

discover... Reference Charts for RF & μ Wave Communications

Spectrum Analyser Conversion Factors

50 Ohms Input Impedance

TO FROM	dBm	dBV	dBmV	dB V
dBm	0	-13	+47	+107
dBV	+13	0	+60	+120
dBmV	-47	-60	0	+60
dB V	-107	-120	-60	0

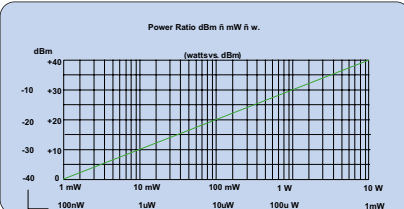
75 Ohms Input Impedance

TO FROM	dBm	dBV	dBmV	dB V
dBm	0	-11.25	+48.7	+108.7
dBV	+11.25	0	+60	+120
dBmV	-48.75	-60	0	+60
dB V	-108.75	-120	-60	0

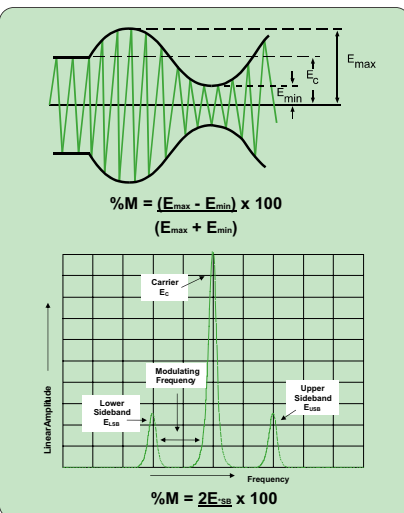
SWR $\bar{n}$ Reflection Coefficient $\bar{n}$ Return Loss

SWR	Refl. Coeff.	Return Loss (dB)	SWR	Refl. Coeff.	Return Loss (dB)
1.7391	0.8913	1	1.0580	0.0282	31
8.7242	0.7943	2	1.0515	0.0251	42
5.8480	0.7079	3	1.0458	0.0224	33
4.4194	0.6310	4	1.0407	0.0200	34
3.5698	0.5623	5	1.0362	0.0178	35
3.0095	0.5012	6	1.0322	0.0158	36
2.6146	0.4467	7	1.0287	0.0141	37
2.3229	0.3981	8	1.0255	0.0126	38
2.0999	0.3548	9	1.0227	0.0112	39
1.9250	0.3162	10	1.0202	0.0100	40
1.7849	0.2818	11	1.0180	0.0089	41
1.6709	0.2512	12	1.0160	0.0079	42
1.5769	0.2239	13	1.0143	0.0071	43
1.4985	0.1995	14	1.0127	0.0063	44
1.4326	0.1778	15	1.0113	0.0056	45
1.3767	0.1585	16	1.0101	0.0050	46
1.3290	0.1413	17	1.0090	0.0045	47
1.2880	0.1259	18	1.0080	0.0040	48
1.2528	0.1122	19	1.0071	0.0035	49
1.2222	0.1000	20	1.0063	0.0032	50
1.1957	0.0891	21	1.0057	0.0028	51
1.1726	0.0794	22	1.0050	0.0025	52
1.1524	0.0708	23	1.0045	0.0022	53
1.1347	0.0631	24	1.0040	0.0020	54
1.1192	0.0562	25	1.0036	0.0018	55
1.1055	0.0501	26	1.0032	0.0016	56
1.0935	0.0447	27	1.0028	0.0014	57
1.0829	0.0398	28	1.0025	0.0013	58
1.0736	0.0355	29	1.0022	0.0011	59
1.0653	0.0316	30	1.0020	0.0010	60

Power Measurement

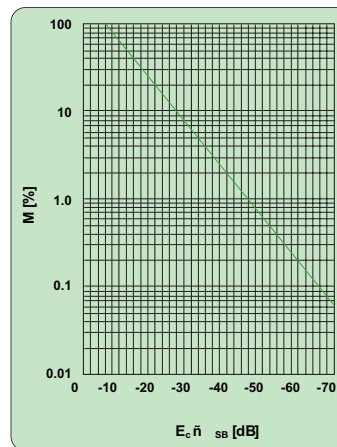


Amplitude Modulation



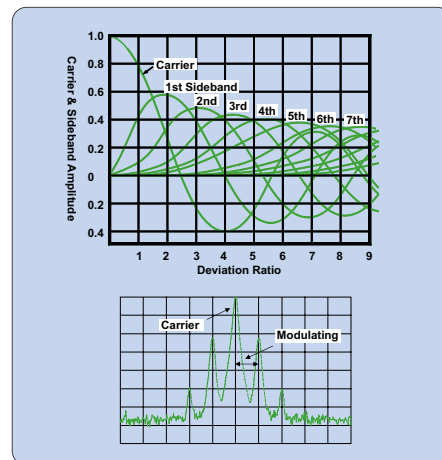
% modulation	E_c Sideband level below carrier (dB)
1	46
2	40
10	26
20	20
30	16.5
40	14
50	12
60	10.4
70	9.1
80	7.9
90	6.9
100	6.0

Sideband level below carrier (dB)	% modulation
10	63
20	20
30	6.3
40	2.0
50	0.63
60	0.2
70	0.063
80	0.02



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Frequency Modulation



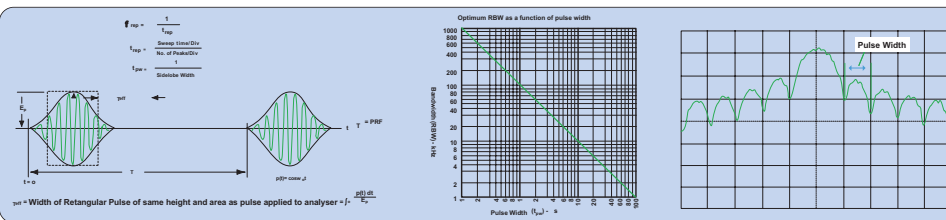
Bessel Functions

Carrier Bessel NULL Number	$M = \Delta f / f$	1st Sideband Bessel NULL number	$M = \Delta f / f$
1st	2.4048	1st	3.83
2nd	5.5201	2nd	7.02
3rd	8.6531	3rd	10.17
4th	11.7915	4th	13.32
5th	14.9309	5th	16.47
6th	18.0711	6th	19.62
7th	21.2116	7th	22.76
8th	24.3525	8th	25.90
9th	27.4935	9th	29.05
10th	30.6346		

Where M = modulation index
 Δf = deviation
 f = modulating frequency



Pulse Modulation



Anritsu RF & Microwave Reference Chart No.2.

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