

Japan Radio Test Report

Project No. : 1807C145
Equipment : USB WIRELESS TRANSCEIVER
Test Model : RC30-026902
Series Model : N/A
Applicant : Razer Inc.
Address : 201 3rd Street, Suite 900, San Francisco, CA 94103, USA

Date of Receipt : Jul. 27, 2018
Date of Test : Jul. 30, 2018 ~ Aug. 13, 2018
Issued Date : Sep. 06, 2018
Tested by : BTL Inc.

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The information, data and test plan are provided by manufacturer, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-JPAP-1-1807C145	Original Issue.	Sep. 06, 2018

1. CERTIFICATION

Equipment : USB WIRELESS TRANSCEIVER
Brand Name : RAZER
Test Model : RC30-026902
Series Model : N/A
Applicant : Razer Inc.
Manufacturer : Razer (Asia-Pacific) Pte.,Ltd.
Address : 514 Chai Chee Lane #07-01~06 Singapore 469029
Factory : RAZER TECHNOLOGY AND DEVELOPMENT (SHENZHEN) CO., LTD
Address : East Wing, 3rd Floor, Block 2, Phase 1 of Vision Shenzhen Business Park Keji
South Road, Hi-Tech Industrial Park, Shenzhen 518057, China
Date of Test : Jul. 30, 2018 ~ Aug. 13, 2018
Test Sample : Engineering Sample No.: D180706292
Standard(s) : MIC Notice No.88 Appendix No.43

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-JPAP-1-1807C145) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of CNAS according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Section Number	Description of Test	Article of ORRE ⁽¹⁾	Result
4.1	Frequency Error/ Frequency Tolerance	Article 5, Table 1	Pass
4.2	Occupied Bandwidth (99%) and Spread-spectrum Bandwidth (90%) / Spreading Factor (diffusion rate)	Article 6, Table 2 & Article 49-20, Item1-h & 1-i	Pass
4.3	Unwanted Emission Intensity	Article 7, Table 3	Pass
4.4	Antenna Power Error/Tolerance	Article 14	Pass
4.5	Limitation of Collateral Emission of Receiver	Article 24, Paragraph 2	Pass
4.6	Transmission Antenna Gain (EIRP Antenna Power)	Article 49-20, Item 1-e & 1-f	N/A
4.7	Transmission Radiation Angle Width (3dB Beamwidth)	Article 49-20, Item 1-f	N/A
4.8	Radio Interference Prevention Capability	Article 9-4, Item 9-C Article 6-2, Item 3 of the Regulation for Enforcement of the Radio Law	Good
4.9	Carrier Sense Capability	Article 49-20, Item1-k	N/A
4.10	Construction Protection Confirmation	Article 49-20, Item1-a	Pass

Method of measurement:	MIC Notice No.88 Appendix No.43
Test condition:	Conductive, RF test program provided by the customer was used to control the operating channel as well as the output power level.

Abbreviations used in this test report are as follows;

NC:	Normal Condition
EC:	Extreme Condition
EUT:	Equipment Under Test
DS:	Direct spreading
FH:	Frequency hopping
OFDM:	Orthogonal frequency division multiplexing

2.1 TEST FACILITY

The test facilities used to collect the test data in this report is **TR13** at the location of No.3,Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

2.2 MEASUREMENT UNCERTAINTY

Test Items	Uncertainty	Remark
Frequency Error / 99% & 90% Bandwidth	$\pm 6.25 \times 10^{-7}$	Confidence levels of 95%
Antenna Power / TX-RX Emission	$\pm 0.5\text{dB}$	Confidence levels of 95%
Transmission Antenna Gain	$\pm 3.72\text{dB}$	Confidence levels of 95%
Carrier Sense Capability	$\pm 0.76\text{dB}$	Confidence levels of 95%

3. GENERAL INFORMATION

3.1. GENERAL DESCRIPTION OF EUT

Equipment	USB WIRELESS TRANSCEIVER	
Brand Name	RAZER	
Model Name	RC30-026902	
Series Model	N/A	
Model Difference	The system model name is RZ04-0269, it consists of a Gaming Headset (Model name: RC30-026901) and a USB WIRELESS TRANSCEIVER (RC30-026902).	
Product Description	Operation Frequency	2403.35 MHz ~ 2477.35 MHz
	Modulation Technology	$\pi/4$ DQPSK
	Bit Rate of Transmitter	2 Mbps
	Occupied Bandwidth	2.18 MHz
	Spread Bandwidth	1.55 MHz
	Software version	V0005
	Hardware version	EVT
	Antenna Power (Rated Power)	2.30 mW
	Antenna Power (Max. Conducted Power)	2.2387 mW
PowerSource	Supplied from USB port.	
Power Rating	DC 5V	

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2403.35	15	2431.35	29	2459.35
02	2405.35	16	2433.35	30	2461.35
03	2407.35	17	2435.35	31	2463.35
04	2409.35	18	2437.35	32	2465.35
05	2411.35	19	2439.35	33	2467.35
06	2413.35	20	2441.35	34	2469.35
07	2415.35	21	2443.35	35	2471.35
08	2417.35	22	2445.35	36	2473.35
09	2419.35	23	2447.35	37	2475.35
10	2421.35	24	2449.35	38	2477.35
11	2423.35	25	2451.35		
12	2425.35	26	2453.35		
13	2427.35	27	2455.35		
14	2429.35	28	2457.35		

3. Table for Filed Antenna

Ant.	Brand	P/N	Antenna Type	Connector	Gain (dBi)
1	N/A	N/A	Printed	N/A	1.20

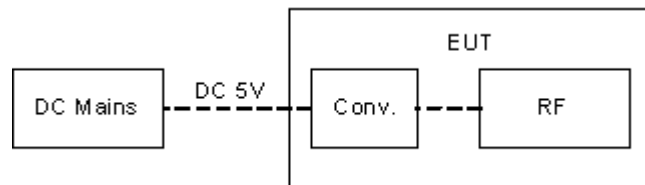
3.2. DESCRIPTION OF TEST MODES

The EUT was tested while in a continuous transmitter / receiver mode.
The EUT was tuned to a low, middle, and high channel for all tests. The EUT continuously transmitted a modulated packet with payload, while transmitting the EUT was setup to operate at the intended maximum power output available to the end user. For all test case pre/scans were completed in all modes to determine worst case levels

Pretest Mode	Description
Mode 1	CH01/20/38 TX & RX mode

For Conducted	
Final Test Mode	Description
Mode 1	CH01/20/38 TX & RX mode

Power Supply Voltage Fluctuation Test



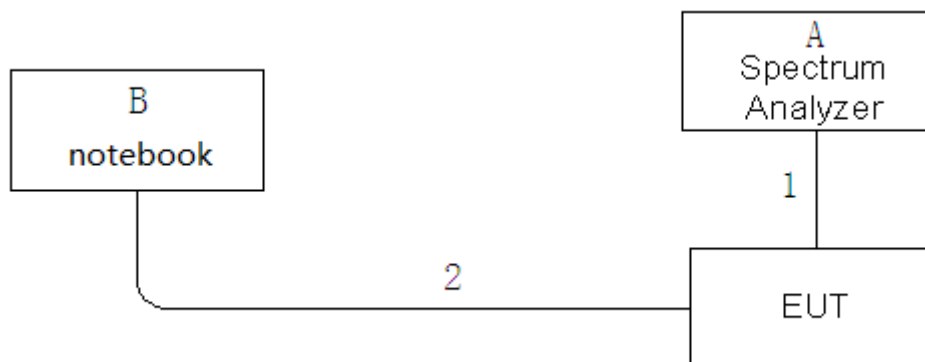
Voltage Fluctuation Test	Normal Voltage	High Voltage + 10% of Normal Voltage	Low Voltage - 10% of Normal Voltage
DC Power	5V	5.5V	4.5V
Voltage Variation(%)	-	+10%	-10%

Note:

Voltage Variation (%)

= (Output High or Low Voltage - Output Normal Voltage)/Output Normal Voltage * 100

3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	FCC ID	Series No.
A	Spectrum Analyzer	R&S	FSP40	N/A	100185
B	notebook	Lenovo	ThinkPadG410	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1	YES	NO	0.1m	RF Cable
2	YES	NO	1.5m	USB Cable

3.5 TABLE FOR PARAMETERS OF TEST SOFTWARE SETTING

During testing, Channel & Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Test software Version	VMI Test Software		
Frequency (MHz)	2403.35	2441.35	2477.35
Power Parameters	0x08	0x08	0x08

4. TEST RESULTS

4.1 FREQUENCY TOLERANCE MEASUREMENT

4.1.1 LIMIT

Item	Limits (See Article 5, Table1 of the Ordinance Regulating Radio Equipment)
Frequency Tolerance	$\leq 50\text{ppm}$

4.1.2 SETTING

The following table is the setting of the spectrum.

Spectrum Parameter	Setting
Span	5 MHz
RBW / VBW	10 kHz / 10 kHz

4.1.3 TEST PROCEDURES

Test method which surpass to Claus 3 of Annex No.43 of MIC Notification No.88.

1. Frequency accuracy of SA shall be less than 10% of limits tolerance (5ppm)
2. Setting of SA is following as: RBW:10 kHz / VBW:10 kHz / SPAN: 5 MHz / AT: 30dB / Ref: 20dBm
3. Center Frequency: The center frequency of testing for EUT
4. Sweep time: Auto
5. Sweep mode: Continuous sweep
6. Detect mode: Positive peak
7. Mark function: Frequency Counter (Resolution 100Hz)
8. EUT have transmitted absence of modulation signal and fixed channelize. f is using the mark cursor to mark the peak frequency value , fc is declaring of channel frequency.
Then the frequency error formula is $(f_c - f) / f_c \times 10^6$ ppm and the limit is less than $\pm 50\text{ppm}$

4.1.4 TEST SETUP LAYOUT



4.1.5 TEST DEVIATION

There is no deviation with the original standard.

4.1.6 EUT OPERATION DURING TEST

The EUT was placed on the test table and programmed in un-modulation function.

Temperature: 25°C Relative Humidity: 55% Test Pressure: 1010 hPa

4.1.7 RESULTS OF FREQUENCY ERROR

Please refer to the Appendix A.

4.2 OCCUPIED BANDWIDTH AND SPREAD-SPECTRUM BANDWIDTH MEASUREMENT

4.2.1 LIMIT

Item	Limits (See Article 6, Table2 and Article 49-20, Item1-h,i of the Ordinance Regulating Radio Equipment)
Occupied Bandwidth	FHSS \leq 83.5MHz; OFDM,DSSS \leq 26MHz; Others \leq 26MHz HT40 \leq 38 MHz
Spreading Bandwidth	\geq 500 kHz (FHSS, DSSS)
Spreading Factor	\geq 5 , Operating Frequency 2400 -2483.5 MHz
	\geq 10 , Operating Frequency 2471 -2497 MHz

4.2.2 SETTING

The following table is the setting of the spectrum.

Power Meter Parameter	Setting
Span	5 MHz
RBW / VBW	300 kHz

4.2.3 TEST PROCEDURES

Test method which surpass to Clause 4 of Annex No.43 of MIC Notification No.88.

- Setting of SA is following as: RBW:300kHz / VBW:300kHz / SPAN: 5MHz / AT: 30dB Ref: 20dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
- EUT have transmitted the maximum modulation signal and fixed channelize (For DSSS or OFDM Device) or continuous maximum power of hopping mode(For FHSS Device).
SA set to 99% of occupied bandwidth to measure occupied bandwidth. The limit is less than 26MHz(For DSSS or OFDM Device) or 83.5MHz(For FHSS Device).
- SA set to 90% of occupied bandwidth to measure Spread Spectrum Bandwidth and must greater than 500kHz.
- Spread Spectrum Factor = Spread Spectrum Bandwidth / modulation rate of EUT.
- Spread Spectrum Factor limit is greater than 5

4.2.4 TEST SETUP LAYOUT



4.2.5 TEST DEVIATION

There is no deviation with the original standard.

4.2.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

Temperature: 25°C Relative Humidity: 55% Test Pressure: 1010 hPa

4.2.7 RESULTS OF OCCUPIED BANDWIDTH AND SPREAD-SPECTRUM BANDWIDTH

Please refer to the Appendix B.

4.3 UNWANTED EMISSION INTENSITY MEASUREMENT

4.3.1 LIMIT

Item	Limits
	(See Article 7, Table 3 of the Ordinance Regulating Radio Equipment)
TX	$\leq 0.25 \mu\text{W}/100\text{kHz}$ ($30\text{MHz} \leq f \leq 1000\text{MHz}$)
Spurious	$\leq 2.5 \mu\text{W}/\text{MHz}$ ($1000\text{MHz} \leq f < 2387\text{MHz}$; $2496.5\text{MHz} < f$)
Emission	$\leq 25 \mu\text{W}/\text{MHz}$ ($2387\text{MHz} \leq f < 2400\text{MHz}$) and ($2483.5\text{MHz} < f \leq 2496.5\text{MHz}$)
Measurement range: 30MHz - 5th harmonics	

4.3.2 SETTING

The following table is the setting of Spectrum Analyzer.

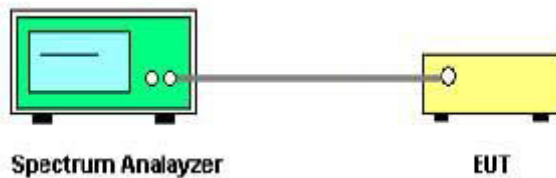
Spectrum Parameter	Setting
Attenuation	Auto
RBW / VBW	100kHz / 100kHz (30-1000MHz) 1 MHz / 1 MHz (Above 1000MHz)
Detector	RMS
Trace	Max Hold
Sweep Time	Auto

4.3.3 TEST PROCEDURES

Test method which surpass to Clause 5 of Annex No.43 of MIC Notification No.88.

1. EUT have transmitted the maximum modulation signal and fixed channelize.
2. Setting of SA is following as: RBW/VBW: 100kHz / 100kHz (30-1000MHz)
1 MHz / 1 MHz (Above 1000MHz) / AT: 30dB / Ref: 20dBm /
Sweep time: Auto / Sweep Mode: Continuous sweep /
Detect mode: Positive peak / Trace mode: Max hold
3. Setting of SA is following as 30MHz and stop frequency 1000MHz Then to mark peak reading value + cable loss shall be less than 0.25μW.
4. Setting of SA is following as 1000MHz and stop frequency 2387MHz Then to mark peak reading value + cable loss shall be less than 2.5μW.
5. SA adjusted to start frequency 2387MHz and stop frequency 2400MHz. Then to mark peak reading value + cable loss shall be less than 25μW.
6. SA adjusted to start frequency 2483.5MHz and stop frequency 2496.5MHz Then to mark peak reading value + cable loss shall be less than 25μW
7. SA adjusted to start frequency 2496.5MHz and stop frequency 12500MHz Then to mark peak reading value + cable loss shall be less than 2.5μW

4.3.4.TEST SETUP LAYOUT



4.3.5. TEST DEVIATION

There is no deviation with the original standard.

4.3.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

Temperature: 25°C Relative Humidity: 55% Test Pressure: 1010 hPa

Note:

- ※ 1: Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)
- ※ 2: Frequency Band 2 ($1000 \text{ MHz} \leq f \leq 2387 \text{ MHz}$)
- ※ 3: Frequency Band 3 ($2387 \text{ MHz} < f \leq 2400 \text{ MHz}$)
- ※ 4: Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)
- ※ 5: Frequency Band 5 ($2496.5 \text{ MHz} \leq f < 12.5 \text{ GHz}$)

Band	1	2	3	4	5
Cable Loss	1.5 dB	1.5 dB	1.5 dB	1.5 dB	1.5 dB

4.3.7TEST RESULT OF UNWANTED EMISSION INTENSITY

Please refer to the Appendix C.

4.4. ANTENNA POWER ERROR MEASUREMENT

4.4.1. LIMIT

Item	Limits
Antenna Power Density	$\leq 3\text{mW}$ (FHSS form 2427 - 2470.75 MHz) $\leq 10\text{mW}$ (OFDM,DSSS from 2400~2483.5MHz) $\leq 10\text{mW}$ (Other from 2400~2483.5MHz)
Antenna Power Error	+20%, -80% (Base on manufacturer declare antenna power density)

4.4.2. MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of the power meter and spectrum analyzer.

Spectrum Analyzer	Setting
Attenuation	30dB
Span	0 MHz
RBW	1 MHz
VBW	1 MHz
Detector	Positive Peak
Trace	Max Hold
Sweep Time	Auto

4.4.3 TEST PROCEDURES

Test method which surpass to Clause 6 of Annex No.43 of MIC Notification No.88.

Step 1:

Connect the UUT to the spectrum analyser and use the following settings:

- Centre Frequency: The centre frequency of the channel under test.
- Resolution BW: 1 MHz.
- Video BW: 1 MHz.
- Span: Wide enough to cover the complete power envelope of the signal of the UUT.
- Detector: Peak.
- Trace Mode: Max Hold.

Step 2:

When the trace is complete, find the peak value of the power envelope and record the frequency.

Step 3:

Make the following changes to the settings of the spectrum analyser:

- Centre Frequency: Equal to the frequency recorded in step 2.
- Span: 3 MHz.
- Resolution BW: 1 MHz.
- Video BW: 1 MHz.
- Sweep time: 1 minute.
- Detector: Average (see note).
- Trace Mode: Max Hold.

NOTE: The detector mode "Average" is often referred to as "RMS Average" or "Sample" but do not use Video Average.

Step 4:

When the trace is complete, capture the trace, for example using the "View" option on the spectrum analyser.

Find the peak value of the trace and place the analyser marker on this peak. This level is recorded as the highest mean power (spectral power density) D in a 1 MHz band.

Step 5:

The maximum e.i.r.p. spectral density is calculated from the above measured power density (D), the observed duty cycle x (see clause 5.7.2.2, step 1), and the applicable antenna assembly gain "G" in dBi, according to the formula below. If more than one antenna assembly is intended for this power setting, the gain of the antenna assembly with the highest gain shall be used.

- $PD = D + G + 10 \log (1/x);$

4.4.4 TEST SETUP LAYOUT



4.4.5 EST DEVIATION

There is no deviation with the original standard.

4.4.6 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

Temperature: 25°C Relative Humidity: 55% Test Pressure: 1010 hPa

4.4.7 TEST RESULT OF ANTENNA POWER ERROR

Please refer to the Appendix D.

4.5. LIMITATION OF COLLATERAL EMISSION OF RECEIVER MEASUREMENT

4.5.1 LIMIT

Item	Limits (See Article 24, Paragraph 2 of the Ordinance Regulating Radio Equipment)
RX Spurious Emission:	$\leq 4 \text{ nW } (-54 \text{ dBm}) (f < 1\text{GHz})$
	$\leq 20 \text{ nW } (-47 \text{ dBm}) (1\text{GHz} \leq f)$
Measurement range: 30MHz - 5th harmonics	

4.5.2 MEASURING INSTRUMENTS AND SETTING

Please refer to section 5 in this report. The following table is the setting of Spectrum Analyzer.

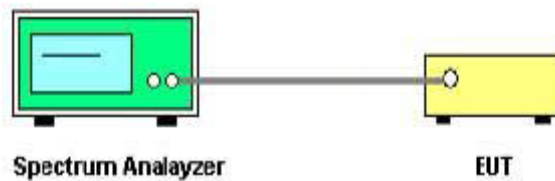
Spectrum Parameter	Setting
Attenuation	Auto
RBW / VBW	100kHz / 100kHz (30-1000MHz) 1 MHz / 1 MHz (Above 1000MHz)
Detector	RMS
Trace	Max Hold
Sweep Time	Auto

4.5.3 TEST PROCEDURES

Test method which surpass to Clause 7 of Annex No.43 of MIC Notification No.88.

- EUT have the continuous reception mode and fixed only one channelize.
- Setting of SA is following as RBW / VBW: 100 kHz (below 1GHz emissions) / 1 MHz (above 1GHz emissions)
AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive RMS / Trace mode: Max hold
- SA set RBW: 100kHz and VBW: 100kHz. Then adjust to start frequency 30MHz and stop frequency 1000MHz. Search to mark peak reading value + cable loss shall be less than 4nW
- SA set RBW: 1MHz and VBW: 1MHz. Then adjust to start frequency 1000MHz and stop frequency 12500MHz. Search to mark peak reading value + cable loss shall be less than 20nW
- If power level of lower emissions are more than 1/10 of limit (.0.4nW for $f < 1\text{GHz}$, 2nW for $f \geq 1\text{GHz}$), all those are to be indicated in the 2nd and 3rd lines. If others are 1/10 or less more of the limit, no necessary to be indicated.

4.5.4. TEST SETUP LAYOUT



4.5.6. TEST DEVIATION

There is no deviation with the original standard.

4.5.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously reception mode.

Temperature: 25°C

Relative Humidity: 55%

Test Pressure: 1010 hPa

Note:

※6: Frequency Band 6 ($30 \text{ MHz} \leq f < 1000 \text{ MHz}$)

※7: Frequency Band 7 ($1000 \text{ MHz} \leq f < 12.5 \text{ GHz}$)

Band	6	7
Cable Loss	1.5 dB	1.5 dB

4.5.7TEST RESULT OF LIMITATION OF COLLATERAL EMISSION OF RECEIVER

Please refer to the Appendix E.

4.6. TRANSMISSION ANTENNA GAIN (EIRP ANTENNA POWER) MEASUREMENT

4.6.1. LIMIT

Item	Limits
EIRP Power Density	$\leq 16.91\text{dBm}$ (FHSS form 2427 - 2470.75 MHz) $\leq 22.14\text{dBm}$ (OFDM,DSSS from 2400~2483.5MHz) $\leq 22.14\text{dBm}$ (Other from 2400~2483.5MHz)
Note: This test item will not be applied to the transmission antenna which has a gain of 2.14dB or less	

4.6.2. MEASURING INSTRUMENTS AND SETTING

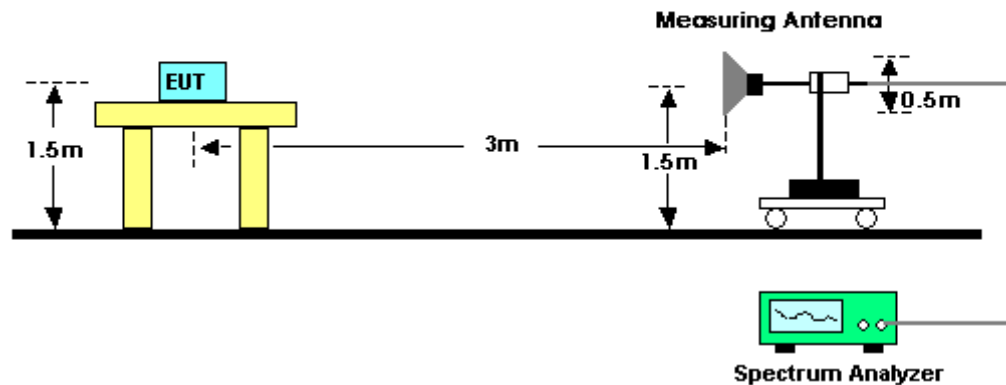
Spectrum Analyzer	Setting
Attenuation	30dB
Span	3 MHz
RBW	1 MHz
VBW	1 MHz
Detector	RMS
Trace	Max Hold
Sweep Time	60s

4.6.3. TEST PROCEDURES

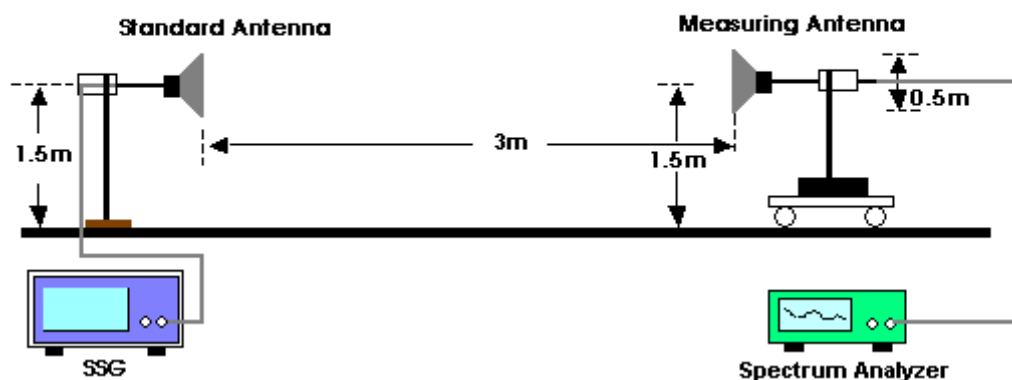
Please refer to 4.4.2 and the $EIRP = PD + \text{Gain}$

4.6.4. TEST SETUP LAYOUT

For EUT radiation measurement



For standard antenna measurement



4.6.5. TEST DEVIATION

There is no deviation with the original standard.

4.6.6. EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

Temperature: 25°C Relative Humidity: 55% Test Pressure: 1010 hPa

4.6.7 RESULTS OF TRANSMISSION ANTENNA GAIN (EIRP ANTENNA POWER)

Method of measurement:	See MIC Notice No.88 Appendix No.43 Clause 10
Results:	N/A

4.7. TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH) MEASUREMENT

4.7.1 LIMIT

Item	Limits (See Article 49-20, Item1-f of the Ordinance Regulating Radio Equipment)
3dB antenna beam width	360/A (if $A < 1$; then $A = 1$) $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$

4.7.2 SETTING

The following table is the setting of the spectrum analyzer.

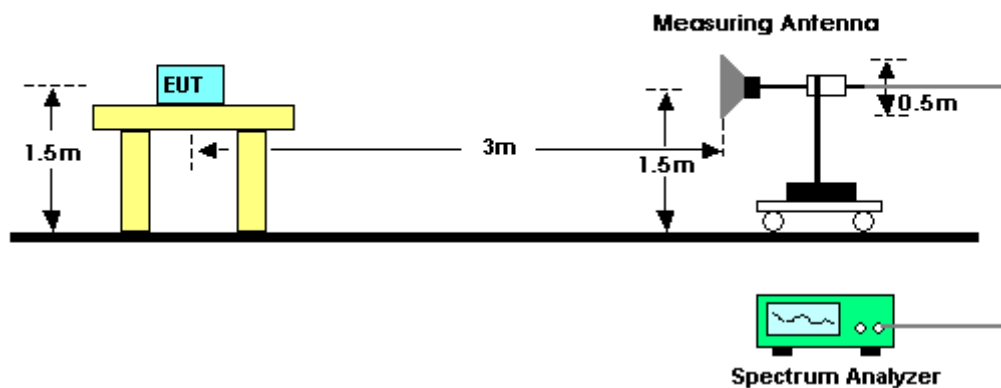
Spectrum Parameter	Setting
Attenuation	Auto
Span	0 MHz
RBW	1 MHz
VBW	1 kHz
Y scale	5 dB
Detector	Peak
Trace	Max Hold

4.7.3 TEST PROCEDURES

Test method which surpass to Clause 22 of Annex No.43 of MIC Notification No.88.

1. Set EUT and measuring antenna at the same height and roughly facing each other.
2. Set spectrum analyzer with condition in section 4.7.2 and tune reference level to observe receiving signal position.
3. Rotate directions of the EUT horizontally and vertically to find the maximum receiving power.
4. Move the measuring antenna height up and down within $\pm 50\text{cm}$ of EUT height and swing it to find the maximum output of measuring antenna. The output level at the spectrum analyzer is read as "E"
5. Calculate permitted radiation angle in horizontal and vertical using EIRP measured in another test method.
6. Calculate 3dB antenna beam width by the formula below $360/A$ (If $A < 1$; then $A = 1$).
 $A = \{\text{EIRP Power [mW]} / 16.36 \text{ for DS, OFDM}\}$ or
 $A = \{\text{EIRP Power [mW]} / 4.9 \text{ for FH}\}$

4.7.4. TEST SETUP LAYOUT



4.7.5. TEST DEVIATION

There is no deviation with the original standard.

4.7.6.EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

Temperature: 25°C Relative Humidity: 55% Test Pressure: 1010 hPa

C : Cable loss 0 dB

4.7.7TEST RESULT OF TRANSMISSION RADIATION ANGLE WIDTH (3DB BEAMWIDTH)

Method of measurement:	See MIC Notice No.88 Appendix No.43 Clause 22
Results:	N/A

4.8. RADIO INTERFERENCE PREVENTION CAPABILITY MEASUREMENT

4.8.1 LIMIT

Item	Limits (See Article 9-4, Item 9-C of the Ordinance Regulating Radio Equipment)
Identification code	≥ 48 bits

4.8.2 MEASURING ID CODE SOFTWARE

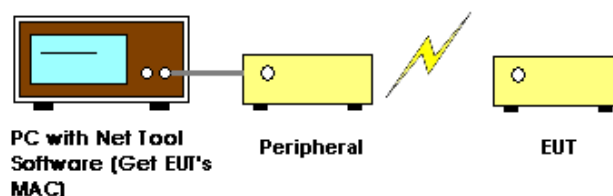
PC with NetTool	Setting
MAC IP List	MAC Scan

4.8.3 TEST PROCEDURES

Test method which surpass to Clause 23 of Annex No.43 of MIC Notification No.88.

- In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes from EUT. b. Check the transmitted identification codes with the demodulator.
- In the case of receiving the identification code: a. Transmit the predetermined identification codes from the counterpart. b. Check if communication is normal. c. Transmit the signals other than predetermined ID codes from the counterpart. d. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

4.8.4 TEST SETUP LAYOUT



4.8.5 TEST DEVIATION

There is no deviation with the original standard.

4.8.6 EUT OPERATION DURING TEST

The EUT was programmed to be in normal transmitting mode.

Temperature: 25°C Relative Humidity: 55% Test Pressure: 1010 hPa

4.8.7 TEST RESULT OF RADIO INTERFERENCE PREVENTION CAPABILIT

Test Power:	Normal Voltage
Test Mode:	TX CH01/20/38
Test Result:	Good(identification code:[0x051E])
0x051E	

4.9. CARRIER SENSE CAPABILITY MEASUREMENT

4.9.1 LIMIT

Item	Limits (See Article 49-20, Item 1-k of the Ordinance Regulating Radio Equipment)
Carrier Sense	Good - EUT stop RF transmission signal after carrier inject to EUT. (On $22.79 + Gr - 20 \cdot \log(f)$ [dBm] (Gr: dBi; f: MHz) or 100mV/m)
Remarks	This test item will be applied to OFDM, $26\text{MHz} < \text{BW} \leq 38\text{MHz}$

4.9.2 SETTING

The following table is the setting of the spectrum analyzer.

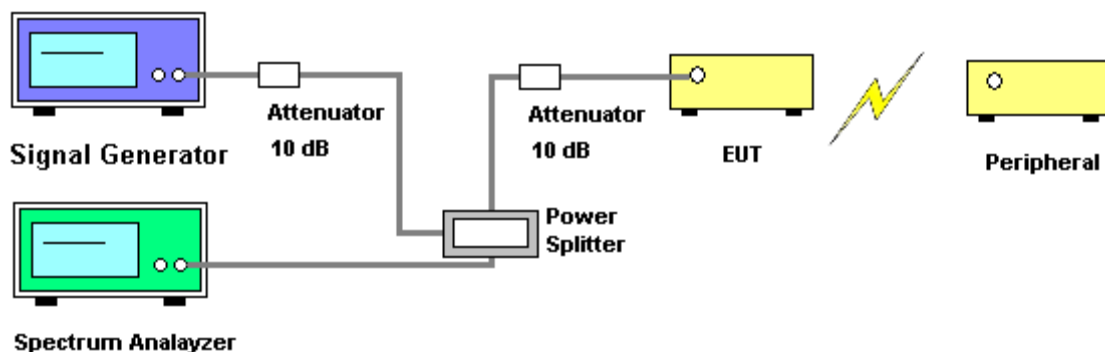
Spectrum Parameter	Setting
Attenuation	Auto
RBW / VBW	1 MHz
Span	0 MHz
Sweep	Continuous
Detector	Peak
Trigger mode	Video

4.9.3 TEST PROCEDURES

Test method which surpass to Clause 8,9 of Annex No.43 of MIC Notification No.88.

- SSG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SSG and power level is (On $22.79 + Gr - 20 \cdot \log(f)$ [dBm] (Gr: dBi; f: MHz). Then turn off the RF signal of SSG.
- EUT have transmitted the maximum modulation signal and fixed channelize.
- Setting of SA is following as: RBW:1MHz / VBW:1MHz / SPAN: 50MHz / AT: 10dB / Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak.
- SSG RF Signal On.
- EUT shall be stop the transmitted any signal and SSG RF Signal Off. Then EUT will be continuous transmitted signal.

4.9.4. TEST SETUP LAYOUT



4.9.5. TEST DEVIATION

There is no deviation with the original standard.

4.9.6. EUT OPERATION DURING TEST

The EUT was programmed to be in transmitting mode.

Temperature: 25°C Relative Humidity: 55% Test Pressure: 1010 hPa

4.9.7. TEST RESULT OF CARRIER SENSE CAPABILITY MEASUREMENT

Test Power:	Normal Voltage
Test Mode:	TX Mode
Test Result:	N/A

4.10. CONSTRUCTION PROTECTIONCONFIRMATION METHOD

4.10.1. LIMIT

The high-frequency section and modulation section of the radio equipment except for the antenna system shall not be capable of being opened easily.

4.10.2 CONFIRMATION METHOD

The RF and modulation portions are protected against illegal modification as following method:

Tick the appropriate box	
<input type="checkbox"/>	1. Sealed with special screws.
<input type="checkbox"/>	2. Plastic chassis is being welded using ultrasonic waves.
<input type="checkbox"/>	3. Chassis is glued using a special adhesive.
<input type="checkbox"/>	4. Metal covers are spot-fused.
<input type="checkbox"/>	5. Cover is specially interlocked.
<input type="checkbox"/>	6. RF and Modulation components are covered with shielding case and this shielding case is soldered.
<input type="checkbox"/>	7. Shield case is welded at RF and modulation parts, and ID-ROM is welded using the BGA Method.
<input type="checkbox"/>	8. Shield case is welded at RF and modulation parts, and ID-ROM is glued at its lead with a special adhesive
<input type="checkbox"/>	9. Shield case is welded at RF and modulation parts, and ID-ROM is guled with a non-transparent laminating agent.
<input checked="" type="checkbox"/>	10. RF and Modulation parts are mounted on PCB with surface mount technology, and there is no any adjustable part on PCB or adjustable parts are not exposed.

5. LIST OF MEASURING EQUIPMENTS

Kind of Equipment	Manufacturer	Model No.	Serial No.	Calibrated Date	Validity Date	Calibration Agency
Spectrum Analyzer	R&S	FSP40	100185	Aug. 21, 2017	Aug. 20, 2018	CHINA CEPREI LABORATORY
Signal Generator	R&S	SMR40	100504	Mar. 12, 2018	Mar. 11, 2019	CEPREI Calibration and Testing Center
Multi-output DC Power Supply	GW Instek	GPC-3030DN	EK880675	Sep. 25, 2017	Sep. 26, 2018	CEPREI Calibration and Testing Center
Attenuator	WOKEN	6SM3502	VAS1214NL	Feb. 15, 2018	Feb. 14, 2019	CEPREI Calibration and Testing Center
power Meter	ANRITSU	ML2495A	1128009	Mar. 12, 2018	Mar. 11, 2019	CEPREI Calibration and Testing Center
Pulse Power Sensor	ANRITSU	MA 2411B	1027500	Mar. 12, 2018	Mar. 11, 2019	CEPREI Calibration and Testing Center
Cable	emci	EMC104-SM-SM-9000(0.01GHz-26.5GHz)	N/A	N/A	N/A	N/A
Cable	emci	EMC80-NM-NM-12000(9KHz-1GHz)	N/A	N/A	N/A	N/A

Note

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

6. EUT TEST PHOTO

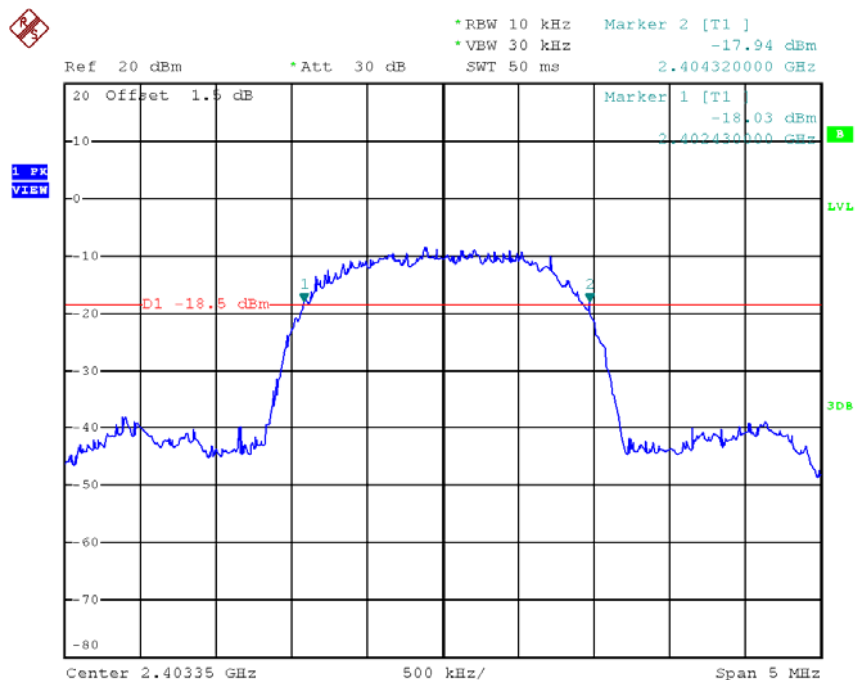


APPENDIX A -FREQUENCY TOLERANCE

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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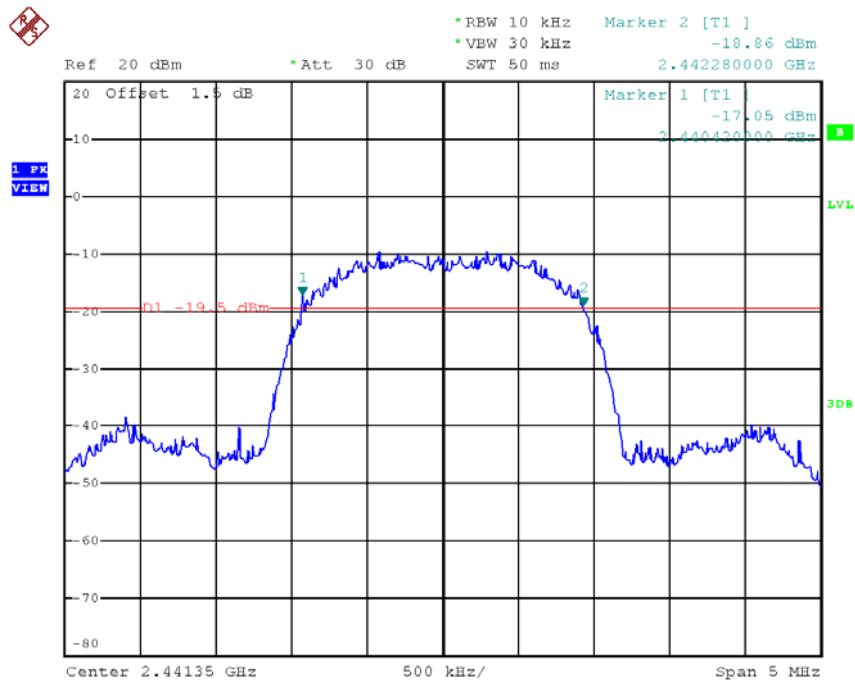
Test Voltage (V)	Normal Voltage			Remarks
Test Frequency (MHz)	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Measured Frequency (MHz)	2403.3750	2441.3500	2477.3700	-
Frequency Error (ppm)	10.40	0.00	8.07	Limit \leq 50 ppm

Normal Voltage 2403.35 MHz



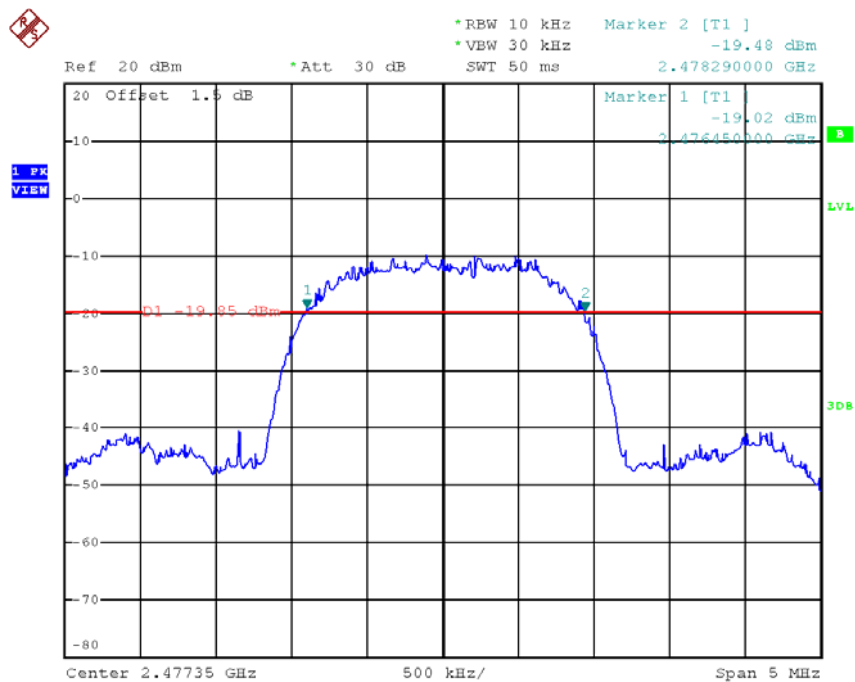
Date: 7.AUG.2018 10:11:23

Normal Voltage 2441.35 MHz



Date: 7.AUG.2018 10:17:55

Normal Voltage 2477.35 MHz

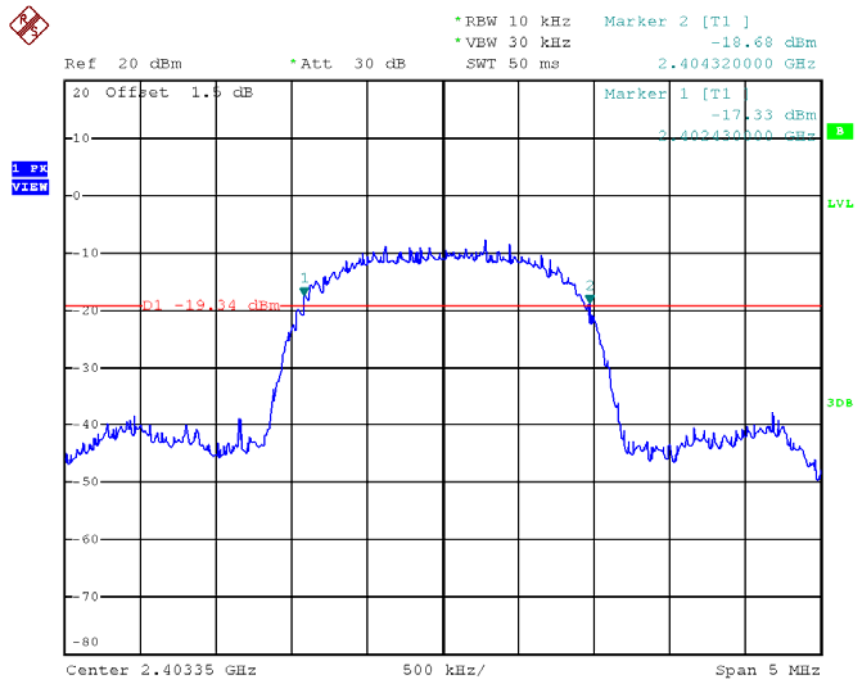


Date: 7.AUG.2018 10:19:36

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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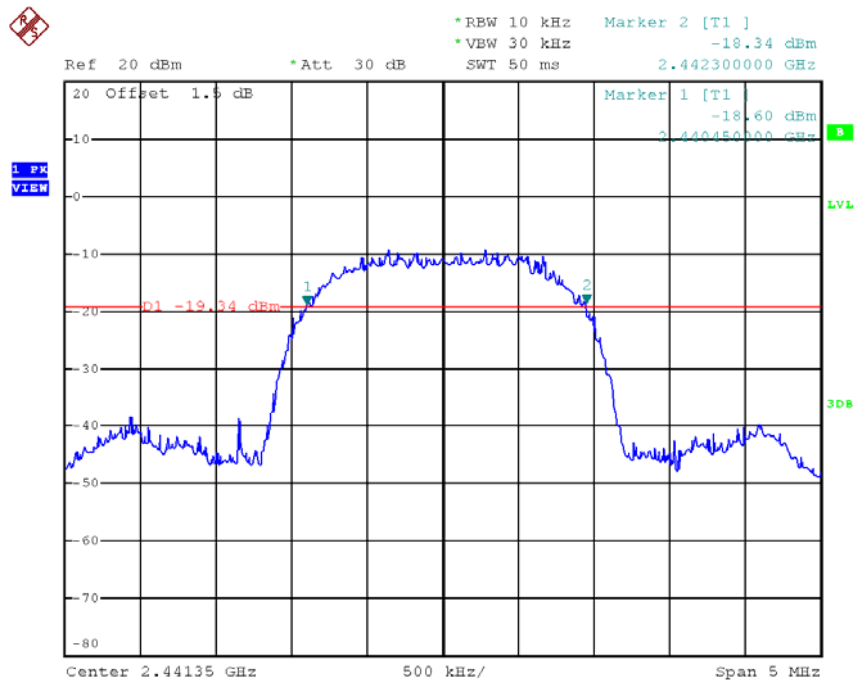
Test Voltage (V)	High Voltage			Remarks
Test Frequency (MHz)	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Measured Frequency (MHz)	2403.3750	2441.3750	2477.3650	-
Frequency Error (ppm)	10.40	10.24	6.05	Limit \leq 50 ppm

High Voltage 2403.35 MHz



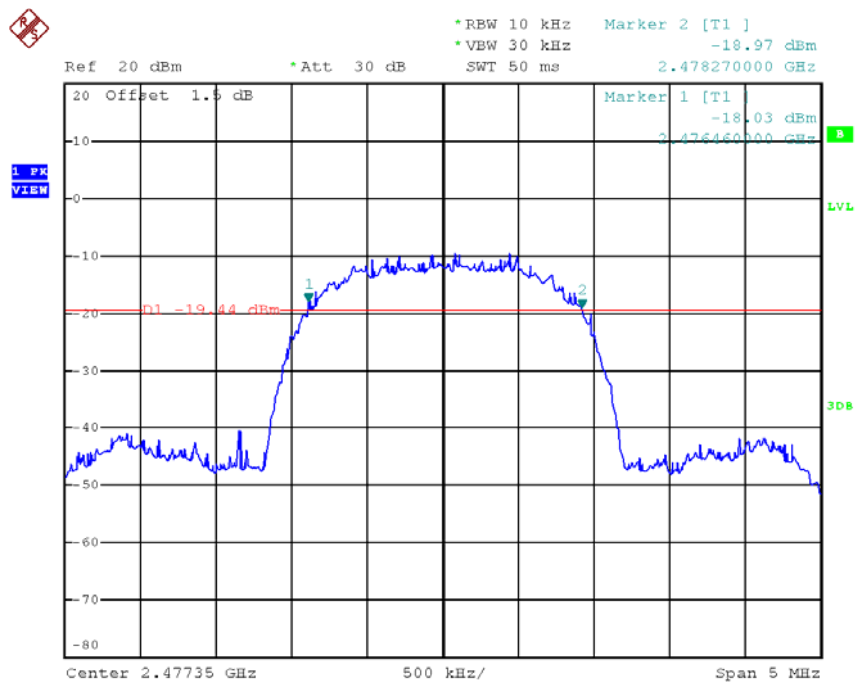
Date: 7.AUG.2018 10:38:10

High Voltage 2441.35 MHz



Date: 7.AUG.2018 10:36:35

High Voltage 2477.35 MHz

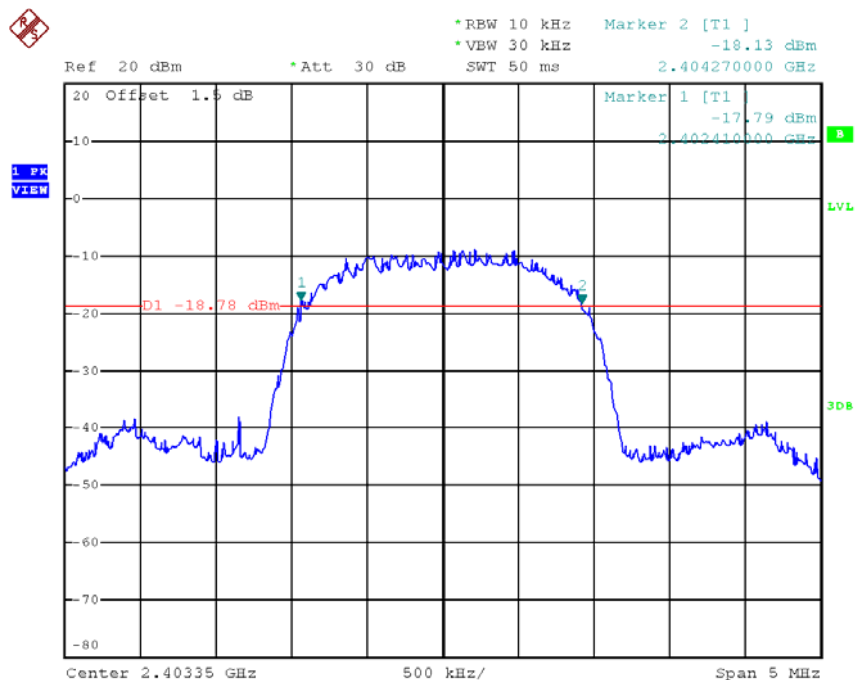


Date: 7.AUG.2018 10:33:09

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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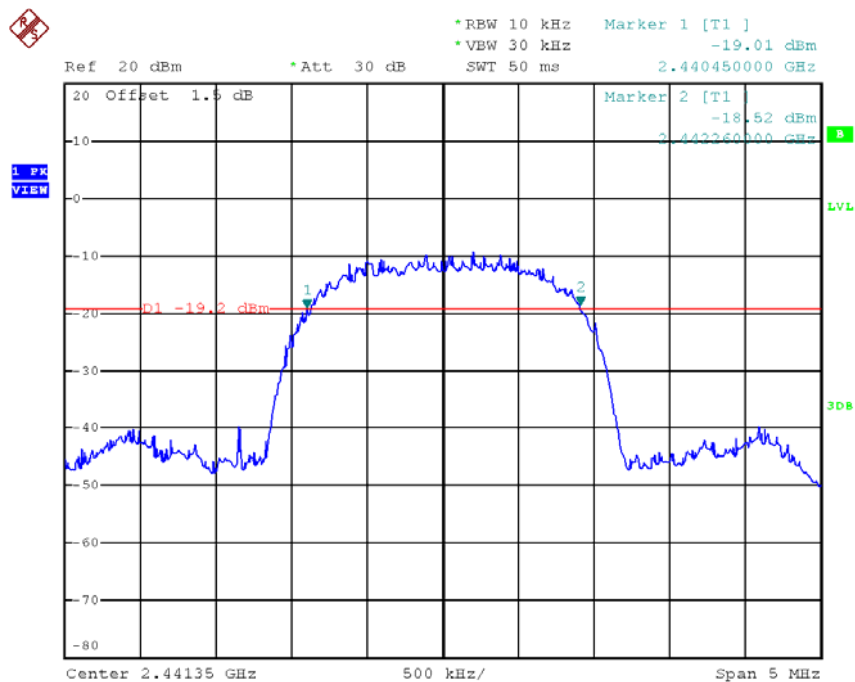
Test Voltage (V)	Low Voltage			Remarks
Test Frequency (MHz)	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Measured Frequency (MHz)	2403.3400	2441.3550	2477.3700	-
Frequency Error (ppm)	-4.16	2.05	8.07	Limit \leq 50 ppm

Low Voltage 2403.35 MHz



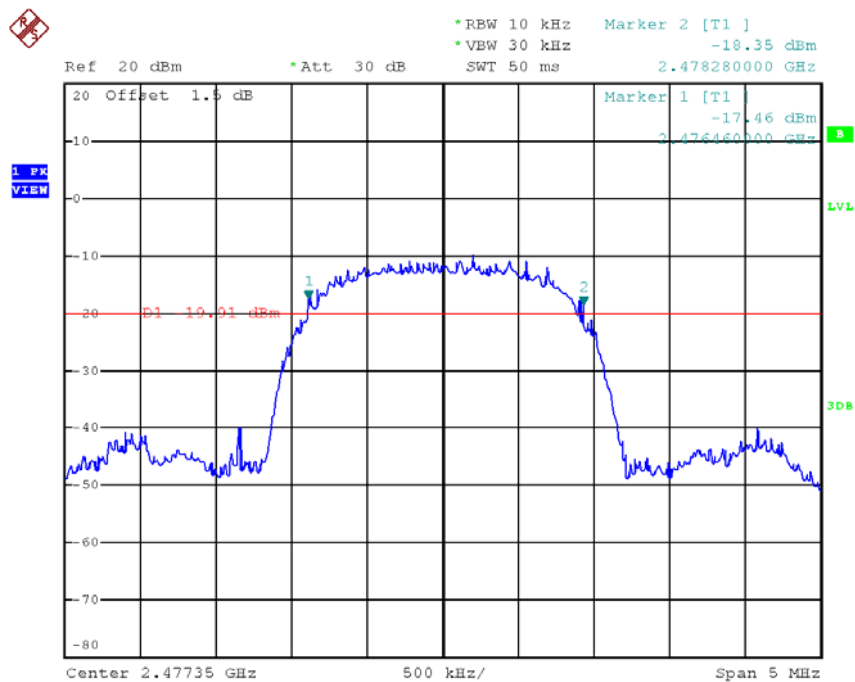
Date: 7.AUG.2018 10:45:22

Low Voltage 2441.35 MHz



Date: 7.AUG.2018 10:47:41

Low Voltage 2477.35 MHz



Date: 7.AUG.2018 10:52:01

APPENDIX B -OCCUPIED BANDWIDTH AND SPREAD-SPECTRUM BANDWIDTH

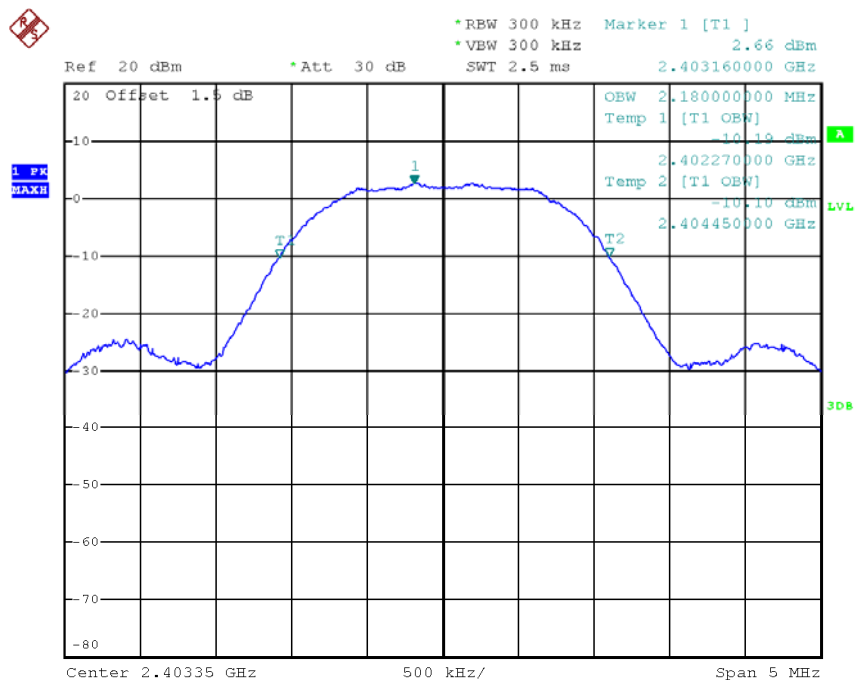
Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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Test Voltage (V)	Normal Voltage			Remarks
Test Frequency (MHz)	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Occupied bandwidth (MHz)	2.18	2.18	2.17	Limit \leq 83.5 MHz (RBW/VBW :300kHz)
Spreading Bandwidth (MHz)	1.57	1.56	1.57	\geq 500 kHz (FHSS, DSSS)

Test Voltage (V)	High Voltage			Remarks
Test Frequency (MHz)	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Occupied bandwidth (MHz)	2.18	2.18	2.17	Limit \leq 83.5 MHz (RBW/VBW :300kHz)
Spreading Bandwidth (MHz)	1.57	1.57	1.57	\geq 500 kHz (FHSS, DSSS)

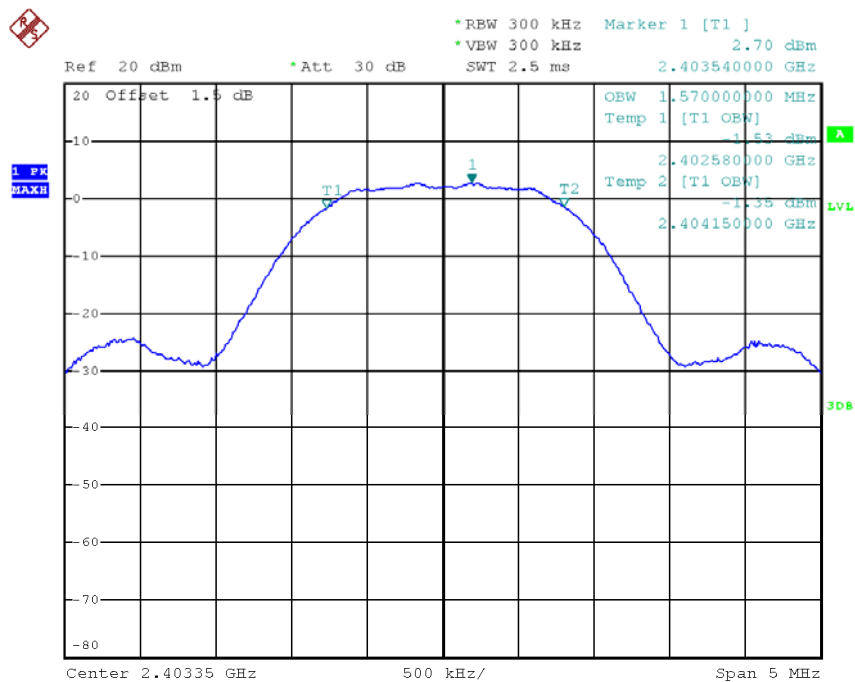
Test Voltage (V)	Low Voltage			Remarks
Test Frequency (MHz)	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Occupied bandwidth (MHz)	2.18	2.18	2.17	Limit \leq 83.5 MHz (RBW/VBW :300kHz)
Spreading Bandwidth (MHz)	1.57	1.57	1.55	\geq 500 kHz (FHSS, DSSS)

Normal Voltage 2403.35 MHz -99 % OBW



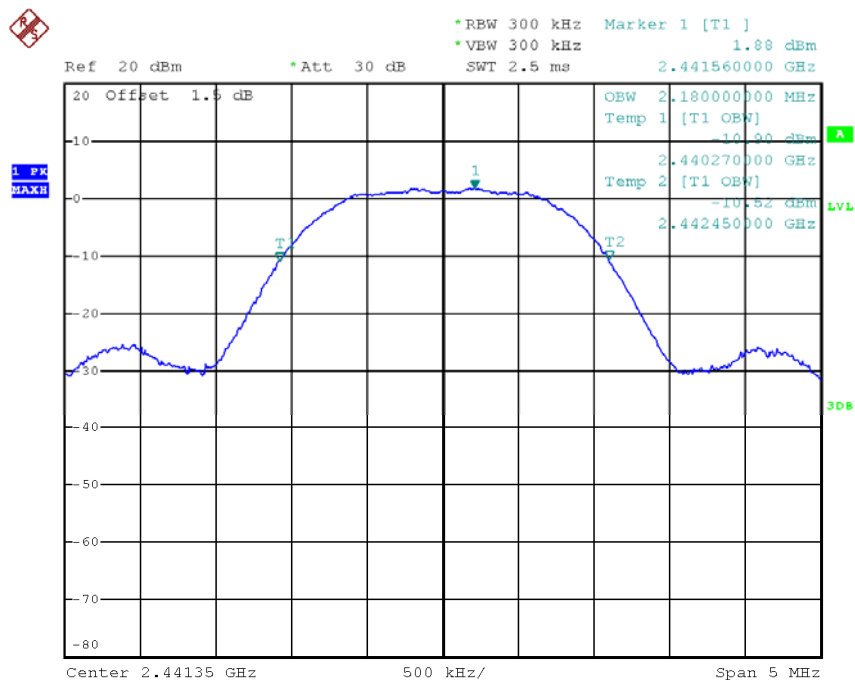
Date: 7.AUG.2018 10:14:20

Normal Voltage 2403.35 MHz -90 % OBW



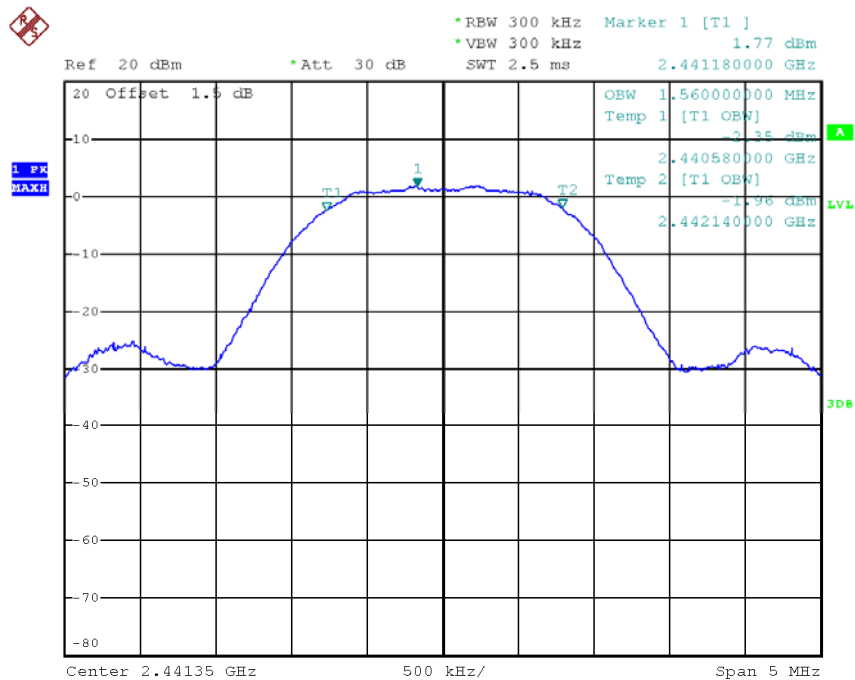
Date: 7.AUG.2018 10:13:40

Normal Voltage 2441.35 MHz -99 % OBW



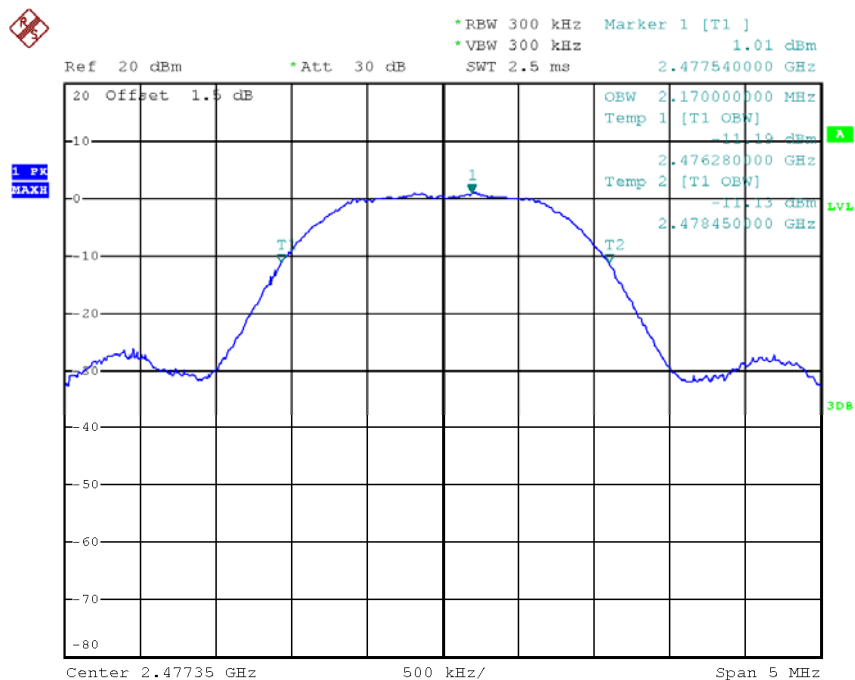
Date: 7.AUG.2018 10:15:27

Normal Voltage 2441.35 MHz -90 % OBW



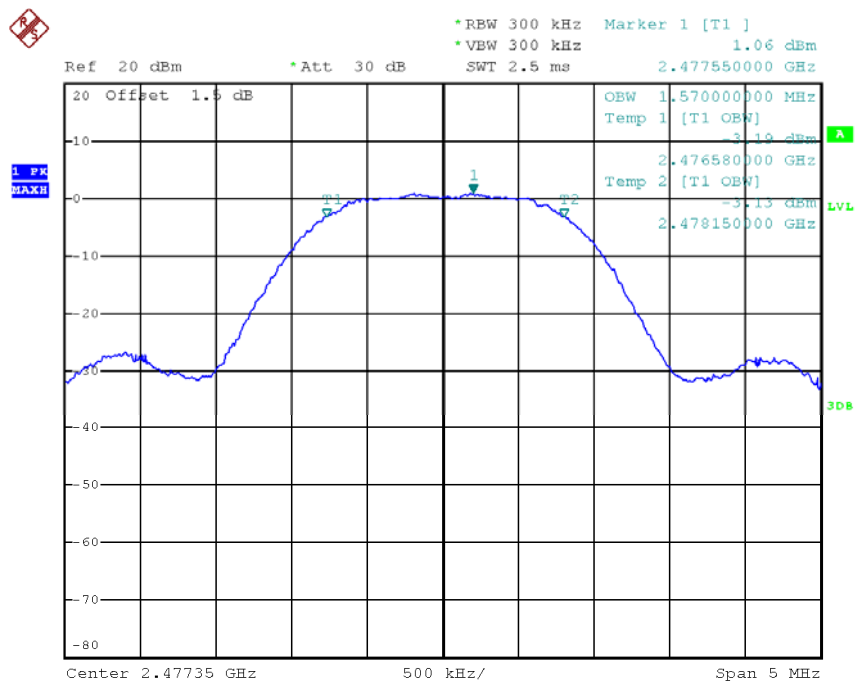
Date: 7.AUG.2018 10:16:21

Normal Voltage 2477.35 MHz -99 % OBW



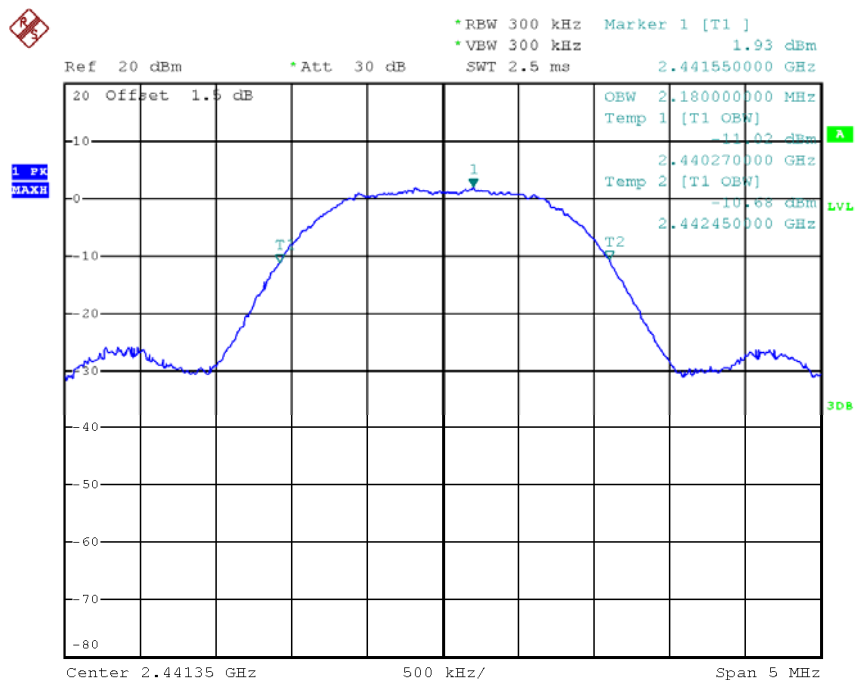
Date: 7.AUG.2018 10:26:17

Normal Voltage 2477.35 MHz -90 % OBW



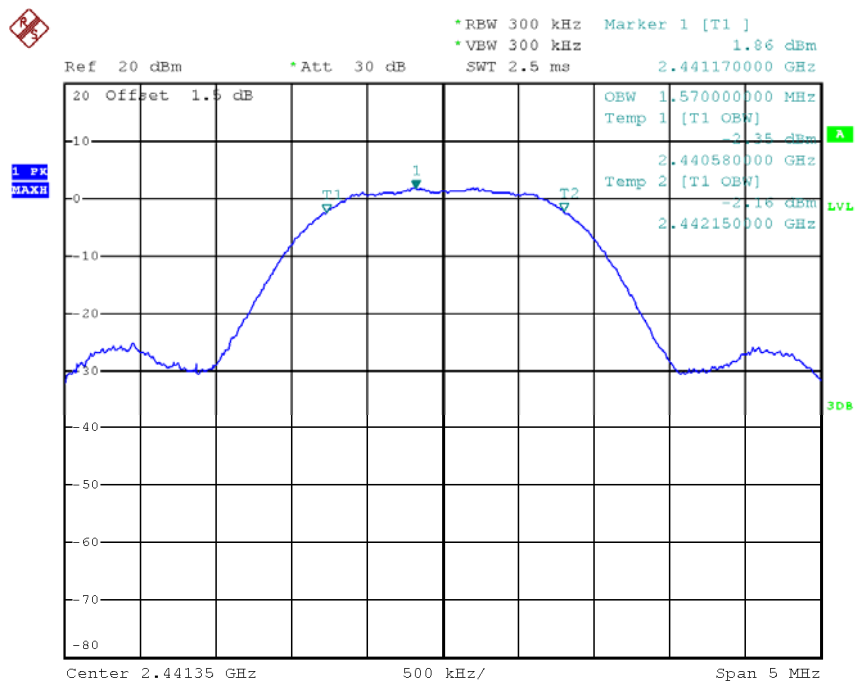
Date: 7.AUG.2018 10:25:46

High Voltage 2441.35 MHz -99 % OBW



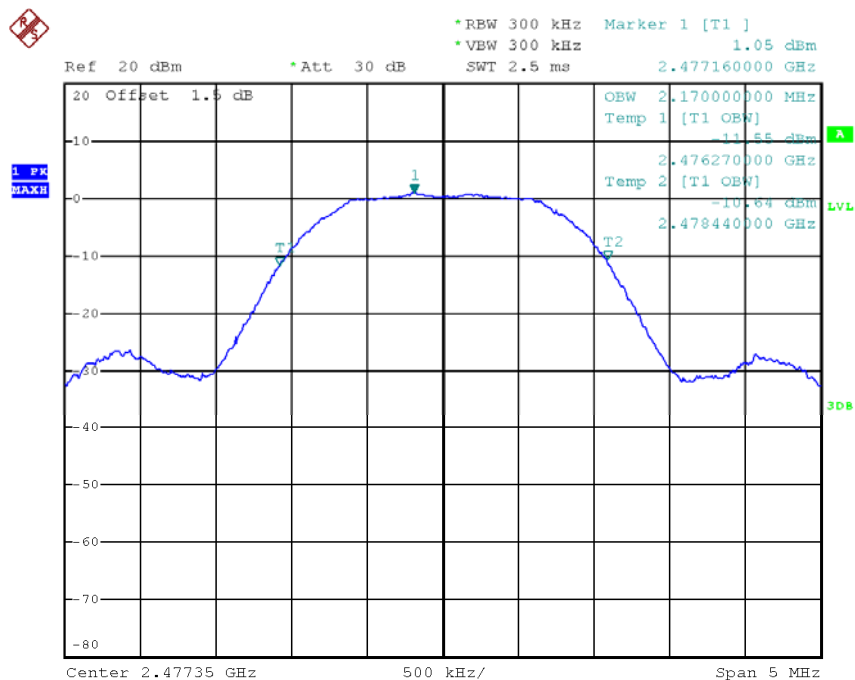
Date: 7.AUG.2018 10:35:18

High Voltage 2441.35 MHz -90 % OBW



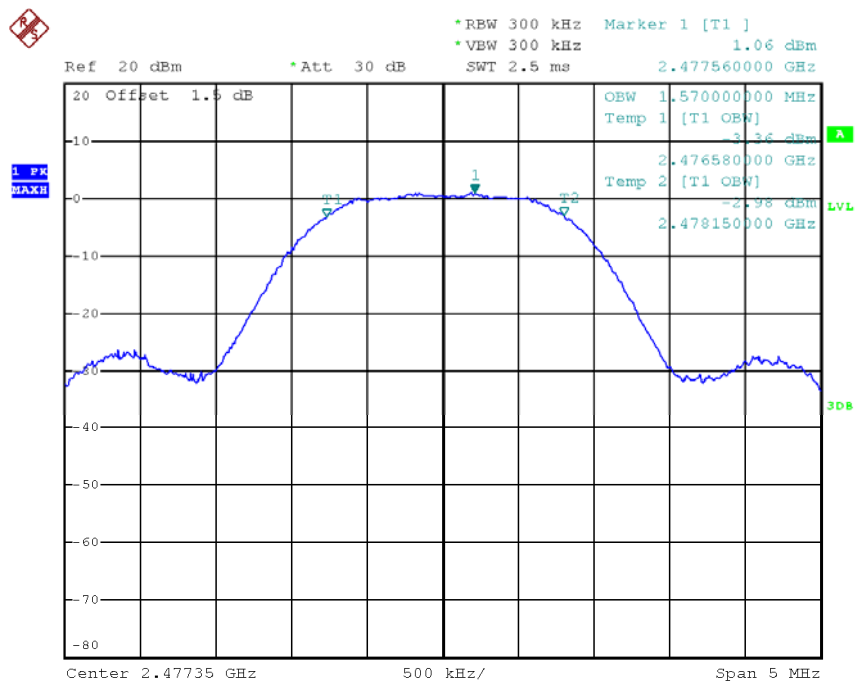
Date: 7.AUG.2018 10:34:48

High Voltage 2477.35 MHz -99 % OBW



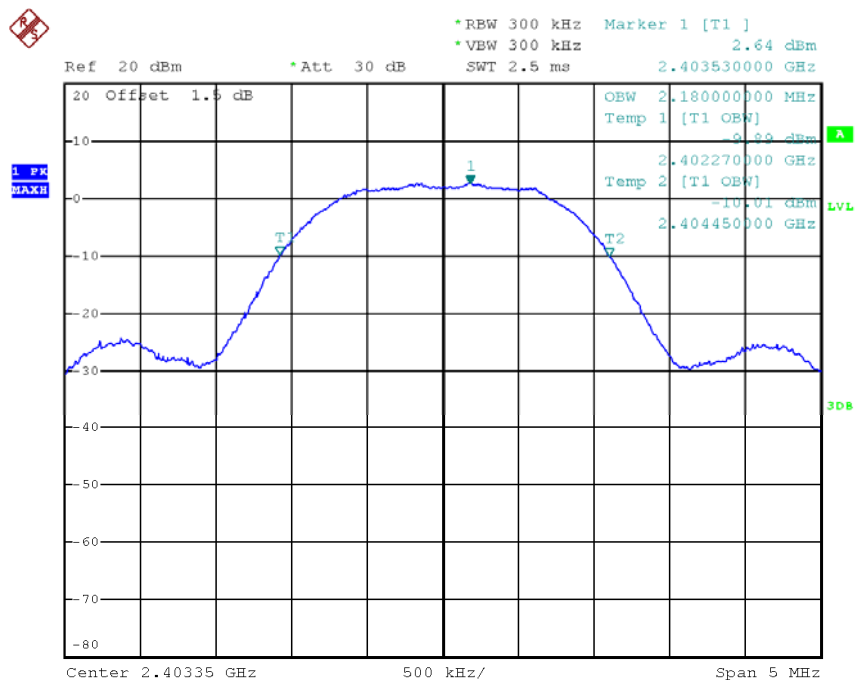
Date: 7.AUG.2018 10:33:37

High Voltage 2477.35 MHz -90 % OBW



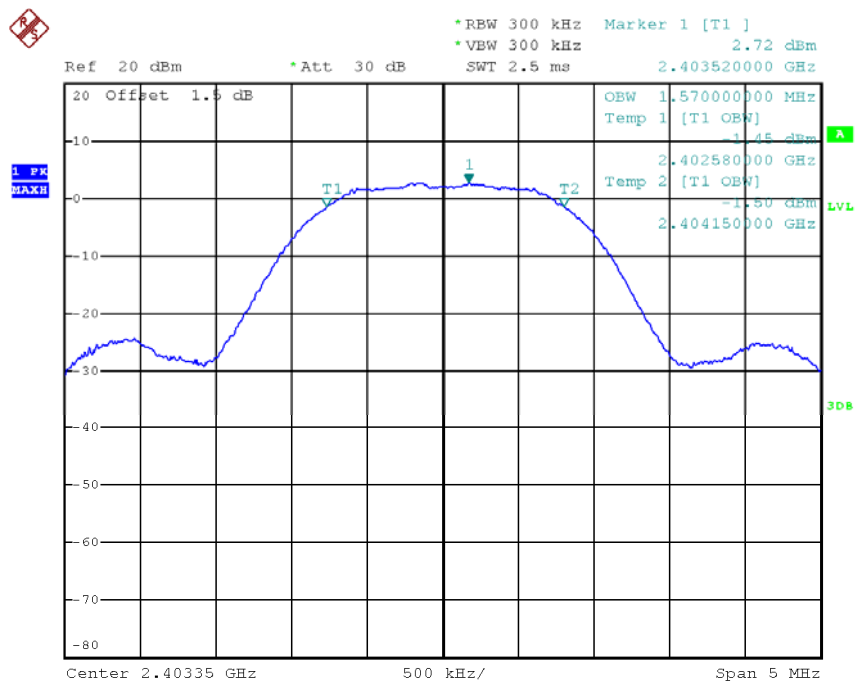
Date: 7.AUG.2018 10:34:06

Low Voltage 2403.35 MHz -99 % OBW



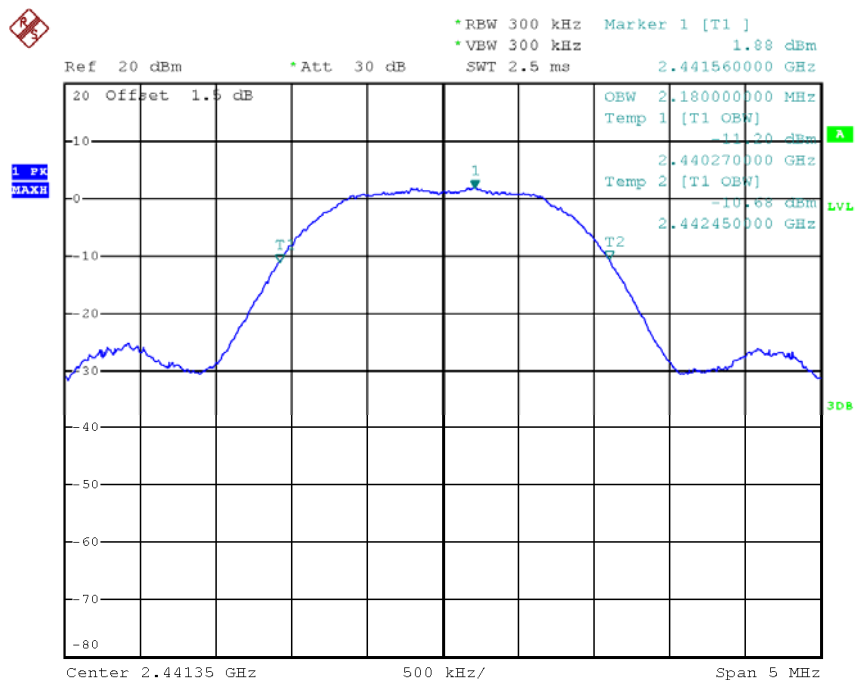
Date: 7.AUG.2018 10:43:16

Low Voltage 2403.35 MHz -90 % OBW



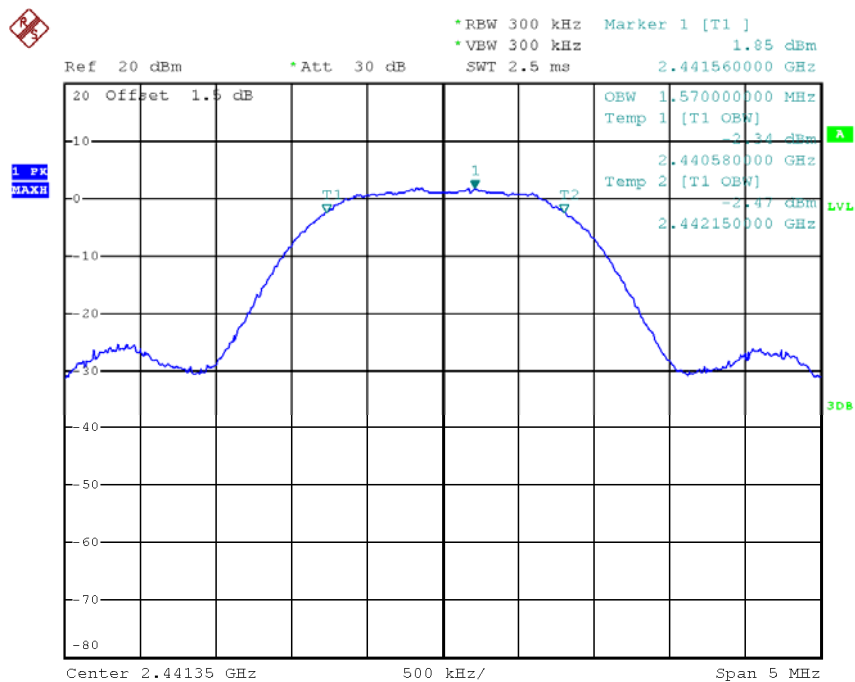
Date: 7.AUG.2018 10:42:21

Low Voltage
2441.35 MHz -99 % OBW



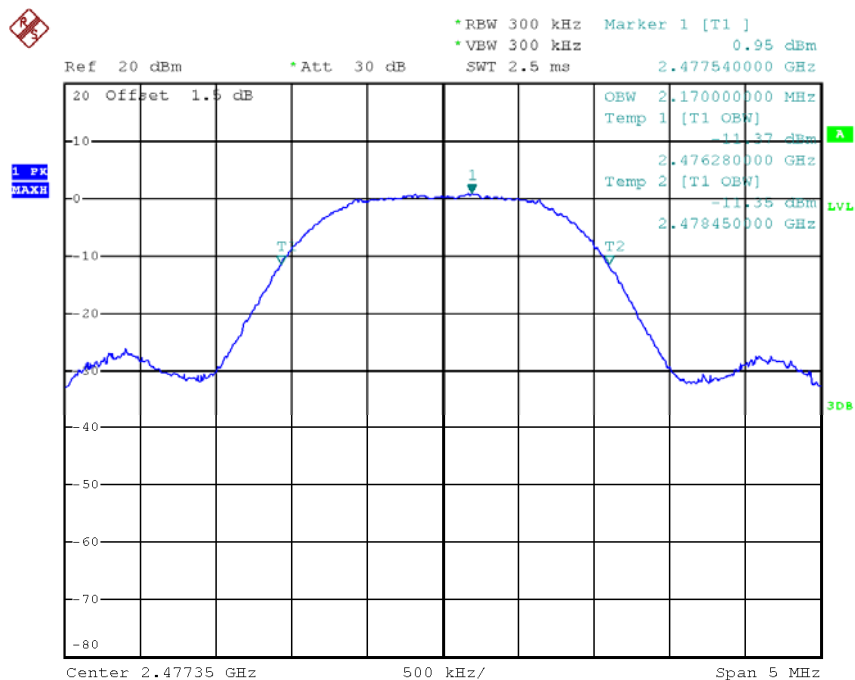
Date: 7.AUG.2018 10:48:56

Low Voltage
2441.35 MHz -90 % OBW



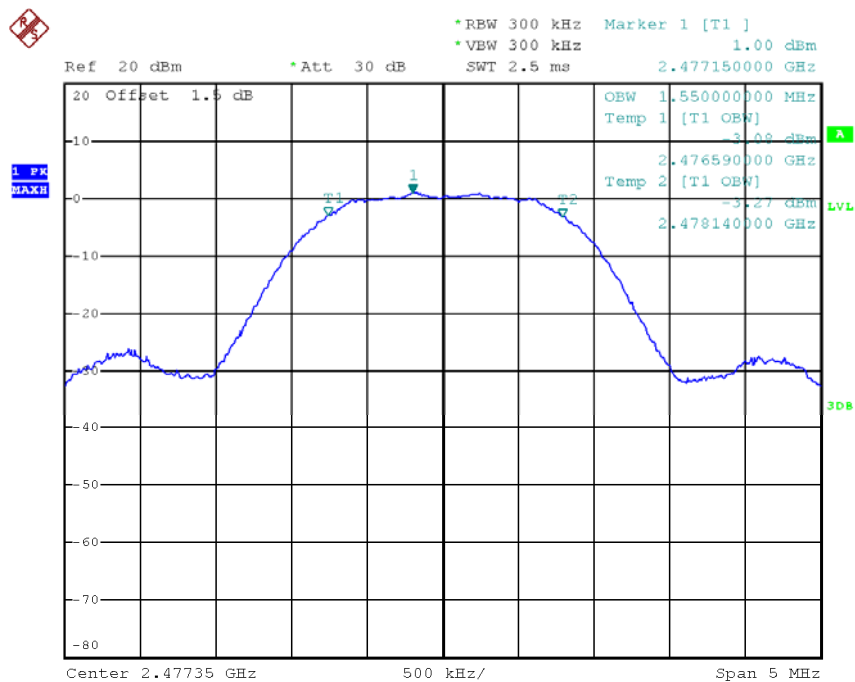
Date: 7.AUG.2018 10:49:24

Low Voltage 2477.35 MHz -99 % OBW



Date: 7.AUG.2018 10:50:23

Low Voltage 2477.35 MHz -90 % OBW



Date: 7.AUG.2018 10:49:56

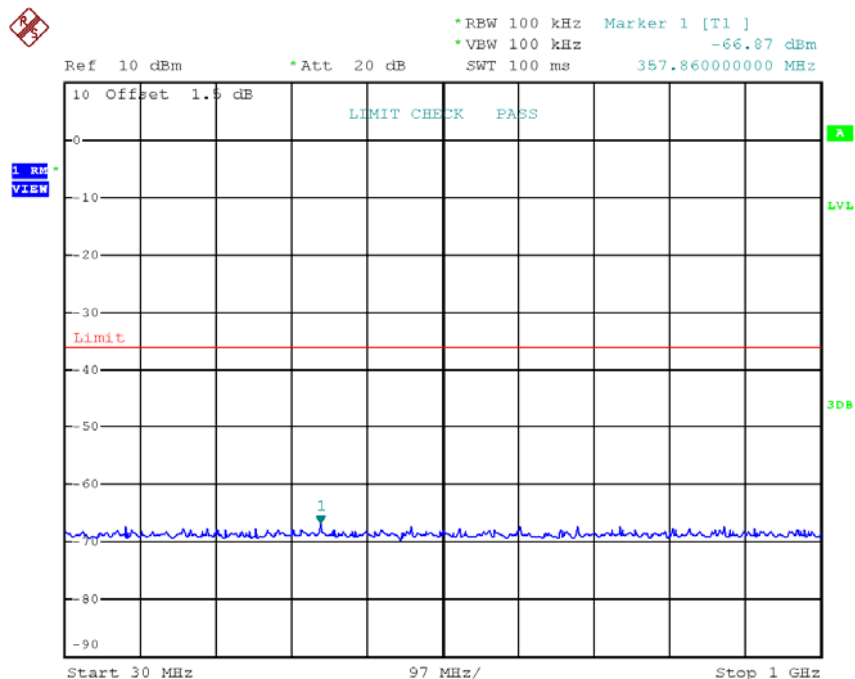
APPENDIX C -UNWANTED EMISSION INTENSITY

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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Test Voltage		V	Normal Voltage			Remarks
Test Frequency		MHz	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Unwanted Emission Intensity (Power emission within 1MHz bandwidth) (units: μW)	※1	$\mu\text{W}/100\text{kHz}$	0.0002	0.0002	0.0002	Limit $\leq 0.25 \mu\text{W}/100\text{kHz}$ (-36 dBm/100kHz)
	※2	$\mu\text{W}/\text{MHz}$	0.0004	0.0003	0.0002	Limit $\leq 2.5 \mu\text{W}/\text{MHz}$ (-26 dBm/MHz)
	※3	$\mu\text{W}/\text{MHz}$	0.5572	0.0003	0.0005	Limit $\leq 25 \mu\text{W}/\text{MHz}$ (-16 dBm/MHz)
	※4	$\mu\text{W}/\text{MHz}$	0.0003	0.0003	0.0316	Limit $\leq 25 \mu\text{W}/\text{MHz}$ (-16 dBm/MHz)
	※5	$\mu\text{W}/\text{MHz}$	0.0005	0.0005	0.0005	Limit $\leq 2.5 \mu\text{W}/\text{MHz}$ (-26 dBm/MHz)

Normal Voltage

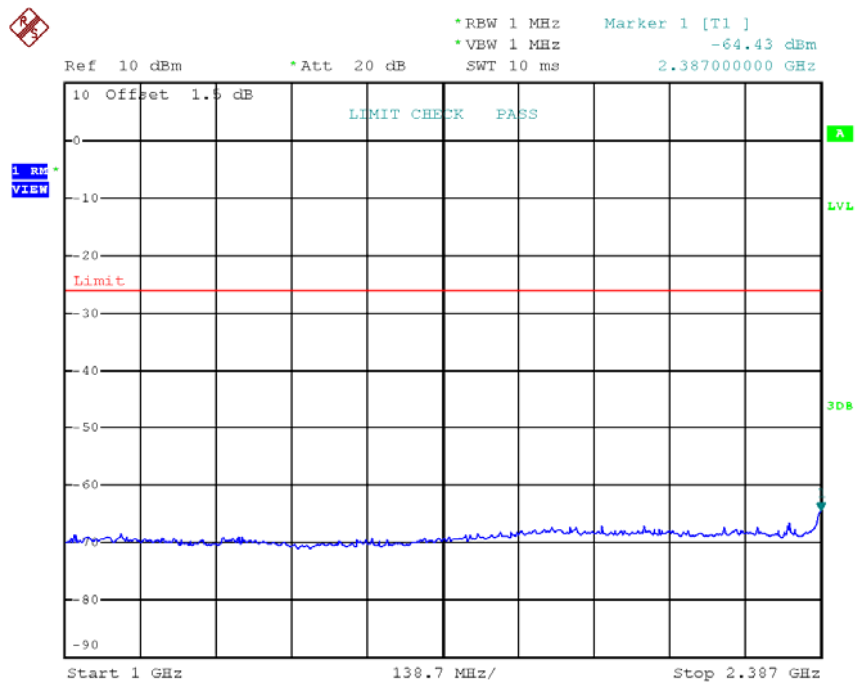
2403.35 MHz Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 11:56:54

Normal Voltage

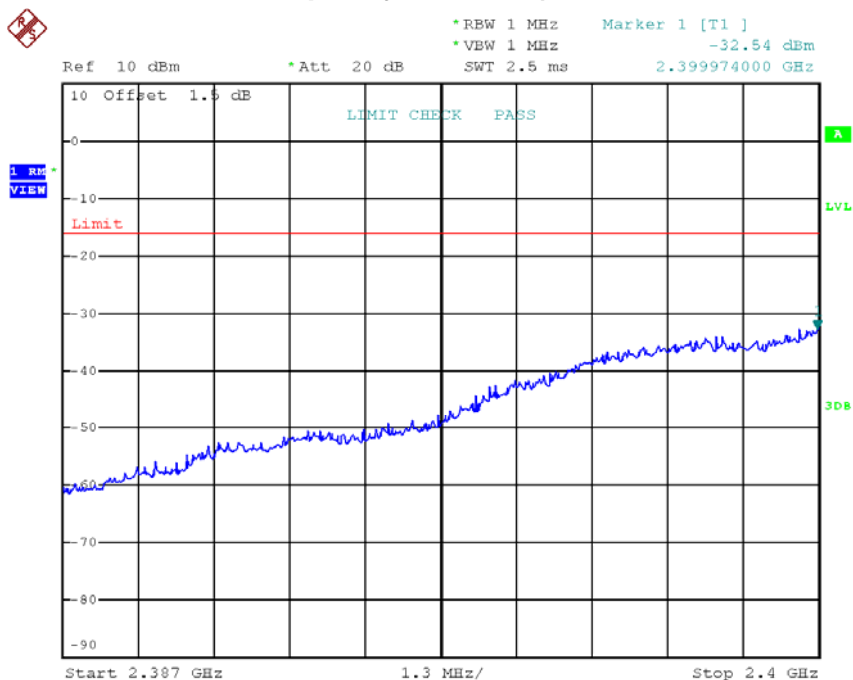
2403.35 MHz Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



Date: 7.AUG.2018 11:57:03

Normal Voltage

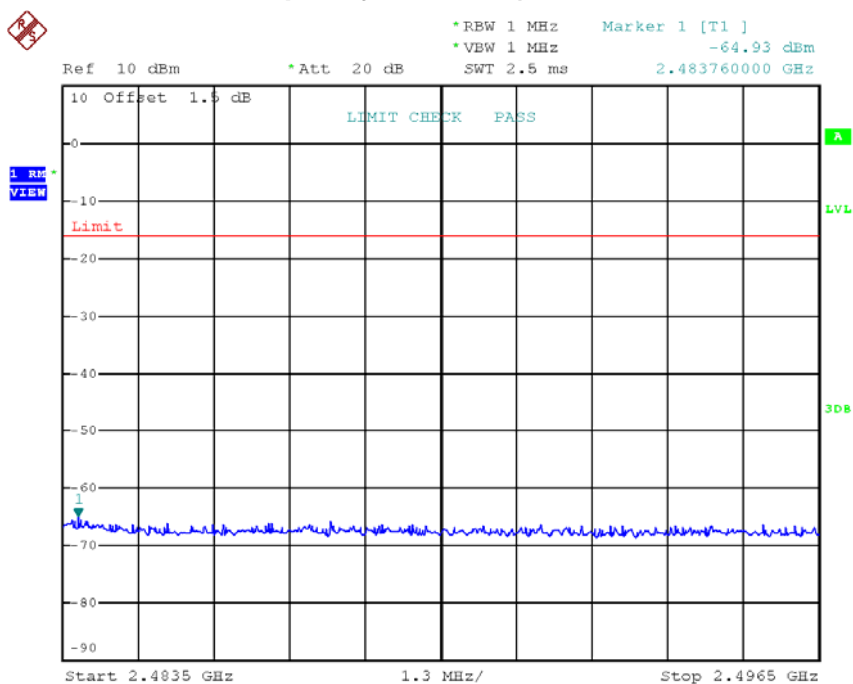
2403.35 MHz Frequency Band 3 ($2387 \text{ MHz} \leq f < 2400 \text{ MHz}$)



Date: 7.AUG.2018 11:57:13

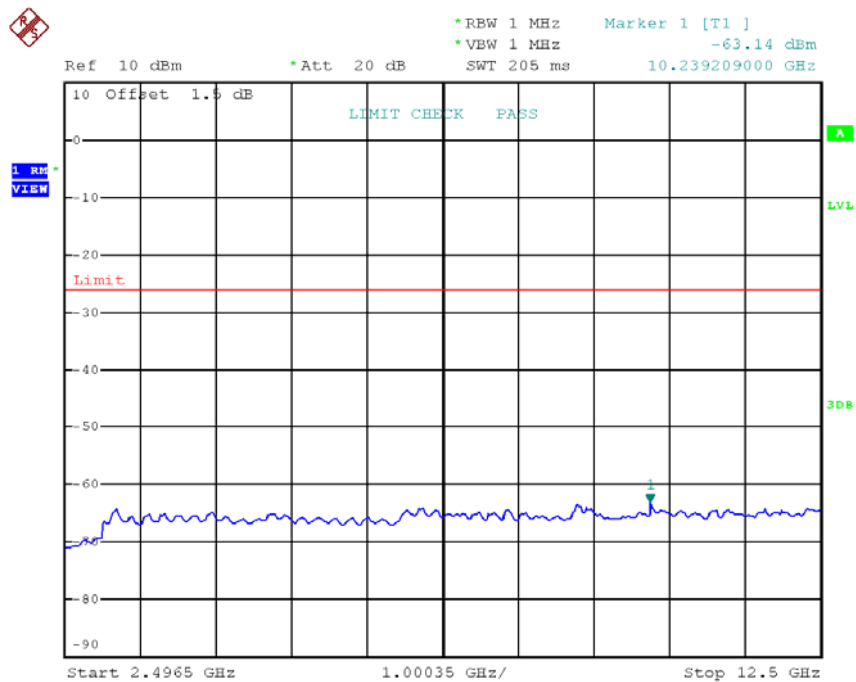
Normal Voltage

2403.35 MHz Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



Date: 7.AUG.2018 11:57:23

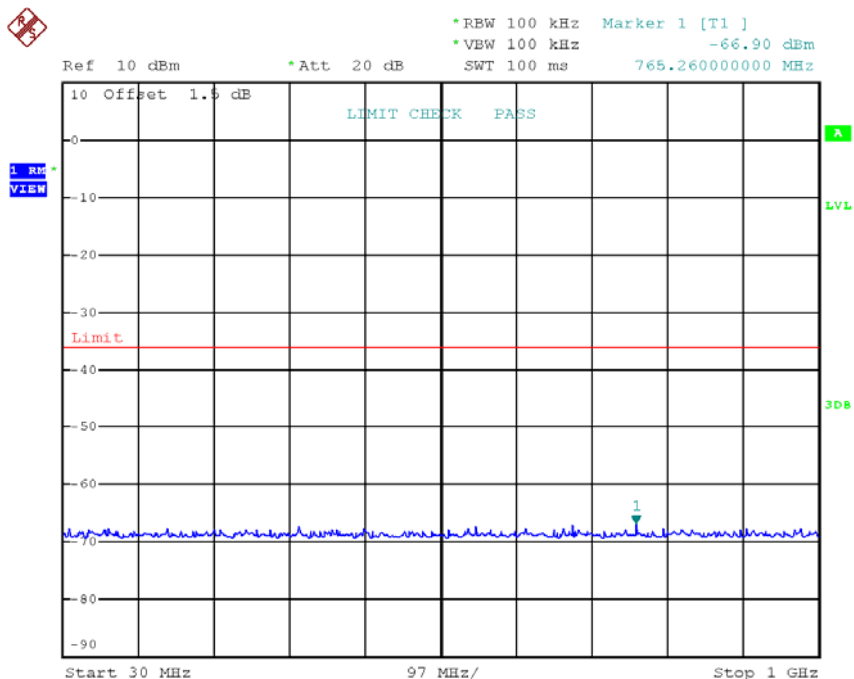
Normal Voltage 2403.35 MHz Frequency Band 5 (2496.5 MHz \leq f <12.5 GHz)



Date: 7.AUG.2018 11:57:32

Normal Voltage

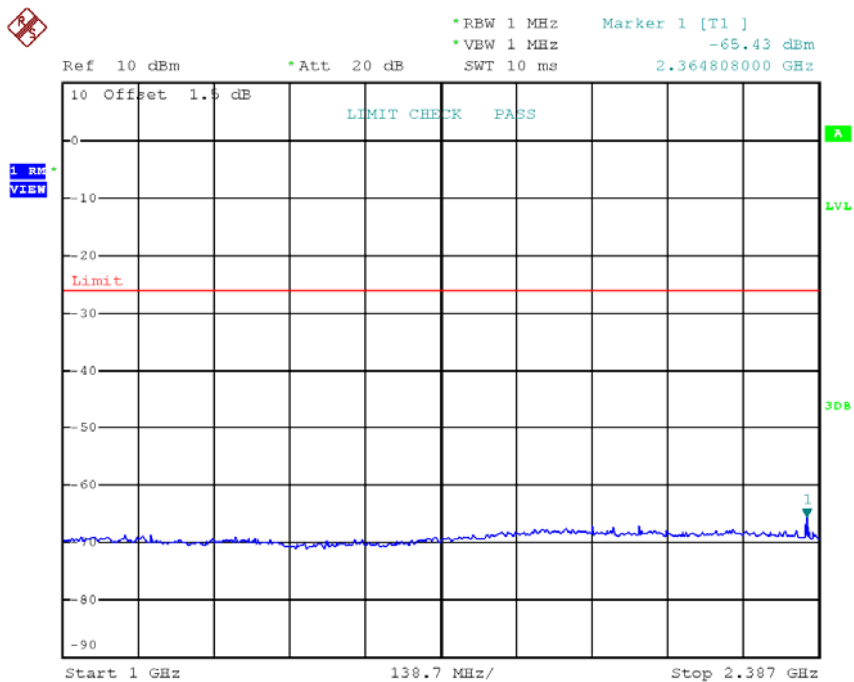
2441.35 MHz Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 11:57:53

Normal Voltage

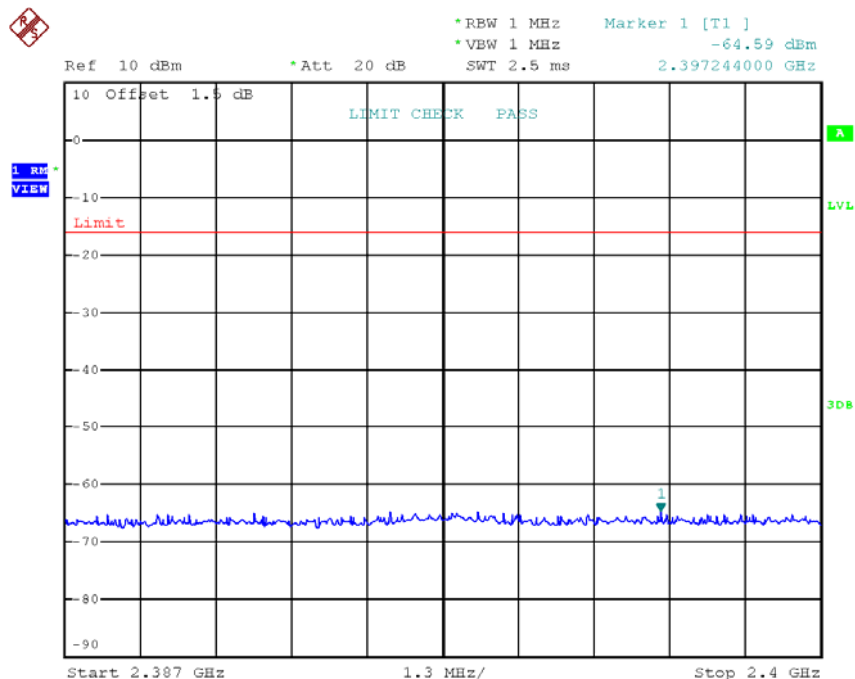
2441.35 MHz Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



Date: 7.AUG.2018 11:58:03

Normal Voltage

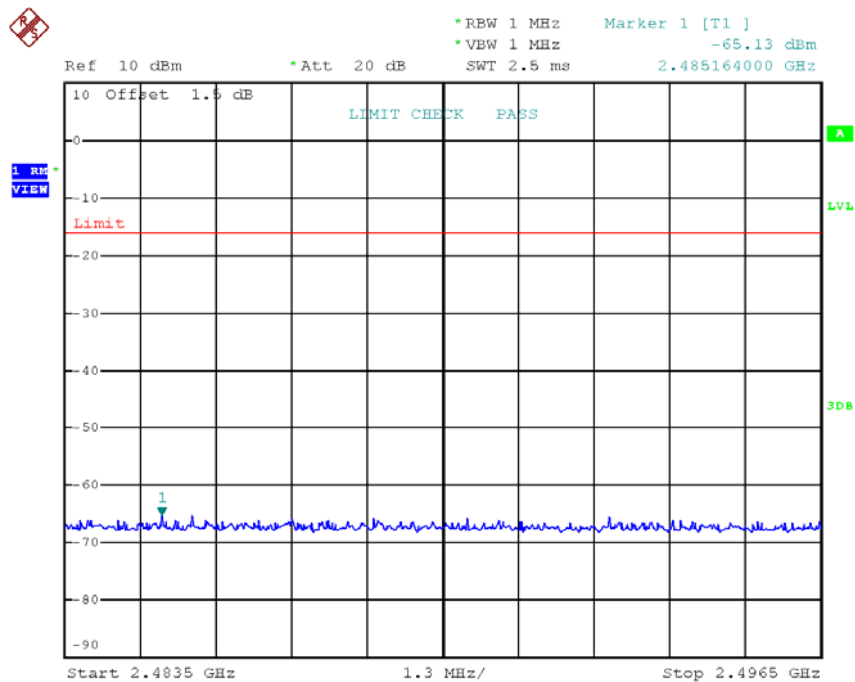
2441.35 MHz Frequency Band 3 ($2387 \text{ MHz} \leq f < 2400 \text{ MHz}$)



Date: 7.AUG.2018 11:58:13

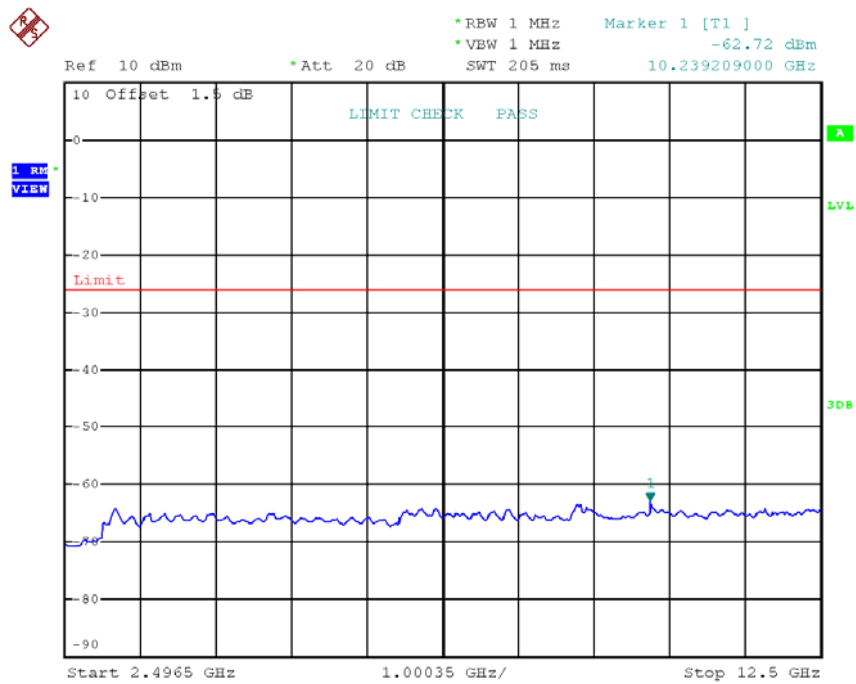
Normal Voltage

2441.35 MHz Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



Date: 7.AUG.2018 11:58:22

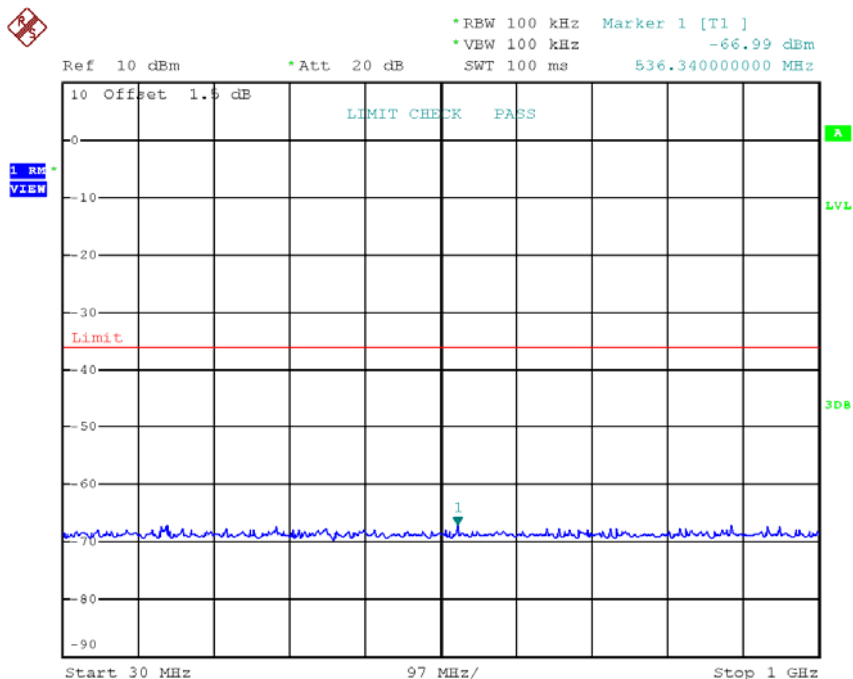
Normal Voltage 2441.35 MHz Frequency Band 5 (2496.5 MHz \leq f <12.5 GHz)



Date: 7.AUG.2018 11:58:32

Normal Voltage

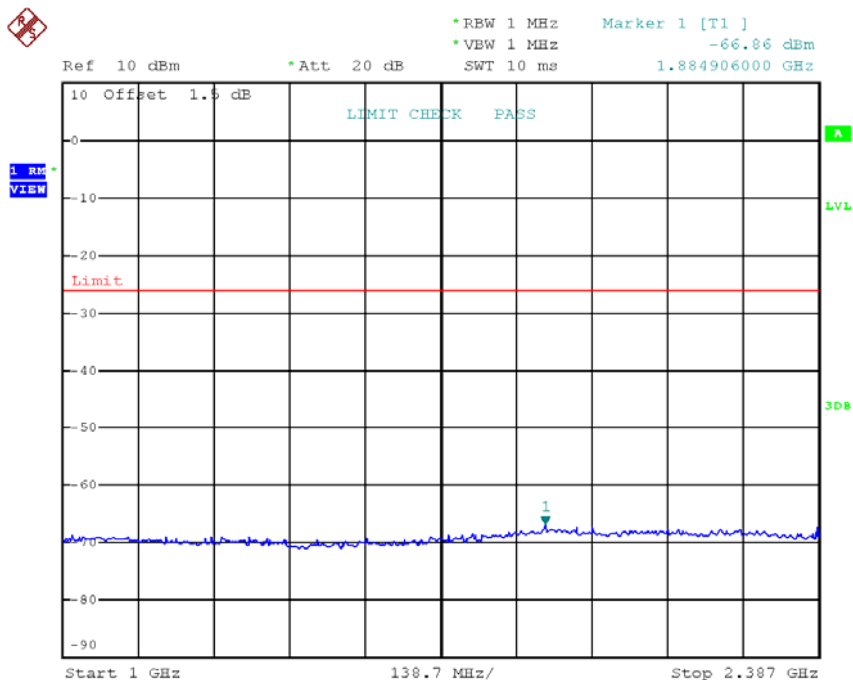
2477.35 MHz Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 11:58:57

Normal Voltage

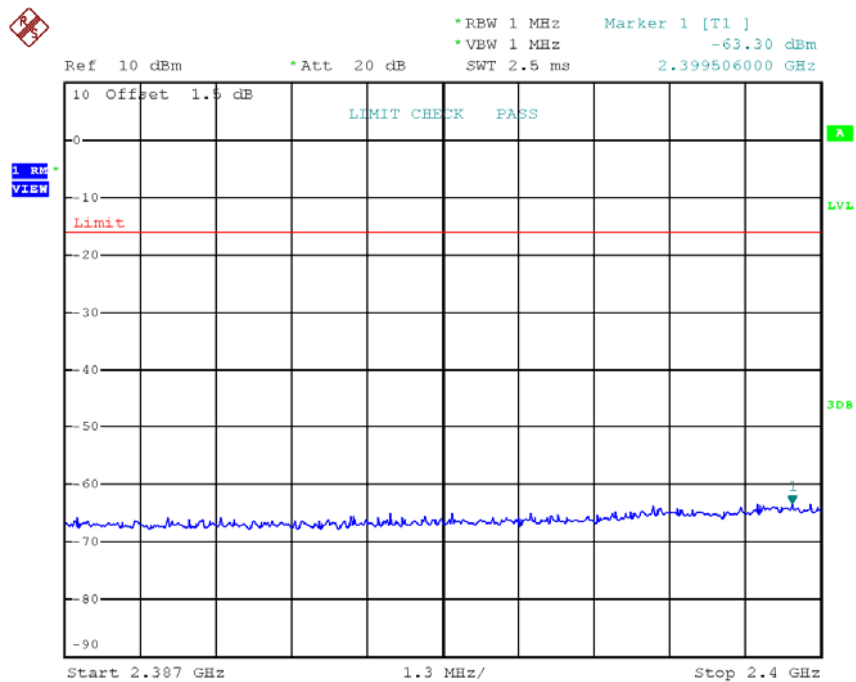
2477.35 MHz Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



Date: 7.AUG.2018 11:59:07

Normal Voltage

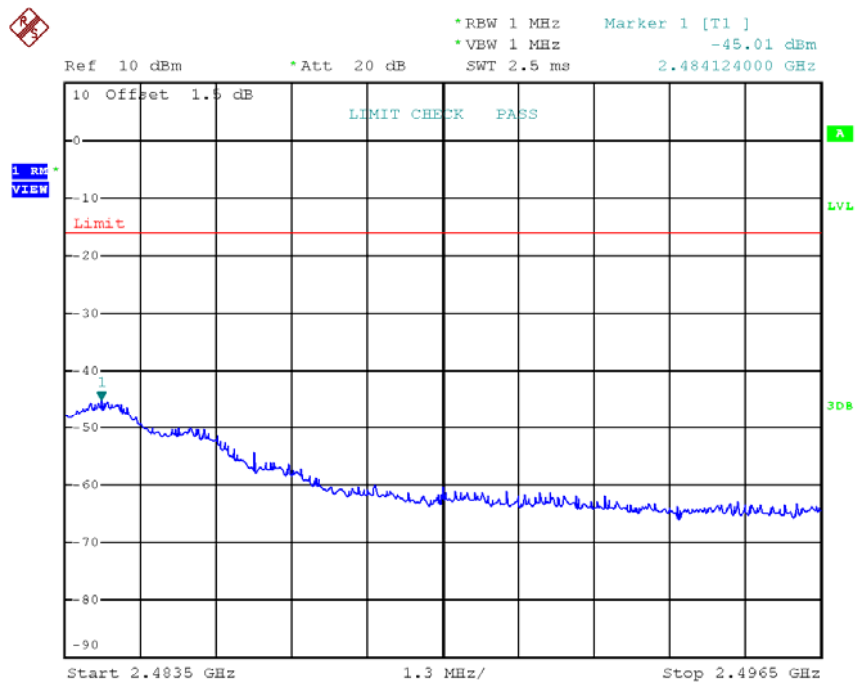
2477.35 MHz Frequency Band 3 ($2387 \text{ MHz} \leq f < 2400 \text{ MHz}$)



Date: 7.AUG.2018 11:59:17

Normal Voltage

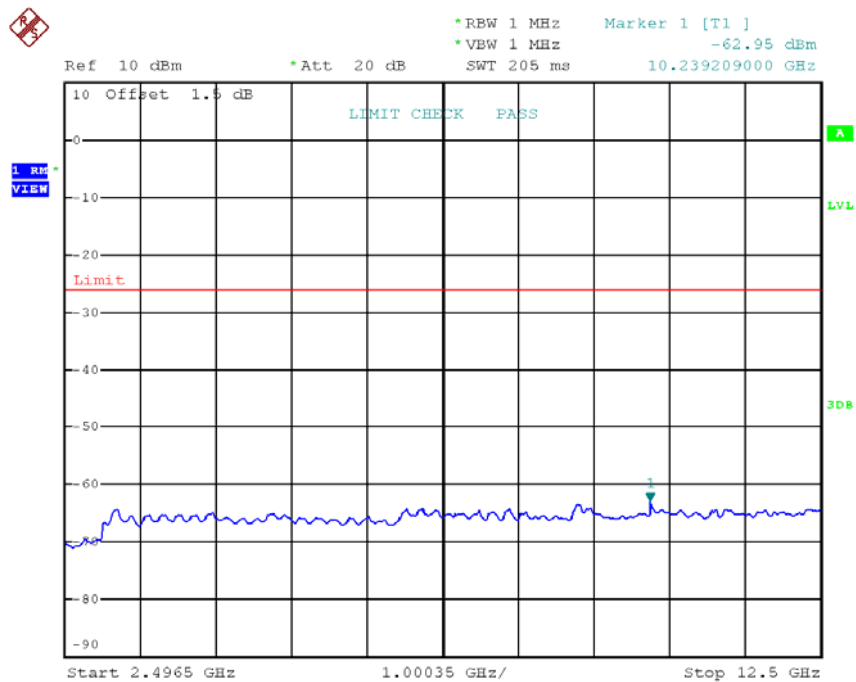
2477.35 MHz Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



Date: 7.AUG.2018 11:59:26

Normal Voltage

2477.35 MHz Frequency Band 5 (2496.5 MHz \leq f <12.5 GHz)



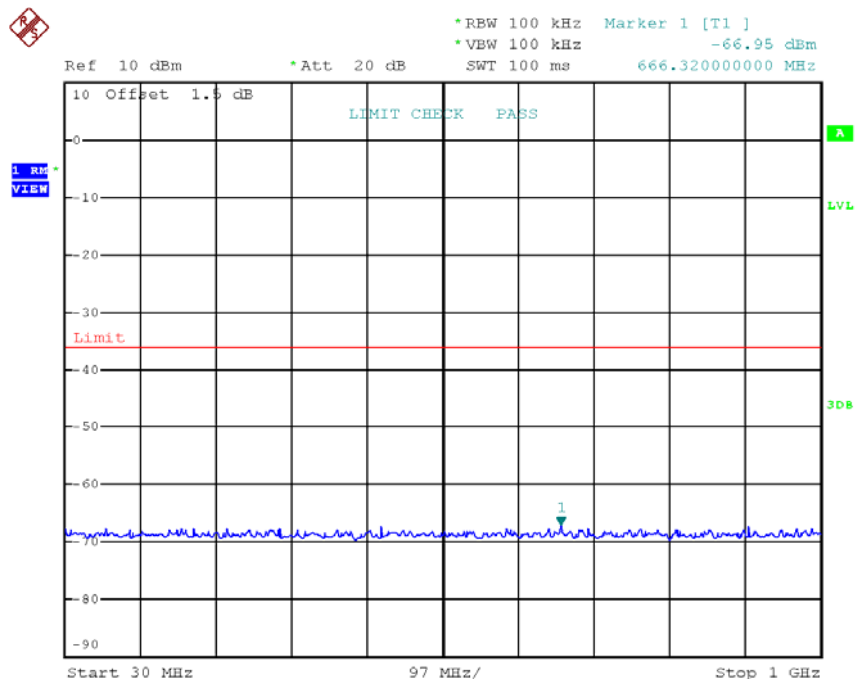
Date: 7.AUG.2018 11:59:36

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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Test Voltage		V	High Voltage			Remarks
Test Frequency		MHz	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Unwanted Emission Intensity (Power emission within 1MHz bandwidth) (units: μW)	※1	$\mu\text{W}/100\text{kHz}$	0.0002	0.0002	0.0002	Limit $\leq 0.25\mu\text{W}/100\text{kHz}$ (-36 dBm/100kHz)
	※2	$\mu\text{W}/\text{MHz}$	0.0004	0.0003	0.0002	Limit $\leq 2.5 \mu\text{W}/\text{MHz}$ (-26 dBm/MHz)
	※3	$\mu\text{W}/\text{MHz}$	0.6730	0.0004	0.0005	Limit $\leq 25 \mu\text{W}/\text{MHz}$ (-16 dBm/MHz)
	※4	$\mu\text{W}/\text{MHz}$	0.0003	0.0003	0.0315	Limit $\leq 25 \mu\text{W}/\text{MHz}$ (-16 dBm/MHz)
	※5	$\mu\text{W}/\text{MHz}$	0.0005	0.0005	0.0004	Limit $\leq 2.5 \mu\text{W}/\text{MHz}$ (-26 dBm/MHz)

High Voltage

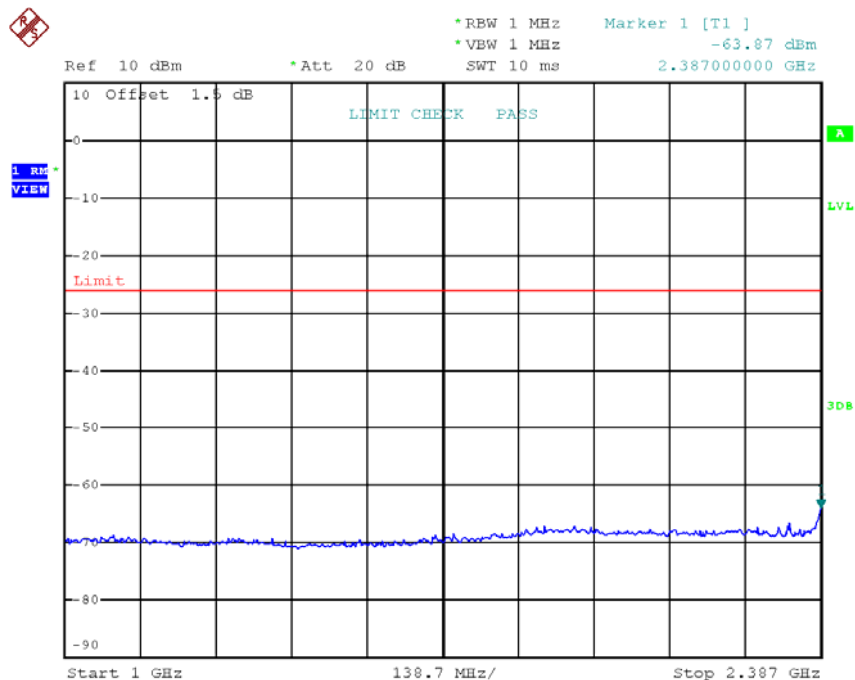
2403.35 MHz Frequency Band 1 ($30\text{ MHz} \leq f \leq 1000\text{ MHz}$)



Date: 7.AUG.2018 14:34:16

High Voltage

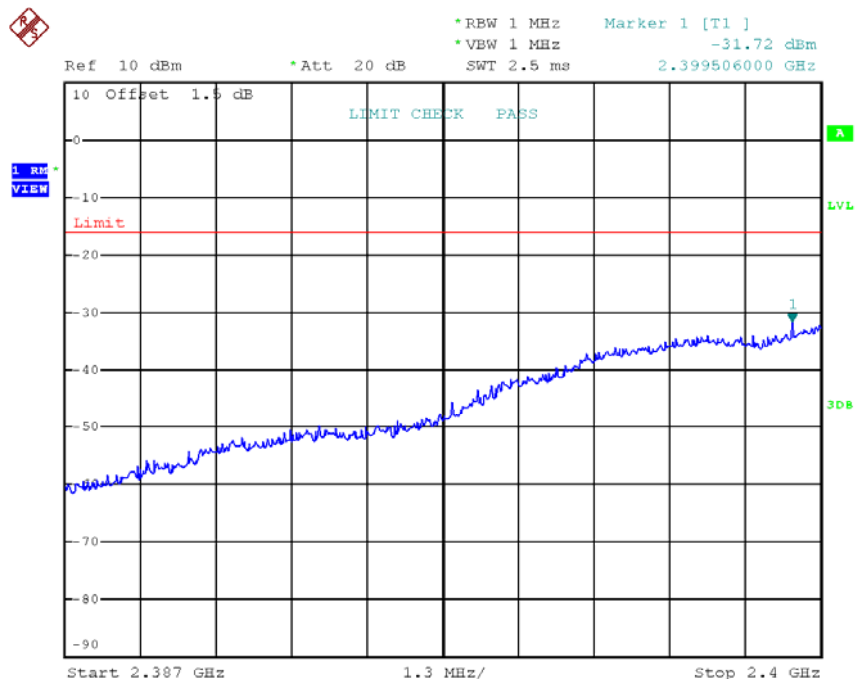
2403.35 MHz Frequency Band 2 ($1000\text{ MHz} < f \leq 2387\text{ MHz}$)



Date: 7.AUG.2018 14:34:26

High Voltage

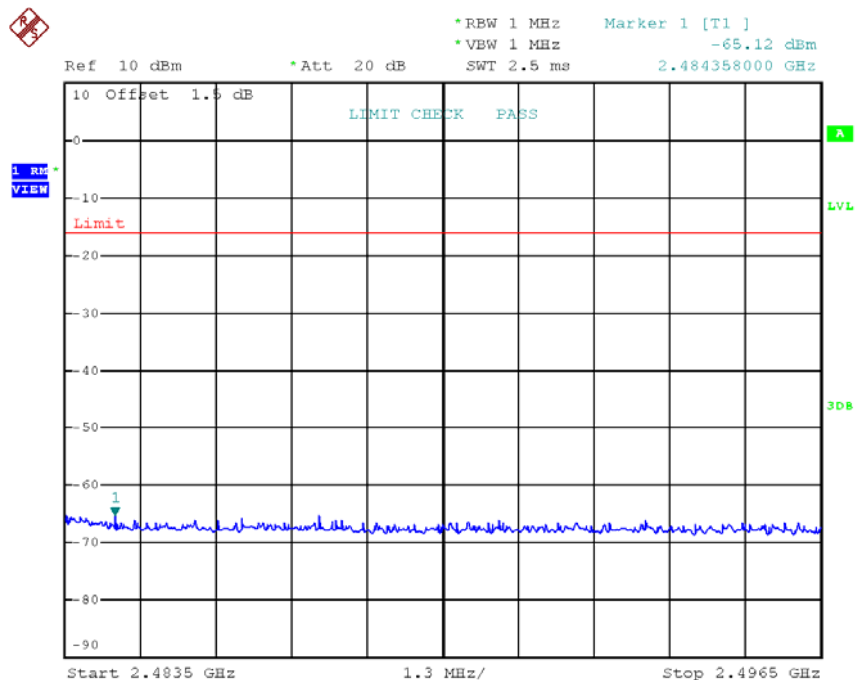
2403.35 MHz Frequency Band 3 (2387 MHz \leq f < 2400 MHz)



Date: 7.AUG.2018 14:34:36

High Voltage

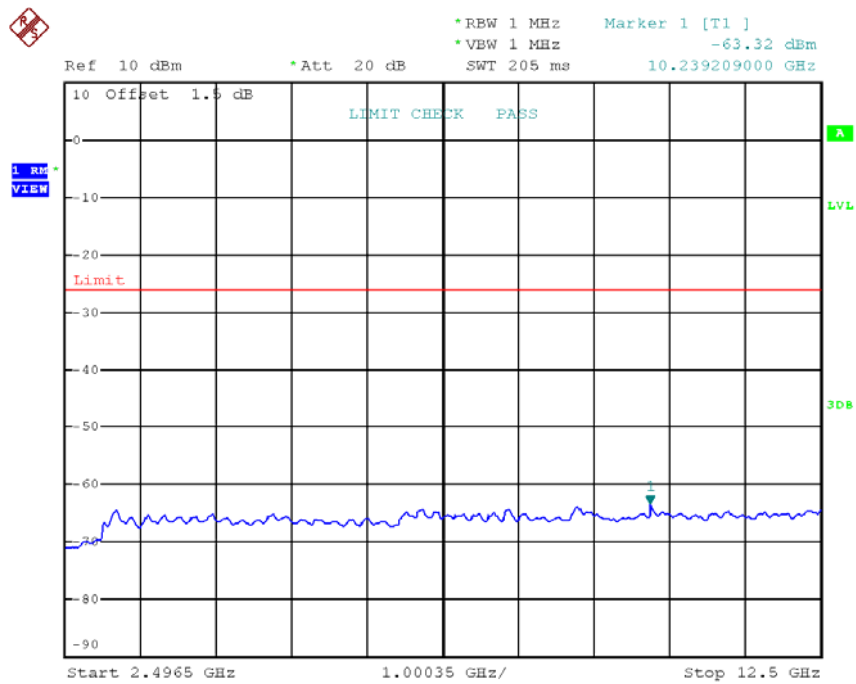
2403.35 MHz Frequency Band 4 (2483.5 MHz \leq f < 2496.5MHz)



Date: 7.AUG.2018 14:34:45

High Voltage

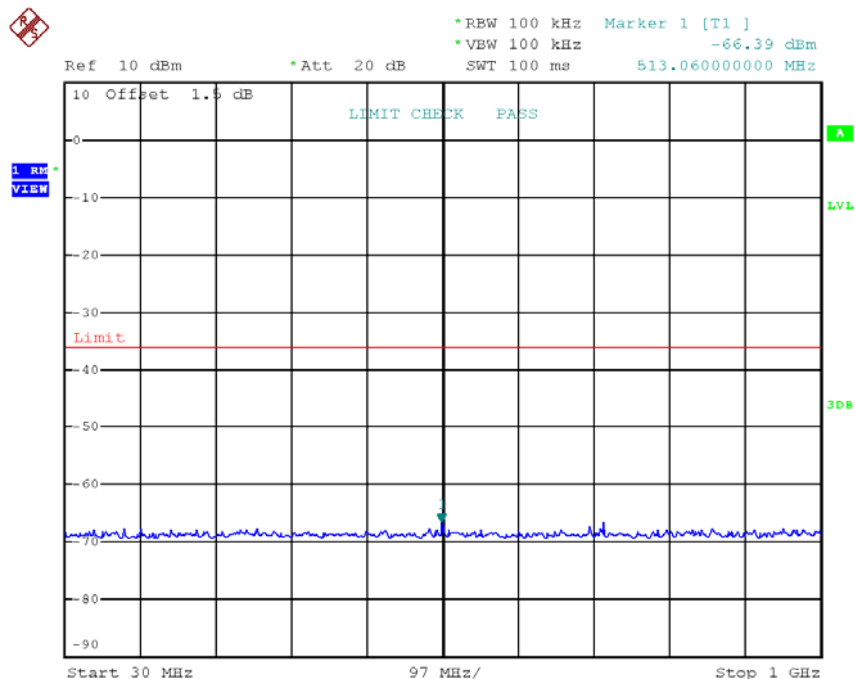
2403.35 MHz Frequency Band 5 (2496.5 MHz \leq f <12.5 GHz)



Date: 7.AUG.2018 14:34:55

High Voltage

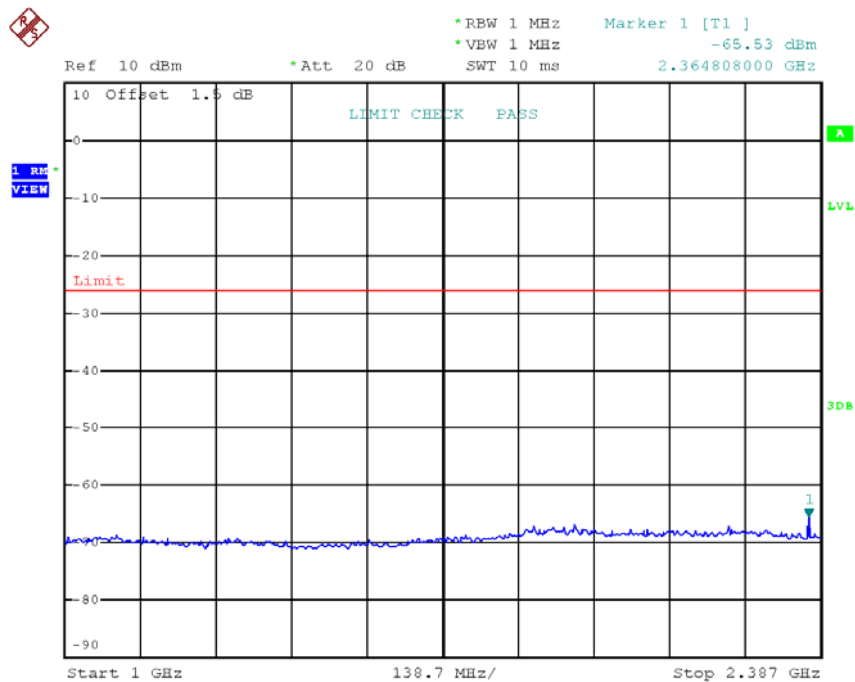
2441.35 MHz Frequency Band 1 ($30\text{ MHz} \leq f \leq 1000\text{ MHz}$)



Date: 7.AUG.2018 14:35:14

High Voltage

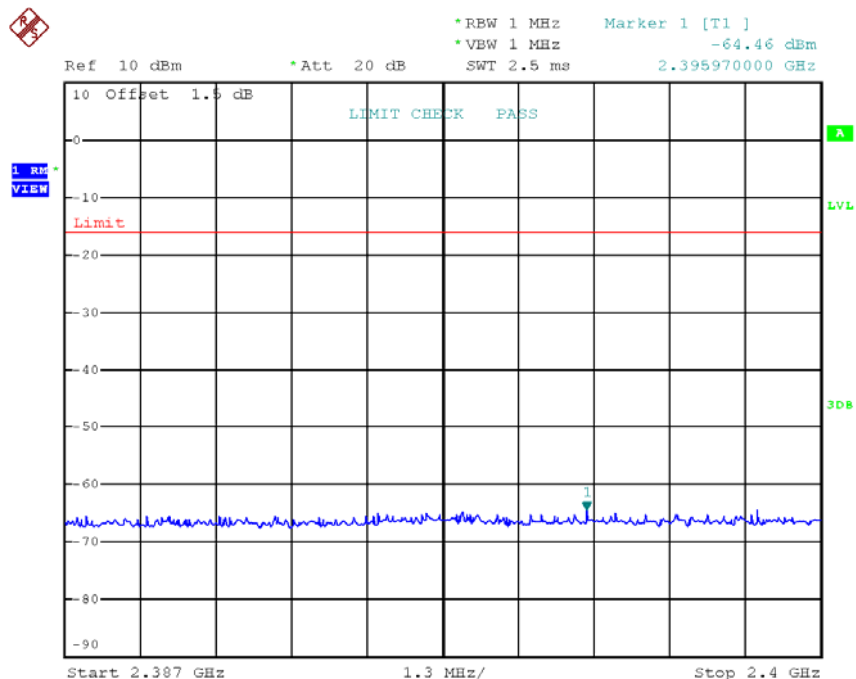
2441.35 MHz Frequency Band 2 ($1000\text{ MHz} < f \leq 2387\text{ MHz}$)



Date: 7.AUG.2018 14:35:24

High Voltage

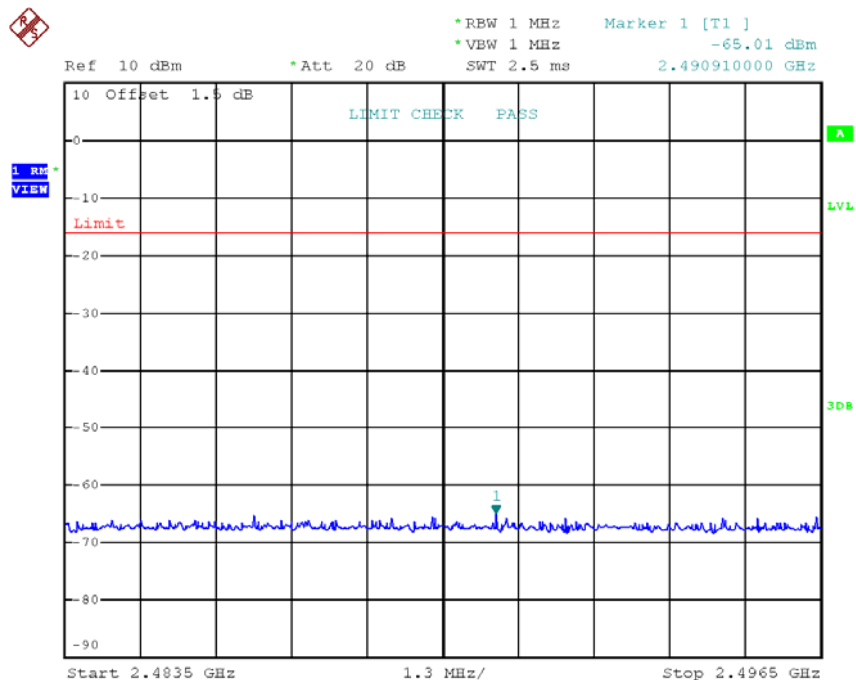
2441.35 MHz Frequency Band 3 ($2387 \text{ MHz} \leq f < 2400 \text{ MHz}$)



Date: 7.AUG.2018 14:35:34

High Voltage

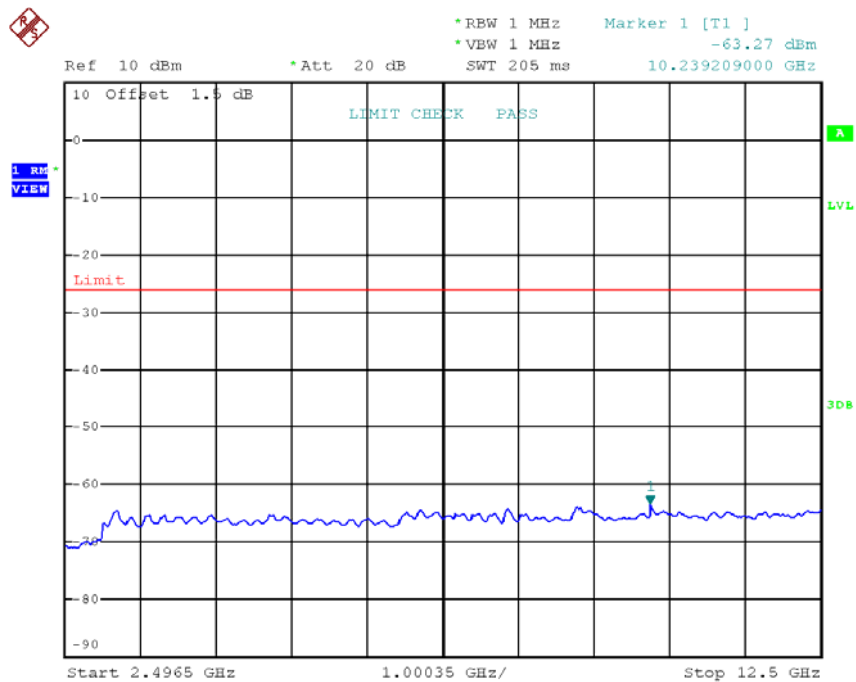
2441.35 MHz Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



Date: 7.AUG.2018 14:35:43

High Voltage

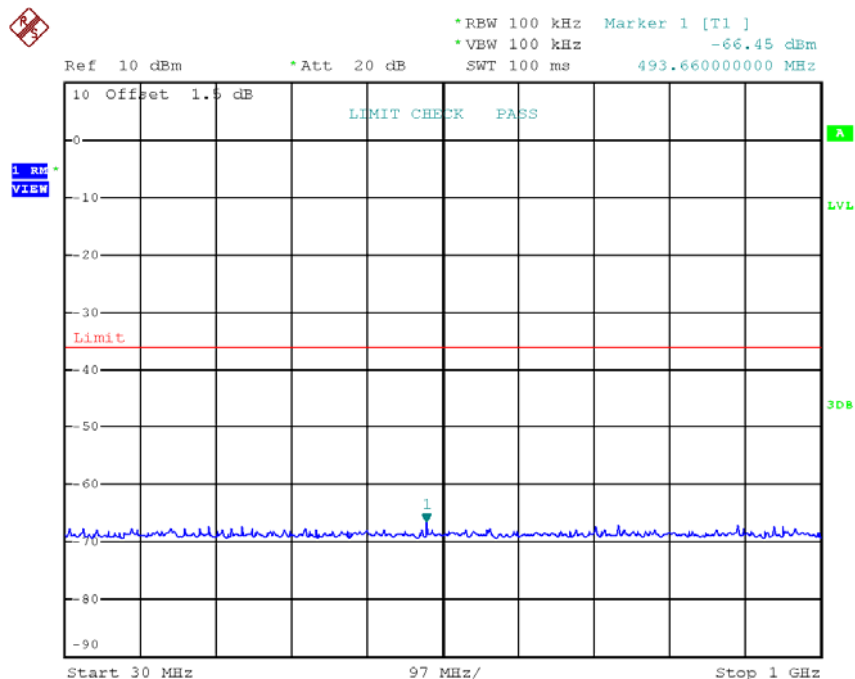
2441.35 MHz Frequency Band 5 (2496.5 MHz \leq f <12.5 GHz)



Date: 7.AUG.2018 14:35:53

High Voltage

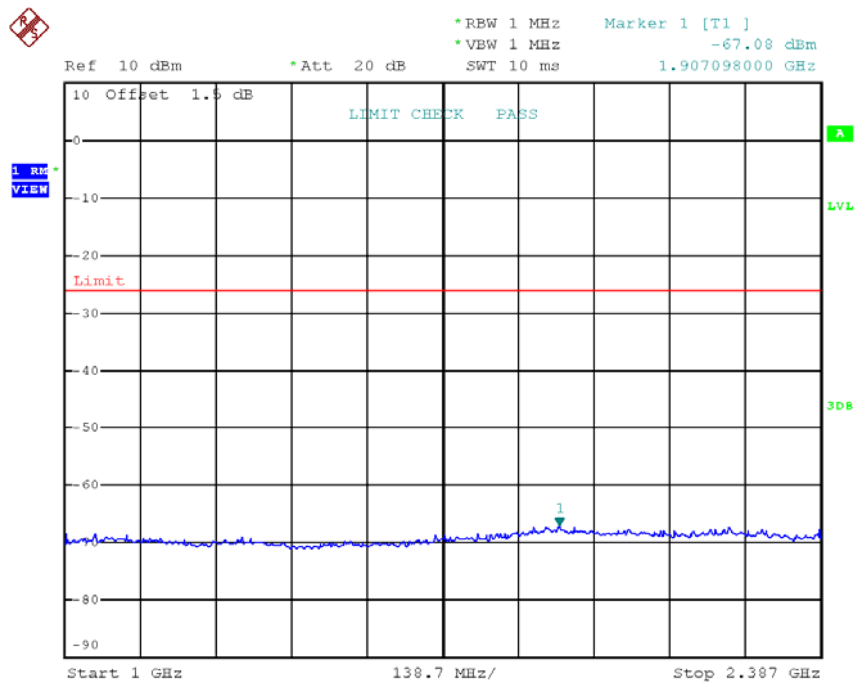
2477.35 MHz Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:36:13

High Voltage

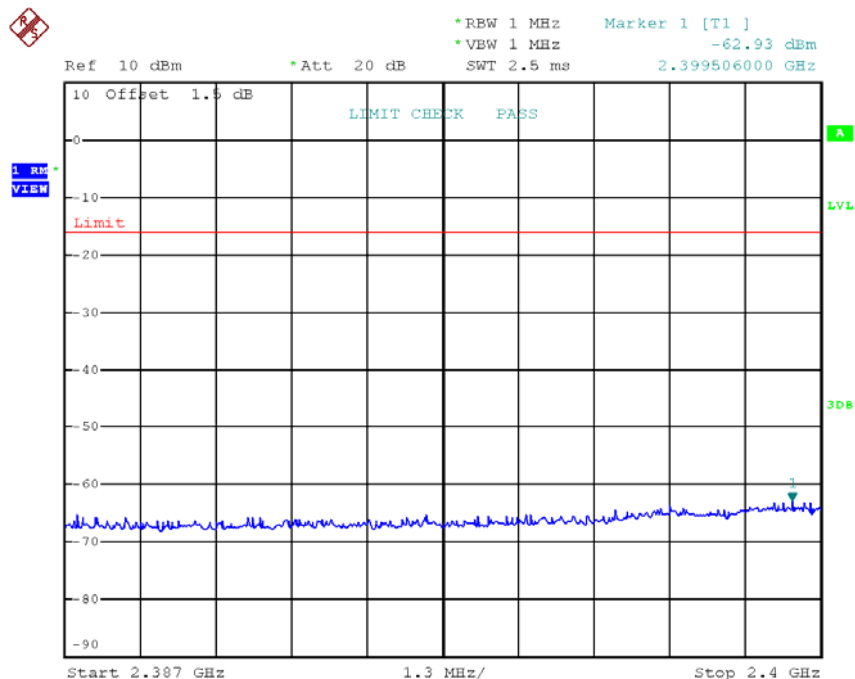
2477.35 MHz Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



Date: 7.AUG.2018 14:36:23

High Voltage

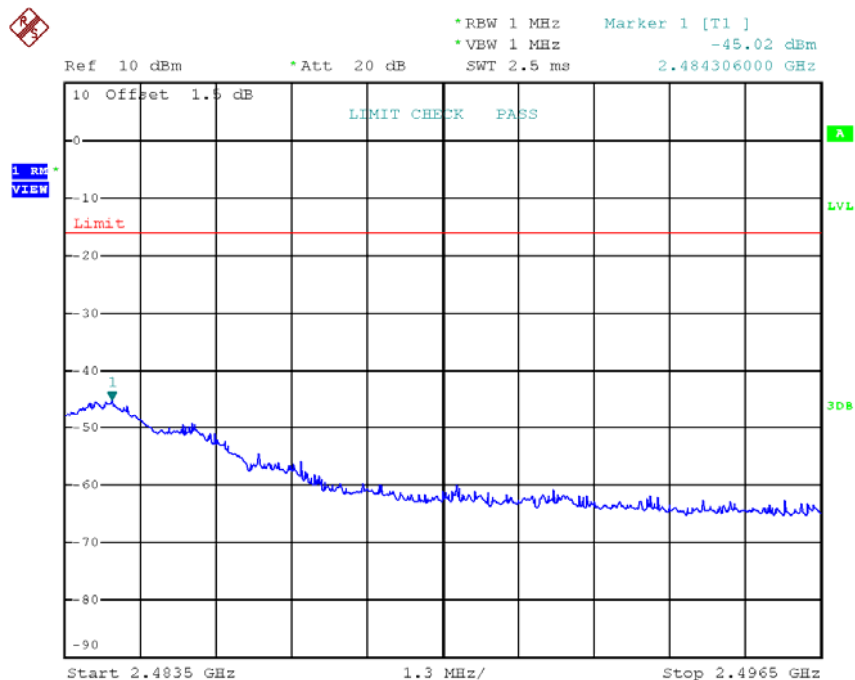
2477.35 MHz Frequency Band 3 ($2387 \text{ MHz} \leq f < 2400 \text{ MHz}$)



Date: 7.AUG.2018 14:36:33

High Voltage

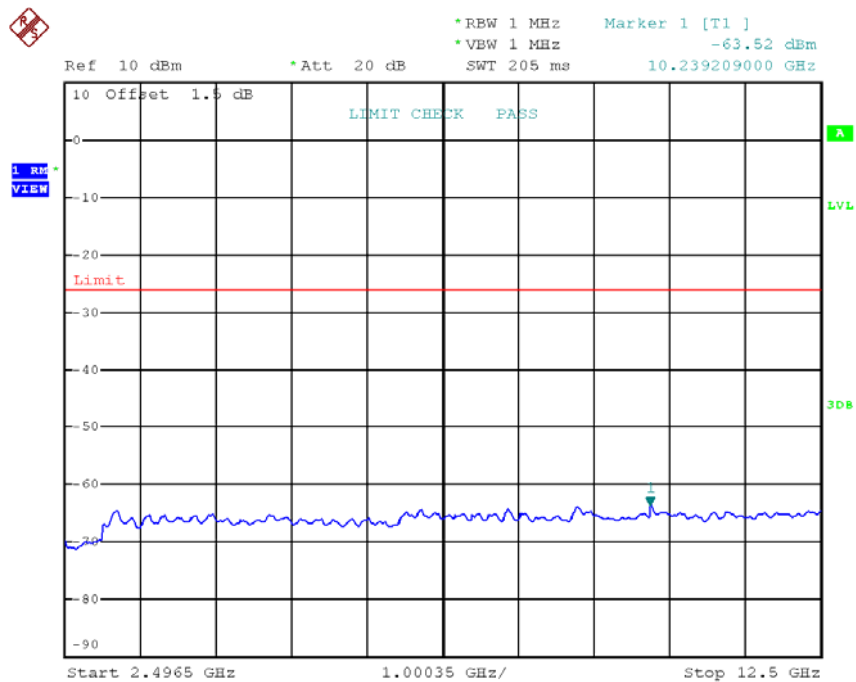
2477.35 MHz Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



Date: 7.AUG.2018 14:36:42

High Voltage

2477.35 MHz Frequency Band 5 (2496.5 MHz \leq f <12.5 GHz)



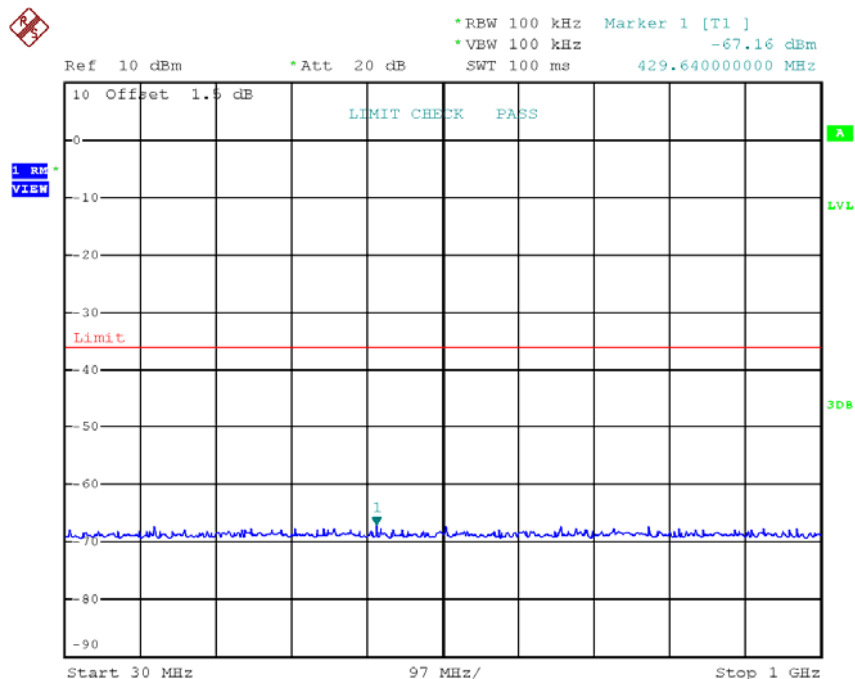
Date: 7.AUG.2018 14:36:52

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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Test Voltage		V	Low Voltage			Remarks
Test Frequency		MHz	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Unwanted Emission Intensity (Power emission within 1MHz bandwidth) (units: μW)	※1	$\mu\text{W}/100\text{kHz}$	0.0002	0.0002	0.0002	Limit $\leq 0.25\mu\text{W}/100\text{kHz}$ (-36 dBm/100kHz)
	※2	$\mu\text{W}/\text{MHz}$	0.0003	0.0003	0.0002	Limit $\leq 2.5 \mu\text{W}/\text{MHz}$ (-26 dBm/MHz)
	※3	$\mu\text{W}/\text{MHz}$	0.5358	0.0004	0.0005	Limit $\leq 25 \mu\text{W}/\text{MHz}$ (-16 dBm/MHz)
	※4	$\mu\text{W}/\text{MHz}$	0.0003	0.0003	0.0352	Limit $\leq 25 \mu\text{W}/\text{MHz}$ (-16 dBm/MHz)
	※5	$\mu\text{W}/\text{MHz}$	0.0004	0.0005	0.0005	Limit $\leq 2.5 \mu\text{W}/\text{MHz}$ (-26 dBm/MHz)

Low Voltage

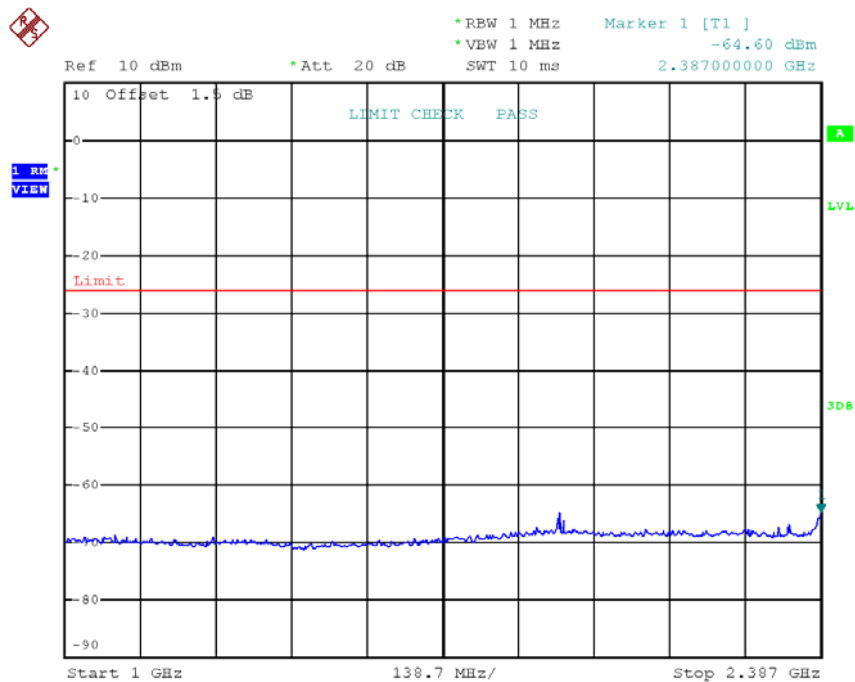
2403.35 MHz Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:07:01

Low Voltage

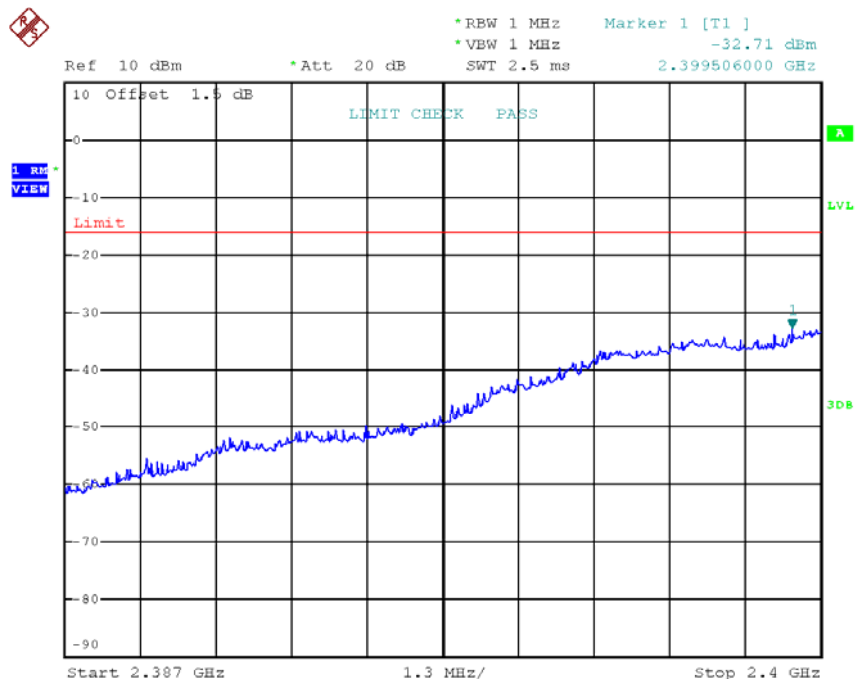
2403.35 MHz Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



Date: 7.AUG.2018 14:07:11

Low Voltage

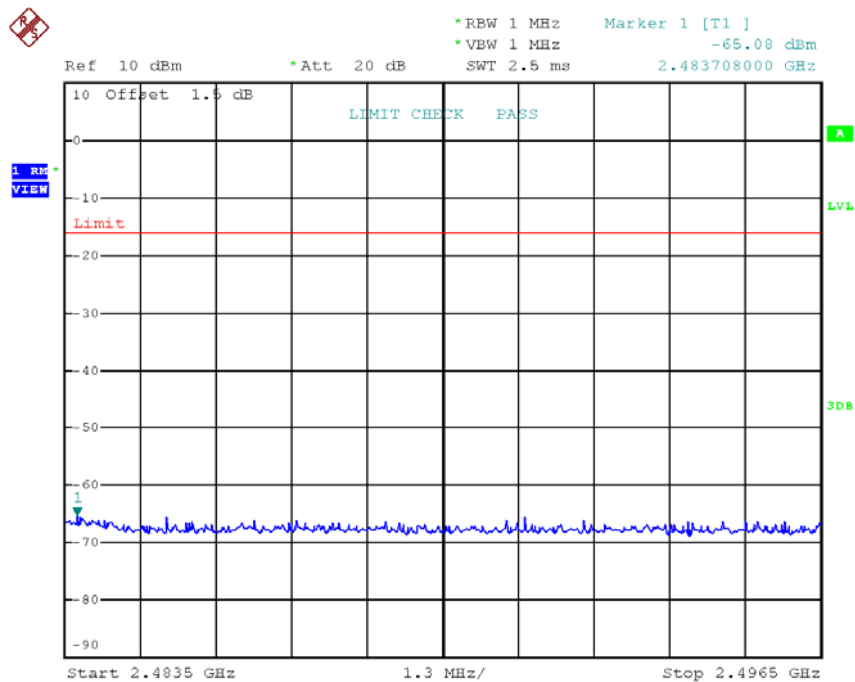
2403.35 MHz Frequency Band 3 ($2387 \text{ MHz} \leq f < 2400 \text{ MHz}$)



Date: 7.AUG.2018 14:07:21

Low Voltage

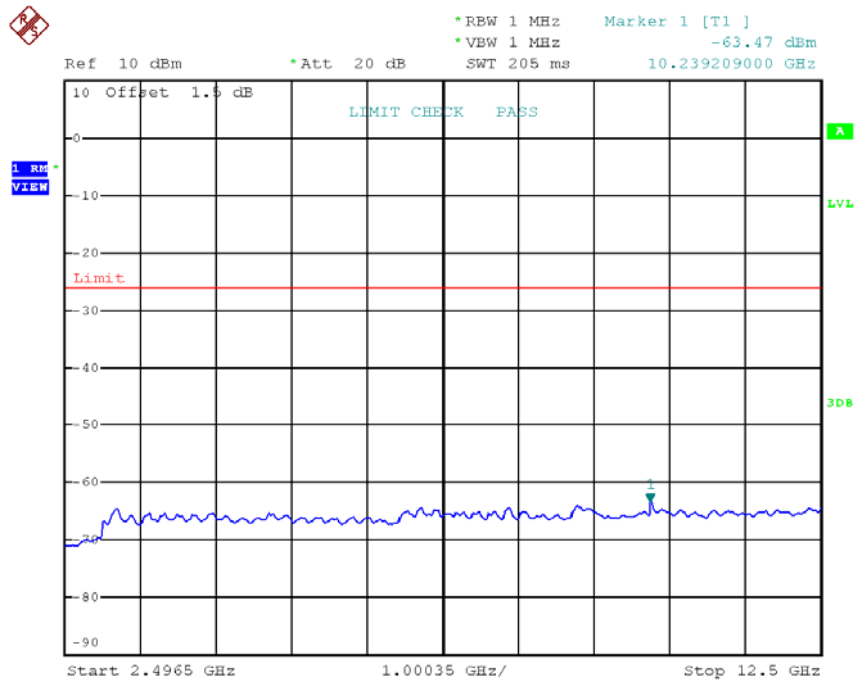
2403.35 MHz Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



Date: 7.AUG.2018 14:07:30

Low Voltage

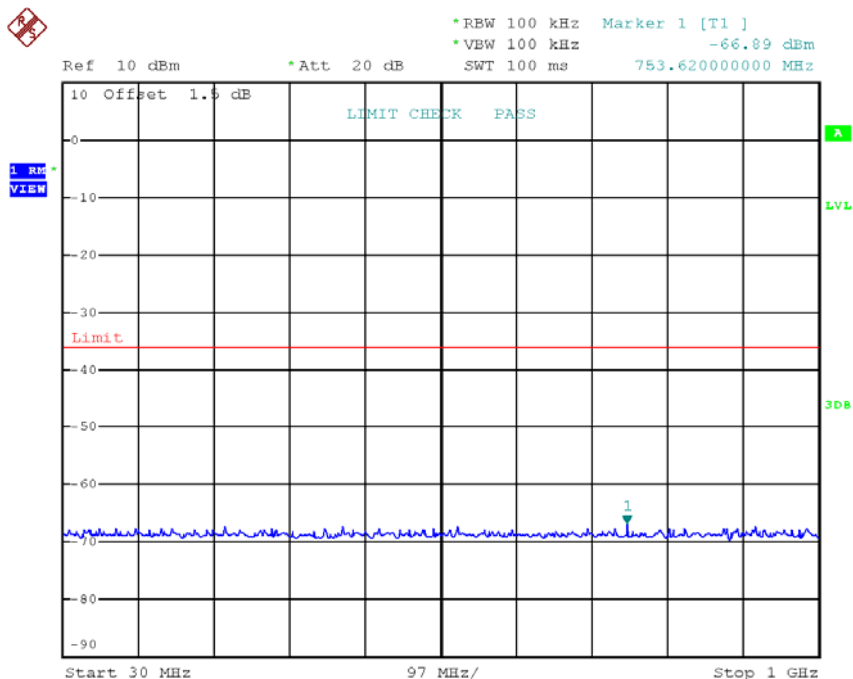
2403.35 MHz Frequency Band 5 (2496.5 MHz \leq f <12.5 GHz)



Date: 7.AUG.2018 14:07:40

Low Voltage

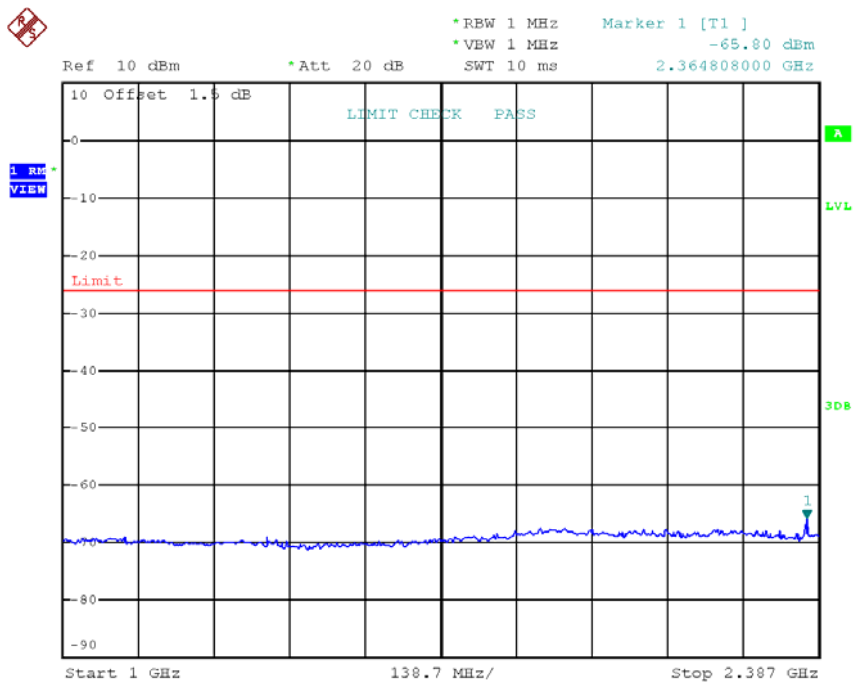
2441.35 MHz Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:08:16

Low Voltage

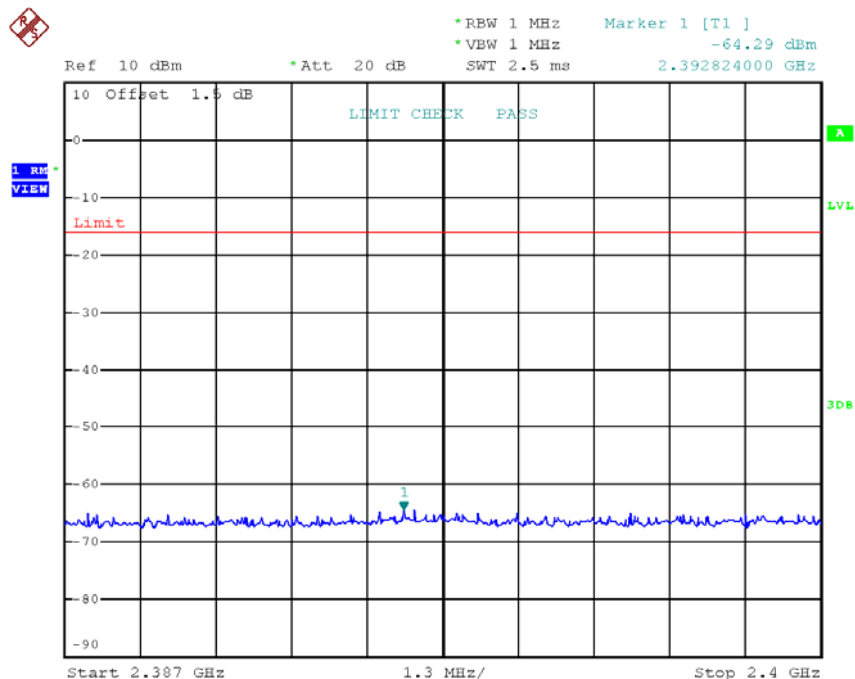
2441.35 MHz Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



Date: 7.AUG.2018 14:08:26

Low Voltage

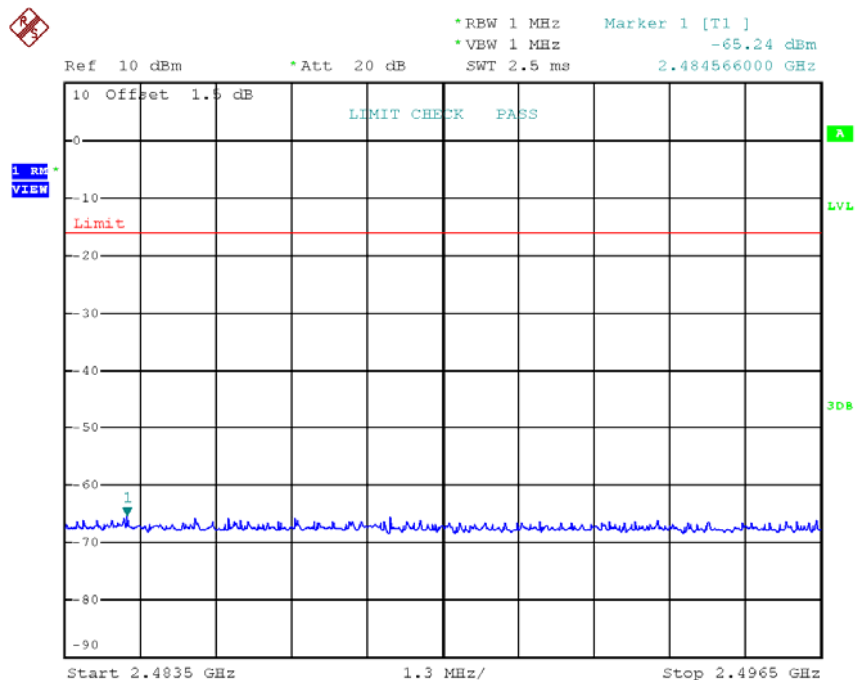
2441.35 MHz Frequency Band 3 ($2387 \text{ MHz} \leq f < 2400 \text{ MHz}$)



Date: 7.AUG.2018 14:08:36

Low Voltage

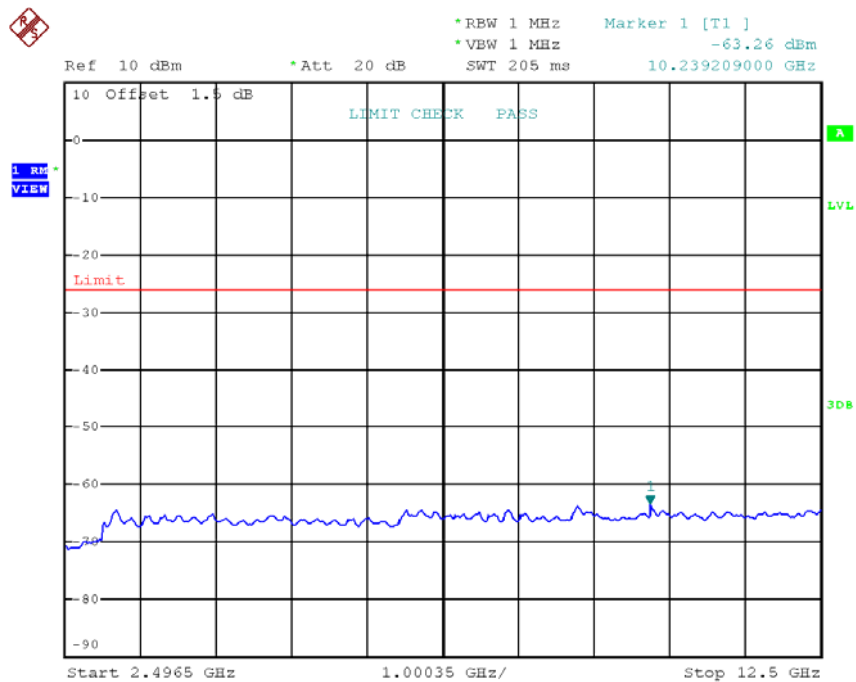
2441.35 MHz Frequency Band 4 ($2483.5 \text{ MHz} \leq f < 2496.5 \text{ MHz}$)



Date: 7.AUG.2018 14:08:45

Low Voltage

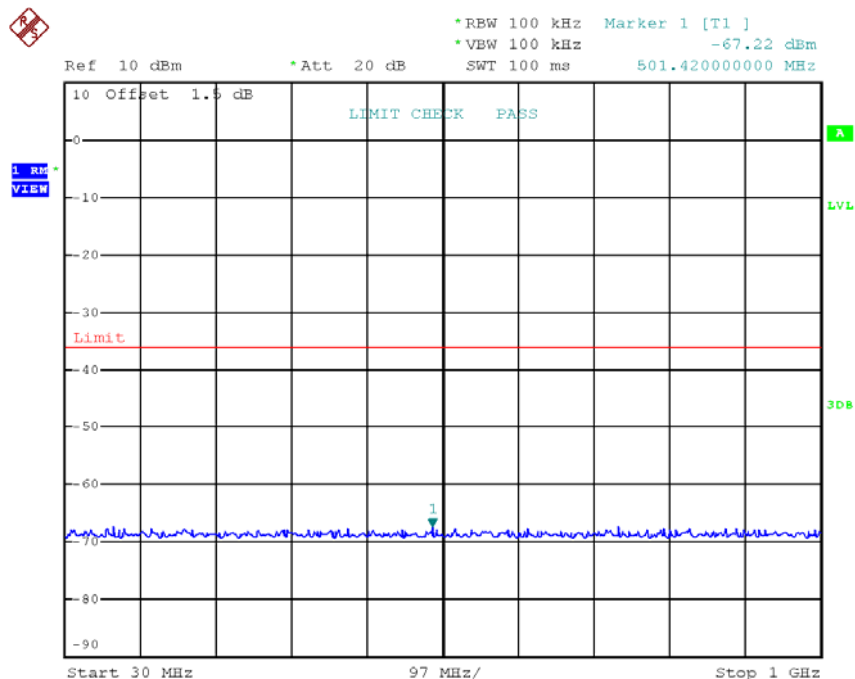
2441.35 MHz Frequency Band 5 (2496.5 MHz \leq f <12.5 GHz)



Date: 7.AUG.2018 14:08:55

Low Voltage

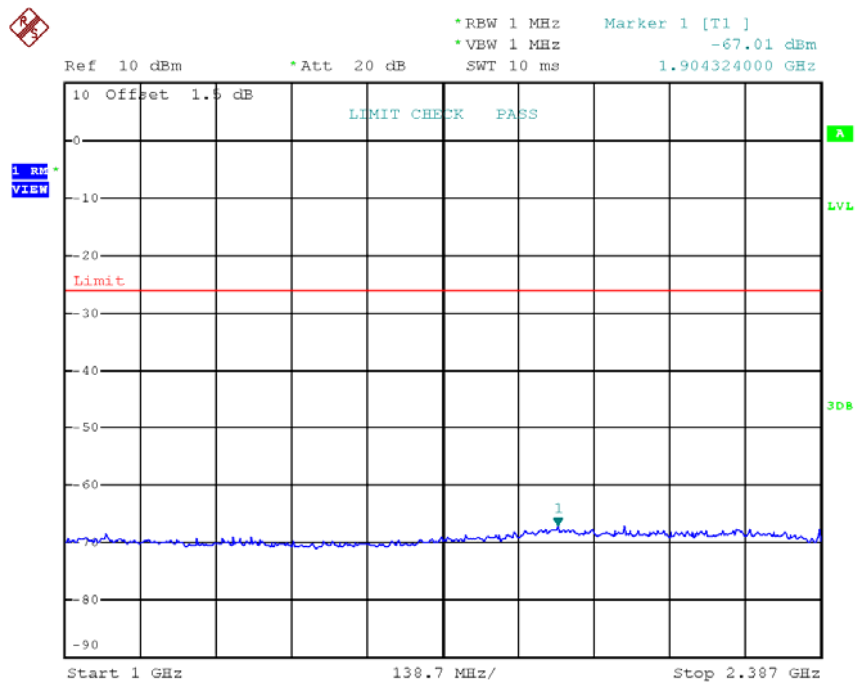
2477.35 MHz Frequency Band 1 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:09:14

Low Voltage

2477.35 MHz Frequency Band 2 ($1000 \text{ MHz} < f \leq 2387 \text{ MHz}$)



Date: 7.AUG.2018 14:09:24

2477.35 MHz Frequency Band 3 (2387 MHz \leq f < 2400 MHz)

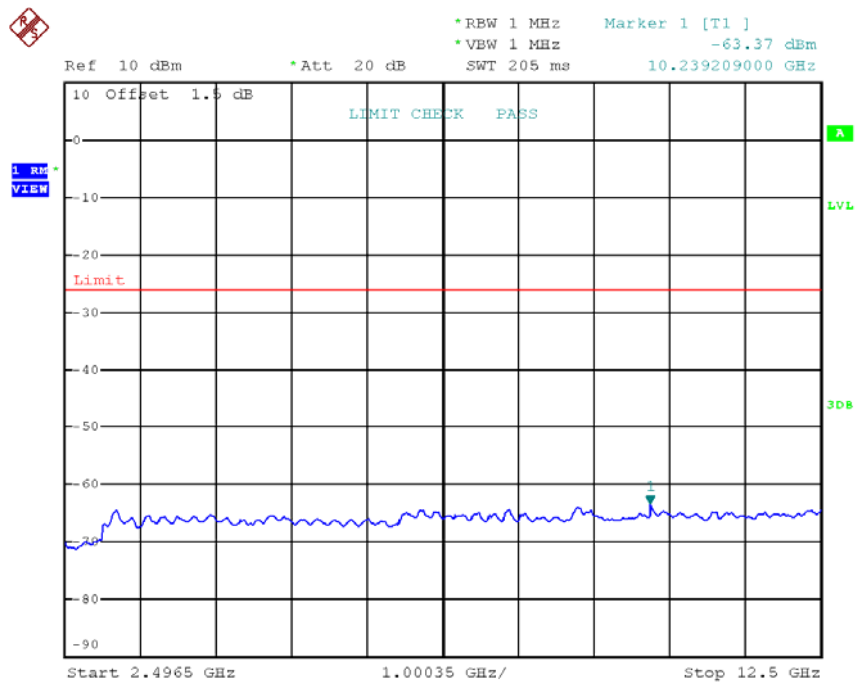


2477.35 MHz Frequency Band 4 (2483.5 MHz \leq f <2496.5MHz)



Low Voltage

2477.35 MHz Frequency Band 5 (2496.5 MHz \leq f <12.5 GHz)



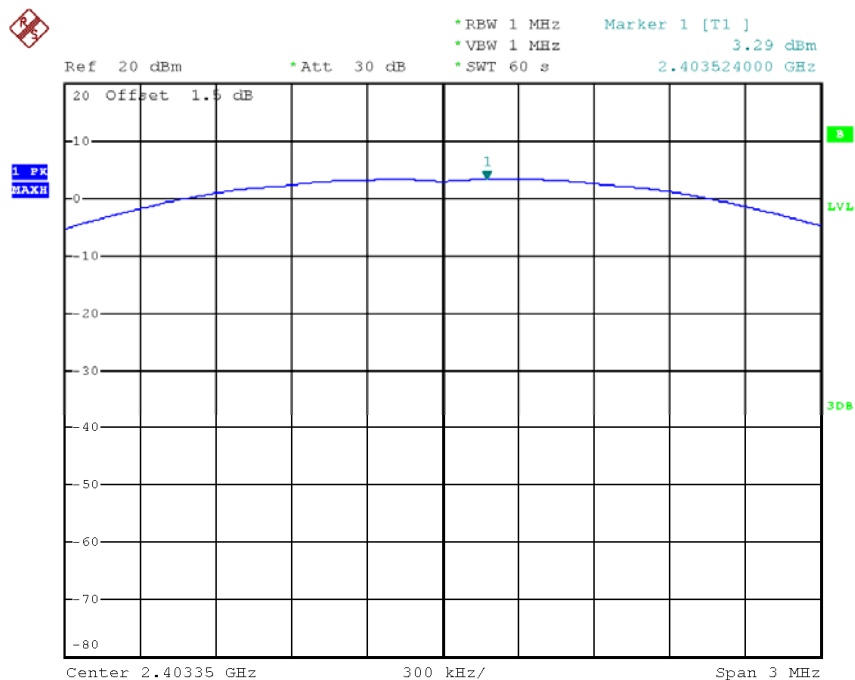
Date: 7.AUG.2018 14:09:53

APPENDIX D -ANTENNA POWER ERROR

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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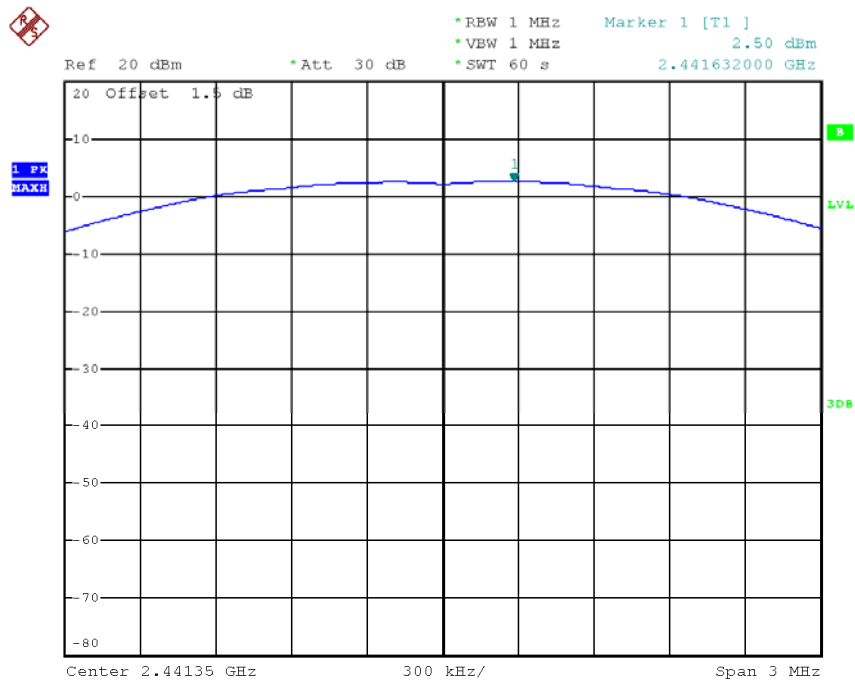
Test Voltage (V)	Normal Voltage			Remarks
Test Frequency (MHz)	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Antenna Power (mW)	2.1330	1.7783	1.4825	-
Antenna Power Error (mW)	-0.1670	-0.5217	-0.8175	-
Antenna Power Error (%)	-7.26	-22.68	-35.54	Limit + 20% ~ - 80%

Normal Voltage 2403.35 MHz



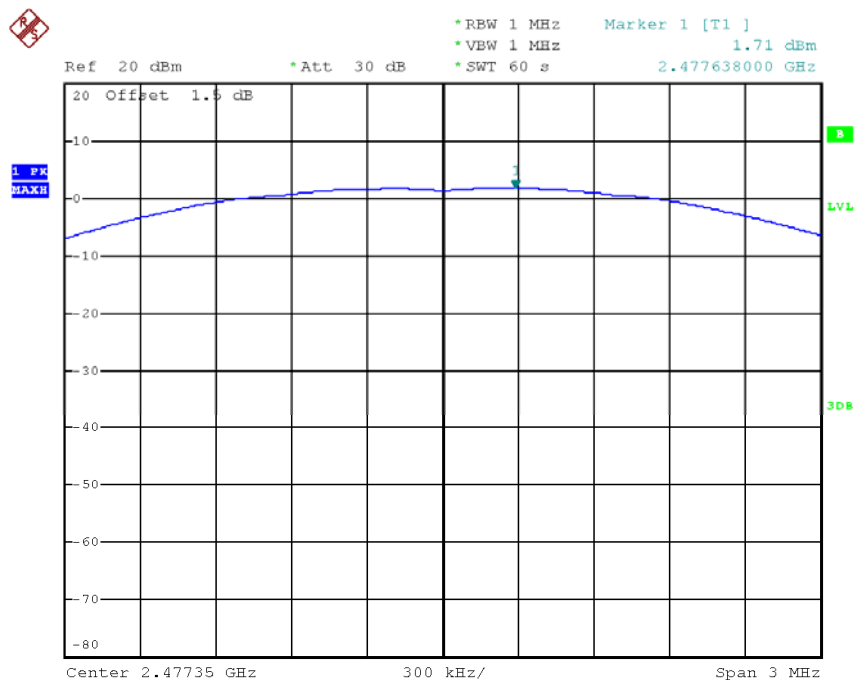
Date: 7.AUG.2018 11:08:34

Normal Voltage 2441.35 MHz



Date: 7.AUG.2018 11:10:06

Normal Voltage 2477.35 MHz

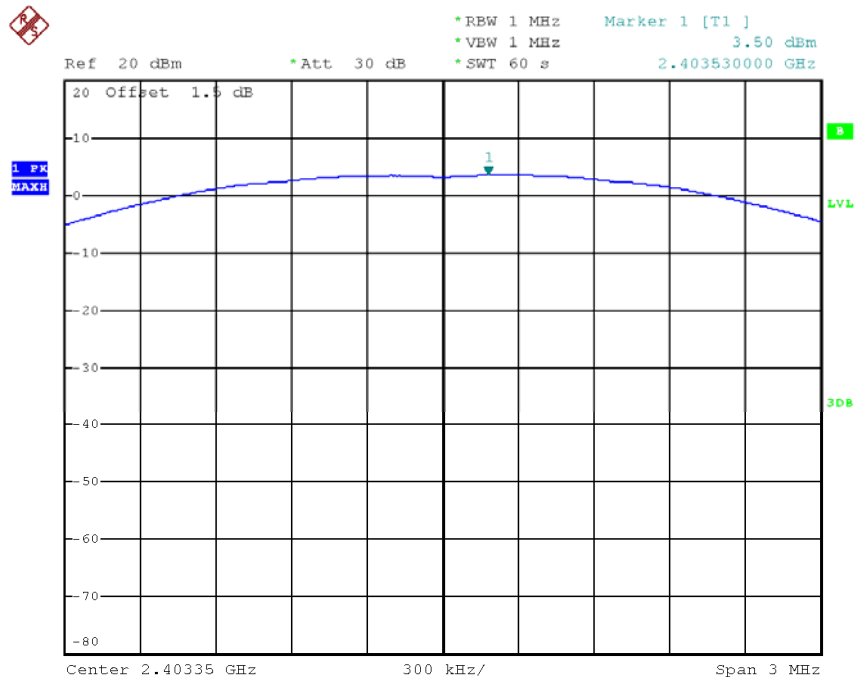


Date: 7.AUG.2018 11:11:35

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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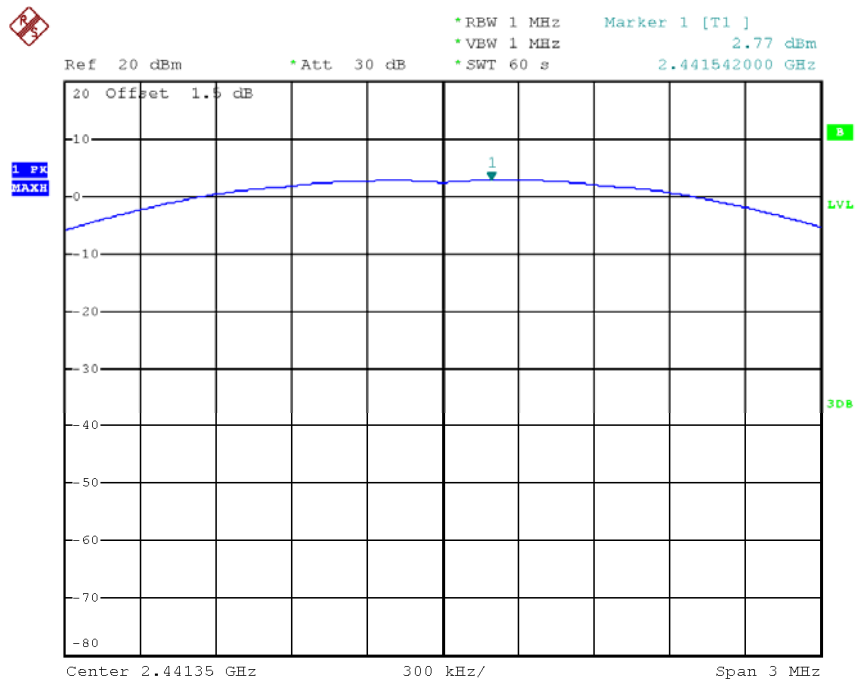
Test Voltage (V)	High Voltage			Remarks
Test Frequency (MHz)	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Antenna Power (mW)	2.2387	1.8923	1.5996	-
Antenna Power Error (mW)	-0.0613	-0.4077	-0.7004	-
Antenna Power Error (%)	-2.66	-17.72	-30.45	Limit + 20% ~ - 80%

High Voltage 2403.35 MHz



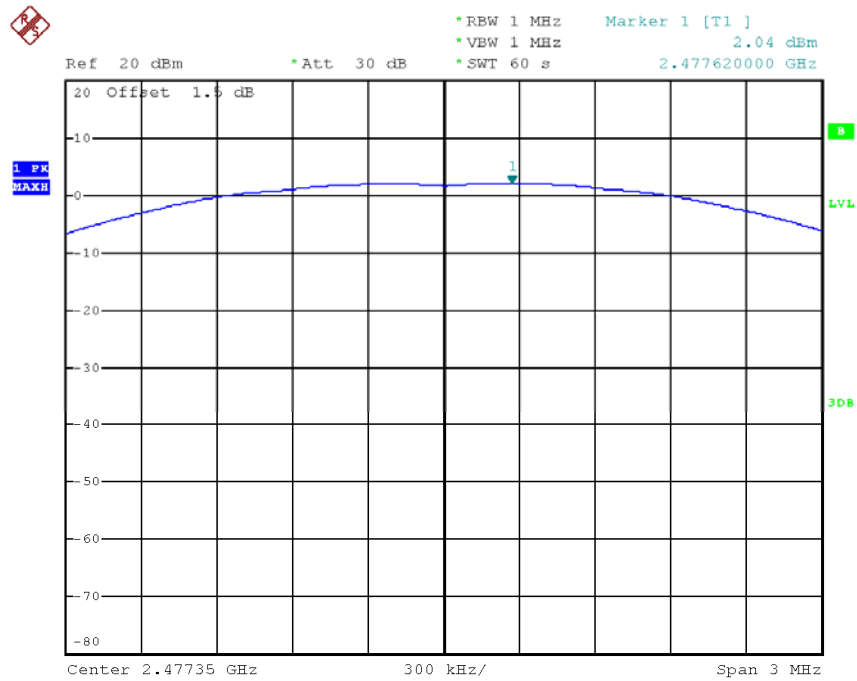
Date: 7.AUG.2018 11:18:54

High Voltage 2441.35 MHz



Date: 7.AUG.2018 11:17:16

High Voltage 2477.35 MHz

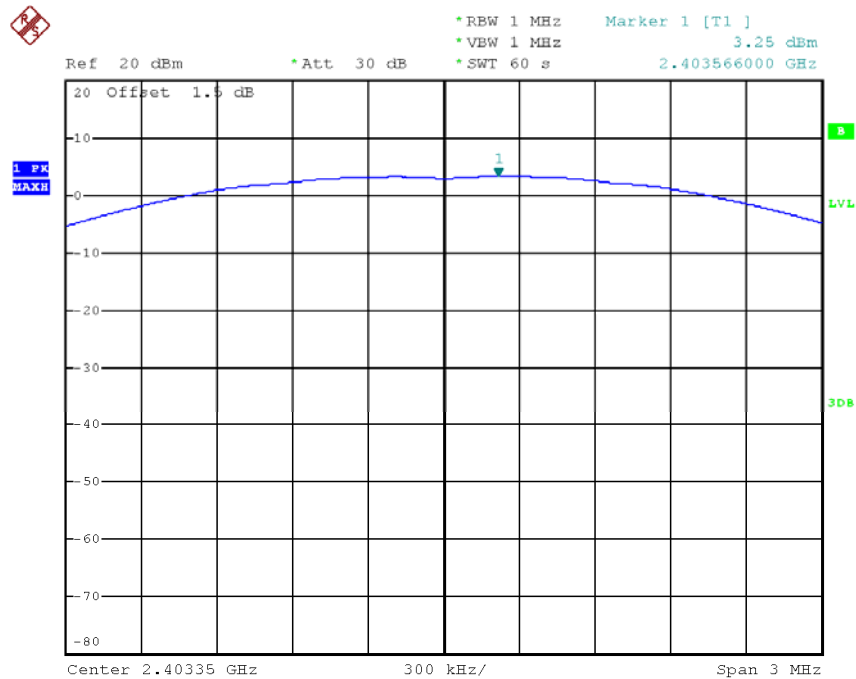


Date: 7.AUG.2018 11:15:46

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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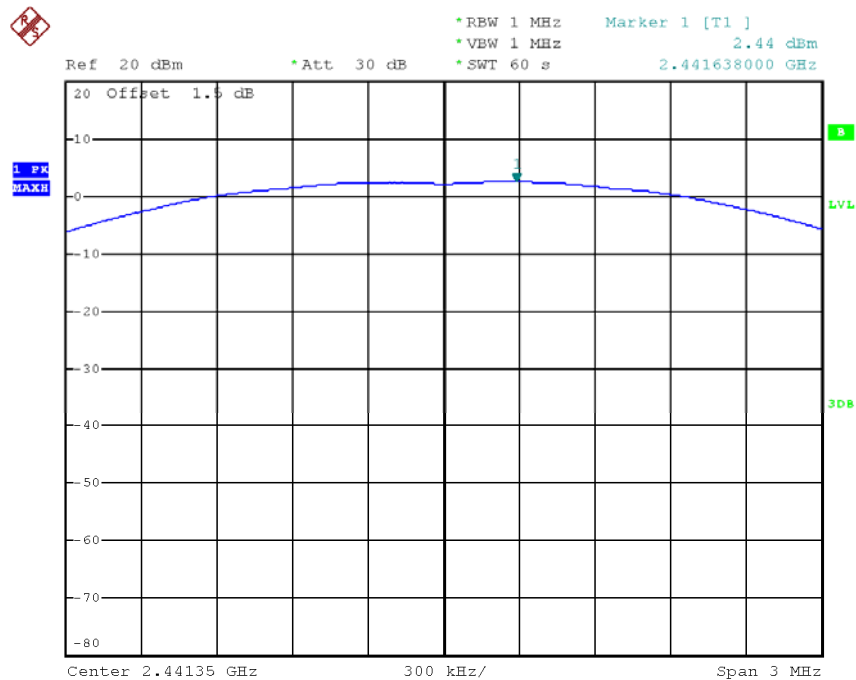
Test Voltage (V)	Low Voltage			Remarks
Test Frequency (MHz)	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Antenna Power (mW)	2.1135	1.7539	1.4223	-
Antenna Power Error (mW)	-0.1865	-0.5461	-0.8777	-
Antenna Power Error (%)	-8.11	-23.74	-38.16	Limit + 20% ~ - 80%

Low Voltage 2403.35 MHz



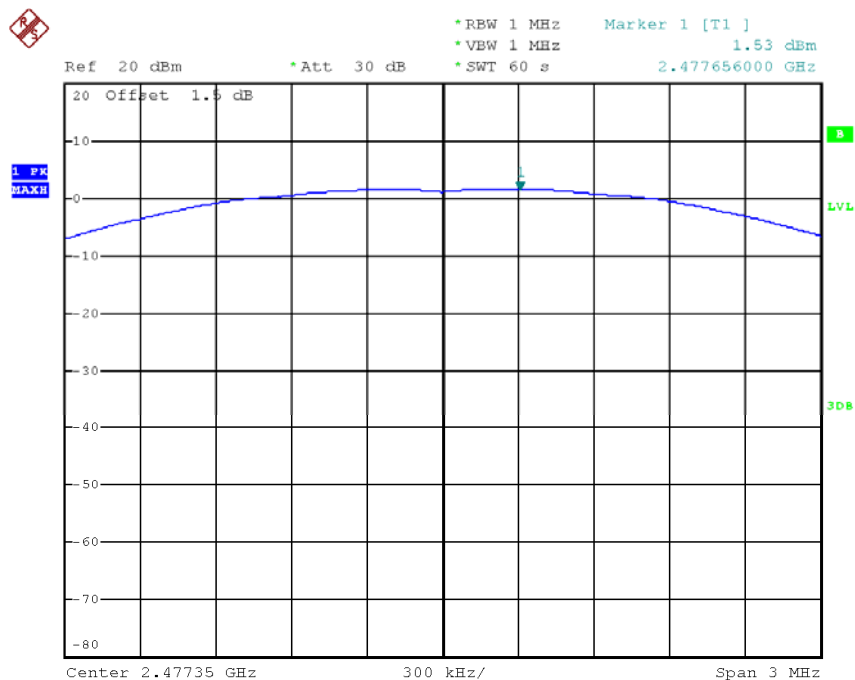
Date: 7.AUG.2018 10:59:21

Low Voltage 2441.35 MHz



Date: 7.AUG.2018 10:57:41

Low Voltage 2477.35 MHz



Date: 7.AUG.2018 10:56:07

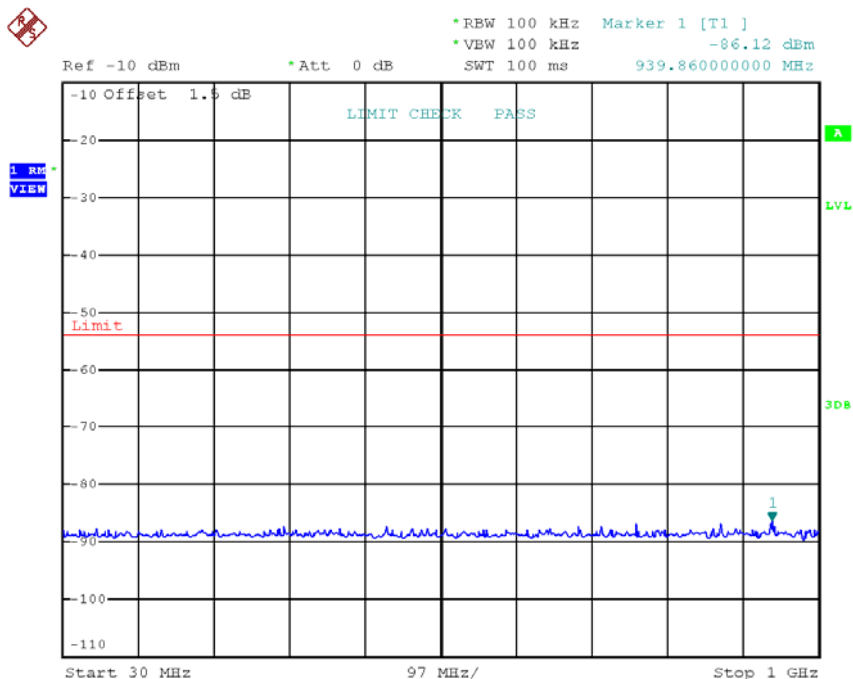
APPENDIX E -LIMITATION OF COLLATERAL EMISSION OF RECEIVER

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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Test Voltage		V	Normal Voltage			Remarks
Test Frequency		MHz	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Limitation of Collateral Emission of Receiver	※6	nW	0.0024	0.0029	0.0025	Limit \leq 4 nW (-54 dBm)
	※7	nW	0.0067	0.0086	0.0058	Limit \leq 20 nW (-47 dBm)

Normal Voltage

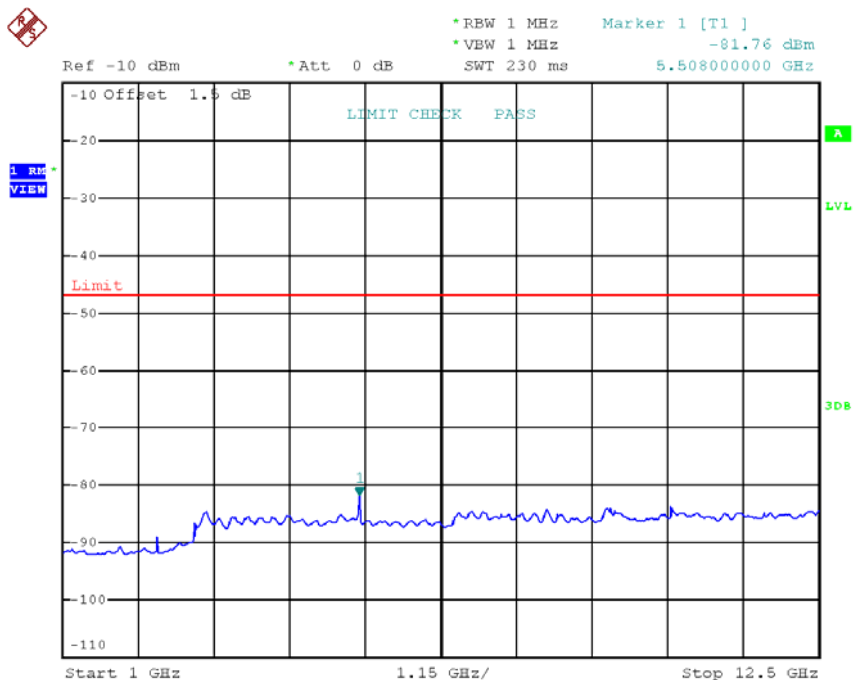
2403.35 MHz Frequency Band 6 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 13:57:46

Normal Voltage

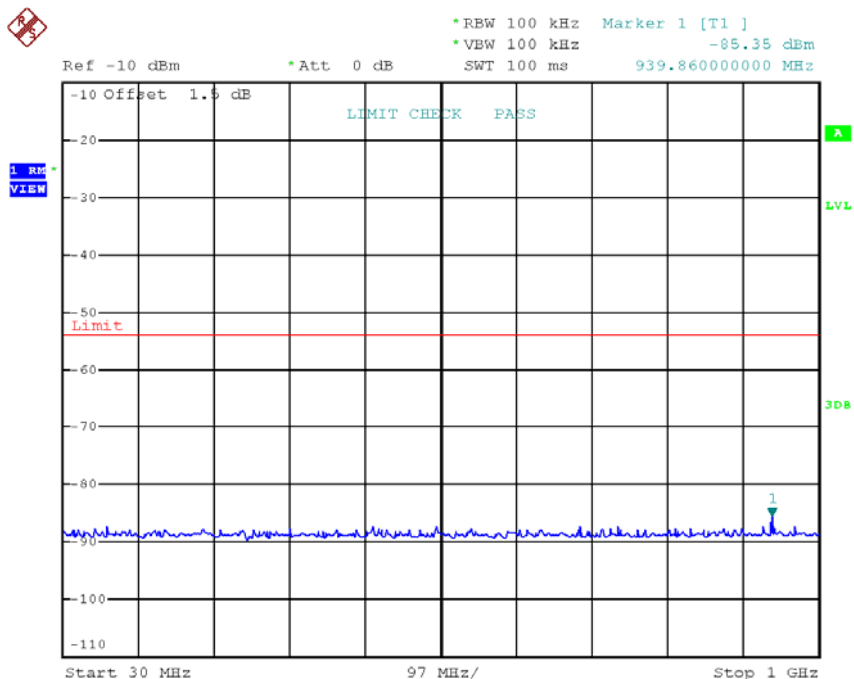
2403.35 MHz Frequency Band 7 ($1000 \text{ MHz} < f \leq 12.5 \text{ GHz}$)



Date: 7.AUG.2018 13:57:56

Normal Voltage

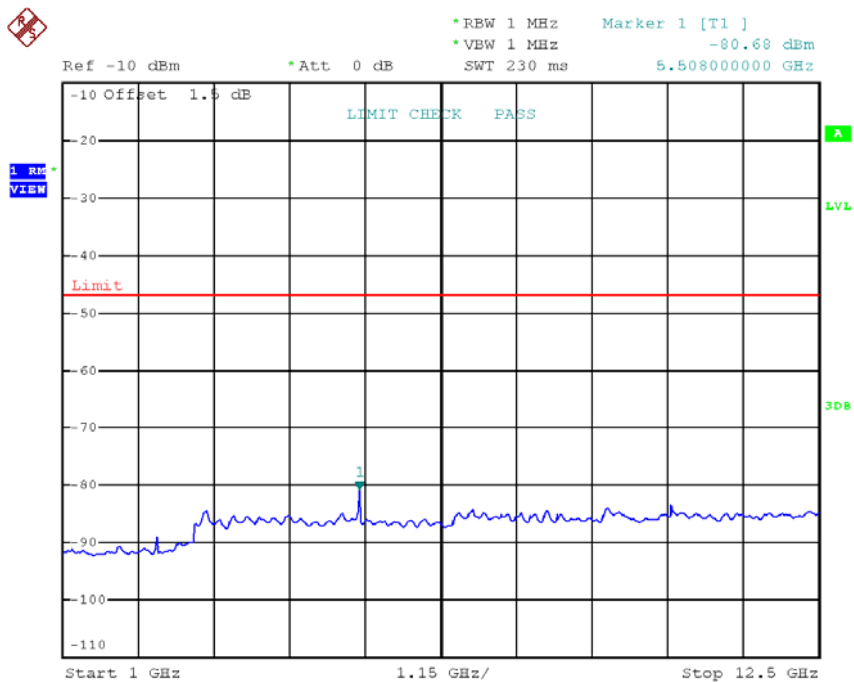
2441.35 MHz Frequency Band 6 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 13:58:31

Normal Voltage

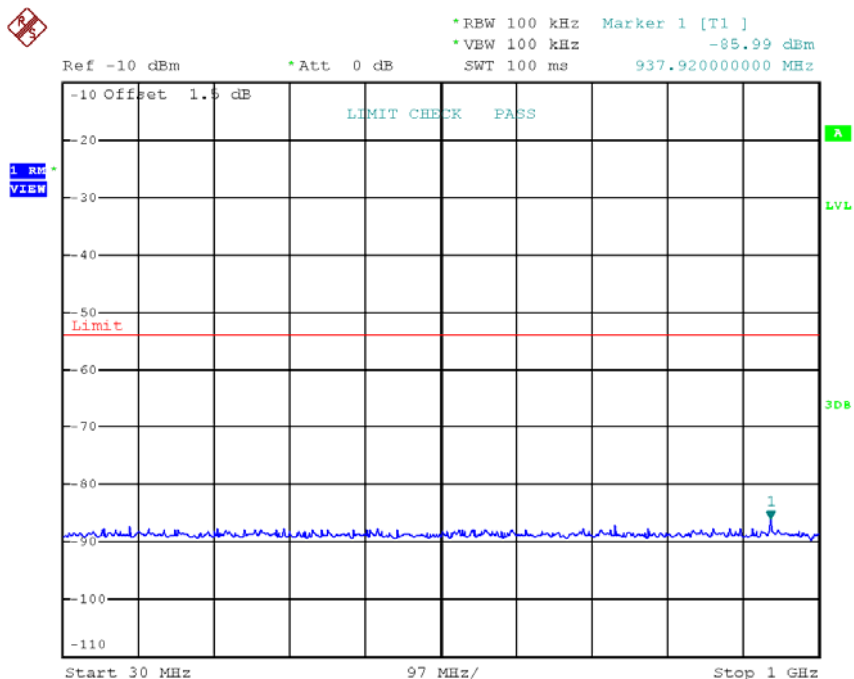
2441.35 MHz Frequency Band 7 ($1000 \text{ MHz} < f \leq 12.5 \text{ GHz}$)



Date: 7.AUG.2018 13:58:41

Normal Voltage

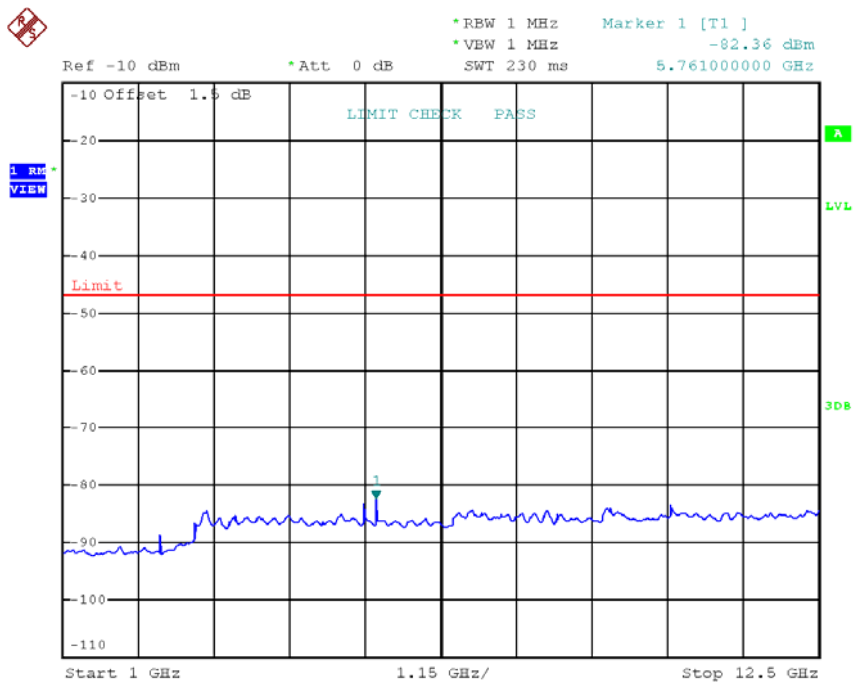
2477.35 MHz Frequency Band 6 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:00:12

Normal Voltage

2477.35 MHz Frequency Band 7 ($1000 \text{ MHz} < f \leq 12.5 \text{ GHz}$)



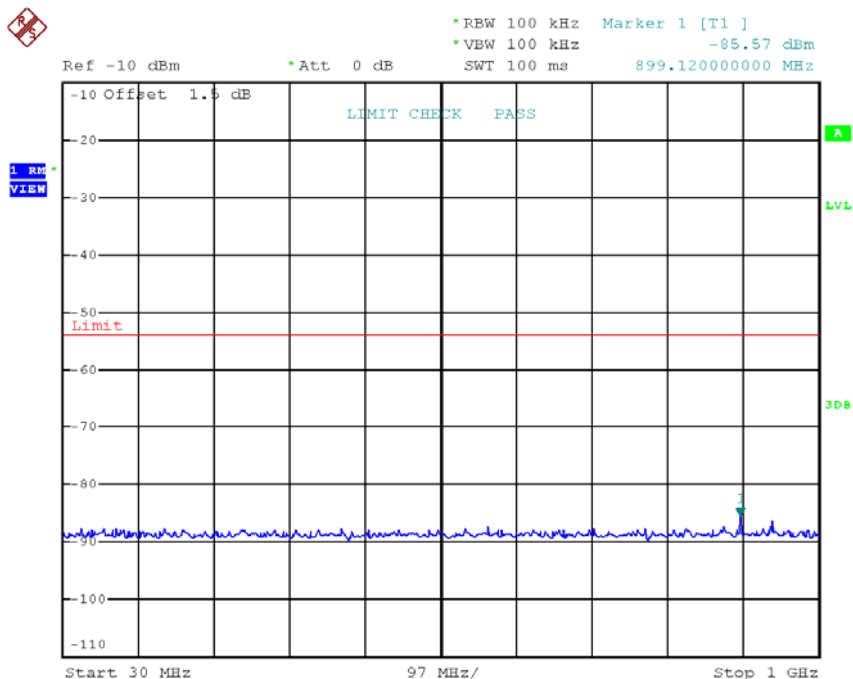
Date: 7.AUG.2018 14:00:22

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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Test Voltage		V	High Voltage			Remarks
Test Frequency		MHz	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Limitation of Collateral Emission of Receiver	※6	nW	0.0028	0.0048	0.0021	Limit \leq 4 nW (-54 dBm)
	※7	nW	0.0144	0.0183	0.0045	Limit \leq 20 nW (-47 dBm)

High Voltage

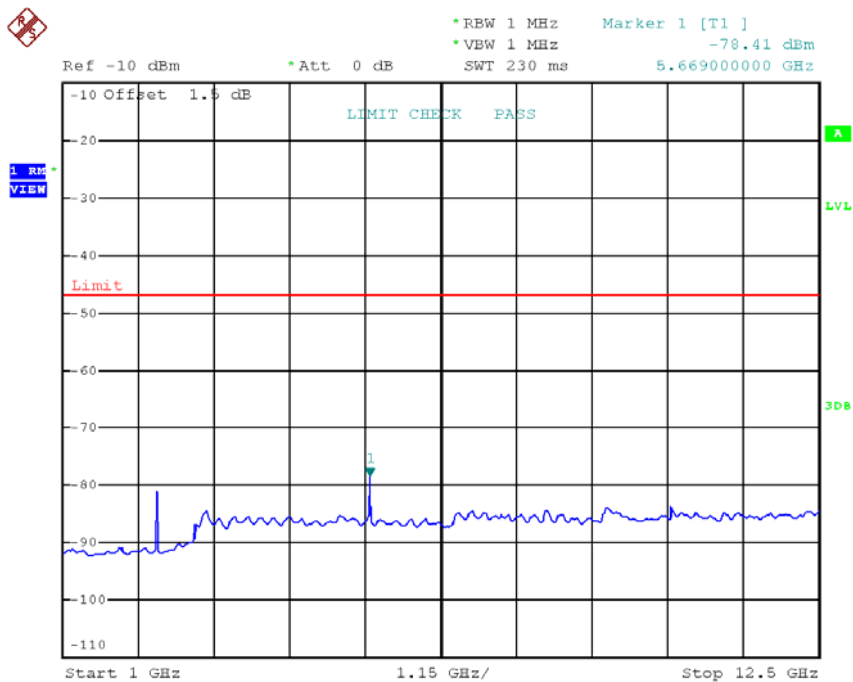
2403.35 MHz Frequency Band 6 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:14:05

High Voltage

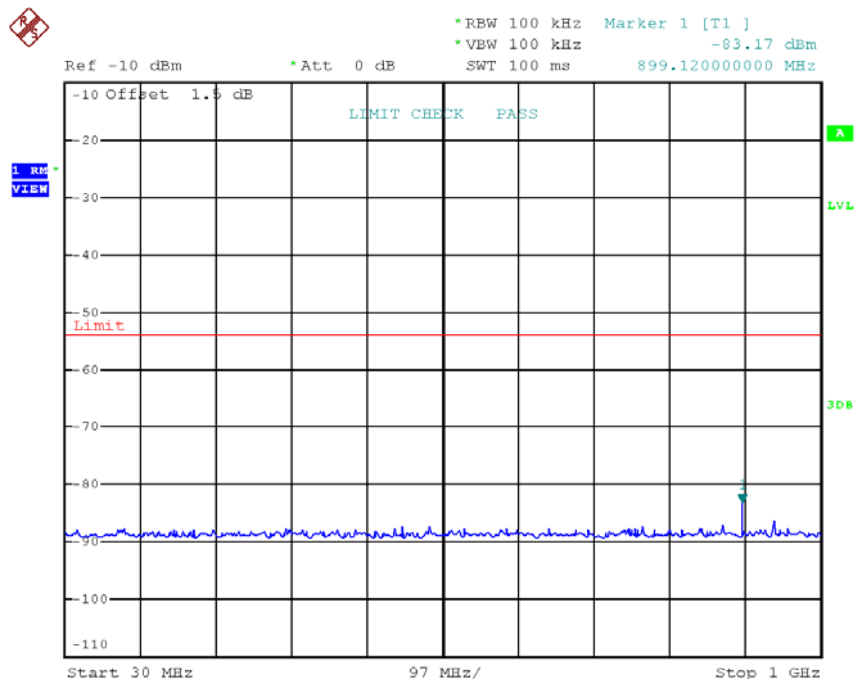
2403.35 MHz Frequency Band 7 ($1000 \text{ MHz} < f \leq 12.5 \text{ GHz}$)



Date: 7.AUG.2018 14:14:15

High Voltage

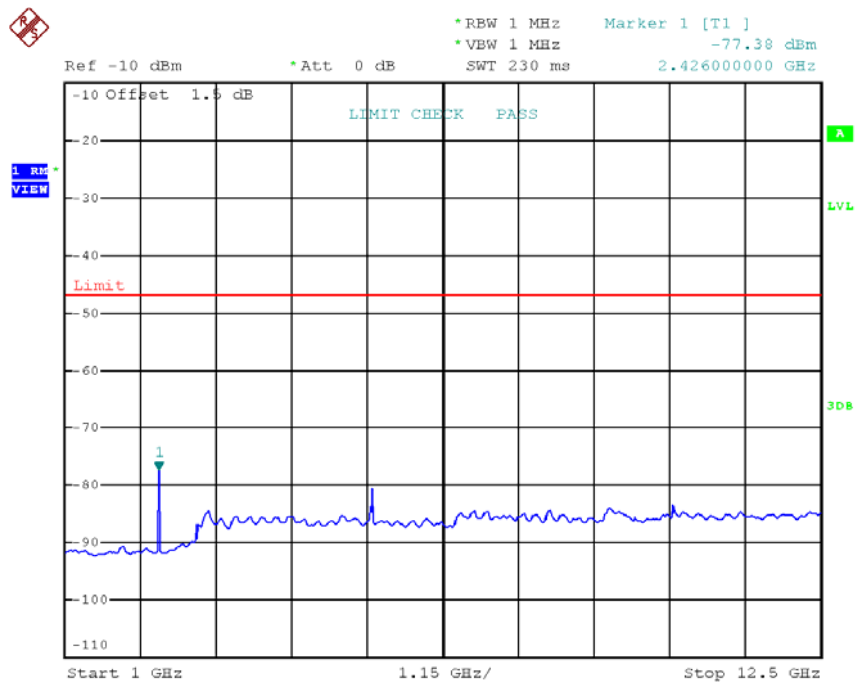
2441.35 MHz Frequency Band 6 (30 MHz ≤ f ≤ 1000 MHz)



Date: 7.AUG.2018 14:14:28

High Voltage

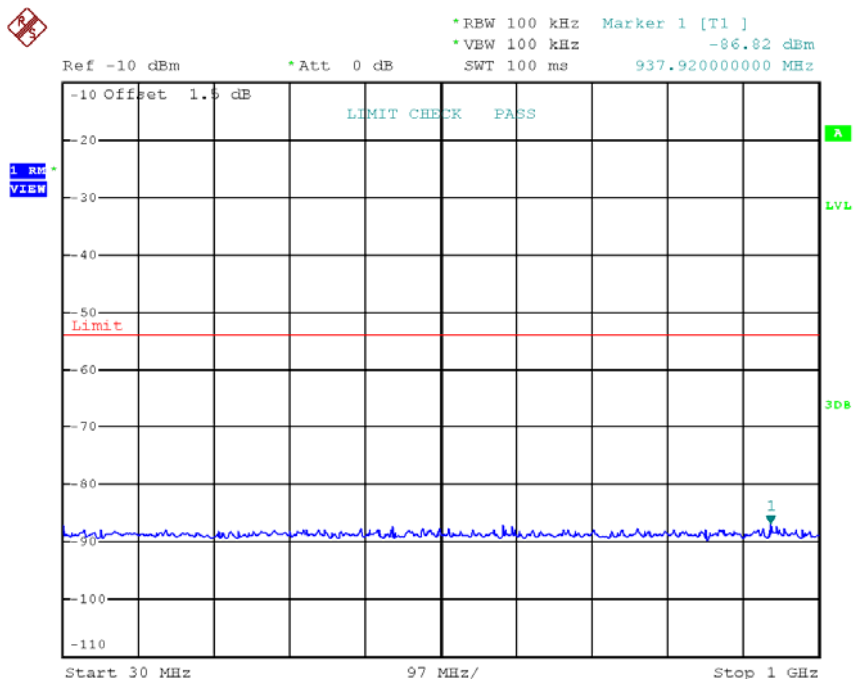
2441.35 MHz Frequency Band 7 (1000 MHz < f ≤ 12.5 GHz)



Date: 7.AUG.2018 14:14:38

High Voltage

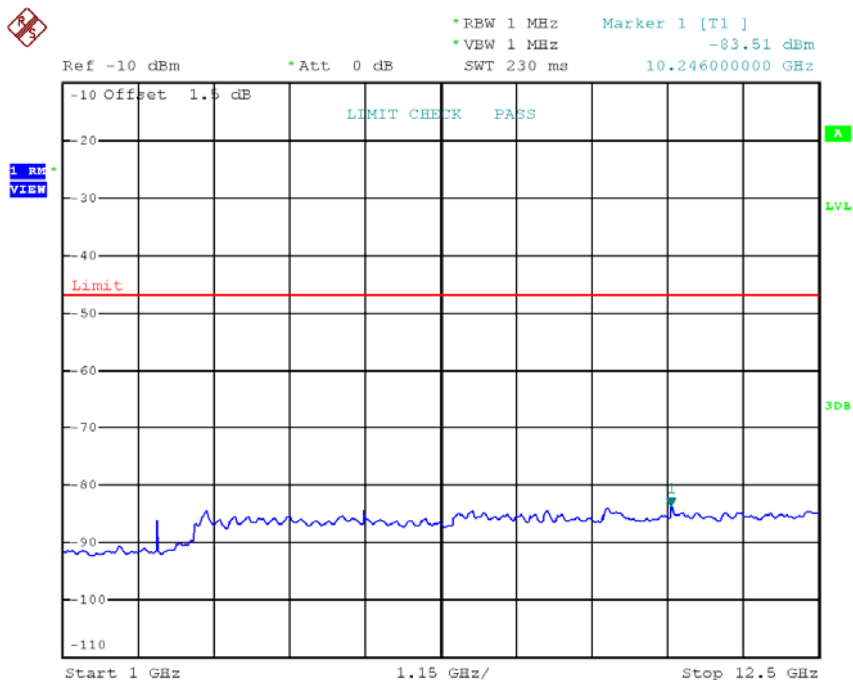
2477.35 MHz Frequency Band 6 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:33:02

High Voltage

2477.35 MHz Frequency Band 7 ($1000 \text{ MHz} < f \leq 12.5 \text{ GHz}$)



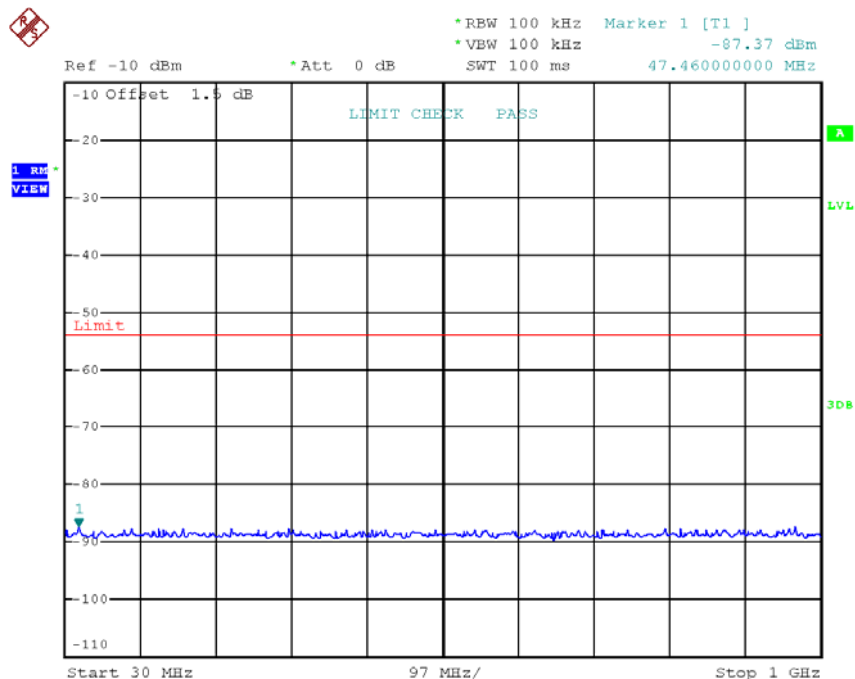
Date: 7.AUG.2018 14:33:12

Test Mode:	TX 2403.35 MHz/2441.35 MHz/2477.35 MHz
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Test Voltage		V	Low Voltage			Remarks
Test Frequency		MHz	2403.35	2441.35	2477.35	Low/Mid/High of test frequency range
Limitation of Collateral Emission of Receiver	※6	nW	0.0018	0.0020	0.0026	Limit \leq 4 nW (-54 dBm)
	※7	nW	0.0064	0.0190	0.0114	Limit \leq 20 nW (-47 dBm)

Low Voltage

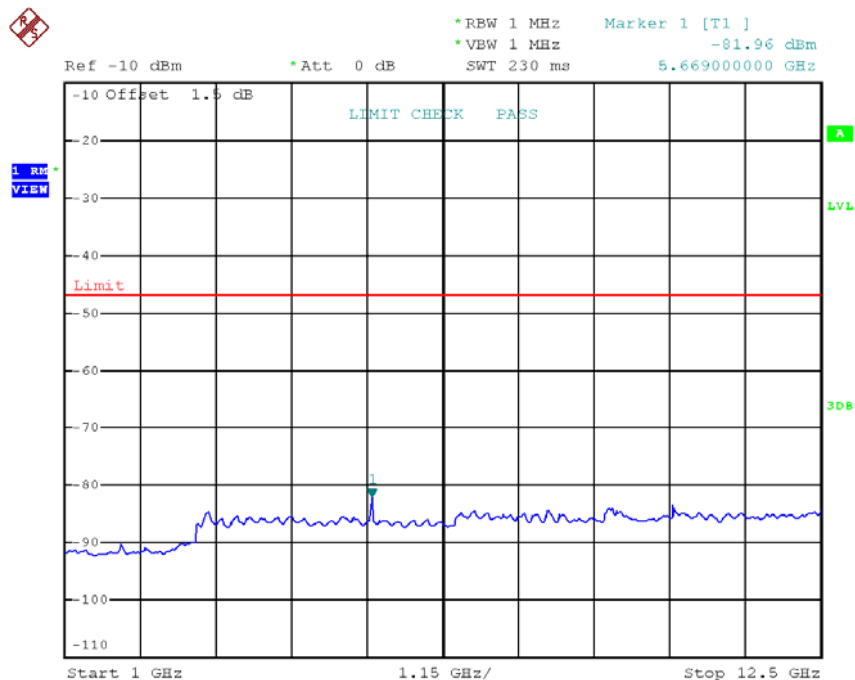
2403.35 MHz Frequency Band 6 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:12:29

Low Voltage

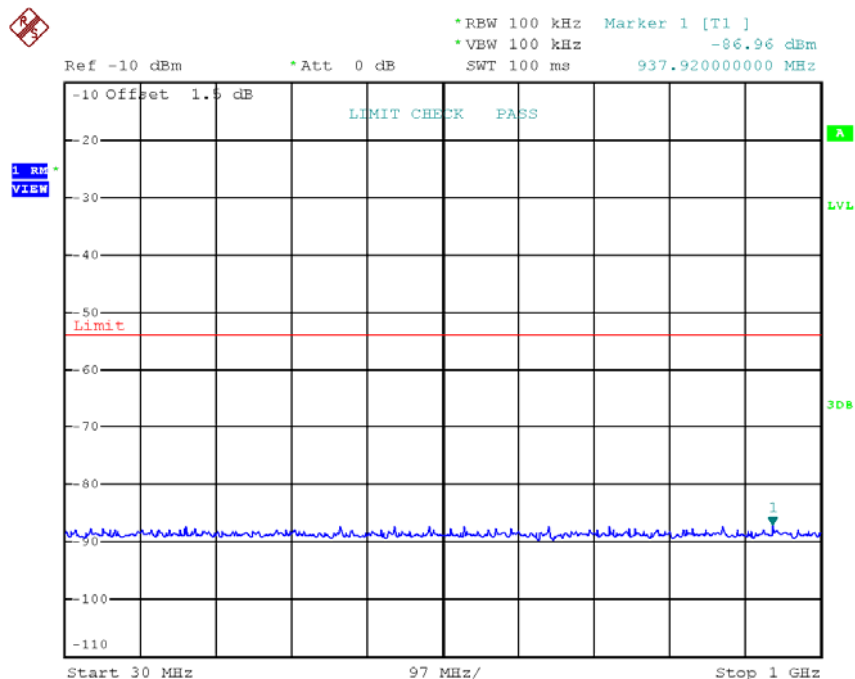
2403.35 MHz Frequency Band 7 ($1000 \text{ MHz} < f \leq 12.5 \text{ GHz}$)



Date: 7.AUG.2018 14:12:39

Low Voltage

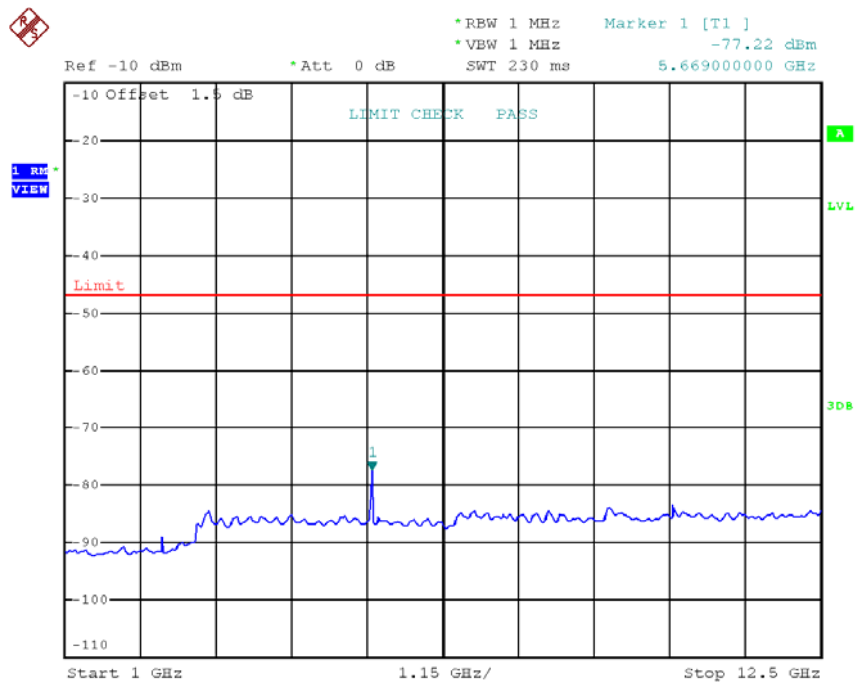
2441.35 MHz Frequency Band 6 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:03:21

Low Voltage

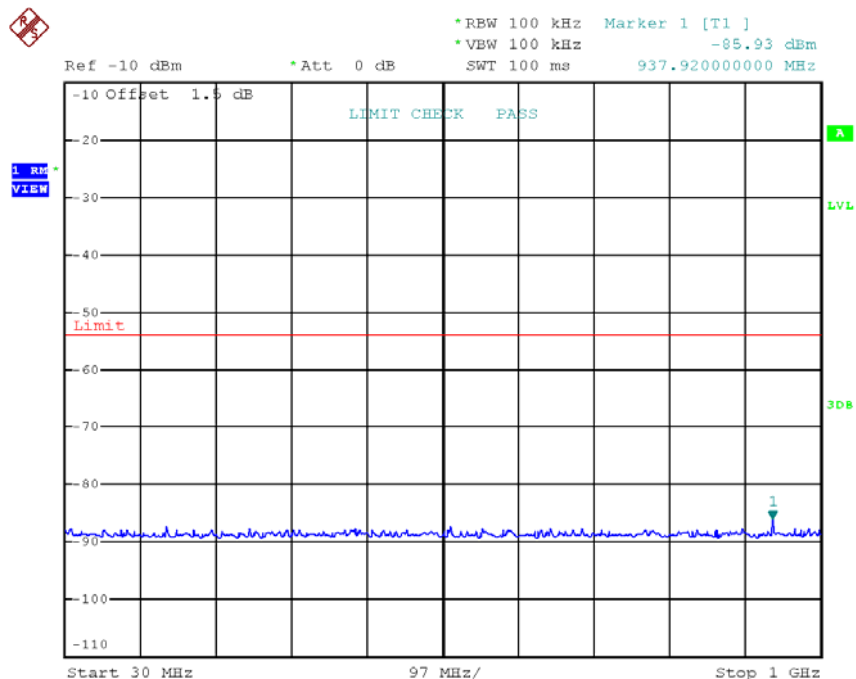
2441.35 MHz Frequency Band 7 ($1000 \text{ MHz} < f \leq 12.5 \text{ GHz}$)



Date: 7.AUG.2018 14:03:30

Low Voltage

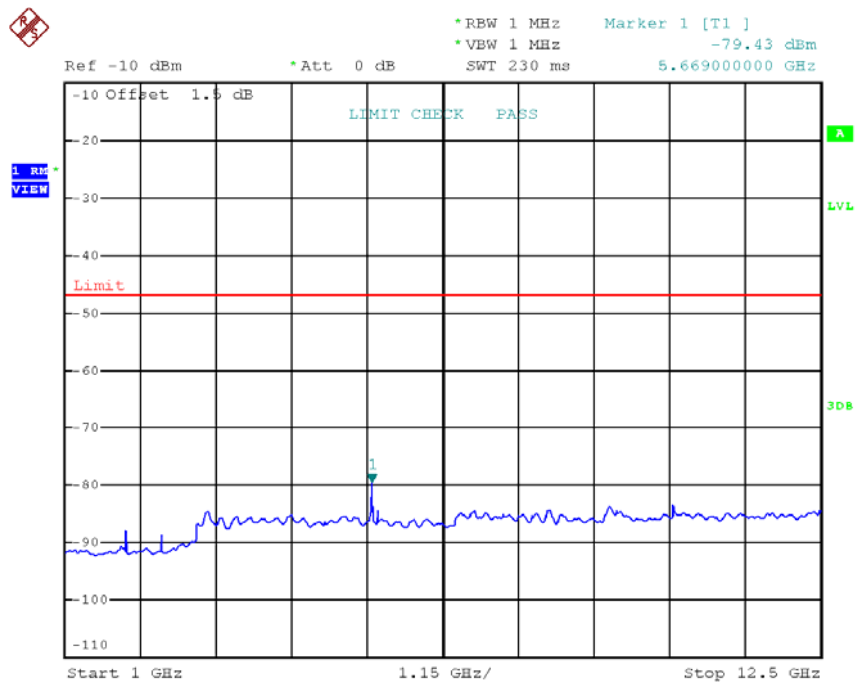
2477.35 MHz Frequency Band 6 ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)



Date: 7.AUG.2018 14:03:53

Low Voltage

2477.35 MHz Frequency Band 7 ($1000 \text{ MHz} < f \leq 12.5 \text{ GHz}$)



Date: 7.AUG.2018 14:04:03