



Conducted Output Power (802.11g-CH 6) 12Mbps

Conducted Output Power (802.11g-CH 6) 18Mbps



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
HCTR1303FR26-1	April 04, 2013	Cellular/PCS GSM/GPRS/EDGE(RX Only)/WCDMA/HSDPA Phone with Bluetooth, WLAN	ZNFE425J
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Conducted Output Power (802.11g-CH 6) 24Mbps

Conducted Output Power (802.11g-CH 6) 36Mbps



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Conducted Output Power (802.11g-CH 6) 48Mbps

Conducted Output Power (802.11g-CH 6) 54Mbps



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Conducted Output Power (802.11g-CH 11) 6Mbps

Conducted Output Power (802.11g-CH 11) 9Mbps



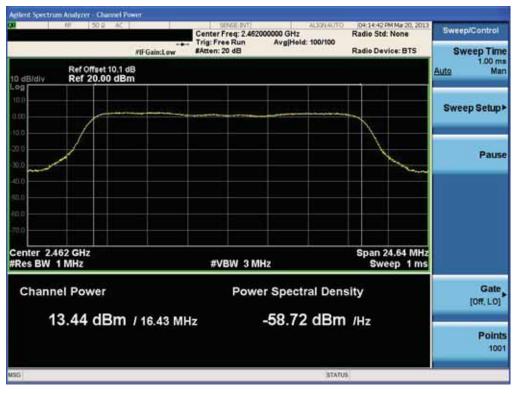
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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Conducted Output Power (802.11g-CH 11) 12Mbps

Conducted Output Power (802.11g-CH 11) 18Mbps



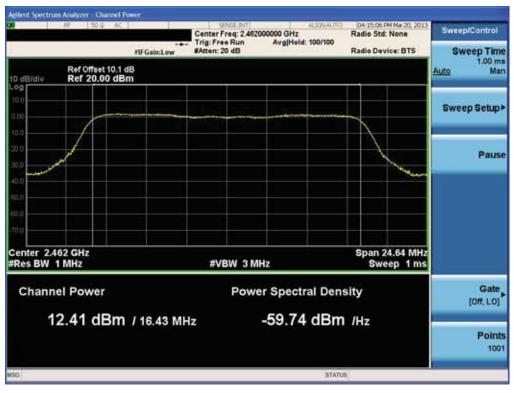
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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Conducted Output Power (802.11g-CH 11) 24Mbps

Conducted Output Power (802.11g-CH 11) 36Mbps



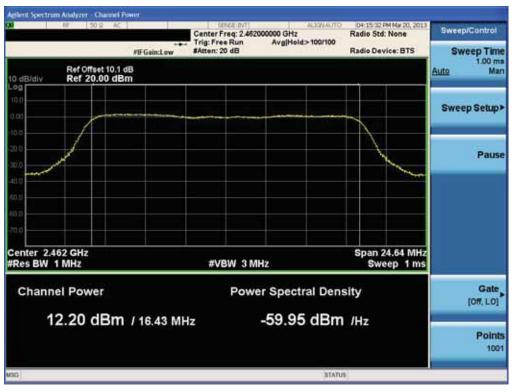
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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Conducted Output Power (802.11g-CH 11) 48Mbps

Conducted Output Power (802.11g-CH 11) 54Mbps



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Conducted Output Power (802.11n-CH 1) 6.5Mbps

Conducted Output Power (802.11n-CH 1) 13Mbps



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Conducted Output Power (802.11n-CH 1) 19.5Mbps

Conducted Output Power (802.11n-CH 1) 26Mbps



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Conducted Output Power (802.11n-CH 1) 39Mbps

Conducted Output Power (802.11n-CH 1) 52Mbps



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Conducted Output Power (802.11n-CH 1) 58.5Mbps

Conducted Output Power (802.11n-CH 1) 65Mbps



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Conducted Output Power (802.11n-CH 6) 6.5Mbps

Conducted Output Power (802.11n-CH 6) 13Mbps



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Conducted Output Power (802.11n-CH 6) 19.5Mbps

Conducted Output Power (802.11n-CH 6) 26Mbps



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Conducted Output Power (802.11n-CH 6) 39Mbps

Conducted Output Power (802.11n-CH 6) 52Mbps



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Conducted Output Power (802.11n-CH 6) 58.5Mbps

Conducted Output Power (802.11n-CH 6) 65Mbps



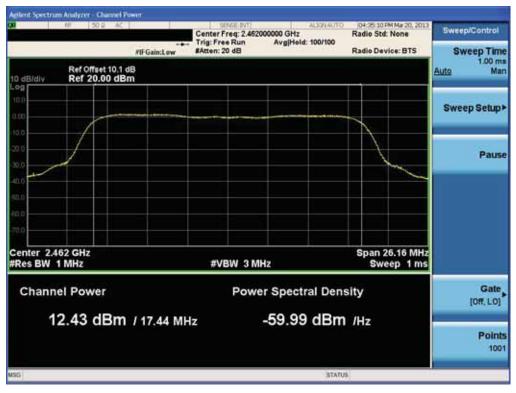
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Test Report No. HCTR1303FR26-1	Date of Issue: April 04, 2013	EUT Type: Cellular/PCS GSM/GPRS/EDGE(RX Only)/WCDMA/HSDPA Phone with Bluetooth, WLAN	FCC ID: ZNFE425J
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Conducted Output Power (802.11n-CH 11) 6.5Mbps

Conducted Output Power (802.11n-CH 11) 13Mbps



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Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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Conducted Output Power (802.11n-CH 11) 19.5Mbps

Conducted Output Power (802.11n-CH 11) 26Mbps



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr		
Test Report No.	Date of Issue:	EUT Type:	FCC ID:		
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Conducted Output Power (802.11n-CH 11) 39Mbps

Conducted Output Power (802.11n-CH 11) 52Mbps



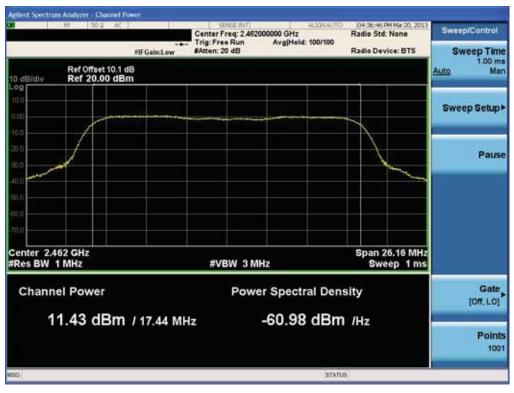
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr
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Conducted Output Power (802.11n-CH 11) 58.5Mbps

Conducted Output Power (802.11n-CH 11) 65Mbps



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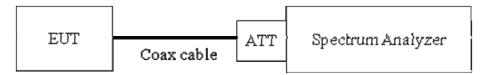
8.3 POWER SPECTRAL DENSITY (802.11b/g/n)

Test Requirements and limit, §15.247(e)

The peak power spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

Minimum Standard – the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST CONFIGURATION



TEST PROCEDURE

We tested according to Procedure 9.1 Option1 in KDB 558074, issued 10/04/2012

The spectrum analyzer is set to :

Set analyzer center frequency to DTS channel center frequency.

Span = 1.5 times the DTS channel bandwidth

 $RBW \ge 3 kHz$

VBW \geq 9 kHz

Sweep = Auto couple

Detector Mode = Peak

Trace Mode = Max hold

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Sample Calculation

PSD = Reading Value + ATT loss + Cable loss(1 ea)

= -5 dBm + 10 dB + 0.8 dB = 5.8 dBm

Note :

- 1. Spectrum reading values are not plot data. The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.
- 2. Spectrum offset = Attenuator loss + Cable loss
- 3. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB. Actual value of loss for the attenuator and cable combination is below table.

So, 10.1 dB is offset. And the offset gap in the 2.4 GHz range do not affect the power spectral density final result.

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Band	Frequency(MHz)	Loss(dB)
	2412	10.11
2.4 GHz	2437	10.10
	2462	10.12

(Actual value of loss for the attenuator and cable combination)

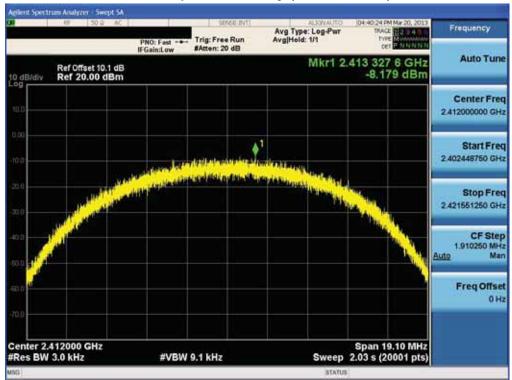
TEST RESULTS

Conducted Power Density Measurement

Frequency Chan (MHz) No.	Channal		Те	est Result	
	No.	Mode	PSD (dBm)	Limit (dBm)	Pass/Fail
2412	1		-8.179	8	Pass
2437	6	802.11b	-6.912	8	Pass
2462	11		-6.883	8	Pass
2412	1	802.11g	-11.404	8	Pass
2437	6		-11.787	8	Pass
2462	11		-11.817	8	Pass
2412	1		-11.609	8	Pass
2437	6	802.11n	-11.258	8	Pass
2462	11		-12.385	8	Pass

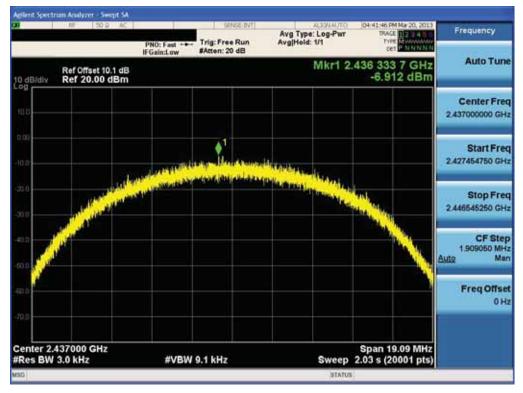
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr
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HCTR1303FR26-1	April 04, 2013	Cellular/PCS GSM/GPRS/EDGE(RX Only)/WCDMA/HSDPA Phone with Bluetooth, WLAN	ZNFE425J





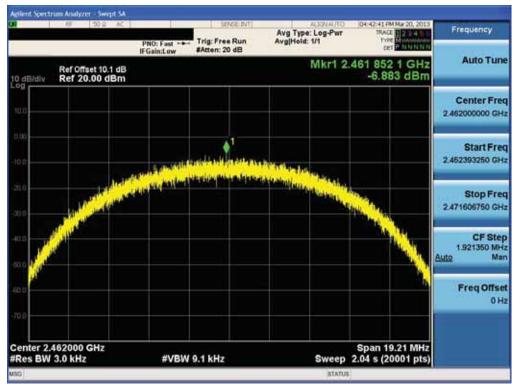
Power Spectral Density (802.11b-CH 1)

Power Spectral Density (802.11b-CH 6)



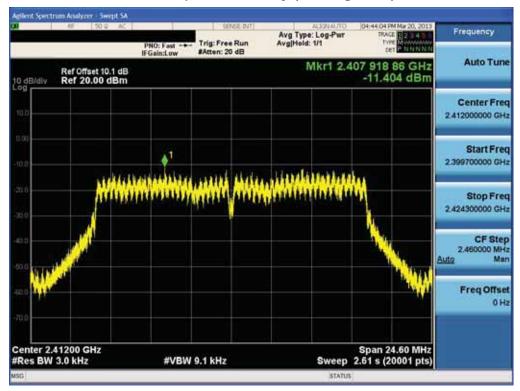
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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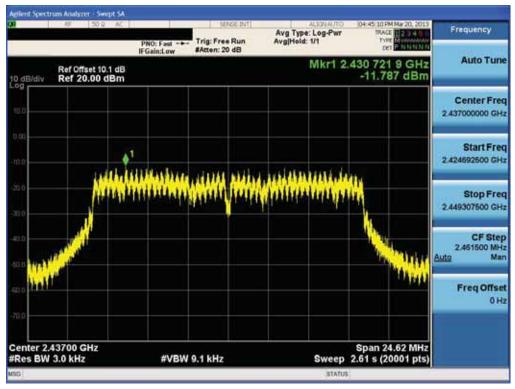
Power Spectral Density (802.11b-CH 11)

Power Spectral Density (802.11g-CH 1)



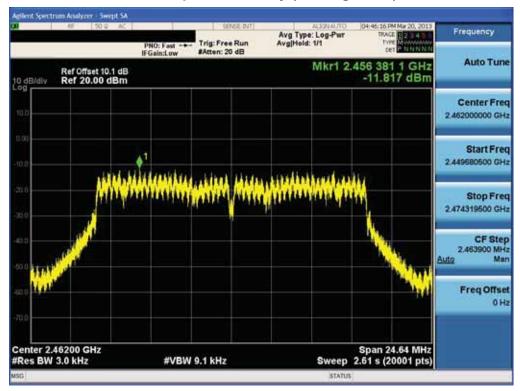
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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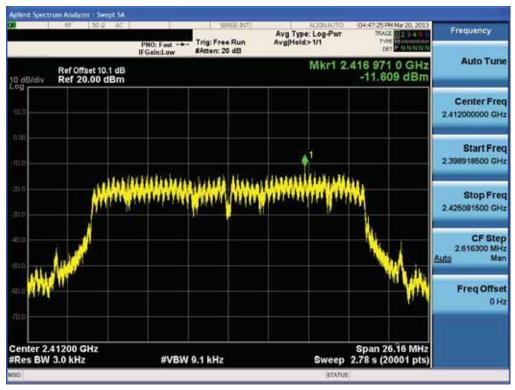
Power Spectral Density (802.11g-CH 6)

Power Spectral Density (802.11g-CH11)



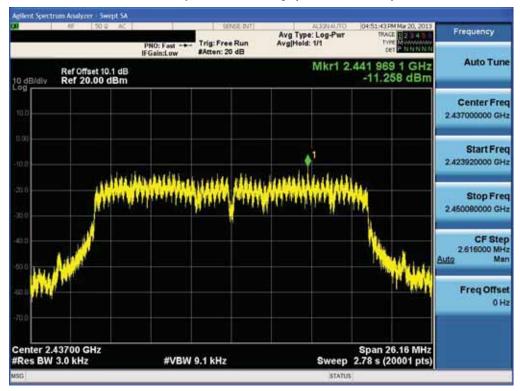
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr		
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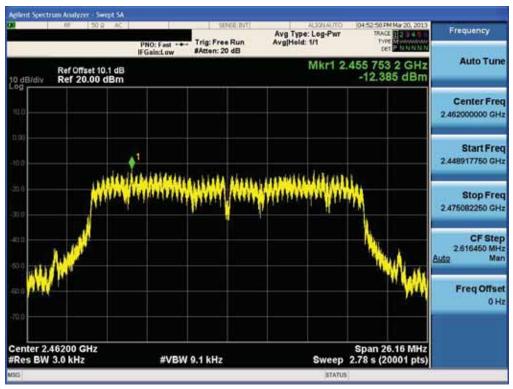
Power Spectral Density (802.11n-CH 1)

Power Spectral Density (802.11n-CH 6)



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Power Spectral Density (802.11n-CH11)

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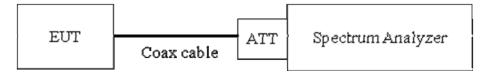


8.4 OUT OF BAND EMISSIONS AT THE BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS Test Requirements and limit, §15.247(d)

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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit: 20 dBc

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. (Procedure 10.1.2 in KDB 558074, issued 10/04/2012)

RBW = 100 kHz(Upon 1 GHz = 1 MHz)

VBW \geq 300 kHz(Upon 1 GHz = 3 MHz)

Set span to encompass the spectrum to be examined

Detector = Peak

Trace Mode = max hold

Sweep = auto couple

Allow the trace to stabilize (this may take some time, depending on the extent of the span).

Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

Measurements are made over the 30 MHz to 40 GHz range with the transmitter set to the lowest, middle, and highest channels.

Note :

- 1. The band edge results in plot is already including the actual values of loss for the attenuator and cable combination.
- 2. Spectrum offset = Attenuator loss + Cable loss
- 3. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB. Actual value of

FCC PT.1 TEST REI			FCC CERTIFICATION REPORT	
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loss for the attenuator and cable combination is below table.

So, 10.1 dB is offset. And the offset gap in the 2.4 GHz range do not affect the band edge final result.

Band	Frequency(MHz)	Loss(dB)
	2412	10.11
2.4 GHz	2437	10.10
	2462	10.12

(Actual value of loss for the attenuator and cable combination)

4. In case of conducted spurious emissions test, please check factors blow table.

FACTORS FOR FREQUENCY

Freq(MHz)	Factor(dB)				
30	10.37				
100	10.16				
200	10.15				
300	10.14				
400	10.18				
500	10.19				
600	10.20				
700	10.30				
800	10.25				
900	10.28				
1000	10.29				
2000	10.17				
2412*	10.11				
2437*	10.10				
2462*	10.12				
3000	10.26				
4000	10.31				
5000	9.85				
6000	10.20				
7000	10.60				
8000	10.53				
9000	10.23				
10000	10.41				
11000	10.65				
12000	11.19				
13000	10.97				
14000	11.42				
15000	12.01				
16000	11.77				
17000	10.78				
18000	10.76				
19000	11.15				
20000	10.75				
21000	10.82				
22000	10.82				
23000	11.26				
24000	11.08				
25000	11.18				
26000	10.90				

Note : 1. '*' is fundamental frequency range.

2. Factor = Cable loss + Attenuator loss

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nt Spectrum Analyzer - Swept SA 05:02:06 PM Mar 20, 2013 Avg Type: Log-Pwr Avg[Hold: 1/1 Frequency TYPE DOWN Trig: Free Run #Atten: 20 dB PNO: Fast +++ ΔMkr1 14.250 MHz 45.817 dB Auto Tune Ref Offset 10.1 dB Ref 20.00 dBm t0 dBi/di **Center Freq** 142 2.40000000 GHz Start Freq 2.375000000 GHz Stop Freq 2.425000000 GHz X CF Step 5.000000 MHz Man Auto A Freq Offset 0 Hz Center 2.40000 GHz #Res BW 100 kHz Span 50.00 MHz Sweep 4.80 ms (2001 pts) #VBW 300 kHz STATI

BandEdge (802.11b-CH1)

BandEdge (802.11b-CH11)



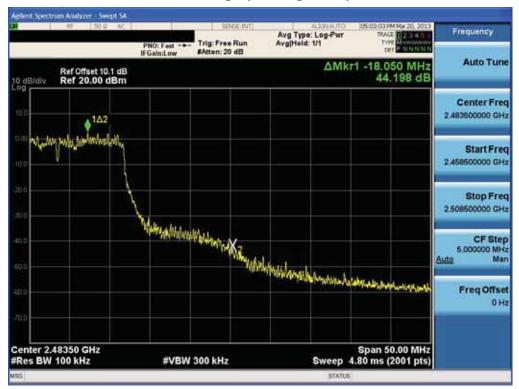
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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Spectrum Analyzer - Swept SA Frequency Avg Type: Log-Pwr Avg|Hold: 1/1 PNO: Fast ---- Trig: Free Run IFGain:Low #Atten: 20 dB CET PINNNN Auto Tune ΔMkr1 21.300 MHz 34.902 dB Ref Offset 10.1 dB Ref 20.00 dBm 10 dB/div Center Freq Alt roles herbridged 2.400000000 GHz minholisting Start Freq 2.375000000 GHz Stop Freq 2.425000000 GHz X₂ CF Step 5.000000 MHz Man in the faither Auto 100 Freq Offset . A. 0 Hz Span 50.00 MHz Sweep 4.80 ms (2001 pts) Center 2.40000 GHz #Res BW 100 kHz #VBW 300 kHz

BandEdge (802.11g-CH1)

BandEdge (802.11g-CH11)



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Spectrum Analyzer - Swept SA Frequency Avg Type: Log-Pwr Avg|Hold: 1/1 PNO: Fast ---- Trig: Free Run IFGain:Low Atten: 20 dB CET PINNNN Auto Tune ΔMkr1 22.450 MHz 35.618 dB Ref Offset 10.1 dB Ref 20.00 dBm t0 dB/div Center Freq 142 2.400000000 GHz northalisedial plan patricked which Start Freq 2.375000000 GHz Stop Freq 2.425000000 GHz X2 1 CF Step 5.000000 MHz Man winninkin Auto +CANA Freq Offset At land in 0 Hz Span 50.00 MHz Sweep 4.80 ms (2001 pts) Center 2.40000 GHz #Res BW 100 kHz #VBW 300 kHz

BandEdge (802.11n-CH1)

BandEdge (802.11n-CH11)



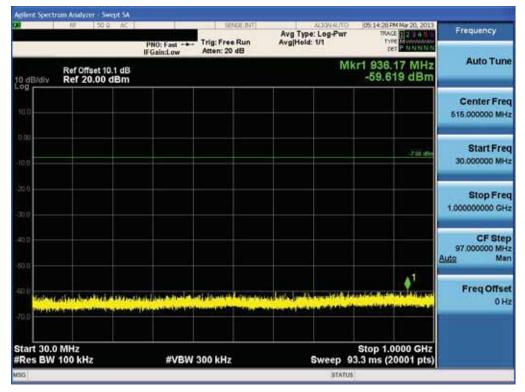
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr	
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1€ 50°Ω AC	PNO: Fast	Trig: Free Run Atten: 20 dB	Avg Type: Log-Pwr Avg Hold: 1/1	05:14:16 PM Mar 20, 20 TRACE 2:2:4 Tryle Monocol cet P 11 N N 2	Frequency
Ref Offset 10.1 dB	a desired at		M	r1 853.43 MH -59.460 dBr	
10	_				Center Free 515.000000 MH
10.00				-9214	Start Free 30.000000 MH
20.0					Stop Free 1.000000000 GH
40.0 50.0					CF Step 97.000000 MH Auto Mar
	la mana manana		and the second strengthere	AT NUMBER OF STREET	Freq Offset
700 <mark>Base it is to the widdle in the state is a</mark>	and the later of the	a na statistick character d		unita filivitata a	
start 30.0 MHz Res BW 100 kHz		300 kHz		Stop 1.0000 GH 3.3 ms (20001 pt	

Conducted Spurious Emission (802.11b-CH1)

Conducted Spurious Emission (802.11b-CH6)



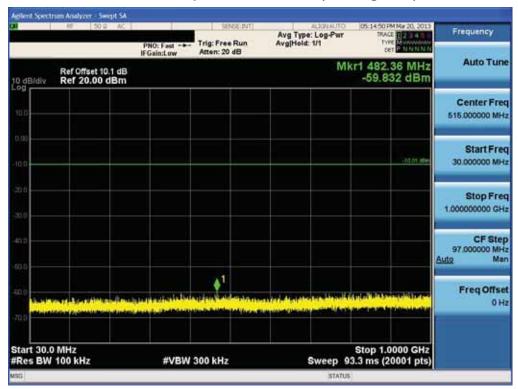
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
HCTR1303FR26-1	April 04, 2013	Cellular/PCS GSM/GPRS/EDGE(RX Only)/WCDMA/HSDPA Phone with Bluetooth, WLAN	ZNFE425J
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NE 50 ₽ MC		SERVER DUT	Avg Type: Log-Pwr	05:14:39 PM Mar 20, 2013 TRACE BEAUALT	Frequency
	PNO: Fast +++ IFGain:Low	Trig: Free Run Atten: 20 dB	Avg Hold: 1/1	cet P N N N N	
Ref Offset 10.1 dB			M	r1 895.09 MHz -59.547 dBm	Auto Tune
10.0					Center Free 515.000000 MH
10.07				-6.53 dDm	Start Free 30.000000 MH
200					Stop Fre 1.000000000 GH
40.0					CF Ste 97.000000 MH Auto Ma
an o 			Astronomics in the ball to be the		Freq Offse
70.0 			and the second se	una hisi din ƙasar	0.H
Start 30.0 MHz #Res BW 100 kHz	#VBW	300 kHz	Sweep 9	Stop 1.0000 GHz 3.3 ms (20001 pts)	

Conducted Spurious Emission (802.11b-CH11)

Conducted Spurious Emission (802.11g-CH1)



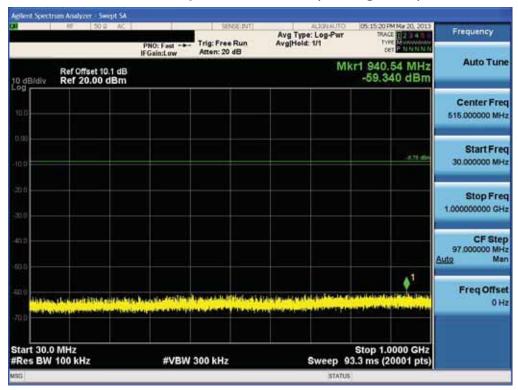
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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NF 50.9 MC		SENSE INT	AUGUALTO Avg Type: Log-Pwr	05:15:05 PM May 20, 2013 TRACE	Frequency
	PNO: Fast ++++ IFGain:Low	Trig: Free Run Atten: 20 dB	Avg Hold: 1/1	cet P to h NN N	
Ref Offset 10.1 dB			M	Auto Tuni	
100					Center Fre 515.000000 MH
10.0				-10.03 albe	Start Fre 30.000000 MH
20.0 31.0					Stop Fre 1.000000000 GH
42.9					CF Ste 97.000000 MH Auto Ma
		Statistics States of the			Freq Offse
70.0	and a state of the st				0.H
Start 30.0 MHz #Res BW 100 kHz	#VBW	300 kHz	Sweep 9	Stop 1.0000 GHz 3.3 ms (20001 pts)	

Conducted Spurious Emission (802.11g-CH6)

Conducted Spurious Emission (802.11g-CH11)



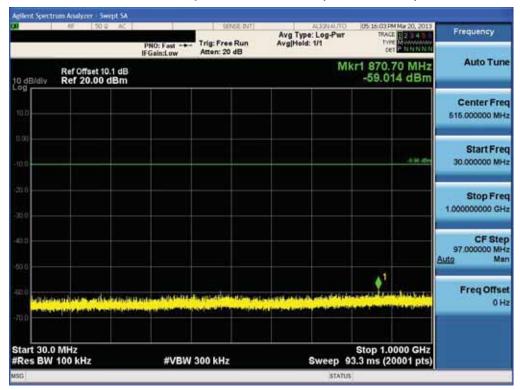
FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT	www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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₩ 50.2 M	PNO: Fast	Trig: Free Run	Avg Type: Log-Par Avg[Hold: 1/1	05:15:47 PM Mar 20, TRAGE E 200 Tryle Mar 20	Frequency
Ref Offset 10.1 dB 0 dB/dly Ref 20.00 dBm	IFGain:Low	Atten: 20 dB	M	r1 867.21 M	Hz Auto Tune
					Center Free 515.000000 MH
10.0				-10.1	Start Fre 30.000000 MH
10 0					Stop Fre 1.00000000 GH
40.0					CF Ste 97.000000 Mi Auto Ma
na o Manaza (h. ta na stali hali d	and the second second second		and the second	Anterest conversions	Freq Offse
Start 30.0 MHz Res BW 100 kHz	#VBW	300 kHz	Sweep 9	Stop 1.0000 G 3.3 ms (20001)	Hz pts)

Conducted Spurious Emission (802.11n-CH1)

Conducted Spurious Emission (802.11n-CH6)



FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT				
Test Report No.	Date of Issue:	EUT Type:	FCC ID:			
HCTR1303FR26-1	April 04, 2013	Cellular/PCS GSM/GPRS/EDGE(RX Only)/WCDMA/HSDPA Phone with Bluetooth, WLAN	ZNFE425J			
		Page 1 0 0 of 130				



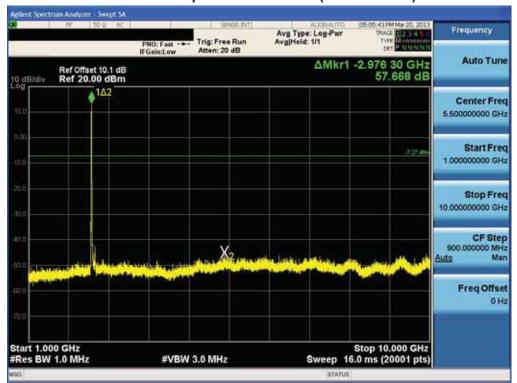
NE 50.9 MC		SENSE INT	Aug Type: Log-Pwr	05:16:16 PM Mar 20 TRACE	Frequency
	PNO: Fast +++	Trig: Free Run Atten: 20 dB	Avg Hold: 1/1	Det P N	The second se
Ref Offset 10.1 dB			M	r1 884.42 N -58.167 d	
uo					Center Free 515,000000 MH
10.0				-15;	Start Free 30.000000 MH
10 0 10 0					Stop Fre 1.000000000 GH
10.0					CF Ste 97.000000 MH <u>Auto</u> Ma
				•	FreqOffse
	e program alle et a			Allowed the second	ОН
70.0					
tart 30.0 MHz Res BW 100 kHz	#VBW	300 kHz	Sweep 9	Stop 1.0000 (3.3 ms (20001	GHz

Conducted Spurious Emission (802.11n-CH11)

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT				
Test Report No.	Date of Issue:	EUT Type:	FCC ID:			
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1 GHz ~ 10 GHz



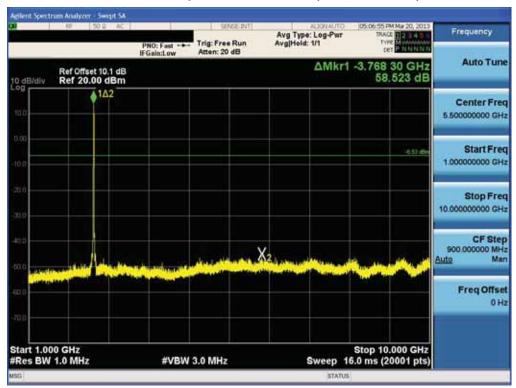
Conducted Spurious Emission (802.11b-CH1)

Conducted Spurious Emission (802.11b-CH6)



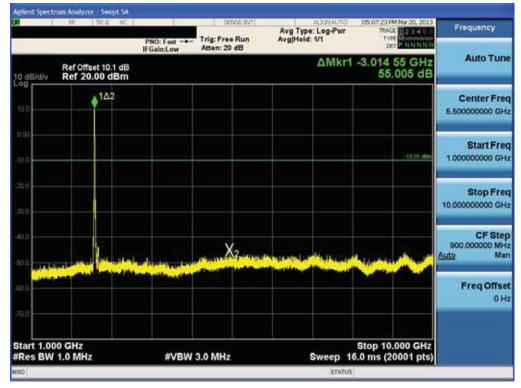
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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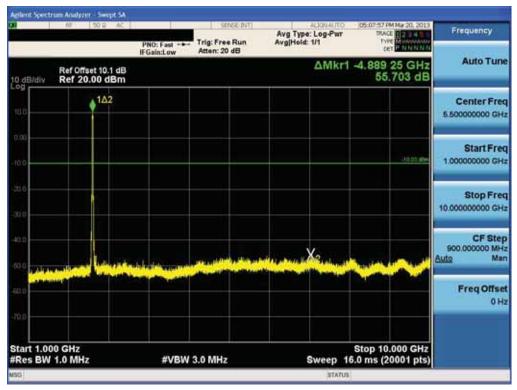
Conducted Spurious Emission (802.11b-CH11)

Conducted Spurious Emission (802.11g-CH1)



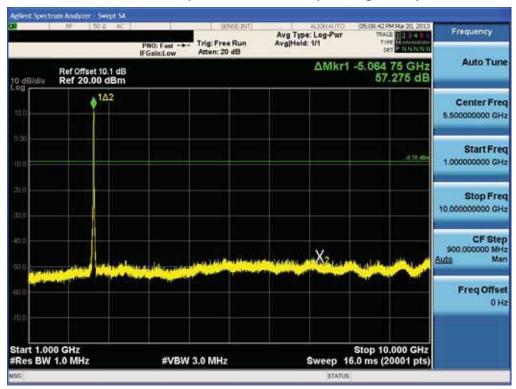
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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Conducted Spurious Emission (802.11g-CH6)

Conducted Spurious Emission (802.11g-CH11)



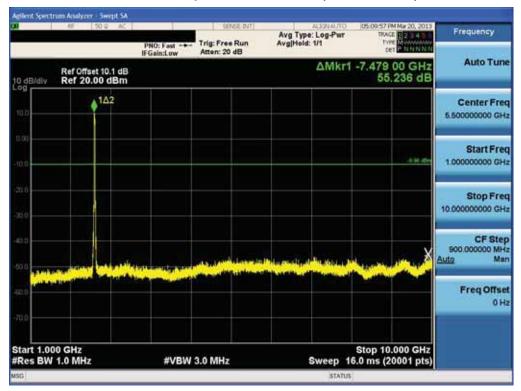
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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t Spectrum Analyzer - Swept SA Frequency Avg Type: Log-Pwr Avg|Hold: 1/1 PNO: Fast ---- Trig: Free Run IFGain:Low Atten: 20 dB NUMBER OF te ΔMkr1 -4.985 55 GHz 55.609 dB Auto Tune Ref Offset 10.1 dB Ref 20.00 dBm t0 dB/div 102 Center Freq 5.50000000 GHz Start Freq 10.17 # 1.00000000 GHz Stop Freq 10.00000000 GHz CF Step 900.000000 MHz to Man X2 Auto Freq Offset 0 Hz Start 1.000 GHz #Res BW 1.0 MHz Stop 10.000 GHz Sweep 16.0 ms (20001 pts) #VBW 3.0 MHz

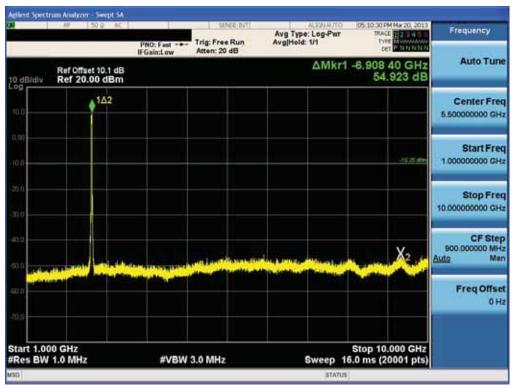
Conducted Spurious Emission (802.11n-CH1)

Conducted Spurious Emission (802.11n-CH6)



FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
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Conducted Spurious Emission (802.11n-CH11)

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr		
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10 GHz ~ 25 GHz



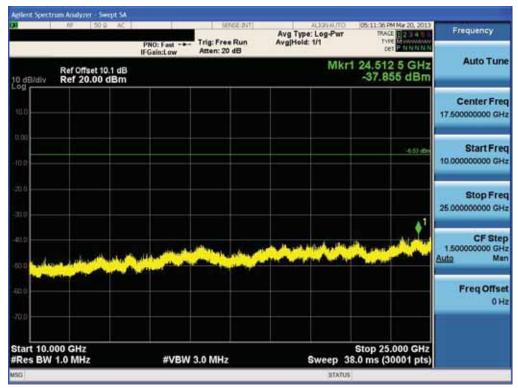
Conducted Spurious Emission (802.11b-CH1)

Conducted Spurious Emission (802.11b-CH6)



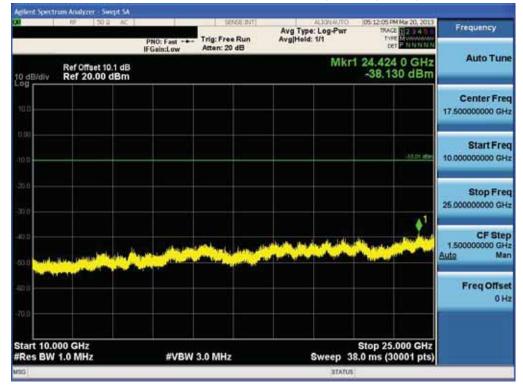
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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Conducted Spurious Emission (802.11b-CH11)

Conducted Spurious Emission (802.11g-CH1)



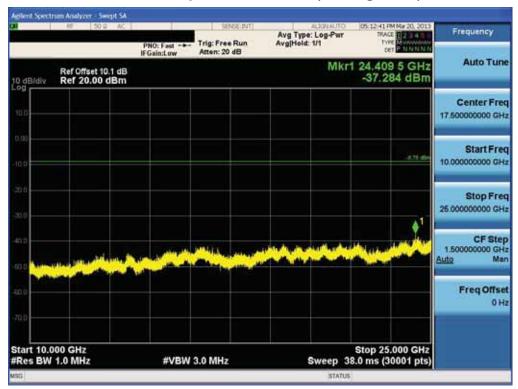
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr	
Test Report No.	Date of Issue:	EUT Type:	FCC ID:	
HCTR1303FR26-1	April 04, 2013	Cellular/PCS GSM/GPRS/EDGE(RX Only)/WCDMA/HSDPA Phone with Bluetooth, WLAN	ZNFE425J	
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Conducted Spurious Emission (802.11g-CH6)

Conducted Spurious Emission (802.11g-CH11)



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Conducted Spurious Emission (802.11n-CH1)

Conducted Spurious Emission (802.11n-CH6)



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Conducted Spurious Emission (802.11n-CH11)

FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr		
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8.5 RADIATED MEASUREMENT.8.5.1 RADIATED SPURIOUS EMISSIONS.

Test Requirements and limit, §15.205, §15.209

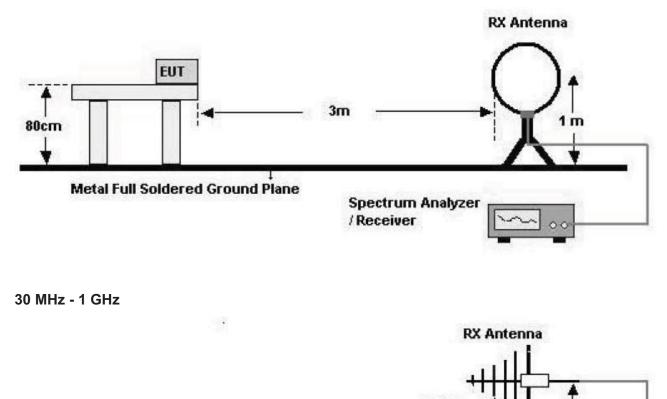
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

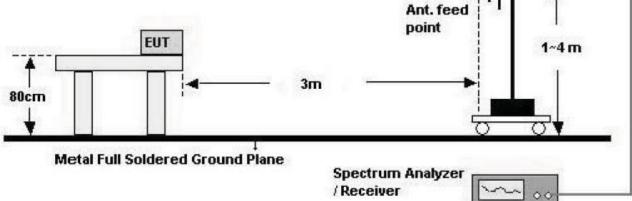
FCC PT.15.247 TEST REPORT	FCC CERTIFICATION REPORT		www.hct.co.kr
Test Report No.	Date of Issue:	EUT Type:	FCC ID:
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Test Configuration

Below 30 MHz

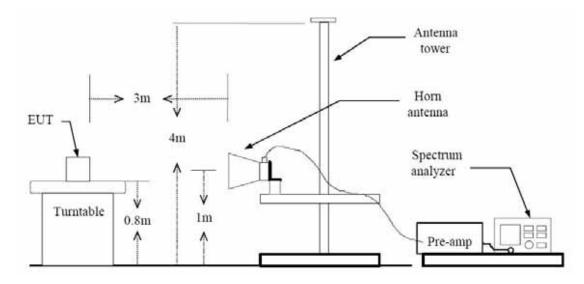




FCC PT.15.247 TEST REPORT		www.hct.co.kr		
Test Report No.	Date of Issue:	EUT Type:	FCC ID:	
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Above 1 GHz



TEST PROCEDURE USED

ANSI C63.4(2003)

Method 10.2.3.2 in KDB 558074, issued 10/04/2012 (Peak)

Method 10.2.3.3 in KDB 558074, issued 10/04/2012(Average)

Spectrum Setting

- Peak (Method 10.2.3.2 in KDB 558074, issued 10/04/2012)
 - RBW = 1 MHz

VBW \geq 3 x RBW

Detector = Peak

Trace = Max hold

Sweep = auto couple

- Average (Method 10.2.3.3 in KDB 558074, issued 10/04/2012)
 - RBW = 1 MH

VBW \geq 3 x RBW

Span = least 1MHz

Detector Mode = Power average (RMS) or sample detector when RMS not available

Trace average at least 100 traces in power averaging(RMS) mode

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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)	dB $\mu N/m$	dBµN/m	dB
No Critical peaks found							

Notes:

- 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
- 5. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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Below 1 GHz

Operation Mode: Normal Mode

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

Notes:

- 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 x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency	Reading	AN.+CL-AMP G	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
4824	52.81	-0.79	V	52.02	74	21.98	PK
4824	43.72	-0.79	V	42.93	54	11.07	AV
7236	48.89	9.08	V	57.97	74	16.03	PK
7236	38.39	9.08	V	47.47	54	6.53	AV
4824	53.15	-0.79	Н	52.36	74	21.64	PK
4824	44.81	-0.79	Н	44.02	54	9.98	AV
7236	50.77	9.08	Н	59.85	74	14.15	PK
7236	38.40	9.08	Н	47.48	54	6.52	AV

Operation Mode: Transfer Rate:

Channel No.

Operating Frequency

802.11 g	
6 Mbps	
2412	
01 Ch	

Frequency	Reading	AN.+CL-AMP G	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
4824	51.98	-0.79	V	51.19	74	22.81	PK
4824	41.54	-0.79	V	40.75	54	13.25	AV
7236	50.18	9.08	V	59.26	74	14.74	PK
7236	38.16	9.08	V	47.24	54	6.76	AV
4824	51.81	-0.79	Н	51.02	74	22.98	PK
4824	42.00	-0.79	Н	41.21	54	12.79	AV
7236	50.23	9.08	Н	59.31	74	14.69	PK
7236	38.20	9.08	Н	47.28	54	6.72	AV

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT			
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Operation Mode:	802.11 n
Transfer Rate:	6.5 Mbps
Operating Frequency	2412
Channel No.	01 Ch

Frequency	Reading	AN.+CL-AMP G	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
4824	51.02	-0.79	V	50.23	74	23.77	PK
4824	41.53	-0.79	V	40.74	54	13.26	AV
7236	50.69	9.08	V	59.77	74	14.23	PK
7236	38.40	9.08	V	47.48	54	6.52	AV
4824	51.59	-0.79	Н	50.8	74	23.20	PK
4824	41.60	-0.79	Н	40.81	54	13.19	AV
7236	50.12	9.08	Н	59.2	74	14.80	PK
7236	38.40	9.08	Н	47.48	54	6.52	AV

Notes:

- 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.
- 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. Total = Reading Value + Antenna Factor + Cable Loss Amp Gain
- 5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
- 6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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		$\mathbf{P}_{\mathbf{Q}} = 1 1^{\circ} 2 1 2 0$	



Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency	Reading	AN.+CL-AMP G	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
4874	51.90	-0.37	V	51.53	74	22.47	PK
4874	41.56	-0.37	V	41.19	54	12.81	AV
7311	48.19	8.64	V	56.83	74	17.17	PK
7311	37.70	8.64	V	46.34	54	7.66	AV
4874	52.96	-0.37	Н	52.59	74	21.41	PK
4874	45.30	-0.37	Н	44.93	54	9.07	AV
7311	48.41	8.64	Н	57.05	74	16.95	PK
7311	37.80	8.64	Н	46.44	54	7.56	AV

Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency	Reading	AN.+CL-AMP G	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
4874	50.46	-0.37	V	50.09	74	23.91	PK
4874	38.28	-0.37	V	37.91	54	16.09	AV
7311	48.06	8.64	V	56.70	74	17.30	PK
7311	35.24	8.64	V	43.88	54	10.12	AV
4874	50.92	-0.37	Н	50.55	74	23.45	PK
4874	41.93	-0.37	Н	41.56	54	12.44	AV
7311	48.14	8.64	Н	56.78	74	17.22	PK
7311	37.70	8.64	Н	46.34	54	7.66	AV

FCC PT.15.247 TEST REPORT		FCC CERTIFICATION REPORT		
Test Report No.	Date of Issue:	EUT Type:	FCC ID:	
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Operation Mode:	802.11 n
Transfer Rate:	6.5 Mbps
Operating Frequency	2437
Channel No.	06 Ch

Frequency	Reading	AN.+CL-AMP G	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
4874	50.91	-0.37	V	50.54	74	23.46	PK
4874	40.32	-0.37	V	39.95	54	14.05	AV
7311	48.40	8.64	V	57.04	74	16.96	PK
7311	37.71	8.64	V	46.35	54	7.65	AV
4874	51.02	-0.37	Н	50.65	74	23.35	PK
4874	41.70	-0.37	Н	41.33	54	12.67	AV
7311	48.40	8.64	Н	57.04	74	16.96	PK
7311	37.80	8.64	Н	46.44	54	7.56	AV

Notes:

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.
- 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. Total = Reading Value + Antenna Factor + Cable Loss Amp Gain
- 5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
- 6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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Operation Mode:	802.11 b
Transfer Rate:	1 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency	Reading	AN.+CL-AMP G	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
4924	53.48	-0.15	V	53.33	74	20.67	PK
4924	42.25	-0.15	V	42.10	54	11.90	AV
7386	49.26	9.06	V	58.32	74	15.68	PK
7386	38.47	9.06	V	47.53	54	6.47	AV
4924	52.17	-0.15	Н	52.02	74	21.98	PK
4924	44.13	-0.15	Н	43.98	54	10.02	AV
7386	49.36	9.06	Н	58.42	74	15.58	PK
7386	38.35	9.06	Н	47.41	54	6.59	AV

Operation Mode:	802.11 g
Transfer Rate:	6 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency	Reading	AN.+CL-AMP G	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
4924	50.73	-0.15	V	50.58	74	23.42	PK
4924	39.81	-0.15	V	39.66	54	14.34	AV
7386	48.92	9.06	V	57.98	74	16.02	PK
7386	38.27	9.06	V	47.33	54	6.67	AV
4924	51.34	-0.15	Н	51.19	74	22.81	PK
4924	39.01	-0.15	Н	38.86	54	15.14	AV
7386	48.82	9.06	Н	57.88	74	16.12	PK
7386	38.24	9.06	Н	47.3	54	6.7	AV

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Operation Mode:	802.11 n
Transfer Rate:	6.5 Mbps
Operating Frequency	2462
Channel No.	11 Ch

Frequency	Reading	AN.+CL-AMP G	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
4924	50.80	-0.15	V	50.65	74	23.35	PK
4924	39.54	-0.15	V	39.39	54	14.61	AV
7386	48.31	9.06	V	57.37	74	16.63	PK
7386	38.38	9.06	V	47.44	54	6.56	AV
4924	50.39	-0.15	Н	50.24	74	23.76	PK
4924	38.91	-0.15	Н	38.76	54	15.24	AV
7386	49.08	9.06	Н	58.14	74	15.86	PK
7386	38.27	9.06	Н	47.33	54	6.67	AV

Notes:

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.
- 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. Total = Reading Value + Antenna Factor + Cable Loss Amp Gain
- 5. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
- 6. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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8.5.2 RADIATED RESTRICTED BAND EDGES

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:	802.11g
Transfer Rate:	6 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency	Reading	AN.+CL	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
2390.0	26.95	33.90	Н	60.85	74	13.15	PK
2390.0	14.39	33.90	Н	48.29	54	5.71	AV
2390.0	25.81	33.90	V	59.71	74	14.29	PK
2390.0	13.91	33.90	V	47.81	54	6.19	AV
2483.5	30.79	33.99	Н	64.78	74	9.22	PK
2483.5	14.60	33.99	Н	48.59	54	5.41	AV
2483.5	26.65	33.99	V	60.64	74	13.36	PK
2483.5	14.06	33.99	V	48.05	54	5.95	AV

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Operation Mode:	802.11b
Transfer Rate:	1 Mbps
Operating Frequency	2412 MHz, 2462 MHz
Channel No.	01 Ch, 11 Ch

Frequency	Reading	AN.+CL	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
2390.0	24.14	33.90	Н	58.04	74	15.96	PK
2390.0	13.54	33.90	Н	47.44	54	6.56	AV
2390.0	24.52	33.90	V	58.42	74	15.58	PK
2390.0	13.47	33.90	V	47.37	54	6.63	AV
2483.5	25.52	33.99	Н	59.51	74	14.49	PK
2483.5	13.50	33.99	Н	47.49	54	6.51	AV
2483.5	23.34	33.99	V	57.33	74	16.67	PK
2483.5	13.42	33.99	V	47.41	54	6.59	AV

Operation Mode: Transfer Rate: Operating Frequency Channel No.

802.11n

6.5 Mbps 2412 MHz, 2462 MHz 01 Ch, 11 Ch

Frequency	Reading	AN.+CL	ANT. POL	Total	Limit	Margin	
[MHz]	dBuV	[dB]	[H/V]	[dBuV/m]	[dBuV/m]	[dB]	Detect
2390.0	24.47	33.90	Н	58.37	74	15.63	PK
2390.0	13.96	33.90	Н	47.86	54	6.14	AV
2390.0	23.87	33.90	V	57.77	74	16.23	PK
2390.0	13.76	33.90	V	47.66	54	6.34	AV
2483.5	28.94	33.99	Н	62.93	74	11.07	PK
2483.5	14.60	33.99	Н	48.59	54	5.41	AV
2483.5	26.08	33.99	V	60.07	74	13.93	PK
2483.5	13.95	33.99	V	47.94	54	6.06	AV

Notes:

- 1. Total = Reading Value + Antenna Factor + Cable Loss
- 2. We have done 802.11b/g/n mode and all data rate. Worst data rate is the lowest data of each mode.
- 3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.

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8.6 POWERLINE CONDUCTED EMISSIONS

Test Requirements and limit, §15.207

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 microvolts (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.
- 5. We are performed the AC Power Line Conducted Emission test for 54 Mbps, Ch.11 and 802.11g. Because the 802.11g mode is worst case.

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RESULT PLOTS

Conducted Emissions (Line 1)

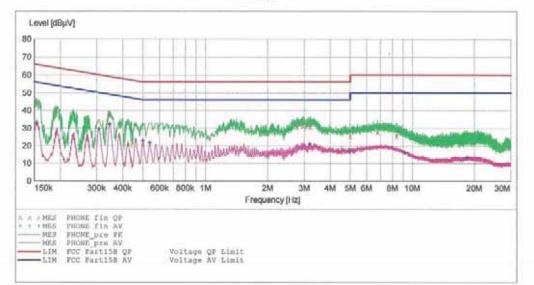
HCT

EMC

EUT:	LG-E425j
Manufacturer:	LG
Operating Condition:	WLAN MODE
Test Site:	SHIELD ROOM
Operator:	JS LEE
Test Specification:	FCC PART 15 B
Comment:	H

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

Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
	500.0 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"

19.12	10.000	Alter an end and	W. J. State Births	100 contract of the	T. manage T.	Dece outpain out
PE	Line	Margin		Transd	Level	Frequency
		dB	dBµV	dB	dBµV	MIIX
22.2		20.7	66	9.8	45.10	0.152010
		23.4	64	9.7	40.60	0.191010
		22.2	59	9.7	36.90	0.342010
		25.2	56	10.0	30.80	2.768000
		24.5	56	10.0	31.50	2.972000
		25.2	56	10.1	30.80	3.208000
		30.5	56	10.2	25.50	5.000000
		32.2	60	10.3	27.80	6.792000
		34.3	60	10.4	25.70	8.412000

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MEASUREMENT RESULT: "PHONE_fin AV"

3/22/2013 8:5		127	899.8	12.00		10.00
Frequency MHz	dBµV	Transd dB	Limit dBµV	Margin dB	Line	PE
0.154010	33.00	9.8	5 G	22.8		
0.307010	29.60	9.7	50	20.5		-
0.346010	32.30	9.7	49	16.7		
0.500000	23.00	9.8	46	23.0		
0.540000	21.80	9.8	46	24.2		()
3,192000	21.20	10.1	46	24.8		
5.000000	17.00	10.2	46	29.0		
9.220000	16.30	10.4	50	33.7		
18,412000	12.80	11.5	50	37.2		

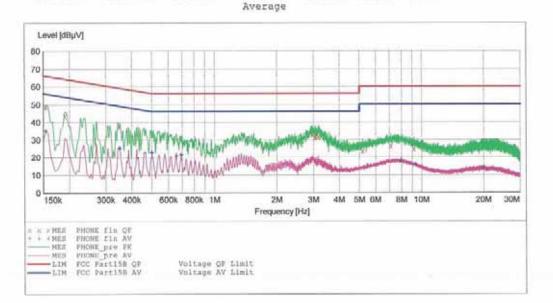
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Conducted Emissions (Line 2)

HCT EMC LG-E425j EUT: Manufacturer: LG Operating Condition: WLAN MODE Test Site: SHIELD ROOM Operator: JS LEE Test Specification: FCC PART 15 CLASS B Comment: N Comment: SCAN TABLE: "FCC PART 15 B(N)" Short Description: FCC PART 15 CLASS B Start Stop Step Detector Meas. Detector Meas. IF Transducer Bandw. Frequency Width Time Frequency 150.0 kHz 500.0 kHz 4.0 kHz MaxPeak 10.0 ms 9 kHz None Average 10.0 ms 9 kHz 500.0 kHz 5.0 MHz 4.0 kHz None MaxPeak Average 5.0 MHz 30.0 MHz 4.0 kHz 10.0 ms 9 kHz None MaxPeak



MEASUREMENT RESULT: "PHONE fin QP"

3/22/2013	8:49AM					
Frequence			Limit dBpV	Margin dB	Line	PE
0.15401	48.5	0 10.0	66	17.3		
0.19001	43.5	0 9.9	64	20.5		
0.35001	10 37.5	0 9.9	59	21.4		
2.97200	32.7	0 10.2	56	23.3		-
3.06400	31.1	0 10.2	56	24.9		
3.17200	31.6	0 10.2	56	24.4		
5.20400	23.7	0 10.4	60	36.3		
7.09600	26.5	0 10.5	60	33.5		
9.19200	24.9	0 10.6	60	35.1		

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MEASUREMENT RESULT: "PHONE_fin AV"

3/22/2013 8:4	9AM					
Frequency MHz	Level dBµV	Transd dB	Limit dBpV	Margin dB	Line	PE
0.154010	34.90	10.0	56	20.9		-
0.350010	25.20	9.9	49	23.7		
0.500000	22.80	10.0	46	23.2		
0.500000	23.10	10.0	46	22.9		
0,656000	21.00	10.0	46	25.0		
0.692000	21.60	10.0	46	24.4		
7,932000	17,90	10.6	50	32.1		
9.392000	15.60	10.7	50	34.4	(
19.872000	13.80	12.1	50	36.2	-	

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		Calibration	Calibration	
Manufacturer	Model / Equipment	Interval	Due	Serial No.
Rohde & Schwarz	ENV216/ LISN	Annual	02/06/2014	100073
Schwarzbeck	VULB 9160/ TRILOG Antenna	Biennial	05/03/2015	3125
Rohde & Schwarz	ESI 40 / EMI TEST RECEIVER	Annual	05/03/2013	831564103
Agilent	E4440A/ Spectrum Analyzer	Annual	05/02/2013	US45303008
Agilent	N9020A/ SIGNAL ANALYZER	Annual	07/31/2013	MY51110020
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	SCU-18/ Signal Conditioning Unit	Annual	09/11/2013	10094
MITEQ	AMF-6B-180265-35-10P / POWER AMP	Annual	04/16/2013	667624
CERNEX	CBL26405040 / POWER AMP	Annual	04/16/2013	19660
Schwarzbeck	BBHA 9120D/ Horn Antenna	Biennial	10/17/2013	937
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	Biennial	10/30/2014	BBHA9170124
Rohde & Schwarz	FSP / Spectrum Analyzer	Annual	02/08/2014	839117/011
Agilent	E4416A /Power Meter	Annual	11/07/2013	GB41291412
Agilent	E9327A /POWER SENSOR	Annual	05/02/2013	MY4442009
Wainwright Instrument	WHF3.3/18G-10EF / High Pass Filter	Annual	05/02/2013	1
Wainwright Instrument	WHNX6.0/26.5G-6SS / High Pass Filter	Annual	05/02/2013	1
Wainwright Instrument	WHNX7.0/18G-8SS / High Pass Filter	Annual	05/02/2013	29
Wainwright Instrument	WRCJ2400/2483.5-2370/2520-60/14SS / Band Reject Filter	Annual	05/02/2013	1
Hewlett Packard	11636B/Power Divider	Annual	11/07/2013	11377
Hewlett Packard	11667B / Power Splitter	Annual	06/05/2013	05001
DIGITAL	EP-3010 /DC POWER SUPPLY	Annual	11/07/2013	3110117
ITECH	IT6720 / DC POWER SUPPLY	Annual	11/07/2013	010002156287001199
TESCOM	TC-3000C / BLUETOOTH TESTER	Annual	11/07/2013	3000C000276
Rohde & Schwarz	CBT / BLUETOOTH TESTER	Annual	05/02/2013	100422
EMCO	6502.LOOP ANTENNA	Biennial	01/11/2014	9009-2536
MITEQ	AMF-6D-001180-35-20P/ POWER AMP	Annual	07/30/2013	990893
Agilent	8493C / Attenuator(10 dB)	Annual	07/30/2013	76649
WEINSCHEL	2-3 / Attenuator(3 dB)	Annual	11/07/2013	BR0617
CERNEX	CBLU1183540 / POWER AMP	Annual	07/27/2013	21691

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