

1 UNITED STATES DISTRICT COURT
2 SOUTHERN DISTRICT OF CALIFORNIA
3 BEFORE HONORABLE CATHY ANN BENCIVENGO, JUDGE PRESIDING

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5 BELL NORTHERN RESEARCH, LLC,,)
6 Plaintiff,) CASE NO. 18CV1783-CAB-BLM
7 vs.)
8) SAN DIEGO, CALIFORNIA
9 COOLPAD TECHNOLOGIES, INC. AND)
10 YULONG COMPUTER COMMUNICATIONS,)
11) THURSDAY, JUNE 20, 2019
12 Defendants.)

13 -----)
14 BELL NORTHERN RESEARCH, LLC,)
15 Plaintiff,) CASE NO. 18CV1784-CAB-BLM
16 vs.)
17)
18 HUAWEI TECHNOLOGIES Co., LTD.,)
19 HUAWEI DEVICE (HONG KONG) CO.,)
20 LTD., and HUAWEI DEVICE USA,)
21 INC.,)
22 Defendants.)

23 -----)
24 BELL NORTHERN RESEARCH, LLC.,)
25 Plaintiff,) CASE NO. 18CV1785-CAB-BLM
vs.)
KYOCERA CORPORATION and KYOCERA)
INTERNATIONAL INC.,)
Defendants.)
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 2 BELL NORTHERN RESEARCH, LLC.,)
 3)
 4 Plaintiff,) CASE NO. 18CV1786-CAB-BLM
 5 vs.)
 6)
 7 ZTE CORPORATION, ZTE (USA) INC.)
 8 ZTE (TX) INC.)
 9)
 10 Defendants.)

11 -----)
 12 BELL NORTHERN RESEARCH, LLC,,)
 13)
 14 Plaintiff,) CASE NO. 18CV2864-CAB-BLM
 15 vs.)
 16)
 17 LG ELECTRONICS, INC., LG)
 18 ELECTRONICS U.S.A. INC., and)
 19 LG ELECTRONICS MOBILE RESEARCH)
 20 U.S.A., LLC,)
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 22 Defendants.)
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20 ALSO PRESENT:

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24

25

1 San Diego, California; Thursday, June 20, 2019; 9:00 a.m.

2 (Cases called)

3 MS. ABDULLAH: Sadaf Abdullah on behalf of plaintiff,
4 Bell Northern Research.

5 MR. HARTSELL: Steven Hartsell on behalf of Bell
6 Northern Research.

7 THE COURT: Thank you.

8 MR. SKIERMONT: Good morning your Honor. Paul
9 Skiermont on behalf of Bell Northern Research.

10 MS. ZHANG: Good morning, your Honor. Jiaxiao Zhang
11 from McDermott Will & Emery on behalf of ZTE. With me is Amol
12 Parikh and Thomas DaMario.

13 MS. FULLER: Good morning. Joanna Fuller on behalf of
14 Huawei with Fish & Richardson, and with me is Jason Wolff and
15 Ethan Rubin.

16 MR. MILLIKEN: Good morning, your Honor. Tom Milliken
17 from Perkins Coie on behalf of Coolpad and Yulong. With me is
18 James Hurt.

19 THE COURT: Thank you. All right. We're back. So
20 let's get started on the '842.

21 MR. HARTSELL: Your Honor, may I approach?

22 THE COURT: Yes. Go ahead.

23 MR. HARTSELL: Good morning, your Honor. Again this
24 is Steven Hartsell on behalf of Bell Northern Research. The
25 '842 patent was developed by engineers at Broadcom and filed in

1 January of 2010. The '842 patent is a continuation of U.S.
2 Patent Number 7,646,703 which claims priority to at least
3 July 2004. The '842 patent is directed to long training
4 sequences with minimum peak-to-average power ratios, and today
5 I would like to provide some background and a few common steps
6 that I hope the Court would find useful in today's discussion.

7 The '842 patent is taught against the backdrop of the
8 802.11 WiFi standard which is promulgated by IEEE, which is the
9 Institute for Electrical and Electronic Engineers. This
10 standard governs how different wireless devices are designed
11 and how they communicate with one another. Now as technology
12 evolves, the 802.11 standard has been amended periodically to
13 add additional capabilities, usually resulting in faster speeds
14 and better coverage.

15 As you can see on our slide, in 1999, the 802.11
16 standard was amended to implement OFDM, which stands for
17 orthogonal frequency-division multiplexing, to increase data
18 throughput. I'm going to show you what that means on slide 5.
19 At the top, you can see this is how data was transmitted OFDM.
20 Basically we have single carriers that are separated. When
21 OFDM is implemented, the carrier waves are essentially smushed
22 together allowing you to send more data found within the given
23 bandwidth. As you can see on the OFDM, there's an overlap in
24 the subcarriers which is necessary to achieve high data rates.

25 In slide 6, each colored peak is a subcarrier which

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