KDB 935210 4.9 SPURIOUS EMISSION 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.

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2.1055 FREQUENCY STABILITY

§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.

☐ (c) In addition to all other requirements of this section, the following information is required for equipment incorporating heater type crystal oscillators to be used in mobile stations, for which type acceptance is first requested after March 25, 1974, except for battery powered, hand carried, portable equipment having less than 3 watts mean output power.

(1) Measurement data showing variation in transmitter output frequency from a cold start and the elapsed time necessary for the frequency to stabilize within the applicable tolerance. Tests shall be made after temperature stabilization at each of the ambient temperature levels; the lower temperature limit, 0° centigrade and + 30° centigrade with no primary power applied.

(2) Beginning at each temperature level specified in paragraph (c)(1) of this section, the frequency shall be measured within one minute after application of primary power to the transmitter and at intervals of no more than one minute thereafter until ten minutes have elapsed or until sufficient measurements are obtained to indicate clearly that the frequency has stabilized within the applicable tolerance, whichever time period is greater. During each test, the ambient temperature shall not be allowed to rise more than 10° centigrade above the respective beginning ambient temperature level.

(3) The elapsed time necessary for the frequency to stabilize within the applicable tolerance from each beginning ambient temperature level as determined from the tests specified in this paragraph shall be specified in the instruction book for the transmitter furnished to the user.

(4) When it is impracticable to subject the complete transmitter to this test because of its physical dimensions or power rating, only its frequency determining and stabilizing portions need be tested.

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FREQUENCY STABILITY

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:

(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

(2) For hand carried, battery powered equipment, reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.

(3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

(e) When deemed necessary, the Commission may require tests of frequency stability under conditions in addition to those specifically set out in paragraphs (a), (b), (c), and (d) of this section. (For example measurements showing the effect of proximity to large metal objects, or of various types of antennas, may be required for portable equipment.)

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KDB 935210 4.8 FREQUENCY STABILITY

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.

90.213 FREQUENCY STABILITY

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

(b) For the purpose of determining the frequency stability limits, the power of a transmitter is considered to be the maximum rated output power as specified by the manufacturer.

Applies to EUT	Frequency range (MHz)	Fixed and base stations (ppm)	Mobile stations > 2 watts output power (ppm)	Mobile stations ≤ 2 watts output power (ppm)
☒	806-809	[14] 1.0	1.5	1.5
☒	809-824	[14] 1.5	2.5	2.5
☒	851-854	1.0	1.5	1.5
☒	854-869	1.5	2.5	2.5

[4]Stations operating in the 154.45 to 154.49 MHz or the 173.2 to 173.4 MHz bands must have a frequency stability of 5 ppm.

[5]In the 150-174 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.

[6]In the 150-174 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth or designed to operate on a frequency specifically designated for itinerant use or designed for low-power operation of two watts or less, must have a frequency stability of 5.0 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 2.0 ppm.

[11]Paging transmitters operating on paging-only frequencies must operate with frequency stability of 5 ppm in the 150-174 MHz band and 2.5 ppm in the 421-512 MHz band.

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FREQUENCY STABILITY

Test Procedure: ANSI C63.26 S 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:

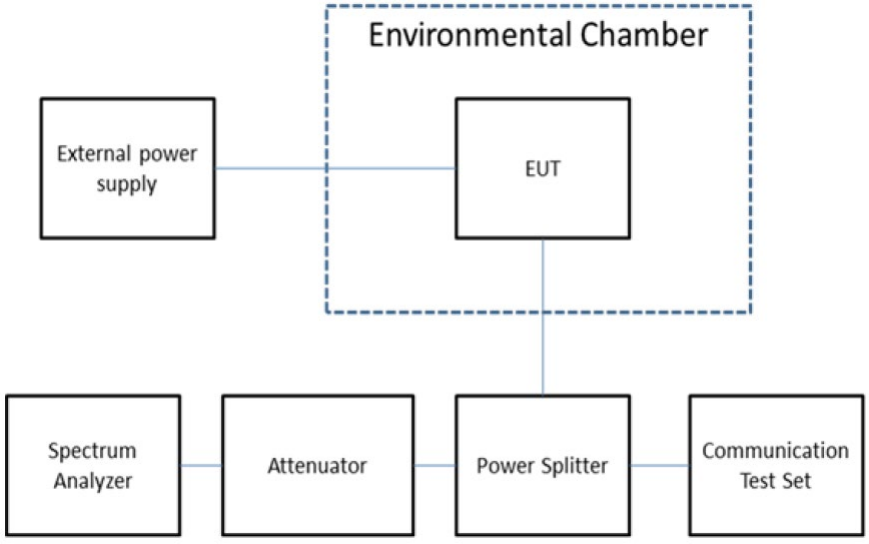
a) At 10 °C intervals of temperatures between −30 °C and +50 °C at the manufacturer's rated supply voltage, and

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.

Test Setup Block Diagram:



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STATEMENT OF MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The measurement uncertainty was calculated for all measurements listed in this test report according To CISPR 16–4 or EN TR 100-028 Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: "Uncertainty in EMC Measurements" and is documented in the Timco Engineering, Inc. quality system according to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Timco Engineering, Inc. is reported:

Test Items	Measurement Uncertainty	Notes
TR 100 028 PARAGRAPH 7.1.1 – FREQUENCY ERROR < 30 MHz	± 0.063 ppm	(1)
TR 100 028 PARAGRAPH 7.1.1 - FREQUENCY ERROR < 200 MHz	± 0.051 ppm	(1)
TR 100 028 PARAGRAPH 7.1.1 - FREQUENCY ERROR < 1 GHz	± 0.051 ppm	(1)
TR 100 028 PARAGRAPH 7.1.1 - FREQUENCY ERROR ≤ 18 GHz	± 0.051 ppm	(1)
TR 100 028 PARAGRAPH 7.1.1 - FREQUENCY ERROR ≤ 40 GHz	± 0.051 ppm	(1)
TR 100 028 PARAGRAPH 7.1.2 - CONDUCTED POWER MEASUREMENT	±0.643 dB	(1)
TR 100 028 PARAGRAPH 7.1.4.1 - CONDUCTED SPURIOUS EMISSIONS 9 kHz – 150 kHz	± 3.14 dB	(1)
TR 100 028 PARAGRAPH 7.1.4.1 - CONDUCTED SPURIOUS EMISSIONS 150 kHz – 30 MHz	± 3.08 dB	(1)
TR 100 028 PARAGRAPH 7.2 – RADIATED EMISSIONS < 200 MHz	± 2.16 dB	(1)
TR 100 028 PARAGRAPH 7.2 – RADIATED EMISSIONS < 1 GHz	± 2.15 dB	(1)
TR 100 028 PARAGRAPH 7.2 – RADIATED EMISSIONS < 18 GHz	± 2.14 dB	(1)
TR 100 028 PARAGRAPH 7.2 – RADIATED EMISSIONS ≤ 40 GHz	± 2.31 dB	(1)
FLUKE Multimeter AC Voltage Uncertainty	± 2.263 %	(1)
FLUKE Multimeter DC Voltage Uncertainty	± 0.453 %	(1)
Temperature (C°)	± 0.81 C°	

Notes: (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

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EMC EQUIPMENT LIST

Device	Manufacturer	Model	SN	Calibration Date	Cal Due Date
Function Generator	Standford	DS340	25200	02/21/18	02/21/20
Modulation Analyzer	HP	8901A	3050A05856	04/13/17	04/13/20
Audio Analyzer	HP	8903B	3011A13084	02/20/18	02/20/20
EMI Test Receiver R & S ESIB 40 firmware v 4.34.3 BIOS v3.3	Rohde & Schwarz	ESIB 40	100274	07/22/19	07/22/21
EMI Test Receiver R & S ESU 40 firmware v 4.43 SP 3 BIOS v5.1-24-3	Rohde & Schwarz	ESU 40	100320	08/28/18	08/28/20
Software: Field Strength Program	Timco	N/A	Version 4.10.7.0	N/A	N/A
Coaxial Cable - Chamber 3 cable set (backup)	Micro-Coax	Chamber 3 cable set (backup)	KMKM-0244-02 KMKM-0670-01 KFKF-0197-00	02/27/19	02/27/21
CHAMBER	Panashield	3M	N/A	03/15/19	03/15/21
Antenna: Active Loop	ETS-Lindgren	6502	00062529	12/11/17	12/11/19
Antenna: Biconical 1096	Eaton	94455-1	1096	08/01/17	08/01/19
Antenna: Log-Periodic 1122	Electro-Metrics	LPA-25	1122	07/26/17	07/26/19
Ant: Double-Ridged Horn/ETS Horn 1	ETS-Lindgren	3117	00035923	01/30/17	01/30/19
Temperature Chamber LARGE	Tenney Engineering	TTRC	11717-7	N/A	N/A
Type K J Thermometer	Martel	303	080504494	11/06/17	11/06/20
Oscilloscope	LeCroy	LT364	00414	03/28/19	03/28/21

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ANNEX I – MANUFACTURER-PROVIDED INFORMATION

Note: The accuracy and precision of the following information provided by the manufacturer of the equipment under test has not been verified using test methods, cannot be verified, or is not necessary to verify.

Power at Final Amplifier:
120 V * 0.8 A = 100 W

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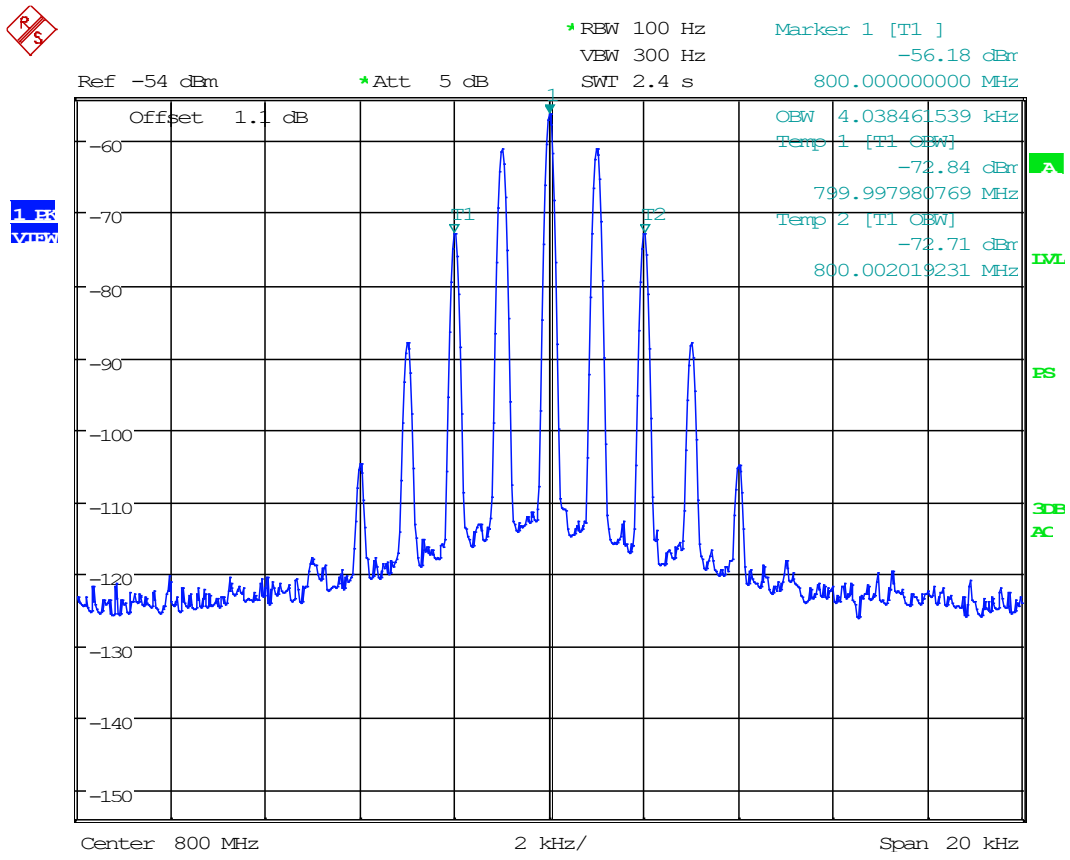
ANNEX II – MEASUREMENT DATA

KDB 935210 4.1 INPUT SIGNALS

4K00F3E (Narrowband Analog FM Voice)

Substituted for signals:

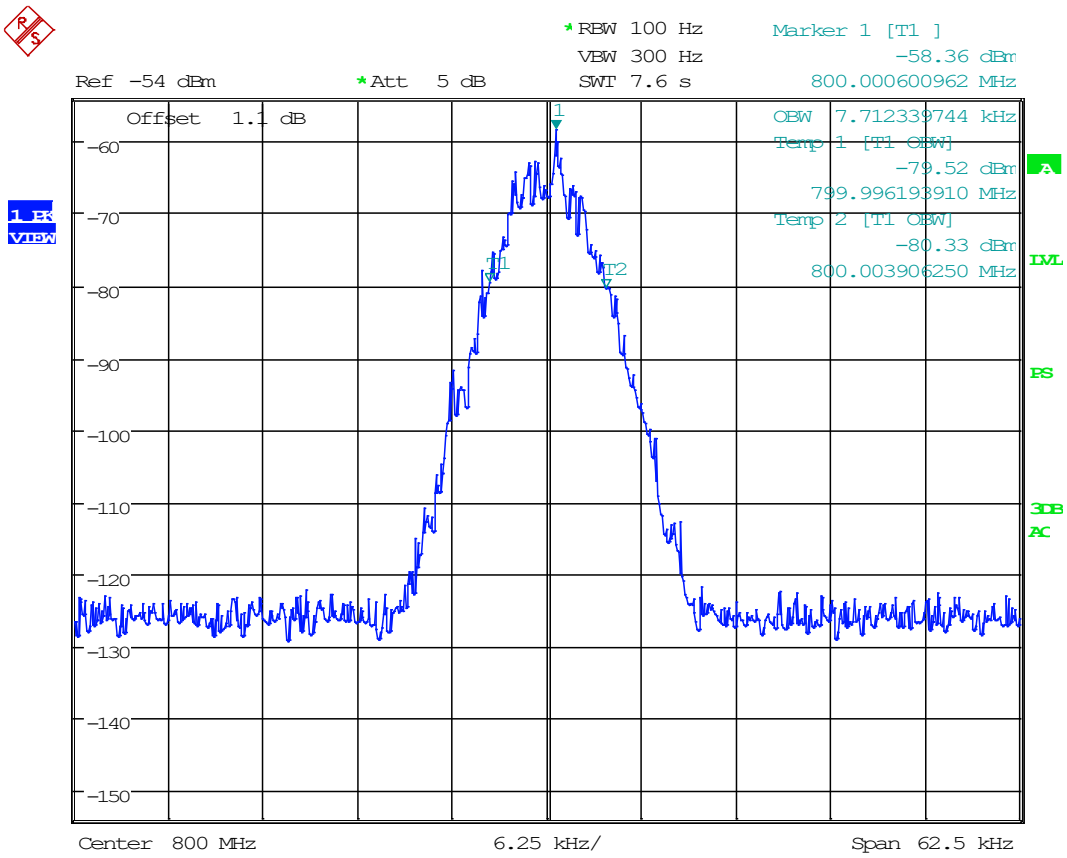
4K00F1E (Narrow NXDN Voice)
4K00F1D (Narrow NXDN Data)
4K00F1W (Narrow NXDN Voice & Data)
4K00F2D (Narrow NXDN CW ID)



Occupied Bandwidth: 4.04 kHz

KDB 935210 4.1 INPUT SIGNALS

8K10F1E/F1D (P25 Phase I C4FM Voice, Data)



Date: 30.JAN.2019 14:28:58

Occupied Bandwidth: 7.71 kHz

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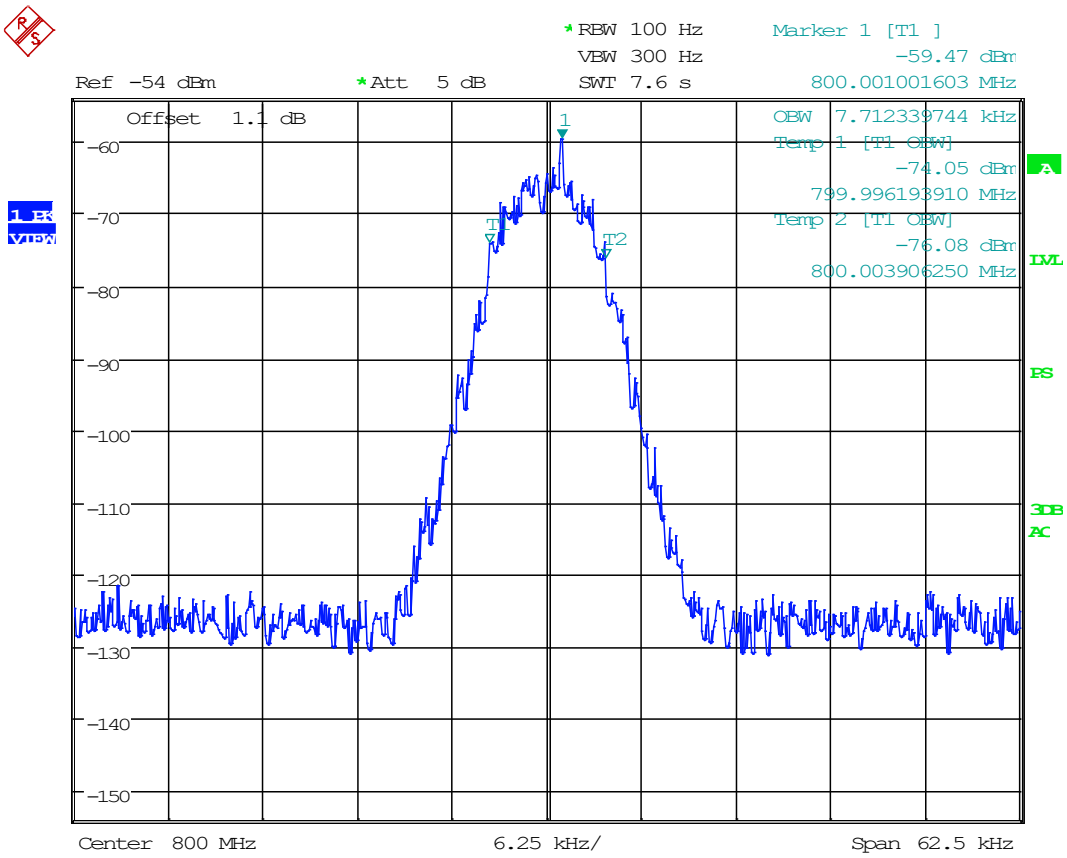
KDB 935210 4.1 INPUT SIGNALS

8K10F1W (P25 Phase II H-CPM Voice & Data)



Date: 30.JAN.2019 14:30:47

Occupied Bandwidth: 7.71 kHz

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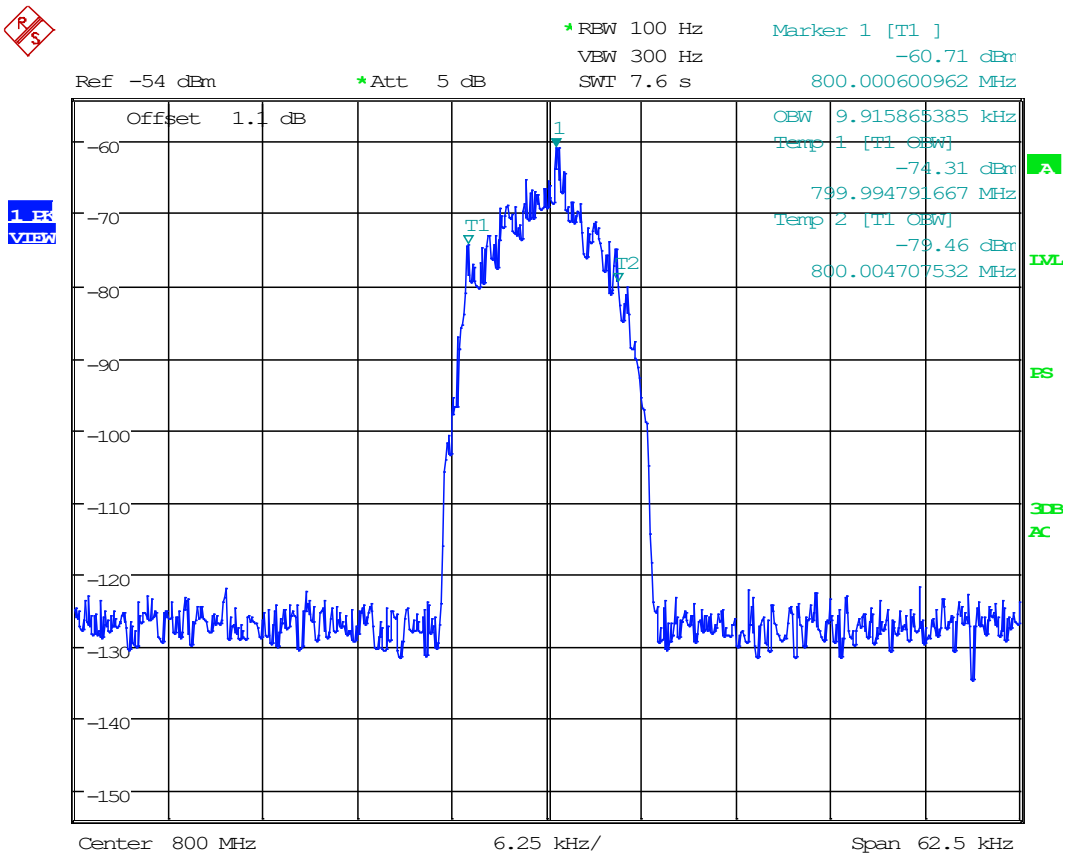
KDB 935210 4.1 INPUT SIGNALS

9K80F1E/F1D (P25 Phase II H-DQPSK Voice, Data)



Date: 30.JAN.2019 14:32:35

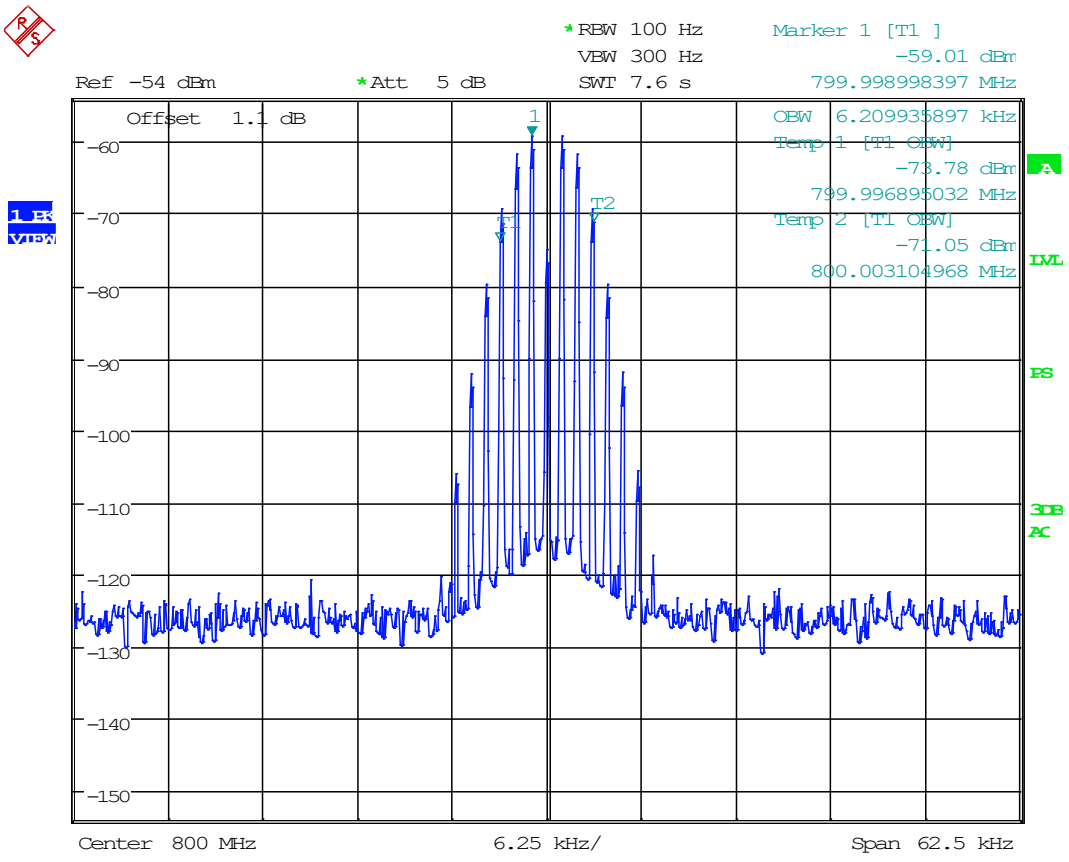
Occupied Bandwidth: 9.92 kHz

KDB 935210 4.1 INPUT SIGNALS

11K3F3E (Narrowband Analog FM Voice)

Substituted for signals:

7K60FXE (2-Slot DMR TDMA Voice)
7K60FXD (2-Slot DMR TDMA Data)
8K30F1E (Wide NXDN Voice)
8K30F1D (Wide NXDN Data)
8K30F1W (Wide NXDN Voice & Data)
8K30F2D (Wide NXDN CW ID)

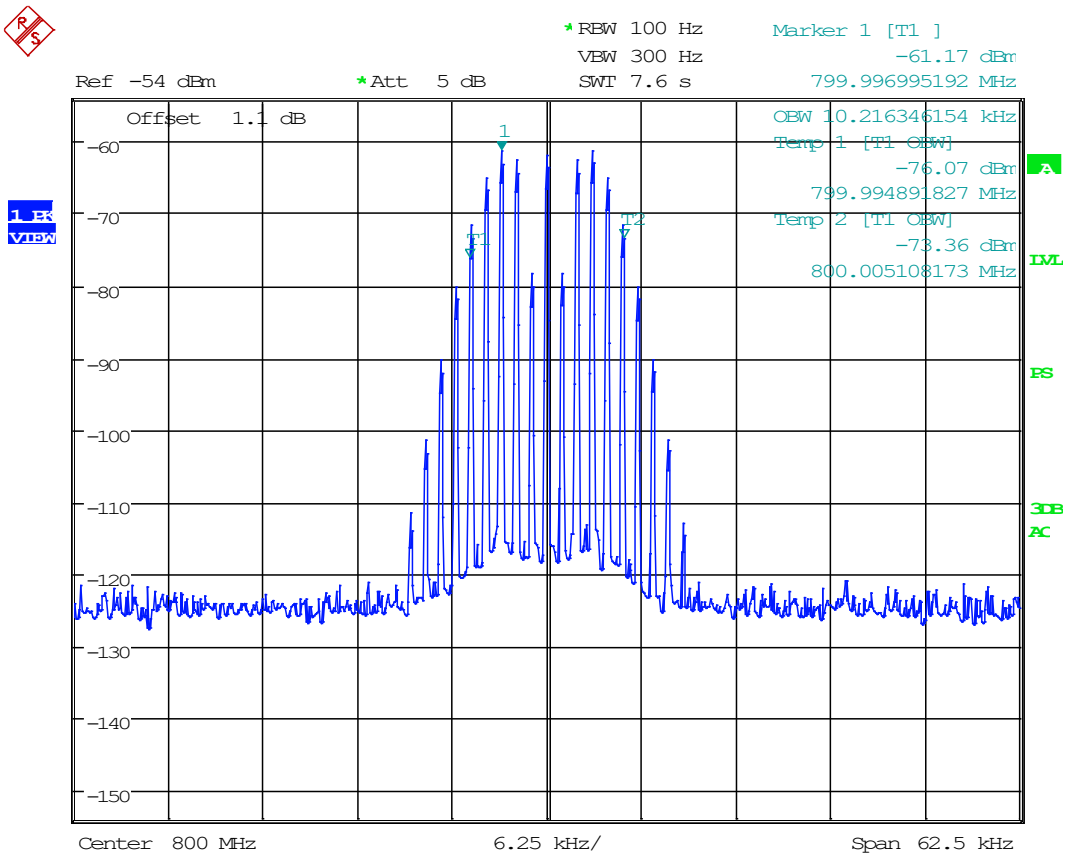


Date: 30.JAN.2019 14:19:45

Occupied Bandwidth: 6.21 kHz

KDB 935210 4.1 INPUT SIGNALS

16K0F3E (Wideband Analog FM Voice)



Date: 30.JAN.2019 14:23:14

Occupied Bandwidth: 10.22 kHz

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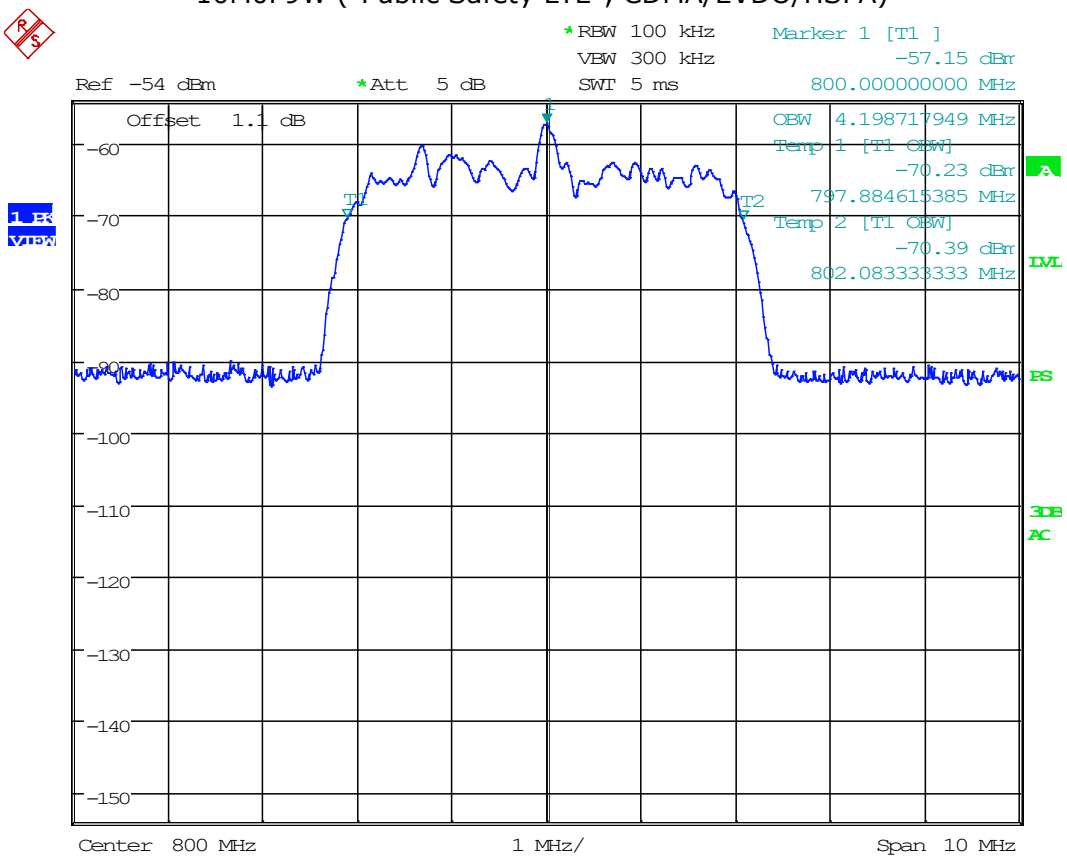
KDB 935210 4.1 INPUT SIGNALS

AWGN Signal ("4.1 MHz" Bandwidth-Limited Additive Gaussian White Noise)

Substituted for signals:

5M00G7D ("Public Safety LTE", GSM/EDGE)
5M00D7W ("Public Safety LTE", QAM)
5M00W7D ("Public Safety LTE", OFDM)
5M00F9W ("Public Safety LTE", CDMA/EVDO/HSPA)
10M0G7D ("Public Safety LTE", GSM/EDGE)
10M0D7W ("Public Safety LTE", QAM)
10M0W7D ("Public Safety LTE", OFDM)
10M0F9W ("Public Safety LTE", CDMA/EVDO/HSPA)



Date: 30.JAN.2019 14:36:46

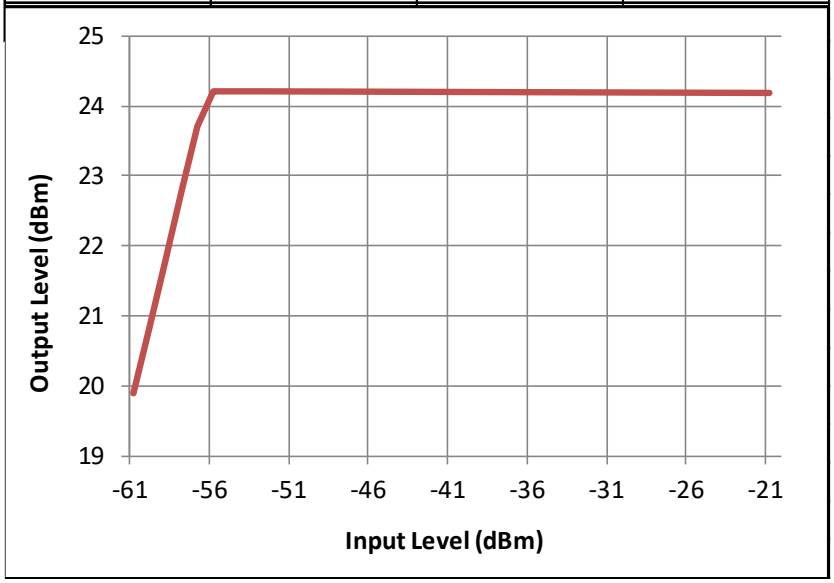
Occupied Bandwidth: 4.20 MHz

KDB 935210 4.2 AGC THRESHOLD

Test Engineer: FR
Test Date: DEC 16 2019

700 MHz Band, Uplink

INPUT (dBm)	CORRECTED INPUT (dBm)	CORRECTED OUTPUT (dBm)	GAIN (dB)
-40	-60.74	19.9	80.6
-39	-59.74	20.83	80.6
-38	-58.74	21.8	80.5
-37	-57.74	22.76	80.5
-36	-56.74	23.71	80.5
-35	-55.74	24.22	80.0
-34	-54.74	24.21	79.0
-33	-53.74	24.2	77.9
-32	-52.74	24.21	77.0
0	-20.74	24.18	44.9



AGC Input Level = -55.74 dBm

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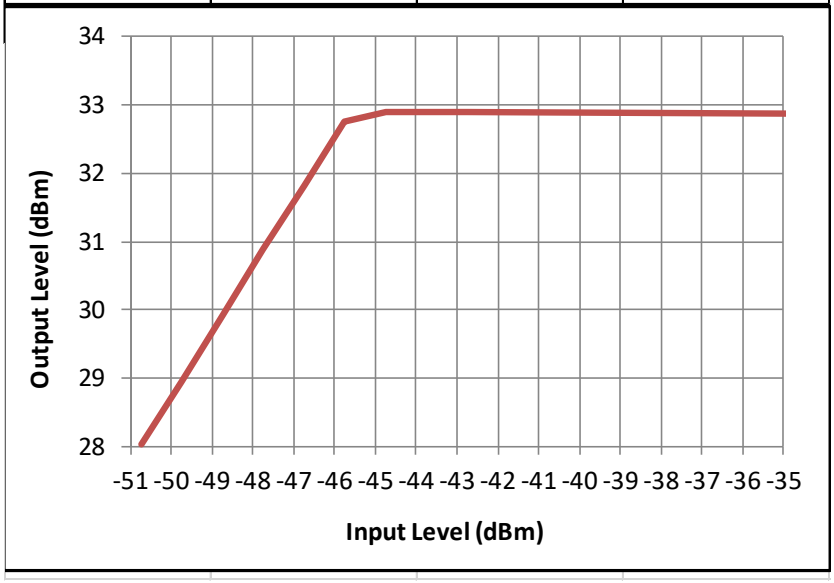
AGC Level

700 MHz Band, Downlink

INPUT (dBm)	CORRECTED INPUT (dBm)	CORRECTED OUTPUT (dBm)	GAIN (dB)
-30	-50.74	28.03	78.8
-29	-49.74	28.95	78.7
-28	-48.74	29.94	78.7
-27	-47.74	30.88	78.6
-26	-46.74	31.82	78.6
-25	-45.74	32.76	78.5
-24	-44.74	32.9	77.6
-23	-43.74	32.89	76.6
-22	-42.74	32.89	75.6
-14.1	-34.84	32.88	67.7



AGC Input Level = -45.74 dBm

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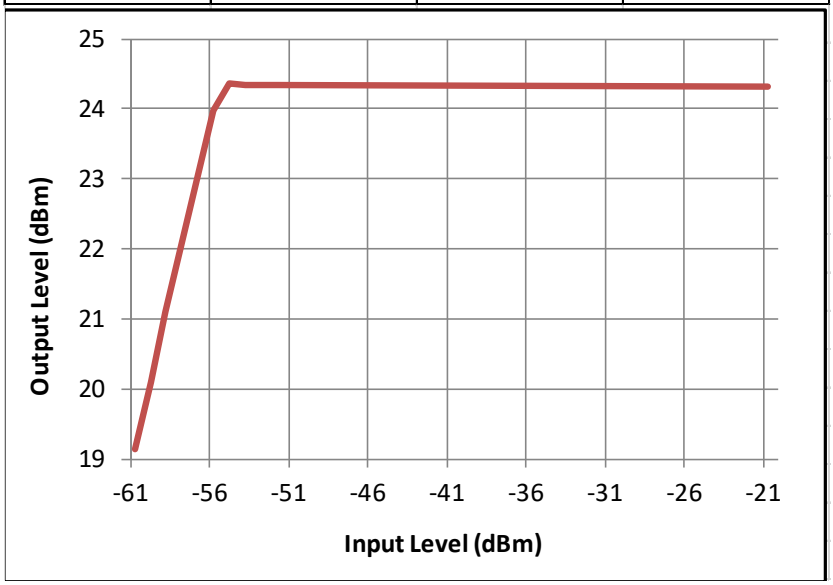
AGC Level

800 MHz Band, Uplink

INPUT (dBm)	CORRECTED INPUT (dBm)	CORRECTED OUTPUT (dBm)	GAIN (dB)
-40	-60.74	19.13	79.9
-39	-59.74	20.1	79.8
-38	-58.74	21.1	79.8
-37	-57.74	22.05	79.8
-36	-56.74	23.01	79.8
-35	-55.74	23.97	79.7
-34	-54.74	24.36	79.1
-33	-53.74	24.35	78.1
-32	-52.74	24.35	77.1
-31	-51.74	24.34	76.1
0	-20.74	24.33	45.1



AGC Input Level = -54.74 dBm

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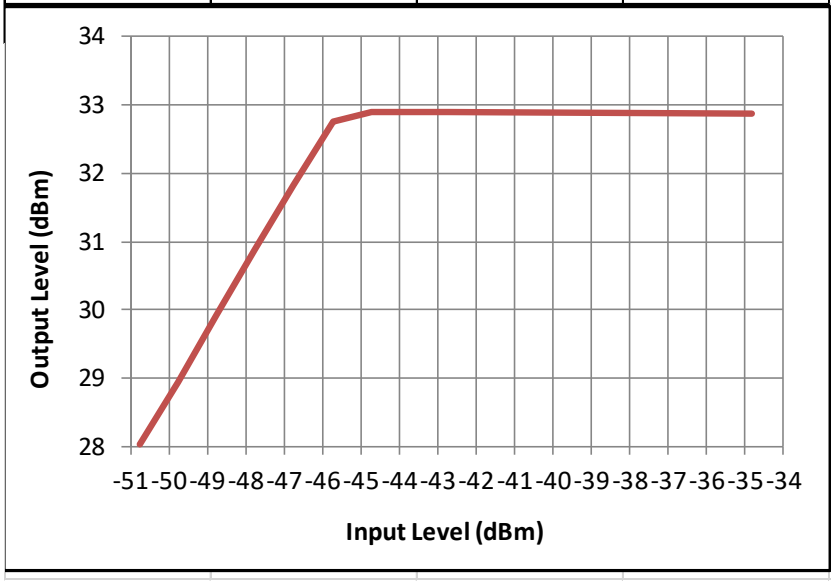
AGC Level

800 MHz Band, Downlink

INPUT (dBm)	CORRECTED INPUT (dBm)	CORRECTED OUTPUT (dBm)	GAIN (dB)
-30	-50.74	28.32	79.1
-29	-49.74	29.18	78.9
-28	-48.74	30.1	78.8
-27	-47.74	31	78.7
-26	-46.74	31.88	78.6
-25	-45.74	32.75	78.5
-24	-44.74	32.8	77.5
-23	-43.74	32.79	76.5
-22	-42.74	32.78	75.5
-14.1	-34.84	32.77	67.6



AGC Input Level = -45.74 dBm

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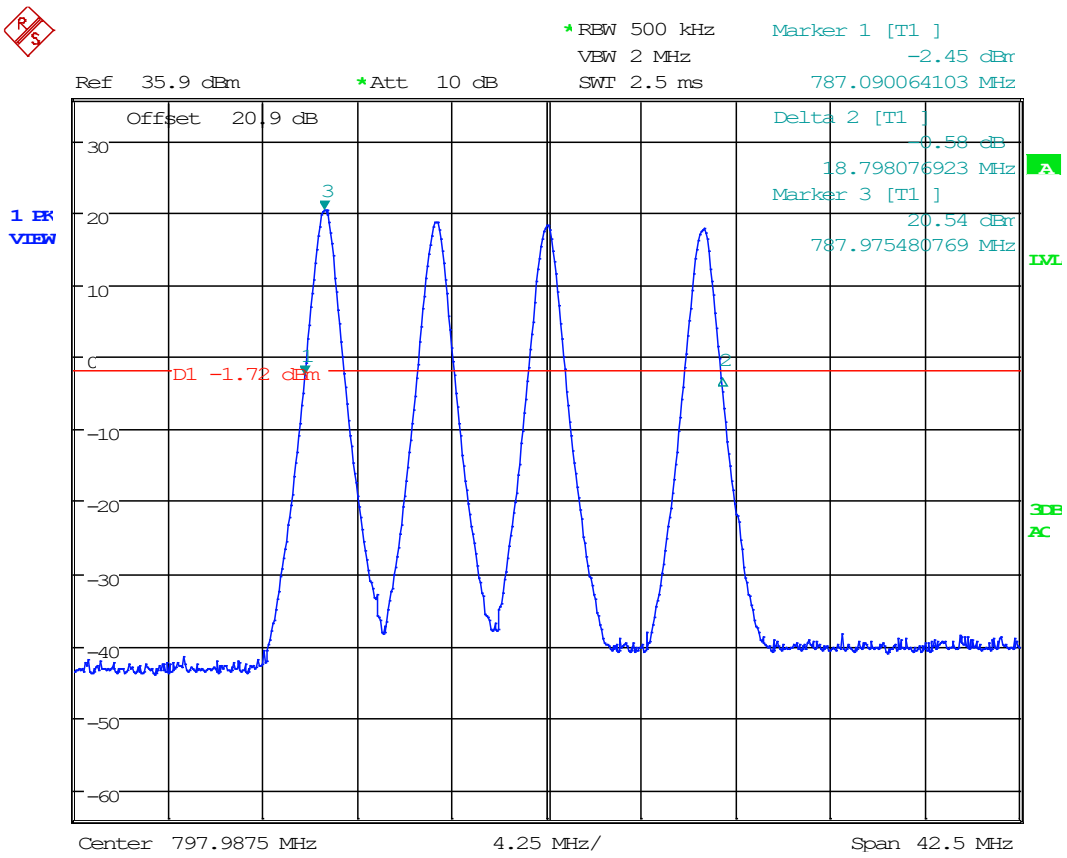
KDB 935210 4.3 OUT OF BAND REJECTION

Test Engineer: FR
Test Date: DEC 16 2019

700 MHz Band, Uplink, B9A



Date: 16.DEC.2019 15:11:47

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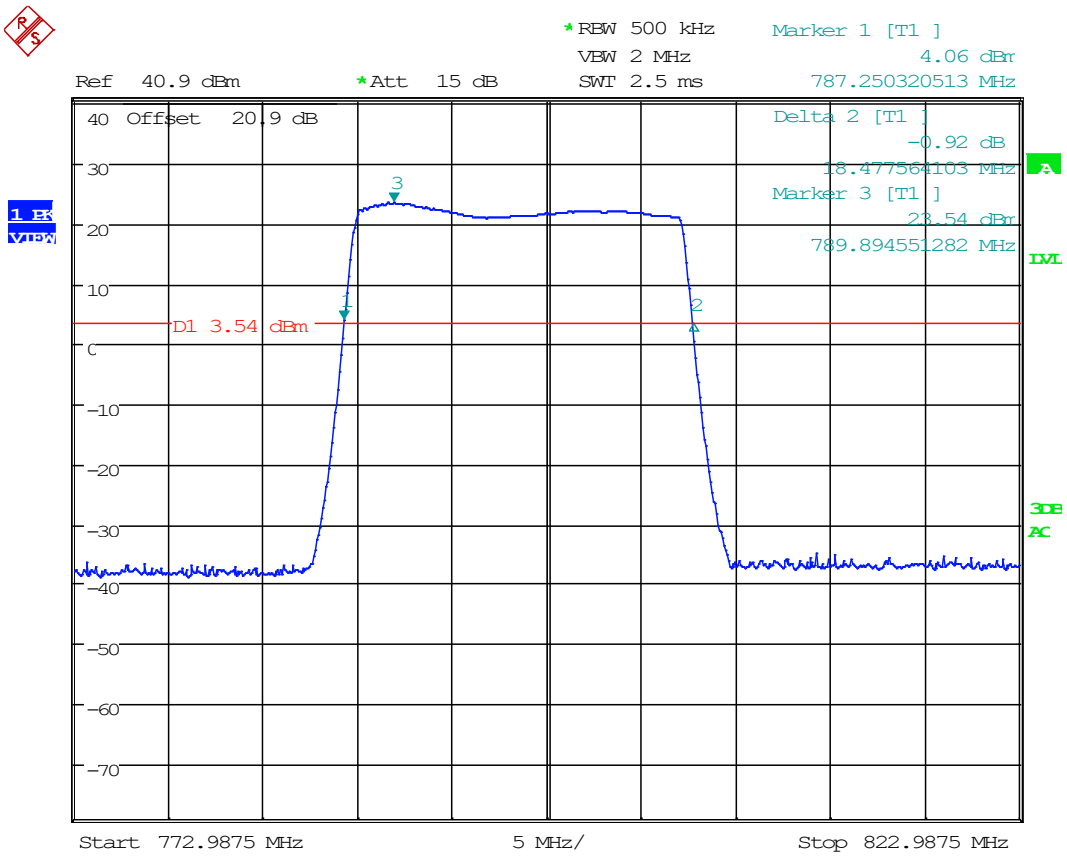
Out of Band Rejection

700 MHz Band, Uplink, B9B



Date: 16.DEC.2019 17:17:30

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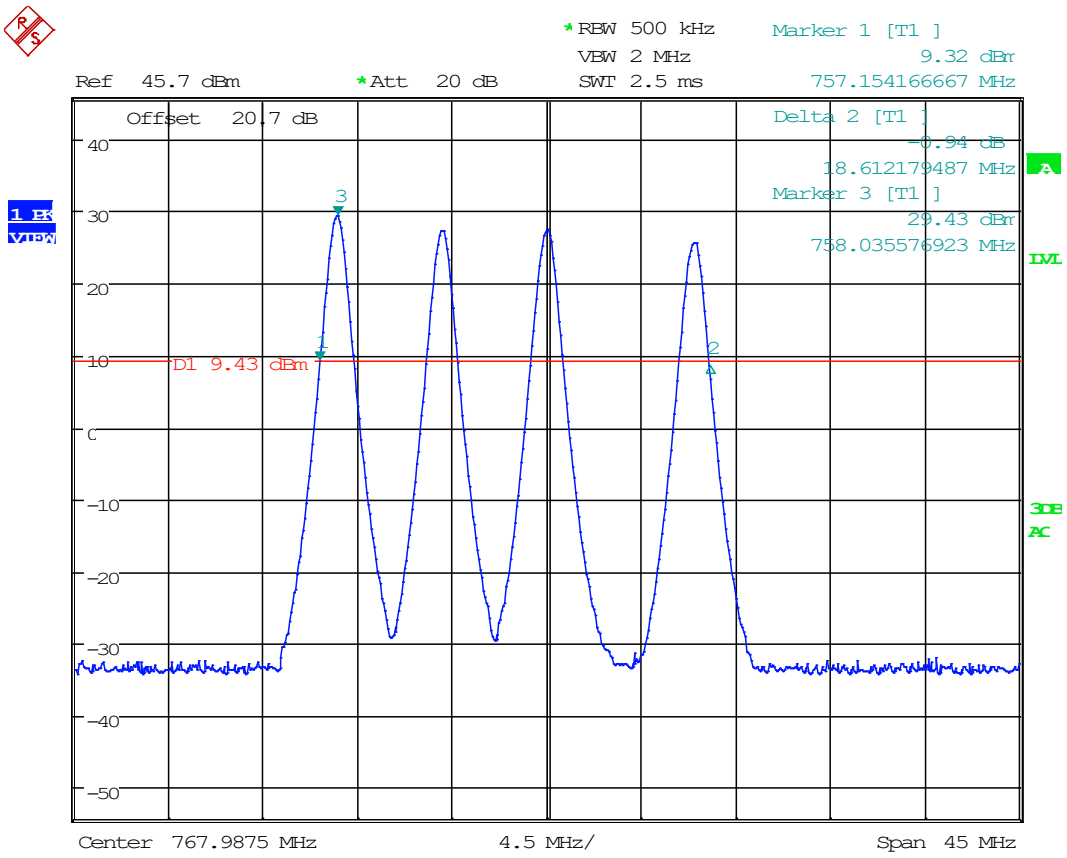
Out of Band Rejection

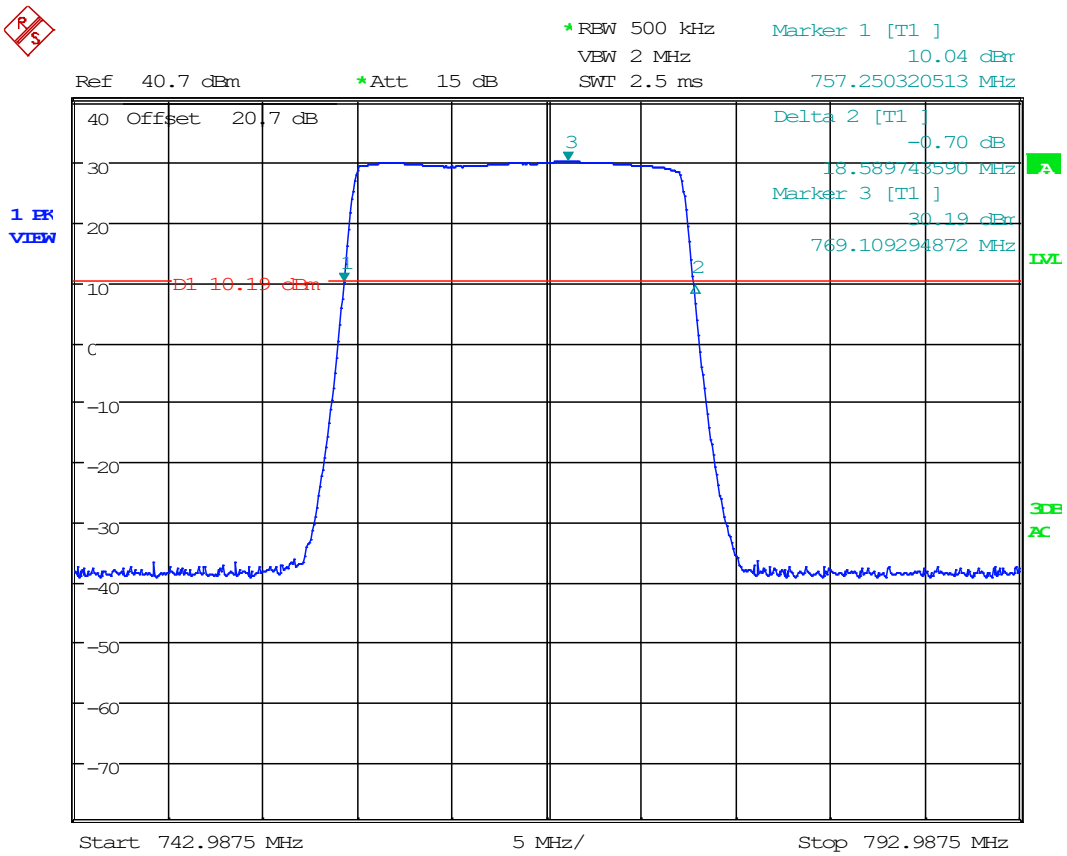
700 MHz Band, Downlink, B9A



Date: 16.DEC.2019 16:15:54

Out of Band Rejection

700 MHz Band, Downlink, B9B



Date: 16.DEC.2019 17:14:33

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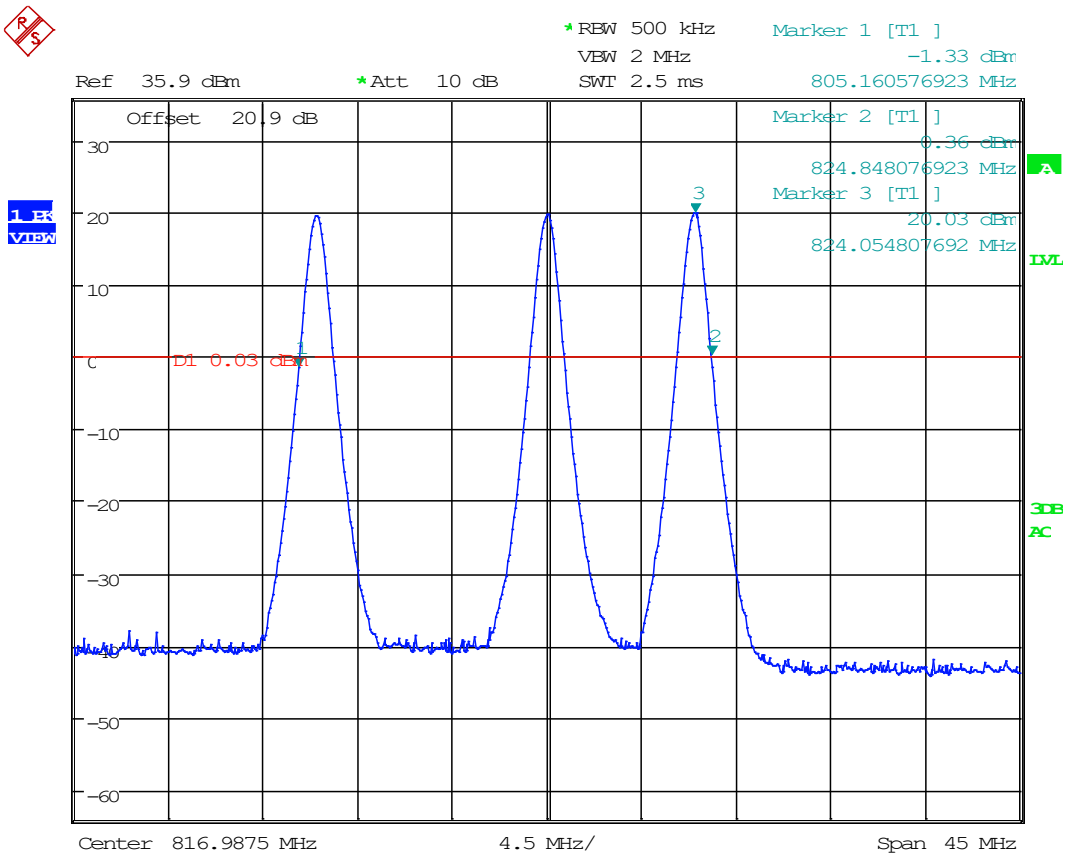
Out of Band Rejection

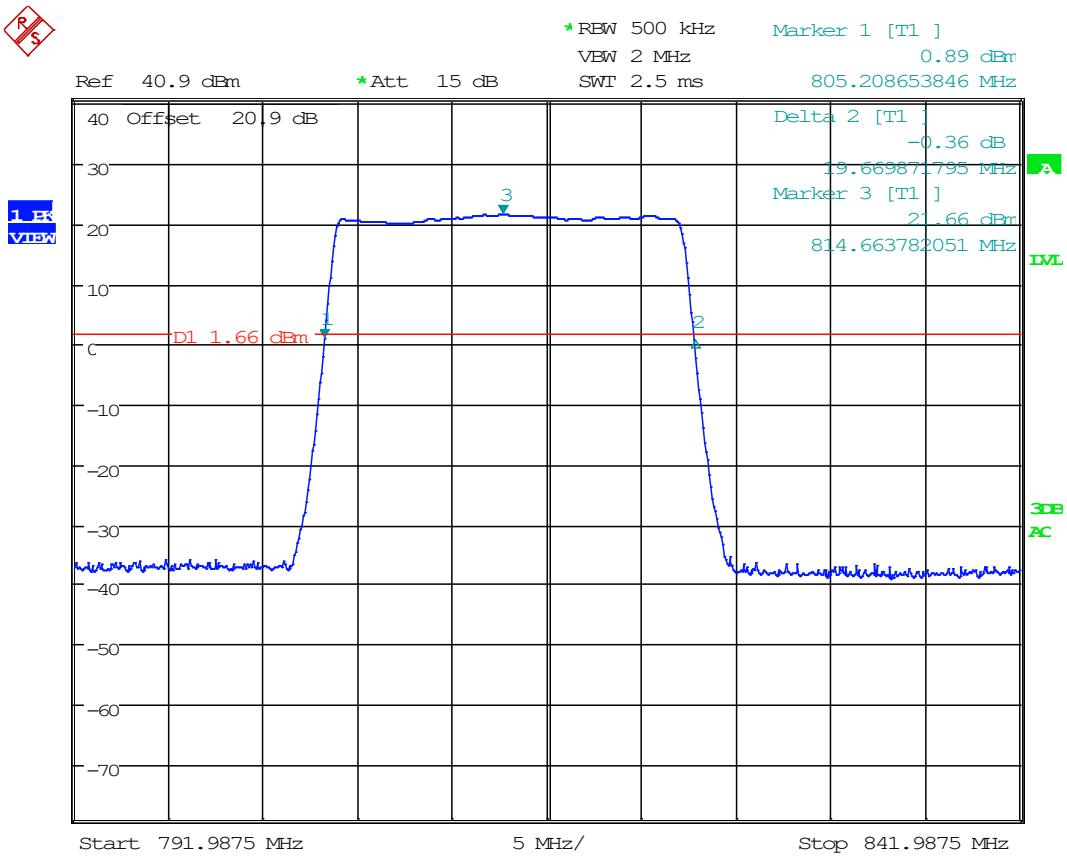
800 MHz Band, Uplink, B9A



Date: 16.DEC.2019 15:50:26

Out of Band Rejection

800 MHz Band, Uplink, B9B



Date: 16.DEC.2019 17:19:51

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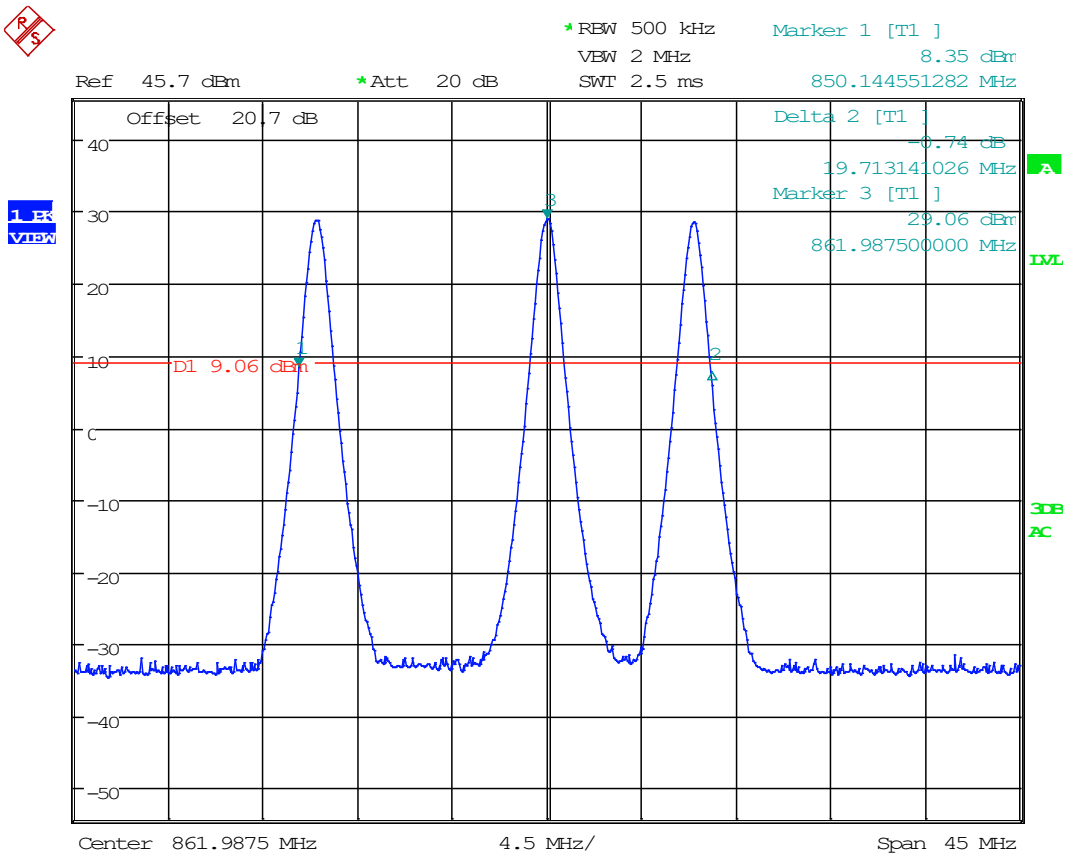
Out of Band Rejection

800 MHz Band, Downlink, B9A



Date: 16.DEC.2019 16:07:16

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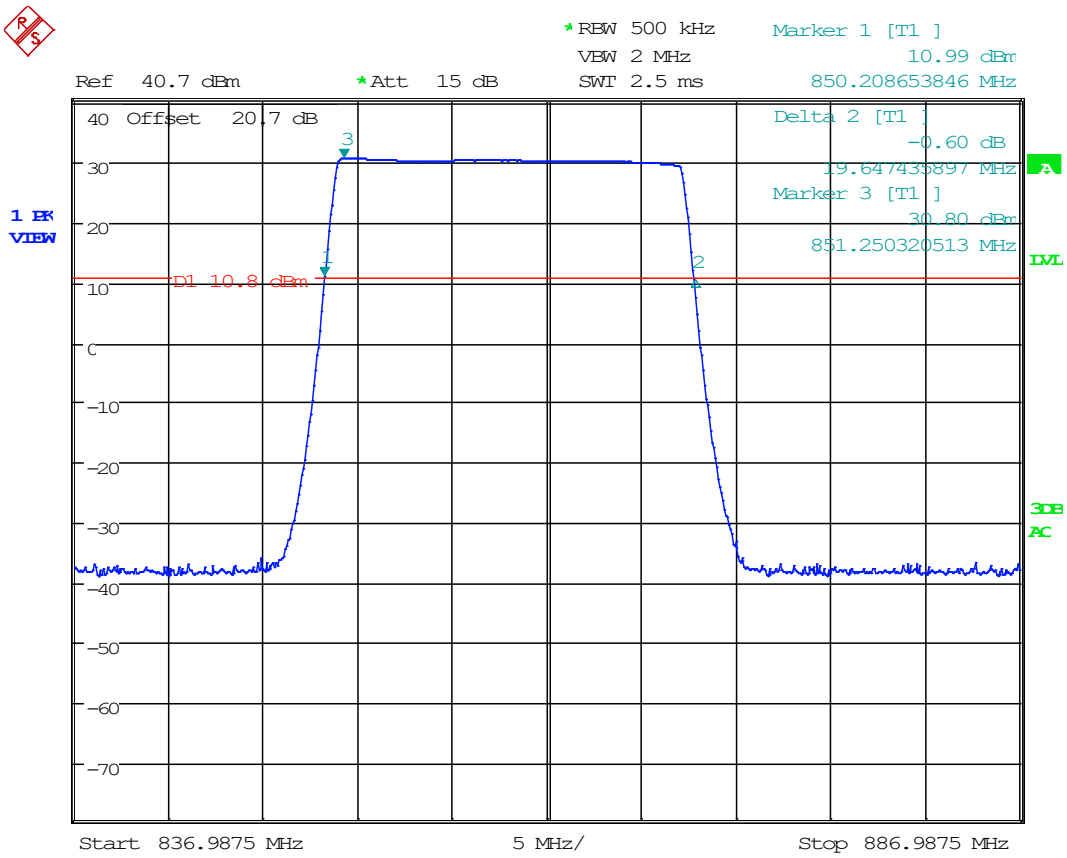
Out of Band Rejection

800 MHz Band, Downlink, B9B



Date: 16.DEC.2019 17:11:02

2.1046 RF POWER OUTPUT

KDB 935210 4.5 RF POWER OUTPUT & GAIN

Test Engineer: FR
Test Date: DEC 16 2019

700 Band, Uplink									
Frequency	AGC Level	Input (dBm)	Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Gain (dB)	Output ERP (W)	Limit ERP (W)	Margin (W)
788.0125	AGC	-55.74	24.21	0.00	0.00	80.0	0.26	5.00	4.74
788.0125	AGC +3	-52.74	24.22	0.00	0.00	77.0	0.26	5.00	4.74
788.0125	Saturation	0.00	24.18	0.00	0.00	24.2	0.26	5.00	4.74
793.0	AGC	-55.74	24.21	0.00	0.00	80.0	0.26	5.00	4.74
793.0	AGC +3	-52.74	24.22	0.00	0.00	77.0	0.26	5.00	4.74
793.0	Saturation	0.00	24.18	0.00	0.00	24.2	0.26	5.00	4.74
804.9875	AGC	-55.74	24.22	0.00	0.00	80.0	0.26	5.00	4.74
804.9875	AGC +3	-52.74	24.22	0.00	0.00	77.0	0.26	5.00	4.74
804.9875	Saturation	0.00	24.18	0.00	0.00	24.2	0.26	5.00	4.74
700 Band, Downlink									
Frequency	AGC Level	Input (dBm)	Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Gain (dB)	Output ERP (W)	Limit ERP (W)	Margin (W)
758.0125	AGC	-45.74	32.76	0.00	0.00	78.5	1.89	5.00	3.11
758.0125	AGC +3	-42.74	32.9	0.00	0.00	75.6	1.95	5.00	3.05
758.0125	Saturation	-14.10	32.88	0.00	0.00	47.0	1.94	5.00	3.06
763.0	AGC	-45.74	32.9	0.00	0.00	78.6	1.95	5.00	3.05
763.0	AGC +3	-42.74	32.9	0.00	0.00	75.6	1.95	5.00	3.05
763.0	Saturation	-14.10	32.88	0.00	0.00	47.0	1.94	5.00	3.06
774.9875	AGC	-45.74	32.89	0.00	0.00	78.6	1.95	5.00	3.05
774.9875	AGC +3	-42.74	32.9	0.00	0.00	75.6	1.95	5.00	3.05
774.9875	Saturation	-14.10	32.88	0.00	0.00	47.0	1.94	5.00	3.06
800 Band, Uplink									
Frequency	AGC Level	Input (dBm)	Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Gain (dB)	Output ERP (W)	Limit ERP (W)	Margin (W)
806.0125	AGC	-54.74	24.35	0.00	0.00	79.1	0.27	5.00	4.73
806.0125	AGC +3	-51.74	24.36	0.00	0.00	76.1	0.27	5.00	4.73
806.0125	Saturation	0.00	24.33	0.00	0.00	24.3	0.27	5.00	4.73
816.9875	AGC	-54.74	24.36	0.00	0.00	79.1	0.27	5.00	4.73
816.9875	AGC +3	-51.74	24.36	0.00	0.00	76.1	0.27	5.00	4.73
816.9875	Saturation	0.00	24.33	0.00	0.00	24.3	0.27	5.00	4.73
823.9875	AGC	-54.74	24.35	0.00	0.00	79.1	0.27	5.00	4.73
823.9875	AGC +3	-51.74	24.36	0.00	0.00	76.1	0.27	5.00	4.73
823.9875	Saturation	0.00	24.32	0.00	0.00	24.3	0.27	5.00	4.73
800 Band, Downlink									
Frequency	AGC Level	Input (dBm)	Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Gain (dB)	Output ERP (W)	Limit ERP (W)	Margin (W)
851.0125	AGC	-45.74	32.75	0.00	0.00	78.5	1.88	5.00	3.12
851.0125	AGC +3	-42.74	32.78	0.00	0.00	75.5	1.90	5.00	3.10
851.0125	Saturation	-14.10	32.77	0.00	0.00	46.9	1.89	5.00	3.11
861.9875	AGC	-45.74	32.8	0.00	0.00	78.5	1.91	5.00	3.09
861.9875	AGC +3	-42.74	32.79	0.00	0.00	75.5	1.90	5.00	3.10
861.9875	Saturation	-14.10	32.77	0.00	0.00	46.9	1.89	5.00	3.11
868.9875	AGC	-45.74	32.78	0.00	0.00	78.5	1.90	5.00	3.10
868.9875	AGC +3	-42.74	32.78	0.00	0.00	75.5	1.90	5.00	3.10
868.9875	Saturation	-14.10	32.77	0.00	0.00	46.9	1.89	5.00	3.11

Max Power Output = 32.90 dBm (1.95 W)

Rated Power Output = 33.00 dBm (2 W)

Max Gain = 80 dB

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KDB 935210 4.6 NOISE FIGURE

Test Engineer: FR
Test Date: DEC 16 2019

700 MHz Band, Uplink

FCC KDB 935210 S. 4.6, ISED RSS-131 S. 6.4 - NOISE FIGURE	
Measurement Freq. (MHz)	**797.9875**
Noise Source ENR (dB)	15.0647
Noise Source T_s^{OFF}, T_O (K)	290
Noise Source T_s^{ON} (K)	9598.2286
Noise Source Cal N_2^{off} (dB)	**-111.33**
Noise Source Cal N_2^{off} (pW)	0.00736
Noise Source Cal N_2^{on} (dB)	**-108.24**
Noise Source Cal N_2^{on} (pW)	0.01500
Calibration Ratio Y_2	2.0370
Calibration T_2	8685.7482
Noise + EUT N_{12}^{off} (dB)	**-41.53**
Noise + EUT N_{12}^{off} (pW)	70307.23
Noise + EUT N_{12}^{on} (dB)	**-30.38**
Noise + EUT N_{12}^{on} (pW)	916220.49
Noise + EUT Ratio Y_{12}	13.0317
Noise + EUT T_{12}	483.6441
Gain (Ratio)	110797370.5089
Gain (dB)	80.4453
2nd Stage Correction T_1	483.644003679748
Noise Factor F	2.66774
Noise Figure (dB)	4.26
Limit (dB)	9.00
Margin (dB)	**4.74**

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Noise Figure

700 MHz Band, Downlink

FCC KDB 935210 S. 4.6, ISED RSS-131 S. 6.4 - NOISE FIGURE	
Measurement Freq. (MHz)	**767.9875**
Noise Source ENR (dB)	15.0684
Noise Source T_s^{OFF}, T_O (K)	290
Noise Source T_s^{ON} (K)	9606.0907
Noise Source Cal N_2^{off} (dB)	**-112.26**
Noise Source Cal N_2^{off} (pW)	0.00594
Noise Source Cal N_2^{on} (dB)	**-109.91**
Noise Source Cal N_2^{on} (pW)	0.01021
Calibration Ratio Y_2	1.7179
Calibration T_2	12686.7124
Noise + EUT N_{12}^{off} (dB)	**-61.91**
Noise + EUT N_{12}^{off} (pW)	644.17
Noise + EUT N_{12}^{on} (dB)	**-51.95**
Noise + EUT N_{12}^{on} (pW)	6382.63
Noise + EUT Ratio Y_{12}	9.9083
Noise + EUT T_{12}	755.7742
Gain (Ratio)	1345013.8461
Gain (dB)	61.2873
2nd Stage Correction T_1	755.764769253392
Noise Factor F	3.60609
Noise Figure (dB)	5.57
Limit (dB)	9.00
Margin (dB)	**3.43**

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Noise Figure

800 MHz Band, Uplink

FCC KDB 935210 S. 4.6, ISED RSS-131 S. 6.4 - NOISE FIGURE	
Measurement Freq. (MHz)	**816.9875**
Noise Source ENR (dB)	15.0624
Noise Source T_s^{OFF}, T_O (K)	290
Noise Source T_s^{ON} (K)	9593.2527
Noise Source Cal N_2^{off} (dB)	**-112.88**
Noise Source Cal N_2^{off} (pW)	0.00515
Noise Source Cal N_2^{on} (dB)	**-109.34**
Noise Source Cal N_2^{on} (pW)	0.01164
Calibration Ratio Y_2	2.2594
Calibration T_2	7096.8417
Noise + EUT N_{12}^{off} (dB)	**-43.59**
Noise + EUT N_{12}^{off} (pW)	43752.21
Noise + EUT N_{12}^{on} (dB)	**-30.59**
Noise + EUT N_{12}^{on} (pW)	872971.37
Noise + EUT Ratio Y_{12}	19.9526
Noise + EUT T_{12}	200.8689
Gain (Ratio)	127788950.4966
Gain (dB)	81.0649
2nd Stage Correction T_1	200.868813630771
Noise Factor F	1.69265
Noise Figure (dB)	2.29
Limit (dB)	9.00
Margin (dB)	**6.71**

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Noise Figure

800 MHz Band, Downlink

FCC KDB 935210 S. 4.6, ISED RSS-131 S. 6.4 - NOISE FIGURE	
Measurement Freq. (MHz)	**861.9875**
Noise Source ENR (dB)	15.0569
Noise Source T_s^{OFF}, T_O (K)	290
Noise Source T_s^{ON} (K)	9581.4783
Noise Source Cal N_2^{off} (dB)	**-112.31**
Noise Source Cal N_2^{off} (pW)	0.00587
Noise Source Cal N_2^{on} (dB)	**-107.27**
Noise Source Cal N_2^{on} (pW)	0.01875
Calibration Ratio Y_2	3.1915
Calibration T_2	3949.7070
Noise + EUT N_{12}^{off} (dB)	**-61.34**
Noise + EUT N_{12}^{off} (pW)	734.51
Noise + EUT N_{12}^{on} (dB)	**-50.74**
Noise + EUT N_{12}^{on} (pW)	8433.35
Noise + EUT Ratio Y_{12}	11.4815
Noise + EUT T_{12}	596.4615
Gain (Ratio)	597965.2723
Gain (dB)	57.7668
2nd Stage Correction T_1	596.454894088337
Noise Factor F	3.05674
Noise Figure (dB)	4.85
Limit (dB)	9.00
Margin (dB)	**4.15**

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2.1047 AUDIO FREQUENCY RESPONSE

2.1047 LOW PASS FILTER RESPONSE

Test Engineer:_____
Test Date:_____

N/A. Device does not accept audio input.

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2.1047 MODULATION LIMITING

Test Engineer:_____
Test Date:_____

N/A. Device does not have means to limit modulation.

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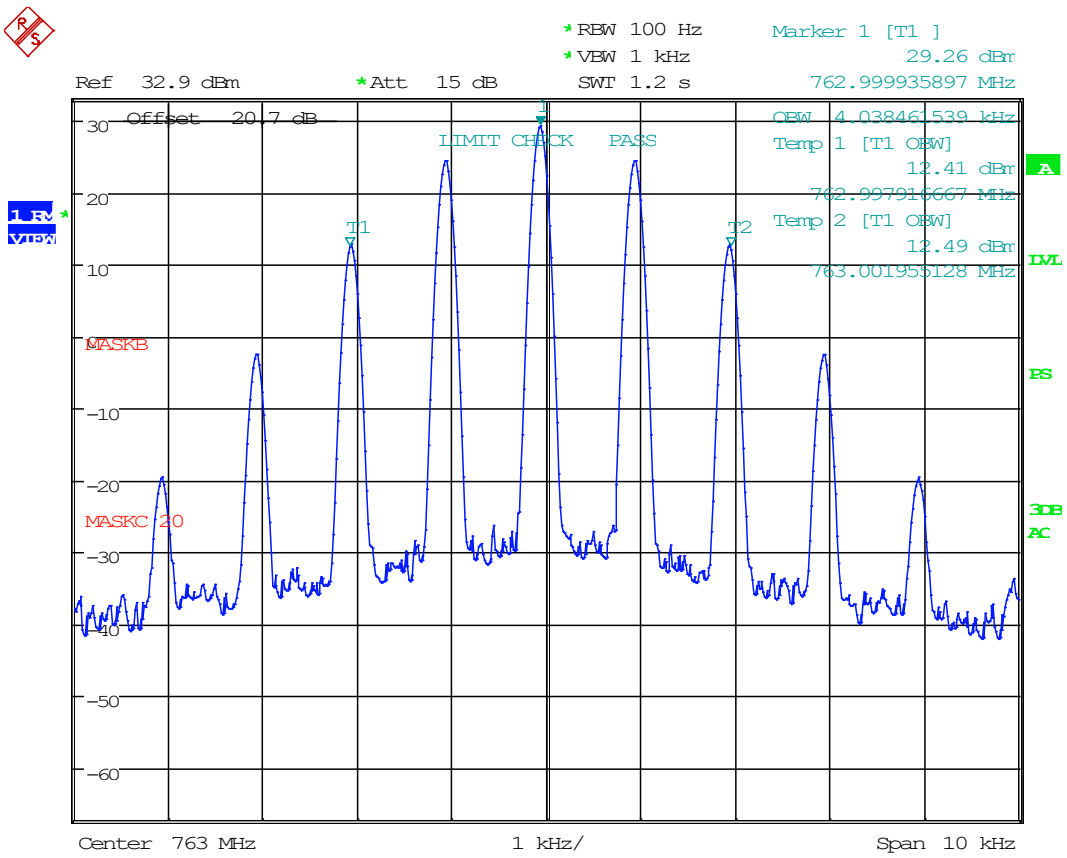
90.209 OCCUPIED BANDWIDTH

Test Engineer: FR
Test Date: JAN 14 2020

700 MHz Band, Downlink, 6.25k FM

OBW: 4.039 kHz



Date: 17.DEC.2019 12:15:52

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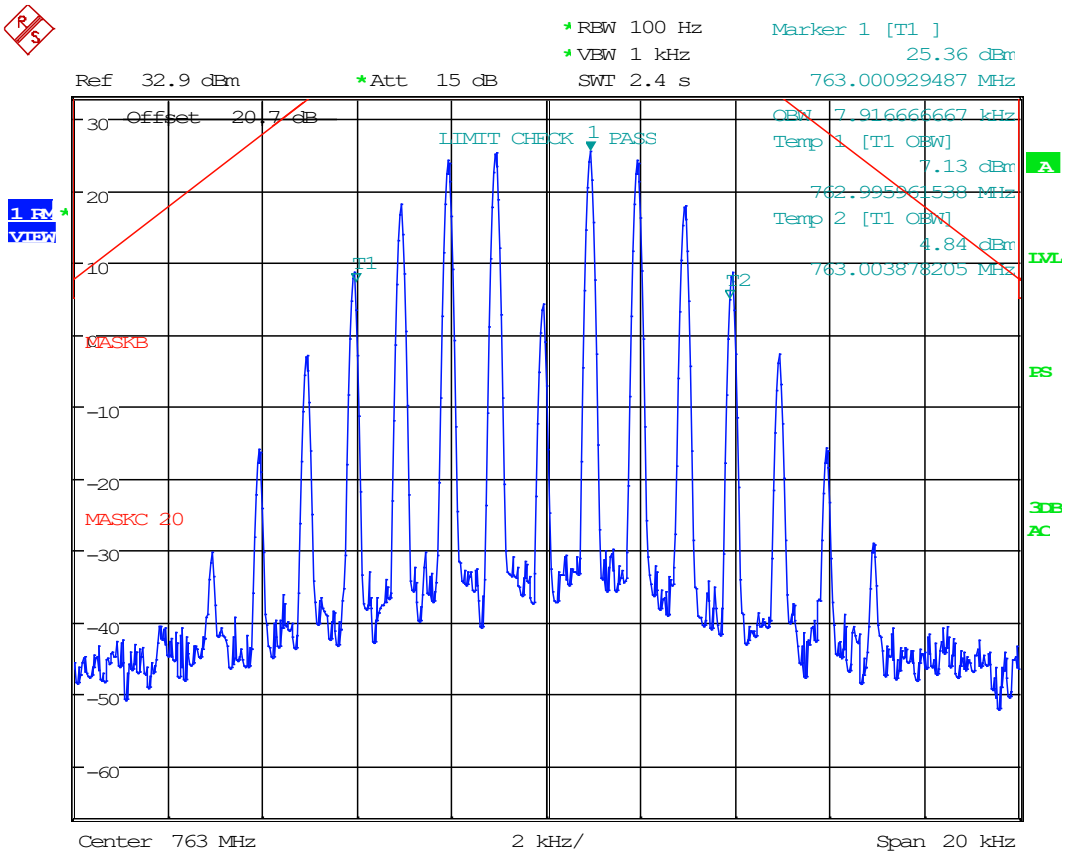
OCCUPIED BANDWIDTH

700 MHz Band, Downlink, 12.5k FM

OBW: 7.917 kHz



Date: 17.DEC.2019 12:19:34

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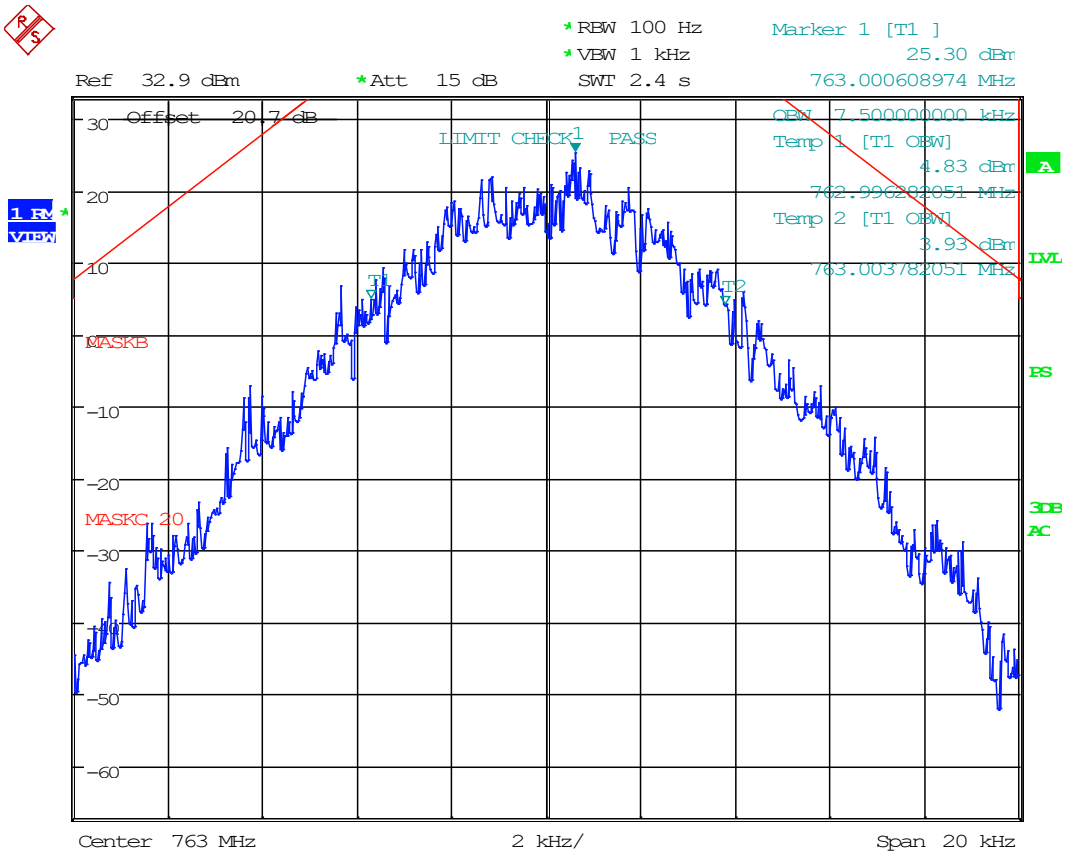
OCCUPIED BANDWIDTH

700 MHz Band, Downlink, C4FM

OBW: 7.500 kHz

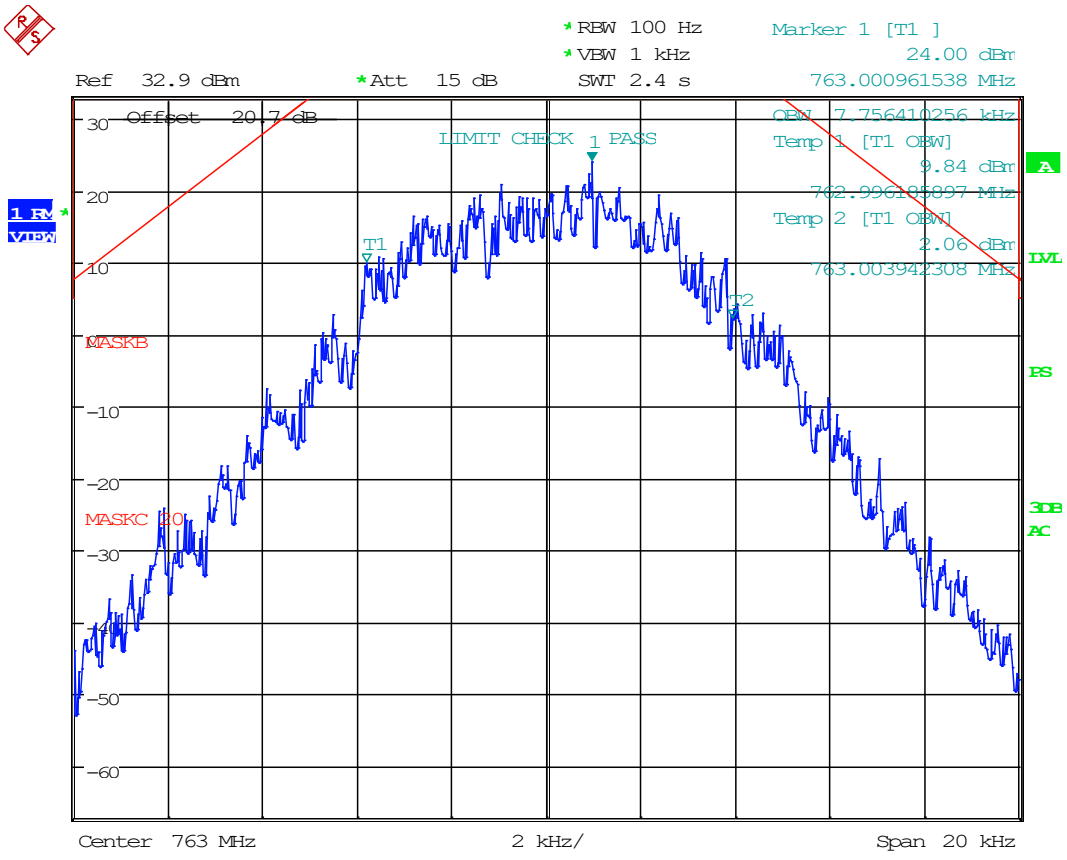


Date: 17.DEC.2019 12:25:53

OCCUPIED BANDWIDTH

700 MHz Band, Downlink, H-CPM

OBW: 7.756 kHz

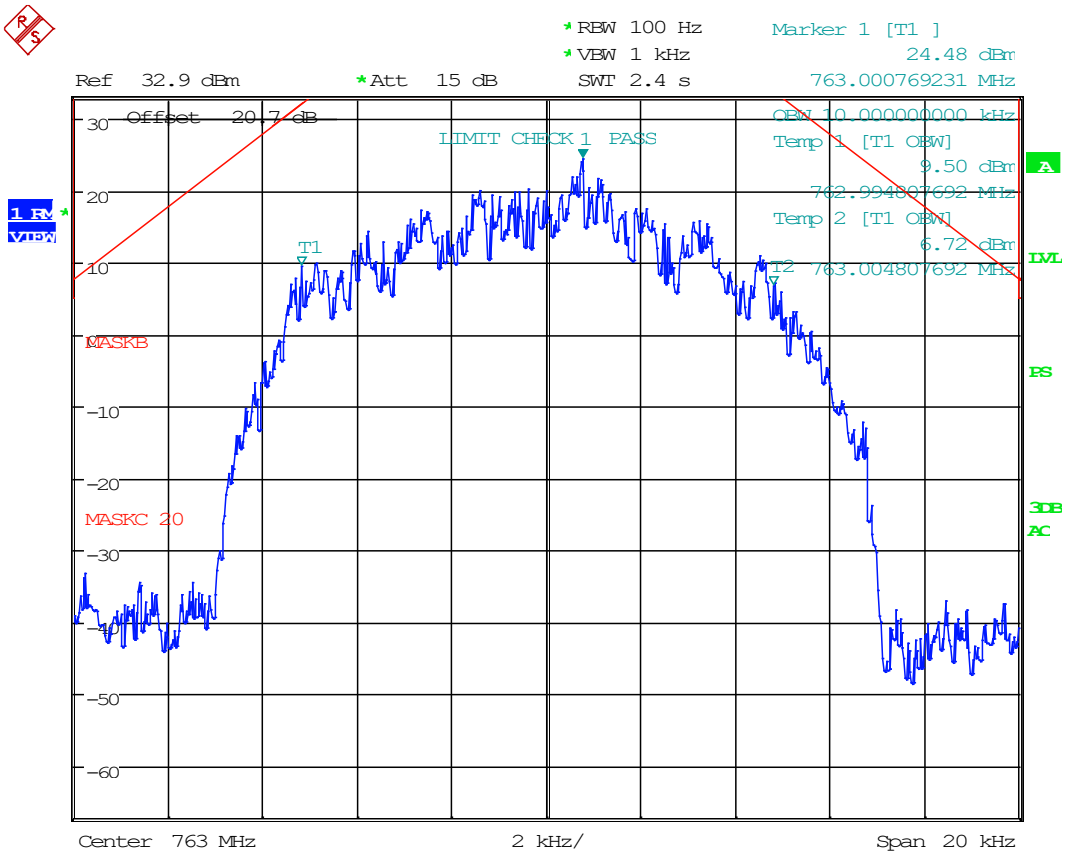


Date: 17.DEC.2019 12:29:26

OCCUPIED BANDWIDTH

700 MHz Band, Downlink, H-DQPSK

OBW: 10.000 kHz



Date: 17.DEC.2019 12:33:46

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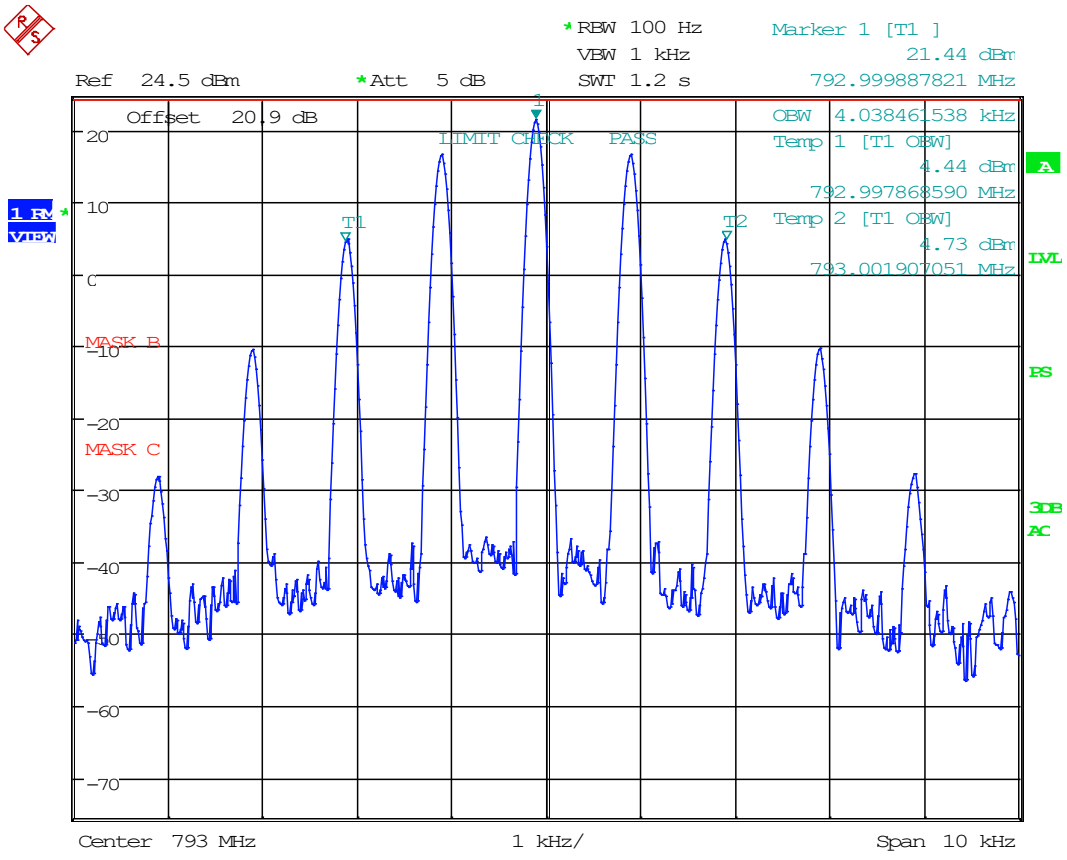
OCCUPIED BANDWIDTH

700 MHz Band, Uplink, 6.25k FM

OBW: 4.039 kHz



Date: 26.DEC.2019 17:11:34

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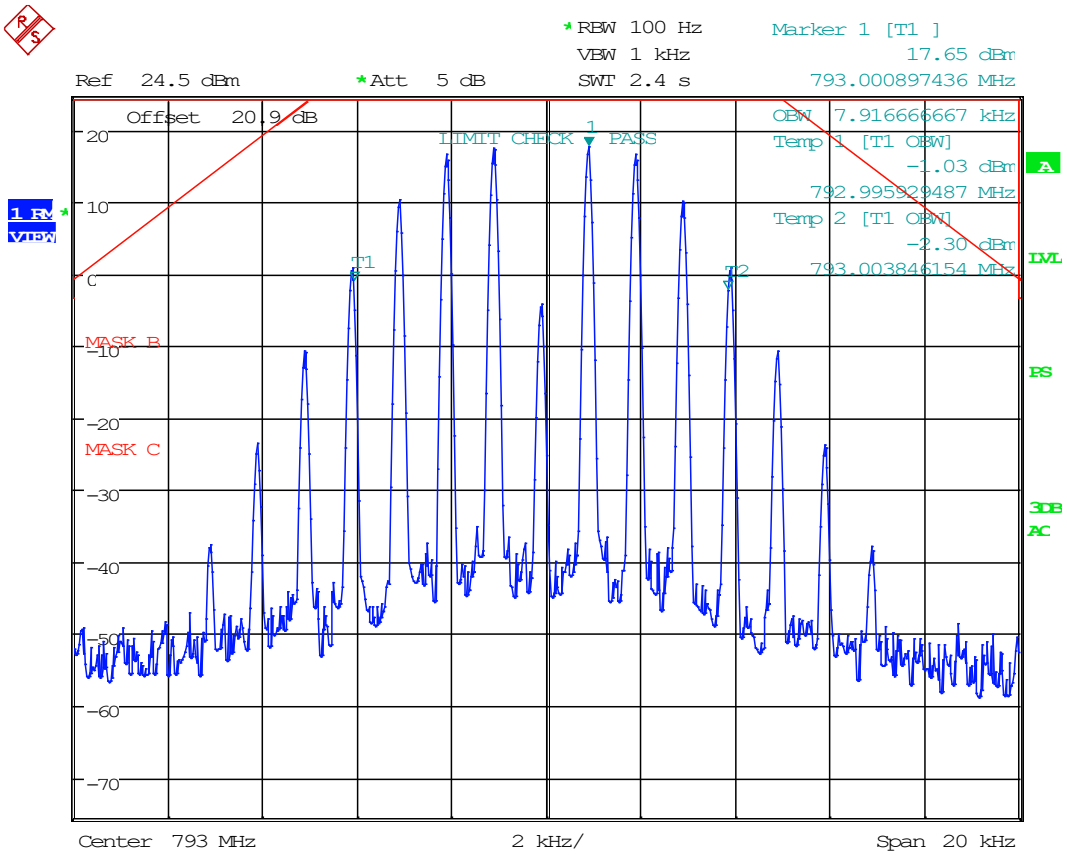
OCCUPIED BANDWIDTH

700 MHz Band, Uplink, 12.5k FM

OBW: 7.917 kHz



Date: 26.DEC.2019 17:10:37

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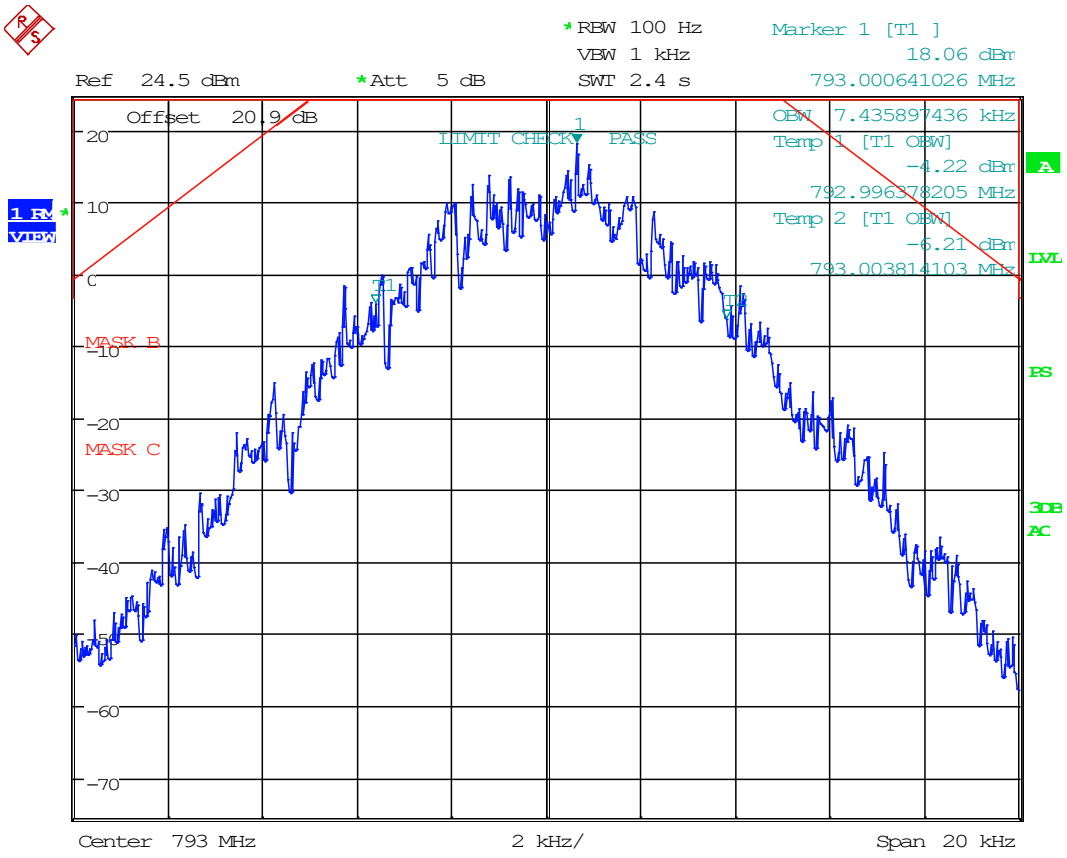
OCCUPIED BANDWIDTH

700 MHz Band, Uplink, C4FM

OBW: 7.436 kHz



Date: 26.DEC.2019 17:13:41

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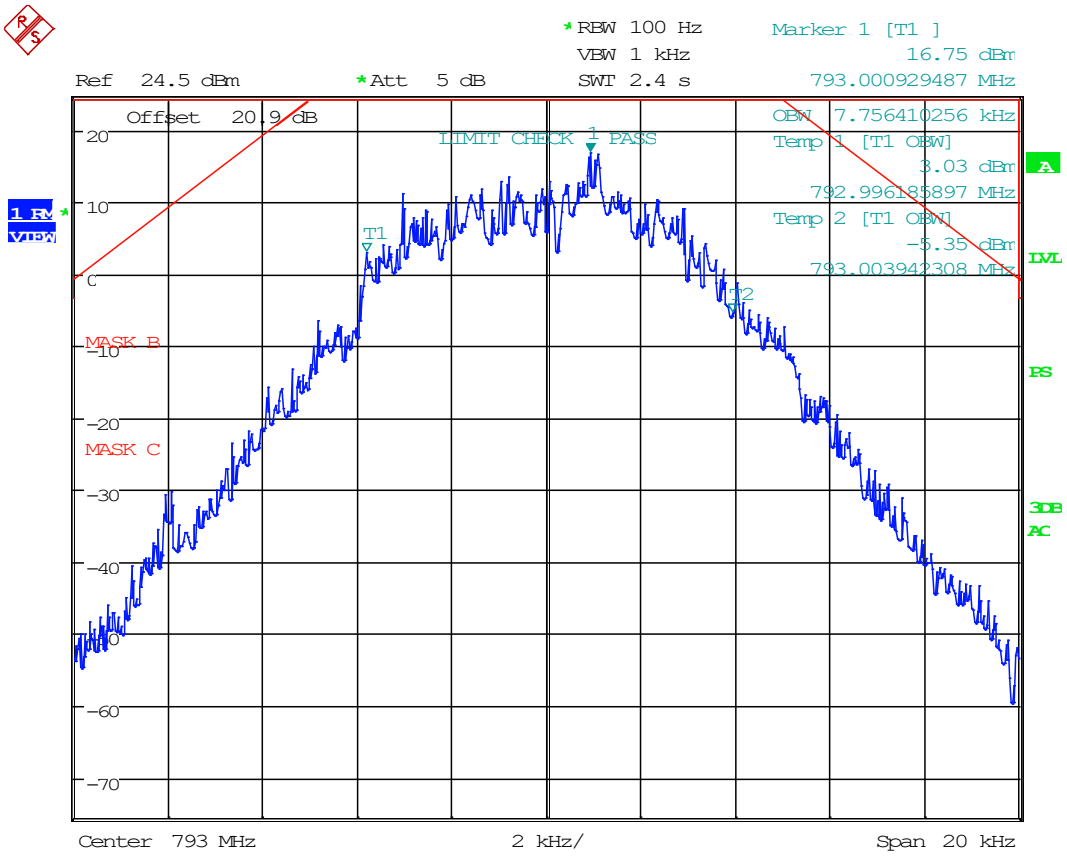
OCCUPIED BANDWIDTH

700 MHz Band, Uplink, H-CPM

OBW: 7.756 kHz

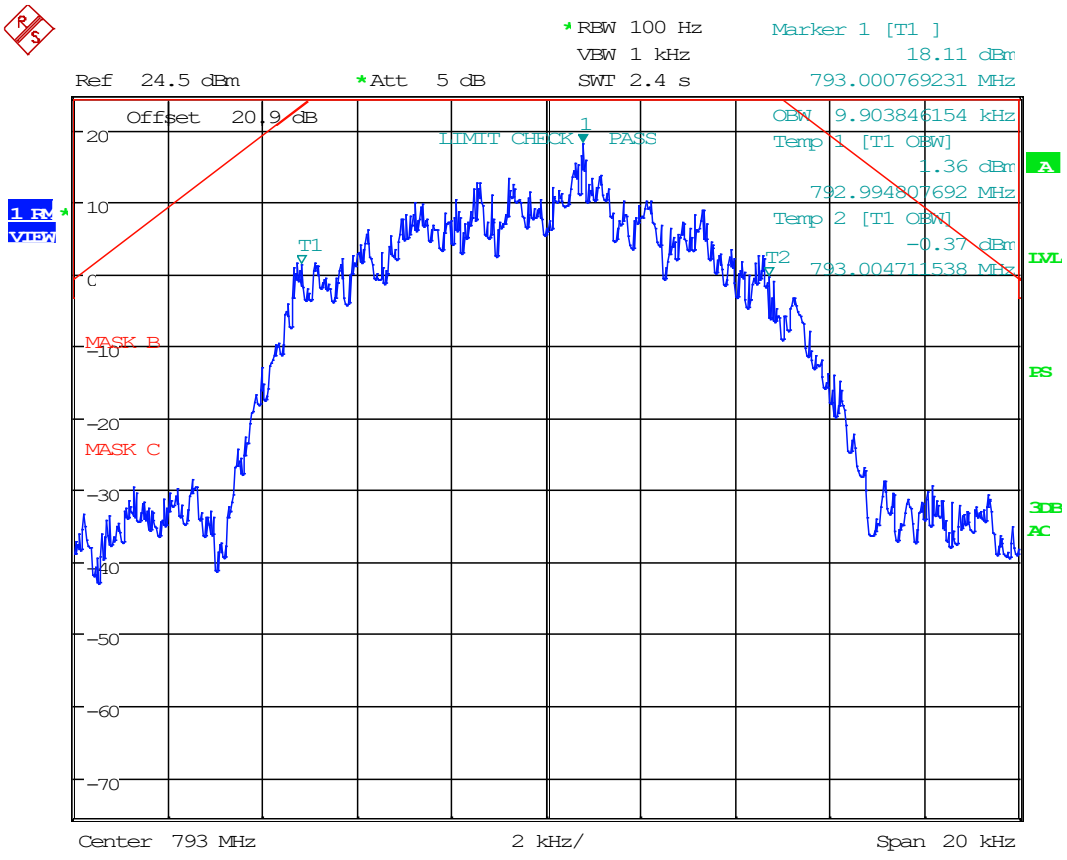


Date: 26.DEC.2019 17:15:11

OCCUPIED BANDWIDTH

700 MHz Band, Uplink, H-DQPSK

OBW: 9.904 kHz



Date: 26.DEC.2019 17:16:26

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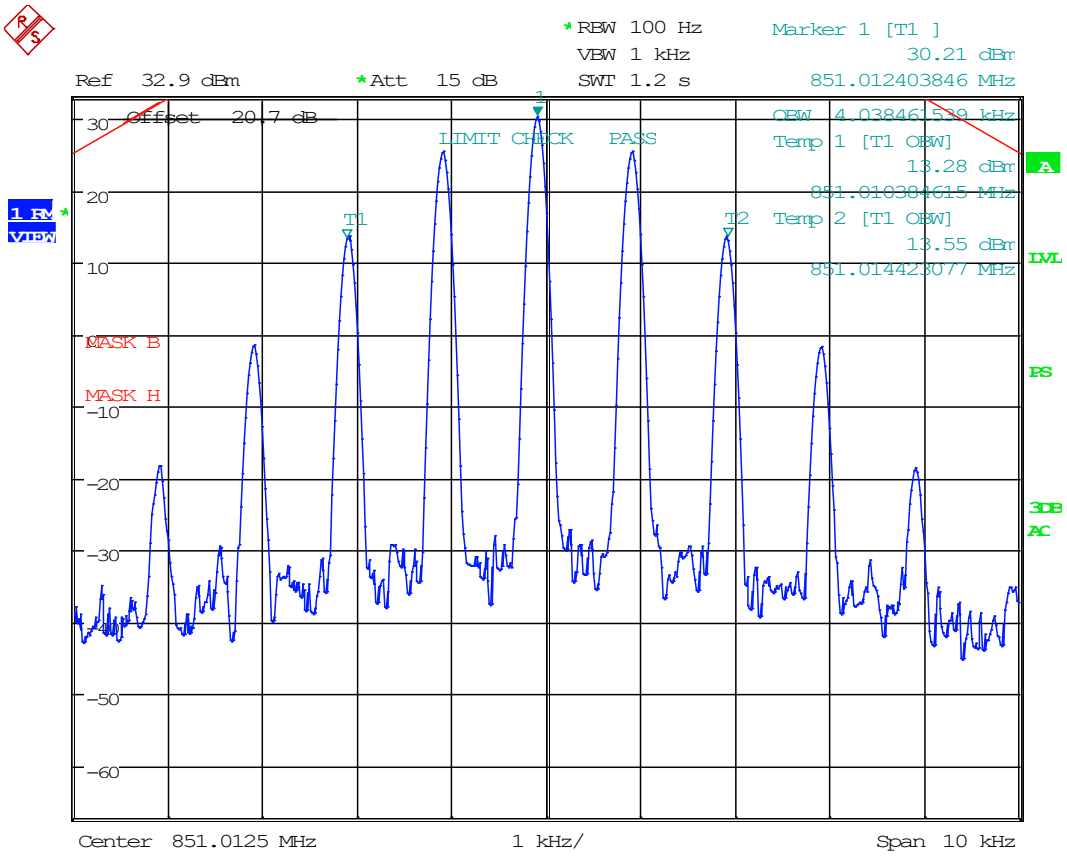
OCCUPIED BANDWIDTH

800 MHz Band, Downlink, 6.25k FM

OBW: 4.039 kHz



Date: 26.DEC.2019 12:24:33

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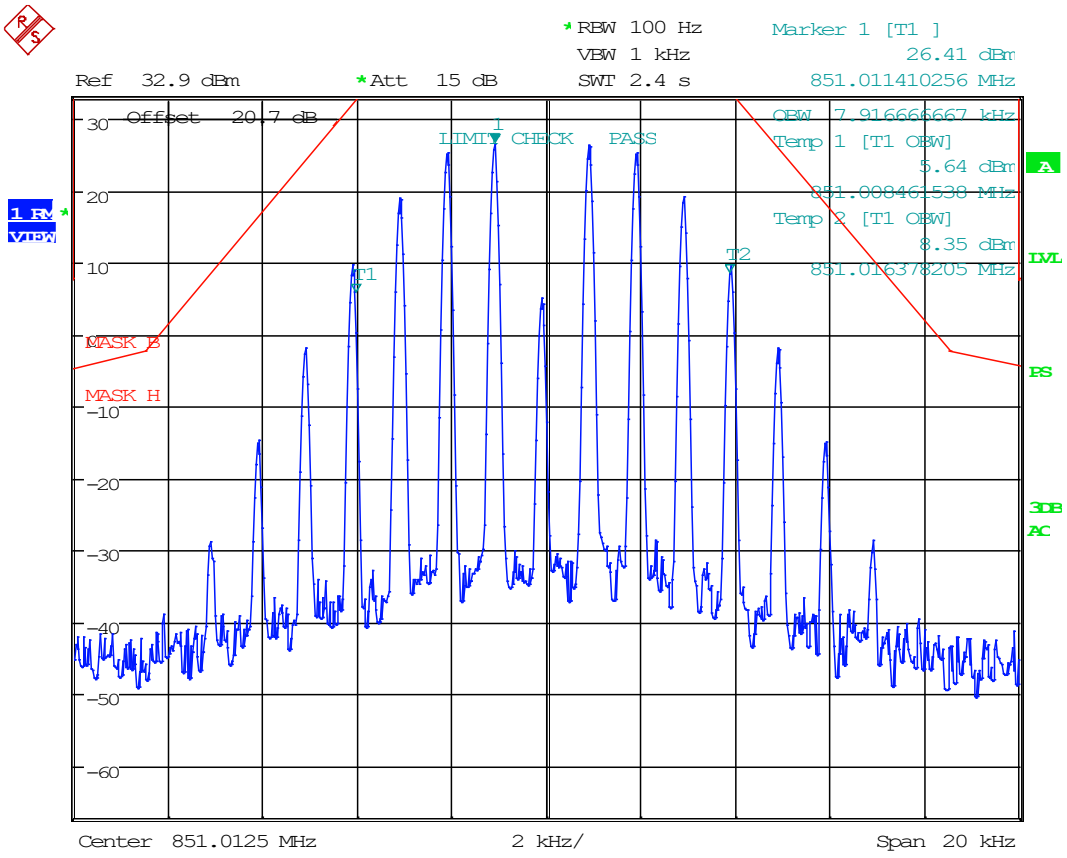
OCCUPIED BANDWIDTH

800 MHz Band, Downlink, 12.5k FM

OBW: 7.917 kHz

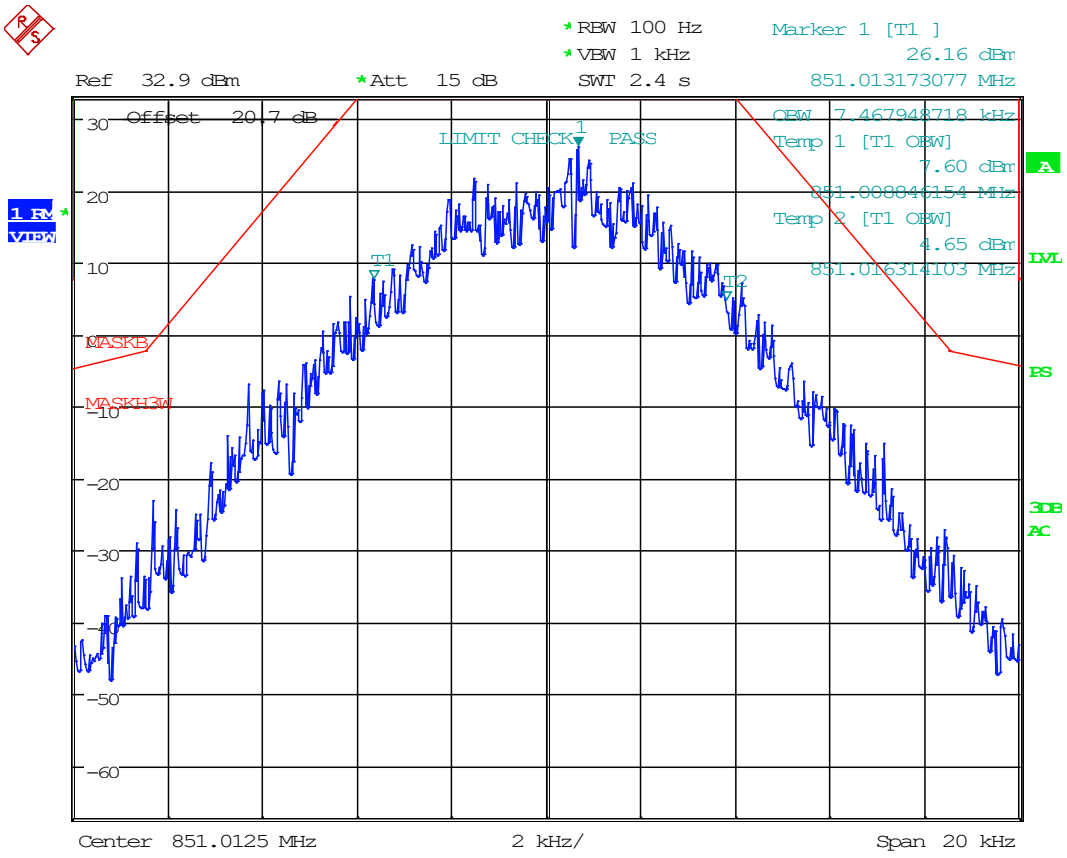


Date: 26.DEC.2019 12:23:01

OCCUPIED BANDWIDTH

800 MHz Band, Downlink, C4FM

OBW: 7.468 kHz



Date: 17.DEC.2019 12:48:28

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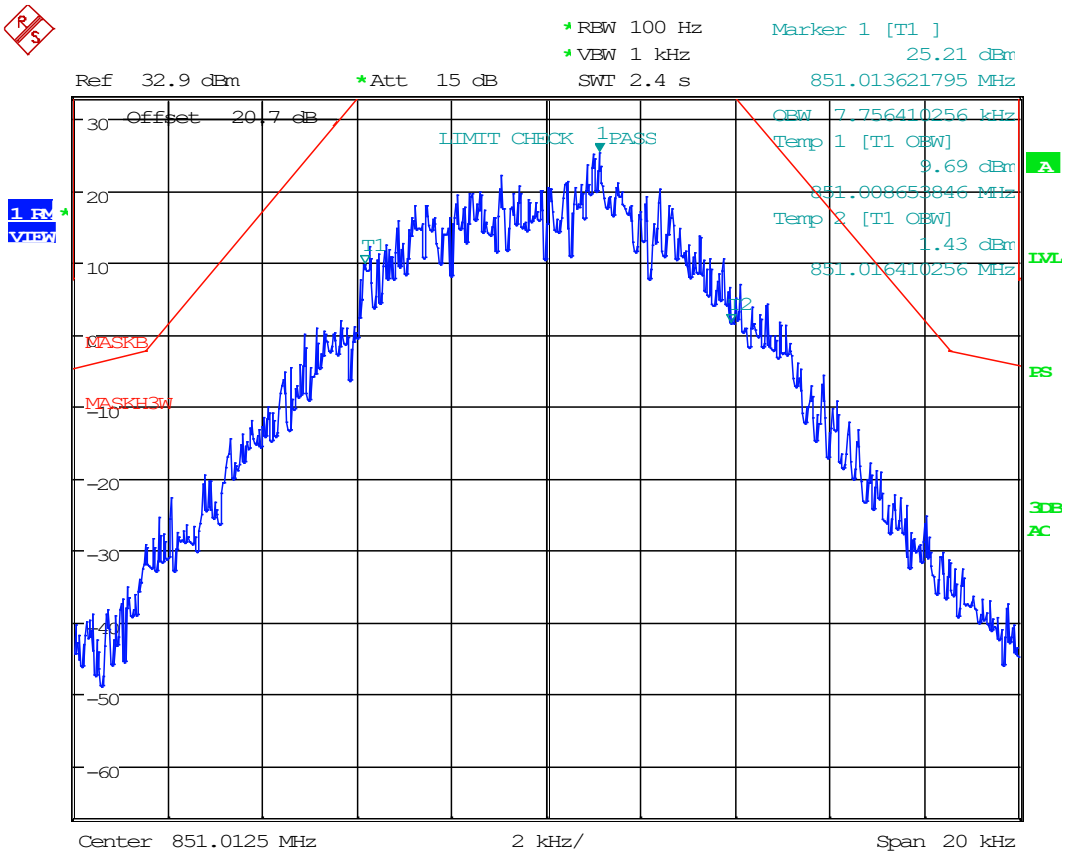
OCCUPIED BANDWIDTH

800 MHz Band, Downlink, H-CPM

OBW: 7.756 kHz



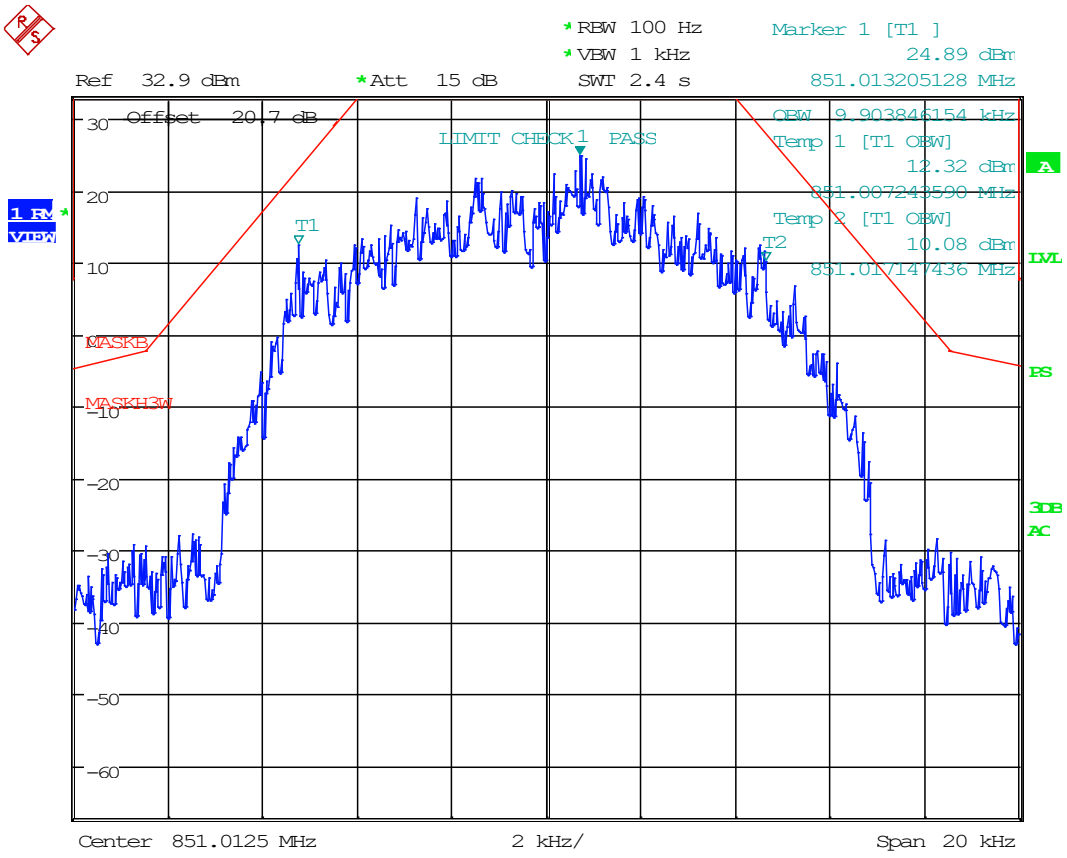
Date: 17.DEC.2019 12:47:34

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

OCCUPIED BANDWIDTH

800 MHz Band, Downlink, H-DQPSK

OBW: 9.904 kHz



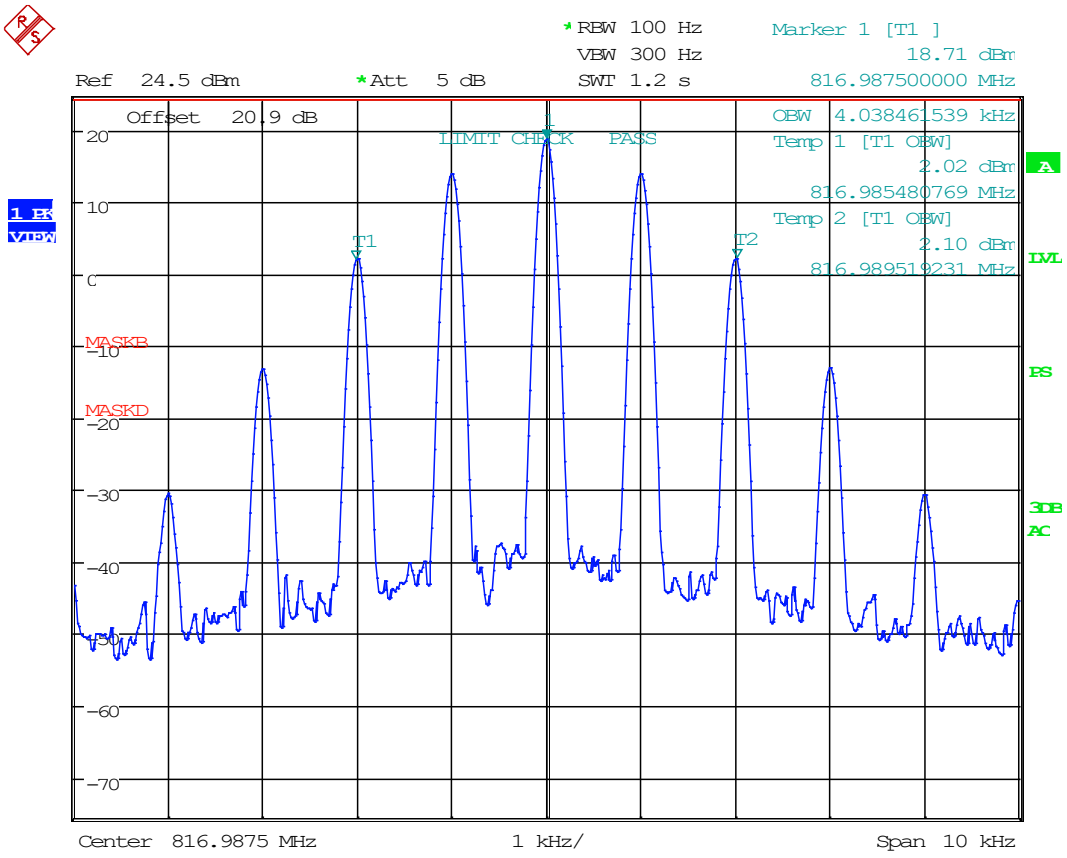
Date: 17.DEC.2019 12:46:56

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

OCCUPIED BANDWIDTH

800 MHz Band, Uplink, 6.25k FM

OBW: 4.039 kHz



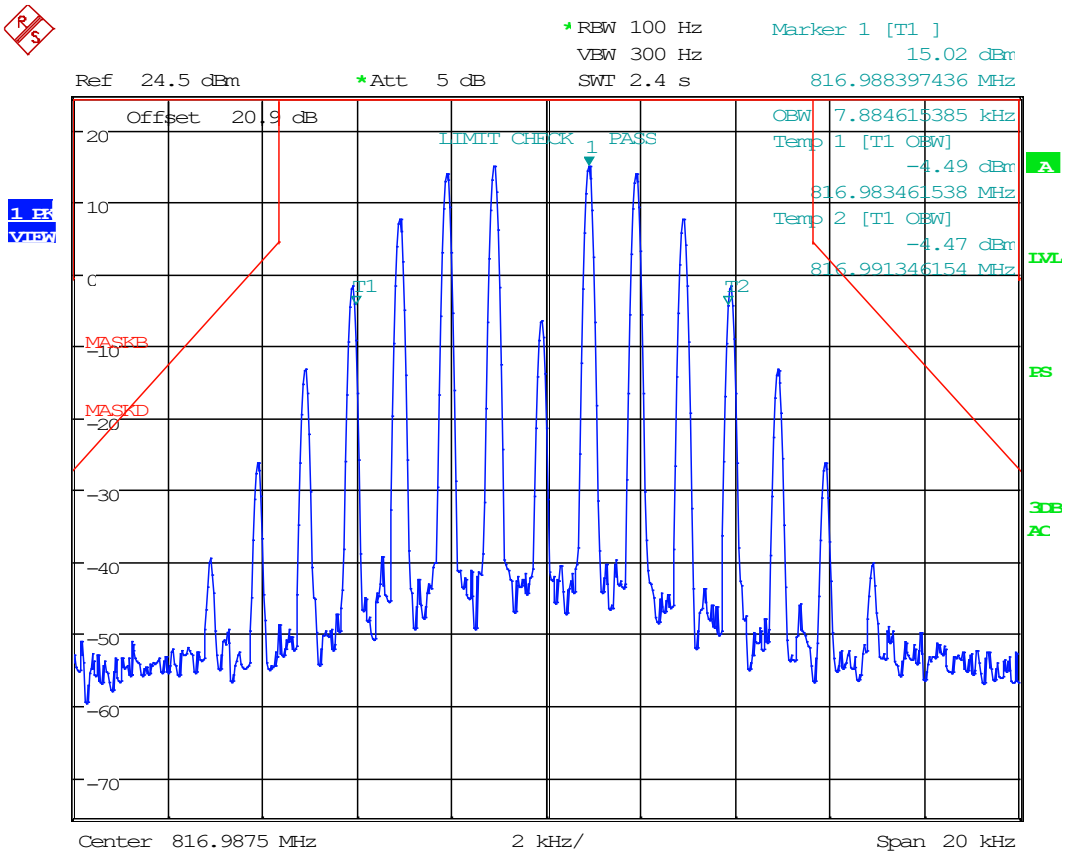
Date: 14.JAN.2020 12:19:15

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

OCCUPIED BANDWIDTH

800 MHz Band, Uplink, 12.5k FM

OBW: 7.885 kHz



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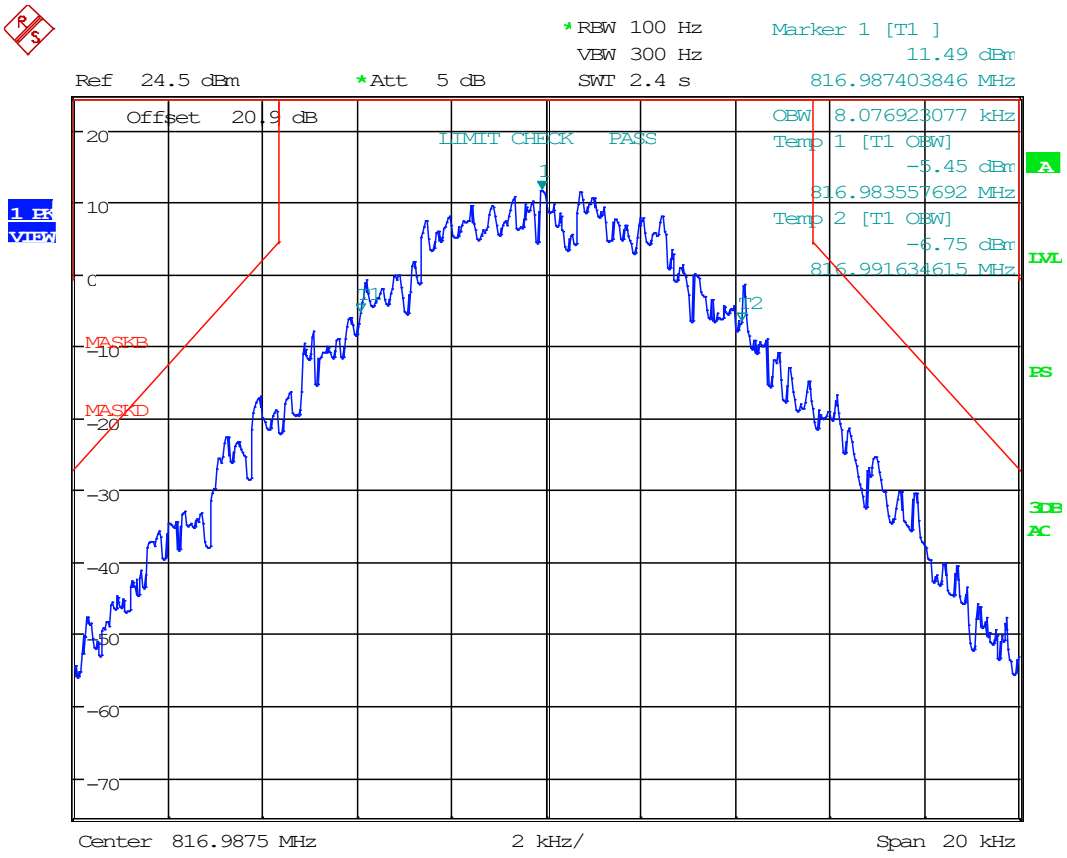
OCCUPIED BANDWIDTH

800 MHz Band, Uplink, C4FM

OBW: 8.077 kHz



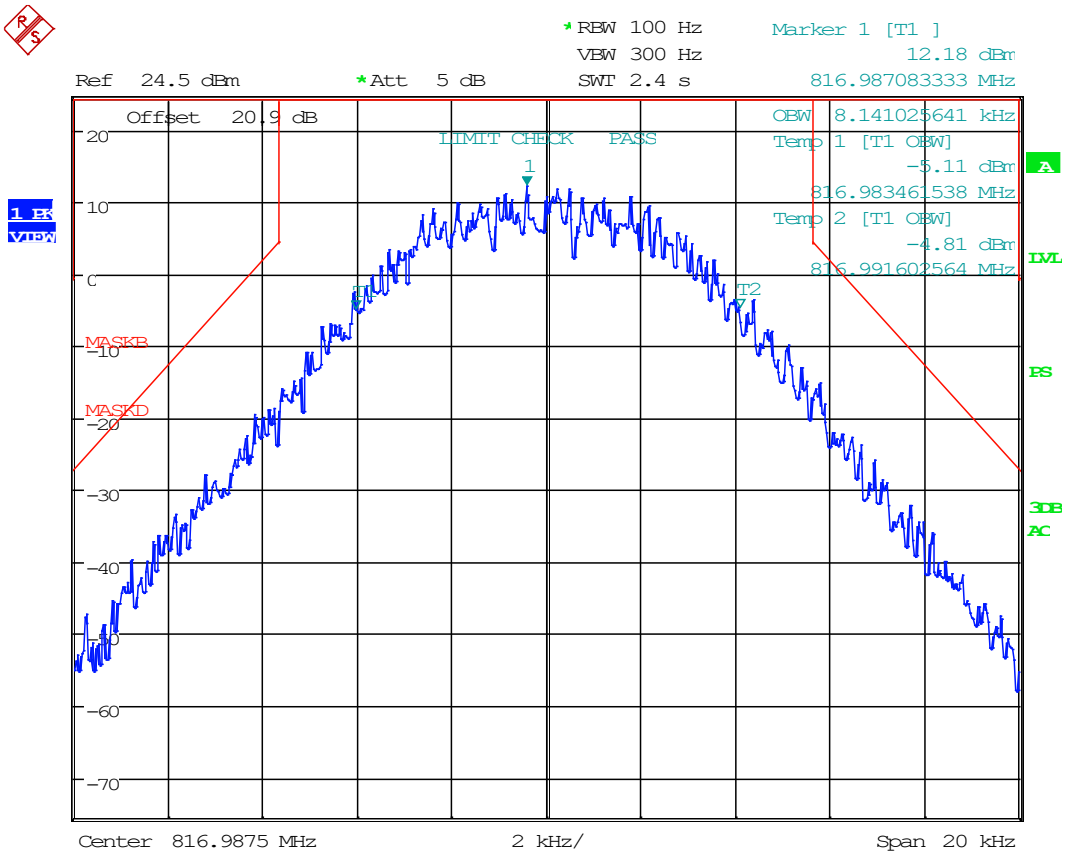
Date: 14.JAN.2020 12:16:25

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

OCCUPIED BANDWIDTH

800 MHz Band, Uplink, H-CPM

OBW: 8.141 kHz



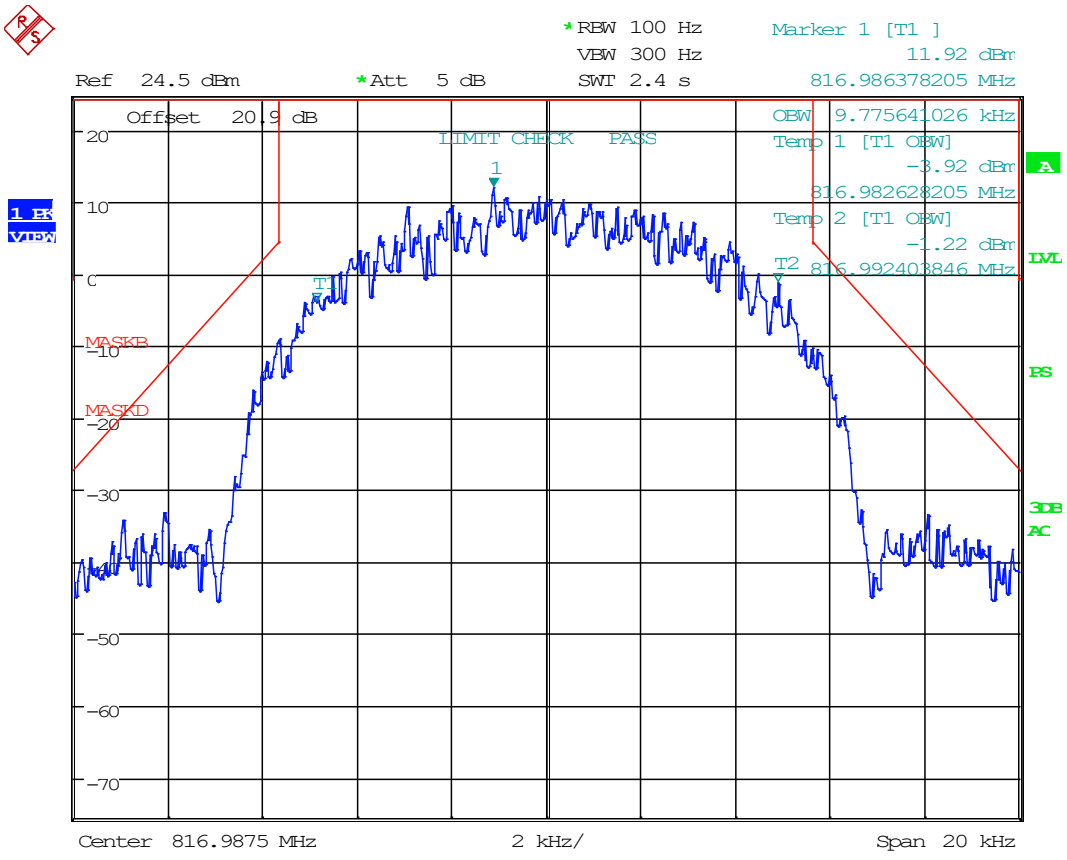
Date: 14.JAN.2020 12:15:42

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

OCCUPIED BANDWIDTH

800 MHz Band, Uplink, H-DQPSK

OBW: 9.776 kHz



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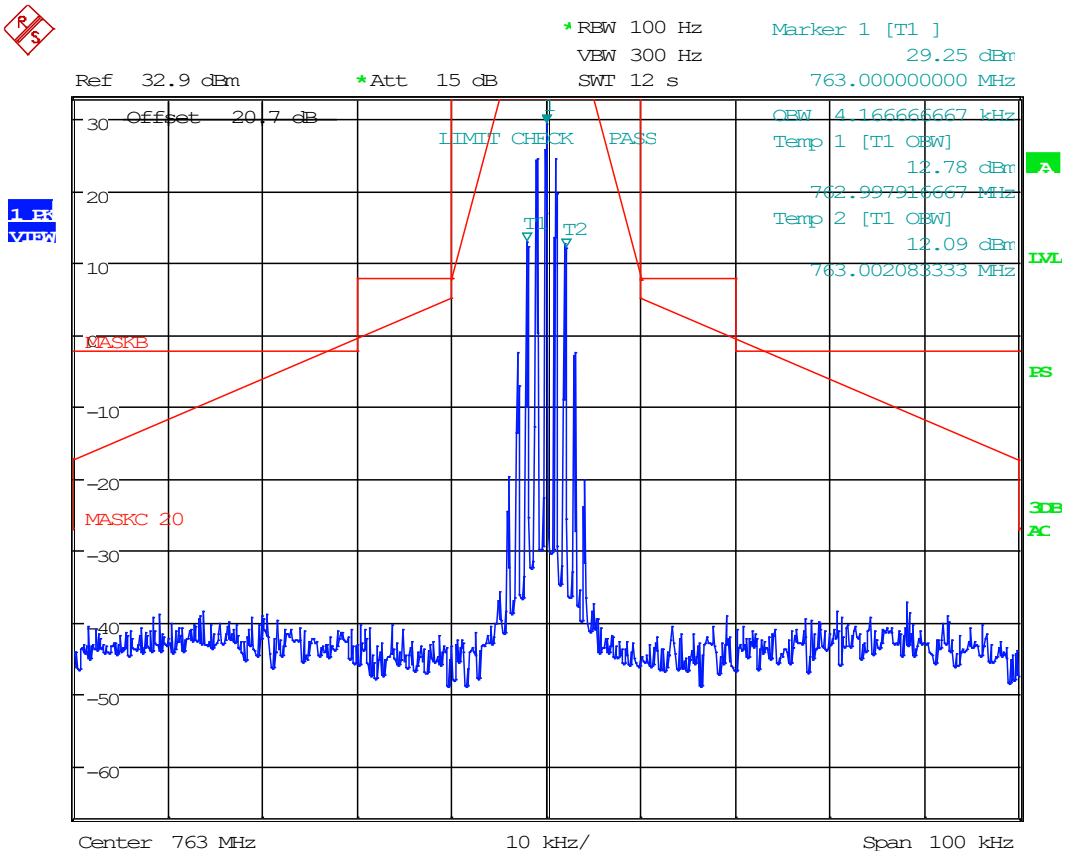
90.210 EMISSION MASKS

KDB 935210 4.4 INPUT VS OUTPUT COMPARISON

Test Engineer: FR
Test Date: JAN 14 2020

700 MHz Band, Downlink, 6.25k FM, At AGC



Date: 17.DEC.2019 12:09:40

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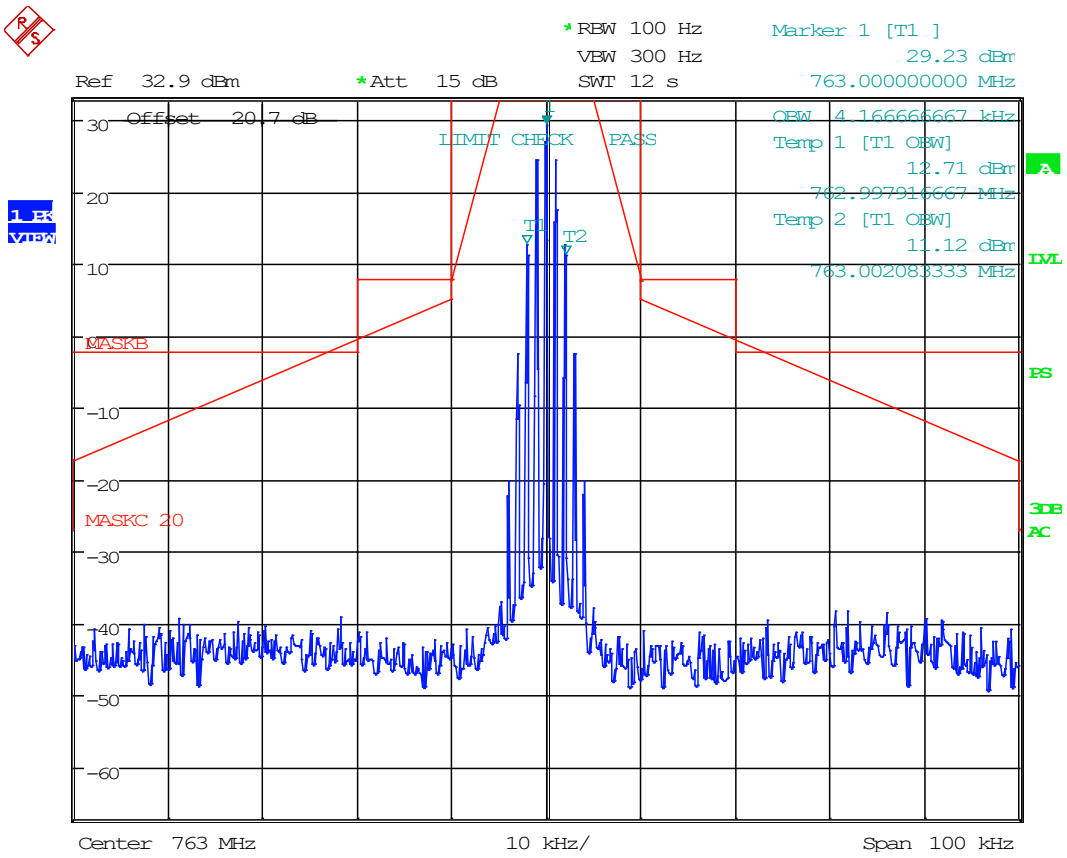
EMISSION MASK & IVO

700 MHz Band, Downlink, 6.25k FM, At AGC +3 dB



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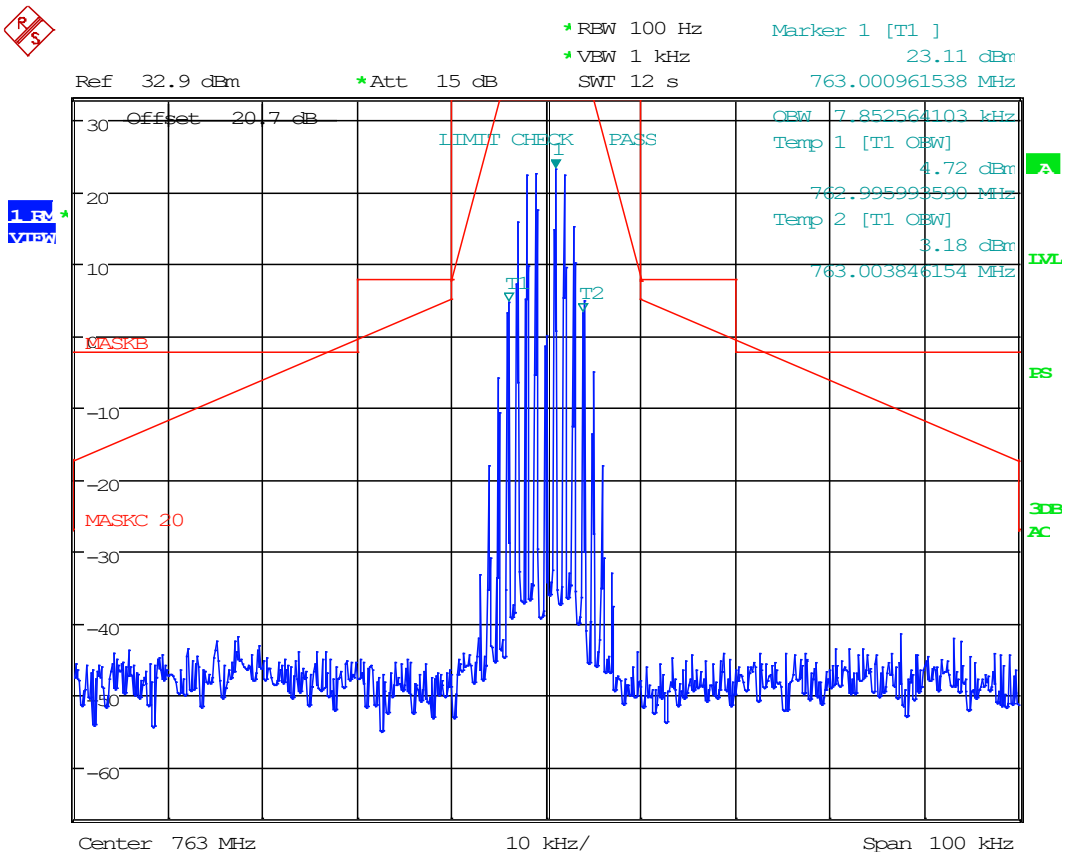
849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

700 MHz Band, Downlink, 12.5k FM, At AGC

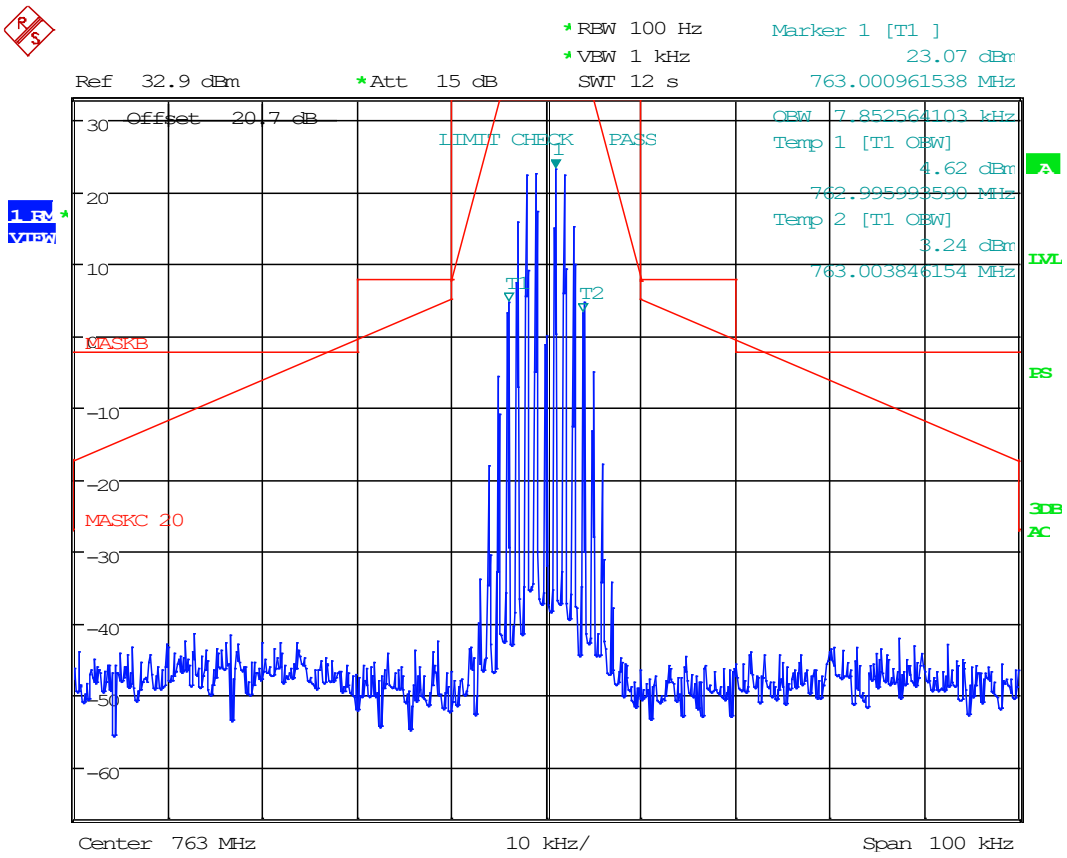


Date: 17.DEC.2019 12:20:31

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

700 MHz Band, Downlink, 12.5k FM, At AGC +3 dB

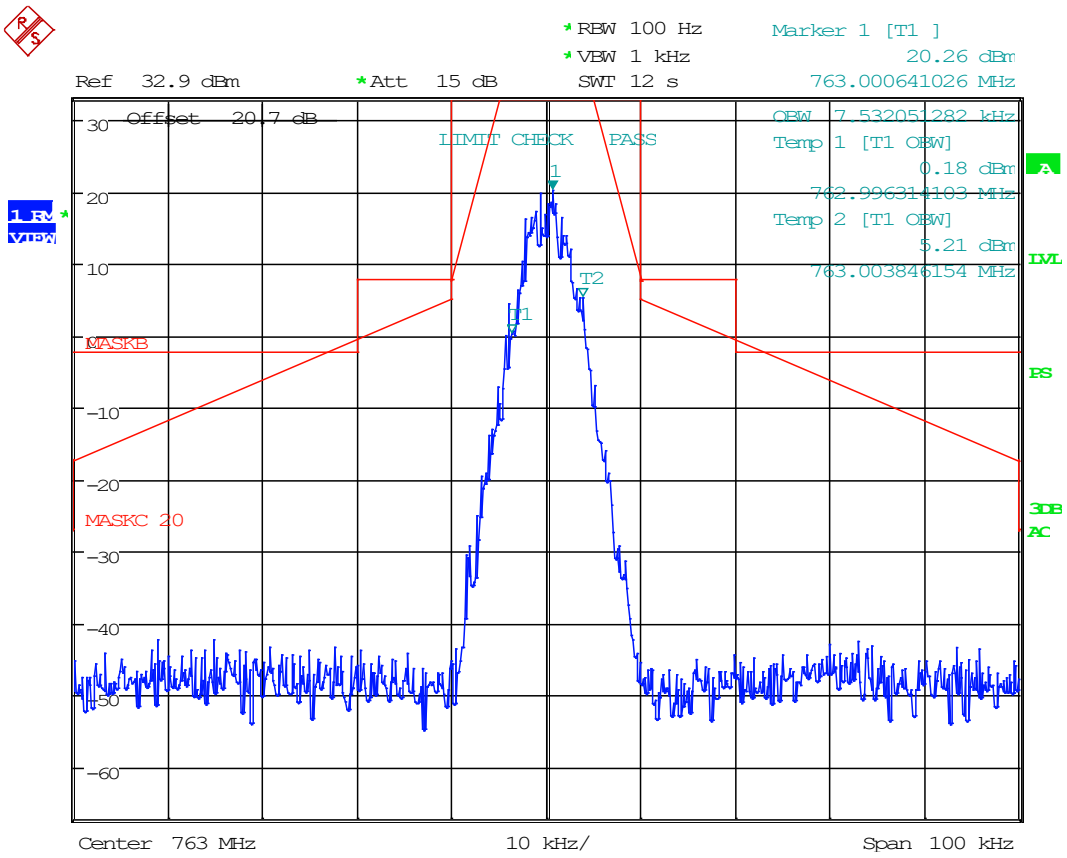


Date: 17.DEC.2019 12:21:24

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

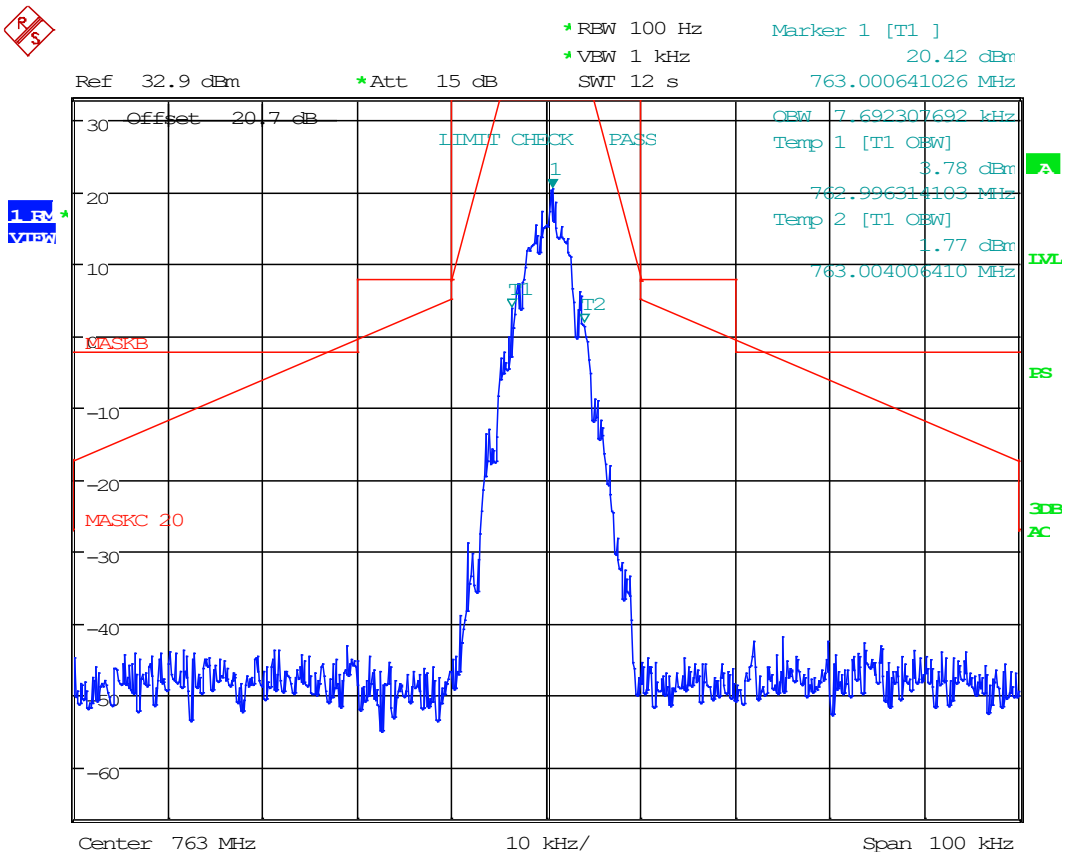
700 MHz Band, Downlink, C4FM, At AGC



Date: 17.DEC.2019 12:23:58

EMISSION MASK & IVO

700 MHz Band, Downlink, C4FM, At AGC +3 dB



Date: 17.DEC.2019 12:25:04

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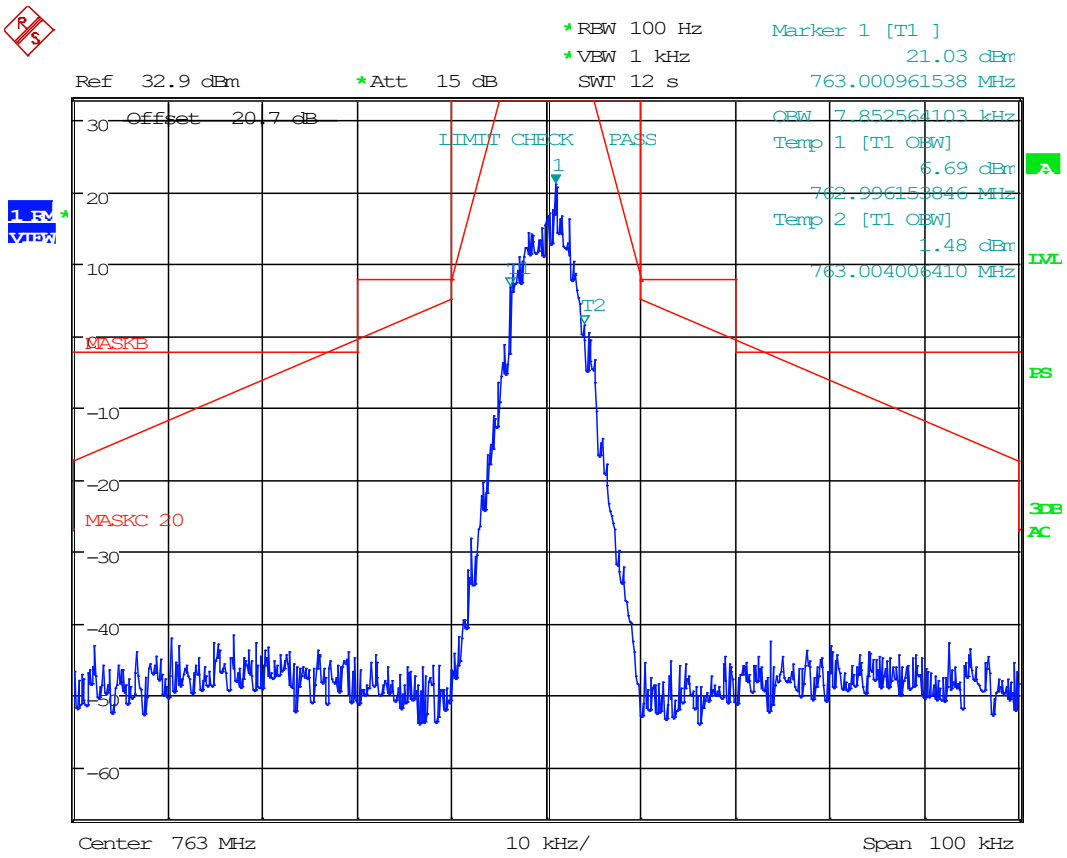
EMISSION MASK & IVO

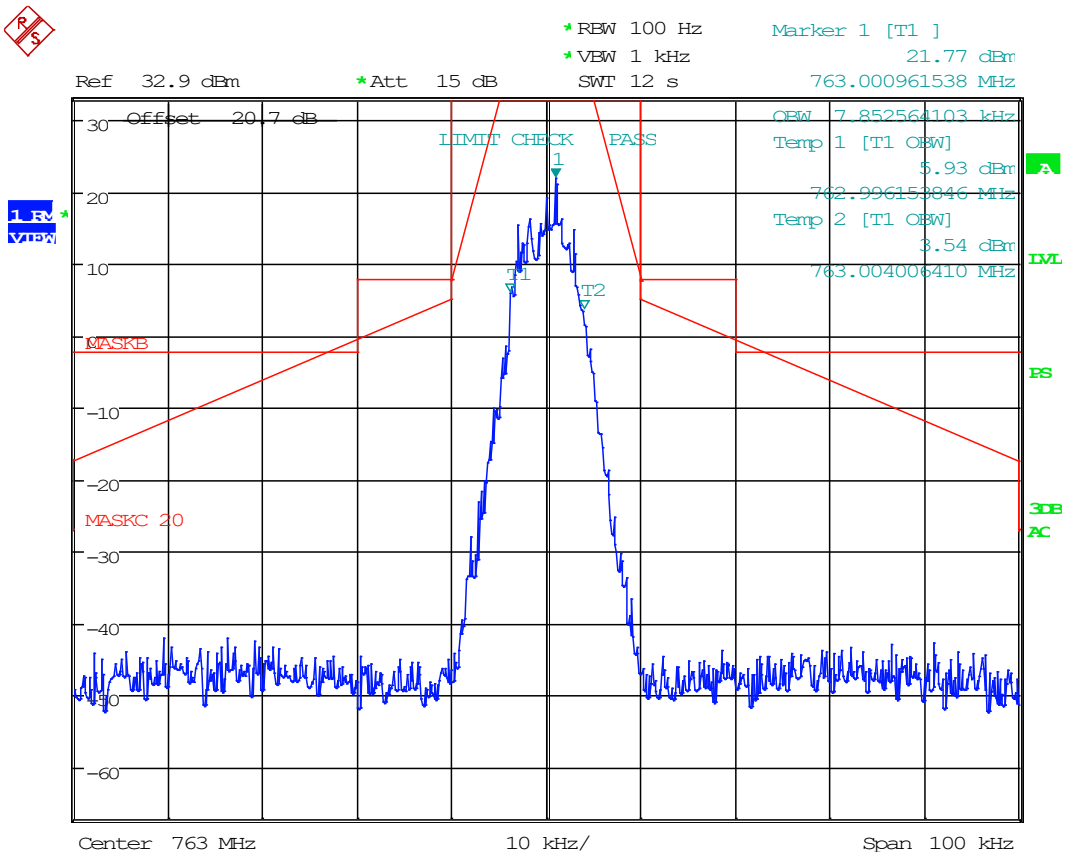
700 MHz Band, Downlink, H-CPM, AT AGC



Date: 17.DEC.2019 12:30:19

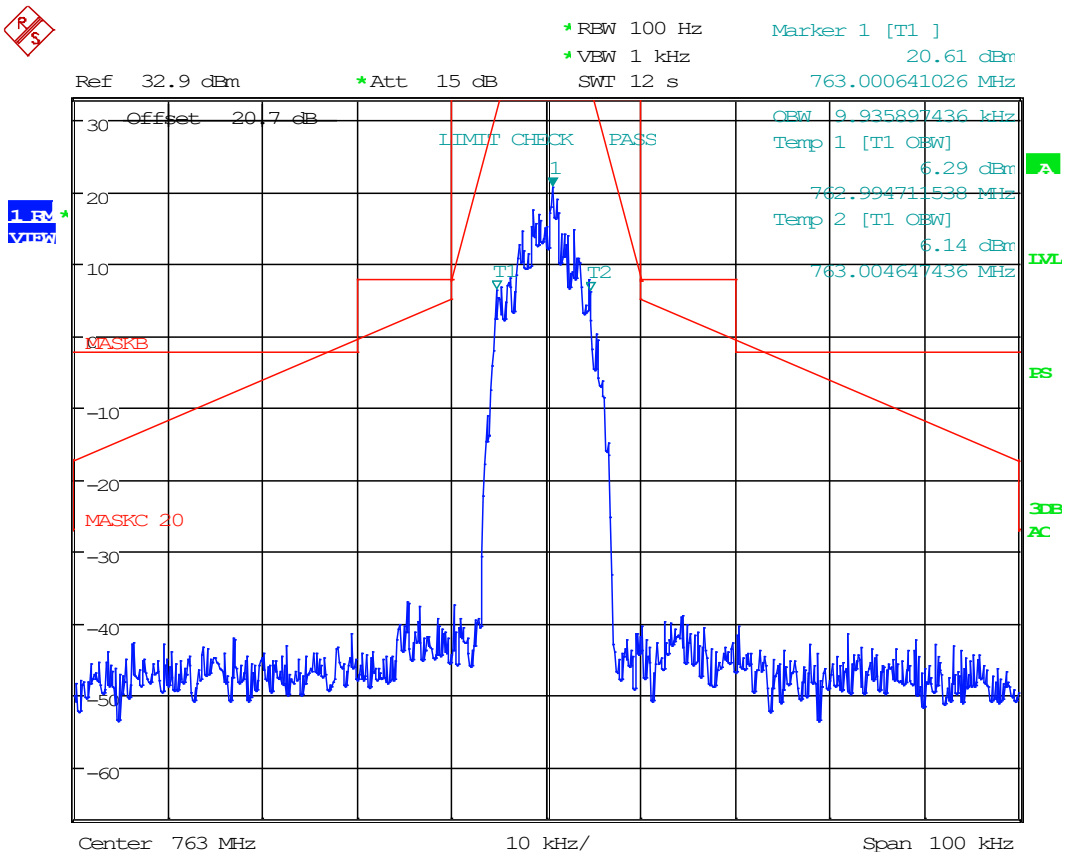
EMISSION MASK & IVO

700 MHz Band, Downlink, H-CPM, AT AGC +3 DB



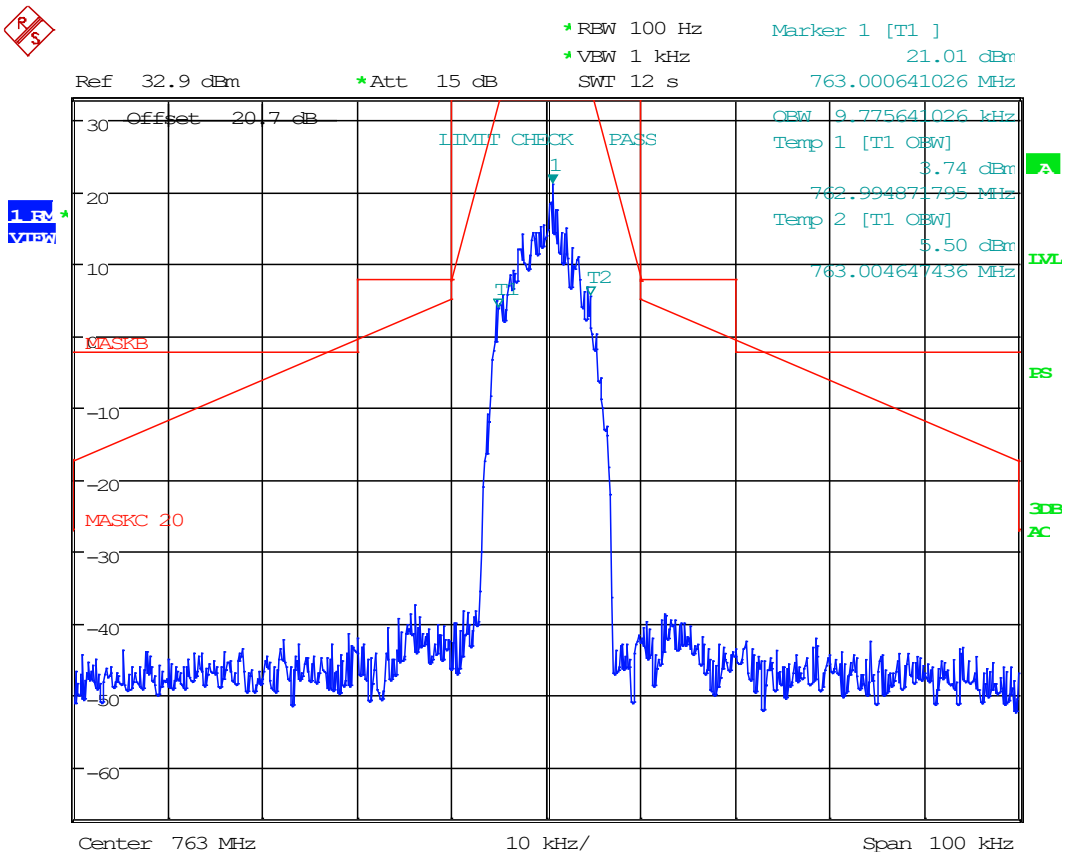
EMISSION MASK & IVO

700 MHz Band, Downlink, H-DQPSK, AT AGC



EMISSION MASK & IVO

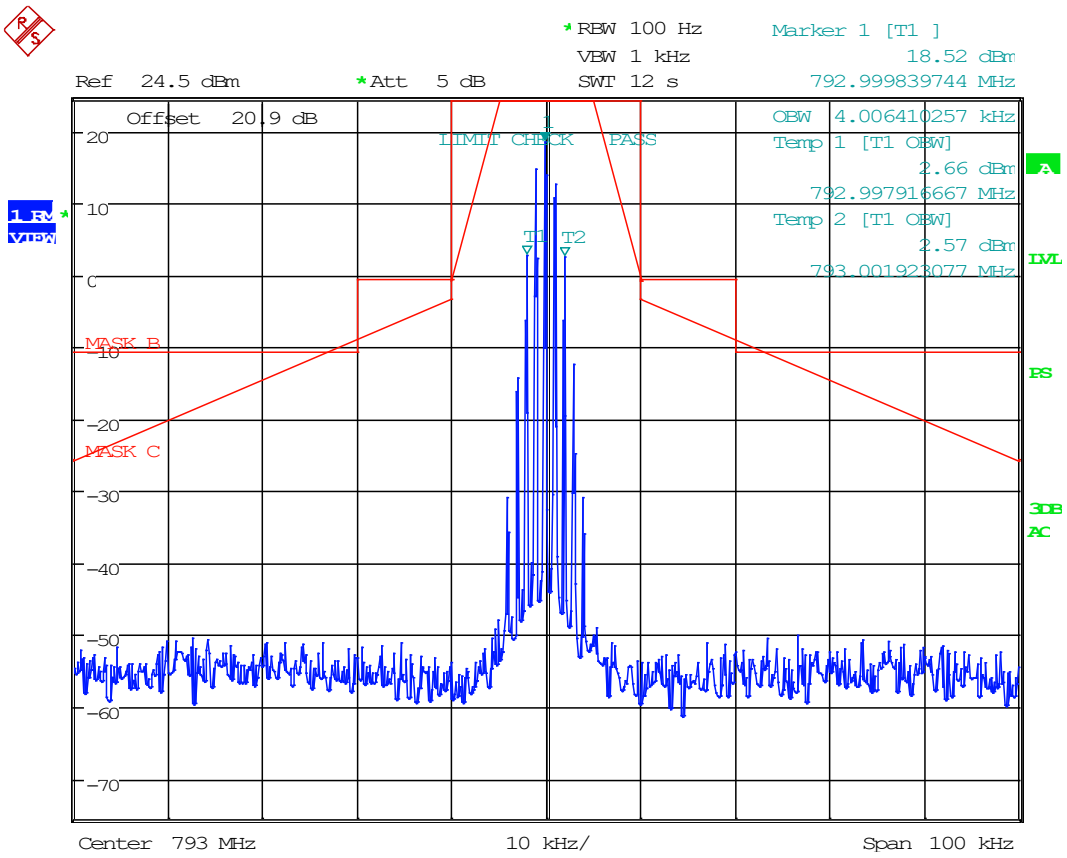
700 MHz Band, Downlink, H-DQPSK, AT AGC +3 DB



Date: 17.DEC.2019 12:32:08

EMISSION MASK & IVO

700 MHz Band, Uplink, 6.25k FM, At AGC



Date: 26.DEC.2019 17:06:00

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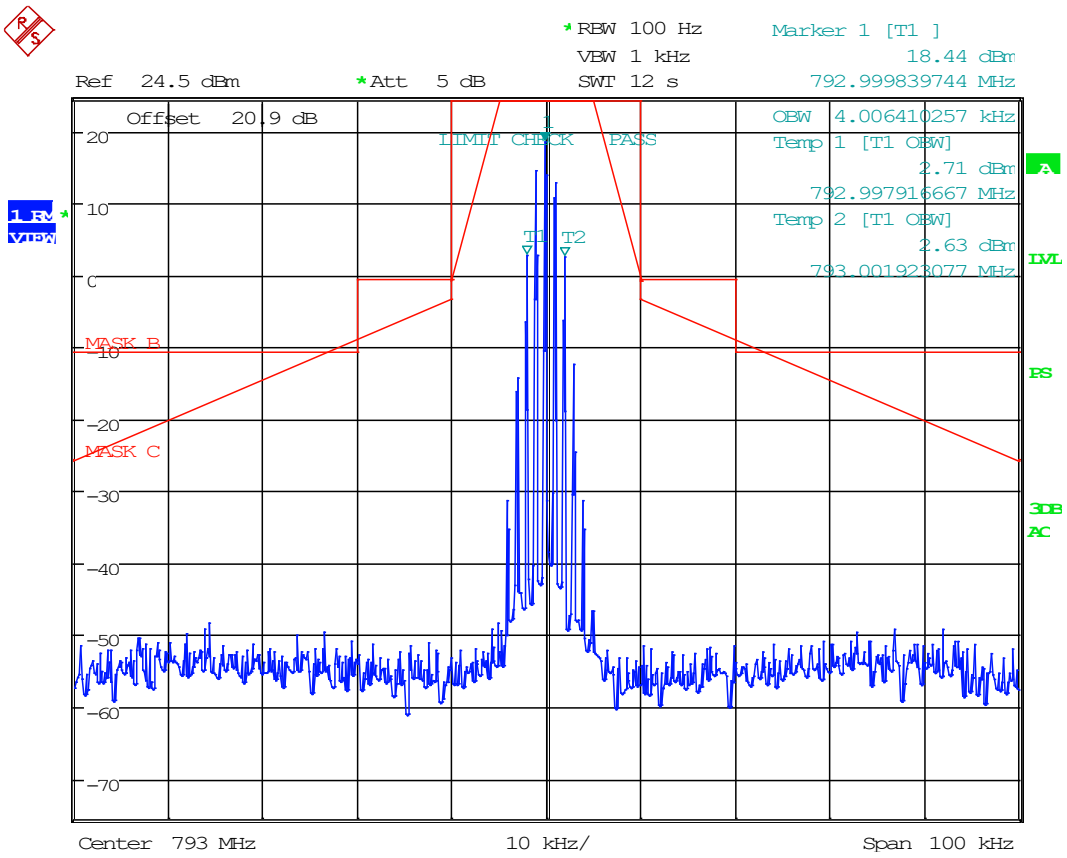
EMISSION MASK & IVO

700 MHz Band, Uplink, 6.25k FM, At AGC +3 dB

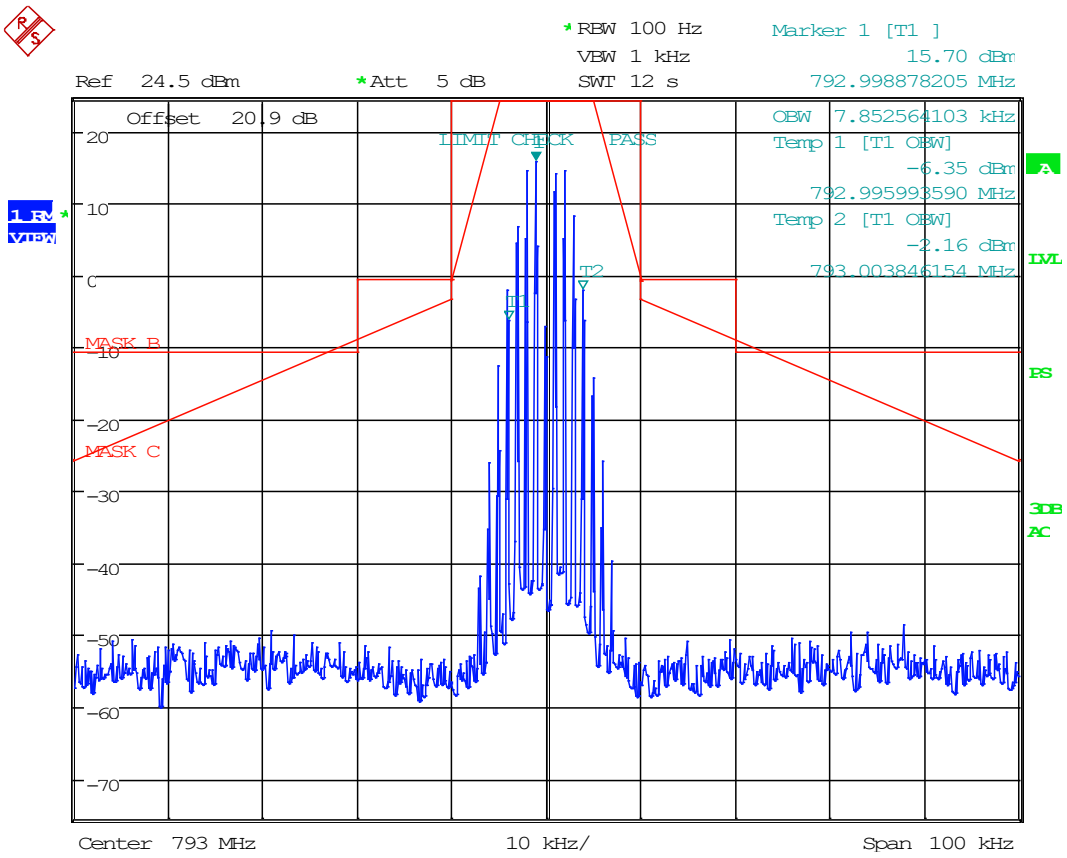


Date: 26.DEC.2019 17:07:26

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

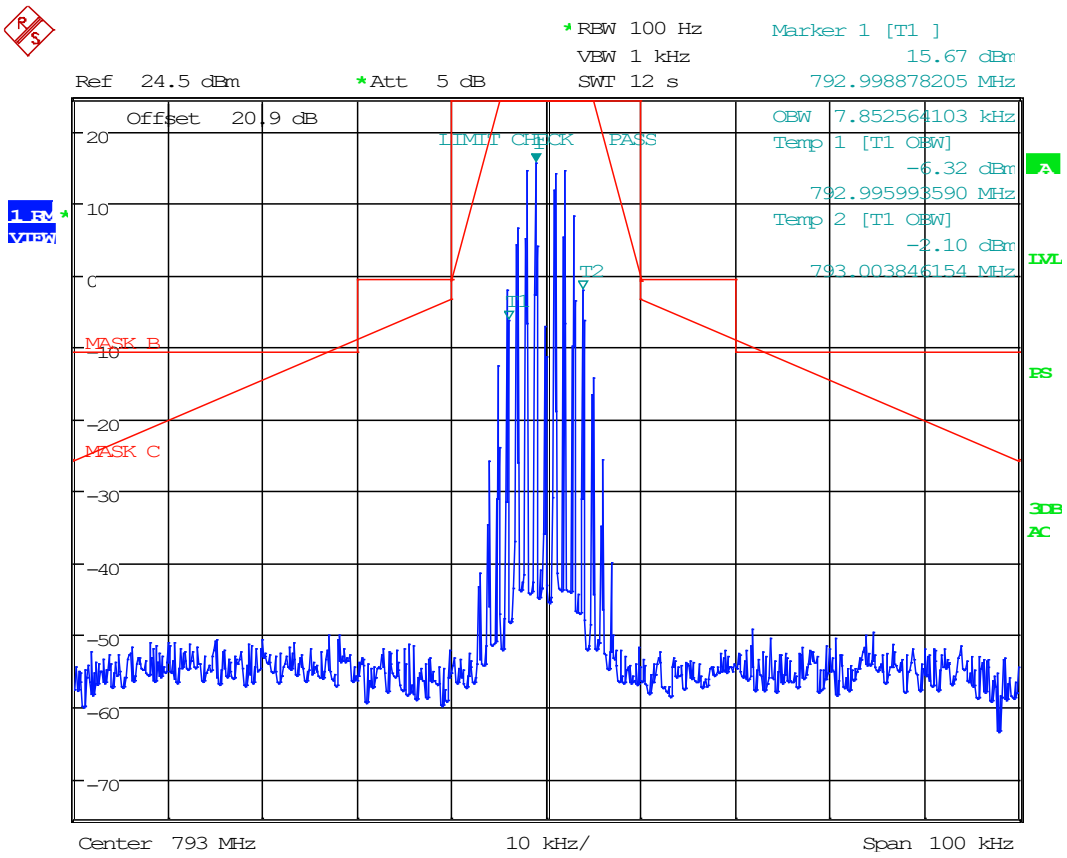
700 MHz Band, Uplink, 12.5k FM, At AGC



Date: 26.DEC.2019 17:09:48

EMISSION MASK & IVO

700 MHz Band, Uplink, 12.5k FM, At AGC +3 dB



Date: 26.DEC.2019 17:08:43

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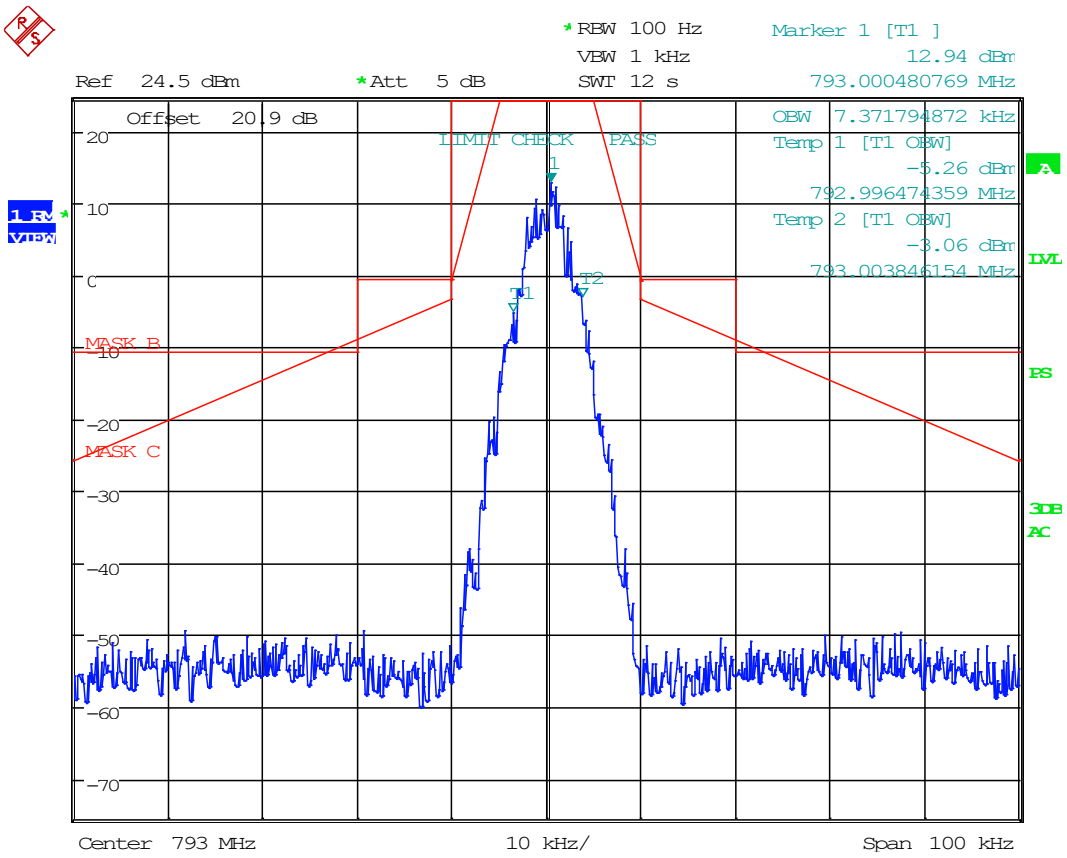
EMISSION MASK & IVO

700 MHz Band, Uplink, C4FM, At AGC



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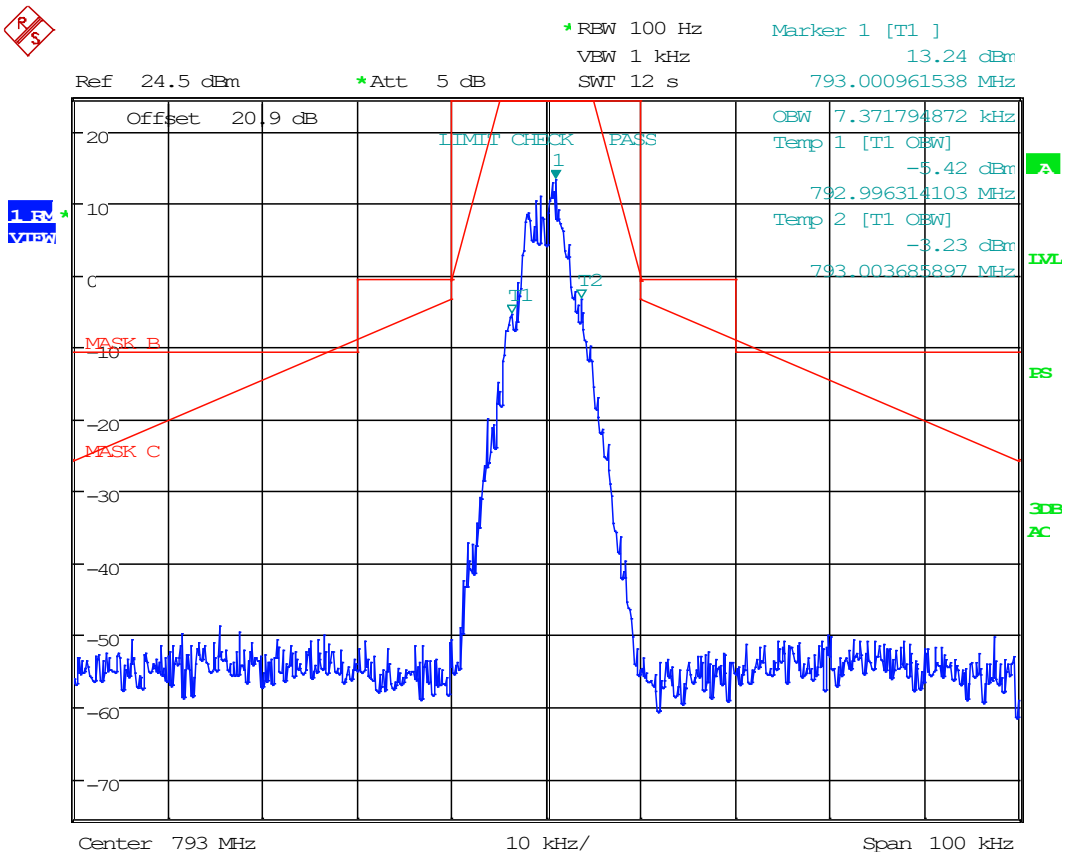
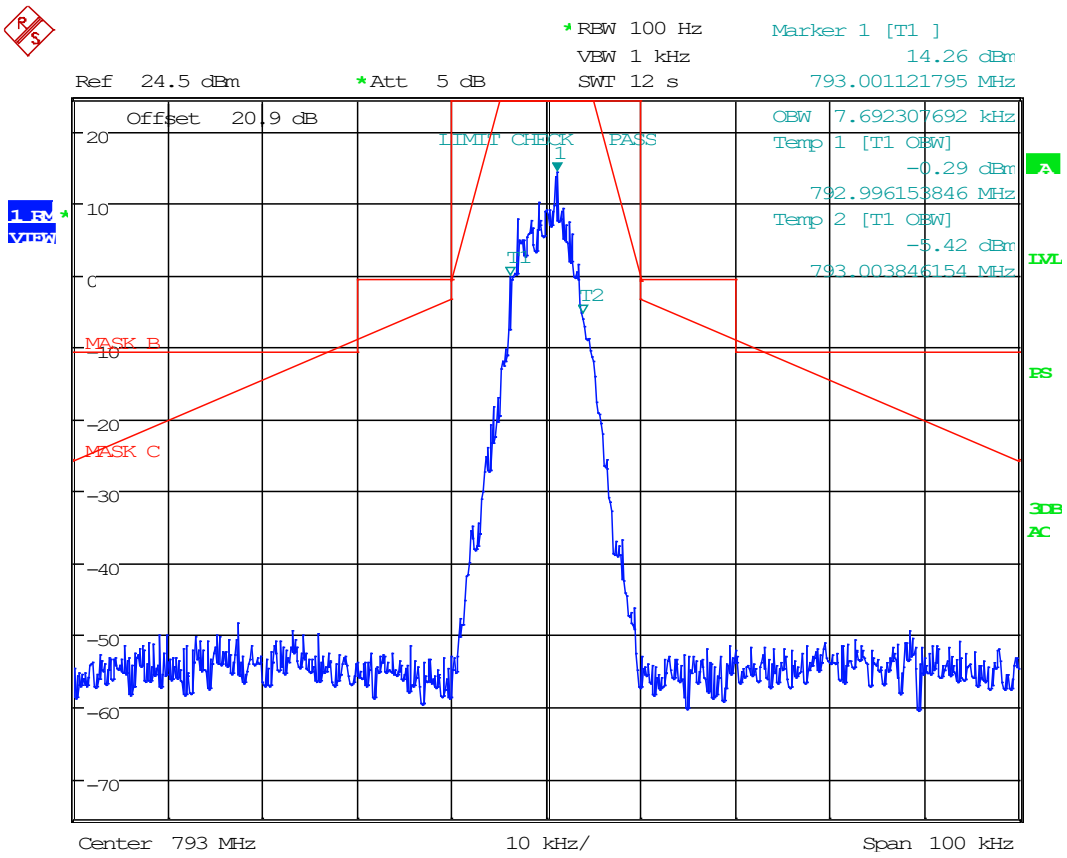
EMISSION MASK & IVO

700 MHz Band, Uplink, C4FM, At AGC +3 dB



EMISSION MASK & IVO

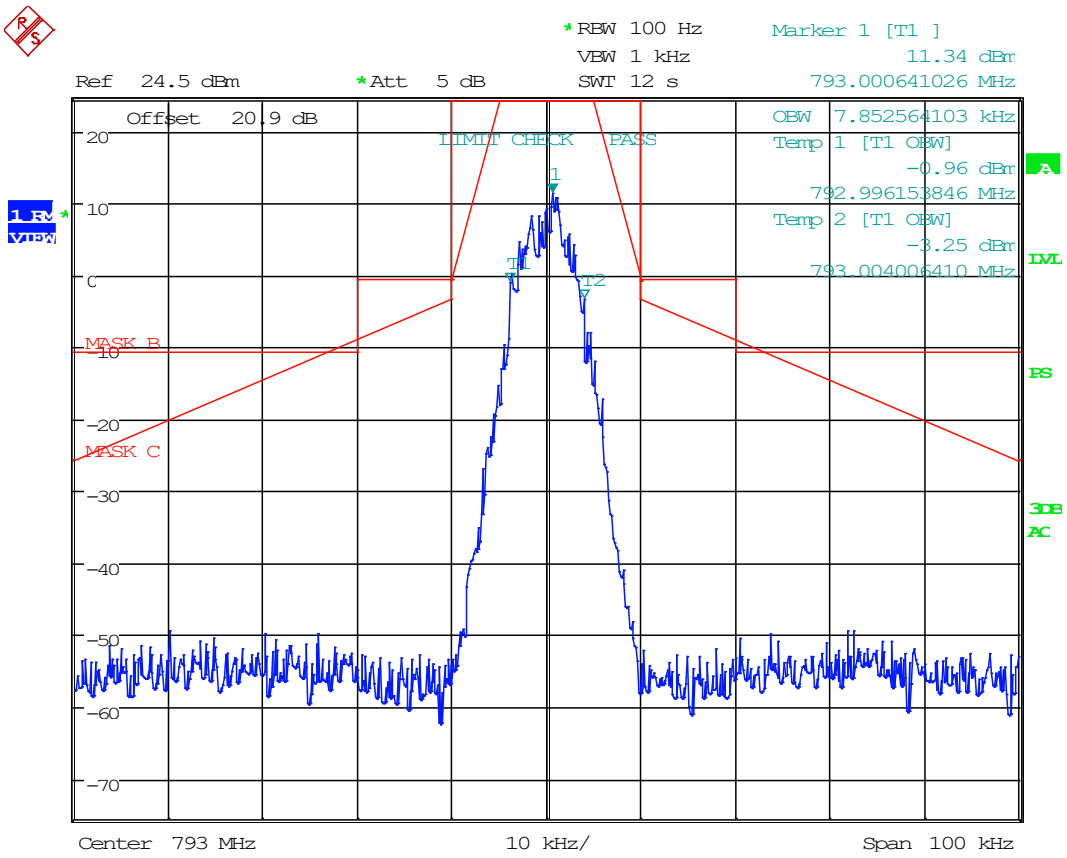
700 MHz Band, Uplink, H-CPM, AT AGC



Date: 26.DEC.2019 17:24:17

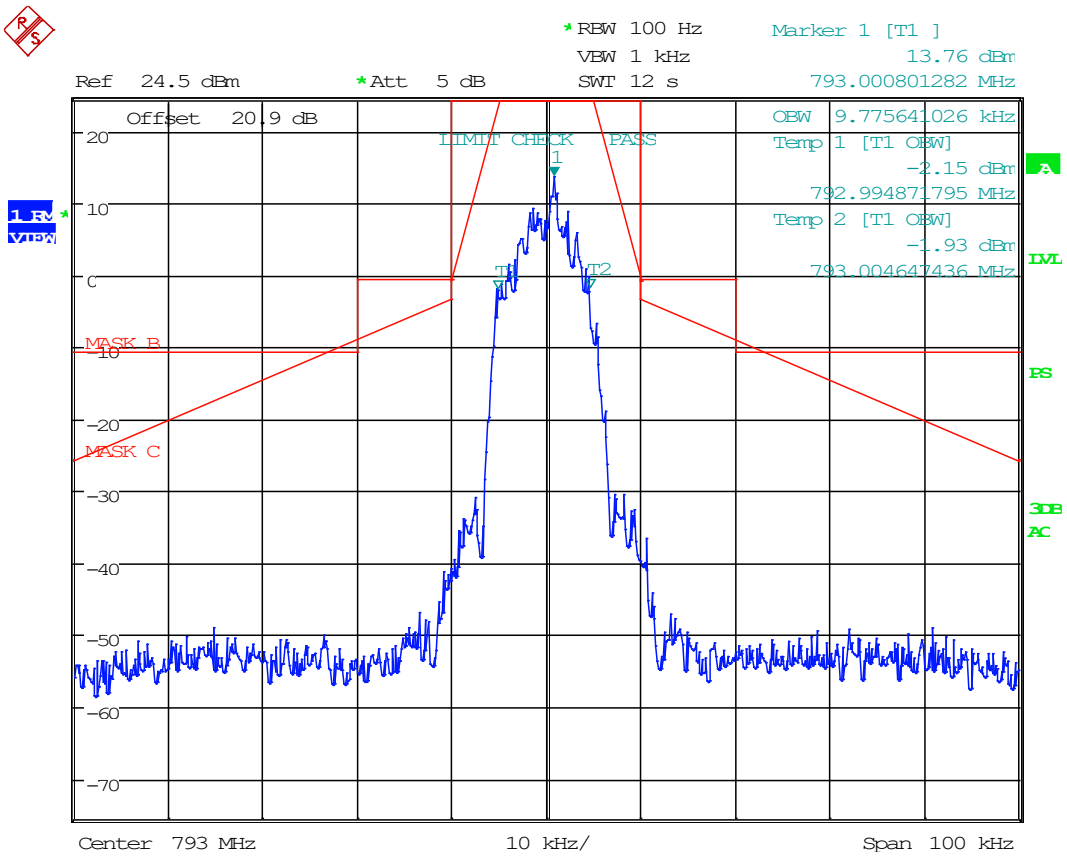
EMISSION MASK & IVO

700 MHz Band, Uplink, H-CPM, AT AGC +3 DB



EMISSION MASK & IVO

700 MHz Band, Uplink, H-DQPSK, AT AGC



Date: 26.DEC.2019 17:25:52

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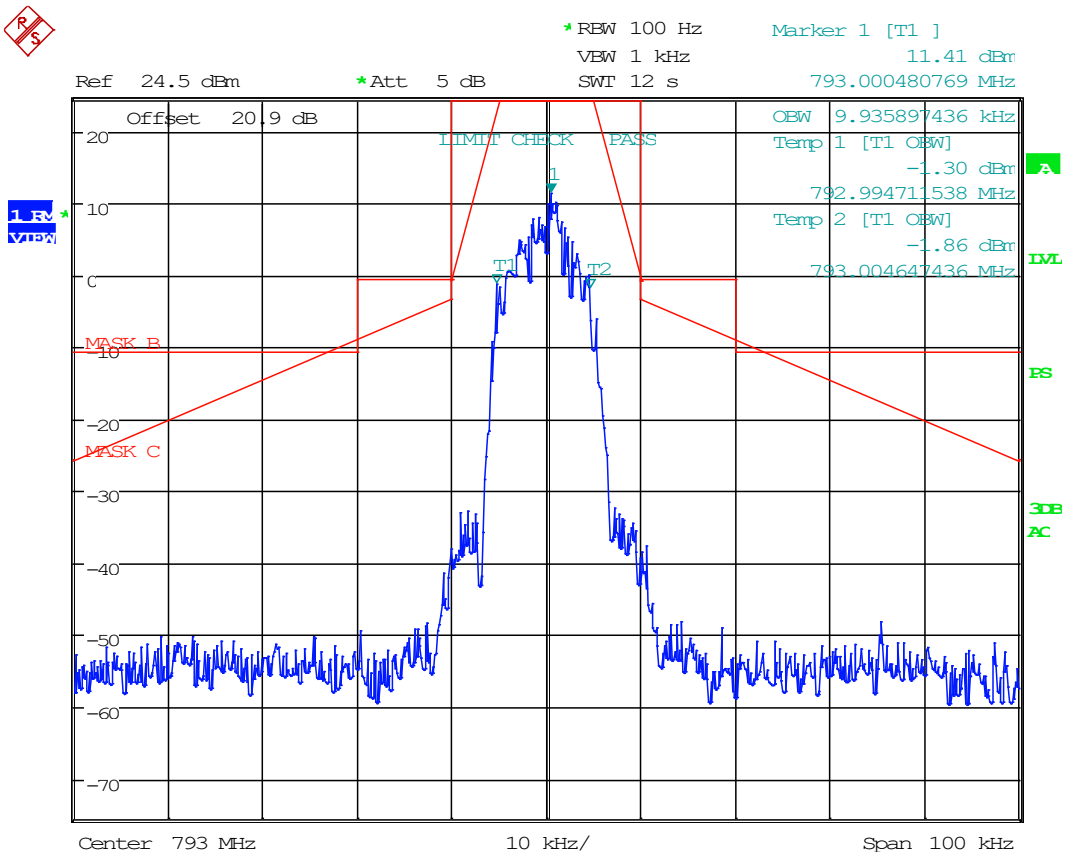
EMISSION MASK & IVO

700 MHz Band, Uplink, H-DQPSK, AT AGC +3 DB



Date: 26.DEC.2019 17:26:39

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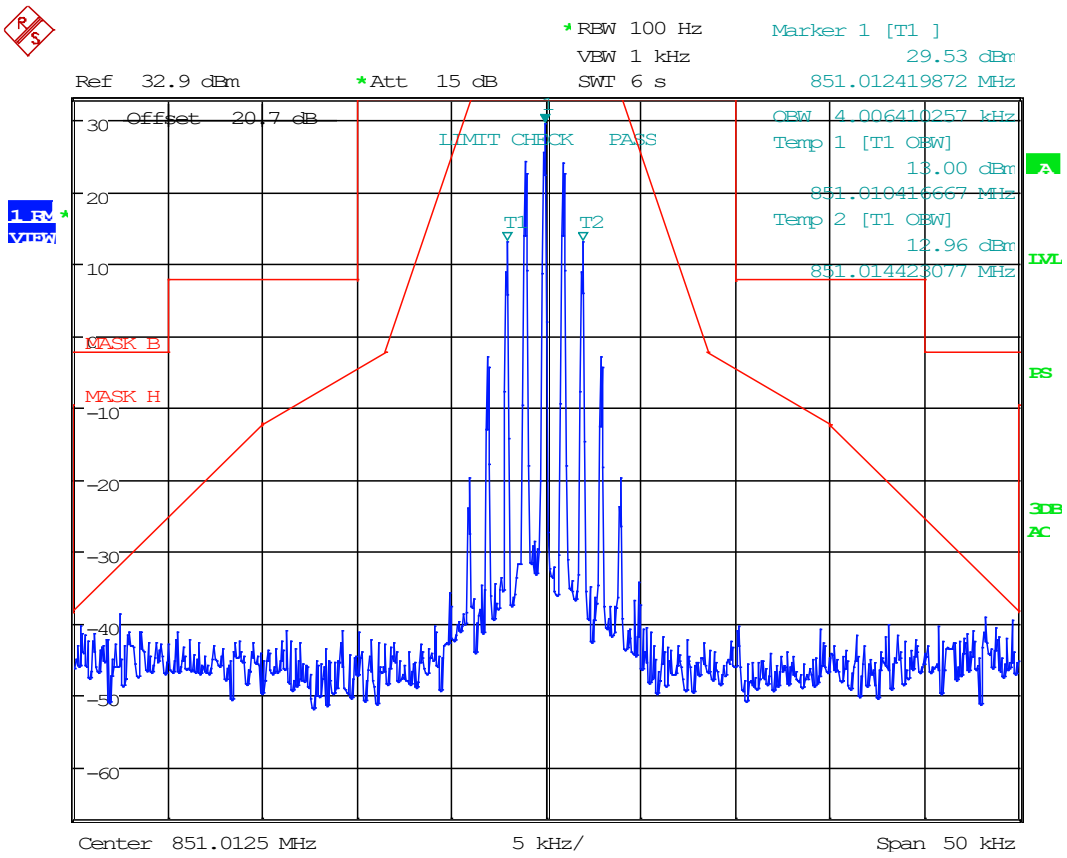
EMISSION MASK & IVO

800 MHz Band, Downlink, 6.25k FM, At AGC



Date: 26.DEC.2019 12:25:26

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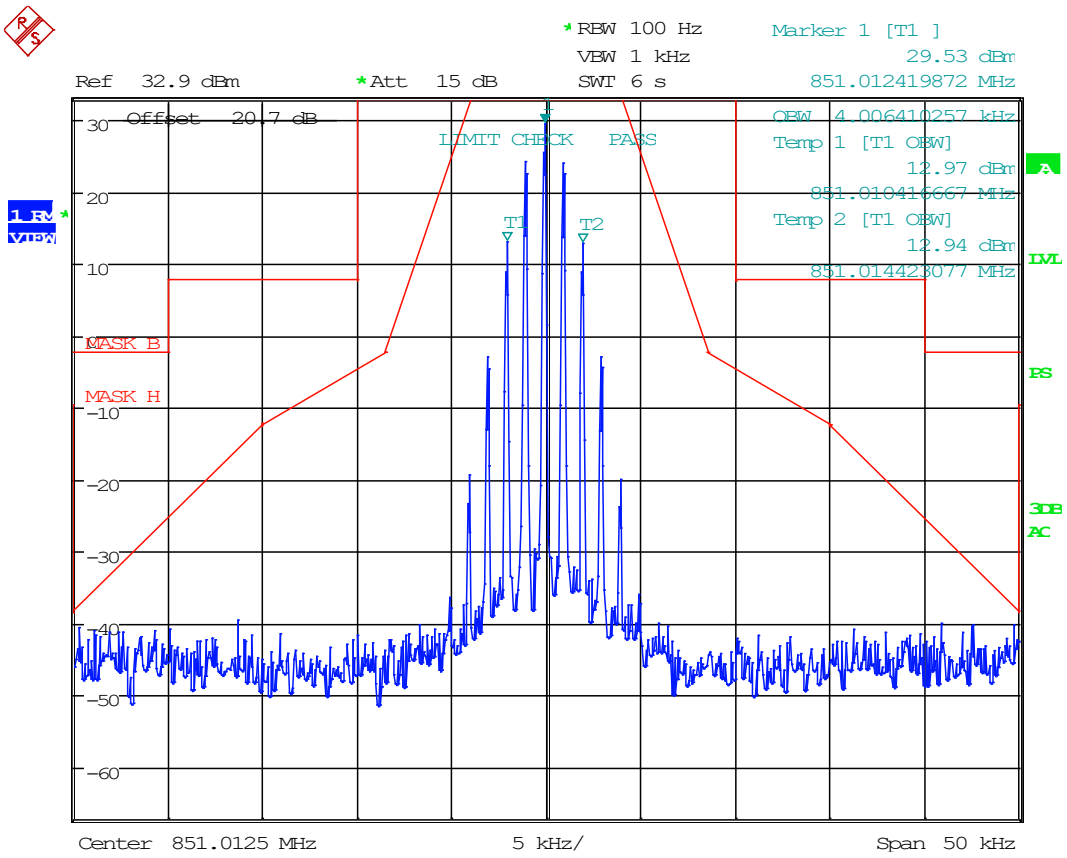
EMISSION MASK & IVO

800 MHz Band, Downlink, 6.25k FM, At AGC +3 dB



Date: 26.DEC.2019 12:26:17

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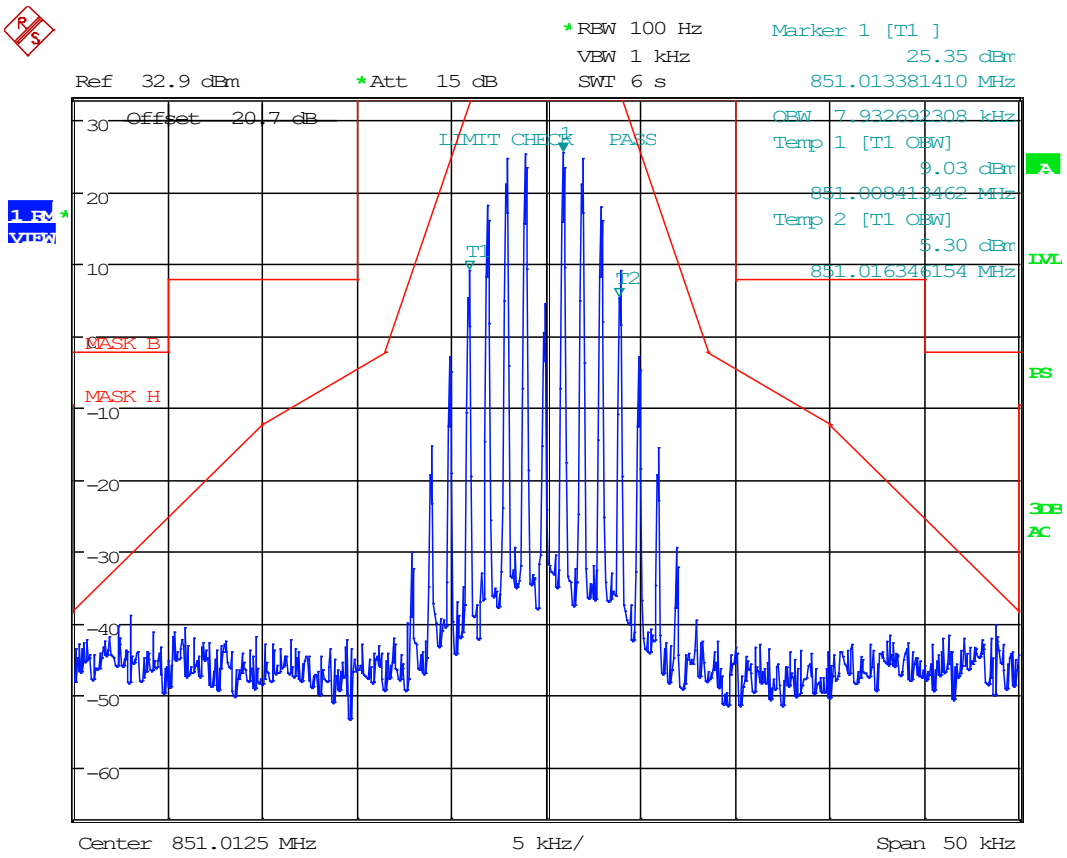
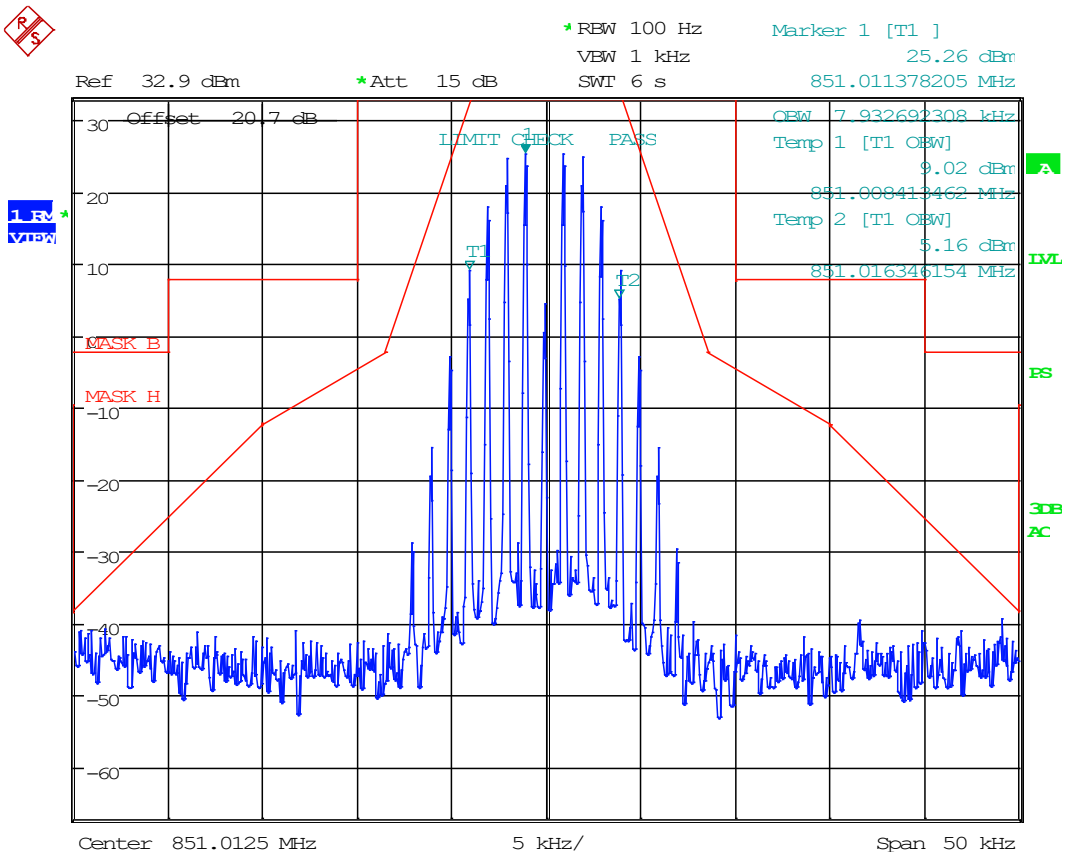
EMISSION MASK & IVO

800 MHz Band, Downlink, 12.5k FM, At AGC



EMISSION MASK & IVO

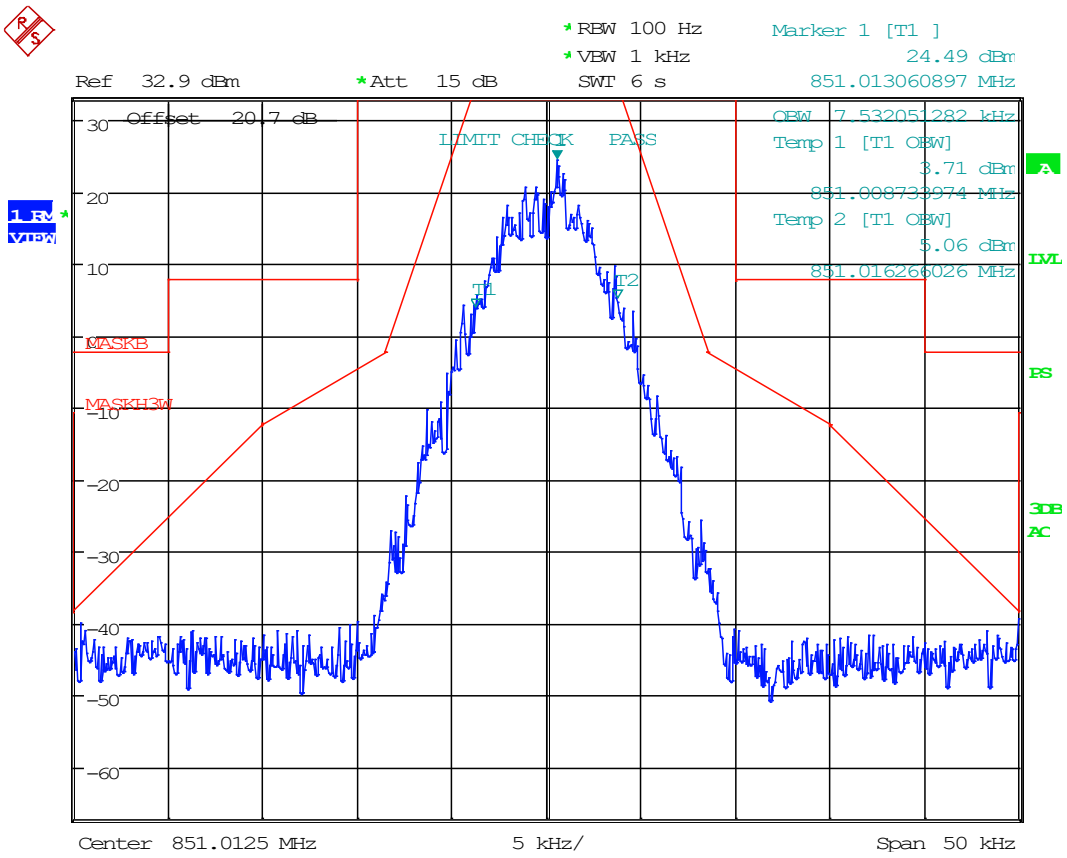
800 MHz Band, Downlink, 12.5k FM, At AGC +3 dB



Date: 26.DEC.2019 12:27:29

EMISSION MASK & IVO

800 MHz Band, Downlink, C4FM, At AGC



Date: 17.DEC.2019 12:49:30

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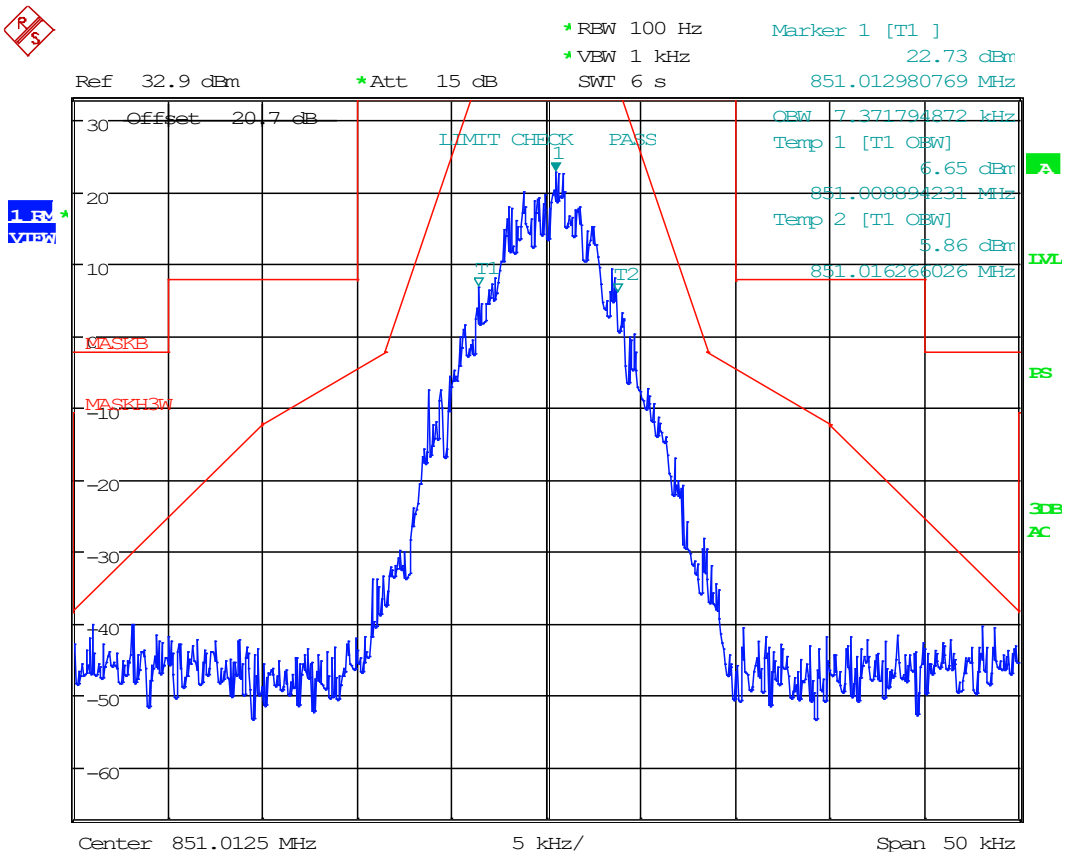
EMISSION MASK & IVO

800 MHz Band, Downlink, C4FM, At AGC +3 dB



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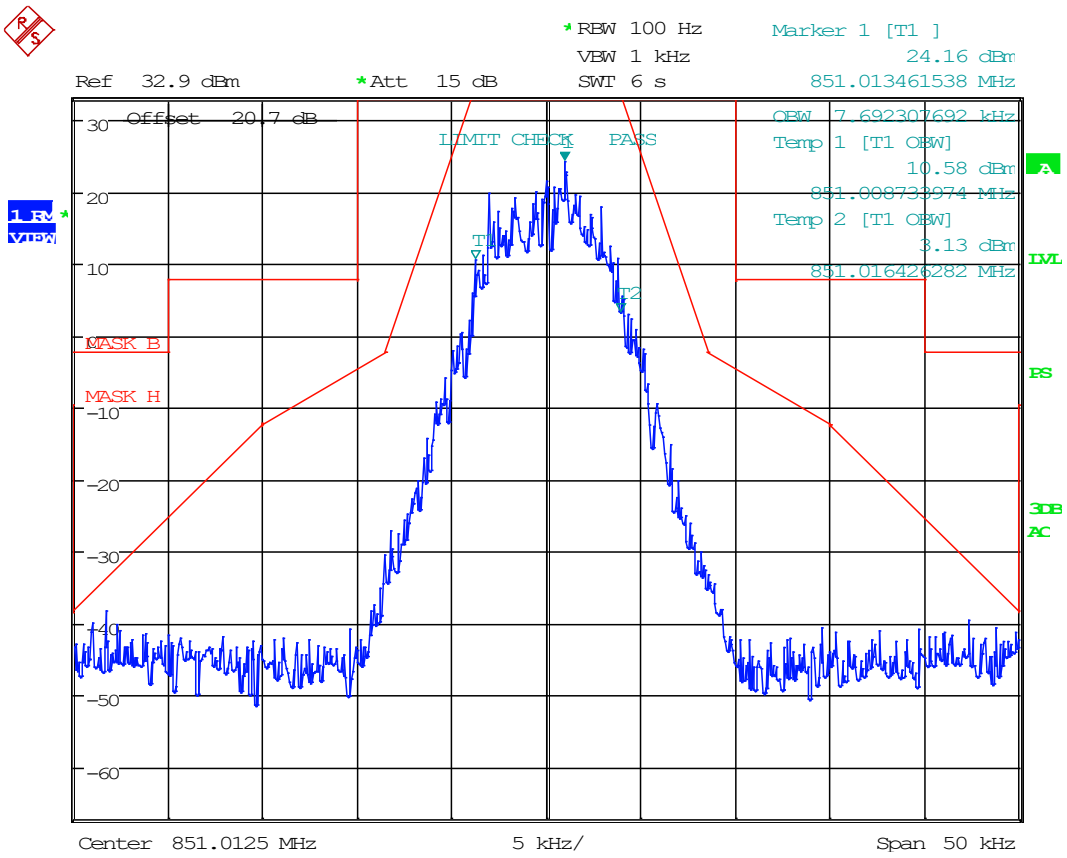
EMISSION MASK & IVO

800 MHz Band, Downlink, H-CPM, AT AGC



Date: 26.DEC.2019 12:31:45

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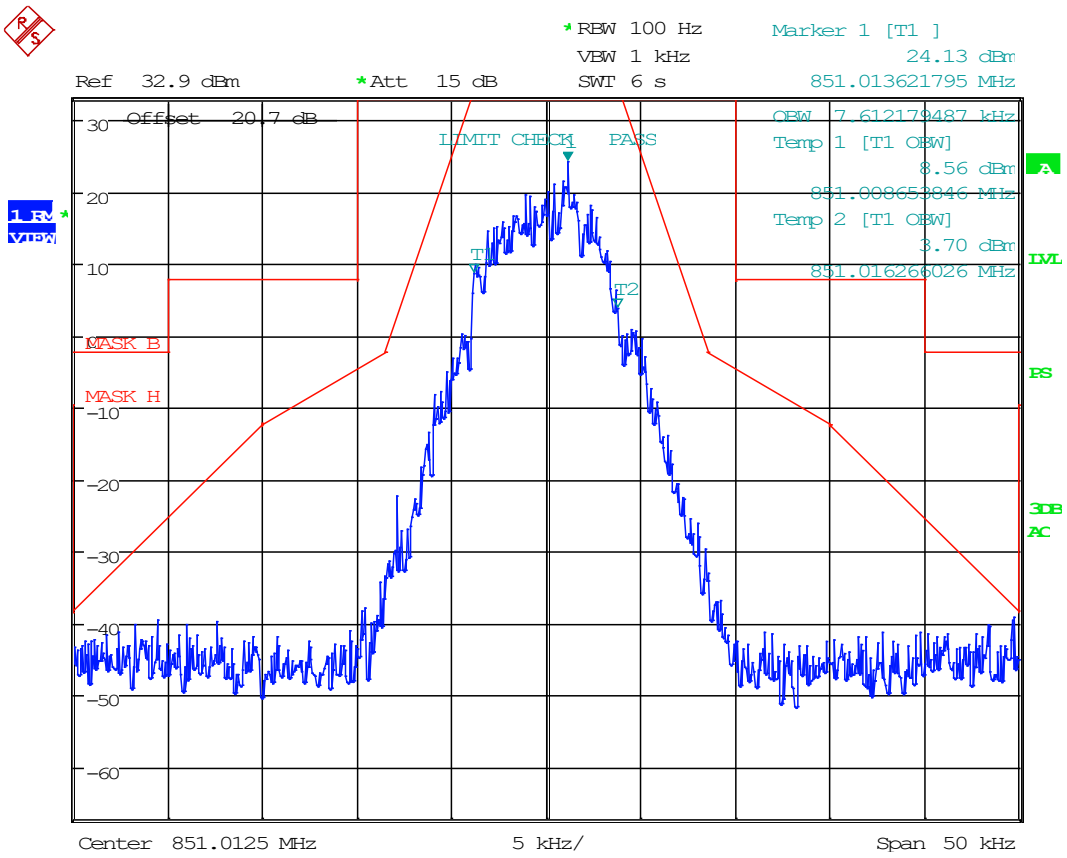
EMISSION MASK & IVO

800 MHz Band, Downlink, H-CPM, AT AGC +3 DB



Date: 26.DEC.2019 12:30:51

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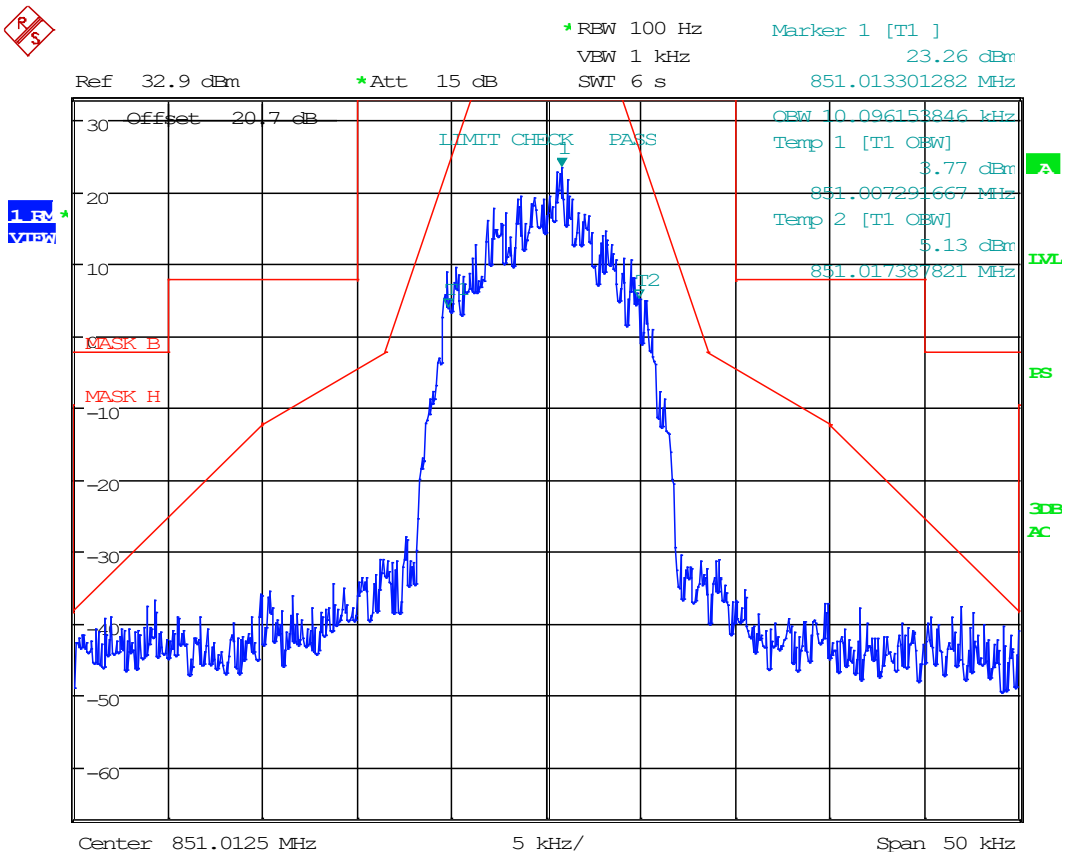
EMISSION MASK & IVO

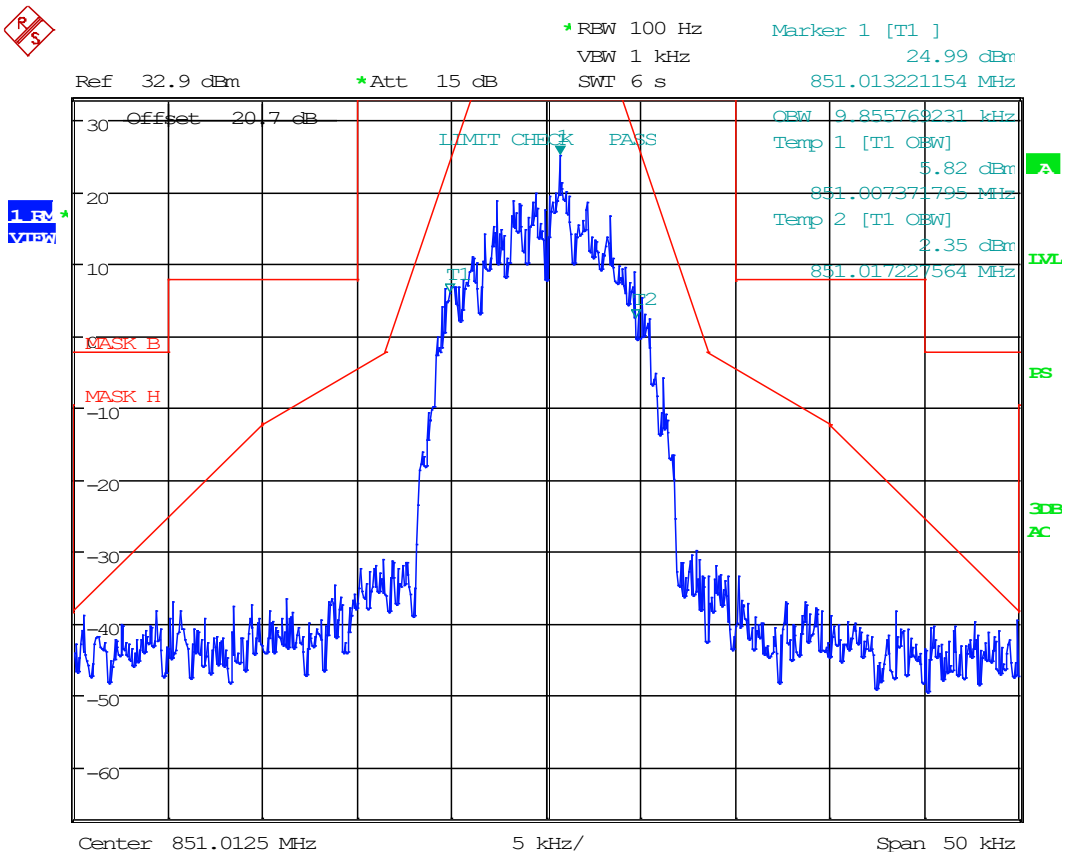
800 MHz Band, Downlink, H-DQPSK, AT AGC



Date: 26.DEC.2019 12:29:11

EMISSION MASK & IVO

800 MHz Band, Downlink, H-DQPSK, AT AGC +3 DB



Date: 26.DEC.2019 12:30:02

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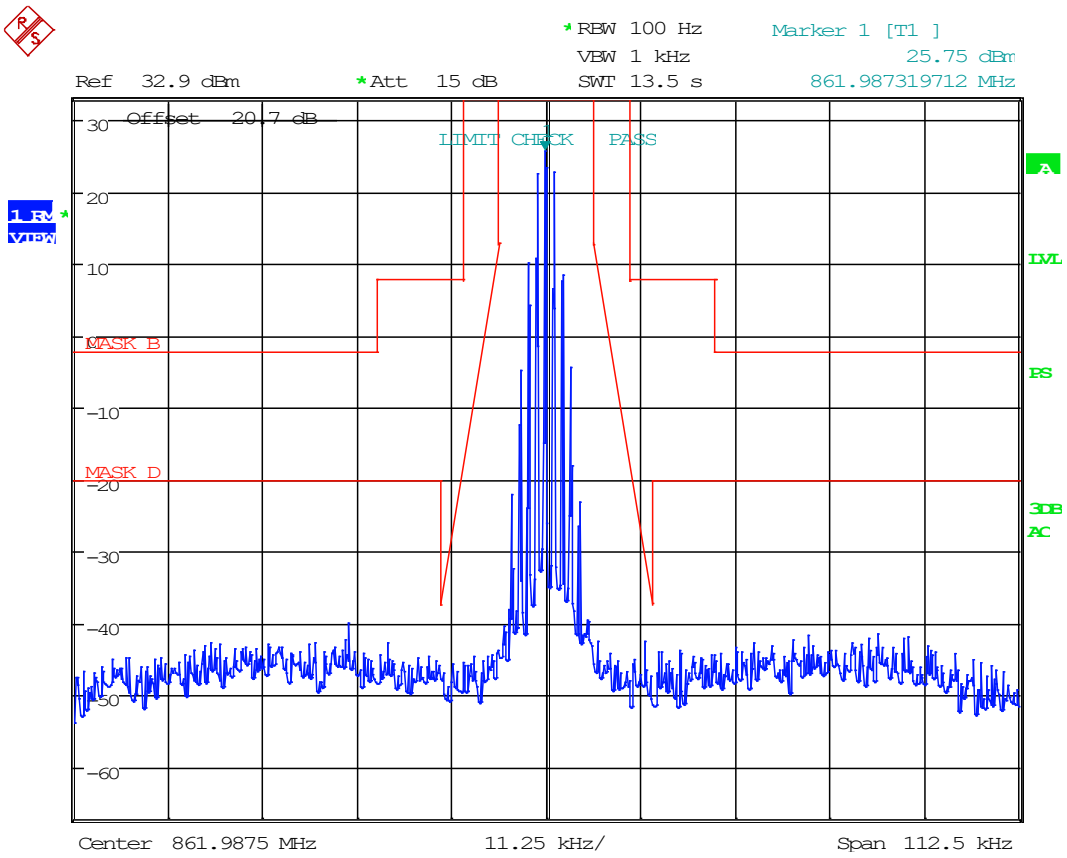
EMISSION MASK & IVO

800 MHz Band, Downlink, 6.25k FM, At AGC



Date: 26.DEC.2019 14:09:35

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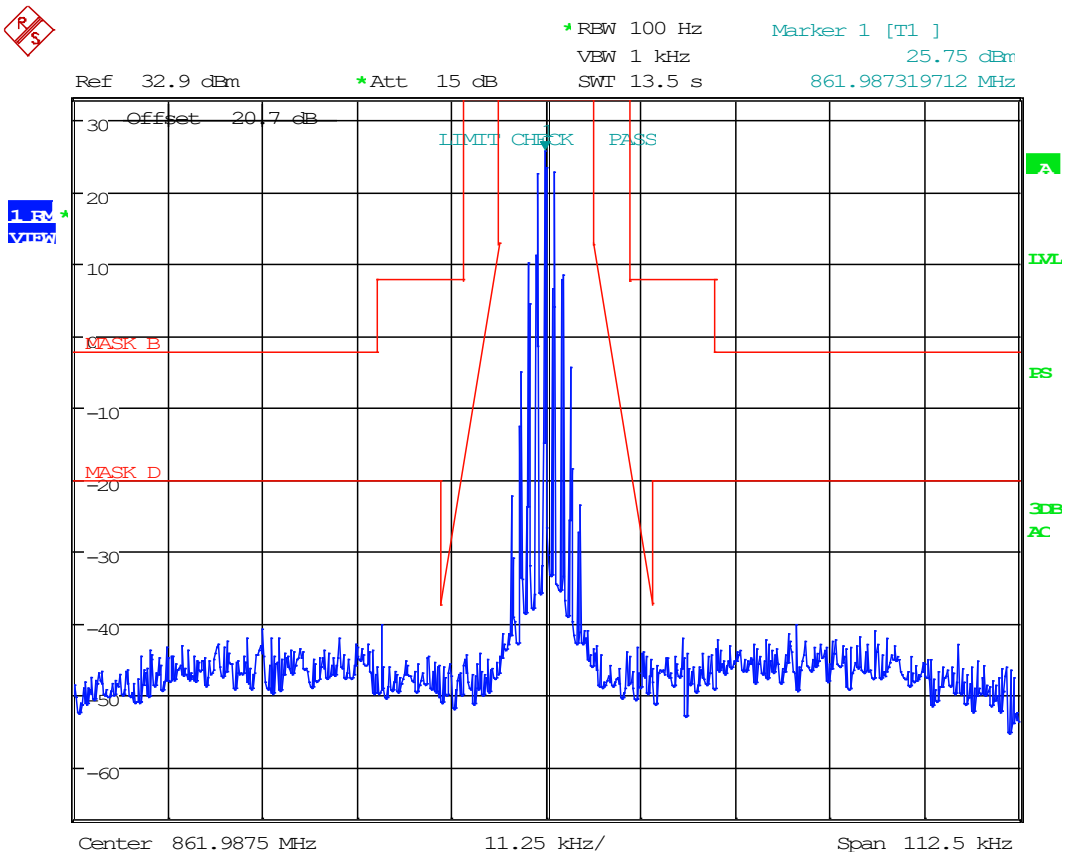
EMISSION MASK & IVO

800 MHz Band, Downlink, 6.25k FM, At AGC +3 dB



Date: 26.DEC.2019 14:08:42

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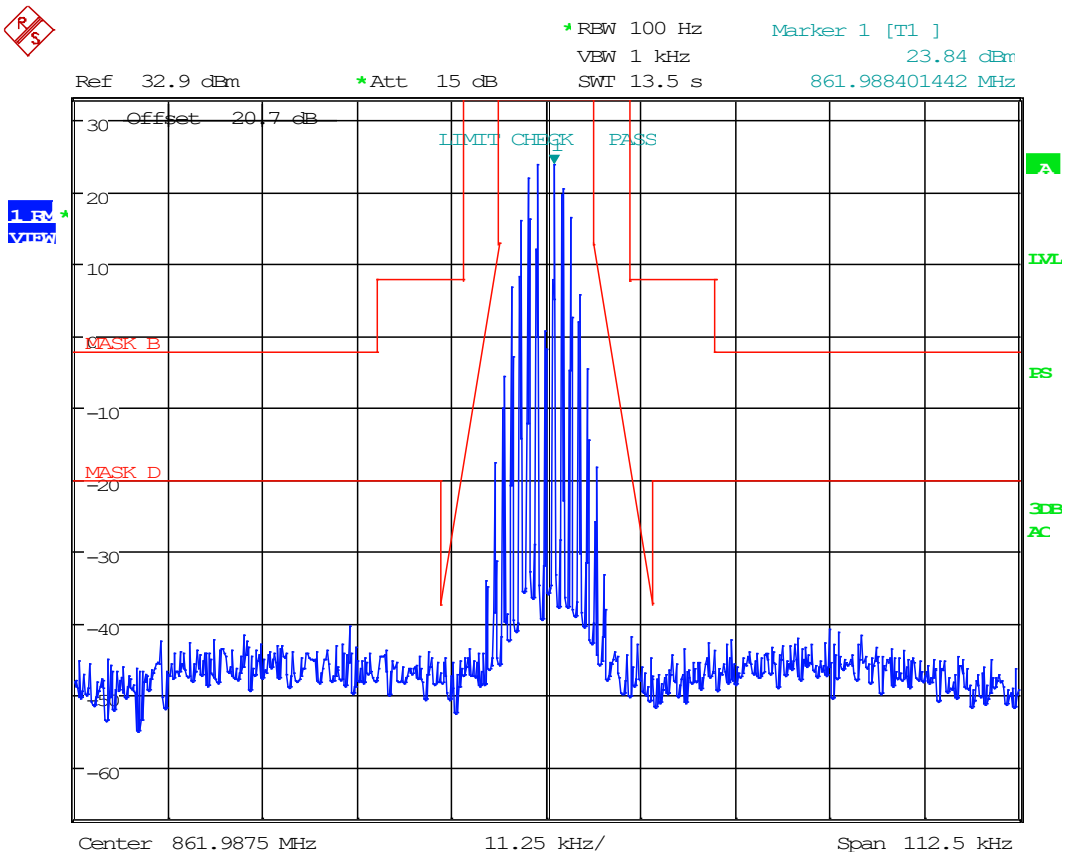
EMISSION MASK & IVO

800 MHz Band, Downlink, 12.5k FM, At AGC



Date: 26.DEC.2019 14:06:07

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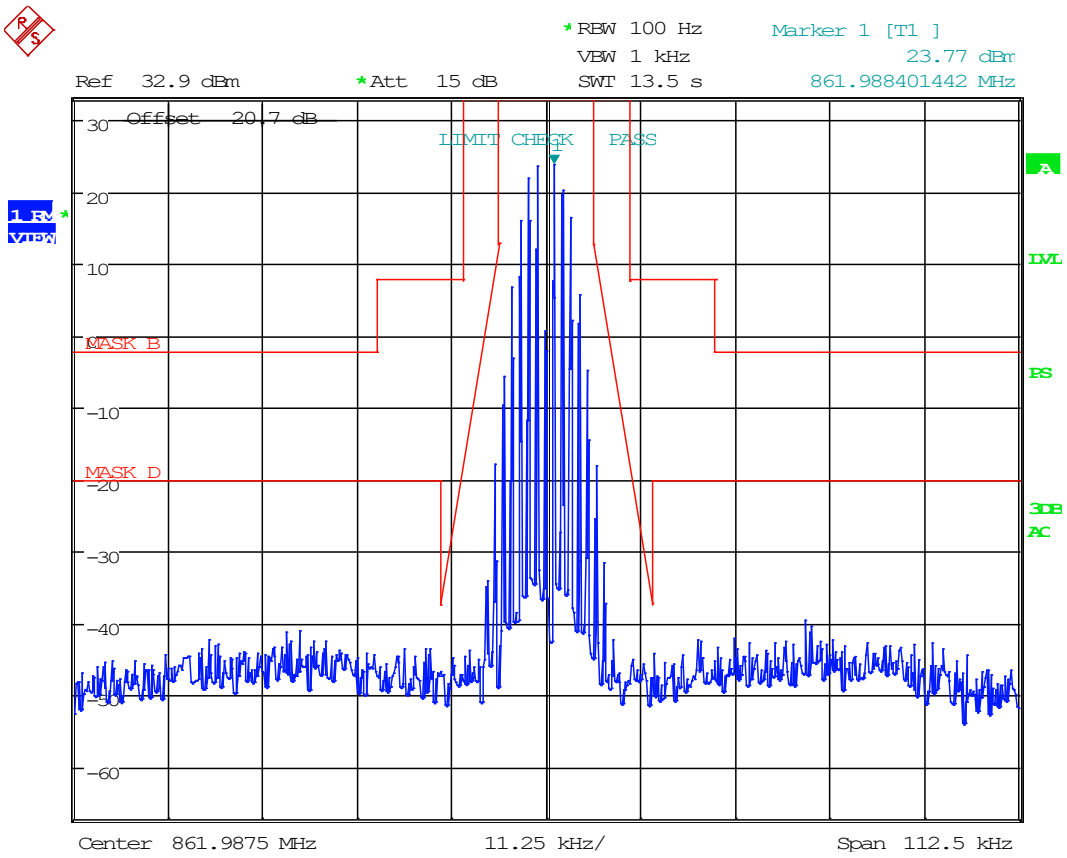
EMISSION MASK & IVO

800 MHz Band, Downlink, 12.5k FM, At AGC +3 dB

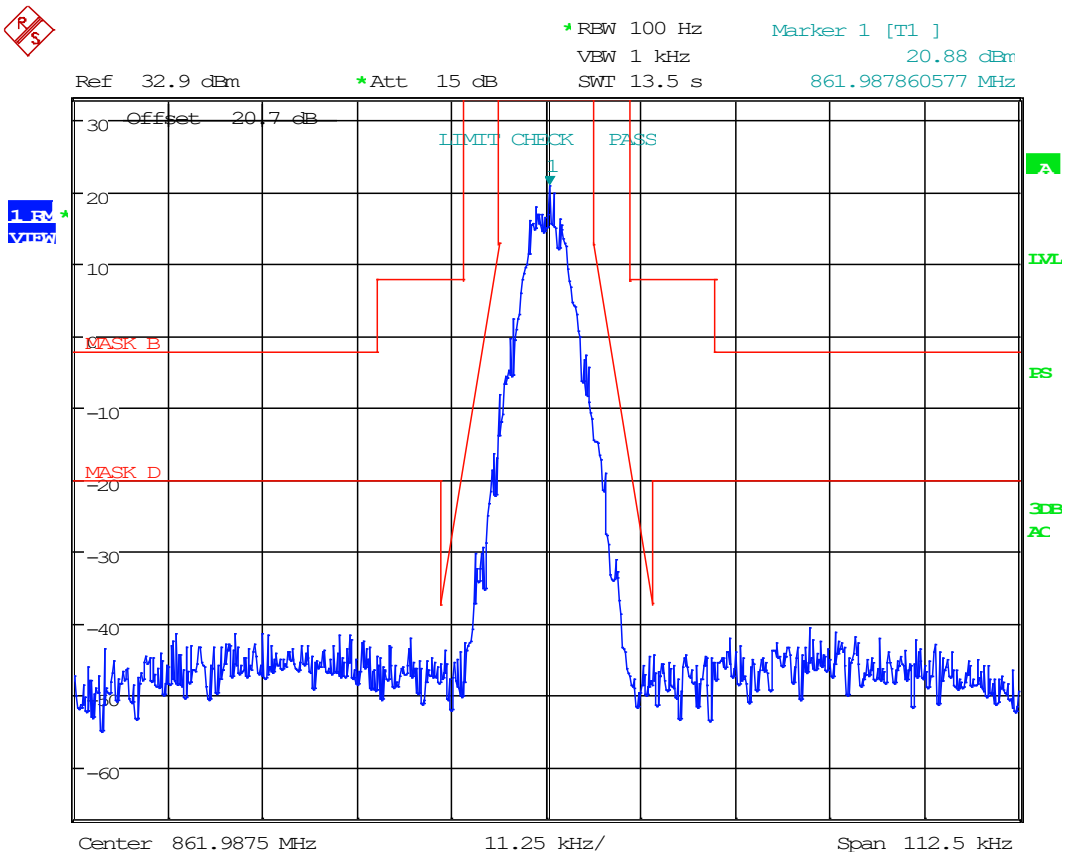


Date: 26.DEC.2019 14:07:51

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

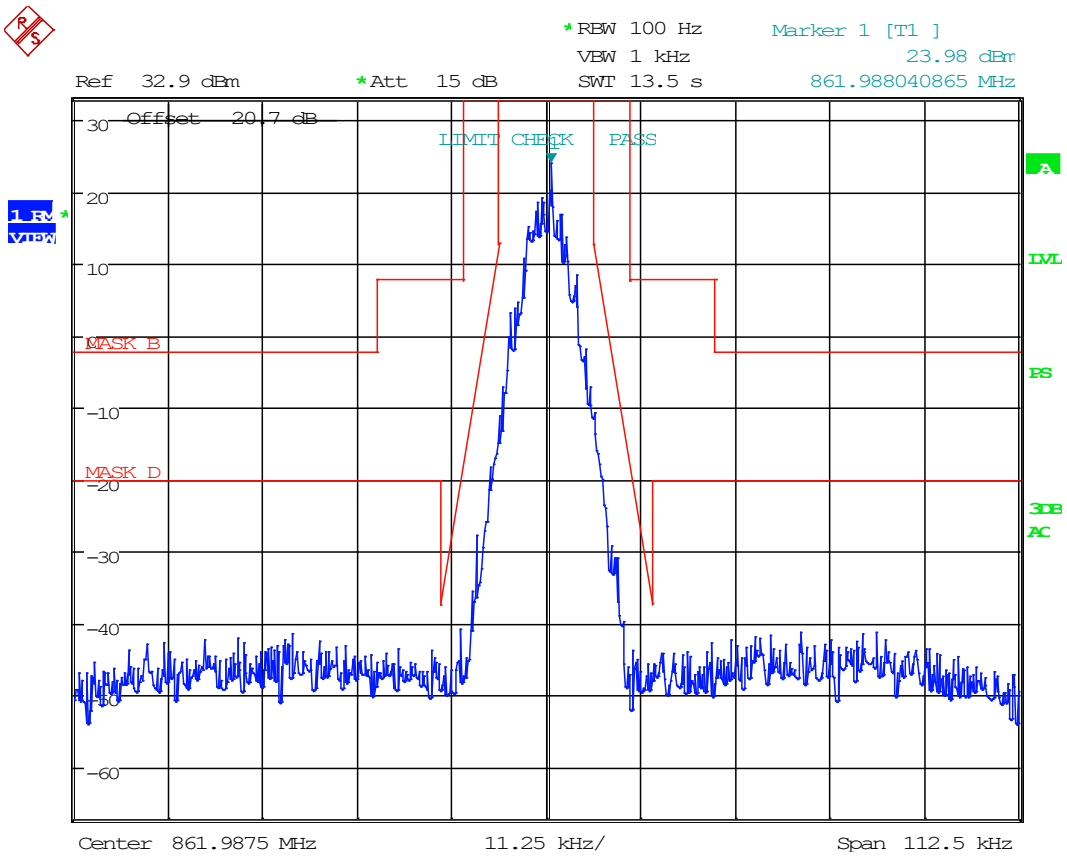
800 MHz Band, Downlink, C4FM, At AGC



Date: 26.DEC.2019 12:39:07

EMISSION MASK & IVO

800 MHz Band, Downlink, C4FM, At AGC +3 dB

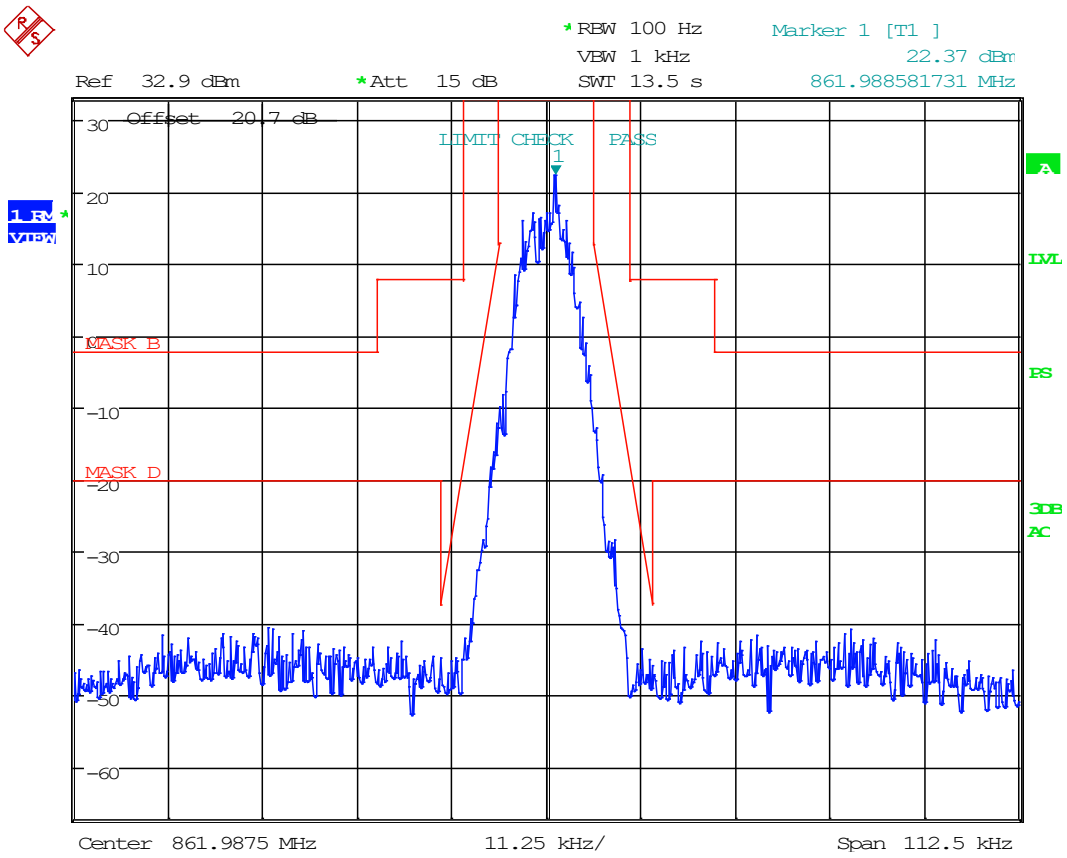


Date: 26.DEC.2019 12:40:16

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

800 MHz Band, Downlink, H-CPM, AT AGC

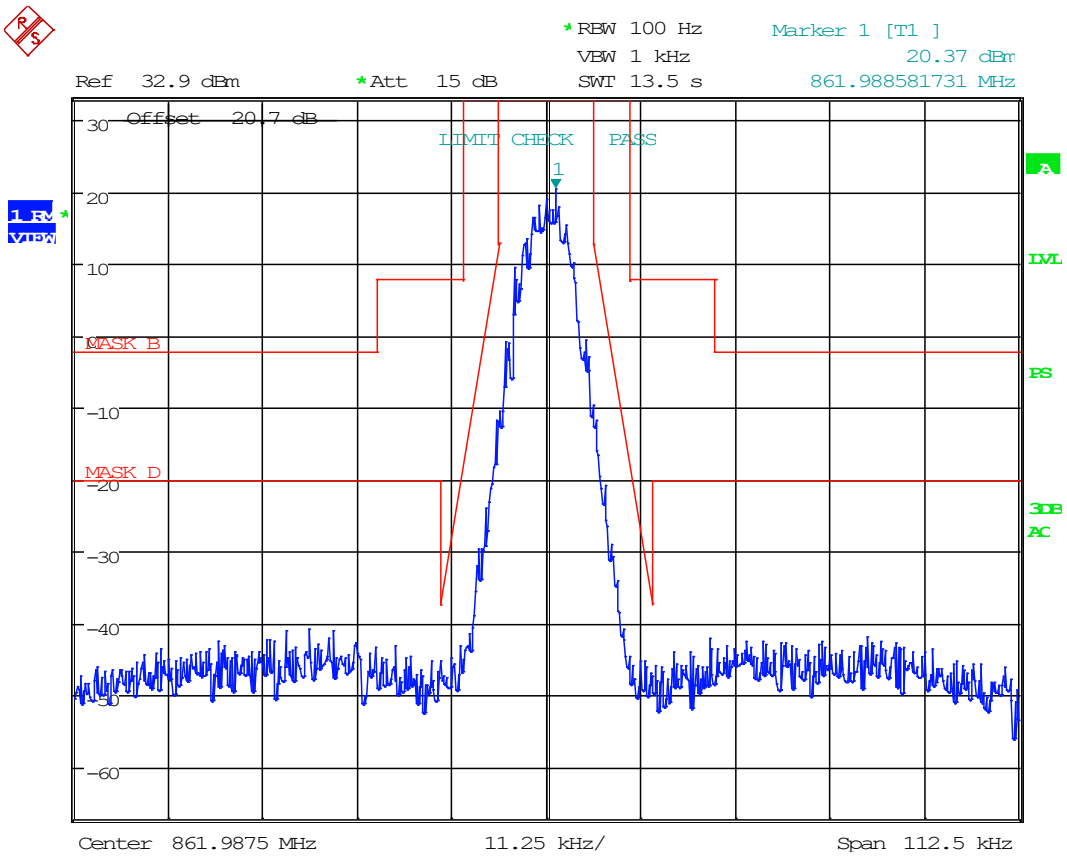


Date: 26.DEC.2019 12:42:33

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

800 MHz Band, Downlink, H-CPM, AT AGC +3 DB

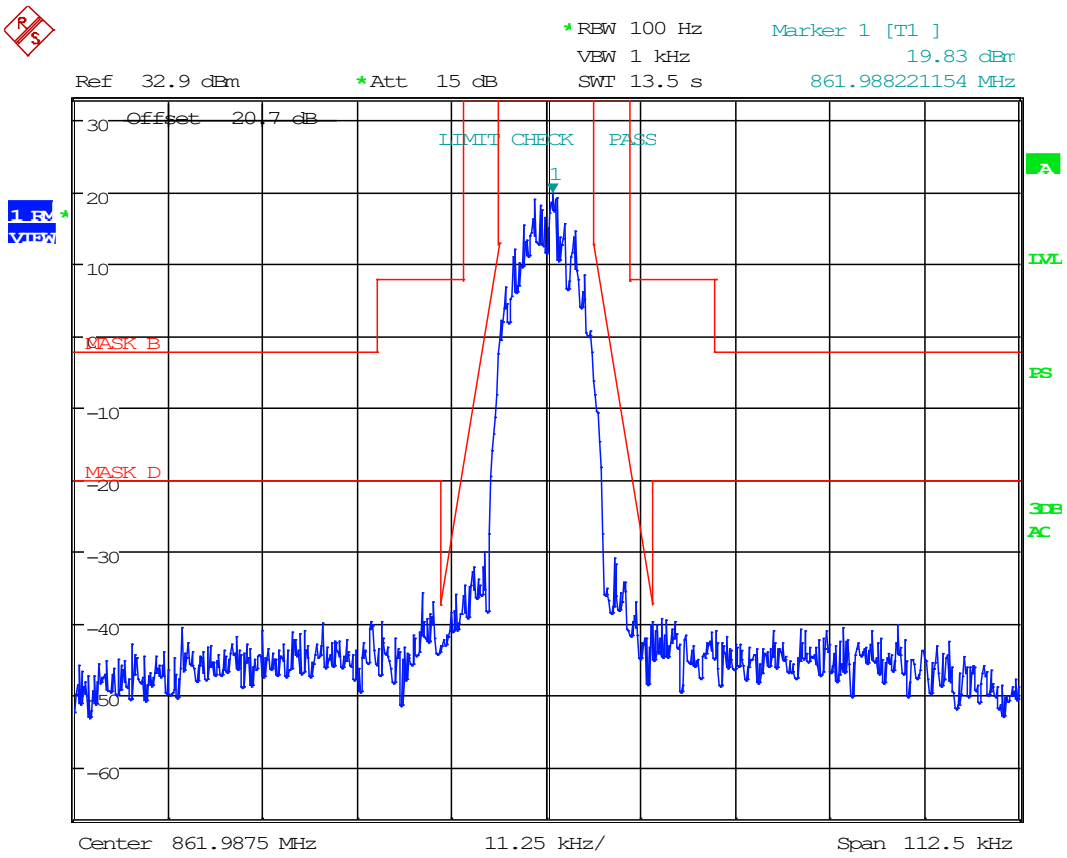


Date: 26.DEC.2019 12:41:35

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

800 MHz Band, Downlink, H-DQPSK, AT AGC



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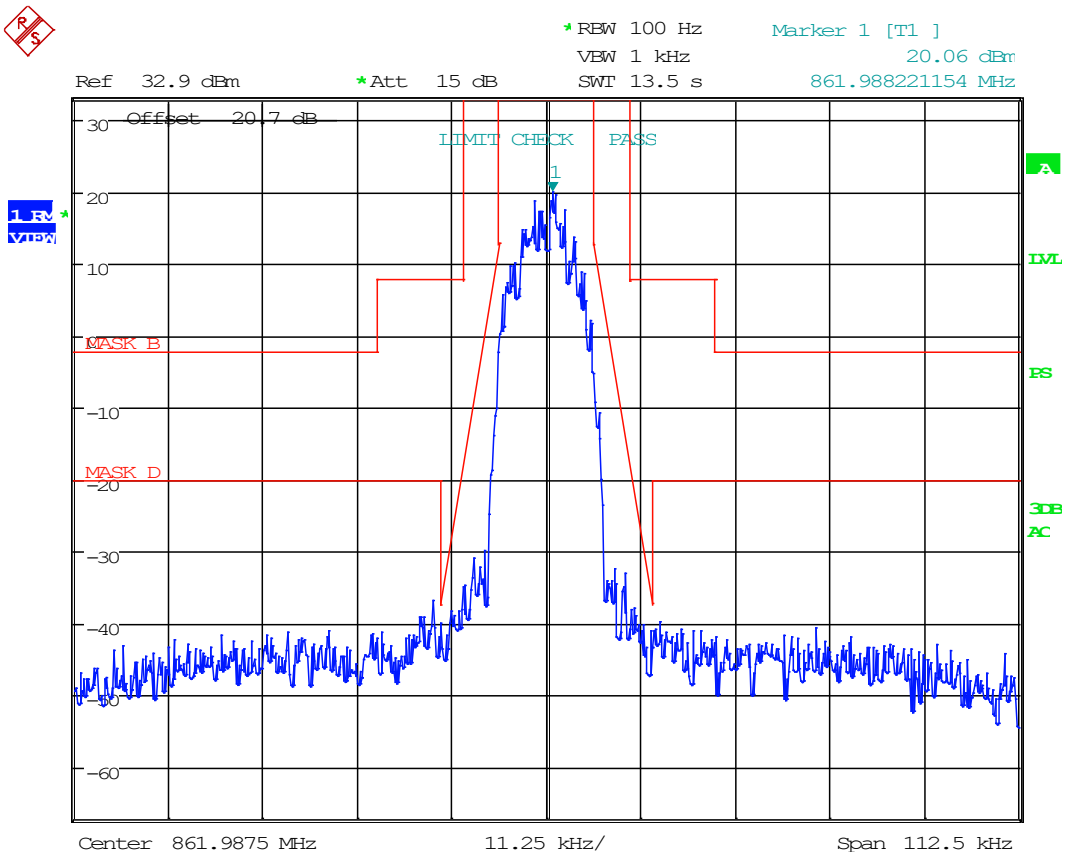
EMISSION MASK & IVO

800 MHz Band, Downlink, H-DQPSK, AT AGC +3 DB



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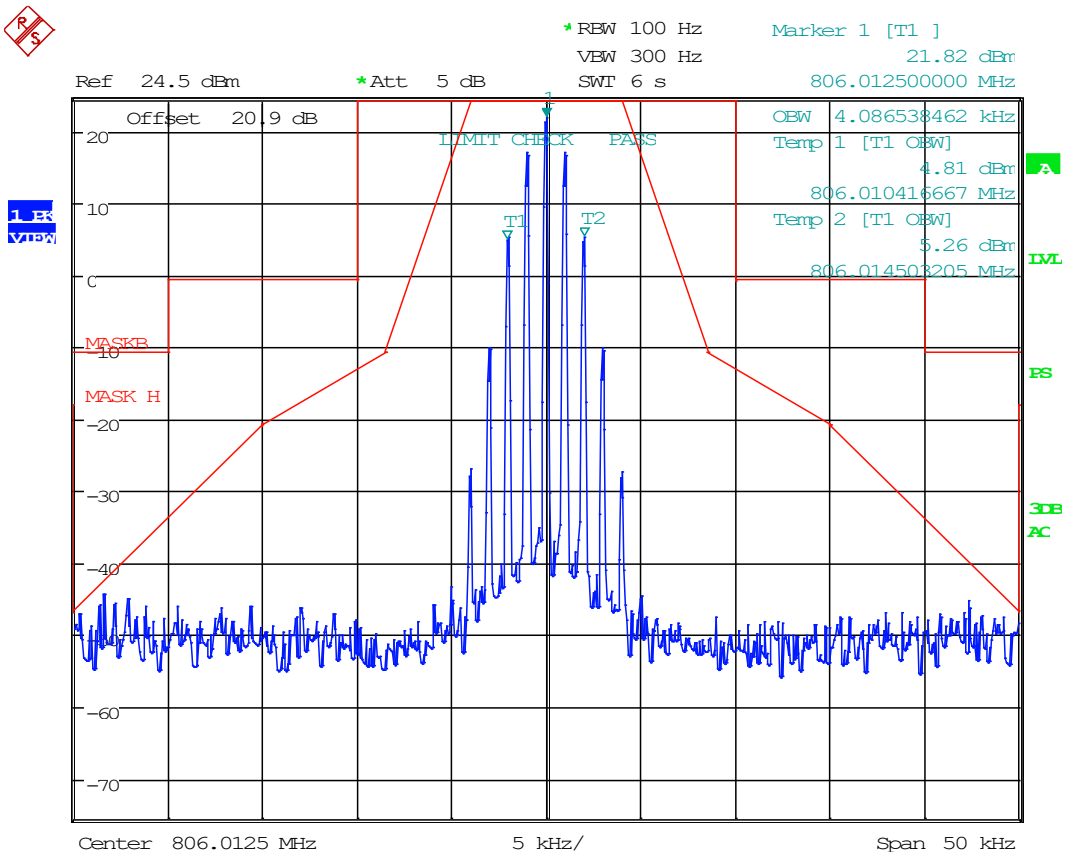
EMISSION MASK & IVO

800 MHz Band, Uplink, 6.25k FM, At AGC

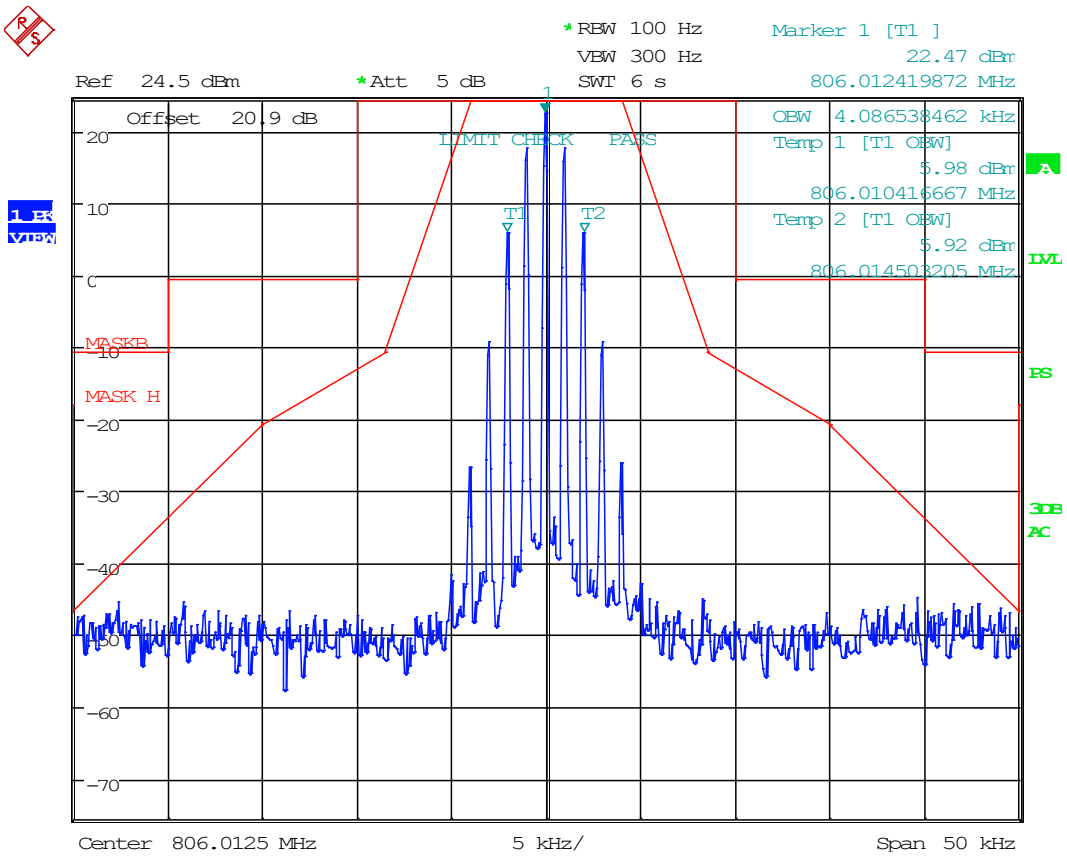


Date: 14.JAN.2020 10:57:55

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

800 MHz Band, Uplink, 6.25k FM, At AGC +3 dB

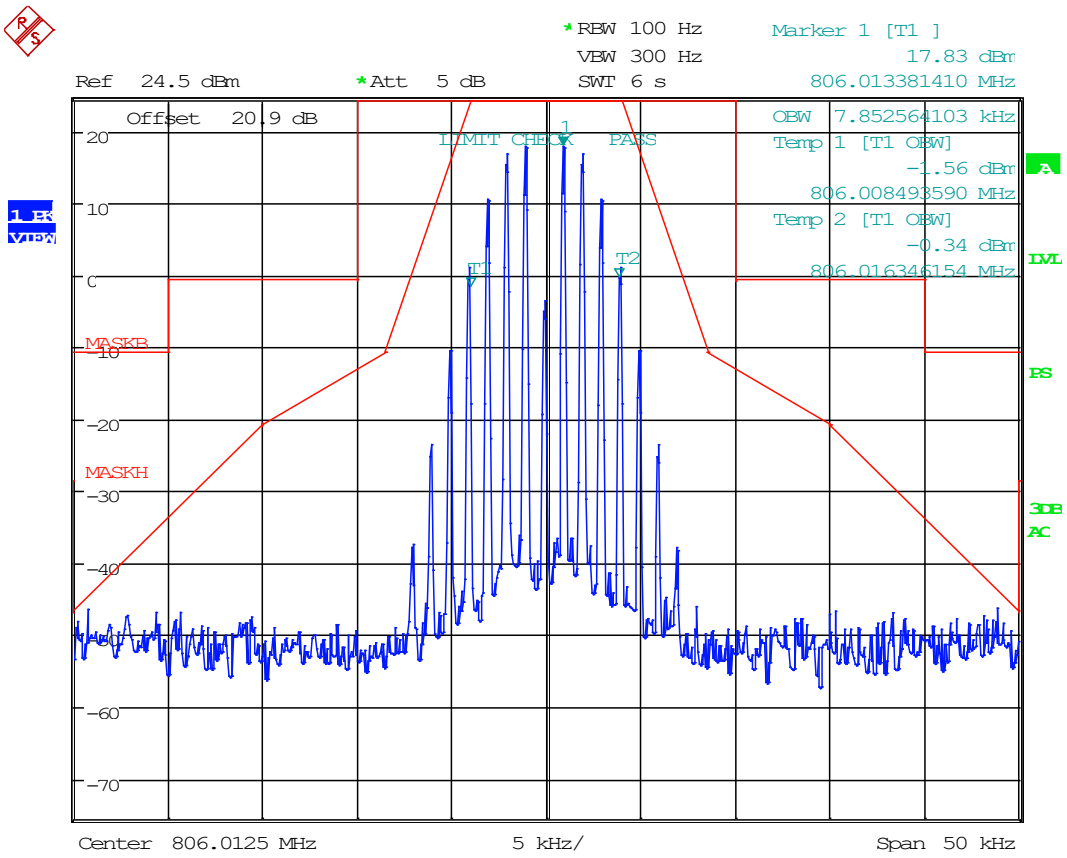


Date: 14.JAN.2020 11:00:05

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

EMISSION MASK & IVO

800 MHz Band, Uplink, 12.5k FM, At AGC



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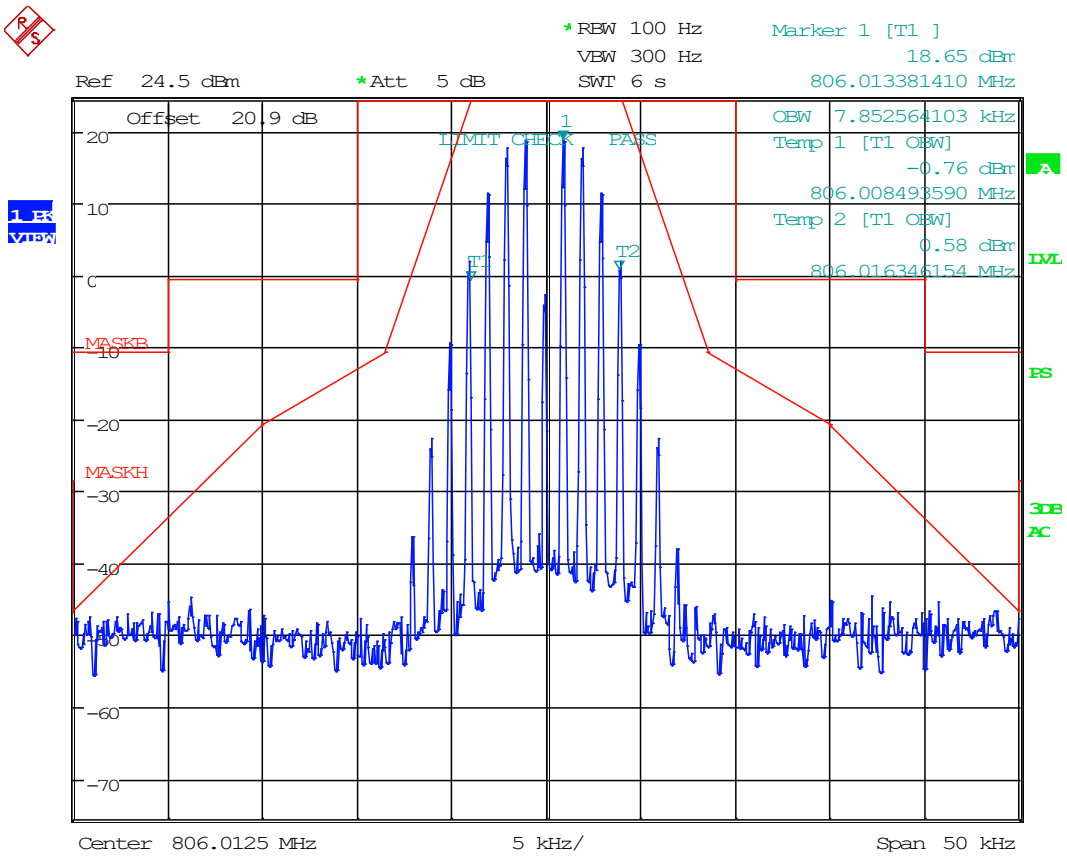
EMISSION MASK & IVO

800 MHz Band, Uplink, 12.5k FM, At AGC +3 dB



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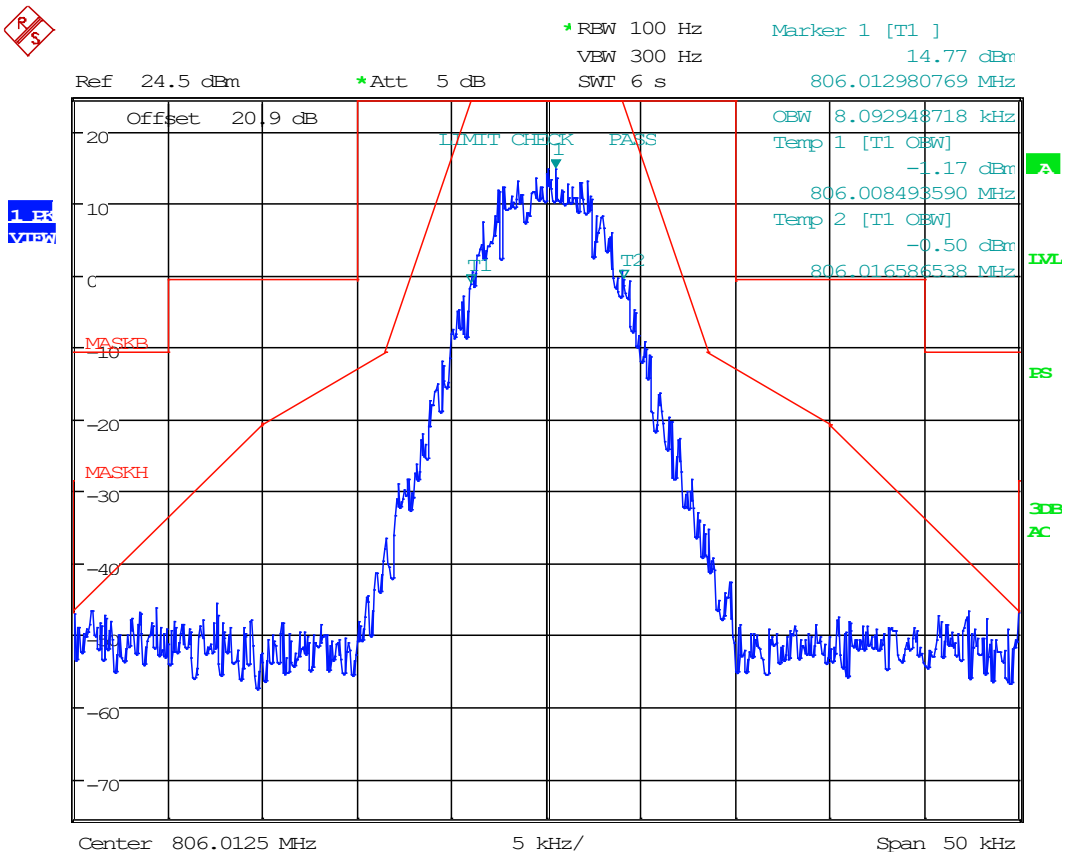
EMISSION MASK & IVO

800 MHz Band, Uplink, C4FM, At AGC



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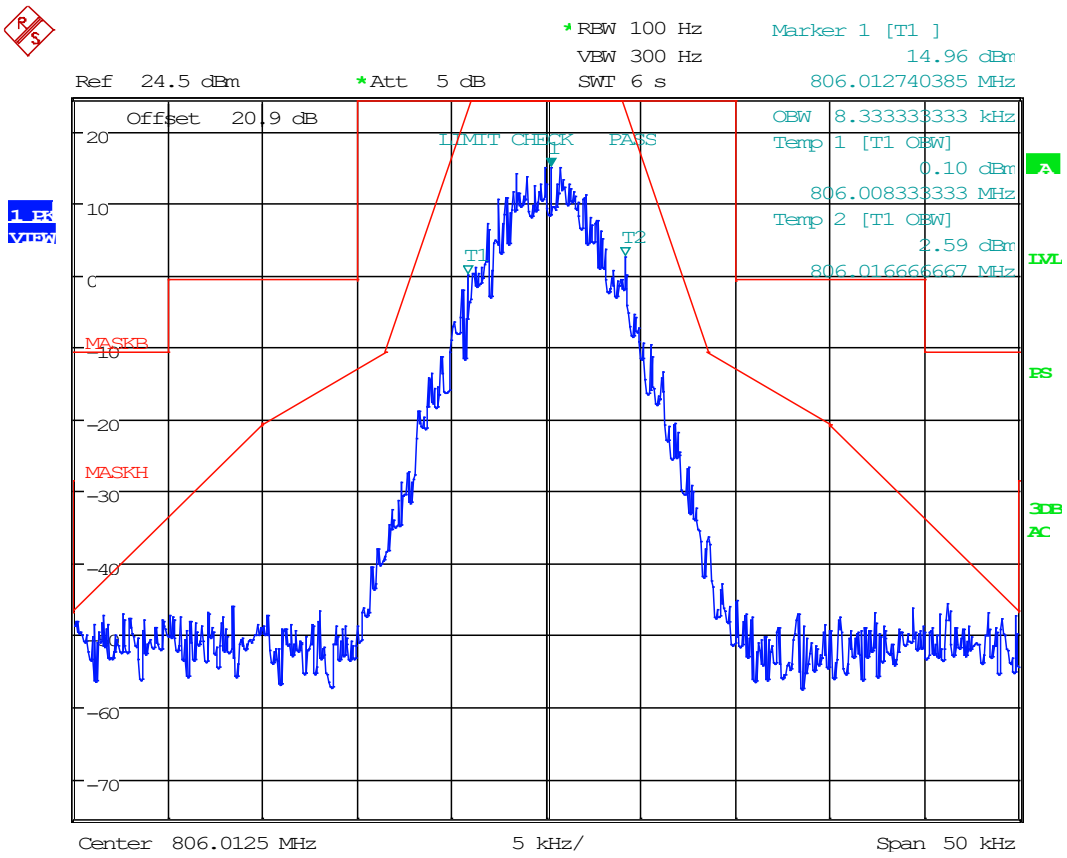
EMISSION MASK & IVO

800 MHz Band, Uplink, C4FM, At AGC +3 dB



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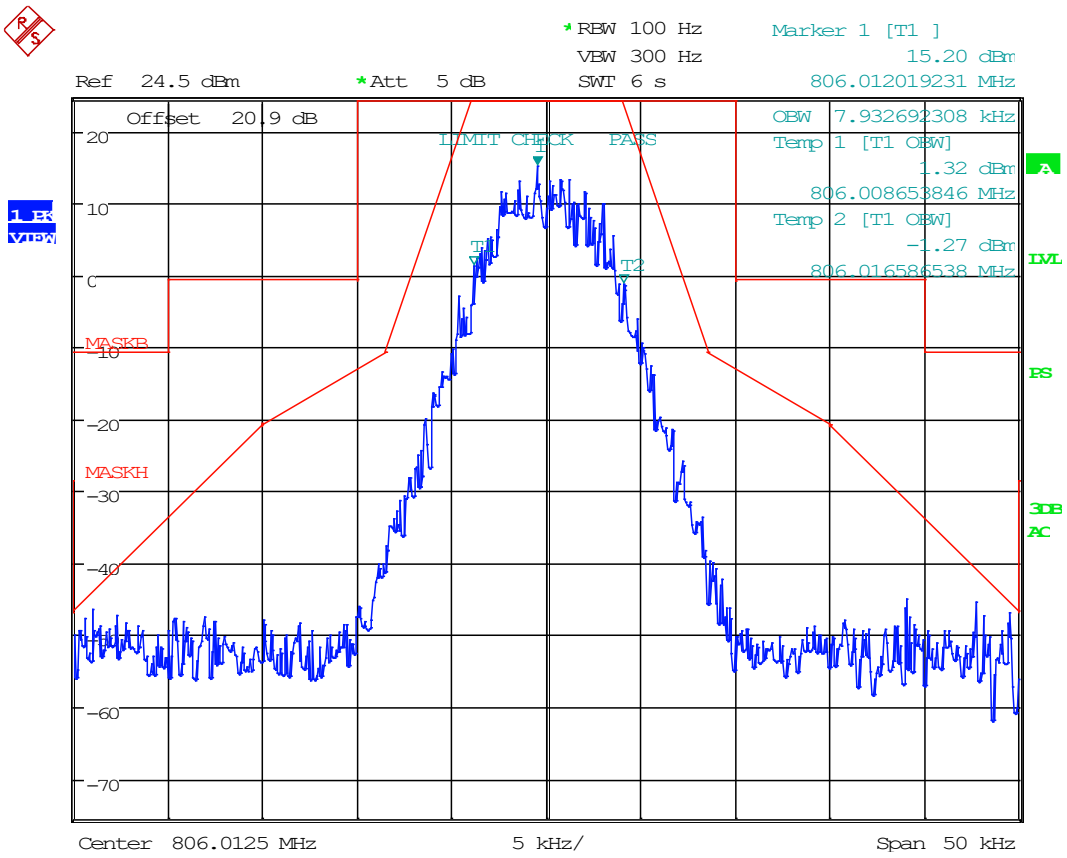
EMISSION MASK & IVO

800 MHz Band, Uplink, H-CPM, AT AGC



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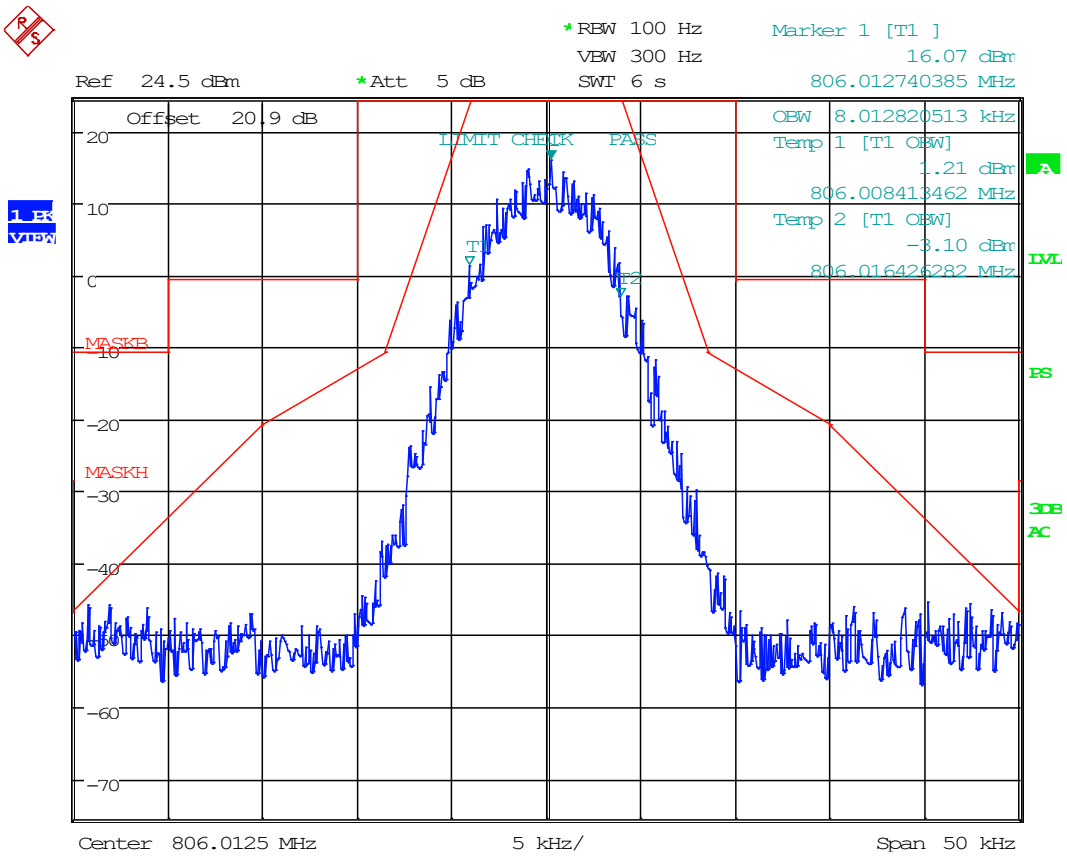
EMISSION MASK & IVO

800 MHz Band, Uplink, H-CPM, AT AGC +3 DB



Date: 14.JAN.2020 11:50:49

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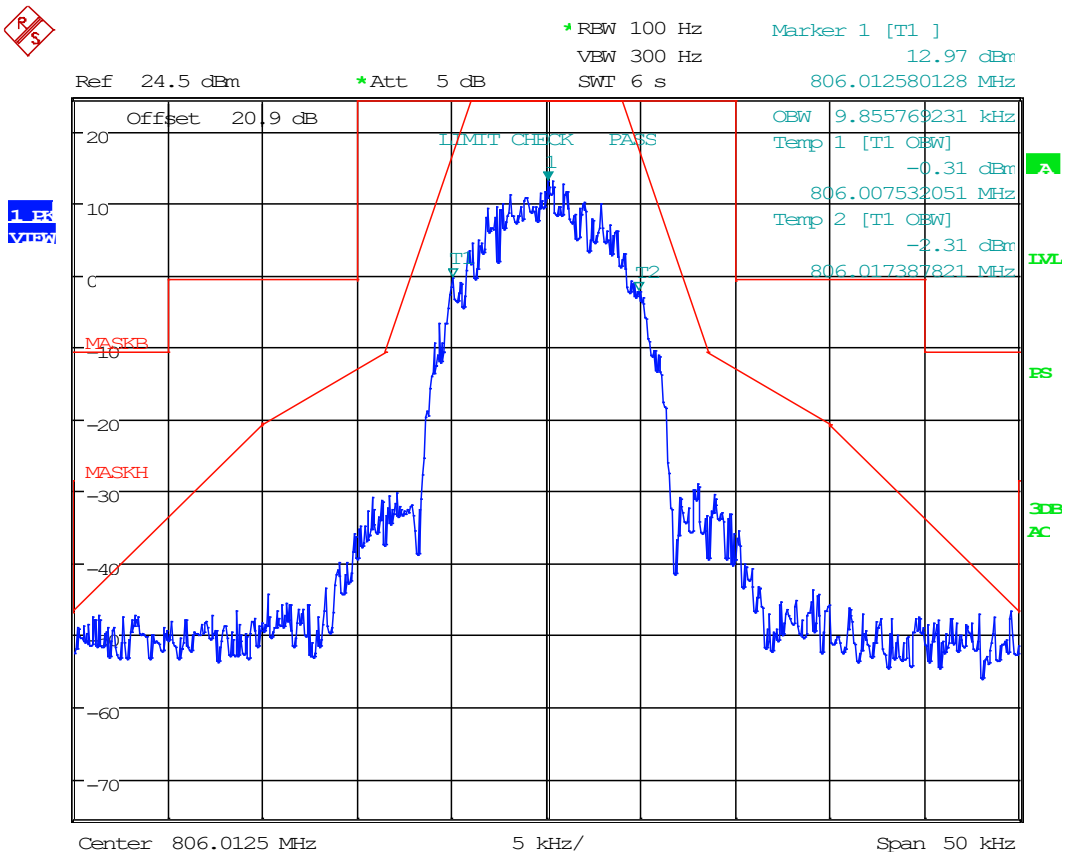
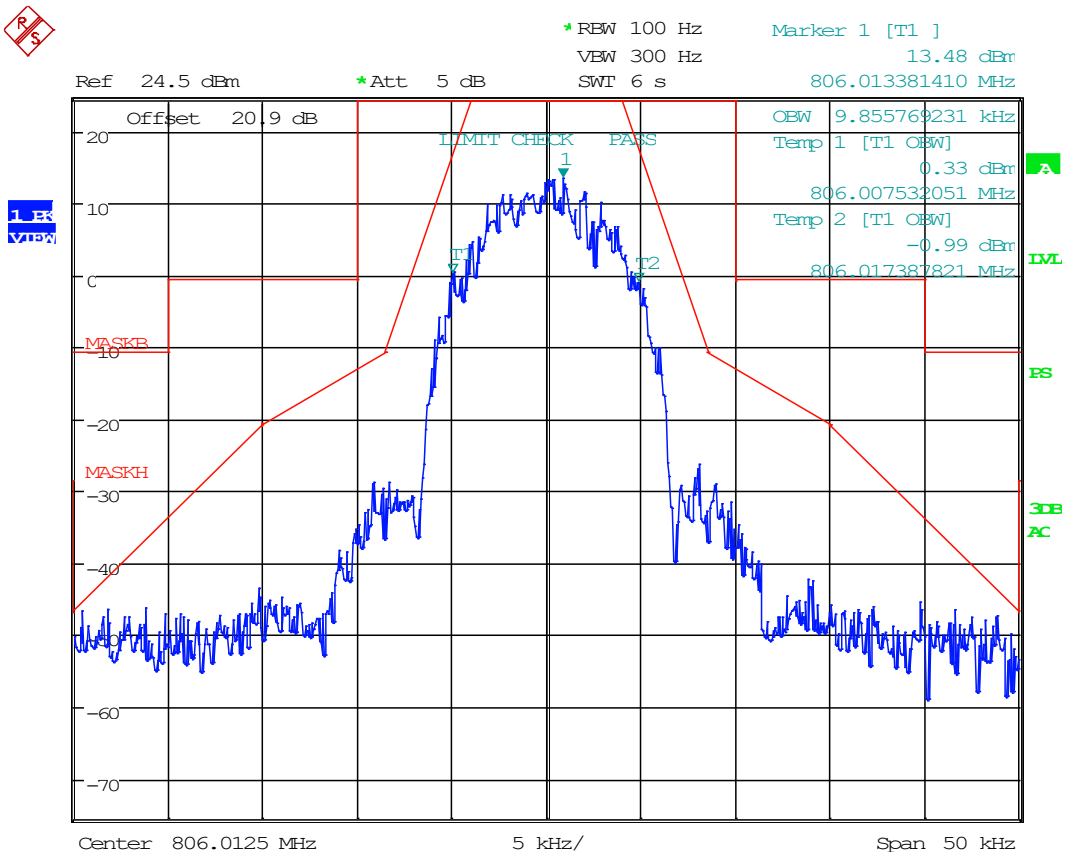
EMISSION MASK & IVO

800 MHz Band, Uplink, H-DQPSK, AT AGC



EMISSION MASK & IVO

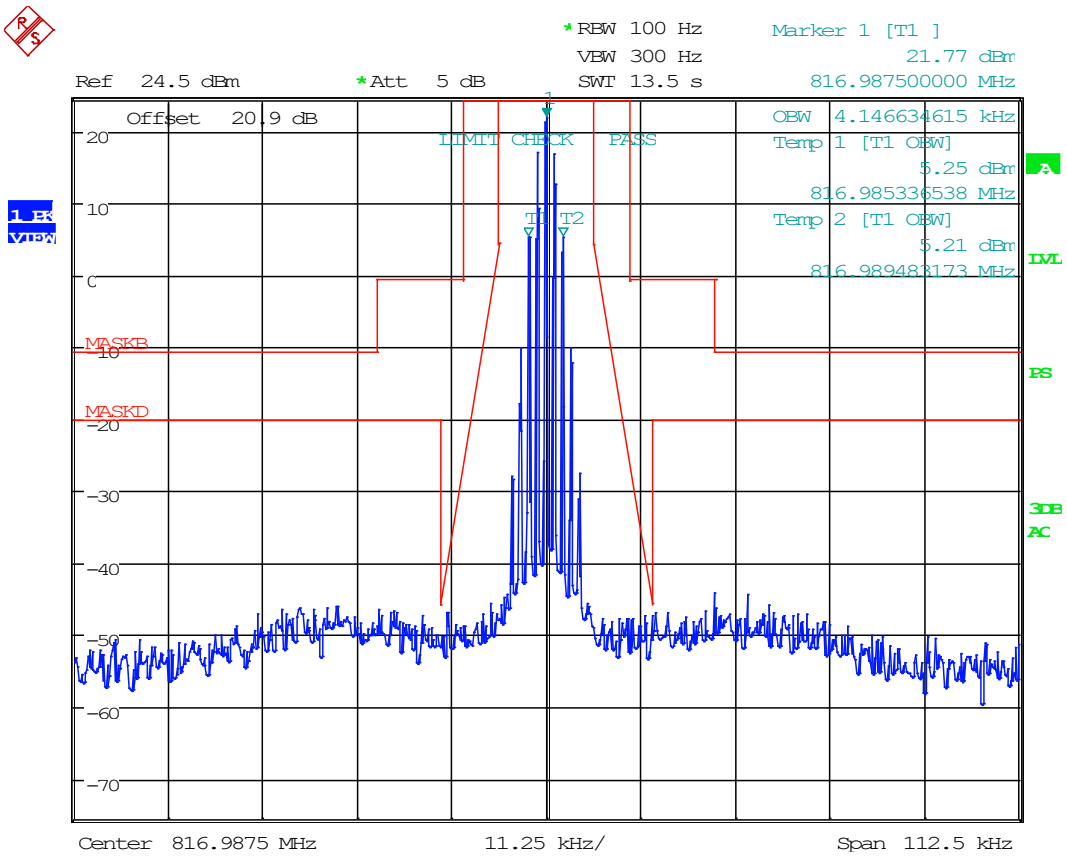
800 MHz Band, Uplink, H-DQPSK, AT AGC +3 DB



Date: 14.JAN.2020 11:53:52

EMISSION MASK & IVO

800 MHz Band, Uplink, 6.25k FM, At AGC



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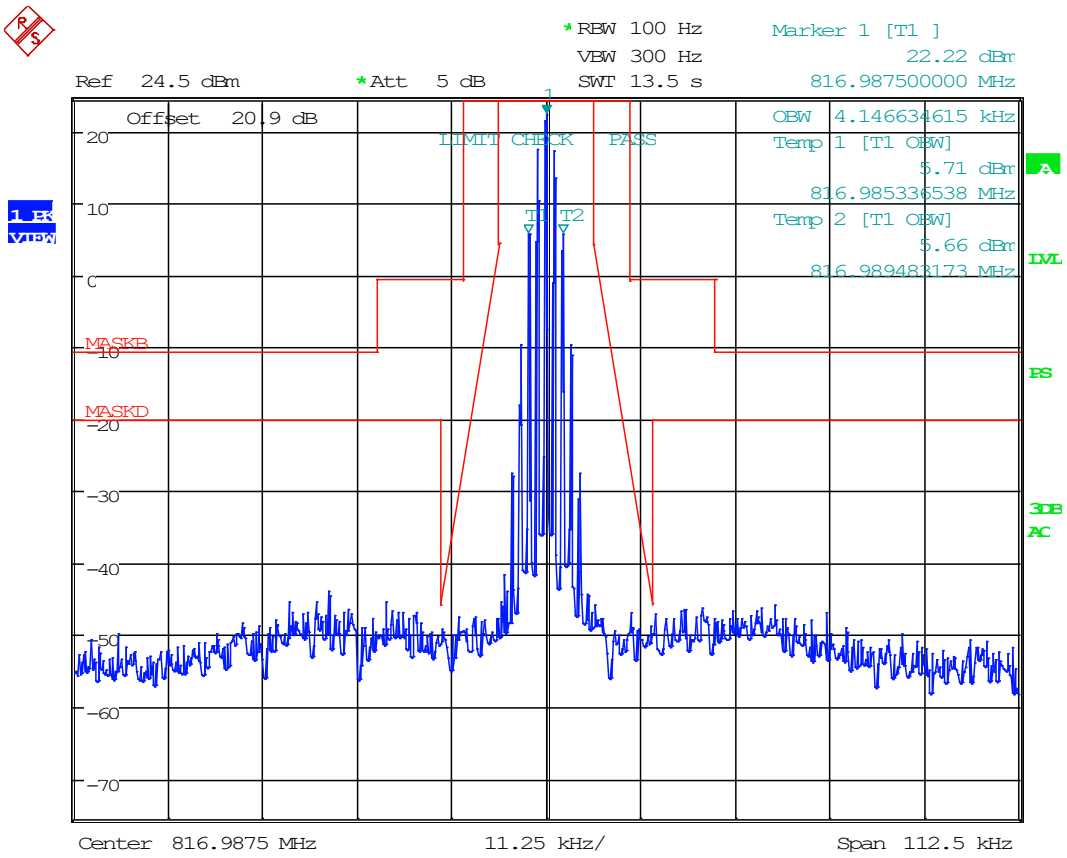
EMISSION MASK & IVO

800 MHz Band, Uplink, 6.25k FM, At AGC +3 dB



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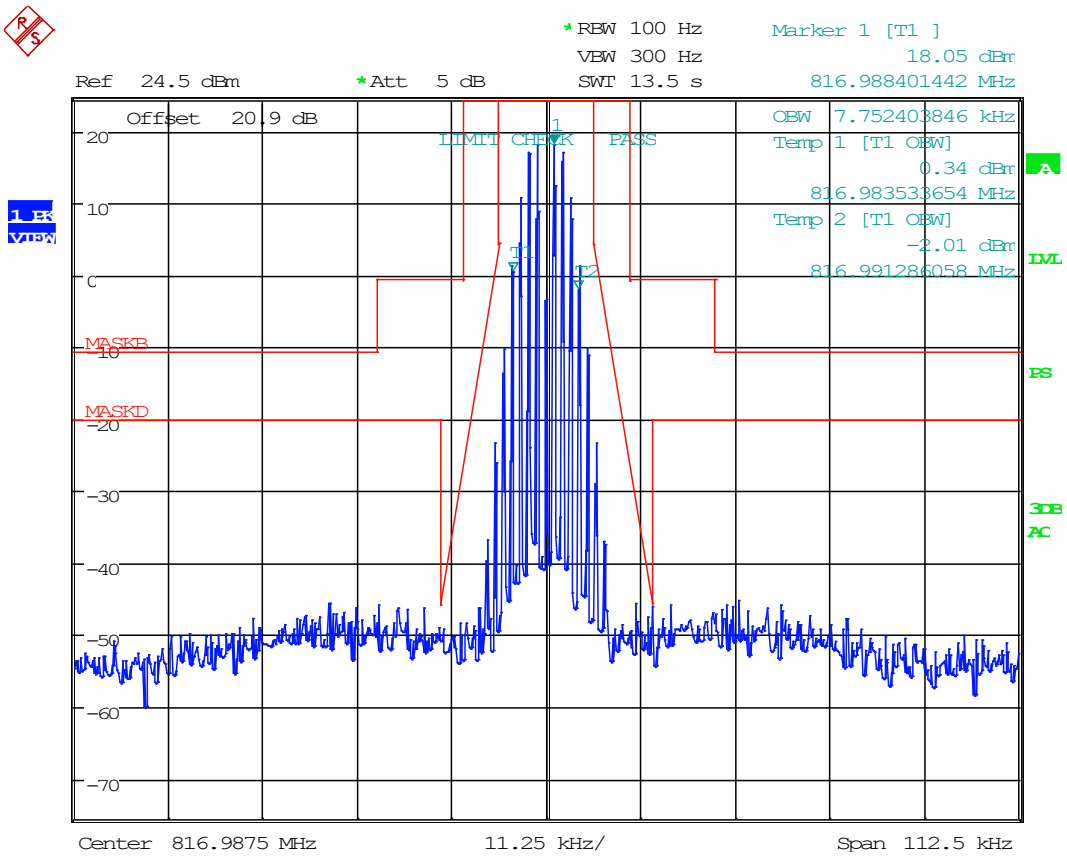
EMISSION MASK & IVO

800 MHz Band, Uplink, 12.5k FM, At AGC



Date: 14.JAN.2020 11:17:15

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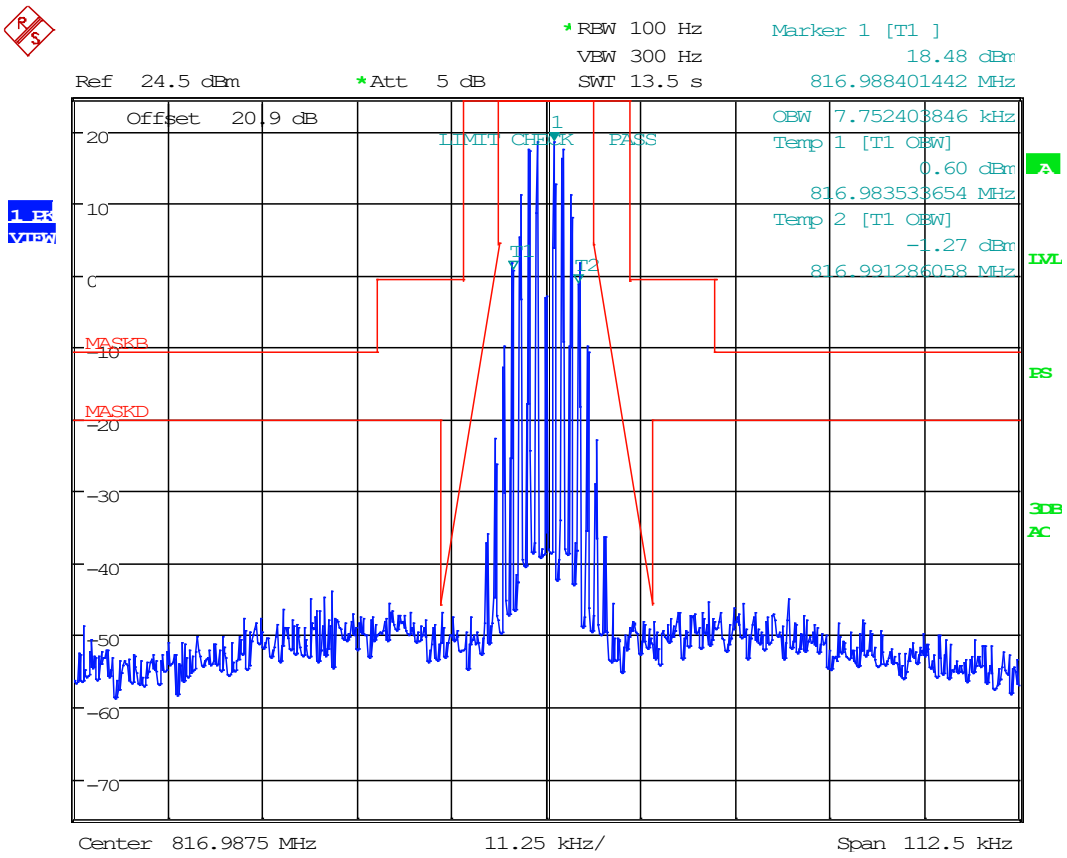
EMISSION MASK & IVO

800 MHz Band, Uplink, 12.5k FM, At AGC +3 dB



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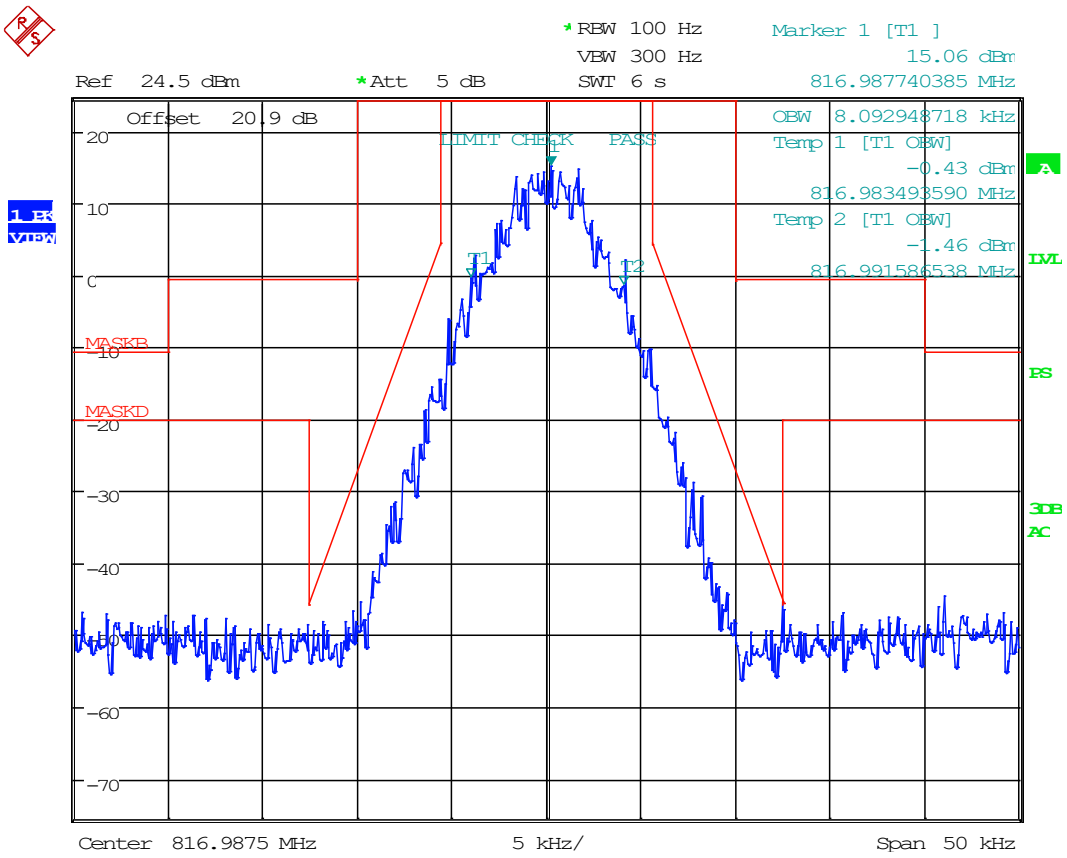
EMISSION MASK & IVO

800 MHz Band, Uplink, C4FM, At AGC



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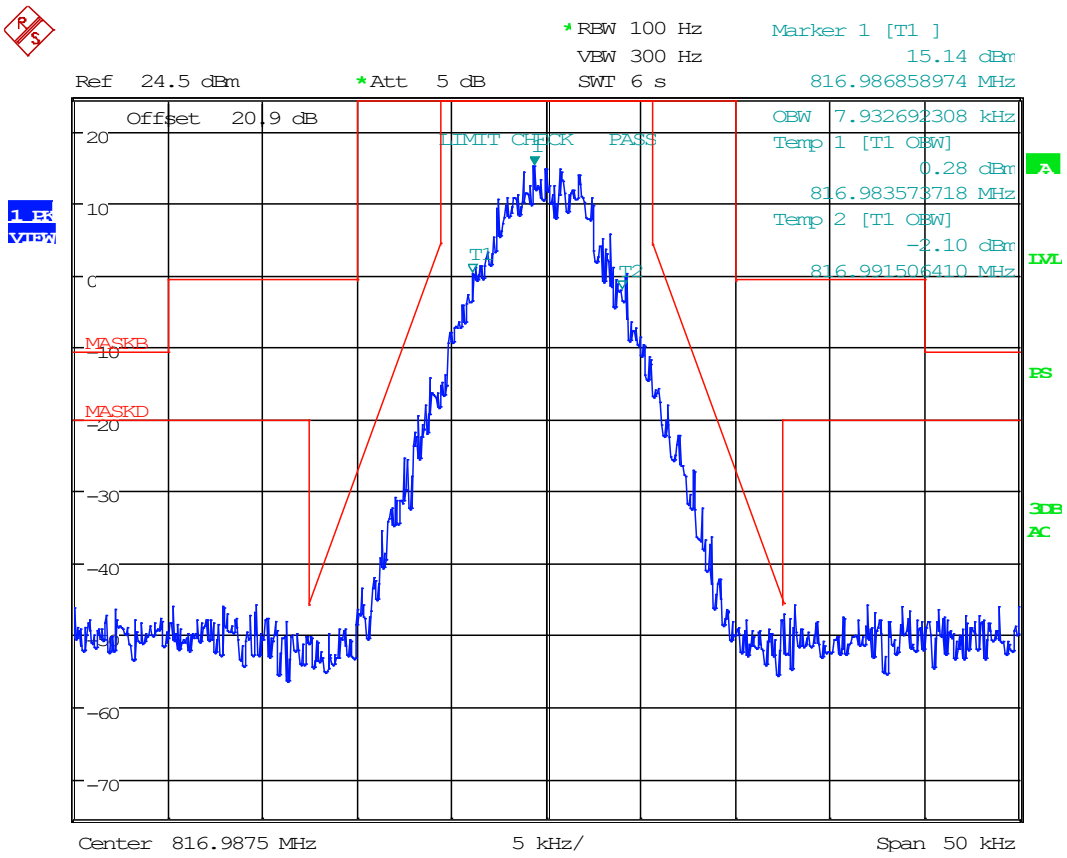
EMISSION MASK & IVO

800 MHz Band, Uplink, C4FM, At AGC +3 dB



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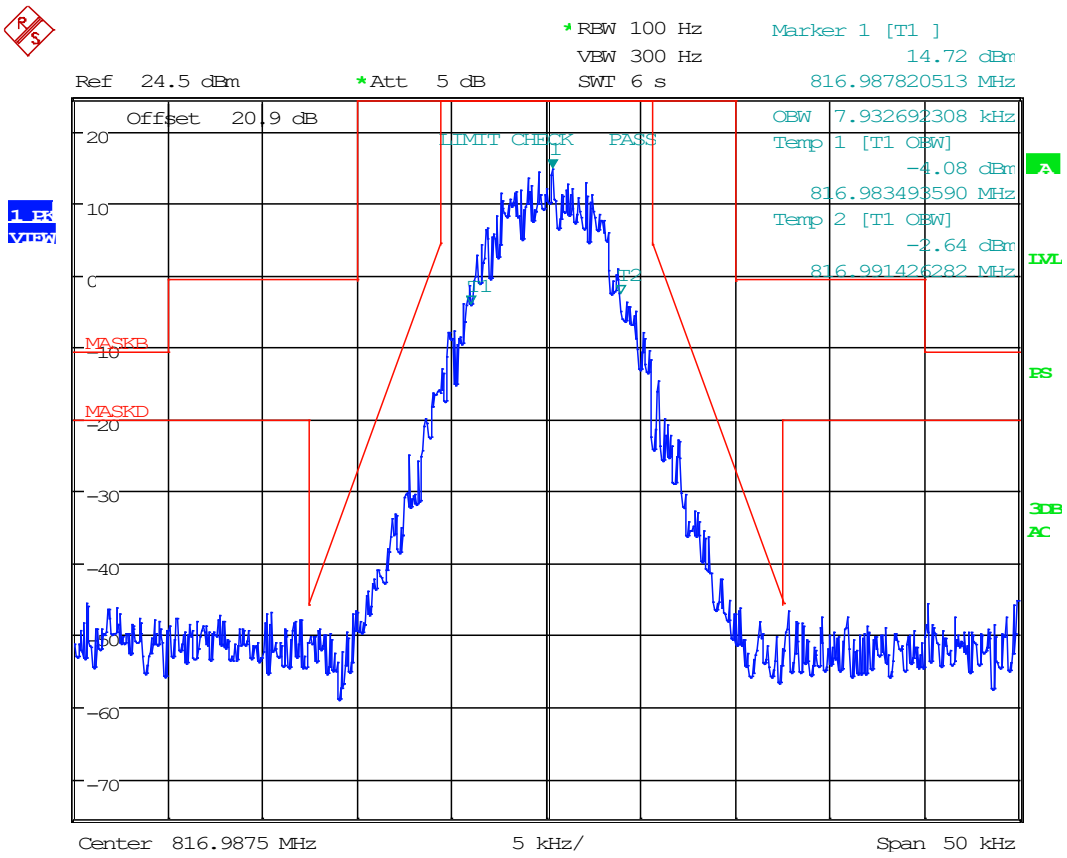
EMISSION MASK & IVO

800 MHz Band, Uplink, H-CPM, AT AGC



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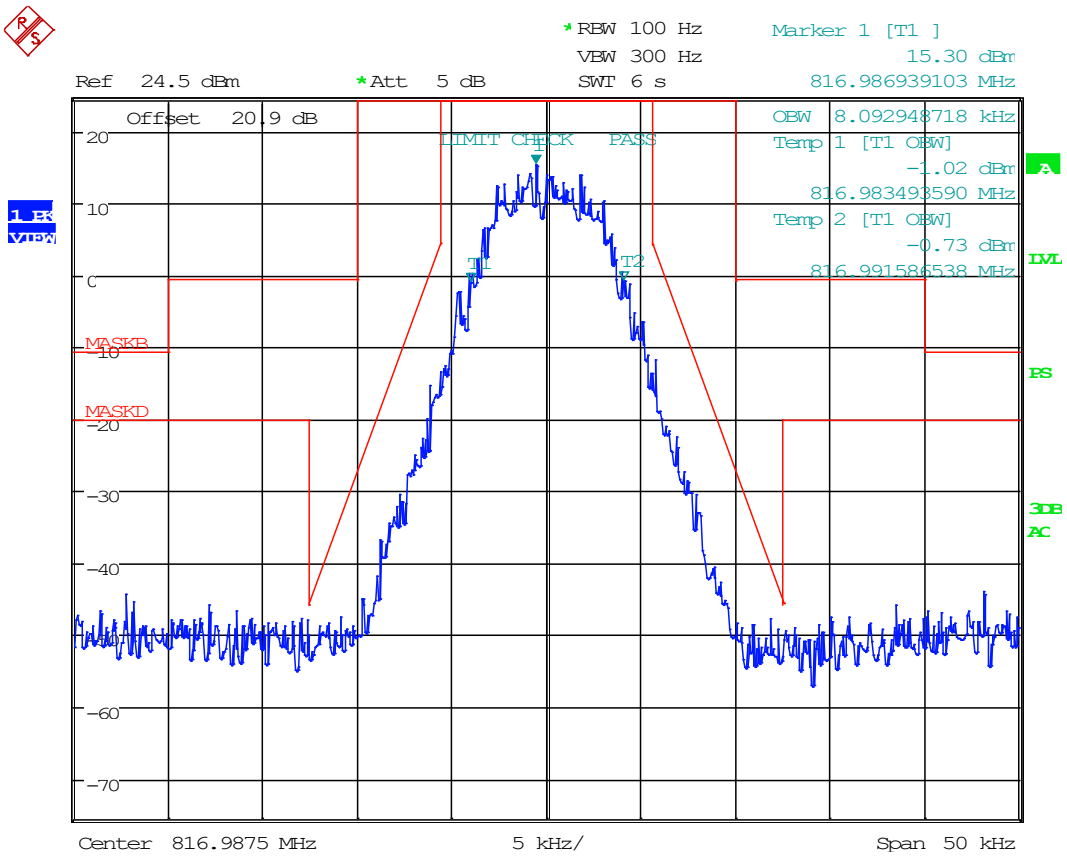
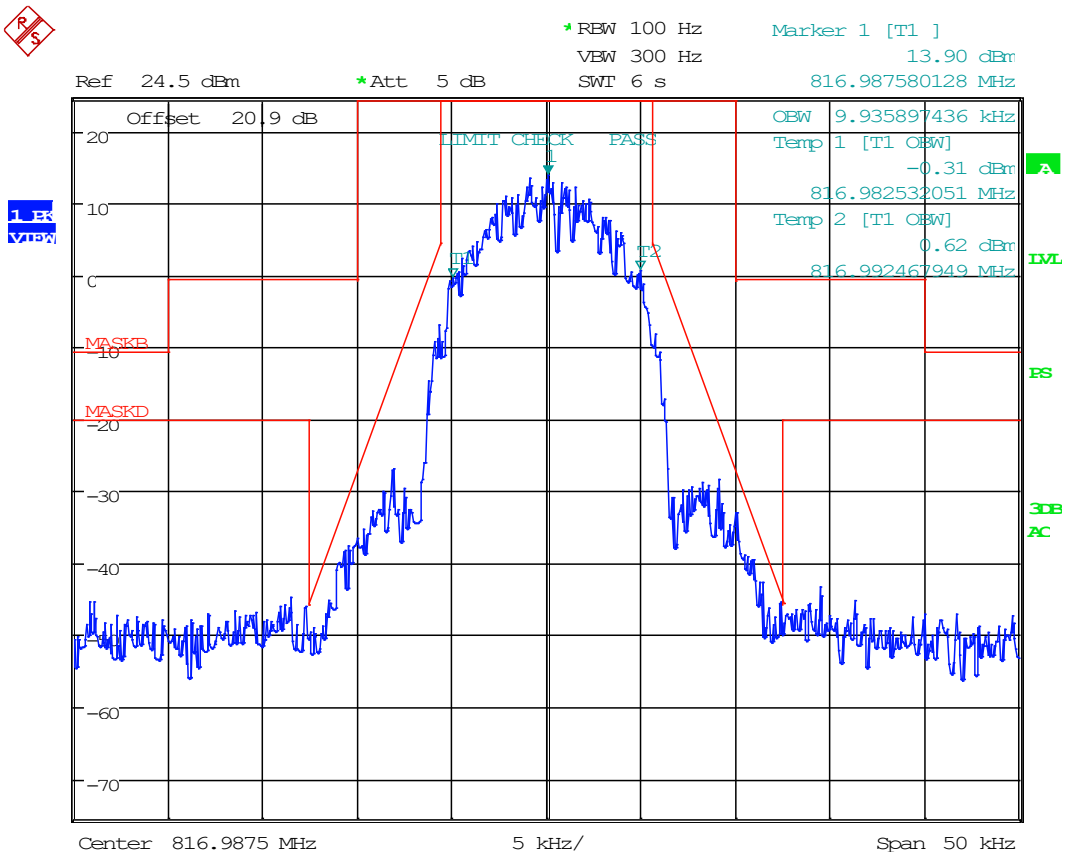
EMISSION MASK & IVO

800 MHz Band, Uplink, H-CPM, AT AGC +3 DB



EMISSION MASK & IVO

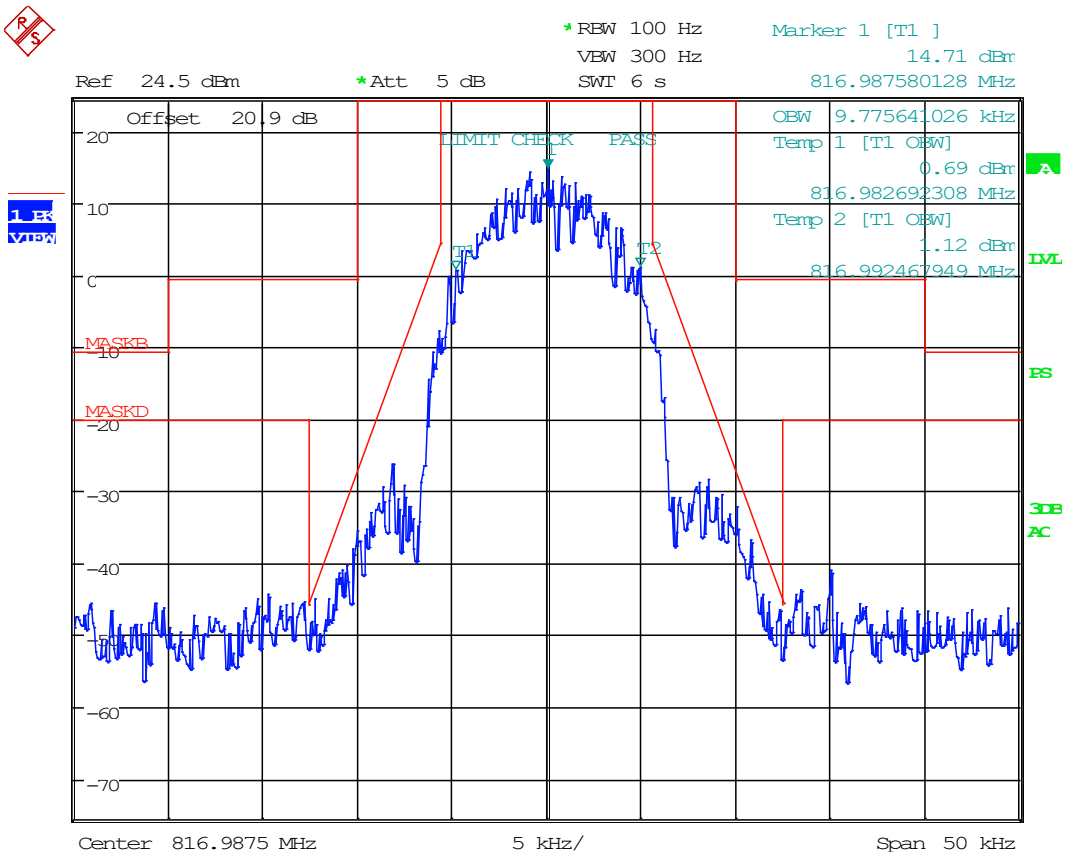
800 MHz Band, Uplink, H-DQPSK, AT AGC



Date: 14.JAN.2020 12:12:42

EMISSION MASK & IVO

800 MHz Band, Uplink, H-DQPSK, AT AGC +3 DB



Date: 14.JAN.2020 12:11:58

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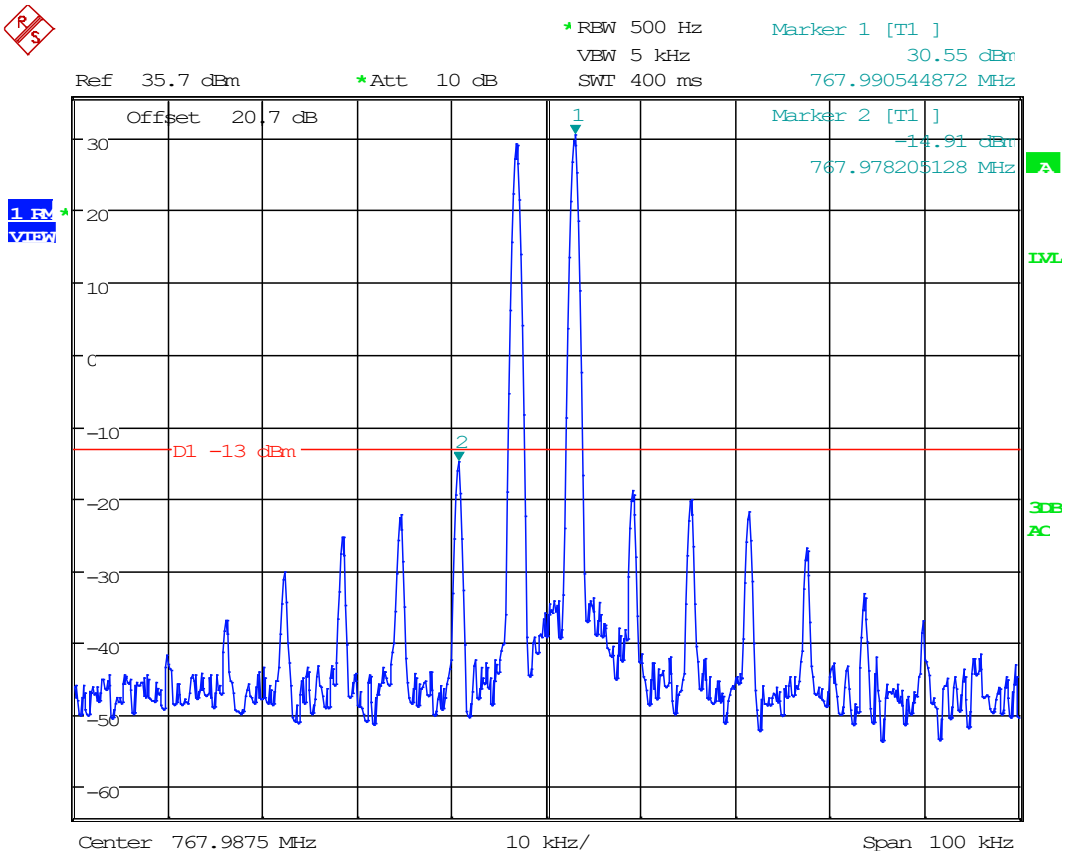
KDB 935210 4.7.2 INTERMODULATION

Test Engineer: FR
Test Date: DEC 16, 2019

700 MHz Band, Downlink, 6.25k, At AGC



Date: 16.DEC.2019 18:01:44

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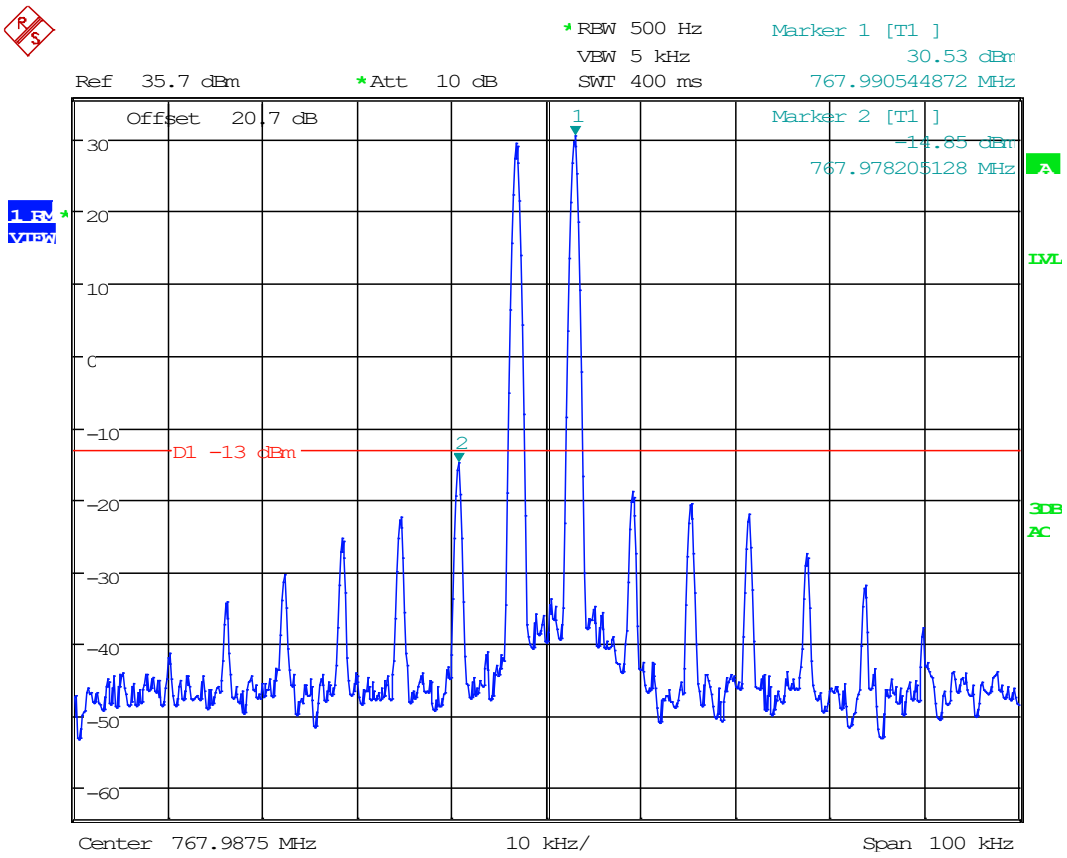
INTERMODULATION

700 MHz Band, Downlink, 6.25k, At AGC +3 dB

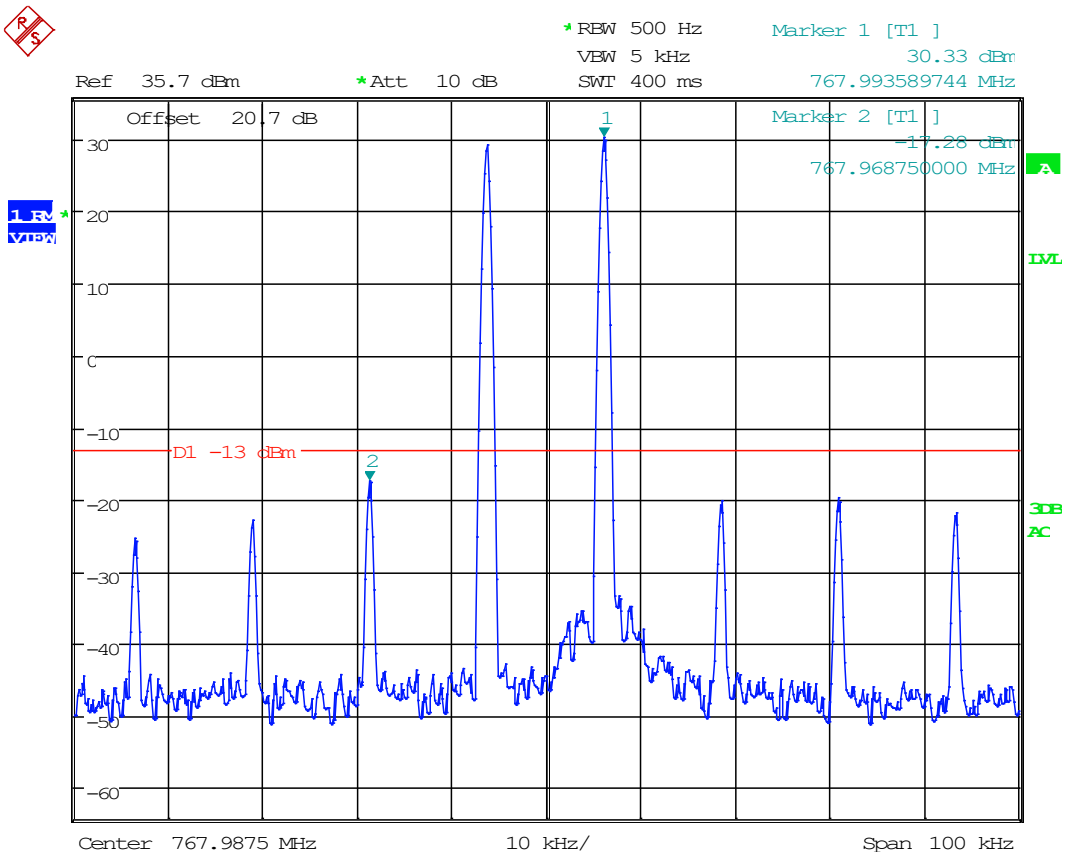


Date: 16.DEC.2019 18:00:01

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

INTERMODULATION

700 MHz Band, Downlink, 12.5k, At AGC

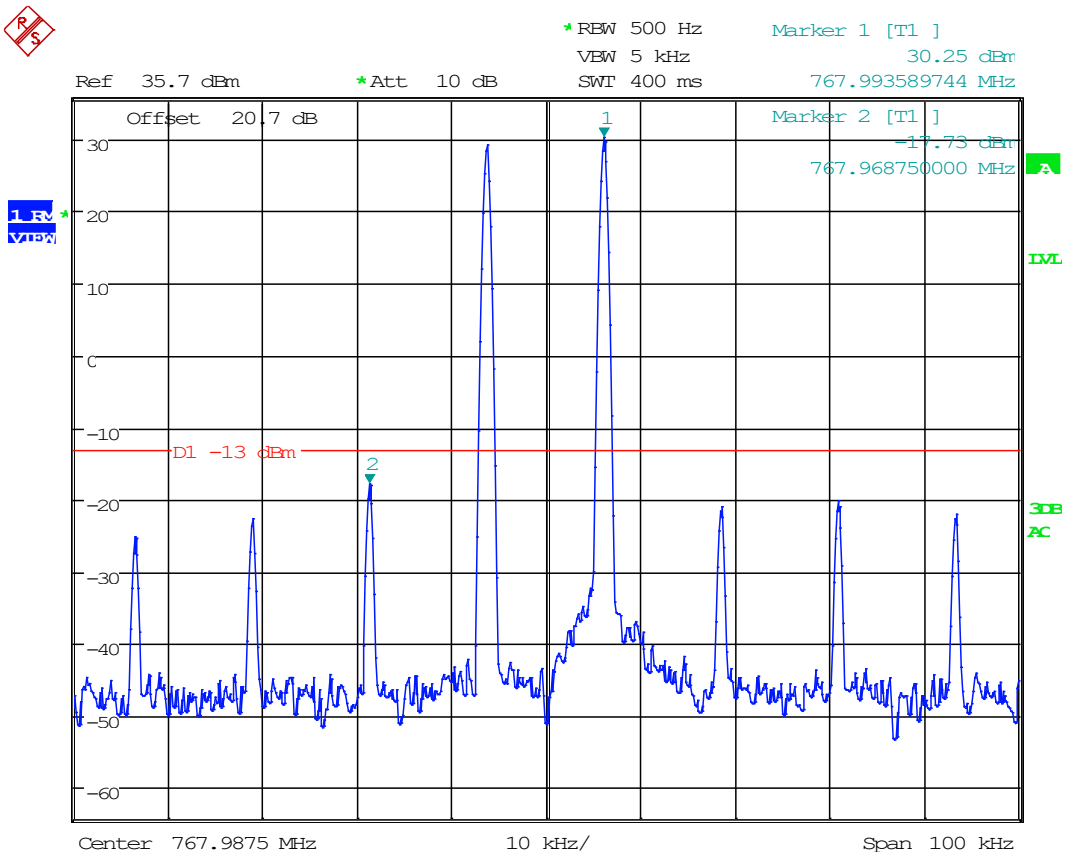


Date: 16.DEC.2019 18:02:55

849 NW STATE ROAD 45 NEWBERRY, FL 32669 USA | PHONE: 888.472.2424 | EMAIL: INFO@TIMCOENGR.COM | WEB: HTTP://WWW.TIMCOENGR.COM

INTERMODULATION

700 MHz Band, Downlink, 12.5k, At AGC +3 dB



Date: 16.DEC.2019 18:03:39

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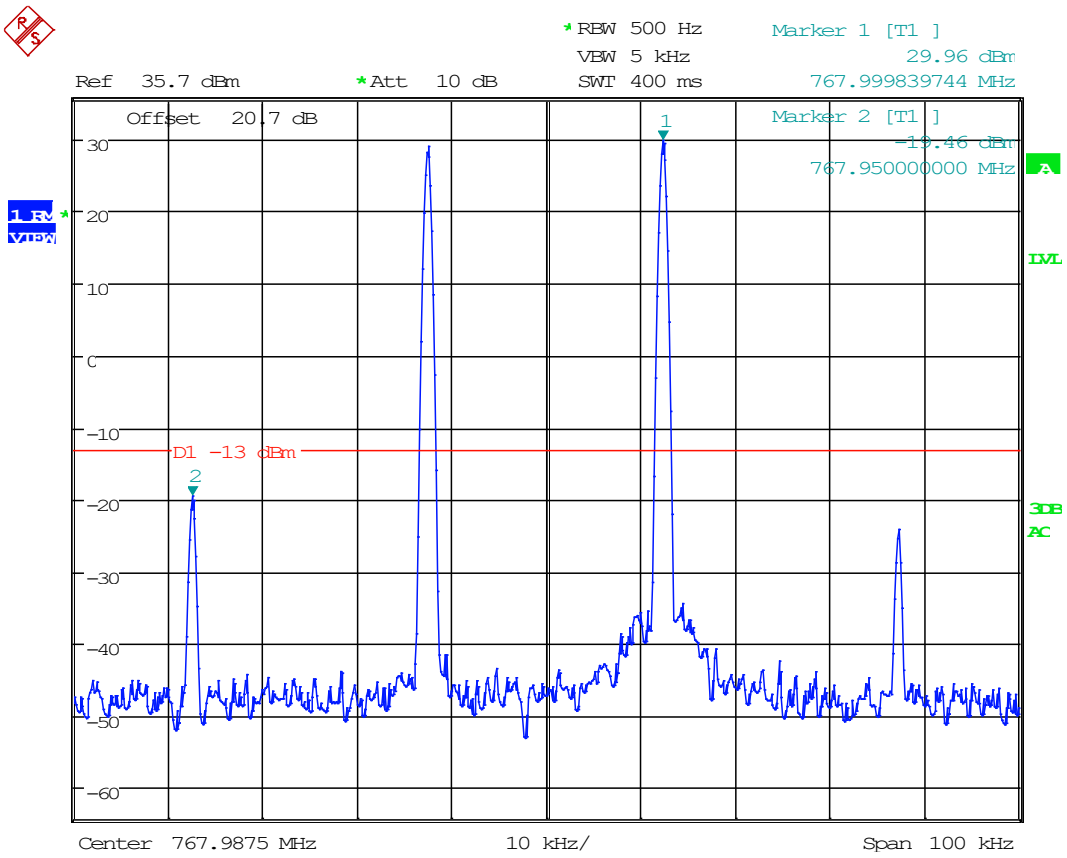
INTERMODULATION

700 MHz Band, Downlink, 25K, At AGC



Date: 16.DEC.2019 18:07:07

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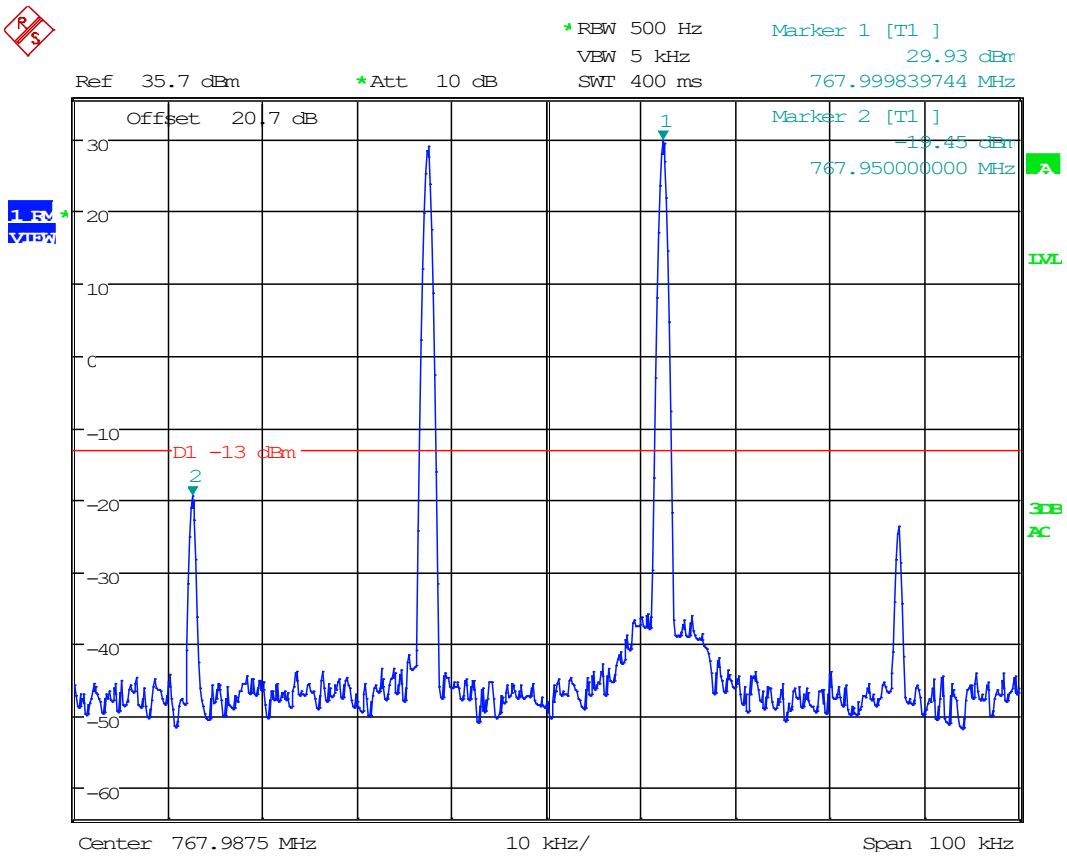
INTERMODULATION

700 MHz Band, Downlink, 25K, At AGC +3 dB



Date: 16.DEC.2019 18:06:25

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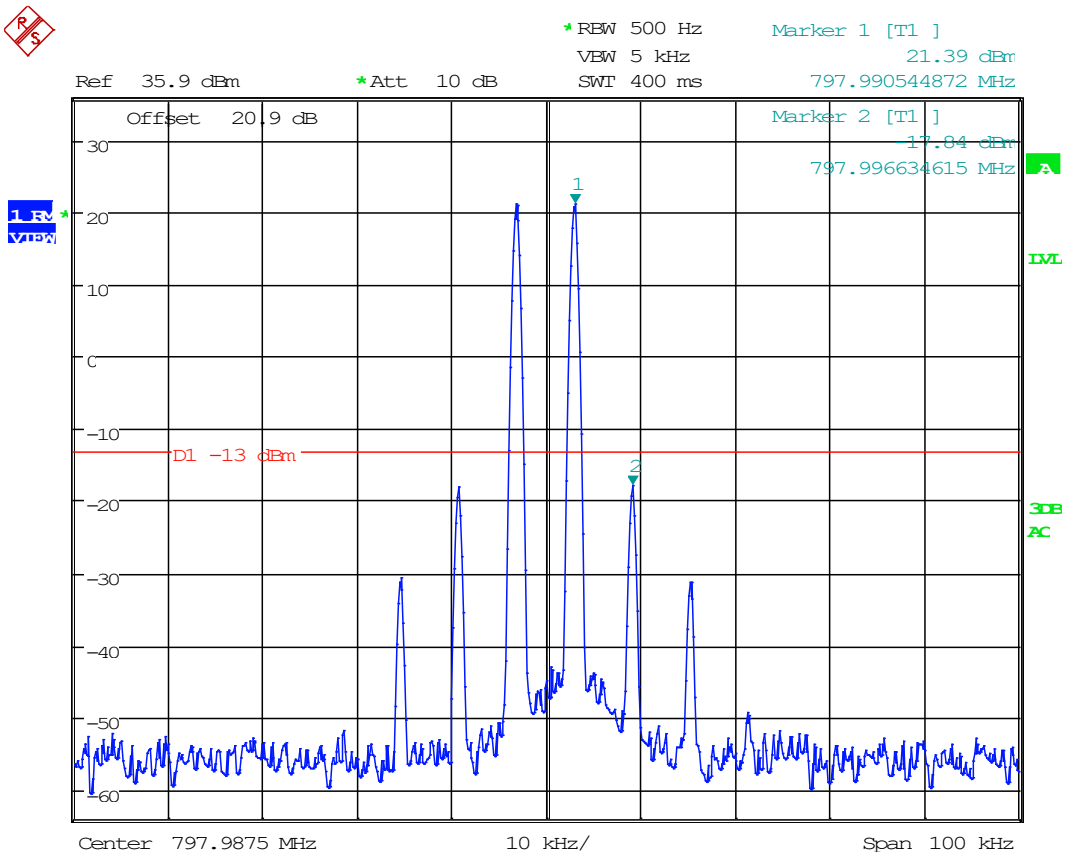
INTERMODULATION

700 MHz Band, Uplink, 6.25k, At AGC



Date: 16.DEC.2019 17:51:11

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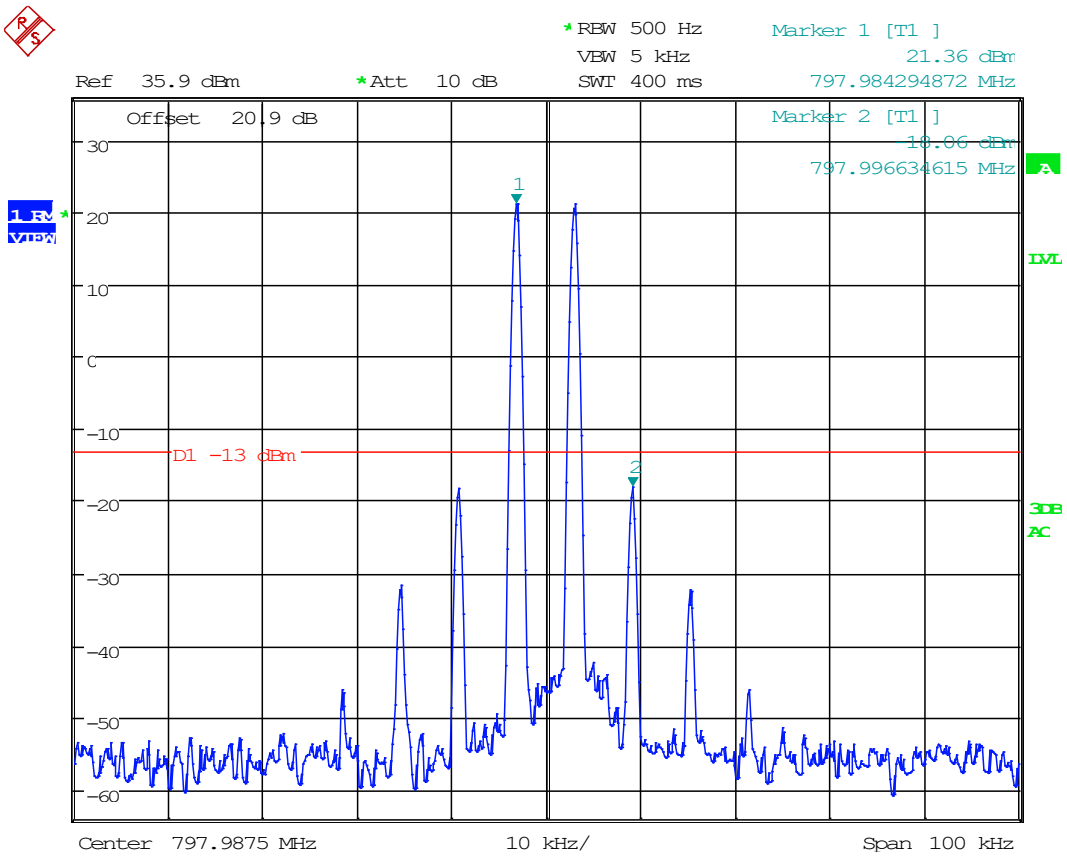
INTERMODULATION

700 MHz Band, Uplink, 6.25k, At AGC +3 dB



Date: 16.DEC.2019 17:50:28

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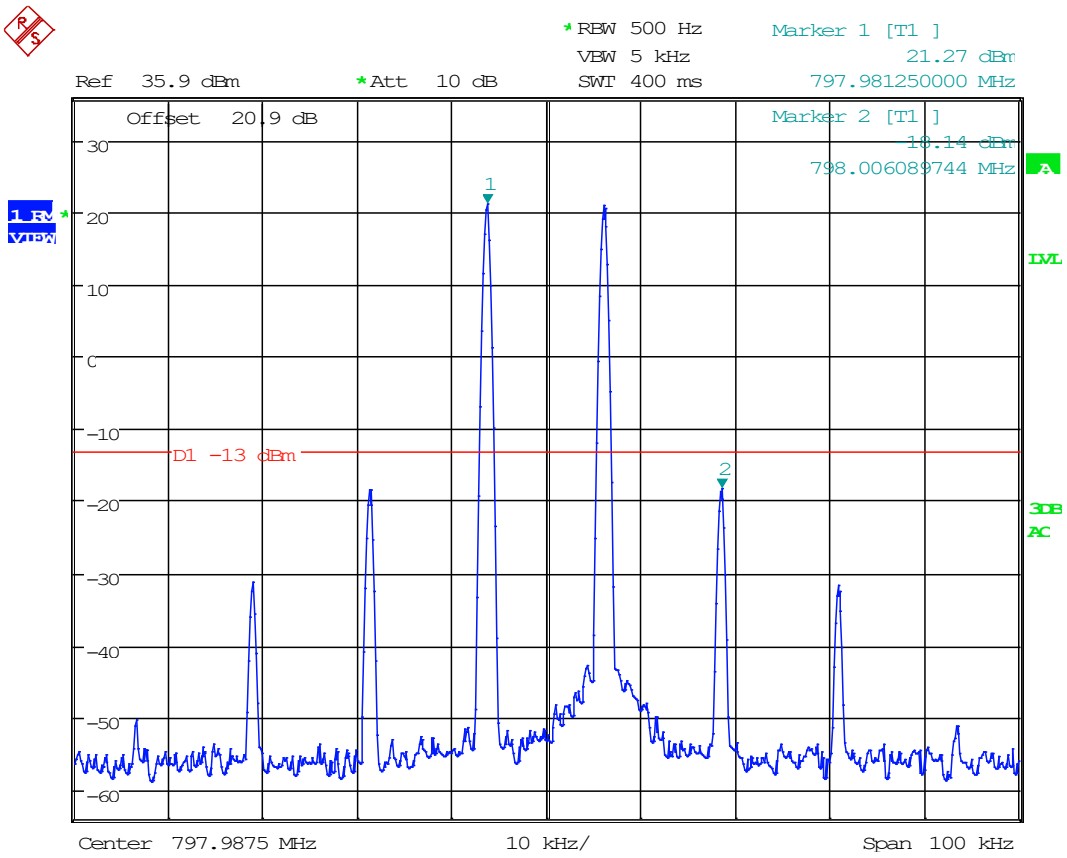
INTERMODULATION

700 MHz Band, Uplink, 12.5k, At AGC



Date: 16.DEC.2019 17:53:01

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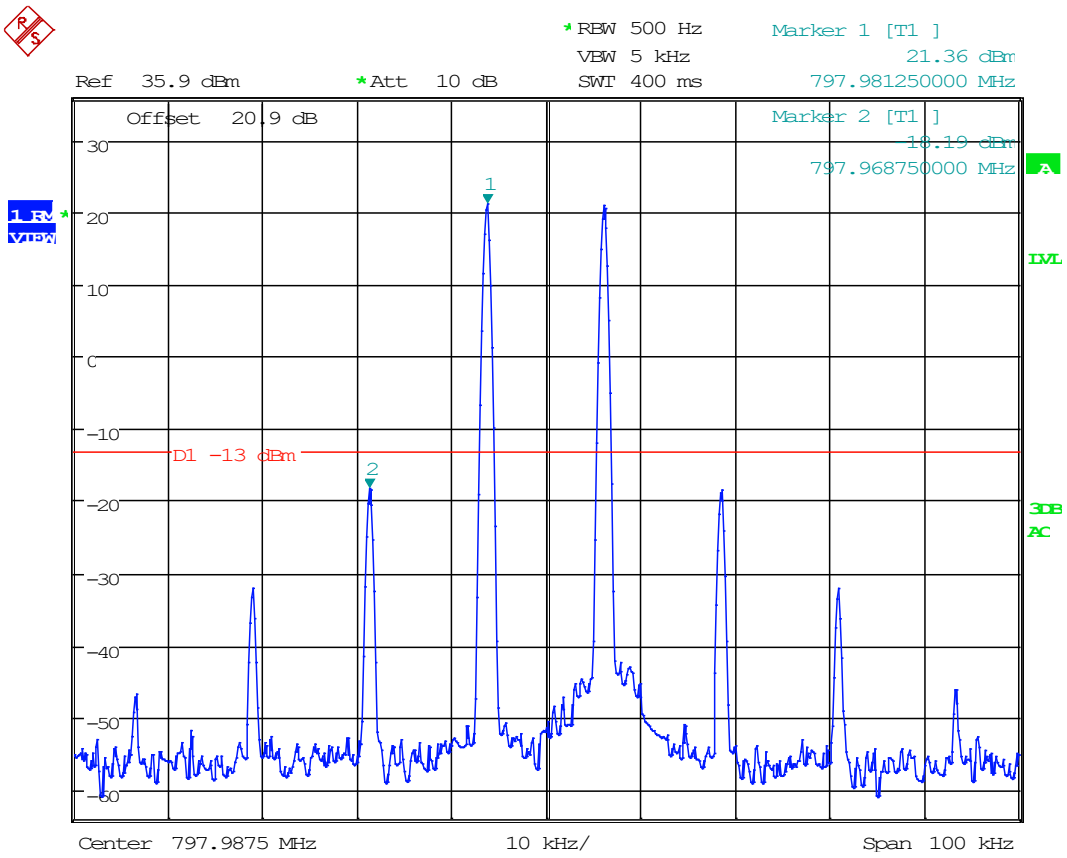
INTERMODULATION

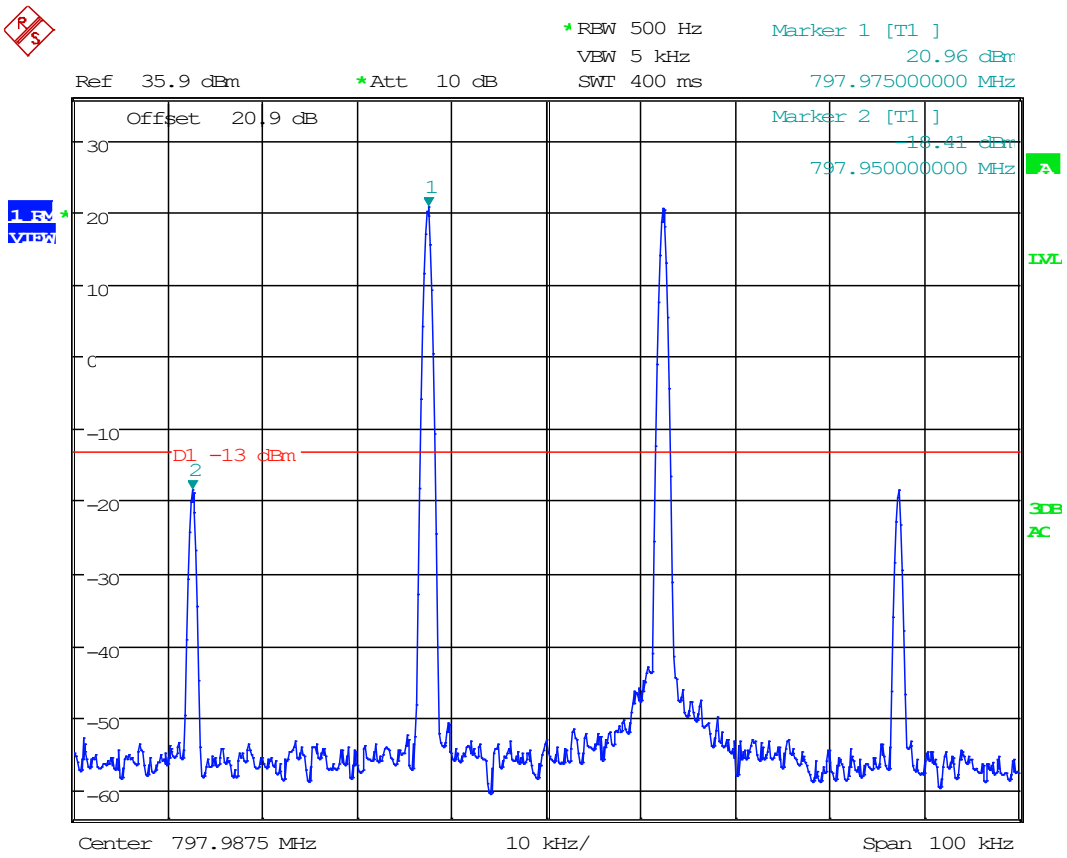
700 MHz Band, Uplink, 12.5k, At AGC +3 dB



Date: 16.DEC.2019 17:53:40

INTERMODULATION

700 MHz Band, Uplink, 25K, At AGC



Date: 16.DEC.2019 17:55:25

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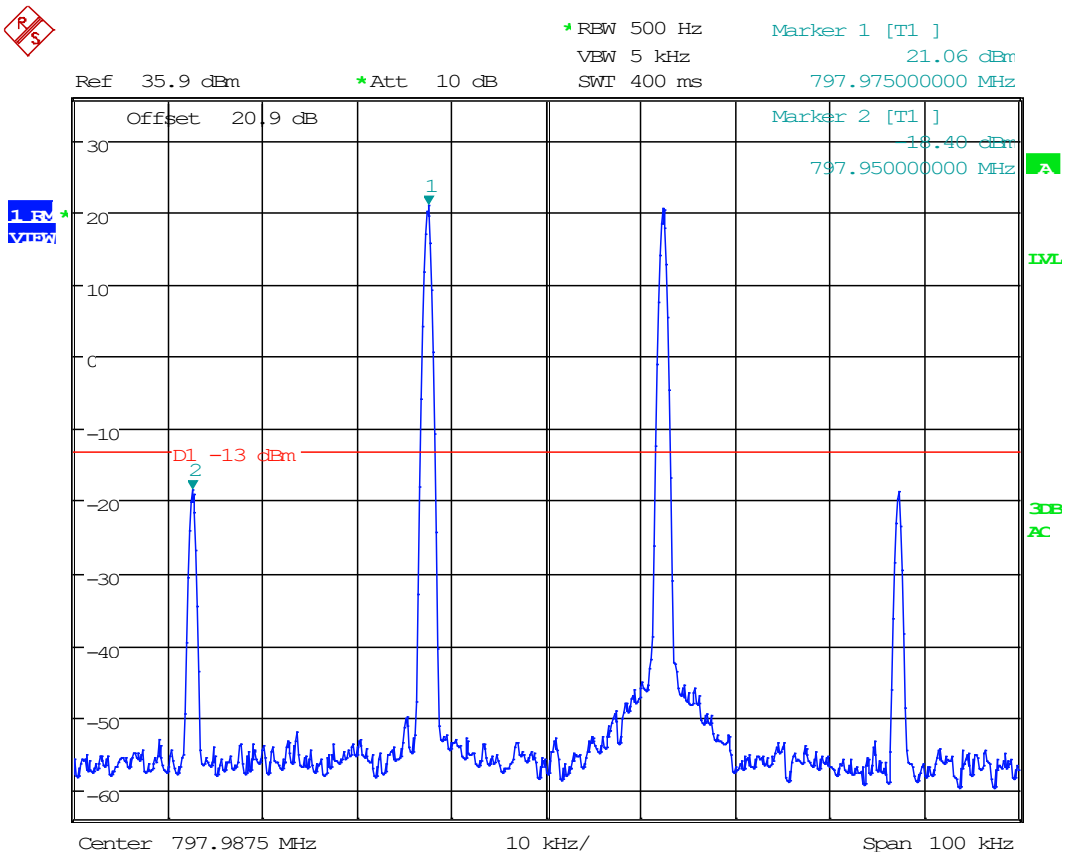
INTERMODULATION

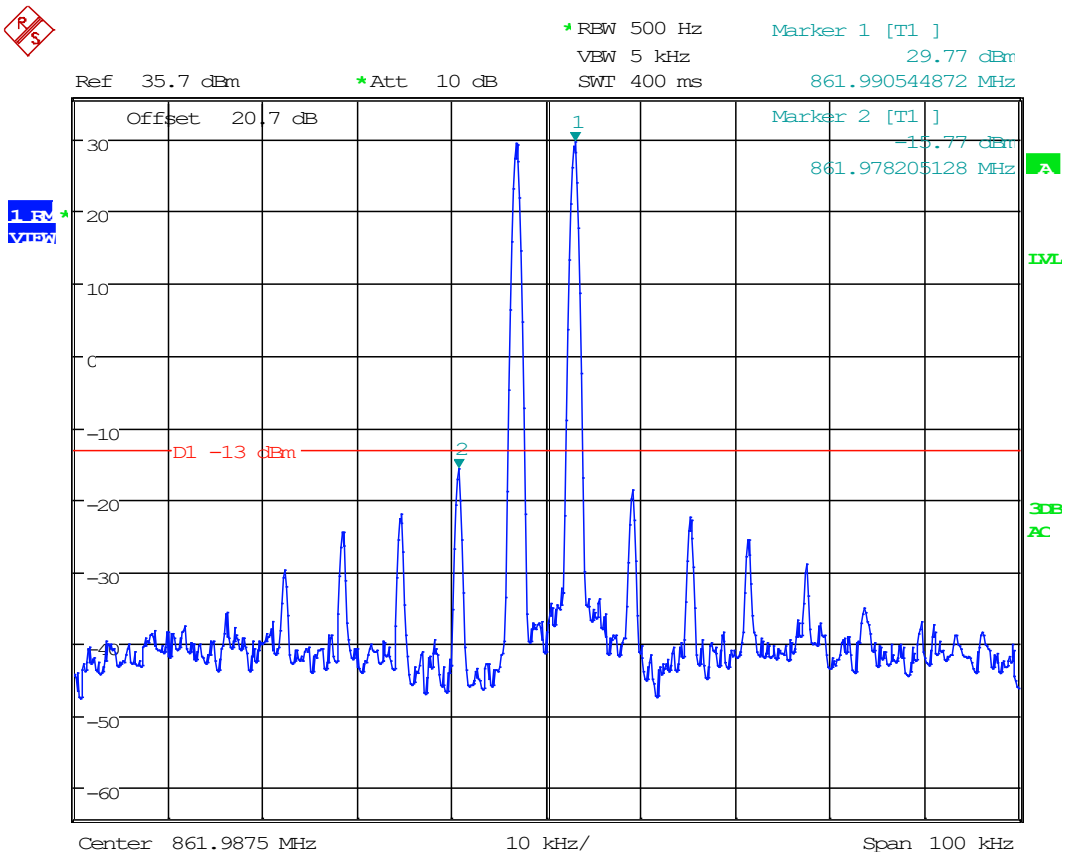
700 MHz Band, Uplink, 25K, At AGC +3 dB



Date: 16.DEC.2019 17:54:42

INTERMODULATION

800 MHz Band, Downlink, 6.25k, At AGC



Date: 16.DEC.2019 18:12:46

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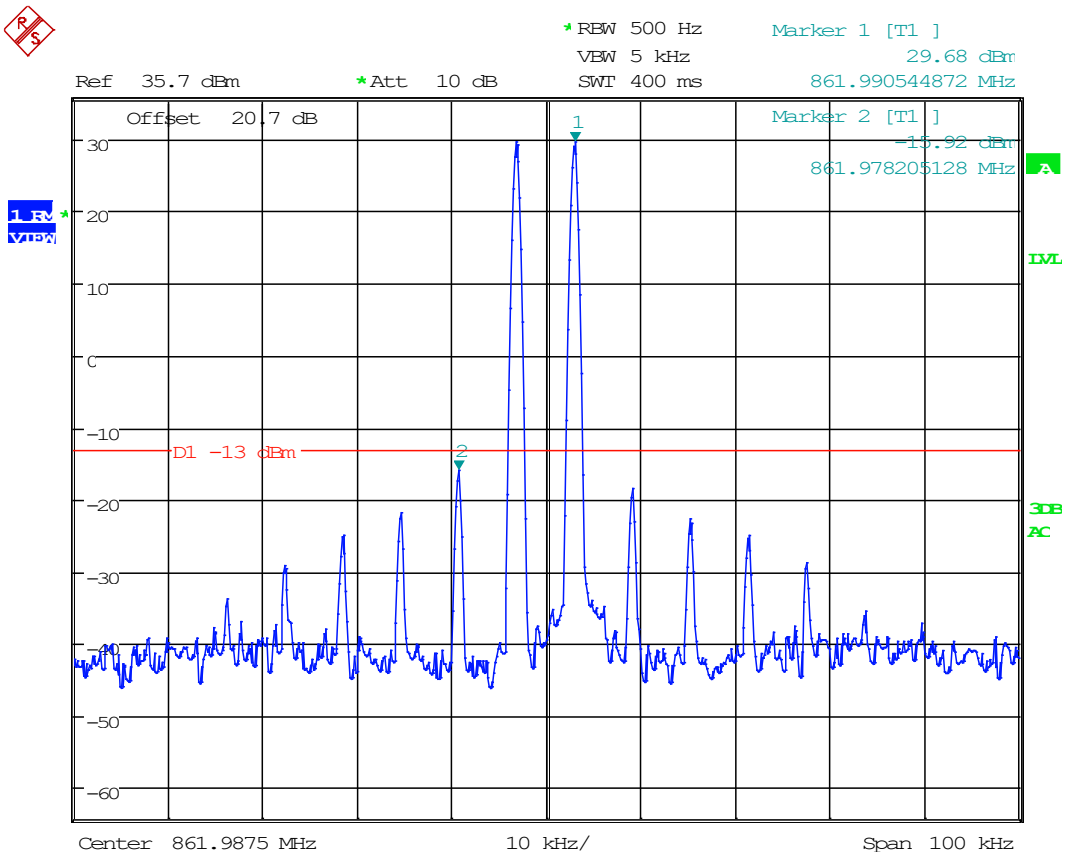
INTERMODULATION

800 MHz Band, Downlink, 6.25k, At AGC +3 dB



Date: 16.DEC.2019 18:13:37

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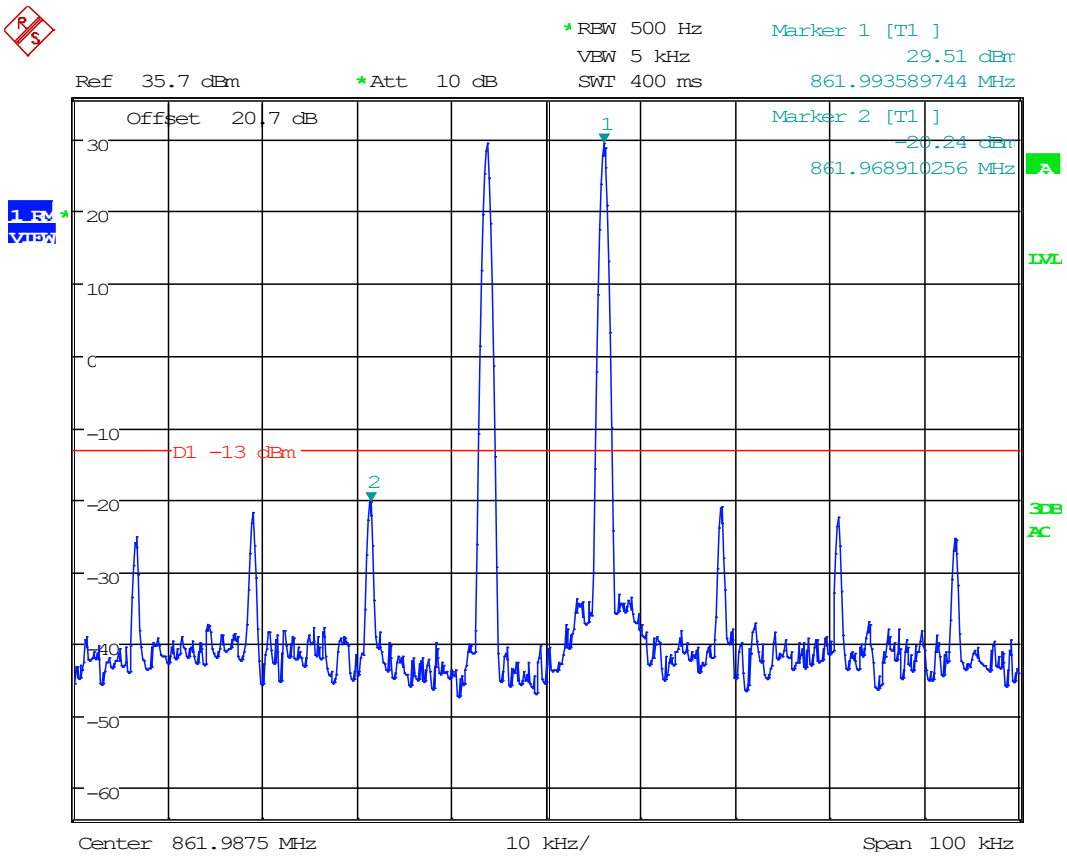
INTERMODULATION

800 MHz Band, Downlink, 12.5k, At AGC



Date: 16.DEC.2019 18:11:35

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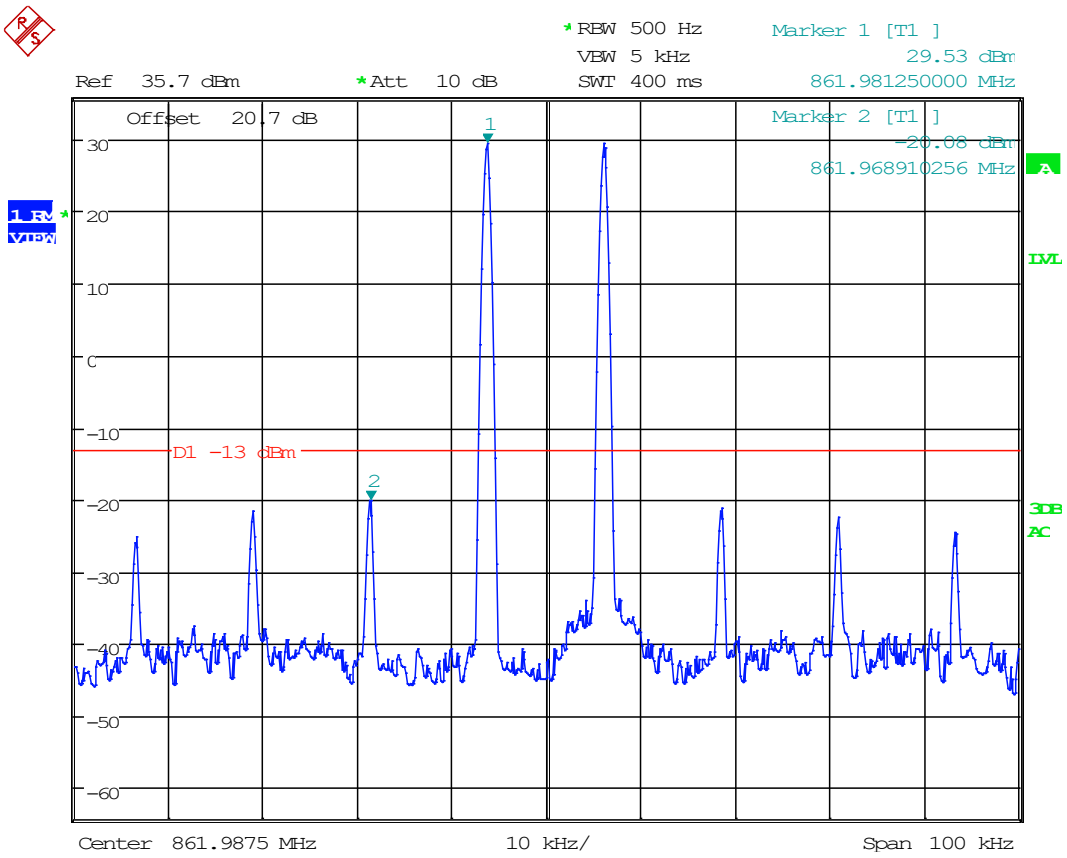
INTERMODULATION

800 MHz Band, Downlink, 12.5k, At AGC +3 dB



Date: 16.DEC.2019 18:10:52

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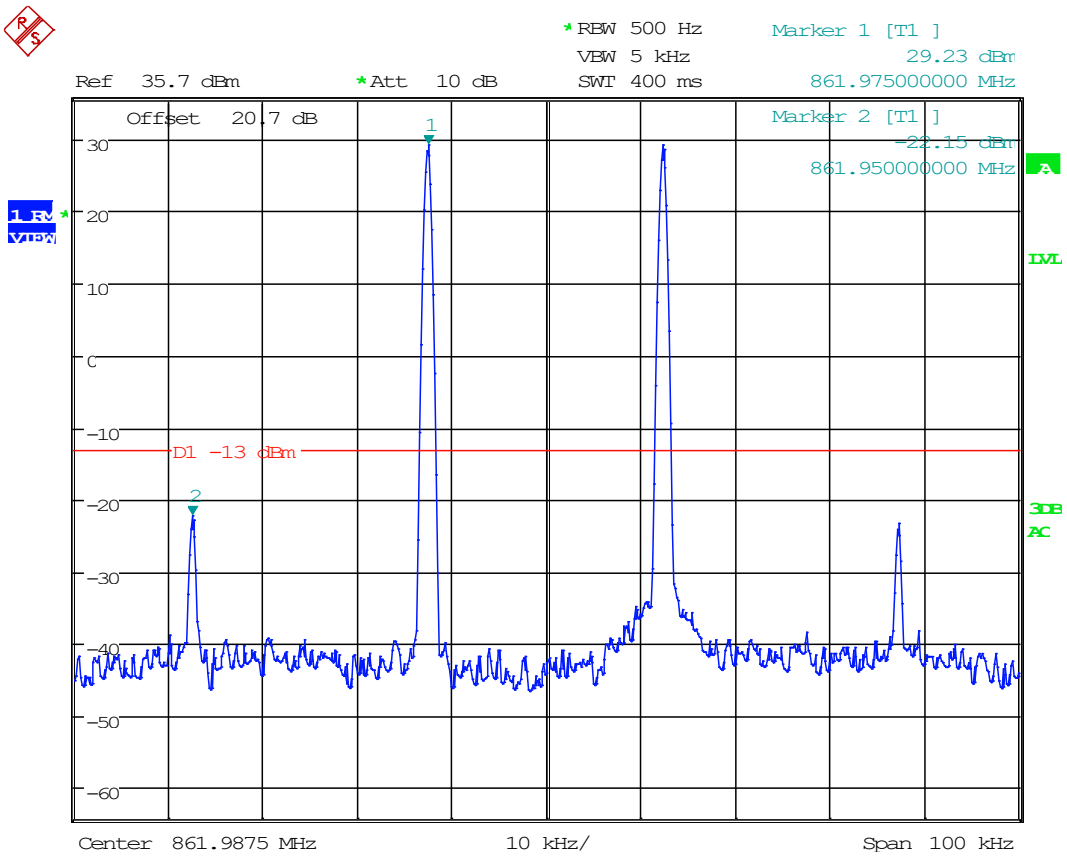
INTERMODULATION

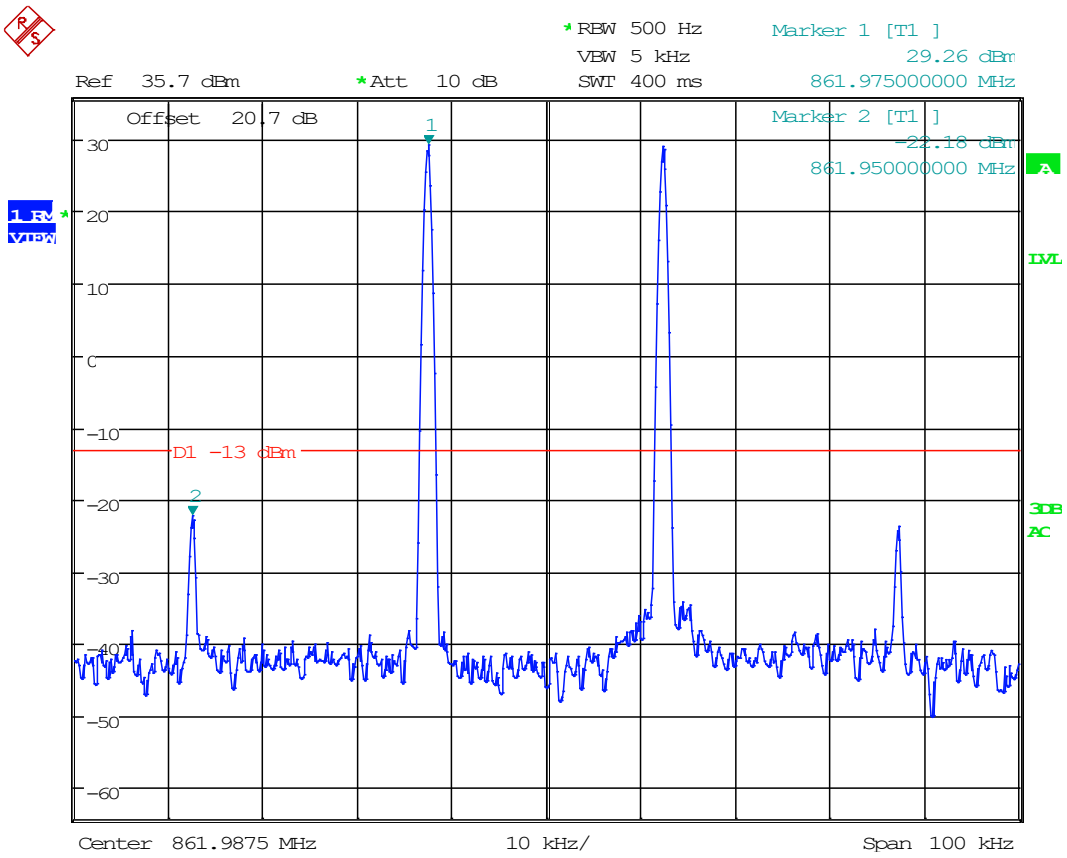
800 MHz Band, Downlink, 25K, At AGC



Date: 16.DEC.2019 18:09:27

INTERMODULATION

800 MHz Band, Downlink, 25K, At AGC +3 dB



Date: 16.DEC.2019 18:09:55

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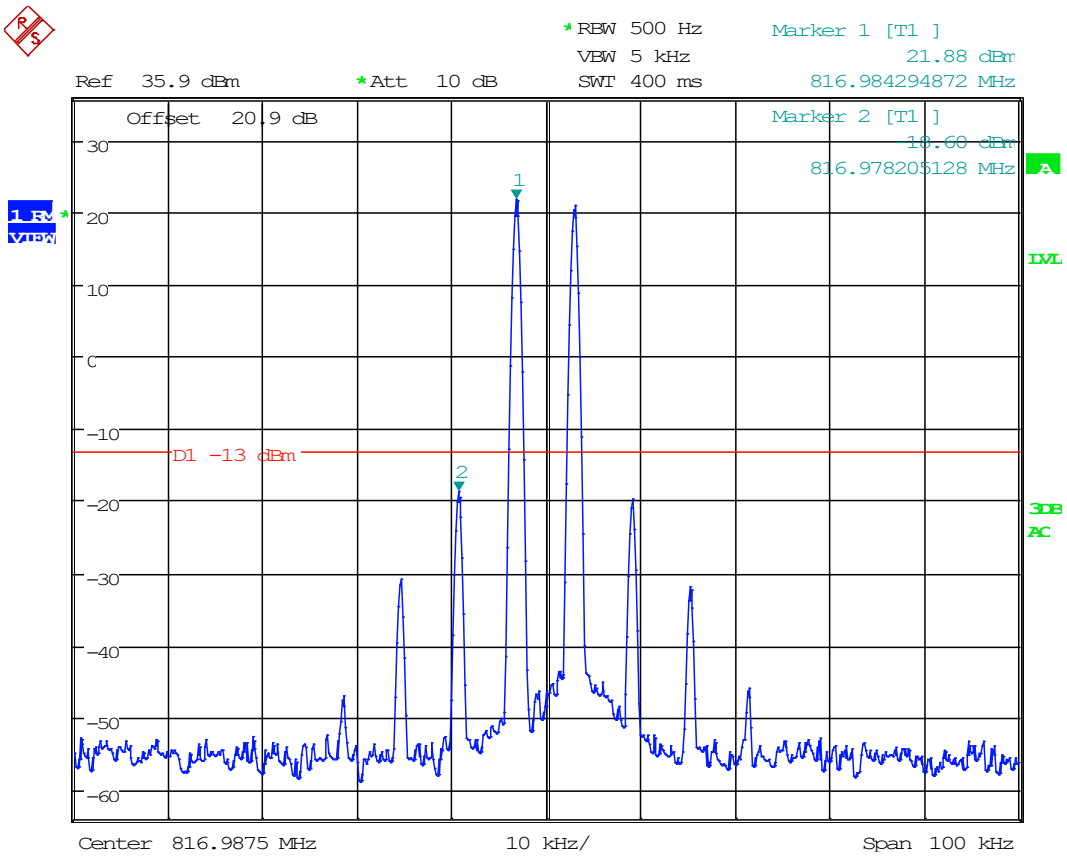
INTERMODULATION

800 MHz Band, Uplink, 6.25k, At AGC



Date: 16.DEC.2019 17:39:51

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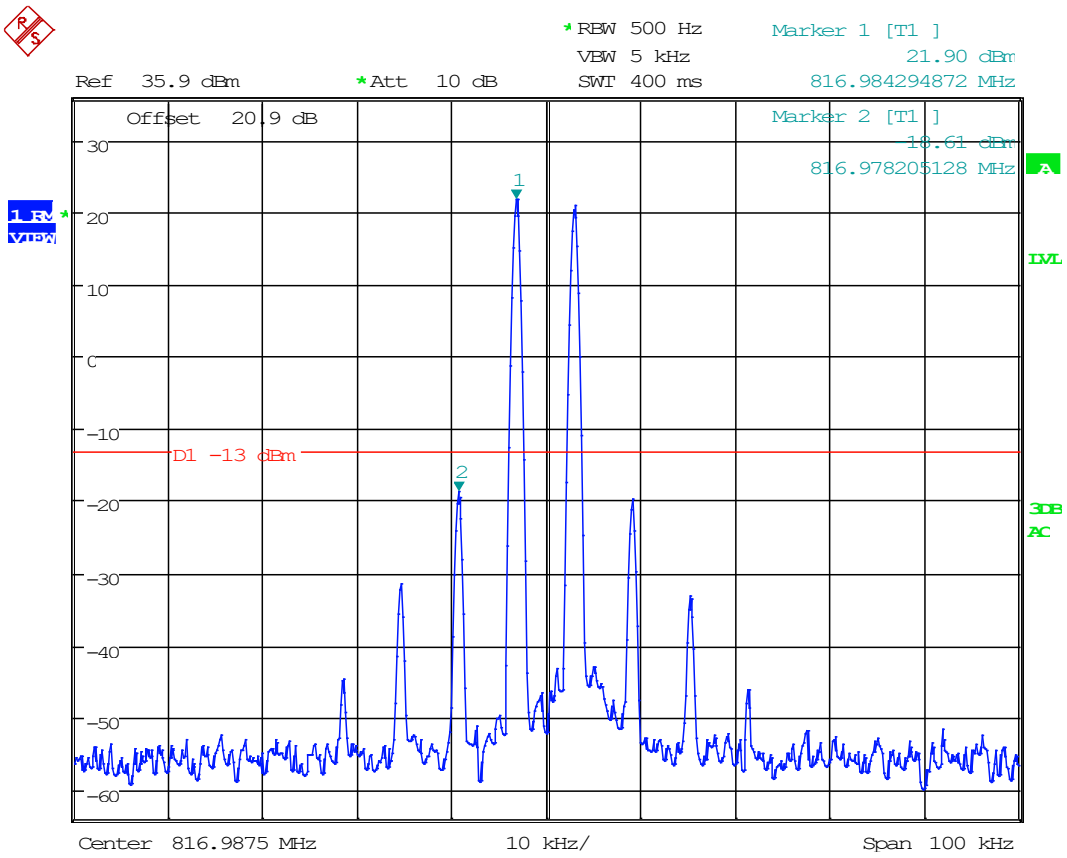
INTERMODULATION

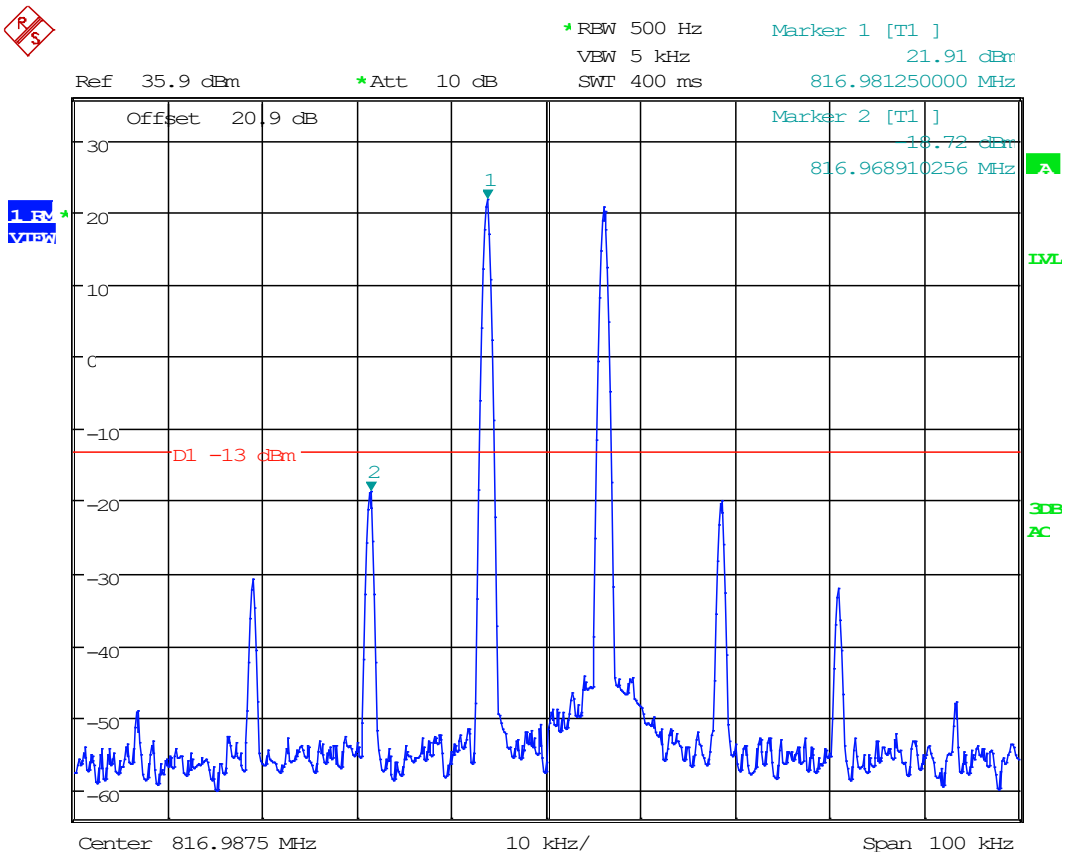
800 MHz Band, Uplink, 6.25k, At AGC +3 dB



Date: 16.DEC.2019 17:41:41

INTERMODULATION

800 MHz Band, Uplink, 12.5k, At AGC



Date: 16.DEC.2019 17:43:57

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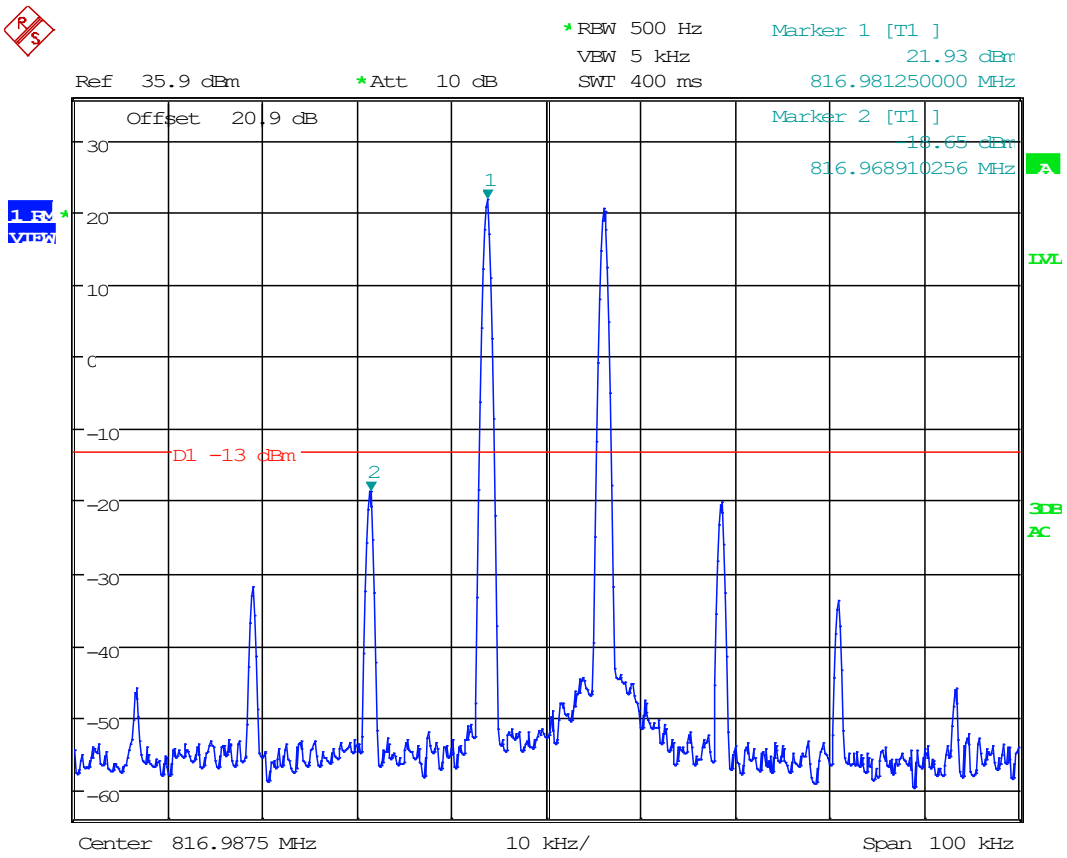
INTERMODULATION

800 MHz Band, Uplink, 12.5k, At AGC +3 dB



Date: 16.DEC.2019 17:43:23

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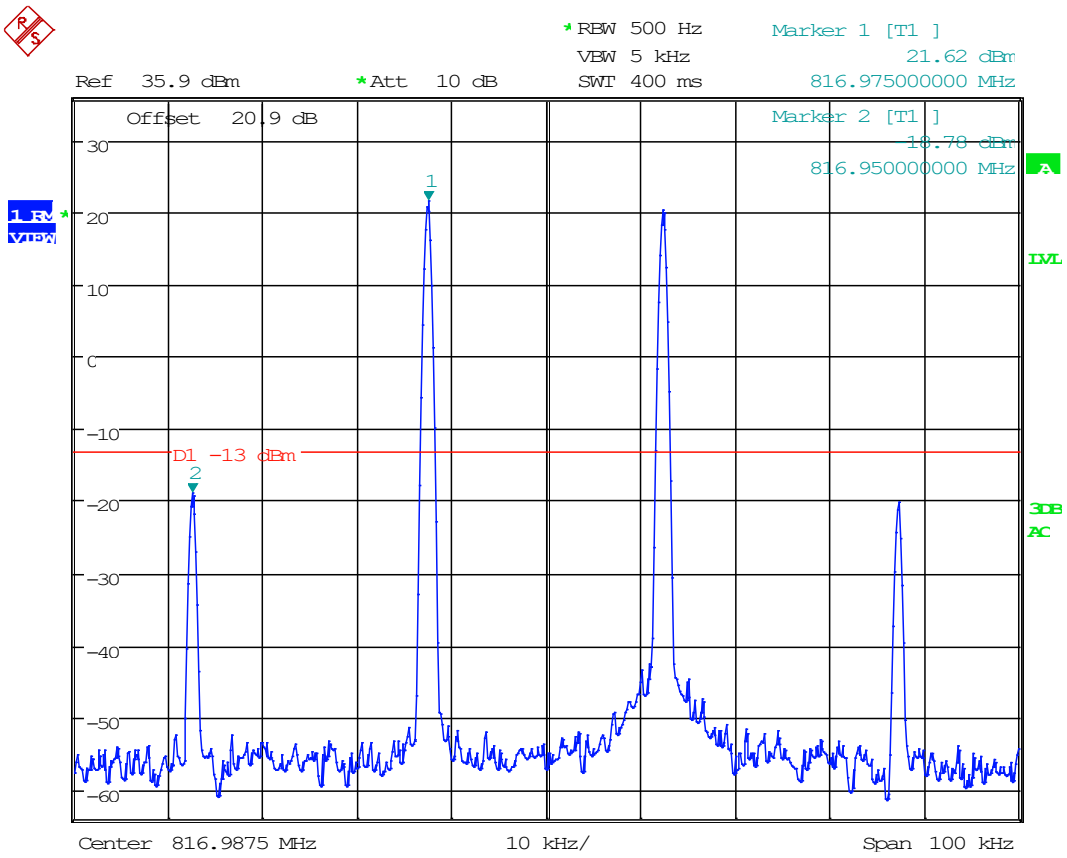
INTERMODULATION

800 MHz Band, Uplink, 25K, At AGC



Date: 16.DEC.2019 17:45:22

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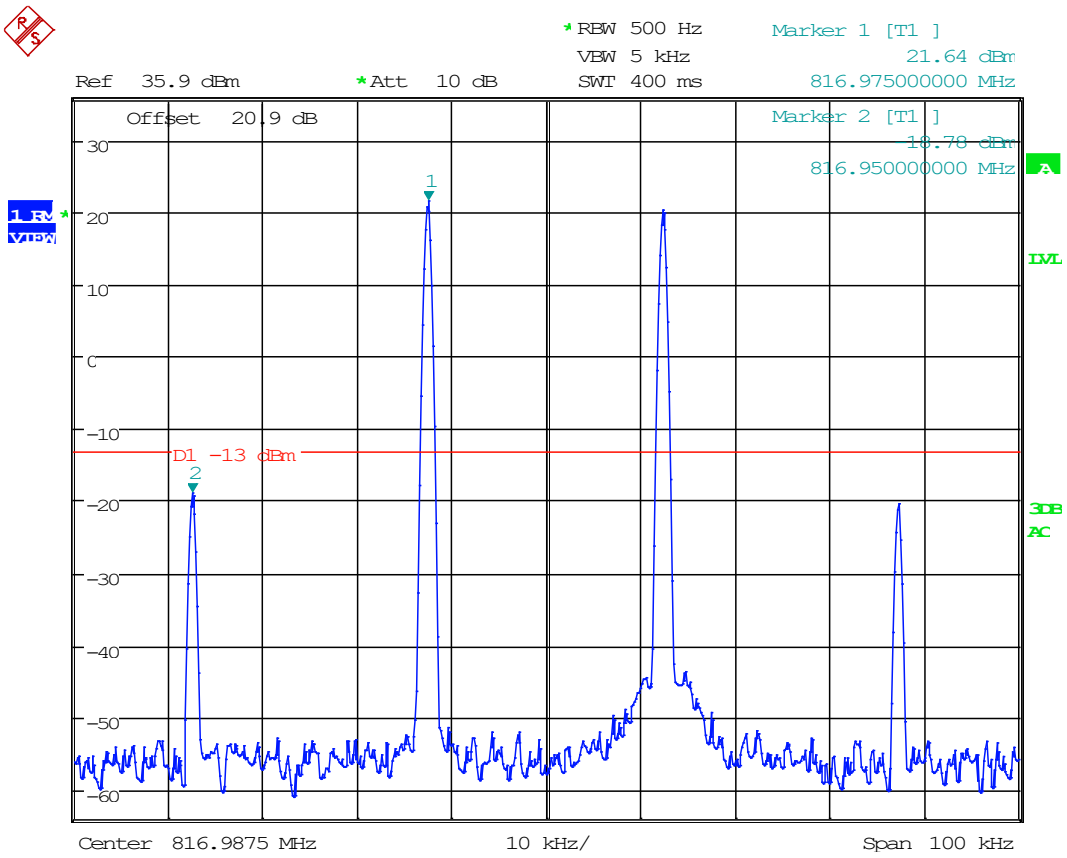
INTERMODULATION

800 MHz Band, Uplink, 25K, At AGC +3 dB



Date: 16.DEC.2019 17:45:58

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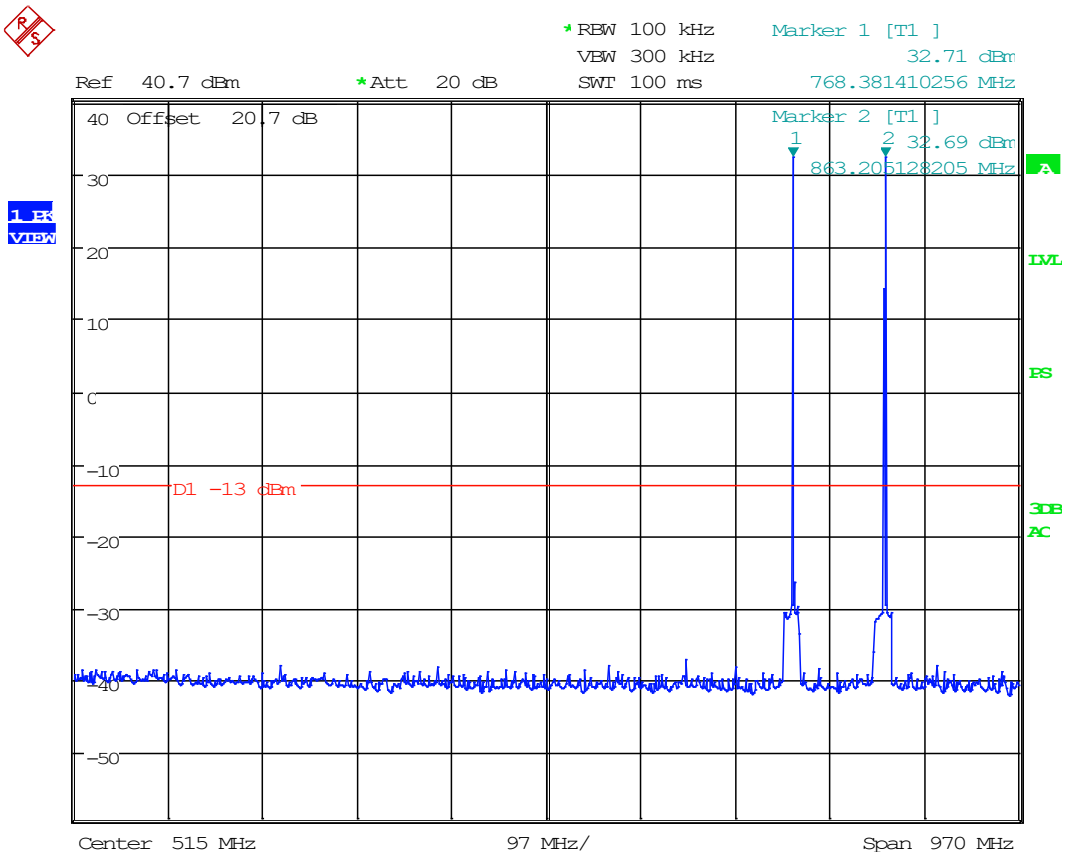
2.1051 CONDUCTED SPURIOUS EMISSIONS

KDB 935210 4.7.3 CONDUCTED SPURIOUS EMISSIONS

Test Engineer: FR
Test Date: DEC 16 2019

Note: Co-located transmitter spurious emissions have been evaluated by providing both input signals in each transmit pathway, and enabling both output signals simultaneously as in normal operation of the EUT.

Downlink, Below 1 GHz



Date: 16.DEC.2019 18:20:16

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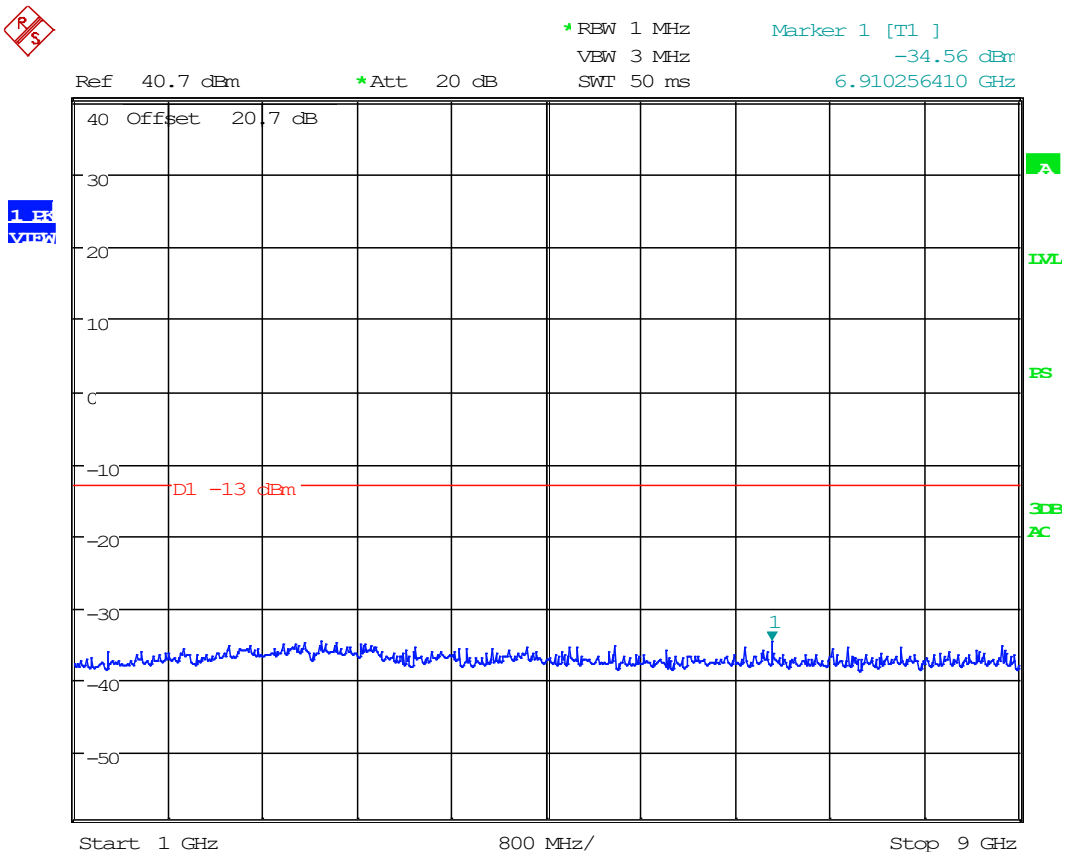
Conducted Spurious Emissions

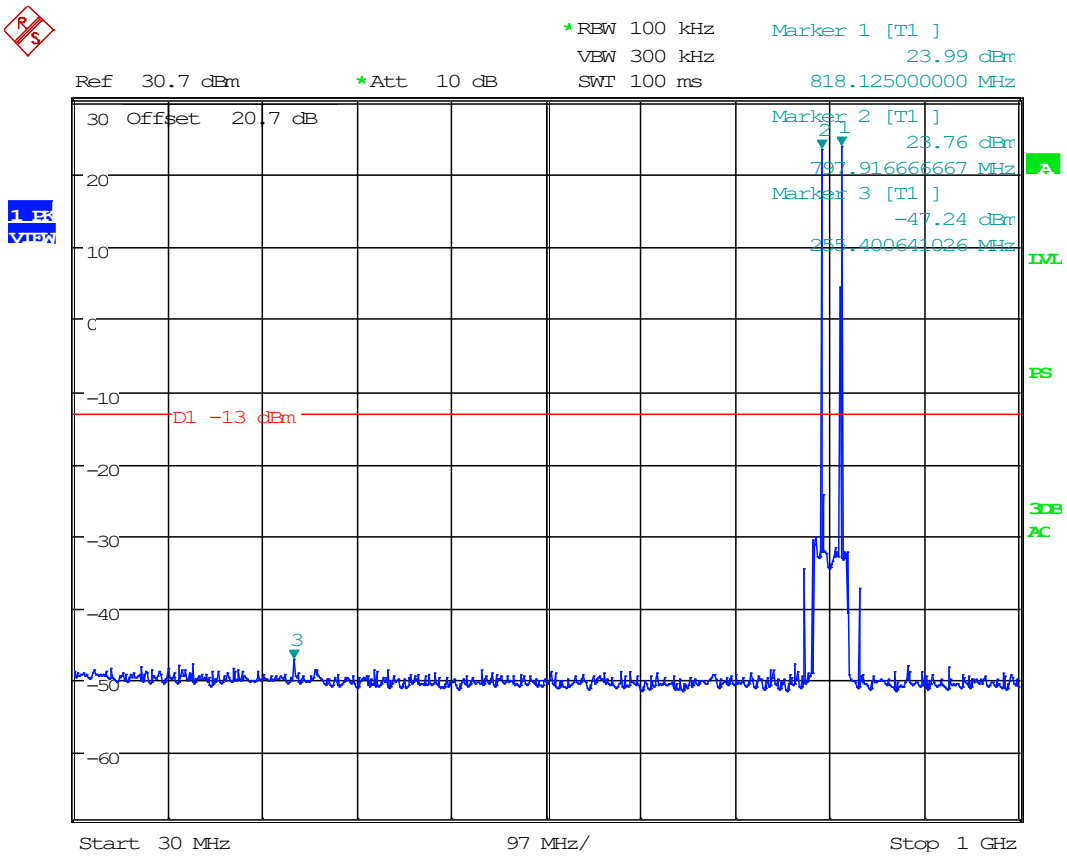
Downlink, Above 1 GHz



Date: 16.DEC.2019 18:29:19

Conducted Spurious Emissions

Uplink, Below 1 GHz



Date: 16.DEC.2019 18:26:20

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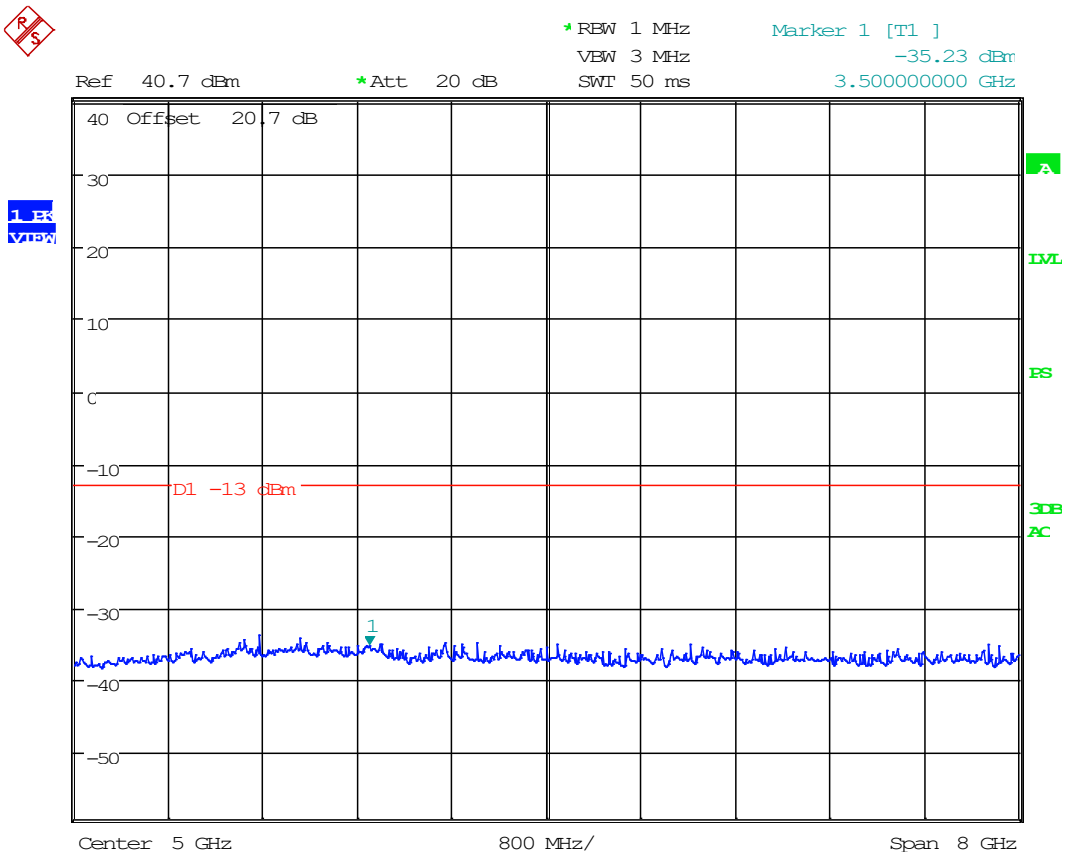
Conducted Spurious Emissions

Uplink, Above 1 GHz



Date: 16.DEC.2019 18:23:55

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2.1053 FIELD STRENGTH OF SPURIOUS EMISSIONS

KDB 935210 4.9 FIELD STRENGTH OF SPURIOUS EMISSIONS

Test Engineer: TR
Test Date: JAN 15 2020

Note: Co-located transmitter spurious emissions have been evaluated by providing both input signals in each transmit pathway, and enabling both output signals simultaneously as in normal operation of the EUT.

Uplink

Tuned Frequency (MHz)	Emission Frequency (MHz)	Detector	Meter Reading (dBµV)	Antenna Polarity	Coax Loss (dB)	Correction Factor (dB/m)	Distance (m)	Field Strength (dBµV/m)	ERP (dBm)	Limit (dBm)	Margin (dBm)
700 & 800	63.04	PK	2.81	H	0.93	6.69	3.00	10.43	-86.94	-20.00	66.94
700 & 800	76.33	PK	4.22	V	1.05	7.60	3.00	12.87	-84.51	-20.00	64.51
700 & 800	77.01	PK	3.24	H	1.05	7.80	3.00	12.09	-85.28	-20.00	65.28
700 & 800	139.35	PK	4.00	V	1.34	15.37	3.00	20.71	-76.67	-20.00	56.67
700 & 800	160.48	PK	4.35	H	1.45	16.95	3.00	22.75	-74.62	-20.00	54.62
700 & 800	182.28	PK	3.04	H	1.57	13.67	3.00	18.28	-79.10	-20.00	59.10
700 & 800	186.71	PK	3.53	V	1.58	13.57	3.00	18.68	-78.70	-20.00	58.70
700 & 800	200.00	PK	10.61	H	1.62	10.80	3.00	23.03	-74.35	-20.00	54.35
700 & 800	219.23	PK	12.33	V	1.69	10.32	3.00	24.34	-73.03	-20.00	53.03
700 & 800	1517.00	PK	21.12	H	4.52	27.76	3.00	53.40	-43.98	-20.00	23.98
700 & 800	1517.00	PK	18.78	V	4.52	27.76	3.00	51.06	-46.32	-20.00	26.32
700 & 800	1721.40	PK	20.62	H	4.81	29.35	3.00	54.78	-42.60	-20.00	22.60
700 & 800	1721.40	PK	20.17	V	4.81	29.35	3.00	54.33	-43.05	-20.00	23.05
700 & 800	3452.90	PK	17.90	H	6.84	32.60	3.00	57.34	-40.04	-20.00	20.04
700 & 800	3452.90	PK	17.09	V	6.84	32.60	3.00	56.53	-40.85	-20.00	20.85

Downlink

Tuned Frequency (MHz)	Emission Frequency (MHz)	Detector	Meter Reading (dBµV)	Antenna Polarity	Coax Loss (dB)	Correction Factor (dB/m)	Distance (m)	Field Strength (dBµV/m)	ERP (dBm)	Limit (dBm)	Margin (dBm)
700 & 800	41.24	PK	24.65	V	0.71	13.28	3.00	38.64	-58.73	-20.00	38.73
700 & 800	41.24	PK	6.97	V	0.71	13.28	3.00	20.96	-76.41	-20.00	56.41
700 & 800	57.93	PK	10.30	V	0.89	8.33	3.00	19.52	-77.86	-20.00	57.86
700 & 800	92.00	PK	21.93	V	1.14	10.80	3.00	33.87	-63.50	-20.00	43.50
700 & 800	95.41	PK	16.45	V	1.15	10.94	3.00	28.54	-68.84	-20.00	48.84
700 & 800	126.75	PK	13.47	V	1.28	12.25	3.00	27.00	-70.38	-20.00	50.38
700 & 800	181.60	PK	10.93	V	1.56	13.78	3.00	26.27	-71.10	-20.00	51.10
700 & 800	182.96	PK	19.50	V	1.57	13.60	3.00	34.67	-62.71	-20.00	42.71
700 & 800	196.93	PK	14.29	V	1.61	16.27	3.00	32.17	-65.21	-20.00	45.21
700 & 800	217.63	PK	12.54	H	1.68	10.35	3.00	24.57	-72.80	-20.00	52.80
700 & 800	217.63	PK	19.98	V	1.68	10.35	3.00	32.01	-65.36	-20.00	45.36
700 & 800	326.65	PK	8.35	V	2.09	13.70	3.00	24.14	-73.24	-20.00	53.24
700 & 800	341.08	PK	8.69	H	2.12	13.70	3.00	24.51	-72.87	-20.00	52.87
700 & 800	604.00	PK	6.46	V	2.87	18.48	3.00	27.81	-69.57	-20.00	49.57
700 & 800	1153.30	PK	15.31	V	3.90	27.38	3.00	46.59	-50.79	-20.00	30.79
700 & 800	1961.90	PK	15.78	H	5.12	31.31	3.00	52.21	-45.16	-20.00	25.16
700 & 800	2659.30	PK	16.59	H	5.91	32.44	3.00	54.94	-42.44	-20.00	22.44
700 & 800	4460.90	PK	16.79	V	7.32	33.81	3.00	57.92	-39.46	-20.00	19.46

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2.1055 FREQUENCY STABILITY

KDB 935210 4.8 FREQUENCY STABILITY

90.213 FREQUENCY STABILITY

22.355 FREQUENCY TOLERANCE

Test Engineer:_____
Test Date:_____

N/A. Device does not use a frequency determining element and is exempt.

N/A. There is no Transient Frequency Response compliance requirement for devices which operate in the 700 and 800 MHz bands.

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END OF TEST REPORT

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