

RF MMIC Innovator

[www.berex.com](http://www.berex.com)

[CLASSIFICATION] APPLICATION NOTE

[DATE] 2015. 04

[REVISION NO.] REV.A

[MEASURING INSTRUMENTS]

- NA\_AGILENT E5071B

- SA\_AGILENT E4440B

- SG\_AGILENT 4438C

- SG\_IFR 3416

## Wide Band Medium Power Amp BT09AG

### Application Note



**Contents**

RF MMIC INNOVATOR [WWW.BEREX.COM](http://WWW.BEREX.COM) ..... 1

1. 738MHZ APPLICATION.....3

    1.1 738MHZ TEST RESULT(S-PARAMETER, OIP3, P1, NF,ACLR) ..... 4

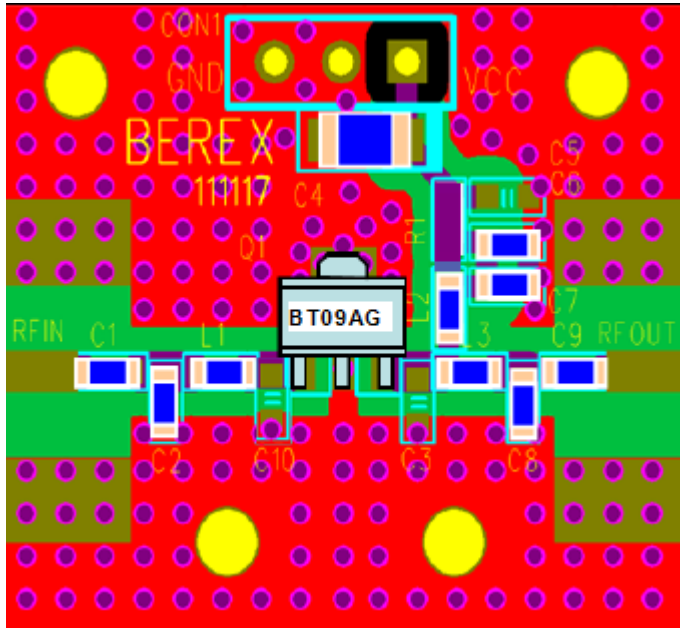
    1.2 738MHZ LTE\_20MHZ\_ACLR TEST RESULT ..... 5

2. 793MHZ APPLICATION.....6

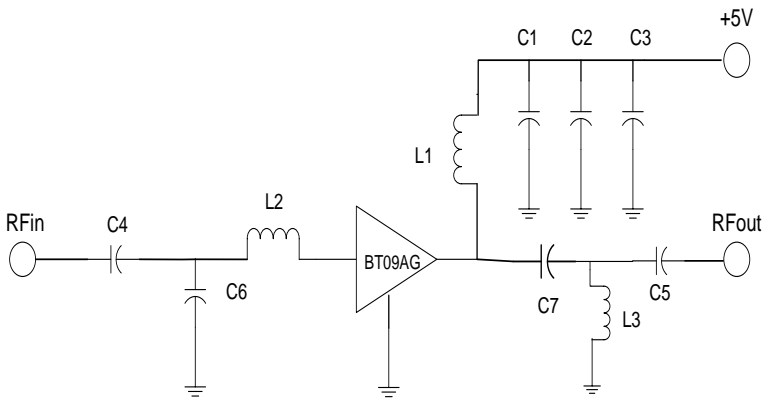
    2.1 793MHZ TEST RESULT(S-PARAMETER, OIP3, P1, NF,ACLR) ..... 7

    2.2 793MHZ LTE\_20MHZ\_ACLR TEST RESULT ..... 8

1. BT09AG\_ 738MHz Application Note



Ref. Des.	Description/ Part Number	Values	Vendor
C1	0603 CAP	100pF	Samsung
C2	0603 CAP	1nF	Samsung
C3	A3216 CAP	10uF	AVX
C4	0603 CAP	100pF	Samsung
C5	0603 CAP	100pF	Samsung
C6	0603 CAP	9pF	Samsung
C7	0603 CAP	13pF	Samsung
L1	0603 IND	39nH	Ceratech
L2	0603 IND	2.2nH	Ceratech
L3	0603 IND	8.2nH	Ceratech
U1	SOT89 PKG	BT09AG	BEREX



Note:

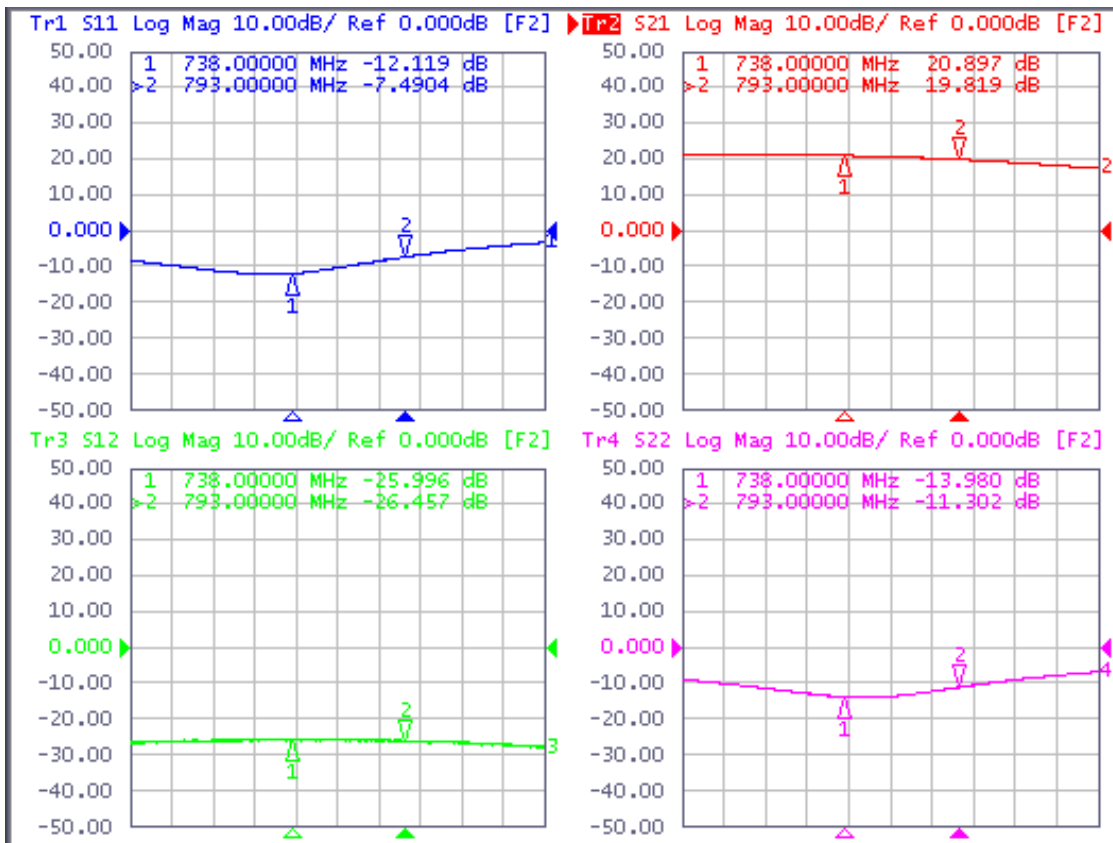
1. PCB: 31mil thick FR4

TITLE	
BT09AG Evaluation Board	
(738MHz)	
Drawing Number	Rev.
Date	Drawn By
FILE NAME	SHEET

1.1 BT09AG\_738MHz Test Result

SN	Freq [MHz]	Vcc [V]	Icc [mA]	Gain [dB]	OIP3 [dBm] <sup>(1)</sup>	P1dB [dBm]	IRL [dB]	ORL [dB]	NF [dB]
-	738	5	135	20.9	43.5	26	-12.1	-14.0	4.0

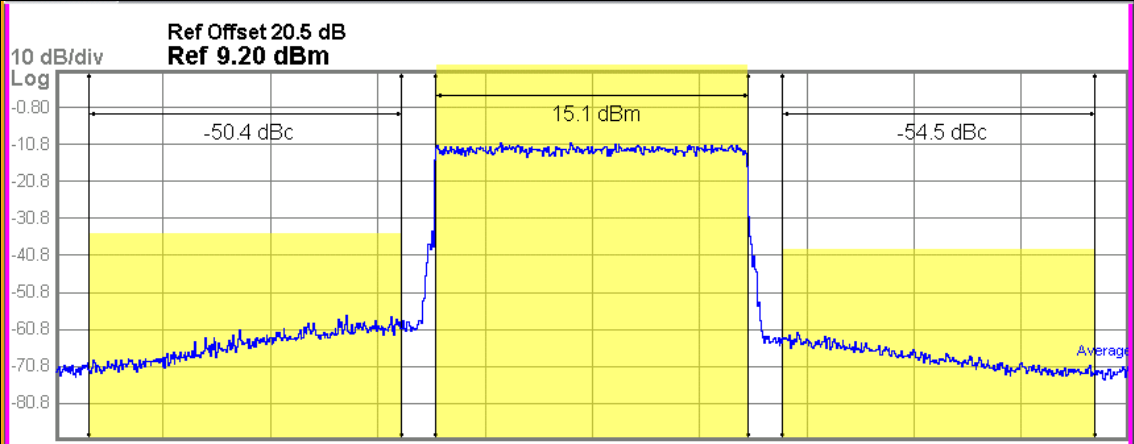
(1) OIP3 was tested @Pout=14dBm/tone 1MHz offset



### 1.2 LTE\_20MHz\_ACLR Test Result

Out Power : 15.12 dBm

LTE\_FDD\_20MHz\_TM 3.1\_100% : 738MHz -50dBc

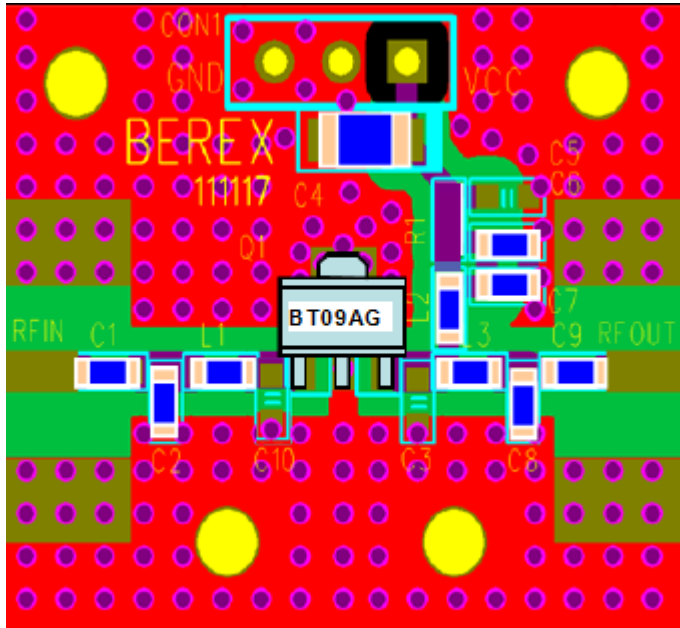


Center 738 MHz #Res BW 30 kHz #VBW 3 kHz Span 61.96 MHz #Sweep 29 ms

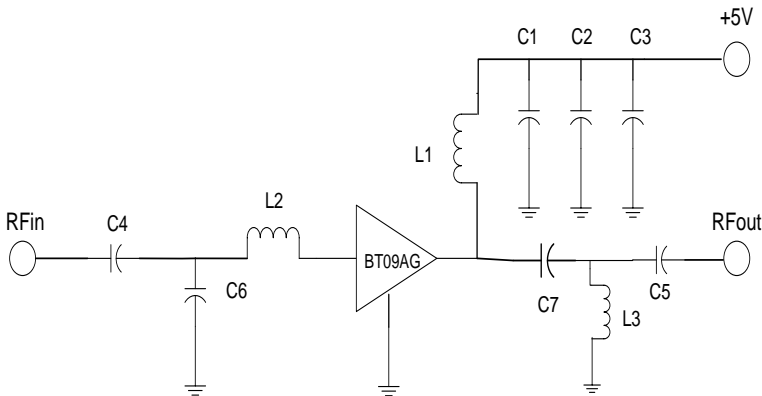
Carrier Power		Filter	Offset Freq	Integ BW	Lower		Upper		Filter
					dBc	dBm	dBc	dBm	
1	15.126 dBm / 18.00 MHz	ON	20.00 MHz	18.00 MHz	-50.37	-35.24	-54.50	-39.37	ON

Total Carrier Power 15.126 dBm/ 18.00 MHz ACP-IBW

2. BT09AG\_ 793MHz Application Note



Ref. Des.	Description/ Part Number	Values	Vendor
C1	0603 CAP	100pF	Samsung
C2	0603 CAP	1nF	Samsung
C3	A3216 CAP	10uF	AVX
C4	0603 CAP	100pF	Samsung
C5	0603 CAP	100pF	Samsung
C6	0603 CAP	11pF	Samsung
C7	0603 CAP	13pF	Samsung
L1	0603 IND	39nH	Ceratech
L2	0603 IND	2.2nH	Ceratech
L3	0603 IND	10nH	Ceratech
U1	SOT89 PKG	BT09AG	BEREX



Note:

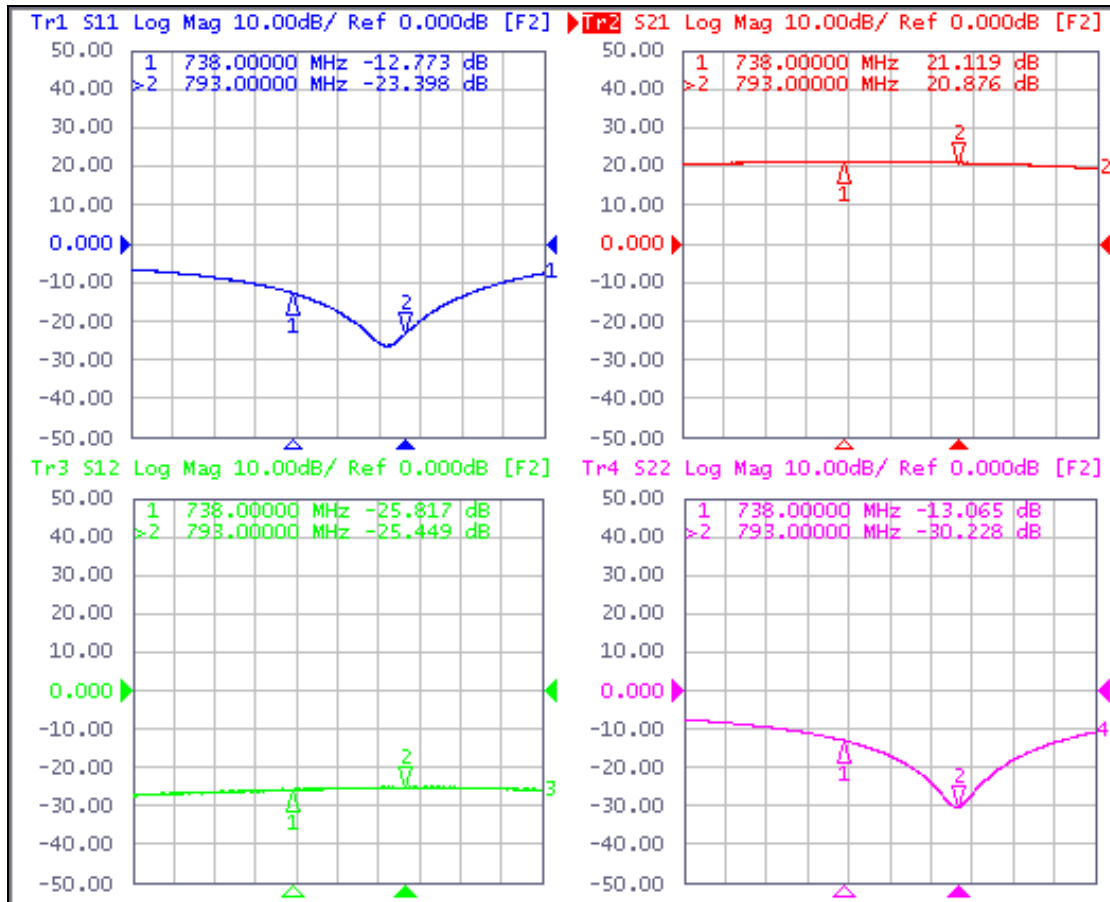
- 2. PCB: 31mil thick FR4

TITLE	
BT09AG Evaluation Board	
(793MHz)	
Drawing Number	Rev.
Date	Drawn By
FILE NAME	SHEET

### 2.1 BT09AG\_793MHz Test Result

SN	Freq [MHz]	Vcc [V]	Icc [mA]	Gain [dB]	OIP3 [dBm] <sup>(1)</sup>	P1dB [dBm]	IRL [dB]	ORL [dB]	NF [dB]
-	793	5	135	20.8	44	26.1	-23.4	-30.2	4.0

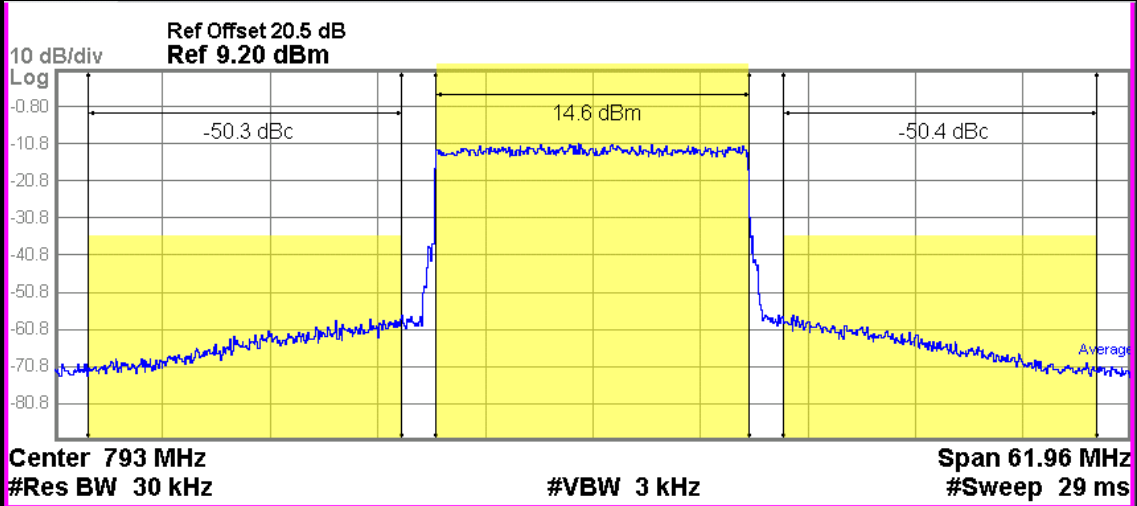
(1) OIP3 was tested @Pout=14dBm/tone 1MHz offset



### 2.2 LTE\_20MHz\_ACLR Test Result

Out Power : 14.6 dBm

LTE\_FDD\_20MHz\_TM 3.1\_100% : 793MHz -50dBc



Carrier Power		Filter	Offset Freq	Integ BW	Lower		Upper		Filter
					dBc	dBm	dBc	dBm	
1	14.596 dBm / 18.00 MHz	ON	20.00 MHz	18.00 MHz	-50.30	-35.71	-50.41	-35.81	ON

Total Carrier Power 14.596 dBm/ 18.00 MHz ACP-IBW