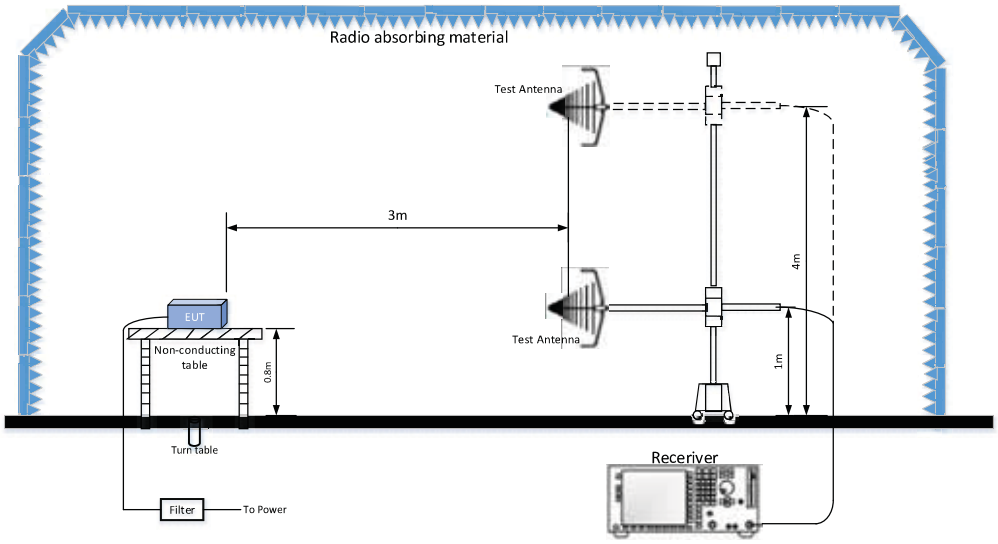
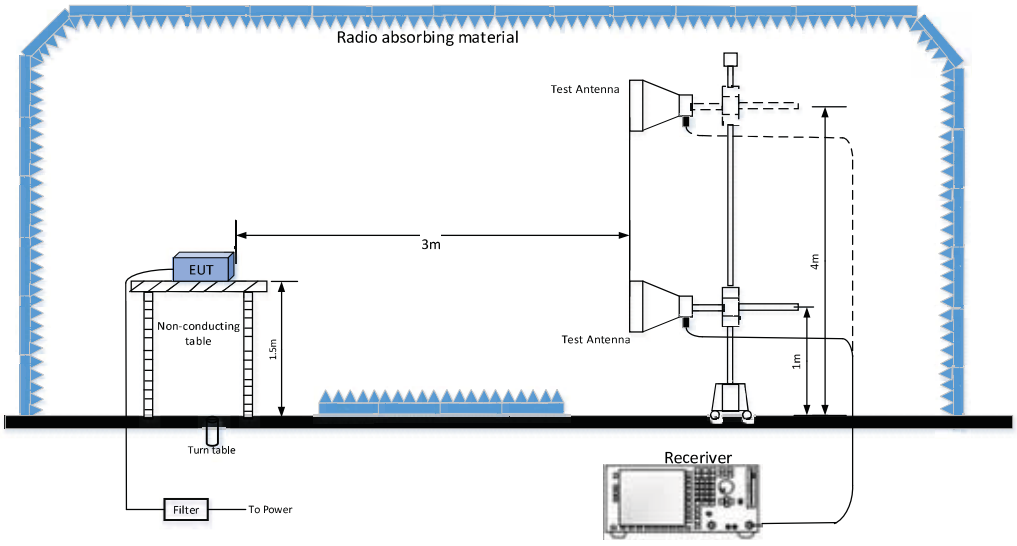
11.11.2. Test configuration

11.11.2.1. Below 1GHz



11.11.2.2. Above 1GHz



11.11.3. Test procedures

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

11.11.3.1. 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 of ANSIC63.26-2015 shows a typical EUT configuration with a wireless device place on a tabletop on an appropriate radiated test site. The measurement antenna shall be placed at the specified distance from the closest point of the EUT. Tabletop devices shall be placed on a RF transparent platform with nominal top

surface dimensions of 1m by 1.5m. Any necessary support equipment shall be placed far enough away from the EUT, such that changes in relative position of the EUT and support equipment do not influence the measured values. If the EUT requires a connection to a server or computer, via control/data cable(s), to exercise the product, then the controlling server or computer may be placed outside of the test area.

11.11.3.2.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.

11.11.3.3.Final radiated emissions testing procedure

(1) Connect the device as illustrated;

(2) Place the EUT in the center of the turntable. The EUT shall be configured to transmit into the standard non-radiating load (for measuring radiated spurious emissions), connected with cables of minimal length unless specified otherwise. If the EUT uses an adjustable antenna, the antenna shall be positioned to the length that produces the worst case emission at the fundamental operating frequency.

(3) Adjust the spectrum analyzer for the following setting;
RBW=100 kHz for spurious emission below 1 GHz, and 1MHz for spurious emission above 1GHz;
VBW=300k for spurious emission below 1GHz, and 3MHz for spurious emission above 1GHz;

(4) Sweep speed slow enough to maintain measurement calibration;

(5) Detector Mode= Positive Peak;

(6) Place the transmitter to be tested on the turntable in the standard test site, or FCC listed site compliant with ANSI C63.4-2001 clause 5.4.The transmitter is transmitting into a non-radiating load that is placed on the turntable, the RF cable to this load should be of minimum length. For transmitters with integral antennas, the tests are to be run with the unit operating into the integral antenna.

(7) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the device. Measurements

shall be made from the lowest radio frequency generated in the device to the tenth harmonic of the carrier, except for the region close to the carrier equal to ±the test bandwidth.

(8) Key the transmitter with normal modulation base the standard.

(9) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Then the turntable should be rotated 360° to determine the maximum reading. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.

(10) Repeat step (9) for each spurious frequency with the test antenna polarized vertically.

(11) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:

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

Where: Pd is the dipole equivalent power and Pg is the generator output power into the substitution antenna. During the test, when the EUT is in Downlink working state, the test radiated emissions is the worst, so the data is recorded.

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

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

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

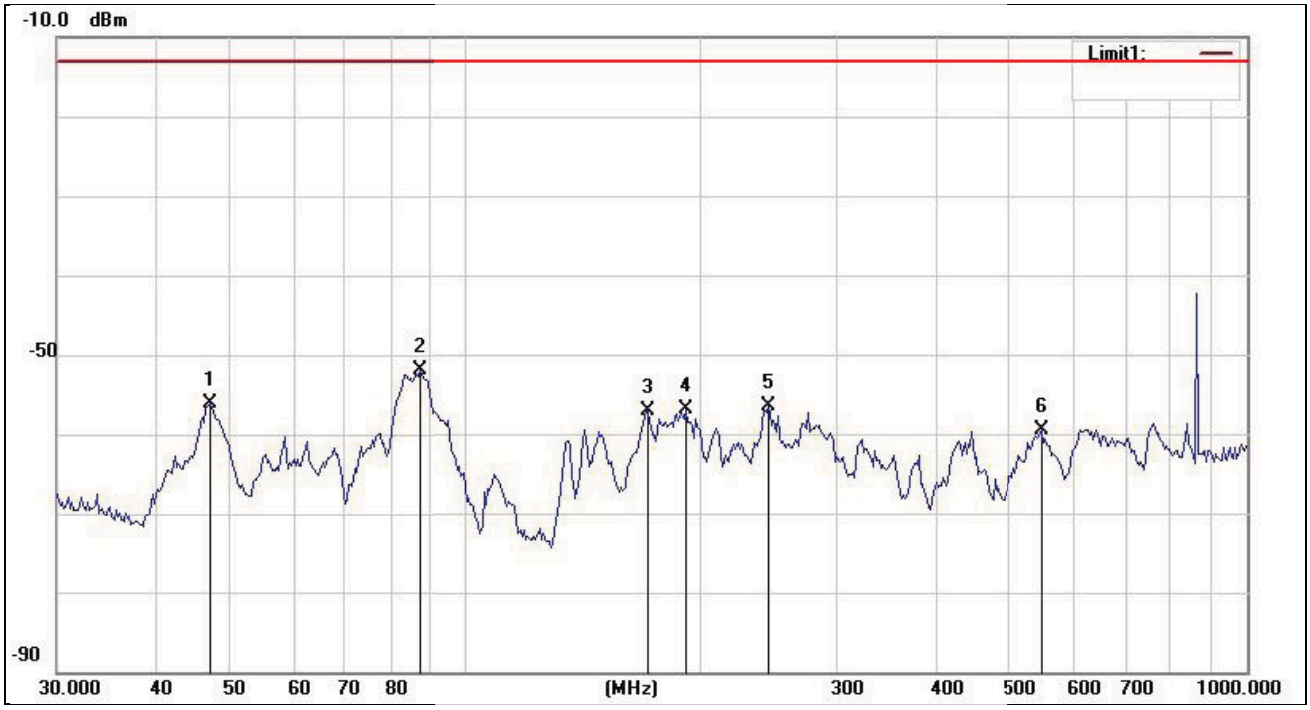
---------- The following blanks ----------

11.11.4. Test results

11.11.4.1. Below 1GHz

11.11.4.1.1. Polarization type: Horizontal

Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2024-05-22
Temp.(℃)/Hum.(%RH):	22.1℃/48%RH	Time:	9:28:36
EUT:	Public Safety DAS	Test mode:	Downlink mode
Model:	RH78V3-B	Distance:	3m
Note:	/		

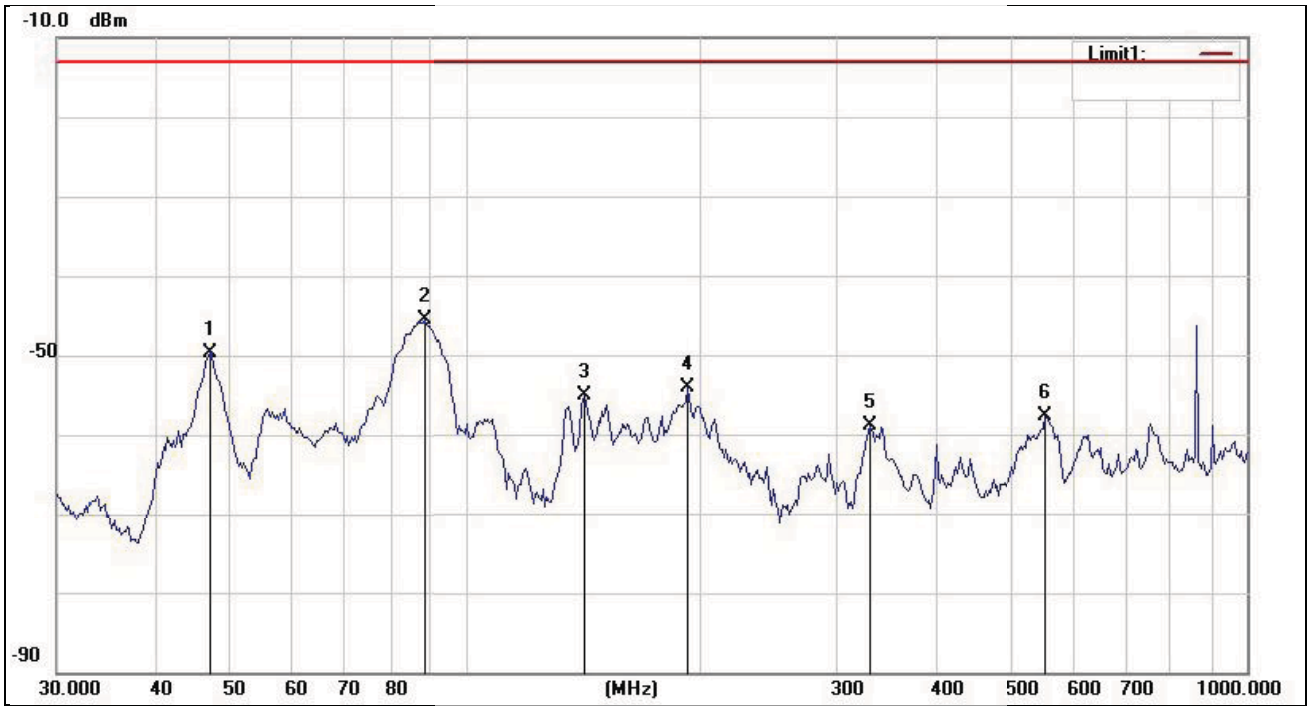


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	
1	47.0286	-85.40	29.40	-56.00	-13.00	-43.00	peak
2	87.2606	-73.47	21.60	-51.87	-13.00	-38.87	peak
3	171.2693	-80.80	23.79	-57.01	-13.00	-44.01	peak
4	191.6416	-79.44	22.59	-56.85	-13.00	-43.85	peak
5	244.0236	-83.25	26.78	-56.47	-13.00	-43.47	peak
6	548.1070	-91.03	31.57	-59.46	-13.00	-46.46	peak

NOTE 1: When the read value of the test frequency does not exceed the peak limit, peak value is used instead of RMS value.
NOTE 2: The signal with a spike is the signal loaded by the device, with a frequency of 861.5MHz.

11.11.4.1.2. Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2024-05-22
Temp.(℃)/Hum.(%RH):	22.1℃/48%RH	Time:	9:30:25
EUT:	Public Safety DAS	Test mode:	Downlink mode
Model:	RH78V3-B	Distance:	3m
Note:	/		



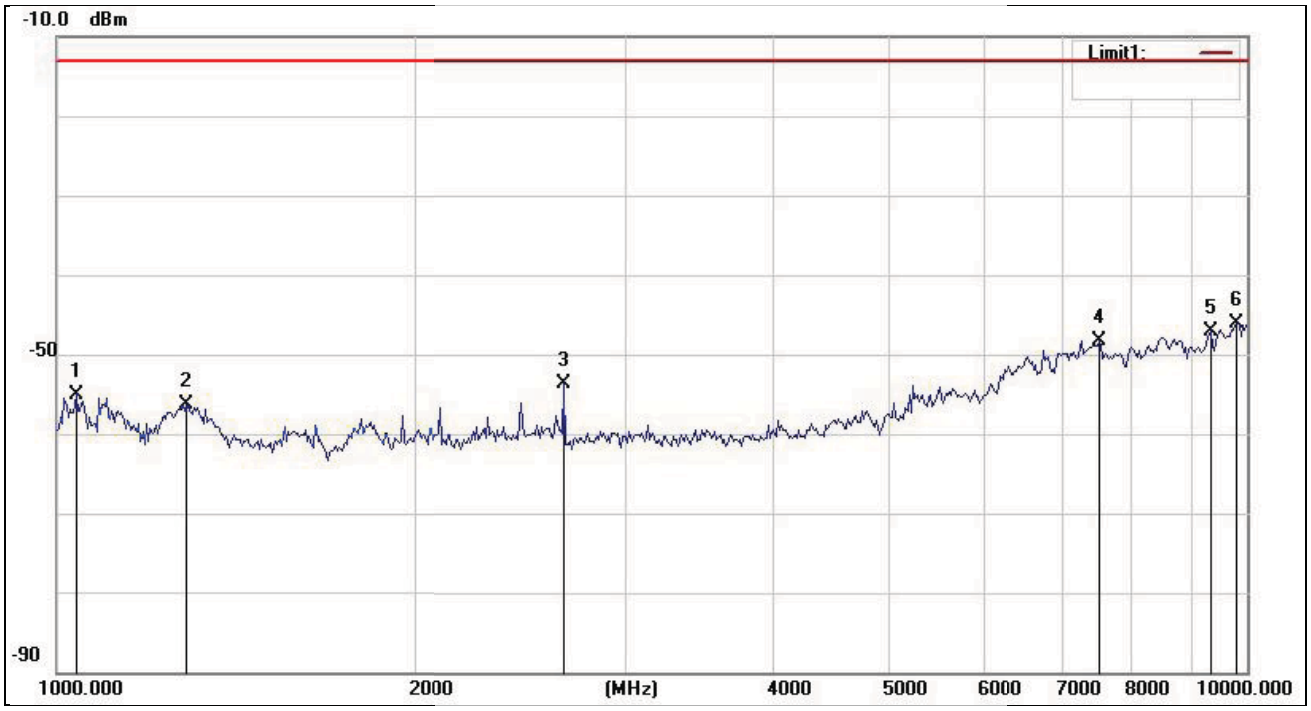
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	47.0286	-74.95	25.21	-49.74	-13.00	-36.74	peak
2	88.7442	-66.39	20.85	-45.54	-13.00	-32.54	peak
3	142.2796	-81.22	26.22	-55.00	-13.00	-42.00	peak
4	192.7216	-79.31	25.29	-54.02	-13.00	-41.02	peak
5	328.6842	-86.48	27.63	-58.85	-13.00	-45.85	peak
6	554.3019	-89.91	32.12	-57.79	-13.00	-44.79	peak

NOTE 1: When the read value of the test frequency does not exceed the peak limit, peak value is used instead of RMS value.
NOTE 2: The signal with a spike is the signal loaded by the device, with a frequency of 861.5MHz.

11.11.4.2. Above 1GHz

11.11.4.2.1. Polarization type: Horizontal

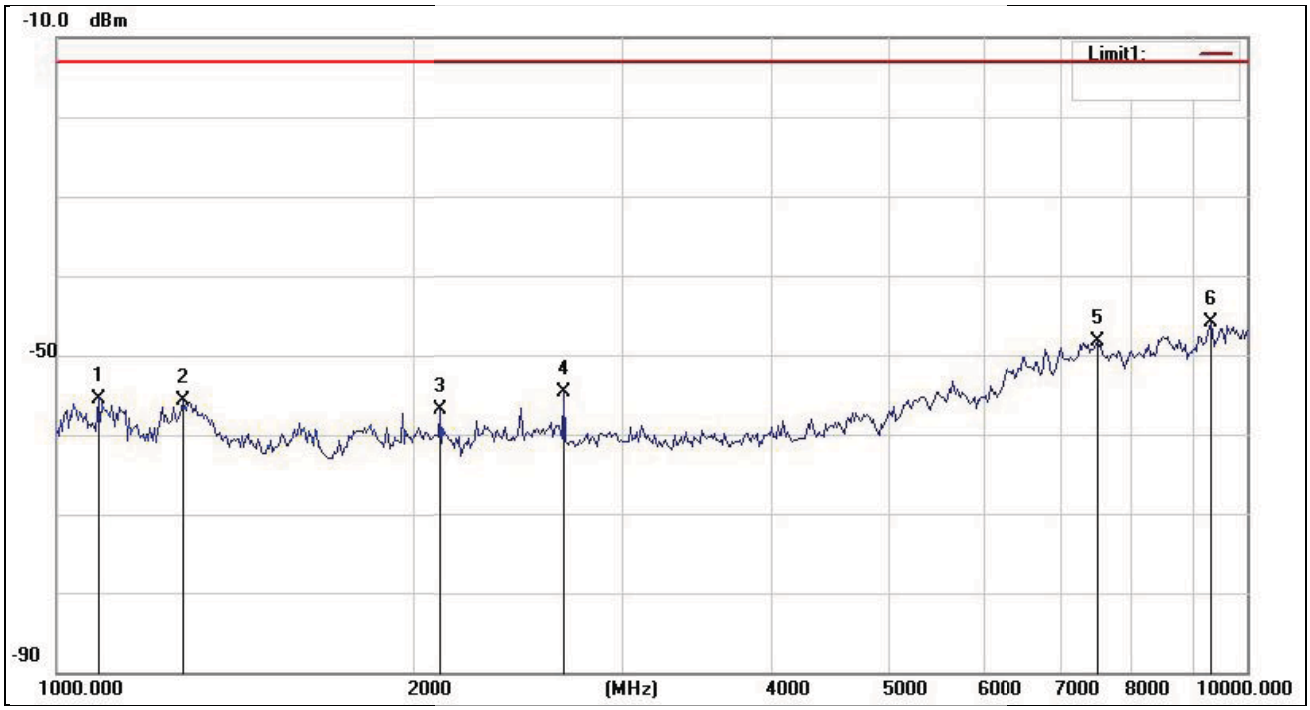
Test Result:	PASS	Polarization:	Horizontal
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2024-05-22
Temp.(℃)/Hum.(%RH):	22.1℃/48%RH	Time:	9:01:45
EUT:	Public Safety DAS	Test mode:	Downlink mode
Model:	RH78V3-B	Distance:	3m
Note:	/		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1037.590	-59.25	4.08	-55.17	-13.00	-42.17	peak
2	1285.211	-64.77	8.38	-56.39	-13.00	-43.39	peak
3	2668.591	-61.74	8.02	-53.72	-13.00	-40.72	peak
4	7526.665	-70.47	22.25	-48.22	-13.00	-35.22	peak
5	9322.906	-69.48	22.40	-47.08	-13.00	-34.08	peak
6	9817.190	-69.69	23.51	-46.18	-13.00	-33.18	peak
NOTE: When the read value of the test frequency does not exceed the peak limit, peak value is used instead of RMS value.							

11.11.4.2.2. Polarization type: Vertical

Test Result:	PASS	Polarization:	Vertical
Standard:	FCC PART 90	Power Source:	AC 110V, 50Hz
Test item:	Radiation spurious emissions	Date:	2024-05-22
Temp.(℃)/Hum.(%RH):	22.1℃/48%RH	Time:	9:03:40
EUT:	Public Safety DAS	Test mode:	Downlink mode
Model:	RH78V3-B	Distance:	3m
Note:	/		



No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1037.590	-58.68	2.83	-55.85	-13.00	-42.85	peak
2	1167.637	-60.18	4.28	-55.90	-13.00	-42.90	peak
3	2099.498	-60.77	6.95	-53.82	-13.00	-40.82	peak
4	2668.591	-57.70	7.33	-50.37	-13.00	-37.37	peak
5	7069.016	-71.75	21.34	-50.41	-13.00	-37.41	peak
6	9745.005	-68.28	22.75	-45.53	-13.00	-32.53	peak
Note: When the read value of the test frequency does not exceed the peak limit, peak is used instead of RMS value.							

Appendix A. Original report test data

NOTE: The following content is the test data corresponding to the original report number E20230509197301-1.

11.12. Input Signals

11.12.1. Result

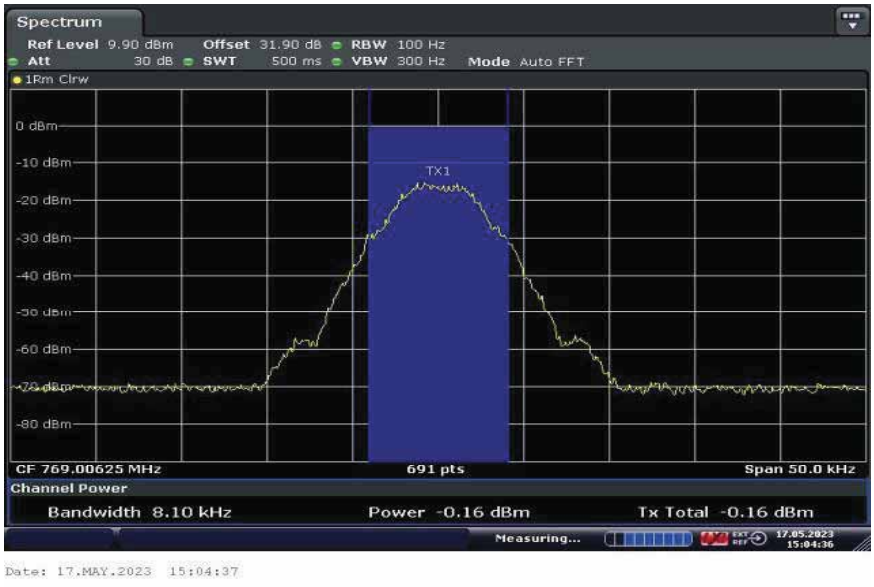
Test Date (yy-mm-dd):	2023-05-17
Normal condition:	Temp: 28.1℃, Humid: 62%, Atmospheric Pressure:101kpa
Supply Voltage:	AC 110V, 50Hz

11.12.1.1. Input Signals screenshot

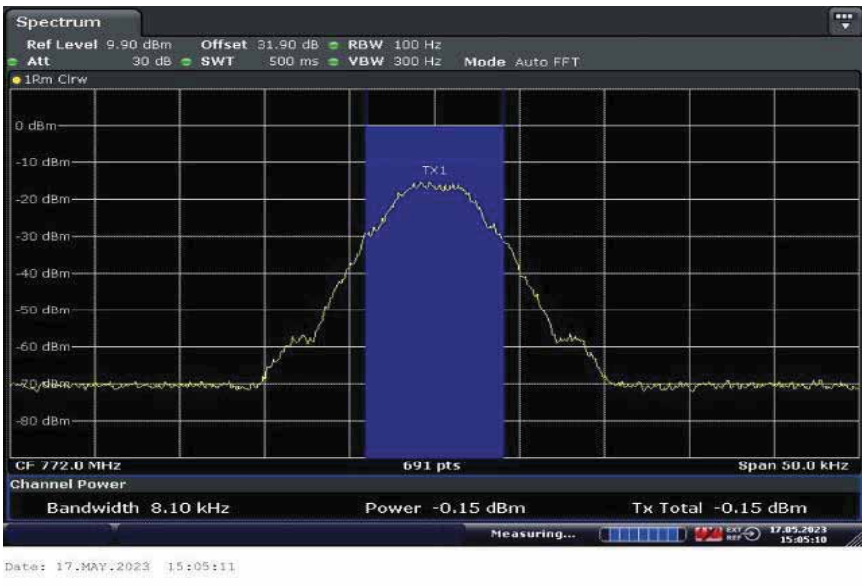
11.12.1.1.1. 700MHz Band

11.12.1.1.1.1. P25 Phase I(C4FM)

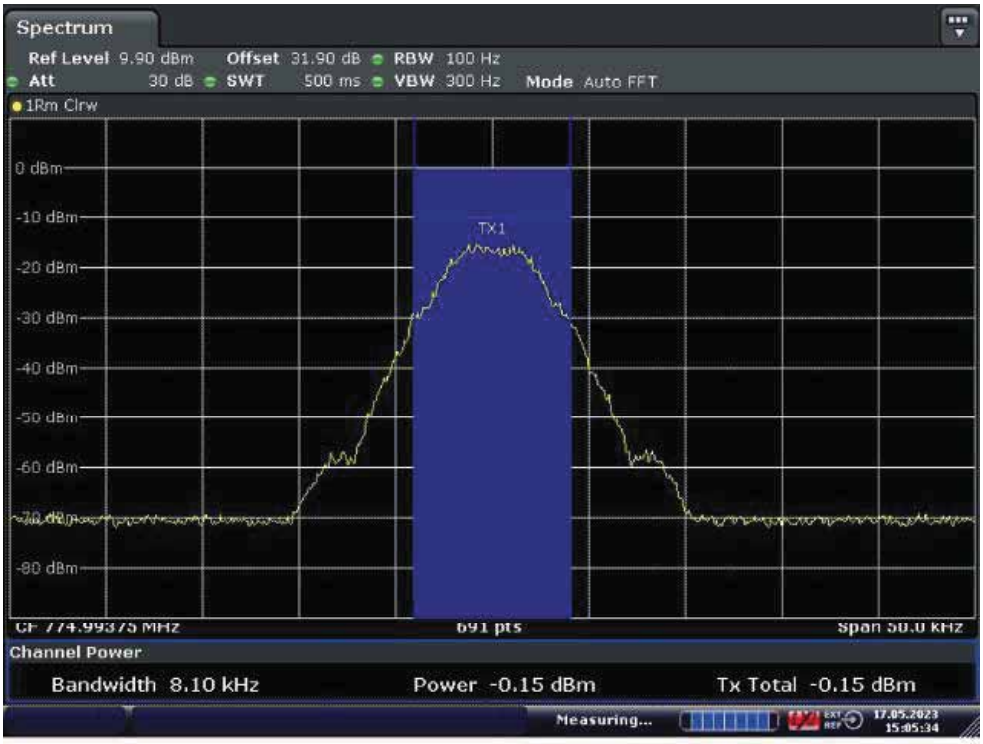
11.12.1.1.1.1.1. Downlink



Low Frequency: 769.00625MHz

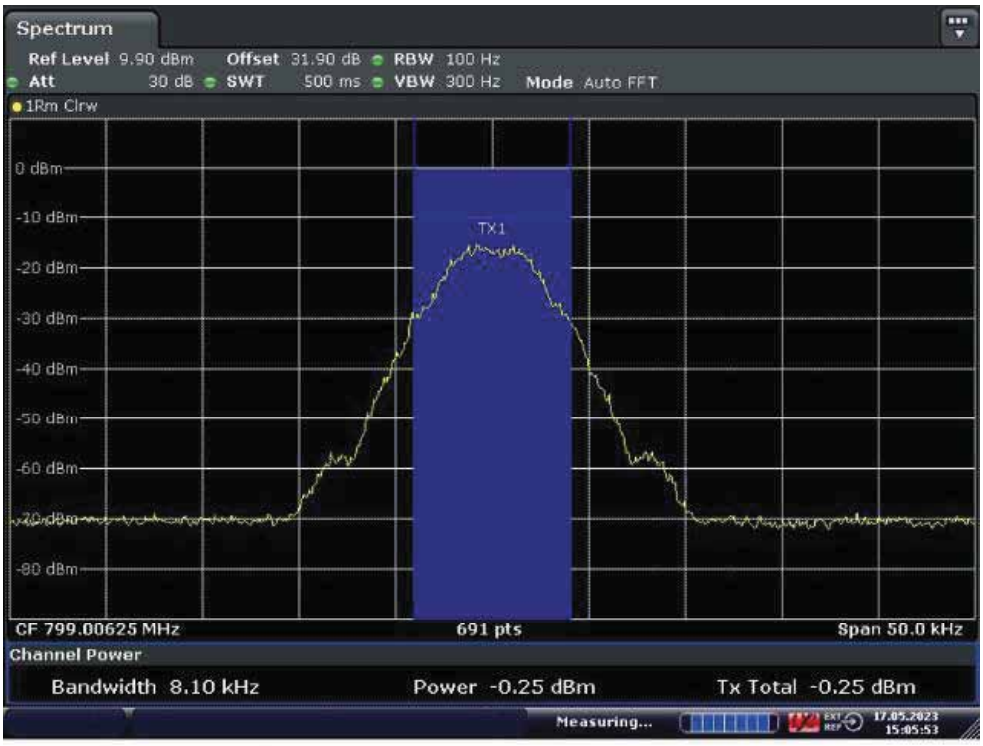


Middle Frequency: 772.0MHz

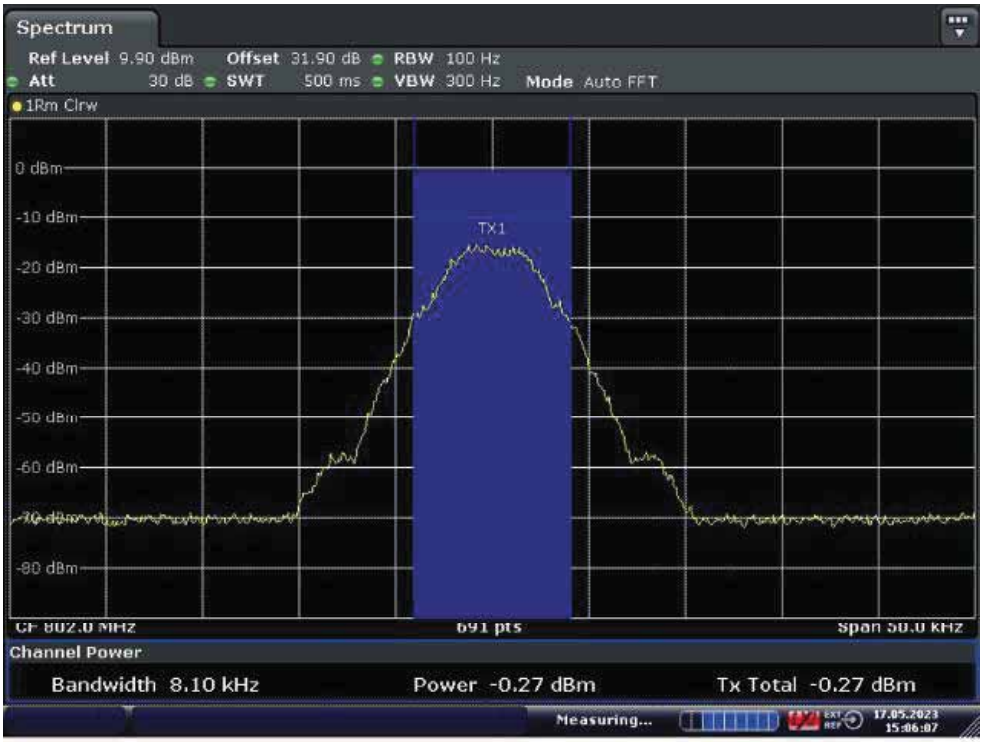


High Frequency: 774.99375MHz

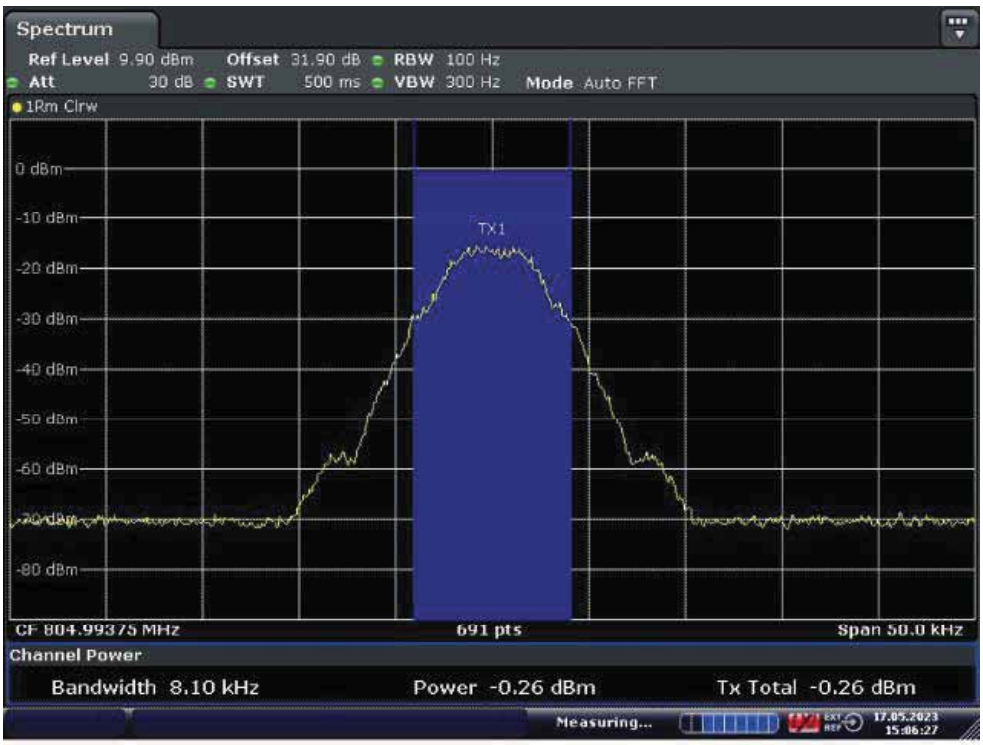
11.12.1.1.1.1.2. Uplink



Low Frequency: 799.00625MHz



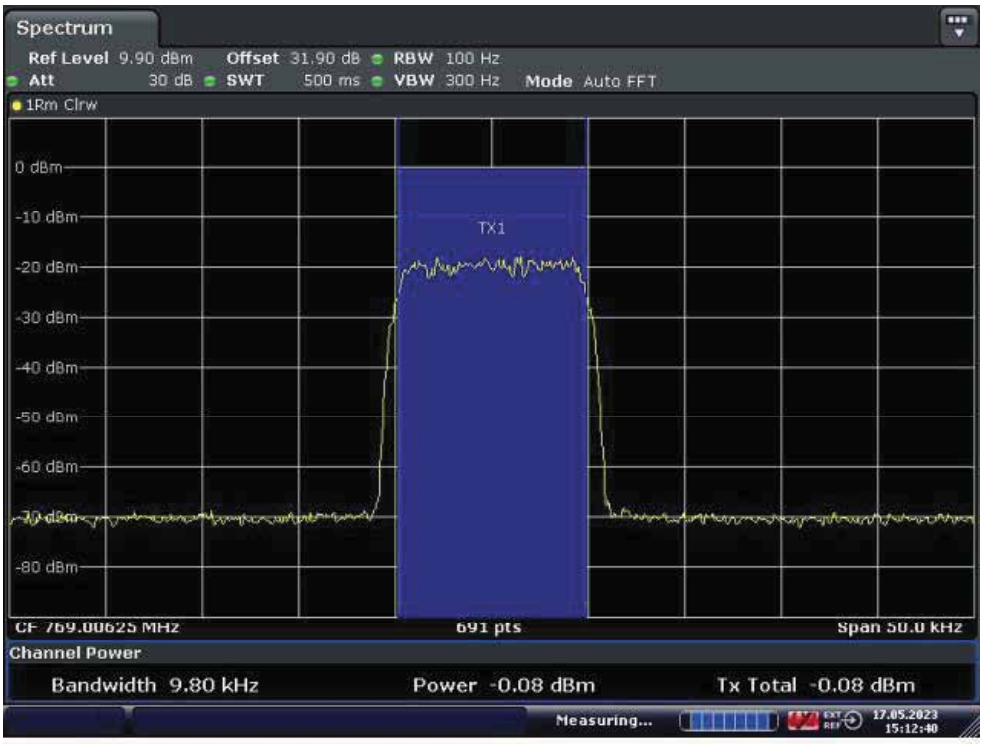
Middle Frequency: 802.0MHz



High Frequency: 804.99375MHz

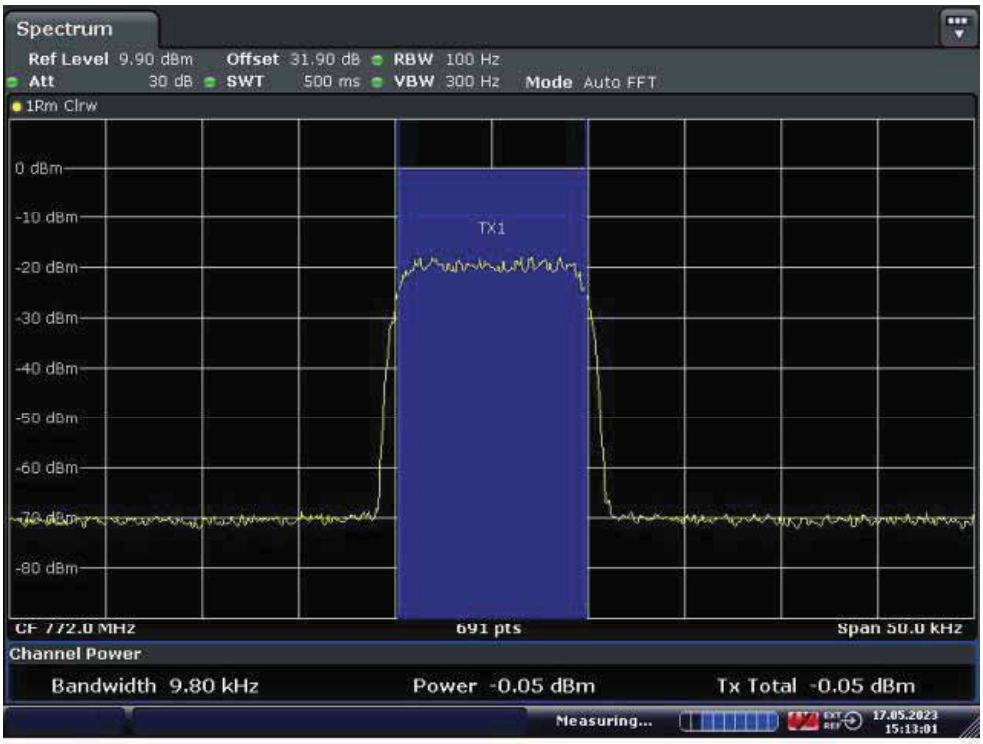
11.12.1.1.1.2. P25 Phase II(H-DQPSK)

11.12.1.1.1.2.1. Downlink



Date: 17.MAY.2023 15:12:41

Low Frequency: 769.00625MHz



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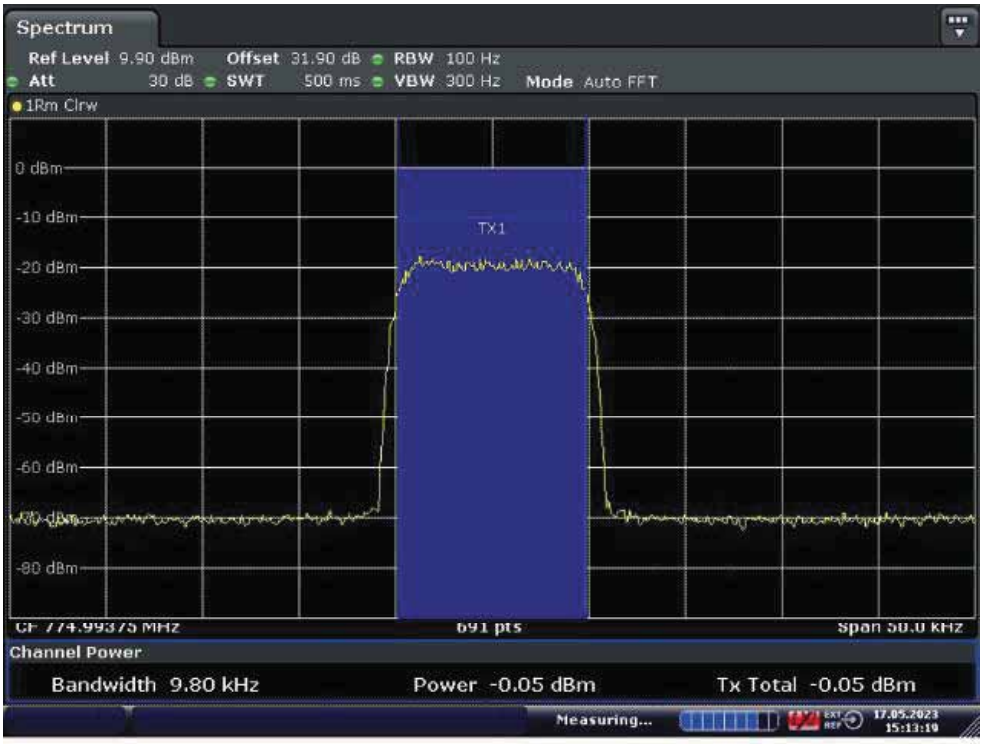
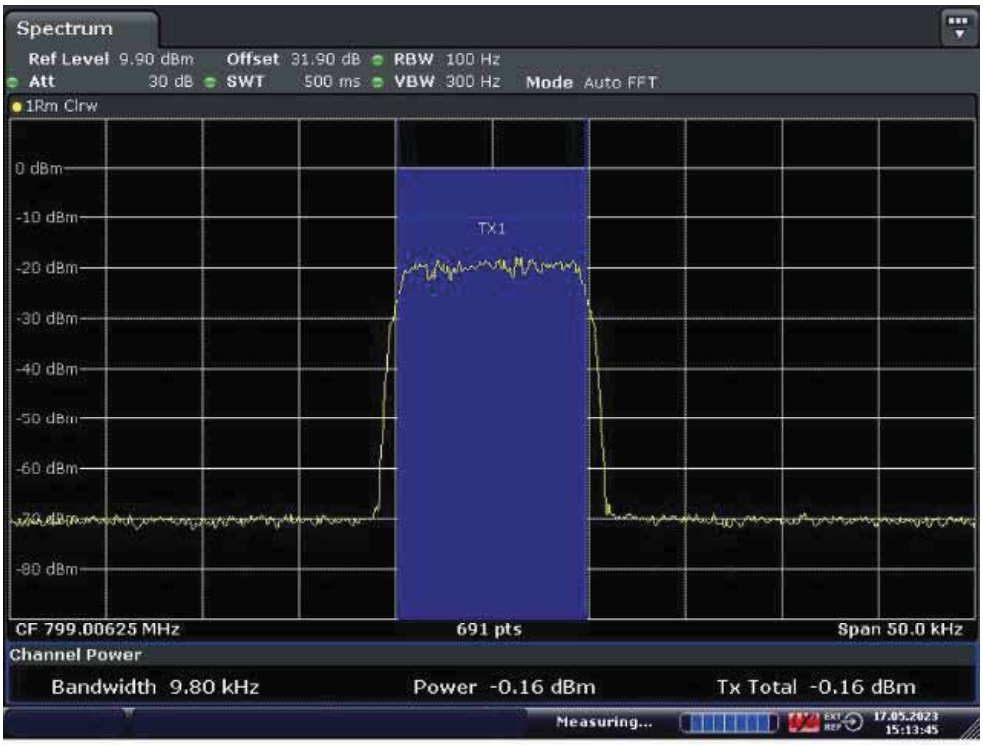
Middle Frequency: 772.0MHz

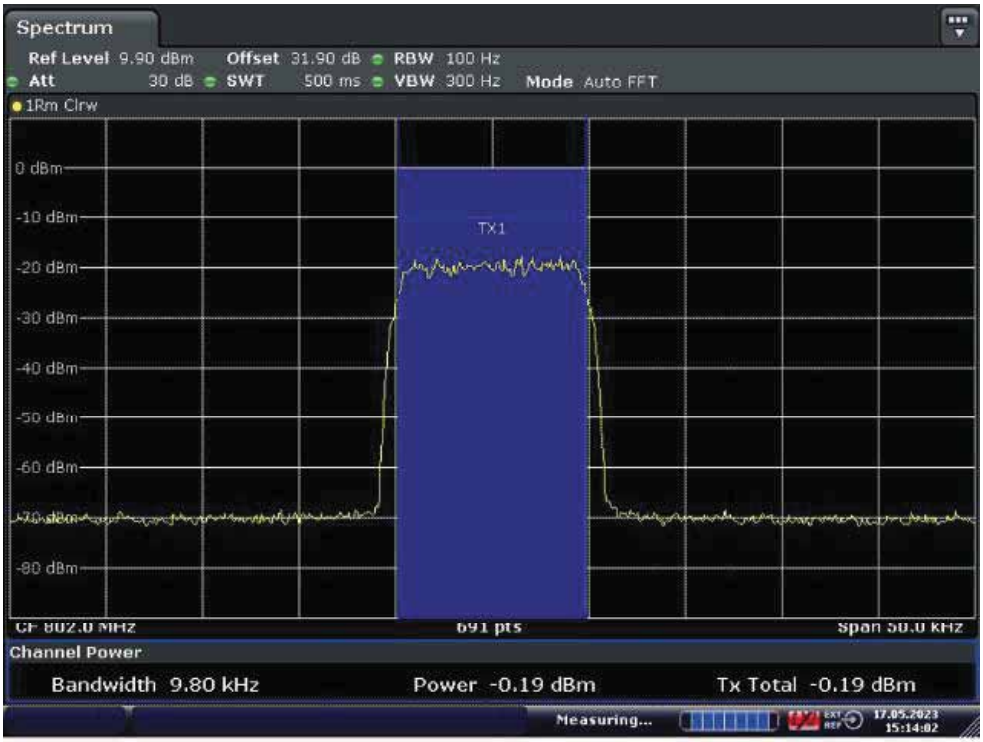


High Frequency: 774.99375MHz

11.12.1.1.1.2.2. Uplink

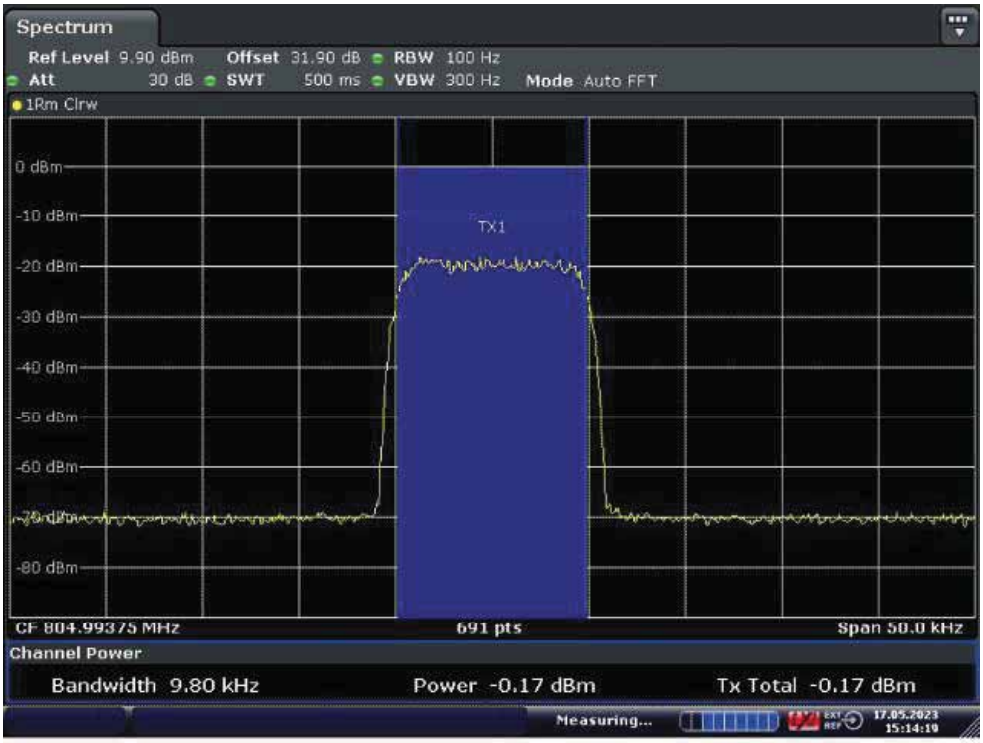


Low Frequency: 799.00625MHz



Date: 17.MAY.2023 15:14:02

Middle Frequency: 802.0MHz

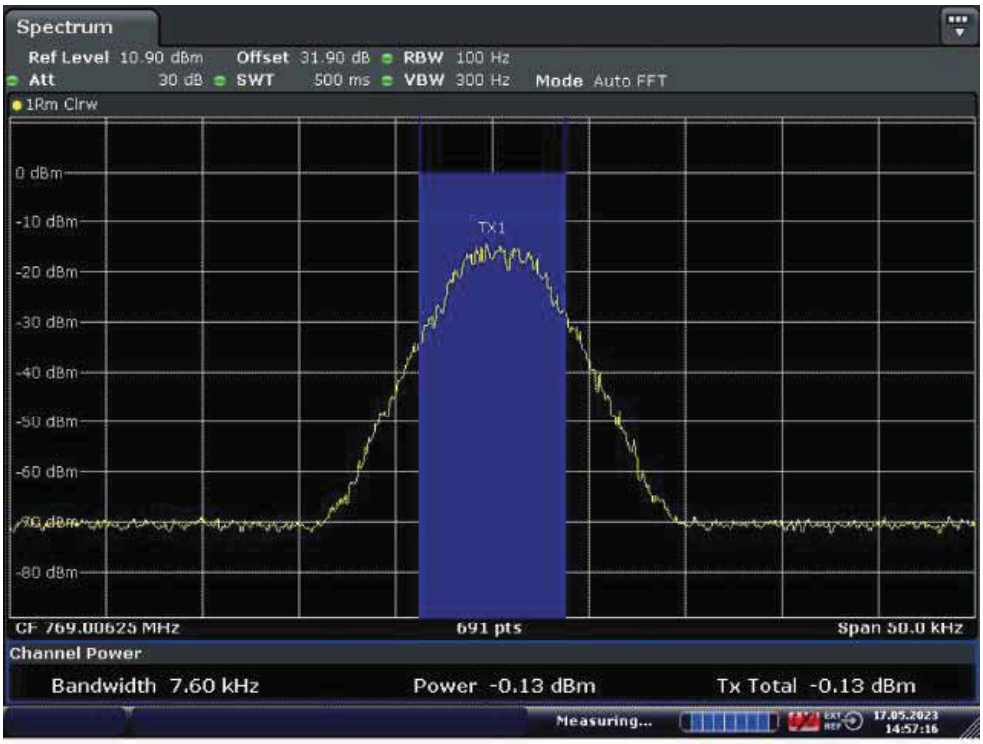


Date: 17.MAY.2023 15:14:19

High Frequency: 804.99375MHz

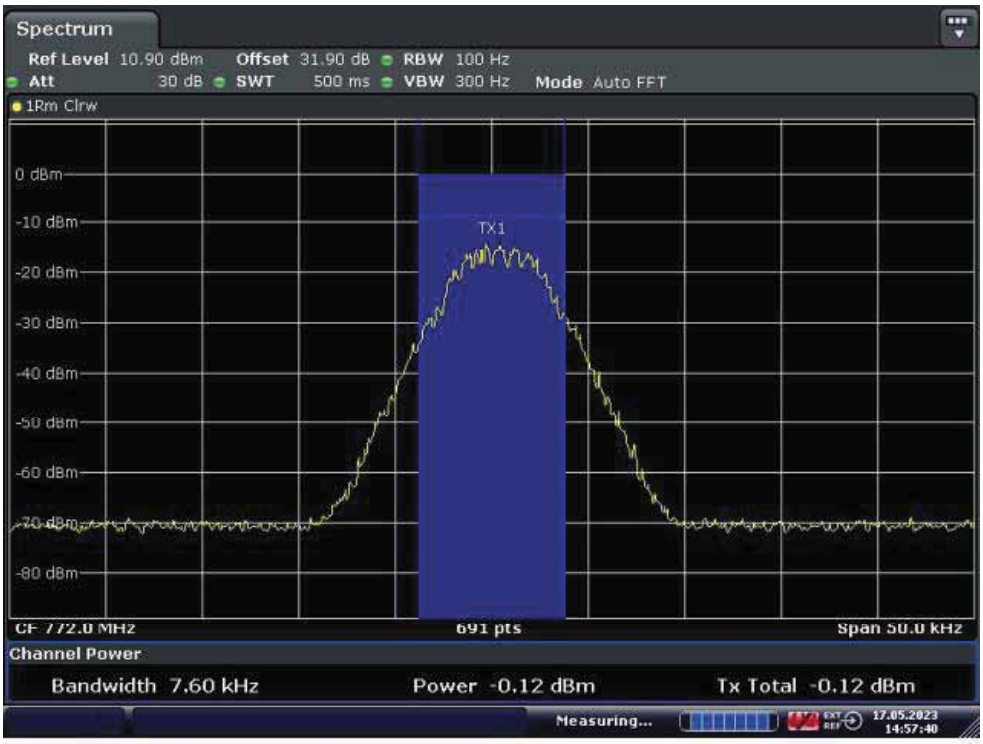
11.12.1.1.1.3. DMR

11.12.1.1.1.3.1. Downlink



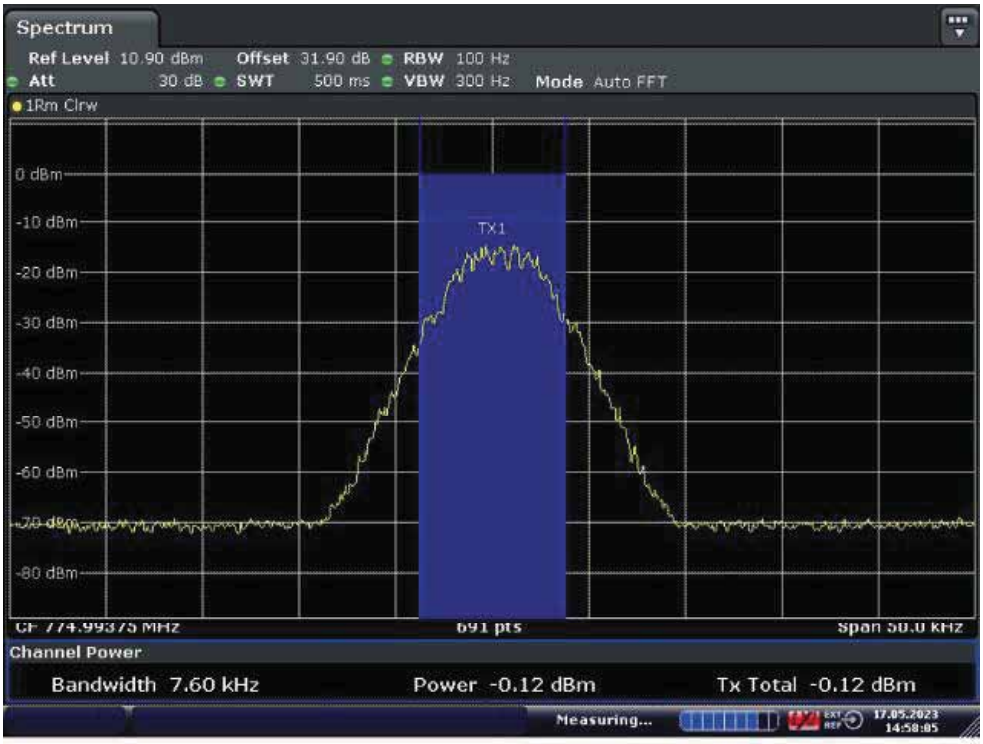
Date: 17.MAY.2023 14:57:16

Low Frequency: 769.00625MHz



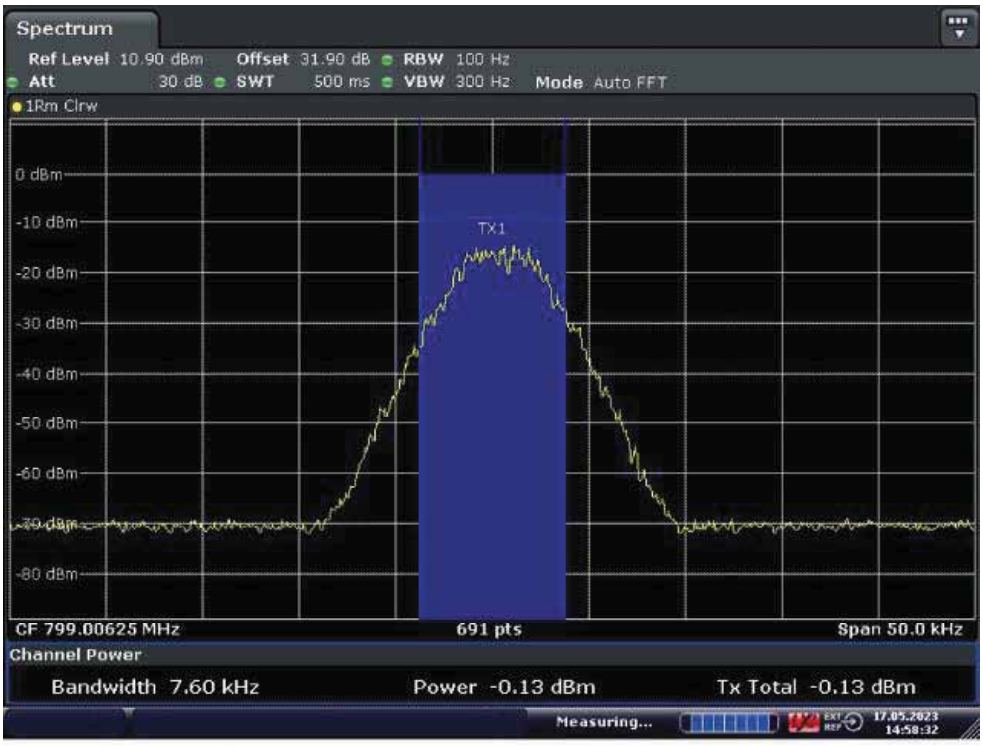
Date: 17.MAY.2023 14:57:40

Middle Frequency: 772.0MHz

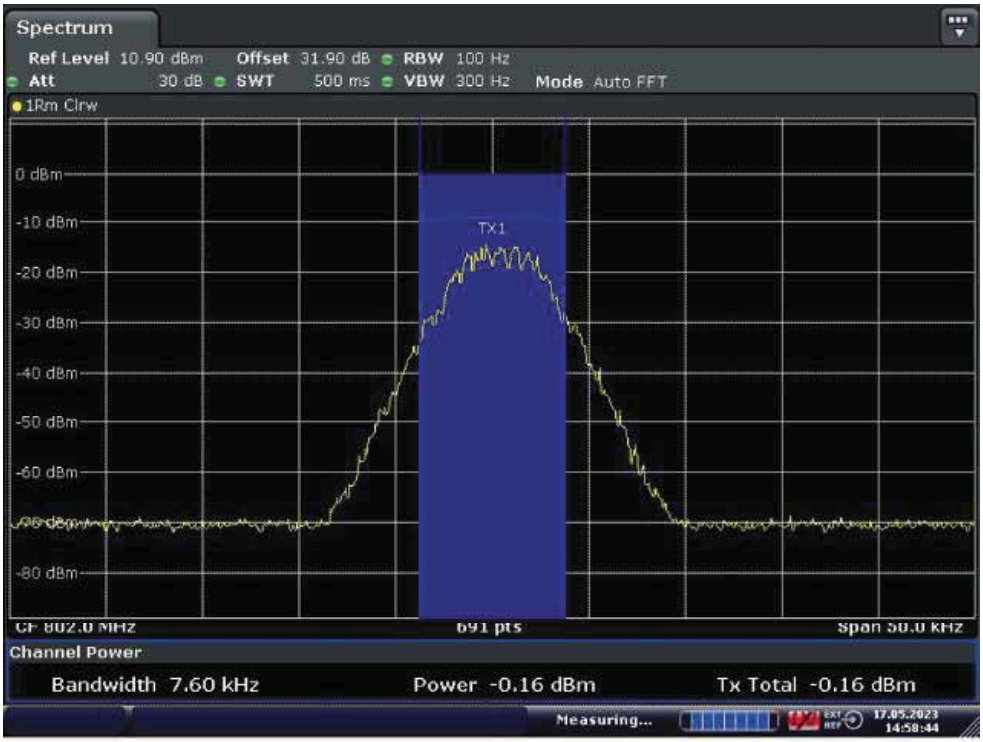


High Frequency: 774.99375MHz

11.12.1.1.1.3.2. Uplink



Low Frequency: 799.00625MHz



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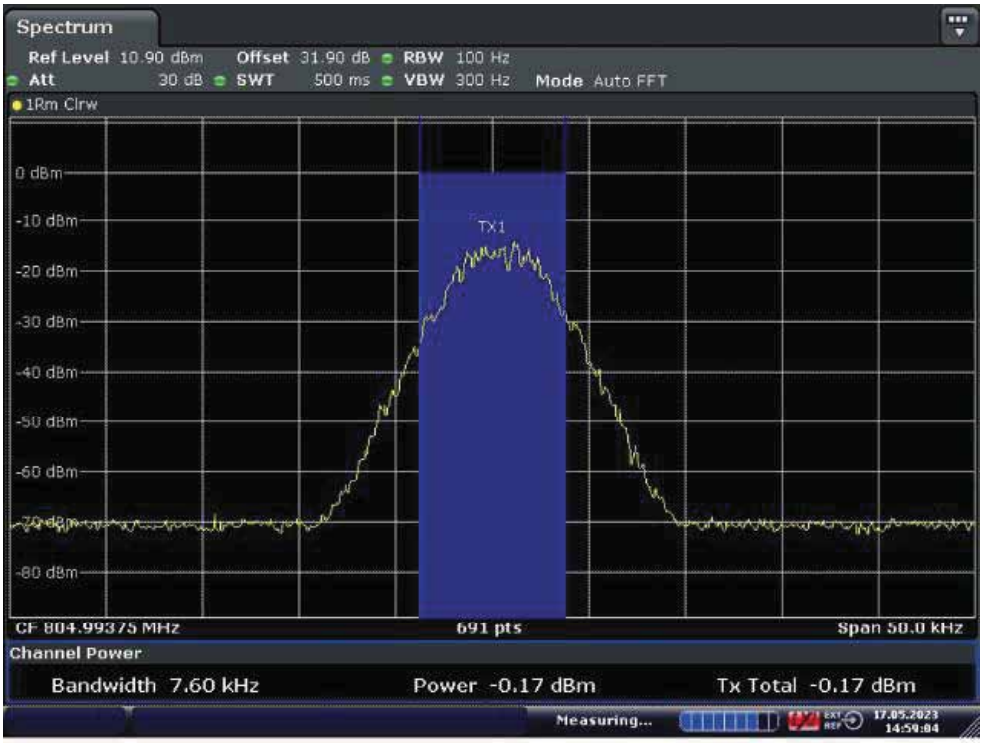
Middle Frequency: 802.0MHz

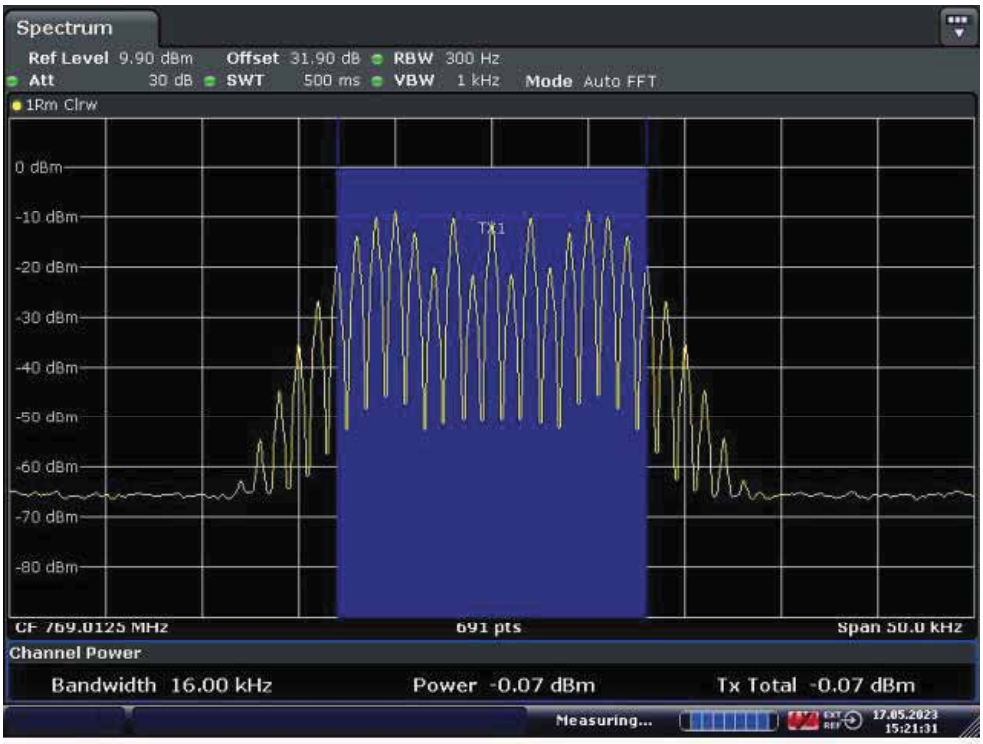


Date: 17.MAY.2023 14:59:04

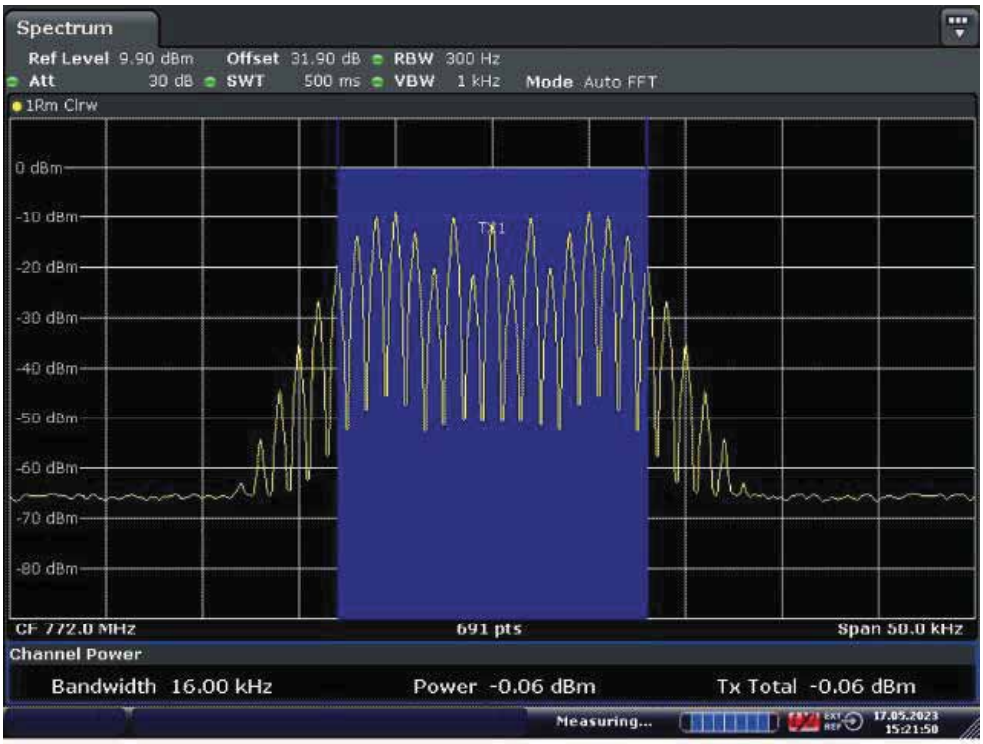
High Frequency: 804.99375MHz

11.12.1.1.1.4. Analog FM

11.12.1.1.1.4.1. Downlink



Low Frequency: 769.0125MHz



Middle Frequency: 772.0MHz