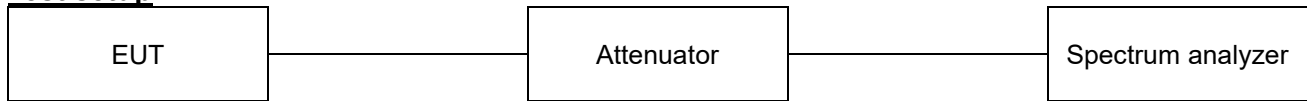


### 7.3. 6 dB Bandwidth(DTS Channel Bandwidth) & 99% Bandwidth

#### Test setup



#### Limit

According to §15.247(a)(2) and RSS-247(5.2), Systems using digital modulation techniques may operate in the 902–928 MHz, 2 400–2 483.5 MHz, and 5 725–5 850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

#### Test procedure

ANSI C63.10 - Section 11.8.2

#### Test settings

##### DTS bandwidth

One of the following procedures may be used to determine the modulated DTS bandwidth.

##### Option 1

- 1) Set RBW = 100 kHz.
- 2) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
- 3) Detector = Peak.
- 4) Trace mode = max hold.
- 5) Sweep = auto couple.
- 6) Allow the trace to stabilize.
- 7) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

##### Option 2

The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW  $\geq 3 \times$  RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be  $\geq 6$  dB.

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### Occupied bandwidth (or 99% emission bandwidth)

- ♦ The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- ♦ The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emissions skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- ♦ The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- ♦ The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted

**Notes:** it may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms, The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

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**Test results****SISO**

Test mode	Frequency(MHz)	6 dB bandwidth(MHz)		99% bandwidth(MHz)	
		ANT 1	ANT 2	ANT 1	ANT 2
802.11b	2412	8.691	8.192	14.236	14.186
	2437	8.641	8.641	14.136	14.236
	2462	8.591	8.192	14.186	14.236
	2467	8.641	8.641	14.086	14.136
	2472	9.091	8.192	14.036	14.036
802.11g	2412	15.784	16.384	16.833	16.883
	2437	15.535	15.185	16.733	16.683
	2462	15.784	15.784	16.783	16.783
	2467	15.734	16.384	16.833	16.833
	2472	16.434	16.134	16.783	16.783
802.11n HT20	2412	17.033	16.484	17.882	17.932
	2437	15.185	15.784	17.782	17.782
	2462	16.434	17.033	17.882	17.882
	2467	16.484	17.632	17.882	17.882
	2472	16.134	16.583	17.882	17.782

**MIMO**

Test mode	Frequency(MHz)	6 dB bandwidth(MHz)		99% bandwidth(MHz)	
		ANT 1	ANT 2	ANT 1	ANT 2
802.11b	2412	9.141	9.141	14.336	14.386
	2437	8.641	8.691	14.186	14.136
	2462	8.641	8.591	14.286	14.336
	2467	8.641	9.091	14.136	14.086
	2472	9.091	9.091	14.036	13.986
802.11g	2412	16.134	16.384	16.883	16.783
	2437	15.734	15.784	16.683	16.683
	2462	15.784	16.384	16.783	16.733
	2467	15.834	16.384	16.783	16.733
	2472	15.535	15.734	16.783	16.633
802.11n HT20	2412	17.283	17.233	17.882	17.982
	2437	15.535	16.334	17.782	17.832
	2462	16.434	17.283	17.882	17.832
	2467	17.033	17.632	17.832	17.882
	2472	16.084	16.633	17.832	17.682

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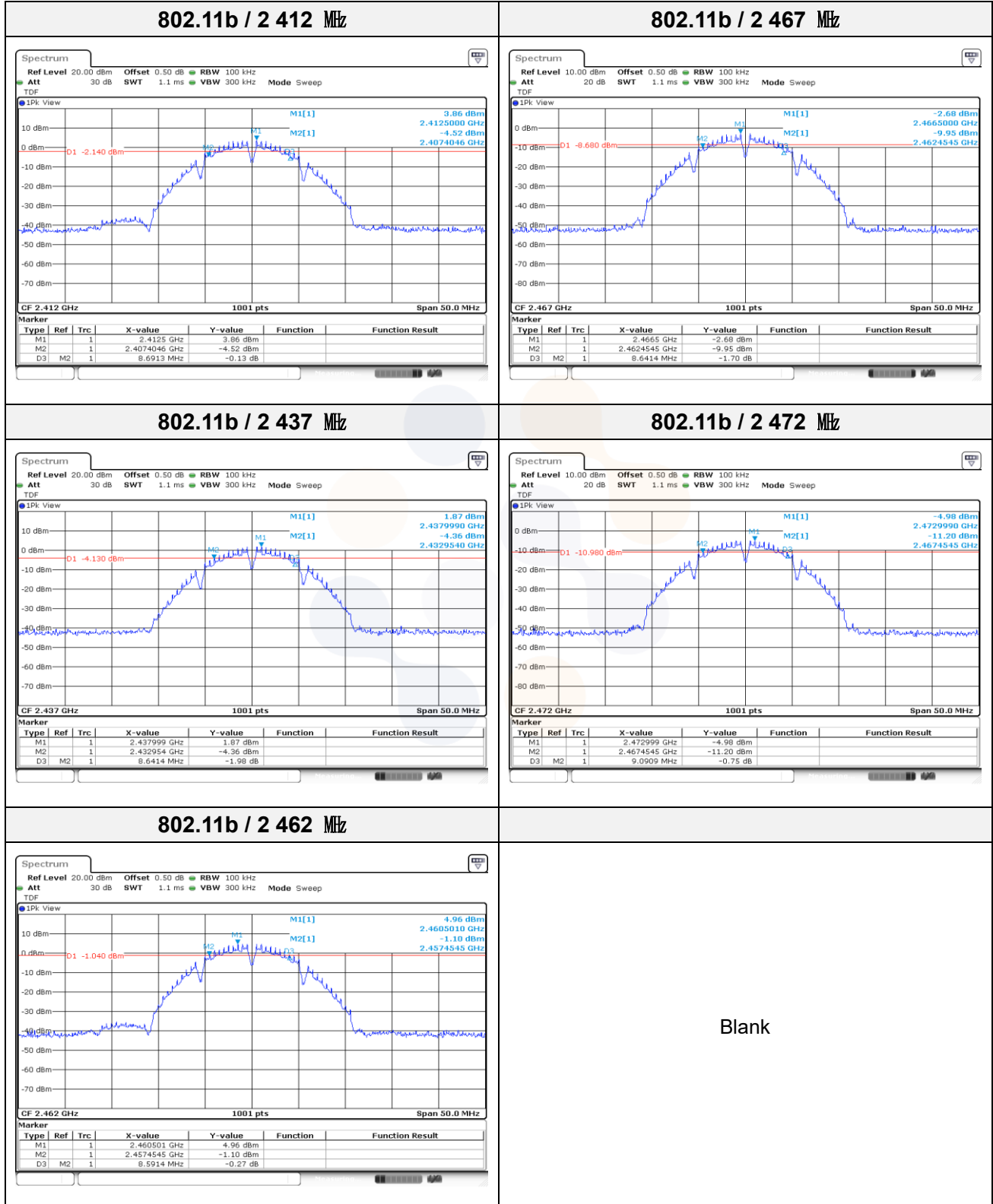
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## SISO ANT 1

### 6 dB bandwidth



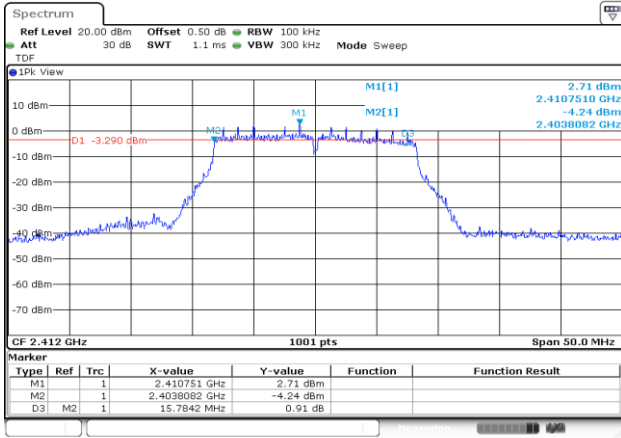
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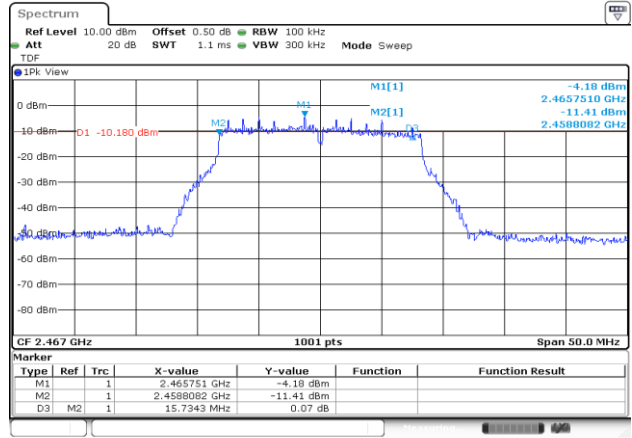
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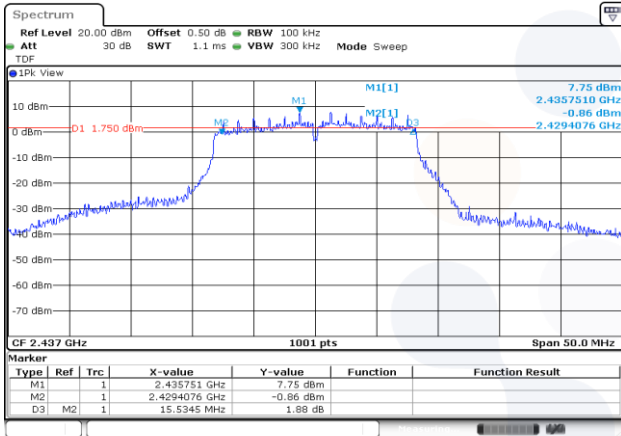
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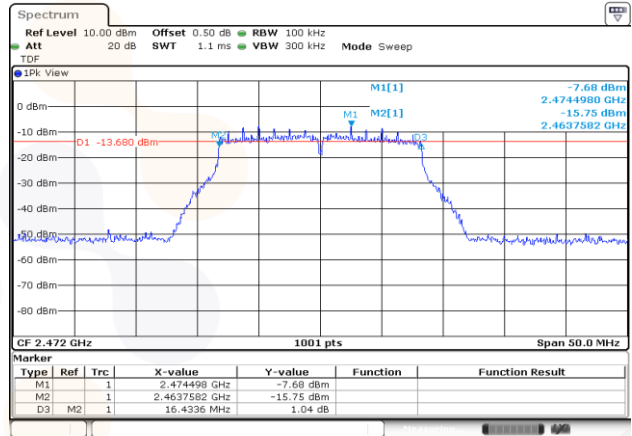
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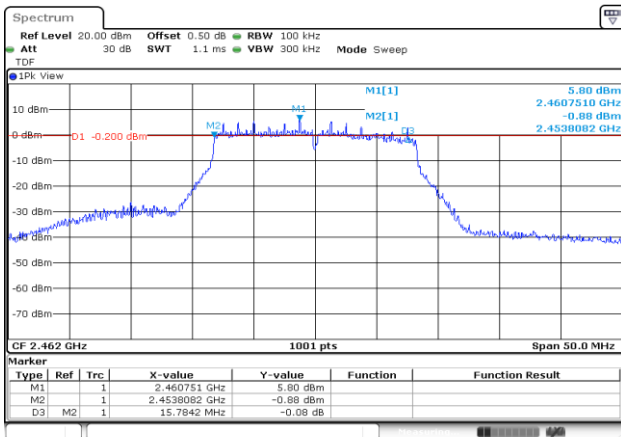
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## 802.11g / 2 472 MHz



## 802.11g / 2 462 MHz



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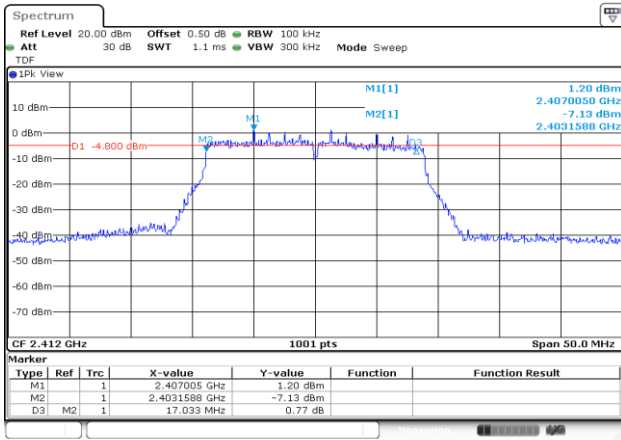
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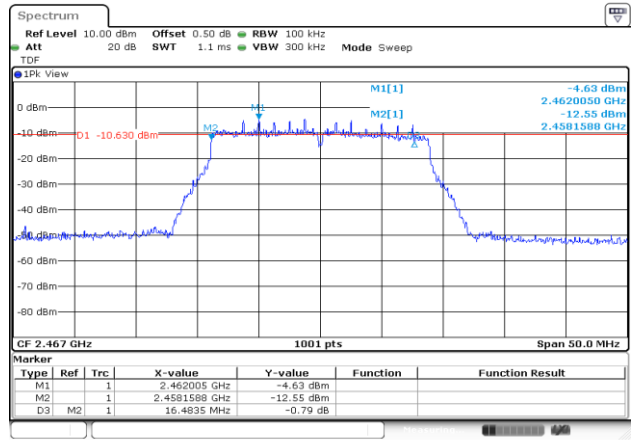
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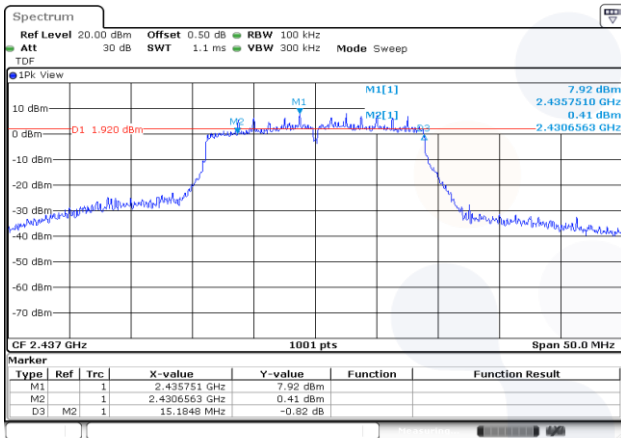
## 802.11n HT20 / 2 412 MHz



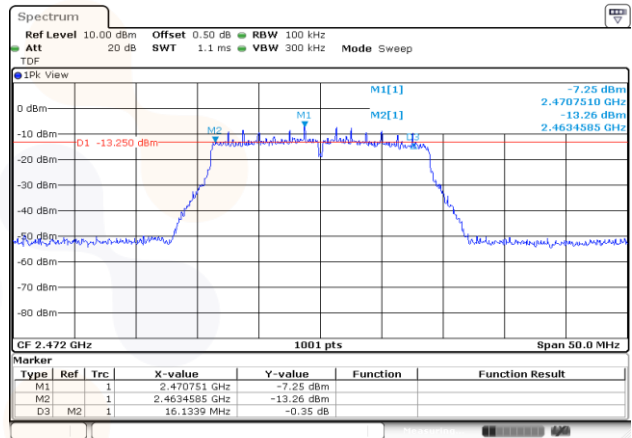
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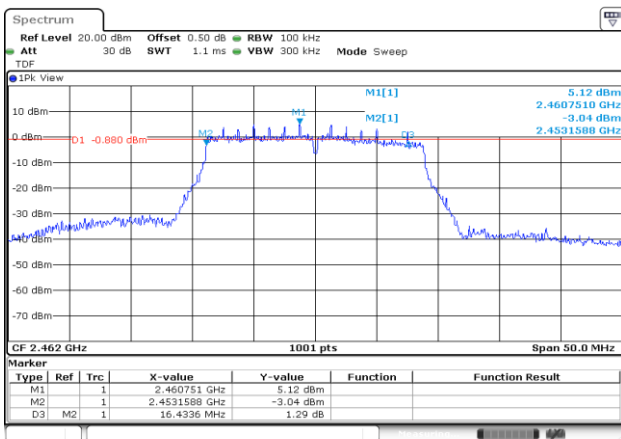
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## 802.11n HT20 / 2 462 MHz



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# KCTL Inc.

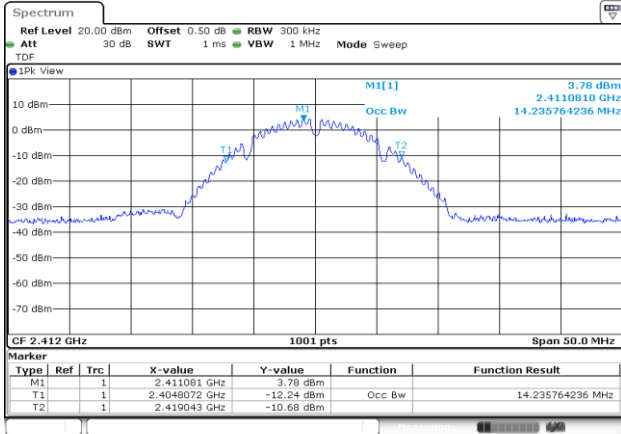
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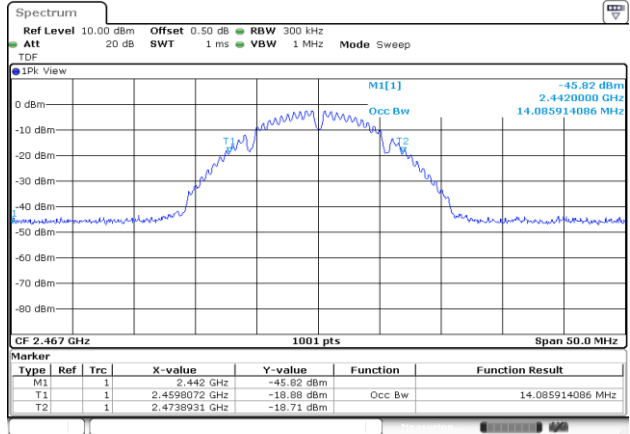


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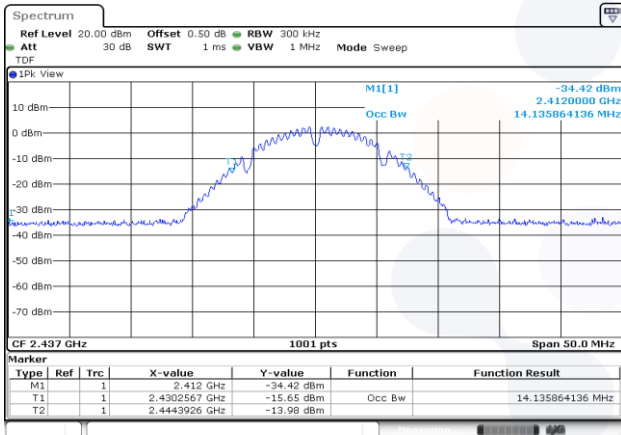
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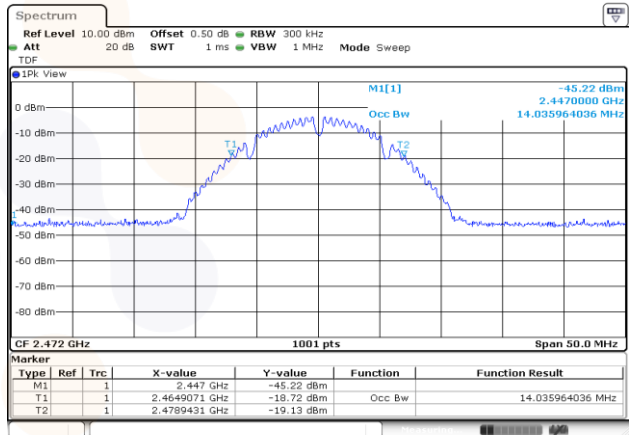
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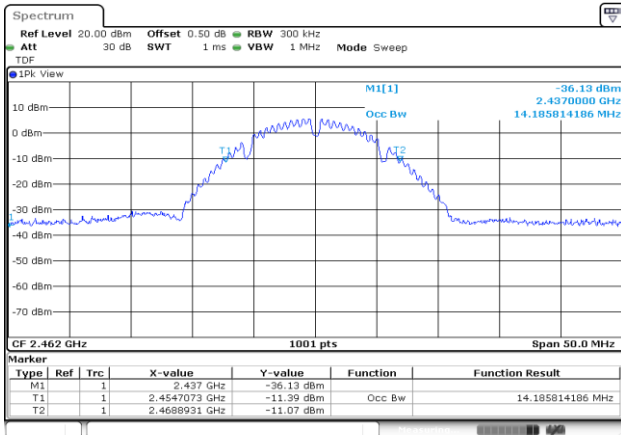
### 802.11b / 2 437 MHz



### 802.11b / 2 472 MHz



### 802.11b / 2 462 MHz



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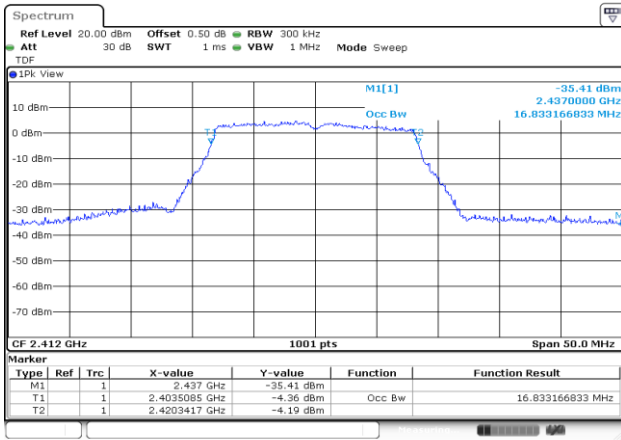
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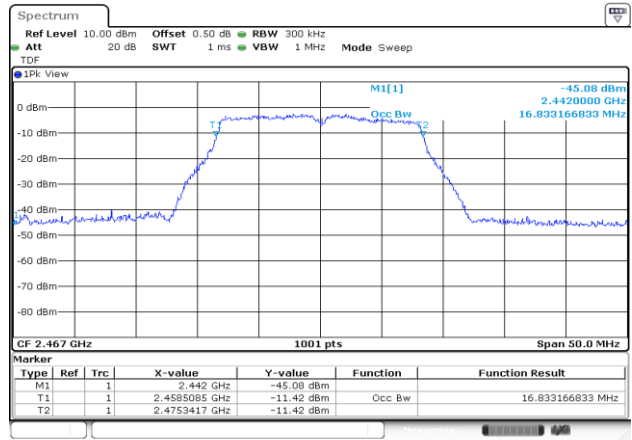
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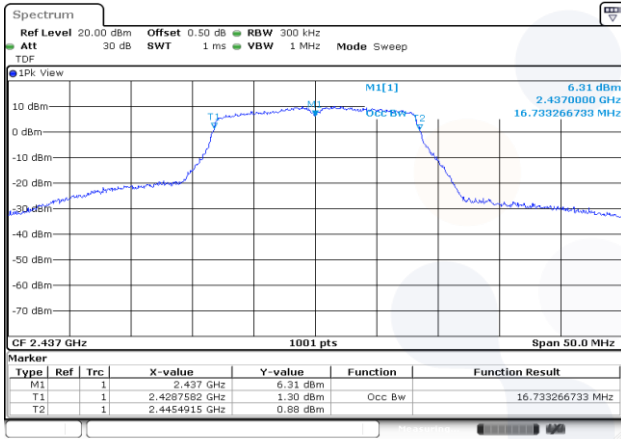
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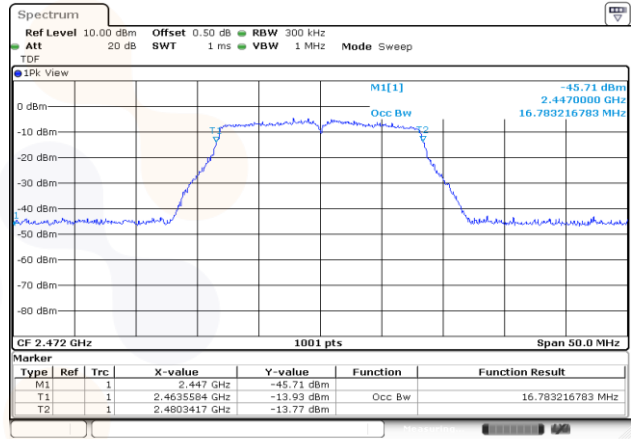
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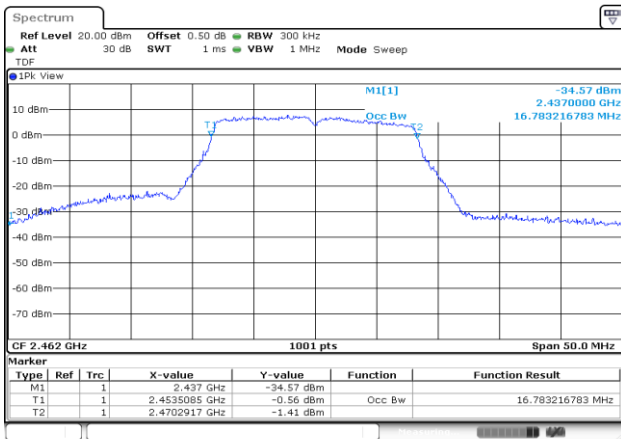
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## 802.11g / 2 472 MHz



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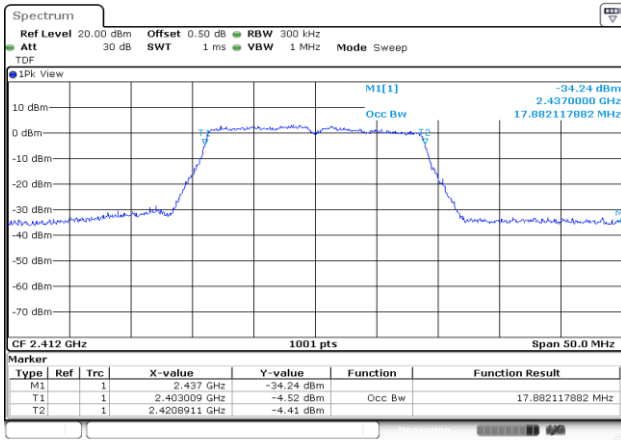
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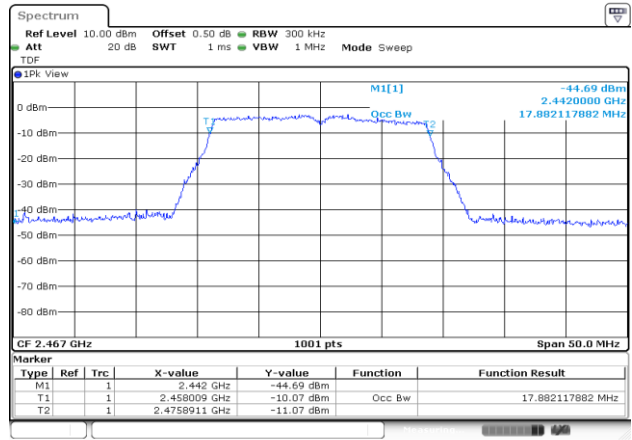
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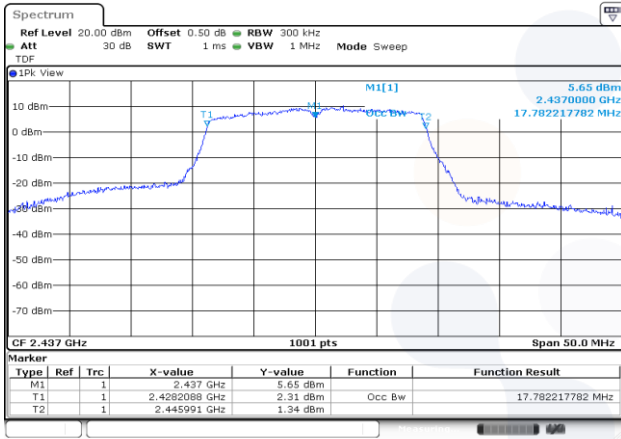
## 802.11n HT20 / 2 412 MHz



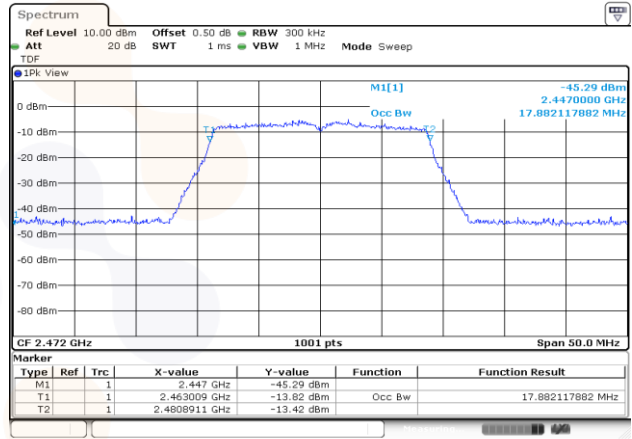
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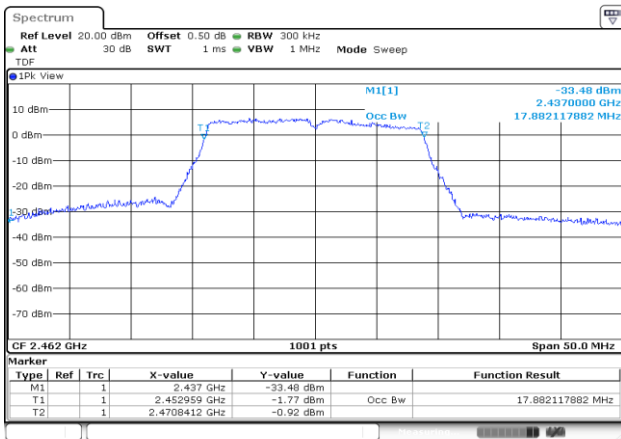
## 802.11n HT20 / 2 437 MHz



## 802.11n HT20 / 2 472 MHz



## 802.11n HT20 / 2 462 MHz



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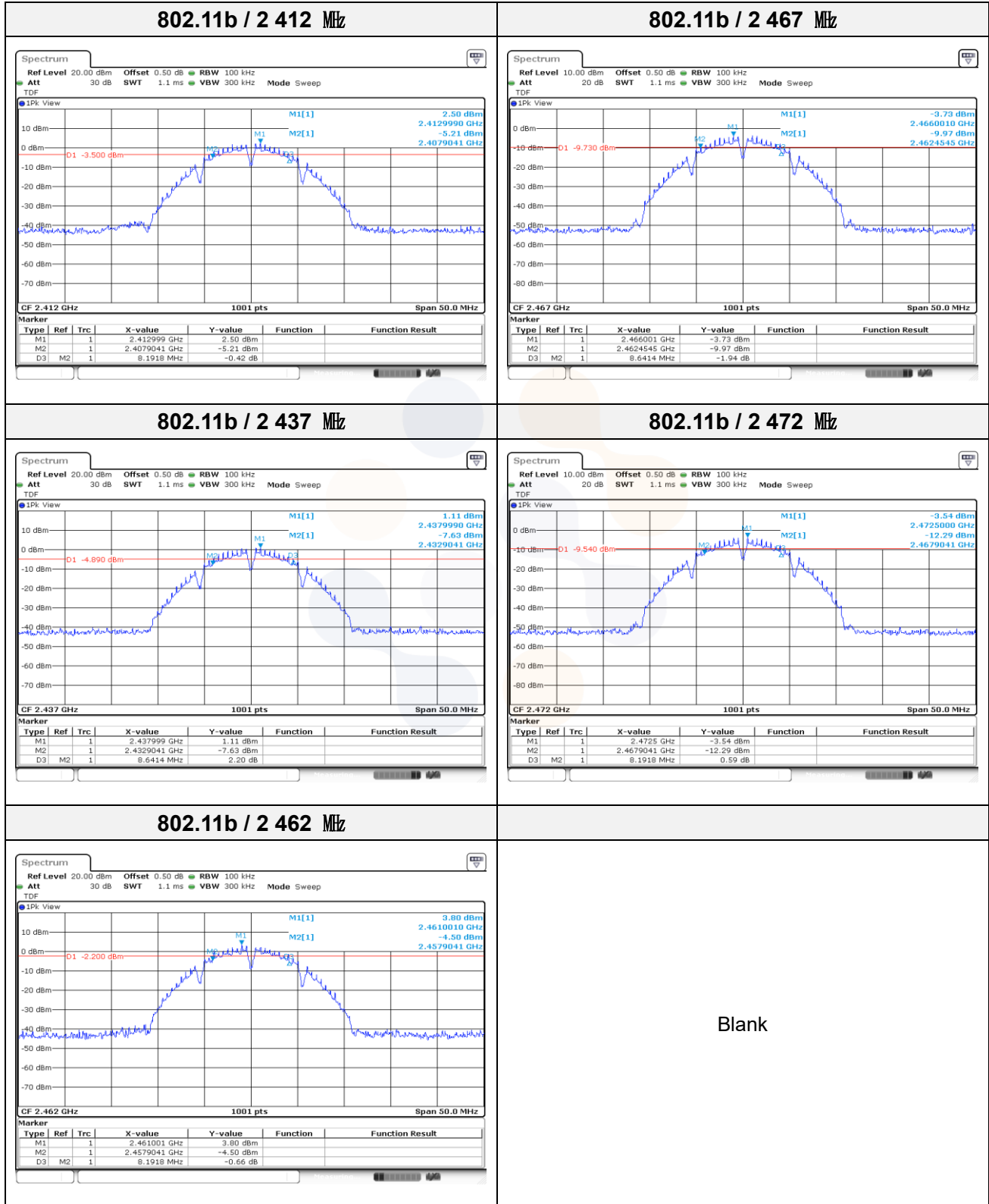
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## SISO ANT 2

### 6 dB bandwidth



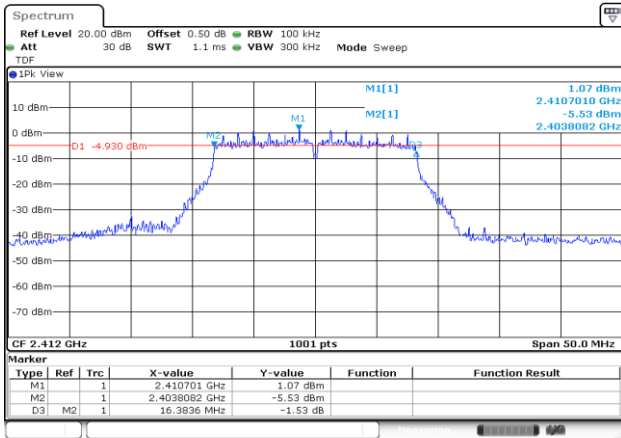
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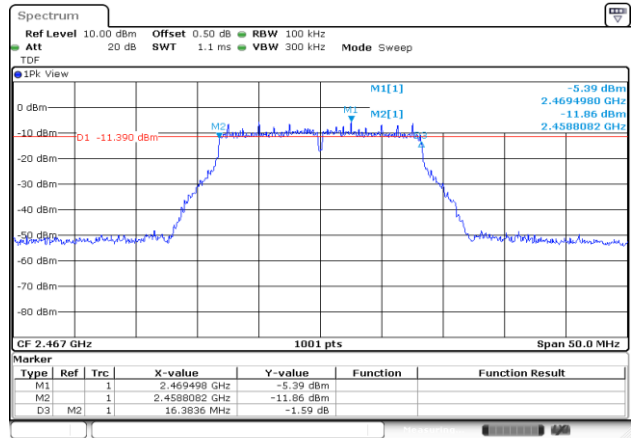
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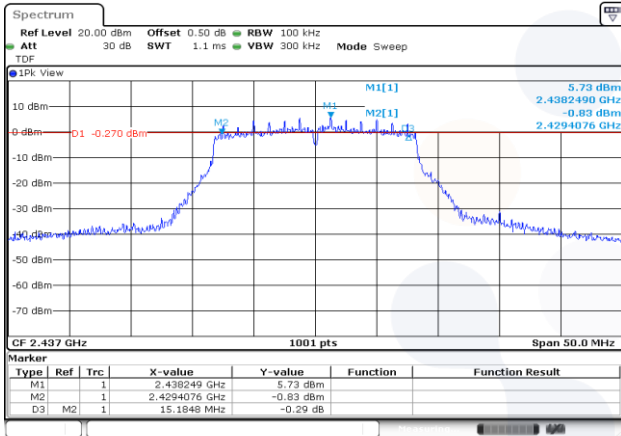
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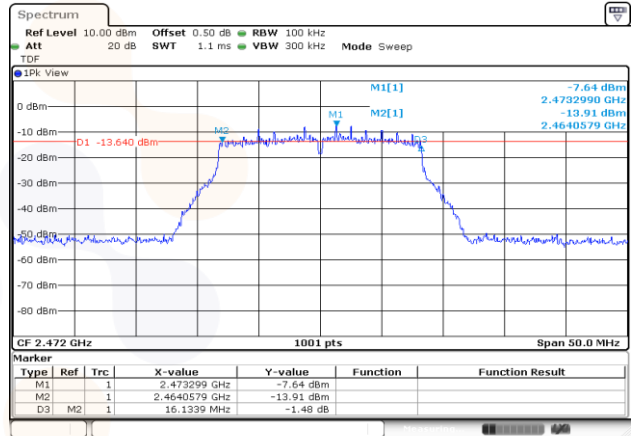
## 802.11g / 2 467 MHz



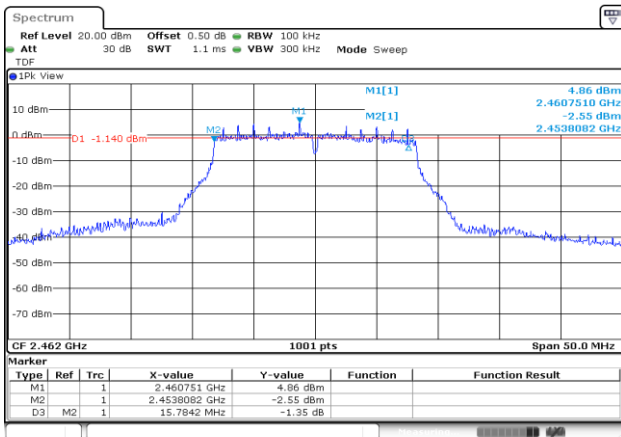
## 802.11g / 2 437 MHz



## 802.11g / 2 472 MHz



## 802.11g / 2 462 MHz



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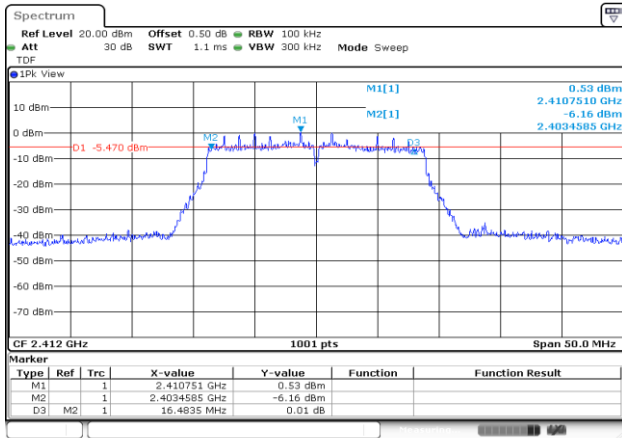
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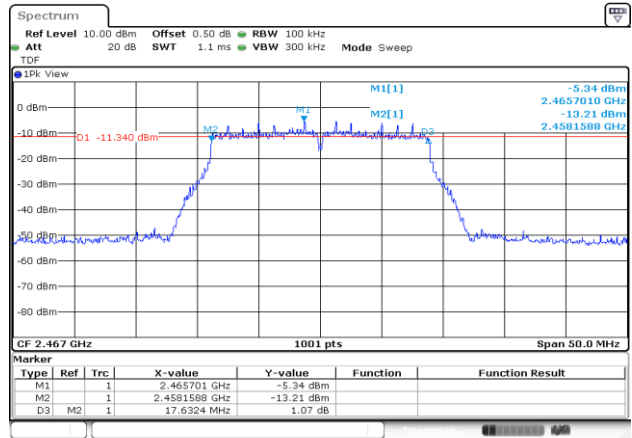
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KR22-SRF0060-A  
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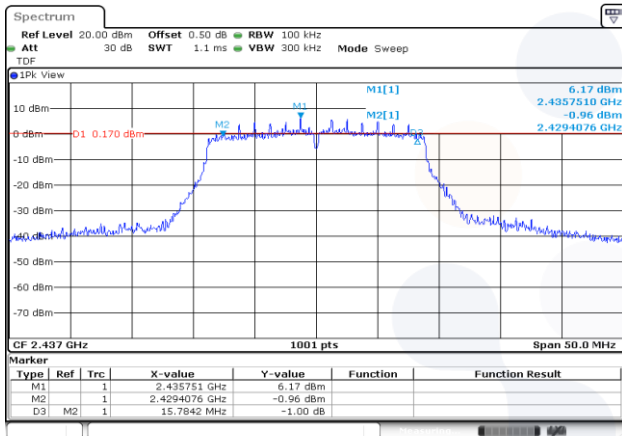
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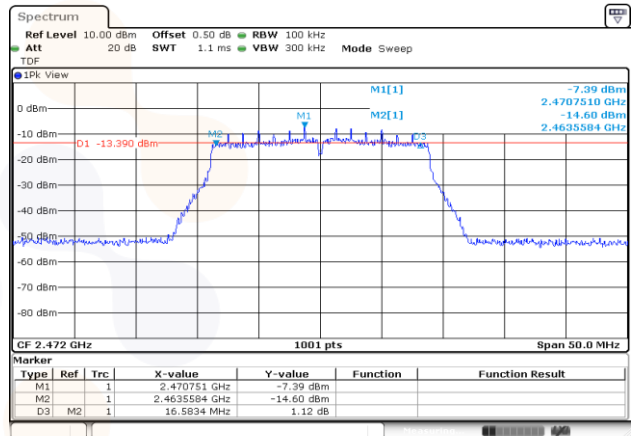
## 802.11n HT20 / 2 467 MHz



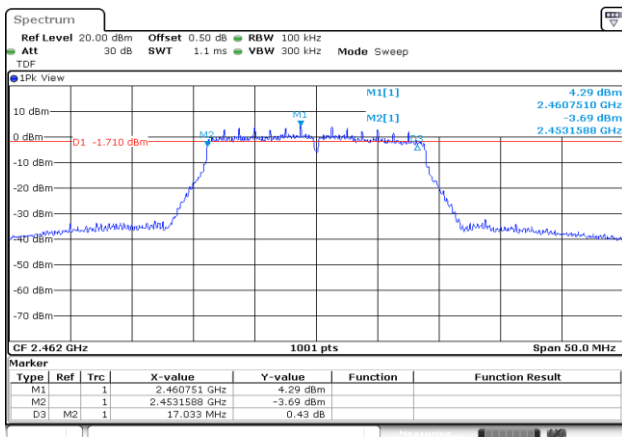
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## 802.11n HT20 / 2 472 MHz



## 802.11n HT20 / 2 462 MHz



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# KCTL Inc.

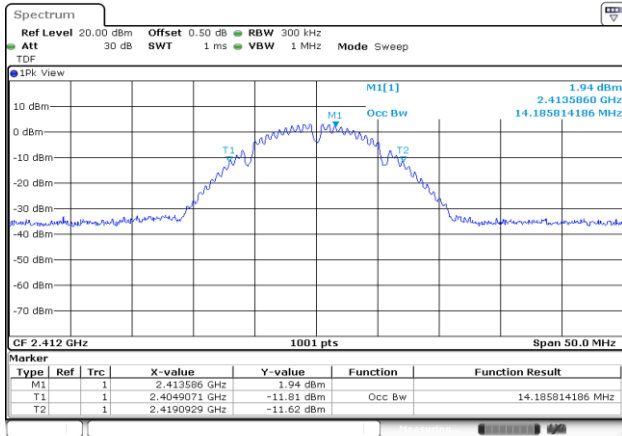
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TEL: 82-31-285-0894 FAX: 82-505-299-8311  
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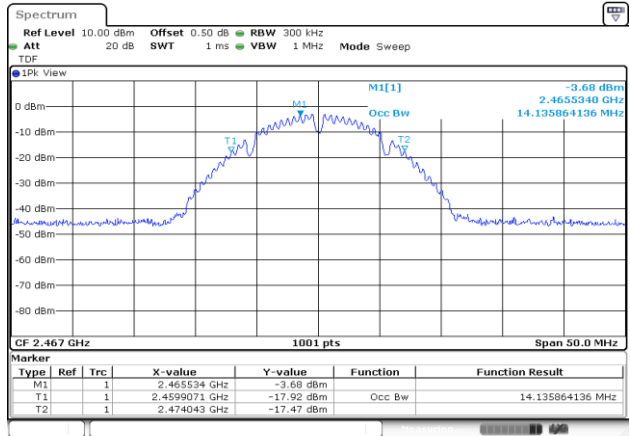


## 99% bandwidth

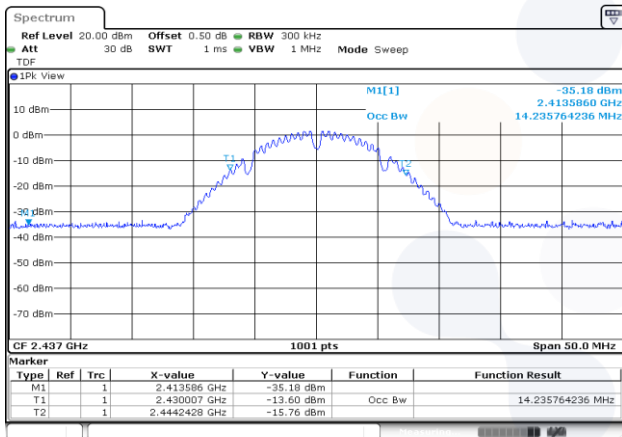
802.11b / 2 412 MHz



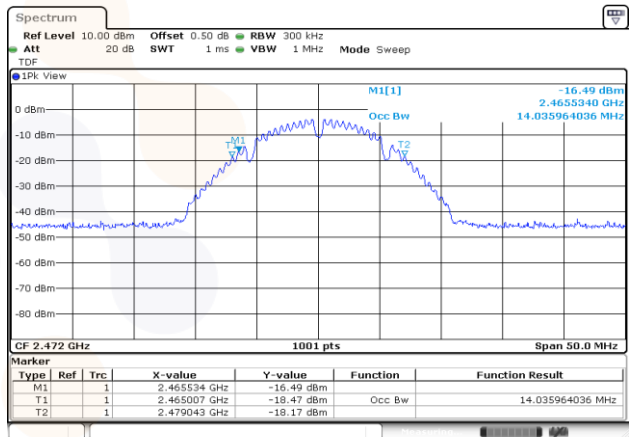
802.11b / 2 467 MHz



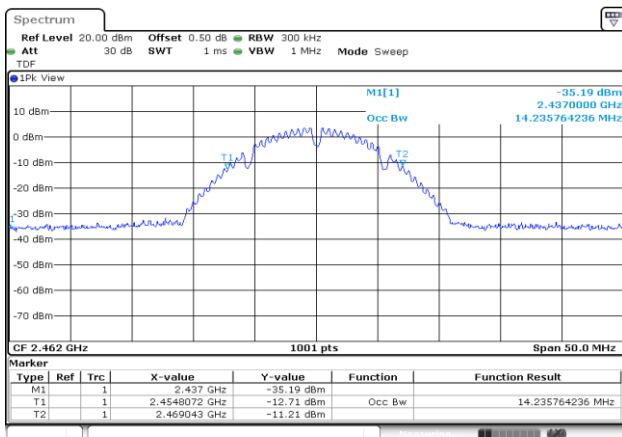
802.11b / 2 437 MHz



802.11b / 2 472 MHz



802.11b / 2 462 MHz



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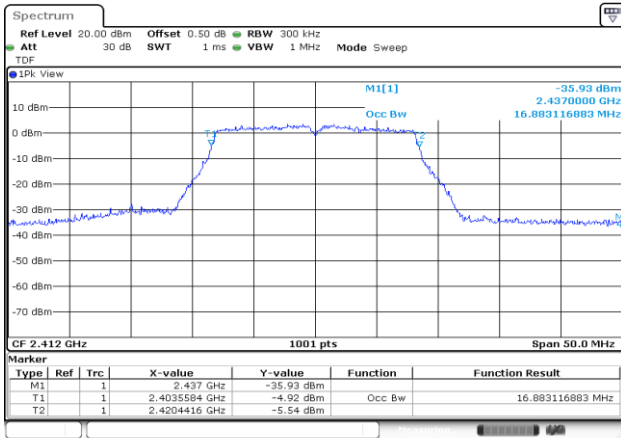
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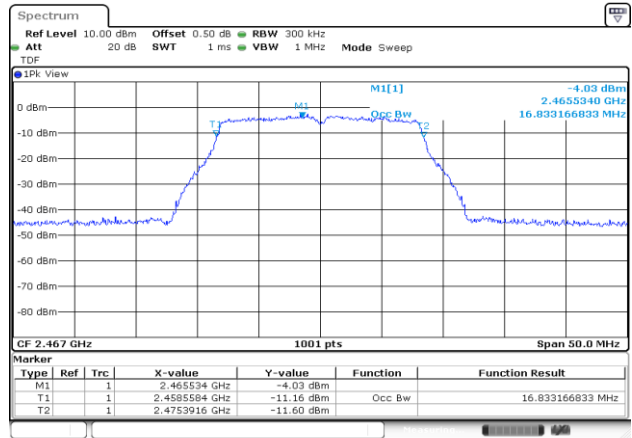
Report No.:  
KR22-SRF0060-A  
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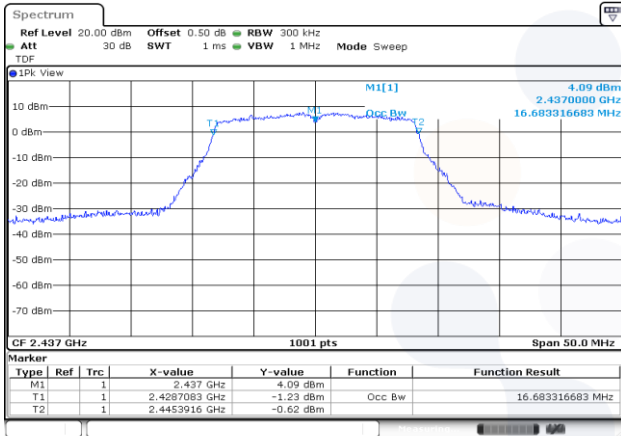
## 802.11g / 2 412 MHz



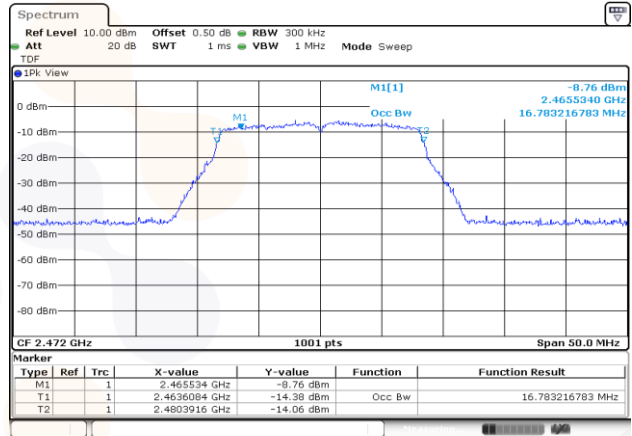
## 802.11g / 2 467 MHz



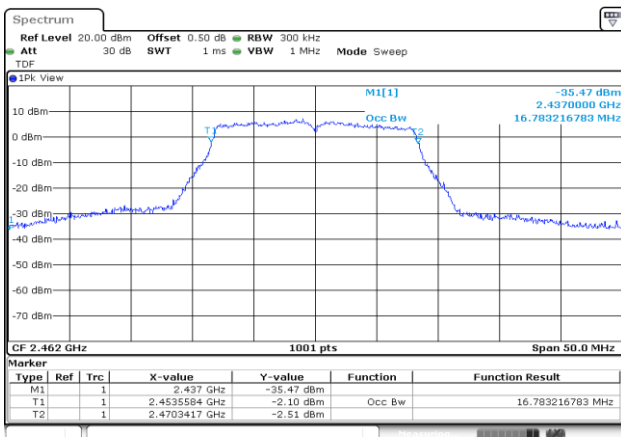
## 802.11g / 2 437 MHz



## 802.11g / 2 472 MHz



## 802.11g / 2 462 MHz



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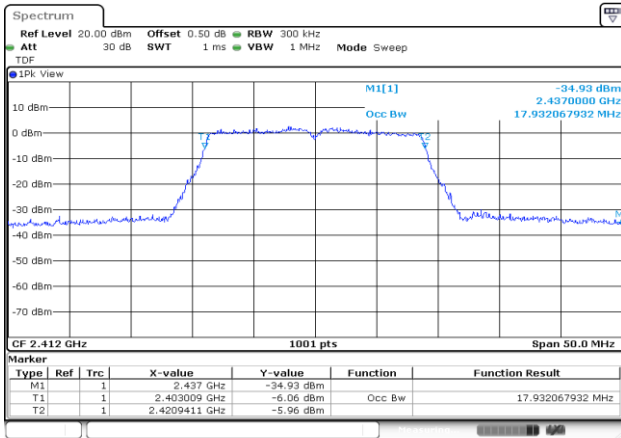
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TEL: 82-31-285-0894 FAX: 82-505-299-8311  
[www.kctl.co.kr](http://www.kctl.co.kr)

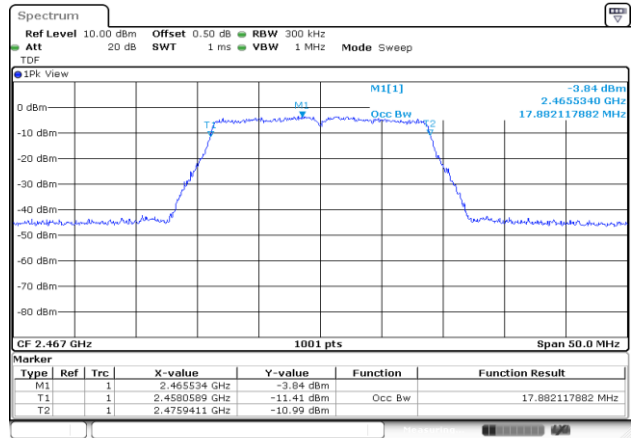
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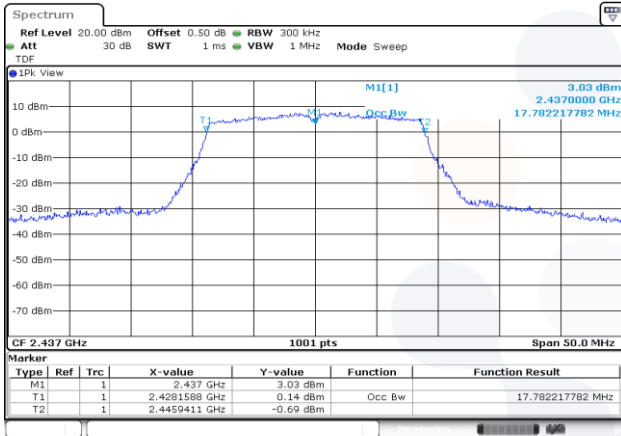
## 802.11n HT20 / 2 412 MHz



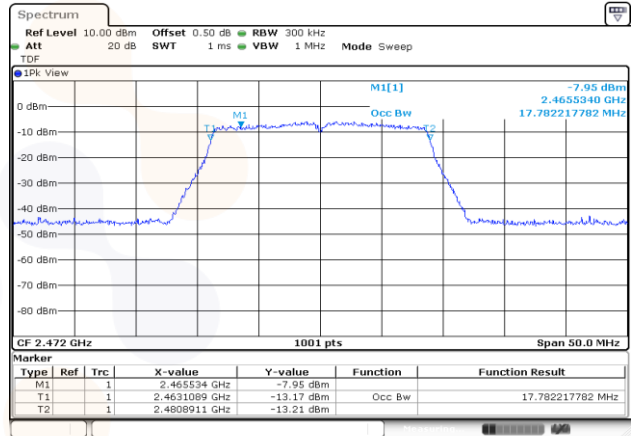
## 802.11n HT20 / 2 467 MHz



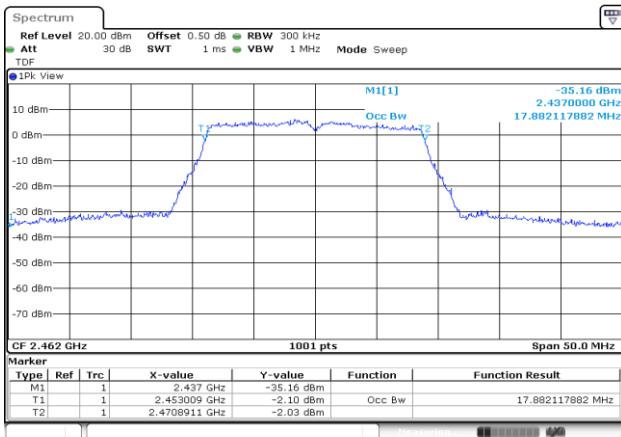
## 802.11n HT20 / 2 437 MHz



## 802.11n HT20 / 2 472 MHz



## 802.11n HT20 / 2 462 MHz



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# KCTL Inc.

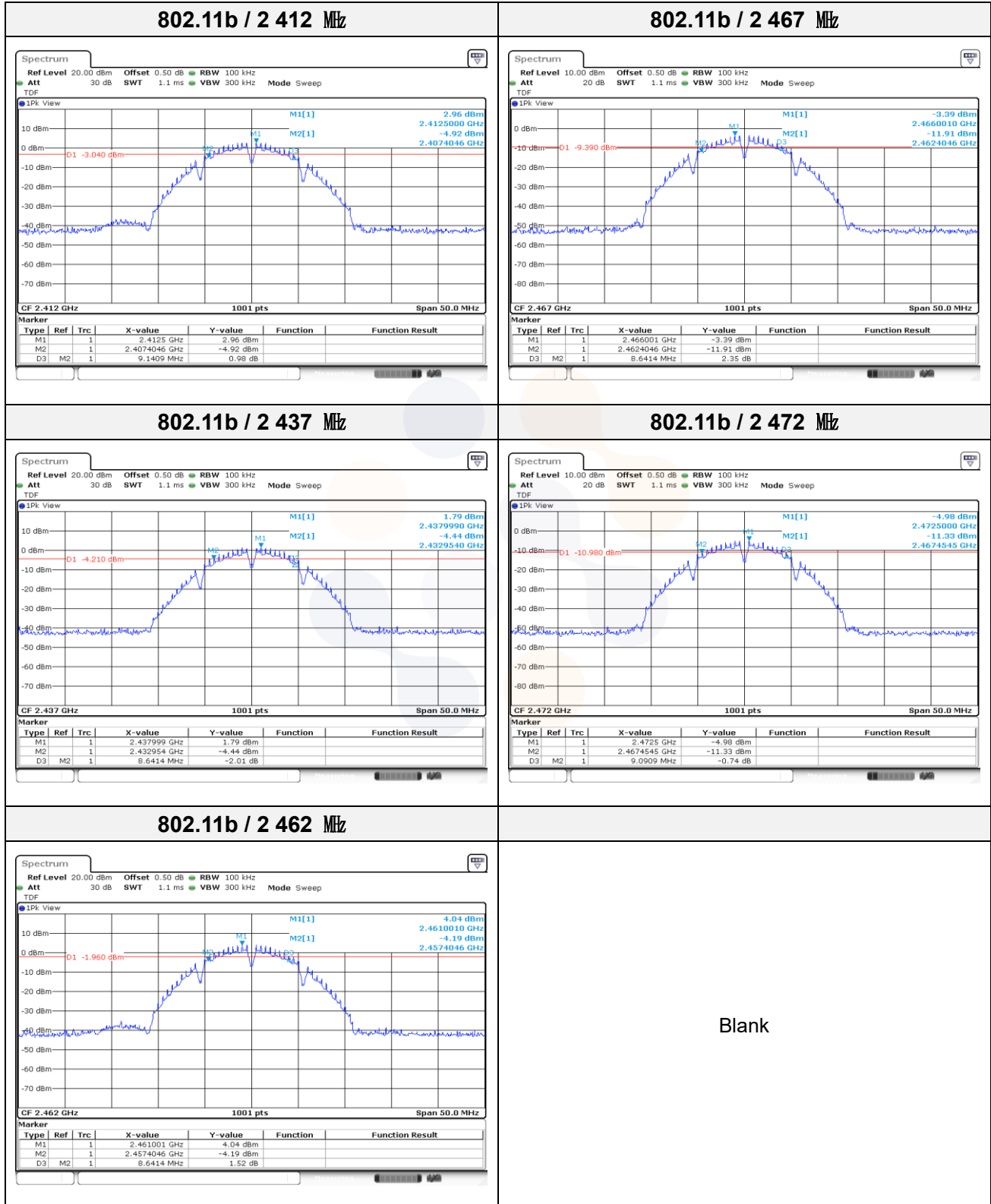
65, Sinwon-ro, Yeongtong-gu,  
Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
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## MIMO ANT 1

### 6 dB bandwidth





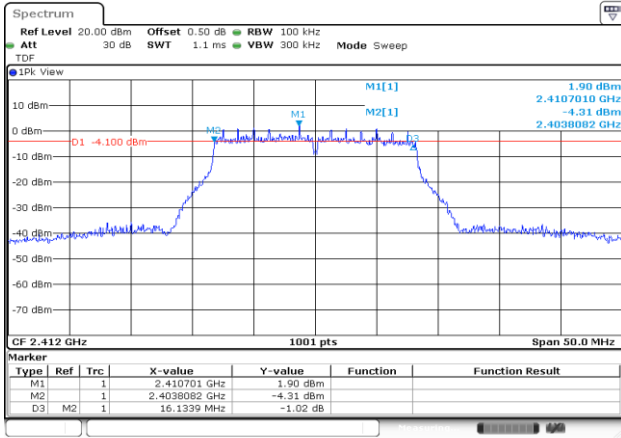
# KCTL Inc.

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](http://www.kctl.co.kr)

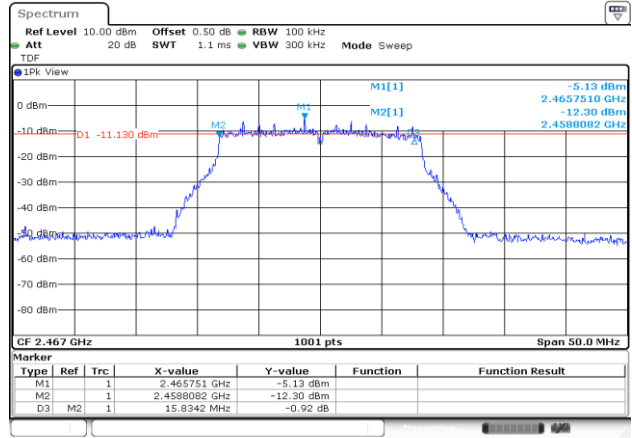
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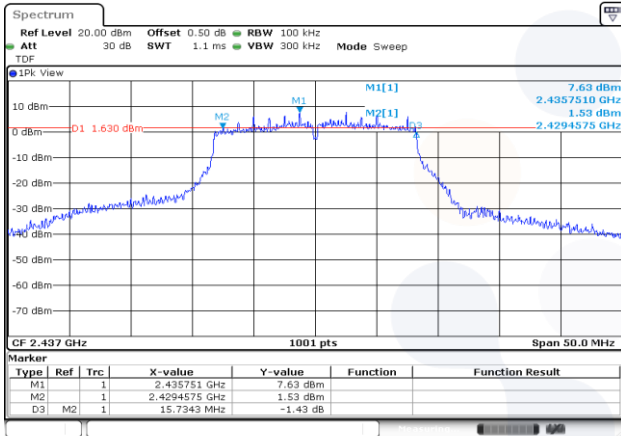
## 802.11g / 2 412 MHz



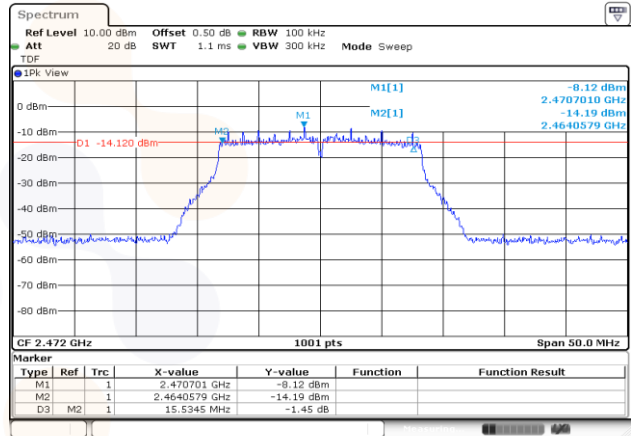
## 802.11g / 2 467 MHz



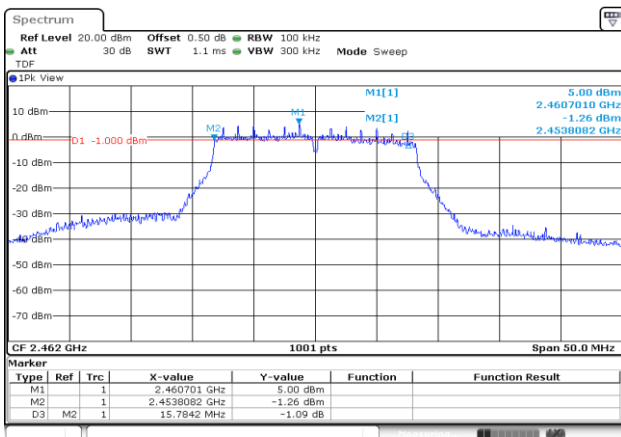
## 802.11g / 2 437 MHz



## 802.11g / 2 472 MHz



## 802.11g / 2 462 MHz



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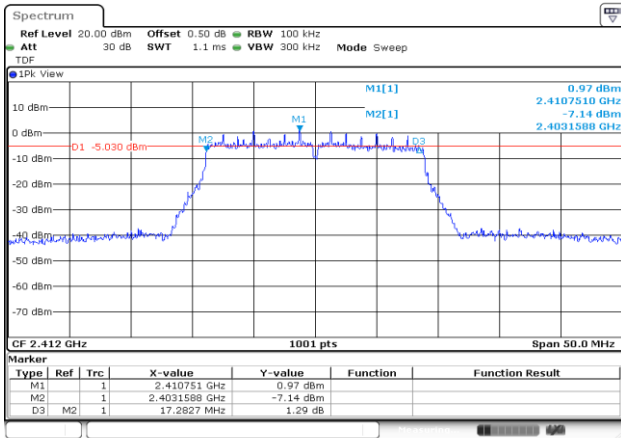
# KCTL Inc.

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Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
[www.kctl.co.kr](http://www.kctl.co.kr)

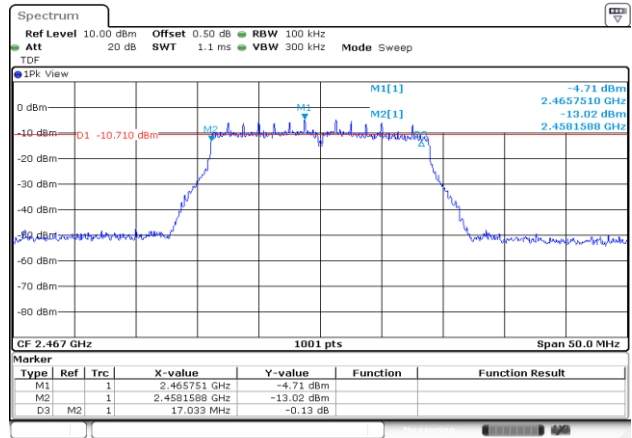
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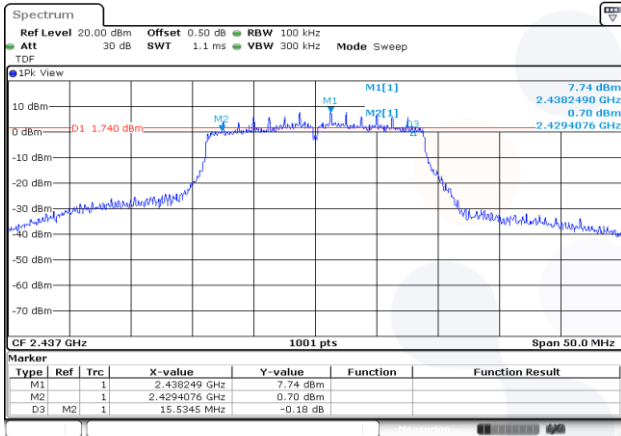
## 802.11n HT20 / 2 412 MHz



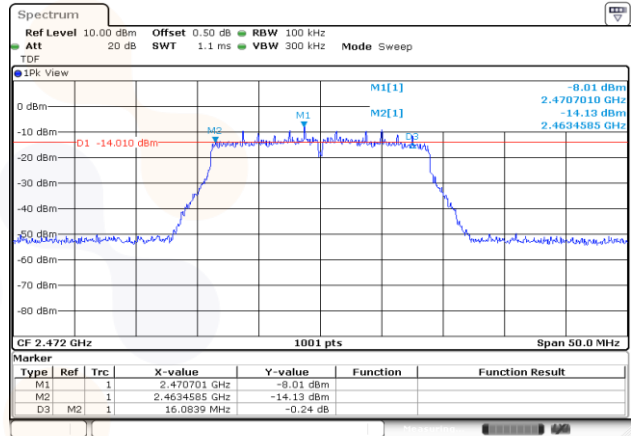
## 802.11n HT20 / 2 467 MHz



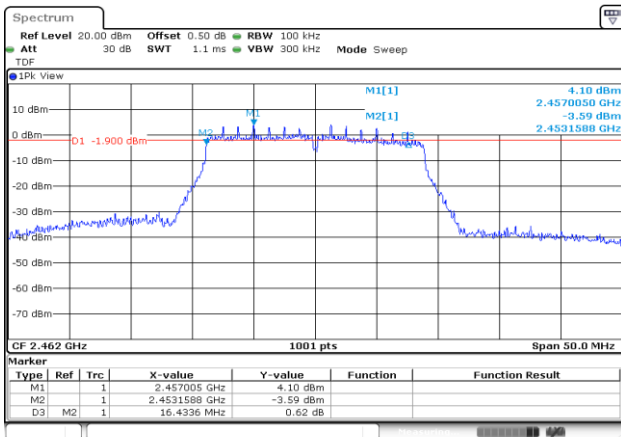
## 802.11n HT20 / 2 437 MHz



## 802.11n HT20 / 2 472 MHz



## 802.11n HT20 / 2 462 MHz



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# KCTL Inc.

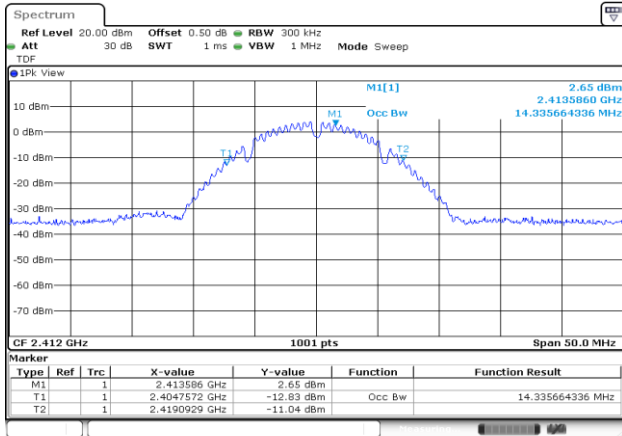
65, Sinwon-ro, Yeongtong-gu,  
Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
[www.kctl.co.kr](http://www.kctl.co.kr)

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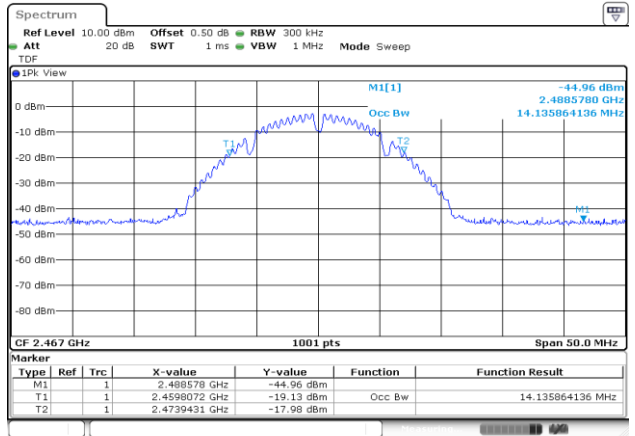


## 99% bandwidth

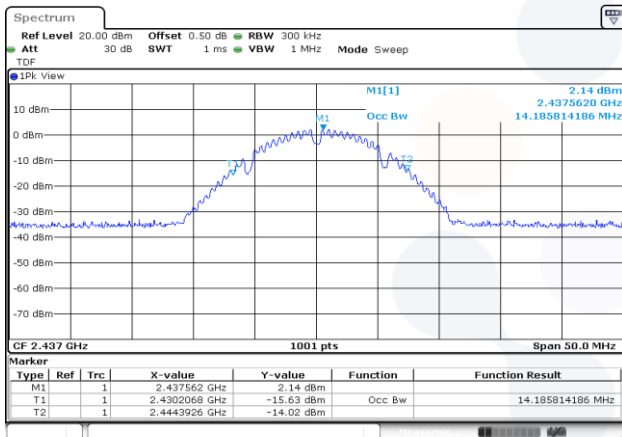
### 802.11b / 2 412 MHz



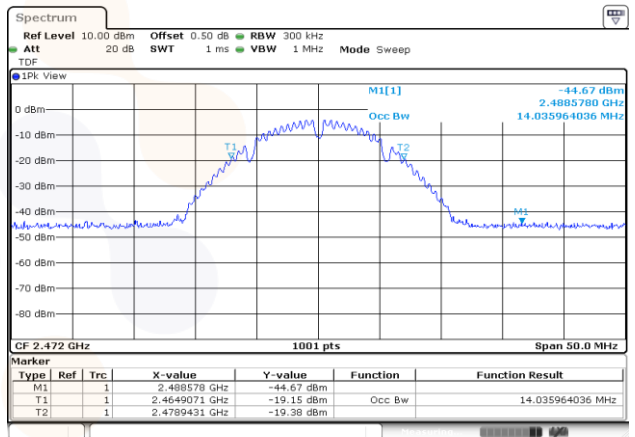
### 802.11b / 2 467 MHz



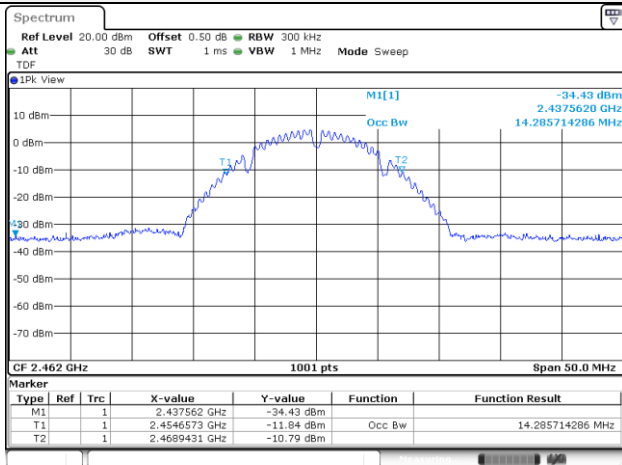
### 802.11b / 2 437 MHz



### 802.11b / 2 472 MHz



### 802.11b / 2 462 MHz



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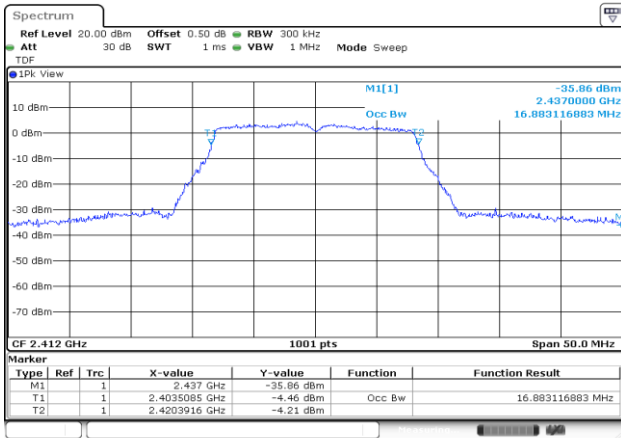
# KCTL Inc.

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Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
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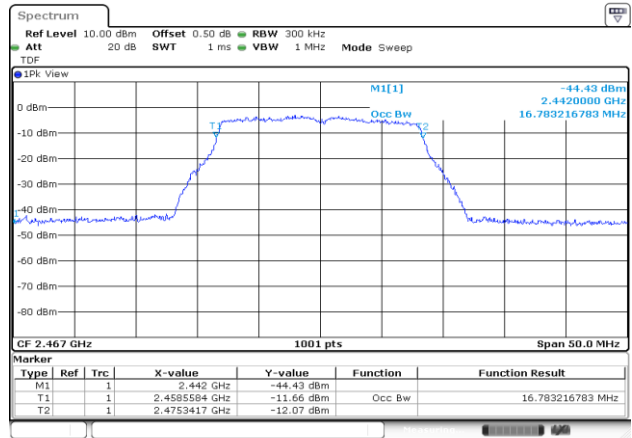
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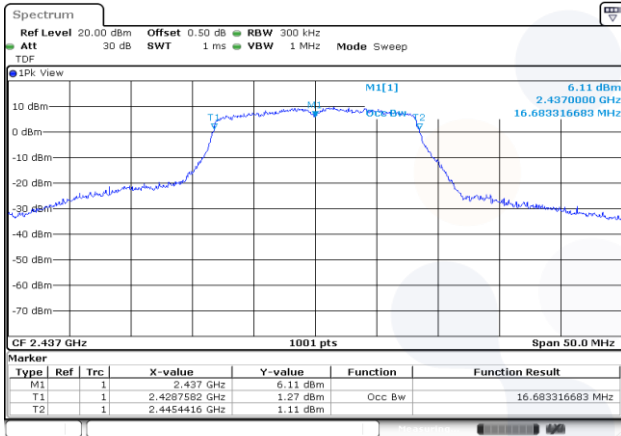
## 802.11g / 2 412 MHz



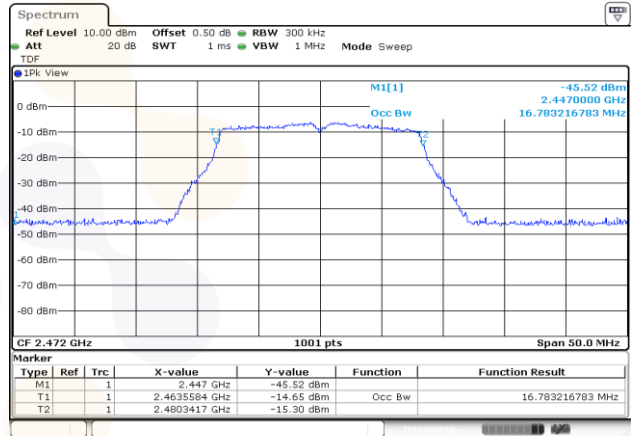
## 802.11g / 2 467 MHz



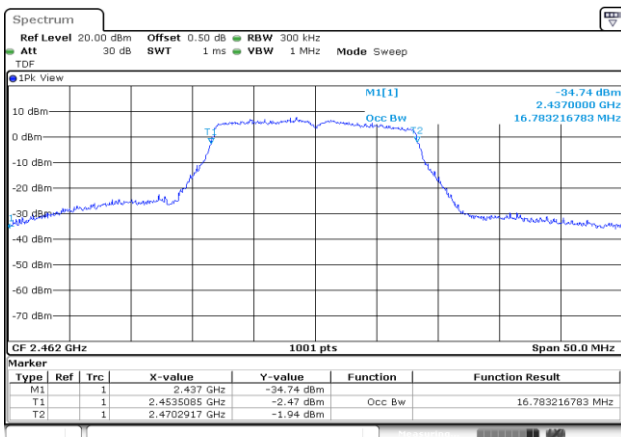
## 802.11g / 2 437 MHz



## 802.11g / 2 472 MHz



## 802.11g / 2 462 MHz



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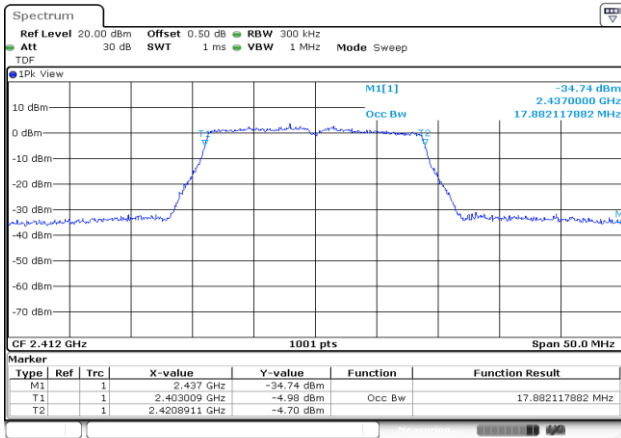
# KCTL Inc.

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Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
[www.kctl.co.kr](http://www.kctl.co.kr)

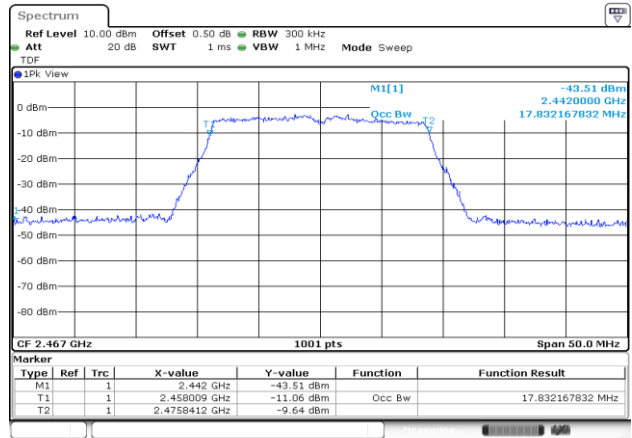
Report No.:  
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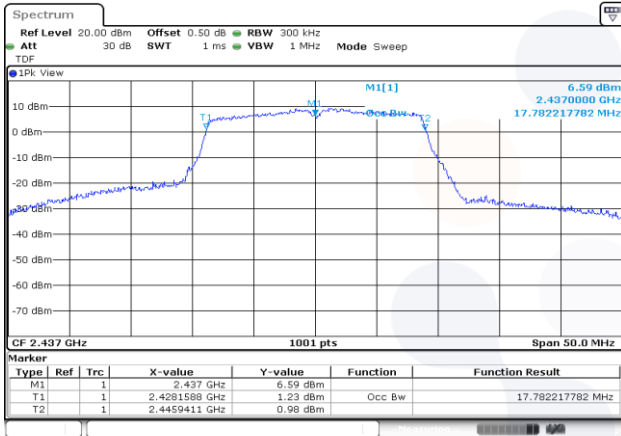
## 802.11n HT20 / 2 412 MHz



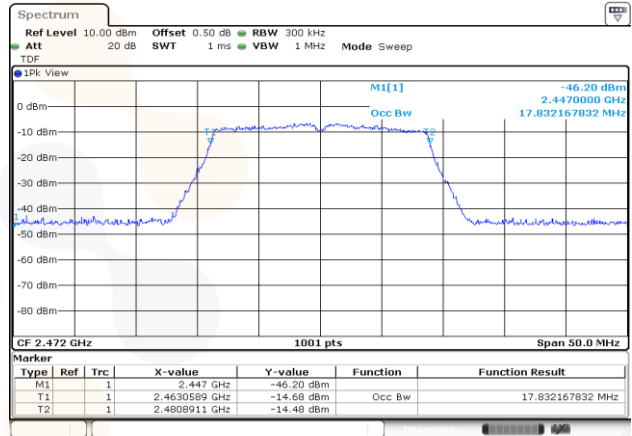
## 802.11n HT20 / 2 467 MHz



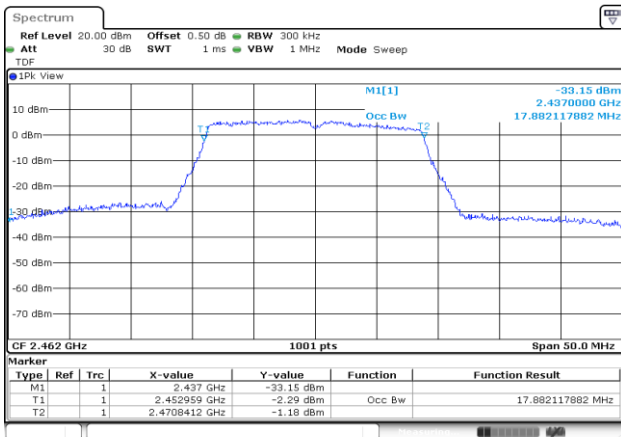
## 802.11n HT20 / 2 437 MHz



## 802.11n HT20 / 2 472 MHz



## 802.11n HT20 / 2 462 MHz



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# KCTL Inc.

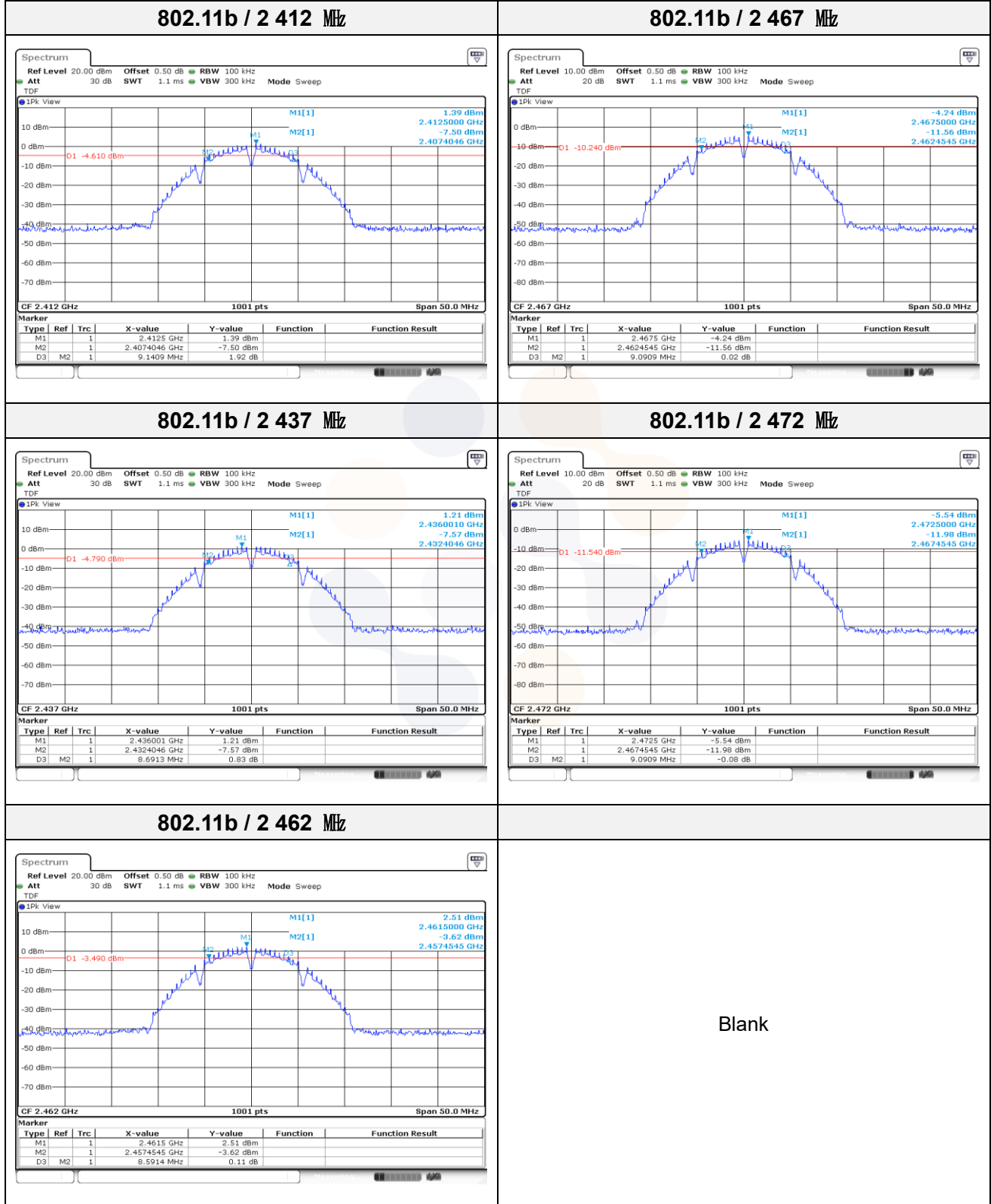
65, Sinwon-ro, Yeongtong-gu,  
Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
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## MIMO ANT 2

### 6 dB bandwidth



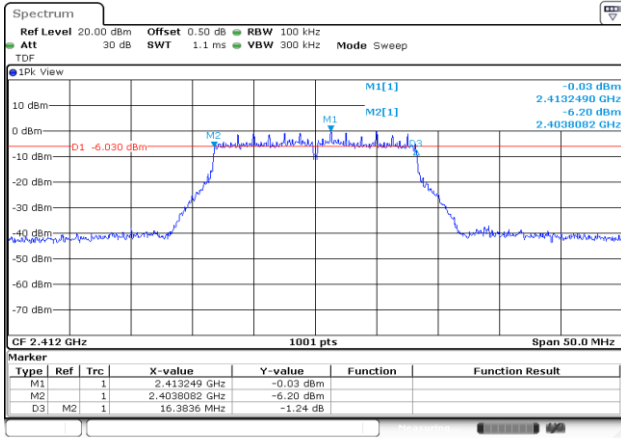
# KCTL Inc.

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Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
[www.kctl.co.kr](http://www.kctl.co.kr)

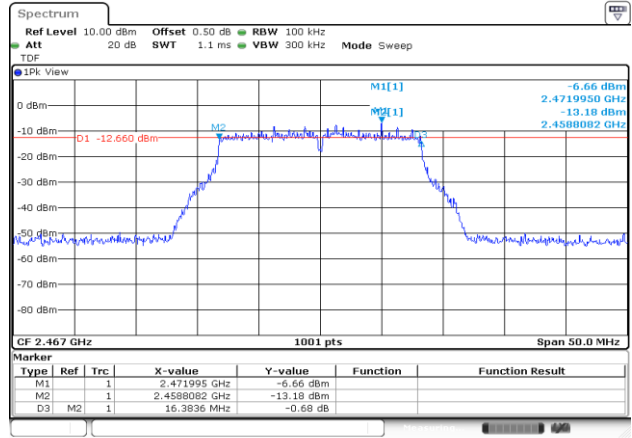
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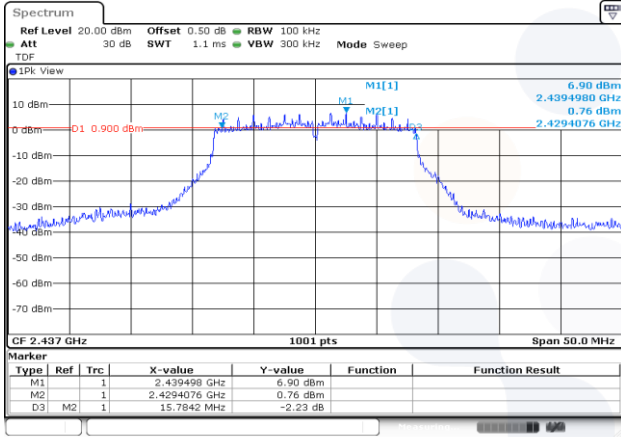
## 802.11g / 2 412 MHz



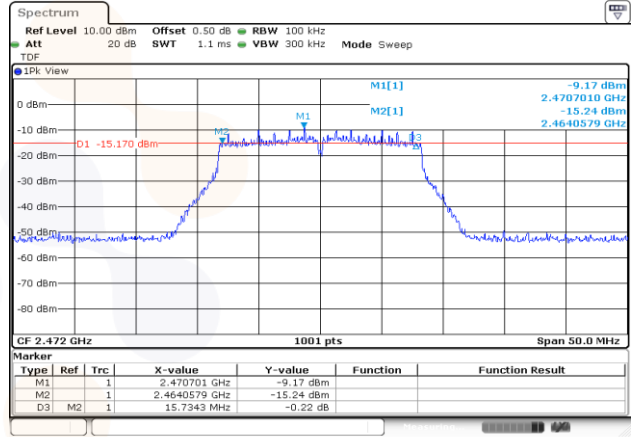
## 802.11g / 2 467 MHz



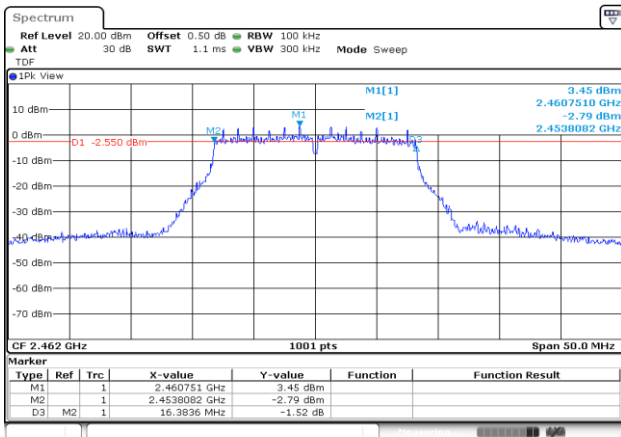
## 802.11g / 2 437 MHz



## 802.11g / 2 472 MHz



## 802.11g / 2 462 MHz



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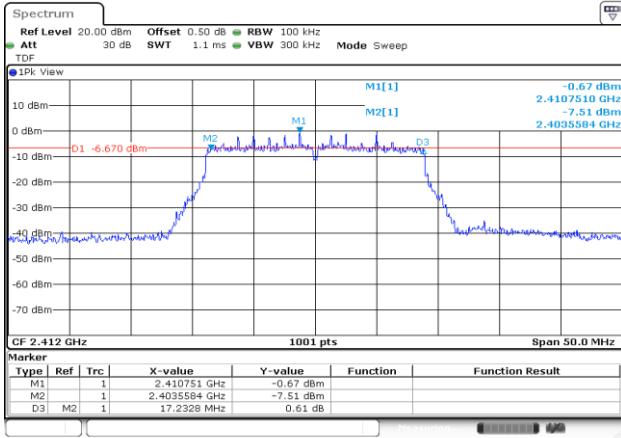
# KCTL Inc.

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Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
[www.kctl.co.kr](http://www.kctl.co.kr)

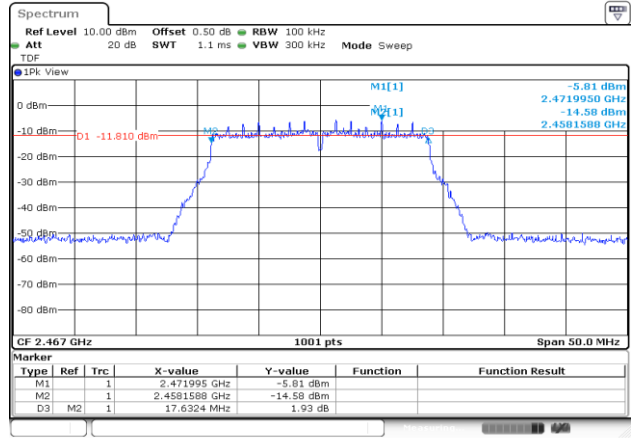
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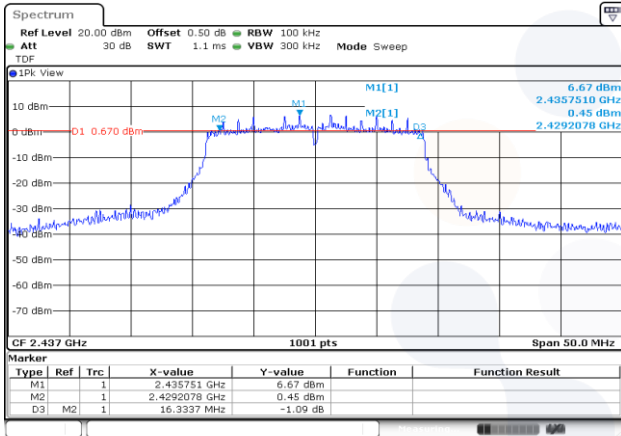
## 802.11n HT20 / 2 412 MHz



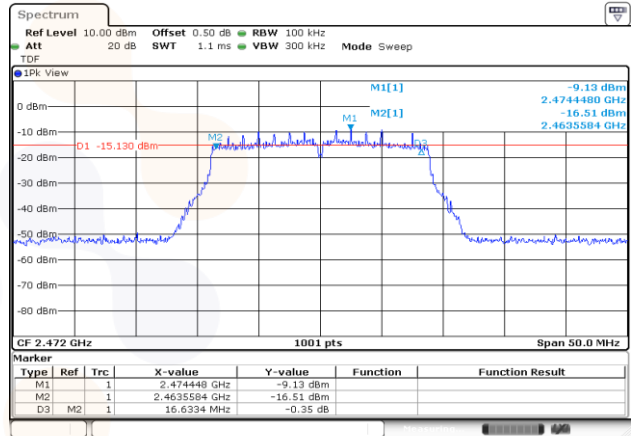
## 802.11n HT20 / 2 467 MHz



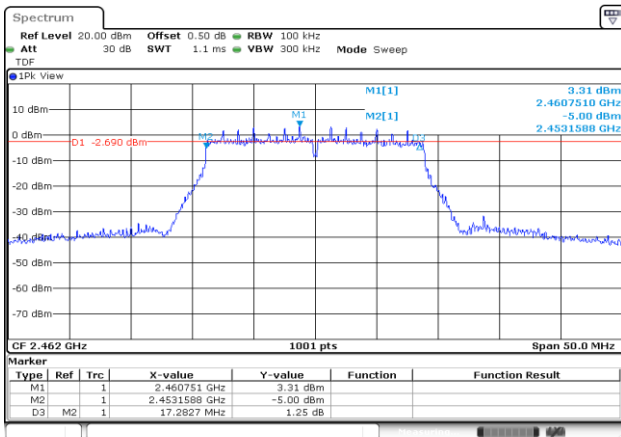
## 802.11n HT20 / 2 437 MHz



## 802.11n HT20 / 2 472 MHz



## 802.11n HT20 / 2 462 MHz



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# KCTL Inc.

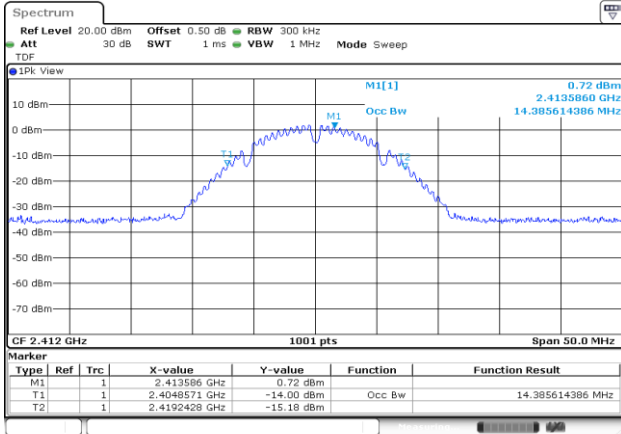
65, Sinwon-ro, Yeongtong-gu,  
Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
[www.kctl.co.kr](http://www.kctl.co.kr)

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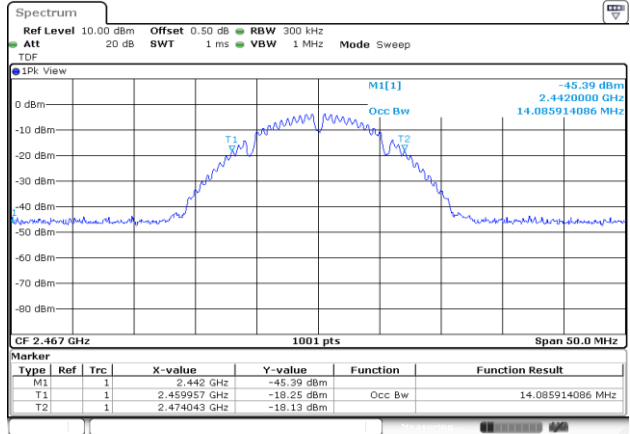


## 99% bandwidth

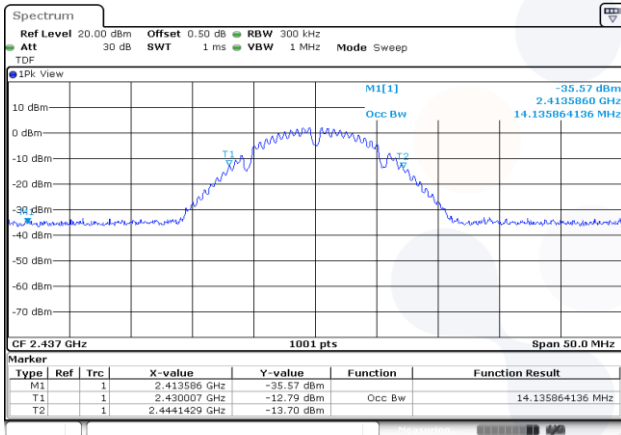
### 802.11b / 2 412 MHz



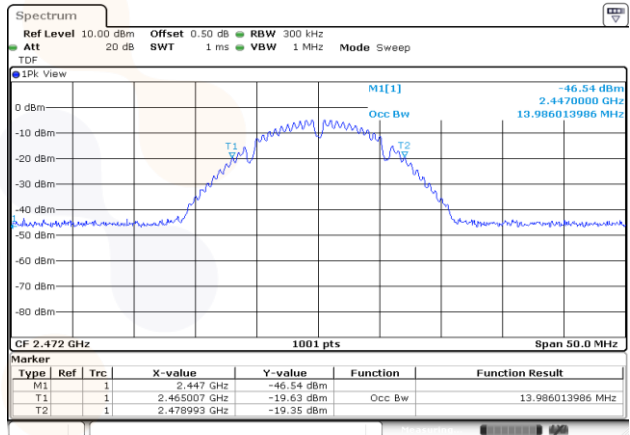
### 802.11b / 2 467 MHz



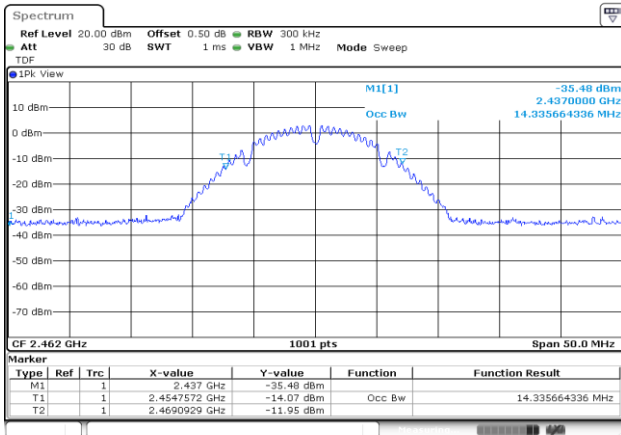
### 802.11b / 2 437 MHz



### 802.11b / 2 472 MHz



### 802.11b / 2 462 MHz



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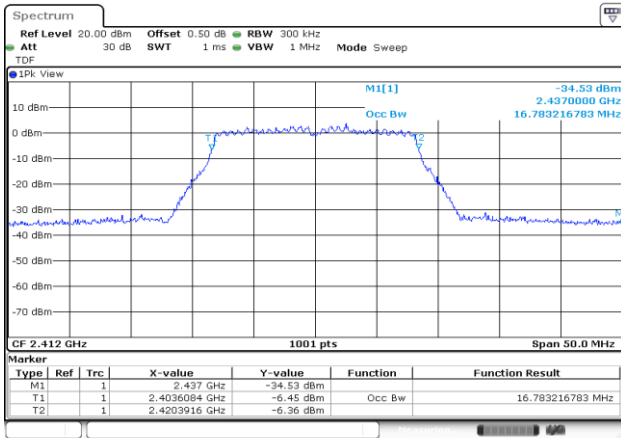
# KCTL Inc.

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Suwon-si, Gyeonggi-do, 16677, Korea  
TEL: 82-31-285-0894 FAX: 82-505-299-8311  
[www.kctl.co.kr](http://www.kctl.co.kr)

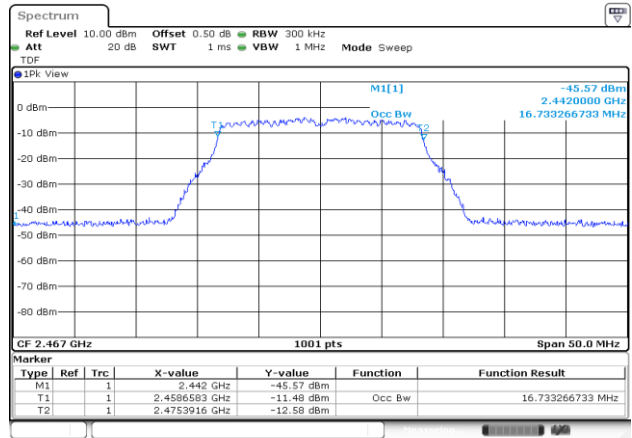
Report No.:  
KR22-SRF0060-A  
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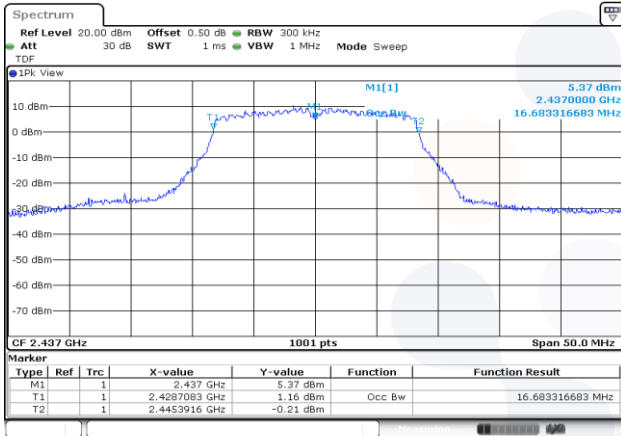
## 802.11g / 2 412 MHz



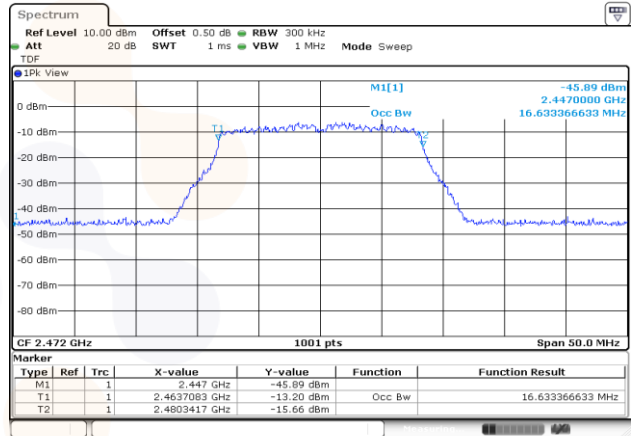
## 802.11g / 2 467 MHz



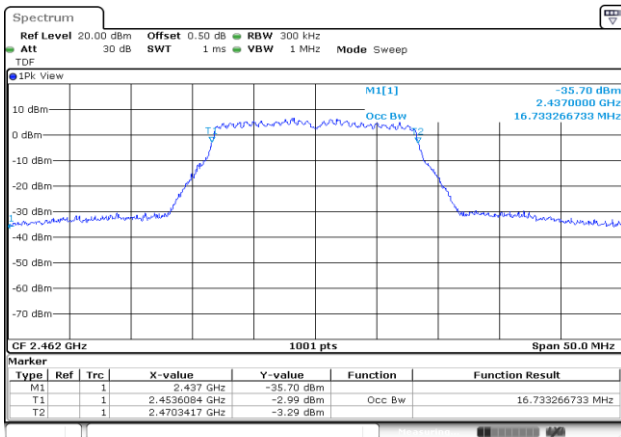
## 802.11g / 2 437 MHz



## 802.11g / 2 472 MHz



## 802.11g / 2 462 MHz



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