

HCT CO., LTD.

CERTIFICATE OF COMPLIANCE FCC Certification

Applicant Name: TCT Mobile Limited

Address:

5F, E building, No.232, Liang Jing Road, ZhangJiang High-Tech Park, Pudong Area, Shanghai, P.R. China Date of Issue: September 19, 2011 Location: HCT CO., LTD., 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, Korea Test Report No.: HCTR1109FR13 HCT FRN: 0005866421

FCC ID :RAD209

APPLICANT :TCT Mobile Limited

FCC Model(s):	JukeB
EUT Type:	PCS CDMA Phone with Bluetooth/ WLAN
Max. RF Output Power:	4.79 dBm(3.01 mW)
Frequency Range:	2402 MHz - 2480 MHz (Bluetooth)
Modulation type	GFSK(Normal), PSK(EDR)
FCC Classification:	FCC Part 15 Spread Spectrum Transmitter
FCC Rule Part(s):	Part 15 subpart C 15.247

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this

equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

Report prepared by : Jong Seok Lee Test Engineer of RF Team

Approved by

: Sang Jun Lee Manager of RF Team

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

FCC PT.15.247 TEST REPORT		www.hct.co.kr	
Test Report No.	Date of Issue:	EUT Type:	FCC ID :
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/WLAN	RAD209
		Page 1 of 48	



<u>Version</u>

TEST REPORT NO.	DATE	DESCRIPTION
HCTR1109FR13	September 19, 2011	First Approval Report

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		
Test Report No.	Date of Issue:	EUT Type:	FCC ID :	
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209	
Dage 2 of 49				



Table of Contents

1.	GENI	ERAL I	NFORMATION	. 4
2.	EUT	DESCR		. 4
3.	TEST	МЕТН	ODOLOGY	. 5
	3.1	EUT (CONFIGURATION	. 5
	3.2	EUT E	EXERCISE	. 5
	3.3	GENE	RAL TEST PROCEDURES	. 5
	3.4	DESC	RIPTION OF TEST MODES	. 5
4.			NT CALIBRATION	
5.	FACI	LITIES	AND ACCREDITATIONS	. 6
	5.1		.ITIES	
	5.2	EQUI	PMENT	. 6
6.	ANTE	ENNA F	REQUIREMENTS	. 6
7.	SUM	MARY	OF TEST RESULTS	. 7
8.	FCC	PART 1	15.247 REQUIREMENTS	. 8
	8.1	PEAK	POWER	. 8
	8.2	BAND	EDGES MEASUREMENT	12
	8.3	FREQ	UENCY SEPARATION / OCCUPIED BANDWIDTH (99% BW)	15
	8.4	NUME	BER OF HOPPING FREQUENCY	20
	8.5	TIME	OF OCCUPANCY (DWELL TIME)	23
	8.6	SPUR	IOUS EMISSIONS	27
	8	6.1	CONDUCTED SPURIOUS MEASUREMENT	27
	8	6.2	RADIATED SPURIOUS EMISSIONS	34
	8	6.3	RADIATED RESTRICTED BAND EDGE MEASUREMENTS	42
	8.7	POW	ERLINE CONDUCTED EMISSIONS	43
9.	LIST	OF TE	ST EQUIPMENT	48

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT			
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		
Page 3 of 49					



1. GENERAL INFORMATION

Applicant Name:	TCT Mobile Limited
Address:	5F, E building, No.232, Liang Jing Road, ZhangJiang High-Tech Park, Pudong Area, Shanghai, P.R. China
FCC ID:	RAD209
EUT:	PCS CDMA Phone with Bluetooth/ WLAN
Model name(s):	JukeB
Date(s) of Tests:	September 05, 2011 ~ September 10, 2011
Contact Person:	Name: Zhizhou Gong Phone #: +86 (0) 21 6146 0890
Place of Tests:	HCT Co., Ltd. 105-1, Jangam-ri , Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, KOREA. (IC Recognition No. : 5944A-3)

2. EUT DESCRIPTION

ЕИТ Туре	PCS CDMA Phone with Bluetooth/ WLAN	
FCC Model Name	JukeB	
Power Supply	DC 3.7 V	
Battery Type	Li-ion Battery(Standard)	
Frequency Range	2402 MHz - 2480 MHz (Bluetooth)	
Transmit Power	4.79 dBm(3.01 mW)	
Modulation Type	GFSK(Normal), PSK(EDR)	
Modulation Technique	FHSS	
Number of Channels	79Channels	
Antenna Specification	Manufacturer: E.M.W Co., Ltd.	
	Antenna type: Internal Antenna	
	Peak Gain : -6.32 dBi	

※ 15.247 Requirements for Bluetooth transmitter

• This Bluetooth module has been tested by a Bluetooth Qualification Lab, and we confirm the following:

- 1) This system is hopping pseudorandomly.
- 2) Each frequency is used equally on the average by each transmitter.
- 3) The receiver input bandwidths that match the hopping channel bandwidths of their corresponding transmitters
- 4) The receiver shifts frequencies in synchronization with the transmitted signals.

• 15.247(g): The system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this Section 15.247 should the transmitter be presented with a continuous data (or information) stream.

• 15.247(h): The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

FCC PT.15.247 TEST REPORT		www.hct.co.kr		
Test Report No.	Date of Issue:	EUT Type:	FCC ID :	
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209	



3. TEST METHODOLOGY

The measurement procedure described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz(ANSI C63.4-2003) and FCC Public Notice DA 00-705 dated March 30, 2000 entitled "Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems" were used in the measurement of the **TCT Mobile Limited.**

PCS CDMA Phone with Bluetooth/ WLAN FCC ID: RAD209

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version :2003) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4. (Version: 2003)

3.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Channel low, mid and high with highest data rate (worst case) is chosen for full testing.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT			
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		
Page 5 of 49					



4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

The SAC(Semi-Anechoic Chamber) and conducted measurement facility used to collect the radiated data are located at the 105-1, Jangam-ri, Majang-Myeon, Icheon-si, Kyunggi-Do, 467-811, Korea. The site is constructed in conformance with the requirements of ANSI C63.4. (Version :2003) and CISPR Publication 22. Detailed description of test facility was submitted to the Commission and accepted dated March 02, 2011 (Registration Number: 90661)

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR §15.203:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

* The antennas of this E.U.T are permanently attached.

*The E.U.T Complies with the requirement of §15.203

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1109FR13	Date of Issue: September 19, 2011	EUT Type: PCS CDMA Phone with Bluetooth/ WLAN	FCC ID : RAD209
попаповна			TURBEOO



7. SUMMARY OF TEST RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
20 dB Bandwidth	§15.247(a)(1)(ii) or (iii)	NA		PASS
Occupied Bandwidth		NA		PASS
Conducted Maximum Peak Output Power	§15.247(b)(1)	< 1 Watts		PASS
Carrier Frequency Separation	§15.247(a)(1)	>25 kHz or >2/3 of the 20dB BW		PASS
Number of Hopping Frequencies	§15.247(a)(1)(iii)	>15	CONDUCTED	PASS
Time of Occupancy	§15.247(a)(1)(iii)	<400 ms		PASS
Conducted Spurious Emissions	§15.247(d)	< 20 dB for all out-of band emissions		PASS
Band Edge(Out of Band Emissions)	§15.247(d)	< 20 dB for all out-of band emissions		PASS
AC Power line Conducted Emissions	§15.207(a)	cf. Section 8.7		PASS
Radiated Spurious Emissions	§15.247(d), 15.205, 15.209	cf. Section 8.1.1	BADIATED	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	cf. Section 8.1.2	RADIATED	PASS

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT						
Test Report No.	Date of Issue:	EUT Type:	FCC ID :					
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209					
		Dage 7 of 49						



8. FCC PART 15.247 REQUIREMENTS

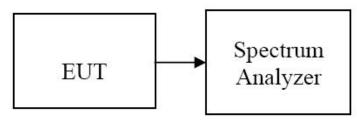
8.1 PEAK POWER

LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

- 1. For systems using digital modulation in the bands of 902 ~ 928 MHz, 2400 ~ 2483.5 MHz, and 5725 ~ 5850 MHz: 1 watt.
- 2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer. The Spectrum Analyzer is set to the peak detector mode.

- 1. Span = 2 MHz (GFSK) / 5 MHz (8DPSK)
- 2. RBW = 1 MHz (GFSK) / 3 MHz (8DPSK)
- 3. VBW = 1 MHz (GFSK) / 3 MHz (8DPSK)
- 4. Sweep = auto
- 5. Packet type= DH5 (GFSK) / 3-DH5 (8DPSK)

TEST RESULTS

No non-compliance noted

Test Data

Channel	Frequency	Output Pov	Output Power(GFSK)		ver(8DPSK)	Limit	Result
Channel	(MHz)	(dBm)	(mW) (dBm) (mW)		(mW)	(W)	Result
Low	2402	-0.16	0.96	3.39	2.18		PASS
Mid	2441	0.67	1.17	4.15	2.60	1	PASS
High	2480	1.42	1.39	4.79	3.01		PASS

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr							
Test Report No. HCTR1109FR13	Date of Issue: September 19, 2011	EUT Type: PCS CDMA Phone with Bluetooth/ WLAN	FCC ID : RAD209							



Test Plots (GFSK) Peak Power (Low-CH)

🔆 Ag	jilent							F	₹ Т	Freq/Channel
FCC B Ref 10 #Peak	T TEST dBm	Power		i.0 20 dB			Mkr1	2.402 @ _0.1	163 GHz .6 dBm	Center Freq 2.40200000 GHz
Log 10 dB/ Offst						1 ◊				Start Freq 2.40100000 GHz
7.4 dB										Stop Freq 2.40300000 GHz
LgAv										CF Step 200.000000 kHz <u>Auto</u> Man
M1 S2 S3 FC AA	<u> </u>									FreqOffset 0.00000000 Hz
€(f): FTun Swp										Signal Track On <u>Off</u>
#Res B	· 2.402 3W 1 MH	z			BW 1 M		weep 1	Span . ms (60	2 MHz 1 pts)	
File 0	peratio	in Stat	us, C:	\HCT.G	IF file	saved				

Test Plots (GFSK) Peak Power (Mid-CH)

🔆 Agilent				RT	Freq/Channel
FCC BT TEST Powe Ref 10 dBm #Peak	r Out Ch.39 Atten 20 dB		Mkr1	2.440 913 GHz 0.67 dBm	Center Freq 2.44100000 GHz
Log 10 dB/ Offst		1 >			Start Freq 2.44000000 GHz
7.4 dB					Stop Freq 2.44200000 GHz
LgAv					CF Step 200.000000 kHz <u>Auto</u> Man
M1 S2 S3 FC AA					Freq Offset 0.00000000 Hz
£(f): FTun Swp					Signal Track On <u>Off</u>
Center 2.441 000 G #Res BW 1 MHz	#U	BW 1 MHz		Span 2 MHz l ms (601 pts)	
File Operation Sta	itus, C:\HCT.G	IF file save			

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT								
Test Report No.	Date of Issue:	EUT Type:	FCC ID :							
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209							
	Page 9 of 48									



Test Plots (GFSK) Peak Power (High-CH)

🔆 Agilent				R	Т	Freq/Channel
FCC BT TEST P Ref 10 dBm #Peak	ower Out Ch.78 Atten 20 d	1	Mkr1	2.479 940		Center Freq 2.48000000 GHz
Log 10 dB/ Offst		 	<u> </u>			Start Freq 2.47900000 GHz
7.4 dB						Stop Freq 2.48100000 GHz
LgAv						CF Step 200.000000 kHz <u>Auto</u> Man
M1 S2 S3 FC AA						Freq Offset 0.00000000 Hz
£(f): FTun Swp						Signal Track On <u>Off</u>
Center 2.480 00 #Res BW 1 MHz		#VBW 1 MHz	Sweep :	Span 2 1 ms (601		
File Operation	Status, C:\HCT	.GIF file save	d			

Test Plots (8DPSK) Peak Power (Low-CH)

🔆 Ag	ilent							R	: T	Freq/Channel
Ref 10		Power	Out Ch Atten				Mkr1	2.402 0 3.3	00 GHz 9 dBm	Center Freq 2.40200000 GHz
#Peak Log 10						<u>ک</u>	 			Start Freq
dB/ Offst										2.39950000 GHz
7.4 dB										Stop Freq 2.40450000 GHz
LgAv										CF Step 500.000000 kHz <u>Auto</u> Man
M1 S2 S3 FC AA	L									FreqOffset 0.00000000 Hz
€(f): FTun Swp										Signal Track On <u>Off</u>
	2.402 W 3 MH		lz	#V	ви з м	Hz	 weep 1	Span ms (60	5 MHz 1 pts)	
			us, C:							

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT							
Test Report No.	Date of Issue:	EUT Type:	FCC ID :						
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209						
	Page 10 of 48								



Test Plots (8DPSK) Peak Power (Mid-CH)

🔆 Agil	lent							F	≀ Т	Freq/Channel
FCC BT Ref 10 #Peak		Power	Out Ch Atten	n.39 20 dB			Mkr1	2.440 9 4.1	75 GHz 5 dBm	Center Freq 2.44100000 GHz
Log 10 dB/ Offst					1					Start Freq 2.43850000 GHz
7.4 dB										Stop Freq 2.44350000 GHz
LgAv										CF Step 500.000000 kHz <u>Auto</u> Man
M1 S2 S3 FC AA										FreqOffset 0.00000000 Hz
€(f): FTun Swp										Signal Track On <u>Off</u>
Center #Res Bl	N 3 MH	z			BW 3 M		weep 1	Span . ms (60	5 MHz 1 pts)	
File Op	eratio	in Stat	tus, C:	\HCT.G	IF file	saved				

Test Plots (8DPSK) Peak Power (High-CH)

🔆 Ag	jilent							F	2 T	Freq/Channel
FCC B Ref 10 #Peak		Power	Out Ch Atten				Mkr1	2.480 2 4.7	75 GHz 9 dBm	Center Freq 2.48000000 GHz
Log 10 dB/ Offst						1				Start Freq 2.47750000 GHz
dB										Stop Freq 2.48250000 GHz
LgAv										CF Step 500.000000 kHz <u>Auto</u> Man
M1 S2 S3 FC AA	L									FreqOffset 0.00000000 Hz
€(f): FTun Swp										Signal Track On <u>Off</u>
#Res B	2.480 3 MH	z			BW 3 M		veep 1	Span . ms (60	5 MHz 1 pts)	
The of	peratit	in stat	us, c:	\HCT.G	TL THE	Savec				

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT							
Test Report No.	Date of Issue:	EUT Type:	FCC ID :						
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209						
	Page 11 of 48								

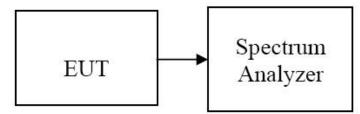


8.2 BAND EDGES MEASUREMENT

LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Configuration



TEST PROCEDURE

The spectrum analyzer is set to :

- 1. Span = 8 MHz
- 2. RBW = 100 kHz
- 3. VBW = 300 kHz
- 4. Sweep = auto
- 5. Detector Mode = Peak

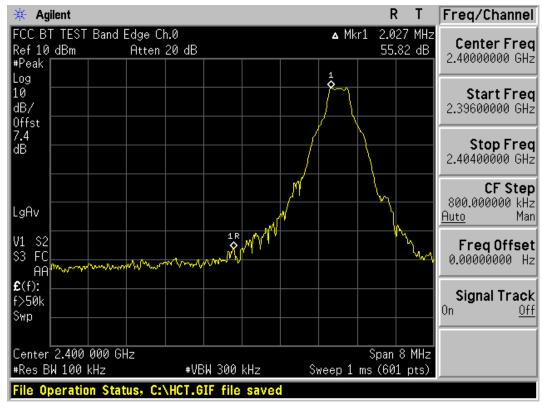
TEST RESULTS

See attached.

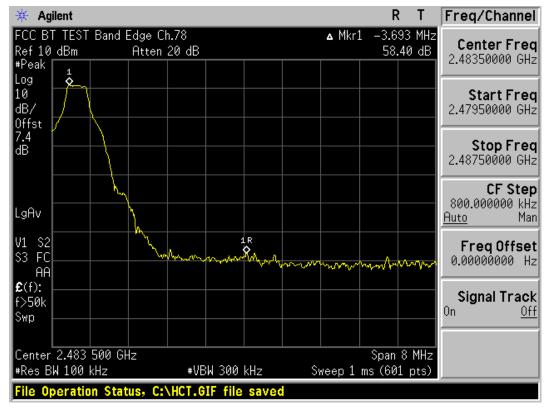
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		
Test Report No.	Date of Issue:	EUT Type:	FCC ID :	
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209	
Page 12 of 48				



Test Plots (GFSK) Band Edges (Low-CH)



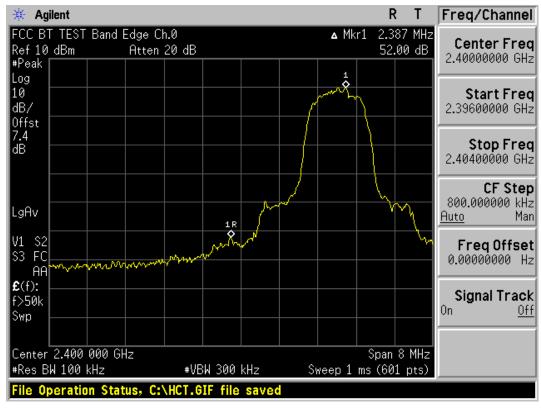
Test Plots (GFSK) Band Edges (High-CH)



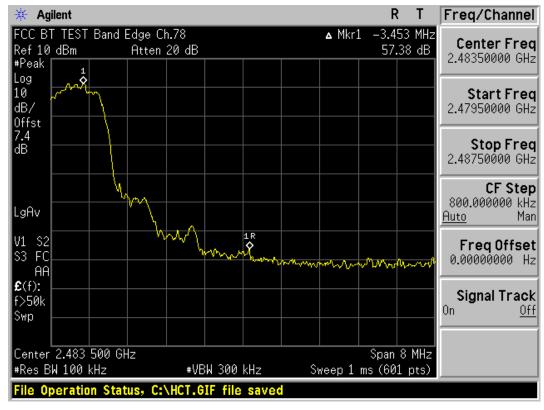
FCC PT.15.247 TEST REPORT		www.hct.co.kr		
Test Report No.	Date of Issue:	EUT Type: PCS CDMA Phone with Bluetooth/ WLAN	FCC ID :	
HCTR1109FR13	September 19, 2011	RAD209		
Page 13 of 48				



Test Plots (8DPSK) Band Edges (Low-CH)



Test Plots (8DPSK) Band Edges (High-CH)



FCC PT.15.247 TEST REPORT		www.hct.co.kr		
Test Report No. HCTR1109FR13	Date of Issue: EUT Type: September 19, 2011 PCS CDMA Phone with Bluetooth/ WLAN		FCC ID : RAD209	
Page 14 of 48				

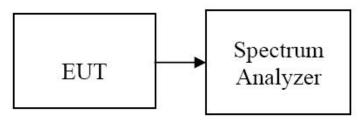


8.3 FREQUENCY SEPARATION / OCCUPIED BANDWIDTH (99% BW)

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 spectrum analyzer is set to :

- 1. Span = 3 MHz
- 2. RBW = 30 kHz
- 3. VBW = 100 kHz
- 4. Sweep = auto

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

Test Data

Channel Separation (kHz)		20dB Bandwidth (kHz)			Limit	Result
GFSK	8DPSK	Channel	GFSK	8DPSK	(kHz)	
		Low CH	942.4	1287.0	>25 or	
960	995	Middle CH	965.9	1289.0	>2/3 of the	Pass
		High CH	941.6	1289.0	20dB BW	

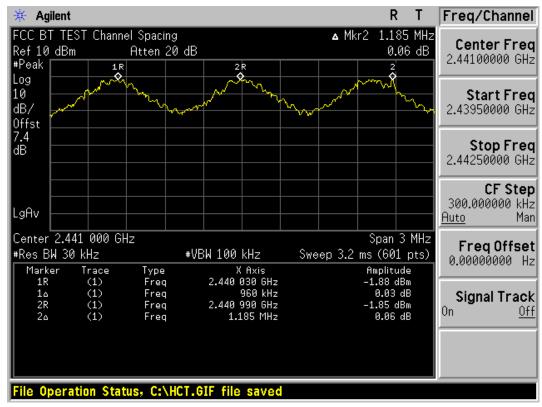
Occupied Bandwidth (99% BW)

	Result			
Channel	Channel GFSK 8DPSK			
Low CH	886.4	1170.6		
Middle CH	895.6	1172.5	Pass	
High CH	891.8	1172.5		

FCC PT.15.247 TEST REPORT		www.hct.co.kr		
Test Report No. HCTR1109FR13			FCC ID : RAD209	
Page 15 of 48				



Test Plots (GFSK) Channel Separation



Test Plots (8DPSK) Channel Separation

🔆 Agilent			RT	Freq/Channel
FCC BT TEST Chann Ref 10_dBm	el Spacing Atten 20 dB		▲ Mkr2 995 kł 2.93 dl	Contor Lrog
#Peak Log 10 dB/ Offst	•^	2R		• Start Freq 2.43950000 GHz
dB				Stop Frec 2.44250000 GHz
LgAv				CF Step 300.000000 kHz <u>Auto</u> Mar
Center 2.441 000 G #Res BW 30 kHz Marker Trace		100 kHz Sm X Axis	Span 3 MH veep 3.2 ms (601 pts Amplitude	F F G G I I I I I I I C G
$ \begin{array}{cccc} 1R & (1) \\ 1 & (1) \\ 2R & (1) \\ 2 & (1) \\ 2 & (1) \end{array} $	Freq 2. Freq	439 865 GHz 1.325 MHz 441 190 GHz 995 kHz	-2.80 dBm -1.85 dB -4.66 dBm 2.93 dB	Signal Track On <u>Of</u>
File Operation Sta		file saved		

FCC PT.15.247 TEST REPORT		www.hct.co.kr		
Test Report No. HCTR1109FR13	Date of Issue: EUT Type: September 19, 2011 PCS CDMA Phone with Bluetooth/ WLAN		FCC ID : RAD209	
Page 16 of 48				



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		www.hct.co.kr		
Test Report No. HCTR1109FR13			FCC ID : RAD209	
Page 17 of 48				



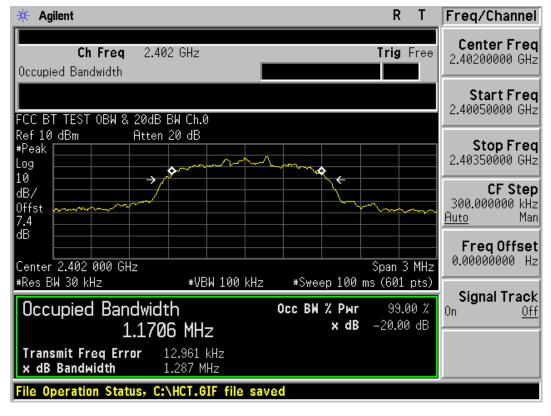
Test Plots (GFSK)

20 dB Bandwidth & Occupied Bandwidth (High-CH)



Test Plots (8DPSK)

20 dB Bandwidth & Occupied Bandwidth (Low-CH)

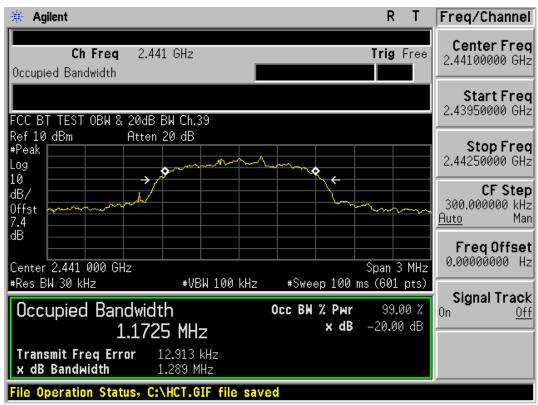


FCC PT.15.247 TEST REPORT		www.hct.co.kr		
Test Report No. HCTR1109FR13	Date of Issue: EUT Type: September 19, 2011 PCS CDMA Phone with Bluetooth/ WLAN		FCC ID : RAD209	
Page 18 of 48				



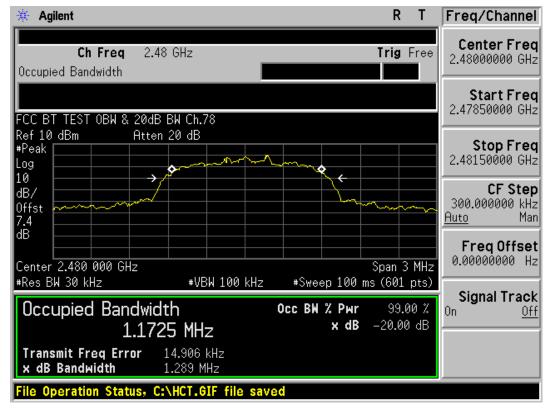
Test Plots (8DPSK)

20 dB Bandwidth & Occupied Bandwidth (Mid-CH)



Test Plots (8DPSK)

20 dB Bandwidth & Occupied Bandwidth (High-CH)



FCC PT.15.247 TEST REPORT		www.hct.co.kr		
Test Report No. HCTR1109FR13	Date of Issue: EUT Type: September 19, 2011 PCS CDMA Phone with Bluetooth/ WLAN		FCC ID : RAD209	
	Page 19 of 48			

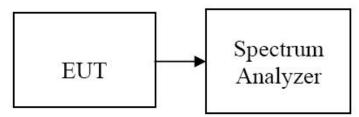


8.4 NUMBER OF HOPPING FREQUENCY

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 was set to :

- 1. Span = the frequency band of operation (Start = 2400 MHz, Stop = 2483.5 MHz)
- 2. RBW = 300 kHz
- 3. VBW = 300 kHz
- 4. Sweep = auto

The trace was allowed to stabilize.

TEST RESULTS

No non-compliance noted

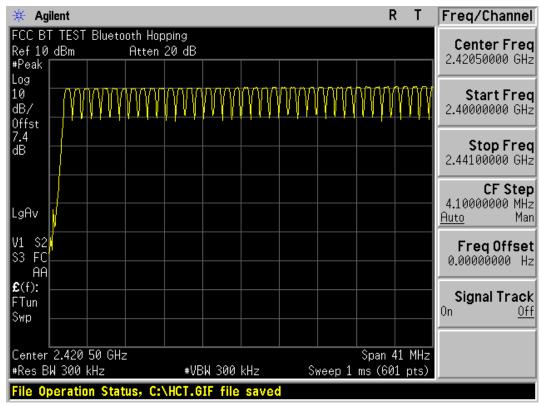
Test Data

Result (N	lo. of CH)	l inc.14	Decel	
GFSK 8DPSK		Limit	Result	
79	79	>15	Pass	

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID :
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209

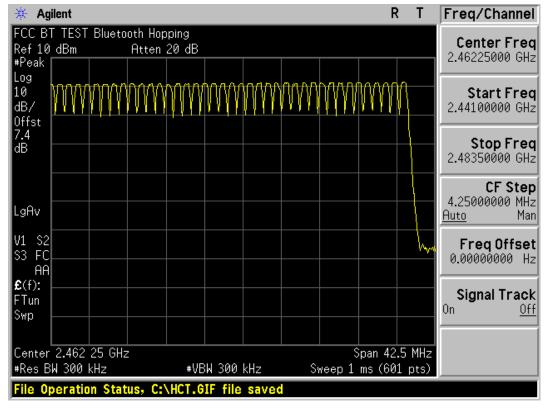


Test Plots (GFSK) Number of Channels (2.4 GHz - 2.441 GHz)



Test Plots (GFSK)

Number of Channels (2.441 GHz - 2.4835 GHz)

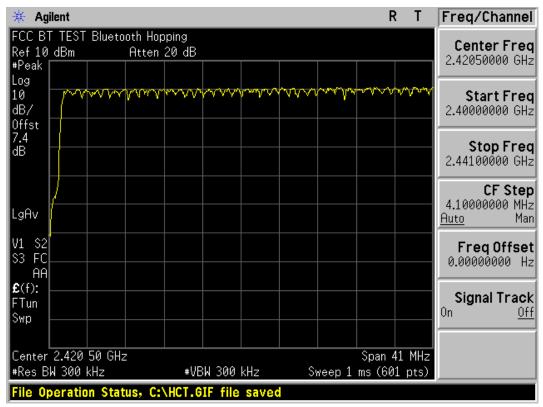


FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT				
Test Report No.	Date of Issue:	EUT Type:	FCC ID :			
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209			
	Page 21 of 48					



Test Plots (8DPSK)

Number of Channels (2.4 GHz - 2.441 GHz)



Test Plots (8DPSK)

Number of Channels (2.441 GHz - 2.4835 GHz)

🔆 Ag	jilent								R	Т	Freq/Channel
FCC B	T TEST	Blueto	oth Hop	ping							
Ref 10	dBm		Atten	20 dB							Center Freq 2.46225000 GHz
#Peak											2.40223000 0H2
Log 10	እ ^ም ነታችለምም	ᢉᢦᠣᠰᡃᡳ᠋ᢩ᠉	งาวงาง	mm	mann	mary mar	, and the second se	www.w	ᡧᠬᡊ᠊ᡳᠬ	<u>a</u>	
dB/	4 * * *	*** * T			· · · ·						Start Freq 2.44100000 GHz
Offst	├───										2.44100000 0H2
7.4 dB											Ch F
dB											Stop Freq 2.48350000 GHz
											2.40330000 GHZ
											CF Step
											4.25000000 MHz
LgAv											<u>Auto</u> Man
V1 S2										- 14	
\$3 FC										54	Freq Offset 0.00000000 Hz
ÂĂ											0.00000000 HZ
£ (f):	L										Circuit Transla
FTun											Signal Track On Off
Swp	├───										On <u>Off</u>
Center	2.462	25 GHz	 Z						Span 42.	5 MHz	
	W 300			#VB	W 300	kHz	Sv		ms (601		
File 0	peratio	n Stat	us, C:'	HCT.G	IF file	saved					

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT			
Test Report No. HCTR1109FR13	Date of Issue: September 19, 2011	EUT Type: PCS CDMA Phone with Bluetooth/ WLAN	FCC ID : RAD209		
Page 22 of 48					

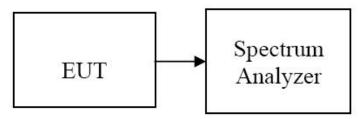


8.5 TIME OF OCCUPANCY (DWELL TIME)

LIMIT

According to \$15.247(a)(1)(iii), Frequency hopping systems operating in the 2400 MHz ~ 2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

Test Configuration



TEST PROCEDURE

EUT was set to transmit the longest packet type (DH5)

- 1. Span = zero span
- 2. RBW = 1 MHz
- 3. VBW = 1 MHz
- 4. Sweep = as necessary to capture the entire dwell time per channel

The marker-delta function was used to determine the dwell time.

TEST RESULTS

See the table.

DH 5(The longest packet type for GFSK)

CH Mid : 2.88 * (1600/6)/79 * 31.6 = 309.33 (ms) **3-DH 5**(The longest packet type for 8DPSK) CH Mid : 2.88 * (1600/6)/79 * 31.6 = 309.33 (ms)

Channel	Pulse Time (ms)		Total of Dwell (ms)		Period Time	Limit	Result
Channer	GFSK	8DPSK	GFSK	8DPSK	(s)	(ms)	Nesult
Low	2.89	2.89	307.20	308.27	31.6		PASS
Mid	2.88	2.88	307.20	307.20	31.6	400	PASS
High	2.88	2.89	307.20	308.27	31.6		PASS

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT			
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		
Page 23 of 48					



Test Plots (GFSK) Dwell Time (Low-CH)

🔆 Agilent				R	T Freq/Channel
FCC BT TEST Dwe Ref 10 dBm	ell Time Ch.0 Atten 20 dB		▲ Mkr1	2.892 -0.36	Contor Lrog
#Peak Log 1R			1		
10 dB/ Offst					Start Freq 2.40200000 GHz
7.4 dB					Stop Freq 2.40200000 GHz
LgAv 🖻					CF Step 1.00000000 MHz <u>Auto</u> Man
V1 S2 S3 FC AA			www.www.www.www.www.	yhwselligensyl	Freq Offset
£ (f): FTun					Signal Track On <u>Off</u>
Center 2.402 000 Res BW 1 MHz		BW 1 MHz	Sweep 5 ms	Span 0 (601 nt	
File Operation St				(001 pt	

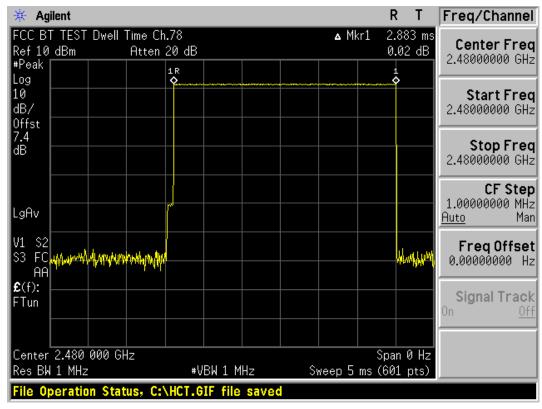
Test Plots (GFSK) Dwell Time (Mid-CH)

🔆 Agilent	R	Т	Freq/Channel
FCC BT TEST Dwell Time Ch.39 ▲ Mkr1 Ref 10 dBm Atten 20 dB #Peak	2.88 -0.06	3 ms dB	Center Freq 2.44100000 GHz
Log 1R 10 dB/ 0ffst	<u></u>	1	Start Freq 2.44100000 GHz
7.4 dB			Stop Freq 2.44100000 GHz
LgAv			CF Step 1.0000000 MHz <u>Auto</u> Man
V1 S2 S3 FC Wildow Wayn Wayn Walaw		W	Freq Offset 0.00000000 Hz
£(f): FTun			Signal Track On <u>Off</u>
Center 2.441 000 GHz Res BW 1 MHz Sweep 5 ms	Span 0 (601 p		
File Operation Status, C:\HCT.GIF file saved			

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr		
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		
Page 24 of 48					



Test Plots (GFSK) Dwell Time (High-CH)



Test Plots (8DPSK) Dwell Time (Low-CH)

🔆 Agilent		R	Т	Freq/Channel
FCC BT TEST Dwell Time Ch.0 Ref 10 dBm Atten 20 dB #Peak	▲ Mkr1	2.89) 0.76		Center Freq 2.40200000 GHz
Log 1R 10 dB/ Offst	ฟฟกา _ส มุกคระหมุ่งสาว _{กา} ร			Start Freq 2.40200000 GHz
7.4 dB				Stop Freq 2.40200000 GHz
LgAv		+		CF Step 1.0000000 MHz <u>Auto</u> Man
V1 S2 S3 FC www.ywww.www.ywylynylynylynylynylynylynylynylynylynyl		,	~\{ <i>\</i> /``\\	Freq Offset 0.00000000 Hz
£(f): FTun				Signal Track On <u>Off</u>
Center 2.402 000 GHz Res BW 1 MHz #VBW 1 MHz \$	Śweep 5 ms ())pan 0 (601 p		
File Operation Status, C:\HCT.GIF file saved				

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr		
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		
Page 25 of 48					



Test Plots (8DPSK) Dwell Time (Mid-CH)

🔆 Agilent			RT	Freq/Channel
FCC BT TEST Dwell Time Ch. Ref 10 dBm Atten 2 #Peak			2.883 ms 0.80 dB	Center Freq 2.44100000 GHz
Log 10 dB/	1R Querter and the analysis of the second se	und fan en fan fan de fan de fan en fan de fan d	1 •	Start Freq 2.44100000 GHz
0ffst 7.4 dB				Stop Freq 2.44100000 GHz
LgAv	r			CF Step 1.00000000 MHz <u>Auto</u> Man
V1 S2 S3 FC <mark>wyllinh, wyl¹yn⁴yniw, ambudw</mark> AA			milliping	FreqOffset 0.00000000 Hz
£(f): FTun				Signal Track ^{On <u>Off</u>}
Center 2.441 000 GHz Res BW 1 MHz	#VBW 1 MHz	Sp Sweep 5 ms (6	an 0 Hz 01 pts)	
File Operation Status, C:\	HCT.GIF file saved			

Test Plots (8DPSK) Dwell Time (High-CH)

🔆 Agilent		R	T Freq/Channel
#Peak	1.78 20 dB 1 R	▲ Mkr1 2.89; -1.84	Contor Lrog
Log 10 dB/ 0ffst		**************************************	Start Fred 2.48000000 GHz
dB			Stop Fred 2.48000000 GHz
LgAv			CF Step 1.00000000 MHz <u>Auto</u> Mar
V1 S2 S3 FC MANIANAN MANANANANANANANANANANANANANANANANAN	wayawad		Freq Offset
£(f):			Signal Track
Center 2.480 000 GHz Res BW 1 MHz	#VBW 1 MHz	Span 0 Sweep 5 ms (601 p	
File Operation Status, C:	\HCT.GIF file saved		

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT			
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		
Page 26 of 48					



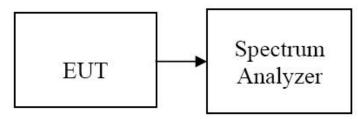
8.6 SPURIOUS EMISSIONS

8.6.1 CONDUCTED SPURIOUS MEASUREMENT

LIMIT : §15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.209(a) (see Section 15.205(c)).

Test Configuration



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz. Detector Mode is set to a peak detector Mode.

Measurements are made over the 30 MHz to 26 GHz range with the transmitter set to the lowest, middle, and highest channels.

TEST RESULTS

No non-compliance noted

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT			
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		
		Dama 07 of 40			



Test Plots (GFSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz) Spurious Emission (Low-CH)

🔆 Agilent			RT	Freq/Channel
#Peak	h.0 20 dB	Mkr1 	380.8 MHz -63.48 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst				Start Freq 30.0000000 MHz
7.4 dB				Stop Freq 1.00000000 GHz
LgAv				CF Step 97.0000000 MHz <u>Auto</u> Man
V1 S2 S3 FC AA	1	10.000 Arth - 1.000 - Arthr. 10.000	en h ^a ranka na na na	Freq Offset 0.00000000 Hz
£(f): FTun Swp				Signal Track On <u>Off</u>
Center 515.0 MHz #Res BW 100 kHz	#VBW 300 kHz		an 970 MHz ; (601 pts)	
File Operation Status, C	\HCT.GIF file sa	ved		

Test Plots (GFSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz) Spurious Emission (Mid-CH)

🔆 Agilent			RT	Freq/Channel
#Peak	Ch.39 m 20 dB	Mk	r1 384.0 MHz -63.20 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst				Start Freq 30.0000000 MHz
7.4 dB				Stop Freq 1.00000000 GHz
LgAv				CF Step 97.0000000 MHz <u>Auto</u> Man
M1 S2 S3 FC AA	1 	aderpatur fot board en selles totals dates	-1100-400-4010	FreqOffset 0.00000000 Hz
£(f): FTun Swp				Signal Track On <u>Off</u>
Center 515.0 MHz #Res BW 100 kHz	#VBW 300 k		Span 970 MHz ms (601 pts)	
Copyright 2000-2007 (Agilent Technolo			

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT			
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		
Page 28 of 48					



Test Plots (GFSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz) Spurious Emission (High-CH)

🔆 Ag	jilent								F	₹ T	Freq/Channel
Ref 10 #Peak		Cond	Spur Cł Atten					Mk		L.7 MHz 3 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst											Start Freq 30.0000000 MHz
7.4 dB											Stop Freq 1.00000000 GHz
LgAv											CF Step 97.0000000 MHz <u>Auto</u> Man
M1 S2 S3 FC AA				1	water	deres - and the set of	hours			whether wat to	FreqOffset 0.00000000 Hz
€(f): F⊤un Swp	**************************************	a na loga do a	ACTAL CARDINE.								Signal Track On <u>Off</u>
	· 515.0 3W 100			#VE	3W 300	kHz	Sweep		Span 93 ms (60		
File 0	peratio	in Stat	tus, C:	\HCT.G	IF file	save					

Test Plots (8DPSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz) Spurious Emission (Low-CH)

🔆 Agilent		RT	Freq/Channel
FCC BT TEST Cond Spur CH Ref 10 dBm Atten #Peak	1.0 20 dB	Mkr1 369.5 MHz -63.11 dBm	Center Freq 515.000000 MHz
Log 10 dB/ 0ffst			Start Freq 30.0000000 MHz
dB			Stop Freq 1.00000000 GHz
LgAv			CF Step 97.0000000 MHz <u>Auto</u> Man
V1 S2 S3 FC AA	1	nelle na gala and an	FreqOffset 0.00000000 Hz
£(f): FTun Swp			Signal Track ^{On <u>Off</u>}
Center 515.0 MHz #Res BW 100 kHz File Operation Status, C:	#VBW 300 kHz	Span 970 MHz Sweep 92.72 ms (601 pts)	
The operation status, c.	And Lott The Save	u	

FCC PT.15.247 TEST REPORT		www.hct.co.kr			
Test Report No. HCTR1109FR13	Date of Issue: EUT Type: September 19, 2011 PCS CDMA Phone with Bluetooth/ WLAN		FCC ID : RAD209		
Page 29 of 48					



Test Plots (8DPSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz) Spurious Emission (Mid-CH)

🔆 Agilent		RT	Freq/Channel
FCC BT TEST Cond Spur Ch. Ref 10 dBm Atten 2 #Peak		Mkr1 355.0 MHz _63.62 dBm	Center Freq 515.000000 MHz
Log 10 dB/ Offst			Start Freq 30.0000000 MHz
7.4 dB			Stop Freq 1.00000000 GHz
LgAv			CF Step 97.0000000 MHz <u>Auto</u> Man
M1 S2 S3 FC	1	and a second and the first on a second data	Freq Offset 0.00000000 Hz
£(f): FTun Swp			Signal Track On <u>Off</u>
Center 515.0 MHz #Res BW 100 kHz	#VBW 300 kHz Sweep	Span 970 MHz 92.72 ms (601 pts)	
File Operation Status, C:\	HCT.GIF file saved		

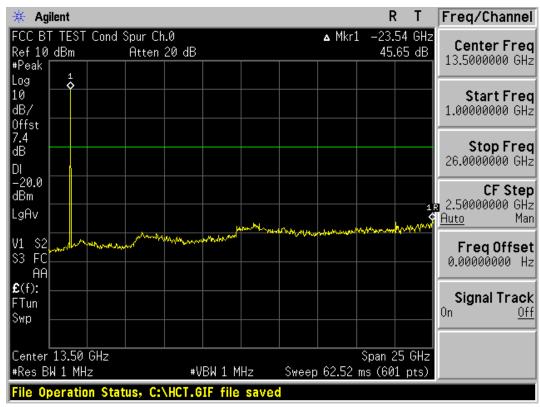
Test Plots (8DPSK) - 30 MHz - 1 GHz (RBW:100 kHz, VBW: 300 kHz) Spurious Emission (High-CH)

🔆 Agilent		F	R T Freq/Channel
#Peak	Ch.78 n 20 dB		2.3 MHz 22 dBm 515.000000 MHz
Log 10 dB/ Offst			Start Freq 30.0000000 MHz
7.4 dB			Stop Freq 1.00000000 GHz
LgAv			CF Step 97.0000000 MHz <u>Auto</u> Man
V1 S2 S3 FC AA	1.	with mary and a second and and and a second and	Freq Offset 0.00000000 Hz
£(f): FTun Swp			Signal Track
Center 515.0 MHz #Res BW 100 kHz	#VBW 300 kHz	Span 9 Sweep 92.72 ms (60	70 MHz 11 pts)
File Operation Status, C	:\HCT.GIF file sav	/ed	

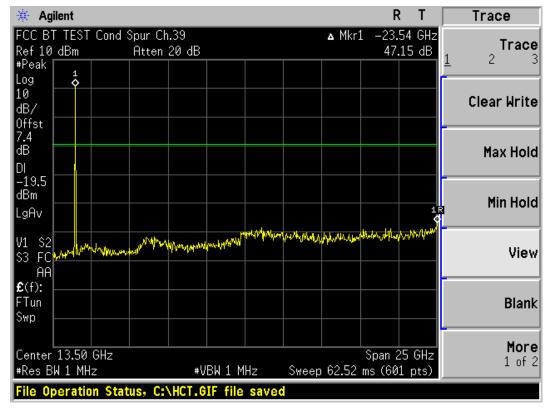
FCC PT.15.247 TEST REPORT		www.hct.co.kr			
Test Report No. HCTR1109FR13	Date of Issue: EUT Type: September 19, 2011 PCS CDMA Phone with Bluetooth/ WLAN		FCC ID : RAD209		
Page 30 of 48					



Test Plots (GFSK) - 1 GHz - 26 GHz (RBW:1 MHz, VBW: 1 MHz) Spurious Emission (Low-CH)



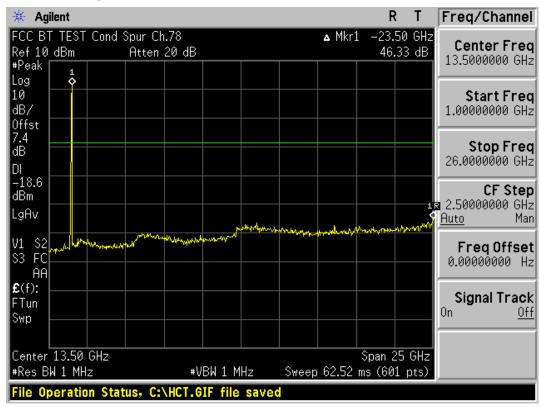
Test Plots (GFSK) - 1 GHz - 26 GHz (RBW:1 MHz, VBW: 1 MHz) Spurious Emission (Mid-CH)



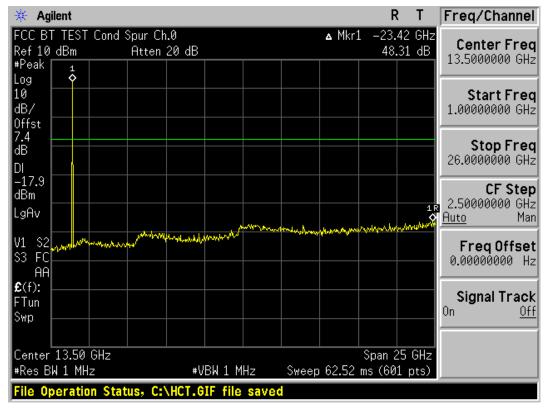
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT www.hct		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID :
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209
Page 31 of 48			



Test Plots (GFSK) - 1 GHz - 26 GHz (RBW:1 MHz, VBW: 1 MHz) Spurious Emission (High-CH)



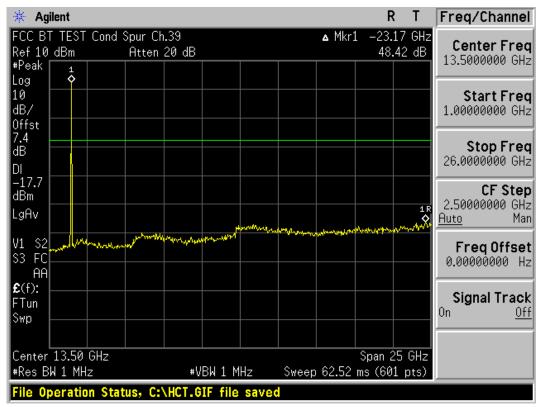
Test Plots (8DPSK) - 1 GHz - 26 GHz (RBW:1 MHz, VBW: 1 MHz) Spurious Emission (Low-CH)



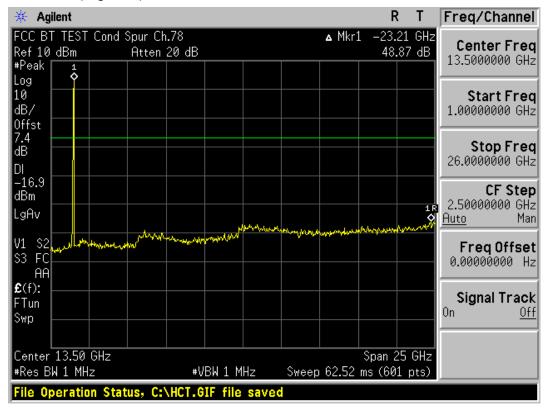
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT <u>www.hct.co</u>		www.hct.co.kr
Test Report No. HCTR1109FR13	Date of Issue: EUT Type: September 19, 2011 PCS CDMA Phone with Bluetooth/ WLAN		FCC ID : RAD209
Page 32 of 48			



Test Plots (8DPSK) - 1 GHz - 26 GHz (RBW:1 MHz, VBW: 1 MHz) Spurious Emission (Mid-CH)



Test Plots (8DPSK) - 1 GHz - 26 GHz (RBW:1 MHz, VBW: 1 MHz) Spurious Emission (High-CH)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No. HCTR1109FR13	Date of Issue: EUT Type: September 19, 2011 PCS CDMA Phone with Bluetooth/ WLAN		FCC ID : RAD209
Page 33 of 48			



8.6.2 RADIATED SPURIOUS EMISSIONS

LIMIT : §15.247(d), §15.205, §15.209

1. 20dBc in any 100kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

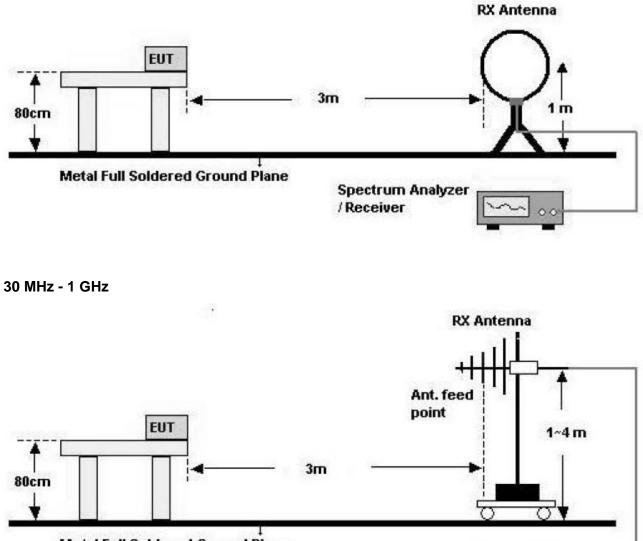
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	
Test Report No.	Date of Issue:	EUT Type:	FCC ID :
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209



Test Configuration

Below 30 MHz



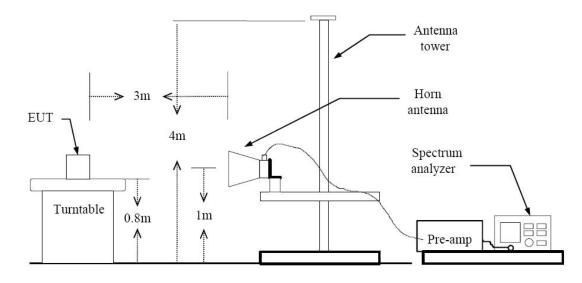
Metal Full Soldered Ground P	lane
------------------------------	------

	5	04
Spectrum Analyzer / Receiver	5	~

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	
Test Report No.	Date of Issue:	EUT Type:	FCC ID :
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209
Page 25 of 48			



Above 1 GHz



TEST PROCEDURE

- 1. The EUT is placed on a turntable, which is 0.8 m above ground plane.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until the measurements for all frequencies are complete.

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT www.hct.c		www.hct.co.kr
Test Report No. HCTR1109FR13	Date of Issue: September 19, 2011	EUT Type: PCS CDMA Phone with Bluetooth/ WLAN	FCC ID : RAD209
HCTR1109FR13	September 19, 2011	PCS CDIMA Phone with Bluetooth/ WLAN	RAD209
Page 36 of 48			



TEST RESULTS

9 kHz – 30MHz

Operation Mode: Normal Mode

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin	
MHz	dBμN	dB /m	dB	(H/V)	dBµN/m	dBµN/m	dB	
	No Critical peaks found							

- 1. Measuring frequencies from 9 kHz to the 30MHz.
- 2. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
- 3. Distance extrapolation factor = 40 log (specific distance / test distance) (dB)
- 4. Limit line = specific Limits (dBuV) + Distance extrapolation factor

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr					
Test Report No.	Date of Issue:	EUT Type:	FCC ID :					
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209					



TEST RESULTS

Below 1 GHz

Operation Mode: EDR Mode (Channel : 2480)

Frequency	Reading	Ant. Factor	Cable Loss	ANT POL	Total	Limit	Margin
MHz	dBuV	dB/m	dB	(H/V)	dBuV/m	dBuV/m	dB
40.60	13.1	13.1	0.6	V	26.8	40.0	13.2
77.30	13.8	10.1	0.9	Н	24.8	40.0	15.2
116.70	16.5	10.6	1.1	Н	28.2	43.5	15.3
171.40	13.4	12.5	1.4	V	27.3	43.5	16.2
281.30	15.6	12.7	1.8	Н	30.1	46.0	15.9
436.10	12.5	16.4	2.3	V	31.2	46.0	14.8

- 1. Measuring frequencies from 30 MHz to the 1 GHz.
- 2. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
- 3. We have done Normal Mode and EDR Mode test. Worst case of EUT is EDR Mode.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr				
Test Report No.	Date of Issue:	EUT Type:	FCC ID :				
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209				
Baga 28 of 18							



Above 1 GHz

Operation Mode: CH Low(GFSK)

Frequency	Reading	* A.F+CL-AMP GAIN	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Deleci
4804	54.65	-3.82	V	50.83	74	23.17	PK
4804	40.93	-3.82	V	37.11	54	16.89	AV
7206	51.52	5.16	V	56.68	74	17.32	PK
7206	37.54	5.16	V	42.70	54	11.30	AV
4804	54.62	-3.82	Н	50.80	74	23.20	PK
4804	40.91	-3.82	Н	37.09	54	16.91	AV
7206	51.37	5.16	Н	56.53	74	17.47	PK
7206	37.54	5.16	Н	42.70	54	11.30	AV

* A·F: ANTENNA FACTOR

C·L: CABLE LOSS AMP GAIN: AMPLIFIER GAIN

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4. Spectrum setting:
 - a. Peak Setting 1 GHz 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz 26 GHz, RBW = 1 MHz, VBW = 10 Hz.
- 5. We have done Normal Mode and EDR Mode test. Worst case of EUT is Normal Mode.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr					
Test Report No.	Date of Issue:	EUT Type:	FCC ID :					
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209					
	Page 20 of 48							



Operation Mode: CH Mid(GFSK)

Frequency	Reading	*A.F+CL-AMP GAIN.	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Deleci
4882	52.39	-3.68	V	48.71	74	25.29	PK
4882	39.48	-3.68	V	35.80	54	18.20	AV
7323	50.47	5.74	V	56.21	74	17.79	PK
7323	36.53	5.74	V	42.27	54	11.73	AV
4882	53.24	-3.68	Н	49.56	74	24.44	PK
4882	39.50	-3.68	Н	35.82	54	18.18	AV
7323	49.82	5.74	Н	55.56	74	18.44	PK
7323	36.55	5.74	Н	42.29	54	11.71	AV

* A-F: ANTENNA FACTOR

C·L: CABLE LOSS

AMP GAIN: AMPLIFIER GAIN

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3. Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4. Spectrum setting:
 - a. Peak Setting 1 GHz 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz 26 GHz, RBW = 1 MHz, VBW = 10 Hz.
- 5. We have done Normal Mode and EDR Mode test. Worst case of EUT is Normal Mode.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr				
Test Report No.	Date of Issue:	EUT Type:	FCC ID :				
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209				
Dage 40 of 49							



Operation Mode: CH High(GFSK)

Frequency	Reading	*A.F+CL-AMP GAIN	ANT. POL	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	
4960	51.36	-3.57	V	47.79	74	26.21	PK
4960	38.31	-3.57	V	34.74	54	19.26	AV
7440	49.21	6.05	V	55.26	74	18.74	PK
7440	36.34	6.05	V	42.39	54	11.61	AV
4960	51.82	-3.57	Н	48.25	74	25.75	PK
4960	38.40	-3.57	Н	34.83	54	19.17	AV
7440	49.42	6.05	Н	55.47	74	18.53	PK
7440	36.36	6.05	Н	42.41	54	11.59	AV

* A·F: ANTENNA FACTOR

C·L: CABLE LOSS

AMP GAIN: AMPLIFIER GAIN

- 1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
- Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
- 3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- 4. Spectrum setting:
 - a. Peak Setting 1 GHz 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz 26 GHz, RBW = 1 MHz, VBW = 10 Hz.
- 5. We have done Normal Mode and EDR Mode test. Worst case of EUT is Normal Mode.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr				
Test Report No.	Date of Issue:	EUT Type:	FCC ID :				
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209				
Dage 41 of 49							



8.6.3 RADIATED RESTRICTED BAND EDGE MEASUREMENTS

Test Requirements and limit, §15.247(d), §15.205, §15.209

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in section 15.209(a) (See section 15.205(c).

Operation Mode Operating Frequency Channel No 8DPSK(EDR) 2402 MHz, 2480 MHz CH 0, CH 78

Frequency	*Fund. Reading	X A.F.+CL	Ant. Pol.	*Fundamental	Delta Value	Total	Limit	Margin	Detect
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dBuV/m]	[dB]	Deleci
2390.0	62.21	33.25	Н	95.46	40.91	54.55	74	19.45	PK
2390.0	49.03	33.25	Н	82.28	40.91	41.37	54	12.63	AV
2390.0	61.14	33.25	V	94.39	41.64	52.75	74	21.25	PK
2390.0	47.70	33.25	V	80.95	41.64	39.31	54	14.69	AV
2483.5	63.03	33.73	Н	96.76	46.72	50.04	74	23.96	PK
2483.5	49.52	33.73	Н	83.25	46.72	36.53	54	17.47	AV
2483.5	61.21	33.73	V	94.94	45.58	49.36	74	24.64	PK
2483.5	47.72	33.73	V	81.45	45.58	35.87	54	18.13	AV

* A·F: ANTENNA FACTOR

C·L: CABLE LOSS

- 1. Spectrum setting:
 - a. Peak Setting 1 GHz 26 GHz, RBW = 1 MHz, VBW = 1 MHz.
 - b. AV Setting 1 GHz 26 GHz, RBW=1 MHz, VBW= 10 Hz.
- 2. Radiated Restricted Band Edge measures by marker-delta method according to FCC guideline.
- 3. We have done Normal Mode and EDR Mode test. Worst case of EUT is EDR Mode.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT					
Test Report No.	Date of Issue:	EUT Type:	FCC ID :				
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209				



8.7 POWERLINE CONDUCTED EMISSIONS

LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

	Limits (dBµV)			
Frequency Range (MHz)	Quasi-peak	Average		
0.15 to 0.50	66 to 56	56 to 46		
0.50 to 5	56	46		
5 to 30	60	50		

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

- 1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
- 2. The EUT is connected via LISN to a test power supply.
- 3. The measurement results are obtained as described below:
- 4. Detectors Quasi Peak and Average Detector.

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT					
Test Report No. HCTR1109FR13	Date of Issue: September 19, 2011	EUT Type: PCS CDMA Phone with Bluetooth/ WLAN	FCC ID : RAD209				



RESULT PLOTS

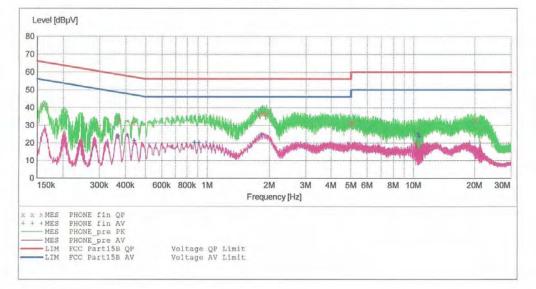
Conducted Emissions (Line 1)

HCT

EUT:	JukeB
Manufacturer:	TCT MOBILE LIMITED
Operating Condition:	BT MODE
Test Site:	SHIELD ROOM
Operator:	JS LEE
Test Specification:	FCC PART15 CLASS B
Comment:	Н

SCAN TABLE: "FCC PART 15 B(H)"

Sho	rt Desc	ription:		FCC PART 15	CLASS B		
Sta	rt	Stop	Step	Detector	Meas.	IF	Transducer
Fre	quency	Frequency	Width		Time	Bandw.	
150	.0 kHz	500.0 kHz	1.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
500	.0 kHz	5.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None
5.0	MHz	30.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None



MEASUREMENT RESULT: "PHONE fin QP"

9/10/2011	3:297	M						
Frequen	cy Hz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE	
0.1610	10	41.30	10.1	65	24.1			
0.3710	10	33.20	10.1	59	25.3			
0.4350	10	31.40	10.1	57	25.8			
1.7760	00	36.00	10.2	56	20.0			
1.8520	00	36.60	10.2	56	19.4			
1.9360	00	35.90	10.2	56	20.1			
5.0000	00	31.60	10.5	56	24.4			
5.0960	00	31.60	10.5	60	28.4			
20.1040	00	32.60	11.9	60	27.4			

Page 1/2 9/10/2011 3:29AM PHONE

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT					
Test Report No. HCTR1109FR13	Date of Issue: September 19, 2011	EUT Type: PCS CDMA Phone with Bluetooth/ WLAN	FCC ID : RAD209				



MEASUREMENT RESULT: "PHONE fin AV"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.367010	23.90	10.1	49	24.7		
0.408010	24.50	10.1	48	23.2		
0.440010	21.30	10.1	47	25.8		
0.868000	20.30	10.1	46	25.7		
0.912000	20.10	10.1	46	25.9		
1.820000	24.60	10.2	46	21.4		
10.548000	25.10	11.0	50	24.9		
10.588000	23.80	11.0	50	26.2		
10.752000	23.70	11.0	50	26.3		

Page 2/2 9/10/2011 3:29AM PHONE

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		
Test Report No.	Date of Issue:	EUT Type:	FCC ID :	
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209	



Conducted Emissions (Line 2)

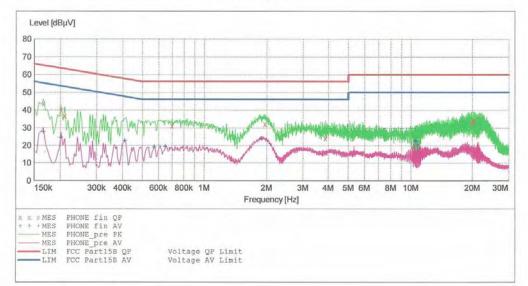
HCT

EMC

EUT:	JukeB
Manufacturer:	TCT MOBILE LIMITED
Operating Condition:	BT MODE
Test Site:	SHIELD ROOM
Operator:	JS Lee
Test Specification:	FCC PART15 CLASS B
Comment:	N

SCAN TABLE: "FCC PART 15 B(N)"

Short Desc			FCC PART 15				
Start	Stop	Step	Detector	Meas.	IF	Transducer	
Frequency	Frequency	Width		Time	Bandw.		
150.0 kHz	500.0 kHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None	
500.0 kHz	5.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None	
5.0 MHz	30.0 MHz	4.0 kHz	MaxPeak Average	10.0 ms	9 kHz	None	



MEASUREMENT RESULT: "PHONE fin QP"

9	/10/2011 3:2	5AM					
	Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
	0.166010	43.60	10.3	65	21.6		
	0.202010	39.90	10.3	64	23.6		
	0.210010	36.70	10.3	63	26.6		
	0.700000	31.10	10.4	56	24.9		
	1.964000	32.10	10.4	56	23.9		
	3.868000	24.10	10.6	56	31.9		
	19.900000	32.70	11.7	60	27.3		
	20.144000	33.90	11.7	60	26.1		
	20.312000	34.00	11.7	60	26.0		

Page 1/2 9/10/2011 3:25AM PHONE

FCC PT.15.247 TEST REPORT		www.hct.co.kr			
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		



					5AM	9/10/2011 3:2
P	Line	Margin dB	Limit dBµV	Transd dB	Level dBµV	Frequency MHz
		27.5	55	10.3	27.70	0.166010
		29.0	54	10.3	24.60	0.202010
		24.9	48	10.3	22.80	0.410010
		26.8	46	10.3	19.20	0.572000
		26.6	46	10.3	19.40	0.648000
		21.7	46	10.4	24.30	1.880000
		27.2	50	11.1	22.80	10.552000
		27.6	50	11.1	22.40	10.592000
		29.8	50	11.1	20.20	10.756000

Page 2/2 9/10/2011 3:25AM PHONE

FCC PT.15.247 TEST REPORT		www.hct.co.kr	
Test Report No.	Date of Issue:	EUT Type:	FCC ID :
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209



9. LIST OF TEST EQUIPMENT

Manufacturer	Model / Equipment	Calibration Interval	Calibration Due	Serial No.
Rohde & Schwarz	ESH2-Z5/ LISN	Annual	02/01/2012	861741/013
Schwarzbeck	VULB 9168/ TRILOG Antenna	Biennial	02/09/2013	200
HD	MA240/ Antenna Position Tower	N/A	N/A	556
EMCO	1050/ Turn Table	N/A	N/A	114
HD GmbH	HD 100/ Controller	N/A	N/A	13
HD GmbH	KMS 560/ SlideBar	N/A	N/A	12
Rohde & Schwarz	ESH3-Z2/ PULSE LIMITER	Annual	10/25/2011	375.8810.352
Rohde & Schwarz	SCU-18/ Signal Conditioning Unit	Annual	09/29/2011	10094
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	09/23/2011	296
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	03/23/2012	839117/011
Agilent	E4440A / Spectrum Analyzer	Annual	05/02/2012	US45303008
Agilent	E4416A /Power Meter	Annual	01/04/2012	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	05/02/2012	MY4442009
Wainwright Instrument	WHF3.3/18G-10EF / High Pass Filter	Annual	05/02/2012	1
Wainwright Instrument	WRCJ2400/2483.5-2370/2520- 60/14SS / Band Reject Filter	Annual	05/02/2012	1
Hewlett Packard	11636B/Power Divider	Annual	12/29/2011	11377
Hewlett Packard	11667B / Power Spliter	Annual	11/08/2011	10126
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	01/04/2012	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	12/01/2011	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	04/01/2012	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	05/02/2012	100422
EMCO	6502.LOOP ANTENNA	Biennial	01/13/2012	9009-2536

FCC PT.15.247 TEST REPORT		www.hct.co.kr			
Test Report No.	Date of Issue:	EUT Type:	FCC ID :		
HCTR1109FR13	September 19, 2011	PCS CDMA Phone with Bluetooth/ WLAN	RAD209		
Page 48 of 48					