VH808-MAIN Lister：Tony Fung Data：2013-01-10

3010240204001 PCBA,VH808-MAIN-V04

Item	Number	Order	Range	Description	Quantity	Position
1	4001024020401		PCB	PCB,VH808-MAIN-V04,20130107,53*107.78mm,1mm,4L,FR4	1	
2	4002010100002	SMT	Resister	1/8W,±5%,0805,0Ω	2	R87，R110
3	4002010100025	SMT	Resister	1/10W,±5%,0603,10Ω	2	R202，R203
4	4002010100004	SMT	Resister	1/16W,±5%,0402,0Ω	4	R115，R1，R13，R137
5	4002010100024	SMT	Resister	1/16W,±5%,0402,10Ω	5	R37，R39，R40，R41，R42
6	4002010100050	SMT	Resister	1/16W,±5%,0402,1KΩ	4	R2，R5，R61，R205
7	4002010100019	SMT	Resister	1/16W,±5%,0402,10KΩ	7	R29，R30，R95，R96，R97，R98，R113
8	4002010100013	SMT	Resister	1/16W,±5%,0402,100KΩ	3	R105，R111，R193
9	4002010100053	SMT	Resister	1/16W,±5%,0402,1MΩ	1	R197
10	4002010100096	SMT	Resister	1/16W,±5%,0402,2KΩ	1	R76
11	4002010100101	SMT	Resister	1/16W,±5%,0402,3.3KΩ	1	R82
12	4002010100180	SMT	Resister	1/16W,±5%,0402,820Ω	1	R79
13	4002010100098	SMT	Resister	1/16W,±5%,0402,2MΩ	1	R194
14	4002010100080	SMT	Resister	1/16W,±5%,0402,22Ω	1	R62
15	4002010100077	SMT	Resister	1/16W,±5%,0402,22KΩ	2	R38，R50
16	4002010100121	SMT	Resister	1/16W,±5%,0402,33Ω	7	R63，R64，R112，R132，R133，R191，R192
17	4002010100175	SMT	Resister	1/16W,±5%,0402,68Ω	1	R3
18	4002010100070	SMT	Resister	1/10W,±5%,0603,200Ω	1	R11

19	4002010100116	SMT	Resister	1/16W,±5%,0402,330Ω	2	R139，R140
20	4002010100018	SMT	Resister	1/16W,±1%,0402,10KΩ	19	R23，R27，R28，R48， R74，R77，R80，R83， R91，R92，R99，R109， R185，R188，R189， R190，R208，R209，R212
21	4002010100355	SMT	Resister	1/16W,±5%,0402,39KΩ	1	R106
22	4002010100012	SMT	Resister	1/16W,±1%,0402,100KΩ	2	R24，R90
23	4002010100057	SMT	Resister	1/16W,±1%,0402,2.2KΩ	1	R26
24	4002010100428	SMT	Resister	1/16W,±5%,0402,510Ω	10	R51，R52，R53，R54， R55，R56，R57，R58， R59，R124
25	4002010100210	SMT	Resister	1/16W,±5%,0402,51KΩ	1	R107
26	4002010100131	SMT	Resister	1/16W,±1%,0402,4.7KΩ	4	R73，R195，R196，R199
27	4002010100243	SMT	Resister	1/16W,±1%,0402,49.9KΩ	1	R85
28	4002010100108	SMT	Resister	1/16W,±1%,0402,30.1KΩ	1	R89
29	4002010100492	SMT	Resister	1/16W,±1%,0402,11KΩ	1	R86
30	4002010200005	SMT	Vol-Resister	5V,10pF,0402,(VPORT0402-100M-V05)	4	RV1，RV7，RV9，RV10
31	4002010200002	SMT	Vol-Resister	9V,5pF,0402,(SC0402E050M09-9V)	5	RV2，RV3，RV4，RV5， RV6
32	4002010500009	SMT	PTC	1A,0805,SCF100,SOCAY,RED	2	F1，F2
33	4004010300253	SMT	Capacitor	10V,±10%,X5R,0805,4.7uF	2	C50，C55
34	4004010300065	SMT	Capacitor	16V,±10%,X7R,0402,0.1uF	21	C9，C11，C12，C17， C22，C25，C35，C36， C38，C41，C42，C43， C44，C54，C58，C70， C71，C72，C73，C74，C81

35	4004010300005	SMT	Capacitor	50V,±5%,NPO,0402,10pF	9	C27，C28，C29，C33， C34，C63，C64，C65，C66
36	4004010300038	SMT	Capacitor	50V,±10%,X7R,0402,1000pF	4	C26，C30，C51，C52
37	4004010300009	SMT	Capacitor	50V,±5%,NPO,0402,22pF	5	C14，C15，C16，C19，C68
38	4004010300024	SMT	Capacitor	50V,±5%,NPO,0402,100pF	1	C56
39	4004010300055	SMT	Capacitor	16V,±10%,X7R,0402,0.01uF	2	C37，C83
40	4004010300066	SMT	Capacitor	16V,+80/-20%,Y5V,0402,0.1uF	2	C6，C40
41	4004010300081	SMT	Capacitor	16V,±10%,X7R,0805,10uF	6	C18，C39，C53，C57， C77，C82
42	4004010300068	SMT	Capacitor	50V,+80/-20%,Y5V,0402,0.1uF	1	C67
43	4004010300142	SMT	Capacitor	10V,+80/-20%,Y5V,0402,0.22uF	1	C32
44	4004010300147	SMT	Capacitor	6.3V,+80/-20%,Y5V,0603,1uF	1	C13
45	4004010300075	SMT	Capacitor	10V,±20%,X5R,0603,2.2uF	2	C21，C31
46	4004010300237	SMT	Capacitor	6.3V,±10%,X5R ,0603,4.7uF	1	C24
47	4004010300098	SMT	Capacitor	50V,±5%,NPO,0402,18pF	2	C79，C80
48	4004010300085	SMT	Capacitor	6.3V,±20%,Y5V,0805,22uF	1	C5
49	4004010300267	SMT	Capacitor	50V,±10%,X7R,0402,560pF	1	C78
50	4004010300044	SMT	Capacitor	50V,±5%,X7R,0402,3300pF	1	C84
51	4003010100014	SMT	Inductor	2.2uH,± 30%,2.95A,4*4*3mm,(SWPA4030S2R2NT,Sunlord)	1	L1
52	4003010100015	SMT	Inductor	10uH,± 20%,1.5A,4.0*4.0*3.0mm,(SWPA4030S100MT,Sunlord)	1	L2
53	4011010700007	SMT	TVS	TVSESD5Z5.0T1,SOD523,ESD5V,ONSemi	2	D2，D4
54	4011010100001	SMT	Diode	Red LED,HT19-21UWC/TR8,0603	1	LED4
55	4011010100004	SMT	Diode	Green LED,HT19-21UWC/TR8,0603	1	LED3

56	4011010100002	SMT	Diode	Yellow LED,HT19-21UWC/TR8,0603	1	LED2
57	4011010100003	SMT	Diode	Blue LED,HT19-21UWC/TR8,0603	1	LED1
58	4011010600003	SMT	Diode	BAT54C,SOT23,30V,10mA	1	D5
59	4011010600011	SMT	Diode	MBR130W,SOD123,30V,1A	1	D6
60	4012010200001	SMT	Audion	PNP,2N2907,SOT23,60/40V,0.6A,0.4W	1	Q2
61	4012010100011	SMT	Audion	NPN,S9013W,SOT323,0.5A,0.2W	7	Q6，Q7，Q8，Q9，Q12，Q14，Q16
62	4014010200003	SMT	MOSFET	IRLM6401TR/TRPBF,SOT23	2	Q13，Q17
63	4007010200001	SMT	Crystal	12.000MHz,±30PPM,3.2*2.5mm,18pF	1	X1
64	4005010300016	SMT	IC	SN74HCT14PWR,TSSOP14,6 Smit NOT Gate	1	U6
65	4005019900003	SMT	IC	ASM809SECR,SOT23,2.93V	1	U9
66	4005010400001	SMT	IC	SP3232EEY(ECY),TSSOP16	1	U3
67	4005010500035	SMT	IC	DC/DC,MP1541,SOT23-5,2.5-6V,1.9A,UP	1	U5
68	4005010700004	SMT	IC	IC,Analog Switch,SGM3005XMS/TR,MSOP10,SPDT	1	U7
69	4005010100006	SMT	IC	IC,CPU,STM32F103RC,LQFP64,ARM,72Mhz,32bit,ST	1	U11
70	4005010500033	SMT	IC	DC/DC,SY8009A,SOT23-5,1.5A,DC/DC,1.5MHz,SILERGY	1	U4
71	4001030000101	SMT	IC	PCB,I915-CORE-V1,33.02*39.12mm,1mm,6L,FR4 SC6530	1	U1
72	4005010400038	SMT	IC	IC,NCN8025A,QFN-24,IC Card	1	U2
73	4017010700012	SMT	Connector	SIM Card,C709,MUP,6PIN	2	SIM1，PSAM1
74	4017010700016	SMT	Connector	MicroSD,MicroSD-ETF03011108375020	1	MicroSD1
75	4017010100015	SMT	Connector	POGO-PIN,2Pin,3mm,H8mm	1	J8
76	4017010100013	SMT	Connector	3PIN,2.5mm,H7.5mm,BTY02-3K41920,SINGEEN,LiBat	1	J6
77	4017010100017	SMT	Connector	4PIN,2mm,CON4-H2.2mm-2x2	1	J12

78	4017010700013	SMT	Connector	IC Connector,ICC-MUP-C730	1	ICC1
79	4017010200040	SMT	Connector	16PIN,0.5mm,Down touch,IRIOS9681	1	J2
80	4017010200041	SMT	Connector	18PIN,0.5mm,Down touch,IRIOS9681	1	J3
81	4017010400002	MINI	Connector	MiniUSB,10Pin,MUB08,CK42000	1	J5
82	4009010100005	SMT	Connector	DT046,4PIN,01A,M	2	K1

Tune-Up Procedure

Tune-Up TX

Content

1 Purpose

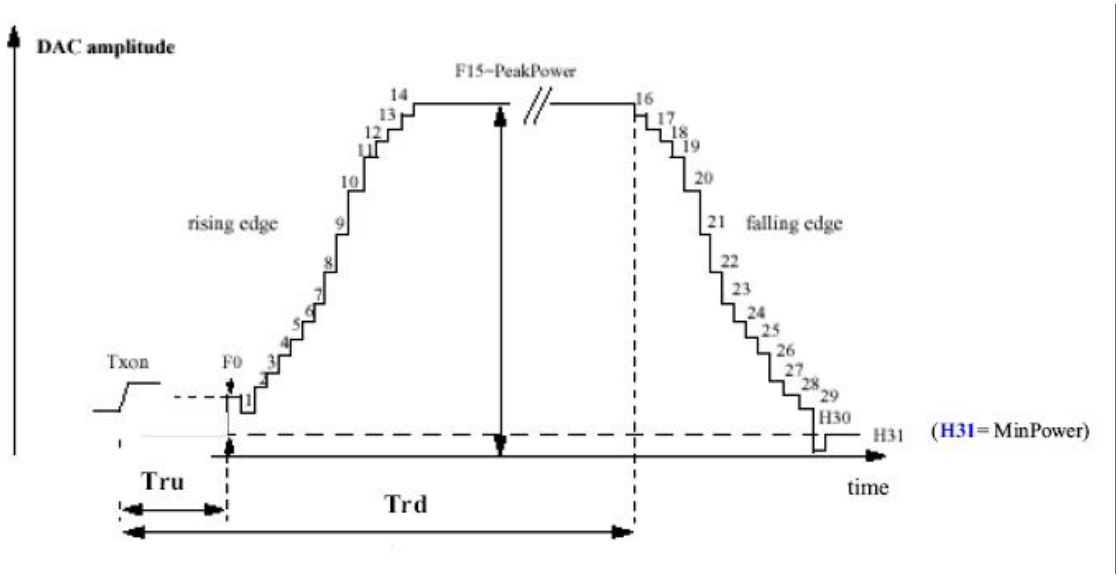
This panel gives the possibility to manage the terminal in the transmit mode.
This window includes both:
- All the parameters (frequency band, RF channel, RF level to get the desire antenna output power…) The user needs to make the terminal transmitting,
- All the parameters needed to define a transmit burst,
- All the compensation table to be able to align the terminal in production.

This Tx_commands user guide is describing:
- The characteristics of the transmit burst,
- All the parameters used in the transmit mode,
- The operating mode to make the terminal transmitting

2 General descriptions

2.1 Characteristics of the transmit burst

The power levels and the shape of a transmit burst are controlled by the power amplifier controller integrated in the SC6530 The burst is generated by a 10-bit DAC from the SC6530 as shown below:
The ramping shape is referenced with the rising edge of Tx-ON (from the Baseband).
There are two types of parameters define the transmit burst: the first one define the shapes of the burst, and the second one define the temporal position of the burst.
The rising and the falling edge of the transmit burst are determined by a set of 32 DAC code values n = 0 … 31.

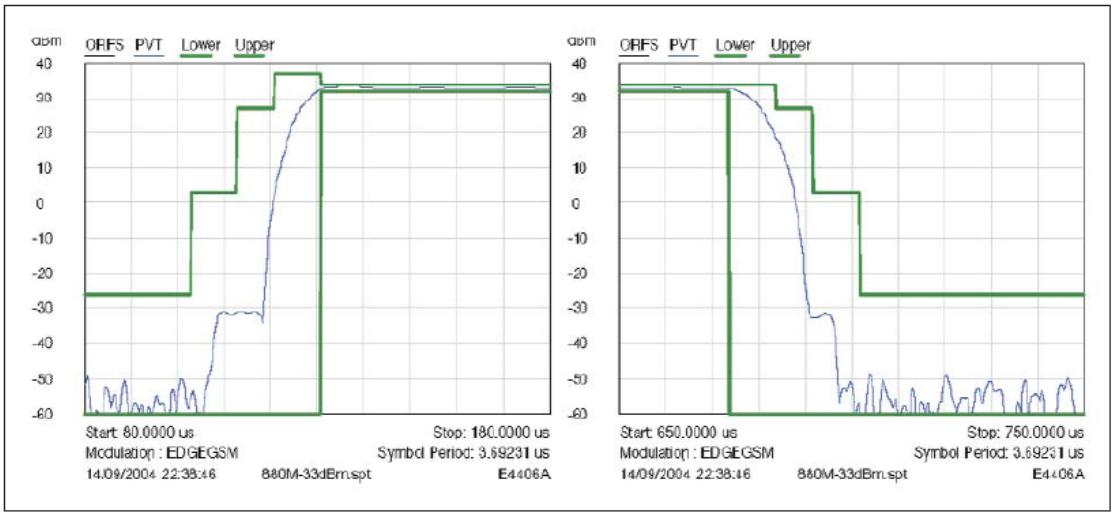


Tru = **TxTRUDefault** + △TRU_P + △TRU_T
Trd = **TxTRD_NBDefault** + △TRD_P (for a normal burst).
Trd = **TxTRD_ABDefault** + △TRD_P (for an access burst).

2.2 GPRS Data Transfer

GSM terminal use a Time Division Multiple Access (TDMA) scheme to transmit data. The TDMA format contains eight time slots. The handset power amplifier typically transmits in two of these up time slots.
To prevent interference between cell phones, the time mask profile as specified is very restricted. To meet the GSM time mask, the output power of the PA needs to ramp up and down very quickly while staying within the time mask and not generating extraneous frequency bursts due to too abrupt ramp profiles. As described before, the Vramp input value sets the RF output power. By applying a certain ramp profile to the Vramp pin, the power level (Pout) of the PA is set to obtain the required time mask. A time mask of the PA's output power is displayed. The time mask meets the limits (displayed by green lines) over a wide

range of temperature, voltage and load variations.



3 Parameters

F (n) are values coming from the DAC to shape the transmit burst. Some F(n) values have a corresponding.
Parameter used in the TAT to align the terminals.
Parameter used in TAT = [F (n)].

3.1 Parameters used to shape the burst

- **H0** = [F (1)] controls the rate at which energy is given to the control loop at the beginning of the ramp. This energy is needed to bring the PA system control in a closed loop. This is the second code coming from the SC6530 DAC.
- **PeakPow** = [F (15)] corresponds to the peak power of the transmit burst.
- **H30** = [F (30)] corresponds to the last ramping coefficients used to shape the ramp.
- **MinPow** = [F (31)] is a fixed parameter and corresponds to the Code Start of the AM7801 specification. It ensures a fast discharge of accumulated energy during the open loop mode in the summing node.

3.2 Parameters used to define the temporal position of the burst

3.2.1 Optimum position of the burst

This parameter is **TRU** (or **△TRU_P**) on the panel, in the Optimal Burst. This is the burst starting time correction, which is optimised for each power control level.
(Note that **_P** means that the parameter is a power compensation parameter).

3.2.2 Optimum length of the burst

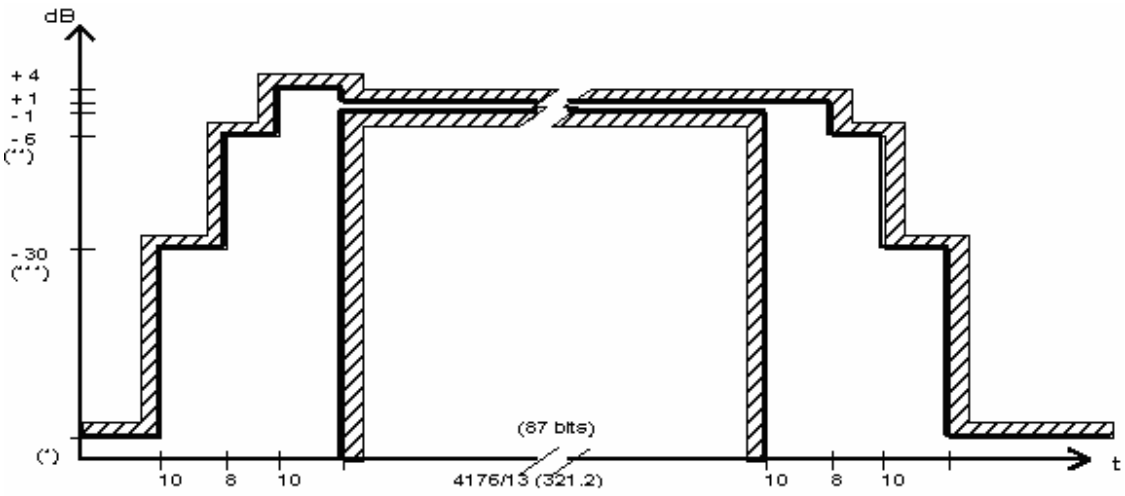
This parameter is **TRD** (or **△TRD_P**) on the panel, in the Optimal Burst. This is the burst length compensation, which is optimized for each power control level.
(Note that **_P** means that the parameter is a power compensation parameter).

4 Operating mode

4.1 How to transmit a Tch burst (Random data), in PCS1900 mode, at power control level max:

PCS 1900:
Connect the terminal with special software, Configuration of the common parameters:
- Band: PCS1900,
- Channel: 661,
- RF level: 0,
- Burst select: Mode Tch Random

Press STAR command to start continuous TX, you can check the burst with CMU200 or Agilent 8960; it must fit the curve below.



The request of the Power vs. Time.

4.2 How to stop Tx measurements:

Press STOP command to stop the TX.

4.3 How to transmit a burst after modifying parameters

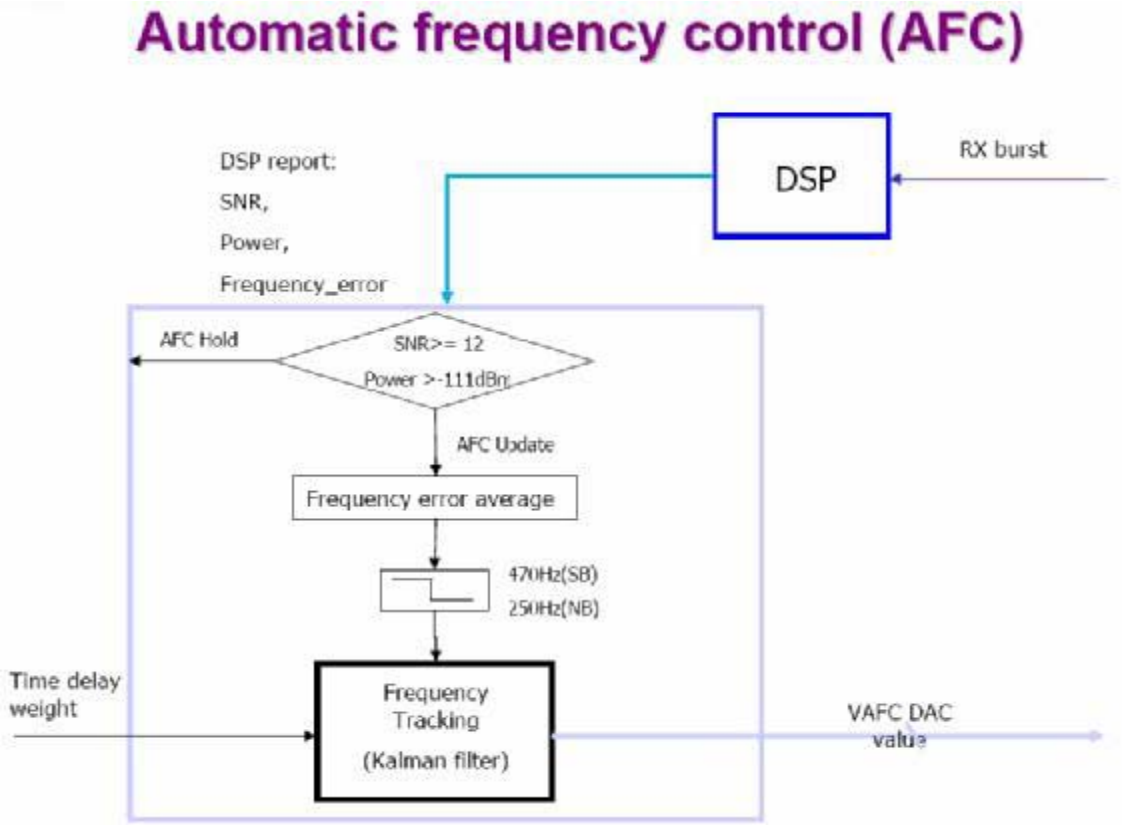
Please note that each time a parameter (such as parameter used to shape the burst) is changed, then the user have to: **download to flash** to validate the parameter modification. If the command is not performed, the old parameters are taken into account.

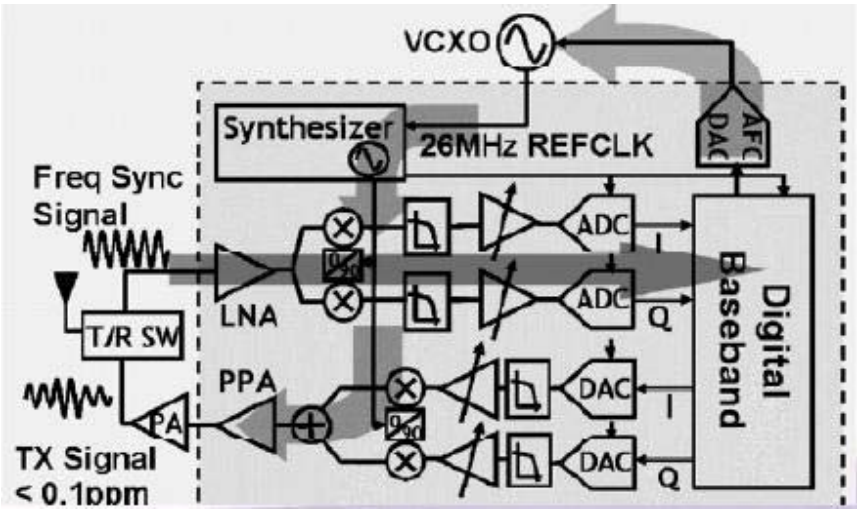
5 Purpose

This panel gives the description of the Frequency plan.
This window includes both:
- Automatic frequency control (AFC),
- Static frequency error and range,
- Dynamic frequency error and range

6 Automatic frequency control

Before a handset is allowed to transmit any signals, it needs to first receive the FSB signal from the base station, demodulate and decode it using its own local oscillator, map it to the constellation plane, calculate the frequency offset, and adjust the local oscillator accordingly, until 0.1ppm of frequency accuracy is achieved. This frequency correction loop is called the automatic frequency control (AFC) loop in GSM standard. The process as below:





In SC6530 it uses an AFC signal from baseband (DAC) to finish automatic frequency control.

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7 Static frequency error and range

- Factors of static frequency error: manufacturing frequency tolerance in crystal at room
temperature, aging,
- Static frequency error is compensated for using 6bits programming capacitor array (CAP ID).
- The static frequency range of capacitor array (CAP ID=0 to63) must larger than 34ppm(+-17ppm).
- The static range depends on crystal‘s TS and CL
- The capacitor array calibration is done in production testing by setting the AFC DAC to mid-scale(4196) and adjusting CAP ID to the setting that give closest to 0 ppm error(finish by test software). This CAP ID value is then stored in Flash memory and rewritten to SC6530 each time the VCXO is initialized.

Output Power

For GSM850&PCS1900 GPRS Power

GSM850 Band:

PCL	Output power(dBm)	Tolerances(dBm)
5	32	+/-1
6	31	+/-1
7	29	+/-1

8	27	+/-1
9	25	+/-1
10	23	+/-1
11	21	+/-1
12	19	+/-1
13	17	+/-1
14	15	+/-1
15	13	+/-1
16	11	+/-1
17	9	+/-1
18	7	+/-1
19	5	+/-1

PCS1900 Band:

PCL	Output power(dBm)	Tolerances(dBm)
0	29	+/-1
1	27	+/-1
2	26	+/-1
3	24	+/-1
4	22	+/-1
5	20	+/-1
6	18	+/-1
7	16	+/-1
8	14	+/-1
9	12	+/-1
10	10	+/-1
11	8	+/-1
12	6	+/-1
13	4	+/-1
14	2	+/-1
15	0	+/-1

Number of timeslots	Permissible nominal reduction of maximum output power, (dB)
1	0
2	0 to 3
3	1.8 to 4.8
4	3 to 6