



Profession Wirsless communication system solution supplier

T350

Handheld Two-Way Radio

Service Manual

Version: V1.3

Fujian Kirisun Communications Co.,Ltd

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1 Overview

1.1 Range of Application

This manual is intended for the maintenance and repair of T350 frequency-modulated handheld radio, and can only be used by engineers and professional technicians who are trained by Kirisun. The parameters in this manual may vary with technology improvement, so for updated technical information, please contact Kirisun or its local dealers.

Please carefully read this manual before repairing the radio.

1.2 Safety Precautions

Electromagnetic Radiation

Radios generate and radiate electromagnetic energy. The security design of Kirisun radio meets national and international standards on electromagnetic radiation. To ensure radio's optimal performance and safe electromagnetic radiation on human, please keep the radio vertical to the ground and 5~10 cm away from your mouth.

Electromagnetic Interference

To avoid electromagnetic interference, please turn off the radio wherever there are clear warnings, e.g. hospitals, health care centers, airports and other places where radios must be turned off.

Explosive and Harmful Gases

The radio should be turned off in areas where there are explosives and harmful gases, e.g. lower deck of the hull, fuel and chemical storage facilities and area where the air contains chemicals, particles, dust or metal dust. Please turn off the radio when close to blasting area and electric blasting detonators. Replacing or charging batteries in potentially explosive atmosphere is prohibited.

Battery Life

To prolong the service life of the battery, avoid fully discharging the battery frequently. Please charge and discharge the battery repeatedly if it will be not used for a long time. For satisfactory performance and safety, you are suggested to replace the battery every two years.

Replacing Components

When replacing components, please be aware of the model number. Do not arbitrarily replace any components that do not match Kirisun's requirement.

1.3 Maintenance Service

Paid maintenance service will be provided after the warranty period. Meanwhile, we offer parts to authorized maintenance stations and dealers at preferential prices, except those of discontinued products.

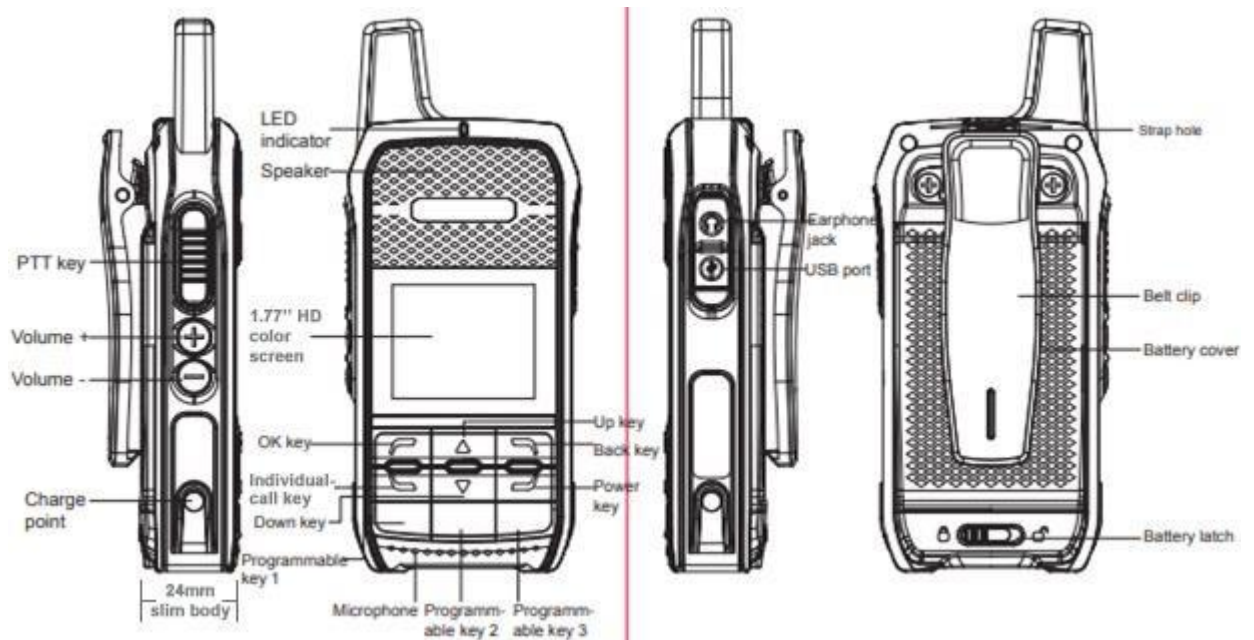
The radio and accessory are provided with warranty service. But if one of the following occurs, no free maintenance is offered.

- No valid warranty card or original invoice.
- Faults caused by unauthorized disassembly, repair and modification.
- Man-made damage such as wear, mechanical damage, burning, and water logging.
- Product serial number is damaged or the product brand is unable to identify.

After the warranty expired, lifetime service is still available. We also provide service components to service station and staff at favorable price.

2 Appearance and Keys

2.1 Appearance



2.2 Keys

To cater to user preference, programmable keys (i.e. P1, P2 and P3 keys) can be set as shortcut keys through programming by your dealer.

Note:

Press: Press down and release quickly.

Press and hold: Hold down for about 3s.

NO	Function	Description
1	Undefined	The radio does not respond when the key is pressed.
2	Remaining battery capacity announcement	Announce the current battery level.
3	User announcement	Announce the current user's alias.
4	Group announcement	Announce the group of the current user.
5	Group/user announcement	Announce the group and alias of the current user.
6	Group/user/remaining battery capacity announcement	Announce the group and alias of the current user and the remaining battery capacity.
7	Individual call	Initiate an individual call.
8	Voice playback	Play back voice records (utmost 99 records).
9	Bluetooth	Enable/disable Bluetooth.
10	Wi-Fi	Enable/disable Wi-Fi.
11	Broadcast call	Switch to broadcast-call mode.
12	All call	Switch to all-call mode.

2.3LED Indicators

LED Indication	Device Status
Red light on	- SIM card not installed or installed improperly - Charging in progress
Green light on	- Call in progress - Charged fully - Downloading voice record
Red light flashing	- Overdue phone charge or suspended card - Network connection failed
Green light flashing	- Registered to network and in standby state
Blue light flashing	- Registering to network - Device not registered to server

Light off	Power off
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3 Basic Operation

3.1 Powering on/Off

When the radio is off, hold down the [Power] key for three seconds before release. The screen and green light will be on, and a startup message will be displayed. When the radio is on, hold down the [Power] key for three seconds before release. When you are prompted to power off or restart, select “Power off” .

If no SIM card is installed, or the card is not registered or invalid, you will hear a voice alert “No SIM card” .

3.2 Adjusting the Volume

When the radio is on, press the [+] / [-] key to increase/ decrease the volume.

3.3 Individual Call

➤ Initiating Individual Call

Step 1: In the standby interface, press the [Menu/OK] key, select Contact, and choose a contact.

Step 2: Press the [Menu/OK] key, select Initiate Individual Call. You will hear a voice prompt “Enter individual-call mode” . Step 3: Press the PTT key to call.

➤ Ending Individual Call

You may end an individual call in one of the following ways.

-During an individual call, press the Menu/OK key, select Contact, and select End Individual Call.

-If you do not press the PTT key within 30 seconds after entering individual-call mode, the radio will quit this mode with a voice prompt “Individual call timed out” .

➤ Call Alert

Before making an individual call, you may confirm whether the contact is idle.

Just select the contact, press the Menu/OK key, select Call Alert. The contact will hear an alert tone “di di di” , and call you back by pressing the PTT key and hear an alert tone “di di” .

To view the sent and received call alerts, press the Menu/OK key, select Message and Call Alert.

3.4 Group Call

➤ Initiating Group Call

Under individual/group/broadcast call mode, you can call the members of a group by pressing the PTT key. If there is no member online, you will hear a voice alert

“No member online” , and transmission will be terminated.

Note: A group needs to be set through the network management system (NMS).

➤ Switching a Group

In standby interface, press the Menu/OK key, select Group List, select a group, and press the Menu/OK key again.

3.5 All Call

After programming an all-call key through the CPS, you may enter all-call mode by pressing the key, and then initiate an all call by pressing the PTT key. A called radio should answer within 3 seconds, otherwise it will quit this mode.

An all call overrides all undergoing calls of all types, for example, an individual and a group call.

3.6 Broadcast Call

After programming a broadcast-call key through the CPS, you may enter broadcast-call mode by pressing the key, and then initiate a broadcast call by pressing the PTT key. A broadcast call can be received but not answered.

A broadcast call overrides all undergoing calls of all types, for example, an individual and a group call.

3.7 Receiving a Call

By switching to a group set through the NMS, the radio can receive an individual call, a group call or an all call from the group and output voice.

3.8 Late Entry

The radio joins an undergoing group call after a delay.

3.9 Priority Call

Different call priority can be set on the radio. A radio with a higher call priority initiates a call prior to a

radio with a lower call priority.

Note: The default call time of all types of calls is 60 seconds, which is modifiable through the NMS. A call is terminated automatically after this time is up, so as to release the floor.

3.10Voice Playback

After voice recording and playback are enabled on the NMS, you can download and play back the latest 30 voice records by pressing a pre-programmed playback key.

3.11Low-Power Alert

When the remaining battery of the radio is below 10%, you will hear the voice alert “Low power. Please charge.” at a certain interval. Please replace or charge the battery after powering off the radio.

3.12Positioning

To enable or disable GPS positioning, go to the standby interface, press the Menu/Ok key, select Setting and then GPS, and slide the switch. The GPS module inside the radio locates the radio and reports position information to the NMS. The real-time location and movement track of the radio can be displayed on a GIS map on the NMS or a dispatcher.

3.13Wi-Fi

To enable or disable Wi-Fi, go to the standby interface, press the Menu/Ok key, select Setting and then Wi-Fi, and slide the switch.

By enabling Wi-Fi, you can search Wi-Fi networks nearby in real time. The radio can only be connected to a Wi-Fi hotspot, which should be preset through the CPS. To view or select from preset hotspots, go to Saved Network.

3.14Bluetooth

To enable or disable Bluetooth, go to the standby interface, press the Menu/Ok key, select Setting and then Bluetooth, and slide the switch.

3.15Short Message

To view the short messages sent or received, go to the standby interface, press the Menu/Ok key, and select Message, Short Message and then Inbox or Outbox.

3.16 Emergency Alarm

The radio supports two types of emergency alarms.

-Manual Alarm: After programming an emergency alarm key through the CPS, you can press the key to send or quit an emergency alarm.

-Man-Down Alarm: When the radio is placed horizontally, an alarm will be triggered. (This function can be enabled on the NMS.) Each type of emergency alarms has two modes.

-Silent Alarm: In this mode, the radio sends an alarm silently, but receives an alarm with a voice prompt "Alarm from ***" .

Alarm and Call: If silent alarm is disabled, the radio sends an alarm and rings a siren, but receives an alarm with a voice

-prompt "Alarm from***" and rings a siren.

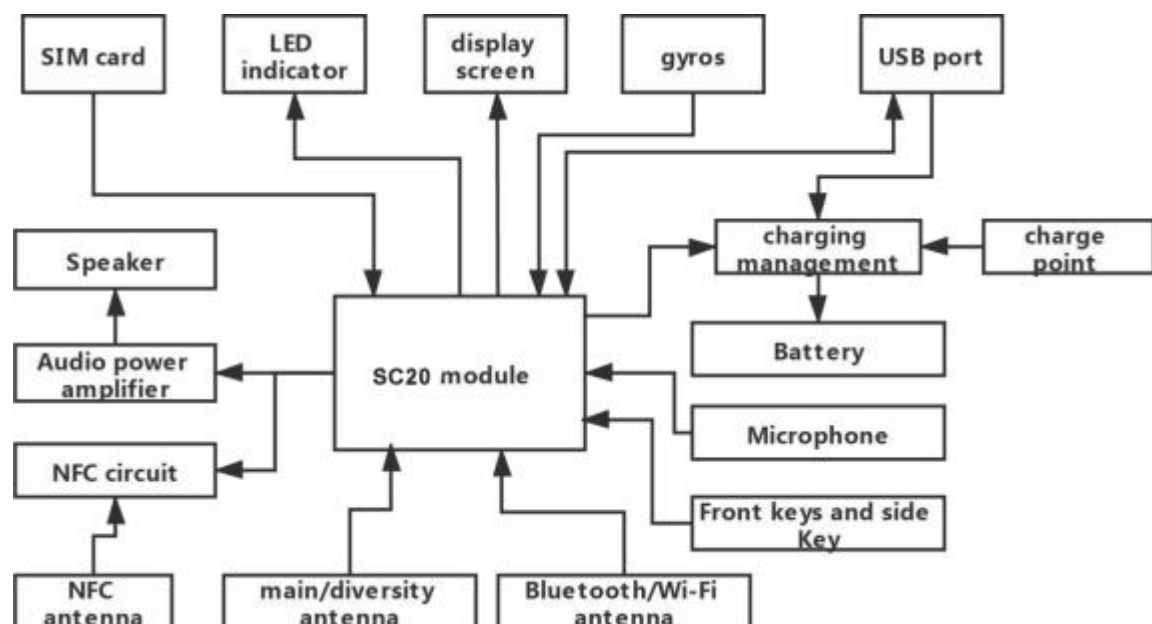
To view the alarms sent and received, go to the standby interface, press the Menu/Ok key, and select Message, SOS Message.

3.17 Advanced Functions

Revive, stun, kill, monitoring and voice playback can be achieved through the dispatcher.

4 Circuit Description

4.1 Main-Board Circuit Diagram



4.2IC Characteristics

4.2.1 Characteristics of SC20 Module

The SC20 4G module achieves 2G, 3G, 4G, Wi-Fi and Bluetooth transmission. It has Chinese, American, Australian edition, European edition and Japanese different versions, which work on different frequency bands and with different antennas.

Electrical parameters:

Supply voltage: 3.5V ~ 4.2V (typical value: 3.8V)

Power consumption: 20uA@power-off state, 3mA@sleep state (typical value)

Interfaces:

-LCM interface: 4-lane MIPI_DSI, max. rate 1.5Gbps/lane, HD (720P) @60fps

-Camera interface: MIPI_CSI, max rate 1.5Gbps/lane

Support 2 cameras: 2 MIPI_CSI sets for ear camera, support up to 8MP; 1 MIPI_CSI set for front camera, support up to 2MP

Touch screen: Capacitive touch screen

Audio: 2 analog audio inputs, 3 analog audio outputs

USB 2.0 interface: 1 pcs, support USB OTG

UART interface: 2 pcs, 1 interface set support hardware flow control, max. rate 4Mbps

SD card interface: 1 pcs, SD 3.0, 4-bit SDIO

SIM interface: 2 pcs, 1.8V/2.95V

I2C interface: 3 pcs

ADC interface: 1 pcs

SPI interface: 1 pcs, multiplex with GPIO interface

GPIO interface: 25 pcs

PMW interface: 1 pcs

Motor drive interface: 1 pcs

Key interface: Power key, volume+ key, volume- key

Antenna interfaces: Interfaces of main antenna, diversity antenna, GNSS antenna and Wi-Fi/BT antenna

Prominent Characteristics:

WLAN: SC20-E/-A/-AU/-J/-EU: 2.4G/5G, 802.11 a/b/g/n

SC20-CE/-W: 2.4G, 802.11 b/g/n (默认), 2.4G/5G, 802.11 a/b/g/n (可选)

WLAN: SC20-E/-A/-AU/-J/-EU: 2.4G/5G, 802.11 a/b/g/n

SC20-CE/-W: 2.4G, 802.11 b/g/n (default), 2.4G/5G, 802.11 a/b/g/n (optional) Bluetooth: BT2.1+EDR/3.0/4.1/4.2LE (BT4.2 for Android 7.1 and above)

GNSS: GPS/GLONASS/BeiDou

Support 3GPP E-UTRA Release 10

Bandwidth: 1.4/3/5/10/15/20 MHz

Support diversity antenna, and MIMO 2×2

(U)SIM card detection

Support firmware update via USB port

General Characteristics:

Operating system: Android 5.1/6.0/7.1

Storage: 8GB eMMC+1GB LPDDR3, 16GB eMMC+2GB LPDDR3

Temperature: -40° C ~ +75° C

Dimension: 40.5mm × 40.5mm × 2.8mm

Encapsulation: LCC+LGA

4.3 Settings

The radio has been set before delivery. However, to meet customers' requirements, further configuration may be necessary. This can be achieved using the customer programming software CPSc V1.2.1. It is user-friendly and easy to operate, and supports Chinese and English.

To set the parameters of the radio, perform the followings.

1. Install the CPSc V1.2.1 on your PC.

Connect the radio and the PC using the USB cable.

Note:

Make sure the radio is powered on.

2. When you connect the USB cable for the first time, its driver is installed automatically.



3.Run the CPSc V1.2.1.

4.For successful connection, “T350” will be displayed in the title bar and “device connected” in the status bar.

5.Click “Read configuration” to read the radio parameters.

6.Modify parameters, and click “Write configuration” .

4.4Upgrade

To upgrade the radio software, take the following steps.

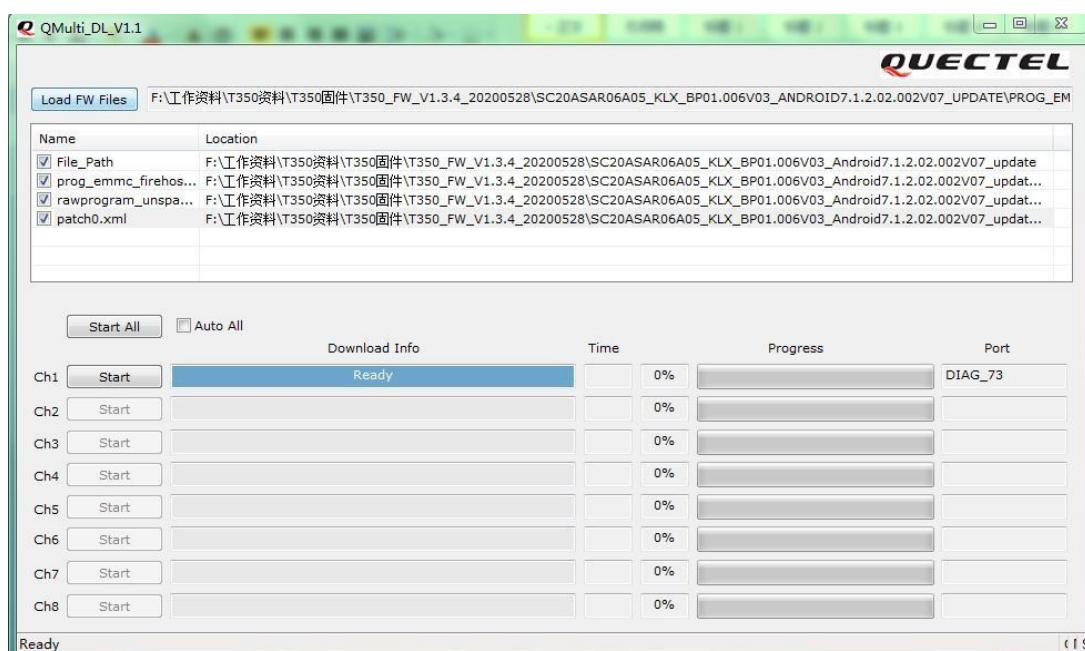
1.Power on the radio, and connect it to the PC using the USB cable. Note:

When you connect the USB cable for the first time, its driver is installed automatically

2.Run QMulti_DL_V1.1.exe.

For successful connection, the status message “Ready” will be displayed in the interface, and the icon [Start] will turn black.

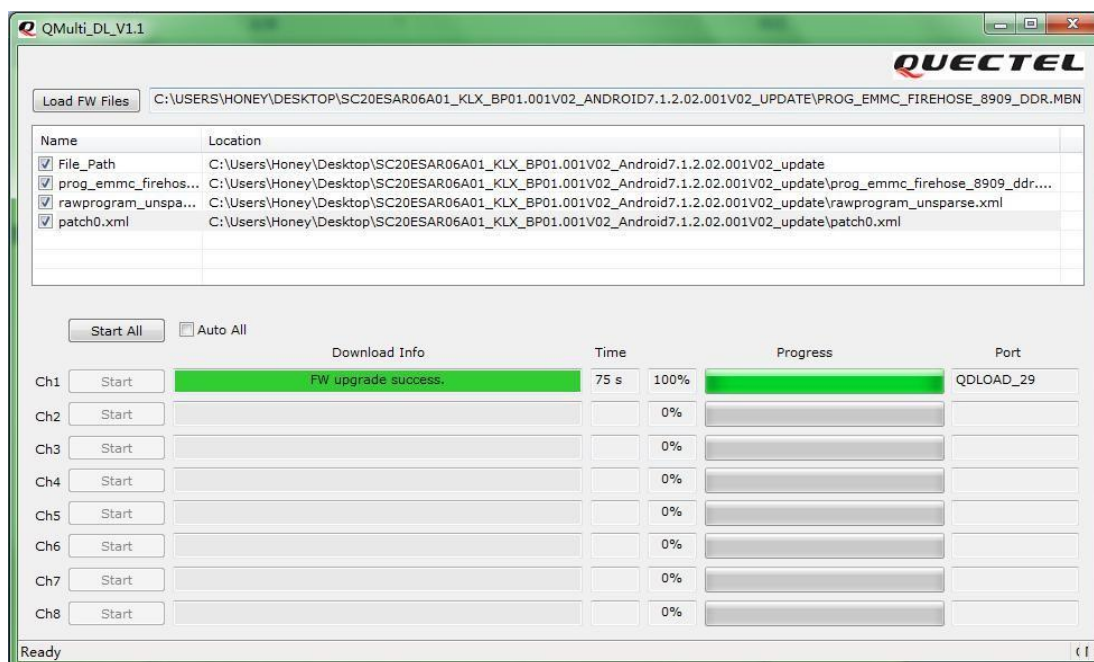
This upgrade tool supports downloading firmware of 8 devices simultaneously. After connecting a device, a blue progress bar and the status message “Ready” will be displayed, and the icon [Start] will turn black.



3.Click [Load FW Files], select files from a firmware package file, and click [Start].

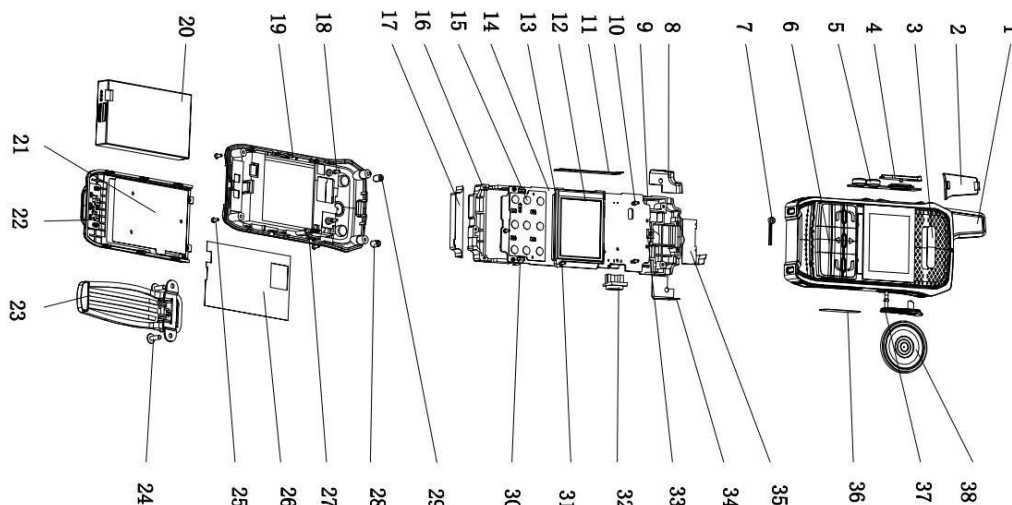
After upgrade, the progress bar will turn green, and a success message will be displayed.
Disconnect the USB cable. Take down the battery of the radio.

(During upgrade, do not cut the power, power off the radio, or disconnect the USB cable.)



4.Reinstall the battery and power on the radio

4.5Exploded View



SN	Material Code	Material Name	Specification
1	147K01000070	Mid-frame assembly	Include mid-frame, charging column, top housing, decorative part, LED indica material
2	7MBP-4391-06A-W0	Antenna support cover	ABS+PC, grey, fine etching
3	167W11000007	Nameplate	25.8*5.8mm, transparent PC
4	7MHP-4391-03A-W0	PTT key	ABS+PC, orange-black, fine etching
5	7MHR-4391-01A-W0	Volume key	Silica gel, black
6	7MBP-4391-01A-W0	Front keys	P+R, black, oil jet + laser etching + screen print
7	4SM7-4216-A30	H9 <u>leaded mic</u>	BY3015BOL30MM-C2-3618
8	136X04000004	Diversity antenna	FPC
9	7MBP-4391-10A-W0	GPS antenna support	ABS+PC, black
10	7STF-014045B-SZCT -Z	Cross recessed countersunk-head self-tapping screw	Hardened iron, black nickel plated, ST1.4x4.5, thread length 4.5mm, f free
11	6PF7-4391-HK1A	PTT key	FPC and metal dome array, V1.0_20190509
12	4PC7-AF6017710-A	LCD module	AF6017710, 1.77", -20~70°C
13	7MBP-4391-11A-W0	LCD support	ABS+PC, black
14	61SM000064	SMD assembly	4G, Quectel V1.2
15	147K05000001	Front-key metal domes	∅ 5, round, 130g strength, lead free
16	7MBP-4391-09A-W0	Main-antenna support	ABS+PC, black
17	136X06000003	Main antenna	FPC, single-sided adhesive, lead free
18	7SMF-014050M-SZY B-N	M1.4*5 cross recessed round-head machine screw	M1.4*5, low-carbon steel, nickel plated
19	7MBP-4391-03A-W0	Bottom housing	ABS+PC, grey, fine etching

20	126B03000005	Li-polymer battery	KB-T350 cell
21	136X05000002	NFC antenna	FPC, single-sided adhesive, lead free
22	147K01000071	Battery-cover assembly	Include battery cover, battery latch and latch fastener
23	63BJ000002	KBJ-17,belt-clip assembly	Black, PC1414, weld line solved, etched
24	7SMF-025055M-SZY B-N1	Cross round-and-mushroom headed machine screw	M2.5*5.5, hardened iron, nickel plated, head diameter 5.2mm, 1.5mm
25	157F08000003	Cross recessed half-round headed machine screw	Low-carbon steel, nickel plated, M1.6*Φ2.8*5, black
26	157F15000012	Battery-holder paster	PVC, black, 60*40*0.20mm, lead free
27	7MDC-4355-01A-G	NFC antenna pogo pin	Dual-head, beryllium copper, gold-plated, original color, Φ2x16mm
28	147K01000015	Left <u>screw stopper</u>	TPU, hardness 70 degree, black, etched, lead free

4.6 ModulationandTest

Note:

(1)Test voltage: 4V +/-0.1V (room temperature)

(2)Frequency range: 2G/3G/4G

After maintenance, the following indexes should be tested in the test mode include:

- Rx

Static current: <=100mA;

Operating current: <=400mA

- Tx

Undervoltage power-off: <3.5V

Operating current: ≤500mA

5 Specifications

Model	T350
Frequency Band	SC20-CE (for China): LTE FDD: B1/B3/B5/B8 LTE TDD: B38/B39/B40/B41 TD-SCDMA: B34/B39 EVDO/CDMA: BC0 WCDMA: B1/B8 GSM: 900/1800MHz SC20-E (for Europe): LTE FDD: B1/B3/B5/B7/B8/B20 LTE TDD: B38/B40/B41 WCDMA: B1/B5/B8 GSM: 850/900/1800/1900MHz SC20-A (for America): LTE FDD: B2/B4/B5/B7/B12/B13/B25/B26 WCDMA: B1/B2/B4/B5/B8 GSM: 850/1900MHz SC20-AU (for Australia): LTE FDD: B1/B3/B5/B7/B8/B28 LTE TDD: B40 WCDMA: B1/B2/B5/B8 GSM: 850/900/1800/1900MHz

	SC20-J (for Japan): LTE FDD: B1/B3/B8/B18/B19/B26 LTE TDD: B41 WCDMA: B1/B6/B8/B19
Network	2G/WCDMA/TD_SCDMA/FDD/TDD
Operating voltage	3.8V
Operating temperature	-25°C ~ +55°C
Antenna gain	-4dBm
Battery	Li-ion battery, DC 3.8V, 3000mAh
Operating time (3000mAh)	≥12h (5-5-90 cycle);
Receiving sensitivity	-92dBm
Frequency stability	≤ ±0.1ppm

6 Equipment for Maintenance and Test

The followings are

- Digital multimeter
- Regulated DC power supply

Appendix 1 Abbreviations

AMP	amplify, amplifier
ANT	antenna
APC	automatic power control
BPF	band pass filter
SAW	surface acoustic wave
DEMODO	demodulation
eMMC	embedded Multi Media Card
lpddr3	low power double data rate SDRAM
HPF	high pass filter
LED	light-emitting diode
LNA	low noise amplifier
LPF	low pass filter
CPU	central processing unit
MIC	microphone
PTT	push-to-talk
RX	receiver
TX	transmitter
SPK	speaker

Appendix 2 Material List (Electronic Section)

Main-Board Material List

SN	Material Code	Material Name	Specification	QTY	
1	2RE1-06-0000	SMD resistor	yageo,RC0201JR-070RL,0,Ω,±5%,1/20W,0201	40	R101,R102,R302,R308,R309,R310,R312,R313,R605,R909,R201,R202,R203,R204,R205,R206 ,R207,R208,R209,
2	112R01000004	Chip resistor	1.5Ω,±1%,0201,	2	R711,R712
3	2RE1-06-1001	Precise SMD resistor	yageo,RC0201FR-071KL,1K,Ω,±1%,1/20W,0201	10	R406,R615,R616,R617,R618,R619,R620,R621,R622,R623
4	112R01000005	Chip resistor	2.2KΩ,±1%,0201,	2	R707,R708
5	2RE1-06-4702	Precise SMD resistor	yageo,RC0201FR-0747KL,47K,Ω,±1%,1/16W,0201	2	R407,R408
6	2RE1-06-4701	Precise SMD resistor	yageo,RC0201FR-074K7L,4.7K,Ω,±1%,1/16W,0201	2	R403,R404
7	2RE1-06-1002	Precise SMD resistor	yageo,RC0201FR-0710KL,10K,Ω,±1%,1/20W,0201	15	R805,R806,R606,R608,R301,R314,R401,R402,R405,R410,R501,R705,R706,R813,R902
8	112R01000006	Chip resistor	39KΩ,±1%,0201,	1	R904

9	112R01000007		75K Ω , $\pm$ 1%,0201,	1	R905
10	2RS1-06-104J	SMD resistor	yageo,RC0201JR-0710KL,100,K Ω , $\pm$ 5%,0201	4	R607,R703,R704,R801
11	2RS1-10-000O	Chip resistor	yageo,RC0402JR-070RL,0, Ω , $\pm$ 5%,0402	4	R715,R810,R814,R903
12	2RS1-10-220J	Chip resistor	yageo,RC0402JR-0722RL,22, Ω , $\pm$ 5%,0402	3	R601,R602,R603
13	2RE1-10-4702	Precise SMD resistor	YAGEO,RC0402FR-0747KL,47,K Ω , $\pm$ 1%,0402	1	R106
14	2RS1-20-000O	Chip resistor	yageo,RC0805JR-070RL,0, Ω , $\pm$ 5%,2012	1	R919
15	112C03000005	Ceramic capacitor	MURATA,2.2pF, $\pm$ 0.25pF,50V,0201,C0G	2	C719,C720
16	2CC1-06-NP0500-100	Multi-layer chip capacitor	MURATA,GRM0335C1H100JA01D,10,pF, $\pm$ 5%,50V,0201,C0G	6	C111,C112,C701,C702,C816,C819
17	2CC1-06-NP0500-220	Multi-layer chip capacitor	MURATA,GRM0335C1H220JA01D,22,pF, $\pm$ 5%,50V,0201,C0G	5	C601,C602,C603,C714,C715
18	2CC1-06-NP0500-330	Multi-layer chip capacitor	MURATA,GRM0335C1H330JA01D,33,pF, $\pm$ 5%,50V,0201,C0G	9	C823,C109,C110,C809,C817,C820,C824,C826,C829
19	2CC1-06-NP0500-560	Multi-layer chip capacitor	MURATA,GRM0335C1H560J,56,pF, $\pm$ 5%,50V,0201,C0G	2	C713,C716

20	2CC1-06-C0G500-10 1J	SMD capacitor	MURATA,GRM0335C1H101JA01D,100,pF,±5%,50V,0201,C0G	3	C827,C810,C825
21	112C03000006	Ceramic capacitor	MURATA,120pF,±10%,50V,0201,X7R	2	C717,C718
22	112C03000019	Ceramic capacitor	MURATA,680pF,±10%,50V,0201,X7R	2	C711,C712
23	2CC1-06-X7R500-10 2	MultiD7467-layer chip capacitor	SMD capacitor, 1nF ±10% 50V X7R 0201 SMD	2	C709,C710
24	2CC1-06-X5R250-10 3K	SMD capacitor	MURATA,GRM033R61E103KA12D,10,nF,±10%,25V,0201,X5R	2	C302,C504
25	2CC1-06-X7R500-33 3K	SMD capacitor	MURATA,GRM033R61A333KE84D,33,nF,±10%,50V,0201,X7R	3	C801,C802,C806
26	2CC1-06-X5R100-10 4	Multi-layer chip capacitor	MURATA,GRM033R61A104KE15D,100,nF,±10%,10V,0201,X5R	14	C304,C502,C604,C916,C107,C108,C409,C411,C506,C705,C708,C828,C903,C911
27	2CC1-06-X5R6R3-2 25	Multi-layer chip capacitor	MURATA,GRM033R60J225KA01D,2.2,uF,±10%,6.3V,0201,X5R	2	C305,C301
28	112C03000007	Ceramic capacitor	MURATA,4.7uF,±20%,6.3V,0201,X5R	1	C404

29	2CC1-10-NP0500-330	Multi-layer chip capacitor	SMD capacitor, 33pF $\pm 5\%$ 50V NP0 0402 SMD	1	C909
30	2CC1-10-X7R250-473K	Multi-layer chip capacitor	MURATA, GRM155R71E473K, 47, nF, $\pm 10\%$, 25V, 0402, X7R	1	C403
31	2CC1-10-X5R250-105K	Ceramic capacitor	1.0uF, $\pm 10\%$, 25V, 04020402	7	C410, C501, C703, C706, C707, C901, C908
32	112C03000008	Ceramic capacitor	TAIYO, 4.7uF, $\pm 20\%$, 10V, 0402, X5R	9	C503, C101, C102, C105, C106, C505, C704, C815, C910
33	2CC1-10-X5R100-106	Multi-layer chip capacitor	MURATA, GRM155R61A106M, 10, uF, $\pm 20\%$, 10V, 0402, X5R	1	C814
34	2CC1-16-X5R250-106M	Multi-layer chip	10uF, $\pm 20\%$, 10V, 0603, X5R	7	C401, C402, C406, C407, C408, C805, C906
35	112C02000001	Tantalum capacitor	AVX, TAJB107M010RNJ, 100uF, $\pm 20\%$, 10V, 3528,	1	C104
36	2LW1-16UC-R16G	Wire wound inductor	160.0nH, $\pm 5\%$, 06030603	2	L701, L702
37	112L06000002	Multi-layer chip	MURATA, DFE201610P-2R2MCA=P2, 2.2uH, $\pm 20\%$, 2.0*1.6*1.0mm,	1	C405

		inductor			
38	135F04000001	Bead	TDK,MMZ1005Y121CT000,0402,	8	F812,F813,F802,F803,F805,F808,F809,F811
39	135F04000002	Bead	TAIYO,FBMH1608HM331-T,0603,	3	F801,F806,F807
40	121D02000005	Voltage regulator diode	ON,ESD9L5.0ST5G,5V,	25	D102,D103,D501,D502,D503,D504,D601,D602,D603,D604,D605,D606,D607,D608,D609,D610,D613,D616,D61
41	121D02000006	ESD protection diode	MURATA,LXES03AAA1-154,4V,	2	D701,D702
42	121D02000007	ESD protection diode	MURATA,LXES15AAA1-153,4V,	6	D809,D801,D803,D806,D807,D808
43	121D02000008	TVS diode	Prisemi,PTVSHC2EN12VU,12V,	2	D404,D405
44	121D02000009	TVS diode	Prisemi,PTVSHC2EN4V8UF,4.8V,	1	D903
45	121D02000010	ESD protection diode	NXP,PESD5V0S1UA,5V,	1	D101
46	121D02000011	TVS diode	JCET,F-CESDLC5V0M5,5V,	1	U601

47	4PE1-16-F9-B	SMD light emitting diode	HQ19-2132UWC,0603-0.6,-30~85°C	4	D302,D303,D304,D305
48	4PE1-16-2333BGRC	SMD light emitting diode	harvatek,HQ19-2333BGRC,1.6×1.5×0.55 mm,-30~85°C	1	D306
49	135X02000001	Crystal resonator	INZI,9S27100014,2.0*1.6mm,27.12MHz ±20PPM	1	Y701
50	126B03000001	Li-ion battery	SeiKo,ML414HIV01E,3V,1mAh	1	B901
51	1IS1-AW9523B	SMD keypad extension IC	Awinic,AW9523BTQR,TQFN4*4-24L,-40 to +85°C	1	U301
52	121I04000003	Charging IC	Silergy,AN_SY6907,4.35V,	1	U401
53	121I04000004	General-purpose	SGMICRO,SGM2036-2.8YN5G/TR,2.8V,	1	U501
54	121I05000011	SMT IC	NXP,PN7150B0HN/C110,NFC IC	1	U701
55	1ID1-AW8733	SMD IC	AWINIC,AW8733,QFN3*3-20L, 3.0mm*3.0mm*0.75mm,-40°C to 85°C	1	U802
56	121I03000001	Universal logic IC	TI,TS5A22362DGSR,ANALOG SWITCH	1	U803

57	121I05000012	SMT IC	SGMICRO,SGM2019-ADJYN5G/TR,2.5-5.5V,ADJ,300mA	1	U901
58	7MHG-4216-01B	Antenna sharpnel	L2.2*W1.0*H1.4mm,electric connection,818004055,lead free	9	J201,J202,J203,J205,J206,J207,J209,J210,J212
59	133W05000003	RF coaxial cable	Speedtech,C89P104,2x2x0.85mm,RF3th Generations	1	J208
60	133W05000004	RF connector	Speedtech,C90P106-00004AH,2X2X1.0mm,	2	J204,J211
61	3CC1-USB-MR5-016C	SMD USB socket	USB MR5-016C,ERROR 42	1	J401
62	3CB1-AYF531035	Board-to-board connector	SU: AYF531035,10PIN,H=1.0MM,	1	J501
63	133C10000002	Card slot	JST,SCZW-7SC-1K(HF),H1.7mm,nano SIM socket	1	J601
64	3CF1-05-6PW	SMD FPC connector	MOLEX,6-pin,0.5mm spacing, AYF530635,ERROR 42	1	J603
65	3CB1-2P-1M	Board-to-board connector	WAFER,1.0T-1-LT(SH)-2A,立贴,	2	J801,J802
66	3CE1-ST-3555	SMD earphone jack	3.5mm,4-core,ST-3555,ERROR 42	1	J803
67	133C06000001	Power connector	OTS3M03-H053005B,H5.3mm,3pin	1	J901

68	121I05000013	SMT IC	INVENSENSE,ICM-40605,LGA-14,A+G 6-axis	1	U302
69	147K02000006	NFC shielding cover	Copper-nickel-zinc alloy,original color	1	SH102
70	147K02000005	Charger shielding cover	Copper-nickel-zinc alloy,original color	1	SH103
71	147K02000004	PA shielding cover	Copper-nickel-zinc alloy,original color	1	SH101
72	121M01000014	4G module	Quectel,SC20	1	U201
73	136P04000014	Main board	47.8*106.5mm, 6-layer, 1.0mm	1	

Appendix 3 Material List (Structural Section)

SN	Material Code	Material Name	Specification	QTY
1	7MBP-4391-01A-W0	Front keys	P+R, black, oil jet + laser etching + screen print	1
2	6PF7-4391-HK1A	PTT key	FPC and metal dome array, V1.0_20190509	1
3	136X04000004	Diversity antenna	FPC	1

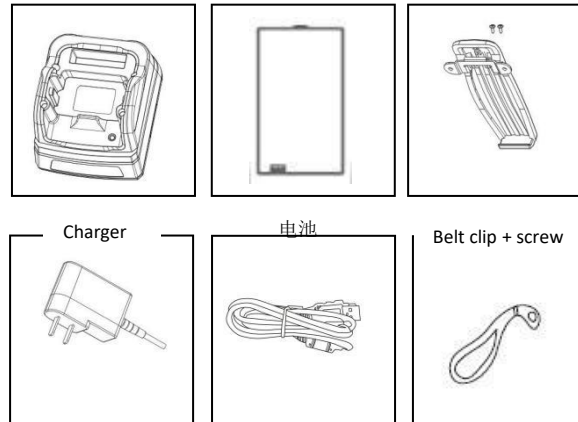
4	4PC7-AF6017710-A	LCD module	AF6017710,1.77",-20~70° C	1
5	7MBP-4391-11A-W0	LCD support	ABS+PC, black	1
6	7MBP-4391-09A-W0	Main-antenna support	ABS+PC, black	1
7	136X06000003	Main antenna	FPC, single-sided adhesive, lead free	1
8	136X02000001	GPS antenna	FPC, with single-sided adhesive, lead free	1
9	136X03000001	BT-Wi-Fi antenna	FPC, with single-sided adhesive, lead free	1
10	136X05000002	NFC antenna	FPC, single-sided adhesive, lead free	1
11	157F15000012	Battery-holder paster	PVC, black, 60*40*0.20mm, lead free	1
12	147K05000001	Front-key metal domes	∅ 5, round, 130g strength, lead free	1
13	63MK000019	Top housing assembly	Black	1

14	147K01000070	Mid-frame assembly	Include mid-frame,charging column, top housing, decorative part,LED indicator and auxiliary material	1
15	4SS7-3006-008-020	Speaker	M9,speaker,2W,8Ω,2-pin connector	1
16	4SM7-4216-A30	H9 leaded mic	BY3015BOL30MM-C2-36 18	1
17	7MHP-4391-01A-W0	USB port stopper	TPU, hardness 70 degree, black, etched	1
18	7MHP-4391-03A-W0	PTT key	ABS+PC, orange-black, fine etching	1
19	7MHR-4391-01A-W0	Volume key	Silicon gel, black	1
20	7MBP-4391-06A-W0	Antenna support cover	ABS+PC, grey, fine etching	1
21	7MBP-4391-03A-W0	Bottom housing	ABS+PC, grey, fine etching	1
22	63WW000002	Battery-cover assembly	ABS+PC, black, etched,	1

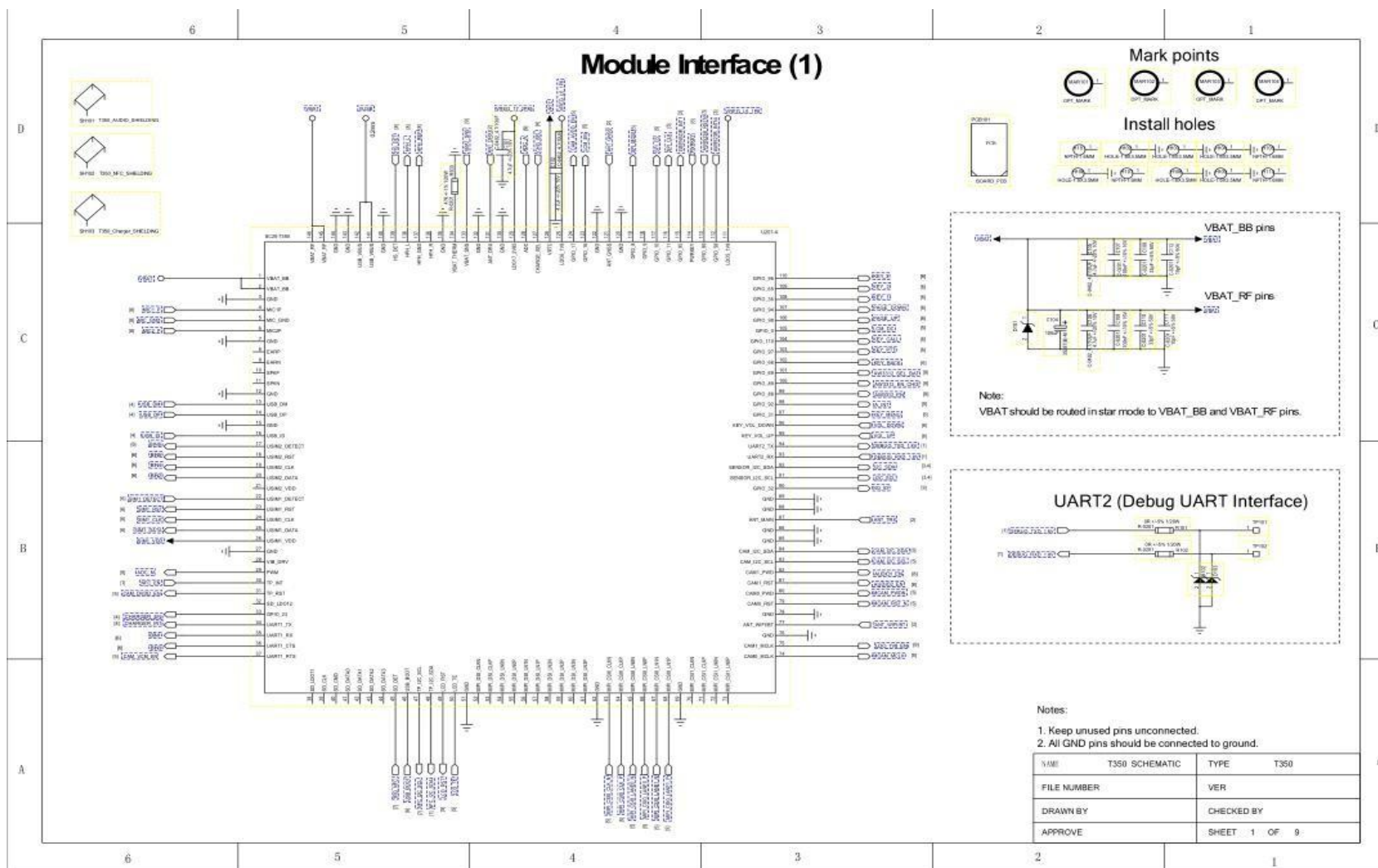
			lead free	
23	7MBP-4391-08A -W0	Battery cover	ABS+PC,black, etched	1
24	7MBP-4391-13A -W0	Battery latch	ABS+PC, black, etched	1
25	7MBP-4391-14A -W0	Battery latch fastener	ABS+PC, black, etched	1
26	147K01000014	Earphone cover	TPU, hardness 70 degree, black, etched, lead free	1
27	147K01000015	Left screw stopper	TPU, hardness 70 degree, black, etched, lead free	1
28	147K01000016	Right screw stopper	TPU, hardness 70 degree, black, etched, lead free	1
29	63BJ000002	KBJ-17,belt-clip assembly	Black, PC1414, weld-line problem solved, etched	1
30	147K01000030	Belt clip	Black, PC1414, weld-line	1

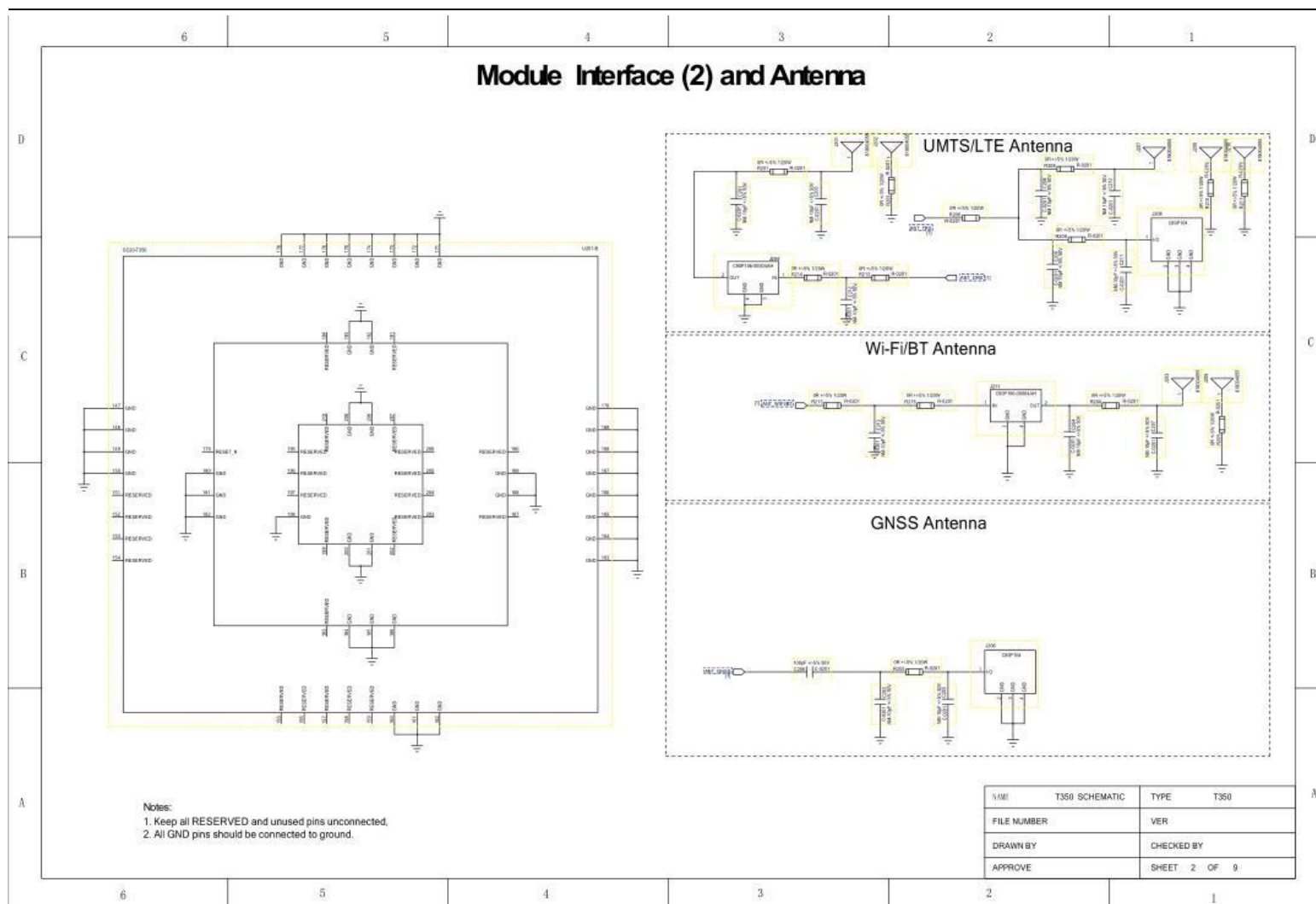
Appendix 4 Accessories

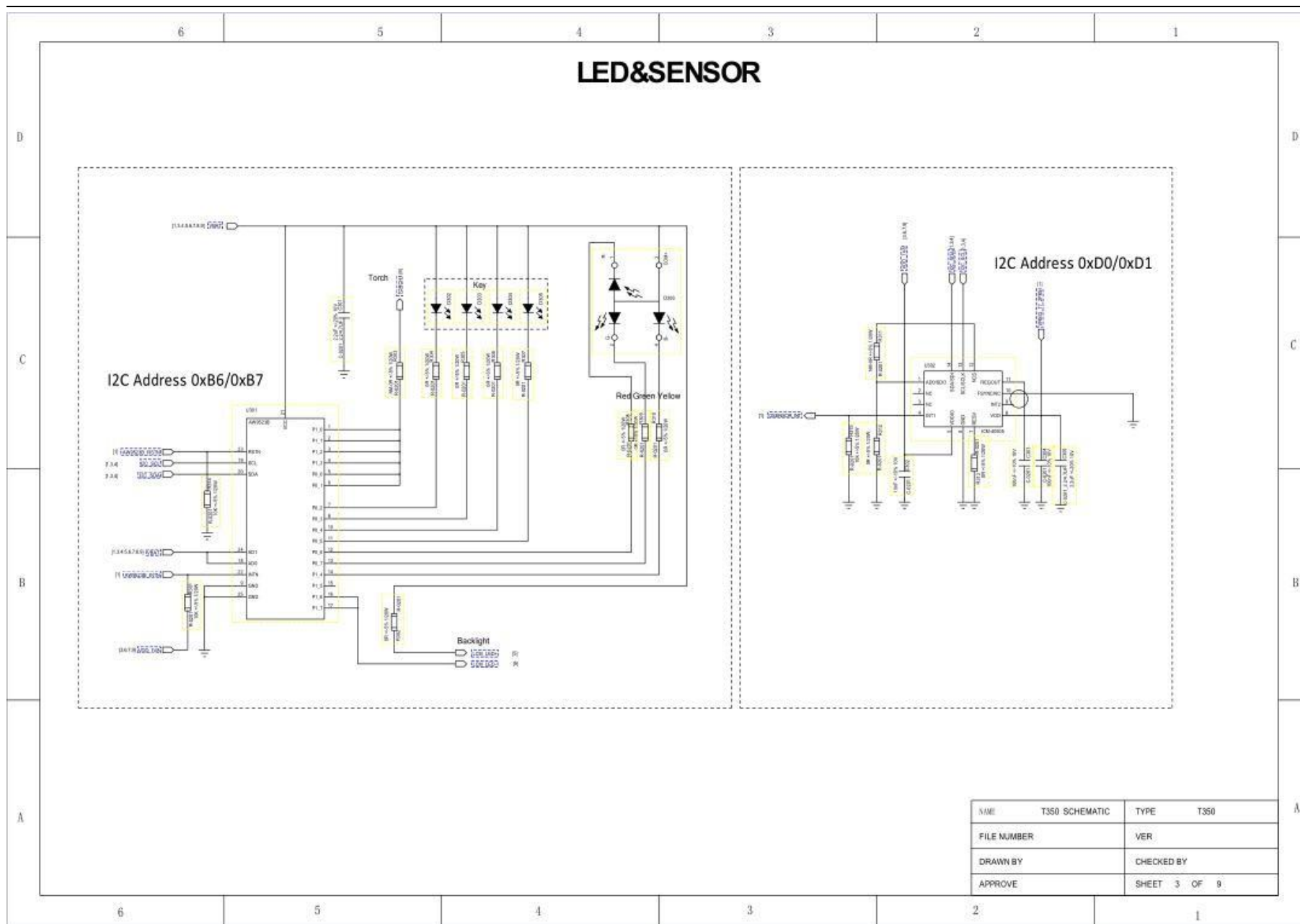
Item	QTY
Two-way radio	1
Charger	1
Power adapter	1
Battery	1
Belt clip	1
USB cable	1
Strap	1
Certificate of quality	1
User manual	1

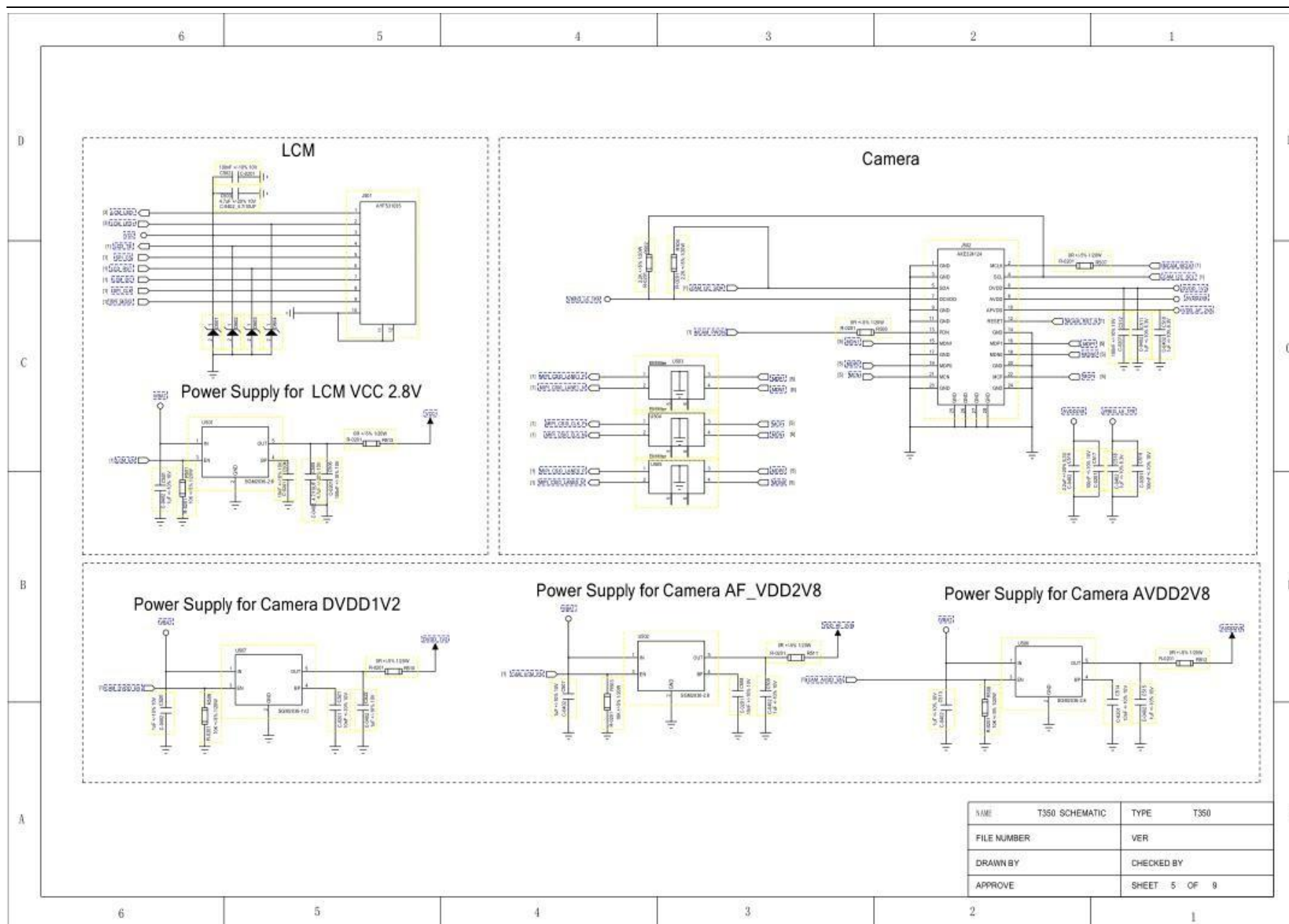


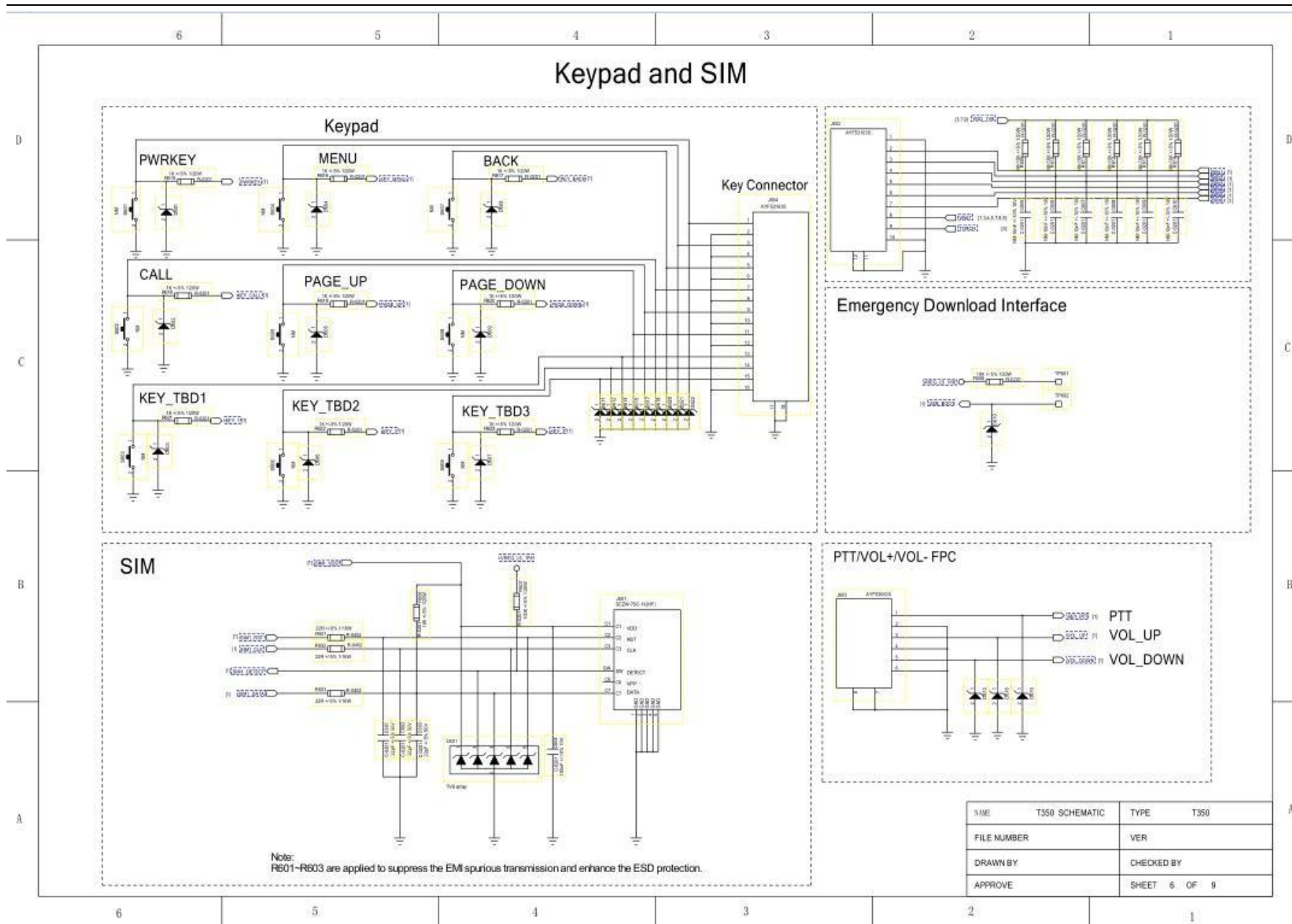
Appendix 5 Schematic Diagrams and Layout Drawing

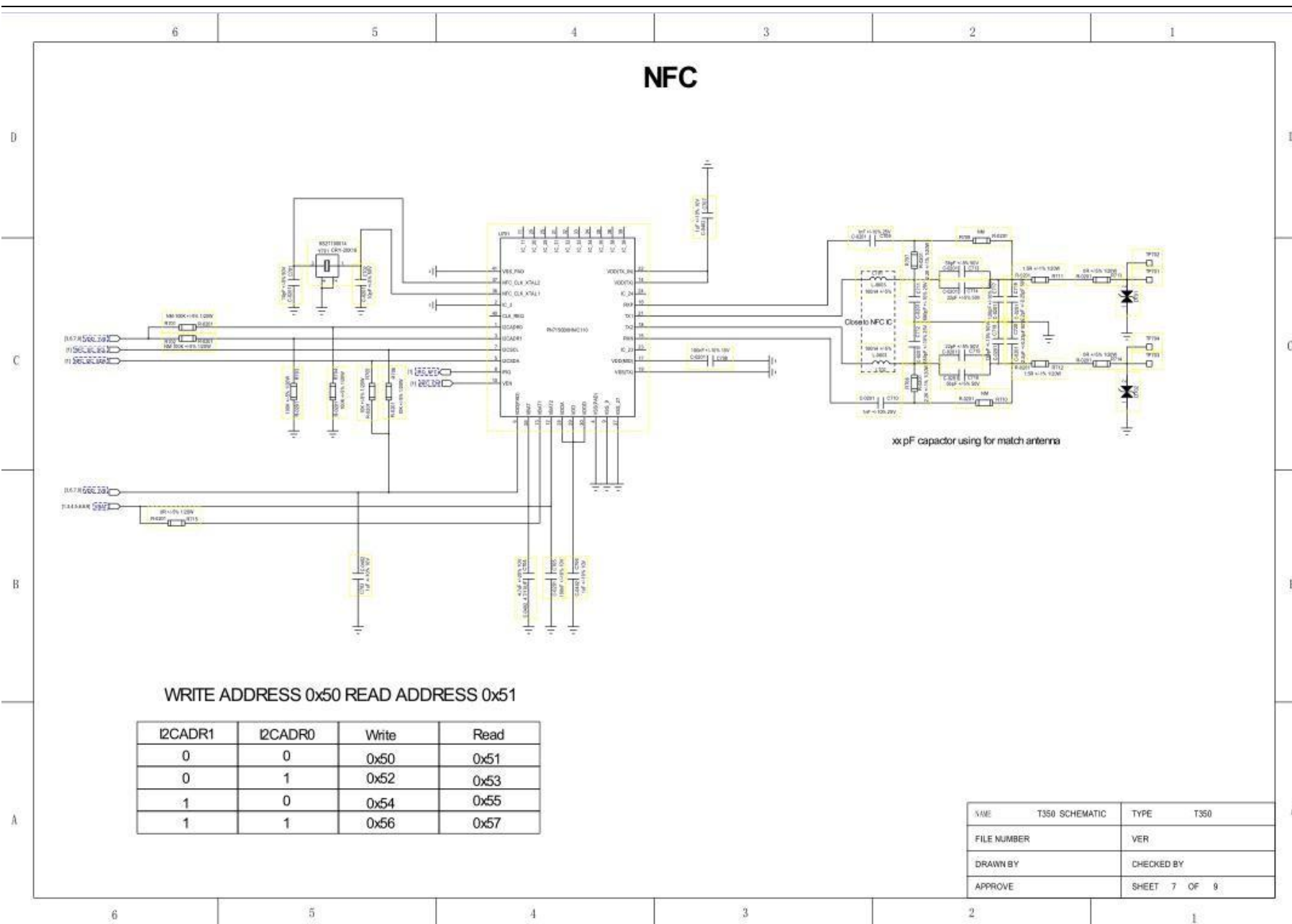






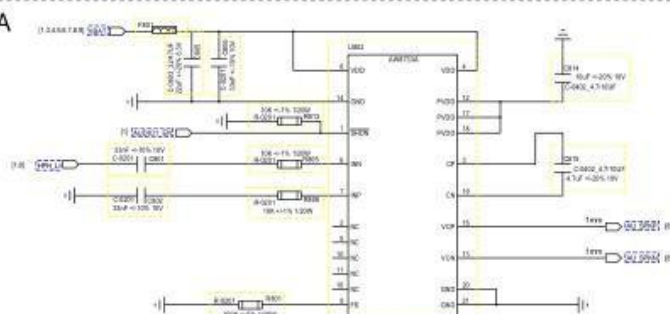




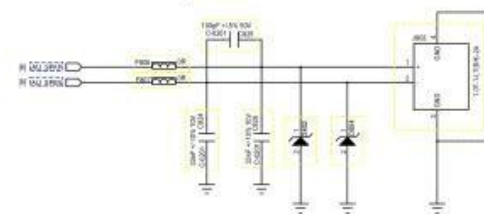


Audio Design

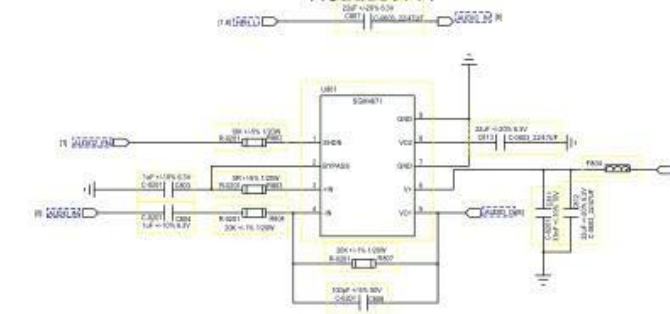
Audio PA



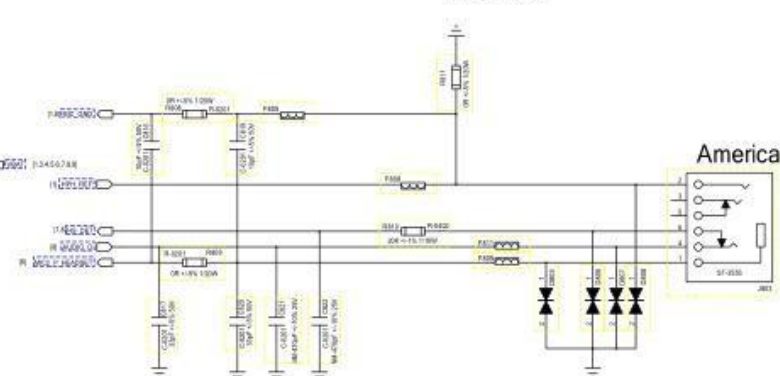
Loudspeaker



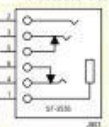
Headset PA



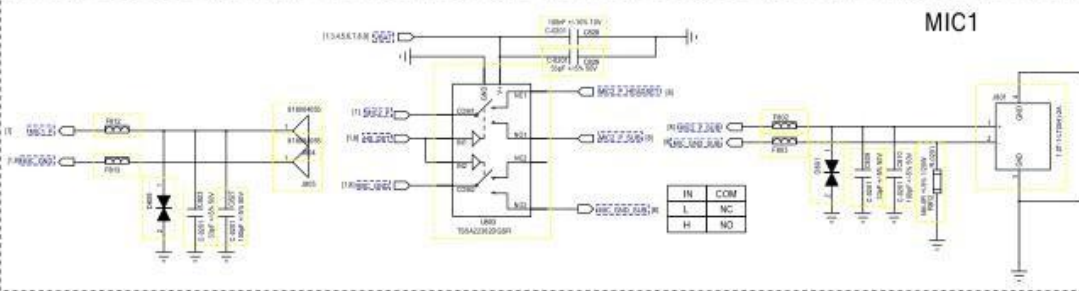
Headset



America



MIC1

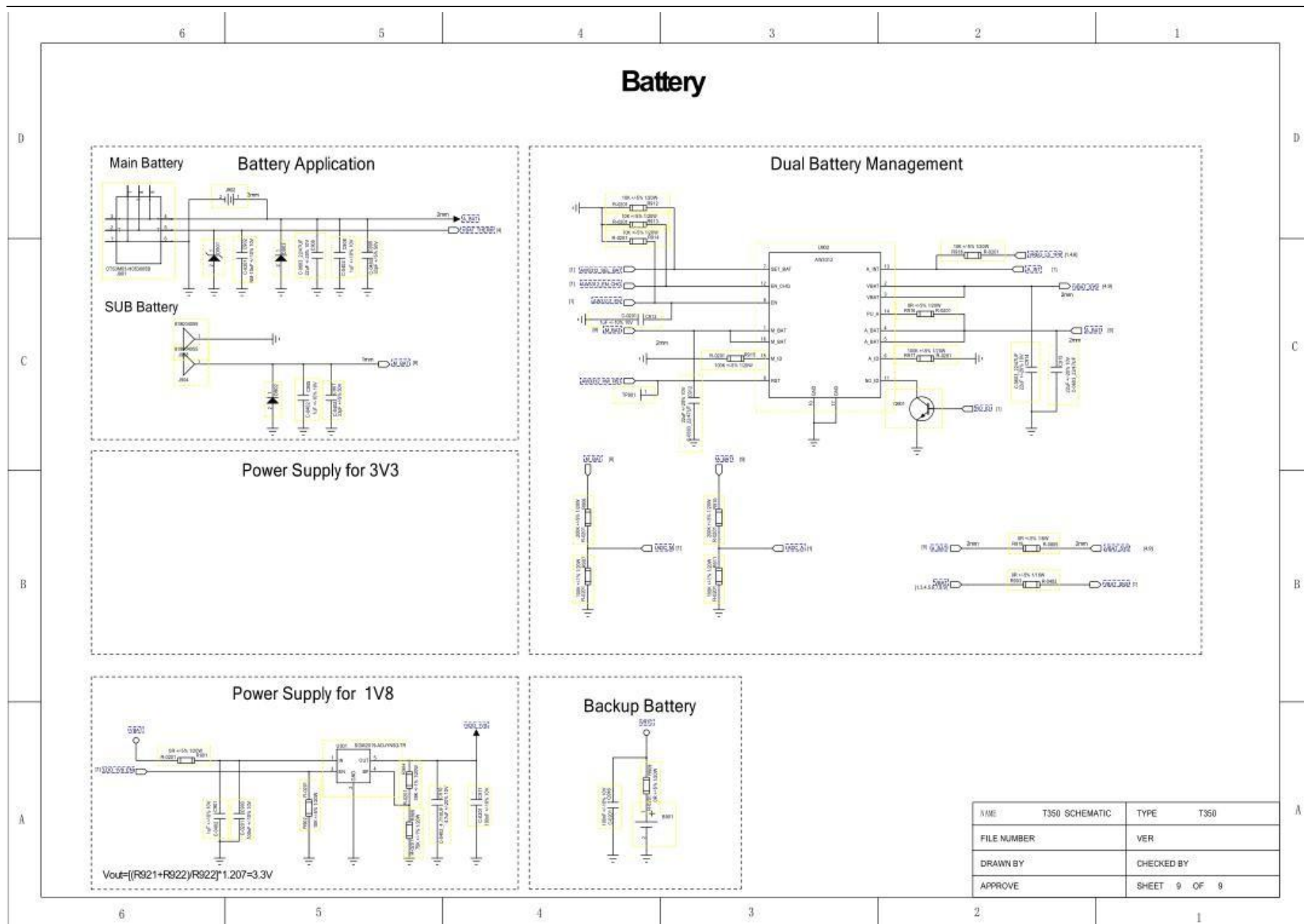


Notes:

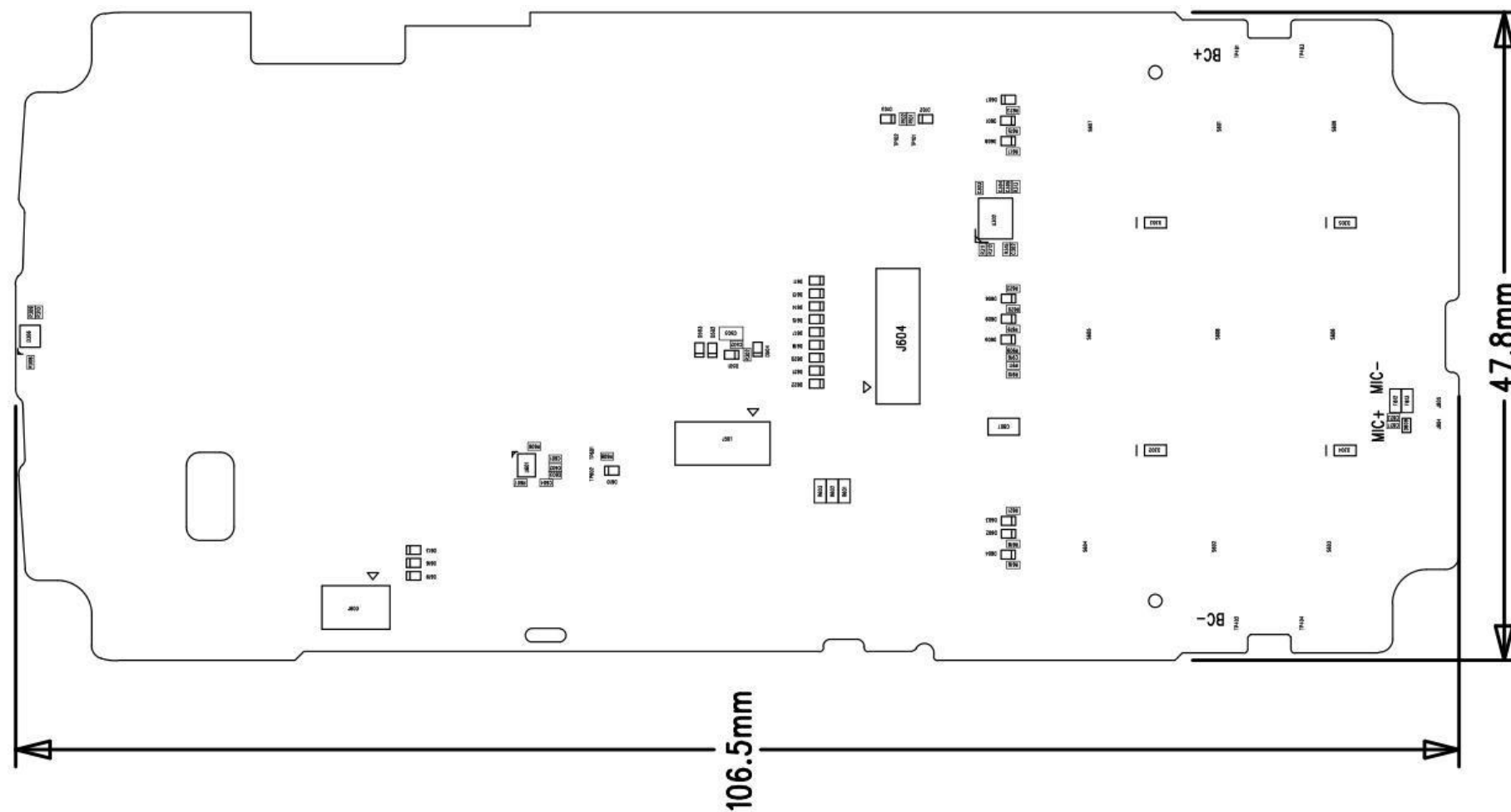
- TVS diodes for SPK and Earpiece pins:
1. The maximum breakdown voltage should be less than 6V
 2. The maximum clamping voltage should be less than 12.5V

- TVS diodes for MIC and Headset pins:
1. The maximum breakdown voltage should be less than 3.6V
 2. The maximum clamping voltage should be less than 6V
 3. HPH has a negative swing and requires a bi-directional TVS diode.

NAME	T350 SCHEMATIC	TYPE	T350
FILE NUMBER		VER	
DRAWN BY		CHECKED BY	
APPROVE		SHEET	8 OF 9



Main-Board Top-Layer Layout Diagram



Main-Board Bottom-Layer Layout Diagram

