

GSM Quick Reference Datasheet



GSM Acronyms

Acronym	Meaning
ARFCN	Absolute Rf Channel Number
PCL	Power Control Level
RXLEV	Received LEVel
GMSK	Gaussean Minimum Shift Keying
EDGE	Enhanced Data for GSM Evolution
8PSK	Eight Phase Shift Keying
IMSI	International Mobile Subscriber Identity
TMSI	Temporary Mobile Subscriber Identity
IMEI	International Mobile Equipment Identity

Frequency

Band	ARFCN Range	Uplink Frequency (MHz)	Downlink Frequency (MHz)
P-GSM 900	1..124	$890 + \text{ARFCN} * 0.2$	$935 + \text{ARFCN} * 0.2$
E-GSM 900	0..124	$890 + \text{ARFCN} * 0.2$	$935 + \text{ARFCN} * 0.2$
	975..1023	$890 + (\text{ARFCN} - 1024) * 0.2$	$935 + (\text{ARFCN} - 1024) * 0.2$
DCS 1800	512..885	$1710.2 + 0.2 * (\text{ARFCN} - 512)$	$1805.2 + 0.2 * (\text{ARFCN} - 512)$
PCS 1900	512..810	$1850.2 + 0.2 * (\text{ARFCN} - 512)$	$1930.2 + 0.2 * (\text{ARFCN} - 512)$
R-GSM 900	0..124	$890 + \text{ARFCN} * 0.2$	$935 + \text{ARFCN} * 0.2$
	955..1023	$890 + (\text{ARFCN} - 1024) * 0.2$	$935 + (\text{ARFCN} - 1024) * 0.2$
GSM 450	259..293	$450.6 + 0.2 * (\text{ARFCN} - 259)$	$460.6 + 0.2 * (\text{ARFCN} - 259)$
GSM 480	306..340	$479 + 0.2 * (\text{ARFCN} - 306)$	$489 + 0.2 * (\text{ARFCN} - 306)$
GSM 850	128..251	$824.2 + 0.2 * (\text{ARFCN} - 128)$	$869.2 + 0.2 * (\text{ARFCN} - 128)$
GSM 750	438..511	$747.2 + 0.2 * (\text{ARFCN} - 438)$	$777.2 + 0.2 * (\text{ARFCN} - 438)$

Timing

	Symbol	Bursts	Frames	Time	Rate
Symbol	1	1/8	1/1250	48/13 μ s (3.692 μ s)	270833/s
Burst	156.25	1	1/8	15/26 ms (576.9 μ s)	1733/s
Frame	1250	8	1	60/13 ms (4.615 ms)	216.6/s
26 Multiframe	32500	208	26	120 ms	8.333/s
51 Multiframe	63750	408	51	235.4 ms	4.248/s
52 Multiframe	65000	416	52	240 ms	4.167/s
Superframe	2071875000	84864	1326	6120 ms	9.803/min
Hyperframe	4.2432E+12	173801472	2715648	3h:28m:53.760s	6.893/day

Uplink Power

GSM 900, 400, 700 & 850

Power Control Level	Nominal Power (dBm)
0..2	39
3	37
4	35
5	33
6	31
7	29
8	27
9	25
10	23
11	21
12	19
13	17
14	15
15	13
16	11
17	9
18	7
19..31	5

Power Class	Maximum Power Control Level
1	N/A
2	2
3	3
4	5
5	7

DCS 1800

Power Control Level	Nominal Power (dBm)
29	36
30	34
31	32
0	30
1	28
2	26
3	24
4	22
5	20
6	18
7	16
8	14
9	12
10	10
11	8
12	6
13	4
14	2
15..28	0

Power Class	Maximum Power Control Level
1	0
2	3
3	29

PCS 1900

Power Control Level	Nominal Power (dBm)
22-29	Reserved
30	33
31	32
0	30
1	28
2	26
3	24
4	22
5	20
6	18
7	16
8	14
9	12
10	10
11	8
12	6
13	4
14	2
15	0
16..21	Reserved

Power Class	Maximum Power Control Level
1	0
2	3
3	30

Downlink Power

Reference Sensitivity Level for MS

Band	Level (dBm)
(E)GSM 900,400,850,700	-102
(E)GSM 900,400,850,700 Small MS	-104
DCS 1800 Class 1 or 2	-100 / -102
DCS 1800 Class 3	-102
PCS 1900 Class 1 or 2	-102
PCS 1900 Other	-104

Received Level Measurements (RXLEV)

RXLEV 0 indicates a level less than -110 dBm

RXLEV 0<n<63 indicates a level of between -111+n and -110+n dBm

RXLEV 63 indicates a level greater than -48 dBm