

NINETEENTH ANNUAL

**Bits**

**Workshop**™

**Burn-in & Test Strategies Workshop**

**March 4 - 7, 2018**

**Hilton Phoenix / Mesa Hotel  
Mesa, Arizona**

**Archive**

# COPYRIGHT NOTICE

The presentation(s)/poster(s) in this publication comprise the Proceedings of the 2018 BiTS Workshop. The content reflects the opinion of the authors and their respective companies. They are reproduced here as they were presented at the 2018 BiTS Workshop. This version of the presentation or poster may differ from the version that was distributed in hardcopy & softcopy form at the 2018 BiTS Workshop. The inclusion of the presentations/posters in this publication does not constitute an endorsement by BiTS Workshop or the workshop's sponsors.

There is NO copyright protection claimed on the presentation/poster content by BiTS Workshop. However, each presentation/poster is the work of the authors and their respective companies: as such, it is strongly encouraged that any use reflect proper acknowledgement to the appropriate source. Any questions regarding the use of any materials presented should be directed to the author(s) or their companies.

The BiTS logo and 'Burn-in & Test Strategies Workshop' are trademarks of BiTS Workshop. All rights reserved.

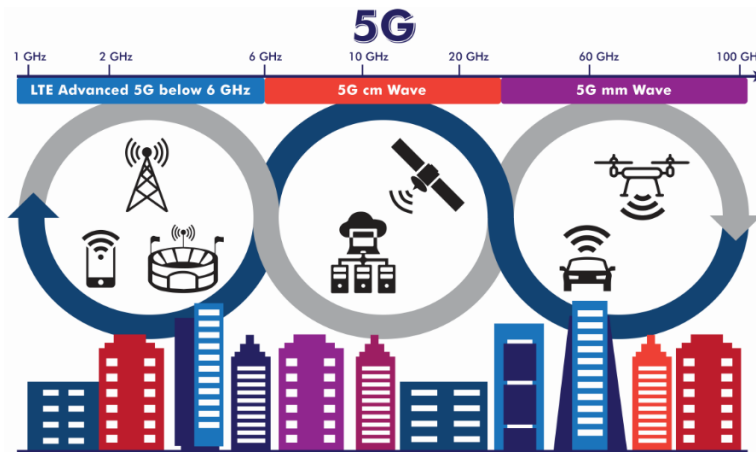
[www.bitsworkshop.org](http://www.bitsworkshop.org)



## Contacting Challenges for 5G

Dan Campion

Xcerra Corporation / MultiTest



UltraGig 802.11ax Tri-Temp 802.11ad HetNet URLLC Calibration Coax Antenna  
Module BeamForming WiGig LTE-WAN R15  
OTA Thermal Spectral mMTC IoT LPWAN  
WaveGuide Wide BW Efficiency R14 Carrier  
MMIMO R13<sup>e</sup>MBB V2X Small Cell Aggregation

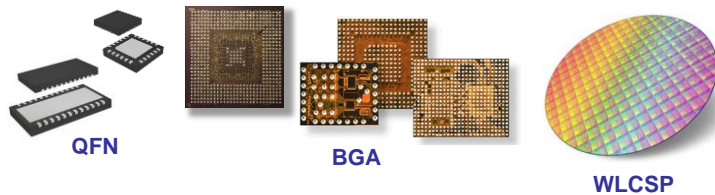
### Overwhelmed by 5G Test Considerations?

Evolving 5G standards and protocols are driving the need for production contactor solutions that provide performance previously only seen in engineering labs for testing RF signals through both contacted and over the air (OTA) test.

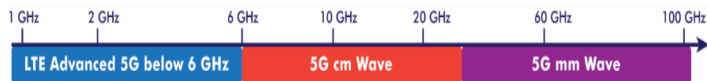
These solutions need to combine broadband RF performance for cmWave and mmWave bands with the robustness needed for production test floors, while meeting reasonable Cost of Test (CoT) targets.

## Contacting Challenges for 5G

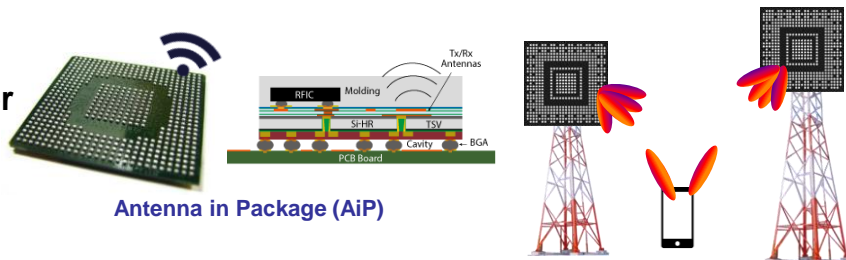
Package Trends:



Frequency Bands:



DUT / Tester Interfaces:



Variety of Contact Technologies Required:



### 5G Contactor Solutions Need to be Modular & Robust

Advanced RF Contacting Building Blocks are often combined to meet evolving package and test requirements for 5G applications.

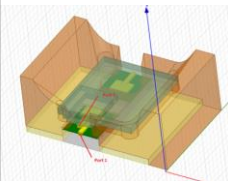
Assuming technical requirements are met, a variety of contact technologies can reduce CoT.

## Contacting Challenges for 5G

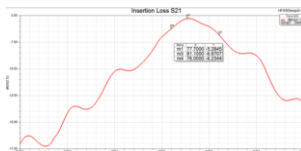
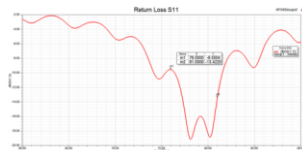
### Conclusions

5G RF Contacting Solutions must be integrated with the entire test cell between the tester and handler/prober for production environments. A variety of modular contact technology solutions allow for the solution to be adapted to the unique test requirements.

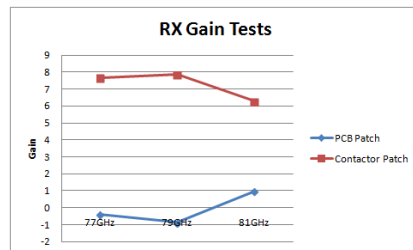
Below is an example of an OTA contactor solution for an AiP device that addressed poor patch antenna quality achieved when antenna was built into PCB.



Modeled OTA Solution w/ Patch Antenna in Contactor



Test Fixture	RX Gain Tests		
	Low Band 77GHz	Mid Band 79GHz	High Band 81GHz
PCB Patch	-0.37	-0.87	0.96
Contactor Patch	7.65	7.85	6.27



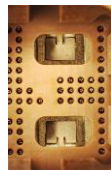
Test Results Superior with Patch Integrated in Contactor vs PCB



Broadband Contactor + Patch for 76-81GHz BGA AiP



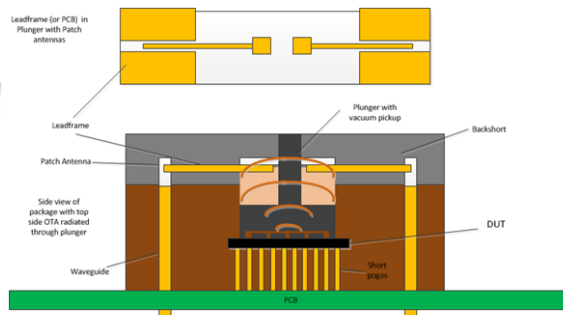
PCB Patch



Contactor LeadFrame Patch



Provide solutions ready for the production test floor



Re-configure building blocks to fit evolving requirements