



Annex A

Radiated Spurious Emissions

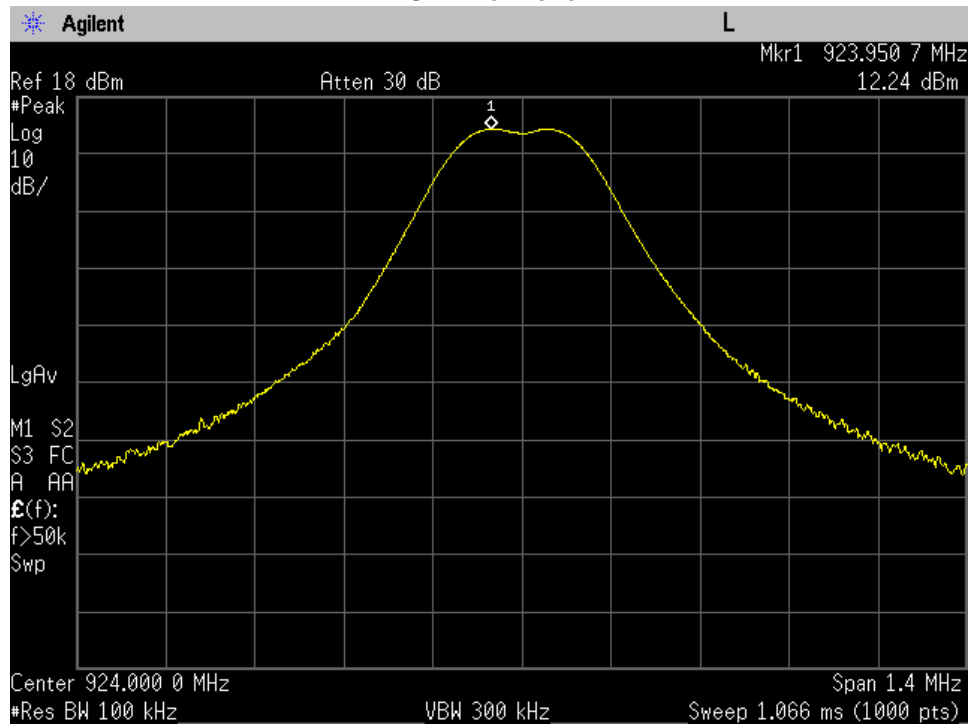


FSK Modulation

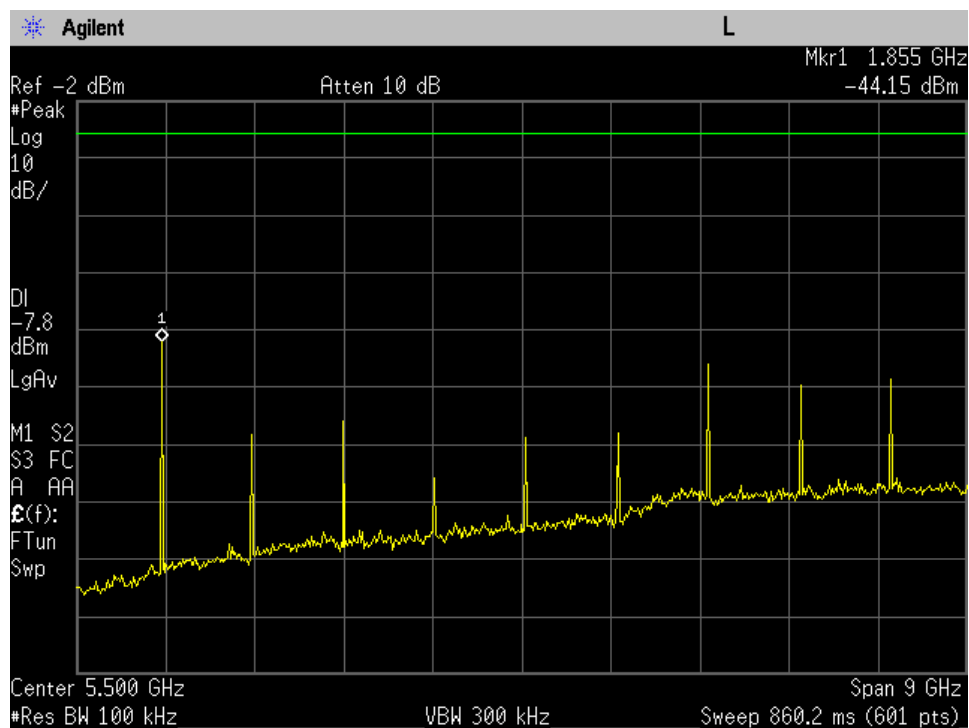
Per 15.247



FSK - Ref Level

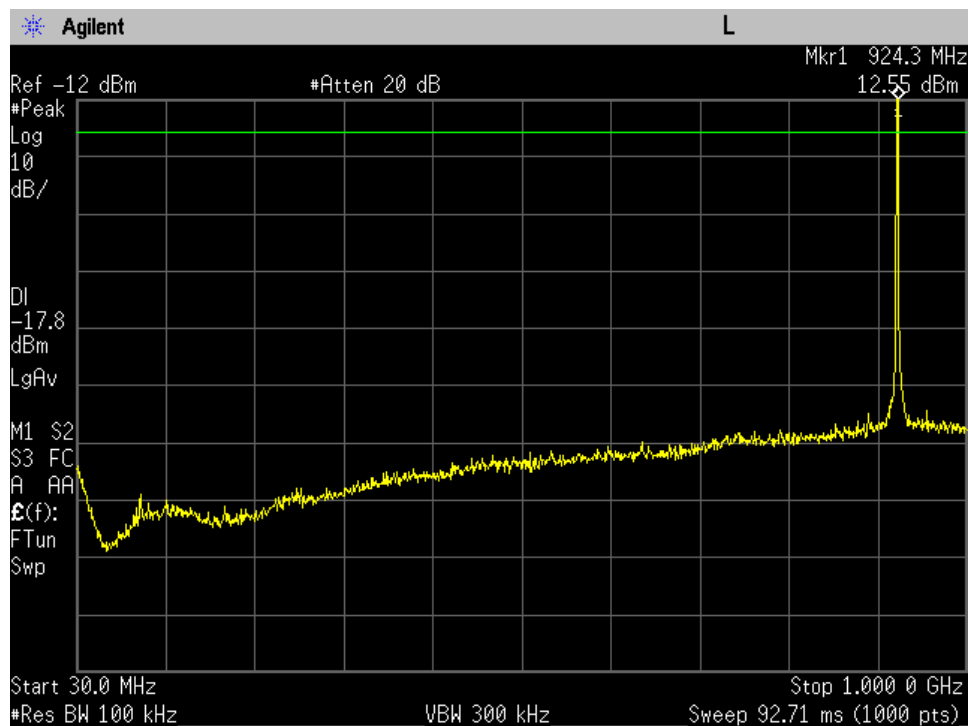


High Ch - 1-10 GHz

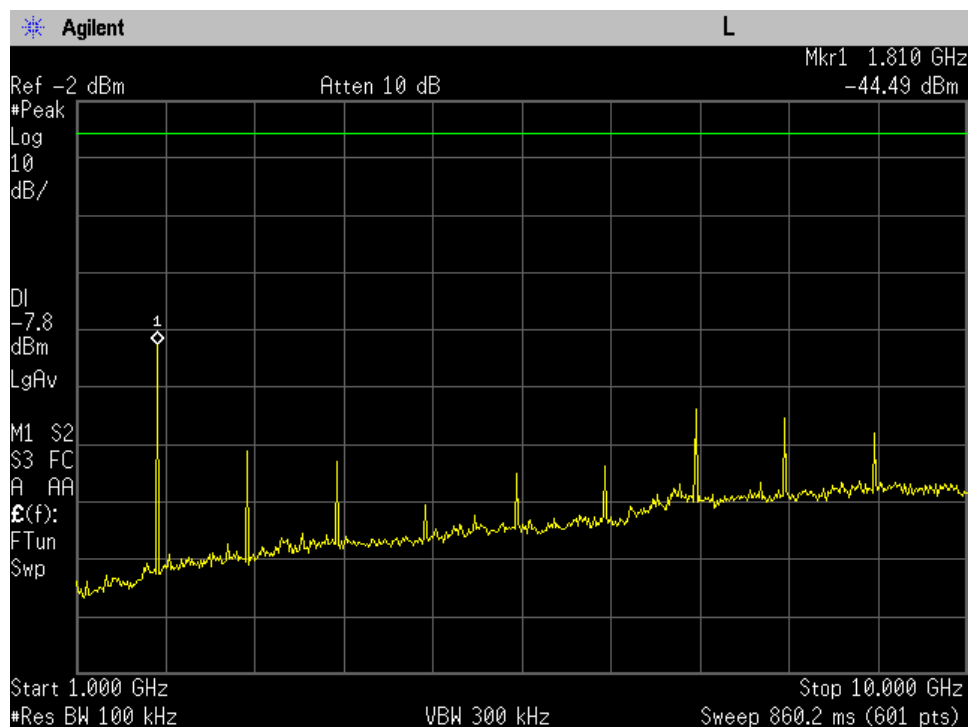




High Ch - 30-1000 MHz

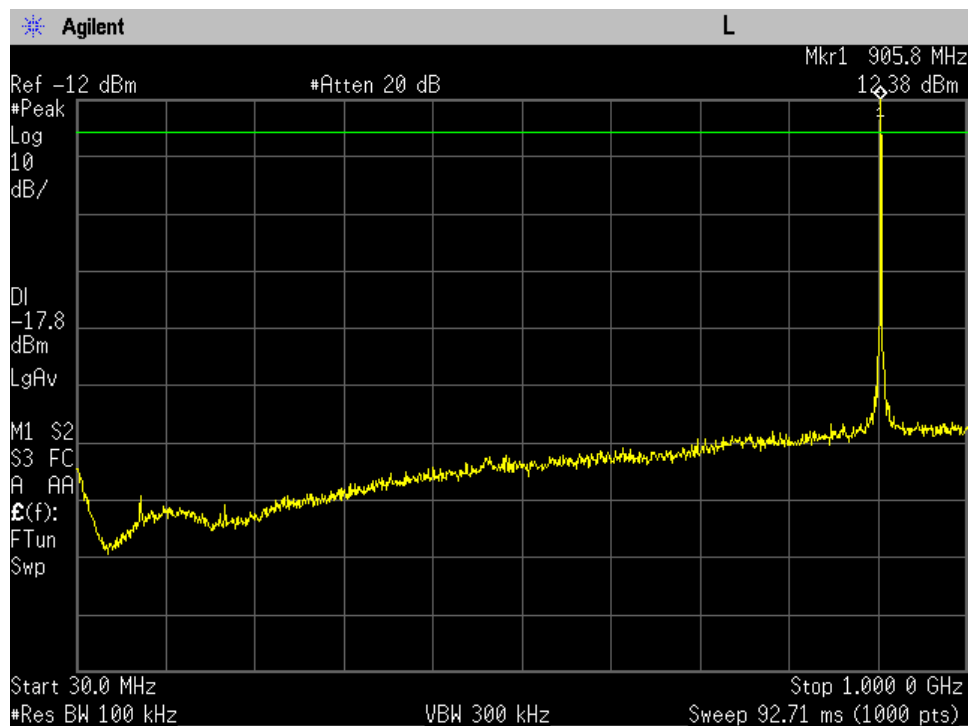


Low Ch - 1-10 GHz

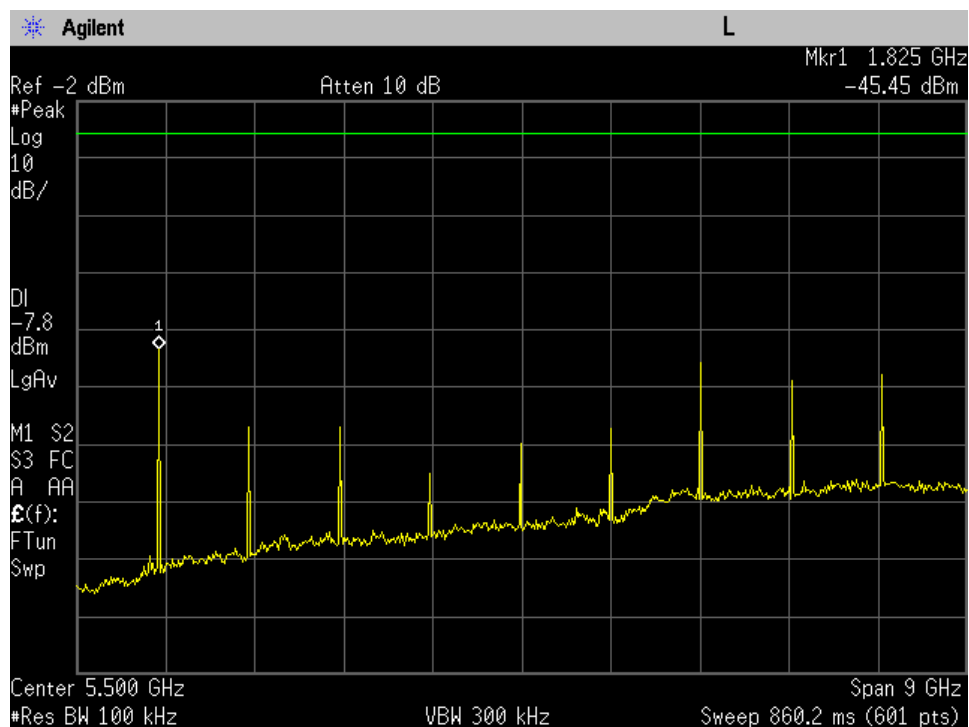




Low Ch - 30-1000 MHz

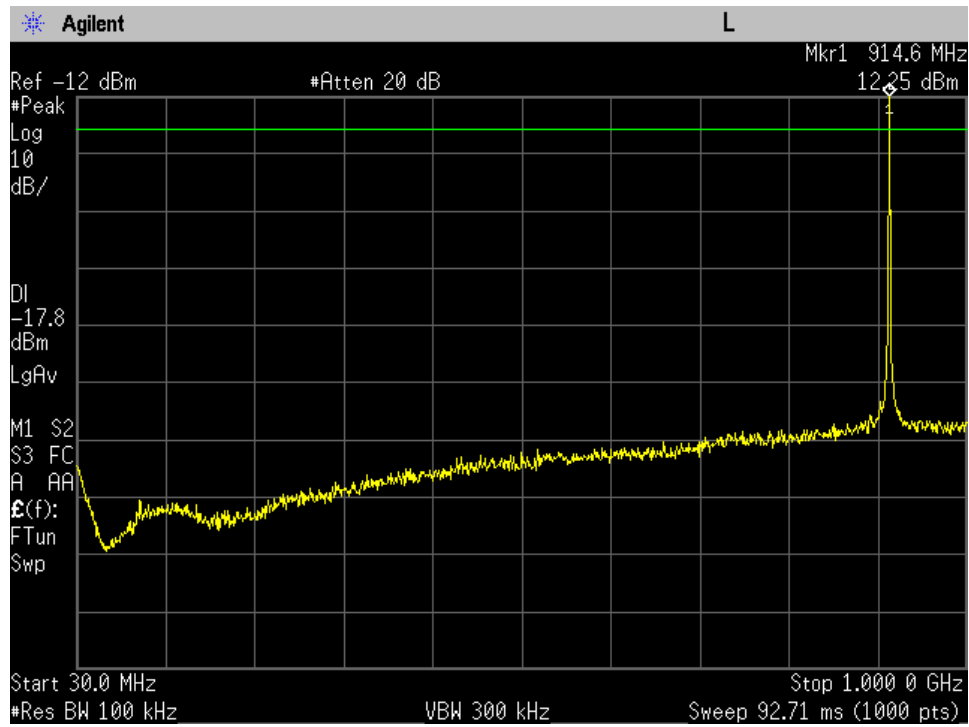


Mid Ch - 1-10 GHz





Mid Ch - 30-1000 MHz

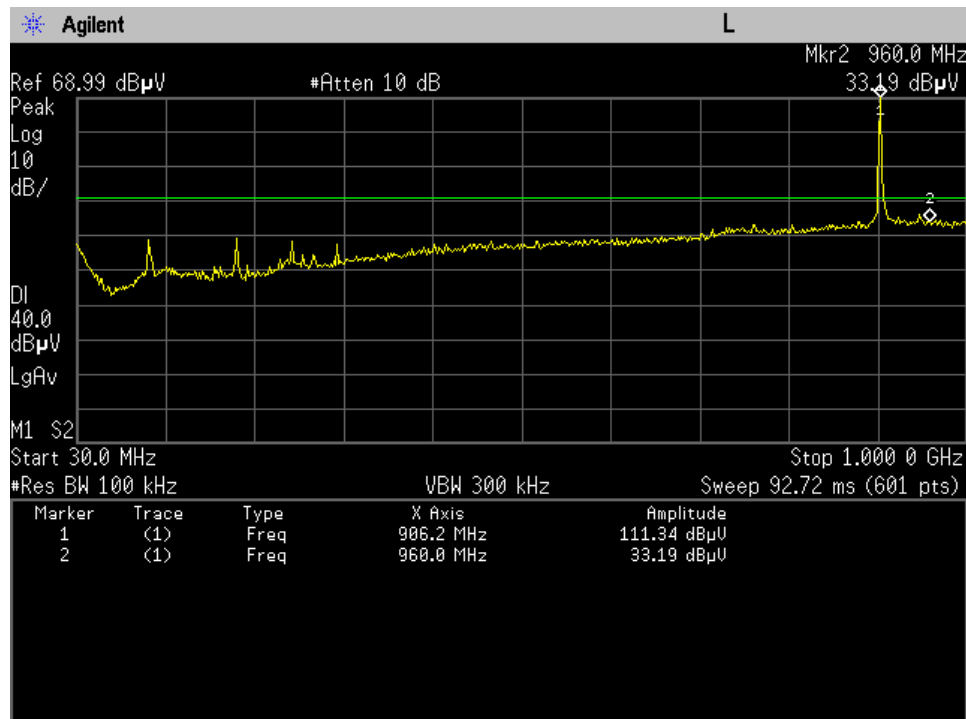




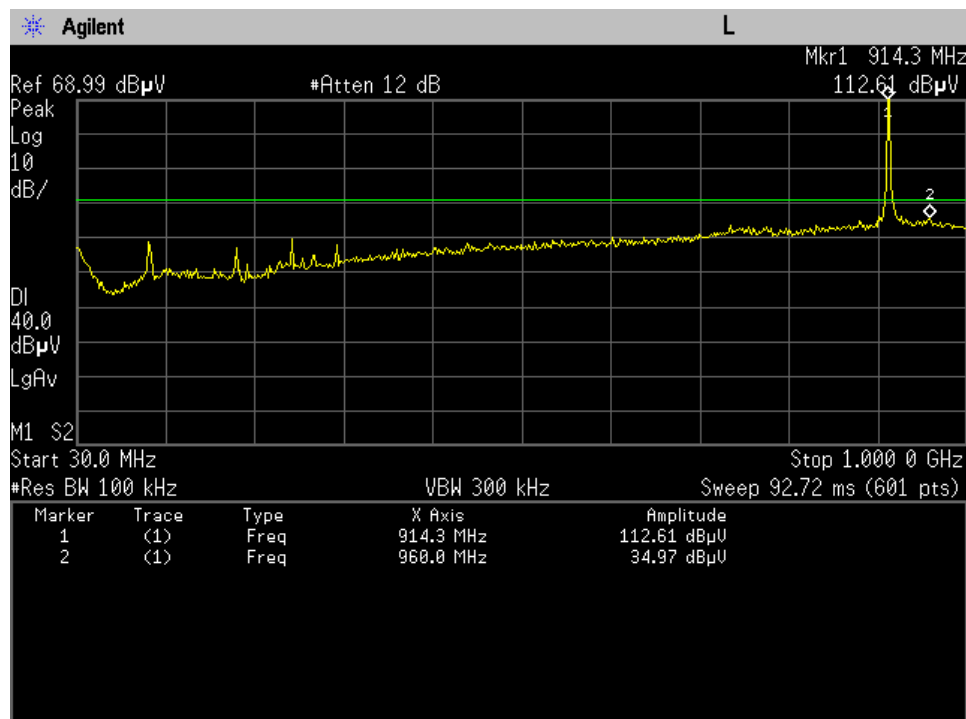
FKS Modulation Restricted Bands



Low Ch - 30-1000 MHz - Rest Spurs

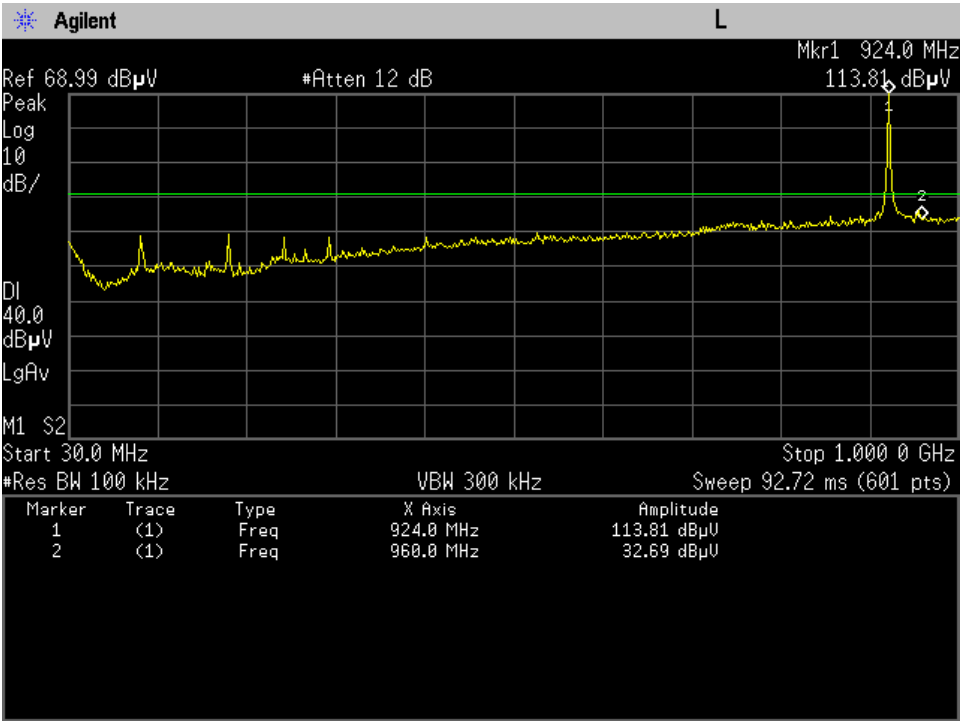


Mid Ch - 30-1000 MHz - Rest Spurs



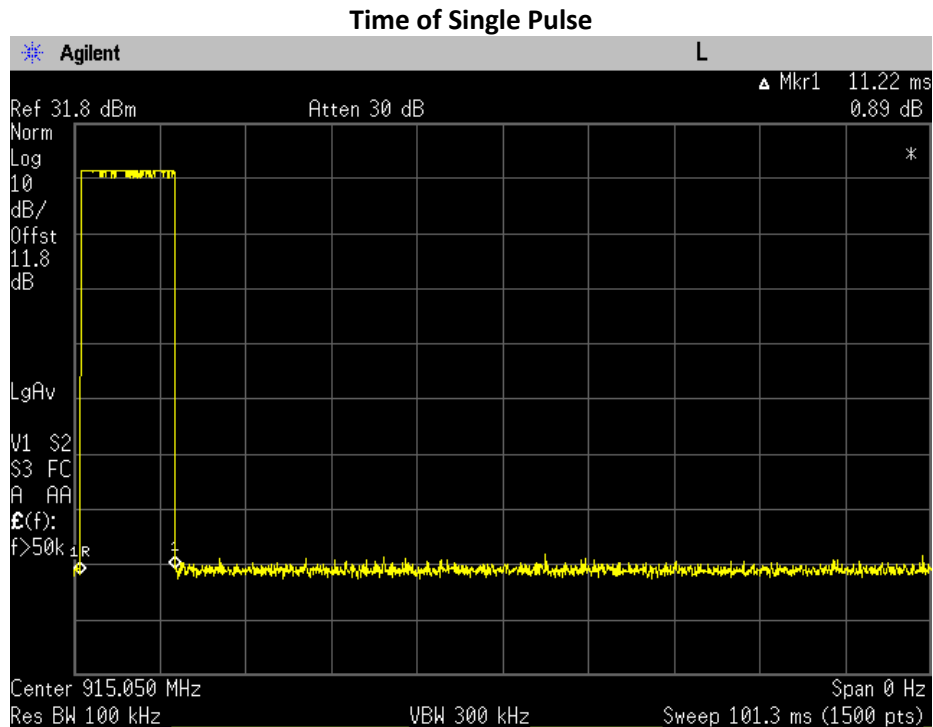


High Ch - 30-1000 MHz - Rest Spurs





Pulsed Emission Duty Cycle Correction



Note: The manufacturer claims the worst case dwell time for FSK modulation is 25 ms, so this will be used for the Duty Cycle Correction

$$\text{Duty Cycle} = (25/100) = 0.25$$

$$\text{Duty Cycle Correction} = \delta(\text{dB}) = 20\log(\Delta)$$

where

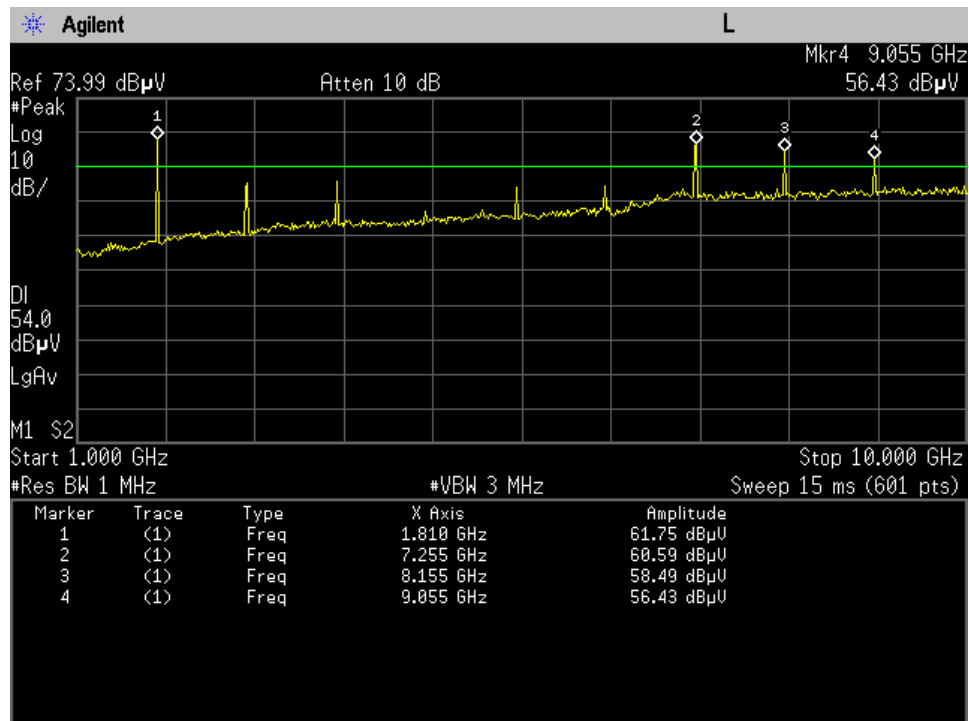
δ is the duty cycle correction factor (dB)

Δ is the duty cycle (dimensionless)

$$\delta(\text{dB}) = 20\log(25/100) = -12.04 \text{ dB}$$



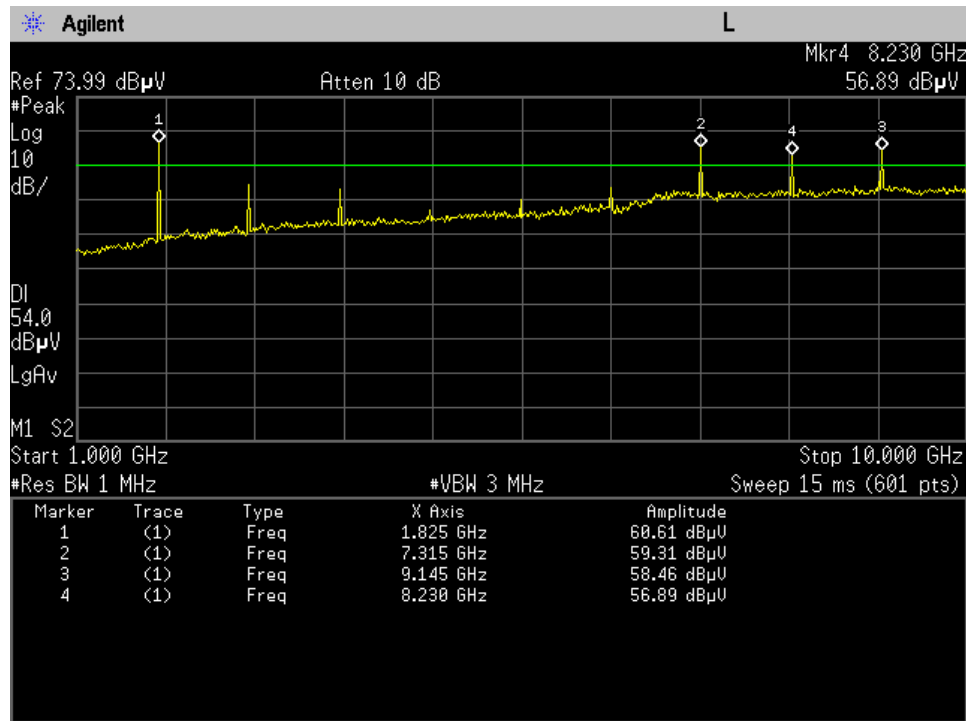
Low Ch - 1-10 GHz - Rest Spurs



Frequency (GHz)	Peak Value (dBuV)	Duty Cycle Correction (dB)	Average Value (dBuV)	Limit (dBuV)	Margin
7.255	60.59	-12.04	48.55	54	-5.45
8.155	58.49	-12.04	46.45	54	-7.55
9.055	56.43	-12.04	44.39	54	-9.61



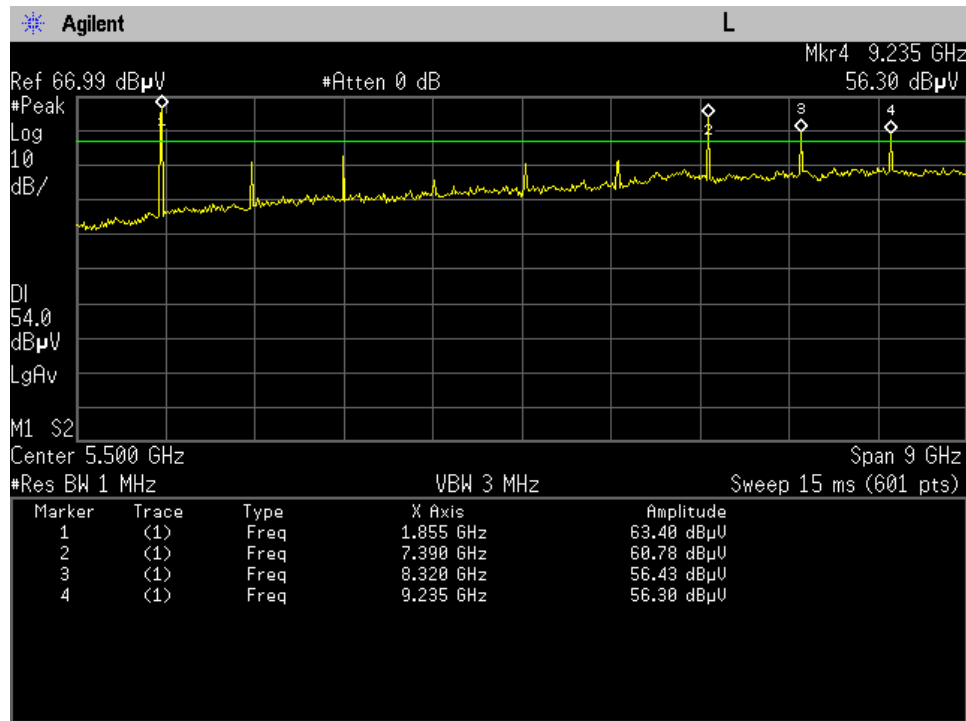
Mid Ch - 1-10 GHz - Rest Spurs



Frequency (GHz)	Peak Value (dBuV)	Duty Cycle Correction (dB)	Average Value (dBuV)	Limit (dBuV)	Margin
7.315	59.31	-12.04	47.27	54	-6.73
7.145	58.46	-12.04	46.42	54	-7.58
8.230	56.89	-12.04	44.85	54	-9.15



High Ch - 1-10 GHz - Rest Spurs



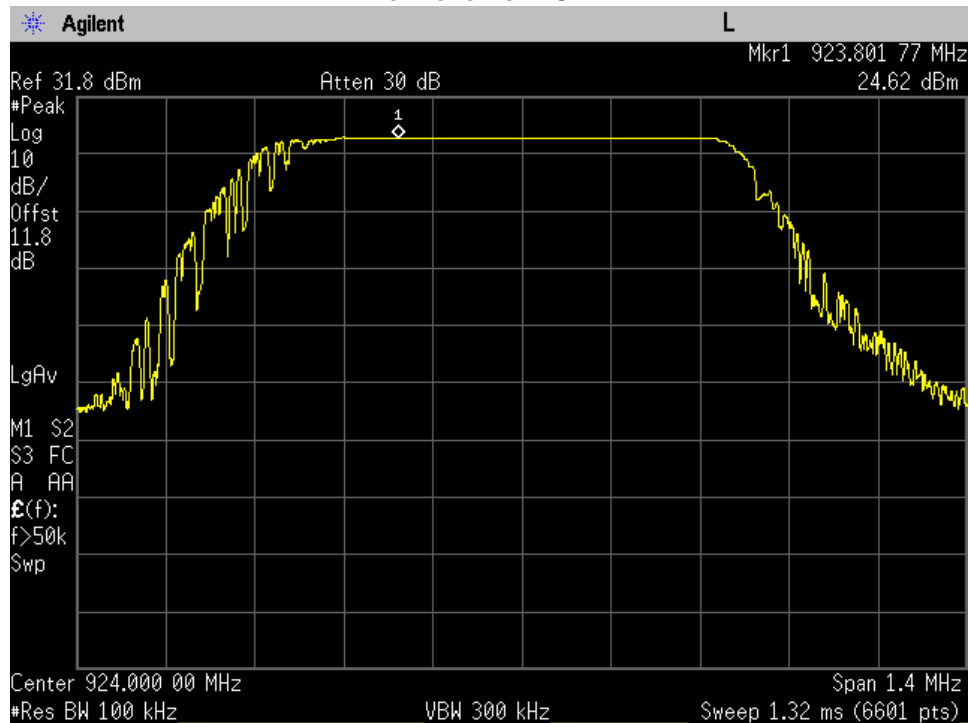
Frequency (GHz)	Peak Value (dBuV)	Duty Cycle Correction (dB)	Average Value (dBuV)	Limit (dBuV)	Margin
7.39	60.78	-12.04	48.74	54	-5.26
8.32	56.43	-12.04	44.39	54	-9.61
9.235	56.30	-12.04	44.26	54	-9.74



LORA Modulation Per 15.247

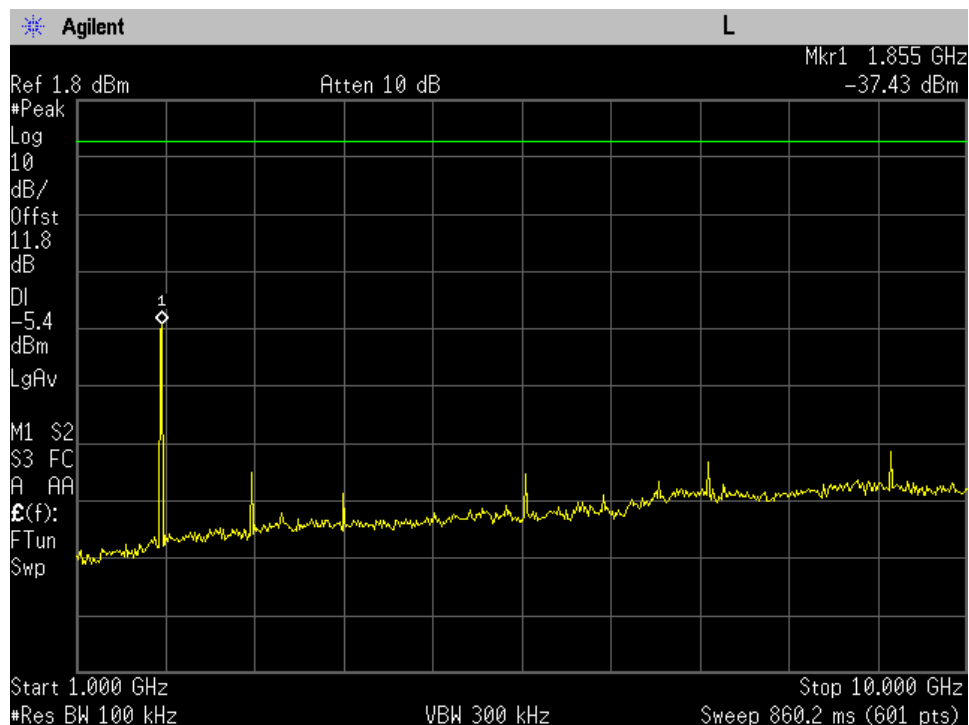


Ref Level for LORA



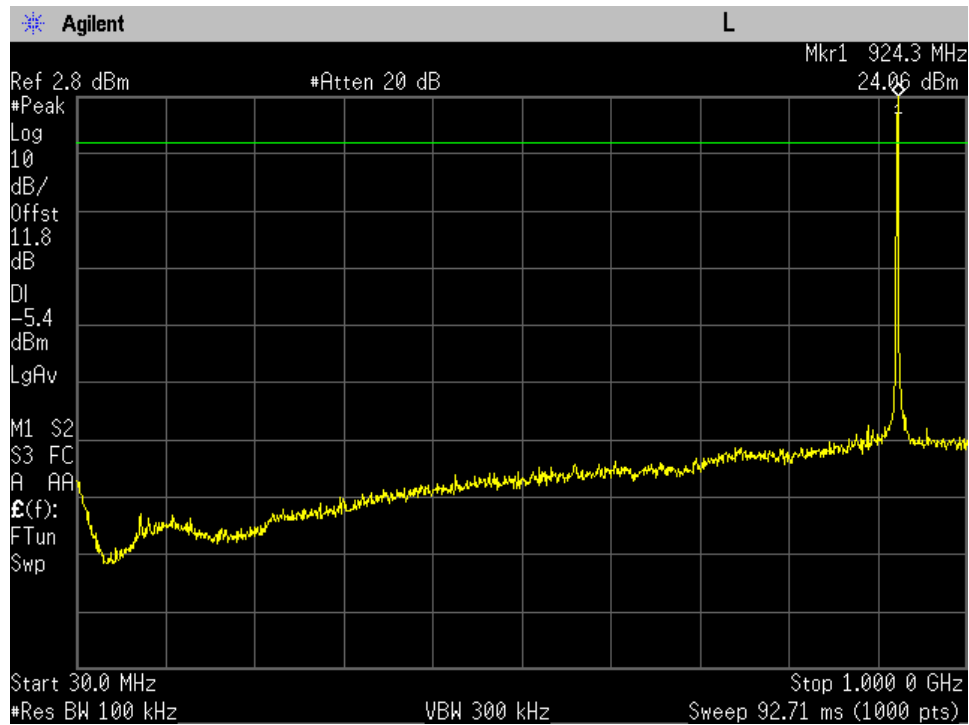
NOTE: As the Avg method was used for the LORA (DTS) output power. The limit of -30dBc was used throughout.

High Ch - 1-10 GHz

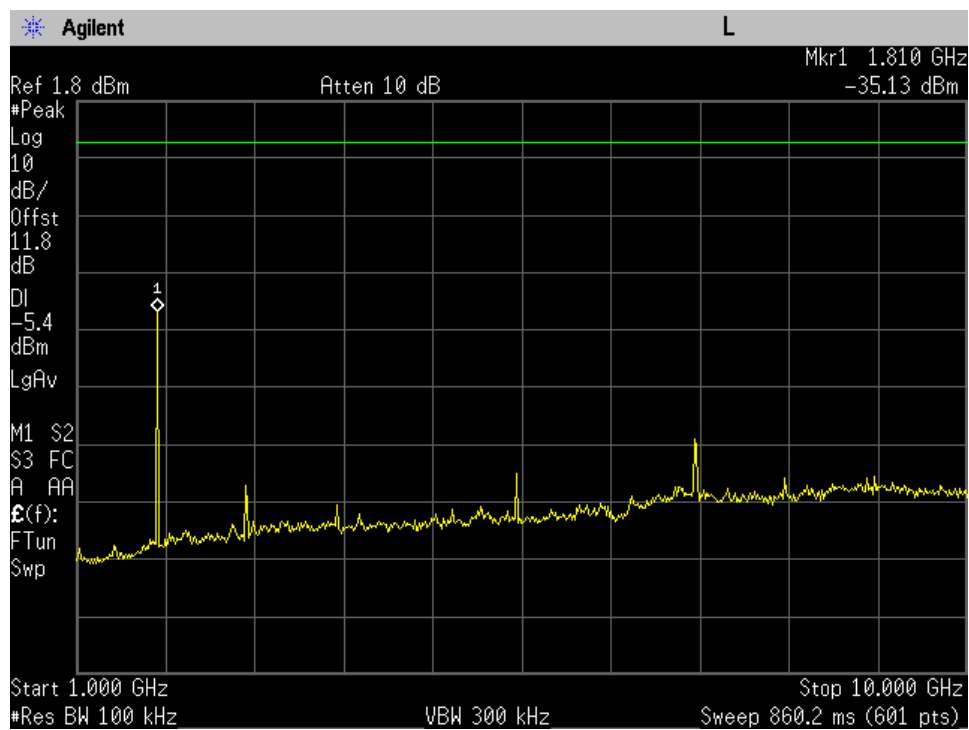




High Ch - 30-1000 MHz

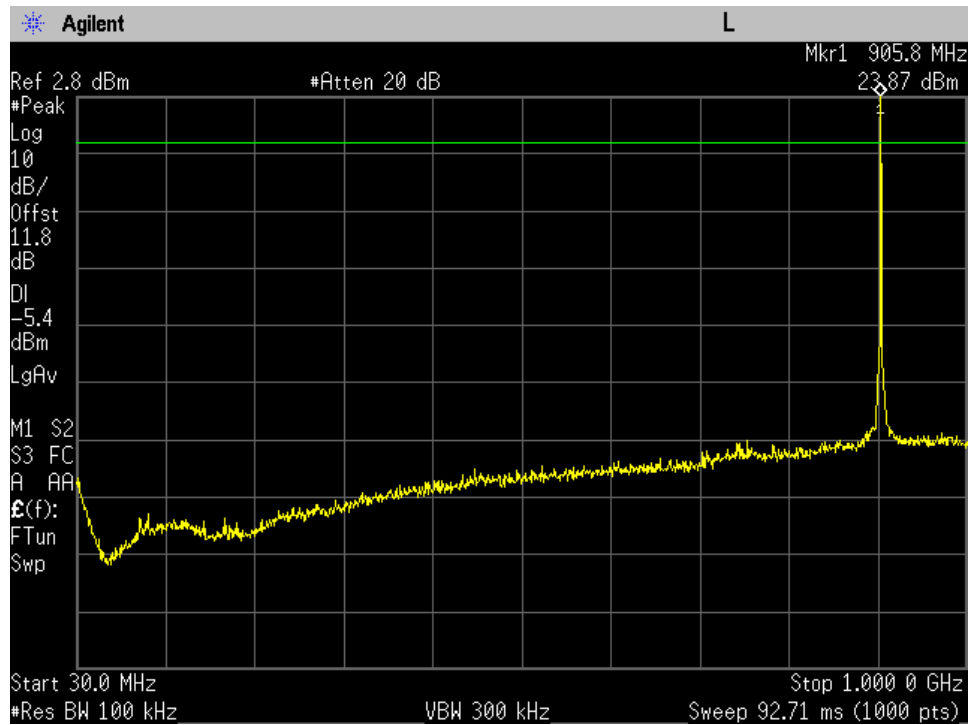


Low Ch - 1-10 GHz

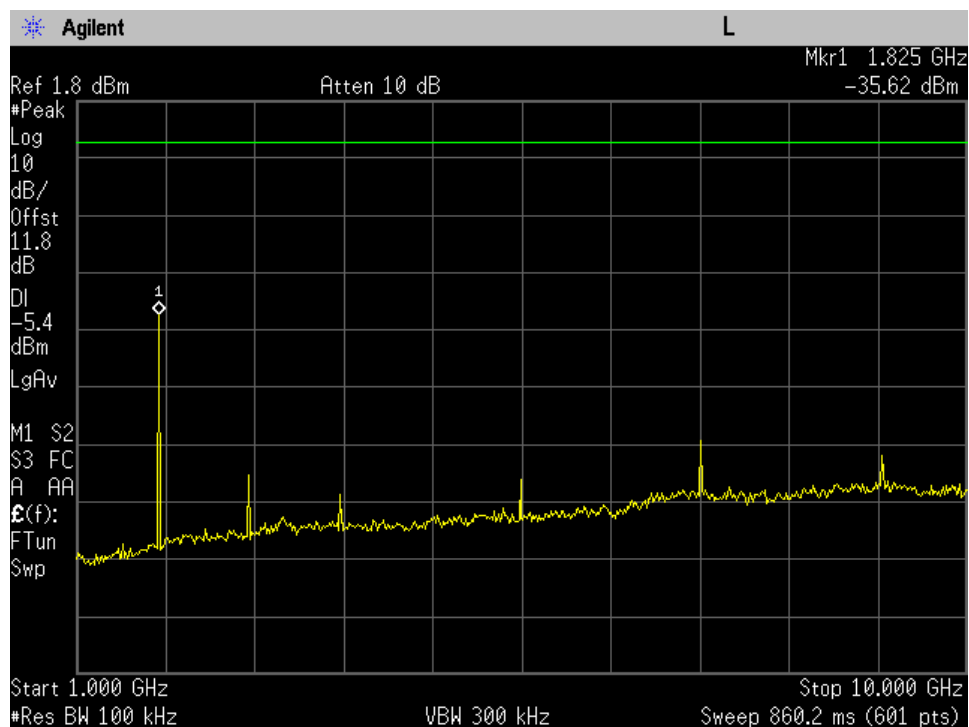




Low Ch - 30-1000 MHz

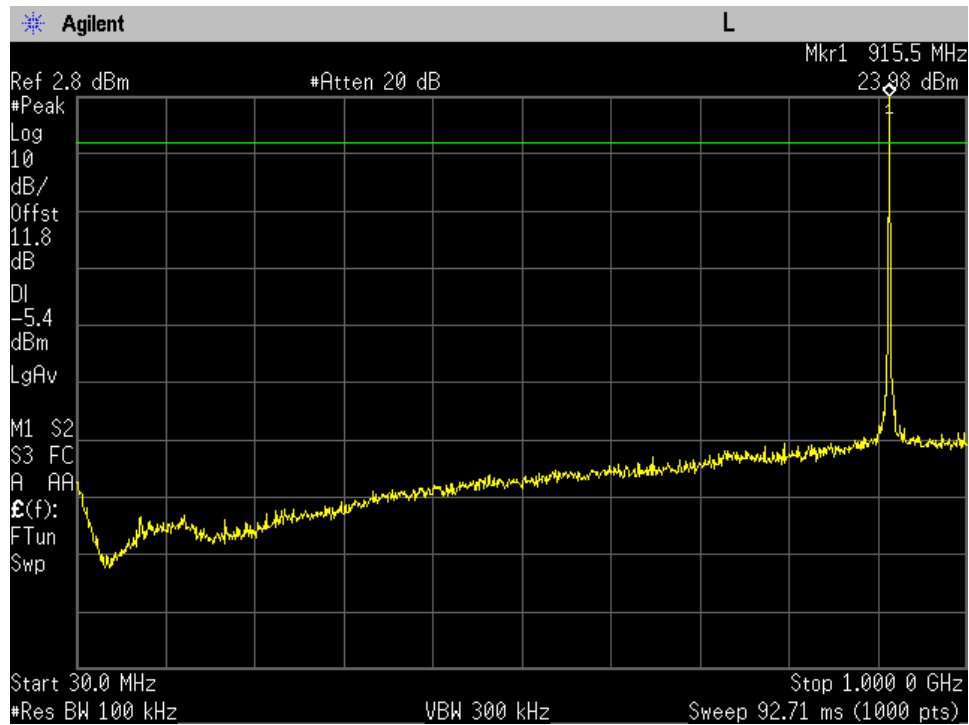


Mid Ch - 1-10 GHz





Mid Ch - 30-1000 MHz

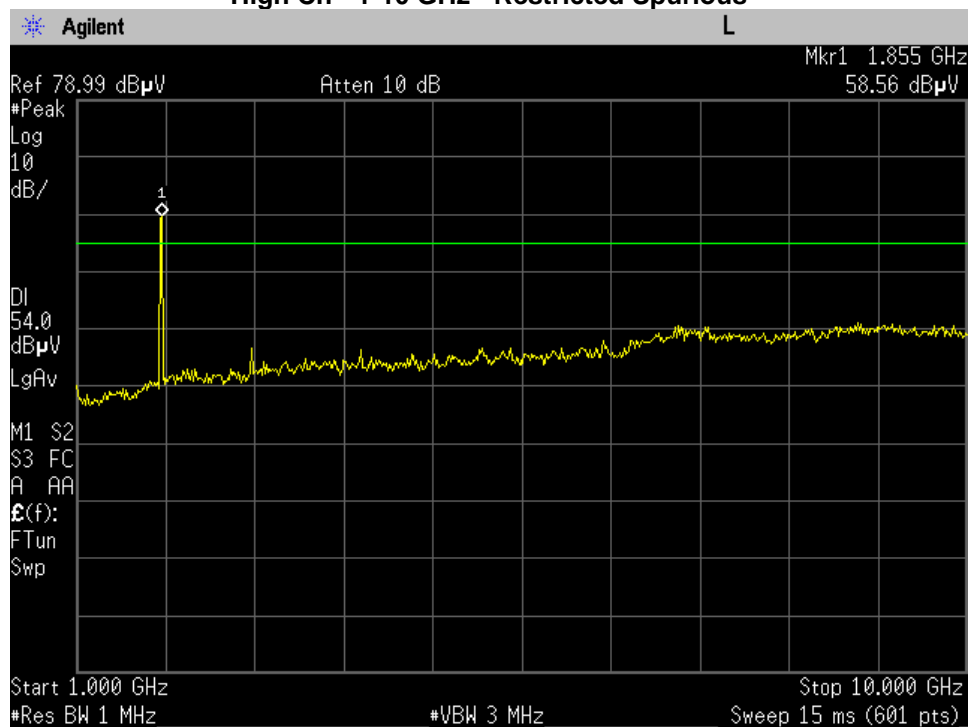




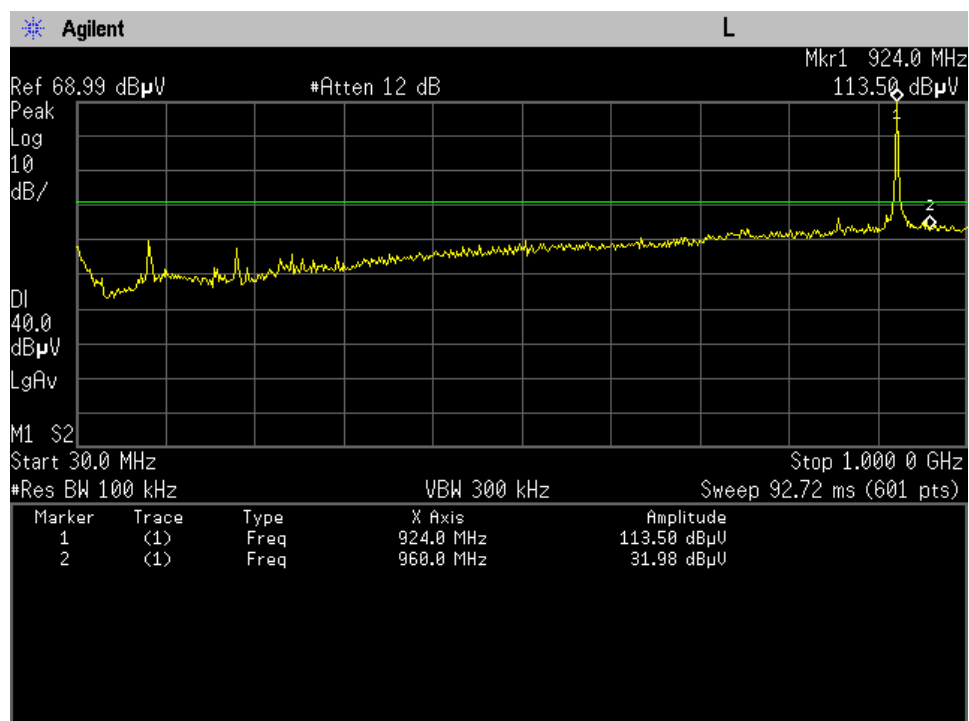
LORA Modulation Restricted Bands



High Ch - 1-10 GHz - Restricted Spurious

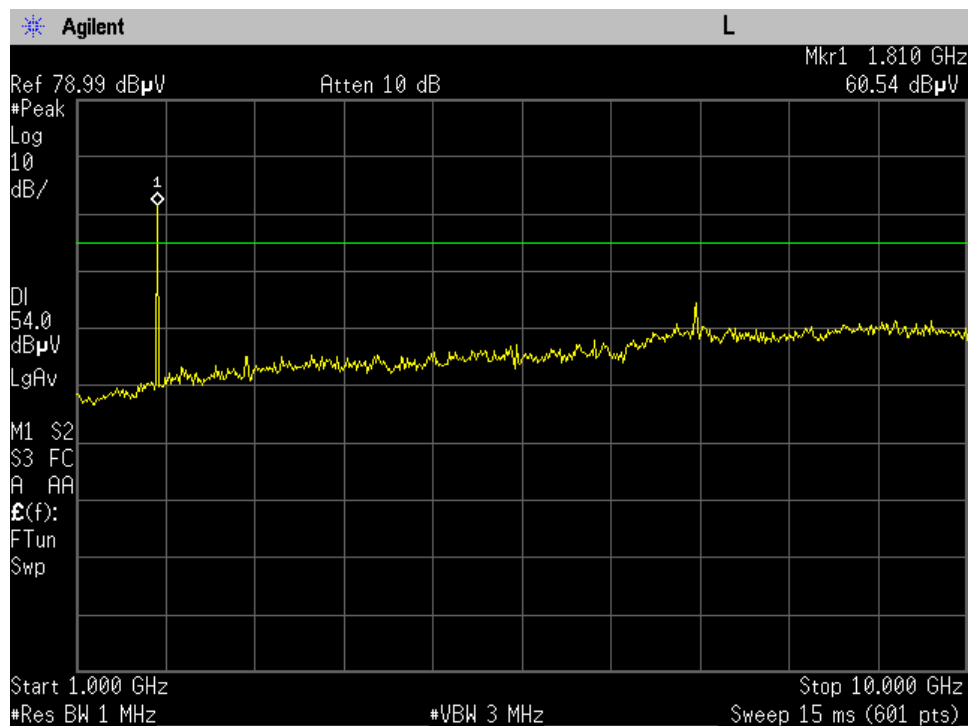


High Ch - 30-1000 MHz - Restricted Spurious

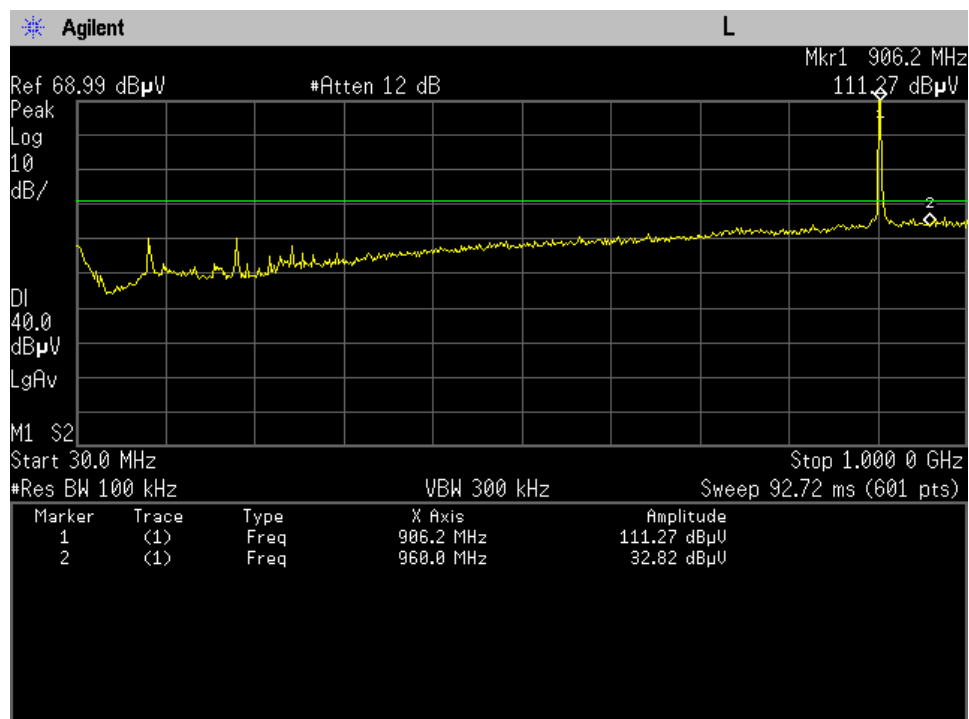




Low Ch - 1-10 GHz - Restricted Spurious

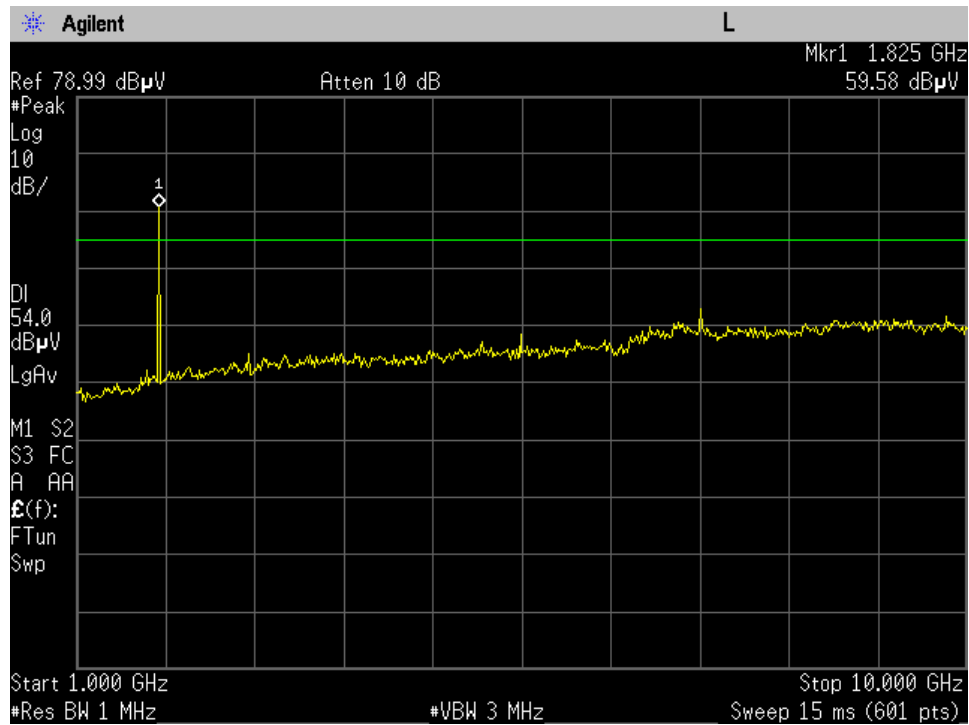


Low Ch - 30-1000 MHz - Restricted Spurious





Mid Ch - 1-10 GHz - Restricted Spurious



Mid Ch - 30-1000 MHz - Restricted Spurious

