



SeeGull® EX LTE Product Release Notes

SeeGull® EX LTE Scanner Product Release Notes

Release 1.3

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This document lists problems known to be associated with the current release. PCTEL RF Solutions Group is committed to releasing defect free products, and appreciates any reports of issues or assistance in the identification of issues. Problems are prioritized and queued for remedy.

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1.0 Current Release Notes

SCANNER COMPONENT VERSIONS

File Name	Version
Supported Digital boards	700050-03
Supported RF boards	700049-20
	700049-21
	700049-22
	700049-24
	700049-25
	700049-27
	700049-29
	700049-33
EX DSP	0.0.8.44
EX Embedded SW	2.1.2.24
Boot Loader	3.12.0.0
Clock Card Embedded SW	12.9
Digital Logic	0.0.7.50
Logic Device	N/A
SeeGull API	2.3.4.11
eICD	2.1.4.0

SUPPORTED OPTIONS

Option Code in Hex	Description
LTE	
0001 000Ah	LTE Support
0003 000Ah	LTE Signal Scanning Messages
Misc.	
0001 0000h	GPS Navigation
0003 0000h	Spectrum Analysis
0005 0000h	Absolute Time Stamp
0006 0000h	Enhanced Power Scanning

SUPPORTED CONFIGURATIONS

Part Number	RF board	Band Number	Band Supported	Protocol
06140	1	1	AWS	LTE
		2	Upper 700 C DL	LTE
06141	1	1	1800 MHz	LTE
		2	IMT-2000 Ext (2600 MHz)	LTE
	2	3	1800 MHz	LTE
		4	IMT-2000 Ext (2600 MHz)	LTE
06142	1	1	IMT-2000 (2100 MHz)	LTE
		2	Ext IMT-2000 (2600 MHz)	LTE
	2	3	IMT-2000 (2100 MHz)	LTE
		4	Ext IMT-2000 (2600 MHz)	LTE
06143	1	1	N/A	N/A
		2	U.S. Upper 700 MHz C	LTE
06144	1	1	N/A	N/A
		2	IMT-2000 Ext (2600 MHz)	LTE
06145	1	1	IMT-2000 (2100 MHz)	LTE
		2	N/A	N/A
06146	1	1	Upper 700 C UL	LTE
		2	Upper 700 C DL	LTE
06147	1	1	Lower 700 A/B/C UL	LTE
		2	Lower 700 A/B/C DL	LTE
06148	1	1	N/A	N/A
		2	Lower 700 A/B/C DL	LTE
06149	1	1	Upper 700 C UL	LTE
		2	Upper 700 C DL	LTE
	2	3	Lower 700 A/B/C UL	LTE
		4	Lower 700 A/B/C DL	LTE
06150	1	1	N/A	N/A
		2	Lower 700 B/C DL	LTE
	2	3	AWS	LTE
		4	N/A	N/A
06151	1	1	1800 MHz	LTE
		2	N/A	N/A
06152	1	1	Lower 700 B/C UL	LTE
		2	Lower 700 B/C DL	LTE
	2	3	AWS	LTE
		4	N/A	N/A
06178	1	1	IMT-2000 (2100MHz) DL	LTE
		2	IMT-2000 (2100MHz) UL	LTE
06186	1	1	1500 UL	LTE
		2	1500 DL	LTE
06187	1	1	1510 UL	LTE
		2	1510 DL	LTE

Notes:

1. Due to the EX multitasking capabilities in conjunction with dual RF cards, if two measurement requests are to be executed back-to-back, both antennas on RF 1 and RF 2 must be connected.

The release details and history are provided in the following sections.

FEATURES

- Compatible with LTE June 2008 standard thru March 2009 and later
- Support for the following bands:
 - UL IMT-2000 (E-UTRA 1)
 - UL/DL Japan 1500 (E-UTRA 11)
 - UL/DL Japan Ext 1500 (E-UTRA 21)
- Enhanced Power Scan updates:
 - Up to 2560 slots (i.e. bins supported per scan)
 - 5120 bins total scanner capacity
 - Auto, Manual and Immediate Measurement Mode
 - Channel or Frequency base request
 - Power flags bits(8:9); min, max and center supported
 - Measurement Window valid values range from default 0 to 400
 - If (RBW<= 4.5MHz) & (Frequency step <RBW) will return message status "Parameter out of range"
 - If (RBW >4.5 MHz) & (Frequency step !=RBW) will return message status "Parameter out of range"
 - Absolute Time Stamp reported with each scan response
- Top N Signal
 - Up to 24 Channels in the Channel list, or up to 24 Top N Scans with one channel each
 - Top N Signal Scan Remaining Capacity Element Number of Used Slots updated from 341 to 213 slots per channel (for 15 to 24 channels support respectively)
 - RS_RP definition changed to be normalized to a single Resource Element (RE)
 - PSCH_RP, PSCH_RQ, SSCH_RP and SSCH_RQ definition changed to be normalized to a single Resource Element (RE)
 - Compared to previous release under the same scanner input signal, RS_RP and RS_RQ reported measurement is 3dB lower.
 - Compared to previous release under the same scanner input signal, PSCH_RP and SSCH_RP reported measurement is $10\log_{10}(62)=17.92\text{dB}$ lower.
 - Compared to previous release when PSCH_RP and RS_RP are requested as operational modes the Sync Signal Data will be sorted based on PSCH_RP and Reference Signal Data will be sorted based on RS_RP level.
 - For a specific Resource Block(s) frequency bandwidth reference signal data-modes RS_RBRP, RS_RBRQ and RS_RBCINR supported

- Reference signal Delay Spread data-mode supported
- Carrier RSSI, Sync Signal and Reference Signal measurements reporting threshold supported
- Top N sorting criteria (operational mode) listed below supported
 - Sync Signal: PSCH_RP, PSCH_RQ, SSCH_RP, SSCH_RQ and SCH_CINR
 - Reference Signal: RS_RP, RS_RQ and RS_CINR
- With Averaging Count of 2, 4, 8 or 16 the below averaged measurements are reported
 - Carrier RSSI
 - Sync Signal: Time Offset, PSCH_RP, PSCH_RQ, SSCH_RP, SSCH_RQ and SSCH_CINR
 - Reference Signal: Time Offset, RS_RP, RS_RQ, RS_RPi, RS_RQi, RS_CINR, RS_RBRP, RS_RSRQ, RS_RBRP and Delay Spread
- Non-zero Averaging Count permits only one Top N Signal Scan running with all the other scan types

KNOWN PROBLEMS IDENTIFIED IN THIS RELEASE

- [2536] Up to 400 samples jump in Top N Signal Time offset might occasionally be reported.
- [2539] In LTE RS_RQi results for 1.4 MHz, 4 Antenna and extended CP are outside the spec at CINR = 0 dB.

PROBLEMS RESOLVED IN THIS RELEASE

- [2432] Spectrum Analysis 5kHz Resolution BW mean error differs by approximately 0.8dB compared to all other Resolution BW supported.
- [2493] Up to 25dB variations of LTE RS_CINR measurement might occur
- [2524] TopN Sig Scan reported measurements might be out of requested sorted order
- [2535] TopN Signal Scan permitted to operate in UL bands

THE FOLLOWING MESSAGES ARE SUPPORTED IN THIS VERSION

General Messages

- Error Message
- Inquiry Message
- Available Options Message
- Reset Message
- Set Receiver's Device ID Message
- Set Baud Rate Message
- Toggle Options Message
- Executable Code Selection Message
- Download Executable Message

Scan Messages

- EPS Scan Message
- RSSI Scan Message
- Spectrum Analysis Scan Message
- Top N Signal Scan Message (LTE)
- Immediate EPS Scan Message
- Immediate RSSI Scan Message
- Immediate Top N Signal Scan Message (LTE)
- Stop Scan Message

Information Messages

- Scan Data Drop Message
- Get Product Information Message
- Channel to Frequency Message

Other Messages

- Get GPS Position Message

NOTES

- None

RELEASE HISTORY

- Release Notes for previous releases can be found in the next section.

2.0 Previous Release Notes

2.1 SeeGull EX LTE Beta Pre-Release 1.3.1 (December 2009)

SCANNER COMPONENT VERSIONS

File Name	Version
Supported Digital boards	700050-03
Supported RF boards	700049-20
	700049-21
	700049-22
	700049-24
	700049-25
EX DSP	0.0.8.39
EX Embedded SW	115.1.2.23
Boot Loader	3.12.0.0
Clock Card Embedded SW	12.9
Digital Logic	0.0.7.50
Logic Device	N/A
SeeGull API	2.3.4.2
eICD	2.1.3.0

SUPPORTED OPTIONS

Option Code in Hex	Description
LTE	
0001 000Ah	LTE Support
0003 000Ah	LTE Signal Scanning Messages
Misc.	
0001 0000h	GPS Navigation
0003 0000h	Spectrum Analysis
0005 0000h	Absolute Time Stamp
0006 0000h	Enhanced Power Scanning

SUPPORTED CONFIGURATIONS

Part Number	RF board	Band Number	Band Supported	Protocol
06140	1	1	AWS	LTE
		2	Upper 700 C DL	LTE
06141	1	1	1800 MHz	LTE
		2	IMT-2000 Ext (2600 MHz)	LTE
	2	3	1800 MHz	LTE
		4	IMT-2000 Ext (2600 MHz)	LTE
06142	1	1	IMT-2000 (2100 MHz)	LTE
		2	Ext IMT-2000 (2600 MHz)	LTE
	2	3	IMT-2000 (2100 MHz)	LTE
		4	Ext IMT-2000 (2600 MHz)	LTE
06143	1	1	N/A	N/A
		2	U.S. Upper 700 MHz C	LTE
06144	1	1	N/A	N/A
		2	IMT-2000 Ext (2600 MHz)	LTE
06145	1	1	IMT-2000 (2100 MHz)	LTE
		2	N/A	N/A
06146	1	1	Upper 700 C UL	LTE
		2	Upper 700 C DL	LTE
06147	1	1	Lower 700 A/B/C UL	LTE
		2	Lower 700 A/B/C DL	LTE
06148	1	1	N/A	N/A
		2	Lower 700 A/B/C DL	LTE
06149	1	1	Upper 700 C UL	LTE
		2	Upper 700 C DL	LTE
	2	3	Lower 700 A/B/C UL	LTE
		4	Lower 700 A/B/C DL	LTE
06150	1	1	N/A	N/A
		2	Lower 700 B/C DL	LTE
	2	3	AWS	LTE
		4	N/A	N/A
06151	1	1	1800 MHz	LTE
		2	N/A	N/A

Notes:

2. Due to the EX multitasking capabilities in conjunction with dual RF cards, if two measurement requests are to be executed back-to-back, both antennas on RF 1 and RF 2 must be connected.

The release details and history are provided in the following sections.

FEATURES

- Compatible with LTE June 2008 standard thru March 2009
- Enhanced Power Scan
 - Up to 2560 slots (i.e. bins supported per scan)
 - 5120 bins total scanner capacity (Number of slots used per Enhanced Power Scan message reduced by 2)
- Top N Signal
 - Up to 24 Channels in the Channel list, or up to 24 Top N Scans with one channel each
 - Top N Signal Scan Remaining Capacity Element Number of Used Slots updated from 341 to 213 slots per channel (for 15 to 24 channels support respectively)
 - RS_RP definition changed to be normalized to a single Resource Element (RE)
 - PSCH_RP, PSCH_RQ, SSCH_RP and SSCH_RQ definition changed to be normalized to a single Resource Element (RE)
 - Compared to previous release under the same scanner input signal, RS_RP and RS_RQ reported measurement is 3dB lower.
 - Compared to previous release under the same scanner input signal, PSCH_RP and SSCH_RP reported measurement is $10\log_{10}(62)=17.92\text{dB}$ lower.
 - Compared to previous release when PSCH_RP and RS_RP are requested as operational modes the Sync Signal Data will be sorted based on PSCH_RP and Reference Signal Data will be sorted based on RS_RP level.

KNOWN PROBLEMS IDENTIFIED IN THIS RELEASE

- None

PROBLEMS RESOLVED IN THIS RELEASE

- [2432] Spectrum Analysis 5kHz Resolution BW mean error differs by approximately 0.8dB compared to all other Resolution BW supported.
- [2524] Top N Scan reported measurements might be out of requested sorted order

THE FOLLOWING MESSAGES ARE SUPPORTED IN THIS VERSION

General Messages

- Error Message
- Inquiry Message
- Available Options Message
- Reset Message
- Set Receiver's Device ID Message
- Set Baud Rate Message
- Toggle Options Message
- Executable Code Selection Message
- Download Executable Message

Scan Messages

- EPS Scan Message
- RSSI Scan Message
- Spectrum Analysis Scan Message
- Top N Signal Scan Message (LTE)
- Immediate EPS Scan Message
- Immediate RSSI Scan Message
- Immediate Top N Signal Scan Message (LTE)
- Stop Scan Message

Information Messages

- Scan Data Drop Message
- Get Product Information Message
- Channel to Frequency Message

Other Messages

- Get GPS Position Message

NOTES

- None

2.2 SeeGull EX LTE Release 1.2 (June 2009)

COMPONENT VERSIONS

File Name	Version
Supported Digital boards	700050-03
Supported RF boards	700049-20
	700049-21
	700049-22
	700049-24
	700049-25
EX DSP	0.0.8.1
EX Embedded SW	2.1.0.39
Boot Loader	3.12.0.0
Clock Card Embedded SW	12.9
Digital Logic	0.0.7.50
Logic Device	N/A
SeeGull API	2.3.4.2
eICD	2.1.3.0

SUPPORTED OPTIONS

Option Code in Hex	Description
LTE	
0001 000Ah	LTE Support
0003 000Ah	LTE Signal Scanning Messages
Misc.	
0001 0000h	GPS Navigation
0003 0000h	Spectrum Analysis
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0006 0000h	Enhanced Power Scanning

SUPPORTED CONFIGURATIONS

Part Number	RF board	Band Number	Band Supported	Protocol
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		2	Upper 700 C DL	LTE
06141	1	1	1800 MHz	LTE
		2	IMT-2000 Ext (2600 MHz)	LTE
	2	3	1800 MHz	LTE
		4	IMT-2000 Ext (2600 MHz)	LTE
06142	1	1	IMT-2000 (2100 MHz)	LTE
		2	Ext IMT-2000 (2600 MHz)	LTE
	2	3	IMT-2000 (2100 MHz)	LTE
		4	Ext IMT-2000 (2600 MHz)	LTE
06143	1	1	N/A	N/A
		2	U.S. Upper 700 MHz C	LTE
06144	1	1	N/A	N/A
		2	IMT-2000 Ext (2600 MHz)	LTE
06145	1	1	IMT-2000 (2100 MHz)	LTE
		2	N/A	N/A
06146	1	1	Upper 700 C UL	LTE
		2	Upper 700 C DL	LTE
06147	1	1	Lower 700 A/B/C UL	LTE
		2	Lower 700 A/B/C DL	LTE
06148	1	1	N/A	N/A
		2	Lower 700 A/B/C DL	LTE
06149	1	1	Upper 700 C UL	LTE
		2	Upper 700 C DL	LTE
	2	3	Lower 700 A/B/C UL	LTE
		4	Lower 700 A/B/C DL	LTE
06150	1	1	N/A	N/A
		2	Lower 700 B/C DL	LTE
	2	3	AWS	LTE
		4	N/A	N/A
06151	1	1	1800 MHz	LTE
		2	N/A	N/A

Notes:

1. Due to the EX multitasking capabilities in conjunction with dual RF cards, if two measurement requests are to be executed back-to-back, both antennas on RF 1 and RF 2 must be connected.

The release details and history are detailed in the following sections.

FEATURES

- Compatible with LTE June 2008 standard thru December 2008.
- RSSI DL/UL Bands Channelization June 2008 thru March 2009 supported
- Enhanced Power Scan
 - Auto, Manual and Immediate Measurement Mode
 - Channel or Frequency Request
 - Power Flags Bit(8..9): Center, Min, and Max
 - Parameters are limited by the following table

Sr. No	Parameter name	Min Value (default)	Max Value	Final Release
1	Time period mark	1 (1)	20,000	1-20,000
2	Time period mark offset	0 (0)	Time period mark -1	0-19,999
3	Measurement window	100 (0)	400	100-400
4	RBW	2(2)	7200 (18Mhz)	2,3,6,40,72,432,1080, 1800, 3600, 7200
5	Freq Step Size	2 (Same as RBW)	7200 (18Mhz)	2,3,6,40,72,432,1080, 1800, 3600, 7200
6	Power Flags	0 (0)	2	0-2

- If (RBW <= 4.5 MHz) & (Frequency_step < RBW), will return message "Parameter out of range"
- If (RBW > 4.5 MHz) & (Frequency_step != RBW), will return message "Parameter out of range"
- RSSI Scan
 - Auto, Manual and Immediate Measurement Mode
 - Channel Style: 0 to 6 (i.e. Channel BW 1.4M, 100k, 3M, 5M, 10M, 15M, 20M Hz) if the bandwidth is defined in LTE standard.
- Spectrum Analysis.
- Absolute Time stamp.
- Top N Signal Scan
 - Auto, Manual and Immediate Mode
 - RS and/or SS Measurement Mode
 - Up to 16 (Number of Signals) sectors reported with specific Cell ID
 - SS (Sync Signal) Data Modes: Time Offset, PSCH_RP/ PSCH_RQ, SSCH_RP/ SSCH_RQ, SCH_CINR
 - RS (Reference Signal) Data Modes: Time Offset, RS_RP/ RS_RQ, RS_RPi/ RS_RQi, RS_CINR
 - Up to 15 Channels in the Channel list, or up to 15 Top N Scans with one channel each
 - CP (Cyclic Prefix): 0-autodetect, 1-15kHz and 2- Extended 15kHz
 - Number of Antenna Ports: 0-autodetect, 1,2 and 4

KNOWN PROBLEMS IDENTIFIED IN THIS RELEASE

- [2432] Spectrum Analysis 5kHz Resolution BW mean error differs by approximately 0.8dB compared to all other Resolution BW supported.

PROBLEMS RESOLVED IN THIS RELEASE

- None

THE FOLLOWING MESSAGES ARE SUPPORTED IN THIS VERSION

EX General Messages

- Error Message
- Inquiry Message
- Available Options Message
- Reset Message.

EX Scan Messages

- EPS scan message
- RSSI scan message.
- Spectrum analysis scan message.
- LTE TopN Signal scan message.
- Stop Scan Message.

EX Information Messages

- Get Product Information Message
- Channel to Frequency Message
- Frequency to Channel Message

EX Other Messages

- Get GPS Position Message

NOTES

- None

2.3 SeeGull EX LTE Release 1.1 (May 2009)

COMPONENT VERSIONS

File Name	Version
Supported Digital boards	700050-03
Supported RF boards	700049-20 700049-22
EX DSP	0.0.7.65
EX Embedded SW	2.1.0.38
Boot Loader	3.12.0.0
Clock Card Embedded SW	12.9
Digital Logic	0.0.7.50
Logic Device	N/A
SeeGull API	2.3.3.7
eICD	2.1.2.0

FEATURES

- Same feature set as Release 1.2