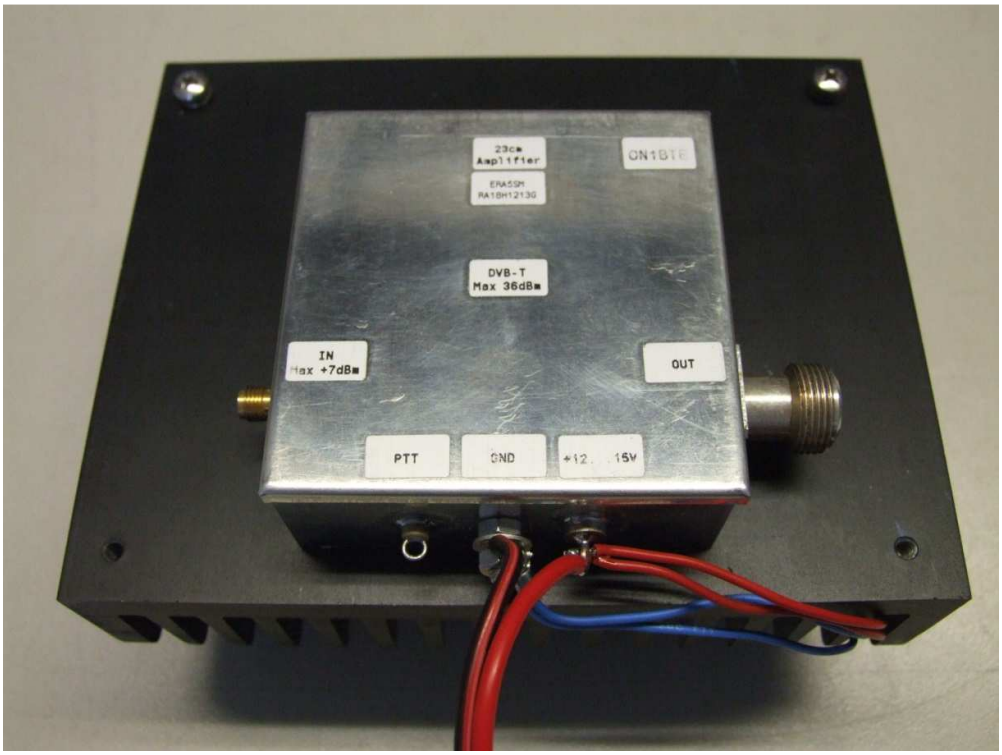
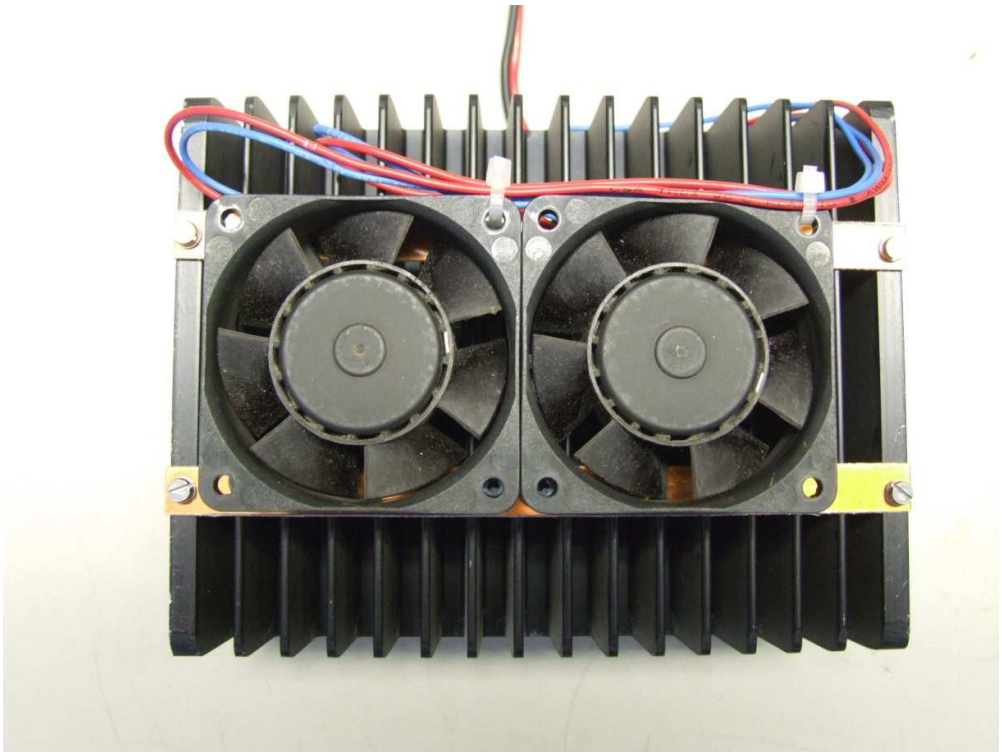
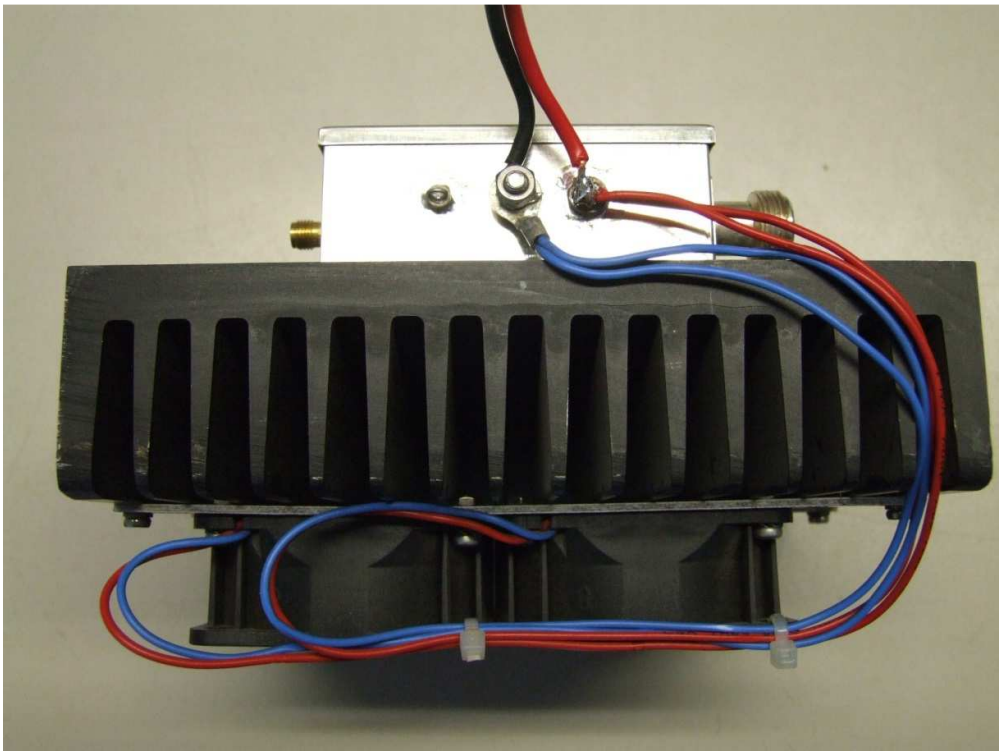
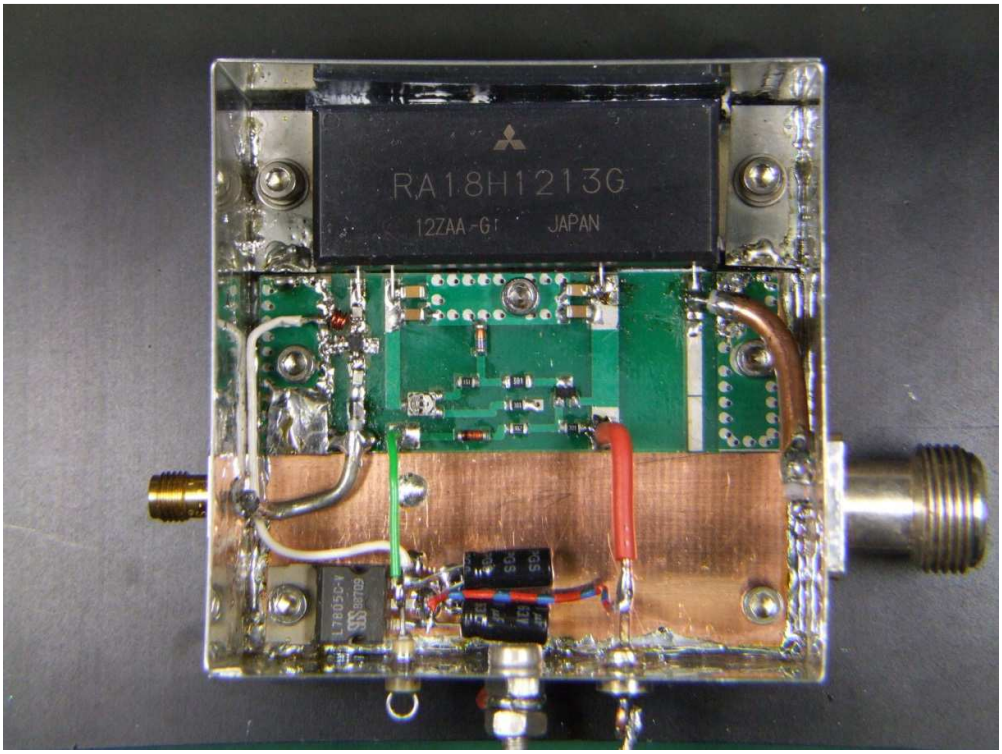
23cm amplifier ERA5SM + RA18H1213G by ON1BTE (intended for DVB-T)

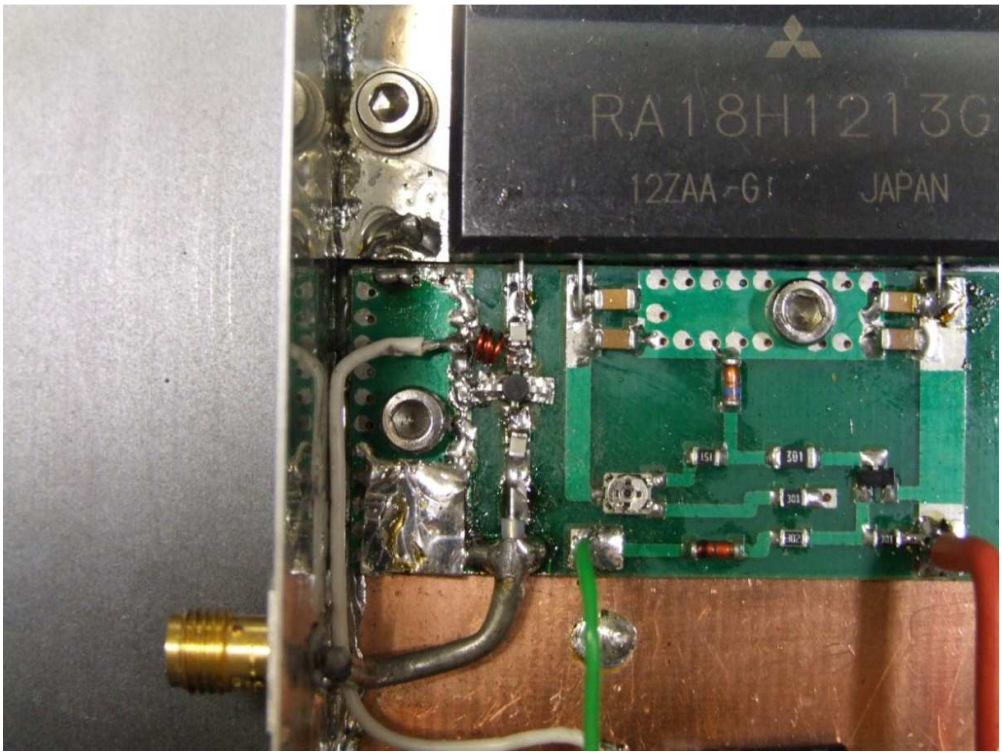
The ERA5SM has not enough power to get the full output from the RA18H1213G module.
I used it because I needed extra gain behind my Hides DVB-T modulator.
All tests done at 12.25V.

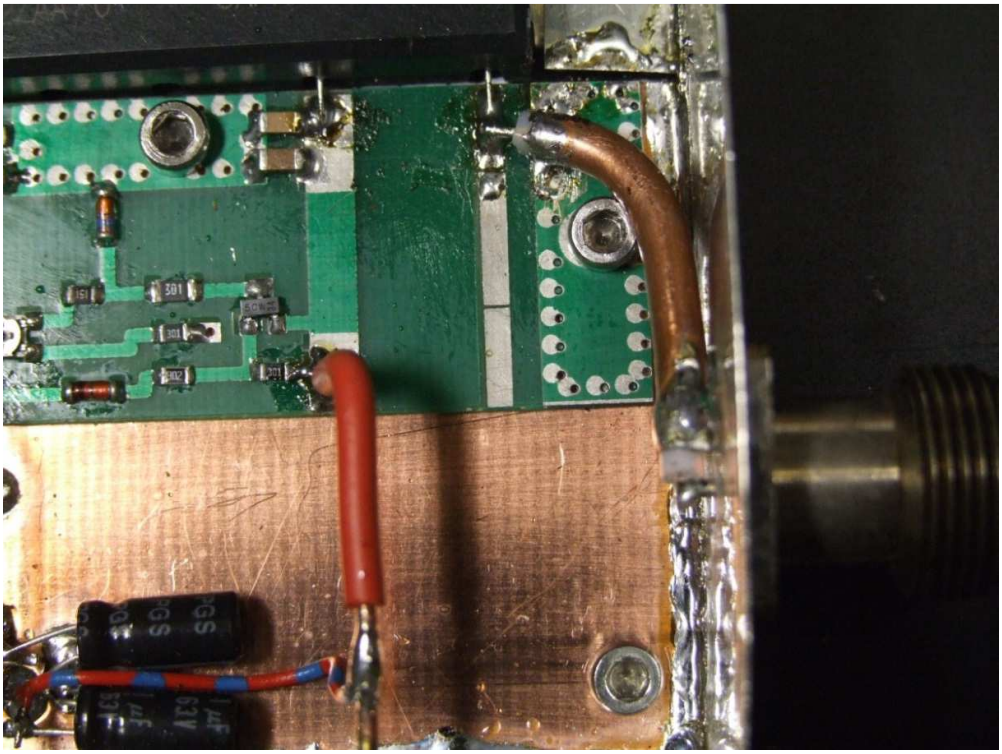


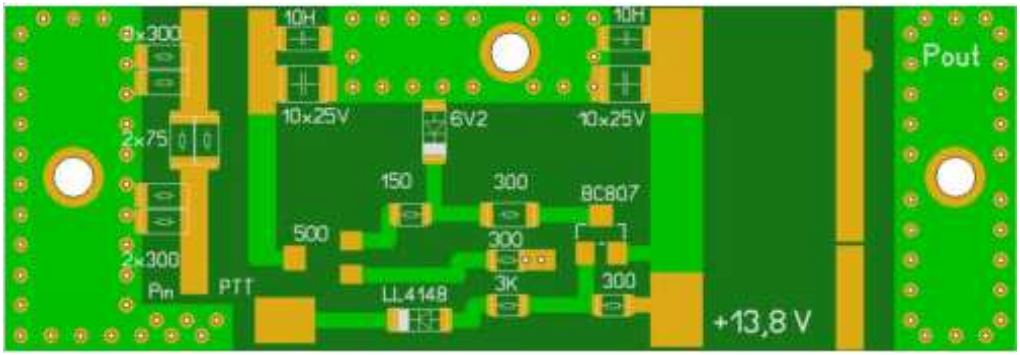





RA18H1213G
12ZAA-G1
JAPAN


RA18H1213G
12ZAA-G1
JAPAN





PCB from ebay vhfdesign Ukraine ($11.99 free shipping)
http://www.ebay.com/itm/PCB-for-module-RA60H1317M-RA60H4047M-RA18H1213G-/112001404605?hash=item1a13cdcebd:g:5bYAAOSwi4lXPKqu

I removed the input attenuator and modified the board a bit so I could place a ERA5SM.
The ERA5SM gets 5V from a 7805 regulator.

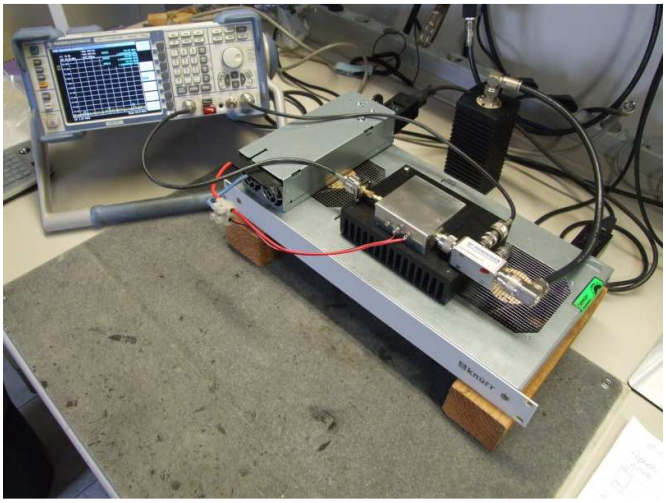
RA18H1213G from DL2AM (€46.9 + €9 shipping to Belgium)
http://www.dl2am.de/

ERA5SM from ebay jk_parts (3pc for $2.99 free shipping)
http://www.ebay.com/itm/270834641763?_trksid=p2060353.m2749.l2649&ssPageName=STRK%3AMEBIDX%3AIT

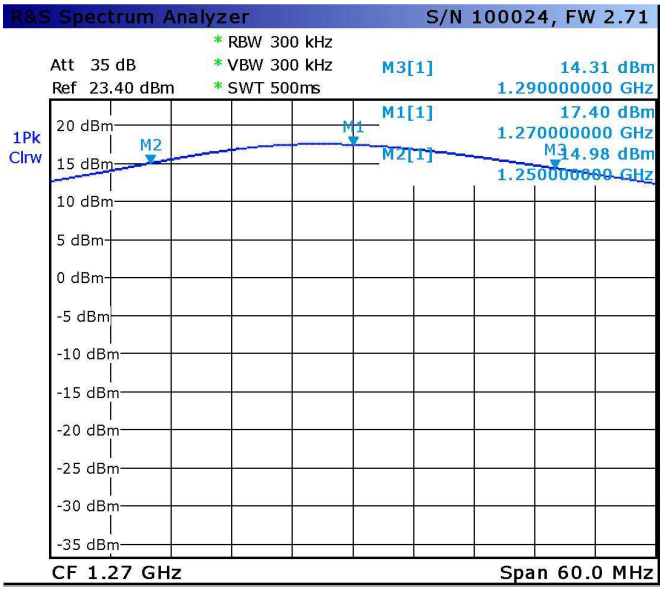
Without heatsink you can build the PA for +/- €80.

Test setup 1:

Tracking Gen -20 … 0dBm + 23cm ampli ERA5SM/RA18H1213G + dummyload.
Coupler -23.4dB on 1270MHz **All tests @12.25Volt PA Ubias=4.98V**



At 0dBm tracking level.
1250MHz → 14.98dBm + 23.4dB (coupler)
1270MHz → 17.4dBm + 23.4dB (coupler) → 12W
1290MHz → 14.31dBm + 23.4dB (coupler)



This 0dBm tracking level is more than enough to use this setup to drive my 2x MRFE6S9160HS PA (design DF9IC).

At -10dBm tracking level.

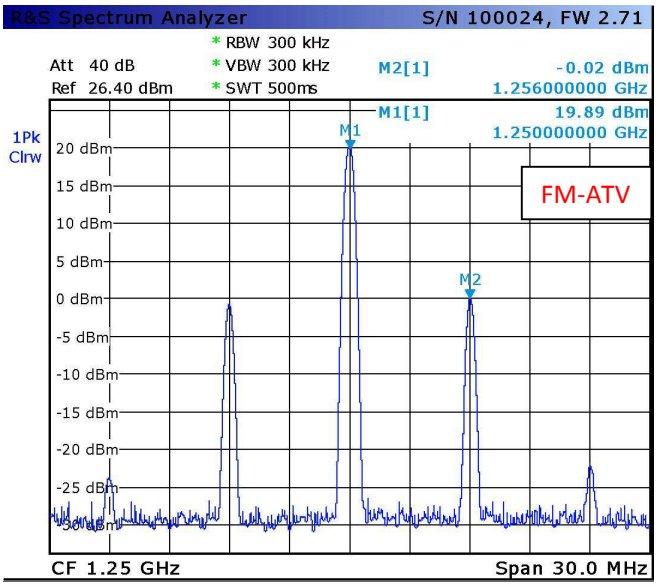
1250MHz → 5.62dBm + 23.4dB (coupler) gain = 39dB
1270MHz → 8.65dBm + 23.4dB (coupler) gain = 42dB
1290MHz → 5,06dBm + 23.4dB (coupler) gain = 38,5dB

Test Setup 2: (FM-ATV)

Homemade PLL FM ATV modulator + 6dB Attenuator + 23cm ampli ERA5SM/RA18H1213G + dummy.
Coupler -23.4dB on 1270MHz **All tests @12.25Volt PA Ubias=4.98V**

PA Drive power:
1250MHz → 6.8dBm 1270MHz → 6.73dBm 1290MHz → 6.84dBm

Outut Power
1250MHz → 20dBm + 23.4dB (coupler) = 43.4dBm (21.9W)
1270MHz → 44dBm (25.1W)
1290MHz → 42.4dBm (17.4W)

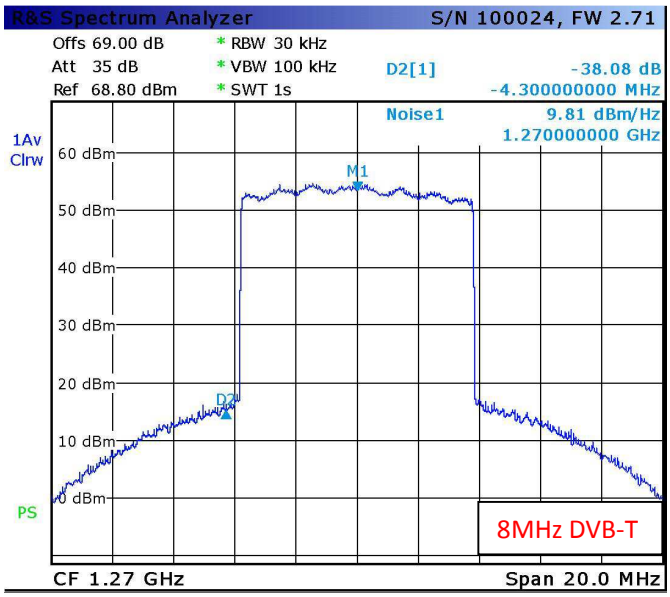


Test Setup 3: (DVB-T)

Hides HV200E + 23cm ampli ERA5SM/RA18H1213G + dummyload.
Coupler -23.4dB on 1270MHz **All tests @12.25Volt PA Ubias=4.98V**

1270MHz:

9.81dBm + 23.4dB = 33.21dBm (2.1W) → shoulders -38dB



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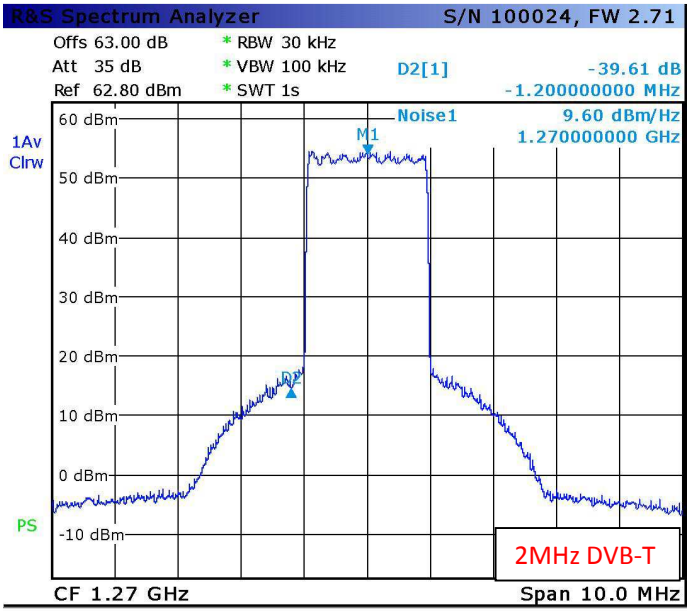
9.60dBm + 23.4dB = 33dBm (2W) → shoulders -40dB



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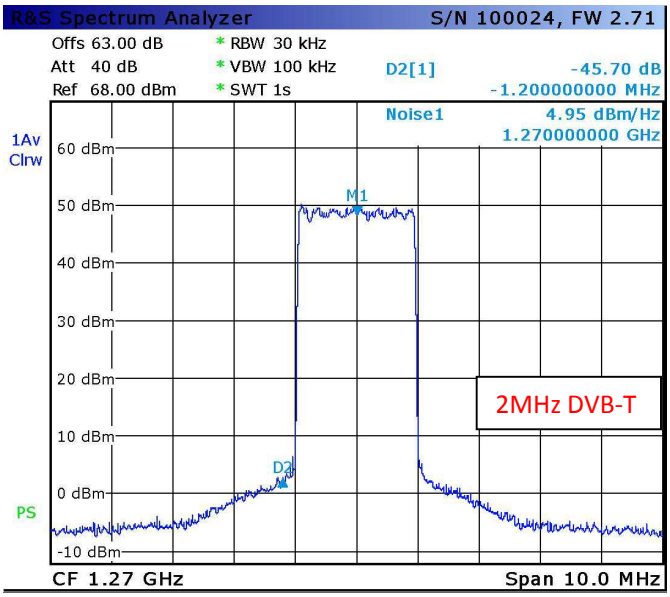
4.95dBm + 23.4dB = 28.35dBm (684mW) → shoulders -46dB



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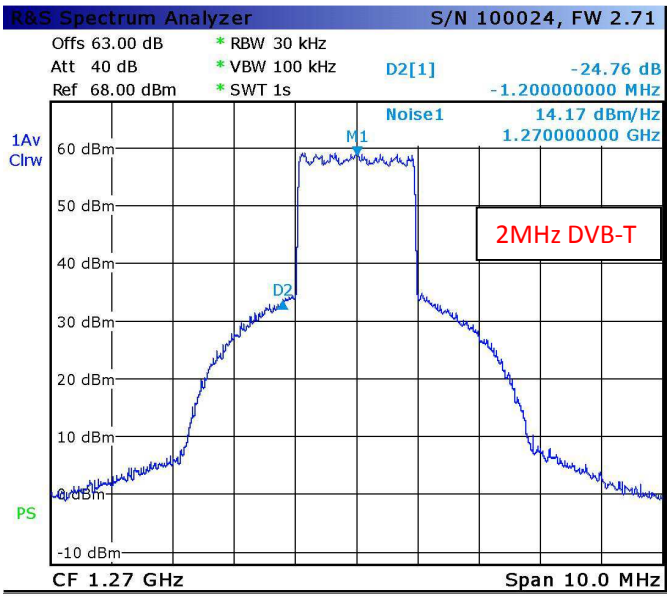
14.17dBm + 23.4dB = 37.57dBm (5.7W) → shoulders -25dB



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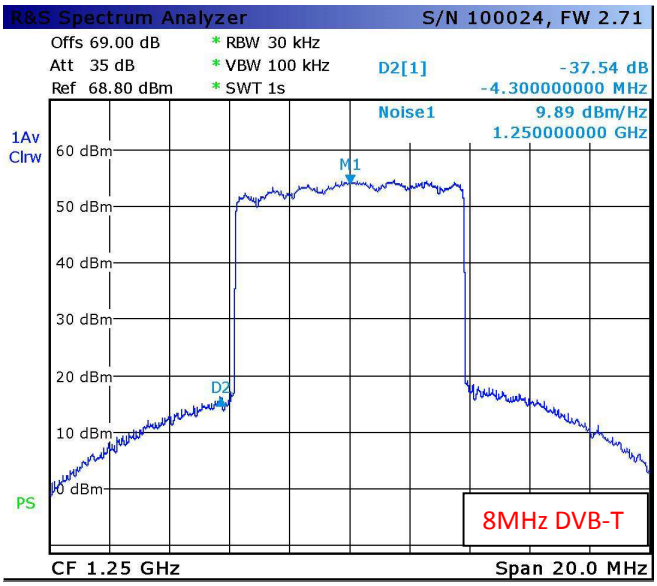
1250MHz: 2.15W shoulders -37.5dB



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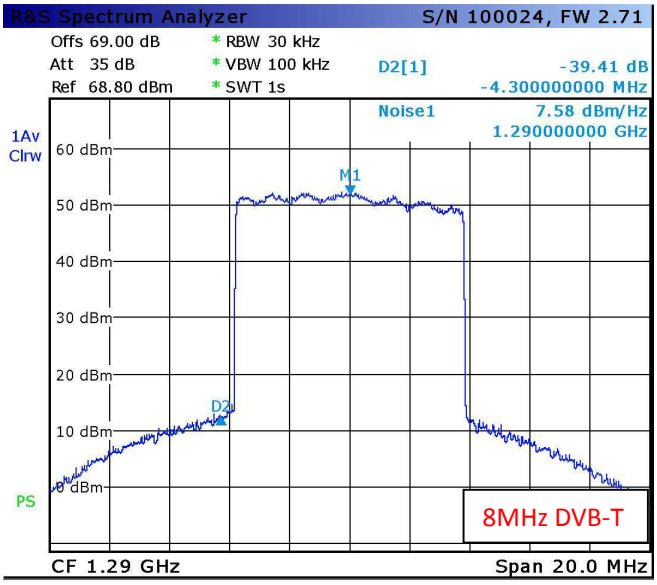
1290MHz: 1.25W shoulders -39.4dB



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