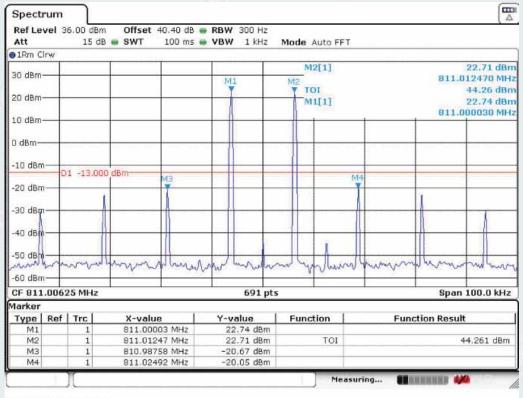
(

10.8.5.2.1.2. Uplink

Spectru Ref Lev	el 36.00 d		0 dB 👄 RBW 300 H 0 ms 👄 VBW 1 kH		FFT	(Δ
1Rm Cir	N				i lucio	
30 dBm-				M2[1]		22,41 dBn
30 aBm—	10		M1	M2		806.018720 MH
20 dBm-		_		TOI		44.25 dBn
20 0011				M1[1]		22.53 dBn 806.006280 MH
10 dBm-						806.006280 MH
0 dBm						
			1 1			
-10 dBm-	01 10	000 40 4				
	01 -13.	000 dBm M3			M4	
-20 dBm-		7			T	
		T I			6	1
-30 dBm-						
-40 dBm-	1					
-40 0601-		1 1				
-50 dBm-						
in	Amery	Marmall	wohn have	amo highl	mallin	moundaling
-60 dBm-			0.0.0		Arres Mar	
CF 806.0	0125 MHz	, I	691	pts		Span 100.0 kHz
Marker						
Type I	Ref Trc	X-value	Y-value	Function	1 1	unction Result
M1	1	806.00628 1	4Hz 22.53 de			
M2	1	806.01872	4Hz 22.41 d8	3m TO	1	44.246 dBm
MЗ	1	805.99383 1				11/2 C 12/2 C
M4	1	806.03117 1	/Hz -20.97 dt	3m		

Date: 21.JUN.2022 16:42:46

Low Frequency and with the ALC threshold level



Date: 21.JUN.2022 16:43:51

Low Frequency and with the input signal amplitude set 3 dB above the ALC threshold

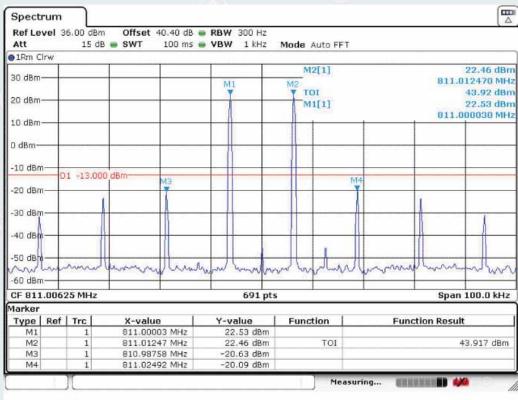
3

F

Spectrum					
Ref Level 3 Att		Offset 40.40 dB		Mode Auto FF1	T
1Rm Clrw					
30 dBm			MI	M2[1]	22.72 dBn 811.012470 MH 44.33 dBn
20 dBm				M1[1]	22.74 dBn 811.000030 MH
10 dBm					011.00030 MH
0 dBm		I CARE AND A CARDON CONTRACTOR			In the second
-10 dBm	01 -13.00	0 dBm			
-20 dBm		Ma			M4
-30 dBm					
-40 dBm				-	
-50 dBh	min	humanthan	monthering	whythe	alfranch man han
-60 dBm			1		
CF 811.006	25 MHz		691 pt:	s	Span 100.0 kHz
Marker					
Type Ref	Trc	X-value	Y-value	Function	Function Result
M1	1	811.00003 MHz	22.74 dBm		
M2	1	811.01247 MHz	22.72 dBm	TOI	44.328 dBm
MЗ	1	810.98758 MHz	-20.79 dBm		
M4	1	811.02492 MHz	-20.15 dBm		

Date: 21.JUN.2022 16:44:33

Mid Frequency and with the ALC threshold level



Date: 21.JUN.2022 16:44:00

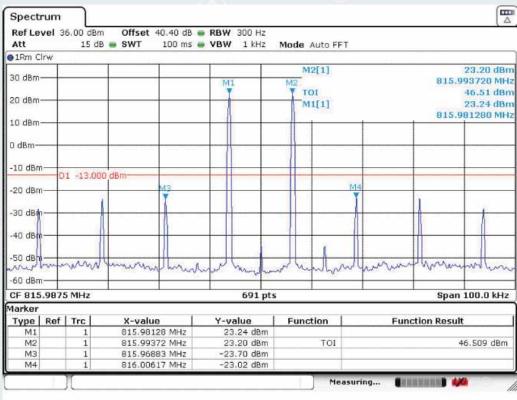
Mid Frequency and with the input signal amplitude set 3 dB above the ALC threshold

F

Spectrur	n								
Ref Level Att		lBm Offset - dB e SWT	10.40 dB 100 ms	 RBW 300 H VBW 1 kH 		Auto FF1	ī.		
●1Rm Clrw			5						
30 dBm	0			MI	M2	42[1]		815.9	23.15 dBn 993720 MH
20 dBm	-	-				01 41[1]			46.73 dBn 23.21 dBn
10 dBm		_		-		1		815.9	981280 MH
0 dBm		ente l'atte attent attent					intiti filiant attrimutiti.	·····	and the second street
-10 dBm-	D1 -13	.000 dBm						_	
-20 dBm—	-	1	M3				MA	1	-
-30 dBm —									1
-40 dBm-	1								
-50 dBh	howy	Mungun	huma	Jultun	with	molum	Amo	m how	million
-60 dBm-						-			
CF 815.98	75 MHz			691	pts			Span	100.0 kHz
Marker									
Type Re	of Trc	X-value		Y-value		ction	Fu	unction Resul	t
M1	1	815.9813		23.21 dB					
M2	1	815.993	A CONTRACTOR OF	23.15 dB		TOI			46.734 dBm
M3 M4	1	815.968	and the second	-24.26 dB -23.61 dB					
	JL					Mea	suring 🚺	ERREN 4	M ,

Date: 21.JUN.2022 16:46:30

High Frequency and with the ALC threshold level



Date: 21.JUN.2022 16:46:46

High Frequency and with the input signal amplitude set 3 dB above the ALC threshold

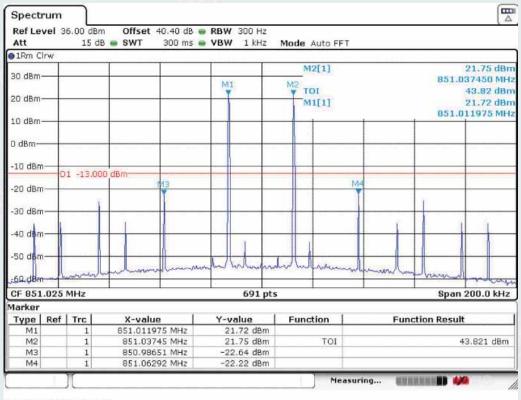
10.8.5.2.2. Channel bandwidth 25kHz

10.8.5.2.2.1. Downlink

		RBW 300 Hz		
15 dB	8 🥶 SWT 300 ms	VBW 1 kHz	Mode Auto FFT	
		MI	M2[1]	21.62 dBi 851.037450 MH 43.64 dBi
			M1[1]	21.61 dB
				851.011975 MH
	1	The second second	and the real terms	and another set and and the second an
1 -13 00	0 dBm			
1 -15.00	1413		M4	
mound	withermathermatic	wohn when here	h	unal malanda and and
MHz		691 pts		Span 200.0 kHz
Trc	X-value	Y-value	Function	Function Result
1	and the second			
			TOI	43.638 dBm
1	850.98651 MHz 851.06292 MHz	-22.61 dBm -22.26 dBm		
	MHz	MHz 1 851.011975 MHz 1 851.03745 MHz 1 850.98651 MHz	1 -13.000 dBm 1 -13.	M1 M2 TOI 1 -13.000 dBm M3 M4 M3 M3 M4 M3 M4 M4 M1 M3 M4 M3 M4 M4 M4 M4 M4 MHz 691 pts M4 1 851.011975 MH2 21.61 dBm TOI 1 851.03745 MH2 21.62 dBm TOI 1 850.98651 MH2 -22.61 dBm TOI

Date: 22.JUN.2022 10:00:36

Low Frequency and with the ALC threshold level

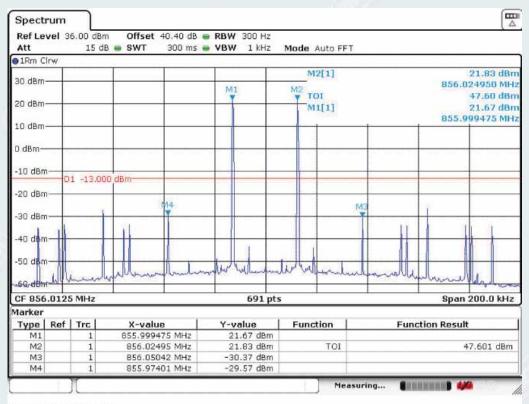


Date: 22.JUN.2022 10:00:49

Low Frequency and with the input signal amplitude set 3 dB above the ALC threshold

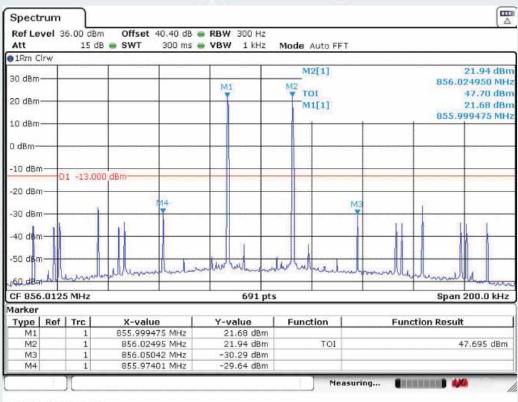
M

R



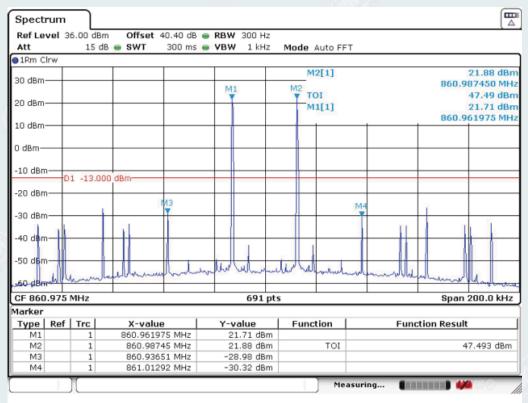
Date: 22.JUN.2022 10:07:08

Mid Frequency and with the ALC threshold level



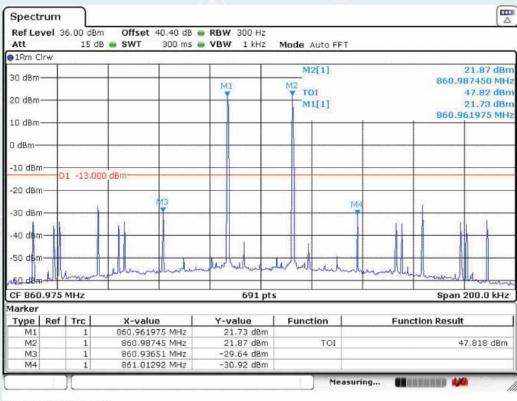
Date: 22.JUN.2022 10:07:22

Mid Frequency and with the input signal amplitude set 3 dB above the ALC threshold



Date: 22.JUN.2022 10:05:30

High Frequency and with the ALC threshold level



Date: 22.JUN.2022 10:03:44

High Frequency and with the input signal amplitude set 3 dB above the ALC threshold

RC

L

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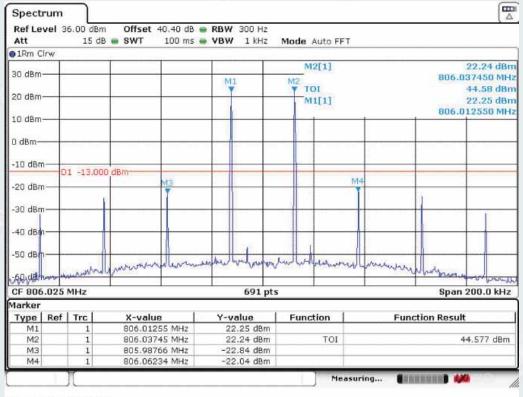
E

10.8.5.2.2.2. Uplink

Ref Lev Att	el 3	5.00 dBn 15 dB		B 🖶 RBW 300 H Is 🖶 VBW 1 kH		lode Auto FF1	r	
1Rm Cli	w		A					
30 dBm-						M2[1]		22.18 dB
50 abiii				M1		M2		806.037450 MH
20 dBm-	-				-	TOI		44.55 dB 22.12 dB
570.625994 						M1[1]		806.012550 Mi
10 dBm-					-			000.012330 Mi
0 dBm—	-							
-10 dBm	-0	1 -13.00	0 dBm		-			
-20 dBm			Ma				M4	
-20 0000			. Y				Y	
-30 dBm	_							
1								
-40 dBm	-				+			
-50 dBm	-			- Juli		H. H.		
CO JN	1.11	marta	humanabelios	mandante mona	an where	- resumery	NU LANGA MAN	mally present de
CF 806.								
	025	MHZ		691	l pts			Span 200.0 kH
Marker		-		1				
	Ref	Trc	X-value	Y-value	-	Function	Fu	nction Result
M1 M2		1	806.01255 MHz 806.03745 MHz			TOI		44.546 dBn
M3		1	805.98766 MHz			101		44,040 UBI
M4		1	806.06234 MHz	the second se	the state of the s			

Date: 21.JUN.2022 16:51:39

Low Frequency and with the ALC threshold level



Date: 21.JUN.2022 16:51:57

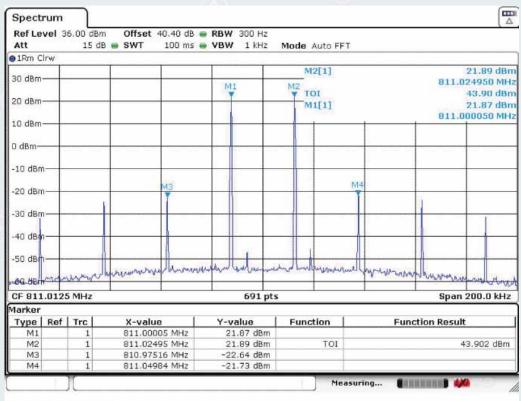
Low Frequency and with the input signal amplitude set 3 dB above the ALC threshold

XG

Spectrum Ref Level	36.00 dBm					
Att	15 dB	SWT 100 ms	VBW 1 kHz	Mode Auto FF	т	
1Rm Clrw		1 1		MOTA1		
30 dBm				M2[1]	811.024	14 dBn
			MI	TOI		.35 dBn
20 dBm	2			M1[1]		.09 dBn
				in all all	811.000	
10 dBm						
11.0.5 TA 11.0.5						
0 dBm		The second second second second			anne ann an an ann an an an	
to do -						
-10 dBm						
-20 dBm		MB			M4	
-20 ubili		Y				
-30 dBm						_
-40 dBm						-
				1 i		
-50 dBm		A state of the state				-
	manuto	municher man theman	conduct hereby and	when we train	our harmonic house and	
60/dBm						What have
CF 811.012	5 MHz		691 p	ts	Span 20	0.0 kHz
larker						
Type Ref	Trc	X-value	Y-value	Function	Function Result	
M1	1	811.00005 MHz	22.09 dBm			
M2	1	811.02495 MHz	22.14 dBm		44.3	352 dBm
MЗ	1	810.97516 MHz	-23.00 dBm		11215-5	
M4	1	811.04984 MHz	-21.79 dBm			

Date: 21.JUN.2022 16:53:49

Mid Frequency and with the ALC threshold level



Date: 21.JUN.2022 16:54:04

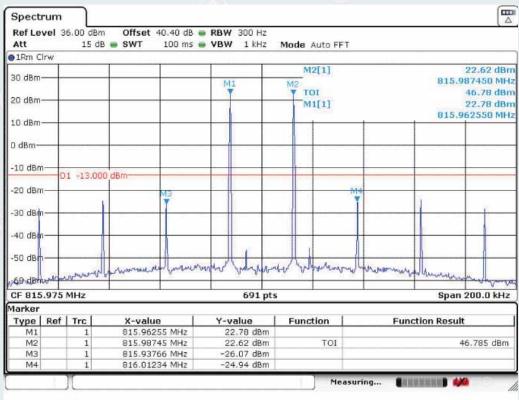
Mid Frequency and with the input signal amplitude set 3 dB above the ALC threshold

Y

Spectrun	٦.									
Ref Level			0.40 dB 🔹 100 ms 🔹	RBW 30		Mode Au	to FET			
1Rm Cirw	15 0	0 0 011	100 113	1011 1	MIL	MOUE AU				
30 dBm				M1	-	M2	1]		815.	22.33 dB 987450 Mi
20 dBm				-	-	M1[1]			46.59 dB 22.56 dB
10 dBm	-				_			1	815.	962550 MI
0 dBm								ting the state of		lar dan saara sa
-10 dBm	01 -13.00	00_dBm			_					_
-20 dBm—	-		M3		-		fy	14	0.1	
-30 dBm					+		-			-
-40 dBm					-					
-50 dBm		mounterest	hennen	much	hours	white	um	Matrices 40		
-60. dB	14 march 10 m	eldor the the		-			2		ANSW MUR	NA Maltow
CF 815.97	5 MHz			6	91 pts				Spar	1 200.0 kH
Marker										
Type Re	f Trc	X-value		Y-valu		Functio	n	Fur	nction Resu	lt
M1	1	815.9625	the local data with the lo	22.56	and the second		-			
M2	1	815.9874	and the second se	22.33			TOI			46.586 dBn
M3 M4	1	815.9376		-26.52	and the second states of the					
	Y						Measu	ring 🚺	ERMANNS 4	10

Date: 21.JUN.2022 16:48:32

High Frequency and with the ALC threshold level



Date: 21.JUN.2022 16:48:55

High Frequency and with the input signal amplitude set 3 dB above the ALC threshold

10.9. Conducted spurious emissions

est requirement:	KDB 935210 D05 clause 4.7.3 FCC PART 2.1051 FCC PART 90.219 (e)(3)
est Method:	KDB 935210 D05/4.7.3

10.9.1. Limit

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The EUT shall comply with sections 4.7.3 of KDB 935210 D05.

Refer to the applicable rule part(s) for specified limits on unwanted (out-of-band/out-of-block and spurious) emissions (e.g., Section 90.210).

Spurious emissions shall be measured using a single test signal sequentially tuned to the low, middle, and high channels or frequencies within each authorized frequency band of operation.

Intermodulation products shall be measured using two CW signals with all available channel spacings (e.g., 12.5 kHz and 6.25 kHz) with the center between these channels being equal to the center frequency fo as determined from 4.3.

NOTE—Intermodulation-product spurious emission measurements are not required for single-channel boosters that cannot accommodate two simultaneous signals within the passband.

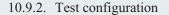
For a multi-channel enhancer, any intermodulation product level must be attenuated, relative to P, by at least:43+10*log₁₀ P is less stringent than 70dB, that limit was used.

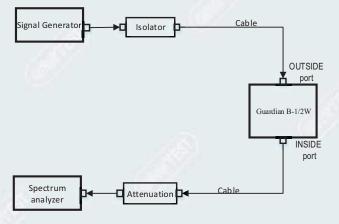
Spurious emissions shall be measured using a single test signal sequentially tuned to the low, middle, and high channels or frequencies within each authorized frequency band of operation.

Out-of-band/out-of-block emissions (including intermodulation products) shall be measured under each of the following two stimulus conditions:

- a) two adjacent test signals sequentially tuned to the lower and upper frequency band/block edges;
- a single test signal, sequentially tuned to the lowest and highest frequencies or channels within the frequency band/block under examination.

NOTE—Single-channel boosters that cannot accommodate two simultaneous signals within the passband may be excluded from the test stipulated in step a).





Signal Generator

Figure 10.9-1 Downlink connection diagram

Figure 10.9-2 Uplink connection diagram

10.9.3. Test procedures

- a) Connect a signal generator to the input of the EUT.
- b) Configure the signal generator to produce a CW signal.
- c) Set the frequency of the CW signal to the center channel of the EUT passband.
- d) Set the output power level so that the resultant signal is just below the AGC threshold (see 4.2).
- e) Connect a spectrum analyzer to the output of the EUT, using appropriate attenuation as necessary.
- f) Set the RBW = 100 kHz. (i.e., for 30 MHz to 1 GHz PLMRS and/or PSRS booster devices)
- g) Set the VBW = $3 \times RBW$.
- h) Set the Sweep time = auto-couple.
- i) Set the detector to PEAK.
- j) Set the spectrum analyzer start frequency to 30 MHz (or the lowest radio frequency signal generated in the EUT, without going below 9 kHz if the EUT has additional internal clock frequencies), and the stop frequency to 10 × the highest allowable frequency of the EUT passband.
- k) Select MAX HOLD, and use the marker peak function to find the highest emission(s) outside the passband. (This could be either at a frequency lesser or greater than the passband frequencies.)
- 1) Capture a plot for inclusion in the test report.

Any frequency outside the authorized bandwidth was attenuated by at least $43+10*\log(P)dB$. This corresponds to an absolute level of -13dBm ($P_{(dBm)}$ -($43+10*\log(P_{(W)})$).

----- The following blanks ------

10.9.4. Test results

Test Date (yy-mm-dd):	2022-06-22
Normal condition:	Temp:25.8°C, Humid: 50%, Atmospheric Pressure:101kpa
Supply Voltage:	AC 110V, 50Hz

10.9.4.1. 700MHz Band

Test Fr	equency	Spurious Limit(dBm)	RBW (kHz)	Max. Spurious Mark Level (dBm)	Margin ^{1*} (dB)	Result
(1) Downlink T	ransmit (Frequenc	y range: 758MHz	z~768MHz)	·		
LTE 5MHz:	9kHz~1GHz	-13	100	-44.3	31.3	PASS
Frequency 763MHz	1GHz~10GHz	-13	100	-45.1	31.1	PASS
LTE 10MHz:	9kHz~1GHz	-13	100	-45.1	32.1	PASS
Frequency 763MHz	1GHz~10GHz	-13	100	-45.3	32.3	PASS
(2) Downlink T	ransmit (Frequenc	y range: 768MHz	z~775MHz)		1	38 / L
Frequency	9kHz~1GHz	-13	100	-44.1	31.1	PASS
771.5MHz	1GHz~10GHz	-13	100	-44.7	31.7	PASS
(3) Uplink Trar	asmit (Frequency ra	ange: 788MHz~7	'98MHz)			
LTE 5MHz:	9kHz~1GHz	-13	100	-47.6	34.6	PASS
Frequency 793MHz	1GHz~10GHz	-13	100	-45.1	32.1	PASS
LTE 10MHz:	9kHz~1GHz	-13	100	-47.3	34.3	PASS
Frequency 793MHz	1GHz~10GHz	-13	100	-45.2	32.2	PASS
(4) Uplink Trar	asmit (Frequency ra	ange: 798MHz~8	805MHz)	11		
Frequency	9kHz~1GHz	-13	100	-46.2	33.2	PASS
801.5MHz	1GHz~10GHz	-13	100	-44.7	31.7	PASS

10.9.4.2. 800MHz Band

Frequer	ncy range	Max. Spurious Limit(dBm)	RBW (kHz)	Max. Spurious mark Level (dBm)	Margin ^{1*} (dB)	Result	
(1) Downlink transmit mode (Frequency range: 851MHz~861MHz)							
frequency	9kHz~1GHz	-13	100	-43.8	30.8	PASS	
856.0MHz	1GHz~8.6GHz	-13	100	-45.0	32.0	PASS	

1

(2) Uplink transmit mode(Frequency range: 806MHz~816MHz)								
frequency 811.0MHz	9kHz~1GHz	-13	100	-46.7	33.7	PASS		
	1GHz~8.6GHz	-13	100	-44.4	31.4	PASS		
NOTE 1: ^{1*} Margin= specification limit -Maximum mark level.								

----- The following blanks ------

10.9.5. Test screenshot

10.9.5.1. 700MHz Band(Frequency range: 758MHz~775MHz/ 788MHz~805MHz)

10.9.5.1.1. Downlink

10.9.5.1.1.1. Frequency range: 758MHz ~768 MHz LTE 5MHz

Spectrum Ref Level 27.00 dBm Offset 40.40 dB 🖷 RBW 100 kHz Att 5 dB SWT 10 ms 👄 VBW 300 kHz Mode Auto Sweep • 1Rm Max -44.28 dBm 908.249 MHz M1[1] 20 dBm-10 dBm-0 dBm--10 dBm-D1 -13.000 dBm--20 dBm--30 dBm--40 dBm 50 dema -60 dBm -70 dBm-2000 pts Start 9.0 kHz Stop 1.0 GHz Marker Type Ref Trc -44.28 dBm Function Function Result X-value M1 908.249 MHz Measuring...

Date: 22.JUN.2022 13:42:16

9kHz~1GHz

Spectrum Offset 40.4 Ref Level 27.00 dBm Offset 40.4 Att 5 dB SWT 9	0 dB 🖷 RBW 100 kHz 0 ms 🖷 VBW 300 kHz	Mode Auto Sweep	
1Rm Max			
20 dBm		M1[1]	-45.13 dBm 6.97830 GHz
10 dBm	-		
0 dBm			
-10 dBm			
-20 dBm			
-30 dBm			
-40 dBm		PIL	
-50 dBman by works and with the second		rout your anon boul not a	
-60 dBm		04.7 2	
-70 dBm			
CF 5.5 GHz	2000 pt	ts	Span 9.0 GHz
Marker <u>Type Ref Trc X-value</u> M1 1 6.9783	Y-value GHz -45.13 dBm	Function	Function Result

Date: 22.JUN.2022 11:34:40

10.9.5.1.1.2. Frequency range: 758 MHz ~768 MHz LTE 10MHz

Spect	rum											
	vel	27.00 dBm		40.40 dB 📢								
Att		5 d8	SWT	10 ms (VBW	300 kH;	z Mode	Auto Swee	эp			
●1Rm M	1ax											
20 dBm-	+						M	1[1]	1			-45.05 dBm 31.249 MHz
10 dBm-	+								ſ	-		
0 dBm—	+											
-10 dBm		D1 -13.00	0 dBm									
-20 dBm	∩+											
-30 dBm	∩+									$\left \right $	ah	
-40 dBm										+	\square	MI
So ash	-	and a constant of the	rita, huidd, hy hod wodd	history all and the second	Withou purchasely	Nitronanian	helphalladered	epitain-baphilti	rhandelsinnigels	bart	wanter leader	his many series and the second se
-60 dBm	∩+											
-70 dBm	∩—+				_							
Start 9	.0 kl	lz				2000	pts				Sto	op 1.0 GHz
Marker												
Туре	Ref	Trc	X-valu			value	Func	tion	F	unc	tion Result	t
M1		1	931.2	249 MHz	-4	5.05 dBr	n .			_		
		Л						Measu	uring			

Date: 22.JUN.2022 13:41:36

9kHz~1GHz

Spectrum Offset 40.40 dB - RBW 100 kHz SWT 90 ms - VBW 300 kHz Ref Level 27.00 dBm Att 5 dB Mode Auto Sweep ●1Rm Max -45.26 dBm 6.99180 GHz M1[1] 20 dBm-10 dBm-0 dBm--10 dBm-01 -13.000 dBm--20 dBm--30 dBm--40 dBm-1 A.A.I.A. -50 dBm ----A. Lander -60 dBm--70 dBm-CF 5.5 GHz 2000 pts Span 9.0 GHz Marker Type | Ref | Trc | X-value 6.9918 GHz Y-value -45.26 dBm Function Function Result M1 1 Measuring...

Date: 22 JUN 2022 11:35:20

10.9.5.1.1.3. Frequency range: 768 MHz ~775 MHz

Spectru	m								
Ref Leve	27.00 dB	m Offset 40.	40 dB 🔵 RBW	100 kHz					
Att	5 0	IB SWT	10 ms 👄 VBW	300 kHz	Mode A	uto Sweep			
1Rm Max									
20 dBm					M1	[1]			44.07 dBm 3.749 MHz
10 dBm									
0 dBm									
-10 dBm—	D1 -13.0	00 dBm					_		
-20 dBm—									
-30 dBm—							M	h	
-40 dBm—	and at labeling states	urin pylowitzakanywisława sie wada	an sin cale of a distribution of the state of	and a state of the		and a state of the second second	minum	annum lunnig	MI Land Million Million
	in the black in Arthreshi								
-60 dBm—									
-70 dBm—									
Start 9.0	kHz			2000 pts	5			Sto	p 1.0 GHz
Marker	(] = _		1		-	I	-		
Type R M1	ef Trc	X-value 933.749		4.07 dBm	Funct	ion	Fu	nction Result	
		500.749				Measuri	ng 🔳		

Date: 22.JUN.2022 13:41:03

9kHz~1GHz

Ref Level 2 Att	7.00 dBm 5 dB	Offset 40.40 dB	• RBW 100 kHz • VBW 300 kHz	Mode Auto Swee	
1Rm Max	5 00	50111 501113	VDW 300 KHZ	MOUE AULO SWEE	4
20 dBm			_	M1[1]	-44.73 dBm 6.94230 GHz
10 dBm			-		
0 dBm					
-10 dBm-0	1 -13.000	dBm	_		
-20 dBm					
-30 dBm					
-40 dBm				MI	
-50 dBm	augu naga sharkiya	and the state of t	-hadrons.extuadats-ctast	warmanter and and and	al the second second and the second
-60 dBm					
-70 dBm					
Start 1.0 GH	Iz	<u>.</u>	2000 p	ts	Stop 10.0 GHz
Marker					
Type Ref M1	Trc 1	X-value 6.9423 GHz	-44.73 dBm	Function	Function Result

Date: 22 JUN 2022 11:33:27

10.9.5.1.2.1. Frequency range: 788 MHz ~798 MHz LTE 5MHz

Spectrum Ref Level 28.00 dBm Offset 40.40 dB 🖷 RBW 100 kHz 5 dB 👜 SWT Att 2 ms 👄 VBW 300 kHz Mode Auto FFT ●1Rm Max M1[1] 47.63 dBm 950,499 MHz 20 dBm 10 dBm-0 dBm--10 dBm-01 -13.000 dBm--20 dBm -30 dBm 40 dBm M1 -StandBook manufament -60 dBm -70 dBm Stop 1.0 GHz Start 9.0 kHz 2000 pts Marker Type | Ref | Trc | X-value 950.499 MHz Y-value Function **Function Result** M1 -47.63 dBm Measuring... ST CAMERA AND ADDRESS OF ADDRESS OF ADDRESS ADDRES ADDRESS ADD

Date: 22 JUN 2022 13 52 15

9kHz~1GHz

Spectrum Ref Level 28.00 dBm Offset 40.40 dB 🖷 RBW 100 kHz 90 ms 👜 VBW 300 kHz Att 5 dB SWT Mode Auto Sweep ●1Rm Max M1[1] 45.06 dBm 6.97830 GHz 20 dBm-10 dBm-0 dBm -10 dBm-01 -13.000 dBm--20 dBm -30 dBm 40 dBm -50 dBm -----60 dBm -70 dBm CF 5.5 GHz Span 9.0 GHz 2000 pts Marker X-value 6.9783 GHz Y-value -45.06 dBm Type | Ref | Trc | Function Function Result M1 1 Measuring. IE DE REAL MEANE RE DE D

Date: 22.JUN.2022 13:57:37

10.9.5.1.2.2. Frequency range: 788 MHz ~798 MHz LTE 10MHz

Spectrum									
Ref Level 2 Att		Offset 4		RBW 100 k		Auto FFT			
●1Rm Max									
20 dBm					M1	[1]	ř.		47.32 dBn 32.999 MH
10 dBm		-					1		
0 dBm				an karatara atana					
-10 dBm0	1 -13.00	0_dBm							
-20 dBm				-	-				
-30 dBm				-					
-40 dBm						0	11		
-Sandball	ANY MARKANIN	Press Pressing	and the second	n an	-and a second	ater and a formation of the	Phanneard	handhare	Catopenes Marchal
-60 dBm		1							
-70 dBm									
Start 9.0 kH	z			2000	pts		1.4	Sto	p 1.0 GHz
Marker Type Ref		X-value	9 MHz	Y-value -47.32 dB	Functi	on	Fun	ction Result	1
M1		702.99	99 MHZ	-47.32 d8	m	Measur	ing 🚺	IN NUMBER OF INCOME.	.

Date: 22 JUN 2022 13:53:05

9kHz~1GHz

Spectrum									
Ref Level				RBW 100 ki					
Att	5 dB	SWT	90 ms 🖷	VBW 300 ki	Hz Mode	Auto Sw	eep		
●1Rm Max		-							
20 dBm					M	1[1]	ň.		45.18 dBm 82980 GHz
10 dBm		-							
0 dBm									
-10 dBm	01 -13.000	dBm							
-20 dBm		1			1				
-30 dBm	-			-					
-40 dBm						MI			
-50 dBm	- demonstration and	and the second	and a state of the	n an	and the state of t	L'ABARA PARA	anerge annual said a far far	trains when it	ويسطون والمعالية ويتا
-60 dBm		·				-			
-70 dBm-									10.0.011-
Start 1.0 G	HZ			200	0 pts			stop	10.0 GHz
Marker Type Ret M1	f Trc	X-value	98 GHz	Y-value -45.18 d	Func	tion	Fund	ction Result	
mit	X	0.02		- 4 5.10 U	om	Mea	suring 💵		

Date: 22.JUN.2022 13:56:41

10.9.5.1.2.3. Frequency range: 798 MHz ~805 MHz

Spect	rum									
Ref Le Att	vel :	28.00 dt 5	dB 📾 SWT		 RBW 100 kHz VBW 300 kHz 		Auto FF	т		
1Rm M	1ax									
20 dBm	-					M1 M2		N.	111.4	16.39 dBm 01.499 MH: -46.16 dBm
10 dBm	-	1			-			1	9	49.749 MH:
0 dBm-	_		-							
-10 dBn	n	01 -13.0	000 dBm							
-20 dBn	n									
-30 dBn	n		-		-				<u> </u>	
-40 dBn	n-+		-						ή	M2
-StandBo	(P a wal	to a subsection of the	resolution Manual	-	14-1-14-15-5-5-5-5-5-5-5-5-5-5-5-5-5-5-5	and and a state of the second s	uranthymiqu	new Mutaman		entrony there
-60 dBn	n-+									
-70 dBn		6. n.	_							
Start 9		łz	30		2000 p	ts			Ste	op 1.0 GHz
Marker										
Туре	Ref	_	X-valu		Y-value	Functi	on	Fun	ction Resul	t
M1 M2		1		99 MHz 49 MHz	16.39 dBm -46.16 dBm					
)(Mea	isuring 🚺	a na mana na manga 🙀	a : ; ,

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9kHz~1GHz

Spectrum Ref Level :		Offcat 40	40 d0 -	RBW 100 kH					
Att	5 dB	SWT	and the second sec	VBW 300 kH		Auto Swee	30		
1Rm Max									
20 dBm					M	1[1]			44.67 dBm 95130 GHz
10 dBm									
0 dBm	SHOODIN HEREIN								
-10 dBm)1 -13.000	dBm							
-20 dBm		-			-				
-30 dBm				-					
-40 dBm				-		MI			
-50 dBm	ne manife the second states	the spectrum	and the second	An	and the second		lan an a	-	
-60 dBm					-				
-70 dBm									
Start 1.0 G	-lz			2000	pts			Stop	10.0 GHz
Marker Type Ref	Trc	X-value	1	Y-value	Func	tion	Fun	ction Result	
M1	1	6,951	L3 GHz	-44.67 dB	m				

10.9.5.2. 800MHz Band(Frequency range: 851MHz~861MHz/ 806MHz~816MHz) 10.9.5.2.1. Downlink

Spectrum					
Ref Level 27.00 dBr Att 5 di		RBW 100 kHz	Mode Auto Sw	(een	
1Rm Max			House Hate on		
20 dBm			M1[1]		-43.84 dBn 913.249 MH
10 dBm					
0 dBm					
-10 dBm-D1 -13.00	00 dBm				
-20 dBm					
-30 dBm				M	
-40 dBm	1		abus (she a su iking dishe sa at	international Walter	united and a stand
50 dBm	and her providence of the state of the second particular	- and the state of a solution			
-60 dBm					
-70 dBm					
Start 9.0 kHz		2000 p	its		Stop 1.0 GHz
Marker Type Ref Trc M1 1	X-value 913.249 MHz	Y-value -43.84 dBm	Function	Funct	ion Result
			Mea	suring	

Date: 22.JUN.2022 13:40:11

9kHz~1GHz

Spectrun	n					
Ref Level	27.00 dBm	Offset 40.40 dB	RBW 100 kHz			
Att	5 dB	SWT 90 ms	VBW 300 kHz	Mode Auto Sw	reep	
●1Rm Max						
20 dBm				M1[1]		4.99 dBm 4930 GHz
10 dBm						
0 dBm						
-10 dBm—	-D1 -13.000	dBm				
-20 dBm—						
-30 dBm						
-40 dBm			- July and for a start of the s	MI		
-50 dBm	with the sport stop the st	and advertising the second star line				and the second second
-60 dBm					helenthiseen other and the last substantial threads	D. Alexan
-70 dBm—						
CF 5.5 GH	z		2000 p	ts	Span	9.0 GHz
Marker				1 1		
Type Re M1	1 1	X-value 6.2493 GHz	-44.99 dBm	Function	Function Result	
		0.2490 GHz		Mea	osuring 🚺 🚺 🚧	

Date: 22.JUN.2022 13:38:53

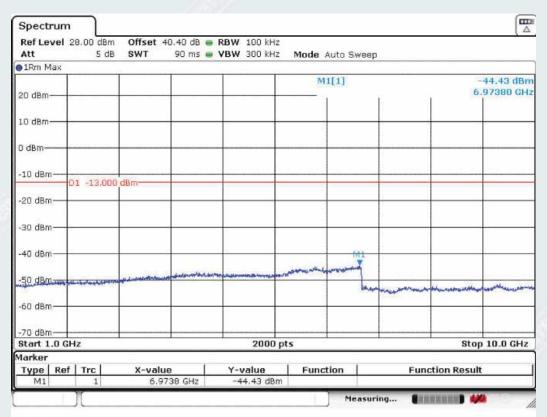
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10.9.5.2.2. Uplink

Spectrun									
Ref Level Att		Offset 4		RBW 100 kHz VBW 300 kHz		Auto FFT			,
1Rm Max	8 11	A	4		11100-041-04				
20 dBm	1. S.			1	M2 M1		1	-46.66 950.249 ▼ 15.55	MH
10 dBm	Ó	-					1 1	811.249	MH
0 dBm									
-10 dBm	01 -13.00	0 dBm							
-20 dBm								Caracterine Caracteri	
-30 dBm	9	-							
-40 dBm							1	M	2
-58/080/000			l'an ta keinifagining S	-	المراجعة المراجعة الم	-	apanen	In a superior and a superior	-
-60 dBm									
-70 dBm	i. Tarr								27.035
Start 9.0 k	Hz			2000 p	its			Stop 1.0	GHz
Marker	f Trc	v salas		O residence	Functi			tion Result	
Type Re M1	1	X-value 811.24	49 MHz	Y-value 15.55 dBm		on	Func	tion Result	_
M2	1		49 MHz	-46.66 dBm					

Date: 22 JUN 2022 13:54:34

9kHz~1GHz



Date: 22 JUN 2022 13:55:14

 $1 GHz \sim 10 GHz$

10.10. Frequency stability

Test requirement:

KDB 935210 D05 clause 4.8
FCC PART 2 1055(a)(2)
FCC PART 90.213 and 90.539
FCC PART 90.219 (e)(4)(i)
KDB 935210 D05/4.8
FCC PART 2 1055(b)

Test Method:

10.10.1. Limit

The EUT shall comply with sections 4.8 of KDB 935210 D05.

Section 90.219(e)(4)(i) requires that a signal being retransmitted by an amplifier, repeater, or industrial booster meets the frequency stability requirements of Section 90.213. However, this requirement presumes that the EUT processes an input signal in ways that can influence the output signal frequency/frequencies; however, most signal boosters do not incorporate an oscillator). If the amplifier, booster, or repeater does not alter the input signal in any way, then a frequency stability test may not be required.

When performing frequency stability measurements on these types of devices, the instability associated with the EUT must be isolated from any frequency instability associated with the measurement instrumentation. One method for realizing such isolation is to connect the reference clock input of the signal generator to the reference output of the frequency counter, to confirm that any frequency instability is associated with the EUT, and is not due to differences between the reference oscillators internal to the measurement instrumentation.

Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table 10.10-1.

frequency range(MHz)	Minimum Frequency Stability(ppm)
758-768/788~798	±2.5
769-775/799-805	±1.5(Channel Bandwidth 12.5kHz) ±2.5(Channel Bandwidth 25kHz)
806-809/851-854	± 1.0
809-816/854-861	±1.5

Tabla	10.10-1Frequ	anay stability	limita
Table	10.10-1Frequ	ency stadinty	minus

NOTE 1: RF channels to be tested for single-carrier: Middle frequency NOTE 2: Modulation type is CW.

Inside port

Guardian B-1/2W

Outside port

10.10.2. Test configuration

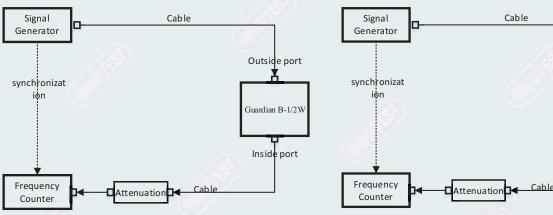


Figure 10.10-1 Downlink connection diagram Figure 10.10-2Uplink connection diagram

10.10.3. Test procedures

10.10.3.1.FCC PART 2 1055(a) (2)

§2.1055 Measurements required: Frequency stability.

(a) The frequency stability shall be measured with variation of ambient temperature as follows:

(1) From −30° to + 50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

(2) From -20° to + 50° centigrade for equipment to be licensed for use in the Maritime Services under part 80 of this chapter, except for Class A, B, and S Emergency Position Indicating Radiobeacons (EPIRBS), and equipment to be licensed for use above 952 MHz at operational fixed stations in all services, stations in the Local Television Transmission Service and Point-to-Point Microwave Radio Service under part 21 of this chapter, equipment licensed for use aboard aircraft in the Aviation Services under part 87 of this chapter, and equipment authorized for use in the Family Radio Service under part 95 of this chapter.

(3) From 0° to + 50° centigrade for equipment to be licensed for use in the Radio Broadcast Services under part 73 of this chapter.

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

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10.10.3.2. ANSI C63.26-2015 clause 5.6.3

5.6.3 Procedure for frequency stability testing

Frequency stability is a measure of the frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at +20 °C and rated supply voltage.

The operating carrier frequency shall be set up in accordance with the manufacturer's published operation and instruction manual prior to the commencement of these tests. No adjustment of any frequency determining circuit element shall be made subsequent to this initial set-up. Frequency stability is tested:

- At 10 °C intervals of temperatures between -30 °C and +50 °C at the manufacturer's rated supply voltage, and
- b) At +20 °C temperature and $\pm 15\%$ supply voltage variations. If a product is specified to operate over a range of input voltage then the -15% variation is applied to the lowermost voltage and the +15% is applied to the uppermost voltage.

During the test all necessary settings, adjustments and control of the EUT have to be performed without disturbing the test environment, i.e., without opening the environmental chamber. The frequency stabilities can be maintained to a lesser temperature range provided that the transmitter is automatically inhibited from operating outside the lesser temperature range. For handheld equipment that is only capable of operating from internal batteries and the supply voltage cannot be varied, the frequency stability tests shall be performed at the nominal battery voltage and the battery end point voltage specified by the manufacturer. An external supply voltage can be used and set at the internal battery nominal voltage, and again at the battery operating end point voltage which shall be specified by the equipment manufacturer.

If an unmodulated carrier is not available, the mean frequency of a modulated carrier can be obtained by using a frequency counter with gating time set to an appropriately large multiple of bit periods (gating time depending on the required accuracy). Full details on the choice of values shall be included in the test report.

Frequency stability is a measure of the frequency drift due to temperature and supply voltage variations, with reference to the frequency measured at +20 °C and rated supply voltage.

The operating carrier frequency shall be set up in accordance with the manufacturer's published operation and instruction manual prior to the commencement of these tests. No adjustment of any frequency determining circuit element shall be made subsequent to this initial set-up. Frequency stability is tested:

- At 10 °C intervals of temperatures between -30 °C and +50 °C at the manufacturer's rated supply voltage, and
- b) At +20 °C temperature and $\pm 15\%$ supply voltage variations. If a product is specified to operate over a range of input voltage then the -15% variation is applied to the lowermost voltage and the +15%is applied to the uppermost voltage.

During the test all necessary settings, adjustments and control of the EUT have to be performed without disturbing the test environment, i.e., without opening the environmental chamber. The frequency stabilities can be maintained to a lesser temperature range provided that the transmitter is automatically inhibited from operating outside the lesser temperature range. For handheld equipment that is only capable of operating from internal batteries and the supply voltage cannot be varied, the frequency stability tests shall be performed at the nominal battery voltage and the battery end point voltage specified by the manufacturer. An external supply voltage can be used and set at the internal battery nominal voltage, and again at the battery operating end point voltage which shall be specified by the equipment manufacturer.

If an unmodulated carrier is not available, the mean frequency of a modulated carrier can be obtained by using a frequency counter with gating time set to an appropriately large multiple of bit periods (gating time depending on the required accuracy). Full details on the choice of values shall be included in the test report. NOTE 1: Input power supply typical working voltage: AC 110V, 50/60Hz.

NOTE 2: Operating Temperature limits by manufacturer's declare: -20°C to +50°C.

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10.10.4. Test results

Test Date (yy-mm-dd):	2022-07-01~07-02		
Normal condition:	Temp:25.1~25.5°C, Humid:50~55	%, Atmospheric	Pressure:101kpa
Extreme test conditions:			
Temp range:	-20°C~+50°C	Test Date:	2022-07-01~07-02

10.10.4.1.Downlink

10.10.4.1.1. The center frequency is 763MHz

Cemperature (°C)	Voltage	Intput carrier Frequency (MHz)	Comparison of deviation value between output frequency and input frequency(Hz)	Limit (ppm)	Frequency stability (ppm)	Result
	AC 93.5V(110*85%)	763.0	+0.6	±2.5	0.001	PASS
-20	AC 110V	763.0	-0.8	±2.5	-0.001	PASS
	AC 126.5V(110*115%)	763.0	-0.6	±2.5	-0.001	PASS
	AC 93.5V(110*85%)	763.0	+0.4	±2.5	0.001	PASS
-10	AC 110V	763.0	+0.4	±2.5	0.001	PASS
	AC 126.5V(110*115%)	763.0	-0.3	±2.5	0.000	PASS
	AC 93.5V(110*85%)	763.0	-0.6	±2.5	-0.001	PASS
0	AC 110V	763.0	+0.3	±2.5	0.000	PASS
	AC 126.5V(110*115%)	763.0	-0.7	±2.5	-0.001	PASS
	AC 93.5V(110*85%)	763.0	-0.9	±2.5	-0.001	PASS
10	AC 110V	763.0	+0.8	±2.5	0.001	PASS
	AC 126.5V(110*115%)	763.0	+0.7	±2.5	0.001	PASS
	AC 93.5V(110*85%)	763.0	-0.6	±2.5	-0.001	PASS
20	AC 110V	763.0	-0.8	±2.5	-0.001	PASS
	AC 126.5V(110*115%)	763.0	+0.7	±2.5	0.001	PASS
	AC 93.5V(110*85%)	763.0	+0.8	±2.5	0.001	PASS
30	AC 110V	763.0	+0.9	±2.5	0.001	PASS
	AC 126.5V(110*115%)	763.0	-0.7	±2.5	-0.001	PASS
	AC 93.5V(110*85%)	763.0	+0.7	±2.5	0.001	PASS
40	AC 110V	763.0	-0.8	±2.5	-0.001	PASS
	AC 126.5V(110*115%)	763.0	-0.6	±2.5	-0.001	PASS
	AC 93.5V(110*85%)	763.0	-0.6	±2.5	-0.001	PASS
50	AC 110V	763.0	-0.5	±2.5	-0.001	PASS
	AC 126.5V(110*115%)	763.0	+0.6	±2.5	0.001	PASS

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10.10.4.1.2.	The center	frequency	is 771.5MHz
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Temperature (℃)	Voltage	Intput carrier Frequency (MHz)	Comparison of deviation value between output frequency and input frequency(Hz)	Limit (ppm)	Frequency stability (ppm)	Result
1	AC 93.5V(110*85%)	771.5	+0.6	±1.5	0.001	PASS
-20	AC 110V	771.5	+0.7	±1.5	0.001	PASS
	AC 126.5V(110*115%)	771.5	-0.8	±1.5	-0.001	PASS
	AC 93.5V(110*85%)	771.5	-0.8	±1.5	-0.001	PASS
-10	AC 110V	771.5	+0.7	±1.5	0.001	PASS
	AC 126.5V(110*115%)	771.5	-0.6	±1.5	-0.001	PASS
128	AC 93.5V(110*85%)	771.5	-0.7	±1.5	-0.001	PASS
0	AC 110V	771.5	-0.7	±1.5	-0.001	PASS
	AC 126.5V(110*115%)	771.5	+0.7	±1.5	0.001	PASS
	AC 93.5V(110*85%)	771.5	+0.6	±1.5	0.001	PASS
10	AC 110V	771.5	-0.7	±1.5	-0.001	PASS
	AC 126.5V(110*115%)	771.5	-0.9	±1.5	-0.001	PASS
21	AC 93.5V(110*85%)	771.5	+0.6	±1.5	0.001	PASS
20	AC 110V	771.5	-0.7	±1.5	-0.001	PASS
	AC 126.5V(110*115%)	771.5	+0.9	±1.5	0.001	PASS
	AC 93.5V(110*85%)	771.5	+1.0	±1.5	0.001	PASS
30	AC 110V	771.5	-0.8	±1.5	-0.001	PASS
0	AC 126.5V(110*115%)	771.5	-1.0	±1.5	-0.001	PASS
	AC 93.5V(110*85%)	771.5	-0.6	±1.5	-0.001	PASS
40	AC 110V	771.5	+0.8	±1.5	0.001	PASS
	AC 126.5V(110*115%)	771.5	+0.8	±1.5	0.001	PASS
	AC 93.5V(110*85%)	771.5	-0.6	±1.5	-0.001	PASS
50	AC 110V	771.5	-0.6	±1.5	-0.001	PASS
687	AC 126.5V(110*115%)	771.5	+0.9	±1.5	0.001	PASS

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Temperature (℃)	Voltage	Intput carrier Frequency (MHz)	Comparison of deviation value between output frequency and input frequency(Hz)	Limit (ppm)	Frequency stability (ppm)	Result
	AC 93.5V(110*85%)	856.0	+0.6	±1.0	0.001	PASS
-20	AC 110V	856.0	+0.6	±1.0	0.001	PASS
	AC 126.5V(110*115%)	856.0	-0.7	±1.0	-0.001	PASS
	AC 93.5V(110*85%)	856.0	+0.7	±1.0	0.001	PASS
-10	AC 110V	856.0	-0.6	±1.0	-0.001	PASS
	AC 126.5V(110*115%)	856.0	+0.5	±1.0	0.001	PASS
74574	AC 93.5V(110*85%)	856.0	-0.6	±1.0	-0.001	PASS
0	AC 110V	856.0	-0.6	±1.0	-0.001	PASS
	AC 126.5V(110*115%)	856.0	0.8	±1.0	0.001	PASS
	AC 93.5V(110*85%)	856.0	+0.9	±1.0	0.001	PASS
10	AC 110V	856.0	+0.7	±1.0	0.001	PASS
	AC 126.5V(110*115%)	856.0	+0.8	±1.0	0.001	PASS
	AC 93.5V(110*85%)	856.0	+0.8	±1.0	0.001	PASS
20	AC 110V	856.0	+0.9	±1.0	0.001	PASS
	AC 126.5V(110*115%)	856.0	+1.0	±1.0	0.001	PASS
	AC 93.5V(110*85%)	856.0	+0.7	±1.0	0.001	PASS
30	AC 110V	856.0	-0.8	±1.0	-0.001	PASS
	AC 126.5V(110*115%)	856.0	-0.8	±1.0	-0.001	PASS
	AC 93.5V(110*85%)	856.0	-0.9	±1.0	-0.001	PASS
40	AC 110V	856.0	-0.8	±1.0	-0.001	PASS
	AC 126.5V(110*115%)	856.0	+0.8	±1.0	0.001	PASS
100	AC 93.5V(110*85%)	856.0	+0.7	±1.0	0.001	PASS
50	AC 110V	856.0	+0.7	±1.0	0.001	PASS
	AC 126.5V(110*115%)	856.0	-0.8	±1.0	-0.001	PASS

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10.10.4.2.Uplink

10.10.4.2.1. The center frequency is 793MHz

Temperature (°C)	Voltage	Intput carrier Frequency (MHz)	Comparison of deviation value between output frequency and input frequency(Hz)	Limit (ppm)	Frequency stability (ppm)	Result
16	AC 93.5V(110*85%)	793.0	+0.6	±2.5	0.001	PASS
-20	AC 110V	793.0	-0.7	±2.5	-0.001	PASS
	AC 126.5V(110*115%)	793.0	-0.5	±2.5	-0.001	PASS
	AC 93.5V(110*85%)	793.0	+0.6	±2.5	0.001	PASS
-10	AC 110V	793.0	+0.8	±2.5	0.001	PASS
18	AC 126.5V(110*115%)	793.0	-0.5	±2.5	-0.001	PASS
93X-	AC 93.5V(110*85%)	793.0	-0.6	±2.5	-0.001	PASS
0	AC 110V	793.0	+0.5	±2.5	0.001	PASS
	AC 126.5V(110*115%)	793.0	-0.5	±2.5	-0.001	PASS
	AC 93.5V(110*85%)	793.0	-0.9	±2.5	-0.001	PASS
10	AC 110V	793.0	+0.7	±2.5	0.001	PASS
	AC 126.5V(110*115%)	793.0	+0.7	±2.5	0.001	PASS
	AC 93.5V(110*85%)	793.0	-0.8	±2.5	-0.001	PASS
20	AC 110V	793.0	-0.9	±2.5	-0.001	PASS
	AC 126.5V(110*115%)	793.0	+0.8	±2.5	0.001	PASS
	AC 93.5V(110*85%)	793.0	+0.7	±2.5	0.001	PASS
30	AC 110V	793.0	+0.9	±2.5	0.001	PASS
1000	AC 126.5V(110*115%)	793.0	-0.8	±2.5	-0.001	PASS
	AC 93.5V(110*85%)	793.0	+0.7	±2.5	0.001	PASS
40	AC 110V	793.0	-0.8	±2.5	-0.001	PASS
	AC 126.5V(110*115%)	793.0	-0.9	±2.5	-0.001	PASS
(A)	AC 93.5V(110*85%)	793.0	-0.6	±2.5	-0.001	PASS
50	AC 110V	793.0	-0.8	±2.5	-0.001	PASS
2	AC 126.5V(110*115%)	793.0	+0.7	±2.5	0.001	PASS

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Temperature (℃)	Voltage	Intput carrier Frequency (MHz)	Comparison of deviation value between output frequency and input frequency(Hz)	Limit (ppm)	Frequency stability (ppm)	Result
1	AC 93.5V(110*85%)	801.5	+0.6	±1.5	0.001	PASS
-20	AC 110V	801.5	+0.6	±1.5	0.001	PASS
	AC 126.5V(110*115%)	801.5	+0.7	±1.5	0.001	PASS
	AC 93.5V(110*85%)	801.5	-1.0	±1.5	-0.001	PASS
-10	AC 110V	801.5	+0.8	±1.5	0.001	PASS
	AC 126.5V(110*115%)	801.5	-0.6	±1.5	-0.001	PASS
128	AC 93.5V(110*85%)	801.5	+0.8	±1.5	0.001	PASS
0	AC 110V	801.5	+0.7	±1.5	0.001	PASS
	AC 126.5V(110*115%)	801.5	+0.8	±1.5	0.001	PASS
	AC 93.5V(110*85%)	801.5	+1.0	±1.5	0.001	PASS
10	AC 110V	801.5	+0.8	±1.5	0.001	PASS
	AC 126.5V(110*115%)	801.5	-0.8	±1.5	-0.001	PASS
2	AC 93.5V(110*85%)	801.5	+0.9	±1.5	0.001	PASS
20	AC 110V	801.5	-0.9	±1.5	-0.001	PASS
	AC 126.5V(110*115%)	801.5	-0.8	±1.5	-0.001	PASS
	AC 93.5V(110*85%)	801.5	-0.9	±1.5	-0.001	PASS
30	AC 110V	801.5	-1.0	±1.5	-0.001	PASS
	AC 126.5V(110*115%)	801.5	-0.8	±1.5	-0.001	PASS
	AC 93.5V(110*85%)	801.5	-0.9	±1.5	-0.001	PASS
40	AC 110V	801.5	+0.9	±1.5	0.001	PASS
	AC 126.5V(110*115%)	801.5	-1.0	±1.5	-0.001	PASS
	AC 93.5V(110*85%)	801.5	+0.7	±1.5	0.001	PASS
50	AC 110V	801.5	+0.7	±1.5	0.001	PASS
	AC 126.5V(110*115%)	801.5	+0.8	±1.5	0.001	PASS

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10.10.4.2.3.	The center frequency is 811MHz
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Temperature (°C)	Voltage	Intput carrier Frequency (MHz)	Comparison of deviation value between output frequency and input frequency(Hz)	Limit (ppm)	Frequency stability (ppm)	Result
1	AC 93.5V(110*85%)	811.0	-0.8	±1.0	-0.001	PASS
-20	AC 110V	811.0	-0.8	±1.0	-0.001	PASS
	AC 126.5V(110*115%)	811.0	-0.7	±1.0	-0.001	PASS
	AC 93.5V(110*85%)	811.0	+0.7	±1.0	0.001	PASS
-10	AC 110V	811.0	+0.6	±1.0	0.001	PASS
	AC 126.5V(110*115%)	811.0	-0.6	±1.0	-0.001	PASS
1.20	AC 93.5V(110*85%)	811.0	+0.8	±1.0	0.001	PASS
0	AC 110V	811.0	+0.8	±1.0	0.001	PASS
2	AC 126.5V(110*115%)	811.0	+0.8	±1.0	0.001	PASS
	AC 93.5V(110*85%)	811.0	-0.8	±1.0	-0.001	PASS
10	AC 110V	811.0	-0.9	±1.0	-0.001	PASS
	AC 126.5V(110*115%)	811.0	-0.6	±1.0	-0.001	PASS
2	AC 93.5V(110*85%)	811.0	+0.8	±1.0	0.001	PASS
20	AC 110V	811.0	+0.9	±1.0	0.001	PASS
	AC 126.5V(110*115%)	811.0	-0.7	±1.0	-0.001	PASS
	AC 93.5V(110*85%)	811.0	+1.0	±1.0	0.001	PASS
30	AC 110V	811.0	-0.8	±1.0	-0.001	PASS
	AC 126.5V(110*115%)	811.0	-0.9	±1.0	-0.001	PASS
	AC 93.5V(110*85%)	811.0	-0.8	±1.0	-0.001	PASS
40	AC 110V	811.0	+0.8	±1.0	0.001	PASS
	AC 126.5V(110*115%)	811.0	-0.7	±1.0	-0.001	PASS
-	AC 93.5V(110*85%)	811.0	+0.9	±1.0	0.001	PASS
50	AC 110V	811.0	+0.9	±1.0	0.001	PASS
	AC 126.5V(110*115%)	811.0	-0.8	±1.0	-0.001	PASS

10.11. Radiated spurious emissions

Test Method:

Test requirement:

KDB 935210 D05 clause 4.9 FCC PART 2.1053 FCC PART 90.219 (e)(3) KDB 935210 D05 clause 4.9 ANSIC63.26-2015/5.5 ANSI/TIA 603-E-2016 ANSI/TIA-102.CAAA-E-2016

10.11.1. Requirements

10.11.1.1. KDB 935210 D05 clause 4.9

The EUT shall comply with sections 4.9 of KDB 935210 D05.

4.9 Spurious emissions radiated measurements

This measurement is intended to produce test data necessary to demonstrate compliance to the radiated spurious emission requirements specified in Section 2.1053 of the FCC rules. This test is intended to capture any emissions that radiate directly from the case, cabinet, control circuits, etc., instead of via the antenna output port, and thus would not be captured in conducted spurious emission measurements. See KDB Publication 971168 [R8] for measurement procedure guidance.

10.11.1.2. FCC PART 2.1053

§2.1053 Measurements required: Field strength of spurious radiation.

(a) Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads, or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission. For this test, single sideband, independent sideband, and controlled carrier transmitters shall be modulated under the conditions specified in paragraph (c) of §2.1049, as appropriate. For equipment operating on frequencies below 890 MHz, an open field test is normally required, with the measuring instrument antenna located in the far-field at all test frequencies. In the event it is either impractical or impossible to make open field measurements (e.g. a broadcast transmitter installed in a building) measurements will be accepted of the equipment as installed. Such measurements must be accompanied by a description of the site where the measurements were made showing the location of any possible source of reflections which might distort the field strength measurements. Information submitted shall include the relative radiated power of each spurious emission with reference to the rated power output of the transmitter, assuming all emissions are radiated from halfwave dipole antennas.

(b) The measurements specified in paragraph (a) of this section shall be made for the following equipment:

(1) Those in which the spurious emissions are required to be 60 dB or more below the mean power of the transmitter.

(2) All equipment operating on frequencies higher than 25 MHz.

(3) All equipment where the antenna is an integral part of, and attached directly to the transmitter.

(4) Other types of equipment as required, when deemed necessary by the Commission.

[39 FR 5919, Feb. 15, 1974. Redesignated and amended at 63 FR 36599, July 7, 1998]

According toFCC PART 2.1053 requirement, this test was performed to measure radiated spurious emissions from the EUT. The test is intended to capture any emissions that radiate directly from the case, cabinet, control circuits, etc., instead of via the antenna output port, and thus would not be captured in conducted spurious emission measurements.

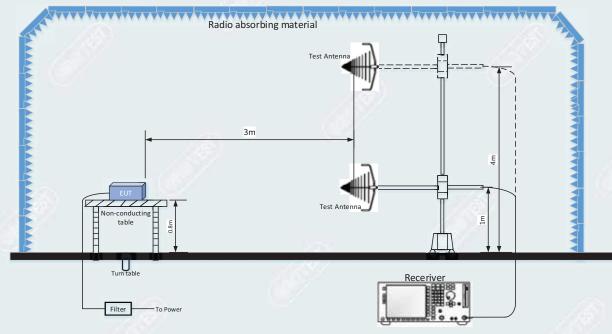
Spurious emissions of zone enhancers shall be suppressed as much as possible, Any emissions must be attenuated below the power (P) of the highest emissions contained within the authorized, by at

least: $43+10*\log_{10} P$ or 70dB, whichever is less stringent, where P is the total RF output power of the test tones in Watts. Since $43+10*\log_{10} P$ is less stringent than 70dB, that limit was used.

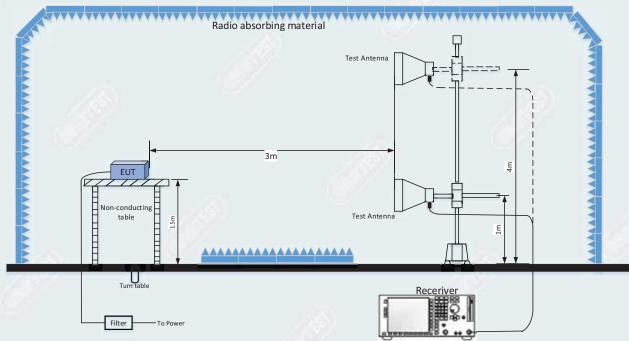
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10.11.2. Test configuration

10.11.2.1. Below 1GHz



10.11.2.2. Above 1GHz



10.11.3. Test procedures

According to the test method of ANSIC63.26-2015/5.5.2.3.1 Test arrangements for tabletop EUTs: 10.11.3.1. Below 1GHz

For radiated emissions measurements performed at frequencies less than or equal to 1GHz, the EUT shall be placed on a RF-transparent table or support at a nominal height of 80 cm above the reference ground plane. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The measurement antenna shall be varied from 1 m to 4 m in height above the reference ground in a search for the relative positioning that produces the maximum radiated signal level (i.e., field strength

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orreceived power). When orienting the measurement antenna in vertical polarization, the minimum height of the lowest element of the antenna shall clear the site reference ground plane by at least 25 cm.

Figure 8.8.2-1 of ANSIC63.26-2015 shows a typical EUT configuration with a wireless device place on a tabletop on an appropriate radiated test site. The measurement antenna shall be placed at the specified distance from the closest point of the EUT. Tabletop devices shall be placed on a RF transparent platform with nominal top surface dimensions of 1m by 1.5m. Any necessary support equipment shall be placed far enough away from the EUT, such that changes in relative position of the EUT and support equipment do not influence the measured values. If the EUT requires a connection to a server or computer, via control/data cable(s), to exercise the product, then the controlling server or computer may be placed outside of the test area.

10.11.3.2. Above 1GHz

For radiated measurements performed at frequencies above 1GHz, the EUT shall be placed on an RF transparent table or support at a nominal height of 1.5m above the ground plane. Radiated measurements shall be made with the measurement antenna positioned in both horizontal and vertical polarization. The height scan of the measurement antenna shall be varied from 1m to 4m in a search for the relative positioning that produces the maximum radiated signal level (i.e., field strength or received power). When using the direct field strength method and the EUT is manipulated through three different orientations, then the scan height range of the measurement antenna is limited to 2.5m, or 0.5m above the top of EUT, whichever is higher.

Radiated unwanted emissions measurements shall be made over the frequency range specified in 5.1 of ANSIC 63.26-2015, dependent upon the relevant operational frequency band, these radiated measurements shall be made around the EUT(or alternatively, with the EUT rotated on a turntable), while varying the measurement antenna height and examining both horizontal and vertical polarization of the measurement antenna, as described above. Ordinarily, this will require the use of a turntable and an antenna positioned.

The EUT shall be set up in its typical configuration and arrangement and operated in its various modes of operation. Unless the EUT uses an integral antenna, the EUT shall be terminated with a non-radiating transmitter load. In cases where the EUT uses an adjustable antenna, the antenna shall be adjusted through typical positions and lengths to maximize emissions levels, EUTs with integral antennas shall be evaluated in their normal orientation. Where EUTs are designed to be installed in one of two distinct orientations, they shall be tested in both of their possible orientations. EUTs that can be operated in one of multiple orientations (e.g., handheld, portable, or modular devices) shall be tested in a minimum of three orientations. When large antennas or antennas not structurally supported by the EUT are utilized, a RF transparent supporting structure shall be used to facilitate the compliance testing. In all cases, the EUT, including the transmit antenna, shall be orientated such that the measurement of the emissions is maximized.

- 10.11.3.3. Final radiated emissions testing procedure
- (1) Connect the device as illustrated;
- (2) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.
- (3) Adjust the spectrum analyzer for the following setting;
 RBW=100 kHz for spurious emission below 1 GHz, and 1MHz for spurious emission above 1GHz;
 VBW=300k for spurious emission below 1GHz, and 3MHz for spurious emission above 1GHz;
- (4) Sweep speed slow enough to maintain measurement calibration;
- (5) Detector Mode= Positive Peak;
- (6) Place the transmitter to be tested on the turntable in the standard test site, or FCC listed site compliant with ANSI C63.4-2001 clause 5.4. The transmitter is transmitting into a non-radiating load that is placed

on the turntable, the RF cable to this load should be of minimum length. For transmitters with integral antennas, the tests are to be run with the unit operating into the integral antenna.

- (7) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the device. Measurements shall be made from the lowest radio frequency generated in the device to the tenth harmonic of the carrier, except for the region close to the carrier equal to ± the test bandwidth.
- (8) Key the transmitter with normal modulation base the standard.
- (9) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Then the turntable should be rotated 360° to determine the maximum reading. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.
- (10) Repeat step (9) for each spurious frequency with the test antenna polarized vertically.
- (11) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:

Pd(dBm)=Pg(dBm)-cable loss(dB)+antenna gain(dB)

Where: Pd is the dipole equivalent power and Pg is the generator output power into the substitution antenna.

During the test, when the EUT is in Downlink working state, the test radiated emissions is the worst, so the data is recorded.

NOTE 1: It is permissible to use other antennas provided they can be referenced to a dipole.

NOTE 2: Effective radiated power(e.r.p) refers to the radiation of a half wave tuned dipole instead of and isotropic antenna. There is a constant difference of 2.15 dB between e.i.r.p and e.r.p.(dBm)=e.i.r.p(dB)-2.15

NOTE 3: The test frequency is set as the center frequency of the frequency band.

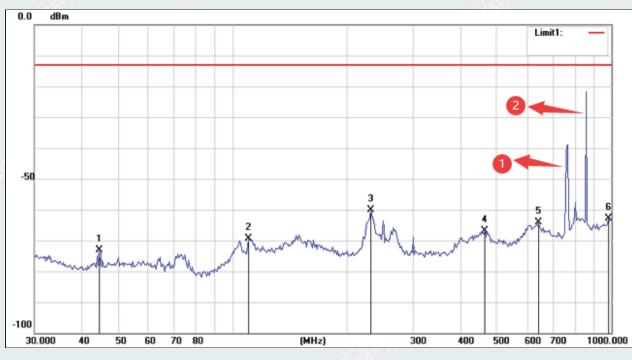
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10.11.4. Test 1	results
10.11.4.1. D	ownlink
10.11.4.1.1.	Below 1GHz

10.11.4.1.1.1. Polarization type: Horizontal

	1	1	
Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2022-06-29
Temp.(℃)/Hum.(%RH):	22.4°C/47%RH	Time:	15:53:06
EUT:	Public safety signal booster	Test mode:	Downlink mode
Model:	GuardianB 1/2W	Distance:	3m
Note:	1		

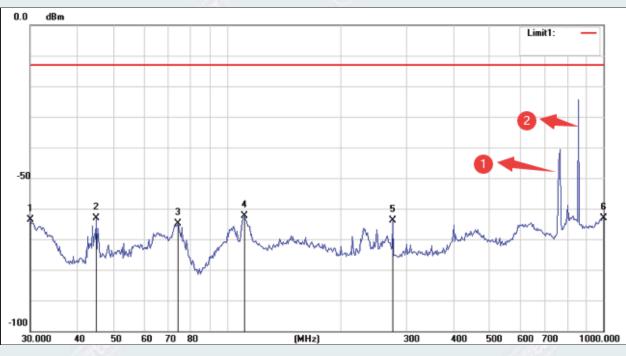


No.	Frequency	Reading	Correct	Result	Limit	Margin	Domorit	
INO.	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	Remark	
1	44.4587	-95.16	22.00	-73.16	-13.00	-60.16	peak	
2	110.4892	-94.32	24.93	-69.39	-13.00	-56.39	peak	
3	231.9889	-86.22	26.01	-60.21	-13.00	-47.21	peak	
4	463.0736	-99.33	32.44	-66.89	-13.00	-53.89	peak	
5	641.5044	-98.20	34.12	-64.08	-13.00	-51.08	peak	
6	983.2829	-98.05	35.11	-62.94	-13.00	-49.94	peak	
Note: 1	Note: 1 In the above figure (1) its frequency is 763MHz. (2) its frequency is 856MHz							

Note: 1. In the above figure, ① its frequency is763MHz, ②its frequency is856MHz. 2. When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2022-06-29
Temp.(°C)/Hum.(%RH):	22.4°C/47%RH	Time:	14:58:18
EUT:	Public safety signal booster	Test mode:	Downlink mode
Model:	GuardianB 1/2W	Distance:	3m
Note:	/		

10.11.4.1.1.2. Polarization type: Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
INO.	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	Kelliark
1	30.0000	-87.83	24.10	-63.73	-13.00	-50.73	peak
2	44.9612	-85.19	22.04	-63.15	-13.00	-50.15	peak
3	74.1384	-84.64	19.88	-64.76	-13.00	-51.76	peak
4	111.1118	-87.38	25.06	-62.32	-13.00	-49.32	peak
5	276.1360	-88.76	24.87	-63.89	-13.00	-50.89	peak
6	1000.0000	-98.93	35.80	-63.13	-13.00	-50.13	peak
Mata 1		(1) :4- fra	::-7(2) /III_	:4- f			

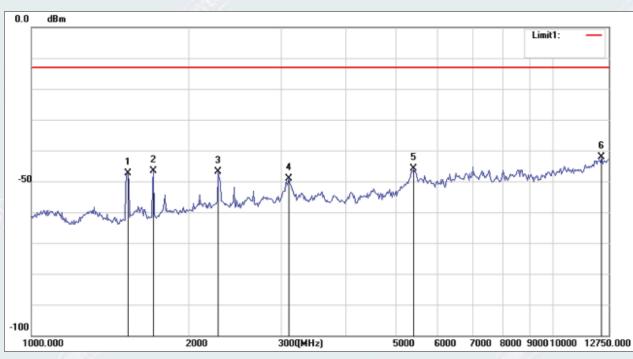
Note: 1. In the above figure, 1 its frequency is 763MHz, 2 its frequency is 856MHz.

2. When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

10.11.4.2. Above 1GHz

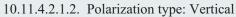
10 11 4 2 1 1	Polarization	type: Horizontal
10.11.1.2.1.1.	1 Olulization	type. monizontal

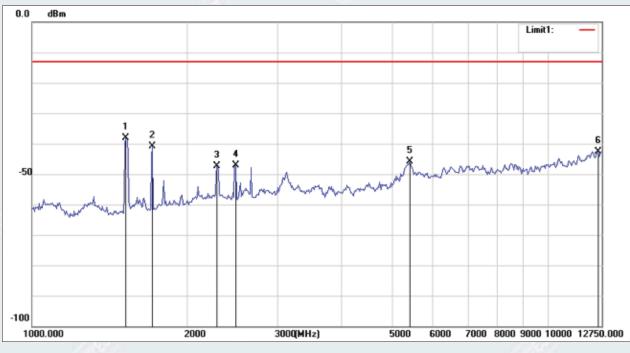
	51		
Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2022-06-29
Temp.(℃)/Hum.(%RH):	22.4℃/47%RH	Time:	15:42:45
EUT:	Public safety signal booster	Test mode:	Downlink mode
Model:	GuardianB 1/2W	Distance:	3m
Note:			



No.	Frequency	Reading	Correct	Result	Limit	Margin	- Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	Kemark
1	1528.452	-50.92	3.47	-47.45	-13.00	-34.45	peak
2	1713.397	-50.32	3.64	-46.68	-13.00	-33.68	peak
3	2279.678	-56.06	9.07	-46.99	-13.00	-33.99	peak
4	3108.272	-61.67	12.62	-49.05	-13.00	-36.05	peak
5	5391.279	-66.17	20.38	-45.79	-13.00	-32.79	peak
6	12340.620	-66.67	24.50	-42.17	-13.00	-29.17	peak
Note: V	When the read valu	e of the test frequ	ency does not exc	eed the peak limit	, peak is used inst	ead of RMS value	e.

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2022-06-29
Temp.(℃)/Hum.(%RH):	22.4℃/47%RH	Time:	15:45:04
EUT:	Public safety signal booster	Test mode:	Downlink mode
Model:	GuardianB 1/2W	Distance:	3m
Note:	/	3/1	





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
INO.	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	Kemark
1	1522.229	-41.52	3.28	-38.24	-13.00	-25.24	peak
2	1713.397	-44.54	3.64	-40.90	-13.00	-27.90	peak
3	2288.997	-56.64	9.22	-47.42	-13.00	-34.42	peak
4	2483.580	-54.89	7.86	-47.03	-13.00	-34.03	peak
5	5413.317	-66.02	20.18	-45.84	-13.00	-32.84	peak
6	12543.640	-67.68	25.17	-42.51	-13.00	-29.51	peak

Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

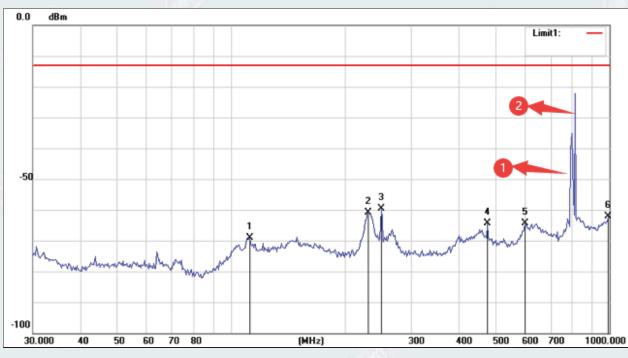
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10.11.4.3. Uplink

10.11.4.3.1.	Below 1GHz
10.11.4.3.1.1.	Polarization type: Horizontal

Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2022-06-29
Temp.(°C)/Hum.(%RH):	22.4°C/47%RH	Time:	15:12:24
EUT:	Public safety signal booster	Test mode:	Uplink mode
Model:	GuardianB 1/2W	Distance:	3m
Note:	/		

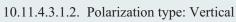


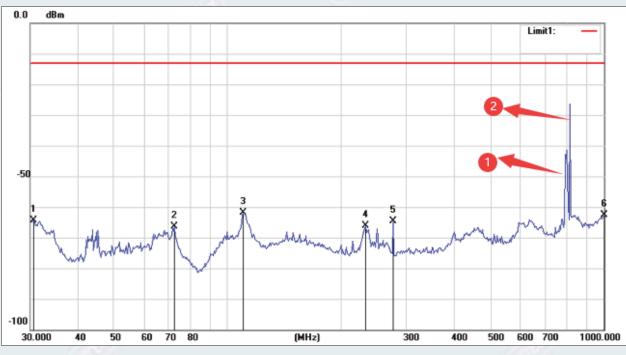
No.	Frequency	Reading	Correct	Result	Limit	Margin	Domorik	
INO.	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	Remark	
1	112.3676	-94.45	25.30	-69.15	-13.00	-56.15	peak	
2	230.6889	-86.80	25.95	-60.85	-13.00	-47.85	peak	
3	249.5708	-85.97	26.37	-59.60	-13.00	-46.60	peak	
4	476.2693	-95.29	30.95	-64.34	-13.00	-51.34	peak	
5	599.6715	-98.30	34.02	-64.28	-13.00	-51.28	peak	
6	994.3963	-97.57	35.57	-62.00	-13.00	-49.00	peak	
Note: 1	Note: 1. In the above figure. (1) its frequency is 793MHz, (2) its frequency is 811MHz.							

In the above figure, ① its frequency is793MHz, ②its frequency is811MHz.
 When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

RG

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2022-06-29
Temp.(°C)/Hum.(%RH):	22.4°C/47%RH	Time:	15:09:44
EUT:	Public safety signal booster	Test mode:	Uplink mode
Model:	GuardianB 1/2W	Distance:	3m
Note:	/	37/	





No.	Frequency	Reading	Correct	Result	Limit	Margin	Domoult	
INO.	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	- Remark	
1	30.6820	-88.27	23.92	-64.35	-13.00	-51.35	peak	
2	72.4906	-86.36	20.06	-66.30	-13.00	-53.30	peak	
3	110.4892	-86.70	24.93	-61.77	-13.00	-48.77	peak	
4	233.2962	-92.25	26.06	-66.19	-13.00	-53.19	peak	
5	276.1360	-89.58	24.87	-64.71	-13.00	-51.71	peak	
6	1000.0000	-98.46	35.80	-62.66	-13.00	-49.66	peak	
Note: 1	Note: 1 In the choice frame () its framework is 702MHz () its framework is 211MHz							

Note: 1. In the above figure, ① its frequency is793MHz, ②its frequency is811MHz. 2. When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

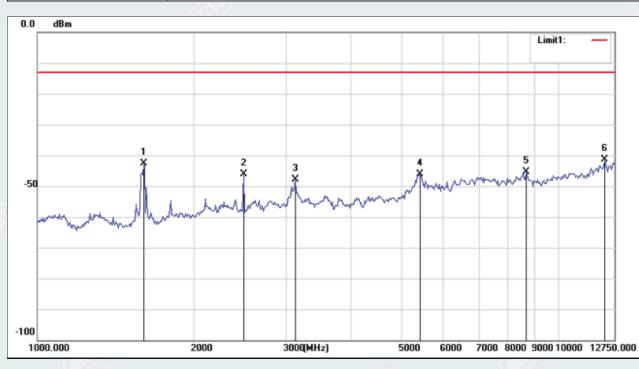
M

R

R

10.11.4.4. Above 1GHz

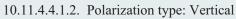
	71		
Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2022-06-29
Temp.(℃)/Hum.(%RH):	22.4℃/47%RH	Time:	15:36:44
EUT:	Public safety signal booster	Test mode:	Uplink mode
Model:	GuardianB 1/2W	Distance:	3m
Note:	/		

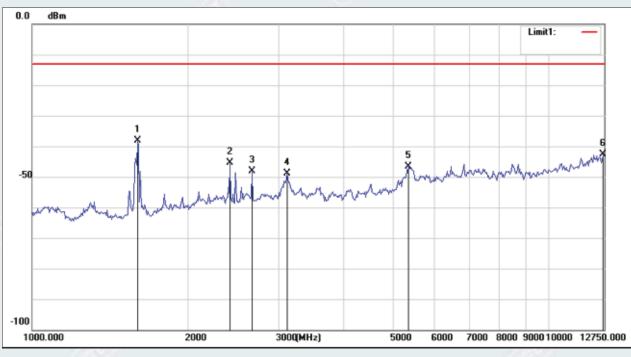


				1. Sec. 2. Sec			
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
INO.	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	Remark
1	1598.600	-48.13	5.62	-42.51	-13.00	-29.51	peak
2	2483.580	-54.02	7.86	-46.16	-13.00	-33.16	peak
3	3120.977	-59.98	12.17	-47.81	-13.00	-34.81	peak
4	5413.317	-66.33	20.18	-46.15	-13.00	-33.15	peak
5	8653.730	-64.61	19.15	-45.46	-13.00	-32.46	peak
6	12240.345	-66.24	24.91	-41.33	-13.00	-28.33	peak

Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2022-06-29
Temp.(℃)/Hum.(%RH):	22.4℃/47%RH	Time:	15:33:46
EUT:	Public safety signal booster	Test mode:	Uplink mode
Model:	GuardianB 1/2W	Distance:	3m
Note:	/	3/1	





No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark	
INO.	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	Kemark	
1	1598.600	-43.69	5.62	-38.07	-13.00	-25.07	peak	
2	2413.663	-53.40	8.06	-45.34	-13.00	-32.34	peak	
3	2661.927	-56.77	8.75	-48.02	-13.00	-35.02	peak	
4	3108.272	-61.60	12.62	-48.98	-13.00	-35.98	peak	
5	5347.472	-65.36	18.86	-46.50	-13.00	-33.50	peak	
6	12698.094	-68.64	25.90	-42.74	-13.00	-29.74	peak	
MILLIN								

Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

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