

KCTL Inc.

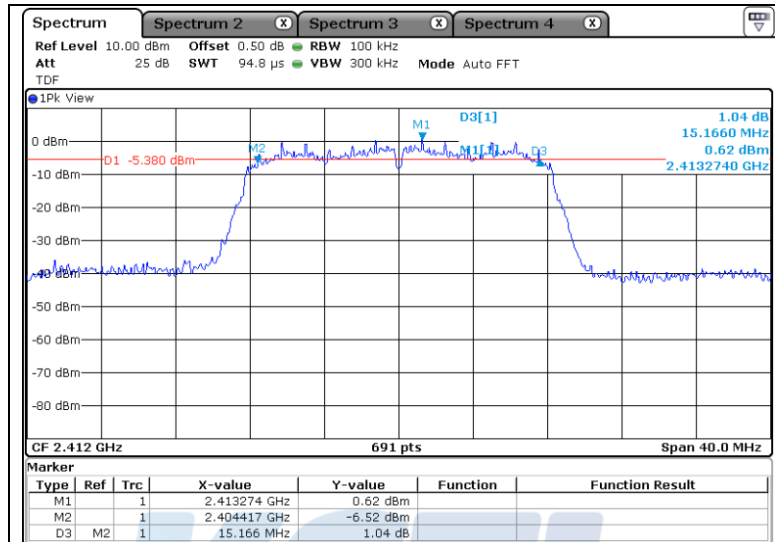
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (53) of (103)

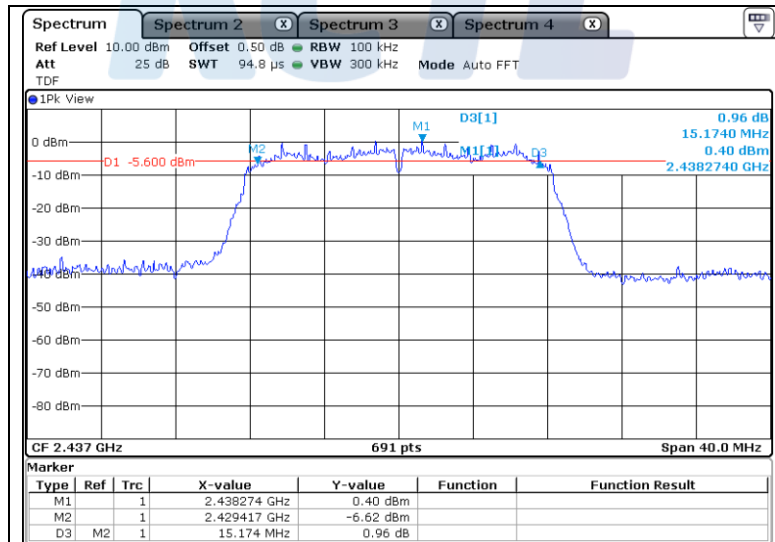


- 802.11g_6 dB Bandwidth

Lowest Channel (2 412 MHz)



Middle Channel (2 437 MHz)



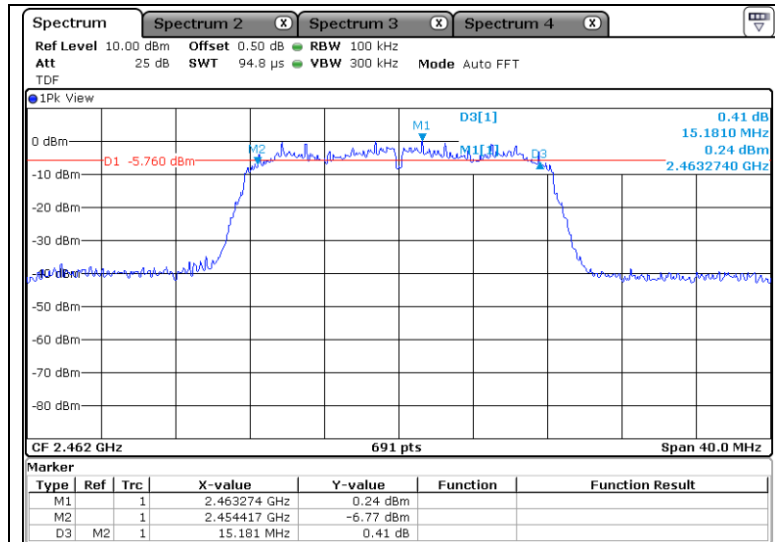
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (54) of (103)

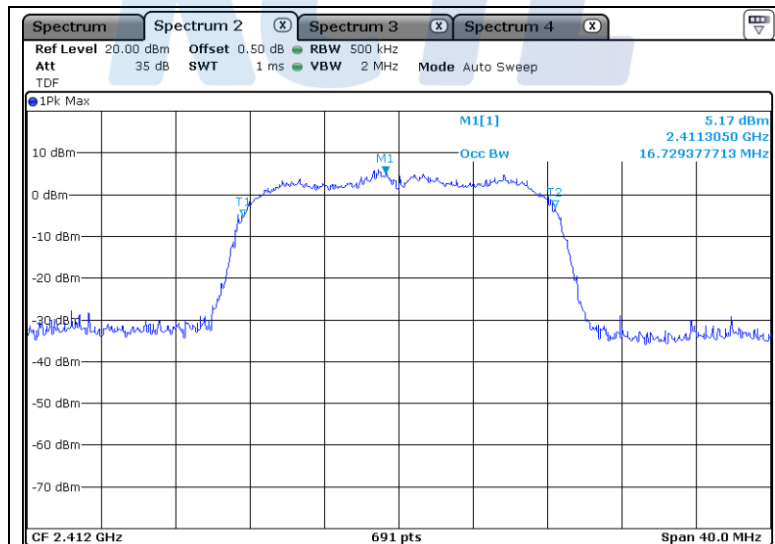


Highest Channel (2 462 MHz)



- 802.11g _ Occupied Bandwidth

Lowest Channel (2 412 MHz)



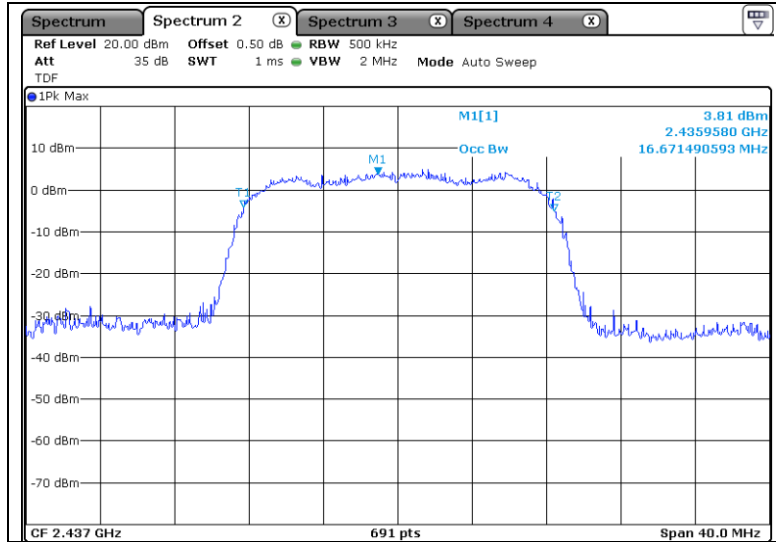
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

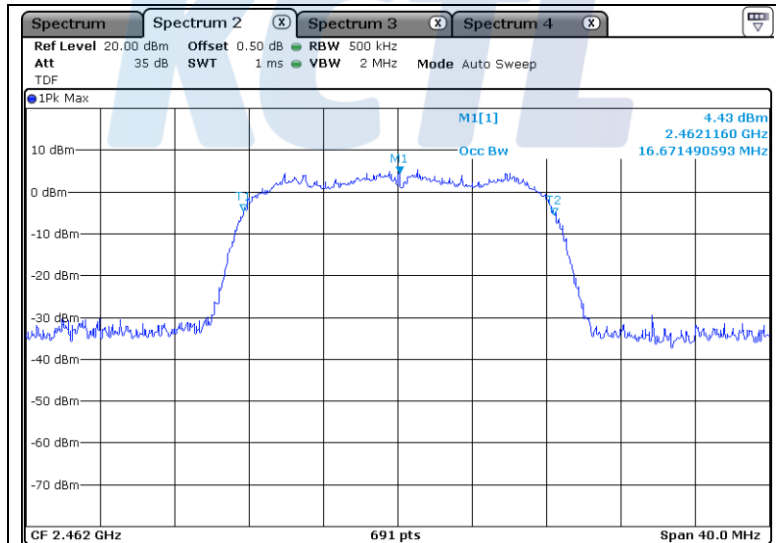
Report No.:
KR17-SRF0041
Page (55) of (103)



Middle Channel (2 437 MHz)



Highest Channel (2 462 MHz)



KCTL Inc.

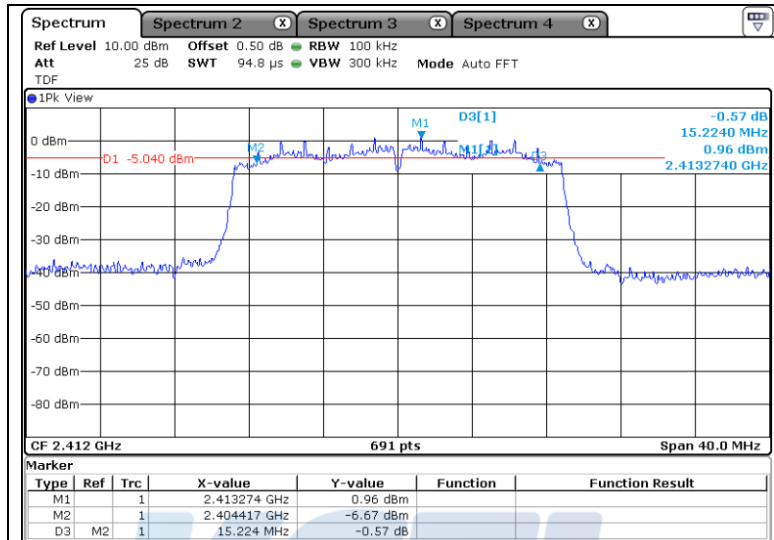
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (56) of (103)

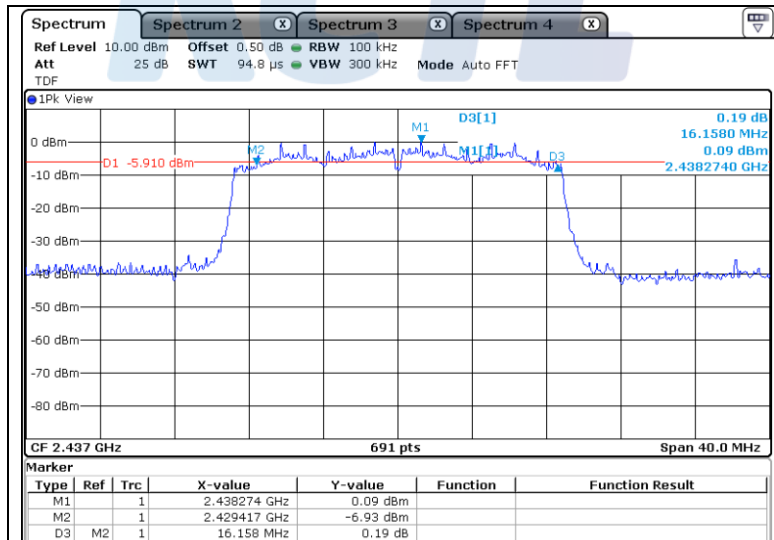


- 802.11n_HT20_6 dB Bandwidth

Lowest Channel (2 412 MHz)



Middle Channel (2 437 MHz)



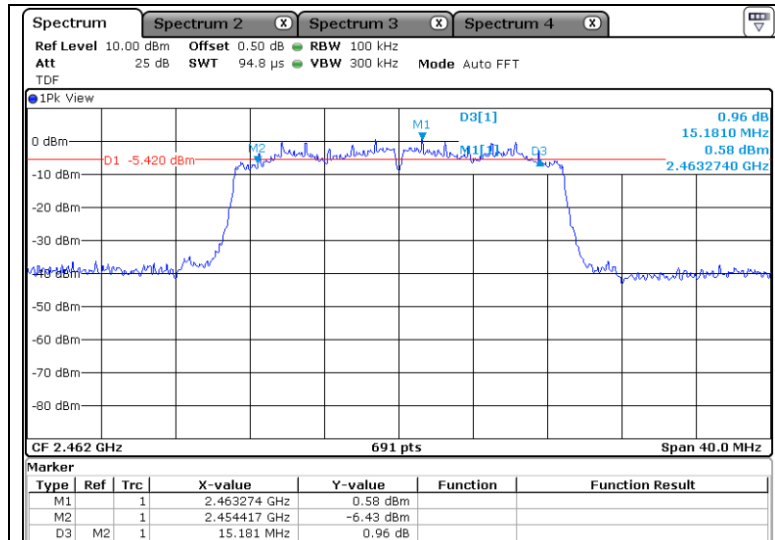
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (57) of (103)

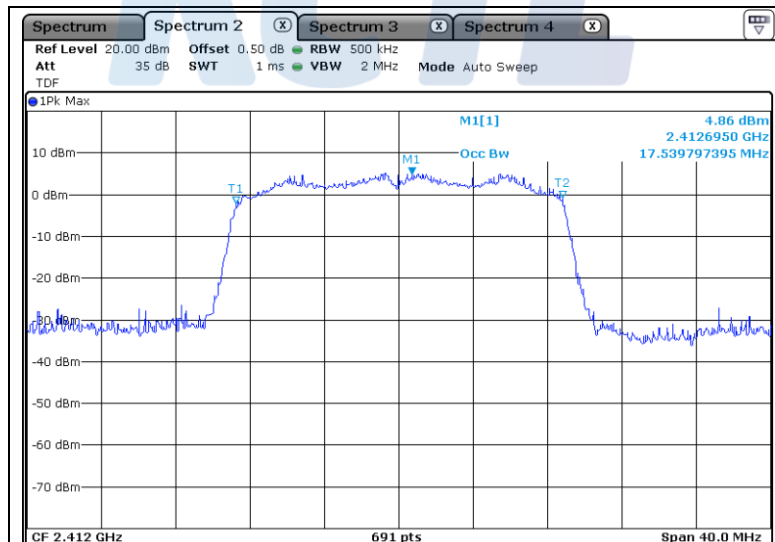


Highest Channel (2 462 MHz)



- 802.11n_HT20_Occupied Bandwidth

Lowest Channel (2 412 MHz)



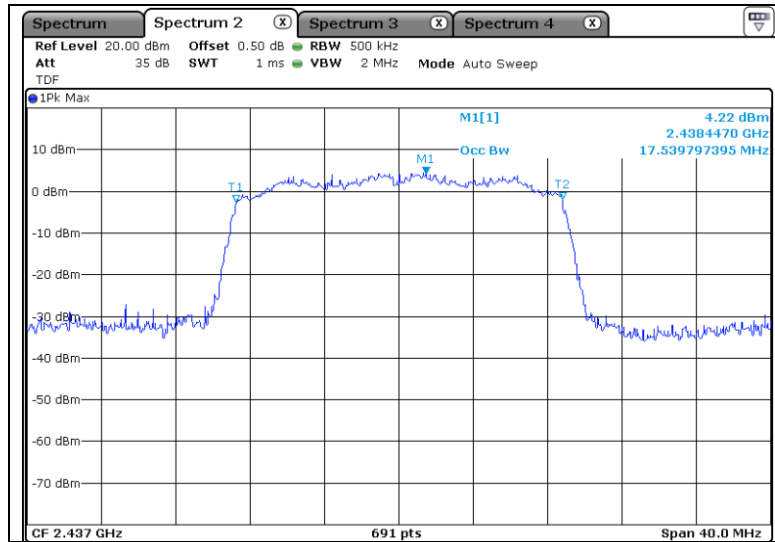
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

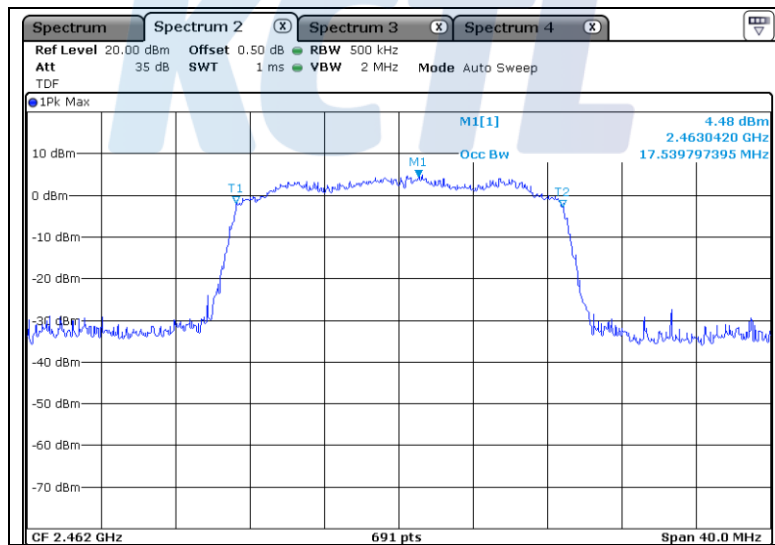
Report No.:
KR17-SRF0041
Page (58) of (103)



Middle Channel (2 437 MHz)



Highest Channel (2 462 MHz)



KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

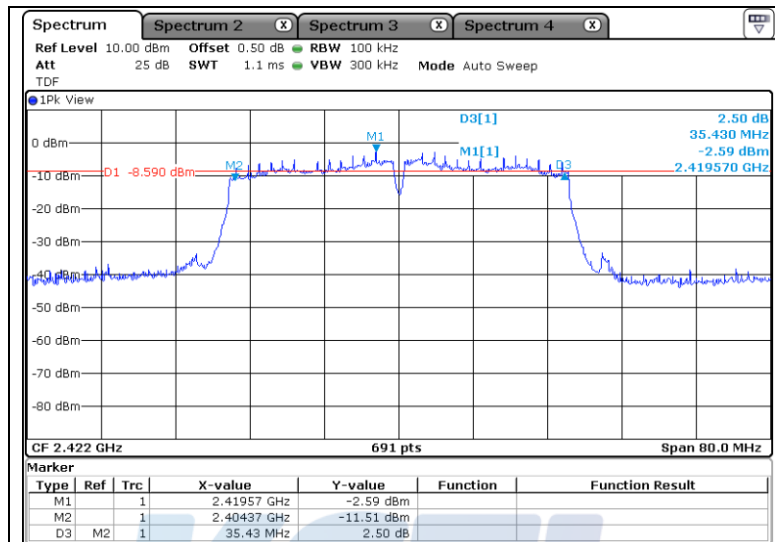
Report No.:
KR17-SRF0041

Page (59) of (103)

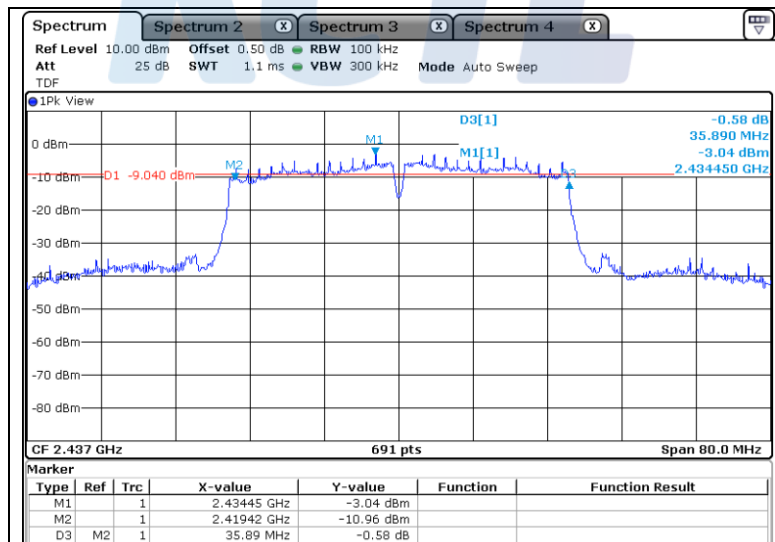


- 802.11n_HT40_6 dB Bandwidth

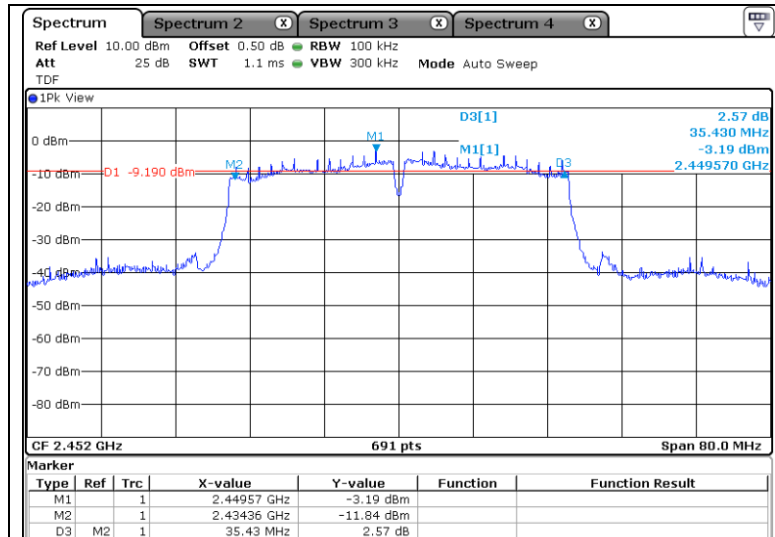
Lowest Channel (2 422 MHz)



Middle Channel (2 437 MHz)

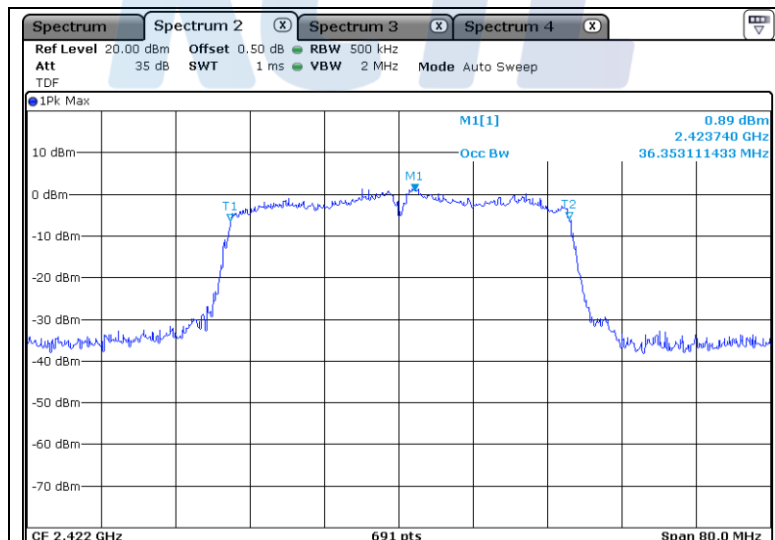


Highest Channel (2 452 MHz)



- 802.11n_HT40_Occupied Bandwidth

Lowest Channel (2 422 MHz)



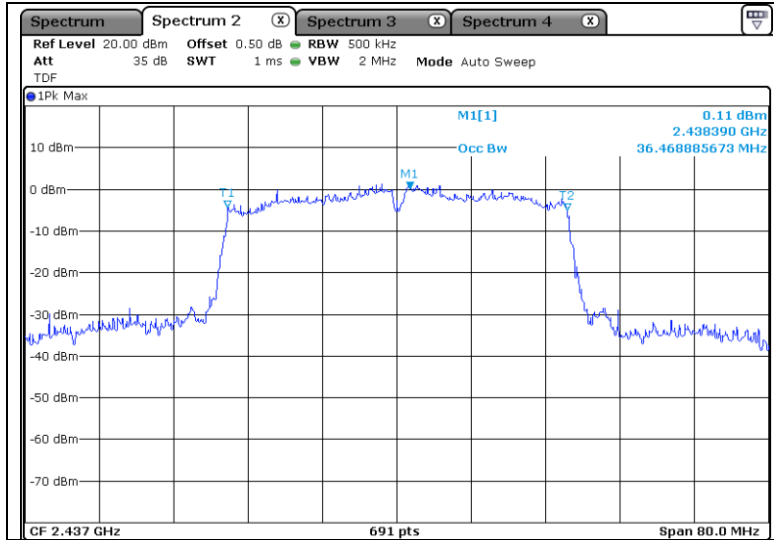
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

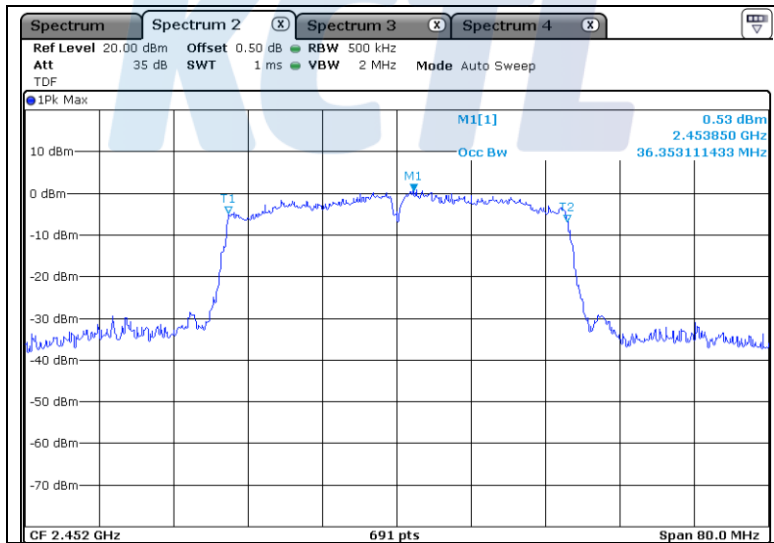
Report No.:
KR17-SRF0041
Page (61) of (103)



Middle Channel (2 437 MHz)



Highest Channel (2 452 MHz)



KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

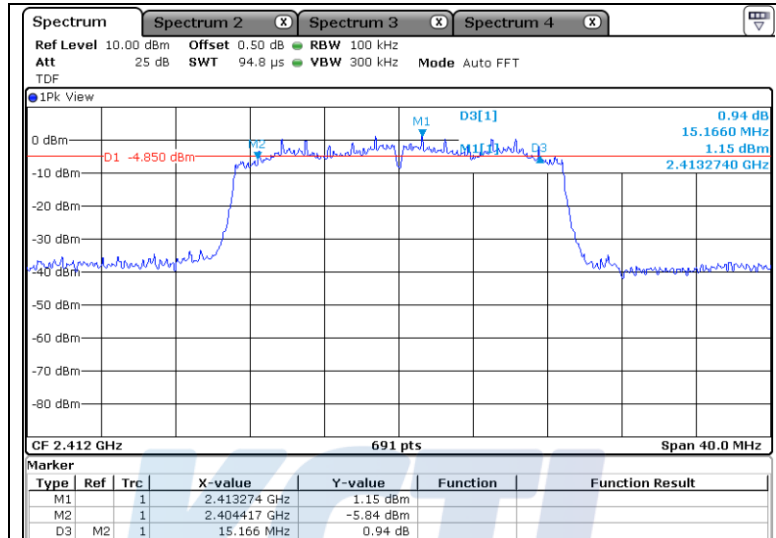
Report No.:
KR17-SRF0041
Page (62) of (103)



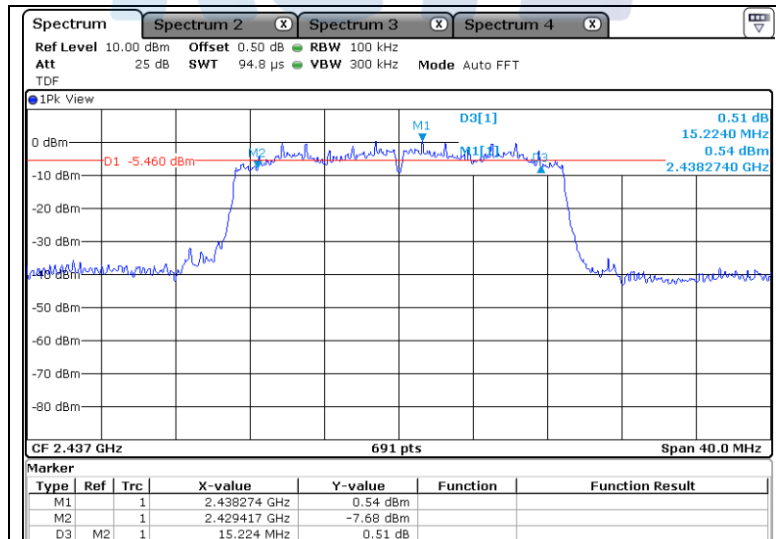
MIMO (ANT 0+1)

- 802.11n_HT20_6 dB Bandwidth

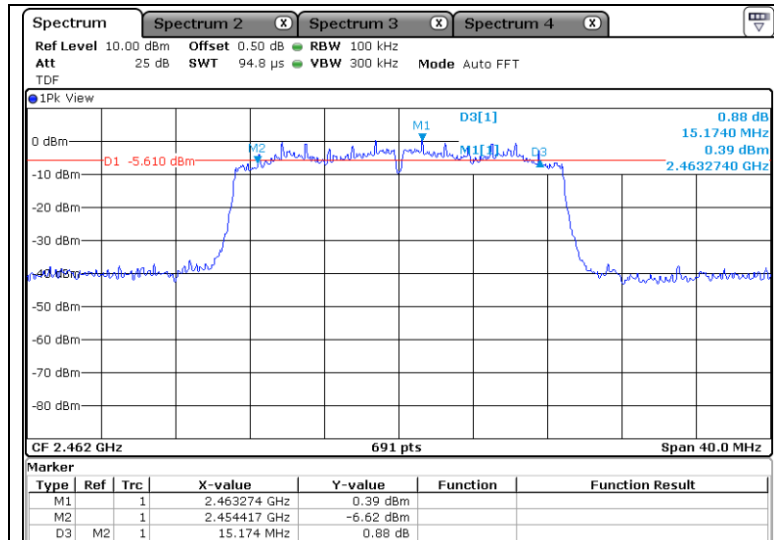
Lowest Channel (2 412 MHz)



Middle Channel (2 437 MHz)

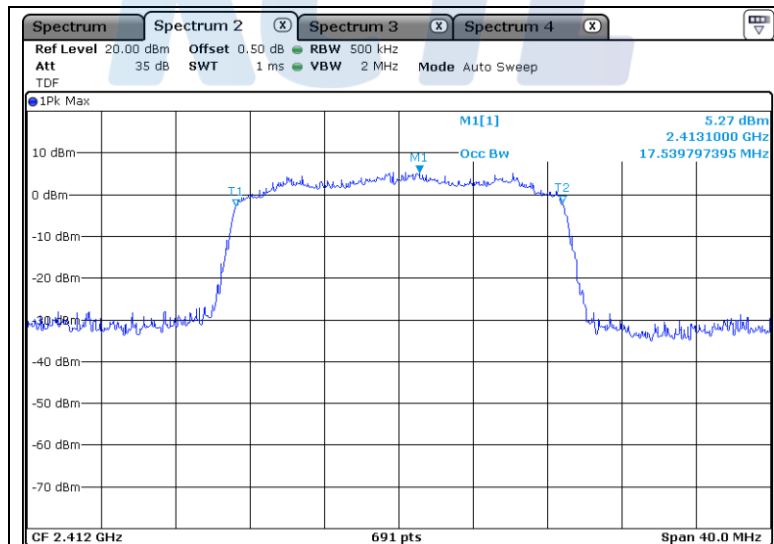


Highest Channel (2 462 MHz)



- 802.11n_HT20_Occupied Bandwidth

Lowest Channel (2 412 MHz)



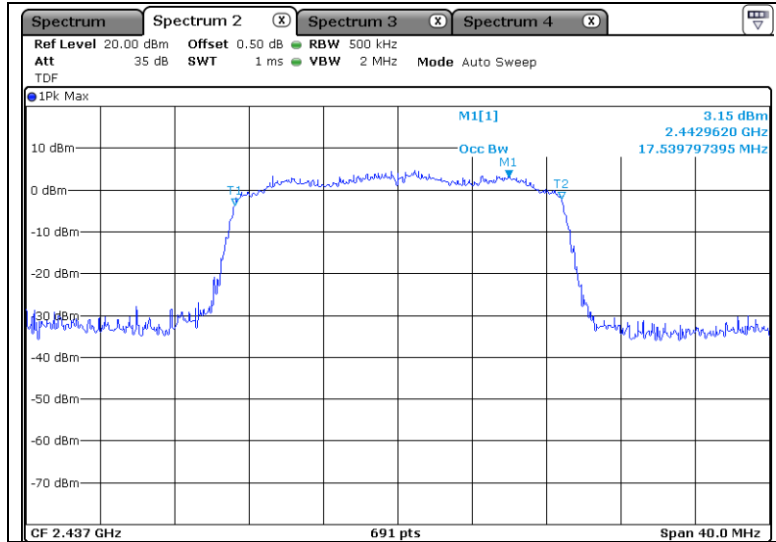
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

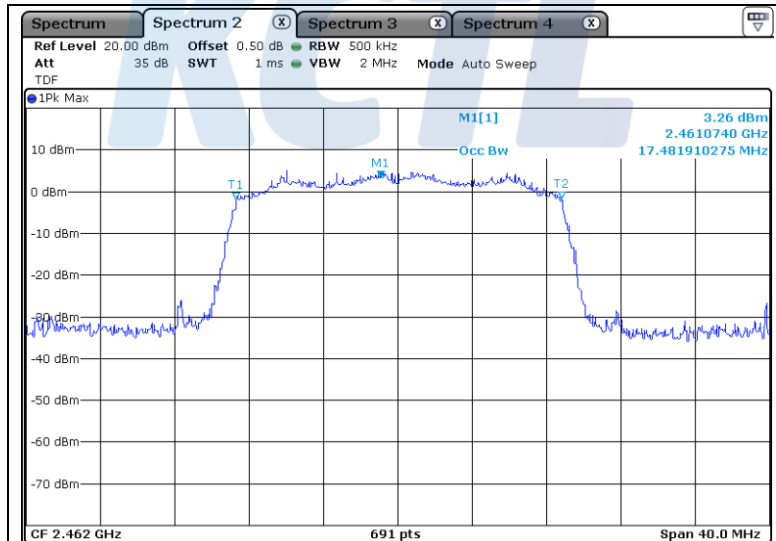
Report No.:
KR17-SRF0041
Page (64) of (103)



Middle Channel (2 437 MHz)



Highest Channel (2 462 MHz)



KCTL Inc.

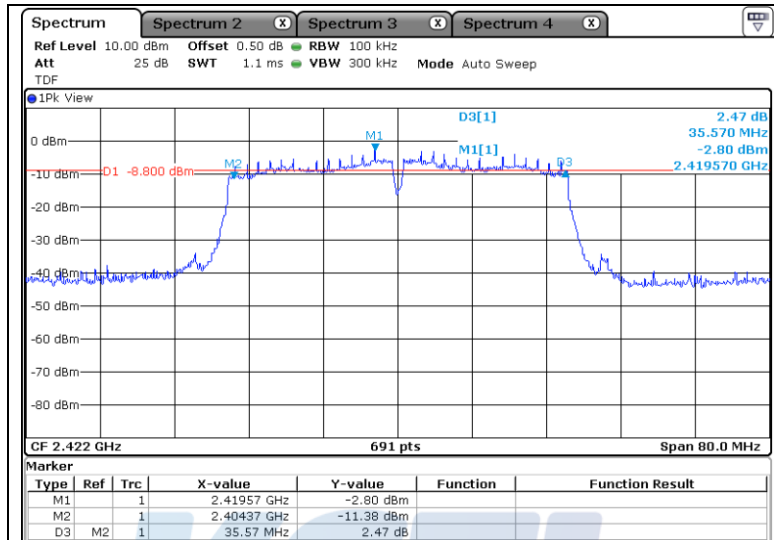
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (65) of (103)

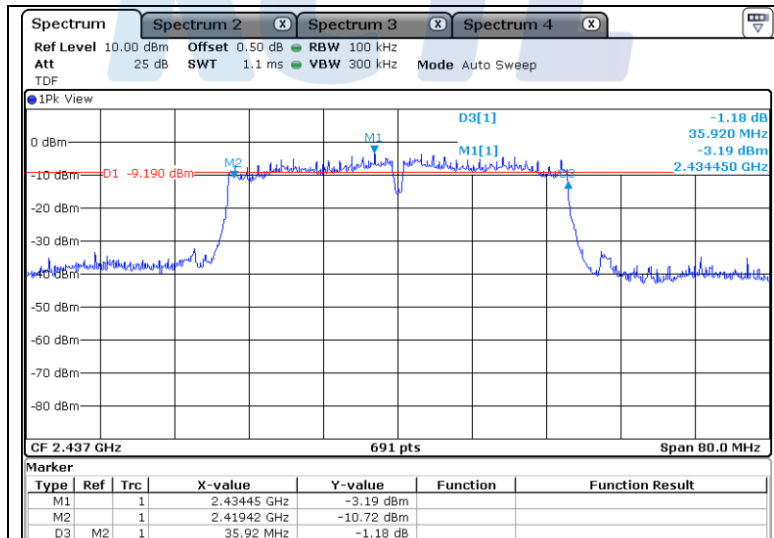


- 802.11n_HT40_6 dB Bandwidth

Lowest Channel (2 422 MHz)



Middle Channel (2 437 MHz)



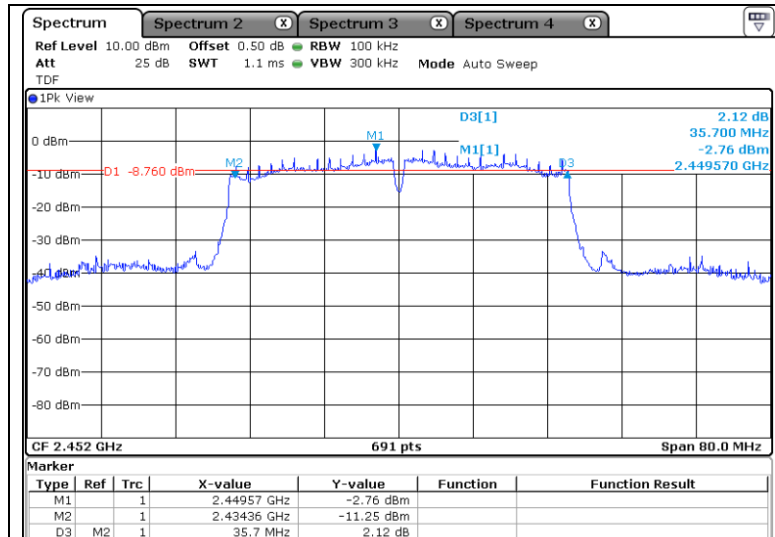
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (66) of (103)

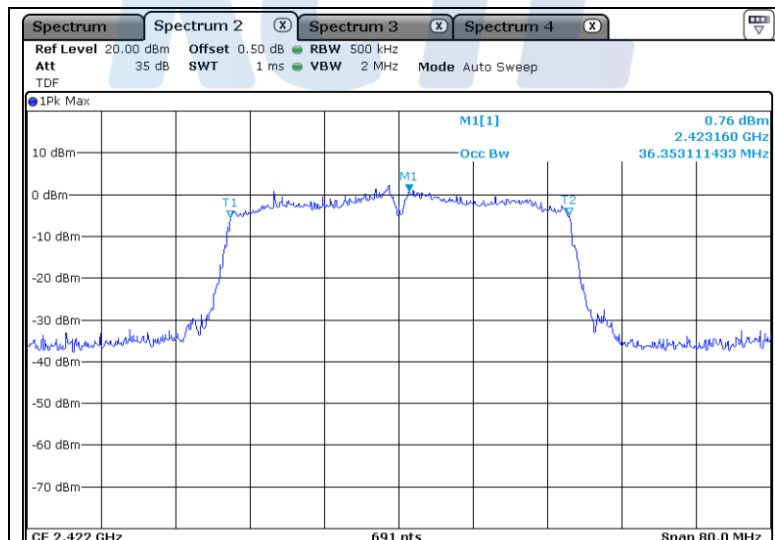


Highest Channel (2 452 MHz)



- 802.11n_HT40_Occupied Bandwidth

Lowest Channel (2 422 MHz)



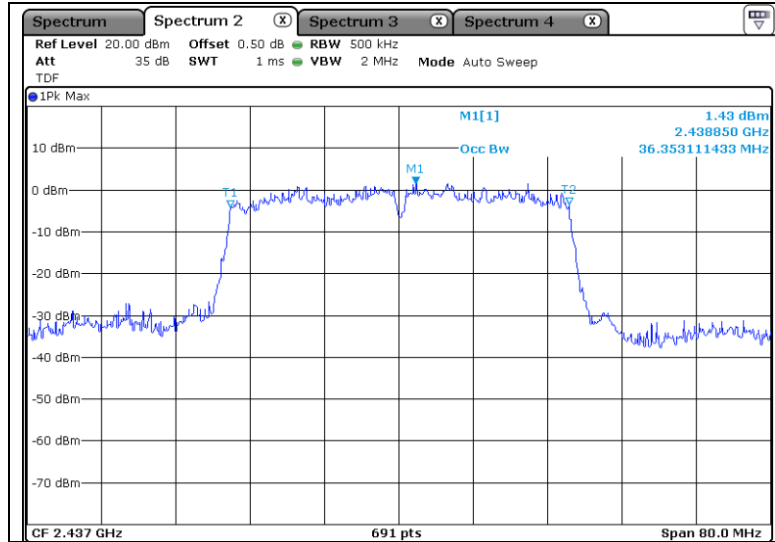
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

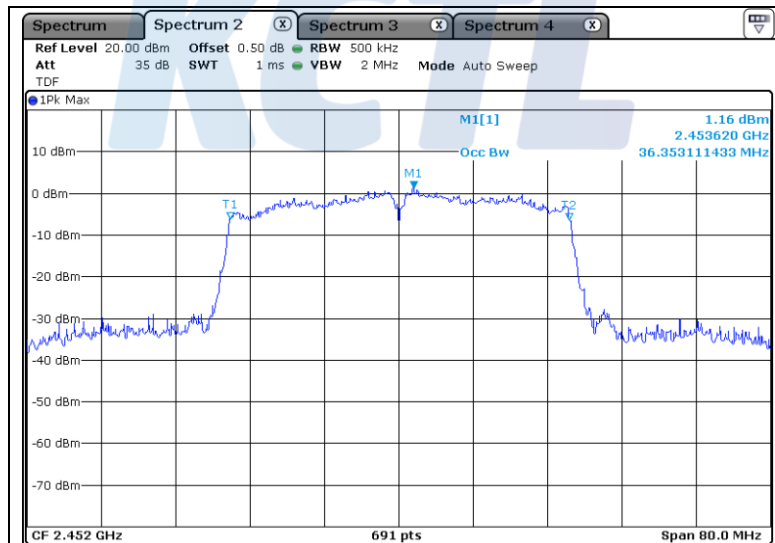
Report No.:
KR17-SRF0041
Page (67) of (103)



Middle Channel (2 437 MHz)



Highest Channel (2 452 MHz)



5.5 Spurious Emission, Band Edge, and Restricted bands

5.5.1 Regulation

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

According to §15.209(a), Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency (MHz) | Field strength ($\mu\text{V}/\text{m}$) | Measurement distance (m) |
|-----------------|---|--------------------------|
| 0.009 - 0.490 | 2 400/F(kHz) | 300 |
| 0.490 - 1.705 | 24 000/F(kHz) | 30 |
| 1.705 - 30 | 30 | 30 |
| 30 - 88 | 100** | 3 |
| 88 - 216 | 150** | 3 |
| 216 - 960 | 200** | 3 |
| Above 960 | 500 | 3 |

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

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (69) of (103)



According to § 15.205(a) and (b), only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|-----------------------|-------------------------|-------------------|---------------|
| 0.009 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| 0.495 - 0.505 | 16.694 75 - 16.695 25 | 608 - 614 | 5.35 - 5.46 |
| 2.173 5 - 2.190 5 | 16.804 25 - 16.804 75 | 960 - 1 240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1 300 - 1 427 | 8.025 - 8.5 |
| 4.177 25 - 4.177 75 | 37.5 - 38.25 | 1 435 - 1 626.5 | 9.0 - 9.2 |
| 4.207 25 - 4.207 75 | 73 - 74.6 | 1 645.5 - 1 646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1 660 - 1 710 | 10.6 - 12.7 |
| 6.267 75 - 6.268 25 | 108 - 121.94 | 1 718.8 - 1 722.2 | 13.25 - 13.4 |
| 6.311 75 - 6.312 25 | 123 - 138 | 2 200 - 2 300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2 310 - 2 390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.524 75 - 156.525 25 | 2 483.5 - 2 500 | 17.7 - 21.4 |
| 8.376 25 - 8.386 75 | 156.7 - 156.9 | 2 690 - 2 900 | 22.01 - 23.12 |
| 8.414 25 - 8.414 75 | 162.012 5 - 167.17 | 3 260 - 3 267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3 332 - 3 339 | 31.2 - 31.8 |
| 12.519 75 - 12.520 25 | 240 - 285 | 3 345.8 - 3 358 | 36.43 - 36.5 |
| 12.576 75 - 12.577 25 | 322 - 335.4 | 3 600 - 4 400 | Above 38.6 |
| 13.36 - 13.41 | | | |

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1 000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1 000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

5.5.2 Measurement Procedure

5.5.2.1 Band-edge Compliance of RF Conducted Emissions

5.5.2.1.1 Reference Level Measurement

Establish a reference level by using the following procedure:

- 1) Set instrument center frequency to DTS channel center frequency.
- 2) Set the span to ≥ 1.5 times the DTS bandwidth.
- 3) Set the RBW = 100 kHz.
- 4) Set the VBW $\geq 3 \times$ RBW.
- 5) Detector = peak.
- 6) Sweep time = auto couple.
- 7) Trace mode = max hold.
- 8) Allow trace to fully stabilize.
- 9) Use the peak marker function to determine the maximum PSD level.

5.5.2.1.2 Emissions Level Measurement

- 1) Set the center frequency and span to encompass frequency range to be measured.
- 2) Set the RBW = 100 kHz.
- 3) Set the VBW $\geq 3 \times$ RBW.
- 4) Detector = peak.
- 5) Ensure that the number of measurement points \geq span/RBW
- 6) Sweep time = auto couple.
- 7) Trace mode = max hold.
- 8) Allow trace to fully stabilize.
- 9) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) are attenuated by at least the minimum requirements specified in 11.1 a) or 11.1 b). Report the three highest emissions relative to the limit.

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (71) of (103)

KCTL

5.5.2.2 Conducted Spurious Emissions

Set the spectrum analyzer as follows:

- 1) Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
- 2) RBW = 100 kHz
- 3) VBW \geq RBW
- 4) Sweep = auto
- 5) Detector function = peak
- 6) Trace = max hold
- 7) Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
- 8) Each frequency found during preliminary measurements was re-examined and investigated.
The test-receiver system was set up to average, peak, and quasi-peak detector function with specified bandwidth.

KCTL

5.5.2.3 Radiated Spurious Emissions

- 1) The preliminary and final radiated measurements were performed to determine the frequency producing the maximum emissions in at a 10m anechoic chamber. The EUT was tested at a distance 3 meters.
- 2) The EUT was placed on the top of the 0.8-meter height, 1 × 1.5 meter non-metallic table. To find the maximum emission levels, the height of a measuring antenna was changed and the turntable was rotated 360°.
- 3) The antenna polarization was also changed from vertical to horizontal. The spectrum was scanned from 9 kHz to 30 MHz using the loop antenna, and from 30 to 1 000 MHz using the TRILOG broadband antenna, and from 1 000 MHz to 26 500 MHz using the horn antenna.
- 4) Each frequency found during preliminary measurements was re-examined and investigated. The test-receiver system was set up to average, peak, and quasi-peak detector function with specified bandwidth.
- 5) The 0.8m height is for below 1 G testing, and 1.5m is for above 1G testing.

Note

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection and frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Average detection (AV) at frequency above 1 GHz.
(Detector=RMS, Average type=power, Perform a trace average: at least 100 traces)
In case of duty cycle less than 98%, a correction factor has to be added the measurement result.

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (73) of (103)

**- KDB 414788**

The test site requirements of Section 15.31(d) apply for part 15 device radiated emission measurements at frequencies below 30 MHz. Site validation requirements for radiated emission measurements below 30 MHz have not been established.

However, ANSI C63 standards provide general criteria for test sites used to make measurements in the 9 kHz to 30 MHz frequency range. For example, Subclause 5.2 of ANSI C63.10-2013 states that “radiated emission test sites below 30 MHz shall be free from metal objects, buried pipes, and any objects that can affect radiated measurements. An alternative test site that can demonstrate equivalence to a test site as described in the preceding sentence shall be accepted for the purposes of this standard.”

Therefore, radiated emission test sites other than open-field test sites (e.g., shielded anechoic chambers), may be employed for emission measurements below 30 MHz if characterized so that the measurements correspond to those obtained at an open-field test site.

Site characterization shall be obtained by other means such as performing measurements at an alternative test site and comparing to measurement results obtained at an open-field test site. Statistical analysis of the measurement data from several similar devices may be required to show correlation between the measurements from the alternative test site and the open-field test site. Test laboratories wishing to make radiated emission measurements below 30 MHz using other than an open-field site must document evidence of correlation between the alternative site and an open-field test site and make it available to the Commission upon request and for review during a laboratory accreditation assessment.

For Part 18 equipment, Section 2.1 of FCC Measurement Procedure MP-5 also permits the use of test sites other than an open-field test site only if it can be shown that the results obtained at such a location are correlated with those made at an open-field test site. Sufficient tests shall be made to demonstrate that the alternative test site produces results that correlate with the results of tests made at an open-field test site.

Note

1. A comparative test on an alternative test site and open-field test site was performed.

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (74) of (103)



5.5.3 Test Result

- Complied

1. Conducted Spurious Emissions was shown in figure 3.
Note: We took the insertion loss of the cable into consideration within the measuring instrument.
2. Measured value of the Field strength of spurious Emissions (Radiated)
3. It tested x,y and z – 3 axis each, mentioned only worst case data at this report.
※ It tested x axis and measured at alternative test site.

- 9 kHz ~ 1 GHz data (Worst-case: 802.11b_ANT 0)

ANT 0_Lowest channel (2 412 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|----------------------|---------------------|----------------|
| Quasi-Peak DATA. Emissions below 30 MHz | | | | | | | | | | |
| 0.70 | 9 | H | 40.20 | 0.23 | -32.73 | 19.60 | -12.90 | 27.30 | 70.70 | 43.40 |
| 9.66 | 9 | V | 36.10 | 0.77 | -32.67 | 19.70 | -12.20 | 23.90 | 69.50 | 45.60 |
| 24.56 | 9 | H | 33.70 | 1.37 | -32.68 | 19.21 | -12.10 | 21.60 | 69.50 | 47.90 |
| Quasi-Peak DATA. Emissions below 1 GHz | | | | | | | | | | |
| 58.37 | 120 | V | 41.20 | 4.48 | -32.51 | 13.23 | -14.80 | 26.40 | 40.00 | 13.60 |
| 374.96 | 120 | H | 50.00 | 7.15 | -32.60 | 15.25 | -10.20 | 39.80 | 46.00 | 6.20 |
| 625.10 | 120 | V | 39.40 | 8.89 | -32.87 | 19.38 | -4.60 | 34.80 | 46.00 | 11.20 |
| 875.11 | 120 | H | 38.70 | 9.55 | -32.20 | 21.85 | -0.80 | 37.90 | 46.00 | 8.10 |

Note : This test item was performed only in the worst case due to request of manufacturer.

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (75) of (103)



- 1 GHz ~ 26.5 GHz

ANT 0

802.11b_Lowest channel (2 412 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 389.82 ¹⁾ | 1 000 | H | 36.70 | 4.86 | -34.50 | 28.54 | -1.10 | - | 35.60 | 74.00 | 38.40 |
| 3 216.11 | 1 000 | H | 43.30 | 5.65 | -35.93 | 30.28 | 0.00 | - | 43.30 | 74.00 | 30.70 |
| 4 050.30 | 1 000 | V | 52.80 | 5.02 | -59.65 | 33.23 | -21.40 | - | 31.40 | 74.00 | 42.60 |
| 5 000.10 | 1 000 | V | 54.40 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.20 | 74.00 | 39.80 |
| 21 422.27 | 1 000 | H | 38.20 | 15.90 | -54.90 | 44.80 | 5.80 | - | 44.00 | 74.00 | 30.00 |
| 23 122.78 | 1 000 | H | 36.70 | 16.10 | -54.90 | 45.10 | 6.30 | - | 43.00 | 74.00 | 31.00 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 389.82 ¹⁾ | 1 000 | H | 27.00 | 4.86 | -34.50 | 28.54 | -1.10 | 0.23 | 26.13 | 54.00 | 27.87 |
| 3 216.11 | 1 000 | H | 41.30 | 5.65 | -35.93 | 30.28 | 0.00 | 0.23 | 41.53 | 54.00 | 12.47 |
| 4 050.30 | 1 000 | V | 47.40 | 5.02 | -59.65 | 33.23 | -21.40 | 0.23 | 26.23 | 54.00 | 27.77 |
| 5 000.10 | 1 000 | V | 51.50 | 4.15 | -58.72 | 34.37 | -20.20 | 0.23 | 31.53 | 54.00 | 22.47 |
| 21 422.27 | 1 000 | H | 27.10 | 15.90 | -54.90 | 44.80 | 5.80 | 0.23 | 33.13 | 54.00 | 20.87 |
| 23 122.78 | 1 000 | H | 25.90 | 16.10 | -54.90 | 45.10 | 6.30 | 0.23 | 32.43 | 54.00 | 21.57 |

¹⁾ Restricted Band.

802.11b_Middle channel (2 437 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 072.93 | 1 000 | H | 36.00 | 4.53 | -34.47 | 27.94 | -2.00 | - | 34.00 | 74.00 | 40.00 |
| 3 249.49 | 1 000 | H | 43.60 | 5.67 | -35.84 | 30.37 | 0.20 | - | 43.80 | 74.00 | 30.20 |
| 4 050.30 | 1 000 | V | 53.50 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.10 | 74.00 | 41.90 |
| 4 999.38 | 1 000 | V | 54.50 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.30 | 74.00 | 39.70 |
| 21 685.78 | 1 000 | H | 38.00 | 16.00 | -54.80 | 44.80 | 6.00 | - | 44.00 | 74.00 | 30.00 |
| 23 211.61 | 1 000 | H | 36.60 | 16.00 | -54.80 | 45.10 | 6.30 | - | 42.90 | 74.00 | 31.10 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 072.93 | 1 000 | H | 20.10 | 4.53 | -34.47 | 27.94 | -2.00 | 0.23 | 18.33 | 54.00 | 35.67 |
| 3 249.49 | 1 000 | H | 40.90 | 5.67 | -35.84 | 30.37 | 0.20 | 0.23 | 41.33 | 54.00 | 12.67 |
| 4 050.30 | 1 000 | V | 49.20 | 5.02 | -59.65 | 33.23 | -21.40 | 0.23 | 28.03 | 54.00 | 25.97 |
| 4 999.38 | 1 000 | V | 50.60 | 4.15 | -58.72 | 34.37 | -20.20 | 0.23 | 30.63 | 54.00 | 23.37 |
| 21 685.78 | 1 000 | H | 29.60 | 16.00 | -54.80 | 44.80 | 6.00 | 0.23 | 35.83 | 54.00 | 18.17 |
| 23 211.61 | 1 000 | H | 26.40 | 16.00 | -54.80 | 45.10 | 6.30 | 0.23 | 32.93 | 54.00 | 21.07 |

This test report shall not be reproduced, except in full, without the written approval

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (76) of (103)

**802.11b_Highest channel (2 462 MHz)**

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result dB(μV/m) | Limit dB(μV/m) | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|--------------------|-------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 484.45 ¹⁾ | 1 000 | H | 44.80 | 4.95 | -35.17 | 28.72 | -1.50 | - | 43.30 | 74.00 | 30.70 |
| 3 282.86 | 1 000 | H | 44.40 | 5.70 | -35.66 | 30.46 | 0.50 | - | 44.90 | 74.00 | 29.10 |
| 5 000.10 | 1 000 | V | 54.20 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.00 | 74.00 | 40.00 |
| 4 049.58 | 1 000 | V | 53.30 | 5.02 | -59.65 | 33.23 | -21.40 | - | 31.90 | 74.00 | 42.10 |
| 21 471.57 | 1 000 | H | 37.80 | 15.90 | -54.80 | 44.80 | 5.90 | - | 43.70 | 74.00 | 30.30 |
| 23 306.81 | 1 000 | H | 36.80 | 16.00 | -54.80 | 45.10 | 6.30 | - | 43.10 | 74.00 | 30.90 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 484.45 ¹⁾ | 1 000 | H | 35.40 | 4.95 | -35.17 | 28.72 | -1.50 | 0.23 | 34.13 | 54.00 | 19.87 |
| 3 282.86 | 1 000 | H | 42.00 | 5.70 | -35.66 | 30.46 | 0.50 | 0.23 | 42.73 | 54.00 | 11.27 |
| 5 000.10 | 1 000 | V | 51.20 | 4.15 | -58.72 | 34.37 | -20.20 | 0.23 | 31.23 | 54.00 | 22.77 |
| 4 049.58 | 1 000 | V | 50.40 | 5.02 | -59.65 | 33.23 | -21.40 | 0.23 | 29.23 | 54.00 | 24.77 |
| 21 471.57 | 1 000 | H | 27.40 | 15.90 | -54.80 | 44.80 | 5.90 | 0.23 | 33.53 | 54.00 | 20.47 |
| 23 306.81 | 1 000 | H | 27.60 | 16.00 | -54.80 | 45.10 | 6.30 | 0.23 | 34.13 | 54.00 | 19.87 |

1) Restricted Band.

802.11g_Lowest channel (2 412 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result dB(μV/m) | Limit dB(μV/m) | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|--------------------|-------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 388.95 ¹⁾ | 1 000 | H | 44.80 | 4.86 | -34.50 | 28.54 | -1.10 | - | 43.70 | 74.00 | 30.30 |
| 3 216.24 | 1 000 | H | 43.30 | 5.65 | -35.93 | 30.28 | 0.00 | - | 43.30 | 74.00 | 30.70 |
| 4 049.58 | 1 000 | V | 53.70 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.30 | 74.00 | 41.70 |
| 5 000.10 | 1 000 | V | 54.50 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.30 | 74.00 | 39.70 |
| 21 518.32 | 1 000 | H | 36.90 | 15.90 | -54.80 | 44.80 | 5.90 | - | 42.80 | 74.00 | 31.20 |
| 23 282.16 | 1 000 | H | 36.40 | 16.00 | -54.80 | 45.10 | 6.30 | - | 42.70 | 74.00 | 31.30 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 388.95 ¹⁾ | 1 000 | H | 32.30 | 4.86 | -34.50 | 28.54 | -1.10 | 0.24 | 31.44 | 54.00 | 22.56 |
| 3 216.24 | 1 000 | H | 39.00 | 5.65 | -35.93 | 30.28 | 0.00 | 0.24 | 39.24 | 54.00 | 14.76 |
| 4 049.58 | 1 000 | V | 49.50 | 5.02 | -59.65 | 33.23 | -21.40 | 0.24 | 28.34 | 54.00 | 25.66 |
| 5 000.10 | 1 000 | V | 50.20 | 4.15 | -58.72 | 34.37 | -20.20 | 0.24 | 30.24 | 54.00 | 23.76 |
| 21 518.32 | 1 000 | H | 27.40 | 15.90 | -54.80 | 44.80 | 5.90 | 0.24 | 33.54 | 54.00 | 20.46 |
| 23 282.16 | 1 000 | H | 26.70 | 16.00 | -54.80 | 45.10 | 6.30 | 0.24 | 33.24 | 54.00 | 20.76 |

1) Restricted Band.

This test report shall not be reproduced, except in full, without the written approval

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (77) of (103)

**802.11g_Middle channel (2 437 MHz)**

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 350.02 | 1 000 | V | 37.90 | 3.52 | -33.62 | 25.20 | -4.90 | - | 33.00 | 74.00 | 41.00 |
| 3 249.49 | 1 000 | H | 43.70 | 5.67 | -35.84 | 30.37 | 0.20 | - | 43.90 | 74.00 | 30.10 |
| 4 049.58 | 1 000 | V | 53.40 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.00 | 74.00 | 42.00 |
| 4 999.38 | 1 000 | V | 54.20 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.00 | 74.00 | 40.00 |
| 21 551.05 | 1 000 | H | 37.40 | 16.00 | -54.90 | 44.80 | 5.90 | - | 43.30 | 74.00 | 30.70 |
| 23 120.66 | 1 000 | H | 36.70 | 16.10 | -54.90 | 45.10 | 6.30 | - | 43.00 | 74.00 | 31.00 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 350.02 | 1 000 | V | 31.90 | 3.52 | -33.62 | 25.20 | -4.90 | 0.24 | 27.24 | 54.00 | 26.76 |
| 3 249.49 | 1 000 | H | 41.10 | 5.67 | -35.84 | 30.37 | 0.20 | 0.24 | 41.54 | 54.00 | 12.46 |
| 4 049.58 | 1 000 | V | 49.80 | 5.02 | -59.65 | 33.23 | -21.40 | 0.24 | 28.64 | 54.00 | 25.36 |
| 4 999.38 | 1 000 | V | 51.50 | 4.15 | -58.72 | 34.37 | -20.20 | 0.24 | 31.54 | 54.00 | 22.46 |
| 21 551.05 | 1 000 | H | 27.60 | 16.00 | -54.90 | 44.80 | 5.90 | 0.24 | 33.74 | 54.00 | 20.26 |
| 23 120.66 | 1 000 | H | 26.50 | 16.10 | -54.90 | 45.10 | 6.30 | 0.24 | 33.04 | 54.00 | 20.96 |

802.11g_Highest channel (2 462 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 484.70 ¹⁾ | 1 000 | H | 58.20 | 4.95 | -35.17 | 28.72 | -1.50 | - | 56.70 | 74.00 | 17.30 |
| 3 282.74 | 1 000 | H | 45.60 | 5.70 | -35.66 | 30.46 | 0.50 | - | 46.10 | 74.00 | 27.90 |
| 4 050.30 | 1 000 | V | 53.90 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.50 | 74.00 | 41.50 |
| 5 000.10 | 1 000 | V | 54.00 | 4.15 | -58.72 | 34.37 | -20.20 | - | 33.80 | 74.00 | 40.20 |
| 21 676.01 | 1 000 | H | 37.40 | 16.00 | -54.90 | 44.80 | 5.90 | - | 43.30 | 74.00 | 30.70 |
| 23 524.85 | 1 000 | H | 36.60 | 15.80 | -54.60 | 45.00 | 6.20 | - | 42.80 | 74.00 | 31.20 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 484.70 ¹⁾ | 1 000 | H | 45.60 | 4.95 | -35.17 | 28.72 | -1.50 | 0.24 | 44.34 | 54.00 | 9.66 |
| 3 282.74 | 1 000 | H | 42.50 | 5.70 | -35.66 | 30.46 | 0.50 | 0.24 | 43.24 | 54.00 | 10.76 |
| 4 050.30 | 1 000 | V | 49.50 | 5.02 | -59.65 | 33.23 | -21.40 | 0.24 | 28.34 | 54.00 | 25.66 |
| 5 000.10 | 1 000 | V | 50.60 | 4.15 | -58.72 | 34.37 | -20.20 | 0.24 | 30.64 | 54.00 | 23.36 |
| 21 676.01 | 1 000 | H | 28.40 | 16.00 | -54.90 | 44.80 | 5.90 | 0.24 | 34.54 | 54.00 | 19.46 |
| 23 524.85 | 1 000 | H | 27.40 | 15.80 | -54.60 | 45.00 | 6.20 | 0.24 | 33.84 | 54.00 | 20.16 |

¹⁾ Restricted Band.

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (78) of (103)

**802.11n_HT20_Lowest channel (2 412 MHz)**

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 388.07 ¹⁾ | 1 000 | H | 51.70 | 4.86 | -34.50 | 28.54 | -1.10 | - | 50.60 | 74.00 | 23.40 |
| 3 216.24 | 1 000 | H | 43.90 | 5.65 | -35.93 | 30.28 | 0.00 | - | 43.90 | 74.00 | 30.10 |
| 4 050.30 | 1 000 | V | 52.90 | 5.02 | -59.65 | 33.23 | -21.40 | - | 31.50 | 74.00 | 42.50 |
| 4 999.38 | 1 000 | V | 54.10 | 4.15 | -58.72 | 34.37 | -20.20 | - | 33.90 | 74.00 | 40.10 |
| 21 459.25 | 1 000 | H | 37.30 | 15.90 | -54.80 | 44.80 | 5.90 | - | 43.20 | 74.00 | 30.80 |
| 23 233.29 | 1 000 | H | 36.90 | 16.00 | -54.80 | 45.10 | 6.30 | - | 43.20 | 74.00 | 30.80 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 388.07 ¹⁾ | 1 000 | H | 34.40 | 4.86 | -34.50 | 28.54 | -1.10 | 0.24 | 33.54 | 54.00 | 20.46 |
| 3 216.24 | 1 000 | H | 41.30 | 5.65 | -35.93 | 30.28 | 0.00 | 0.24 | 41.54 | 54.00 | 12.46 |
| 4 050.30 | 1 000 | V | 48.20 | 5.02 | -59.65 | 33.23 | -21.40 | 0.24 | 27.04 | 54.00 | 26.96 |
| 4 999.38 | 1 000 | V | 49.50 | 4.15 | -58.72 | 34.37 | -20.20 | 0.24 | 29.54 | 54.00 | 24.46 |
| 21 459.25 | 1 000 | H | 28.40 | 15.90 | -54.80 | 44.80 | 5.90 | 0.24 | 34.54 | 54.00 | 19.46 |
| 23 233.29 | 1 000 | H | 27.10 | 16.00 | -54.80 | 45.10 | 6.30 | 0.24 | 33.64 | 54.00 | 20.36 |

¹⁾ Restricted Band.

802.11n_HT20_Middle channel (2 437 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 350.27 | 1 000 | V | 36.90 | 3.52 | -33.62 | 25.20 | -4.90 | - | 32.00 | 74.00 | 42.00 |
| 3 236.49 | 1 000 | H | 36.30 | 5.66 | -35.80 | 30.34 | 0.20 | - | 36.50 | 74.00 | 37.50 |
| 4 050.30 | 1 000 | V | 54.20 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.80 | 74.00 | 41.20 |
| 5 000.10 | 1 000 | V | 55.00 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.80 | 74.00 | 39.20 |
| 21 440.12 | 1 000 | H | 37.50 | 15.90 | -54.80 | 44.80 | 5.90 | - | 43.40 | 74.00 | 30.60 |
| 23 496.80 | 1 000 | H | 36.70 | 15.80 | -54.70 | 45.10 | 6.20 | - | 42.90 | 74.00 | 31.10 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 350.27 | 1 000 | V | 31.90 | 3.52 | -33.62 | 25.20 | -4.90 | 0.24 | 27.24 | 54.00 | 26.76 |
| 3 236.49 | 1 000 | H | 25.30 | 5.66 | -35.80 | 30.34 | 0.20 | 0.24 | 25.74 | 54.00 | 28.26 |
| 4 050.30 | 1 000 | V | 50.60 | 5.02 | -59.65 | 33.23 | -21.40 | 0.24 | 29.44 | 54.00 | 24.56 |
| 5 000.10 | 1 000 | V | 51.40 | 4.15 | -58.72 | 34.37 | -20.20 | 0.24 | 31.44 | 54.00 | 22.56 |
| 21 440.12 | 1 000 | H | 27.10 | 15.90 | -54.80 | 44.80 | 5.90 | 0.24 | 33.24 | 54.00 | 20.76 |
| 23 496.80 | 1 000 | H | 26.90 | 15.80 | -54.70 | 45.10 | 6.20 | 0.24 | 33.34 | 54.00 | 20.66 |

This test report shall not be reproduced, except in full, without the written approval

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (79) of (103)

**802.11n_HT20_Highest channel (2 462 MHz)**

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result dB(μV/m) | Limit dB(μV/m) | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|--------------------|-------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 483.57 ¹⁾ | 1 000 | H | 58.70 | 4.95 | -35.17 | 28.72 | -1.50 | - | 57.20 | 74.00 | 16.80 |
| 3 282.99 | 1 000 | H | 44.80 | 5.70 | -35.66 | 30.46 | 0.50 | - | 45.30 | 74.00 | 28.70 |
| 4 050.30 | 1 000 | V | 52.70 | 5.02 | -59.65 | 33.23 | -21.40 | - | 31.30 | 74.00 | 42.70 |
| 4 999.38 | 1 000 | V | 54.40 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.20 | 74.00 | 39.80 |
| 21 533.20 | 1 000 | H | 38.10 | 16.00 | -54.90 | 44.80 | 5.90 | - | 44.00 | 74.00 | 30.00 |
| 23 378.64 | 1 000 | H | 37.00 | 15.90 | -54.80 | 45.10 | 6.20 | - | 43.20 | 74.00 | 30.80 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 483.57 ¹⁾ | 1 000 | H | 46.70 | 4.95 | -35.17 | 28.72 | -1.50 | 0.24 | 45.44 | 54.00 | 8.56 |
| 3 282.99 | 1 000 | H | 41.30 | 5.70 | -35.66 | 30.46 | 0.50 | 0.24 | 42.04 | 54.00 | 11.96 |
| 4 050.30 | 1 000 | V | 48.00 | 5.02 | -59.65 | 33.23 | -21.40 | 0.24 | 26.84 | 54.00 | 27.16 |
| 4 999.38 | 1 000 | V | 50.40 | 4.15 | -58.72 | 34.37 | -20.20 | 0.24 | 30.44 | 54.00 | 23.56 |
| 21 533.20 | 1 000 | H | 28.40 | 16.00 | -54.90 | 44.80 | 5.90 | 0.24 | 34.54 | 54.00 | 19.46 |
| 23 378.64 | 1 000 | H | 28.10 | 15.90 | -54.80 | 45.10 | 6.20 | 0.24 | 34.54 | 54.00 | 19.46 |

¹⁾ Restricted Band.

802.11n_HT40_Lowest channel (2 422 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result dB(μV/m) | Limit dB(μV/m) | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|--------------------|-------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 385.82 ¹⁾ | 1 000 | H | 45.40 | 4.85 | -34.48 | 28.53 | -1.10 | - | 44.30 | 74.00 | 29.70 |
| 3 229.61 | 1 000 | H | 41.90 | 5.66 | -35.88 | 30.32 | 0.10 | - | 42.00 | 74.00 | 32.00 |
| 4 050.30 | 1 000 | V | 53.30 | 5.02 | -59.65 | 33.23 | -21.40 | - | 31.90 | 74.00 | 42.10 |
| 5 000.10 | 1 000 | V | 54.90 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.70 | 74.00 | 39.30 |
| 21 406.12 | 1 000 | H | 37.70 | 15.90 | -54.90 | 44.80 | 5.80 | - | 43.50 | 74.00 | 30.50 |
| 23 254.96 | 1 000 | H | 36.50 | 16.00 | -54.80 | 45.10 | 6.30 | - | 42.80 | 74.00 | 31.20 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 385.82 ¹⁾ | 1 000 | H | 35.70 | 4.85 | -34.48 | 28.53 | -1.10 | 0.46 | 35.06 | 54.00 | 18.94 |
| 3 229.61 | 1 000 | H | 39.10 | 5.66 | -35.88 | 30.32 | 0.10 | 0.46 | 39.66 | 54.00 | 14.34 |
| 4 050.30 | 1 000 | V | 49.50 | 5.02 | -59.65 | 33.23 | -21.40 | 0.46 | 28.56 | 54.00 | 25.44 |
| 5 000.10 | 1 000 | V | 50.70 | 4.15 | -58.72 | 34.37 | -20.20 | 0.46 | 30.96 | 54.00 | 23.04 |
| 21 406.12 | 1 000 | H | 27.40 | 15.90 | -54.90 | 44.80 | 5.80 | 0.46 | 33.66 | 54.00 | 20.34 |
| 23 254.96 | 1 000 | H | 26.20 | 16.00 | -54.80 | 45.10 | 6.30 | 0.46 | 32.96 | 54.00 | 21.04 |

¹⁾ Restricted Band.

This test report shall not be reproduced, except in full, without the written approval

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (80) of (103)

KCTL**802.11n_HT40_Middle channel (2 437 MHz)**

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 349.89 | 1 000 | V | 37.40 | 3.52 | -33.62 | 25.20 | -4.90 | - | 32.50 | 74.00 | 41.50 |
| 3 249.49 | 1 000 | H | 41.30 | 5.67 | -35.84 | 30.37 | 0.20 | - | 41.50 | 74.00 | 32.50 |
| 4 049.58 | 1 000 | V | 53.10 | 5.02 | -59.65 | 33.23 | -21.40 | - | 31.70 | 74.00 | 42.30 |
| 5 000.10 | 1 000 | V | 54.70 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.50 | 74.00 | 39.50 |
| 21 824.76 | 1 000 | H | 37.10 | 16.10 | -54.90 | 44.80 | 6.00 | - | 43.10 | 74.00 | 30.90 |
| 23 218.84 | 1 000 | H | 36.40 | 16.00 | -54.80 | 45.10 | 6.30 | - | 42.70 | 74.00 | 31.30 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 349.89 | 1 000 | V | 31.80 | 3.52 | -33.62 | 25.20 | -4.90 | 0.46 | 27.36 | 54.00 | 26.64 |
| 3 249.49 | 1 000 | H | 39.40 | 5.67 | -35.84 | 30.37 | 0.20 | 0.46 | 40.06 | 54.00 | 13.94 |
| 4 049.58 | 1 000 | V | 49.50 | 5.02 | -59.65 | 33.23 | -21.40 | 0.46 | 28.56 | 54.00 | 25.44 |
| 5 000.10 | 1 000 | V | 50.70 | 4.15 | -58.72 | 34.37 | -20.20 | 0.46 | 30.96 | 54.00 | 23.04 |
| 21 824.76 | 1 000 | H | 28.10 | 16.10 | -54.90 | 44.80 | 6.00 | 0.46 | 34.56 | 54.00 | 19.44 |
| 23 218.84 | 1 000 | H | 27.60 | 16.00 | -54.80 | 45.10 | 6.30 | 0.46 | 34.36 | 54.00 | 19.64 |

802.11n_HT40_Highest channel (2 452 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 484.45 ¹⁾ | 1 000 | H | 59.40 | 4.95 | -35.17 | 28.72 | -1.50 | - | 57.90 | 74.00 | 16.10 |
| 3 269.61 | 1 000 | H | 42.70 | 5.69 | -35.72 | 30.43 | 0.40 | - | 43.10 | 74.00 | 30.90 |
| 4 049.58 | 1 000 | V | 53.20 | 5.02 | -59.65 | 33.23 | -21.40 | - | 31.80 | 74.00 | 42.20 |
| 5 000.10 | 1 000 | V | 55.00 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.80 | 74.00 | 39.20 |
| 21 550.63 | 1 000 | H | 37.60 | 16.00 | -54.90 | 44.80 | 5.90 | - | 43.50 | 74.00 | 30.50 |
| 23 336.14 | 1 000 | H | 36.70 | 15.90 | -54.70 | 45.10 | 6.30 | - | 43.00 | 74.00 | 31.00 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 484.45 ¹⁾ | 1 000 | H | 47.70 | 4.95 | -35.17 | 28.72 | -1.50 | 0.46 | 46.66 | 54.00 | 7.34 |
| 3 269.61 | 1 000 | H | 39.50 | 5.69 | -35.72 | 30.43 | 0.40 | 0.46 | 40.36 | 54.00 | 13.64 |
| 4 049.58 | 1 000 | V | 49.20 | 5.02 | -59.65 | 33.23 | -21.40 | 0.46 | 28.26 | 54.00 | 25.74 |
| 5 000.10 | 1 000 | V | 51.60 | 4.15 | -58.72 | 34.37 | -20.20 | 0.46 | 31.86 | 54.00 | 22.14 |
| 21 550.63 | 1 000 | H | 28.30 | 16.00 | -54.90 | 44.80 | 5.90 | 0.46 | 34.66 | 54.00 | 19.34 |
| 23 336.14 | 1 000 | H | 27.80 | 15.90 | -54.70 | 45.10 | 6.30 | 0.46 | 34.56 | 54.00 | 19.44 |

¹⁾ Restricted Band.

This test report shall not be reproduced, except in full, without the written approval

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (81) of (103)



- 1 GHz ~ 26.5 GHz

MIMO (ANT 0+1)

802.11n_HT20_Lowest channel (2 412 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result dB(μV/m) | Limit dB(μV/m) | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|--------------------|-------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 381.57 ¹⁾ | 1 000 | H | 51.90 | 4.85 | -34.47 | 28.52 | -1.10 | - | 50.80 | 74.00 | 23.20 |
| 3 216.24 | 1 000 | H | 43.30 | 5.65 | -35.93 | 30.28 | 0.00 | - | 43.30 | 74.00 | 30.70 |
| 4 049.58 | 1 000 | V | 54.40 | 5.02 | -59.65 | 33.23 | -21.40 | - | 33.00 | 74.00 | 41.00 |
| 5 000.10 | 1 000 | V | 53.80 | 4.15 | -58.72 | 34.37 | -20.20 | - | 33.60 | 74.00 | 40.40 |
| 21 549.35 | 1 000 | H | 37.30 | 16.00 | -54.90 | 44.80 | 5.90 | - | 43.20 | 74.00 | 30.80 |
| 23 260.49 | 1 000 | H | 37.10 | 16.00 | -54.80 | 45.10 | 6.30 | - | 43.40 | 74.00 | 30.60 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 381.57 ¹⁾ | 1 000 | H | 39.10 | 4.85 | -34.47 | 28.52 | -1.10 | 0.44 | 38.44 | 54.00 | 15.56 |
| 3 216.24 | 1 000 | H | 39.30 | 5.65 | -35.93 | 30.28 | 0.00 | 0.44 | 39.74 | 54.00 | 14.26 |
| 4 049.58 | 1 000 | V | 50.40 | 5.02 | -59.65 | 33.23 | -21.40 | 0.44 | 29.44 | 54.00 | 24.56 |
| 5 000.10 | 1 000 | V | 48.60 | 4.15 | -58.72 | 34.37 | -20.20 | 0.44 | 28.84 | 54.00 | 25.16 |
| 21 549.35 | 1 000 | H | 27.40 | 16.00 | -54.90 | 44.80 | 5.90 | 0.44 | 33.74 | 54.00 | 20.26 |
| 23 260.49 | 1 000 | H | 28.10 | 16.00 | -54.80 | 45.10 | 6.30 | 0.44 | 34.84 | 54.00 | 19.16 |

¹⁾ Restricted Band.

802.11n_HT20_Middle channel (2 437 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result dB(μV/m) | Limit dB(μV/m) | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|--------------------|-------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 349.77 | 1 000 | V | 36.90 | 3.52 | -33.62 | 25.20 | -4.90 | - | 32.00 | 74.00 | 42.00 |
| 3 249.49 | 1 000 | H | 43.40 | 5.67 | -35.84 | 30.37 | 0.20 | - | 43.60 | 74.00 | 30.40 |
| 4 050.30 | 1 000 | V | 53.50 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.10 | 74.00 | 41.90 |
| 5 000.10 | 1 000 | V | 53.90 | 4.15 | -58.72 | 34.37 | -20.20 | - | 33.70 | 74.00 | 40.30 |
| 21 479.22 | 1 000 | H | 37.50 | 15.90 | -54.80 | 44.80 | 5.90 | - | 43.40 | 74.00 | 30.60 |
| 23 194.61 | 1 000 | H | 36.30 | 16.00 | -54.80 | 45.10 | 6.30 | - | 42.60 | 74.00 | 31.40 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 349.77 | 1 000 | V | 31.80 | 3.52 | -33.62 | 25.20 | -4.90 | 0.44 | 27.34 | 54.00 | 26.66 |
| 3 249.49 | 1 000 | H | 40.30 | 5.67 | -35.84 | 30.37 | 0.20 | 0.44 | 40.94 | 54.00 | 13.06 |
| 4 050.30 | 1 000 | V | 49.10 | 5.02 | -59.65 | 33.23 | -21.40 | 0.44 | 28.14 | 54.00 | 25.86 |
| 5 000.10 | 1 000 | V | 48.60 | 4.15 | -58.72 | 34.37 | -20.20 | 0.44 | 28.84 | 54.00 | 25.16 |
| 21 479.22 | 1 000 | H | 28.40 | 15.90 | -54.80 | 44.80 | 5.90 | 0.44 | 34.74 | 54.00 | 19.26 |
| 23 194.61 | 1 000 | H | 27.90 | 16.00 | -54.80 | 45.10 | 6.30 | 0.44 | 34.64 | 54.00 | 19.36 |

This test report shall not be reproduced, except in full, without the written approval

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (82) of (103)

**802.11n_HT20_Highest channel (2 462 MHz)**

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result dB(μV/m) | Limit dB(μV/m) | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|--------------------|-------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 485.20 ¹⁾ | 1 000 | H | 61.60 | 4.95 | -35.17 | 28.72 | -1.50 | - | 60.10 | 74.00 | 13.90 |
| 3 282.86 | 1 000 | H | 44.50 | 5.70 | -35.66 | 30.46 | 0.50 | - | 45.00 | 74.00 | 29.00 |
| 4 050.30 | 1 000 | V | 54.00 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.60 | 74.00 | 41.40 |
| 5 000.10 | 1 000 | V | 53.90 | 4.15 | -58.72 | 34.37 | -20.20 | - | 33.70 | 74.00 | 40.30 |
| 21 414.19 | 1 000 | H | 37.70 | 15.90 | -54.90 | 44.80 | 5.80 | - | 43.50 | 74.00 | 30.50 |
| 23 438.57 | 1 000 | H | 37.10 | 15.90 | -54.80 | 45.10 | 6.20 | - | 43.30 | 74.00 | 30.70 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 485.20 ¹⁾ | 1 000 | H | 46.60 | 4.95 | -35.17 | 28.72 | -1.50 | 0.44 | 45.54 | 54.00 | 8.46 |
| 3 282.86 | 1 000 | H | 41.20 | 5.70 | -35.66 | 30.46 | 0.50 | 0.44 | 42.14 | 54.00 | 11.86 |
| 4 050.30 | 1 000 | V | 50.10 | 5.02 | -59.65 | 33.23 | -21.40 | 0.44 | 29.14 | 54.00 | 24.86 |
| 5 000.10 | 1 000 | V | 49.60 | 4.15 | -58.72 | 34.37 | -20.20 | 0.44 | 29.84 | 54.00 | 24.16 |
| 21 414.19 | 1 000 | H | 28.10 | 15.90 | -54.90 | 44.80 | 5.80 | 0.44 | 34.34 | 54.00 | 19.66 |
| 23 438.57 | 1 000 | H | 27.80 | 15.90 | -54.80 | 45.10 | 6.20 | 0.44 | 34.44 | 54.00 | 19.56 |

¹⁾ Restricted Band.

802.11n_HT40_Lowest channel (2 422 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result dB(μV/m) | Limit dB(μV/m) | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|--------------------|-------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 384.82 ¹⁾ | 1 000 | H | 55.40 | 4.85 | -34.48 | 28.53 | -1.10 | - | 54.30 | 74.00 | 19.70 |
| 3 229.36 | 1 000 | H | 42.20 | 5.66 | -35.88 | 30.32 | 0.10 | - | 42.30 | 74.00 | 31.70 |
| 4 049.58 | 1 000 | V | 53.50 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.10 | 74.00 | 41.90 |
| 5 000.10 | 1 000 | V | 54.30 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.10 | 74.00 | 39.90 |
| 21 460.95 | 1 000 | H | 37.40 | 15.90 | -54.80 | 44.80 | 5.90 | - | 43.30 | 74.00 | 30.70 |
| 23 175.06 | 1 000 | H | 37.00 | 16.00 | -54.80 | 45.10 | 6.30 | - | 43.30 | 74.00 | 30.70 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 384.82 ¹⁾ | 1 000 | H | 40.80 | 4.85 | -34.48 | 28.53 | -1.10 | 0.81 | 40.51 | 54.00 | 13.49 |
| 3 229.36 | 1 000 | H | 38.50 | 5.66 | -35.88 | 30.32 | 0.10 | 0.81 | 39.41 | 54.00 | 14.59 |
| 4 049.58 | 1 000 | V | 49.70 | 5.02 | -59.65 | 33.23 | -21.40 | 0.81 | 29.11 | 54.00 | 24.89 |
| 5 000.10 | 1 000 | V | 50.60 | 4.15 | -58.72 | 34.37 | -20.20 | 0.81 | 31.21 | 54.00 | 22.79 |
| 21 460.95 | 1 000 | H | 27.40 | 15.90 | -54.80 | 44.80 | 5.90 | 0.81 | 34.11 | 54.00 | 19.89 |
| 23 175.06 | 1 000 | H | 27.20 | 16.00 | -54.80 | 45.10 | 6.30 | 0.81 | 34.31 | 54.00 | 19.69 |

¹⁾ Restricted Band.

This test report shall not be reproduced, except in full, without the written approval

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041

Page (83) of (103)

**802.11n_HT40_Middle channel (2 437 MHz)**

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 350.14 | 1 000 | V | 37.00 | 3.52 | -33.62 | 25.20 | -4.90 | - | 32.10 | 74.00 | 41.90 |
| 3 249.36 | 1 000 | H | 43.10 | 5.67 | -35.84 | 30.37 | 0.20 | - | 43.30 | 74.00 | 30.70 |
| 4 050.30 | 1 000 | V | 53.90 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.50 | 74.00 | 41.50 |
| 5 000.10 | 1 000 | V | 54.40 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.20 | 74.00 | 39.80 |
| 21 446.92 | 1 000 | H | 37.40 | 15.90 | -54.80 | 44.80 | 5.90 | - | 43.30 | 74.00 | 30.70 |
| 23 185.26 | 1 000 | H | 36.50 | 16.00 | -54.80 | 45.10 | 6.30 | - | 42.80 | 74.00 | 31.20 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 1 350.14 | 1 000 | V | 31.60 | 3.52 | -33.62 | 25.20 | -4.90 | 0.81 | 27.51 | 54.00 | 26.49 |
| 3 249.36 | 1 000 | H | 40.10 | 5.67 | -35.84 | 30.37 | 0.20 | 0.81 | 41.11 | 54.00 | 12.89 |
| 4 050.30 | 1 000 | V | 49.50 | 5.02 | -59.65 | 33.23 | -21.40 | 0.81 | 28.91 | 54.00 | 25.09 |
| 5 000.10 | 1 000 | V | 50.20 | 4.15 | -58.72 | 34.37 | -20.20 | 0.81 | 30.81 | 54.00 | 23.19 |
| 21 446.92 | 1 000 | H | 28.20 | 15.90 | -54.80 | 44.80 | 5.90 | 0.81 | 34.91 | 54.00 | 19.09 |
| 23 185.26 | 1 000 | H | 27.50 | 16.00 | -54.80 | 45.10 | 6.30 | 0.81 | 34.61 | 54.00 | 19.39 |

802.11n_HT40_Highest channel (2 452 MHz)

| Frequency [MHz] | Receiver Bandwidth [kHz] | Pol. [V/H] | Reading [dB(μV)] | Cable Loss [dB] | Amp Gain [dB] | Antenna Factor [dB] | Factor [dB] | DCCF [dB] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] |
|--|--------------------------------|---------------|---------------------|-----------------------|---------------------|---------------------------|----------------|--------------|----------------------|---------------------|----------------|
| Peak DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 487.45 ¹⁾ | 1 000 | H | 61.00 | 4.96 | -35.19 | 28.73 | -1.50 | - | 59.50 | 74.00 | 14.50 |
| 3 269.49 | 1 000 | H | 42.60 | 5.69 | -35.72 | 30.43 | 0.40 | - | 43.00 | 74.00 | 31.00 |
| 4 049.58 | 1 000 | V | 53.70 | 5.02 | -59.65 | 33.23 | -21.40 | - | 32.30 | 74.00 | 41.70 |
| 5 000.10 | 1 000 | V | 54.90 | 4.15 | -58.72 | 34.37 | -20.20 | - | 34.70 | 74.00 | 39.30 |
| 21 422.69 | 1 000 | H | 38.10 | 15.90 | -54.90 | 44.80 | 5.80 | - | 43.90 | 74.00 | 30.10 |
| 23 331.47 | 1 000 | H | 36.60 | 16.00 | -54.80 | 45.10 | 6.30 | - | 42.90 | 74.00 | 31.10 |
| Average DATA. Emissions above 1 GHz | | | | | | | | | | | |
| 2 487.45 ¹⁾ | 1 000 | H | 48.60 | 4.96 | -35.19 | 28.73 | -1.50 | 0.81 | 47.91 | 54.00 | 6.09 |
| 3 269.49 | 1 000 | H | 39.20 | 5.69 | -35.72 | 30.43 | 0.40 | 0.81 | 40.41 | 54.00 | 13.59 |
| 4 049.58 | 1 000 | V | 49.50 | 5.02 | -59.65 | 33.23 | -21.40 | 0.81 | 28.91 | 54.00 | 25.09 |
| 5 000.10 | 1 000 | V | 51.00 | 4.15 | -58.72 | 34.37 | -20.20 | 0.81 | 31.61 | 54.00 | 22.39 |
| 21 422.69 | 1 000 | H | 29.10 | 15.90 | -54.90 | 44.80 | 5.80 | 0.81 | 35.71 | 54.00 | 18.29 |
| 23 331.47 | 1 000 | H | 27.40 | 16.00 | -54.80 | 45.10 | 6.30 | 0.81 | 34.51 | 54.00 | 19.49 |

¹⁾ Restricted Band.

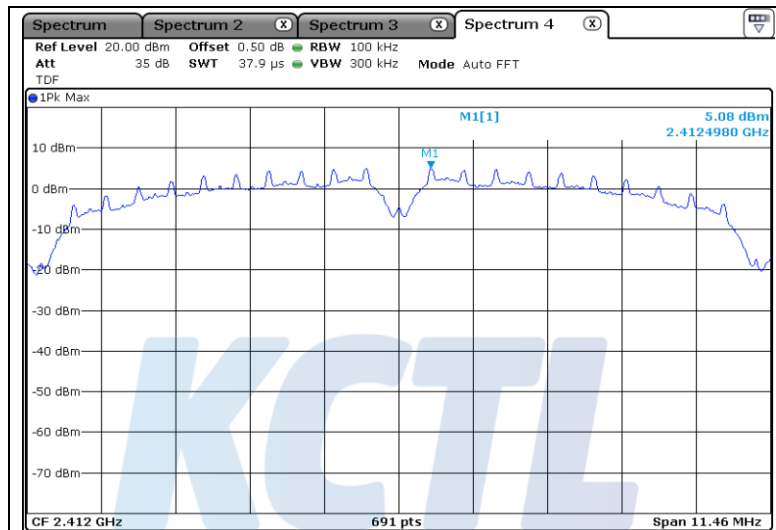
Figure 4. Plot of the Band-edge & Conducted Spurious Emissions

ANT 0

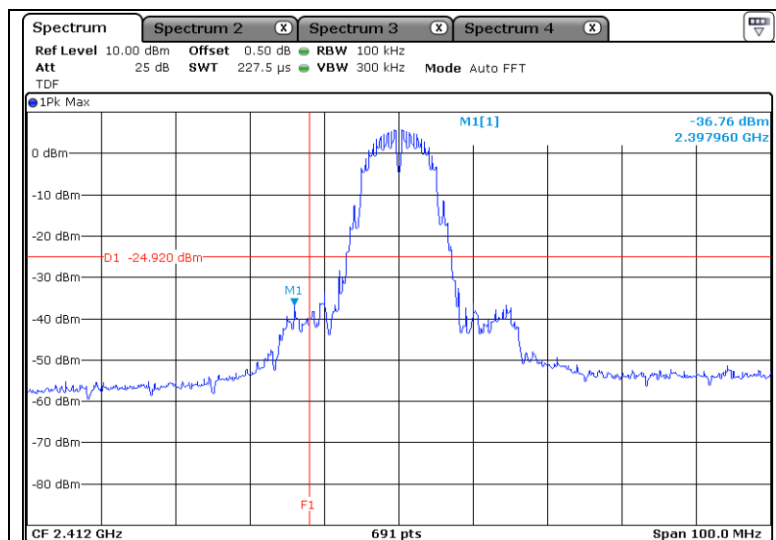
- 802.11b

Lowest Channel (2 412 MHz)

Reference



Band-edge



- Result of 2 400.0 MHz

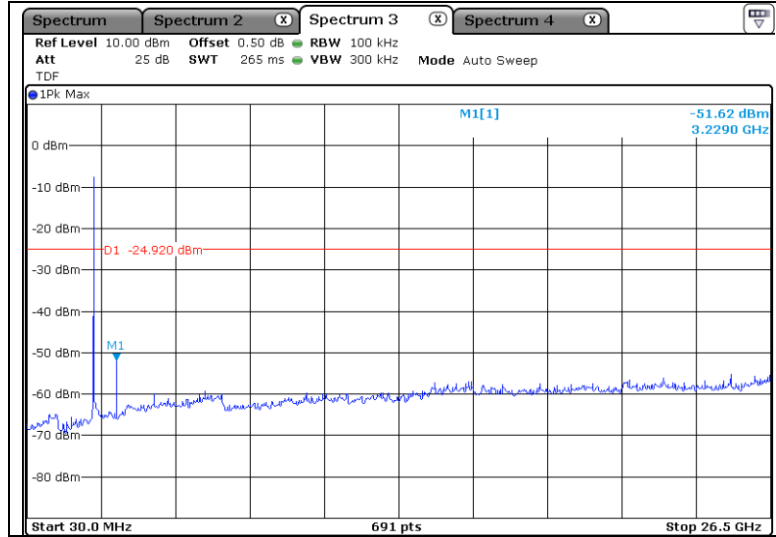
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (85) of (103)

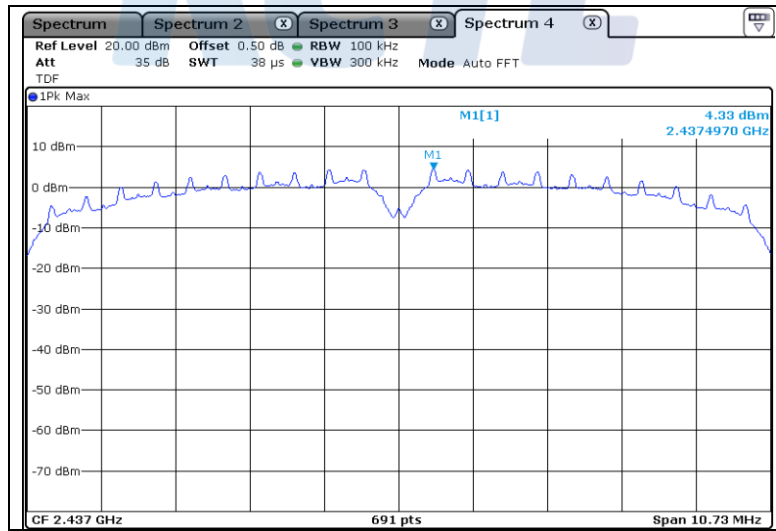


Conducted Spurious Emissions



Middle Channel (2 437 MHz)

Reference



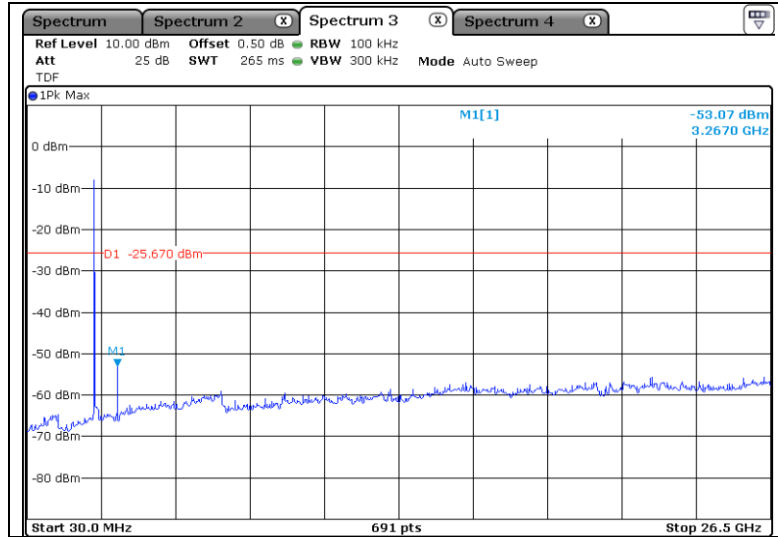
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (86) of (103)

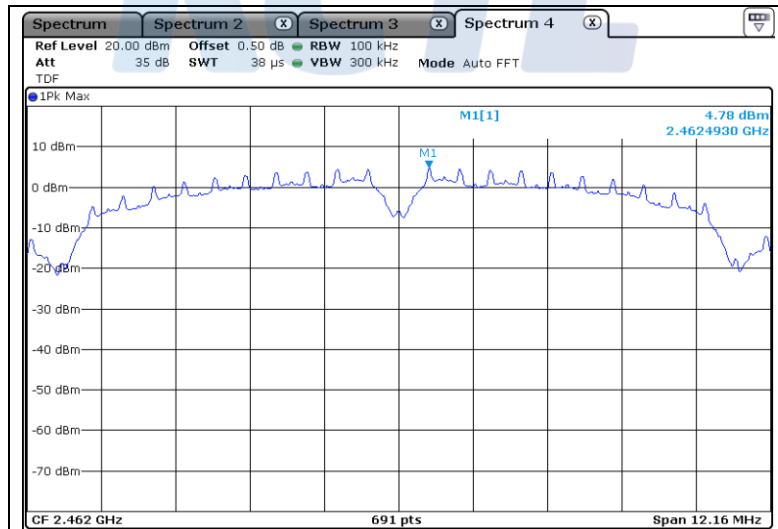


Conducted Spurious Emissions



Highest Channel (2 462 MHz)

Reference



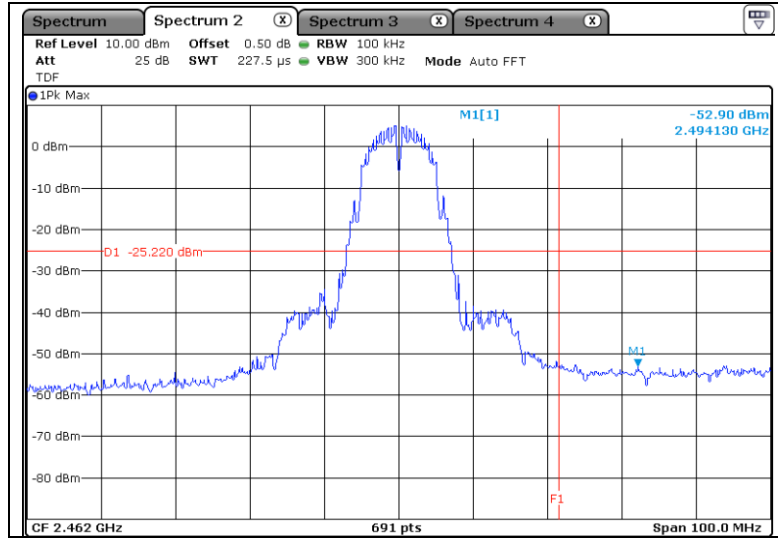
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (87) of (103)

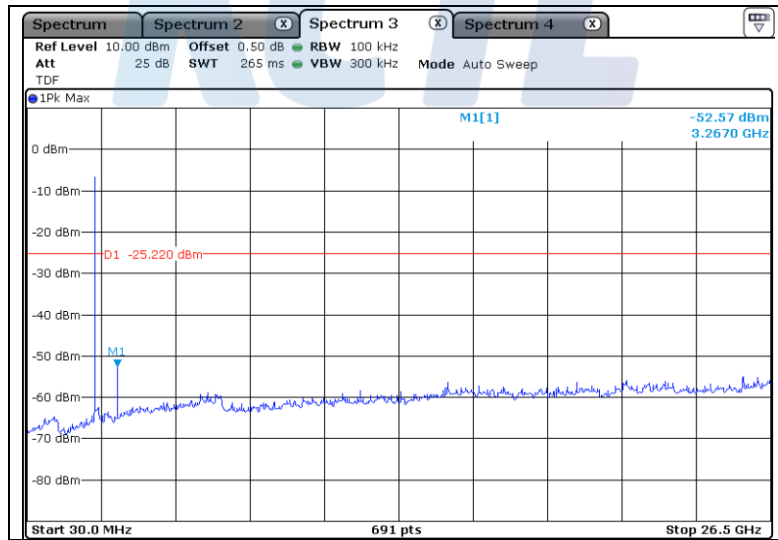


Band-edge



- Result of 2 483.5 MHz

Conducted Spurious Emissions



KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

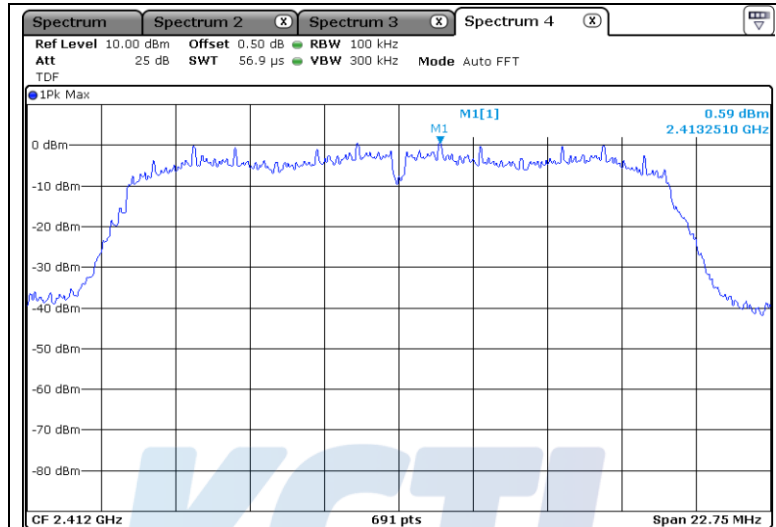
Report No.:
KR17-SRF0041
Page (88) of (103)



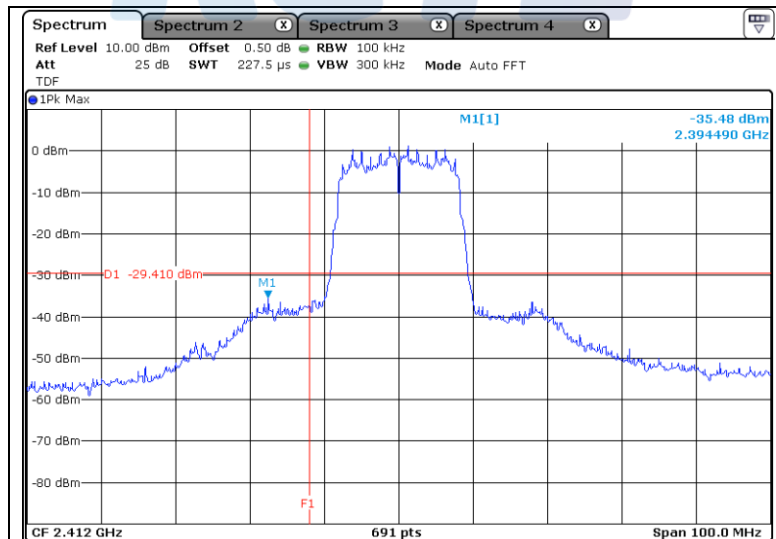
- 802.11g

Lowest Channel (2 412 MHz)

Reference



Band-edge



- Result of 2 400.0 MHz

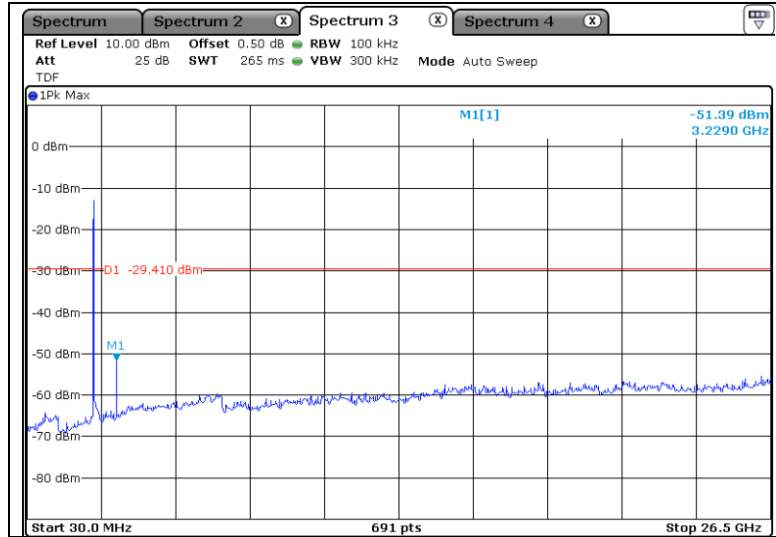
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (89) of (103)

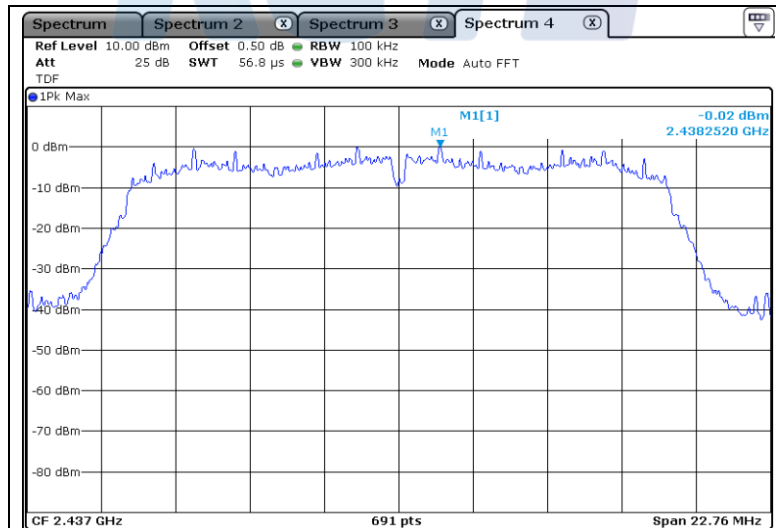


Conducted Spurious Emissions



Middle Channel (2 437 MHz)

Reference



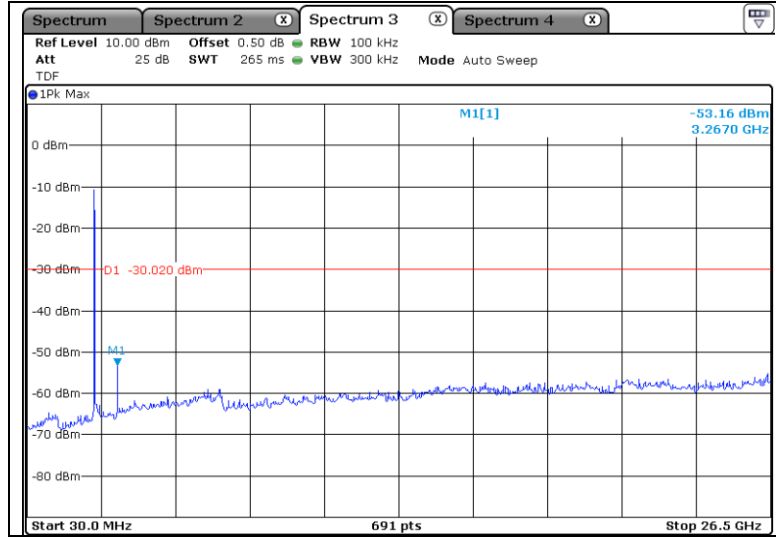
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (90) of (103)

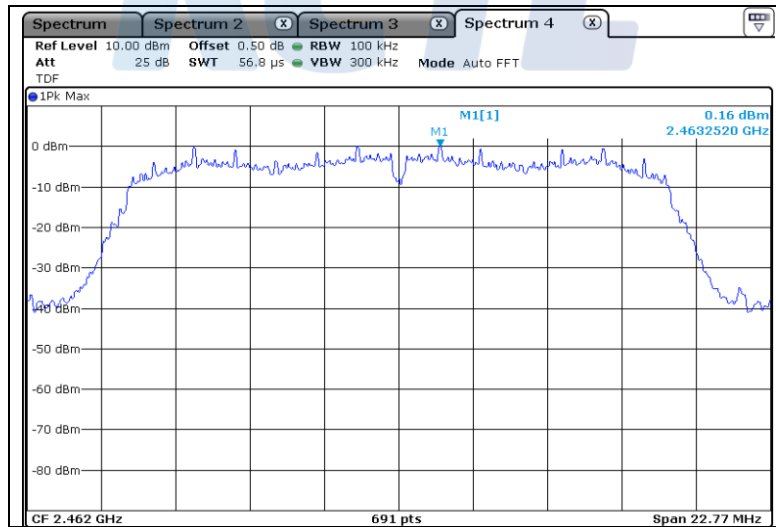


Conducted Spurious Emissions



Highest Channel (2 462 MHz)

Reference



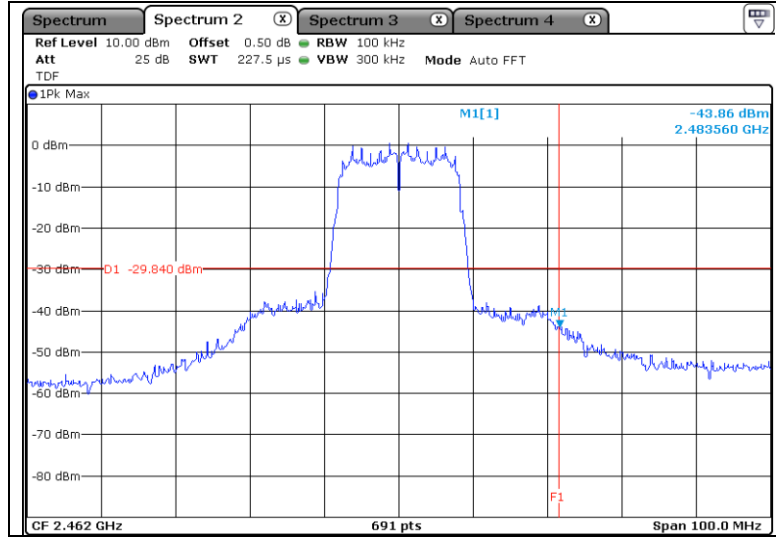
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (91) of (103)

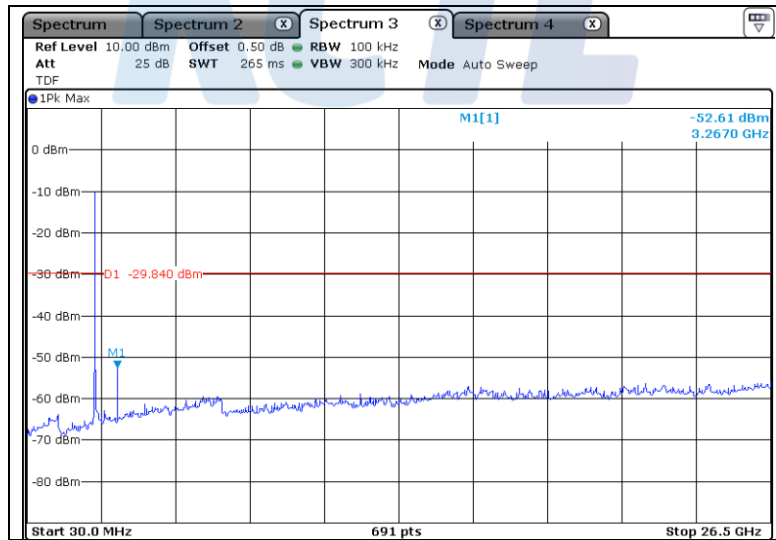


Band-edge



- Result of 2 483.5 MHz

Conducted Spurious Emissions



KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

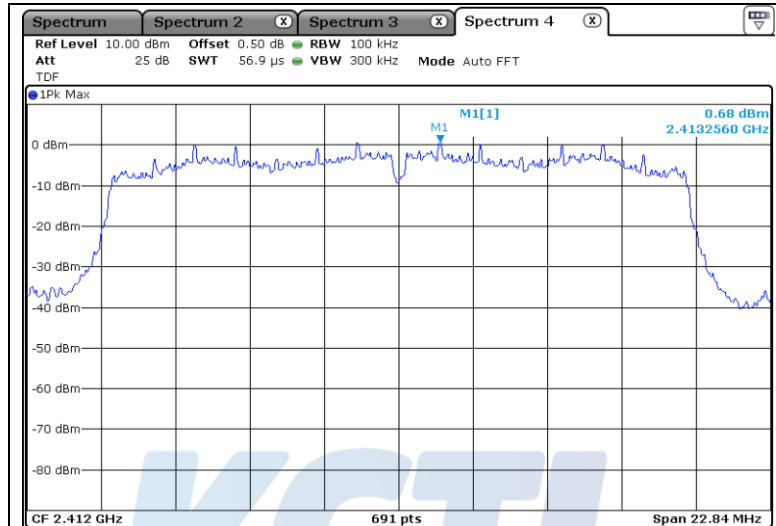
Report No.:
KR17-SRF0041
Page (92) of (103)



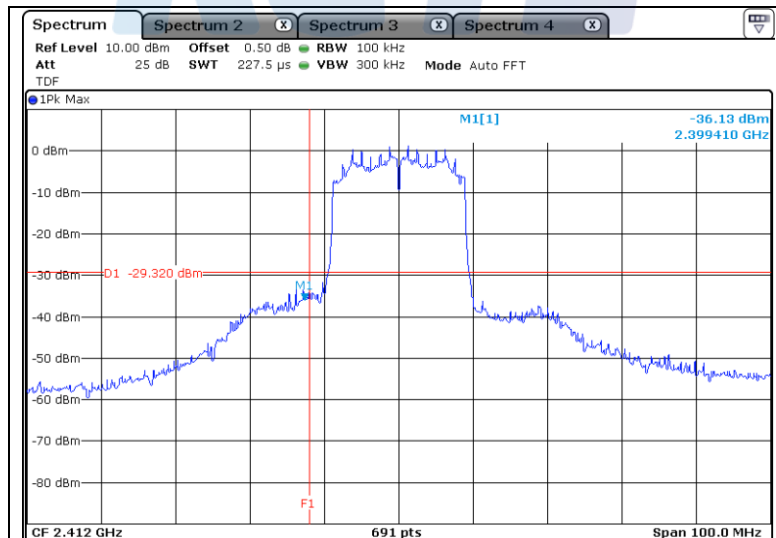
- 802.11n_HT20

Lowest Channel (2 412 MHz)

Reference



Band-edge



- Result of 2 400.0 MHz

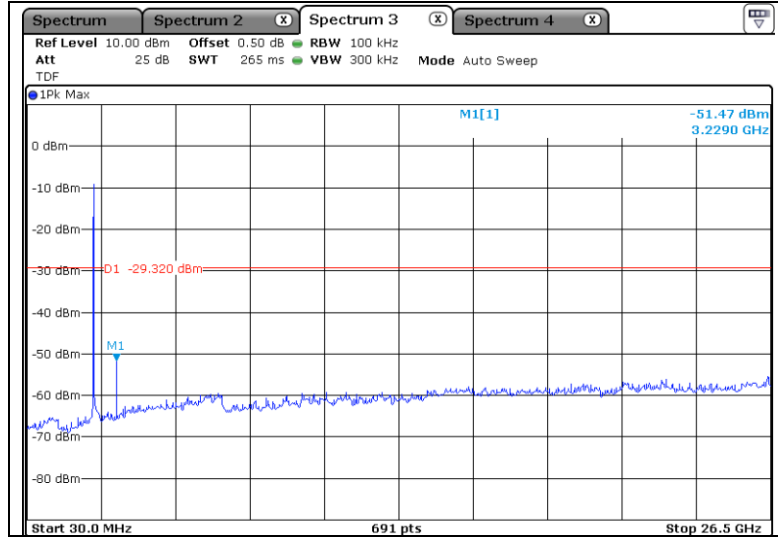
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (93) of (103)

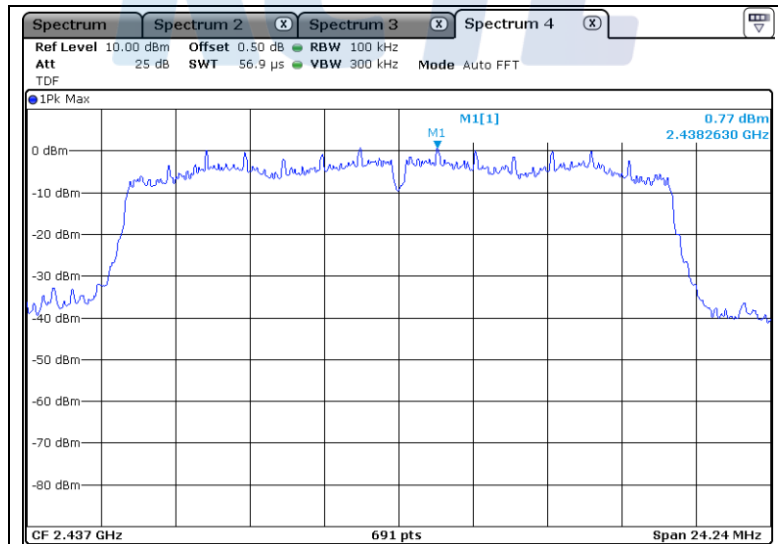


Conducted Spurious Emissions



Middle Channel (2 437 MHz)

Reference



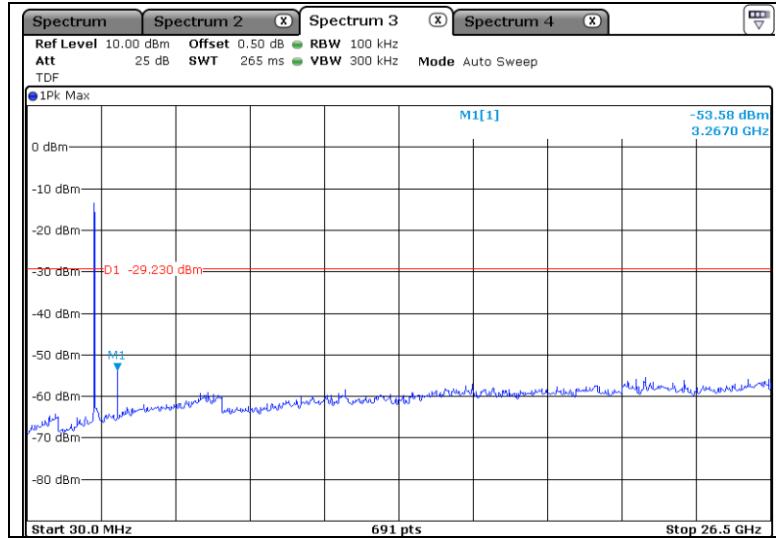
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (94) of (103)

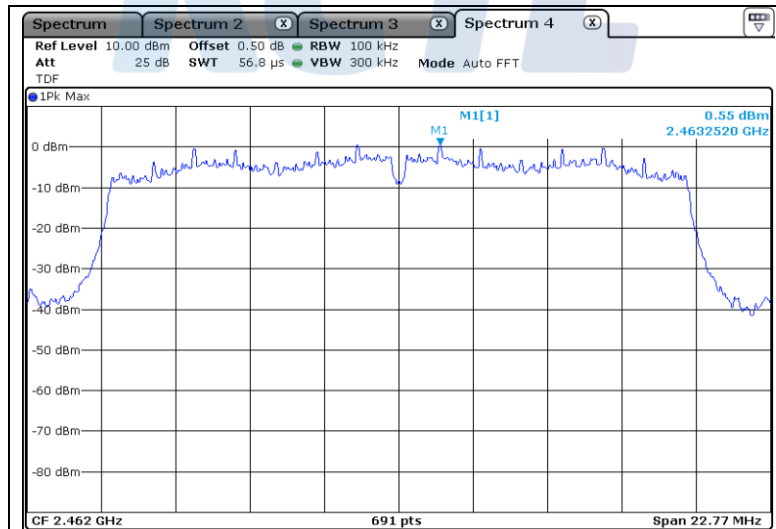


Conducted Spurious Emissions



Highest Channel (2 462 MHz)

Reference



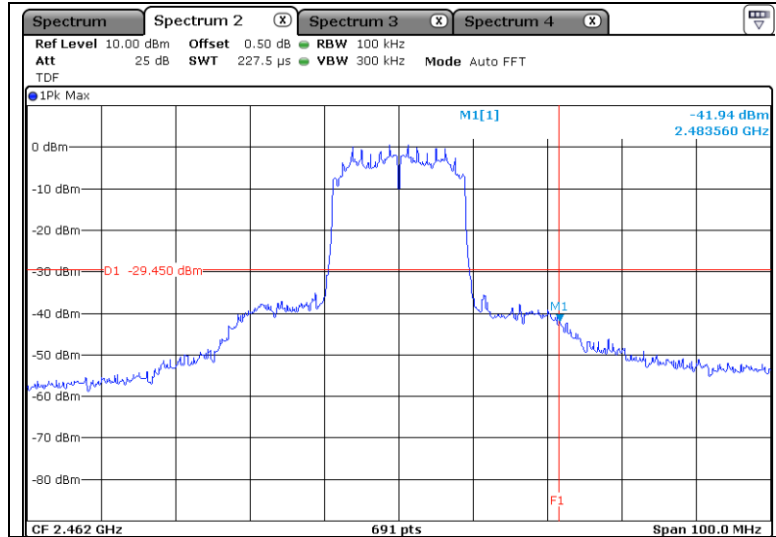
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (95) of (103)

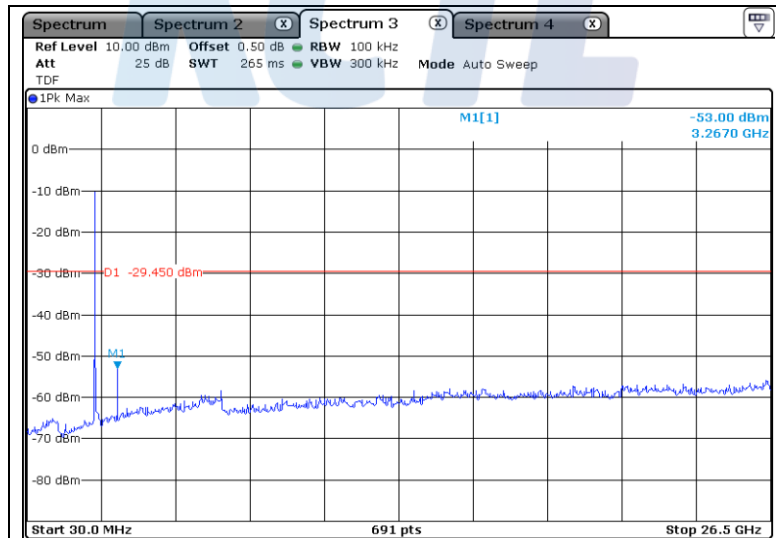


Band-edge



- Result of 2 483.5 MHz

Conducted Spurious Emissions



KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

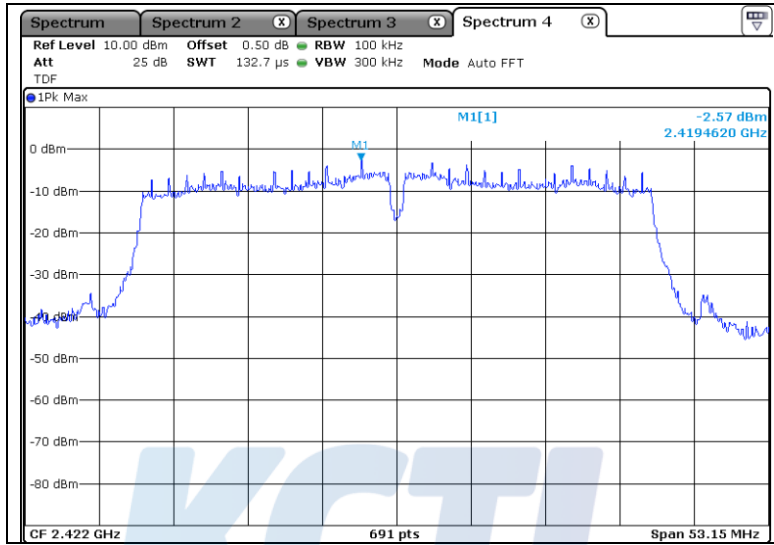
Report No.:
KR17-SRF0041
Page (96) of (103)



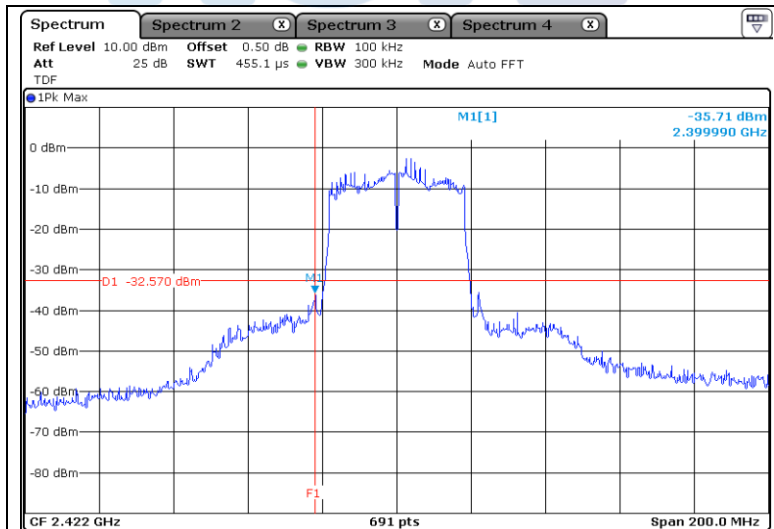
- 802.11n_HT40

Lowest Channel (2 422 MHz)

Reference



Band-edge



- Result of 2 400.0 MHz

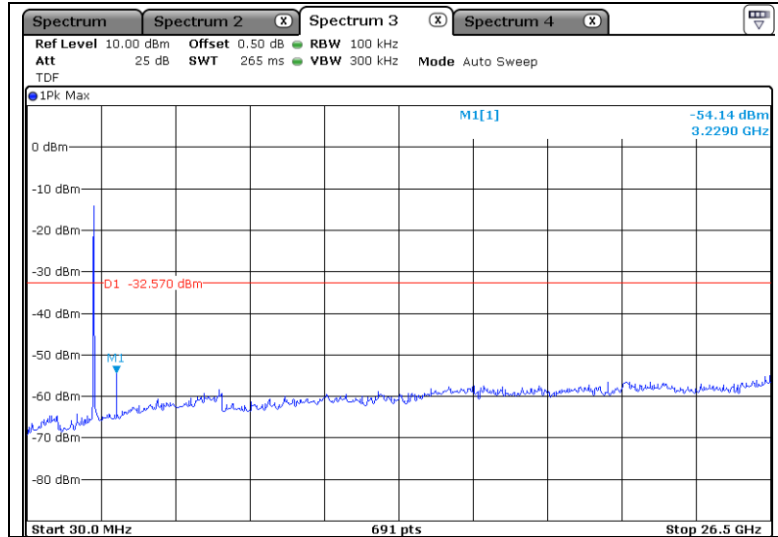
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (97) of (103)

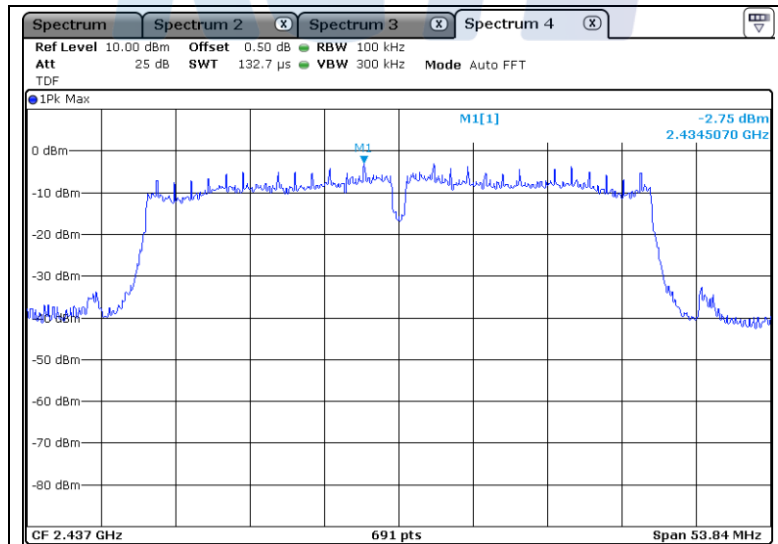


Conducted Spurious Emissions



Middle Channel (2 437 MHz)

Reference



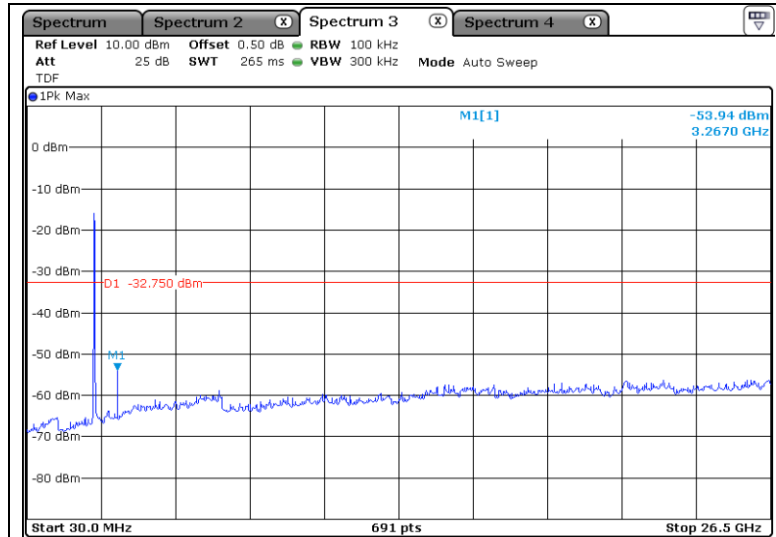
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (98) of (103)

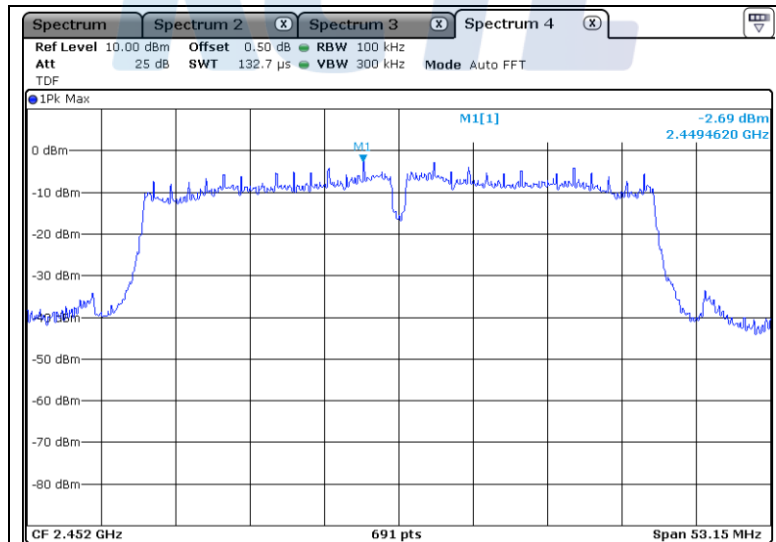


Conducted Spurious Emissions



Highest Channel (2 452 MHz)

Reference



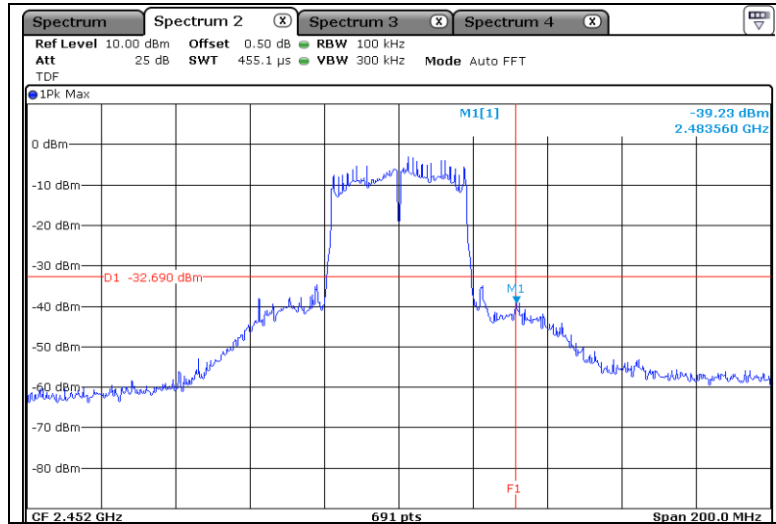
KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (99) of (103)

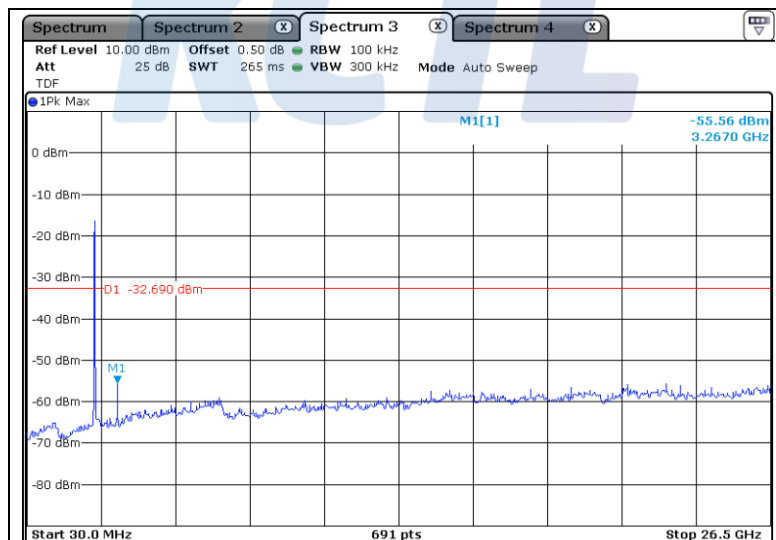


Band-edge



- Result of 2 483.5 Mhz

Conducted Spurious Emissions



5.6 Conducted Emission

5.6.1 Regulation

According to §15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 Ω line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency of emission (MHz) | Conducted limit (dB μ V) | |
|-----------------------------|------------------------------|------------|
| | 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.

According to §15.107(a), for unintentional device, except for Class A digital devices, line conducted emission limits are the same as the above table.

KCTL Inc.

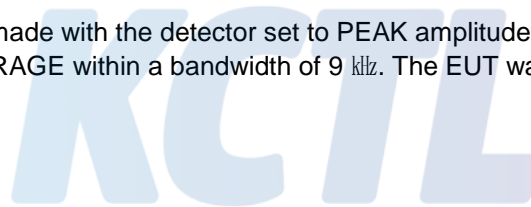
65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (101) of (103)



5.6.2 Measurement Procedure

- 1) The EUT was placed on a wooden table of size, 1 m by 1.5 m, raised 80 cm in which is located 40 cm away from the vertical wall and 1.5m away from the side wall of the shielded room.
- 2) Each current-carrying conductor of the EUT power cord was individually connected through a 50Ω/50μH LISN, which is an input transducer to a Spectrum Analyzer or an EMI/Field Intensity Meter, to the input power source.
- 3) Exploratory measurements were made to identify the frequency of the emission that had the highest amplitude relative to the limit by operating the EUT in a range of typical modes of operation, cable position, and with a typical system equipment configuration and arrangement. Based on the exploratory tests of the EUT, the one EUT cable configuration and arrangement and mode of operation that had produced the emission with the highest amplitude relative to the limit was selected for the final measurement.
- 4) The final test on all current-carrying conductors of all of the power cords to the equipment that comprises the EUT (but not the cords associated with other non-EUT equipment is the system) was then performed over the frequency range of 0.15 MHz to 30 MHz.
- 5) The measurements were made with the detector set to PEAK amplitude within a bandwidth of 10 kHz or to QUASI-PEAK and AVERAGE within a bandwidth of 9 kHz. The EUT was in transmitting mode during the measurements.

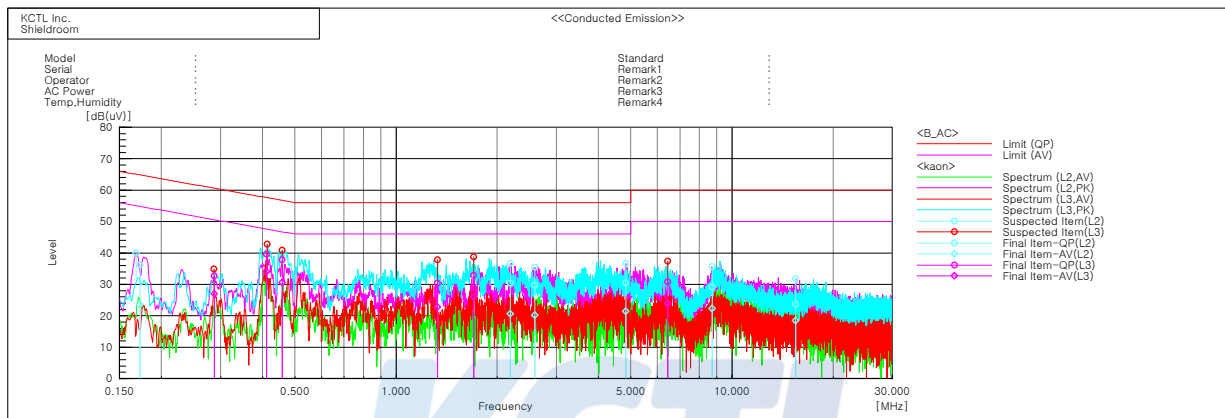


5.6.3 Test Result

- Complied

Figure 6. plot of Conducted Emission

- Conducted worst-case data : ANT 0_Lowest channel (2 412 MHz)



Final Result

--- L2 Phase ---

| No. | Frequency [MHz] | Reading QP [dB(uV)] | Reading CAV [dB(uV)] | c. f [dB] | Result QP [dB(uV)] | Result CAV [dB(uV)] | Limit QP [dB(uV)] | Limit AV [dB(uV)] | Margin QP [dB] | Margin CAV [dB] |
|-----|-----------------|---------------------|----------------------|-----------|--------------------|---------------------|-------------------|-------------------|----------------|-----------------|
| 1 | 0.1728 | 25.8 | 13.4 | 10.2 | 36.0 | 23.6 | 64.8 | 54.8 | 28.8 | 31.2 |
| 2 | 2.18807 | 20.5 | 10.7 | 9.8 | 30.3 | 20.5 | 56.0 | 46.0 | 25.7 | 25.5 |
| 3 | 2.58521 | 19.7 | 10.2 | 9.9 | 29.6 | 20.1 | 56.0 | 46.0 | 26.4 | 25.9 |
| 4 | 4.83078 | 20.5 | 11.3 | 10.0 | 30.5 | 21.3 | 56.0 | 46.0 | 25.5 | 24.7 |
| 5 | 8.7144 | 18.9 | 12.1 | 10.2 | 29.1 | 22.3 | 60.0 | 50.0 | 30.9 | 27.7 |
| 6 | 15.45583 | 13.1 | 7.8 | 10.6 | 23.7 | 18.4 | 60.0 | 50.0 | 36.3 | 31.6 |

--- L3 Phase ---

| No. | Frequency [MHz] | Reading QP [dB(uV)] | Reading CAV [dB(uV)] | c. f [dB] | Result QP [dB(uV)] | Result CAV [dB(uV)] | Limit QP [dB(uV)] | Limit AV [dB(uV)] | Margin QP [dB] | Margin CAV [dB] |
|-----|-----------------|---------------------|----------------------|-----------|--------------------|---------------------|-------------------|-------------------|----------------|-----------------|
| 1 | 0.28717 | 22.9 | 17.1 | 9.8 | 32.7 | 26.9 | 60.6 | 50.6 | 27.9 | 23.7 |
| 2 | 0.41158 | 29.6 | 23.9 | 10.0 | 39.6 | 33.9 | 57.6 | 47.6 | 18.0 | 13.7 |
| 3 | 0.458 | 27.8 | 20.6 | 10.0 | 37.8 | 30.6 | 56.7 | 46.7 | 18.9 | 16.1 |
| 4 | 1.3274 | 20.5 | 12.8 | 9.9 | 30.4 | 22.7 | 56.0 | 46.0 | 25.6 | 23.3 |
| 5 | 1.70222 | 23.0 | 16.2 | 9.9 | 32.9 | 26.1 | 56.0 | 46.0 | 23.1 | 19.9 |
| 6 | 6.43172 | 20.6 | 13.7 | 10.1 | 30.7 | 23.8 | 60.0 | 50.0 | 29.3 | 26.2 |

KCTL Inc.

65, Sinwon-ro, Yeongtong-gu,
Suwon-si, Gyeonggi-do, 16677, Korea
TEL: 82-31-285-0894 FAX: 82-505-299-8311
www.kctl.co.kr

Report No.:
KR17-SRF0041
Page (103) of (103)

KCTL**6. Test equipment used for test**

| | Equipment Name | Manufacturer | Model No. | Serial No. | Next Cal. Date |
|---|--------------------------|-------------------|------------------------|-------------|----------------|
| ■ | Vector Signal Generator | R & S | SMBV100A | 257566 | 18.01.06 |
| ■ | Signal Generator | R & S | SMR40 | 100007 | 18.05.15 |
| ■ | Spectrum Analyzer | R & S | FSV40 | 100988 | 18.01.06 |
| ■ | DC Power Supply | Agilent | E3632A | MY40017108 | 18.05.15 |
| ■ | EMI Test Receiver | R & S | ESCI | 100001 | 17.10.20 |
| ■ | Two-Line V -Network | R & S | ENV216 | 101358 | 17.08.16 |
| ■ | LOOP Antenna | R & S | HFH2-Z2 | 100355 | 18.03.03 |
| ■ | Amplifier | SONOMA | 310N | 344922 | 17.08.26 |
| ■ | EMI Test Receiver | R & S | ESCI7 | 100732 | 17.08.25 |
| ■ | Turn Table | Innco Systems | DT2000 | 79 | - |
| ■ | Bi-Log Antenna | SCHWARZBECK | VULB 9163 | 552 | 18.06.27 |
| ■ | Coaxial Fixed Attenuator | HP | 8491A | 16861 | 18.04.06 |
| ■ | Amplifier | SONOMA INSTRUMENT | 310N | 186280 | 18.04.06 |
| ■ | EMI Test Receiver | R & S | ESCI | 101408 | 17.08.25 |
| ■ | Horn Antenna | ETS.lindgren | 3115 | 62589 | 17.11.11 |
| ■ | Broadband PreAmplifier | SCHWARZBECK | BBV9718 | 216 | 17.08.29 |
| ■ | Highpass Filter | WT | WT-A1698-HS | WT160411001 | 18.05.15 |
| ■ | Amplifier | L-3 Narda-MITEQ | AMF-7D-01001800-22-10P | 2031196 | 18.03.27 |
| ■ | Horn Antenna | ETS.lindgren | 3116 | 00086632 | 18.02.10 |
| ■ | Amplifier | L-3 Narda-MITEQ | JS44-18004000-33-8P | 2000997 | 17.08.23 |
| ■ | Antenna Mast | Innco Systems | MA4640-XP-ET | - | - |
| ■ | Turn Table | MATURO | CO2000-SOFT | - | - |