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Site: A													09/26	- 19:1	3					
			t15.209								argin									
			120D_4										rizont	al						
EUT: 3	3G W	CDI	MA+GS	M Sm	nart Pl	none				Po	wer:	DC (3.7V							
Note: I	Mode	2: T	ransmi	t at ch	annel	2402	2MHz	By 2	DH5											
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1			(IVIDZ) 2390.000		60.85			29.674	15:		3.141		74.0		31	.185		PK		
2	*		2401.79		95.26			34.084	54	N/A		40	N/A	1		181		PK		

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Flag Mark

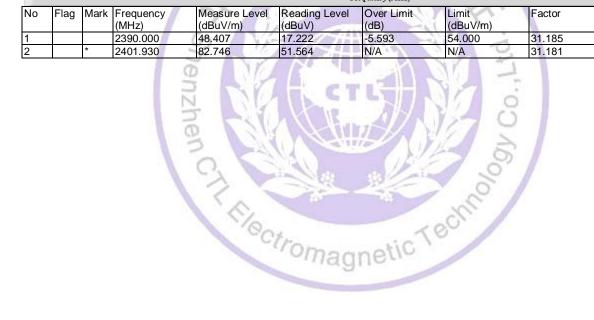
Factor

Туре

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te: A	eer: Jam C5							Time:	2013/0	9/26 -	19:14		
mit:	FCC_Pa	rt15.209_l	RE(3m)				Margir	ո։ 0				
		120D_499						Polarit	y: Hori	izontal			
		MA+GSM						Power	: DC 3	.7V			
		ransmit a	t chan	nel 240	2MHz	: By 2D	H5						
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No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Туре
1			2390.000	61.155	29.970	-12.845	74.000	31.185	PK
2		*	2402.070	86.568	55.386	N/A	N/A	31.181	PK
			ZUP		CT		1		
			ZHoi				200		
				9		130	700		
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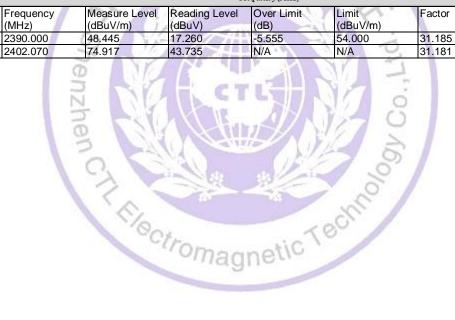
2325 2330 2335 2340 2345 2350 2355 2360 2365 2370 2375 2380

Frequency(MHz)

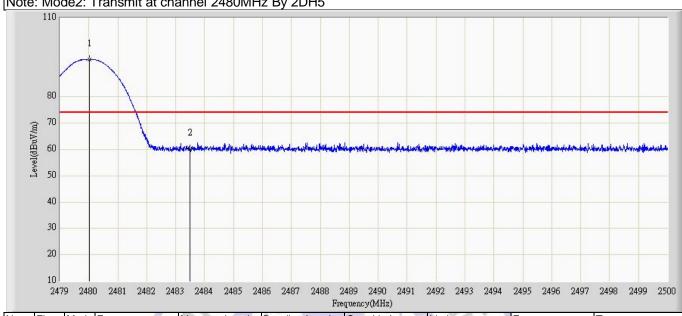
ΑV

ΑV

ngine ite: A											Tim	ne: 2	013/0	09/26	3 - 19	9:17					
		_Part1	5.209	RE(3m)							rgin:									
		- 1A912				z)							Ver	tical							
UT: 3	3G W	CDM/	A+GS	M Sm	art P	hone					Pov	wer:	DC 3	3.7V							
ote: N	Mode	2: Tra	ansmit	at ch	anne	l 240	2MF	lz B	y 2D	H5											
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Engineer: Jame	
Site: AC5	Time: 2013/09/26 - 19:18
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Horizontal
EUT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V
Note: Mode2: Transmit at channel 2480MHz By 2DH5	





Engineer: Jame	
Site: AC5	Time: 2013/09/26 - 19:31
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Horizontal
EUT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V

Note: Mode2: Transmit at channel 2480MHz By 2DH5

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m	1)	Factor	Туре
1		*	2480.071	81.990	50.783	N/A	N/A	-	31.206	AV
2			2483.500	48.762	17.553	-5.238	54.000	-0	31.209	AV
				Then CTUTIES	tromag	netic	echno	1091 Co		

Engineer: Jame		
Site: AC5	Time: 2013/09/26 - 19:32	
Limit: FCC_Part15.209_RE(3m)	Margin: 0	
Probe: BBHA9120D_499(1-18GHz)	Polarity: Vertical	
EUT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V	

Note: Mode2: Transmit at channel 2480MHz By 2DH5

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2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500
Frequency(NHz)

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Туре
1		*	2480.113	85.354	54.147	N/A	N/A	-	31.206	PK
2			2483.500	61.714	30.505	-12.286	74.000	-0	31.209	PK
			ZIII	then CTL Filed	tromag	netic	echno	,09y Co		

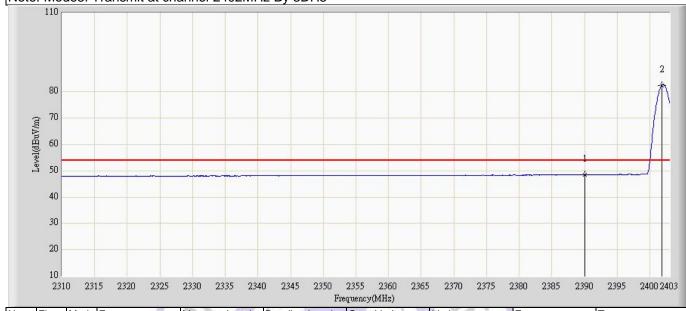
Engineer: Jame	
Site: AC5	Time: 2013/09/26 - 19:33
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Vertical
EUT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m	1)	Factor	Type
1		*	2480.092	74.551	43.344	N/A	N/A	-	31.206	AV
2			2483.500	48.735	17.526	-5.265	54.000	-0	31.209	AV
				Then CTIFIED	tromag	netic	echno	1091 Co		

		: Jam	е														
Site:										Time: 2013/09/26 - 19:35							
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			120D_									rizontal					
EUT	: 3G	WCD	MA+G	SM Sr	mart P	hone				Powe	r: DC :	3.7V					
Note	: Mo	ode3: Transmit at channel 2402MHz By 3DH5															
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INO	Flag	iviaiK	Frequei (MHz)	ю	(dBu			eading L IBuV)	Level	Over L (dB)	mit	(dBuV	'm)	Factor		Туре	
1			2390.00	00	60.5			9.367	TAR.	-13.44	3	74.000		31.185		PK	
2		*	2401.88		95.5	75	64	4.393	7.5	N/A	1 1	N/A	-0	31.181		PK	

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Engineer: Jame								
Site: AC5	Time: 2013/09/26 - 19:35							
Limit: FCC_Part15.209_RE(3m)	Margin: 0							
Probe: BBHA9120D_499(1-18GHz)	Polarity: Horizontal							
EUT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V							
Note: Mode3: Transmit at channel 2402MHz By 3DH5								
110								





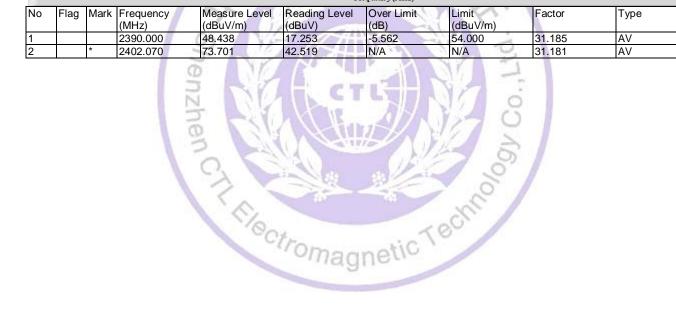
ngineer: Jame	
te: AC5	Time: 2013/09/26 - 19:36
mit: FCC_Part15.209_RE(3m)	Margin: 0
obe: BBHA9120D_499(1-18GHz)	Polarity: Vertical
JT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V
ote: Mode3: Transmit at channel 2402MHz By 3	BDH5
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Frequency(MHz)

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	obe: BBHA9120D_499(1-18GHz)						ty: Verti						
	3G WCDMA	Powe	r: DC 3.	7V									
	Mode3: Tran	smit at cha	nnel 2402	2MHz B	y 3DH5								
	110												
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	20												
	30												
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Engineer: Jame	
Site: AC5	Time: 2013/09/26 - 19:38
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Horizontal
EUT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V
N. A. LOT. WALL BOOKER BOOK	·-

Note: Mode3: Transmit at channel 2480MHz By 3DH5

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	Factor	Туре
1		*	2479.998	94.462	63.255	N/A	N/A	-	31.206	PK
2			2483.500	61.073	29.864	-12.927	74.000	-0	31.209	PK
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				Flec	tromag	netic	echnic			

Engineer: Jame	
Site: AC5	Time: 2013/09/26 - 19:40
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Horizontal
EUT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V
Note: Mode2: Transmit at abanyal 2490MHz By 2DHE	•

Note: Mode3: Transmit at channel 2480MHz By 3DH5

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m	1)	Factor	Туре
1		*	2480.040	81.907	50.700	N/A	N/A	-	31.206	AV
2			2483.500	48.792	17.583	-5.208	54.000	-0,	31.209	AV
				enzhen CTLEJec	tromag	netic	echic	109V Co		

Engineer: Jame		
Site: AC5	Time: 2013/09/26 - 19:41	
Limit: FCC_Part15.209_RE(3m)	Margin: 0	
Probe: BBHA9120D_499(1-18GHz)	Polarity: Vertical	
EUT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V	

Note: Mode3: Transmit at channel 2480MHz By 3DH5

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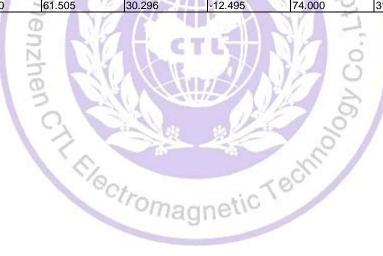
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2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500

Prequency(Hz)

No	Flag	Mark	Frequency (MHz)	13/11/11/11/11	3		Limit (dBuV/m)	Factor	Туре
1		*	2479.966	85.505	54.298	N/A	N/A	31.206	PK
2			2483.500	61.505	30.296	-12.495	74.000	31.209	PK



Engineer: Jame	
Site: AC5	Time: 2013/09/26 - 19:42
Limit: FCC_Part15.209_RE(3m)	Margin: 0
Probe: BBHA9120D_499(1-18GHz)	Polarity: Vertical
EUT: 3G WCDMA+GSM Smart Phone	Power: DC 3.7V
Note: Made 2: Transmit at about al 2400M In Dr. 2015	•

Note: Mode3: Transmit at channel 2480MHz By 3DH5

No	Flag	Mark	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m	1)	Factor	Туре
1		*	2480.071	73.700	42.493	N/A	N/A	-	31.206	AV
2			2483.500	48.729	17.520	-5.271	54.000	-0	31.209	AV
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					romag	netic '				
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V1.0 Page 67 of 113 Report No.: CTL1309121433-WB

4.6. Frequency Separation

TEST CONFIGURATION



TEST PROCEDURE

According to ANSI C63.10: 2009.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = wide enough to capture the peaks of two adjacent channels

Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span

Video (or Average) Bandwidth VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

LIMIT

According to 15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by minimum of 25KHz or the 2/3*20dB bandwidth of the hopping channel, whichever is greater.

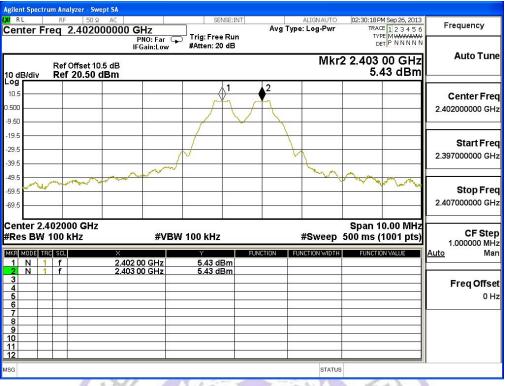
TEST RESULTS

Product	: 3G WCDMA+GSM Smart Phone	
Test Item	: Carrier Frequency Separation	
Test Site	TR-8	
Test Mode	: Mode 1: Transmitter-1Mbps(GFSK_DH5)	

Channel No.	Frequency	Carrier Frequency Separation	Limit	Result
	(MHz)	(kHz)	(kHz)	
00	2402	1000	>25 kHz or	Pass
00	2402	1000	2/3 of 20 dB BW	
30	2444	1000	>25 kHz or	Pass
39	2441	1000	2/3 of 20 dB BW	
70	2490	1000	>25 kHz or	Pass
70	78 2480	1000	2/3 of 20 dB BW	

Report No.: CTL1309121433-WB

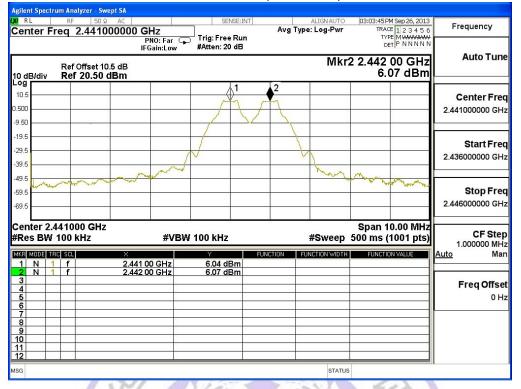
Channel 00 (2402MHz)



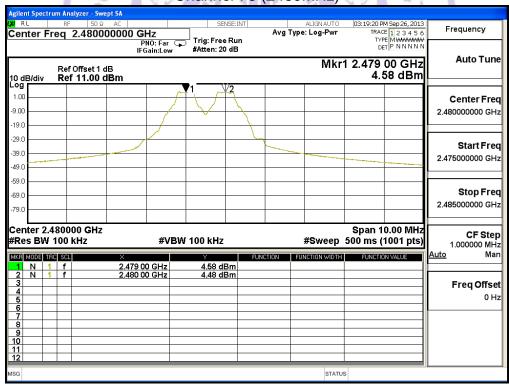


Page 69 of 113 Report No.: CTL1309121433-WB

Channel 39 (2441MHz)



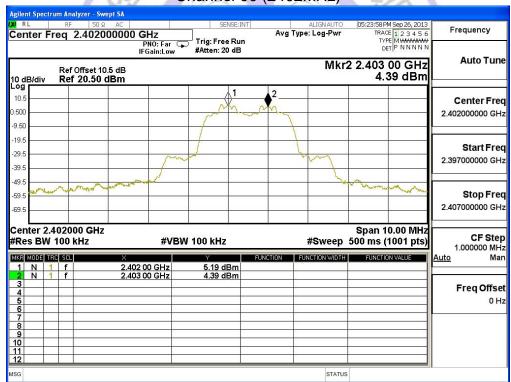
Channel 78 (2480MHz)



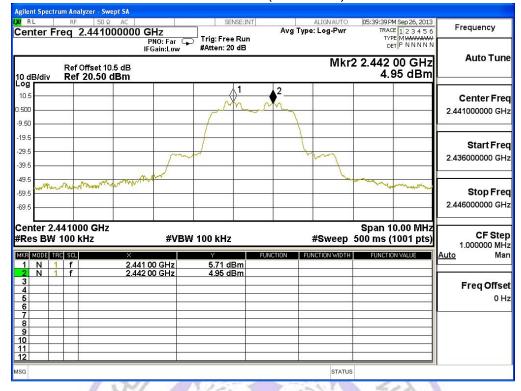
Product	:	3G WCDMA+GSM Smart Phone	
Test Item	:	Carrier Frequency Separation	
Test Site	:	TR-8	
Test Mode	:	Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)	

Channel No.	Frequency	Carrier Frequency Separation	Limit	Result
	(MHz)	(kHz)	(kHz)	
00	2402	1000	>25 kHz or	Pass
00	2402	1000	2/3 of 20 dB BW	
30	2444	1000	>25 kHz or	Pass
39	2441	1000	2/3 of 20 dB BW	
70	2490	4000	>25 kHz or	Pass
78	2480	1000	2/3 of 20 dB BW	

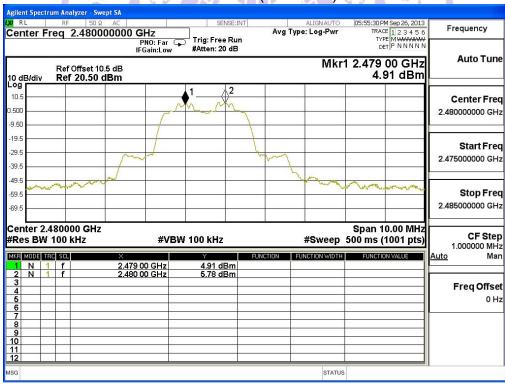
Channel 00 (2402MHz)



Channel 39 (2441MHz)



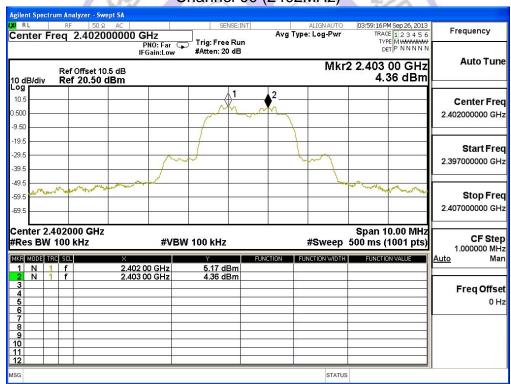
Channel 78 (2480MHz)



Product	:	3G WCDMA+GSM Smart Phone	
Test Item	:	Carrier Frequency Separation	
Test Site	:	TR-8	
Test Mode	:	Mode 3: Transmitter-3Mbps(8DPSK_DH5)	

Channel No.	Frequency	Carrier Frequency Separation	Limit	Result
	(MHz)	(kHz)	(kHz)	
00	2402	1000	>25 kHz or	Pass
00	2402	1000	2/3 of 20 dB BW	
30	2444	1000	>25 kHz or	Pass
39	2441	1000	2/3 of 20 dB BW	
70	2490	4000	>25 kHz or	Pass
78	2480	1000	2/3 of 20 dB BW	

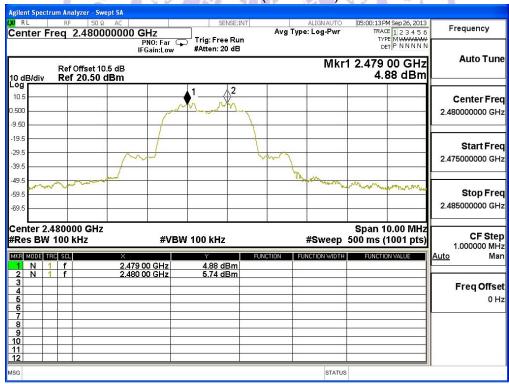
Channel 00 (2402MHz)



Channel 39 (2441MHz)



Channel 78 (2480MHz)



V1.0 Page 74 of 113 Report No.: CTL1309121433-WB

4.7. Number of hopping frequency

TEST CONFIGURATION



TEST PROCEDURE

According to ANSI C63.10: 2009.

The EUT must have its hopping function enabled.

Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW \geq 1% of the span

VBW ≧ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. It may prove necessary to bread the span up to sections, in order to clearly show all of the hopping frequencies.

LIMIT

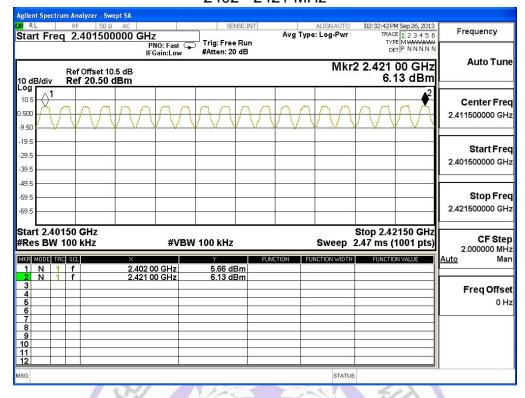
Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

TEST RESULTS

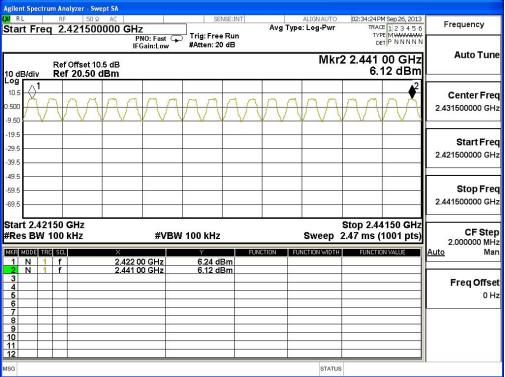
Product	: 3G WCDMA+GSM Smart Phone
Test Item	: Number of Hopping Frequencies
Test Site	: TR-8
Test Mode	: Mode 1: Transmitter-1Mbps(GFSK_DH5)

Fr	equency Band	Number of Hopping Frequencies	Limit	Result
	(MHz)			
2	2400 - 2483.5	79	>15	Pass

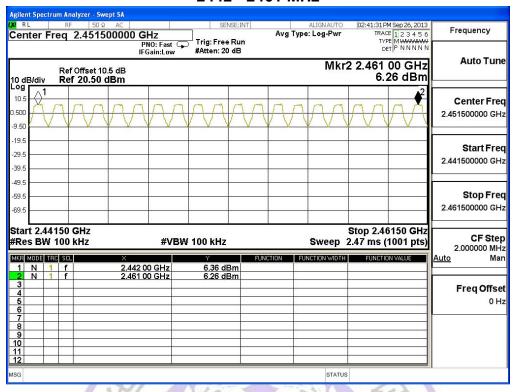
2402 - 2421 MHz



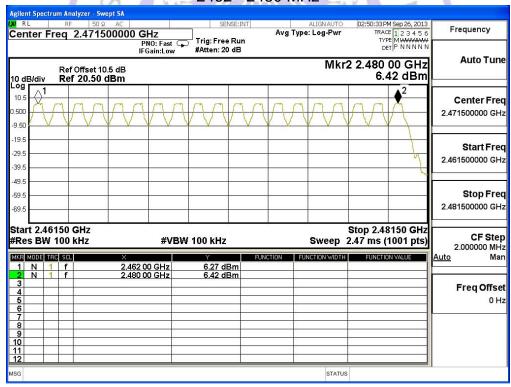
2422 - 2441 MHz



2442 - 2461 MHz



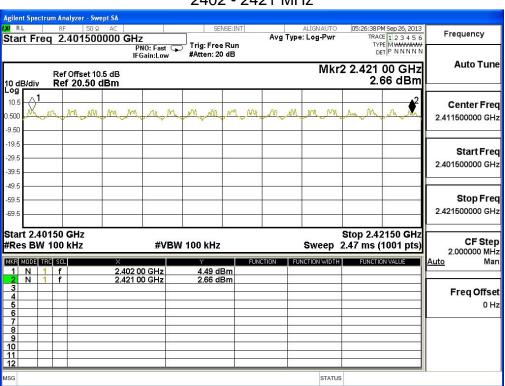
2462 - 2480 MHz



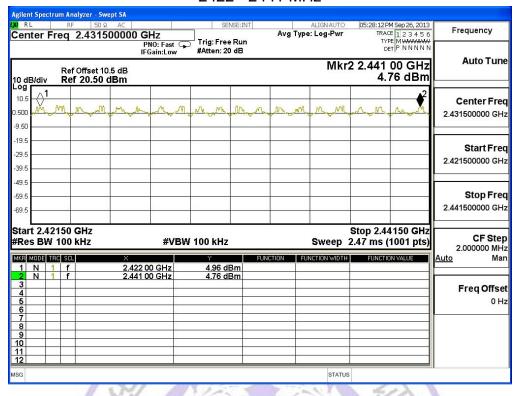
Product	:	3G WCDMA+GSM Smart Phone
Test Item	:	Number of Hopping Frequencies
Test Site	:	TR-8
Test Mode	:	Mode 2: Transmitter-2Mbps(Pi/4 DQPSK_DH5)

Frequency Band	Number of Hopping Frequencies	Limit	Result
(MHz)			
2400 - 2483.5	79	>15	Pass

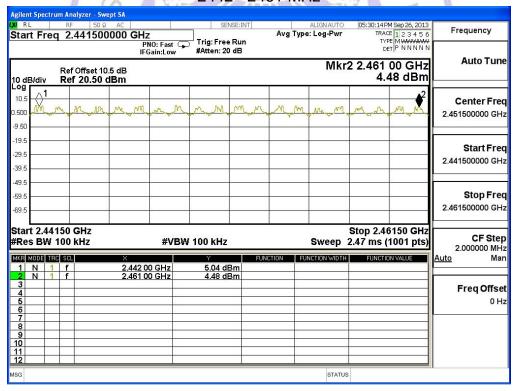
2402 - 2421 MHz



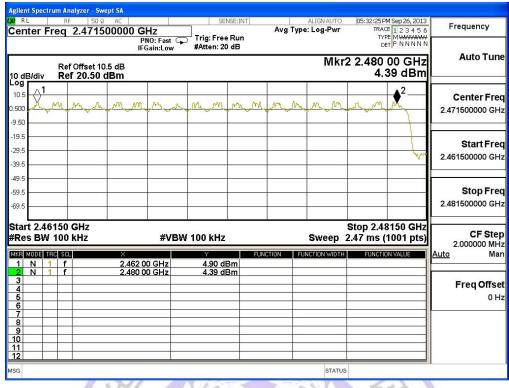
2422 - 2441 MHz



2442 - 2461 MHz



2462 - 2480 MHz





Product	:	3G WCDMA+GSM Smart Phone	
Test Item	:	lumber of Hopping Frequencies	
Test Site	• •	TR-8	
Test Mode	:	Mode 3: Transmitter-3Mbps(8DPSK_DH5)	

Frequency Band	Number of Hopping Frequencies	Limit	Result
(MHz)			
2400 - 2483.5	79	>15	Pass

2402 - 2421 MHz

