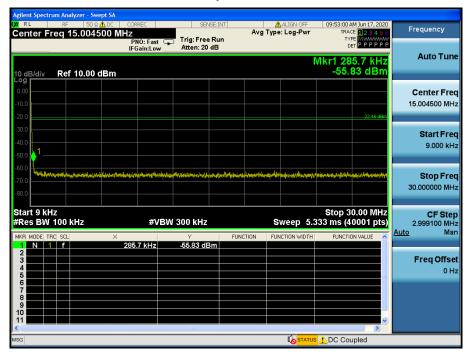
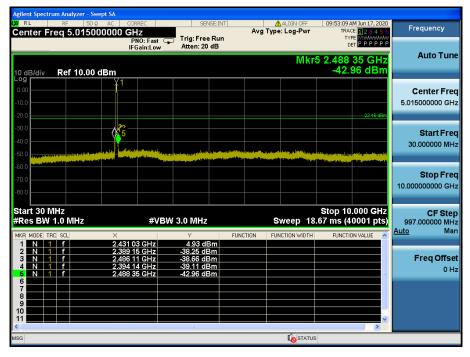
# TM 4 & ANT 1 & 2437

Reference

#### ectrum Analyzer -Swept S/ 09:52:53 AM Jun 17, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P ALIGN OFF Frequency Center Freq 2.437000000 GHz GHz PNO: Fast IFGain:Low Atten: 20 dB Auto Tune Mkr1 2.420 720 GHz -2.46 dBm 10 dB/div Ref 10.00 dBm **Center Freq** 2.437000000 GHz Inderstudius and model where we was a little the model with the second to be had well all Start Freq 2.409685000 GHz Stop Freq 2.464315000 GHz CF Step 5.463000 MHz Man Auto Freq Offset 0 Hz Center 2.43700 GHz #Res BW 100 kHz Span 54.63 MHz Sweep 5.400 ms (3001 pts) #VBW 300 kHz 🕼 STATUS





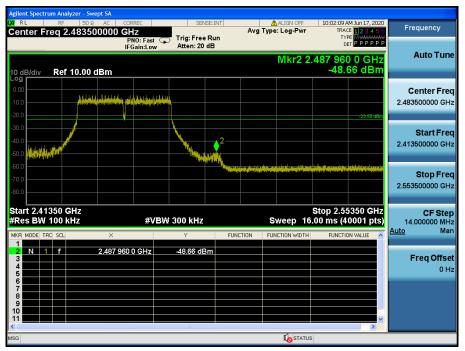
Agilent Spectrum Analyzer - Swept SA (X RL RF 50Ω AC Center Freq 17.500000000		Avg Type: Log-Pwr	09:53:17 AM Jun 17, 2020 TRACE 123456	Frequency
10 dB/div Ref 10.00 dBm	PNO: Fast 💭 Trig: Free Run IFGain:Low Atten: 20 dB		4.164 500 GHz -37.66 dBm	Auto Tune
-10.0			22.46.4Bm	Center Freq 17.500000000 GHz
-200			<b>↓</b> <sup>3</sup> 🔮	Start Freq 10.000000000 GHz
-60.0				<b>Stop Freq</b> 25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz		Stop 25.000 GHz .00 ms (40001 pts)	CF Step 1.50000000 GHz Auto Man
2 N 1 f 24.714	3 250 GHz	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
9 10 11 ≮⊓ MSG	ш 	<b>I</b> ostatus	×	

### TM 4 & ANT 1 & 2462

#### Reference



# **High Band-edge**



Center Freq 15.004500 MHz      Trig: Frea Run Rten: 20 dB      Avg Type: Log-Pwr      Trig: Avg Type: Log-Pwr      Trig: Frequency        10 dB/div      Ref 10.00 dBm      -58.13 dBm      -58.13 dBm      -58.13 dBm      -	Agilent Spectrum A									
Plot Fast IF GeintLow    Trig: Free Run Atten: 20 dB      Mkr1 298.4 kHz -58.13 dBm      Center Freq 15.004500 MHz      Center Freq 15.004500 MHz      Center Freq 15.004500 MHz      Start Freq 9.000 kHz      Stop 30.00 MHz      Stop 30.00 MHz   Stop 30.00 MHz      Stop 30.00 MHz      Stop 30.00 MHz      Stop 30.00 MHz      Stop 30.00 MHz      Stop 30.00 MHz      Stop 30.00 MHz      Stop 30.00 MHz      Stop 30.00			CORREC	SENS	E:INT					Frequency
Index  Auto Tune    Mkr1 298.4 kHz  -58.13 dBm    100  -58.13 dBm    11  -58.13 dBm    12  -58.13 dBm    13  -58.13 dBm    14  -58.13 dBm    15  -58.13 dBm    16  -58.13 dBm    17  -58.13 dBm    18  -58.13 dBm    19  -58.13 dBm    10  -58.13 dBm    10  -58.13 dBm    11  -58.13	Center Freq	15.004500 N	PNO: Fast G			1112 1944		TYP	E M WWWWWW	
Implementation    Imple			IFGain:Low	Atten: 20 o	iB					
Comparison    Teor Force data      Comparison    Center Freq      100    Center Freq      200    Center Freq      300    Center Freq      300000 MHz    Stop Freq      30.00000 MHz    Stop Statt Bern      200    Center Freq      30.00000 MHz    Stop Freq      30.00000 MHz    Stop Statt Bern      200    Center Freq      200    Stop Freq      30.00000 MH										Autorune
0.00	10 dB/div Re	ef 10.00 dBm						-58.1	13 dBm	
Start 9 kHz      Y      Function      Function width      Function value      Function value      Freq Offset 0 Hz        1      1      1      298.4 kHz      588.13 dBm      588.13 dBm      588.13 dBm      588.13 dBm      578.13 d	-									
200    3000    300    300										•
300    MHz    Stop Freq    300    300    300    MHz    CF Step    2.999100    MHz    2.999100    MHz    2.999100    MHz    2.999100    MHz    300	-10.0									15.004500 MHz
400    4	-20.0								-23.55 dBm	
400    1    9.000 kHz      500    1    1 <t< td=""><td>-30.0</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Start From</td></t<>	-30.0									Start From
500    1	-40.0									
And and a state of the stat	.50.0 1									9.000 KH2
7.00  Image: Marked and the place of the data of										
2700    30.000000 MHz      800    Start 9 kHz      Start 9 kHz    #VBW 300 kHz      #Res BW 100 kHz    #VBW 300 kHz      Sweep 5.333 ms (40001 pts)      MR MODE TRC Scl.    X      Y    FUNCTION      1    1      7    298.4 kHz      5    5      6    5      7    6      9    6      10    1      11    1      12    1      13    1      14    1      15    1      16    1      17    1      18    1      19    1      10    1      11    1      11    1      11    1      10    1      11    1	Mark Mark Mark Mark Mark Mark Mark Mark	والمعادة المدارية المعرفة مساولة المساولة	windunglyndyduroda	and the second of the second of	and a static and a state	والمسعود ومعاويها و	d we designed a state	happy white and	adaalaadiidaha yaadadad	Stop Freq
Start 9 kHz      Stop 30.00 MHz      Stop 30.00 MHz      CF Step 2.999100 MHz        WRE BWD 100 kHz      #VBW 300 kHz      Sweep 5.333 ms (40001 pts)      Auto      Man        N      f      298.4 kHz      -58.13 dBm      Function      Function value      Man        1      n      f      298.4 kHz      -58.13 dBm      Function      Function value      Man        2      a      a      a      a      a      a      a      a      b      b      a      a      b      a      a      a      a      a      a      b      a										
#Res BW 100 kHz      #VBW 300 kHz      Sweep 5.333 ms (40001 pts)      2.999100 MHz        MKR MODE TRC SCL      X      Y      FUNCTION      FUNCTION VIDTH      FUNCTION	-80.0									
#Res BW 100 kHz      #VBW 300 kHz      Sweep 5.333 ms (40001 pts)      2.999100 MHz        MKR MODE TRC SCL      X      Y      FUNCTION      FUNCTION VIDTH      FUNCTION	Start 0 kHz							Stop 2	0.00 MHz	
MKR  MODE  TRC:  X  Y  FUNCTION  FUNCTION WIDTH  FUNCTION VALUE  Auto  Man    1  N  1  f  22934 kHz  253413 dBm		kHz	#VBV	V 300 kHz		s	ween 5.3			
MRR MODE      HL      X      Y      FUNCTION      FUNCTION WIDTH      FUNCTION VALUE      Image: Constraint of the state of the stat								•		
2			298.4 kHz			TION FUN	ICTION WIDTH	FUNCTIO	IN VALUE	_
4 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	2		230.4 KHZ	-50.15 GD						
6 0 H2 6 0 H2 9 9 0 H2 11 0 0 H2 111 0 H2 11					_					
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9									=	0 Hz
									~	
اللي STATUS L DC Coupled	<									
	MSG							DC Cou	pled	

Agilent Spectrum Analyzer - Swept SA					
M RL RF 50Ω AC Center Freq 5.01500000		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	10:02:26 AM Jun 17, 2020 TRACE 1 2 3 4 5 6	Frequency
Center Freq 5.01500000	PNO: Fast 🖕	Trig: Free Run			
	IFGain:Low	Atten: 20 dB			Auto Tune
			Mkr	5 2.616 47 GHz	Auto Tune
10 dB/div Ref 10.00 dBm				-45.02 dBm	
0.00	Y1				Center Freq
-10.0					5.015000000 GHz
-20.0					0.01000000000112
				-23:55 dBm	
-30.0	5				Start Freq
-40.0					30.000000 MHz
-50.0			an a	a na ana ang mpakagan na ang mpakagan ang mpakagan ang mpakagan na ang mpakagan ang mpakagan ang mpakagan ang Na ang mpakagan na ang mpakagan a	
-60.0					Oton Erog
-70.0					Stop Freq 10.00000000 GHz
-80.0					10.00000000 GHZ
Start 30 MHz #Res BW 1.0 MHz	#)(B)A	3.0 MHz	Swoon 19	Stop 10.000 GHz 67 ms (40001 pts)	CF Step
			· · · · ·		997.000000 MHz Auto Man
MKR MODE TRC SCL	< 2.448 47 GHz	Y FUN 4.12 dBm	ICTION FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 f 2	2.397 88 GHz	-40.35 dBm			
	2.390 90 GHz 2.393 89 GHz	-42.79 dBm -43.22 dBm			Freq Offset
5 N 1 f 2	2.616 47 GHz	-45.02 dBm		=	0 Hz
6					
8					
9					
11				×	
MSG		10	I STATUS		
mag			LO STATUS		

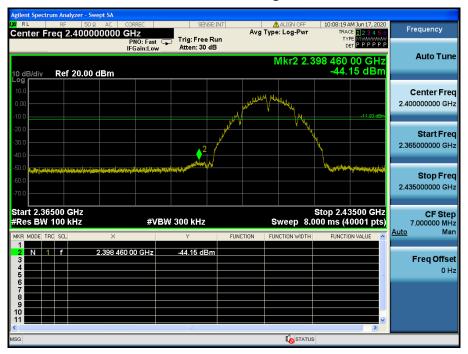


# TM 1 & ANT 2 & 2412



#### Reference

#### Low Band-edge



Agilent Spectrum Analyzer - Swept SA					
KL RF 50 Ω ▲ DC  Center Freq 15.004500 M	CORREC	SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	10:08:27 AM Jun 17, 2020 TRACE 123456	Frequency
	PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 30 dB		TYPE MWWWWWW DET P P P P P P	
	II OUIIIEON			Vkr1 341.9 kHz	Auto Tune
10 dB/div Ref 20.00 dBm				-47.68 dBm	
Log					Contor From
0.00					Center Freq 15.004500 MHz
-10.0 )				-11.93 dBm	13.004300 Mil12
-20.0					
-30.0					Start Freq
-40.0 1					9.000 kHz
-50.0 Wile แต่สะกฎป การการสูปในโรงที่ผู้การสะการที่	one and the states of the stat	الماجا مهجاة السيانية والمأجزة والجراري الطواري	districtioner for the second second second	eprint terry distant second diated	Stop Freq
-70.0					30.000000 MHz
Start 9 kHz				Stop 30.00 MHz	CF Step
#Res BW 100 kHz	#VBW :			333 ms (40001 pts)	2.999100 MHz Auto Man
MKR MODE TRC SCL X	341.9 kHz	-47.68 dBm	CTION FUNCTION WIDTH	FUNCTION VALUE	<u>/(dto</u>
2		41.00 0011			Freq Offset
3 4					0 Hz
5					0112
7					
9					
10				~	
<				>	
MSG				DC Coupled	

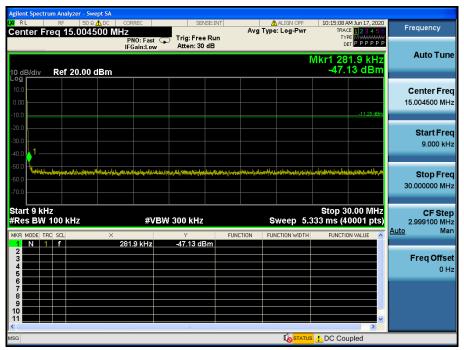
Agilent Spectrum Analyzer - Swept SA					
M RL RF 50 Ω AC Center Freq 5.01500000		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	10:08:35 AM Jun 17, 2020 TRACE 1 2 3 4 5 6	Frequency
Center Freq 5.01500000	PNO: Fast C	Trig: Free Run			
	IFGain:Low	Atten: 30 dB			Auto Tune
			Mkr	5 3.308 39 GHz	Autorune
10 dB/div Ref 20.00 dBm				-35.54 dBm	
Log	<b>⟩</b> 1				Contor From
					Center Freq
0.00					5.015000000 GHz
-10.0				-11.93 dBm	
-20.0	0 17				Start Freq
-30.0	- 0 <sup>4</sup> - 1 <sup>5</sup>				30.000000 MHz
-40.0	The second second second	and the second second for	and the second state of th	and the sector required the spin of the second	00.000000 11112
-50.0	and the second second second	ti ili ili ili ili ili ili ili ili ili i	والمراجع والمتحافظ والمناد والمناد والمرجع والمتشاط المتستلم والالالا	The second s	
-60.0					Stop Freq
					10.00000000 GHz
-70.0					
Start 30 MHz				Stop 10.000 GHz	CF Step
#Res BW 1.0 MHz	#VB	N 3.0 MHz	Sweep 18	.67 ms (40001 pts)	997.000000 MHz
MKB MODELTRC SCL X	,	Y	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
	.412 08 GHz	10.92 dBm	Inclusion Fonction within	TONCTION VALUE	
2 N 1 f 3	.199 71 GHz	-35.11 dBm -35.18 dBm			Freq Offset
3 N 1 f 2 4 N 1 f 2	.664 82 GHZ	-35.18 dBm -35.53 dBm			0 Hz
5 N 1 f 3	.308 39 GHz	-35.54 dBm			0 HZ
6					
8					
9					
11				~	
<		III	-		
MSG					

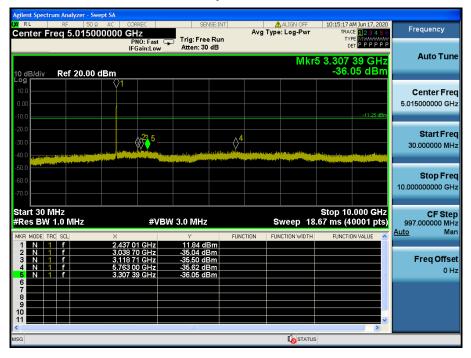


### TM 1 & ANT 2 & 2437

#### Reference







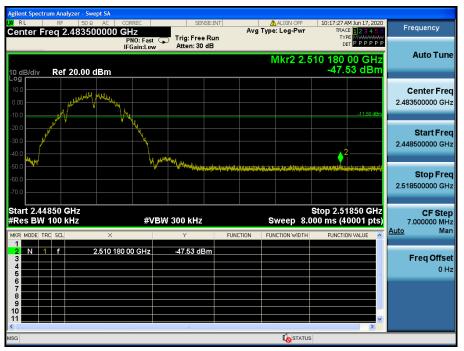
Agilent Spectrum Analyzer - Swept SA		
Center Freg 17,50000000 GHz Avg Type: Log-Pwr	D:15:24 AM Jun 17, 2020 TRACE 123456	Frequency
PNO: Fast Trig: Free Run IFGain:Low Atten: 30 dB		
Mkr3 23.5	22 875 GHz	Auto Tune
10 dB/div Ref 20.00 dBm	-28.14 dBm	
Log		Center Freq
		17.50000000 GHz
-10.0	-11.25 dBm	
-20.0	3_ <u>∧2 </u> ,	StortErog
-30.0		Start Freq 10.00000000 GHz
	and the second difference of the second s	
-50.0		
-60.0		<b>Stop Freq</b> 25.00000000 GHz
-70.0		25.00000000 GH2
Start 10.000 GHz Sto	op 25.000 GHz	CF Step
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 40.00		1.500000000 GHz
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f 24.752 125 GHz -27.84 dBm 2 N 1 f 24.228 625 GHz -28.12 dBm		
3 N 1 f 23.522 875 GHz -28.14 dBm		Freq Offset
5	=	0 Hz
8		
I = 1		
MSG Loss Loss Loss Loss Loss Loss Loss Los		

# TM 1 & ANT 2 & 2462

#### Reference



# **High Band-edge**



Agilent Spectrum Analyzer - Swe ເ <mark>XI</mark> RL RF 50 ຊຸ Center Freq 15.0045	\Lambda DC 🛛 CORREC	SENSE:INT	ALIGN OFF	10:17:34 AM Jun 17, 2020 TRACE 1 2 3 4 5 6	Frequency
10 dB/div Ref 20.00 d	PNO: Fast G IFGain:Low	Trig: Free Run Atten: 30 dB		түре	Auto Tune
Log 10.0 0.00 -10.0				-11.50 dBm	Center Freq 15.004500 MHz
-20.0 -30.0 -40.0					Start Freq 9.000 kHz
-50.0	theorethologeneyi geneyallyalak geneyi tereye	โกษฐโปนกรรมทำเหียงในปัจจุบัตรที่ในคณุหมุศไทยรร	มีสาวารุมีร่างสราปสูดรูปของรูมักรังการเสา <sup>1</sup> มาตรงสาวารูร่าง	ครารสารและเป็นสู่หลุ่งไปสารที่สุดของได้ <sub>ไป</sub> ได้	Stop Freq 30.000000 MHz
Start 9 kHz #Res BW 100 kHz	×		Sweep 5.3	Stop 30.00 MHz 333 ms (40001 pts) FUNCTION VALUE	CF Step 2.999100 MHz <u>Auto</u> Mar
1 N 1 f 2 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	281.9 kHz	-47.10 dBm			Freq Offset 0 Hz
7 8 9 9 10 11				~	
MSG				DC Coupled	

Agilent Spectrum Analyze					
Center Freq 5.0 <sup>4</sup>	50 Ω AC CORREC 15000000 GH7	SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	10:17:42 AM Jun 17, 2020 TRACE 123456	Frequency
Contor Freq 6.0	PNO: Fast C IFGain:Low	Trig: Free Run Atten: 30 dB			
	IFGalfi:LUW_	Atten: 00 dB	Miles	5 2.741 09 GHz	Auto Tune
10 dB/div Ref 20	0.00 dBm		IVIKI	-36.20 dBm	
Log 10.0	≬1				
					Center Freq
0.00					5.015000000 GHz
-10.0				-11.50 dBm	
-20.0	A5 ∧3				Start Freq
-30.0		<mark>2</mark>			30.000000 MHz
-40.0					
-50.0					
-60.0					Stop Freq
-70.0					10.00000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#\/P	W 3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step
-					997.000000 MHz Auto Man
MKR MODE TRC SCL	× 2.461 18 GHz	Y FUNI 11.57 dBm	CTION FUNCTION WIDTH	FUNCTION VALUE	
2 N 1 f	5.615 69 GHz	-35.62 dBm			E 05
3 N 1 f 4 N 1 f	3.241 59 GHz 2.702 46 GHz	-36.06 dBm -36.15 dBm			Freq Offset 0 Hz
5 N 1 f	2.741 09 GHz	-36.20 dBm		=	0 Hz
6 7					
8					
10					
11		TH		×	
MSG			STATUS		
			<b></b>		



# TM 2 & ANT 2 & 2412

#### nt Spectrum Analyzer Swept S/ 11:07:10 AM Jun 17, 202 TRACE 1 2 3 4 5 TYPE MWWWW DET P P P P P ALIGN OFF Frequency Center Freq 2.412000000 GHz GHz PNO: Fast IFGain:Low Atten: 20 dB Auto Tune Mkr1 2.413 252 GHz 0.36 dBm 10 dB/div Ref 10.00 dBm ♦1 Center Freq 2.412000000 GHz montantonal man mar march Start Freq 2.399649000 GHz Stop Freq 2.424351000 GHz CF Step 2.470200 MHz Man Auto Freq Offset 0 Hz Center 2.41200 GHz #Res BW 100 kHz Span 24.70 MHz Sweep 2.400 ms (3001 pts) #VBW 300 kHz **STATUS**

#### Reference

Low Band-edge



Agilent Spectrum Analyzer - Swept SA					
KE RF 50 Ω ▲ DC  Center Freq 15.004500		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	11:07:45 AM Jun 17, 2020 TRACE 12 3 4 5 6	Frequency
·	PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 20 dB		DET PPPP	
to IDUIN Dof 40.00 dDw				Vkr1 292.4 kHz -56.80 dBm	Auto Tune
10 dB/div Ref 10.00 dBm					
0.00					Center Freq
-10.0					15.004500 MHz
-20.0				-19.64 dBm	
-30.0					Start Freq
-40.0					9.000 kHz
-50.0					
-60.0	والمتحد والمتحد والمحافظ والم	أمحط بالمرال أخليلهم بالمعاركة والدينة الأطرا	ومنافعها وهيم وتراوير فيترارك التراهي	de Alexandra a se a se de la califación de	Oton Enon
-70.0		A August and a second se	Contraction of the second s		Stop Freq 30.000000 MHz
-80.0					30.000000 MHZ
Start 9 kHz				Stop 30.00 MHz	0.5.01
#Res BW 100 kHz	#VBW	300 kHz	Sweep 5.3	333 ms (40001 pts)	CF Step 2.999100 MHz
MKRI MODEL TRCI SCLI	<	Y FUN	ICTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	292.4 kHz	-56.80 dBm			
2 3					Freq Offset
4 5					0 Hz
6 7					
8					
9					
11				×	
MSG				DC Coupled	

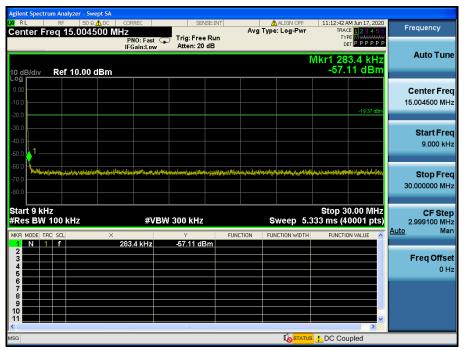
Image: Note of the state of the st
Microsoft      Trig: Free Run Atten: 20 dB      Trig: Free Run Atten: 20 dB      Trig: Free Run Der PP
Iteration      Match: 20 dB      Mkr5 2.689 00 GHz      Auto Tu        10 dB/div      Ref 10.00 dBm      -45.98 dBm      -45.98 dBm      -45.98 dBm        100      1      -45.98 dBm      -45.98 dBm      -45.98 dBm      -45.98 dBm        100      200      -45.98 dBm      -45.98 dBm      -45.98 dBm      -45.98 dBm        -200      -300      -39.8 dBm      -45.98 dBm      -45.98 dBm      -45.98 dBm
Nikro 2.689 00 GH2        10 dB/div      Ref 10.00 dBm      -45.98 dBm        000      11      -45.98 dBm        100      11      -60        100      11      -60        100      11      -60        100      11      -60        100      11      -60        100      11      -60        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100      -790        100      1100
Cog      1      Center Fr        100      19.64 dBm      5.01500000 G        300      22      Start Fr
0.00      Center Fr        -0.0
-10.0 -20.0
-20.0
2 Start Fr
-300 Start Fr
-40.0 30.00000 M
Stop Er
-700 10.00000000 G
Start 30 MHz Stop 10.000 GHz
Start 30 MHz Stop 10.000 GHz CF St #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 18.67 ms (40001 pts) 997,000000 M
Auto
MKR      MODE      TRC SCL      X      Y      FUNCTION      FUNCTION WIDTH      FUNCTION VALUE      Automatical        1      N      1      f      2.407 10 GHz      8.42 dBm      Automatical
2 N 1 f 2 393 14 GHz -35 60 dBm
3 N 1 f 2,389 40 GHz 41,43 dBm Freq Offs 4 N 1 f 2,644 63 GHz 45,57 dBm
5 N 1 f 2.689 00 GHz -45.98 dBm
MSG Constants

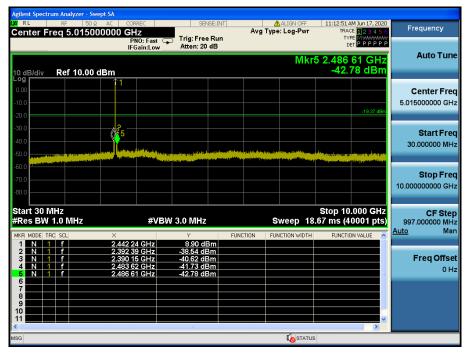


# TM 2 & ANT 2 & 2437

#### Reference







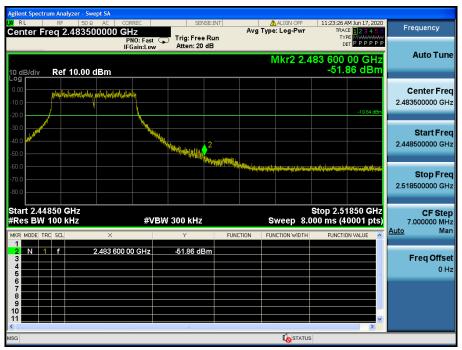
Agilent Spectrum Analyzer - Swept SA	
X      RF      50 Ω      AC      CORREC      SENSE:INT      Align OFF      11:12:59 AM 3.        Center Freq 17.500000000 GHz      Avg Type: Log-Pwr      TRACE      TRACE<	23456 Frequency
PNO: Fast 🕟 Trig: Free Run TYPE	PPPP
IFGIN:LUW Atten: 20 40	Auto Tuno
Mkr3 24.073 750	GHZ
10 dB/div Ref 10.00 dBm -31.12	CIBIII
0.00	Center Freq
-10.0	17.500000000 GHz
-20.0	-19.37 dBm
-30.0	13 R
	Start Freq
	10.00000000 GHz
-60.0	Stop Freq
-70.0	25.00000000 GHz
-80.0	23.00000000 6H2
Start 10.000 GHz Stop 25.00 #Res BW 1.0 MHz #VBW 3.0 MHz Sweep 40.00 ms (400	00 GHZ CF Step 01 pts) 1.500000000 GHz
	Auto Man
MKR MODE      TRC      SCL      X      Y      FUNCTION      FUNCTION WIDTH      FUNCTION V/        1      N      1      f      24,751 000 GHz      -36,96 dBm      -36,96 dBm	
2 N 1 f 24.668 500 GHz -37.05 dBm	
3 N 1 f 24.073 750 GHz -37.72 dBm	Freq Offset
5	0 Hz
9	
11	<b></b> ⊻
MSG Lostatus	

# TM 2 & ANT 2 & 2462

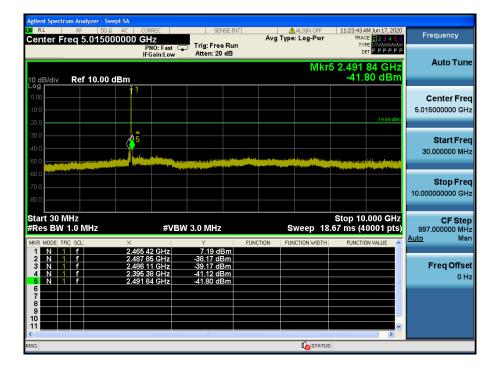
#### Reference



# **High Band-edge**



Agilent Spectrum Analyzer - Swe		SENSE:INT	ALIGN OFF	11:23:34 AM Jun 17, 2020	
Center Freq 15.0045	00 MHz		Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWWW	Frequency
	PNO: Fast C IFGain:Low	Atten: 20 dB		DET PPPPP	Auto Tuno
10 dB/div Ref 10.00 c	lBm			Mkr1 297.7 kHz -54.88 dBm	Auto Tune
Log 0.00					Center Freq
-10.0					15.004500 MHz
-20.0				-19.84 dBm	
-30.0					Start Freq
-50.0					9.000 kHz
-60.0	المحمد المراجعة المالية المحمد المحمد المحمد الم	مهاليه المعادلة المالية المالية المعالمة المعالمة المعالمة المعالمة المعالمة المعالمة المعالمة المعالمة المعالم	ور المحافظ المنصورة المراجع المراجع المراجع المراجع	and sector and a sector first data in such as the sector first sector first sector first sector first sector fi	Stop Frog
-70.0	an a				Stop Freq 30.000000 MHz
-80.0					
Start 9 kHz #Res BW 100 kHz	#VB	N 300 kHz	Sweep 5.3	Stop 30.00 MHz 333 ms (40001 pts)	CF Step 2.999100 MHz
MKR MODE TRC SCL	× 297.7 kHz	Y FUN -54.88 dBm	CTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2	237.7 КП2	-04.00 dBm			Freq Offset
4					0 Hz
6					
8 9 9					
10				~	
<		Ш	~	>	
MSG				DC Coupled	



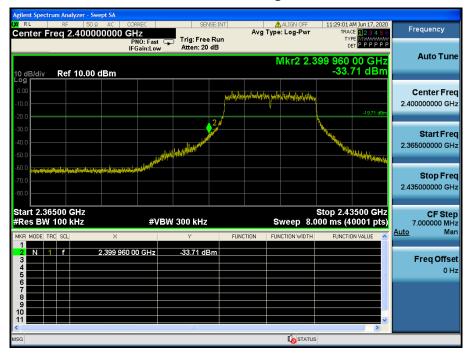


# TM 3 & ANT 2 & 2412

#### ectrum Analyzer Swept S/ 11:28:35 AM Jun 17, 202 TRACE 1 2 3 4 5 TYPE MWWWWW DET P P P P P ALIGN OFF Frequency Center Freq 2.412000000 GHz GHz PNO: Fast IFGain:Low Atten: 20 dB Auto Tune Mkr1 2.413 242 GHz 0.29 dBm 10 dB/div Ref 10.00 dBm Center Freq particular mandan work have 2.412000000 GHz month and mark and warding Start Freq 2.398782750 GHz Stop Freq which 2.425217250 GHz **CF Step** 2.643450 MHz Man Auto Freq Offset 0 Hz Center 2.41200 GHz #Res BW 100 kHz Span 26.43 MHz Sweep 2.600 ms (3001 pts) #VBW 300 kHz **STATUS**

# Reference

Low Band-edge



Agilent Spectrum Analyze	r - Swept SA 50 Ω 🛕 DC 🔋 CORREC	SENSE	EINT	ALIGN OFF	11:29:09 AM Jun 17, 2020	
Center Freq 15.0		ast 😱 Trig: Free R		e: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE M 444444	Frequency
10 dB/div Ref 10	IFGain:L		B	N	<sub>0er</sub> № ۵۹۲۹ /kr1 281.9 kHz -57.13 dBm	Auto Tune
Log 0.00 -10.0 -20.0					-19.71 dBm	Center Freq 15.004500 MHz
-30.0 -40.0 -50.0						Start Freq 9.000 kHz
-60.0 -70.0 -80.0	ใส้หมูงสาวเพื่อที่เป็นเขาและมีชังตั้งสารที่ไดรมีไดย	uhmendelanden operantiksensen aktivet	janovsta (1) v cripsi o svijest jihosov od pla	<del>หรุงจุ่างเฉาะไสางเลางไม่ไ</del>	transsettentalisetedisseretaastenenses	Stop Freq 30.000000 MHz
Start 9 kHz #Res BW 100 kHz	2 7	¢VBW 300 kHz		Sweep 5.3	Stop 30.00 MHz 33 ms (40001 pts)	CF Step 2.999100 MHz Auto Man
MKR      MODE      TRC      SCL        1      N      1      f        2      -      -      -        3      -      -      -        4      -      -      -        5      -      -      -	× 281.9 kH	lz -57.13 dBm		JNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
6 7 8 9 10 11					v	
KSG				Te STATUS	DC Coupled	

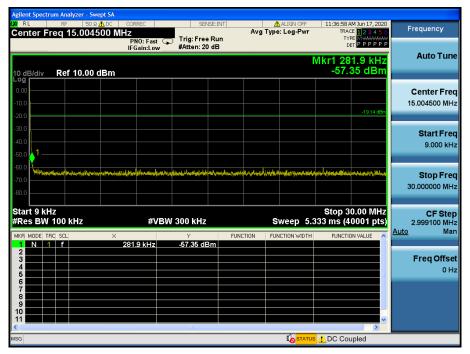
Agilent Spectrum Analyzer - Swept					
M RL RF 50Ω / Center Freq 5.0150000		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	11:29:19 AM Jun 17, 2020 TRACE 1 2 3 4 5 6	Frequency
Center Freq 5.0150000	PNO: Fast G	🕤 Trig: Free Run	ing type. Log thi		
	IFGain:Low	Atten: 20 dB			Auto Tune
			Mkr	5 2.764 27 GHz	Auto Tune
10 dB/div Ref 10.00 dB	m			-45.96 dBm	
Log 0.00	<b>1</b>				0
					Center Freq
-10.0				-19.71 dBm	5.015000000 GHz
-20.0				-15.71 dbii	
-30.0	2 10				Start Freq
-40.0					30.000000 MHz
-50.0	all standings with the start	the strength and the strength of the state of the	ويستغلقه ومغاسفها ومورية العاقب	Manager and an and the second second	00.000000 11112
-60.0				in the second design of the second design of the	
-70.0					Stop Freq
-80.0					10.000000000 GHz
-00.0					
Start 30 MHz				Stop 10.000 GHz	CF Step
#Res BW 1.0 MHz	#VB\	V 3.0 MHz	Sweep 18	.67 ms (40001 pts)	997.000000 MHz
MKRI MODEL TRCL SCL	X	Y FI	JNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	2.404 36 GHz	7.10 dBm			
2 N 1 f 3 N 1 f	2.389 65 GHz 3.292 43 GHz	-38.69 dBm -44.70 dBm			Freq Offset
4 N 1 f	3.187 00 GHz	-45.45 dBm			0 Hz
5 N 1 f	2.764 27 GHz	-45.96 dBm		=	
7					
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10					
		illi		~	
MSG			STATUS		

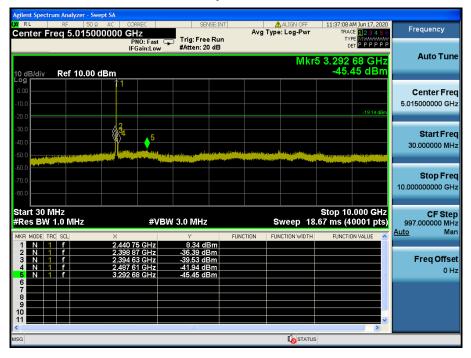
RL	RF 51	DΩ AC CORREC	SENSE:INT	🛕 ALIGN OFF	11:29:27 AM Jun 17, 2020	<b>F</b>
enter F	req 17.50	0000000 GHz PNO: Fast IFGain:Low	➡ Trig: Free Run Atten: 20 dB	Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWW DET PPPPP	Frequency
0 dB/div	Ref 10.0	0 dBm		Mkr3 2	4.375 250 GHz -37.98 dBm	Auto Tun
.og 0.00 10.0 20.0					-19.71 dBm	Center Fre 17.500000000 G⊦
30.0 40.0 50.0		Stratific and International Action of the strategy of the State of the strategy of the State of		an a fan te an an a gwys ar yn fernan yn a fan ar yn a gwys a gwys a fan a gwys a gwys a gwys a gwys a gwys a Gwys a fan a fan a gwys gwys a gwy		Start Fre 10.000000000 G⊦
50.0 70.0 30.0						Stop Fre 25.00000000 G⊦
tart 10.0 Res BW	000 GHz 1.0 MHz	#VB	W 3.0 MHz	Sweep 40.	Stop 25.000 GHz 00 ms (40001 pts)	CF Ste 1.50000000 GF Auto Ma
IKR MODE T	RC SCL	X	, -36.80 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto Wa
2 N 4 4 5	f f	24.704 875 GHz 24.673 375 GHz 24.375 250 GHz	-36.80 dBm -37.40 dBm -37.98 dBm			Freq Offso 0 ⊦
6 7 8 9						
10					×	

# TM 3 & ANT 2 & 2437

#### W RL RF 50 Q AC UNINE Center Freq 2.437000000 GHz PN0: Fast IFGain:Low #Atten: 20 dB ALIGN OFF 11:36:50 AM Jun 17, 2020 Avg Type: Log-Pwr TRACE 23 4 5 6 TYPE MWWWWW DET P P P P SENSE:INT Frequency Auto Tune Mkr1 2.438 240 GHz 0.86 dBm 10 dB/div Ref 10.00 dBm Center Freq **♦**<sup>1</sup> 2.437000000 GHz mounderstanting when the phate when Start Freq 2.423719000 GHz Stop Freq in Minu 2.450281000 GHz CF Step 2.656200 MHz Man Auto Freq Offset 0 Hz Center 2.43700 GHz #Res BW 100 kHz Span 26.56 MHz Sweep 2.600 ms (3001 pts) #VBW 300 kHz In STA

#### Reference





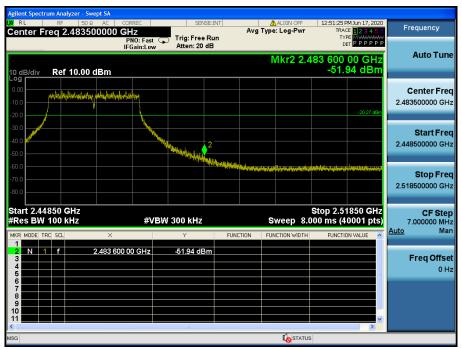
Agilent Spectr											
LXI RL	RF	50 Ω		DRREC	9	ENSE:INT	Ava	ALIGN OFF		AM Jun 17, 2020 CE 123456	Frequency
Center F	req 1	7.5000		GHZ PNO: Fast -Gain:Low			- ry	Type. Log-I wi	TY		
								Mkr3 2		50 GHz	Auto Tune
10 dB/div Log	Ref	10.00 d	Bm						-38.	55 dBm	
0.00											Center Freq
-10.0											17.500000000 GHz
-20.0										-19.14 dBm	
-30.0										3-1	
-40.0											Start Freq 10.00000000 GHz
-50.0	الم الوريان	de ministration	and a second second second	and the second s	Constant of the						10.00000000 GHz
-60.0	الأ الفط										
-70.0											Stop Freq
-80.0											25.00000000 GHz
-00.0											
Start 10.0 #Res BW				#V	BW 3.0 MH	7		Sweep 40	Stop 25	.000 GHz	CF Step
		112		<i></i>		2	FUNCTION	•			Auto Man
MKR MODE TH	ft SUL		× 24.717 2	50 GHz	-36,99	dBm	FUNCTION	FUNCTION WIDTH	FUNCT	JN VALUE	
2 N 1 3 N 1	f		24.557 1: 23.968 7	25 GHz	-38.37 -38.55	dBm					Freq Offset
4			23.300 7	50 GH2	-50.55						0 Hz
5 6										==	
7											
9											
10										~	
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MSG									5		

# TM 3 & ANT 2 & 2462

#### Reference



# **High Band-edge**



Agilent Spectrum Analyzer - Swep XI RL RF 50 Ω▲ Center Freq 15.00450	DC CORREC	SENSE:INT	ALIGN OFF	12:51:32 PM Jun 17, 2020 TRACE 12 3 4 5 6	Frequency
10 dB/div Ref 10.00 dE	PNO: Fast G IFGain:Low	Trig: Free Run Atten: 20 dB		туре Муницика Det P P P P P P Mkr1 281.9 kHz -57.58 dBm	Auto Tune
-10.0				-20.27 dBm	Center Freq 15.004500 MHz
-30.0 -40.0 -50.0					Start Freq 9.000 kHz
-60.0	\	tetereningstottheetigepörtmelisteretiinnetyinsipn	มิสสมไหรสร้างสารสุขางสารไข่สารประสารที่มีที่ได้สารปร	t Atter mensen et manen en	Stop Freq 30.000000 MHz
Start 9 kHz #Res BW 100 kHz	×		Sweep 5.	Stop 30.00 MHz 333 ms (40001 pts) FUNCTION VALUE	CF Step 2.999100 MHz <u>Auto</u> Mar
1 N 1 f 2 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	281 <u>.</u> 9 kHz	-57.58 dBm		=	Freq Offset 0 Hz
7 8 9 9 9 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				~	
MSG		m		DC Coupled	

Agilent Spectrum Analyzer - Swept					
X      RL      RF      50 Ω      A        Center Freq 5.0150000      C <thc< <="" td=""><td></td><td>SENSE:INT</td><td>ALIGN OFF</td><td>12:51:43 PM Jun 17, 2020 TRACE 1 2 3 4 5 6</td><td>Frequency</td></thc<>		SENSE:INT	ALIGN OFF	12:51:43 PM Jun 17, 2020 TRACE 1 2 3 4 5 6	Frequency
Center Freq 5.0 150000	PNO: Fast C	Trig: Free Run	ing type. Log t in		
	IFGain:Low	Atten: 20 dB			Auto Tune
			Mkr	5 2.574 59 GHz	Autorune
10 dB/div Ref 10.00 dB				-46.31 dBm	
	1				Contor From
-10.0					Center Freq 5.015000000 GHz
				-20.27 dBm	5.015000000 GHZ
-20.0				-20.27 dbm	
-30.0			,		Start Freq
-40.0	_ <mark></mark> 5 <u>}{\$</u> 2		4		30.000000 MHz
-50.0		and the local sector of the sector of the	this much second as allowed and the second sec	n deber aller synan om sammer flagter	
-60.0		and the second	The Minister of the Association		
-70.0					Stop Freq
-80.0					10.00000000 GHz
-00.0					
Start 30 MHz				Stop 10.000 GHz	CF Step
#Res BW 1.0 MHz	#VB	W 3.0 MHz	Sweep 18	8.67 ms (40001 pts)	997.000000 MHz
MKR MODE TRC SCL	X	Y F	JNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	2.467 67 GHz	7.56 dBm			
2 N 1 f 3 N 1 f	3.262 77 GHz 3.145 63 GHz	-45.23 dBm -45.92 dBm			Freq Offset
4 N 1 f	5.661 55 GHz	-45.99 dBm			0 Hz
5 N 1 f	2.574 59 GHz	-46.31 dBm			
7					
8					
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MSG			STATU	s	
			<b>U</b>		

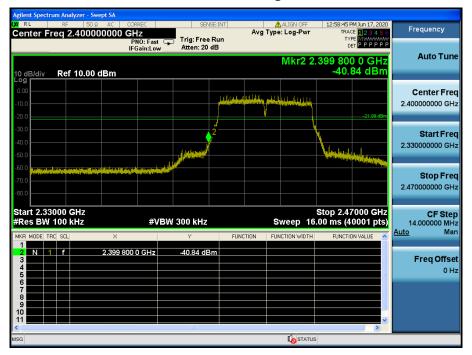


# TM 4 & ANT 2 & 2412



#### Reference

Low Band-edge



Agilent Spectrum Analyzer - Swept SA					
RL RF 50 Ω ▲DC  Center Freq 15.004500 M	CORREC	SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	12:58:52 PM Jun 17, 2020 TRACE 123456	Frequency
	PNO: East	Trig: Free Run Atten: 20 dB		DET PPPP	
				Vikr1 283.4 kHz	Auto Tune
10 dB/div Ref 10.00 dBm				-57.18 dBm	
					Our test
-10.0					Center Freq 15.004500 MHz
-20.0 )				-21.99 dBm	13.004300 Mil12
-30.0					
-40.0					Start Freq
-50.0					9.000 kHz
-50.0 Herety lawely any instance by instance by the	ابغجابي المهداوين ليبالط ومعاومون الية	hip halanaharahasahasahasahihana	han an a	Vergeniserspheriotekstersfeitensitediersk	Stop Freq
-80.0					30.000000 MHz
Start 9 kHz	<i>(</i> ) ( <b>5</b> ) ( ) ( )	AA 1.11-		Stop 30.00 MHz	CF Step
#Res BW 100 kHz	#VBW 3			33 ms (40001 pts)	2.999100 MHz Auto Man
MKR MODE TRC SCL X	283.4 kHz	Y FUNC 57.18 dBm	TION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Mart
2	200.4 KHZ				Freq Offset
3					0 Hz
5					0112
7					
9					
10				~	
<				>	
MSG				L DC Coupled	

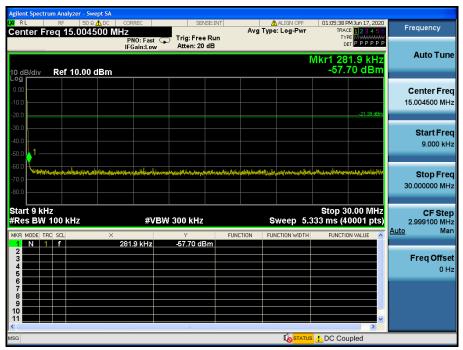
Agilent Spectrum Analyzer - Swept					
RL RF 50 Ω  Center Freq 5.015000		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	12:59:01 PM Jun 17, 2020 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast G	Trig: Free Run Atten: 20 dB		DET P P P P P P	
	IFGain:Low	Atten: 20 GB	Mke	5 2.598 27 GHz	Auto Tune
10 dB/div Ref 10.00 dE				-46.08 dBm	
0.00	¥1				Center Freq
-10.0					5.015000000 GHz
-20.0				-21.99 dBm	
-30.0					
-40.0	́5		4		Start Freq
-50.0	ALL AND A CONTRACTOR OF A CONT		the set of the stand of the stand of the second stands of the second sta	united and the state of the sta	30.000000 MHz
-60.0	and the second second second	A had a been a build a share of the state			
-70.0					Stop Freq
-80.0					10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBV	V 3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL	×		NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f 2 N 1 f	2.424 30 GHz 2.486 11 GHz	4.45 dBm -42.20 dBm			
3 N 1 f	5.818 83 GHz	-45.17 dBm			Freq Offset
4 N 1 f 5 N 1 f	5.843 76 GHz 2.598 27 GHz	-45.91 dBm -46.08 dBm		=	0 Hz
6					
8					
9					
11				×	
MSG					
			-0		



# TM 4 & ANT 2 & 2437

#### Reference





Agilent Spectrum Analyzer - Sw					
Center Freq 5.01500		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	01:05:47 PM Jun 17, 2020 TRACE 123456	Frequency
	PNO: Fast G IFGain:Low	Trig: Free Run Atten: 20 dB		TYPE MWWWWWW DET P P P P P	
	II Gam.cow		Mkr	5 3.136 40 GHz	Auto Tune
10 dB/div Ref 10.00			IVIKI	-45.48 dBm	
0.00	¥1				Center Freq
-10.0					5.015000000 GHz
-20.0				-21.38 dBm	
-30.0	2				
-40.0	5				Start Freq
-50.0	a transfer and the second second	the state of the second se	and the second		30.000000 MHz
-60.0 <b>*********************</b> ***************		A STREET, STREE			
-70.0					Stop Freq
-80.0					10.00000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#\/B\	V 3.0 MHz	Sween 19	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL	× .		UNCTION FUNCTION WIDTH	FUNCTION VALUE	Auto Man
1 N 1 f	2.439 50 GHz	5.16 dBm	ONCTION FONCTION WIDTH	FUNCTION VALUE	
2 N 1 f 3 N 1 f	2.395 88 GHz 2.490 10 GHz	-37.71 dBm -42.54 dBm			Freq Offset
4 N 1 f 5 N 1 f	2.490 85 GHz 3.136 40 GHz	-42.94 dBm -45.48 dBm			0 Hz
6	3.136 40 GHZ	-45.48 dBm			
8					
9					
11				~	
MSG					
Down			LO STATUS		

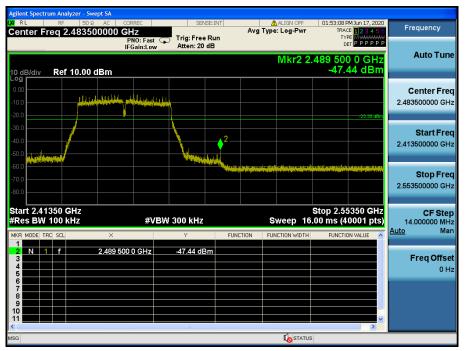
Agilent Spectrum Analyzer - Swept SA        K      RF      50 Ω      AC        Center Freq 17.5000000000	CORREC SENSE: GHZ PN0: Fast Trig: Free Ri	Avg Type: Log-Pwr	01:05:55 PM Jun 17, 2020 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P	Frequency
10 dB/div Ref 10.00 dBm	IFGain:Low Atten: 20 dE	3	оет Р Р Р Р Р Р 24.187 750 GHz -38.10 dBm	Auto Tune
-10.0			-21.38 dBm	Center Freq 17.500000000 GHz
-30.0 -40.0 -50.0		na ng sa sa tanan ing sa		Start Freq 10.000000000 GHz
-60.0 -70.0 -80.0				<b>Stop Freq</b> 25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 40	Stop 25.000 GHz 0.00 ms (40001 pts)	<b>CF Step</b> 1.50000000 GHz <u>Auto</u> Man
1 N 1 f 24.938 2 N 1 f 24.656	125 GHz -37.30 dBm 125 GHz -38.00 dBm 750 GHz -38.10 dBm			Freq Offset 0 Hz
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9			~	
MSG		STATU	S	

# TM 4 & ANT 2 & 2462

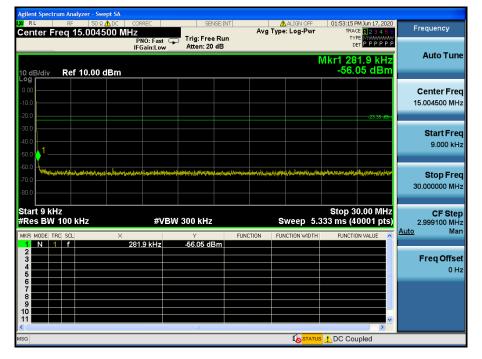
#### Reference



# **High Band-edge**







Agilent Spectrum Analyzer - Swep		or Nor- NIT		ALIGN OFF	01:53:24 PMJun 17, 2020	
Center Freq 5.015000	0000 GHz	SENSE:INT		e: Log-Pwr	TRACE 2 3 4 5 6 TYPE MWWWWWW	Frequency
	PNO: Fast G IFGain:Low	Atten: 20 dB			DETPPPPP	A
10 dB/div Ref 10.00 dl				Mkr	5 2.507 30 GHz -45.97 dBm	Auto Tune
-10.0 -20.0					-23.35 dBm	Center Freq 5.015000000 GHz
-30.0 -40.0 -50.0	5 <u>43</u>		and station and free film for factors ( ) as			Start Freq 30.000000 MHz
-60.0 -70.0 -80.0						<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBV	V 3.0 MHz		Sweep 18.	Stop 10.000 GHz 67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL	×		FUNCTION FI	UNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	2.454 21 GHz 2.398 62 GHz 3.053 65 GHz 2.930 02 GHz 2.507 30 GHz	3.41 dBm -40.65 dBm -45.64 dBm -45.87 dBm -45.97 dBm				<b>Freq Offset</b> 0 Hz
6 8 9 10 11					~	
MSG				<b>I</b> o status		

## **Conducted Spurious Emissions**





## 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, the radio frequency power that is produced by the

adiator shall be at least 20 dB below that in the 100 KHz bandwidth within the 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

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

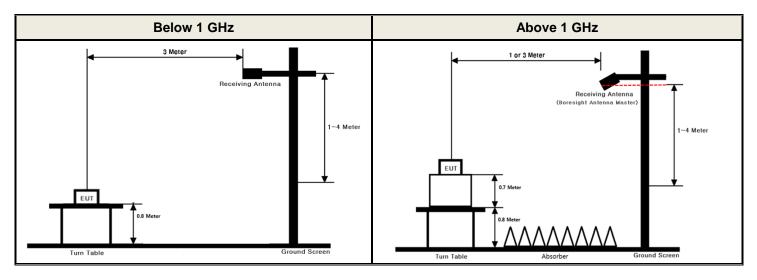
\*\* Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 MHz - 72 MHz, 76 MHz - 88 MHz, 174 MHz - 216 MHz or 470 MHz -806 MHz. However, operation within these frequency bands is permitted under other 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 ~ 12.52025	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.57675 ~ 12.57725	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	13.36 ~ 13.41	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	16.42 ~ 16.423	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	16.69475 ~ 16.69525	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.80425 ~ 16.80475	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	25.5 ~ 25.67	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	37.5 ~ 38.25	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	73 ~ 74.6	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	74.8 ~ 75.2	608 ~ 614	3345.8 ~ 3358		
		960 ~ 1240	3600 ~ 4400		
		000 1240	0000 4400		

• 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 1 000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1 000 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 1 m or 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  $\ge$  3 x RBW, Sweep = Auto, Detector = Peak, Trace mode = Max Hold until the trace stabilizes.

#### 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.

Test Mode	Date rate	T <sub>on</sub> (ms)	T <sub>on+off</sub> (ms)	D = T <sub>on</sub> / (T <sub>on+off</sub> )	DCCF = 10 log(1/D) (dB)
TM 1	1 Mbps	12.200	12.300	0.991 9	0.04
TM 2	54 Mbps	0.244	0.333	0.733 3	1.35
TM 3	MCS 8	0.197	0.284	0.692 5	1.60
TM 4	MCS 7	0.129	0.222	0.578 8	2.37

#### **Duty Cycle Correction factor**

Note1: Where, T= Transmission duration / D= Duty cycle Note2: Please refer to the appendix I for duty cycle plots.

#### Test Results: Comply

Please refer to next page for data table and the appendix I for worst data plots.



## Test Notes.

- 1. The radiated emissions were investigated 9 kHz to 25 GHz. And no other spurious and harmonic emissions were found below listed frequencies.
- Sample Calculation.
  Margin = Limit Result / Result = Reading + T.F+ DCCF + DCF / T.F = AF + CL AG Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, DCCF = Duty Cycle Correction Factor, DCF = Distance Correction Factor
- Information of Distance Factor
  For finding emissions, the test distance might be reduced from 3 m to 1 m. In this case, the distance factor(-9.54 dB) is applied to the result.

Calculation of distance factor = 20 log( applied distance / required distance ) = 20 log( 1 m / 3 m ) = -9.54 dB When distance factor is "N/A", the distance is 3 m and distance factor is not applied.

# Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : TM 1\_ Normal \_ ANT 1

Tested Frequency (MHz)	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
	2 388.78	V	Z	PK	50.52	4.80	N/A	N/A	55.32	74.00	18.68
2 412	2 388.92	V	Z	AV	40.91	4.80	N/A	N/A	45.71	54.00	8.29
2 412	4 823.93	Н	Z	PK	52.39	0.93	N/A	N/A	53.32	74.00	20.68
	4 823.97	Н	Z	AV	45.00	0.93	N/A	N/A	45.93	54.00	8.07
2 437	4 873.92	Н	Z	PK	52.24	1.17	N/A	N/A	53.41	74.00	20.59
2 437	4 874.02	Н	Z	AV	45.36	1.17	N/A	N/A	46.53	54.00	7.47
	2 484.09	V	Z	PK	50.78	5.26	N/A	N/A	56.04	74.00	17.96
2 462	2 484.21	V	Z	AV	41.07	5.26	N/A	N/A	46.33	54.00	7.67
2 402	4 924.04	Н	Z	PK	52.92	1.45	N/A	N/A	54.37	74.00	19.63
	4 923.98	Н	Z	AV	44.83	1.45	N/A	N/A	46.28	54.00	7.72

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

Tested Frequency (MHz)	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
	2 389.45	Н	Z	PK	50.28	4.80	N/A	N/A	55.08	74.00	18.92
2 412	2 389.28	Н	Z	AV	40.53	4.80	1.35	N/A	46.68	54.00	7.32
2412	4 823.84	Н	Z	PK	49.11	0.93	N/A	N/A	50.04	74.00	23.96
	4 823.58	Н	Z	AV	38.76	0.93	1.35	N/A	41.04	54.00	12.96
2 437	4 874.04	Н	Z	PK	49.83	1.17	N/A	N/A	51.00	74.00	23.00
2 437	4 874.16	Н	Z	AV	38.91	1.18	1.35	N/A	41.44	54.00	12.56
	2 484.22	Н	Z	PK	50.84	5.26	N/A	N/A	56.10	74.00	17.90
0.400	2 484.15	Н	Z	AV	41.31	5.26	1.35	N/A	47.92	54.00	6.08
2 462	4 924.14	Н	Z	PK	49.39	1.45	N/A	N/A	50.84	74.00	23.16
	4 924.12	Н	Z	AV	38.89	1.45	1.35	N/A	41.69	54.00	12.31



# Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : TM 3\_ Normal

Tested Frequency (MHz)	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
	2 389.71	Н	Z	PK	53.23	4.80	N/A	N/A	58.03	74.00	15.97
2 412	2 389.86	Н	Z	AV	42.30	4.80	1.60	N/A	48.70	54.00	5.30
2 412	4 824.33	Н	Z	PK	49.13	0.93	N/A	N/A	50.06	74.00	23.94
	4 824.18	Н	Z	AV	38.68	0.93	1.60	N/A	41.21	54.00	12.79
2 437	4 874.23	Н	Z	PK	49.80	1.18	N/A	N/A	50.98	74.00	23.02
2 437	4 874.22	Н	Z	AV	39.00	1.18	1.60	N/A	41.78	54.00	12.22
	2 483.63	Н	Z	PK	59.50	5.25	N/A	N/A	64.75	74.00	9.25
2 462	2 483.79	Н	Z	AV	43.76	5.26	1.60	N/A	50.62	54.00	3.38
2 402	4 924.04	Н	Z	PK	50.49	1.45	N/A	N/A	51.94	74.00	22.06
	4 924.09	Н	Z	AV	38.90	1.45	1.60	N/A	41.95	54.00	12.05

## Radiated Spurious Emissions data(9 kHz ~ 25 GHz) : <u>TM 4</u> Normal

Tested Frequency (MHz)	Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCCF (dB)	DCF (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
	2 388.78	Н	Z	PK	55.02	4.80	N/A	N/A	59.82	74.00	14.18
2 412	2 388.62	Н	Z	AV	43.52	4.80	2.37	N/A	50.69	54.00	3.31
2 412	4 844.20	Н	Z	PK	49.41	1.09	N/A	N/A	50.50	74.00	23.50
	4 844.48	Н	Z	AV	38.95	1.09	2.37	N/A	42.41	54.00	11.59
2 437	4 873.61	Н	Z	PK	50.01	1.17	N/A	N/A	51.18	74.00	22.82
2 437	4 873.64	Н	Z	AV	38.87	1.17	2.37	N/A	42.41	54.00	11.59
	2 484.58	Н	Z	PK	55.86	5.27	N/A	N/A	61.13	74.00	12.87
2.462	2 484.71	Н	Z	AV	43.44	5.27	2.37	N/A	51.08	54.00	2.92
2 462	4 904.23	Н	Z	PK	50.09	1.36	N/A	N/A	51.45	74.00	22.55
	4 904.40	Н	Z	AV	38.89	1.36	2.37	N/A	42.62	54.00	11.38

## 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 (MHz)	Conducted Limit (dBuV)				
	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

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

#### Test 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.

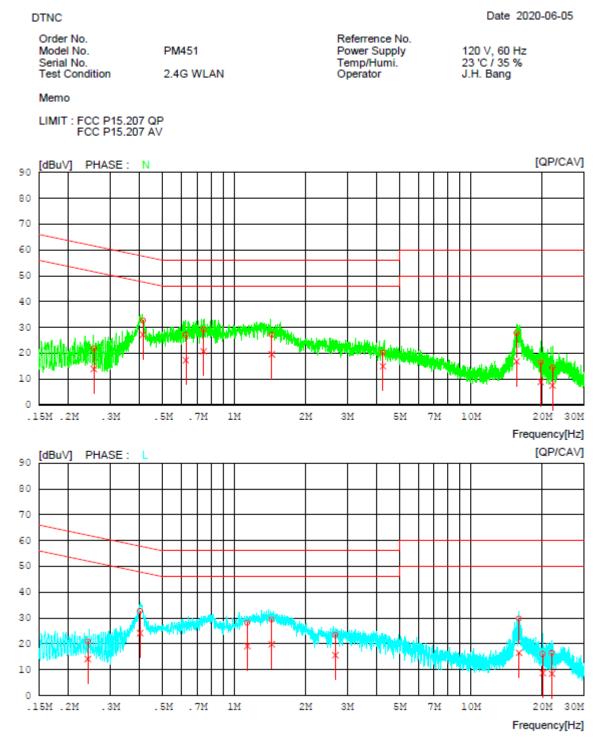


## RESULT PLOTS

#### AC Line Conducted Emissions (Graph)

TM 2 & Highest

# Results of Conducted Emission



## AC Line Conducted Emissions (List)

## TM 2 & Highest

DTNC

# Results of Conducted Emission

Date 2020-06-05

Order No. Model No. Serial No.	PM451	Referrence No. Power Supply Temp/Humi.	120 V, 60 Hz 23 'C / 35 %
Test Condition	2.4G WLAN	Operator	J.H. Bang

#### Memo

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

NO	FREQ	READING QP CAV [dBuV][dBuV		RESULT QP CAV [dBuV][dBuV	QP CAV	MARGIN QP CAV J] [dBuV][dBuV]	PHASE /]
1	0.25565	12.03 4.00	9.95	21.9813.95	61.57 51.57	39.5937.62	N
2	0.41216	22.7717.23	9.97	32.7427.20	57.60 47.60	24.8620.40	N
3	0.62577	17.21 7.32	9.97	27.1817.29	56.00 46.00	28.8228.71	N
4	0.74417	19.2010.81	9.97	29.1720.78	56.00 46.00	26.8325.22	N
5	1.44295	17.23 9.57	9.99	27.2219.56	56.00 46.00	28.7826.44	N
6	4.25368	10.12 4.87	10.13	20.2515.00	56.00 46.00	35.7531.00	N
7	15.59949	17.37 6.42	10.45	27.8216.87	60.00 50.00	32.18 33.13	N
8	19.70551	5.94-1.62	10.50	16.44 8.88	60.00 50.00	43.5641.12	N
9	22.10058	3.85-2.97	10.53	14.38 7.56	60.00 50.00	45.6242.44	N
10	0.24161	10.95 4.21	9.94	20.8914.15	62.04 52.04	41.15 37.89	L
11	0.40079	22.7914.14	9.95	32.7424.09	57.84 47.84	25.1023.75	L
12	1.13678	18.17 9.15	9.98	28.1519.13	56.00 46.00	27.8526.87	L
13	1.44215	19.37 9.81	10.00	29.3719.81	56.00 46.00	26.6326.19	L
14	2.68017	13.44 5.56	10.05	23.4915.61	56.00 46.00	32.51 30.39	L
15	15.97385	19.28 6.09	10.44	29.7216.53	60.00 50.00	30.28 33.47	L
16	20.12744	5.46-1.81	10.47	15.93 8.66	60.00 50.00	44.07 41.34	L
17	21.98730	5.99-2.11	10.50	16.49 8.39	60.00 50.00	43.5141.61	L



# Test Requirements, RSS-Gen [6.7]

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99 % emission bandwidth, as calculated or measured.

# **TEST CONFIGURATION**

Refer to the APPENDIX I.

# TEST PROCEDURE

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

# TEST RESULTS: Comply

Test Made	Eroguopou	Test Res	ults[MHz]	
Test Mode	Frequency	ANT 1	ANT 2	
	2 412	12.63	12.52	
TM 1	2 437	12.77	12.81	
	2 462	12.93	12.94	
	2 412	16.92	16.95	
TM 2	2 437	17.00	17.00	
	2 462	17.04	17.06	
	2 412	18.01	18.02	
ТМ 3	2 437	18.12	18.07	
	2 462	18.15	18.16	
	2 422	36.81	36.41	
TM 4	2 437	36.83	36.42	
	2 452	36.78	36.37	

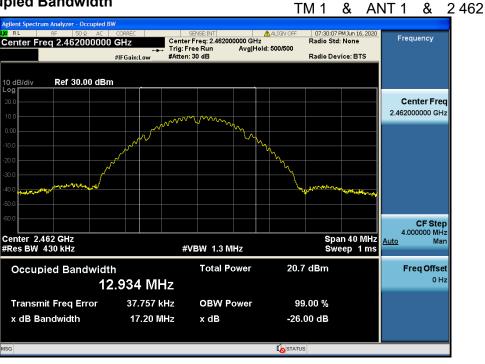
#### RESULT PLOTS





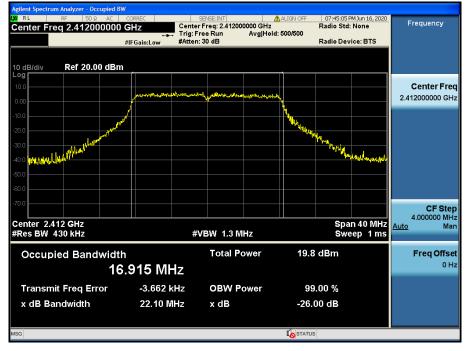








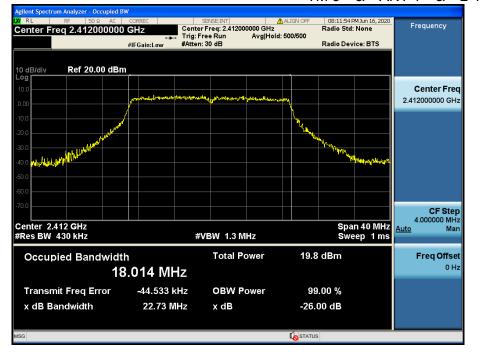






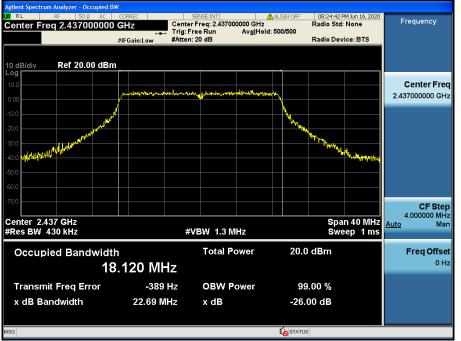


TM 3 & ANT 1 & 2412



## **Occupied Bandwidth**

## TM 3 & ANT 1 & 2437







#### **Occupied Bandwidth**

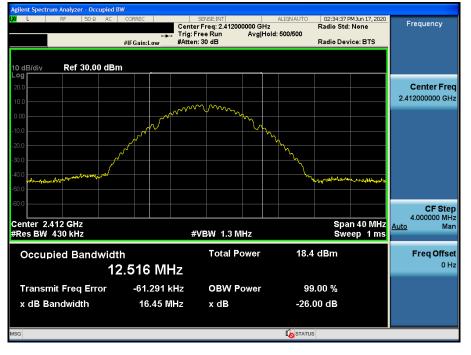
## TM 4 & ANT 1 & 2437







TM 1 & ANT 2 & 2412



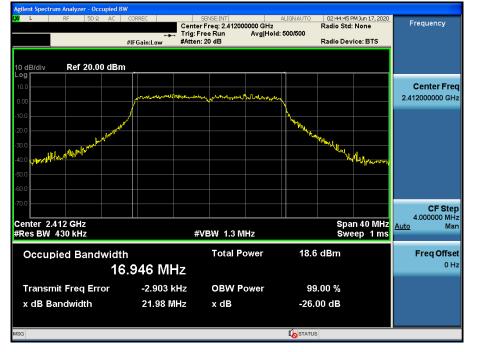
#### **Occupied Bandwidth**

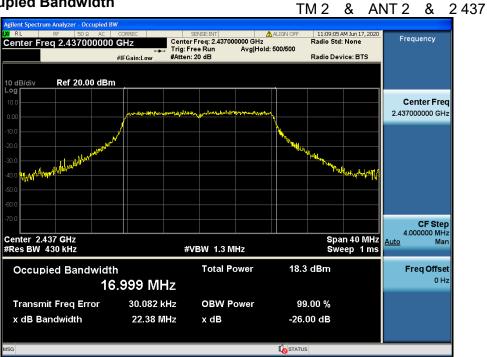
TM 1 & ANT 2 & 2437















TM 3 & ANT 2 & 2412

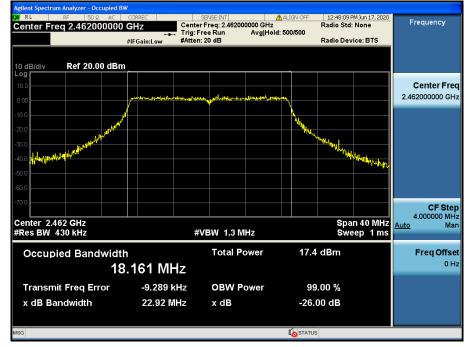


#### **Occupied Bandwidth**

TM 3 & ANT 2 & 2437







#VBW 2.4 MHz Total Power

x dB

**OBW Power** 



## **Occupied Bandwidth**

10 dB



17.9 dBm

99.00 %

-26.00 dB

**STATUS** 

#### **Occupied Bandwidth**

Center 2.422 GHz #Res BW 820 kHz

Occupied Bandwidth

**Transmit Freq Error** 

x dB Bandwidth

36.413 MHz -31.549 kHz

41.52 MHz

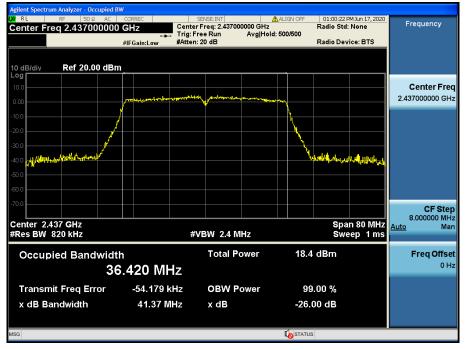
TM 4 & ANT 2 & 2437

Auto

Span 80 MHz Sweep 1 ms

CF Step 8.000000 MHz Man

Freq Offset 0 Hz





# 9. LIST OF TEST EQUIPMENT

Туре	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	19/12/16	20/12/16	MY50410357
Spectrum Analyzer	Agilent Technologies	N9020A	19/12/16	20/12/16	MY48011700
Spectrum Analyzer	Agilent Technologies	N9020A	19/06/16	20/12/16	MY48010133
DC Power Supply	Agilent Technologies	66332A	19/06/25	20/06/25	MY43000211
Multimeter	FLUKE	17B	19/12/16	20/12/16	26030065WS
Signal Generator	Rohde Schwarz	SMBV100A	19/12/16	20/12/16	255571
Signal Generator	ANRITSU	MG3695C	19/12/16	20/12/16	173501
Thermohygrometer	BODYCOM	BJ5478	19/12/18	20/12/18	120612-1
Thermohygrometer	BODYCOM	BJ5478	19/12/18	20/12/18	120612-2
Thermohygrometer	BODYCOM	BJ5478	19/07/03	20/07/03	N/A
Loop Antenna	ETS-Lindgren	6502	19/09/18	21/09/18	00226186
BILOG ANTENNA	Schwarzbeck	VULB 9160	19/04/23	21/04/23	9160-3362
Horn Antenna	ETS-Lindgren	3115	20/01/30	22/01/30	6419
Horn Antenna	Schwarzbeck	BBHA 9120C	19/12/04	21/12/04	9120C-561
PreAmplifier	tsj	MLA-0118-B01-40	19/12/16	20/12/16	1852267
PreAmplifier	tsj	MLA-1840-J02-45	19/06/27	20/06/27	16966-10728
PreAmplifier	H.P	8447D	19/12/16	20/12/16	2944A07774
High Pass Filter	Wainwright Instruments	WHKX12-935-1000- 15000-40SS	19/06/26	20/06/26	8
High Pass Filter	Wainwright Instruments	WHKX10-2838- 3300-18000-60SS	19/06/26	20/06/26	1
High Pass Filter	Wainwright Instruments	WHNX8.0/26.5-6SS	19/06/27	20/06/27	3
Attenuator	Hefei Shunze	SS5T2.92-10-40	19/06/27	20/06/27	16012202
Attenuator	SRTechnology	F01-B0606-01	19/06/27	20/06/27	13092403
Attenuator	Aeroflex/Weinschel	20515	19/06/27	20/06/27	Y2370
Attenuator	SMAJK	SMAJK-2-3	19/06/27	20/06/27	2
Attenuator	SMAJK	SMAJK-50-10	19/08/07	20/08/07	15081901
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2488B MA2491A	20/01/02	21/01/02	0910025 0845333
EMI Receiver	ROHDE&SCHWARZ	ESW44	19/07/30	20/07/30	101645
PULSE LIMITER	Rohde Schwarz	ESH3-Z2	19/09/17	20/09/17	101333
LISN	SCHWARZBECK	NSLK 8128 RC	19/11/04	20/11/04	8128 RC-387
Cable	Junkosha	MWX241	20/01/13	21/01/13	G-04
Cable	Junkosha	MWX241	20/01/13	21/01/13	G-07
Cable	DT&C	Cable	20/01/13	21/01/13	G-13
Cable	DT&C	Cable	20/01/13	21/01/13	G-14
Cable	HUBER+SUHNER	SUCOFLEX 104	20/01/13	21/01/13	G-15
Cable	Radiall	TESTPRO3	20/01/16	21/01/16	M-01
Cable	Junkosha	MWX315	20/01/16	21/01/16	M-05
Cable	Junkosha	MWX221	20/01/16	21/01/16	M-06
Cable	Radiall	TESTPRO3	20/01/16	21/01/16	RF-82
Test Software	tsj	Raidated Emission Measurement	NA	NA	Version 2.00.0177
Test Software	tsj	Noise Terminal Measurement	NA	NA	Version 2.00.0170

Note 1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017 Note 2: The cable is not a regular calibration item, so it has been calibrated by DT & C itself.

# **APPENDIX I**

## Duty cycle plots

#### Test Procedure

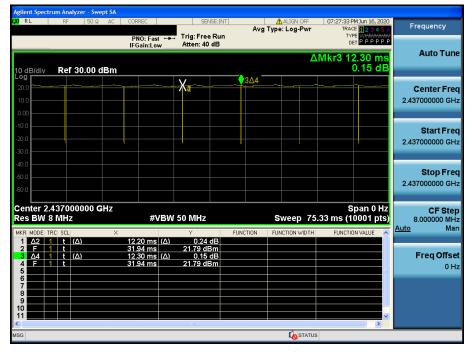
#### Duty Cycle was measured using section 6.0 b) of KDB558074 D01v05r02 :

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.)

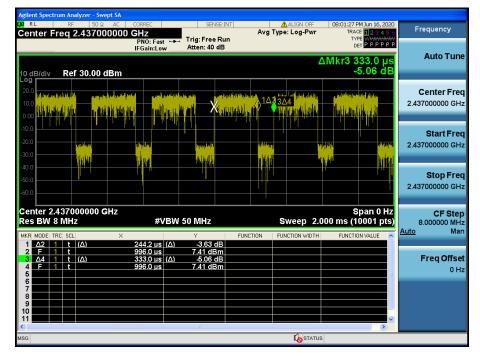
## **Duty Cycle**

## TM 1 & ANT 1 & 2 437 MHz & 1 Mbps

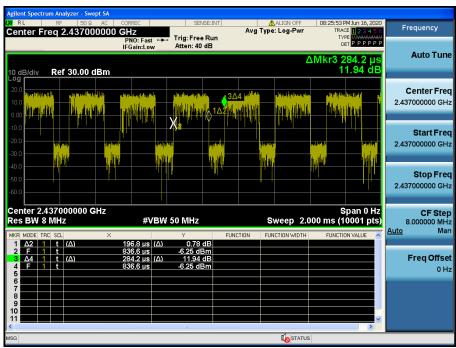


# **Dt&C**

#### TM 2 & ANT 1 & 2 437 MHz & 54 Mbps



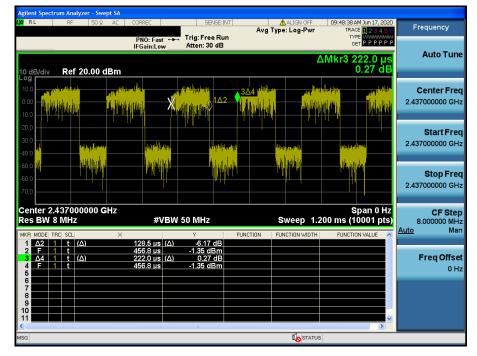
## TM 3 & ANT 1 & 2 437 MHz & MCS 8



## **Duty Cycle**



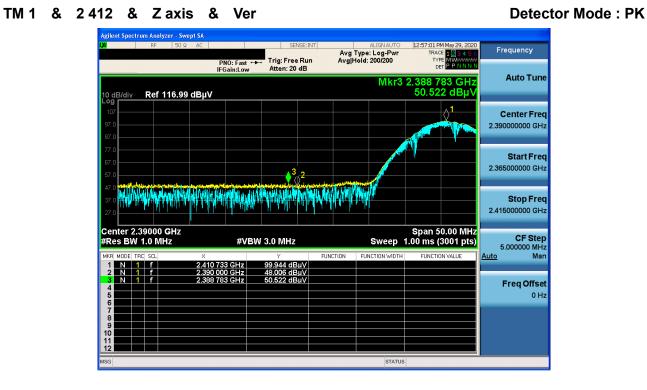
## TM 4 & ANT 1 & 2 437 MHz & MCS 7



# **Duty Cycle**

# **APPENDIX II**

# **Unwanted Emissions (Radiated) Test Plot**



#### TM 1 & 2412 & Zaxis & Ver

**Detector Mode : AV** 

RF	50 Ω AC	NO:Fast ↔ Trig:Fr		ALIGN AUTO g Type: RMS  Hold: 200/200	01:01:24 PM May 29, 2020 TRACE 1 2 3 4 5 6 TYPE A WWWW DET A P N N N	Frequency
10 dB/div Ref		Gain:Low Atten: 2		Mkr3	2.388 917 GHz 40.907 dBuV	Auto Tur
107 97.0 87.0						Center Fre 2.390000000 GH
77.0 67.0 57.0			3 2			<b>Start Fre</b> 2.365000000 GI
47.0 37.0 27.0						<b>Stop Fr</b> 2.415000000 G
enter 2.39000 GHz Span 50.00 MH: Res BW 1.0 MHz #VBW 3.0 MHz* Sweep 1.00 ms (3001 pts						
MKR MODE TRC SCL	× 2.410 73			FUNCTION WIDTH	FUNCTION VALUE	Auto M
2 N 1 f	2.390 00 2.388 91					Freq Offs
3 N 1 f 4 5 6 6	1					
4 5						



#### TM 1 & 2462 & Zaxis & Ver



#### **Detector Mode : AV**

#### TM 1 & 2462 & Zaxis & Ver





## TM 2 & 2412 & Zaxis & Hor



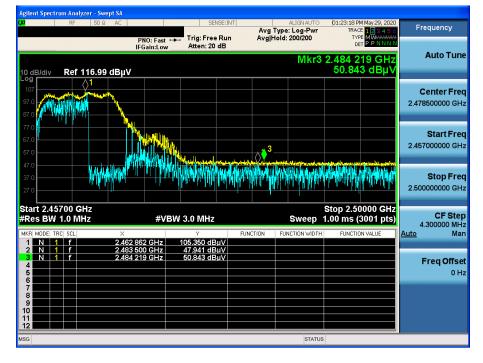
#### TM 2 & 2412 & Zaxis & Hor

#### ectrum Analyzer - Swept SA Avg Type: RMS Avg|Hold: 200/200 Frequency TRACE DET A P N N Auto Tune Mkr3 2.389 283 GH 40.533 dBµ' 10 dB/div Ref 116.99 dBµV Center Freq 2.39000000 GHz Start Freq 2.365000000 GHz Stop Freq 2.415000000 GHz Center 2.39000 GHz #Res BW 1.0 MHz Span 50.00 MHz Sweep 1.00 ms (3001 pts) CF Step 5.000000 MHz Man #VBW 3.0 MHz\* Auto 00 GHz 39.783 dBµ\ 40.533 dBµ\ Freq Offset 0 Hz 10 STATUS

#### **Detector Mode : AV**



#### TM 2 & 2462 & Zaxis & Hor



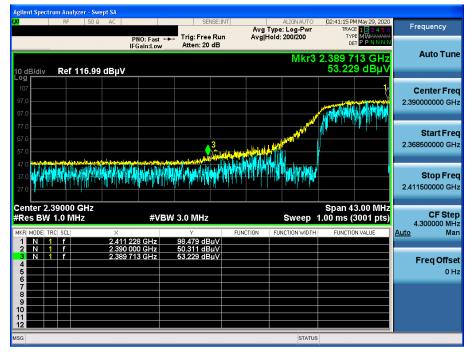
#### Detector Mode : AV

#### TM 2 & 2462 & Zaxis & Hor





## TM 3 & 2412 & Zaxis & Hor



#### TM 3 & 2412 & Zaxis & Hor

#### ectrum Analyzer - Swept SA Frequency Avg Type: RMS Avg|Hold: 200/200 TRAC PNO: Fast +++ Trig: Free Run IFGain:Low Atten: 20 dB DET A P N N Auto Tune Mkr3 2.389 857 GHz 42.296 dBµ\ 10 dB/div Ref 116.99 dBµV **Center Freq** 2.390000000 GHz Start Freq 2.368500000 GHz 3 Stop Freq 2.411500000 GHz Span 43.00 MHz Sweep 1.00 ms (3001 pts) Center 2.39000 GHz #Res BW 1.0 MHz **CF Step** 4.300000 MHz Man #VBW 3.0 MHz\* Auto 228 GHZ 000 GHZ 857 GHZ 42.020 dBµ<sup>1</sup> 42.296 dBµ<sup>1</sup> Freq Offset 0 Hz STATUS

#### **Detector Mode : AV**



#### TM 3 & 2462 & Zaxis & Hor



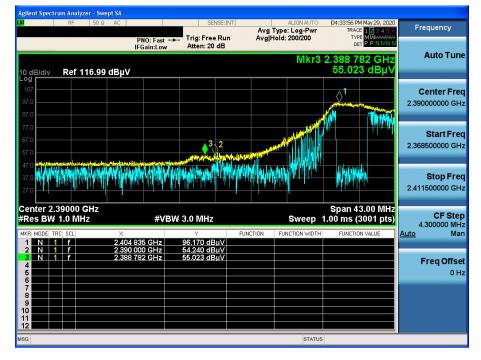
#### TM 3 & 2462 & Zaxis & Hor

#### Spectrum Analyzer - Swept SA Avg Type: RMS Avg|Hold: 200/200 Frequency Trig: Free Run Atten: 20 dB DET A P N N PNO: Fast ↔→ IFGain:Low Auto Tune Mkr3 2.483 789 GHz 43.759 dBµ\ 10 dB/div Ref 116.99 dBµV Center Freq 2.478500000 GHz Start Freq 2.457000000 GHz <́́<sup>3</sup> Stop Freq 2.50000000 GHz Start 2.45700 GHz #Res BW 1.0 MHz Stop 2.50000 GHz Sweep 1.00 ms (3001 pts) CF Step 4.300000 MHz Man #VBW 3.0 MHz\* <u>Auto</u> 2.467 406 GHZ 2.483 500 GHz 2.483 789 GHz 43.260 dBµ\ 43.759 dBµ\ Freq Offset 0 Hz STATUS

#### **Detector Mode : AV**



#### TM 4 & 2 422 & Z axis & Hor



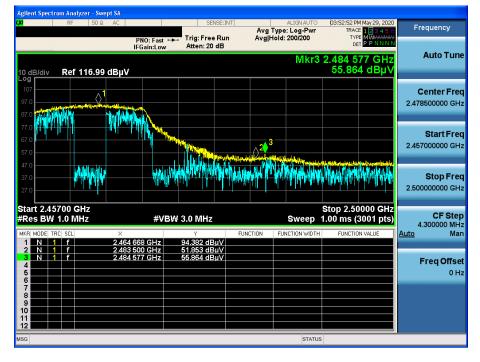
#### **Detector Mode : AV**

#### TM 4 & 2 422 & Z axis & Hor





#### TM 4 & 2452 & Zaxis & Hor



#### **Detector Mode : AV**

#### TM 4 & 2 452 & Z axis & Hor



**Detector Mode : AV** 

## TM 1 & 2 437 & Z axis & Hor



#### TM 2 & 2462 & Zaxis & Hor

#### nt Spectrum Analyzer - Swept SA Frequency Avg Type: RMS Avg|Hold: 200/200 Trig: Free Run Atten: 6 dB PNO: Fast +++ IFGain:Low Mkr1 4.924 123 3 GHz 38.888 dBµV Auto Tune Ref 66.99 dBµV 5 dB/div Log **Center Freq** 4.924000000 GHz Start Freq 4.921500000 GHz Stop Freq 4.926500000 GHz **∮**<sup>1</sup> CF Step 2.46200000 GHz Auto Man Freq Offset 0 Hz Center 4.924000 GHz #Res BW 1.0 MHz Span 5.000 MHz Sweep 1.00 ms (3001 pts) #VBW 3.0 MHz\*

#### **Detector Mode : AV**

**Detector Mode : AV** 

#### TM 3 & 2462 & Zaxis & Hor



#### TM 4 & 2 452 & Z axis & Hor

#### nt Spectrum Analyzer - Swept SA Frequency Avg Type: RMS Avg|Hold: 200/200 Trig: Free Run Atten: 6 dB TYPE A WANNAN DET A P N N N PNO: Fast +++ IFGain:Low Auto Tune 04 400 0 GHz 38.887 dBµ∨ Mkr1 4.9 Ref 66.99 dBµV 5 dB/div Log **Center Freq** 4.904000000 GHz Start Freq 4.901500000 GHz Stop Freq 4.906500000 GHz \$ CF Step 2.45200000 GHz Auto Man Freq Offset 0 Hz Center 4.904000 GHz #Res BW 1.0 MHz Span 5.000 MHz Sweep 1.00 ms (3001 pts) #VBW 3.0 MHz\*

#### **Detector Mode : AV**