

Elis Het I kilke la Elixinisi

XR829 Validation Report

Revision 1.0

June. 6, 2018

Hilliphis Market Land Committee in the c

White the state of the state of

All the state of the state of

Copyright @2017 Xradio Technology Co., Ltd. All Rights Reserved

Declaration

THIS DOCUMENTATION IS THE ORIGINAL WORK AND COPYRIGHTED PROPERTY OF XRADIO ("XRADIO"). REPRODUCTION IN WHOLE OR IN PART MUST OBTAIN THE WRITTEN APPROVAL OF XRADIO AND GIVE CLEAR ACKNOWLEDGEMENT TO THE COPYRIGHT OWNER.

THE INFORMATION FURNISHED BY XRADIO IS BELIEVED TO BE ACCURATE AND RELIABLE. XRADIO RESERVES THE RIGHT TO MAKE CHANGES IN CIRCUIT DESIGN AND/OR SPECIFICATIONS AT ANY TIME WITHOUT NOTICE. XRADIO DOES NOT ASSUME ANY RESPONSIBILITY AND LIABILITY FOR ITS USE. NOR FOR ANY INFRINGEMENTS OF PATENTS OR OTHER RIGHTS OF THE THIRD PARTIES WHICH MAY RESULT FROM ITS USE. NO LICENSE IS GRANTED BY IMPLICATION OR OTHERWISE UNDER ANY PATENT OR PATENT RIGHTS OF XRADIO. THIS DATASHEET NEITHER STATES NOR IMPLIES WARRANTY OF ANY KIND, INCLUDING FITNESS FOR ANY PARTICULAR APPLICATION.

THIRD PARTY LICENCES MAY BE REQUIRED TO IMPLEMENT THE SOLUTION/PRODUCT, CUSTOMERS SHALL BE SOLELY RESPONSIBLE TO OBTAIN ALL APPROPRIATELY REQUIRED THIRD PARTY LICENCES. XRADIO SHALL NOT BE LIABLE FOR ANY LICENCE FEE OR ROYALTY DUE IN RESPECT OF ANY REQUIRED THIRD PARTY LICENCE. XRADIO SHALL HAVE NO WARRANTY, INDEMNITY OR OTHER OBLIGATIONS WITH RESPECT TO MATTERS COVERED UNDER ANY REQUIRED THIRD PARTY LICENCE.



Revision History

Revision History

Version	Data	Summary of Changes	-(\$. ¹)
1.0	2018-6-6	Initial Version	

Table 1-1 Revision History



XR829 Validation Report (Revision 1.0) Page 3



Contents

Declaration			2
Revision History			3
Contents			4
Tables			6
Figures			8
1 Introduction			9
2 Summary of Test Result		W. A.	10
2.1 Current Consumption	A A A A A A A A A A A A A A A A A A A	A A A A A A A A A A A A A A A A A A A	10
2.2 WLAN TX Performance			10
2.3 WLAN RX Performance	深圳	- Fritting	10
2.4 WLAN Field Trial Test			10
2.5 BlueTooth TX Performance			11
2.6 BlueTooth RX Performance			11
3 Current Consumption			12
4 WLAN TX Performance			13
4.1 11b Mode		^{is} hir	13
4.2 11g Mode	\$\langle \langle \lang		14
4.3 11n Mode	**************************************		15
5 WLAN RX Performance			16
5.1 RX Sensitivity	***		16
5.2 RX Maximum Input Level			17
5.3 Adjacent Channel Rejection			17
5.4 Nonadjacent Channel Rejection			18
6 WLAN Field Trial Test			19
7 BlueTooth TX Performance			20
7.1 Output Power	All Kinter	A Hinter	20
RIV RIV	W.V	SELV.	

8	Xinei
	:101
	V.

KRAD TECH	ALV THE		Contents
7.2 Adjacent Channel Power			21
7.3 Carrier Frequency Drift			22
7.4 EDR Relative Transmit Power	-\$ ²		23
7.5 EDR Carrier Frequency Stability and	Modulation Accuracy		24
7.6 EDR In-band Spurious Emissions			26
7.7 BLE Output Power			28
7.8 BLE In-Band Emissions			28
7.9 BLE Modulation Characteristics			29
7.10 BLE Carrier Frequency Offset and [Drift	interior de la companya de la compan	30
8 Blue Tooth RX Performance			31
8.1 Receiver Sensitivity			31

8.2 RX Maximum Input Level.....

8.3 Adjacent Channel Rejection.....



Table 2-1 Summary Test Result of Current Consumption. Table 2-2 Summary Test Result of WLAN TX Test Table 2-3 Summary Test Result of WLAN RX Test Table 2-4 Summary Test Result of WLAN Field Trial Test Table 3-1 Test Result of Current Consumption Table 4-1 Test Result of TX Performance in 802.11b Mode Table 4-2 Test Result of TX Performance in 802.11g Mode Table 4-3 Test Result of TX Performance in 802.11n Mode Table 5-1 Test Result of RX Sensitivity Table 5-2 Test Result of RX Maximum Input Level Table 5-3 Test Result of Adjacent Channel Rejection Table 6-1 Test Result of Throughput in Shielding Room Table 7-1 Test Result of BT Output Power Table 7-2 Test Result of BT Adjacent Channel Power Table 7-3 Test Result of BT Carrier Frequency Drift Table 7-4 Test Result of BT Carrier Frequency Drift Table 7-4 Test Result of BT EDR transmit maximum output Power.		NO.	A LIV		ALL V	Tables
Table 2-1 Summary Test Result of Current Consumption	II His	Tables	J. Krist J. Krist	A TO THE PARTY OF	Alie Market Commencer Comm	Kis ^{ili}
Table 2-2 Summary Test Result of WLAN TX Test	· [**]	Table 1-1	Revision History	alik killi		3
Table 2-3 Summary Test Result of WLAN RX Test. Table 2-4 Summary Test Result of WLAN Field Trial Test. Table 3-1 Test Result of Current Consumption. Table 4-1 Test Result of TX Performance in 802.11b Mode. Table 4-2 Test Result of TX Performance in 802.11p Mode. Table 4-3 Test Result of TX Performance in 802.11p Mode. Table 5-1 Test Result of RX Sensitivity. Table 5-2 Test Result of RX Maximum Input Level. Table 5-3 Test Result of Adjacent Channel Rejection. Table 5-4 Test Result of Nonadjacent Channel Rejection. Table 6-1 Test Result of Throughput in Shielding Room. Table 7-1 Test Result of BT Output Power. Table 7-2 Test Result of BT Carrier Frequency Drift. Table 7-3 Test Result of BT EDR transmit maximum output Power. Table 7-5 Test Result of BT EDR Carrier Frequency Stability and Modulation Accuracy. Table 7-7 Test Result of BT EDR In-band spurious emissions. Table 7-8 Test Result of BT ED RUD Toward. Table 7-9 Test Result of BT ED RUD Toward. Table 7-10 Test Result of BT EDR Modulation Characteristics. Table 7-11 Test Result of BLE Carrier Frequency Offset and Drift.	7	Table 2-1	Summary Test Result of Curre	ent Consumption		10
Table 2-4 Summary Test Result of WLAN Field Trial Test	1	Table 2-2	Summary Test Result of WLAN	N TX Test		10
Table 3-1 Test Result of Current Consumption Table 4-1 Test Result of TX Performance in 802.11b Mode Table 4-2 Test Result of TX Performance in 802.11p Mode Table 4-3 Test Result of TX Performance in 802.11n Mode Table 5-1 Test Result of RX Sensitivity Table 5-2 Test Result of RX Maximum Input Level Table 5-3 Test Result of Adjacent Channel Rejection Table 5-4 Test Result of Nonadjacent Channel Rejection Table 6-1 Test Result of Throughput in Shielding Room Table 7-1 Test Result of BT Output Power Table 7-2 Test Result of BT Adjacent Channel Power Table 7-3 Test Result of BT Carrier Frequency Drift Table 7-5 Test Result of BT EDR transmit maximum output Power Table 7-6 Test Result of BT EDR Carrier Frequency Stability and Modulation Accuracy Table 7-7 Test Result of BT EDR In-band spurious emissions. Table 7-8 Test Result of BT BLE Output Power Table 7-9 Test Result of BT BLE In-Band Emissions Table 7-10 Test Result of BLE Modulation Characteristics Table 7-11 Test Result of BLE Carrier Frequency Offset and Drift	7	Table 2-3	Summary Test Result of WLAN	N RX Test		10
Table 4-1 Test Result of TX Performance in 802.11b Mode	7	Table 2-4	Summary Test Result of WLAN	N Field Trial Test		10
Table 4-2 Test Result of TX Performance in 802.11g Mode	7	Table 3-1	Test Result of Current Consum	nption		12
Table 4-3 Test Result of TX Performance in 802.11n Mode Table 5-1 Test Result of RX Sensitivity Table 5-2 Test Result of RX Maximum Input Level Table 5-3 Test Result of Adjacent Channel Rejection Table 5-4 Test Result of Nonadjacent Channel Rejection Table 6-1 Test Result of Throughput in Shielding Room Table 7-1 Test Result of BT Output Power Table 7-2 Test Result of BT Adjacent Channel Power Table 7-3 Test Result of BT Carrier Frequency Drift Table 7-4 Test Result of BT EDR transmit maximum output Power. Table 7-5 Test Result of BT EDR Carrier Frequency Stability and Modulation Accuracy Table 7-7 Test Result of BT EDR In-band spurious emissions. Table 7-9 Test Result of BT BLE In-Band Emissions Table 7-10 Test Result of BLE Modulation Characteristics Table 7-11 Test Result of BLE Carrier Frequency Offset and Drift			:(0)	(),	:(0)	
Table 5-1 Test Result of RX Sensitivity	7	Table 4-2	Test Result of TX Performance	e in 802.11g Mode		14
Table 5-2 Test Result of RX Maximum Input Level. Table 5-3 Test Result of Adjacent Channel Rejection	1	4,00	4,44	4,**	4,44	15
Table 5-2 Test Result of RX Maximum Input Level. Table 5-3 Test Result of Adjacent Channel Rejection		Table 5-1	Test Result of RX Sensitivity			16
Table 5-4 Test Result of Nonadjacent Channel Rejection	徐" 7		Test Result of RX Maximum Ir	nput Level		17
Table 6-1 Test Result of Throughput in Shielding Room. Table 7-1 Test Result of BT Output Power	7	Table 5-3	Test Result of Adjacent Chann	nel Rejection		17
Table 7-1 Test Result of BT Output Power	1	Table 5-4	Test Result of Nonadjacent Ch	nannel Rejection		18
Table 7-2 Test Result of BT Adjacent Channel Power	1	Table 6-1	Test Result of Throughput in S	Shielding Room		19
Table 7-3 Test Result of BT Carrier Frequency Drift Table 7-4 Test Result of BT EDR transmit maximum output Power. Table 7-5 Test Result of BT EDR transmit minimum output Power. Table 7-6 Test Result of BT EDR Carrier Frequency Stability and Modulation Accuracy Table 7-7 Test Result of BT EDR In-band spurious emissions. Table 7-8 Test Result of BLE Output Power. Table 7-9 Test Result of BT BLE In-Band Emissions Table 7-10 Test Result of BLE Modulation Characteristics Table 7-11 Test Result of BLE Carrier Frequency Offset and Drift.	7	Table 7-1	Test Result of BT Output Power	er		20
Table 7-4 Test Result of BT EDR transmit maximum output Power			Test Result of BT Adjacent Cha	annel Power		21
Table 7-4 Test Result of BT EDR transmit maximum output Power	1	Table 7-3	Test Result of BT Carrier Frequency	uency Drift		22
Table 7-6 Test Result of BT EDR Carrier Frequency Stability and Modulation Accuracy Table 7-7 Test Result of BT EDR In-band spurious emissions. Table 7-8 Test Result of BLE Output Power		.O.: V	Test Result of BT EDR transmi	t maximum output Power	N. W.	23
Table 7-7 Test Result of BT EDR In-band spurious emissions Table 7-8 Test Result of BLE Output Power Table 7-9 Test Result of BT BLE In-Band Emissions Table 7-10 Test Result of BLE Modulation Characteristics Table 7-11 Test Result of BLE Carrier Frequency Offset and Drift		Table 7-5	Test Result of BT EDR transmi	t minimum output Power		23
Table 7-8 Test Result of BLE Output Power Table 7-9 Test Result of BT BLE In-Band Emissions Table 7-10 Test Result of BLE Modulation Characteristics Table 7-11 Test Result of BLE Carrier Frequency Offset and Drift.		Table 7-6	Test Result of BT EDR Carrier	Frequency Stability and Modul	ation Accuracy	24
Table 7-9 Test Result of BT BLE In-Band Emissions Table 7-10 Test Result of BLE Modulation Characteristics Table 7-11 Test Result of BLE Carrier Frequency Offset and Drift	1.	Та	able 7-7 Test Result of BT EDF	R In-band spurious emissions	r	26
Table 7-10 Test Result of BLE Modulation Characteristics	7	Table 7-8	Test Result of BLE Output Pov	ver		28
Table 7-11 Test Result of BLE Carrier Frequency Offset and Drift	1	Table 7-9	Test Result of BT BLE In-Band	Emissions		28
	7	Table 7-10	Test Result of BLE Modulation	on Characteristics		29
Table 8-1 Test Result of BT Rx Sensitivity	1	Table 7-11	Test Result of BLE Carrier Fre	equency Offset and Drift		30
	1	Table 8-1	Test Result of BT Rx Sensitivit	у	,(Ö)	31
Table 8-2 Test Result of RX Maximum Input Level	7	Table 8-2	Test Result of RX Maximum Ir	nput Level	all Xim	32

Contents

Table 8-3 Test Result of Adjacent Channel Rejection.....

1.40

SWELTHIN TO LINE

影開於影響程才樹塊心湖流的

SELIMBIO MARTINES

深圳府游塘租升橋牌12周城市

A HORALD KINGS

. .

THE TO HINE

CIR IN AIR WINE

ARTIN KITT

	Figures		
深圳	Figure 4-1	11b Mode Transmit Spectrum Mask	13
	Figure 4-2	11g Mode Transmit Spectrum Mask	14
	Figure 4-3	11n Mode Transmit Spectrum Mask	15
	Figure 7-1	The limit definition of the BR output power	21
	Figure 7-2	The limits of the initial carrier frequency drift test	22
	Figure 7-3	The EDR in-band spurious limits definition	27
	Figure 7-4	TheΔf1 definition of the BLE Modulation Characteristics test	29
	Figure 7-5	The∆f2 definition of the BLE Modulation Characteristics test	30

張捌桁譪攤黊浳憪쏂淽敧喖햡



1 Introduction

This document is the RF validation report of the XR829, a fully integrated 2.4GHz WLAN and Bluetooth SoC. The key RF performance test results, such as TX power, RX sensitivity and Power test etc. are shown in this document.

Hilly is the last the

張捌桁擶攤挺捀燘觮Ѵ┚傠椛喖

深圳附指推提上排機工工品,

深圳市场推荐作品

The parties of the pa

加州市

指導機能才機機以關於市

CHIEF THE PROPERTY OF THE PARTY OF THE PARTY

IR IV Linke

IN IN THE

A IZ TAINTE

THE IN THE

2 Summary of Test Result

2.1 Current Consumption

Section	Test Item	Status
3	Current Consumption	Excellent

Table 2-1 Summary Test Result of Current Consumption

2.2 WLAN TX Performance

	Section	AND THE PERSON NAMED IN COLUMN TO TH	Test Item	Status	A STATE OF THE PARTY OF THE PAR
×	4	深圳	Transmit Power	Pass	- FRETHE

Table 2-2 Summary Test Result of WLAN TX Test

2.3 WLAN RX Performance

Section	Test Item	Status
5.1	Receiver Sensitivity	Pass
5.2	Receiver Maximum Input Level	Pass
5.3	Adjacent channel rejection	Pass
5.4 (%)	Nonadjacent channel rejection	Pass

Table 2-3 Summary Test Result of WLAN RX Test

2.4 WLAN Field Trial Test

Section	Test Item	Status
6	Throughput in Shielding Room	Pass

Table 2-4 Summary Test Result of WLAN Field Trial Test

2.5 BlueTooth TX Performance

	X3' X3'	X	.X\$\tag{3}'
XVXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Section	Test Item	Status
	7.1	Output Power	Pass
	7.2	Adjacent Channel Power	Pass
	7.3	Carrier Frequency Drift	Pass
	7.4	EDR Relative Transmit Power	Pass
	7.5	EDR Carrier Frequency Stability and Modulation Accuracy	Pass
	7.6 Airte	EDR In-Band Spurious Emissions	Pass Kinkei
	7.7	BLE Output Power	Pass
	7.8	BLE In-Band Emissions	Pass
ž.XX	7 .9	BLE Modulation Characteristics	Pass
T.	7.10	BLE Carrier Frequency Offset and Drift	Pass

Table 2-5 Summary Test Result of BT TX Test

2.6 BlueTooth RX Performance

Section		Test Item	Status	
8.1		Receiver Sensitivity	Pass (hither	
8.2	A TOPPE OF	Maximum Input Level	Pass	A THE PERSON NAMED IN COLUMN TO PERSON NAMED
8.3		Adjacent Channel Rejection	Pass	

Table 2-6 Summary Test Result of BT RX Test

3 Current Consumption

Test Results:

State (at normal condition) Mode: DCDC	VCC (3	3.6V)	Unit
State (at normal condition) Mode. Debe	Test	Max.	Onic
RX (WLAN Active, 2.4 GHz, 1M DSSS/CCK)	29	-	mA
RX (WLAN Active, 2.4 GHz, 11M DSSS/CCK)	29.9	-	mA
RX (WLAN Active, 2.4 GHz, 20M Mode MCS0)	32.4	-	mA
RX (WLAN Active, 2.4 GHz, 20M Mode MCS7)	34.2	-	mA
RX (WLAN Active, 2.4 GHz, 40M Mode MCS0)	37.6	-	mA
RX (WLAN Active, 2.4 GHz, 40M Mode MCS7)	40.8	-	mA
TX (WLAN Active, 2.4 GHz, 16dBm, 11M DSSS/CCK)	141.8	-	mA
TX (WLAN Active, 2.4 GHz, 15dBm,20M Mode MCS0)	134.8	<u> </u>	mA
TX (WLAN Active, 2.4 GHz, 14dBm,20M Mode MCS7)	127.3	-	mA
TX (WLAN Active, 2.4 GHz, 15dBm,40M Mode MCS0)	136.4	-	mA
TX (WLAN Active, 2.4 GHz, 14dBm,40M Mode MCS7)	124.7	-	mA
RX(BT Active,5dBm,DH1)	17.9	-	mA
RX(BT Active,5dBm,2DH3)	18.9	-	mA
RX(BT Active,5d8m,3DH5)	18.9	-	mA
TX(BT Active,5dBm,DH1)	40.5	-	mA N
TX(BT Active,5dBm,2DH3)	40.8	- /½	mA
TX(BT Active,5dBm,3DH5)	41.2	- 强制附	mA

Table 3-1 Test Result of Current Consumption

4 WLAN TX Performance

4.1 11b Mode

Test Results:

Mode: 11b		Band	width:	20MHz	Z			Data	Rate: 1	1Mbps	;	Temp	eratur	e: 30 ℃	!
Items(Unit)	Spec.							Cha	nnel						
items(Gine)	Spec.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Output Power (dBm)	16±2	16.6	16.8	16.3	16.2	16.4	16.3	16.4	15.7	15.6	15.6	15.9	15.6	15.7	16
EVM (dB)	<-9	-32	-32	-32	-32	-32	-33	-32	-33	-32,	-32	-32	-32	-32,1	-32
Mask	<u>-</u>	pass	pass												
Freq. Error (KHz)	±60	-11. 2	-11. 2	-11. 2	11. 2	-11. 3	-11. 5	-11. 6	11. 5	-11. 7	-11. 7	-11. 7	11. 5	-11. 6	-11. 5
Symbol Clock Error (ppm)	±25	-5.2 4	-5.0 3	-4.9 3	-5.0 2	-5.2 1	-5.3 9	-5.3 4	-5.3 9	-5.4 8	-5.5 7	-5.6	-5.3 7	-5.4 5	-5.5 1

Table 4-1 Test Result of TX Performance in 802.11b Mode

Pass Criteria:

Follow the 802.11b criterions which are marked in "red color" in the table.

The mask criterion of 802.11b mode is shown in Figure 4-1.

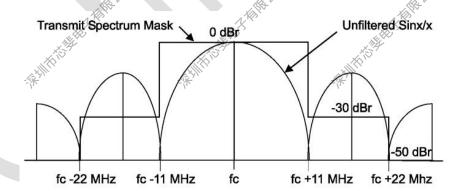


Figure 4-1 11b Mode Transmit Spectrum Mask

4.2 11g Mode

Test Results:

														00	
Mode: 11g				Band	width:	20MH	Z	Data	Rate: 5	4Mbps		Temp	eratur	e: 30 °C	
								Cha	nnel						
Items(Unit)	Spec.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Output Power (dBm)	15±2	15.1	15.2												
EVM (dB)	<-25	-31	-30 -30 -30 -30 -30 -30 -30 -30 -30 -30												
Mask	-	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass
Freq. Error (KHz)	±48	-11													
Symbol Clock Error (ppm)	±20	44.7	-4.8	-5.1	-4.8	4.8	-4.7	-4.6	-4.8	4.5	-4.3	-4.7	-4.7	*5	-4.6

Table 4-2 Test Result of TX Performance in 802.11g Mode

Pass Criteria:

Follow the 802.11g criterions which are marked in "red color" in the table.

The mask criterion of 802.11g mode is shown in Figure 4-2.

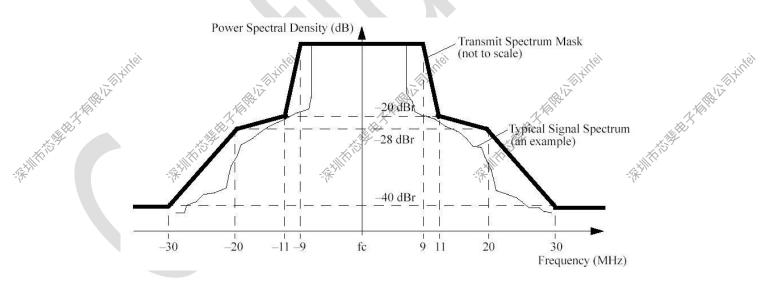


Figure 4-2 11g Mode Transmit Spectrum Mask

4.3 11n Mode

Test Results:

Mode: 11n			Bandwidth: 20MHz Data Rate: 65Mbps Temperature: 30 ℃ Channel												
								Cha	nnel						
Items(Unit)	Spec.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Output Power (dBm)	14±2	14.4	14.1												
EVM (dB)	<-28	-31													
Mask	-	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass	pass
Freq. Error (KHz)	±48	-11	11	-11	-11	-11	41	-11	-11	-11	41	-11	-11	-11	41
Symbol Clock Error (ppm)	±20	4	-4.1	-3.3	-4.3	3.8	-4.5	-3.8	-3.6	3.8	-3.6	-3.4	-3.3	3.2	-3.5

Table 4-3 Test Result of TX Performance in 802.11n Mode

Pass Criteria:

Follow the 802.11n criterions which are marked in "red color" in the table.

The mask criterion of 802.11n mode is shown in Figure 4-3.

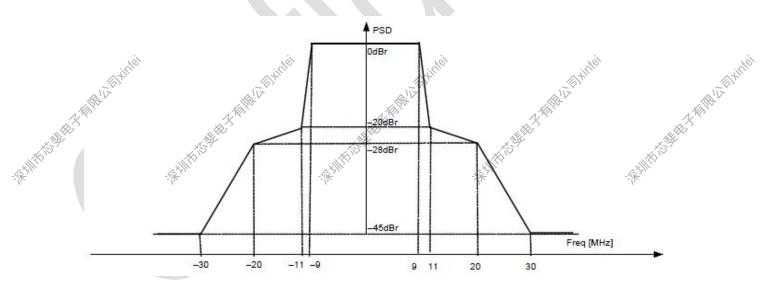


Figure 4-3 11n Mode Transmit Spectrum Mask

5 WLAN RX Performance

5.1 RX Sensitivity

Test Results:

	Bandwidth:	20MHz							Temp	eratur	e: 30 ℃)		-			
									Cha	nnel							
	Rate	Spec.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Unit
	11b@ 11Mbps	<-85	-89	-89	-89	÷89	-89	-89	-89	-89 	-89	-89	-89	-89	-89	-90	dBm
	11g@ 54Mbps	<-70	-75	-75	-75	-74	-75	-75	×-75	-75	-75	-75	× 7 5	-75	-75	-75	dBm
177	11n@ mcs7	<-69	- 71	-71	-71	-71	-71	-71	-71	-71	-71	-71	-71	-71	-7 <u>1</u>	-71	dBm

Table 5-1 Test Result of RX Sensitivity

Pass Criteria:

Follow the criterions which are marked in "red color" in the table.

Militial Heart I have been supported to the state of the

Marine Ma

5.2 RX Maximum Input Level

Test Results:

Bandwidth	Temperature: 30 ℃ Channel Rate Spec. 1 2 3 4 5 6 7 8 9 10 11 12 13 14 Unit 11b@ 11Mbps >-10 7.0															
								Cha	nnel							
Rate	Spec.	1	2													
	>-10	7.0	7.0	7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0												
11g@ 54Mbps	>-20. Xintel	-4.0	-4.0	-4.0		-4.0	-4.0	-4.0		-4.0	-4.0	-4.0	-4.0 tintel	-4.0	-4.0	dBm
11n@ mcs7	>-20	-4.0	-4.0	-4.0 ¹⁷	-4.0	-4.0	-4.0	-4.0 ¹⁷	-4.0	-4.0	-4.0	-4.0 ¹¹	-4.0	-4.0	-4.0	dBm ¹

Table 5-2 Test Result of RX Maximum Input Level

Pass Criteria:

Follow the 802.11 criterions which are marked in "red color" in the table.

5.3 Adjacent Channel Rejection

Test Results:

	Bandwidth: 20MHz	Temper	ature: 30	C		
	TO THE VIEW OF THE PARTY OF THE		THE LET C	Channel		TO THE
	Rate	Spec.	1	7	13	Unit
7	11b @ 11Mbps(dB)	≯3 5	35.2	35.2	35.1	dB
	11g @ 54Mbps(dB)	>-1	18.9	19.2	19.4	dB
	11n @ mcs7(dB)	>-2	10.2	10.2	10.2	dB

Table 5-3 Test Result of Adjacent Channel Rejection

Pass Criteria:

Follow the 802.11 criterions which are marked in "red color" in the table.

5.4 Nonadjacent Channel Rejection

Test Results:

Bandwidth: 20MHz	Tempe	rature: 3	30℃		
			Channe	I	
Rate	Spec.	1	7	13	Unit
11g @ 54Mbps	>15	23.2	23.2	23.2	dB
11n @ mcs7	>14	19.2	19.2	19.2	dB

Table 5-4 Test Result of Nonadjacent Channel Rejection

Pass Criteria:

Follow the 802.11 criterions which are marked in "red color" in the table.

XR829 Validation Report (Revision 1.0)

6 WLAN Field Trial Test

Test Equipment:

PC with Pentium 4 CPU inside or better equipment

Shielding room

Chariot v5.0 or later version or Iperf

Test Results:

		Tinic			i	Mic			Tinic				tilling.			tinic
	Bandwidth:	20/40N	1Hz	ړ	Distanc	ce: 1m		Mod	e: TCP		Tem	peratur	e: 30℃		.16	STILL STATES
							15		Cha	nnel		\$ ^		X		
×X	Item(Unit)	Spec	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	UpLink TX-20M(Mbps)	>40	44.8	44.5	44.6	44.8	44.7	44.4	44.8	44.7	44.3	44.8	44.5	44.4	43.7	43.9
	DownLink RX-20M(Mbps)	>40	46.1	45.1	46.2	46.1	45.5	43.2	41.9	41.6	46.1	43.1	41.6	45.5	43.8	41.3
	UpLink TX-40M(Mbps)	(1) xintel (2) > 75	77.4	77.8	78.3	76	79.1	77.8	77.3	78	77.2	77.5	78.5	77.9 ×	78.4	77.6
XXXXX	DownLink RX-40M(Mbps)	>70	72.5	80.7	81.3	71	82	79.9	70.8	71	82.6	83.5	84	80.8	77.5	78.5

Table 6-1 Test Result of Throughput in Shielding Room

Pass Criteria:

Follow the criterions which are marked in "red color" in the table.

7 BlueTooth TX Performance

7.1 Output Power

Test Results:

Mode: Loopback	k Hoopin	ıg: On Rate:	DH5		
	بن		Channel		رها
Item Alla	Spec.	0	副护 加 39	78	Jim Unit
Average Power	-6~20	7.4	7.32	7.28	dBm
Peak Power	<23	7.9	7.8	7.73	dBm

Table 7-1 Test Result of BT Output Power

Pass Criteria:

Follow the criterions which are marked in "red color" in the table.

Hillight Helicide Hel

XR829 Validation Report (Revision 1.0)

7.2 Adjacent Channel Power

Test Results:

Mode: Loopback Hooping: O	ff Rate: L	ongest DH1			
Item	Spec.	CH0	CH39	CH78	Unit
Max PTx(f) F = F0 + 2 MHz	≦20	-44.63	-44.32	-44.29	dBm
Max PTx(f) F = F0 - 2 MHz	≦20	-44.55	-44.56	-44.29	dBm
Max PTx(f) F = F0 + 3 MHz	(¹) ≤ 40	-48.09	48.16	-47.4	dBm
Max PTx(f) F = F0 - 3 MHz	≦40	-48.14	-48.17	-47.64	dBm
Exceptions frequency count	≦3	The Co	0	0	dBm
Exceptions count if > -20dBm	=0	0	0	0	dBm

Table 7-2 Test Result of BT Adjacent Channel Power

- 1. $PTx(f) \le -20 \text{ dBm for } |M-N| = 2 \text{ (M: Tx Channel, N: Adjacent Channel)}$
- 2. $PTx(f) \le -40 \text{ dBm for } |M-N| \ge 3 \text{ (M: Tx Channel, N: Adjacent Channel)}$

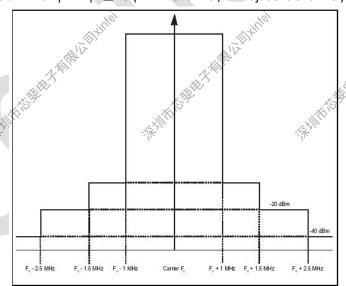


Figure 7-1 The limit definition of the BR output power

7.3 Carrier Frequency Drift

Test Results:

Mode: Loopback with whitening off Or	Тх Ноор	ing: On Rate	e: Longest DH	1/3/5	
Item	Spec.	СНО	CH39	CH78	Unit
Frequency Drift - Maximum, DH1	≦ ±2 5	5.9	6.99	6.1	KHz
Frequency Drift - Maximum, DH3	≦±40	6.5	5.8	6.08	KHz
Frequency Drift - Maximum, DH5	≦±40	6.91	6.75	8.12	KHz
Max Drift Rate (per 50 μs), DH1	≦±20	2.05	2.01	1.99	KHz
Max Drift Rate (per 50 μs), DH3	≦±20	-2.95	-1.89	-2.24	KHz
Max Drift Rate (per 50 μs), DH5	≨±20	2.27	2.7	2.42	KHZ

Table 7-3 Test Result of BT Carrier Frequency Drift

- 1. Frequency drift $\leq \pm 25$ KHz for One-slot packet
- 2. Frequency drift $\leq \pm 40$ KHz for Three-slot packet
- 3. Frequency drift $\leq \pm 40$ KHz for Five-slot packet
- 4. Maximum drift rate \leq 20KHz/50us

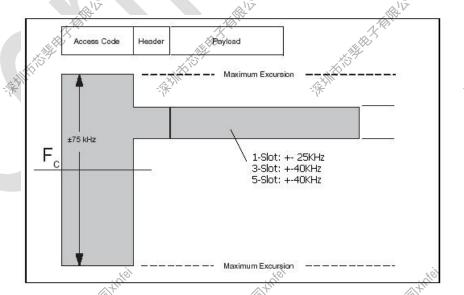


Figure 7-2 The limits of the initial carrier frequency drift test

7.4 EDR Relative Transmit Power

Test Results:

Mode: Loopback Or Tx Hooping: Off	Rate: 2-DH5/3-DH5 with PRBS9					
Item	Spec.	CH0	CH39	CH78	Unit	
GFSK Power, 2-DH5	-	6.61	6.59	6.6	dBm	
DPSK Power, 2-DH5	-	6.03	6	6.01	dBm	
DPSK Power - GFSK Power, 2-DH5	-4~1	-0.58	-0.59	-0.59	dBm	
GFSK Power, 3-DH5	-	6.62	6.6	6.6	dBm	
DPSK Power, 3-DH5	-	6.12	6.1	6.11	dBm	
DPSK Power - GFSK Power, 3-DH5	-471	-0.5	-0.5	-0.49	dBm	

Table 7-4 Test Result of BT/EDR transmit maximum output Power

Mode: Loopback Or Tx Hooping: Off	Rate: 2-D	H5/3-DH5 wit	th PRBS9		
ltem	Spec.	CH0	CH39	CH78	Unit
GFSK Power, 2-DH5	-	-19.61	-19.77	-19.89	dBm
DPSK Power, 2-DH5	-	-20.14	-20.3	-20.42	dBm
DPSK Power - GFSK Power, 2-DH5	-4~1	-0.53	-0.53	-0.53	dBm
GFSK Power, 3-DH5	-	19.61	-19.77	-19.89	dBm
DPSK Power, 3-DH5	-1/4/2°	-20.19	-20.19	-20.31	dBm
DPSK Power GFSK Power, 3-DH5	4~1	-0.42	20.42	-0.42	dBm

Table 7-5 Test Result of BT EDR transmit minimum output Power

Pass Criteria:

1. (PeakGFSK - 4dB) < PeakDPSK < (PeakGFSK+ 1dB)

7.5 EDR Carrier Frequency Stability and Modulation Accuracy

Test Results:

Mode: Loopback Or Tx with whitening off Hooping: Off Rate: 2-DH5/3-DH5 with PRBS9								
Item	Spec.	CH0	CH39	CH78	Unit			
Initial Frequency Error-2DH5	-75~75	4.96	4.34	4.9	KHz			
Frequency Error-2DH5	-10~10	-0.61	0.35	-0.2	KHz			
Block Frequency Error-2DH5	-75~75	4.81	4.86	4.94	KHz			
RMS DEVM-2DH5	≦20	Tajin 7	6	Altinio 6	%			
Peak DEVM-2DH5	≦35	13	13	14	%			
99% DEVM-2DH5	30	11	11	11	15 % o			
Initial Frequency Error-3DH5	-75~75	4.27	4.88	3.86	KHz			
Frequency Error-3DH5	-10~10	0.46	-0.4	1.12	KHz			
Block Frequency Error-3DH5	-75~75	4.85	4.86	4.98	KHz			
RMS DEVM-3DH5	≦13	6	6	6	%			
Peak DEVM-3DH5	≦25	15	14	14	%			
99% DEVM-3DH5	≦20	12	11	12	%			

Table 7-6 Test Result of BT EDR Carrier Frequency Stability and Modulation Accuracy

- 1. Carrier frequency stability: (ωi- Initial frequency error; ω0 frequency error in payload)
 - -75KHz ≤ ω i ≤ +75KHz for all packets
 - $-75 \text{KHz} \le (\omega i + \omega o) \le +75 \text{KHz}$ for all blocks
 - -10KHz $\leq \omega_0 \leq$ +10KHz for all blocks
- 2. RMS DEVM ≤ 0.2 for all $\Pi/4$ -DQPSK blocks
 - RMS DEVM \leq 0.13 for all 8DPSK blocks
- 3. Peak DEVM \leq 0.35 for all $\Pi/4$ -DQPSK symbols



7.6 EDR In-band Spurious Emissions

Test Results:

Mode: Loopback Or Tx with whitening off He	ooping: Of	f Rate: 2-DH	15/3-DH5 with	n PRBS9	
Channel	Spec.	CH0	CH39	CH78	Unit
Tx Power Difference for M-N = +1(dBm)-2DH5	≦-22.2	-31.75	-32.18	-32.33	dBm
Tx Power Difference for M-N = -1 (dBm)-2DH5	≦-22.2	-31.44	-32.24	-32.16	dBm
Tx Power for M-N ≧ +3 (dBm)-2DH5	≦-40	-41.58	-41.91	-41.37	dBm
Tx Power for M-N = +2(dBm)-2DH5	≦-20	-31.26	-32.31	-31.75	dBm
Tx Power for M-N = -2(dBm)-2DH5	≦-20	31.43	-31.98	32.09	dBm
Tx Power for M-N ≦ 3 (dBm)-2DH5	≦-40	-41.85	-41.89	-41.16	dBm (8)
Exceptions frequency count-2DH5	<u></u> 3	0	-52	0	-5211111
Exceptions count if > -20dBm-2DH5	=0	0	0	0	/
Tx Power Difference for M-N = $+1(dBm)$ -3DH5	≦-22.2	-31.92	-32.49	-32.64	dBm
Tx Power Difference for M-N = -1 (dBm)-3DH5	≦-22.2	-31.59	-32.18	-32.19	dBm
Tx Power for M-N ≧ +3 (dBm)-3DH5	≦-40	-41.68	-41.95	-40.87	dBm
Tx Power for M-N = $+2(dBm)-3DH5$	≦-20	-31.36	-31.98	-32	dBm
Tx Power for M-N = -2(dBm)-3DH5	≦-20	-31.46	-31.78	-31.85	dBm
Tx Power for M-N ≤ -3 (dBm)-3DH5	≦-40	-41.75	-41.57	-41.22	dBm
Exceptions frequency count-3DH5	≦3 /	0	0	0	1
Exceptions count if > -20dBm-3DH5	till(t)±0	0	E HIRO ET	0	EXIII POST

Table 7-7 Test Result of BT EDR In-band spurious emissions

- 1. PTX-26dB(f) \leq PTXref 26dB for |M-N| = 1 (M: Tx Channel, N: Adjacent Channel)
- 2. $PTX(f) \le -20dBm$ for |M-N| = 2 (M: Tx Channel, N: Adjacent Channel)
- 3. PTX(f) \leq -40dBm for |M-N| \geq 3 (M: Tx Channel, N: Adjacent Channel)

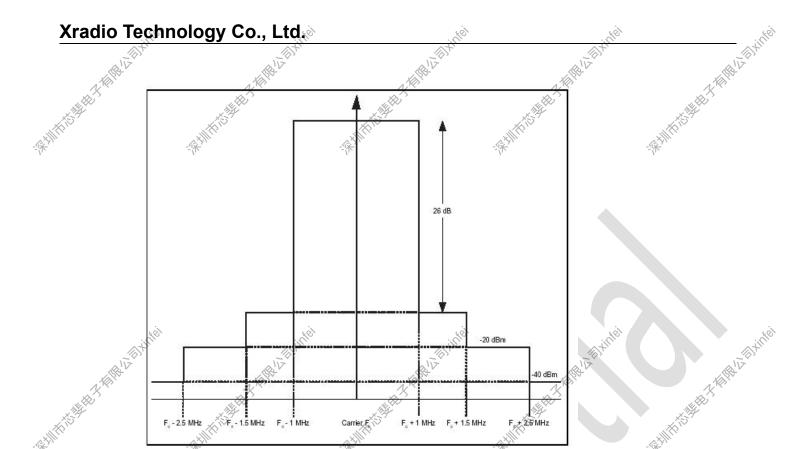


Figure 7-3 The EDR in-band spurious limits definition



7.7 BLE Output Power

Test Results:

Mode: Direct Tx with Whitening off	Hooping: Of	f Packet typ	Packet type: PRBS9(37 octets)		
Channel	Spec.	CH0	CH19	CH39	Unit
Average Power	-20~+10	7.35	7.22	7.22	dBm
Peak Power	-20~+10	8.02	7.81	7.78	dBm

Table 7-8 Test Result of BLE Output Power

Pass Criteria;

- 1. $-20 \text{ dBm} \le P_{AVG} \le +10 \text{ dBm}$
- 2. $-20 \text{ dBm} \le P_{PK} \le +10 \text{dBm}$

7.8 BLE In-Band Emissions

Test Results:

Mode: Direct Tx with whitening off Ho	ooping: Of	f Packet Typ	e: PRBS9(37o	ctets)	
Channel	Spec.	Ch3	Ch19	CH37	Unit
PTX(f) for f = N	-	7.34	7.24	7.12	dBm
Tx Power for M-N ≥ +3	≦-30	-46.87 +in	-46.38	-47.07 jin	dBm
Tx Power for M-N = +2	≦-20	43.79	-43.54	43.9	dBm
Tx Power for M-N = -2	≦-20	-43.79	-43.54	-44.32	dBm
Tx Power for M-N ≤ -3	<u>\$</u> 30	-47.06	-43.54	-43.9	dBm
Exceptions frequency count	≦3	0	0	0	dBm
Exceptions count if > -20dBm	=0	0	0	0	dBm

Table 7-9 Test Result of BT BLE In-Band Emissions

- 1. PTX ≤ -20 dBm for (fTX ± 2 MHz)
- 2. PTX \leq -30 dBm for (fTX \pm (3 + n] MHz]); where n=0,12...

7.9 BLE Modulation Characteristics

Test Results:

Mode: Direct Tx with whitening off Hooping: Off Packet Type: PRBS9(37octets)								
Channel	Spec.	0	19	39	Unit			
Frequency Deviation df1 Average	225~275	254.97	254.74	254.53	kHz			
Frequency Deviation df2 99.9%	≧185	207.44	209.14	206.94	kHz			
Frequency Deviation df2 Average / df1 Average	≧0.8	0.9	0.9	0.91	/			

Table 7-10 Test Result of BLE Modulation Characteristics

- 1. 225 kHz $\leq \Delta f1avg \leq 275$ kHz
- 2. At least 99.9% of all Δf2max frequency values recorded over 10 test packets must be greater than 185 kHz
- 3. $\triangle f2_{avg}/\triangle f1_{avg} \ge 0.8$

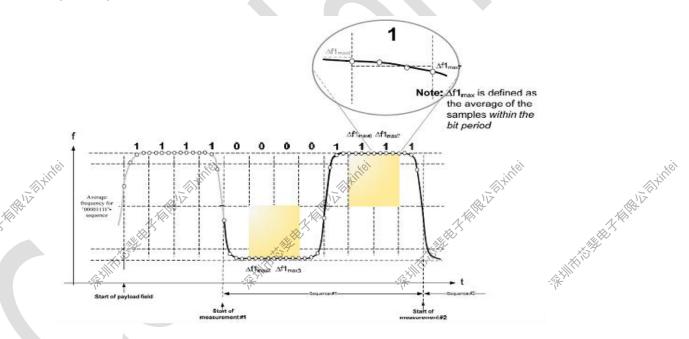


Figure 7-4 TheΔf1 definition of the BLE Modulation Characteristics test

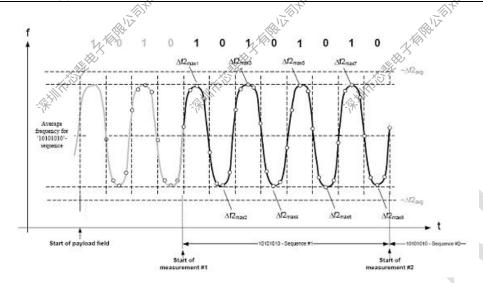


Figure 7-5 TheΔf2 definition of the BLE Modulation Characteristics test

7.10 BLE Carrier Frequency Offset and Drift

Test Results:

Mode: Direct Tx with whitening off	Hooping: Off	Packet Type:	PRBS9(37oct	ets)	
Channel	Spec.	0	19	39	Unit
Frequency Accuracy	-150~+150	-14.39	-14.55	-14.6	KHz
Frequency Offset	-150~+150	-14.39	-14.55	-14.6	KHz
Frequency Drift	-50~+50	2.66	2.45	2.34	KHz
Max Drift Rate/ 50us	-20~+20	-1.22	-1.48	-1.88	KHz
Initial Frequency Drift	-20~+20	3.74	3.31	3.75	1

Table 7-11 Test Result of BLE Carrier Frequency Offset and Drift

- 1. $f_{TX} 150 \text{ kHz} \le f_n \le f_{TX} + 150 \text{ kHz}$
- 2. $|f_0 f_n| \le 50 \text{ kHz where } n=2,3,4...k$
- 3. $|f_1 f_0| \le 20 \text{ kHz and } |f_n f_{n-5}| \le 20 \text{ kHz}$

8 BlueTooth RX Performance

8.1 Receiver Sensitivity

Test Results:

	Mode: Loopback with Dirty-Tx on	Hooping: On/C	Off Packet 1	Type: PRBS9		
	Rate	Spec.	CH0	CH39	CH78	Unit
	DH1	≦-85	-90 ·	-90	-90	dBm
13	Hittle DH3	≦-85	hinte-90	-90	(A) 41/1-90	dBm
V	DH5	≦-85	-90	-90	-90	dBm
	2-DH1	87	-92	-92	-92	dBm
	2-DH3	≦-87	-92 	-92	-92	dBm
	2-DH5	≦-87	-92	-92	-91	dBm
	3-DH1	≦-80	-84	-84	-84	dBm
	3-DH3	≦-80	-84	-84	-84	dBm
	3-DH5	≦-80	-83	-83	-83	dBm
	BLE	≦-87	-93	-92	-93	dBm

Table 8-1 Test Result of BT Rx Sensitivity

- 1. (DHx): BER $\leq 0.1\%$ (minimum number of samples, 1600000 returned payload bits)
- 2. (2-DHx/3-DHx):
 - \bigcirc . BER \leq 7*10⁻⁵ (minimum number of samples, 1600000 returned payload bits)
 - ② . If Criterion-1 fail then BER $\leq 10^{-4}$ (minimum number of samples, 16000000 returned payload bits)
- 3. (BLE):PER better than 30.8% for a minimum of 1500 packets transmitted by the tester.

8.2 RX Maximum Input Level

Test Results:

Mode: Loopback with Dirty-Tx on H	ooping: On/Of	f Packet Typ	pe: PRBS9		
Rate	Spec.	CH3	CH39	CH78	Unit
DH1	≥-20	>0	>0	>0	dBm
DH3	≥-20	>0	>0	>0	dBm
DH5	≥-20	>0	>0	>0	dBm
2-DH1		>0	aintei>0	>0	inlei dBm
2-DH3 2-DH5	≥-20	>0	>0	>0	dBm
2-DH5	≥-20	>0,	>0	>0 × 0	dBm
3-DH1	≥-20	>0	-0.5	-0.5	dBm
3-DH3 🛠	≥-20 🏋	>0	-0.5	-0.5	dBm
3-DH5	≥-20	>0	-0.5	-0.5	dBm
BLE	≥-10	>0	>0	>0	dBm

Table 8-2 Test Result of RX Maximum Input Level

- 1. (DHx): BER \leq 0.1% (minimum number of samples, 1600000 returned payload bits)
- 2. (2-DHx/3-DHx):
 - BER $\leq 7*10^{-5}$ (minimum number of samples, 1600000 returned payload bits)
 - ② If Criterion-1 fail then BER $\leq 10^{-4}$ (minimum number of samples, 16000000 returned payload bits)
- 3. (BLE):PER better than 30.8% for a minimum of 1500 packets transmitted by the tester.

8.3 Adjacent Channel Rejection

Test Results:

	Mode: Looph	ack with Dirty	-Tx on Hoopi	ng: On/Off _P	acket Type: PR	BS9	
	Rate	ltem	Spec.	CH3	CH39	CH78	Unit
		C/I _{co-channel}	≦11	8	8	9	dB
			 ≦0	-5	-5	-5	dB
		C/I _{+1MHz}					
		C/I _{-1MHz}	≦0	-3	-3	-3	dB
	BR	C/I _{+2MHz}	<u>≨</u> -30	-35	-34.2	-34	dB
	BR	C/I _{-2MHz}	-30 ≤ -30	-22	-20	-19	dB
Ŕ		C/I _{+3MHz}	≦-40	-41	-41	41	dB
		C/I-3MHz	≦-40	7-32	-36	-31	dB
	3	C/I _{co-chnnel}	≦13 ﴿	11	11 条	11	d B k
		C/I _{+1MHz}	≦0	-10	-10	-10	dB
		C/I _{-1MHz}	≦0	-10	-8	-8	dB
	EDR 2Mbps	C/I _{+2MHz}	≦-30	-35	-34	-34	dB
		C/I _{-2MHz}	≦-30	-17	-18	-17	dB
		C/I _{+3MHz}	≦-40	-41	-40	-40	dB
	itigi	C/I _{-3MHz}	<u>≨</u> -40	-30	-29	-29	dB
	RIV RIVE	C/I _{co-channel}	<u></u>	19	19	19	dB
Ŕ	***	C/I _{+1MHz}	≦5	-3/	-5	1-3	dB
4		C/I-1MHz	≦5	-3 -3	-4	-3	dB
	EDR 3Mbps	C/I _{+2MHz}	≦-25 ﴿	-33	-34 ·徐 ^尔	-33	d B k [₹]
		C/I _{-2MHz}	≦-25	-9	-9	-9	dB
		C/I _{+3MHz}	≦-33	-36	-36	-36	dB
		C/I _{-3MHz}	≦-33	-32	-31	-30	dB
		C/I _{co-channel}	≦21	4	5	5	dB
	BLE	C/I _{+1MHz}	≦15	-7	-9	-9	dB
	BLE SILES	C/I _{-1MHz}	<u>≨</u> 15	-7	8- intel	-8	dB
	BIV.	C/I _{+2MHz}	≦-17	-35	-36	-36	dB
2	Y.	XIV.		XX.		XX	

Xradio Technology Co., Ltd.



Table 8-3 Test Result of Adjacent Channel Rejection

Pass Criteria:

- 1. BR: BER \leq 0.1% (minimum number of samples, 1600000 returned payload bits)
- 2. EDR:
 - \bigcirc BER $\leq 7*10^{-5}$ (minimum number of samples, 1600000 returned payload bits)
 - ② If Criterion-1 fail then BER $\leq 10^{-4}$ (minimum number of samples, 16000000 returned payload bits)
- 36 BLE: PER better than 30.8% for a minimum of 1500 packets transmitted by the tester.

HA HAR LE AND LE HAR LE AND LE LE AN