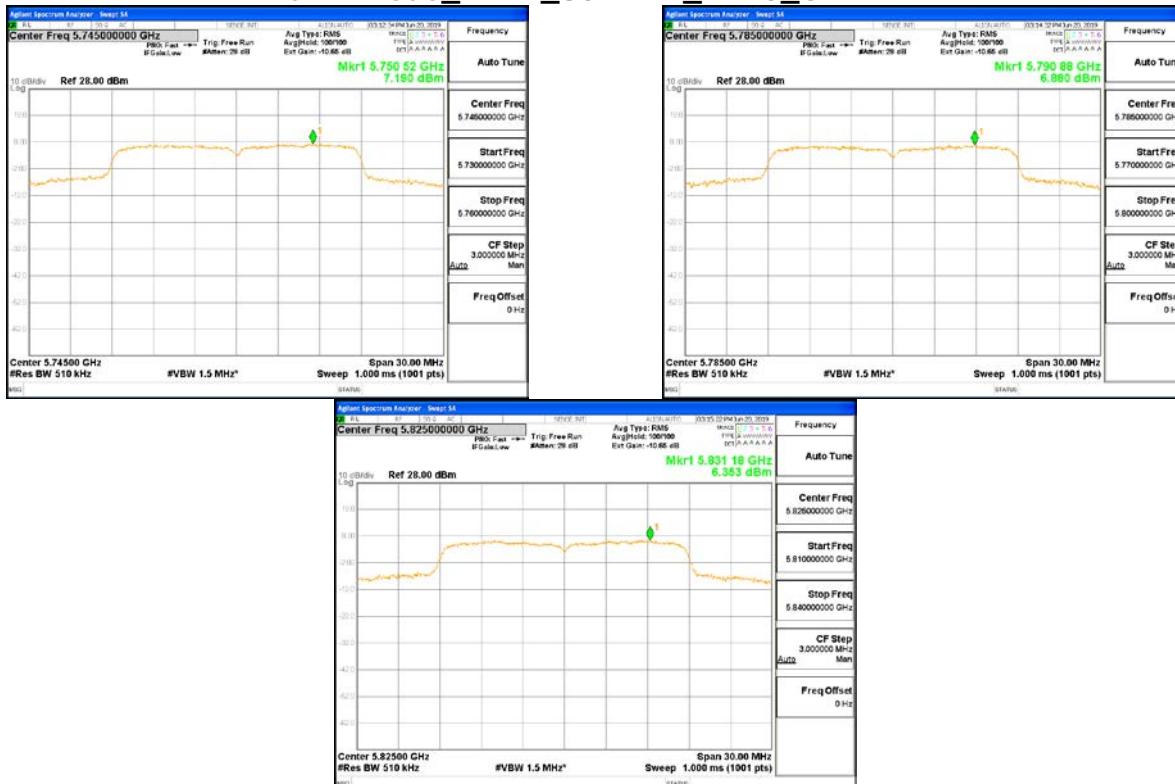
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Tel: +82-31-339-9970
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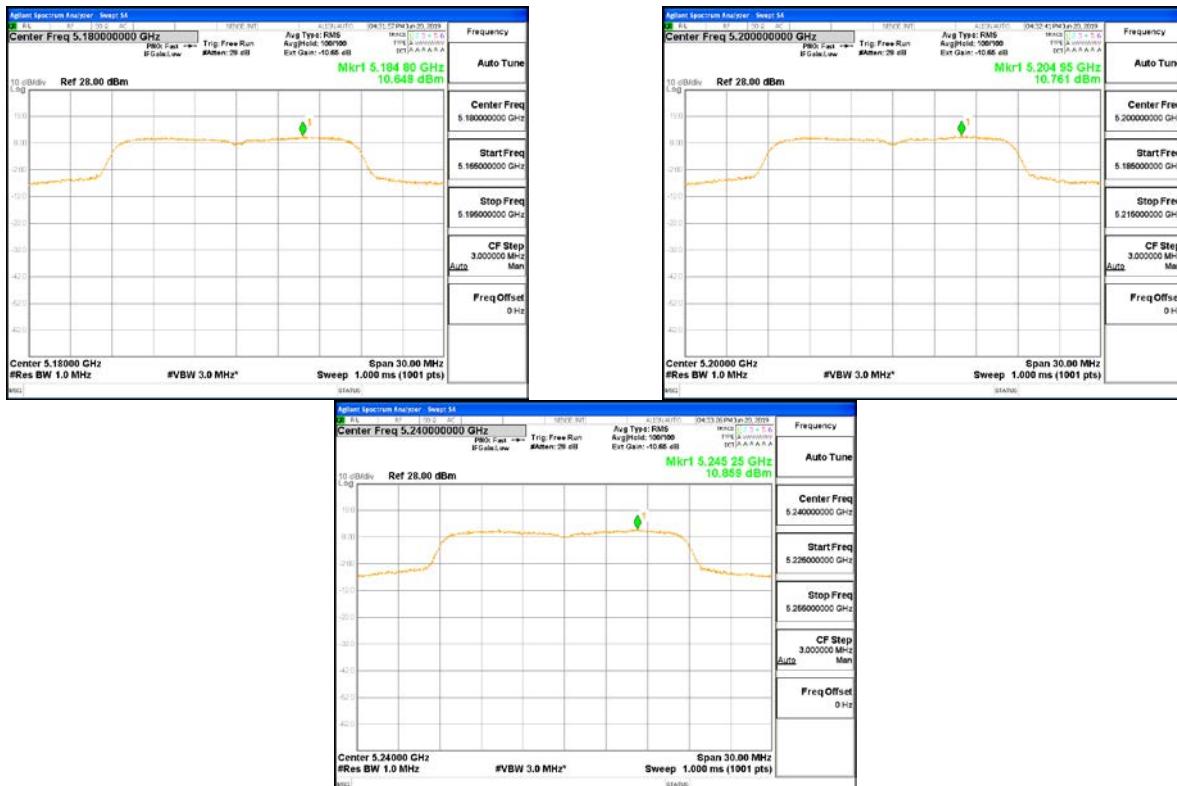
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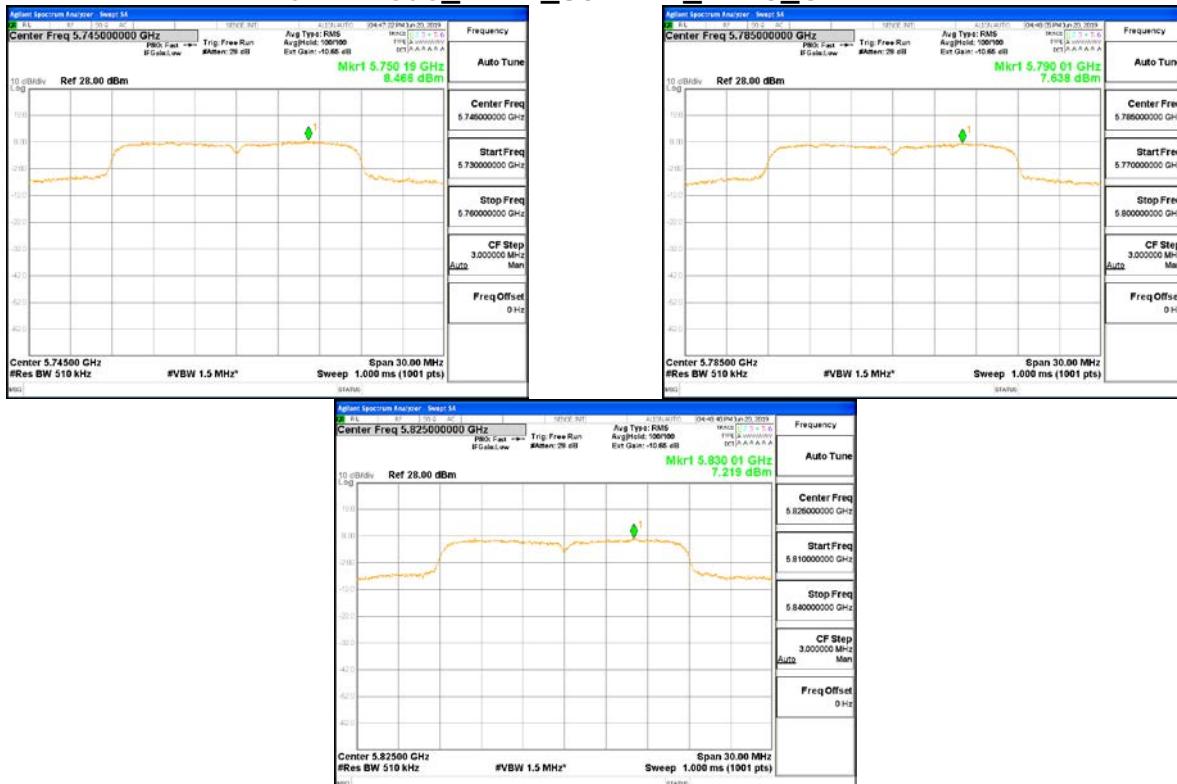
SDM Mode_ANT1_802.11n_HT20_UNI1-1



SDM Mode_ANT1_802.11n_HT20_UNI1-3



SDM Mode_ANT2_802.11n_HT20_UNII-1



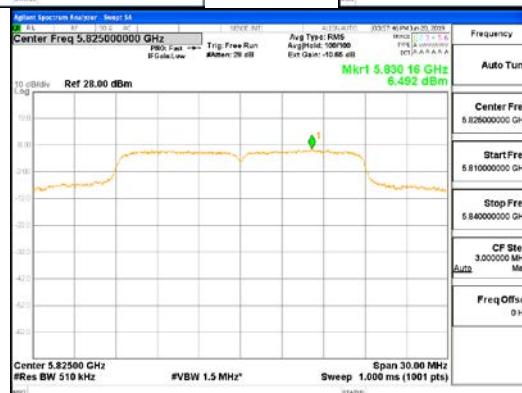
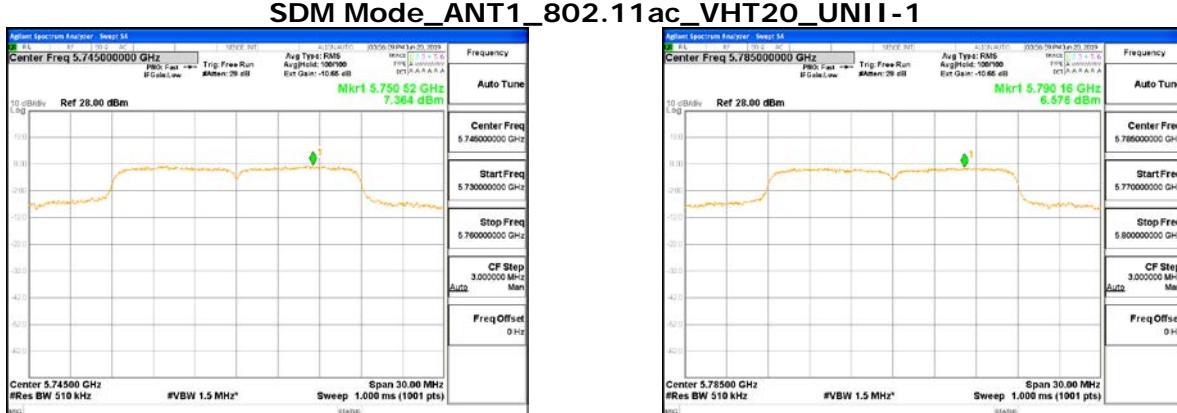
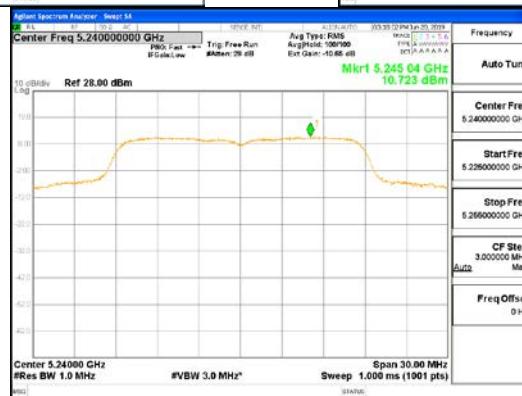
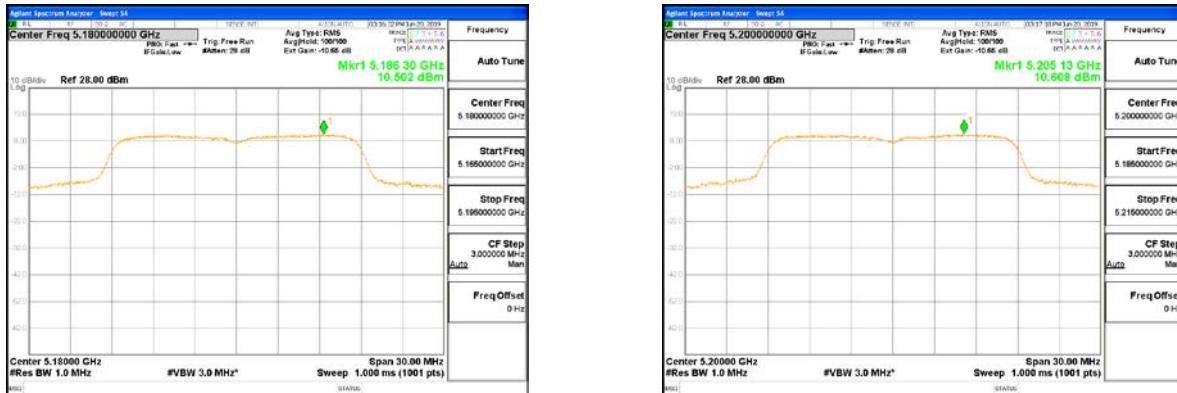
SDM Mode_ANT2_802.11n_HT20_UNII-3



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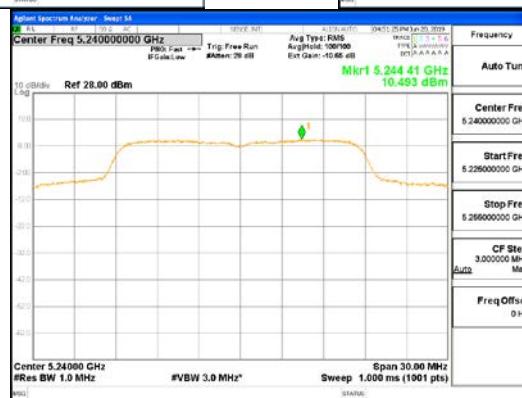
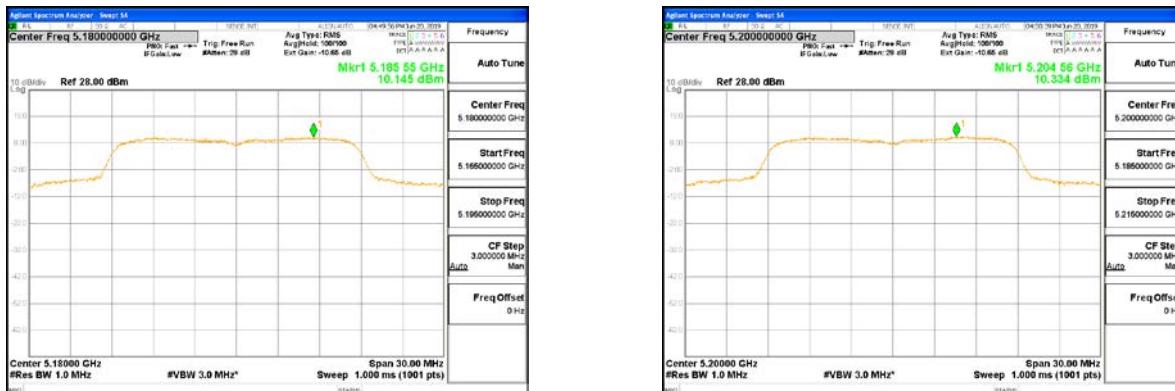
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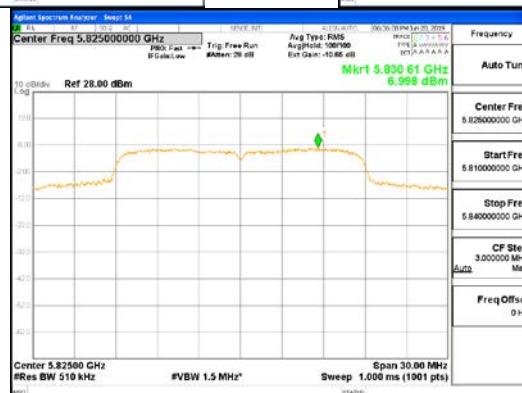
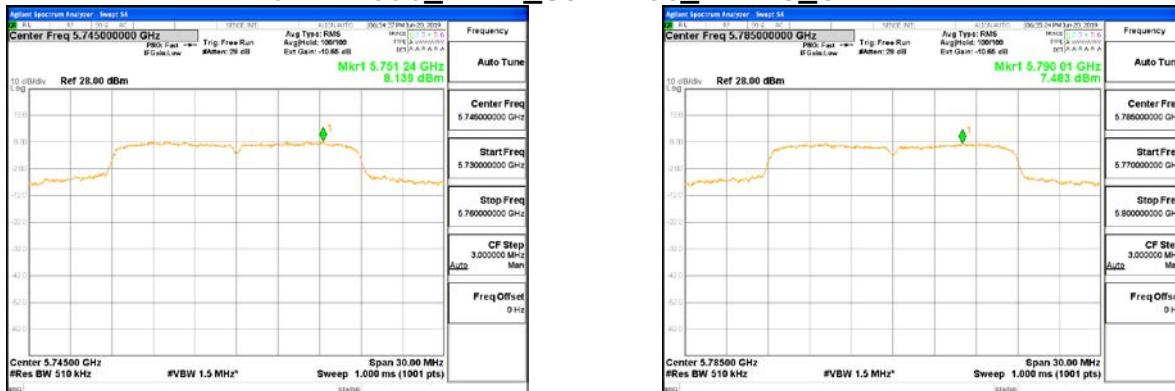
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(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

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SDM Mode_ANT2_802.11ac_VHT20_UNII-1



SDM Mode_ANT2_802.11ac_VHT20_UNII-3

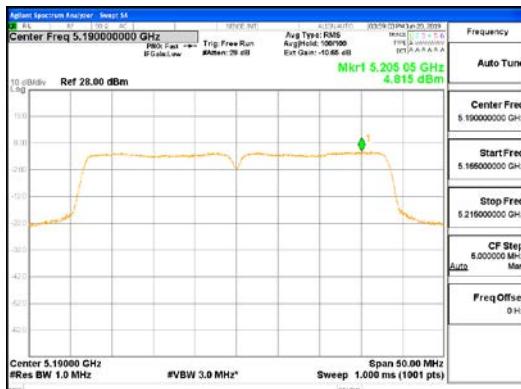


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SDM Mode_ANT1_802.11n_HT40_UNII-1



SDM Mode_ANT1_802.11n_HT40_UNII-3



SDM Mode_ANT2_802.11n_HT40_UNII-1



SDM Mode_ANT2_802.11n_HT40_UNII-3

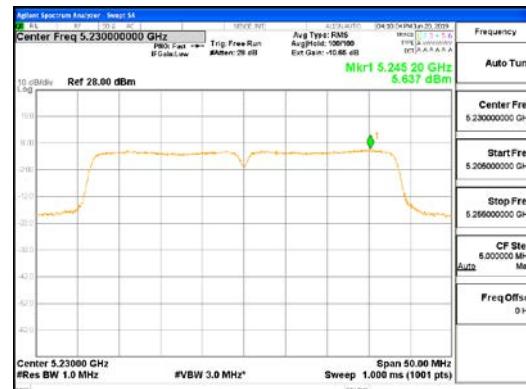
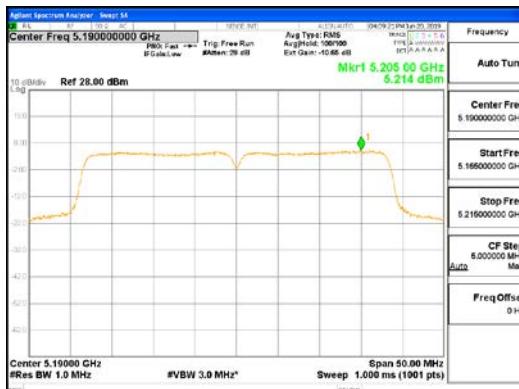


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Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

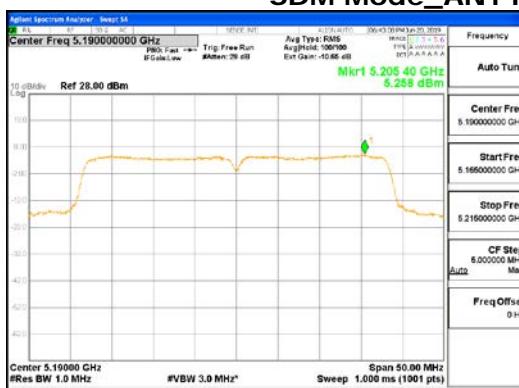
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SDM Mode_ANT1_802.11ac_VHT40_UNII-1



SDM Mode_ANT1_802.11ac_VHT40_UNII-3



SDM Mode_ANT2_802.11ac_VHT40_UNII-1



SDM Mode_ANT2_802.11ac_VHT40_UNII-3

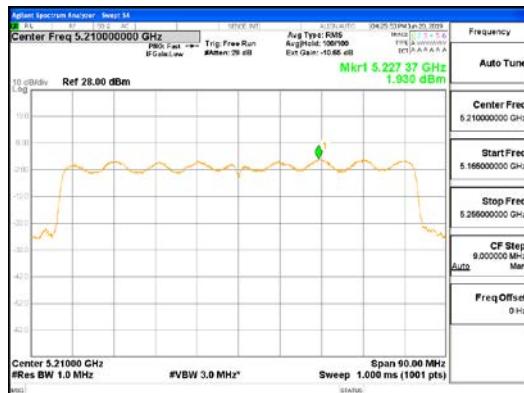


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Fax: +82-31-624-9501

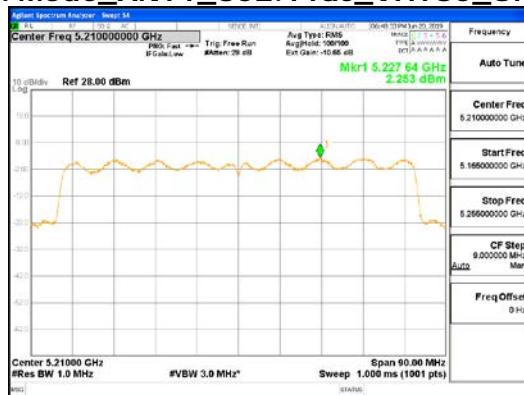
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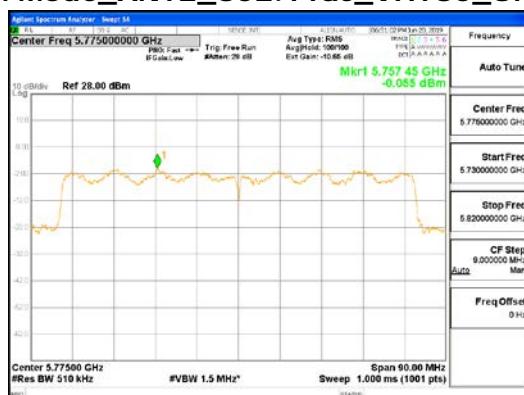
SDM Mode_ANT1_802.11ac_VHT80_UNII-1



SDM Mode_ANT1_802.11ac_VHT80_UNII-3



SDM Mode_ANT2_802.11ac_VHT80_UNII-1



SDM Mode_ANT2_802.11ac_VHT80_UNII-3



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Yongin-si, Gyeonggi-do, Korea
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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 | 16.157 | 11.137 | 4.081 | -4.018 | -6.264 |
| 5 200 MHz | 16.266 | 10.617 | 3.456 | -4.478 | -6.109 |
| 5 240 MHz | 16.373 | 10.540 | 3.263 | -4.550 | -5.985 |
| 5 745 MHz | 18.322 | 11.833 | 3.993 | -4.342 | -5.616 |
| 5 785 MHz | 18.395 | 12.132 | 4.245 | -4.271 | -5.682 |
| 5 825 MHz | 18.635 | 12.356 | 4.407 | -4.258 | -5.677 |

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.



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Yongin-si, Gyeonggi-do, Korea
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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)

| | | |
|---|---|---|
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|---|---|---|

- 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 |
| | 0.16 |
| | 802.11n_HT20 |
| | 0.17 |
| | 802.11n_HT40 |
| | 0.33 |
| SDM Mode | 802.11ac_VHT20 |
| | 0.17 |
| | 802.11ac_VHT40 |
| | 0.33 |
| | 802.11ac_VHT80 |
| | 0.63 |
| | 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 |

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.

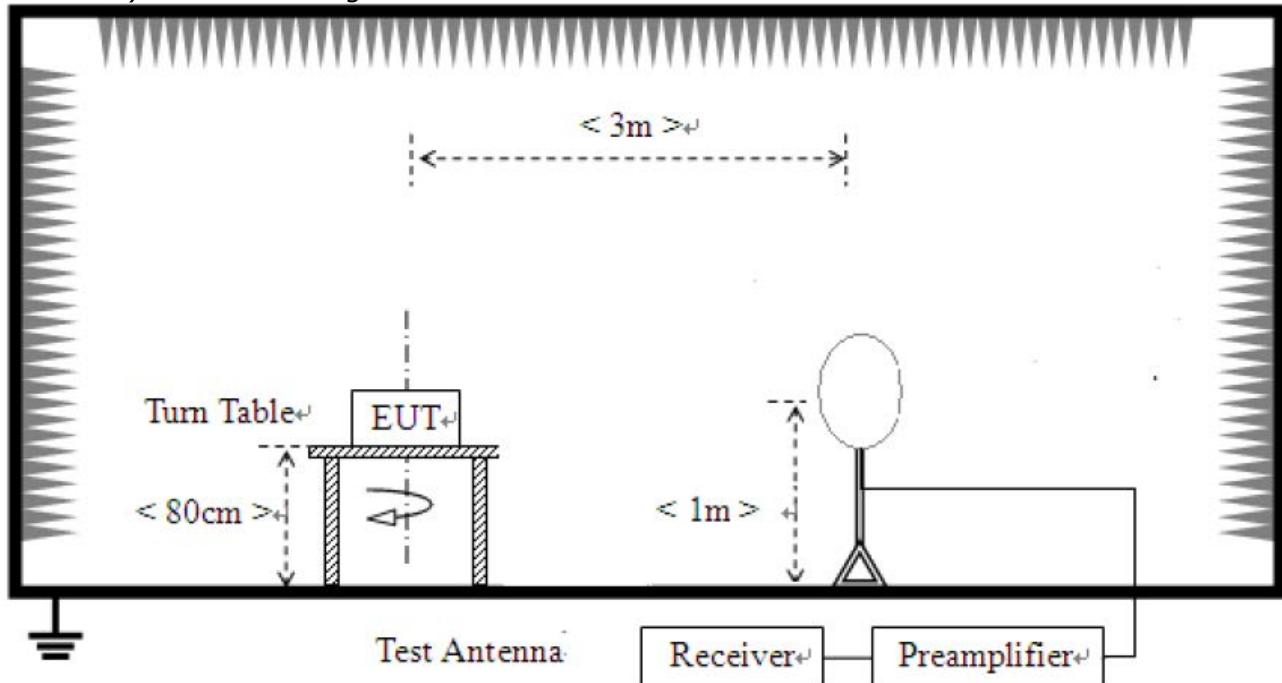
- 15.407, KDB 789033

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

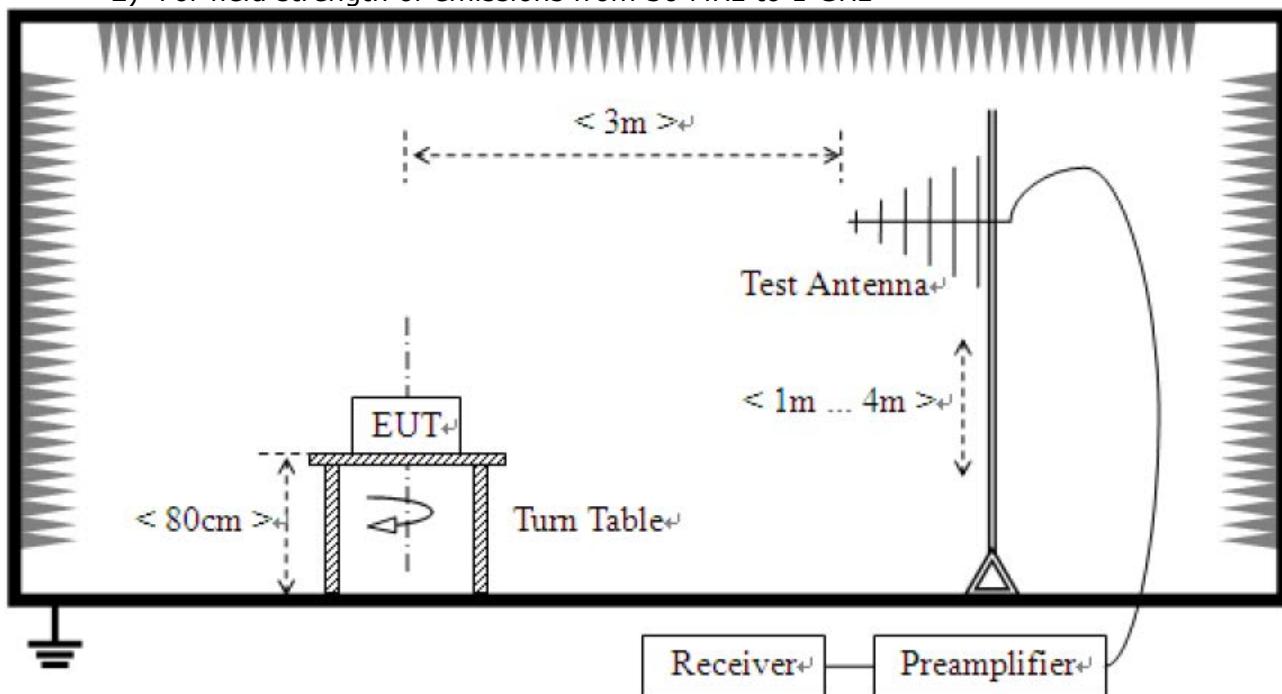
$$E[\text{dBuV/m}] = \text{EIRP}[\text{dBm}] + 95.2, \text{ for } d = 3\text{m}$$

Test Setup:

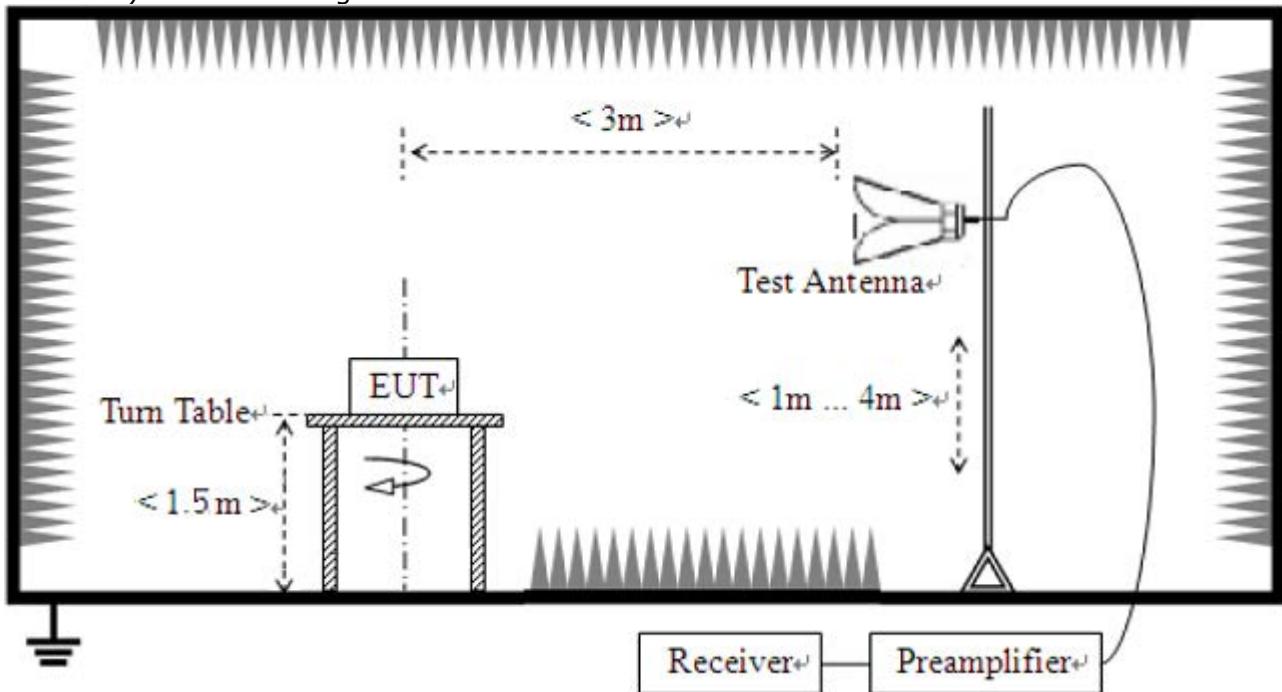
- 1) For field strength of emissions from 9 kHz to 30 MHz



- 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 (MIMO)

802.11n CDD mode : ANT1 + ANT2 (MIMO)

802.11ac CDD mode : ANT1 + ANT2 (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

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Test Results

1) 9 kHz to 30 MHz

Test mode : 802.11a, 802.11n, 802.11ac (Worst case)

The requirements are:

Complies

| Frequency (MHz) | Measured Data (dBuV/m) | Margin (dB) | Remark |
|--------------------|---------------------------|----------------|----------|
| - | - | - | See note |

Note :

The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB)

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(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
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2) 30 MHz to 1 GHz

Test mode : 802.11a(Worst Case)

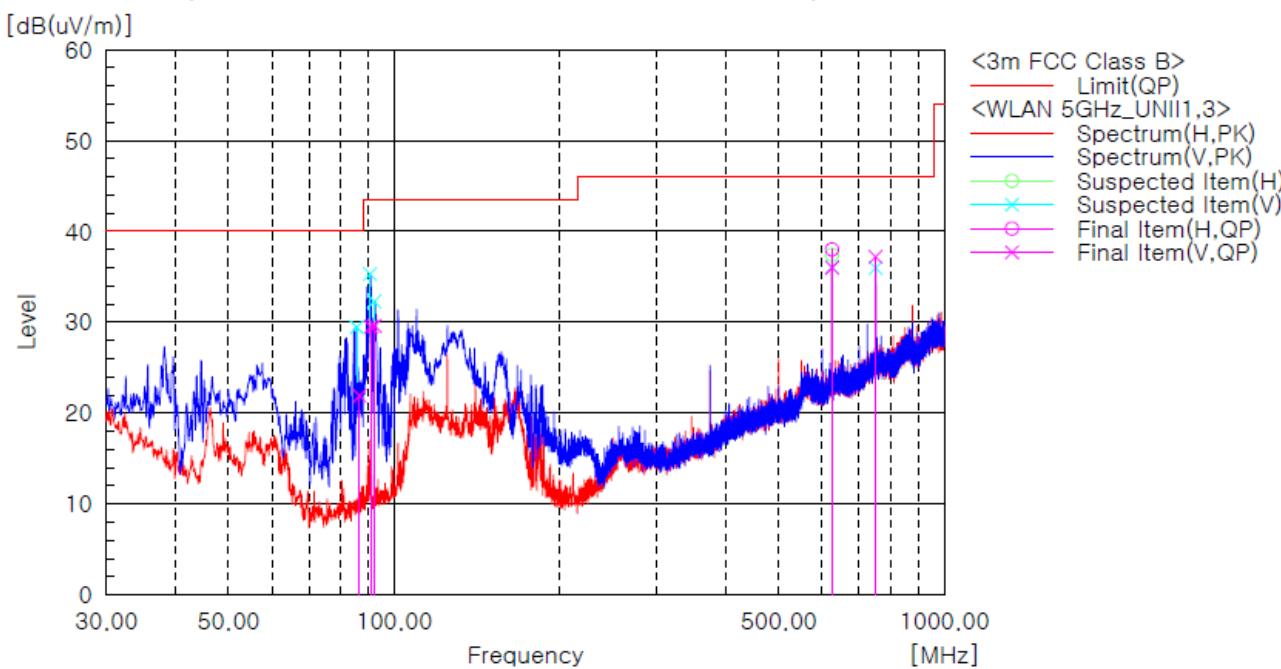
The requirements are:

Complies

Test Data

Test Model : AR1031
Test Mode : WLAN 5GHz_UNII1,3
Tester : kim ji hye
:
:

Manufacturer : GAON
:
:
:



Final Result

| No. | Frequency [MHz] | (P) [dB(uV)] | Reading QP [dB(1/m)] | c.f [dB(1/m)] | Result QP [dB(uV/m)] | Limit QP [dB(uV/m)] | Margin QP [dB] | Height [cm] | Angle [deg] |
|-----|--------------------|-----------------|----------------------------|------------------|----------------------------|---------------------------|----------------------|----------------|----------------|
| 1 | 86.552 | V | 37.1 | -15.2 | 21.9 | 40.0 | 18.1 | 101.0 | 0.0 |
| 2 | 90.768 | V | 44.1 | -14.6 | 29.5 | 43.5 | 14.0 | 200.0 | 0.0 |
| 3 | 92.169 | V | 44.1 | -14.5 | 29.6 | 43.5 | 13.9 | 101.0 | 41.0 |
| 4 | 625.016 | H | 37.4 | 0.6 | 38.0 | 46.0 | 8.0 | 101.0 | 214.0 |
| 5 | 624.974 | V | 35.4 | 0.6 | 36.0 | 46.0 | 10.0 | 101.0 | 94.0 |
| 6 | 749.989 | V | 34.2 | 3.0 | 37.2 | 46.0 | 8.8 | 101.0 | 199.0 |

Remark :

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X 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. We have done all test mode. The results are only attached worst cases.

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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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3) above 1 GHz

Test mode : 802.11a

The requirements are:

Complies

Test Data

Ch.36(5 180 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 907.14 | H | 54.00 | 74.00 | 43.46 | 50.50 | 10.54 | 23.50 |
| 6 907.14 | V | 54.00 | 74.00 | 47.26 | 55.20 | 6.74 | 18.80 |
| 9 687.89 | H | 54.00 | 74.00 | 39.66 | 49.80 | 14.34 | 24.20 |
| 9 687.89 | V | 54.00 | 74.00 | 41.66 | 49.70 | 12.34 | 24.30 |
| 5 149.93 | H | 54.00 | 74.00 | 53.36 | 67.60 | 0.64 | 6.40 |
| 5 149.84 | V | 54.00 | 74.00 | 52.96 | 71.20 | 1.04 | 2.80 |

Ch.40(5 200 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 934.07 | H | 54.00 | 74.00 | 42.46 | 49.60 | 11.54 | 24.40 |
| 6 934.07 | V | 54.00 | 74.00 | 45.66 | 55.40 | 8.34 | 18.60 |
| 9 687.89 | H | 54.00 | 74.00 | 39.36 | 48.30 | 14.64 | 25.70 |
| 9 687.89 | V | 54.00 | 74.00 | 42.46 | 49.20 | 11.54 | 24.80 |

Ch.48(5 240 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 987.05 | H | 54.00 | 74.00 | 41.86 | 49.00 | 12.14 | 25.00 |
| 6 987.05 | V | 54.00 | 74.00 | 45.46 | 53.80 | 8.54 | 20.20 |
| 9 687.89 | H | 54.00 | 74.00 | 39.86 | 48.50 | 14.14 | 25.50 |
| 9 687.89 | V | 54.00 | 74.00 | 42.26 | 49.90 | 11.74 | 24.10 |

| | | |
|--|---|--|
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|--|---|--|

Ch.149(5 745 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 687.89 | H | 54.00 | 74.00 | 39.46 | 48.10 | 14.54 | 25.90 |
| 9 687.89 | V | 54.00 | 74.00 | 42.26 | 49.70 | 11.74 | 24.30 |
| 11 487.91 | H | 54.00 | 74.00 | 39.96 | 48.60 | 14.04 | 25.40 |
| 11 487.91 | V | 54.00 | 74.00 | 42.06 | 52.80 | 11.94 | 21.20 |
| 5 649.75 | H | - | 68.20 | - | 62.70 | - | 5.50 |
| 5 645.73 | V | - | 68.20 | - | 67.00 | - | 1.20 |

Ch.157(5 785 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 687.89 | H | 54.00 | 74.00 | 39.56 | 48.40 | 14.44 | 25.60 |
| 9 687.89 | V | 54.00 | 74.00 | 41.66 | 49.60 | 12.34 | 24.40 |
| 11 569.72 | H | 54.00 | 74.00 | 40.66 | 50.90 | 13.34 | 23.10 |
| 11 566.69 | V | 54.00 | 74.00 | 43.66 | 55.60 | 10.34 | 18.40 |

Ch.165(5 825 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 687.89 | H | 54.00 | 74.00 | 39.66 | 48.70 | 14.34 | 25.30 |
| 9 687.89 | V | 54.00 | 74.00 | 41.96 | 49.40 | 12.04 | 24.60 |
| 11 646.49 | H | 54.00 | 74.00 | 41.66 | 51.10 | 12.34 | 22.90 |
| 11 644.47 | V | 54.00 | 74.00 | 44.56 | 54.20 | 9.44 | 19.80 |
| 5 926.85 | H | - | 68.20 | - | 57.80 | - | 10.40 |
| 5 930.54 | V | - | 68.20 | - | 62.50 | - | 5.70 |

Remarks

- The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
- Peak Result = Reading + c.f(Correction factor)
 Average Result = Reading + c.f(Correction factor) + Duty cycle factor
- Correction factor = Antenna factor + Cable loss - Amp Gain

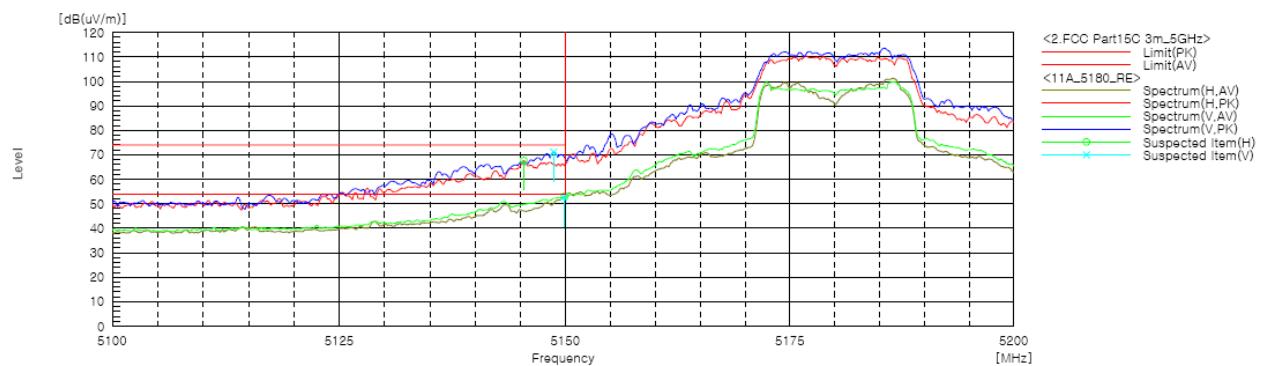


CTK Co., Ltd.

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

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



Radiated Restricted Lower Band Edge Plot

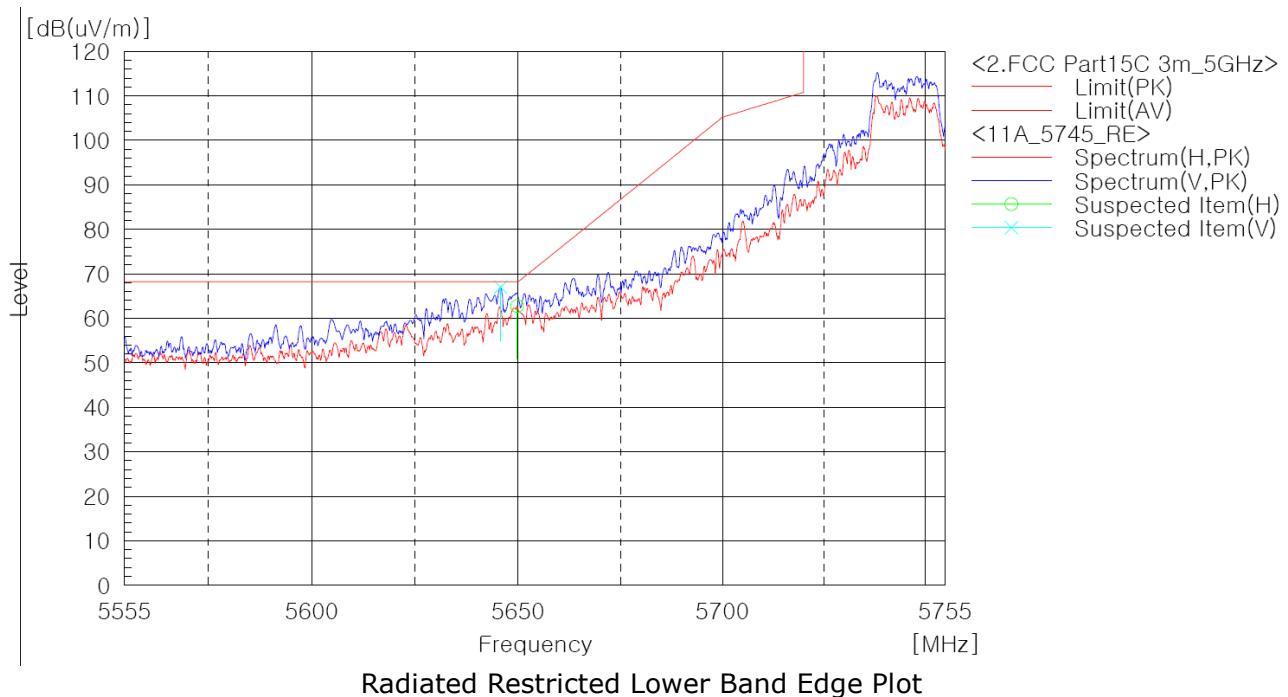


CTK Co., Ltd.

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

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



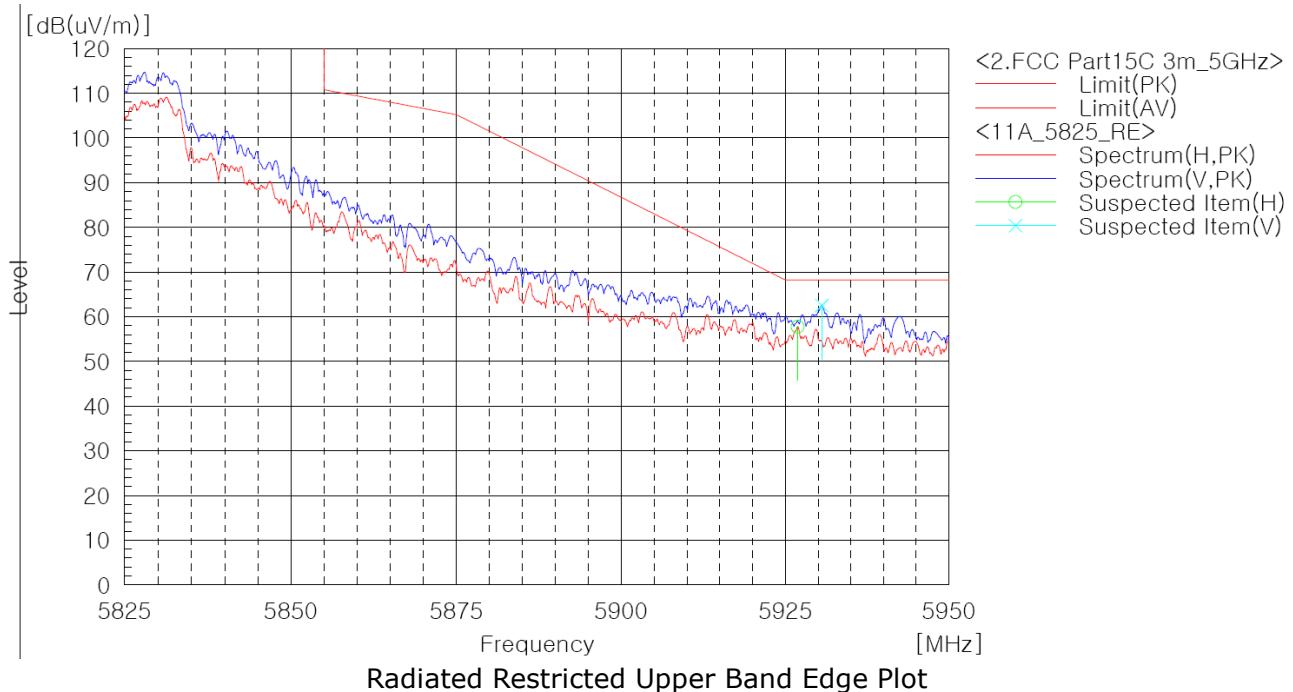


CTK Co., Ltd.

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

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



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|--|---|--|

Test mode : 802.11n_HT20_CDD Mode

The requirements are:

- Complies

Test Data

Ch.36(5 180 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 907.14 | H | 54.00 | 74.00 | 43.67 | 50.20 | 10.33 | 23.80 |
| 6 907.14 | V | 54.00 | 74.00 | 47.17 | 55.70 | 6.83 | 18.30 |
| 9 687.89 | H | 54.00 | 74.00 | 39.47 | 47.90 | 14.53 | 26.10 |
| 9 687.89 | V | 54.00 | 74.00 | 42.17 | 49.50 | 11.83 | 24.50 |
| 5 149.88 | H | 54.00 | 74.00 | 51.87 | 67.50 | 2.13 | 6.50 |
| 5 148.42 | V | 54.00 | 74.00 | 51.77 | 70.60 | 2.23 | 3.40 |

Ch.40(5 200 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 934.07 | H | 54.00 | 74.00 | 42.27 | 50.10 | 11.73 | 23.90 |
| 6 934.07 | V | 54.00 | 74.00 | 46.07 | 55.00 | 7.93 | 19.00 |
| 9 687.89 | H | 54.00 | 74.00 | 39.47 | 47.70 | 14.53 | 26.30 |
| 9 687.89 | V | 54.00 | 74.00 | 41.57 | 49.60 | 12.43 | 24.40 |

Ch.48(5 240 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 687.05 | H | 54.00 | 74.00 | 41.57 | 48.90 | 12.43 | 25.10 |
| 6 987.05 | V | 54.00 | 74.00 | 45.87 | 54.40 | 8.13 | 19.60 |
| 9 687.89 | H | 54.00 | 74.00 | 39.67 | 48.40 | 14.33 | 25.60 |
| 9 687.89 | V | 54.00 | 74.00 | 42.07 | 49.10 | 11.93 | 24.90 |

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|---|---|--|

Ch.149(5 745 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 687.89 | H | 54.00 | 74.00 | 39.67 | 48.20 | 14.33 | 25.80 |
| 9 687.89 | V | 54.00 | 74.00 | 41.57 | 50.00 | 12.43 | 24.00 |
| 11 491.95 | H | 54.00 | 74.00 | 39.77 | 50.30 | 14.23 | 23.70 |
| 11 488.92 | V | 54.00 | 74.00 | 40.97 | 51.30 | 13.03 | 22.70 |
| 5 644.00 | V | - | 68.20 | - | 66.30 | - | 1.90 |
| 5 649.52 | H | - | 68.20 | - | 62.70 | - | 5.50 |
| 5 651.63 | V | - | 69.40 | - | 68.20 | - | 1.20 |

Ch.157(5 785 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 687.89 | H | 54.00 | 74.00 | 39.77 | 48.40 | 14.23 | 25.60 |
| 9 687.89 | V | 54.00 | 74.00 | 41.57 | 49.60 | 12.43 | 24.40 |
| 11 574.78 | H | 54.00 | 74.00 | 40.57 | 50.70 | 13.43 | 23.30 |
| 11 570.74 | V | 54.00 | 74.00 | 41.27 | 53.20 | 12.73 | 20.80 |

Ch.165(5 825 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 687.89 | H | 54.00 | 74.00 | 39.37 | 48.30 | 14.63 | 25.70 |
| 9 687.89 | V | 54.00 | 74.00 | 41.47 | 49.30 | 12.53 | 24.70 |
| 11 652.55 | H | 54.00 | 74.00 | 41.27 | 51.60 | 12.73 | 22.40 |
| 11 649.52 | V | 54.00 | 74.00 | 41.77 | 53.60 | 12.23 | 20.40 |
| 5 924.52 | V | - | 68.60 | - | 62.40 | - | 6.20 |
| 5 927.63 | V | - | 68.20 | - | 61.50 | - | 6.70 |
| 5 932.07 | H | - | 68.20 | - | 57.10 | - | 11.10 |

Remarks

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

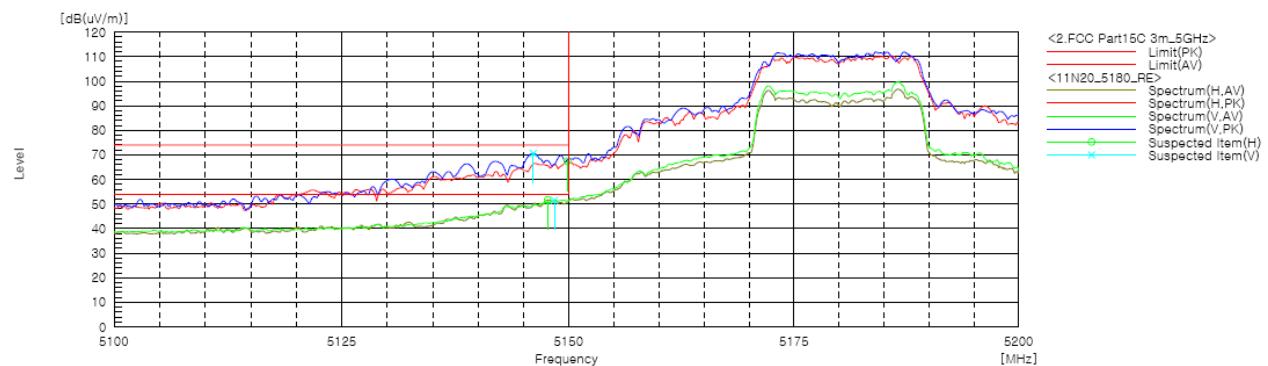


CTK Co., Ltd.

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

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| | |
|----------------------------|--------------------------|
| Worst Case Mode : | 802.11n_HT20_CDD Mode |
| Worst Case Transfer Rate : | MCS 16 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 180 MHz |
| Channel : | 36 |



Radiated Restricted Lower Band Edge Plot

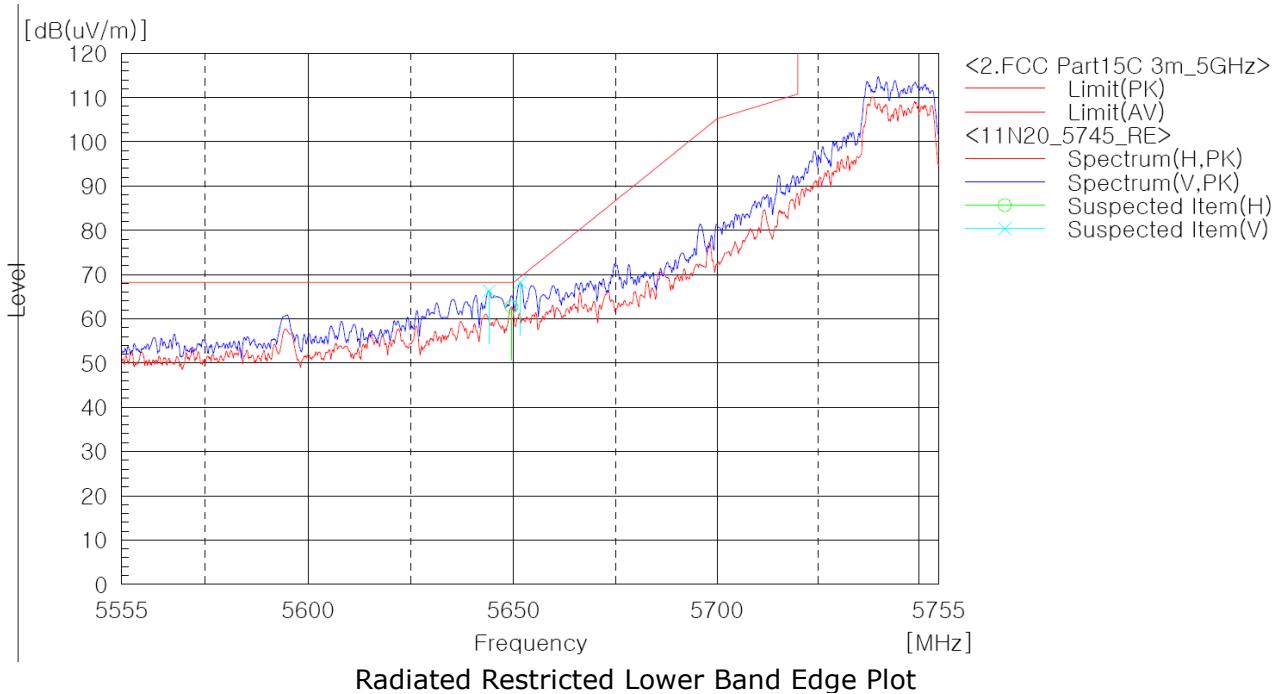


CTK Co., Ltd.

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

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| | |
|----------------------------|--------------------------|
| Worst Case Mode : | 802.11n_HT20_CDD Mode |
| Worst Case Transfer Rate : | MCS 16 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 745 MHz |
| Channel : | 149 |



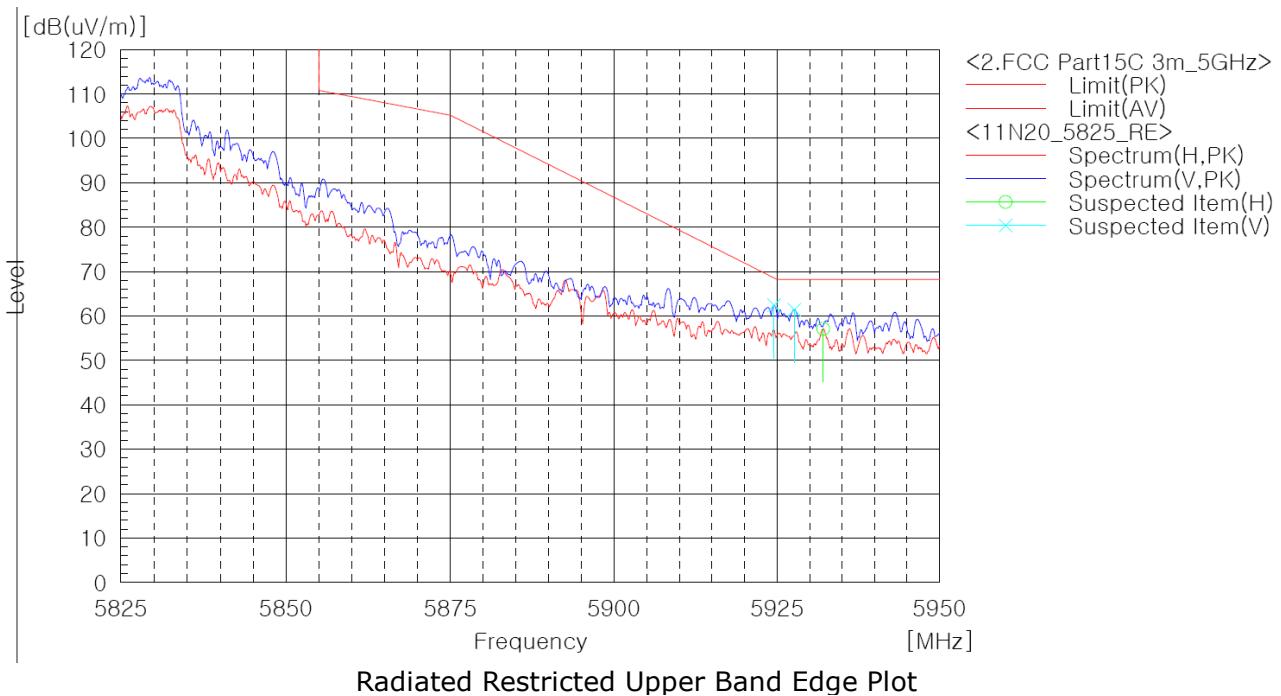


CTK Co., Ltd.

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

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| | |
|----------------------------|-----------------------|
| Worst Case Mode : | 802.11n_HT20_CDD Mode |
| Worst Case Transfer Rate : | MCS 16 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 825 MHz |
| Channel : | 165 |



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|--|---|--|
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|--|---|--|

Test mode : 802.11ac_VHT20_CDD Mode

The requirements are:

- Complies

Test Data

Ch.36(5 180 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 907.14 | H | 54.00 | 74.00 | 43.57 | 50.50 | 10.43 | 23.50 |
| 6 907.14 | V | 54.00 | 74.00 | 46.87 | 55.40 | 7.13 | 18.60 |
| 9 687.89 | H | 54.00 | 74.00 | 39.37 | 47.70 | 14.63 | 26.30 |
| 9 687.89 | V | 54.00 | 74.00 | 41.97 | 49.00 | 12.03 | 25.00 |
| 5 149.94 | H | 54.00 | 74.00 | 51.77 | 68.00 | 2.23 | 6.00 |
| 5 148.89 | V | 54.00 | 74.00 | 51.27 | 70.50 | 2.73 | 3.50 |

Ch.40(5 200 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 934.07 | H | 54.00 | 74.00 | 42.27 | 50.20 | 11.73 | 23.80 |
| 6 934.07 | V | 54.00 | 74.00 | 45.57 | 55.40 | 8.43 | 18.60 |
| 9 687.89 | H | 54.00 | 74.00 | 39.47 | 48.10 | 14.53 | 25.90 |
| 9 687.89 | V | 54.00 | 74.00 | 42.07 | 49.50 | 11.93 | 24.50 |

Ch.48(5 240 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 987.05 | H | 54.00 | 74.00 | 41.67 | 50.10 | 12.33 | 23.90 |
| 6 987.05 | V | 54.00 | 74.00 | 45.67 | 53.70 | 8.33 | 20.30 |
| 9 687.89 | H | 54.00 | 74.00 | 39.87 | 47.50 | 14.13 | 26.50 |
| 9 687.89 | V | 54.00 | 74.00 | 42.27 | 49.20 | 11.73 | 24.80 |

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|--|---|--|

Ch.149(5 745 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 687.89 | H | 54.00 | 74.00 | 39.37 | 47.80 | 14.63 | 26.20 |
| 9 687.89 | V | 54.00 | 74.00 | 41.77 | 51.30 | 12.23 | 22.70 |
| 5 646.61 | H | - | 68.20 | - | 61.50 | - | 6.70 |
| 5 649.59 | V | - | 68.20 | - | 66.60 | - | 1.60 |

Ch.157(5 785 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 687.89 | H | 54.00 | 74.00 | 39.47 | 48.30 | 14.53 | 25.70 |
| 9 687.89 | V | 54.00 | 74.00 | 41.77 | 50.30 | 12.23 | 23.70 |
| 11 569.72 | H | 54.00 | 74.00 | 40.57 | 50.90 | 13.43 | 23.10 |
| 11 569.72 | V | 54.00 | 74.00 | 41.67 | 51.90 | 12.33 | 22.10 |

Ch.165(5 825 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 687.89 | H | 54.00 | 74.00 | 39.57 | 48.30 | 14.43 | 25.70 |
| 9 687.89 | V | 54.00 | 74.00 | 41.87 | 48.80 | 12.13 | 25.20 |
| 11 653.56 | H | 54.00 | 74.00 | 41.87 | 52.30 | 12.13 | 21.70 |
| 11 649.52 | V | 54.00 | 74.00 | 41.37 | 52.60 | 12.63 | 21.40 |
| 5 932.76 | H | - | 68.20 | - | 58.90 | - | 9.30 |
| 5 925.00 | V | - | 68.20 | - | 62.90 | - | 5.30 |

Remarks

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

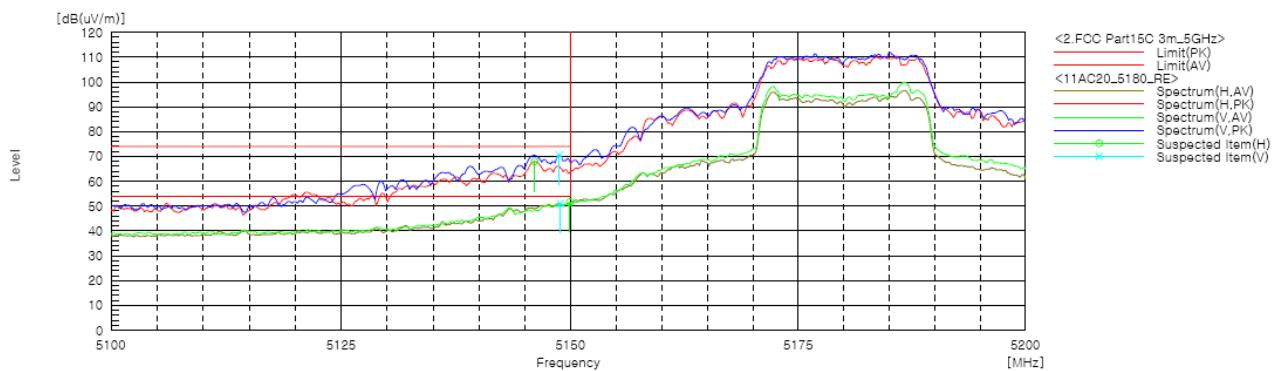


CTK Co., Ltd.

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

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|----------------------------|-------------------------|
| Worst Case Mode : | 802.11ac_VHT20_CDD Mode |
| Worst Case Transfer Rate : | MNSS 0 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 180 MHz |
| Channel : | 36 |



Radiated Restricted Lower Band Edge Plot

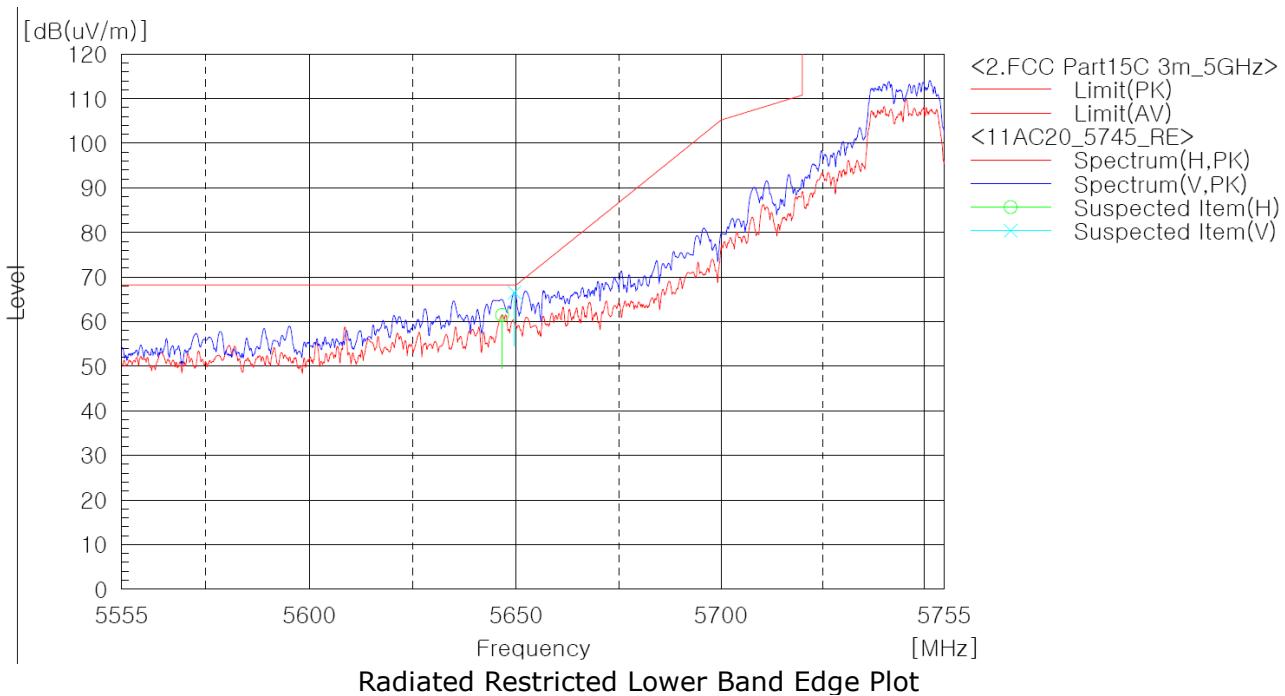


CTK Co., Ltd.

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

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|----------------------------|-------------------------|
| Worst Case Mode : | 802.11ac_VHT20_CDD Mode |
| Worst Case Transfer Rate : | MNSS 0 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 745 MHz |
| Channel : | 149 |



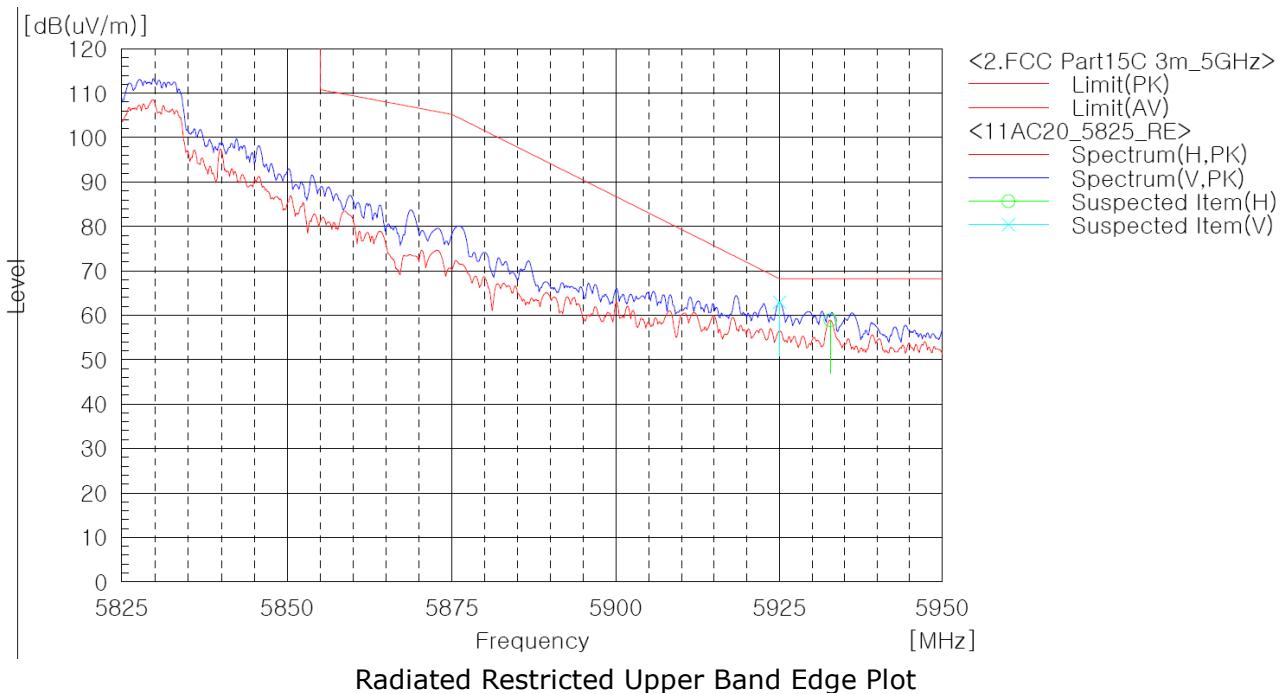


CTK Co., Ltd.

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

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| | |
|----------------------------|-------------------------|
| Worst Case Mode : | 802.11ac_VHT20_CDD Mode |
| Worst Case Transfer Rate : | MNSS 0 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 825 MHz |
| Channel : | 165 |



| | | |
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|--|---|---|

Test mode : 802.11n_HT40_CDD Mode

The requirements are:

- Complies

Test Data

Ch.38(5 190 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 920.61 | H | 54.00 | 74.00 | 45.13 | 50.90 | 8.87 | 23.10 |
| 6 920.61 | V | 54.00 | 74.00 | 48.93 | 56.50 | 5.07 | 17.50 |
| 9 787.89 | H | 54.00 | 74.00 | 39.83 | 49.00 | 14.17 | 25.00 |
| 9 787.89 | V | 54.00 | 74.00 | 44.13 | 50.70 | 9.87 | 23.30 |
| 5 149.86 | H | 54.00 | 74.00 | 51.53 | 68.00 | 2.47 | 6.00 |
| 5 147.97 | V | 54.00 | 74.00 | 51.63 | 70.00 | 2.37 | 4.00 |

Ch.46(5 230 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 973.58 | H | 54.00 | 74.00 | 43.83 | 51.40 | 10.17 | 22.60 |
| 6 973.58 | V | 54.00 | 74.00 | 48.43 | 56.00 | 5.57 | 18.00 |
| 9 787.89 | H | 54.00 | 74.00 | 40.03 | 49.90 | 13.97 | 24.10 |
| 9 787.89 | V | 54.00 | 74.00 | 44.13 | 50.40 | 9.87 | 23.60 |

Ch.151(5 755 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 7 673.92 | H | 54.00 | 74.00 | 40.43 | 48.10 | 13.57 | 25.90 |
| 7 673.92 | V | 54.00 | 74.00 | 42.43 | 49.60 | 11.57 | 24.40 |
| 9 787.89 | H | 54.00 | 74.00 | 40.03 | 48.60 | 13.97 | 25.40 |
| 9 787.89 | V | 54.00 | 74.00 | 44.43 | 51.60 | 9.57 | 22.40 |
| 5 642.25 | H | - | 68.20 | - | 60.90 | - | 7.30 |
| 5 649.12 | V | - | 68.20 | - | 64.40 | - | 3.80 |

| | | |
|---|--|--|
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|---|--|--|

Ch.159(5 795 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 7 726.90 | H | 54.00 | 74.00 | 37.83 | 48.60 | 16.17 | 25.40 |
| 7 726.90 | V | 54.00 | 74.00 | 40.43 | 48.60 | 13.57 | 25.40 |
| 9 787.89 | H | 54.00 | 74.00 | 40.13 | 48.20 | 13.87 | 25.80 |
| 9 787.89 | V | 54.00 | 74.00 | 44.23 | 51.10 | 9.77 | 22.90 |
| 5 926.66 | H | - | 68.20 | - | 57.80 | - | 10.40 |
| 5 925.56 | V | - | 68.20 | - | 58.90 | - | 9.30 |

Remarks

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

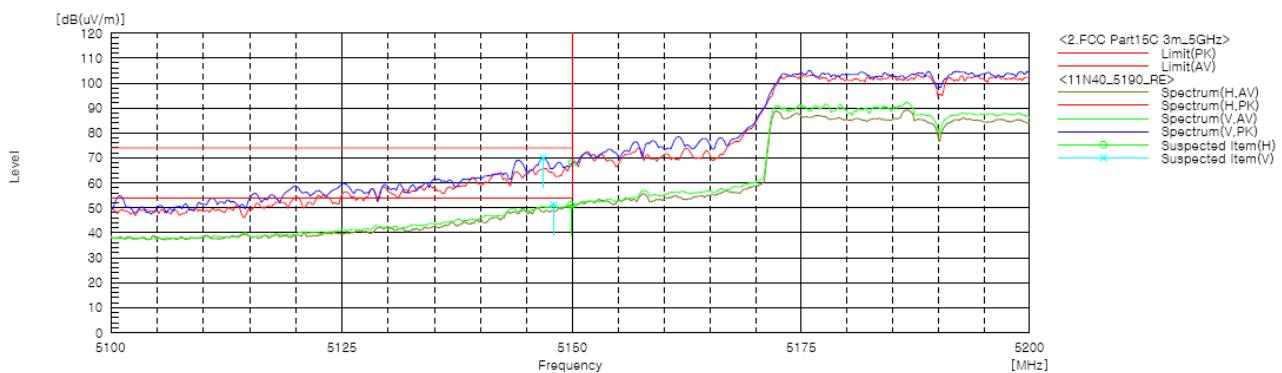


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Yongin-si, Gyeonggi-do, Korea
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| | |
|----------------------------|--------------------------|
| Worst Case Mode : | 802.11n_HT40_CDD Mode |
| Worst Case Transfer Rate : | MCS 16 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 190 MHz |
| Channel : | 38 |



Radiated Restricted Lower Band Edge Plot

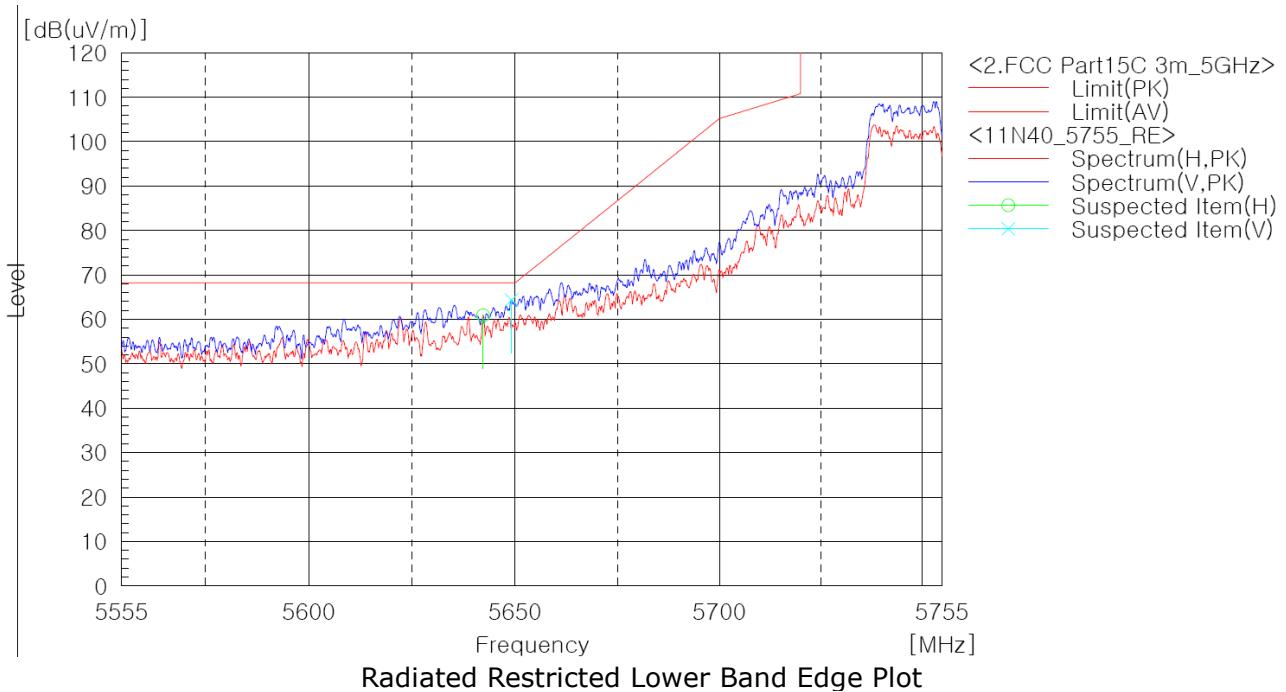


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| | |
|----------------------------|-----------------------|
| Worst Case Mode : | 802.11n_HT40_CDD Mode |
| Worst Case Transfer Rate : | MCS 16 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 755 MHz |
| Channel : | 151 |



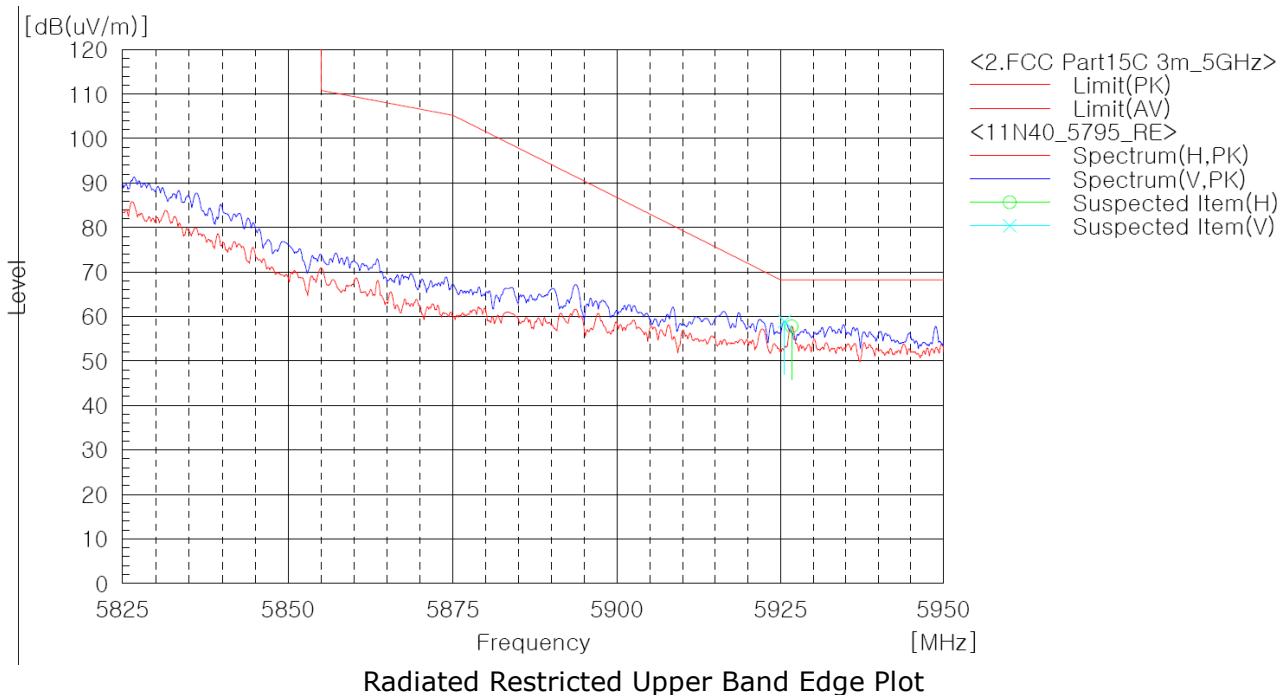


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| | |
|----------------------------|--------------------------|
| Worst Case Mode : | 802.11n_HT40_CDD Mode |
| Worst Case Transfer Rate : | MCS 16 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 795 MHz |
| Channel : | 159 |



| | | |
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|--|---|---|

Test mode : 802.11ac_VHT40_CDD Mode

The requirements are:

- Complies

Test Data

Ch.38(5 190 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 920.61 | H | 54.00 | 74.00 | 44.83 | 51.20 | 9.17 | 22.80 |
| 6 920.61 | V | 54.00 | 74.00 | 48.73 | 55.80 | 5.27 | 18.20 |
| 9 787.89 | H | 54.00 | 74.00 | 39.93 | 50.30 | 14.07 | 23.70 |
| 9 787.89 | V | 54.00 | 74.00 | 44.53 | 50.00 | 9.47 | 24.00 |
| 5 147.52 | H | 54.00 | 74.00 | 50.83 | 65.90 | 3.17 | 8.10 |
| 5 149.99 | V | 54.00 | 74.00 | 51.33 | 69.30 | 2.67 | 4.70 |

Ch.46(5 230 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 973.58 | H | 54.00 | 74.00 | 43.43 | 50.50 | 10.57 | 23.50 |
| 6 973.58 | V | 54.00 | 74.00 | 47.33 | 55.80 | 6.67 | 18.20 |
| 9 787.89 | H | 54.00 | 74.00 | 40.23 | 49.50 | 13.77 | 24.50 |
| 9 787.89 | V | 54.00 | 74.00 | 44.33 | 51.00 | 9.67 | 23.00 |

Ch.151(5 755 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 7 673.92 | H | 54.00 | 74.00 | 41.03 | 48.30 | 12.97 | 25.70 |
| 7 673.92 | V | 54.00 | 74.00 | 43.03 | 48.70 | 10.97 | 25.30 |
| 9 787.89 | H | 54.00 | 74.00 | 40.03 | 49.00 | 13.97 | 25.00 |
| 9 787.89 | V | 54.00 | 74.00 | 44.13 | 50.70 | 9.87 | 23.30 |
| 5 649.44 | H | - | 68.20 | - | 60.10 | - | 8.10 |
| 5 645.62 | V | - | 68.20 | - | 64.80 | - | 3.40 |

| | | |
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|---|--|--|

Ch.159(5 795 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 7 726.90 | H | 54.00 | 74.00 | 38.33 | 47.70 | 15.67 | 26.30 |
| 7 726.90 | V | 54.00 | 74.00 | 40.13 | 48.30 | 13.87 | 25.70 |
| 9 787.89 | H | 54.00 | 74.00 | 39.73 | 49.20 | 14.27 | 24.80 |
| 9 787.89 | V | 54.00 | 74.00 | 44.53 | 50.20 | 9.47 | 23.80 |
| 5 929.29 | H | - | 68.20 | - | 56.00 | - | 12.20 |
| 5 931.61 | V | - | 68.20 | - | 60.20 | - | 8.00 |

Remarks

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

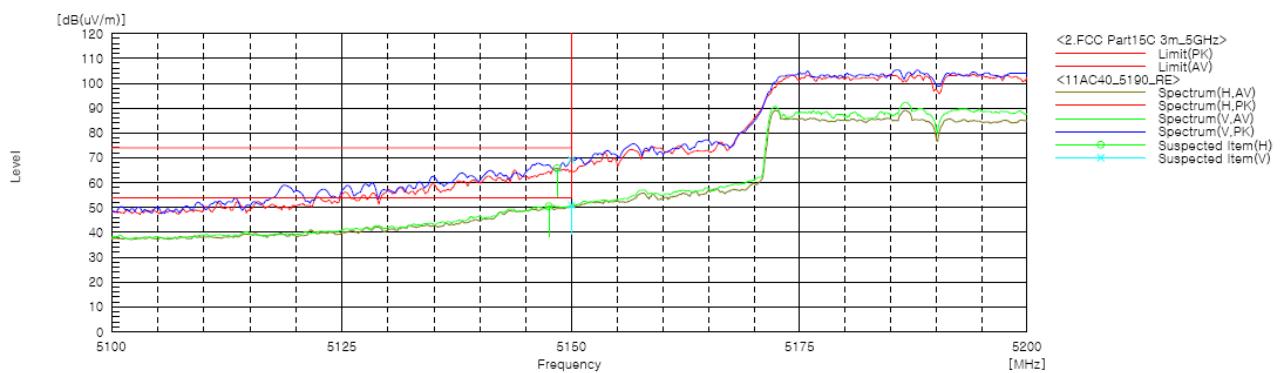


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| | |
|----------------------------|-------------------------|
| Worst Case Mode : | 802.11ac_VHT40_CDD Mode |
| Worst Case Transfer Rate : | MNSS 0 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 190 MHz |
| Channel : | 38 |



Radiated Restricted Lower Band Edge Plot

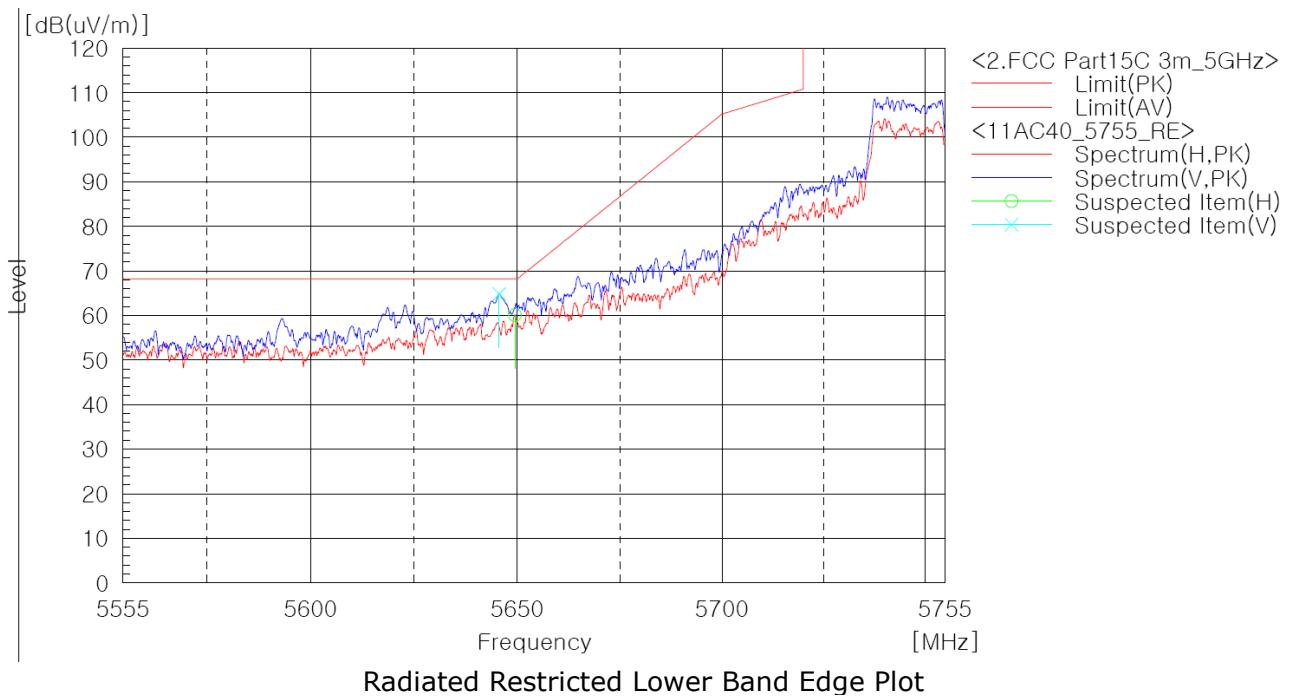


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|----------------------------|-------------------------|
| Worst Case Mode : | 802.11ac_VHT40_CDD Mode |
| Worst Case Transfer Rate : | MNSS 0 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 755 MHz |
| Channel : | 151 |



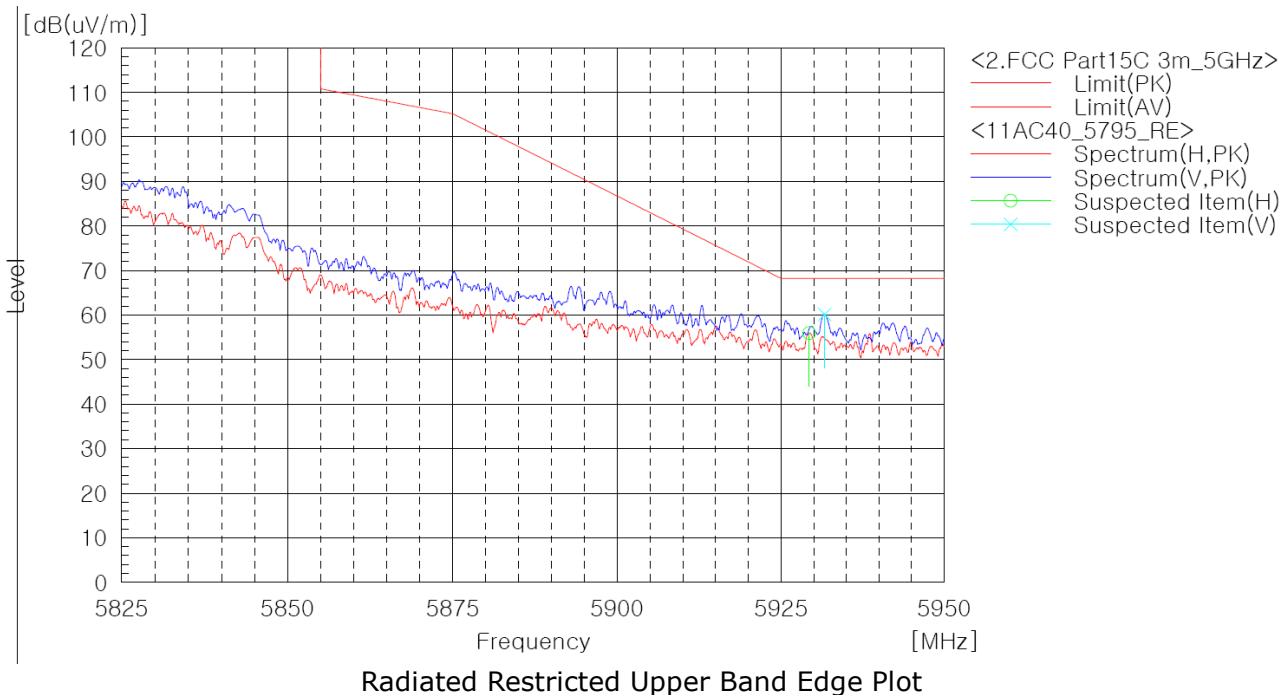


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|----------------------------|-------------------------|
| Worst Case Mode : | 802.11ac_VHT40_CDD Mode |
| Worst Case Transfer Rate : | MNSS 0 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 795 MHz |
| Channel : | 159 |



| | | |
|---|--|--|
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|---|--|--|

Test mode : 802.11ac_VHT80_CDD Mode

The requirements are:

- Complies

Test Data

Ch.42(5 210 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 6 947.54 | H | 54.00 | 74.00 | 44.35 | 50.70 | 9.65 | 23.30 |
| 6 947.54 | V | 54.00 | 74.00 | 47.25 | 56.60 | 6.75 | 17.40 |
| 9 787.89 | H | 54.00 | 74.00 | 40.85 | 49.00 | 13.15 | 25.00 |
| 9 787.89 | V | 54.00 | 74.00 | 45.55 | 50.30 | 8.45 | 23.70 |
| 5 143.30 | H | 54.00 | 74.00 | 52.45 | 67.40 | 1.55 | 6.60 |
| 5 143.01 | V | 54.00 | 74.00 | 53.45 | 69.40 | 0.55 | 4.60 |

Ch.155(5 775 MHz)

| Frequency [MHz] | (P) | Limit AV [dBuV/m] | Limit PK [dBuV/m] | Result AV [dBuV/m] | Result PK [dBuV/m] | Margin AV [dB] | Margin PK [dB] |
|--------------------|-----|-------------------------|-------------------------|--------------------------|--------------------------|----------------------|----------------------|
| 9 787.89 | H | 54.00 | 74.00 | 41.05 | 49.50 | 12.95 | 24.50 |
| 9 787.89 | V | 54.00 | 74.00 | 44.95 | 49.80 | 9.05 | 24.20 |
| 5 649.93 | H | - | 68.20 | - | 63.50 | - | 4.70 |
| 5 600.16 | V | - | 68.20 | - | 64.20 | - | 4.00 |
| 5 947.00 | H | - | 68.20 | - | 55.90 | - | 12.30 |
| 5 928.17 | V | - | 68.20 | - | 60.20 | - | 8.00 |

Remarks

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

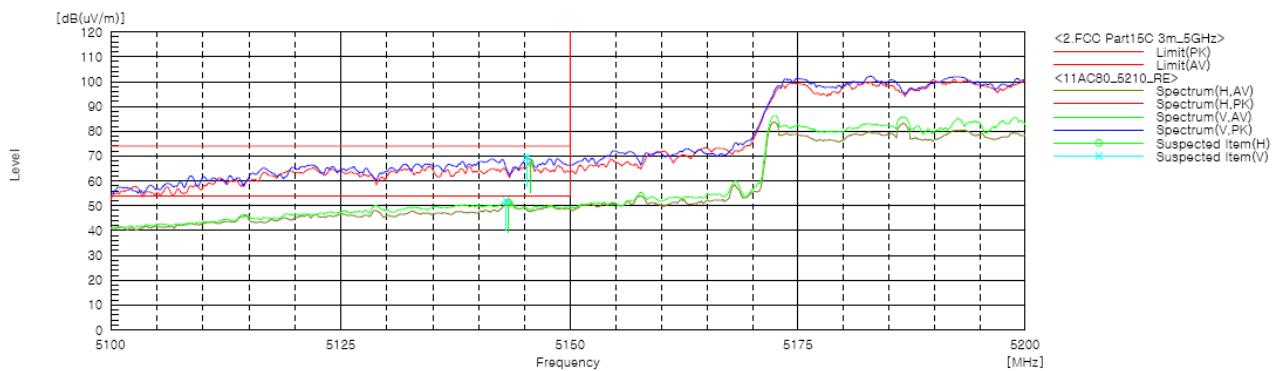


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|----------------------------|-------------------------|
| Worst Case Mode : | 802.11ac_VHT80_CDD Mode |
| Worst Case Transfer Rate : | MNSS 0 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 210 MHz |
| Channel : | 42 |



Radiated Restricted Lower Band Edge Plot

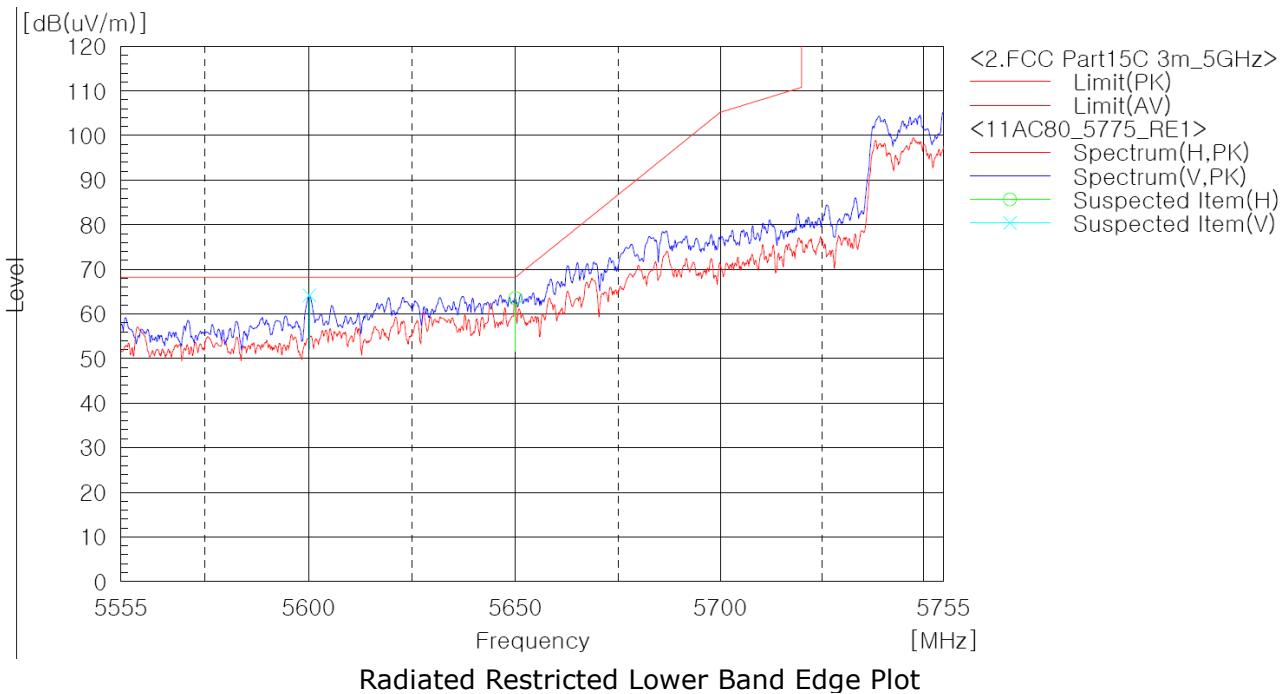


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|----------------------------|-------------------------|
| Worst Case Mode : | 802.11ac_VHT80_CDD Mode |
| Worst Case Transfer Rate : | MNSS 0 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 775 MHz |
| Channel : | 155 |



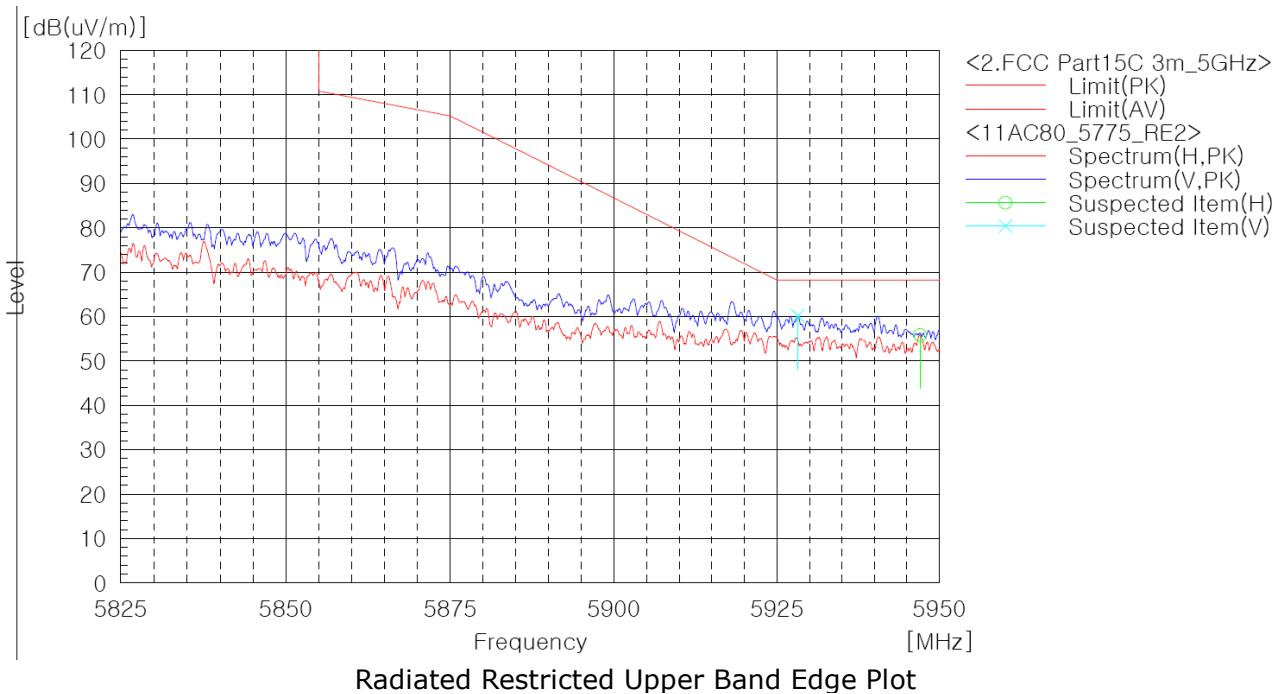


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|----------------------------|-------------------------|
| Worst Case Mode : | 802.11ac_VHT80_CDD Mode |
| Worst Case Transfer Rate : | MNSS 0 |
| Distance of Measurements : | 3 Meters |
| Operating Frequency : | 5 775 MHz |
| Channel : | 155 |





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4.7 AC Conducted Emissions

Test Location

Shielded Room

Frequency Range of Measurement

150 kHz to 30 MHz

Instrument Settings

IF Band Width: 9 kHz

Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

Limit

- 15.207(a)

| Frequency (MHz) | Conducted Limit (dBuV) | |
|--------------------|------------------------|-----------|
| | Quasi-peak | Average |
| 0.15 ~ 0.5 | 66 to 56* | 56 to 46* |
| 0.5 ~ 5 | 56 | 46 |
| 5 ~ 30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

Test Results

The requirements are:

Complies

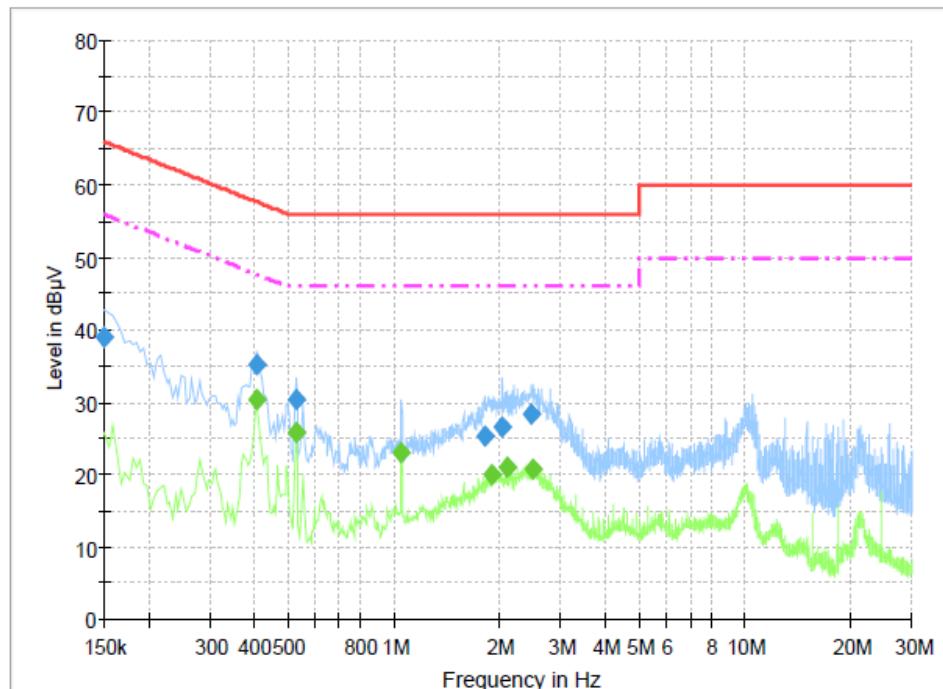
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Test Data[LINE]
(with EC)3CE_Class B_L1**Final Result 1**

| Frequency (MHz) | QuasiPeak (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|------------------|-----------------|-----------------|--------|------|------------|-------------|--------------|
| 0.150000 | 39.0 | 1000.0 | 9.000 | On | L1 | 10.0 | 27.0 | 66.0 |
| 0.406500 | 35.1 | 1000.0 | 9.000 | On | L1 | 10.0 | 22.6 | 57.7 |
| 0.528000 | 30.5 | 1000.0 | 9.000 | On | L1 | 10.0 | 25.5 | 56.0 |
| 1.815000 | 25.3 | 1000.0 | 9.000 | On | L1 | 9.9 | 30.7 | 56.0 |
| 2.049000 | 26.7 | 1000.0 | 9.000 | On | L1 | 9.9 | 29.3 | 56.0 |
| 2.467500 | 28.3 | 1000.0 | 9.000 | On | L1 | 9.9 | 27.7 | 56.0 |

Final Result 2

| Frequency (MHz) | CAverage (dBµV) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dBµV) |
|-----------------|-----------------|-----------------|-----------------|--------|------|------------|-------------|--------------|
| 0.406500 | 30.5 | 1000.0 | 9.000 | On | L1 | 10.0 | 17.2 | 47.7 |
| 0.528000 | 25.8 | 1000.0 | 9.000 | On | L1 | 10.0 | 20.2 | 46.0 |
| 1.054500 | 23.1 | 1000.0 | 9.000 | On | L1 | 9.9 | 22.9 | 46.0 |
| 1.900500 | 19.9 | 1000.0 | 9.000 | On | L1 | 9.9 | 26.1 | 46.0 |
| 2.112000 | 21.0 | 1000.0 | 9.000 | On | L1 | 9.9 | 25.0 | 46.0 |
| 2.494500 | 20.7 | 1000.0 | 9.000 | On | L1 | 9.9 | 25.3 | 46.0 |



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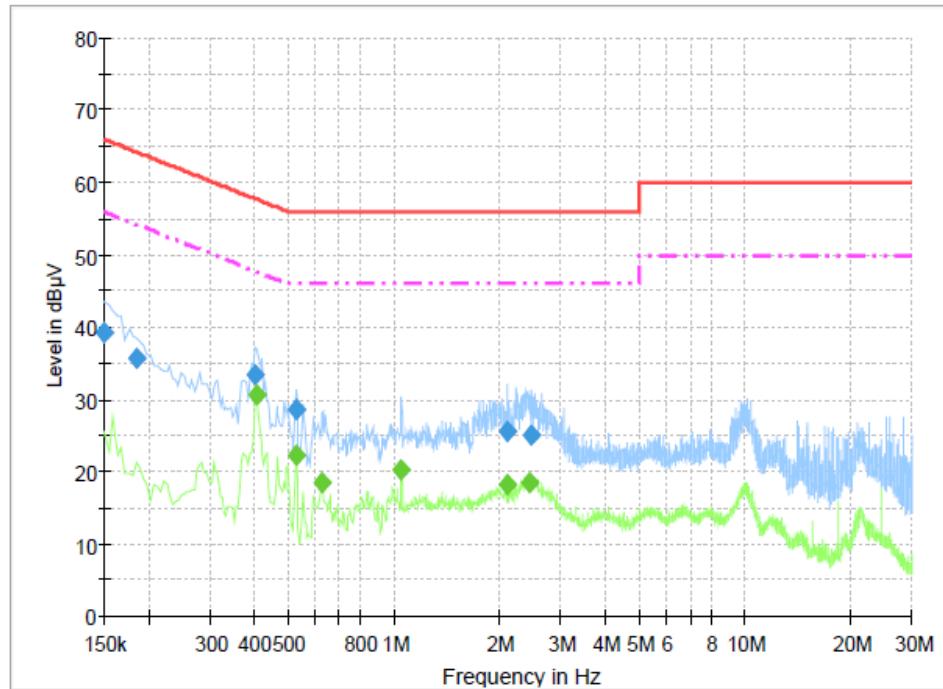
CTK-2019-02420

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[NEUTRAL]

(with EC)3CE_Class B_N



Final Result 1

| Frequency (MHz) | QuasiPeak (dB μ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|------------------------|-----------------|-----------------|--------|------|------------|-------------|--------------------|
| 0.150000 | 39.3 | 1000.0 | 9.000 | On | N | 9.9 | 26.7 | 66.0 |
| 0.186000 | 35.8 | 1000.0 | 9.000 | On | N | 10.2 | 28.4 | 64.2 |
| 0.402000 | 33.3 | 1000.0 | 9.000 | On | N | 10.0 | 24.5 | 57.8 |
| 0.528000 | 28.7 | 1000.0 | 9.000 | On | N | 10.0 | 27.3 | 56.0 |
| 2.112000 | 25.6 | 1000.0 | 9.000 | On | N | 9.9 | 30.4 | 56.0 |
| 2.481000 | 25.2 | 1000.0 | 9.000 | On | N | 9.9 | 30.8 | 56.0 |

Final Result 2

| Frequency (MHz) | CAverage (dB μ V) | Meas. Time (ms) | Bandwidth (kHz) | Filter | Line | Corr. (dB) | Margin (dB) | Limit (dB μ V) |
|-----------------|-----------------------|-----------------|-----------------|--------|------|------------|-------------|--------------------|
| 0.406500 | 30.7 | 1000.0 | 9.000 | On | N | 10.0 | 17.0 | 47.7 |
| 0.528000 | 22.3 | 1000.0 | 9.000 | On | N | 10.0 | 23.7 | 46.0 |
| 0.622500 | 18.6 | 1000.0 | 9.000 | On | N | 10.0 | 27.4 | 46.0 |
| 1.054500 | 20.2 | 1000.0 | 9.000 | On | N | 9.9 | 25.8 | 46.0 |
| 2.112000 | 18.3 | 1000.0 | 9.000 | On | N | 9.9 | 27.7 | 46.0 |
| 2.440500 | 18.6 | 1000.0 | 9.000 | On | N | 9.9 | 27.4 | 46.0 |

| | | |
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APPENDIX A – Test Equipment Used For Tests

| | Name of Equipment | Manufacturer | Model No. | Serial No. | Cal Date | Due Date |
|----|---------------------------|---------------------|------------------|-------------------|-----------------|-----------------|
| 1 | Signal Analyzer | Agilent | N9020A | MY48011598 | 2018-10-25 | 2019-10-25 |
| 2 | Signal Generator | Rohde & Schwarz | SMB100A | 175528 | 2018-10-24 | 2019-10-24 |
| 3 | EMI Test Receiver | Rohde & Schwarz | ESCI7 | 100814 | 2018-10-25 | 2019-10-25 |
| 4 | Bilog Antenna | Schaffner | CBL6111C | 2551 | 2018-05-10 | 2020-05-10 |
| 5 | Active Loop Antenna | SCHWARZBECK | FMZB 1513 | 1513-126 | 2018-05-27 | 2020-05-27 |
| 6 | 6dB Attenuator | R&S | DNF | 272.4110.50-2 | 2018-10-25 | 2019-10-25 |
| 7 | AMPLIFIER | SONOMA | 310 | 291721 | 2019-01-28 | 2020-01-28 |
| 8 | EMI Test Receiver | Rohde & Schwarz | ESU40 | 100336 | 2019-01-29 | 2020-01-29 |
| 9 | Preamplifier | Agilent | 8449B | 3008A02011 | 2018-12-03 | 2019-12-03 |
| 10 | Horn Antenna | ETS-Lindgren | 3116 | 00062504 | 2017-12-04 | 2019-12-04 |
| 11 | Horn Antenna | ETS-Lindgren | 3117 | 00154525 | 2019-02-22 | 2021-02-22 |
| 12 | Band Reject Filter | Micro Tronics | BRM50716 | G184 | 2019-01-28 | 2020-01-28 |
| 13 | EMI Test Receiver | R&S | ESCI3 | 100032 | 2019-01-29 | 2020-01-29 |
| 14 | LISN | Rohde & Schwarz | ENV216 | 101236 | 2018-10-29 | 2019-10-29 |
| 15 | Singnal Canditioning Unit | R&S | SCU-40 | 10023 | 2018-10-24 | 2019-10-24 |
| 16 | Temp&Humi Chamber | ESPEC CORP. | SH-242 | 93008423 | 2018-09-18 | 2019-09-18 |

| | Cable | Manufacturer | Model No. | Serial No. | Check Date |
|---|--------------|---------------------|------------------|-------------------|-------------------|
| 1 | RF Cable | Canare Corporation | L-5D2W | N/A | 2018-12-19 |
| 2 | RF Cable | Junkosha Inc. | MWX221 | 1510S087 | 2019-05-23 |
| 3 | RF Cable | HUBER+SUHNER | SUCOFLEX 102 | MY073/2 | 2018-12-19 |
| 4 | RF Cable | HUBER+SUHNER | SUCOFLEX 102 | MY4728/2 | 2018-12-19 |
| 5 | RF Cable | HUBER+SUHNER | SUCOFLEX 104 | MY27558/4 | 2018-12-19 |
| 6 | RF Cable | HUBER+SUHNER | SUCOFLEX 104 | N/A | 2018-12-19 |
| 7 | RF Cable | HUBER+SUHNER | SUCOFLEX 104 | MY27573/4 | 2018-12-19 |
| 8 | RF Cable | HUBER+SUHNER | SUCOFLEX 106 | N/A | 2018-12-19 |