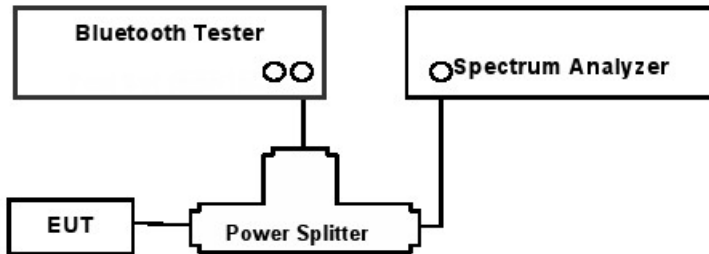


8.3 FREQUENCY SEPARATION / OCCUPIED BANDWIDTH (99% BW)

LIMIT

According to §15.247(a)(1), Frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Test Configuration



TEST PROCEDURE

The Channel Separation test is performed with hopping on. And the 20 dB Bandwidth test is performed with hopping off.

The Spectrum Analyzer is set to (DA 00-705)

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

RBW \geq 1% of the span

VBW \geq RBW

Sweep = Auto

Detector = Peak

Trace = Max hold

The trace was allowed to stabilize. The marker-delta function was used to determine the separation between the peaks of the adjacent channels.

TEST RESULTS

No non-compliance noted

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1305FR03	Date of Issue: May 08, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F	

Test Data

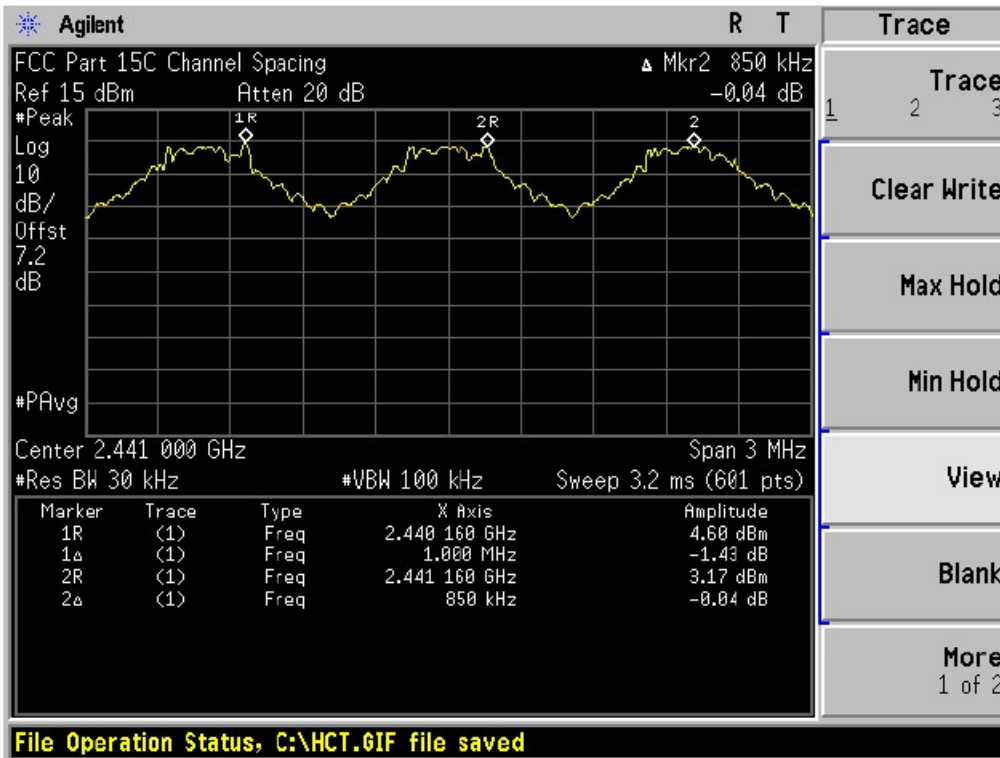
Channel Separation (kHz)			20dB Bandwidth (kHz)				Limit (kHz)	Result
GFSK	8DPSK	$\pi/4$ DQPSK	Channel	GFSK	8DPSK	4DQPSK		
850	990	810	Low CH	940.4	1278.0	1279.0	>25 or >2/3 of the 20dB BW	Pass
			Middle CH	939.6	1253.0	1258.0		
			High CH	942.4	1278.0	1281.0		

Occupied Bandwidth (99% BW)

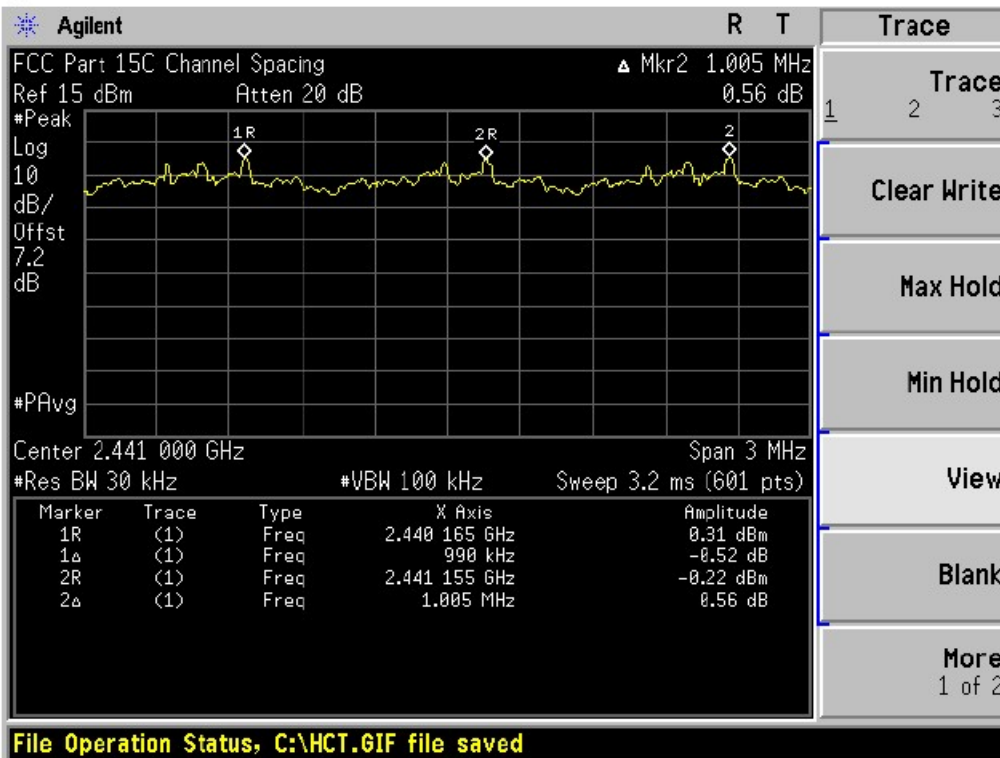
99% BW (kHz)			
Channel	GFSK	8DPSK	4DQPSK
Low CH	870.1	1158.5	1153.9
Middle CH	871.9	1146.3	1155.7
High CH	869.8	1158.9	1154.4

Note : We can not know what use channel in AFH mode. So, we can not test in AFH mode. Also, if the test performs some channel in AFH mode, the test result is not different with normal mode.

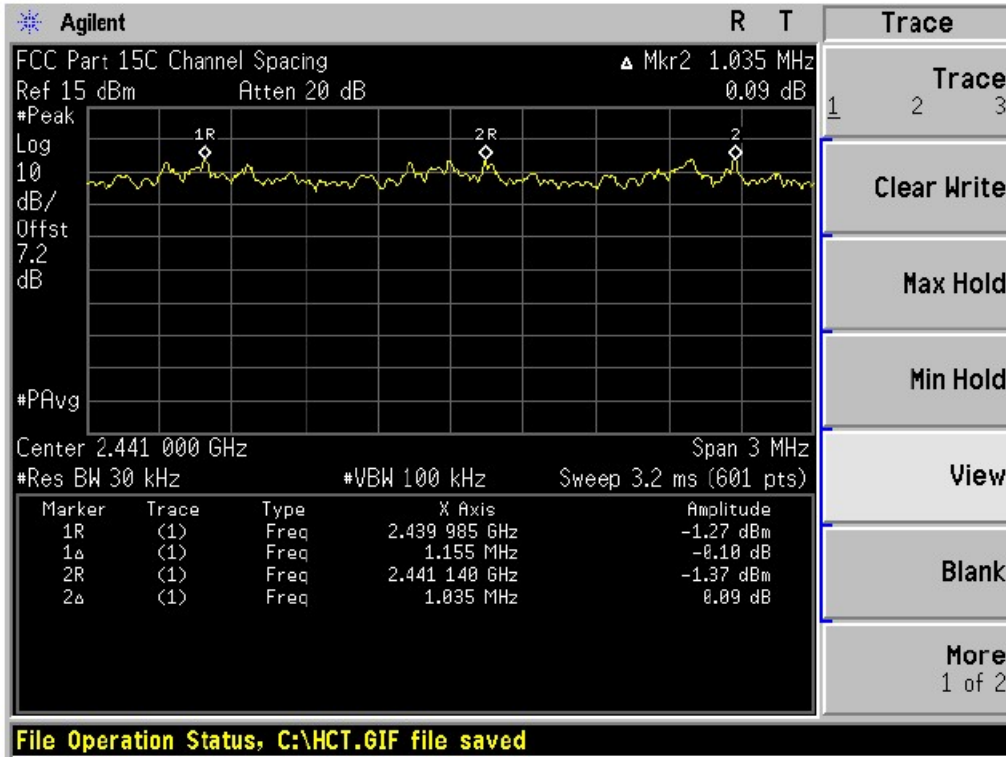
**Test Plots (GFSK)
Channel Separation**



**Test Plots (8DPSK)
Channel Separation**



Test Plots ($\pi/4$ DQPSK)
Channel Separation



Test Plots (GFSK)

20 dB Bandwidth & Occupied Bandwidth (Low-CH)



Test Plots (GFSK)

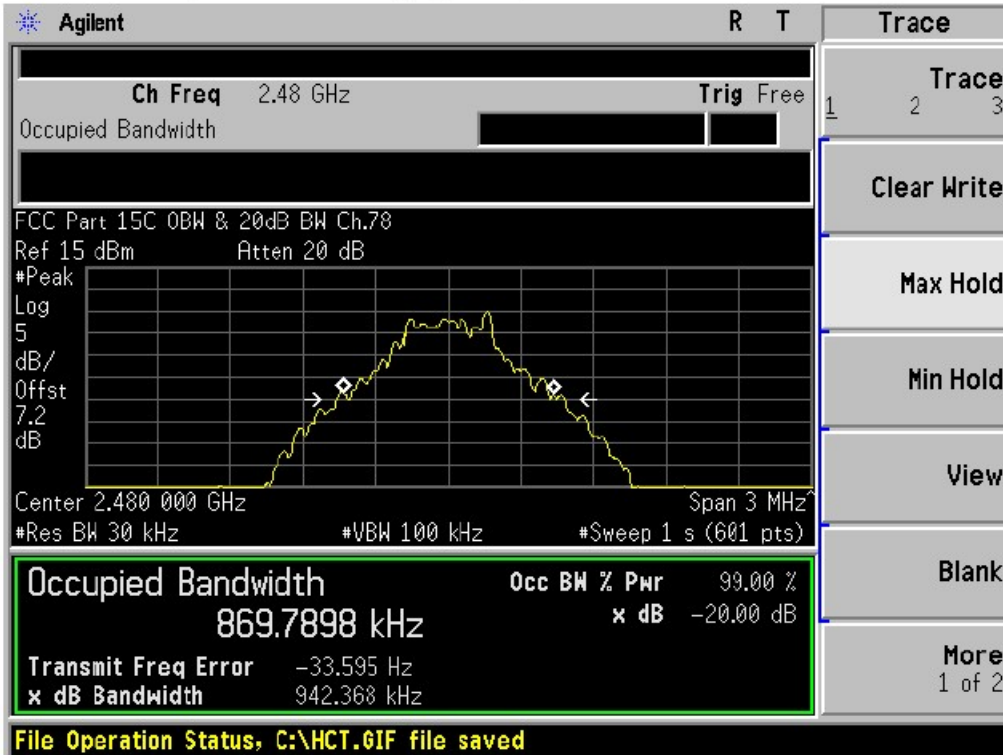
20 dB Bandwidth & Occupied Bandwidth (Mid-CH)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1305FR03	Date of Issue: May 08, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNF467F

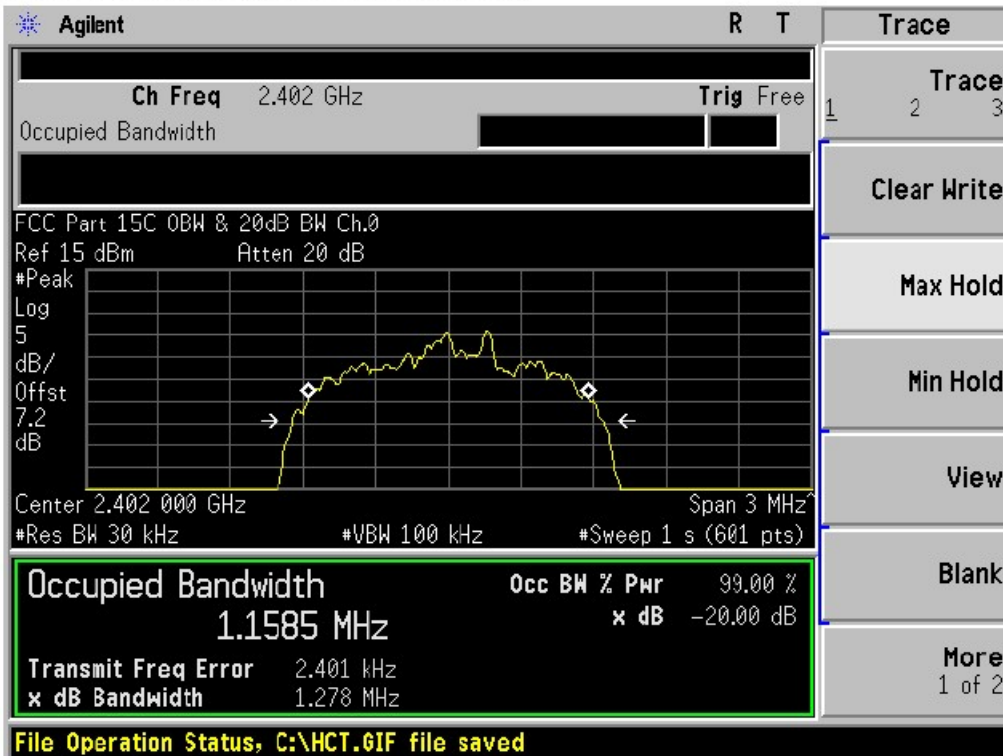
Test Plots (GFSK)

20 dB Bandwidth & Occupied Bandwidth (High-CH)

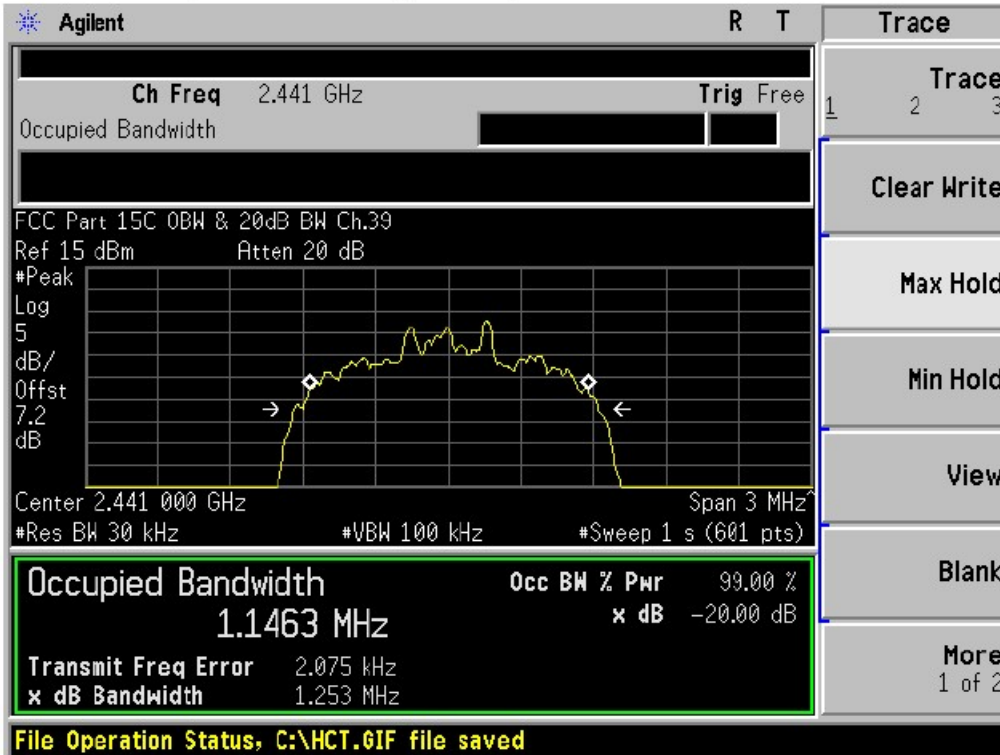


Test Plots (8DPSK)

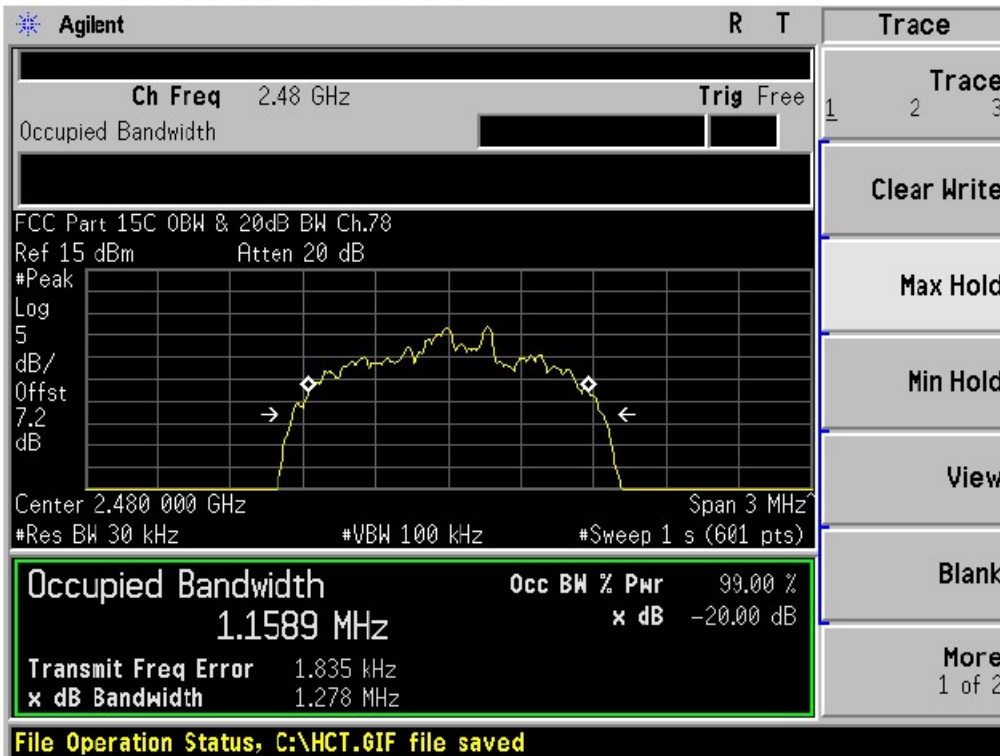
20 dB Bandwidth & Occupied Bandwidth (Low-CH)



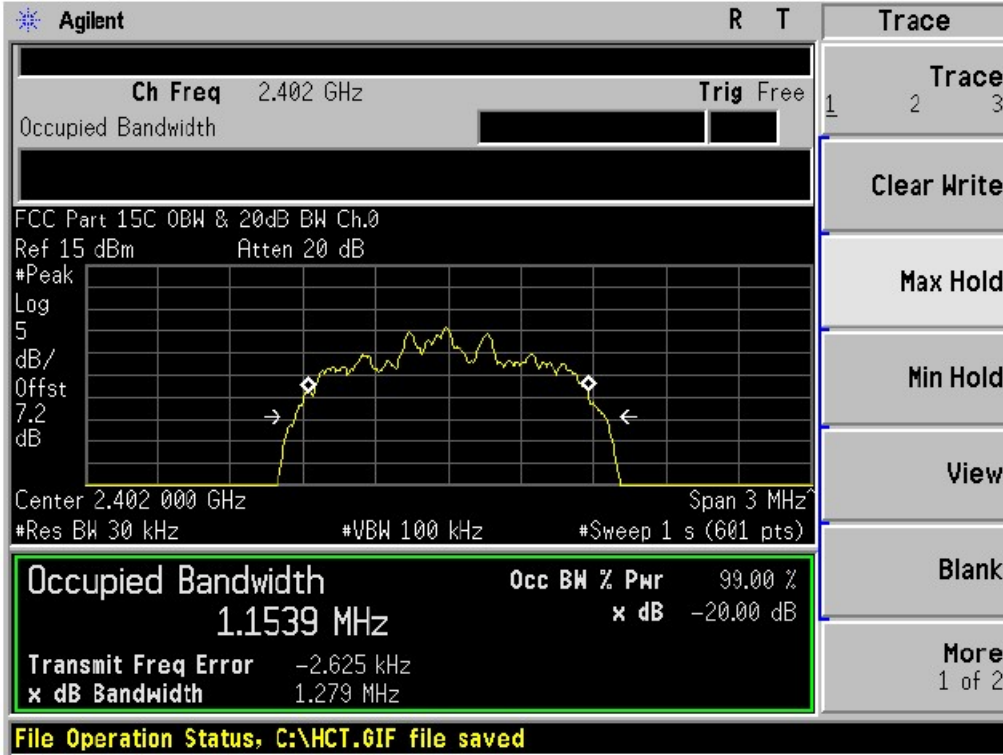
**Test Plots (8DPSK)
20 dB Bandwidth & Occupied Bandwidth (Mid-CH)**



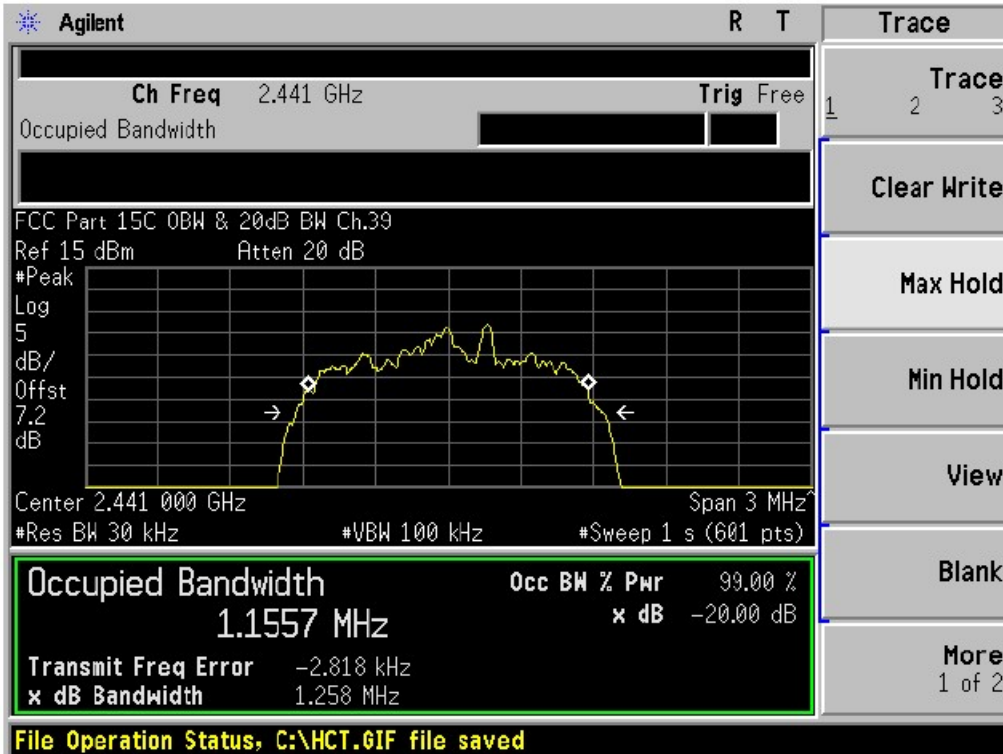
**Test Plots (8DPSK)
20 dB Bandwidth & Occupied Bandwidth (High-CH)**



**Test Plots ($\pi/4$ DQPSK)
20 dB Bandwidth & Occupied Bandwidth (Low-CH)**

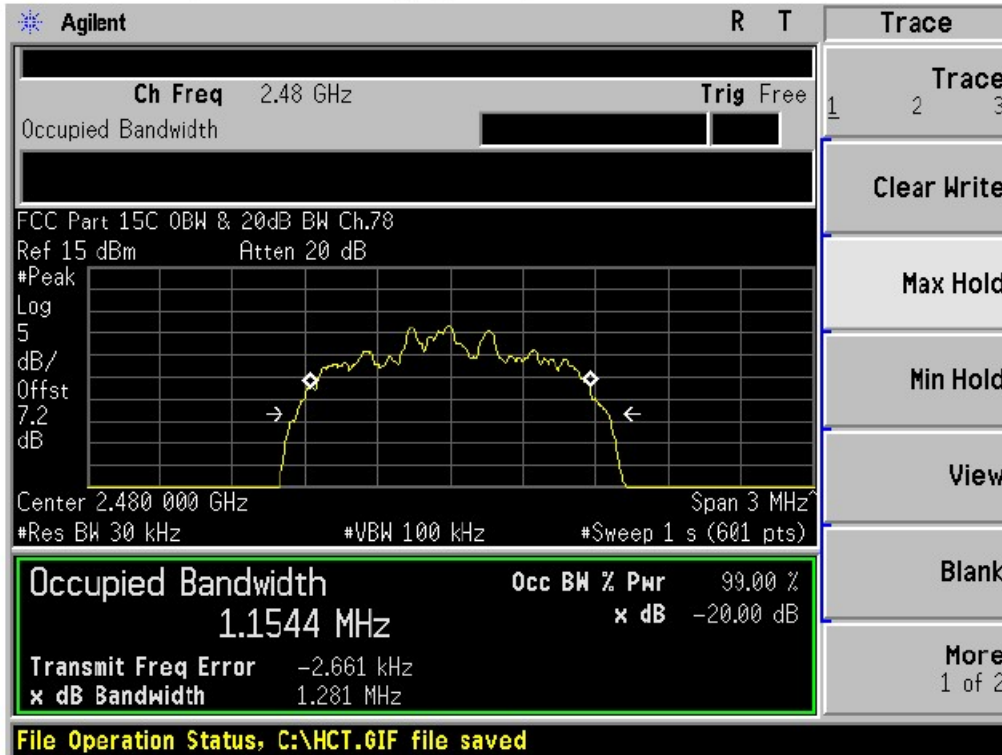


**Test Plots ($\pi/4$ DQPSK)
20 dB Bandwidth & Occupied Bandwidth (Mid-CH)**



Test Plots ($\pi/4$ DQPSK)

20 dB Bandwidth & Occupied Bandwidth (High-CH)



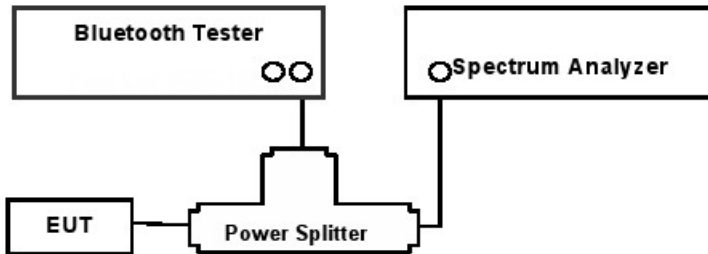
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1305FR03	Date of Issue: May 08, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNFE467F

8.4 NUMBER OF HOPPING FREQUENCY

LIMIT

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400 MHz ~ 2483.5 MHz bands shall use at least 15 hopping frequencies.

Test Configuration



TEST PROCEDURE

The Bluetooth frequency hopping function of the EUT was enabled.

The Spectrum Analyzer is set to (DA 00-705)

Span = the frequency band of operation

RBW \geq 1% of the span

VBW \geq RBW

Sweep = Auto

Detector = Peak

Trace = Max hold

The trace was allowed to stabilize.

TEST RESULTS

No non-compliance noted

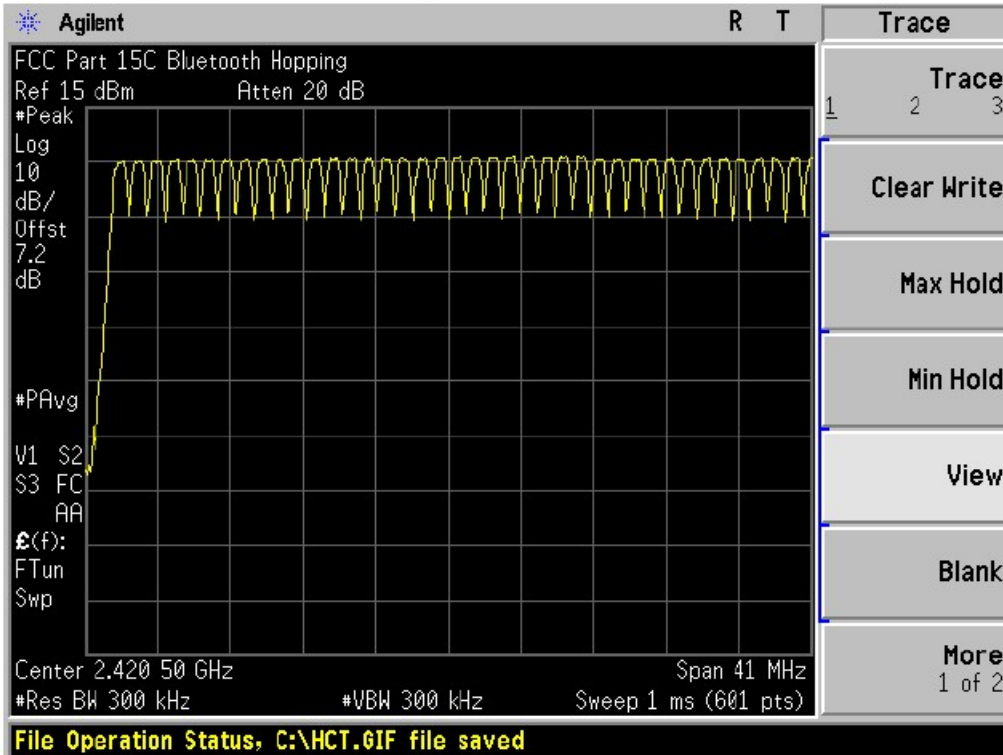
Test Data

Result (No. of CH)			Limit	Result
GFSK	8DPSK	$\pi/4$ DQPSK		
79	79	79	>15	Pass

Note : In case of AFH mode, minimum number of hopping channels is 20.

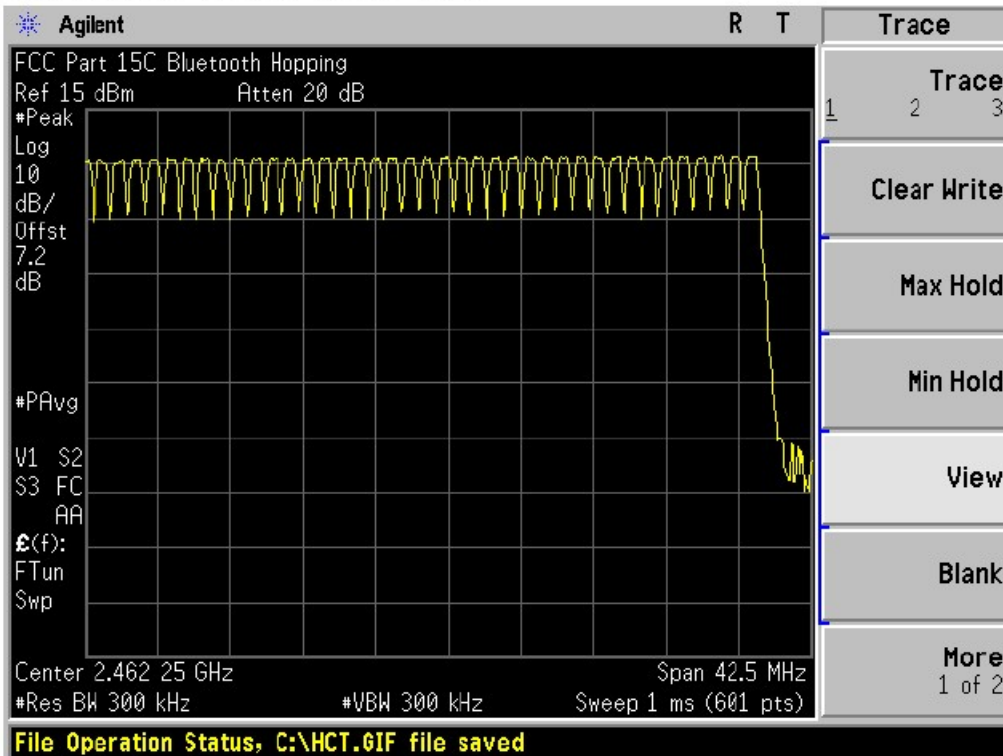
Test Plots (GFSK)

Number of Channels (2.4 GHz - 2.441 GHz)



Test Plots (GFSK)

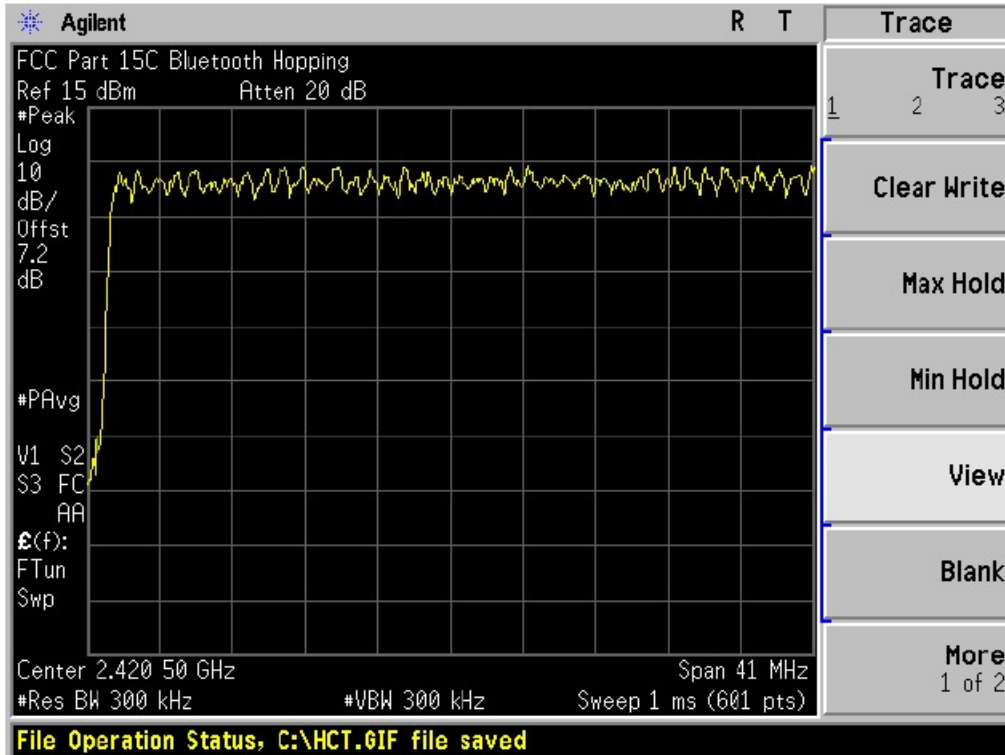
Number of Channels (2.441 GHz - 2.4835 GHz)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1305FR03	Date of Issue: May 08, 2013	EUT Type: GSM/WCDMA Phone with Bluetooth3.0, WIFI802.11 b/g/n	FCC ID: ZNF467F

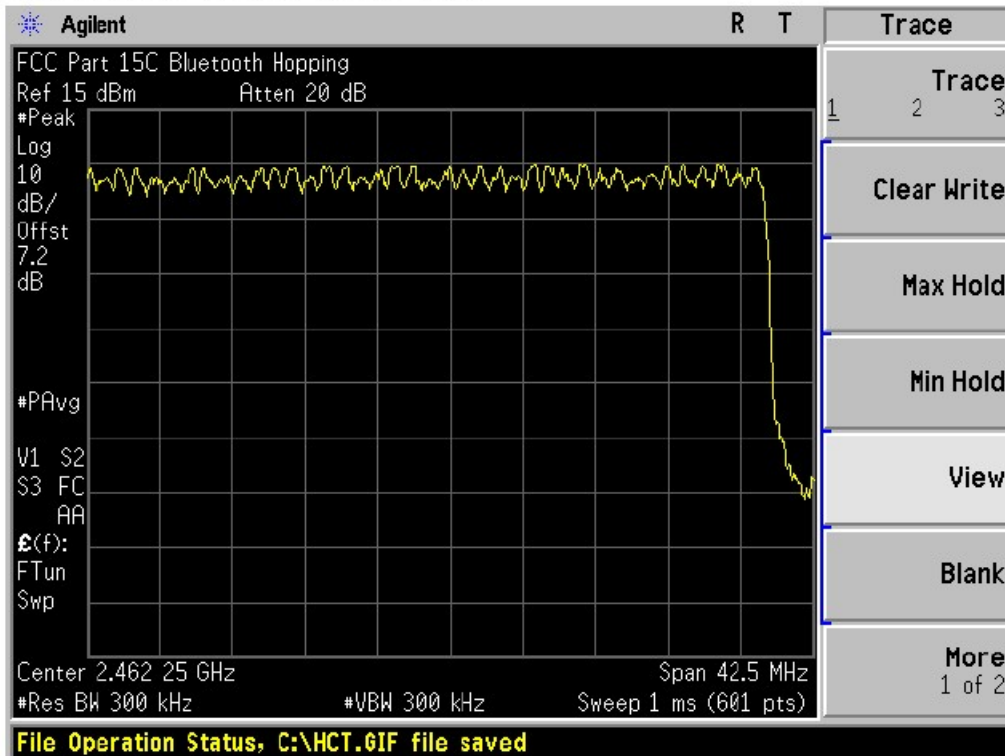
Test Plots (8DPSK)

Number of Channels (2.4 GHz - 2.441 GHz)



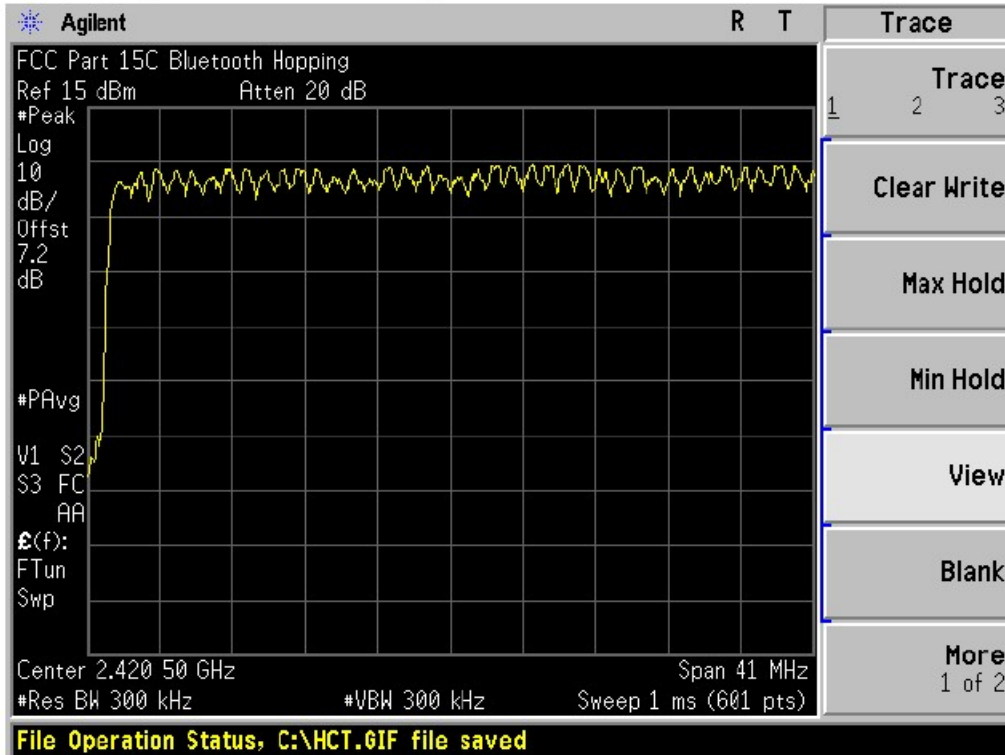
Test Plots (8DPSK)

Number of Channels (2.441 GHz - 2.4835 GHz)



Test Plots ($\pi/4$ DQPSK)

Number of Channels (2.4 GHz - 2.441 GHz)



Test Plots ($\pi/4$ DQPSK)

Number of Channels (2.441 GHz - 2.4835 GHz)

