

RF MMIC Innovator

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[CLASSIFICATION] APPLICATION NOTE

[DATE] 2022. 06

[REVISION NO.] REV.1.1

[MEASURING INSTRUMENTS]

- NA_AGILENT E5080A

- SA_AGILENT N9020A

- SG_AGILENT N5182A

- SG_AGILENT N5182B

High Power Amp BT302

Application Note



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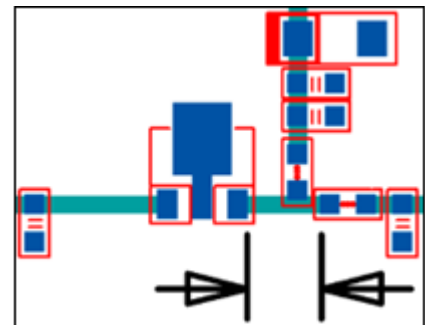
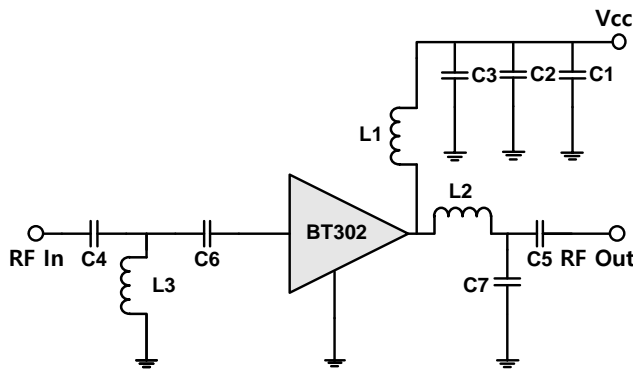
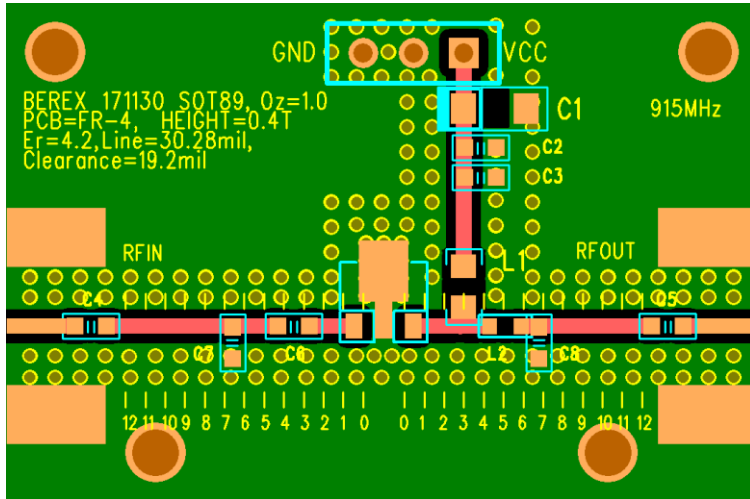
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1. BT302_ 869~960MHz Application Note



Note:

1. PCB: 16mil thick FR4
2. Distance between the edge of the series cap(C6) and the input pin of BT302 - 1.7mm.
3. Distance between the edge of the shunt ind(L3) and the input pin of BT302 - 5.0mm.
4. Distance between the edge of the series ind(L2) and the output pin of BT302 - 3.3mm.
5. Distance between the edge of the shunt cap(C7) and the output pin of BT302 - 5.6mm.

TITLE

BT302 Evaluation Board

(869~960MHz)

Drawing Number

Rev.

Date

Drawn By

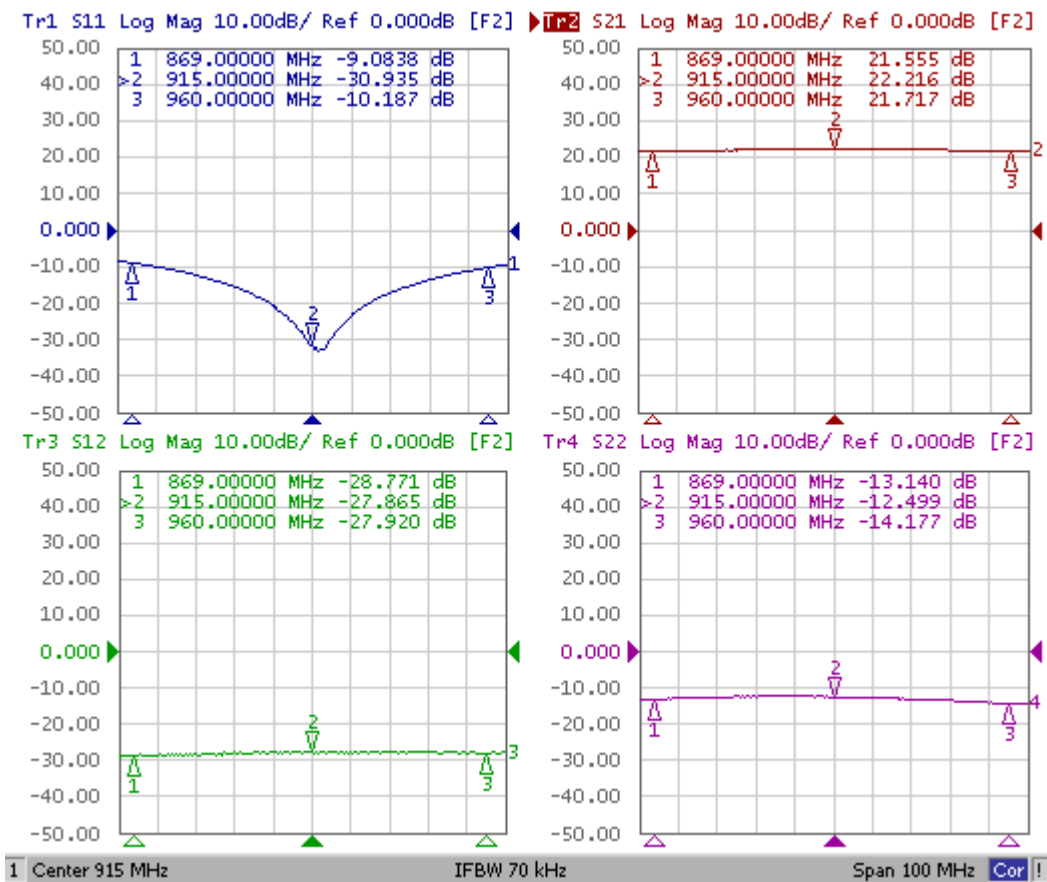
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SHEET

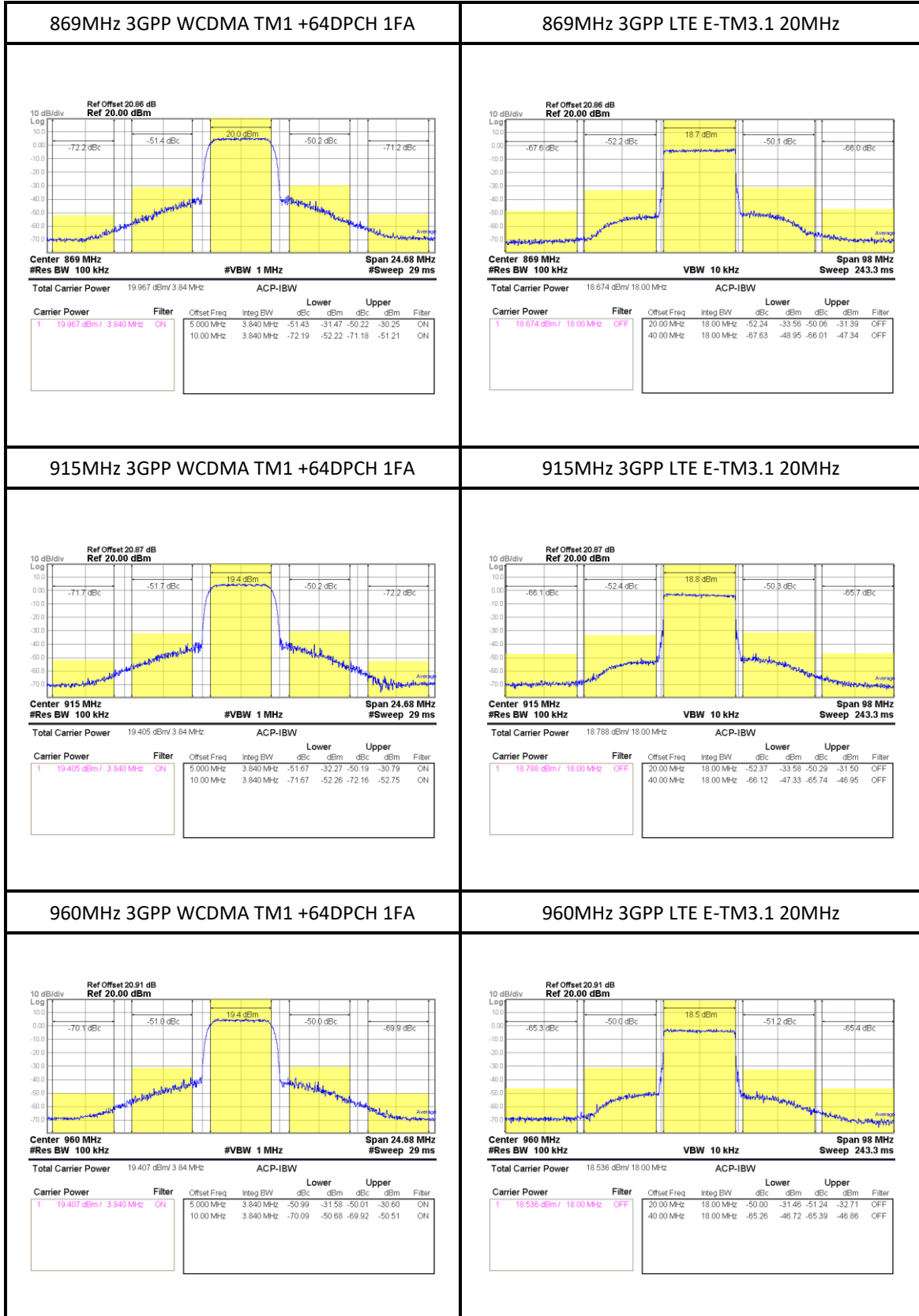
1.1 BT302_869~960MHz Test Result

SN	Freq [MHz]	Vcc [V]	Icc [mA]	Gain [dB]	OIP3 [dBm] ⁽¹⁾	P1dB [dBm]	IRL [dB]	ORL [dB]	NF [dB]
-	869	5	214	21.5	45.2	29.8	-9.1	-13.1	-
-	915	5	214	22.2	42.6	29.4	-30.9	-12.5	-
-	960	5	214	21.7	40.2	29.8	-10.2	-14.2	-

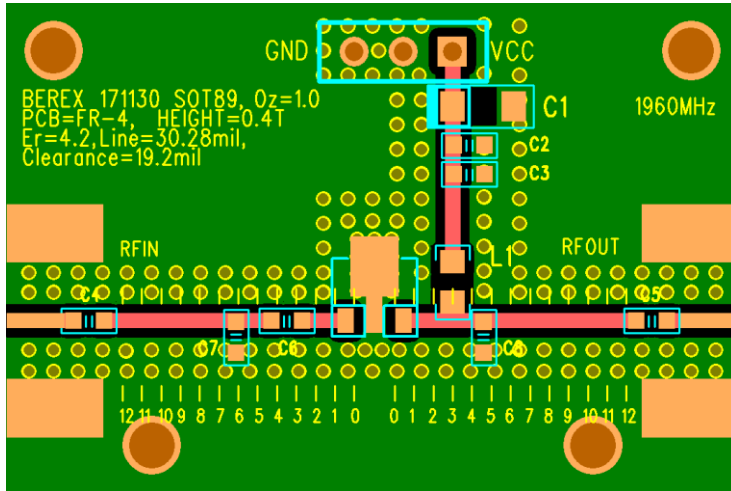
(1) OIP3 was tested @Pout=16dBm/tone 1MHz offset



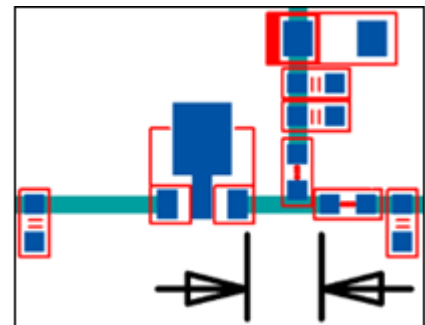
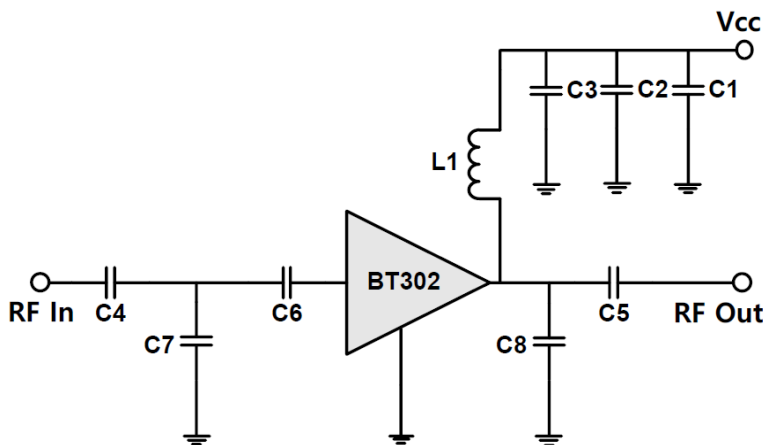
1.1 BT302_869~960MHz ACLR Test Result



2. BT302_1930~1990MHz Application Note



Ref. Des.	Description/ Part Number	Values	Vendor
C1	A3216 CAP	10uF	AVX
C2	0603 CAP	1nF	Samsung
C3	0603 CAP	100pF	Samsung
C4	0603 CAP	100pF	Samsung
C5	0603 CAP	100pF	Samsung
C6	0603 CAP	2.7pF	Samsung
C7	0603 CAP	3.5pF	Samsung
C8	0603 CAP	2pF	Samsung
L1	0805 IND	27nH	Coilcraft
U1	SOT89 PKG	BT302	BEREX



Note:

1. PCB: 16mil thick FR4
1. Distance between the edge of the series cap(C6) and the input pin of BT302 - 1.7mm.
2. Distance between the edge of the shunt ind(C7) and the input pin of BT302 - 5.0mm.
3. Distance between the edge of the shunt cap(C8) and the output pin of BT302 - 3.6mm.

TITLE

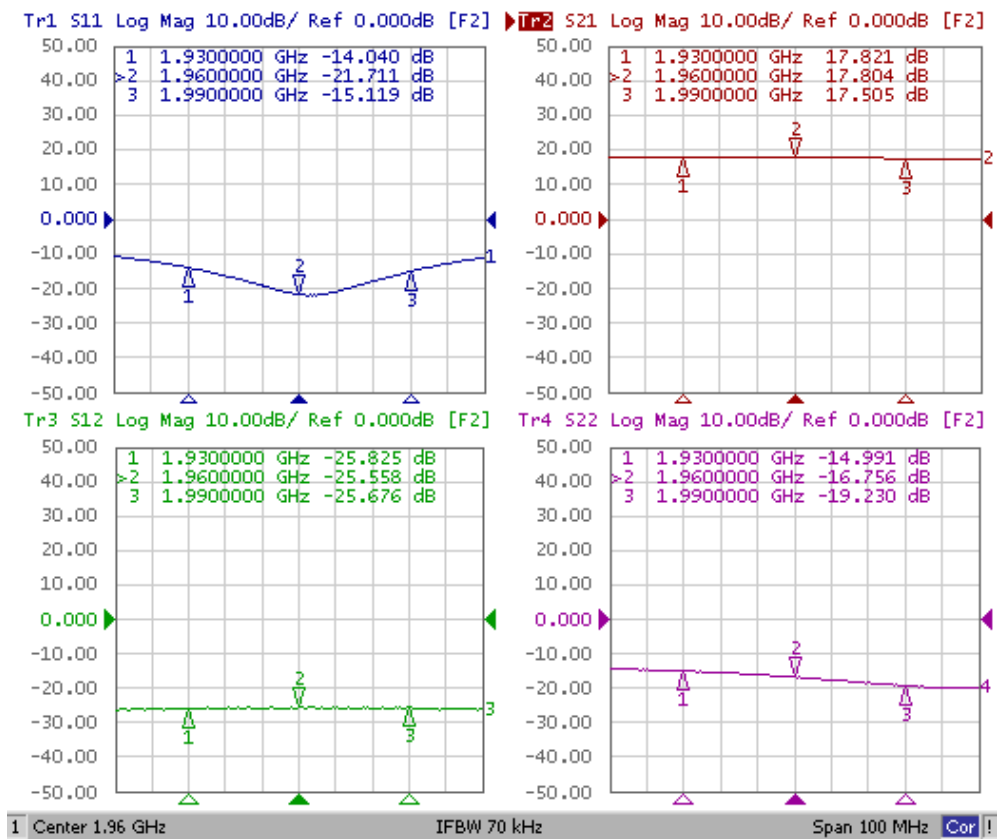
BT302 Evaluation Board
(1930~1990MHz)

Drawing Number	Rev.
Date	Drawn By
FILE NAME	SHEET

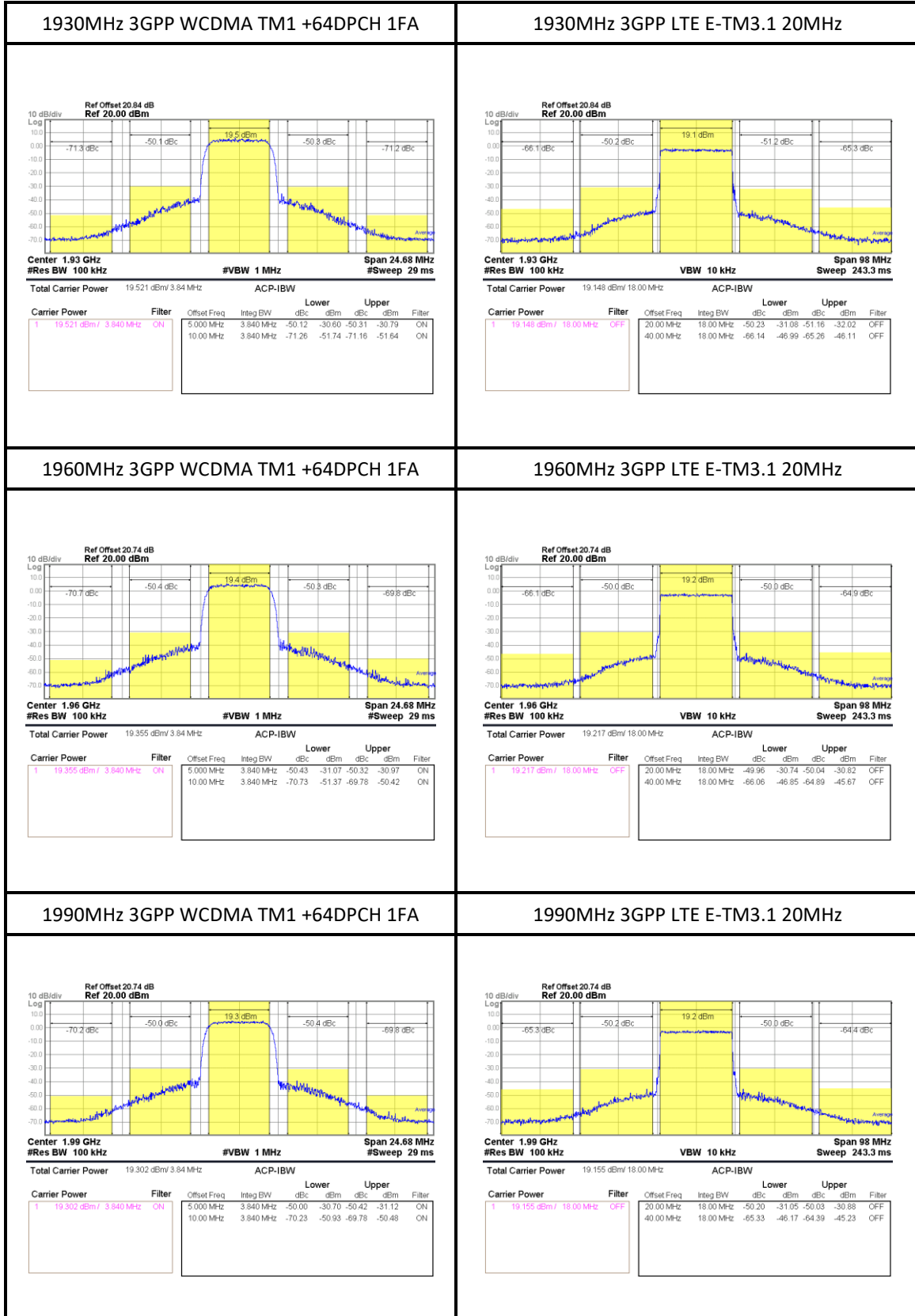
2.1 BT302_1930~1990MHz Test Result

SN	Freq [MHz]	Vcc [V]	Icc [mA]	Gain [dB]	OIP3 [dBm] ⁽¹⁾	P1dB [dBm]	IRL [dB]	ORL [dB]	NF [dB]
-	1930	5	215	17.8	41.6	29.9	-14.0	-15.0	-
-	1960	5	215	17.8	42.1	29.5	-21.7	-16.8	-
-	1990	5	215	17.5	41.2	29.5	-15.1	-19.2	-

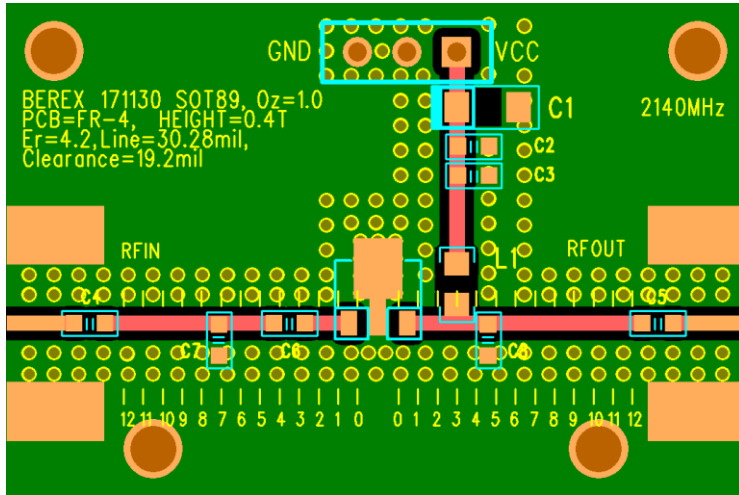
(1) OIP3 was tested @Pout=16dBm/tone 1MHz offset



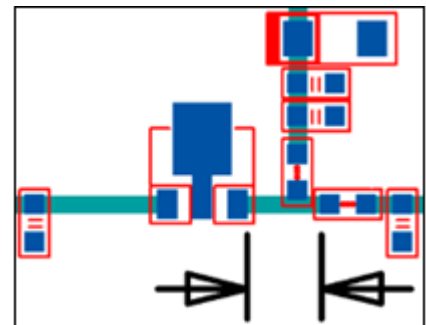
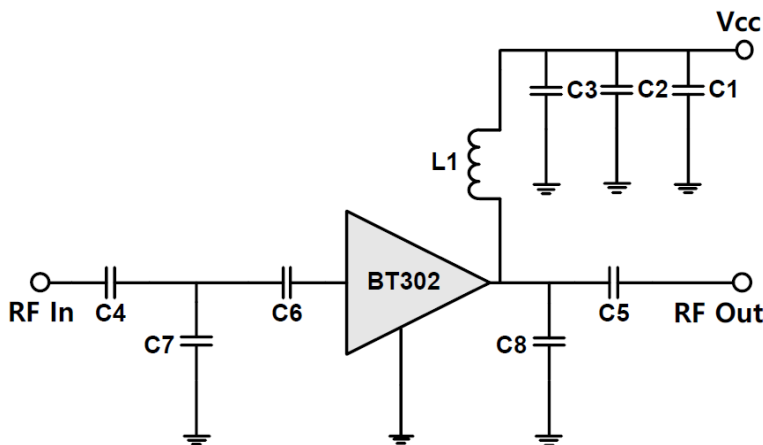
2.2 BT302_1930~1990MHz ACLR Test Result



3. BT302_2110~2170MHz Application Note



Ref. Des.	Description/ Part Number	Values	Vendor
C1	A3216 CAP	10uF	AVX
C2	0603 CAP	1nF	Samsung
C3	0603 CAP	100pF	Samsung
C4	0603 CAP	100pF	Samsung
C5	0603 CAP	100pF	Samsung
C6	0603 CAP	2pF	Samsung
C7	0603 CAP	2.5pF	Samsung
C8	0603 CAP	1.5pF	Samsung
L1	0805 IND	20nH	Coilcraft
U1	SOT89 PKG	BT302	BEREX



Note:

1. PCB: 16mil thick FR4
2. Distance between the edge of the series cap(C6) and the input pin of BT302 - 1.7mm.
3. Distance between the edge of the shunt ind(C7) and the input pin of BT302 - 5.6mm.
4. Distance between the edge of the shunt cap(C8) and the output pin of BT302 - 3.3mm.

TITLE

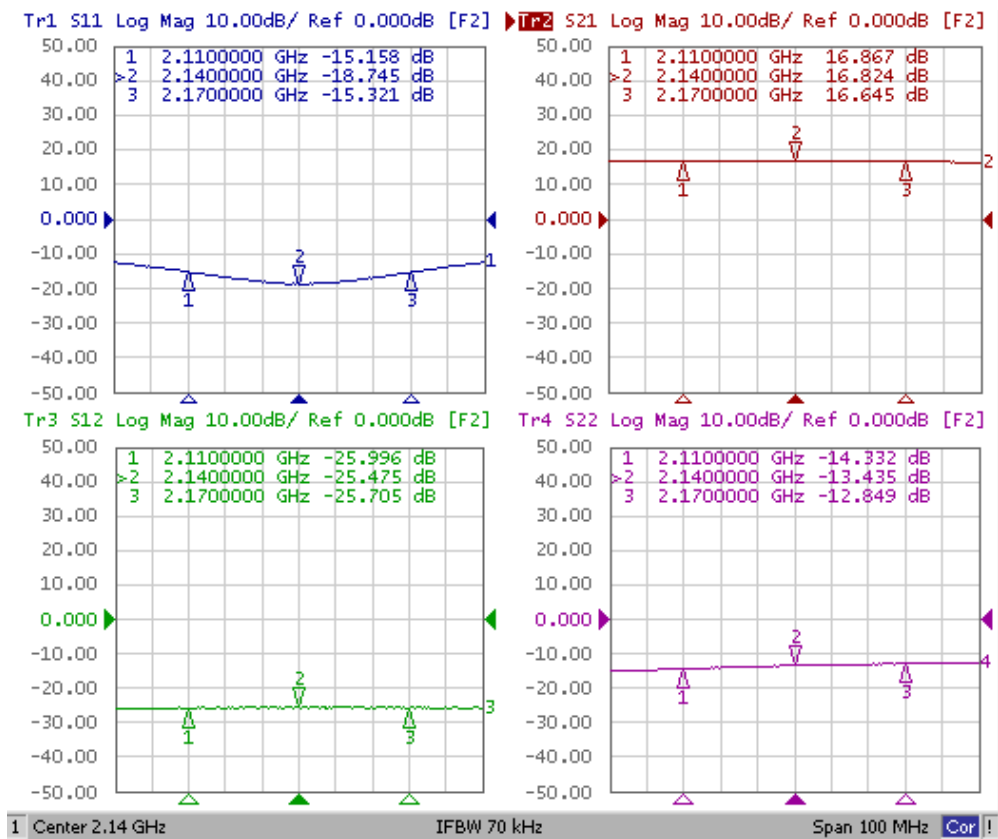
BT302 Evaluation Board
(2110~2170MHz)

Drawing Number	Rev.
Date	Drawn By
FILE NAME	SHEET

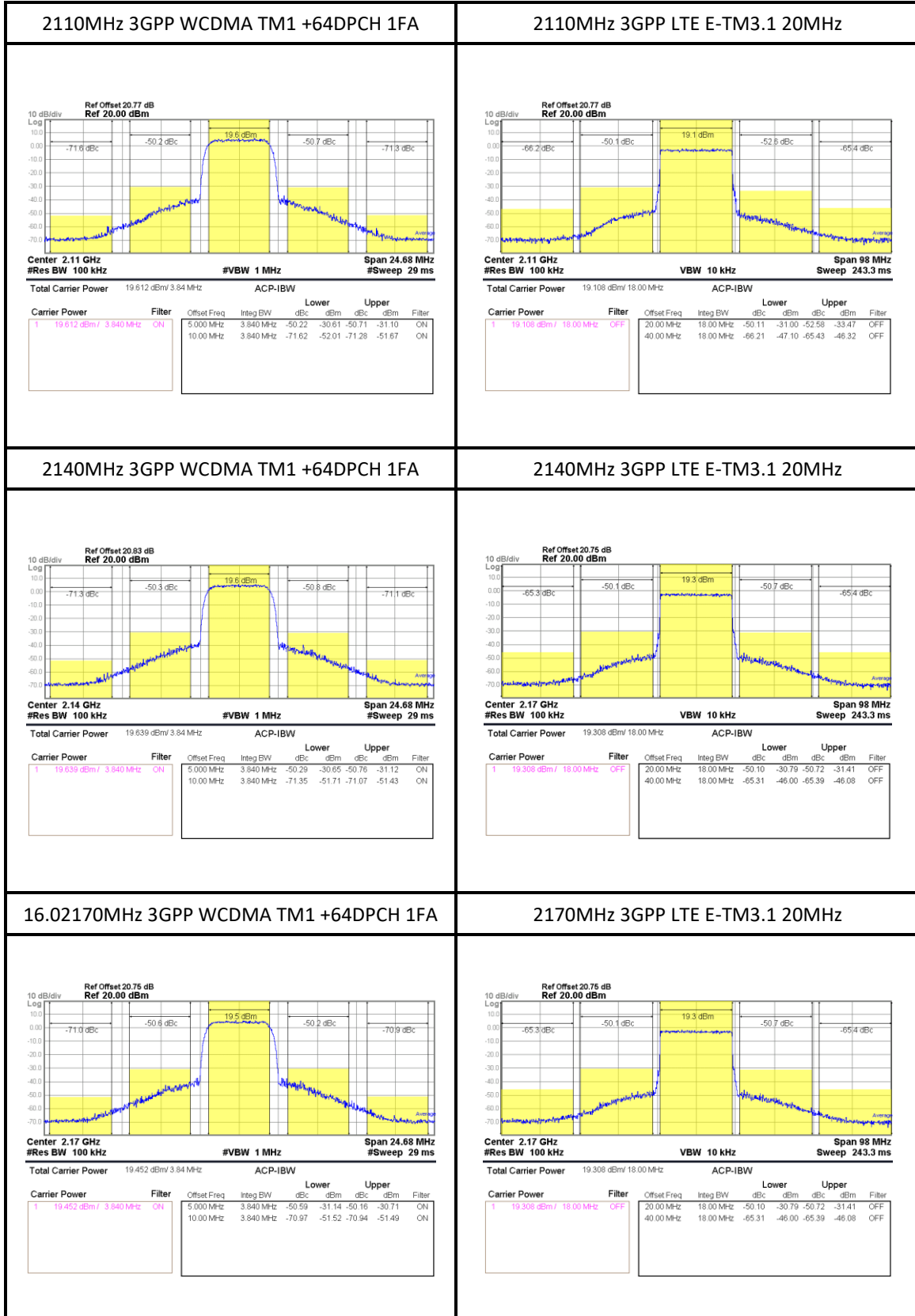
3.1 BT302_2110~2170MHz Test Result

SN	Freq [MHz]	Vcc [V]	Icc [mA]	Gain [dB]	OIP3 [dBm] ⁽¹⁾	P1dB [dBm]	IRL [dB]	ORL [dB]	NF [dB]
-	2110	5	210	16.9	41.5	30	-15.1	-14.3	-
-	2140	5	210	16.8	41.7	29.9	-18.7	-13.4	-
-	2170	5	210	16.6	42.1	29.6	-15.3	-12.8	-

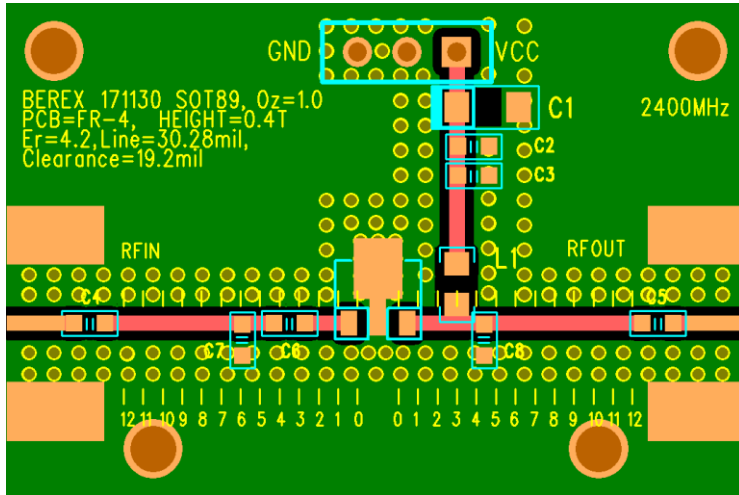
(1) OIP3 was tested @Pout=16dBm/tone 1MHz offset



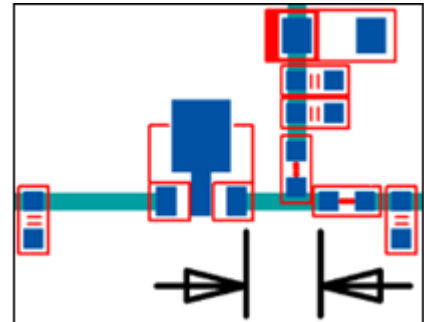
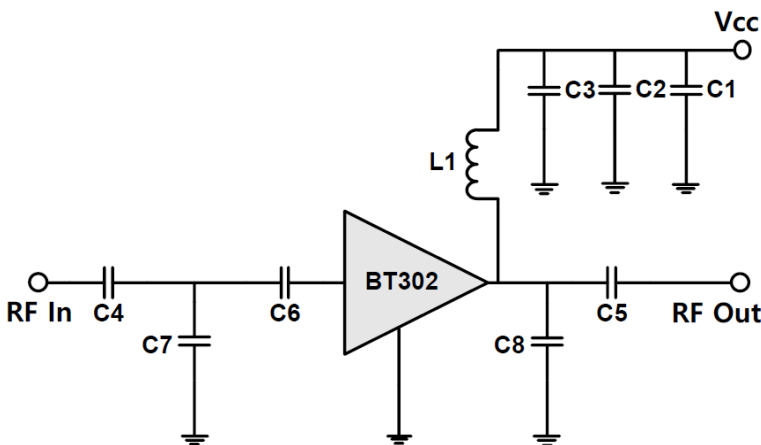
3.2 BT302_2110~2170MHz ACLR Test Result



4. BT302_ 2350~2450MHz Application Note



Ref. Des.	Description/ Part Number	Values	Vendor
C1	A3216 CAP	10uF	AVX
C2	0603 CAP	1nF	Samsung
C3	0603 CAP	100pF	Samsung
C4	0603 CAP	100pF	Samsung
C5	0603 CAP	100pF	Samsung
C6	0603 CAP	1.5pF	Samsung
C7	0603 CAP	2.2pF	Samsung
C8	0603 CAP	1.2pF	Samsung
L1	0805 IND	18nH	Coilcraft
U1	SOT89 PKG	BT302	BEREX



Note:

1. PCB: 16mil thick FR4
2. Distance between the edge of the series cap(C6) and the input pin of BT302 - 1.7mm.
3. Distance between the edge of the shunt ind(C7) and the input pin of BT302 - 4.5mm.
4. Distance between the edge of the shunt cap(C8) and the output pin of BT302 - 3.0mm. .

TITLE

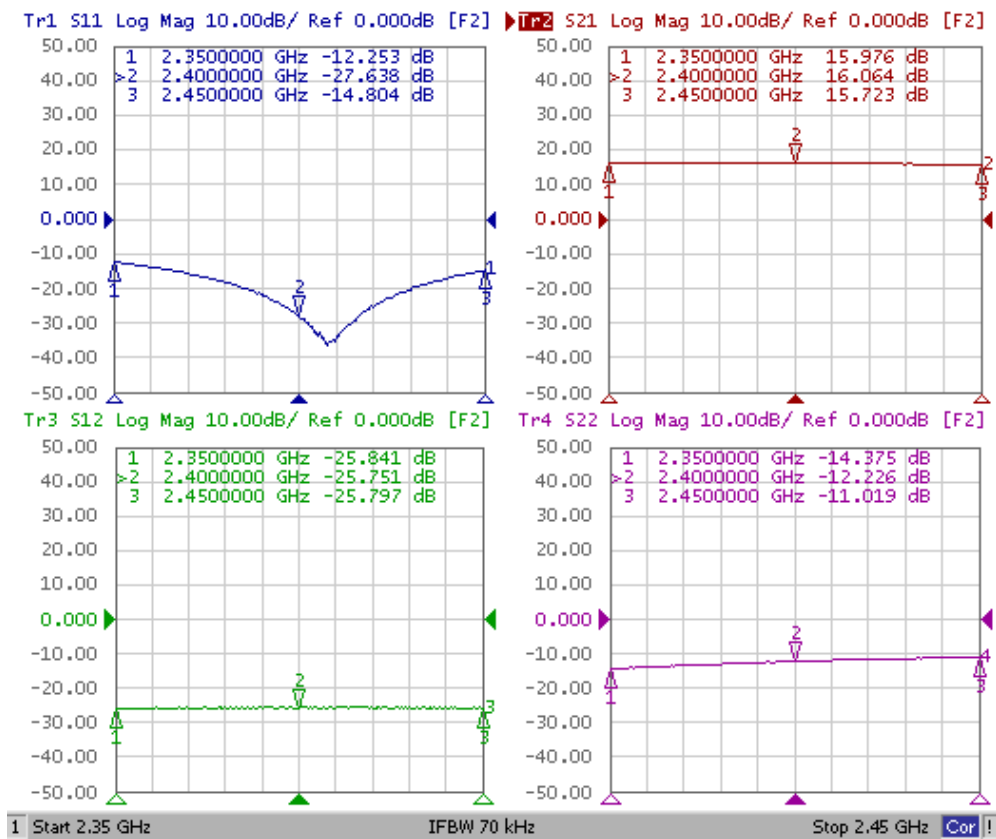
BT302 Evaluation Board
(2350~2450MHz)

Drawing Number	Rev.
Date	Drawn By
FILE NAME	SHEET

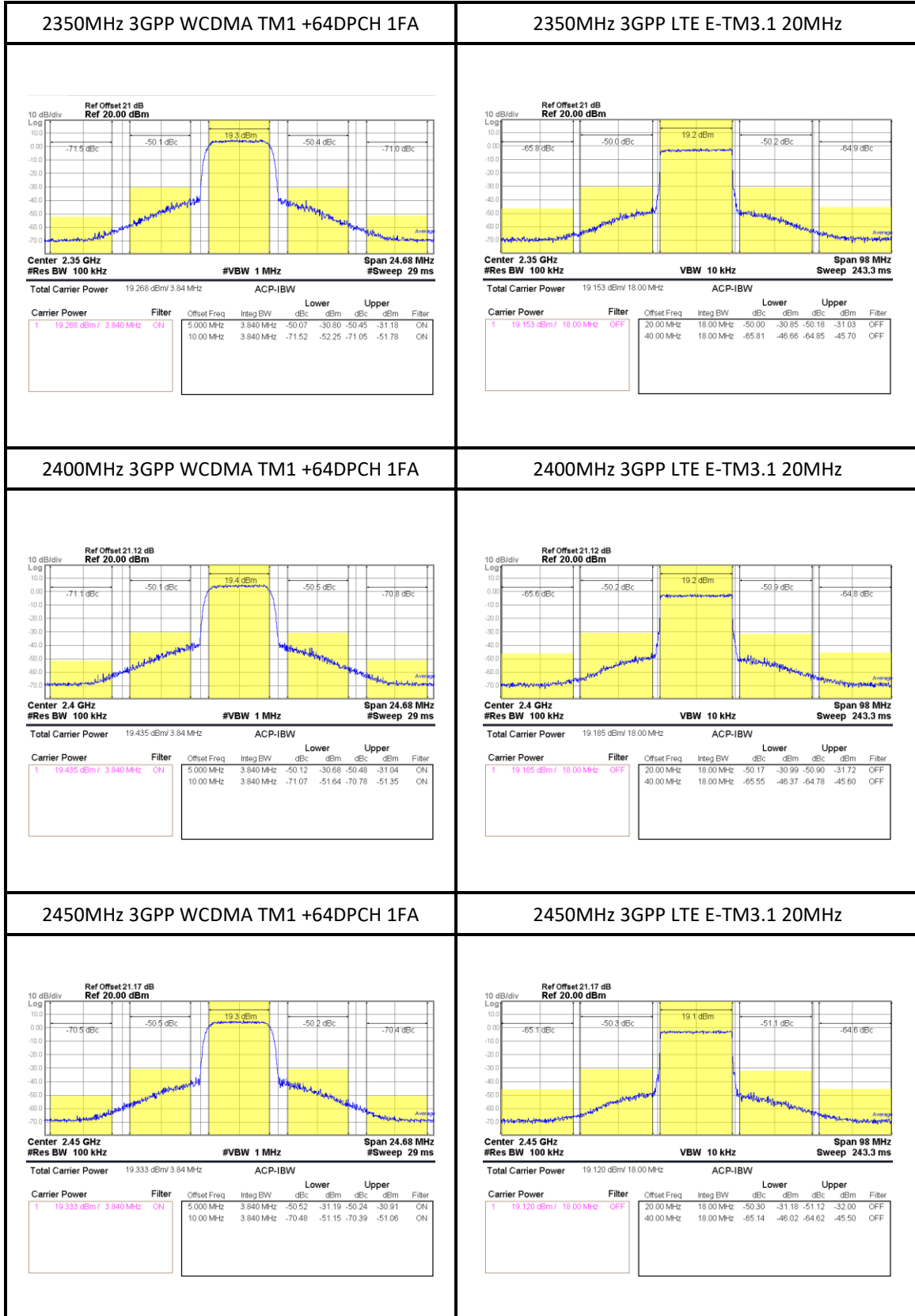
4.1 BT302_2350~2450MHz Test Result

SN	Freq [MHz]	Vcc [V]	Icc [mA]	Gain [dB]	OIP3 [dBm] ⁽¹⁾	P1dB [dBm]	IRL [dB]	ORL [dB]	NF [dB]
-	3400	5	223	16.0	43.0	29.4	-12.3	-14.4	-
-	3500	5	223	16.1	41.6	29.7	-27.6	-12.2	-
-	3600	5	223	15.7	41.4	29.7	-14.8	-11.0	-

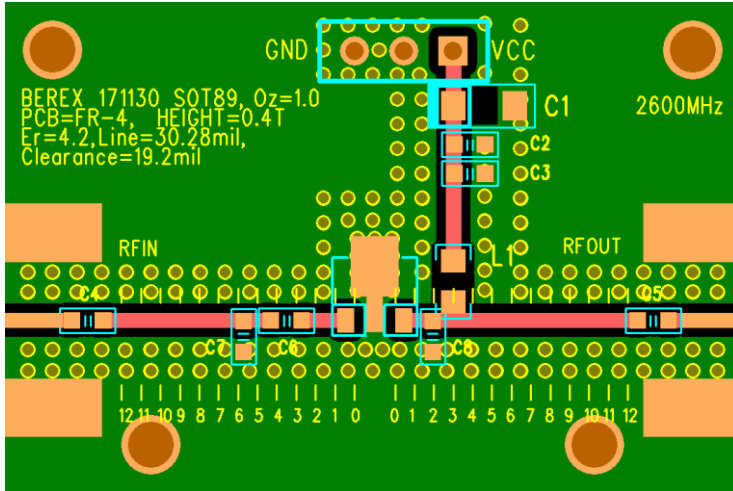
(1) OIP3 was tested @Pout=16dBm/tone 1MHz offset



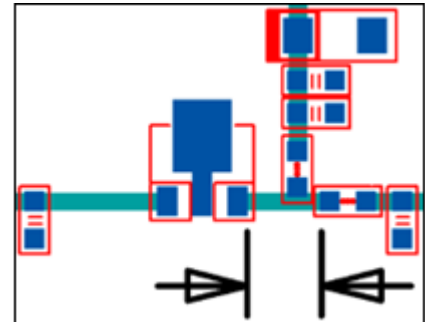
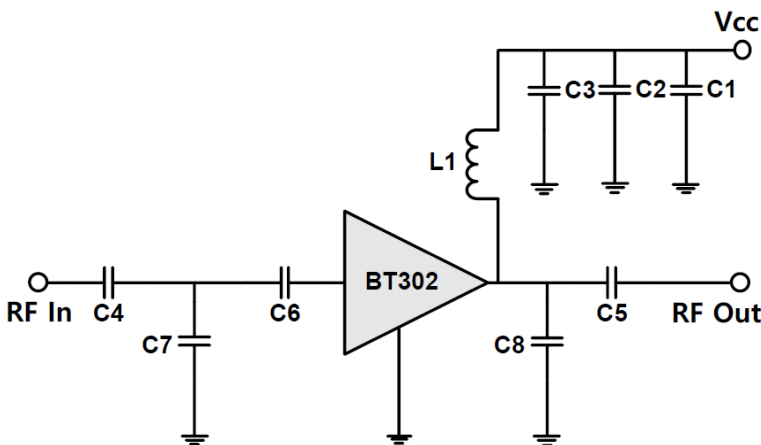
4.2 BT302_2350~2450MHz ACLR Test Result



5. BT302_ 2550~2650MHz Application Note



Ref. Des.	Description/ Part Number	Values	Vendor
C1	A3216 CAP	10uF	AVX
C2	0603 CAP	1nF	Samsung
C3	0603 CAP	100pF	Samsung
C4	0603 CAP	100pF	Samsung
C5	0603 CAP	100pF	Samsung
C6	0603 CAP	1.2pF	Samsung
C7	0603 CAP	2pF	Samsung
C8	0603 CAP	1.2pF	Samsung
L1	0805 IND	12nH	Coilcraft
U1	SOT89 PKG	BT302	BEREX



Note:

1. PCB: 16mil thick FR4
2. Distance between the edge of the series cap(C6) and the input pin of BT302 - 1.7mm.
3. Distance between the edge of the shunt ind(C7) and the input pin of BT302 - 3.6mm.
4. Distance between the edge of the shunt cap(C8) and the output pin of BT302 - 0.8mm.

TITLE

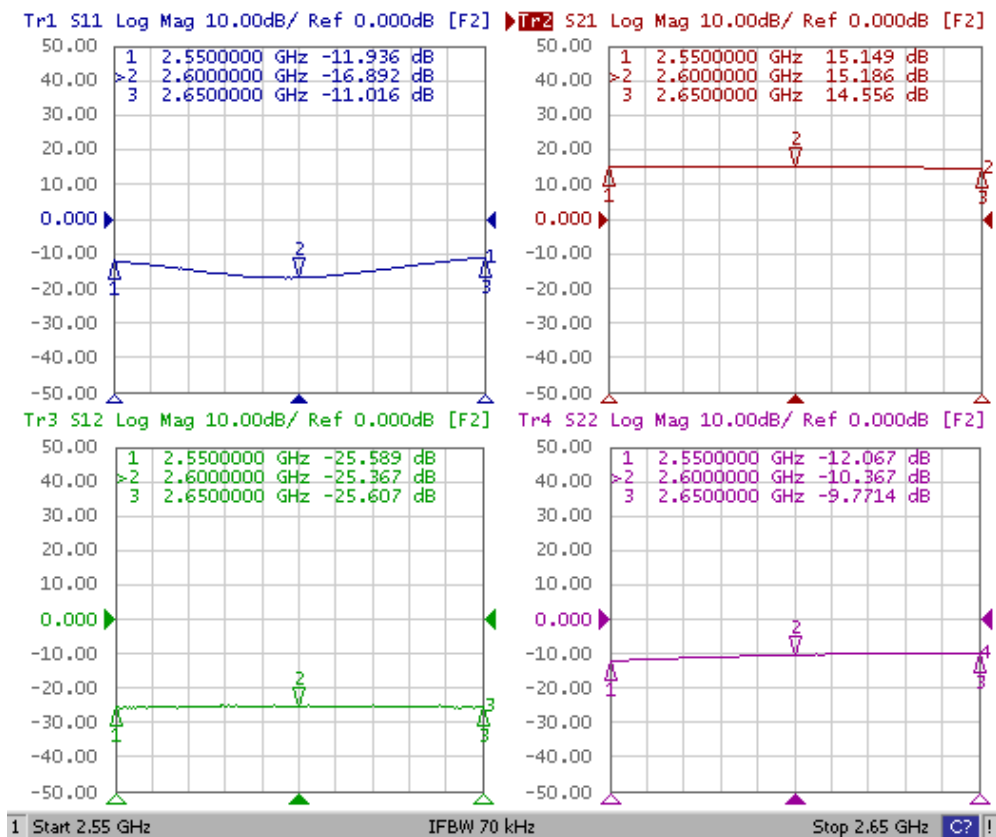
BT302 Evaluation Board
(2550~2650MHz)

Drawing Number	Rev.
Date	Drawn By
FILE NAME	SHEET

5.1 BT302_2550~2650MHz Test Result

SN	Freq [MHz]	Vcc [V]	Icc [mA]	Gain [dB]	OIP3 [dBm] ⁽¹⁾	P1dB [dBm]	IRL [dB]	ORL [dB]	NF [dB]
-	2550	5	216	15.1	41.0	29.9	-11.9	-12.1	-
-	2600	5	216	15.2	41.2	29.6	-16.9	-10.4	-
-	2650	5	216	14.6	40.2	29.9	-11.0	-9.7	-

(1) OIP3 was tested @Pout=16dBm/tone 1MHz offset



5.2 BT302_2550~2650MHz ACLR Test Result

