MMWAVE RadarSS Release Notes

1 RadarSS Firmware

RadarSS firmware is responsible for configuring RF/analog and digital front-end in real-time. It also schedules temperature based calibrations. This enables the mm-Wave front-end to be autonomous and capable of adapting itself to handle temperature and ageing effects, and to enable significant ease-of-use.

Version	Type
2.0.0.1	**ROM**
1.1.0.2	**Binary (Patch)**

1.1 Features and enhancements

- Patch release for xWR1642 ES2.0 silicon
- Software trigger of sub-frames
- Fixes for RX signal and image band monitor
- Fixes for autonomous periodic calibrations not getting triggered
- Support for 32-bit and 64-bit CRC for async events
- Support for inter-mixing of VCOs within a frame
- Fixes in VCO fault injection
- Fix for inter TX phase mismatches when run time calibration kicks in
- Updated thresholds for DCBIST monitoring based to make the monitoring robust
- Improvements in repeatability performance of TX and RX monitoring

1.2 Changes in this release (with respect to DFP 1.0)

Item type	Key	Description
Feature	AUTORADAR_REQ-	Reduce minimum inter-burst time to 200 µs

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Feature	AUTORADAR_REQ-938	Support for software trigger of sub-frames
Feature	AUTORADAR_REQ-878	Add an option in device configuration API to support other CRC types for async events
Bug	AUTORADAR-1635	Relaxing limits for calibration outputs to avoid false failures
Feature	AUTORADAR-1634	Updating of temperature sensor decoding information on trimmed units
Bug	AUTORADAR-1630	GPADC ECC test does not disable the error going to MSS during boot up safety testing
Bug	AUTORADAR-1617	Digital temperature sensor information is not sent to the host
Bug	AUTORADAR-1616	Synth calibration time budget needs to be increased
Bug	AUTORADAR-1610	Disable programmable filter boot time test for xWR12xx
Bug	AUTORADAR-1609	Change VCO control voltage limits in synth calibration and remove the tighter checks on APLL clock frequency
Bug	AUTORADAR-1598	Support per-chirp phase shifter only when the part variant supports 5 degree phase resolution
Bug	AUTORADAR-1583	Race condition in invoking TX task to avoid shared resource problem
Bug	AUTORADAR-1582	BSS was not sending CPU fault and ESM error async events to DSS when the default direction of async events was changed
Feature	AUTORADAR-1560	Update reading of external inputs through GPADC to support buffer option (in single shot mode)
Bug	AUTORADAR-1558	GPADC reference signal fault injection does not indicate fault is injected
Bug	AUTORADAR-1552	TX Gain Phase and TX BPM monitor does not work when all RX are disabled
Bug	AUTORADAR-1550	RF Init calibration status is not cleared before invoking the boot calibration
Bug	AUTORADAR-1547	DFE LBIST fault insertion test isolation removal time increase
Bug	AUTORADAR-1546	ECC Self-test of TCM has DSB instruction missing after corrupting the memory
Bug	AUTORADAR-1545	Periodic static configuration register read back failure
Feature	AUTORADAR-1533	Protection from spurious frame trigger pulses/signals in HW triggered frames
Bug	AUTORADAR-1531	Synth control voltage at 81GHz is crossing 1.3V on 1642 ES2.0
Bug	AUTORADAR-1530	Increase PDLNA gain for incident PD to avoid noisy PD

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		reading for lower gain codes during boot time TX CLPC
Feature	AUTORADAR-1528	Synthesizer calibration status should not indicate updated if the settings are unchanged
Feature	AUTORADAR-1526	Add support for inter-mixing VCOs within the same frame
Bug	AUTORADAR-1525	Update PDLNA Gain vs TX back off table to reduce the possibility of CDS ON < CDS OFF PD measurement
Bug	AUTORADAR-1507	CQ needs to be enabled for IWR part variants
Bug	AUTORADAR-1484	Synth frequency should be measured using DCC after IOBUF LDO and VCO LDO adjustment
Bug	AUTORADAR-1476	AGC SB ESM error observed when boot up DFE STC monitoring is enabled
Bug	AUTORADAR-1472	TX Gain and Phase Monitor not honoring chirp phase value
Bug	AUTORADAR-1465	Additional checks before bias codes for TXs are overwritten with the same back off to avoid phase mismatch
Bug	AUTORADAR-1463	Update GPADC DCBIST monitoring scale factor thresholds
Bug	AUTORADAR-1437	TX loopback monitor phase jumps issue fix
Bug	AUTORADAR-1436	Jumps in inter-TX phase mismatch due to independent run time TX power calibrations
Bug	AUTORADAR-1433	Fix for AGC RAM ECC errors observed when doing DFE STC fault insertion test
Bug	AUTORADAR-1432	Fix for ATCM double bit errors seen on AWR1642 ES 2.0
Bug	AUTORADAR-1430	Update GPADC DCBIST monitoring thresholds based on IRDROP of external supplies
Bug	AUTORADAR-1429	Fix for RX gain phase monitoring phase imbalance jump issue
Bug	AUTORADAR-1401	Fault Injection API for synth control voltage showing different control voltages for Min/max frequencies
Bug	AUTORADAR-1365	RX signal and image band monitor is not working
Bug	AUTORADAR-1364	Periodic calibrations are not triggered due to autonomous calibrations of APLL and synth
Bug	AUTORADAR-1362	Simultaneous 3 TX should be disabled for 1243 and enabled only in 1243P based on device variant

1.3 Known issues

Key	Description

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AUTORADAR-1554	TX gain phase does not work in non-verbose mode (report mode 1 and 2). Users can continue to use report mode 0 for this monitor
AUTORADAR-1555	RX gain phase monitoring does not work in non-verbose mode (report mode 1 and 2). Users can continue to use report mode 0 for this monitor
MMWAVE_RFANA-80	APLL VCO LDO and PA LDO short circuit monitors are disabled by default. These features will be considered in a future release after characterization
MMWAVESYS-39	Synthesizer frequency monitor (AWR_MONITOR_SYNTHESIZER_FREQUENCY_CONF_SB) is not characterized for performance
MMWAVESYS-11	Boot time IQMM calibration is disabled (AWR_RF_INIT_CALIBRATION_CONF_SB). Recommendation to the users is to keep IQMM calibration disabled. Users should ignore the IQ mismatch calibration status in the report (AWR_AE_RF_INITCALIBSTATUS_SB)
MMWAVE_RFANA-73	RX mixer input monitoring and power monitoring of internal RX nodes (part of RX internal analog signal monitor) are not supported. The status fields in RX internal analog signal monitor report (AWR_MONITOR_RX_INTERNAL_ANALOG_SIGNALS_REPORT_AE_SB) are kept reserved
MMWAVESYS-34	Known issue with 79.2 GHz spur at TX output, which can cause Doppler spurs in 2D FFT image if using narrowband chirp configuration around 79.2 GHz
MMWAVE_SOC-36	Low power ADC mode should be used on a 5 MHz device variant. Regular ADC mode configuration on a 5 MHz device variant will not be honored by the device and the API will be rejected with an error indication.

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