



S I L I C O N L A B S

Si470X FM Receiver Products Overview

Silicon Labs Broadcast Audio Products

- ◆ Hundreds of FM Rx, FM Tx, FM Rx/Tx, and AM/FM Rx design wins shipping world wide
- ◆ Broad portfolio of granted and pending domestic and international patents
- ◆ International presence and local support in all major markets
- ◆ Rapidly expanding portfolio of solutions targeting all digital and analog audio broadcast markets



Silicon Labs Broadcast Audio

- ◆ Highly successful product family
 - Hundreds of design wins shipping
 - >100MU units shipped
- ◆ Broad portfolio of granted and pending domestic and international patents
- ◆ International presence and local support in all major markets
- ◆ Rapidly expanding portfolio of solutions targeting most digital and analog audio markets



**Tune in with Silicon Labs,
You Can Hear the Difference**

Single-Chip Broadcast Radio Solutions
The Si47xx family of broadcast audio solutions is the industry's first to leverage digital integration and 100% CMOS, resulting in completely integrated, easy-to-use solutions that require only two external components and less than 15 mm² of board space. Leveraging Silicon Labs' proven digital low-IF receiver and transmitter architectures and frequency synthesizer technology, the Si47xx family delivers superior RF performance and interference rejection. Digital signal processing is utilized to provide optimum sound quality under varying signal conditions. The Si47xx family provides unmatched design flexibility with a complete footprint-compatible portfolio of AM and FM solutions.

Footprint Compatible Portfolio

Part Number	Features
Si4702/03	• FM receiver • RDS (Si4702)
Si4704/05	• FM receiver • RDS (Si4705) • No external antennas required
Si4710/11	• FM transmitter • RDS (Si4711)
Si4712/13	• FM transmitter • RDS (Si4713) • Receiver power scan (RPS)
Si4720/21	• FM transmitter • RDS (Si4721) • No external antennas required
Si4730/31	• AM/FM receiver • RDS (Si4731)

USB FM Radio Reference Design

- FM Radio Tuner
- C8051F321 USB MCU
- Radio Player for PC

silabs.com/USBRadio

Product details: www.silabs.com/Audio

MCU | TUNING | POWER | BROADCAST | WIRELINE | WIRELESS

SILICON LABS
www.silabs.com

FM Receiver Generation 1 (Si4702/03)

- ◆ Highly successful product
 - 0-10 MU shipped in first year
 - Adopted world wide in all Tier 1, 2, and 3 targeted accounts
- ◆ Patented digital low-IF architecture
 - Most highly integrated, smallest FM receiver
 - Most flexible, best performing portable solution available



Design-win
SEMC w950i

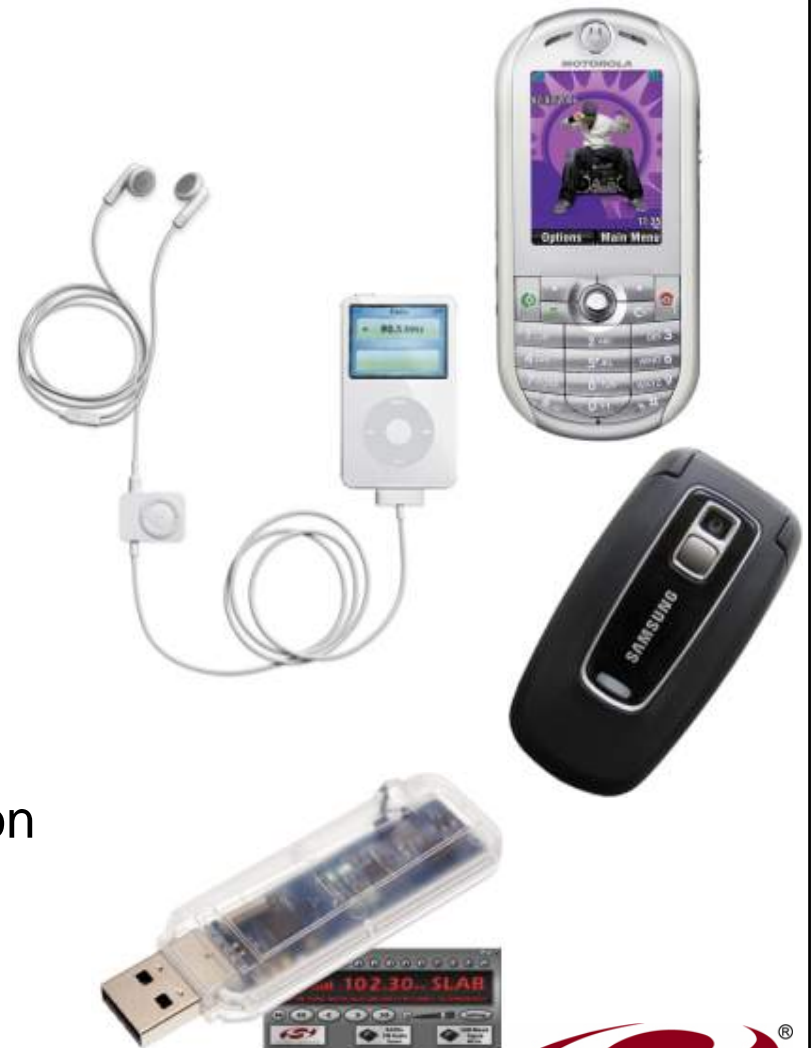


Design-win
Moto w375



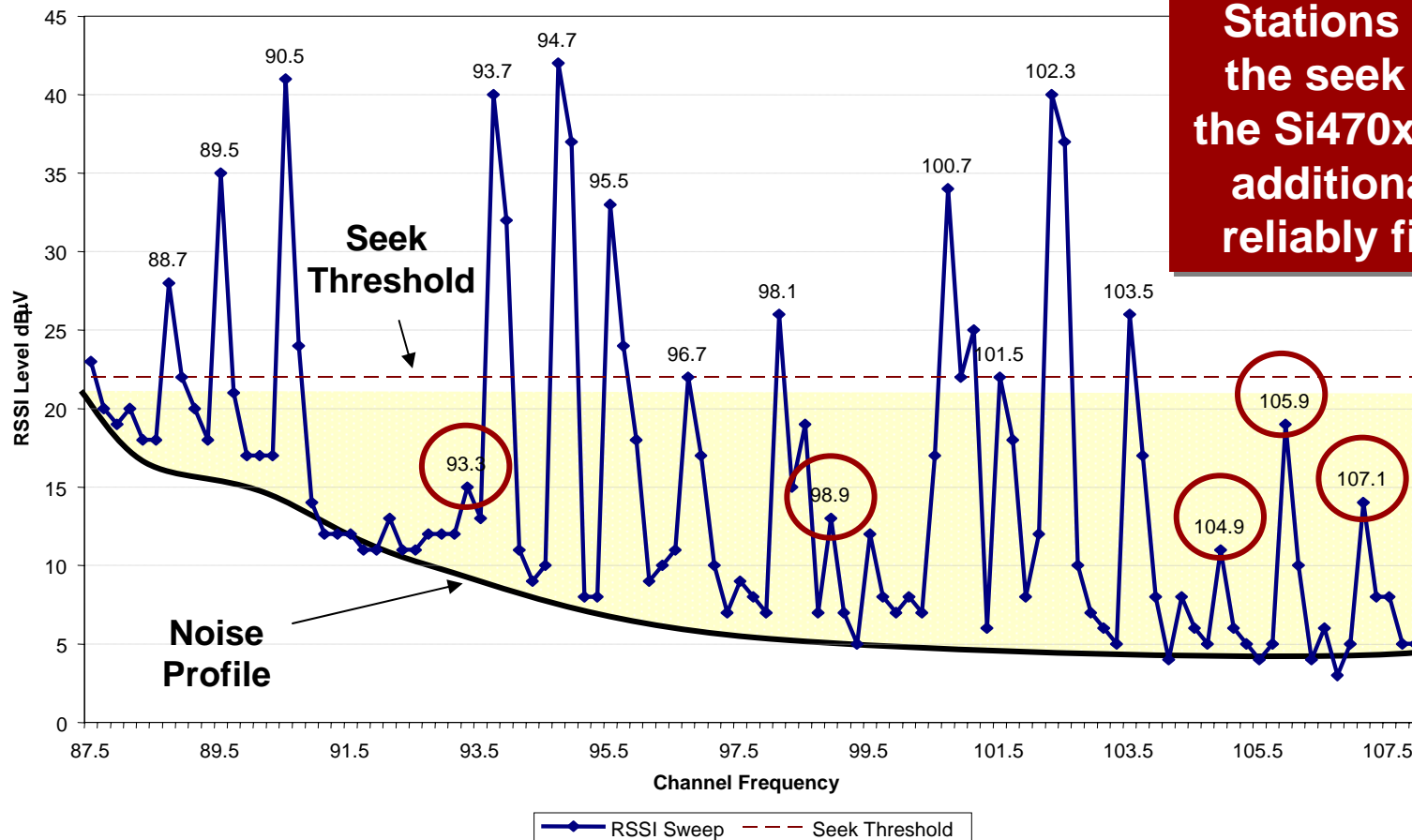
Si4702/03 Broadcast FM Radio Receiver

- ◆ Broadcast radio receiver IC
 - FM stereo receiver (76 to 108 MHz)
 - 3 x 3 mm QFN package
 - Si4703 adds RDS/RBDS decoder
- ◆ Highly integrated solution
 - Minimal external components
 - Easy-to-use implementation
- ◆ CMOS process technology
 - Enables breakthrough digital integration
- ◆ Best-in-class performance
 - Superior audio quality and reception



Superior, Proven Seek Performance

- ◆ Si470x products have excellent, proven seek performance
- ◆ Better user experience with more stations found

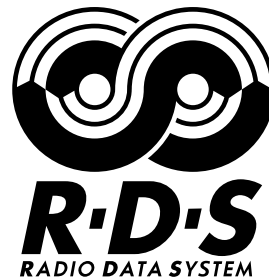


Stations may fall below the seek threshold, but the Si470x algorithm uses additional qualifiers to reliably find all stations

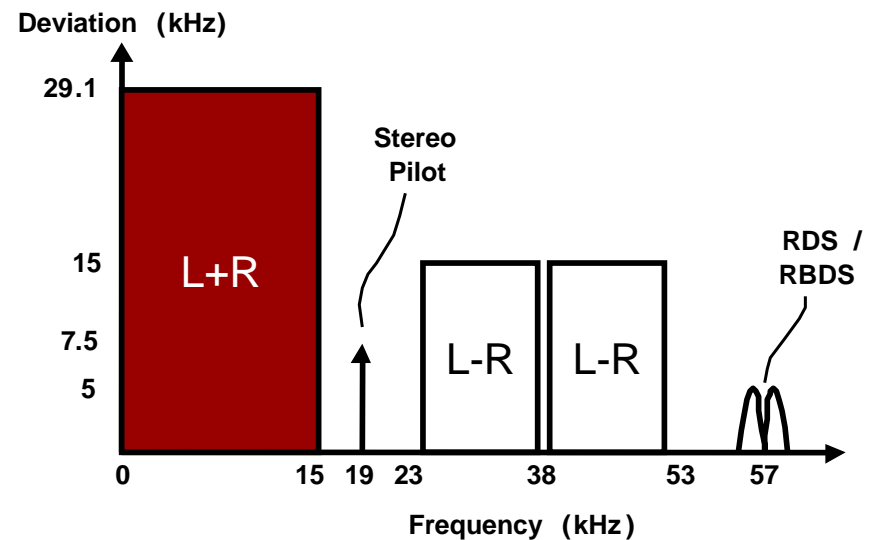


Pin-Compatible RDS Solution

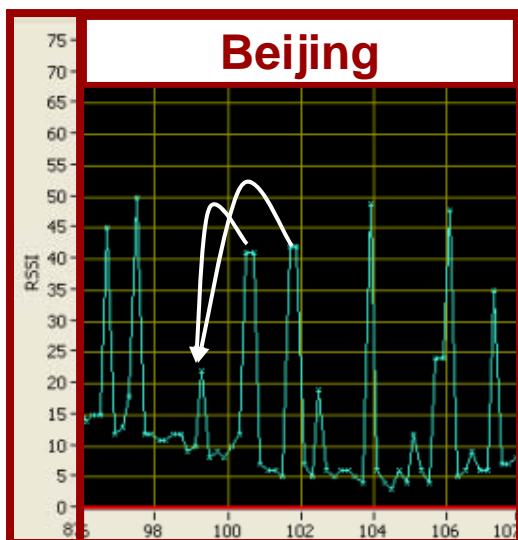
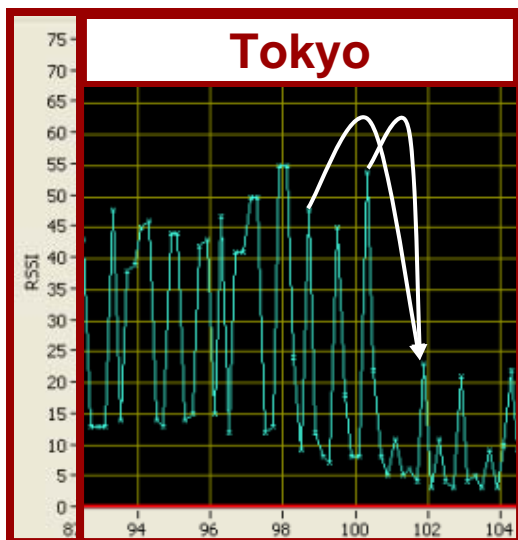
- ◆ Millions of Silicon Labs' RDS devices tested, adopted, and shipped worldwide
- ◆ Pin-compatible, drop-in enhancement
 - Si4703 adds RDS/RBDS
- ◆ RDS adoption increasing
 - FM w/ RDS ~ MP3 experience
 - GPS & navigation applications using traffic data



FM Modulated Signal w/ RDS



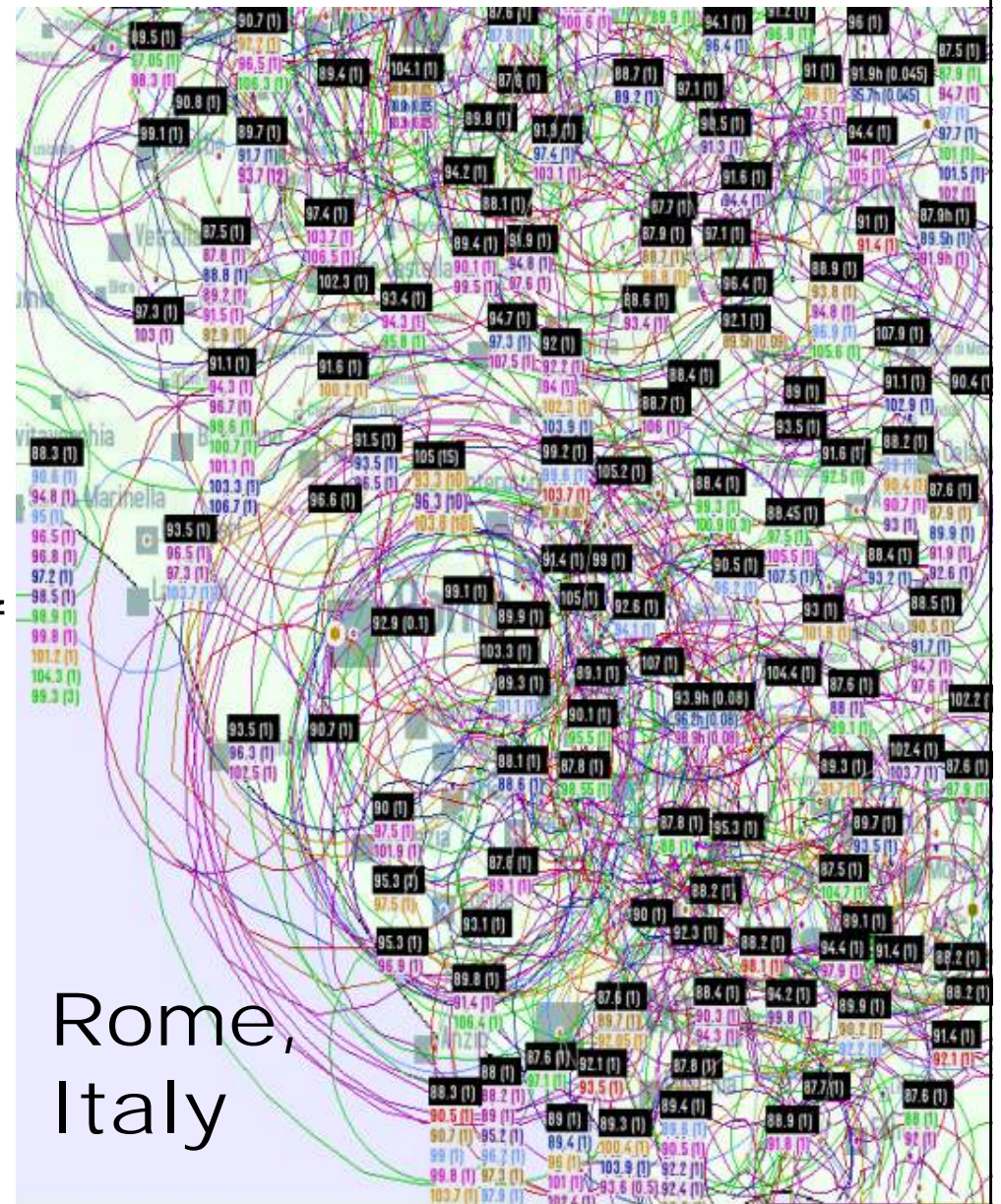
Unmatched Interference Performance



- ◆ Selectivity – Essential in an urban environment
 - Ability to receive weak signals with large adjacent[†] or alternate[‡] blockers
- ◆ IP3 – Important in an urban environment
 - Ability to receive weak signals with strong intermod products
- ◆ Real-world FM environments show highly likely scenarios for good IP3 and selectivity

Selectivity is Important in Urban Areas

- ◆ Urban areas are problem centers for selectivity
- ◆ Multiple stations, transmitters results in more adjacent channels
 - www.fmscan.org
 - Note overlapping coverage of FM Radio stations in the map
- ◆ Over 3.5 Billion people live in urban areas



Si4704/05 – Advanced FM Receiver

- ◆ Built on proven CMOS FM Rx solutions
 - Protected with dozens of international patents
 - Over 100 MU of this family shipped (CMOS)
 - Patented digital low-IF architecture
 - 3 x 3 x 0.55mm 20 pin QFN, minimal BOM
 - Worldwide FM Band support (64~108MHz)
- ◆ Unique and patented embedded antenna support for “antenna free” device casings
- ◆ I2S/PCM for digital audio out and FM recording (Si4705)
- ◆ Enhanced RDS for dedicated FM data traffic monitoring (AF, TMC)
- ◆ In mass production with designs shipping



Mitsubishi - D905i

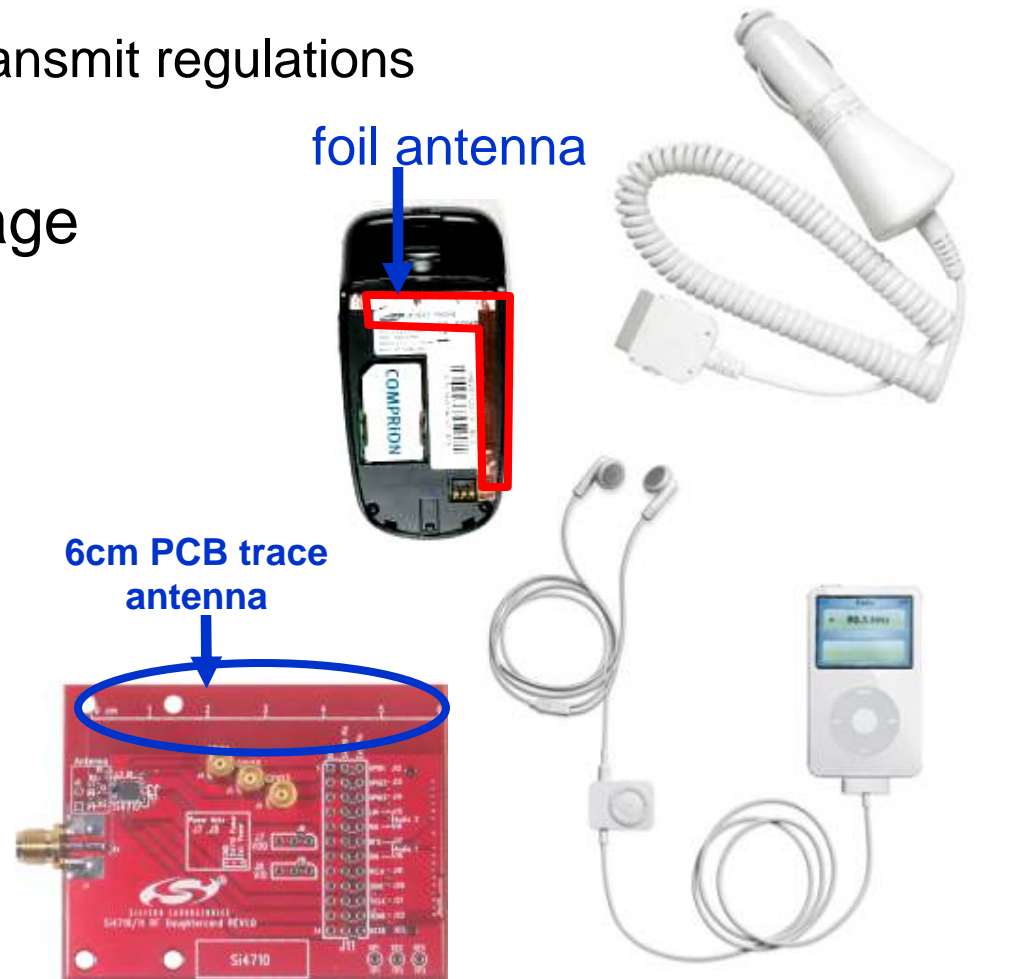


Tianyu E75
w/ embedded antenna



Si4704/05 Antenna Flexibility

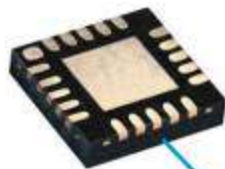
- ◆ Precise output voltage control
 - Used to meet government transmit regulations
- ◆ Programmable output voltage
 - Enables multiple antennas
- ◆ Antennas
 - PCB trace antennas
 - Wire antennas
 - Loop antennas
 - Headphone antennas
 - Charger cable antennas



Gen 1 & Gen 2 Are Lay-out Compatible

Si4702/03

- FM receiver
- RDS (Si4703)



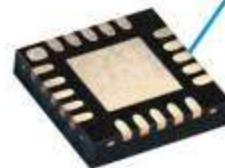
Si4704/05

- FM receiver
- Requires no external antenna
- RDS (Si4705)



Si4710/11

- FM transmitter
- RDS (Si4711)

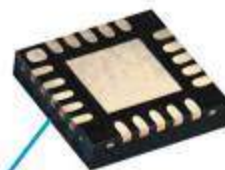


Sample Design



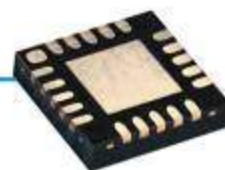
Si4712/13

- FM transmitter
- RDS (Si4713)
- Receive Power Scan (RPS)



Si4720/21

- FM transceiver
- Requires no external antenna
- RDS (Si4721)



Si4730/31

- AM/FM receiver
- RDS (Si4731)



- ◆ Portfolio of products offering unmatched flexibility
- ◆ Features can be “dropped-in” for product differentiation

Product Selector Guide

Part	RDS	RPS	FM	TX	AM	SW	WB	SAME	PCM
Si4702			✓						
Si4703	✓		✓						
Si4704			✓						
Si4705	✓		✓						✓
Si4706	✓+								
Si4707							✓	✓	✓
Si4710				✓					✓
Si4711	✓			✓					✓
Si4712		✓		✓					✓
Si4713	✓	✓		✓					✓
Si4720			✓	✓					
Si4721	✓		✓	✓					✓
Si4730			✓		✓				
Si4731	✓		✓		✓				✓
Si4734			✓		✓	✓			
Si4735	✓		✓		✓	✓			✓
Si4736			✓		✓		✓		
Si4737	✓		✓		✓		✓		✓
Si4738			✓				✓		
Si4739	✓		✓				✓		✓





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