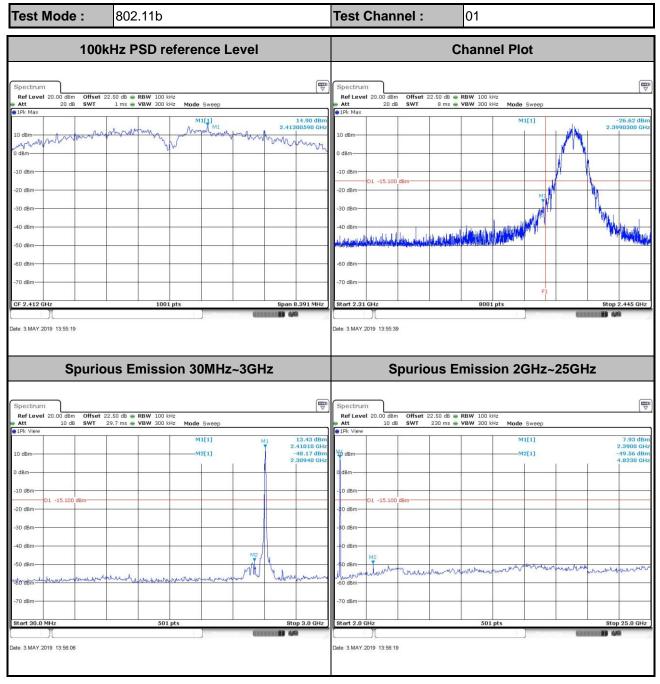


Test Mode :	802.11ac VHT40	Тез	st Channel :	09	
100	100kHz PSD reference Level		Channel Plot		
Att 20 dB SWT     IPk Max     lo dBm	2.447	Ref           0.54 dBm           0250 GHz           10 dB           -10 dC           -20 dB           -0.46           -0.46           -50 dE           -50 dE           -50 dE           -70 dE	20 dB SWT 4	50 db • RBW 100 kHz 8 ms • VBW 300 kHz Mode Sweep M1[1] Shirt + Utility and Shirt - Utility and Shirt - Utility and Shirt - Utility and Shirt - Utility - Ut	
Spurie	ous Emission 30MHz~3GHz		Spuriou	s Emission 2GHz	~25GHz
Spectrum Ref Level 20.00 dBm Offset Att 10 dB SWT	29.7 ms  VBW 300 kHz Mode Sweep			50 dB • RBW 100 kHz 10 ms • VBW 300 kHz Mode Sweep M2[1]	(₩) -47.33 dBm
10 dBm		7300 GHz 0.39 dBm 4570 GHz 0 dBm 7 -10 dE -20 dE			6.9350 GHz -3.87 dBm 2.4360 GHz
-30 dBm -40 dBm -50 dBm -70 dBm -70 dBm	w weeken week	10 de 10 de 10 de 10 de 50 de 70 de	In M2 Im M2 Im M2 Im M2	munderaling	and and and a
Start 30.0 MHz	501 pts Stop	04.2010	2.0 GHz 25.Apr.2019 17:22:12	501 pts	Stop 25.0 GHz



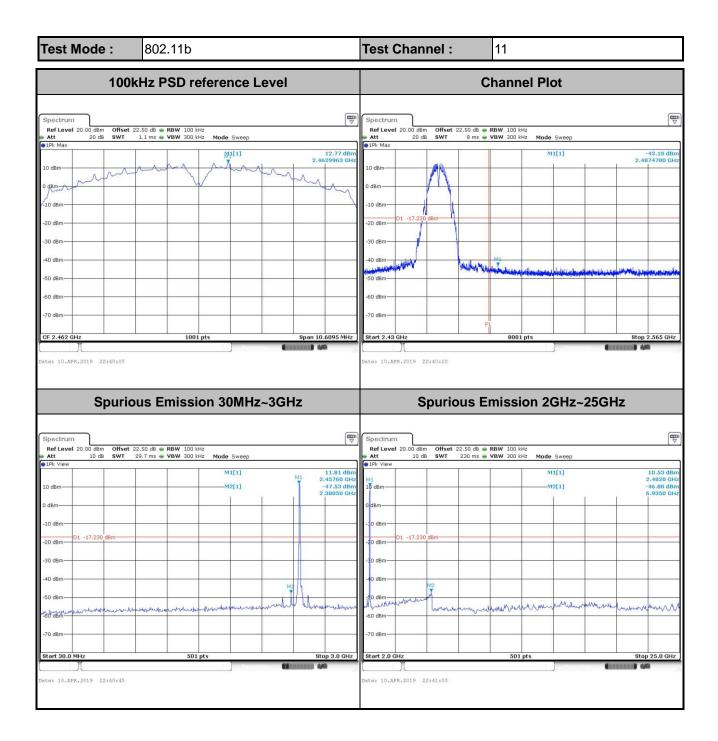
#### Number of TX = 2, Ant. 2 (Measured)



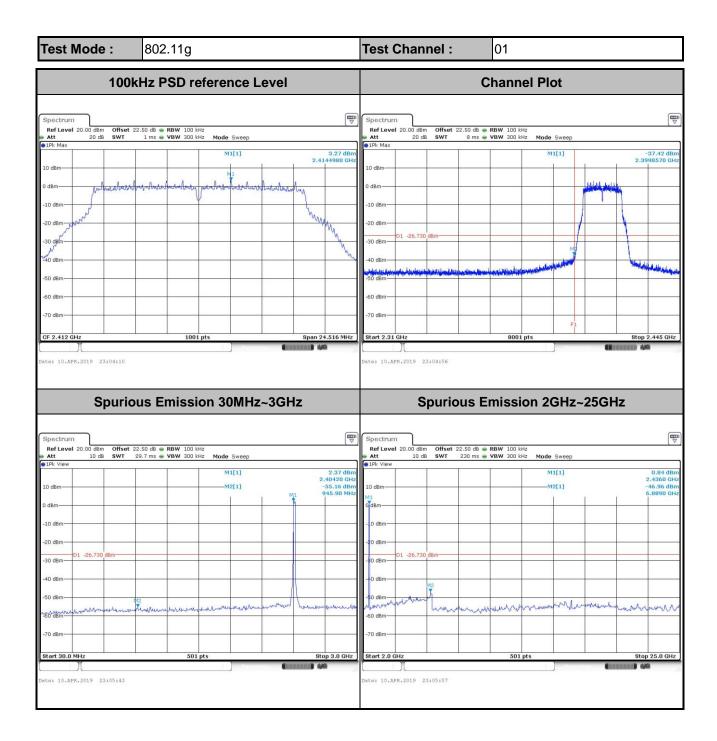


Test Mode :	802.11b	Test Cha	annel: 06	
100k	Hz PSD reference Level		Channel Plot	
Spectrum           Ref Level 20.00 dbm         Offset 2:           10 dbm         SWT           10 dbm         Offset 2:           0 dbm         Offset 2:           10 dbm         Offset 2:           0 dbm         Offset 2:           0 dbm         Offset 2:           0 dbm         Offset 2:           -10 dbm         Offset 2:           -20 dbm         Offset 2:           -30 dbm         Offset 2:           -50 dbm         Offset 2:           -60 dbm         Offset 2:           -70 dbm         Offset 2:           CF 2:437 GHz         Offset 2:           Date: 10.AFE.2019 22:27:29         22:27:29	2.50 dB • RBW 100 kHz 1 ms • VBW 300 kHz Mode Sweep	(\vec{v})		
Spurio	us Emission 30MHz~3G	Hz	Spurious Emission 2GHz~2	25GHz
Spectrum Ref Level 20.00 dBm Offset 2: Att 10 dB SWT 2 PIPk View	29.7 ms 💩 VBW 300 kHz Mode Sweep	e Att 1	dBm Offset 22.50 dB RBW 100 kH= 10 dB SWT 230 ms VBW 300 kHz Mode Sweep	(\)
10 dBm	M1[1] M2[1]	M1 12.94 dBm 2.4390 GHz 2.27380 GHz 0 dBm -10 dBm	M1[1] M2[1]	12.09 dBm 2.4360 GHz -45.00 dBm 4.8690 GHz
01 -15.260 dBm -20 dBm -30 dBm -40 dBm		-20 dBm	2260 d8m	
-50 dBm	research week and a second week of a second s	40 dem -60 dem -70 dem	not have a second a s	neuronant
Start 30.0 MHz	501 pts	Stop 3.0 GHz	501 pts	Stop 25.0 GHz





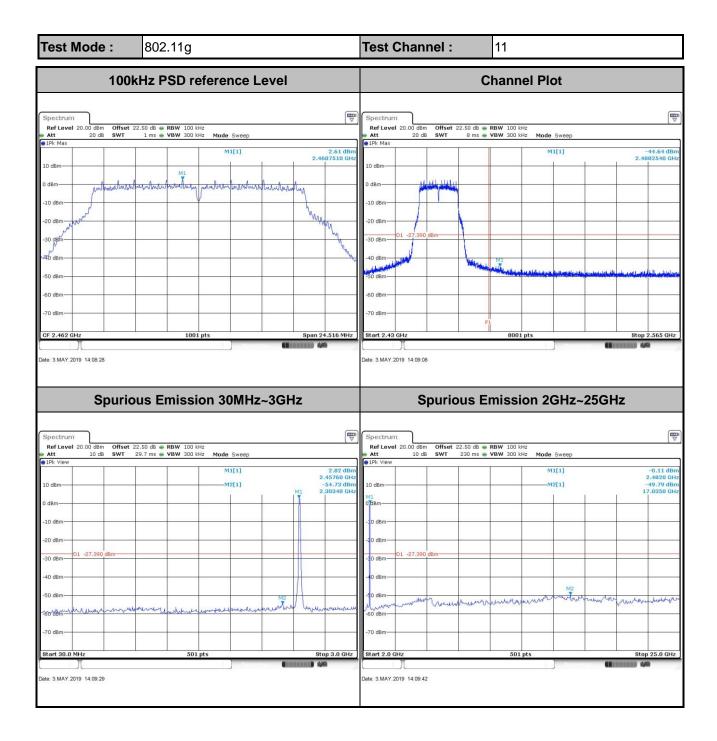






Test Mode :	802.11g	Tes	t Channel :	06	
100k	Hz PSD reference Level			Channel Plot	
Att 20 dB SWT  10 dBm	2.50 dB • RBW 100 kHz 1 ms • VBW 200 kHz Mode Sweep M1[1] MM/MM/MM/MM/MM/MM/MM/MM/MM/MM/MM/MM/MM/	9.01 dBm 2.4420150 GHz			
Spurio	us Emission 30MHz~3GI	Hz	Spurious I	Emission 2GHz~250	GHz
Spectrum           Ref Level 20.00 dbm         Offset 2: SWT           • IPk View           • IPk View           10 dbm           0 dbm           10 dbm           0 dbm           -10 dbm           -20 dbm           -30 dbm      >30 dbm           -30 dbm	2.50 dB      RBW 100 kHz 29.7 ms     VBW 300 kHz Mode Sweep      M1[1]     M2[1]     M		evel 20.00 dbm Offset 22.50 dB 10 dB SWT 230 ms ew 0 db SWT 230 ms 0 d	VBW 300 kHz Mode Sweep      Mi[1]      M2[1]      M2[1]	8.17 dBm 2.4360 GHz -46.88 dBm 6.9810 GHz
Date: 10.APR.2019 23:44:40	501 pts	44	.0 GHZ	501 pts	Stop 25.0 GHz )







Test Mode :	802.11ac VHT20		Test Channel :	01	
100	100kHz PSD reference Level		Channel Plot		
Spectrum           Ref Level 20.00 dBm         Offset           Att         20 dB         SWT           ID dBm         0         0 dBm           10 dBm         0         0 dBm           -10 dBm	122.50 dB @ RBW 100 kHz 1.1 ms @ VBW 300 kHz Mode Sweep M1[1] M1 M2 M2 M2 M2 M2 M2 M2 M2 M2 M2	6.03 dBm 2.4107620 GH2	Spectrum           Ref Level 20.00 dBm         Offset 22.50 dB           • Att         20 dB         SWT         8 ms           • Ith Max         10 dBm         0         0         0           • 10 dBm         0         0         0         0         0           • 10 dBm         0         0         0         0         0         0           • 20 dBm         0         -23.970 dBm         0	VBW 300 kHz     Mode Sweep      M1[1]      M1[1]      M1[1]      M1      M1	-38,18 dBm 2.9970730 GHz
Spuri	ous Emission 30MHz	~3GHz	Spurious	Emission 2GHz~25G	Hz
Spectrum Ref Level 20.00 dBm Offse Att 10 dB SWT	t 22.50 dB <b>● RBW</b> 100 kHz 29.7 ms <b>● VBW</b> 300 kHz <b>Mode</b> Sweep	( <del>m</del>	Spectrum           Ref Level 20.00 dBm         Offset 22.50 dB           Att         10 dB         SWT         230 ms	RBW 100 kHz     VBW 300 kHz     Mode Sweep	
1Pk. View     10 dBm     10 dBm     -20 dBm     -20 dBm     -30 dBm     -30 dBm     -50 dBm     -50 dBm     -70 dBm	M1[1] M2[1] M2 M2 M2 M2 M2 M2 M2 M2 M2 M2	6.34 dBm 2.41610 GHz M1 -54.93 dBm 987.40 MHz 987.40 MHz	19k View      10 dBm      -0 dBm      -70 dBm	M1[1] 	4.26 dBm 2.4360 GHz -47.66 dBm 6.9810 GHz
Start 30.0 MHz	501 pts	Stop 3.0 GHz	Start 2.0 GHz	501 pts	Stop 25.0 GHz



Test Mode :	802.11ac VHT20	Test Channel :	06
100	kHz PSD reference Level	Cł	nannel Plot
Spectrum           Ref Level 20.00 dBm         Offset           4tt         20 dB           9 IPk Max         10 dBm           10 dBm         0 dBm           -10 dBm	22.50 db @ RBW 100 kH2 1.1 ms @ VBW 300 kH2 Mode Sweep M1[1] 9.50 db M2[1] 9.50 db AMAMAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA		
Spurio	ous Emission 30MHz~3GHz	Spurious En	nission 2GHz~25GHz
Spectrum Ref Level 20.00 dBm Offset Att 10 dB SWT	22.50 dB ● RBW 100 kHz 29.7 ms ● VBW 300 kHz Mode Sweep	Spectrum RefLevel 20.00 dBm Offset 22.50 dB RE Att 10 dB SWT 230 ms VI IPk View	3W 100 kHz 3W 300 kHz Mode Sweep
10 dBm 0 dBm -10 dBm -20 dBm -20 dBm -30 dBm -40 dBm -50 dBm -70 dBm -70 dBm -70 dBm -70 dBm -70 dBm	M1[1]         0.85 dB           M2[1]         M1         2.44570 GH           M2[1]         2.24570 GH         -52.02 dB           2.29160 GH         2.29160 GH         -           M1         1.44570 GH         -           M2[1]         M2         2.29160 GH           M2         M2         -           M3         -	M1 10 dBm 0 dBm -10 dBm -20 dBm -30 dBm -0 dBm -0 dBm -0 dBm -0 dBm -10 dB	M1[1] 9.84 GH 2.4360 GH M2[1] -47.15 GB 6.9350 GH 
Date: 11.APR.2019 02:52:06	Contraction of the Contraction o	Date: 11.AFR.2019 02:52:25	Communit (Communit) (449



Test Mode : 802.11ac VHT20	Test Channel : 11
100kHz PSD reference Level	Channel Plot
Spectrum         Image: Spectrum           Ref Level 20.00 dbm         Offset 22.50 db         RBW 100 kHz         Mode Sweep           I Max         0 db         M1[1]         6.35 dbm           10 dbm         M1[1]         6.35 dbm           0 dbm         M1[1]         6.35 dbm           -10 dbm         M1[1]         6.35 dbm           -20 dbm         Muther Max         Muther Max           -30 dbm         Muther Max         Muther Max           -30 dbm         -30 dbm         -40 dbm           -30 dbm         -40 dbm         -40 dbm           -30 dbm         -40 dbm         -40 dbm           -30 dbm         -40 dbm         -40 dbm           -30 dbm         -50 dbm         -50 dbm           -20 dbm         -70 dbm         -70 dbm           -20 dbm         -70 dbm         -70 dbm	Spectrum         W           Ref Lovel 20.00 dBm         Offset 22.50 dB * RBW 100 kHz           10 dBm         20 dB * WT           10 dBm         M1[1]           -43.45 dBm           10 dBm         -43.45 dBm           10 dBm         0 dBm           10 dBm
Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
Spectrum         Image: Constraint of the second secon	Spectrum         Image: Constraint of the second secon



Test Mode :	802.11ac VHT40	Test Channel : 03
100kł	Hz PSD reference Level	Channel Plot
	50 db e PBW 100 kHz 1 ms e VBW 300 kHz Mode Sweep M1[1] -0.56 d 2.4169993 C M1 db/dutter/h/hz 1001 pts Spen 52.6875 MI	Hz         2.3970050 GHz           0 dBm
Spuriou	s Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
1Pk View      10 dBm     0 dBm     -10 dBm     -20 dBm     -20 dBm     -30 dBm     -50 dBm     -50 dBm     -50 dBm     -50 dBm		Hz
Date: 11.APR.2019 03:39:14	source (annual) Ma	Date: 11.APR.2019 03:39:28



Test Mode :	802.11ac VHT40	Test Channel : 06	
100	0kHz PSD reference Level	Channel I	Plot
Spectrum           Ref Level 20.00 dBm         Offse           Att         20 dB         SWT           IPIK Max         10 dBm         0           0 dBm         -0         dBm           -20 dBm	t 22.50 dB e RBW 100 kHz         Mode Sweep           1 ms e VBW 300 kHz         Mode Sweep		
Spuri	ous Emission 30MHz~3GHz	Spurious Emission	2GHz~25GHz
Spectrum           Ref Level 20.00 dlm         Offse           Att         10 dB           10 dBm         0           10 dBm         0           -10 dBm         -           -20 dBm         -           -30 dBm         01 -28,150 dBm           -30 dBm         -           -50 dBm         -           -50 dBm         -           -70 dBm         -           -20 dBm         -           -30 dBm         01 -28,150 dBm           -30 dBm         -           -70 dBm         -           -70 dBm         -           -70 dBm         -	29.7 ms • VBW 300 kHz Mode Sweep	Ref Level 20.00 dBm Offset 22.50 dB . RBW 100 kHz	M1[1]         -0.07 dBm           2.4360 GHz           -M2[1]         -47.87 dBm           6.9350 GHz
Stort 30.0 MHz	501 pts Stop 3.0 GHz	Bitort 2.0 GHz 501 pts	Stop 25.0 GHz

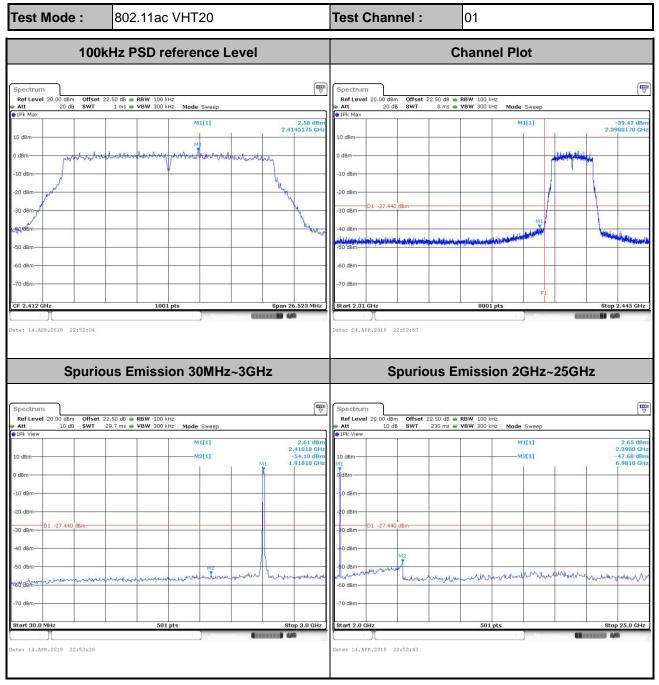


Test Mode : 802.11ac VHT40	Test Channel : 09	
100kHz PSD reference Level	Channel Plot	
Spectrum         Image: Spectrum           Ref Level 20.00 dBm         Offset 22.50 dB         RBW 100 kHz           Att         20 dB         SWT         1 ms         VBW 300 kHz         Mode Sweep           I Pk Max         MI[1]         -0.30 dBm         -0.30 dBm           10 dBm         MI[1]         -0.30 dBm         -0.30 dBm           -10 dBm         MI[1]         -0.470463 GHz         -0.30 dBm           -20 dBm         MI[1]         -0.470463 GHz         -0.30 dBm           -30 dBm         -0.40404 GHz         -0.40404 GHz         -0.40404 GHz           -30 dBm         -0.4040 GHz         -0.4040 GHz         -0.4040 GHz           -50 dBm         -0.4040 GHz         -0.4040 GHz         -0.4040 GHz           -70 dBm<	Ref Level         20.00 dBm         Offset         22.50 dB         RBW 100 kHz         Mode Sweep           IPk Max         -43.59 dBm         -43.59 dBm <t< th=""></t<>	
Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz	
Spectrum         Image: Constraint of the second secon	Spectrum         Image: Constraint of the second of th	



#### <TXBF Modes>

#### Number of TX = 2, Ant. 1 (Measured)





Test Mode : 80	2.11ac VHT20	Test Channel : 06	
100kHz	PSD reference Level	Chan	nel Plot
Spectrum           Ref Level 20.00 dBm         Offset 22.50 dB.           Att         20 dB         SWT         1 ms           ID dBm         Image: Comparison of the set of	● VBW 300 kHz Mode Sweep M1[1] 10.06 dBr M1 2.4337515 GH		
Spurious I	Emission 30MHz~3GHz	Spurious Emis	sion 2GHz~25GHz
Spectrum           Ref Level 20.00 dBm Offset 22.50 dB           Att         10 dB SWT 29.7 ms           DIPK View	RBW 100 kHz     WBW 300 kHz     Mode Sweep	Spectrum     RefLevel 20.00 dBm Offset 22.50 dB ● RBW 10     Att 10 dB SWT 230 ms ● VBW 30     ● IPk View	
10 dBm         0 dBm           0 dBm         0 dBm           -10 dBm	M1[1] 9.05 dBr 	10         dBm           0         dBm           -10         dBm           -20         dBm           -30         dBm           -40         dBm           -50         dBm           -60         dBm           -70         dBm           -70         dBm	MI[1] 7.95 dBm 



Test Mode :	802.11ac VHT20	Test Channel : 11
100	kHz PSD reference Level	Channel Plot
Att 20 dB SWT     PIPk Max     10 dBm	1 22.50 dB • RBW 100 HH2 1 ms • VBW 300 HH2 Mode Sweep M1[1] 2.46102 M1[1] 2.46102	10 dBm
Spuri	ous Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz
Att         10 dB         SWT           • IPk View	2.463 M2[1] -53.2 M1 2.190 M1 2.190 M3 2.190 M3 2.190 M3 2.190 M3 2.190 M3 2.190 M3 2.190 M3 2.190 M3 2.190 M4 2.1	dBm        48.86 dBm         6.9350 GHz           0dBm        6.9350 GHz         6.9350 GHz           -0 dBm         -         -           -0 dBm         -         -           -10 dBm
Stort 30.0 MHz	501 pts Stop 3.1	GHz         S01 pts         Stop 25.0 GHz           Date:         14.AFR.2019         23:50:06



Test Mode :	802.11ac VHT40	Test Channel : 03	
100k	Hz PSD reference Level	Channel Plot	
Spectrum           Ref Level 20.00 dBm         Offset 2: SWT           • IPk Max         0           • IPk Max         0           • O dBm         0           <	2.50 db e RBW 100 kH2 1 ms • VBW 300 kH2 Mode Sweep	Ref Level 20.00 dlm         Offset 22.50 dll @ RBW 100 H4z           Mat         20 dll         B ms @ VBW 200 H4z         Mode Sweep           @1Pk Max         M1[1]         2.9'           I 0 dllm         0 dllm         0         0           -0 dllm         01 - 27.260 dllm         0         0           -0 dllm         0         0         0         0           -0 dllm         0         0         0         0           -70 dllm         0         0         0         0	-96.16 dBm 996710 GHz
Spurio	us Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz	
	2:50 dB = RBW 100 kHz         Mode Sweep           29.7 ms = VBW 300 kHz         Mode Sweep           M1[1]         2.44 dBm           M2[1]         -54.76 dBm           M2[1]         -54.76 dBm           M1         904.40 MHz           M1         904.40 MHz	Perform         Mathematical State         State <thstate< th="">         State         State<th>-1.06 dBm -48.19 dBm 6.8430 GHz</th></thstate<>	-1.06 dBm -48.19 dBm 6.8430 GHz
Date: 15.APR.2019 02:57:41	501 pts Stop 3.0 GHz	Stort 2.0 GHz         S01 pts         Stor           Date:         15.AFR.2019         02:50:12         02:50:12	19 23.0 GHZ )



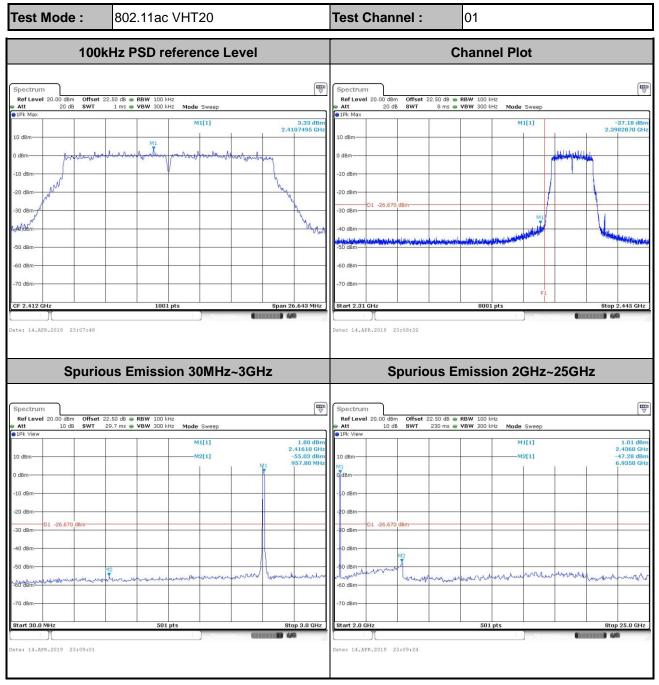
Test Mode :	802.11ac VHT40	Test Channel : 06			
100	0kHz PSD reference Level	Channel Plot			
Spectrum           Ref level 20.00 dbm Offse           Att 20 dB SWT           1Pk Max           10 dbm           0 dbm           -10 dbm           -20 dbm           -20 dbm           -30 dbm           -20 dbm           -20 dbm           -20 dbm           -20 dbm           -20 dbm           -50 dbm           -50 dbm           -50 dbm           -70 dbm           -70 dbm           Date: 15.APR.2019 02:30:54	Ims # VBW 100 kHz         Mode Sweep           Ims # VBW 300 kHz         Mode Sweep				
Spuri	ious Emission 30MHz~3GHz	Spurious Emission	on 2GHz~25GHz		
Att         10 dB         SWT           ●1Pk View	M1[1]         4.95 dbm           M1[1]         4.95 dbm           M1[1]         2.4700 GHz           M2[1]         100 GHZ           M2[1] <th>Spectrum           Ref Level 20.00 dBm         Offset 22.50 dB         RBW 100 kF           Att         10 dB         SWT         230 ms         VBW 300 kF           ID dBm         ID         ID         ID         ID         ID         ID           0 dBm         ID         <th< th=""><th>Z         3.21 dm           M1[1]         3.21 dm          </th></th<></th>	Spectrum           Ref Level 20.00 dBm         Offset 22.50 dB         RBW 100 kF           Att         10 dB         SWT         230 ms         VBW 300 kF           ID dBm         ID         ID         ID         ID         ID         ID           0 dBm         ID         ID <th< th=""><th>Z         3.21 dm           M1[1]         3.21 dm          </th></th<>	Z         3.21 dm           M1[1]         3.21 dm		
Start 30.0 MHz Date: 15.APR.2019 02:31:25	501 pts Stop 3.0 GHz	Stort 2.0 GHz 501	ots Stop 25.0 GHz		



Test Mode : 802.11ac VHT40	Test Channel : 09		
100kHz PSD reference Level	Channel Plot		
Spectrum         With 20 dB         Offset 22.50 dB         RBW 100 kHz         Made Sweep           IPk Max         Ims         VBW 300 kHz         Made Sweep         4.83 dBm           ID dBm         Ims         Ims         4.83 dBm         4.469943 GHz           ID dBm         Ims         Ims         Ims         4.83 dBm           ID dBm         Ims         Ims         Ims         4.83 dBm           ID dBm         Ims         Ims         Ims         Ims         4.83 dBm           ID dBm         Ims         Ims         Ims         Ims         4.83 dBm           ID dBm         Ims         Ims         Ims         Ims         Ims         Ims           ID dBm         Ims         Ims <t< th=""><th>Spectrum         Spectrum           Ref Level         20.00 dBm         Offset         22.50 dB         RBW 100 kH2           1PK         20 dB         SWT         8 ms         VBW 300 kH2         Mode Sweep           1D dBm        </th></t<>	Spectrum         Spectrum           Ref Level         20.00 dBm         Offset         22.50 dB         RBW 100 kH2           1PK         20 dB         SWT         8 ms         VBW 300 kH2         Mode Sweep           1D dBm		
Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz		
Spectrum         Image: Constraint of the second secon	Spectrum         Tro           Ref Level 20.00 dBm         Offset 22.50 dB = RBW 100 kHz         Mode Sweep           Att         10 dB         SWT         230 ms = VBW 300 kHz         Mode Sweep           9 IPk View         M1[1]         2.4300 GHz         -4.40 dBm           10 dBm         M2[1]         6.9010 GHz         -4.7.69 dBm           0 dBm         0.9010 GHz         6.9010 GHz         -4.00 dBm           -0 dBm         -0 dBm         -0 dBm         -0 dBm         -0 dBm           -0 dBm         -0 dBm         -0 dBm         -0 dBm         -0 dBm           -0 dBm         -0 dBm         -0 dBm         -0 dBm         -0 dBm           -0 dBm         -0 dBm         -0 dBm         -0 dBm         -0 dBm           -0 dBm         -0 dBm         -0 dBm         -0 dBm         -0 dBm           -0 dBm         -0 dBm         -0 dBm         -0 dBm         -0 dBm           -0 dBm         -0 dBm         -0 dBm         -0 dBm         -0 dBm           -70 dBm         -0 dBm         -0 dBm         -0 dBm         -0 dBm		



#### Number of TX = 2, Ant. 2 (Measured)





Test Mode :	802.11ac VHT20	Test Channel : 06		
100	kHz PSD reference Level	Channel Plot		
Att 20 dB SWT  PIPk Max	t 22.50 db e RBW 100 kHz         Mode Swep           1ms e VBW 300 kHz         Mode Swep			
Spuri	ous Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz		
Att 10 dB SWT     ● IPk View     10 dBm     0 dBm     -10 dBm     -20 dBm     -20 dBm     -40 dBm	t 22.50 db @ RBW 100 kHz         Mode Sweep           29.7 ms @ VBW 300 kHz         Mode Sweep           M1[1]         11.02 dbm           M2[1]         2.43390 GHz           -51.64 dbm         2.2870 GHz           -51.64 dbm         -51.64 dbm           -51.64 dbm         -51.64 dbm           -51.64 dbm         -51.64 dbm	Ref Level 20.00 dem Offset 22.50 de @ RBW 100 kHz           Att         10 de SWT         230 ms @ VBW 300 kHz         Mode Sweep           @ IPk View         MI[1]         7.86 dBm           10 dBm         MI[1]         2.4360 GHz           0 dBm         M2[1]         -40.48 dBm           -20 dBm         -19.290 dBm         -30 dBm           -30 dBm         -40 dBm         -40 dBm		
-50 dBm -70 dBm -70 dBm Stort 30.0 MHz Date: 14.AFR.2019 23:33:51	501 pts Stop 3.0 GHz	0 dBm         0 dBm <td< td=""></td<>		



Test Mode : 802.11ac VHT20	Test Channel : 11		
100kHz PSD reference Level	Channel Plot		
Spectrum         Offset 22.50 dB @ RBW 100 kHz         Mode Sweep           120 dB @WT         1 ms @ VBW 300 kHz         Mode Sweep           10 dBm         0.71         2.457013           0 dBm         0 dBm         0.11         2.457013           0 dBm         0.11         2.457013         0.71           0 dBm         0.11         2.457013         0.71           0 dBm         0.11         0.41         0.41         0.41           -10 dBm         0.11         0.41         0.41         0.41           -20 dBm         0.50 dBm         0.40         0.41         0.41           -70 dBm         0.70 dBm         0.70         0.70 dBm         0.70         0.70           Date: 15.APR.2019         00:00:46         0.40         0.40         0.40         0.40	i GHZ     10 dBm     2.4852000 GHZ       0 dBm     0 dBm     10 dBm		
Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz		
Spectrum           Ref Lavel         20.00 dBm         Offset         22.50 dB         RBW 100 kHz         Mode         Sweep           • TPL View            2.4633	2.4360 GHz       10 dbm       10 dbm       10 dbm       11 dbm       11 dbm       12 dbm       13 dbm       14 dbm       15 dbm       15 dbm       16 dbm       17 dbm       18 dbm       19 dbm       10 dbm		



Test Mode : 802.11ac VHT40	Test Channel : 03		
100kHz PSD reference Level	Channel Plot		
Spectrum         Image: Spectrum           Ref Level 20.00 dBm         Offset 22.50 dB         RBW 100 HHz           Att         20 dB         SWT         1 ms         VBW 300 HHz         Mode Sweep           I DHk Max         IIII         1.02 dBm         1.02 dBm         1.02 dBm           0 dBm         IIII         2.4169943 GHz         1.02 dBm           -10 dBm         IIII         1.02 dBm         1.02 dBm           -30 dBm         IIIII         1.02 dBm         IIIIII           -30 dBm         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Spectrum         Spectrum           Ref Level         20.00 dBm         Offset         22.50 dB         RBW         100 kHz           IPF: Max         -37.89 dBm         -37.89 dBm         -37.89 dBm         -37.89 dBm           ID dBm         -37.89 dBm         -37.89 dBm         -37.89 dBm         -37.89 dBm           ID dBm         -37.89 dBm         -37.89 dBm         -37.89 dBm         -37.89 dBm           ID dBm         -37.89 dBm         -37.89 dBm         -37.89 dBm         -37.89 dBm           ID dBm		
Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz		
Spectrum         Image: Constraint of the second secon	Spectrum         Image: Constraint of the second secon		



Test Mode :	802.11ac VHT40	Test Channel : 06			
100	kHz PSD reference Level	Channel Plot			
Att 20 dB SWT     1Pk Max     10 dBm	t 22.50 dB = RBW 100 kHz         Mode Sweep           1 ms = VBW 300 kHz         Mode Sweep           1 ms = VBW 100 kHz         M1[1]           4.55 dBm         2.4319993 GHz           4.41 HBM         4.41 HBM           4.41 HBM         4.41 HBM				
Spuri	ous Emission 30MHz~3GHz	Spurious Emissio	n 2GHz~25GHz		
Att 10 dB SWT     DI dB SWT     DI dBm     D dBm     D dBm     D dBm     D1 -25.450 dBm     -30 dBm     -30 dBm     -50 dBm	t 22.50 dB @ RBW 100 kHz           29.7 ms @ VBW 300 kHz           M1[1]         3.56 dBm           M2[1]         1.3.56 dBm           2.2790 GHz         -51.80 dBm           M2[1]         1.2.2790 GHz           M2[1]         2.26190 GHz           M2[1]         1.2.26190 GHz           M2         -51.80 dBm           M3         -51.90 dHz           M	Spectrum           Ref Level 20.00 dBm         Offset 22.50 dB @ RBW 100 kHz           Att         10 dB         SWT         230 ms         VBW 300 kHz           ID         JD         JD <t< th=""><th>Mode Sweep           M1[1]         3.46 dbm          </th></t<>	Mode Sweep           M1[1]         3.46 dbm		
Date: 15.APR.2019 02:36:44	All providence (Table 1996)	Date: 15.AFR.2019 02:37:09			



Test Mode : 802.11ac VHT40	Test Channel : 09		
100kHz PSD reference Level	Channel Plot		
Spectrum         Image: Spectrum           Ref Level 20.00 dBm         Offset 22.50 dB         RBW 100 kHz           4 tt         20 dB         SWT         1 ms         VBW 300 kHz         Mode Sweep           • IPk Max         • III         • 4.62 dBm         • 4.62 dBm           10 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -10 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -20 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -20 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -30 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -20 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -20 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -50 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -50 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -50 dBm         • 0 dBm         • 0 dBm         • 0 dBm         • 0 dBm           -50 dBm         • 0 dBm         • 0 dBm         • 0 dBm <td< th=""><th>Spectrum         Production         Offset 22.50 dB e RBW 100 kH2         Mode Sweep           IPR: Max        </th></td<>	Spectrum         Production         Offset 22.50 dB e RBW 100 kH2         Mode Sweep           IPR: Max		
Spurious Emission 30MHz~3GHz	Spurious Emission 2GHz~25GHz		
Spectrum         Image: Constraint of the second secon	Spectrum         Image: Constraint of the second secon		

# 3.5 Radiated Band Edges and Spurious Emission Measurement

# 3.5.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device was measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

#### 3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

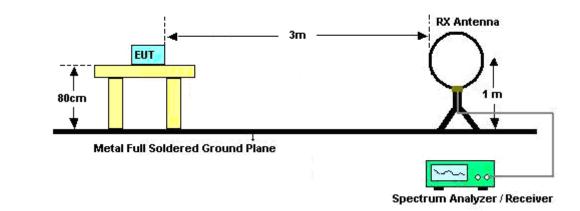
#### 3.5.3 Test Procedures

- 1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements
- 2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
- 3. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
- 4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 5. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level
- 6. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
- 7. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 8. Use the following spectrum analyzer settings:
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Set RBW=100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
  - (3) Set RBW = 1 MHz, VBW= 3MHz for  $f \ge 1$  GHz for peak measurement. For average measurement:
    - VBW = 10 Hz, when duty cycle is no less than 98 percent.
    - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.



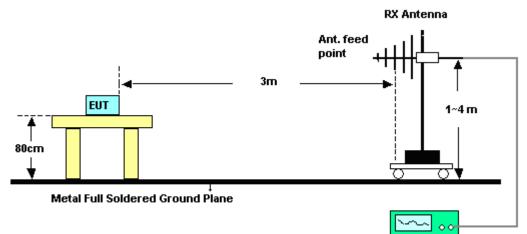
# 3.5.4 Test Setup

For radiated emissions below 30MHz



# For radiated emissions from 30MHz to 1GHz

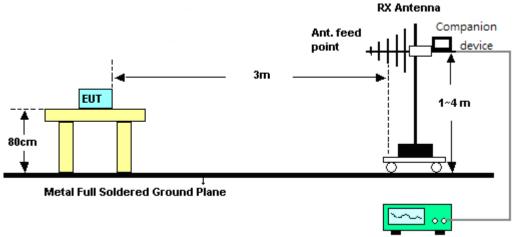
#### <CDD Mode>



Spectrum Analyzer / Receiver



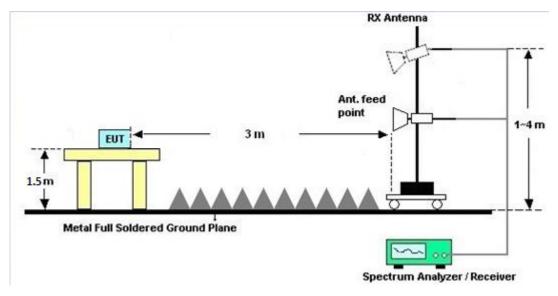
#### <TXBF Modes>



Spectrum Analyzer / Receiver

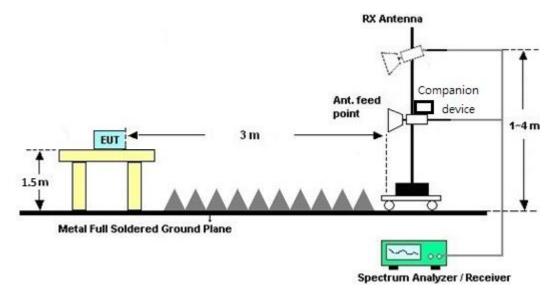
#### For radiated emissions above 1GHz

#### <CDD Mode>





#### <TXBF Modes>



#### 3.5.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

#### 3.5.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C and D.

#### 3.5.7 Duty Cycle

Please refer to Appendix E.

# 3.5.8 Test Result of Radiated Spurious Emission (30MHz ~ 10<sup>th</sup> Harmonic)

Please refer to Appendix C and D.



# 3.6 AC Conducted Emission Measurement

# 3.6.1 Limit of AC Conducted Emission

For equipment that 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 the limits in the following table.

Frequency of Emission	Conducted I	Conducted Limit (dBµV)		
(MHz)	Quasi-Peak	Average		
0.15-0.5	66 to 56*	56 to 46*		
0.5-5	56	46		
5-30	60	50		

\*Decreases with the logarithm of the frequency.

#### 3.6.2 Measuring Instruments

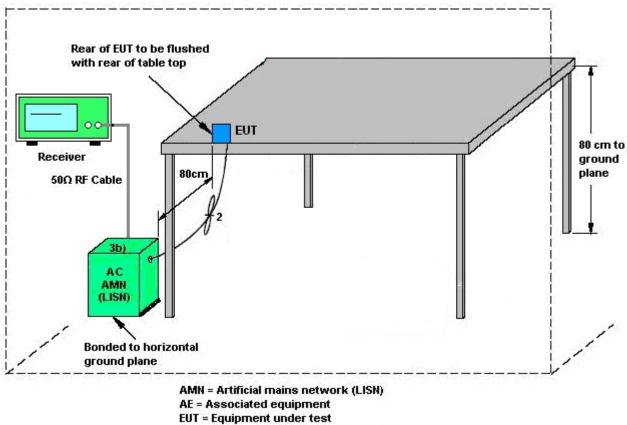
See list of measuring equipment of this test report.

#### 3.6.3 Test Procedures

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room, and it was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.



# 3.6.4 Test Setup



ISN = Impedance stabilization network

# 3.6.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

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# 3.7 Antenna Requirements

# 3.7.1 Standard Applicable

If directional gain of transmitting Antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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 rule.

## 3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

## 3.7.3 Antenna Gain

#### <CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain =  $G_{ANT}$  + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain =  $10 \log(N_{ANT}/N_{SS}=1) dB$ .

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for  $N_{ANT} \le 4$ .

Directional gain may be calculated by using the formulas applicable to equal gain antennas with

GANT set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain  $G_{ANT}$  is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain "DG" is calculated as following table.

<cdd mod<="" th=""><th>es&gt;</th><th></th><th></th><th></th><th></th><th></th></cdd>	es>					
			DG	DG	Power	PSD
			for	for	Limit	Limit
	Ant. 1	Ant. 2	Power	PSD	Reduction	Reduction
	(dBi)	(dBi)	(dBi)	(dBi)	(dB)	(dB)
2.4 GHz	1.80	0.40	1.80	4.14	0.00	0.00

Power Limit Reduction = DG(Power) - 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) - 6dBi, (min = 0)