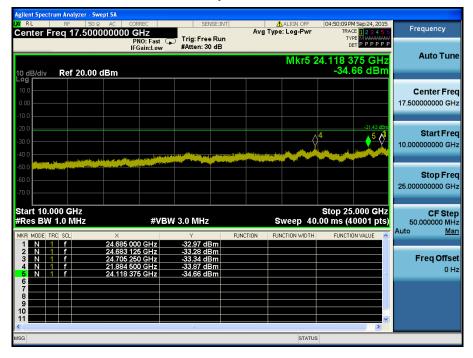


	t Spectr	ım An													
LXI RL		RF		] <u>0</u> [ 4 E 0	∞   co 0 MHz	RREC	SE	NSE:INT	۵		ALIGN OFF		M Sep 24, 2015 CE 123456	Freque	ncy
Cen	ter Fi	eq	15.00	450		NO: Fast	Trig: Fre			vg iype	. Log-r wi	TY			_
						Gain:Low	#Atten: 3	0 dB				C	ETPPPPP		_
											Mkr		5 9 MHz	Auto	o Tune
10 dE	3/div	Re	20.0	0 dB	m							-58.	43 dBm		
Log															_
10.0															er Freq
0.00														15.0045	00 MHz
-10.0															
-20.0									_				-21.43 dBm	Sta	rt Freq
-30.0															000 kHz
-40.0															
-50.0	◊'										<b>2</b> -				
-60.0	A.L.										. ♥⁻.			Sto	p Freq
-70.0	- Mertyley	work.		ef. also		and the second states	in shirt with the second s	the second s	infrantis (Participa	an a	er den de distant	Heyfeled Algebra	and the second states and	30.0000	00 MHz
-70.0															
Star	t 9 kH	z										Stop 3	0.00 MHz	C	F Step
#Re	s BW	100	kHz			#VB	W 300 kH:	2		S	weep 5.3		0001 pts)		00 MHz
MKB 1	MODE TF	CI SCL			×		Y		FUNCTION	FUN	ICTION WIDTH	FUNCTI	ON VALUE	Auto	Man
1	N 1	f				.9 kHz	-51.17 c	Bm							
2	N 1	f			22.835	9 MHz	-58.43 c	Bm						Frea	Offset
4															0 Hz
5		+											=		
7															
8		+													
10															
11													>		
MSG		_									STATUS	DC Co	upled		
	_	_	_	_	_	_		_	_	_					

	IQ AC CORREC	SENSE:INT	ALIGN OFF	04:50:00 PM Sep 24, 2015 TRACE 1 2 3 4 5 6	Frequency
Center Freq 5.015	DUUUUU GHZ PNO: Fast G IFGain:Low	⊃ Trig: Free Run #Atten: 30 dB	Avg Type. Log-Pwr	TYPE MWWWWW DET PPPPP	
10 dB/div Ref 20.00	0 dBm		Mkr1	0 6.063 59 GHz -43.99 dBm	Auto Tune
10.0 0.00 -10.0	1				Center Freq 5.015000000 GHz
-20.0				21.43 dBm	Start Freq 30.000000 MHz
-50.0 top-atting heater (1440) active -60.0					<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBV	<b>/ 3.0 MHz</b>	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 50.000000 MHz Auto <u>Man</u>
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f 6 N 1 f	2.414 08 GHz 6.250 78 GHz 5.440 47 GHz 2.621 20 GHz 6.375 66 GHz 7.493 79 GHz	5.32 dBm -42.61 dBm -43.05 dBm -43.23 dBm -43.37 dBm -43.39 dBm			Freq Offset 0 Hz
7 N 1 f 8 N 1 f 9 N 1 f 10 N 1 f 11 5	2.777 73 GHz 2.831 07 GHz 2.524 99 GHz 6.063 59 GHz	-43.57 dBm -43.92 dBm -43.93 dBm -43.99 dBm		×	
MSG			STATUS		



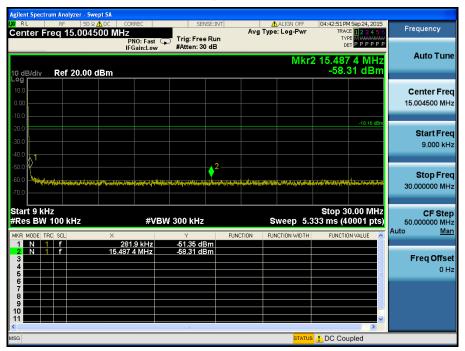




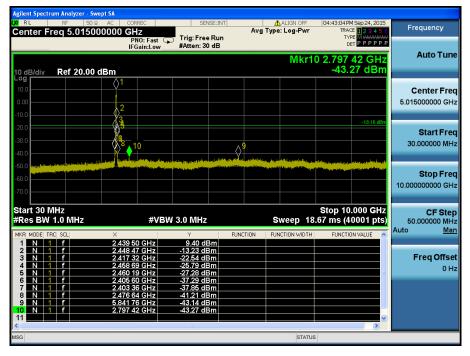
## TM 3 & ANT 1 & Middle

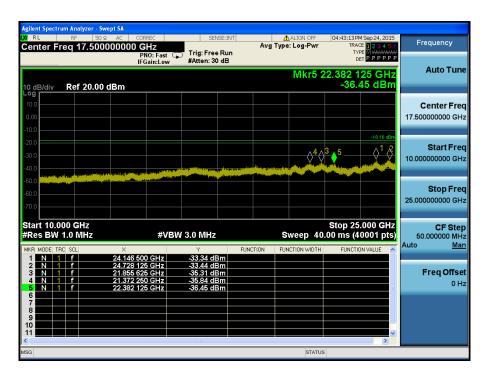


#### Reference









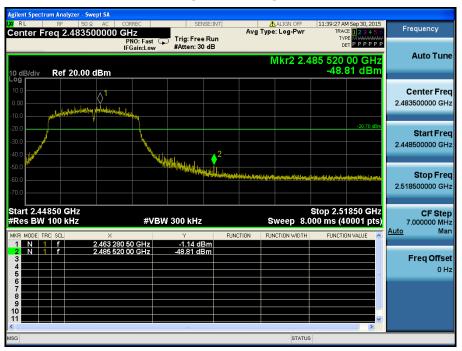


## TM 3 & ANT 1 & Highest



#### Reference

#### **High Band-edge**





	t Spectr	um Ar	nalyze																	
L <mark>XI</mark> RL		RF			<u>▲</u> DC		RREC		SEM	√SE:INT		A		ALIGN OFF			4 Sep 30, 201		Frequency	
Cen	ter F	req	15.	004	500		NO: Fast	0	Trig: Free	Run		AVg I	ype:	Log-Pwr		TY	CE 12345 PE M <del>WAAWAA</del> A	A4		
							Gain:Low		#Atten: 30							D	TPPPP	Р		
														M	220 O	<b>USAE</b>	7 6 MH:		Auto Ti	une
		_												IVI			56 dBn			
10 dE Log	B/div	Re	12	0.00	aBn	1							_			-00.				
10.0																			Center F	rea
0.00																			15.004500 1	- 1
																			15.0045001	
-10.0																				
-20.0																	-20.70 dBr		Start F	rea
-30.0																			9.000	
-40.0																			9.000	KHZ
	<u>_</u> 1																			
-50.0	$\mathbb{N}$						<mark>+</mark> ĕ²−												Stop F	roa
-60.0	-		and the	100 100		alitan di sala		WWWWW	بالمردية والمقارمة	Underle	-	all all and a		with the street	in the state		a la la constante de		•	
-70.0												- distance -							30.000000	MHZ
Star	t9kH	z													St	top 3	0.00 MH;	z	CF S	tep
#Re	s BW	100	kН	z			#V	BW	300 kHz				SV	veep 5	.333 r	ns (4	0001 pts	)	2.999100	
MKB 1	MODE TI	aci so	1			×			Y		FUNC		FLIN	CTION WIDTH	4	FUNCTI	ON VALUE		<u>Auto</u> I	Man
1	N 1	f				298	3.4 kHz		-52.90 di											
2	N 1	f				9.517	6 MHz		-58.56 dE	3m									Freq Off	Foot
3		_																	•	
5																			L. L.	0 Hz
6																				
8		+																		
9																				
10	_	—																		
<									111								>	9		
MSG	_													STAT	JS 🚺 D	C Col	ipled			_
	_	_	_	_	_	_		_	_	_	_	_	_		<u> </u>	0.00	, prod			

lgilent Spectrum Analyzer - S					
RL RF 50 Center Freq 5.0150		SENSE:INT	ALIGN OFF	11:39:48 AM Sep 30, 2015 TRACE 1 2 3 4 5 6 TYPE M WWWWW	Frequency
10 dB/div Ref 20.00	IFGain:Low	#Atten: 30 dB	Mkr1	0 3.022 25 GHz -43.96 dBm	Auto Tune
-og 10.0 0.00	<sup>1</sup>				Center Fred 5.015000000 GH;
20.0 30.0 40.0	2 3 10	  ₽ (\theta <sup>+</sup> 3 <	√7 <sub>0</sub> 5	-20.70 dBm	Start Free 30.000000 MH:
-50.0					Stop Free 10.000000000 GH
tart 30 MHz Res BW 1.0 MHz	#VBV	V 3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Ste 997.000000 MH
MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f	× 2.464 92 GHz 2.443 74 GHz 2.432 52 GHz 5.265 75 GHz	Y F⊍N 6.07 dBm -35.16 dBm -41.92 dBm -43.59 dBm	ICTION FUNCTION WIDTH	FUNCTION VALUE	Auto Ma Freq Offse
5 N 1 f 6 N 1 f 7 N 1 f 8 N 1 f 9 N 1 f	6.217 88 GHz 3.178 03 GHz 5.901 08 GHz 5.387 13 GHz 4.888 38 GHz	-43.74 dBm -43.78 dBm -43.90 dBm -43.91 dBm -43.92 dBm			0 H
10 N 1 f 11 SG	3.022 25 GHz	-43.96 dBm	STATUS		
			of All de		





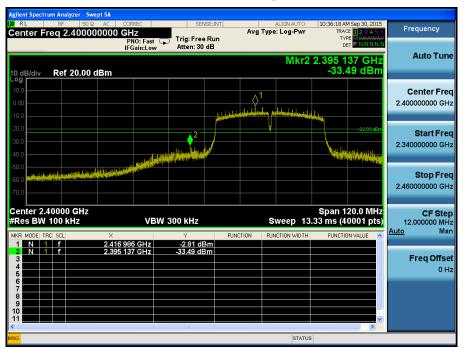


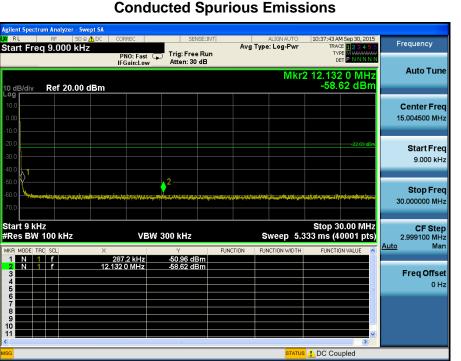
## TM 4 & ANT 1 & Lowest



#### Reference

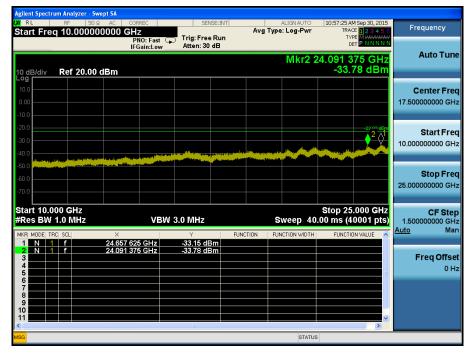
Low Band-edge





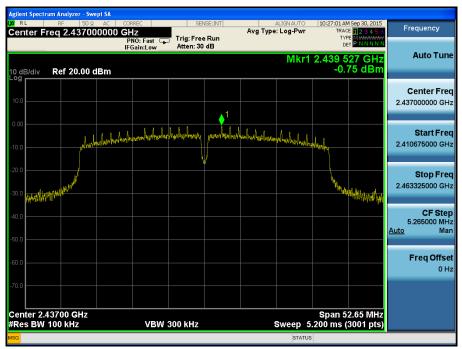
gilent Spectrum Analyzer - S RL RF 50		SENSE:INT	ALIGNAUTO	10:56:48 AM Sep 30, 2015	
Start Freq 30.0000			Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWWW DET PNNNNN	Frequency
10 dB/div Ref 20.00			Mkr	5 5.806 62 GHz -42.72 dBm	Auto Tun
- 0 g 10.0 0.00 10.0					Center Fre 5.015000000 GH
20.0	2 R4				Start Fre 30.000000 MH
50.0 setting for an left of 196 setting 196 60.0					Stop Fre 10.000000000 G⊦
tart 30 MHz Res BW 1.0 MHz	VBW	/ 3.0 MHz		Stop 10.000 GHz .67 ms (40001 pts)	CF Ste 997.000000 MH Auto Ma
MKR MODE TRC SCL	× 2.417 07 GHz 2.380 68 GHz	4.29 dBm -33.13 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 f 4 N 1 f 5 N 1 f	2.340 00 GHz 2.347 36 GHz 5.806 62 GHz	-40.81 dBm -40.33 dBm -42.72 dBm		3	Freq Offs 0 H
6 7 8 9 10					
				×	
sg			STATUS		



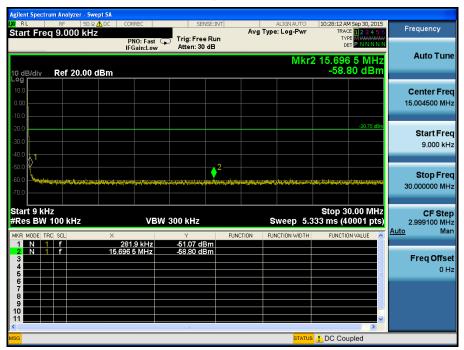




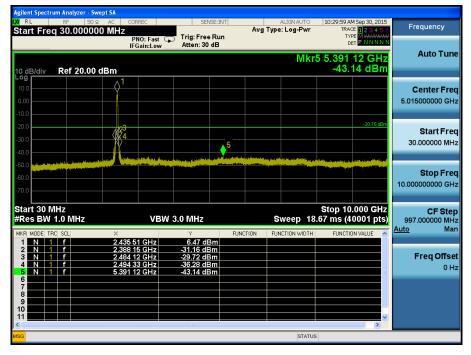
### TM 4 & ANT 1 & Middle



#### Reference







Old   R.L   RF   SD.R. AC   CORREC   SENSE:INT   ALIGNAUTO   10:337AMSep 30, 2015   Frequency     Start Freq 10.000000000 GHz   Trig: Free Run IFGain:Low   Trig: Free Run Atten: 30 dB   Avg Type: Log-Pwr   TRACE   PR0: Fast P IN NHM   Trig: Free Run Atten: 30 dB   Trig: Free Run Atten: 30 dB   Trig: Free Run Cert P IN NHM   Auto Tune     10 dB/div   Ref 20.00 dBm   -32.95 dBm   Center Free 17.500000000 GHz   Center Free 17.500000000 GHz   Trig: Free Run Atten: 30 dB   Trig: Free Run Atten: 30 dB   Trig: Free Run Atten: 30 dB   Center Free 17.500000000 GHz
Mkr2 24.580 750 GHz   Auto Tune     10 dB/div   Ref 20.00 dBm   -32.95 dBm   Center Freq     10 0
10 dB/div Ref 20.00 dBm -32.95 dB
Log   Content   Center Freq     10.0   11.500000000000000000000000000000000000
10.0 0.00 Center Freq 17.50000000 GHz
-10.0
-20.75 dBm
-30.0 -40.0
Len n
-70.0 25.00000000 GHz
Start 10.000 GHz Stop 25.000 GHz CF Step
Start 10.000 GHz Stop 25.000 GHz CF Step #Res BW 1.0 MHz VBW 3.0 MHz Sweep 40.00 ms (40001 pts) 1.50000000 GHz
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE ALLO MAR
1   N   1   f   24.118 000 GHz   -32.48 dBm     2   N   1   f   24.580 750 GHz   -32.95 dBm
3 FreqOffset
MSG STATUS



## TM 4 & ANT 1 & Highest

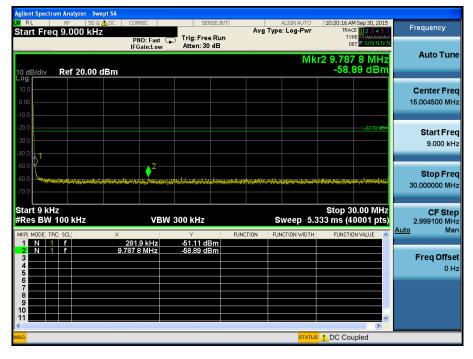


#### Reference

#### **High Band-edge**







Agilent Spectrum Analyzer - S					
KI RE 50 Start Freg 30.0000	DQ AC CORREC	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	10:22:49 AM Sep 30, 2015 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast G IFGain:Low	Trig: Free Run Atten: 30 dB		DET P N'N N N	
10 dB/div Ref 20.0	0 dBm		Mkr	4 5.754 28 GHz -42.45 dBm	Auto Tune
10.0 0.00 -10.0					Center Freq 5.015000000 GHz
-20.0 -30.0 -40.0	2 2		4 4		Start Freq 30.000000 MHz
-50.0					<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	VBW	3.0 MHz	Sweep 18	Stop 10.000 GHz 3.67 ms (40001 pts)	CF Step 997.000000 MHz Auto Man
MKR   MODE   TRC   SCL     1   N   1   f     2   N   1   f     3   N   1   f	× 2.454 45 GHz 2.498 57 GHz 2.391 15 GHz	4.77 dBm -35.72 dBm -38.31 dBm	ICTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset
4   N   1   f     5   -   -   -     6   -   -   -     7   -   -   -     9   -   -   -     10   -   -   -	5.754 28 GHz	-42.45 dBm			0 Hz
11				×	
MSG			STATU	3	







### TM 1 & ANT 2 & Lowest

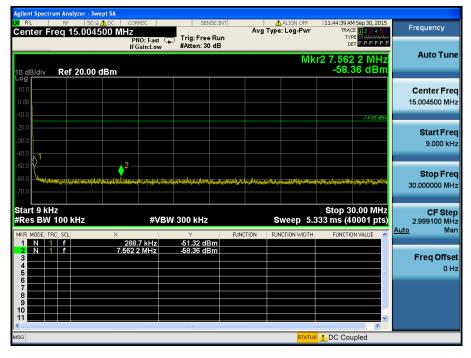


#### Reference

Low Band-edge







gilent Spectru V RL	um Analyzer - Swo RF 50 Q		REC	SEN	SE:INT		ALIGN OFF	11:44:52 A	M Sep 30, 2015	
enter Fr	req 5.01500	PN	Z IO: Fast 🕞 ain:Low	Trig: Free #Atten: 30			e: Log-Pwr	TRA	CE 123456 PE M WWWWWW ET P P P P P P	Frequency
10 dB/div	Ref 20.00 (		ain:Low	Pricen. 00			Mkr1		67 GHz 53 dBm	Auto Tune
10.0 0.00		1 							-14.66 dBm	Center Fred 5.015000000 GH
20.0 30.0 40.0			la Allenha na positi da Auro	للفرانان		10 87	¢ <sup>5</sup>			Start Free 30.000000 MH:
-50.0					<u>, 1<sup>2</sup> 80 12 12 12 12 12 12 12 12 12 12 12 12 12 </u>					Stop Fred 10.000000000 GH
Start 30 M Res BW			#VBW	/ 3.0 MHz		ş	Sweep 18		.000 GHz 0001 pts)	CF Stej 997.000000 MH Auto Ma
MKR MODE TR 1 N 1 2 N 1 3 N 1 4 N 1 5 N 1 6 N 1 7 N 1	IC SCL f f f f f f f f f	× 2.413 33 2.397 63 5.760 26 5.804 13 7.164 78 2.513 28 6.542 18	3 GHz 5 GHz 3 GHz 3 GHz 3 GHz 5 GHz	Y 8.49 dB -35.04 dB -42.00 dB -42.82 dB -43.11 dB -43.37 dB -43.39 dB	m m m m	TION FU	NCTION WIDTH	FUNCTI	DN VALUE	Freq Offse 0 H
8 N 1 9 N 1 10 N 1 11	f f f	6.434 99 6.380 89 5.956 6	3 GHz 9 GHz	-43.44 dB -43.45 dB -43.53 dB	m m				~	
G							STATUS	5		



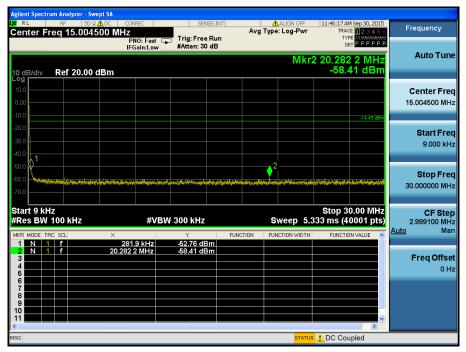




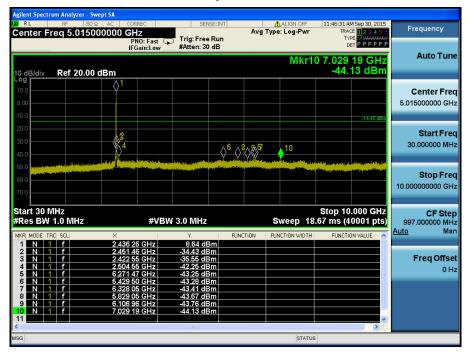
## TM 1 & ANT 2 & Middle



#### Reference







Agilent Spectrum Analyzer - Swept SA					
X/RL RF 50Ω AC		SENSE:INT	ALIGN OFF	11:46:39 AM Sep 30, 2015	Frequency
Center Freq 17.500000	PNO East Tri	g: Free Run iten: 30 dB	Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWWW DET PPPPP	
10 dB/div Ref 20.00 dBm			Mkr5 2	4.017 125 GHz -35.37 dBm	Auto Tune
Log 10.0 0.00				-14.45 dBm	Center Freq 17.500000000 GHz
-20.0		directory and formation in the state of the			Start Freq 10.000000000 GHz
-50.0					<b>Stop Fred</b> 25.000000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VBW 3.0	MHz	Sweep 40.	Stop 25.000 GHz 00 ms (40001 pts)	<b>CF Step</b> 1.50000000 GHz
		Y FUNCTIO	ON FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 24. 3 N 1 f 21. 4 N 1 f 21. 5 N 1 f 24. 6	163 375 GHz -34 909 250 GHz -35 728 500 GHz -35	1.74 dBm 1.74 dBm 1.9 dBm 1.36 dBm 1.37 dBm			Freq Offset 0 Hz
7 8 9 10 11				×	
<				>	

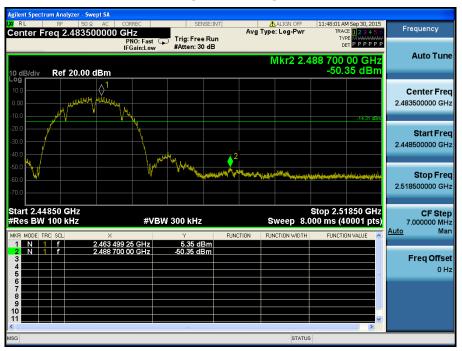


## TM 1 & ANT 2 & Highest



#### Reference

#### **High Band-edge**





Agilent Spectrum Analyzer - Swept SA					
K RL RF 50 Ω ADC	CORREC	SENSE:INT	ALIGN OFF	11:48:08 AM Sep 30, 2015 TRACE 1 2 3 4 5 6	Frequency
Center Freq 15.004500	PNO: Fast C Trig: 1	Free Run	Type: Log-Pwr	TYPE MWWWWWW DET P P P P P P	
	IFGain:Low #Atter	n:30 dB		DETPPPP	
			Mkr	2 28.551 4 MHz	Auto Tune
10 dB/div Ref 20.00 dBm				-58.25 dBm	
Log					
10.0					Center Freq
0.00					15.004500 MHz
-10.0					
-20.0				-14.31 dBm	
					Start Freq
-30.0					9.000 kHz
-40.0					
-50.0 🔶 -				<u> </u>	
-60.0	an a	dan dalam dalah ing punch wasa inter-	den da da da se da se da se		Stop Freq
-70.0	and shall be a special the second second	error for the well south from your test of the disk to		and a part of the state of the	30.000000 MHz
10.0					
Start 9 kHz				Stop 30.00 MHz	CF Step
#Res BW 100 kHz	#VBW 300 k	Hz	Sweep 5.3	333 ms (40001 pts)	2.999100 MHz
MKR MODE TRC SCL X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f		3 dBm			
2 N 1 f 28	8.551 4 MHz -58.2	5 dBm			Freq Offset
4					0 Hz
5				Ξ.	0112
7					
8					
10					
11				~	
<					
MSG			STATUS	L DC Coupled	

Agilent Spectrum Analyzer - Sw	AC CORREC	SENSE:INT	ALIGN OFF	11:48:21 AM Sep 30, 2015	
Center Freq 5.01500			Avg Type: Log-Pwr	TRACE 123456 TYPE MWAWAWA DET P P P P P P	Frequency
10 dB/div Ref 20.00		#Atten: 30 dB	Mkr1	0 6.249 29 GHz -43.82 dBm	Auto Tune
10.0 0.00 -10.0				-14.31 dBm	Center Freq 5.015000000 GHz
-20.0 -30.0 -40.0	<b>2</b> <b>4</b> 6 79		5 <b>£10</b>		Start Freq 30.000000 MHz
-50.0					<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBV	<b>/ 3.0 MHz</b>	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz Auto Man
MAR MUDE   FIC   SL     1   N   1   f     2   N   1   f     3   N   1   f     4   N   1   f     5   N   1   f     6   N   1   f     7   N   1   f     8   N   1   f	2.460 94 GHz 2.476 39 GHz 2.447 48 GHz 2.434 27 GHz 5.733 84 GHz 2.662 38 GHz 3.184 01 GHz 6.143 11 GHz	Y   FU     8.79 dBm			Freq Offset 0 Hz
9 N 1 f 10 N 1 f 11 s MSG	3.273 49 GHz 6.249 29 GHz	43.67 dBm 43.82 dBm	STATUS	×	







### TM 2 & ANT 2 & Lowest

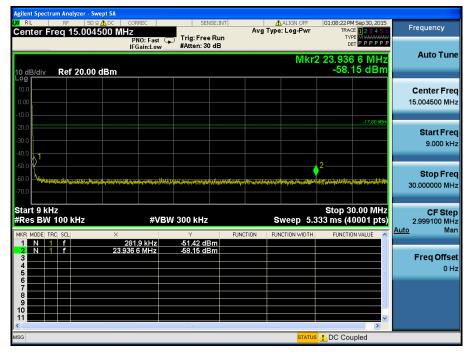


#### Reference

Low Band-edge







	50 Ω AC CORREC	SENSE:INT	ALIGN OFF	01:08:35 PM Sep 30, 2015	Frequency
enter Freq 5.015	5000000 GHz PNO: Fast G IEGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 123456 TYPE M WWWWWW DET PPPPP	requeries
0 dB/div Ref 20.0	00 dBm		Mkr1	0 7.651 32 GHz -43.62 dBm	Auto Tun
.og 10.0 0.00 10.0					Center Fre 5.015000000 GH
20.0 30.0 40.0	2 3 5 7			-17.80 dBm	Start Fre 30.000000 MH
50.0					<b>Stop Fre</b> 10.000000000 GH
tart 30 MHz Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Ste 997.000000 MH Auto Ma
IKR MODE TRC SCL	× 2.414 57 GHz 2.397 38 GHz	Y FUN 10.49 dBm -24.66 dBm	CTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma
2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	2.389 15 GHz 2.387 41 GHz 2.446 48 GHz	-35.24 dBm -39.47 dBm -39.65 dBm		Ξ.	Freq Offse 0 H
6 N 1 f 7 N 1 f 8 N 1 f 9 N 1 f	6.422 51 GHz 3.309 38 GHz 5.752 03 GHz 6.189 22 GHz	-43.27 dBm -43.28 dBm -43.38 dBm -43.48 dBm			
10 N 1 F	7.651 32 GHz	-43.62 dBm		×	
SG			STATUS	3	



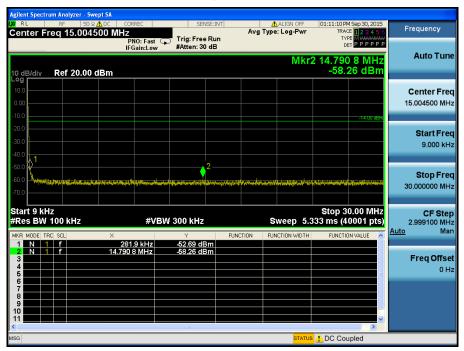




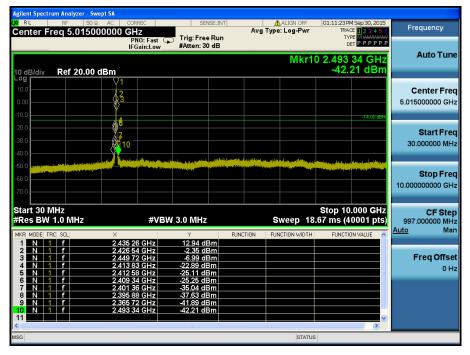
## TM 2 & ANT 2 & Middle



#### Reference







Agilent Spectrum Analyzer - Swept SA					
LX RL RF 50 Q AC			01:11:31 PM Sep 30, 2015	Frequency	
Center Freq 17.5000000	PNO: Fast IFGain:Low #Atten: 30 dB	Avg Type: Log-Pwr n	TRACE 1 2 3 4 5 6 TYPE M WWWWWWW DET PPPPP		
10 dB/div Ref 20.00 dBm		Mkr5	21.914 875 GHz -35.49 dBm	Auto Tune	
10.0 0.00 -10.0			-14.UU Obm	Center Freq 17.500000000 GHz	
-20.0			5 <sup>42</sup>	Start Freq 10.000000000 GHz	
-50.0 -70.0				Stop Freq 25.00000000 GHz	
Start 10.000 GHz #Res BW 1.0 MHz					
MKR MODE TRC SCL X	22 375 GHz -32.77 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mar	
3 N 1 f 21.3 4 N 1 f 23.9 5 N 1 f 21.9	45 750 GHz -34.57 dBm 27 625 GHz -34.90 dBm 86 375 GHz -35.10 dBm 14 875 GHz -35.49 dBm			Freq Offset 0 Hz	
6 7 8 9 10					
11	ш. Ш		×		
MSG		STATU	s		



## TM 2 & ANT 2 & Highest

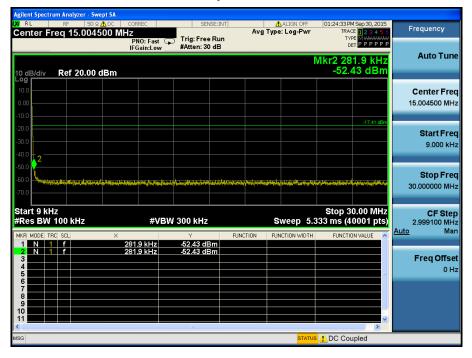


#### Reference

#### **High Band-edge**







N <mark>gilent Spectrum Analyzer - Sw</mark> M RL RF 50 Q		SENSE:INT	ALIGN OFF		
Center Freq 5.0150	00000 GHz		Avg Type: Log-Pwr	01:24:46 PM Sep 30, 2015 TRACE 1 2 3 4 5 6 TYPE M WARMANN	Frequency
	PNO: Fast 🖵 IFGain:Low	#Atten: 30 dB		DETPPPP	
10 dB/div Ref 20.00	dBm		Mkr1	0 5.921 27 GHz -43.87 dBm	Auto Tune
10.0	<b>≬</b> 1				Center Fred
0.00					5.015000000 GHz
-10.0	A3			-17.41 dBm	
-20.0	5				Start Fred
-30.0	A <sup>79</sup> (A <sup>79</sup>	<mark>8</mark>	10 <sub>0</sub> 6		30.000000 MHz
-50.0					
-60.0					Stop Free 10.00000000 GH
-70.0					10.00000000 GH.
Start 30 MHz #Res BW 1.0 MHz	#VBW	' 3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MH
MKR MODE TRC SCL	X		ICTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mai
2 N 1 f	2.460 44 GHz 2.445 73 GHz	9.70 dBm -21.71 dBm			
3 N 1 f 4 N 1 f	2.480 13 GHz 2.478 88 GHz	-23.31 dBm -24.74 dBm			Freq Offse
5 N 1 f	2.437 76 GHz	-36.70 dBm		∃	0 Н
6 N 1 f	6.365 19 GHz 3.137 90 GHz	-43.14 dBm -43.34 dBm			
8 N 1 f	5.386 88 GHz	-43.66 dBm			
9 N 1 f	3.232 61 GHz	-43.82 dBm			
<mark>10 N 1 f</mark>	5.921 27 GHz	-43.87 dBm			
		10		>	





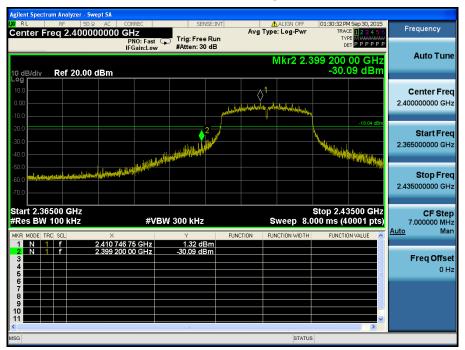


### TM 3 & ANT 2 & Lowest



#### Reference

Low Band-edge





Agilent Spectrum Analyzer - Swept SA					
Center Freq 15.004500	MHz	Avg Type		40 PM Sep 30, 2015 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 20.00 dBm	PNO: Fast Trig: Free IFGain:Low #Atten: 30	dB		298.4 kHz 2.25 dBm	Auto Tune
10.0 0.00 -10.0					Center Freq 15.004500 MHz
-20.0				-18.04 dBm	Start Freq 9.000 kHz
-50.0	namungal statistican yike ee aan andrik ta yah	ngingi dhera a denter da rangena si tinada	vartulajatkoparentiitiivikalarist	yanta yang saya sha hara	Stop Freq 30.000000 MHz
Start 9 kHz #Res BW 100 kHz	#VBW 300 kHz		weep 5.333 m		<b>CF Step</b> 2.999100 MHz <u>Auto</u> Man
MMM MODE THU SLL A 1 N 1 F 2 N 1 F 3 4 4 4 5 6 6 6 7 7 8 8 9 10 10 11 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	298 4 kHz 52.25 dB 298.4 kHz 52.25 dB	m		~	Freq Offset 0 Hz
MSG			STATUS 🥂 DC	Coupled	

Instant down   Mkr10 2.459 94 GHz -43.34 dBm   Auto Tune     10 dB/div   Ref 20.00 dBm   -43.34 dBm   Center Free 5.01500000 GHz     100   1   2   2   2   2   1	Agilent Spectrum Analyzer - Swe Mark RL RF 50 Q Center Freq 5.01500	AC CORREC	SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	01:30:53 PM Sep 30, 2015 TRACE 1 2 3 4 5 6 TYPE M WMMMMMM DET P P P P P P	Frequency
100 1	10 dB/div Ref 20.00 d	IFGain:Low		Mkr1	0 2.459 94 GHz	Auto Tune
200 300 10 9 <td>0.00</td> <td>1 </td> <td></td> <td></td> <td></td> <td>Center Freq 5.015000000 GHz</td>	0.00	1 				Center Freq 5.015000000 GHz
CF   CF   CF   CF   CF   Stop   Freq   Offset     0   1	-30.0	23 357 10 09 10 09	مەشىرى يولغان . يى	smetti utafaktat, juni dian uztatu, - ,	-18.04 dBm	Start Freq 30.000000 MHz
#Res BW 1.0 MHz   #VBW 3.0 MHz   Sweep 18.67 ms (40001 pts)   997.00000 MHz     MKR MODE TRC SCL   X   Y   FUNCTION   FUNCTION WIDTH   FUNCTION VALUE     1   N   1   f   2.4394.39 GHz   -2.311 dBm   -	-60.0					<b>Stop Freq</b> 10.000000000 GHz
1 N 1 f 2.410.34 GHz 8.66 dBm   2 N 1 f 2.311 dBm F   3 N 1 f 2.432 92 GHz -23.11 dBm F   4 N 1 f 2.432 92 GHz -25.11 dBm F 0 Hz   5 N 1 f 2.389 0 GHz -30.18 dBm O Hz 0 Hz   6 N 1 f 2.387 66 GHz -30.18 dBm O Hz 0 Hz   7 N 1 f 2.437 01 GHz -36.66 dBm O Hz 0 Hz   9 N 1 f 3.141 99 GHz -42.42 dBm 0 Hz 0 Hz   9 N 1 f 2.459 94 GHz -42.93 dBm 0 Hz 0 Hz   10 N 1 f 2.459 94 GHz -43.34 dBm 0 Hz 0 Hz	#Res BW 1.0 MHz				.67 ms (40001 pts)	CF Step 997.000000 MHz Auto Man
	1   N   1   f     2   N   1   f     3   N   1   f     4   N   1   f     5   N   1   f     6   N   1   f     7   N   1   f     8   N   1   f     9   N   1   f     10   N   1   f     11	2,410 34 GHz 2,394 39 GHz 2,428 28 GHz 2,431 27 GHz 2,388 90 GHz 2,387 66 GHz 2,437 01 GHz 2,451 71 GHz 3,141 89 GHz	8.66 dBm -23.11 dBm -25.11 dBm -29.84 dBm -30.18 dBm -34.36 dBm -36.66 dBm -42.42 dBm -42.93 dBm	FORCERON FORCERON WIDTH	~	Freq Offset 0 Hz



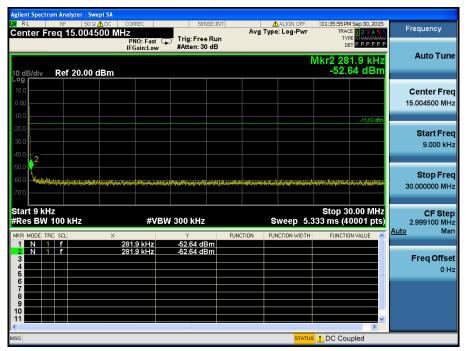




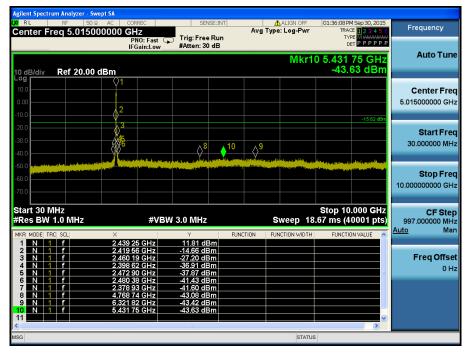
## TM 3 & ANT 2 & Middle

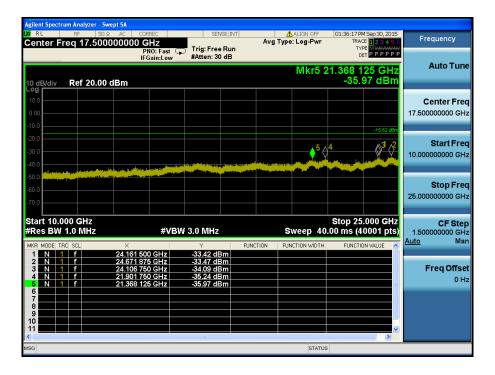


#### Reference











# TM 3 & ANT 2 & Highest

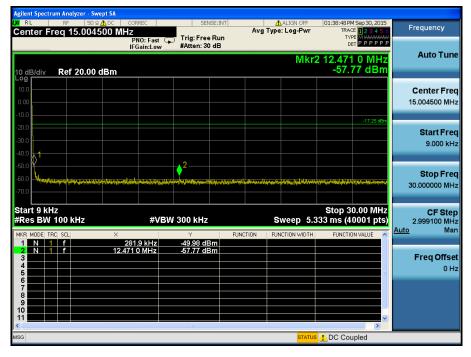


### Reference

### **High Band-edge**







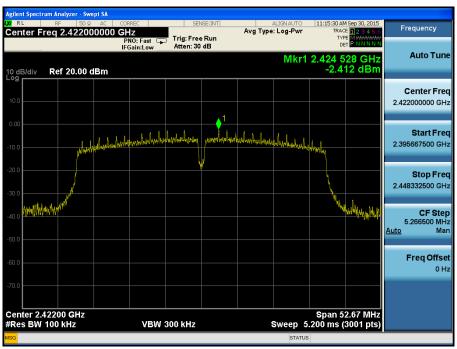
RL RF 50	DQ AC CORREC	SENSE:INT	ALIGN OFF	01:39:01 PM Sep 30, 2015	-
enter Freq 5.015	000000 GHz PNO: Fast C IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 123456 TYPE M WANNAM DET PPPPP	Frequency
0 dB/div Ref 20.0			Mkr1	) 2.434 27 GHz -37.17 dBm	Auto Tun
					Center Fre 5.015000000 G⊦
0.0				-17.25 dBm	Start Fre 30.000000 M⊦
0.0 0.0					<b>Stop Fre</b> 10.00000000 G⊦
tart 30 MHz Res BW 1.0 MHz	#VBI	N 3.0 MHz	Sweep 18	Stop 10.000 GHz 67 ms (40001 pts)	<b>CF Ste</b> 997.000000 M⊦ Auto Ma
KR MODE TRC SCL	X		CTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ivia
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f 6 N 1 f	2.460 44 GHz 2.448 47 GHz 2.443 99 GHz 2.442 24 GHz 2.477 14 GHz 2.482 37 GHz	9.68 dBm -16.66 dBm -21.13 dBm -21.70 dBm -22.11 dBm -28.01 dBm			Freq Offs 0 ⊦
7 N 1 f 8 N 1 f 9 N 1 f 0 N 1 f	2.482 37 GHz 2.484 36 GHz 2.486 11 GHz 2.438 00 GHz 2.434 27 GHz	-28.23 dBm -32.48 dBm -33.11 dBm -37.17 dBm			
		10		>	





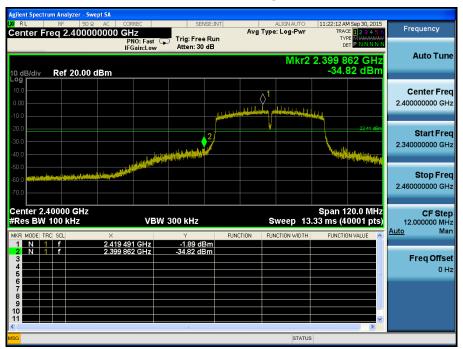


## TM 4 & ANT 2 & Lowest

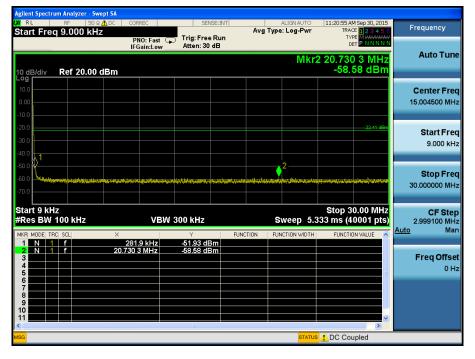


### Reference

Low Band-edge

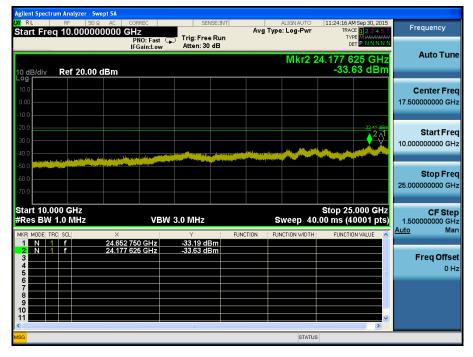






Agilent Spectrum Analyzer - Swept SA						
₩ RL RF 50Ω AC Start Freq 30.000000 MHz	CORREC	SENSE:INT	AL Avg Type: L		3:47 AM Sep 30, 2015 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 30 dB			DET P N N N N N	
	II Gam.cow			Mkr4 2.3	343 04 GHz	Auto Tune
10 dB/div Ref 20.00 dBm				-	44.13 dBm	
Log 10.0						Center Freq
0.00						5.015000000 GHz
-10.0						
-20.0					22.41 dBm	
-30.0	_		<u> </u>			Start Freq 30.000000 MHz
-40.0	3		2			30.000000 Wil 12
-50.0						
-60.0						Stop Freq 10.00000000 GHz
-70.0						10.00000000 GH2
Start 30 MHz				Sto	p 10.000 GHz	CF Step
#Res BW 1.0 MHz	VBW :	3.0 MHz	Sw		is (40001 pts)	997.000000 MHz
MKR MODE TRC SCL X			FUNCTION FUNCT	ION WIDTH F	UNCTION VALUE	<u>Auto</u> Man
1 N 1 f 2.42 2 N 1 f 5.63	20 06 GHz 30 40 GHz	5.52 dBm -42.72 dBm				
3 N 1 f 2.95	54 45 GHz 13 04 GHz	-43.12 dBm -44.13 dBm				Freq Offset
5		44.10 40.11				0 Hz
7						
9						
10					~	
<		m		1 1		
MSG				STATUS		



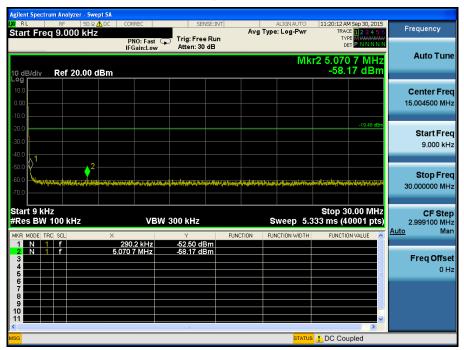




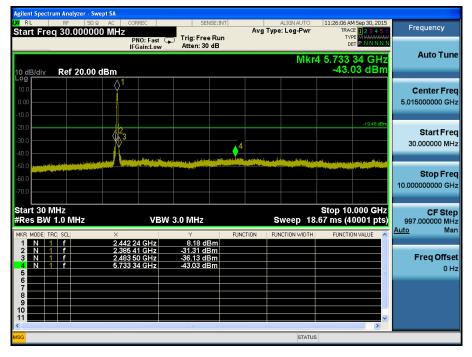
## TM 4 & ANT 2 & Middle



### Reference







RL RF 50 tart Freg 10.0000		SENSE: INT		ALIGNAUTO	11:25:00 AM Sep 30, 2015 TRACE 1 2 3 4 5 (	
tart Freq 10.0000	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB		ype. Log i ni	TYPE M WARMAN	
0 dB/div Ref 20.00	0 dBm			Mkr2 2	4.168 250 GHz -33.33 dBm	
og 10.0 0.00						Center Fre 17.500000000 GH
0.0	و المحمد الم				-19.48 dBm	<b>Start Fre</b> 10.000000000 GH
50.0 50.0 70.0						<b>Stop Fre</b> 25.00000000 G⊦
tart 10.000 GHz Res BW 1.0 MHz	VBI	N 3.0 MHz		Sweep 40	Stop 25.000 GHz 00 ms (40001 pts)	1.50000000 GH
KR MODE TRC SCL	× 24.644 125 GHz	-32.78 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Ma
2 N 1 f 3 4 5	24.168 250 GHz	-33.33 dBm				Freq Offso 0 ⊦
6 7 8 9 0						
1					~	ļ



# TM 4 & ANT 2 & Highest

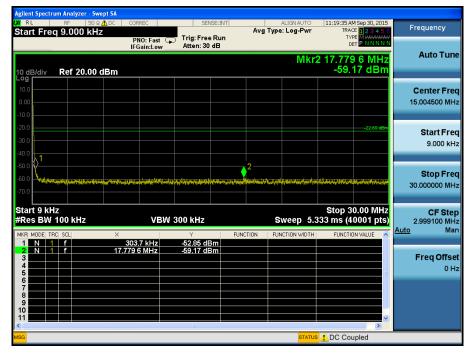


### Reference

### **High Band-edge**







Agilent Spectrum Analyzer - Swept SA						
<b>(X)</b> RL RF 50 Ω AC Start Freg 30.000000 MHz	CORREC	SENSE:INT		ALIGNAUTO	11:29:08 AM Sep 30, 2015 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast 😱	Trig: Free Run Atten: 30 dB	-		TYPE M WARMANN DET P NIN NIN N	
	IFGain:LUW	Atten: oo ub		Mkr	4 2.999 07 GHz	Auto Tune
10 dB/div Ref 20.00 dBm				IVINI-	-42.69 dBm	
Log						Center Freq
0.00						5.015000000 GHz
-10.0						
-20.0 2					-22.69 dBm	Otoret Enor
-30.0						Start Freq 30.000000 MHz
-40.0	3 04					30.000000 Mil 12
-50.0 week alternative and the best of search and		Andreas District a second by	A DESCRIPTION OF THE OWNER OWNER OWNER OWNER O			
-60.0						Stop Freq
-70.0						10.00000000 GHz
Start 30 MHz					Officer 40,000,000	
#Res BW 1.0 MHz	VBW 3	.0 MHz		Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL X		Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
	7 97 GHz 8 35 GHz	4.97 dBm -29.46 dBm				
3 N 1 f 2.54	3 50 GHz 9 07 GHz	-46.53 dBm -42.69 dBm				Freq Offset
5	307 GH2	-42.09 UBIII			=	0 Hz
6 7 <b>1 1 1</b>						
8						
10						
<					×	
MSG				STATUS		







# 8.5 Radiated Spurious Emissions

## Test Requirements and limit,

## §15.247(d), §15.205, §15.209

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

### - FCC Part 15.209(a) and (b)

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)
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

\*\* Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 - 72 MHz, 76 - 88 MHz, 174 - 216 MHz or 470 - 806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

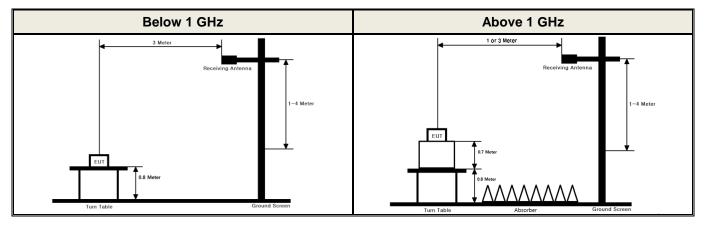
• FCC Part 15.205 (a): Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240	3600 ~ 4400		
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

• FCC Part 15.205(b): The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.



### **Test Configuration**



### **TEST PROCEDURE**

- 1. The EUT is placed on a non-conductive table, emission measurements at below 1 GHz, the table height is 80 cm and above 1 GHz, the table height is 1.5 m.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until the measurements for all frequencies are complete.

### Measurement Instrument Setting for Radiated Emission Measurements.

The radiated emission was tested according to the section 6.3, 6.4, 6.5 and 6.6 of the ANSI C63.10-2013 with following settings.

#### **Peak Measurement:**

RBW = As specified in below table , VBW ≥ 3 x RBW, Sweep = Auto, Detector = Peak, Trace mode = Max Hold until the trace stabilizes.

Frequency	RBW
9 - 150 kHz	200 - 300 Hz
0.15 - 30 MHz	9 - 10 kHz
30 - 1000 MHz	100 - 120 kHz
> 1000 MHz	1 MHz

#### Average Measurement:

- 1. RBW = 1 MHz (unless otherwise specified).
- 2. VBW  $\geq$  3 x RBW.
- 3. Detector = RMS (Number of points  $\geq$  2 x Span / RBW)
- 4. Averaging type = power. (i.e., RMS)
- 5. Sweep time = auto.
- 6. Perform a trace average of at least 100 traces.

7. A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

- 1) If power averaging (RMS) mode was used in step 4, then the applicable correction factor is 10 log(1/x), where x is the duty cycle.
- 2) If linear voltage averaging mode was used in step 4, then the applicable correction factor is  $20 \log(1/x)$ , where x is the duty cycle.
- 3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

#### Duty Cycle Corrections (Refer to appendix II for duty cycle measurement procedure and plots)

Band	Date rate	Duty Cycle (%)	T <sub>on</sub> (ms)	T <sub>on</sub> + T <sub>off</sub> (ms)	DCF = 10log(1 / Duty) (dB)
TM 1	1Mbps	98.50	16.450	16.700	-
TM 2	6Mbps	89.84	2.740	3.050	0.47
TM 3	MCS 0	88.77	2.530	2.850	0.52
1 101 3	MCS 8	80.06	1.285	1.605	0.97
TM 4	MCS 0	79.55	1.245	1.565	1.00



Tested Frequency	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Test Ant of Worst data <sup>Note2</sup>
	2484.52	V	Y	PK	54.32	2.88	N/A	N/A	57.20	74.00	16.80	1
Lowest	2383.64	V	Y	AV	47.19	2.88	N/A	N/A	50.07	54.00	3.93	1
Lowest	4824.19	Н	Z	PK	49.76	8.20	N/A	N/A	57.96	74.00	16.04	2
	4823.92	Н	Z	AV	43.13	8.20	N/A	N/A	51.33	54.00	2.67	2
Middle	4874.22	Н	Z	PK	49.57	8.66	N/A	N/A	58.23	74.00	15.77	2
Middle	4873.88	Н	Z	AV	43.40	8.66	N/A	N/A	52.06	54.00	1.94	2
	2483.56	V	Y	PK	52.18	3.36	N/A	N/A	55.54	74.00	18.46	1
Llighoot	2483.57	V	Y	AV	44.83	3.36	N/A	N/A	48.19	54.00	5.81	1
Highest	4924.05	Н	Z	PK	48.96	8.99	N/A	N/A	57.95	74.00	16.05	2
	4923.96	Н	Z	AV	42.79	8.99	N/A	N/A	51.78	54.00	2.22	2

# Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 1(TM 1)

#### Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.

2. This device was tested under single transmitting(Ant 1, 2) and the worst case data are reported in the table above.

3. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F + DCF + Distance F / T.F = AF + CL – AG Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, DCF = Duty Cycle Correction Factor, Distance F = Distance Correction Factor



Tested Frequency	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Test Ant of Worst data <sup>Note2</sup>
	2389.95	V	Y	PK	66.89	2.88	N/A	N/A	69.77	74.00	4.23	1
Lowest	2390.00	V	Y	AV	48.27	2.88	0.47	N/A	51.62	54.00	2.38	1
Lowest	4824.37	Н	Z	PK	46.12	8.20	N/A	N/A	54.32	74.00	19.68	2
	4824.31	Н	Z	AV	36.84	8.20	0.47	N/A	45.51	54.00	8.49	2
Middle	4874.45	Н	Z	PK	47.86	8.66	N/A	N/A	56.52	74.00	17.48	2
Middle	4874.05	Н	Z	AV	38.48	8.66	0.47	N/A	47.61	54.00	6.39	2
	2483.86	V	Y	PK	62.20	3.36	N/A	N/A	65.56	74.00	8.44	1
Llighoot	2483.93	V	Y	AV	44.86	3.36	0.47	N/A	48.69	54.00	5.31	1
Highest	4924.13	Н	Z	PK	47.22	8.99	N/A	N/A	56.21	74.00	17.79	2
	4923.98	Н	Z	AV	36.49	8.99	0.47	N/A	45.95	54.00	8.05	2

# Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 2(TM 2)

#### Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.

2. This device was tested under single transmitting(Ant 1, 2) and the worst case data are reported in the table above.

3. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F + DCF + Distance F / T.F = AF + CL – AG Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, DCF = Duty Cycle Correction Factor, Distance F = Distance Correction Factor



Tested Frequency	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Test Ant of Worst data <sup>Note2</sup>
	2389.52	V	Y	PK	67.23	2.88	N/A	N/A	70.11	74.00	3.89	1
Lowest	2389.88	V	Y	AV	48.72	2.88	0.52	N/A	52.12	54.00	1.88	1
Lowest	4924.65	Н	Z	PK	46.84	8.20	N/A	N/A	55.04	74.00	18.96	2
	4924.48	Н	Z	AV	36.76	8.20	0.52	N/A	45.48	54.00	8.52	2
Middle	4874.00	Н	Z	PK	46.01	8.66	N/A	N/A	54.67	74.00	19.33	1+2
Middle	4874.15	Н	Z	AV	37.94	8.66	0.97	N/A	47.57	54.00	6.43	1+2
	2483.53	V	Y	PK	63.79	3.36	N/A	N/A	67.15	74.00	6.85	1
Llighoot	2483.50	V	Y	AV	45.24	3.36	0.52	N/A	49.12	54.00	4.88	1
Highest	4925.03	Н	Z	PK	46.95	8.99	N/A	N/A	55.94	74.00	18.06	2
	4924.12	Н	Z	AV	36.15	8.99	0.52	N/A	45.66	54.00	8.34	2

# Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 3(TM 3)

#### Note.

- 1. No other spurious and harmonic emissions were found greater than listed emissions on above table.
- 2. This device was tested under single transmitting(Ant 1, 2) and multiple transmitting (Ant 1+2) and the worst case data are reported in the table above.
- 3. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F + DCF + Distance F / T.F = AF + CL – AG Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, DCF = Duty Cycle Correction Factor, Distance F = Distance Correction Factor



Tested Frequency	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance F (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Test Ant of Worst data <sup>Note2</sup>
	2389.43	V	Y	PK	65.84	2.88	N/A	N/A	68.72	74.00	5.28	1
Lowest	2389.52	V	Y	AV	47.86	2.88	1.00	N/A	51.74	54.00	2.26	1
Lowest	4846.12	Н	Z	PK	45.34	8.38	N/A	N/A	53.72	74.00	20.28	2
	4845.30	Н	Z	AV	35.48	8.38	1.00	N/A	44.86	54.00	9.14	2
Middle	4873.58	Н	Z	PK	46.96	8.66	N/A	N/A	55.62	74.00	18.38	2
Middle	4874.17	Н	Z	AV	36.84	8.66	1.00	N/A	46.50	54.00	7.50	2
	2484.81	V	Y	PK	64.04	3.36	N/A	N/A	67.40	74.00	6.60	2
Llighoot	2483.56	V	Y	AV	46.01	3.36	1.00	N/A	50.37	54.00	3.63	2
Highest	4903.93	Н	Z	PK	46.12	8.86	N/A	N/A	54.98	74.00	19.02	2
	4904.00	Н	Z	AV	36.55	8.86	1.00	N/A	46.41	54.00	7.59	2

# Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : Test Mode 4(TM 4)

#### Note.

1. No other spurious and harmonic emissions were found greater than listed emissions on above table.

2. This device was tested under single transmitting(Ant 1, 2) and the worst case data are reported in the table above.

3. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F + DCF + Distance F / T.F = AF + CL – AG Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, DCF = Duty Cycle Correction Factor, Distance F = Distance Correction Factor



### 8.6 Power-line conducted emissions

### Test Requirements and limit, §15.207

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network(LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range	Conducted Limit (dBuV)				
(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

### TEST PROCEDURE

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

### Test Results: Comply(Refer to next page.)

The worst data was reported.

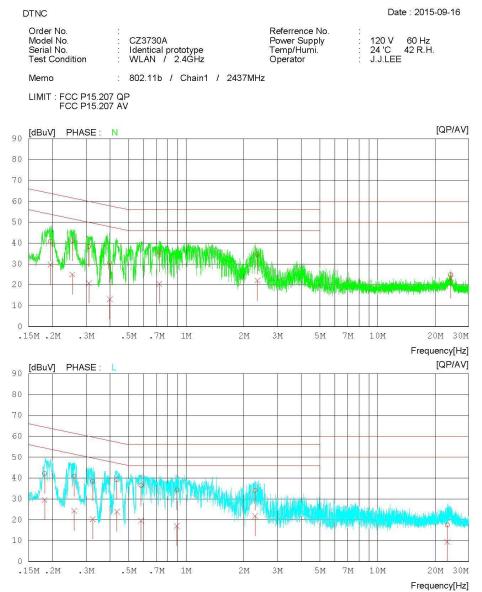


### RESULT PLOTS

### AC Line Conducted Emissions (Graph)

Test Mode: 802.11b & 1 Mbps & 2437 MHz

# **Results of Conducted Emission**





# AC Line Conducted Emissions (List)

Test Mode: 802.11b & 1 Mbps & 2437 MHz

# **Results of Conducted Emission**

Date : 2015-09-16

DTNC						Date : 2015-09	<u>}-</u> ·
Order No. Model No. Serial No. Test Condition		CZ3730A Identical prototype WLAN / 2.4GHz		Referrence No. Power Supply Temp/Humi. Operator	100 VI 100 V	120 V 60 Hz 24 'C 42 R.H. J.J.LEE	
Memo	i.	802.11b / Chain1 /	2437MHz				
	07 05	2					

LIMIT : FCC P15.207 QP FCC P15.207 AV

NC	) FREQ	READ QP [dBuV]	ING AV [dBuV]	C.FACTOR [dB]	QP	ULT AV [dBuV]	LIM QP [dBuV]	1IT AV  [dBuV]	QP	RGIN AV ][dBuV]	PHASE
1	0.19519	30.7	19.6	10.1	40.8	29.7	63.8	53.8	23.0	24.1	N
2	0.25420	31.0	14.9	10.1	41.1	25.0	61.6	51.6	20.5	26.6	N
3	0.31013	28.2	10.8	10.1	38.3	20.9	60.0	50.0	21.7	29.1	Ν
4	0.39841	20.4	3.0	10.1	30.5	13.1	57.9	47.9	27.4	34.8	N
5	0.72531	25.6	10.5	10.1	35.7	20.6	56.0	46.0	20.3	25.4	N
6	2.35600	24.4	11.9	10.2	34.6	22.1	56.0	46.0	21.4	23.9	Ν
7	24.17300	14.0	12.3	10.9	24.9	23.2	60.0	50.0	35.1	26.8	Ν
8	0.18214	32.0	19.4	10.1	42.1	29.5	64.4	54.4	22.3	24.9	L
9	0.25982	30.7	14.2	10.1	40.8	24.3	61.4	51.4	20.6	27.1	L
10	0.32532	28.4	10.1	10.1	38.5	20.2	59.6	49.6	21.1	29.4	L
11	0.43451	29.1	13.8	10.1	39.2	23.9	57.2	47.2	18.0	23.3	L
12	0.58086	26.3	9.4	10.1	36.4	19.5	56.0	46.0	19.6	26.5	L
13	0.89343	24.0	7.0	10.1	34.1	17.1	56.0	46.0	21.9	28.9	L
14	2.29240	23.8	11.6	10.2	34.0	21.8	56.0	46.0	22.0	24.2	L
15	23.18000	6.5	-1.6	11.0	17.5	9.4	60.0	50.0	42.5	40.6	L



# 9. LIST OF TEST EQUIPMENT

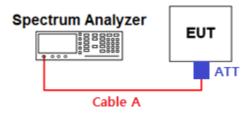
Туре	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
MXA Signal Analyzer	Agilent Technologies	N9020A	15/08/18	16/08/18	MY50200867
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2496A MA2411B	15/06/25	16/06/25	1338004 1306053
Vector Signal Generator	Rohde Schwarz	SMBV100A	15/01/06	16/01/06	255571
Signal Generator	Rohde Schwarz	SMF100A	15/06/29	16/06/29	102341
Dynamic Measurement DC Source	Agilent Technologies	66332A	15/01/22	16/01/22	GB37470200
Multimeter	FLUKE	17B	15/04/27	16/04/27	26030065WS
Thermohygrometer	BODYCOM	BJ5478	15/02/26	16/02/26	1209
Loop Antenna	Schwarzbeck	FMZB1513	14/04/29	16/04/29	1513-128
TRILOG Broadband Test- Antenna	SCHWARZBECK	VULB 9160	14/04/04	16/04/04	3357
HORN ANT	ETS	3117	14/05/12	16/05/12	00140394
HORN ANT	A.H.Systems	SAS-574	15/04/30	17/04/30	154
Highpass Filter	Wainwright	WHKX12-2580-3000- 18000-80SS	14/10/17	15/10/17	3
Highpass Filter	Wainwright	WHNX6-6320-8000- 26500-40CC	14/10/17	15/10/17	7
Low Noise Pre Amplifier	tsj	MLA-010K01-B01-27	15/04/09	16/04/09	1844539
Amplifier (30dB)	Agilent	8449B	14/11/06	15/11/06	3008A02108
EMI TEST RECEIVER	R&S	ESR7	14/10/21	15/10/21	101109
EMI TEST RECEIVER	R&S	ESCI	15/02/25	16/02/25	100364
FREQUENCY CONVERTER	Taejin Electronic	CVCF	15/09/09	16/09/09	ZU0033
ARTIFICIAL MAINS NETWORK	Narda S.T.S. / PMM	PMM L2-16B	15/06/26	16/06/26	000WX20305



# **APPENDIX I**

# Conducted Test set up Diagram & Path loss Information

Conducted Measurement



### Path loss information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	3.07	15	4.40
1	3.16	20	4.69
2.412 & 2.422 & 2.437 & 2.452 & 2.462	3.43	25	4.97
5	3.61	-	-
10	4.12	-	-

Note. 1: The path loss from EUT to Spectrum analyzer was measured and used for test.

Path loss (S/A's offset value) = Cable A (Attenuator, Applied only when it was used externally)



# **APPENDIX II**

# **Duty cycle plots**

### TEST PROCEDURE

### Duty Cycle measured using section 6.0 b) of KDB558074

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal.

Set the center frequency of the instrument to the center frequency of the transmission. Set RBW  $\geq$  OBW if possible; otherwise, set RBW to the largest available value. Set VBW  $\geq$  RBW. Set detector = peak or average.

The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T  $\leq$  16.7 microseconds.)

Duty cycle data :	TM 1 & ANT 1 & 1Mbps	& Middle	Duty cycle data : TM 2 & ANT 1 & 6Mbps & Middle
Algent Spectrum Analyzer Swept SA 1 BE - West Sector Sect	SENSEENT AUXANTO 002071974548 30,2015 - Trig:Free Run Atten: 40 dB Free Run Atten: 40 dB CMR/ST 16,70 ms - ΔMK/ST 16,70 ms - 1.86 dB	Frequency Auto Tune	Allen Spectram Analyzer - Swept 5A. I B to B S So or Coresec Serve Part - All SPANTO (02:10:26745 59:05:2015) Conter Freq 2.437000000 GHz. Product aw Allen : 40 dB Allen Serve Part - Trig: Free Run IFGainLaw Allen : 40 dB Allen Serve Part - Allen Serve Par
	304	Center Freq 2.437000000 GHz	Log 200
-10.0		Start Freq 2.437000000 GHz	100 200 300 400 400 400 400 400 400 4
40 0 60 0 60 0		Stop Freq 2.437000000 GHz	400 600 600 600 600
MKR MODE TRC SCL Χ 1 Δ2 1 t (Δ) 16.45 ms (Δ)			Center 2.437000000 GHz   Span 0 Hz   Span 0 Hz   CF Step     Res BW 8 MHz   VBW 8.0 MHz   Sweep 10.00 ms (1001 pts)   8.000000 MHz     MRR Mode: FRC SCL   X   Y   Function worth   Function worth   Function worth     1   Acto   X   Y   Function worth   Function worth   Function worth
2 F 1 t 3600 ms 3 A4 F 1 t (A) 1670 ms (A) 4 F 1 t (A) 3600 ms 6 6 6 7 8 8 9 8 9 9 10 11 11 1 10 1 11 1 10 1	1902 dBm	Freq Offset 0 Hz	2 F 1 t 2440 ms 1597 dBm 4 F 1 t (Δ) 3060 ms (Δ) 1577 dB 5 F 1 t 2440 ms (Δ) 1577 dB 6 F 1 t 2440 ms (Δ) 1577 dB 7 B 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
MSG	STATUS		MSG STATUS

### Result Plots



