

miniPad, miniPad SMA and rPad User Guide



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RELEASE 3.0

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Introduction

This guide applies to miniPad / rPad devices with firmware release 4.0 or newer

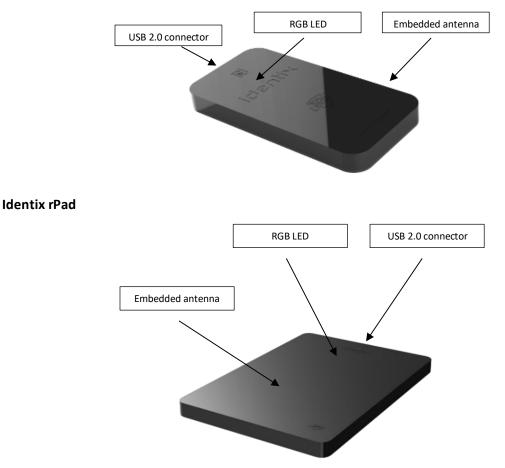
Identix miniPad and rPad are stationary, small form factor, UHF Gen2 RFID tag readers with USB connectivity. This guide provides detailed instructions for installing, connecting, configuring, operating and troubleshooting the Identix miniPad and rPad UHF RFID family of readers.

The intended audience for this guide is anyone installing an Identix miniPad or rPad reader. The assumed primary users of this guide are systems engineers and IT personnel with experience and basic knowledge of:

- Software development
- Hardware systems integration
- Network connectivity

This guide also assumes that the user has a high-level understanding of RFID, RFID systems management, and a basic familiarity with the EPCglobal Gen 2 specification.

Identix miniPad





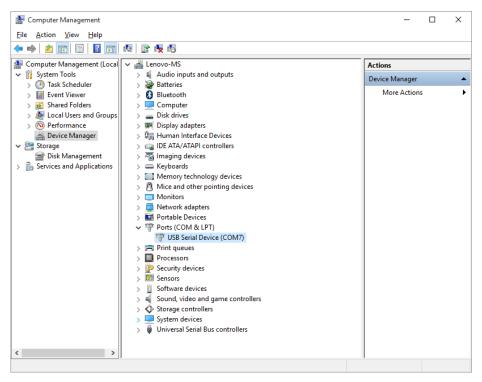
Downloading Windows drivers

If you're using miniPad or rPad with Windows XP, Windows 7 or 8, you will need to download the appropriate drivers from the Identix support web site.

If you're using Windows 10 or newer, Mac or Linux, then you don't need any special driver to work with miniPad or rPad.

Installing the miniPad – rPad USB Driver on Windows XP, Windows 7 or 8

- 1. Download the *miniPad-rPad* Windows USB driver file from <u>https://idntx.zendesk.com</u>
- 2. Connect the miniPad or rPad to your PC using the mini USB cable provided.
- 3. Once Microsoft Windows detects the new device, set the downloaded INF file as the device driver file.
- 4. Open Windows Device Manager, search for the miniPad / rPad device, right-click on the device and then select Update Driver Software.
- 5. Browse your computer and find the location of the *miniPad-rPad.inf*, click Next
- 6. After installing the drivers correctly, Windows will map a new virtual COM port to the connected miniPad / rPad RFID reader.
- 7. You may check the successful installation of the driver looking at the Computer management applet





Configuring the device operating mode

The miniPad / rPad device can operate in three different modes:

HID Keyboard Emulation

In this mode of operation, miniPad / rPad emulates a keyboard wedge. When reading RFID tags, miniPad / rPad sends reading data to the host computer as if it were a keyboard. In this scenario, the device operates autonomously sending data through a *virtual keyboard (HID)* connected to the USB port.

By default, miniPad / rPad operates in HID Mode with the transmitting power configured in 15dBm

RAW Mode

In this mode of operation, a host application controls the miniPad / rPad device. *The host application communicates with the miniPad / rPad device using simple ASCII based commands.* The connection between the host (PC) and the device is via a virtual COM (serial) port over USB.

Transparent Mode

In this mode of operation, a host application controls the miniPad / rPad device. The host application communicates with the miniPad / rPad device using the *IRI – Impinj Reader Interface - protocol*. The connection between the host (PC) and the device is via a virtual COM (serial) port over USB.

Changing the operating mode

A *configuration file* ("Identix-Pad.cfg") is stored inside a removable drive (labeled IDENTIX that mounts automatically when the miniPad / rPad device connects to the host computer), allows the user to switch between Transparent, HID Keyboard Emulation and RAW modes.

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IDENTIX (D:)									
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To change the operation mode between Transparent and HID, edit the entry "Opmode" on the configuration file.

Warning! Use only Windows Notepad to edit the configuration file.

File Edit Format View Help	
Opmode= <mark>1</mark>	; defines the device operating mode: T for transparent mode, H for keyboard emulation (HID),
Region=0	; set 0 for FCC (USA), 13 for Anatel (Brasil) or consult Identix for other regions
TXPower=10	; transmit power in dBm (maximum 23)
Inventory=0	; Inventory search mode: D for Dual Target, S for Single Target and SS for Single Target with
Session=1	; Gen2 Tag inventory session: 0, 1, 2 or 3
TagPopulationEstimate=4	; an estimate of the tag population in view of the RF field of the antenna
Inventory(cyle=0,0	; set the inventory cycle duration and interval (on-off) in milliseconds. Set to 0,0 (default
RSSIFilterThreshold=0	; only tags with RSSI data above this threshold will be reported (typical value -6500). Set t
DecodeSGTIN96-False	; decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number)
AddSerialToDecodedGTIN13=True	; includes the EPC serial number in GTIN13 decoded string
GTIN13SNseparator=0x2F	; ASCII character to be used as separator between decoded GTIN13 and serial number
GS1CompanyPrefixLength=6	; number of digits used for the GS1 Company Prefix Length
DecodeEPCMemory=False	; output EPC data into EPC Tag URI (urn:epc:tag:) format
HidReportFormat=0	; set 0 to report EPC data only or 1 to report EPC+TID
HidReportSeparator=0x20	; ASCII character to be used as separator between EPC and TID in HID reports
HidReportCRcharacter=0xD	; ASCII character to be used as Carriage Return in HID reports
HidReportLFcharacter=0xA	; ASCII character to be used as Line Feed in HID reports
IncludeRSSI=False	; set True to include RSSI data at the end of HID report data
RSSIReportSeparator=0x23	; leading character to be used before RSSI information
PrSensor=0	; set to 0 to disable presence sensor or between 1 to 10 to define the sensor sensitivity
HidTrigger=True	; enable Start Inventory by LED Presence Sensor
BeeperVolume=10	; set beeper volume during inventory from 0 (no beep) to 10 (maximum volume)
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After saving the configuration file, the miniPad / rPad reader will automatically switch to the selected operating mode.

Reading RFID Tags

In HID Keyboard Emulation Mode Operation

- 1. Configure the miniPad / rPad reader to operate in HID Keyboard Emulation mode.
- 2. Open an application like Excel or Notepad.
- 3. Place UHF RFID tags on top of the miniPad or rPad embedded antenna.
- 4. See the tags reading results at the opened application.

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<u>F</u> ile <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp	
Opmode= <mark>1</mark>	; defines the device operating mode: T for transparent mode, H for keyboard emulation (HID),
Region=0	; set 0 for FCC (USA), 13 for Anatel (Brasil) or consult Identix for other regions
TXPower=23	; transmit power in dBm (maximum 23)
Inventory=D	; Inventory search mode: D for Dual Target, S for Single Target and SS for Single Target with
Session=1	; Gen2 Tag inventory session: 0, 1, 2 or 3
TaePopulationEstimate=4	; an estimate of the tag population in view of the RF field of the antenna
InventoryCycle=0,0	; set the inventory cycle duration and interval (on-off) in milliseconds. Set to 0,0 (default
RSSIfilterThreshold=0	; only tags with RSSI data above this threshold will be reported (typical value -6500). Set 1
DecodeSGTIN96=False	; decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number)
AddSerialToDecodedGTIN13=True	; includes the EPC serial number in GTIN13 decoded string
GTIN13SNseparator=0x2F	; ASCII character to be used as separator between decoded GTIN13 and serial number
GS1CompanyPrefixLength=6	; number of digits used for the GS1 Company Prefix Length
DecodeEPCMemory=False	; output EPC data into EPC Tag URI (urn:epc:tag:) format
HidReportFormat=0	; set 0 to report EPC data only or 1 to report EPC+TID
HidReportSeparator=0x20	; ASCII character to be used as separator between EPC and TID in HID reports
HidReportCRcharacter=0xD	; ASCII character to be used as Carriage Return in HID reports
HidReportLFcharacter=0xA	; ASCII character to be used as Line Feed in HID reports
IncludeRSSI=True RSSIReportSeparator=0x23	; set True to include RSSI data at the end of HID report data ; leading character to be used before RSSI information
PrSensor=0	; set to 0 to disable presence sensor or between 1 to 10 to define the sensor sensitivity
HidTrigger=True	; enable Start Inventory by LED Presence Sensor
BeeperVolume=10	; set beeper volume during inventory from 0 (no beep) to 10 (maximum volume)
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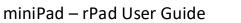
In RAW Mode Operation

1. Configure the miniPad / rPad reader to operate in HID Keyboard Emulation mode.

Identix-Pad.cfg - Notepad	- 🗆 X
ile <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp	
Dpmode= <mark>R</mark> Region=0	; defines the device operating mode: T for transparent mode, H for keyboard emulation (HID), ; set 0 for FCC (USA), 13 for Anatel (Brasil) or consult Identix for other regions
TXPower=10	; transmit power in dBm (maximum 23)
Inventory=D	; Inventory search mode: D for Dual Target, S for Single Target and SS for Single Target with
Session=1	; Gen2 Tag inventory session: 0, 1, 2 or 3
TagPopulationEstimate=4	; an estimate of the tag population in view of the RF field of the antenna
InventoryCycle=0,0 RSSIfilterThreshold=0	; set the inventory cycle duration and interval (on-off) in milliseconds. Set to 0,0 (default ; only tags with RSSI data above this threshold will be reported (typical value -6500). Set 1
DecodeSGTIN96=False	; decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number)
AddSerialToDecodedGTIN13=True	,
GTIN13SNseparator=0x2F	; ASCII character to be used as separator between decoded GTIN13 and serial number
GS1CompanyPrefixLength=6	; number of digits used for the GS1 Company Prefix Length
DecodeEPCMemory=False	; output EPC data into EPC Tag URI (urn:epc:tag:) format
HidReportFormat=0	; set 0 to report EPC data only or 1 to report EPC+TID
HidReportSeparator=0x20	; ASCII character to be used as separator between EPC and TID in HID reports
HidReportCRcharacter=0xD	; ASCII character to be used as Carriage Return in HID reports
HidReportLFcharacter=0xA	; ASCII character to be used as Line Feed in HID reports
IncludeRSSI=False	; set True to include RSSI data at the end of HID report data
RSSIReportSeparator=0x23	; leading character to be used before RSSI information
PrSensor=0	; set to 0 to disable presence sensor or between 1 to 10 to define the sensor sensitivity
HidTrigger=True	; enable Start Inventory by LED Presence Sensor
BeeperVolume=10	; set beeper volume during inventory from 0 (no beep) to 10 (maximum volume)

2. Identify the virtual COM port that Windows assigned to the miniPad – rPad device using the "Computer Management" applet.

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✓ [™] System Tools	> 4 Audio inputs and outputs	Device Manager	
> 🕑 Task Scheduler	> 🥪 Batteries	More Actions	
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> 👸 Shared Folders	> 💻 Computer		
> 🜆 Local Users and Groups	> Disk drives		
> (N) Performance	> 🔤 Display adapters		
🚔 Device Manager	> 🕼 Human Interface Devices		
V 🔄 Storage	> 📑 IDE ATA/ATAPI controllers		
🔤 Disk Management	> 🚡 Imaging devices		
> 🛃 Services and Applications	> — Keyboards > — Memory technology devices		
	Mice and other pointing devices		
	Monitors		
	Network adapters		
	Portable Devices		
	 Ports (COM & LPT) 		
	USB Serial Device (COM7)		
	> In Print queues		
	> Processors		
	> D Security devices		
	> 🔯 Sensors		
	> Software devices		
	Sound, video and game controllers		
	> 🗲 Storage controllers		
	> 💻 System devices		
	> 🏺 Universal Serial Bus controllers		
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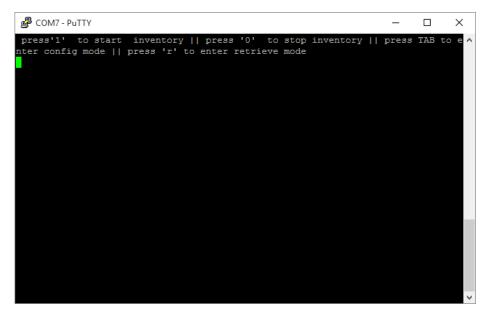


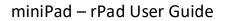


- 3. Download a terminal emulation program like Putty. You can get it from: http://www.putty.org/
- 4. Execute Putty.exe and a screen like the following one will be displayed.
 - a. Select the COM virtual port
 - b. Set the Speed to 115.200 Bps
 - c. Set the Connection type to "Serial"
 - d. Hit the "Open" button

Real PuTTY Configuration		×
Category:		
Session	Basic options for your PuTTY se	ession
Logging	Specify the destination you want to conne	ect to
	Serial line	Speed
Keyboard Bell	COM7	115200
Features	Connection type:	
🖻 ·· Window	○ Ra <u>w</u> ○ <u>T</u> elnet ○ Rlogin ○ <u>S</u> S	H 💿 Se <u>r</u> ial
… Appearance … Behaviour … Translation … Selection … Colours ⊡ Connection … Data … Proxy … Telnet … Rlogin	Load, save or delete a stored session Saved Sessions Default Settings RAW	Load Sa <u>v</u> e Delete
SSH Serial	Close window on exit:	
	○ Always ○ Never	dean exit
About	<u>O</u> pen	<u>C</u> ancel

5. Once you open the connection and hit "enter" a screen like this one will be displayed.





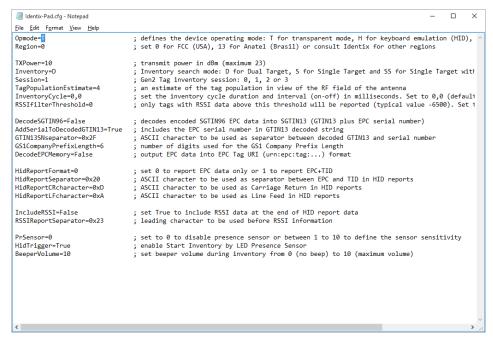


6. Press "1" and hit "Enter", then inventory of tags will start immediately. If you enter "0" and "Enter", inventory of tags will stop.

B COM7 - PuTTY	-	\times
Inventory started		~
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde397		
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
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e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
Inventory stopped		~

In Transparent Mode Operation

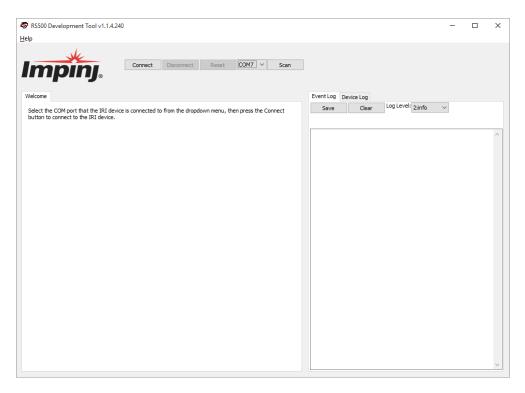
1. Configure the device to operate in "Transparent Mode" by editing the configuration file.



- 2. Download a copy of the RS500 Development Tool.exe file from https://idntx.zendesk.com
- 3. Connect the miniPad or rPad to your PC using the miniUSB cable. At this point, the RGB LED, should go on with pink color.
- 4. Place UHF RFID tags on top of the miniPad or rPad embedded antenna.



5. Open the RS500 Development Tool software by double-clicking on the "RS500 Development Tool.exe" file. A screen like the following one will appear.



1. Press the "Scan" button to detect the COM port corresponding to the hardware. Press the "Connect" button to connect to the hardware.

RS500 Development Tool v1.1.4.240 -	Help Connect Disconnect Reset COM7 Scan Inventory Write EPC Access Tx Control Set/Get Image Loader Inventory Settings' to configure inventory settings. Press 'Apply Inventory Settings' to configure inventory settings. A value of 0 raspo values is equal to infinity. Stop Tag Count O Stop Tag Count O	Help Immediation Immediation <t< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></t<>									
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Inventory Write EPC Access Tx Control Set/Get Image Loader Inventory Event Log Device Log Inventory Settings Save Clear Log Level: Press 'Apply Inventory Settings' to configure inventory settings. A value of 0 for stop values is equal to infinity. Stop Tag Count 0 Tag Population (ms) 15 Session 0	Inventory Write EPC Access Tx Control Set/Get Image Loader Inventory Event Log Device Log Inventory Settings Save Clear Log Level: 2:info Years A value of 0 for stop values is equal to infinity. Save Clear Log Level: 2:info Stop Tag Count 0	Inventory Write EPC Access Tx Control Set/Get Image Loader Inventory Event Log Device Log Inventory Save Clear Log Level: Zinfo Year Save Clear Log Level: Zinfo Year Save Clear Log Level: Zinfo Stop Duration (ms) 0 Stop Duration (ms) Port COM7 opened Connected to RS500 [Serial Number: 210] on port COM7 Stop Duration (ms) 0 Stop Duration (ms) Port Stop Number: 210] on port COM7 Stap Population 16 Stop Duration (ms) Stop Duration (ms) Stop Duration (ms) Stap Population 16 Stop Duration (ms) Stop Duration (ms) Stop Duration (ms) Stap Population 16 Stop Duration (ms) Stop Duration (ms) Stop Duration (ms) Stap Population 16 Stop Duration (ms) Stop Duration (ms) Stop Duration (ms) Stap Population 16 Stop Duration (ms) Stop Duration (ms) Stop Duration (ms) All Top Report Fields Field Stop Inventorying tags. Press Stap' to atop inventorying tags. Stop Inventorying tag	Help								
Fastid Tag Focus (Session = 1, Search Mode = 2) All Tag Report Fields Enable Channel Activity Packets Tag Type Leionfier (Via TID Read) Apply Inventory Settings Inventory Control Press 'Start' to begin inventorying tags. Press Stop' to stop inventorying tags. Press 'Stop' to stop inventorying tags.			Help Inventory Write EPC Access Tx Control Stop Targot Stop Targot Stop Targot Beside Stop Duration (ms) Tag Population Stop Duration (ms) Stop Duration (ms) Beside Stap Focus (Session = 1, Search Mode = 2) Ana Tag Report Fields Tag Population StapPort Fields Tag Poput Fields Tag Start to begin inventorying tags. Press 'Stap' to begin inventorying tags.	Get Image Loader	Reset	COM7 v	Scan	Save	Clear	_	

miniPad – rPad User Guide



- 2. Under the "Inventory" tab, start an inventory by pressing the "Start" button.
- 3. At this point, the "Event Log" on the right-hand side of the GUI will show the stream of EPCs of the tags that are read by the miniPad or rPad.
- 4. Try moving the tag relative to the antenna, or introducing a new tag, and observe the change in the reads displayed in the Event Log.

Help Event Log Deconnect Reset COM7 v Scan Inventory Write EPC Access Tx Control Set/Get Image Loader Inventory Settings Press 'Apply Inventory Settings' to configure inventory settings. A value of 0 for stop values is equal to infinity. Event Log Device Log Stop Tag Count 0 0 Event Log Device - 2307 Stop Duration (ms) 0 0 Event Log Device - 2307 Session 0 0 Event Log Device - 2307 Session 0 0 Event Log Device - 2307 A rade Control 15 Event Log Device - 2307 Event Log Device - 2307 Search Mode 0 0 Event Log Device - 2307 Event Log
EPC: e380-1160-6000-0205-2acd-e337 Start Stop EPC: e280-1160-6000-0205-2acd-e397 EPC: e280-1160-6000-0205-2acd-e397

Configuration File settings

When operating in **HID and RAW modes**, operating parameters like: transmitted power, inventory mode and other settings may be changed via the Configuration File stored on the Identix drive.

The Configuration File name is "Identix-Pad.cfg".

Attention! The settings on the Configuration File have no effect when the device is running in Transparent mode

Operating Mode

Opmode=H, defines the device operating mode: T for transparent mode, H for keyboard emulation (HID), R for raw serial data output and allows users to configure the miniPad – rPad mode of operation.



Regulatory Region

Region=0, sets the reader for FCC (USA), 13 for Anatel (Brasil)

Each country determines the frequencies / channels UHF RFID readers may operate. Set this field according to the regulatory region you are in.

Attention! The regions marked in Blue are only available on the European version of the miniPad and rPad devices. CHECK FOR AVAILABILITY OF EUROPEAN VERSION WITH IDENTIX REPRESENTATIVE

HONG KONG 920 925 MHZ 3 TAIWAN 922 928 MHZ 4 ETSI EN 302 208 V1 4 1 7 KOREA 917 921 MHZ 8 MALAYSIA 919 923 MHZ 9 CHINA 920 925 MHZ 10 SOUTH AFRICA 915 919 MHZ 12 BRAZIL 902 907 AND 915 928 MHZ 13 THAILAND 920 925 MHZ 14 SINGAPORE 920 925 MHZ 15 AUSTRALIA 920 926 MHZ 16 INDIA 865 867 MHZ 17 URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21 INDONESIA 923 925 MHZ 23
ETSI EN 302 208 V1 4 1 7 KOREA 917 921 MHZ 8 MALAYSIA 919 923 MHZ 9 CHINA 920 925 MHZ 10 SOUTH AFRICA 915 919 MHZ 12 BRAZIL 902 907 AND 915 928 MHZ 13 THAILAND 920 925 MHZ 14 SINGAPORE 920 925 MHZ 15 AUSTRALIA 920 926 MHZ 16 INDIA 865 867 MHZ 17 URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
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CHINA 920 925 MHZ 10 SOUTH AFRICA 915 919 MHZ 12 BRAZIL 902 907 AND 915 928 MHZ 13 THAILAND 920 925 MHZ 14 SINGAPORE 920 925 MHZ 15 AUSTRALIA 920 926 MHZ 16 INDIA 865 867 MHZ 17 URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
SOUTH AFRICA 915 919 MHZ 12 BRAZIL 902 907 AND 915 928 MHZ 13 THAILAND 920 925 MHZ 14 SINGAPORE 920 925 MHZ 15 AUSTRALIA 920 926 MHZ 16 INDIA 865 867 MHZ 17 URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
BRAZIL 902 907 AND 915 928 MHZ 13 THAILAND 920 925 MHZ 14 SINGAPORE 920 925 MHZ 15 AUSTRALIA 920 926 MHZ 16 INDIA 865 867 MHZ 17 URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
THAILAND 920 925 MHZ 14 SINGAPORE 920 925 MHZ 15 AUSTRALIA 920 926 MHZ 16 INDIA 865 867 MHZ 17 URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
SINGAPORE 920 925 MHZ 15 AUSTRALIA 920 926 MHZ 16 INDIA 865 867 MHZ 17 URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
AUSTRALIA 920 926 MHZ 16 INDIA 865 867 MHZ 17 URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
INDIA 865 867 MHZ 17 URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
URUGUAY 916 928 MHZ 18 VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
VIETNAM 920 925 MHZ 19 ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
ISRAEL 915 917 MHZ 20 PHILIPPINES 918 920 MHZ 21
PHILIPPINES 918 920 MHZ 21
INDONESIA 923 925 MHZ 23
NEW ZEALAND 921P5 928 MHZ 24
JAPAN 916 921 MHZ NO LBT 25
PERU 916 928 MHZ 26
RUSSIA 916 921 MHZ 27

Transmitted Power

TXPower=15 set the transmit power in dBm (maximum 23).

This setting allows to define the transmitter power the RFID radio will use for inventory tags.

Attention! miniPad and rpad devices allow a maximum transmission power of 23dBm.

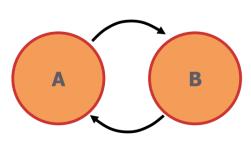
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Inventory Search Mode

Inventory= X sets the tag inventory search mode: D for Dual Target, S for Single Target and SS for Single Target with Suppression

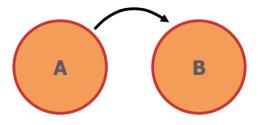
- Gen2 compliant RFID tags have four logical sessions
 - An inventory round operates in one and only one logical session
 - o The session is set by a parameter in the Query command
- Each session has an independent inventory flag
 - The tag toggles the state of its inventory flag once it has been counted
 - The *inventory* flag has two states, A or B (logical 0 or 1 respectively)



Dual Target

- Moves all 'A' tags into 'B'
- Moves all 'B' tags into 'A'
- Generates many, many reads
- Good for small populations or static environments

Single Target



- Moves all 'A' tags into 'B'
- Reads tags once
- Allows 'B' tags to stay quiet
- Good for high population, dynamic environments

Single Target with Suppression

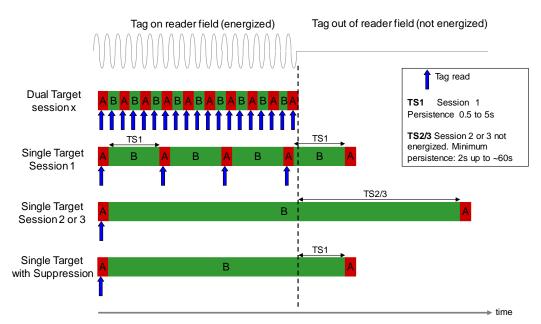
- Suppression algorithm further reduces the number of times tags are re-read
- Potentially improves read percentages up to 20%

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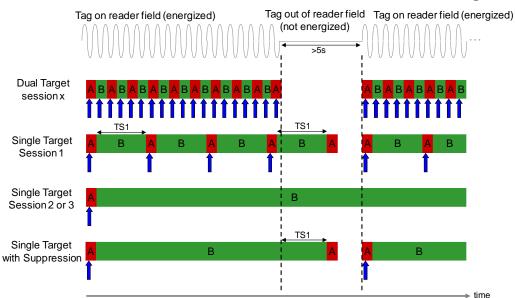


	Session 0		Sessi	ion 1	Sess	Session 2 Session		ion 3
	Tag energized	Tag not energized						
Single Target	Infinite	o	0.5 to 5s	0.5 to 5s	Infinite	2s min Up to 60s	Infinite	2s min Up to 60s
Single Target with Suppression	\mathbf{X}	\mathbf{X}	Infinite	0.5 to 5s	\mathbf{X}	\mathbf{X}	\mathbf{X}	\mathbf{X}

Behavior of Search Mode and Sessions



Behavior of Search Mode and Sessions on intermittent reading field





Inventory Gen2 Session

Session= X set the session under Gen2 standard for Tag inventory. Chose session: 0, 1, 2 or 3.

Tag Population Estimate

TagPopulationEstimate= 4 an estimate of the tag population in view of the RF field of the antenna

- Defines the estimation of the tag population you want to read
- This parameter is used to optimize the anti-collision algorithm
- Set this value to a power of 2

RSSI Filter

RSSIfilterThreshold=X, only tags with RSSI data above this threshold will be reported (typical value -6500). Set to 0 to disable RSSI filtering

• This is a "filter" that allows users to configure the threshold above a given Received Signal Strength Indication, the tags will be reported

Automatic decoding of SGTIN96 encoded data

DecodeSGTIN96=False - decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number)

AddSerialToDecodedGTIN13=True - includes the EPC serial number in GTIN13 decoded string

GTIN13SNseparator=0x2F - ASCII character to be used as separator between decoded GTIN13 and serial number

GS1CompanyPrefixLength=6 - number of digits used for the GS1 Company Prefix Length

DecodeEPCMemory=False - output EPC data into EPC Tag URI (urn:epc:tag:...) format

• This setting allows miniPad – rpad to automatic decode the tags EPC memory (SGTIN96 format) data into to UPC / EAN-13 "human readable" barcode format.

Include TID on inventory reports

HidReportFormat=0 - set 0 to report EPC data only or 1 to report EPC+TID

HidReportSeparator=0x20 - ASCII character to be used as separator between EPC and TID in HID reports

HidReportCRcharacter=0xD - ASCII character to be used as Carriage Return in HID reports

HidReportLFcharacter=0xA - ASCII character to be used as Line Feed in HID reports



• This setting allows miniPad – rpad to automatic include the TID (Tag Unique ID) data in tag read reports.

Include RSSI on inventory reports

IncludeRSSI=False - set True to include RSSI data at the end of HID report data

RSSIReportSeparator=0x23 - leading character to be used before RSSI information

• This setting allows miniPad – rpad to automatic include the RSSI value (Received Signal Strength Indication) in tag read reports

Modifying configuration settings in HID Keyboard Emulation mode

Once the device is running in HID Keyboard Emulation mode of operation, simply open the configuration file "Identix-Pad.cfg" and edit it using Notepad.

Warning! Use only Windows Notepad to edit the configuration file.

For example, to change the Transmitter Power from 10dBm to 23dBm, just edit the corresponding entry from "TXPower=10" to "TXPower=23".

Save the file and the miniPad – rPad device will immediately accept this new setting.

Attention! if you put and invalid value or change the configuration file inappropriately, the wrong setting will be ignored.

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Identix-Pad.cfg - Notepad	– 🗆 X
<u>F</u> ile <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp	
Opmode=H Region=0	; defines the device operating mode: T for transparent mode, H for keyboard emulation (HID), ; set 0 for FCC (USA), 13 for Anatel (Brasil) or consult Identix for other regions
TXPower= <mark>23</mark>	; transmit power in dBm (maximum 23)
Inventory=D	; Inventory search mode: D for Dual Target, S for Single Target and SS for Single Target with
Session=1	; Gen2 Tag inventory session: 0, 1, 2 or 3
TagPopulationEstimate=4	; an estimate of the tag population in view of the RF field of the antenna
InventoryCycle=0,0	; set the inventory cycle duration and interval (on-off) in milliseconds. Set to 0,0 (default
RSSIfilterThreshold=0	; only tags with RSSI data above this threshold will be reported (typical value -6500). Set 1
DecodeSGTIN96=False	; decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number)
AddSerialToDecodedGTIN13=True	; includes the EPC serial number in GTIN13 decoded string
GTIN13SNseparator=0x2F	; ASCII character to be used as separator between decoded GTIN13 and serial number
GS1CompanyPrefixLength=6	, number of digits used for the GS1 Company Prefix Length
DecodeEPCMemory=False	; output EPC data into EPC Tag URI (urn:epc:tag:) format
HidReportFormat=0	; set 0 to report EPC data only or 1 to report EPC+TID
HidReportSeparator=0x20	; ASCII character to be used as separator between EPC and TID in HID reports
HidReportCRcharacter=0xD	ASCII character to be used as Carriage Return in HID reports
HidReportLFcharacter=0xA	; ASCII character to be used as Line Feed in HID reports
IncludeRSSI=True	; set True to include RSSI data at the end of HID report data
RSSIReportSeparator=0x23	; leading character to be used before RSSI information
PrSensor=0	; set to 0 to disable presence sensor or between 1 to 10 to define the sensor sensitivity
HidTrigger=True	; enable Start Inventory by LED Presence Sensor
BeeperVolume=10	; set beeper volume during inventory from 0 (no beep) to 10 (maximum volume)
<	>

You may change any other setting using the same procedure.

Modifying configuration settings in RAW mode

Once the device is running in RAW mode of operation you can change the settings on the configuration file in two different ways:

1) By editing the configuration file "Identix-Pad.cfg" and changing the desired settings. While running in RAW mode, the new settings on the configuration file will only take effect when the computer is rebooted.

Warning! Use only Windows Notepad to edit the configuration file.

2) The other way of changing the operating parameters without requiring a reboot is via user commands on the terminal emulation program. In this case, simply open the serial port using a terminal emulation program like Putty.

Modifying settings via command line

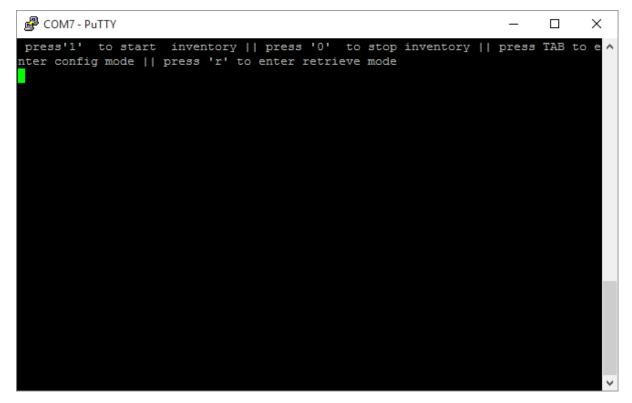


- a. Download a terminal emulation program like Putty. You can get it from: http://www.putty.org/
- b. Execute Putty.exe and a screen similar to the following one will be displayed.
- c. Select the COM virtual port
- d. Set the Speed to 115.200 Bps
- e. Set the Connection type to "Serial"
- f. Hit the "Open" button

🕵 PuTTY Configuration		\times
Category:	Basic options for your PuTTY session Specify the destination you want to connect to	
Keyboard Bell	Serial line Speed	
Window Window Mppearance	Connection type: Raw <u>I</u> elnet Rlogin <u>SSH</u> Serial Load, save or delete a stored session	
···· Behaviour ···· Translation ···· Selection	Saved Sessions	
Colours ⊡ Connection Data Proxy Telnet Rlogin	Default Settings RAW Sa <u>v</u> e Delete	
SSH	Close window on e <u>xi</u> t: O Always O Never O Only on clean exit	
About	<u>Open</u> <u>Cancel</u>	

3) Once you open the connection and hit "enter", a screen similar to this one will be displayed.





4) To enter the configuration command prompt, hit "TAB". The device will now be ready to accept configuration commands.

Putty	_	×
e2801160600002052acde3a7		~
e2801160600002052acde397		
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
e2801160600002052acde397		
e2801160600002052acde3a7		
Inventory stopped		
Identix firmware 1.39		
Configuration mode Press TAB to exit Config mode		
>		\checkmark

5) For example, if you want to have the RSSI data reported along with the tags inventory data, just enter the command exactly as it appears on the Configuration File.



Type "IncludeRSSI=True" and hit "Return"

Attention! All commands are case sensitive.

The new setting will be saved on the configuration file and automatically applied when you leave the configuration mode command prompt.

Putty	>
sion	
Session=1	; Gen2 Tag inventory session: 0, 1, 2 or 3
TagPopulationEstimate=4	; an estimate of the tag population in view of the RF field of the antenna
InventoryCycle=0,0 ntinuous inventory	; set the inventory cycle duration and interval (on-off) in milliseconds. Set to 0,0 (default) for c
RSSIfilterThreshold=0 isable RSSI filtering	; only tags with RSSI data above this threshold will be reported (typical value -6500). Set to 0 to \cdot
DecodeSGTIN96=False	; decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number)
AddSerialToDecodedGTIN13=True	; includes the EPC serial number in GTIN13 decoded string
GTIN13SNseparator=0x2F	; ASCII character to be used as separator between decoded GTIN13 and serial number
GS1CompanyPrefixLength≈6	; number of digits used for the GS1 Company Prefix Length
DecodeEPCMemory=False	; output EPC data into EPC Tag URI (urn:epc:tag:) format
HidReportFormat=0	; set 0 to report EPC data only or 1 to report EPC+TID
HidReportSeparator=0x20	; ASCII character to be used as separator between EPC and TID in HID reports
HidReportCRcharacter=0xD	; ASCII character to be used as Carriage Return in HID reports
HidReportLFcharacter=0xA	; ASCII character to be used as Line Feed in HID reports
IncludeRSSI=False	; set True to include RSSI data at the end of HID report data
RSSIReportSeparator=0x23	; leading character to be used before RSSI information
PrSensor=0	; set to 0 to disable presence sensor or between 1 to 10 to define the sensor sensitivity
HidTrigger=True	; enable Start Inventory by LED Presence Sensor
BeeperVolume=10	; set beeper volume during inventory from 0 (no beep) to 10 (maximum volume)
Identix firmware 1.39	
Configuration mode Press TAB t	o exit Config mode
>IncludeRSSI=True	
Updating Parameters	
Done	
>	

6) To retrieve the current configuration data, just type "r" while in the main RAM mode command prompt.

Putty	- 🗆 X
Retrieve Mode: Prints config f	ile data
Opmode=R w serial data output	; defines the device operating mode: T for transparent mode, H for keyboard emulation (HID), R for ra
Region=0	; set 0 for FCC (USA), 13 for Anatel (Brasil) or consult Identix for other regions
TXPower=23	; transmit power in dBm (maximum 23)
Inventory=D sion	; Inventory search mode: D for Dual Target, S for Single Target and SS for Single Target with Suppres
Session=1	; Gen2 Tag inventory session: 0, 1, 2 or 3
TagPopulationEstimate=4	; an estimate of the tag population in view of the RF field of the antenna
InventoryCycle=0,0	; set the inventory cycle duration and interval (on-off) in milliseconds. Set to 0,0 (default) for co
ntinuous inventory	
RSSIfilterThreshold=0 isable RSSI filtering	; only tags with RSSI data above this threshold will be reported (typical value -6500). Set to 0 to d
DecodeSGTIN96=False	; decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number)
AddSerialToDecodedGTIN13=True	; includes the EPC serial number in GTIN13 decoded string
GTIN13SNseparator=0x2F	; ASCII character to be used as separator between decoded GTIN13 and serial number
GS1CompanyPrefixLength=6	; number of digits used for the GSI Company Prefix Length
DecodeEPCMemory=False	; output EPC data into EPC Tag URI (urn:epc:tag:) format
HidReportFormat=0	; set 0 to report EPC data only or 1 to report EPC+TID
HidReportSeparator=0x20	; ASCII character to be used as separator between EPC and TID in HID reports
HidReportCRcharacter=0xD	; ASCII character to be used as Carriage Return in HID reports
HidReportLFcharacter=0xA	; ASCII character to be used as Line Feed in HID reports
IncludeRSSI=False	; set True to include RSSI data at the end of HID report data
RSSIReportSeparator=0x23	; leading character to be used before RSSI information
PrSensor=0	; set to 0 to disable presence sensor or between 1 to 10 to define the sensor sensitivity
HidTrigger=True	; enable Start Inventory by LED Presence Sensor
BeeperVolume=10	; set beeper volume during inventory from 0 (no beep) to 10 (maximum volume)
2 <mark>-</mark>	×



How to integrate miniPad and rPad devices with user's application

miniPad and rPad devices were designed for easy integration with virtually any existing software application. The devices may be used in different platforms including, Intel based PCs, MACs, tablets and small computer boards such as RaspberryPi, BeagleBone Black and others.

HID Keyboard Wedge Emulation – read/inventory only

This is the simplest and straightforward way of integration. The device will behave as it were a "barcode scanner", simply reporting the RFID read data as it were a human typing on a keyboard.

Software Development

The other way of integration between miniPad and rPad devices with businesses applications is via software development. There are basically two options for doing that.

RAW Operating Mode - ASCII commands - read/inventory only

This is the simplest way of to develop the code to integrate the devices with the business application. **Virtually all programing languages may be used** since there are only two functions that must be used: 1) connection over a serial port and 2) parsing of ASCII strings.

Using the RAW operating mode will allow users programmatically to configure the devices and execute inventory (read only). If your application requires writing into the RFID tags, you will need to use the IRI Application Programming Interface.

IRI - Low level API – read/inventory and write commands

IRI stands for "Impinj Reader Interface". It is a low level API that allow users to develop integration software with all features available, including reading, inventory and writing into RFID tags.

IRI was developed in C language and is available in 02 forms

- 1) A "wrapper" for .NET developed by Identix. This library can be downloaded directly from the Identix support web site: https://idntx.zendesk.com
- 2) Source codes in C. A special license / authorization is required. Please contact Identix for further details.

Operating System	Programing Language			
	Operating Mode			
indows	Visual Studio C# (IRI)			
	Java (RAW)			
	ANSI C (IRI and RAW)			
	Phyton (IRI and RAW)			
	Others (Raw)			
ux	Java (RAW)			
	ANSI C (IRI and RAW)			
	Phyton (IRI and RAW)			

Supported Operating Systems and Programming Languages



Other (RAW)	
Java (RAW)	
ANSI C (IRI and RAW)	
Phyton (IRI and RAW)	
Other (RAW)	
Java (RAW)	
ANSI C (IRI and RAW)	
Phyton (IRI and RAW)	
Other (RAW)	
Any (Raw)	
	Java (RAW) ANSI C (IRI and RAW) Phyton (IRI and RAW) Other (RAW) Java (RAW) ANSI C (IRI and RAW) Phyton (IRI and RAW) Other (RAW)

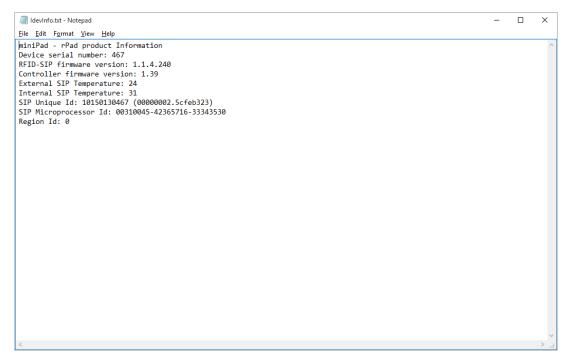
Firmware Management

miniPad and rPad devices have 02 distinct firmwares with specific instructions for updating each one of them. The first one is the "RFID-SIP" firmware (related to low level functions of the UHF Gen2 protocol) and the other one is the "Controller Firmware" (which manages the device connectivity to the Host computer).

Obtaining the device serial number and Firmware versions

An information file ("Idevinfo.txt") is created inside a removable drive (labeled IDENTIX that mounts automatically when the miniPad / rPad device connects to the host computer) automatically when the miniPad / rPad device connects to a computer. Open the file on notepad to obtain

- Device serial number
- RFID SIP firmware version
- Controller firmware version
- Internal and external temperatures of the device





Updating the "Controller Firmware" on miniPad – rPad devices

miniPad and rPad devices have 02 distinct firmwares with specific instructions for updating each one of them. The first one is the "RFID-SIP" firmware (related to low level functions of the UHF Gen2 protocol) and the other one is the "Controller Firmware" (which manages the device connectivity to the Host computer). This chapter contains specific instructions to update the "Controller Firmware" only.

 Open the device information file to identify the current firmware version. Connect your device to a Windows machine and open the "Identix" drive that is automatically mounted when you connect the device to the computer. The file that contains the device information is named "IdevInfo.txt"

🕳 🕑 📙 🖛		Drive	Tools D:\					_		×
File Home	Share	View Mai	nage							^ 🕐
Pin to Quick Copy access	Paste	Cut Ξ Copy path Paste shortcut	🛃 Move to 👻	X Delete ▼ ■ Rename	New folder	Properties	lit	Selec	t none t selecti	on
C	lipboard		Orga	nize	New	Open			lect	
$\leftarrow \rightarrow \checkmark \uparrow$	■ > idei	NTIX (D:)				~ Ū	Sear	ch IDENTI)	K (D:)	<i>م</i>
📌 Quick access		Name	^		Date modifi	ed Type		Si	ze	
Bocuments	*	🥘 Identix-Pa	d.cfg		30/05/2015	12:10 CFG Fil	e		3	3 KB
🎎 mauricio	*	ldevInfo.b	t		11/09/1981	03:30 Text Do	cumen	t	1	I KB
E Desktop	*									
🕵 Identix	*									
🌄 Impinj	*									
🛃 RFID	*									
🛃 OfficeWork	*									
🛃 Work-MS	*									
💻 This PC	*									
💱 Dropbox										
🐔 OneDrive										
💻 This PC										
IDENTIX (D:)										
💣 Network										
2 items										

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2) Identify the Controller Firmware version by opening the "IdevInfo.txt" file on Notepad.

IdevInfo.tt - Notepad
 Eile Edit Fgrmat View Help
 IminPad - rPad product Information
 Device serial number: 467
 RFID-SIP firmware version: 1.14.240
 Controller firmware version: 1.39
 External SIP Temperature: 24
 Internal SIP Temperature: 31
 SIP Unique Id: 10150130467 (00000002.5cfeb323)
 SIP Microprocessor Id: 00310045-42365716-33343530
 Region Id: 0

3) After having the new firmware file on your hands (available for download at the Identix support web site), put your device in DFU (Device Firmware Update) mode. To do that, open the Identix-Pad.cfg file on Notepad and include the statement "DFUmode=True" on the first line of the file. The statement is case sensitive so be careful editing the configuration file.

Identix-Pad.cfg - Notepad	– 🗆 X
<u>F</u> ile <u>E</u> dit F <u>o</u> rmat <u>V</u> iew <u>H</u> elp	
DFUmode=True Opmode=T Region=0	; defines the device operating mode: T for transparent mode, H for keyboard emulation (HID), ; set 0 for FCC (USA), 13 for Anatel (Brasil) or consult Identix for other regions
TXPower=10 Inventory=D Session=1 TagPopulationEstimate=4 InventoryCycle=0,0 RSSIfilterThreshold=0	; transmit power in dBm (maximum 23) ; Inventory search mode: D for Dual Target, S for Single Target and SS for Single Target with ; Gen2 Tag inventory session: 0, 1, 2 or 3 ; an estimate of the tag population in view of the RF field of the antenna ; set the inventory cycle duration and interval (on-off) in milliseconds. Set to 0,0 (default ; only tags with RSSI data above this threshold will be reported (typical value -6500). Set 1
DecodeSGTIN96=False AddSerialToDecodedGTIN13=True GTIN13SNseparator=0x2F GS1CompanyPrefixLength=6 DecodeEPCMemory=False	; decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number) ; includes the EPC serial number in GTIN13 decoded string ; ASCII character to be used as separator between decoded GTIN13 and serial number ; number of digits used for the GS1 Company Prefix Length ; output EPC data into EPC Tag URI (urn:epc:tag:) format
HidReportFormat=0 TIDlength=32 HidReportSeparator=0x20 HidReportCRcharacter=0xD HidReportLFcharacter=0xA	; set 0 to report EPC data only or 1 to report EPC+TID ; defines the length of TID field (bits) to chips that are not Impinj Monza. Set to 0 for aut ; ASCII character to be used as separator between EPC and TID in HID reports ; ASCII character to be used as Carriage Return in HID reports ; ASCII character to be used as Line Feed in HID reports
IncludeRSSI=False RSSIReportSeparator=0x23	; set True to include RSSI data at the end of HID report data ; leading character to be used before RSSI information
PrSensor=0 HidTrigger=True BeeperVolume=10 	; set to 0 to disable presence sensor or between 1 to 10 to define the sensor sensitivity ; enable Start Inventory by LED Presence Sensor ; set beeper volume during inventory from 0 (no beep) to 10 (maximum volume)
<	v



- 4) After saving the configuration file on Notepad, the device will reboot and enter in "DFU mode". The "Identix" drive will dismount and your will no longer have access to the configuration file.
- 5) Locate the "Python_Firmware Upgrade". Identix provides this utility on a zipped file. Create a folder and unzip all content of the zip package inside it. Execute the file "Pyton_Firmware_UpgradeGUI.exe" by double clicking over it.

access	Paste	Coty path Paste shortcut Copy path Paste shortcut Copy to Copy to Copy to Copy to Copy to Copy path Copy to Copy path Copy to Copy to Copy path Copy to Copy t	New New	Edit 8	Select all Select none Invert selection Select
- > • ^	→ This	PC > Windows (C:) > TI > Python_Firmware_	Upgrader	✓ Ö Search P	ython_Firmw 🔎
🖈 Quick access		Name	Date modified	Туре	Size
Documents	*	css	24/02/2015 12:40	File folder	
Section 2010	*	doc	24/02/2015 12:40	File folder	
Desktop	*	🔒 images	24/02/2015 12:40	File folder	
		License_Manifest	24/02/2015 12:40	File folder	
🧏 Identix	*	python-msp430-tools	24/02/2015 12:40	File folder	
🚽 Impinj	*	5529_CDC_echo.txt	07/11/2014 14:59	Text Document	27 KB
RFID	*	5529_HID_echo.txt	07/11/2014 14:59	Text Document	26 KB
🌏 OfficeWork	*	5529_LED_Blink.txt	07/11/2014 14:59	Text Document	1 KB
🌏 Work-MS	*	👋 Python_Firmware_UpgraderGUI.exe	07/11/2014 15:01	Application	5.750 KB
💻 This PC	*	Python_Firmware_UpgraderGUI.spec	07/11/2014 15:01	SPEC File	1 KB
*		e release_Notes_Example_Python_Firmwar	07/11/2014 14:59	HTML File	19 KB
🐉 Dropbox		TargetGUI.py	07/11/2014 14:59	PY File	14 KB
a OneDrive		HI_Bug_lcon_Red.ico	07/11/2014 14:59	lcon	98 KB
💻 This PC		TIResourceExplorer.html	07/11/2014 14:59	HTML File	1 KB
💣 Network					

6) Once the program is executed, a scree like the one below must be displayed. The program will automatically recognize the miniPad / rPad device and a "ready...." Message will be displayed.





7) Select the new firmware file by the the menu "File / Open User Firmware". In the example blow the firmware file is "miniPad-rPad1.39.txt"

🜵 Choose a file					×
\leftrightarrow \rightarrow \checkmark	« PADs	> Software > Firmware PCB V2	~ Ō	Search Firmwar	re PCB V2 🔎
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🞎 mauricio	* ^	Name	Da	te modified	Туре
E Desktop	*	Python_Firmware_Upgrader	18	/11/2015 14:19	File folder
🕵 Identix	*	😹 miniPad-rPadv1.39.txt	08	/09/2015 17:22	Text Document
 Impinj RFID OfficeWork Work-MS This PC Dropbox OneDrive This PC 	*				
	∨ < File <u>n</u> am	e: miniPad-rPadv1.39.txt	~	text files (*.txt) <u>O</u> pen	Cancel

8) When selecting the file, the firmware update process will start automatically. Once finished the "Programming: OK" message will appear

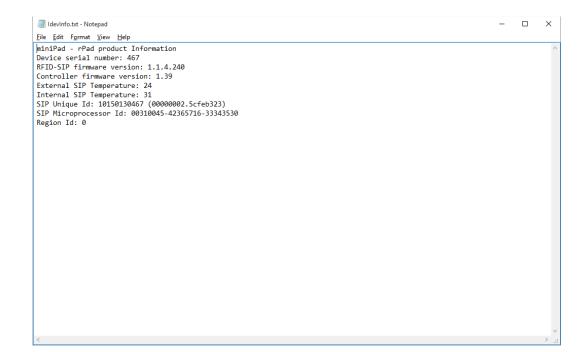
Attention! DO NOT INTERRUPT THIS PROCESS, OTHEWISE YOUR DEVICE MAY BECOME PERMANENTLY DEMAGED.

🌵 MSP430 USB Firmware Upgrade Example 2.0 – 🗖	\times
<u>File</u> About	
Opening HID device HID device (vID=0x2047, pID=0x0200, v=0x0105); Unknown manufacturer; @input.inf,%hid_device_vendor_defined_rang ;HID-compliant vendor-defined device, Path: \\?\hid#vid_2047&pid_0200#7%112000ad&0&0000#{4dle55b2-f16f-11cf-88cb-001111000030} Mass erase Download full BSL Programming: . Programming: 0K Waiting for BSL closing HID device Closed!	et ^
Opening HID device HID device (vID=0x2047, pID=0x0200, v=0x0109); Unknown manufacturer; @input.inf,%hid_device_vendor_defined_rang ;HID-compliant vendor-defined device, Path: \\?\hid#vid_2047&pid_0200#7%112000ad&0&0000#{4dle55b2-f16f-11cf-88cb-001111000030} Programming Programming: OK	'e\$
	~



9) Disconnect and reconnect the miniPad – rPad device to the computer. Open the device information file to verify if everything went ok.

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	*	Name	^		Date modifi 30/05/2015		Type CFG File		Size	3 KB
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🞎 Identix 🌄 Impinj	A A									
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This PC	A.									
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💻 This PC 🕳 IDENTIX (D:)										
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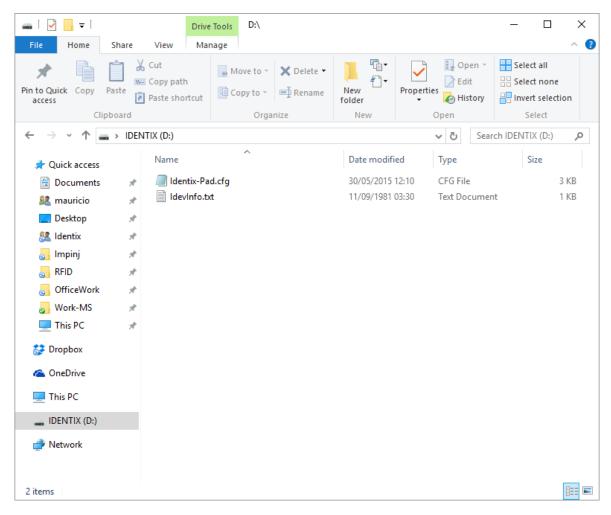




Updating the "RFID SIP Firmware" on miniPad – rPad devices

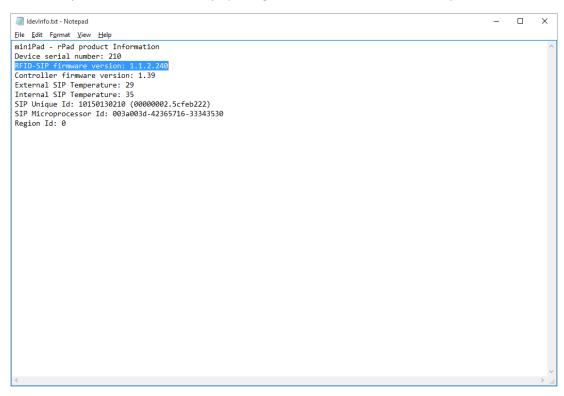
miniPad and rPad devices have 02 distinct firmwares with specific instructions for updating each one of them. The first one is the "RFID-SIP" firmware (related to low level functions of the UHF Gen2 protocol) and the other one is the "Controller Firmware" (which manages the device connectivity to the Host computer). This chapter contains specific instructions to update the "RFID SIP Firmware" only.

 Open the device information file to identify the current firmware version. Connect your device to a Windows machine and open the "Identix" drive that is automatically mounted when you connect the device to the computer. The file that contains the device information is named "IdevInfo.txt"





2) Identify the RFID SIP version by opening the "IdevInfo.txt" file on Notepad.



 Make sure your device is configured to work in "Transparent Mode". Set the option "Opmode=T" on the Identix-Pad.cfg file located inside the "Identix" drive.

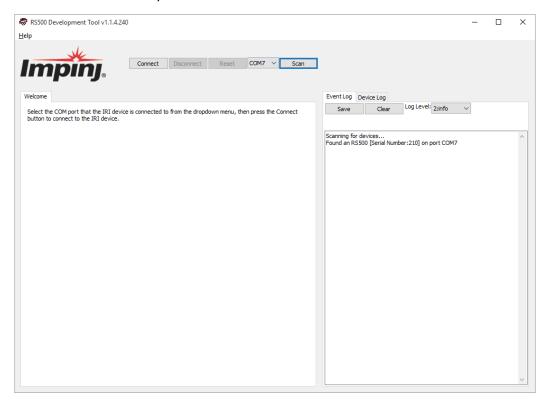
- 🗆 X
; defines the device operating mode: T for transparent mode, H for keyboard emulation (HID), ; set 0 for FCC (USA), 13 for Anatel (Brasil) or consult Identix for other regions
; transmit power in dBm (maximum 23) ; Inventory search mode: D for Dual Target, S for Single Target and SS for Single Target with ; Gen2 Tag inventory session: 0, 1, 2 or 3 ; an estimate of the tag population in view of the RF field of the antenna ; set the inventory cycle duration and interval (on-off) in milliseconds. Set to 0,0 (default
<pre>; only tags with RSSI data above this threshold will be reported (typical value -6500). Set 1 ; decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number) ; includes the EPC serial number in GTIN13 decoded string ; ASCII character to be used as separator between decoded GTIN13 and serial number ; number of digits used for the GSI Company Prefix Length ; output EPC data into EPC Tag URI (urn:epc:tag:) format</pre>
; set 0 to report EPC data only or 1 to report EPC+TID ; ASCII character to be used as separator between EPC and TID in HID reports ; ASCII character to be used as Carriage Return in HID reports ; ASCII character to be used as Line Feed in HID reports
; set True to include RSSI data at the end of HID report data ; leading character to be used before RSSI information
; set to 0 to disable presence sensor or between 1 to 10 to define the sensor sensitivity ; enable Start Inventory by LED Presence Sensor ; set beeper volume during inventory from 0 (no beep) to 10 (maximum volume)

4) Verify the COM port your computer assigns to the miniPad – rPad device by opening the "Computer Management" Windows applet.



File Action Yiew Help 	•
Image: Computer Management (Local S ✓ Image: Lenovo-MS Actions ✓ Image: System Tools > Image: Action puts and outputs Device Manager > Image: System Tools > Image: Action puts and outputs Device Manager > Image: Shared Folders > Image: Computer More Actions > Image: Shared Folders > Image: Computer > Image: Computer > Image: Storage > Imaging devices > Imaging devices ✓ Image: Storage > Imaging devices > Imaging devices > Imaging devices > Imaging devices > Imaging devices	•
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> 🖻 Print queues	
> D Processors	
> 😰 Security devices	
> 📧 Sensors	
> 🗋 Software devices	
> 🗃 Sound, video and game controllers	
> 🔆 Storage controllers	
> 📃 System devices	
> 🏺 Universal Serial Bus controllers	

5) Open the "RS500 Development Tool" or the "Indy Demo Tool" provided by Identix. Click "Scan" to automatically detect the miniPad – rPad device.



6) After a successful connection, the following screen is deployed.



RS500 Development Tool v1.1.4.240	– – ×
Help	
Inventory Write EPC Access Tx Control Set/Get Image Loader	EventLog DeviceLog
Inventory Settings	Save Clear Log Level: 2:info V
Press' Apply Inventory Settings' to configure inventory settings. A value of 0 for stop values is equal to infinity. Stop Tag Count 0 Tag Population 0 Bog Duration (ms) 0 Bog Duration (ms) 0 Bog Duration (ms) 0 Bog Population 16 Search Mode 0 Brastid 0 Fastid 0 Brastid 0 Brastid 0 Press (session = 1, Search Mode = 2) All Tag Report Fields Brable Channel Activity Packets Brable Channel Activity Packets Tag Type Identifier (Via TID Read) Apply Inventory Settings Inventory Control Press Start' to begin inventorying tags. Fress Stop to stop inventorying tags. Start Stop	Scanning for devices Found an RS500 [Serial Number:210] on port COM7 Port COM7 opened Connected to RS500 [Serial Number:210] on port COM7

7) Now go to the "Image Loader" tab and select the RFID SIP firmware file provided by Identix. Hit the "Open" button to select the firmware file.

🕏 RS500 Development Tool v1.1.4.240	- 0	×
Help Connect Disconnect Reset COM7 v Scan Inventory Write EPC Access Tx Control Set/Get Image Loader	Event Log Device Log	
Browse to an RS500 loader image and press Load Image to flash the image to the device. Loader images can be an RS500 application or a stored settings image. Open Load Image	Scanning for devices Found an RS500 [Serial Number:210] on port COM7 Port COM7 opened Connected to RS500 [Serial Number:210] on port COM7	^
Stored Settings Click the button below to save the device settings to an XML file. If the checkbox is checked then the binary image loader file will also be saved. Save Stored Settings to XML Save Settings Image BIN Click the button below to convert a settings XML file to a loader image that is compatible with the attached IRI device. Note that the load image controls above can be used to load the image on to the device. Fleese set the RSS 00 counsentation for a description of the XML format. Make Settings Image (BIN) from XML		
Factory Reset Create Example Stored Settings XML File		

In this example the filename is "RS500_Application_01.04.02.240.bin"



→ • ↑	« Dropb	ox > Identix > Identix Products > Id	lentix PADs > Software		√ Ū	Search Software	۶
rganize 🔻 Nev	v folder					== -	
🖈 Quick access	<u>^</u> N	lame ^	Date modified	Туре	Size		
Documents	*	Firmware PCB V2	14/01/2016 12:08	File folder			
🧟 mauricio	*	Firmware PCB V3	09/09/2015 16:49	File folder			
	*	Identix.TagReader_v1.0	15/01/2016 14:11	File folder			
		ndy-release-itk-01.04.02.240 📊	05/09/2015 15:50	File folder			
-	_	USB Drivers	10/09/2015 15:29	File folder			
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	File name:	RS500 Application 01.04.02.240.bin			~	Image files (*.bin)	,

8) After selecting the desired RFID SIP Firmware file, press the" Load Image" button and the firmware update process will begin. A progress bar will be displayed and a "Download Completed Successfully" confirmation message will appear at the end of the update process.

RS500 Development Tool v1.1.4.240	- 0	×
Help Connect Disconnect Reset COM7 Scan Inventory Write EPC Access Tx Control Set/Get Image Loader Browse to an RS500 loader image and press Load Image to flash the image to the device. Loader images can be an RS500 application or a stored settings image. C:\Users\mauricio\Dropbox\Identix\Identix Products\Identix T Open Load Image	Event Log Device Log Save Clear Log Level: 2:info V IRI Device Reset Image load in progress	^
Stored Settings Click the button below to save the device settings to an XML file. If the checkbox is checked then the binary image loader file will also be saved. Save Stored Settings to XML Save Settings Image BIN Click the button below to convert a settings XML file to a loader image that is compatible with the attached IRI device. Note that the load image controls above can be used to load the image on to the device. Please see the R5500 documentation for a description of the XML format. Make Settings Image (BIN) from XML Factory Reset		
Create Example Stored Settings XML File		~

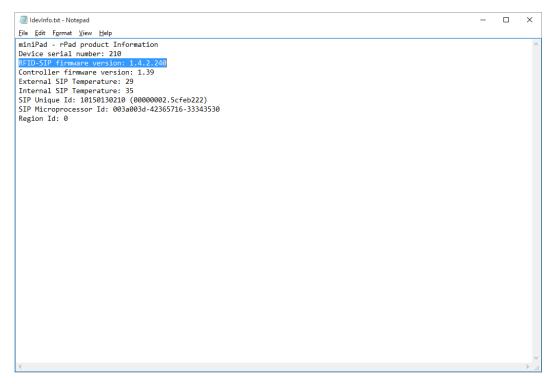
Attention! DO NOT INTERRUPT this process, otherwise your device may become permanently corrupted.



9) Now verify is the firmware was successfully updated to the desired version. Go to the "Set/Get" tab and hit the "Retrieve Device Info" button. The current firmware of the RFID SIP will be displayed on the right panel.

RS500 Development Tool v1.1.4.240 elp									-	×
Impinj.	Connect	Disconnect	Reset	СОМ7 ~	Scan					
Inventory Write EPC Access Tx Contr	rol Set/Get	Image Loader				Event Log De	evice Log			
Select the desired key, fill in optional para to perform the operation. Value is only va			t button			Save	Clear	Log Level: 2:info	~	
ACCESS PASSWORD	edific firmware v	versions and identi	fication			SKU: 01 Lot Date Code: Serial Number: Bootstrap: v1. Inplication: v1 Microprocessor Microprocessor	rogress cessful o IRI device et 0 150130210 (c015013 0210 0.2.240 [0x8 c122200044 c0200044 c02000044	E0748C5F]		*

You can check also by reopening the "Idenvinfo.txt" file present on the Identix drive





Emergency recovery procedure for he RFID SIP Firmware

In the case the RFID SIP firmware update process fails and you're no longer able to connect to the device, you may use this procedure to reset the RFID SIP to the latest working firmware version.

Open the Identix-Pad.cfg file located inside the "Identix" drive. Insert on the first line of the configuration file the following statement/command: "*RecoverIRIdevice=True*" (without quotes). Disconnect and reconnect the device from the computer and verify if you're able to access the miniPad - rPad again.

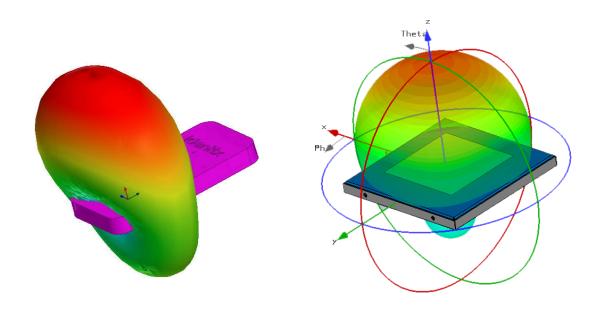
Identix-Pad.cfg - Notepad	- 🗆 X
<u>File Edit Format View H</u> elp	
RecoverIRIdevice=True	· · · · · · · · · · · · · · · · · · ·
Opmode=R Region=0	; defines the device operating mode: T for transparent mode, H for keyboard emulation (HID), ; set 0 for FCC (USA), 13 for Anatel (Brasil) or consult Identix for other regions
TXPower=23	; transmit power in dBm (maximum 23)
Inventory=D	; Inventory search mode: D for Dual Target, S for Single Target and SS for Single Target with
Session=1	; Gen2 Tag inventory session: 0, 1, 2 or 3
TagPopulationEstimate=4	; an estimate of the tag population in view of the RF field of the antenna
InventoryCycle=0,0	; set the inventory cycle duration and interval (on-off) in milliseconds. Set to 0,0 (default
RSSIfilterThreshold=0	; only tags with RSSI data above this threshold will be reported (typical value -6500). Set t
DecodeSGTIN96=False	; decodes encoded SGTIN96 EPC data into SGTIN13 (GTIN13 plus EPC serial number)
AddSerialToDecodedGTIN13=True	; includes the EPC serial number in GTIN13 decoded string
GTIN13SNseparator=0x2F	; ASCII character to be used as separator between decoded GTIN13 and serial number
GS1CompanyPrefixLength=6	; number of digits used for the GS1 Company Prefix Length
DecodeEPCMemory=False	; output EPC data into EPC Tag URI (urn:epc:tag:) format
HidReportFormat=0	; set 0 to report EPC data only or 1 to report EPC+TID
HidReportSeparator=0x20	; ASCII character to be used as separator between EPC and TID in HID reports
HidReportCRcharacter=0xD	; ASCII character to be used as Carriage Return in HID reports
HidReportLFcharacter=0xA	; ASCII character to be used as Line Feed in HID reports
IncludeRSSI=False	; set True to include RSSI data at the end of HID report data
RSSIReportSeparator=0x23	; leading character to be used before RSSI information
PrSensor=0	; set to 0 to disable presence sensor or between 1 to 10 to define the sensor sensitivity
HidTrigger=True	; enable Start Inventory by LED Presence Sensor
BeeperVolume=10	; set beeper volume during inventory from 0 (no beep) to 10 (maximum volume)
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<	





Antenna Radiation Patterns

Below are the antenna patterns for minPad and rPad respectively. Antenna gains are -4dBi for miniPad and +8dBi for rPad.



miniPad internal antenna radiation pattern

rPad internal antenna radiation pattern

Contacts

Sales: sales@idntx.com Support: https://idntx.zendesk.com

FCC Statement

FCC Statement: §15.105 Digital Devices Statement. Class B Digital Devices.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of



the following measures: (1) reorient or relocate the receiving antenna, (2) increase the separation between the equipment and receiver, (3) connect the equipment into an outlet on a circuit different from that to which the receiver is connected or (4) consult the dealer or an experienced radio/TV technician for help.



Notices

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