**Quality Excellence for Suppliers of
Telecommunications Forum
(QuEST Forum)**

TL 9000
Quality Management System

Measurements Handbook

BRR Examples

7.2 BRR Examples

7.2.1 Basic Calculation

Example 7.2-1

Each month the reporting organization reports the Basic Return Rate measure for the month based on the returns received during the month that were originally shipped in the BRR basis period and the field population of units shipped in the BRR basis period. The BRR basis period is eighteen months. Therefore the returns count would include any unit shipped during the report month or the prior eighteen months. The field population would be the total number of units shipped in the eighteen months prior to the report month. It can be noted that BRR is equivalent to the combination of the ERI and YRR measures. BRR is used for products where tracking long term reliability is not practical.

As an example, suppose during January 2013 there were a total of 355 returns received out of a total population of 186,914 units. Of the 355 returns, 316 were shipped during the month or the prior eighteen months. In other words, 316 of the returned units were shipped on or after July 1, 2011. For purposes of this example, let us set the number of units shipped in the previous eighteen months at 156,914 and a total number of shipments at 186,914. In tabular form the data for the month is:

Table 7.2-1 BRR Data

	BRR	Total
Returns	316	355
Population	156,914	186,914

The resulting BRR calculation for the month is:

$$\text{Basic Return Rate} = 100 \times 12 \times \frac{\text{Returns from units shipped Jul-11 through Jan-13}}{\text{Total shipments for Jul-11 through Dec-12}}$$

$$= 100 \times 12 \times \text{FRrb} / \text{FRsb}$$

$$= 100 \times 12 \times 316 / 156914$$

$$= 2.42\%$$

Note: All returned units which fall into the basis shipping period and meet the TL 9000 definition of a return are to be counted. Whether the unit is in or out of warranty does not have any bearing on the determination.

 The following shows this example in detail.

Table 7.2-2   **Example Returns**

Shipment Month	Number Shipped	Returns from Shipment Population by Month Received											
		Jan 2013	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013	Nov 2013	Dec 2013
Jun-11 & before	30000	39	44	42	46	31	35	48	36	46	41	32	30
Jul-11	8253	22	9	11	12	11	10	7	10	8	15	16	5
Aug-11	9243	11	11	14	12	19	15	13	1	16	10	13	21
Sep-11	9261	17	16	17	12	16	16	17	7	16	11	12	17
Oct-11	9721	19	13	21	15	17	11	14	19	16	18	17	13
Nov-11	10131	16	8	15	14	21	28	17	17	19	13	14	20
Dec-11	10140	24	16	17	22	12	19	17	15	24	14	15	14
Jan-12	6263	11	11	7	9	9	9	9	13	6	3	6	3
Feb-12	6436	7	9	8	11	10	8	5	5	3	14	7	9
Mar-12	7244	14	15	12	8	10	15	4	12	7	9	5	12
Apr-12	7275	10	9	14	10	9	8	10	6	12	11	11	10
May-12	7396	6	11	12	11	16	9	13	16	8	13	10	3
Jun-12	8263	6	13	12	16	11	7	9	12	14	13	7	13
Jul-12	8833	14	12	14	12	12	14	14	15	11	10	11	8
Aug-12	8954	16	6	14	17	14	14	11	14	12	12	8	13
Sep-12	9368	20	18	15	18	16	6	12	19	12	6	16	11
Oct-12	9818	39	24	18	7	15	15	17	16	13	6	19	9
Nov-12	9787	36	26	24	23	12	13	6	13	9	9	20	12
Dec-12	10528	23	30	20	22	25	15	15	15	16	12	16	11
Jan-13	10644	5	33	23	25	22	30	18	15	14	19	14	19
Feb-13	11321		1	31	23	27	24	24	11	13	22	11	16
Mar-13	11332			5	27	26	20	29	38	17	14	19	12
Apr-13	11674				2	33	28	26	26	16	19	19	12
May-13	12151					4	27	27	28	31	18	13	24
Jun-13	12460						1	31	26	28	26	22	15
Jul-13	13494							1	35	25	32	35	16
Aug-13	13670								5	33	25	28	21
Sep-13	13933									4	30	23	32
Oct-13	13725										4	34	22
Nov-13	14467											3	36
Dec-13	14905												4
Total Returns Received In Month		355	335	366	374	398	397	414	445	449	449	476	463

Table 7.2-2 shows shipments for July 2011 through December 2013, plus all shipments prior to July 2011. In addition, it shows returns for January 2013 through December 2013, by month of shipment as determined by shipping records. The highlighted first column of data in Table 7.2-2 shows the month of shipment for the 355 returns received during January 2013. For example, in January 2013, 22 returns were received from the 8253 units shipped in July 2011 and 11 returns were received from the 9243 units shipped in August 2011.

The Basic Return Rate, BRR, for the month of January 2013, is calculated as follows. The field population is determined by adding the shipment quantities shown on the left side of Table 7.2-2 for the months of July 2011 through December 2012. Therefore the total shipments are

$$FRsb = 8253+9243+9261+9721+10131+10140+6263+6436+7244+$$
$$7275+7396+8263+8833+8954+9368+9818+9787+10528 = 156,914$$

The number of returned units is the total returned from July 2011 through January 2013. Therefore

$$FRrb = 22+11+17+19+16+24+11+7+14+10+6+6+14+16+20+39+$$
$$36+23+5 = 316$$

Basic			Returns of units shipped Jul-11 through Jan-13
Return	=	100 x 12 x	————————————————————————————
Rate			Total Shipments for Jul-11 through Dec-12

$$= \quad 100 \times 12 \times FRrb / FRsb$$
$$= \quad 100 \times 12 \times 316 / 156914$$
$$= \quad 2.42\%$$

Note that the returns of units shipped in January are included to count all returns during the month and to be alerted to any developing problems. However, shipments during January are excluded because the majority of units shipped in January will not have been placed in operation.

For those product categories that require the reporting of BRR, there is no tracking of return rate data outside of the initial eighteen months after shipment required. BRR is the only return rate measure reported for these product categories.

Calculating the Basic Return rate for all months in 2013 gives

Month in 2013	BRR Returns	BRR Shipments	Basic Return Rate
January	316	156914	2.42%
February	282	159305	2.12%
March	299	161383	2.22%
April	292	163454	2.14%
May	304	165407	2.21%
June	282	167427	2.02%
July	281	169747	1.99%
August	327	176978	2.22%
September	295	184212	1.92%
October	301	190901	1.89%
November	328	197351	1.99%
December	306	204422	1.80%

2)   Field Replaceable Unit (FRU) Returns Data Table

The data reported to the TL 9000 Administrator are shown in Table 7.2-3.

Table 7.2-3   Example 1 – FR Data Table Report

Identifier	Value
Year	2013
Month	01
Product Category	7.7.2
MeasurementID	BRR
FRa	12
FRrb	316
FRsb	156914