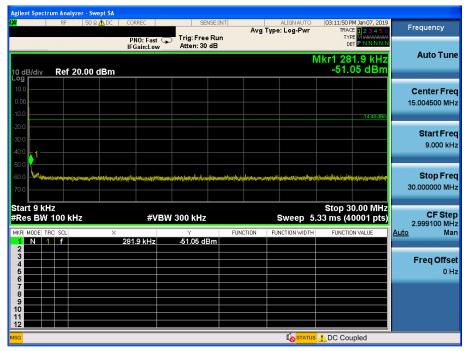
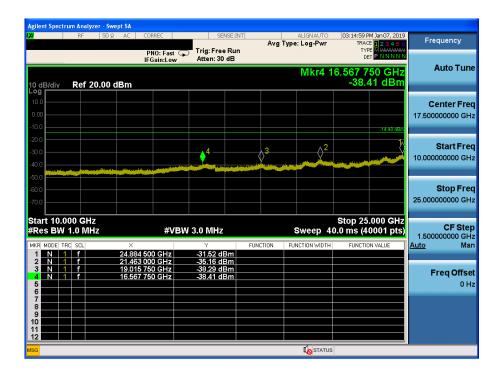


TM 2 & 2437

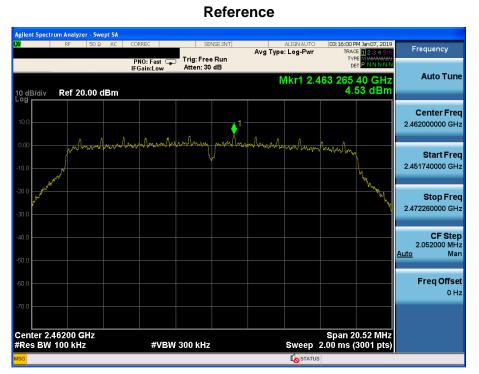




RF 50 9	Ω AC CORREC	SENSE:INT		ALIGN AUTO	03:13:28 PM Jan 07, 2019	Frequency
	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg T <sub>i</sub>	/pe: Log-Pwr	TRACE 123456 TYPE M WWWWWW DET P N N N N N	Frequency
dB/div Ref 20.00	dBm			Mkr	3 3.850 50 GHz -43.40 dBm	Auto Tun
<b>29</b> 0.0 .00					-14.48 dBm	Center Fre 5.015000000 GH
0.0 0.0 0.0		3			fred as the grant for the second	Start Fre 30.000000 Mi
						<b>Stop Fre</b> 10.000000000 GI
tart 30 MHz Res BW 1.0 MHz	#VI	BW 3.0 MHz	FUNCTION	Sweep 1	Stop 10.000 GHz 8.7 ms (40001 pts)	CF Ste 997.000000 Mi <u>Auto</u> Mi
1 N 1 f 2 N 1 f 3 N 1 f 4	2.439 50 GHz 5.740 32 GHz 3.850 50 GHz	12.79 dBm -42.01 dBm -43.40 dBm	Tonenon	TORENOT WIDTH	TORCHOIL VALUE	Freq Offs
5 6 7 8 9						0



#### TM 2 & 2462



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

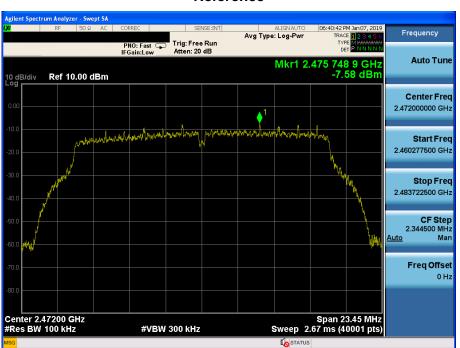


	RF	50 Ω <u>Λ</u> DC	CORREC	SENS	E:INT	ALIGN AUTO		1 Jan 07, 2019	
			PNO: Fast	Trig: Free F	Run	Type: Log-Pwr	TRACE TYPE DET	123456 M <del>ummun</del> PNNNNN	Frequency
) dB/div	Ref 20	.00 dBm	IFGain:Low	Atten: 30 d	B	r	/kr1 295		Auto Tun
o.0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0								-15.47 dBm	Center Fre 15.004500 MH
10.0 10.0									<b>Start Fre</b> 9.000 kH
io.0 io.0 io.0	ally, Metaodicean	artina)aya Terfiyen antara ya marka ka	analan ya alaya ina ang	ntaline fair a dath y right y deid a fhr	ay ya manana ay ang	aljänskandstatusentoisent	den <sup>te</sup> nteksen det werden versen og	unter the test of the second second	Stop Fre 30.000000 Mi
	100 kHz	×	#VE	300 kHz	FUNCTION	Sweep 5			CF Ste 2.999100 MI Auto M
KB MODE TE			295.4 kHz	-52.23 dBr		Tonenon with	Toricitor		
1 N 1 2	f .								
1 N 1 2 3 4 5									· · · · · · · · · · · · · · · · · · ·
2 2 3 4 5 5 6 7 7 9 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1									Freq Offs 01
1 N 1 2 3 4 5 6 7 8									

Agilent Spectrum Analyzer - Swep	ot SA				
<mark>(X)</mark> RF 50 Ω	AC CORREC	SENSE:INT	ALIGN AUTO	03:21:44 PM Jan 07, 2019	Frequency
	PNO: Fast IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N	
10 dB/div Ref 20.00 dB	Bm		Mkr	2 5.823 32 GHz -42.16 dBm	Auto Tune
Log 10.0 0.00 -10.0				-15.47 dBm	Center Freq 5.015000000 GHz
-20.0 -30.0 -40.0					Start Freq 30.000000 MHz
-50.0					<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz		3W 3.0 MHz	-	Stop 10.000 GHz 8.7 ms (40001 pts)	<b>CF Step</b> 997.000000 MHz
MKR MODE TRC SCL 1 N 1 f 2 N 1 f	× 2.460 69 GHz 5.823 32 GHz	Y 11.91 dBm -42.16 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
3 4 5 6					<b>Freq Offset</b> 0 Hz
7 8 9 9 10 11					
12 MSG			STATUS		

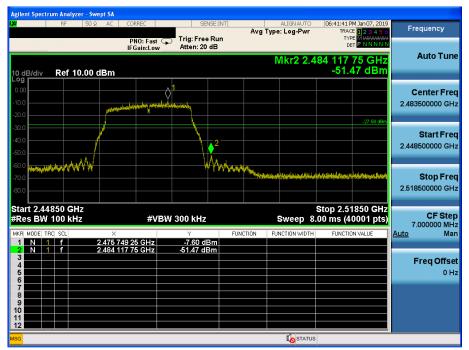


#### TM 2 & 2472



#### Reference

**High Band-edge** 

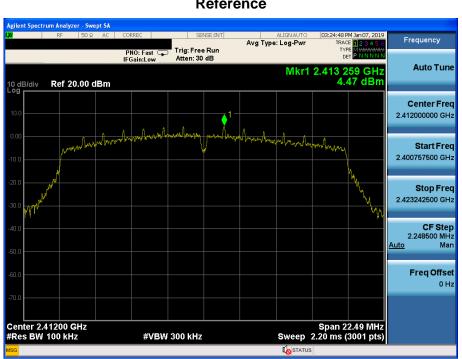


RF 5	50 Ω 🧥 DC 🔰	CORREC	SENSE:	INT	ALIGN AUTO	06:42:05 PM Jan 07, 201	
		PNO: Fast C	Trig: Free Ru Atten: 20 dB	in –	Type: Log-Pwr	TRACE 12345 TYPE MWWWWW DET PINNNN	Frequency
0 dB/div Ref 10.0		ii Gain.Eow			ſ	Mkr1 299.9 kHz -63.00 dBm	Auto Tune
							Center Free 15.004500 MH
80.0						-27.58 dBr	Start Free 9.000 kH
	An him and played an private	utetationadalap	and an analyzantic state of the second	www.ia.interactionant	angle and and angle of the	Kelenterser van Latertandersteren die sta	Stop Fre
80.0							30.000000 MH
tart 9 kHz Res BW 100 kHz	×	#VB	W 300 kHz	FUNCTION	Sweep 5	Stop 30.00 MHz 33 ms (40001 pts FUNCTION VALUE	CF Ste 2.999100 MH
tart 9 kHz Res BW 100 kHz		#VB				.33 ms (40001 pts	CF Ste 2.999100 M⊢
tart 9 kHz Res BW 100 kHz KR MODE TRC SCL 1 N 1 f 2 3 4 5			Y			.33 ms (40001 pts	CF Ste 2.999100 MH Auto Ma Freq Offso

RF	50Ω AC	CORREC	SENSE:If				
		PNO: Fast G	Trig: Free Run Atten: 20 dB	Avg	ALIGN AUTO I Type: Log-Pwr	06:43:44 PM Jan 07, 2019 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P N N N N N	Frequency
0 dB/div Ref 10	0.00 dBm				Mkr	3 5.714 89 GHz -51.91 dBm	Auto Tune
						-27.59 dBm	Center Fred 5.015000000 GH
		2		3		يى ئۇتۇمىنىۋارىرىيە بەر بەر بەر بەر بەر بەر بەر بەر بەر بە	Start Free 30.000000 MH
50.0							<b>Stop Fre</b> 10.000000000 GH
tart 30 MHz Res BW 1.0 MH		#VBV	V 3.0 MHz			Stop 10.000 GHz 3.7 ms (40001 pts)	CF Ste 997.000000 MH
KR         MODE         TRC         SCL           1         N         1         f           2         N         1         f           3         N         1         f           4         -         -           5         -         -           6         -         -	3.16	/3 90 GHz 9 05 GHz 4 89 GHz	Y 0.57 dBm -51.00 dBm -51.91 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Ma Freq Offse 0 ⊢
7 8 9 0 1 2							

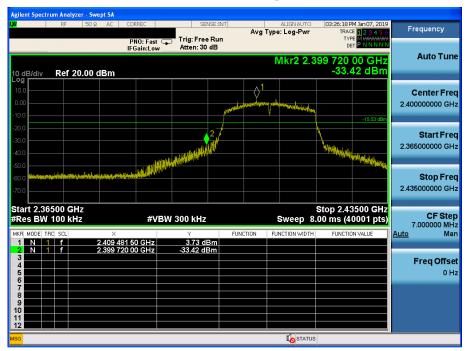
	RF	50Ω AC	CORREC	SENSE:	INT	ALIGN AUTO	06:45:20 PM Jan 07, 2019	
			PNO: Fast IFGain:Low	Trig: Free Ru Atten: 20 dB		Type: Log-Pwr	TRACE 123456 TYPE MWWWW DET PNNNNN	Frequency
) dB/div	Ref 10	.00 dBm				Mkr4 1	9.027 000 GHz -48.86 dBm	Auto Tun
og 1.00 0.0 0.0							-27.58 dBm	Center Fre 17.500000000 G⊢
0.0 0.0 0.0		enter bete reserve to you		3	4-	<sup>2</sup>		Start Fre 10.00000000 GF
								<b>Stop Fre</b> 25.000000000 GH
	1.0 GHz	×		SW 3.0 MHz Y	FUNCTION	Sweep 4	Stop 25.000 GHz 0.0 ms (40001 pts) FUNCTION VALUE	CF Ste 1.50000000 GF Auto Ma
1 N 1 2 N 1 3 N 1 4 N 1 5 6	f f f f	21.40 16.63	8 625 GHz 9 000 GHz 30 750 GHz 7 000 GHz	-41.38 dBm -45.22 dBm -48.40 dBm -48.86 dBm				Freq Offs 0 H
7 8 9 0 1 2								

#### TM 3 & 2412



Reference

#### Low Band-edge

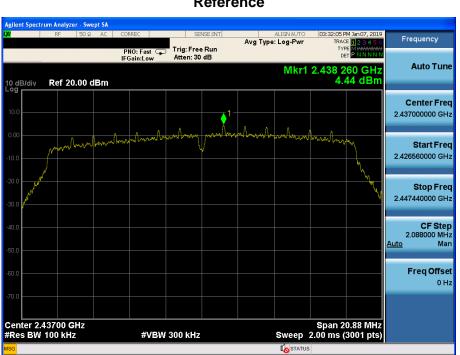


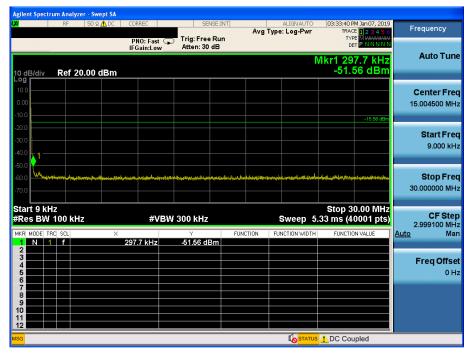
RF	50 Ω 🚹 DC	CORREC	SENSE:IN		ALIGN AUTO	03:27:00 PM J		
		PNO: Fast G	Trig: Free Run Atten: 30 dB		e: Log-Pwr	TRACE TYPE DET	23456 ////////////////////////////////////	Frequency
) dB/div Ref 2	0.00 dBm	IFGain:Low	Atten: 50 dB		N	/lkr1 292. -52.20	4 kHz	Auto Tun
og 10.0 1.00 0.0							-15.53 dBm	Center Fre 15.004500 MH
0.0								<b>Start Fre</b> 9.000 k⊦
	iyaattijihohayadenan daastiniiiih	ayin gulaya Ayaya da	terrenter daristrase darint	dighachallinnachaushaamnig	Y <sub>an</sub> uyinja:jiajwat	photol a black is give the second birds	nyaa daa ay d	Stop Fre 30.000000 MH
tart 9 kHz Res BW 100 kH		#VBV	V 300 kHz		Sweep 5.	Stop 30.0 33 ms (400	01 pts)	<b>CF Ste</b> 2.999100 Mi uto Mi
KR MODE TRC SCL	×							
KR MODE TRC SCL 1 N 1 f 2 3 4 5		92.4 kHz	-52.20 dBm			Tonenon		Freq Offs
1 N 1 f 2 3 4		92.4 kHz	-52.20 dBm			- OKENGINA		Freq Offs 0 H

Agilent Spectrum Analyzer - Swept S	A				
<mark>ιχί</mark> RF 50.Ω AG	C CORREC	SENSE:INT	ALIGN AUTO	03:29:11 PM Jan 07, 2019	Frequency
	PNO: Fast 🕞 IFGain:Low	⊃ Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWWW DET PINNNNN	
10 dB/div Ref 20.00 dBn	n		Mkr	2 4.991 32 GHz -42.05 dBm	Auto Tune
Log 10.0 0.00 -10.0				-15.53 dBm	Center Freq 5.015000000 GHz
-20.0 -30.0 -40.0 -50.0		2 		n julieten son och til soke til teden stort och	Start Freq 30.000000 MHz
-60.0					<b>Stop Freq</b> 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz		V 3.0 MHz	-	Stop 10.000 GHz 8.7 ms (40001 pts)	<b>CF Step</b> 997.000000 MHz
1 N 1 f	× 2.410 84 GHz 4.991 32 GHz	Y FU 11.93 dBm -42.05 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
3 4 5 6					<b>Freq Offset</b> 0 Hz
7 8 9 10 11					
MSG					



#### TM 3 & 2437





INKR 2 51 42 81 GHz           10 dB/div         Ref 20.00 dBm         41.43 dBm           10 dB/div         Ref 20.00 dBm         1         Center F           10 dB/div         Ref 20.00 dBm         1         1         Center F           10 dB/div         Ref 20.00 dBm         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         0         1         1         0         1         1         0         1         1         1         1         1         1         2         41.43 dBm         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         4         5         5         6         7         1         1         1         1         1         1         2         43 dBm         4         4         4         4         4         4         4         4         4         4         5         997.000000 M         4         4         4         5         997.000000 M	Agilent Spectrum Analyzer - Swep					
International Content of the second	🗶 RF 50 Ω	AC CORREC				Frequency
INIKI2 3: 142 81 GHz           Center F           Control           Control <t< td=""><td></td><td>PNO: Fast 🖵 IFGain:Low</td><td></td><td></td><td>DET P N N N N</td><td></td></t<>		PNO: Fast 🖵 IFGain:Low			DET P N N N N	
100	10 dB/div Ref 20.00 dB	3m		Mkr		Auto Tune
300       30.0       30.00000 M         400       50.0         400       50.0         400       50.0         400       50.0         400       50.0         400       50.0         50.0       50.000 GHz         1       1         1       1         2       1         3       4         4       5         6       6         7       1	10.0	<b>♦</b> 1			-15.56 dBm	Center Fred 5.015000000 GHz
600     Stop F     10.0000000000     10.0000000000     10.000000000 </td <td>-30.0</td> <td></td> <td></td> <td></td> <td></td> <td>Start Free 30.000000 MH;</td>	-30.0					Start Free 30.000000 MH;
#Res BW 1.0 MHz         #VBW 3.0 MHz         Sweep 18.7 ms (40001 pts)         CFS 997.000000           MKR MODE TBC SCL         X         Y         FUNCTION         FUNCTION WIDTH         FUNCTION VALUE           1         N         1         f         2.439 50 GHz         11.40 dBm         Auto           2         N         1         f         5.742 81 GHz         -41.43 dBm         Function         Function Value         Auto           3         -         -         -         -         -         -         -         -         -         Fireq Off           5         -         <	-60.0					Stop Fred 10.000000000 GH:
1         N         1         f         2.439.50 GHz         11.40 dBm           2         N         1         f         5.742.81 GHz         -41.43 dBm           3	#Res BW 1.0 MHz				8.7 ms (40001 pts)	CF Step 997.000000 MH Auto Mar
4 Freq on 5 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	1 N 1 f	2.439 50 GHz 5.742 81 GHz	11.40 dBm			
	4 5					<b>Freq Offse</b> 0 H:
	8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9					
11 12 19 19 19 19 19 19 19 19 19 19 19 19 19	12					

Agilent Spectrum Analyzer - Swe	pt SA				
<b>ιχί</b> RF 50 Ω	AC CORREC	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	03:39:49 PM Jan 07, 2019	Frequency
	PNO: Fast 🕞 IFGain:Low	Trig: Free Run Atten: 30 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET PINNNNN	
10 dB/div Ref 20.00 d	Bm		Mkr3 1	6.690 375 GHz -37.93 dBm	Auto Tune
10.0 0.00 -10.0				-15.56 dBm	Center Freq 17.50000000 GHz
-20.0 -30.0 -40.0		3			Start Freq 10.000000000 GHz
-50.0					Stop Fred 25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VBV	V 3.0 MHz		Stop 25.000 GHz ).0 ms (40001 pts)	CF Step 1.50000000 GHz
2 N 1 f 3 N 1 f 4	× 24.868 000 GHz 21.440 875 GHz 16.690 375 GHz	Y FL -31.20 dBm -34.44 dBm -37.93 dBm	INCTION FUNCTION WDTH	FUNCTION VALUE	Auto Man Freq Offsel
5 6 7 8 9 10 11 12					0 H2
MSG			<b>I</b> STATUS		

TM 3 & 2462



Reference

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



RF 50 9	wept SA Ω ⚠ DC CORREC	SENSE:II	IT ALIGN AU		
	PNO: Fa IFGain:L	nst 🕞 Trig: Free Run	Avg Type: Log-P	WT TRACE 123456 TYPE M WWWWW DET P N N N N N	Frequency
0 dB/div Ref 20.00		JW Haten oo ab		Mkr1 301.4 kHz -52.86 dBm	Auto Tune
og 10.0 1.00 0.0				-16.25 dBm	Center Fre 15.004500 MH
				-16,20 08m	Start Fre 9.000 kH
0.0 0.0 0.0	kalantakataka ang maka pantang	internet of president of the leader of president types of	nensessey og førkelje følgetige stølveder	nes <sub>ent</sub> ek darts das konservent das konserven	Stop Fre 30.000000 MH
tart 9 kHz Res BW 100 kHz	# ×	VBW 300 kHz	Sweep	Stop 30.00 MHz 5.33 ms (40001 pts)	<b>CF Ste</b> 2.999100 MH <u>Auto</u> Ma
1 N 1 f	301.4 kH				Freq Offs
3					0 L
					01

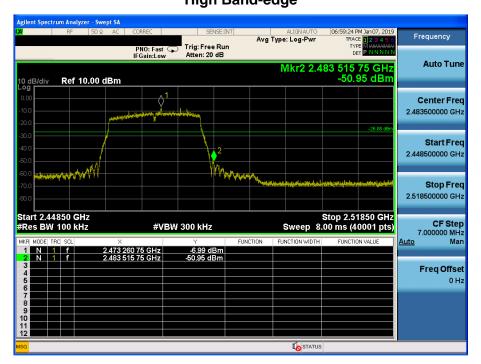
RF 50	)Ω AC CORREC	SENSE:INT	ALIGN AUTO	04:55:58 PM Jan 07, 2019	
	PNO: Fas IEGain:Lo	st 🕞 Trig: Free Run	Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWWW DET PNNNNN	Frequency
D dB/div Ref 20.0	0 dBm		Mkr	2 5.802 63 GHz -41.81 dBm	Auto Tune
og 0.00 0.00				-16.25 dBm	Center Free 5.015000000 GH
				and the second	Start Free 30.000000 MH
					<b>Stop Fre</b> 10.000000000 GH
tart 30 MHz Res BW 1.0 MHz KR MODE TRC SCL	X		Sweep 1	Stop 10.000 GHz 8.7 ms (40001 pts) FUNCTION VALUE	<b>CF Ste</b> 997.000000 MH <u>Auto</u> Ma
1 N 1 f 2 N 1 f 3 4 4 5 5 6	2.456 95 GHz 5.802 63 GHz	z 11.07 dBm z -41.81 dBm			Freq Offse 0 H
7 8 9 0 1 2					
			I STATUS		



TM 3 & 2472



High Band-edge



RF	50 Ω 🧥 DC	CORREC	SENSE:IN	л	ALIGN AUTO		4 Jan 07, 2019	_
		PNO: Fast G	Trig: Free Run Atten: 20 dB		e: Log-Pwr	TRACE TYPE DE1	123456 MWWWWWWW PNNNNN	Frequency
0 dB/div Ref	10.00 dBm	II Gam.Low			Ν	/kr1 282 -60.3	2.7 kHz 1 dBm	Auto Tune
og 0.00 10.0 20.0							-26.88 dBm	Center Fre 15.004500 MH
80.0 40.0 50.0 <mark>- 1</mark>							-20.00 00m	<b>Start Fre</b> 9.000 kH
50.0 70.0 30.0	n an	katiyyetti kiyare anastik	alay ay ay ang	addara, <del>amid Alfa</del> rffiellyn daeldd, yllafa	ميار ماريغ ، وفر شريع المريم ا	ar formand the state of the	448.6.4.9.4.4.9%	Stop Fre 30.000000 M⊦
tart 9 kHz Res BW 100 i	<b>KHZ</b>	#VBV	V 300 kHz		Sweep 5.	Stop 30 33 ms (40		<b>CF Ste</b> 2.999100 MH Auto Ma
KB MODE TBC SCL		282.7 kHz	-60.31 dBm			renerio		<u></u>
IKR MODE TRC SCL								Freg Offs
1 N 1 f 2								Freq Offs 0 F
1 N 1 f 2 3 4 5 6 9		202./ KTZ						

Agilent Spectrum Analyzer - S					
LXI RF 50	Ω AC CORREC	SENSE:INT	ALIGNAUTO Avg Type: Log-Pwi		Frequency
	PNO: Fast IFGain:Low	Trig: Free Run Atten: 20 dB	Avg Type: Log-Pwi	TRACE 123456 TYPE MWWWW DET PNNNNN	
10 dB/div Ref 10.00	dBm		Mk	r2 5.751 53 GHz -52.25 dBm	Auto Tune
Log 0.00 -10.0 -20.0				-26.83 dBm	Center Fre 5.015000000 GH
-30.0 -40.0 -50.0		Handa Arashiyasala ing kalendari kalendari kalendari kalendari kalendari kalendari kalendari kalendari kalendar	2	alle an tre delle an anna an anna an an anna an an an anna an an	<b>Start Fre</b> 30.000000 MH
-60.0 -70.0 -80.0					<b>Stop Fre</b> 10.000000000 GH
Start 30 MHz #Res BW 1.0 MHz		3W 3.0 MHz		Stop 10.000 GHz 18.7 ms (40001 pts)	CF Ste 997.000000 MH
MKR MODE TRC SCL	× 2.473 90 GHz 5.751 53 GHz	0.28 dBm -52.25 dBm	FUNCTION FUNCTION WID	H FUNCTION VALUE	<u>Auto</u> Ma
3 4 5 6					<b>Freq Offse</b> 0 H
7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9					
12 <b>SG</b>			<b>I</b> ostat	US	

RF 50 Ω	AC CORREC	SENSE:INT	ALIGN AUTO	07:06:35 PM Jan 07, 2019	Frequency
	PNO: Fast IFGain:Low	Trig: Free Run Atten: 20 dB	Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE M WWWWWW DET P N N N N N	Frequency
) dB/div Ref 10.00	dBm		Mkr3 1	6.627 000 GHz -48.88 dBm	Auto Tur
<b>29</b> 1.00 0.0 0.0				-26.83 dBm	Center Fre 17.500000000 GH
0.0 0.0 0.0	a	3			Start Fre 10.00000000 GH
0.0					<b>Stop Fre</b> 25.000000000 GI
tart 10.000 GHz Res BW 1.0 MHz KRI MODE TRC SCL	X		Sweep 40	Stop 25.000 GHz 0.0 ms (40001 pts) FUNCTION VALUE	CF Ste 1.50000000 GI <u>Auto</u> M
1 N 1 f 2 N 1 f 3 N 1 f 4 5	24.860 500 GHz 21.458 500 GHz 16.627 000 GHz	-40.76 dBm -44.51 dBm -48.88 dBm			Freq Offs
6 / / / / / / / / / / / / / / / /					
0					



## 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 intentional radiator 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.

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

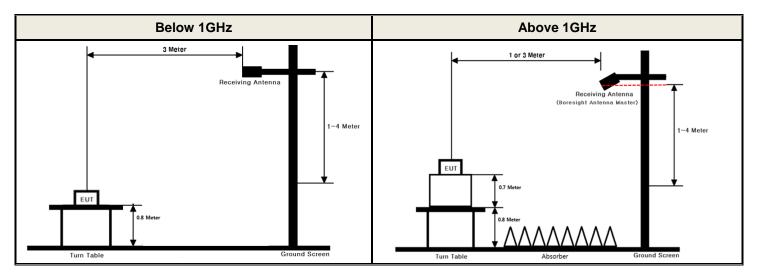
\*\* Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part,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

• FCC Part 15.205 (a): Only	spurious emissions are permitted in any	y 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		

• 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.

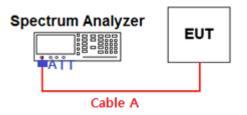
#### Test Configuration



#### 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 1 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.

#### Conducted Measurement



#### Path loss information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	3.83	15	4.17
1	3.90	20	4.97
2.412 & 2.437 & 2.462	3.94	25	5.86
5	4.60	-	-
10	4.67	-	-

Note 1: The path loss from EUT to Spectrum analyzer was measured and used for test. Path loss (S/A's correction factor) = Cable A (Attenuator, Applied only when it was used externally)



#### 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  $\geq$  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 ≥ 3 x RBW.
- 3. Detector = RMS (Number of points  $\ge 2 \times \text{Span} / \text{RBW}$ )
- 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 Correction factor**

Test Mode	Date rate	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
TM 1	1 Mbps	98.94	0.05
TM 2	6 Mbps	96.53	0.16
TM 3	MCS 0	95.82	0.19

#### Test Results: Comply

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

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

Tested Frequency	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)
2412	2389.32	Н	Х	PK	52.15	2.31	N/A	N/A	54.46	74.00	19.54
	2389.56	Н	Х	AV	42.33	2.31	N/A	N/A	44.64	54.00	9.36
	4823.87	Н	Y	PK	50.77	0.84	N/A	N/A	51.61	74.00	22.39
2412	4823.90	Н	Y	AV	40.81	0.84	N/A	N/A	41.65	54.00	12.35
	7237.24	Н	Y	PK	47.99	7.63	N/A	N/A	55.62	74.00	18.38
	7235.27	Н	Y	AV	39.21	7.63	N/A	N/A	46.84	54.00	7.16
	4874.03	Н	Y	PK	50.25	0.87	N/A	N/A	51.12	74.00	22.88
0.407	4873.88	Н	Y	AV	40.83	0.87	N/A	N/A	41.70	54.00	12.30
2437	7310.94	Н	Y	PK	47.59	7.76	N/A	N/A	55.35	74.00	18.65
	7310.19	Н	Y	AV	37.34	7.76	N/A	N/A	45.10	54.00	8.90
	2483.98	Н	Х	PK	52.86	2.61	N/A	N/A	55.47	74.00	18.53
	2483.74	Н	Х	AV	43.01	2.61	N/A	N/A	45.62	54.00	8.38
0400	4923.90	Н	Y	PK	50.33	0.98	N/A	N/A	51.31	74.00	22.69
2462	4924.16	Н	Y	AV	40.35	0.98	N/A	N/A	41.33	54.00	12.67
	7386.05	Н	Y	PK	47.43	7.68	N/A	N/A	55.11	74.00	18.89
	7386.44	Н	Y	AV	37.11	7.68	N/A	N/A	44.79	54.00	9.21
	2484.01	Н	Х	PK	53.34	2.61	N/A	N/A	55.95	74.00	18.05
	2483.79	Н	Х	AV	42.93	2.61	N/A	N/A	45.54	54.00	8.46
2472	4943.55	Н	Y	PK	50.33	1.03	N/A	N/A	51.36	74.00	22.64
2472	4943.58	Н	Y	AV	39.31	1.03	N/A	N/A	40.34	54.00	13.66
	7416.08	Н	Y	PK	47.16	7.63	N/A	N/A	54.79	74.00	19.21
	7415.92	Н	Y	AV	36.93	7.63	N/A	N/A	44.56	54.00	9.44

#### Note.

1. The radiated emissions were investigated 9kHz to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.

2. 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 3m to 1m. In this case, the distance factor(-9.54dB) is applied to the result.

- Calculation of distance factor = 20 log( applied distance / required distance ) = 20 log( 1 m / 3 m ) = -9.54 dB

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

Tested Frequency	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)
2412	2389.51	Н	Х	PK	54.19	2.31	N/A	N/A	56.50	74.00	17.50
	2389.71	Н	Х	AV	43.33	2.31	0.16	N/A	45.80	54.00	8.20
	4823.79	Н	Y	PK	50.48	0.84	N/A	N/A	51.32	74.00	22.68
2412	4823.87	Н	Y	AV	39.83	0.84	0.16	N/A	40.83	54.00	13.17
	7233.85	Н	Y	PK	48.42	7.62	N/A	N/A	56.04	74.00	17.96
	7234.19	Н	Y	AV	37.17	7.62	0.16	N/A	44.95	54.00	9.05
	4873.73	Н	Y	PK	50.07	0.87	N/A	N/A	50.94	74.00	23.06
0.407	4873.72	Н	Y	AV	39.76	0.87	0.16	N/A	40.79	54.00	13.21
2437	7314.77	Н	Y	PK	47.97	7.75	N/A	N/A	55.72	74.00	18.28
	7314.41	Н	Y	AV	36.92	7.75	0.16	N/A	44.83	54.00	9.17
	2483.66	Н	Х	PK	60.31	2.61	N/A	N/A	62.92	74.00	11.08
	2483.78	Н	Х	AV	45.67	2.61	0.16	N/A	48.44	54.00	5.56
0.400	4924.14	Н	Y	PK	49.91	0.98	N/A	N/A	50.89	74.00	23.11
2462	4924.02	Н	Y	AV	39.23	0.98	0.16	N/A	40.37	54.00	13.63
	7384.78	Н	Y	PK	47.54	7.68	N/A	N/A	55.22	74.00	18.78
	7383.95	Н	Y	AV	36.63	7.68	0.16	N/A	44.47	54.00	9.53
	2483.52	Н	Х	PK	54.22	2.61	N/A	N/A	56.83	74.00	17.17
	2483.57	Н	Х	AV	44.62	2.61	0.16	N/A	47.39	54.00	6.61
0.470	4943.96	Н	Y	PK	50.15	1.03	N/A	N/A	51.18	74.00	22.82
2472	4943.96	Н	Y	AV	39.07	1.03	0.16	N/A	40.26	54.00	13.74
	7416.10	Н	Y	PK	47.17	7.63	N/A	N/A	54.80	74.00	19.20
	7416.23	Н	Y	AV	36.96	7.63	0.16	N/A	44.75	54.00	9.25

#### Note.

1. The radiated emissions were investigated 9kHz to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.

2. 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 3m to 1m. In this case, the distance factor(-9.54dB) is applied to the result.

- Calculation of distance factor = 20 log( applied distance / required distance ) = 20 log( 1 m / 3 m ) = -9.54 dB

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

Tested Frequency	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)
0.440	2389.43	Н	Х	PK	52.59	2.31	N/A	N/A	54.90	74.00	19.10
	2389.67	Н	Х	AV	42.62	2.31	0.19	N/A	45.12	54.00	8.88
	4824.46	Н	Y	PK	49.96	0.84	N/A	N/A	50.80	74.00	23.20
2412	4823.68	Н	Y	AV	39.56	0.84	0.19	N/A	40.59	54.00	13.41
	7231.24	Н	Y	PK	47.63	7.62	N/A	N/A	55.25	74.00	18.75
	7229.78	Н	Y	AV	37.11	7.62	0.19	N/A	44.92	54.00	9.08
	4874.03	Н	Y	PK	50.54	0.87	N/A	N/A	51.41	74.00	22.59
2437	4874.04	Н	Y	AV	39.56	0.87	0.19	N/A	40.62	54.00	13.38
	7313.70	Н	Y	PK	46.92	7.76	N/A	N/A	54.68	74.00	19.32
	7312.49	Н	Y	AV	36.71	7.76	0.19	N/A	44.66	54.00	9.34
	2483.90	Н	Х	PK	68.38	2.61	N/A	N/A	70.99	74.00	3.01
	2483.74	Н	Х	AV	48.16	2.61	0.19	N/A	50.96	54.00	3.04
	4923.96	Н	Y	PK	49.88	0.98	N/A	N/A	50.86	74.00	23.14
2462	4924.34	Н	Y	AV	39.26	0.98	0.19	N/A	40.43	54.00	13.57
	7386.27	Н	Y	PK	46.63	7.68	N/A	N/A	54.31	74.00	19.69
	7385.95	Н	Y	AV	36.61	7.68	0.19	N/A	44.48	54.00	9.52
	2483.53	Н	Х	PK	54.84	2.61	N/A	N/A	57.45	74.00	16.55
2472	2483.52	Н	Х	AV	45.28	2.61	0.19	N/A	48.08	54.00	5.92
	4944.05	Н	Y	PK	50.09	1.03	N/A	N/A	51.12	74.00	22.88
	4943.62	Н	Y	AV	39.27	1.03	0.19	N/A	40.49	54.00	13.51
	7416.03	Н	Y	PK	48.69	7.63	N/A	N/A	56.32	74.00	17.68
	7416.45	Н	Y	AV	36.78	7.63	0.19	N/A	44.60	54.00	9.40

#### Note.

1. The radiated emissions were investigated 9kHz to 25GHz. And no other spurious and harmonic emissions were found above listed frequencies.

2. 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 3m to 1m. In this case, the distance factor(-9.54dB) is applied to the result.

- Calculation of distance factor = 20 log( applied distance / required distance ) = 20 log( 1 m / 3 m ) = -9.54 dB

## 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

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 Configuration

See test photographs for the actual connections between EUT and support equipment.

#### 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.

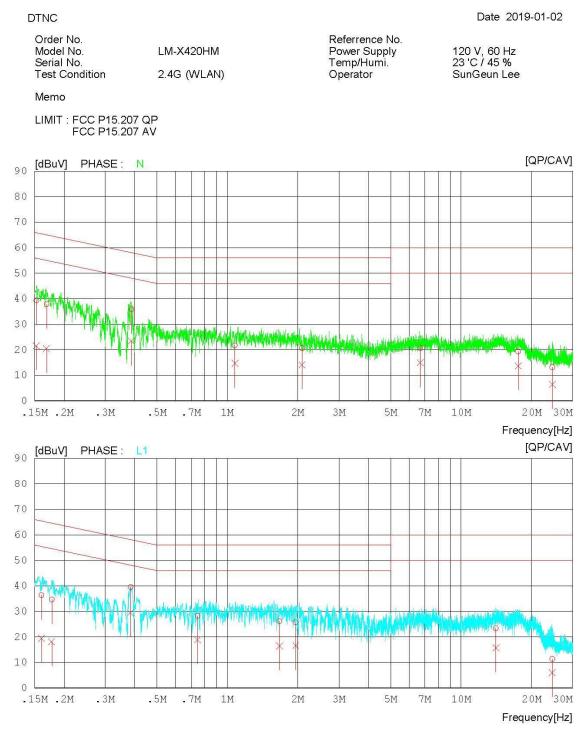


#### RESULT PLOTS

#### AC Line Conducted Emissions (Graph)

Test Mode: TM 2 & 2437 MHz

# **Results of Conducted Emission**



# AC Line Conducted Emissions (List)

Test Mode: TM 2 & 2437 MHz

DTNC

# **Results of Conducted Emission**

Date 2019-01-02

Order No. Model No. Serial No. Test Condition	LM-X420HM 2.4G (WLAN)	Referrence No. Power Supply Temp/Humi. Operator	120 V, 60 Hz 23 'C / 45 % SunGeun Lee
Memo			
LIMIT : FCC P15.20 FCC P15.20			

NC	FREQ	READING QP CAV	C.FACTOR			MIT CAV	MARGIN QP CAV	PHASE
	[MHz]	[dBuV] [dBuV	] [dB]	QP CAV [dBuV][dBuV	QP ] [dBuV	/] [dBuV]	10	]
1	0.15248	29.07 11.30	10.28	39.3521.58	65.86	55.86	26.5134.28	Ν
2	0.16852	27.7210.29	10.19	37.9120.48	65.03	55.03	27.1234.55	Ν
3	0.38886	25.7913.46	10.02	35.8123.48	58.09	48.09	22.28 24.61	Ν
4	1.07760	11.69 4.64	10.05	21.74 14.69	56.00	46.00	34.2631.31	Ν
5	2.08640	10.54 4.06	10.11	20.6514.17	56.00	46.00	35.35 31.83	Ν
6	6.69460	10.33 4.68	10.29	20.6214.97	60.00	50.00	39.3835.03	Ν
7	17.54840	8.74 3.17	10.56	19.30 13.73	60.00	50.00	40.7036.27	Ν
8	24.58240	2.50 -4.21	10.65	13.15 6.44	60.00	50.00	46.8543.56	Ν
9	0.16031	26.15 9.22	10.20	36.3519.42	65.45	55.45	29.1036.03	L1
10	0.17735	24.56 7.96	10.11	34.6718.07	64.61	54.61	29.94 36.54	L1
11	0.38575	29.51 19.46	9.99	39.5029.45	58.15	48.15	18.65 18.70	L1
12	0.74650	18.30 8.84	10.01	28.3118.85	56.00	46.00	27.6927.15	L1
13	1.67320	16.10 6.43	10.06	26.1616.49	56.00	46.00	29.84 29.51	L1
14	1.96080	15.60 6.52	10.07	25.67 16.59	56.00	46.00	30.3329.41	L1
15	14.08720	12.92 5.21	10.45	23.3715.66	60.00	50.00	36.6334.34	L1
16	24.53520	0.77-4.58	10.59	11.36 6.01	60.00	50.00	48.64 43.99	L1

# 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	18/12/19	19/12/19	MY48010133
Spectrum Analyzer	Agilent Technologies	N9020A	18/12/19	19/12/19	MY48011700
Attenuator	SMAJK	SMAJK-2-3	18/07/04	19/07/04	4
DC Power Supply	Agilent Technologies	66332A	18/07/02	19/07/02	US37473422
Multimeter	FLUKE	17B	18/12/18	19/12/18	26030065WS
Signal Generator	Rohde Schwarz	SMBV100A	18/12/19	19/12/19	255571
Signal Generator	ANRITSU	MG3695C	18/12/10	19/12/10	173501
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-1
Thermohygrometer	BODYCOM	BJ5478	18/12/27	19/12/27	120612-2
Thermohygrometer	BODYCOM	BJ5478	18/07/09	19/07/09	N/A
HYGROMETER	TESTO	608-H1	18/02/10	19/02/10	34862883
Loop Antenna	Schwarzbeck	FMZB1513	18/01/30	20/01/30	1513-128
BILOG ANTENNA	Schwarzbeck	VULB 9160	18/07/13	20/07/13	3359
Horn Antenna	ETS-Lindgren	3115	18/01/30	20/01/30	6419
Horn Antenna	Schwarzbeck	BBHA 9120C	17/12/04	19/12/04	9120C-561
Horn Antenna	A.H.Systems Inc.	SAS-574	17/07/31	19/07/31	155
PreAmplifier	tsj	MLA-0118-J01-45	18/02/08	19/02/08	17138
PreAmplifier	tsj	MLA-1840-J02-45	18/07/06	19/07/06	16966-10728
PreAmplifier	H.P	8447D	18/12/18	19/12/18	2944A07774
Attenuator	SMAJK	SMAJK-2-3	18/07/02	19/07/02	3
Attenuator	Aeroflex/Weinschel	56-3	18/07/02	19/07/02	Y2370
Attenuator	SRTechnology	F01-B0606-01	18/07/02	19/07/02	13092403
Attenuator	Hefei Shunze	SS5T2.92-10-40	18/07/03	19/07/03	16012202
High Pass Filter	Wainwright Instruments	WHNX8.0/26.5-6SS	18/07/03	19/07/03	3
High Pass Filter	Wainwright Instruments	WHKX12-935-1000- 15000-40SS	18/07/02	19/07/02	8
High Pass Filter	Wainwright Instruments	WHKX10-2838-3300- 18000-60SS	18/07/02	19/07/02	1
Power Meter & Wide Bandwidth Sensor	Anritsu	ML2495A MA2490A	18/04/17	19/04/17	1306007 1249001
EMI Test Receiver	Rohde Schwarz	ESR7	18/02/13	19/02/13	101061
EMI Test Receiver	Rohde Schwarz	ESCI7	18/02/12	19/02/12	100910
PULSE LIMITER	Rohde Schwarz	ESH3-Z2	18/09/27	19/09/27	101333
LISN	SCHWARZBECK	NNLK 8121	18/03/20	19/03/20	06183
Cable	Radiall	TESTPRO3	18/07/06	19/07/06	M-01
Cable	Junkosha	MWX315	18/11/19	19/11/19	M-05
Cable	Junkosha	MWX221	18/11/19	19/11/19	M-06
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-04
Cable	Junkosha	MWX241	18/06/25	19/06/25	G-07
Cable	DT&C	Cable	18/07/06	19/07/06	G-13
Cable	DT&C	Cable	18/07/06	19/07/06	G-14
Cable	HUBER+SUHNER	SUCOFLEX 104	18/07/06	19/07/06	G-15
Cable	DT&C	Cable	18/06/25	19/06/25	RF-18
Cable	DT&C	Cable	18/07/05	19/07/05	RF-82

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** 

#### Duty Cycle was measured using section 6.0 b) of KDB558074 D01V05 :

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.)

TM 1 Frequency Avg Type: Log-Pwr Trig: Free Run Atten: 40 dB PNO: Fast ↔→ IFGain:Low Auto Tun ΔMkr3 12.32 m 35 Ref 30.00 dBm <mark>⊘</mark>3∆4 Center Fred 2.437000000 GHz Start Freq 2.437000000 GHz Stop Freq 2.437000000 GHz Center 2.437000000 GHz Span 0 Hz Sweep 48.00 ms (40001 pts) CF Step 8.000000 MHz Res BW 8 MHz #VBW 50 MHz Man ۱uto (A) -1. 20.49 ms 12.32 ms (Δ) 20.49 ms 19.93 dBm -1.35 dB 19.93 dBm (Δ) Freq Offset 0 Н **STATUS** 

& 2437

# **Dt&C**

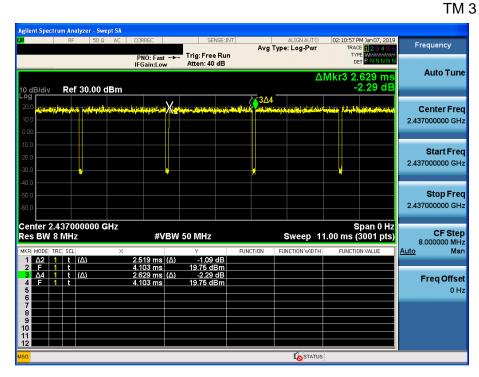
# TM 2

& 2437

## **Duty Cycle**

Agilent Spect														
LXI	RF	50 Ω	AC	CORREC			SE:INT	Avg T		LIGNAUTO	02:08:57 F	E 🔳	23456	Frequency
				PNO: Fas IFGain:Lo		Trig: Free Atten: 40					TYF	PE W ET P	NNNNN	
										Δ	Mkr3 2.	85	6 ms	Auto Tune
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-40.0														Stop Free
-60.0														2.437000000 GH
	407000													
Center 2. Res BW		000 G	ΠZ	#\	/BW :	50 MHz				weep 1	د () 1.00 ms		n 0 Hz )1 pts)	CF Step
MKR MODE T	FRC SCL		×			Y	FUN	CTION		ICTION WIDTH	FUNCTIO			8.000000 MH: Auto Mar
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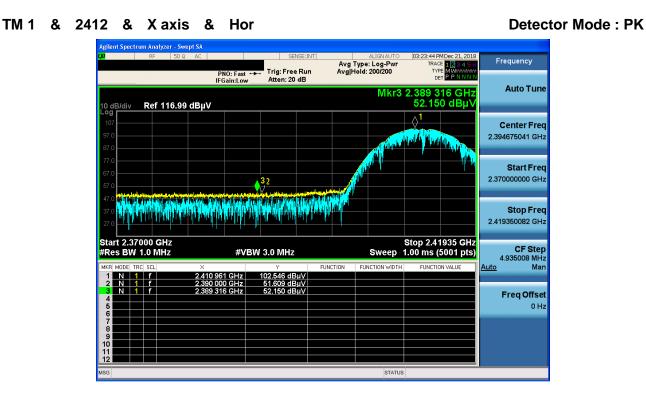
#### & 2437



# **Duty Cycle**

# APPENDIX II

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



#### TM 1 & 2412 & X axis & Hor





#### TM 1 & 2462 & X axis & Hor

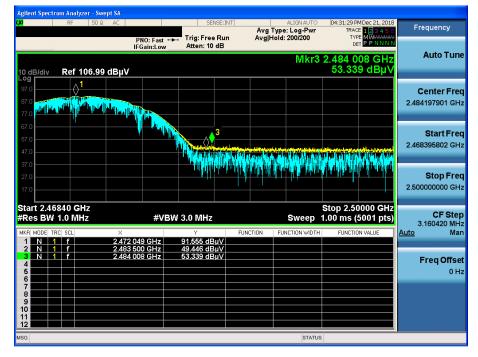


#### TM 1 & 2462 & X axis & Hor

#### m Analyzer - Swept SA Avg Type: RMS Avg|Hold: 200/200 Frequency Trig: Free Run Atten: 20 dB TYPE DET PNO: Fast +++ IFGain:Low Auto Tune Mkr3 2.483 744 GHz 43.010 dBµ\ 10 dB/div Ref 116.99 dBµV Center Freq 2.48000000 GHz Start Freq 2.46000000 GHz Stop Freq 2.50000000 GHz Start 2.46000 GHz #Res BW 1.0 MHz Stop 2.50000 GHz Sweep 1.00 ms (5001 pts) CF Step 4.000000 MHz #VBW 3.0 MHz\* Man Auto 98.371 dBμV 42.755 dBμV 43.010 dBμV 2.483 500 GHz 2.483 744 GHz Freq Offset 0 Hz



#### TM 1 & 2472 & X axis & Hor

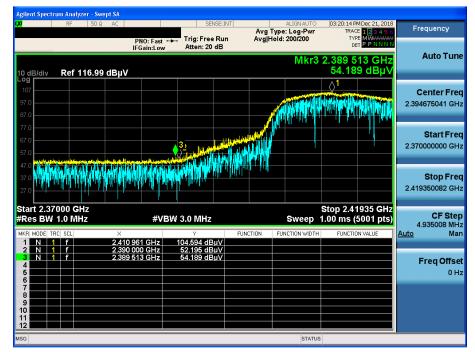


#### TM 1 & 2472 & X axis & Hor

#### 21.201 Frequency Avg Type: RMS Avg|Hold: 200/200 DET A P N N N Trig: Free Run Atten: 10 dB PNO: Fast ↔→ IFGain:Low Mkr3 2.483 791 GHz 42.933 dBµV Auto Tune Ref 106.99 dBµV 10 dB/div **Center Freq** 2.484197901 GHz Start Freq 2.468395802 GHz -{<mark>()</mark>+ Stop Freq 2.50000000 GHz Start 2.46840 GHz #Res BW 1.0 MHz Stop 2.50000 GHz 1.00 ms (5001 pts) CF Step 3.160420 MHz Man #VBW 3.0 MHz\* Sweep Auto 2.483 500 GHz 2.483 791 GHz 42.544 dBµV 42.933 dBµV Freq Offset 0 Hz STATUS



#### TM 2 & 2412 & X axis & Hor



#### TM 2 & 2412 & X axis & Hor

#### 21.201 Frequency Avg Type: RMS Avg|Hold: 200/200 Trig: Free Run Atten: 20 dB DET A P N N N PNO: Fast IFGain:Low Auto Tune Mkr3 2.389 710 GHz 43.331 dBµV Ref 116.99 dBµV 10 dB/div $\Diamond^1$ **Center Freq** 2.394675041 GHz Start Freq 2.37000000 GHz Stop Freq 2.419350082 GHz Start 2.37000 GHz #Res BW 1.0 MHz Stop 2.41935 GHz 1.00 ms (5001 pts) CF Step 4.935008 MHz Man #VBW 3.0 MHz\* Sweep Auto 42.995 dBµV 43.331 dBµV 2 389 710 GHz Freq Offset 0 Hz STATUS



#### TM 2 & 2462 & X axis & Hor

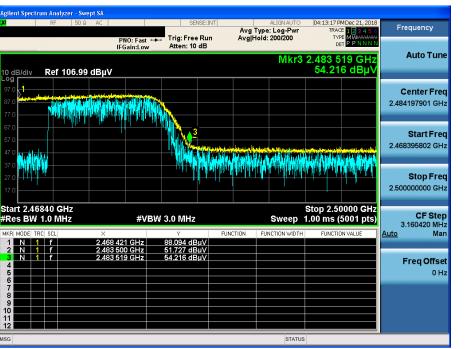


#### TM 2 & 2462 & X axis & Hor

#### 21.201 Frequency Avg Type: RMS Avg|Hold: 200/200 TYPE A WWWWW Trig: Free Run Atten: 20 dB PNO: Fast ↔→ IFGain:Low Mkr3 2.483 776 0 GHz 45.669 dBµV Auto Tune Ref 116.99 dBµV 10 dB/div **Center Freq** $\Diamond^1$ 2.480500000 GHz Start Freq 2.461000000 GHz Stop Freq 2.50000000 GHz Start 2.46100 GHz #Res BW 1.0 MHz Stop 2.50000 GHz 1.00 ms (5001 pts) CF Step 3.900000 MHz Man #VBW 3.0 MHz\* Sweep Auto 45.222 dBµV 45.669 dBµV 2.483 500 0 GHz 2.483 776 0 GHz Freq Offset 0 Hz STATUS



#### TM 2 & 2472 & X axis & Hor

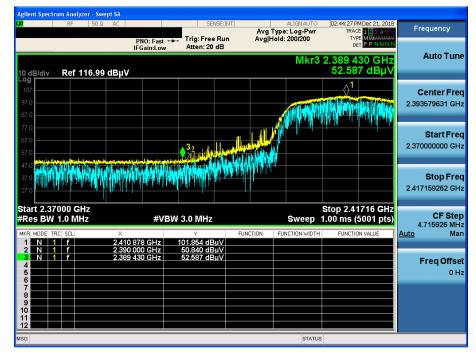


#### TM 2 & 2472 & X axis & Hor

#### ectrum Analyzer - Swept SA Avg Type: RMS Avg|Hold: 200/200 TRACE TYPE A WANN DET A P N N N PNO: Fast ---- Trig: Free Run IFGain:Low Atten: 10 dB Auto Tune Mkr3 2.483 570 GHz 44.624 dBµ\ 0 dB/div Ref 106.99 dBµV **Center Freq** 2.484197901 GHz Start Freq 2.468395802 GHz Stop Freq 2.50000000 GHz Start 2.46840 GHz #Res BW 1.0 MHz Stop 2.50000 GHz 1.00 ms (5001 pts) CF Step 3.160420 MHz #VBW 3.0 MHz\* Sweep Man Auto 81.319 dBµV 44.596 dBµV 44.624 dBµV 2.483 500 GHz 2.483 570 GHz Freq Offset 0 Hz 11



#### TM 3 & 2412 & X axis & Hor



#### TM 3 & 2412 & X axis & Hor

#### 21.201 Frequency Avg Type: RMS Avg|Hold: 200/200 Trig: Free Run Atten: 20 dB DET A P N N N PNO: Fast IFGain:Low Auto Tune Mkr3 2.389 665 GHz 42.619 dBµ\ Ref 116.99 dBµV 10 dB/div **Center Freq** 2.393579631 GHz Start Freq 2.37000000 GHz **≜**3 Stop Freq 2.417159262 GHz Start 2.37000 GHz #Res BW 1.0 MHz Stop 2.41716 GHz 1.00 ms (5001 pts) **CF Step** 4.715926 MHz Man #VBW 3.0 MHz\* Sweep Auto 42.609 dBµV 42.619 dBµV 665 GHz Freq Offset 0 Hz STATUS



## TM 3 & 2462 & X axis & Hor

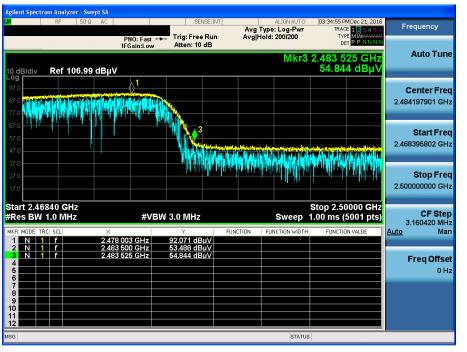


#### TM 3 & 2462 & X axis & Hor

#### Frequency Avg Type: RMS Avg|Hold: 200/200 Trig: Free Run Atten: 20 dB PNO: Fast ↔→ IFGain:Low DET A P N N N Mkr3 2.483 739 GHz 48.162 dBµ\ Auto Tune Ref 116.99 dBµV 10 dB/div **Center Freq** 2.476650576 GHz Start Freq 2.453301152 GHz 3 Stop Freq 2.50000000 GHz Start 2.45330 GHz #Res BW 1.0 MHz Stop 2.50000 GHz 1.00 ms (5001 pts) CF Step 4.669885 MHz Man #VBW 3.0 MHz\* Sweep Auto 45.144 dBμV 48.162 dBμV 2 483 739 GHz Freq Offset 0 Hz STATUS



## TM 3 & 2472 & X axis & Hor



#### TM 3 & 2472 & X axis & Hor

#### m Analyzer - Swept SA Frequency Avg Type: RMS Avg|Hold: 200/200 Trig: Free Run Atten: 10 dB PNO: Fast +++ IFGain:Low TYPE DET Mkr3 2.483 519 GHz 45.284 dBµV Auto Tune Ref 106.99 dBµV 10 dB/div **Center Freq** 61 2.484197901 GHz Start Freq 2.468395802 GHz Stop Freq 2.50000000 GHz Start 2.46840 GHz #Res BW 1.0 MHz Stop 2.50000 GHz 1.00 ms (5001 pts) CF Step 3.160420 MHz Man #VBW 3.0 MHz\* Sweep Auto 84.741 dBµV 44.987 dBµV 45.284 dBµV 2.478 003 GHz 2.483 500 GHz 2.483 519 GHz Freq Offset 0 Hz

**Detector Mode : AV** 



#### TM 1 & 2412 & Yaxis & Hor



#### TM 2 & 2412 & Yaxis & Hor

#### nt Spectrum Analyzer - Swept SA Avg Type: RMS Avg|Hold: 200/200 Frequency Trig: Free Run Atten: 6 dB DET A P N N N PNO: Fast +++ IFGain:Low Auto Tune Mkr1 7.234 194 GHz 37.171 dBµV Ref 61.99 dBµV 5 dB/div Center Freq 7.236000000 GHz Start Freq 7.221000000 GHz Stop Freq **∮**<sup>1</sup> 7.251000000 GHz CF Step 2.412000000 GHz uto <u>Man</u> Auto Freq Offset 0 Hz Center 7.23600 GHz #Res BW 1.0 MHz Span 30.00 MHz Sweep 1.00 ms (5001 pts) #VBW 3.0 MHz\*

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

#### TM 3 & 2412 & Yaxis & Hor

