

# 802.11a mode 5180MHz, 30MHz – 6GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 3 79110000000	GHZ SENSE:	Ava Type: Loa-Pwr	103:44:09 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
	PNO: Fast C Trig: Free Rui	n Avg Hold:>100/100		
	IFGain:Low #Atten: 30 dB		DELE ALGUARA	NextBeak
Ref Offset 1 dB		Mkr'	1 3.791 10 GHz	NextPeak
10 dB/div Ref 21.00 dBm			-42.506 dBm	
Log				
11.0			h	Next Pk Right
1.00				HEAT I KINGIN
-9.00				
-19.0				
-29.0			-27.00 dBm	Next Pk Left
-39.0		1		
.49.0	سيشفو والمراجع والعبد والمتعاد الأمليون وال	and a start	men upper and	
50.0 and an all and a star and an all and	Construction of the second s			
-59.0				Marker Delta
-69.0				
Start 30 MHz			Stop 6 000 GHz	
#Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	10.0 ms (1001 pts)	
	×		EUNCTION VALUE	Mkr→CF
	91 10 GHz -42,506 dBm	FONCTION FONCTION WIDTH	FUNCTION VALUE	
2	التقانية فتشتعتها وتشكيفهم			
3				Mkr. Doflad
5				wiki → Kei Lvi
6				
8				No. of the second s
9				More
11				1 of 2
12				
MSG		STATUS		

## 5180MHz, 6GHz – 18GHz

Agilent Spectrum Analyzer - Swept SA					
Marker 1 19.3400000000	00 GHz	NSE:INT Avg Type e Run AvgIHold	ALIGNAUTO e: Log-Pwr >100/100	03:46:18 PM Mar 07, 2013 TRACE 1 2 3.4 5 6 TYPE M & WWWWW	Peak Search
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm	IFGain:Low #Atten: 3	0 dB	Mk	r1 19.34 GHz -43.781 dBm	Next Peak
11.00 1.00 					Next Pk Right
-19.0 -29.0 -39.0		1	and have been a floor	-27.00 dBm	Next Pk Left
-49.0					Marker Delta
Start 6.00 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	FUNCTION FU	Sweep 33	Stop 26.00 GHz 3 ms (1001 pts)	Mkr→CF
2 3 4 5 6	12.04 GHz 40.701 G				Mkr→RefLvl
8 9 10 11 12					More 1 of 2
MSG			STATUS		



### 5180MHz, 18GHz – 40GHz

Agilent Spectrum Analyzer - Swept SA				
XI RL RF 50 Q DC	SENSE:	INT ALIGNAUTO	03:47:36 PM Mar 07, 2013 TRACE 1 2 3 4 5 5	Peak Search
Marker 1 34.00000000000	PNO: Fast C Trig: Free Ru	un Avg Hold:>100/100		
	IFGain:Low #Atten: 30 dE	3	DET	Next Peak
Ref Offset 1 dB		MI	kr1 34.666 GHz	HEATT CUR
10 dB/div Ref 21.00 dBm			-36.420 aBm	
11.0				
1.00				Next Pk Right
-9.00				
-19.0				
-29.0		1	-27.00 dBm	Next Pk Left
20.0		Non han an and the blan		NEXTERLET
10.0		Apart of the Palance		
-49.0				
-59.0				Marker Delta
-69.0				
Start 26.000 GHz			Stop 40.000 GHz	
#Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	23.3 ms (1001 pts)	Mkr_CE
MKR MODE TRC SCL X	Y	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	WIKI→CI
1 N 1 f 3	4.666 GHz -36.420 dBm			
3				
4				Mkr→RefLvl
6				
8				
9				More
11				1 of 2
12				
MSG		STATUS		

# 5260MHz, 30MHz – 6GHz

gilent Spectrum Analyzer - Swep	t SA	10	10 <sup>1</sup>		
RL RF 50 Ω		SENSE:INT		03:48:44 PM Mar 07, 2013 TRACE 12 3 4 5 6	Peak Search
IIKel 13.763130000	PNO: Fast G	Trig: Free Run	Avg Hold:>100/100		
	IFGain:Low	#Atten: 30 dB		DELLE A MINIMUM	NextBeck
Ref Offset 1 dB	3		Mkr	1 3.785 13 GHz	NextPeak
Bidiv Ref 21.00 dE	3m			-43.314 dBm	
				1	Next Pk Right
				-27.00 dBm	
					Next Pk Left
	and when the address in the state of the sta	adar adress to a product of the state of the	and a share a	and water a second and a second	
have been a second and a second and a second					Markey Dalta
					Marker Deita
t 30 MHz				Stop 6.000 GHz	
s BW 1.0 MHz	#VBW	3.0 MHz	Sweep	10.0 ms (1001 pts)	Mkr→CF
MODE TRC SCL	×	Y FL	JNCTION FUNCTION WIDTH	FUNCTION VALUE	
<u>N 1 f</u>	3.785 13 GHz	-43.314 dBm			
					Mkr→RefLvi
					More
					1 of 2
			STATUS	3	



## 5260MHz, 6GHz – 18GHz

Agilent Spectrum Anal	lyzer - Swept SA						
LXI RL RF	50 Ω DC		SENSE:I	INT	ALIGN AUTO	03:49:37 PM Mar 07, 2013	Deak Search
Marker 1 21.54	4000000000	0 GHz		Avg	Type: Log-Pwr	TRACE 1 2 3 4 5 1	Feak Search
		PNO: Fast G	Trig: Free Ru	n Avgj	Hold:>100/100	DET P A N N N	1
		IFGain:Low	#Atten: 30 dB	! 			Novt Book
Pafr	Offect 1 dB				IV	1kr1 21.54 GHz	INEXLFEAK
10 dBidiy Ref	21 00 dBm					-41.585 dBm	
Log	21.00 4811				1		19 (A)
11.0							
1.00							Next Pk Right
1.00							
-9.00							
-19.0							
20.0						-27.00 dBm	Next Dk Loff
-29.0					1		Next PK Leit
-39.0						and the second states of the second states of the	
-49 n unarter when	Contraction of the second s	and month	and the more marging	anger al and a second	and the second all the second		
-59.0							Marker Delta
-69.0							
Start 6.00 GHz						Stop 26.00 GHz	
#Res BW 1.0 M	IHz	#VBV	V 3.0 MHz		Sweep 🗧	33.3 ms (1001 pts)	Mike CE
	0	1.	0	FUNCTION	FUNCTION	FUNCTION VALUE	IVIKI→CF
MKA MODE INC SCE		21 54 CH7	41 595 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	W. H.
2		21.34 GHZ	-41.365 GBIII				
3							
4							Mkr→RefLvl
5							
7							
8							
9							More
10							1 of 2
12							
MSG					STATUS	5	

# 5260MHz, 18GHz – 40GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 37.0600000000	00 GHz	ALIGNAUTO	03:51:52 PM Mar 07, 2013 TRACE 1 2 3.4 5 6	Peak Search
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm	PN0: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	Avg Heid>100/100	(r1 37.060 GHz -35.248 dBm	Next Peak
11.0				Next Pk Right
-19.0 -29.0 -39.0		matthe formation of the second	1	Next Pk Left
-49.0 -59.0 -69.0				Marker Delta
Start 26.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep :	Stop 40.000 GHz 23.3 ms (1001 pts) FUNCTION VALUE	Mkr→CF
1 N 1 f 3 2 3 4 5 5 6 7	7.060 GHz -35.248 dBm			Mkr→RefLvl
8 9 10 11 12				More 1 of 2
MSG Alignment Completed		STATUS		



# 5320MHz, 30MHz – 6GHz

Agilent Spectrum Analyzer - Swept SA				
LXI RL RF 50Ω DC	SEN	SE:INT AL	LIGN AUTO 03:57:31	PM Mar 07, 2013 Peak Search
Marker 1 3.82095000000	) GHz	Avg Type: L	Log-Pwr TRA	
	PNO: Fast Trig: Free	AR AVG[Hold:>1		ET P A N N N N
	IFGain:Low #Atten: 30			Next Peak
Pef Offset 1 dB			Mkr1 3.820	95 GHz
10 dB/div Ref 21.00 dBm			-44.3	23 dBm
Log				
11.0				
1.00			ĥ	Next Pk Righ
1.00				
-9.00				
-19.0				
20.0				-27.00 dBm Noxt Dk Lof
-29.0		. 1		Next PK Lei
-39.0				
-49.0	والمقال متهدهم والاستيار أوراد ومراور ومعاديا والمراد	and a second and a	manunationshared	and the second sec
reghen asper a rest of a superior and a superior				
-59.0				Marker Delta
-69.0				
Start 30 MHz			Stop 6	5.000 GHz
#Res BW 1.0 MHz	#VBW 3.0 MHz	9	Sweep 10.0 ms	(1001 pts)
	v	EUNCTION EUNC		
	20 95 CHz	PONCHON PONC	TION WIDTH FONCT	ON VALUE
2 0.0	20 30 6112 44.020 48			
3				
4				Mkr→RefLv
5				
7				
8				
9				More
10				1 of 2
12				
MSG			STATUS	

# 5320MHz, 6GHz – 18GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 13.6600000000	0 GHz	ALIGNAUTO Avg Type: Log-Pwr	03:58:16 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Ref Offset 1 dB	PNO: Fast File Run IFGain:Low #Atten: 30 dB	Avg Held:>100/100	Ikr1 13.66 GHz -43.920 dBm	Next Peak
11.0 1.00 -9.00				Next Pk Right
-19.0	<u>↓</u> 1	ىرىنى بىرىنى	-27.00 dBm	Next Pk Left
-49.0 -59.0 -69.0				Marker Delta
Start 6.00 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	Stop 26.00 GHz 33.3 ms (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 4 5 6 7				Mkr→RefLvl
8 9 10 11 12				More 1 of 2
		STATUS		



### 5320MHz, 18GHz - 40GHz



### 5500MHz, 30MHz – 6GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 3.797070000000	GHz SENSE:INT	ALIGN AUTO	04:02:44 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Ref Offset 1 dB	PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	Avg Hold:>100/100	DET P A N N N N	Next Peak
10 dB/div Ref 21.00 dBm			-42.640 dBm	Next Pk Right
-19.0			1 -27.00 dBm	
-29.0 -39.0 -49.0	altra and altraining and a state of the stat	1	and the second	Next Pk Left
-59.0				Marker Delta
Start 30 MHz #Res BW 1.0 MHz MKR  MODE  TRC  SCL  X	#VBW 3.0 MHz	Sweep FUNCTION WIDTH	Stop 6.000 GHz 10.0 ms (1001 pts) FUNCTION VALUE	Mkr→CF
1 N 1 f 3.79 2 3 4 5 5 5 5 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	77 07 GHz -42.640 dBm			Mkr→RefLvl
8 9 9 10 10 11 12 12 12 12 12 12 12 12 12 12 12 12				More 1 of 2
MSG		STATUS		



### 5500MHz, 6GHz – 18GHz

Agilent Spectrum A	Analyzer - Swept SA	l.					
LXI RL I	RF 50 Ω DC		SENSE:		ALIGNAUTO	04:03:46 PM Mar 07, 2013	Peak Search
Marker 1 16	.500000000	000 GHz	Trig: Free Ru	n Avg	Type: Log-Pwr Hold:>100/100	TYPE M A WAMAA	
		IFGain:Low	#Atten: 30 dB	1		DET PANNN	
					N	1kr1 16 50 GHz	Next Peak
	ef Offset 1 dB	× .				-37 902 dBm	
	er 21.00 uBit						
11.0							
1.00							Next Pk Right
0.00							
-9.00							
-19.0						-27.00 dBm	
-29.0				1			Next Pk Left
-39.0						where a subshire we tak	
-49.0 marchan	and the second	and the second	man and many and presented	there white match desired	- Contraction of the second second second		
-59 0							
-50.0							Marker Delta
-69.0							
Start 6 00 GH	17					Stop 26 00 GHz	
#Res BW 1.0	MHz	#VB\	N 3.0 MHz		Sweep	33.3 ms (1001 pts)	
	ci l	× I	×	FUNCTION	EUNCTION WIDTH	EUNCTION VALUE	MIKT→CF
		16.50 GHz	-37.902 dBm	TONCTION	TONCTION WIDTH	TONCHON VALUE	
2							
3							Mkr. Boflyd
5							WIKI→REI LVI
6							
8							
9							More
10					-		1 of 2
12							
MSG					STATUS		

# 5500MHz, 18GHz – 40GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 36.45800000000	0 GHz	ALIGN AUTO Avg Type: Log-Pwr	04:04:42 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
	PNO: Fast 🕞 Trig: Free Run IFGain:Low #Atten: 30 dB	Avg Hold:>100/100		NextPeak
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm			-36.311 dBm	
11.0				Next Pk Right
-9.00				
-29.0		1_	-27.00 dBm	Next Pk Left
-39.0	al de la construction de la constru	ndragen verter and the second of	- Altream - And Altream -	
-59.0				Marker Delta
Start 26.000 GHZ #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	Stop 40.000 GH2 23.3 ms (1001 pts)	Mkr→CF
MKR MODE TRC SCL X	5.458 GHz -36.311 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
				Mkr→RefLvl
5 6 7				
8				More
10 11 12				1 of 2
MSG		STATUS		



# 5580MHz, 30MHz – 6GHz

Agilent Spectrum Analyzer - Swept SA				
(X) RL RF 50 Ω DC Marker 1 3 797070000000	GH7	ALIGN AUTO Avg Type: Log-Pwr	04:05:42 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Ref Offset 1 dB	PN0: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	AvgjHoid≫100/100 Mkr	1 3.797 07 GHz	Next Peak
10 aB30V Rei 21.00 dBm Log 11.0 1.00				Next Pk Right
-19.0 -29.0 -39.0		1	27.00 dBm	Next Pk Left
-49,0 -59,0 -69,0				Marker Delta
Start 30 MHz           #Res BW 1.0 MHz           MKR MODE TRC SCL         X           1         N         1         f         3.79	#VBW 3.0 MHz 97 07 GHz -44.678 dBm	Sweep	Stop 6.000 GHz 10.0 ms (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 4 5 6 7				Mkr→RefLvl
8 9 10 11 12				More 1 of 2
Mod		STATUS		

# 5580MHz, 6GHz – 18GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 16.74000000000	0 GHz	ALIGN AUTO Avg Type: Log-Pwr	04:06:44 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Trace/Det
Ref Offset 1 dB	PNO: Fast Fire Run IFGain:Low #Atten: 30 dB	Avginera>100/100	1kr1 16.74 GHz -40.343 dBm	Select Trace
Log 11.0 1.00 -9.00				Clear Write
-19.0 -29.0 -39.0	1		-27.00 dBm	Trace Average
-49.0				Max Hold
Start 6.00 GHz           #Res BW 1.0 MHz           MKR MODE         TRC SCL           1         N         1	#VBW 3.0 MHz 16.74 GHz -40.343 dBm	Sweep	Stop 26.00 GHz 33.3 ms (1001 pts) FUNCTION VALUE	Min Hold
2 3 4 5 6 7				View/Blank Trace On
8 9 10 11 11 12				More 1 of 3
MSG		STATUS		



### 5580MHz, 18GHz - 40GHz



### 5700MHz, 30MHz - 6GHz

ment spectrum Analyzer - Swept SA				
RF 50 Ω DC	GHz SENSE:INT	Ava Type: Loa-Pwr	04:08:50 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
	PNO: Fast Trig: Free Run	Avg Hold:>100/100	TYPE MANNANY DET PANNNN	
	IFGain:Low #Atten: 30 dB	B.41		NextPeak
Ref Offset 1 dB		IVIKE	-42.878 dBm	
			1	Next Pk Right
				noxer a ragin
			-27 D0 dBm	Novt Dk Loft
		▲1		Next PK Leit
		man and manage and participant	water men man Under	
anone has a harman a set of the second	Man person of the last of the			
				Marker Delta
BW 1.0 MHz	#VBW 3.0 MHz	Sweep	10.0 ms (1001 pts)	
DE TRC SCL X	Y	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	MKr→CF
1 f 3.79	7 07 GHz -42.878 dBm			
				Mkr→RefLvl
				More
				1 of 2
		STATUS		



### 5700MHz, 6GHz – 18GHz

Agilent Spectrum Analyzer - Swept SA				
(X) RL RF 50Ω DC Marker 1 17 10000000000	OD GHZ	E:INT ALIGNAUTO Avg Type: Log-Pwr	04:09:36 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Ref Offset 1 dB	PNO: Fast Trig: Free I IFGain:Low #Atten: 30	Run AvgjHold:>100/100 dB I	/kr1 17.10 GHz -35.380 dBm	Next Peak
Log 11.0 -9.00				Next Pk Right
-19.0 -29.0 -39.0	مرد	1	-27.00 dBm	Next Pk Left
-49.0 -59.0				Marker Delta
Start 6.00 GHz           #Res BW 1.0 MHz           MKR MODE TRC SCL           1           N         1	#VBW 3.0 MHz	Sweep	Stop 26.00 GHz 33.3 ms (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4				Mkr→RefLvl
8 9 10 11 12				More 1 of 2
MSG		STATU	5	

# 5700MHz, 18GHz – 40GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 34.33000000000	00 GHz	ALIGNAUTO	04:10:48 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm	PN0: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	AvgiHald>100/100	(r1 34.330 GHz -37.608 dBm	Next Peak
11.0				Next Pk Right
-19.0 -29.0 -39.0	all langestrange and all and a second and a se	1	-27.00 dBm 27.00 dBm	Next Pk Left
-49.0 -59.0 -69.0				Marker Delta
Start 26.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 2	Stop 40.000 GHz 23.3 ms (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 3 4 4 5 5 6 7 7 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				Mkr→RefLvl
8 9 10 11 11 11 11 11 11 11 11 11 11 11 11				More 1 of 2
		STATUS		



## 802.11n HT20 mode 5180MHz, 30MHz – 6GHz

Agrient Spectrum Analyzer - Swept SA	CENCE		04-12-29 DM Mar 07, 2013	
Marker 1 3.850800000000	GHZ Trig: Free Bu	Avg Type: Log-Pwr n AvgIHold:>100/100	TRACE 1 2 3 4 5 6 TYPE MA WARAW	Peak Search
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm	IFGain:Low #Atten: 30 dE	Mkr	DET P ANNNN 1 3.850 80 GHz -43.361 dBm	Next Peak
11.0 1.00 -9.00				Next Pk Right
-19.0 -29.0 -39.0		1	-27.00 dBm	Next Pk Left
-69.0				Marker Delta
Start 30 MHz           #Res BW 1.0 MHz           MKR MODE TRC SCL           1         N           1         f           3.85	#VBW 3.0 MHz	Sweep	Stop 6.000 GHz 10.0 ms (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 4 5 6 7				Mkr→RefLvl
8 9 9 10 11 11 12 12				More 1 of 2
MSG		STATUS		

## 5180MHz, 6GHz – 18GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 17.22000000000	00 GHz	ALIGNAUTO Avg Type: Log-Pwr Avg/Hald:>100/100	04:16:09 PM Mar 07, 2013 TRACE 1 2 3 4 5 6 TYPE M & WAMAN	Peak Search
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm	IFGain:Low #Atten: 30 dB		DET P ANNNN Mkr1 17.22 GHz -43.961 dBm	Next Peak
11.00 1.00 -9.00				Next Pk Right
-19.0 -29.0 -39.0		<u>1</u>	-27.00 dBm	Next Pk Left
-49.0 -59.0				Marker Delta
Start 6.00 GHz #Res BW 1.0 MHz MKB MODE TRC SCL X	#VBW 3.0 MHz	Sweep	Stop 26.00 GHz 33.3 ms (1001 pts)	Mkr→CF
2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				Mkr→RefLvl
8 9 10 11 12				More 1 of 2
MSG		STATU	s	



### 5180MHz, 18GHz – 40GHz

Agilent Spectrum Analyzer - Swept SA					
LXU RL RF 50Ω DC	SI	ENSE:INT	ALIGNAUTO 04:	18:03 PM Mar 07, 2013	Peak Search
Marker 1 32.2020000000	00 GHZ	e Run Avg Type	e: Log-Pwr ·>100/100		
	IFGain:Low #Atten: 3	0 dB		DET PANNN	
			Miked 3	22 202 CH-	Next Peak
Ref Offset 1 dB				9 469 dBm	
10 dB/div Ref 21.00 dBm				6.409 UBIII	
					Next Pk Right
1.00					-
-9.00					
-19.0					
-29.0				-27.00 dBm	Next Pk Left
20.0		Automatic	and the owner of the second	and and a stranger of the stranger	HEAT I K LOIT
-39.0 Wardel and the second of the second se	and the second and the second second	*=====================================			
-49.0					
-59.0					Marker Delta
-69.0					Marker Della
Start 26.000 GHz			Sto	p 40.000 GHz	
#Res BW 1.0 MHz	#VBW 3.0 MHz	2	Sweep 23.3	ms (1001 pts)	Mkr CE
MKBI MODEL TBCL SCL X	Y	FUNCTION	NCTION WIDTH F	UNCTION VALUE	IVIKI
1 N 1 f 3	2.202 GHz -38.469 c	IBm			
2					
3					Miles Define
5					wikr→Ref Lvi
6					
7					
9					More
10					1 of 2
12					
					N
MSG			STATUS		

# 5260MHz, 30MHz – 6GHz

Agilent Spectru	ım Analyzer - Sv	wept SA								
X RL Markor 1 '	RF 50 S		CH2	SE	NSE:INT	Ava Tvp	e: Log-Pwr	04:21:15 TRA	PM Mar 07, 2013	Peak Search
Marker 1	5.7495100	00000	PNO: Fast	Trig: Free	Run	Avg Hold	1:>100/100	T		
			IFGain:Low	#Atten: 30	) dB					Next Deak
	Ref Offset 1	dB					Mkr	1 3.749	31 GHz	NextPeak
10 dB/div	Ref 21.00	dBm						-43.6	50 dBm	
11.0										
1.00								1		Next Pk Right
9.00										
-5.00										
-19.0								l Γ	-27.00 dBm	New Dist of
-29.0						<b>1</b>				Next PK Left
-39.0						and war	بالإيبالير المنع	and man	andress sides in	
-49.0	the second second second		ndersong Philadelphic property	and the second	and the second second					
-59.0										Marker Delta
-69.0										
Start 30 M	Hz						-	Ston	6 000 GHZ	
#Res BW 1	1.0 MHz		#VB	W 3.0 MHz			Sweep	10.0 ms	(1001 pts)	
MKB MODEL TBO		×	12	Y	FUN	ICTION E	INCTION WIDTH	FUNCT		MKr→CF
1 N 1	f	3.74	19 31 GHz	-43.650 dl	3m			Toner		
2										
4										Mkr→RefLvl
5										
7										
9										More
10										1 of 2
12										
MSG							STATUS			



## 5260MHz, 6GHz – 18GHz

Agilent Spectrum Analyzer - Swept SA				
XI RL RF 50 Ω DC	IN GHZ	ALIGNAUTO Avg Type: Log-Pwr	04:22:20 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Ref Offset 1 dB	PNO: Fast IFGain:Low #Atten: 30 dB	Avg]Hold≫100/100	1kr1 15.80 GHz -45.323 dBm	Next Peak
Log 11.0 1.00 -9.00				Next Pk Right
-19.0 -29.0 -39.0		مى رايى رايى مۇرىيى بىلى بىلى بىلى بىلى بىلى بىلى بىلى ب	-27.00 dBm	Next Pk Left
-49.0 -59.0 -69.0				Marker Delta
Start 6.00 GHz           #Res BW 1.0 MHz           MKR MODE TRC SCL         X           1         N         1         f	#VBW 3.0 MHz	Sweep	Stop 26.00 GHz 33.3 ms (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 4 5 6				Mkr→RefLvl
8 9 10 11 12				More 1 of 2
MSG DAlignment Completed		STATUS		

# 5260MHz, 18GHz – 40GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 32 0620000000	0 GHz	ALIGN AUTO Avg Type: Log-Pwr	04:23:37 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
	PNO: Fast Trig: Free Run	Avg Hold:>100/100	TYPE M A WWWW DET P A N N N N	
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm	IFGain:Low #Atten. 30 th	MI	kr1 32.062 GHz -38.765 dBm	Next Peak
11.0 1.00 -9.00				Next Pk Right
-19.0	1 	programme production and the second s	-27.00 dBm	Next Pk Left
-49.0 -59.0 -69.0				Marker Delta
Start 26.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	Stop 40.000 GHz 23.3 ms (1001 pts) FUNCTION VALUE	Mkr→CF
1 N 1 F 32 2 3 4 4	2.062 GHz -38.765 dBm			
4 5 6 7				Mkr→RefLvl
8 9 10 11 12				More 1 of 2
MSG		STATUS		



# 5320MHz, 30MHz – 6GHz

Agilent Spectrum Analyzer - Swept SA					
LXI RL RF 50Ω DC		SENSE:INT	ALIGNAUTO	04:27:53 PM Mar 07, 2013	Peak Search
Marker 1 3.83289000000	0 GHz	Avg	Type: Log-Pwr	TRACE 1 2 3 4 5 6	i can ocarcii
	PNO: Fast C Ing	Free Run Avg	[Hold:>100/100	DET P A N N N	
	IFGain:Low #At	en: 30 db		52.7	Next Deck
			Mkr	1 3.832 89 GHz	NextPeak
10 dRidiu Pef 21 00 dBm				-44,282 dBm	
Log					
11.0					
				4	Next Pk Right
1.00					
-9.00					
10.0					
-15.0				-27.00 dBm	
-29.0					Next Pk Left
-39.0		<b>_</b>			
10.0	and the second second second second	and an address of the second	warman warman and a service	and manual hand	
-49.0 menune wir of the manual	and and a france of the second second second				
-59.0					Marker Delta
-69.0					Ivial Kel Della
99.19					
Start 30 MHz				Stop 6 000 CHz	
#Bac BW 10 MHz	#VRM 3.0	V/11/2	Sween	10.0 mc (1001 ptc)	
#Res Dvv 1.0 winz	#VDVV 3.01	91112	Sweep	10.0 ms (1001 pts)	Mkr→CF
MKR MODE TRC SCL X		FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	
1 N 1 f 3.	832 89 GHz -44.2	82 dBm			
2					
3					
5					MKr→Ret LVI
6					
7					
8					
10					More
11					1 of 2
12					
NRC .			STATUS		
Mod			STATUS		

# 5320MHz, 6GHz – 18GHz

gilent Spectrum Analyzer - Swept SA					
		SENSE:INT	ALIGN AUTO	04:28:48 PM Mar 07, 2013	Peak Search
larker 1 19.120000000	PNO: East	Trig: Free Run	Avg Hold:>100/100		
	IFGain:Low	#Atten: 30 dB		DET <u>PANNN</u>	
Ref Offset 1 dB				Mkr1 19.12 GHz	NextPeak
0 dB/div Ref 21.00 dBm				-41.014 dBm	
og					
11.0					Next Pk Right
1.00					noxer in agin
9.00					
19.0				07.00.15	
29.0				-27.00 dBm	Next Pk Left
39.0				In the second second	
49 man monto and method	ad a have grow to a solution of the set	where more and an any of	and a state of the second of t	A get a fair of the state of th	
59.0					
50.0					Marker Delta
22.0					
tart 6.00 GHz				Stop 26.00 GHz	-
Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep	33.3 ms (1001 pts)	Mkr. CE
KR MODE TRC SCL >	(	Y	FUNCTION FUNCTION WIDT	H FUNCTION VALUE	
1 N 1 f	19.12 GHz	-41.014 dBm			
3					
4					Mkr→RefLvl
6					DEPENDED DESERVES STOL
7					
9					More
10					1 of 2
2					1012
			STAT	10	
			STAT	10	



### 5320MHz, 18GHz – 40GHz



### 5500MHz, 30MHz - 6GHz

Agilent Spectrum Analyzer - Swept SA				
X/ RL RF 50Ω DC Marker 1 4.083630000000	GH7	ALIGN AUTO Avg Type: Log-Pwr	04:31:17 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
	PNO: Fast Trig: Free Run IFGain:Low #Atten: 30 dB	Avg Hold:>100/100		Next Peak
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm Log		IVIKI	-45.569 dBm	
11.0 1.00 			1	Next Pk Right
-19.0		<sup>1</sup>	-27.00 dBm	Next Pk Left
-49.0 -59.0 -69.0			utthught baget	Marker Delta
Start 30 MHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 7	Stop 6.000 GHz 10.0 ms (1001 pts)	Mkr→CF
1 N 1 f 4.08	33 63 GHz -45.569 dBm			
3 4 5 6 7				Mkr→RefLvl
8 9 10 11 12				More 1 of 2
MSG  Alignment Completed		STATUS		



### 5500MHz, 6GHz – 18GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 16.50000000000	0 GHz	ALIGN AUTO Avg Type: Log-Pwr	04:32:05 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Ref Offset 1 dB	PN0: Fast Trig: Free Ru IFGain:Low #Atten: 30 dB	n Avg Hold>100/100	1kr1 16.50 GHz -38.639 dBm	Next Peak
11.0 1.00 -9.00				Next Pk Right
-19.0		المحمد مربع المراجع	-27.00 dBm	Next Pk Left
-49.0 -59.0				Marker Delta
Start 6.00 GHz           #Res BW 1.0 MHz           MKR MODE TRC SCL         X           1         N         1         f	#VBW 3.0 MHz 16.50 GHz -38.639 dBm	Sweep	Stop 26.00 GHz 33.3 ms (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 4 5 6 7				Mkr→RefLvl
8 9 9 10 11 11 12 12				More 1 of 2
Mou		STATUS		

# 5500MHz, 18GHz – 40GHz

Agilent Spectrum Analyzer - Swept SA				
(X) RL RF 50Ω DC	SENSE:IN	ALIGNAUTO	04:34:00 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Marker 1 33.47 80000000	PNO: Fast C Trig: Free Run	Avg Hold:>100/100		
	IFGain:Low #Atten: 30 dB			Nevt Peak
Ref Offset 1 dB		M	kr1 35.478 GHz	NEXTFEAK
10 dB/div Ref 21.00 dBm			-35.719 dBm	
11.0				
1.00				Next Pk Right
-9 00				
19.0				
20.0		1	-27.00 dBm	Novt Bk Loft
-23.0		and the rest of the second second second	and in the second state of	NEXT FR LEIL
-39.0 alter the state of the state of the second se	and the second			
-49.0				
-59.0				Marker Delta
-69.0				
Start 26.000 GHz			Stop 40.000 GHz	
#Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	23.3 ms (1001 pts)	Mkr.CE
MKR MODE TRC SCL X	Y	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
1 N 1 f 34	5.478 GHz -35.719 dBm			
3				
4 5				Mkr→RefLvl
6				
8				
9				More
				1 of 2
12				
MSG		STATUS		



### 5580MHz, 30MHz - 6GHz



### 5580MHz, 6GHz – 18GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 16.74000000000	0 GHz	ALIGN AUTO Avg Type: Log-Pwr	04:36:06 PM Mar 07, 2013 TRACE 123456	Peak Search
	PNO: Fast Trig: Free Run IEGain:Low #Atten: 30 dB	Avg Hold:>100/100	DET P A N N N N	
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm		Ν	/kr1 16.74 GHz -39.774 dBm	NextPeak
11.0 1.00 -9.00				Next Pk Right
-19.0 -29.0 -39.0		1	-27.00 dBm	Next Pk Left
-49.0 -59.0				Marker Delta
Start 6.00 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	Stop 26.00 GHz 33.3 ms (1001 pts) FUNCTION VALUE	Mkr→CF
1 N 1 f	16.74 GHz -39.774 dBm			Mkr→RefLvl
8 9 10 11 11				More 1 of 2
MSG		STATUS		



### 5580MHz, 18GHz – 40GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 34.8760000000	0 GHz	ALIGNAUTO	04:40:41 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Ref Offset 1 dB	PN0: Fast Trig: Free Rur IFGain:Low #Atten: 30 dB	n Avg Hold>100/100	(r1 34.876 GHz -35.846 dBm	Next Peak
11.0				Next Pk Right
-19.0 -29.0 -39.0	HARRING CONTRACTOR	1	-27.00 dBm	Next Pk Left
-49.0 -59.0 -69.0				Marker Delta
Start 26.000 GHz           #Res BW 1.0 MHz           MKR MODE TRC SCL           1         N           1         f           3/2	#VBW 3.0 MHz 4.876 GHz -35.846 dBm	Sweep :	Stop 40.000 GHz 23.3 ms (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 4 5 6 7				Mkr→RefLvl
8 9 9 10 11 12 12				More 1 of 2
MSG		STATUS		

# 5700MHz, 30MHz – 6GHz

Agilent Spectrum Analyzer - Swept SA				
Markor 1 3 79707000000	SENSE:IN		04:41:41 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Peak Search
Marker 1 3.797070000000	PNO: Fast C Trig: Free Run	Avg Hold:>100/100		
	IFGain:Low #Atten: 30 dB		DELLATATATA	Nevt Peak
Ref Offset 1 dB		Mkr	1 3.797 07 GHz	NEXTFOR
10 dB/div Ref 21.00 dBm			-44.820 aBm	
11.0				
1.00				Next Pk Right
-9.00				
-19.0				
-29.0			-27 00 dBm	Next Pk Left
-39.0		1		
-49.0	ماريم المحمد ورسوره بالمعاد مع المراجع والمراجع والم	my what a south and a second an	advational have more	
-59 D				
-69.0				Marker Delta
Start 30 MHz			Stop 6.000 GHz	-
#Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep	10.0 ms (1001 pts)	Mkr→CF
MKR MODE TRC SCL X	Y	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
1 N 1 F 3.75	37 07 GHz -44.820 dBm			
3				
5				MKr→RetLVI
6				
8				
10				More
11				1 07 2
Msc 1 Alignment Completed		CTATHO		
		STATUS		



### 5700MHz, 6GHz – 18GHz

Agilent Spectrum Analyzer	r - Swept SA				
LXU RL RF	50 Ω DC	SENSE:INT	ALIGN AUTO	04:42:29 PM Mar 07, 2013	Peak Search
Marker 1 17.1000	000000000 GHz		Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6	Feak Search
	PNO: Fast	► Irig: Free Run	AvgiHold:>100/100	DET P A N N N N	
	IFGain:Low	#Atten: 30 dB		527	Next Deck
Def Offe			N	1kr1 17.10 GHz	NextPeak
10 d Ridiu Pof 21				-38.422 dBm	
	.00 abiii				
11.0					
					Next Pk Right
1.00					
-9.00					
10.0					
-19.0				-27.00 dBm	and a second second
-29.0		1-			Next Pk Left
-39.0					
the construction	and the second	permition and server bargh	www.willians and	thank parata the marked water	-
-49.0					
-59.0					Maulson Dalta
60.0					marker Delta
-09.0					
Start 6 00 CHZ				Oton 26 00 CH-	
Start 6.00 GHZ	-43 (		•	Stop 20.00 GHZ	
#Res BW 1.0 MHz	#VE	W 3.0 WHZ	sweep	33.3 ms (1001 pts)	Mkr→CF
MKR MODE TRC SCL	×	Y FUN	ICTION FUNCTION WIDTH	FUNCTION VALUE	
	17.10 GHz	-38.422 dBm			
2					
3					
4					Mkr→RefLvl
6					
7					
8					
9					More
10					1 of 2
12					
MSG			STATUS	5	

# 5700MHz, 18GHz – 40GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 34.75000000000	0 GHz	AVg Type: Log-Pwr	04:43:41 PM Mar 07, 2013 TRACE 123.456	Peak Search
	PNO: Fast Trig: Free Run IEGain:Low #Atten: 30 dB	Avg Hold:>100/100	DET PANNN	
Ref Offset 1 dB 10 dB/div Ref 21.00 dBm		M	kr1 34.750 GHz -37.004 dBm	Next Peak
11.00 1.00 -9.00				Next Pk Right
-19.0 -29.0 -39.0	han any hand and the second	1	-27.00 dBm	Next Pk Left
-49.0 -59.0 -69.0				Marker Delta
Start 26.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz		Stop 40.000 GHz 23.3 ms (1001 pts)	Mkr→CF
1 N 1 f 34	4.750 GHz -37.004 dBm			
2 3 4 5 6 7				Mkr→RefLvl
8 9 10 11 12				More 1 of 2
MSG		STATUS	3	



### 11. UNDESIRABLE EMISSION - RADICTED MEASUREMENT

### **11.1 Standard Applicable**

#### According to §15.407(b),

(b) Undesirable Emission Limits: Except as shown in Paragraph (b)(6) of this section, the peak emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.
- (3) For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of -27 dBm/MHz.
- (4) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.
- (5) The above emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.
- (6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in Section 15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in Section 15.207.
- (7) The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.
- (8) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the upper and lower frequency block edges as the design of the equipment permits.



#### §15.205- RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	( <sup>2</sup> )
13.36 - 13.41	322 - 335.4		

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



FCC PART 15.209				
MEASURING DISTANCE OF 3 METER				
FREQUENCY RANGE FIELD STRENGTH FIELD STRENGTH				
(MHz)	(Microvolts/m)	(dBuV/m)		
30-88	100	40		
88-216	150	43.5		
216-960	200	46		
Above 960	500	54		

#### **§15.209- RADIATED EMISSION LIMITS: GENERAL REQUIREMENTS**

#### According to RSS-210 A9.2

- For transmitters operating in the band 5150-5250 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27dBm/MHz e.i.r.p.
- 2. For transmitters operating in the band 5250-5350 MHz, all emissions outside the band 5150-5350 MHz shall not exceed -27dBm/MHz e.i.r.p. Devices operating in the band 5250-5350 MHz that generate emissions in the band 5150-5250 MHz shall not exceed an out-of-band emission limit of -27dBm/MHz e.i.r.p. in the band 5150-5250 MHz in order to operate indoor/outdoor, or alternatively shall comply with the spectral power density for operation within the band 5150-5250 MHz and shall be labeled "for indoor use only".
- 3. For transmitters operating in the band 5470-5725 MHz, all emissions outside that band shall not exceed -27dBm/MHz e.i.r.p.
- 4. For transmitters operating in the band 5725-5825 MHz, all emissions within the frequency range from the band edges to 10 MHz above or below the band edges shall not exceed -17dBm/MHz e.i.r.p. For frequencies more than 10 MHz above or below the band edges, emissions shall not exceed -27dBm/MHz.



#### 11.2 EUT Setup

- 1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-1992.
- The EUT was put in the front of the test table. The host PC system was placed on the center of the back edge on the test table. The peripherals like modem, monitor printer, K/B, and mouse were placed on the side of the host PC system. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The keyboard was placed directly in the front of the monitor, flushed with the front tabletop. The mouse was placed next to the Keyboard, flushed with the back of keyboard.
- 4. The spacing between the peripherals was 10 centimeters.
- 5. External I/O cables were draped along the edge of the test table and bundle when necessary.
- 6. The host PC system was connected with 120Vac/60Hz power source.

#### **11.3 Measurement Procedure**

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna which 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 all frequency measured were complete.

Refer to section E of KDB Document: KDB789033 D01 General UNII Test Procedures v01r02



### **11.4** Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



#### (B) Radiated Emission Test Set-UP Frequency Over 1 GHz





Chamber 14(966)					
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		NUMBER	NUMBER	CAL.	
Spectrum Analyzer 21(26.5GHz)	Agilent	N9010A	MY49060537	07/17/2012	07/16/2013
Spectrum Analyzer 20(6.5GHz)	Agilent	E4443A	MY48250315	05/24/2012	05/23/2013
Spectrum Analyzer 22(43GHz)	R&S	FSU43	100143	04/25/2012	04/24/2013
Loop Antenna9K-30M	A.H.SYSTEM	SAS-564	294	02/28/2012	02/27/2014
Bilog Antenna30-1G	Schaffner	CBL 6111B	2756	01/13/2013	01/12/2014
Horn antenna1-18G	COM-POWER	AH118	2011071401	03/01/2013	02/29/2014
Horn antenna1-18G(06)	EMCO	3117	0006665	10/15/2012	10/14/2013
Horn antenna26-40G(05)	Com-power	AH-640	100A	01/09/2013	01/08/2015
Horn antenna18-26G(04)	Com-power	AH-826	081001	05/04/2011	05/03/2013
Preamplifier9-1000M	HP	8447D	NA	02/19/2013	02/18/2014
Preamplifier1-18G	MITEQ	AFS44-001018 00-25-10P-44	1329256	07/23/2012	07/22/2013
Preamplifier1-26G	EM	EM01M26G	NA	02/26/2013	02/25/2014
Preamplifier26-40G	MITEQ	JS-26004000-2 7-5A	818471	05/21/2011	05/20/2013
Cable1-18G	HUBER SUHNER	Sucoflex 106	NA	09/07/2012	09/06/2013
Cable UP to 1G	HUBER SUHNER	RG 214/U	NA	10/08/2012	10/07/2013
SUCOFLEX 1GHz~40GHz cable	HUBER SUHNER	Sucoflex 102	27963/2&3742 1/2	09/21/2011	09/20/2013
2.4G Filter	Micro-Tronics	Brm50702	76	12/27/2012	12/26/2013
5G Filter	Micro-Tronics	Brm50716	005	12/27/2012	12/26/2013

### **11.5 Measurement Equipment Used:**



#### **11.6 Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

#### **11.7** Measurement Result

Refer to attach tabular data sheets.

#### NOTE:

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 100kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.



Radiated Spurious Emission Measurement Result (below 1GHz) (worst case)							
Operation Mode	802.11a TX CH Low	Test Date	2013/03/12				
Fundamental Frequency	5180MHz	Test By	Dino				
Temperature	25 °C	Pol	Ver./Hor				
Humidity	60 %						

No	Freq	Reading	Factor	Level	Limit	Over Limit	Remark	Pol
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		V/H
1	72.68	44.97	-16.65	28.32	40.00	-11.68	Peak	VERTICAL
2	161.92	35.42	-13.53	21.89	43.50	-21.61	Peak	VERTICAL
3	269.59	36.67	-13.41	23.26	46.00	-22.74	Peak	VERTICAL
4	555.74	35.49	-7.90	27.59	46.00	-18.41	Peak	VERTICAL
5	600.36	38.34	-6.74	31.60	46.00	-14.40	Peak	VERTICAL
6	655.65	35.32	-5.90	29.42	46.00	-16.58	Peak	VERTICAL
1	71.71	46.29	-16.39	29.90	40.00	-10.10	Peak	HORIZONTAL
2	140.58	38.50	-13.87	24.63	43.50	-18.87	Peak	HORIZONTAL
3	241.46	46.90	-14.34	32.56	46.00	-13.44	Peak	HORIZONTAL
4	340.40	36.89	-11.67	25.22	46.00	-20.78	Peak	HORIZONTAL
5	555.74	39.17	-7.90	31.27	46.00	-14.73	Peak	HORIZONTAL
6	599.39	39.26	-6.76	32.50	46.00	-13.50	Peak	HORIZONTAL

- 1 No further spurious emissions detected from the lowest internal frequency and 30MHz.
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90KHz/110-490KHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100KHz, VBW=300KHz.



Radiated Spurious Emission Measurement Result (Delow IGHz) (worst case)							
Operation Mode	802.11a TX CH Mid	Test Date	2013/03/12				
Fundamental Frequency	5260MHz	Test By	Dino				
Temperature	25 °C	Pol	Ver./Hor				
Humidity	60 %						
-							

No	Freq	Reading	Factor	Level	Limit	Over Limit	Remark	Pol
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		V/H
1	71.71	45.08	-16.39	28.69	40.00	-11.31	Peak	VERTICAL
2	162.89	35.29	-13.62	21.67	43.50	-21.83	Peak	VERTICAL
3	256.01	35.61	-14.00	21.61	46.00	-24.39	Peak	VERTICAL
4	338.46	39.23	-11.69	27.54	46.00	-18.46	Peak	VERTICAL
5	480.08	32.61	-9.22	23.39	46.00	-22.61	Peak	VERTICAL
6	641.10	36.95	-6.11	30.84	46.00	-15.16	Peak	VERTICAL
1	71.71	47.62	-16.39	31.23	40.00	-8.77	Peak	HORIZONTAL
2	165.80	38.51	-13.86	24.65	43.50	-18.85	Peak	HORIZONTAL
3	232.73	47.02	-14.83	32.19	46.00	-13.81	Peak	HORIZONTAL
4	342.34	37.41	-11.65	25.76	46.00	-20.24	Peak	HORIZONTAL
5	555.74	41.47	-7.90	33.57	46.00	-12.43	Peak	HORIZONTAL
6	641.10	43.66	-6.11	37.55	46.00	-8.45	Peak	HORIZONTAL

- 1 No further spurious emissions detected from the lowest internal frequency and 30MHz.
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90KHz/110-490KHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100KHz, VBW=300KHz.



kadiated Spurious Emission Measurement Result (Delow IGHZ) (Worst case)								
Operation Mode	802.11a TX CH High	Test Date	2013/03/12					
Fundamental Frequency	5320MHz	Test By	Dino					
Temperature	25 °C	Pol	Ver./Hor					
Humidity	60 %							

No	Freq	Reading	Factor	Level	Limit	Over Limit	Remark	Pol
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		V/H
1	71.71	44.88	-16.39	28.49	40.00	-11.51	Peak	VERTICAL
2	160.95	36.10	-13.46	22.64	43.50	-20.86	Peak	VERTICAL
3	256.01	35.31	-14.00	21.31	46.00	-24.69	Peak	VERTICAL
4	367.56	38.64	-11.08	27.56	46.00	-18.44	Peak	VERTICAL
5	600.36	37.14	-6.74	30.40	46.00	-15.60	Peak	VERTICAL
6	641.10	36.27	-6.11	30.16	46.00	-15.84	Peak	VERTICAL
1	55.22	43.33	-14.36	28.97	40.00	-11.03	Peak	HORIZONTAL
2	230.79	39.97	-14.96	25.01	46.00	-20.99	Peak	HORIZONTAL
3	365.62	40.06	-11.13	28.93	46.00	-17.07	Peak	HORIZONTAL
4	600.36	42.50	-6.74	35.76	46.00	-10.24	Peak	HORIZONTAL
5	641.10	39.68	-6.11	33.57	46.00	-12.43	Peak	HORIZONTAL
6	940.83	32.59	-1.38	31.21	46.00	-14.79	Peak	HORIZONTAL

- 1 No further spurious emissions detected from the lowest internal frequency and 30MHz.
- 2 Measuring frequencies from the lowest internal frequency to the 1GHz.
- 3 Radiated emissions measured in frequency range from 9MHz to 1000MHz were made with an instrument detector setting 9-90KHz/110-490KHz using PK/AV and other Frequency Band using PK/QP
- 4 Measurement result within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 5 The IF bandwidth of SPA between 9kHz to 30MHz was 10kHz, VBW= 30kHz; between 30MHz to 1GHz was 100KHz, VBW=300KHz.



Radiated Spurious Emission Measurement Result (above IGHz) (worst case)								
Operation Mode	802.11a TX CH Low	Test Date	2013/03/12					
Fundamental Frequency	5180MHz	Test By	Dino					
Temperature	25 °C	Humidity	60 %					

No	Freq	Reading	Factor	Level	Limit	Over Limit	Remark	Pol
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		V/H
1	2288.00	51.88	-11.51	40.37	74.00	-33.63	Peak	VERTICAL
2	4206.00	48.65	-4.54	44.11	74.00	-29.89	Peak	VERTICAL
3	10360.00	30.71	6.98	37.69	74.00	-36.31	Peak	VERTICAL
1	1112.00	53.74	-16.58	37.16	74.00	-36.84	Peak	HORIZONTAL
2	3198.00	50.46	-8.68	41.78	74.00	-32.22	Peak	HORIZONTAL
3	10360.00	31.81	6.98	38.79	74.00	-35.21	Peak	HORIZONTAL

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- <sup>2</sup> Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above IGHz) (worst case)								
Operation Mode	802.11a TX CH Mid	Test Date	2013/03/12					
Fundamental Frequency	5260MHz	Test By	Dino					
Temperature	25 °C	Humidity	60 %					

No	Freq	Reading	Factor	Level	Limit	Over Limit	Remark	Pol
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		V/H
1	1371.00	53.91	-15.84	38.07	74.00	-35.93	Peak	VERTICAL
2	4787.00	49.91	-2.38	47.53	74.00	-26.47	Peak	VERTICAL
3	10520.00	37.49	7.22	44.71	74.00	-29.29	Peak	VERTICAL
1	2456.00	51.67	-11.07	40.60	74.00	-33.40	Peak	HORIZONTAL
2	2799.00	51.09	-9.95	41.14	74.00	-32.86	Peak	HORIZONTAL
3	10520.00	35.81	7.22	43.03	74.00	-30.97	Peak	HORIZONTAL

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- <sup>2</sup> Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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Radiated Spurious Emission Measurement Result (above IGHz) (worst case)								
Operation Mode	802.11a TX CH High	Test Date	2013/03/12					
Fundamental Frequency	5230MHz	Test By	Dino					
Temperature	25 °C	Humidity	60 %					

#### Radiated Spurious Emission Measurement Result (above 1GHz) (worst case)

No	Freq	Reading	Factor	Level	Limit	Over Limit	Remark	Pol
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		V/H
1	3289.00	50.26	-8.40	41.86	74.00	-32.14	Peak	VERTICAL
2	4325.00	48.15	-4.06	44.09	74.00	-29.91	Peak	VERTICAL
3	10640.00	36.38	7.27	43.65	74.00	-30.35	Peak	VERTICAL
1	1455.00	53.39	-15.61	37.78	74.00	-36.22	Peak	HORIZONTAL
2	3002.00	50.64	-9.29	41.35	74.00	-32.65	Peak	HORIZONTAL
3	10640.00	35.21	7.27	42.48	74.00	-31.52	Peak	HORIZONTAL

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- <sup>2</sup> Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.
- 3 Measurement of data within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- 4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.
- 5 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



## Band Edges Test Data 802.11a mode, 5180MHz

Agilent Spectrum Analyzer - Swept SA				
Marker 2 5.15000000000	SENSE:IM	ALIGNAUTO Avg Type: Log-Pwr	02:18:06 PM Mar 07, 2013 TRACE 1 2 3 4 5 6	Marker
Ref Offset 1 dB	PN0: Fast Free Run IFGain:Low #Atten: 30 dB	M Avg Hold>100/100	r2 5.150 0 GHz -41.810 dBm	Select Marker
Log				Normal
-19.0 -29.0 -39.0			-27 00 dBig	Delta
-49.0 -69.0 -69.0	a har Manuar of Log and Later of Anna Providence and Anna Providence of Anna Providence of Anna Providence of A	อาจุปรักษณ์ 	M Andrewskiewskiewskiewskiewskiewskiewskiewski	Fixed⊳
Start 4.5000 GHz #Res BW 300 kHz         Stop 5.2000 GHz #VBW 1.0 MHz         Stop 5.2000 GHz Sweep 7.40 ms (1001 pts)           MKR MODE TRC SCL         X         Y         FUNCTION         FUNCTION WIDTH         FUNCTION VALUE				Off
1 N 1 f 5.1 2 N 1 f 5.1 3 4 5 5 6	179 0 GHz 3.020 dBm 150 0 GHz -41.810 dBm			Properties▶
7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9				More 1 of 2
MSG STATUS				

### 802.11a mode, 5320MHz

