Tune-Up Procedure

Tune-Up TX

Content

1 Purpose

This panel gives the possibility to manage the mobile 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 mobile transmitting,
- all the parameters needed to define a transmit burst,
- all the compensation table to be able to align the mobile in production.

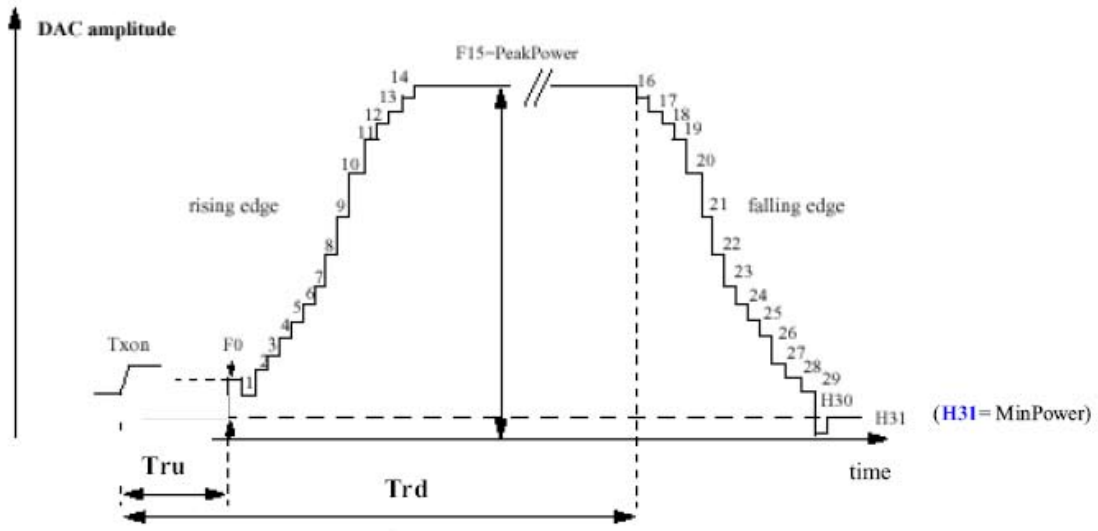
This Tx_commands user guide is describing:

- the characteristics of the transmit burst,
- all the parameters used in the transmit mode,
- the operating mode to make the mobile transmittin.

2 General description

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 MT6163. The burst is generated by a 10-bits DAC from the MT6163 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

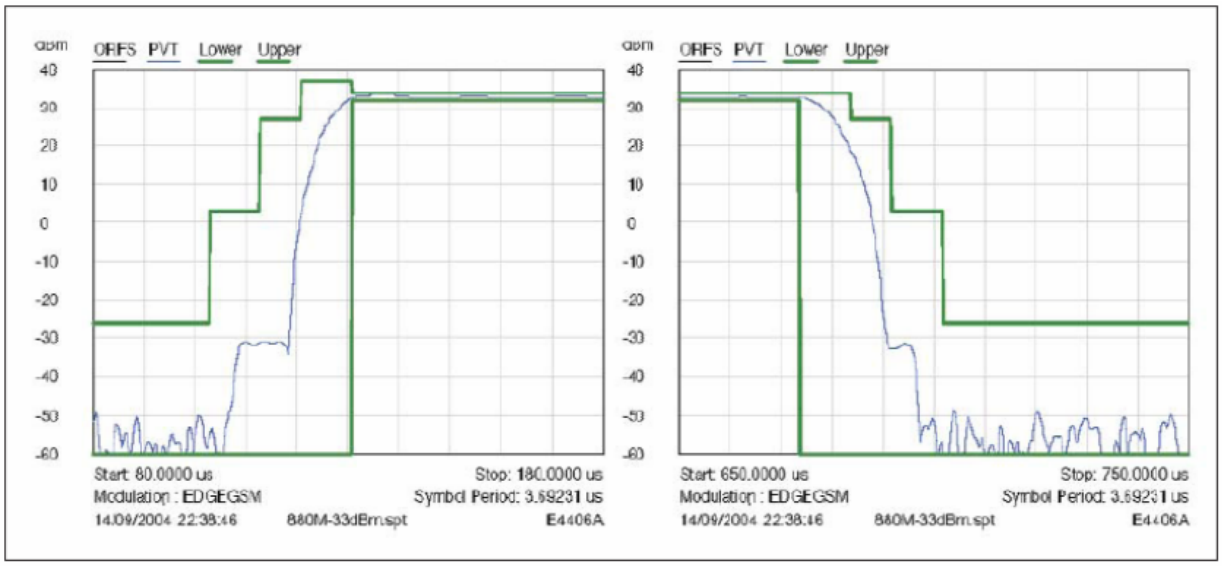
Trd = TxTRD_NBDefault + △ TRD_P (for a normal burst).

Trd = TxTRD_ABDefault + △ TRD_P (for an access burst).

2.2 GPRS/EDGE Data Transfer

GSM mobile phones 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 four 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 correspondingparameter used in the TAT to align the mobiles.

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 AP5200 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 RF7170 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 optimised for each power control level. (Note that _P means that the parameter is a power compensation parameter).

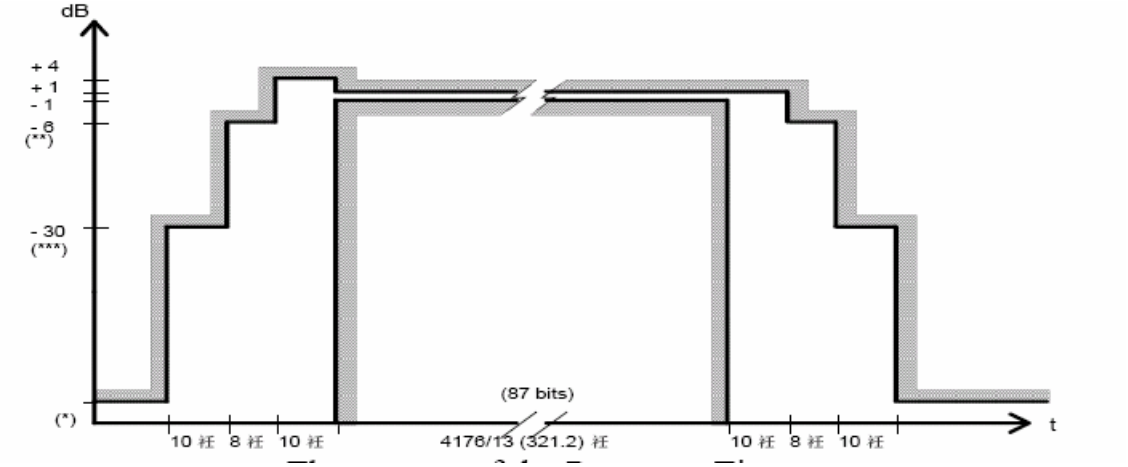
4 Operating mode

4.1 How to transmit a Tch burst (Random data), in GSM850mode;GSM900mode;DCS1800mode; PCS1900mode,at power control level max:

Connect the mobile with a special software, Configuration of the common parameters:

- band: GSM850/PCS1900;GSM900/DCS1800
- channel: 192/661,62/698
- RF level: PCL5/ PCL0,
- 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.

Tune-Up Frequency

Content

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

Depending on the chosen 26 MHz Crystal and on the spread on the Crystal, the init voltage for the AFC command could change.

On production line, on each handset, an initial frequency alignment procedure is done to compensate all components tolerances. In Case of DCXO implementation, 2 parameters are used for the Reference Clock alignment in order to guarantee a low frequency error at each switch-ON of the handset. This compensation is done by internal capacitors data bank of the AD6548 that can be switched.

One parameter called DCXO_CDAC defining the coarse initial frequency tuning by the 7 CDAC bits of the MT6163.

Second parameter called DCXO_CAFC defining the fine initial frequency tuning by the 13 CAFC bits of the MT61

Table 1: Alignment parameter related to reference clock - Generic

	Name	Description/Comments	Unit	Range	Value	Dyn	Dim	Comments
Generic	DCXO_CDAC	Coarse Init voltage for the AFC command (coarse capacitor data bank)	LSB		2_8-1	Default is mid scale (*) 64d	1 byte	1
Generic	DCXO_CAFC	Fine Init voltage for the AFC command (fine capacitor data bank)	LSB		2_{16}-1	Default is mid scale (*) 4096d	2 bytes	1

General conditions:

Power supply is set to nominal battery voltage on VBAT. Switch ON the mobile in TAT mode.

Step1: DCXO_CDAC tuning (Coarse AFC)

-Switch the mobile in TX PCS (channel 661 level 15 for PCS).

-Measure the frequency error in TX Mode with a CMU200 (reference board radio tester)

- Calculate the DCXO_CDAC (tuned) value

- Enter this value in the fixed parameter window: parameter DCXO_CDAC

-Save DCXO_CDAC (tuned) value in EEPROM with the TAT software menu.

-Switch-OFF and switch-ON the mobile to validate the new value

Step2: DCXO_CAFC tuning (Fine AFC)

-Switch the mobile in TX PCS (channel 661 level 15 for PCS).

-Measure the frequency error in TX Mode with a CMU200 (reference board radio tester)

- Calculate the DCXO_CAFC (tuned) value

- Enter this value in the fixed parameter window: parameter DCXO_CAFC

-Save DCXO_CAFC (tuned) value in EEPROM with the TAT software menu.

-Switch-OFF and switch-ON the mobile to validate the new value

Output Power

BAND GSM850

Power Level Target Unit Tolerance

Power level	Power Peak value
	dBm
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	5

BAND PCS1800

Power Level Target Unit Tolerance

Power level	Power Peak value
	dBm
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

BAND GSM900

Power Level Target Unit Tolerance

Power level	Power Peak value
	dBm
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	5

BAND PCS1900

Power Level Target Unit Tolerance

Power level	Power Peak value
	dBm
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

3. Output Power

GSM850&PCS1900, GSM9000&DCS1800 allowed maximum output reduction
In a multislot configuration

Number of Timeslots in uplink assignment	Permissible nominal reduction of maximum output Power,(dB)
1	0
2	0 to 3,0
3	1,8 to 4,8
4	3,0 to 6,0

4. EDGE Output Power

BAND GSM850 Power Level Target Unit Tolerance

Power level	Power Peak value	limit
8	27	+/-2 dB
9	25	+/-2 dB
10	23	+/-2 dB
11	21	+/-2 dB
12	19	+/-2 dB
13	17	+/-2 dB
14	15	+/-2 dB
15	13	+/-2 dB
16	11	+/-3 dB
17	9	+/-3 dB
18	7	+/-3 dB
19	5	+/-3 dB

BAND GSM900 Power Level Target Unit Tolerance

Power level	Power Peak value	limit
8	27	+/-2 dB
9	25	+/-2 dB
10	23	+/-2 dB
11	21	+/-2 dB
12	19	+/-2 dB
13	17	+/-2 dB
14	15	+/-2 dB
15	13	+/-2 dB
16	11	+/-3 dB
17	9	+/-3 dB
18	7	+/-3 dB
19	5	+/-3 dB

BAND PCS1800 Power Level Target Unit Tolerance

Power level	Power Peak value	limit
2	25	+/-0.5dB
3	24	+/-2 dB
4	22	+/-3 dB
5	20	+/-3 dB
6	18	+/-3 dB
7	16	+/-3 dB
8	14	+/-3 dB
9	12	+/-4 dB
10	10	+/-4 dB
11	8	+/-4 dB
12	6	+/-4 dB
13	4	+/-4 dB
14	2	+/-5 dB
15	0	+/-5 dB

BAND PCS1900 Power Level Target Unit Tolerance

Power level	Power Peak value	limit
2	25	+/-0.5dB
3	24	+/-2 dB
4	22	+/-3 dB
5	20	+/-3 dB
6	18	+/-3 dB
7	16	+/-3 dB
8	14	+/-3 dB
9	12	+/-4 dB
10	10	+/-4 dB
11	8	+/-4 dB
12	6	+/-4 dB
13	4	+/-4 dB
14	2	+/-5 dB
15	0	+/-5 dB

GSM850&PCS1900, GSM9000&DCS1800 allowed maximum output reduction
In a multislot configuration

Number of Timeslots in uplink assignment	Permissible nominal reduction of maximum output Power,(dB)
1	0
2	0 to 3,0
3	1,8 to 4,8
4	3,0 to 6,0

7. WIFI Operating mode

WIFI Operating Frequency Band (RF): 2.412- 2.462GHz (TX/RX)

Modulation mode： BPSK, QPSK, CCK, OFDM(BPSK, QPSK, 16QAM, 64QAM)

Item	Description	Footprint	Qty	Location	Part Number	Vender
			RES			
1	RES-0201-0Ω,5%,1/20W	0201	1	R1410	RC0201JR-070RL	YAGEO
2	RES-0402-0Ω,5%,1/16W	0402	8	C601,C603,R606,R612,R618,C624,R1426,R608	RC0402JR-070RL	YAGEO
3	RES-0402-18Ω,5%,1/16W	0402	1	R821	RC0402JR-0718RL	YAGEO
4	RES-0402-1kΩ,5%,1/16W	0402	8	R304,R309,R316,R429,R432,R448,R607,R610	RC0402JR-071KL	YAGEO
5	RES-0402-1.5kΩ,5%,1/16W	0402	2	R430,R433	RC0402JR-071K5L	YAGEO
6	RES-0201-2.2KΩ,5%,1/20W	0201	6	R204,R205,R206,R209,R212,R213	RC0201JR-072K2L	YAGEO
7	RES-0402-3.3kΩ,5%,1/16W	0402	1	R310	RC0402JR-073K3L	YAGEO
8	RES-0201-5.1KΩ,1%,1/20W	0201	1	R203	RC0201FR-075K1L	YAGEO
9	RES-0402-10kΩ,5%,1/16W	0402	1	R605	RC0402JR-0710KL	YAGEO
10	RES-0402-24KΩ,5%,1/16W	0402	2	R306,R601	RC0402JR-0724KRL	YAGEO
11	RES-0402-39KΩ,5%,1/16W	0402	4	R318,R511,R307,R308	RC0402JR-0739KRL	YAGEO
12	RES-0402-330kΩ,5%,1/16W	0402	2	R313,R824	RC0402JR-07330KL	YAGEO
13	RES-1206-0.2Ω,1%,1/4W	1206	1	R312	RL1206FR-070R2L	YAGEO
14	RES-0805-0.02Ω,1%,1/8W	0805	1	R366	RL0805FR-070R02L	YAGEO
15	RES-0603-0Ω,5%,1/16W	0603	1	B601	RC0603JR-070RL	YAGEO
			CAP			
1	CAP-0402-1uF,10%,X5R,6.3V	0402	33	C276,C342,C345,C347,C359,C360,C362,C363,C366,C369,C370,C379,C380,C381,C383,C394,C395,C411,C4[illegible]	GRM155R60J105K*	MURATA
2	CAP-0201-100nF,20%,X5R,6.3V	0201	38	C275,C332,C333,C335,C337,C339,C341,C344,C348,C349,C350,C352,C354,C355,C357,C361,C364,C365,C368,C372,C373,C374,C375,C376,C377,C382,C384,C385,C387,C389,C390,C392,C398,C464,C801,C802,C804,C1610	GRM033R60J104KE19D	MURATA
3	CAP-0402-100nF,10%,X5R,10V	0402	6	C271,C611,C628,C1402,C505,C506	GRM155R71C104KA88D	MURATA
4	CAP-0402-10nF,10%,X5R,50V	0402	3	C203,C268,C807	GRM155R71H103KA01D	MURATA
5	CAP-0402-100pF,5%,COG,50V	0402	5	C413,C420,C403,C609,C610	GRM1555C1H101J	MURATA

6	CAP-0402-56pF, 5%, C0G, 50V	0402	1	C616	GRM1555C1H560J	MURATA
7	CAP-0402-33pF, 5%, C0G, 50V	0402	13	C404, C407, C414, C419, C421, C428, C441, C602, C605, C608, C613, C621, C634	GRM1555C1H330J	MURATA
8	CAP-0402-22pF, 5%, C0G, 50V	0402	5	C615, C617, C620, C635, C638	GRM1555C1H220JZ01D	MURATA
9	CAP-0402-7.0pF, 0.25pF, C0G, 50V	0402	2	C622, C623	GRM1555C1H7R0C	MURATA
10	CAP-0402-18pF, 5%, C0G, 50V	0402	4	C202, C210, C606, C607	GRM1555C1H180J	MURATA
11	CAP-0402-1.0pF, 0.25pF, C0G, 50V	0402	1	L620	GRM1555C1H1R0C	MURATA
12	CAP-0603-4.7uF, 10%, X5R, 6.3V	0402	6	C315, C316, C318, C356, C458, C502	GRM188R60J475K	MURATA
13	CAP-0402-2.2uF, 20%, X5R, 6.3V	0402	8	C313, C334, C353, C386, C503, C803, C806, C1401	GRM155R60J225ME15D	MURATA
14	CAP-0603-10uF, 20%, X5R, 6.3V	0603	11	C235, C239, C241, C243, C358, C388, C391, C393, C401, C463, C612	GRM188R60J106ME47D	MURATA
15	CAP-0603-22uF, 20%, X5R, 6.3V	0603	3	C245, C256, C614	GRM188R60J226MEA0D	MURATA
16	CAP-0603-1uF, 10%, X5R, 25V	0603	1	C367	GRM188R61E105K	MURATA
17	CAP-0603-1uF, 10%, X5R, 50V	0603	1	C805	C0603X5R105K500NT	MURATA
Ind						
1	IND-0402-22nH, 5%	0402	1	L604	LQG15HS22NJ02D	MURATA
2	IND-0402-12nH, 5%	0402	1	L605	LQG15HS12NJ02D	MURATA
3	IND-0402-4.7nH, +/-0.3nH	0402	2	L609, L611	LQG15HS4N7S02D	MURATA
4	IND-0402-2.4nH, +/-0.3nH	0402	1	L608	LQG15HS2N4S02D	MURATA
5	IND-0402-2.0nH, +/-0.3nH	0402	1	C604	LQG15HS2N0S02D	MURATA
6	IND-0402-1.8nH, +/-0.3nH	0402	1	L612	LQG15HS1N8S02D	MURATA

7	IND-功率型-3030- 10uH, 20%, DCR=0.48R, 600mA, H=1.0 mm	0402	1	L801	ELLVEG100M	PANASONIC
8	IND-PWR-2016- 2.2uH, 30%, DCR=0.12R, 1300mA, H=0 .8mm	0402	4	L305, L309, L311, L312	ELGUEA2R2NA	PANASONIC
9	IND-BEAD-0402- 120R/100MHZ, DCR=0.25R, 500mA	0402	6	R320, B403, B404, R823, R825, R1501	BLM15AG121SN1	MURATA
Other						
1	IC-AP/BP, MT6517A	MT6517A	1	U201	MT6517A	MTK
2	IC-PMIC, MT6329	MT6329	1	U331	MT6329	MTK
3	IC-EDGE TRANCEIVER, MT6163	MT6163	1	U601	MT6163	MTK
4	IC-QUAD-BAND GPRS/LINEAR EDGE TRANSMIT MODULE	AP5200	1	U602	AP5200	LDA
5	IC-MEMORY- NAND+LPDDR1(4Gb+4Gb), MT29C4G96 MAZAPCJA_5IT	MT29C4G96MAZAP CJA_5IT	1	U501	MT29C4G96MAZAPCJA_ 5IT	Micron
6	IC-DCDC, SLED, BASE OVP=25V, CP2123ST-A1	CP2123ST-A1	1	U813	CP2123ST-A1	CHIPHOMER
7	IC-SAW(GSM900/850)	B9512	1	U610	B9512	EPCOS
8	IC-SAW(GSM1800/1900)	B9513	1	U611	B9513	EPCOS
9	OSC-CRYSTAL, 32.768K	SSP-T7-F	1	X201	SSP-T7-F	SII
10	OSC-CRYSTAL, 26M	TZ1689A	1	X601	TZ1689A	TST

11	DIO- ttr<5ns,<1A,Vr=40,1PS79SB30	1PS79SB30	1	D801	1PS79SB30	NXP
12	EMI&ESD- ESD,Bi_TVS,0402,5V,0.5pF	ES0402V014BT	8	T1408,T1409,T1410,T1412,T1413,T1414,T1406,T1407	ES0402V014BT	AEM
13	EMI&ESD- ESD,Bi_TVS,0402,5V,35pF	AVLC5S02050	14	T301,T302,T1404,T406,T407,T1411,T1521,T1522,T1523,T1524,T1525,T1526,C1504,C1511	AVLC5S02050	AMTECH
14	IC-HIGH GAIN LOW VOLTAGE PNP POWER TRANSISTOR,STT818B	PT236T30E2	1	U301	PT236T30E2	Prisemi
15	MOS-MOSFET,Ntype,2SK3541	2SK3541	1	Q301	2SK3541	JCST
16	IC-GSENSOR,I2C,1.8-3.3V,12bit AD	KXTJ9-1005	1	U1604	KXTJ9-1005	KIONIX
17	QIO-Io>1A,Vs=5.1v,	MMSZ5231BT1G	1	D301	MMSZ5231BT1G	On semi
18	BAT-RTC,3.3V,0.027 mAh to 2.0V	XH311HU-IV07EA	1	BB301	XH311HU-IV07EA	SII
19	CON-BAT CON,KBC13S1D1R	KBC13S1D1R	1	BAT301	KBC13S1D1R	WEIAN
20	CON-SIM,ONE,KWS6156N20R	KWS6156N20R	2	SIM1502,SIM1503	KWS6156N20R	WEIAN
21	CON-TFCARD,KM3308465B1R	KM3308465B1R	1	TF1401	KM3308465B1R	WEIAN
22	CON-BTB,24pin,24-5804-024-000-829+	24-5804-024-000-829+	1	J801	24-5804-024-000-829+	JINC
23	CON- USBCON,SMT,5pin,KIU90511S1R	KIU90511S1R	1	P1401	KIU90511S1R	WEIAN
24	CON-ZIF,51pin,FH26-51S-0.3SHW(05)	FH26-51S-0.3SHW(05)	2	J1503 J1405	FH26-51S-0.3SHW(05)	HIROS
25	CON-1PIN,RF,818000387	818000387	3	ANT601,ANT602,ANT603	818000387	ECT
26	CON-RF TEST,ECT818000163	ECT818000163	1	SW601	ECT818000163	ECT

27	OTHER-SLD,MHU13-BB-SLD	MHU13-BB-SLD	1	BB_SLD	MHU13-BB-SLD	QIW
28	OTHER-SLD,MH05-RF-SLD	MH05-RF-SLD	1	RF_SLD	MH05-RF-SLD	QIW
29	OTHER-SLD,MHU13-POWER-SLD	MHU13-POWER-SLD	1	DY-SLD	MHU13-POWER-SLD	QIW
50	PCB-MHU13MAIN	MHU13MAIN-PCB	1		MHU13MAIN-PCB	

Item	Description	Footprint	Qty	Location	Part Number	Vender
			RES			
1	RES-0201-0Ω, 5%, 1/20W	0201	1	C1049	RC0201JR-070RL	YAGEO
2	RES-0402-0Ω, 5%, 1/16W	0402	7	L1007, R1011, R1012, R1019, R428, R1018, R1502	RC0402JR-070RL	YAGEO
3	RES-0402-33Ω, 5%, 1/16W	0402	2	R438, R459	RC0402JR-0733RL	YAGEO
4	RES-0402-1kΩ, 5%, 1/16W	0402	1	R409	RC0402JR-071KL	YAGEO
5	RES-0402-1.5kΩ, 5%, 1/16W	0402	1	R412	RC0402JR-071K5L	YAGEO
6	RES-0201-10KΩ, 5%, 1/20W	0201	2	R802, R803	RC0201JR-0710KL	YAGEO
7	RES-0402-24KΩ, 1%, 1/16W	0402	2	R403, R1015	RC0402FR-0724KRL	YAGEO
8	RES-0402-33kΩ, 5%, 1/16W	0402	1	R401	RC0402JR-0733KL	YAGEO
9	RES-0402-68KΩ, 1%, 1/16W	0402	1	R402	RC0402FR-0768KRL	YAGEO
10	RES-0402-220kΩ, 5%, 1/16W	0402	2	R815, R1020	RC0402JR-07220KL	YAGEO
			CAP			
1	CAP-0402-1uF, 10%, X5R, 6.3V	0402	15	C411, C831, C1001, C1006, C1007, C1010, C1016, C1018, C1028, C1039, C1059, C1061, C349, C437, C470	GRM155R60J105K*	MURATA
2	CAP-0201- 100nF, 20%, X5R, 6.3V	0201	10	C812, C823, C1047, C1056, C1060, C1062, C1521, C1522, C1523, C1611	GRM033R60J104KE19D	MURATA
3	CAP-0402-100nF, 10%, X5R, 10V	0402	6	C412, C1004, C1013, C1015, C1029, C1063	GRM155R71C104KA88D	MURATA
4	CAP-0402-33nF, 10%, X5R, 16V	0402	2	C435, C436	GRM155R71C333K	MURATA
5	CAP-0201-10nF, 20%, X5R, 6.3V	0201	4	C810, C811, C828, C1044	GRM033R61A103KA01D	MURATA
6	CAP-0402-1nF, 10%, X7R, 50V	0402	5	C409, C429, C430, C431, C1048	GRM155R71H102K	MURATA
7	CAP-0402-100pF, 5%, COG, 50V	0402	4	C406, C410, C476, C407	GRM1555C1H101J	MURATA

8	CAP-0402-33pF, 5%, COG, 50V	0402	12	C405, C408, C438, C464, C465, C469, C471, C475, C483, C1040, C1041, C1043	GRM1555C1H330J	MURATA
9	CAP-0402-18pF, 5%, COG, 50V	0402	1	C1005	GRM1555C1H180J	MURATA
10	CAP-0402-10pF, 5%, COG, 50V	0402	4	C1002, C1025, C1050, C1051	GRM1555C1H100J	MURATA
11	CAP-0402- 2.2pF, 0.25pF, COG, 50V	0402	2	C1024, C1042	GRM1555C1H2R2C	MURATA
12	CAP-0603- 4.7uF, 10%, X5R, 6.3V	0402	4	C1003, C1008, C1009, C1518	GRM188R60J475K	MURATA
13	CAP-0402- 2.2uF, 20%, X5R, 6.3V	0402	7	C1512, C1513, C1514, C826, C827, C830, C1019	GRM155R60J225ME15D	MURATA
14	CAP-0603- 2.2uF, 10%, X5R, 6.3V	0603	2	C825, C1607	GRM188R61A225K	MURATA
15	CAP-0603-10uF, 20%, X5R, 6.3V	0603	2	C456, C455	GRM188R60J106ME47D	MURATA
16	CAP-0603-1uF, 10%, X5R, 25V	0603	1	C806	GRM188R61E105K	MURATA
Ind						
1	IND-0402-100nH, 5%	0402	1	L404	LQG15HSR10J02D	MURATA
2	IND-0402-27nH, 5%	0402	1	L1010	LQG15HS27NJ02D	MURATA
3	IND-0402-6.8nH, 5%	0402	1	L1008	LQG15HS6N8J02D	MURATA
4	IND-PWR-3030- 10uH, 20%, DCR=0.48R, 600mA, H=1.0mm	1212	1	L802	ELLVEG100M	MURATA
5	IND-PWR-2520- 2.2uH, 20%, 1300mA	1008	1	L1001	LQM2HPN2R2MG0L	MURATA
6	IND-DEAD- 0603, 220R@100MHz, , DCR=0.1R, 1400mA	0603	3	B411, B422, B423	BLM18PG221SN1	MURATA
7	IND-BEAD－0402- 120R/100MHZ, DCR=0.25R, 500mA	0402	8	R310, B418, B421, R426, B1002, R451, B801, B802	BLM15AG121SN1	MURATA

8	IND-BEAD- 0603,1K/100MHz,0.5DCR,400mA	0603	1	B429	BLM18AG102SN1	MURATA
9	IND-BEAD- 0603,2.5K@1GHz,250mA	0603	3	B419,B424,B426	BLM18BD252SN1D	MURATA
Other						
1	IC-WIFI/GPS/FM/BT 4IN1,MT6628Q	MT6628Q	1	U1001	MT6628Q	MTK
2	IC-GPS LNA,BGU7005	BGU7005	1	U1004	BGU7005	NXP
3	CRY-26MHz,2520,MT6620,2.8V,4pin	TX6217	1	U1003	TX6217	RAKON
4	IC-SAW-0.8-6G BPF+Balun	FB2012-05N2R4GT	1	F1001	FB2012-05N2R4GT	ACX
5	IC-SAW-1.5G,GPS SAW	SAFEB1G57KE0F00	1	F1002	SAFEB1G57KE0F00	MURATA
6	DIO-UMD2,VF<0.41V&0.5A	RB520-30	2	D302,D3801	RB520-30	ROHM
7	EMI&ESD-ESD,BI_TVS,0402,5V	ES0402V014BT	2	T407,T408	ES0402V014BT	AEM
8	EMI&ESD-ESD,Bi_TVS,0402,5V	AVLC5S02050	10	T401,T402,T403,T404,T405,T406,T1401,T1402,T1403,T1404	AVLC5S02050	AMTECH
9	IC-AUDIO PA,Dtype,AW8145CSR	AW8145CSR	1	U402	AW8145CSR	AIWEI
10	IC-ALS&PS,I2C,CM3623AD	CM3623AD	1	U1603	CM3623AD	CAPELL
11	IC-CTP,I2C,GT813	GT813	1	U801	GT813	GODIX
12	CON-ZIF,39Pin,FH26-39S-0.3SHW(05)	FH26-39S-0.3SHW(05)	1	J802	FH26-39S-0.3SHW(05)	HIROS
13	CON—BTB,40pin,AXT540124	AXT540124	1	J101	AXT540124	PANASONIC
14	CON—BTB,60pin,AXT540124	AXT560124	1	J102	AXT560124	PANASONIC
15	CON—BTB,24pin,AXT524147	AXK724147	1	J103	AXK724147	PANASONIC

16	CON-HEADSET,3.5mm ,AUD00003505QC	AUD00003505QC	1	J401	AUD00003505QC	HDL
17	CON-1PIN,RF,818000387	818000387	4	ANT1001,ANT1002,ANT1003,ANT1004	818000387	ECT
18	LED-PS,HIR26-21C-L423-TR8	HIR26-21B/L423/CT	1	LED1603	HIR26-21B/L423/CT	Everlight
19	OTHER-SLD,MAQ01-4IN1-SLD	MHU13-4IN1-SLD	1	4IN1-SLD	MHU13-4IN1-SLD	QIW
50	PCB-MHU13SUB,6LAYER	MHU13SUB-PCB	1		MHU13SUB-PCB	