

Experiment 4:

Power Measurement with Spectrum Analyzer

포항공과대학교 전자전기공학과
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Outline

1. Review
2. Today's experiment
3. About report

Outline

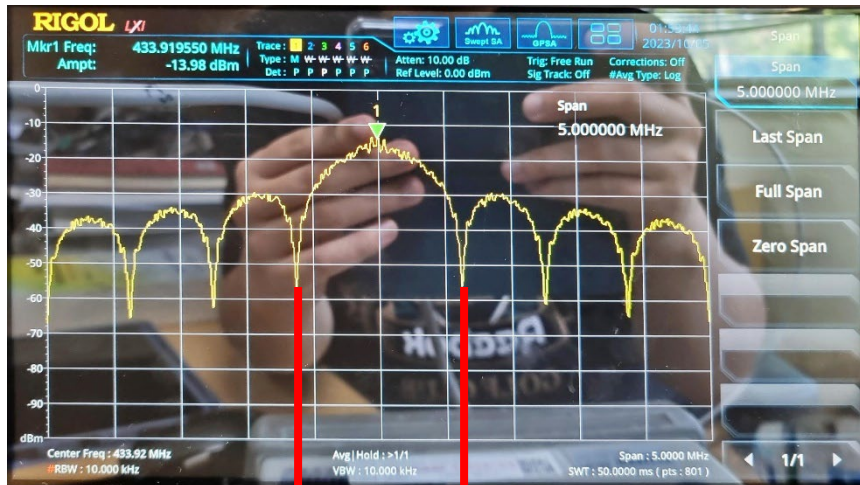
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Review

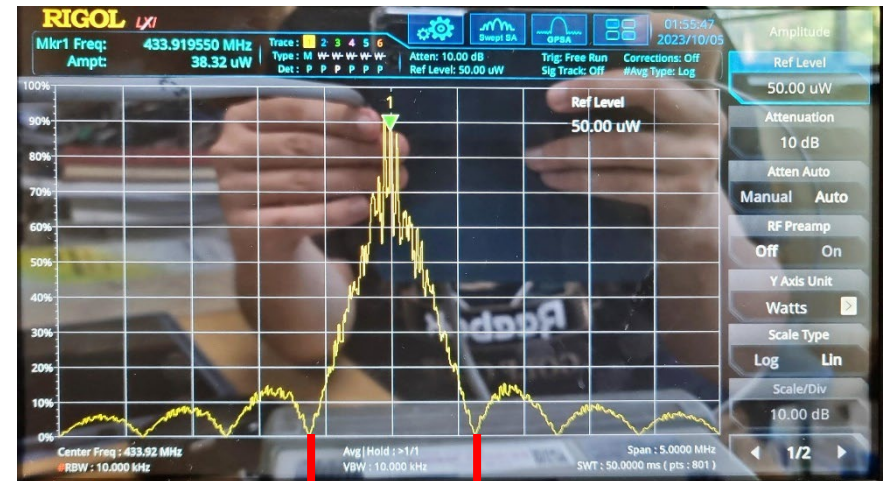
- Experiment 3 : Spectrum Analyzer
 - Square wave와 SRRC pulse shaping한 신호를 spectrum analyzer로 본 결과
 - Frequency range, resolution BW, video BW
 - Pulse shaping filter 종류, roll-off factor, Chip rate
 - 이론적인 frequency response와의 비교

Review

- 결과 예시 (square wave, chip rate = 12.5 kHz)



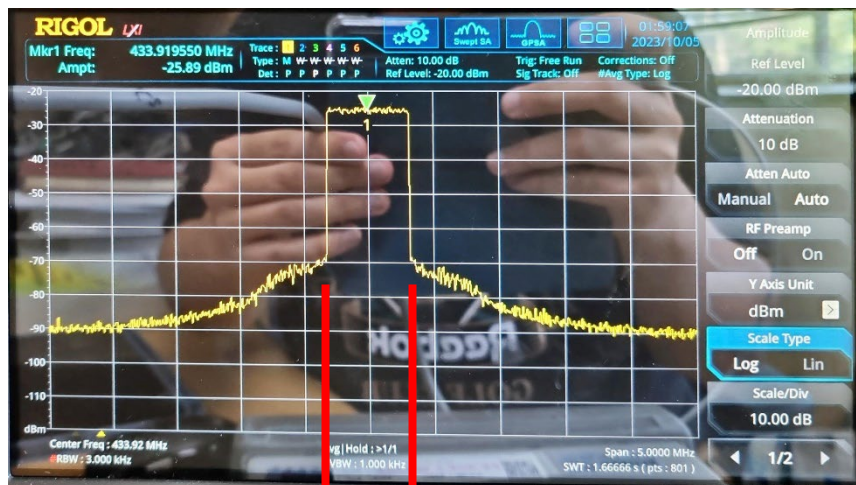
12.5 kHz



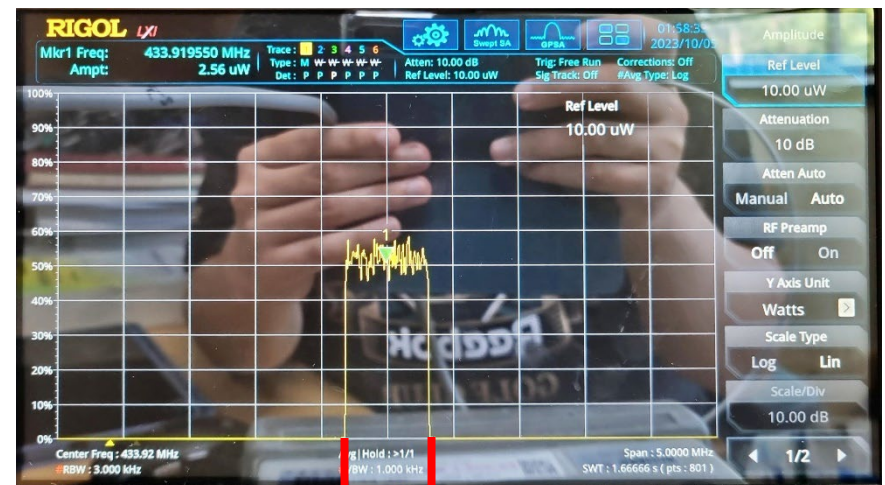
12.5 kHz

Review

- 결과 예시 (SRRC, roll-off factor = 0, chip rate = 625 kHz)



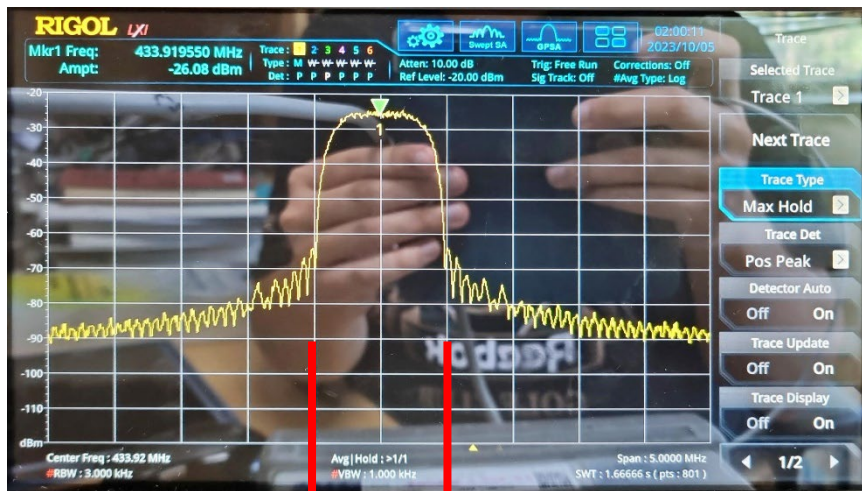
625 kHz



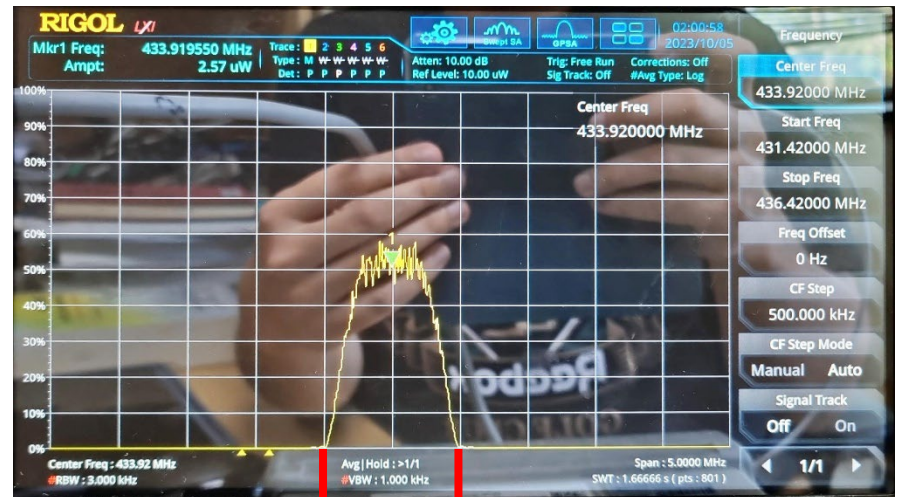
625 kHz

Review

- 결과 예시 (SRRC, roll-off factor = 0.5, chip rate = 980 kHz)



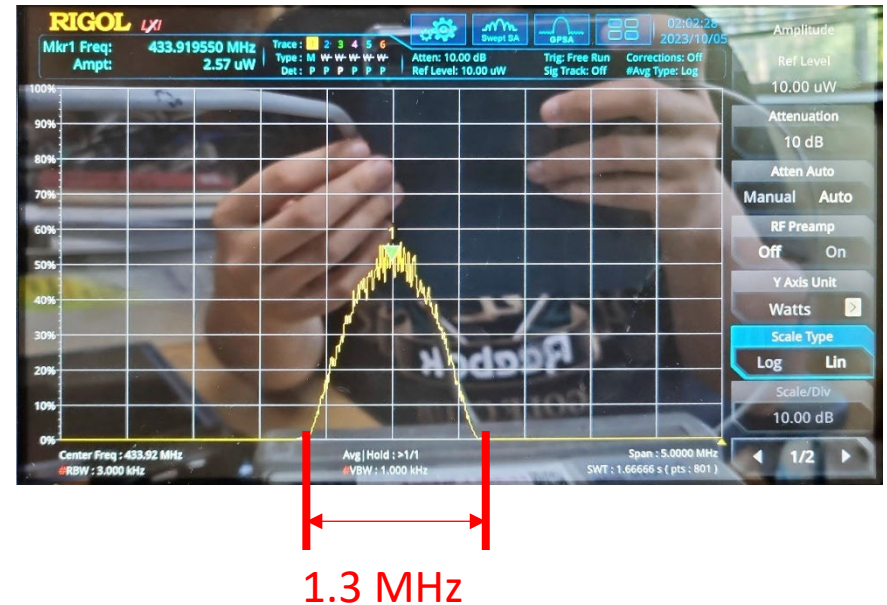
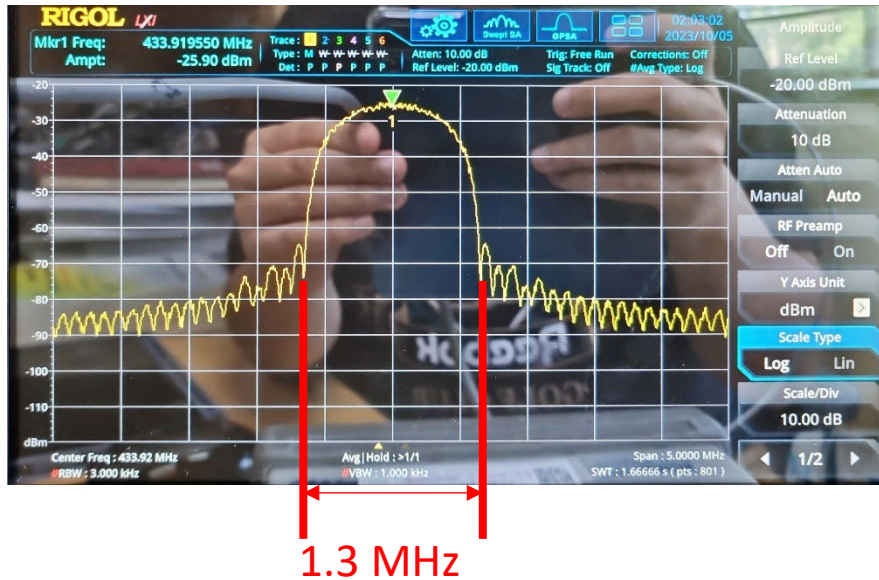
980 kHz



980 kHz

Review

- 결과 예시 (SRRC, roll-off factor = 1, chip rate = 1.3 MHz)

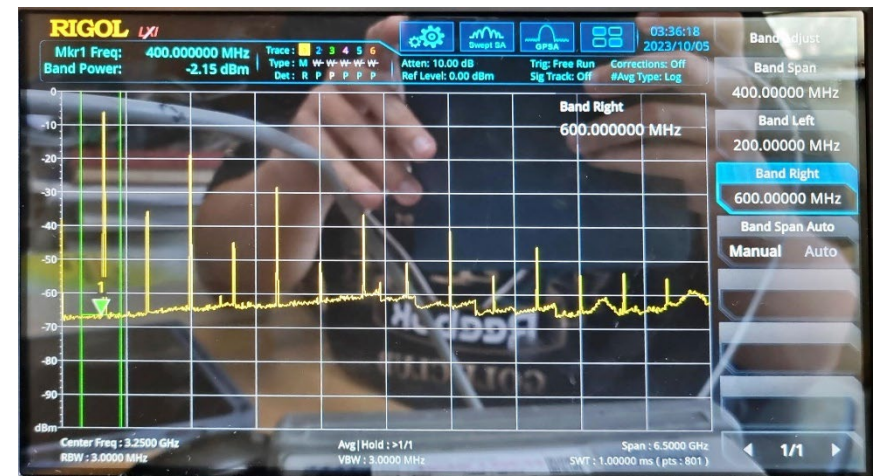


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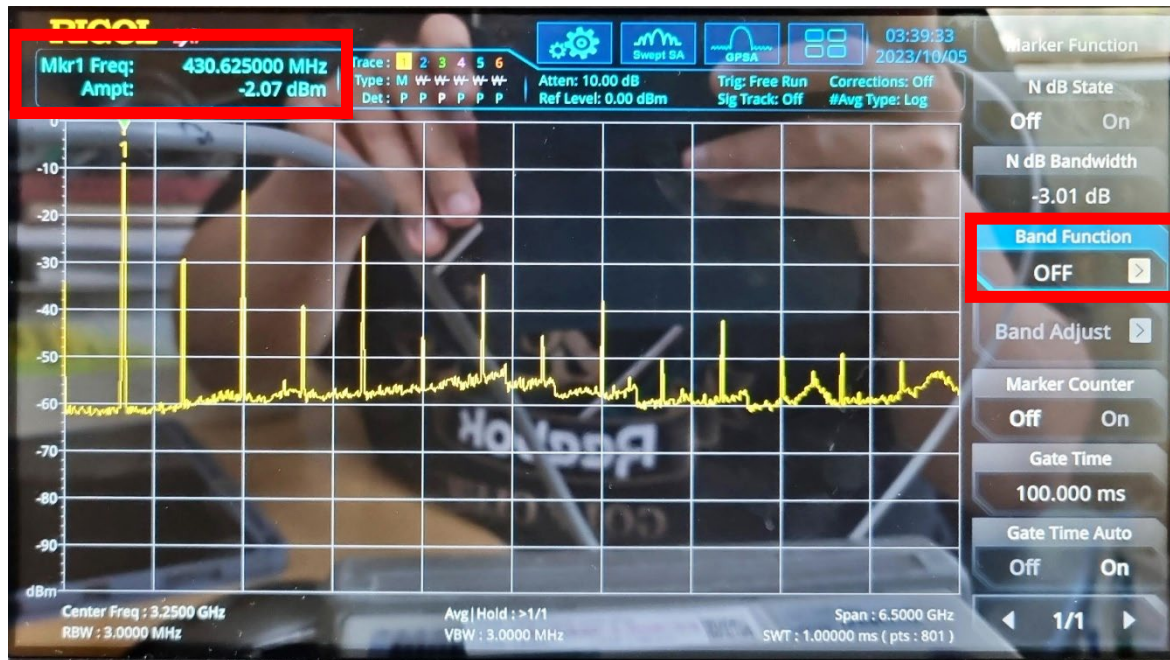
Today's experiment

- Spectrum Analyzer로 power 측정하기
 - Power meter : entire frequency range
 - Spectrum analyzer : 특정 frequency range
 - Range, RBW, VBW에 따라 power가 다를 수 있다.



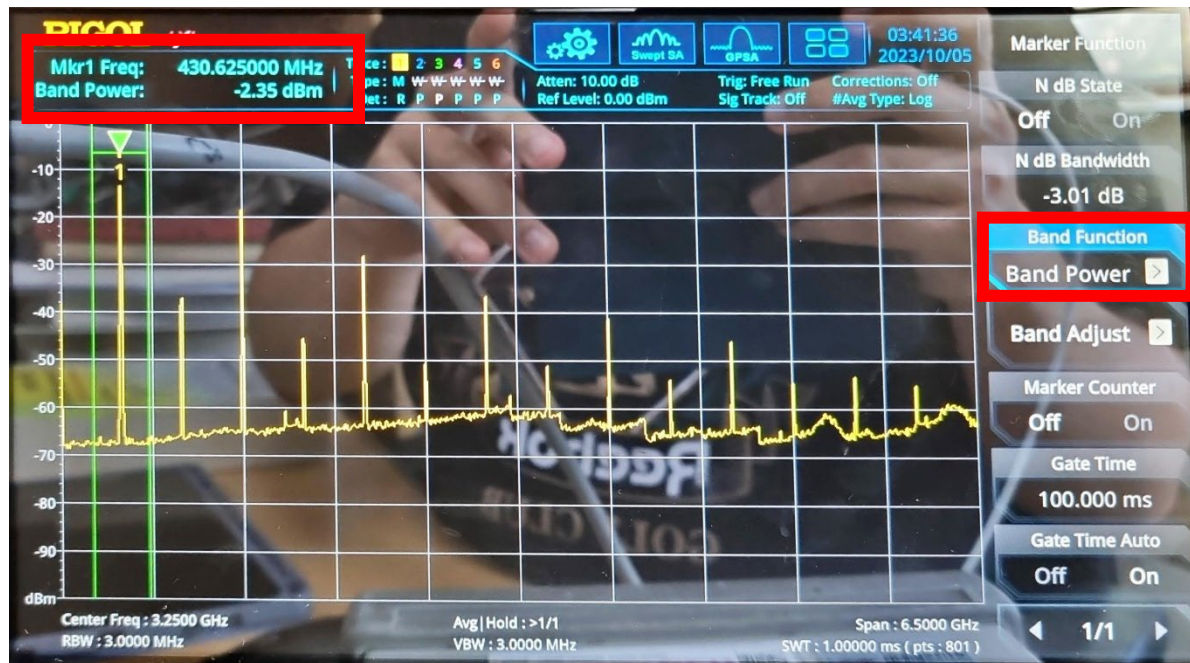
Spectrum Analyzer

- Marker의 사용
 - Marker Func -> Band Function -> OFF
 - 그래프의 y-axis 값을 읽는다.



Spectrum Analyzer

- Marker의 사용
 - Marker Func -> Band Function -> Band Power
 - 지정한 frequency range에서의 power

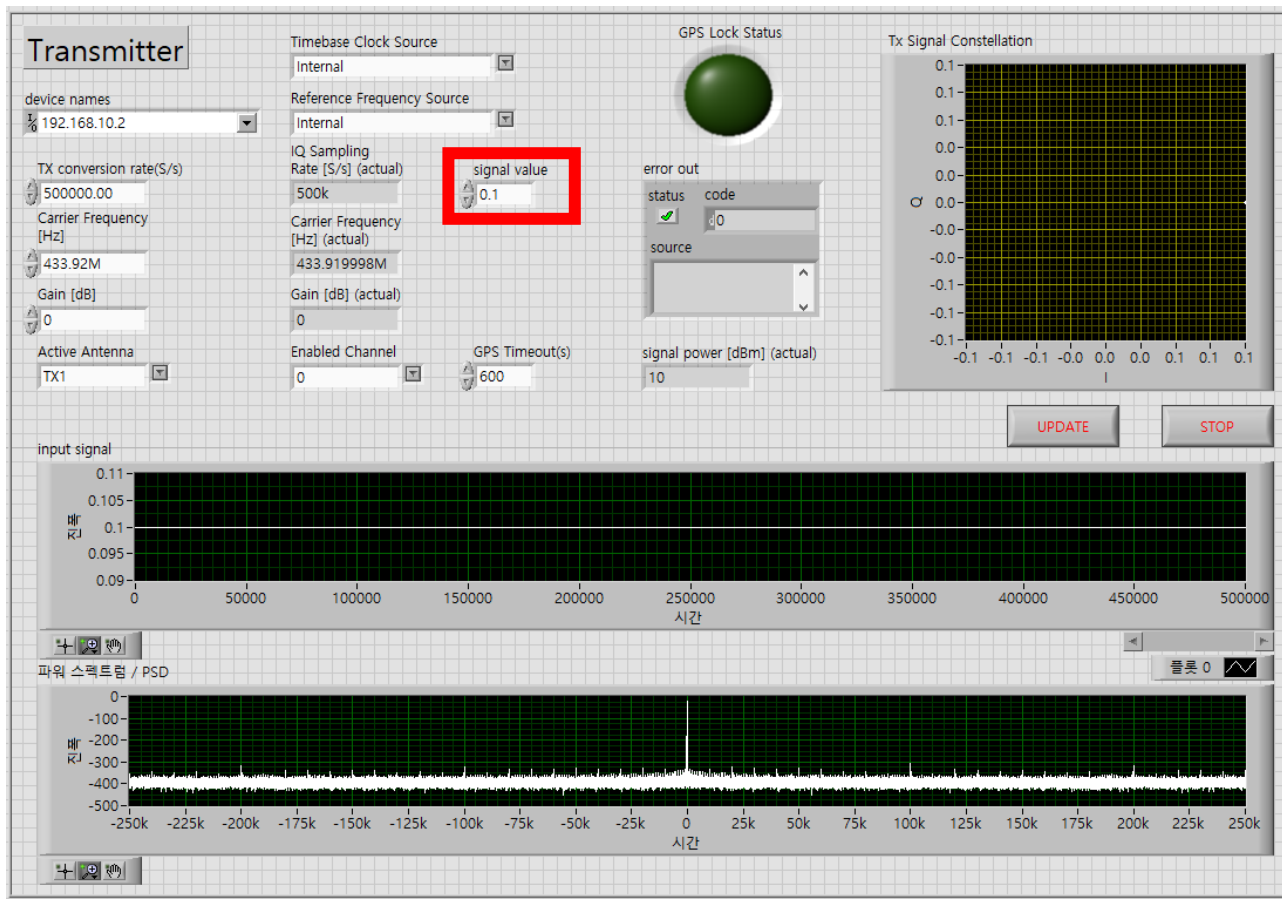


Today's experiment

- USRP를 송신 mode로 사용.
- Power meter vs Spectrum Analyzer
 - Power meter와 Spectrum Analyzer로 측정한 power 비교
 - 차이가 난다면 그 이유는?
 - VGA gain : 0 ~ 30 dB
- Power vs RBW, VBW?
 - SRRC filter로 성형된 신호 송신
 - RBW, VBW 바꾸면서 그래프에 미치는 영향 분석.
 - 해당 range의 power 계산 및 측정 결과와 비교
 - Tone signal 송신
 - RBW, VBW 바꾸면서 그래프에 미치는 영향 분석.
 - 해당 range의 power 계산 및 측정 결과와 비교

Today's experiment

- Tone signal 송신 code



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About report

- Due: 2024. 10. 07 (월) 오후 4:59
- Must be included :
 - Power meter와 Spectrum Analyzer로 power 측정 결과 비교
 - SRRC filter로 성형된 신호의 그래프에 RBW, VBW 가 미치는 영향과 power 계산 및 비교 결과
 - Tone signal의 그래프에 RBW, VBW 가 미치는 영향과 power 계산 및 비교 결과
- jhchoi0226@postech.ac.kr로 제출