Test Report

Verified code: 667795

Report No.: E202207280743-1

Customer:	Comba Telecom Network Systems Limited
Address:	Flat/Rm 10, 3/F, Bio-Informatics Ctr, 2 Science Park West Avenue, HK Science Park, Pak Shek Kok, N.T. Hong Kong
Sample Name:	Public Safety Bi-directional Amplifier
Sample Model:	RX78V2F-B-AC
Receive Sample Date:	Aug.02,2022
Test Date:	Aug.03,2022 ~ Aug.15,2022
Reference Document:	FCC PART 90-- PRIVATE LAND MOBILE RADIO SERVICES
Test Result:	Pass
FCC ID:	PX8RX78V2F-B

Prepared by: Huang Lifang Reviewed by: Wu Haoting Approved by: Liao Liang

GUANGZHOU GRG METROLOGY & TEST CO., LTD.

Issued Date: 2022-09-06

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TABLE OF CONTENTS

1. Applicant information 5
   1.1. Client information 5
   1.2. Manufacturer and Factory 5
2. General description of EUT 5
   2.1. Basic description of EUT 5
   2.2. Test signal modulation description 6
      2.2.1. Analog signals 6
      2.2.2. Digital signals 6
   2.3. Signal Booster control process 8
      2.3.1. System block 8
      2.3.2. Signal control process 8
3. Reference documents 9
4. Test result summary 10
5. About Signal Booster 11
   5.1. KDB 935210 D02 APPENDIXA3.1 11
   5.2. FCC part 90.219 (a) Definitions 11
6. Test modes 12
7. Laboratory 13
   7.1. Laboratory 13
   7.2. Accreditations 13
8. Measurements uncertainty 14
9. Test instrument equipment and accessory equipment during test 15
   9.1. Test instrument equipment 15
   9.2. Test accessory equipment 15
10. Radio technical requirement specification 16
   10.1. Test Frequencies 16
      10.1.1. Requirements 16
      10.1.2. Result 17
   10.2. Input Signals 18
      10.2.1. Requirements 18
      10.2.2. Result: 18
      10.2.3. Input Signals screenshot 19
   10.3. AGC Threshold 53
      10.3.1. Requirements 53
      10.3.2. Test configuration 53
      10.3.3. Test procedures 53
      10.3.4. Test results 54
   10.4. Out-of-band rejection 78
      10.4.1. Requirements 78
      10.4.2. Test configuration 78
      10.4.3. Test procedures 78
      10.4.4. Test results 79
      10.4.5. Test screenshot 80

10.5. Input VS output Comparison 82
10.5.1. Requirements 82
10.5.2. Test configuration 86
10.5.3. Test procedures 86
10.5.4. Test results 87
10.5.5. Test screenshot 103
10.6. Mean power and amplifier/booster gain 187
10.6.1. Requirements 187
10.6.2. Test configuration 187
10.6.3. Test procedures 188
10.6.4. Test results 189
10.7. Noise figure 203
10.7.1. Requirements 203
10.7.2. Test configuration 203
10.7.3. Test procedures 204
10.7.4. Test results 205
10.7.5. Test screenshot 206
10.8. Out-of-band/out-of-block emissions 209
10.8.1. Requirements 209
10.8.2. Test configuration 210
10.8.3. Test procedures 211
10.8.4. Test results 212
10.8.5. Test screenshot 216
10.9. Conducted spurious emissions 240
10.9.1. Limit 240
10.9.2. Test configuration 240
10.9.3. Test procedures 241
10.9.4. Test results 242
10.9.5. Test screenshot 244
10.10. Frequency stability 252
10.10.1. Limit 252
10.10.2. Test configuration 253
10.10.3. Test procedures 253
10.10.4. Test results 255
10.11. Radiated spurious emissions 261
10.11.1. Requirements 261
10.11.2. Test configuration 263
10.11.3. Test procedures 263
10.11.4. Test results 266
APPENDIX A. PHOTOGRAPH OF THE TEST CONNECTION DIAGRAM 274
APPENDIX B. PHOTOGRAPHS OF EUT 278
B.1 External photos 278

1. Applicant information

1.1. Client information

Name:	Comba Telecom Network Systems Limited
Address:	Flat/Rm 10, 3/F, Bio-Informatics Ctr, 2 Science Park West Avenue, HK Science Park, Pak Shek Kok, N.T. Hong Kong

1.2. Manufacturer and Factory

Manufacture Name:	Comba Network Systems Company Limited
Address:	No. 10 Shenzhou Road, Guangzhou Science City, Guangzhou 510663, Guangdong, P.R.China
Factory:	Comba Telecom Technology (Guangzhou) Ltd.
Address:	No. 6 Jinbi Road, Economics and Technology Development District, Guangzhou, Guangdong, China

2. General description of EUT

2.1. Basic description of EUT

Product Name:	Public Safety Bi-directional Amplifier
Product Model:	RX78V2F-B-AC
Adding Model:	/
Trade Name:	Comba
Power Supply:	Typical working voltage: AC 110V, 50/60Hz
Power cord:	AC power cord
Frequency Band:	700MHz Band: Downlink: 758MHz ~ 775MHz, Uplink: 788MHz ~805MHz 800MHz Band: Downlink: 851MHz ~861MHz, Uplink: 806MHz ~ 816MHz
Nominal Output Power:	Downlink: 33dBm Uplink: 27dBm
Nominal System Gain:	Downlink: 90dB Uplink: 90dB
EUT Operating Temperature:	-33°C to +55°C
Operating Humidity:	5% to 95%
Antenna Type:	N/A①

NOTE 1: This EUT is a Broadband device, which belongs to Class B signal booster.

NOTE 2: ① The EUT does not provide antenna by manufacturer's statement, but it is required that the sum of antenna gain and cable loss shall not exceed 3dBi for downlink and 9 dBi for uplink when the project is used by manufacturer's statement.

2.2. Test signal modulation description

Refer to FCC PART 2.202 (g), Table of necessary bandwidths follow:

2.2.1. Analog signals

Emission Designator	Description	Modulation type	M (modulaition Freq, kHz)	R (Rate, baud sym/s)	D (Deviation, kHz)	K (numeric constant)	S (Symbols)	Bandwidth Calculation	Necessary Bandwidth (kHz)
11K0F3E	Narrowband Analog FM Voice	FM	3.0	--	2.5	1.0	--	Bn=2M+2DK	11.0
16K0F3E	Wideband Analog FM Voice	FM	3.0	--	5.0	1.0	--	Bn=2M+2DK	16.0

2.2.2. Digital signals

Emission Designator	Description	Modulation type	M (modulaition Freq, kHz)	R (Rate, baud sym/s)	D (Deviation, kHz)	K (numeric constant)	S (Symbols)	Bandwidth Calculation	Necessary Bandwidth
8K10F1E	P25 Phase I C4FM Voice	4FSK	--	9600	1.8	0.916	4	$Bn=(R/\log_2 S)+2DK$	8.1
8K10F1D	P25 Phase I C4FM Data	4FSK	--	9600	1.8	0.916	4	$Bn=(R/\log_2 S)+2DK$	8.1
8K10F1W	P25 Phase II H-CPM Voice/Data	4FSK	--	9600	1.8	0.916	4	$Bn=(R/\log_2 S)+2DK$	8.1
9K80F1E	P25 Phase II H-DQPSK Voice	QPSK	--	12000	--	0.817	4	$Bn=2RK/\log_2 S$	9.8
9K80F1D	P25 Phase II H-DQPSK Data	QPSK	--	12000	--	0.817	4	$Bn=2RK/\log_2 S$	9.8
7K60FXE	DMR Voice	4FSK	--	9600	1.8	0.778	4	$Bn=(R/\log_2 S)+2DK$	7.6
7K60FXD	DMR Data	4FSK	--	9600	1.8	0.778	4	$Bn=(R/\log_2 S)+2DK$	7.6
21K0F1E	Tetra Voice	$\pi/4$DQPSK	--	9600	--	2.188	4	$Bn=2RK/\log_2 S$	21.0
21K0F1D	Tetra Data	$\pi/4$DQPSK	--	9600	--	2.188	4	$Bn=2RK/\log_2 S$	21.0
5M00G7D	Public Safety LTE	8PSK	--	5000	--	1	4	$Bn=2RK/\log_2 S$	5000
10M0G7D	Public Safety LTE	8PSK	--	10000	--	1	4	$Bn=2RK/\log_2 S$	10000
5M00G7W	Public Safety LTE	QAM	--	5000	--	--	4	$Bn=2R/\log_2 S$	5000
10M0G7W	Public Safety LTE	QAM	--	10000	--	--	4	$Bn=2R/\log_2 S$	10000
5M00W7D	Public Safety LTE	OFDM	--	-	--	16	--	Bn=312.5*K	5000
10M0W7D	Public Safety LTE	OFDM	--	-	--	32	--	Bn=312.5*K	10000
5M00F9W	Public Safety LTE	QPSK	--	5000	--	1	4	$Bn=2RK/\log_2 S$	5000
10M0F9W	Public Safety LTE	QPSK	--	10000	--	1	4	$Bn=2RK/\log_2 S$	10000

NOTE: In the above test signal modes, the typical signal and the worst mode signal are used as representatives in this test. The specific test signal types are as follows:

Emission Designator	Description	Modulation type	M (modulaition Freq, kHz)	R (Rate, baud sym/s)	D (Deviation, kHz)	K (numeric constant)	S (Symbols)	Bandwidth Calculation	Necessary Bandwidth
16K0F3E	Wideband Analog FM Voice	FM	3.0	--	5.0	1.0	--	Bn=2M+2DK	16.0
8K10F1D	P25 Phase I C4FM Data	4FSK	--	9600	1.8	0.916	4	$Bn=(R/\log_2 S)+2DK$	8.1
9K80F1D	P25 Phase II H-DQPSK Data	QPSK	--	12000	--	0.817	4	$Bn=2RK/\log_2 S$	9.8
7K60FXD	DMR Data	4FSK	--	9600	1.8	0.778	4	$Bn=(R/\log_2 S)+2DK$	7.6
21K0F1D	Tetra Data	$\pi/4$DQPSK	--	9600	--	2.188	4	$Bn=2RK/\log_2 S$	21.0
5M00F9W	Public Safety LTE	QPSK	--	5000	--	1	4	$Bn=2RK/\log_2 S$	5000
10M0F9W	Public Safety LTE	QPSK	--	10000	--	1	4	$Bn=2RK/\log_2 S$	10000

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2.3. Signal Booster control process

2.3.1. System block

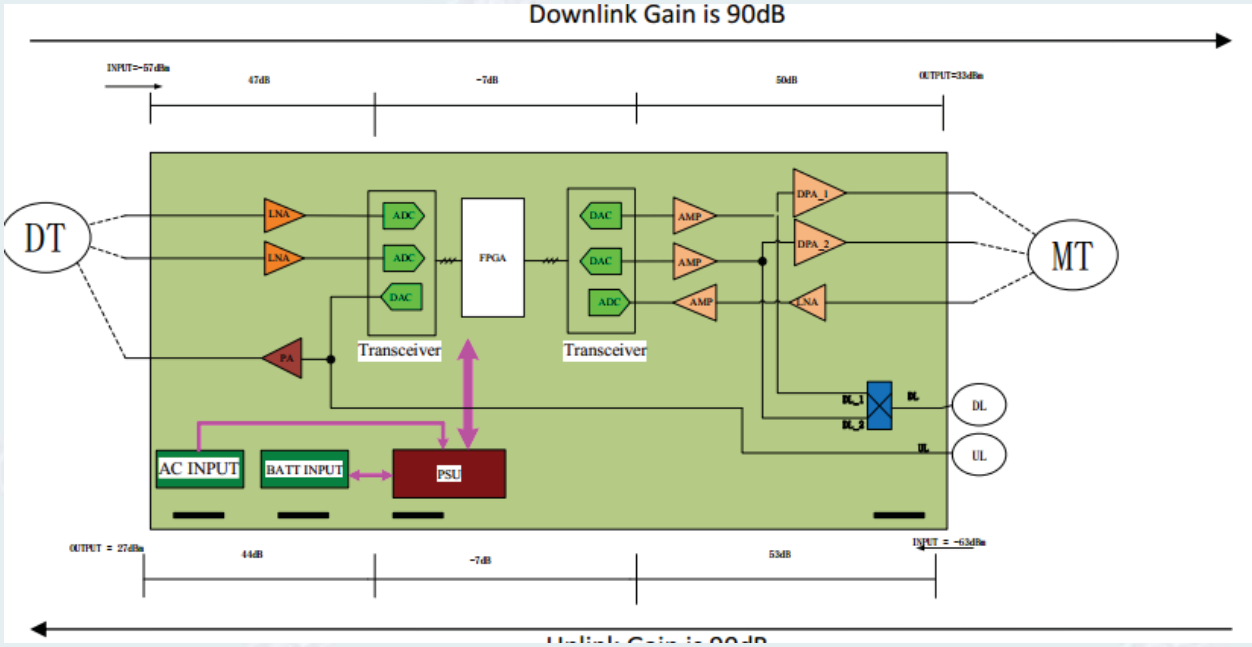

Figure 2-1 System block diagram

2.3.2. Signal control process

In the downlink, the BTS signals are received by donor antenna of the repeater. After the circulator and the downlink filter, the signals are sent to the LNA module for pre-amplification and digital RF integrated module for digital filtering and frequency conversion. Then the DL signals will be sent to downlink PA to amplify power. After amplification, the signals are transmitted via the MT port to the service antenna.

In the uplink, the mobile signals are received by the service antenna. After the circulator and the uplink filter, the signals are sent to the LNA, integrated module for digital filtering, then to PA for power amplification. After that, the uplink signals are sent to the donor antenna for transmission back to the BTS.

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3. Reference documents

FCC PART 2(6/22/2022)
FCC PART 90(6/22/2022)
KDB 935210 D05 Indus Booster Basic Meas v01r04
KDB 935210 D02 Signal Boosters Certification v04r02
KDB 971168 D01 Power Meas License Digital Systems v03r01
ANSI/TIA 603-E-2016
ANSI/TIA-102.CAAA-E-2016
ANSI C63.26-2015

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4. Test result summary

Test Item	Test Requirements	Test Method	Reported	N/A
Test Frequency	KDB 935210 D02 APPENDIX D/Table D.3, ANSI C63.26-2015 Clause 5.1.2	/	Reported only	
Input Signals	KDB 935210 D05 clause 4.1	/	Reported only	
AGC Threshold	KDB 935210 D05 clause 4.2	/	Reported only	
Out of Band Rejection	FCC PART 90.219 (a) FCC PART 90.219 (d)((7)	KDB 935210 D05 clause 4.3	☒	
Input VS output Comparison	KDB 935210 D05 clause 4.4 FCC PART 2.1049(c) FCC PART 90.210 FCC PART 90.219 (e)(4)(ii) FCC PART 90.219 (e)(4)(iii)	KDB 935210 D05 clause 4.4	☒	
Mean power and amplifier/booster gain	KDB 935210 D05 clause 4.5 FCC PART 90.219 (e)(1)	KDB 935210 D05 clause 4.5	☒	
Noise Figure	KDB 935210 D05 clause 4.6 FCC PART 90.219 (e)(2)	KDB 935210 D05 clause 4.6	☒	
Out-of-band/out-of-block emissions	KDB 935210 D05 clause 4.7.2 FCC PART 90.219 (d)(6)(i) FCC PART 90.219 (e)(3)	KDB 935210 D05 clause 4.7.2	☒	
Conducted spurious emissions	KDB 935210 D05 clause 4.7.3 FCC PART 2.1051 FCC PART 90.219 (e)(3)	KDB 935210 D05 clause 4.7.3	☒	
Frequency stability	KDB 935210 D05 clause 4.8 FCC PART 2 1055(a)(2) FCC PART 90.213 and 90.539 FCC PART 90.219 (e)(4)(i)	KDB 935210 D05/4.8 FCC PART 2 1055(b)	☒	
Radiated spurious emissions	KDB 935210 D05 clause 4.9 FCC PART 2.1053 FCC PART 90.219 (e)(3)	KDB 935210 D05 clause 4.9 ANSIC63.26-2015/5.5 ANSI/TIA 603-E-2016 ANSI/TIA-102.CAAA-E-2016	☒	

NOTE: ☒ mean that test needs to be performed.

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5. About Signal Booster

According to the basic information of EUT and FCC part 90.219 (a) and KDB 935210 D02 APPENDIXA3.1 rules, this EUT belongs to PART 90 class B Industrial signal booster and it is a non SMR.

5.1. KDB 935210 D02 APPENDIXA3.1

A.3.1 Signal Booster (Section 90.219)

A **Signal Booster (Section 90.219)** is a device or system that automatically receives, amplifies, and retransmits signals from wireless stations into and out of building interiors, tunnels, shielded outdoor areas and other locations where these signals would otherwise be too weak for reliable communications. Signal booster systems may contain both Class A and Class B signal boosters as components. [Section 90.219(a)]

All **Section 90.219 boosters** are a type of Industrial Signal Booster, and are classified as either **Class A boosters** (narrowband) or **Class B boosters** (wideband).[R11] [*Order*, ¶ 15]

Note also that Consumer Signal Boosters are not defined for PLMRS or PSRS because licensees are considered to operate private services. Part 90 PLMR licensees typically obtain authorizations for individual narrowband channels or groups of channels to satisfy their own communication needs. Moreover, many Part 90 channels are interleaved and a licensee's channels may not be adjacent to one another, which presents unique considerations for signal boosters used with Part 90 PLMR services. [*Order*, ¶ 144]

a) Class A signal booster: A signal booster designed to retransmit signals on one or more specific channels. A signal booster is deemed to be a Class A signal booster if none of its passbands exceed 75 kHz. [Section 90.219(a)]

b) Class B signal booster: A signal booster designed to retransmit any signals within a wide frequency band. A signal booster is deemed to be a Class B signal booster if it has a passband that exceeds 75 kHz. [Section 90.219(a)]

Class B signal boosters may be deployed only at fixed locations; mobile operation of Class B signal boosters is prohibited (after November 1, 2014). [Section 90.219(d)(4)]

Except for signal boosters incorporating distributed antenna systems (DAS) and installed in buildings, the passband of a Class B booster shall not encompass both commercial services (such as ESMR and Cellular Radiotelephone) and Part 90 Land Mobile and Public Safety Services. [Section 90.219(d)(7)]

5.2. FCC part 90.219 (a) Definitions

§90.219 Use of signal boosters.

This section contains technical and operational rules allowing the use of signal boosters in the Private Land Mobile Radio Services (PLMRS). Rules for signal booster operation in the Commercial Mobile Radio Services under part 90 are found in §20.21 of this chapter.

https://www.ecfr.gov/cgi-bin/text-idx?SID=2097cbedce8abb94d012e95530a44e05&mc=true&node=pt47.5.90&rgn=div5

2020/6/15 Electronic Code of Federal Regulations (eCFR)

(a) *Definitions.* The definitions in this paragraph apply only to the rules in this section.

Class A signal booster. A signal booster designed to retransmit signals on one or more specific channels. A signal booster is deemed to be a Class A signal booster if none of its passbands exceed 75 kHz.

Class B signal booster. A signal booster designed to retransmit any signals within a wide frequency band. A signal booster is deemed to be a Class B signal booster if it has a passband that exceeds 75 kHz.

6. Test modes

Test modes	Downlink mode: “DT” port of the EUT is connected to the signal generator, “MT” port is connected to the spectrum analyzer through attenuator, and the power of the EUT is turned on and signal is sent. Uplink mode: “MT” port of the EUT is connected to the signal generator, “DT” port is connected to the spectrum analyzer through attenuator, and the power of the EUT is turned on and signal is sent.

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7. Laboratory

7.1. Laboratory

The tests & measurements refer to this report were performed by Shenzhen EMC Laboratory of Guangzhou GRG Metrology & Test Co., Ltd.

Testing Certificate Number: 2861.01

Add.	:	No.1301 Guanguang Road Xinlan Community, Guanlan Street, Longhua District Shenzhen, 518110, People's Republic of China.
P.C.	:	518110
Tel	:	0755-61180008
Fax	:	0755-61180008

7.2. Accreditations

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	A2LA(Certificate #2861.01)

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

Canada	ISED (Company Number: 24897, CAB identifier:CN0069)
USA	FCC (Registration Number: 759402, Designation Number:CN1198)

Copies of granted accreditation certificates are available for downloading from our web site, http://www.grgtest.com

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8. Measurements uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement		Frequency	Uncertainty
Radiated spurious emissions	Horizontal	30MHz～1000MHz	4.3dB
	Horizontal	1GHz～18GHz	5.6dB
	Vertical	30MHz～1000MHz	4.3dB
	Vertical	1GHz～18GHz	5.6dB

Measurement	Uncertainty
RF frequency	6.0×10^{-6}
RF power conducted	0.78dB
Occupied channel bandwidth	0.40%
Unwanted emission, conducted	0.68dB
Humidity	6.0%
Temperature	2.0℃

Note: This uncertainty represents an expanded uncertainty factor of *k*=2.

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9. Test instrument equipment and accessory equipment during test

9.1. Test instrument equipment

Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Vector Signal Generator	Agilent	N5182A	MY50142870	2023-07-13
Vector Signal Generator	R&S	SMBV 100B	101965	2023-07-17
Vector Signal Generator	R&S	SMBV 100A	260996	2022-12-29
Signal Generator	R&S	SMB 100A	109290	2022-12-16
Spectrum analyzer	R&S	FSV30	104381	2022-12-10
Spectrum analyzer	R&S	FSV30	103264	2022-10-31
NFA Series Noise Figure Analyzer	Agilent	N8973A	MY45271191	2023-05-29
SNS Series Noise Source	Agilent	N4000A	MY44421910	2023-05-29
Frequency meter	Suin	SS7300	6E5042030	2023-02-09
Power splitter	WEINSCHEL	1580	SL767	2023-02-10
AC variable frequency power supply	GuangzhouYUXI	YT-11010	4550	2023-03-28
Receiver	R&S	ESU26	100526	2023-01-20
Receiver	R&S	ESU40	100106	2022-10-10
Bi-log Antenna	Schwarzbeck	VULB 9168	01303	2023-07-30
Horn Antenna	Schwarzbeck	BBHA9120D	286	2022-09-11
Horn Antenna	Schwarzbeck	BBHA9120D	02492	2023-07-27
Horn Antenna	ETS	3117 C	00075824	2023-01-15
Broadband Amplifiers	Schwarzbeck	BBV 9718 C	00073	2023-07-09
Semi-anechoic chamber	ETS-lindgren	966(RFD-F/A-100)	3730	2022-09-19

9.2. Test accessory equipment

Name of Equipment	Manufacturer	Model	Serial Number
Power splitter	WEINSCHEL	1580	SL767
Attenuation	Shanghaihua xiang	TS5-40dB-4G	04062229
Voltage regulator	Qingdaoqingzhi	TDGC2J-5	GRGTAG2013026
Temp & Humidity chamber	HOSON	ZB-TY800H	180810001

10. Radio technical requirement specification

10.1. Test Frequencies

Test requirement: KDB 935210 D02 APPENDIX D/Table D.3
FCC PART 2.1057
ANSI C63.26-2015 Clause 5.1.2

10.1.1. Requirements

Reference to FCC regulations, FCC part 2.1057, ANSI C63.26-2015 clause 5.1.2 and KDB 935210 D02 Appendix D / table D.3 have relevant frequency band requirements.

(1) FCC PART 2.1057

§2.1057 Frequency spectrum to be investigated.

(a) In all of the measurements set forth in §§2.1051 and 2.1053, the spectrum shall be investigated from the lowest radio frequency signal generated in the equipment, without going below 9 kHz, up to at least the frequency shown below:

(1) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

(2) If the equipment operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

(3) If the equipment operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower.

(b) Particular attention should be paid to harmonics and subharmonics of the carrier frequency as well as to those frequencies removed from the carrier by multiples of the oscillator frequency. Radiation at the frequencies of multiplier stages should also be checked.

(c) The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.

(d) Unless otherwise specified, measurements above 40 GHz shall be performed using a minimum resolution bandwidth of 1 MHz.

(2) ANSI C63.26-2015 Clause 5.1.2

5.1.2 Number of fundamental frequencies to be tested in EUT transmit band

5.1.2.1 General requirement

Measurements of transmitters shall be performed and, if required, reported for each frequency band in which the EUT can be operated with the device transmitting at the number of frequencies in each band specified in Table 2.

[24] See 47 CFR 2.1057.

23

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ANSI C63.26-2015
American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services

Table 2—Number of frequencies to be tested

Frequency range over which EUT operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

(3) KDB 935210 D02 APPENDIX D/Table D.3

Section 90.219 purposes (for info only – see rules for details, also KDB Publication 634817 [R14])

F_L (MHz)	–	F_U (MHz)	Rule(s)	Misc. Notes
150	–	150.05	Federal (non-FCC)	
150.05	–	150.8	90.265	
150.8	–	162.0125	90	
162.0125	–	173.2	90.265	
173.2	–	173.4	90	
173.4	–	174	Federal (non-FCC)	
406.1	–	420	90.265	
420	–	421	ULS presently shows no licensees for 420-420.9 MHz	
421	–	430	90	
430	–	450	Not available under 90 Subparts B, C land mobile service	
450	–	470	90 (selected bands)	
470	–	512	90	
746	–	757	27.5(b)(3) Block C; 90 not available	
757	–	758	27.5(b)(1) Block A; 90 not available	
758	–	768	90-R, Public Safety (PS) Broadband (FirstNet)	B9B (LTE)
768	–	769	PS Guardband	
769	–	775	PS Narrowband	
775	–	776	27.5(b)(2) Block B; 90 not available	
776	–	787	27.5(b)(3) Block C; 90 not available	
787	–	788	27.5(b)(1) Block A; 90 not available	
788	–	798	90-R, Public Safety (PS) Broadband (FirstNet)	B9B (LTE)
798	–	799	PS Guardband	
799	–	805	PS Narrowband	
805	–	806	27.5(b)(2) Block B; 90 not available	
806	–	809	90 NPSPAC (PS) [90.617(a)(1)]	B9B/B9A
809	–	815	90 Interleaved PS; B/ILT; SMR [90.614(a); 90.613 ch. nos. 1-470][a]	B9B/B9A
815	–	816	90 Expansion B/ILT; SMR [90.614(a); 90.613 ch. nos. 470-550][a]	B9B/B9A
816	–	817	90 Guardband	B9B/B9A
817	–	824	CMRS 90 ESMR [90.614(b); 90.613 ch. nos. 551-830]	B2I 90-S
824	–	849	22 H; 90 not available	B2I
849	–	851	22 G; 90 not available	BOS
851	–	854	90 NPSPAC (PS) [90.617(a)(1)]	B9B/B9A
854	–	860	90 Interleaved PS; B/ILT; SMR [90.614(a); 90.613 ch. nos. 1-470][a]	B9B/B9A
860	–	861	90 Expansion B/ILT; SMR [90.614(a); 90.613 ch. nos. 470-550][a]	B9B/B9A
861	–	862	90 Guardband	B9B/B9A
862	–	869	CMRS 90 ESMR [90.614(b); 90.613 ch. nos. 551-830]	B2I 90-S
869	–	894	22-H; 90 not available	B2I
894	–	896	22-G; 90 not available	BOS
896	–	901	90 Interleaved B/ILT [90.617(c)] and SMR [90.617(f)]; UL (donor)	B2I 90-S & B9B/B9A 90-S
901	–	902	24-D; 90 not available	B2I
928	–	929	101; 90 not available[b,c]	BOS
929	–	930	90[d,e]	B9B/B9A
930	–	931	24-D; 90 not available	B2I
931	–	932	22-E; 90 not available	B2I
932	–	935	101; 90 not available	BOS
935	–	940	90 Interleaved B/ILT [90.617(c)] and SMR [90.617(f)]; DL (server)	B2I 90-S & B9B/B9A 90-S

The EUT will utilize bands:

700MHz Band: Downlink: 758MHz ~ 775MHz, Uplink: 788MHz ~ 805MHz
800MHz Band: Downlink: 851MHz ~ 861MHz, Uplink: 806MHz ~ 816MHz

10.1.2. Result

This project is only reported and checked, the frequency range of this EUT meets the above regulatory requirements.

10.2. Input Signals

Test requirement: KDB 935210 D05 clause 4.1

10.2.1. Requirements

KDB 935210 D05 clause 4.1

The procedures in this clause are specific to EUTs intended for operating in the Private Land Mobile Radio Services (PLMRS) and Public Safety Radio Services (PSRS)[5], which are governed under the provisions and requirements of the Part 90 rules (i.e., Section 90.219 applies).

Table 1 depicts signal types associated with PLMRS operations, which are to be considered as test signals to be used in performing compliance testing on PLMRS amplifiers, repeaters, and industrial boosters. Not all of the procedures in this clause will require using each of the signals listed in Table 1, because for

[5] As explained in § 90.16, Public Safety Radio Services is part of the Public Safety Radio Pool, also known as the Public Safety Pool.

many EUTs a CW tone can adequately model the narrowband signals typically encountered within these services. For EUTs supporting digitally modulated signals, the intended operating signal types should be tested (e.g., P25 Phase 1, P25 Phase 2, TETRA, etc.), especially for PSRS devices. Devices intended for use in 700 MHz Public Safety Broadband spectrum shall be tested using a representative band-limited AWGN signal (99 % OBW of 4.1 MHz) or the applicable signal type (e.g., LTE).

Table 1—Test signals for PLMRS devices

Emission Designator	Modulation	Occupied Bandwidth	Channel Bandwidth	Audio Frequency
16K0F3E	FM	16 kHz	25 kHz	1 kHz
11K3F3E	FM	11.3 kHz	12.5 kHz	1 kHz
4K00F1E	FM	4 kHz	6.25 kHz	1 kHz
N/A	CW	N/A	N/A	N/A

10.2.2. Result:

Test Date (yy-mm-dd): 2022-08-03~2022-08-07

Normal condition: Temp:26.5~26.8℃, Humid: 48~50%, Atmospheric Pressure:101kpa

Supply Voltage: AC 110V, 50Hz

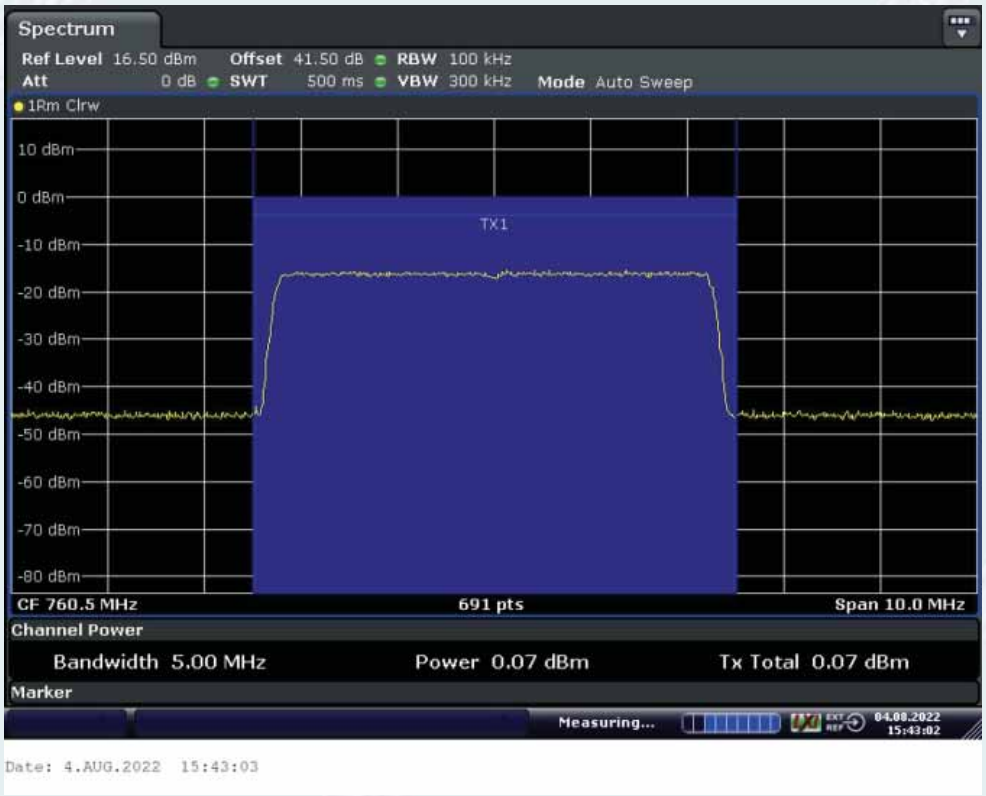
This project is only reported and checked.

10.2.3. Input Signals screenshot

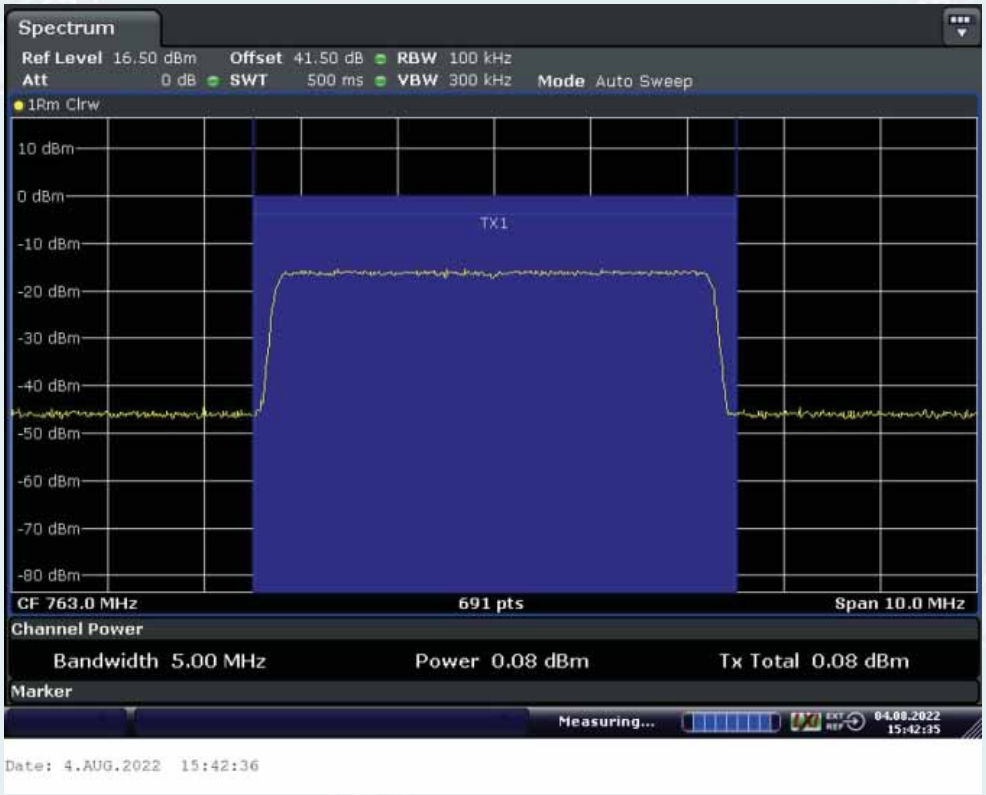
10.2.3.1. 700MHz Band

10.2.3.1.1. LTE 5MHz

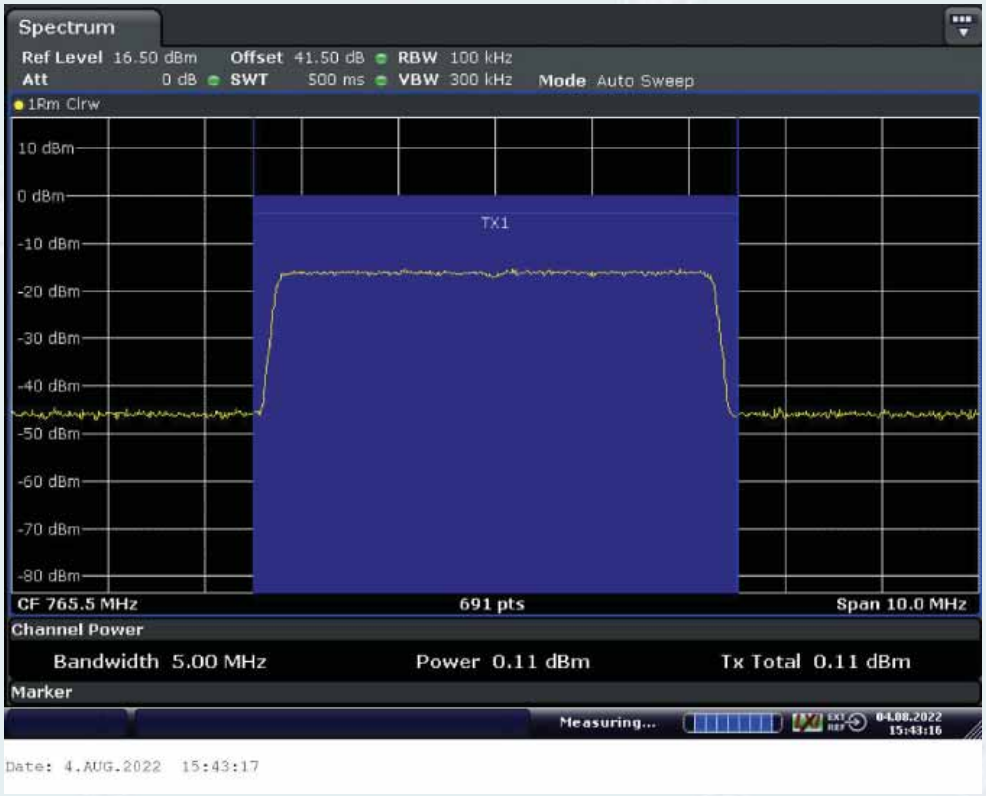
10.2.3.1.1.1. Downlink



Low Frequency: 760.5MHz

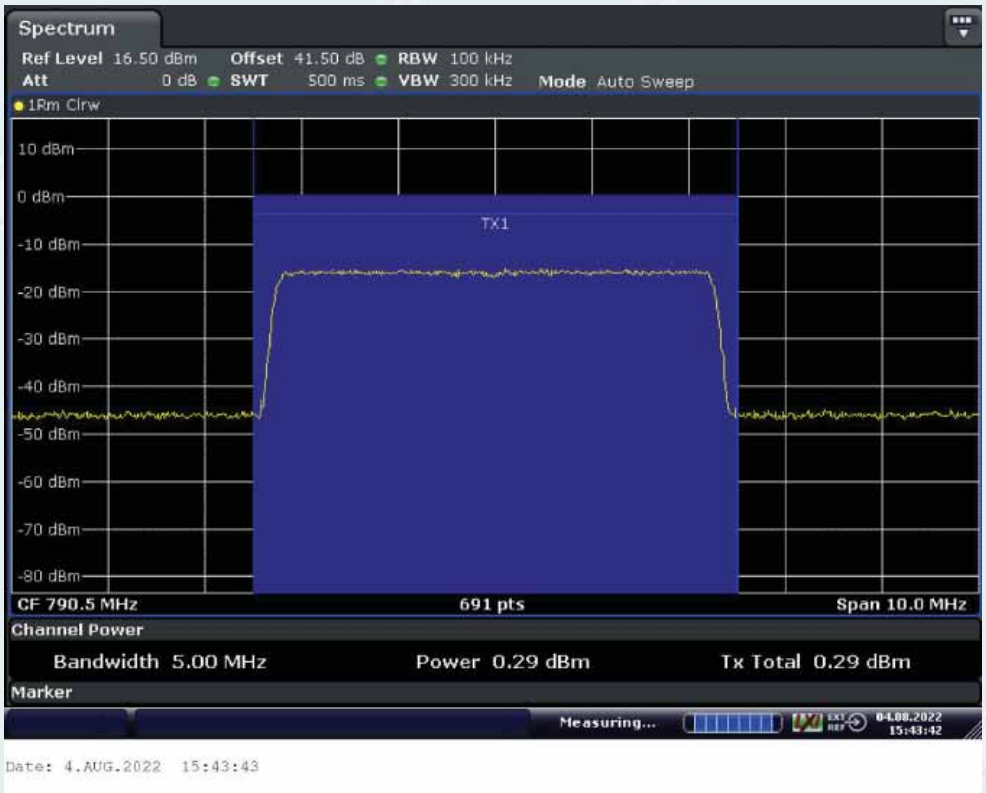


Middle Frequency: 763.0MHz

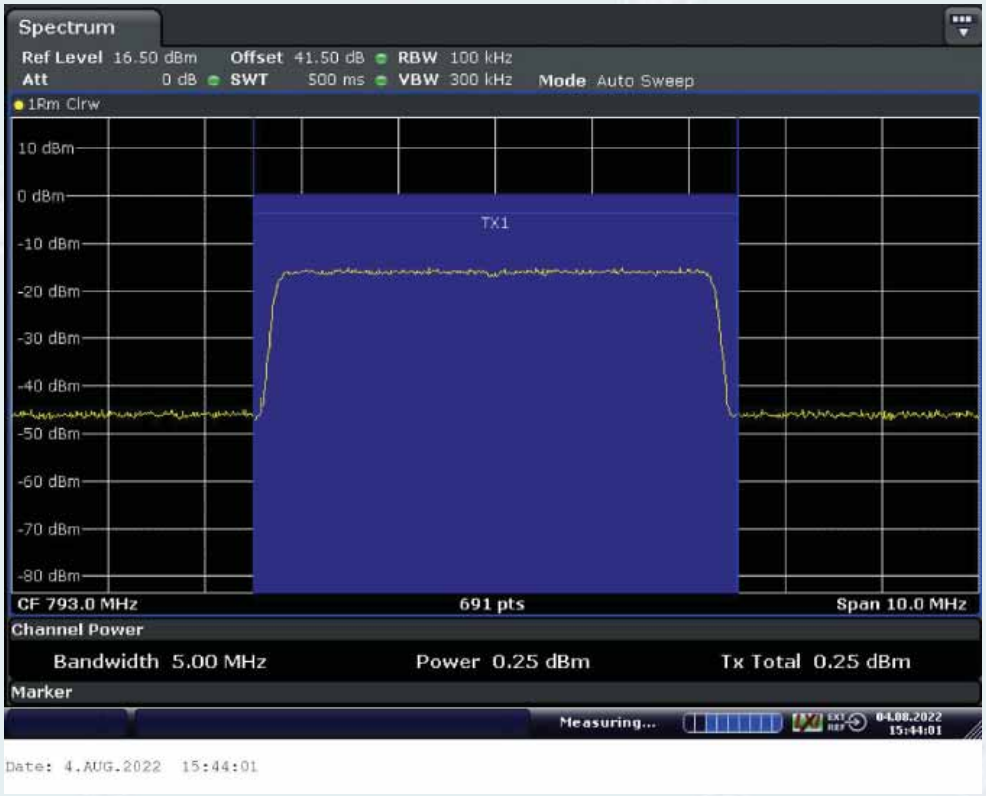


High Frequency: 765.5MHz

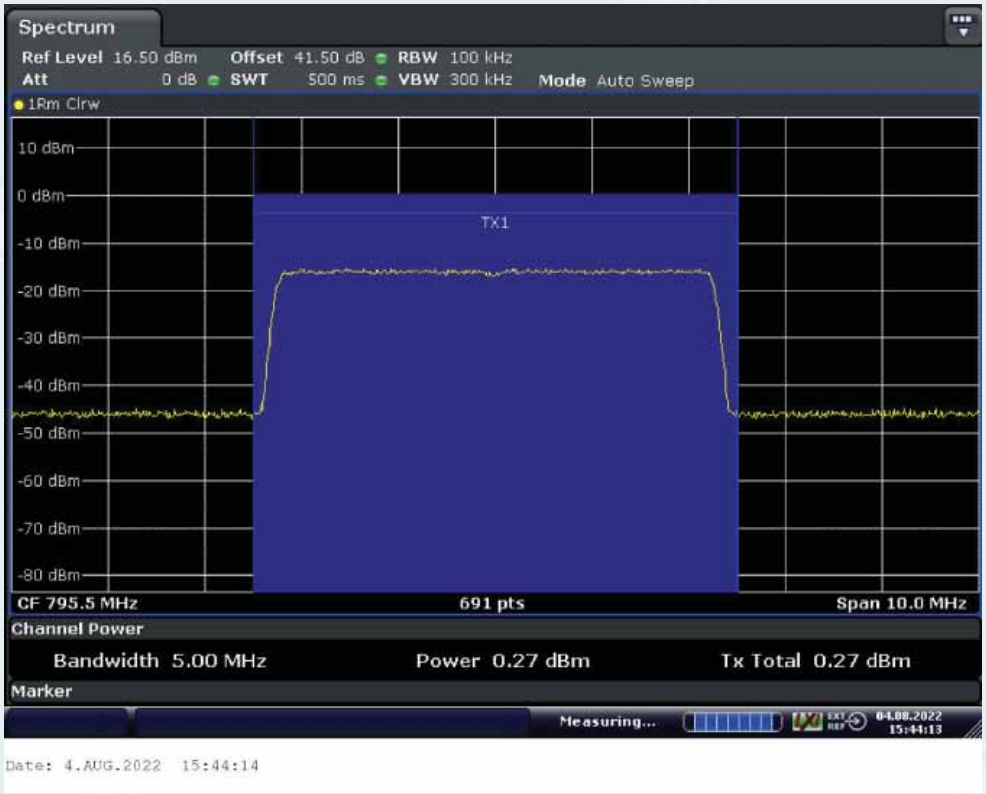
10.2.3.1.1.2. Uplink



Low Frequency: 790. 5MHz



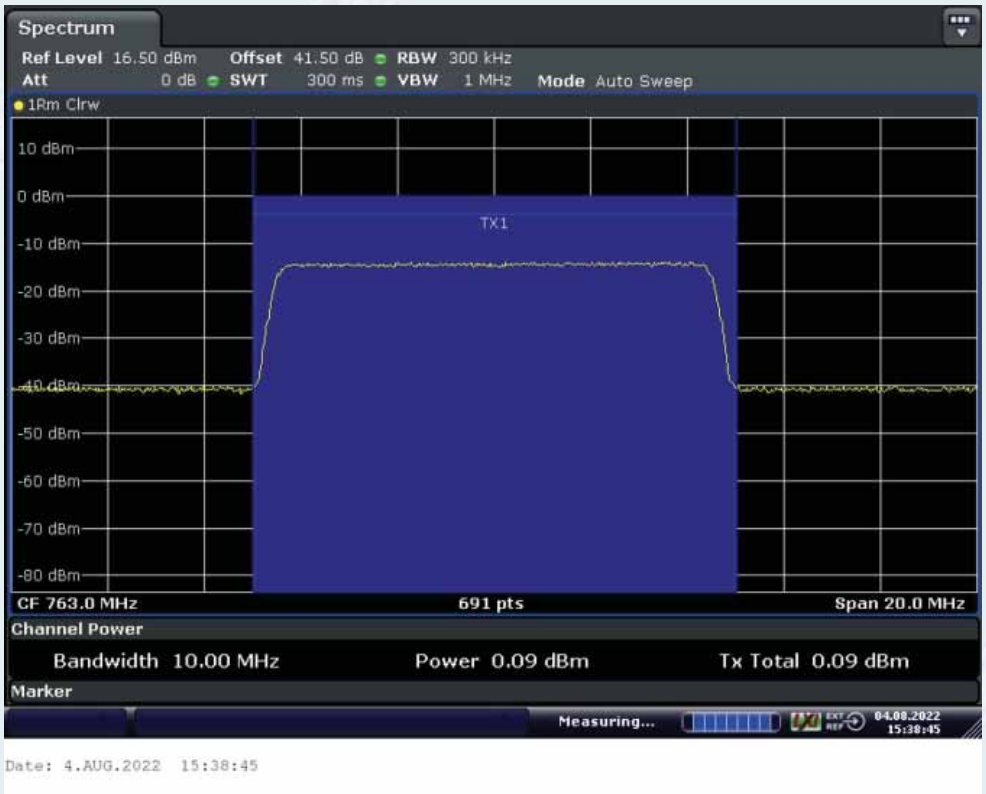
Middle Frequency: 793.0MHz



High Frequency: 795.5MHz

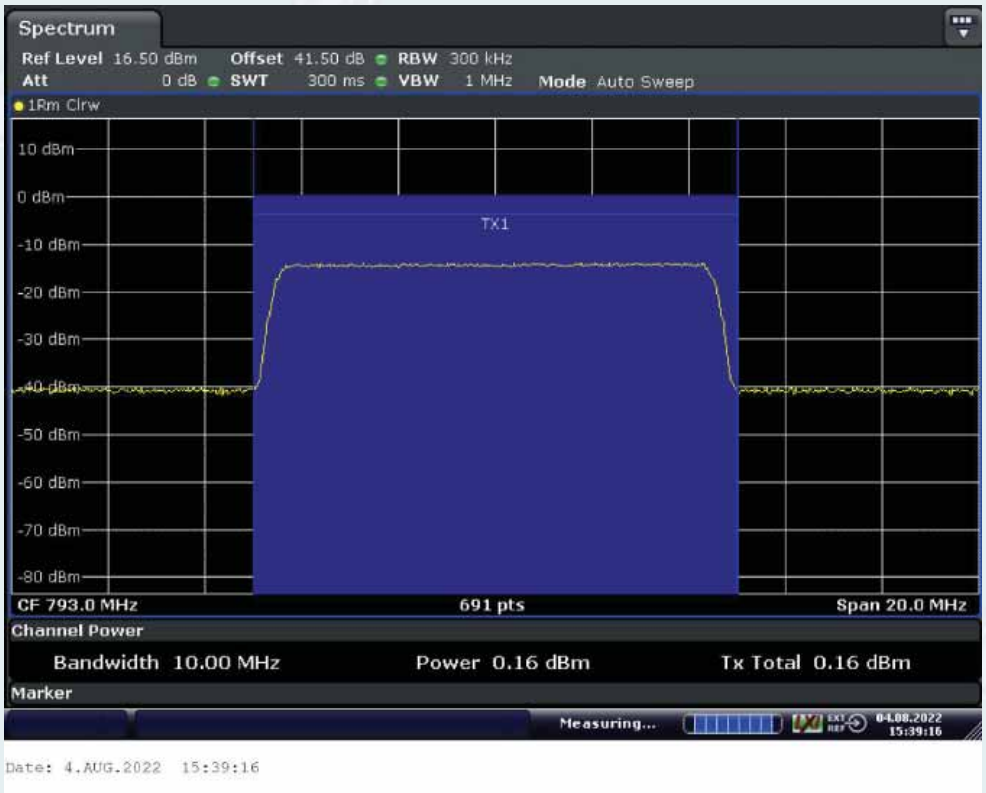
10.2.3.1.2. LTE 10MHz

10.2.3.1.2.1. Downlink



Middle Frequency: 763.0MHz

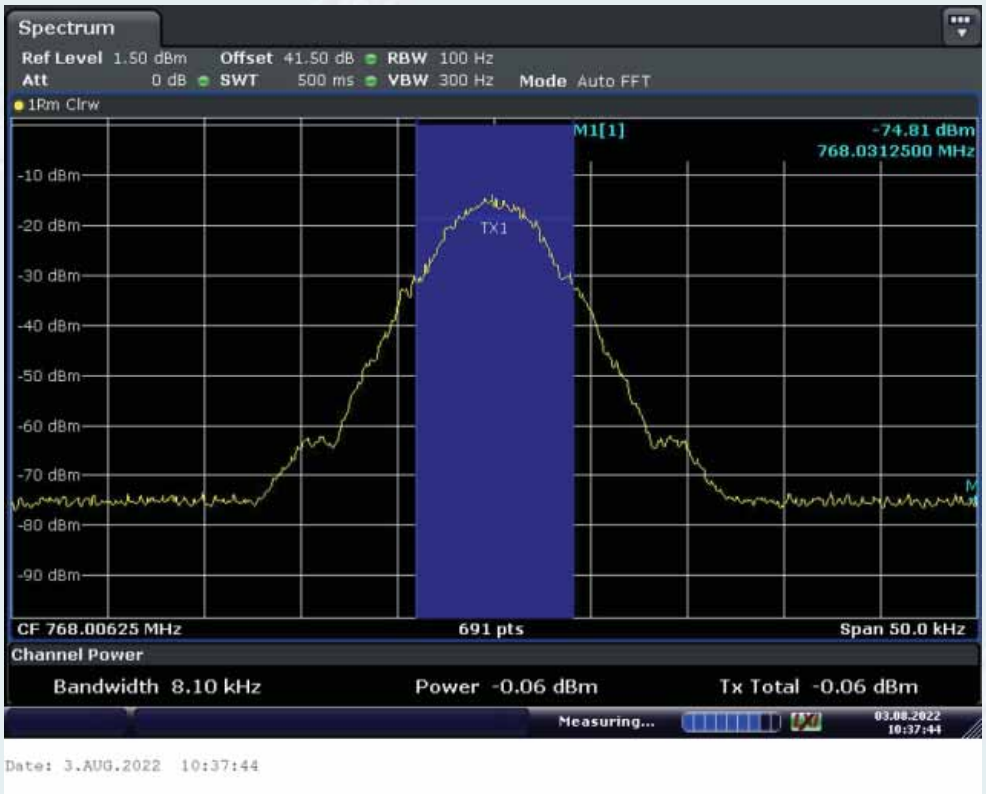
10.2.3.1.2.2. Uplink



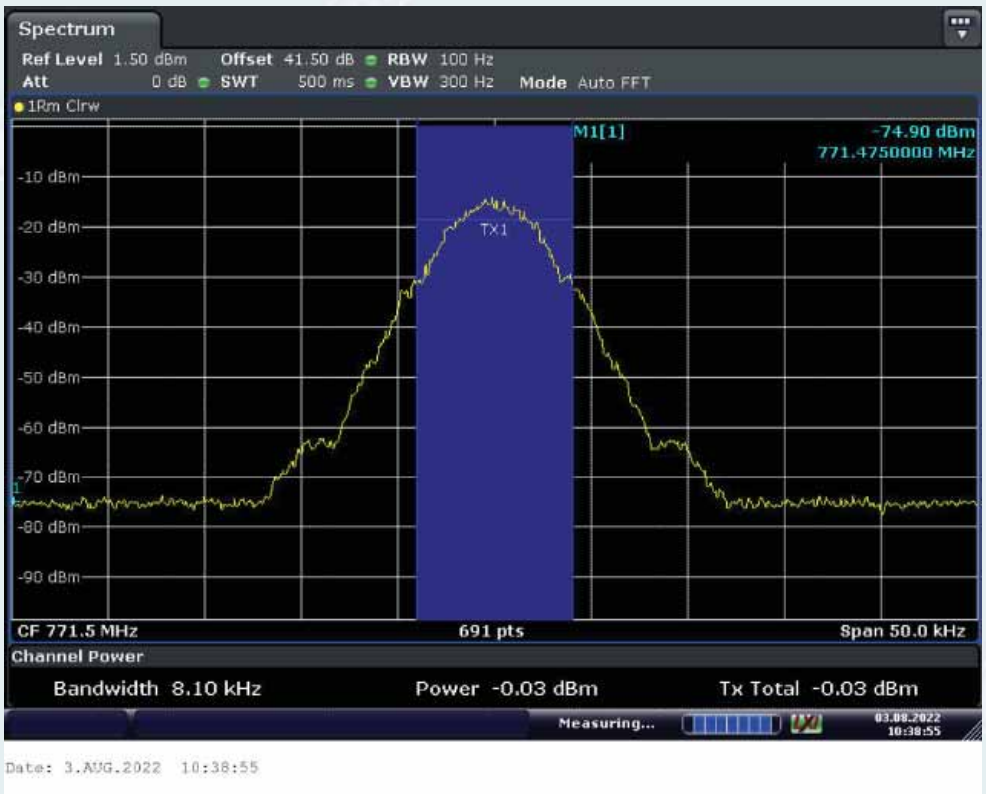
Middle Frequency: 793.0MHz

10.2.3.1.3. P25 Phase I(C4FM)

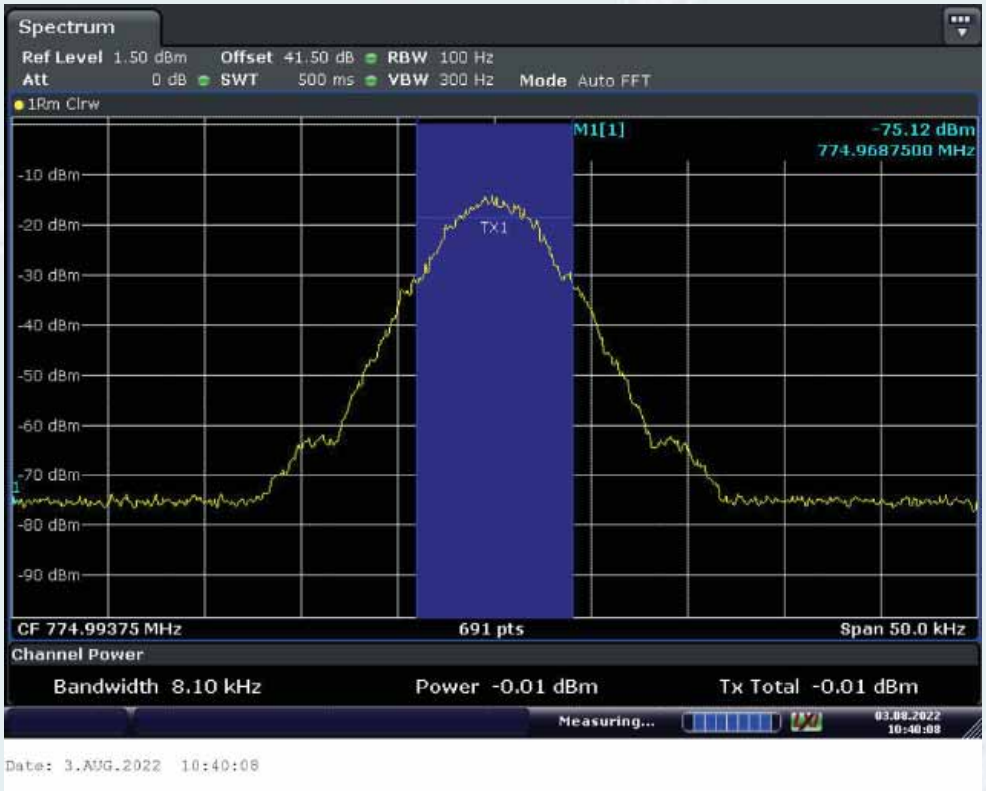
10.2.3.1.3.1. Downlink



Low Frequency: 768.00625MHz

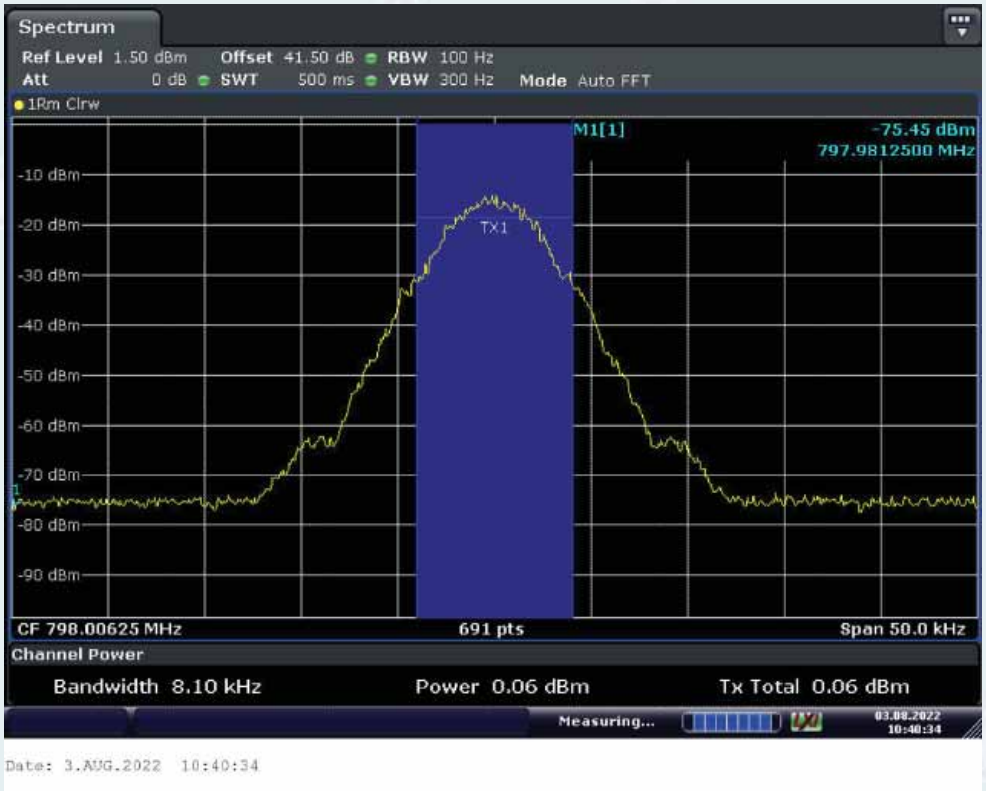


Middle Frequency: 771.5MHz

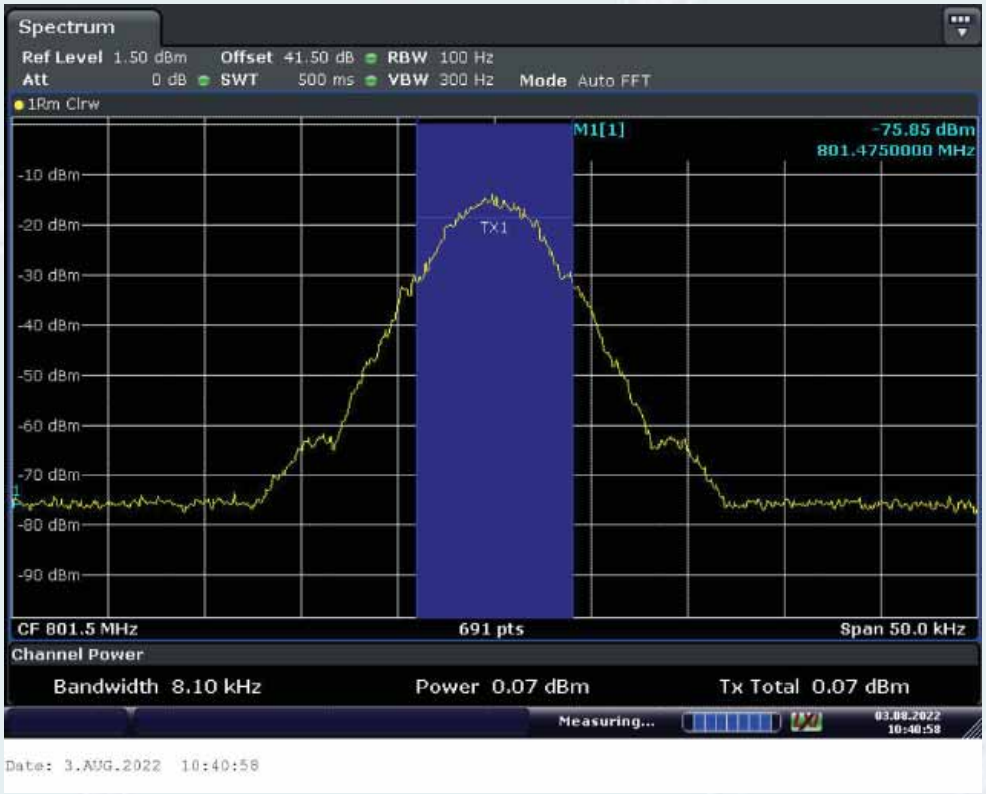


High Frequency: 774.99375MHz

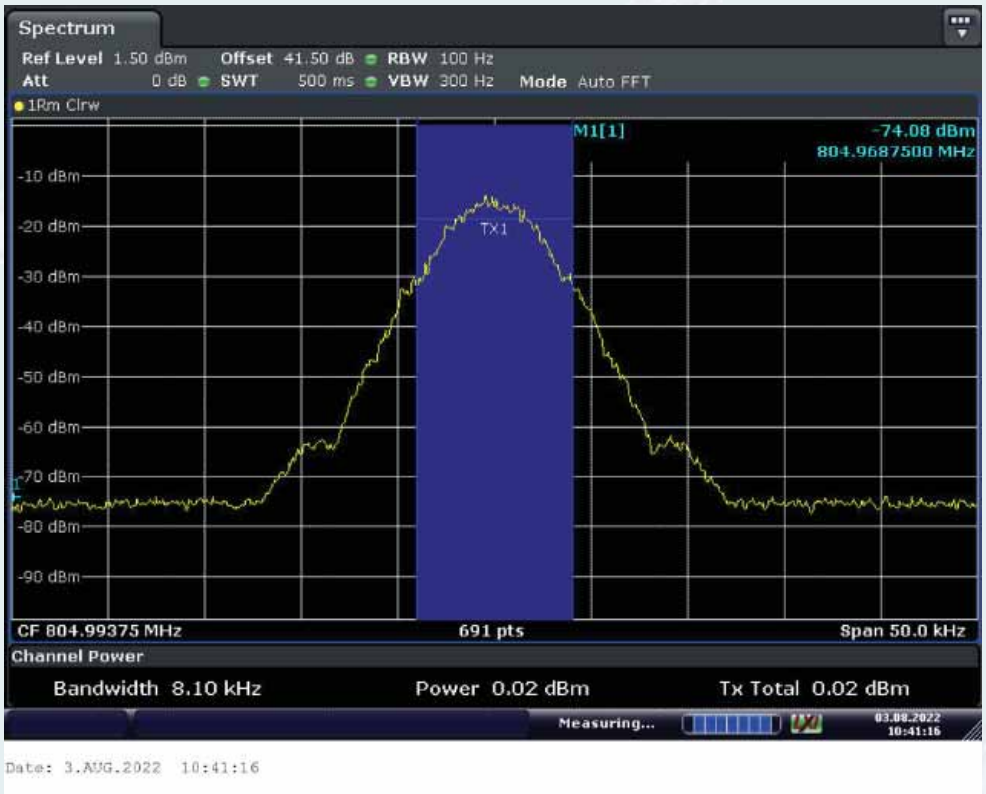
10.2.3.1.3.2. Uplink



Low Frequency: 798.00625MHz



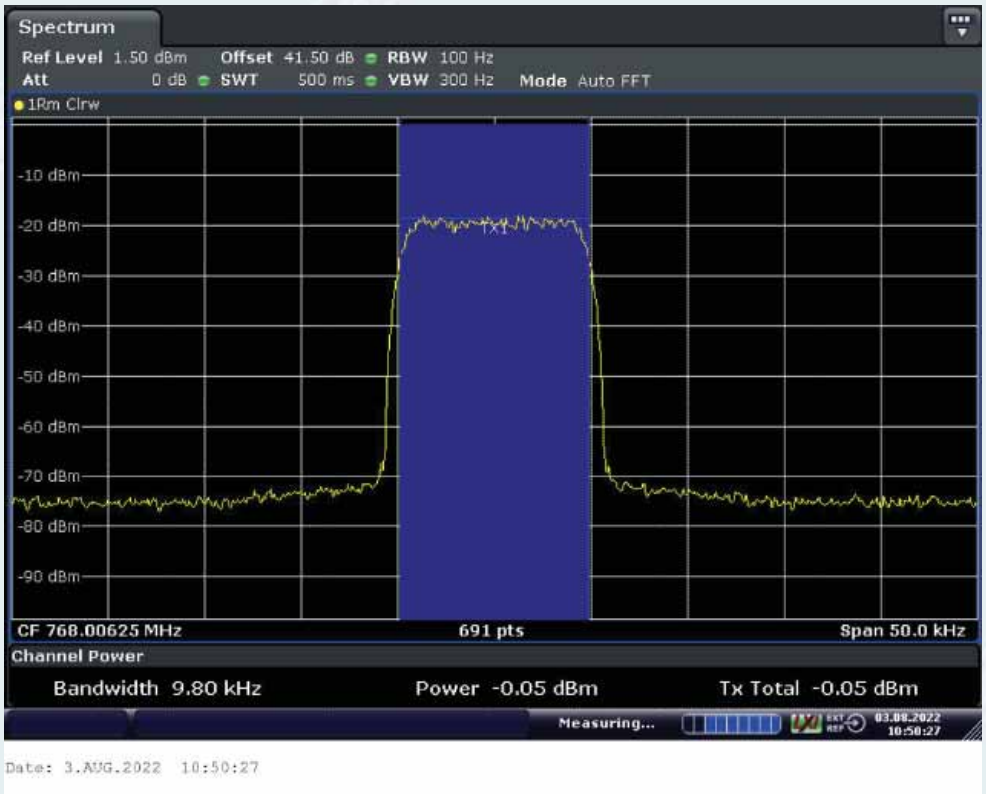
Middle Frequency: 801.5MHz



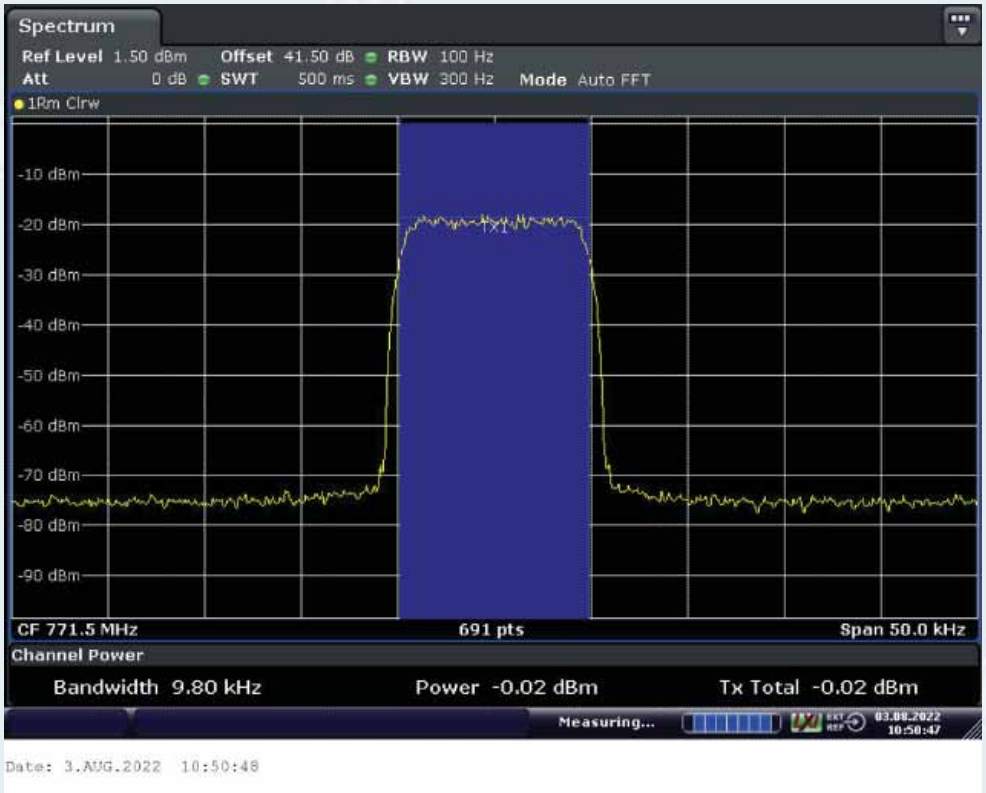
High Frequency: 804.99375MHz

10.2.3.1.4. P25 Phase II(H-DQPSK)

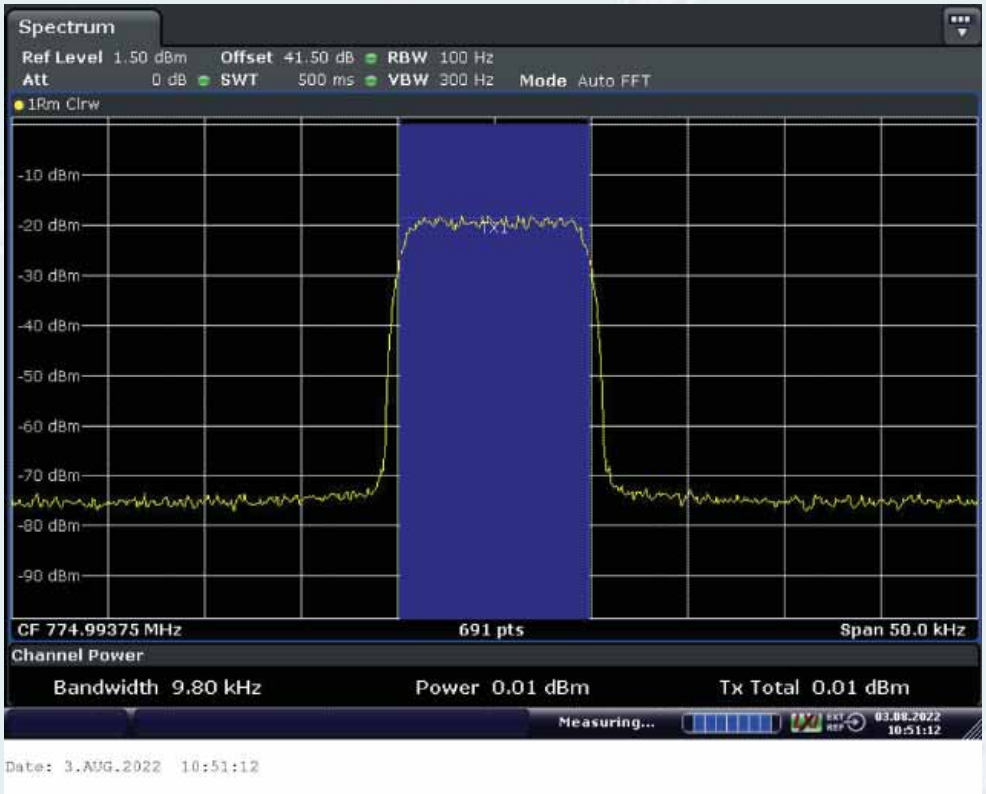
10.2.3.1.4.1. Downlink



Low Frequency: 768.00625MHz

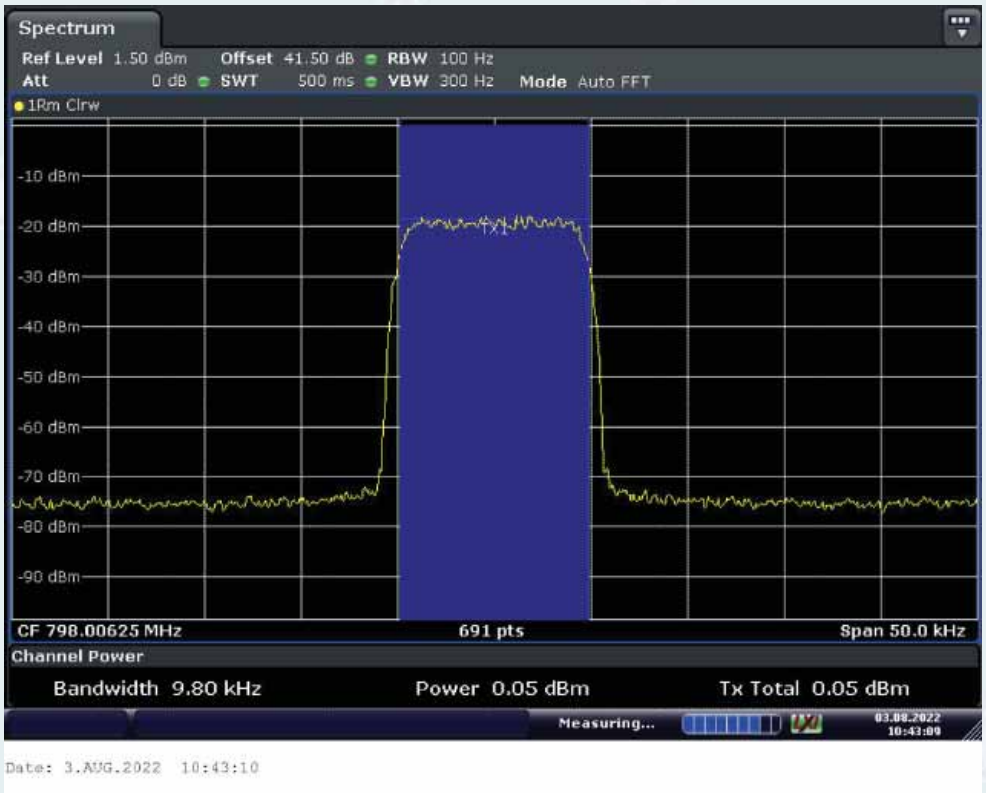


Middle Frequency: 771.5MHz

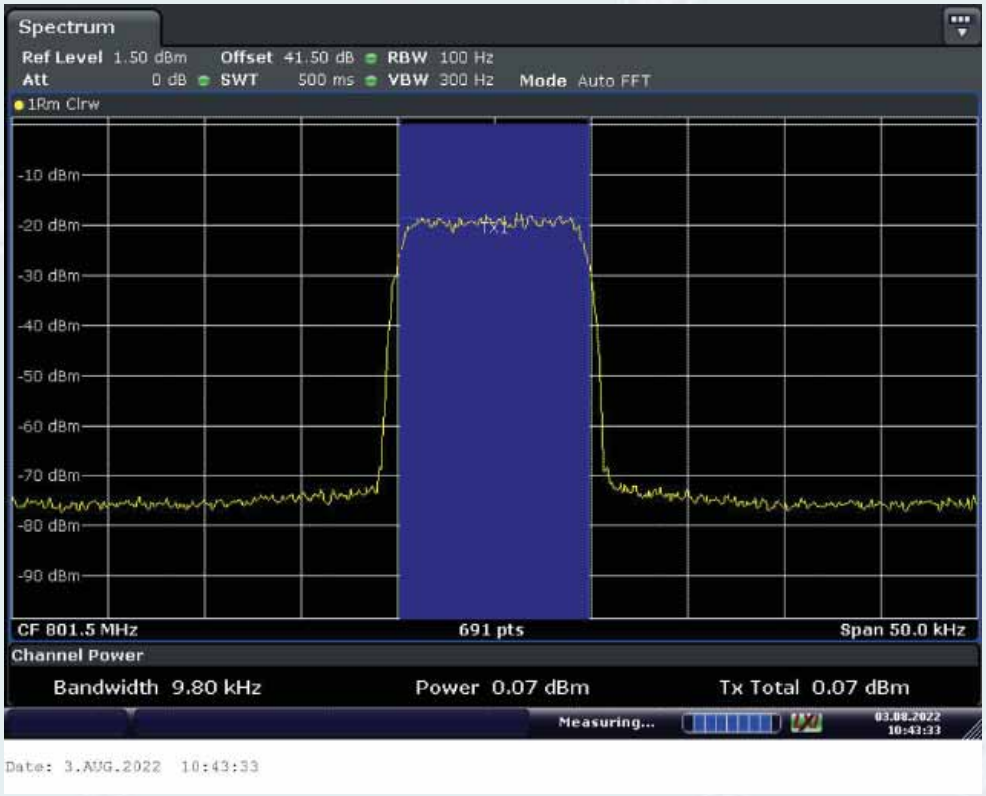


High Frequency: 774.99375MHz

10.2.3.1.4.2. Uplink



Low Frequency: 798.00625MHz

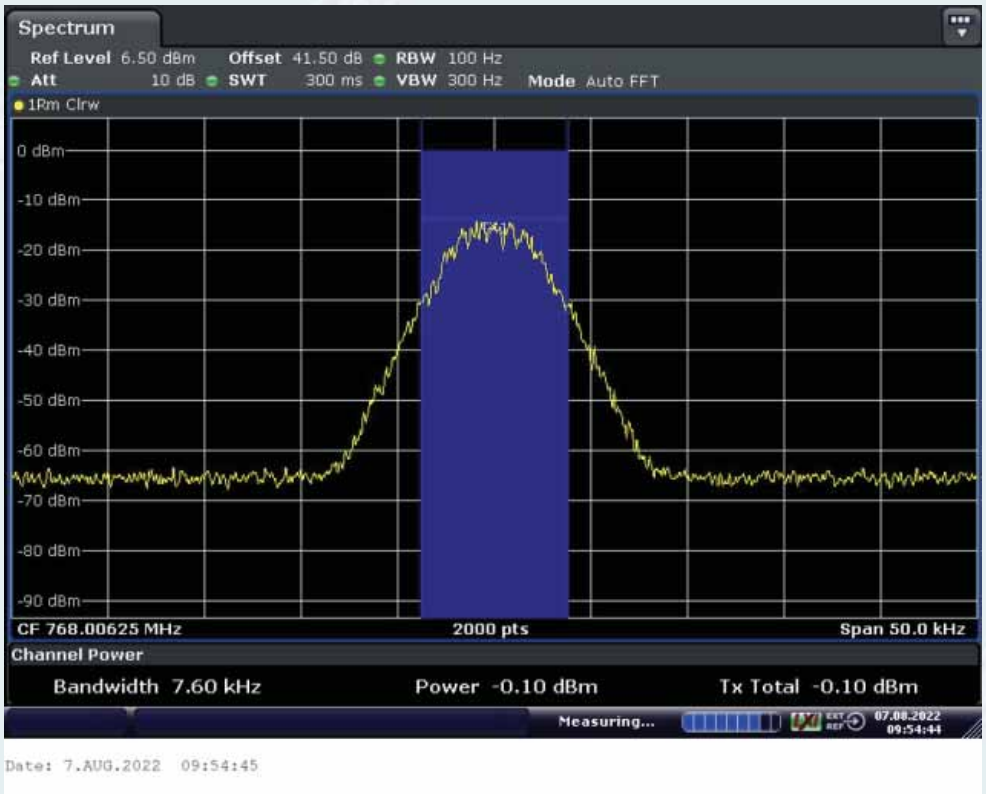


Middle Frequency: 801.5MHz

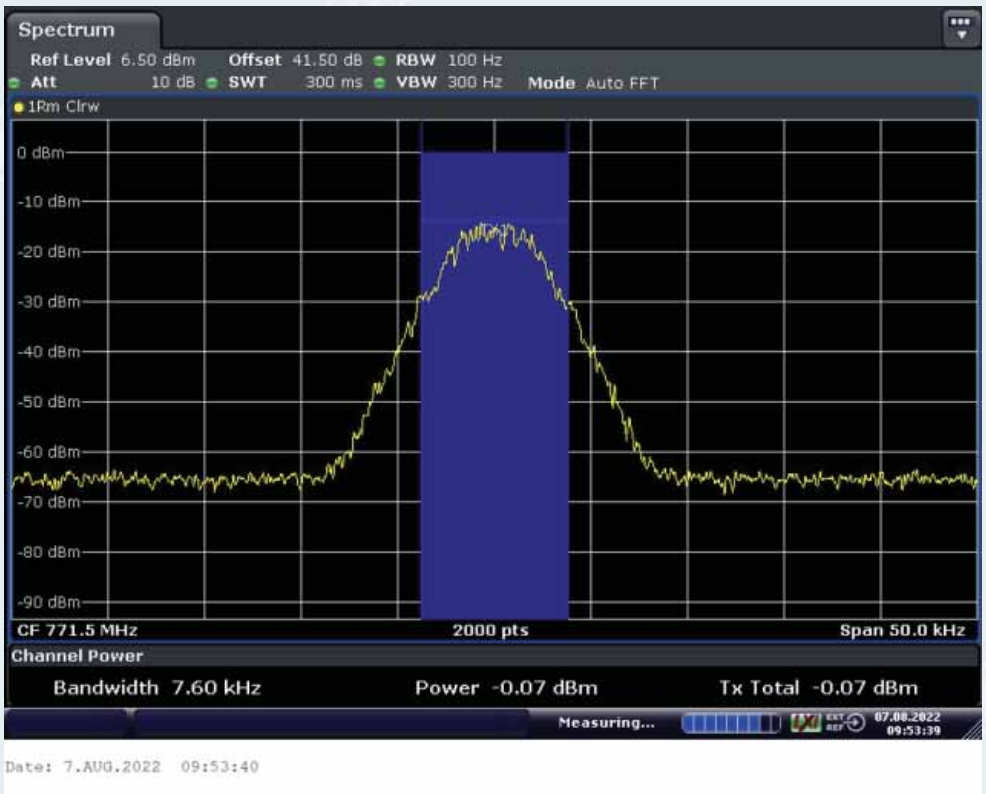
High Frequency: 804.99375MHz

10.2.3.1.5. DMR

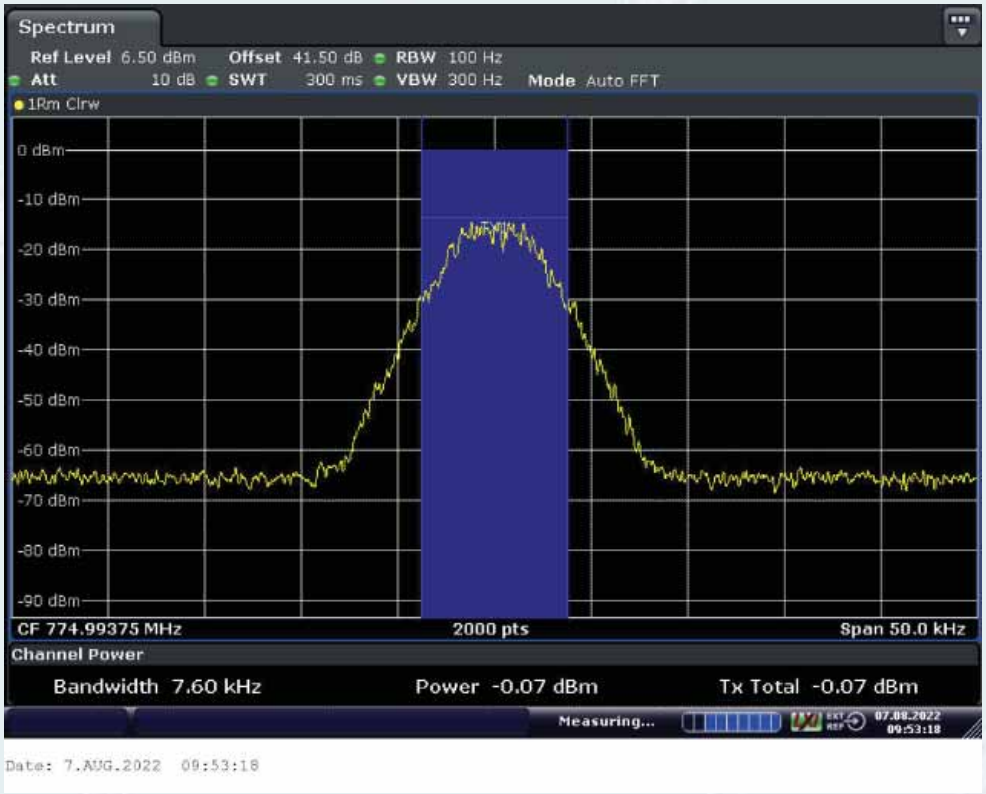
10.2.3.1.5.1. Downlink



Low Frequency: 768.00625MHz

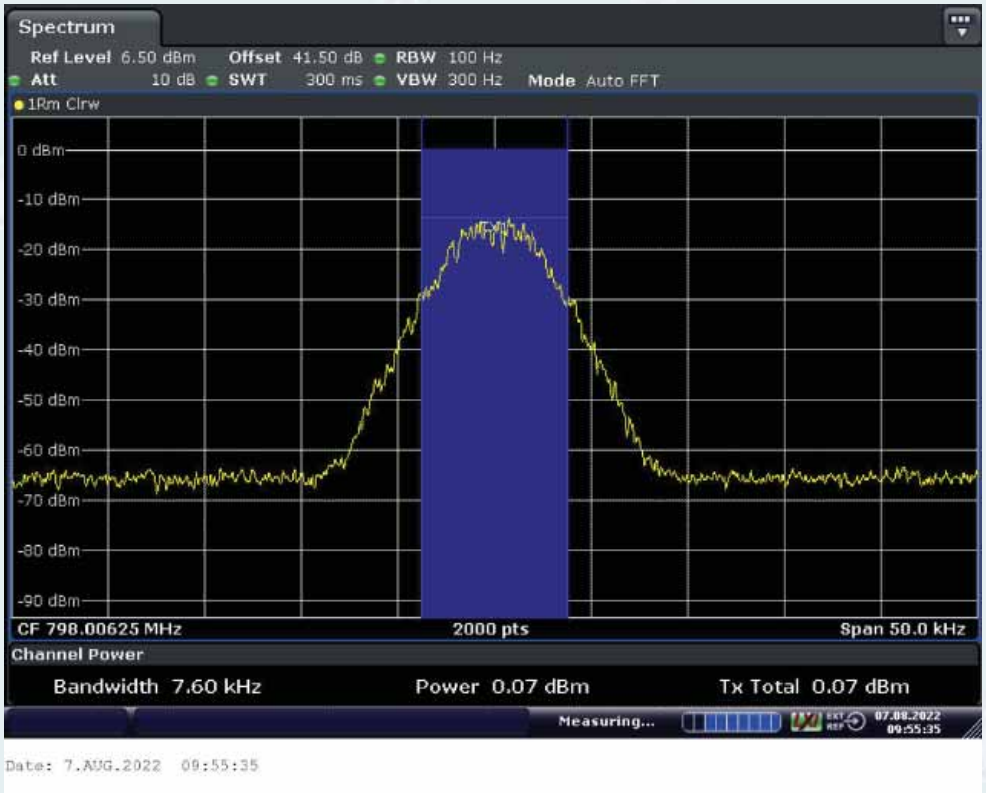


Middle Frequency: 771.5MHz

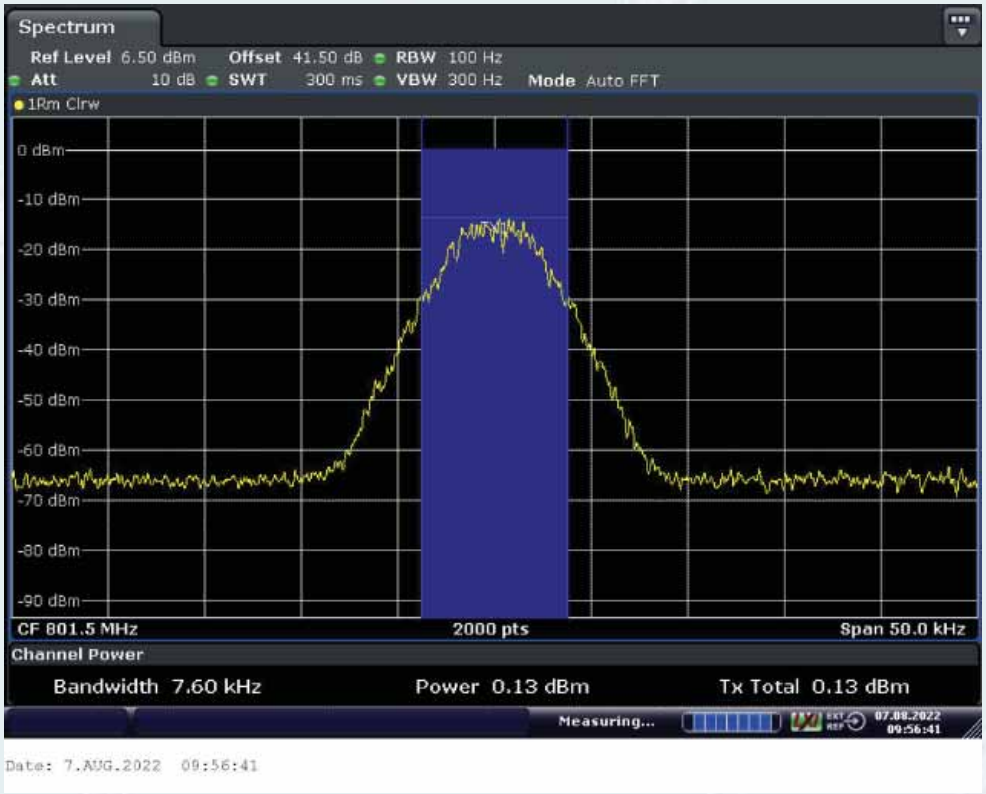


High Frequency: 774.99375MHz

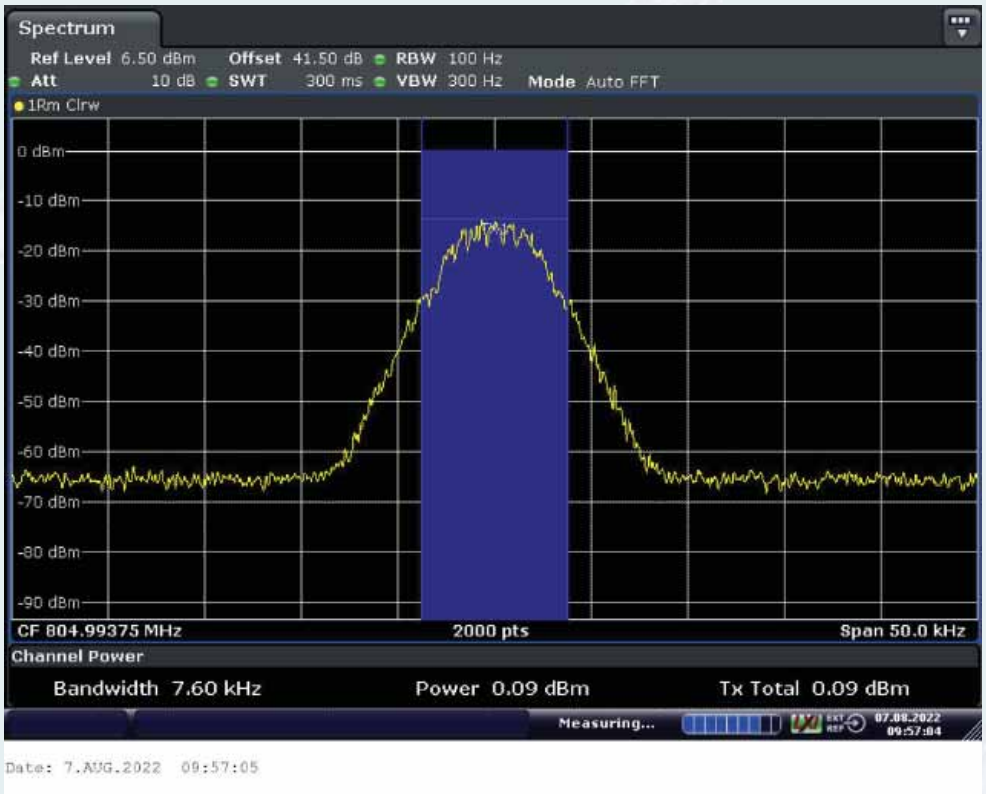
10.2.3.1.5.2. Uplink



Low Frequency: 798.00625MHz



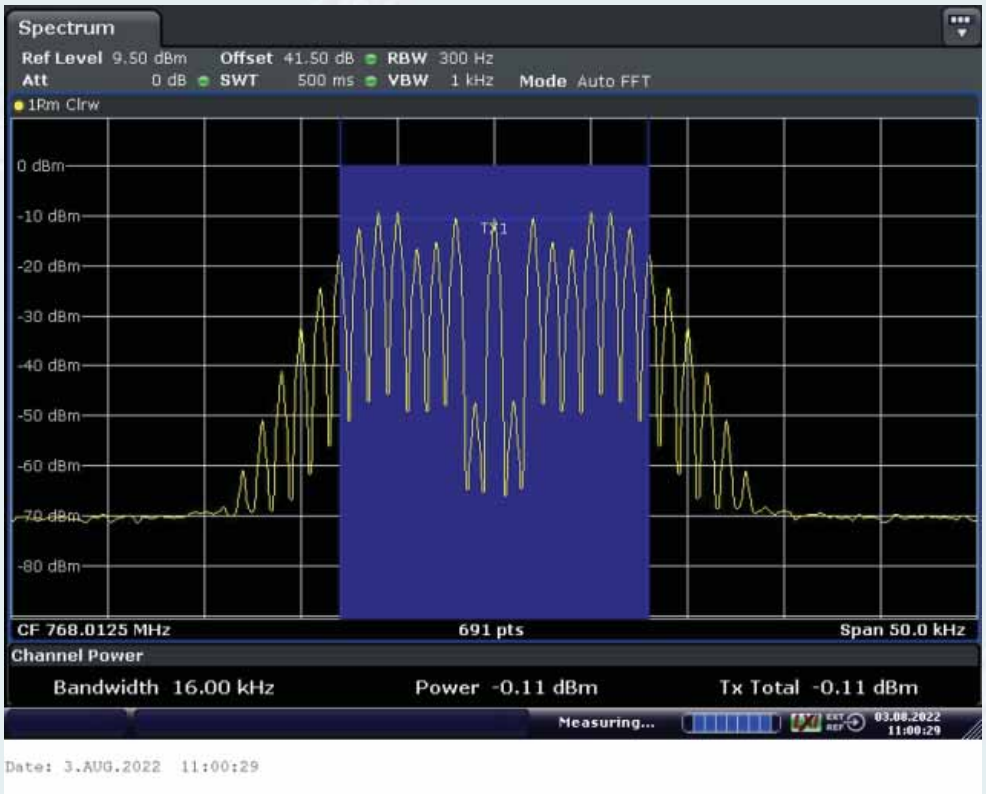
Middle Frequency: 801.5MHz



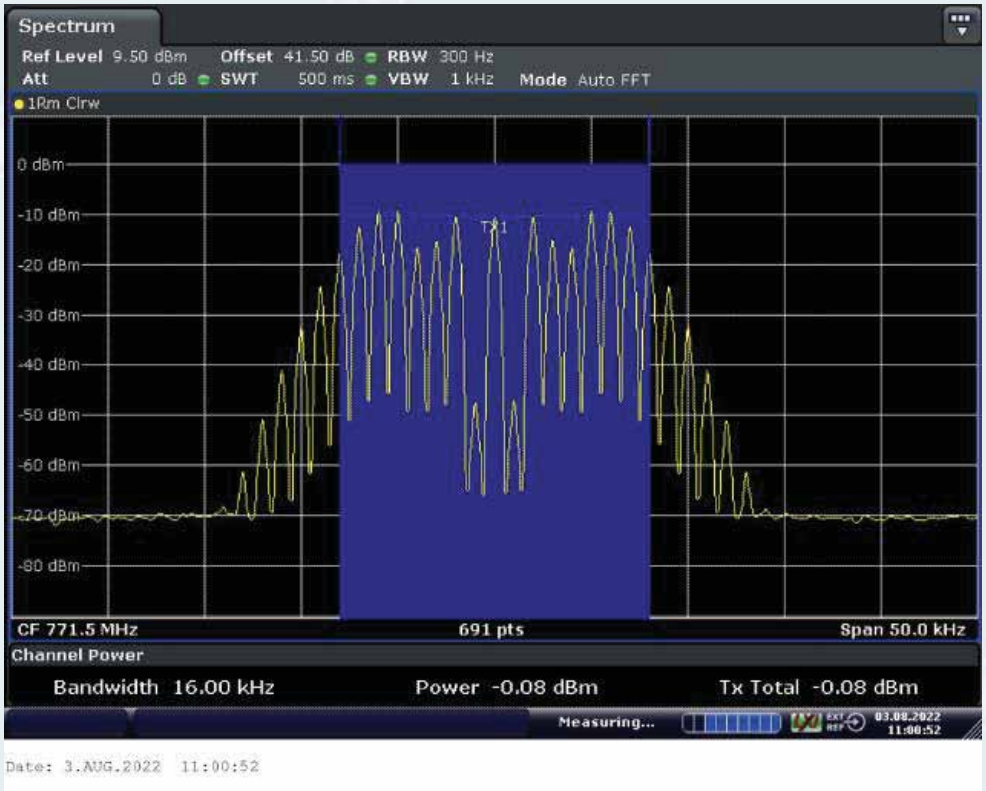
High Frequency: 804.99375MHz

10.2.3.1.6. Analog FM

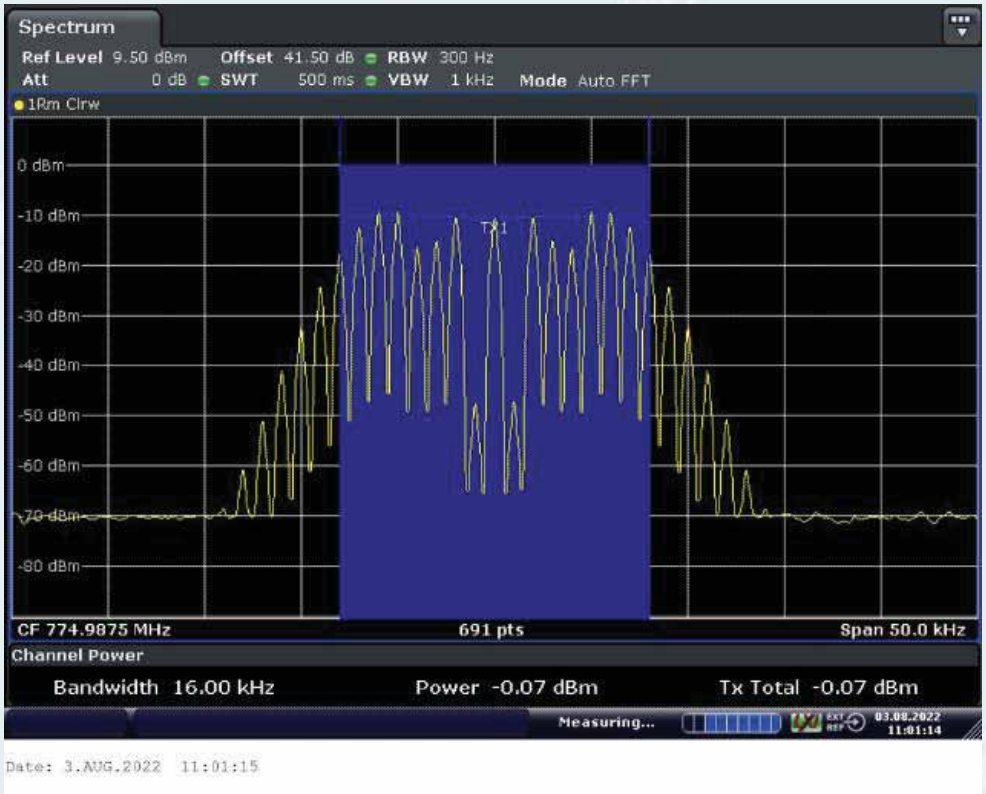
10.2.3.1.6.1. Downlink



Low Frequency: 768.0125MHz

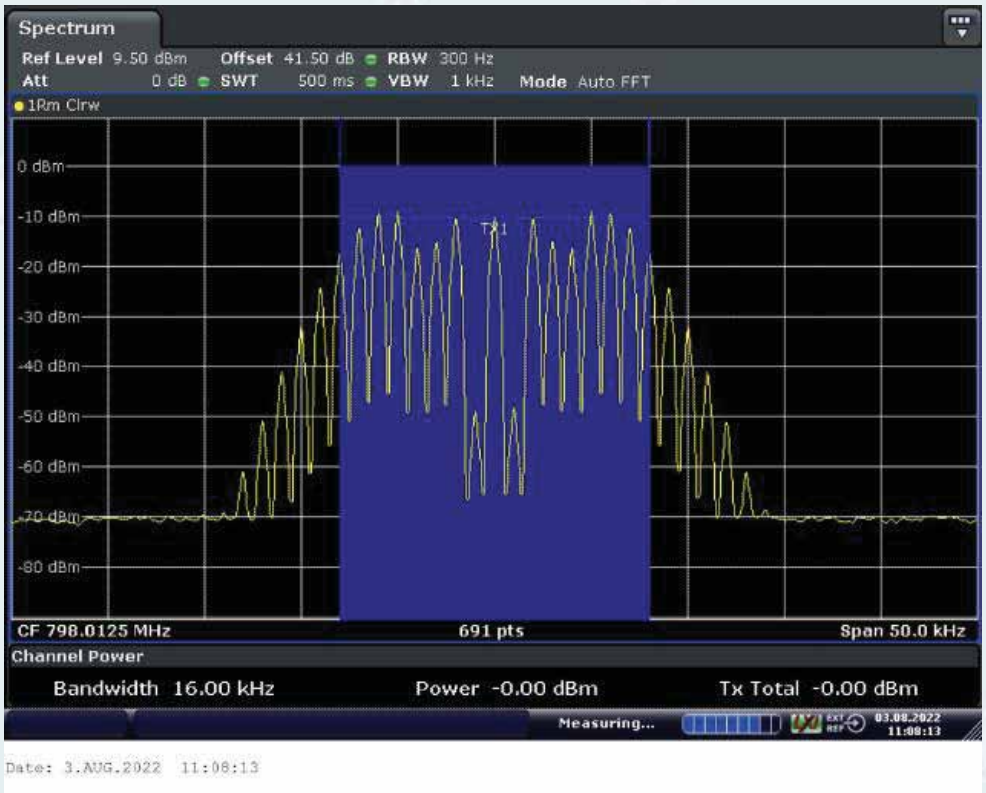


Middle Frequency: 771.5MHz

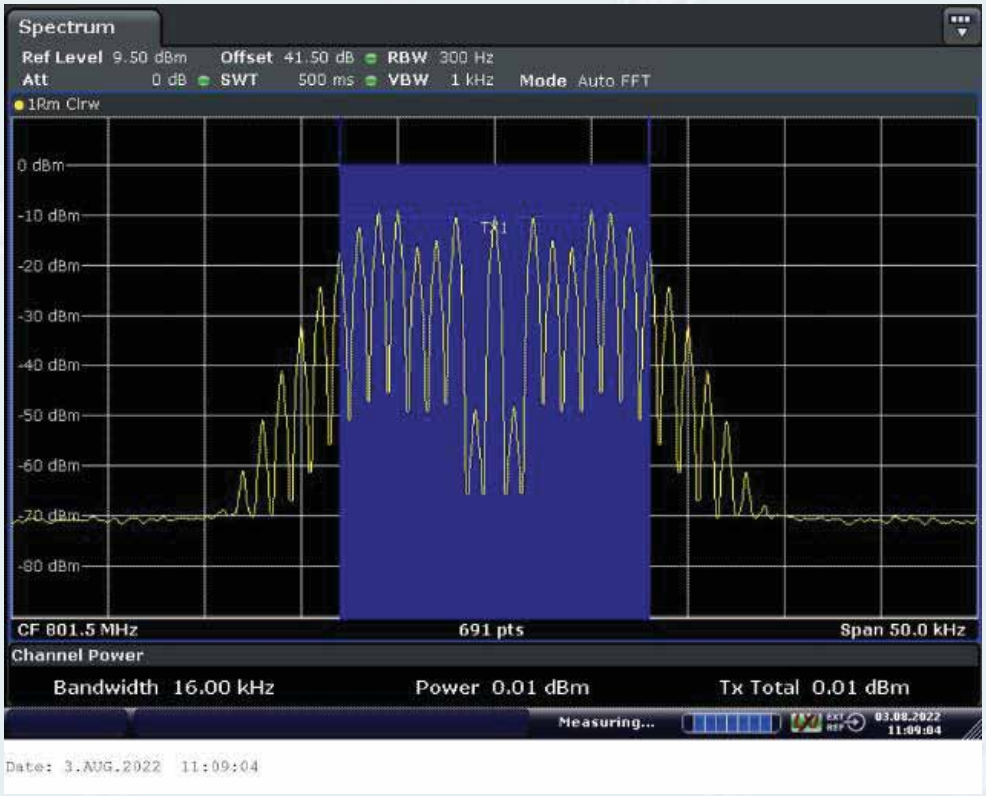


High Frequency: 774.9875MHz

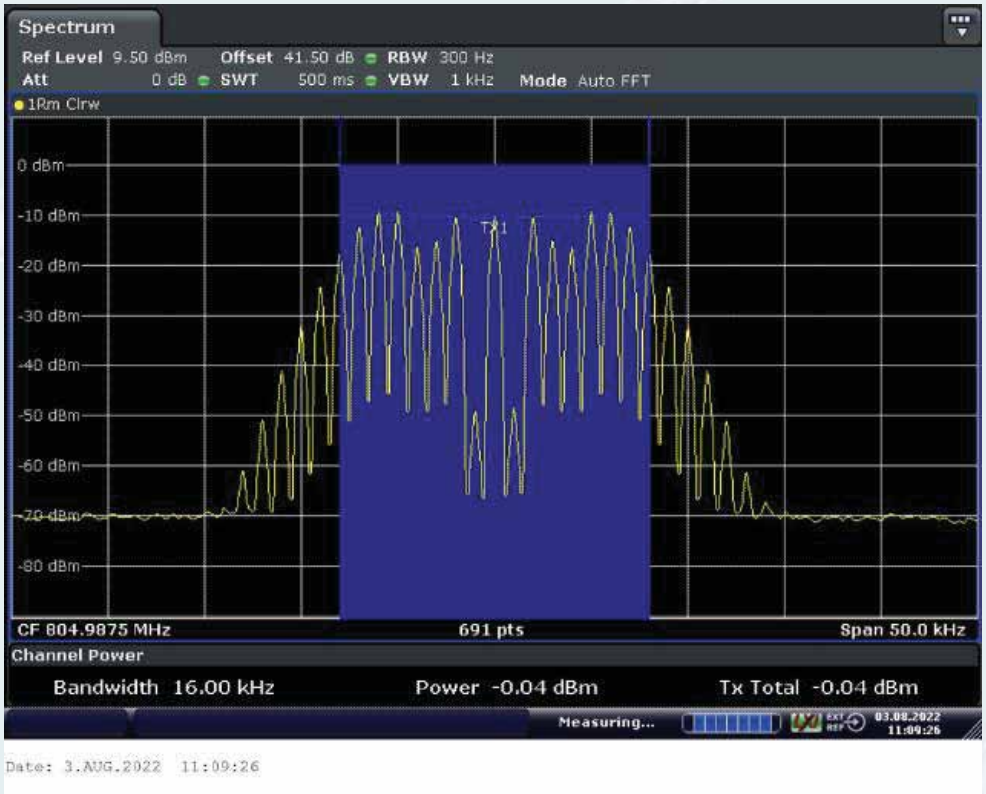
10.2.3.1.6.2. Uplink



Low Frequency: 798.0125MHz



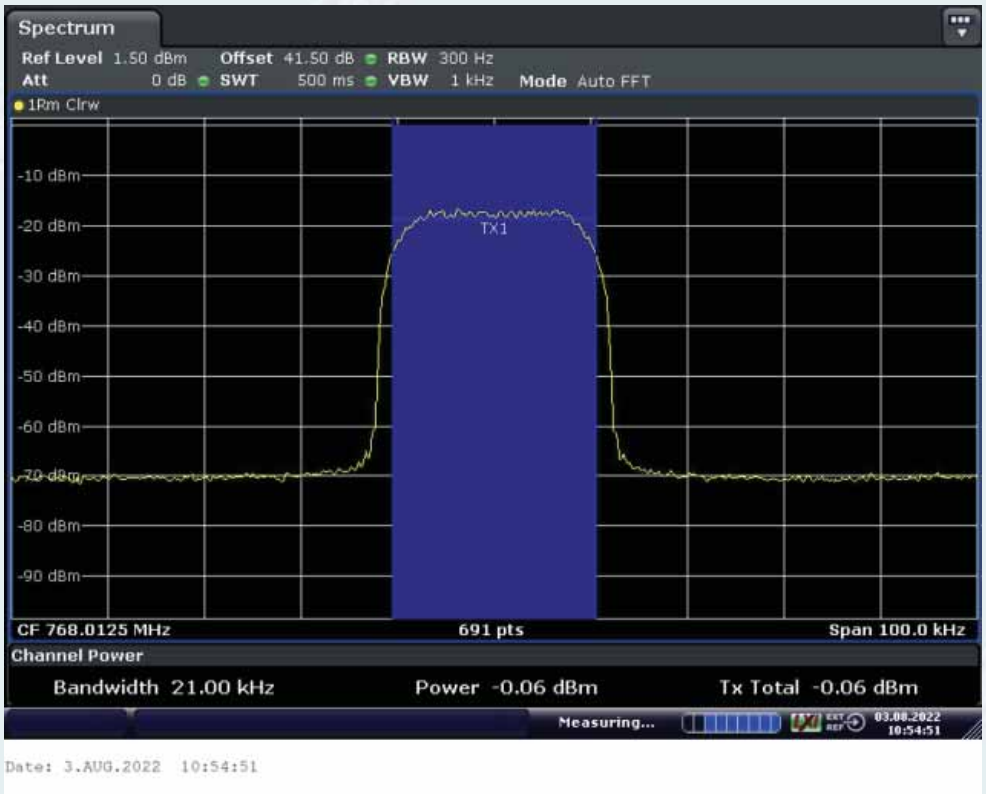
Middle Frequency: 801.5MHz



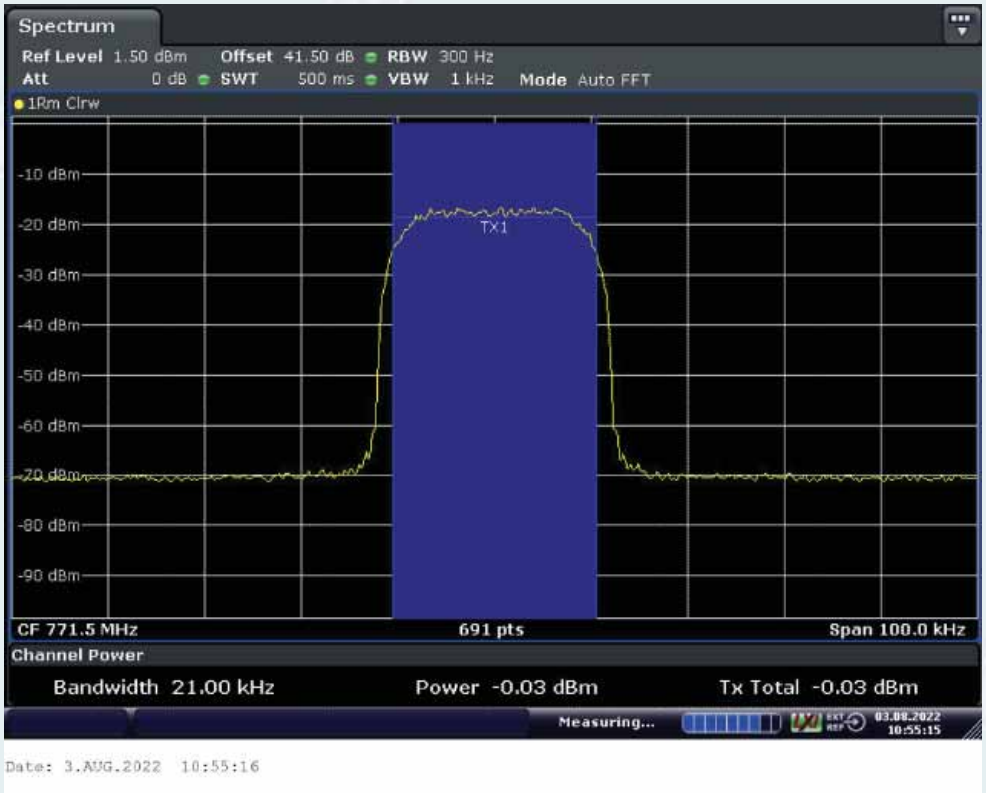
High Frequency: 804.9875MHz

10.2.3.1.7. Tetra

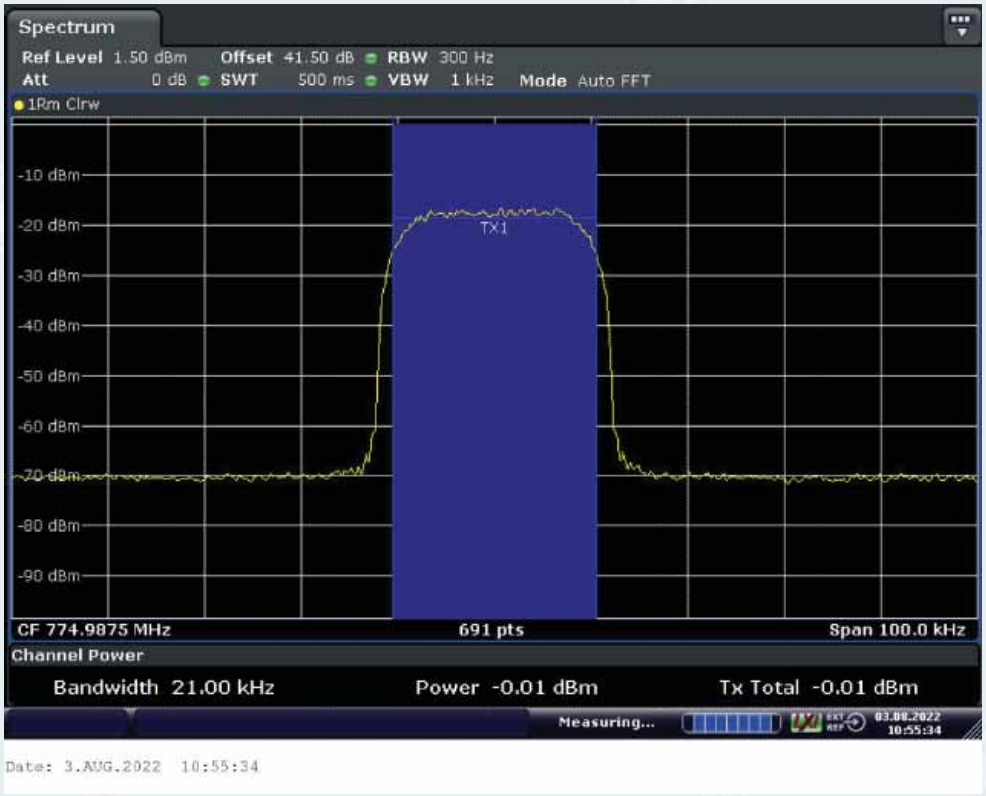
10.2.3.1.7.1. Downlink



Low Frequency: 768.0125MHz

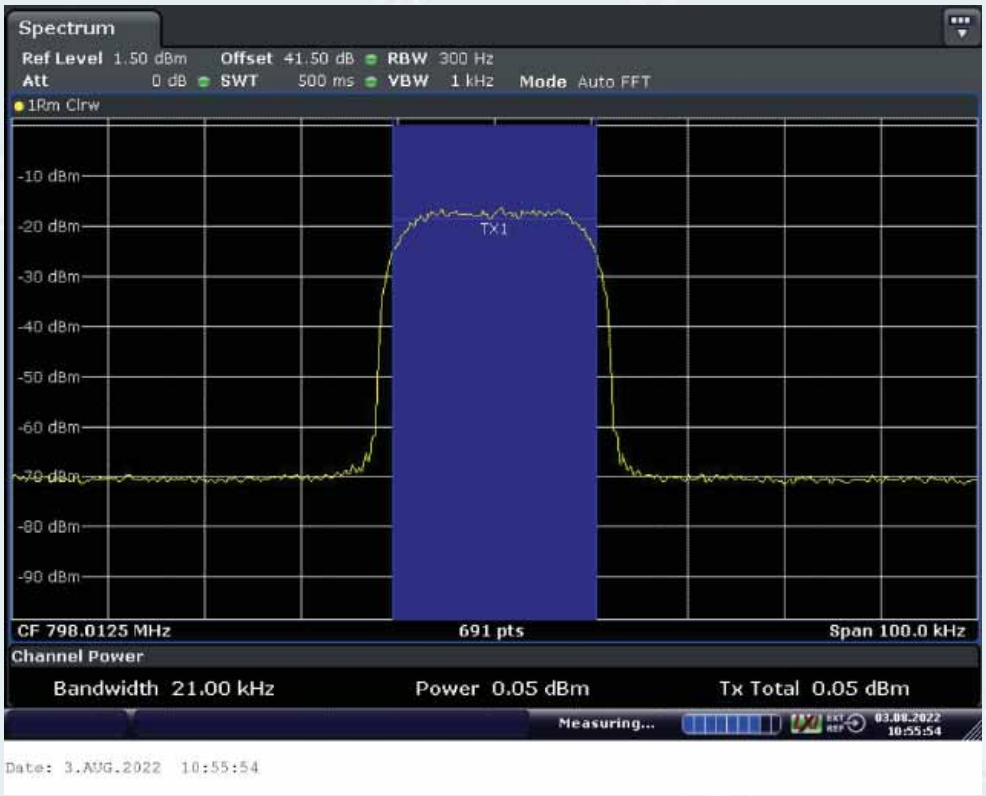


Middle Frequency: 771.5MHz

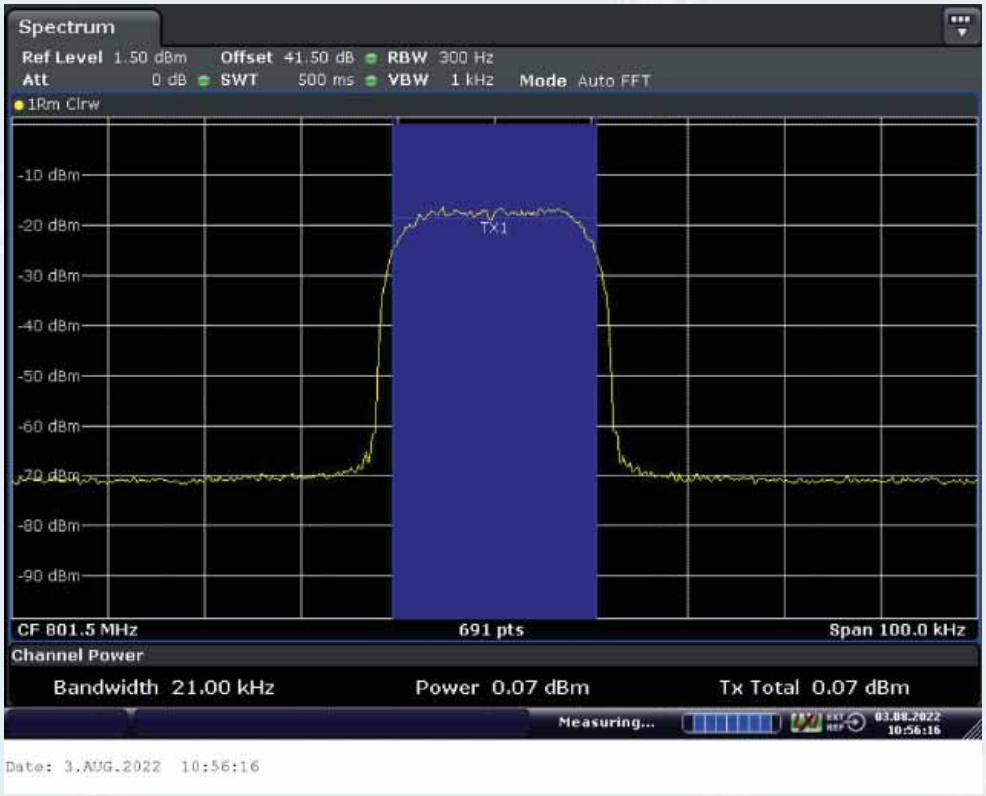


High Frequency: 774.9875MHz

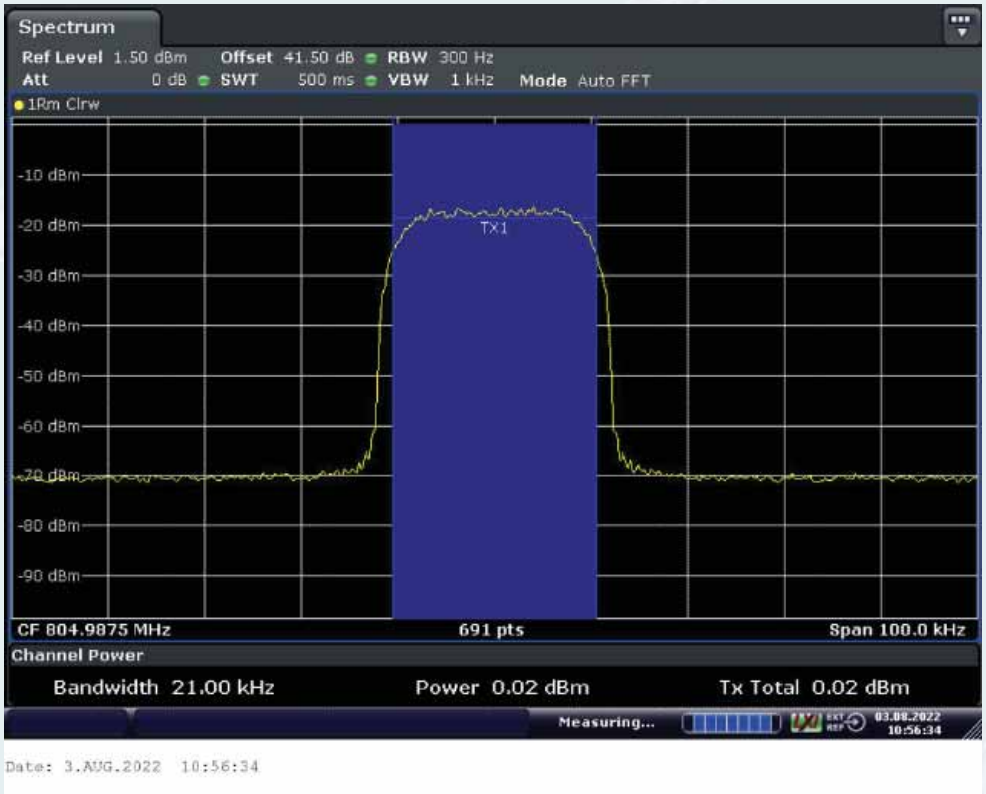
10.2.3.1.7.2. Uplink



Low Frequency: 798.0125MHz



Middle Frequency: 801.5MHz

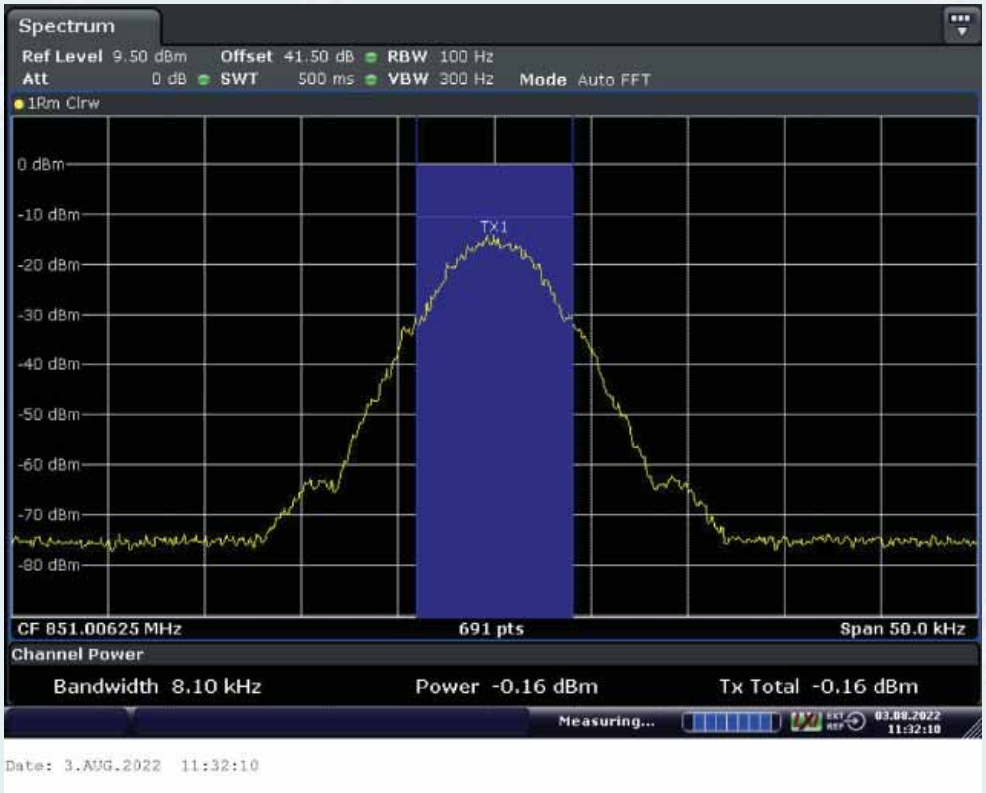


High Frequency: 804.9875MHz

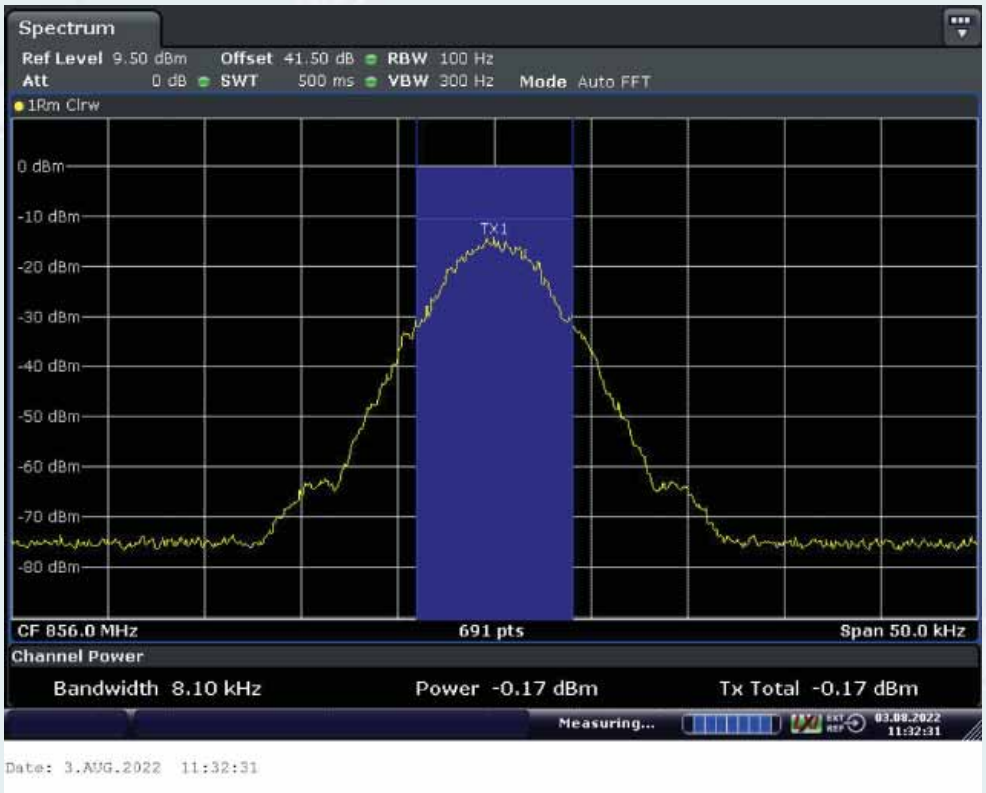
10.2.3.2. 800MHz Band

10.2.3.2.1. P25 phase I (C4FM)

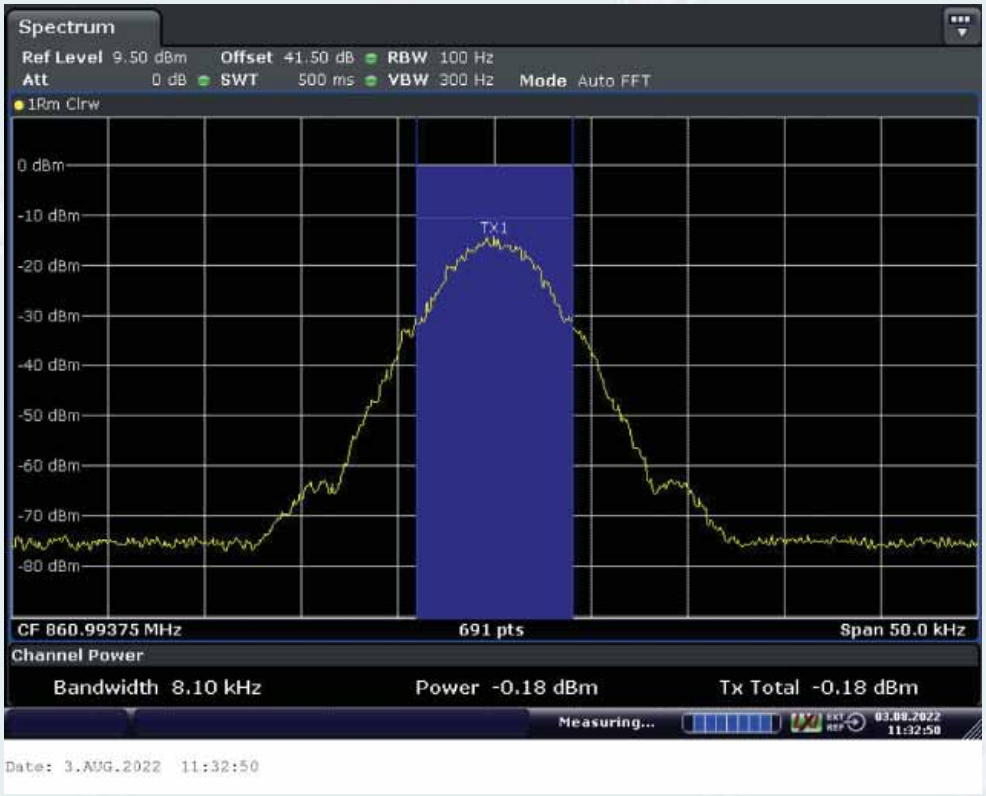
10.2.3.2.1.1. Downlink



Low Frequency: 851.00625MHz

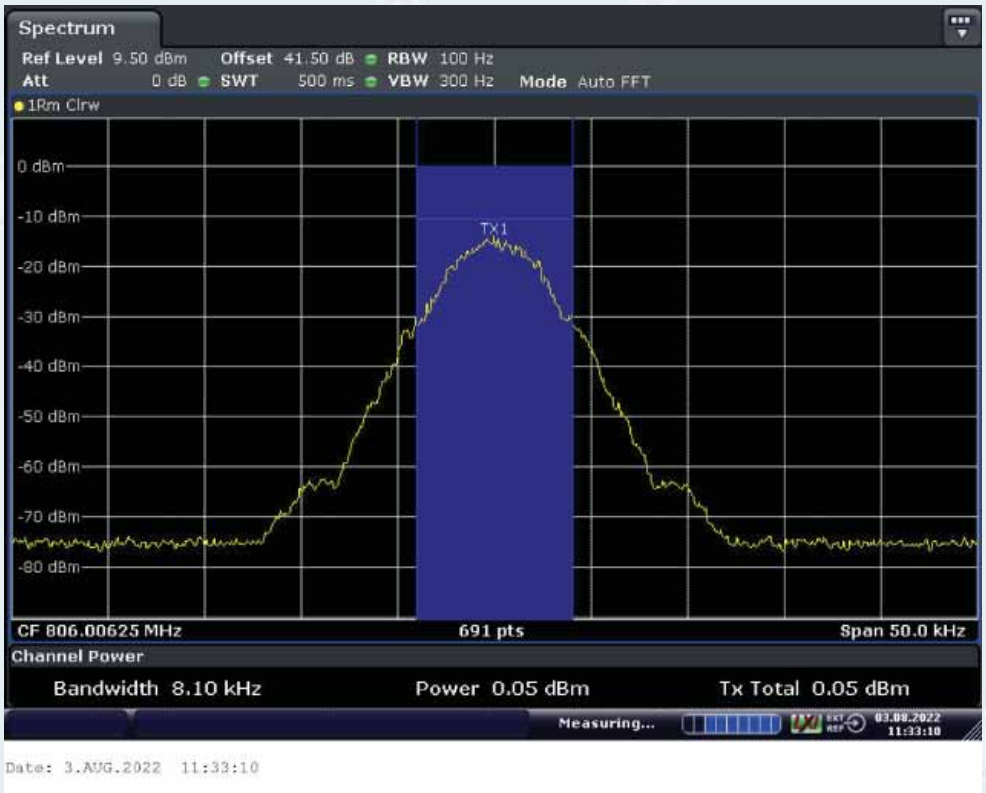


Middle Frequency: 856.0MHz

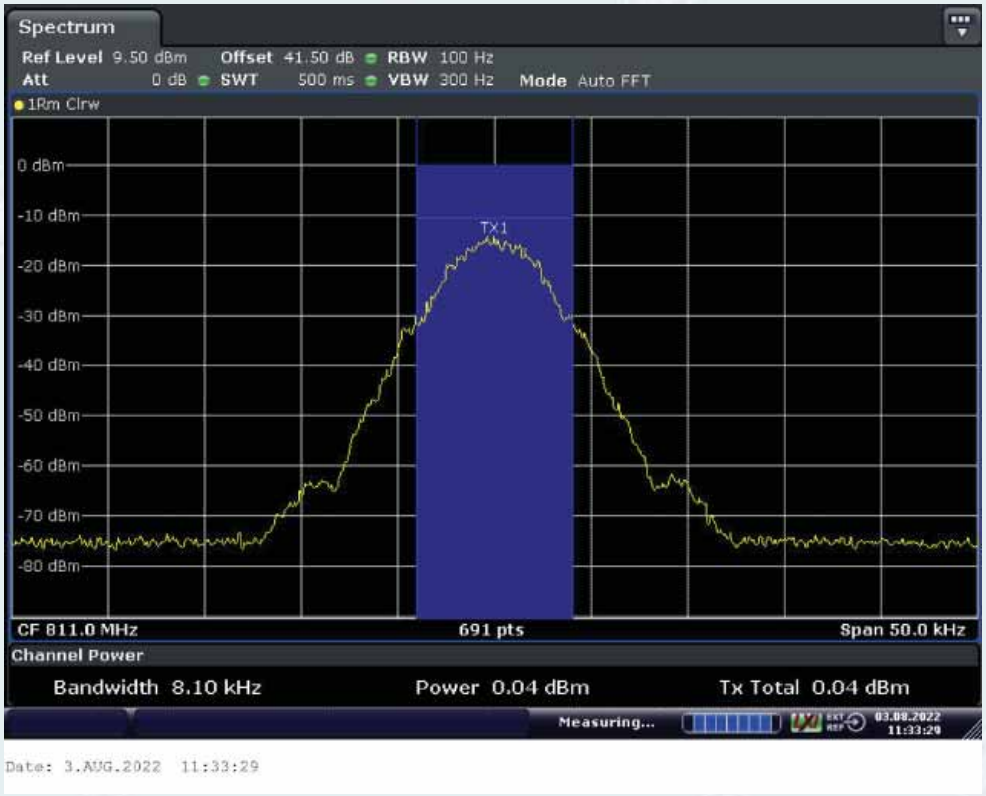


High Frequency: 860.99375MHz

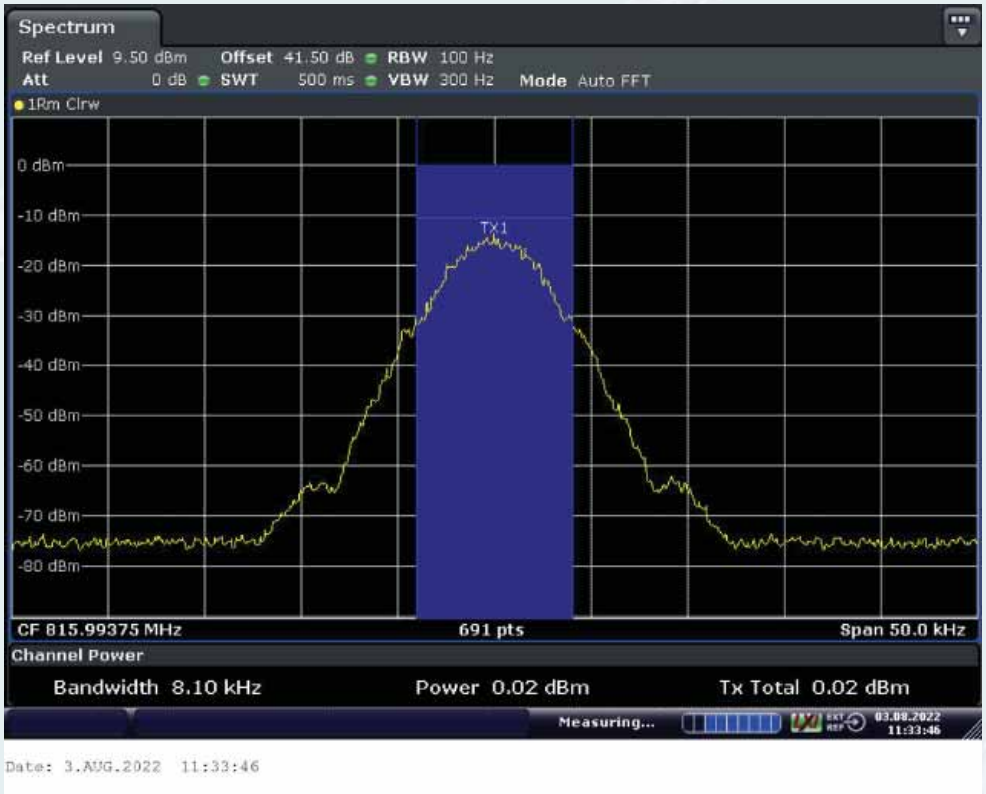
10.2.3.2.1.2. Uplink



Low Frequency: 806.00625MHz



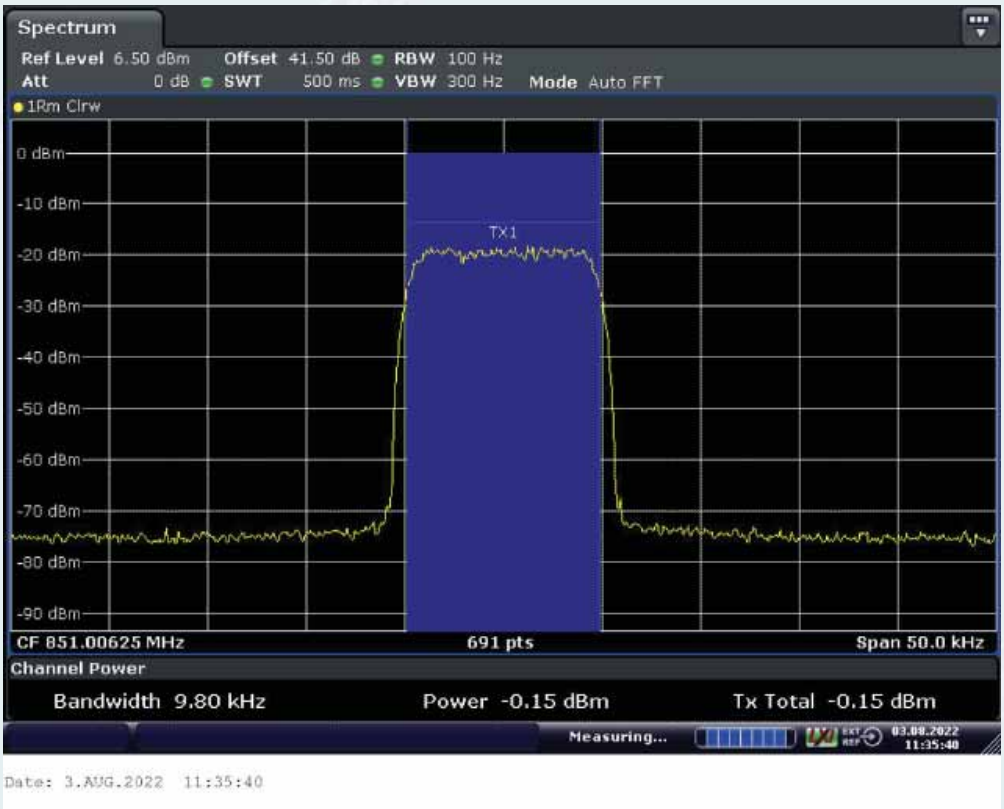
Middle Frequency: 811.0MHz



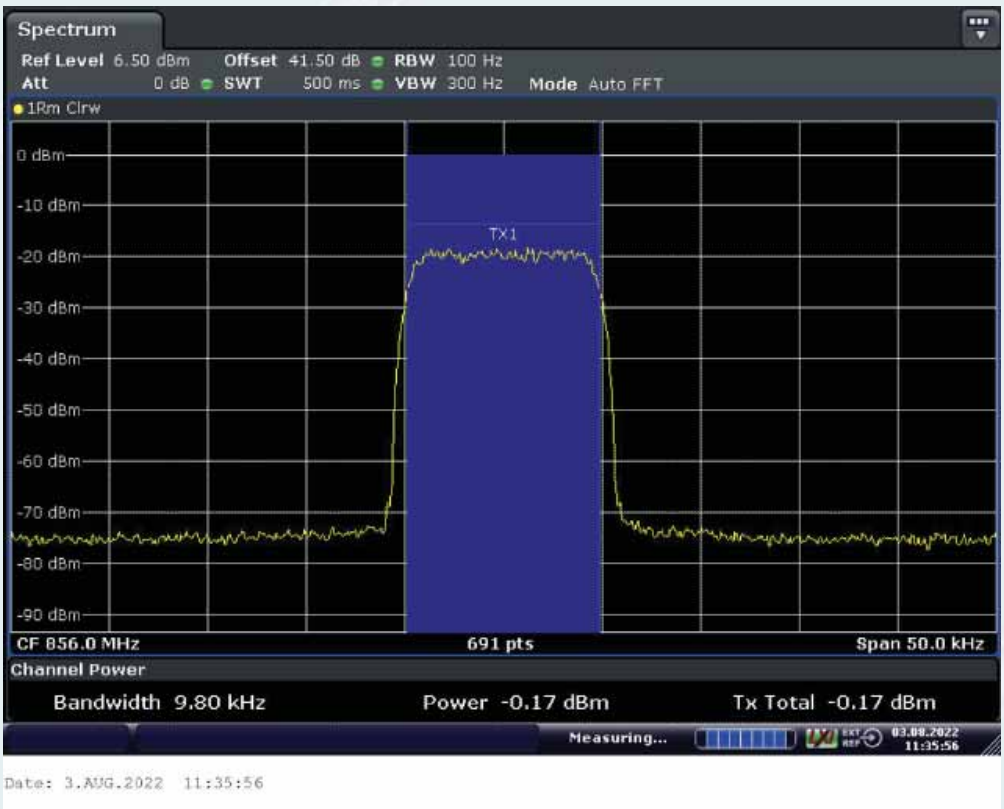
High Frequency: 815.99375MHz

10.2.3.2.2. P25 phase II (H-DQPSK)

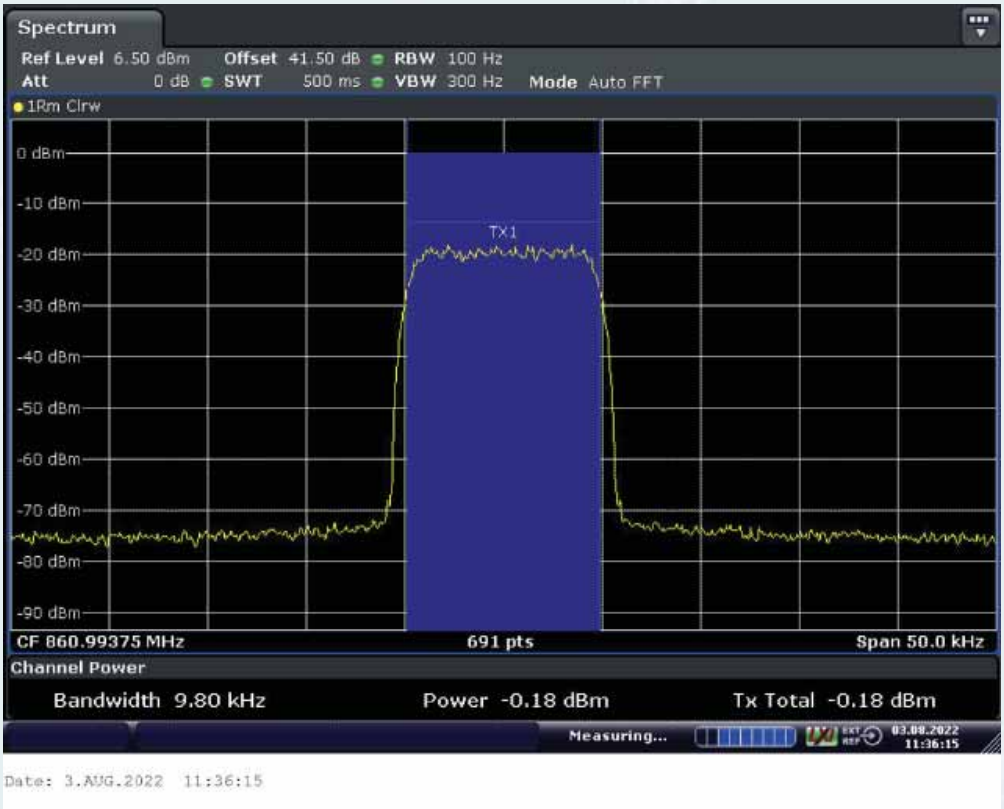
10.2.3.2.2.1. Downlink



Low Frequency: 851.00625MHz

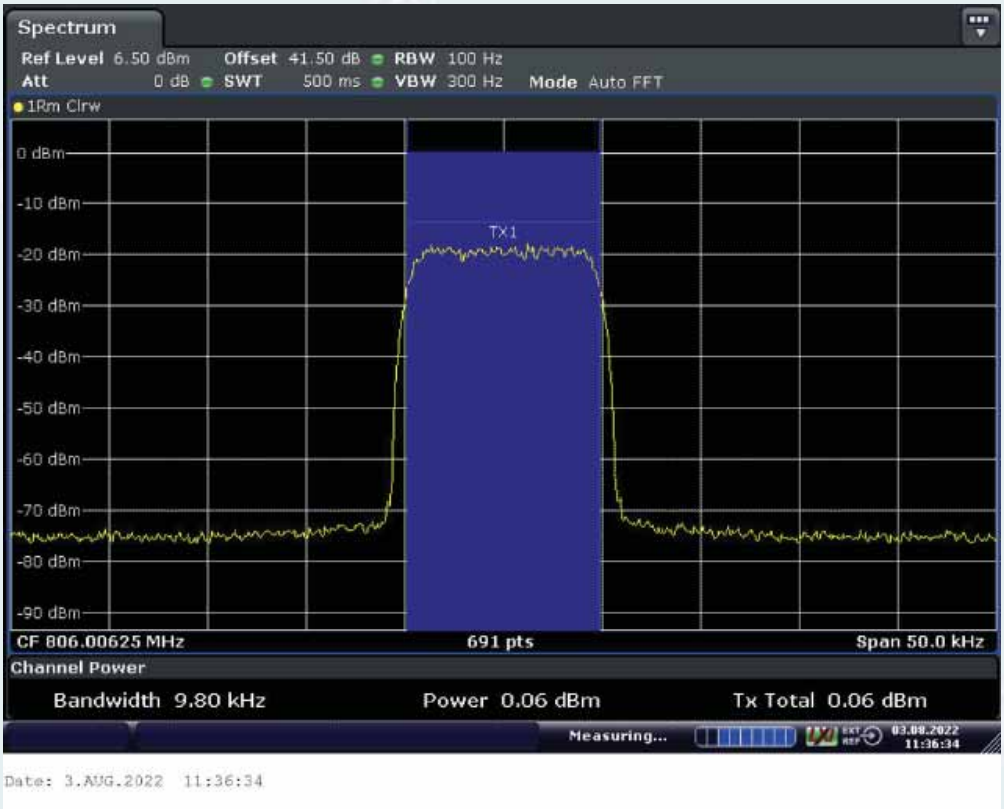


Middle Frequency: 856.0MHz

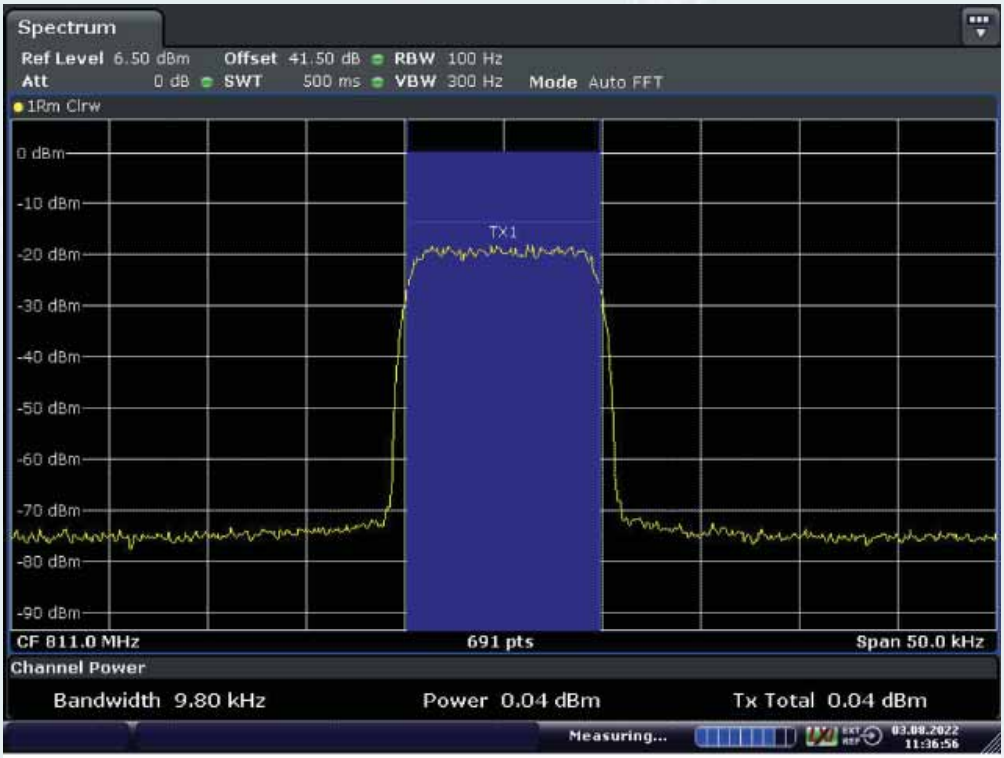


High Frequency: 860.99375MHz

10.2.3.2.2.2. Uplink

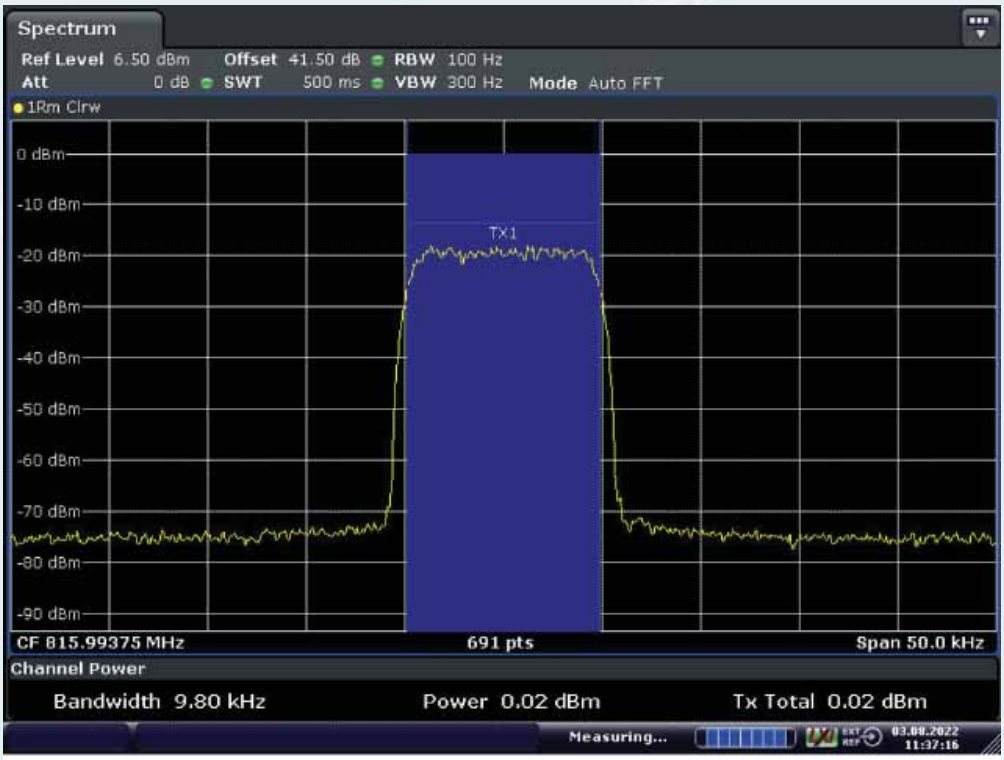


Low Frequency: 806.00625MHz



Date: 3.AUG.2022 11:36:56

Middle Frequency: 811.0MHz

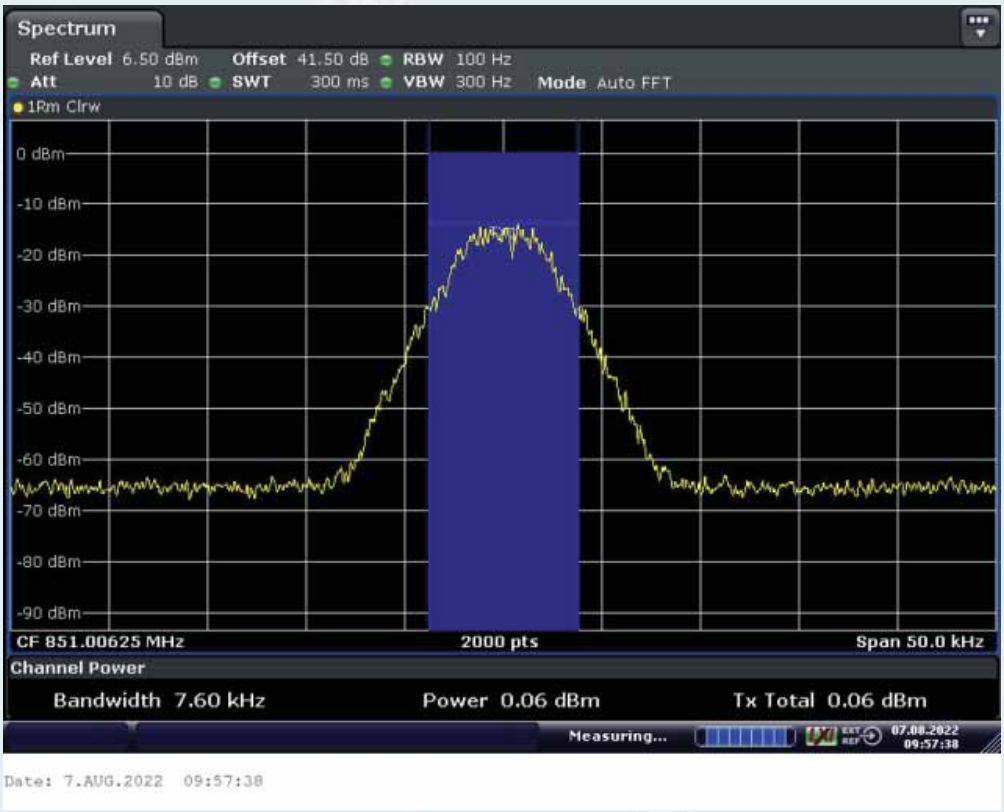


Date: 3.AUG.2022 11:37:16

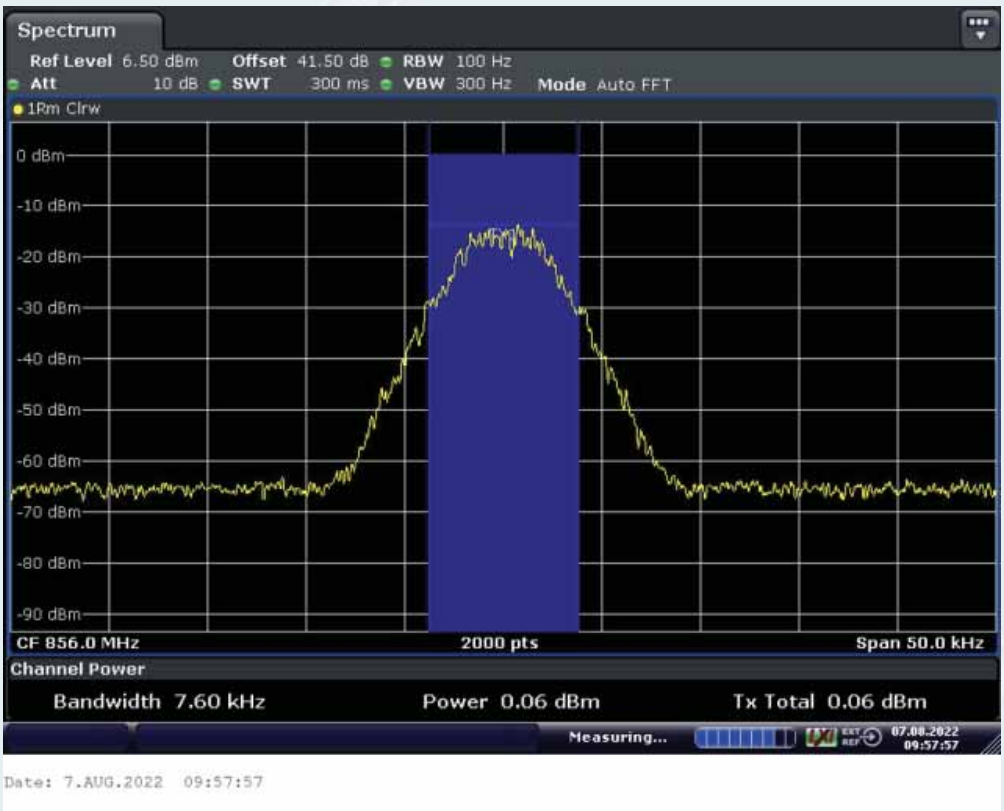
High Frequency: 815.99375MHz

10.2.3.2.3. DMR

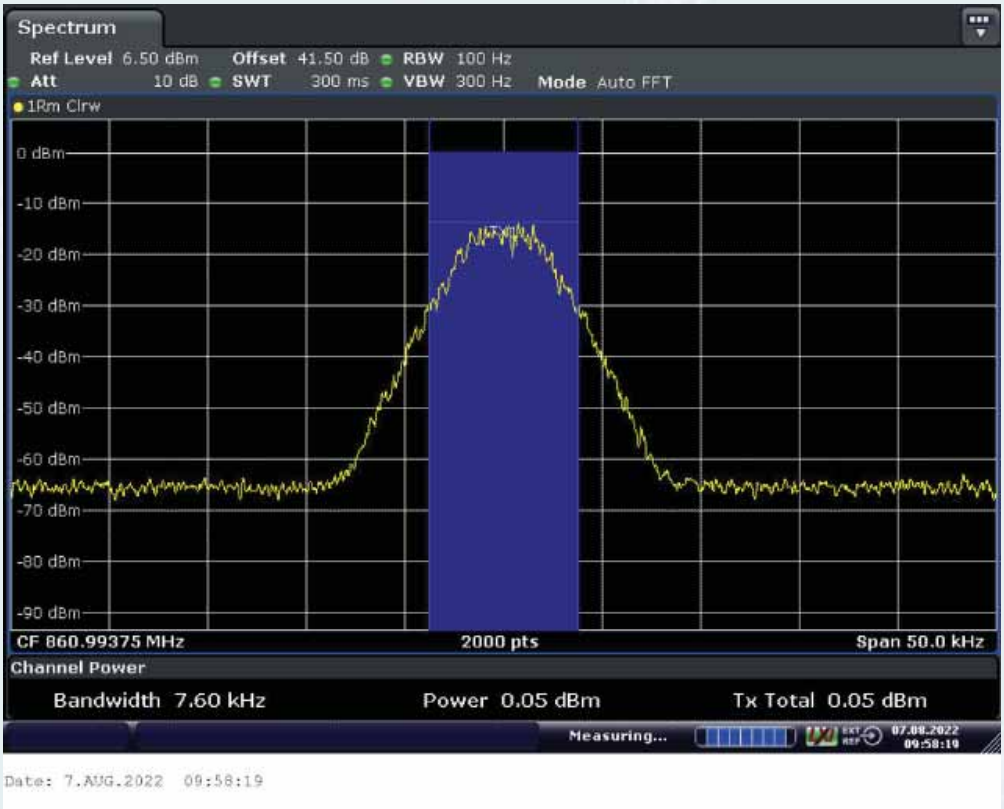
10.2.3.2.3.1. Downlink



Low Frequency: 851.00625MHz

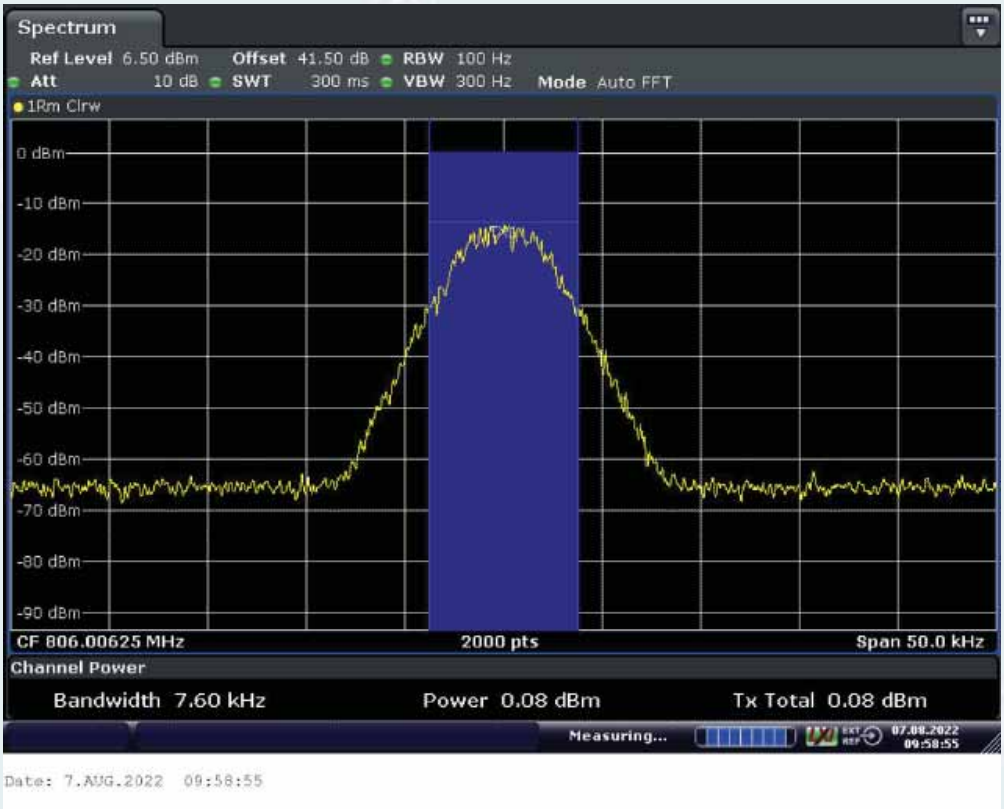


Middle Frequency: 856.0MHz

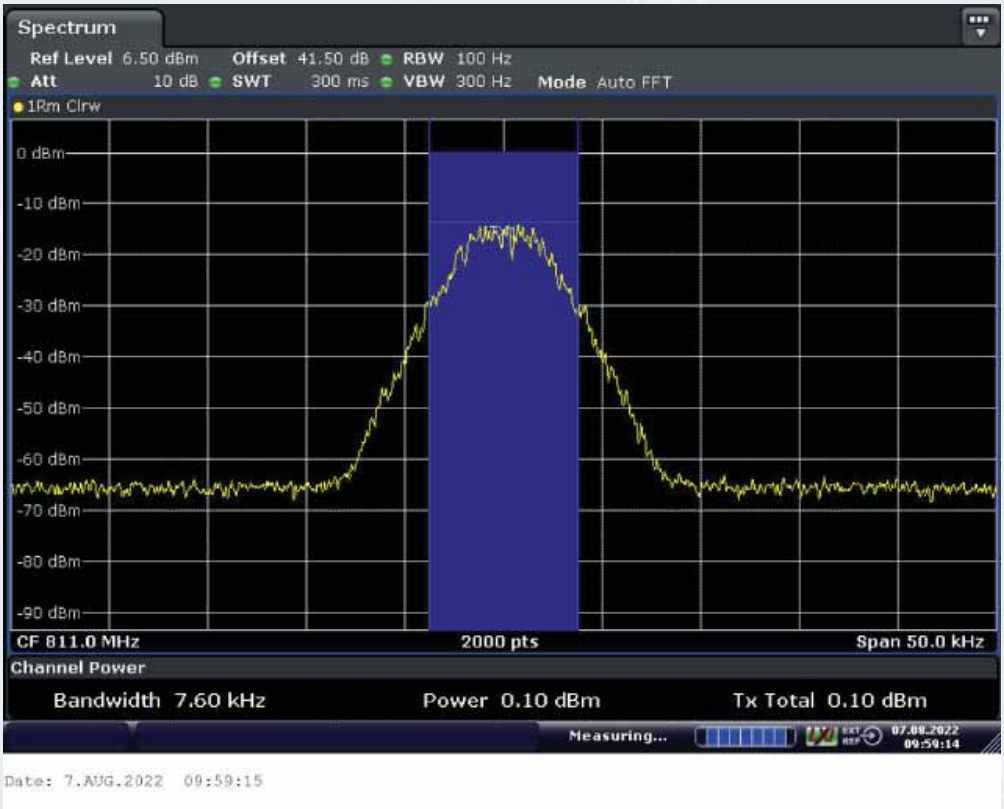


High Frequency: 860.99375MHz

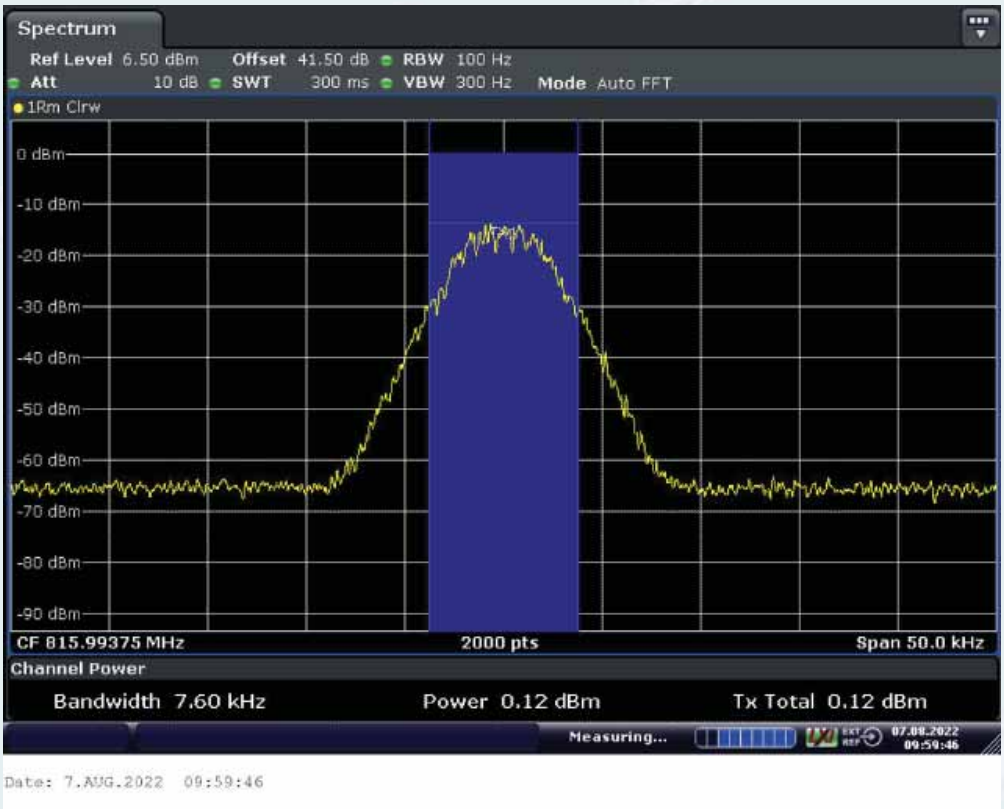
10.2.3.2.3.2. Uplink



Low Frequency: 806.00625MHz



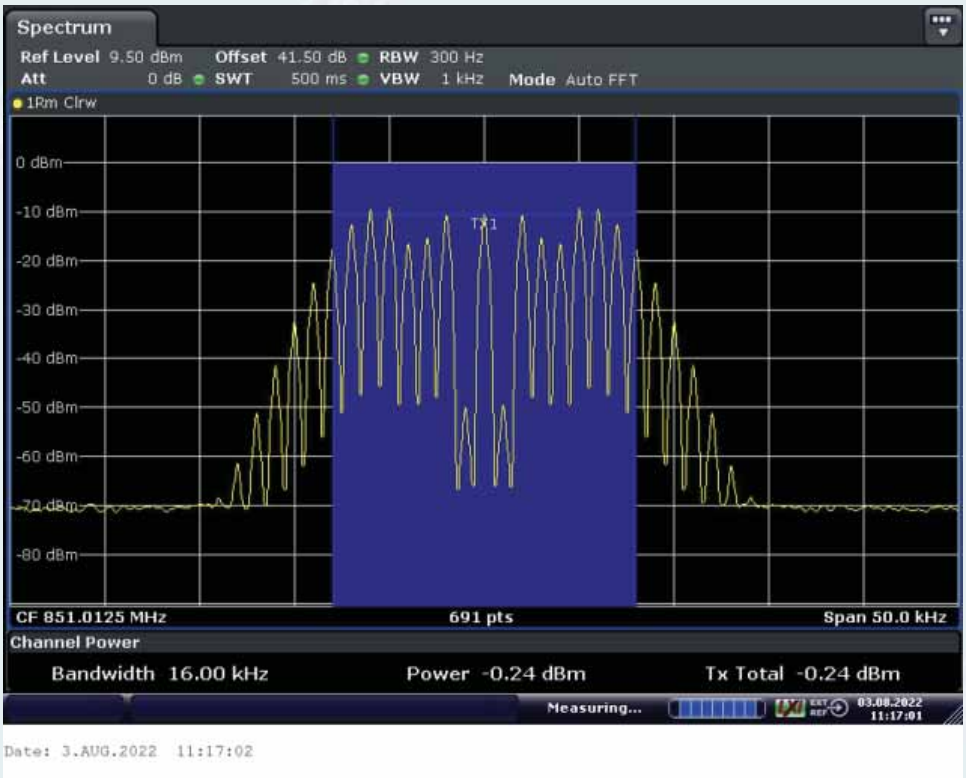
Middle Frequency: 811.0MHz



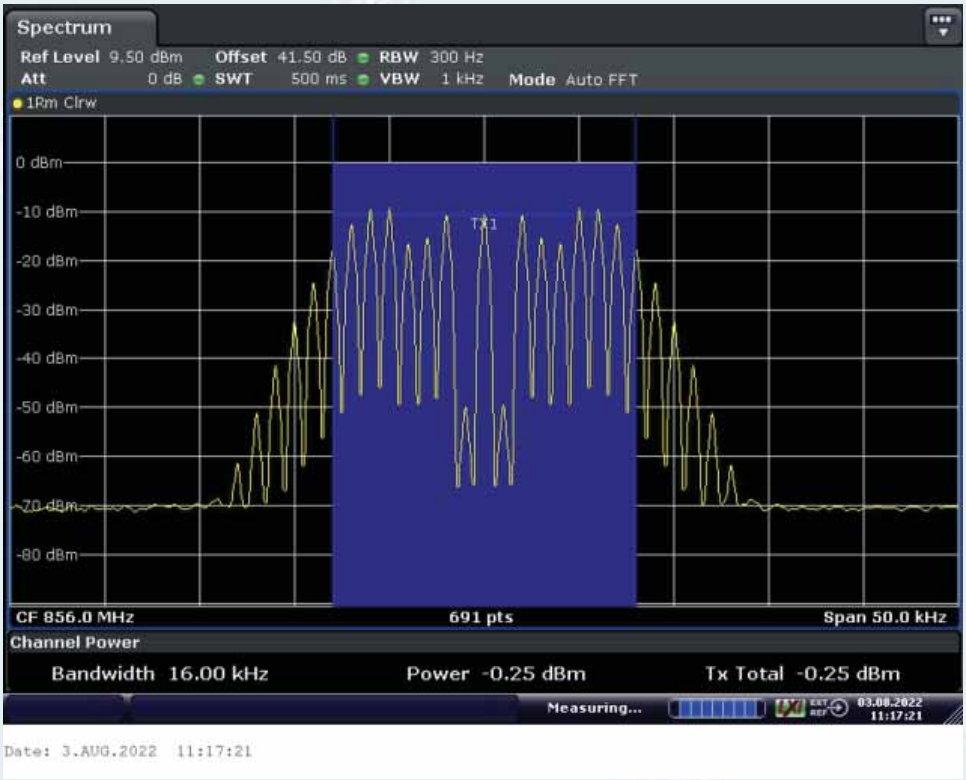
High Frequency: 815.99375MHz

10.2.3.2.4. Analog FM

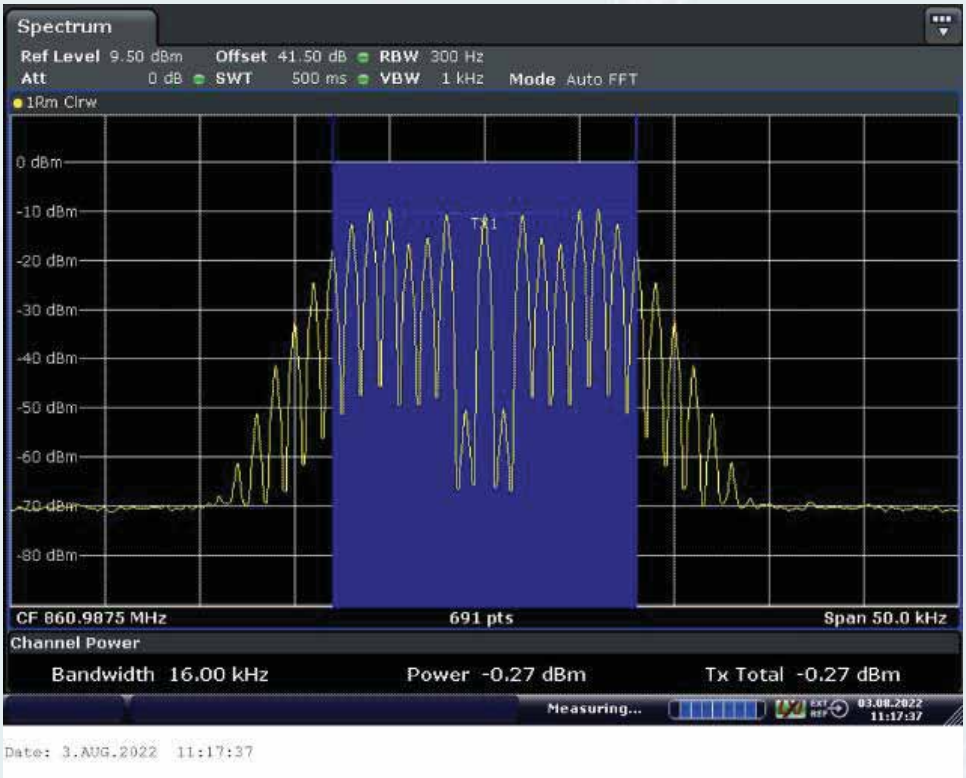
10.2.3.2.4.1. Downlink



Low Frequency: 851.0125MHz

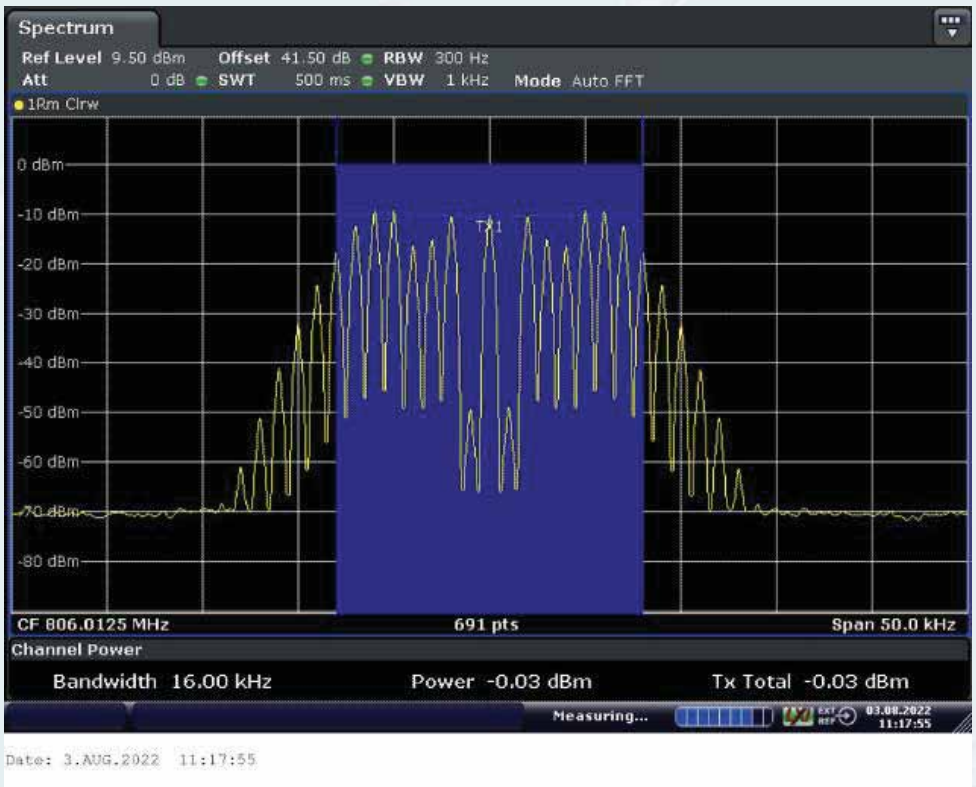


Middle Frequency: 856.0MHz

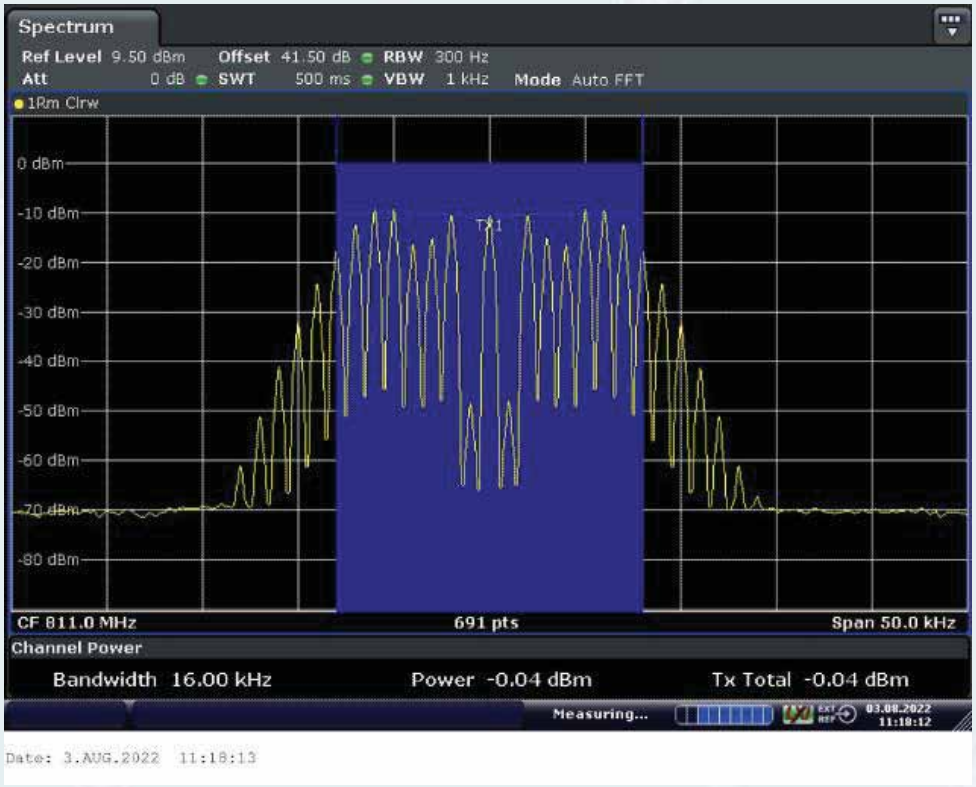


High Frequency: 860.9875MHz

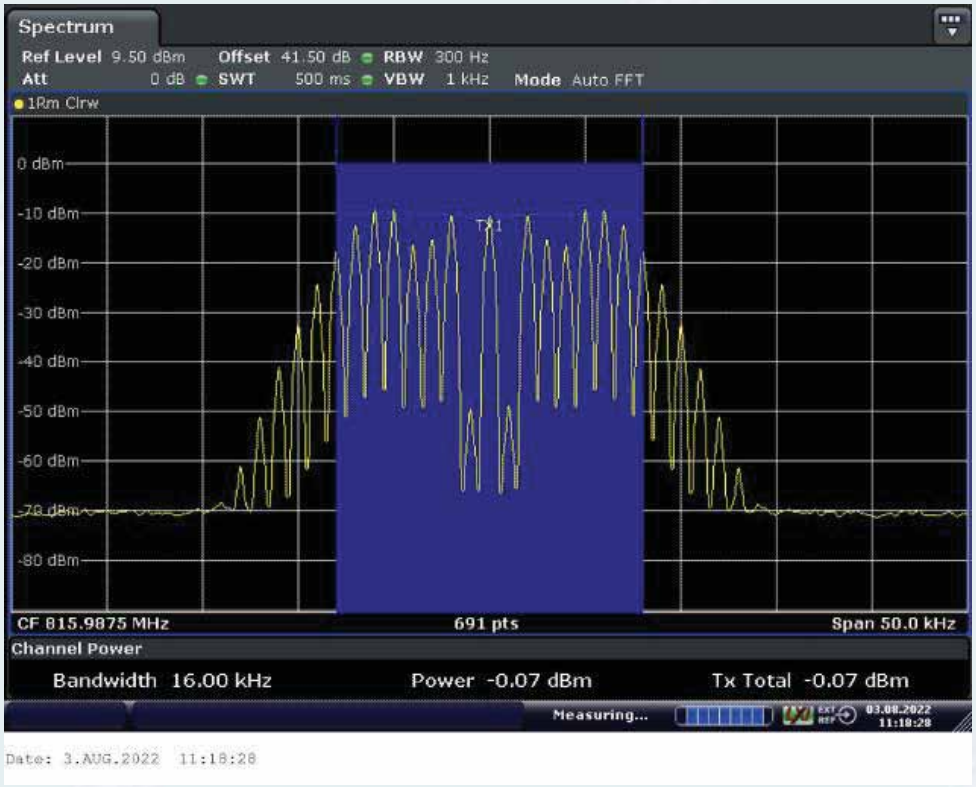
10.2.3.2.4.2. Uplink



Low Frequency: 806.0125MHz



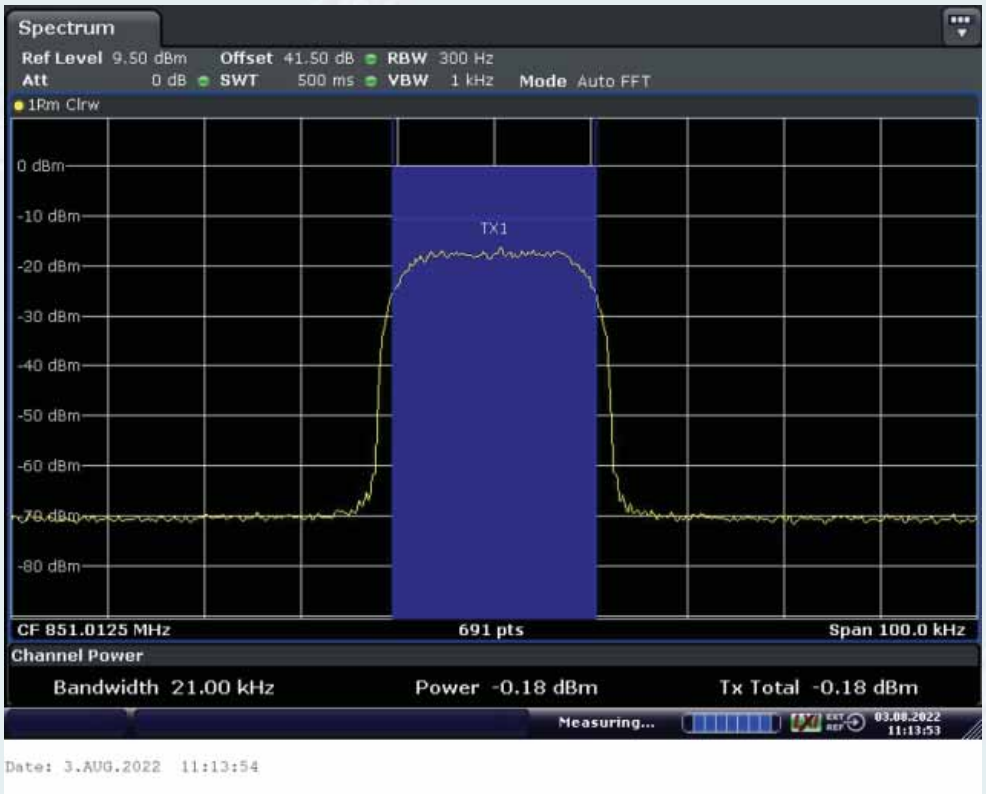
Middle Frequency: 811.0MHz



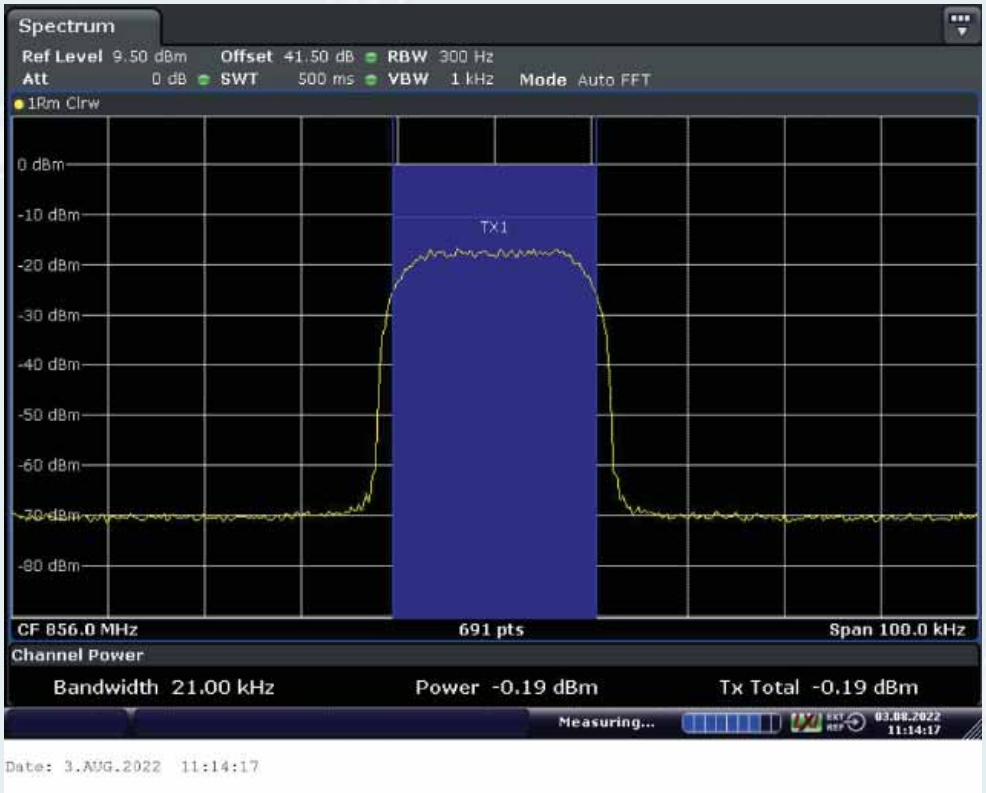
High Frequency: 815.9875MHz

10.2.3.2.5. Tetra

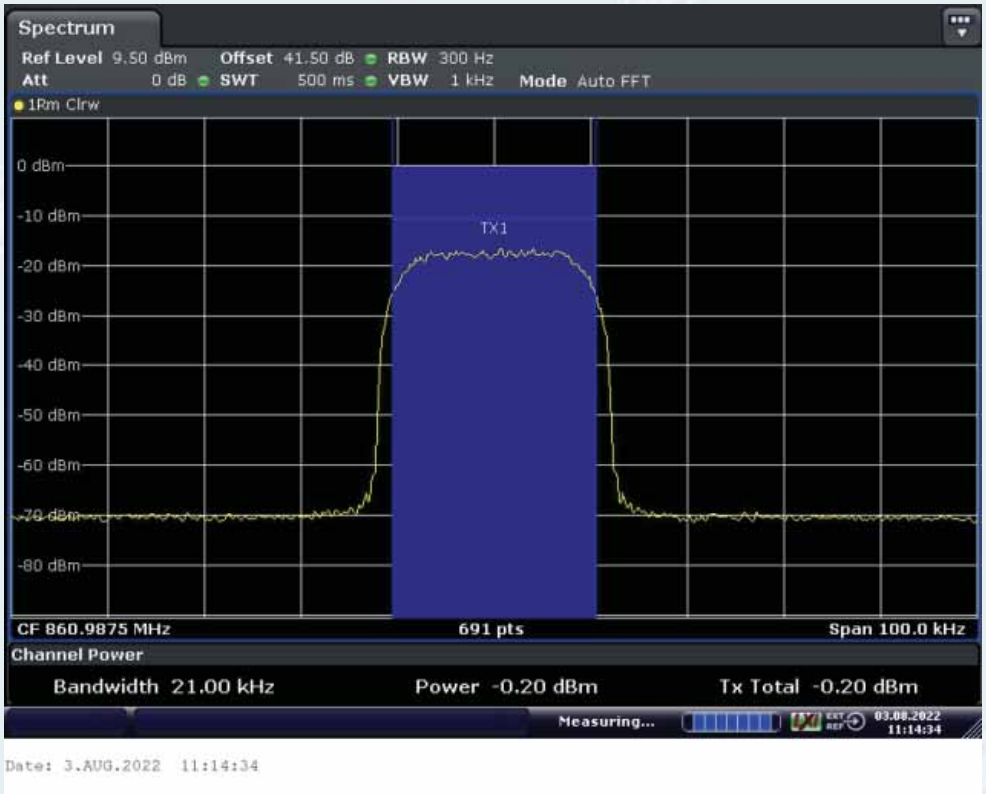
10.2.3.2.5.1. Downlink



Low Frequency: 851.0125MHz

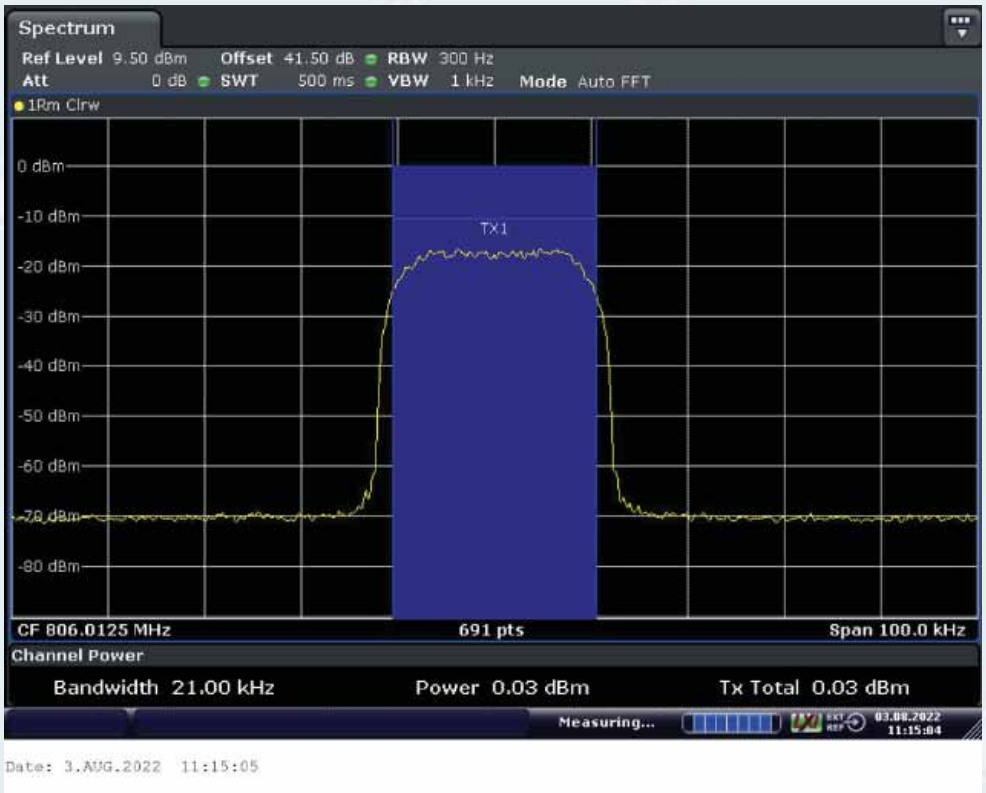


Middle Frequency: 856.0MHz

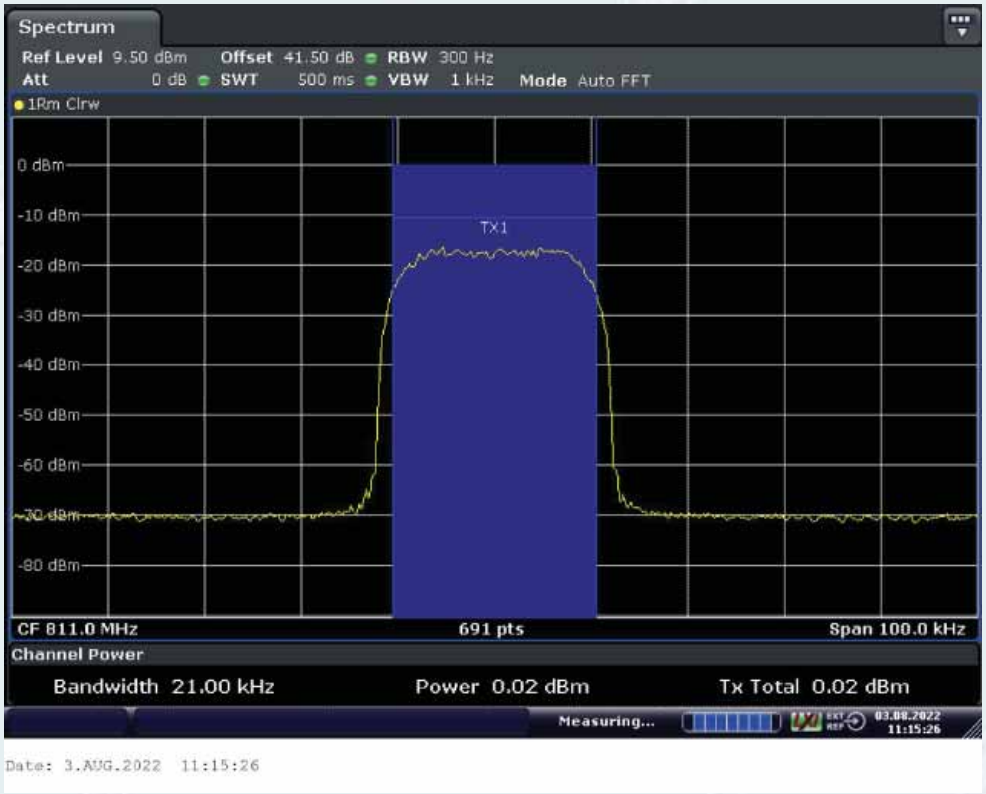


High Frequency: 860.9875MHz

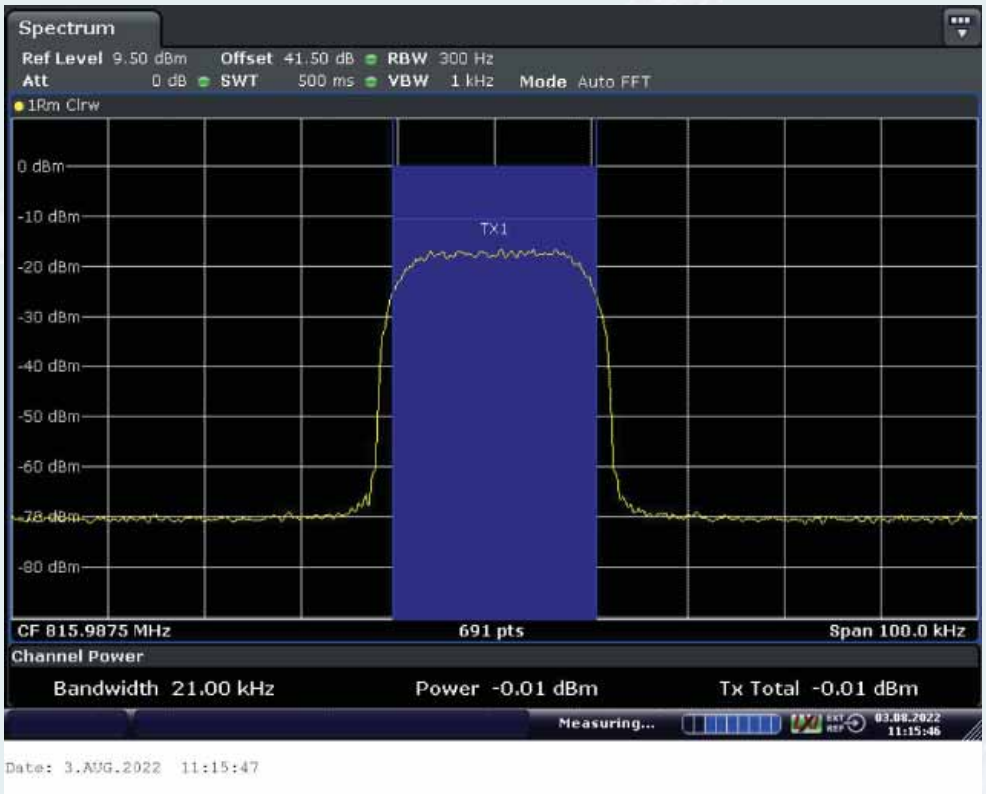
10.2.3.2.5.2. Uplink



Low Frequency: 806.0125MHz



Middle Frequency: 811.0MHz



High Frequency: 815.9875MHz

10.3. AGC Threshold

Requirements: KDB 935210 D05 clause 4.2

Test Method: KDB 935210 D05 clause 3.2

10.3.1. Requirements

Testing at and above the AGC threshold will be required.[6] The AGC threshold shall be determined by applying the procedure of 3.2, but with the signal generator configured to produce a test signal defined in Table 1, a CW input signal, or a digitally modulated signal, consistent with the discussion about signal types in 4.1.

10.3.2. Test configuration

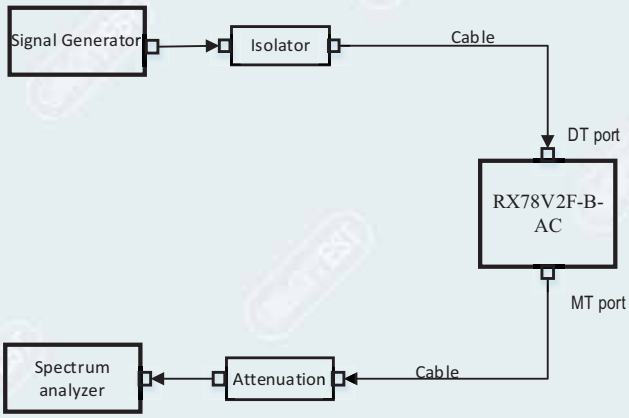


Figure 10.3-1 Downlink connection diagram

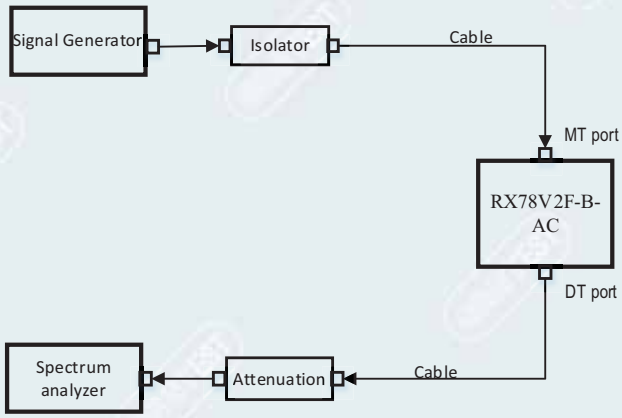


Figure 10.3-2 Uplink connection diagram

10.3.3. Test procedures

The AGC threshold is to be determined as follows.[3]

In the case of fiber-optic distribution systems, the RF input port of the equipment under test (EUT) refers to the RF input of the supporting equipment RF to optical convertor; see also descriptions and diagrams for typical DAS booster systems in KDB Publication 935210 D02 [R7].

Devices intended to be directly connected to an RF source (donor port) only need to be evaluated for any over-the-air transmit paths.

a) Connect a signal generator to the input of the EUT.
b) Connect a spectrum analyzer or power meter to the output of the EUT using appropriate attenuation as necessary.
c) The signal generator should initially be configured to produce either of the required test signals (i.e., broadband or narrowband).
d) Set the signal generator frequency to the center frequency of the EUT operating band.
e) While monitoring the output power of the EUT, measured using the methods of 3.5.3 or 3.5.4, increase the input level until a 1 dB increase in the input signal power no longer causes a 1 dB increase in the output signal power.
f) Record this level as the AGC threshold level.
g) Repeat the procedure with the remaining test signal.

10.3.4. Test results

Test Date (yy-mm-dd): 2022-08-03~2022-08-05

Normal condition: Temp:26.6~27.1℃, Humid: 50~52%, Atmospheric Pressure:101kpa

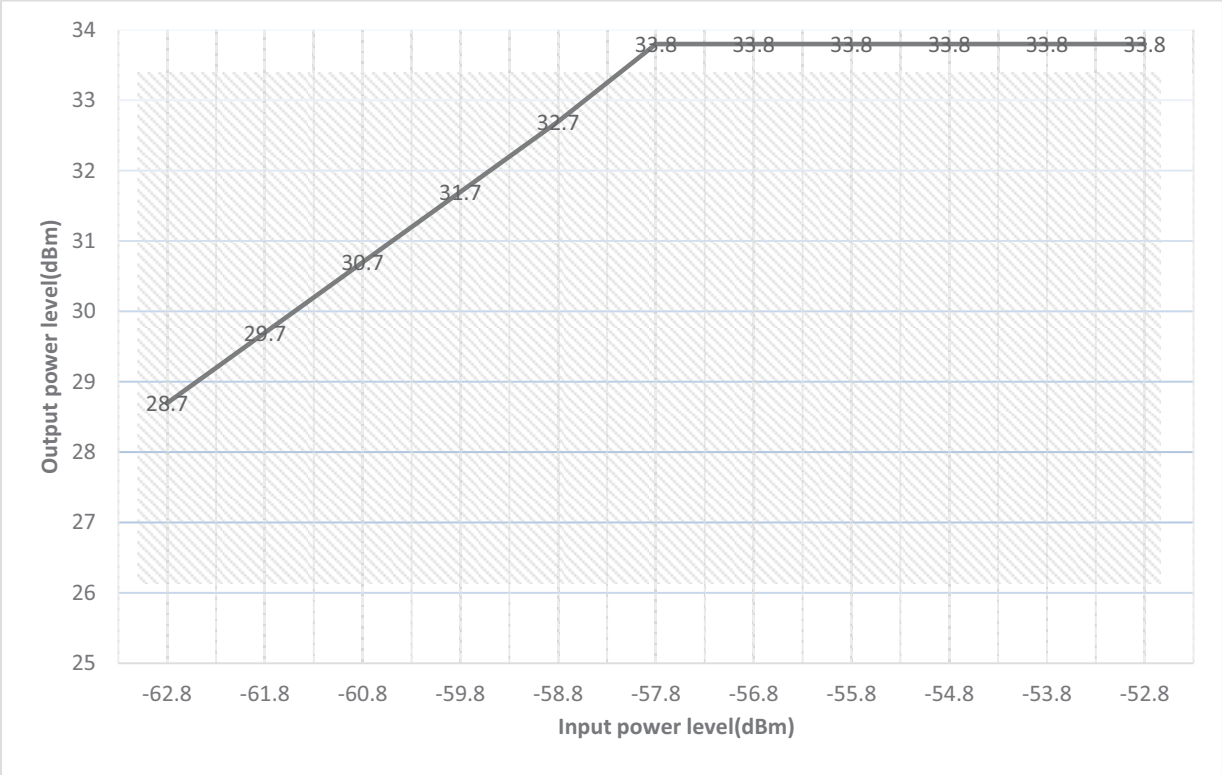
Supply Voltage: AC 110V, 50Hz

10.3.4.1. 700MHz Band

10.3.4.1.1. Downlink

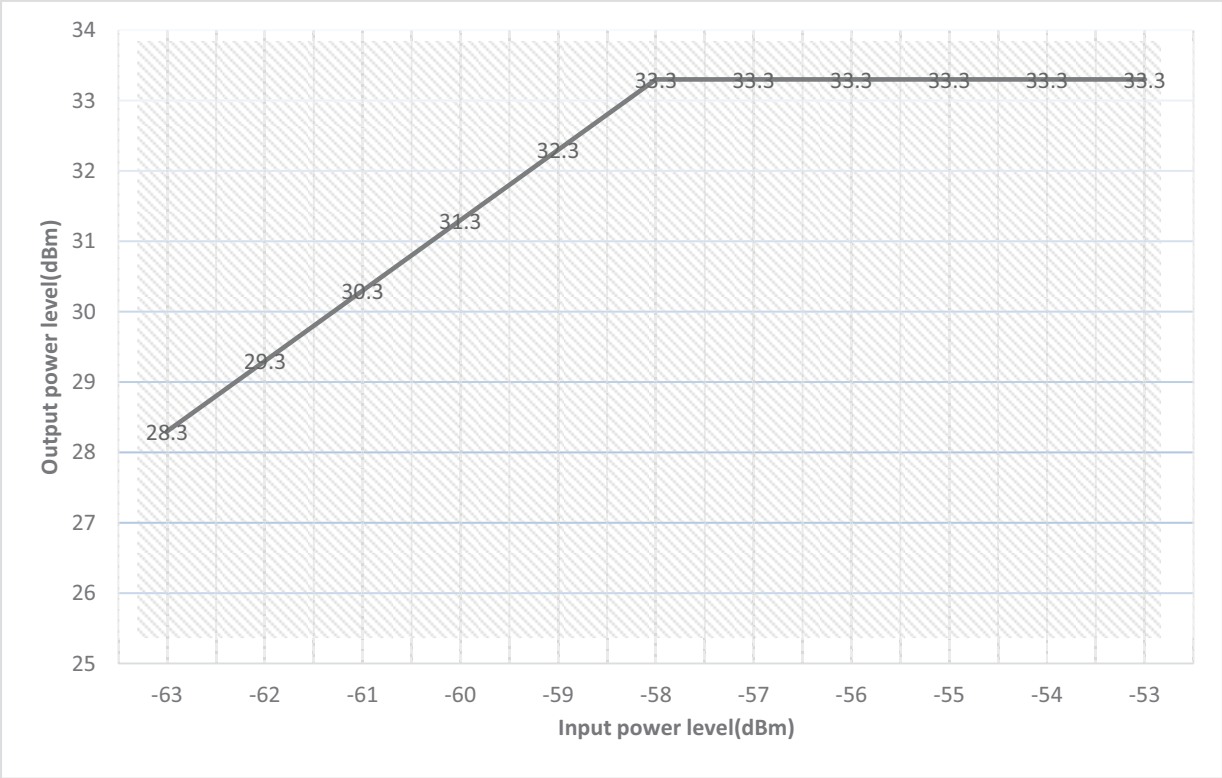
10.3.4.1.1.1. LTE 5MHz

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
763.0MHz	-62.1	0.7	-62.8	28.7
	-61.1	0.7	-61.8	29.7
	-60.1	0.7	-60.8	30.7
	-59.1	0.7	-59.8	31.7
	-58.1	0.7	-58.8	32.7
	-57.1	0.7	-57.8	33.8
	-56.1	0.7	-56.8	33.8
	-55.1	0.7	-55.8	33.8
	-54.1	0.7	-54.8	33.8
	-53.1	0.7	-53.8	33.8
	-52.1	0.7	-52.8	33.8



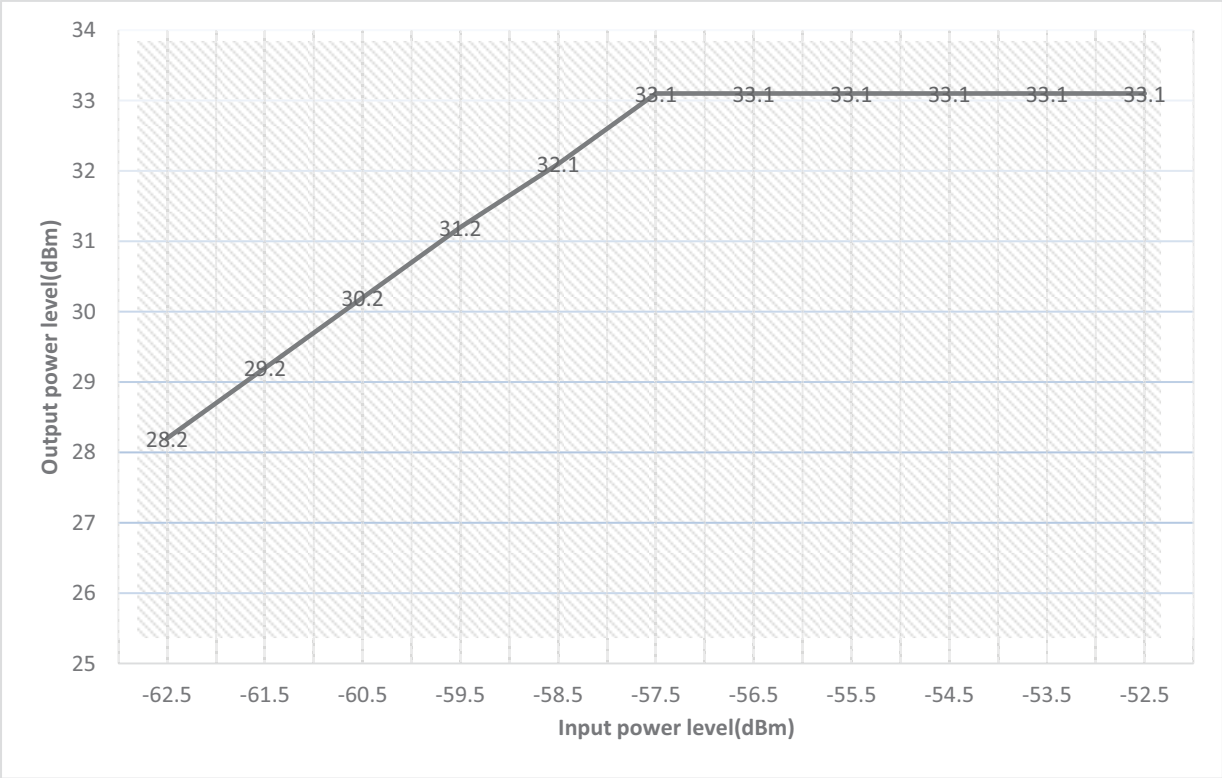
10.3.4.1.1.2. LTE 10MHz

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
763.0MHz	-62.3	0.7	-63.0	28.3
	-61.3	0.7	-62.0	29.3
	-60.3	0.7	-61.0	30.3
	-59.3	0.7	-60.0	31.3
	-58.3	0.7	-59.0	32.3
	-57.3	0.7	-58.0	33.3
	-56.3	0.7	-57.0	33.3
	-55.3	0.7	-56.0	33.3
	-54.3	0.7	-55.0	33.3
	-53.3	0.7	-54.0	33.3
	-52.3	0.7	-53.0	33.3



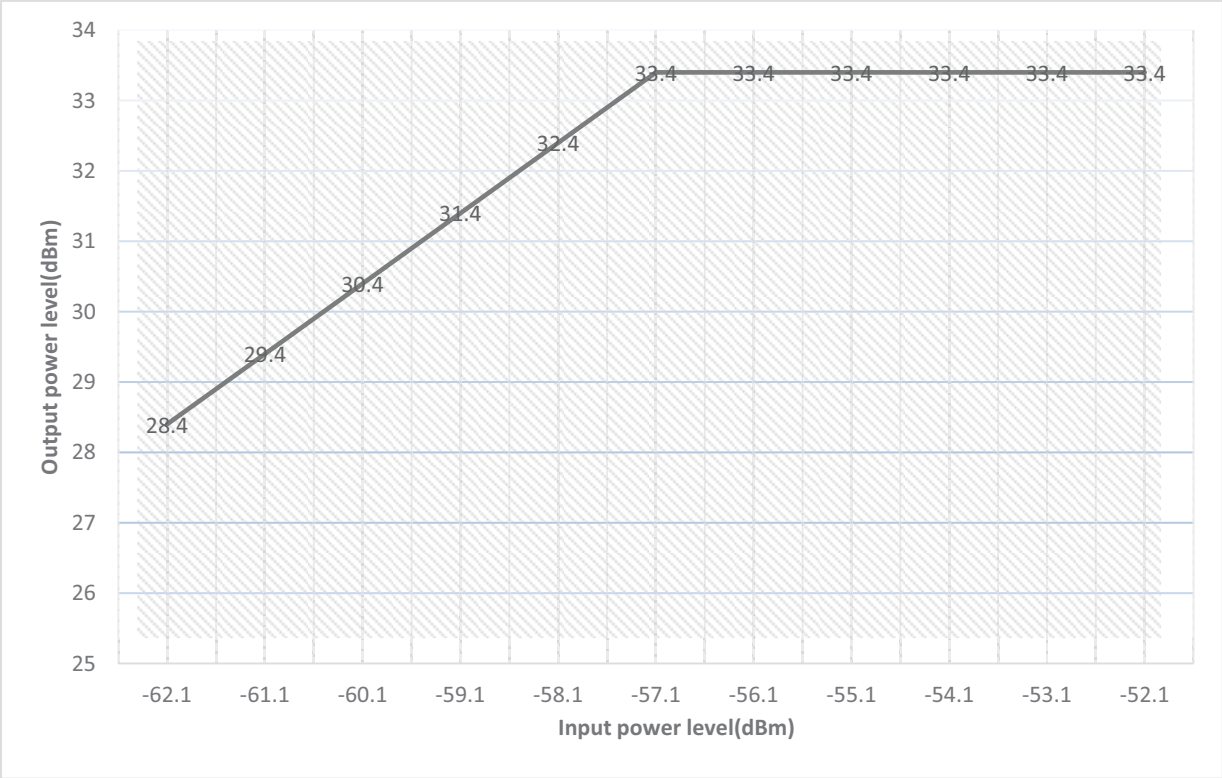
10.3.4.1.1.3. P25 Phase I(C4FM)

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
771.5MHz	-61.8	0.7	-62.5	28.2
	-60.8	0.7	-61.5	29.2
	-59.8	0.7	-60.5	30.2
	-58.8	0.7	-59.5	31.2
	-57.8	0.7	-58.5	32.1
	-56.8	0.7	-57.5	33.1
	-55.8	0.7	-56.5	33.1
	-54.8	0.7	-55.5	33.1
	-53.8	0.7	-54.5	33.1
	-52.8	0.7	-53.5	33.1
	-51.8	0.7	-52.5	33.1



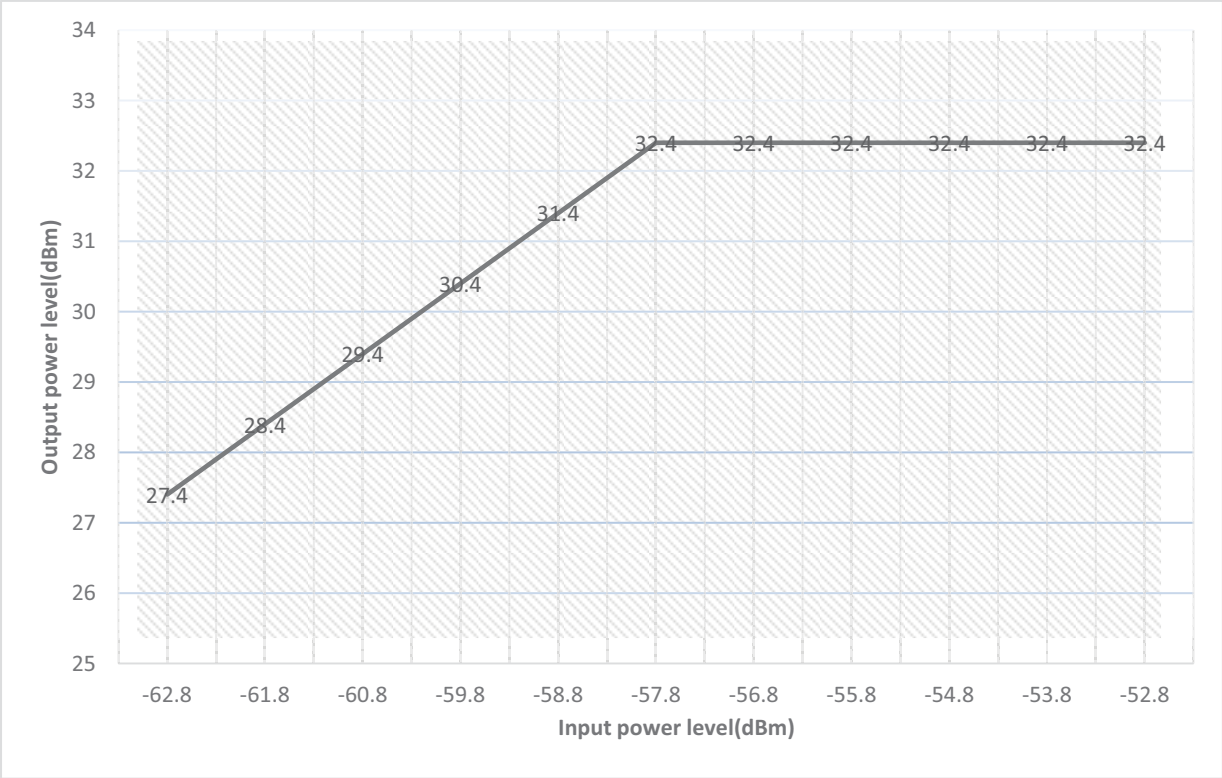
10.3.4.1.1.4. P25 Phase II(H-DQPSK)

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
771.5MHz	-61.4	0.7	-62.1	28.4
	-60.4	0.7	-61.1	29.4
	-59.4	0.7	-60.1	30.4
	-58.4	0.7	-59.1	31.4
	-57.4	0.7	-58.1	32.4
	-56.4	0.7	-57.1	33.4
	-55.4	0.7	-56.1	33.4
	-54.4	0.7	-55.1	33.4
	-53.4	0.7	-54.1	33.4
	-52.4	0.7	-53.1	33.4
	-51.4	0.7	-52.1	33.4



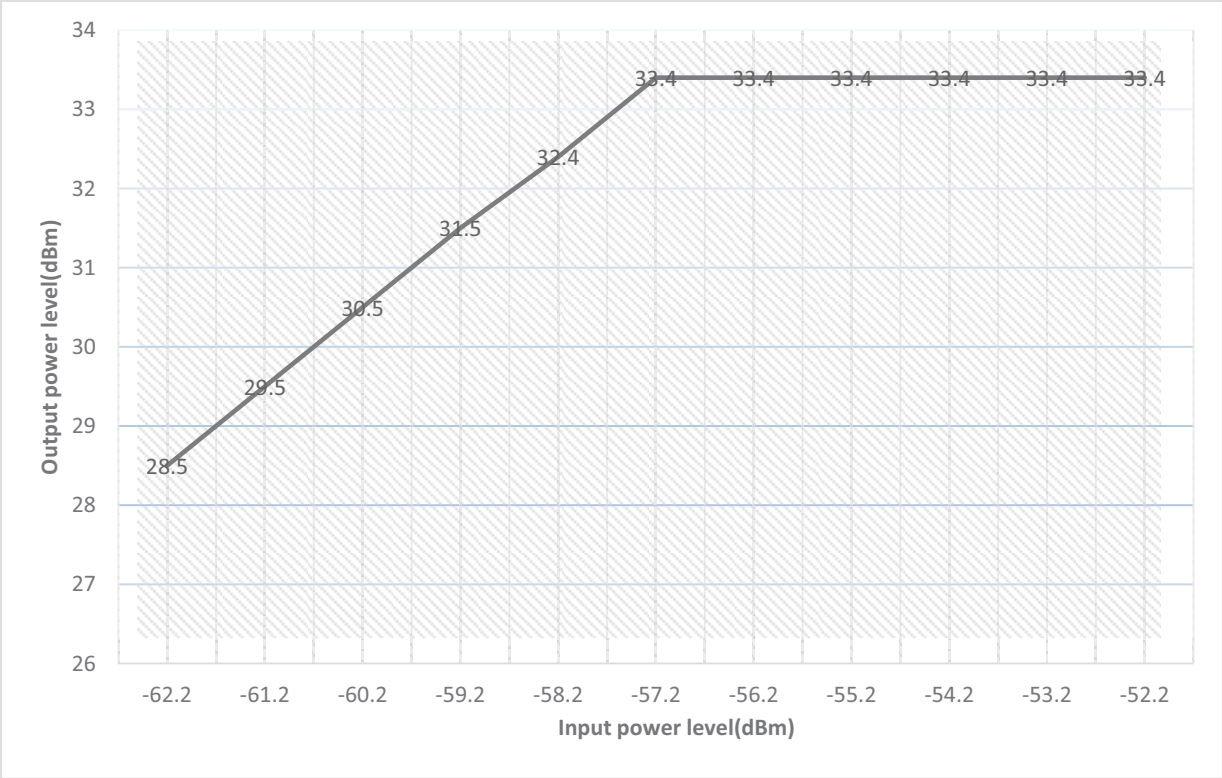
10.3.4.1.1.5. DMR

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
771.5MHz	-62.1	0.7	-62.8	27.4
	-61.1	0.7	-61.8	28.4
	-60.1	0.7	-60.8	29.4
	-59.1	0.7	-59.8	30.4
	-58.1	0.7	-58.8	31.4
	-57.1	0.7	-57.8	32.4
	-56.1	0.7	-56.8	32.4
	-55.1	0.7	-55.8	32.4
	-54.1	0.7	-54.8	32.4
	-53.1	0.7	-53.8	32.4
	-52.1	0.7	-52.8	32.4



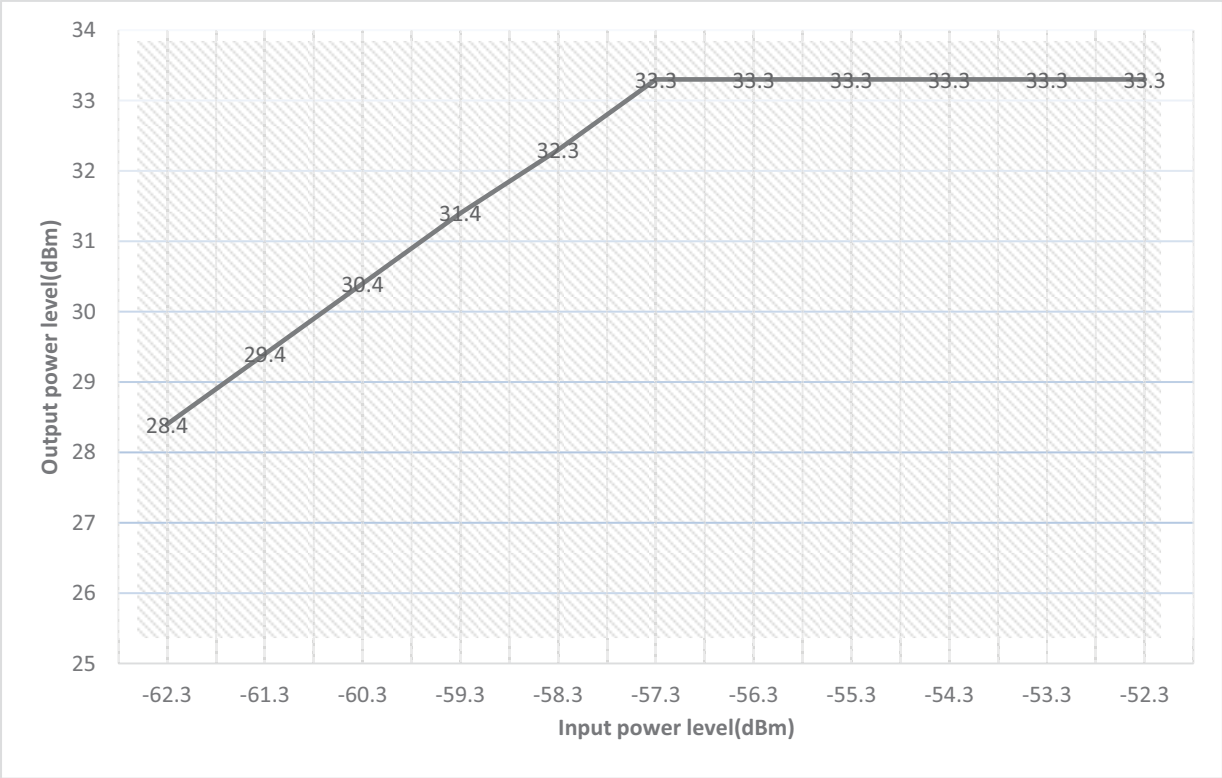
10.3.4.1.1.6. Analog FM

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
771.5MHz	-61.5	0.7	-62.2	28.5
	-60.5	0.7	-61.2	29.5
	-59.5	0.7	-60.2	30.5
	-58.5	0.7	-59.2	31.5
	-57.5	0.7	-58.2	32.4
	-56.5	0.7	-57.2	33.4
	-55.5	0.7	-56.2	33.4
	-54.5	0.7	-55.2	33.4
	-53.5	0.7	-54.2	33.4
	-52.5	0.7	-53.2	33.4
	-51.5	0.7	-52.2	33.4



10.3.4.1.1.7. Tetra

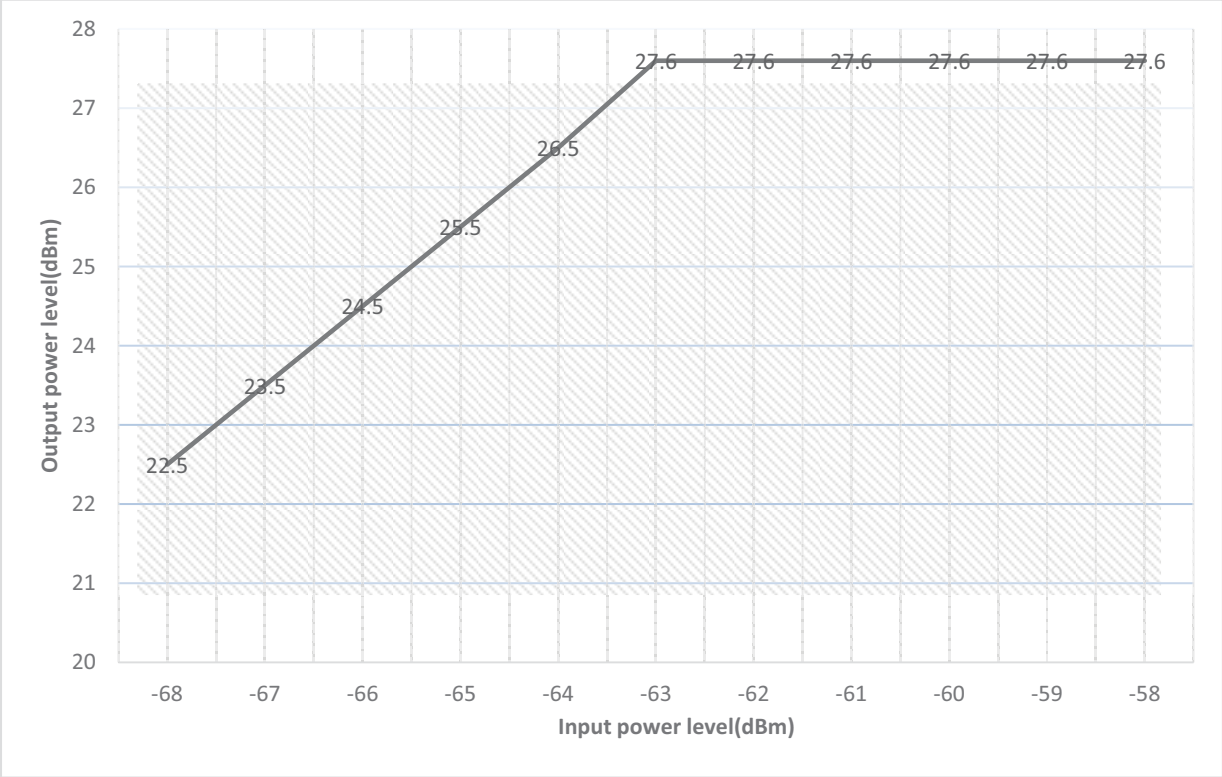
Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
771.5MHz	-61.6	0.7	-62.3	28.4
	-60.6	0.7	-61.3	29.4
	-59.6	0.7	-60.3	30.4
	-58.6	0.7	-59.3	31.4
	-57.6	0.7	-58.3	32.3
	-56.6	0.7	-57.3	33.3
	-55.6	0.7	-56.3	33.3
	-54.6	0.7	-55.3	33.3
	-53.6	0.7	-54.3	33.3
	-52.6	0.7	-53.3	33.3
	-51.6	0.7	-52.3	33.3



10.3.4.1.2. Uplink

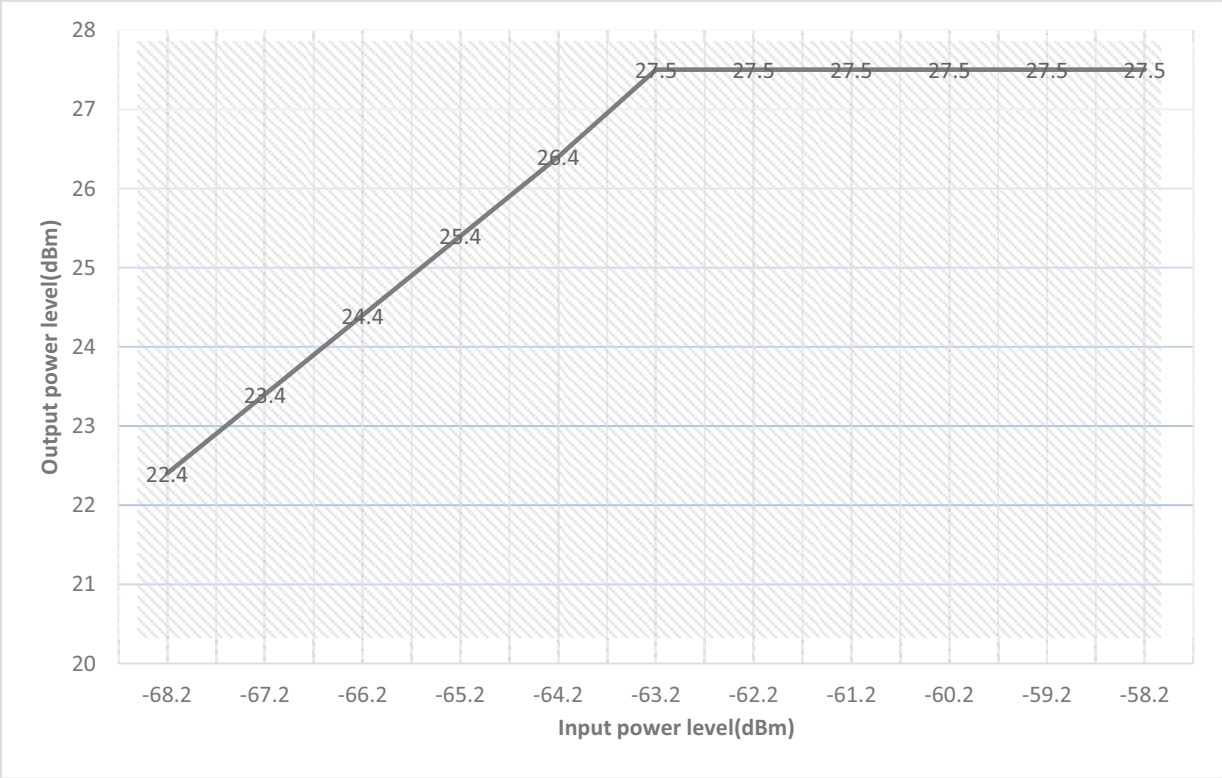
10.3.4.1.2.1. LTE 5MHz

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
793.0MHz	-67.3	0.7	-68.0	22.5
	-66.3	0.7	-67.0	23.5
	-65.3	0.7	-66.0	24.5
	-64.3	0.7	-65.0	25.5
	-63.3	0.7	-64.0	26.5
	-62.3	0.7	-63.0	27.6
	-61.3	0.7	-62.0	27.6
	-60.3	0.7	-61.0	27.6
	-59.3	0.7	-60.0	27.6
	-58.3	0.7	-59.0	27.6
	-57.3	0.7	-58.0	27.6



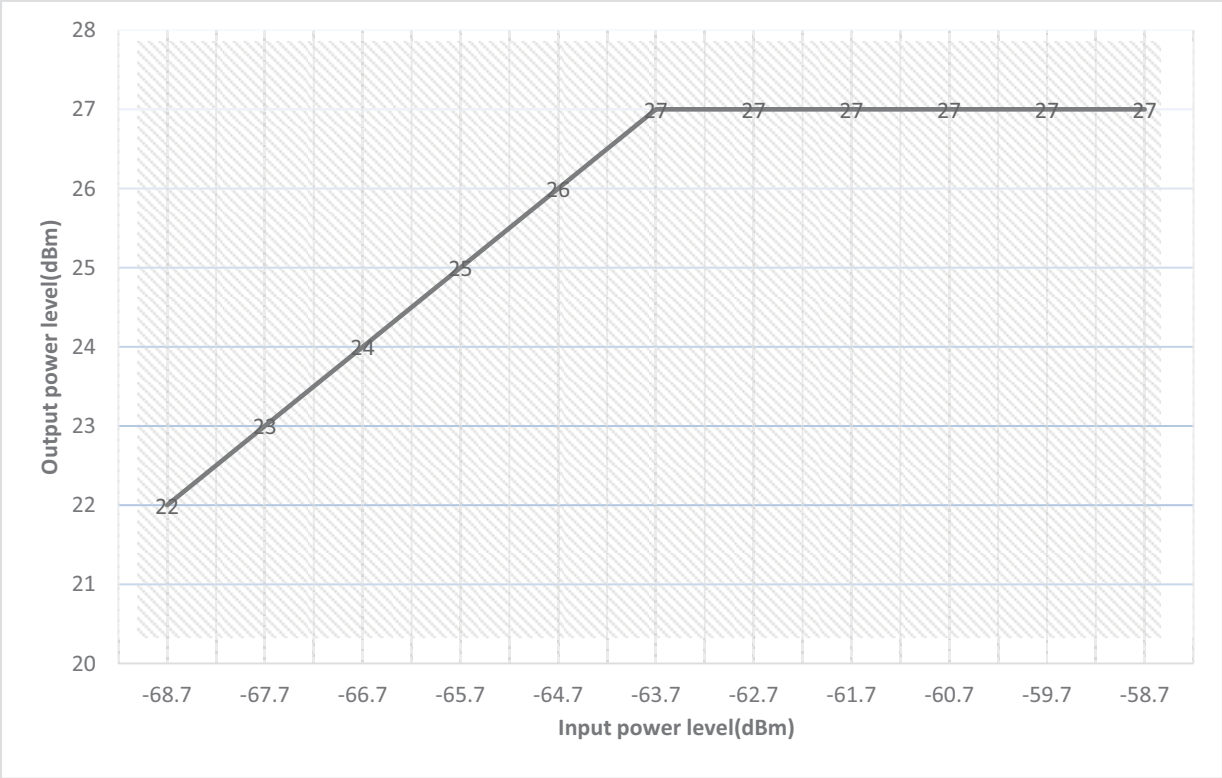
10.3.4.1.2.2. LTE 10MHz

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
793.0MHz	-67.5	0.7	-68.2	22.4
	-66.5	0.7	-67.2	23.4
	-65.5	0.7	-66.2	24.4
	-64.5	0.7	-65.2	25.4
	-63.5	0.7	-64.2	26.4
	-62.5	0.7	-63.2	27.5
	-61.5	0.7	-62.2	27.5
	-60.5	0.7	-61.2	27.5
	-59.5	0.7	-60.2	27.5
	-58.5	0.7	-59.2	27.5
	-57.5	0.7	-58.2	27.5



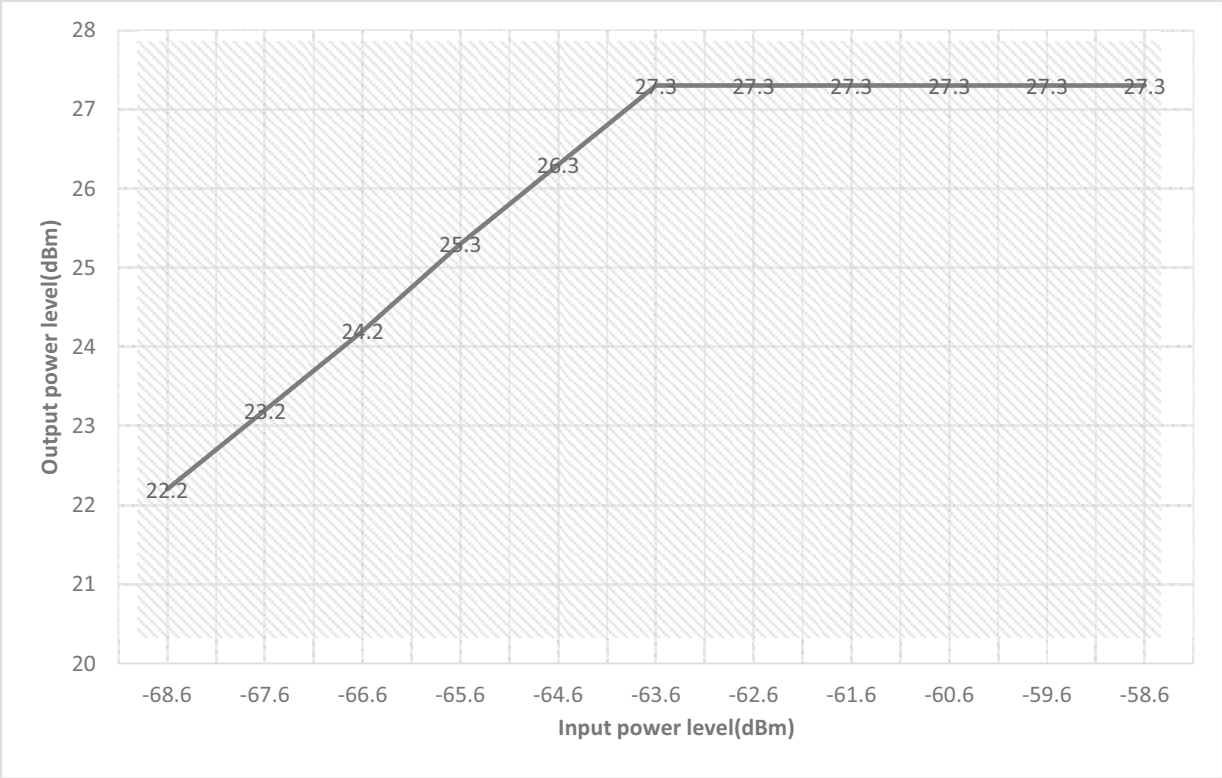
10.3.4.1.2.3. P25 Phase I(C4FM)

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
801.5MHz	-68.0	0.7	-68.7	22.0
	-67.0	0.7	-67.7	23.0
	-66.0	0.7	-66.7	24.0
	-65.0	0.7	-65.7	25.0
	-64.0	0.7	-64.7	26.0
	-63.0	0.7	-63.7	27.0
	-62.0	0.7	-62.7	27.0
	-61.0	0.7	-61.7	27.0
	-60.0	0.7	-60.7	27.0
	-59.0	0.7	-59.7	27.0
	-58.0	0.7	-58.7	27.0



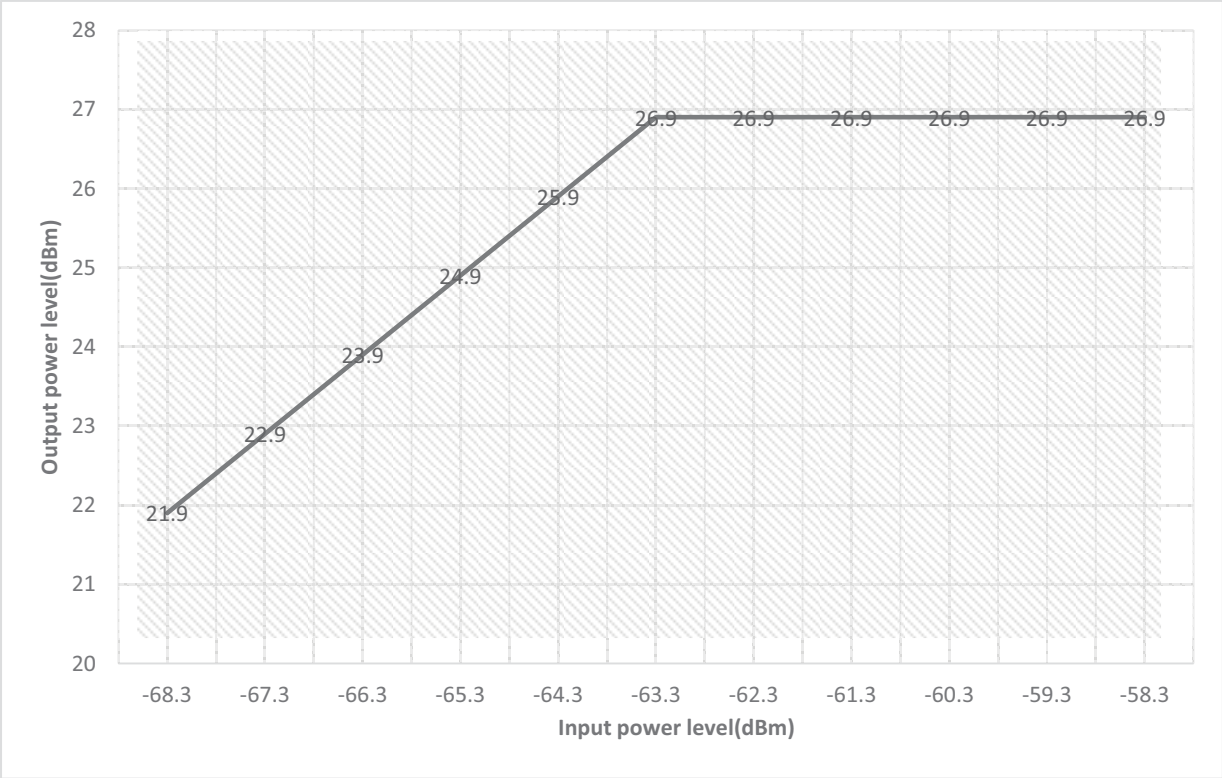
10.3.4.1.2.4. P25 Phase II(H-DQPSK)

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
801.5MHz	-67.9	0.7	-68.6	22.2
	-66.9	0.7	-67.6	23.2
	-65.9	0.7	-66.6	24.2
	-64.9	0.7	-65.6	25.3
	-63.9	0.7	-64.6	26.3
	-62.9	0.7	-63.6	27.3
	-61.9	0.7	-62.6	27.3
	-60.9	0.7	-61.6	27.3
	-59.9	0.7	-60.6	27.3
	-58.9	0.7	-59.6	27.3
	-57.9	0.7	-58.6	27.3



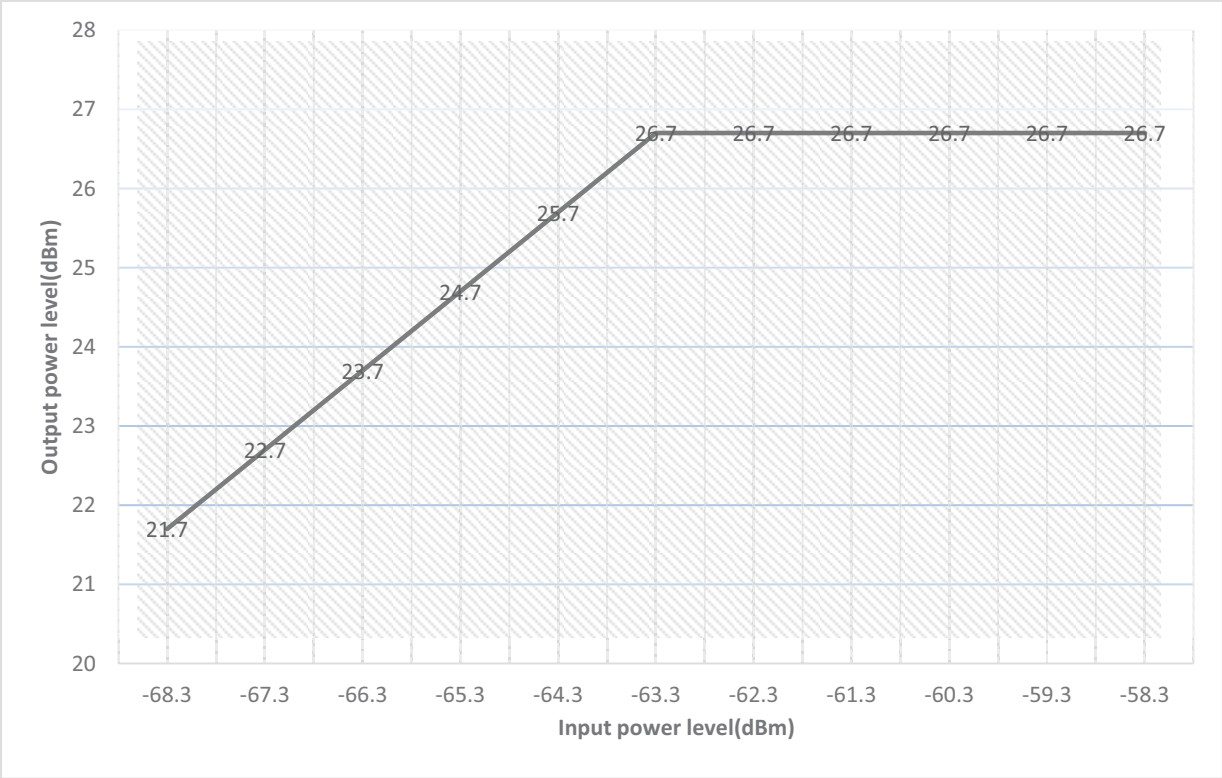
10.3.4.1.2.5. DMR

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
801.5MHz	-67.6	0.7	-68.3	21.9
	-66.6	0.7	-67.3	22.9
	-65.6	0.7	-66.3	23.9
	-64.6	0.7	-65.3	24.9
	-63.6	0.7	-64.3	25.9
	-62.6	0.7	-63.3	26.9
	-61.6	0.7	-62.3	26.9
	-60.6	0.7	-61.3	26.9
	-59.6	0.7	-60.3	26.9
	-58.6	0.7	-59.3	26.9
	-57.6	0.7	-58.3	26.9



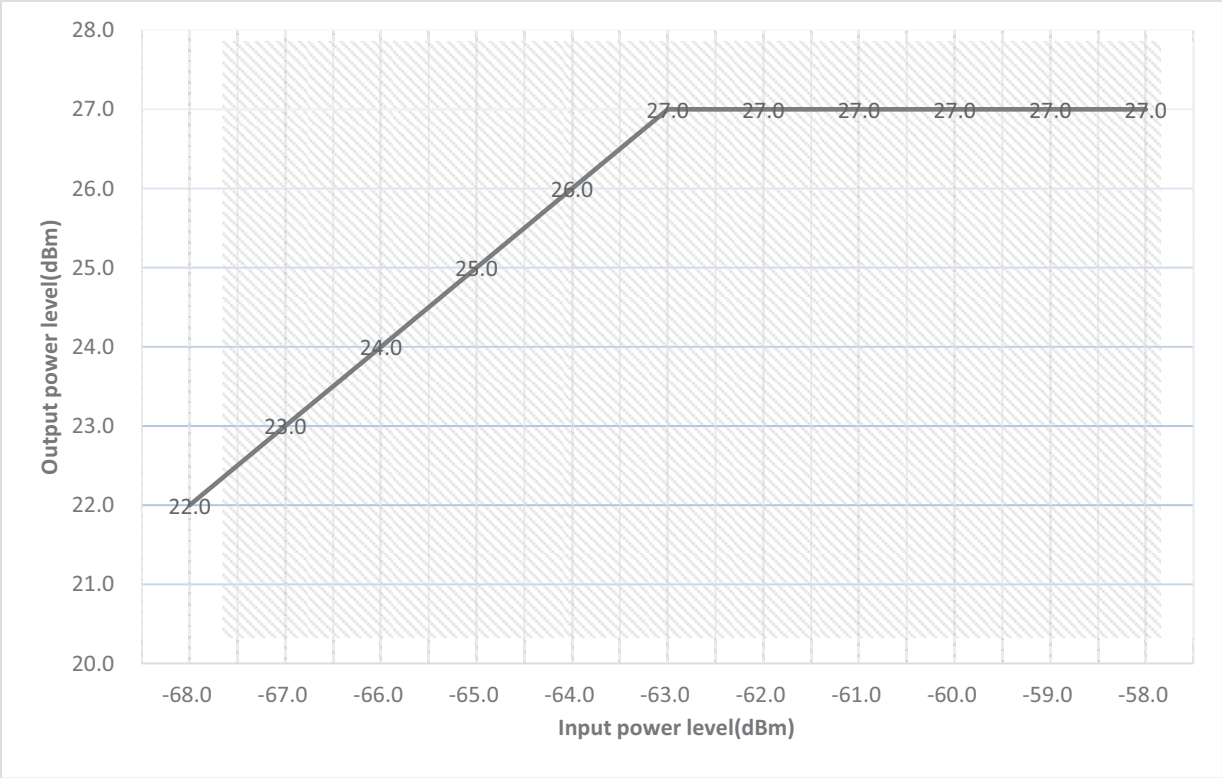
10.3.4.1.2.6. Analog FM

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
801.5MHz	-67.6	0.7	-68.3	21.7
	-66.6	0.7	-67.3	22.7
	-65.6	0.7	-66.3	23.7
	-64.6	0.7	-65.3	24.7
	-63.6	0.7	-64.3	25.7
	-62.6	0.7	-63.3	26.7
	-61.6	0.7	-62.3	26.7
	-60.6	0.7	-61.3	26.7
	-59.6	0.7	-60.3	26.7
	-58.6	0.7	-59.3	26.7
	-57.6	0.7	-58.3	26.7



10.3.4.1.2.7. Tetra

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
801.5MHz	-67.3	0.7	-68.0	22.0
	-66.3	0.7	-67.0	23.0
	-65.3	0.7	-66.0	24.0
	-64.3	0.7	-65.0	25.0
	-63.3	0.7	-64.0	26.0
	-62.3	0.7	-63.0	27.0
	-61.3	0.7	-62.0	27.0
	-60.3	0.7	-61.0	27.0
	-59.3	0.7	-60.0	27.0
	-58.3	0.7	-59.0	27.0
	-57.3	0.7	-58.0	27.0

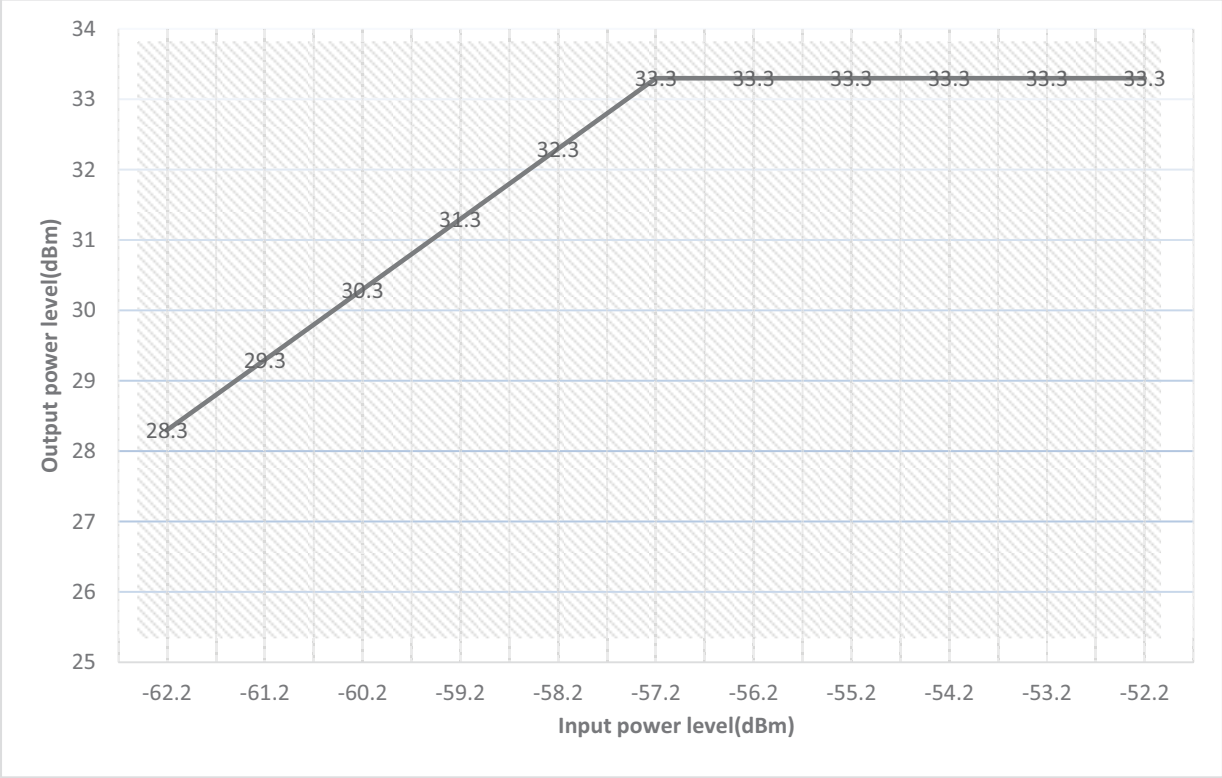


10.3.4.2. 800MHz Band

10.3.4.2.1. Downlink

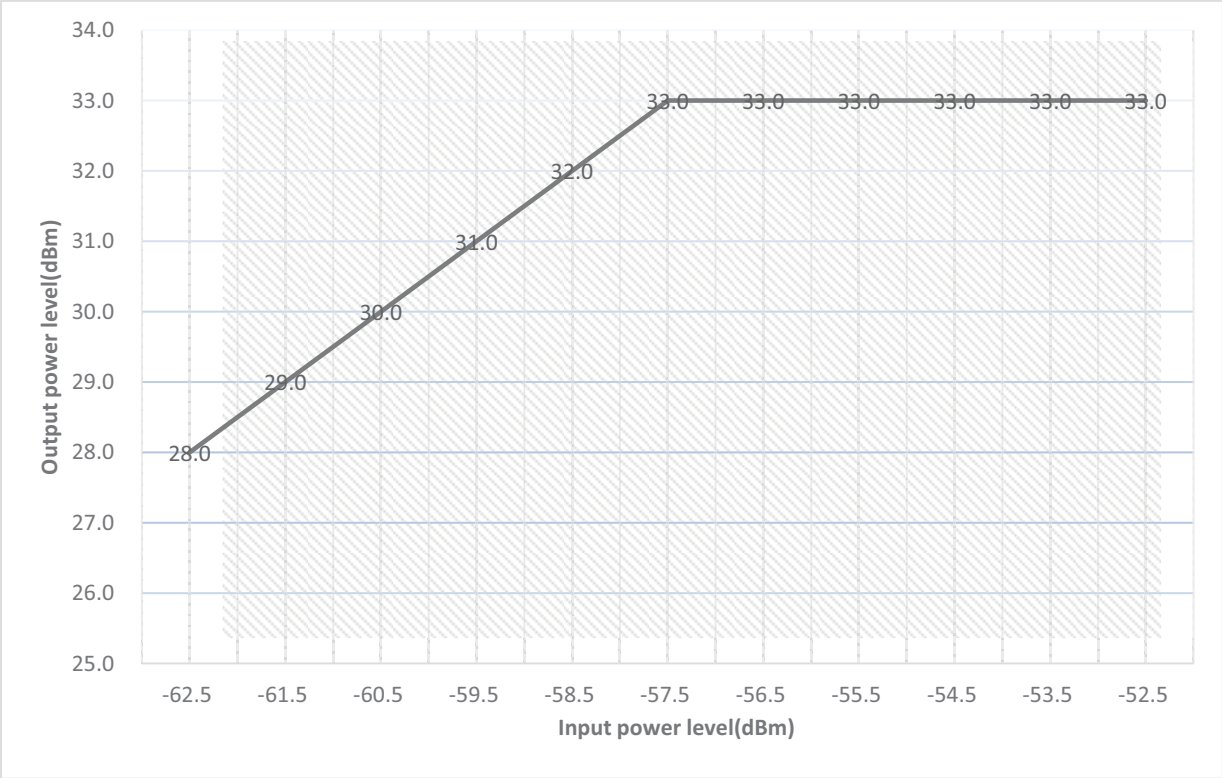
10.3.4.2.1.1. P25 Phase I(C4FM)

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
856.0MHz	-61.5	0.7	-62.2	28.3
	-60.5	0.7	-61.2	29.3
	-59.5	0.7	-60.2	30.3
	-58.5	0.7	-59.2	31.3
	-57.5	0.7	-58.2	32.3
	-56.5	0.7	-57.2	33.3
	-55.5	0.7	-56.2	33.3
	-54.5	0.7	-55.2	33.3
	-53.5	0.7	-54.2	33.3
	-52.5	0.7	-53.2	33.3
	-51.5	0.7	-52.2	33.3



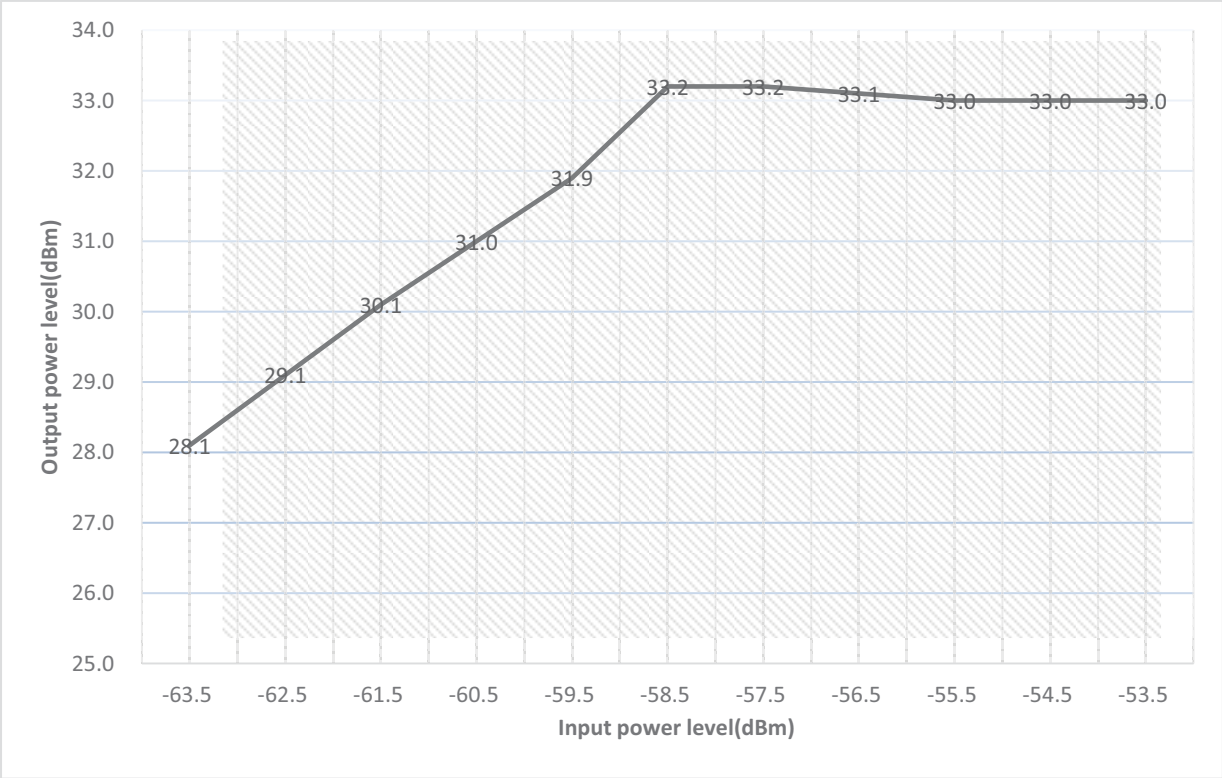
10.3.4.2.1.2. P25 Phase II(H-DQPSK)

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
856.0MHz	-61.8	0.7	-62.5	28.0
	-60.8	0.7	-61.5	29.0
	-59.8	0.7	-60.5	30.0
	-58.8	0.7	-59.5	31.0
	-57.8	0.7	-58.5	32.0
	-56.8	0.7	-57.5	33.0
	-55.8	0.7	-56.5	33.0
	-54.8	0.7	-55.5	33.0
	-53.8	0.7	-54.5	33.0
	-52.8	0.7	-53.5	33.0
	-51.8	0.7	-52.5	33.0



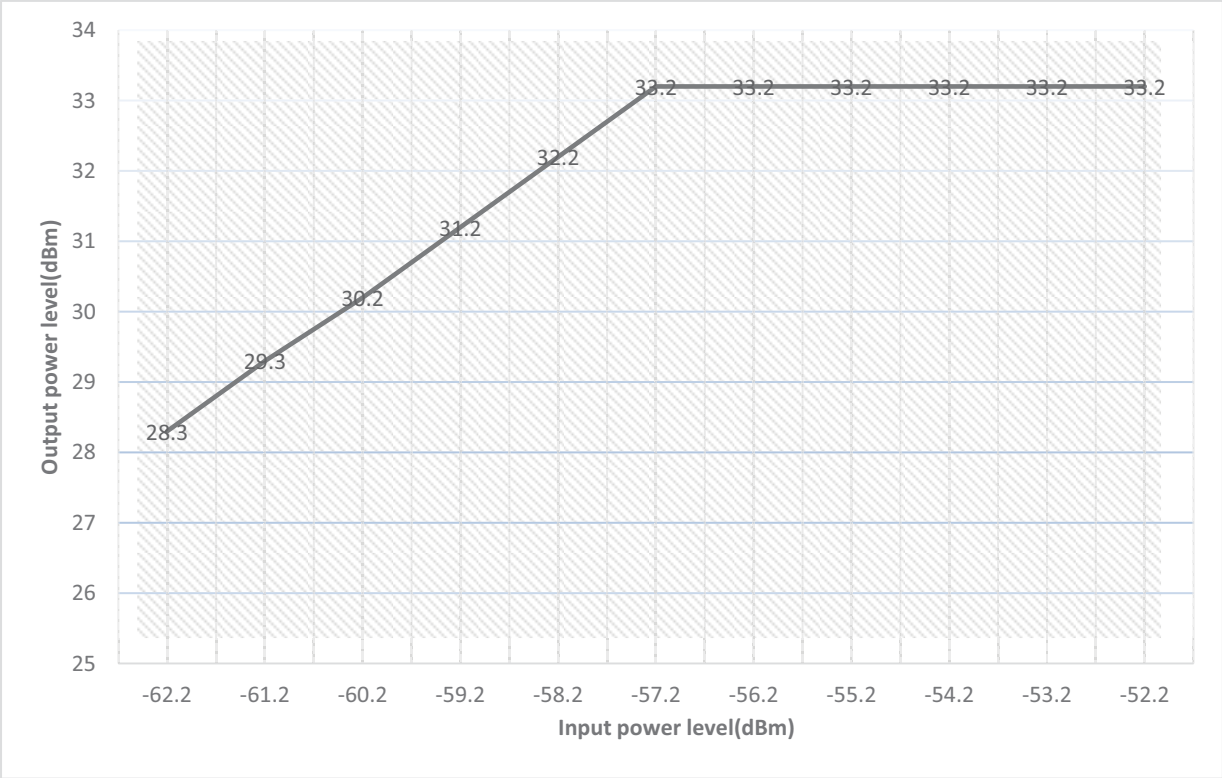
10.3.4.2.1.3. DMR

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
856.0MHz	-62.8	0.7	-63.5	28.1
	-61.8	0.7	-62.5	29.1
	-60.8	0.7	-61.5	30.1
	-59.8	0.7	-60.5	31.0
	-58.8	0.7	-59.5	31.9
	-57.8	0.7	-58.5	33.2
	-56.8	0.7	-57.5	33.2
	-55.8	0.7	-56.5	33.1
	-54.8	0.7	-55.5	33.0
	-53.8	0.7	-54.5	33.0
	-52.8	0.7	-53.5	33.0



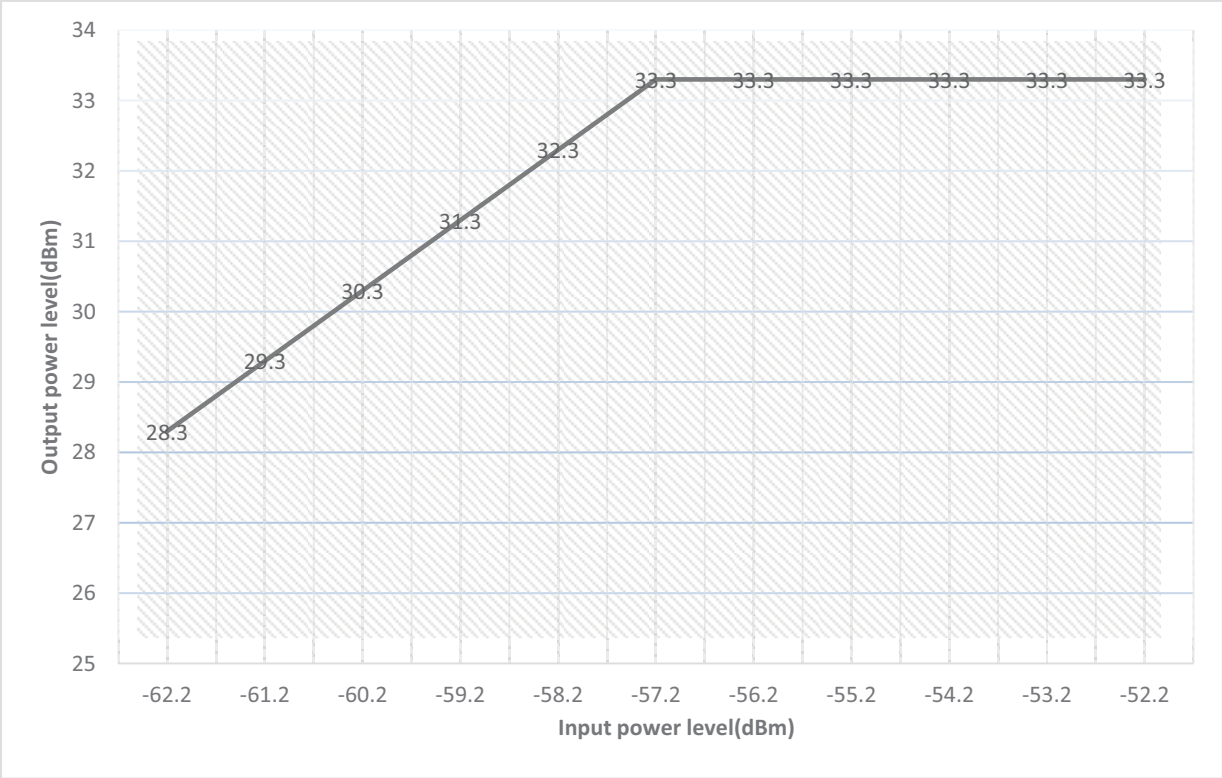
10.3.4.2.1.4. Analog FM

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
856.0MHz	-61.5	0.7	-62.2	28.3
	-60.5	0.7	-61.2	29.3
	-59.5	0.7	-60.2	30.2
	-58.5	0.7	-59.2	31.2
	-57.5	0.7	-58.2	32.2
	-56.5	0.7	-57.2	33.2
	-55.5	0.7	-56.2	33.2
	-54.5	0.7	-55.2	33.2
	-53.5	0.7	-54.2	33.2
	-52.5	0.7	-53.2	33.2
	-51.5	0.7	-52.2	33.2



10.3.4.2.1.5. Tetra

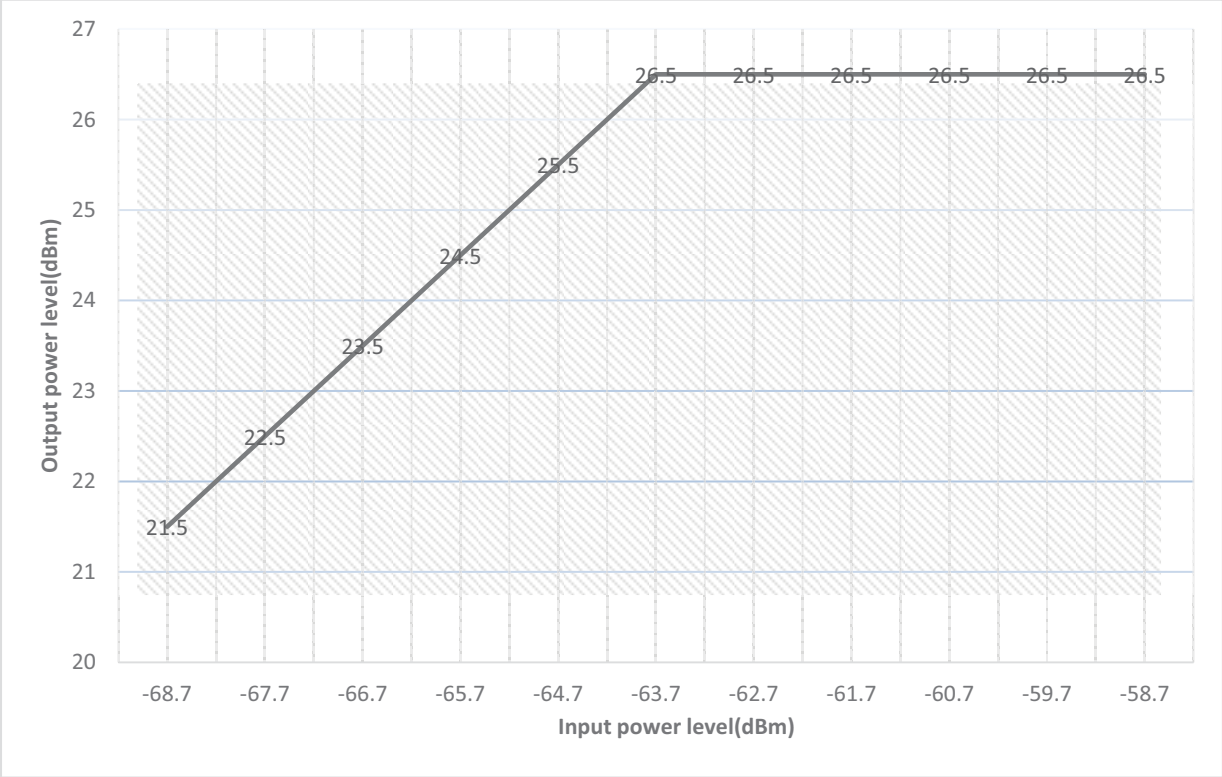
Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
856.0MHz	-61.5	0.7	-62.2	28.3
	-60.5	0.7	-61.2	29.3
	-59.5	0.7	-60.2	30.3
	-58.5	0.7	-59.2	31.3
	-57.5	0.7	-58.2	32.3
	-56.5	0.7	-57.2	33.3
	-55.5	0.7	-56.2	33.3
	-54.5	0.7	-55.2	33.3
	-53.5	0.7	-54.2	33.3
	-52.5	0.7	-53.2	33.3
	-51.5	0.7	-52.2	33.3



10.3.4.2.2. Uplink

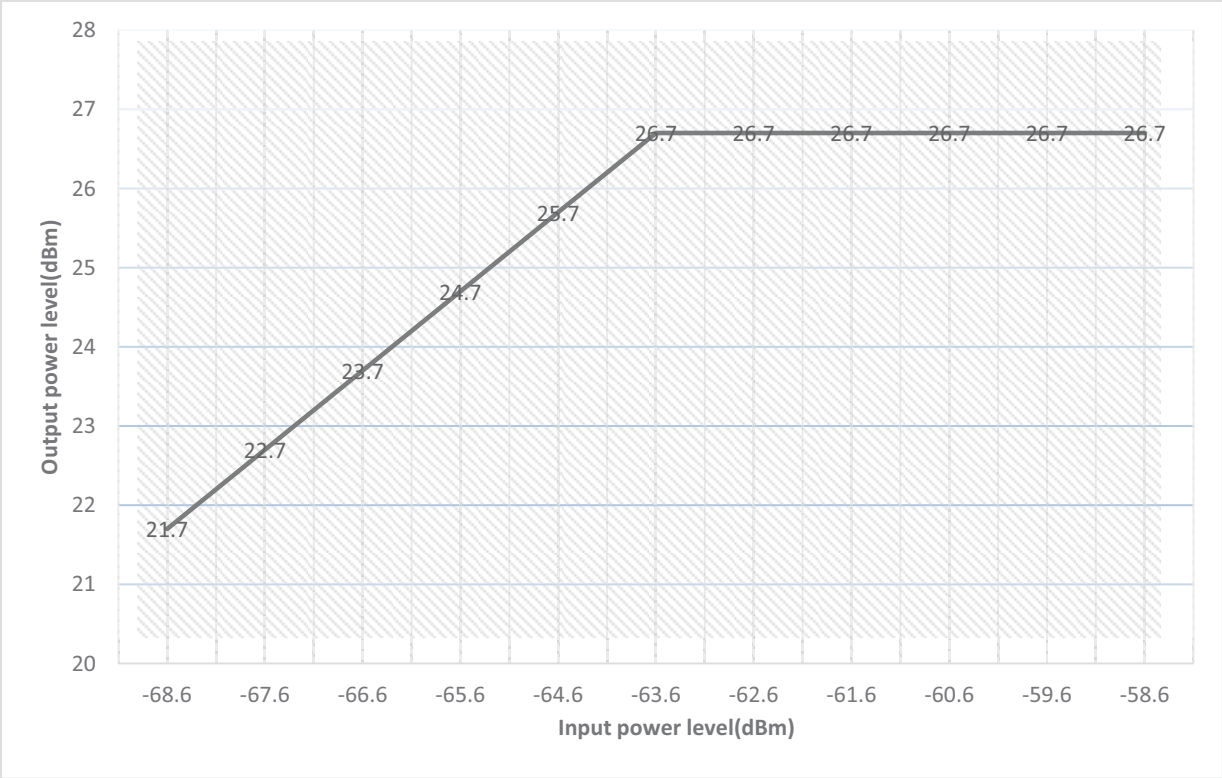
10.3.4.2.2.1. P25 Phase I(C4FM)

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
811.0MHz	-68.0	0.7	-68.7	21.5
	-67.0	0.7	-67.7	22.5
	-66.0	0.7	-66.7	23.5
	-65.0	0.7	-65.7	24.5
	-64.0	0.7	-64.7	25.5
	-63.0	0.7	-63.7	26.5
	-62.0	0.7	-62.7	26.5
	-61.0	0.7	-61.7	26.5
	-60.0	0.7	-60.7	26.5
	-59.0	0.7	-59.7	26.5
	-58.0	0.7	-58.7	26.5



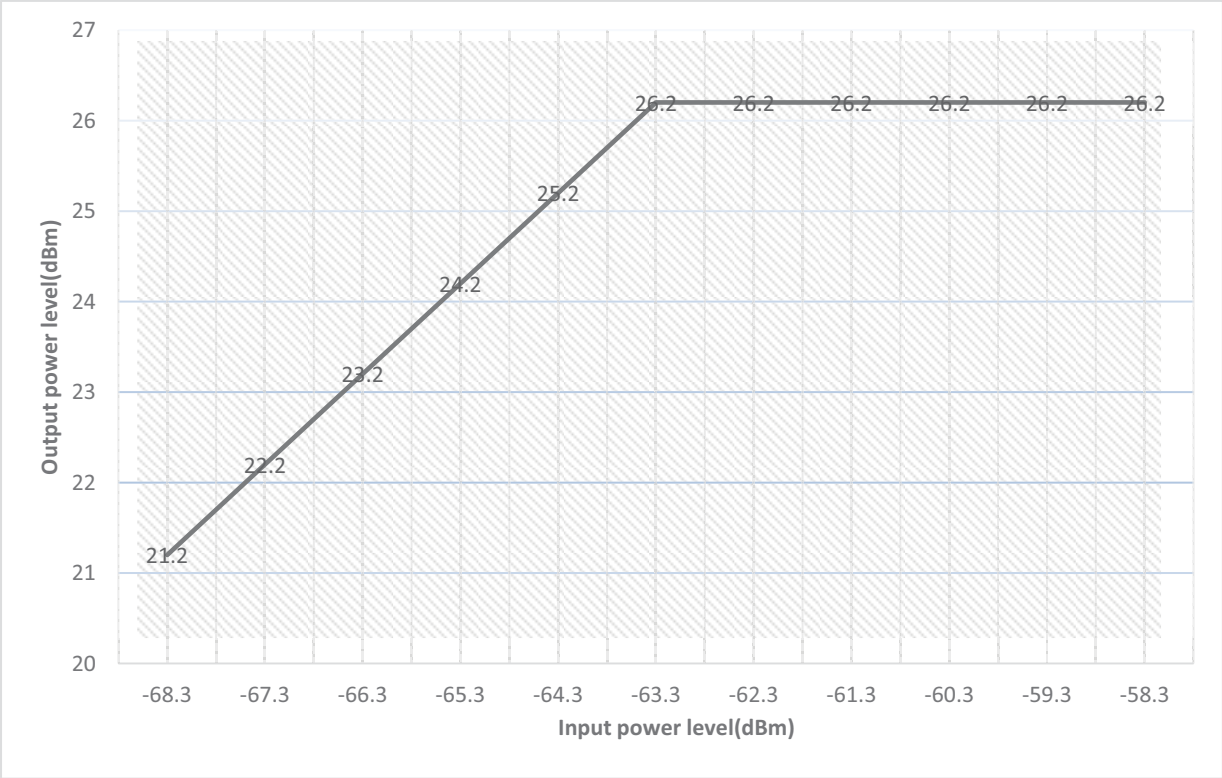
10.3.4.2.2.2. P25 Phase II(H-DQPSK)

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
811.0MHz	-67.9	0.7	-68.6	21.7
	-66.9	0.7	-67.6	22.7
	-65.9	0.7	-66.6	23.7
	-64.9	0.7	-65.6	24.7
	-63.9	0.7	-64.6	25.7
	-62.9	0.7	-63.6	26.7
	-61.9	0.7	-62.6	26.7
	-60.9	0.7	-61.6	26.7
	-59.9	0.7	-60.6	26.7
	-58.9	0.7	-59.6	26.7
	-57.9	0.7	-58.6	26.7



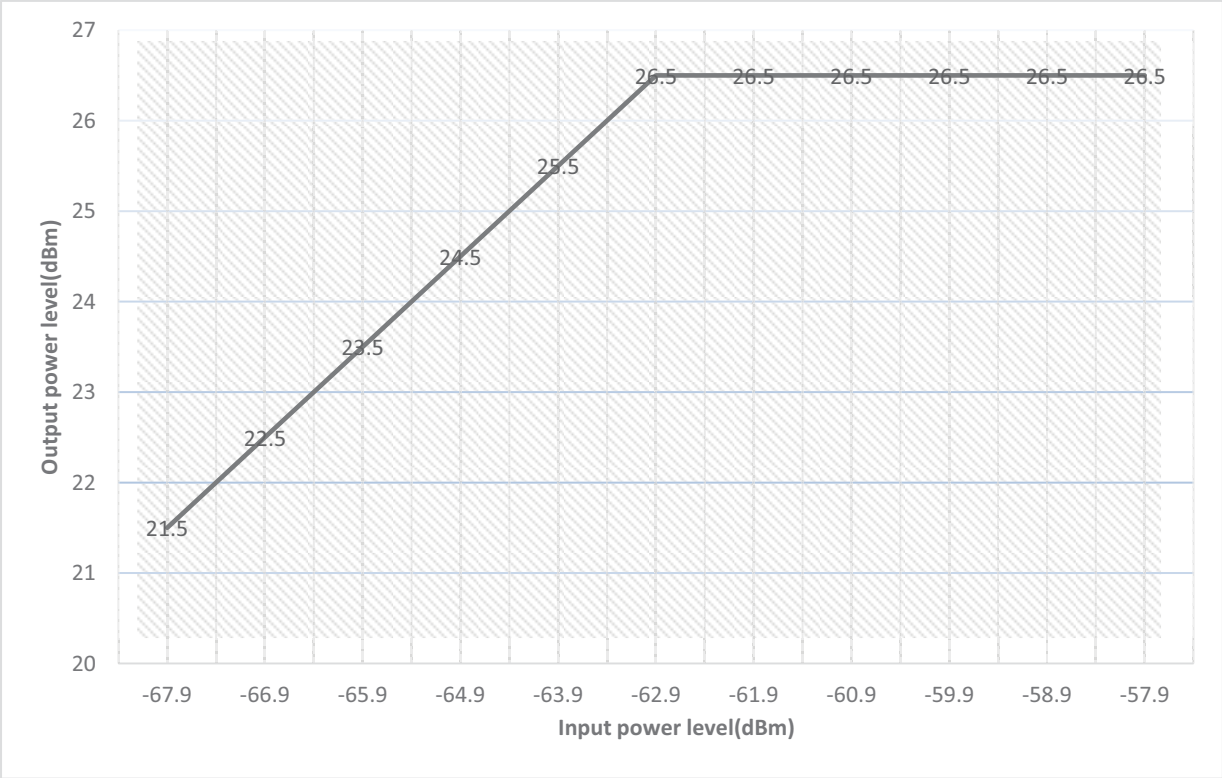
10.3.4.2.2.3. DMR

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
811.0MHz	-67.6	0.7	-68.3	21.2
	-66.6	0.7	-67.3	22.2
	-65.6	0.7	-66.3	23.2
	-64.6	0.7	-65.3	24.2
	-63.6	0.7	-64.3	25.2
	-62.6	0.7	-63.3	26.2
	-61.6	0.7	-62.3	26.2
	-60.6	0.7	-61.3	26.2
	-59.6	0.7	-60.3	26.2
	-58.6	0.7	-59.3	26.2
	-57.6	0.7	-58.3	26.2



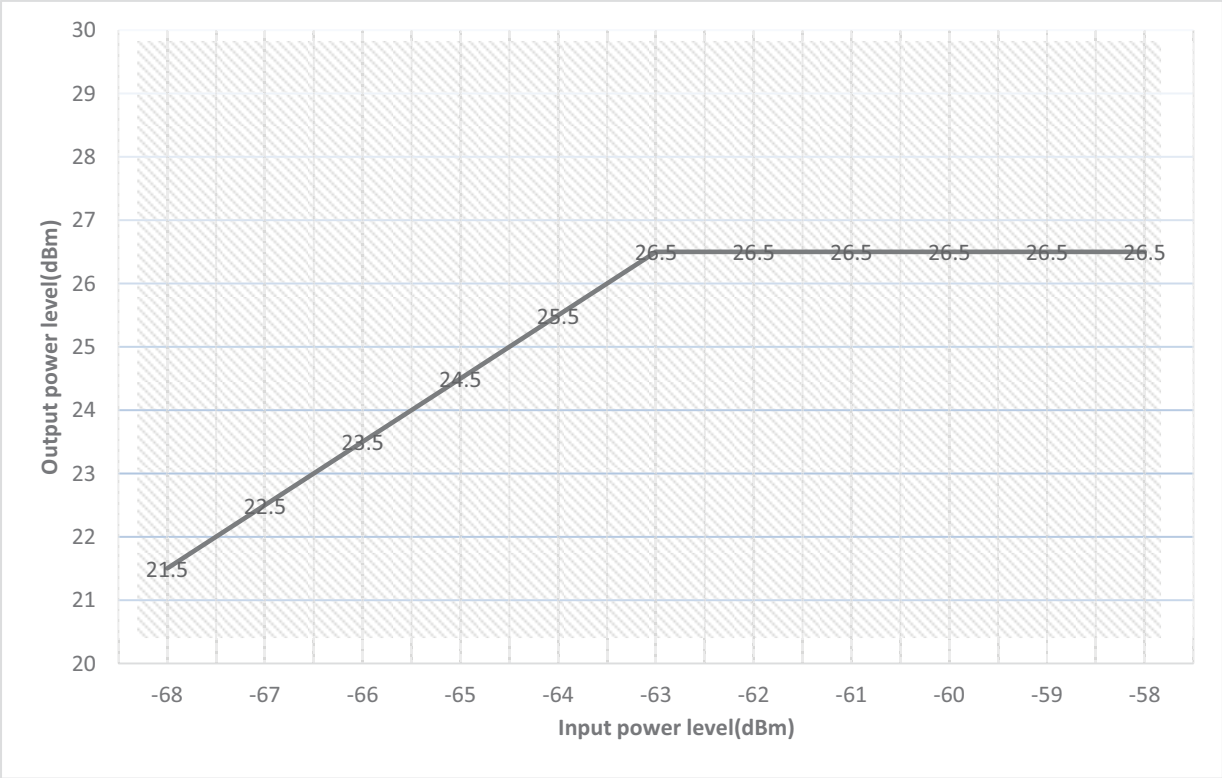
10.3.4.2.2.4. Analog FM

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
811.0MHz	-67.2	0.7	-67.9	21.5
	-66.2	0.7	-66.9	22.5
	-65.2	0.7	-65.9	23.5
	-64.2	0.7	-64.9	24.5
	-63.2	0.7	-63.9	25.5
	-62.2	0.7	-62.9	26.5
	-61.2	0.7	-61.9	26.5
	-60.2	0.7	-60.9	26.5
	-59.2	0.7	-59.9	26.5
	-58.2	0.7	-58.9	26.5
	-57.2	0.7	-57.9	26.5



10.3.4.2.2.5. Tetra

Test frequency	Signal output power (dBm)	EUT Input cable loss (dB)	EUT Corrected Input power (dBm)	EUT Corrected Output power (dBm)
811.0MHz	-67.3	0.7	-68.0	21.5
	-66.3	0.7	-67.0	22.5
	-65.3	0.7	-66.0	23.5
	-64.3	0.7	-65.0	24.5
	-63.3	0.7	-64.0	25.5
	-62.3	0.7	-63.0	26.5
	-61.3	0.7	-62.0	26.5
	-60.3	0.7	-61.0	26.5
	-59.3	0.7	-60.0	26.5
	-58.3	0.7	-59.0	26.5
	-57.3	0.7	-58.0	26.5



10.4. Out-of-band rejection

Test requirement:	FCC PART 90.219 (a) FCC PART 90.219 (d)((7)
Test Method:	KDB 935210 D05 clause 4.3

10.4.1. Requirements

According to KDB 935210 D05 clause 4.3 requirement, A signal booster shall reject amplification of other signals outside of its pass band. Adjust the internal gain control of the EUT to the maximum gain for which equipment certification is sought.

10.4.2. Test configuration

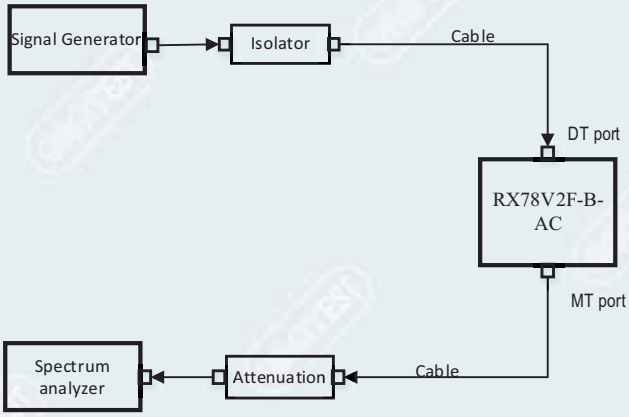


Figure 10.4-1 Downlink connection diagram

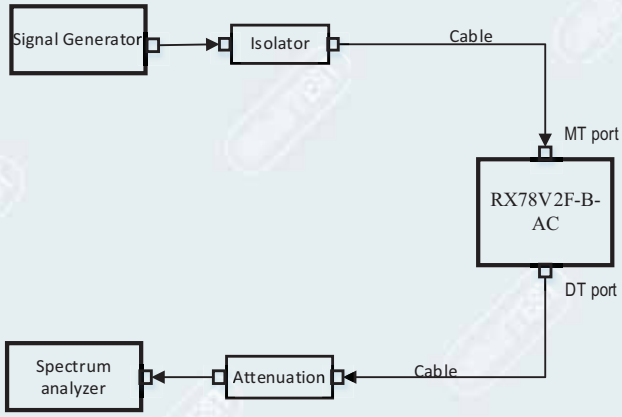


Figure 10.4-2 Uplink connection diagram

10.4.3. Test procedures

a) Connect a signal generator to the input of the EUT.
b) Configure a swept CW signal with the following parameters:
   1) Frequency range = ± 250 % of the manufacturer's specified pass band.
   2) The CW amplitude shall be 3 dB below the AGC threshold (see 4.2), and shall not activate the AGC threshold throughout the test.
   3) Dwell time = approximately 10 ms.
   4) Frequency step = 50 kHz.
c) Connect a spectrum analyzer to the output of the EUT using appropriate attenuation.
d) Set the RBW of the spectrum analyzer to between 1 % and 5 % of the manufacturer's rated passband, and VBW = 3 × RBW.
e) Set the detector to Peak and the trace to Max-Hold.
f) After the trace is completely filled, place a marker at the peak amplitude, which is designated as f_0, and with two additional markers (use the marker-delta method) at the 20 dB bandwidth (i.e., at the points where the level has fallen by 20 dB).
g) Capture the frequency response plot for inclusion in the test report.

10.4.4. Test results

Test Date (yy-mm-dd): 2022-08-04

Normal condition: Temp: 27.1℃, Humid:52%, Atmospheric Pressure:101kpa

Supply Voltage: AC 110V, 50Hz

10.4.4.1. 700MHz Band

RBW (kHz)	VBW (kHz)	20dB Down		20dB BW (MHz)
		Below frequency (MHz)	Up frequency (MHz)	
(1) Downlink: 758MHz~775MHz				
300	1000	757.51	775.55	18.04
(2) Uplink: 788MHz~816MHz				
300	1000	787.51	816.49	28.97

NOTE: 700MHz uplink and 800MHz uplink use the same power amplifier module, and it is broadband power amplifier.

10.4.4.2. 800MHz Band

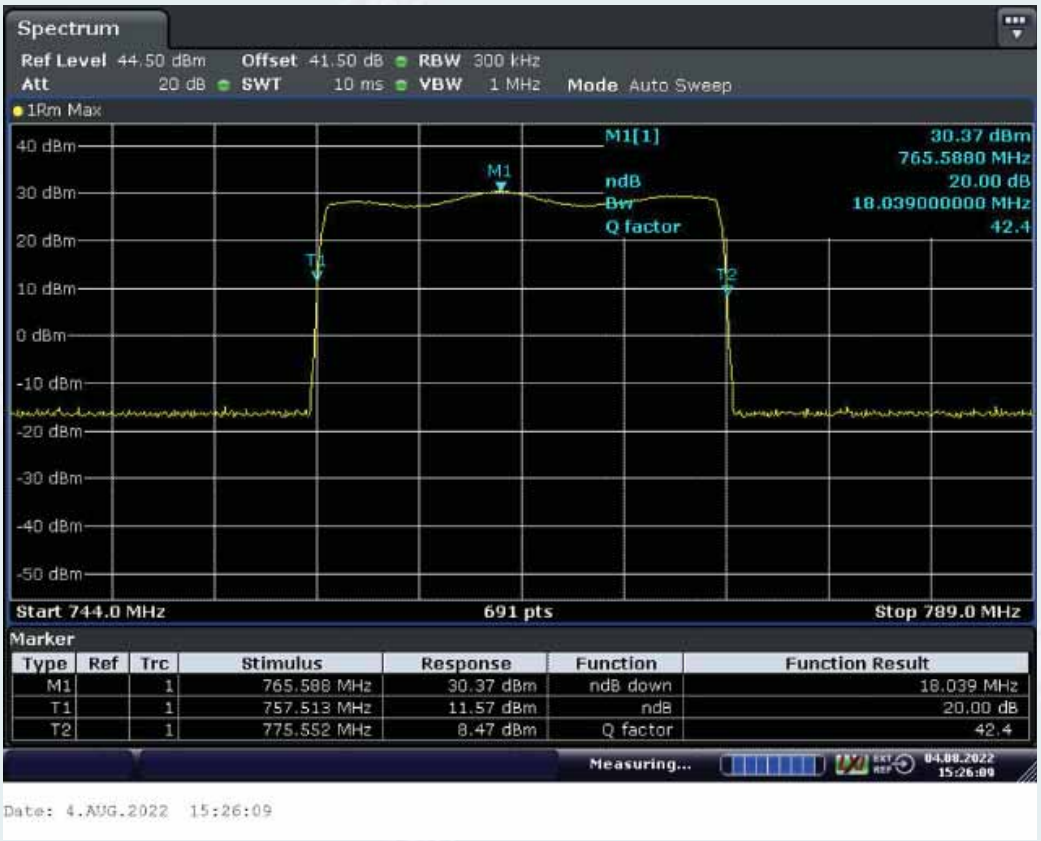
RBW (kHz)	VBW (kHz)	20dB Down		20dB BW (MHz)
		Below frequency (MHz)	Up frequency (MHz)	
(3) Downlink: 851MHz~861MHz				
300	1000	850.46	861.53	11.07
(4) Uplink: 788MHz~816MHz				
300	1000	787.51	816.49	28.97

NOTE: 700MHz uplink and 800MHz uplink use the same power amplifier module, and it is broadband power amplifier.

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

10.4.5. Test screenshot

10.4.5.1. 700MHz Band



Downlink: 758MHz~775MHz

Uplink: 788MHz~816MHz