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EXAMINER

LINDGREN BALTZELL, ANDREA J

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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* NUTTAPONG SRIRATTANA, BRIAN WHITE, and  
ALEXANDER WAYNE HIETALA<sup>1</sup>

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Appeal 2015-005027  
Application 13/022,840  
Technology Center 2800

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Before JAMES C. HOUSEL, CHRISTOPHER C. KENNEDY, and  
JENNIFER R. GUPTA, *Administrative Patent Judges*.

KENNEDY, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's decision to reject claims 1, 2, and 4. We have jurisdiction under 35 U.S.C. § 6(b). We REVERSE.

BACKGROUND

The subject matter on appeal relates to radio frequency switches. *E.g.*, Spec. ¶ 1; Claim 1. Claim 1 is reproduced below from page 8 (Claims Appendix) of the Appeal Brief:

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<sup>1</sup> According to the Appellants, the real party in interest is RF Micro Devices, Inc. App. Br. 1.

1. A multiport radio frequency switch comprising:
  - a first plurality of switches;
  - a second plurality of switches;
  - an antenna port configured to couple to an antenna;
  - a first inductor having a first end and a second end, the first end of the first inductor electrically coupled to the antenna port, and the second end of the first inductor electrically coupled to the first plurality of switches;
  - a second inductor having a first end and a second end, the first end of the second inductor electrically coupled to the antenna port, and the second end of the second inductor electrically coupled to the second plurality of switches;
  - a capacitor array having a first end and a second end, the first end of the capacitor array electrically coupled to the second end of the first inductor, and the second end of the capacitor array coupled to the second end of the second inductor,wherein the first inductor and the second inductor are configured in series to form an inductor series, and wherein the capacitor array is configured in parallel with the inductor series.

#### REJECTIONS ON APPEAL

1. Claim 2 stands rejected under 35 U.S.C. § 112, ¶ 2, as indefinite.<sup>2</sup>
2. Claims 1, 2, and 4 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Seshita et al. (US 2010/0073066 A1, published Mar. 25,

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<sup>2</sup> Although the Examiner also finds that claim 2 does not further limit independent claim 1, *see* Ans. 3, the Examiner does not cite § 112, ¶ 4 as a basis for the rejection of claim 2. Additionally, we note that this ground of rejection, as stated by the Examiner, does not encompass claims 1 or 4, notwithstanding the fact that those claims include the term “capacitor array” (directly or through claim dependency), which the Examiner finds to be unclear.

2010) in view of Harada et al. (US 2002/0021182 A1, published Feb. 21, 2002).

## ANALYSIS

### *Rejection 1*

The Examiner concludes that claim 2 is indefinite because it recites a “capacitor array” but “no structure for the array is recited.” *See* Ans. 3. The Examiner further determines that “Claim 2 does not further limit Claim 1.” *Id.*

We reverse the rejection. The Examiner finds that “capacitor arrays are well known in the art,” and that the term “capacitor array indicates more than one capacitor.” Ans. 2. Given those findings, we conclude that the term “capacitor array” reasonably apprises those of skill in the art of its scope. *See In re Warmerdam*, 33 F.3d 1354, 1361 (Fed. Cir. 1994). Although the Examiner also finds that “no structure for the array is recited,” that appears to be indicative of claim breadth rather than indefiniteness, particularly in view of the Examiner’s finding that capacitor arrays are well known in the art. *See In re Miller*, 441 F.2d 689, 693 (CCPA 1971) (“[B]readth is not to be equated with indefiniteness . . .”).

We disagree with the Examiner’s determination that “Claim 2 does not further limit Claim 1.” *See* Ans. 3. Claim 2 expressly requires the capacitor array to be programmable; claim 1 does not.

On this record, a preponderance of the evidence does not support the Examiner’s rejection under § 112, ¶ 2. Therefore, we must reverse the rejection.

*Rejection 2*

Claim 1, which appears above, requires first and second inductors connected in series and having an antenna port between the two inductors, i.e., having first ends “electrically coupled to the antenna port.” Claim 1 further requires that “a capacitor array is configured in parallel with the inductor series.” Thus, as the Appellants explain, claim 1 requires a capacitor array in parallel with an inductor series that includes an antenna port between two inductors in the inductor series. *See App. Br. 6.*

Relying principally on Harada’s Figure 3, the Examiner finds, *inter alia*, that:

[Harada’s Figure 3 teaches] many configurations of capacitors and inductors connected in various combinations of series and parallel configurations. C1, for instance is connected in parallel to L1. L1 is connected in series to L2. The reference teaches series connections of inductors and parallel connections of capacitors. It would be obvious for a person of ordinary skill in the art at the time of the invention to rearrange the parts of the circuit as desired to meet various design needs.

Ans. 6. Harada Figure 3 is reproduced below:

**FIG. 3**

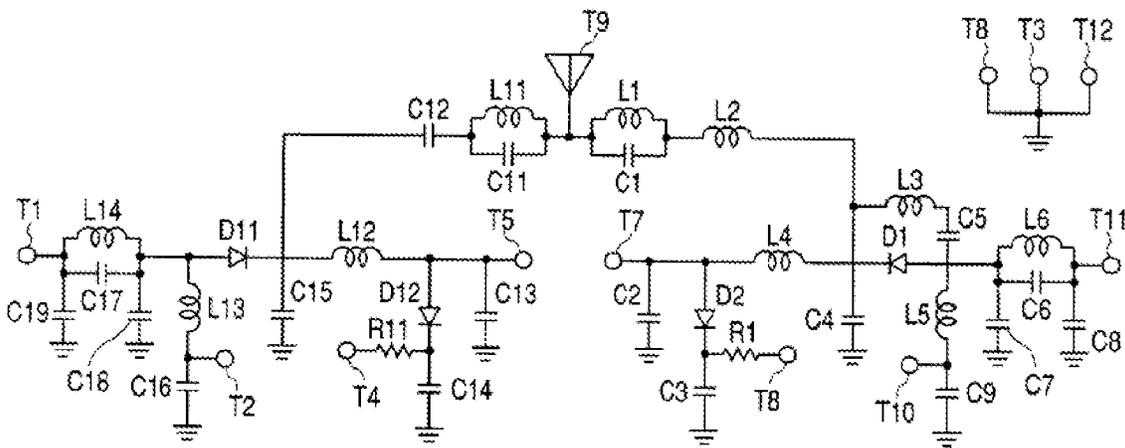


Figure 3 is a circuit diagram showing an embodiment of Harada's front-end module for a mobile communications apparatus. Harada ¶ 11.

Largely for reasons expressed by the Appellants, *see* App. Br. 4–6; Reply Br. 3, we are not persuaded that a preponderance of the evidence supports the Examiner's rejection. As an initial matter, it appears that capacitors C1 and C11 in Harada are individual capacitors rather than capacitor arrays. The Examiner appears to acknowledge that individual capacitors are distinct from capacitor arrays, *see* Ans. 2, but the Examiner fails to persuasively explain why C1 and C11, individually or in combination, would have been considered to be a capacitor array such, for example, as those disclosed by the Appellants' Figure 5.

To the extent that the Examiner relies on L1 and L2 as the first and second inductors, *see* Ans. 6, C1 is an individual capacitor that is in parallel with L1, but the Examiner makes no finding that C1 would also be considered to be in parallel with L2, as required by claim 1 (“wherein the capacitor array is configured in parallel with the inductor series”). Nor does the Examiner find that an individual capacitor is equivalent to a capacitor array, or that it would have been obvious to replace an individual capacitor with a capacitor array. Moreover, the Examiner does not persuasively explain whether either end of inductor L2 could be considered to be electrically coupled to the antenna port, as required by claim 1.

To the extent that the Examiner interprets L1 and L11 as the first and second inductors, they are individually in parallel with individual capacitors C1 and C11, respectively. Although the Examiner correctly finds that C1 is in parallel with L1 and that C11 is in parallel with L11, the Examiner makes no persuasive finding that C11 is in parallel with L1 or that C1 is in parallel

with L11. *See* Ans. 10. Instead, the Examiner finds that “they are all electrically connected with one another.” *Id.* The claim, however, requires more than that: It requires that the first inductor series as a whole is in parallel with the capacitor array. Figure 3 of Harada does not appear to disclose a first inductor series in parallel with a capacitor array, even if one were to consider the combination of C1 and C11 to be the capacitor array because, as mentioned above, the Examiner does not find that C1 is in parallel with L11 or that C11 is in parallel with L1.

Although we agree with the Examiner that Harada teaches “many configurations of capacitors and inductors connected in various combinations of series and parallel configurations,” Ans. 6, for reasons set forth above, the Examiner has not established by a preponderance of the evidence that Harada teaches or otherwise renders obvious the particular arrangement required by claim 1. Accordingly, we must reverse the rejection. Because the Examiner’s rejection of claims 2 and 4 does not remedy the error identified above, we likewise must reverse the Examiner’s rejection of those claims.

#### CONCLUSION

We REVERSE the Examiner’s § 112 rejection of claim 2.

We REVERSE the Examiner’s § 103 rejection of claims 1, 2 and 4.

REVERSED