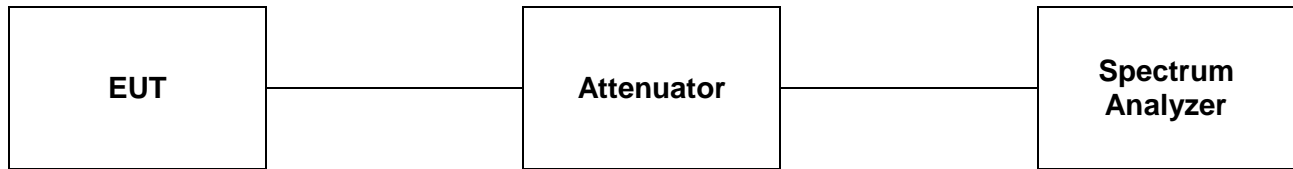


5. Power Spectral Density

5.1. Test Setup



5.2. Limit

5.2.1 FCC

According to §15.247(e), for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

5.2.2 IC

According to RSS-247 Issue 2, 5.2(b), the transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of section 5.4(d), (i.e. the power spectral density shall be determined using the same method as is used to determine the conducted output power).

5.3. Test Procedure

All data rates and modes were investigated for this test. The full data for the worst case data rate are reported in this section.

The measurements are recorded using the PKPSD measurement procedure in section 11.10.2 of ANSI C63.10-2013.

- This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq [3 \times \text{RBW}]$.
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 amplitude level within the RBW.
10. If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

5.4. Test Results

Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

OFDMA: 802.11ax_HE20_SISO

Tones	RU offset	Channel	Frequency (MHz)	Measured PSD (dB m/3 kHz)		Limit (dB m/3 kHz)
				Ant.1	Ant.2	
26T	0	Low	2 412	-4.12	-3.06	8
		Middle	2 437	-2.69	-3.69	
		High	2 462	-3.30	-2.91	
		12	2 467	-13.07	-13.22	
		13	2 472	-23.67	-14.30	
	4	Low	2 412	-4.72	-4.67	
		Middle	2 437	-4.36	-4.47	
		High	2 462	-4.67	-4.11	
		12	2 467	-12.36	-13.71	
		13	2 472	-22.56	-14.18	
	8	Low	2 412	-2.93	-3.95	
		Middle	2 437	-4.11	-4.01	
		High	2 462	-5.45	-3.53	
		12	2 467	-12.46	-11.52	
		13	2 472	-24.41	-14.74	
52T	37	Low	2 412	-5.71	-5.61	8
		Middle	2 437	-4.88	-5.50	
		High	2 462	-5.42	-4.96	
		12	2 467	-14.95	-15.06	
		13	2 472	-25.83	-16.24	
	38	Low	2 412	-6.15	-6.13	
		Middle	2 437	-5.95	-6.11	
		High	2 462	-6.71	-6.09	
		12	2 467	-14.65	-14.75	
		13	2 472	-25.61	-16.29	
	40	Low	2 412	-4.97	-4.93	
		Middle	2 437	-5.37	-5.07	
		High	2 462	-5.70	-5.23	
		12	2 467	-13.88	-14.02	
		13	2 472	-25.26	-15.79	

Tones	RU offset	Channel	Frequency (MHz)	Measured PSD (dB m/3 kHz)		Limit (dB m/3 kHz)
				Ant.1	Ant.2	
106T	53	Low	2 412	-8.37	-8.72	8
		Middle	2 437	-8.19	-7.57	
		High	2 462	-8.98	-8.15	
		12	2 467	-17.64	-18.32	
		13	2 472	-29.19	-20.00	
	54	Low	2 412	-9.32	-9.00	
		Middle	2 437	-9.05	-9.24	
		High	2 462	-9.73	-9.08	
		12	2 467	-17.75	-17.99	
		13	2 472	-29.31	-19.49	
SU	-	Low	2 412	-11.10	-11.46	8
		Middle	2 437	-10.36	-11.03	
		High	2 462	-10.95	-10.96	
		12	2 467	-21.23	-20.47	
		13	2 472	-24.35	-21.62	

OFDMA: 802.11ax_HE20_MIMO

Tones	RU offset	Channel	Frequency (MHz)	Measured PSD (dB m/3 kHz)			Limit (dB m/3 kHz)
				Ant.1	Ant.2	Ant.1+Ant.2	
26T	0	Low	2 412	-3.79	-3.43	-0.60	8
		Middle	2 437	-3.18	-3.68	-0.41	
		High	2 462	-3.54	-3.43	-0.47	
		12	2 467	-13.82	-14.02	-10.91	
		13	2 472	-23.94	-24.70	-21.29	
	4	Low	2 412	-4.48	-4.63	-1.54	
		Middle	2 437	-4.67	-4.54	-1.59	
		High	2 462	-4.92	-3.32	-1.04	
		12	2 467	-14.25	-13.91	-11.07	
		13	2 472	-24.35	-21.27	-19.53	
	8	Low	2 412	-4.07	-4.48	-1.26	
		Middle	2 437	-4.60	-4.81	-1.69	
		High	2 462	-4.94	-5.00	-1.96	
		12	2 467	-13.92	-14.31	-11.10	
		13	2 472	-23.98	-22.13	-19.95	
52T	37	Low	2 412	-6.10	-5.92	-3.00	8
		Middle	2 437	-5.37	-5.79	-2.56	
		High	2 462	-6.12	-5.19	-2.62	
		12	2 467	-16.05	-16.00	-13.01	
		13	2 472	-25.86	-23.47	-21.49	
	38	Low	2 412	-6.97	-4.04	-2.25	
		Middle	2 437	-6.72	-4.15	-2.24	
		High	2 462	-7.10	-3.81	-2.14	
		12	2 467	-16.18	-13.55	-11.66	
		13	2 472	-25.99	-20.87	-19.71	
	40	Low	2 412	-6.99	-6.18	-3.56	
		Middle	2 437	-7.31	-6.95	-4.12	
		High	2 462	-7.59	-7.09	-4.32	
		12	2 467	-16.85	-16.08	-13.44	
		13	2 472	-27.04	-24.11	-22.32	

Tones	RU offset	Channel	Frequency (MHz)	Measured PSD (dB m/3 kHz)			Limit (dB m/3 kHz)
				Ant.1	Ant.2	Ant.1+Ant.2	
106T	53	Low	2 412	-8.81	-8.44	-5.61	8
		Middle	2 437	-8.79	-8.24	-5.50	
		High	2 462	-9.13	-8.05	-5.55	
		12	2 467	-19.64	-18.54	-16.04	
		13	2 472	-29.38	-29.36	-23.36	
	54	Low	2 412	-10.00	-6.53	-4.92	
		Middle	2 437	-10.01	-6.77	-5.08	
		High	2 462	-10.35	-6.67	-5.12	
		12	2 467	-19.82	-16.37	-14.75	
		13	2 472	-29.72	-27.02	-25.15	
SU	-	Low	2 412	-11.65	-10.63	-8.10	8
		Middle	2 437	-11.41	-10.91	-8.14	
		High	2 462	-11.61	-11.18	-8.38	
		12	2 467	-22.94	-22.78	-19.85	
		13	2 472	-24.81	-23.67	-21.19	

Remark;

According to KDB 662911 D01 v02r01, power spectral density of each port (Ant.1 + Ant.2) was combined by using below calculation.

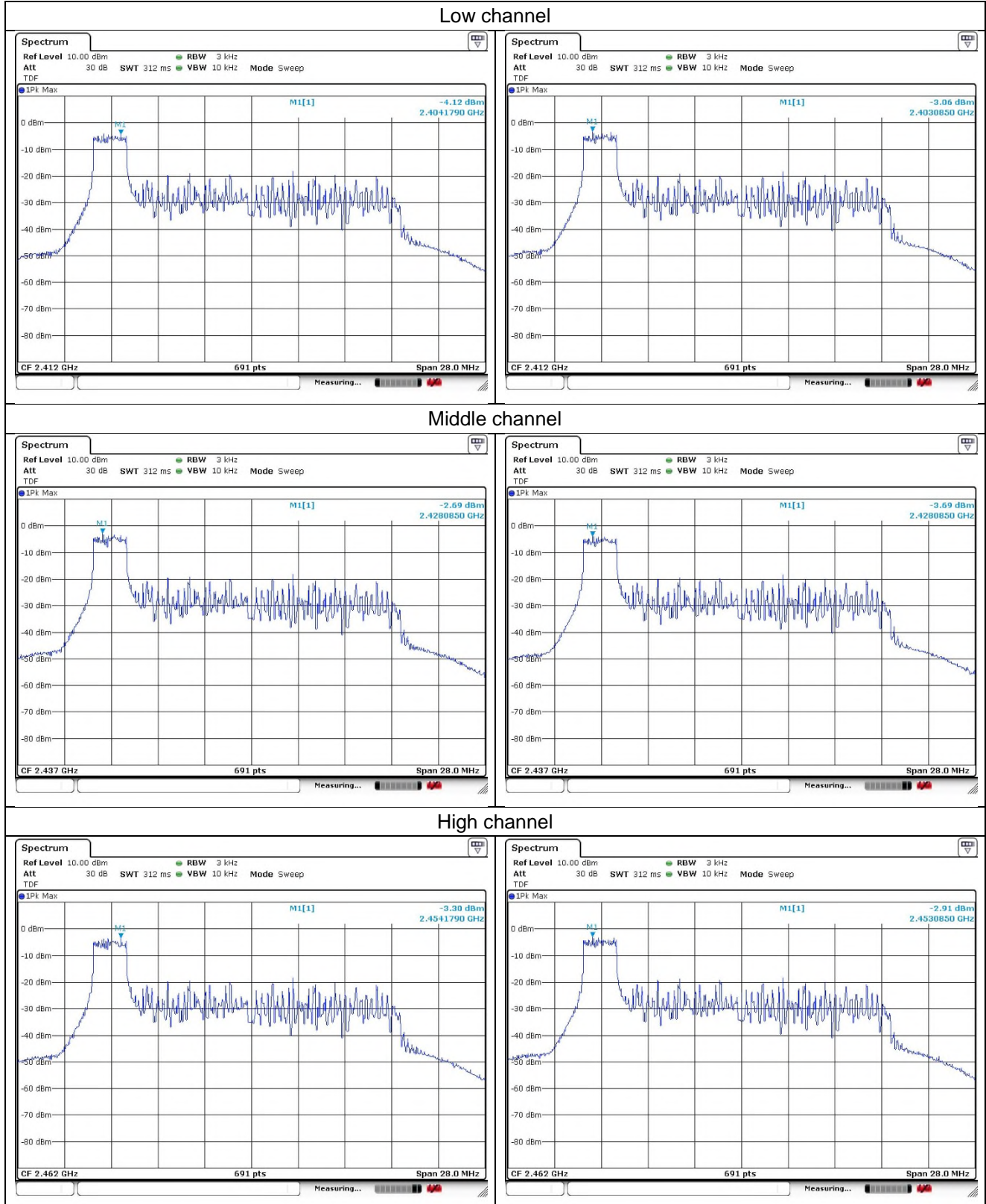
PSD: $10 \log \{10^{(Ant.1 \text{ PSD} / 10)} + 10^{(Ant. 2 \text{ PSD} / 10)}\}$

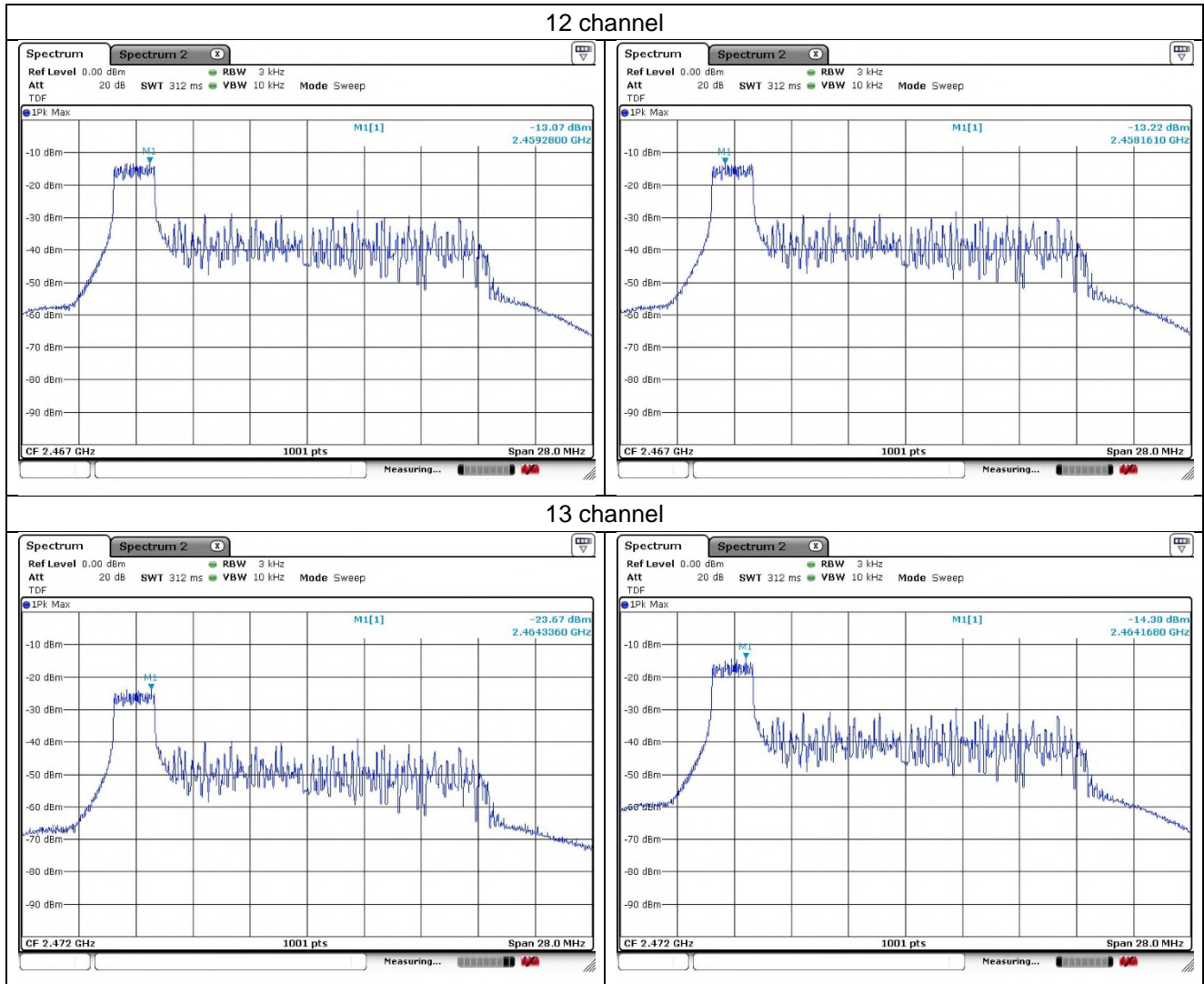
- Test plots_SISO

26T_0 RU

Ant.1

Ant.2



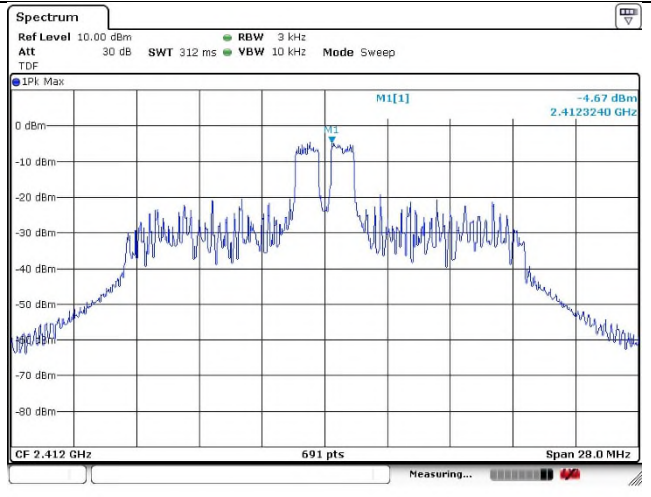
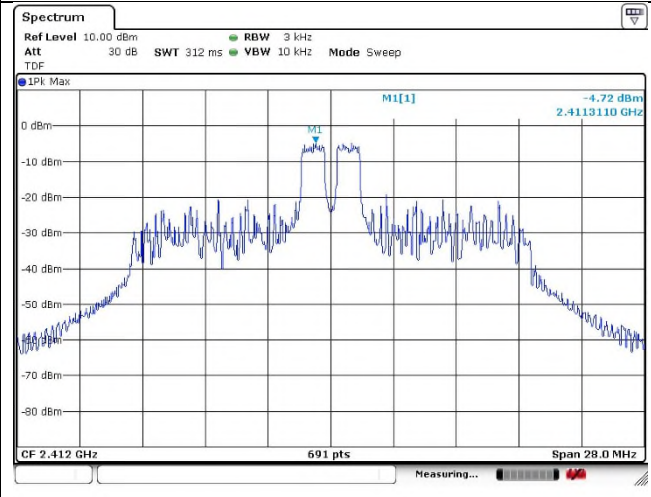


26T_4 RU

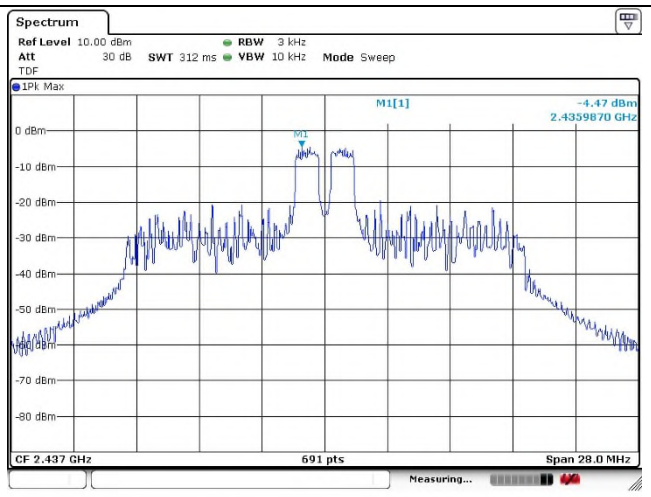
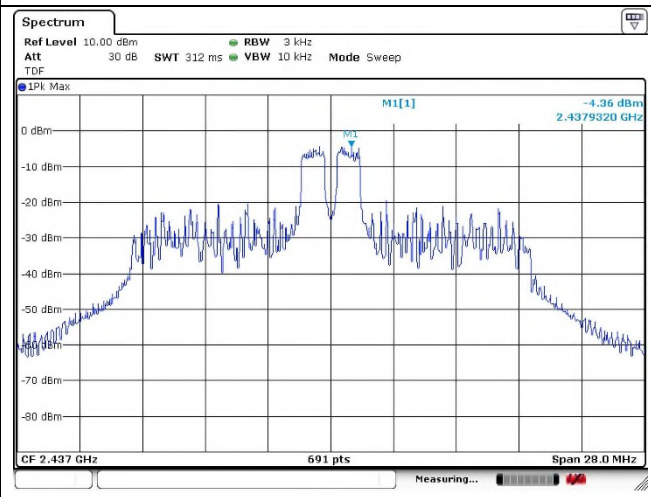
Ant.1

Ant.2

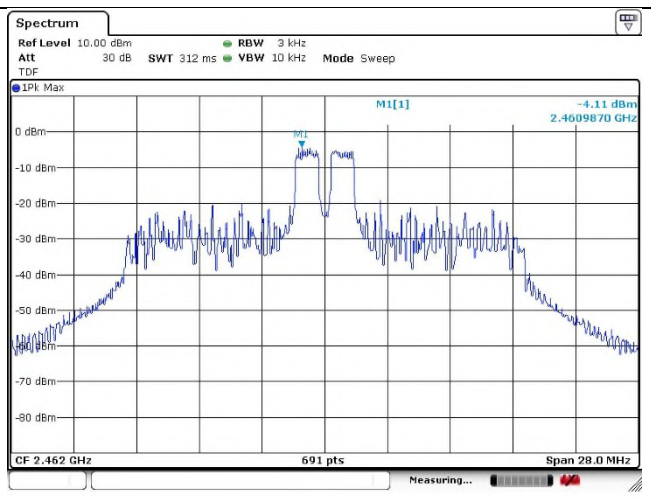
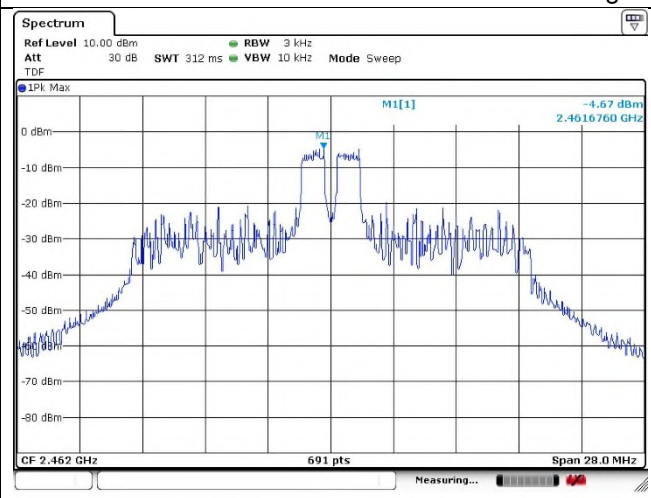
Low channel



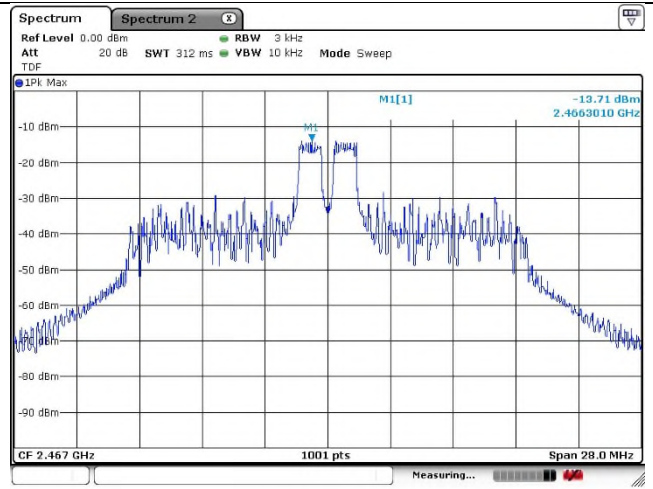
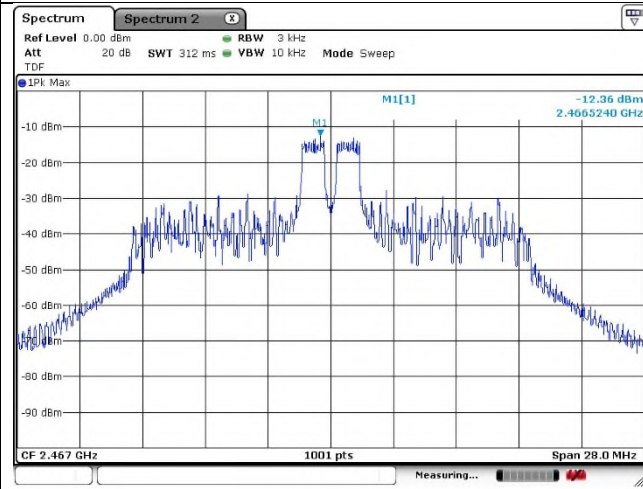
Middle channel



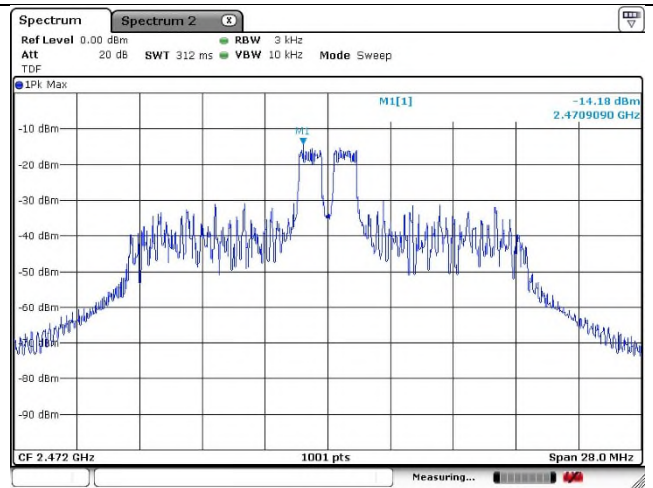
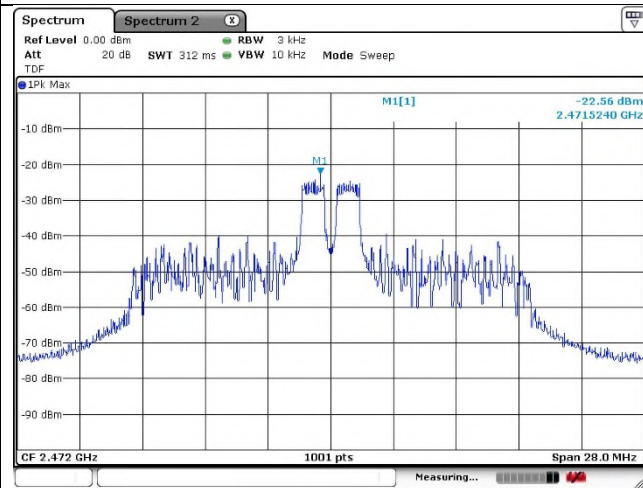
High channel



12 channel



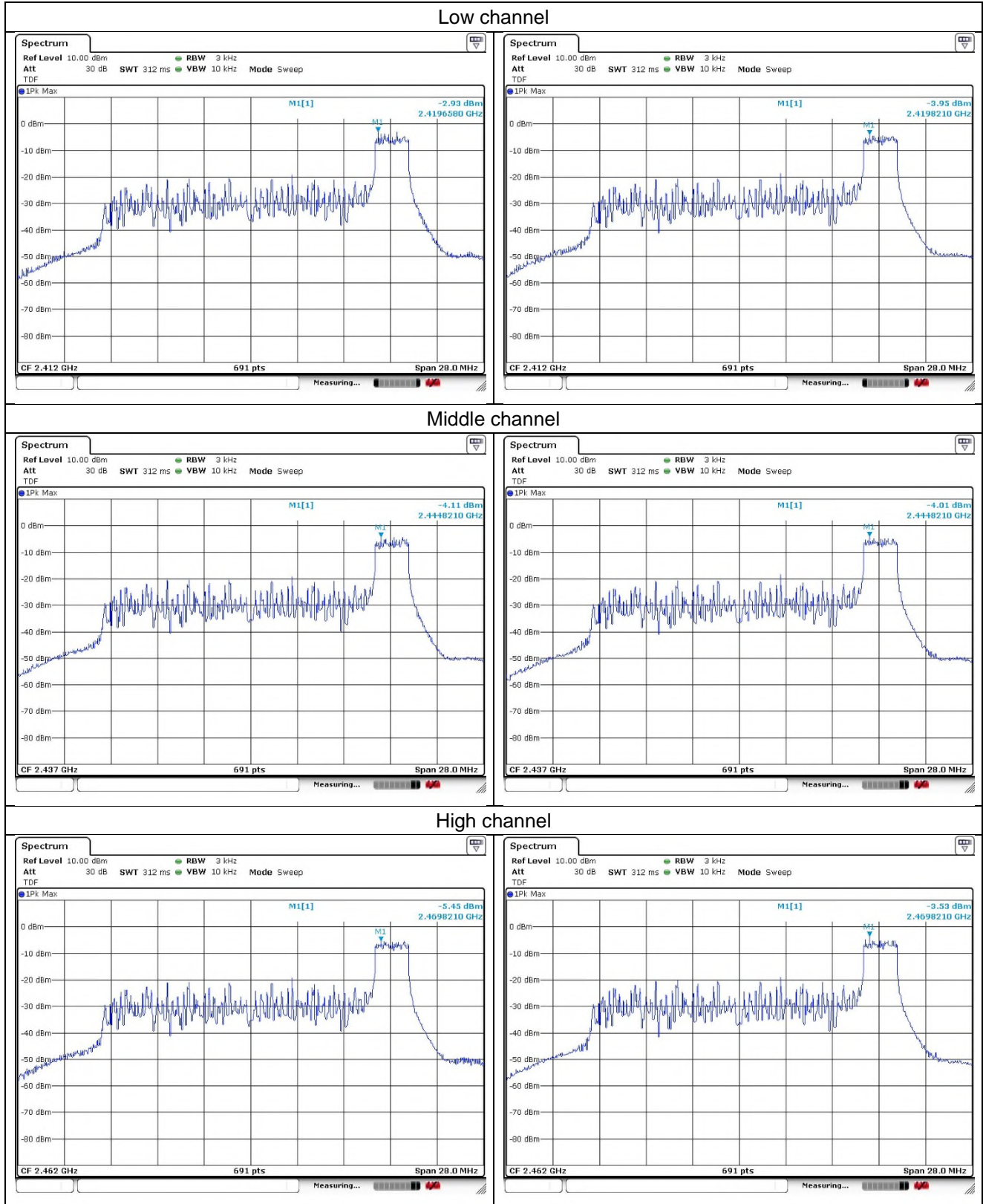
13 channel



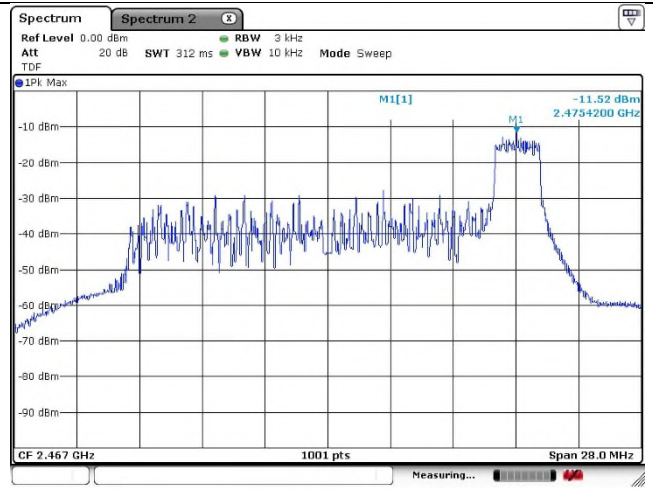
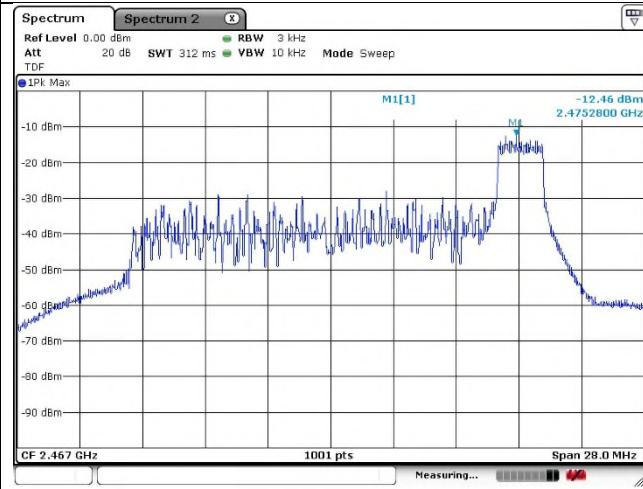
26T_8 RU

Ant.1

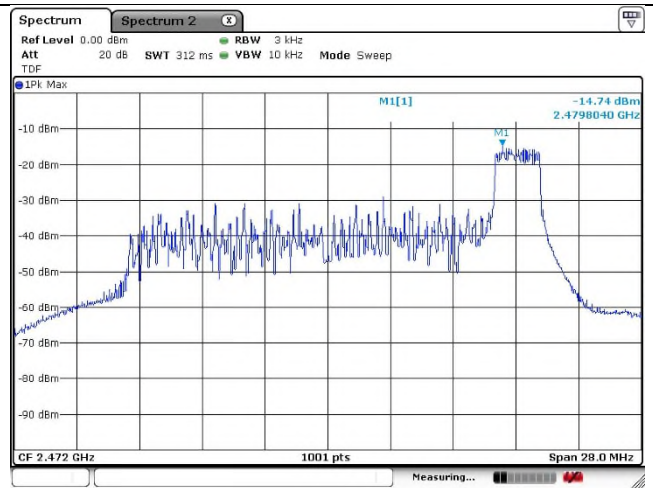
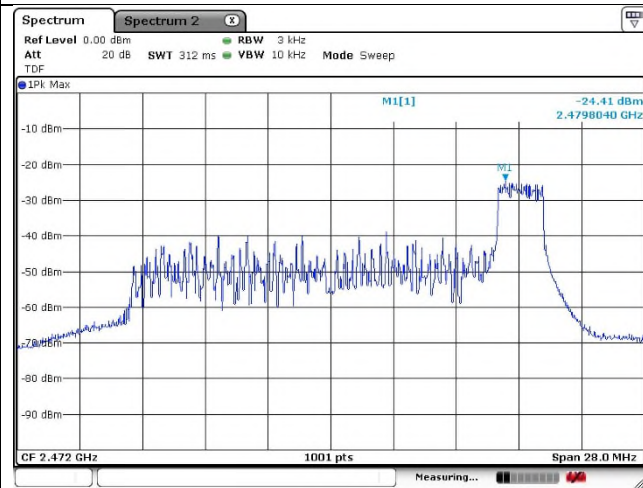
Ant.2



12 channel



13 channel

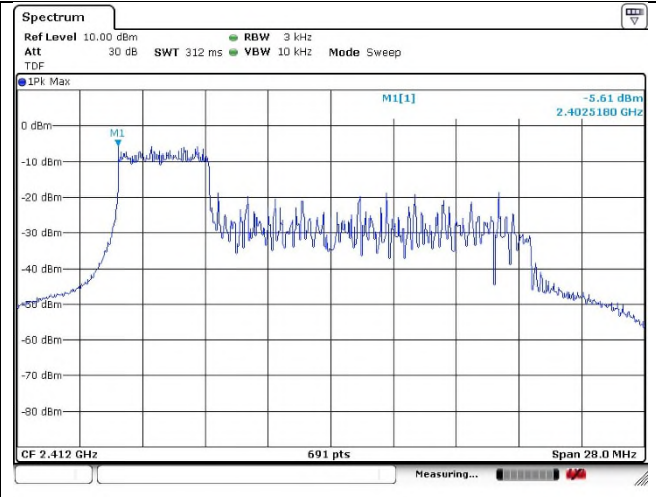
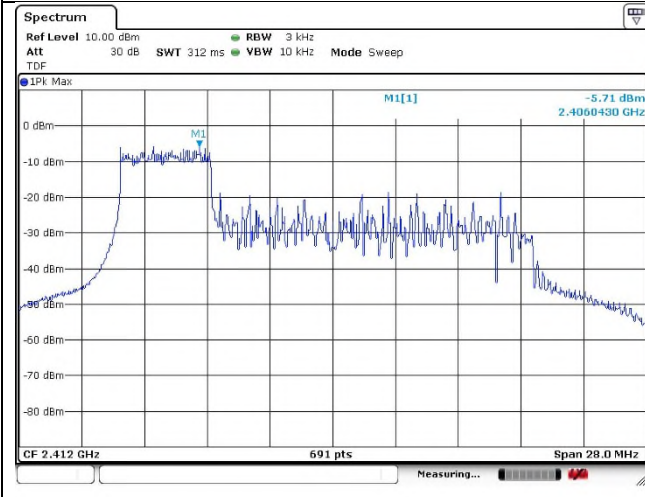


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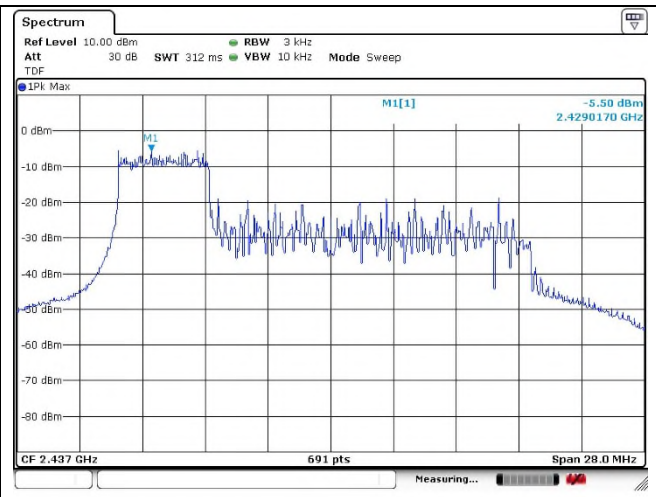
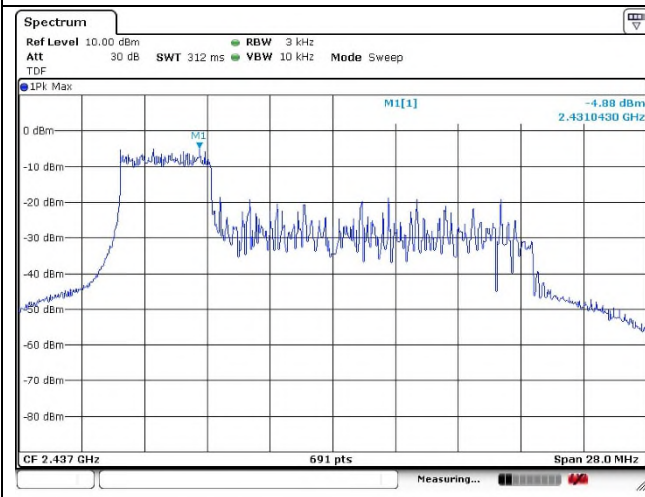
Ant.1

Ant.2

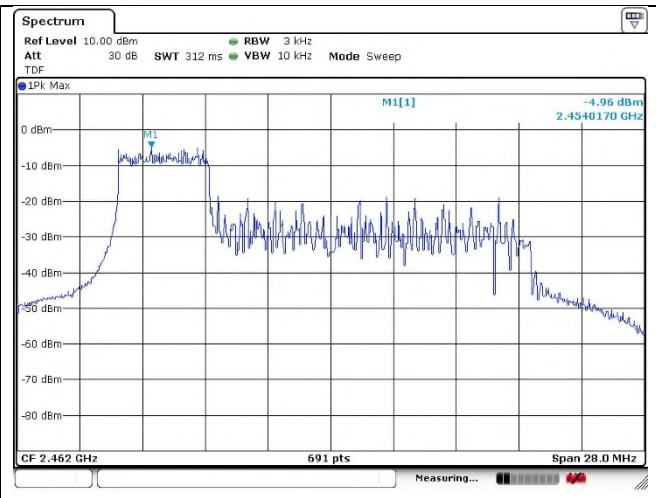
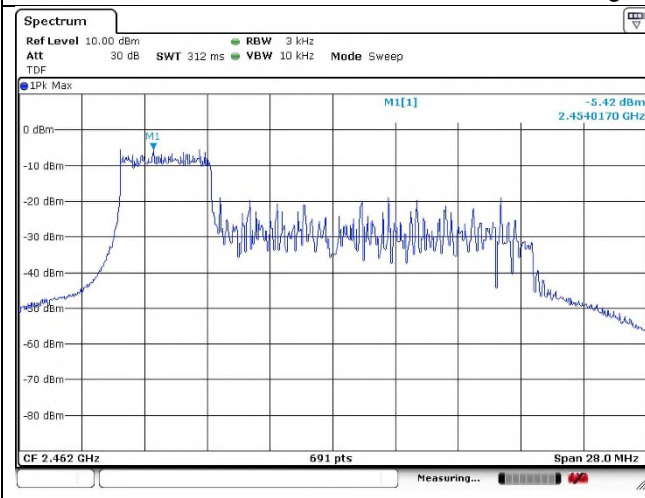
Low channel



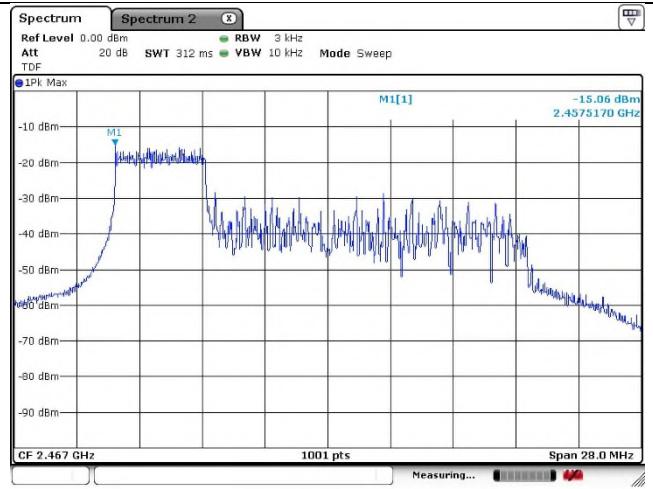
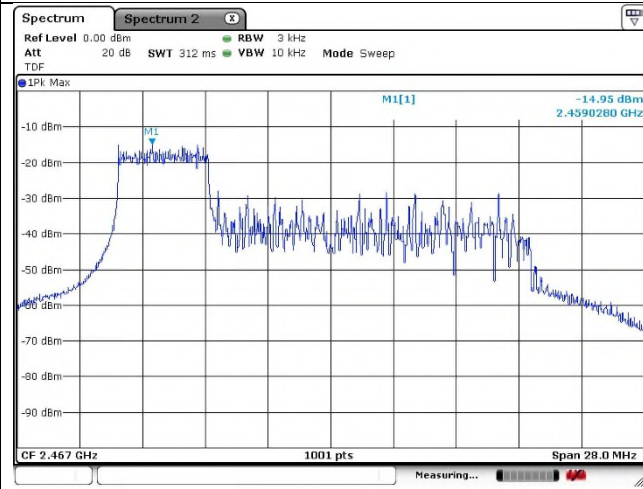
Middle channel



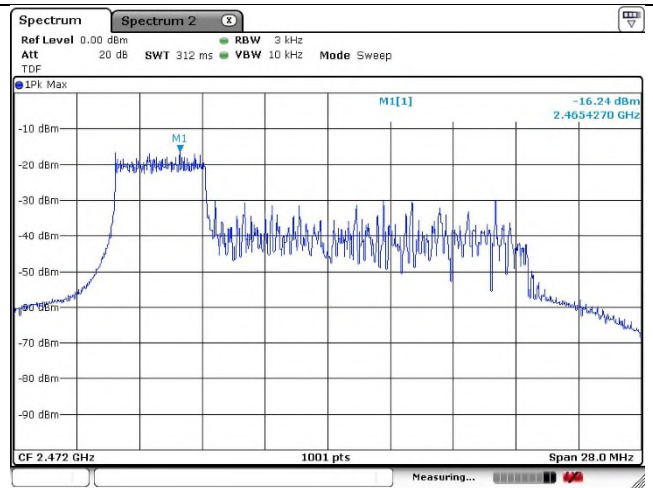
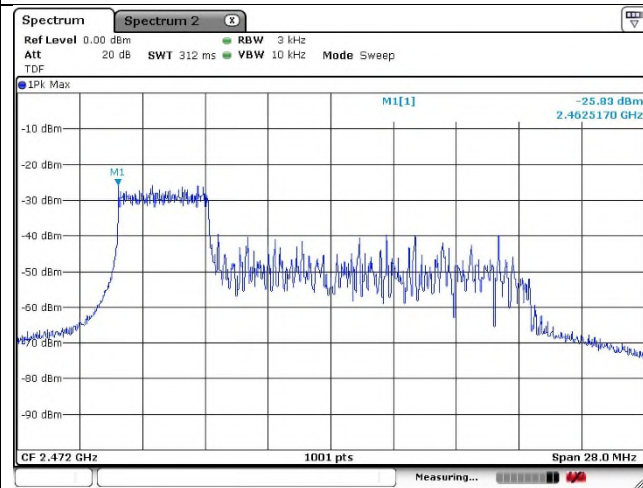
High channel



12 channel



13 channel

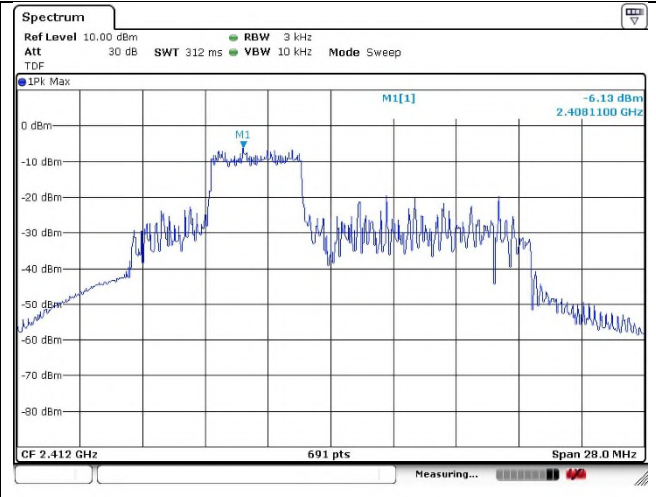
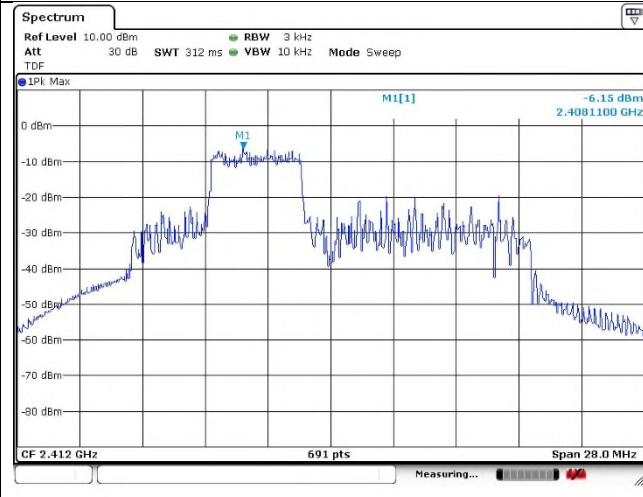


52T_38 RU

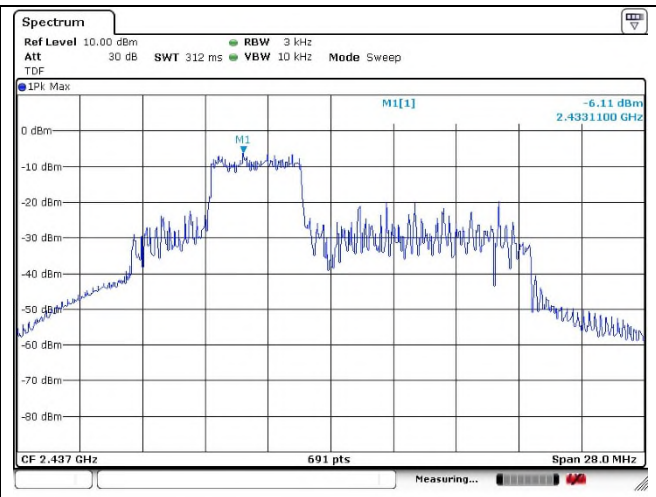
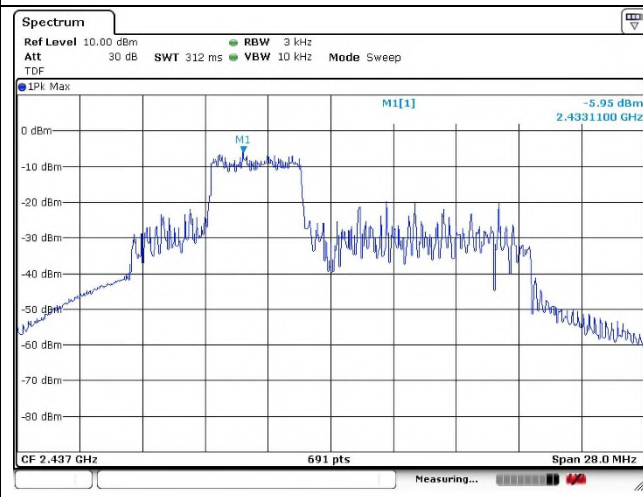
Ant.1

Ant.2

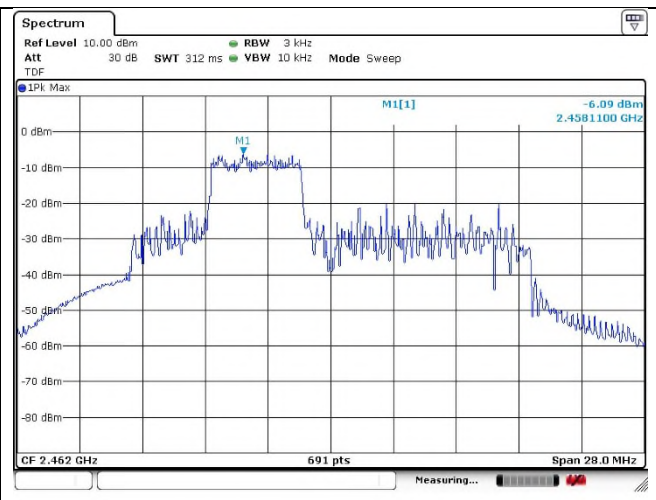
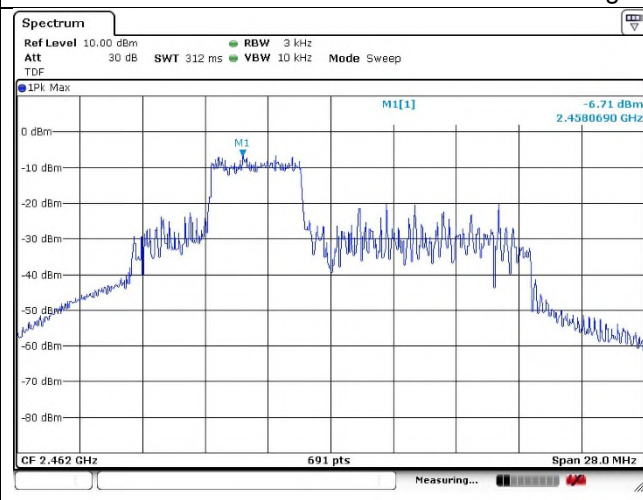
Low channel



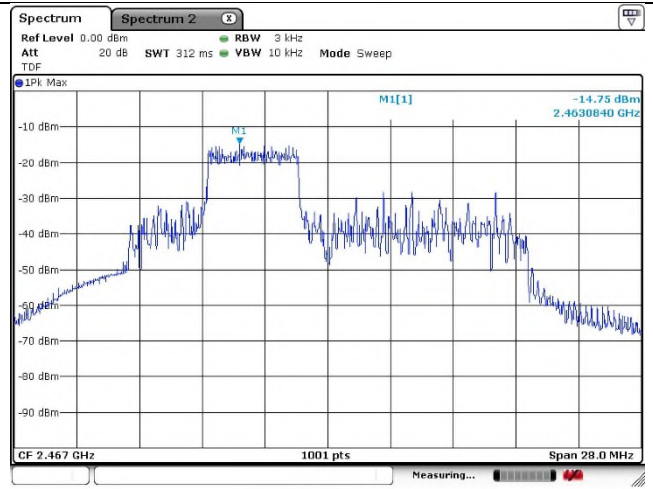
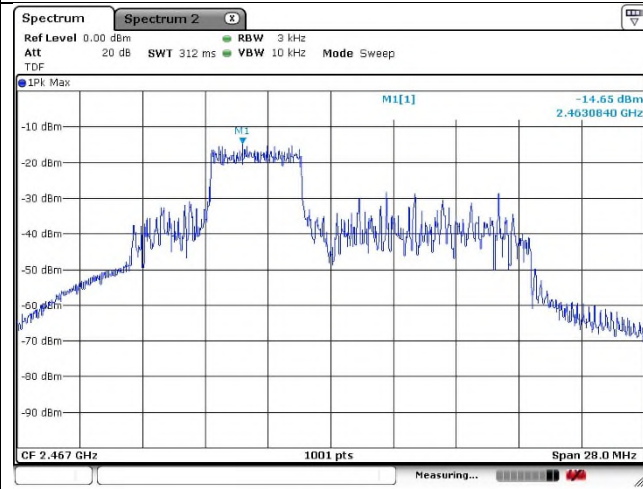
Middle channel



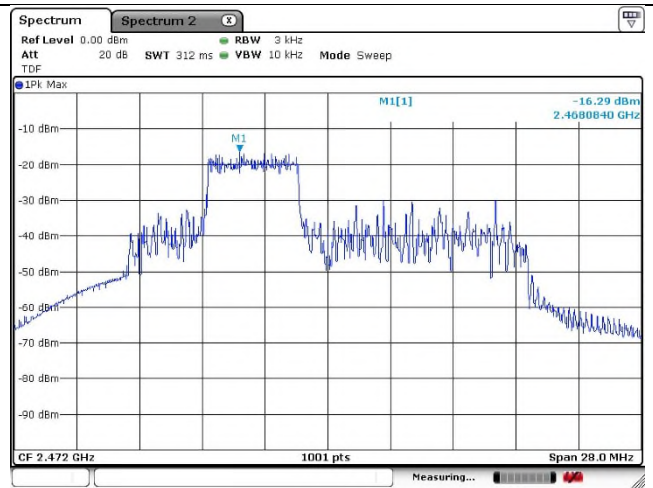
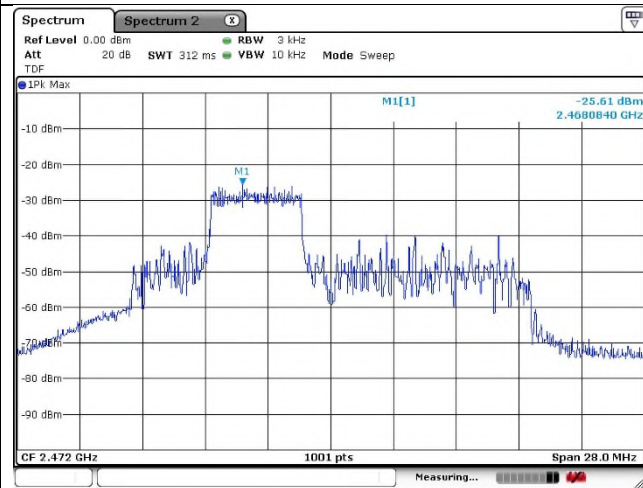
High channel



12 channel



13 channel

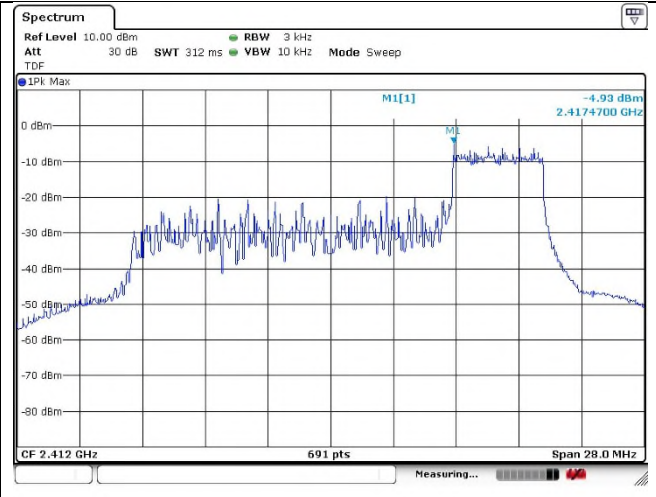
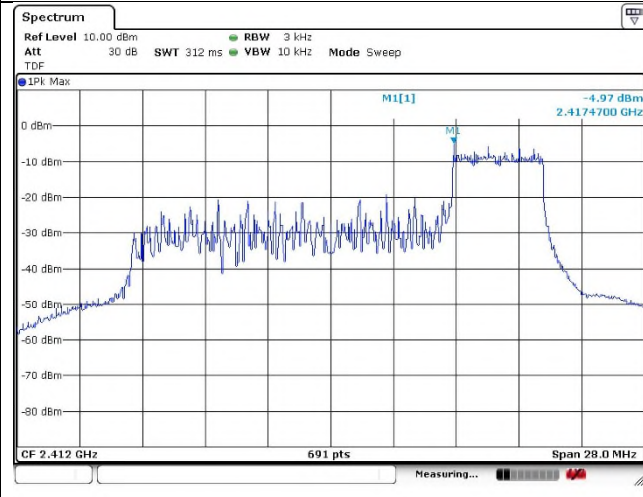


52T_40 RU

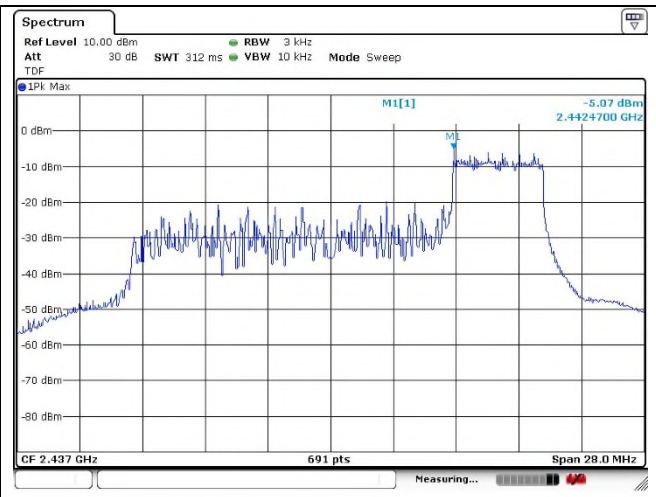
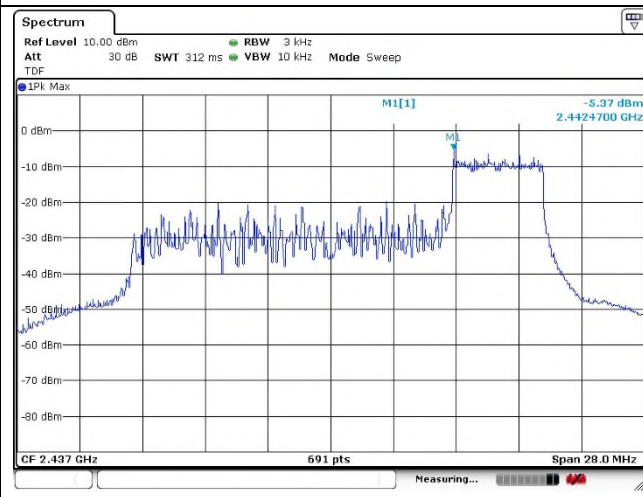
Ant.1

Ant.2

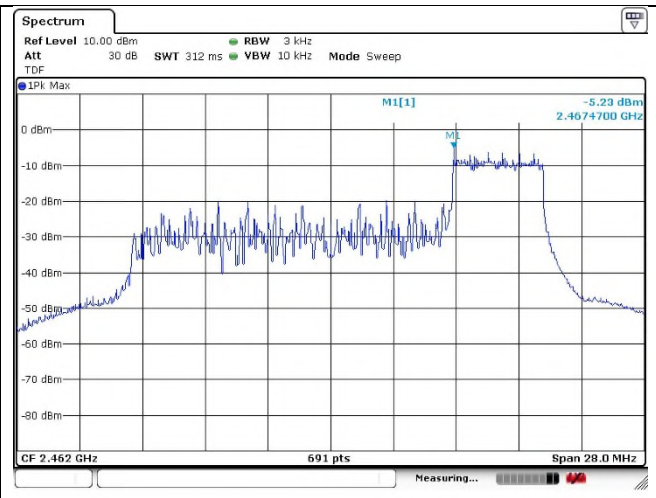
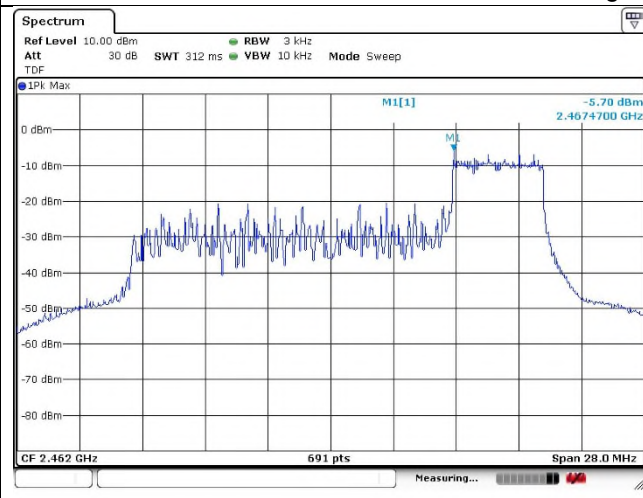
Low channel



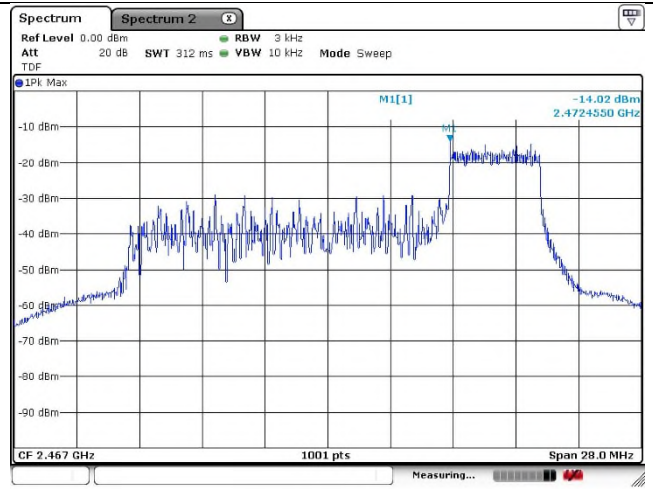
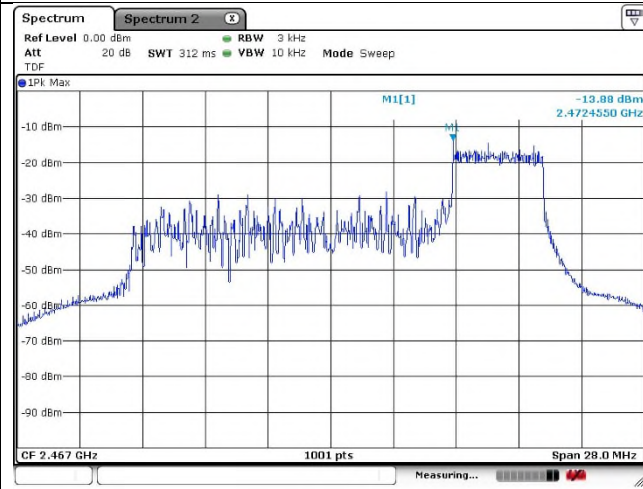
Middle channel



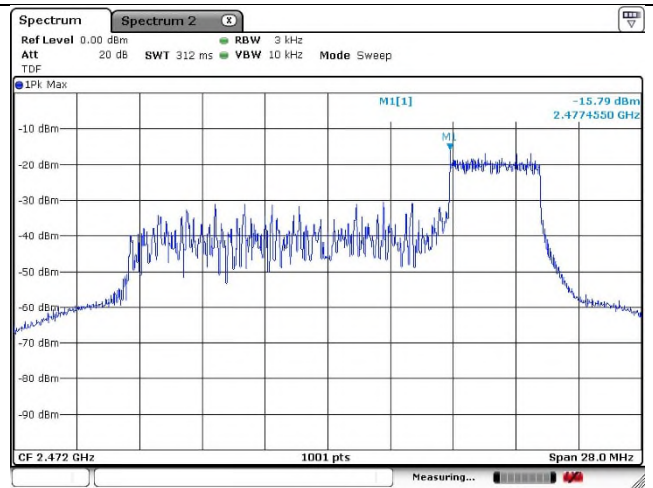
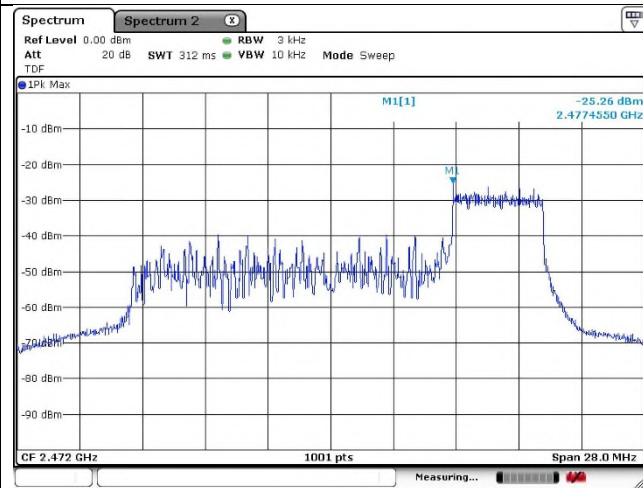
High channel



12 channel



13 channel

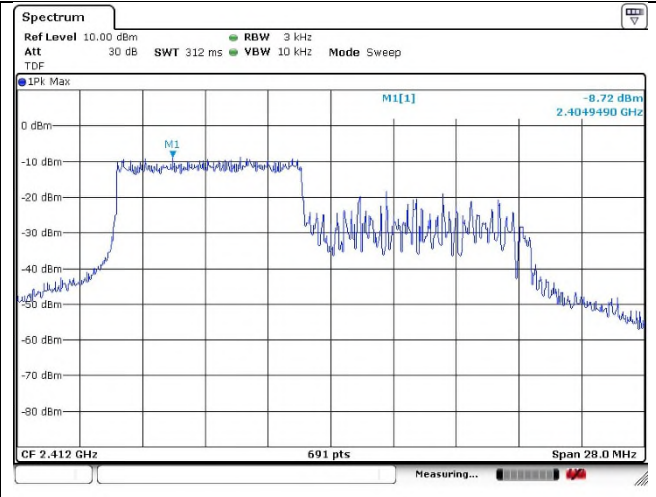
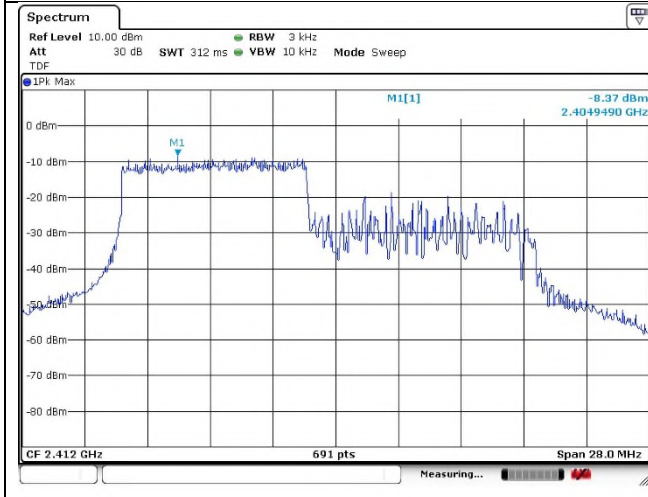


106T_53 RU

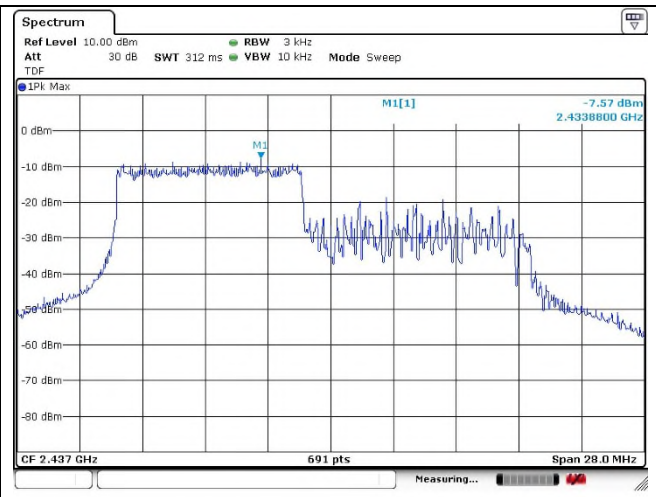
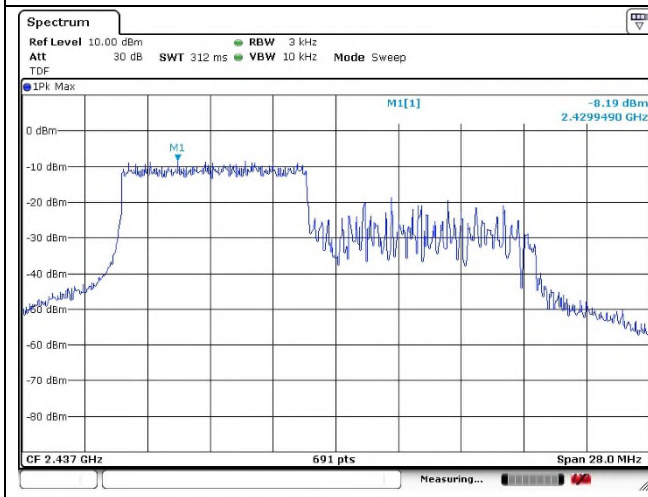
Ant.1

Ant.2

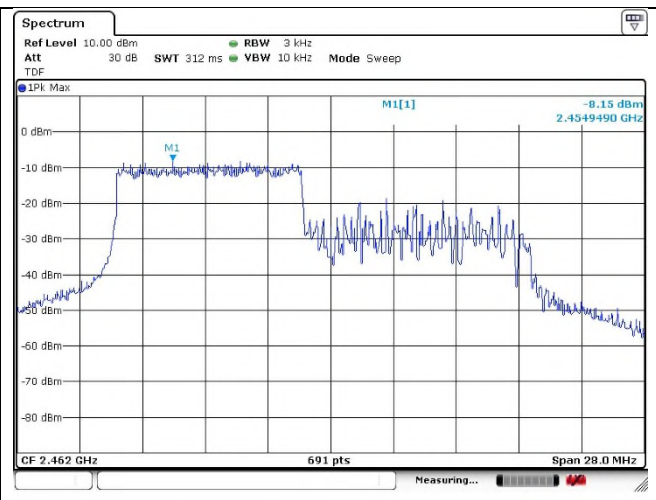
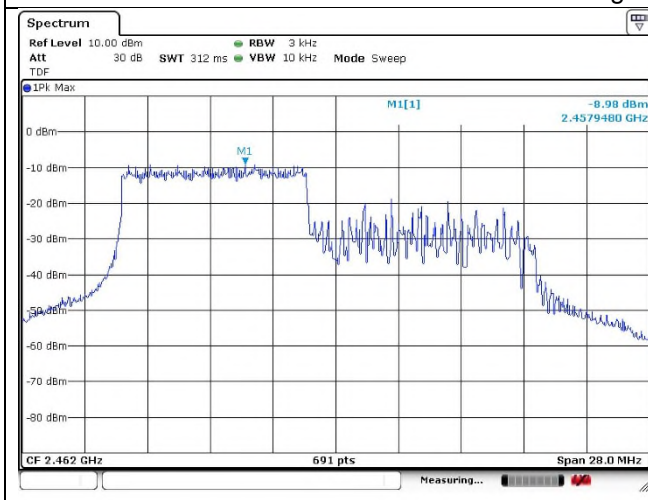
Low channel



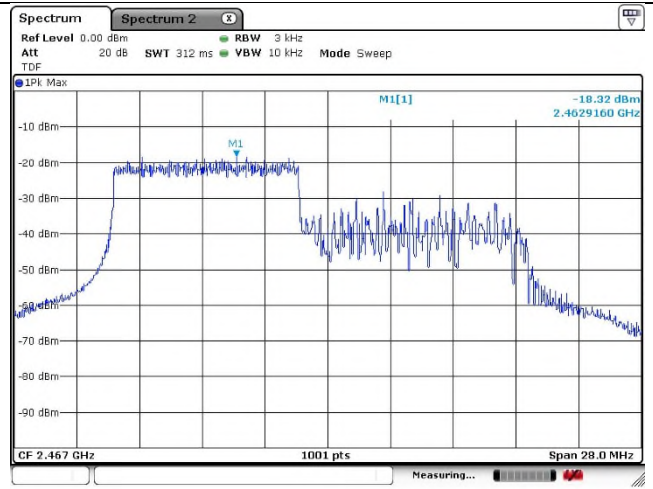
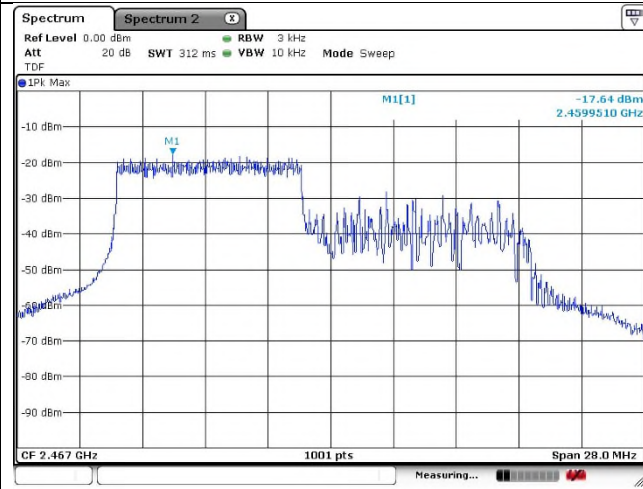
Middle channel



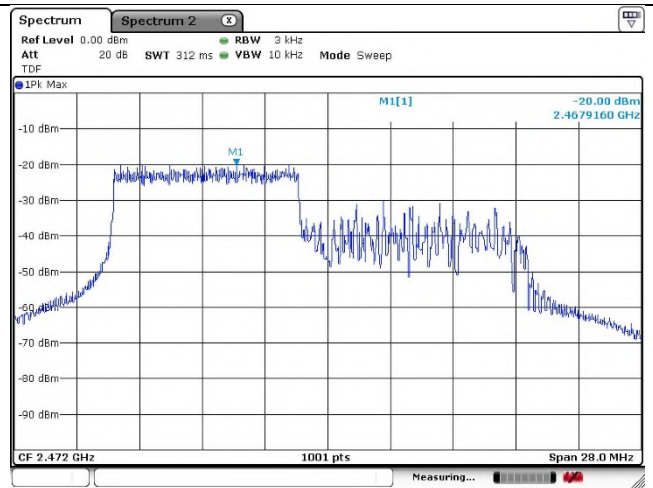
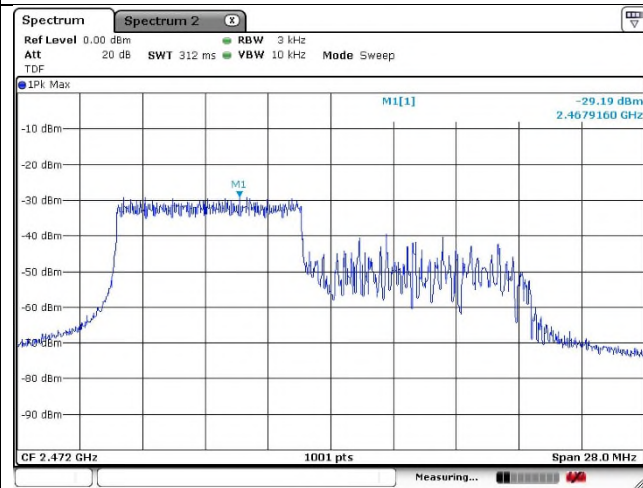
High channel



12 channel



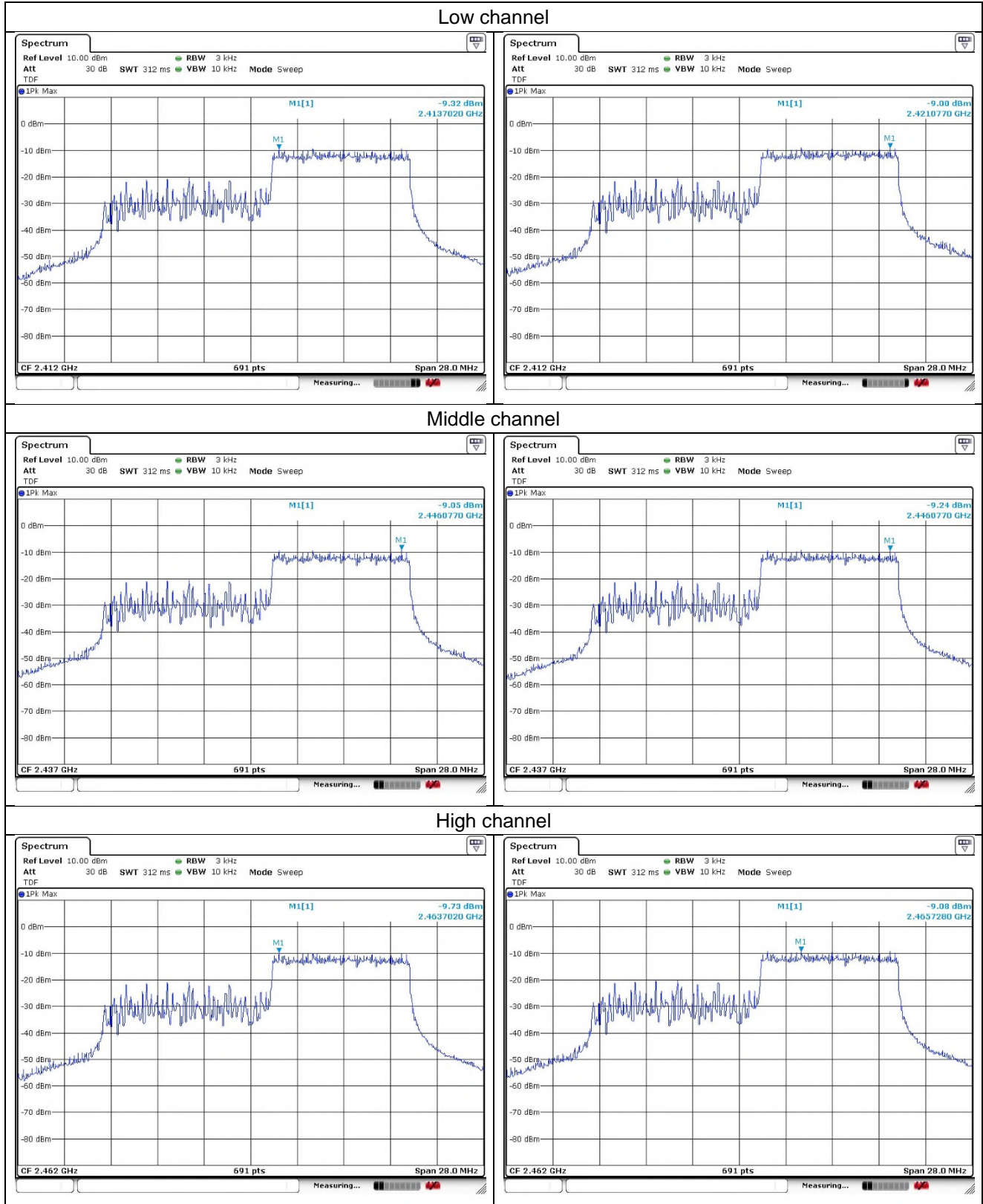
13 channel



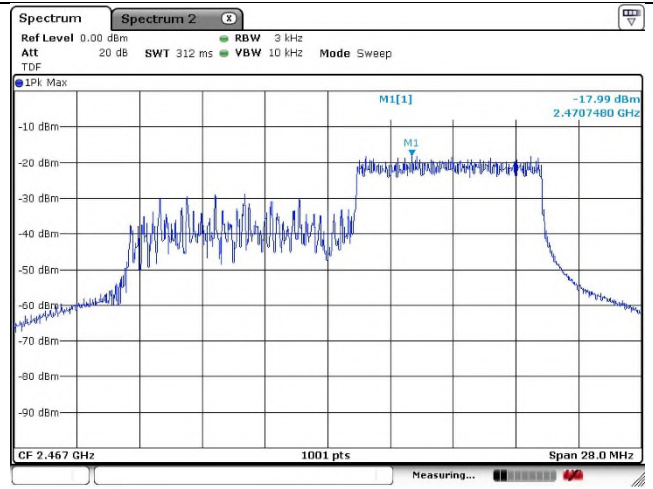
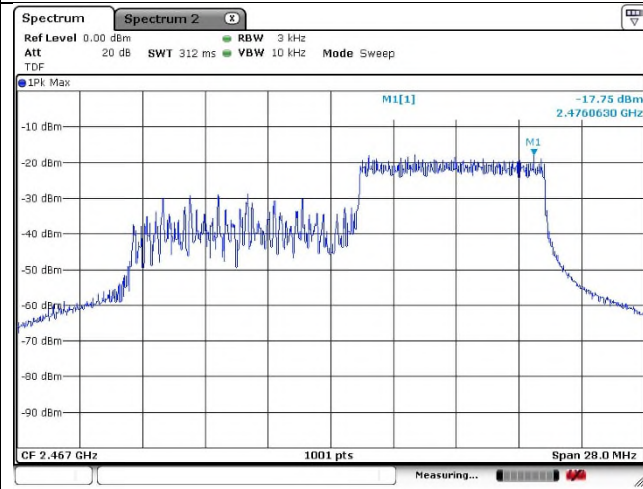
106T_54 RU

Ant.1

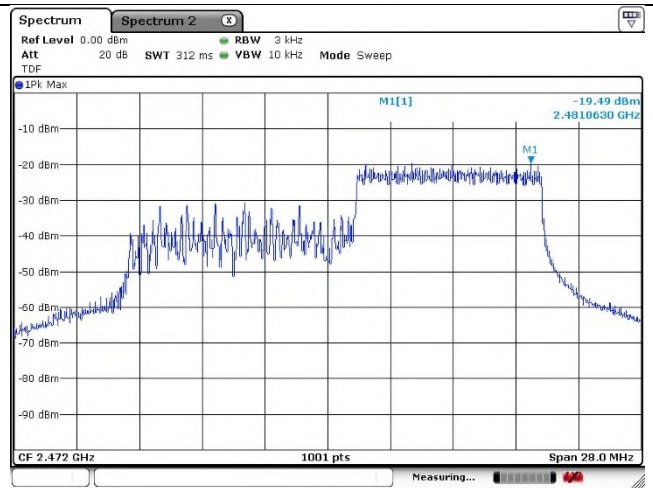
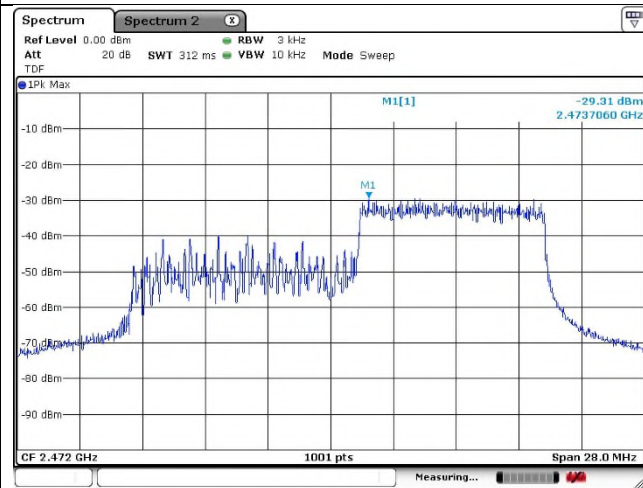
Ant.2



12 channel



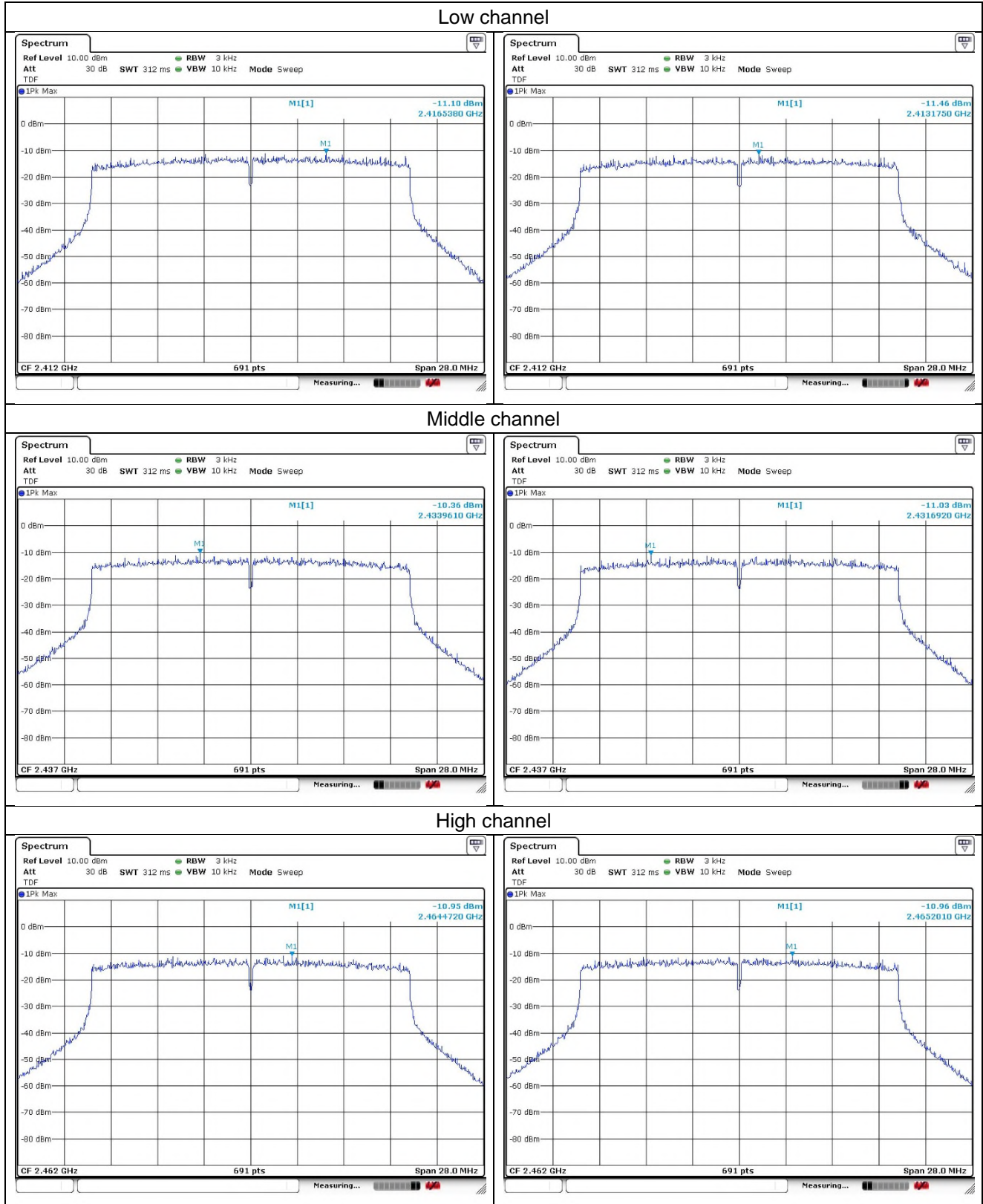
13 channel



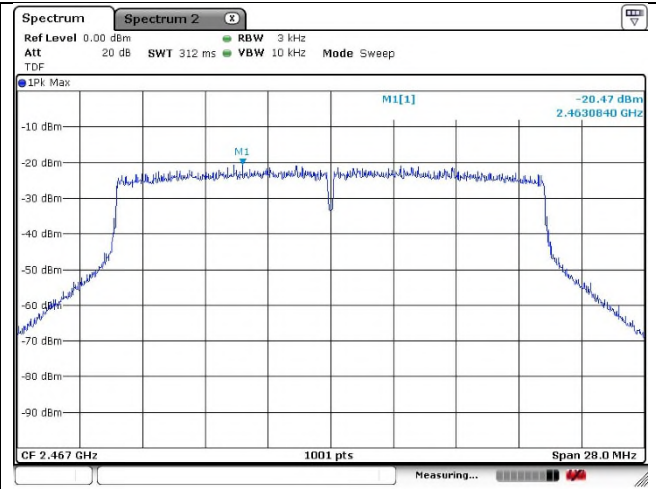
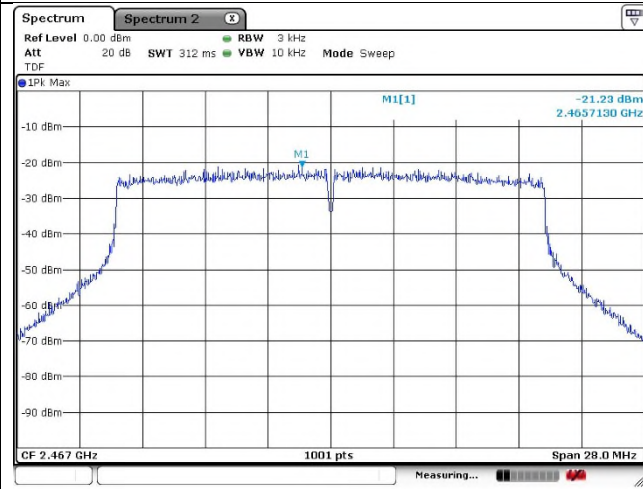
SU

Ant.1

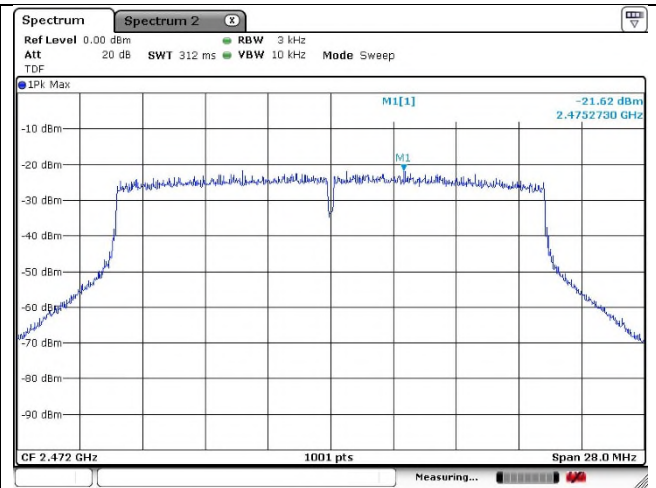
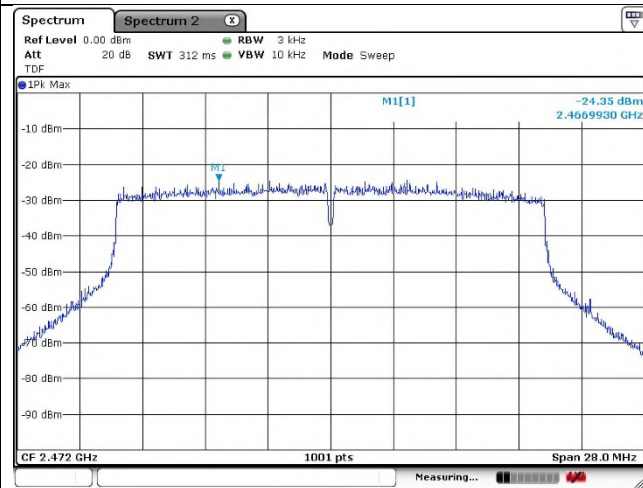
Ant.2



12 channel



13 channel

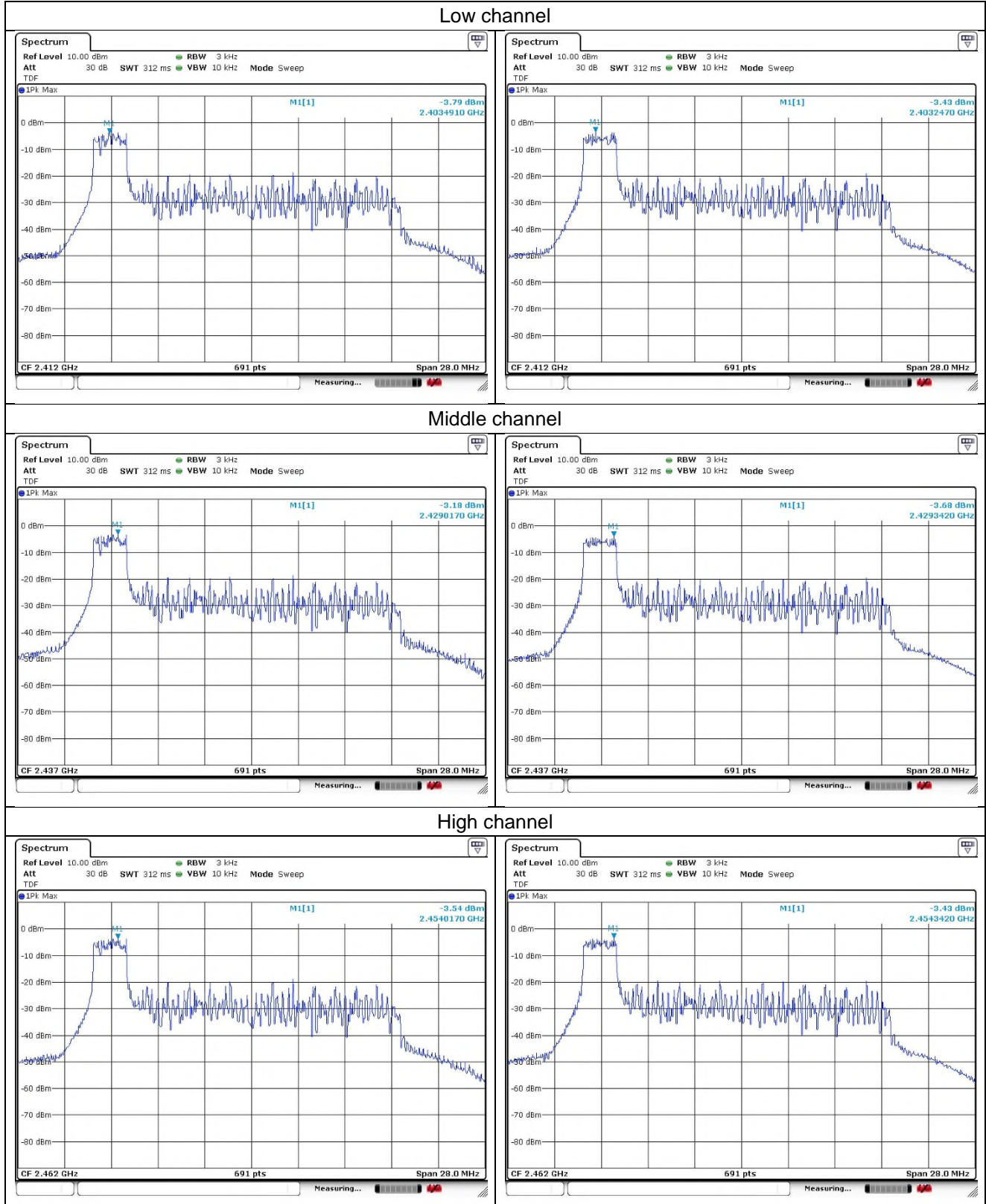


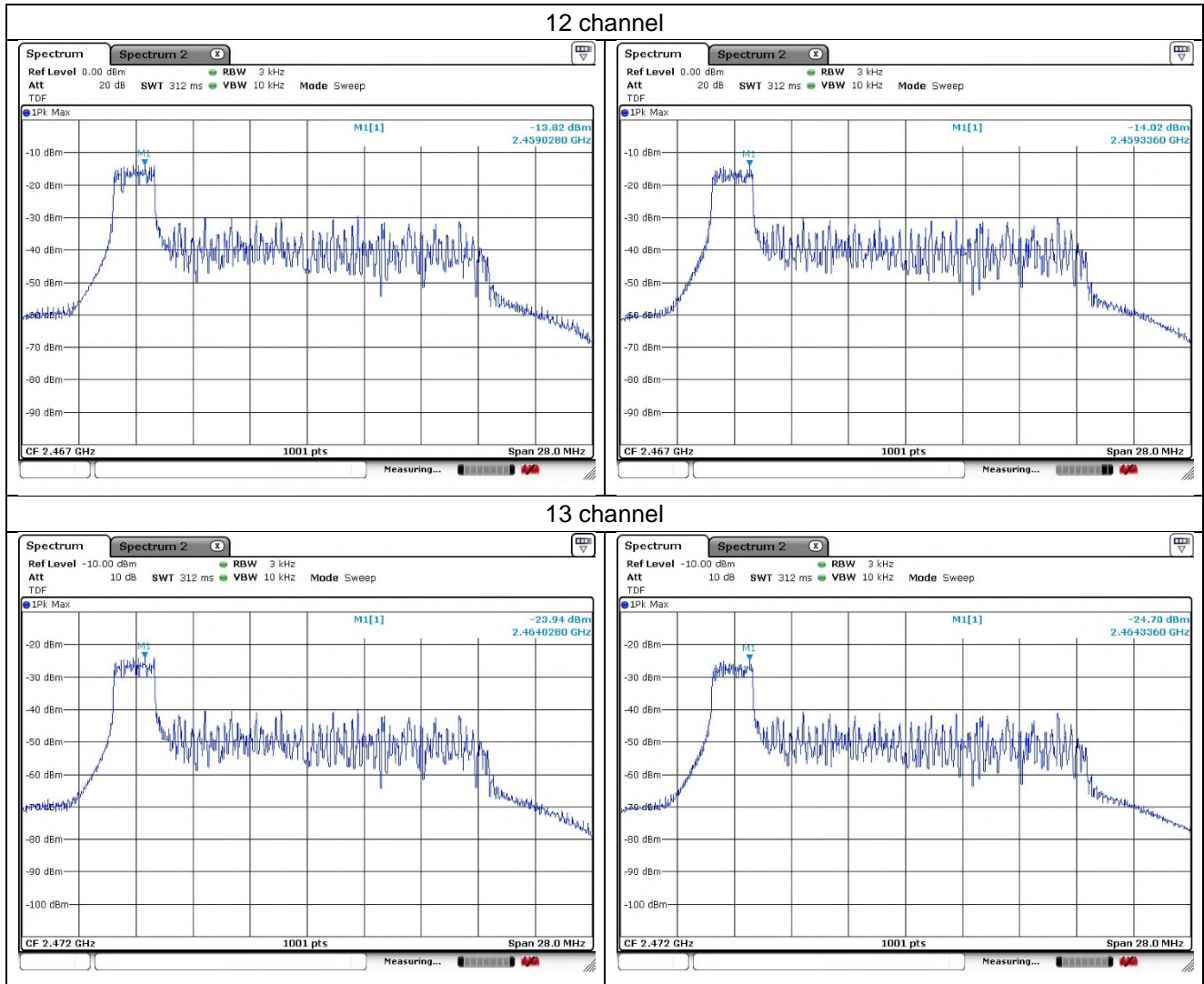
- Test plots_MIMO

26T_0 RU

Ant.1

Ant.2



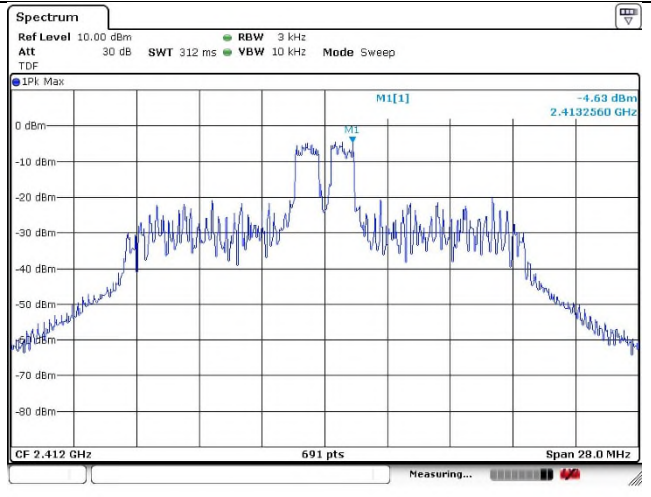
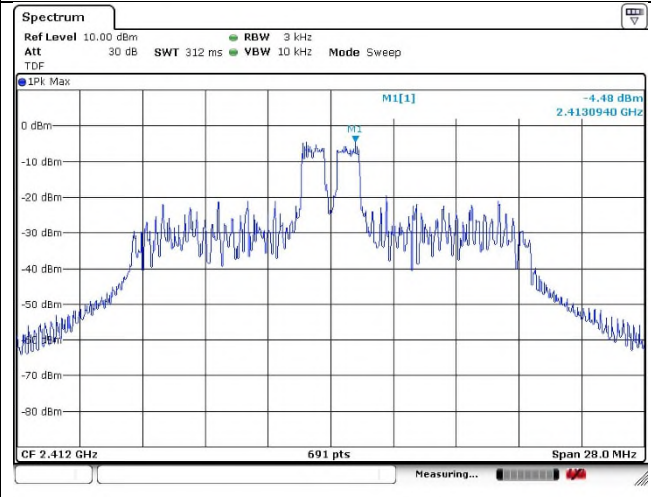


26T_4 RU

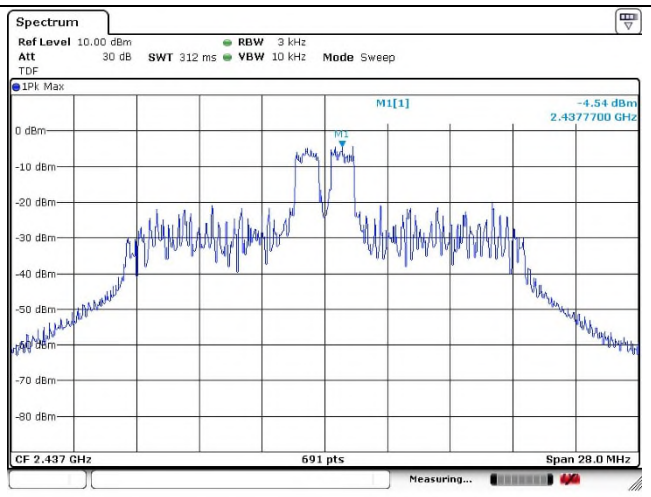
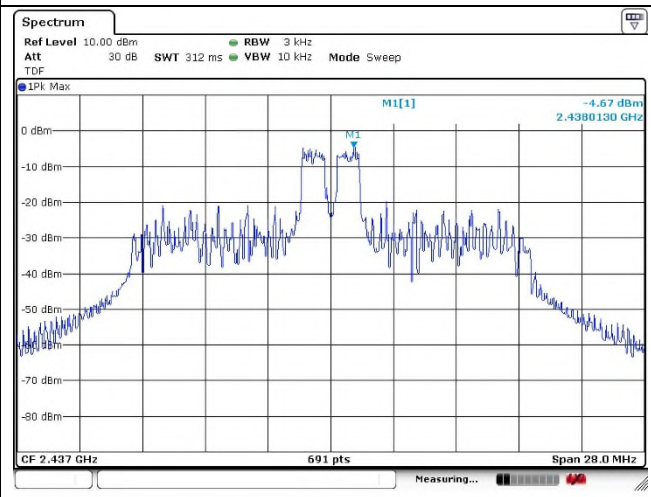
Ant.1

Ant.2

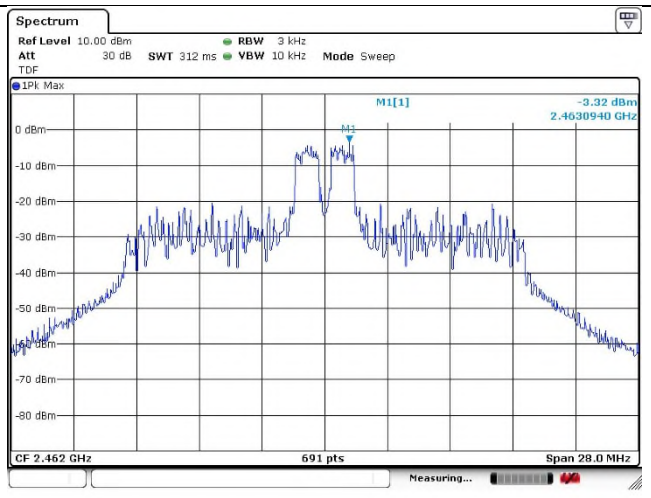
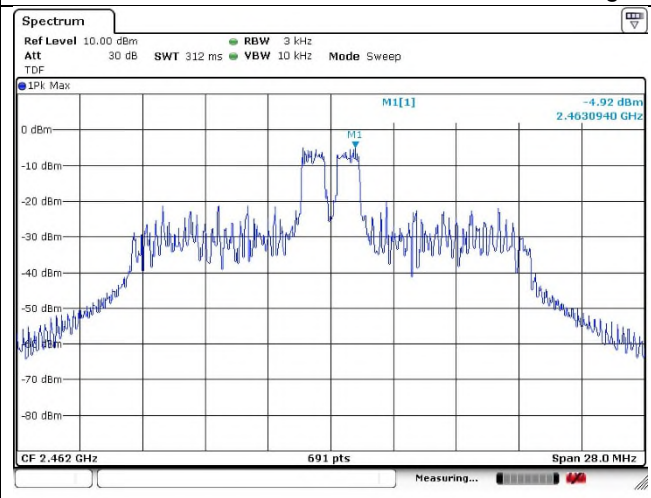
Low channel

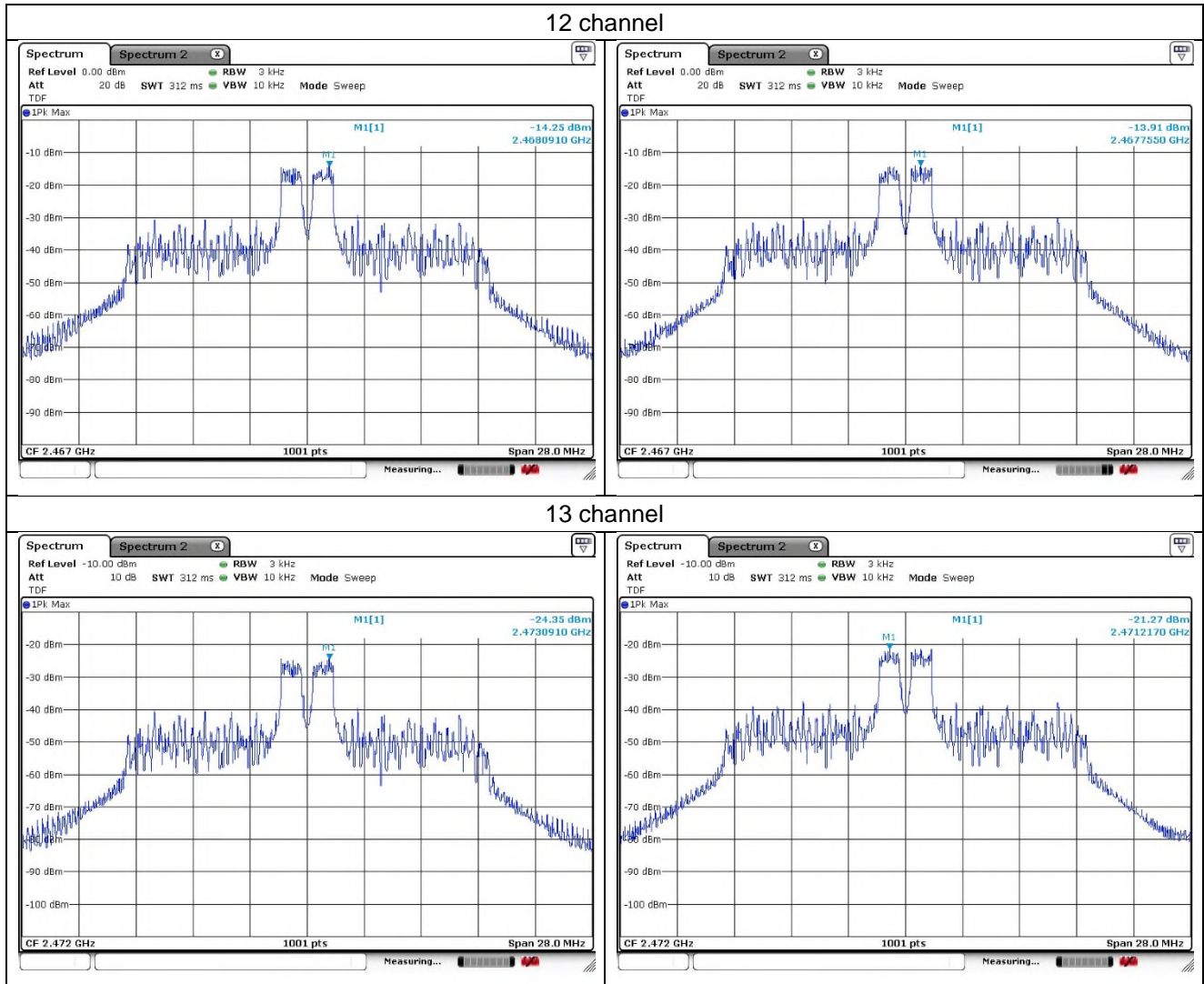


Middle channel



High channel



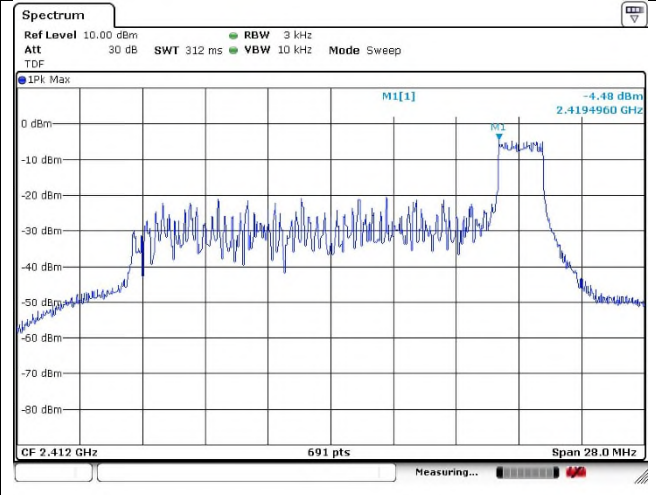
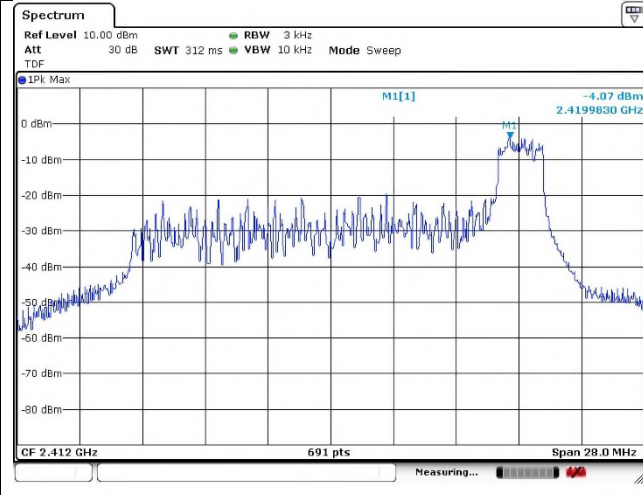


26T_8 RU

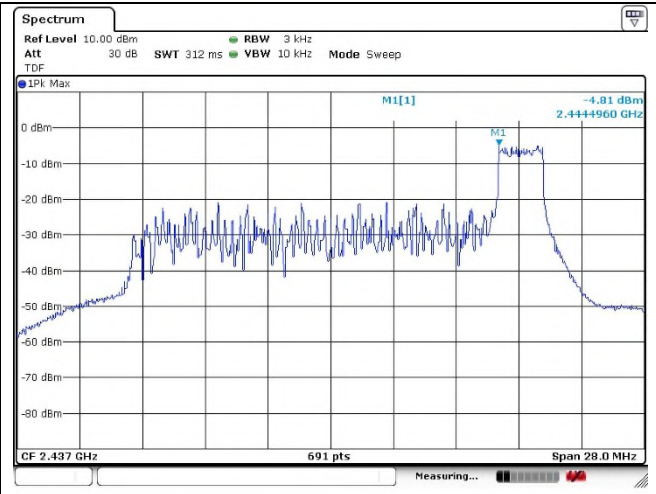
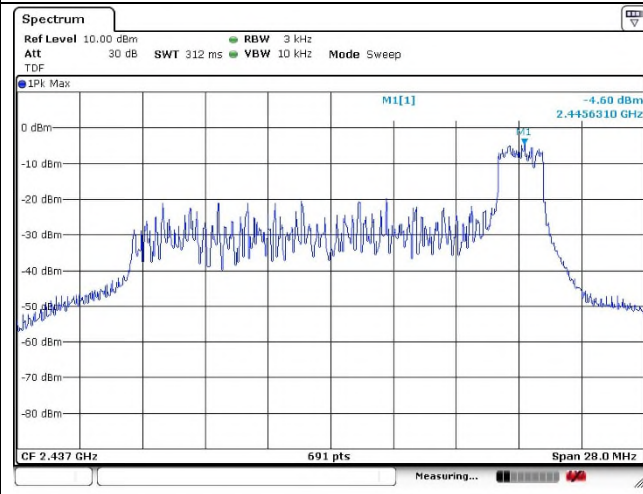
Ant.1

Ant.2

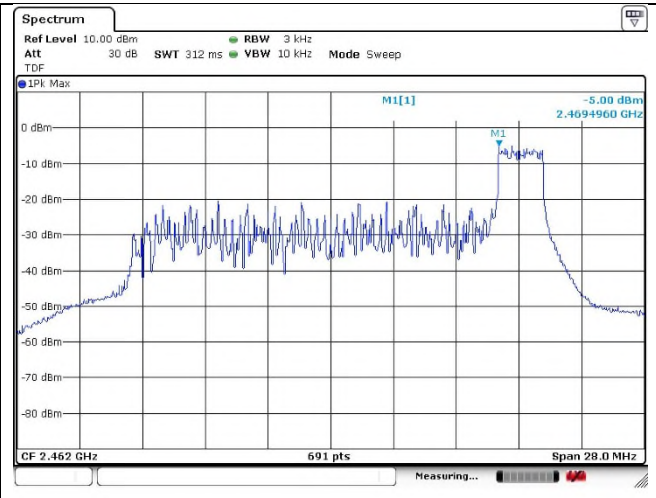
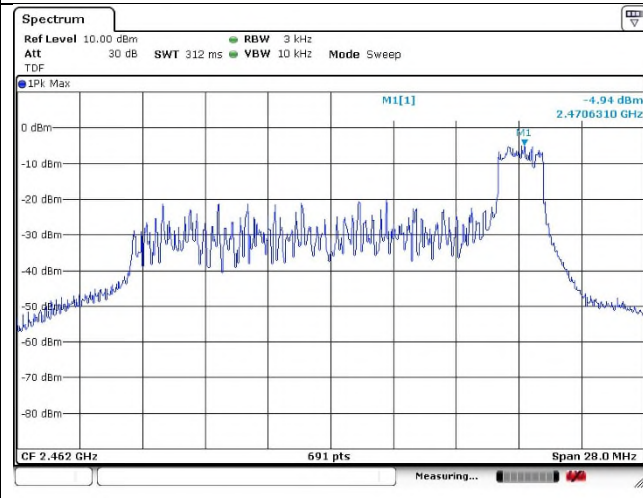
Low channel

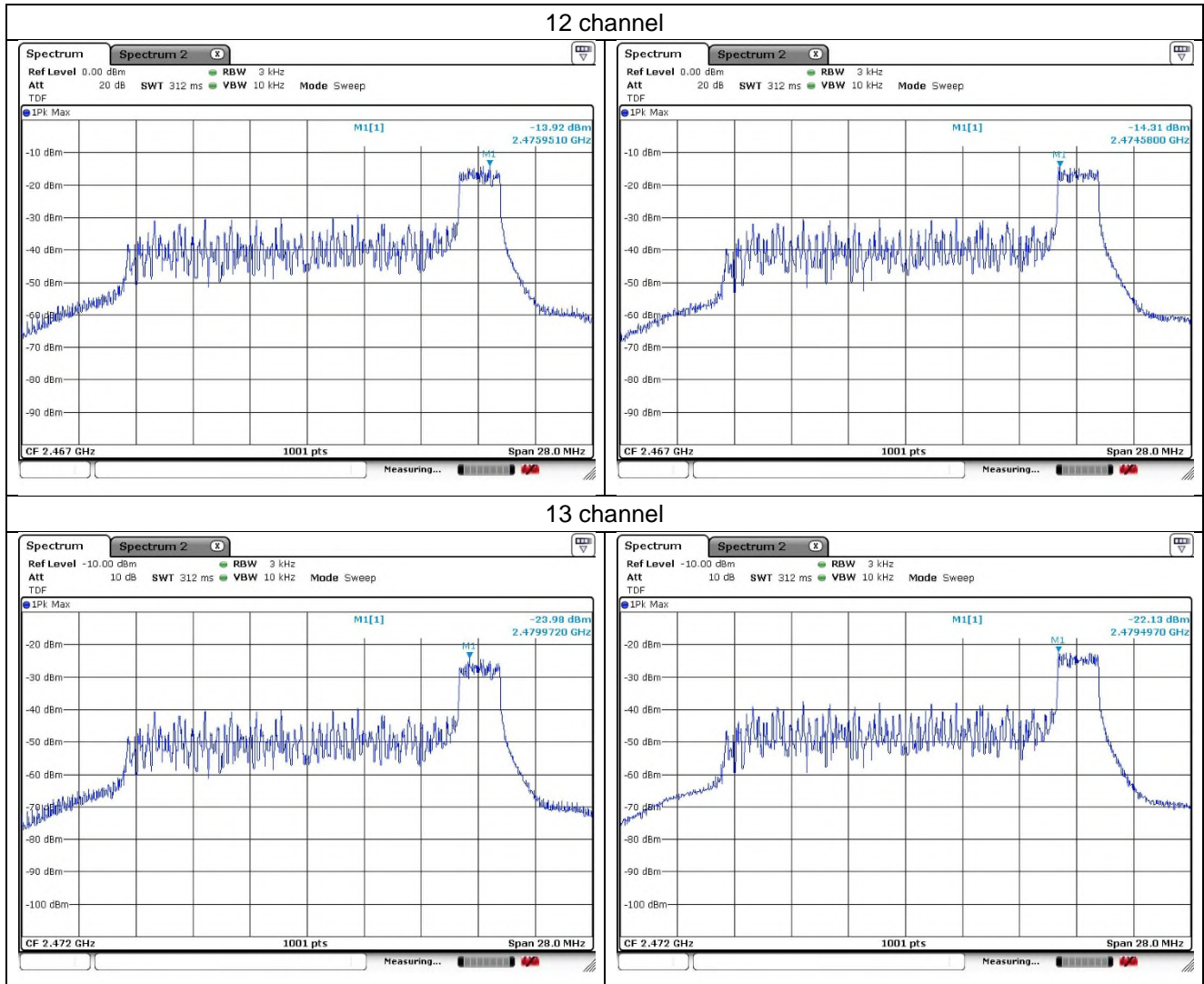


Middle channel



High channel



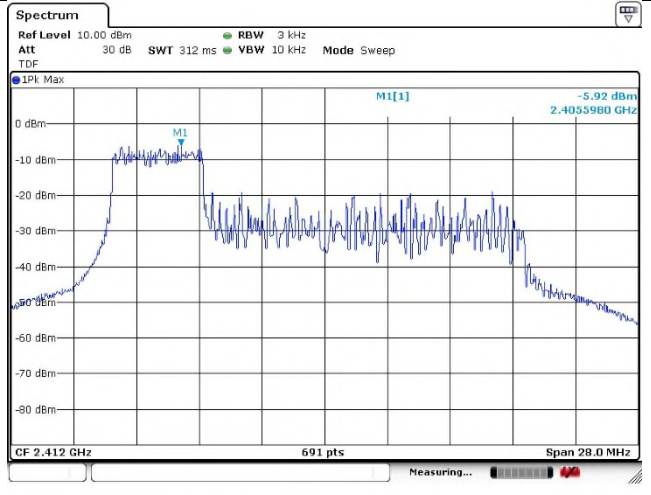
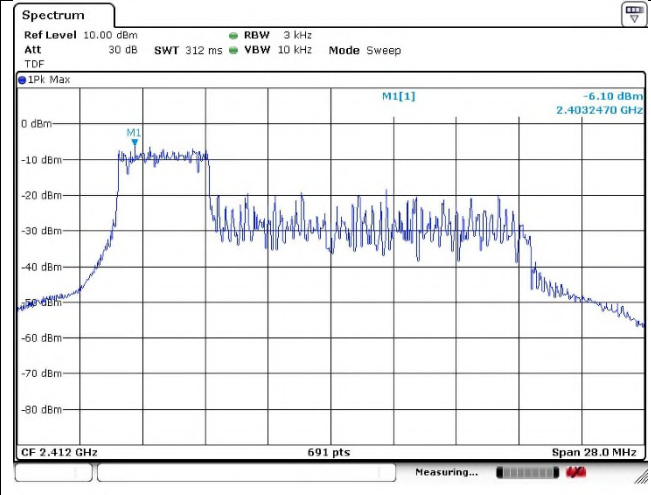


52T_37 RU

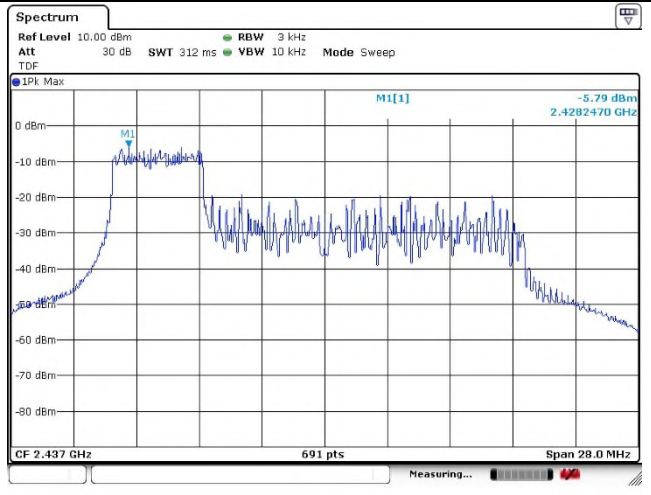
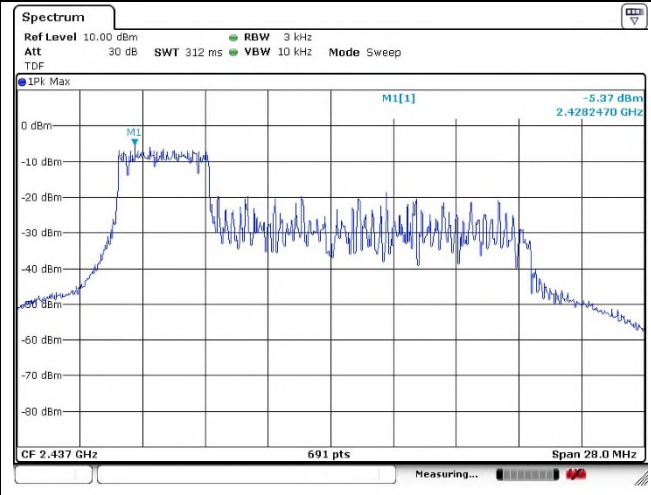
Ant.1

Ant.2

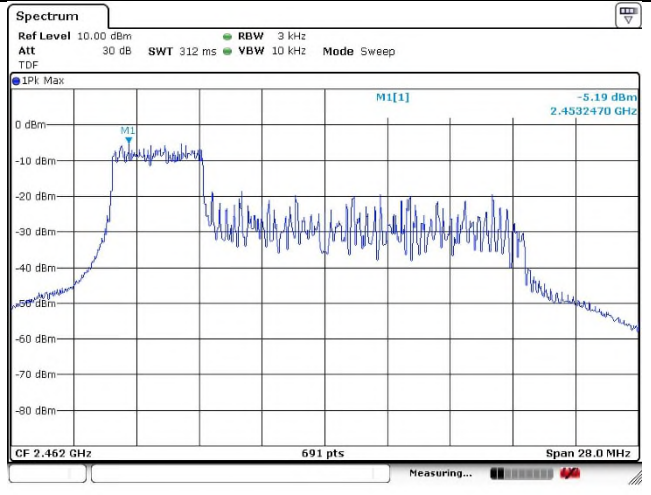
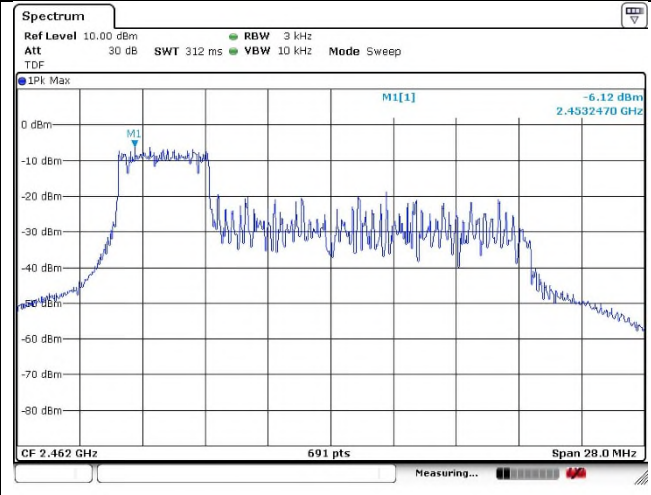
Low channel

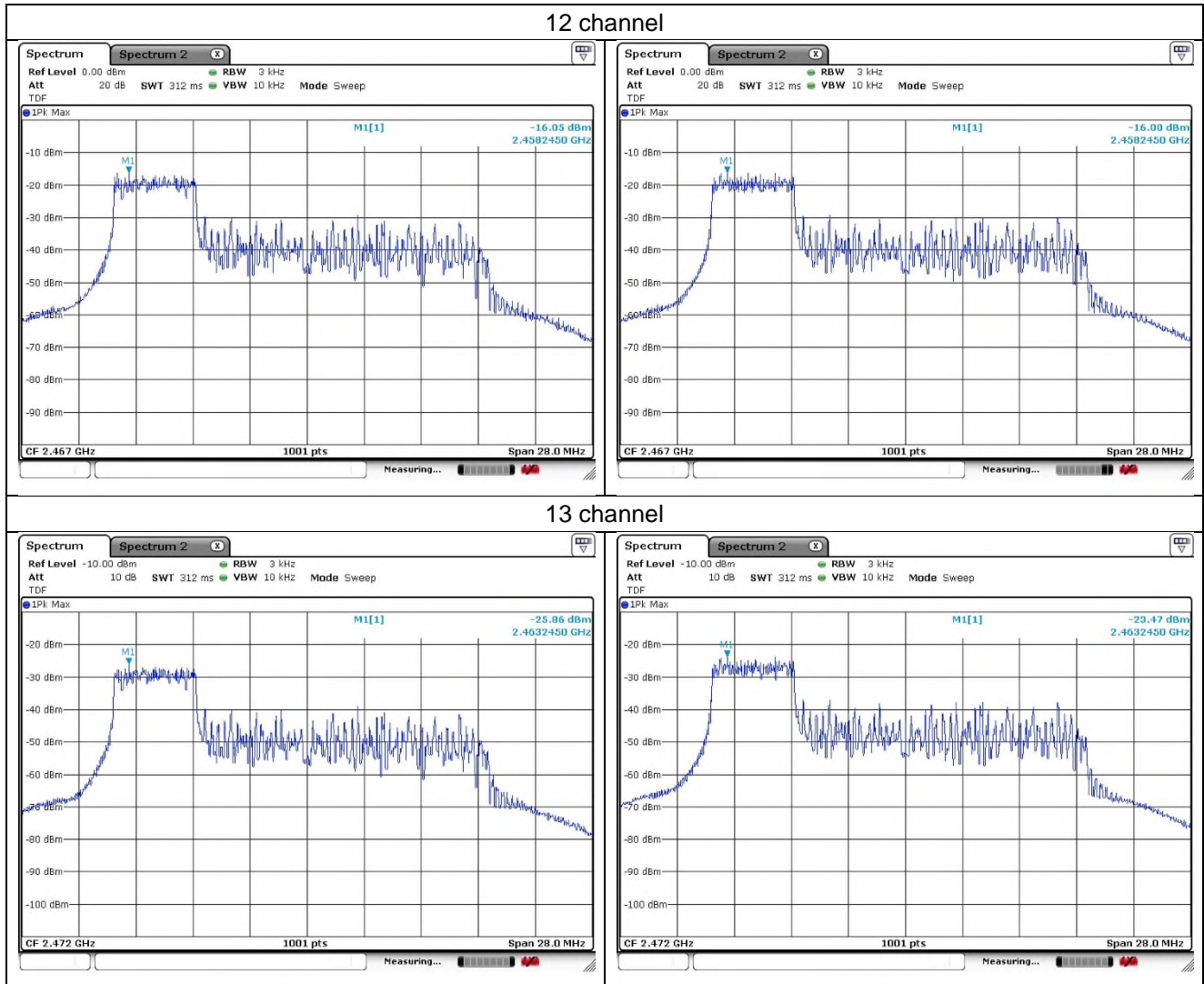


Middle channel



High channel



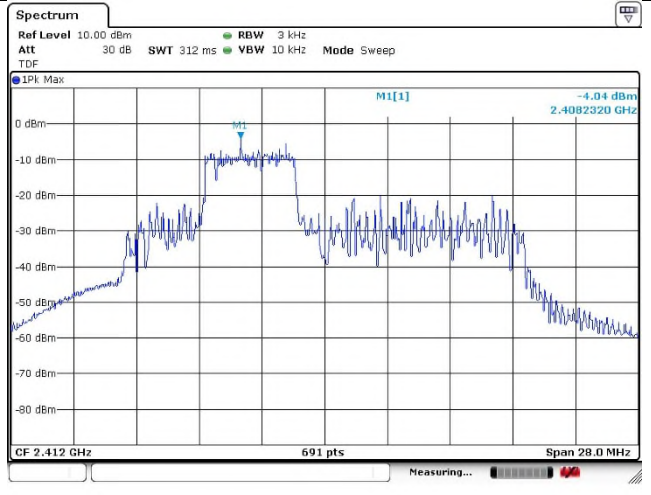
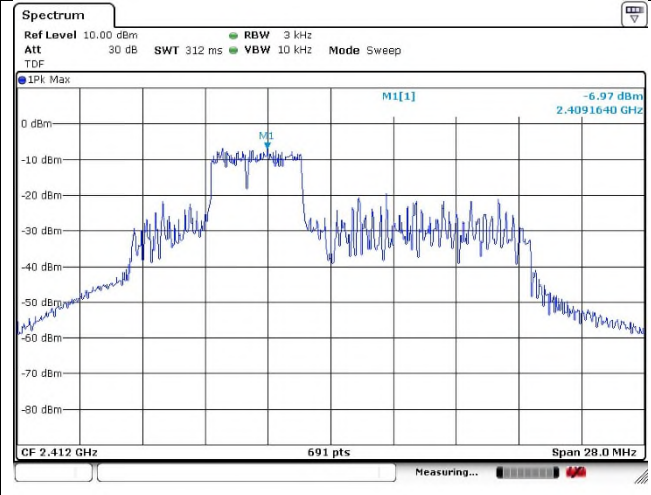


52T_38 RU

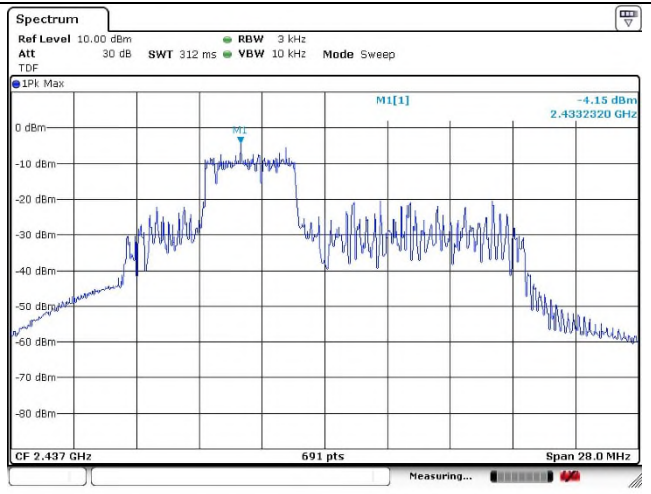
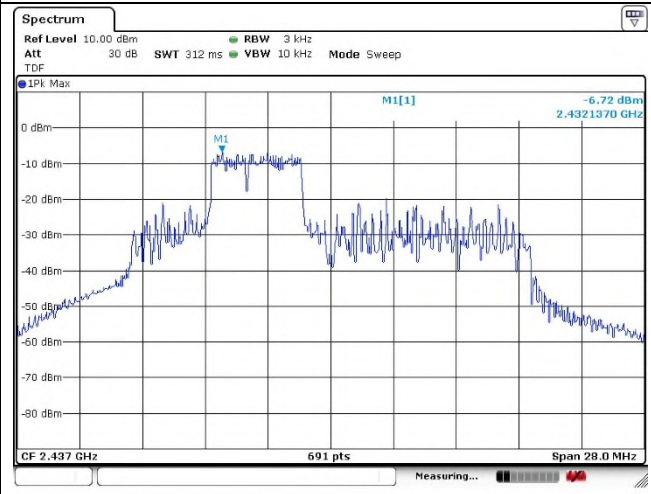
Ant.1

Ant.2

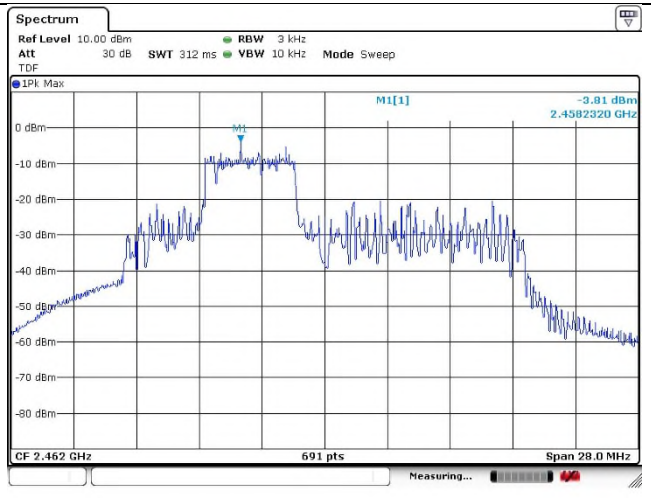
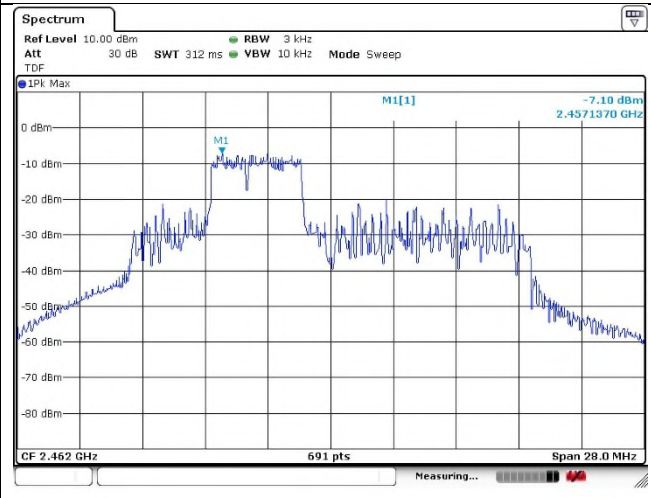
Low channel

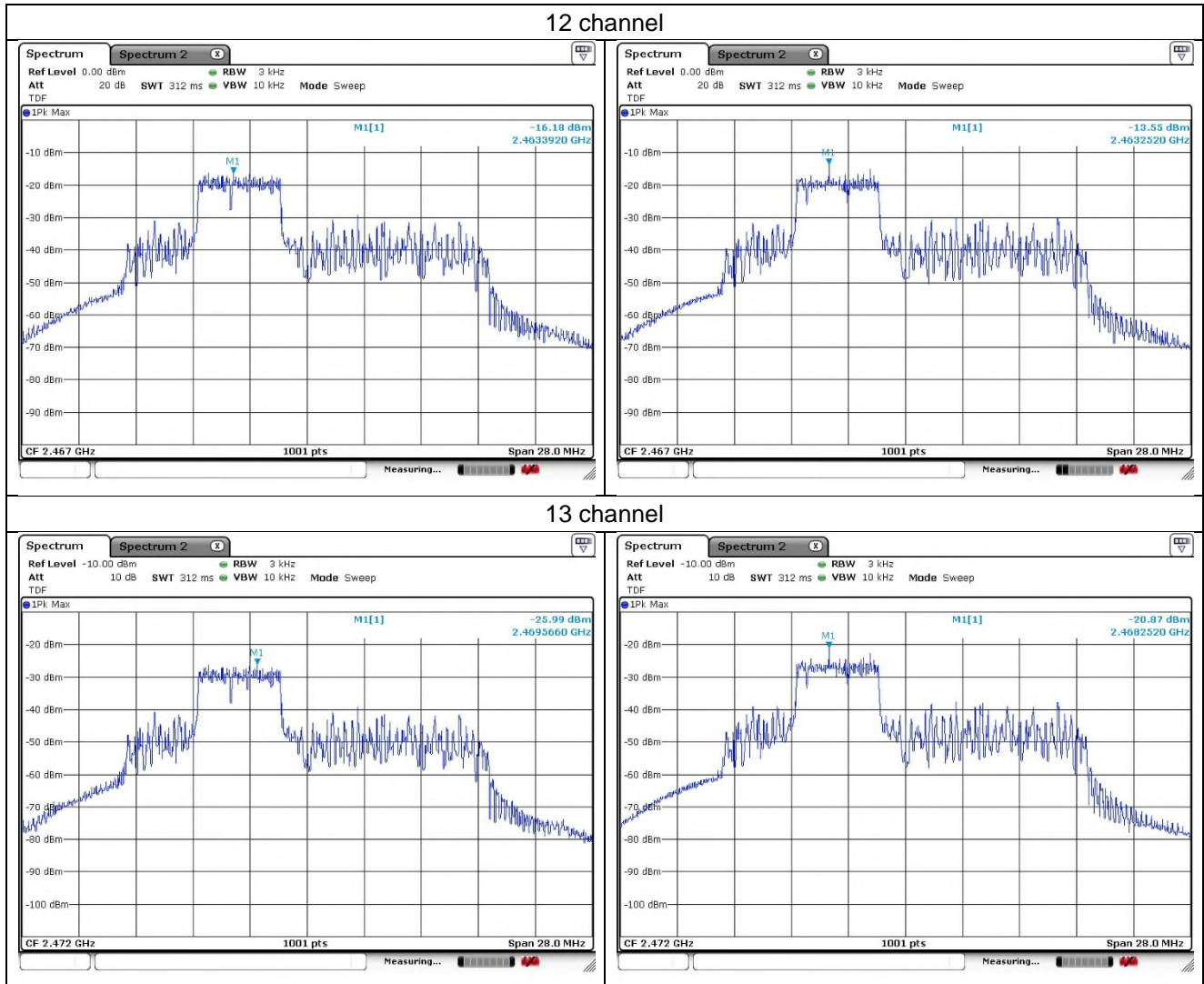


Middle channel



High channel



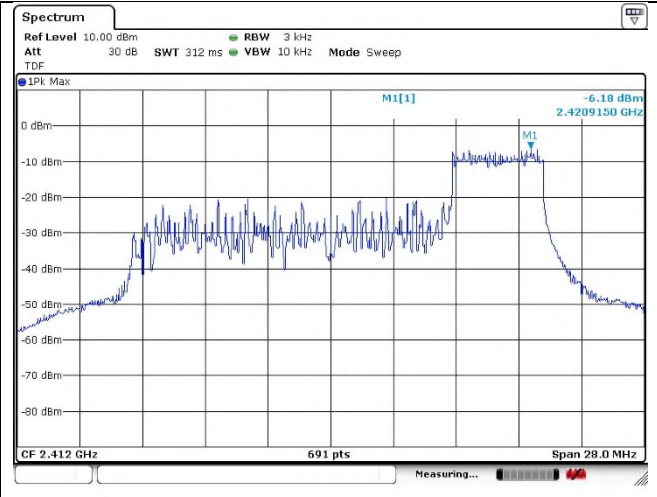
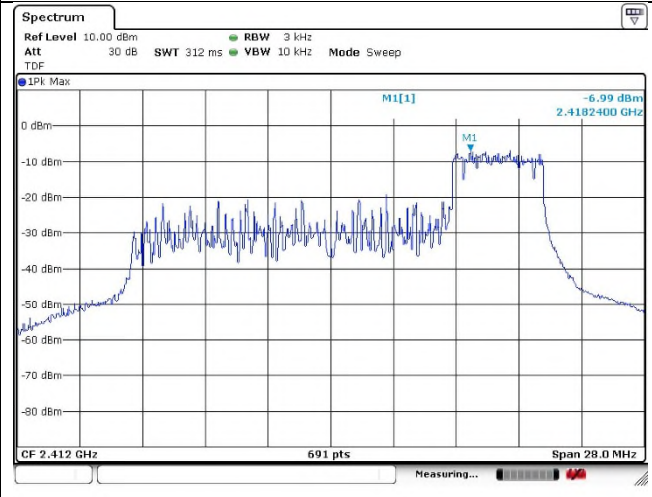


52T_40 RU

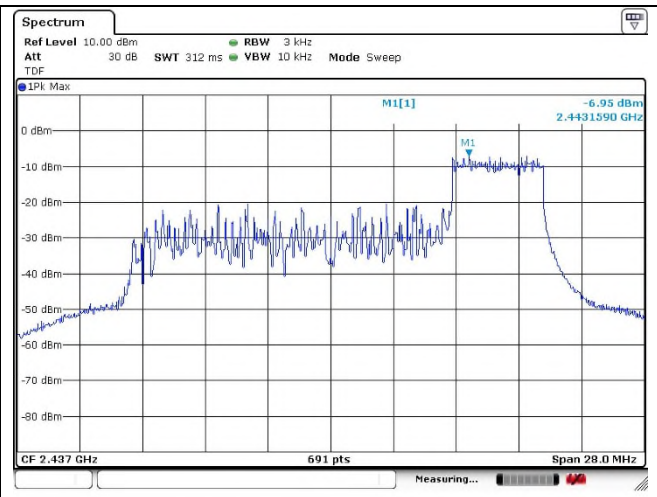
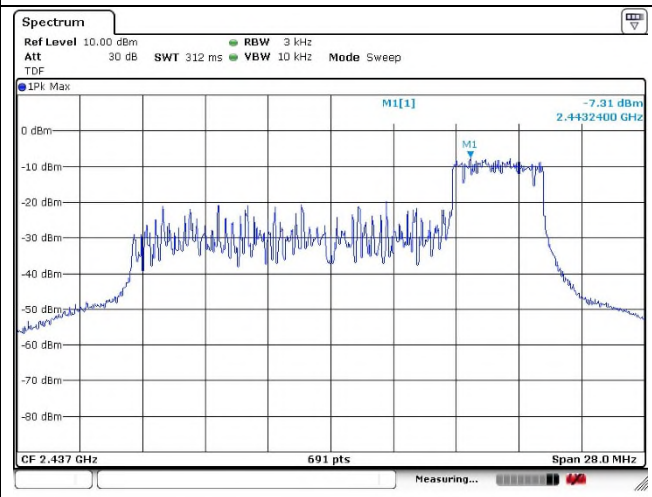
Ant.1

Ant.2

Low channel



Middle channel



High channel

