Solar Radio Bursts ~ Summary of Major Characteristics

(source: Table 1, Radio emission from the sun and stars, Dulk, 1985, http://adsabs.harvard.edu/abs/1985ARA&A..23..169D)

Burst type	Duration at 100 MHz or 10 GHz	Temperature (K)	Polarization (circular)	Frequency range/ bandwidth	Height range/ magnetic topology	Association	Emission mechanism
I	≤ 1 s	≥ 10^{10}	50 – 100%	50-300 MHz/ ~1 MHz (burst)	0.1 – 0.6 R_0/ closed	large sunspots	fundamental plasma
I storm	days to weeks	≥ 10^{10}	o-mode	~100 MHz (storm)			
III storm	days to weeks	≥ 10^{10}	o-mode	50 MHz – 30 kHz/	0.6 R_0 – 1 AU/ open	Type I storms	fundamental and/or harmonic plasma
II	≥ 10 min	10^8 – 10^{11}	usually unpolarized	200 → 1 MHz/ 10 MHz	0.2 – 200 R_0/ open	flare shockwave	fundamental and harmonic plasma
III	few seconds	10^8 – 10^{12} (to 10^{13} at ~ 1 MHz)	fundamental: 30% harmonic: 10% o-mode	200 → 1 MHz/ 10 MHz 2 harmonics	0.2 – 200 R_0/ open (closed for U or J burst)	c/3 electron stream	fundamental and harmonic plasma
IV moving	~ 30 min	10^8 – 10^9	low → high x-mode	200 → 10 MHz/ > 10 MHz	0.5 - few R_0 / plasmoid	small flare	gyrosynchronous and/or plasma
IV flare continuum	~ 20 min	10^8 – 10^{12}	0 – 40% o-mode ?	200 → 10 MHz/ 100 MHz	0.1 – 1 R_0/ closed ?	moderate to large flare, initial phase	plasma ?
IV storm continuum	few hours	> 10^8	60 – 100% o-mode	50 – 300 MHz/ 100 MHz	0.1 – 0.6 R_0/ closed ?	flare, late phase	fundamental plasma
V	> 1 min	10^8 – 10^{11}	< 10% x-mode	100 → 10 MHz/ 50 MHz	0.5 – 2 R_0/ open ?	follows some Type IIIs	harmonic plasma
Microwave impulse	> 1 min (at 10 GHz)	10^7 – 10^9	~ 30% x-mode	3 – 30 GHz/ 10 GHz	~ 10^4 km closed	small to large flares hard x-rays	gyrosynchronous (Maxwellian or power law)
microwave IV	~ 10 min	10^7 – 10^9	~ 10% x-mode	1 – 30 GHz/ 5 GHz	10^4 – 10^5 km closed	large flares with shocks	gyrosynchronous (power law)
microwave postburst	minutes to hours	~ 10^7	low	1 – 10 GHz/ 5 GHz	10^4 – 10^5 km closed	flare, late phase	thermal bremsstrahlung
microwave spike burst	~ 10 ms (burst) ~ 10 min (group)	> 10^{13}	~ 100% x-mode ?	~ 0.5 – 5 GHz/ few MHz	10^4 – 10^5 km closed	flare, hard x-rays	cyclotron maser

Solar Radio Bursts ~ Frequency-Time Characteristics

(source: Figure 11, Radio emission from the sun and stars, Dulk, 1985, http://adsabs.harvard.edu/abs/1985ARA&A..23..169D)