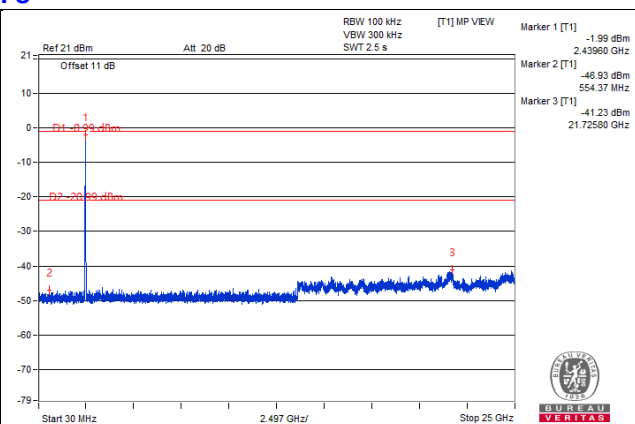
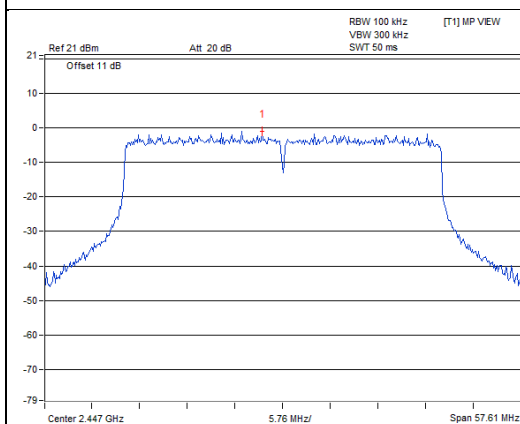
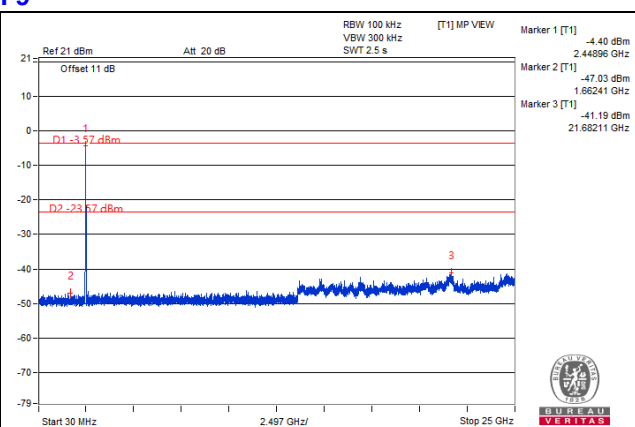
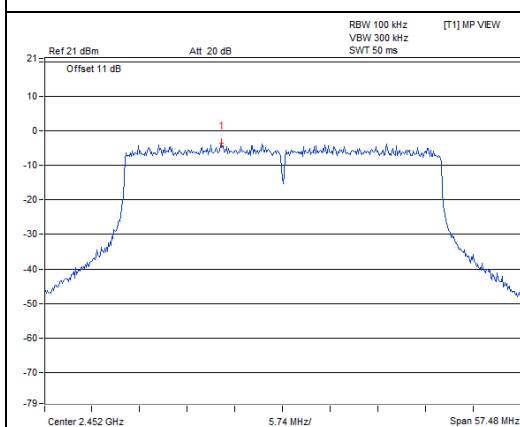


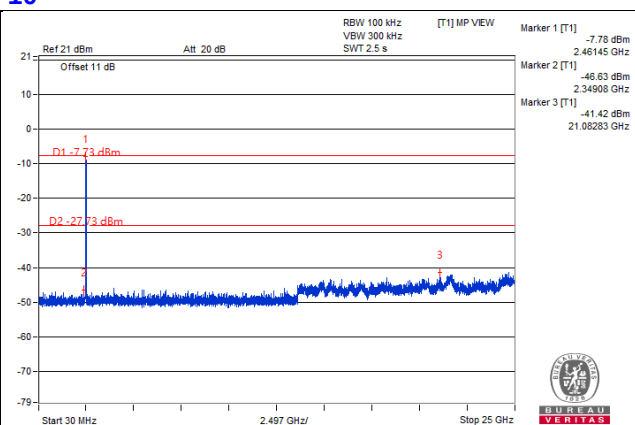
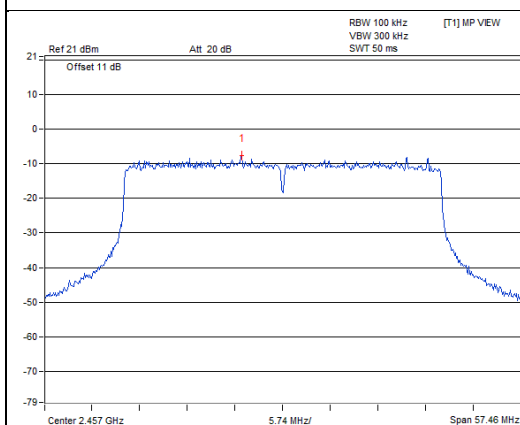
CH 8



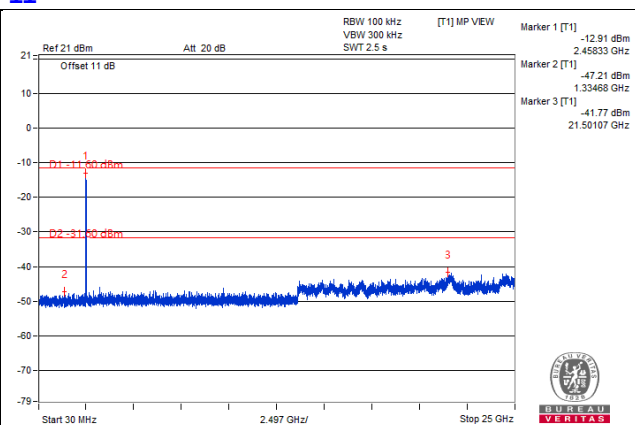
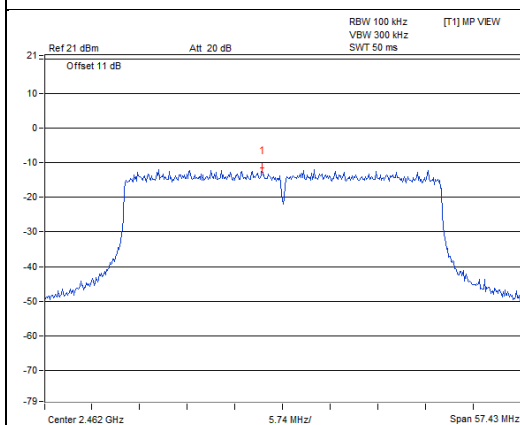
CH 9



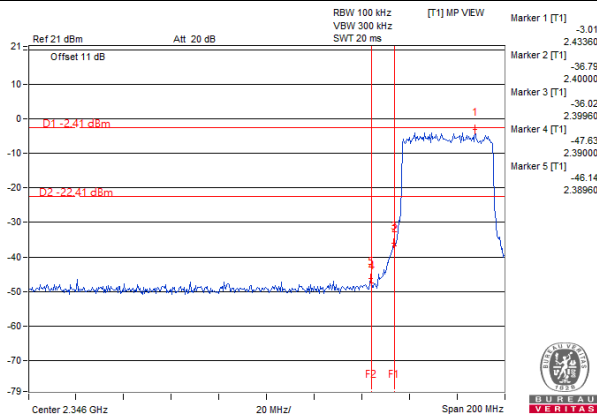
CH 10



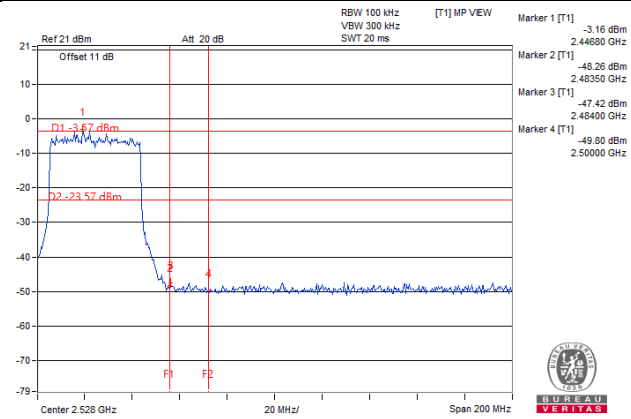
CH 11



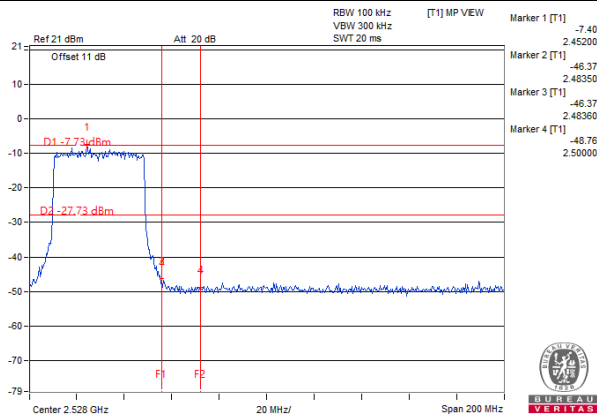
CH 3 Band edge



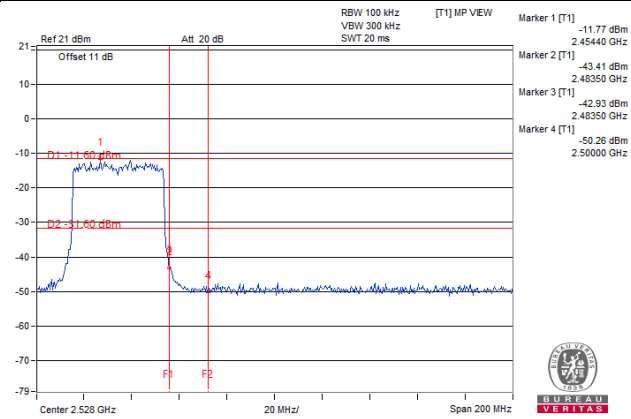
CH 9 Band edge



CH 10 Band edge

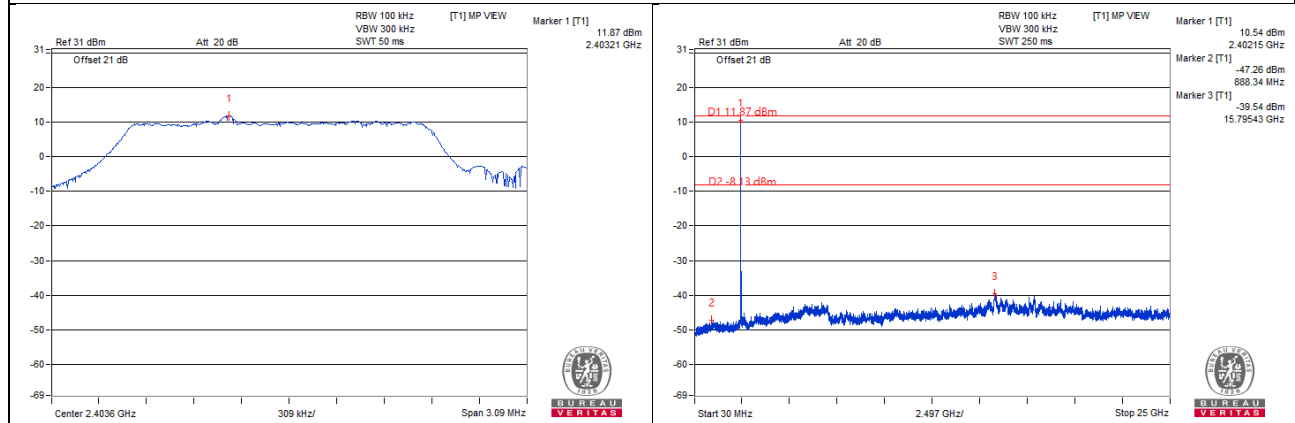


CH 11 Band edge

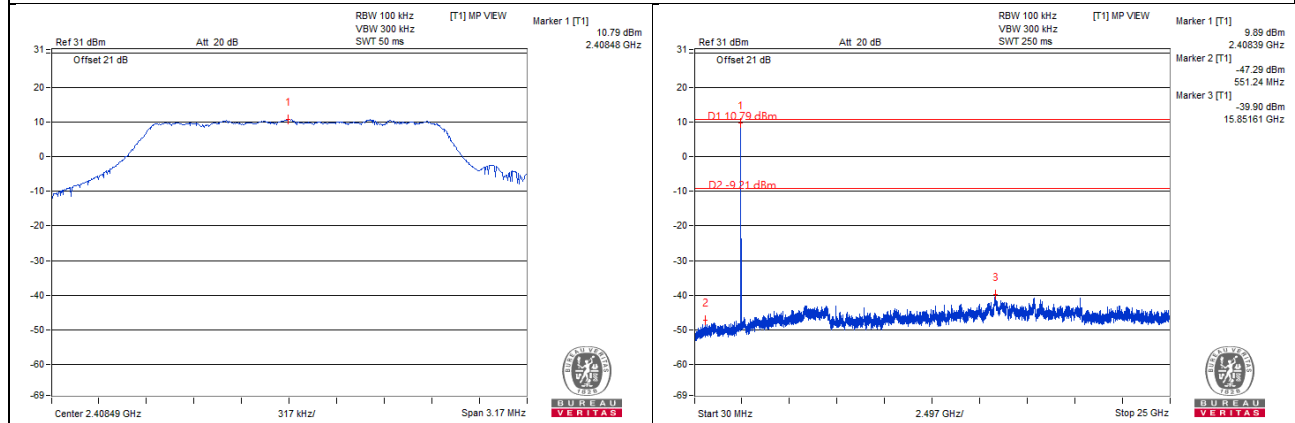


20MHz Preamble (RU26) - Chain 0

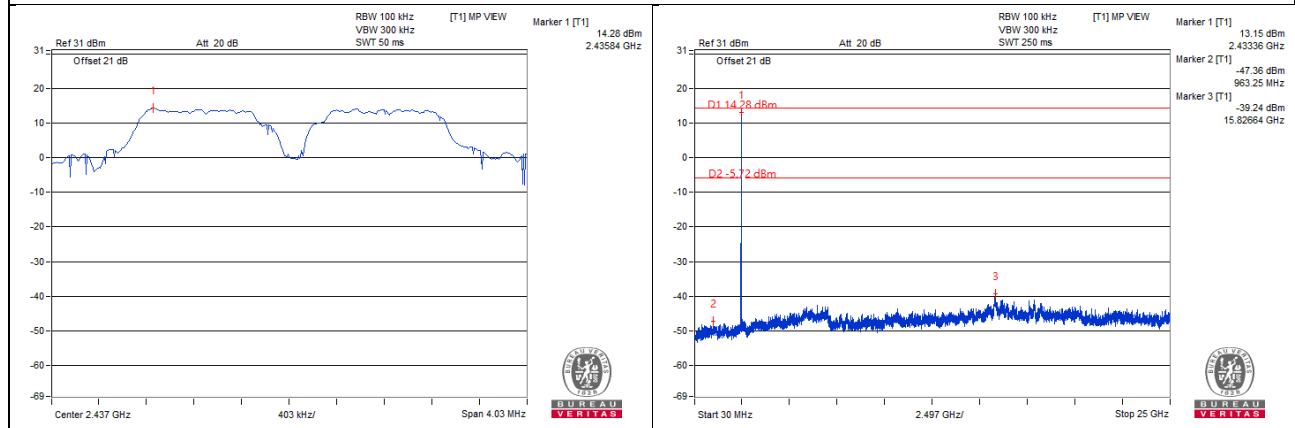
CH 1



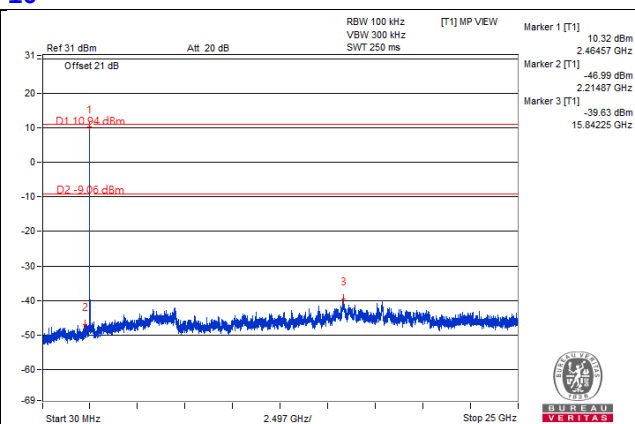
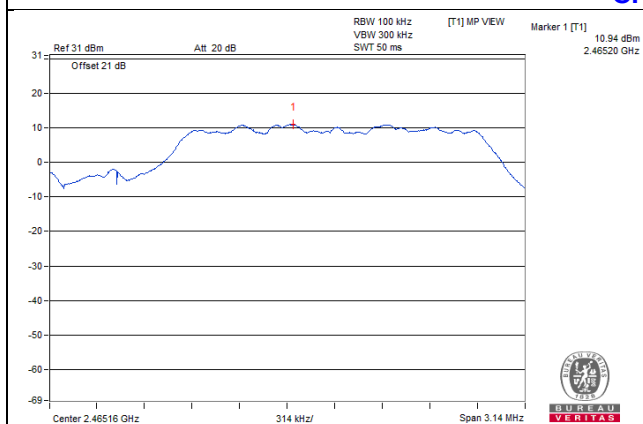
CH 2



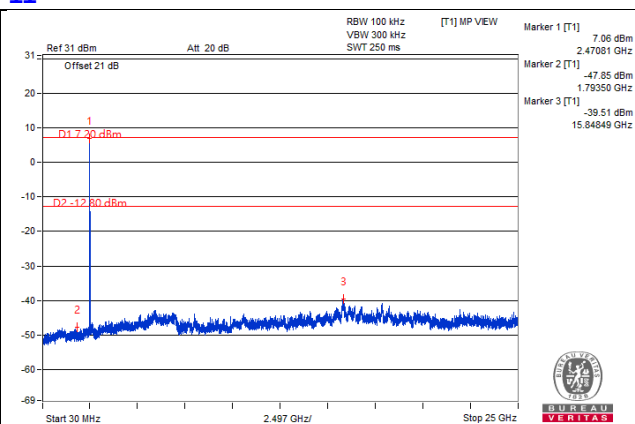
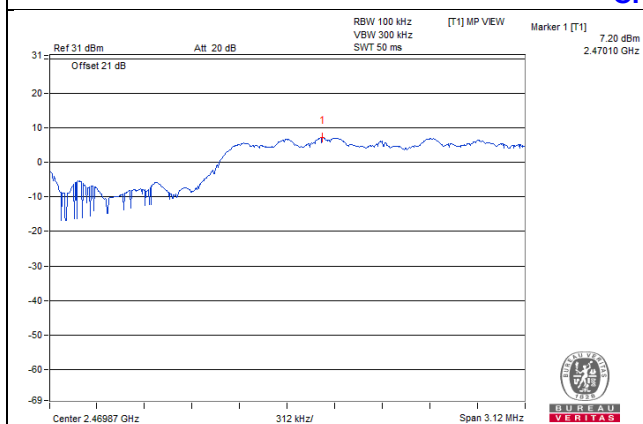
CH 6



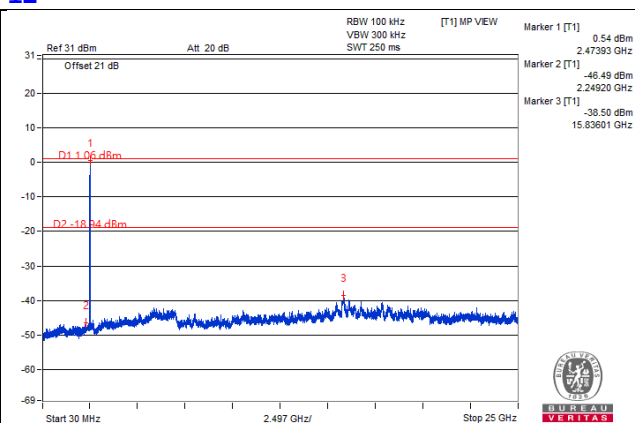
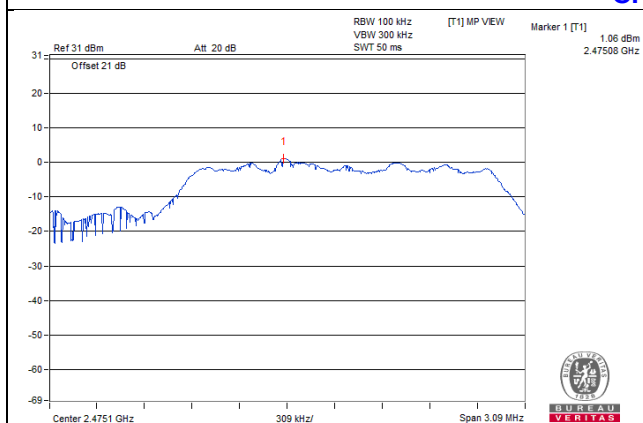
CH 10



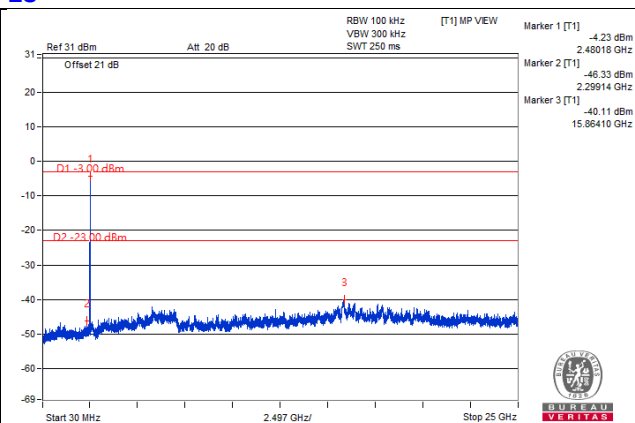
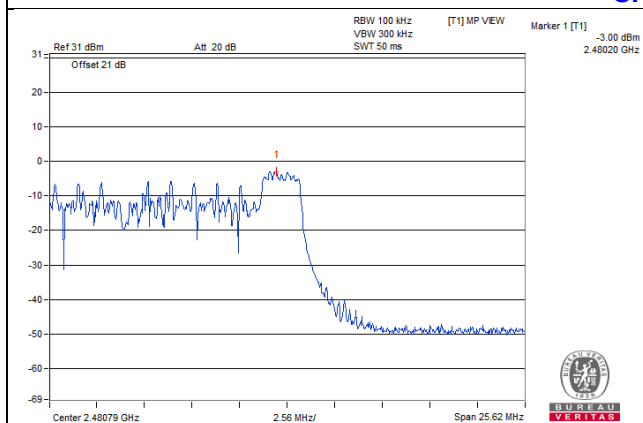
CH 11



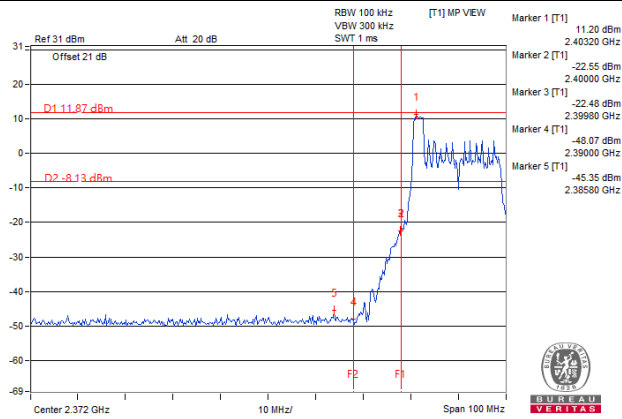
CH 12



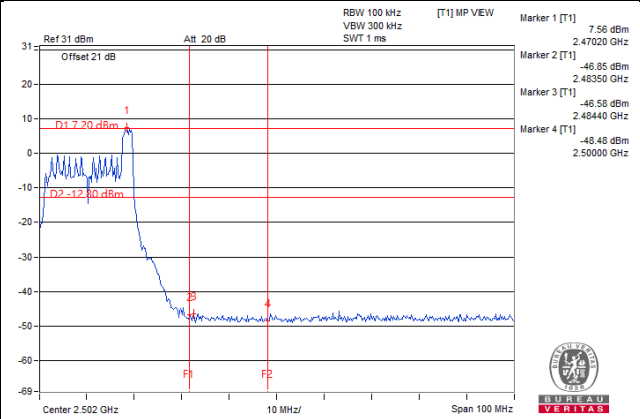
CH 13



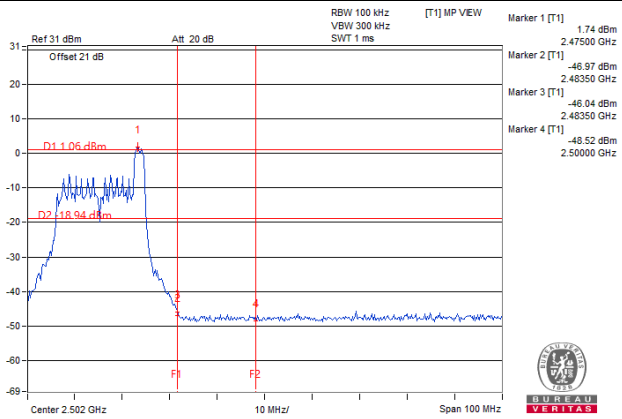
CH 1 Band edge



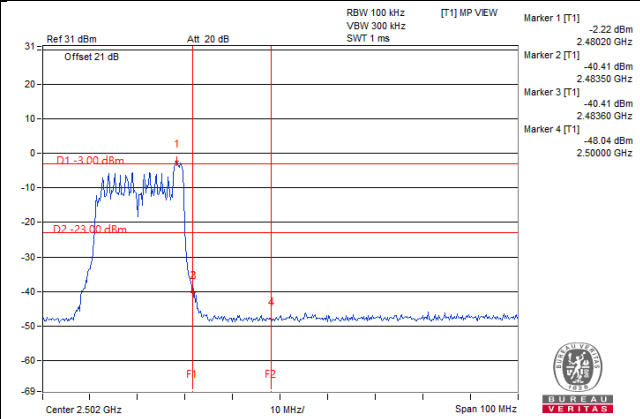
CH 11 Band edge



CH 12 Band edge

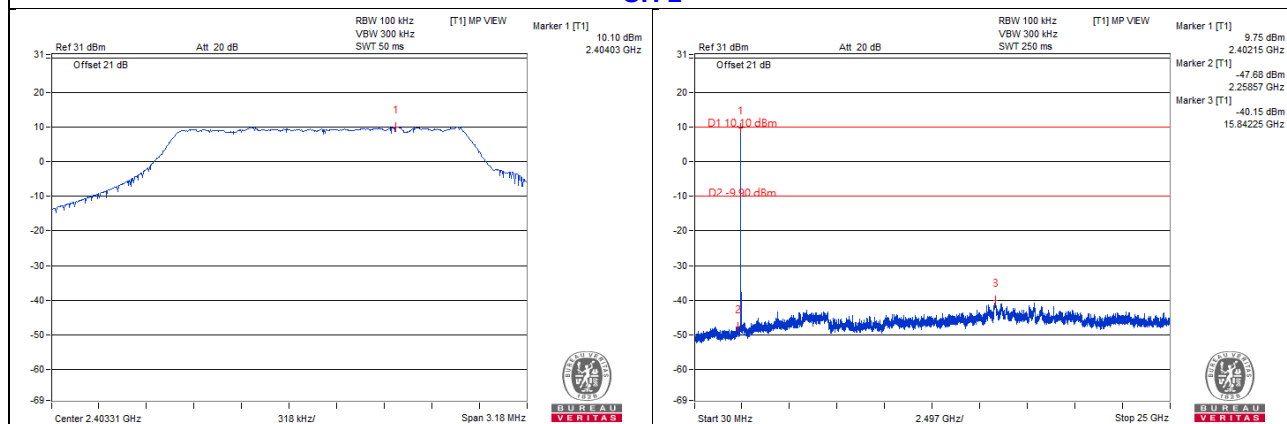


CH 13 Band edge

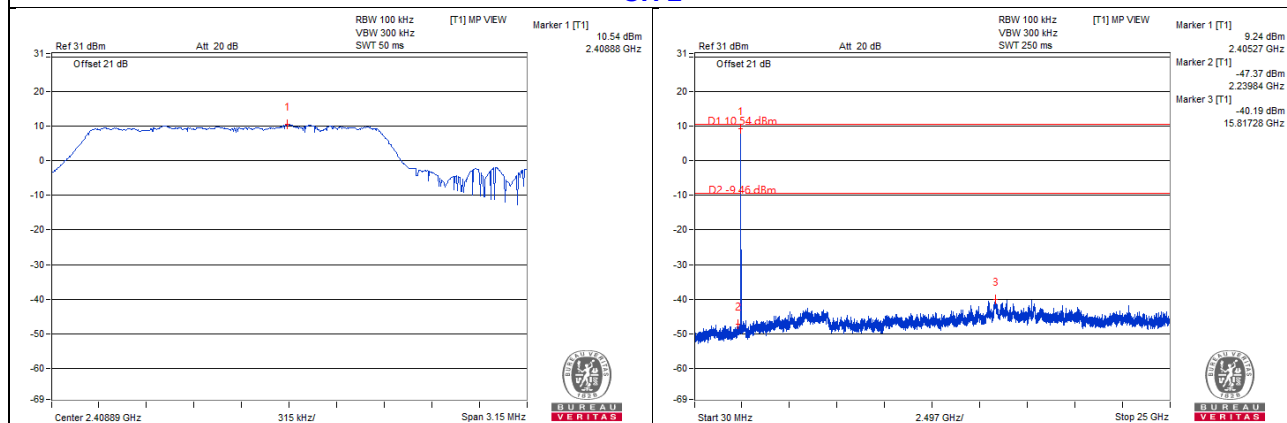


Chain 1

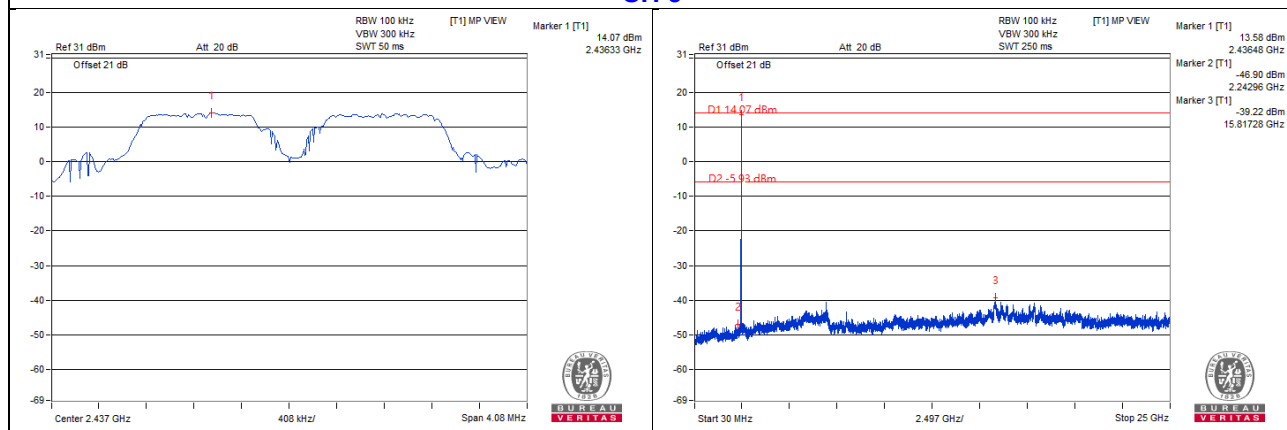
CH 1



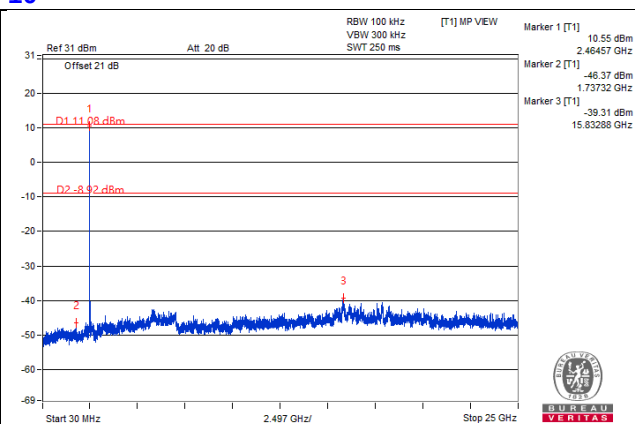
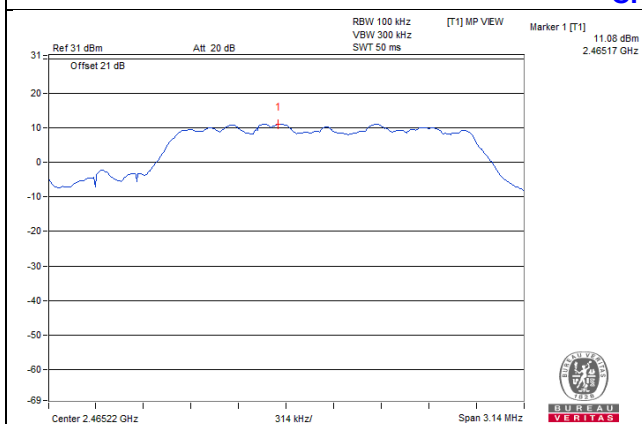
CH 2



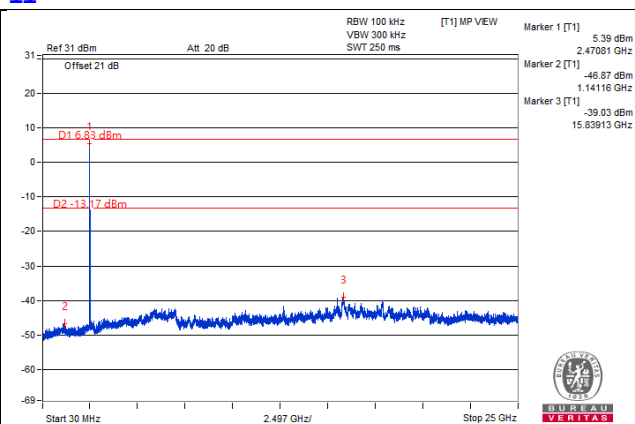
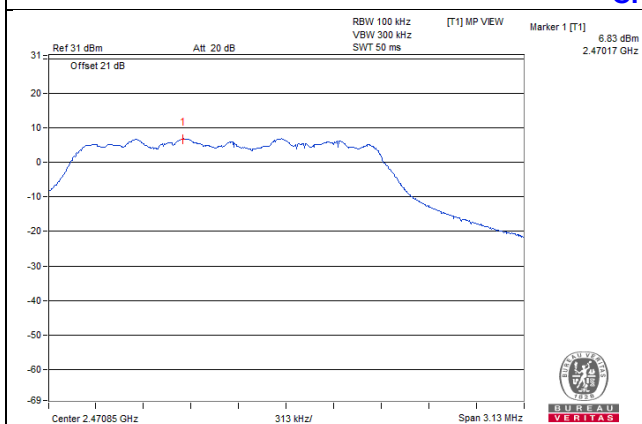
CH 6



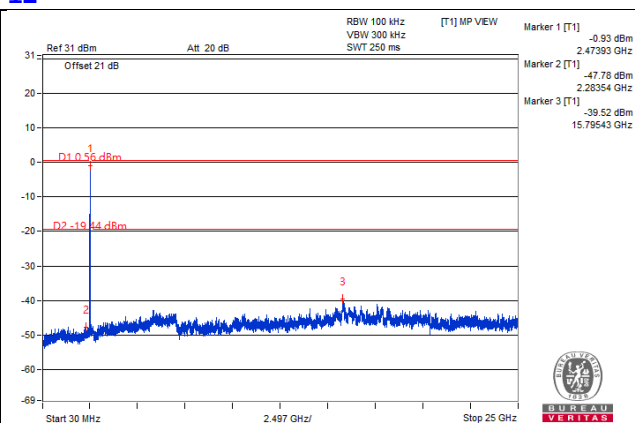
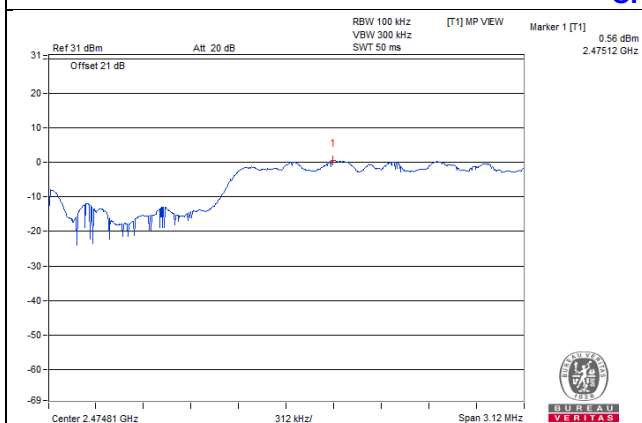
CH 10



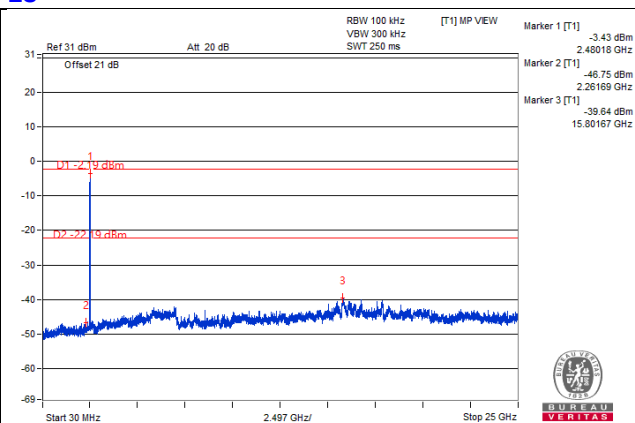
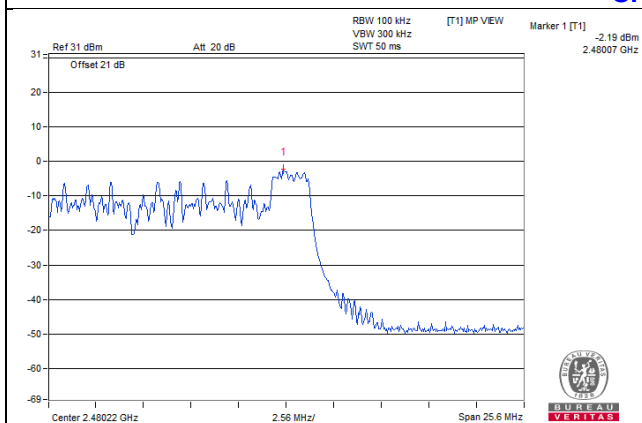
CH 11



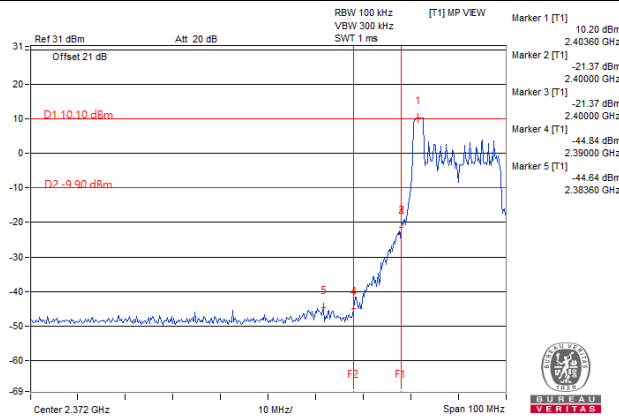
CH 12



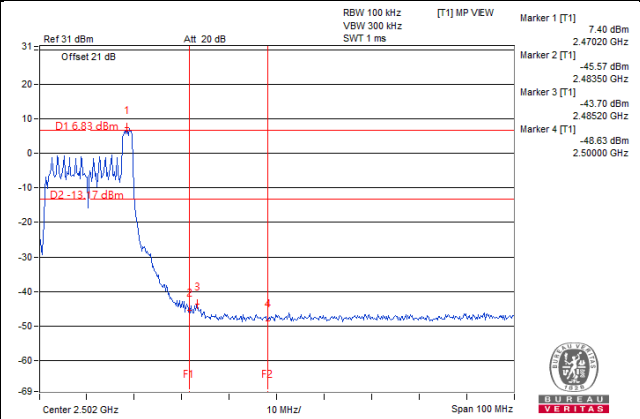
CH 13



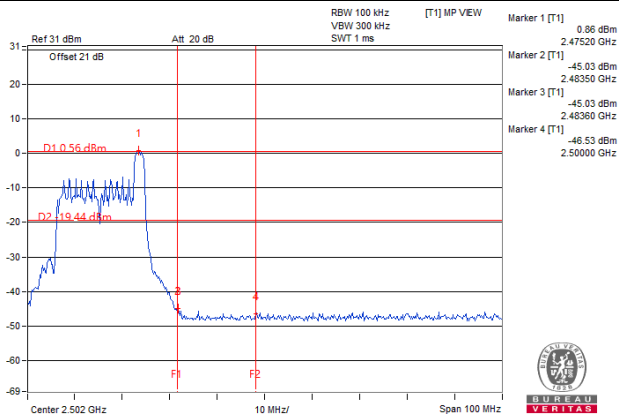
CH 1 Band edge



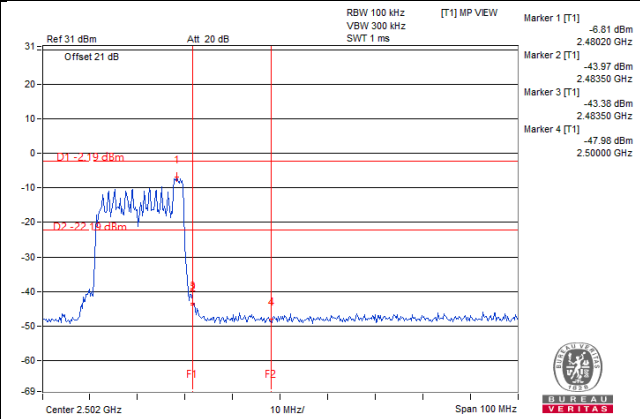
CH 11 Band edge



CH 12 Band edge

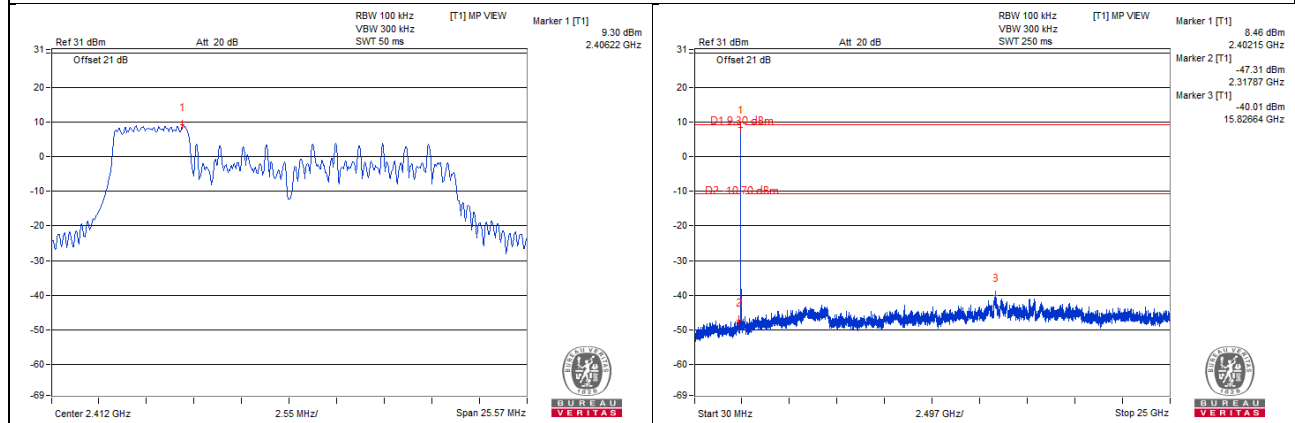


CH 13 Band edge

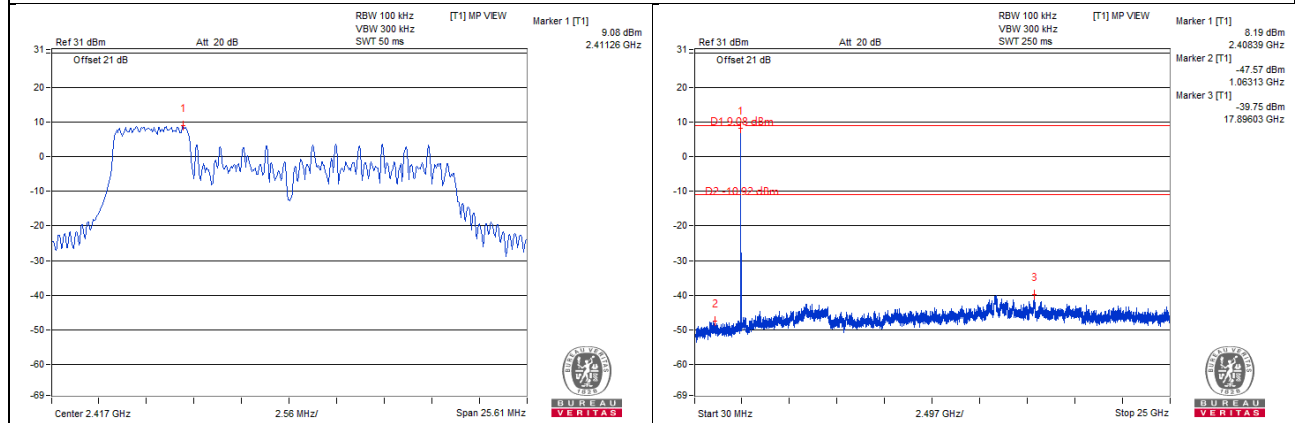


20MHz Preamble (RU52) - Chain 0

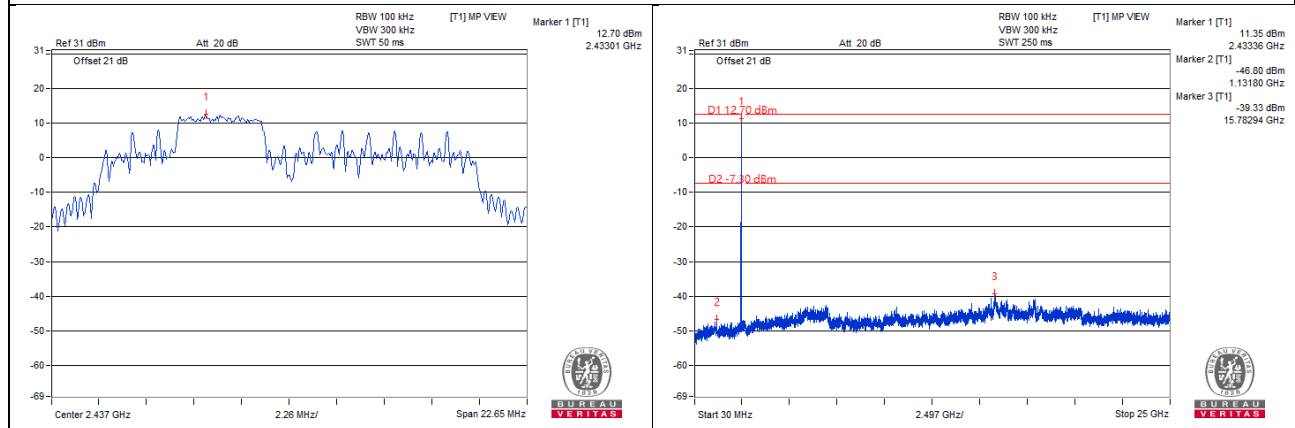
CH 1



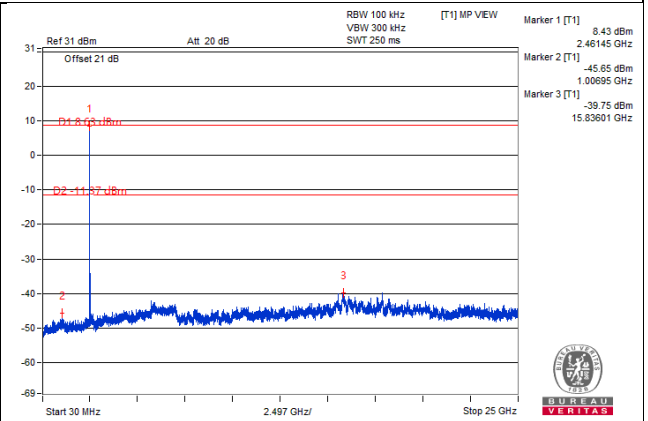
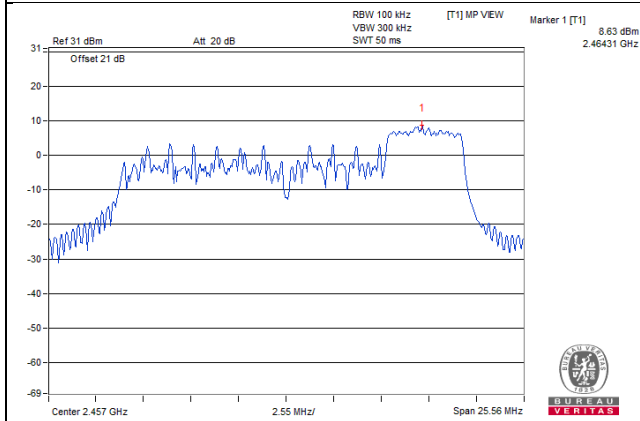
CH 2



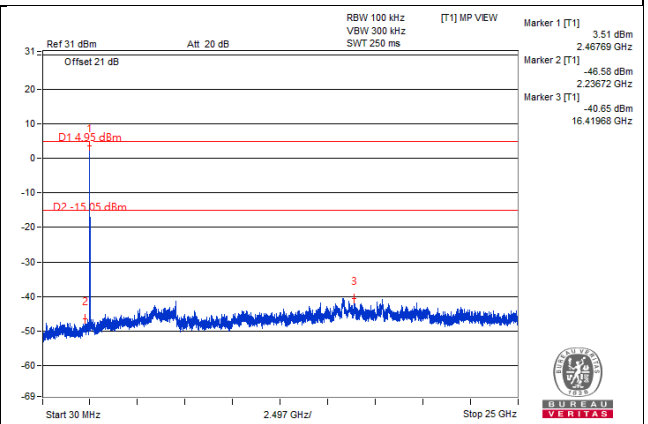
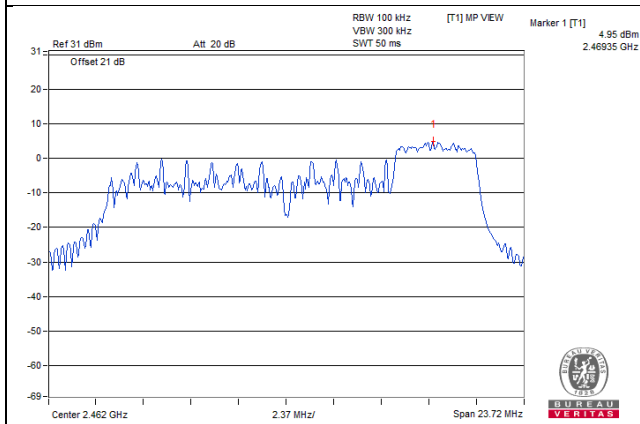
CH 6



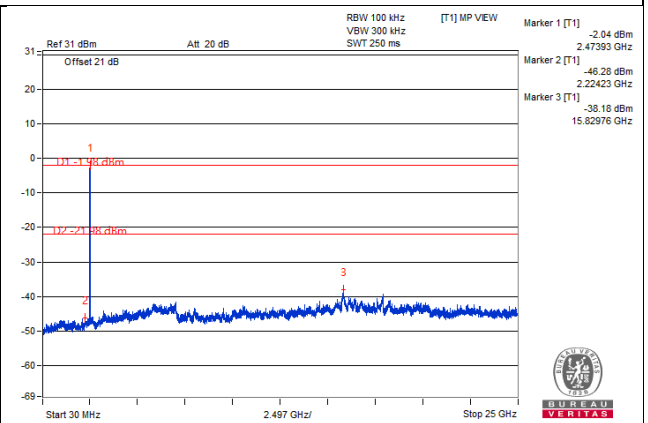
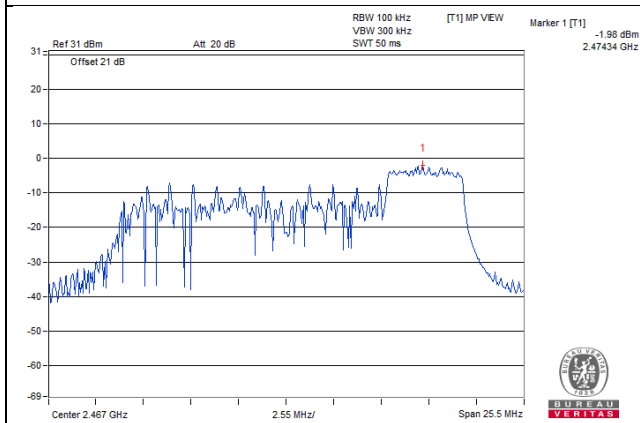
CH 10



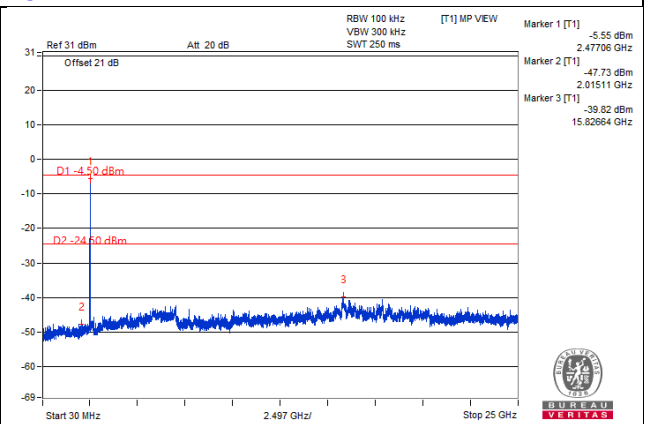
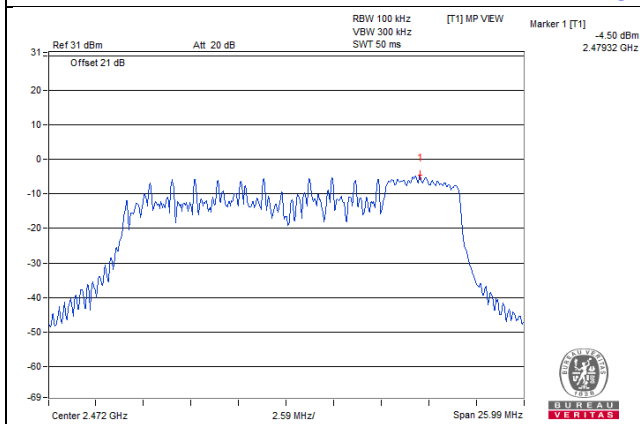
CH 11



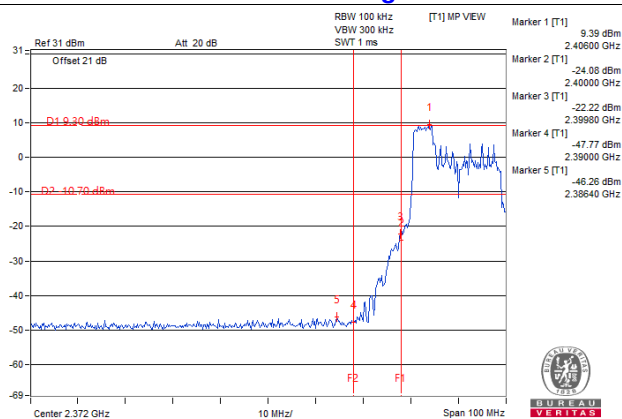
CH 12



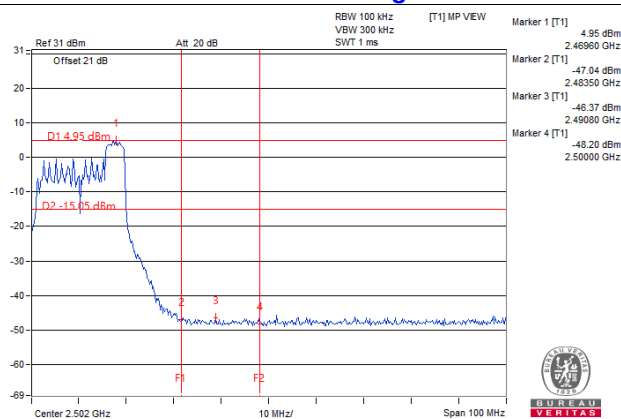
CH 13



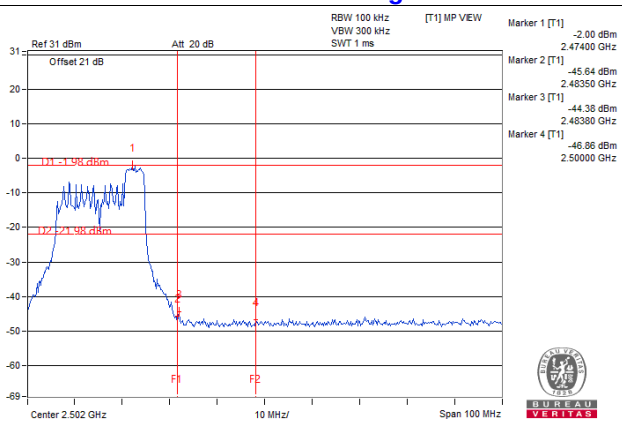
CH 1 Band edge



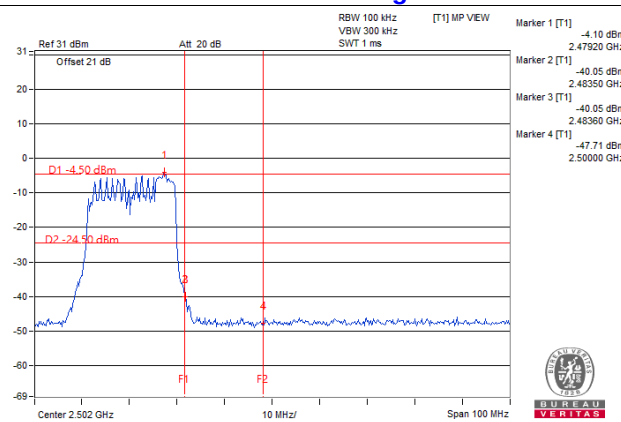
CH 11 Band edge



CH 12 Band edge

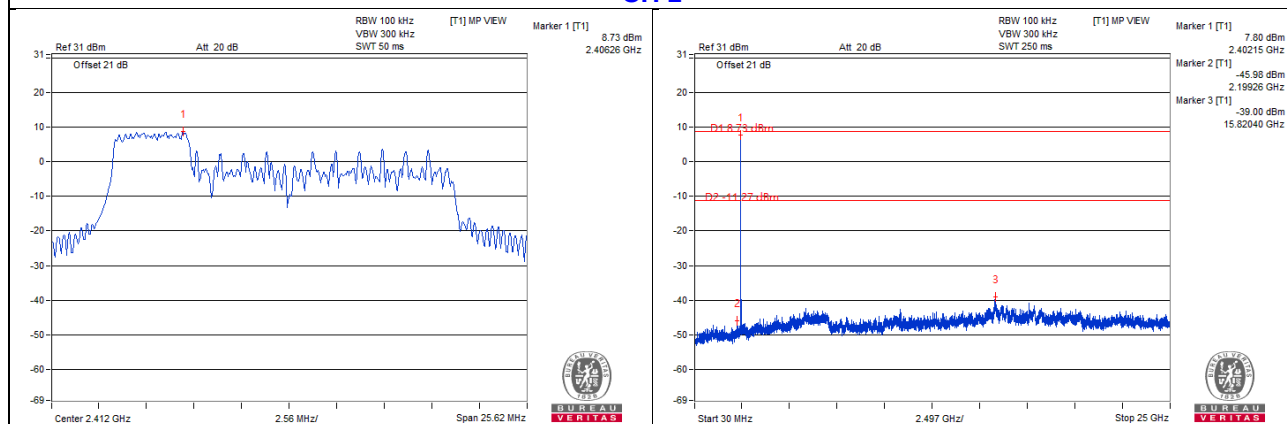


CH 13 Band edge

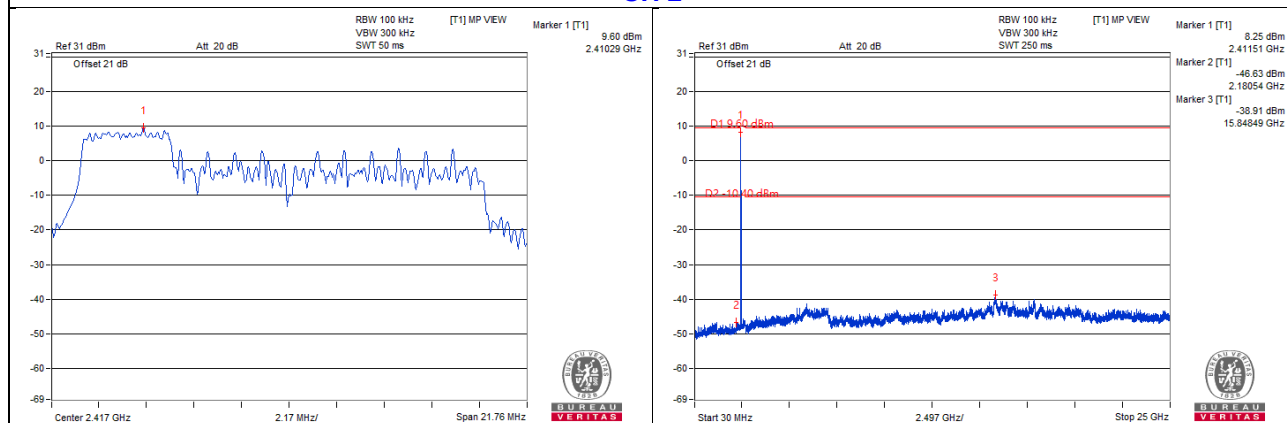


Chain 1

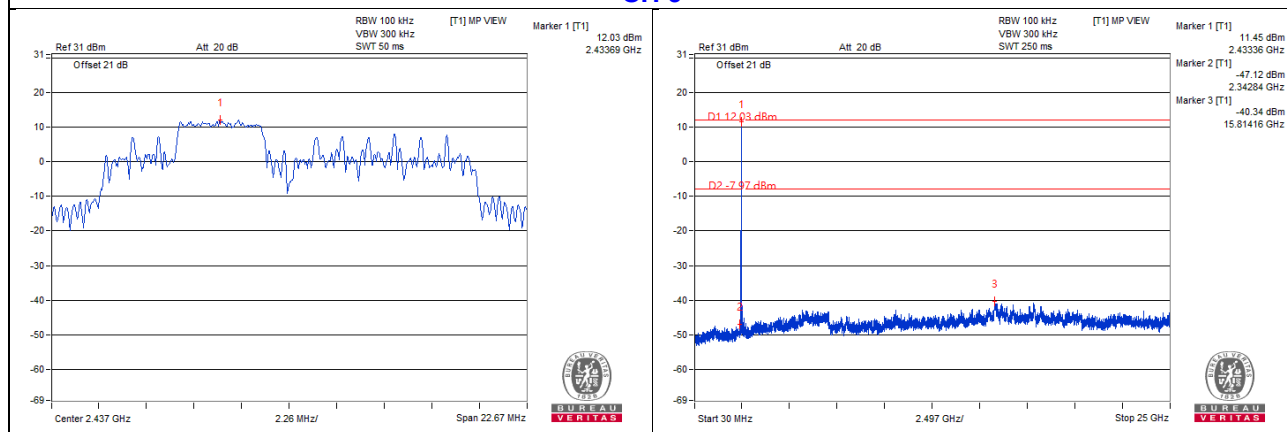
CH 1



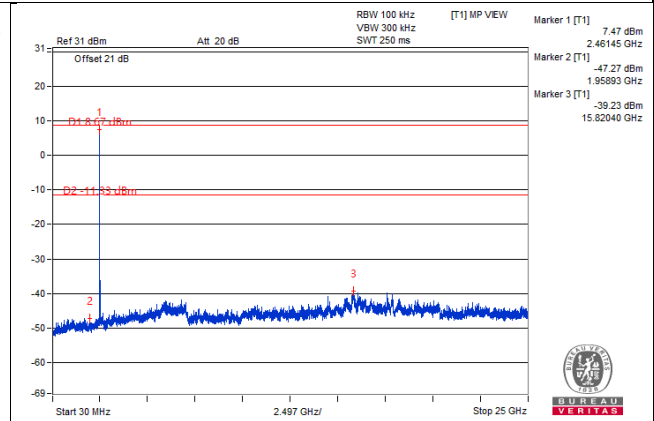
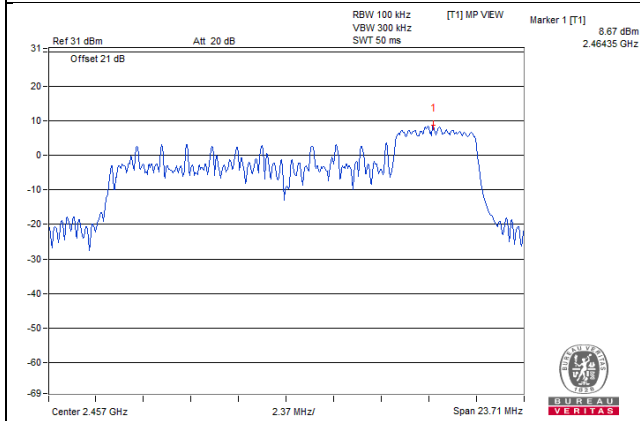
CH 2



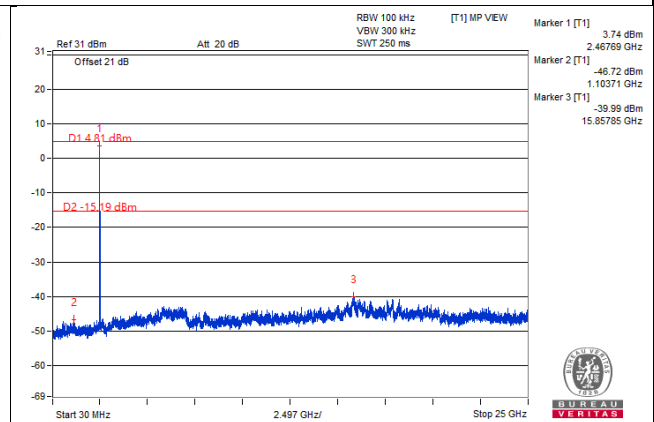
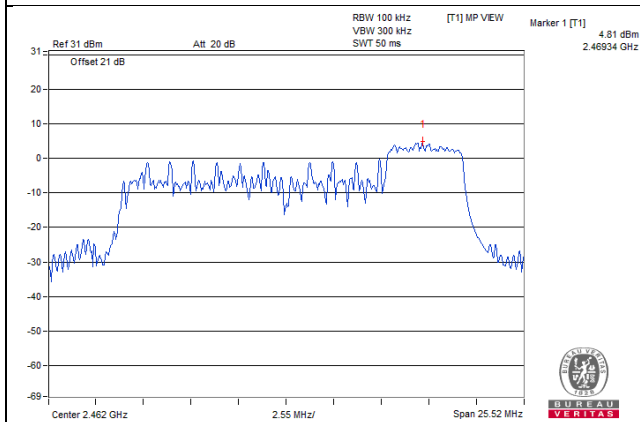
CH 6



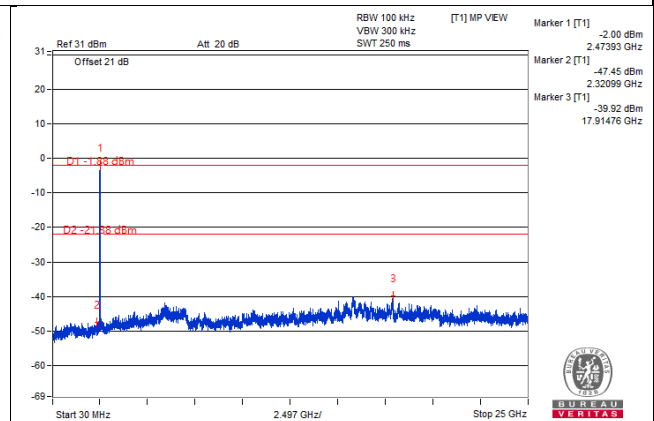
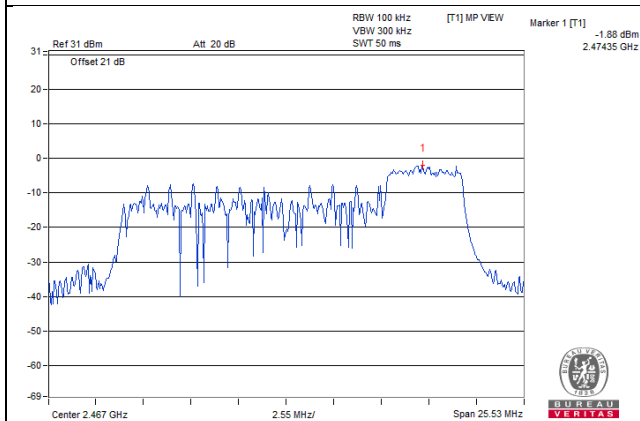
CH 10



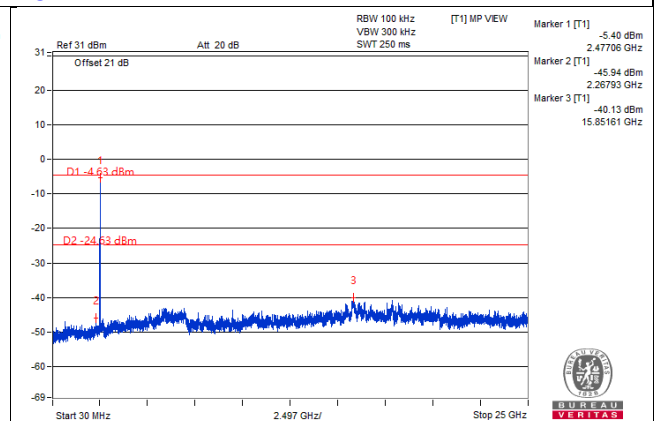
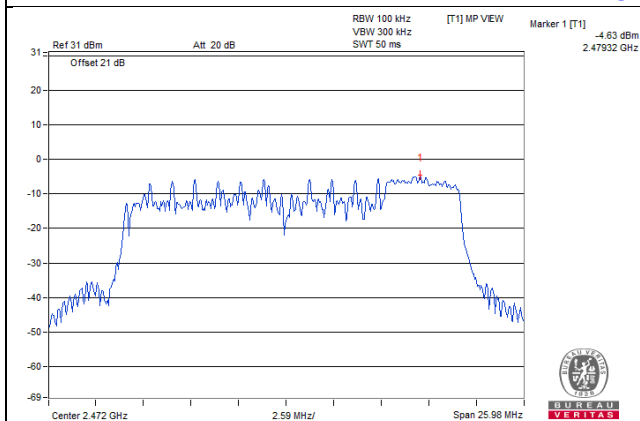
CH 11



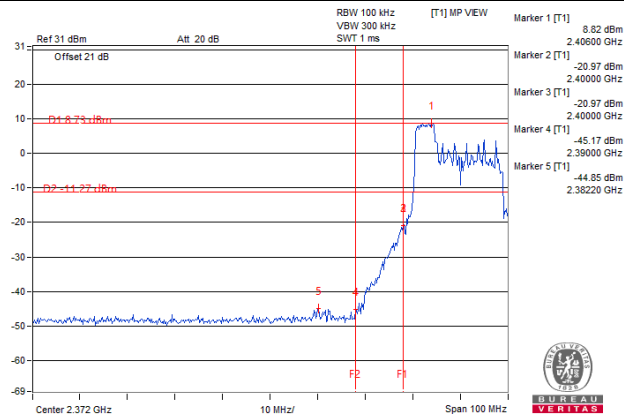
CH 12



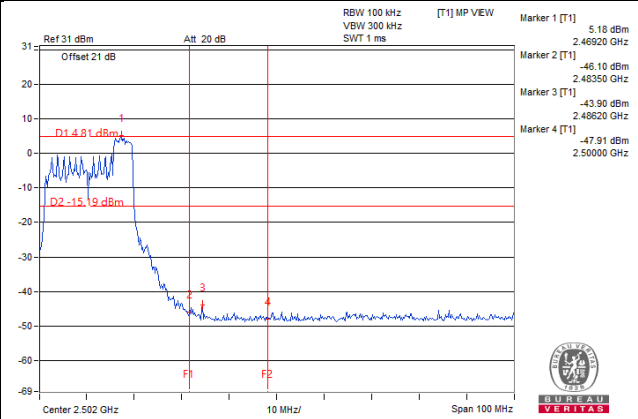
CH 13



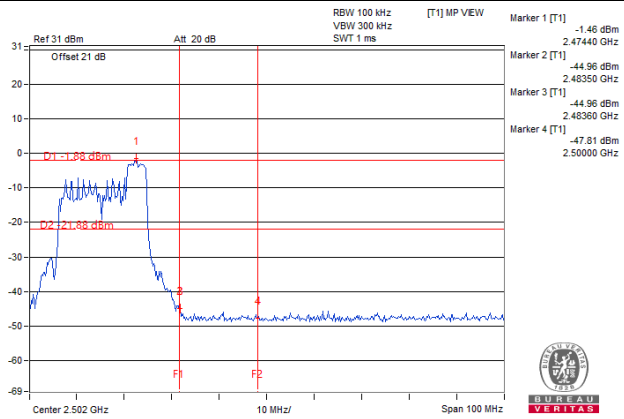
CH 1 Band edge



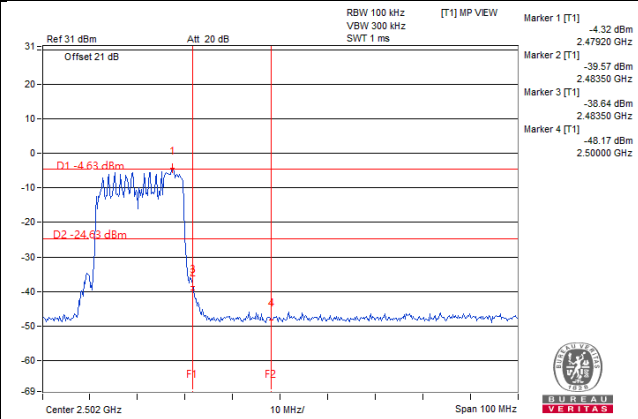
CH 11 Band edge



CH 12 Band edge

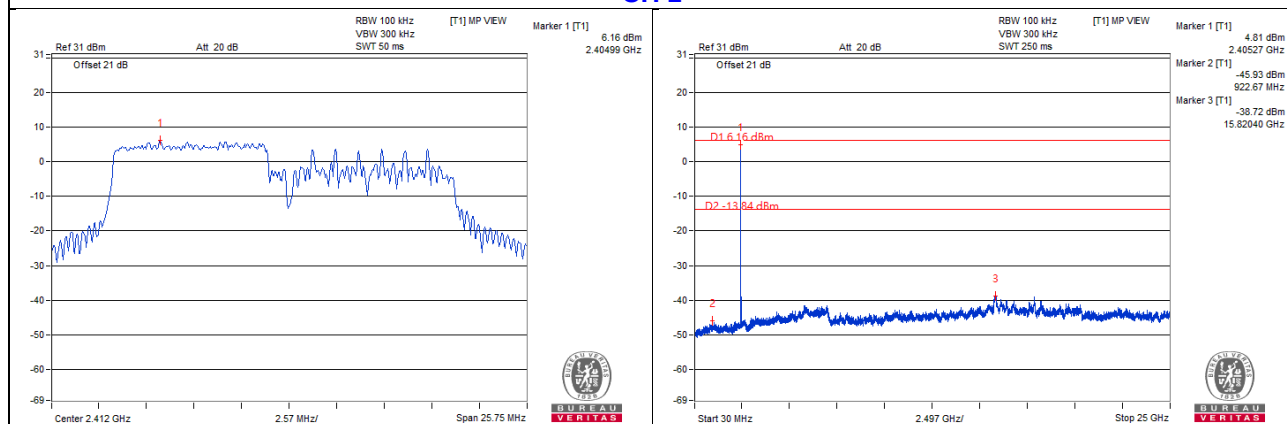


CH 13 Band edge

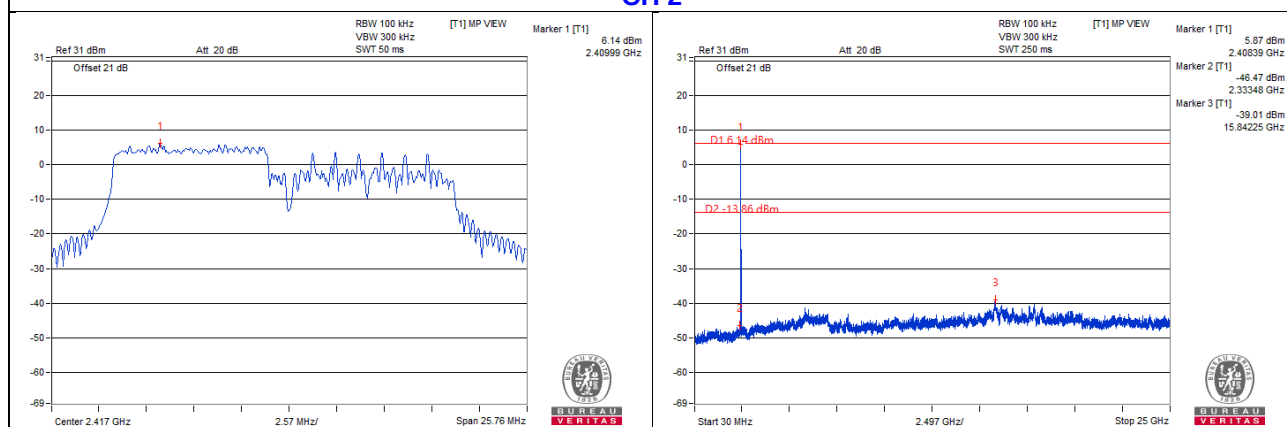


20MHz Preamble (RU106) - Chain 0

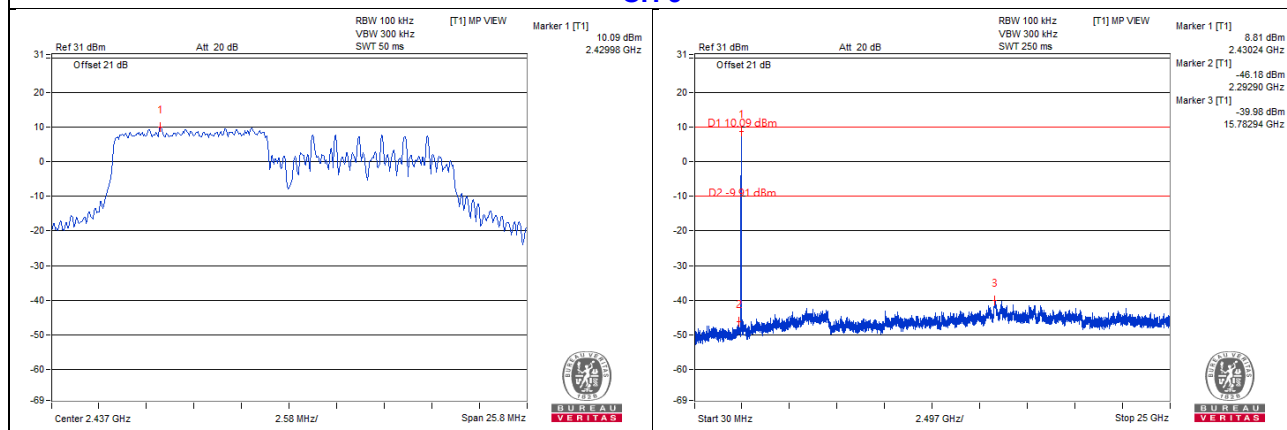
CH 1



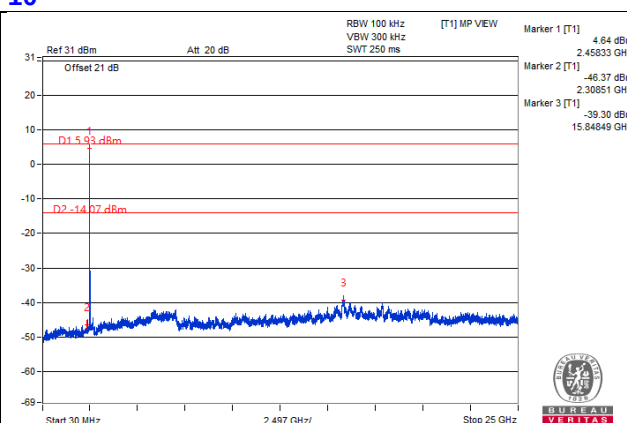
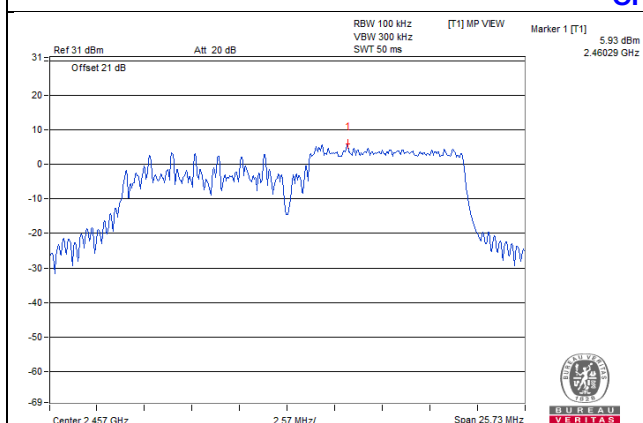
CH 2



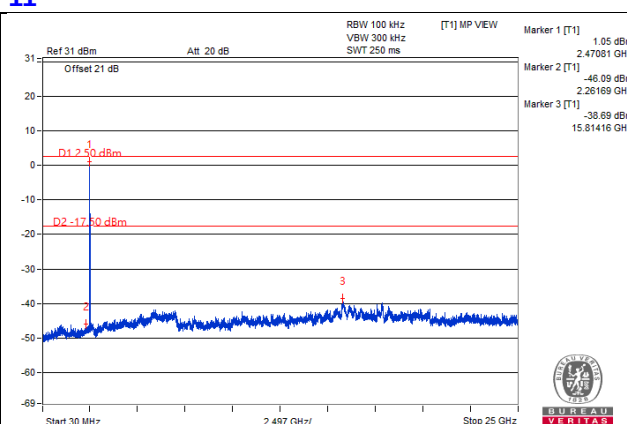
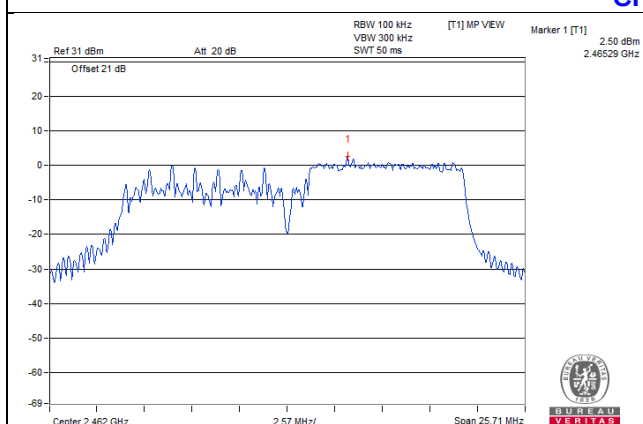
CH 6



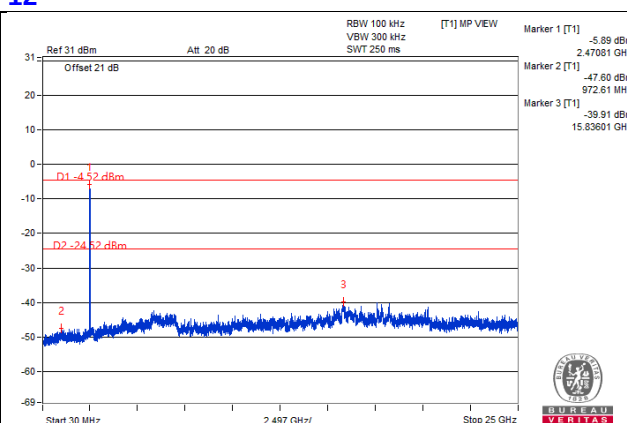
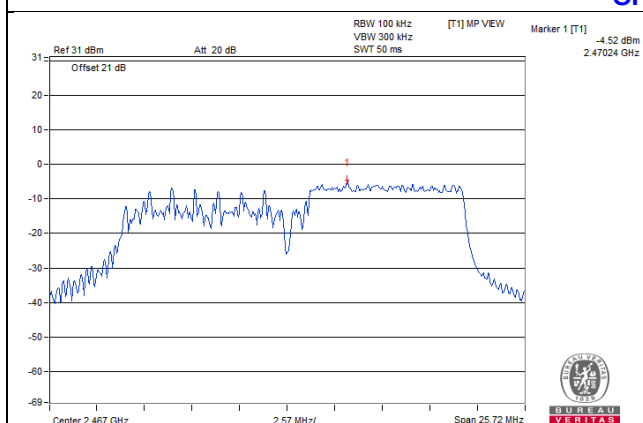
CH 10



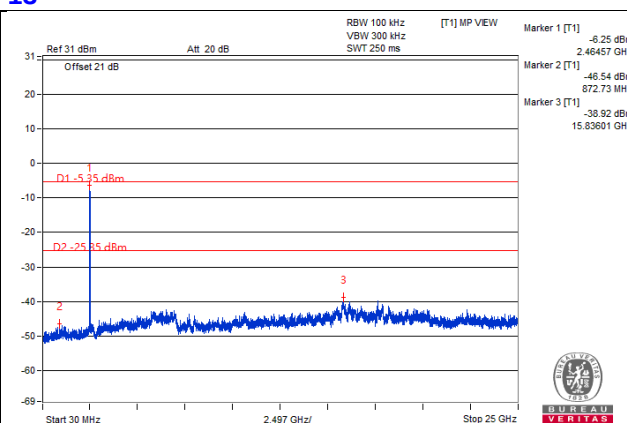
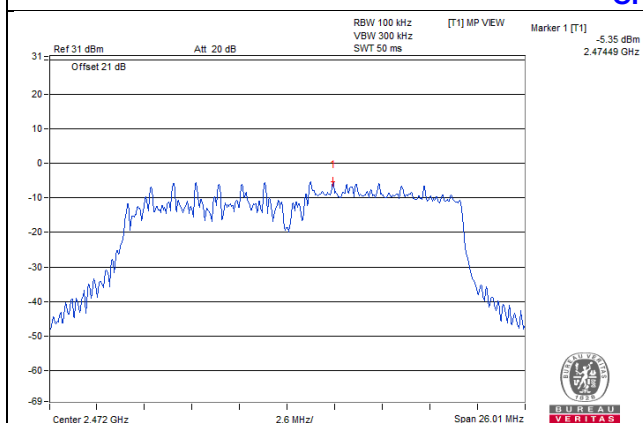
CH 11



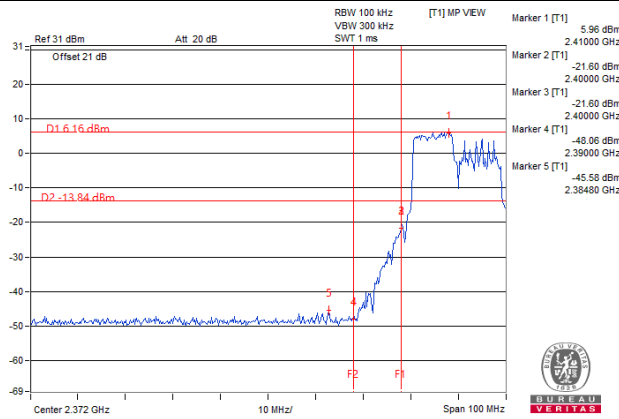
CH 12



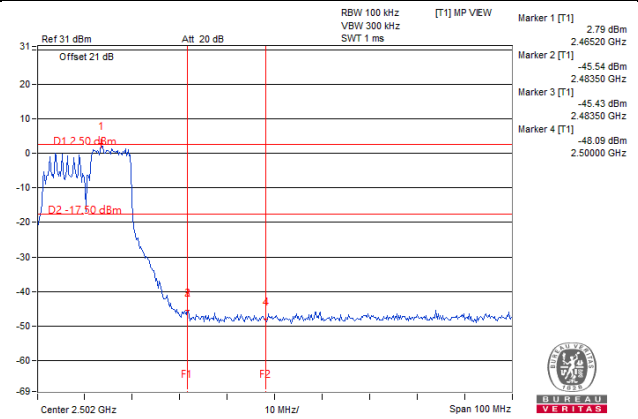
CH 13



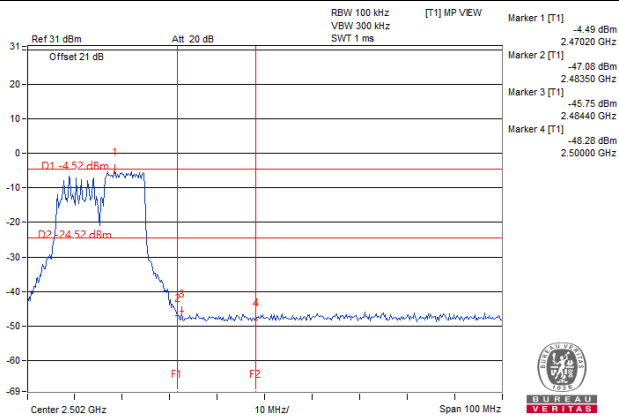
CH 1 Band edge



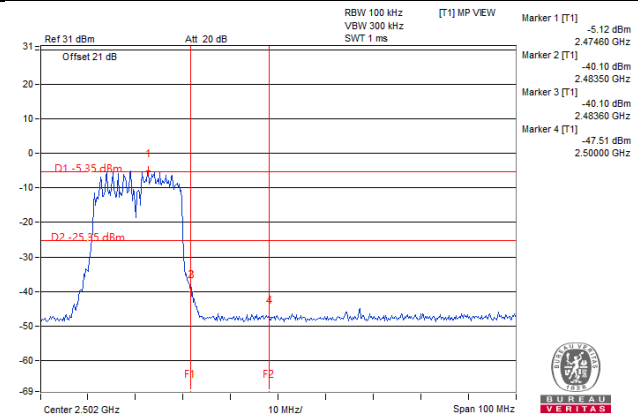
CH 11 Band edge



CH 12 Band edge

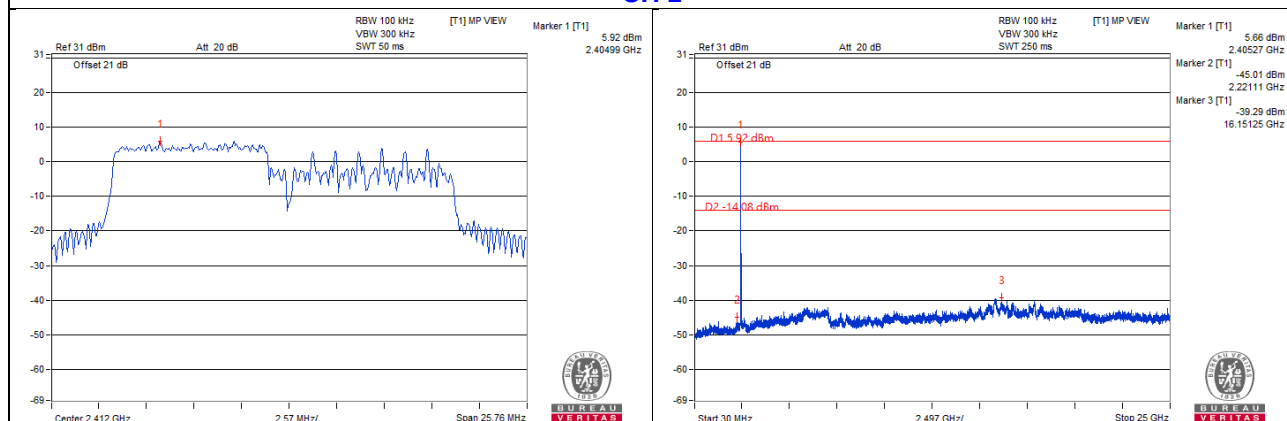


CH 13 Band edge

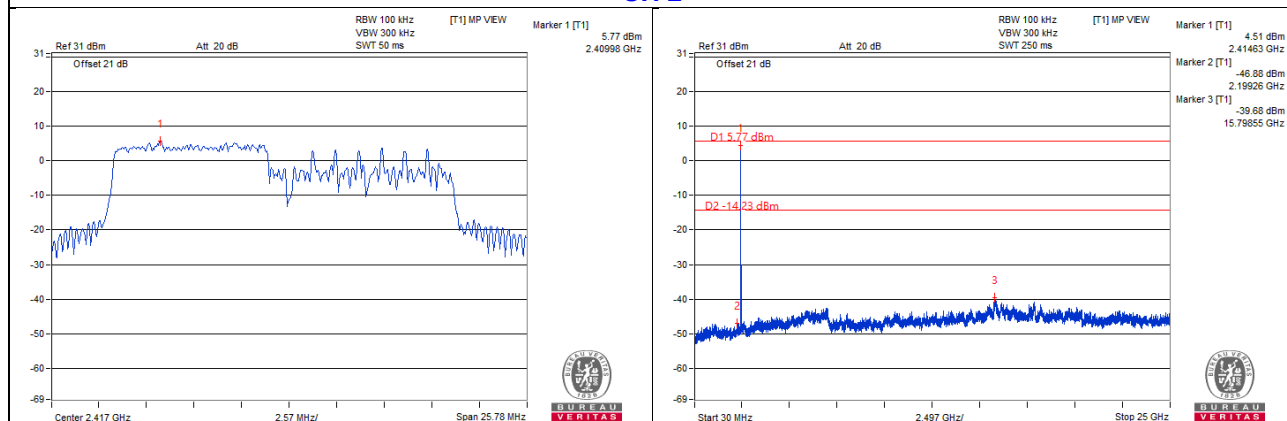


Chain 1

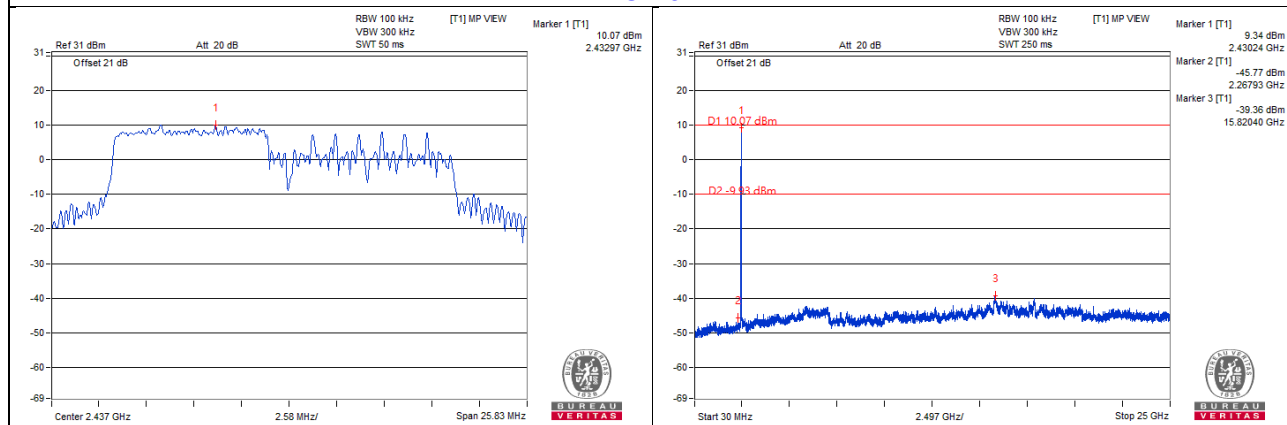
CH 1



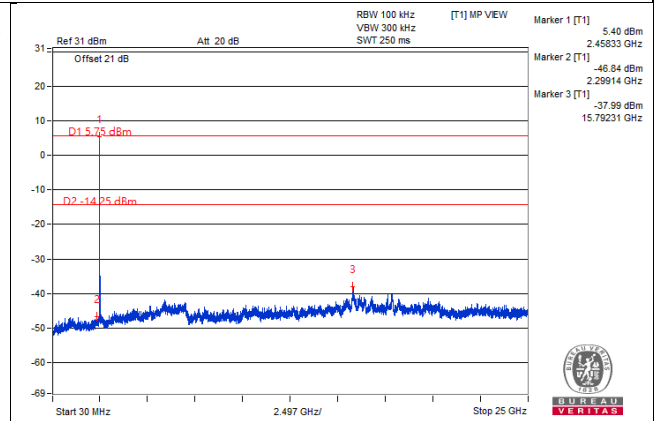
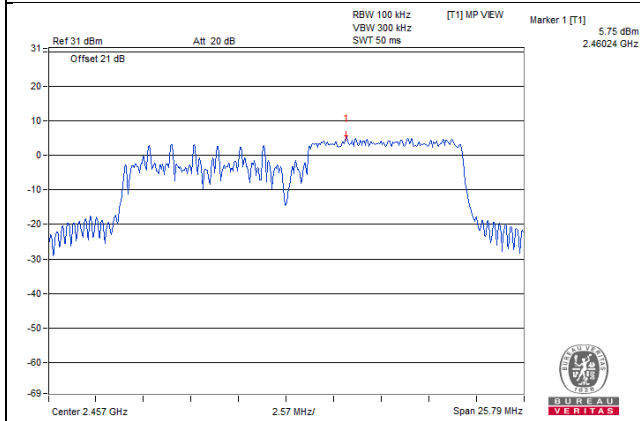
CH 2



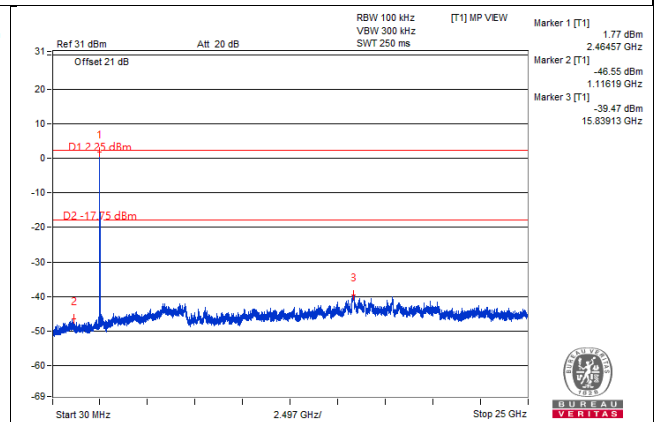
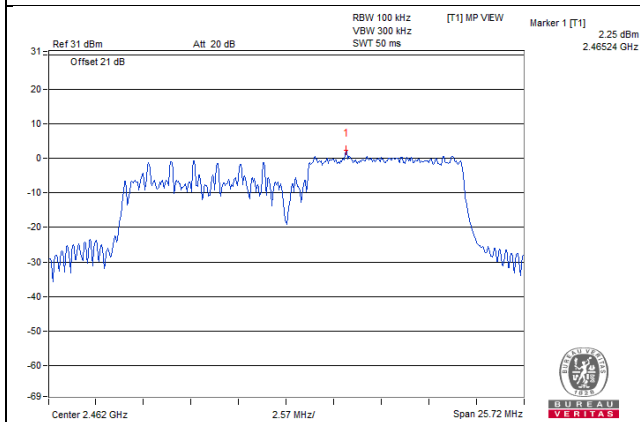
CH 6



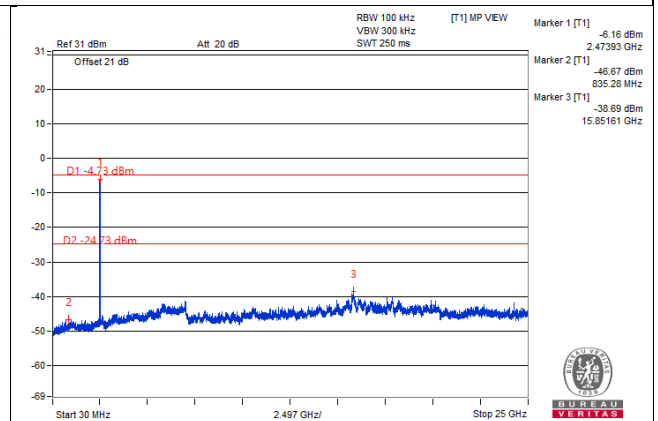
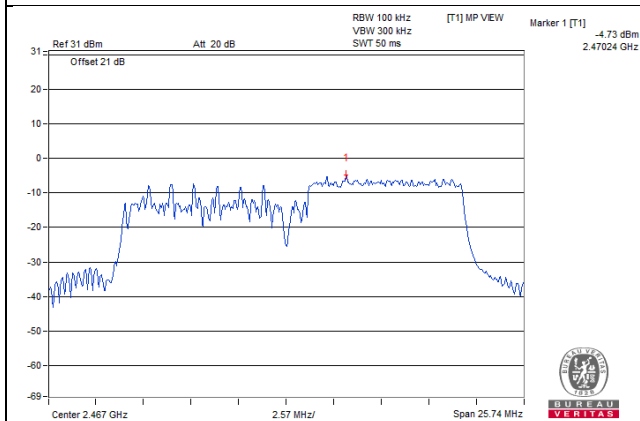
CH 10



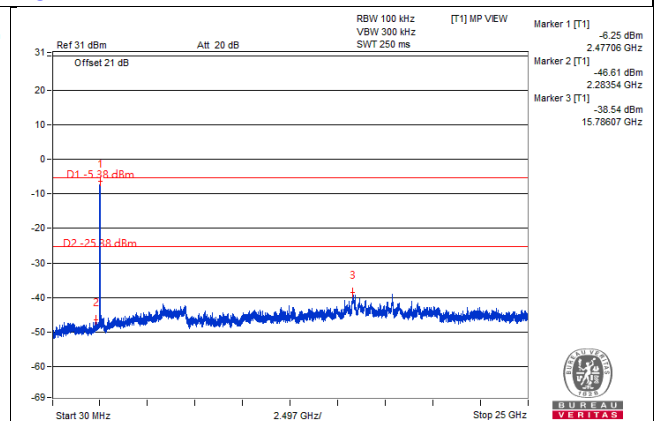
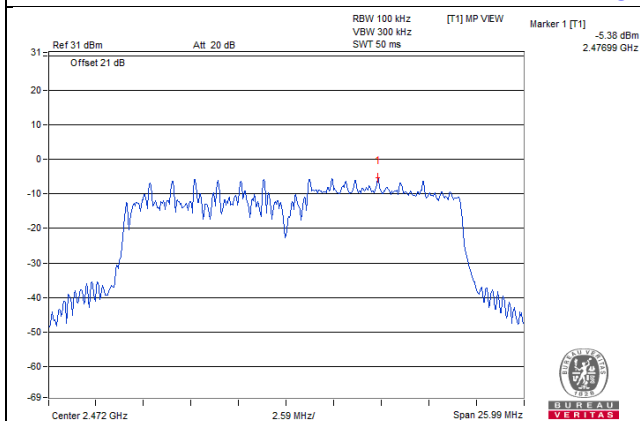
CH 11



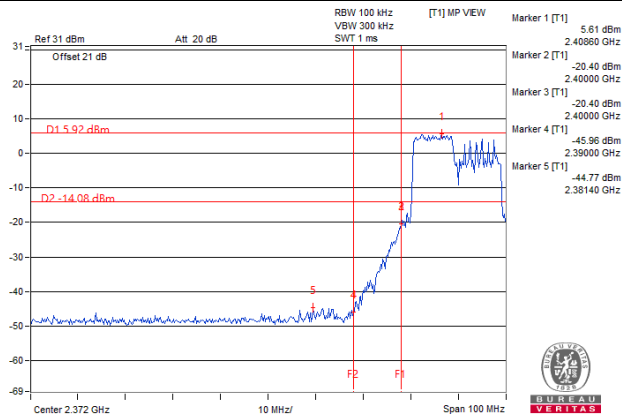
CH 12



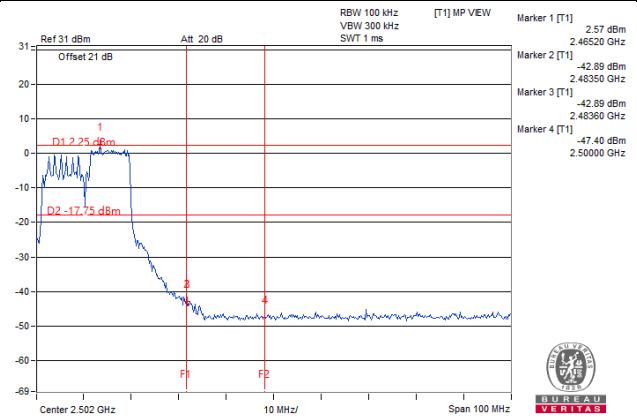
CH 13



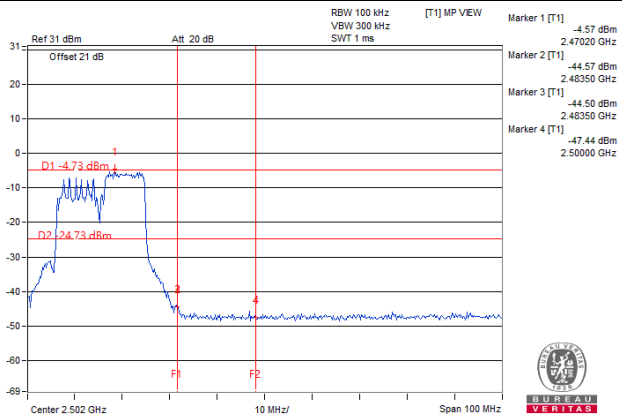
CH 1 Band edge



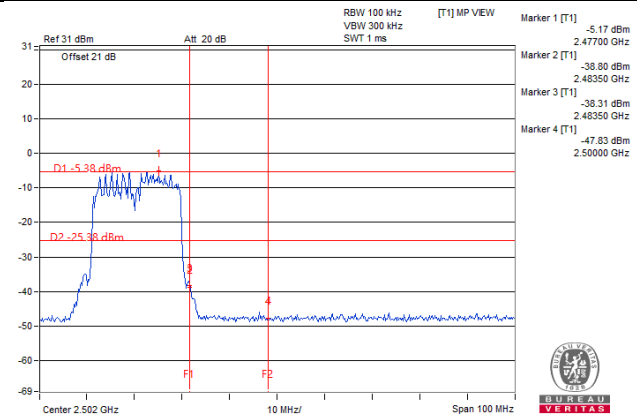
CH 11 Band edge



CH 12 Band edge

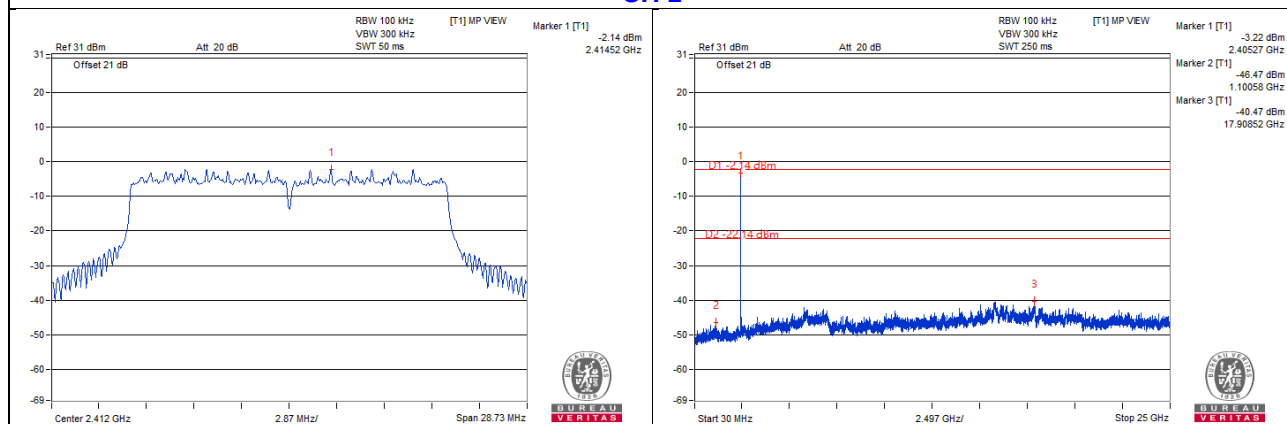


CH 13 Band edge

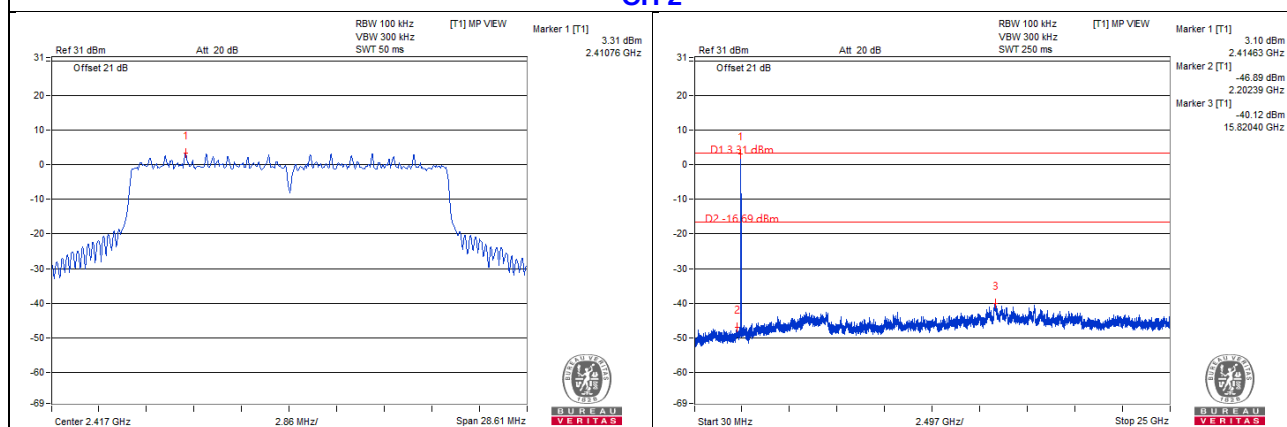


20MHz Preamble (RU242) - Chain 0

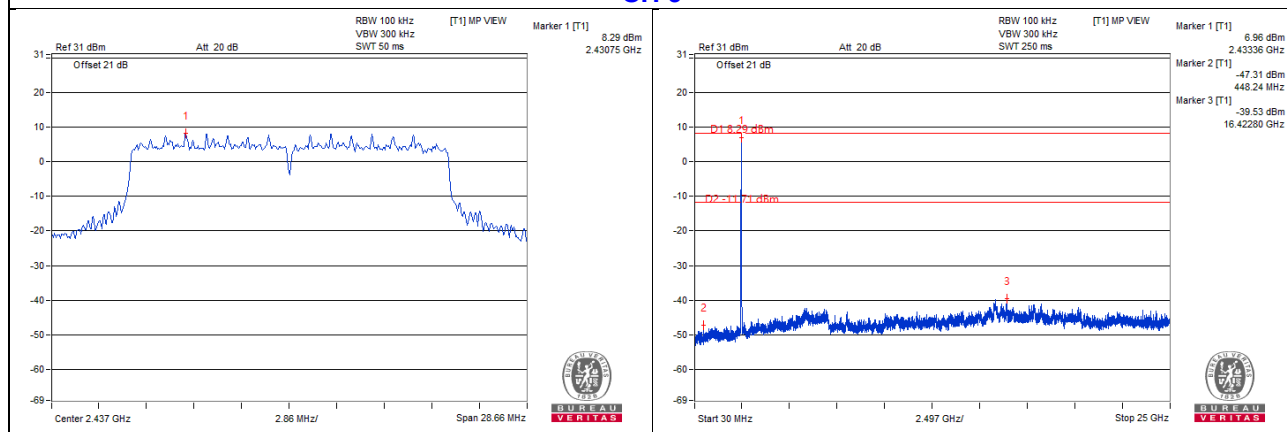
CH 1



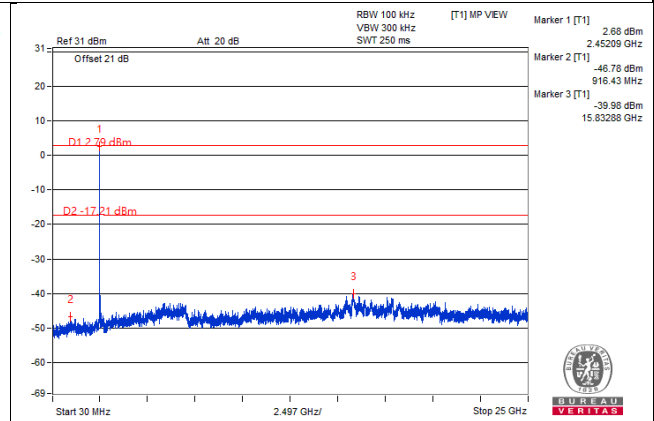
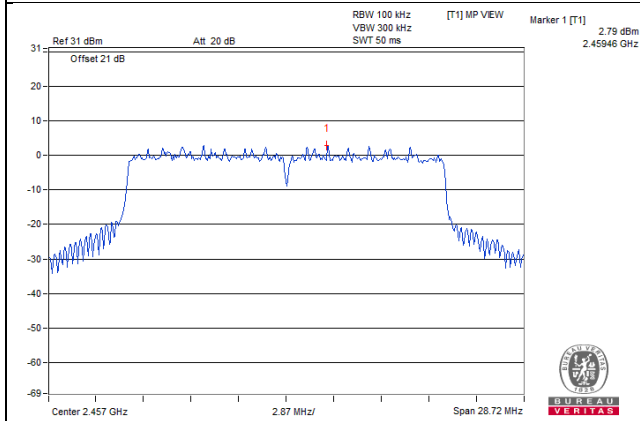
CH 2



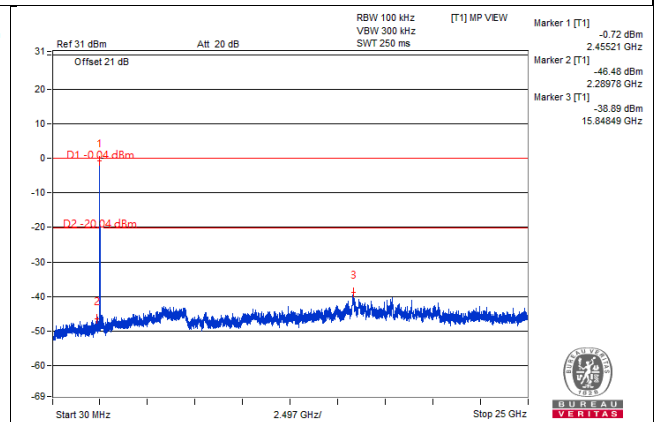
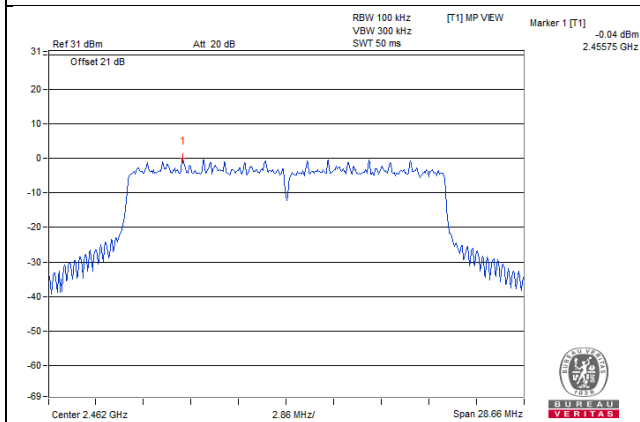
CH 6



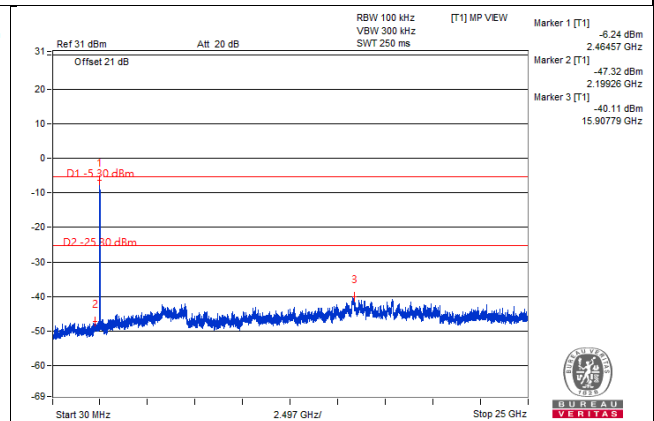
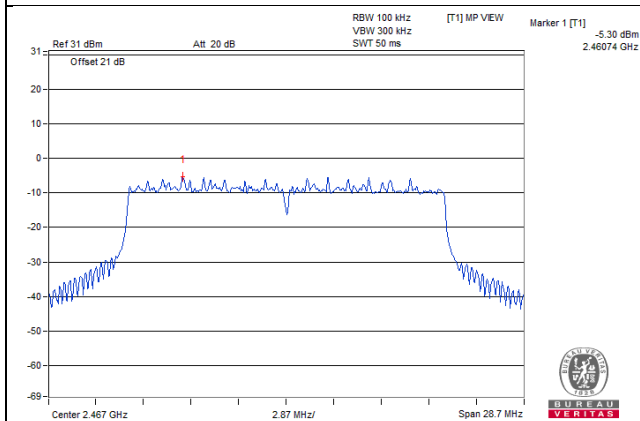
CH 10



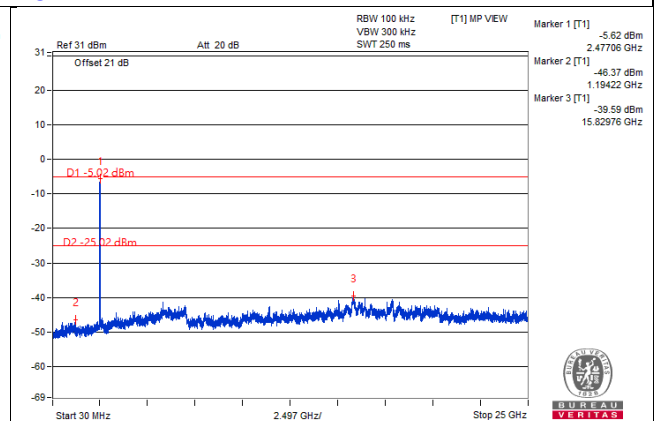
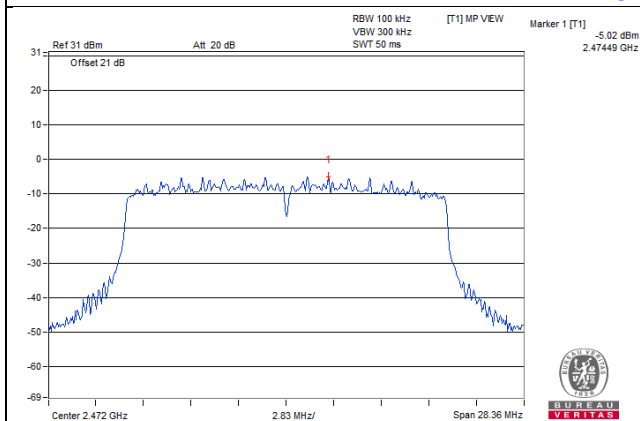
CH 11



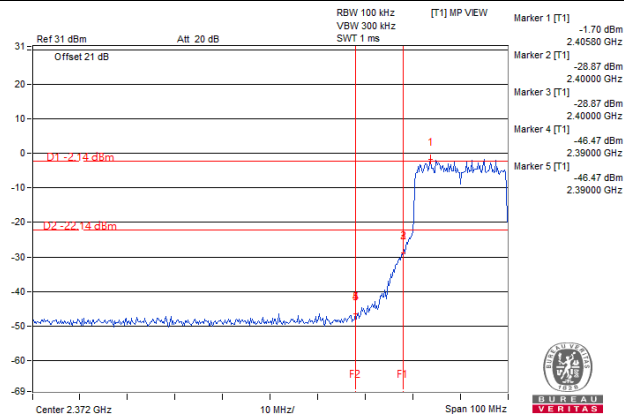
CH 12



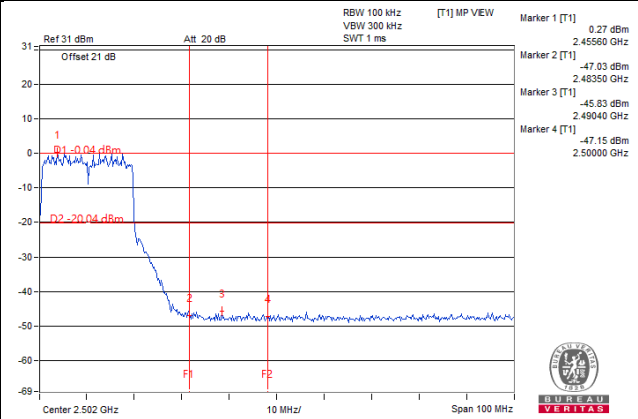
CH 13



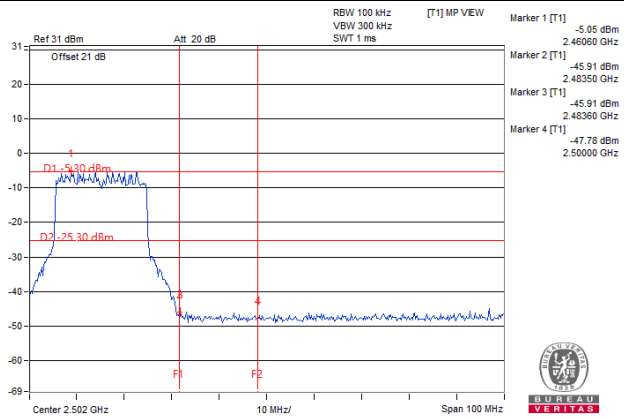
CH 1 Band edge



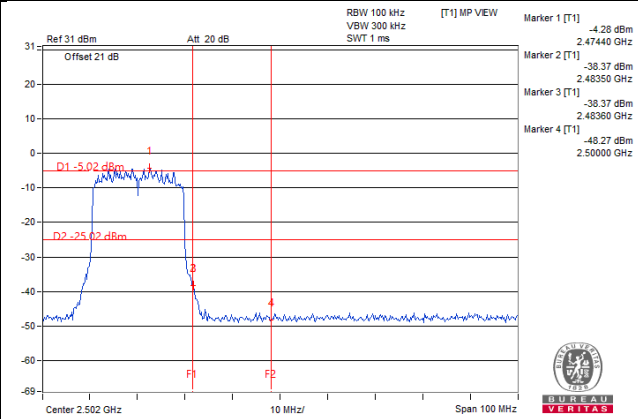
CH 11 Band edge



CH 12 Band edge

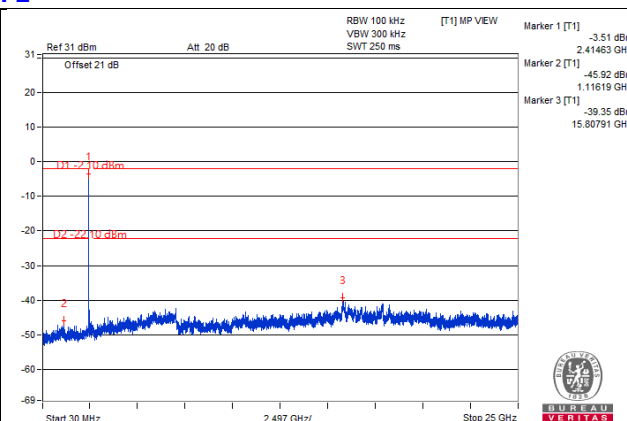
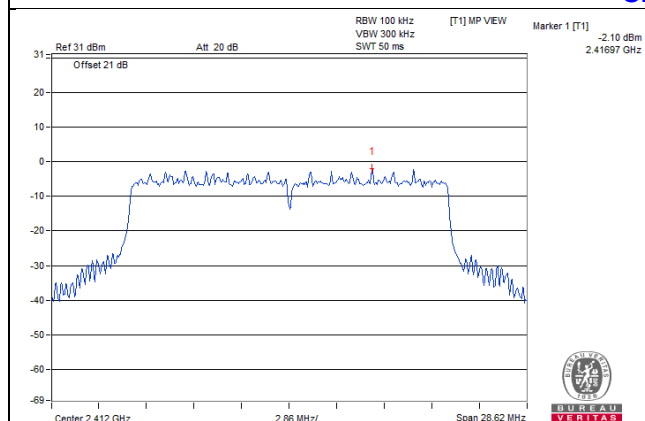


CH 13 Band edge

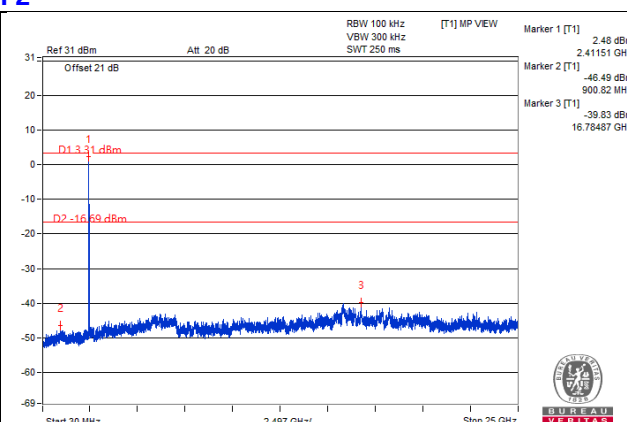
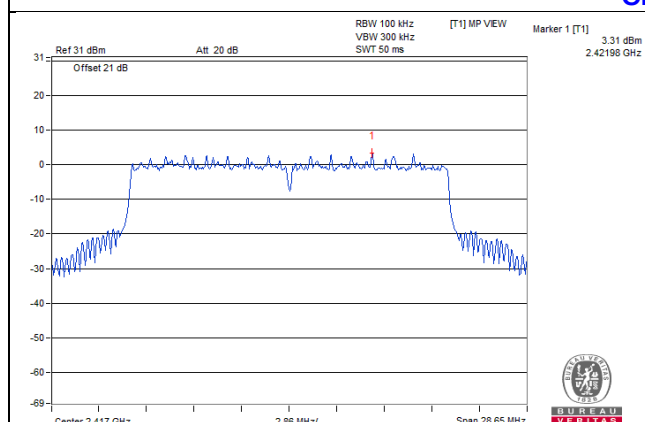


Chain 1

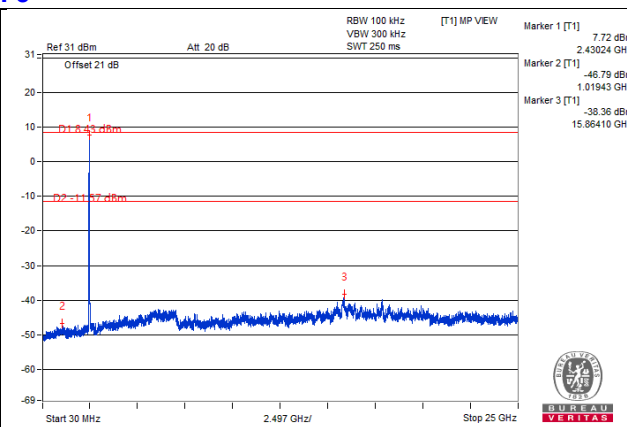
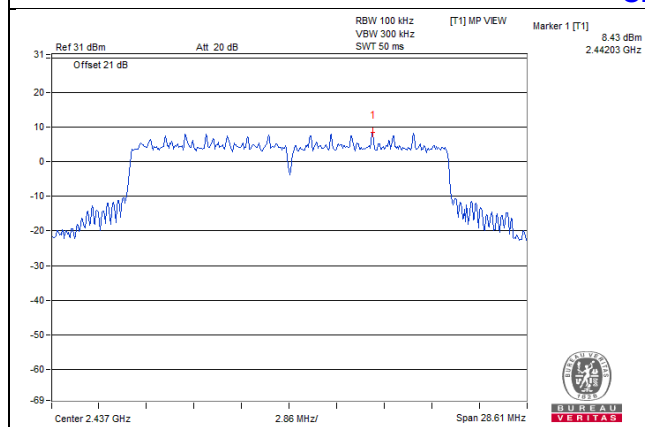
CH 1



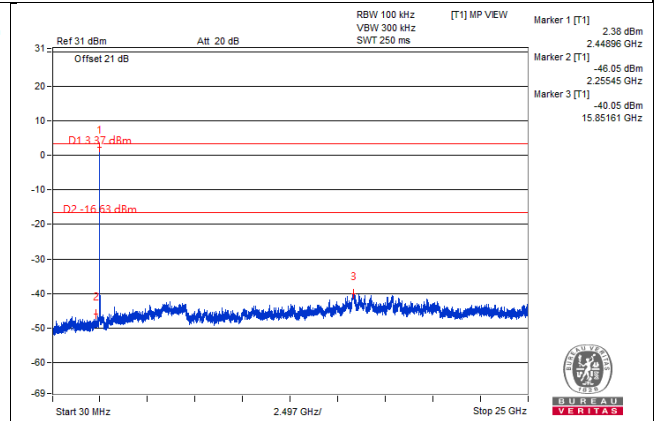
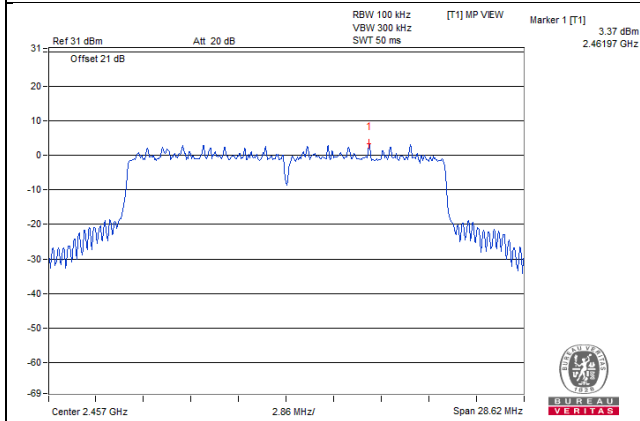
CH 2



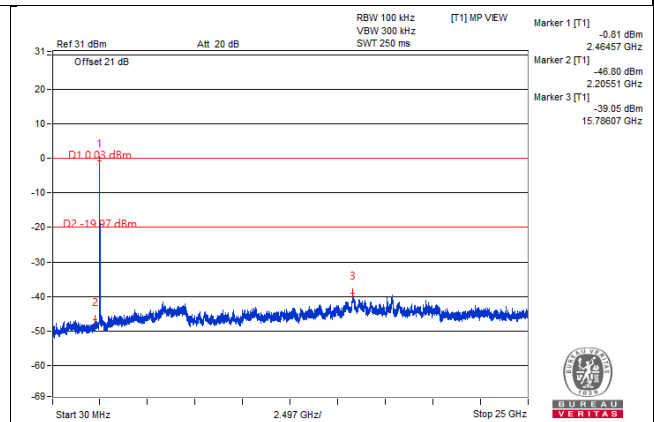
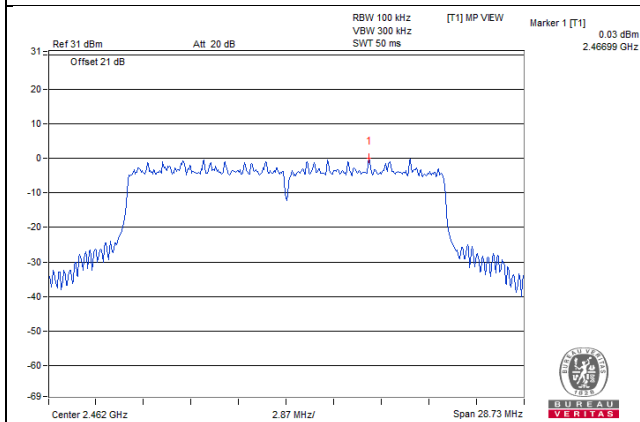
CH 6



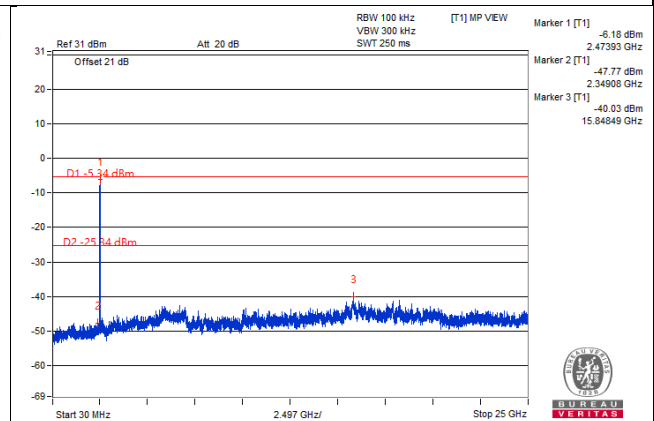
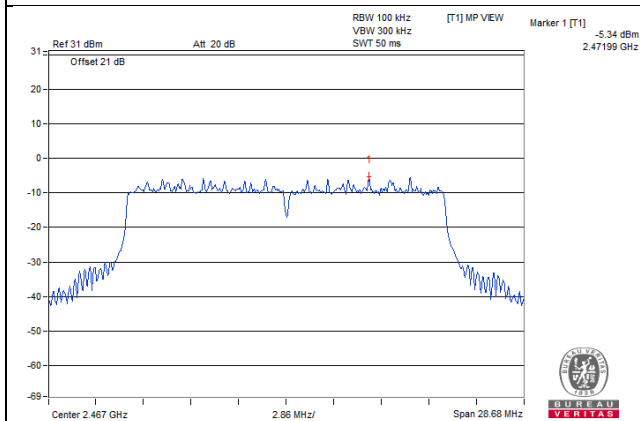
CH 10



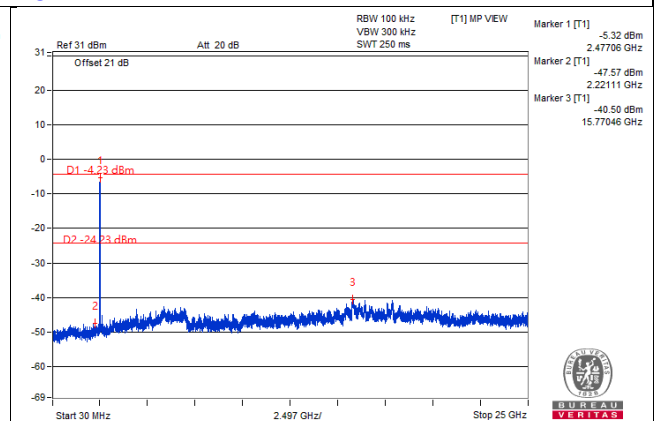
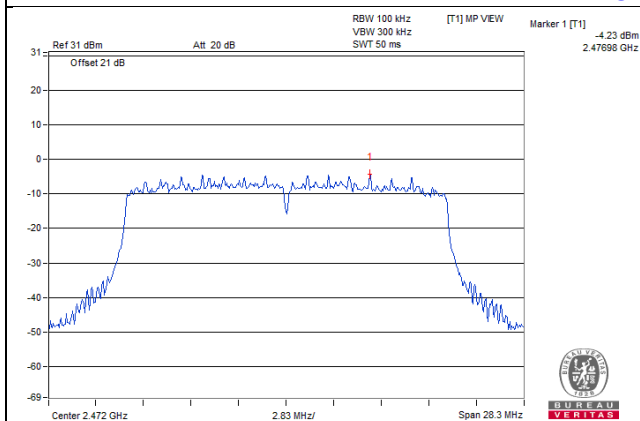
CH 11



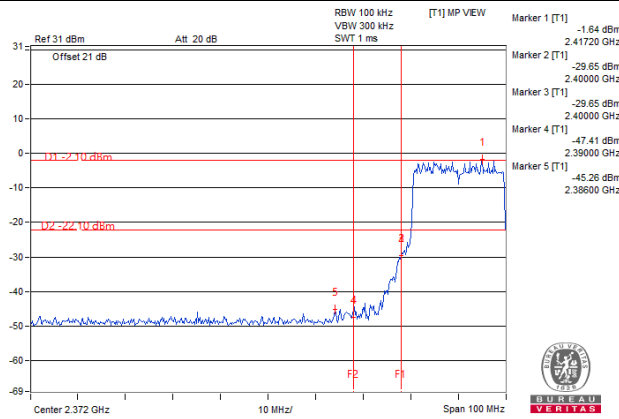
CH 12



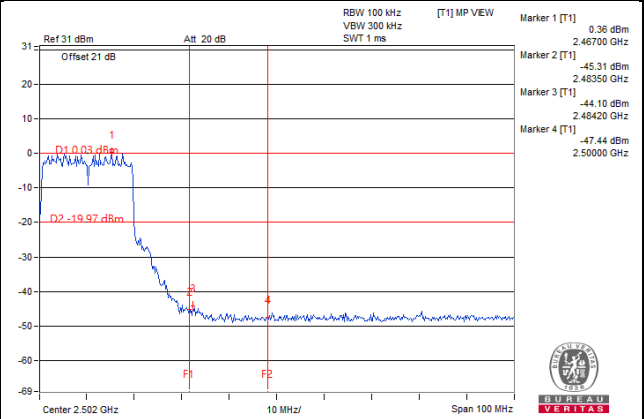
CH 13



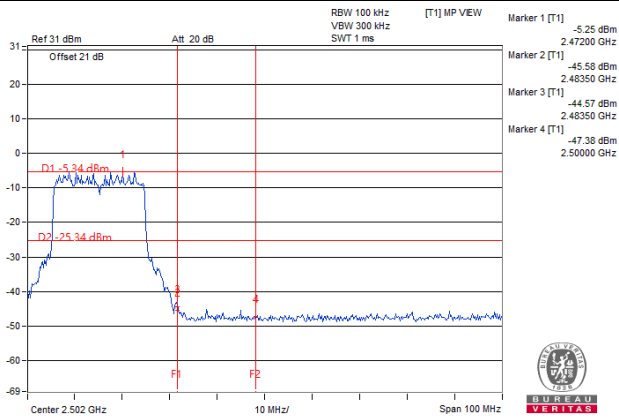
CH 1 Band edge



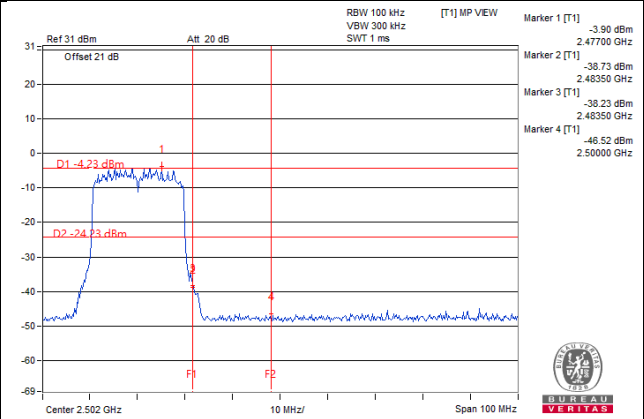
CH 11 Band edge



CH 12 Band edge

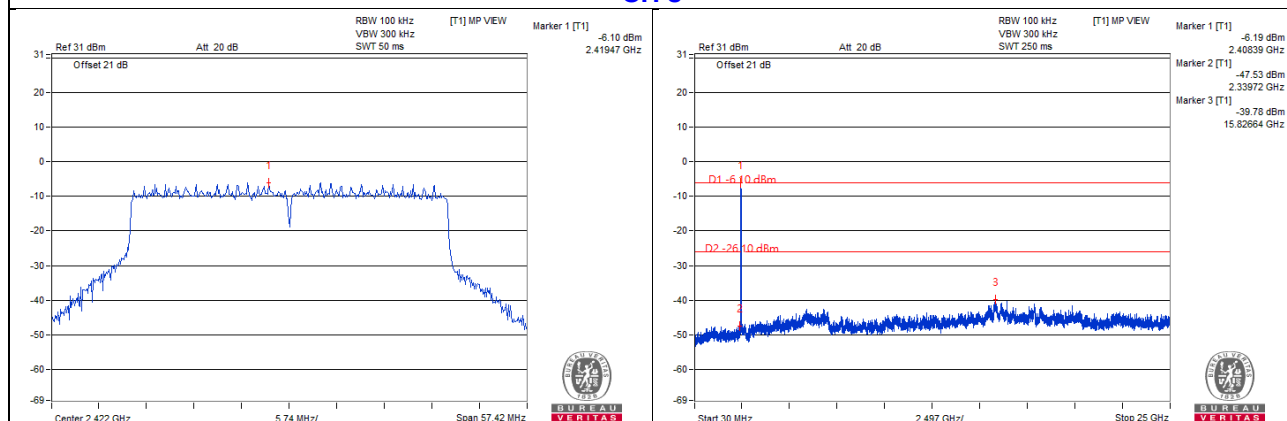


CH 13 Band edge

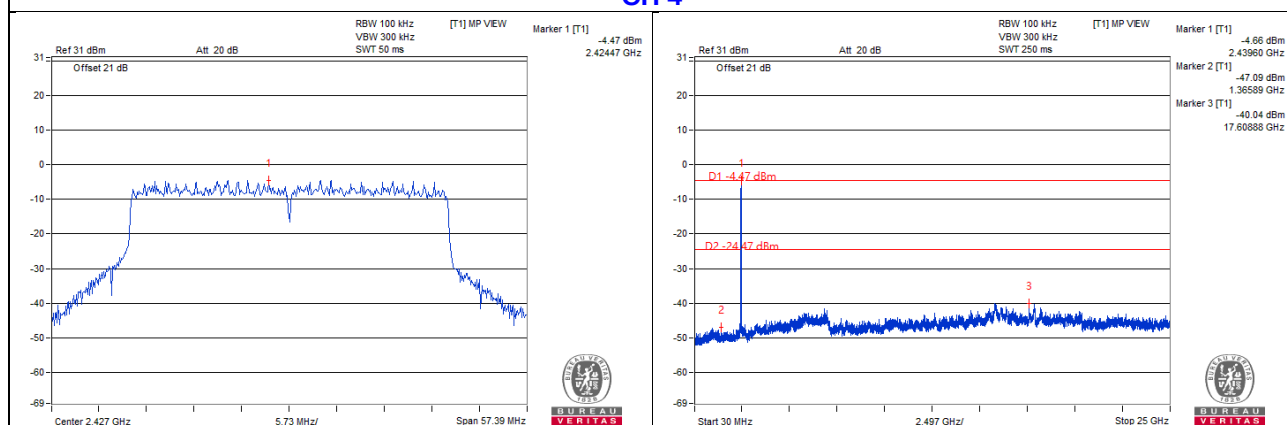


40MHz Preamble (RU484) - Chain 0

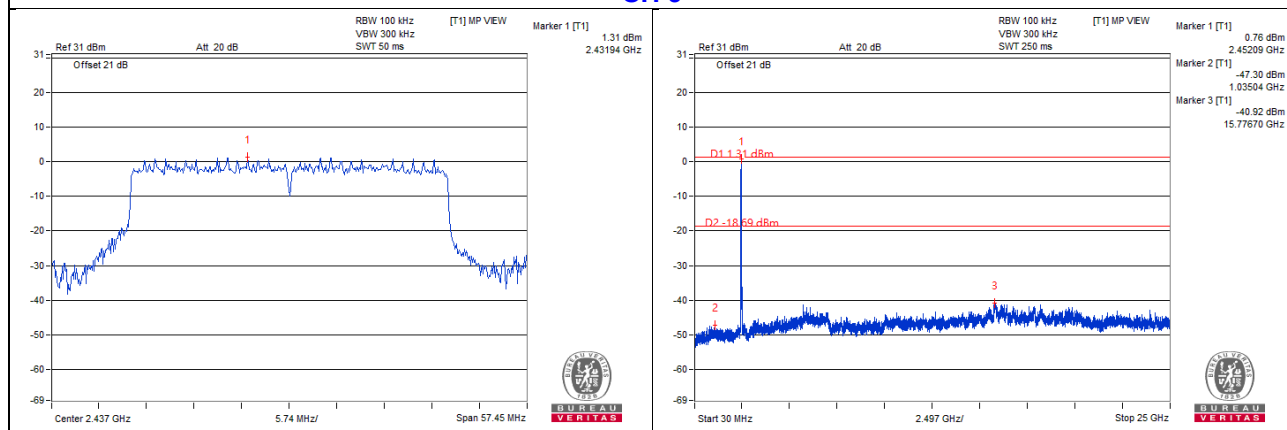
CH 3



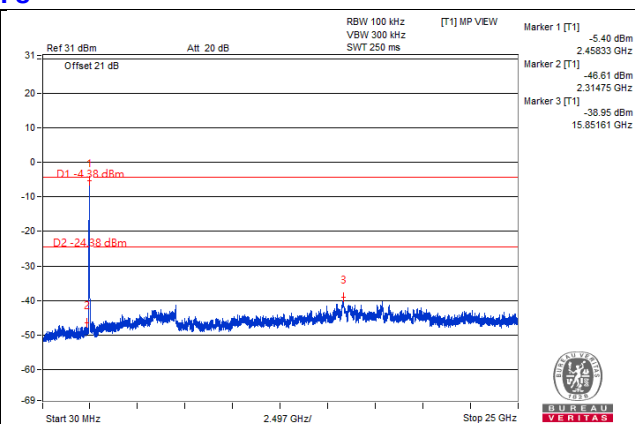
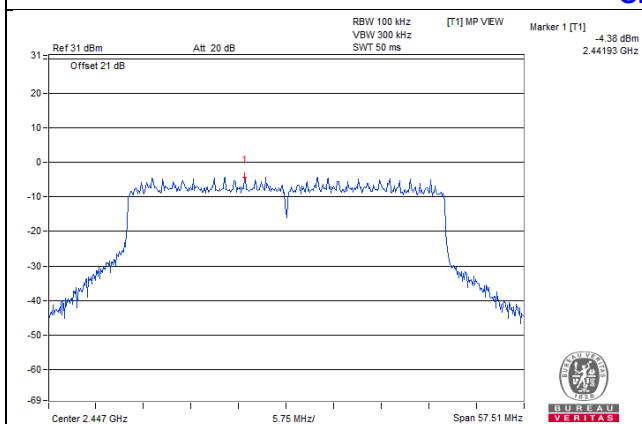
CH 4



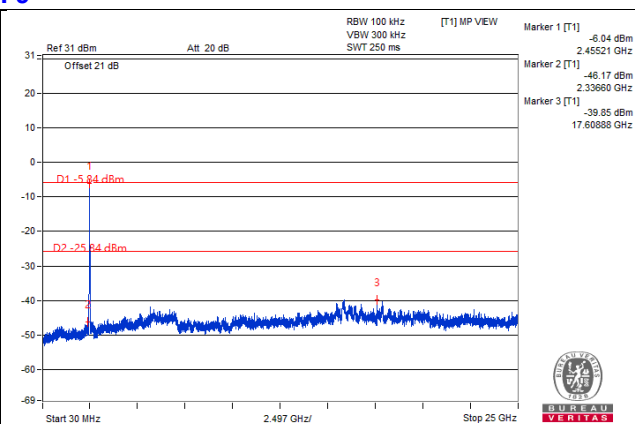
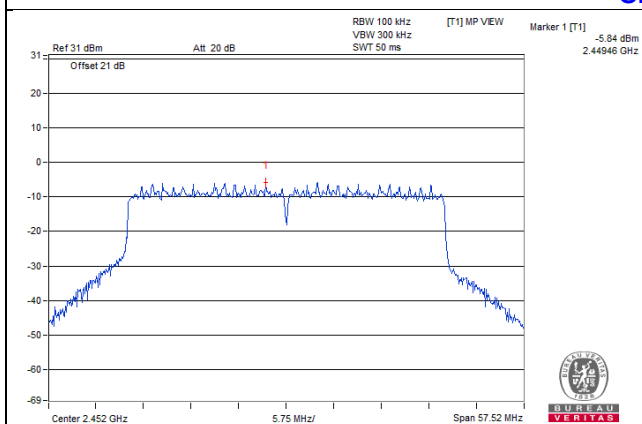
CH 6



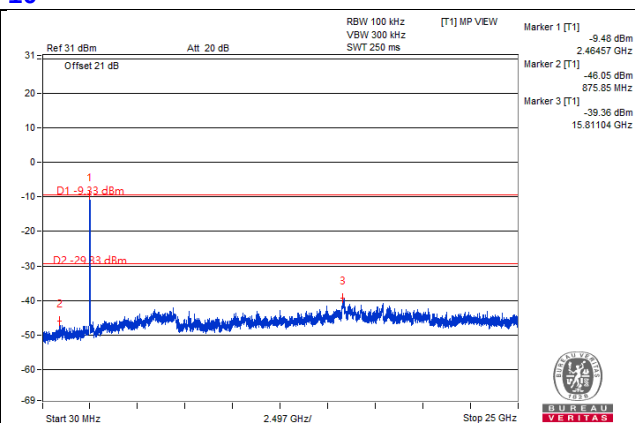
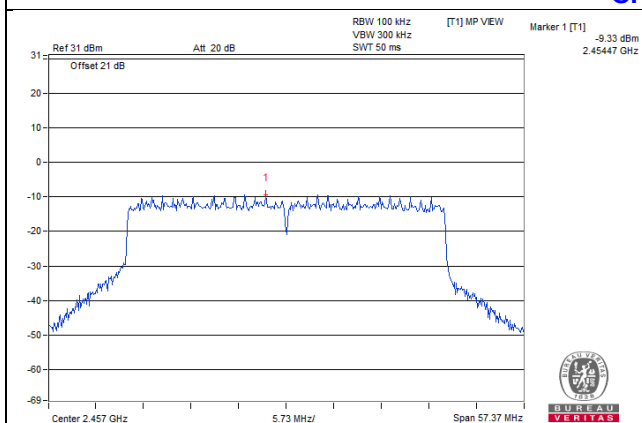
CH 8



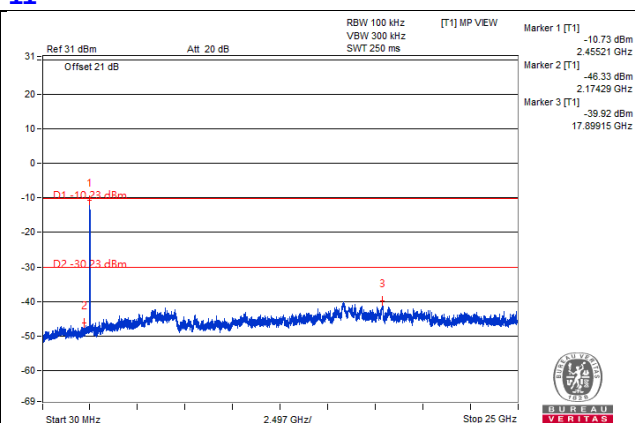
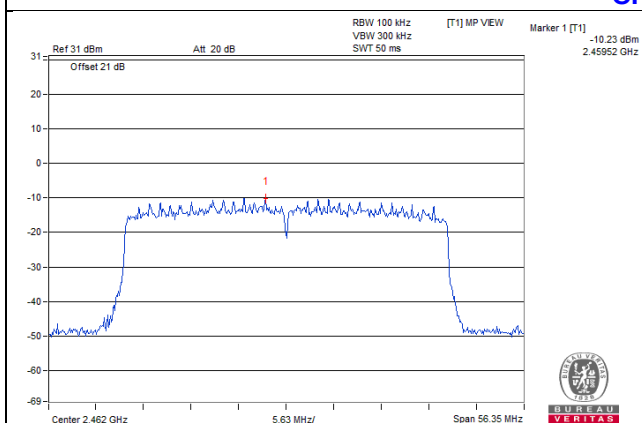
CH 9



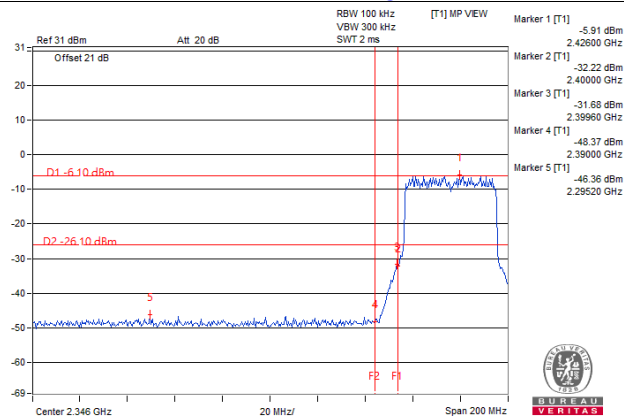
CH 10



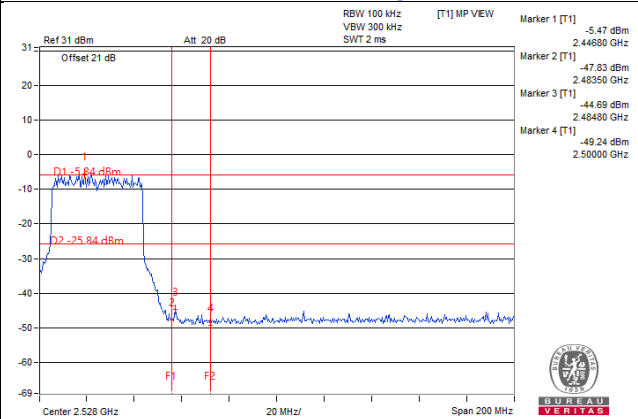
CH 11



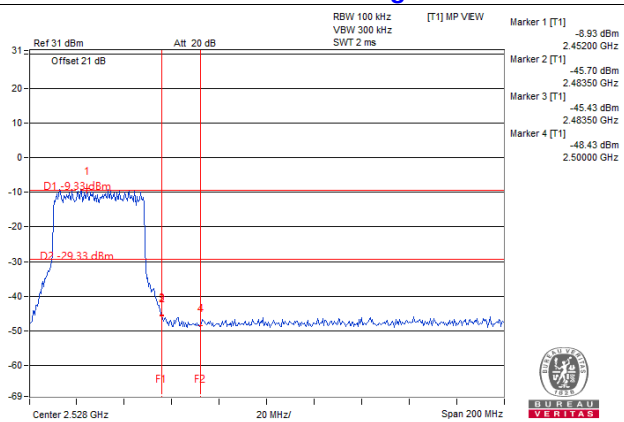
CH 3 Band edge



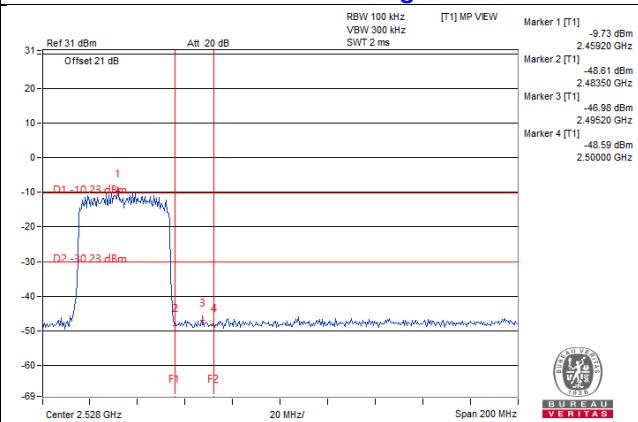
CH 9 Band edge



CH 10 Band edge

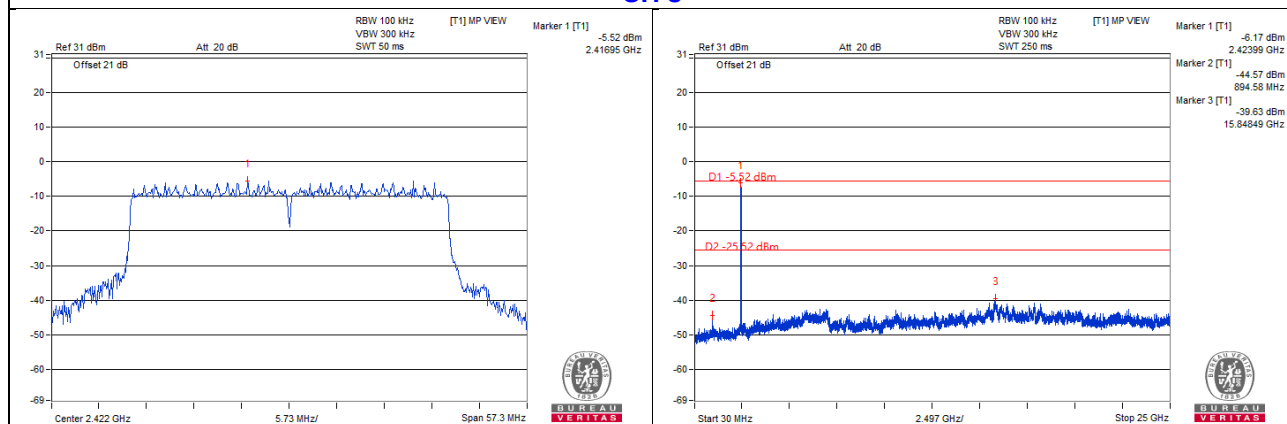


CH 11 Band edge

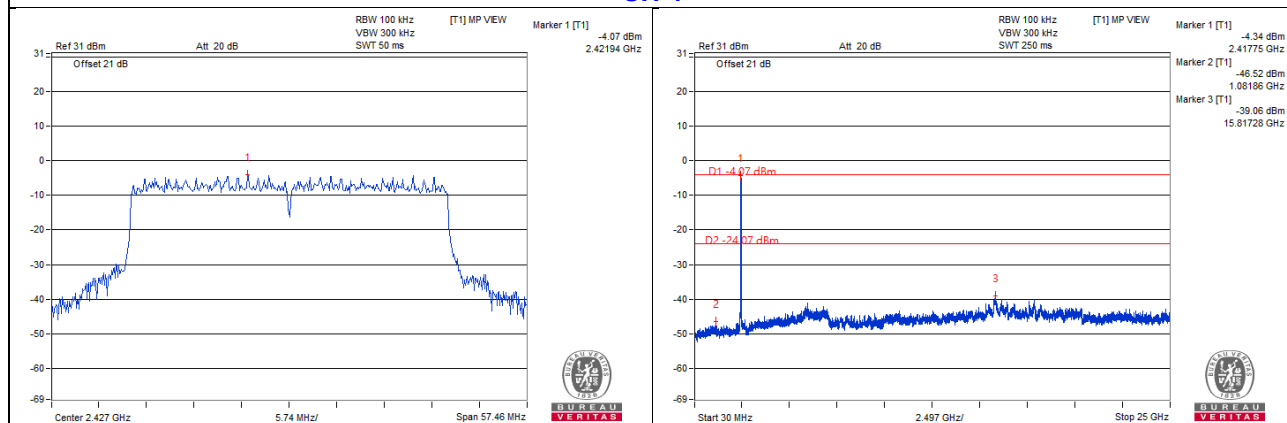


Chain 1

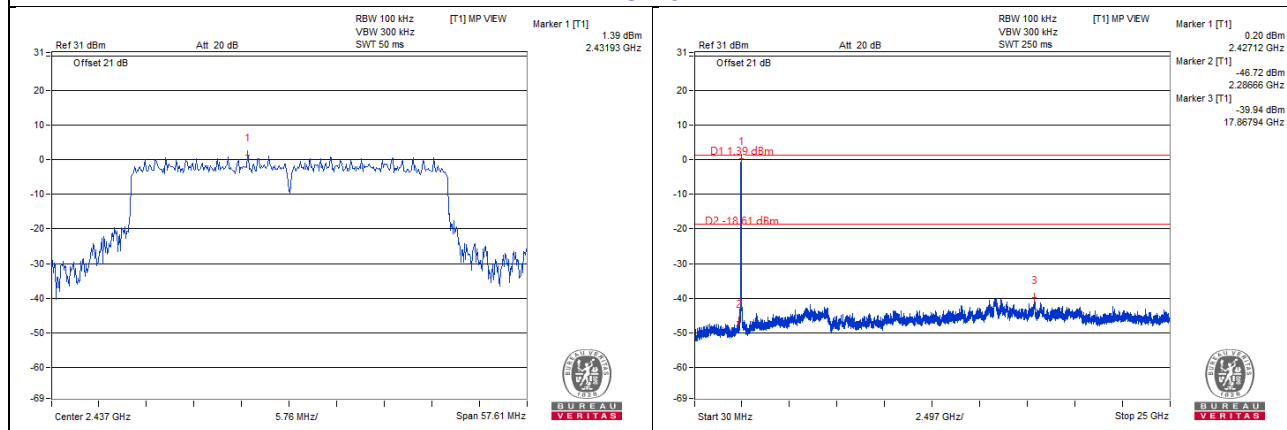
CH 3



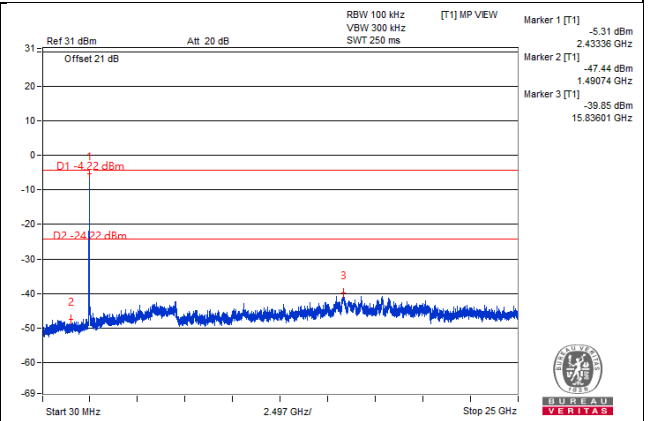
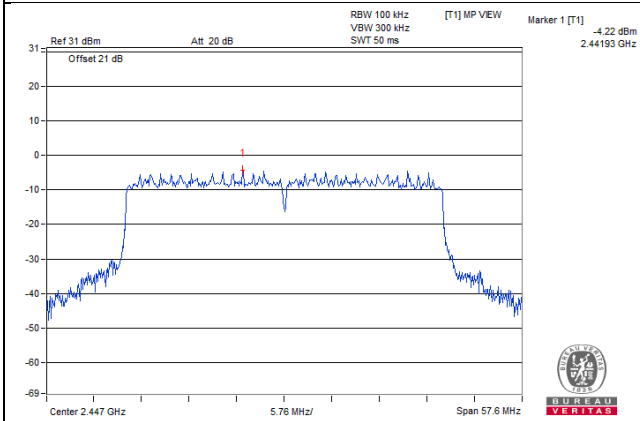
CH 4



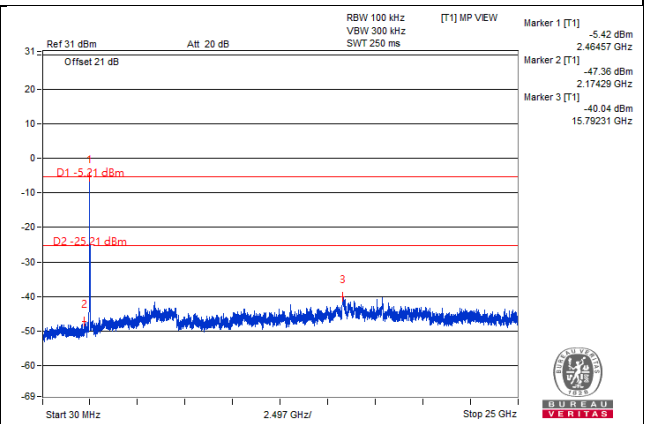
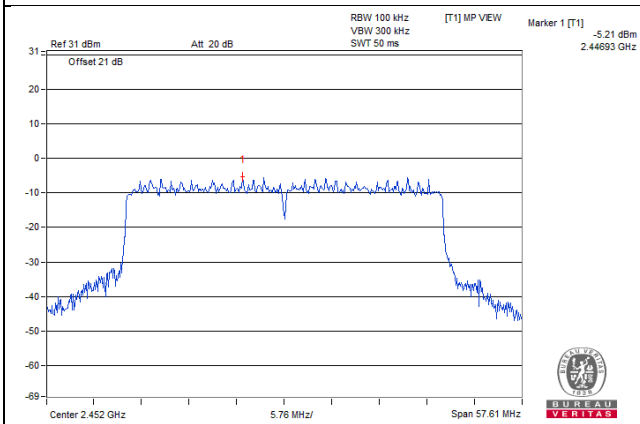
CH 6



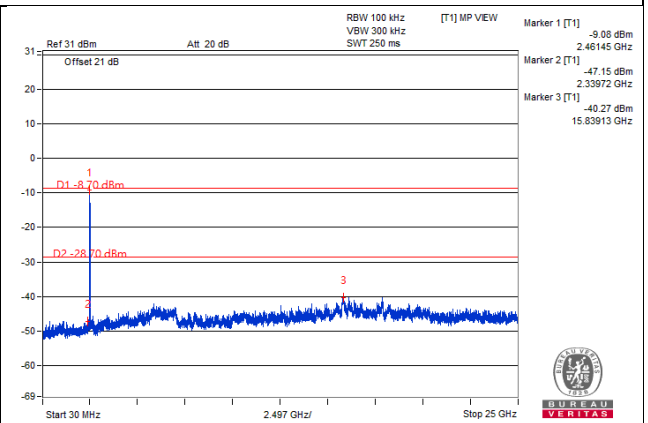
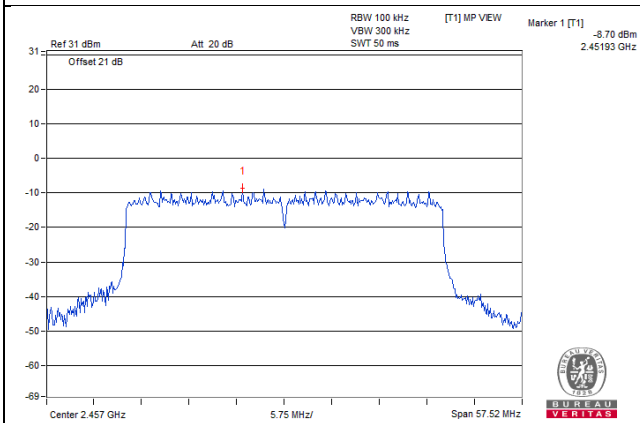
CH 8



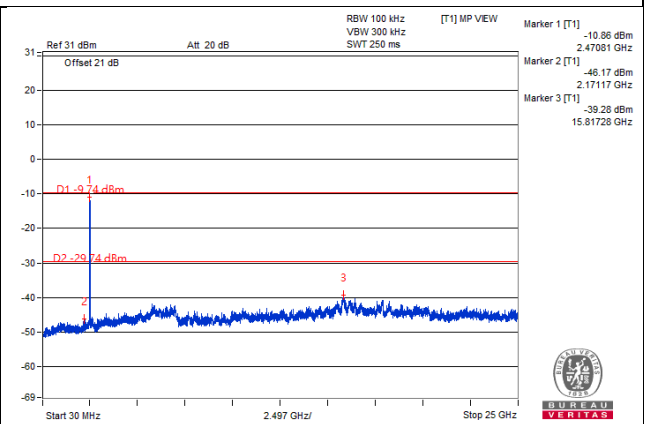
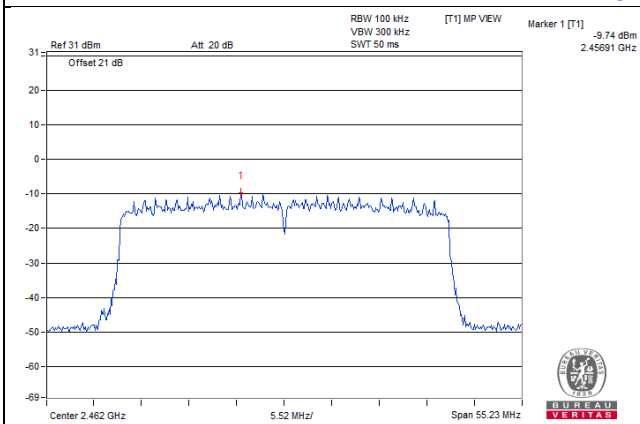
CH 9



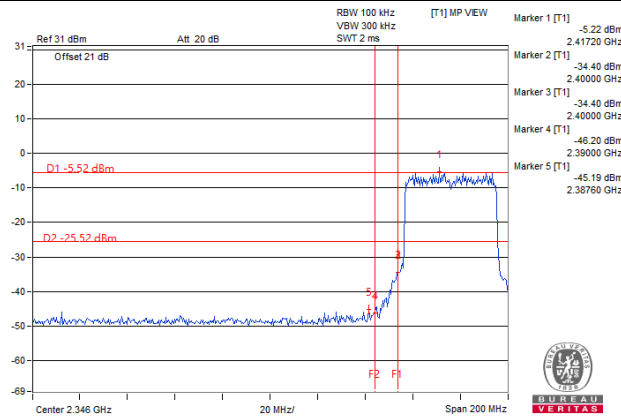
CH 10



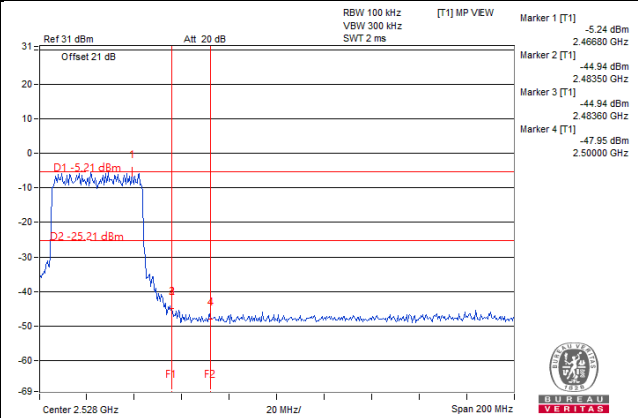
CH 11



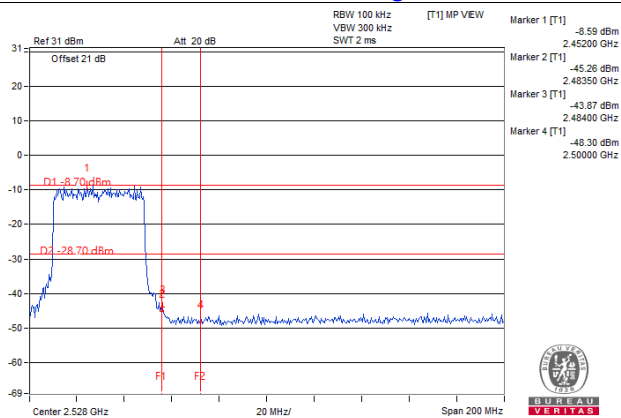
CH 3 Band edge



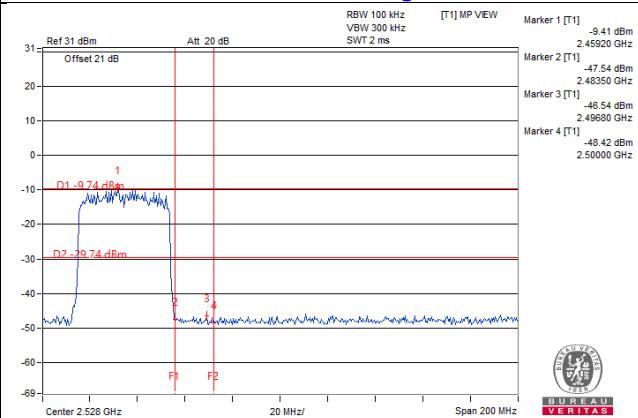
CH 9 Band edge



CH 10 Band edge



CH 11 Band edge



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix A – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

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Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

6 Appendix B – Radiated Emission Measurement

6.1.1 Limits of Radiated Emission Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

6.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver ESR7 R&S	ESR7	102026	Apr. 24, 2019	Apr. 23, 2020
Spectrum Analyzer Keysight	N9030B	MY57141948	May 25, 2019	May 24, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-1819	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980509	May 03, 2019	May 02, 2020
RF Cable EMCI	EMC104-SM-SM-1500	180503	May 03, 2019	May 02, 2020
RF Cable EMCI	EMC104-SM-SM-2000	180501	May 03, 2019	May 02, 2020
RF Cable EMCI	EMC104-SM-SM-6000	180505	May 03, 2019	May 02, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	NA	NA

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in 966 Chamber No. 5.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Sep. 10 to Nov. 11, 2019

6.1.3 Test Procedures

- a. The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

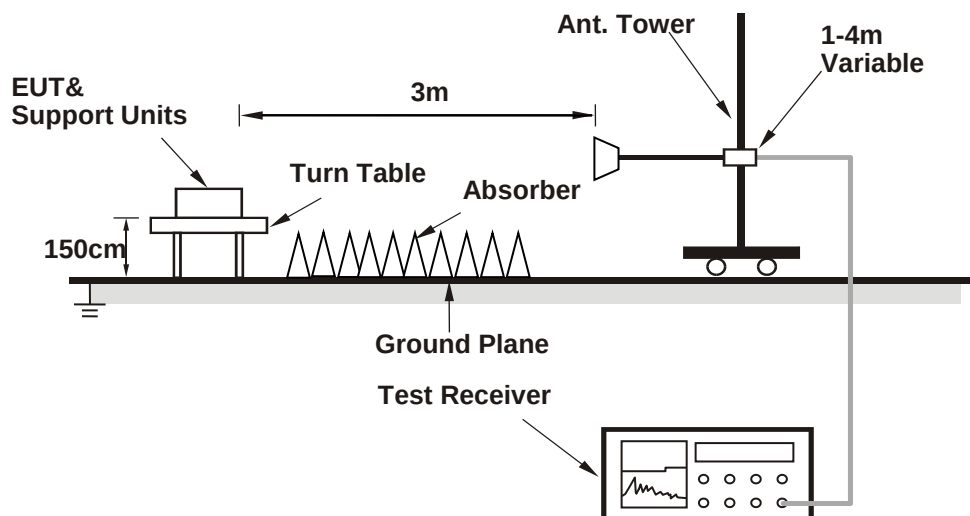
Note:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

6.1.4 Deviation from Test Standard

No deviation

6.1.5 Test Setup



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.1.6 EUT Operating Conditions

Same as 4.5.6.

6.1.7 Test Results

The EUT's antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.

VHT40

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.99	64.2 PK	74.0	-9.8	1.51 H	34	67.3	-3.1
2	2389.99	47.8 AV	54.0	-6.2	1.51 H	34	50.9	-3.1
3	2483.50	59.4 PK	74.0	-14.6	1.52 H	223	62.5	-3.1
4	2483.50	50.8 AV	54.0	-3.2	1.52 H	223	53.9	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.99	64.1 PK	74.0	-9.9	1.78 V	198	67.2	-3.1
2	2389.99	48.1 AV	54.0	-5.9	1.78 V	198	51.2	-3.1
3	2483.50	58.2 PK	74.0	-15.8	1.78 V	198	61.3	-3.1
4	2483.50	45.2 AV	54.0	-8.8	1.78 V	198	48.3	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

802.11ax (HE40)

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.84	66.3 PK	74.0	-7.7	1.50 H	223	69.4	-3.1
2	2389.84	48.8 AV	54.0	-5.2	1.50 H	223	51.9	-3.1
3	2483.50	62.4 PK	74.0	-11.6	1.50 H	223	65.5	-3.1
4	2483.50	50.6 AV	54.0	-3.4	1.50 H	223	53.7	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.84	67.7 PK	74.0	-6.3	1.85 V	176	70.8	-3.1
2	2389.84	50.2 AV	54.0	-3.8	1.85 V	176	53.3	-3.1
3	2483.50	60.7 PK	74.0	-13.3	1.85 V	176	63.8	-3.1
4	2483.50	45.4 AV	54.0	-8.6	1.85 V	176	48.5	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

20MHz Preamble

RU26

CHANNEL	TX Channel 13	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2483.51	70.2 PK	74.0	-3.8	1.00 H	211	73.3	-3.1
2	2483.51	43.0 AV	54.0	-11.0	1.00 H	211	46.1	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2483.51	70.9 PK	74.0	-3.1	1.50 V	199	74.0	-3.1
2	2483.51	43.3 AV	54.0	-10.7	1.50 V	199	46.4	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

20MHz Preamble

RU242

CHANNEL	TX Channel 13	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2483.58	68.9 PK	74.0	-5.1	2.41 H	356	72.0	-3.1
2	2483.58	45.3 AV	54.0	-8.7	2.41 H	356	48.4	-3.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2483.58	70.6 PK	74.0	-3.4	1.54 V	199	73.7	-3.1
2	2483.58	43.1 AV	54.0	-10.9	1.54 V	199	46.2	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

40MHz Preamble

RU484

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.27	67.3 PK	74.0	-6.7	3.15 H	84	70.4	-3.1
2	2389.27	48.3 AV	54.0	-5.7	3.15 H	84	51.4	-3.1
3	2485.03	70.9 PK	74.0	-3.1	3.15 H	84	74.0	-3.1
4	2485.03	49.3 AV	54.0	-4.7	3.15 H	84	52.4	-3.1

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2389.27	70.2 PK	74.0	-3.8	2.64 V	356	73.3	-3.1
2	2389.27	48.8 AV	54.0	-5.2	2.64 V	356	51.9	-3.1
3	2485.03	70.7 PK	74.0	-3.3	2.64 V	356	73.8	-3.1
4	2485.03	48.9 AV	54.0	-5.1	2.64 V	356	52.0	-3.1

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

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