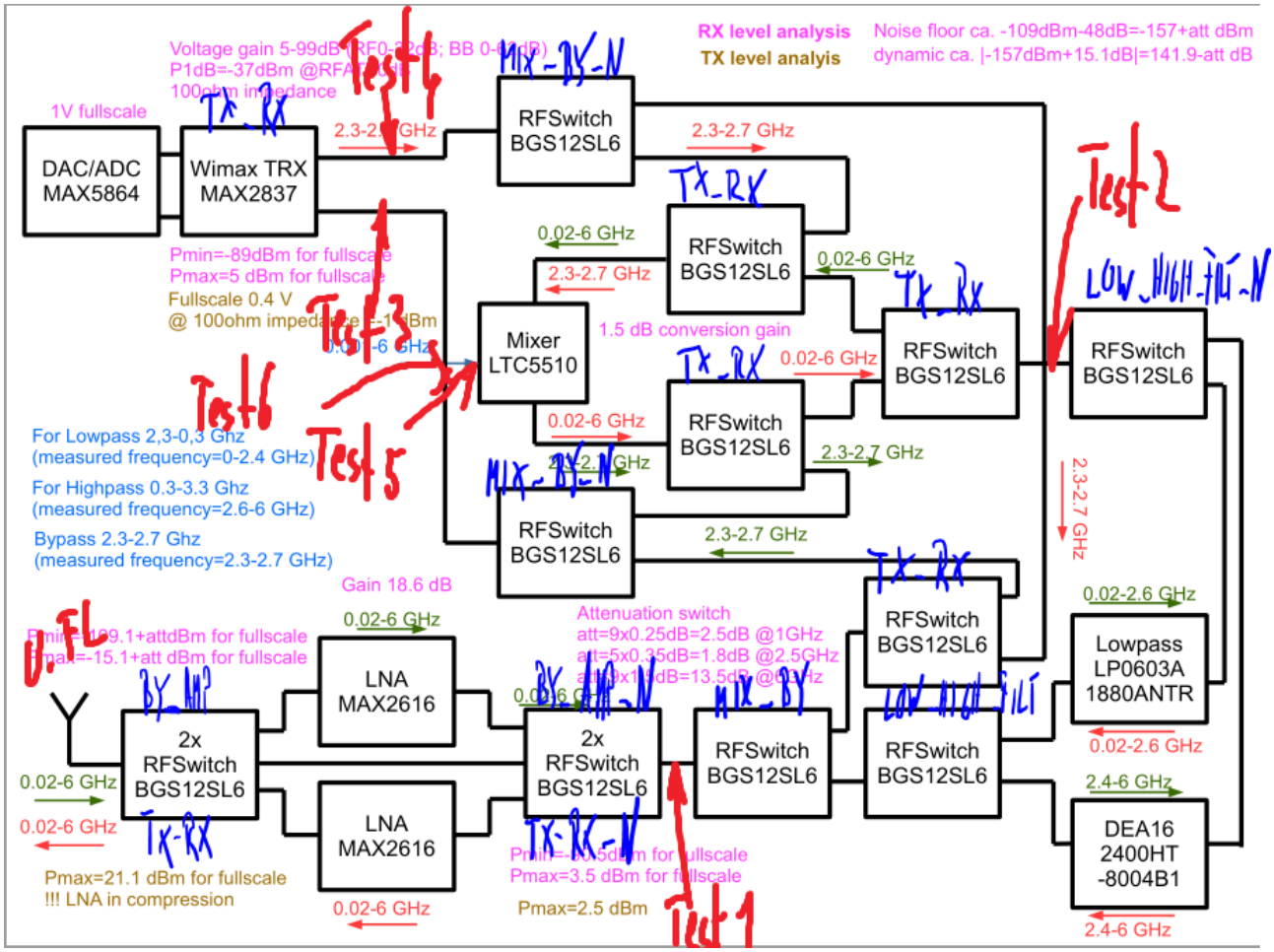
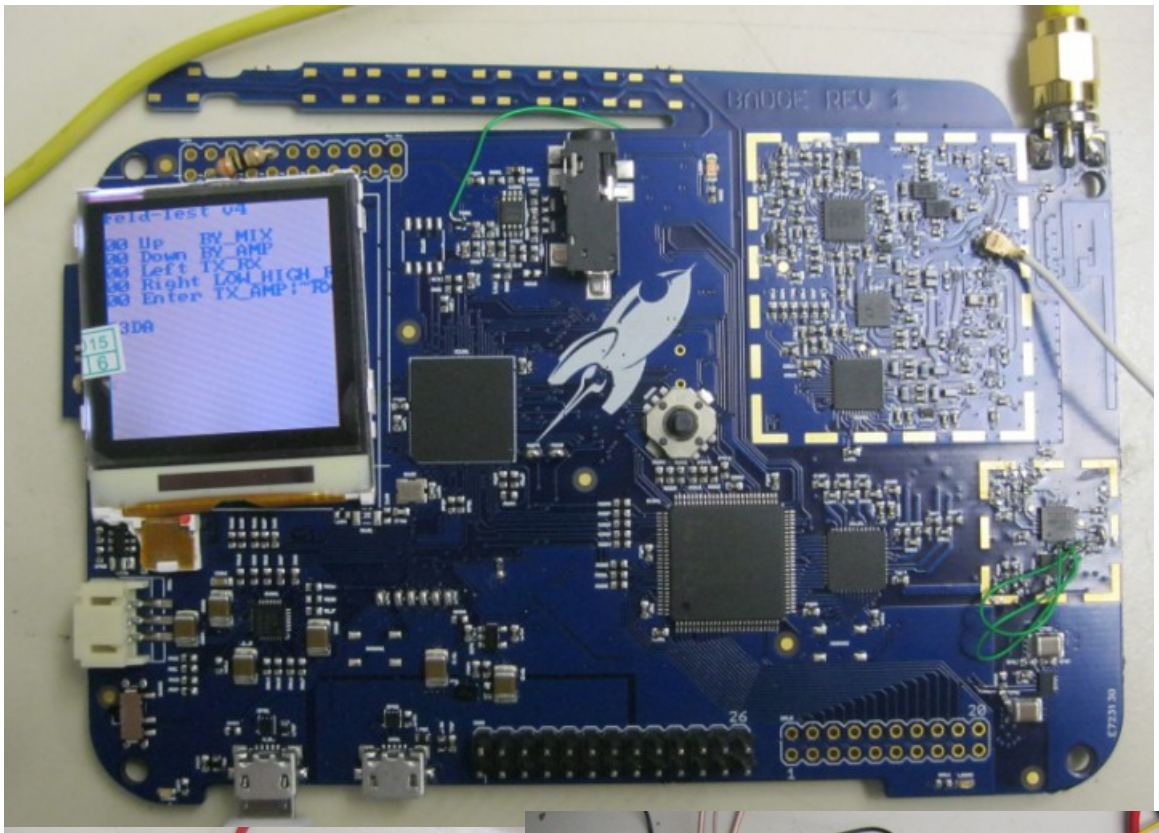
Testplan Badge

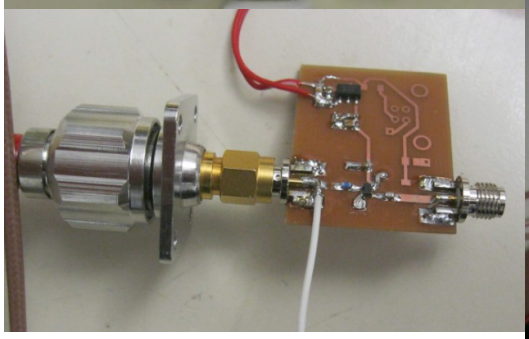
BY_AMP	P1_7
BY_AMP_N	P2_5
TX_AMP	P5_6
RX_LNA	P6_7
TX_RX	P2_10
TX_RX_N	P2_11
BY_MIX	P2_12
LOW_HIGH_FILT	P5_2
LOW_HIGH_FILT_N	P5_3

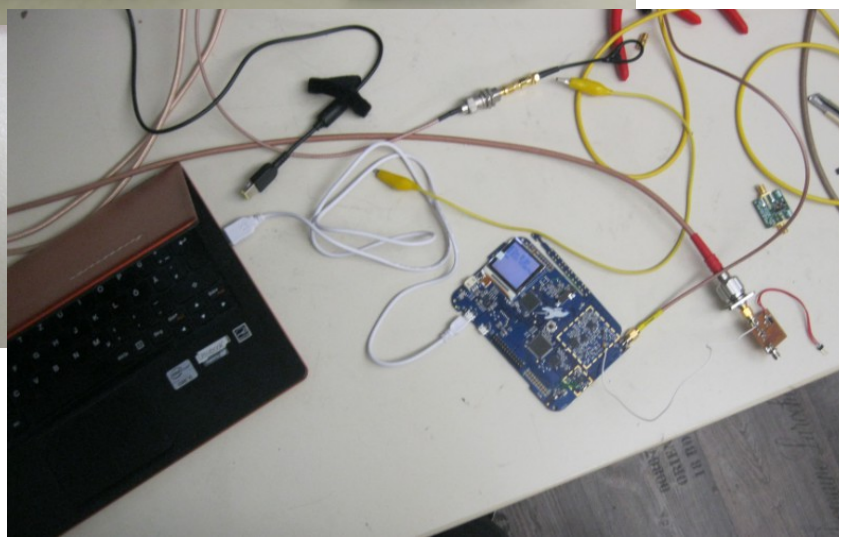


1. **LNA-Path**

1.1 Overview

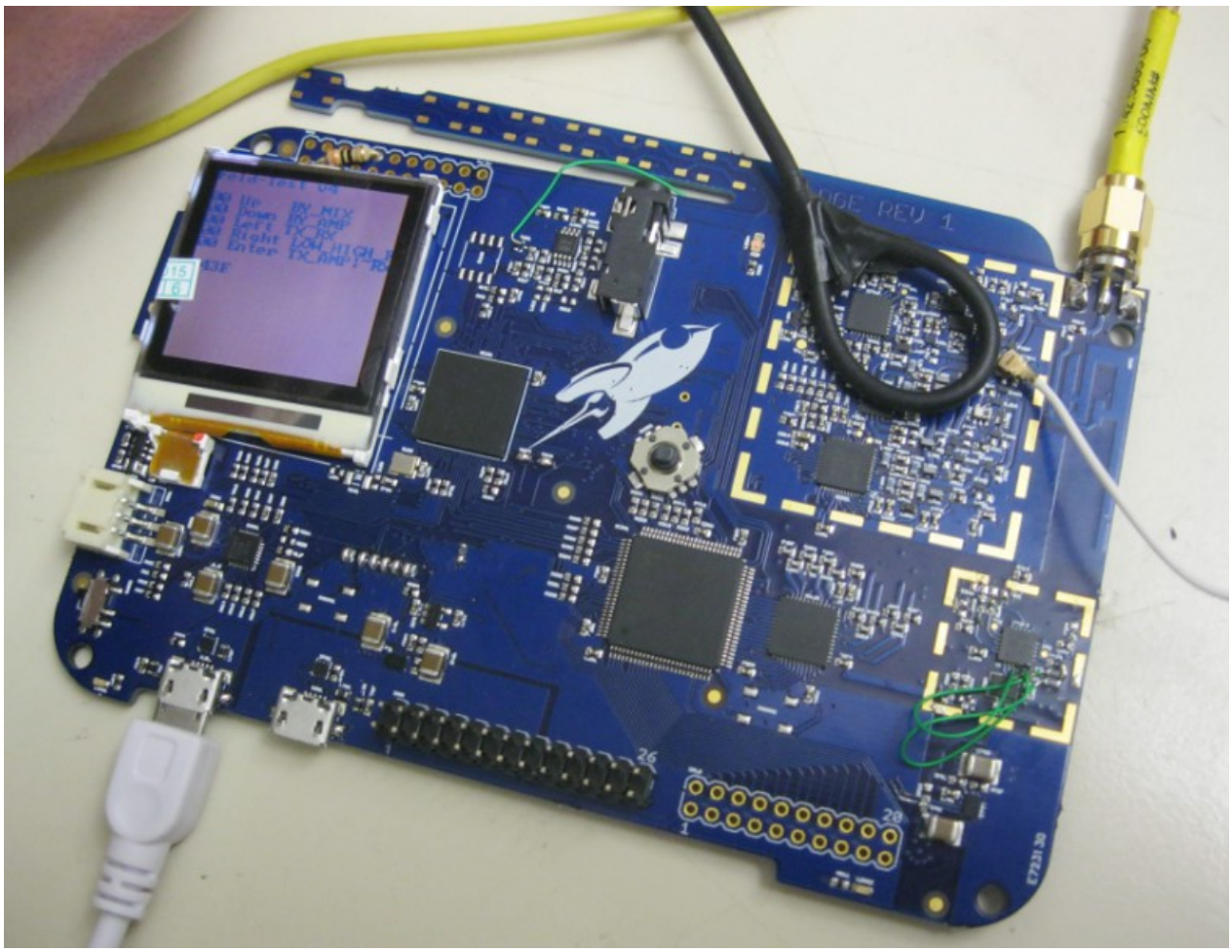


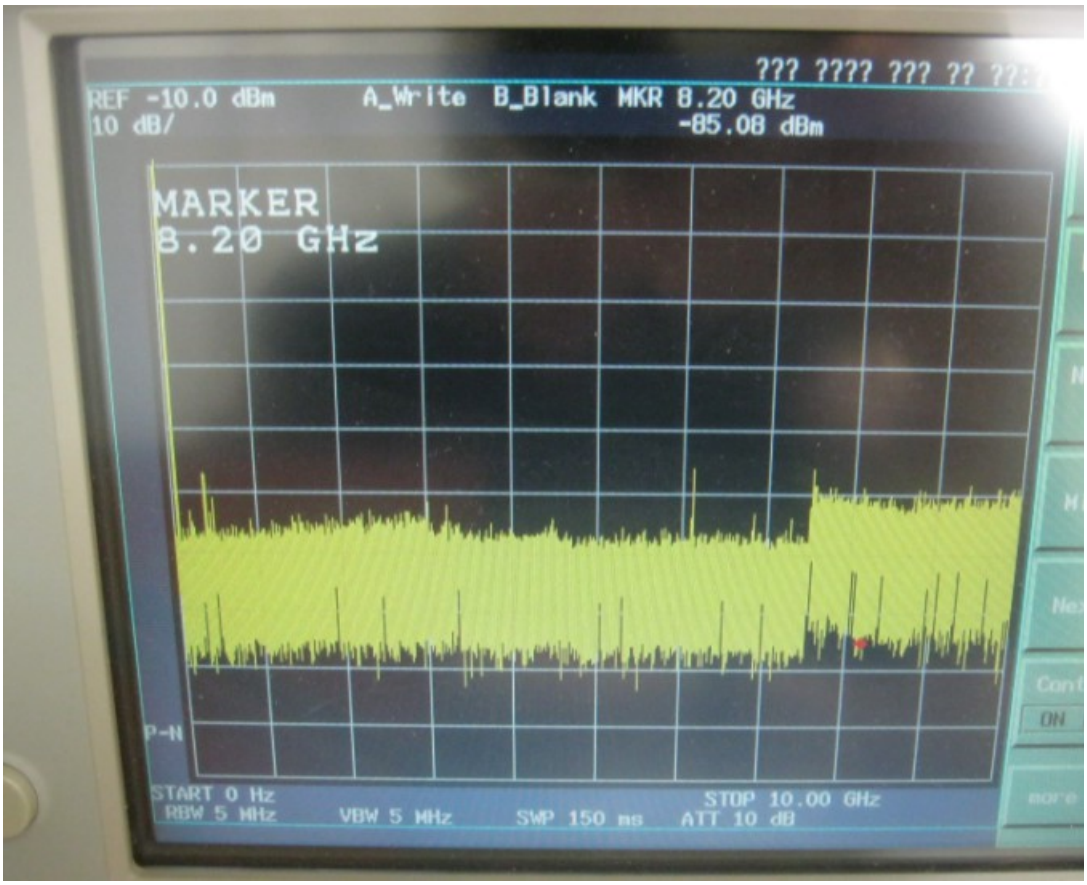




1.2 Emission of the RF-Path

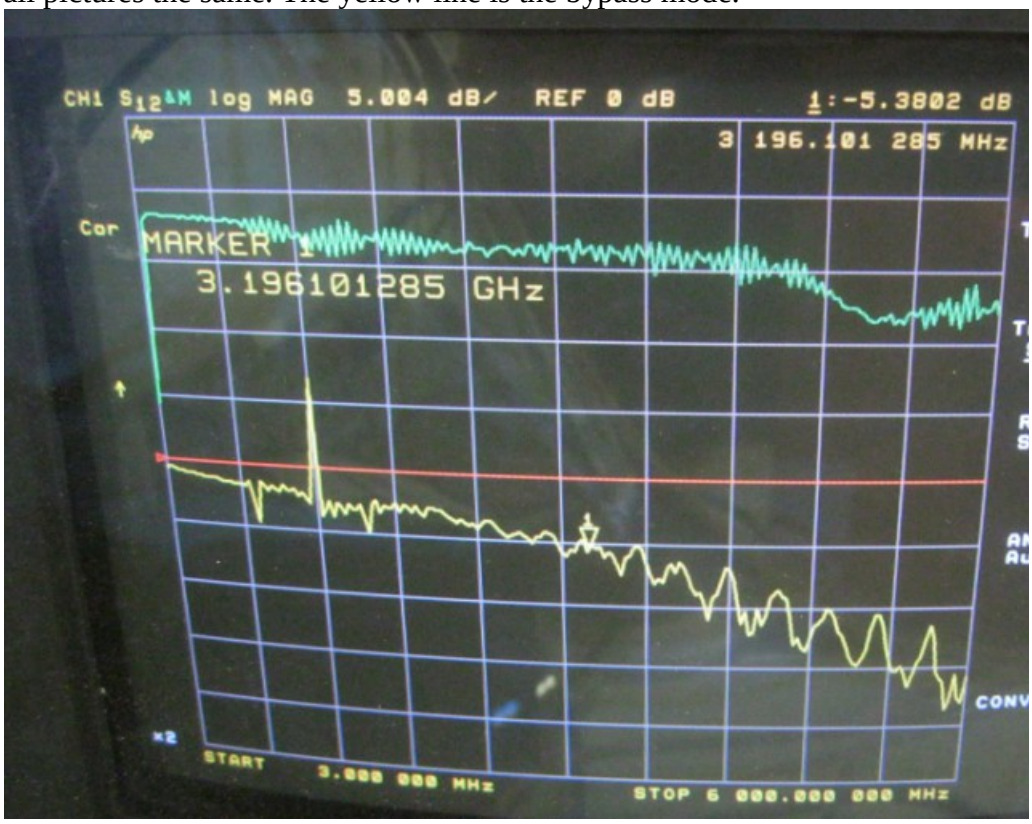
A RF-Sniffer was built to see if there is any emission during to oscillating of the amplifiers. At the beginning both amplifiers (LNA and Transmitting AMP) was set to run. Because of the feedback a oscillation at about 6.5 GHz started. But when only one amplifier is on everything is all right. The next two pictures show the measurement of the complete frequency band.



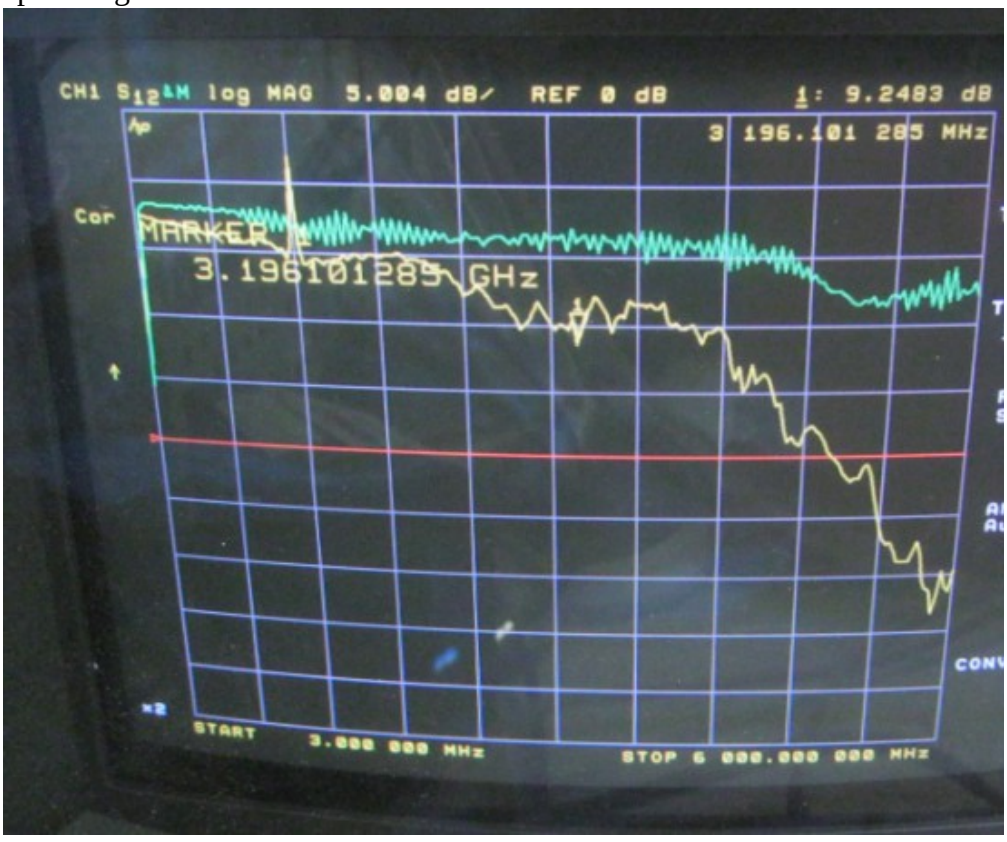

REF -10.0 dBm
10 dB/
A_Write B_Blank MKR 8.20 GHz
-85.08 dBm
MARKER
8.20 GHz
START 0 Hz
RBW 5 MHz
VBW 5 MHz
SWP 150 ms
STOP 10.00 GHz
ATT 10 dB

1.3 Transmision and amplification

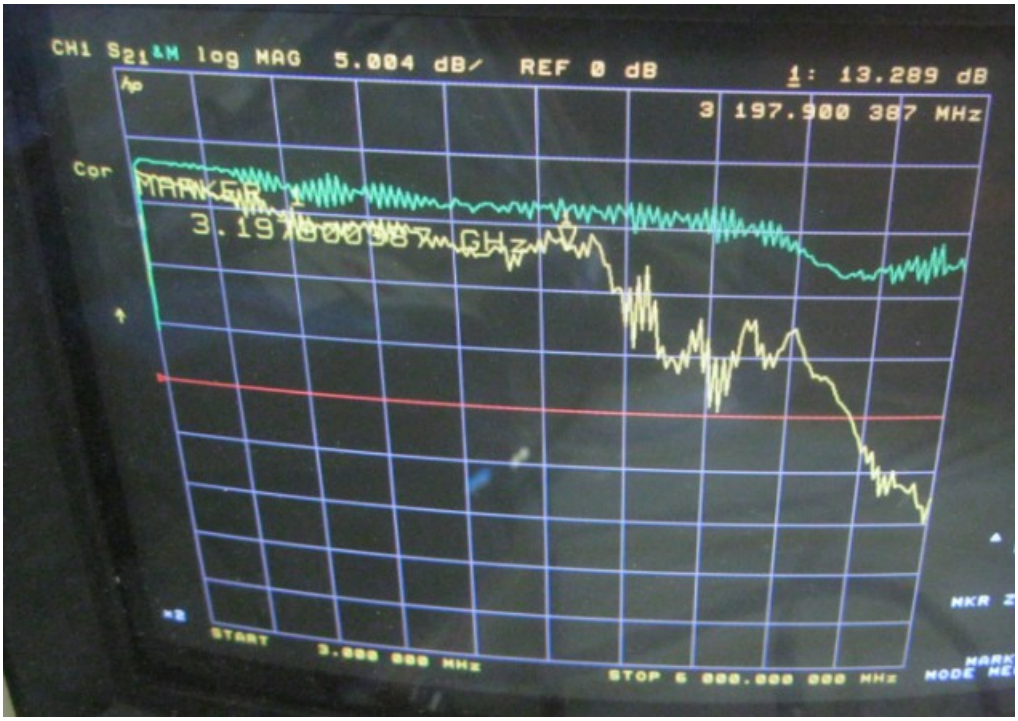
The next picture shows the transmission in the bypass mode. The calibration was done with the N-Calkit. The cables to the UFL-Connector and the SMA is not in the calibration. Therefore this attenuation is also in the measurement. The green line is the evaluation board of the amplifier which will be in all pictures the same. The yellow line is the bypass mode.



The next picture gives the LNA-curve curve.

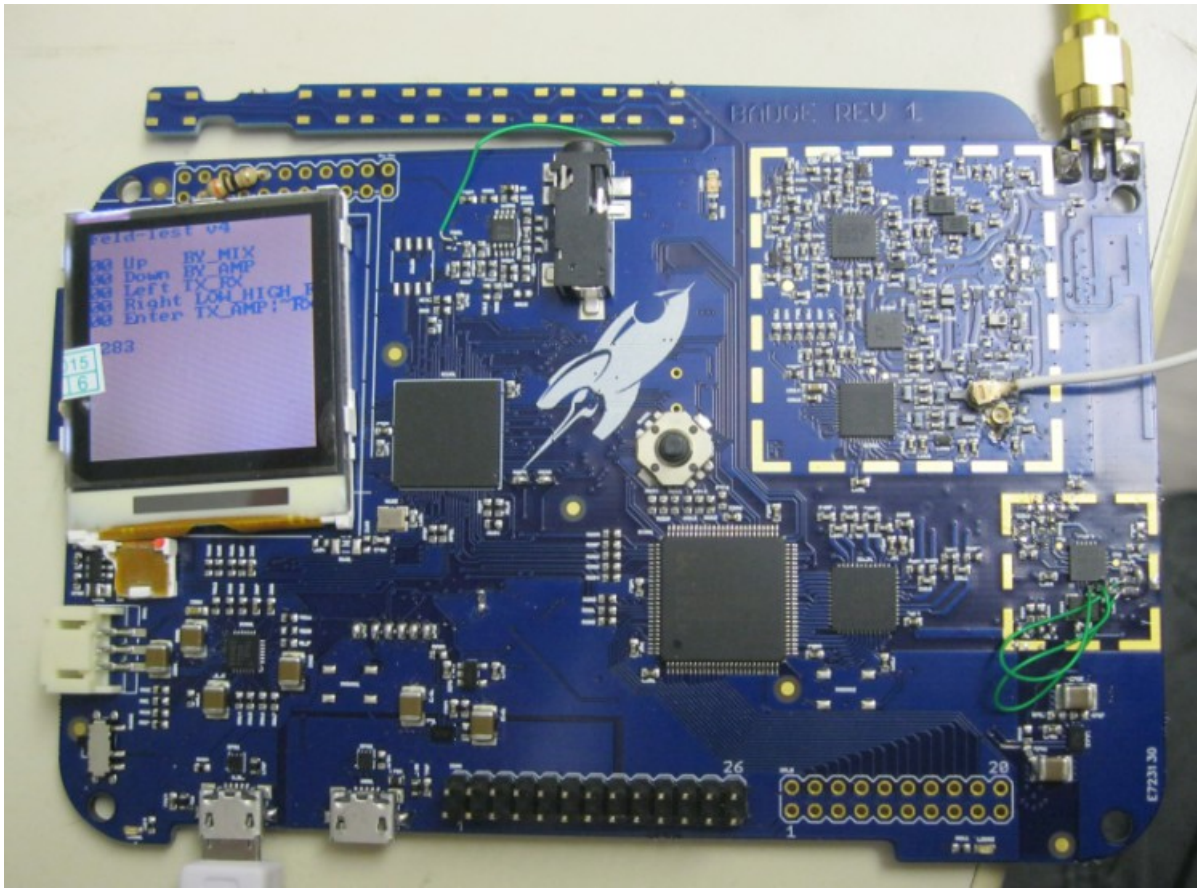


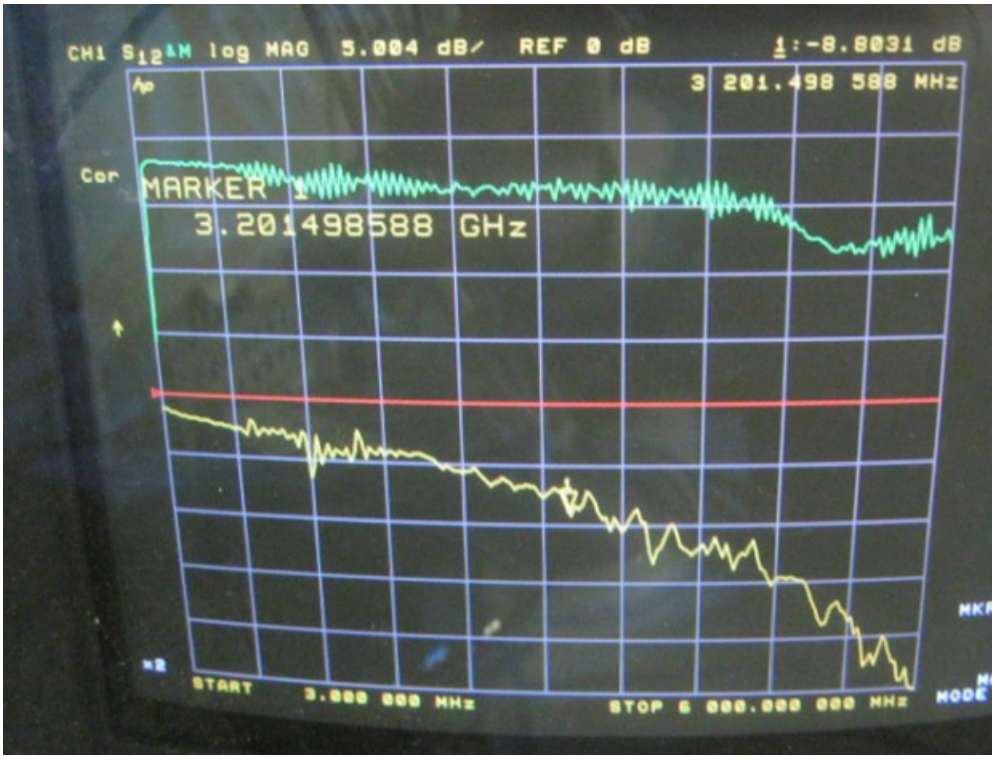
The next picture shows the TX-amplifier



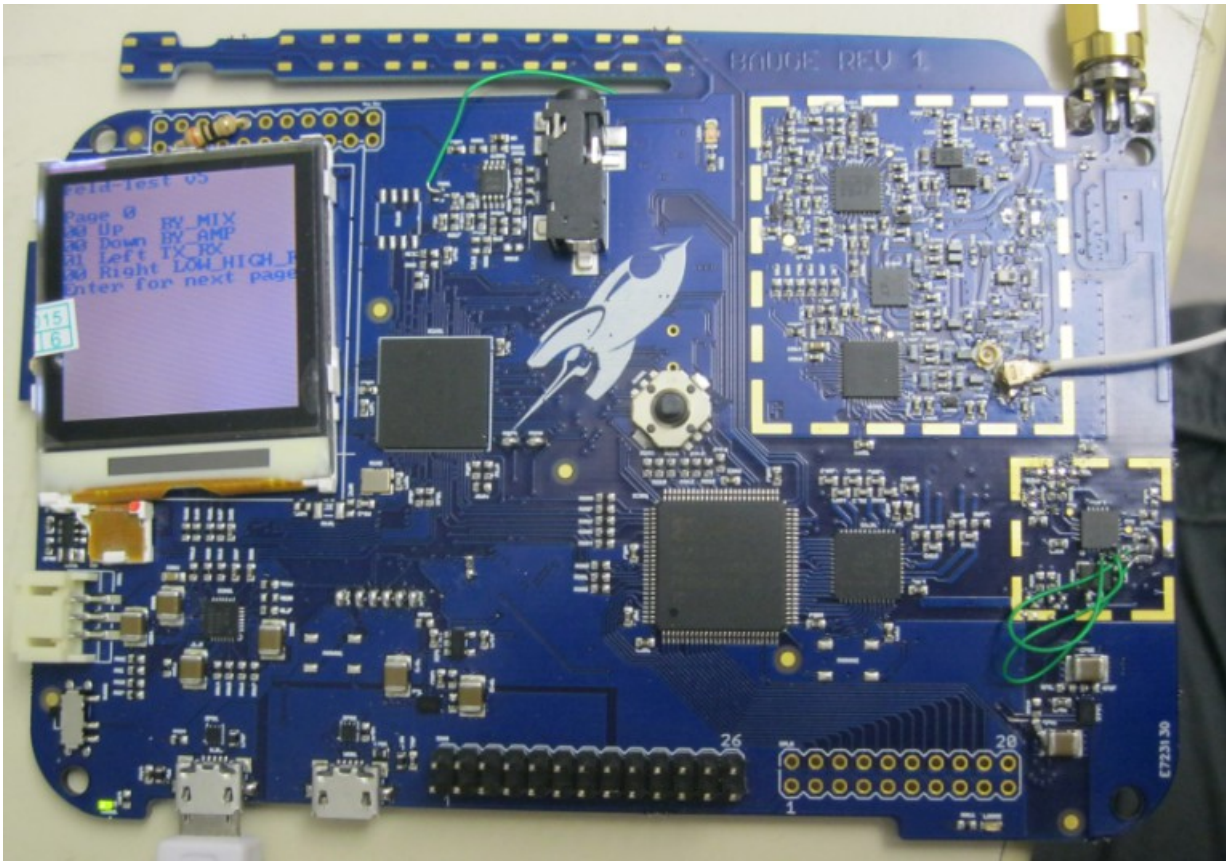
2. Input and Output of the Wimax in bypass mode

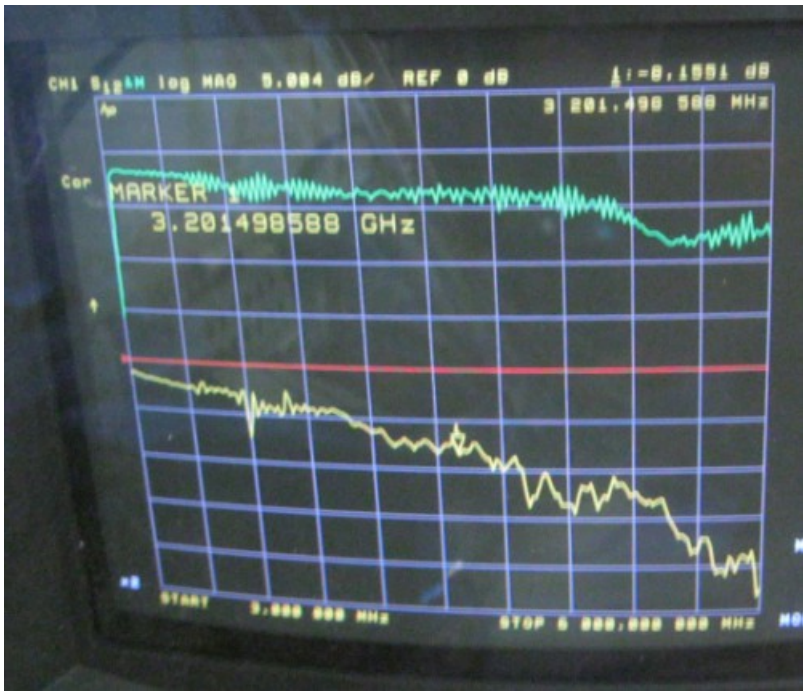
2.1 First the TX-Path



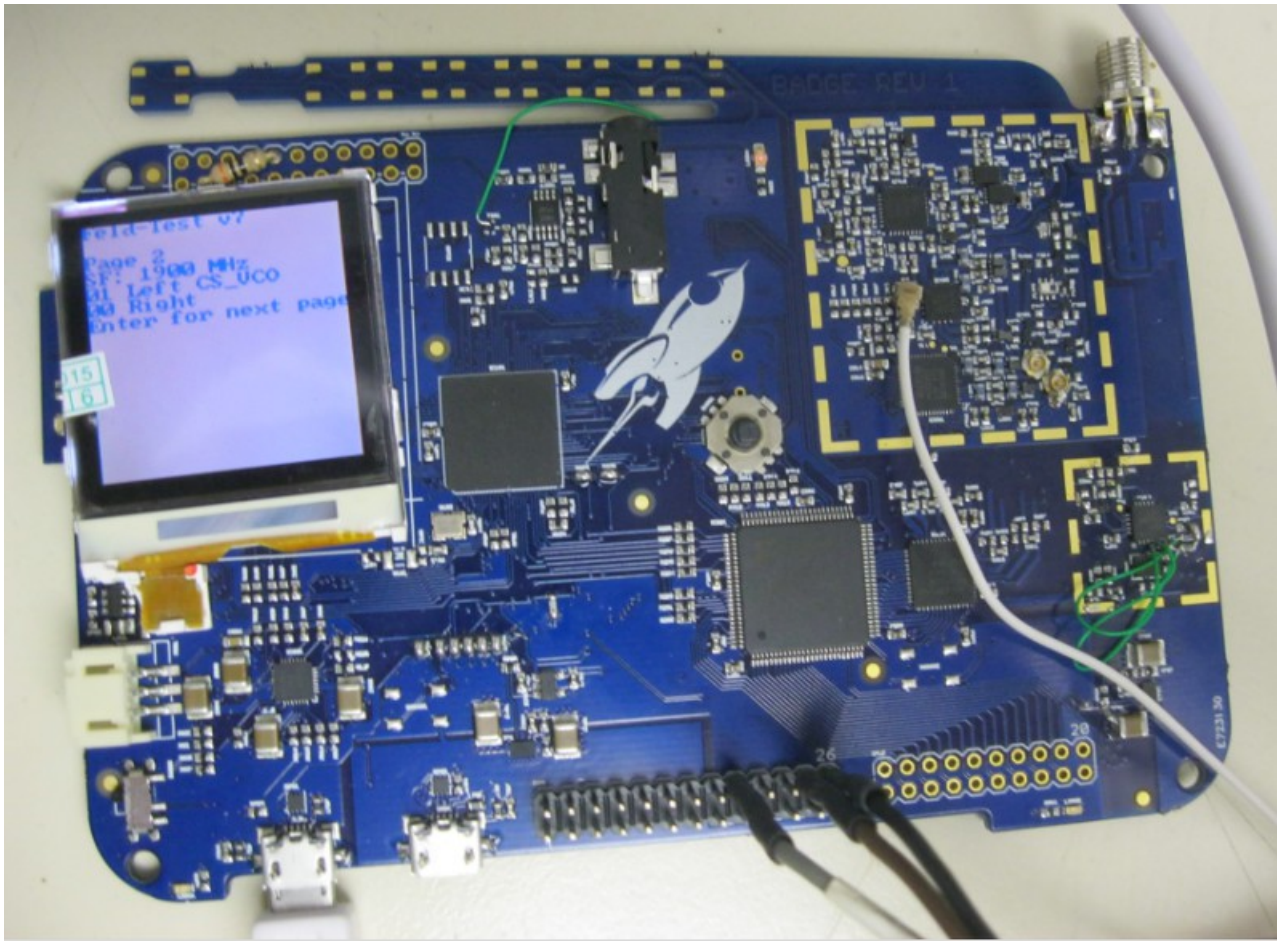


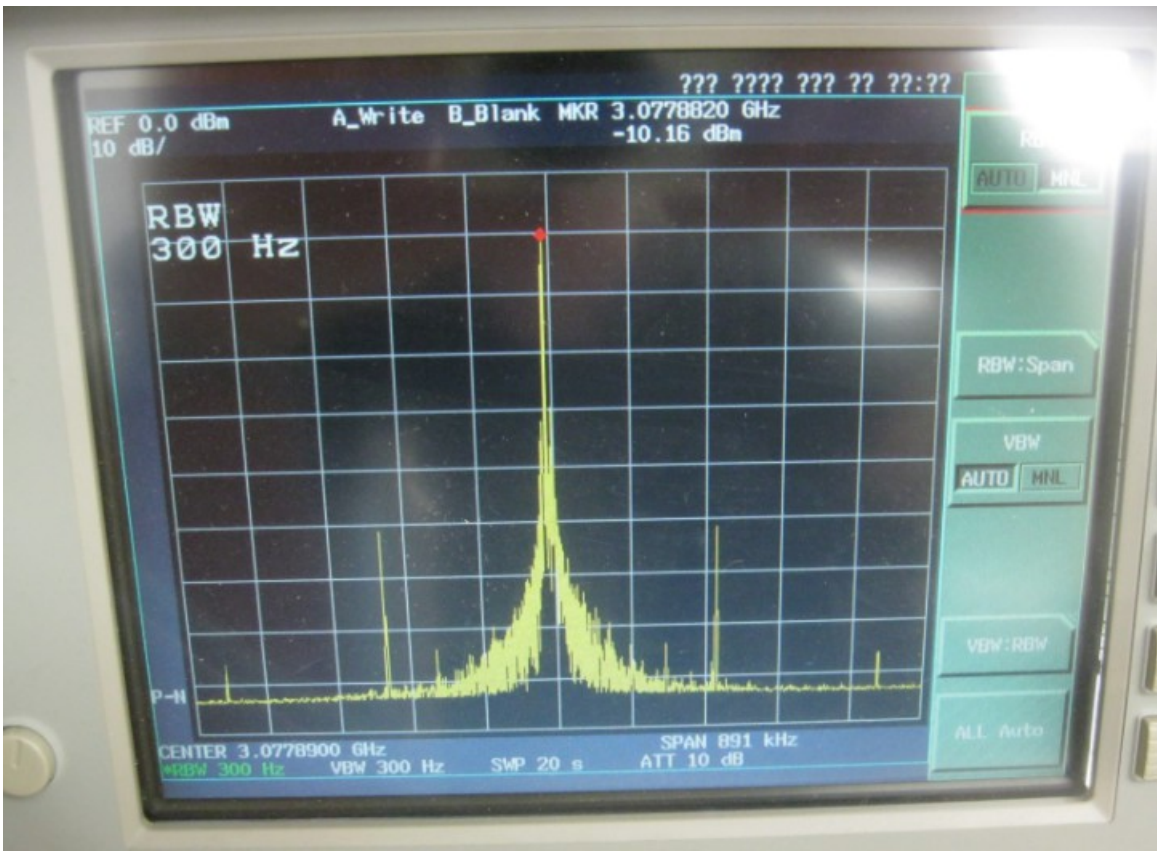
2.2 RX-Path to the WIMAX

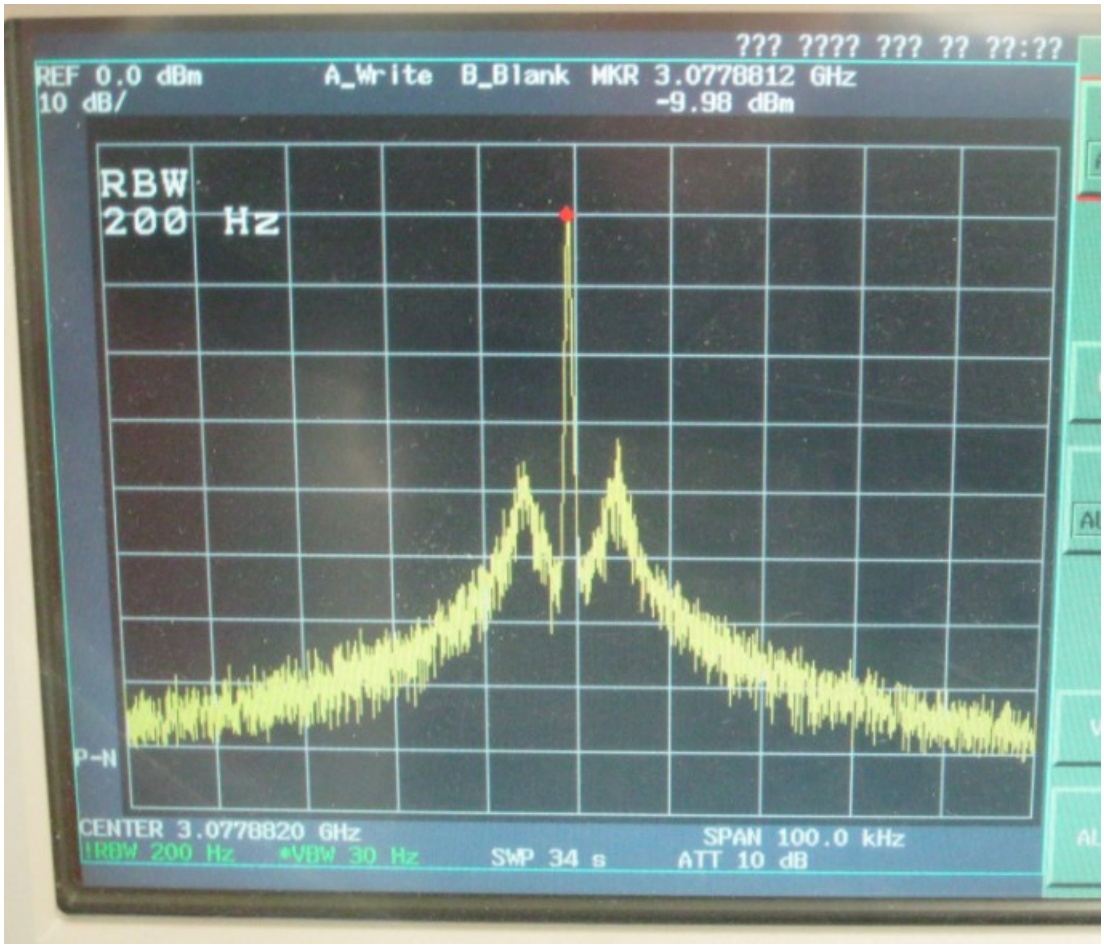


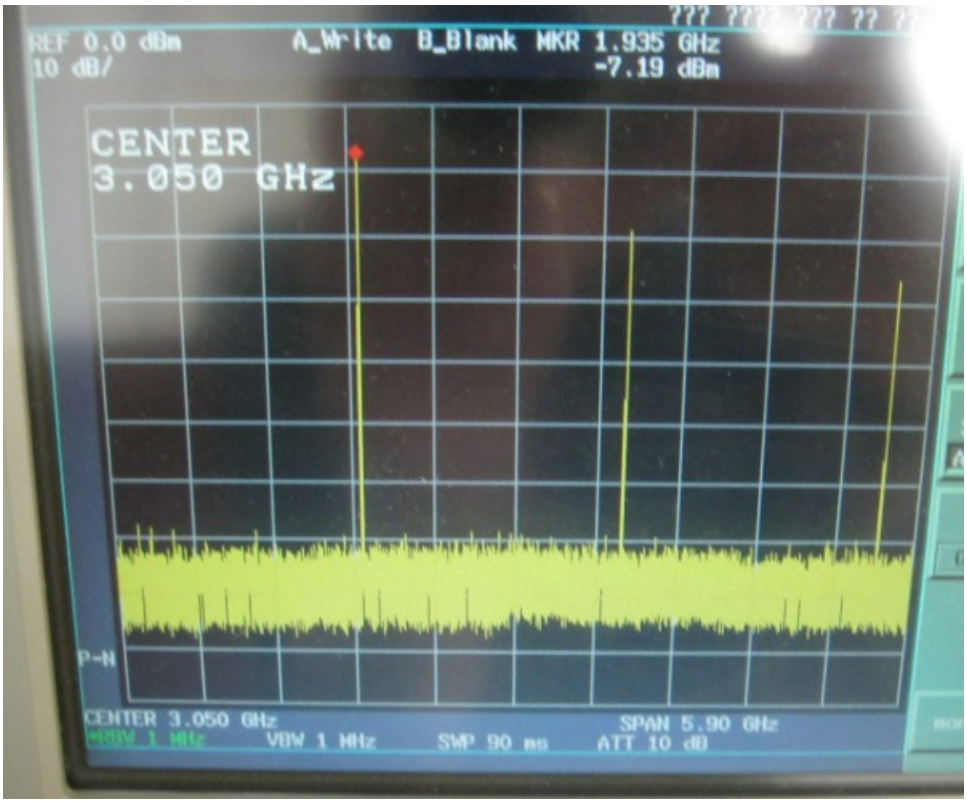


3. Synthesizer + Reference to the Synthesizer

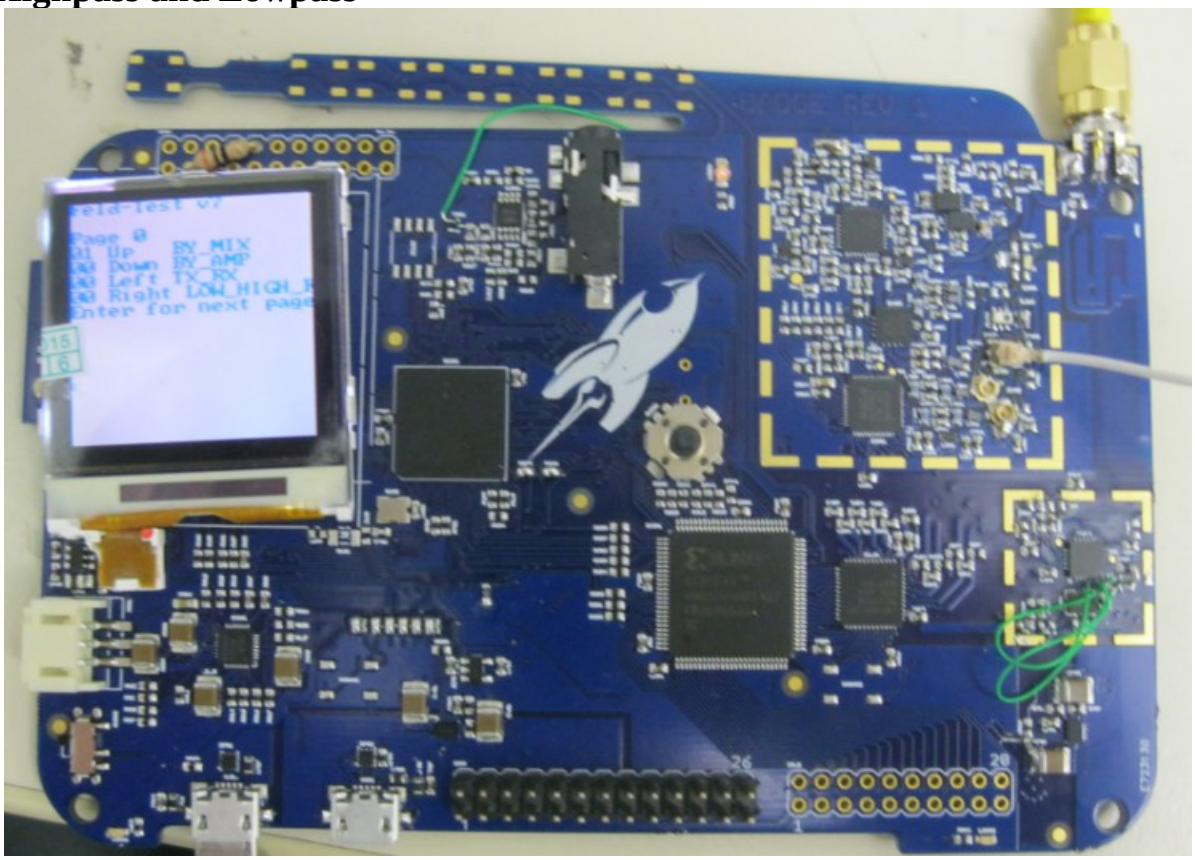



??? ???? ??? ?? ??:??
REF 0.0 dBm
10 dB/
A_Write B_Blank MKR 3.0778820 GHz
-10.16 dBm
RBW
300 Hz
RBW:Span
VBW
AUTO MNL
VBW:RBW
ALL Auto
P-N
CENTER 3.0778900 GHz
*RBW 300 Hz VBW 300 Hz SWP 20 s
SPAN 891 kHz
ATT 10 dB

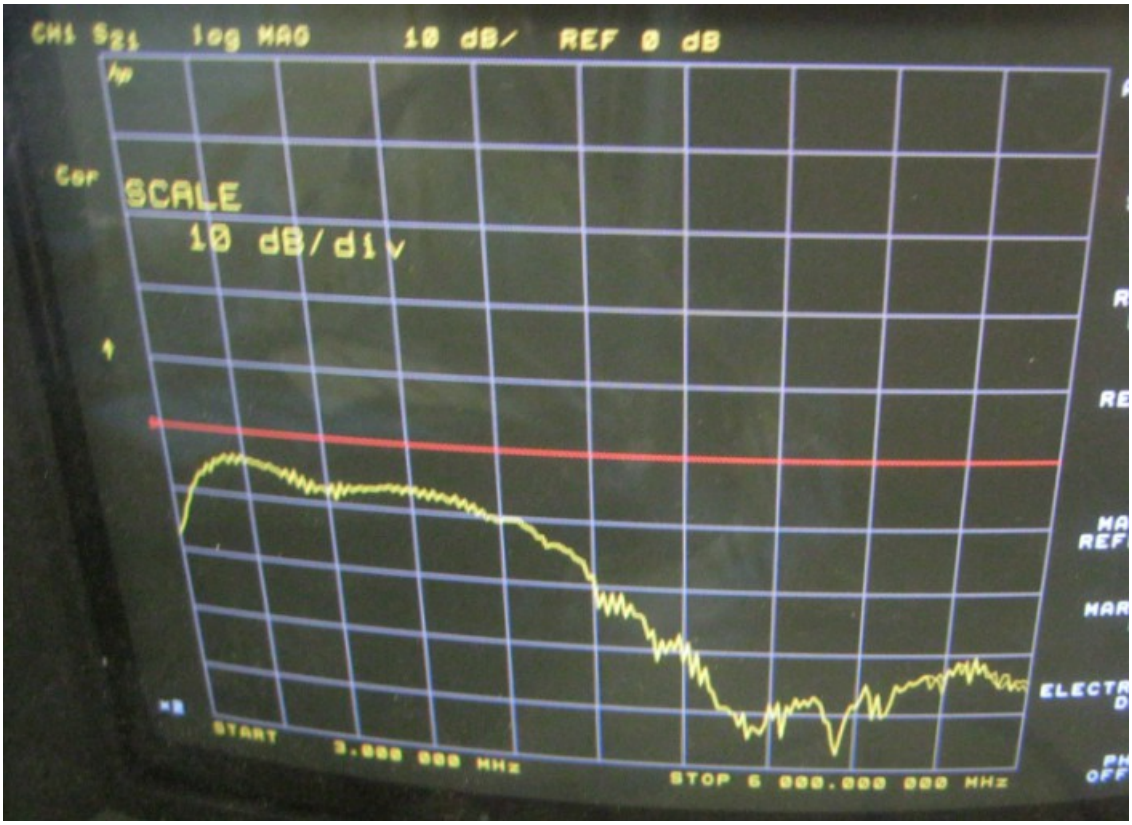

??? ???? ??? ?? ??:??
REF 0.0 dBm
10 dB/
A_Write B_Blank MKR 3.0778812 GHz
-9.98 dBm
RBW
200 Hz
P-N
CENTER 3.0778820 GHz
!RBW 200 Hz *VBW 30 Hz SWP 34 s
SPAN 100.0 kHz
ATT 10 dB



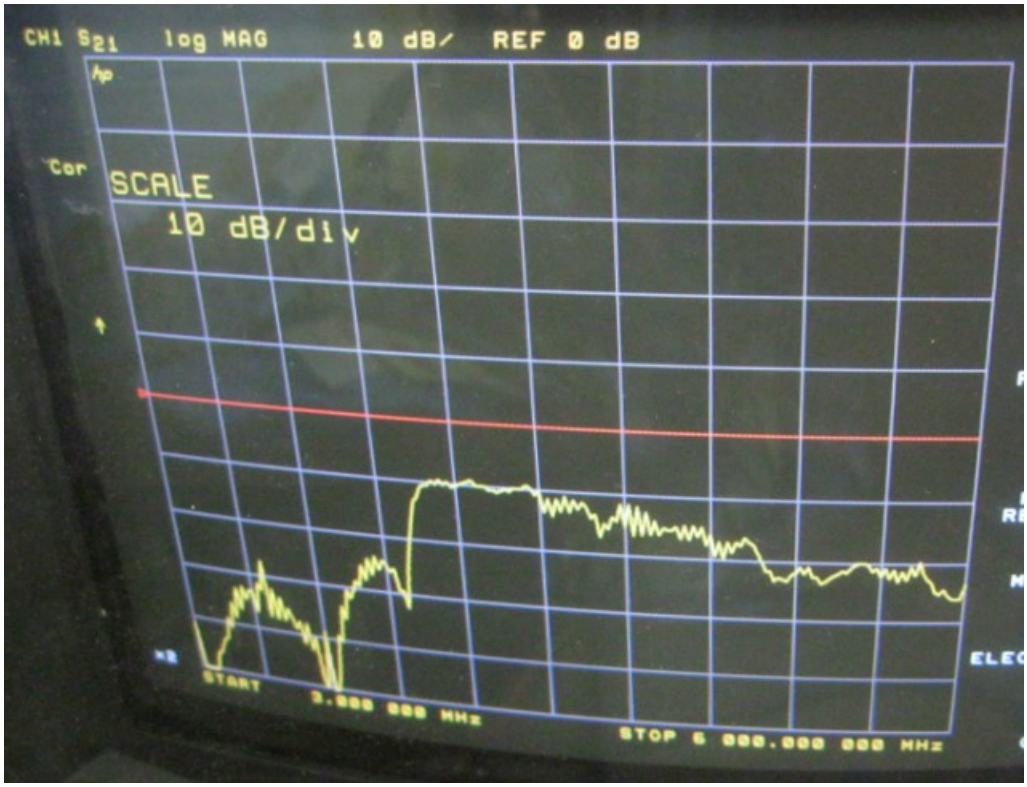
4. Highpass and Lowpass



4.1 Lowpass

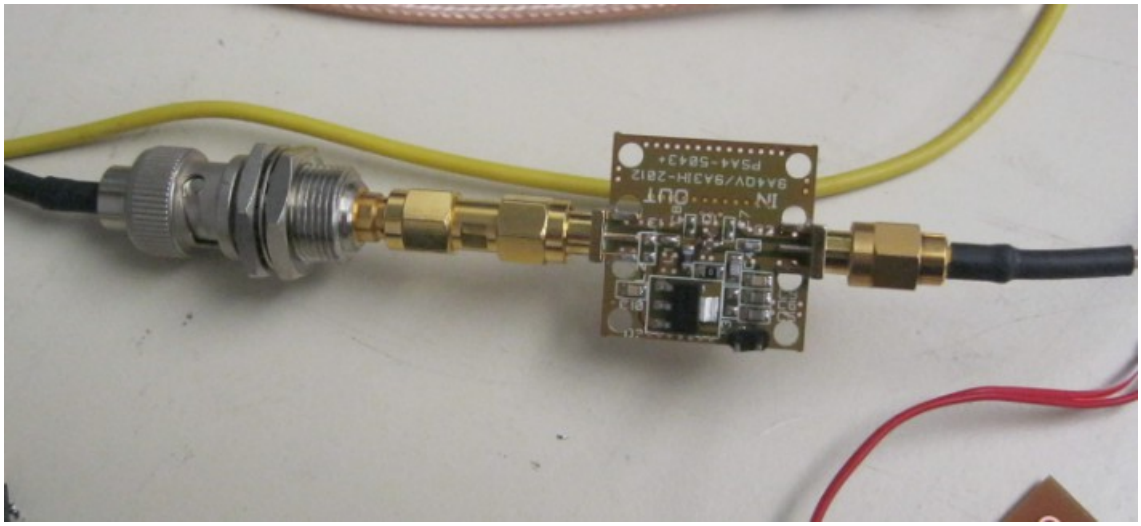


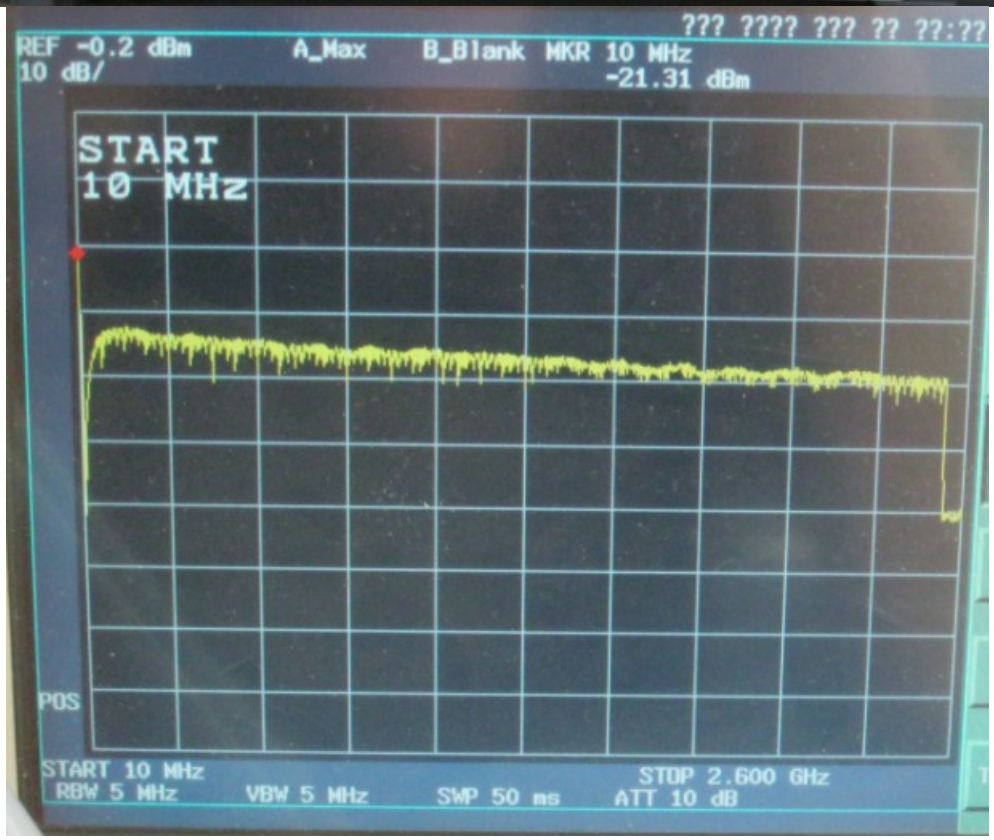
4.2 Highpass



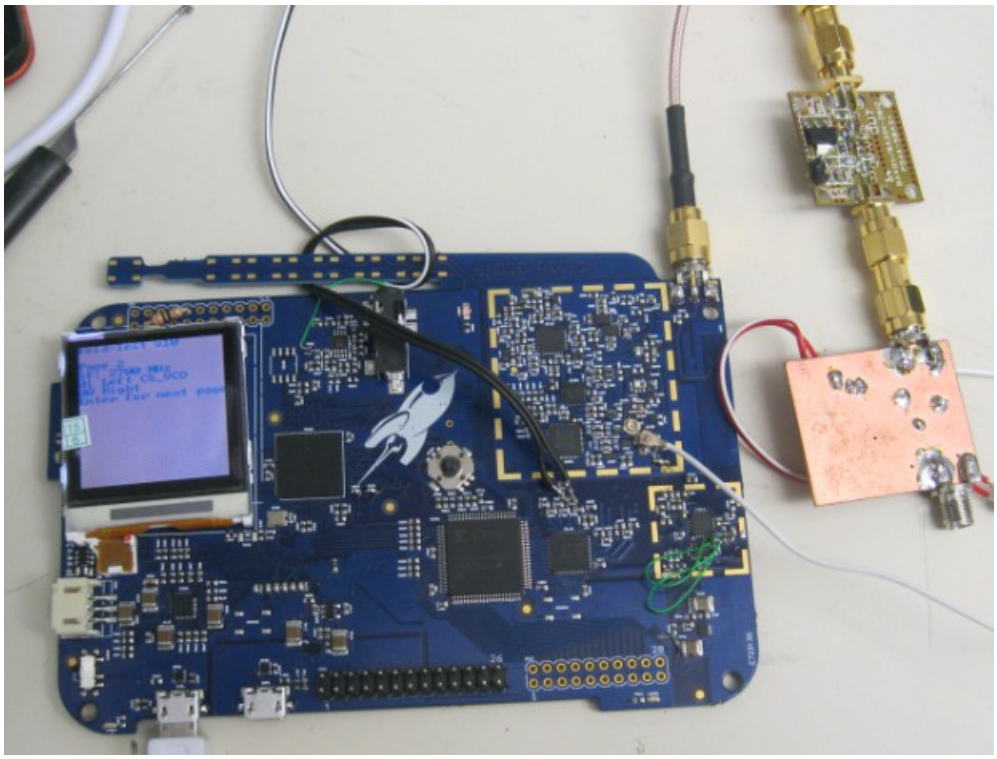
5. Mixer

5.1 Power Signal generator





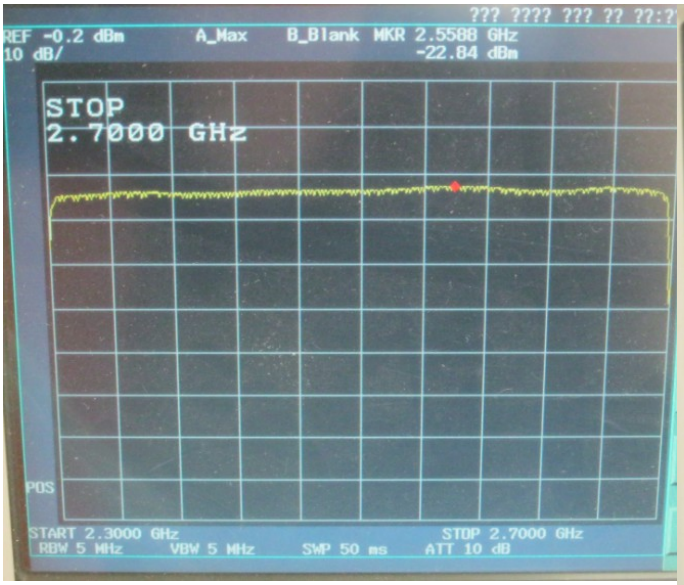
5.2 RX

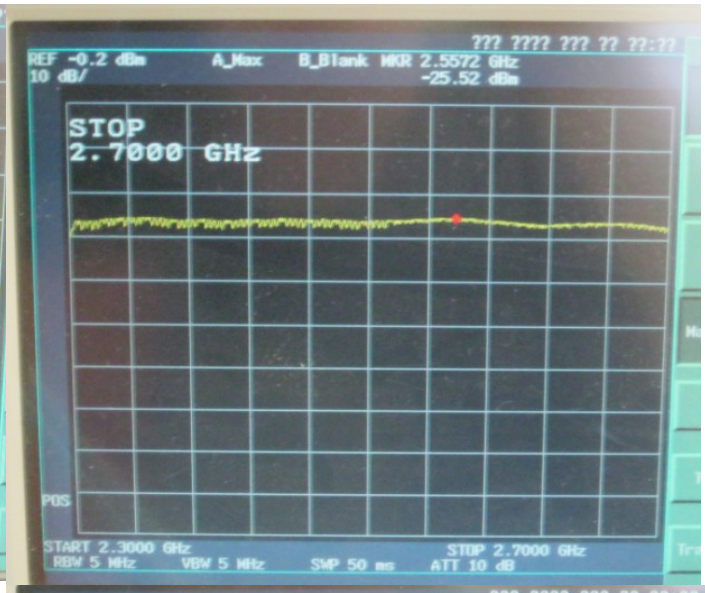


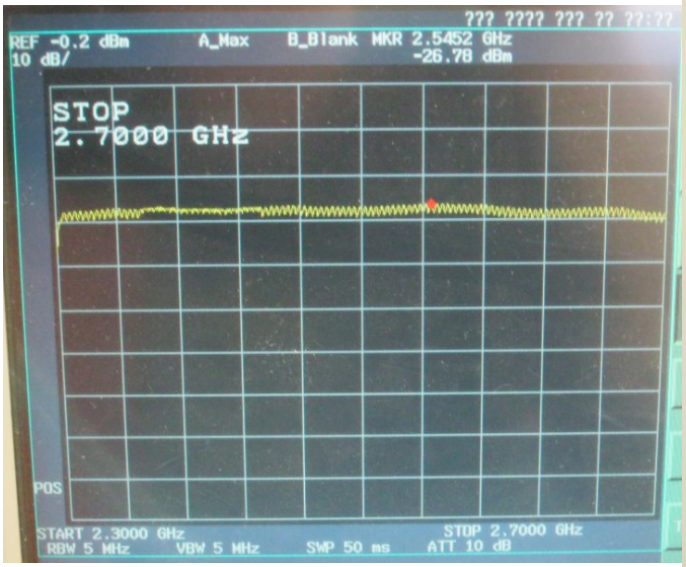
Input [MHz]	Synthesizer Frequency [MHz]	Spectrum analyser [MHz]
10-400	2700	2300-2700
400-800	3100	2300-2700
800-1200	3500	2300-2700
1200-1600	3900	2300-2700
1600-2000	4300	2300-2700
2000-2400	4700	2300-2700

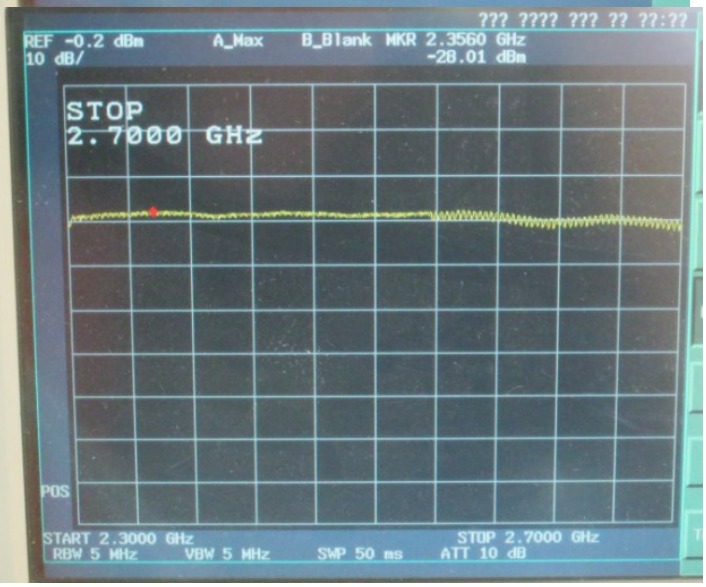
2300-2700	Bypass mode	2300-2700

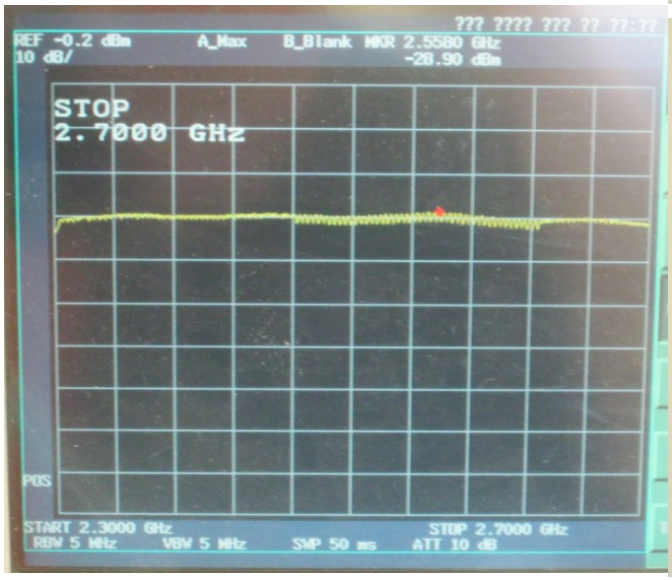
Mixer

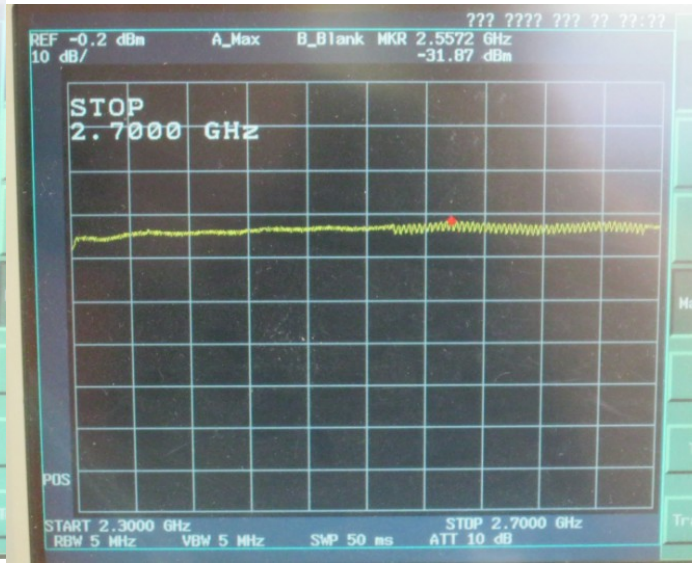




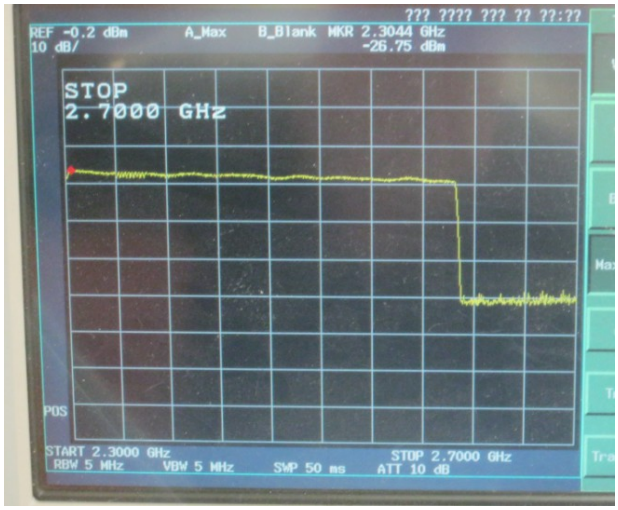








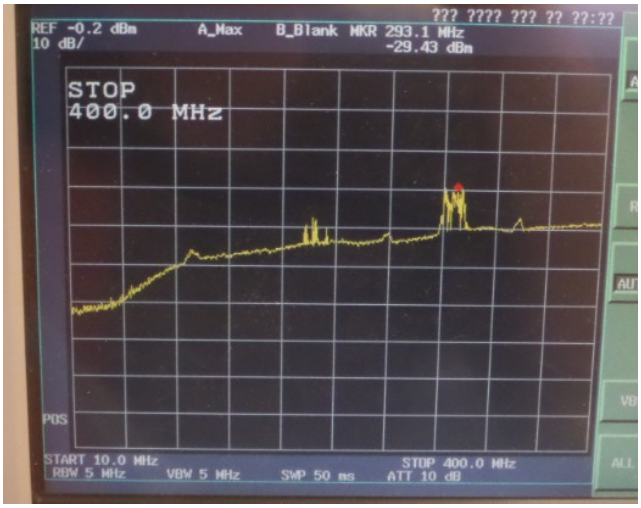
Bypass

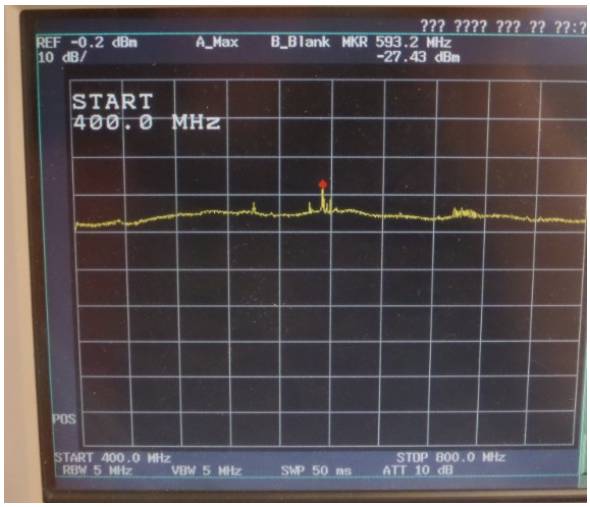


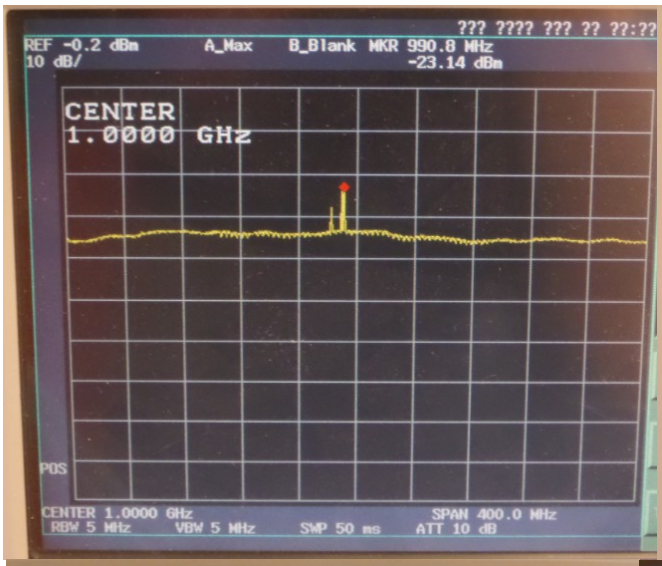
5.2 TX

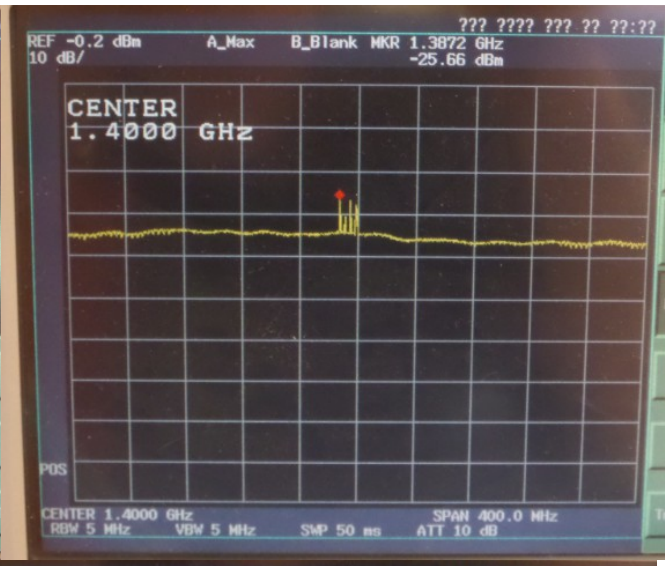
Input [MHz]	Synthesizer Frequency [MHz]	Spectrum analyser [MHz]
2200-2600	2600	10-400
2200-2600	3000	400-800
2200-2600	3400	800-1200
2200-2600	3800	1200-1600
2200-2600	4200	1600-2000
2200-2600	4600	2000-2400
2200-2600	Bypass mode	2200-2600

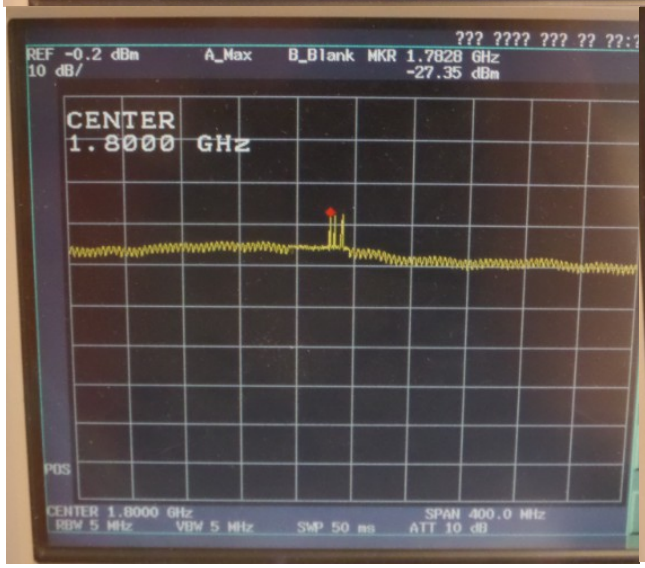
Mixer

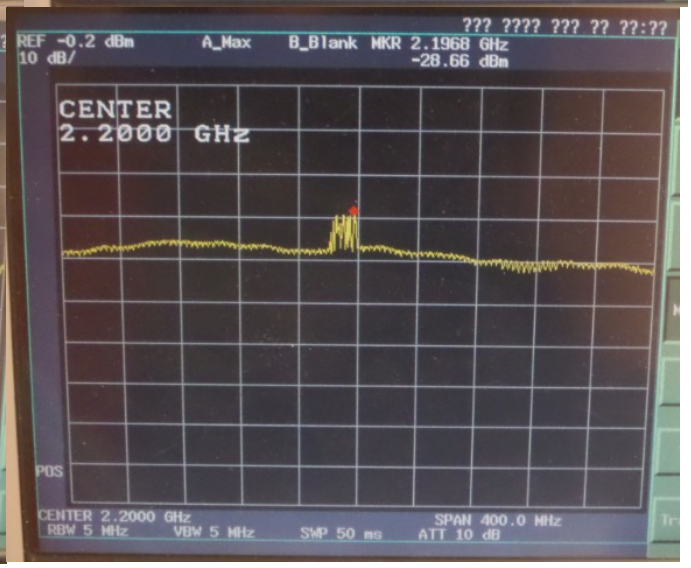

REF -0.2 dBm
10 dB/
A_Max
B_Blank MKR 293.1 MHz
-29.43 dBm
STOP
400.0 MHz
START 10.0 MHz
RBW 5 MHz
VBW 5 MHz
SWP 50 ms
STOP 400.0 MHz
ATT 10 dB


REF -0.2 dBm
10 dB/
A_Max
B_Blank MKR 593.2 MHz
-27.43 dBm
START
400.0 MHz
START 400.0 MHz
RBW 5 MHz
VBW 5 MHz
SWP 50 ms
STOP 800.0 MHz
ATT 10 dB

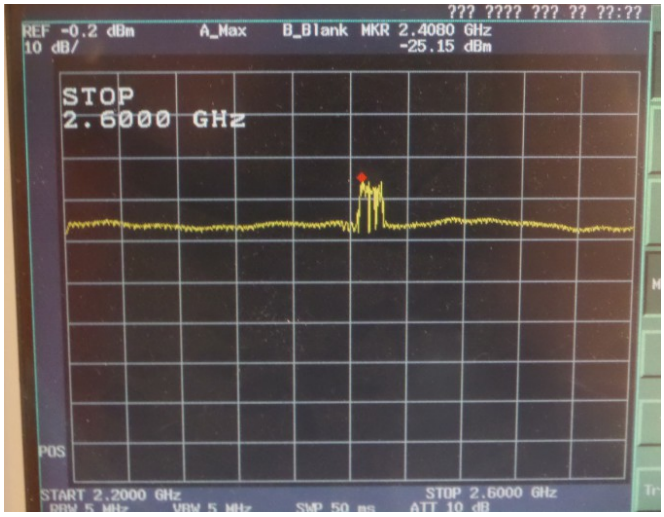

REF -0.2 dBm
10 dB/
A_Max
B_Blank MKR 990.8 MHz
-23.14 dBm
CENTER
1.0000 GHz
CENTER 1.0000 GHz
RBW 5 MHz
VBW 5 MHz
SWP 50 ms
SPAN 400.0 MHz
ATT 10 dB


REF -0.2 dBm
10 dB/
A_Max
B_Blank MKR 1.3872 GHz
-25.66 dBm
CENTER
1.4000 GHz
CENTER 1.4000 GHz
RBW 5 MHz
VBW 5 MHz
SWP 50 ms
SPAN 400.0 MHz
ATT 10 dB

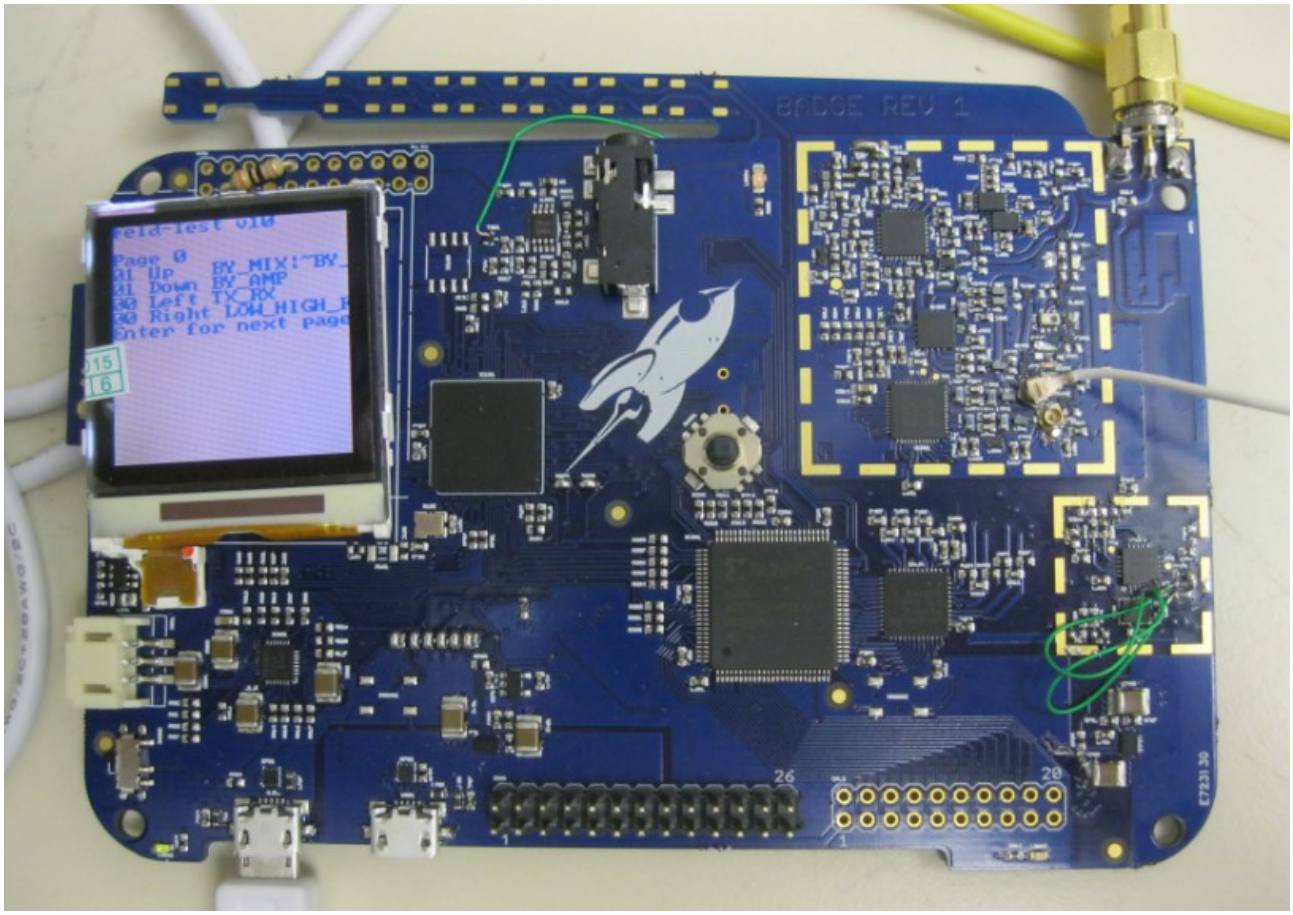

REF -0.2 dBm
10 dB/
A_Max
B_Blank MKR 1.7828 GHz
-27.35 dBm
CENTER
1.8000 GHz
CENTER 1.8000 GHz
RBW 5 MHz
VBW 5 MHz
SWP 50 ms
SPAN 400.0 MHz
ATT 10 dB

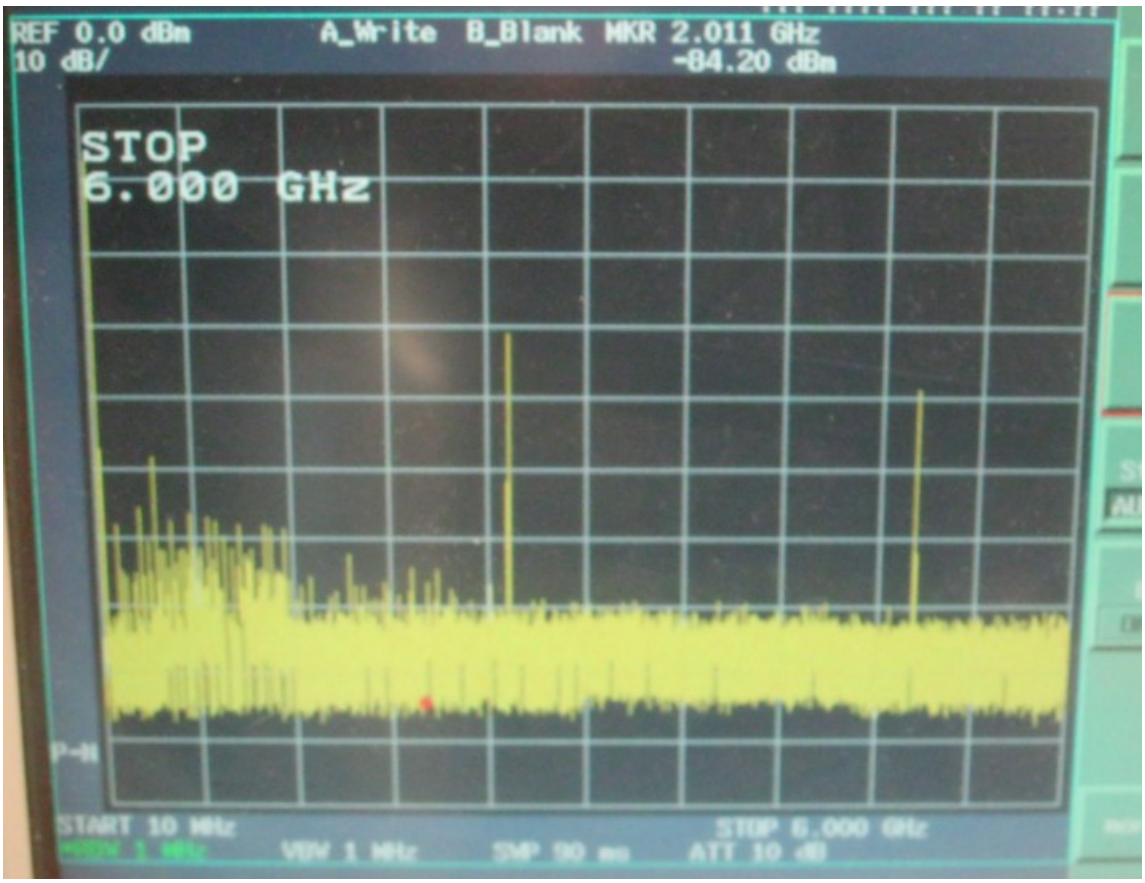

REF -0.2 dBm
10 dB/
A_Max
B_Blank MKR 2.1968 GHz
-28.66 dBm
CENTER
2.2000 GHz
CENTER 2.2000 GHz
RBW 5 MHz
VBW 5 MHz
SWP 50 ms
SPAN 400.0 MHz
ATT 10 dB

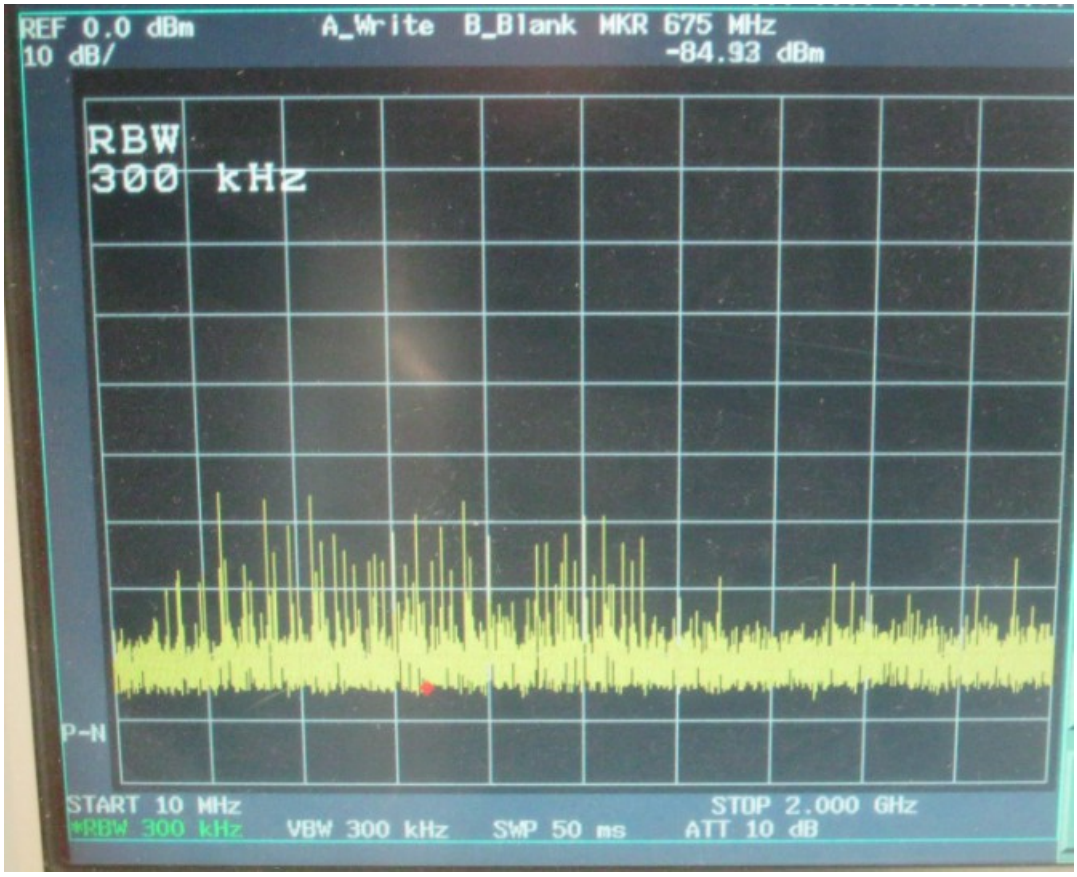
Bypass



6. TX-Output (unwanted emission)




REF 0.0 dBm
10 dB/
A_Write B_Blank MKR 2.011 GHz
-84.20 dBm
STOP
6.000 GHz
P-N
START 10 MHz
STOP 6.000 GHz
VBW 1 MHz
SWP 90 ms
ATT 10 dB


REF 0.0 dBm
10 dB/
A_Write B_Blank MKR 675 MHz
-84.93 dBm
RBW
300 kHz
P-N
START 10 MHz
STOP 2.000 GHz
*RBW 300 kHz
VBW 300 kHz
SWP 50 ms
ATT 10 dB

7. Antenna onboard