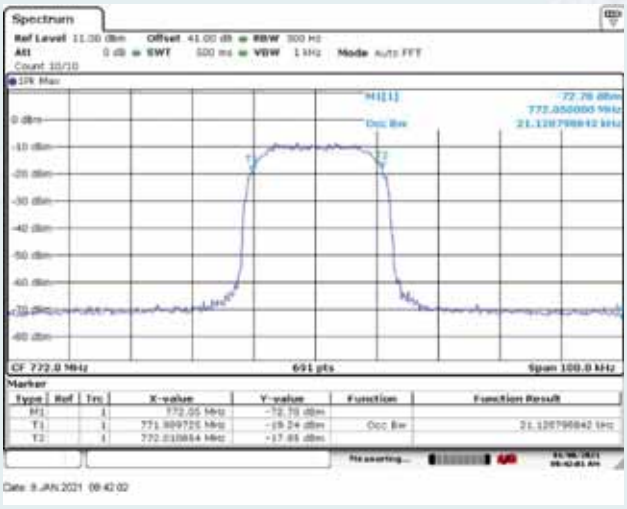
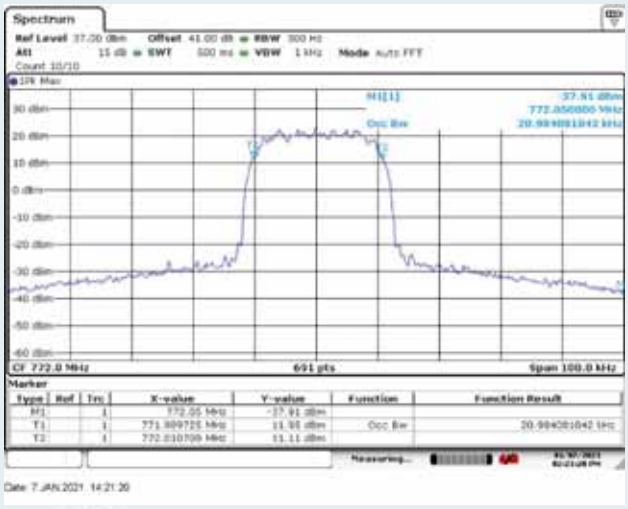
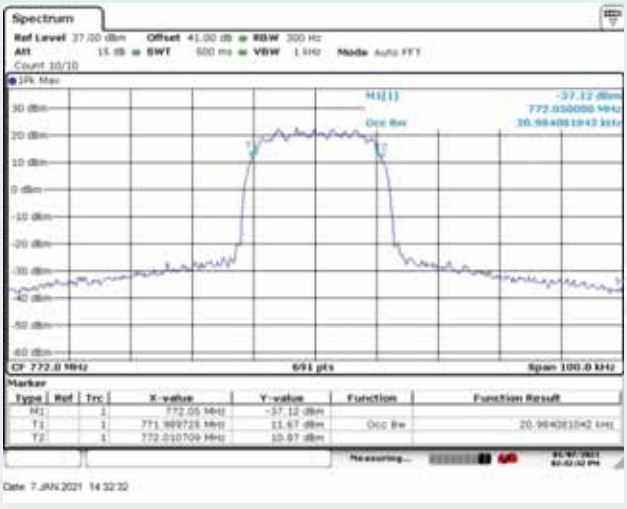
Low Frequency: 769.0125MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



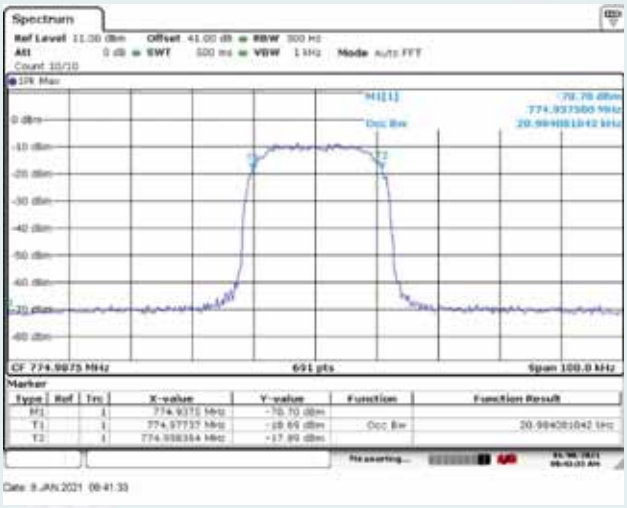
Middle Frequency: 772.0MHz, Input occupied BW



Middle Frequency: 772.0MHz, Output occupied BW(AGC)

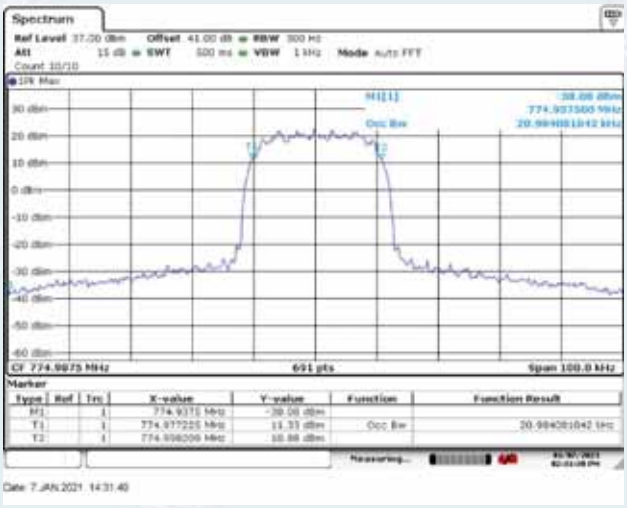


Middle Frequency: 772.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



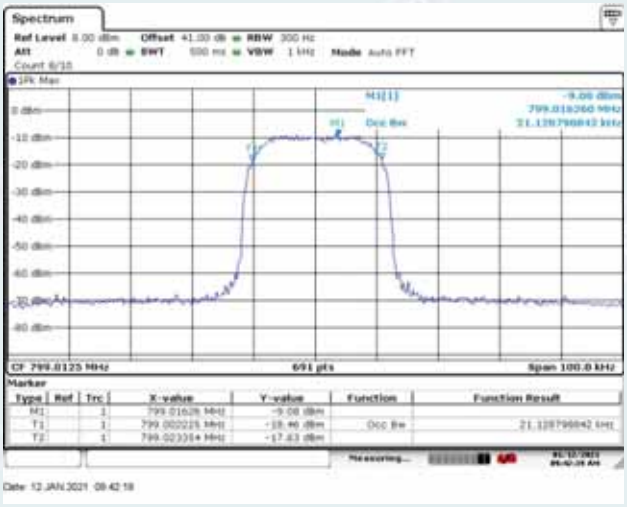
High Frequency: 774.9875MHz, Input occupied BW

High Frequency: 774.9875MHz, Output occupied BW(AGC)

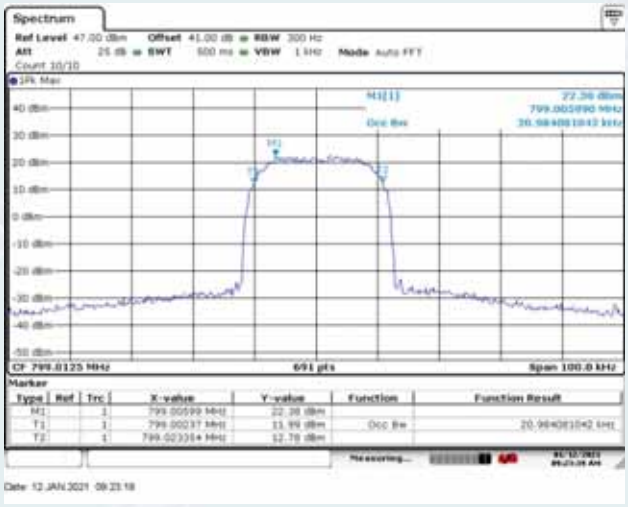


High Frequency: 774.9875MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

10.5.5.3.1.3.2 Uplink

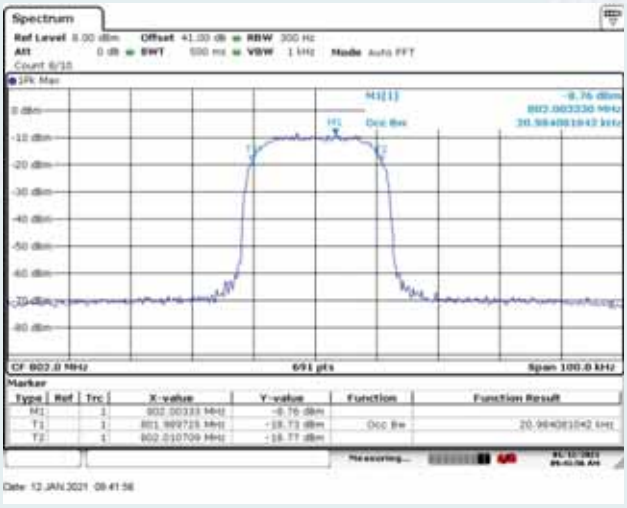


Low Frequency: 799.0125MHz, Input occupied BW

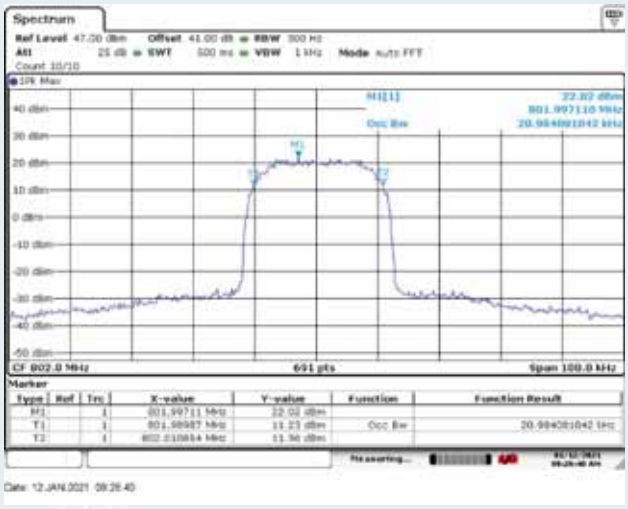


Low Frequency: 799.0125MHz, Output occupied BW(AGC)

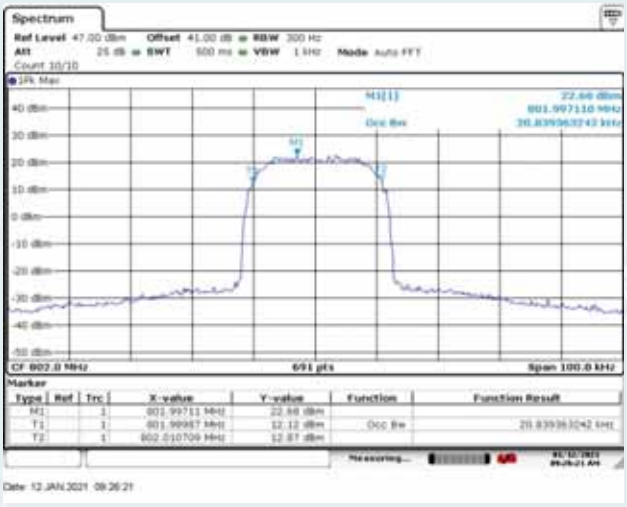
Low Frequency: 799.0125MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



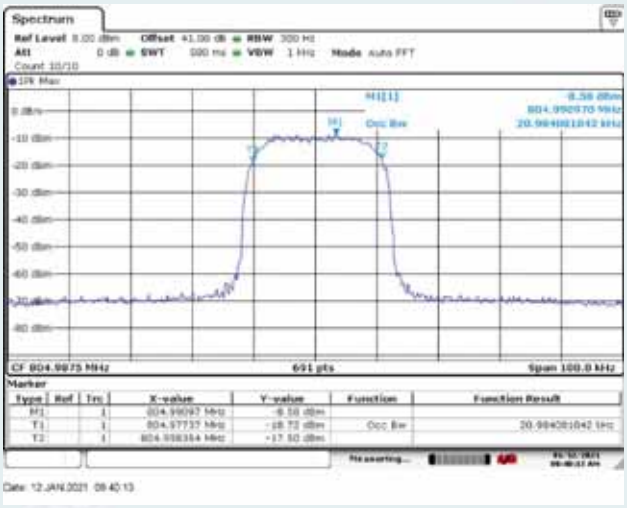
Middle Frequency: 802.0MHz, Input occupied BW



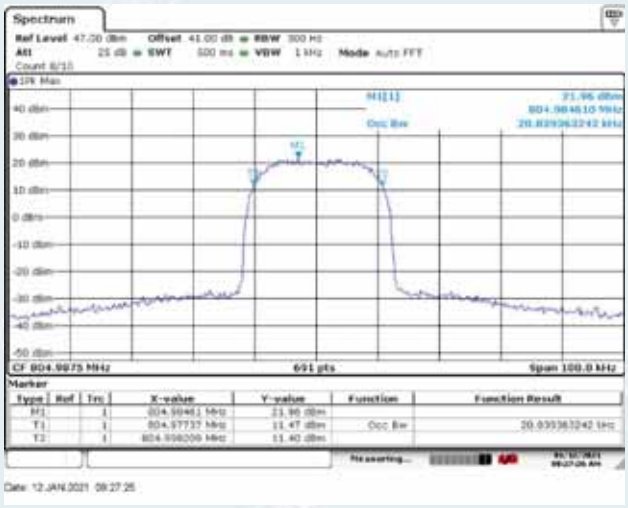
Middle Frequency: 802.0MHz, Output occupied BW(AGC)



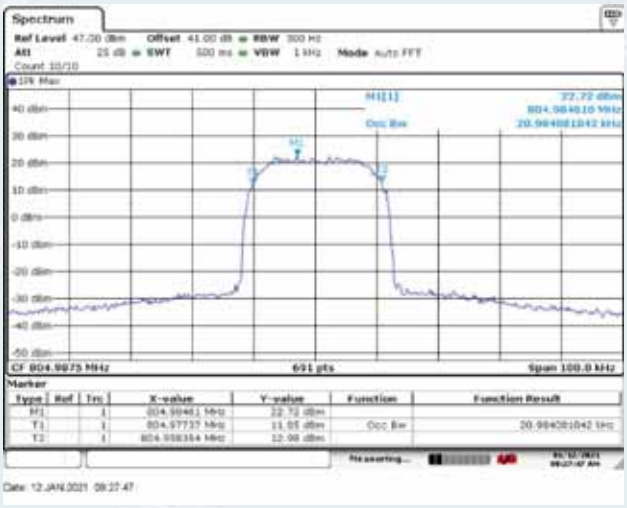
Middle Frequency: 802.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



High Frequency: 804.9875MHz, Input occupied BW



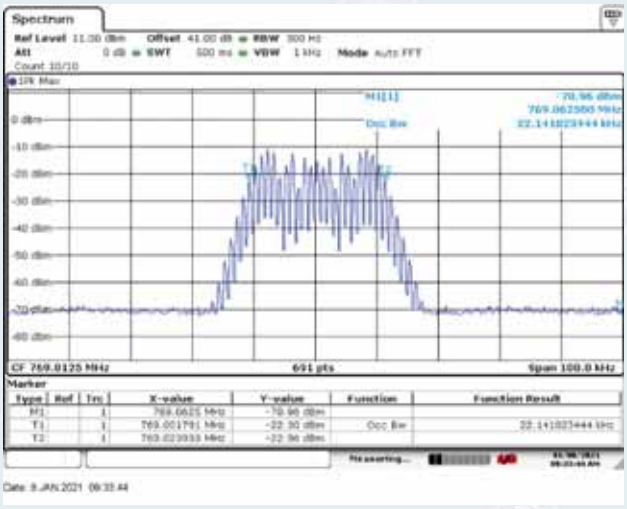
High Frequency: 804.9875MHz, Output occupied BW(AGC)



High Frequency: 804.9875MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

10.5.5.3.1.4 Analog FM mode

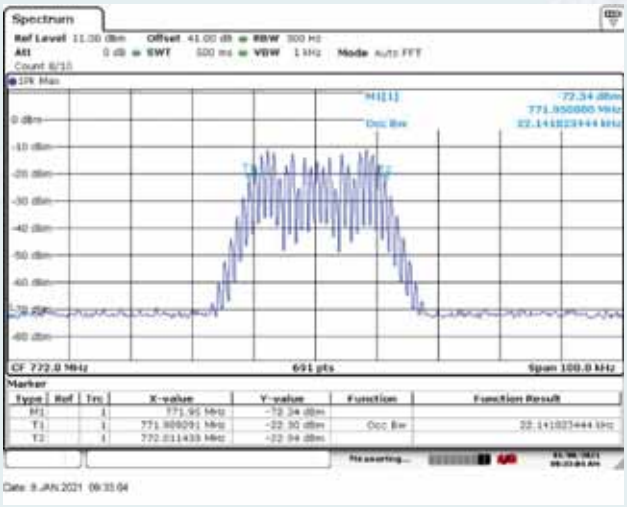
10.5.5.3.1.4.1 Downlink



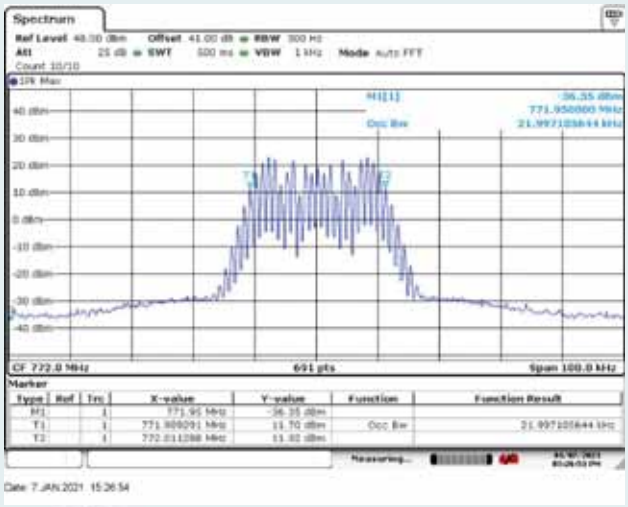
Low Frequency: 769.0125MHz, Input occupied BW

Low Frequency: 769.0125MHz, Output occupied BW(AGC)

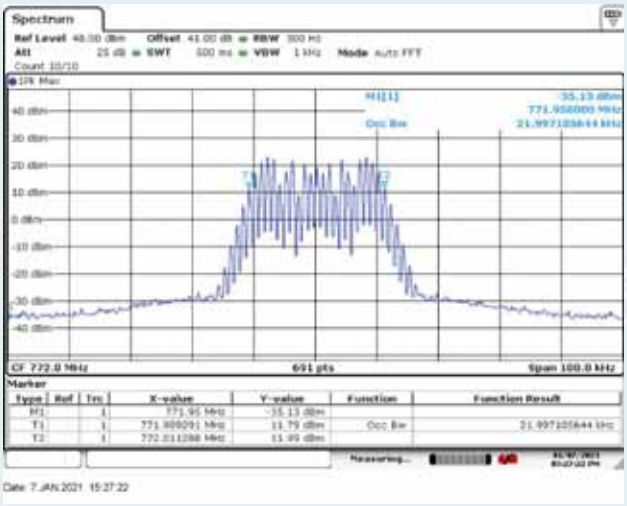
Low Frequency: 769.0125MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



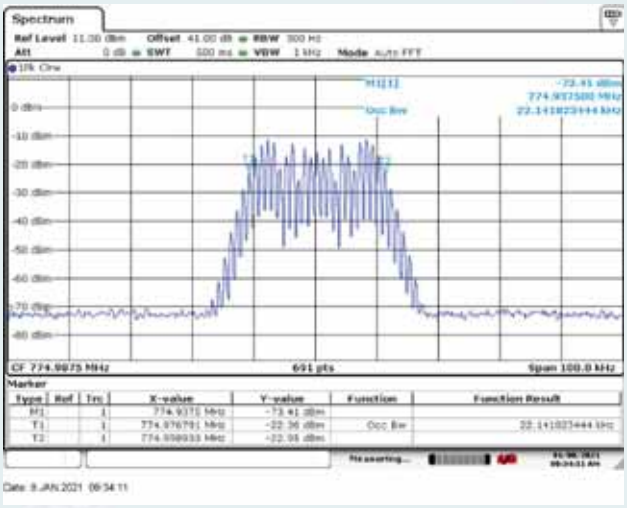
Middle Frequency: 772.0MHz, Input occupied BW



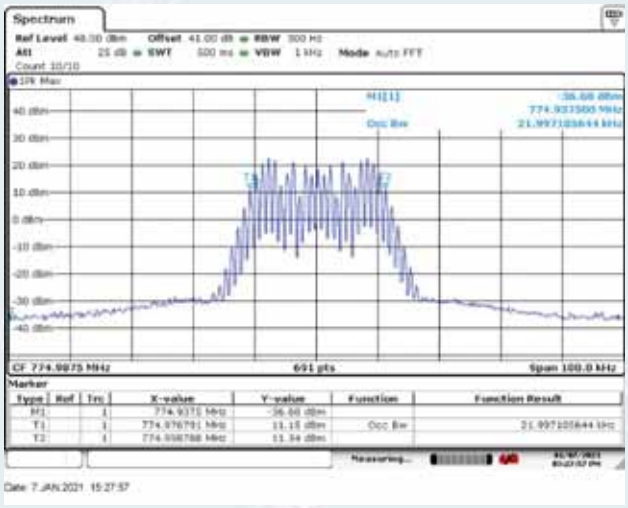
Middle Frequency: 772.0MHz, Output occupied BW(AGC)



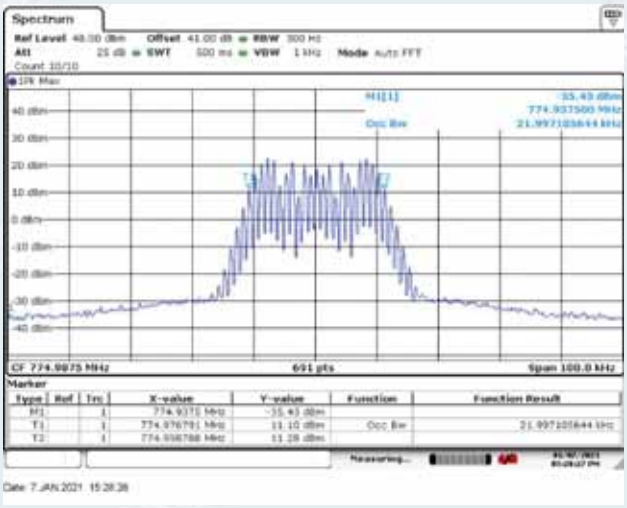
Middle Frequency: 772.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



High Frequency: 774.9875MHz, Input occupied BW

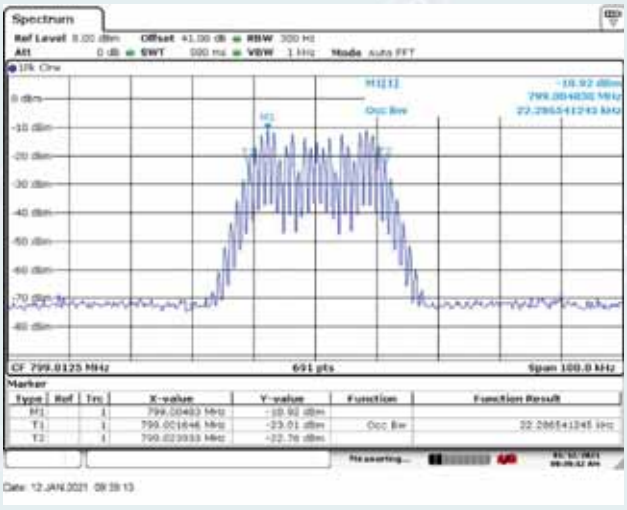


High Frequency: 774.9875MHz, Output occupied BW(AGC)

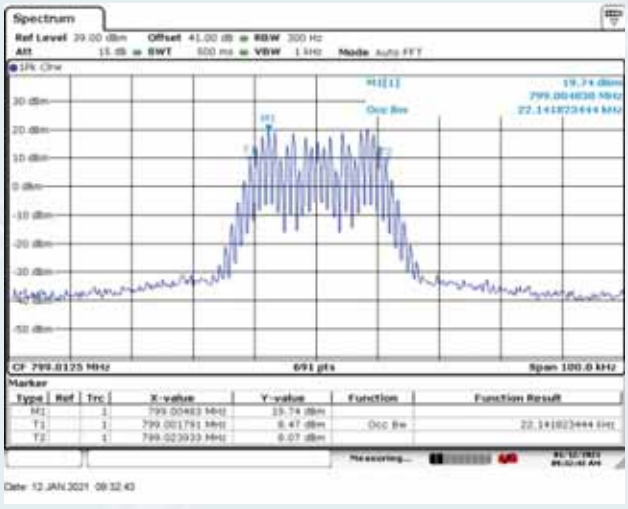


High Frequency: 774.9875MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

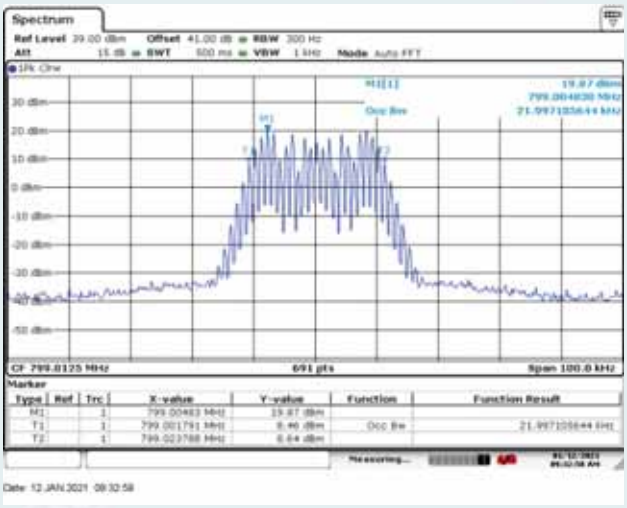
10.5.5.3.1.4.2 Uplink



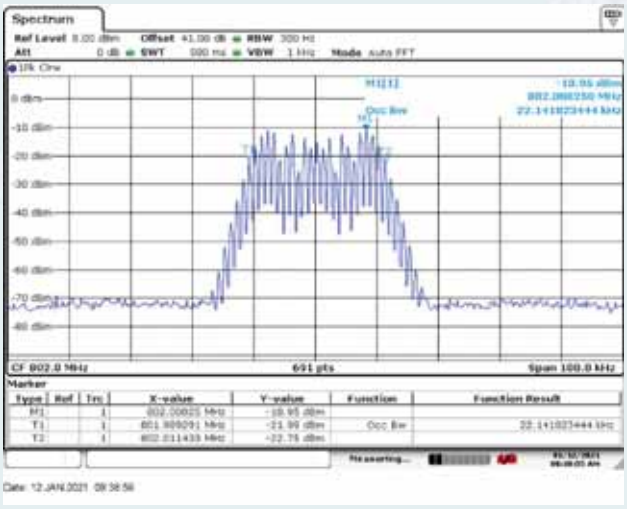
Low Frequency: 799.0125MHz, Input occupied BW



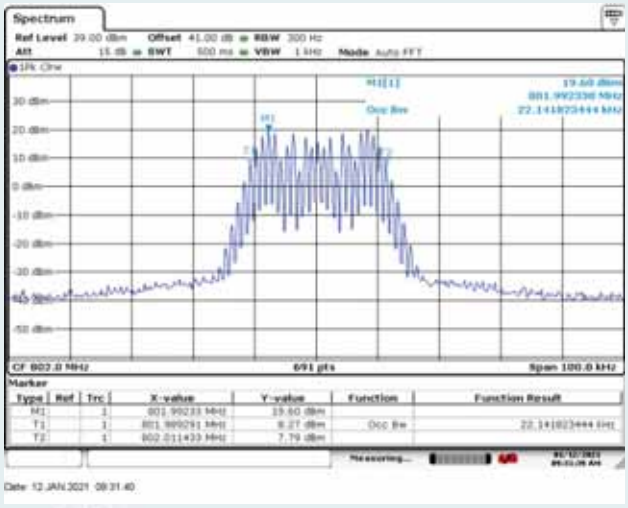
Low Frequency: 799.0125MHz, Output occupied BW(AGC)



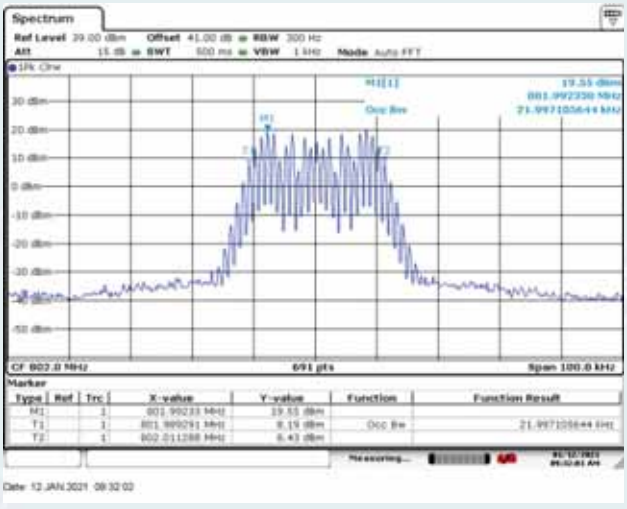
Low Frequency: 799.0125MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



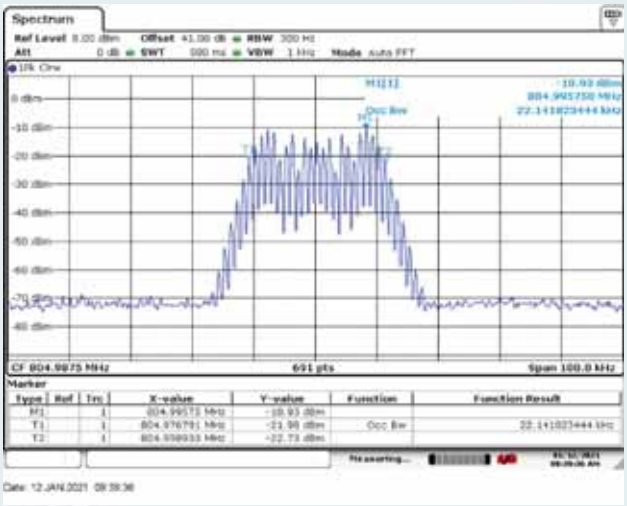
Middle Frequency: 802.0MHz, Input occupied BW



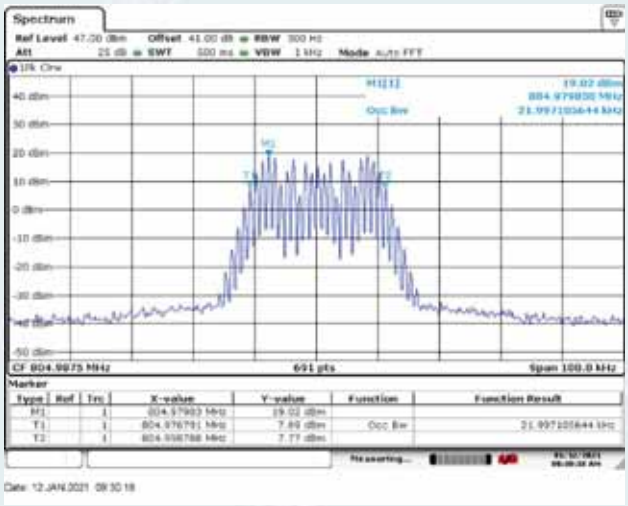
Middle Frequency: 802.0MHz, Output occupied BW(AGC)



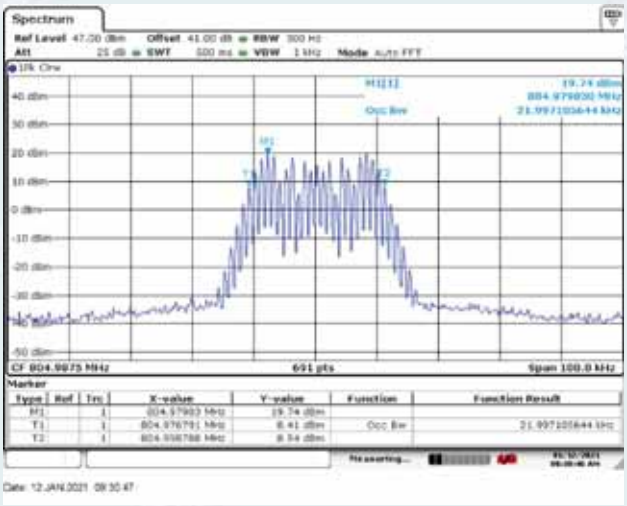
Middle Frequency: 802.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



High Frequency: 804.9875MHz, Input occupied BW



High Frequency: 804.9875MHz, Output occupied BW(AGC)

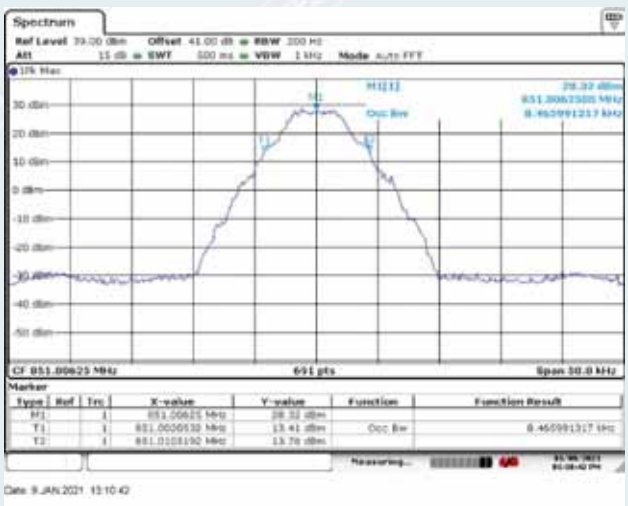


High Frequency: 804.9875MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

10.5.5.3.2 800MHz Band

10.5.5.3.2.1 C4FM mode

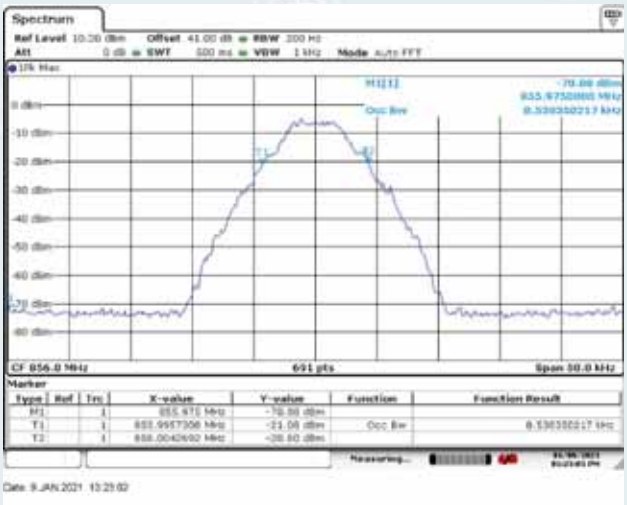
10.5.5.3.2.1.1 Downlink



Low Frequency: 851.00625MHz, Input occupied BW

Low Frequency: 851.00625MHz, Output occupied BW(AGC)

Low Frequency: 851.00625MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



Middle Frequency: 856.0MHz, Input occupied BW

Middle Frequency: 856.0MHz, Output occupied BW(AGC)

Middle Frequency: 856.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

High Frequency: 860.99375MHz, Input occupied BW

High Frequency: 860.99375MHz, Output occupied BW(AGC)

High Frequency: 860.99375MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

10.5.5.3.2.1.2 Uplink

Low Frequency: 806.00625MHz, Input occupied BW

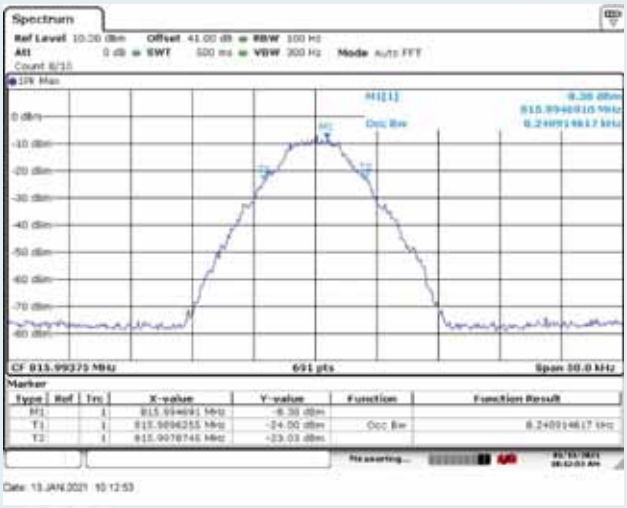
Low Frequency: 806.00625MHz, Output occupied BW(AGC)

Low Frequency: 806.00625MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

Middle Frequency: 811.0MHz, Input occupied BW

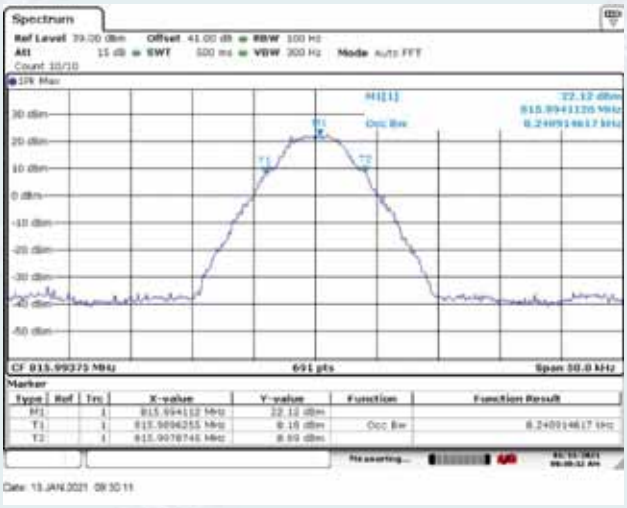
Middle Frequency: 811.0MHz, Output occupied BW(AGC)

Middle Frequency: 811.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



High Frequency: 815.99375MHz, Input occupied BW

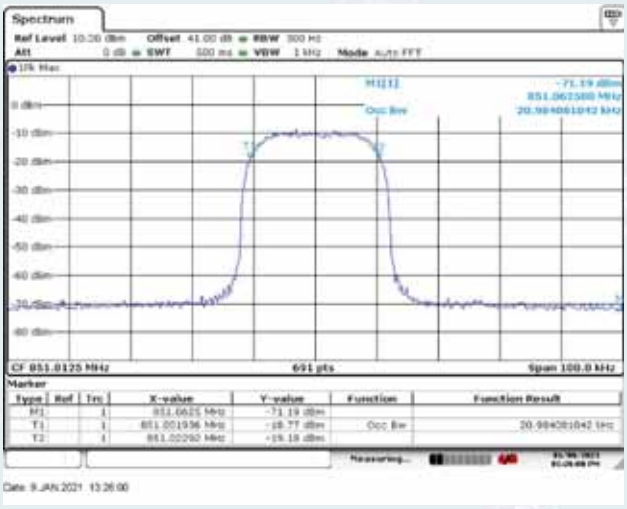
High Frequency: 815.99375MHz, Output occupied BW(AGC)



High Frequency: 815.99375MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

10.5.5.3.2.2 TETRA mode

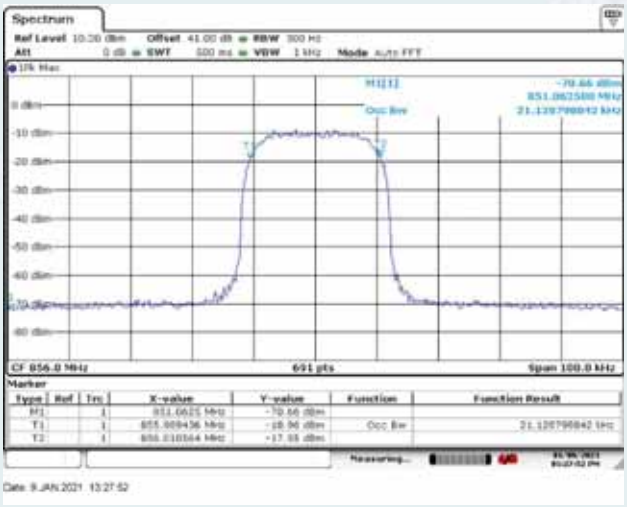
10.5.5.3.2.2.1 Downlink



Low Frequency: 851.0125MHz, Input occupied BW

Low Frequency: 851.0125MHz, Output occupied BW(AGC)

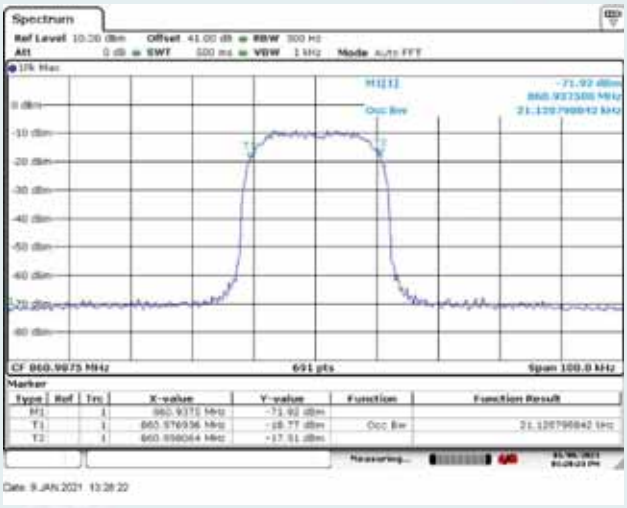
Low Frequency: 851.0125MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



Middle Frequency: 856.0MHz, Input occupied BW

Middle Frequency: 856.0MHz, Output occupied BW(AGC)

Middle Frequency: 856.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

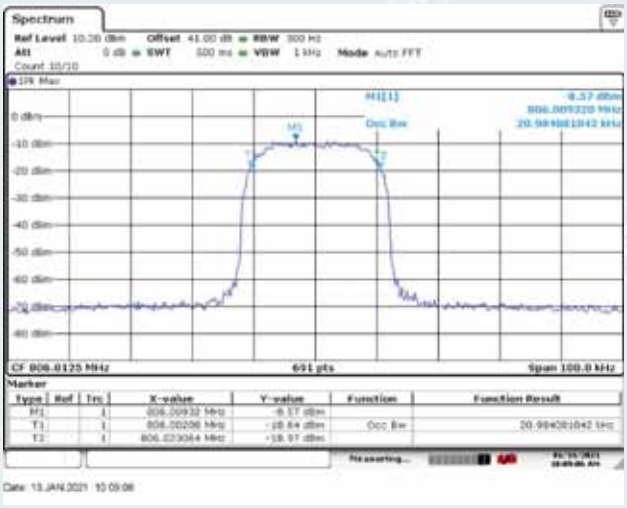


High Frequency: 860.9875MHz, Input occupied BW

High Frequency: 860.9875MHz, Output occupied BW(AGC)

High Frequency: 860.9875MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

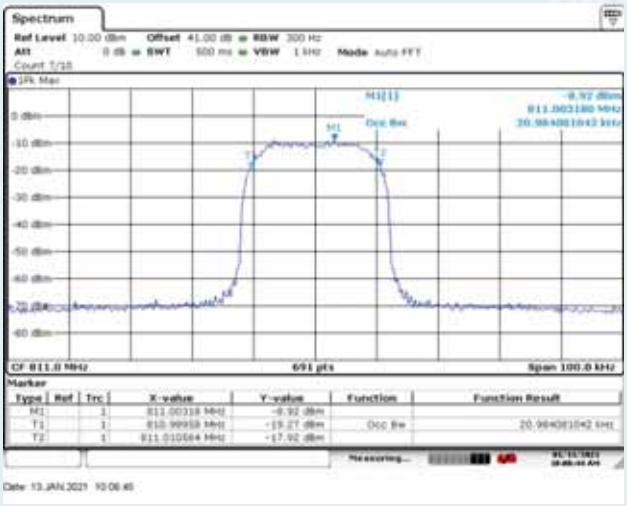
10.5.5.3.2.2.2 Uplink



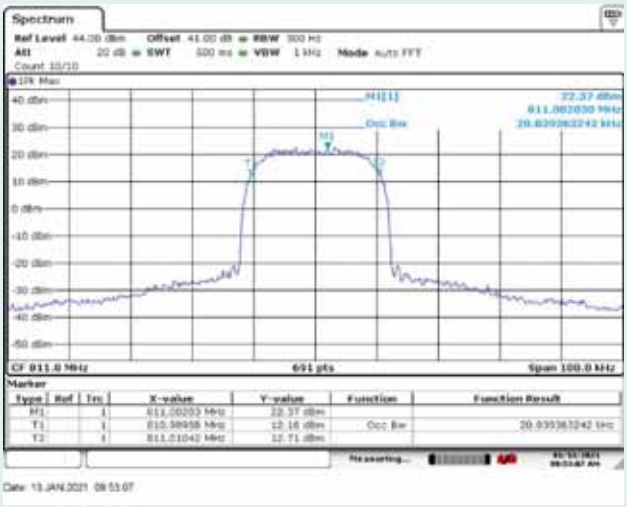
Low Frequency: 806.0125MHz, Input occupied BW

Low Frequency: 806.0125MHz, Output occupied BW(AGC)

Low Frequency: 806.0125MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

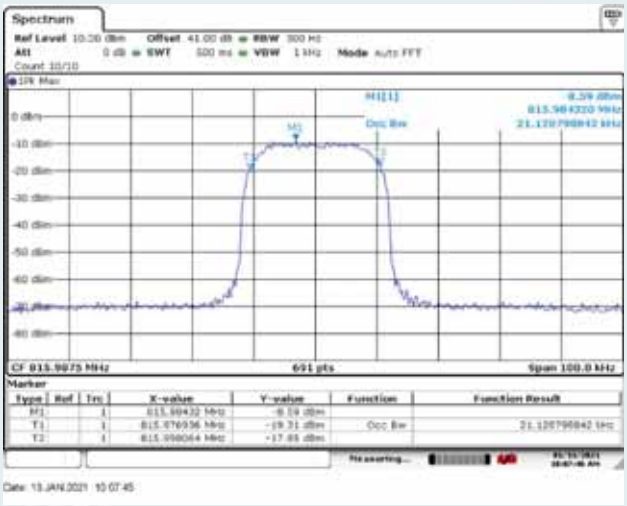


Middle Frequency: 811.0MHz, Input occupied BW

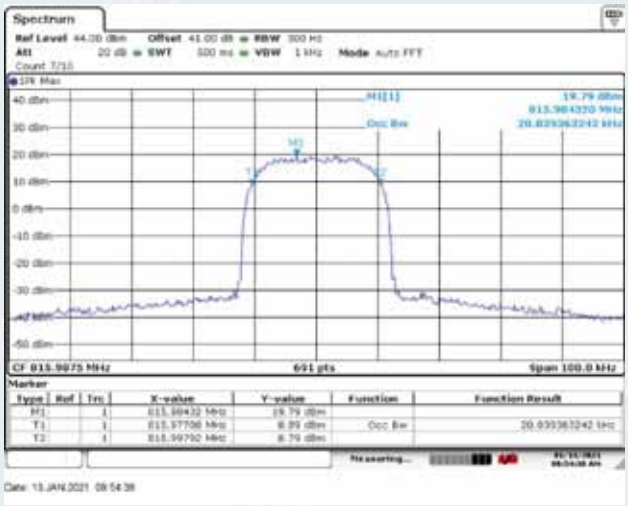


Middle Frequency: 811.0MHz, Output occupied BW(AGC)

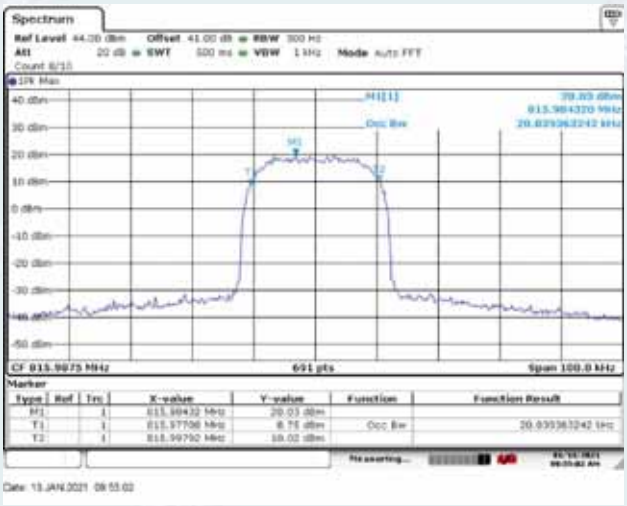
Middle Frequency: 811.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



High Frequency: 815.9875MHz, Input occupied BW



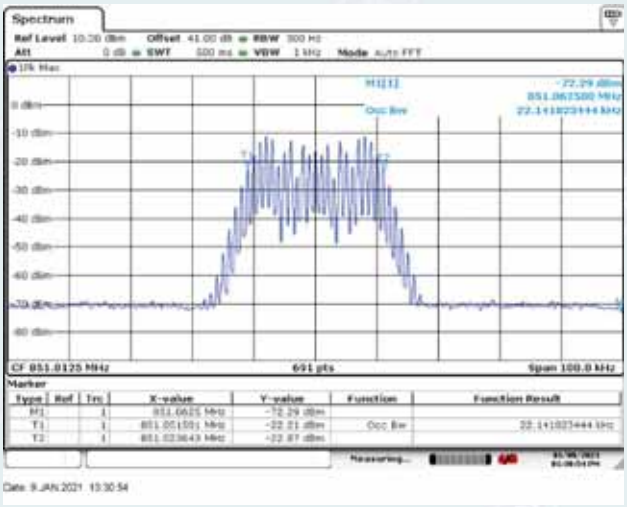
High Frequency: 815.9875MHz, Output occupied BW(AGC)



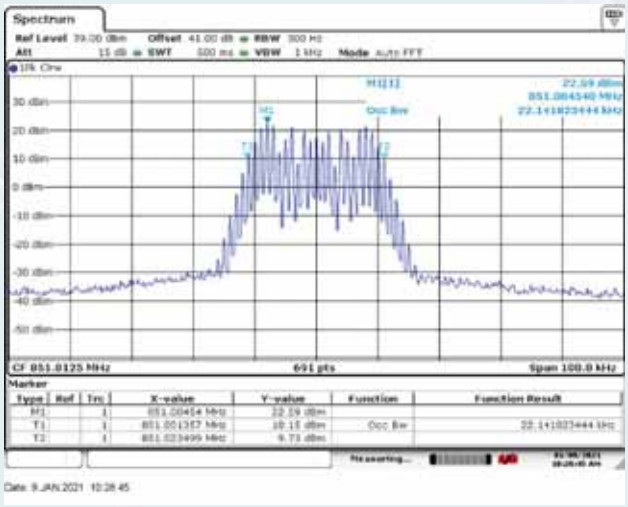
High Frequency: 815.9875MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

10.5.5.3.2.3 Analog FM mode

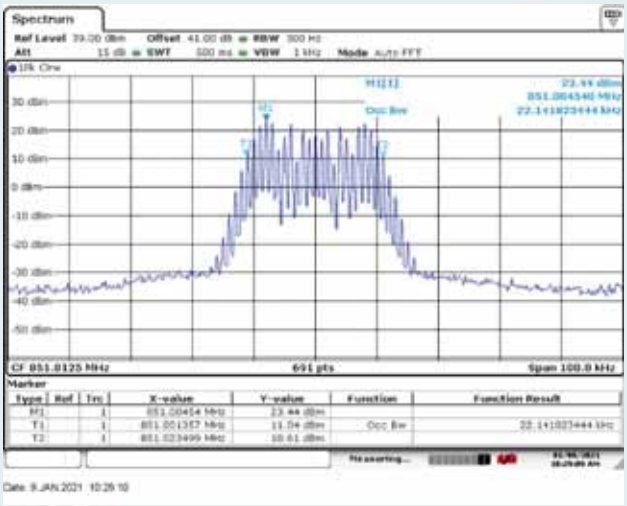
10.5.5.3.2.3.1 Downlink



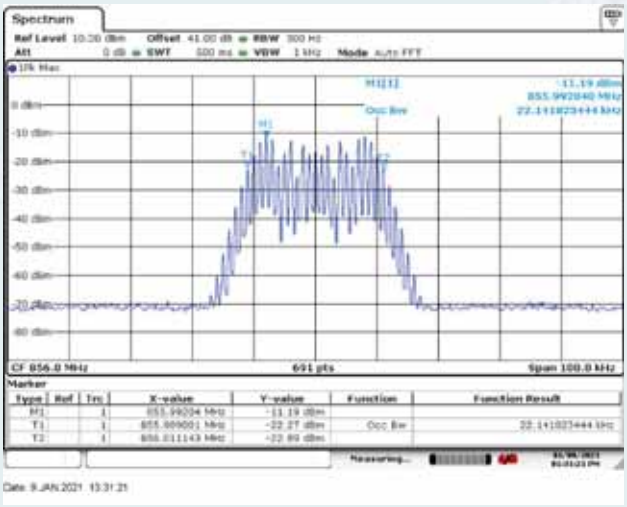
Low Frequency: 851.0125MHz, Input occupied BW



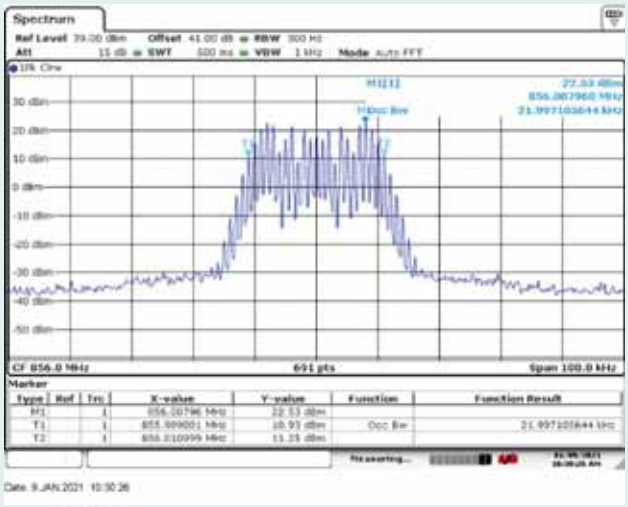
Low Frequency: 851.0125MHz, Output occupied BW(AGC)



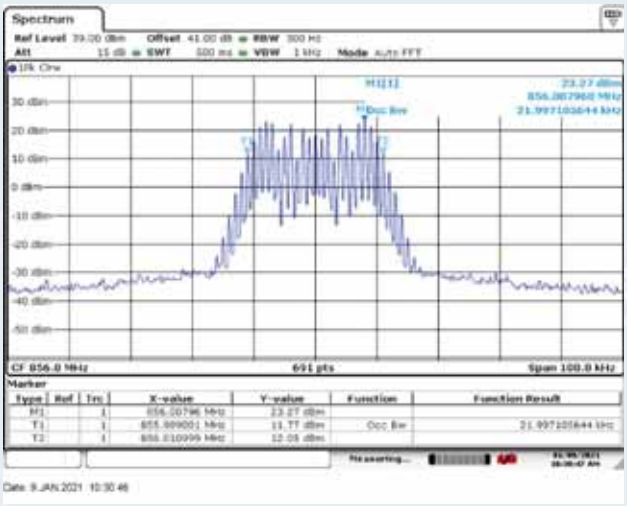
Low Frequency: 851.0125MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



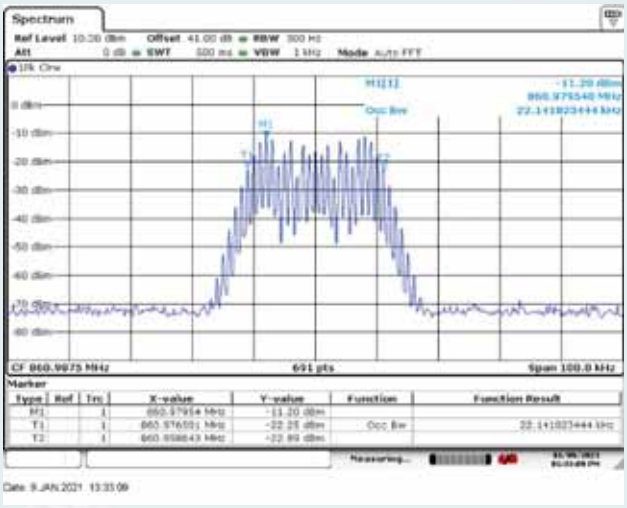
Middle Frequency: 856.0MHz, Input occupied BW



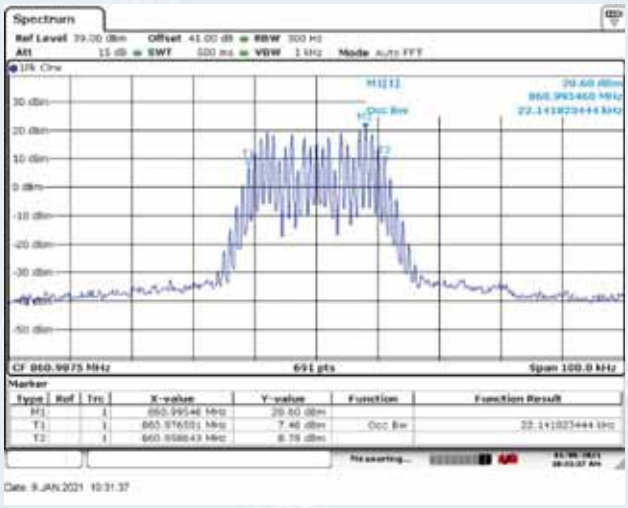
Middle Frequency: 856.0MHz, Output occupied BW(AGC)



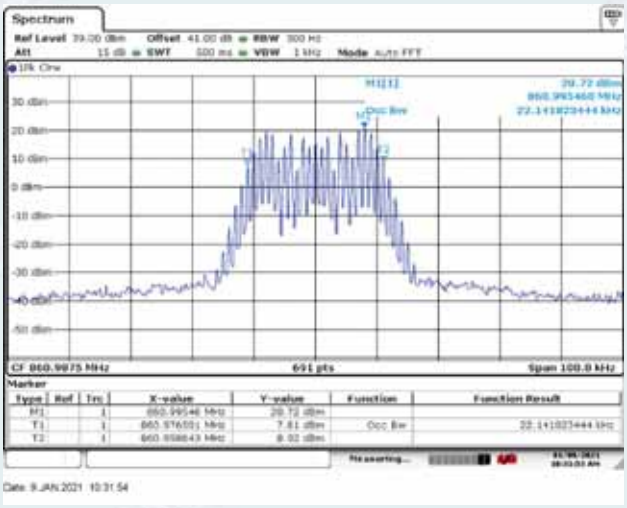
Middle Frequency: 856.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



High Frequency: 860.9875MHz, Input occupied BW

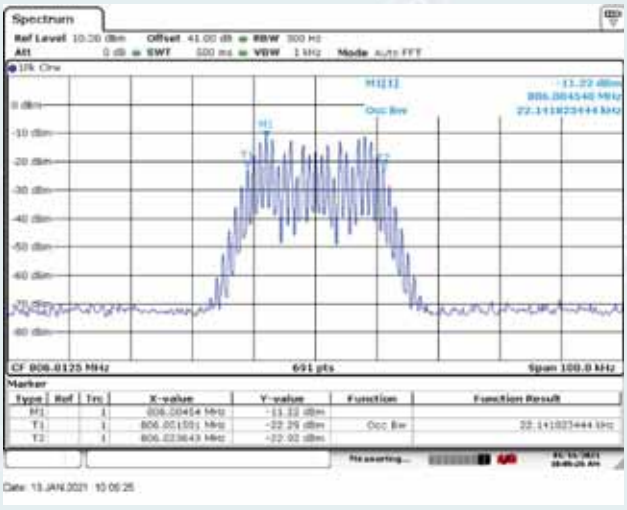


High Frequency: 860.9875MHz, Output occupied BW(AGC)

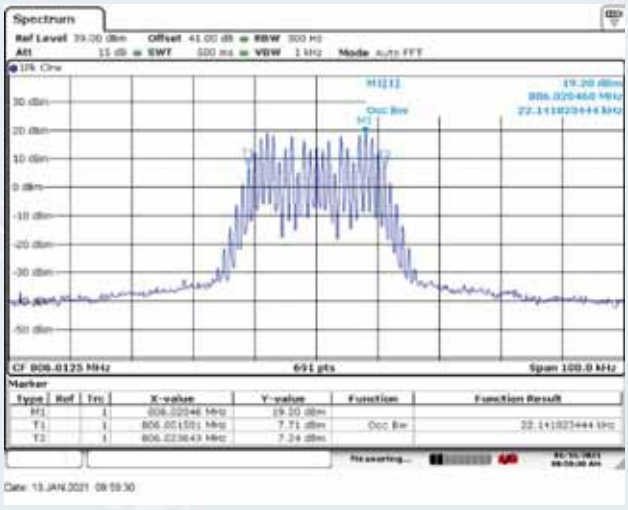


High Frequency: 860.9875MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

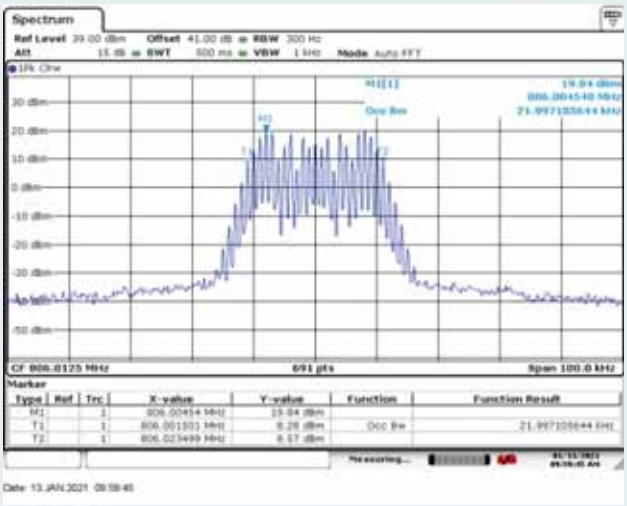
10.5.5.3.2.3.2 Uplink



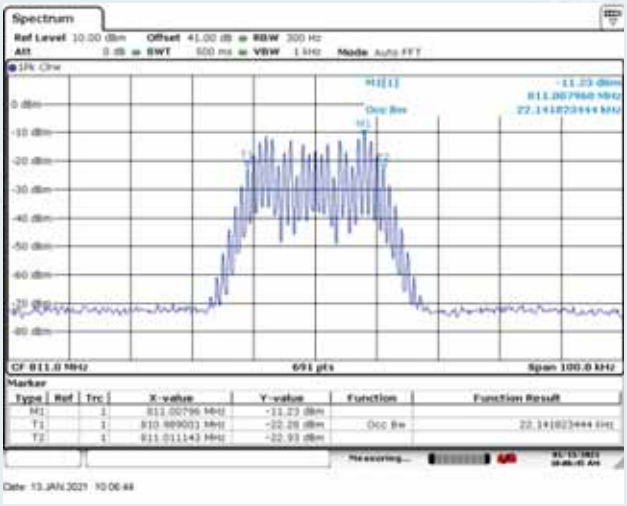
Low Frequency: 806.0125MHz, Input occupied BW



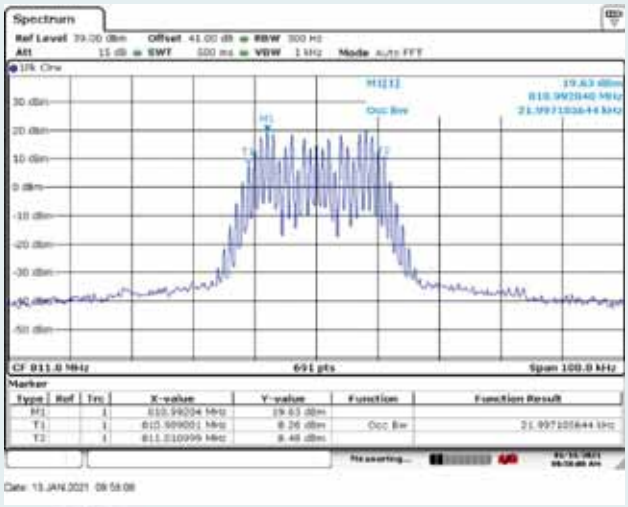
Low Frequency: 806.0125MHz, Output occupied BW(AGC)



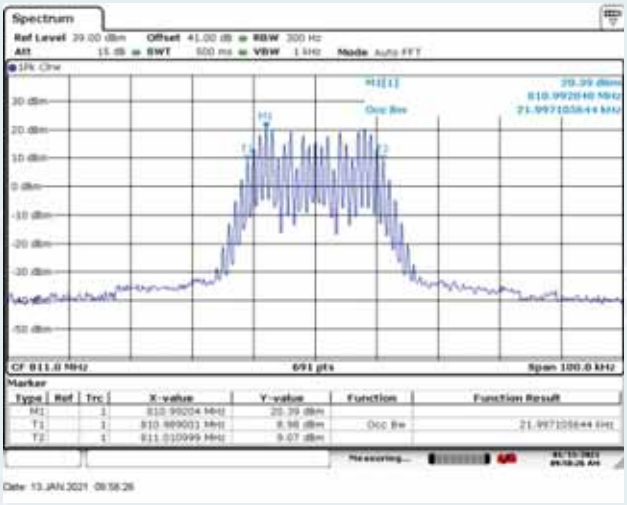
Low Frequency: 806.0125MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



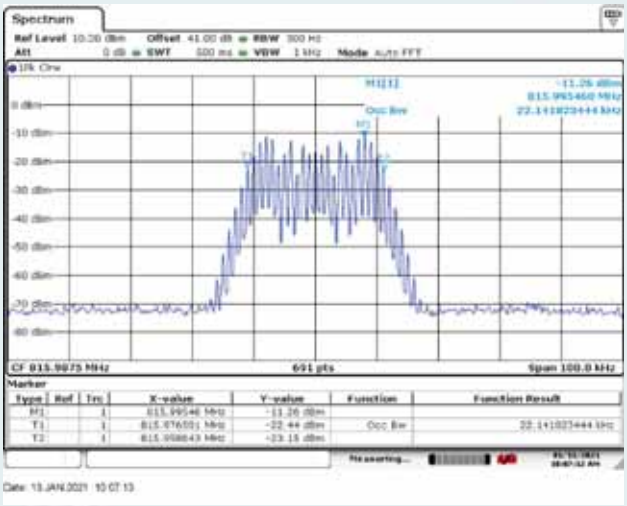
Middle Frequency: 811.0MHz, Input occupied BW



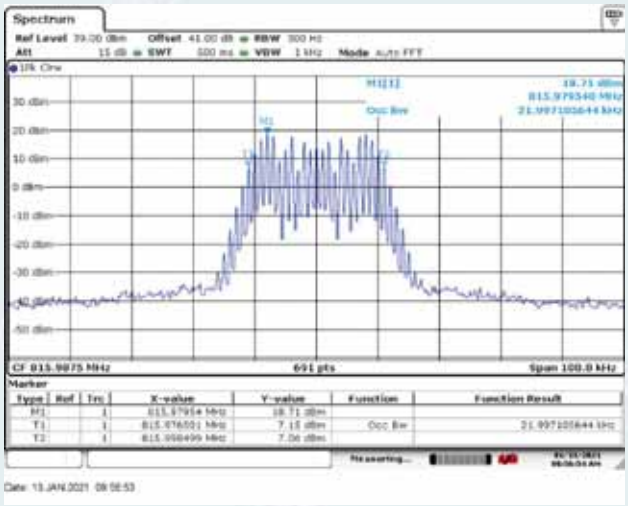
Middle Frequency: 811.0MHz, Output occupied BW(AGC)



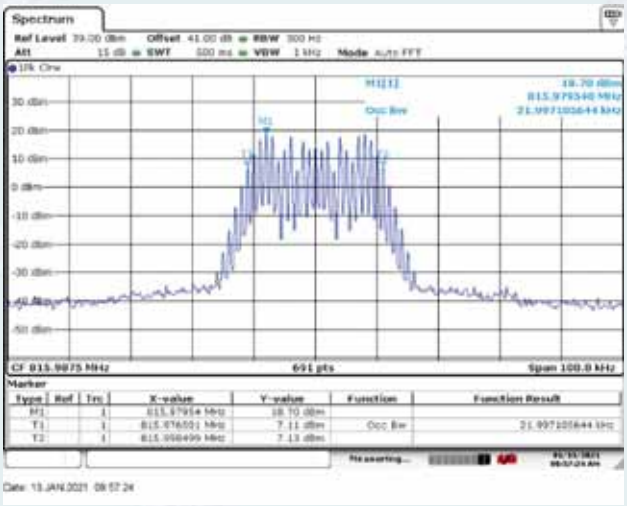
Middle Frequency: 811.0MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)



High Frequency: 815.9875MHz, Input occupied BW



High Frequency: 815.9875MHz, Output occupied BW(AGC)



High Frequency: 815.9875MHz, Output occupied BW (with the input signal amplitude set 3 dB above the AGC threshold)

10.6 Mean power and amplifier/booster gain

Test requirement: KDB 935210 D05 clause 4.5
FCC PART 90.219 (e)(1)

Test Method: KDB 935210 D05 clause 4.5

10.6.1 Requirements

According to KDB 935210 D05 clause 4.5, the mean input and output power and the amplifier gain was measured by adjusting the internal gain control of the EUT to the maximum gain for which equipment certification is sought. Any EUT attenuation settings were set to their minimum value.

Input power levels (Downlink and Uplink) were set to maximum input ratings while confirming that the device is not capable of operating in saturation (Non-linear mode) at the rated input levels, including during the performance of the input/output power measurements.

FCC PART 90.219 (e)(1) requirement:

(e) *Device Specifications.* In addition to the general rules for equipment certification in §90.203(a)(2) and part 2, subpart J of this chapter, a signal booster must also meet the rules in this paragraph.

(1) The output power capability of a signal booster must be designed for deployments providing a radiated power not exceeding 5 Watts ERP for each retransmitted channel.

10.6.2 Test configuration

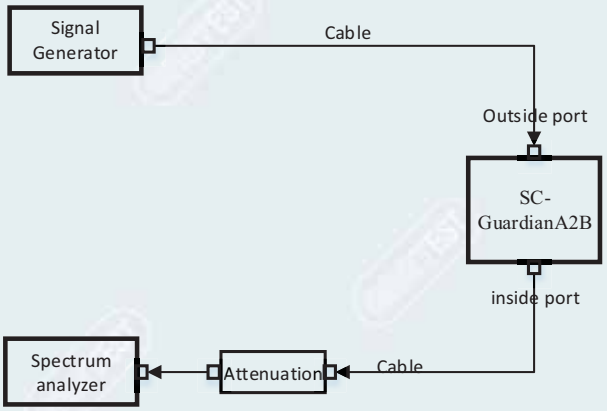


Figure 10.6-1 Downlink connection diagram

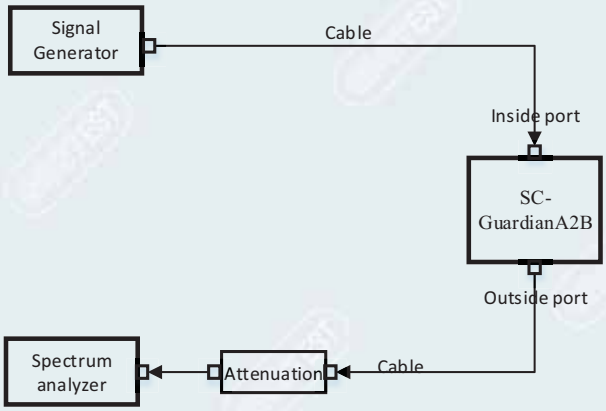


Figure 10.6-2 Uplink connection diagram

10.6.3 Test procedures

a) Connect a signal generator to the input of the EUT.
b) Configure to generate the AWGN (broadband) test signal.
c) The frequency of the signal generator shall be set to the frequency f_0 as determined from 3.3.
d) Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation as necessary.
e) Set the signal generator output power to a level that produces an EUT output level that is just below the AGC threshold (see 3.2), but not more than 0.5 dB below.
f) Measure and record the output power of the EUT; use 3.5.3 or 3.5.4 for power measurement.
g) Remove the EUT from the measurement setup. Using the same signal generator settings, repeat the power measurement at the signal generator port, which was used as the input signal to the EUT, and record as the input power. EUT gain may be calculated as described in 3.5.5.
h) Repeat steps f) and g) with input signal amplitude set to 3 dB above the AGC threshold level.
i) Repeat steps e) to h) with the narrowband test signal.
j) Repeat steps e) to i) for all frequency bands authorized for use by the EUT.

10.6.4 Test results

Test Date (yy-mm-dd): 2021-01-07

Normal condition: Temp: 22.9℃, Humid:35%, Atmospheric Pressure:101kpa

Supply Voltage: AC 120V, 60Hz

10.6.4.1 Mean power and gain

10.6.4.1.1 700MHz Band

10.6.4.1.1.1 Downlink: 758~768MHz/ Uplink: 788~798MHz

Test link	Freq. (MHz)	Sig output power (dBm)	Cable Loss (dB)	Peak power (dBm)	Output Atten (dB)	Cable Loss (dB)	Output power (dBm)	Output power (W)	Gain (dB)
Down(1)	763.0	-56.0	1.0	-7.97	40.0	1.0	33.03	2.009	90.0
Down(2)	763.0	-53.0	1.0	-7.87	40.0	1.0	33.13	2.056	87.1
Up(1)	793.0	-57.0	1.0	-10.43	40.0	1.0	30.57	1.140	88.6
Up(2)	793.0	-54.0	1.0	-10.52	40.0	1.0	30.48	1.117	85.5

NOTE: (1) Level is 0.5 dB below AGC threshold; (2) Level is 3dB above AGC threshold.

10.6.4.1.1.2 Downlink: 769~775MHz/ Uplink: 799~805MHz

Test link	Freq. (MHz)	Sig output power (dBm)	Cable Loss (dB)	Peak power (dBm)	Output Atten (dB)	Cable Loss (dB)	Output power (dBm)	Output power (W)	Gain (dB)
Down(1)	772.0	-55.6	1.0	-8.29	40.0	1.0	32.71	1.866	89.3
Down(2)	772.0	-52.6	1.0	-8.17	40.0	1.0	32.83	1.919	86.4
Up(1)	802.0	-58.2	1.0	-11.29	40.0	1.0	29.71	0.935	88.9
Up(2)	802.0	-55.2	1.0	-11.24	40.0	1.0	29.76	0.946	86.0

NOTE: (1) Level is 0.5 dB below AGC threshold; (2) Level is 3dB above AGC threshold.

10.6.4.1.2 800MHz Band

10.6.4.1.2.1 Downlink: 851~861MHz/ Uplink: 806~816MHz

Test link	Freq. (MHz)	Sig output power (dBm)	Cable Loss (dB)	Peak power (dBm)	Output Atten (dB)	Cable Loss (dB)	Output power (dBm)	Output power (W)	Gain (dB)
Down(1)	856.0	-55.0	1.0	-8.08	40.0	1.0	32.92	1.959	88.9
Down(2)	856.0	-52.0	1.0	-8.14	40.0	1.0	32.86	1.932	85.9
Up(1)	811.0	-54.3	1.0	-10.87	40.0	1.0	30.13	1.030	85.4
Up(2)	811.0	-51.3	1.0	-10.74	40.0	1.0	30.26	1.062	82.6

NOTE: (1) Level is 0.5 dB below AGC threshold; (2) Level is 3dB above AGC threshold.

10.6.4.2 ERP Calculations

10.6.4.2.1 700MHz Band

10.6.4.2.1.1 Downlink: 758~768MHz/ Uplink: 788~798MHz

Test link	Freq. (MHz)	EUT Max. output power (dBm)	Max. Ant Gain(dBi)	Duty Cycle (%)	ERP (W)	ERP Limit (W)	AGC Mode
Down	763.0	33.03	3.0	100	4.009	5	-0.5dB Below
Down	763.0	33.13	3.0	100	4.102	5	+3.0dB above
Up	793.0	30.57	6.0	100	4.539	5	-0.5dB Below
Up	793.0	30.48	6.0	100	4.446	5	+3.0dB above

10.6.4.2.1.2 Downlink: 769~775MHz/ Uplink: 799~805MHz

Test link	Freq. (MHz)	EUT Max. output power (dBm)	Max. Ant Gain(dBi)	Duty Cycle (%)	ERP (W)	ERP Limit (W)	AGC Mode
Down	772.0	32.71	3.0	100	3.724	5	-0.5dB Below
Down	772.0	32.83	3.0	100	3.828	5	+3.0dB above
Up	802.0	29.71	6.0	100	3.724	5	-0.5dB Below
Up	802.0	29.76	6.0	100	3.767	5	+3.0dB above

10.6.4.2.2 800MHz Band

10.6.4.2.2.1 Downlink: 851~861MHz/ Uplink: 806~816MHz

Test link	Freq. (MHz)	EUT Max. output power (dBm)	Max. Ant Gain(dBi)	Duty Cycle (%)	ERP (W)	ERP Limit (W)	AGC Mode
Down	856.0	32.92	3.0	100	3.908	5	-0.5dB Below
Down	856.0	32.86	3.0	100	3.855	5	+3.0dB above
Up	811.0	30.13	6.0	100	4.102	5	-0.5dB Below
Up	811.0	30.26	6.0	100	4.227	5	+3.0dB above

10.7 Noise figure

Test requirement: KDB 935210 D05 clause 4.6
FCC PART 90.219 (e)(2)

Test Method: KDB 935210 D05/4.6

10.7.1 Requirements

According to FCC PART 90 § 90.219 (e) (2) requirement, the noise figure limit of a signal booster must are given in table 10.7-1.

Table 10.7-1 Noise figure limits

frequency range(MHz)	Max. Noise figure limit(dB)
758-768/788~798	9
769-775/799-805	9
851-861/806-816	9

10.7.2 Test configuration

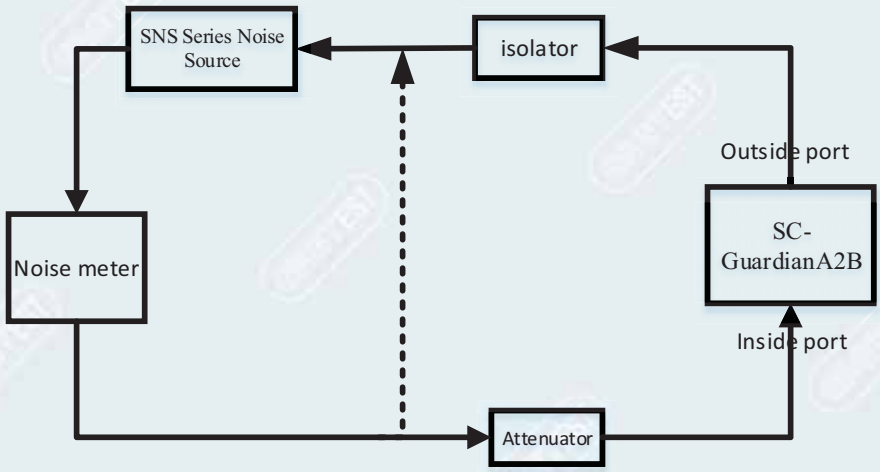


Figure 10.7-1 Downlink connection diagram

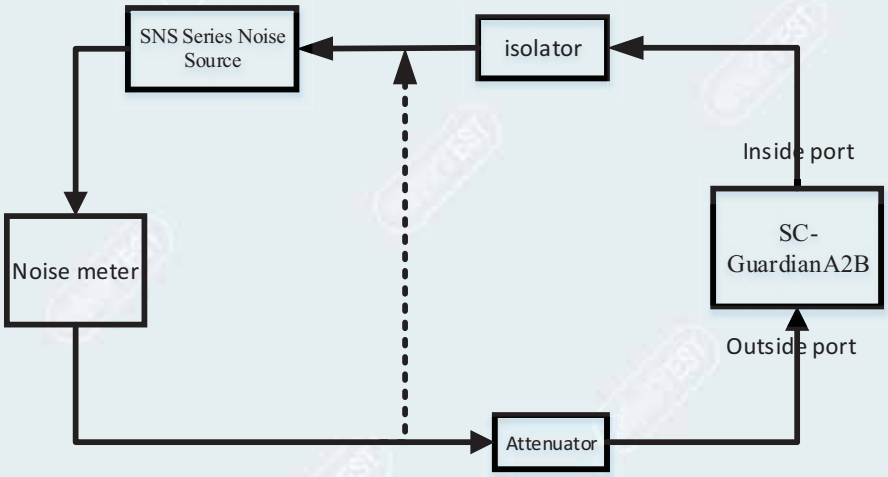


Figure 10.7-2 Uplink connection diagram

10.7.3 Test procedures

(1) Connect the device as illustrated Figure 10.7-1 and Figure 10.7-2, when the output power is over the maximum value of the Noise meter, add the attenuator to avoid destroying;

(2) Set the EUT operating band and maximum gain;

(3) Set the relevant parameters for 700MHz of device and connect the dotted line to calibrate;

(4) After calibrating , According to the solid line connecting and testing Noise figure and record data;

(5) Repeat RF channels to be tested for 800MHz of device and Repeat steps (2) to (4);

10.7.4 Test results

Test Date (yy-mm-dd): 2021-01-14

Normal condition: Temp: 23.3℃, Humid:35%, Atmospheric Pressure:101kpa

Supply Voltage: AC 120V, 60Hz

10.7.4.1 700MHz Band

Frequency(MHz)	Max. Limit (dB)	Noise figure data (dB)	Margin (dB)	Result
Downlink: 758~768	9	5.90	-3.10	PASS
Downlink: 769~775	9	5.85	-3.15	PASS
Uplink: 788~798	9	6.23	-2.77	PASS
Uplink: 799~805	9	7.73	-1.27	PASS
NOTE : Margin= Noise figure data - specification limit.				

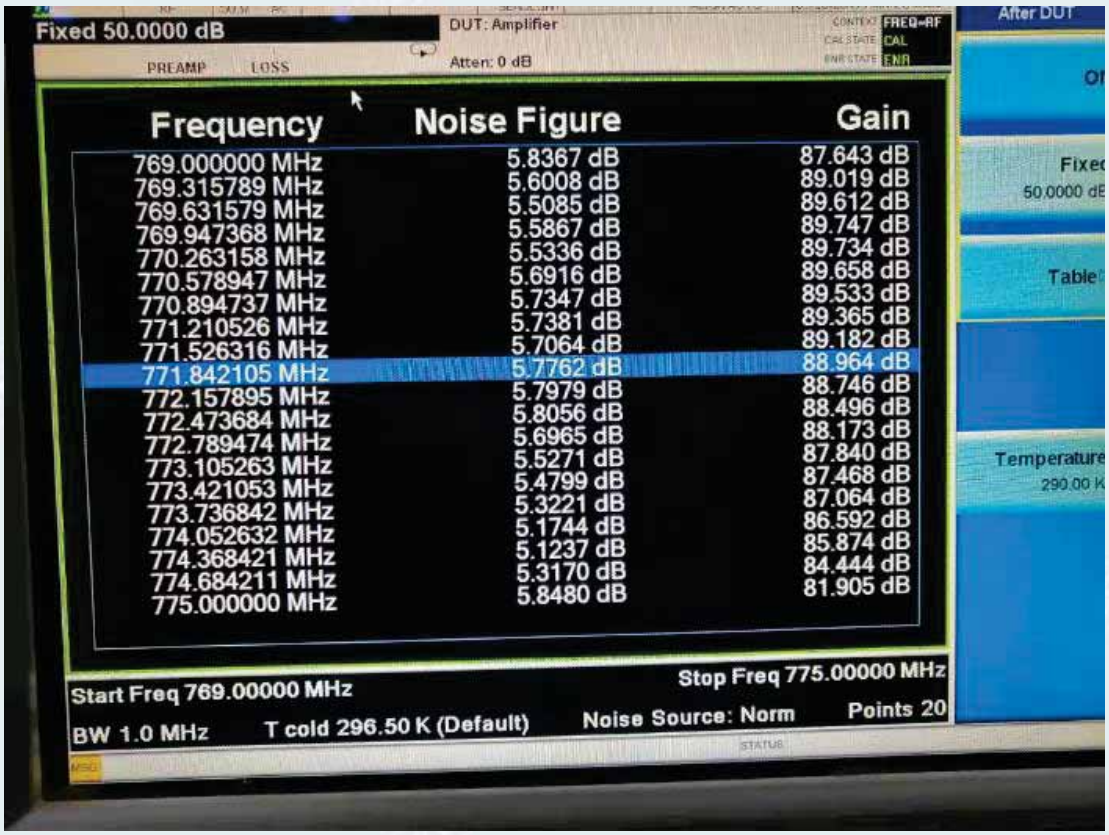
10.7.4.2 800MHz Band

Frequency(MHz)	Max.Limit (dB)	Noise figure data (dB)	Margin (dB)	Result
Downlink: 851~861	9	6.52	-2.48	PASS
Uplink: 806~816	9	7.00	-2.0	PASS
NOTE : Margin= Noise figure data - specification limit.				

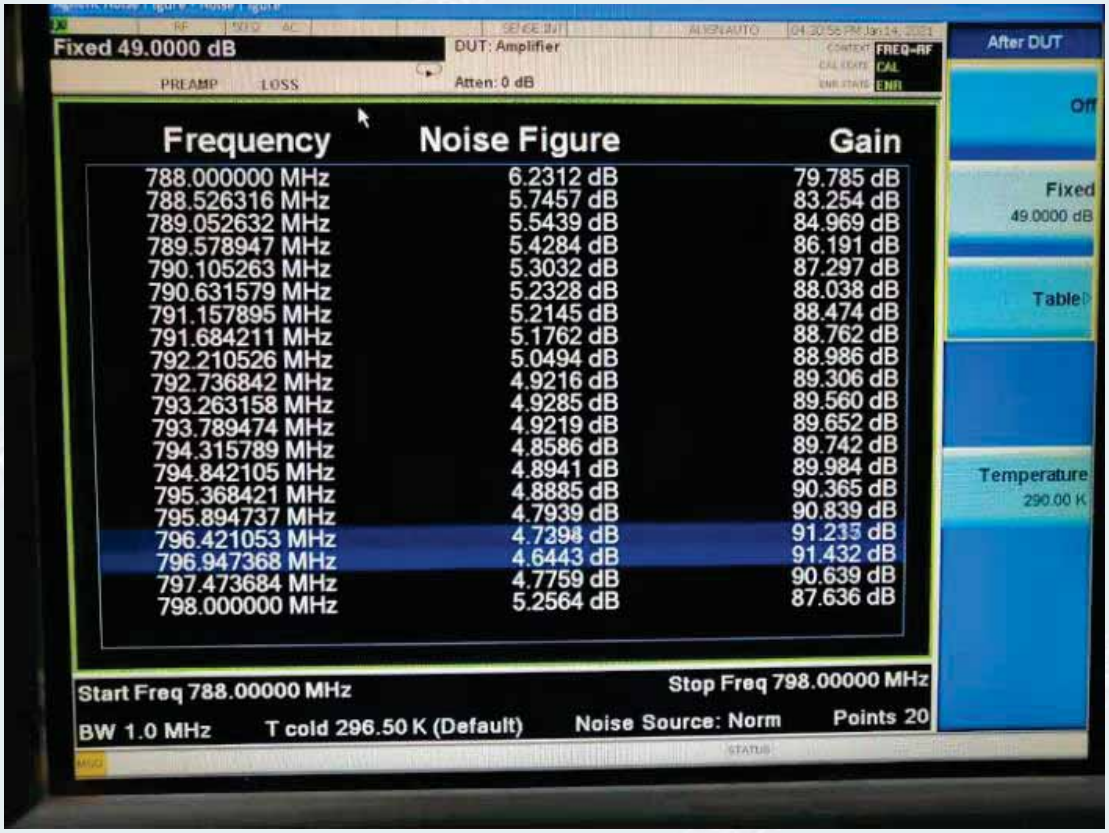
10.7.5 Test screenshot

10.7.5.1 700MHz Band

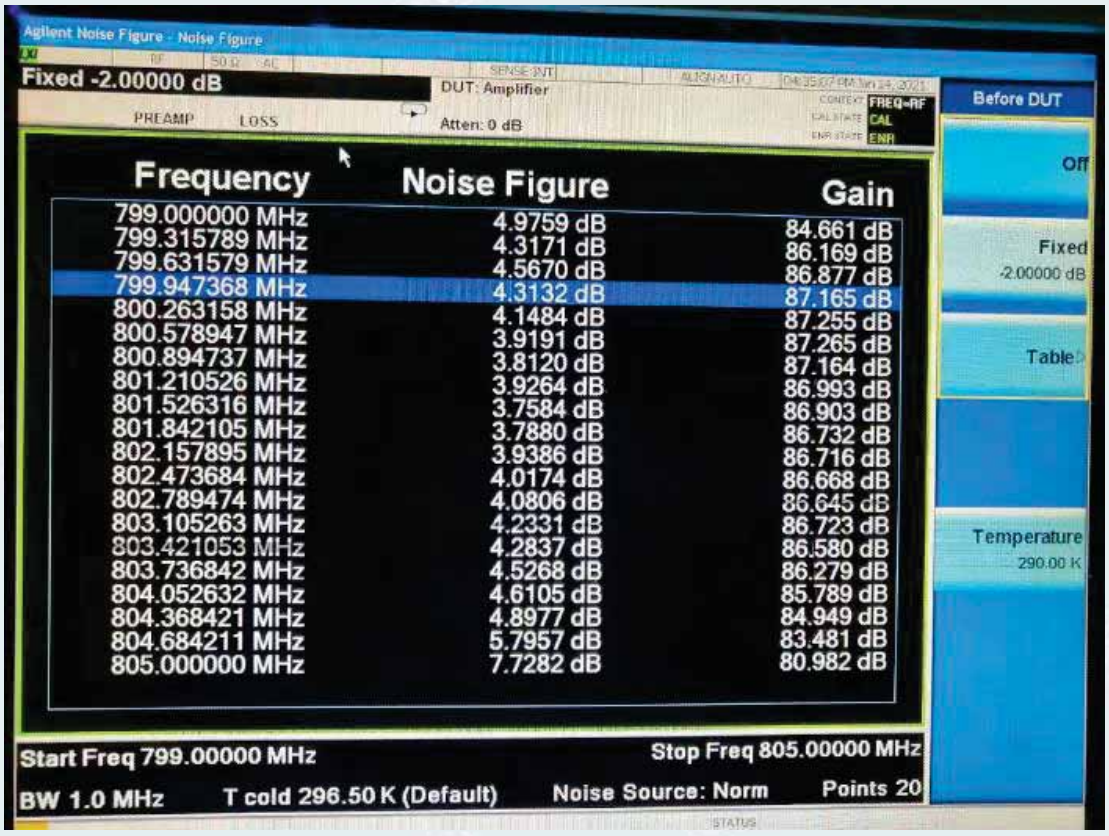
Downlink: 758MHz~768MHz



Downlink: 769MHz~775MHz

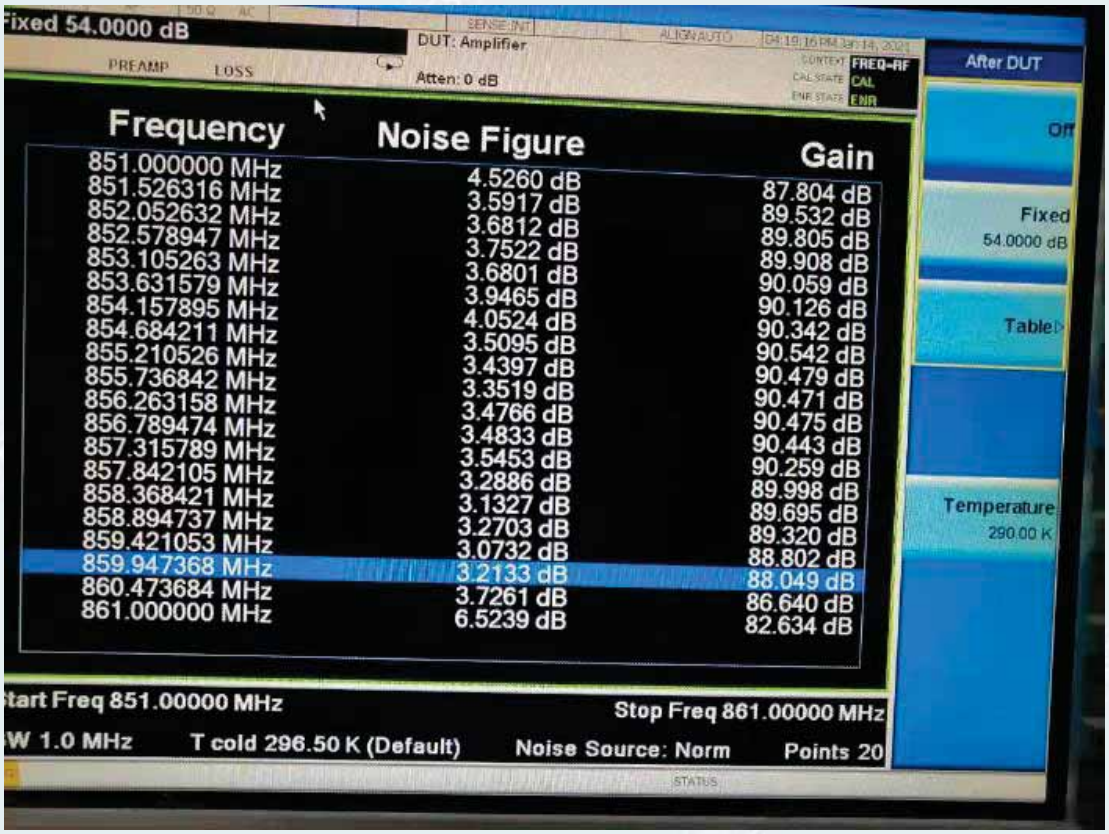


Uplink: 788MHz~798MHz

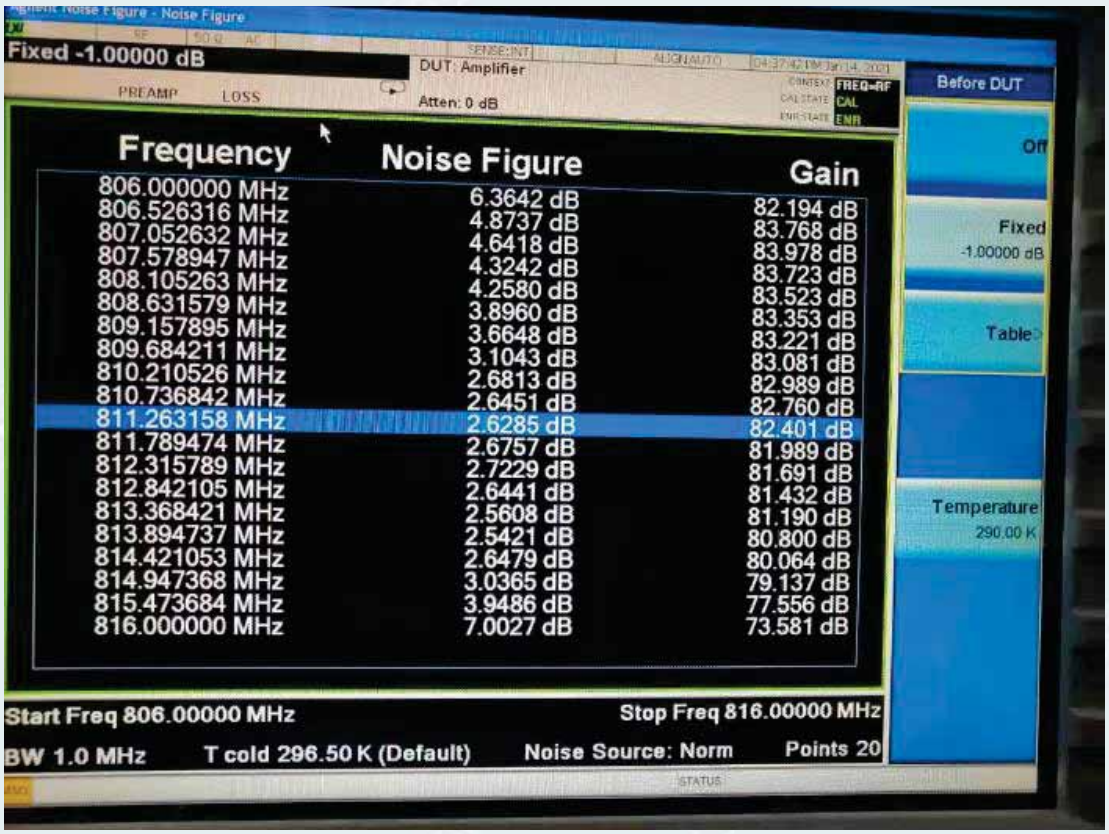


Uplink: 799MHz~805MHz

10.7.5.2 800MHz Band



Downlink: 851MHz~861MHz



Uplink: 806MHz~816MHz

10.8 Out-of-band/out-of-block emissions

Test requirement:	KDB 935210 D05 clause 4.7.2 FCC PART 2.1051 FCC PART 90.219 (d)(6)(i) FCC PART 90.219 (e)(3)
Test Method:	KDB 935210 D05/4.7.1 and 4.7.2

10.8.1 Requirements

The EUT shall comply with sections 4.7.2 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 f_0 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*log$_{10}$ 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;
b) 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).

10.8.2 Test configuration

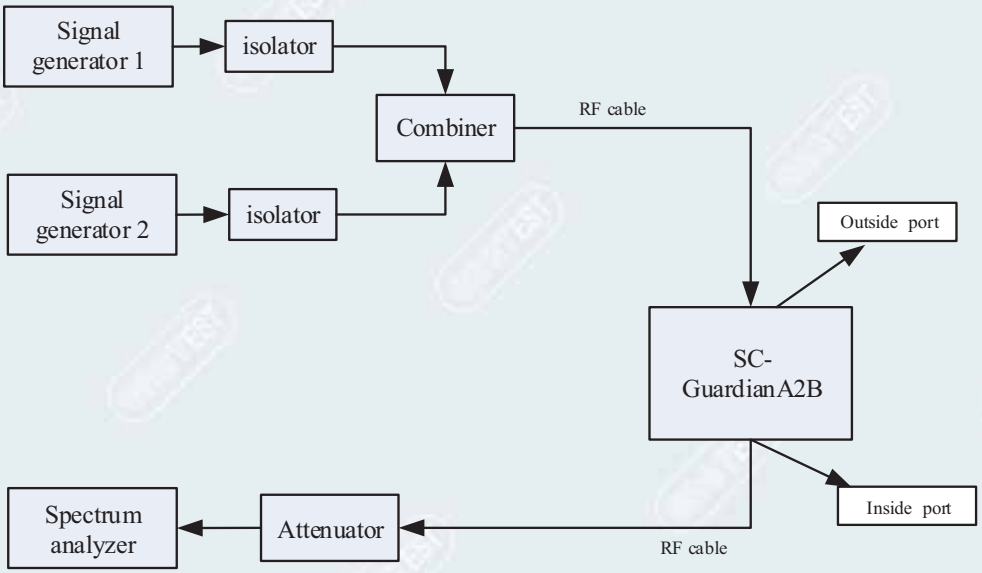


Figure 10.8-1 Downlink connection diagram

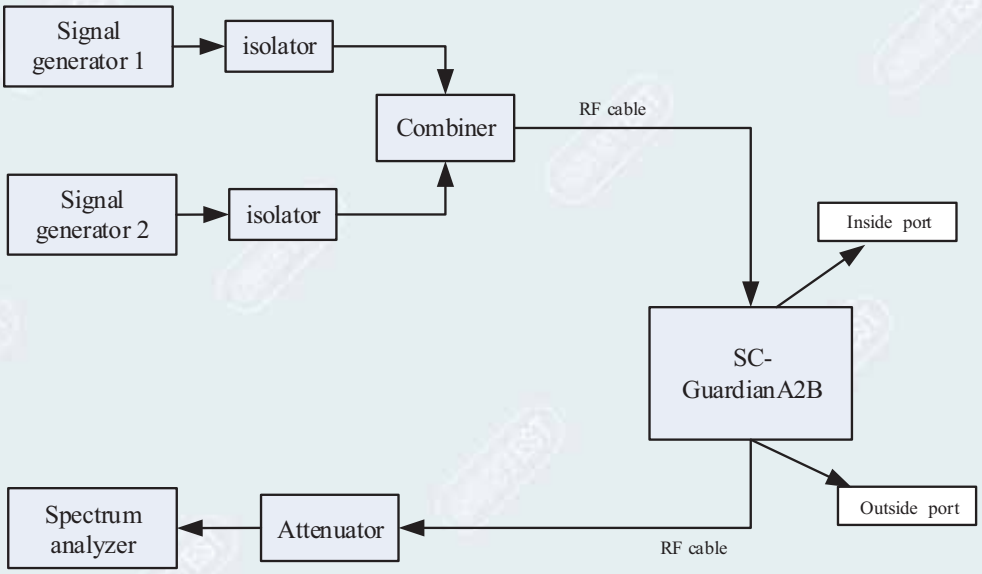


Figure 10.8-2 Uplink connection diagram

10.8.3 Test procedures

a) Connect a signal generator to the input of the EUT.
If the signal generator is not capable of producing two independent modulated carriers simultaneously, then two discrete signal generators can be connected, with an appropriate combining network to support the two-signal test.
b) Configure the two signal generators to produce CW on frequencies spaced consistent with 4.7.1, with amplitude levels set to just below the AGC threshold (see 4.2). Set the signal generator amplitudes so that the power from each into the EUT is equivalent.
c) Connect a spectrum analyzer to the EUT output.
d) Set the span to 100 kHz.
e) Set RBW = 300 Hz with VBW ≥ 3 × RBW.
f) Set the detector to power averaging (rms).
g) Place a marker on highest intermodulation product amplitude.
h) Capture the plot for inclusion in the test report.
i) Repeat steps c) to h) with the composite input power level set to 3 dB above the AGC threshold.
j) Repeat steps b) to i) for all operational bands.

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($P_{(W)}$)).

10.8.4 Test results

Test Date (yy-mm-dd): 2021-01-08 to 2021-01-12

Normal condition: Temp: 22.5~23.1℃, Humid:22~31%, Atmospheric Pressure:101kpa

Supply Voltage: AC 120V, 60Hz

10.8.4.1 700MHz Band

10.8.4.1.1 Downlink transmit mode

Frequency range		Intermodulaiton product Limit (dBm)	Max. intermodulation product (dBm)	Margin (dB)	Result
(1) Frequency range: 769MHz~775MHz					
(1.1) With the ALC threshold level					
Channel Bandwidth: 12.5kHz	Low frequency: f1:769.00625MHz f2:769.04375MHz	-13	-16.76	-3.76	PASS
	Mid frequency: f1:772.0MHz f2:772.0375MHz	-13	-22.47	-9.47	PASS
	High frequency: f1:774.95625MHz f2:774.99375MHz	-13	-18.33	-5.33	PASS
Channel Bandwidth: 25kHz	Low frequency: f1:769.0125MHz f2:769.0875MHz	-13	-21.45	-8.45	PASS
	Mid frequency: f1:772.0MHz f2:772.075MHz	-13	-20.52	-7.52	PASS
	High frequency: f1:774.9125MHz f2:774.9875MHz	-13	-25.31	-12.31	PASS
(1.2) With the input signal amplitude set 3 dB above the AGC threshold					
Channel Bandwidth: 12.5kHz	Low frequency: f1:769.00625MHz f2:769.04375MHz	-13	-16.09	-3.09	PASS
	Mid frequency: f1:772.0MHz f2:772.0375MHz	-13	-22.92	-9.92	PASS
	High frequency: f1:774.95625MHz f2:774.99375MHz	-13	-18.62	-5.62	PASS
Channel Bandwidth: 25kHz	Low frequency: f1:769.0125MHz f2:769.0875MHz	-13	-21.68	-8.68	PASS
	Mid frequency: f1:772.0MHz f2:772.075MHz	-13	-20.43	-7.43	PASS
	High frequency: f1:774.9125MHz f2:774.9875MHz	-13	-22.54	-9.54	PASS
NOTE 1: Intermodulation products select the worst data record. NOTE 2: Margin= Maximum mark level- specification limit.					

10.8.4.1.2 Uplink transmit mode

Frequency range		Intermodulaiton product Limit (dBm)	Max. intermodulation product (dBm)	Margin (dB)	Result
(2) Frequency range: 799MHz~805MHz					
(2.1) With the ALC threshold level					
Channel Bandwidth: 12.5kHz	Low frequency: f1:799.00625MHz f2:799.04375MHz	-13	-18.92	-5.92	PASS
	Mid frequency: f1:802.0MHz f2:802.0375MHz	-13	-20.48	-7.48	PASS
	High frequency: f1:804.95625MHz f2:804.99375MHz	-13	-20.42	-7.42	PASS
Channel Bandwidth: 25kHz	Low frequency: f1:799.0125MHz f2:799.0875MHz	-13	-21.62	-8.62	PASS
	Mid frequency: f1:802.0MHz f2:802.075MHz	-13	-21.08	-8.08	PASS
	High frequency: f1:804.9125MHz f2:804.9875MHz	-13	-21.29	-8.29	PASS
(2.2) With the input signal amplitude set 3 dB above the AGC threshold					
Channel Bandwidth: 12.5kHz	Low frequency: f1:799.00625MHz f2:799.04375MHz	-13	-18.91	-5.91	PASS
	Mid frequency: f1:802.0MHz f2:802.0375MHz	-13	-20.26	-7.26	PASS
	High frequency: f1:804.95625MHz f2:804.99375MHz	-13	-20.78	-7.78	PASS
Channel Bandwidth: 25kHz	Low frequency: f1:799.0125MHz f2:799.0875MHz	-13	-22.20	-9.20	PASS
	Mid frequency: f1:802.0MHz f2:802.075MHz	-13	-21.01	-8.01	PASS
	High frequency: f1:804.9125MHz f2:804.9875MHz	-13	-21.30	-8.30	PASS
NOTE 1: Intermodulation products select the worst data record. NOTE 2: Margin= Maximum mark level- specification limit.					

10.8.4.2 800MHz Band

10.8.4.2.1 Downlink transmit mode

Frequency range		Intermodulaiton product Limit (dBm)	Max. intermodulation product (dBm)	Margin (dB)	Result
(1) Frequency range: 851MHz~861MHz					
(1.1) With the ALC threshold level					
Channel Bandwidth: 12.5kHz	Low frequency: f1:851.00625MHz f2:851.04375MHz	-13	-22.30	-9.30	PASS
	Mid frequency: f1:856.0MHz f2:856.0375MHz	-13	-21.69	-8.69	PASS
	High frequency: f1:860.95625MHz f2:860.99375MHz	-13	-20.74	-7.74	PASS
Channel Bandwidth: 25kHz	Low frequency: f1:861.0125MHz f2:851.0875MHz	-13	-19.30	-6.30	PASS
	Mid frequency: f1:856.0MHz f2:856.075MHz	-13	-18.69	-5.69	PASS
	High frequency: f1:860.9125MHz f2:860.9875MHz	-13	-18.02	-5.02	PASS
(1.2) With the input signal amplitude set 3 dB above the AGC threshold					
Channel Bandwidth: 12.5kHz	Low frequency: f1:851.00625MHz f2:851.04375MHz	-13	-22.32	-9.32	PASS
	Mid frequency: f1:856.0MHz f2:856.0375MHz	-13	-21.32	-8.32	PASS
	High frequency: f1:860.95625MHz f2:860.99375MHz	-13	-20.84	-7.84	PASS
Channel Bandwidth: 25kHz	Low frequency: f1:861.0125MHz f2:851.0875MHz	-13	-19.45	-6.45	PASS
	Mid frequency: f1:856.0MHz f2:856.075MHz	-13	-19.12	-6.12	PASS
	High frequency: f1:860.9125MHz f2:860.9875MHz	-13	-20.98	-7.98	PASS
NOTE 1: Intermodulation products select the worst data record. NOTE 2: Margin= Maximum mark level- specification limit.					

10.8.4.2.2 Uplink transmit mode

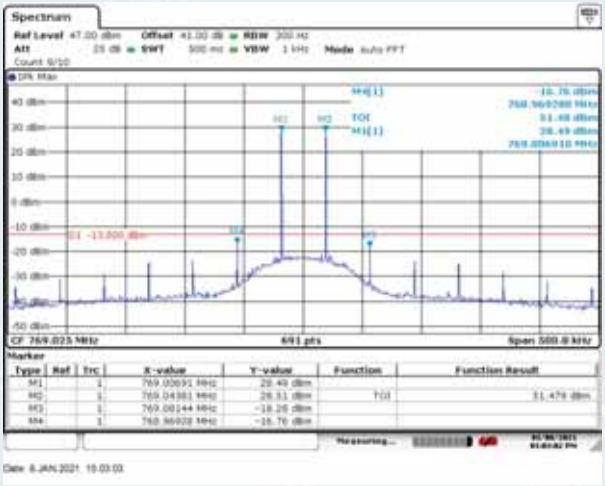
Frequency range		Intermodulaiton product Limit (dBm)	Max. intermodulation product (dBm)	Margin (dB)	Result
(2) Frequency range: 806MHz~816MHz					
(2.1) With the ALC threshold level					
Channel Bandwidth: 12.5kHz	Low frequency: f1:806.00625MHz f2:806.04375MHz	-13	-20.27	-7.27	PASS
	Mid frequency: f1:811.0MHz f2:811.0375MHz	-13	-13.78	-0.78	PASS
	High frequency: f1:815.95625MHz f2:815.99375MHz	-13	-14.25	-1.25	PASS
Channel Bandwidth: 25kHz	Low frequency: f1:806.0125MHz f2:806.0875MHz	-13	-22.52	-9.52	PASS
	Mid frequency: f1:811.0MHz f2:811.075MHz	-13	-17.23	-4.23	PASS
	High frequency: f1:815.9125MHz f2:815.9875MHz	-13	-16.57	-3.57	PASS
(2.2) With the input signal amplitude set 3 dB above the AGC threshold					
Channel Bandwidth: 12.5kHz	Low frequency: f1:806.00625MHz f2:806.04375MHz	-13	-20.31	-7.31	PASS
	Mid frequency: f1:811.0MHz f2:811.0375MHz	-13	-13.48	-0.48	PASS
	High frequency: f1:815.95625MHz f2:815.99375MHz	-13	-14.25	-1.25	PASS
Channel Bandwidth: 25kHz	Low frequency: f1:806.0125MHz f2:806.0875MHz	-13	-23.85	-10.85	PASS
	Mid frequency: f1:811.0MHz f2:811.075MHz	-13	-18.18	-5.18	PASS
	High frequency: f1:815.9125MHz f2:815.9875MHz	-13	-13.45	-0.45	PASS
NOTE 1: Intermodulation products select the worst data record. NOTE 2: Margin= Maximum mark level- specification limit.					

10.8.5 Test screenshot

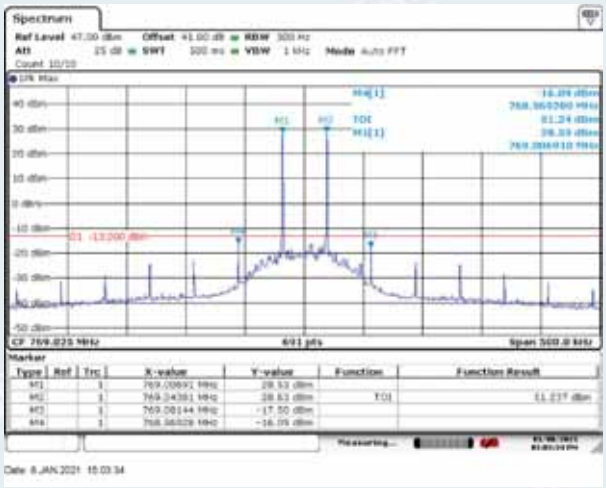
10.8.5.1 700MHz Band

10.8.5.1.1 Channel bandwidth 12.5kHz

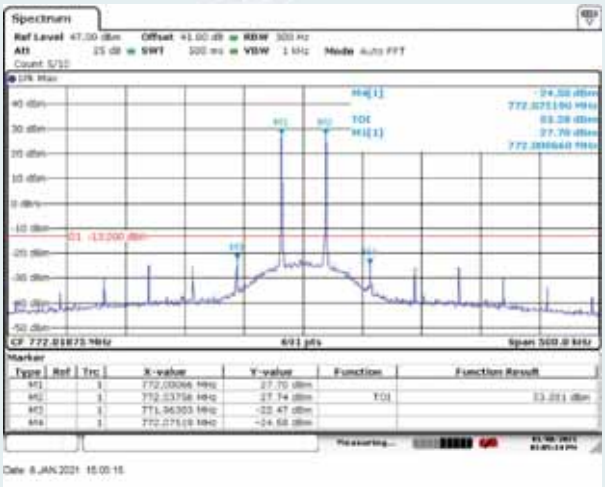
10.8.5.1.1.1 Downlink



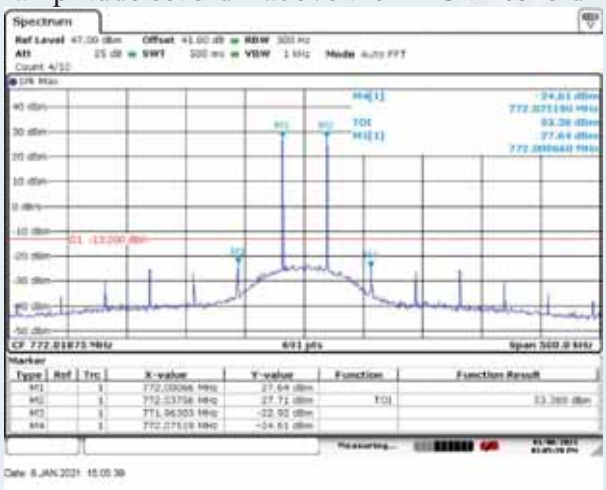
Low Frequency and With the ALC threshold level



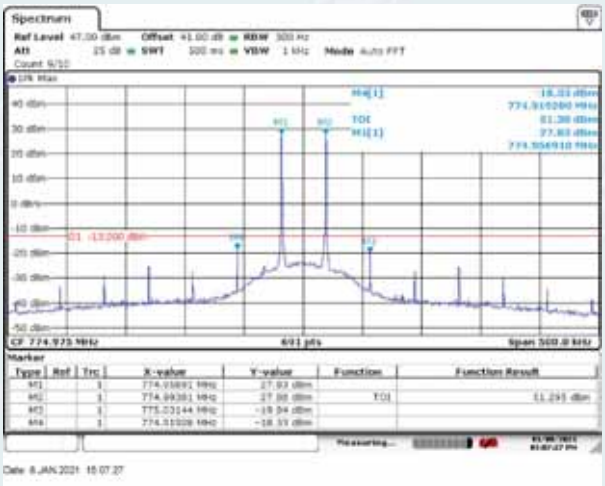
Low Frequency and With the input signal amplitude set 3 dB above the ALC threshold



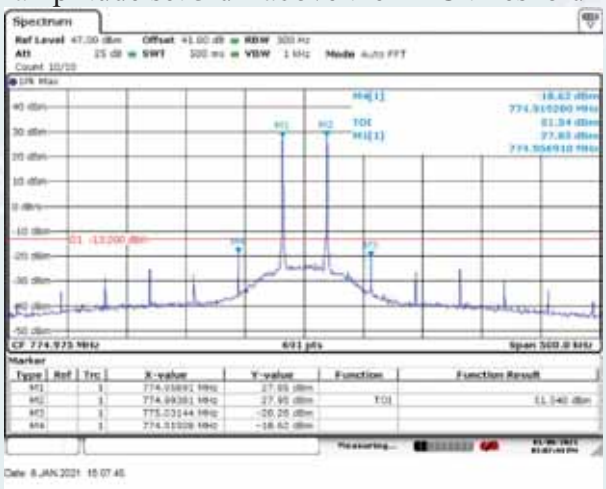
Mid Frequency and With the ALC threshold level



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

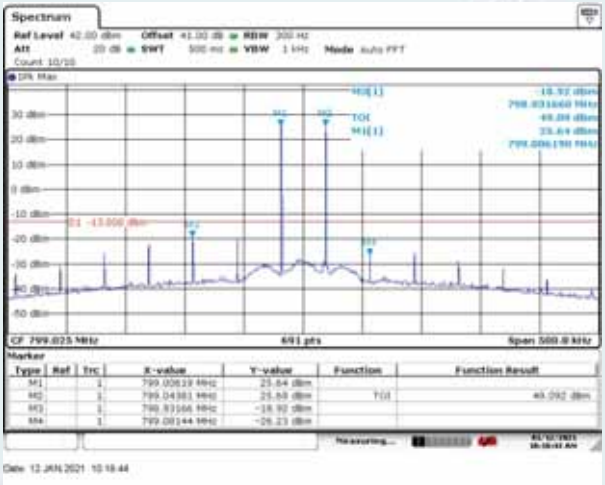


High Frequency and With the ALC threshold level

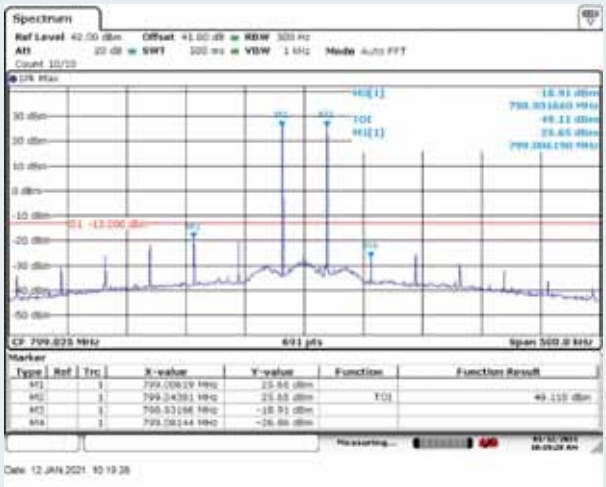


High Frequency and With the input signal amplitude set 3 dB above the ALC threshold

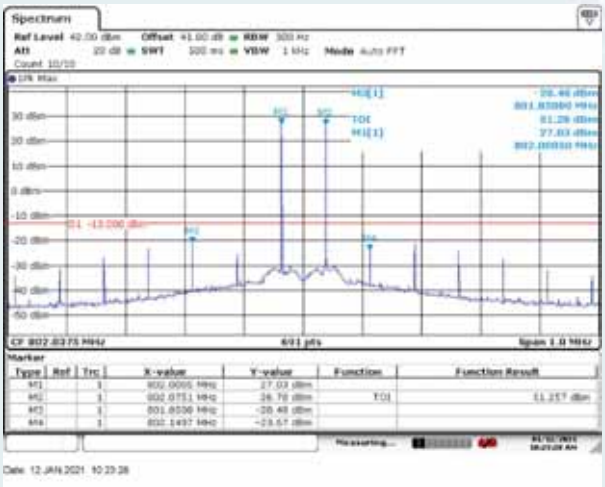
10.8.5.1.1.2Uplink



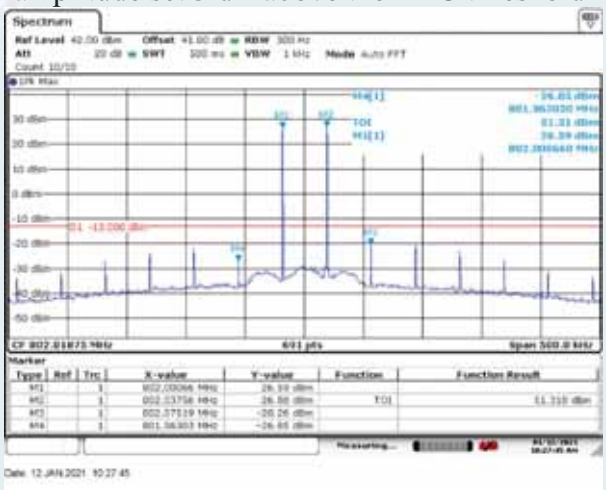
Low Frequency and With the ALC threshold level



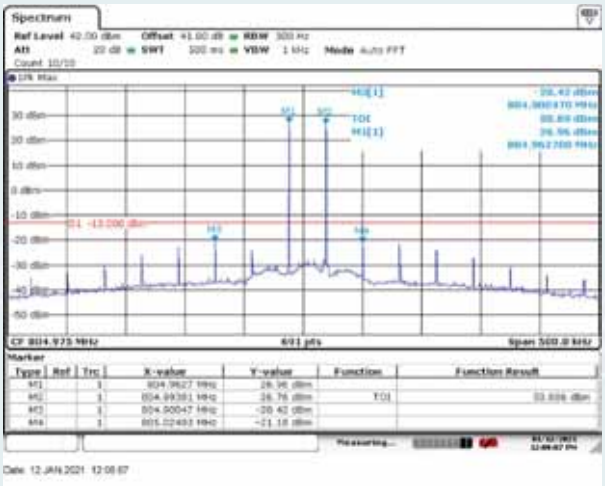
Low Frequency and With the input signal amplitude set 3 dB above the ALC threshold



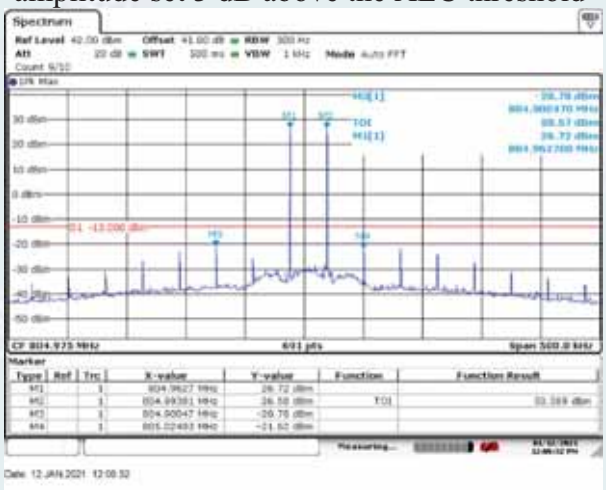
Mid Frequency and With the ALC threshold level



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



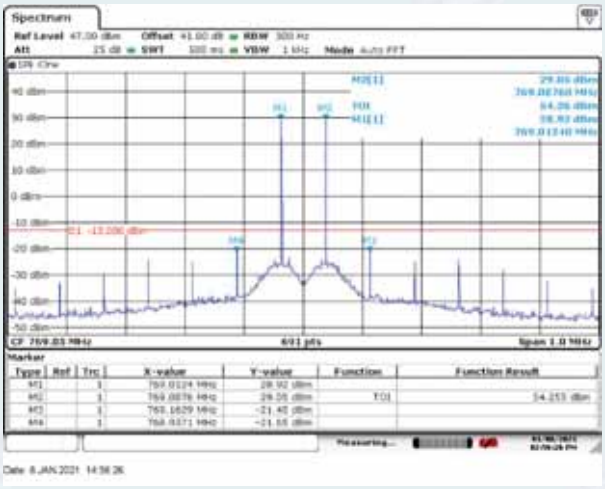
High Frequency and With the ALC threshold level



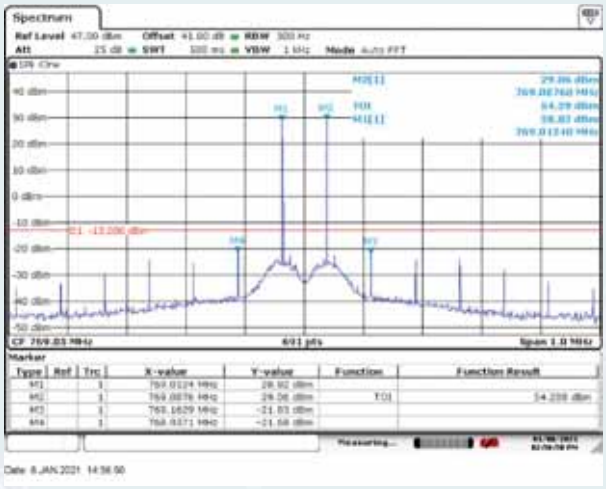
High Frequency and With the input signal amplitude set 3 dB above the ALC threshold

10.8.5.1.2 Channel bandwidth 25kHz

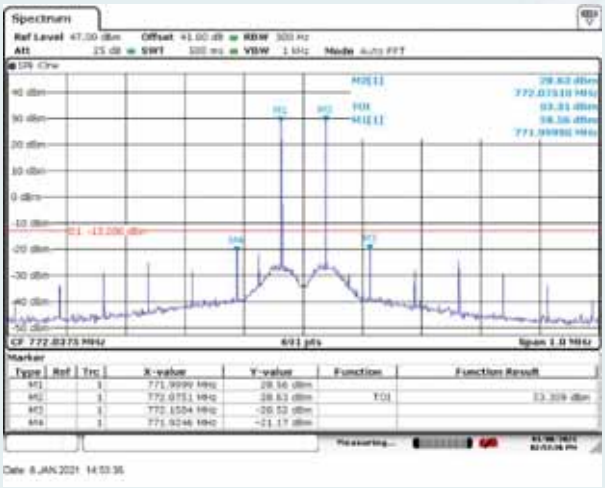
10.8.5.1.2.1 Downlink



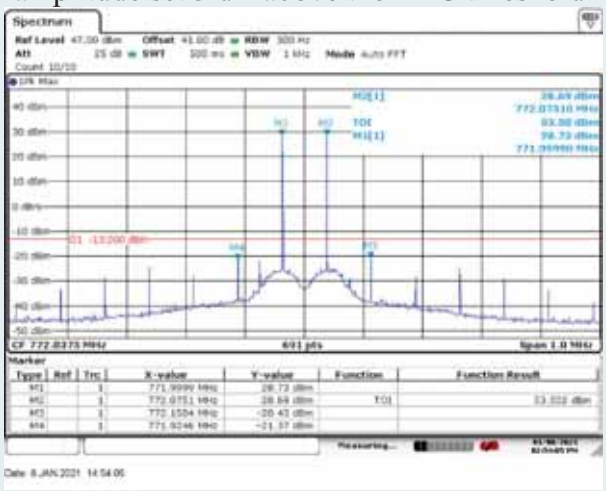
Low Frequency and With the ALC threshold level



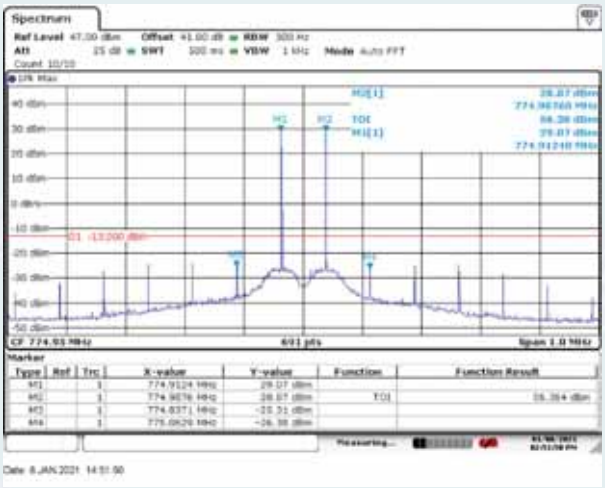
Low Frequency and With the input signal amplitude set 3 dB above the ALC threshold



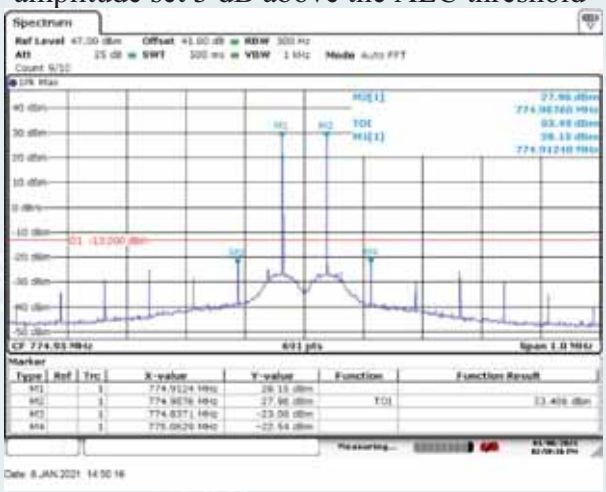
Mid Frequency and With the ALC threshold level



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

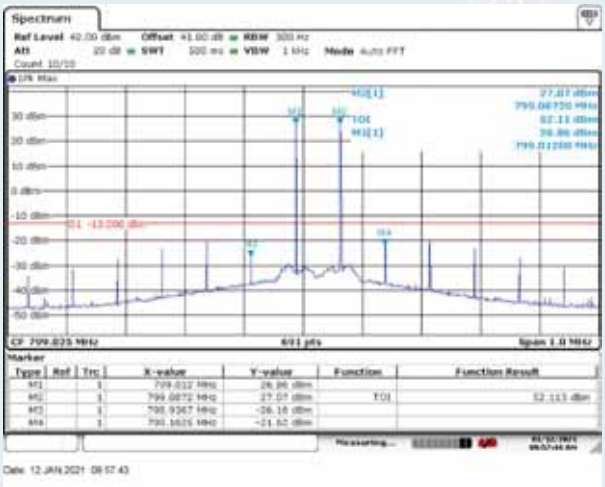


High Frequency and With the ALC threshold level

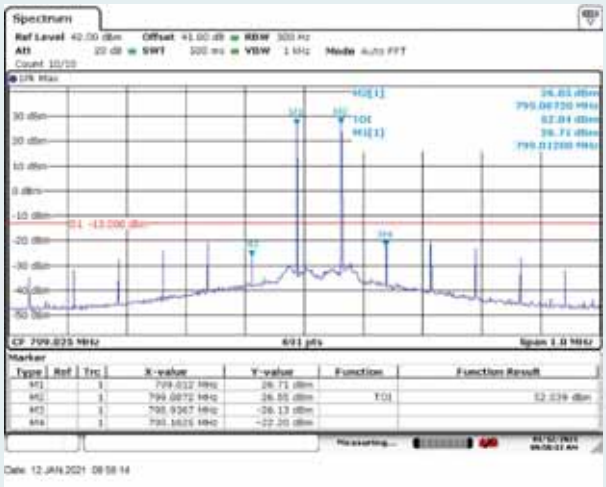


High Frequency and With the input signal amplitude set 3 dB above the ALC threshold

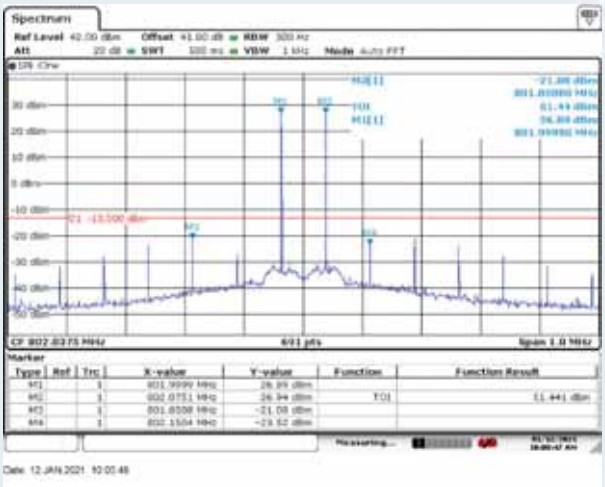
10.8.5.1.2.2Uplink



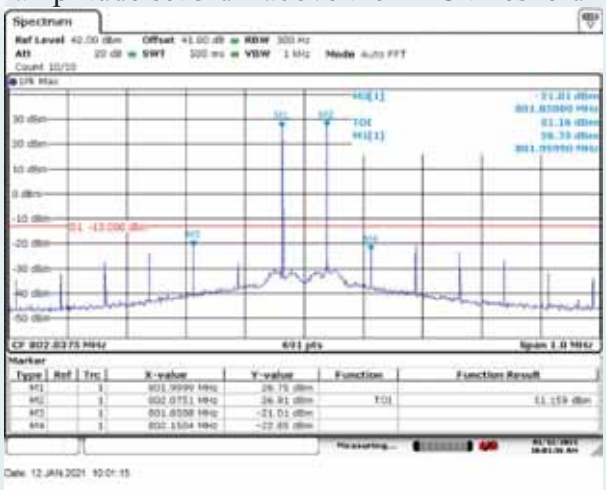
Low Frequency and With the ALC threshold level



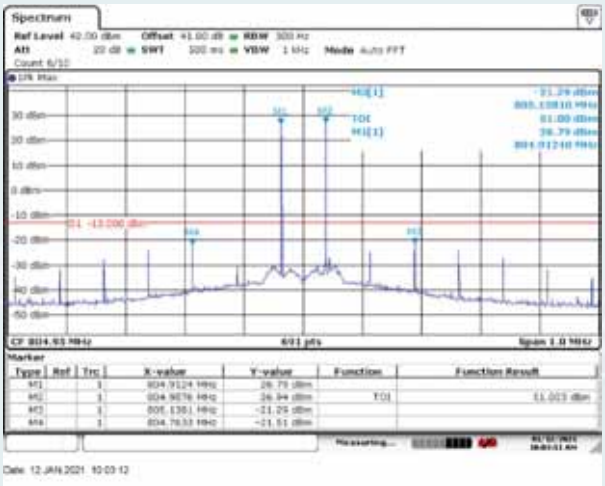
Low Frequency and With the input signal amplitude set 3 dB above the ALC threshold



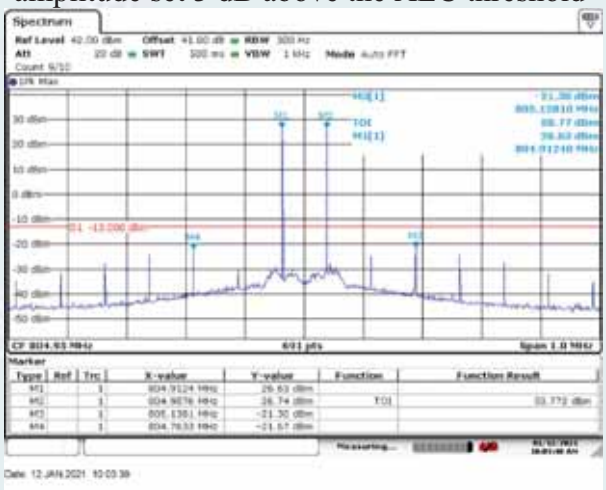
Mid Frequency and With the ALC threshold level



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



High Frequency and With the ALC threshold level

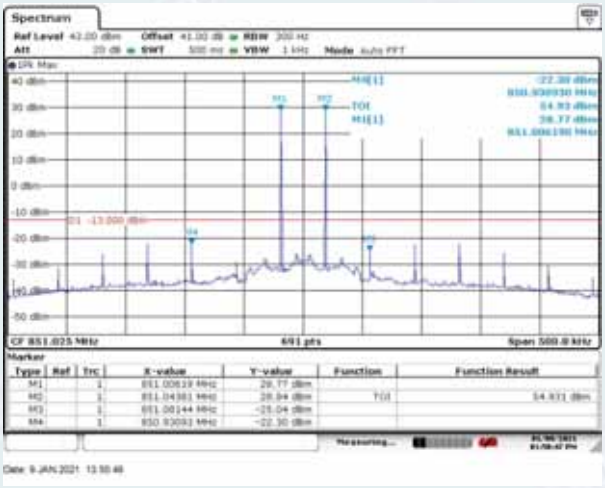


High Frequency and With the input signal amplitude set 3 dB above the ALC threshold

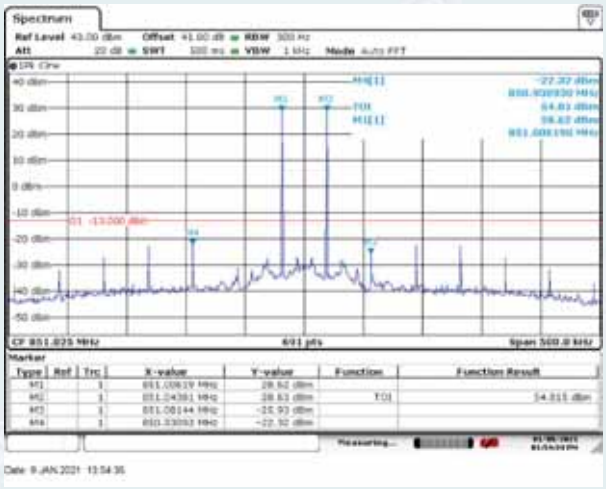
10.8.5.2 800MHz Band

10.8.5.2.1 Channel bandwidth 12.5kHz

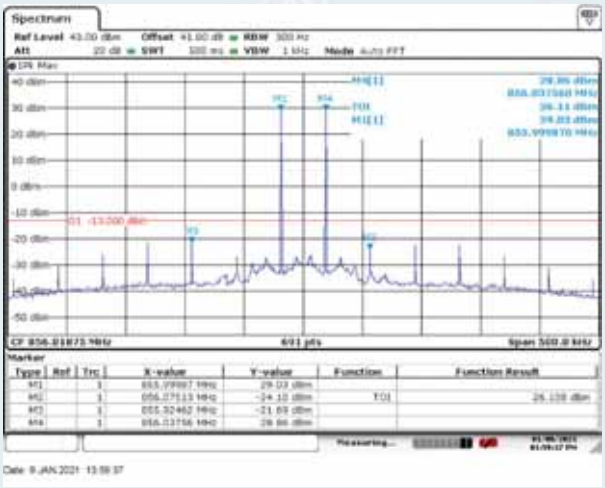
10.8.5.2.1.1 Downlink



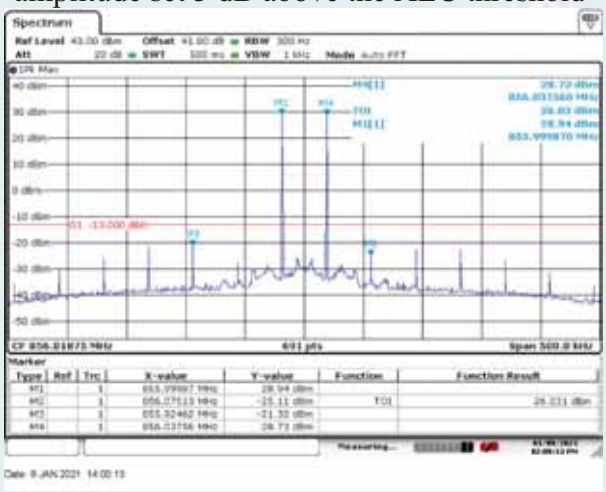
Low Frequency and With the ALC threshold level



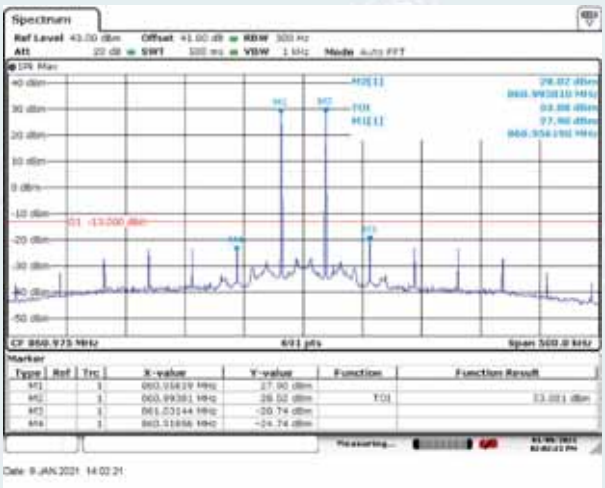
Low Frequency and With the input signal amplitude set 3 dB above the ALC threshold



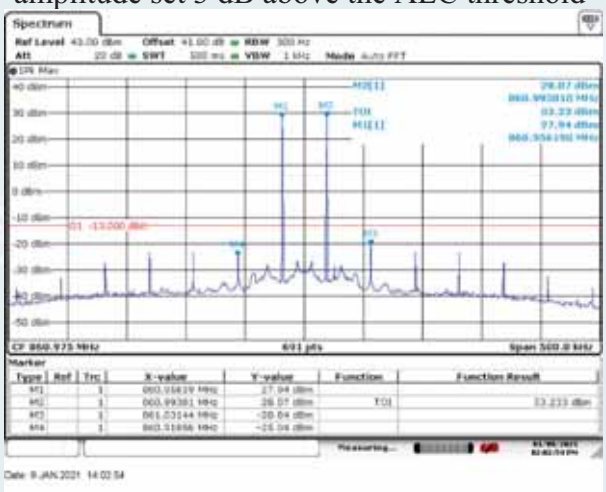
Mid Frequency and With the ALC threshold level



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

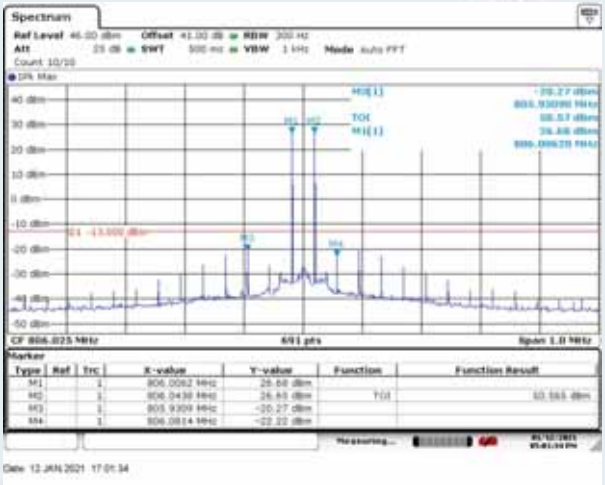


High Frequency and With the ALC threshold level

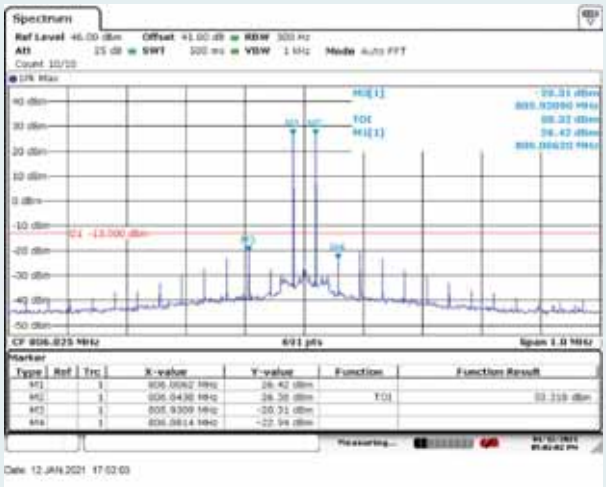


High Frequency and With the input signal amplitude set 3 dB above the ALC threshold

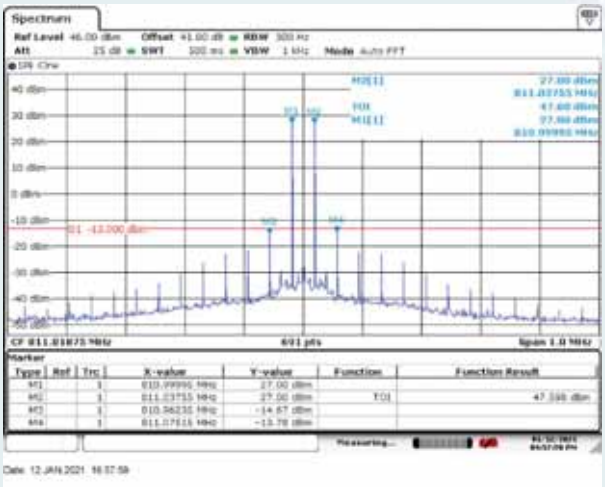
10.8.5.2.1.2Uplink



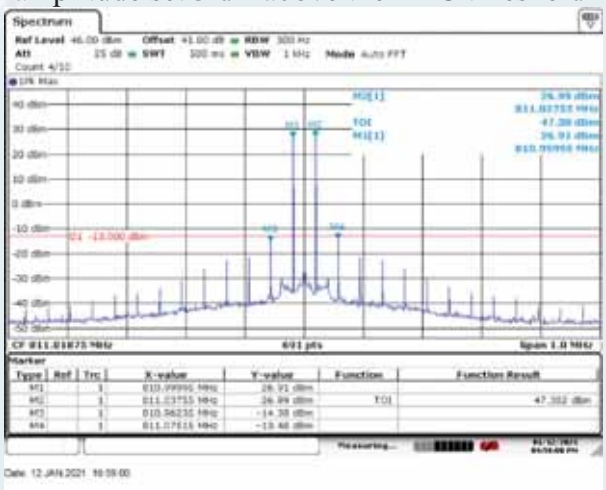
Low Frequency and With the ALC threshold level



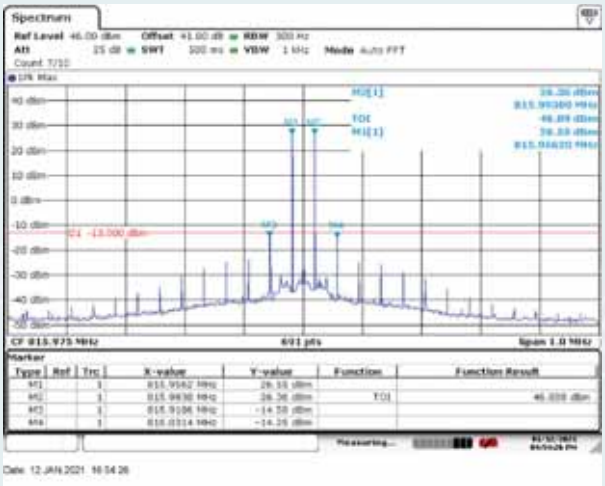
Low Frequency and With the input signal amplitude set 3 dB above the ALC threshold



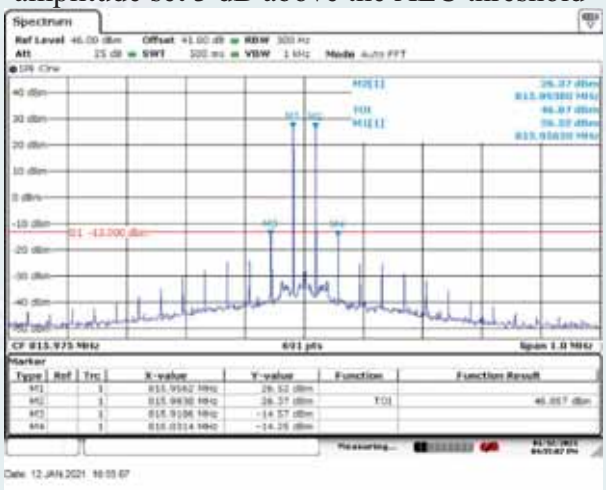
Mid Frequency and With the ALC threshold level



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



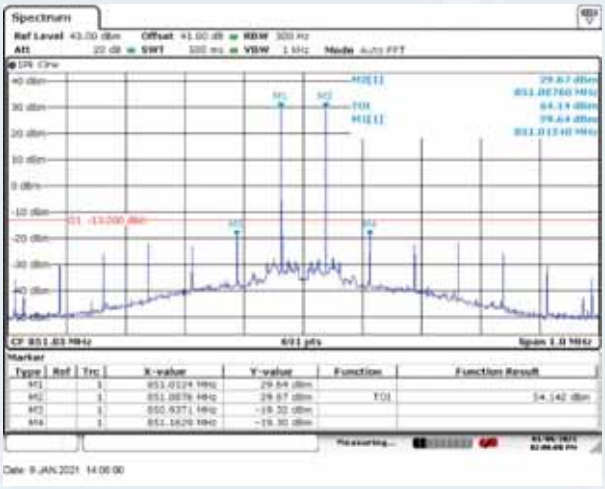
High Frequency and With the ALC threshold level



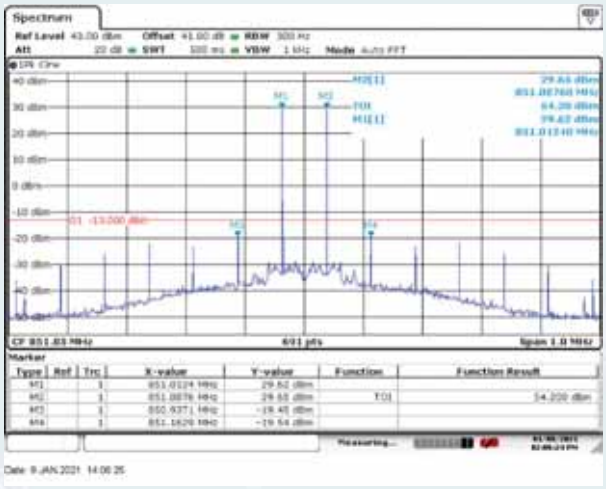
High Frequency and With the input signal amplitude set 3 dB above the ALC threshold

10.8.5.2.2 Channel bandwidth 25kHz

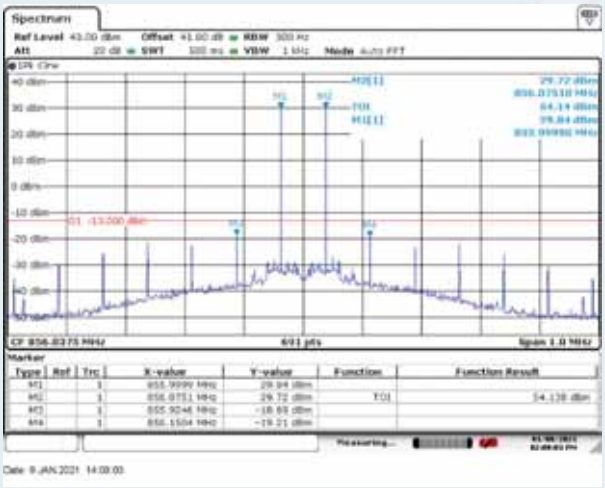
10.8.5.2.2.1 Downlink



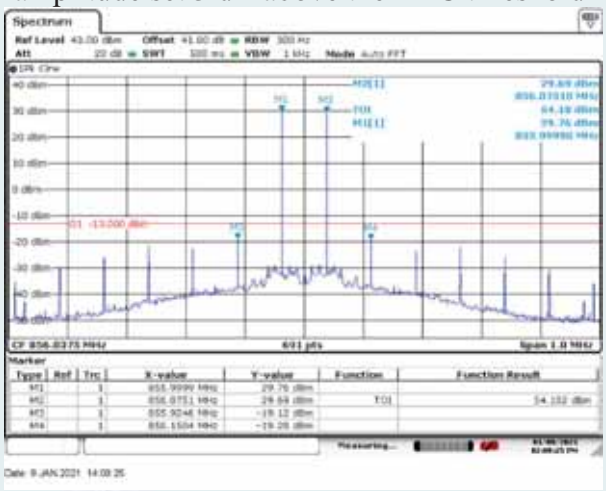
Low Frequency and With the ALC threshold level



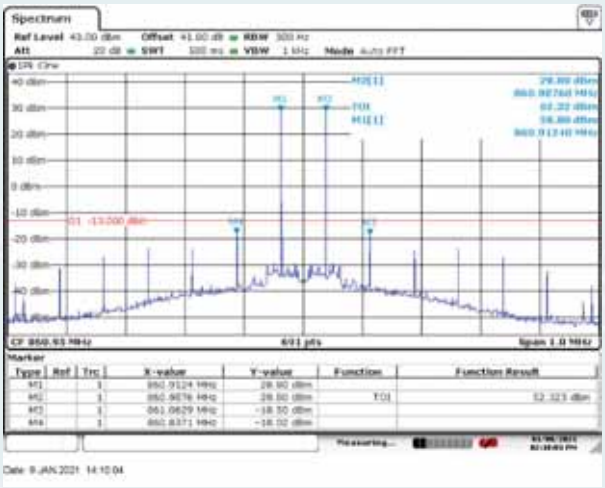
Low Frequency and With the input signal amplitude set 3 dB above the ALC threshold



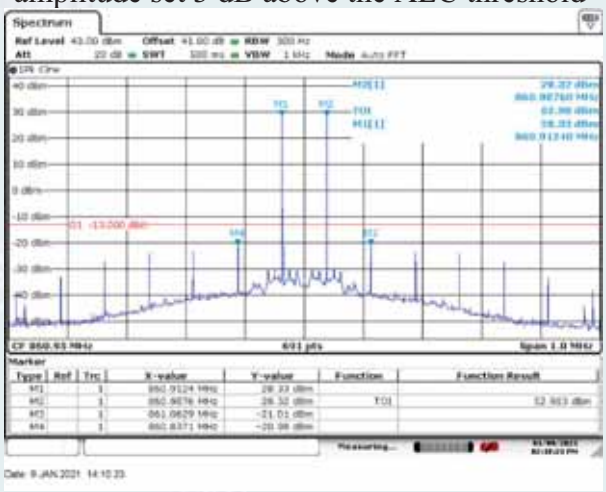
Mid Frequency and With the ALC threshold level



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

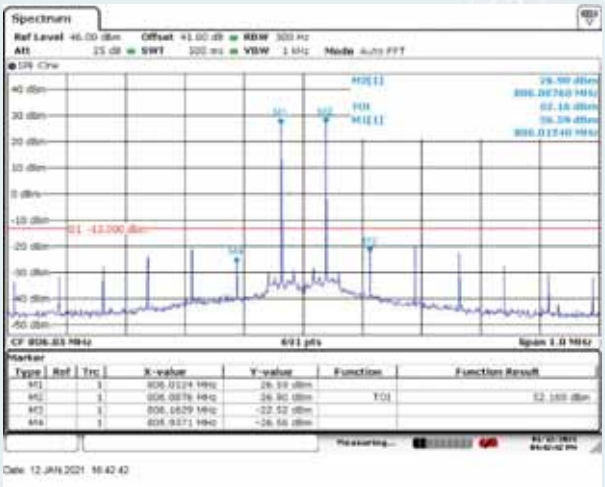


High Frequency and With the ALC threshold level

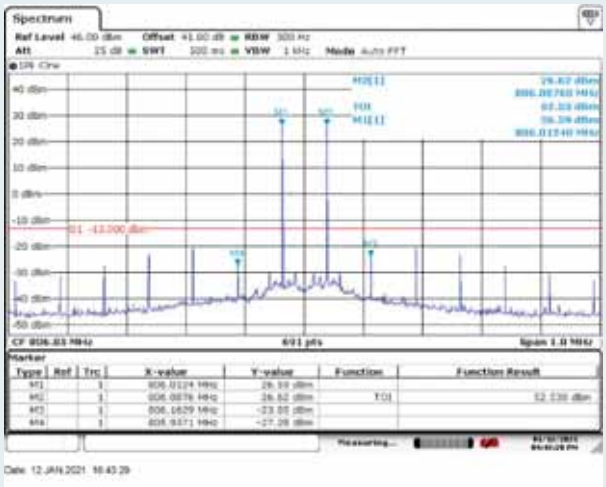


High Frequency and With the input signal amplitude set 3 dB above the ALC threshold

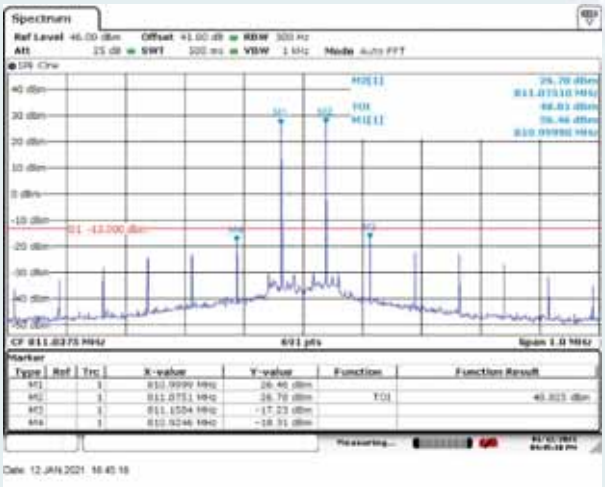
10.8.5.2.2.2Uplink



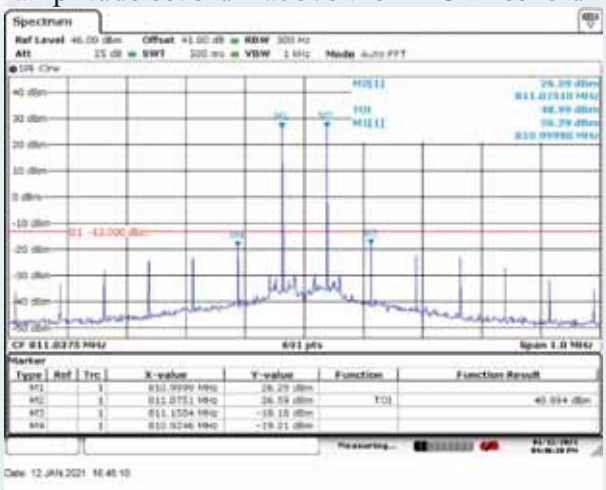
Low Frequency and With the ALC threshold level



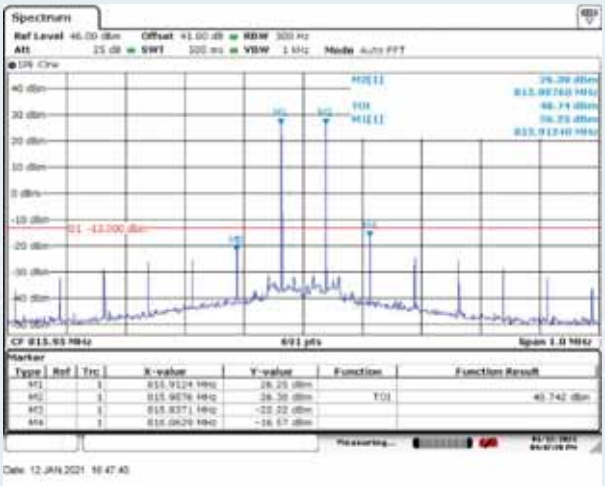
Low Frequency and With the input signal amplitude set 3 dB above the ALC threshold



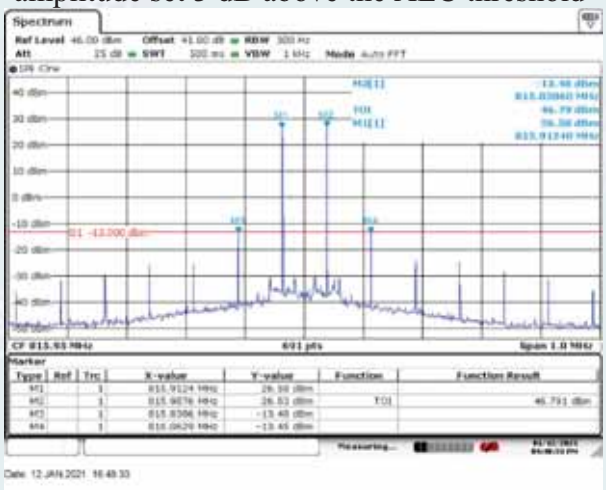
Mid Frequency and With the ALC threshold level



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



High Frequency and With the ALC threshold level



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

10.9 Conducted spurious emissions

Test requirement: KDB 935210 D05 clause 4.7.3
FCC PART 2.1051
FCC PART 90.219 (e)(3)

Test Method: KDB 935210 D05/4.7.3

10.9.1 Limit

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 f_0 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:$43+10*\log_{10} P$ 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;
b) 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).

10.9.2 Test configuration

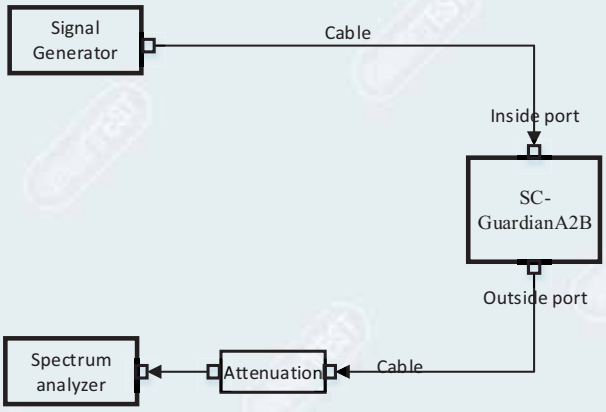


Figure 10.9-1 Downlink connection diagram

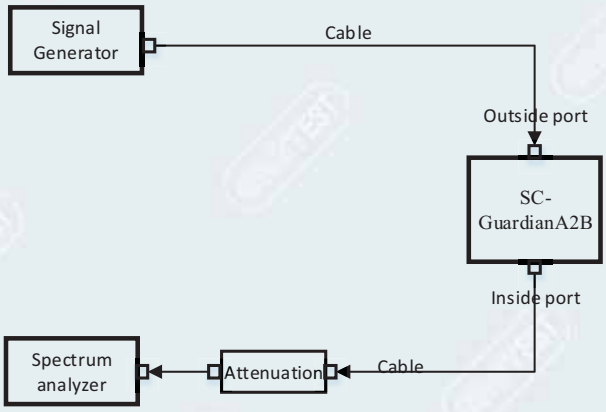


Figure 10.9-2 Uplink connection diagram

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 × 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.)
l) 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($P_{(W)}$)).

10.9.4 Test results

Test Date (yy-mm-dd): 2021-01-13

Normal condition: Temp: 22.8℃, Humid:33%, Atmospheric Pressure:101kpa

Supply Voltage: AC 120V, 60Hz

10.9.4.1 700MHz Band

10.9.4.1.1 Operating frequency range: 758MHz~768MHz/ 788MHz~798MHz

Frequency range		Max. Spurious Limit(dBm)	RBW (kHz)	Max. Spurious mark Level (dBm)	Margin[1*] (dB)	Result
(1) Downlink transmit mode (Frequency range: 758MHz~768MHz)						
frequency 763.0MHz	9kHz~1GHz	-13	100	-41.6	-28.6	PASS
	1GHz~8.6GHz	-13	100	-37.7	-24.7	PASS
(2) Uplink transmit mode(Frequency range: 788MHz~798MHz)						
frequency 793.0MHz	9kHz~1GHz	-13	100	-44.4	-31.4	PASS
	1GHz~8.6GHz	-13	100	-38.2	-25.2	PASS
NOTE :1*--Margin= Maximum mark level- specification limit.						

10.9.4.1.2 Operating frequency range: 769MHz~775MHz/ 799MHz~805MHz

Frequency range		Max. Spurious Limit(dBm)	RBW (kHz)	Max. Spurious mark Level (dBm)	Margin[1*] (dB)	Result
(1) Downlink transmit mode (Frequency range: 769MHz~775MHz)						
frequency 772.0MHz	9kHz~1GHz	-13	100	-40.7	-27.7	PASS
	1GHz~8.6GHz	-13	100	-39.0	-26.0	PASS
(2) Uplink transmit mode(Frequency range: 799MHz~805MHz)						
frequency 802.0MHz	9kHz~1GHz	-13	100	-43.7	-30.7	PASS
	1GHz~8.6GHz	-13	100	-38.4	-25.4	PASS
NOTE :1*--Margin= Maximum mark level- specification limit.						

10.9.4.2 800MHz Band

Frequency 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 856.0MHz	9kHz~1GHz	-13	100	-44.1	-31.1	PASS

	1GHz~8.6GHz	-13	100	-36.4	-23.4	PASS
(2) Uplink transmit mode(Frequency range: 806MHz~816MHz)						
frequency 811.0MHz	9kHz~1GHz	-13	100	-41.9	-28.9	PASS
	1GHz~8.6GHz	-13	100	-37.1	-24.1	PASS
NOTE :1*--Margin= Maximum mark level- specification limit.						

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)

Test Method: KDB 935210 D05/4.8
FCC PART 2 1055(b)

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.

Table 10.10-1 Frequency stability limits

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

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

10.10.2 Test configuration

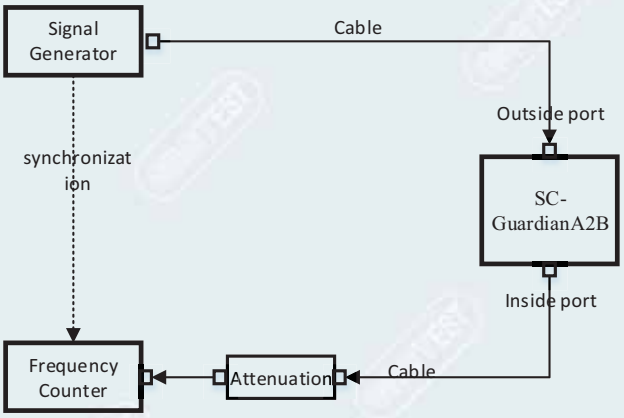


Figure 10.10-1 Downlink connection diagram

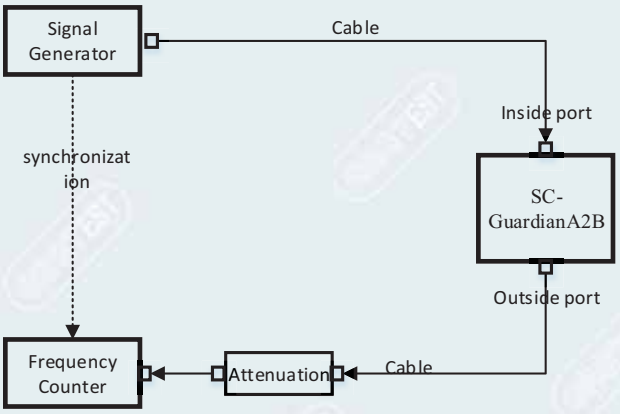


Figure 10.10-2 Uplink connection diagram

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.

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:

a) 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 ±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.

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a) 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 ±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 range limits by manufacturer's declare: AC 100~240V, 50Hz~60Hz, and typical working voltage: AC 120V, 50/60Hz.

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

10.10.4 Test results

Test Date (yy-mm-dd): 2021-01-12

Normal condition: Temp: 23.1℃, Humid:36%, Atmospheric Pressure:101kpa

Extreme test conditions:

Temp range: -20℃~+50℃ Test Date: 2021-01-18

10.10.4.1 The center frequency is 763MHz

Temperature (℃)	Voltage	Intput carrier Frequency (MHz)	Output carrier Frequency (MHz)	Limit (ppm)	Frequency stability (ppm)	Result
-20	AC 102V(120*85%)	763.0	763.0000008	±2.5	0.0010	PASS
	AC 120V	763.0	763.0000011	±2.5	0.0014	PASS
	AC 138V(120*115%)	763.0	763.0000006	±2.5	0.0008	PASS
-10	AC 102V(120*85%)	763.0	763.0000006	±2.5	0.0008	PASS
	AC 120V	763.0	763.0000006	±2.5	0.0008	PASS
	AC 138V(120*115%)	763.0	763.0000005	±2.5	0.0007	PASS
0	AC 102V(120*85%)	763.0	763.0000007	±2.5	0.0009	PASS
	AC 120V	763.0	763.0000008	±2.5	0.0010	PASS
	AC 138V(120*115%)	763.0	763.0000005	±2.5	0.0007	PASS
10	AC 102V(120*85%)	763.0	763.0000006	±2.5	0.0008	PASS
	AC 120V	763.0	763.0000005	±2.5	0.0007	PASS
	AC 138V(120*115%)	763.0	763.0000007	±2.5	0.0009	PASS
20	AC 102V(120*85%)	763.0	763.0000007	±2.5	0.0009	PASS
	AC 120V	763.0	763.0000005	±2.5	0.0007	PASS
	AC 138V(120*115%)	763.0	762.9999996	±2.5	-0.0005	PASS
30	AC 102V(120*85%)	763.0	763.0000006	±2.5	0.0008	PASS
	AC 120V	763.0	763.0000007	±2.5	0.0009	PASS
	AC 138V(120*115%)	763.0	763.0000008	±2.5	0.0010	PASS
40	AC 102V(120*85%)	763.0	763.0000005	±2.5	0.0007	PASS
	AC 120V	763.0	763.0000007	±2.5	0.0009	PASS
	AC 138V(120*115%)	763.0	763.0000008	±2.5	0.0010	PASS
50	AC 102V(120*85%)	763.0	763.0000007	±2.5	0.0009	PASS
	AC 120V	763.0	763.0000006	±2.5	0.0008	PASS
	AC 138V(120*115%)	763.0	762.9999995	±2.5	-0.0007	PASS
NOTE: The test result is accurate to 4 decimal places.						

10.10.4.2 The center frequency is 772MHz

Temperature (℃)	Voltage	Intput carrier Frequency (MHz)	Output carrier Frequency (MHz)	Limit (ppm)	Frequency stability (ppm)	Result
-20	AC 102V(120*85%)	772.0	772.0000011	±1.5	0.0014	PASS
	AC 120V	772.0	772.0000009	±1.5	0.0012	PASS
	AC 138V(120*115%)	772.0	772.0000005	±1.5	0.0006	PASS
-10	AC 102V(120*85%)	772.0	772.0000007	±1.5	0.0009	PASS
	AC 120V	772.0	772.0000005	±1.5	0.0006	PASS
	AC 138V(120*115%)	772.0	772.0000009	±1.5	0.0012	PASS
0	AC 102V(120*85%)	772.0	772.0000006	±1.5	0.0008	PASS
	AC 120V	772.0	772.0000007	±1.5	0.0009	PASS
	AC 138V(120*115%)	772.0	772.0000005	±1.5	0.0006	PASS
10	AC 102V(120*85%)	772.0	772.0000008	±1.5	0.0010	PASS
	AC 120V	772.0	772.0000006	±1.5	0.0008	PASS
	AC 138V(120*115%)	772.0	772.0000007	±1.5	0.0009	PASS
20	AC 102V(120*85%)	772.0	772.0000006	±1.5	0.0008	PASS
	AC 120V	772.0	772.0000008	±1.5	0.0010	PASS
	AC 138V(120*115%)	772.0	772.0000006	±1.5	0.0008	PASS
30	AC 102V(120*85%)	772.0	772.0000007	±1.5	0.0009	PASS
	AC 120V	772.0	772.0000006	±1.5	0.0008	PASS
	AC 138V(120*115%)	772.0	772.0000009	±1.5	0.0012	PASS
40	AC 102V(120*85%)	772.0	772.0000008	±1.5	0.0010	PASS
	AC 120V	772.0	772.0000010	±1.5	0.0014	PASS
	AC 138V(120*115%)	772.0	772.0000006	±1.5	0.0008	PASS
50	AC 102V(120*85%)	772.0	772.0000007	±1.5	0.0009	PASS
	AC 120V	772.0	772.0000014	±1.5	0.0018	PASS
	AC 138V(120*115%)	772.0	772.0000009	±1.5	0.0012	PASS
NOTE: The test result is accurate to 4 decimal places.						

10.10.4.3 The center frequency is 856MHz

Temperature (℃)	Voltage	Intput carrier Frequency (MHz)	Output carrier Frequency (MHz)	Limit (ppm)	Frequency stability (ppm)	Result
-20	AC 102V(120*85%)	856.0	856.0000008	±1.0	0.0009	PASS
	AC 120V	856.0	856.0000007	±1.0	0.0008	PASS
	AC 138V(120*115%)	856.0	856.0000012	±1.0	0.0014	PASS
-10	AC 102V(120*85%)	856.0	855.9999991	±1.0	-0.0011	PASS
	AC 120V	856.0	856.0000008	±1.0	0.0009	PASS
	AC 138V(120*115%)	856.0	856.0000008	±1.0	0.0009	PASS
0	AC 102V(120*85%)	856.0	856.0000007	±1.0	0.0008	PASS
	AC 120V	856.0	856.0000005	±1.0	0.0006	PASS
	AC 138V(120*115%)	856.0	856.0000006	±1.0	0.0007	PASS
10	AC 102V(120*85%)	856.0	856.0000008	±1.0	0.0009	PASS
	AC 120V	856.0	856.0000008	±1.0	0.0009	PASS
	AC 138V(120*115%)	856.0	856.0000006	±1.0	0.0007	PASS
20	AC 102V(120*85%)	856.0	856.0000006	±1.0	0.0007	PASS
	AC 120V	856.0	855.9999992	±1.0	-0.0009	PASS
	AC 138V(120*115%)	856.0	856.0000008	±1.0	0.0009	PASS
30	AC 102V(120*85%)	856.0	856.0000005	±1.0	0.0006	PASS
	AC 120V	856.0	856.0000004	±1.0	0.0005	PASS
	AC 138V(120*115%)	856.0	856.0000006	±1.0	0.0007	PASS
40	AC 102V(120*85%)	856.0	856.0000007	±1.0	0.0008	PASS
	AC 120V	856.0	856.0000006	±1.0	0.0007	PASS
	AC 138V(120*115%)	856.0	856.0000009	±1.0	0.0011	PASS
50	AC 102V(120*85%)	856.0	856.0000009	±1.0	0.0011	PASS
	AC 120V	856.0	856.0000006	±1.0	0.0007	PASS
	AC 138V(120*115%)	856.0	856.0000009	±1.0	0.0011	PASS
NOTE: The test result is accurate to 4 decimal places.						

10.10.4.4 The center frequency is 793MHz

Temperature (℃)	Voltage	Intput carrier Frequency (MHz)	Output carrier Frequency (MHz)	Limit (ppm)	Frequency stability (ppm)	Result
-20	AC 102V(120*85%)	793.0	792.9999995	±2.5	-0.0006	PASS
	AC 120V	793.0	793.0000010	±2.5	0.0013	PASS
	AC 138V(120*115%)	793.0	793.0000009	±2.5	0.0011	PASS
-10	AC 102V(120*85%)	793.0	792.9999994	±2.5	-0.0008	PASS
	AC 120V	793.0	792.9999994	±2.5	-0.0008	PASS
	AC 138V(120*115%)	793.0	793.0000004	±2.5	0.0005	PASS
0	AC 102V(120*85%)	793.0	793.0000005	±2.5	0.0006	PASS
	AC 120V	793.0	793.0000007	±2.5	0.0009	PASS
	AC 138V(120*115%)	793.0	793.0000006	±2.5	0.0008	PASS
10	AC 102V(120*85%)	793.0	793.0000009	±2.5	0.0011	PASS
	AC 120V	793.0	793.0000011	±2.5	0.0014	PASS
	AC 138V(120*115%)	793.0	793.0000008	±2.5	0.0010	PASS
20	AC 102V(120*85%)	793.0	792.9999991	±2.5	-0.0011	PASS
	AC 120V	793.0	793.0000009	±2.5	0.0011	PASS
	AC 138V(120*115%)	793.0	792.9999993	±2.5	-0.0009	PASS
30	AC 102V(120*85%)	793.0	793.0000007	±2.5	0.0009	PASS
	AC 120V	793.0	792.9999995	±2.5	-0.0006	PASS
	AC 138V(120*115%)	793.0	793.0000004	±2.5	0.0005	PASS
40	AC 102V(120*85%)	793.0	793.0000005	±2.5	0.0006	PASS
	AC 120V	793.0	793.0000008	±2.5	0.0010	PASS
	AC 138V(120*115%)	793.0	793.0000006	±2.5	0.0008	PASS
50	AC 102V(120*85%)	793.0	793.0000010	±2.5	0.0013	PASS
	AC 120V	793.0	793.0000006	±2.5	0.0008	PASS
	AC 138V(120*115%)	793.0	793.0000006	±2.5	0.0008	PASS
NOTE: The test result is accurate to 4 decimal places.						

10.10.4.5 The center frequency is 802MHz

Temperature (℃)	Voltage	Intput carrier Frequency (MHz)	Output carrier Frequency (MHz)	Limit (ppm)	Frequency stability (ppm)	Result
-20	AC 102V(120*85%)	802.0	802.0000011	±1.5	0.0014	PASS
	AC 120V	802.0	802.0000008	±1.5	0.0010	PASS
	AC 138V(120*115%)	802.0	802.0000006	±1.5	0.0007	PASS
-10	AC 102V(120*85%)	802.0	802.0000011	±1.5	0.0014	PASS
	AC 120V	802.0	802.0000009	±1.5	0.0011	PASS
	AC 138V(120*115%)	802.0	802.0000009	±1.5	0.0011	PASS
0	AC 102V(120*85%)	802.0	802.0000007	±1.5	0.0009	PASS
	AC 120V	802.0	802.0000006	±1.5	0.0007	PASS
	AC 138V(120*115%)	802.0	802.0000009	±1.5	0.0011	PASS
10	AC 102V(120*85%)	802.0	802.0000012	±1.5	0.0015	PASS
	AC 120V	802.0	802.0000007	±1.5	0.0009	PASS
	AC 138V(120*115%)	802.0	802.0000008	±1.5	0.0010	PASS
20	AC 102V(120*85%)	802.0	802.0000011	±1.5	0.0014	PASS
	AC 120V	802.0	802.0000008	±1.5	0.0010	PASS
	AC 138V(120*115%)	802.0	802.0000006	±1.5	0.0007	PASS
30	AC 102V(120*85%)	802.0	802.0000004	±1.5	0.0005	PASS
	AC 120V	802.0	801.9999996	±1.5	-0.0005	PASS
	AC 138V(120*115%)	802.0	801.9999995	±1.5	-0.0006	PASS
40	AC 102V(120*85%)	802.0	802.0000007	±1.5	0.0009	PASS
	AC 120V	802.0	802.0000008	±1.5	0.0010	PASS
	AC 138V(120*115%)	802.0	802.0000008	±1.5	0.0010	PASS
50	AC 102V(120*85%)	802.0	802.0000005	±1.5	0.0006	PASS
	AC 120V	802.0	802.0000008	±1.5	0.0010	PASS
	AC 138V(120*115%)	802.0	802.0000007	±1.5	0.0009	PASS
NOTE: The test result is accurate to 4 decimal places.						

10.10.4.6 The center frequency is 811MHz

Temperature (℃)	Voltage	Intput carrier Frequency (MHz)	Output carrier Frequency (MHz)	Limit (ppm)	Frequency stability (ppm)	Result
-20	AC 102V(120*85%)	811.0	811.0000007	±1.0	0.0009	PASS
	AC 120V	811.0	811.0000008	±1.0	0.0010	PASS
	AC 138V(120*115%)	811.0	811.0000007	±1.0	0.0009	PASS
-10	AC 102V(120*85%)	811.0	811.0000007	±1.0	0.0009	PASS
	AC 120V	811.0	811.0000005	±1.0	0.0006	PASS
	AC 138V(120*115%)	811.0	811.0000009	±1.0	0.0011	PASS
0	AC 102V(120*85%)	811.0	811.0000006	±1.0	0.0007	PASS
	AC 120V	811.0	811.0000009	±1.0	0.0011	PASS
	AC 138V(120*115%)	811.0	811.0000007	±1.0	0.0009	PASS
10	AC 102V(120*85%)	811.0	811.0000011	±1.0	0.0014	PASS
	AC 120V	811.0	811.0000009	±1.0	0.0011	PASS
	AC 138V(120*115%)	811.0	811.0000007	±1.0	0.0009	PASS
20	AC 102V(120*85%)	811.0	811.0000006	±1.0	0.0007	PASS
	AC 120V	811.0	810.9999991	±1.0	-0.0011	PASS
	AC 138V(120*115%)	811.0	811.0000013	±1.0	0.0016	PASS
30	AC 102V(120*85%)	811.0	811.0000010	±1.0	0.0012	PASS
	AC 120V	811.0	811.0000005	±1.0	0.0006	PASS
	AC 138V(120*115%)	811.0	811.0000004	±1.0	0.0005	PASS
40	AC 102V(120*85%)	811.0	811.0000007	±1.0	0.0009	PASS
	AC 120V	811.0	811.0000006	±1.0	0.0007	PASS
	AC 138V(120*115%)	811.0	811.0000009	±1.0	0.0011	PASS
50	AC 102V(120*85%)	811.0	811.0000009	±1.0	0.0011	PASS
	AC 120V	811.0	811.0000007	±1.0	0.0009	PASS
	AC 138V(120*115%)	811.0	811.0000010	±1.0	0.0012	PASS
NOTE: The test result is accurate to 4 decimal places.						

10.10.5Test scenarios(Apply normal voltage at normal temperature +20℃ only)

Test frequency: 763MHz

Test frequency: 793MHz

Test frequency: 772MHz

Test frequency: 802MHz

Test frequency: 856MHz

Test frequency: 811MHz

10.11 Radiated spurious emissions

Test requirement:	KDB 935210 D05 clause 4.9 FCC PART 2.1053 FCC PART 90.219 (e)(3)
Test Method:	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.

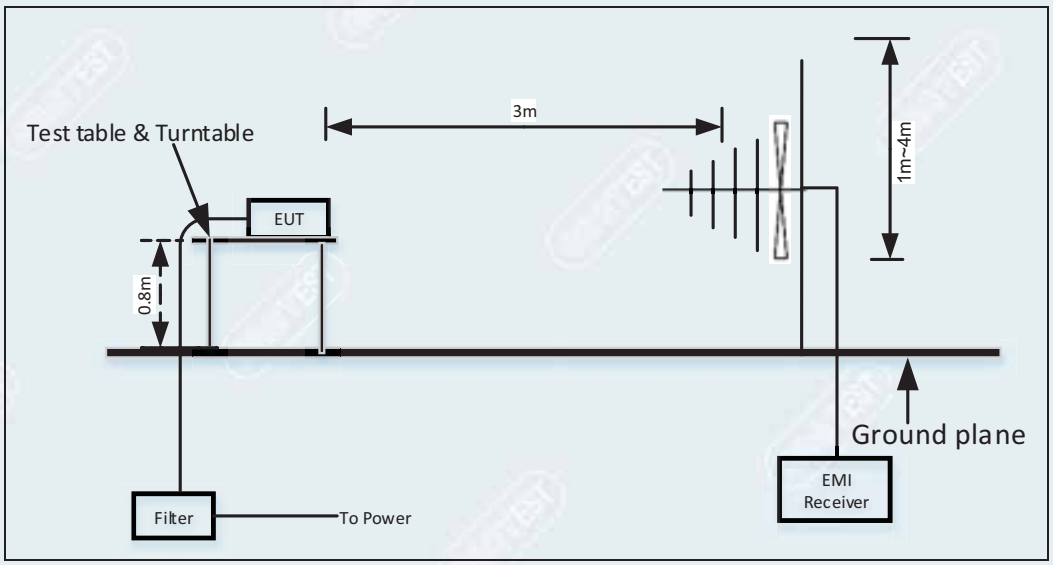
[39 FR 5919, Feb. 15, 1974. Redesignated and amended at 63 FR 36599, July 7, 1998]

According to FCC 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.

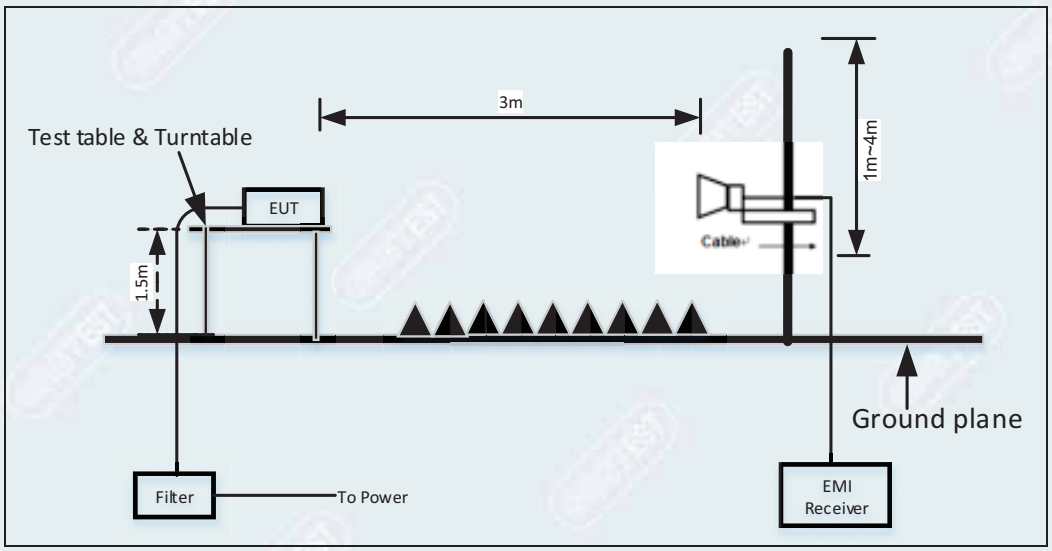
Spurious emissions of zone enhancers shall be suppressed as much as possible, Any emissions must be attenuated below the power (P) of the highest emissions contained within the authorized, by at least: $43+10*\log_{10} P$ or 70dB, whichever is less stringent, where P is the total RF output power of the test tones in Watts. Since $43+10*\log_{10} P$ is less stringent than 70dB, that limit was used.

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 or received 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 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 produce

(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.

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.

10.11.4 Test results

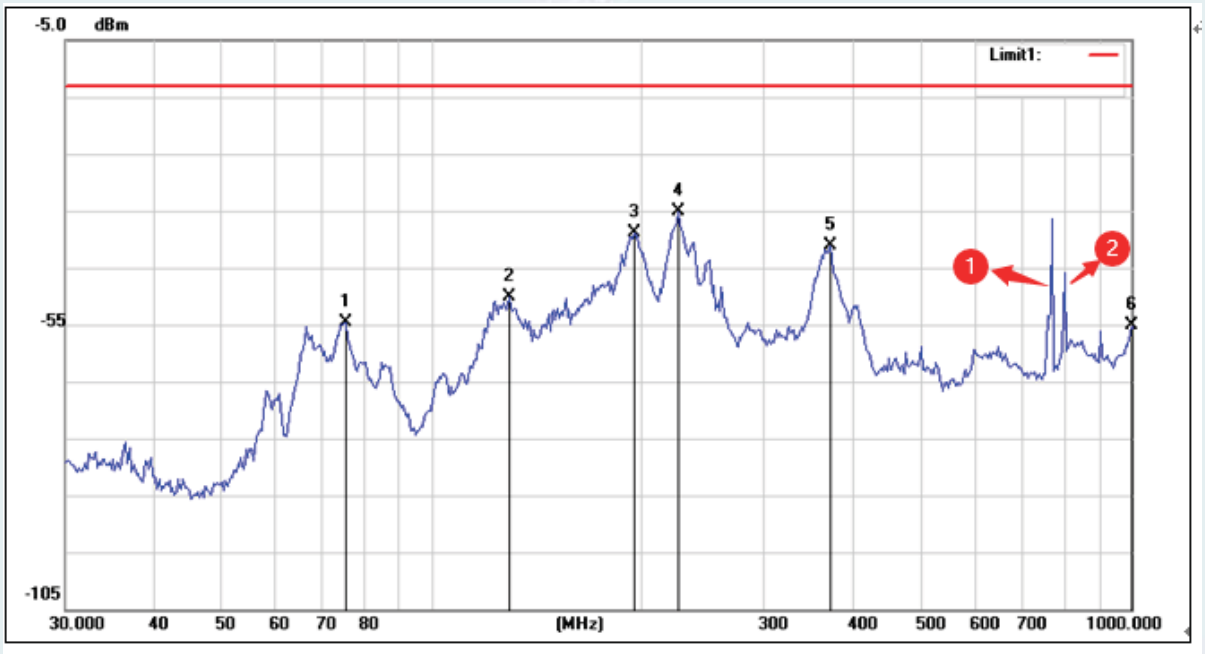
10.11.4.1 700MHz Band

10.11.4.1.1 Downlink

10.11.4.1.1.1 Below 1GHz

10.11.4.1.1.1.1 Polarization type: Horizontal

Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	10:53:13
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	TX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Downlink: 763MHz and 772MHz		

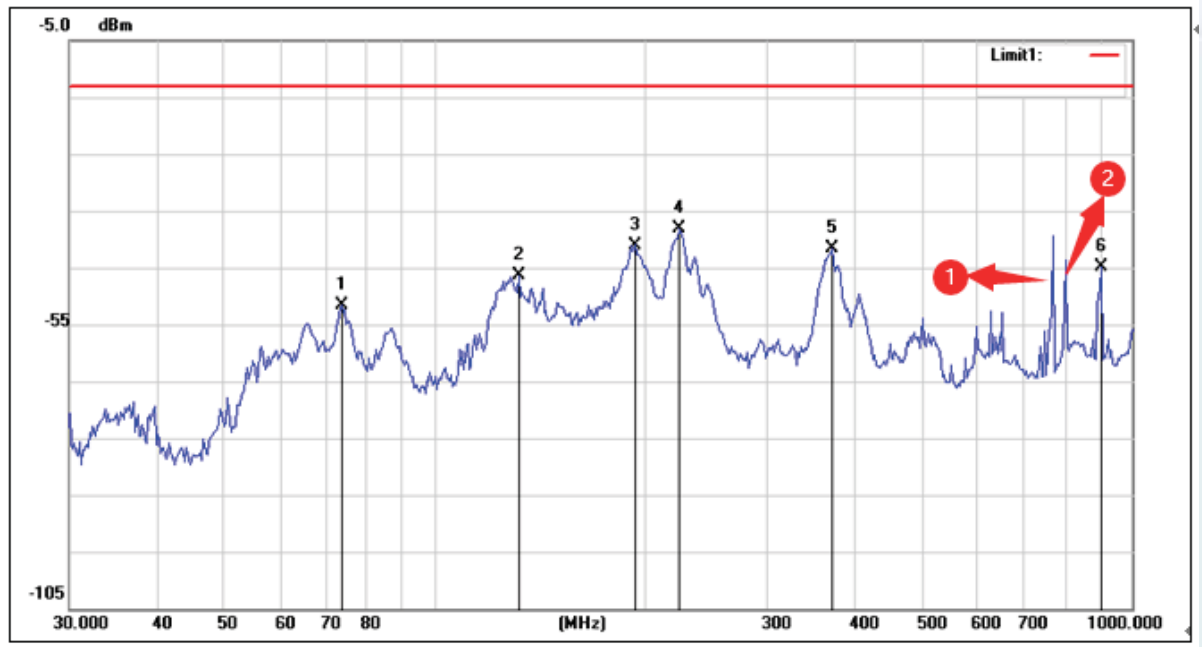


No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	75.3989	-78.49	23.89	-54.60	-13.00	-41.60	peak
2	129.3165	-85.17	34.98	-50.19	-13.00	-37.19	peak
3	194.8998	-75.81	36.93	-38.88	-13.00	-25.88	peak
4	225.5613	-70.94	35.79	-35.15	-13.00	-22.15	peak
5	371.9376	-79.85	38.71	-41.14	-13.00	-28.14	peak
6	1000.0000	-103.96	48.80	-55.16	-13.00	-42.16	peak

Note: 1. In the above figure, ① its frequency is763MHz, ② its frequency is772MHz.
2. When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

10.11.4.1.1.1.2 Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	10:52:24
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	TX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Downlink: 763MHz and 772MHz		



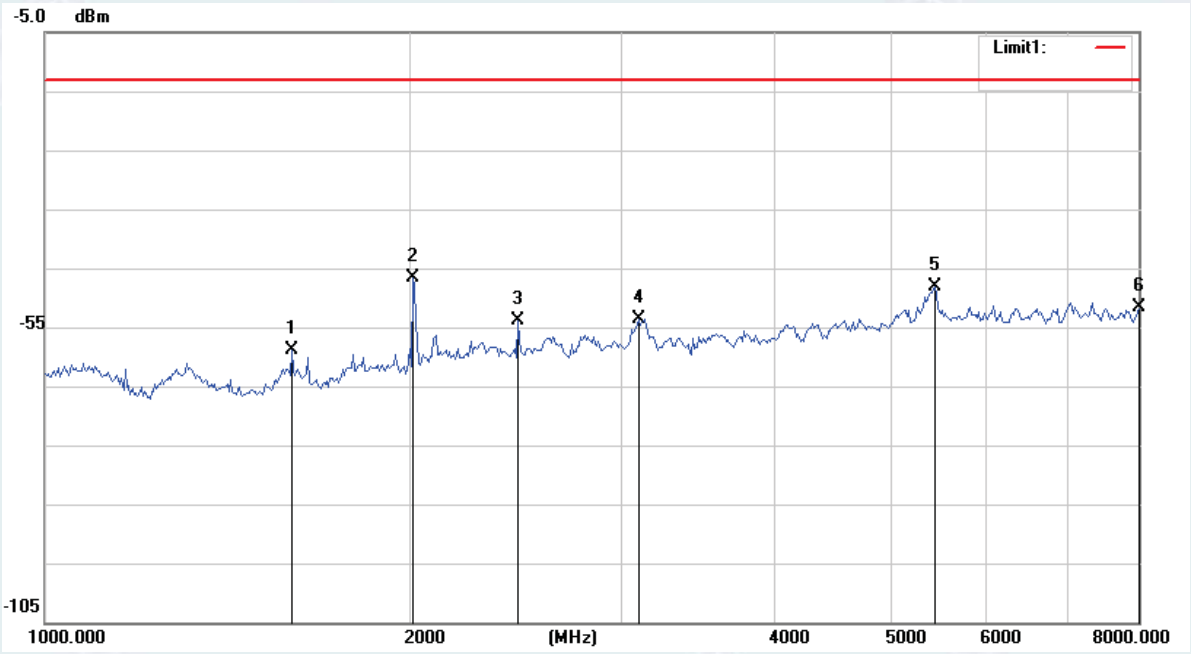
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	73.7229	-75.36	23.68	-51.68	-13.00	-38.68	peak
2	132.2562	-81.83	35.41	-46.42	-13.00	-33.42	peak
3	193.8076	-78.06	37.06	-41.00	-13.00	-28.00	peak
4	224.2973	-73.68	35.58	-38.10	-13.00	-25.10	peak
5	371.9376	-80.36	38.71	-41.65	-13.00	-28.65	peak
6	903.7968	-90.36	45.46	-44.90	-13.00	-31.90	peak

Note: 1. In the above figure, ① its frequency is763MHz, ② its frequency is772MHz.
2. When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

10.11.4.1.1.2 Above 1GHz

10.11.4.1.1.2.1 Polarization type: Horizontal

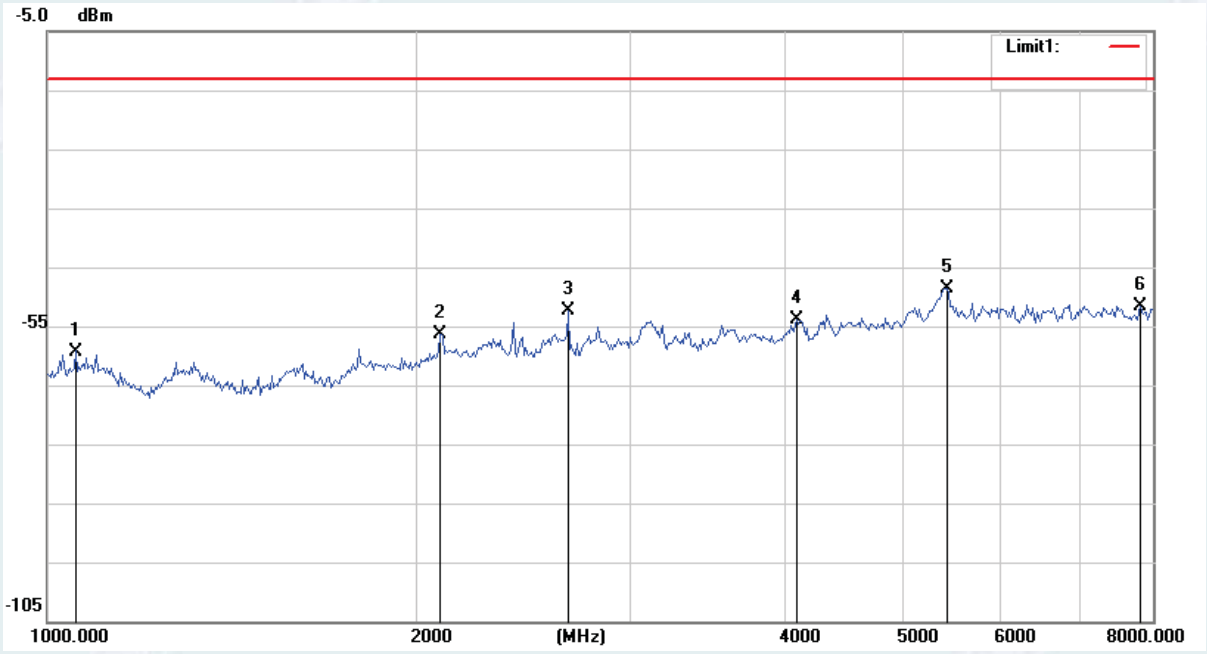
Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:55:12
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	TX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Downlink: 763MHz and 772MHz		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1599.792	-65.92	6.99	-58.93	-13.00	-45.93	peak
2	2013.374	-55.31	8.66	-46.65	-13.00	-33.65	peak
3	2459.009	-64.56	10.71	-53.85	-13.00	-40.85	peak
4	3094.717	-68.85	15.33	-53.52	-13.00	-40.52	peak
5	5435.104	-68.90	20.76	-48.14	-13.00	-35.14	peak
6	8000.000	-71.76	20.20	-51.56	-13.00	-38.56	peak
Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.							

10.11.4.1.1.2.2 Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:56:46
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	TX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Downlink: 763MHz and 772MHz		



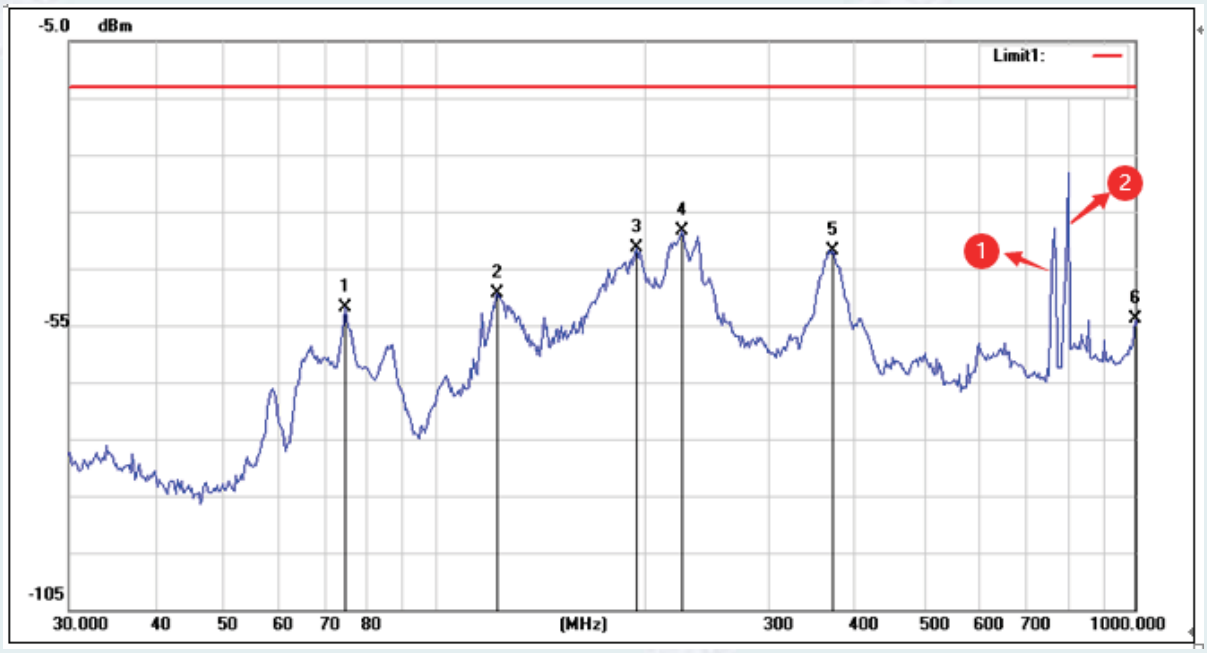
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1054.766	-63.41	4.16	-59.25	-13.00	-46.25	peak
2	2095.519	-67.34	10.90	-56.44	-13.00	-43.44	peak
3	2663.755	-63.93	11.46	-52.47	-13.00	-39.47	peak
4	4094.405	-68.82	14.91	-53.91	-13.00	-40.91	peak
5	5435.104	-69.31	20.76	-48.55	-13.00	-35.55	peak
6	7815.543	-71.43	19.70	-51.73	-13.00	-38.73	peak
Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.							

10.11.4.1.2 Uplink

10.11.4.1.2.1 Below 1GHz

10.11.4.1.2.1.1 Polarization type: Horizontal

Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:08:17
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	RX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Uplink: 793MHz and 802MHz		

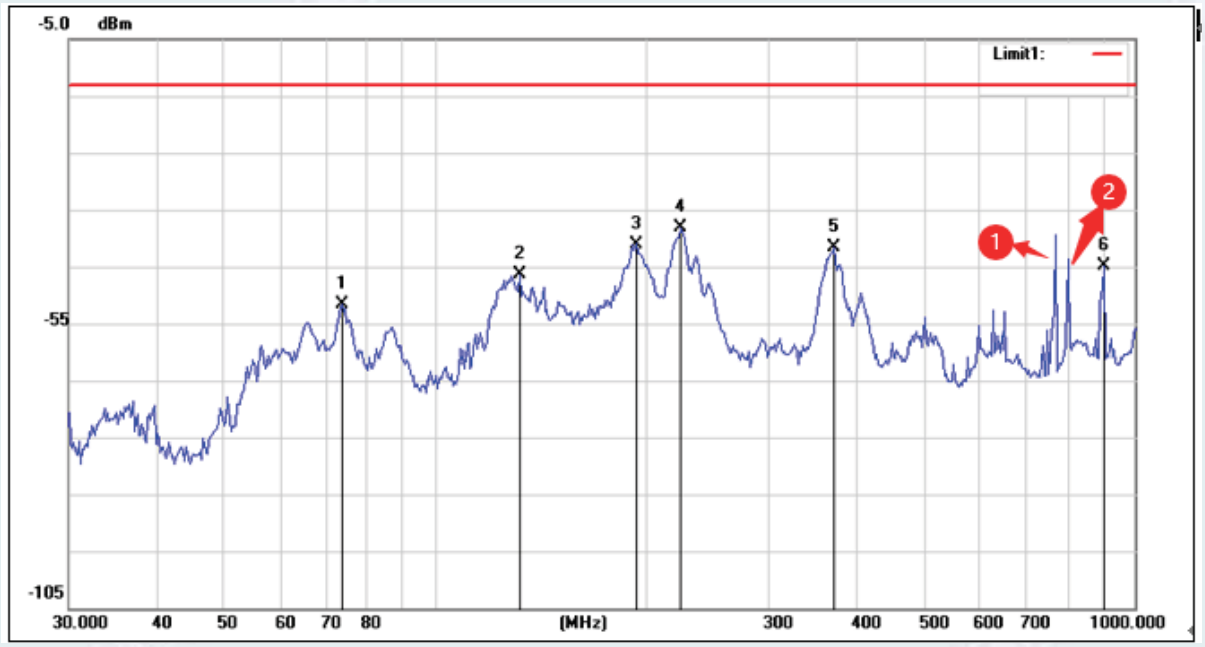


No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	74.5562	-75.65	23.78	-51.87	-13.00	-38.87	peak
2	122.9389	-84.16	34.70	-49.46	-13.00	-36.46	peak
3	193.8076	-78.44	37.06	-41.38	-13.00	-28.38	peak
4	225.5612	-74.09	35.79	-38.30	-13.00	-25.30	peak
5	369.8534	-80.24	38.47	-41.77	-13.00	-28.77	peak
6	1000.0000	-102.67	48.80	-53.87	-13.00	-40.87	peak

Note: 1. In the above figure, ① its frequency is793MHz, ② its frequency is 802MHz.
2. When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

10.11.4.1.2.1.2 Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	10:50:51
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	RX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Uplink: 793MHz and 802MHz		



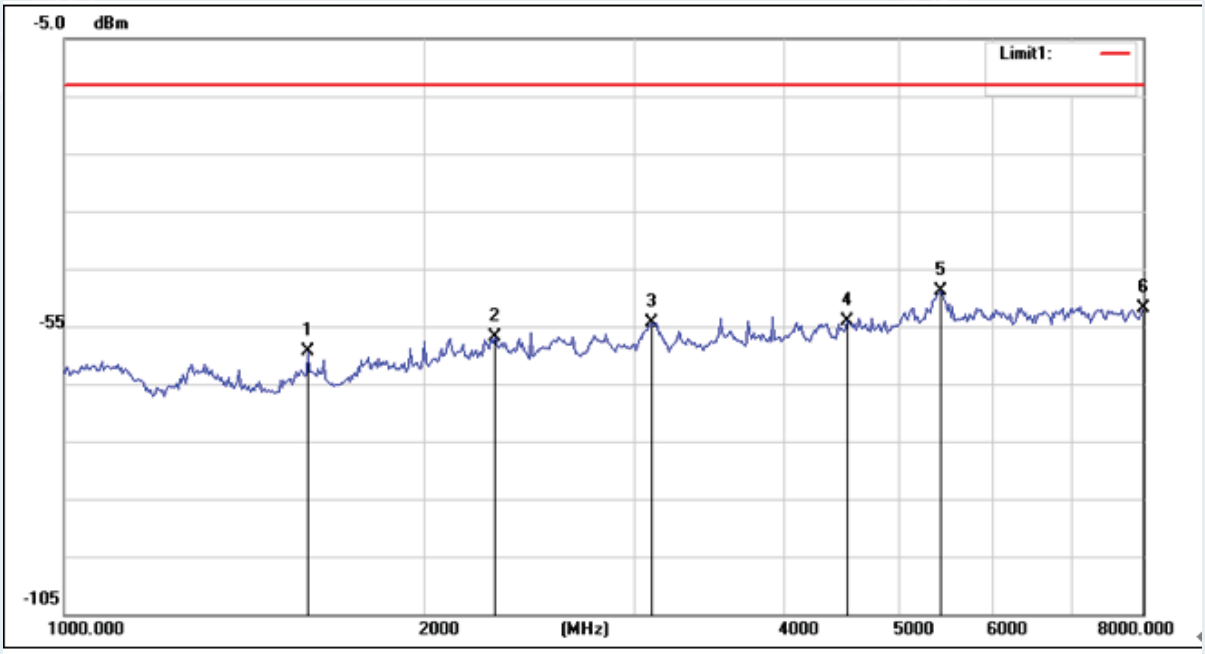
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	73.7229	-75.36	23.68	-51.68	-13.00	-38.68	peak
2	132.2562	-81.83	35.41	-46.42	-13.00	-33.42	peak
3	193.8076	-78.06	37.06	-41.00	-13.00	-28.00	peak
4	224.2973	-73.68	35.58	-38.10	-13.00	-25.10	peak
5	371.9376	-80.36	38.71	-41.65	-13.00	-28.65	peak
6	903.7968	-90.36	45.46	-44.90	-13.00	-31.90	peak

Note: 1. In the above figure, ① its frequency is793MHz, ② its frequency is 802MHz.
2. When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

10.11.4.1.2.2 Above 1GHz

10.11.4.1.2.2.1 Polarization type: Horizontal

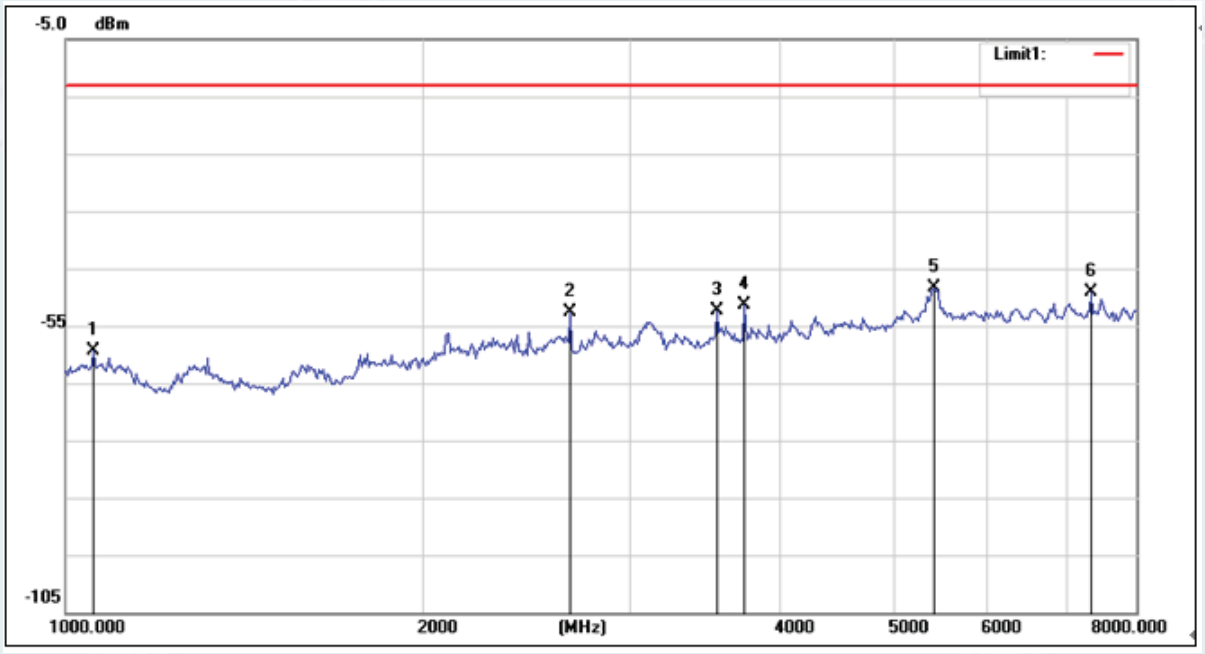
Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:40:59
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	RX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Uplink: 793MHz and 802MHz		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1599.792	-66.36	6.99	-59.37	-13.00	-46.37	peak
2	2292.808	-68.81	12.05	-56.76	-13.00	-43.76	peak
3	3105.048	-69.59	15.33	-54.26	-13.00	-41.26	peak
4	4524.896	-69.05	14.96	-54.09	-13.00	-41.09	peak
5	5417.022	-70.28	21.48	-48.80	-13.00	-35.80	peak
6	8000.000	-72.17	20.20	-51.97	-13.00	-38.97	peak
Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.							

10.11.4.1.2.2.2 Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:38:23
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	RX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Uplink: 793MHz and 802MHz		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1054.766	-63.56	4.16	-59.40	-13.00	-46.40	peak
2	2663.755	-64.12	11.46	-52.66	-13.00	-39.66	peak
3	3547.796	-65.57	13.09	-52.48	-13.00	-39.48	peak
4	3742.095	-64.22	12.82	-51.40	-13.00	-38.40	peak
5	5399.000	-70.55	22.13	-48.42	-13.00	-35.42	peak
6	7336.032	-69.17	20.04	-49.13	-13.00	-36.13	peak
Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.							

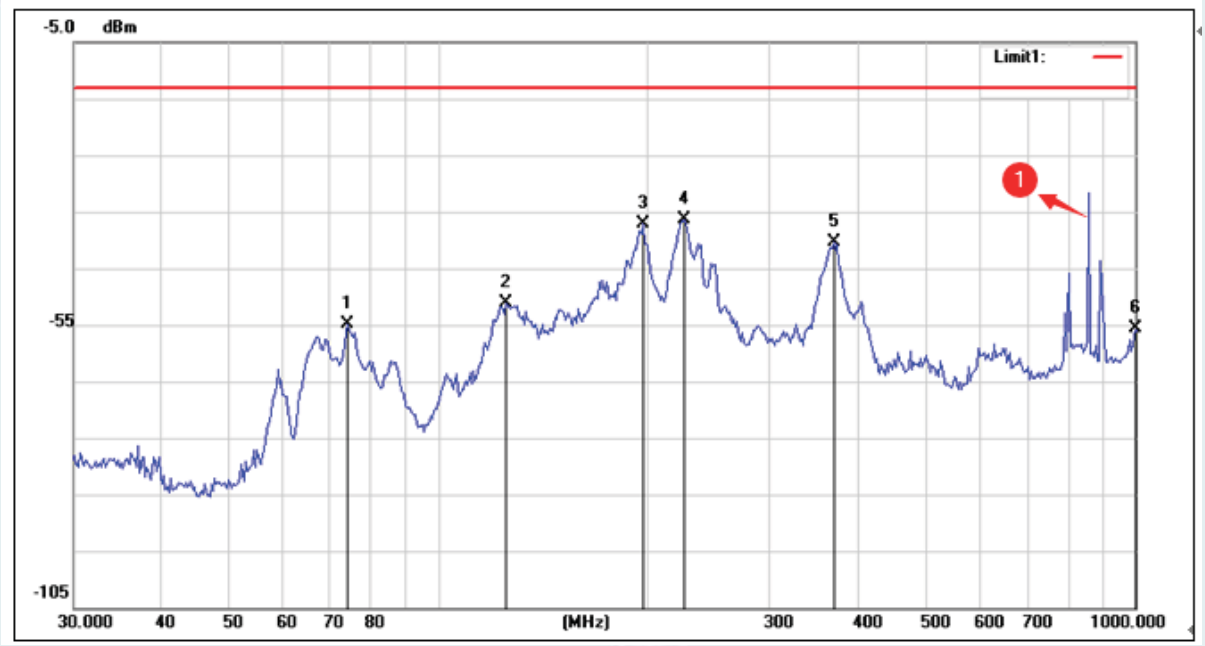
10.11.4.2 800MHz Band

10.11.4.2.1 Downlink

10.11.4.2.1.1 Below 1GHz

10.11.4.2.1.1.1 Polarization type: Horizontal

Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	10:55:41
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	TX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Downlink: 856MHz		

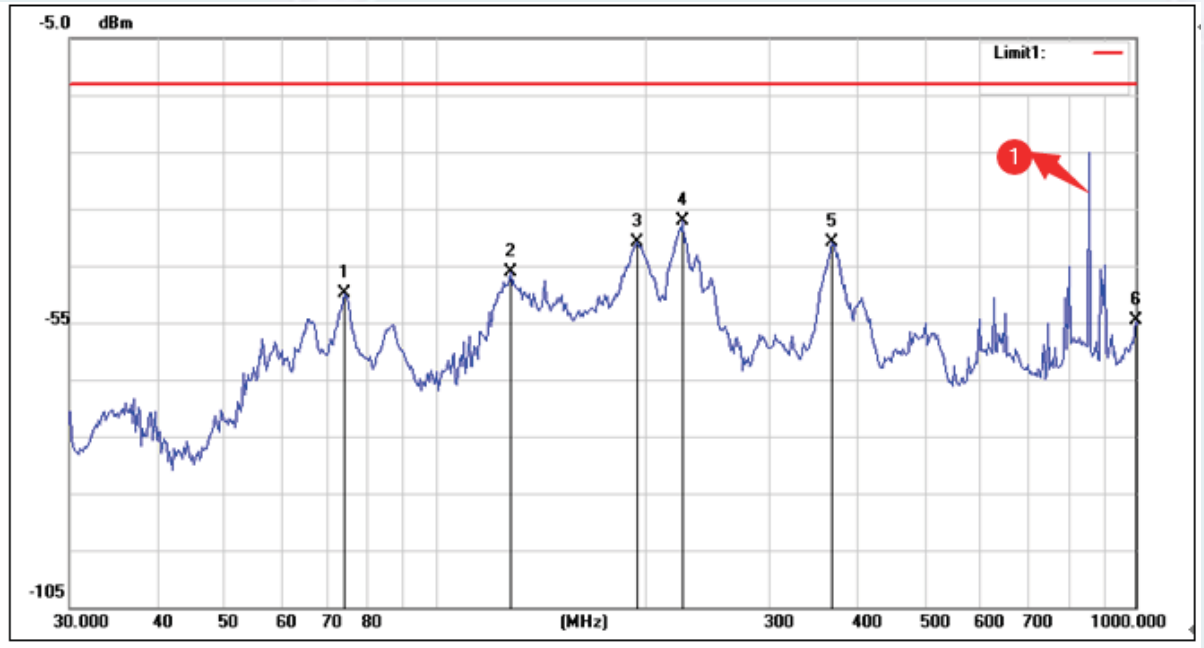


No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	74.1384	-78.58	23.73	-54.85	-13.00	-41.85	peak
2	125.0290	-85.83	34.79	-51.04	-13.00	-38.04	peak
3	197.1024	-73.66	36.64	-37.02	-13.00	-24.02	peak
4	225.5612	-72.08	35.79	-36.29	-13.00	-23.29	peak
5	369.8534	-78.93	38.47	-40.46	-13.00	-27.46	peak
6	1000.0000	-104.39	48.80	-55.59	-13.00	-42.59	peak

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

10.11.4.2.1.1.2 Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	10:59:00
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	TX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Downlink: 856MHz		



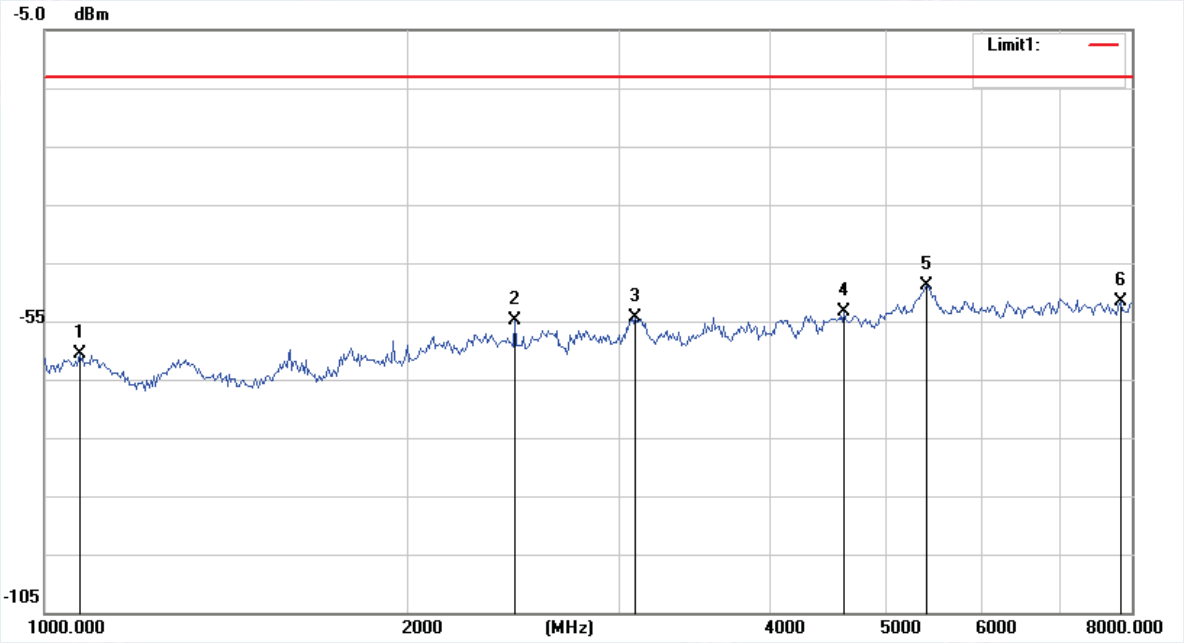
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	74.1384	-73.62	23.73	-49.89	-13.00	-36.89	peak
2	127.8713	-80.91	34.90	-46.01	-13.00	-33.01	peak
3	193.8076	-77.92	37.06	-40.86	-13.00	-27.86	peak
4	225.5613	-72.79	35.79	-37.00	-13.00	-24.00	peak
5	367.7808	-79.13	38.23	-40.90	-13.00	-27.90	peak
6	1000.0000	-103.51	48.80	-54.71	-13.00	-41.71	peak

Note: 1. In the above figure, ① 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.

10.11.4.2.1.2 Above 1GHz

10.11.4.2.1.2.1 Polarization type: Horizontal

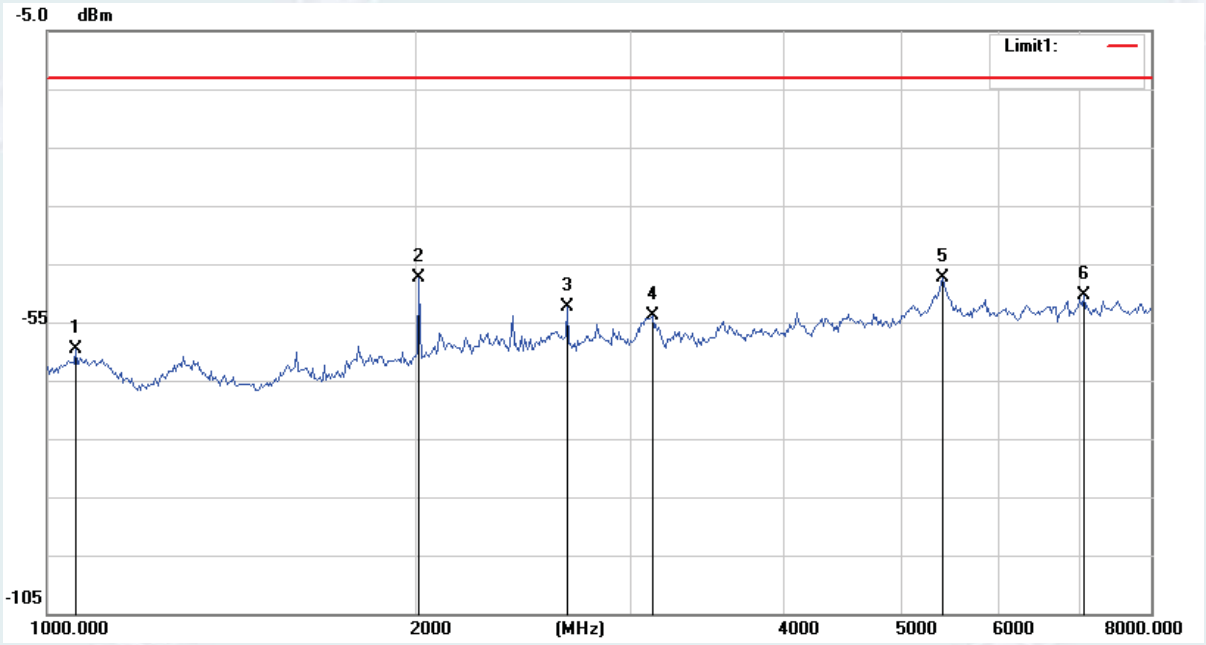
Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:52:50
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	TX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Downlink: 856MHz		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1068.920	-65.16	4.47	-60.69	-13.00	-47.69	peak
2	2459.009	-65.47	10.71	-54.76	-13.00	-41.76	peak
3	3094.717	-69.81	15.33	-54.48	-13.00	-41.48	peak
4	4616.280	-67.92	14.65	-53.27	-13.00	-40.27	peak
5	5399.000	-71.05	22.13	-48.92	-13.00	-35.92	peak
6	7841.632	-71.09	19.42	-51.67	-13.00	-38.67	peak
Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.							

10.11.4.2.1.2.2 Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:50:46
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	TX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Downlink: 856MHz		



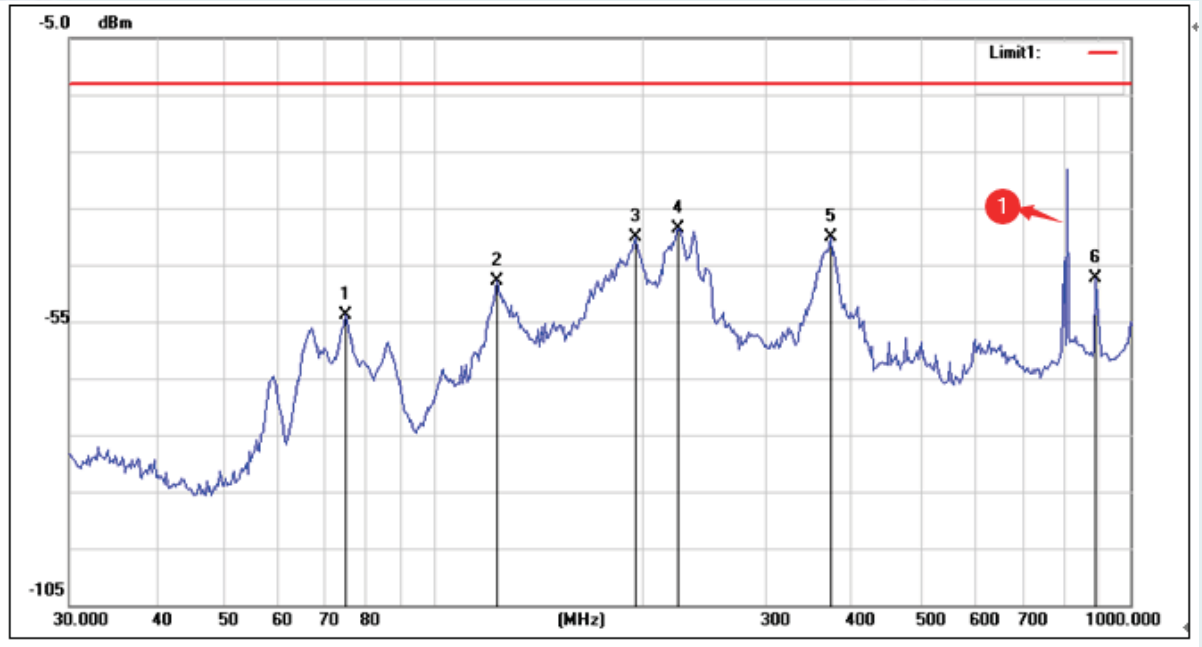
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1054.766	-63.88	4.16	-59.72	-13.00	-46.72	peak
2	2013.374	-55.99	8.66	-47.33	-13.00	-34.33	peak
3	2663.755	-63.75	11.46	-52.29	-13.00	-39.29	peak
4	3125.811	-68.36	14.56	-53.80	-13.00	-40.80	peak
5	5399.000	-69.50	22.13	-47.37	-13.00	-34.37	peak
6	7048.458	-70.63	20.25	-50.38	-13.00	-37.38	peak
Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.							

10.11.4.2.2 Uplink

10.11.4.2.2.1 Below 1GHz

10.11.4.2.2.1.1 Polarization type: Horizontal

Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:05:08
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	RX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Uplink: 811MHz		

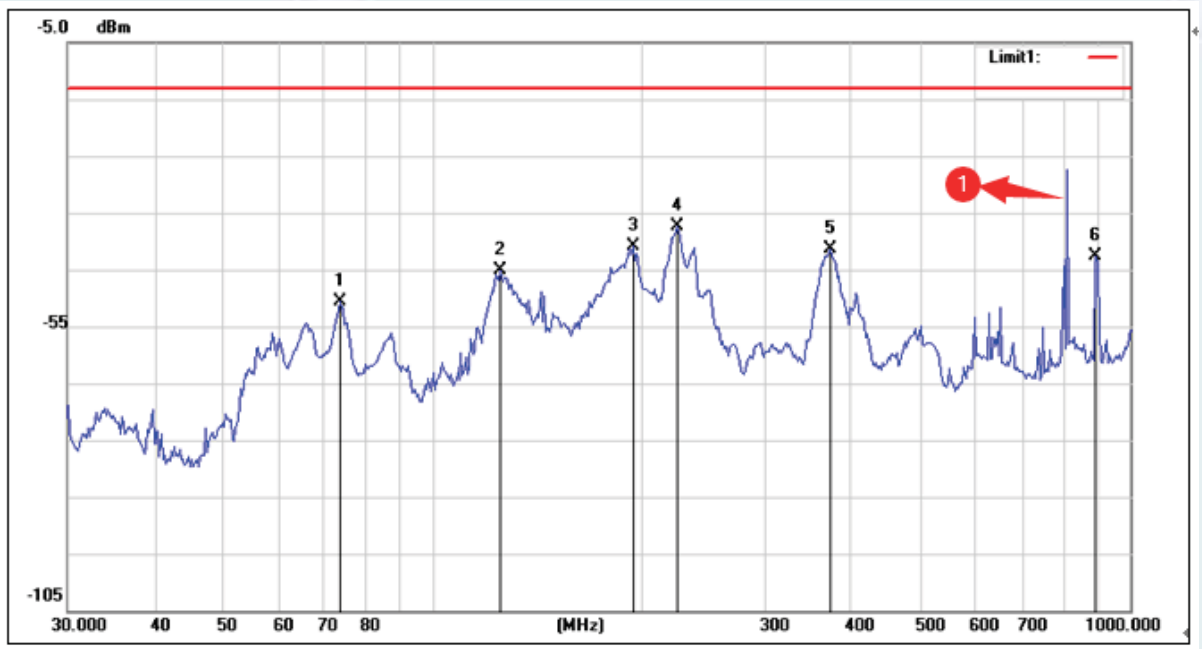


No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	74.9763	-77.81	23.83	-53.98	-13.00	-40.98	peak
2	123.6316	-82.66	34.72	-47.94	-13.00	-34.94	peak
3	194.8997	-77.00	36.93	-40.07	-13.00	-27.07	peak
4	224.2973	-74.13	35.58	-38.55	-13.00	-25.55	peak
5	371.9375	-78.90	38.71	-40.19	-13.00	-27.19	peak
6	893.6959	-92.91	45.43	-47.48	-13.00	-34.48	peak

Note: 1. In the above figure, ① its frequency is 811MHz.
2. When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

10.11.4.2.2.1.2 Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:02:54
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	RX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Uplink: 811MHz		



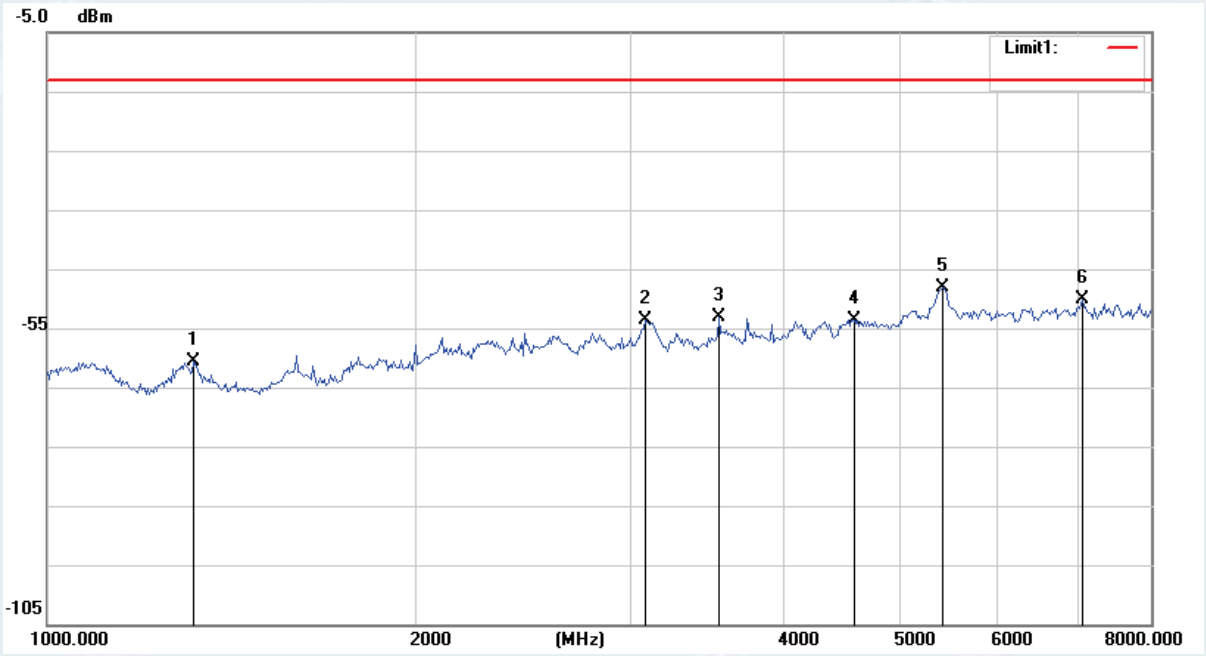
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	73.7229	-74.25	23.68	-50.57	-13.00	-37.57	peak
2	125.0291	-79.81	34.79	-45.02	-13.00	-32.02	peak
3	193.8076	-77.85	37.06	-40.79	-13.00	-27.79	peak
4	224.2973	-72.86	35.58	-37.28	-13.00	-24.28	peak
5	371.9376	-80.09	38.71	-41.38	-13.00	-28.38	peak
6	893.6959	-87.96	45.43	-42.53	-13.00	-29.53	peak

Note: 1. In the above figure, ① its frequency is 811MHz.
2. When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.

10.11.4.2.2.2 Above 1GHz

10.11.4.2.2.2.1 Polarization type: Horizontal

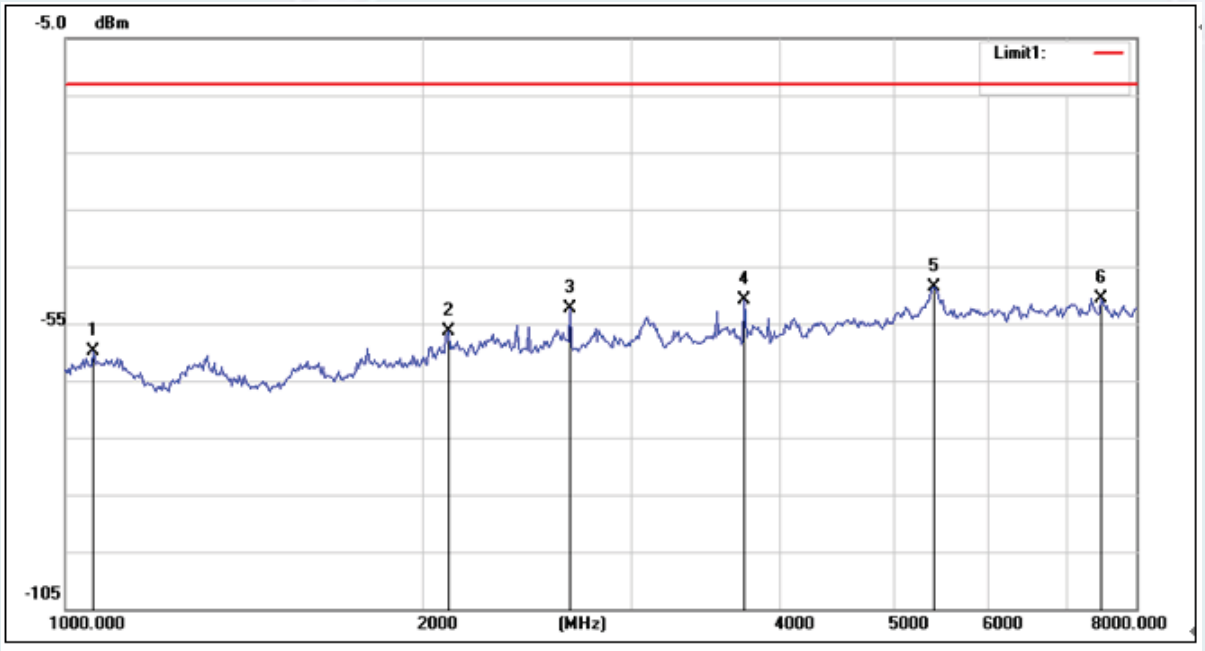
Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:44:16
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	RX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Uplink: 811MHz		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1318.629	-66.20	5.69	-60.51	-13.00	-47.51	peak
2	3084.422	-68.55	14.92	-53.63	-13.00	-40.63	peak
3	3547.796	-66.28	13.09	-53.19	-13.00	-40.19	peak
4	4570.359	-68.36	14.76	-53.60	-13.00	-40.60	peak
5	5399.000	-70.34	22.13	-48.21	-13.00	-35.21	peak
6	7025.009	-70.56	20.33	-50.23	-13.00	-37.23	peak
Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.							

10.11.4.2.2.2.2 Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 120V, 60Hz
Test item:	Radiation spurious emissions	Date:	2021-01-20
Temp.(℃)/Hum.(%RH):	22.6℃/42%RH	Time:	11:46:15
EUT:	In-building 2-Way Emergency Radio Communication Enhancement Booster	Test mode:	RX mode
Model:	SC-GuardianA2B	Distance:	3m
Note:	Uplink: 811MHz		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1054.766	-64.10	4.16	-59.94	-13.00	-46.94	peak
2	2102.514	-67.49	11.00	-56.49	-13.00	-43.49	peak
3	2663.755	-63.91	11.46	-52.45	-13.00	-39.45	peak
4	3742.095	-63.76	12.82	-50.94	-13.00	-37.94	peak
5	5399.000	-70.73	22.13	-48.60	-13.00	-35.60	peak
6	7484.190	-70.75	20.20	-50.55	-13.00	-37.55	peak
Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.							