```
Analysis of Variance Table

Response: y
                  Df Sum Sq Mean Sq F value    Pr(>F)
Short              1 3.4428  3.4428 41.0738  0.023492 *
BakeT              2 0.2053  0.1026 10.4416  0.003559 **
TrayT              1 0.6700  0.6700 68.1533 8.931e-06 ***
Short:Batch        2 0.1676  0.0838  8.5263  0.006902 **
Short:BakeT        2 0.0547  0.0273  2.7821  0.109490
Short:TrayT        1 0.1962  0.1962 19.9580  0.001202 **
BakeT:TrayT        2 0.0510  0.0255  2.5956  0.123608
Short:BakeT:TrayT  2 0.0008  0.0004  0.0424  0.958673
Residual          10 0.0983  0.0098
---
Signif. codes:  0 *** 0.001 ** 0.01 * 0.05 . 0.1   1
```

In the ANOVA table, it can be seen that the F-value for `Short` was created by dividing the mean square for `Short` by the mean square for batch within shortening (`Short:Batch`) rather than the error mean square.

The `lmer` function in the `lme4` package as described in Section 5.8 can also be used for REML analysis of split-plot experiments. The R code and resulting analysis below shows the analysis of the data from the cookie baking experiment.

```
> library(lme4)
> rmodel <- lmer(y ~ 1 + short + bakeT + trayT + short:bakeT +
+                  short:trayT + bakeT:trayT + short:bakeT:trayT +
+                  (1|short:batch), data = splitPdes)
> anova(rmodel)
Analysis of Variance Table
                 npar  Sum Sq Mean Sq F value
short               1 0.40379 0.40379 41.0738
bakeT               2 0.20530 0.10265 10.4416
trayT               1 0.67000 0.67000 68.1533
short:bakeT         2 0.05470 0.02735  2.7821
short:trayT         1 0.19620 0.19620 19.9580
bakeT:trayT         2 0.05103 0.02552  2.5956
short:bakeT:trayT   2 0.00083 0.00042  0.042
```

The F-values above are seen to be identical to those produced by the `gad` function. Although the P-values (`Pr(>F)`) are not given, they can be easily computed. For example, the P-value for the shortening effect can be calculated in R with the command `1-pf(41.0738,1,2)`.