

# ODEN T Beta Test Results Global Telecomm Companies 2018

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## ODEN-T: Beta Test Objectives to be Evaluated

- Improve efficiency of data transmitted over RF spectrum and bandwidth
- Improve Performance in Reduced Service Areas
- Improve Performance in Low Signal Strength Areas
- Improve Performance in Highly Congested Areas
- Reduce Handset Wait Times, Quality of Experience (QoE), for Downloads
  - Images
  - Video
  - Browsing
- Retain optical clarity of compressed Images and Videos
- Demonstrate Performance with Android and iOS O/S

# ODEN-T: Test Scripps and Description

1. LTE Coverage (Stationary, Phone in automatic mode)
  - a) Excellent Coverage
  - b) Good Coverage
  - c) Poor Coverage
2. UMTS Coverage (Stationary, Phone forced to UMTS)
  - a) Excellent Coverage
  - b) Good Coverage
  - c) Poor Coverage
3. GSM Coverage (Stationary, Phone forced to GSM)
  - a) Excellent Coverage
  - b) Good Coverage
  - c) Poor Coverage
4. Busy Cellsite Test (Stationary)
  - a) Excellent Coverage
  - b) Good Coverage
  - c) Poor Coverage

## Test Description

- Browse for ten minutes
- Download five high resolution pictures
- Download a video of at least 1 minute

## Test Tools

- Internet Speed Meter
- Verification of data consumption using Telecomm quota data to verify data available in the phone plan before and after the test.

# ODEN-T: Test Scripps Results and Comments

## LTE Coverage (Stationary, Phone in automatic mode)

Test Description	Results	Comments
<b>Excellent Coverage</b>		
Browse for ten minutes	<b>ODEN T average compression 40%</b>	<b>LTE coverage (-80dBm or better)</b>
Download five high resolution pictures	<b>High resolution pictures downloaded faster with ODEN-T. ODEN T average compression 90%</b>	
Download a video of at least 1 minute	<b>ODEN T average compression 20%</b>	
<b>Good Coverage</b>		
Browse for ten minutes	<b>ODEN T average compression 19%</b>	<b>LTE coverage (-90dBm or better)</b>
Download five high resolution pictures	<b>High resolution pictures downloaded faster with ODEN-T. ODEN T average compression 85%</b>	
Download a video of at least 1 minute	<b>ODEN T average compression 33%.</b>	
<b>Poor Coverage</b>		
Browse for ten minutes	<b>ODEN T average compression 17%.</b>	<b>LTE coverage was poor (-104dBm or worst)</b>
Download five high resolution pictures	<b>High resolution pictures downloaded faster with ODEN-T. ODEN T average compression 65%</b>	
Download a video of at least 1 minute	<b>Videos downloaded faster with ODEN-T ODEN T average compression 20%</b>	

# ODEN-T: Test Scripps Results and Comments

## UMTS Coverage (Stationary, Phone forced to UMTS)

Test Description	Results	Comments
<b>Excellent Coverage</b>		
Browse for ten minutes	<b>ODEN T average compression 37%</b>	<b>UMTS coverage was excellent (-69dBm or better)</b>
Download five high resolution pictures	<b>High resolution pictures downloaded faster with ODEN-T. ODEN T average compression 78%</b>	
Download a video of at least 1 minute	Videos downloaded practically at the same time. <b>ODEN T average compression 15%.</b>	
<b>Good Coverage</b>		
Browse for ten minutes	<b>ODEN T average compression 50%</b>	<b>UMTS coverage was good (-83dBm or better)</b>
Download five high resolution pictures	<b>High resolution pictures downloaded faster with ODEN-T. ODEN T average compression 80%</b>	
Download a video of at least 1 minute	<b>ODEN T average compression 10%.</b>	
<b>Poor Coverage</b>		
Browse for ten minutes	<b>Pages loaded faster with ODEN-T. Sometimes the phone without ODEN timed out downloading the pages. ODEN T average compression 20%</b>	<b>UMTS coverage was poor (-100dBm or worst)</b>
Download five high resolution pictures	<b>High resolution pictures downloaded faster with ODEN-T. ODEN T average compression 60%</b>	
Download a video of at least 1 minute	<b>Videos downloaded first with ODEN-T. ODEN T average compression 15%</b>	

# ODEN-T: Test Scripps Results and Comments

## GSM Coverage (Stationary, Phone forced to GSM)

Test Description	Results	Comments
<b>Excellent Coverage</b>		
Browse for ten minutes	Faster with ODEN-T. ODEN T average compression 15%	GSM coverage was excellent (-65dBm or better)
Download five high resolution pictures	High resolution pictures downloaded faster with ODEN-T. ODEN T average compression 80%.	
Download a video of at least 1 minute	ODEN-T was faster.	
<b>Good Coverage</b>		
Browse for ten minutes	Phone without ODEN-T did not show all the web page pictures. ODEN T average compression 32%.	GSM coverage was good (-80dBm or better)
Download five high resolution pictures	High resolution pictures downloaded faster with ODEN-T. ODEN T average compression 55%.	
Download a video of at least 1 minute	ODEN-T was faster.	
<b>Poor Coverage</b>		
Browse for ten minutes	Phone without ODEN-T did not show all the web page pictures. ODEN T average compression 20%.	GSM coverage was poor (-91dBm or worst)
Download five high resolution pictures	High resolution pictures downloaded faster with ODEN-T. ODEN T average compression 35%.	
Download a video of at least 1 minute	ODEN-T was faster.	

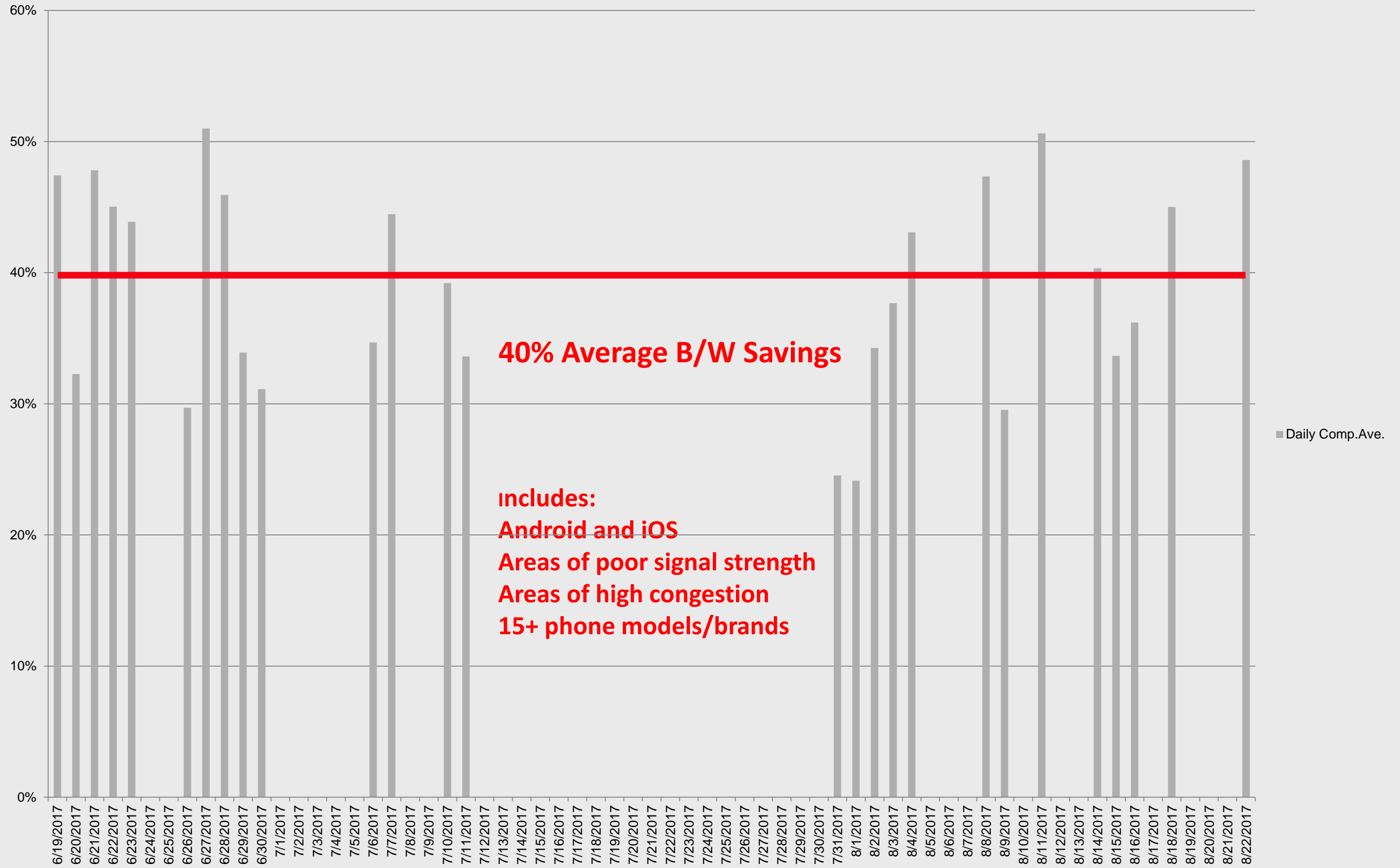
# ODEN-T: Test Scripps Results and Comments

## Busy Cellsite Test (Stationary)

Test Description	Results	Comments
LTE Cellsite		
Browse for ten minutes	The pages loaded practically at the same time.	<b>LTE coverage was excellent (-80dBm or better)</b>
Download five high resolution pictures	<b>High resolution pictures downloaded faster with ODEN-T</b>	
Download a video of at least 1 minute	Videos downloaded practically at the same time.	
UMTS Cellsite		
Browse for ten minutes	The pages loaded practically at the same time.	<b>UMTS coverage was excellent (-69dBm or better)</b>
Download five high resolution pictures	<b>High resolution pictures downloaded faster with ODEN-T</b>	
Download a video of at least 1 minute	Videos downloaded practically at the same time.	
GSM Cellsite		
Browse for ten minutes	<b>Faster with ODEN-T.</b> <b>ODEN T average compression 22%</b>	<b>GSM coverage was excellent (-65dBm or better)</b>
Download five high resolution pictures	<b>High resolution pictures downloaded faster with ODEN-T.</b> <b>ODEN T average compression 80%.</b>	
Download a video of at least 1 minute	<b>ODEN-T was faster.</b>	

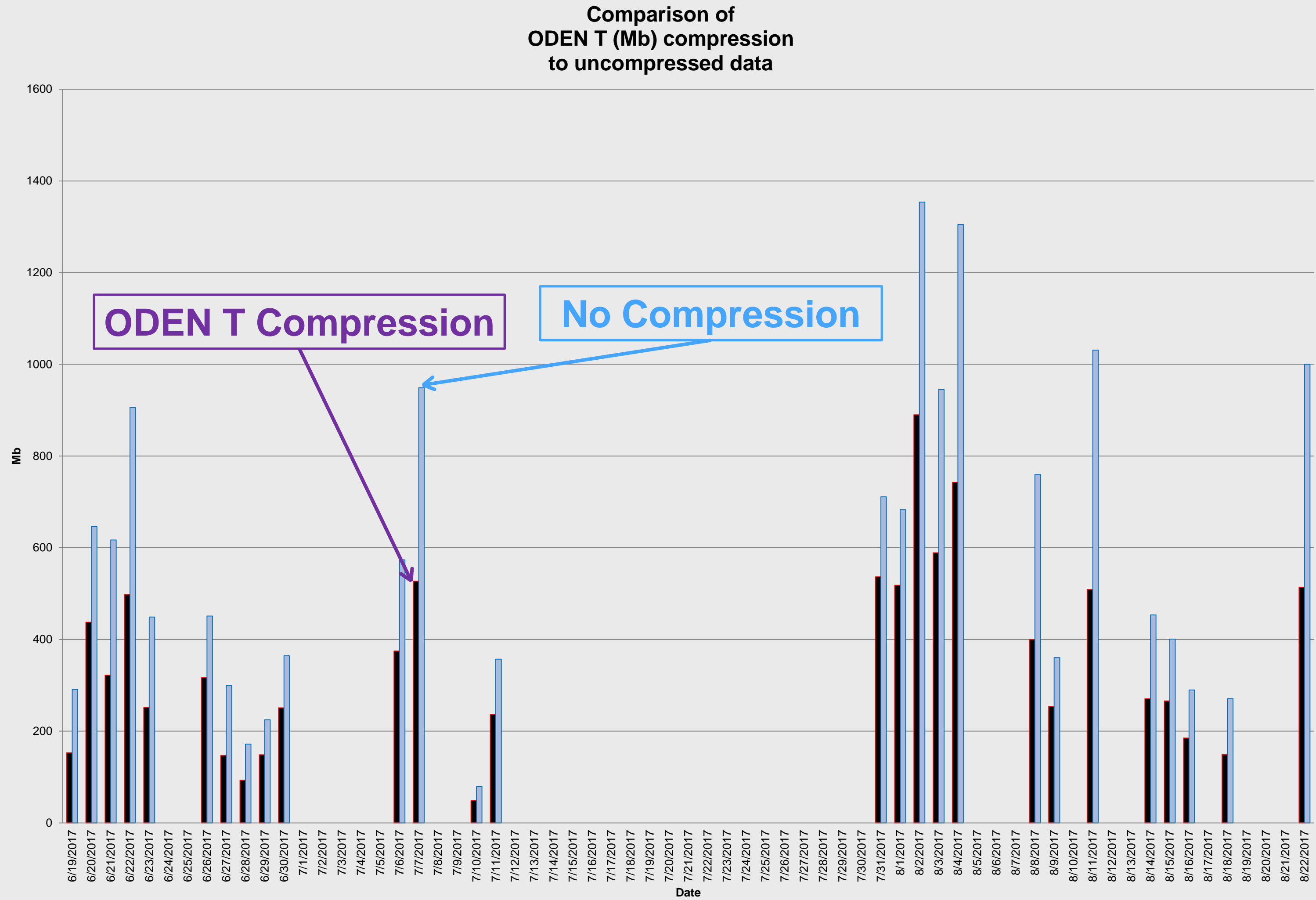
# ODEN T: Beta Test Compression Savings (06/19/17 to 08/16/17)

## Daily Compression Average





# ODEN T: Comparison of ODEN T (Mb) to uncompressed data (06/19/17 to 08/16/17)



## ODEN T: Telecomm Comments During Test

- “Today we performed tests in an area with poor 3G coverage (-100dBm or worst). We saw that while browsing and downloading videos, the phones with ODEN-T loaded the pages or the video faster. Sometimes the phone without ODEN-T timed out because of the bad signal level. When we downloaded images, the phones with ODEN-T always downloaded the images faster.”
- “Yesterday we incorporated the verification of the data consumption of the phones using quota data to verify data available in the phone plan before and after the test. By doing this, we were able to validate what we were getting from the Internet Speed Meter application. We got very similar numbers with both methods. And we were able to confirm the compression in the ODEN-T phones.
- “We did tests with the iPhone as well without any problems.”

## ODEN-T: Summary of Beta Test Results

- Improve efficiency of data transmitted over RF spectrum and bandwidth
  - Result: ODEN T average RF spectrum savings 40%
- Improve Performance in Reduced Service Areas
  - Result: ODEN T phone is always faster, phone w/o ODEN T timed out
- Improve Performance in Low Signal Strength Areas
  - Result: ODEN T phone is always faster, phone w/o ODEN T timed out
- Improve Performance in Highly Congested Areas
  - Result: ODEN T phone is always faster,
- Reduce Handset Wait Times, QoE, for Downloads
  - Result: ODEN T is faster
- Retain optical clarity of compressed Images and Videos
  - Result: Image quality is the same with ODEN T compression compared to phones without ODEN T.
  - There is no difference when comparing with ODEN T and without ODEN T
- Demonstrate Performance with Android and iOS O/S
  - Result: Both Android and iPhone with ODEN T worked perfectly

# TIMMES, Inc.

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