

JAPAN MIC
TEST REPORT
For
SZ DJI TECHNOLOGY CO., LTD

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Nanshan, Shenzhen, Guangdong, China

Model: GL900A

This Report Concerns: <input checked="" type="checkbox"/> Original Report		Equipment Type: Cendence S	
Report Number:	RDG181113011-07A		
Report Date:	2018-11-26		
Reviewed By:	Robin Zheng RF Engineer		
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

Equipment Name		Cendence S
Tested Model Number		GL900A
Radio Type		1.4M/10M/20M Mode
SDR Technical Parameters	Support Technical	1.4M/10M/20M Mode
	Modulation Type	GFSK, OFDM
	Emission Type	G1D, D1D
	Frequency Range	1.4M: 2403.5-2477.5MHz, 10M: 2406.5-2476.5MHz, 20M: 2411.5-2471.5MHz
	Output Power	1.4M: 0.5mW/MHz 10M: 0.15mW/MHz for 2411.5-2476.5MHz, 0.05mW/MHz for 2406.5-2410.5MHz 20M : 0.12mW/MHz
	Antenna Gain	3.69dBi
Nominal Power Supply:		DC 7.6V from battery
Voltage Range		6.8V to 8.4V DC
External Dimension		168mm (L) x 205mm (W) x 80mm (H)
Serial Number		181113011 (Assigned by BACL, Dongguan)
Received Date		2018-11-13

Adapter Information:

MODEL: IN2C180

INPUT: AC 100-240V~50/60Hz 2.5A

OUTPUT: 26.1V~-6.9A (Total)

Objective

The objective of the manufacturer is to demonstrate compliance with Radio Law of Japan item 19-2-2 of Article 2 Paragraph 1.

Test Methodology

All measurements contained in this report were conducted with technical regulations of the Radio Law of Japan.

EUT TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in engineering mode which was selected by manufacturer. The system configure 1T2R, only main antenna can transmit.

For 10M mode, 71 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2406.5	37	2442.5
2	2407.5
...
...	...	70	2475.5
..	...	71	2476.5
36	2441.5	/	/

EUT was tested with channel 1, 36 and 71.

For 20M mode, 61 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2411.5	32	2442.5
2	2412.5
...
...	...	60	2470.5
..	...	61	2471.5
31	2441.5	/	/

EUT was tested with channel 1, 31 and 61.

The extreme voltage test conditions which were declared by the manufacturer and the normal conditions are as below:

NV: Normal Voltage 7.6V_{DC}

LV: Low Voltage 6.8V_{DC}

HV: High Voltage 8.4V_{DC}

EUT Exercise Software

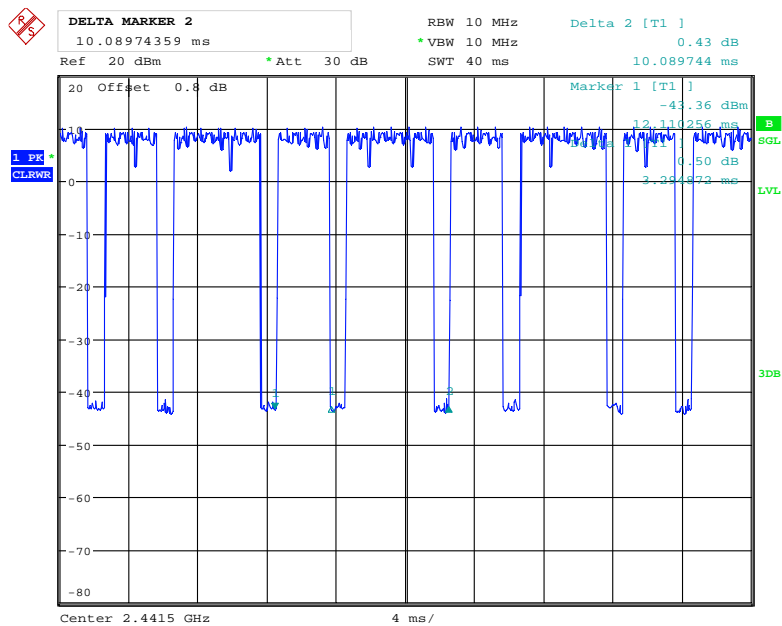
The software 'DjiSdrConsole_1.3.1.50.exe' was used in test for 10M and 20M mode, which was provided by manufacture. The maximum power with maximum duty cycle was configured as default setting. Per pretest the conducted output power, 10MHz z mode's power in difference power level, all test items performed at Low, Middle and High Channel, transmitter spurious for frequency range: 2387-2400MHz and output power were tested with additional channels according to the pretest output power test results.

Duty cycle and Duty cycle factor:

Mode	T _{on} (ms)	T _{on+off} (ms)	Duty Cycle (%)	Duty Cycle Factor (dB)
10M	8.55	10.09	84.74	0.72
20M	8.40	10.00	84.00	0.76

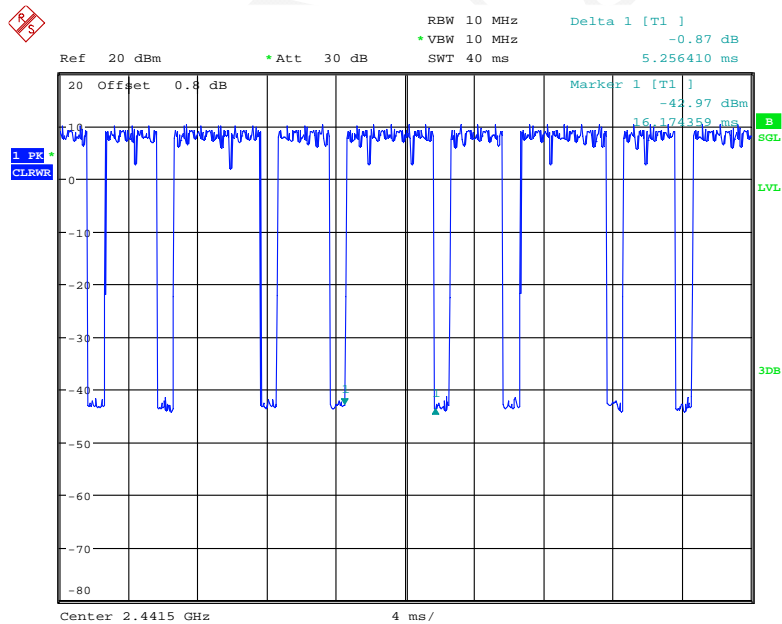
Note: Duty Cycle Factor = 10*log(1/Duty Cycle)

10M-1



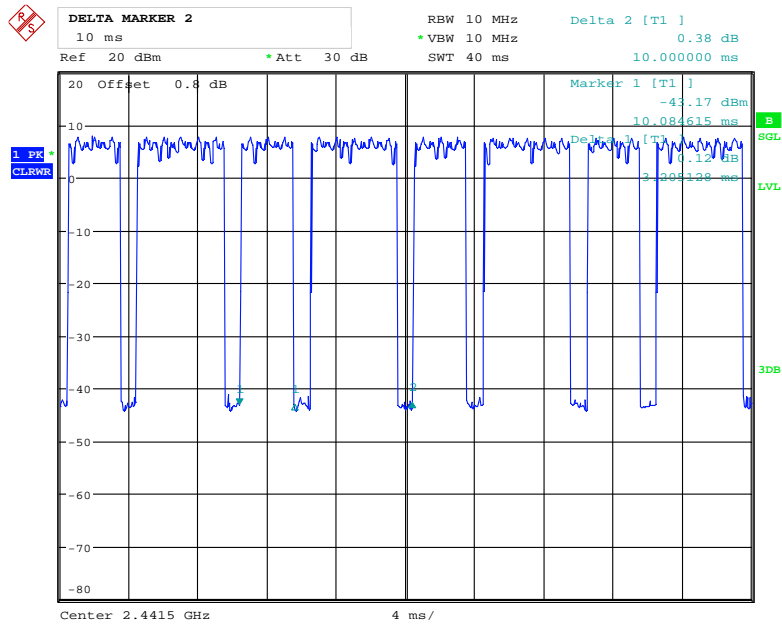
Date: 19.NOV.2018 16:10:15

10M-2



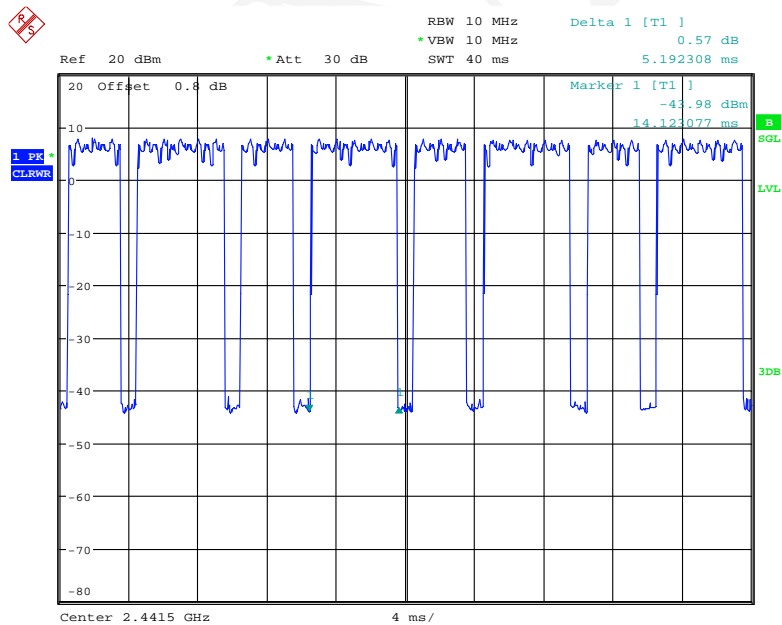
Date: 19.NOV.2018 16:10:50

20M-1



Date: 19.NOV.2018 16:12:30

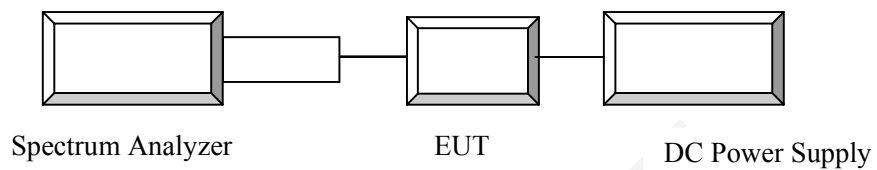
20M-2



Date: 19.NOV.2018 16:13:17

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Pro instrument	DC Power Supply	pps3300	3300012

Configuration of Test Setup**Test Equipment List and Details**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2018-01-04	2019-01-04
Unknown	Coaxial Cable	C-SJ00-0010	C0010/02	Each time	N/A
UNI-T	Multimeter	UT39A	M130199938	2018-07-24	2019-07-24
Pro instrument	DC Power Supply	pps3300	3300012	N/A	N/A

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

SUMMARY OF TEST RESULTS

MIC Notice No.88 Appendix No.43 Article 2, Paragraph 1, Item 19-2-2 Rules Section	Description of Test	Result
3	Frequency Error	Compliance
4	Occupied Bandwidth and Spreading Bandwidth	Compliance
5	Transmitter Spurious Emission and Unwanted Emission Intensity	Compliance
6	Antenna Output Power and Output Power Tolerance	Compliance
7	Receiver Spurious Emission and Unwanted Emission Intensity	Compliance
8	Transmission Antenna Gain	Not Applicable
9	Transmission Radiation Angle Width	Not Applicable
10	Carrier sense capability	Not Applicable**
11	Frequency Hopping Dwell Time	Not Applicable*
12	Interference Prevention Function	Compliance
Note 1	Construction Protection Confirmation	Compliance

Note:

Not Applicable: Please refer to 'Note 3' of Antenna Output Power and Output Power Tolerance section.

Not Applicable*: Testing is only required for FHSS system devices.

Not Applicable**: This item only required for bandwidth which more than 26MHz and less than 38MHz.

FREQUENCY ERROR

Limit

50ppm or below

Test Procedure

Set the EUT to the measurement frequency without modulation.
Setting of SA is following as: RBW: 300 kHz / VBW: 300 kHz / Sweep time: Auto / Sweep Mode:
Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold.
Record the peak spot frequency.

If the EUT can't set at un-modulation mode, measure the 10dBc center frequency.

Test Data

Environmental Conditions

Temperature:	26.9°C
Relative Humidity:	47 %
ATM Pressure:	100.8 kPa

The testing was performed by Elena Lei on 2018-11-19.

Test Result: Compliance*Test Mode: Transmitting*

10M:

Frequency (MHz)	Voltage	Measure Frequency (MHz)		Result	Tolerance	Limit
		F1	F2	MHz	ppm	
2406.5	LV	2401.910	2411.223	2406.567	27.63	<50ppm
	NV	2401.917	2411.212	2406.565	26.80	
	HV	2401.869	2411.222	2406.546	18.91	
2441.5	LV	2436.903	2446.228	2441.566	26.83	
	NV	2436.853	2446.212	2441.533	13.31	
	HV	2436.843	2446.176	2441.510	3.89	
2476.5	LV	2471.841	2481.176	2476.509	3.43	
	NV	2471.885	2481.179	2476.532	12.92	
	HV	2471.922	2481.222	2476.572	29.07	

20M:

Frequency (MHz)	Voltage	Measure Frequency (MHz)		Result	Tolerance	Limit
		F1	F2	MHz	ppm	
2411.5	LV	2402.373	2420.555	2411.464	-14.93	<50ppm
	NV	2402.333	2420.603	2411.468	-13.27	
	HV	2402.286	2420.645	2411.466	-14.31	
2441.5	LV	2432.507	2450.721	2441.614	46.69	
	NV	2432.462	2450.763	2441.613	46.08	
	HV	2432.465	2450.761	2441.613	46.28	
2471.5	LV	2462.246	2480.663	2471.455	-18.41	
	NV	2462.269	2480.667	2471.468	-12.95	
	HV	2462.241	2480.653	2471.447	-21.44	

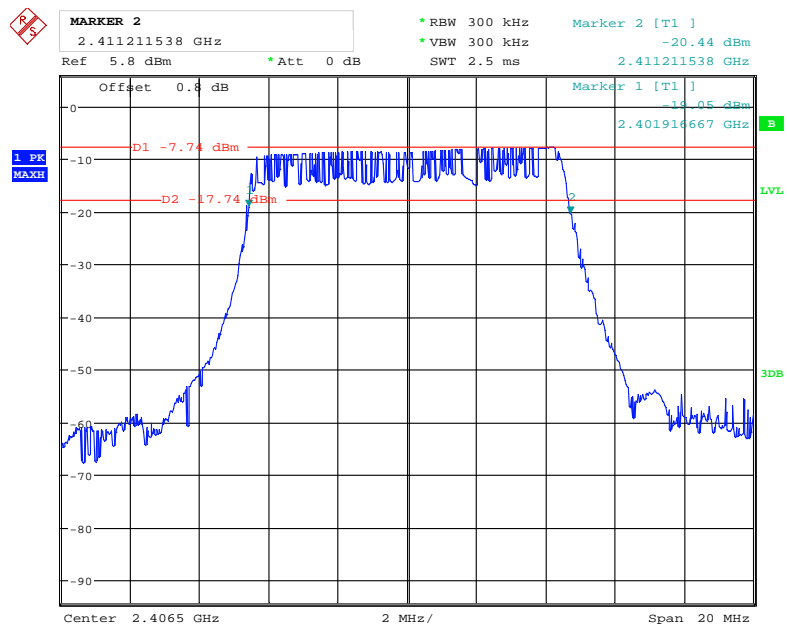
Note:

$$\text{Result} = (F1+F2)/2$$

$$\text{Tolerance} = (\text{Result}-\text{Test Frequency})/\text{Test Frequency} \times 10^6$$

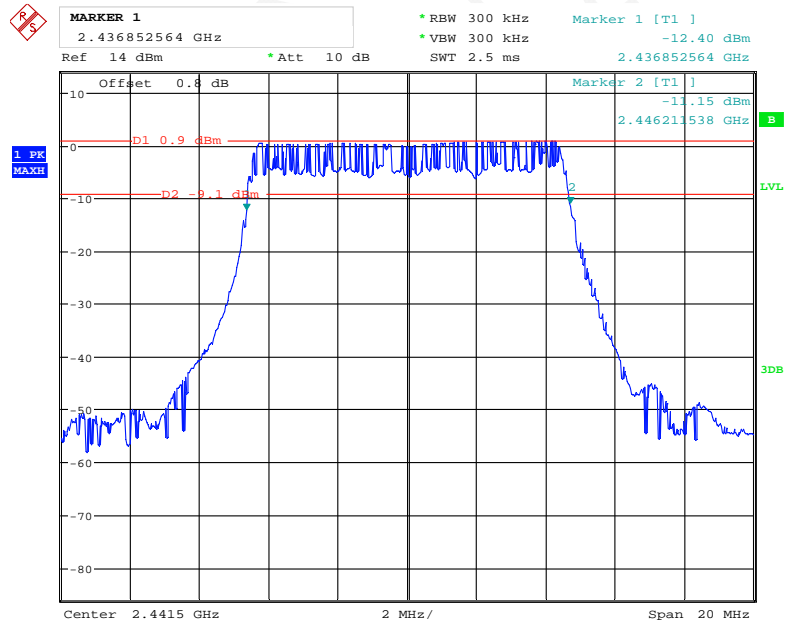
Please refer to the following plots for normal voltage:

10M-Test Frequency:2406.5MHz



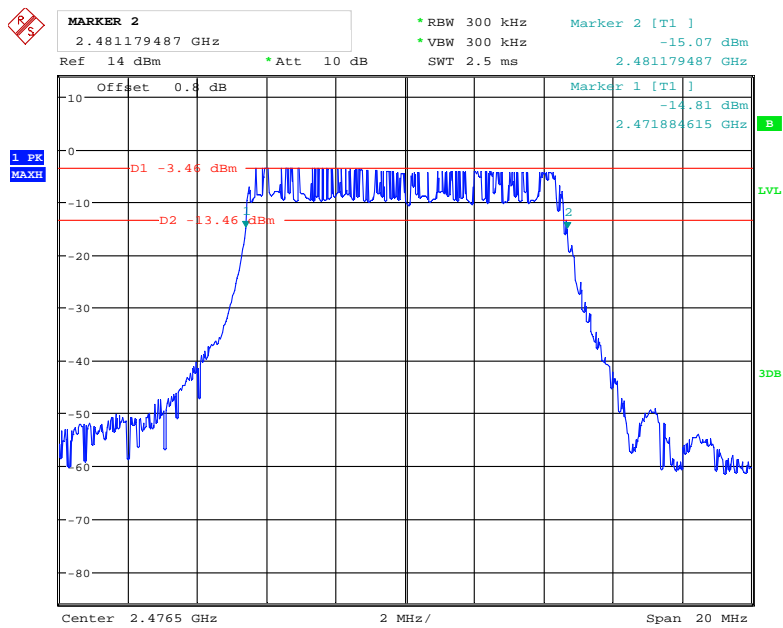
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10M-Test Frequency:2441.5MHz



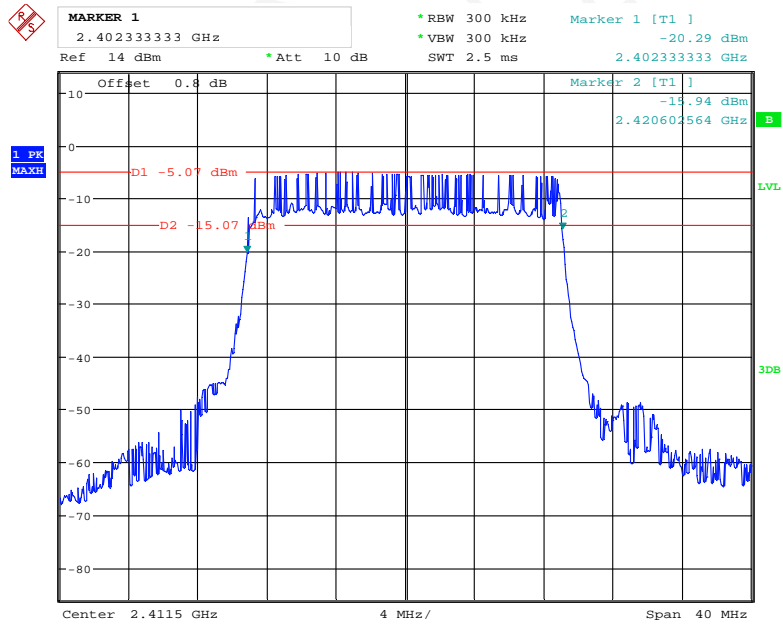
Date: 19.NOV.2018 16:02:33

10M-Test Frequency:2476.5MHz



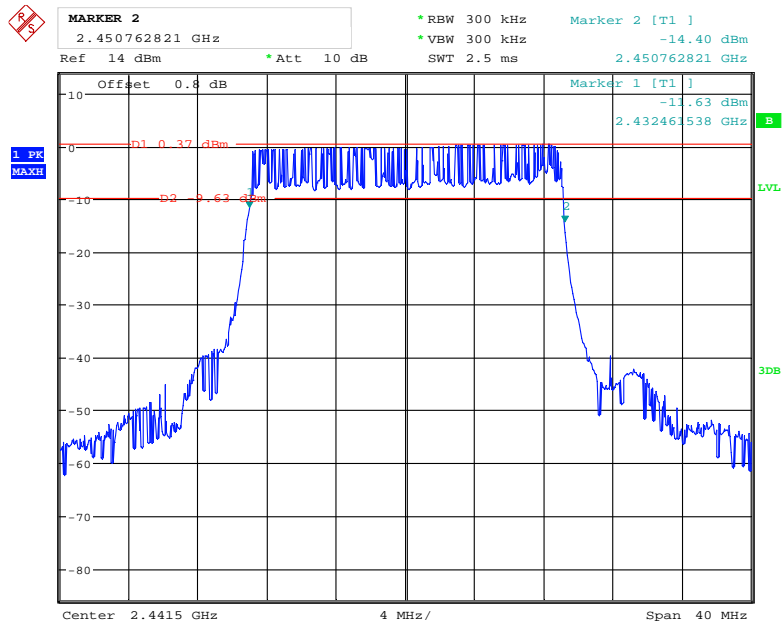
Date: 19.NOV.2018 16:07:49

20M-Test Frequency:2411.5MHz



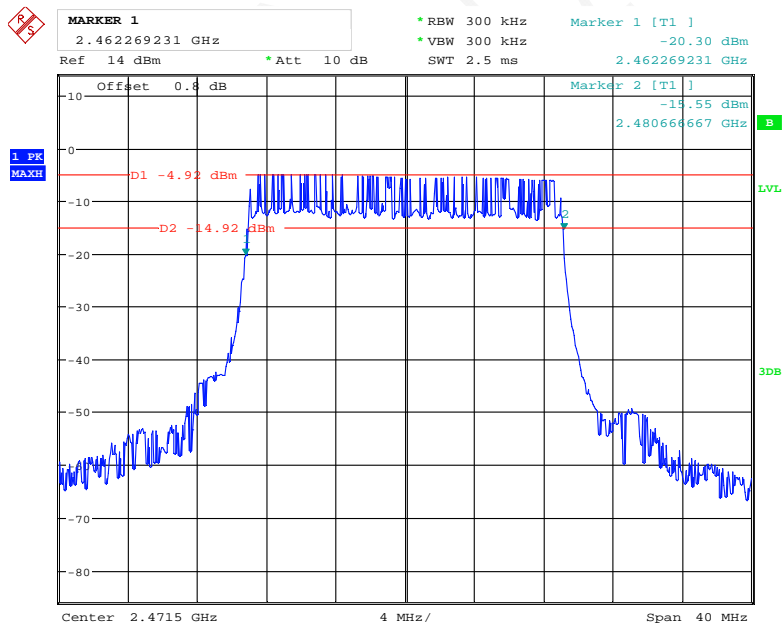
Date: 19.NOV.2018 16:04:34

20M-Test Frequency:2441.5MHz



Date: 19.NOV.2018 16:03:39

20M-Test Frequency:2471.5MHz



Date: 19.NOV.2018 16:05:22

OCCUPIED BANDWIDTH AND SPREADING BANDWIDTH

Limit

- Occupied bandwidth: FH \leq 83.5 MHz; DS \leq 26 MHz; OFDM \leq 38 MHz, Others \leq 26 MHz
- Spread Bandwidth: \geq 500 kHz(FH,DS), Spread factor $>$ 5.

Test Procedure

1. Setting of SA is following as: RBW: 300 kHz / VBW: 300 kHz / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak / Trace mode: Max hold
2. EUT have transmitted the maximum modulation signal and fixed channelize. SA set to 99% of occupied bandwidth to measure occupied bandwidth.

Test Data

Environmental Conditions

Temperature:	26.9°C
Relative Humidity:	47 %
ATM Pressure:	100.8 kPa

The testing was performed by Elena Lei on 2018-11-19.

Test Result: Compliance

Test Mode: Transmitting

10M:

Frequency	Low Channel			Middle Channel			High Channel			Limit
Voltage	LV	NV	HV	LV	NV	HV	LV	NV	HV	
Occupied Bandwidth (MHz)	9.093	9.071	9.063	9.123	9.103	9.103	9.073	9.103	9.113	\leq 26MHz

20M:

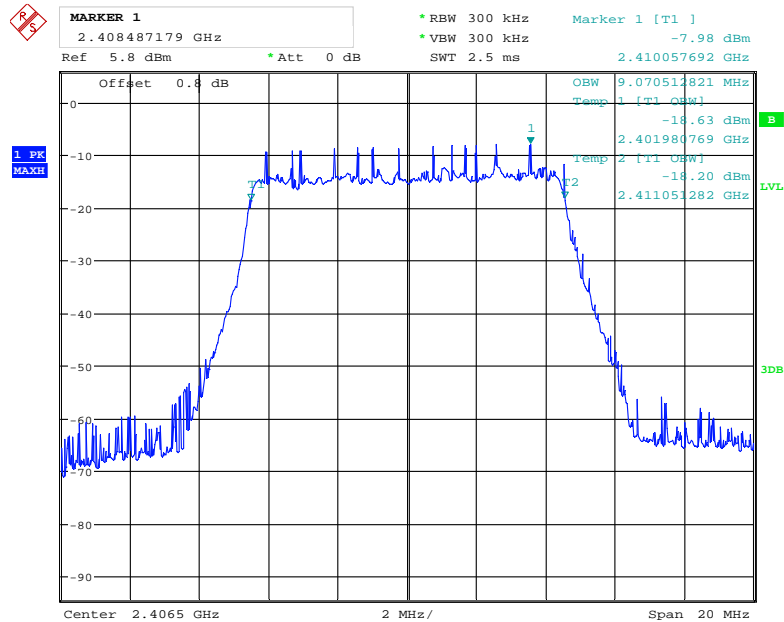
Frequency	Low Channel			Middle Channel			High Channel			Limit
Voltage	LV	NV	HV	LV	NV	HV	LV	NV	HV	
Occupied Bandwidth (MHz)	18.023	17.885	17.983	17.983	18.013	18.033	17.983	17.885	18.043	\leq 26MHz

Note: for OFDM modulation, Spread Bandwidth and Spread factor was not requirement.

Please refer to the following plots for normal voltage:

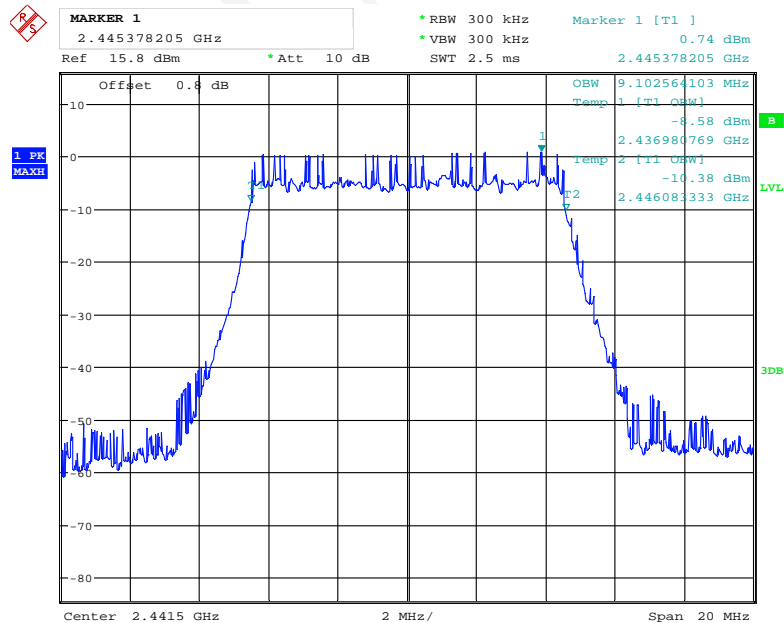
Occupied Bandwidth:

10M - Test Frequency:2406.5MHz



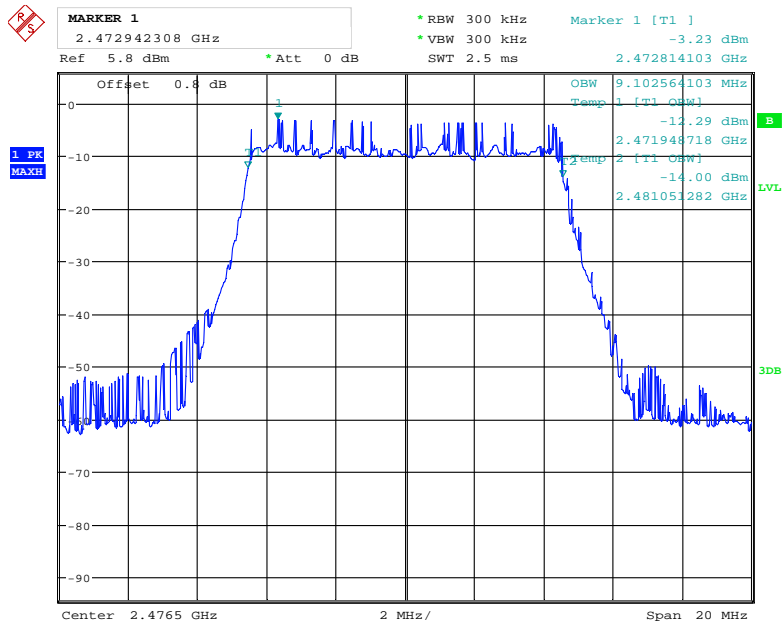
Date: 19.NOV.2018 15:46:21

10M - Test Frequency:2441.5MHz



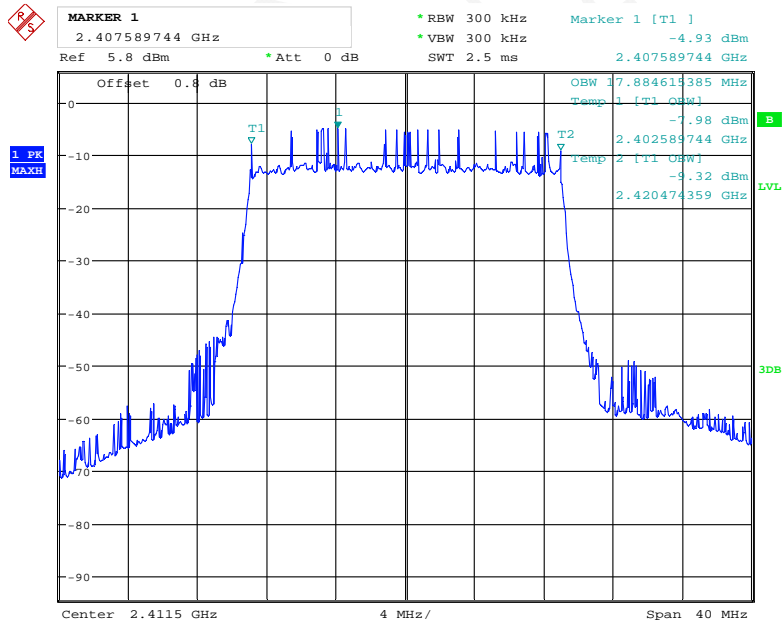
Date: 19.NOV.2018 15:44:15

10M - Test Frequency: 2476.5MHz



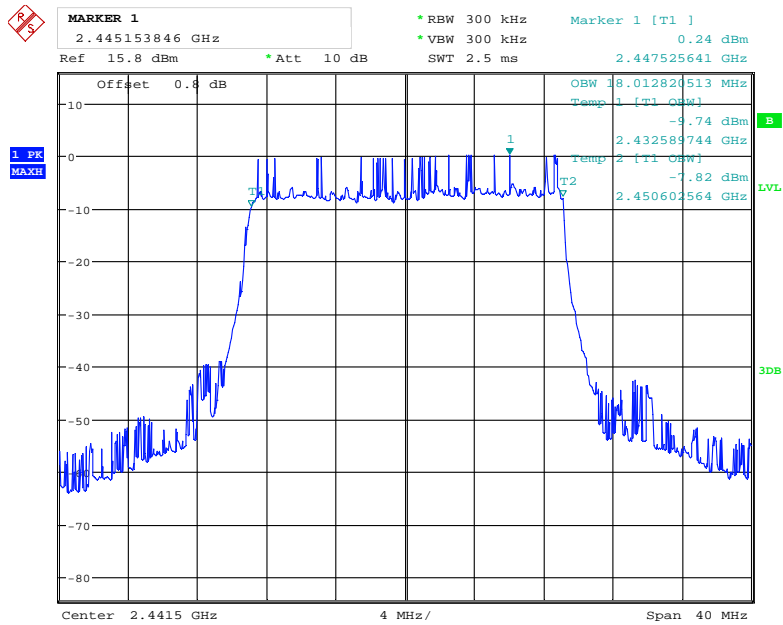
Date: 19.NOV.2018 15:45:53

20M - Test Frequency: 2411.5MHz



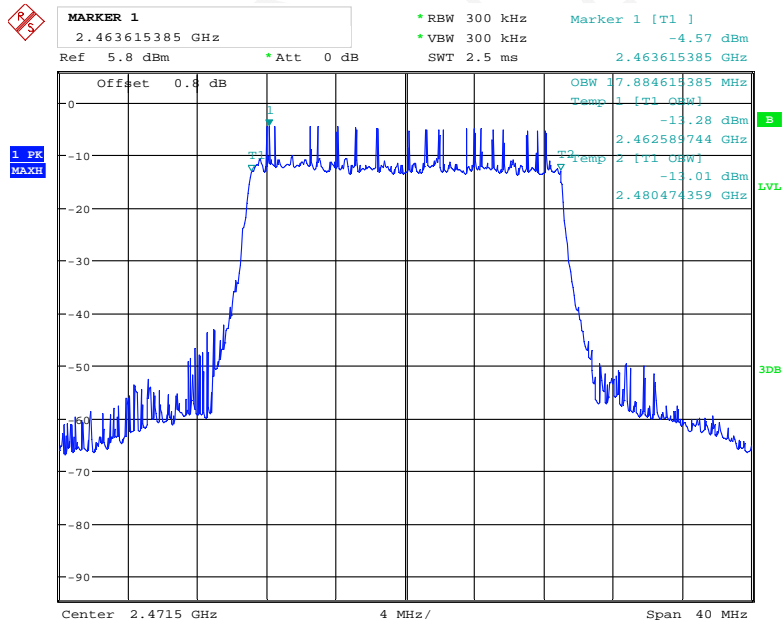
Date: 19.NOV.2018 15:47:40

20M - Test Frequency:2441.5MHz



Date: 19.NOV.2018 15:42:35

20M - Test Frequency:2471.5MHz



Date: 19.NOV.2018 15:47:12

TRANSMITTER SPURIOUS EMISSION STRENGTH AND UNWANTED EMISSION INTENSITY

Limit

- $f < 1000 \text{ MHz}$: $\leq 0.25 \mu\text{W}/100\text{kHz}$
- $1000 \text{ MHz} < f < 2387 \text{ MHz}$, $f > 2496.5 \text{ MHz}$: $\leq 2.5 \mu\text{W}/\text{MHz}$
- $2387 \text{ MHz} \leq f \leq 2400 \text{ MHz}$; $2483.5 \text{ MHz} < f \leq 2496.5 \text{ MHz}$: $\leq 25 \mu\text{W}/\text{MHz}$

Test Procedure

❖ Conditions of Application Equipment (EUT)

- The modulation state shall be in continuously transmitting mode.

❖ Spectrum Analyzer Conditions

- Setting of SA start 30MHz and stop frequency 1000MHz, RB:100kHz/VB:100kHz, Sweep time: Auto. Sweep mode: continuous sweep .Detect mode: Positive peak/Trace mode: max hold. Then to mark peak. reading value + cable loss shall be less than $0.25 \mu\text{W}/100\text{kHz}$.
- Setting of SA start 1000MHz and stop frequency 2387MHz, RB:1MHz/VB:1MHz, Sweep time: Auto. Sweep mode: continuous sweep .Detect mode: Positive peak/Trace mode: max hold. Then to mark peak. reading value + cable loss shall be less than $2.5 \mu\text{W}/\text{MHz}$.
- Setting of SA start 2387MHz and stop frequency 2400MHz, RB:1MHz/VB:1MHz, Sweep time: Auto. Sweep mode: continuous sweep .Detect mode: Positive peak/Trace mode: max hold. Then to mark peak. reading value + cable loss shall be less than $25 \mu\text{W}/\text{MHz}$.
- Setting of SA start 2483.5MHz and stop frequency 2496.5MHz, RB:1MHz/VB:1MHz, Sweep time: Auto. Sweep mode: continuous sweep .Detect mode: Positive peak/Trace mode: max hold. Then to mark peak. reading value + cable loss shall be less than $25 \mu\text{W}/\text{MHz}$.
- Setting of SA start 2496.5MHz and stop frequency 12500MHz, RB:1MHz/VB:1MHz, Sweep time: Auto. Sweep mode: continuous sweep .Detect mode: Positive peak/Trace mode: max hold. Then to mark peak. reading value + cable loss shall be less than $2.5 \mu\text{W}/\text{MHz}$.

Test Data**Environmental Conditions**

Temperature:	26.5~26.9°C
Relative Humidity:	47~49 %
ATM Pressure:	100.7~100.8 kPa

The testing was performed by Elena Lei on 2018-11-19~2018-11-21.

Test Mode: Transmitting,

Test Result: Compliance, Please refer to the below plots

10M Mode:

	Frequency Band	2406.5 MHz			2441.5 MHz			2476.5 MHz			Limit
		LV	NV	HV	LV	NV	HV	LV	NV	HV	
Raw data	Band I (dBm/100kHz)	-57.25	-57.15	-56.97	-57.04	-56.84	-56.88	-57.76	-57.05	-57.23	- 36dBm/100kHz
	Band II (dBm/MHz)	-49.28	-49.30	-49.35	-49.75	-49.41	-49.50	-48.63	-48.72	-48.90	-26dBm/MHz
	Band III (dBm/MHz)	-40.38	-40.67	-40.71	-48.09	-47.87	-47.95	-48.43	-48.28	-48.36	-16dBm/MHz
	Band IV (dBm/MHz)	-47.64	-47.82	-47.62	-47.88	-48.18	-47.65	-38.80	-38.52	-38.22	-16dBm/MHz
	Band V (dBm/MHz)	-45.51	-45.47	-45.70	-45.47	-45.65	-45.87	-47.13	-47.29	-47.46	-26dBm/MHz
Unwanted Emission Intensity	Band I (μW/100kHz)	0.0019	0.0019	0.0020	0.0020	0.0021	0.0021	0.0017	0.0020	0.0019	0.25 μW/100kHz
	Band II (μW/MHz)	0.0118	0.0117	0.0116	0.0106	0.0115	0.0112	0.0137	0.0134	0.0129	2.5 μW/MHz
	Band III (μW/MHz)	0.09162	0.08570	0.08492	0.01552	0.01633	0.01603	0.01435	0.01486	0.01459	25 μW/MHz
	Band IV (μW/MHz)	0.01722	0.01652	0.01730	0.01629	0.01521	0.01718	0.13183	0.14060	0.15066	25 μW/MHz
	Band V (μW/MHz)	0.02812	0.02838	0.02692	0.02838	0.02723	0.02588	0.01936	0.01866	0.01795	2.5 μW/MHz

Frequency		2411.5 MHz			Limit
Voltage		LV	NV	HV	
Raw data	Band III(dBm/MHz)	-48.46	-48.92	-48.70	-16dBm/MHz
Unwanted Emission Intensity	Band III(μ W/MHz)	0.01426	0.01282	0.01349	25 μ W/MHz

20M:

	Frequency Band	2411.5 MHz			2441.5 MHz			2471.5 MHz			Limit
		LV	NV	HV	LV	NV	HV	LV	NV	HV	
Raw data	Band I (dBm/100kHz)	-56.79	-56.87	-56.67	-56.45	-56.16	-55.89	-56.78	-56.53	-56.36	-36dBm/100kHz
	Band II (dBm/MHz)	-49.54	-49.44	-49.39	-48.59	-48.77	-48.83	-49.54	-49.30	-49.08	-26dBm/MHz
	Band III (dBm/MHz)	-18.83	-18.70	-18.45	-48.86	-48.77	-48.58	-48.42	-48.68	-48.74	-16dBm/MHz
	Band IV (dBm/MHz)	-48.34	-47.80	-48.05	-47.35	-47.53	-47.78	-38.98	-38.73	-38.66	-16dBm/MHz
	Band V (dBm/MHz)	-46.46	-46.05	-46.19	-44.98	-44.77	-44.83	-47.55	-47.38	-47.25	-26dBm/MHz
Unwanted Emission Intensity	Band I (μ W/100kHz)	0.0021	0.0021	0.0022	0.0023	0.0024	0.0026	0.0021	0.0022	0.0023	0.25 μ W/100kHz
	Band II (μ W/MHz)	0.0111	0.0114	0.0115	0.0138	0.0133	0.0131	0.0111	0.0117	0.0124	2.5 μ W/MHz
	Band III (μ W/MHz)	13.0918	13.48963	14.28894	0.01300	0.01327	0.01387	0.01439	0.01355	0.01337	25 μ W/MHz
	Band IV (μ W/MHz)	0.0147	0.01660	0.01567	0.01841	0.01766	0.01667	0.12647	0.13397	0.13614	25 μ W/MHz
	Band V (μ W/MHz)	0.0226	0.02483	0.02404	0.03177	0.03334	0.03289	0.01758	0.01828	0.01884	2.5 μ W/MHz

Note:

Band I: 30MHz~1000MHz

Band II: 1000MHz~2387MHz

Band III: 2387MHz~2400MHz

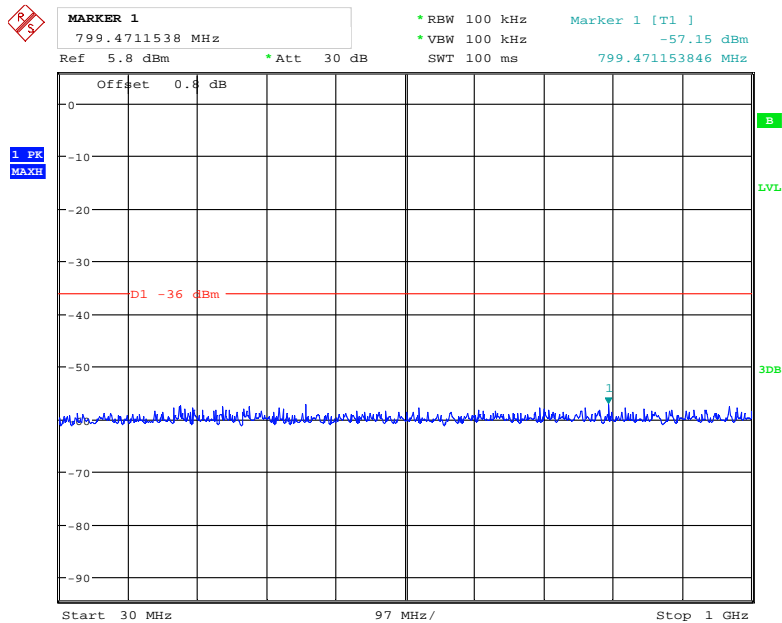
Band IV: 2483.5MHz~2496.5MHz

Band V: 2496.5MHz~12500MHz

Please refer to the following plots for normal voltage:

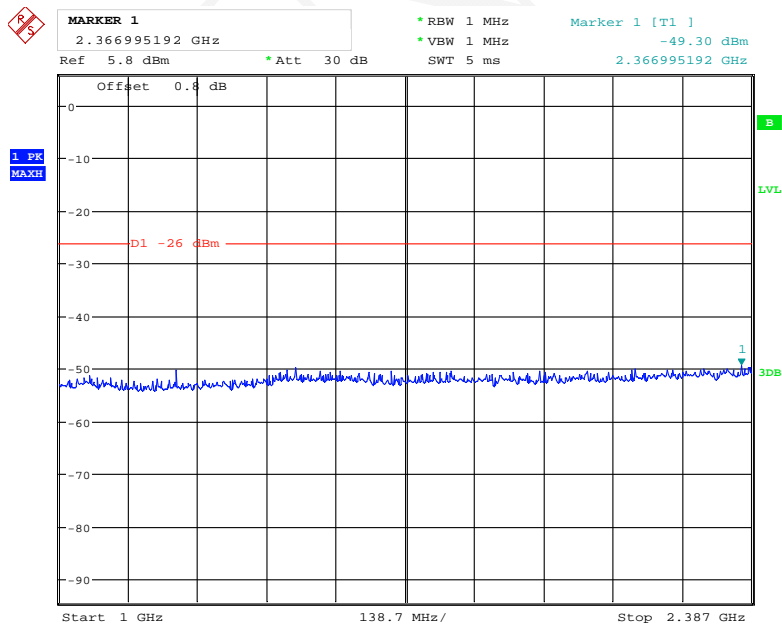
10M Low Channel:

30MHz~1000MHz



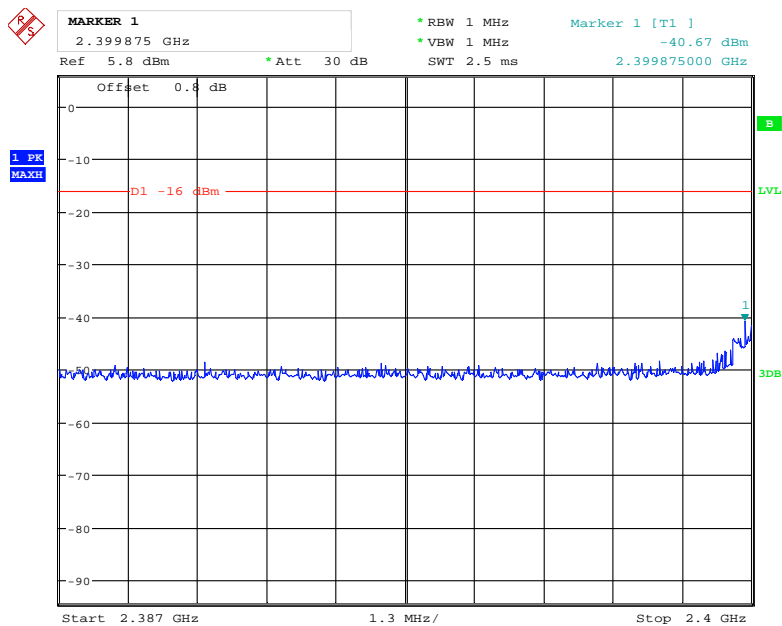
Date: 19.NOV.2018 15:16:33

1000MHz~2387MHz



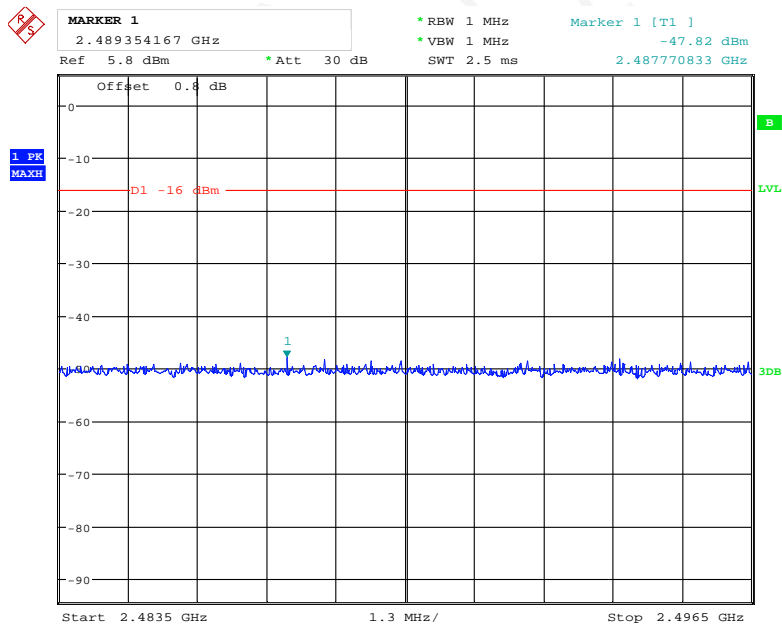
Date: 19.NOV.2018 15:13:19

2387MHz~2400MHz



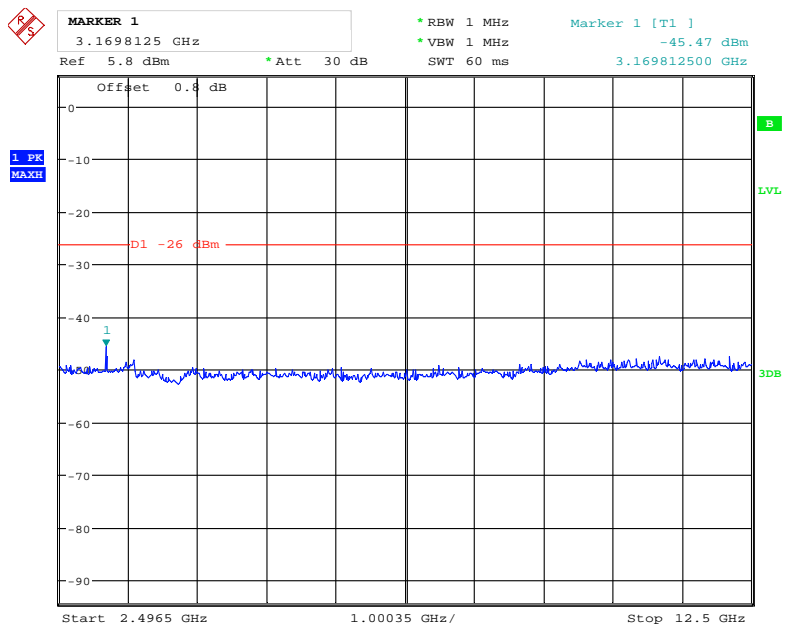
Date: 19.NOV.2018 15:14:26

2483.5MHz~2496.5MHz



Date: 19.NOV.2018 15:14:58

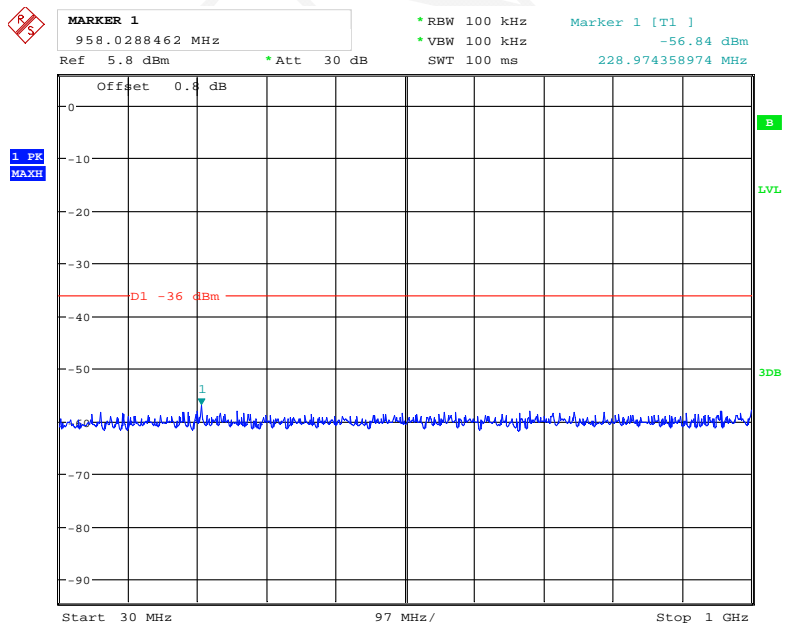
2496.5MHz~12500MHz



Date: 19.NOV.2018 15:13:58

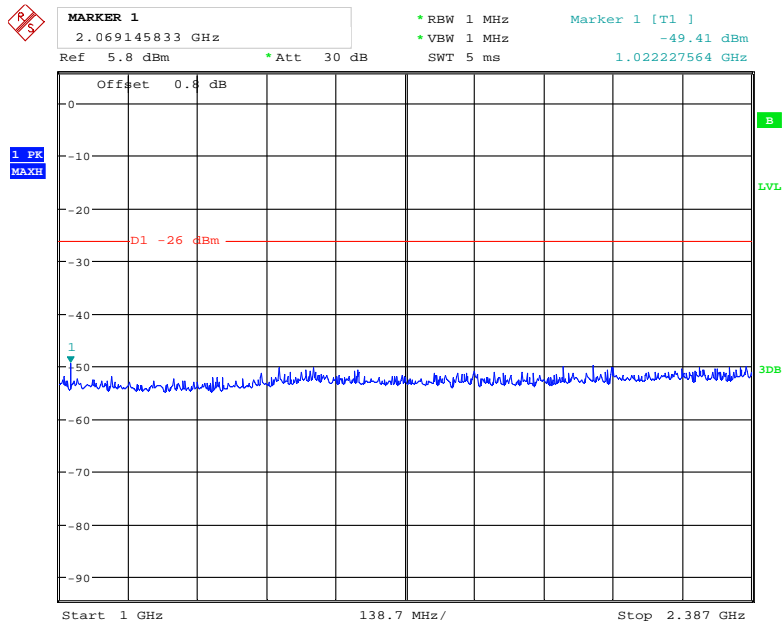
Middle Channel:

30MHz~1000MHz



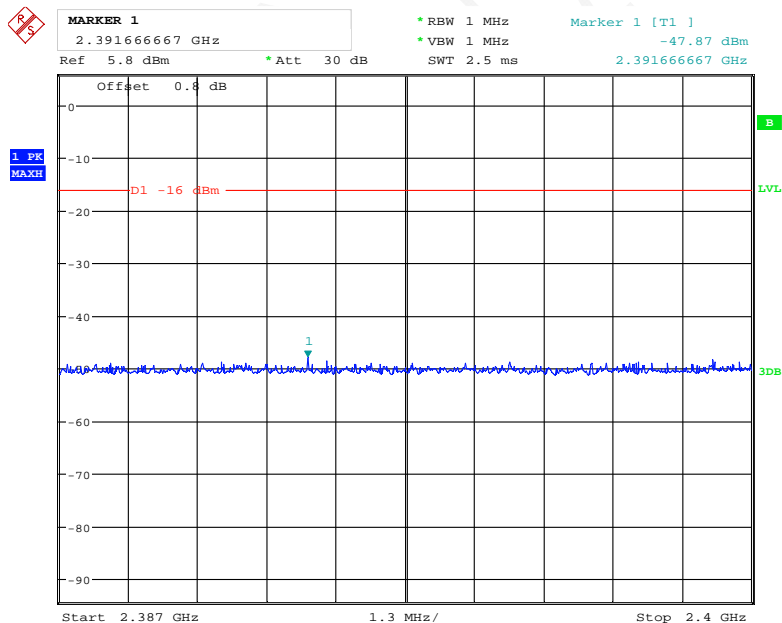
Date: 19.NOV.2018 15:16:47

1000MHz~2387MHz



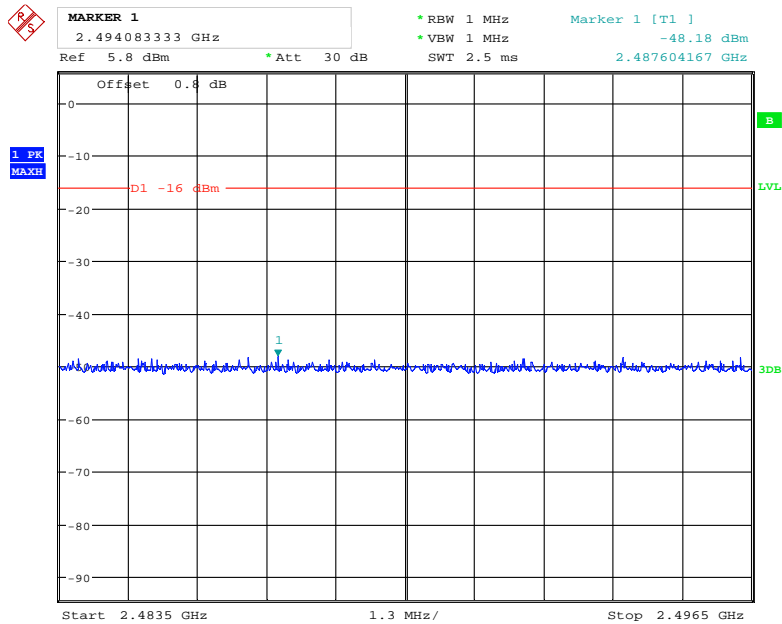
Date: 19.NOV.2018 15:17:33

2387MHz~2400MHz



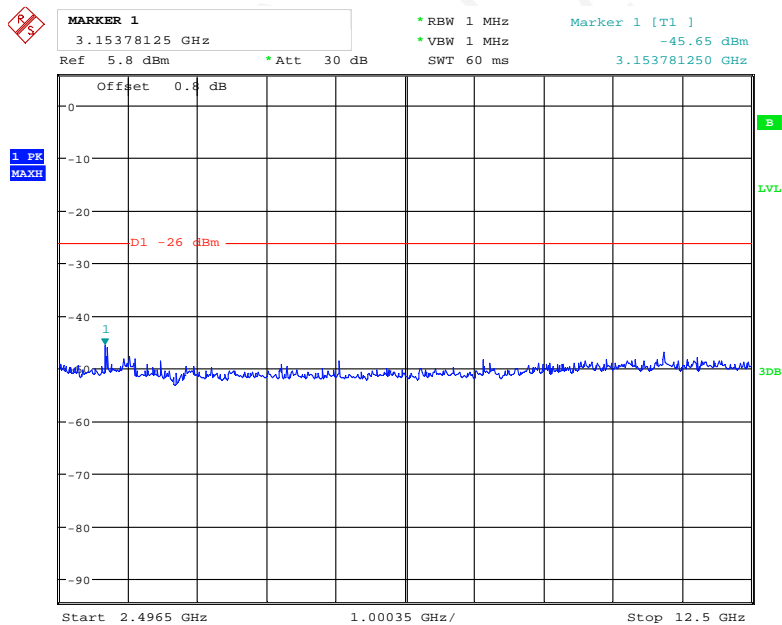
Date: 19.NOV.2018 15:18:21

2483.5MHz~2496.5MHz



Date: 19.NOV.2018 15:18:52

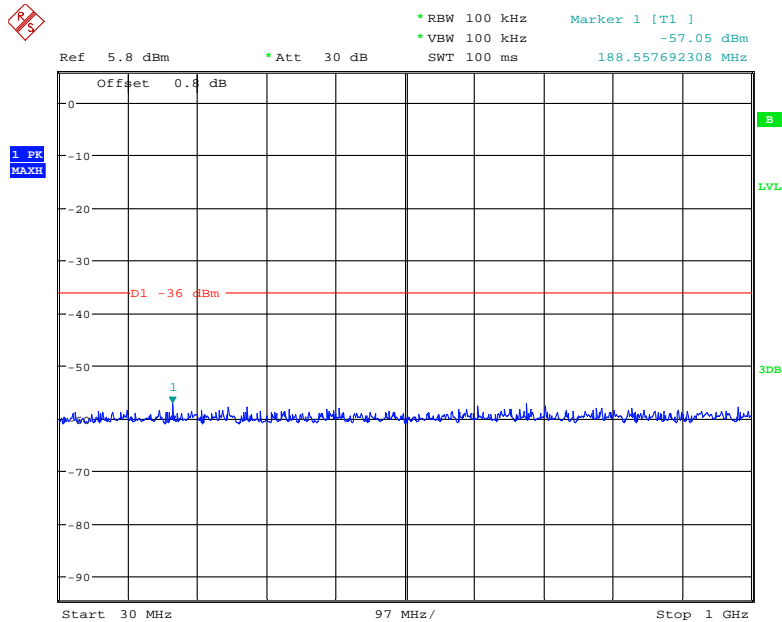
2496.5MHz~12500MHz



Date: 19.NOV.2018 15:19:12

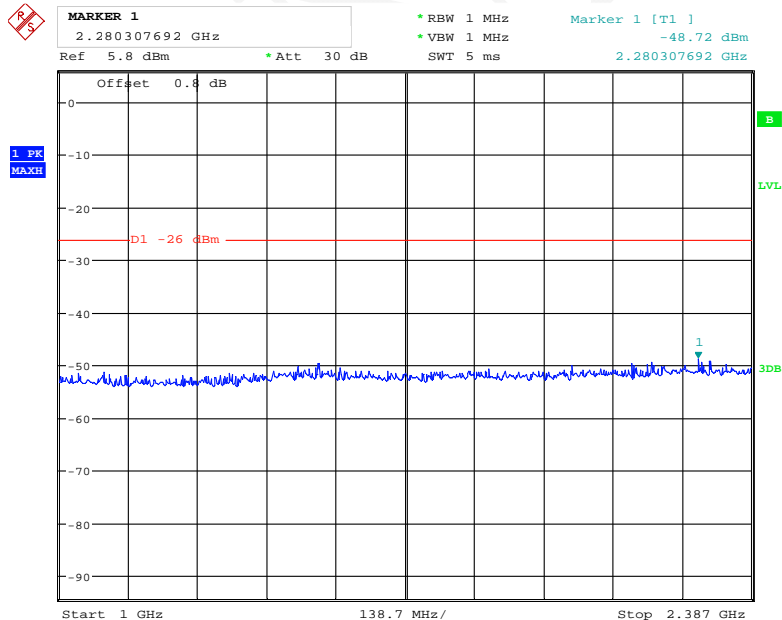
High Channel:

30MHz~1000MHz



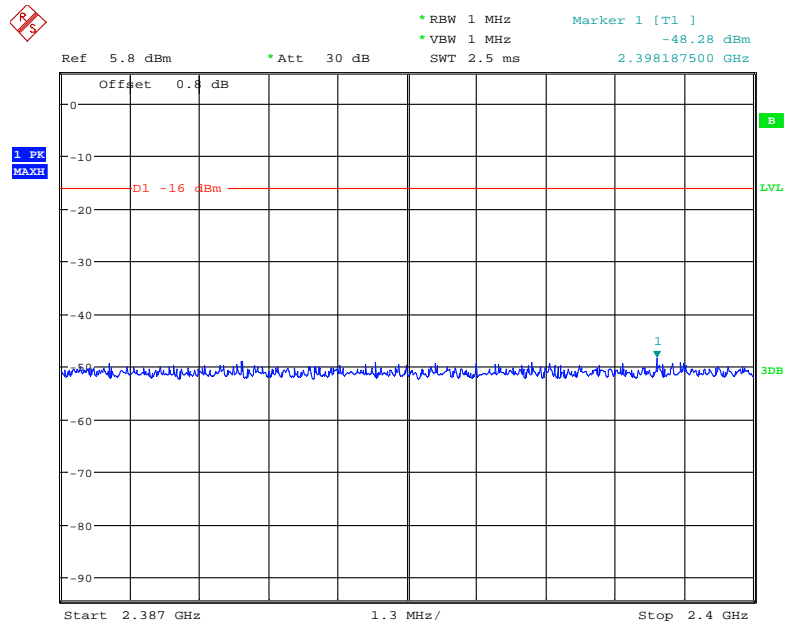
Date: 19.NOV.2018 15:16:56

1000MHz~2387MHz



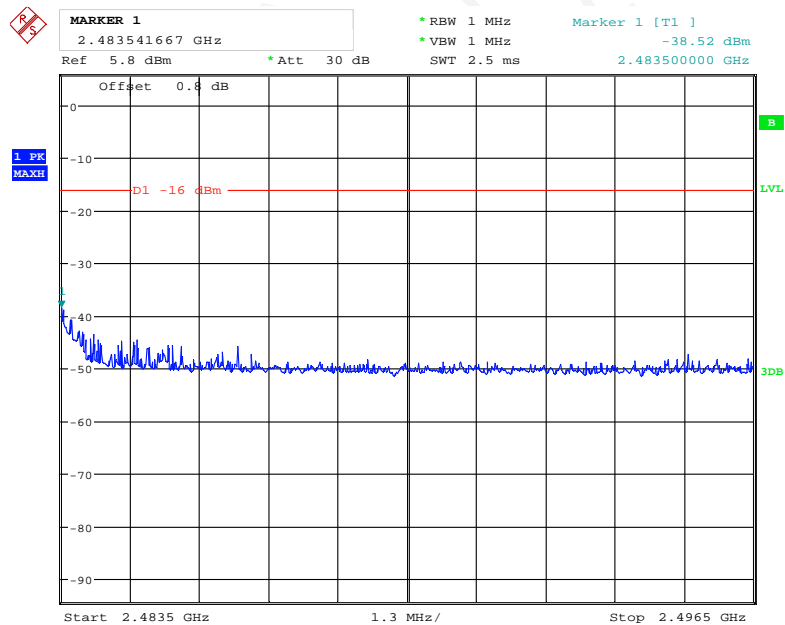
Date: 19.NOV.2018 15:30:23

2387MHz~2400MHz



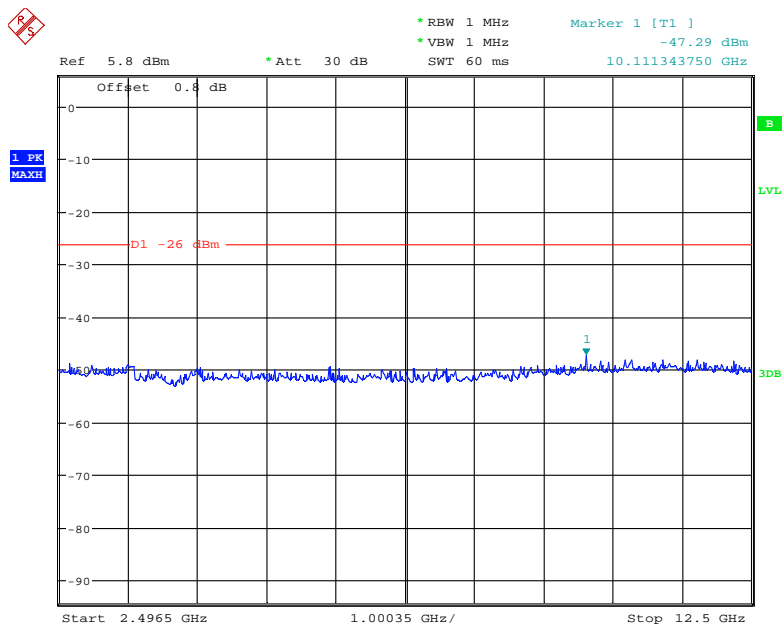
Date: 19.NOV.2018 15:28:47

2483.5MHz~2496.5MHz



Date: 19.NOV.2018 15:20:13

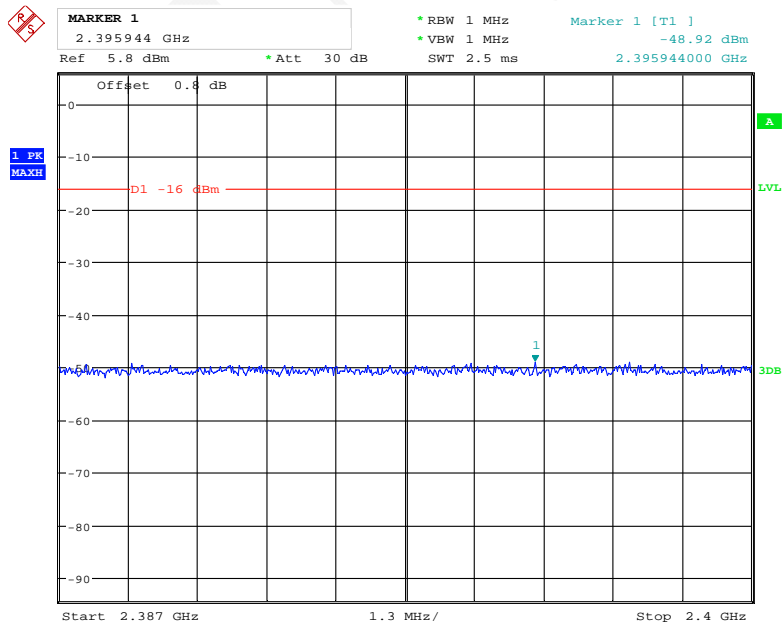
2496.5MHz~12500MHz



Date: 19.NOV.2018 15:19:42

2411.5MHz:

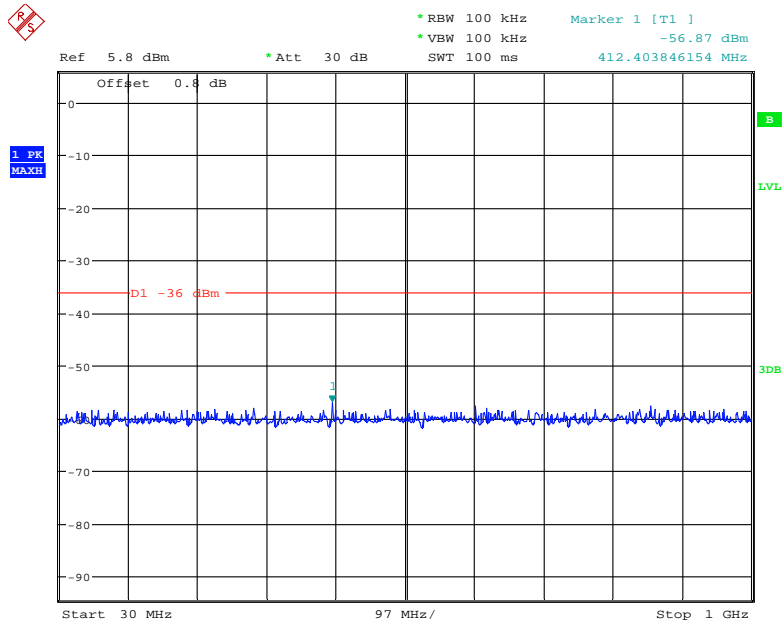
2387MHz~2400MHz



Date: 21.NOV.2018 10:17:34

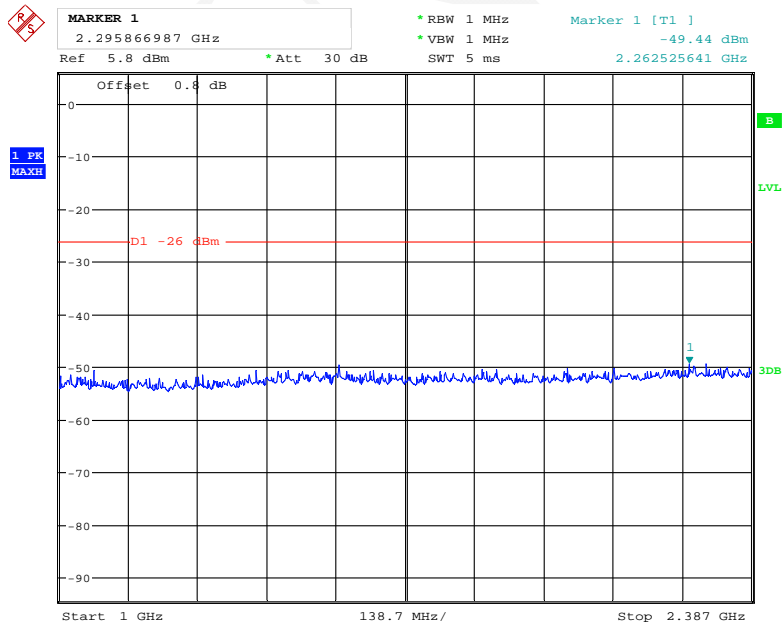
20M
Low Channel:

30MHz~1000MHz



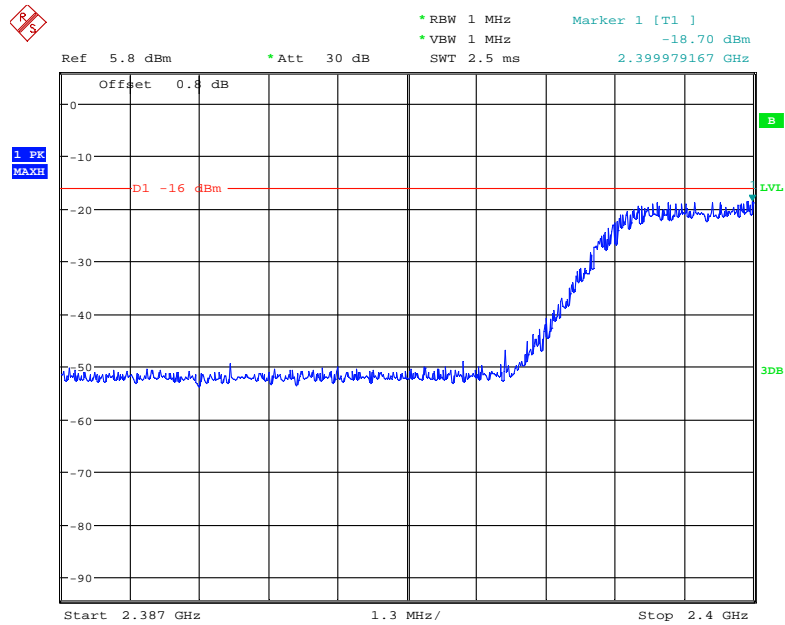
Date: 19.NOV.2018 15:36:02

1000MHz~2387MHz



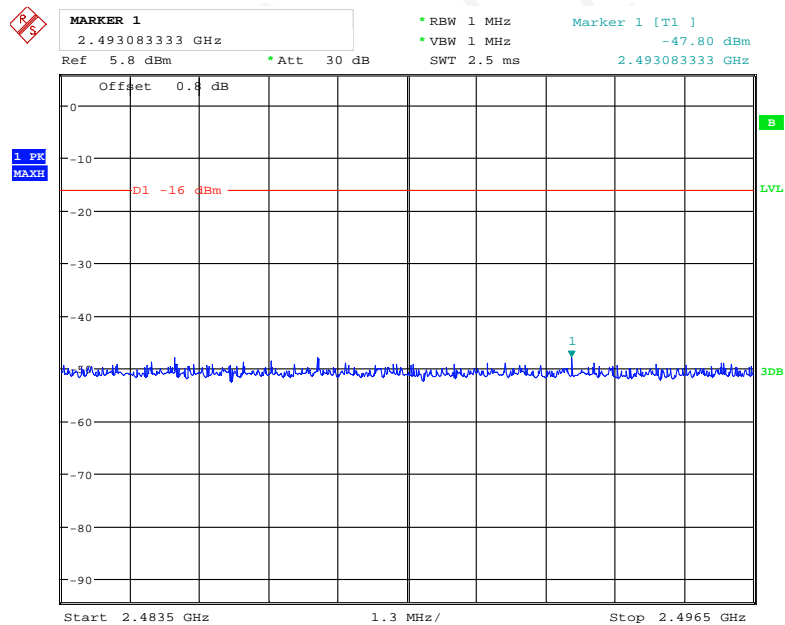
Date: 19.NOV.2018 15:36:49

2387MHz~2400MHz



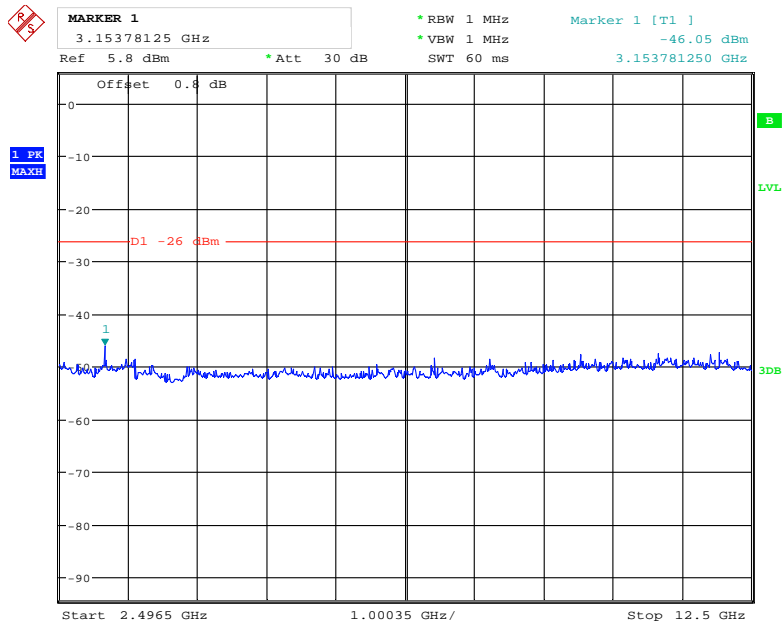
Date: 19.NOV.2018 15:37:33

2483.5MHz~2496.5MHz



Date: 19.NOV.2018 15:37:53

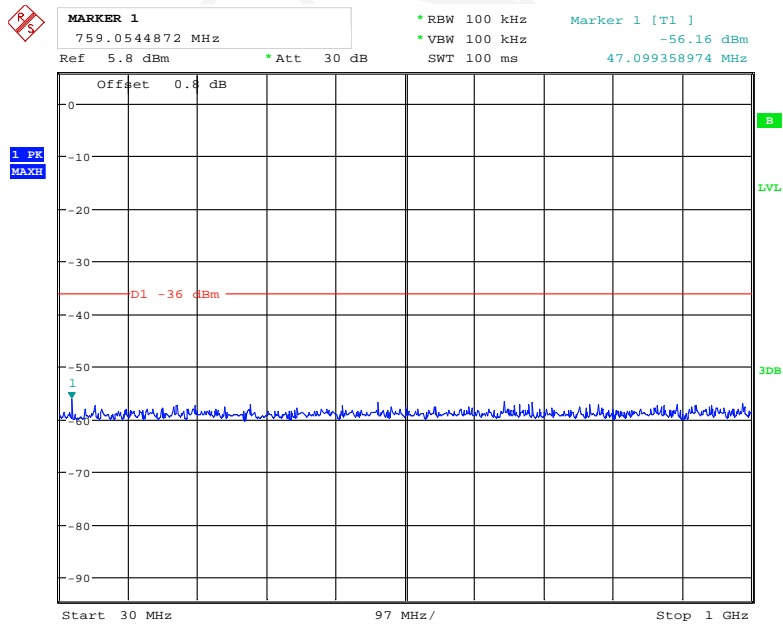
2496.5MHz~12500MHz



Date: 19.NOV.2018 15:38:09

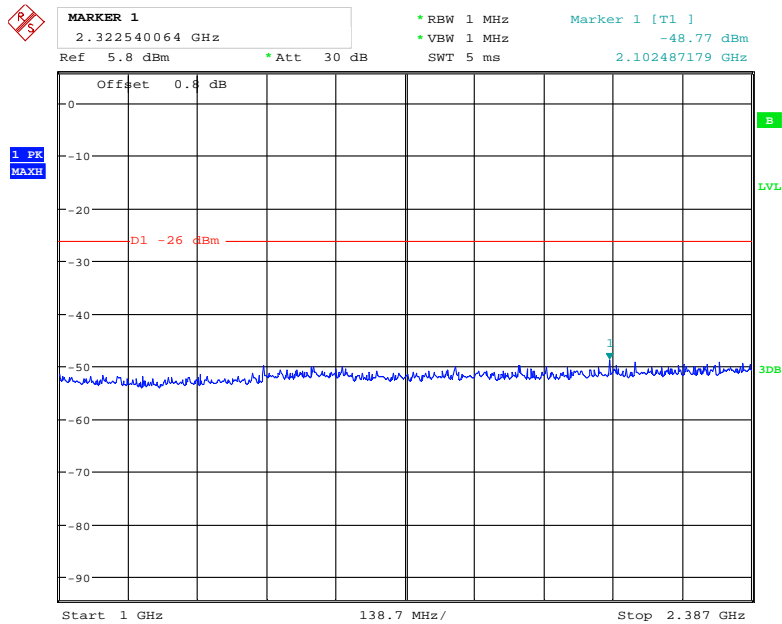
Middle Channel:

30MHz~1000MHz



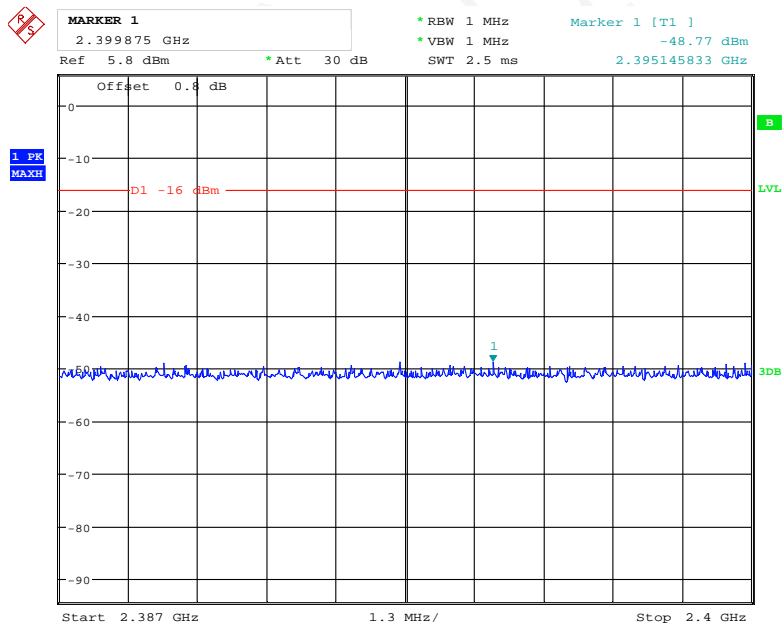
Date: 19.NOV.2018 15:34:55

1000MHz~2387MHz

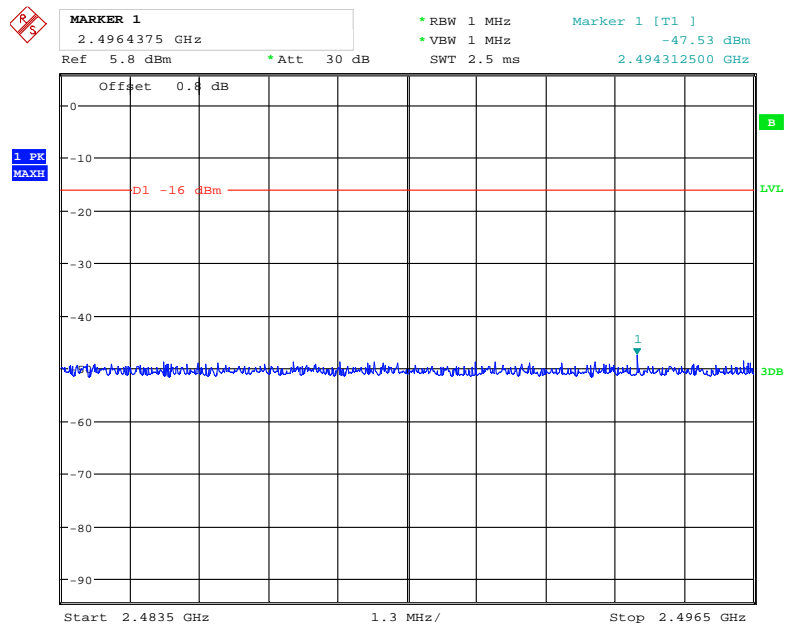


Date: 19.NOV.2018 15:34:02

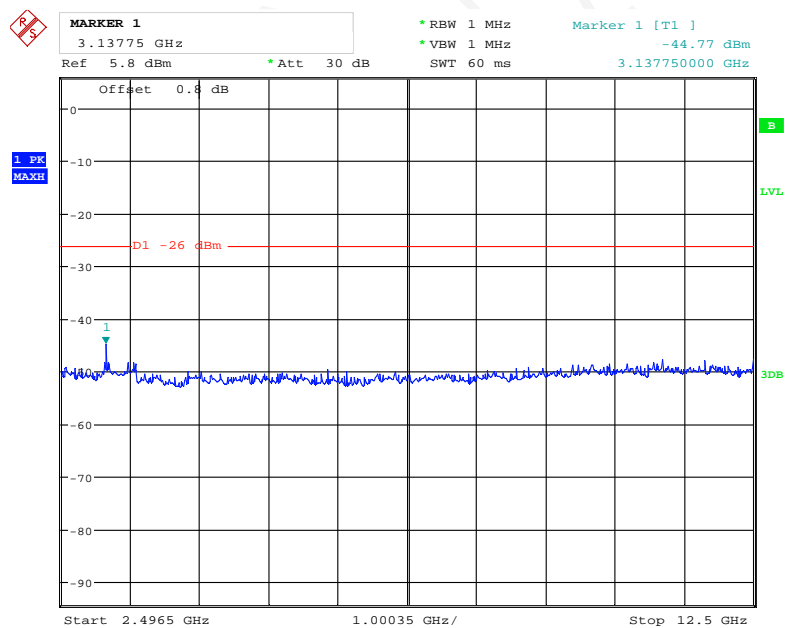
2387MHz~2400MHz



Date: 19.NOV.2018 15:33:31

$2483.5\text{MHz} \sim 2496.5\text{MHz}$ 

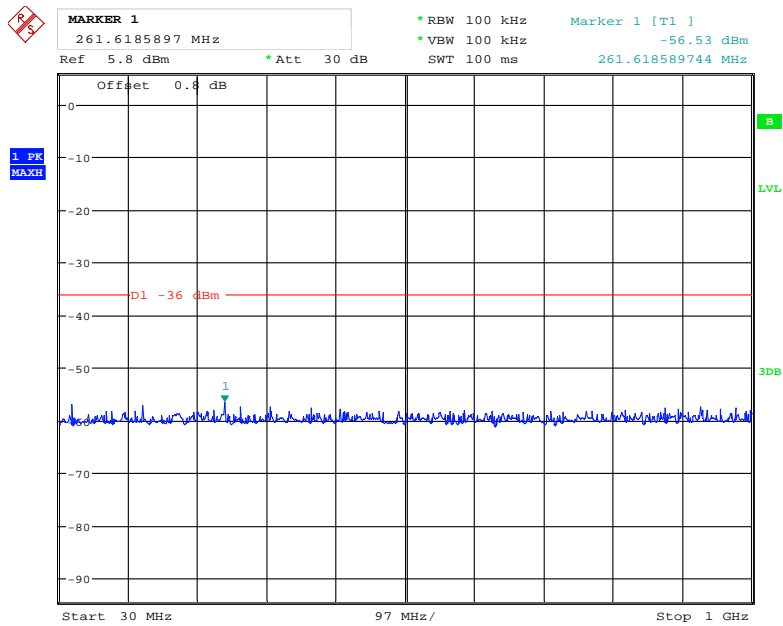
Date: 19.NOV.2018 15:33:17

 $2496.5\text{MHz} \sim 12500\text{MHz}$ 

Date: 19.NOV.2018 15:34:17

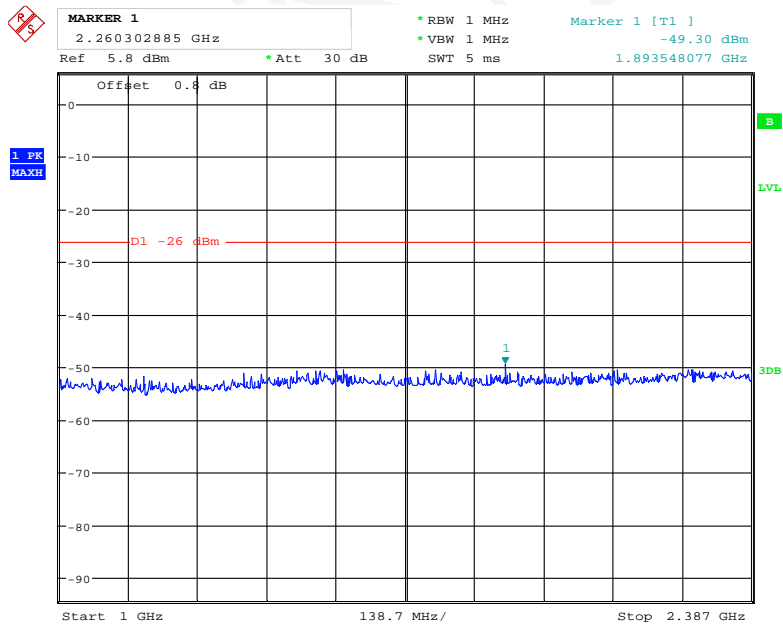
High Channel:

30MHz~1000MHz



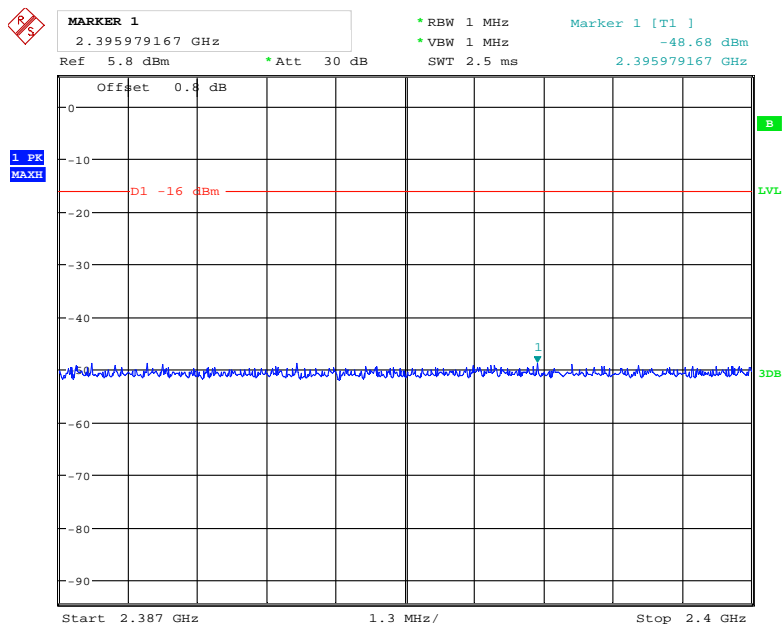
Date: 19.NOV.2018 15:35:52

1000MHz~2387MHz



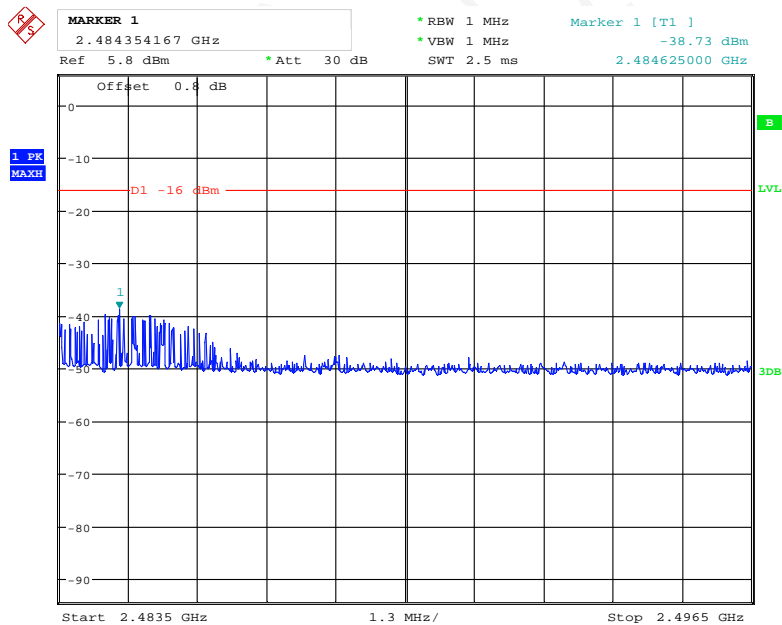
Date: 19.NOV.2018 15:30:40

2387MHz~2400MHz

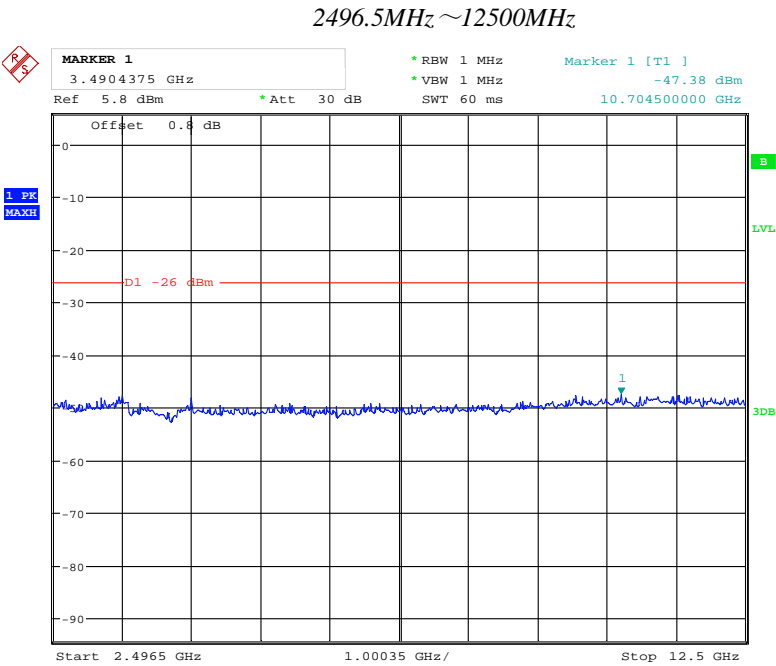


Date: 19.NOV.2018 15:32:24

2483.5MHz~2496.5MHz



Date: 19.NOV.2018 15:32:51



Date: 19.NOV.2018 15:31:47

ANTENNA OUTPUT POWER, ANTENNA POWER TOLERANCE AND TRANSMISSION ANTENNA GAIN

Limit

- ≤ 3 mW /MHz(FHSS from 2400-2483.5 MHz)
- ≤ 10 mW/MHz (OFDM/DSSS for bandwidth ≤ 26 MHz)
- ≤ 5 mW/MHz (OFDM for bandwidth ≤ 38 MHz)
- ≤ 10 mW (others)

The Output Power Tolerance must be within +20%, -80%.

E.i.r.p:

- ≤ 12.14 dBm/MHz(OFDM,DS for 2400-2483.5 MHz)

Note: E.I.R.P will not be applied to the transmission antenna which has a gain of 2.14 dBi or less.

Test Procedure

For FHSS UUT:

Connect the UUT to the power meter

For OFDM, DSSS UUT:

Step 1:

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

- Centre Frequency: The centre frequency of the channel under test.
- RBW: 1 MHz.
- VBW: 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.
- RBW: 1 MHz.
- VBW: 1 MHz.
- Detector: Average (see note).
- Trace Mode: Max Hold.

For other UUT:

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

- Centre Frequency: The centre frequency of the channel under test.
- Span: 5MHz.
- RBW: 3 MHz.
- VBW: 10 MHz.
- Detector: Peak
- Trace Mode: Max Hold.

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

When the trace is complete, capture the trace, for example using the "View" option on the spectrum analyser. For Find the peak value of the trace and place the analyser marker on this peak. This level is recorded as D.

D shall be recorded in the test report.

The maximum PD, which is e.i.r.p. PSD (spectral density power) or power, is calculated from the above measured value D, 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.

$$PD = D + G$$

Test Setup Block diagram



Test Data

Environmental Conditions

Temperature:	26.5~26.9°C
Relative Humidity:	47~49 %
ATM Pressure:	100.7~100.8 kPa

The testing was performed by Elena Lei on 2018-11-19~2018-11-21.

Test Result: Compliance

Test Mode: Transmitting

10M:

Frequency		2411.5MHz			2441.5MHz			2476.5MHz			Limit
Voltage		LV	NV	HV	LV	NV	HV	LV	NV	HV	
Reading	dBm/MHz	-11.33	-11.25	-11.20	-8.72	-8.65	-8.58	-12.85	-12.93	-12.97	10dBm/MHz
Duty Cycle Factor	dB	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72	/
Antenna Output Power	dBm/MHz	-10.61	-10.53	-10.48	-8.00	-7.93	-7.86	-12.13	-12.21	-12.25	10dBm/MHz
Antenna Output Power	mW/MHz	0.09	0.09	0.09	0.16	0.16	0.16	0.06	0.06	0.06	10mW/MHz
Antenna Output Power Error	%	-40.00	-40.00	-40.00	6.67	6.67	6.67	-60.00	-60.00	-60.00	+20% ~ -80%
EIRP	dBm/MHz	-6.92	-6.84	-6.79	-4.31	-4.24	-4.17	-8.44	-8.52	-8.56	12.14dBm/MHz

Frequency		2406.5MHz			Limit
Voltage		LV	NV	HV	
Reading	dBm/MHz	-18.26	-18.14	-18.19	10dBm/MHz
Duty Cycle Factor	dB	0.72	0.72	0.72	/
Antenna Output Power	dBm/MHz	-17.54	-17.42	-17.47	10dBm/MHz
Antenna Output Power	mW/MHz	0.02	0.02	0.02	10mW/MHz
Antenna Output Power Error	%	-60.00	-60.00	-60.00	+20% ~ -80%
EIRP	dBm/MHz	-13.85	-13.73	-13.78	12.14dBm/MHz

Note 1: The antenna gain is 3.69dBi for 10M.

Note 2: the nominal Output power is 0.15mW/MHz for 2411.5-2476.5MHz, 0.05mW/MHz for 2406.5-2410.5MHz.

Note 3: Transmission Antenna Gain and Transmission Radiation Angle Width are not required since EIRP less than 12.14dBm/MHz.

Note 4: Antenna output power (dBm/MHz) = Reading(dBm/MHz)+Duty cycle factor

20M:

Frequency		2411.5MHz			2441.5MHz			2471.5MHz			Limit
Voltage		LV	NV	HV	LV	NV	HV	LV	NV	HV	
Reading	dBm/MHz	-15.86	-15.91	-15.99	-10.65	-10.56	-10.69	-15.73	-15.86	-15.92	10dBm/MHz
Duty Cycle Factor	dB	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	/
Antenna Output Power	dBm/MHz	-15.10	-15.15	-15.23	-9.89	-9.80	-9.93	-14.97	-15.10	-15.16	10dBm/MHz
Antenna Output Power	mW/MHz	0.03	0.03	0.03	0.10	0.10	0.10	0.03	0.03	0.03	10mW/MHz
Antenna Output Power Error	%	-75.00	-75.00	-75.00	-16.67	-16.67	-16.67	-75.00	-75.00	-75.00	+20% ~ -80%
EIRP	dBm/MHz	-11.41	-11.46	-11.54	-6.20	-6.11	-6.24	-11.28	-11.41	-11.47	12.14dBm/MHz

Note 1: the antenna gain is 3.69dBi for 20M.

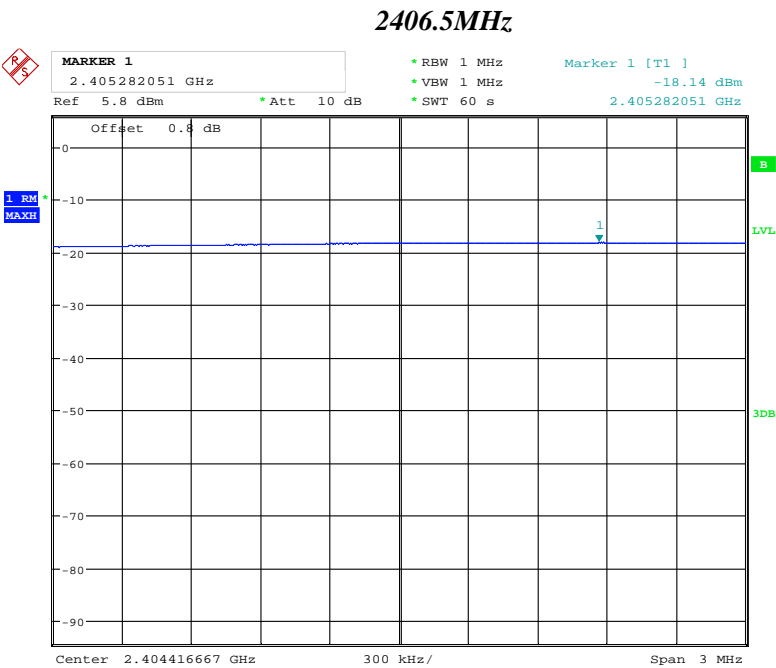
Note 2: the nominal Output power is 0.12mW/MHz for 2411.5-2471.5MHz.

Note 3: Transmission Antenna Gain and Transmission Radiation Angle Width are not required since EIRP less than 12.14dBm/MHz.

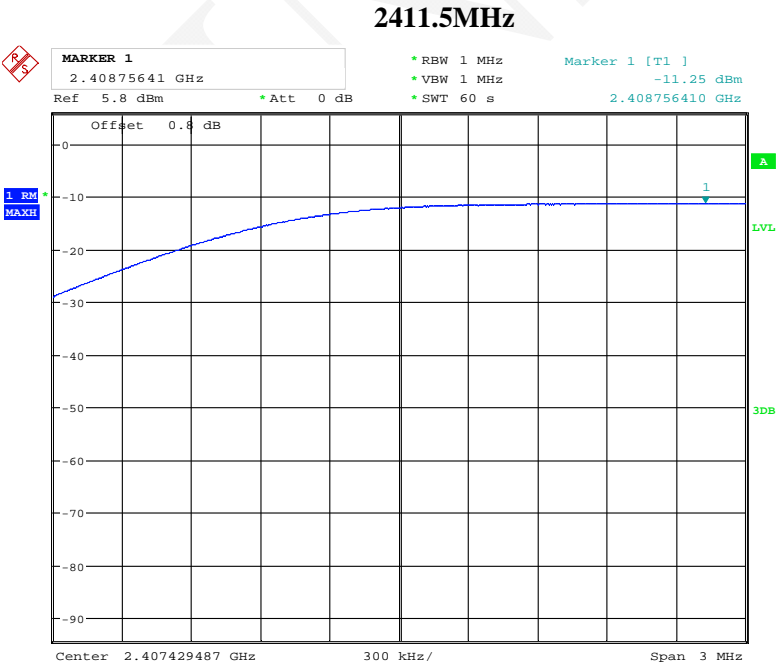
Note 4: Antenna output power (dBm/MHz) = Reading(dBm/MHz)+Duty cycle factor

Please refer to the plots below for normal voltage.

10M

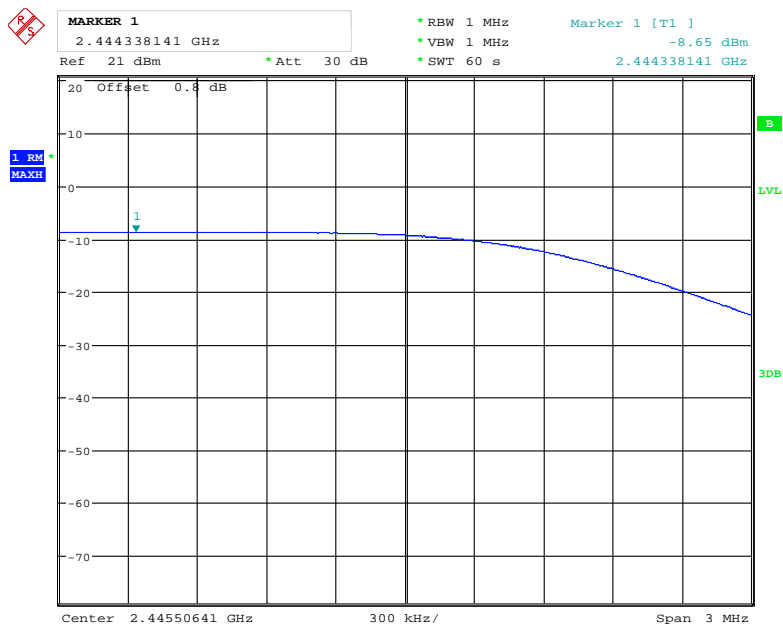


Date: 19.NOV.2018 16:21:35



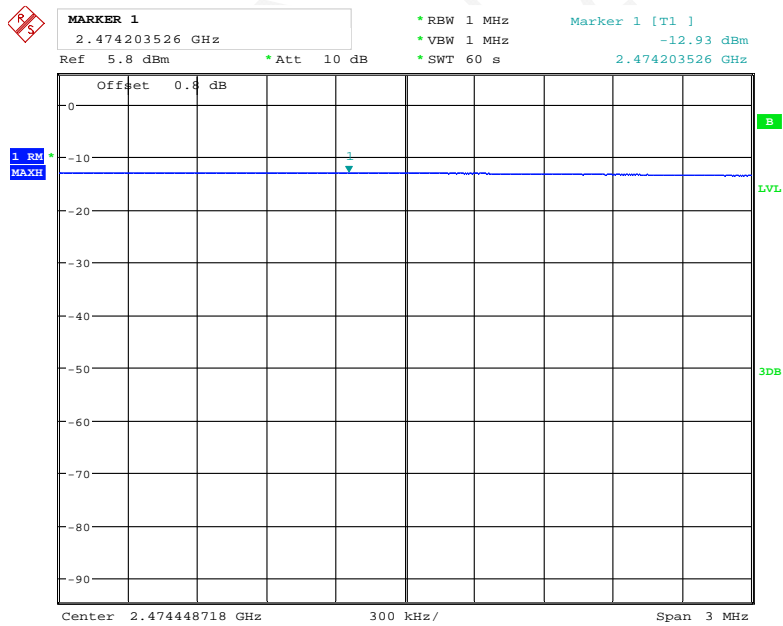
Date: 21.NOV.2018 09:49:10

2441.5MHz



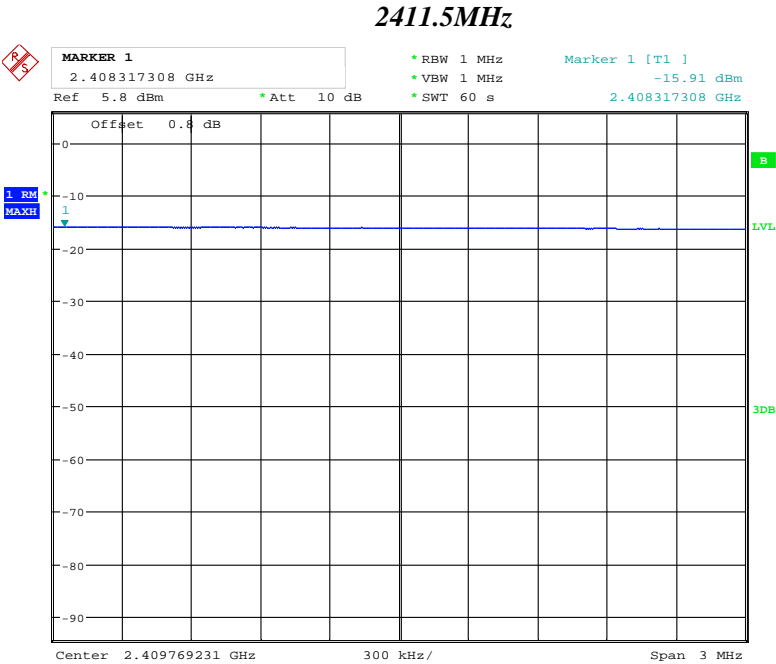
Date: 19.NOV.2018 16:30:59

2476.5MHz

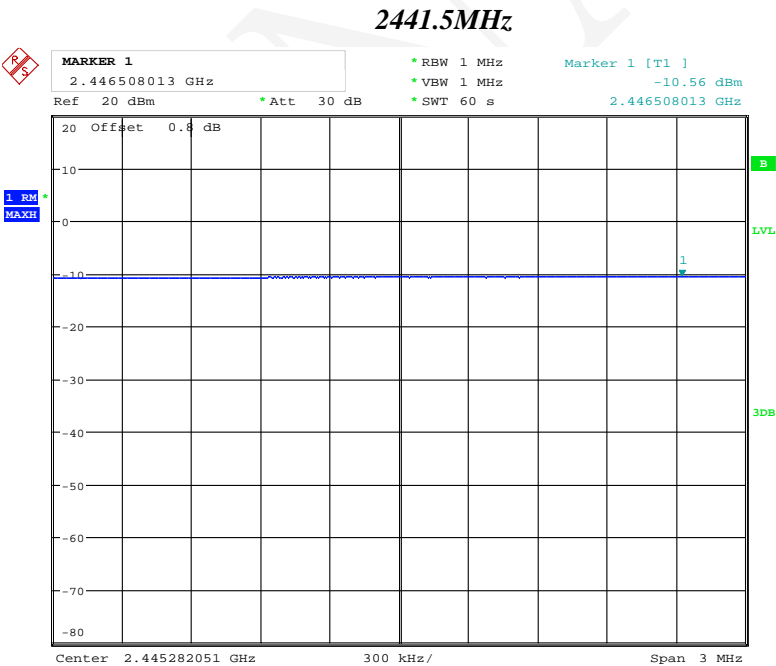


Date: 19.NOV.2018 16:23:11

20M:

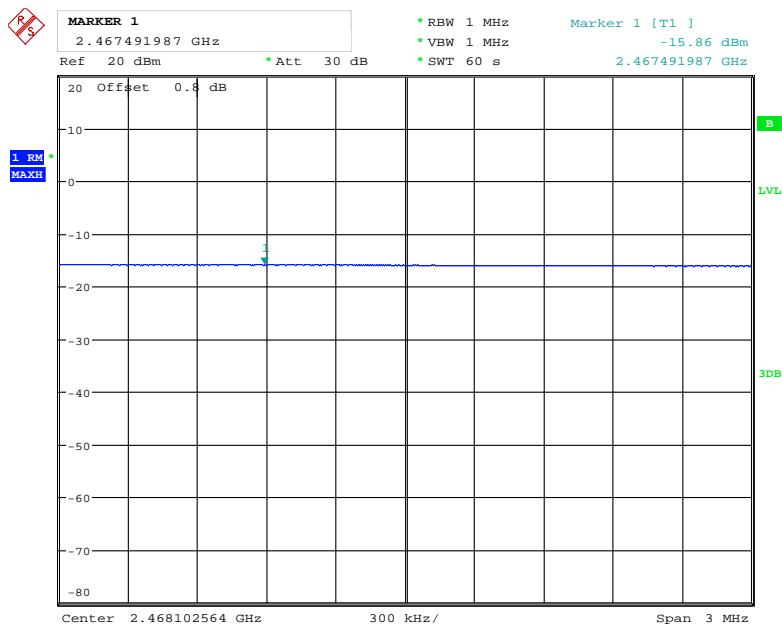


Date: 19.NOV.2018 16:20:01



Date: 19.NOV.2018 16:16:45

2471.5MHz



Date: 19.NOV.2018 16:18:19

RECEIVER SPURIOUS EMISSION AND UNWANTED EMISSION INTENSITY

Limit

- $\leq 4 \text{ nW}$ ($30 \text{ MHz} \leq f \leq 1000 \text{ MHz}$)
- $\leq 20 \text{ nW}$ ($1 \text{ GHz} \leq f \leq 12.5 \text{ GHz}$)

Test Procedure

❖ Conditions of Application Equipment (EUT)

- The modulation state shall be “continuous receiving mode”.

❖ Spectrum Analyzer Conditions

- Start Frequency: Start Frequency of frequency range to measure (30MHz or 1GHz)
- Stop Frequency: Stop Frequency of frequency range to measure (1GHz or 12.5GHz)
- Span: AUTO (Measurement Range)
- RBW: 100 kHz, VBW: 100 kHz for Frequency $< 1 \text{ GHz}$
- RBW: 1MHz, VBW: 1MHz for Frequency $> 1 \text{ GHz}$
- Sweep time: AUTO or more
- Sweep mode: Auto Sweep
- Detection: Positive Peak
- Reference Level: Enough level for maximum dynamic range

Measurement Result**Environmental Conditions**

Temperature:	26.5~26.9°C
Relative Humidity:	47~49 %
ATM Pressure:	100.7~100.8 kPa

The testing was performed by Elena Lei on 2018-11-19~2018-11-21.

Test Result: Compliant, please see the below tables and plots

Test Mode: Receiving

10M mode:

	Frequency band	Low Channel			Middle Channel			High Channel			Limit
		LV	NV	HV	LV	NV	HV	LV	NV	HV	
Raw data Chain 0	Band VI dBm	-70.97	-71.12	-71.41	-70.77	-70.53	-70.26	-70.13	-69.99	-69.73	-54dBm
	Band VII dBm	-66.46	-66.10	-66.27	-57.10	-57.04	-57.31	-65.91	-65.70	-65.56	-47dBm
Raw data Chain 1	Band VI dBm	-70.92	-69.90	-70.44	-70.08	-70.29	-70.75	-70.18	-69.85	-69.77	-54dBm
	Band VII dBm	-70.23	-70.68	-70.85	-70.81	-70.08	-70.31	-70.99	-70.14	-70.56	-47dBm
Unwanted Emission Intensity Chain 0	Band VI nW	0.07998	0.07727	0.07228	0.08375	0.08851	0.09419	0.09705	0.10023	0.10641	4nW
	Band VII nW	0.22594	0.24547	0.23605	1.94984	1.97697	1.85780	0.25645	0.26915	0.27797	20nW
Unwanted Emission Intensity Chain 1	Band VI nW	0.08091	0.10233	0.09036	0.09817	0.09354	0.08414	0.09594	0.10351	0.10544	4nW
	Band VII nW	0.09484	0.08551	0.08222	0.08299	0.09817	0.09311	0.07962	0.09683	0.08790	20nW
Unwanted Emission Intensity Chain 0+1	Band VI nW	0.16089	0.1796	0.16264	0.18192	0.18205	0.17833	0.19299	0.20374	0.21185	4nW
	Band VII nW	0.32078	0.33098	0.31827	2.03283	2.07514	1.95091	0.33607	0.36598	0.36587	20nW

Note: Band VI: 30MHz~1000MHz Band VII: 1000MHz~12500MHz

20M mode:

	Frequency band	Low Channel			Middle Channel			High Channel			Limit
		LV	NV	HV	LV	NV	HV	LV	NV	HV	
Raw data Chain 0	Band VI dBm	-70.59	-70.79	-71.05	-70.46	-70.56	-70.70	-70.21	-70.06	-69.92	-54dBm
	Band VII dBm	-65.76	-65.60	-65.62	-59.43	-59.16	-58.86	-65.98	-65.86	-66.13	-47dBm
Raw data Chain 1	Band VI dBm	-70.33	-70.53	-71.02	-70.47	-69.89	-70.74	-70.24	-69.89	-69.93	-54dBm
	Band VII dBm	-70.26	-70.78	-70.42	-71.44	-71.00	-71.77	-70.91	-70.00	-70.65	-47dBm
Unwanted Emission Intensity Chain 0	Band VI nW	0.08730	0.08337	0.07852	0.08995	0.08790	0.08511	0.09528	0.09863	0.10186	4nW
	Band VII nW	0.26546	0.27542	0.27416	1.14025	1.21339	1.30017	0.25235	0.25942	0.24378	20nW
Unwanted Emission Intensity Chain 1	Band VI nW	0.09268	0.08851	0.07907	0.08974	0.10257	0.08433	0.09462	0.10257	0.10162	4nW
	Band VII nW	0.09419	0.08356	0.09078	0.07178	0.07943	0.06653	0.08110	0.10000	0.08610	20nW
Unwanted Emission Intensity Chain 0+1	Band VI nW	0.17998	0.17188	0.15759	0.17969	0.19047	0.16944	0.1899	0.2012	0.20348	4nW
	Band VII nW	0.35965	0.35898	0.36494	1.21203	1.29282	1.3667	0.33345	0.35942	0.32988	20nW

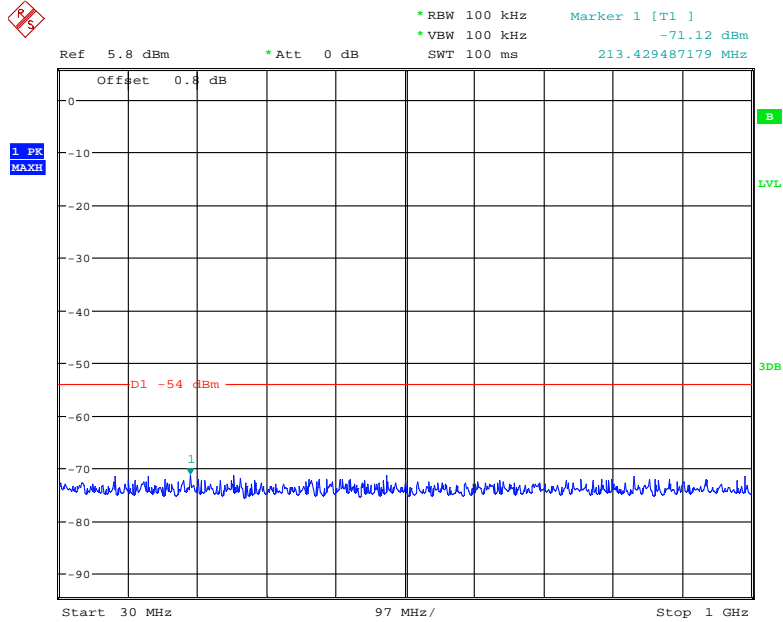
Note: Band VI: 30MHz~1000MHz Band VII: 1000MHz~12500MHz

Please refer to the plots below for normal voltage.

Chain 0: 10M mode,

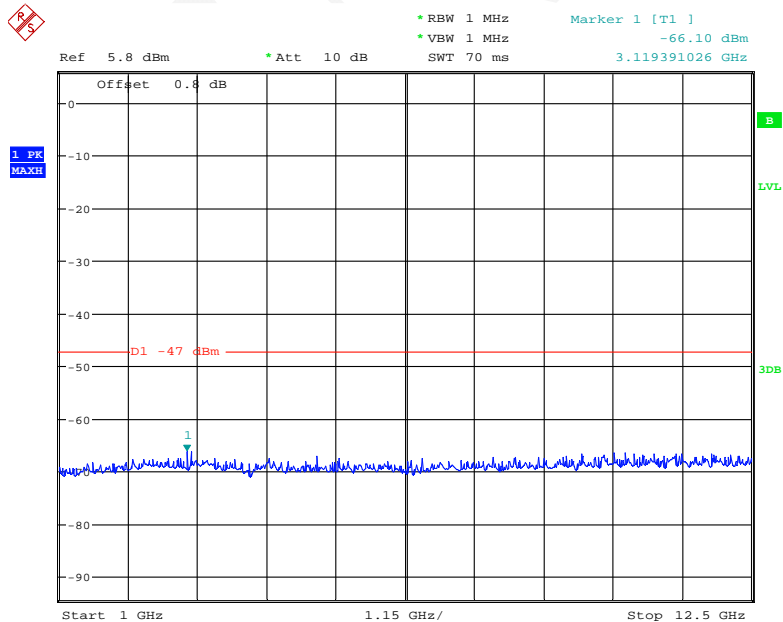
Test Frequency: 2406.5MHz

30MHz~1000MHz



Date: 19.NOV.2018 17:06:08

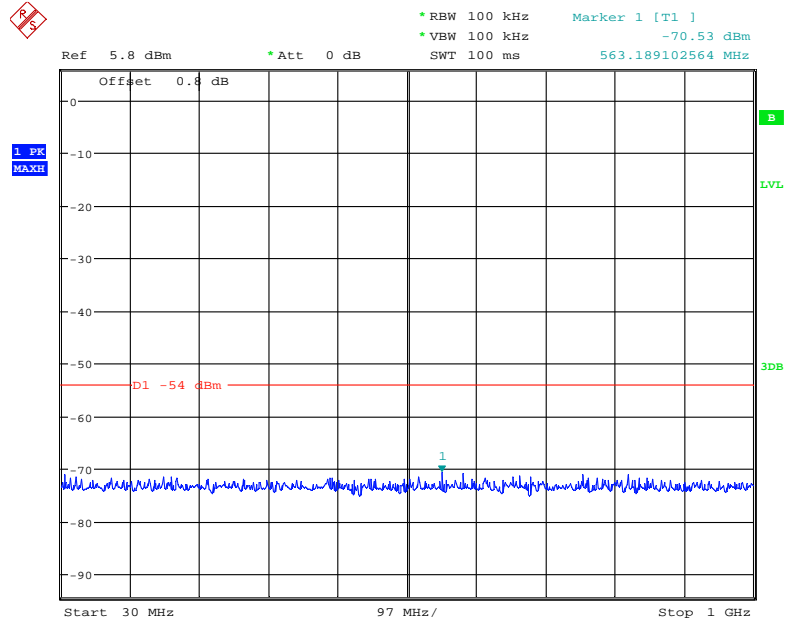
1000MHz~12500MHz



Date: 19.NOV.2018 17:10:31

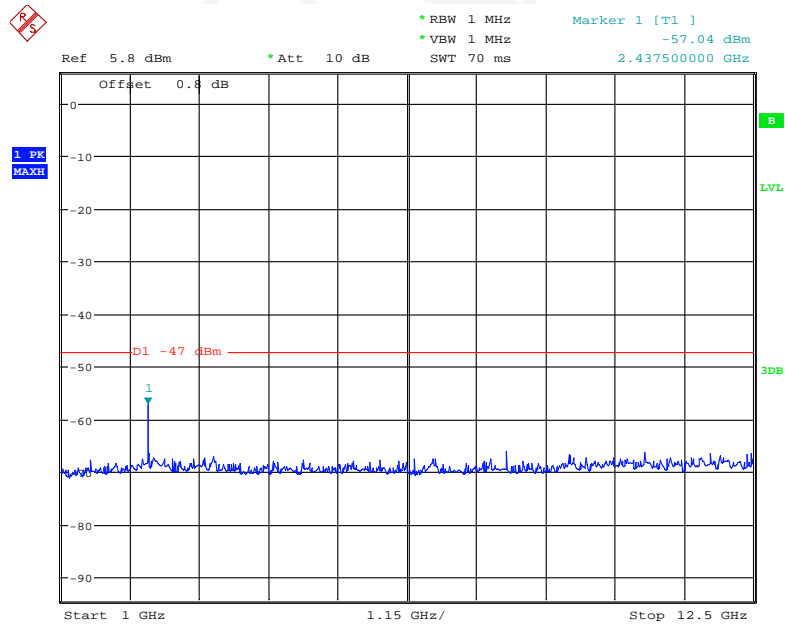
Test Frequency: 2441.5MHz:

30MHz~1000MHz



Date: 19.NOV.2018 17:06:18

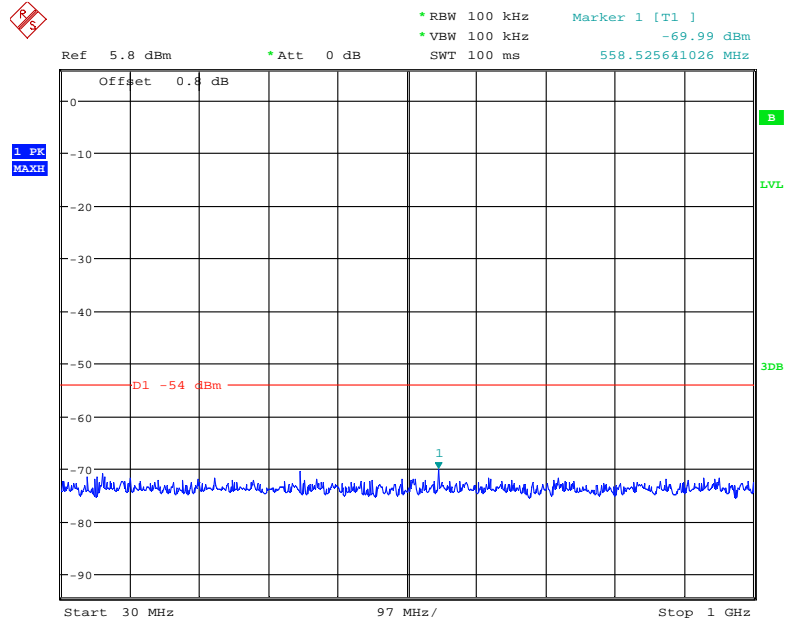
1000MHz~12500MHz



Date: 19.NOV.2018 17:10:43

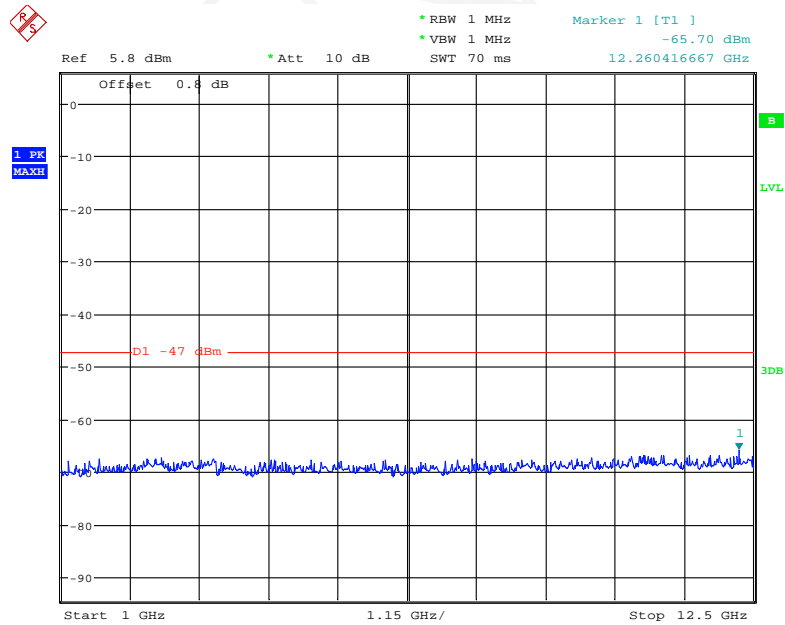
Test Frequency: 2476.5MHz:

30MHz~1000MHz



Date: 19.NOV.2018 17:06:29

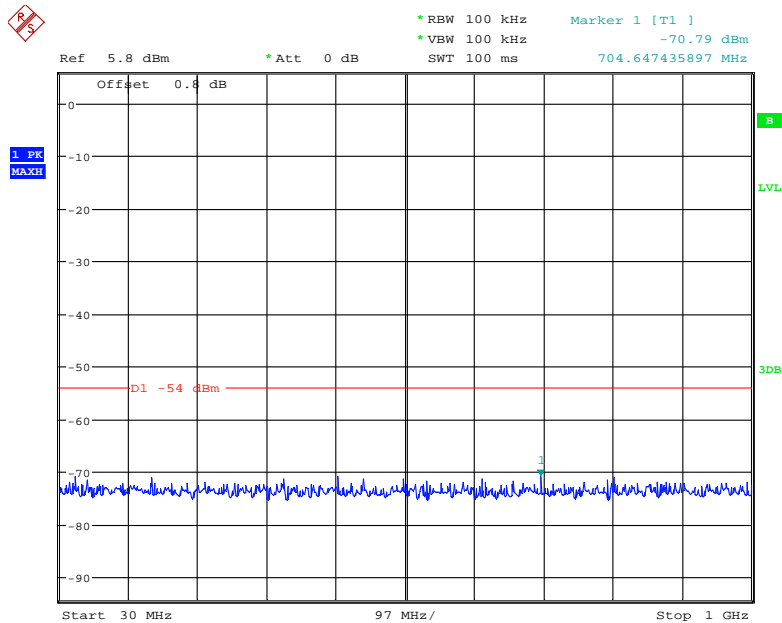
1000MHz~12500MHz



Date: 19.NOV.2018 17:10:55

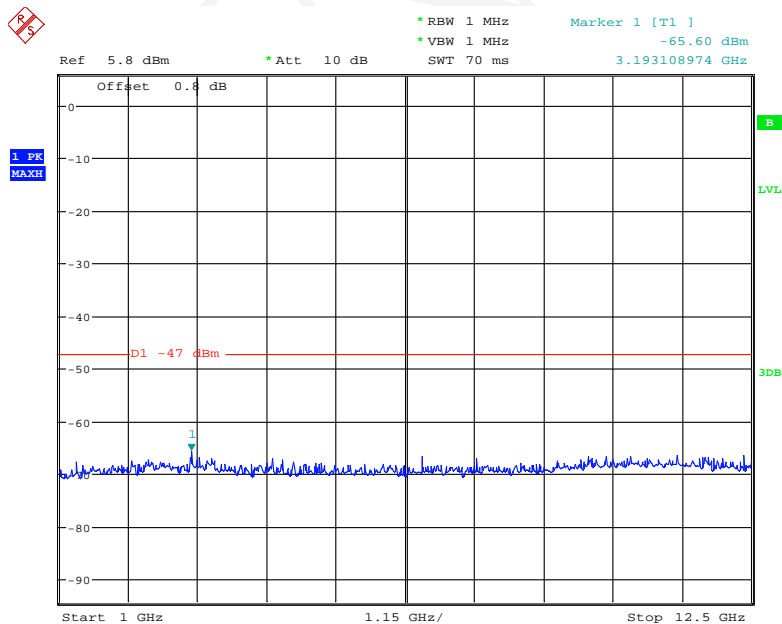
20M mode,
Test Frequency: 2411.5MHz

30MHz~1000MHz



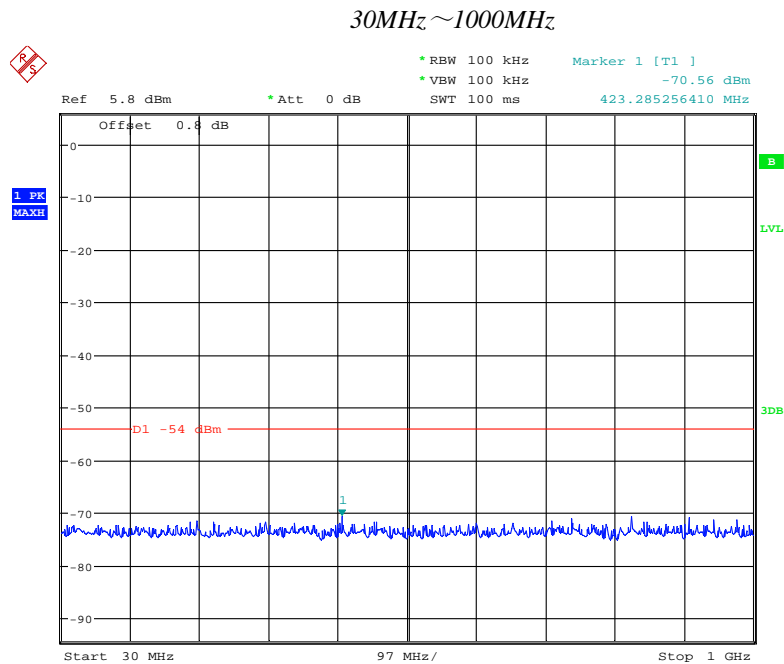
Date: 19.NOV.2018 17:06:46

1000MHz~12500MHz

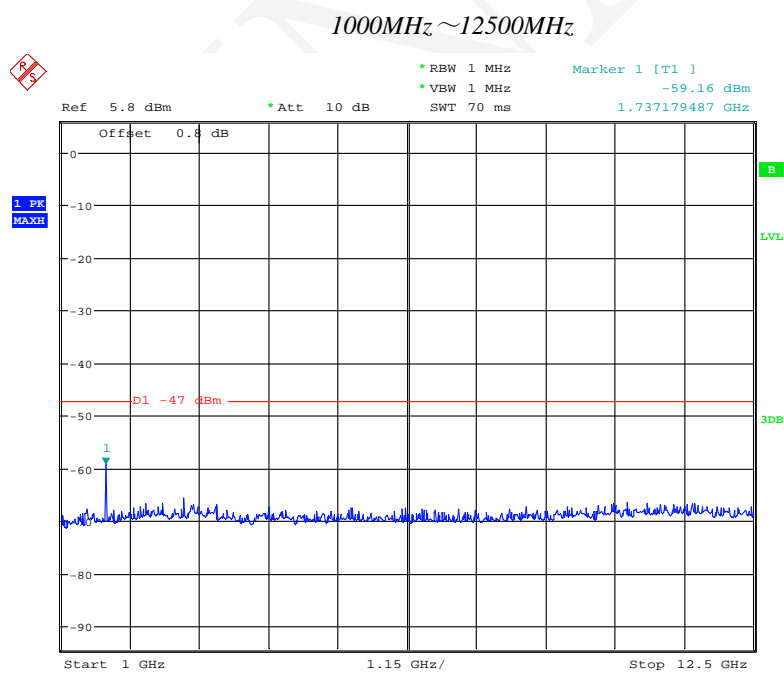


Date: 19.NOV.2018 17:11:07

Test Frequency: 2441.5MHz:

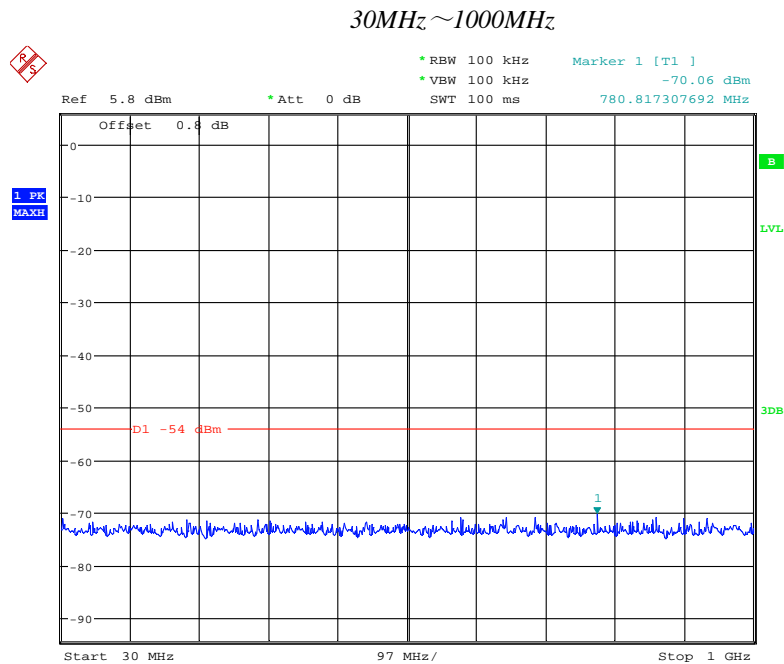


Date: 19.NOV.2018 17:06:57

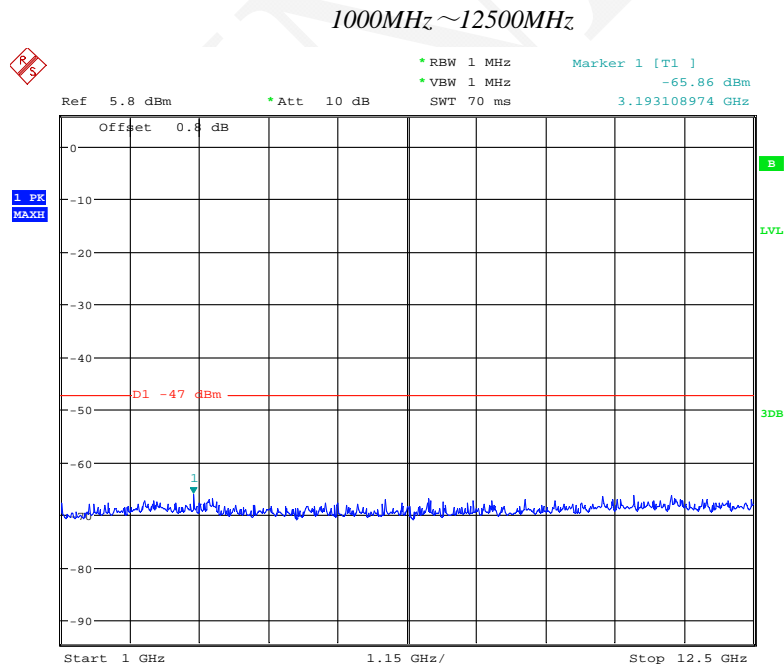


Date: 19.NOV.2018 17:11:17

Test Frequency: 2471.5MHz:



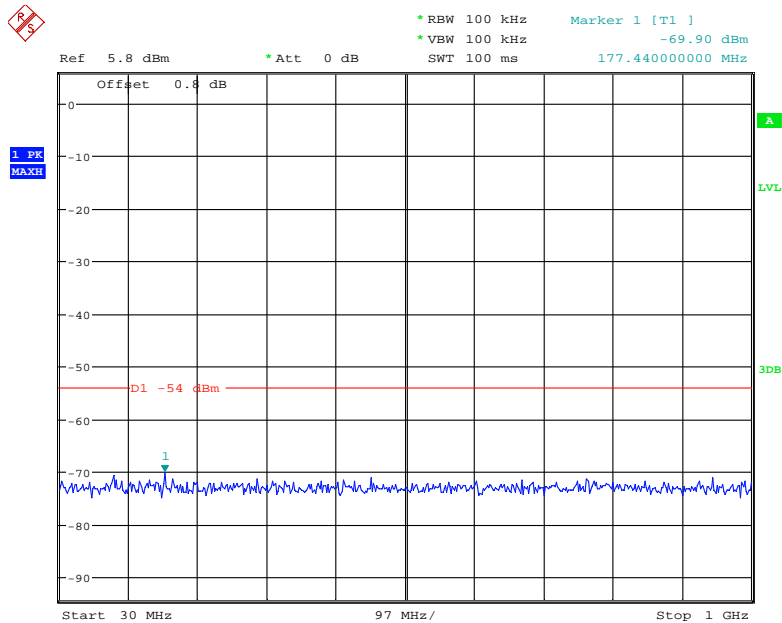
Date: 19.NOV.2018 17:07:07



Date: 19.NOV.2018 17:11:38

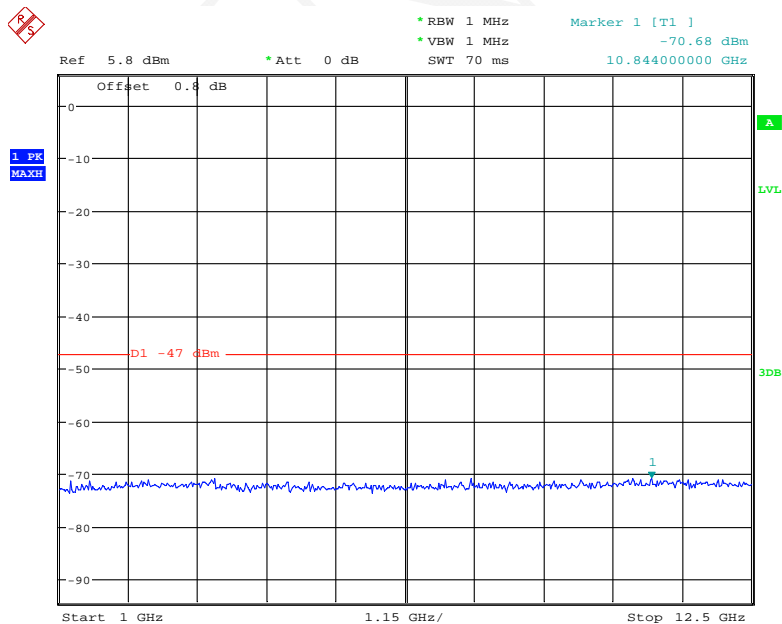
Chain 1: 10M mode,
Test Frequency: 2406.5MHz

30MHz~1000MHz



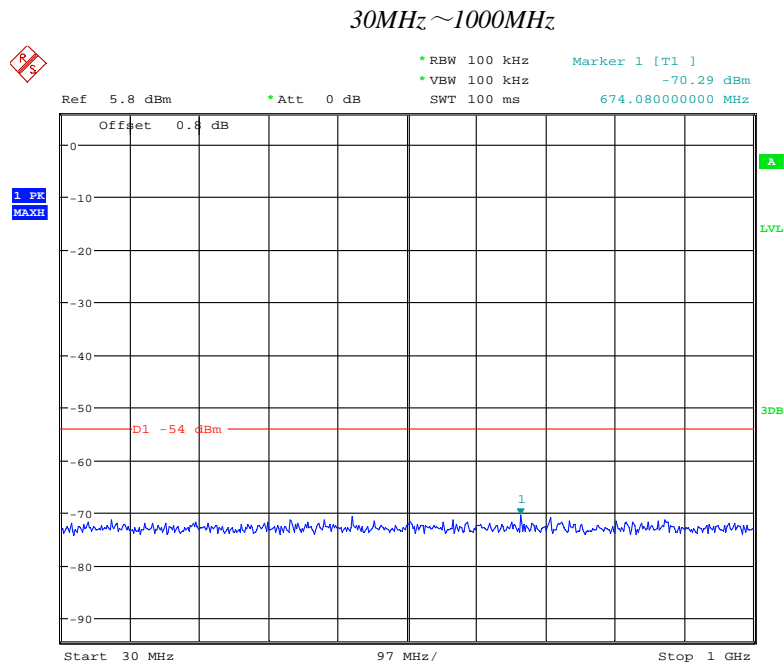
Date: 21.NOV.2018 10:44:16

1000MHz~12500MHz

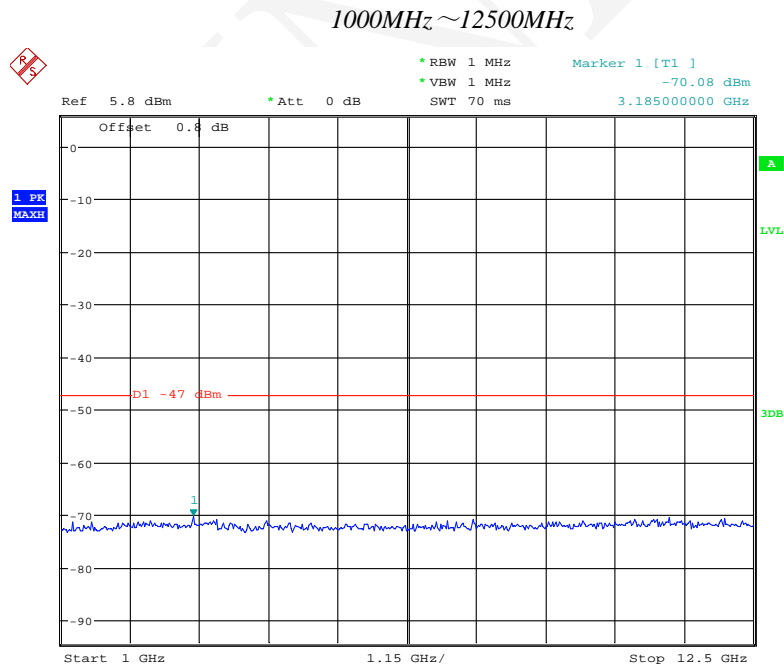


Date: 21.NOV.2018 10:48:37

Test Frequency: 2441.5MHz:

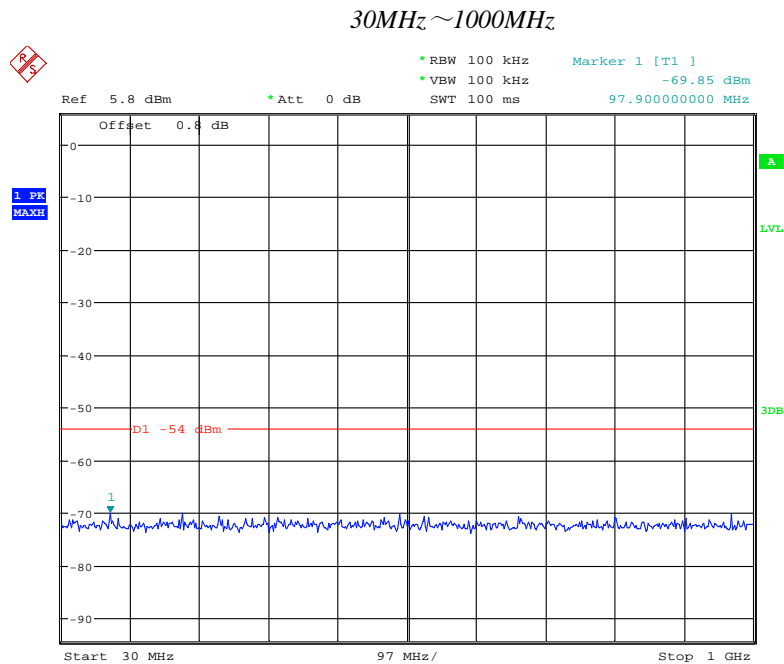


Date: 21.NOV.2018 10:44:02

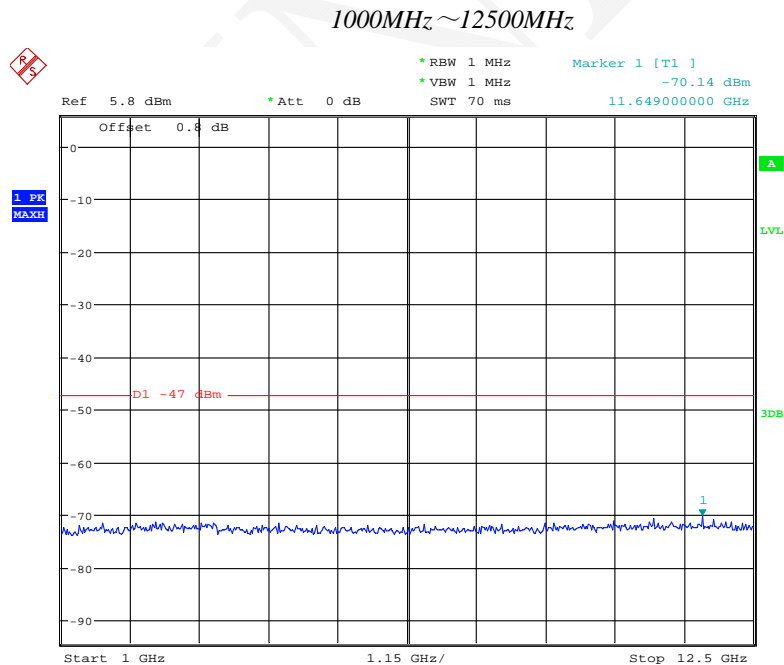


Date: 21.NOV.2018 10:48:53

Test Frequency: 2476.5MHz:



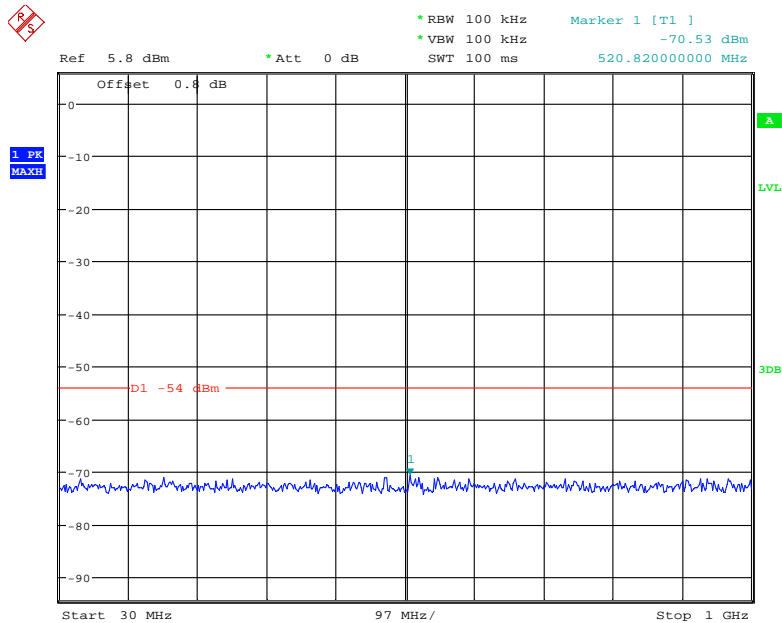
Date: 21.NOV.2018 10:43:49



Date: 21.NOV.2018 10:49:10

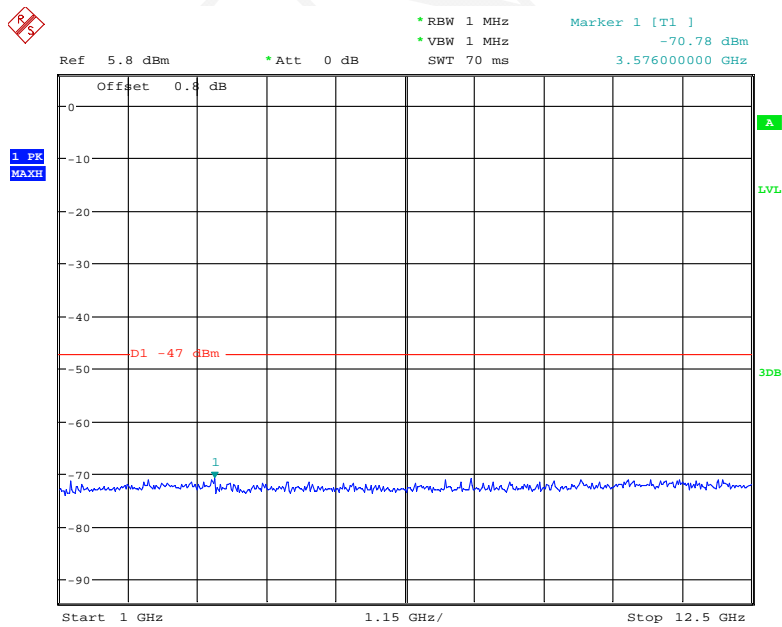
20M mode,
Test Frequency: 2411.5MHz

30MHz~1000MHz



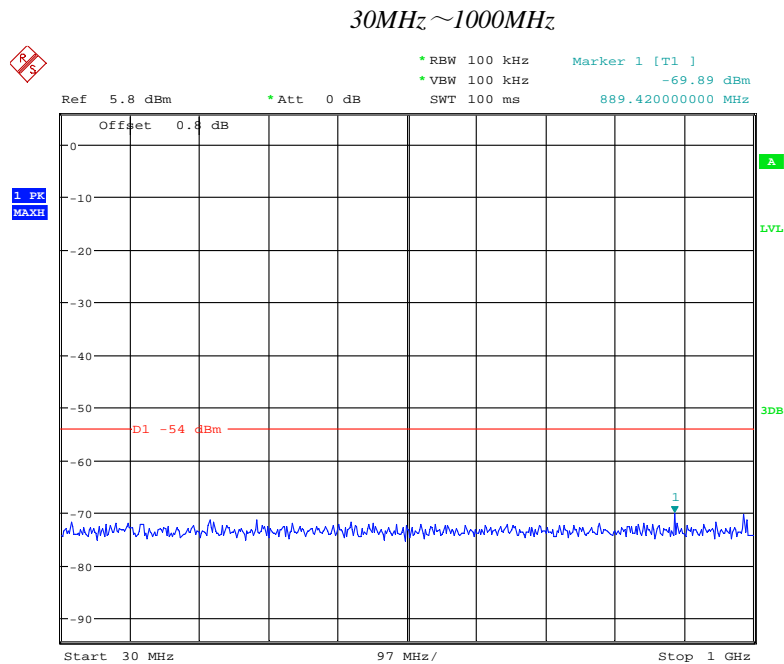
Date: 21.NOV.2018 10:44:31

1000MHz~12500MHz

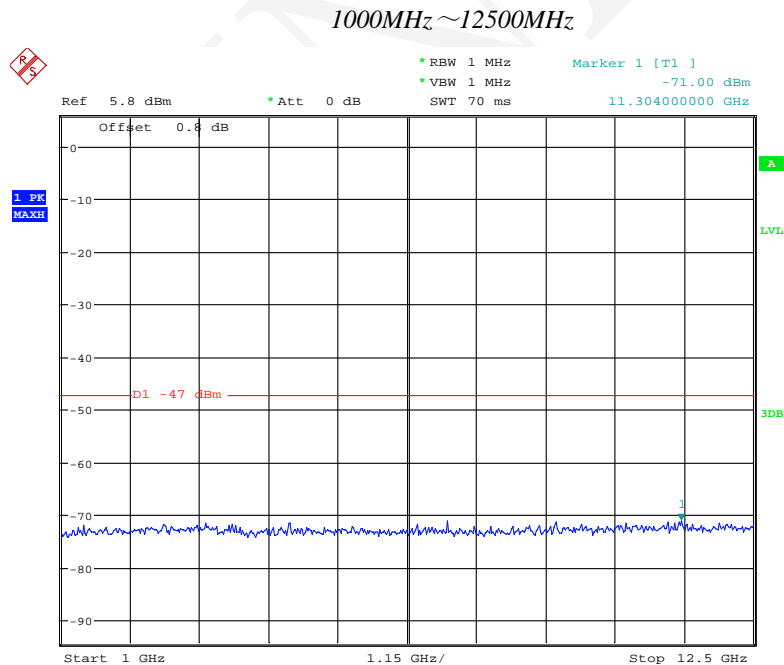


Date: 21.NOV.2018 10:48:22

Test Frequency: 2441.5MHz:

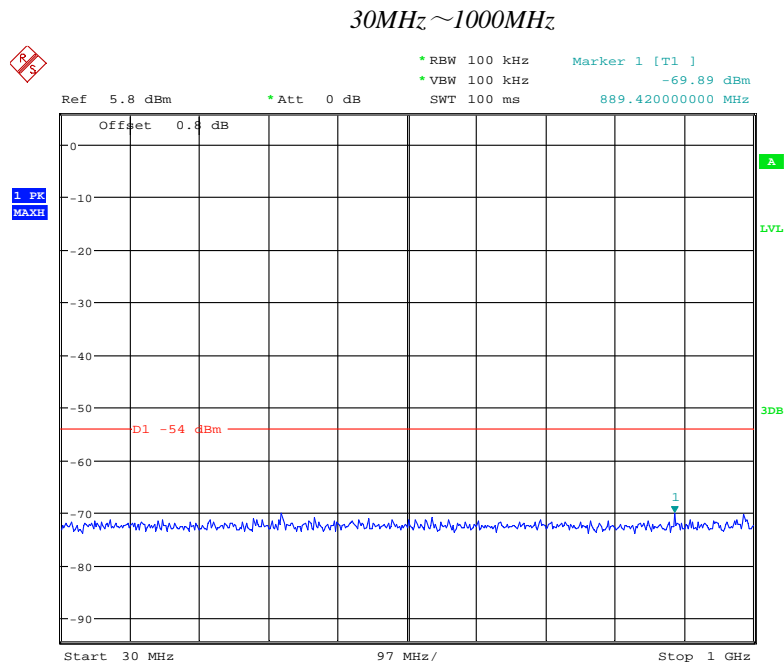


Date: 21.NOV.2018 10:44:46

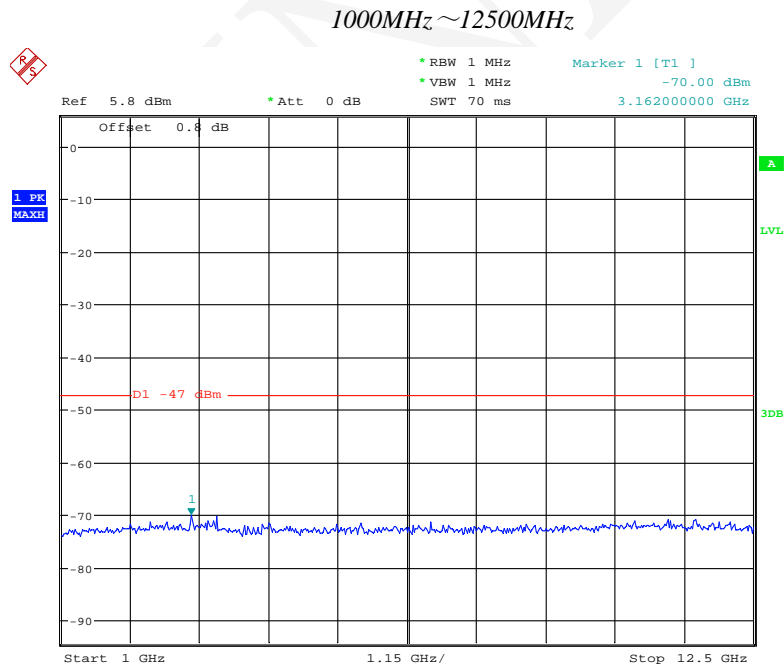


Date: 21.NOV.2018 10:48:10

Test Frequency: 2471.5MHz:



Date: 21.NOV.2018 10:44:56



Date: 21.NOV.2018 10:47:54

INTERFERENCE PREVENTION FUNCTION

Requirement

The EUT shall have the interference prevention capability to transmit or to receive the identification automatically, so that sender and receiver shall exclude other equipment.

Test Procedure

In the case that the EUT has the function of automatically transmitting the identification code:

1. Transmit the predetermined identification codes from EUT
2. Check the transmitted identification codes with the demodulator.

In the case of receiving the identification codes:

1. Transmit the predetermined identification codes from the counterpart.
2. Check if communication is normal
3. Transmit the signal other than predetermined ID codes from the counterpart.
4. Check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

Measurement Result

Environmental Conditions

Temperature:	26.9°C
Relative Humidity:	47 %
ATM Pressure:	100.8 kPa

The testing was performed by Elena Lei on 2018-11-19.

Test Result: Good

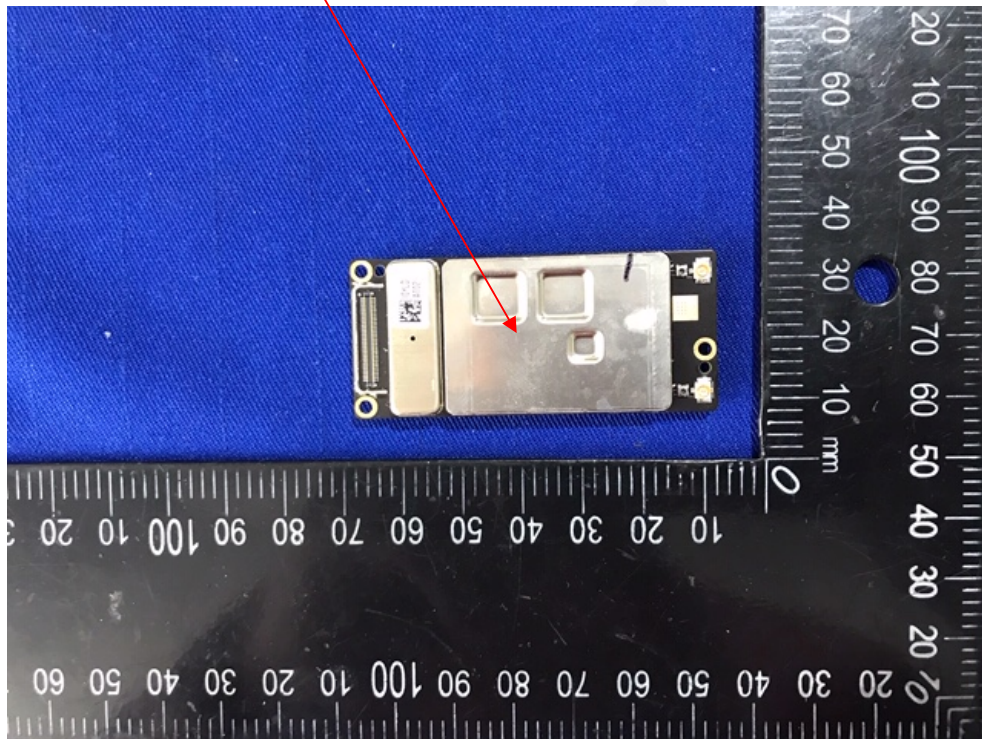
CONSTRUCTION PROTECTION CONFIRMATION

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.

Confirmation Method

The EUT has shielding cover the high-frequency section except for the antenna system, the shielding can't be opened easily. Please refer the EUT photo.



****END OF REPORT****