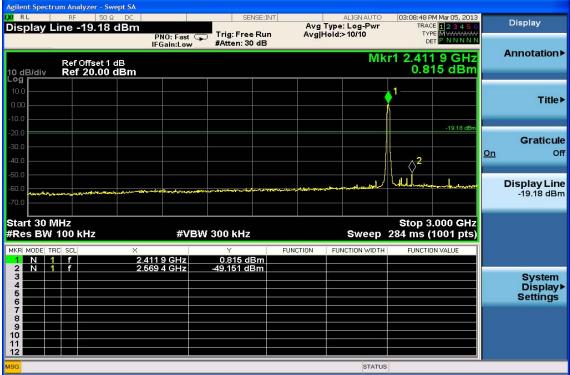
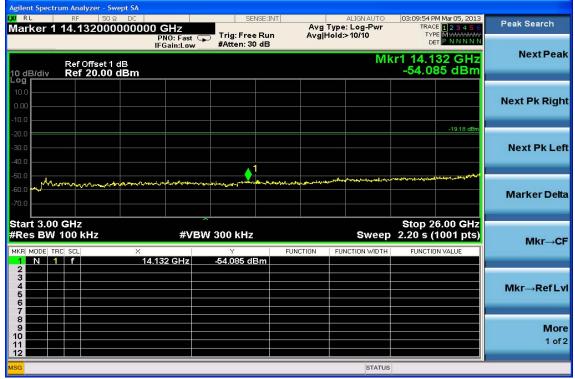


Conducted Spurious Emission Measurement Result 802.11n_20M for 2.4GHz Ch Low 30MHz – 3GHz

 $\sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i$



Ch Low 3GHz – 26.5GHz





Ch Mid 30MHz – 3GHz

Agilent Spectrum Analyzer - Swept SA						
W RL RF 50 Ω DC Display Line -19.09 dBm		SENSE:IN	Avg T	ALIGNAUTO ype: Log-Pwr old:>10/10	03:12:00 PM Mar 05, 201 TRACE 1 2 3 4 5 TYPE M 444444	Display
Ref Offset 1 dB	PNO: Fast 🖵 IFGain:Low	#Atten: 30 dB	Avgine		r1 2.435 7 GH: 0.909 dBn	Annotation
Log 10.0 0.00 -10.0					1	Title
-20.0					-19.09 dB	Graticul On O
-50.0 -60.0 -70.0	handra a franka a franka fr	nght, m-ture y to define to	and a state of the second s		how and the second second	Display Lin -19.09 dBr
Start 30 MHz #Res BW 100 kHz	#VBW	300 kHz		Sweep	Stop 3.000 GH 284 ms (1001 pts	
	.435 7 GHz .515 9 GHz		FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	
		47.300 abiii				System Display Settings
7 8 9 10 11 12						
MSG				STATUS		

Ch Mid 3GHz – 26.5GHz

Agilent Spec	ctrum Analyzer	- Swept SA						
Marker		50 Ω DC		SENSI	Avg	ALIGN AUTO Type: Log-Pwr Hold:>10/10	03:13:14 PM Mar 05, 2 TRACE 1 2 3 4 TYPE M WARA	5 6 Peak Search
10 dB/div	Ref Offse Ref 20.	et 1 dB	PNO: Fast 🔾 FGain:Low	#Atten: 30 d			^{Det PNNN} /Ikr1 8.313 GH -53.611 dB	N Next Peak
Log 10.0 0.00								Next Pk Right
-20.0							-19.09 c	Next Pk Left
-50.0 -60.0	harry where	propendition of	an a	al and a second s	her Astronomeration of the second second	un de return men et de room ben	Blongord Beneric and a strange adverter	Marker Delta
MKR MODE	V 100 kHz	× 8.3	#VB\	₩ 300 kHz Y -53.611 dBn	FUNCTION	Sweer	Stop 26.00 G 2.20 s (1001 pt FUNCTION VALUE	
2 3 4 5 6 7								Mkr→RefLvl
8 9 10 11 12								More 1 of 2
MSG						STATUS	5	



Ch High 30MHz – 3GHz

Agilent Spectrum Analyzer - Swept SA						
KI RE 50Ω DC Display Line -18.74 dBm		SENSE:IN	Avg	ALIGNAUTO	03:14:32 PM Mar 05, 2013 TRACE 1 2 3 4 5 6	Display
Ref Offset 1 dB	PNO: Fast 🕞 IFGain:Low	Trig: Free Run #Atten: 30 dB	Avgl	Hold:>10/10 Mk	r1 2.465 4 GHz 1.258 dBm	Annatations
Log 10.0 0.00					•1	Title►
-20.0					-18.74 dBm	Graticule On Off
-60.0 -60.0 -70.0	uter and a star of the star and a star		the second	ىلىنىر يەرىمەر يەرىمەر يەرىمەر يەرىمەر	2 ******	Display Line -18.74 dBm
Start 30 MHz #Res BW 100 kHz	#VBV	V 300 kHz		Sweep	Stop 3.000 GHz 284 ms (1001 pts)	
	2.465 4 GHz 2.872 3 GHz	Y 1.258 dBm -54.686 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	
2 N I I 3 4 4 5 5 6 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6	2.6723 GHZ	-54.000 UDIII				System Display► Settings
7 8 9 10 11 12						
MSG				STATUS		

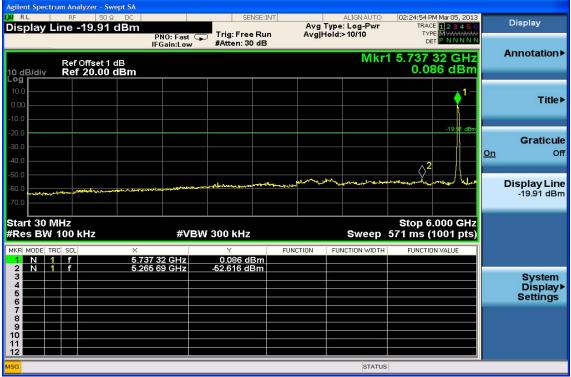
Ch High 3GHz – 26.5GHz

		etrur		alyzer - Sv										
lxi Ma			RF			00 GHz		SENSE:I	NT	Ava Tvp	ALIGNAUTO		M Mar 05, 2013	Peak Search
Me	Kel		0.0	570000		PNO: Fast IFGain:Lov		: Free Rui en: 30 dB	n	Avg Hold		TY		
	B/div			Offset 1 20.00							MI	(r1 18.8 -51.4	70 GHz 56 dBm	Next Peak
Log 10. 0.0														Next Pk Right
-20. -30. -40.											1		-18.74 dBm	Next Pk Left
-50. -60. -70.) mul	rh.	~~~	rdnere	an a	nnannan		پەرچى مىسىرىس	r flangesergedag	and the second		an the second	and a second second second	Marker Delta
#R	nt 3. es Bl MODE	W 1	00		× 1	#V 8.870 GHz	BW 300 Y -51.4		FUNC	CTION FI	Sweep	2.20 s (26.00 GHz 1001 pts)	Mkr→CF
2 3 4 5 6 7														Mkr→RefLvl
8 9 10 11 12														More 1 of 2
MSG	1)Al	ignm	ent	Comple	ted						STATUS			

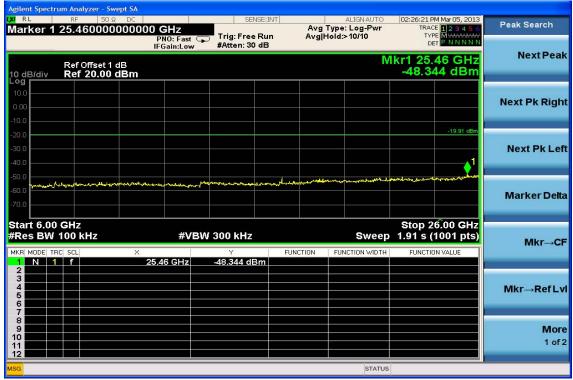


Conducted Spurious Emission Measurement Result 802.11a

Ch Low 30MHz – 3GHz



Ch Low 3GHz - 26GHz





Ch Low 26GHz – 40GHz

Agilent Spectrum A <mark>X/</mark> RL R Marker 1 38.		PNO: Fast G	Trig: Free Ru #Atten: 30 dE	Avg In Avg H	ALIGN AUTO Type: Log-Pwr Iold:>10/10	02:28:28 PM Mar 05, 2013 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N N	Peak Search
10 dB/div Re	f Offset 1 dB ef 20.00 dBm	IFGain:Low	#Atten: 30 de	5	MI	r1 38.894 GHz -44.710 dBm	Next Peak
10.0							Next Pk Righ
-10.0 -20.0 -30.0 -40.0						-19.91 dBm	Next Pk Lei
-50.0	41	- Que a gal an angle an angle ang	vinger and an and a second second	lan managar		ad an	Marker Delt
Start 26.000 (#Res BW 100 MKR MODE TRC SC	L X	#VBV	V 300 kHz Y -44.710 dBm	FUNCTION	Sweep	Stop 40.000 GHz 1.34 s (1001 pts) FUNCTION VALUE	Mkr→Cl
2 3 4 5 6		834 GHZ	-44.7 10 UBIII				Mkr→RefLv
7 8 9 10 11 12							Mor 1 of
ısg 🔱 Alignmen	t Completed				STATUS		

Ch Mid 30MHz – 3GHz

Agilent Spectrum Analyzer - Swept SA				
M RL RF 50Ω DC Display Line -20.43 dBm	SENSE:IN	Avg Type: Log-Pwr	02:30:11 PM Mar 05, 2013 TRACE 1 2 3 4 5 6 TYPE M WANNAM	Display
Ref Offset 1 dB 10 dB/div Ref 20.00 dBm	PNO: Fast 🏳 Trig: Free Run IFGain:Low #Atten: 30 dB		DET P NNNNN 1 5.779 11 GHz -0.431 dBm	Annotation►
Log 10.0 0.00 -10.0			1- 1-	Title►
-20.0 -30.0 -40.0		^2	-20.45 dBm	Graticule <u>On</u> Off
-50.0	and the second		mund	Display Line -20.43 dBm
Start 30 MHz #Res BW 100 kHz	#VBW 300 kHz	Sweep	Stop 6.000 GHz 571 ms (1001 pts)	
	79 11 GHz -0.431 dBm 77 66 GHz -54,330 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
3 4 5 6				System Display► Settings
7 8 9 10 11				
12 MSG		STATUS		

Ch Mid 3GHz – 26GHz

Agilent Spectrum Analyzer - Swept SA				
Marker 1 25.4800000000	00 GHz PNO: Fast C	Avg Type: Log-Pw	r TRACE 123456	Peak Search
Ref Offset 1 dB	IFGain:Low #Atten: 30 d		Mkr1 25.48 GHz -48.461 dBm	Next Peak
Log 10.0 0.00				Next Pk Right
-20.0			-20.43 dBm	Next Pk Left
-50.0 -60.0 -70.0	nadiver generatives have been also and the standard and the standard and the standard and the standard and the	the and the second s	hyperterranger of the second	Marker Delta
Start 6.00 GHz #Res BW 100 kHz MKR MODE TRC SCL 1 N 1	#VBW 300 kHz	FUNCTION FUNCTION WID	Stop 26.00 GHz ep 1.91 s (1001 pts)	Mkr→CF
2 3 4 5 6 7				Mkr→RefLvl
8 9 10 11 12				More 1 of 2
MSG		STAT	US	



Ch Mid 26GHz – 40GHz

Agilent Spectrum Analyzer - Swe R RL RF 50 Ω Marker 1 38.8520000	DC	SENSE:IN		ALIGN AUTO e: Log-Pwr d:>10(10	02:35:09 PM Mar 05, 2013 TRACE 1 2 3 4 5 6 TYPE M WWWW	Peak Search
Ref Offset 1 d 0 dB/div Ref 20.00 d	IFGain:Low	#Atten: 30 dB			r1 38.852 GHz -43.914 dBm	NextPea
- og 10.0 0.00						Next Pk Righ
-20.0					-20.43 dBm	Next Pk Le
50.0	an Industrial and a start of the start of th	Part and a stress of the second se	ndinationan de la constantion de la constanti			Marker Delt
Start 26.000 GHz Res BW 100 kHz	#VB	W 300 kHz -43.914 dBm	FUNCTION F	Sweep	Stop 40.000 GHz 1.34 s (1001 pts) FUNCTION VALUE	Mkr→C
2						Mkr→RefL
7						Mor 1 of
se 🐼 No Peak Found				STATUS		0





Ch High 30MHz – 3GHz

Agilent Spectrum Analyzer - Swept SA						
M RL RF 50 Ω DC Start Freq 30.000000 MHz		SENSE:IN	Avg	ALIGN AUTO Type: Log-Pwr Iold:>10/10	02:39:31 PM Mar 05, 201 TRACE 1 2 3 4 5 TYPE M MANANA	Frequency
Ref Offset 1 dB	PNO: Fast C IFGain:Low	#Atten: 30 dB			Det PNNNN 1 5.826 87 GH -0.747 dBn	Auto Tune
10.0 0.00 -10.0						Center Freq 3.015000000 GHz
-20.0			^2		20.75 2B	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0	non a secondaria	and a star and a star and a star a	martine and the set	Miller Malanether	un and a second la	Stop Freq 6.000000000 GHz
Start 30 MHz #Res BW 100 kHz	#VB	W 300 kHz	FUNCTION	Sweep	Stop 6.000 GH 571 ms (1001 pts	
1 N 1 f 5.8 2 N 1 f 3.7	26 87 GHz 79 16 GHz	-0.747 dBm -54.209 dBm	Tonenon		TORCHOR VALUE	
3 4 5 6						Freq Offsel 0 Hz
7 8 9 9 10						
11 12 MSG				STATUS		

Ch High 3GHz – 26GHz

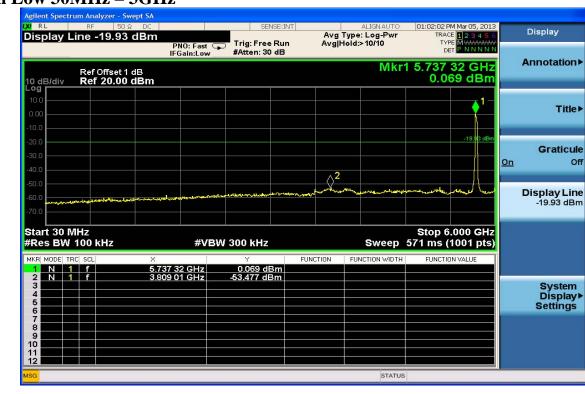
	rum Analyzer - Sw						
Marker 1		2 DC 0000000 GHz	SENSE:		ALIGNAUTO	02:40:35 PM Mar 05, 2013 TRACE 1 2 3 4 5 6	Peak Search
Marker	17.400000	PNO: Fast IFGain:Low		n AvgiH	5id:>10/10	TYPE MWWWWW DET PNNNN	NewtDeak
10 dB/div	Ref Offset 1 Ref 20.00				N	lkr1 17.48 GHz -51.348 dBm	Next Peak
10.0 0.00							Next Pk Right
-20.0 -30.0 -40.0						-20,75 dBm	Next Pk Left
-50.0 -60.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	ڶۥ᠆ _ᠵ ᠬᠯᡘᢝᢗᡯᢗᡌᡇᠰᡘᠺᡀ _ᡘ ᡗᢓᠰᡍᡘᡟᢁ _{ᡄᡄᠧᢘ} ᡈ	and the phile Phile Phile of the rest	are malent at showing the	1	-9-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-2-	Marker Delta
Start 6.00 #Res BW	100 kHz	#V	BW 300 kHz Y -51.348 dBm	FUNCTION	Sweep	Stop 26.00 GHz 1.91 s (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 4 5 6 7							Mkr→RefLvl
8 9 10 11 12							More 1 of 2
MSG					STATUS		

Ch High 26GHz – 40GHz

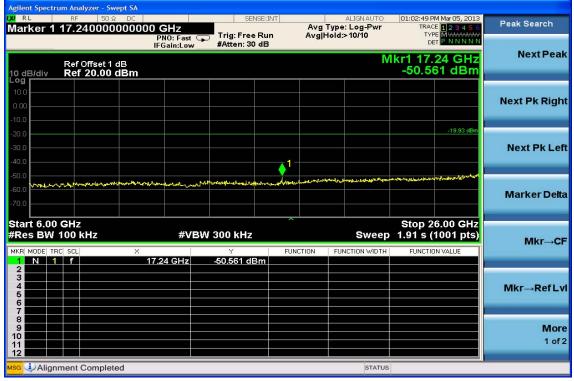
arker 1 30	RF 50 Ω DC 6.4300000000	PNO: Fast C	SENSE:IN Trig: Free Rur #Atten: 30 dB	Avg	ALIGN AUTO Type: Log-Pwr Hold:>10/10	02:41:40 PM Mar 05, 20 TRACE 1 2 3 4 5 TYPE MWWWW DET P N N N	6 Peak Search
0 dB/div	Ref Offset 1 dB Ref 20.00 dBm	IFGain:Low	#Atten: 30 dB		MI	(r1 36.430 GH -45.556 dBr	Next Peak
. og 10.0 0.00							Next Pk Righ
10.0 20.0 30.0 40.0					1	-20.75 dB	Next Pk Lef
50.0			fantangan an the state of the	Karanga Jung Parkang	han an a	and a stand of the	Marker Delta
tart 26.000 Res BW 10	90 kHz		₩ 300 kHz -45,556 dBm	FUNCTION	Sweep	Stop 40.000 GH 1.34 s (1001 pts FUNCTION VALUE	
2 3 4 5 6							Mkr→RefLv
7 8 9 0 1 2							Mor 1 of
s 🐼 No Peal	k Found				STATUS		



Conducted Spurious Emission Measurement Result 802.11n_20M for 5GHz Ch Low 30MHz – 3GHz



Ch Low 3GHz – 26GHz





Ch Low 26GHz – 40GHz

Peak Search	PM Mar 05, 2013 CE 1 2 3 4 5 6 PE M WWWWW ET P N N N N N	TRAC	ALIGNAUTO : Log-Pwr > 10/10	Avg Tyj Avg Hol	un			GHz PNO: Fast ⊂ Gain:Low	2 DC			RL
NextPea	286 GHz 52 dBm	r1 32.2 -47.7	Mk				PAGEN. C	-Gain:Low	dB	Offset 1 f 20.00		dB/div
Next Pk Righ												
Next Pk Lei	-19.93 dBm						1_					.0 .0 .0
Marker Delt	and an advantage	Ale resigned and and and and and and and and and an	yko-re- ^{pro} ntis _t ioru		4,4-11, 134,8 <u>0</u> %g	uli cina un	iguaget the and a gardle and	Water	and to relate the second state of the second s	and de la	and and a second	.0 .0 .0
Mkr→C).000 GHz (1001 pts)	1.34 s (1 51	z	/ 300 kHz	#VB	<u></u>	kHz	V 10	art 26 es B\
Mkr→RefLv	ON VALUE	FUNCTIL	NCTION WIDTH	CTION F		dBm	Υ -47.752 d	86 GHz	× 32.2			N MODE
Mor 1 of												
			STATUS									



Ch Mid 30MHz – 3GHz

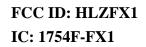
	rum Analyzer - S										
Display	_ine -22.77	Ω DC		SENS	E:INT		e: Log-Pwr	TRA	M Mar 05, 2013		Display
	Ref Offset 1		PNO: Fast IFGain:Low	Trig: Free F #Atten: 30 d		vg Hold	l⇒10/10 <mark>Mkr</mark> 1	тү D 5.785			Annotation►
10 dB/div Log	Ref 20.00							-2.7	72 dBm		
10.0 0.00									1		Title►
-10.0											
-20.0 -30.0 -40.0						2			-22.79 dBm	<u>On</u>	Graticule Off
-50.0 -60.0 -70.0	م بدا دا مور میکرد. مراجع استور میکرد.	وه اله معيا ميا والريق	tere and the second second second	and the second sec	Mannan and Part)~ **********	a mana lar maritya	and a start of the	mandhe		Display Line -22.77 dBm
Start 30 F #Res BW			#VB	W 300 kHz			Sweep		.000 GHz 1001 pts)		
MKR MODE T			5 08 GHz	۲ -2.772 dBr		N FL	JNCTION WIDTH	FUNCTI	ON VALUE		
2 N 4 3 4 5 6		3.77	3 19 GHz	-53.487 dBr	n						System Display▶ Settings
7 8 9											
11 12											
MSG							STATUS				

Ch Mid 3GHz – 26GHz

Agilent Spect	rum Analyzer - Sw	ept SA					
Marker 1		DC 000000 GHz PN0: Fast	SENSE:INT	Avg T	ALIGN AUTO ype: Log-Pwr old:>10/10	01:07:12 PM Mar 05, 2013 TRACE 1 2 3 4 5 6 TYPE M WAAWAAW	Peak Search
10 dB/div	Ref Offset 1 Ref 20.00	IFGain:Low	#Atten: 30 dB			Ikr1 17.36 GHz -49.337 dBm	Next Peak
10.0 0.00							Next Pk Right
-20.0 -30.0 -40.0						22.77 dBin	Next Pk Left
-50.0 -60.0	ri handi panamahagin	the state of the s	ugater an angletic transmission of the second s	and the second second	Star. and a real and a	an a	Marker Delta
Start 6.00 #Res BW	100 kHz	#VE × 17.36 GHz	3W 300 kHz Y -49.337 dBm	FUNCTION	Sweep FUNCTION WIDTH	Stop 26.00 GHz 1.91 s (1001 pts) FUNCTION VALUE	Mkr→CF
2 3 4 5 6 7							Mkr→RefLvl
8 9 10 11 12							More 1 of 2
MSG					STATUS		

Ch Mid 26GHz – 40GHz

Agilent Spectrum	Analyzer - Swept SA		SENSE:	YA INT	ALIGN AUTO	01:07:54 PM Mar 05, 2013	
	9.7100000000	DOO GHZ PNO: Fast		Avg	Type: Log-Pwr Iold:>10/10	TRACE 1 2 3 4 5 6 TYPE M WWWWW	Peak Search
10 dB/div	Ref Offset 1 dB Ref 20.00 dBm	IFGain:Low	#Atten: 30 dE			cr1 29.710 GHz -49.423 dBm	NextPea
10.0 0.00							Next Pk Righ
-20.0		1				-22.77 dBin	Next Pk Le
-50.0 •••••••••••••••••••••••••••••••••••	andregen Antolou transferingen og de stationer	wand when we want the second	all and a second s	Alexander and Alexander	and a second	anan manana ana ang ang ang ang ang ang ang an	Marker Delt
Start 26.000 #Res BW 10	00 kHz		V 300 kHz	FUNCTION	Sweep	Stop 40.000 GHz 1.34 s (1001 pts)	Mkr→C
2 3 4 5 6	f	29.710 GHz	-49.423 dBm				Mkr→RefL
7 8 9 10 11 12							Moi 1 of
ISG					STATUS		





Ch High 30MHz – 3GHz

Agilent Spectrum Analyzer - Swept SA						
IN RL RF 50 Ω DC Display Line -23.23 dBm		SENSE:IN	Avg Ty	ALIGN AUTO	01:09:15 PM Mar 05, 2013 TRACE 1 2 3 4 5 6	Display
Ref Offset 1 dB	PNO: Fast G	Trig: Free Run #Atten: 30 dB	i Avg Ho	ld:>10/10 Mkr1	TYPE DET P NNNNN 5.820 90 GHz -3.231 dBm	Annotation►
Log 10.0 0.00 -10.0					1	Title►
-20.0			<u>^2</u>		-23.23 dBm	Graticule On Off
-50.0 -60.0 -70.0	مرين مريني المريني المريني الم	ىرىمەنىي بىرىمەر يېرىمەر يەرىمەر يەرىمەر يەرىمەر يەرىمەر يەرىپىرى مەرىپىرىمەر يېرىمەر يەرىپىرىمەر يەرىپىرىمەر يەرىپىرىمەر يەرىپىرىمەر يەرىپىرىمەر يەرىپىرىمەر يەرىپىرىمەر يەرىپىرى	Manuar de arrende a ser	A CONTRACTOR OF THE OWNER	man and a second has	Display Line -23.23 dBm
Start 30 MHz #Res BW 100 kHz	#VB\	∿ 300 kHz		Sweep	Stop 6.000 GHz 571 ms (1001 pts)	
	20 90 GHz 97 07 GHz	Y -3.231 dBm -53.587 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	
2 N T T 3.7 3 4 5 6	57 07 982	-55.567 4811				System Display► Settings
7 8 9 9 10 11						
12 MSG				STATUS		

-70 of 94-

Ch High 3GHz – 26GHz

nt Spectrum Analyzer - Swept RL RF 50 Ω rker 1 17.48000000	DC	SENSE: Trig: Free Ru #Atten: 30 dB	Avg n Avg	ALIGN AUTO Type: Log-Pwr Hold:>10/10	02:20:16 PM Mar 05, 2013 TRACE 1 2 3 4 5 6 TYPE M WWWWWW DET P N N N N N	Peak Search
Ref Offset 1 dB B/div Ref 20.00 dB		WAtten: 00 dB		N	lkr1 17.48 GHz -49.876 dBm	Next Pe
o o o						Next Pk Rig
					-23.23 dBm	Next Pk L
	at the state of th	free and all the second and a second		were the second s		Marker D
art 6.00 GHz es BW 100 kHz	#VB	W 300 kHz	~	Sweep	Stop 26.00 GHz 1.91 s (1001 pts)	Mkr→
MODE TRC SCL	× 17.48 GHz	۲ -49.876 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	
						Mkr→Ref
						M 1



Ch High 26GHz – 40GHz

Peak Search	ACE 1 2 3 4 5 6	TRAC	ALIGNAUTO e: Log-Pwr I:>10/10			Trig: Free	0 GHz PNO: Fast	Ω DC	m Analyzer - 5 RF 50 32.66400	RL
NextPea	664 GHz 055 dBm	r1 32.6	Mk		0 dB	#Atten: 30	IFGain:Low		Ref Offset Ref 20.00	dB/div
Next Pk Rig										9
Next Pk Le	-23:23 dBm					1				
Marker De		and and an and an and an and and and and	Station and a state of the stat	with the second s	**	ي رواي رواي رواي رواي رواي رواي رواي روا		A A A A A A A A A A A A A A A A A A A		1.0 1.0
Mkr→(0.000 GHz (1001 pts)	1.34 s (/ 300 kHz	#VB		100 kHz	art 26.0 tes BW
	TION VALUE	FUNCTIO	JNCTION WIDTH	FUNCTION	Bm	Y -47.055 df	.664 GHz	× 32	f	R MODE TR
Mkr→RefL										
Mo 1 o										
			STATUS							



Operation Mode Fundamental Frequency	802.11 g TX CH Low 2412MHz	Test Date Test By	2013/03/11 Dino
Temperature	25 ℃	Pol	Ver./Hor
Humidity	60 %		

Radiated Spurious Emission Measurement Result (below 1GHz) (worst case)

No	Freq	Reading	Factor	Level	Limit	Over Limit	Remark	Pol
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		V/H
1	55.22	44.47	-14.36	30.11	40.00	-9.89	Peak	VERTICAL
2	78.50	49.21	-18.14	31.07	40.00	-8.93	Peak	VERTICAL
3	163.86	42.24	-13.70	28.54	43.50	-14.96	Peak	VERTICAL
4	337.49	38.09	-11.71	26.38	46.00	-19.62	Peak	VERTICAL
5	600.36	39.02	-6.74	32.28	46.00	-13.72	Peak	VERTICAL
6	940.83	33.26	-1.38	31.88	46.00	-14.12	Peak	VERTICAL
1	78.50	52.84	-18.14	34.70	40.00	-5.30	Peak	HORIZONTAL
2	165.80	41.88	-13.86	28.02	43.50	-15.48	Peak	HORIZONTAL
3	233.70	47.67	-14.77	32.90	46.00	-13.10	Peak	HORIZONTAL
4	314.21	38.86	-12.14	26.72	46.00	-19.28	Peak	HORIZONTAL
5	418.00	34.47	-10.16	24.31	46.00	-21.69	Peak	HORIZONTAL
6	655.65	39.37	-5.90	33.47	46.00	-12.53	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.



Operation Mode Fundamental Frequency	802.11g TX CH Mid 2437MHz	Test Date Test By	2013/03/11 Dino
Temperature	25 ℃	Pol	Ver./Hor
Humidity	60 %		

Radiated Spurious Emission Measurement Result (below 1GHz) (worst case)

No	Freq	Reading	Factor	Level	Limit	Over Limit	Remark	Pol
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		V/H
1	55.22	43.52	-14.36	29.16	40.00	-10.84	Peak	VERTICAL
2	78.50	49.76	-18.14	31.62	40.00	-8.38	Peak	VERTICAL
3	165.80	41.22	-13.86	27.36	43.50	-16.14	Peak	VERTICAL
4	338.46	37.65	-11.69	25.96	46.00	-20.04	Peak	VERTICAL
5	600.36	39.34	-6.74	32.60	46.00	-13.40	Peak	VERTICAL
6	940.83	32.29	-1.38	30.91	46.00	-15.09	Peak	VERTICAL
1	78.50	51.26	-18.14	33.12	40.00	-6.88	Peak	HORIZONTAL
2	166.77	41.53	-13.94	27.59	43.50	-15.91	Peak	HORIZONTAL
3	208.48	42.75	-16.15	26.60	43.50	-16.90	Peak	HORIZONTAL
4	313.24	39.31	-12.16	27.15	46.00	-18.85	Peak	HORIZONTAL
5	418.00	35.55	-10.16	25.39	46.00	-20.61	Peak	HORIZONTAL
6	641.10	40.23	-6.11	34.12	46.00	-11.88	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.



Operation Mode Fundamental Frequency	802.11g TX CH High 2462MHz	Test Date Test By	2013/03/11 Dino
Temperature	25 °C	Pol	Ver./Hor
Humidity	60 %		

Radiated Spurious Emission Measurement Result (below 1GHz) (worst case)

No	Freq	Reading	Factor	Level	Limit	Over Limit	Remark	Pol
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB		V/H
1	55.22	44.35	-14.36	29.99	40.00	-10.01	Peak	VERTICAL
2	78.50	53.04	-18.14	34.90	40.00	-5.10	Peak	VERTICAL
3	163.86	42.60	-13.70	28.90	43.50	-14.60	Peak	VERTICAL
4	335.55	37.22	-11.73	25.49	46.00	-20.51	Peak	VERTICAL
5	600.36	37.13	-6.74	30.39	46.00	-15.61	Peak	VERTICAL
6	940.83	32.17	-1.38	30.79	46.00	-15.21	Peak	VERTICAL
1	77.53	51.65	-17.89	33.76	40.00	-6.24	Peak	HORIZONTAL
2	161.92	41.78	-13.53	28.25	43.50	-15.25	Peak	HORIZONTAL
3	310.33	39.96	-12.23	27.73	46.00	-18.27	Peak	HORIZONTAL
4	418.00	34.65	-10.16	24.49	46.00	-21.51	Peak	HORIZONTAL
5	641.10	37.87	-6.11	31.76	46.00	-14.24	Peak	HORIZONTAL
6	940.83	29.44	-1.38	28.06	46.00	-17.94	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.



Operation Mode Fundamental Frequency	8802.11g TX CH Low 2412MHz	Test Date Test By	2013/03/11 Dino
Temperature	25 °C	Pol	Ver./Hor
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	1728.00	53.02	-14.02	39.00	74.00	-35.00	Peak	VERTICAL
2	4824.00	45.68	-2.26	43.42	74.00	-30.58	Peak	VERTICAL
1	4824.00	44.94	-2.26	42.68	74.00	-31.32	Peak	HORIZONTAL
2	4920.00	50.92	-1.94	48.98	74.00	-25.02	Peak	HORIZONTAL

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 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.



-	-		
Operation Mode	802.11g TX CH Mid	Test Date	2013/03/11
Fundamental Frequency	2437MHz	Test By	Dino
Temperature	25 °C	Pol	Ver./Hor
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	4766.00	47.72	-2.45	45.27	74.00	-28.73	Peak	VERTICAL
2	4874.00	45.15	-2.09	43.06	74.00	-30.94	Peak	VERTICAL
1	1735.00	53.05	-13.96	39.09	74.00	-34.91	Peak	HORIZONTAL
2	4874.00	43.90	-2.09	41.81	74.00	-32.19	Peak	HORIZONTAL

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- ² 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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Operation Mode	802.11g TX CH High	Test Date	2013/03/11
Fundamental Frequency	2462MHz	Test By	Dino
Temperature	25 °C	Pol	Ver./Hor
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	2204.00	50.97	-11.73	39.24	74.00	-34.76	Peak	VERTICAL
2	4924.00	44.89	-1.92	42.97	74.00	-31.03	Peak	VERTICAL
1	1735.00	54.69	-13.96	40.73	74.00	-33.27	Peak	HORIZONTAL
2	4924.00	44.71	-1.92	42.79	74.00	-31.21	Peak	HORIZONTAL

- 1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency
- 2 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.



10 Peak Power Spectral Density

10.1 Standard Applicable:

According to §15.247(e) For digitally modulated systems, 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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

According to RSS-210 issue 8, §A8.2(b) and §A8.3(2), The transmitter power spectral density (into the antenna) shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission or over 1.0 second if the transmission exceeds 1.0 second duration.

10.2 Measurement Equipment Used:

Refer to section 6.2 for details.

10.3 Test Set-up:

Refer to section 6.3 for details.

10.4 Measurement Procedure:

Refer to section 9 Measurement Procedure PKPSD:of KDB Document: 558074 D01 DTS Meas Guidance v02

- 1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
- 2. Set the RBW = 100 kHz.
- 3. Set the VBW \geq 300 kHz.
- 4. Set the span to 5-30 % greater than the EBW.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- 10. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = $10\log (3 \text{ kHz}/100 \text{ kHz} = -15.2 \text{ dB})$.
- 11. The resulting peak PSD level must be ≤ 8 dBm.



10.5 Measurement Result:

802.11b Mode

Frequency MHz	Power Density Reading (dBm)/100KHz	BWCF (dB)	Power Density Level (dBm)/3KHz	Maximum Limit (dBm)
2412	8.347	-15.2	-6.853	8
2437	8.225	-15.2	-6.975	8
2462	8.312	-15.2	-6.888	8

BWCF(bandwidth correction factor)= $10\log (3 \text{ kHz}/100\text{KHz})$ kHz = -15.2 dB)

802.11g Mode

Frequency	Power Density	BWCF	Power Density	Maximum Limit
MHz	Reading (dBm)/100KHz	(dB)	Level (dBm)/3KHz	(dBm)
2412	2.592	-15.2	-12.608	8
2437	2.31	-15.2	-12.89	8
2462	2.288	-15.2	-12.912	8

BWCF(bandwidth correction factor)=10log (3 kHz/100KHz) kHz = -15.2 dB)

802.11n HT20 Mode

Frequency MHz	Power Density Reading (dBm)/100KHz	BWCF (dB)	Power Density Level (dBm)/3KHz	Maximum Limit (dBm)
2412	1.067	-15.2	-14.133	8
2437	1.465	-15.2	-13.735	8
2462	1.903	-15.2	-13.297	8

BWCF(bandwidth correction factor)=10log (3 kHz/100KHz) kHz = -15.2 dB)



802.11a HT20 Mode

Frequency MHz	Power Density Reading (dBm)/100KHz	BWCF (dB)	Power Density Level (dBm)/3KHz	Maximum Limit (dBm)
5745	-0.561	-15.2	-15.761	8
5785	-0.906	-15.2	-16.106	8
5825	-2.872	-15.2	-18.072	8

802.11a HT20 Mode

Frequency MHz	Power Density Reading (dBm)/100KHz	BWCF (dB)	Power Density Level (dBm)/3KHz	Maximum Limit (dBm)
MINZ	Reading (ubin)/100KHZ	(UD)	Level (ubili)/3KHZ	(ubiii)
5745	-2.5	-15.2	-17.7	8
5785	-1.075	-15.2	-16.275	8
5825	-0.301	-15.2	-15.501	8



802.11b Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)





Power Spectral Density Test Plot (CH-High)





802.11g

Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)





Power Spectral Density Test Plot (CH-High)





802.11n_20M for 2.4GHz Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)





Power Spectral Density Test Plot (CH-High)





802.11a Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)





Power Spectral Density Test Plot (CH-High)





802.11n_20M for 5GHz Power Spectral Density Test Plot (CH-Low)



Power Spectral Density Test Plot (CH-Mid)





Power Spectral Density Test Plot (CH-High)





11 ANTENNA REQUIREMENT

11.1 Standard Applicable:

According to §15.203, Antenna requirement.

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

According to RSS-GEN 7.1.2, a transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter. When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-210 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be ad ded to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

11.2 Antenna Connected Construction:

The directional gins of antenna used for transmitting is -2.07dBi for 2.4G / 0.7dBi for 5G, and the antenna connector is designed with unique type RF connector and no consideration of replacement. Please see EUT photo and antenna spec. for details.



12 Maximum Permissible Exposure (MPE)

12.1 Standard Applicable

According to \$1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time				
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm^2)	(minute)				
	Limits for General Population/Uncontrolled Exposure							
0.3-1.34	614	1.63	*(100)	30				
1.34-30	824/f	2.19/f	*(180/f ²)	30				
30-300	27.5	0.073	0.2	30				
300-1500	/	/	F/1500	30				
1500-15000	/	/	1.0	30				

F = frequency in MHz

* = Plane-wave equipment power density



12.2 Maximum Permissible Exposure (MPE) Evaluation

The worst case of Average power: refer to section 6.5 for detail measurement date.

$\frac{802.110}{\text{Cable loss} = 0}$		Output Power		Limit
СН	Frequency	Detector		(dBm)
	(MHz)	РК	AV	
		(dBm)	(dBm)	
1	2412	20.05	17.84	
6	2437	20.25	18.09	30
11	2462	20.40	18.16	

802 11h

MPE Prediction (802.11b)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

 $S=PG/4 \pi R^2$

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum average output power at antenna input	18.16	(dBm)
Maximum Average output power at antenna input	65.46361741	(mW)
Duty cycle:	100	(%)
Maximum Pav :	65.46361741	(mW)
Antenna gain (typical):	-2.07	(dBi)
Maximum antenna gain:	0.620869034	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	(MHz)	
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0080900	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.008 mW/cm^2 . This is below the uncontrolled exposure limit of 1 mW/cm² at 2462MHz.



The worst case of Average power: refer to section 6.5 for detail measurement date.

Cable loss = 0		Output Power		Limit
СН	Frequency	Detector		(dBm)
	(MHz)	РК	AV	
		(dBm)	(dBm)	
149	5745	17.53	11.76	
157	5785	16.88	11.52	30
165	5825	17.11	11.84	

802.11n 20MHz(5G)

MPE Prediction (802.11n 20MHz)

Prediction of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

S=PG/4 π R²

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

Maximum average output power at antenna input	11.84	(dBm)
Maximum Average output power at antenna input	15.27566058	(mW)
Duty cycle:	100	(%)
Maximum Pav :	15.27566058	(mW)
Antenna gain (typical):	0.7	(dBi)
Maximum antenna gain:	1.174897555	(numeric)
Prediction distance:	20	(cm)
Prediction frequency:	5825	(MHz)
MPE limit for uncontrolled exposure at prediction	1	(mW/cm2)
Power density at predication frequency at 20 (cm)	0.0035723	(mW/cm^2)

Measurement Result

The predicted power density level at 20 cm is 0.0036 mW/cm^2 . This is below the uncontrolled exposure limit of 1 mW/cm² at 5825MHz.