

蓝牙4.0BLE课程

主讲人 朱兆祺

MT254x 蓝牙4.0系列QQ群: 242497460



因为专注
所以专业

第二课 MT254xBoard开发板使用



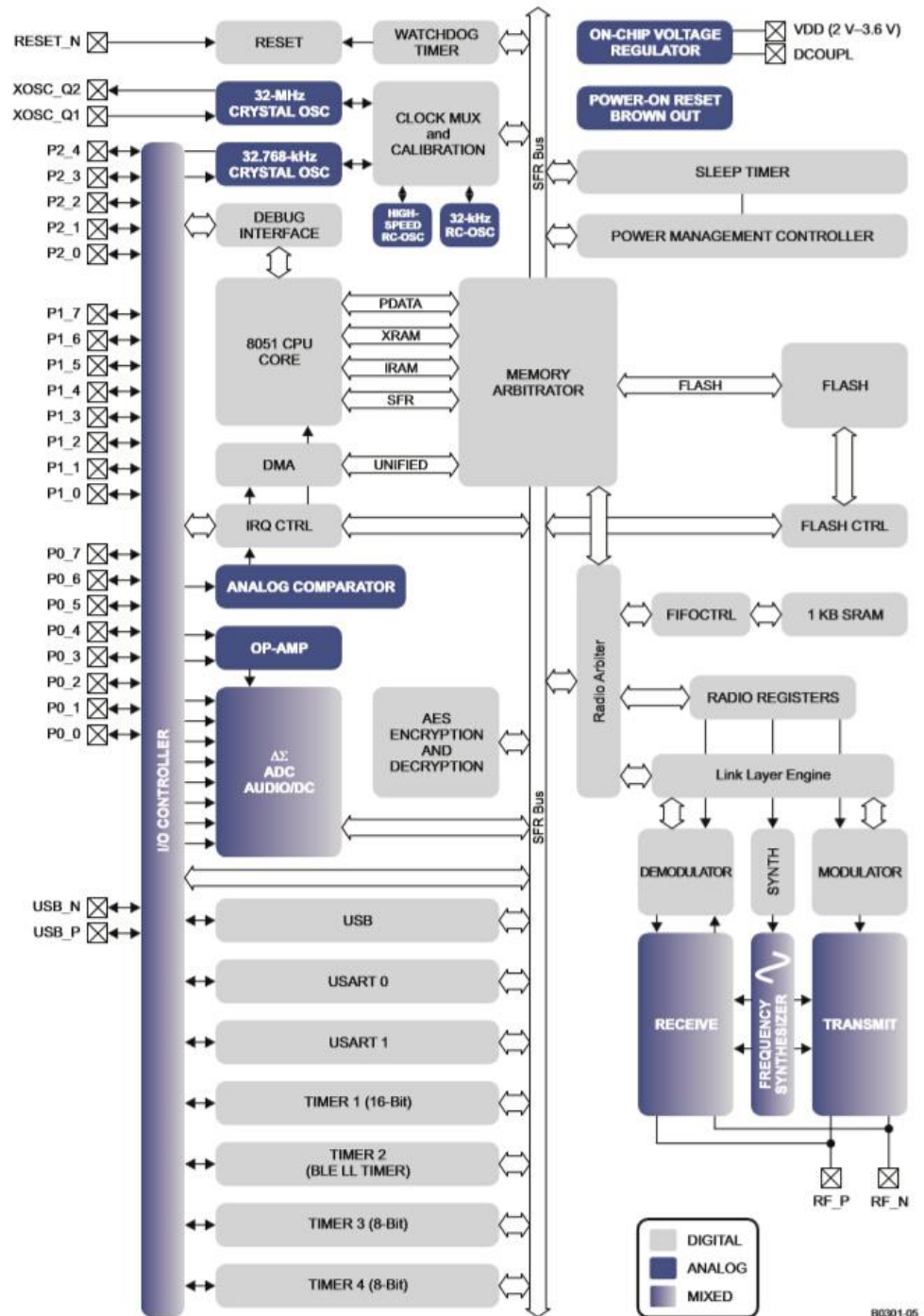
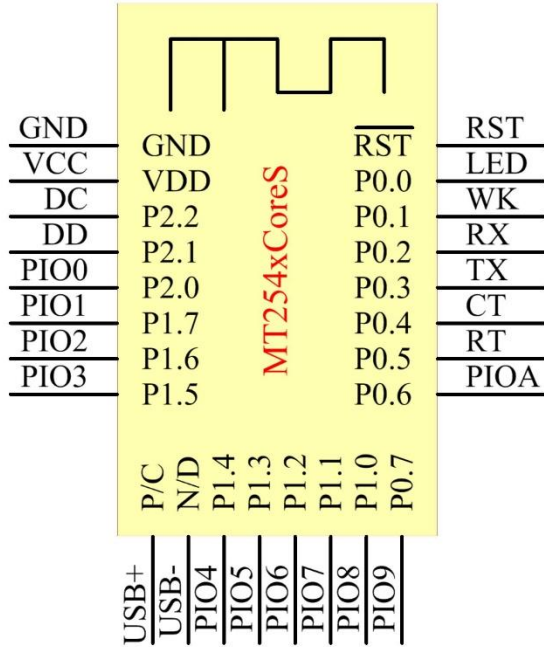
因为专注
所以专业

MT254xBoard开发板硬件资源

CC2540/CC2541芯片介绍

MT254xCoreS蓝牙模块

MT254xBoard开发板的电路设计说明



CC254x重要特性

➤ 6mm*6mm QFN-40 封装;

➤ 低功耗:

接收模式低至 19.6mA

发送模式 (-6dBm) :24mA

功率模式 1 (3-us 唤醒) : 235uA

功率模式 2 (睡眠计时器开启) : 0.9uA

功率模式 3: (外部中断) :0.4uA

供电范围: 2V-3.6V

➤ 微控制处理器

高性能, 低功耗的 8051内核

系统可编程闪存 128KB/**256KB** (MT254x)

静态随机存储器 8KB

➤ 外围设备

含 8 个通道和可配置分辨率的 12 位数模转换
集成高性能比较器

通用定时器 16 字节, 2 个 8 字节

21 个多功能 I/O 口 (19*4mA, 2*20mA)

32kHz 休眠定时器

2 个串口

全速 USB 接口 (CC2541: I2C)

红外发生电路

功能强大的 5 个通道直接内存访问 (DMA)

AES 安全协处理器

电池监控和温度传感器

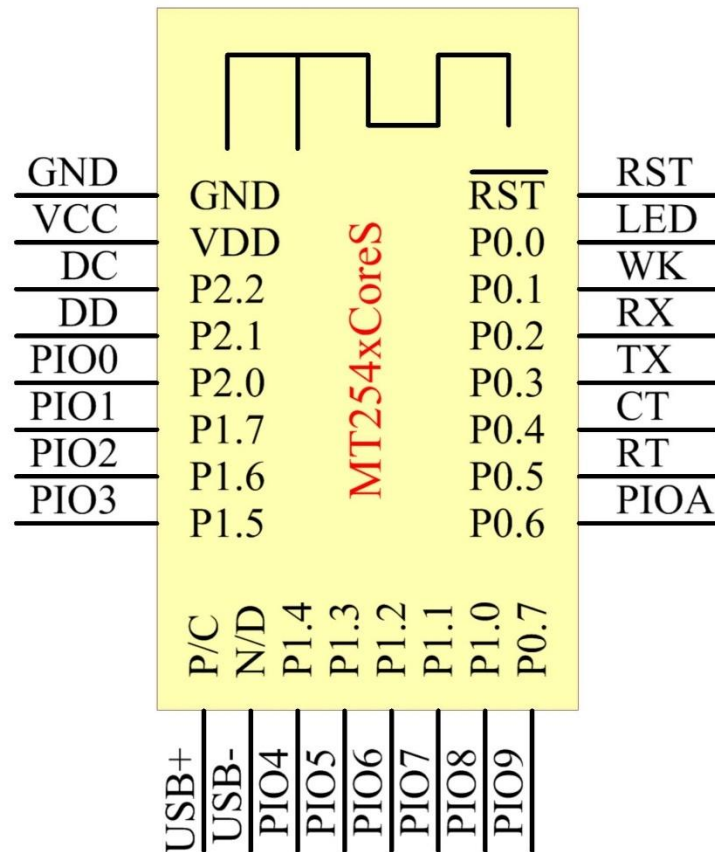
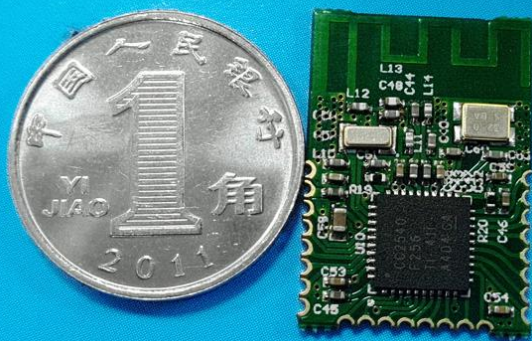
每个 CC2540 内涵一个唯一的 48 位 IEEE 地址

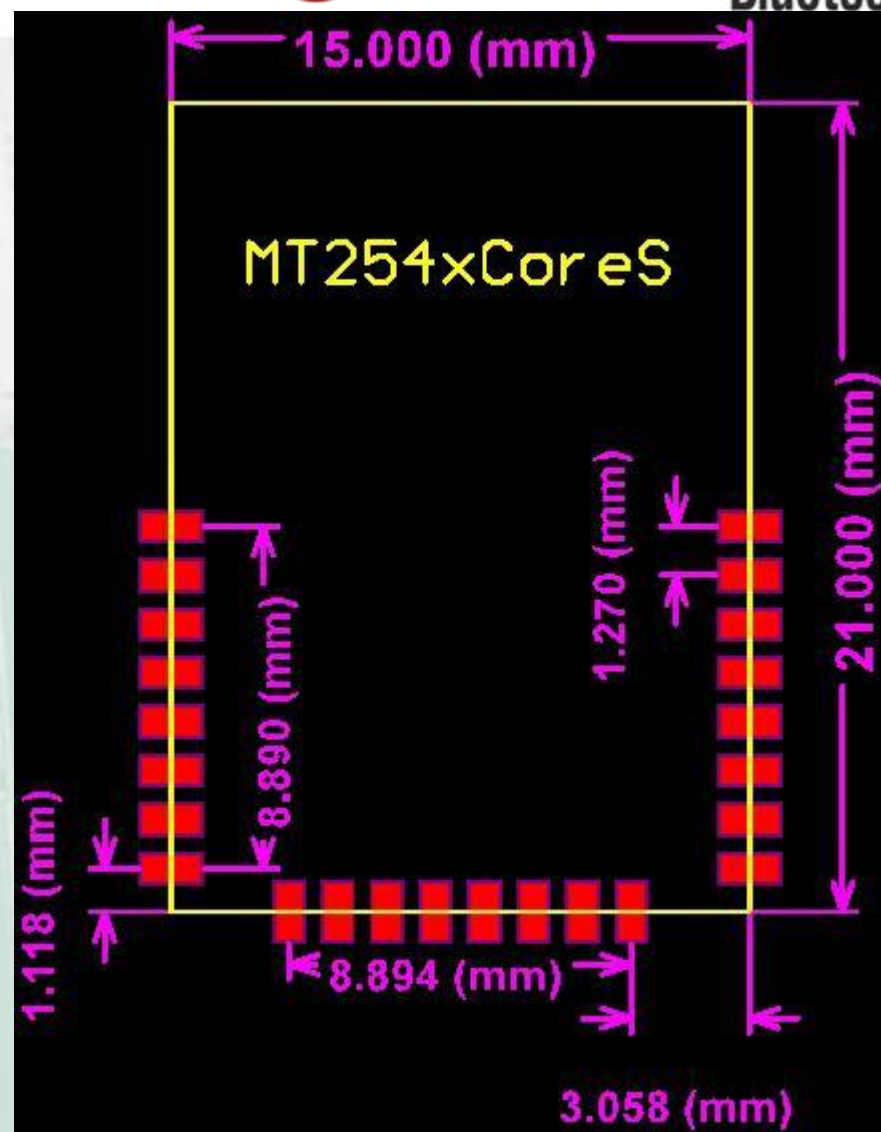
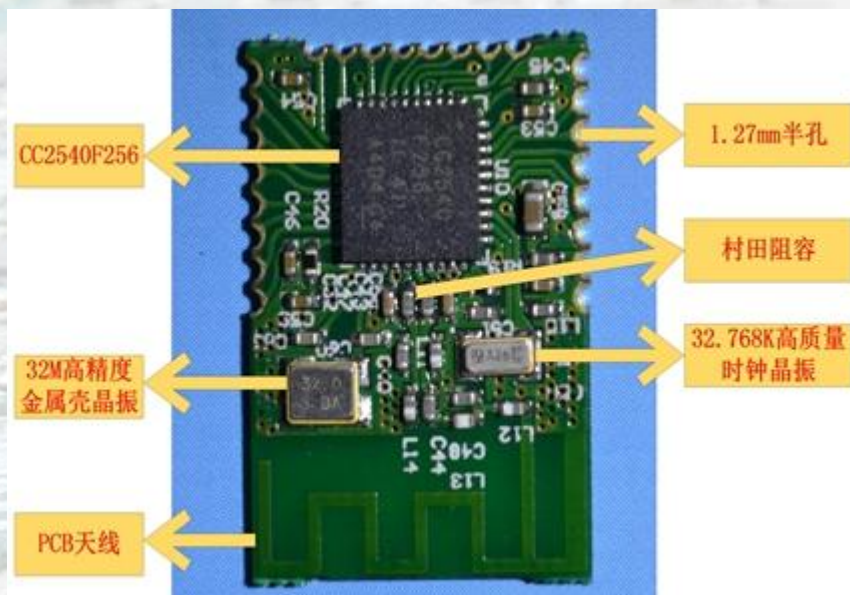


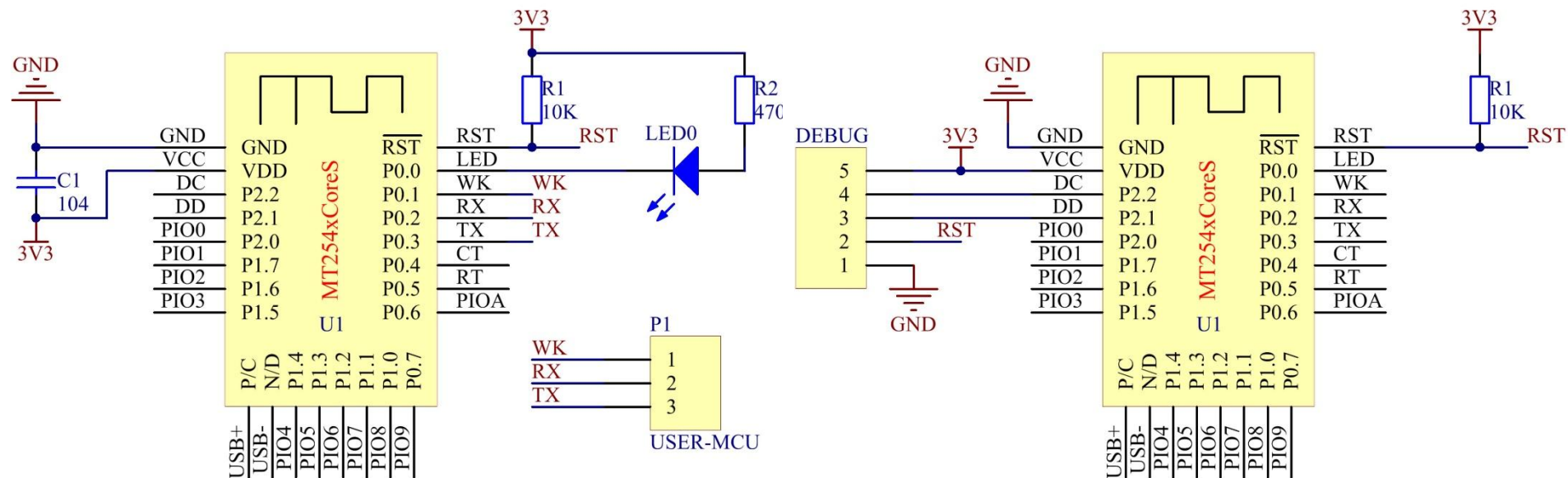
MT254xCoreS

蓝牙4.0 BLE 串口透传 CC2540/CC2541

iBeacon Keyfob SensorTag 超低功耗 超远传输







模块正确上电后，默认工作于从机模式，对外广播数据，等待主机设备连接。由于 WK 引脚在芯片内部已经上拉，所以此时模块处于透传模式，详情请参考《MT254xCoreS- V1.0-AT 指令手册》。若此时模块和远端设备连接上，用户通过串口发给模块的数据将直接转发给远端设备；如果模块不处于连接状态，用户发送的数据将被丢弃。

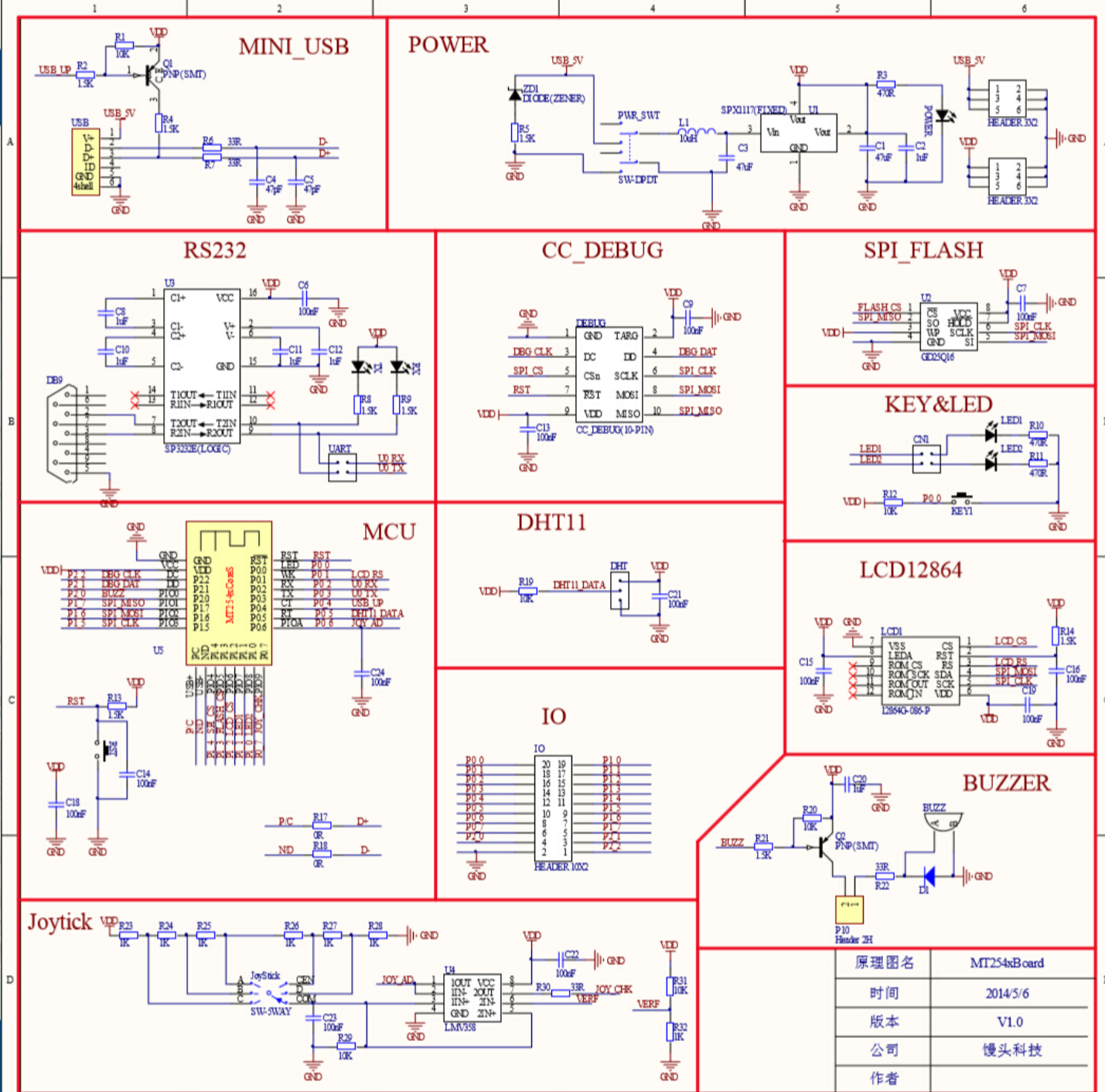
本模块出厂时默认自带了基于 BLE4.0 协议栈开发的串口透传固件，如果用户不想使用自带的固件，必须先擦除模块上的固件，再将新开发的固件写入到模块。



MT254xBoard 开发板



mantoukeji.taobao.com



工具软件的使用

蓝牙开发工具下载:

<http://pan.baidu.com/share/link?shareid=3562495290&uk=3996269986#dir/path=%2F%E6%9C%B1%E5%85%86%E7%A5%BAForARM%2F%E9%A6%92%E5%A4%B4%E7%A7%91%E6%8A%80%E8%93%9D%E7%89%994.0%E7%B3%BB%E5%88%97>

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蓝牙4.0开发工具



MT254x蓝牙4.0测试软件



MT254xCoreS透传模块



MT254xCoreSTest蓝牙...



MT254xBoard蓝牙开发板



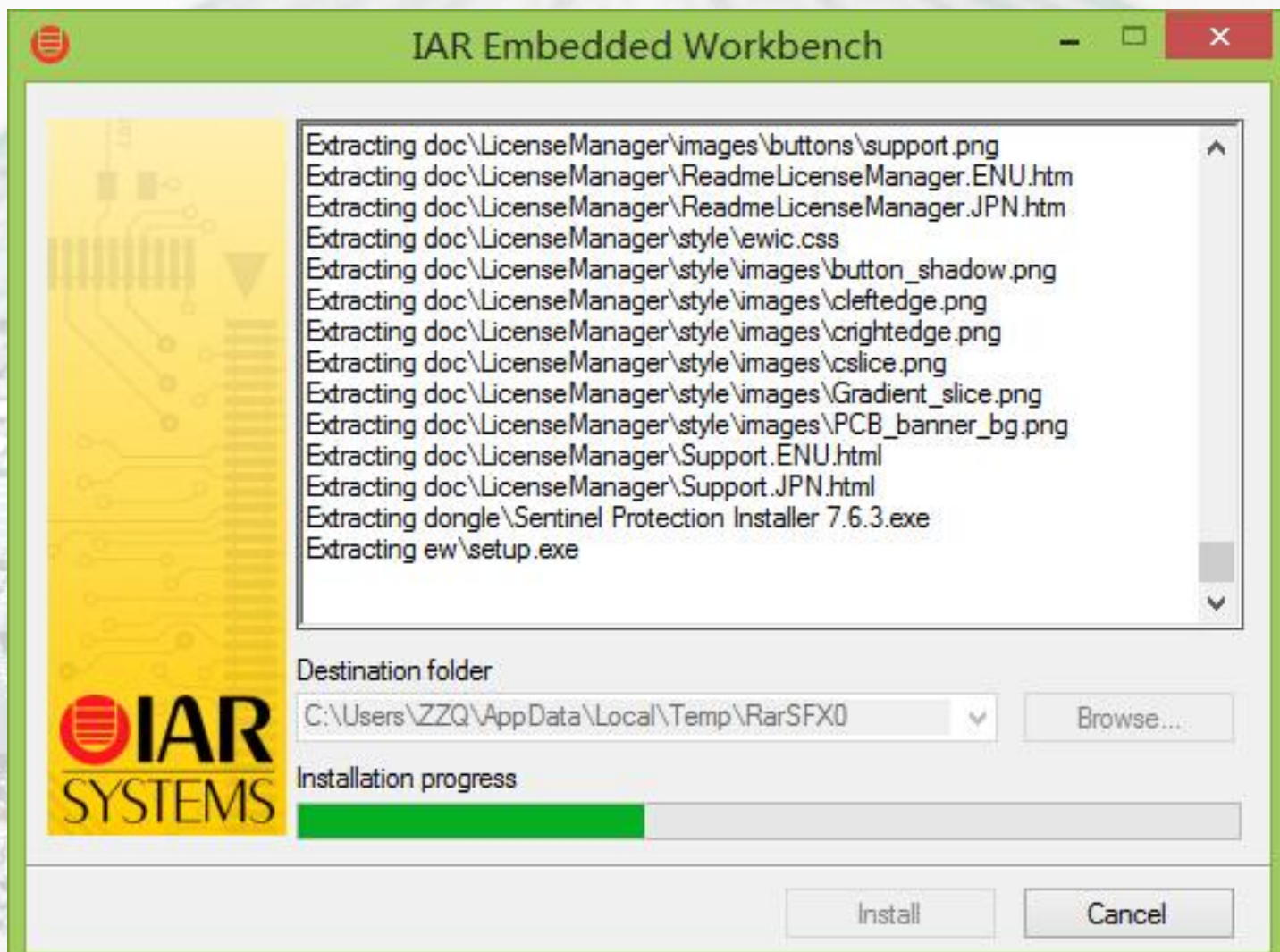
MT-USB Dongle



MT-iBeacon基站



CC-debug





电子发烧友
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IAR Embedded Workbench[®]

for 8051

Installation and licensing information

Install IAR Embedded Workbench[®]

Release notes

Explore the installation media

Exit

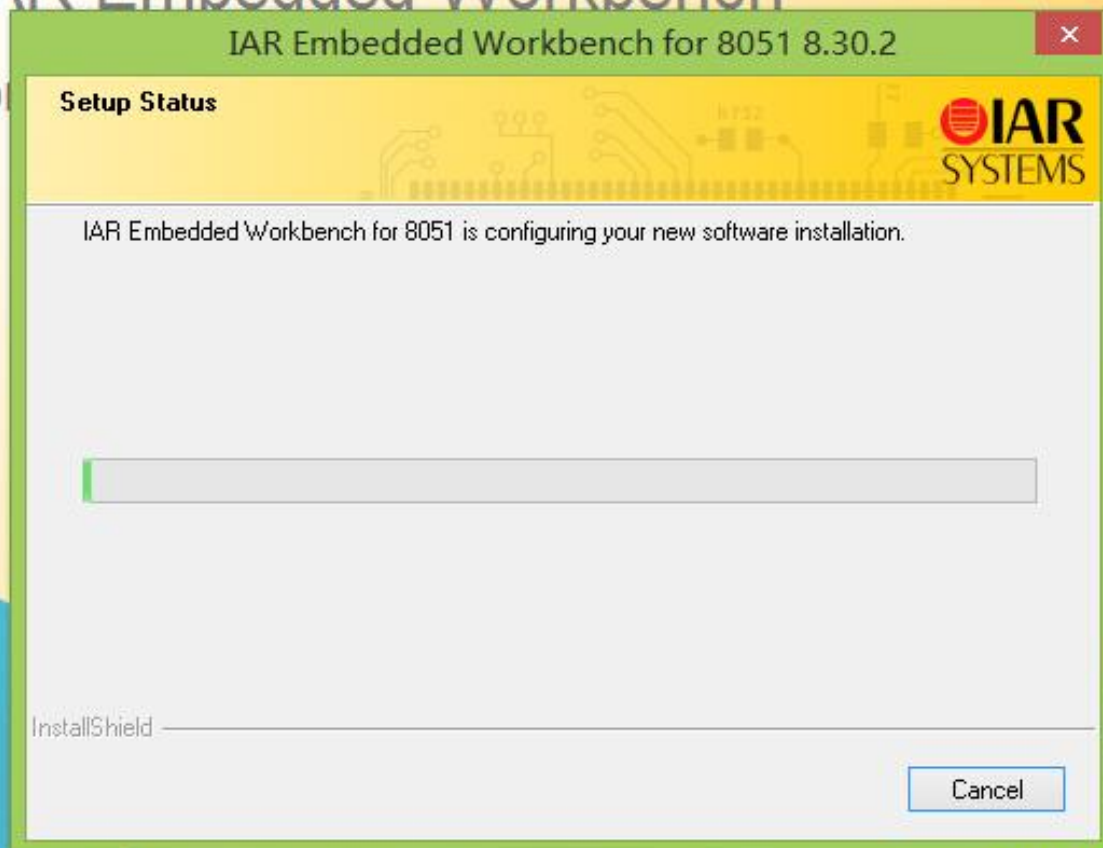


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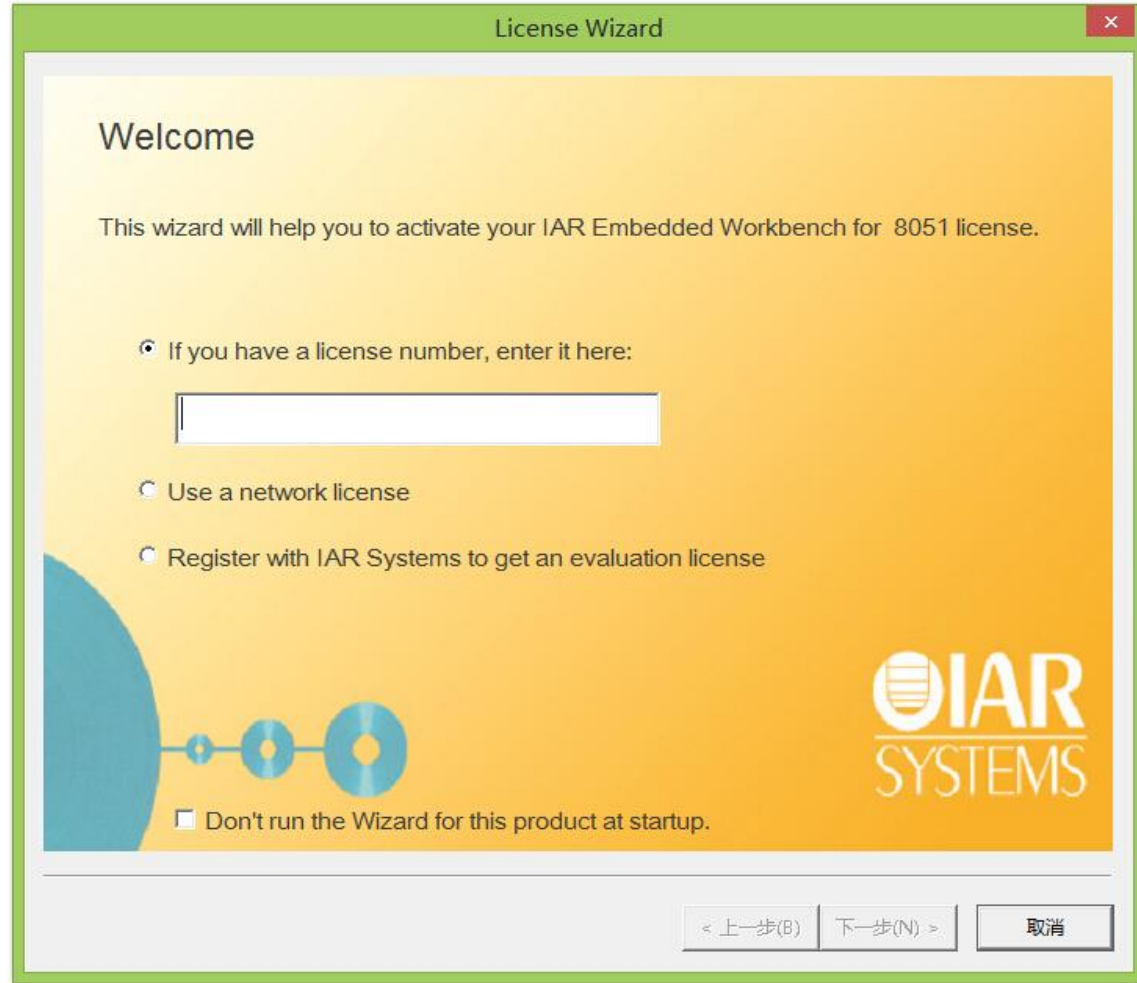
for



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名称	修改日期	类型
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BAk	2014/5/22 10:21	文件夹
common	2014/5/22 10:21	文件夹



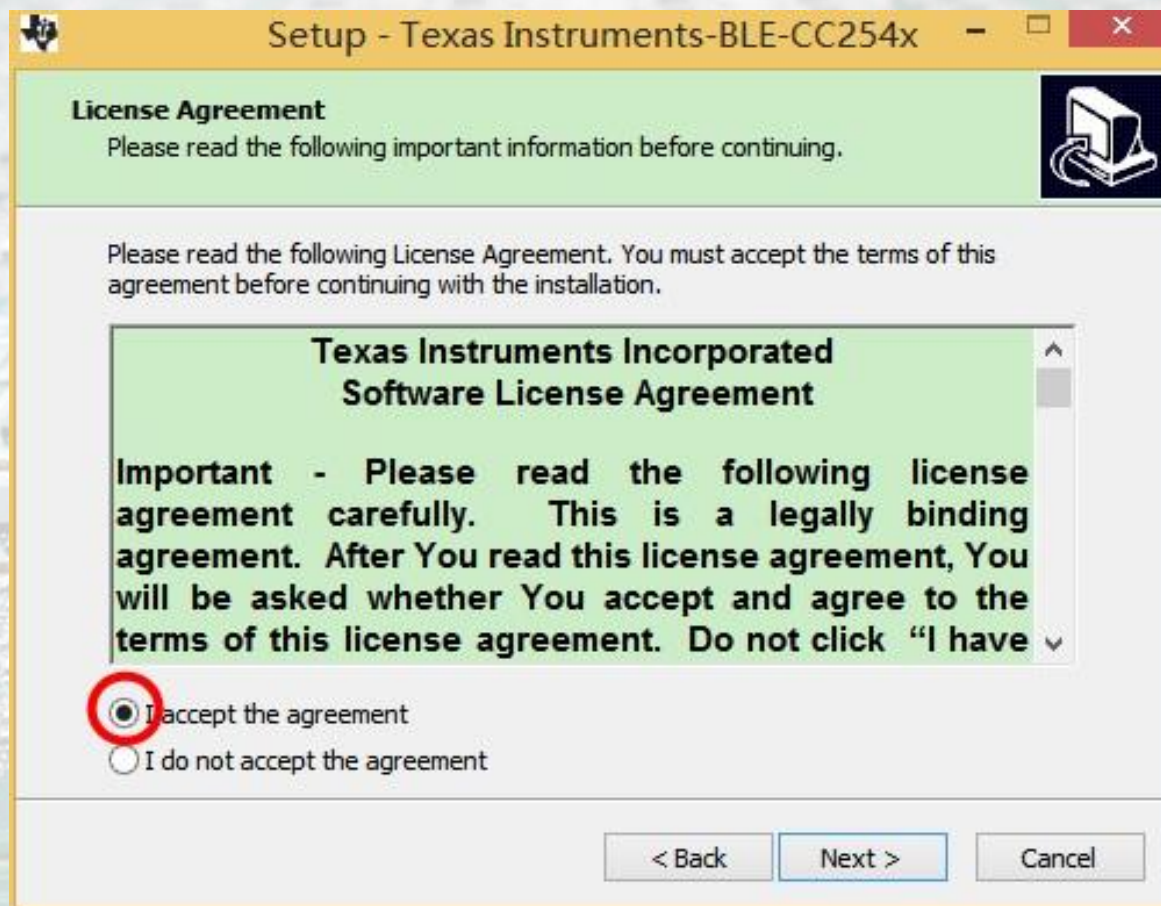


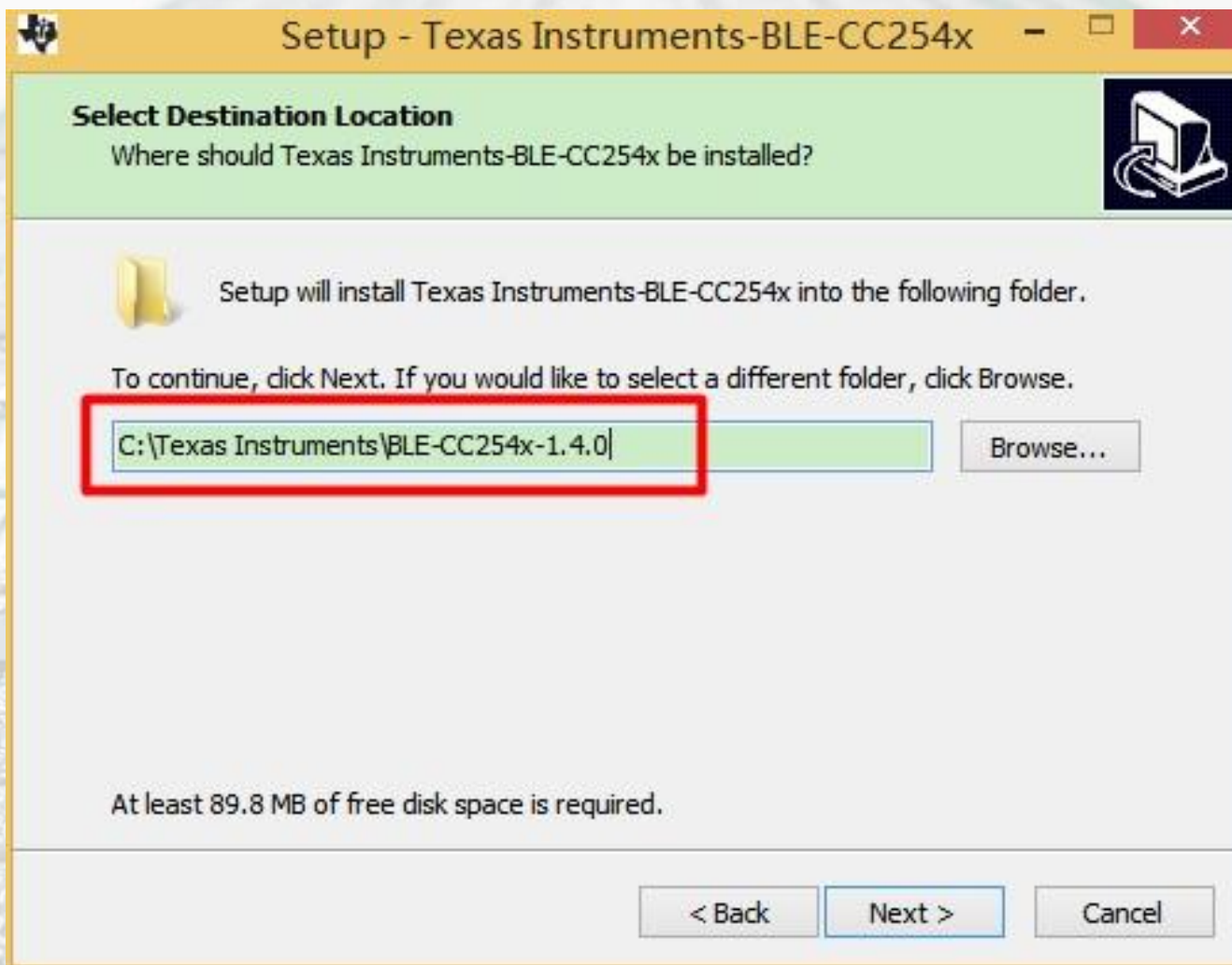
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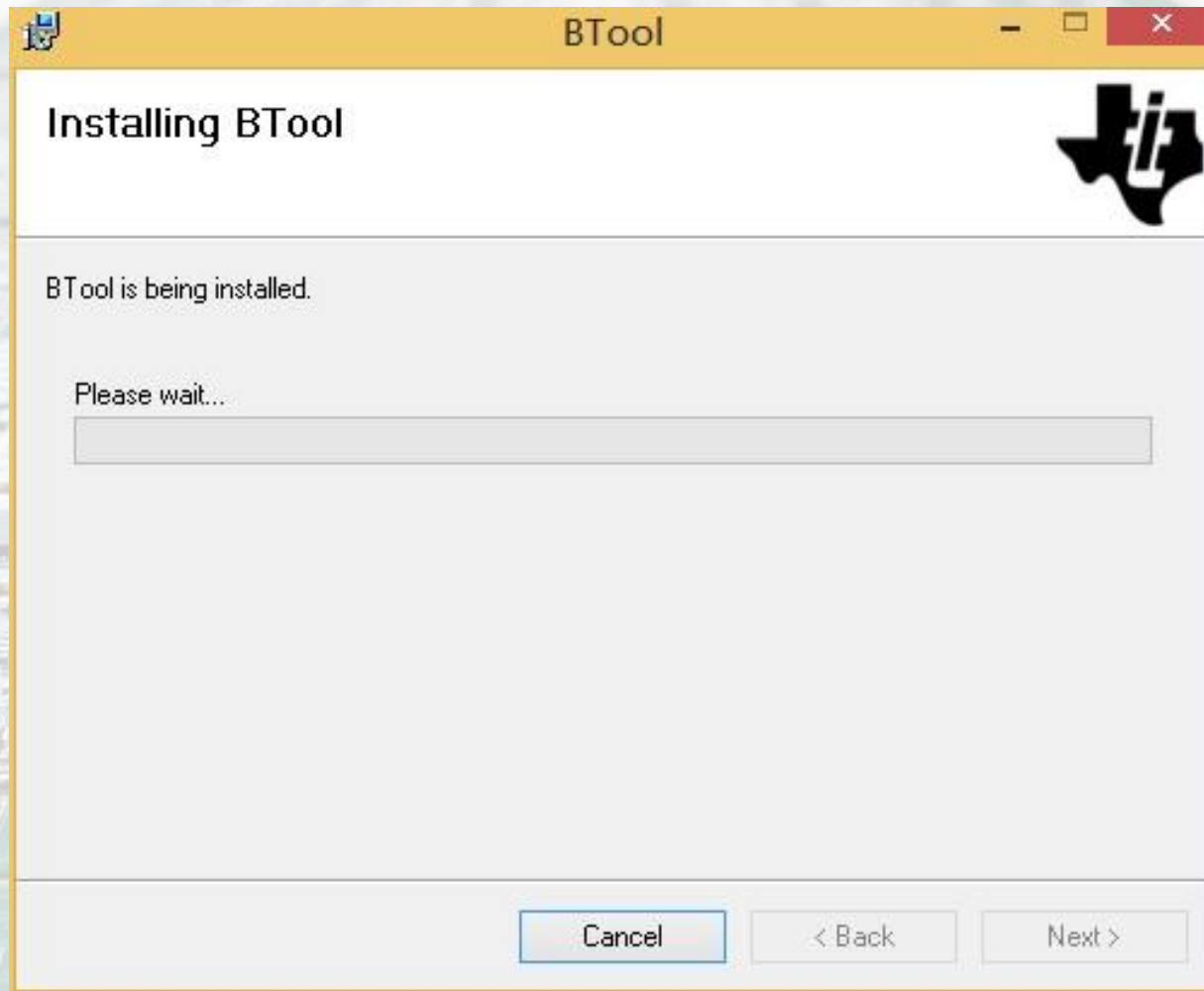




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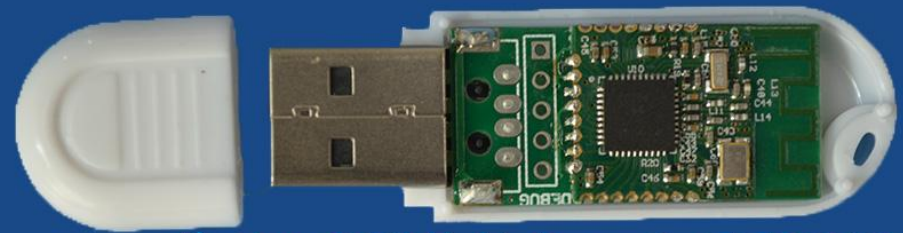








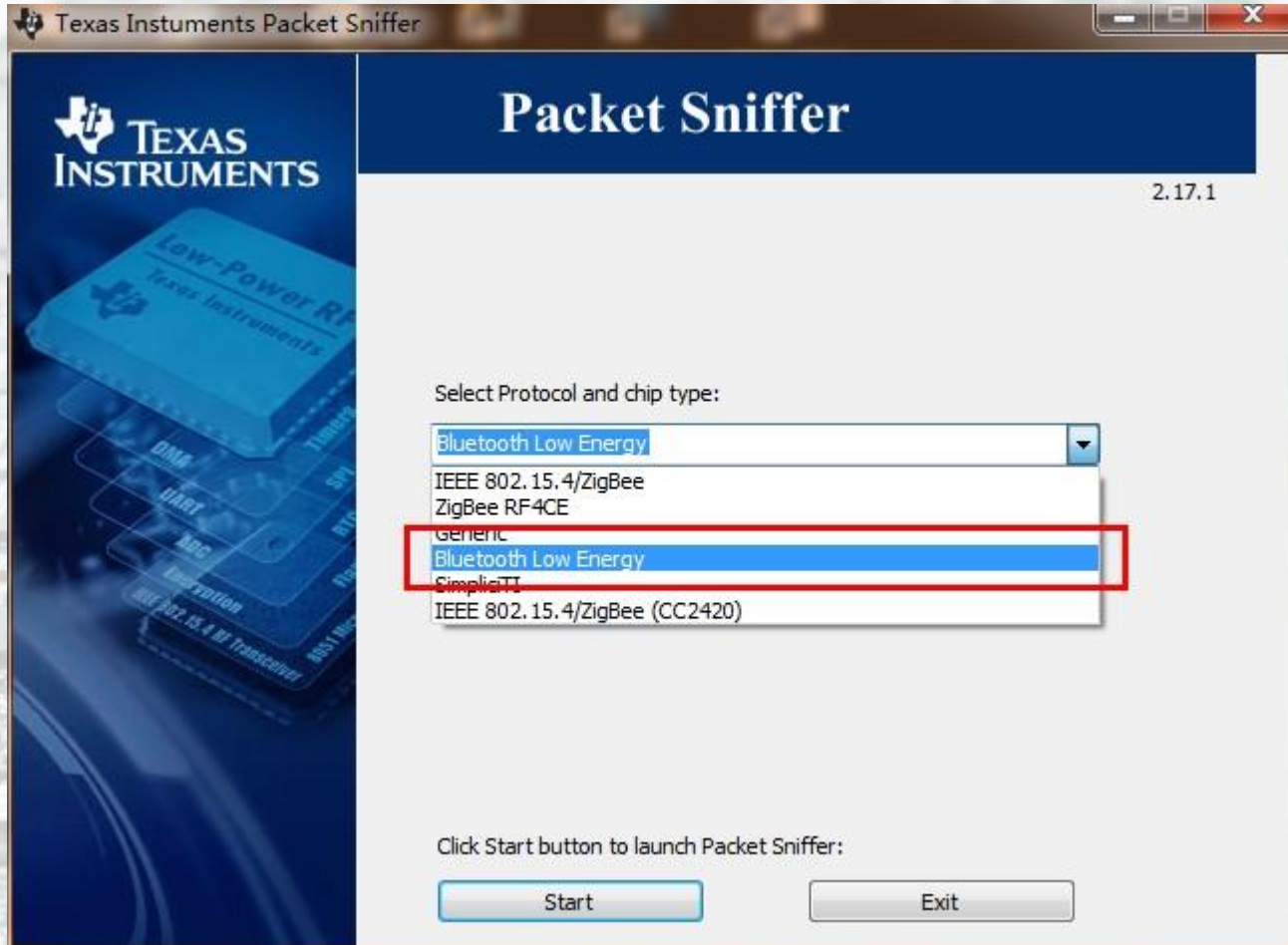
MT-USB Dongle 抓包工具的使用

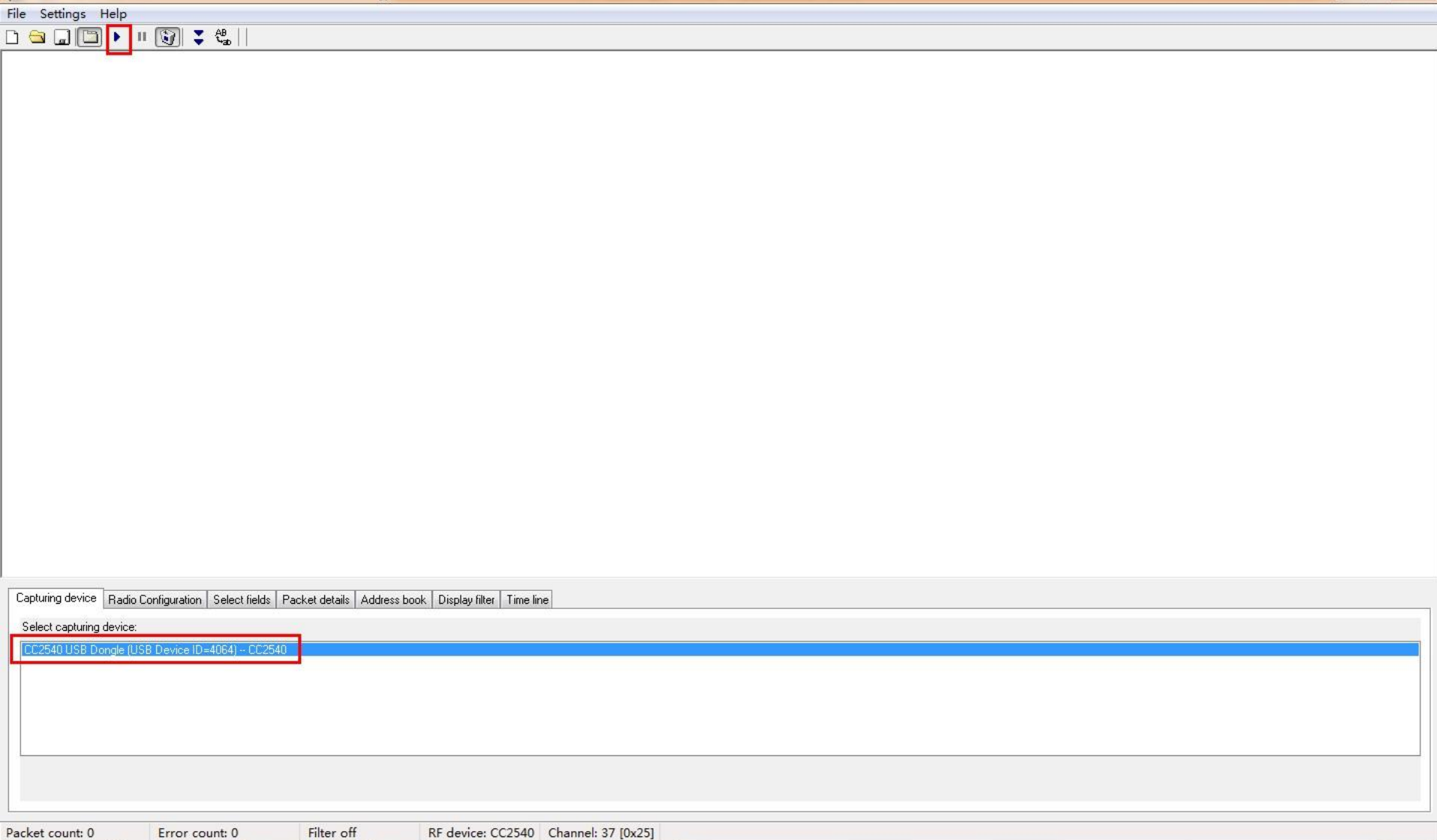


蓝牙4.0 BLE 抓包工具 CC2540

USB Dongle Sniffer Btool 协议分析









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Texas Instruments SmartRF Packet Sniffer Bluetooth Low Energy

File Settings Help

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+0				Type	TxAdd	RxAdd	PDU-Length																				
1	=0	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-66	OK

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+103				Type	TxAdd	RxAdd	PDU-Length																				
2	=103	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-65	OK

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+110				Type	TxAdd	RxAdd	PDU-Length																				
3	=213	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-65	OK

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+104				Type	TxAdd	RxAdd	PDU-Length																				
4	=317	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-65	OK

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+108				Type	TxAdd	RxAdd	PDU-Length																				
5	=425	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-65	OK

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+108				Type	TxAdd	RxAdd	PDU-Length																				
6	=534	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-65	OK

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+100				Type	TxAdd	RxAdd	PDU-Length																				
7	=634	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-66	OK

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+102				Type	TxAdd	RxAdd	PDU-Length																				
8	=737	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-66	OK

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+107				Type	TxAdd	RxAdd	PDU-Length																				
9	=844	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-65	OK

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData																CRC	RSSI (dBm)	FCS
	+109				Type	TxAdd	RxAdd	PDU-Length																				
10	=954	0x25	0x8E89BED6	ADV_IND	0	0	0	36	0x7C669D9F62AD	02 01 06 1A FF 4C 00 02 15 E2 C5 6D B5 DF FB 48 D2 B0 60 D0 F5 A7 10 96 E0 00 01 00 01 C5																0xBB0576	-66	OK

Capturing device Radio Configuration Select fields Packet details Address book Display filter Time line

Select capturing device:

PktNumber	Time	Channel	Access Address	Adv PDU Type	Adv PDU Header
数据包序号	数据包接收时间	广播通道	访问地址	广播类型	广播数据头
AdvA	AdvData	CRC	RSSI	FCS	
广播设备的地址	广播数据	循环冗余校验	接收的信号强度	帧校验序列	

抓取设备通信数据

Texas Instruments SmartRF Packet Sniffer Bluetooth Low Energy

File Settings Help



P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData				CRC	RSSI (dBm)	FCS
46	+105 =4742	0x26	0x8E89BED6	ADV_IND	Type	TxAdd	RxAdd	PDU-Length		02 01 06 03 02 A0 FF 07 FF	53 5A 4D 54 54 43 02 32 00	0x6D12B6	-48	OK		
					0	0	0	24	0x7C669D9F6439							
P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData				CRC	RSSI (dBm)	FCS
47	+109 =4851	0x26	0x8E89BED6	ADV_IND	Type	TxAdd	RxAdd	PDU-Length		02 01 06 03 02 A0 FF 07 FF	53 5A 4D 54 54 43 02 32 00	0x6D12B6	-48	OK		
					0	0	0	24	0x7C669D9F6439							
P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData				CRC	RSSI (dBm)	FCS
48	+100 =4952	0x26	0x8E89BED6	ADV_IND	Type	TxAdd	RxAdd	PDU-Length		02 01 06 03 02 A0 FF 07 FF	53 5A 4D 54 54 43 02 32 00	0x6D12B6	-48	OK		
					0	0	0	24	0x7C669D9F6439							
P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData				CRC	RSSI (dBm)	FCS
49	+100 =5052	0x26	0x8E89BED6	ADV_IND	Type	TxAdd	RxAdd	PDU-Length		02 01 06 03 02 A0 FF 07 FF	53 5A 4D 54 54 43 02 32 00	0x6D12B6	-48	OK		
					0	0	0	24	0x7C669D9F6439							
P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header				AdvA	AdvData				CRC	RSSI (dBm)	FCS
50	+104 =5156	0x26	0x8E89BED6	ADV_IND	Type	TxAdd	RxAdd	PDU-Length		02 01 06 03 02 A0 FF 07 FF	53 5A 4D 54 54 43 02 32 00	0x6D12B6	-46	OK		
					0	0	0	24	0x7C669D9F6439							

正在广播...

P.nbr.	Time (ms)	Channel	Access Address	Adv PDU Type	Adv PDU Header					InitA	AdvA	LLData (Part 1)					LLData (Part 2)				
51	+0 =5157	0x26	0x8E89BED6	ADV_CONNECT_REQ	Type	TxAdd	RxAdd	PDU-Length		0x7C669D9F6297	0x7C669D9F6439	AccessAddr	CRCInit	WinSize	WinOffset	Interval	Latency	Timeout	ChM		
					5	0	0	34				0xD6CDEA9D	2C 9D 2A 02	0x0006	0x0008	0x0000	0x0000	0x01F4	1F FF FF FF		
P.nbr.	Time (ms)	Channel	Access Address	Direction	ACK Status	Data Type	Data Header					L2CAP Header		ATT_Read_By_Group_Type_Req				CRC	RSSI (dBm)	FCS	
52	+0 =5167	0x0D	0xD6CDEA9D	M->S	OK	L2CAP-S	LLID	NESN	SN	MD	PDU-Length	L2CAP-Length	ChanId	Opcode	StartingHandle	EndingHandle	AttGroupType	0x31930A	-40	OK	
							2	0	0	0	11	0x0007	0x0004	0x10	0x0001	0xFFFF	00 28				
P.nbr.	Time (ms)	Channel	Access Address	Direction	ACK Status	Data Type	Data Header					CRC	RSSI (dBm)	FCS							
53	+0 =5168	0x0D	0xD6CDEA9D	S->M	OK	Empty PDU	LLID	NESN	SN	MD	PDU-Length	0x4C813C	-49	OK							
							1	1	0	0	0										
P.nbr.	Time (ms)	Channel	Access Address	Direction	ACK Status	Data Type	Data Header					CRC	RSSI (dBm)	FCS							
54	+9 =5177	0x1A	0xD6CDEA9D	M->S	OK	Empty PDU	LLID	NESN	SN	MD	PDU-Length	0x4C8C9A	-39	OK							
							1	1	1	0	0										
P.nbr.	Time (ms)	Channel	Access Address	Direction	ACK Status	Data Type	Data Header					L2CAP Header		ATT_Read_By_Group_Type_Rsp				CRC	RSSI (dBm)	FCS	
	+0						LLID	NESN	SN	MD	PDU-Length	L2CAP-Length	ChanId	Opcode	Length	AttData					

握手连接...

握手连接...

Capturing device Radio Configuration Select fields Packet details Address book Display filter Time line

Advertising Channel: 38 (2426 MHz)

☐ Connect to Initiator Address (hex)

Long Term Key (hex (LSO to MSO))

Pass Key 000000 (Numeric 6 digits)

File Settings Help

P.nbr.	Time (ms)	Channel	Access Address	Direction	ACK Status	Data Type	Data Header	CRC	RSSI (dBm)	FCS																																							
1156	+8 =88939	0x10	0x7343050D	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 1 1 0 0	0xF240E2	-35	OK																																							
1157	+0 =88940	0x10	0x7343050D	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 0 1 0 0	0xF24631	-30	OK																																							
1158	+8 =88948	0x18	0x7343050D	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 0 0 0 0	0xF24B97	-36	OK																																							
1159	+0 =88948	0x18	0x7343050D	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 1 0 0 0	0xF24D44	-31	OK																																							
1160	+8 =88957	0x20	0x7343050D	?	OK	L2CAP-S	<table border="1"> <thead> <tr> <th colspan="4">Data Header</th> <th colspan="2">L2CAP Header</th> <th colspan="4">ATT_Write_Command</th> <th>CRC</th> <th>RSSI (dBm)</th> <th>FCS</th> </tr> <tr> <th>LLID</th> <th>NESN</th> <th>SN</th> <th>MD</th> <th>PDU-Length</th> <th>L2CAP-Length</th> <th>ChanId</th> <th>Opcode</th> <th>AttHandle</th> <th>AttValue</th> <th></th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>2</td> <td>1</td> <td>1</td> <td>0</td> <td>21</td> <td>0x0011</td> <td>0x0004</td> <td>0x52</td> <td>0x0003</td> <td>34 35 36 34 38 36 38 39 36 34 38 36 37 34</td> <td>0x03FB05</td> <td>-35</td> <td>OK</td> </tr> </tbody> </table>	Data Header				L2CAP Header		ATT_Write_Command				CRC	RSSI (dBm)	FCS	LLID	NESN	SN	MD	PDU-Length	L2CAP-Length	ChanId	Opcode	AttHandle	AttValue				2	1	1	0	21	0x0011	0x0004	0x52	0x0003	34 35 36 34 38 36 38 39 36 34 38 36 37 34	0x03FB05	-35	OK			
Data Header				L2CAP Header		ATT_Write_Command				CRC	RSSI (dBm)	FCS																																					
LLID	NESN	SN	MD	PDU-Length	L2CAP-Length	ChanId	Opcode	AttHandle	AttValue																																								
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1161	+0 =88957	0x20	0x7343050D	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 0 1 0 0																																										
1162	+8 =88966	0x03	0x7343050D	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 0 0 0 0																																										
1163	+0 =88966	0x03	0x7343050D	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 1 0 0 0																																										
1164	+8 =88974	0x0B	0x7343050D	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 1 1 0 0																																										
1165	+0						LLID NESN SN MD PDU-Length																																										

Capturing device Radio Configuration Select fields Packet details Address book Display filter Time line

Packet index: 1151
Length: 39
Raw data (hex): 0D 05 43 73 4D 1E 33 35 11 B1 87 4D E0 A9 AF F8 24 2C E9 AD F2 2A 82 92 AE 36 55 6A E3 CF 4A 22 C1 5A B8 69 93
RSSI (dBm): -92
CRC OK: 0

Packet count: 1926 Error count: 249 Filter off RF device: CC2540 Channel: 38 [0x26]

深圳馒头科技有限公司串口蓝牙调试软件

作者: Truth(企鹅446876407) 日期: 2014/3/26 点击有惊喜哦

☒ O(∩_∩)O~~ ☐ Hex接收

串口号: COM1
波特率: 115200
数据位: 8
停止位: 1
校验位: 无校验

接收量: 0 Bytes
发送量: 14 Bytes

45648689648674

100 ms ☐ 定时发送 ☐ 带回车发送 ☐ Hex发送

Texas Instruments SmartRF Packet Sniffer Bluetooth Low Energy

File Settings Help

P.nbr.	Time (ms)	Channel	Access Address	Direction	ACK Status	Data Type	Data Header	CRC	RSSI (dBm)	FCS		
3625	=61562	0x0F	0x68668EED	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 1 0 0 0	0x96E255	-43	OK		
3626	=61570	0x1E	0x68668EED	?	OK	L2CAP-S	LLID NESN SN MD PDU-Length 2 1 1 0 10	L2CAP-Header L2CAP-Length ChanId 0x0006 0x0004	ATT_Write_Command Opcode AttHandle AttValue 0x52 0x0007 41 54 2B	CRC 0x126417	RSSI (dBm) -37	FCS OK
3627	=61571	0x1E	0x68668EED	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 0 1 0 0	0x96E920	-50	OK		
3628	=61579	0x08	0x68668EED	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 0 0 0 0	0x96E486	-35	OK		
3629	=61579	0x08	0x68668EED	?	OK	L2CAP-S	LLID NESN SN MD PDU-Length 2 1 0 0 11	L2CAP-Header L2CAP-Length ChanId 0x0007 0x0004	ATT_Handle_Value_Notify Opcode AttHandle AttValue 0x1B 0x0003 4F 4B 0D 0A	CRC 0x9ACC26	RSSI (dBm) -39	FCS OK
3630	=61588	0x17	0x68668EED	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 1 1 0 0					
3631	=61588	0x17	0x68668EED	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 0 1 0 0					
3632	=61597	0x01	0x68668EED	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 0 0 0 0					
3633	=61597	0x01	0x68668EED	?	OK	Empty PDU	LLID NESN SN MD PDU-Length 1 1 0 0 0					

Advertising Channel: 38 (2426 MHz)
☐ Connect to Initiator Address (hex)
 Long Term Key (hex (LSO to MSO))
 Pass Key 000000 (Numeric 6 digits)

Packet count: 3655 Error count: 18 Filter off RF device: CC2540 Channel: 38

深圳馒头科技有限公司串口蓝牙调试软件

作者: Truth(企鹅446876407) 日期: 2014/3/26 点击有惊喜哦

☒ 0(0_0)0~~ ☐ Hex接收

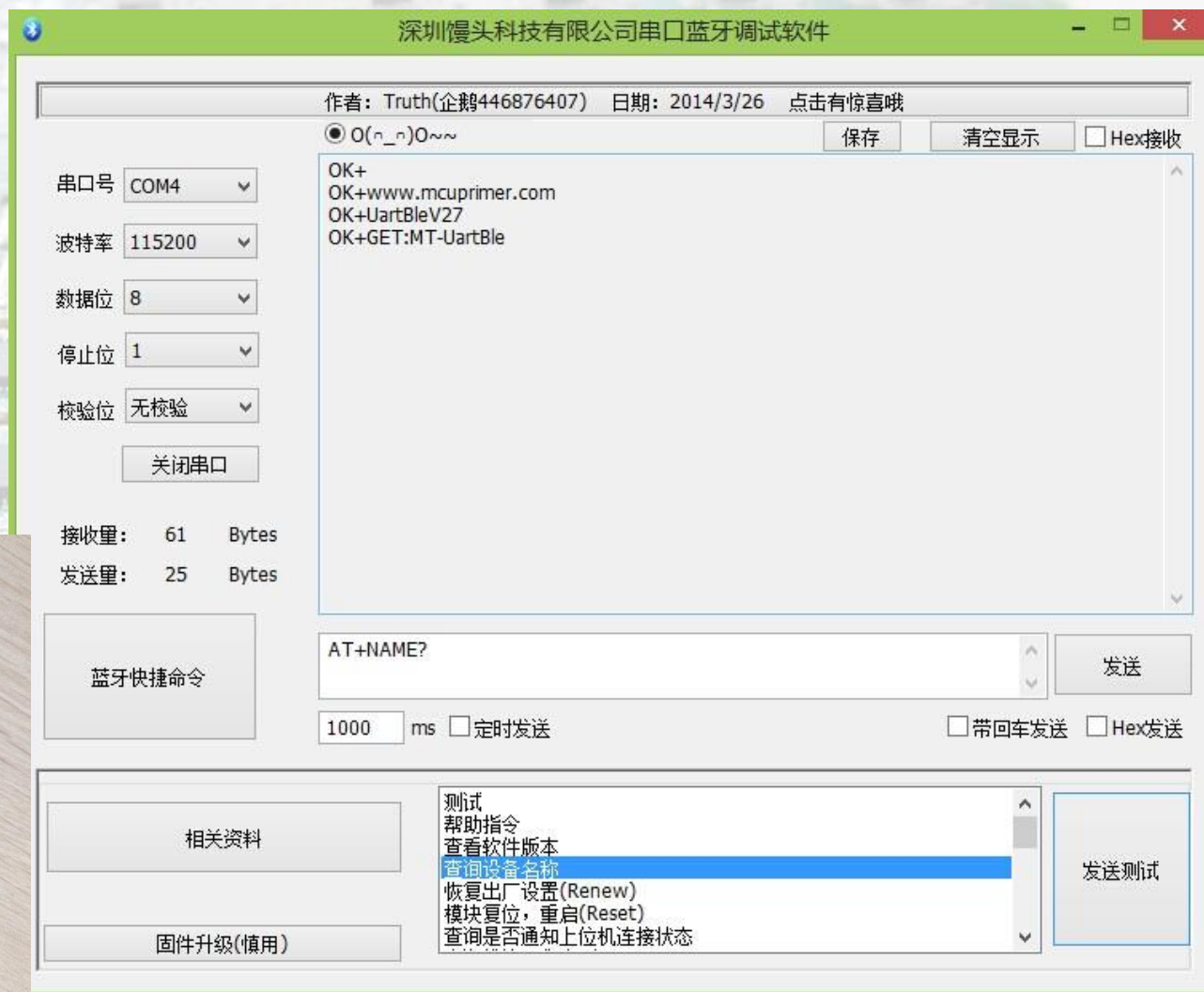
串口号 COM1 波特率 115200 数据位 8 停止位 1 校验位 无校验

接收量: 249 Bytes 发送量: 434 Bytes **OK**

100 ms ☐ 定时发送 ☐ 带回车发送 ☐ Hex发送

AT指令手册:

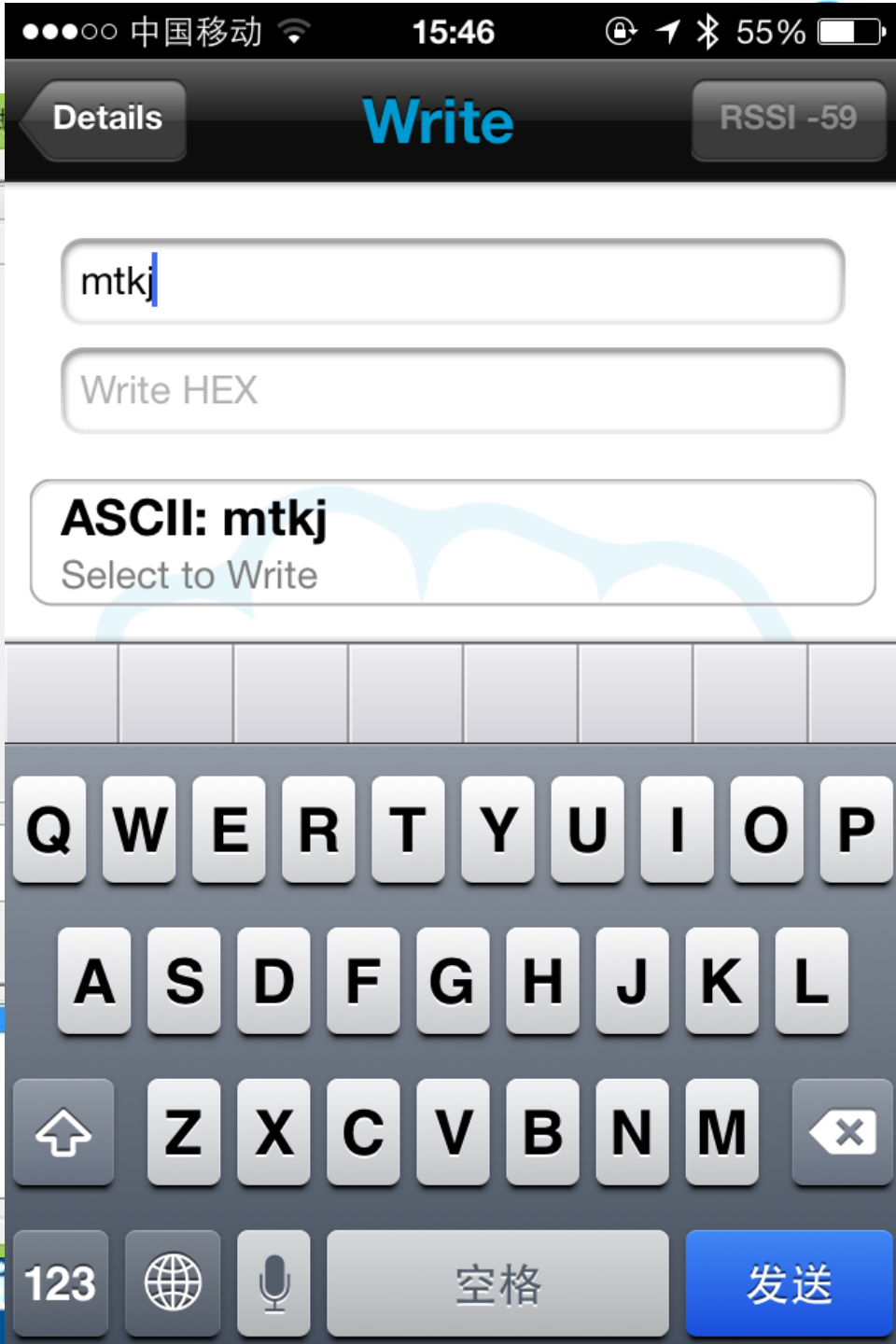
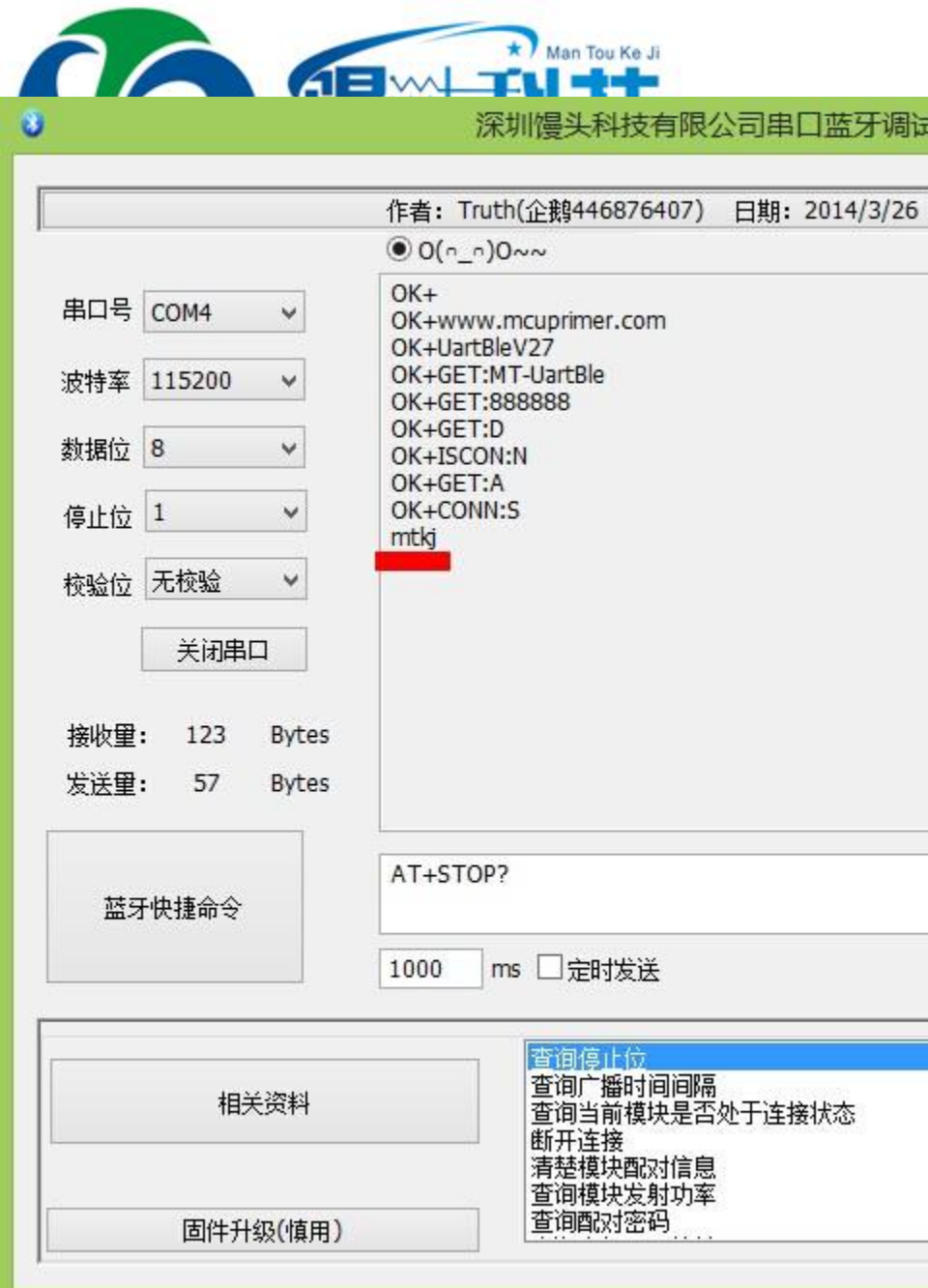
<http://pan.baidu.com/share/link?shareid=3562495290&uk=3996269986#dir/path=%2F%E6%9C%B1%E5%85%86%E7%A5%BAForARM%2F%E9%A6%92%E5%A4%B4%E7%A7%91%E6%8A%80%E8%93%9D%E7%89%99.0%E7%B3%BB%E5%88%97%2FMT254xCoreS%E9%80%8F%E4%BC%A0%E6%A8%A1%E5%9D%97>

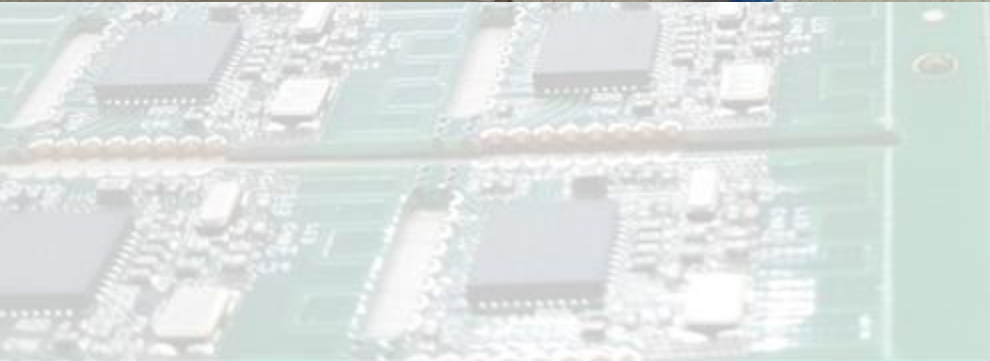
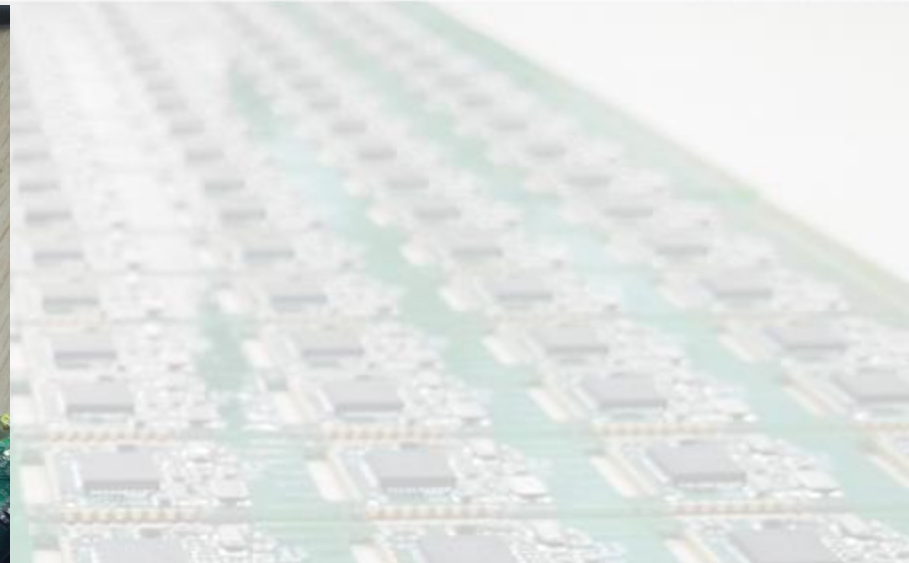
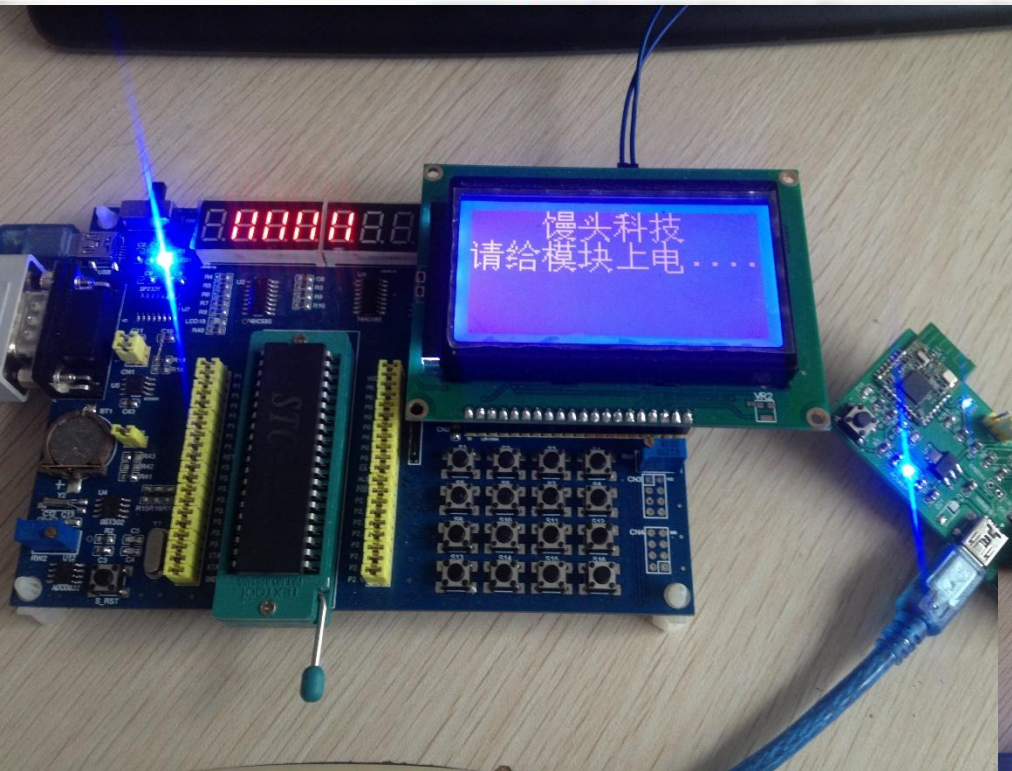


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mantoukeji.



蓝牙4.0 BLE 串口透传 CC2540/CC2541 iBeacon/Keyfob 超远传输:

<http://item.taobao.com/item.htm?spm=a1z10.1.w6545579-4546600052.5.YgGVfy&id=38218044175>

iBeacon/iBeacons基站 蓝牙4.0BLE模块 近场定位 无线升级待机1年:

<http://item.taobao.com/item.htm?spm=a1z10.1.w6545579-4546600052.23.YgGVfy&id=37352738955>

蓝牙4.0 BLE 抓包工具 CC2540 USB Dongle Sniffer Btool 协议分析:

<http://item.taobao.com/item.htm?spm=a1z10.1.w6545579-4546600052.17.YgGVfy&id=38404002542>

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联系方式：188 2333 5955

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