FCC Part 90

Test Report

Equipment Under Test	**Wireless communication device**
Model Name	**ACRO-M**
Applicant	**INSOPACK. CO., LTD.**
FCC ID	**RGN-ACRO-M**
Manufacturer	**INSOPACK. CO., LTD.**
Date of Test(s)	**2015. 08. 03 ~ 2015. 08. 28**
Date of Issue	**2015. 09. 17**

In the configuration tested, the EUT complied with the standards specified above.

Issue to	Issue by
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Revision history

Revision	Date of issue	Description	Revised by
--	Sep. 17, 2015	Initial	--

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1. Attestation of test results

1.1. Details of applicant & manufacturer

Applicant	:	INSOPACK. CO., LTD.
Address	:	101/508, Digital Empire Building, Sin-dong, Yeongtong-gu, Suwon, Kyeonggi-do, Korea.
Contact Person	:	Jeong Hyun, Cho
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1.2. Summary of test results

The EUT has been tested according to the following specifications;

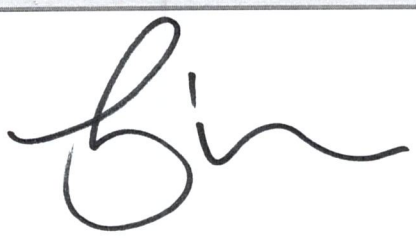
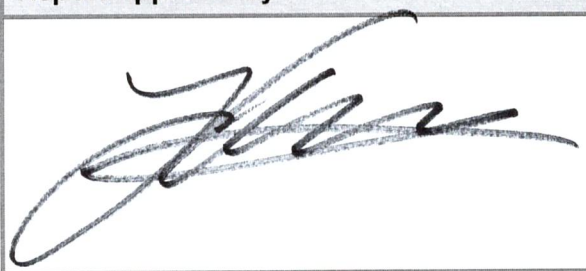
Section in FCC part 90	Description	Result
§90.205	RF output power	C
§90.209	Bandwidth limitation	C
§90.210(d)	Emission mask	C
§90.210(d)	Conducted spurious emissions	C
§90.213	Frequency stability	C
§90.214	Transient frequency behavior	C
§90.210(d)	Radiated spurious emissions	C

The sample was tested according to the following specification:
FCC Part 90
ANSI/TIA-603-D-2010
TEST SITE REGISTRATION NUMBER: ***FCC(670686), FCC(287786)***

※ Abbreviation

C Complied
N/A Not applicable
F Fail

Approval Signatories

Test and Report Completed by :	Report Approval by :
	
Jungmoo Her Test Engineer MOVON CORPORATION	Issac Jin Technical Manager MOVON CORPORATION

2. EUT Description

Kind of product	Wireless communication device
Model Name	ACRO-M
FCC ID	RGN-ACRO-M
Power supply	DC 3.8V
Frequency range	450.025 ㎒ ~ 469.925 ㎒
Rated power	Low power mode : 1W (30 ㏈m)
	High power mode : 2.5W (34 ㏈m)
Modulation technique	4FSK
Number of channels	200
Antenna gain	0.17 ㏈i (Max.)
TEST SITE REGISTRATION NUMBER	FCC(670686), FCC(287786)

※Declarations by the manufacturer : None
※Details of modification : None

2.1. Measurement equipment

Equipment	Manufacturer	Model	Serial number	Calibration Interval	Calibration due.
EMI Receiver	R&S	ESVN30	832854/010	1 year	2016-01-12
Signal Generator	R&S	SMBV100	257379	1 year	2015-09-29
Spectrum Analyzer	R&S	FSV-40	100832	1 year	2016-03-06
Test Receiver	R&S	ESPI	100012	1 year	2016.01.12
Test Receiver	R&S	ESPI	100063	1 year	2016.01.12
LISN	R&S	ENV216	100324	1 year	2016.01.12
Impuls-Begrenzer Pulse Limiter	R&S	ESH3-Z2	100092	1 year	2016.01.12
Horn Antenna	SCHWARZBECK MESS-ELECTRONIK	BBHA 9120 D	BBHA 9120 D 517	2 year	2016-10-16
Bi-Log Antenna	SCHWARZBECK	VULB 9160	9160-3122	2 year	2016-04-02
Biconical Antenna	SCHWARZBECK	VHA9103	2502	2 year	2017-08-31
EMC Analyzer	H.P	E7403A	US39150108	1 year	2016.01.12
RF Amplifier	COM-POWER	PAM-118A	551019	1 year	2016-07-21
High Pass Filter	Wainwright	WHK3.0/18G-10SS	508	1 year	2015-09-29
Tunable Controller	AUDIX	ACT	N/A	N/A	N/A
Antenna Master	AUDIX	N/A	N/A	N/A	N/A
Loop Antenna	R&S	HEH2-Z2	881056/6	2 year	2017-01-06

3. Test Results

3.1. RF output power

3.1.1. Test setup

3.1.2. Test procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator
2. Use the following spectrum analyzer setting,
   Span = 2 ㎒
   RBW = 100 ㎑
   VBW = 100 ㎑ (≥ RBW)
   Sweep = auto
   Detector function = peak
   Trace = max hold

3.1.3. Limit

According to FCC 90.205(h) 450 ~ 470 ㎒. (1) The maximum allowable station effective radiated power (ERP) is dependent upon the station's antenna HAAT and required service area and will be authorized in accordance with table 2. Applicants requesting an ERP in excess of that listed in table 2 must submit an engineering analysis based upon generally accepted engineering practices and standards that includes coverage contours to demonstrate that the requested station parameters will not produce coverage in excess of that which the applicant requires.

Table 2. 450 ~ 470 ㎒—Maximum ERP/Reference HAAT for a Specific Service Area Radius

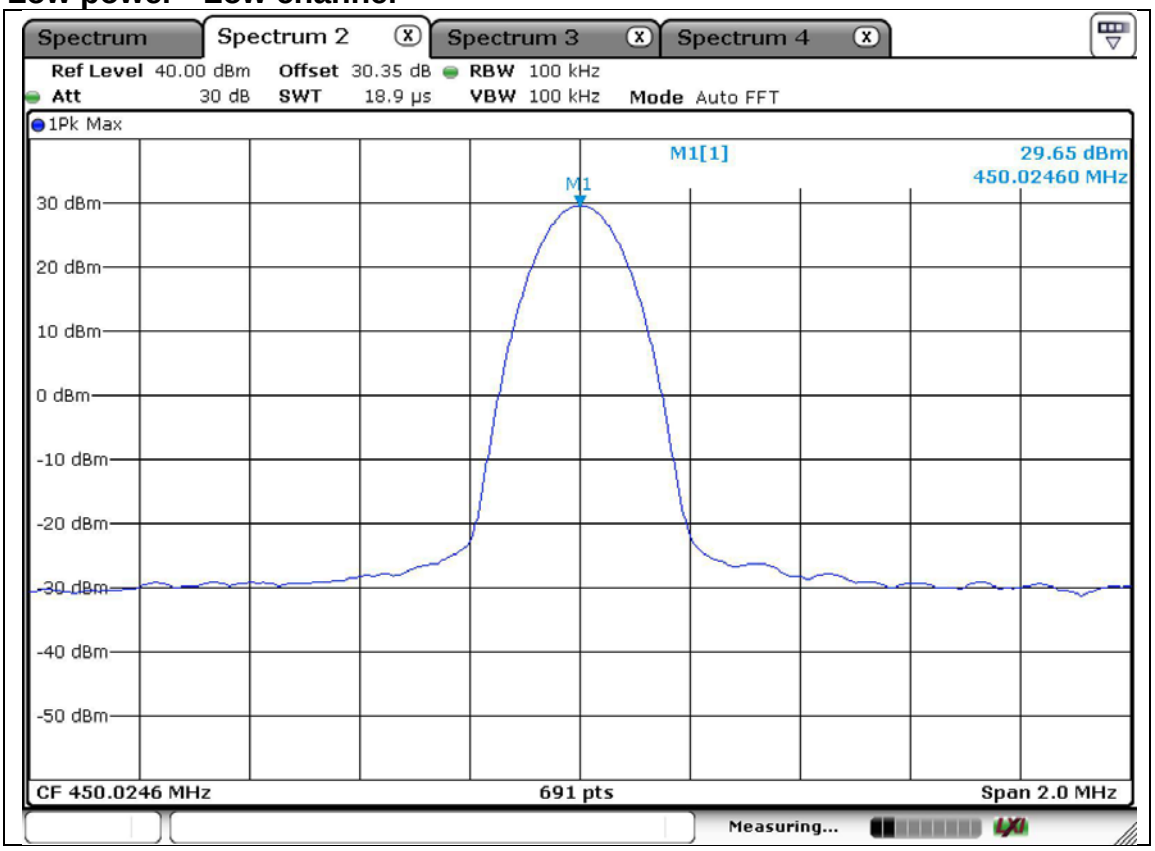
	Service area radius (km)									
	3	8	13	16	24	32	40[4]	48[4]	64[4]	80[4]
Maximum ERP (W)[1]	2	100	[2]500	[2]500	[2]500	[2]500	[2]500	[2]500	[2]500	[2]500
Up to reference HAAT (m)[3]	15	15	15	27	63	125	250	410	950	2700

[1]Maximum ERP indicated provides for a 39 ㏈u signal strength at the edge of the service area per FCC Report R-6602, Fig. 29 (See §73.699, Fig. 10 b).
[2]Maximum ERP of 500 watts allowed. Signal strength at the service area contour may be less than 39 ㏈u.
[3]When the actual antenna HAAT is greater than the reference HAAT, the allowable ERP will be reduced in accordance with the following equation: $ERP_{allow}=ERP_{max}\times (HAAT_{ref}/HAAT_{actual})^2$.
[4]Applications for this service area radius may be granted upon specific request with justification and must include a technical demonstration that the signal strength at the edge of the service area does not exceed 39 ㏈u.

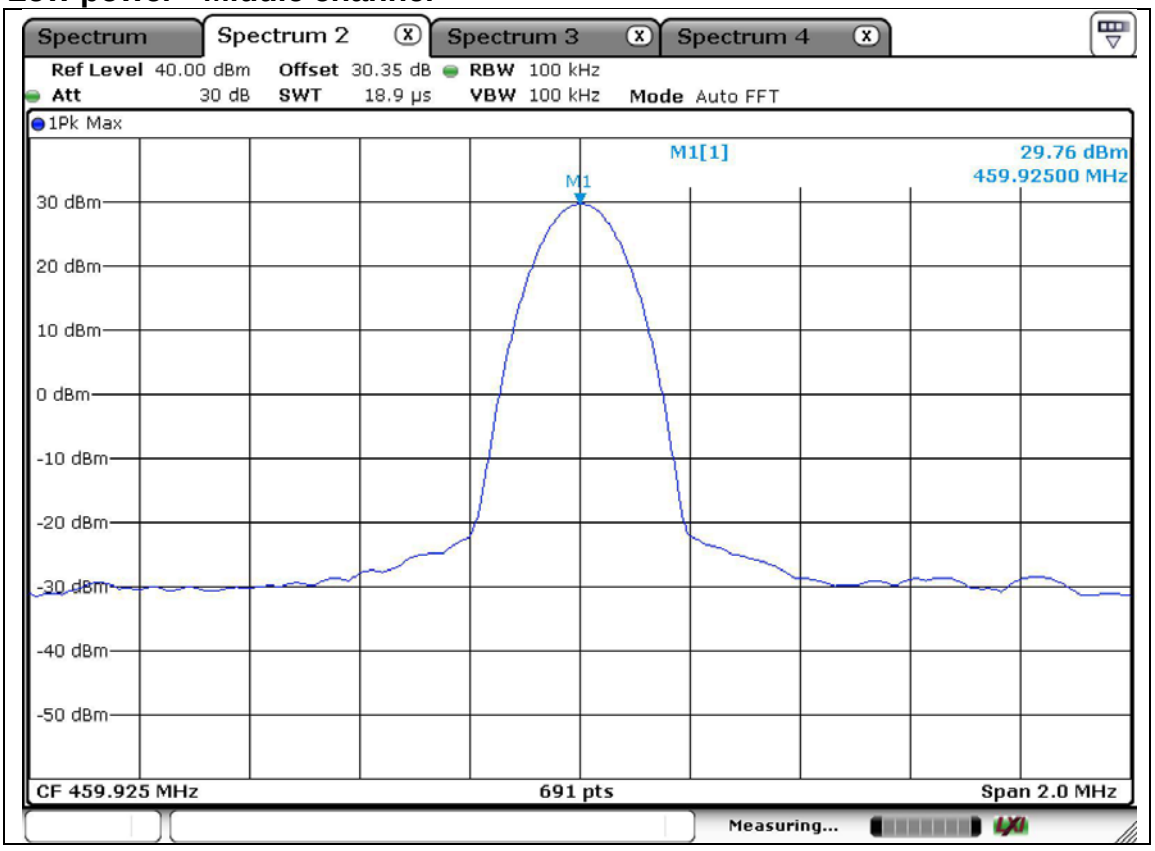
3.1.4. Test results

Mode	Frequency (MHz)	Output power (dBm)	Output power (W)	Rated power (dBm)
Low power	450.025	29.65	0.923	30
	459.925	29.76	0.946	
	469.925	29.88	0.973	
High power	450.025	33.41	2.193	34
	459.925	33.63	2.307	
	469.925	33.54	2.260	

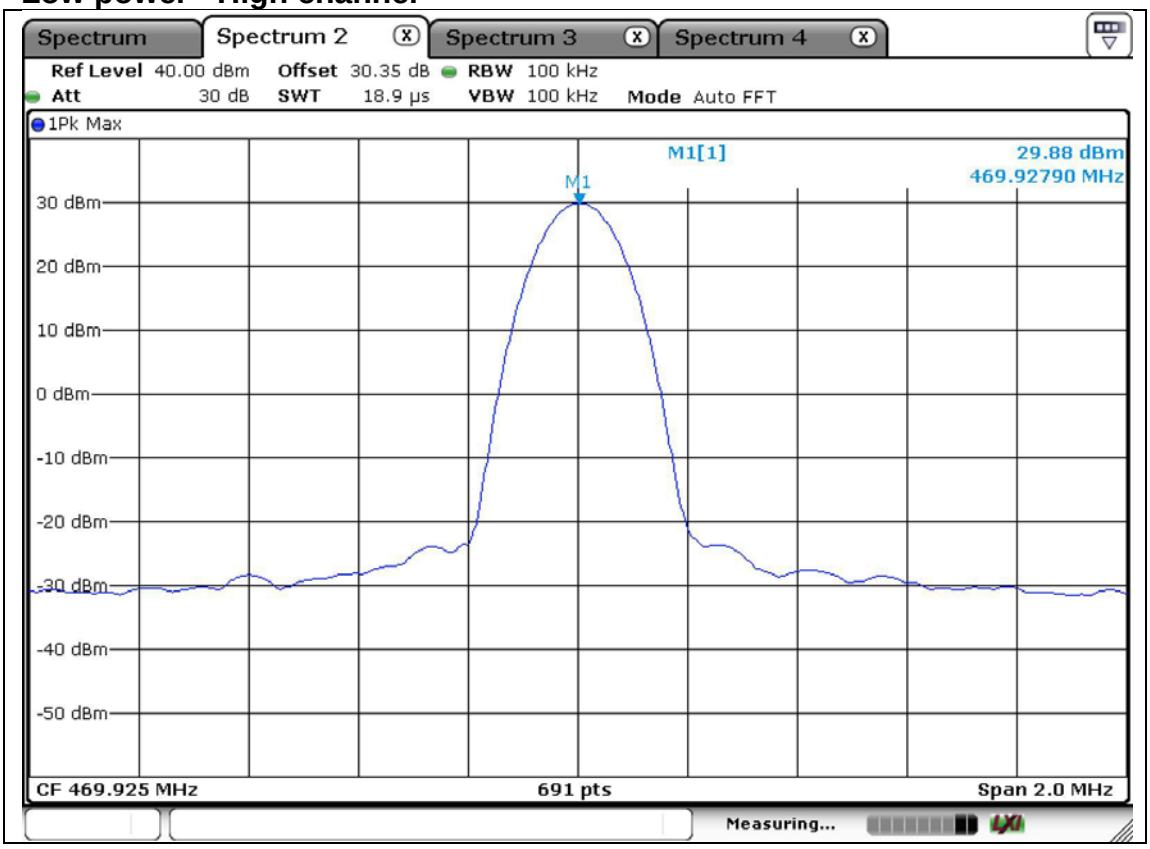
Low power - Low channel



Low power - Middle channel



Low power - High channel



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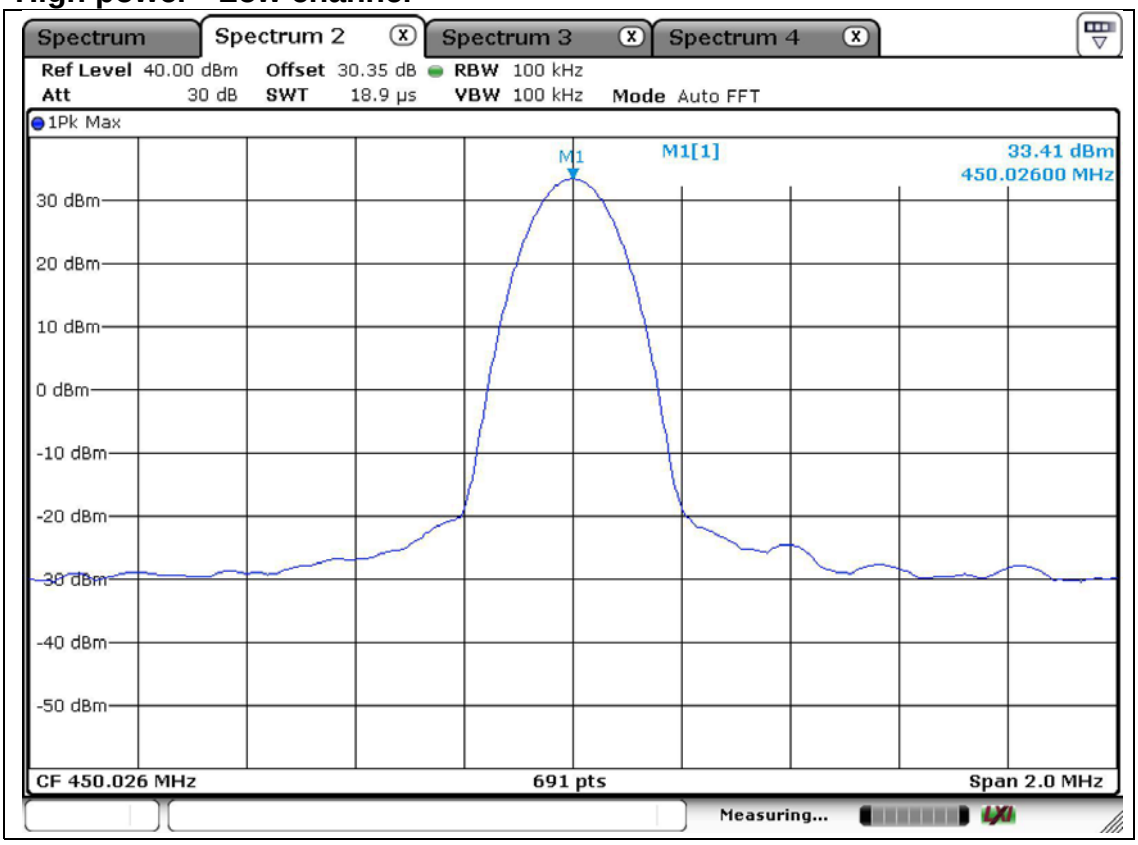
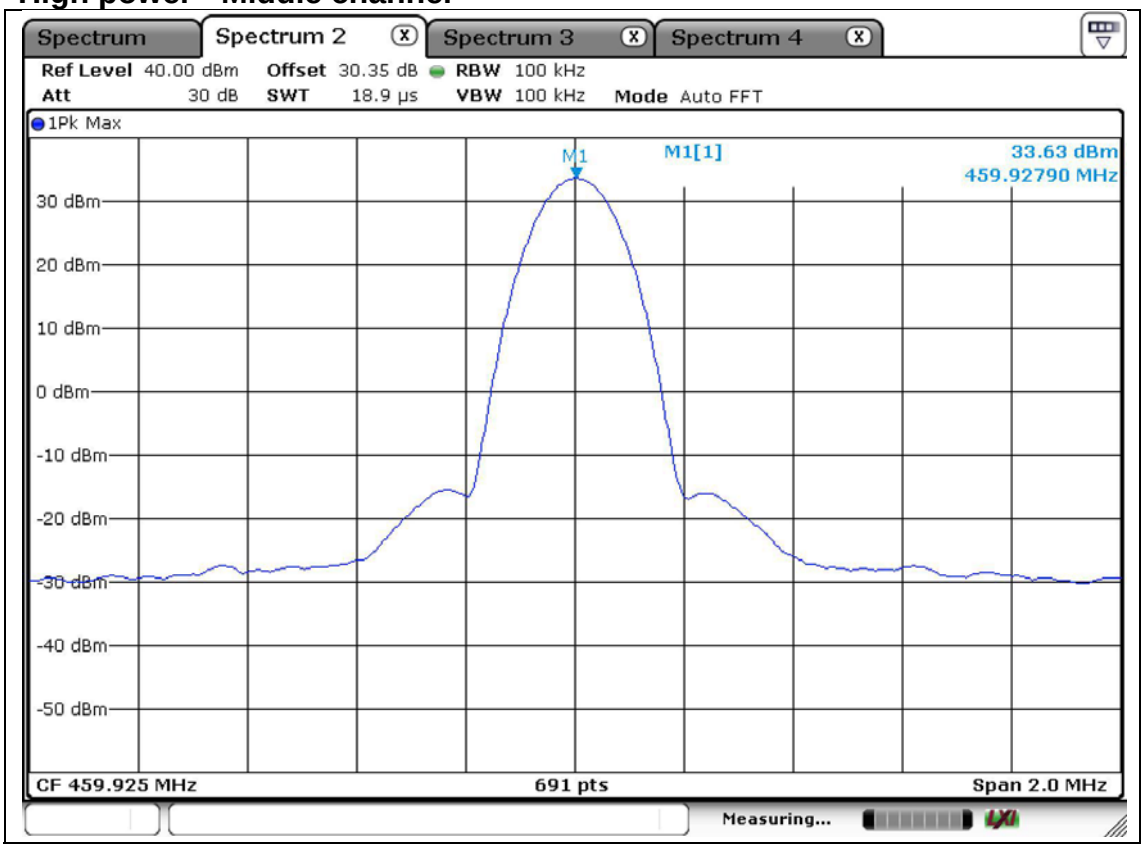
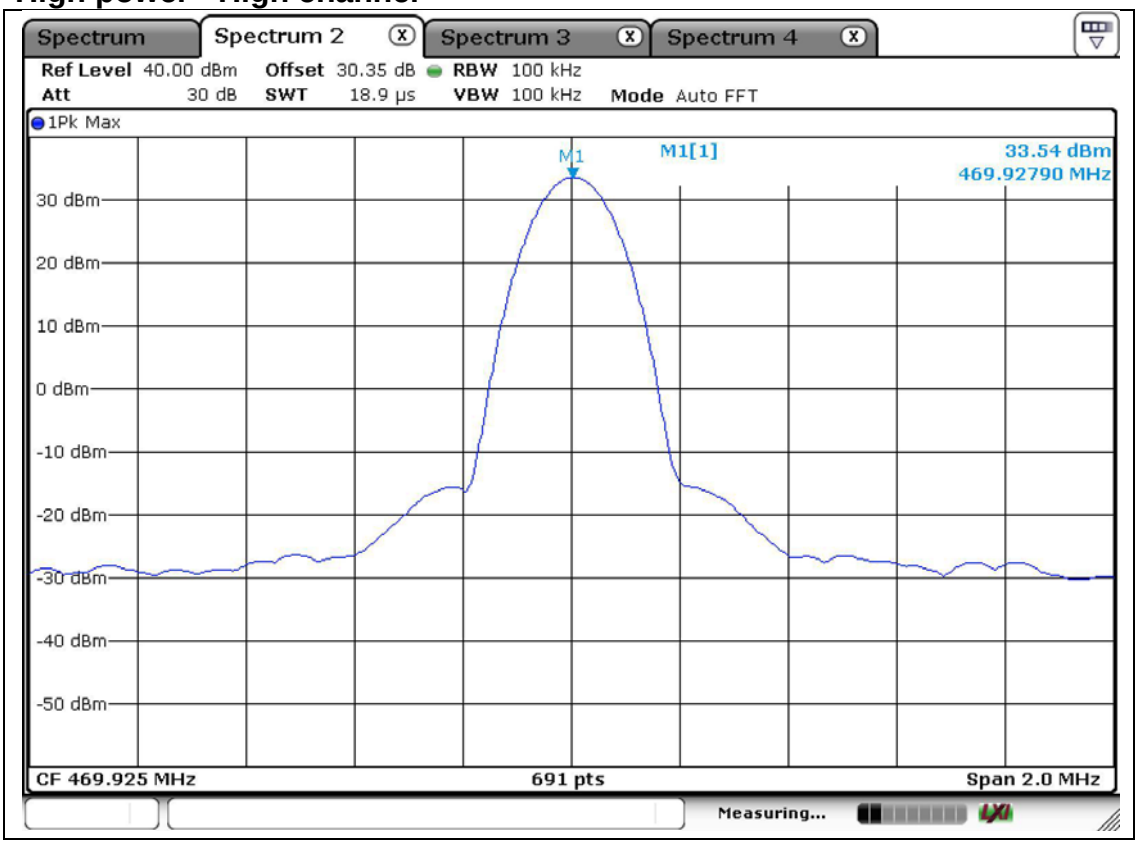


High power - Middle channel

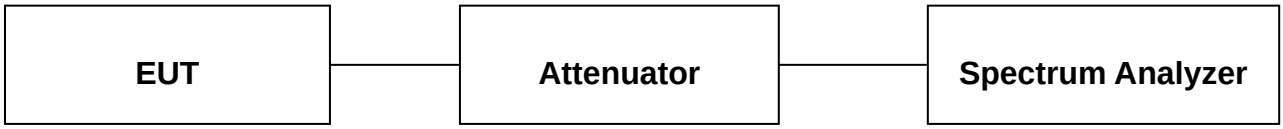


High power - High channel



3.2. Bandwidth limitation

3.2.1. Test setup



3.2.2. Test procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator
2. Use the following spectrum analyzer setting,
   Span = 50 ㎑
   RBW = 300 ㎐
   VBW = 300 ㎐ (≥ RBW)
   Sweep = auto
   Detector function = peak
   Trace = max hold
3. Mark the peak frequency and -20 ㏈(Upper and lower) frequency.

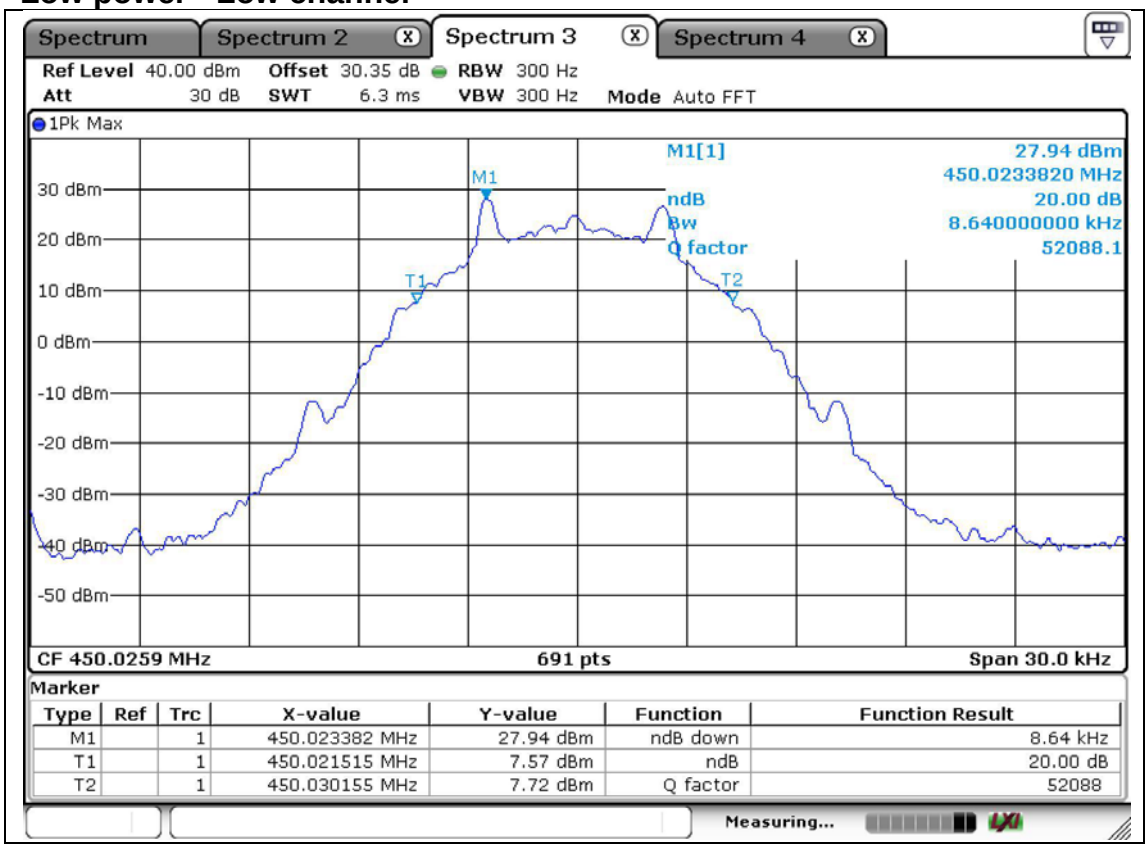
3.2.3. Limit

N/A

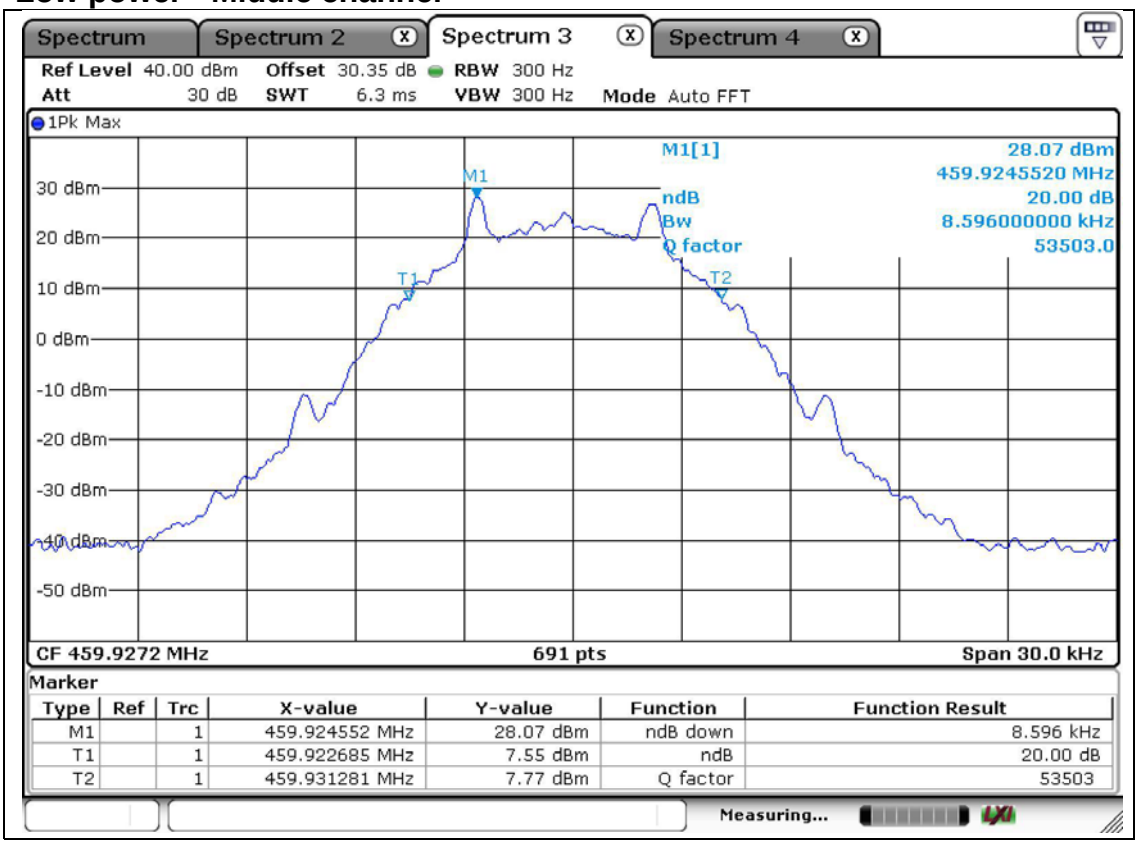
3.2.4. Test results

Mode	Frequency (MHz)	Bandwidth (kHz)
Low power	450.025	8.640
	459.925	8.596
	469.925	8.596
High power	450.025	8.640
	459.925	8.596
	469.925	8.640

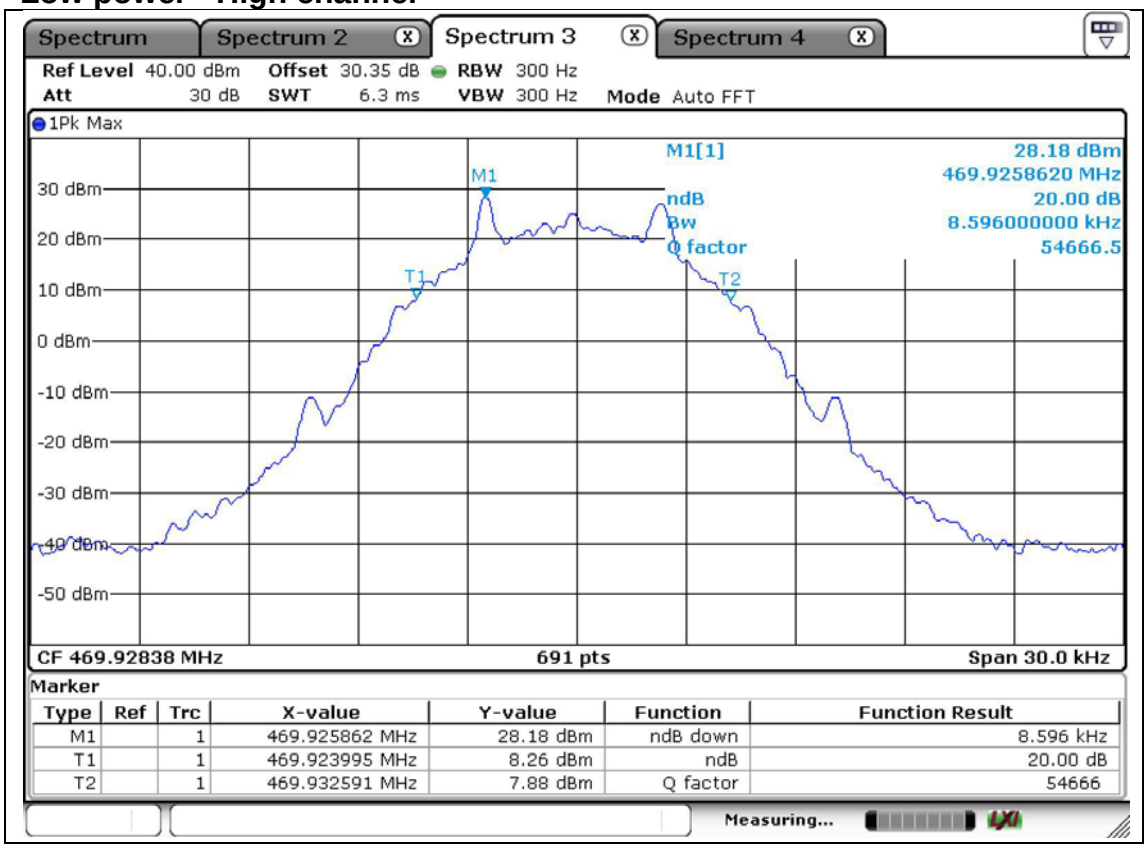
Low power - Low channel



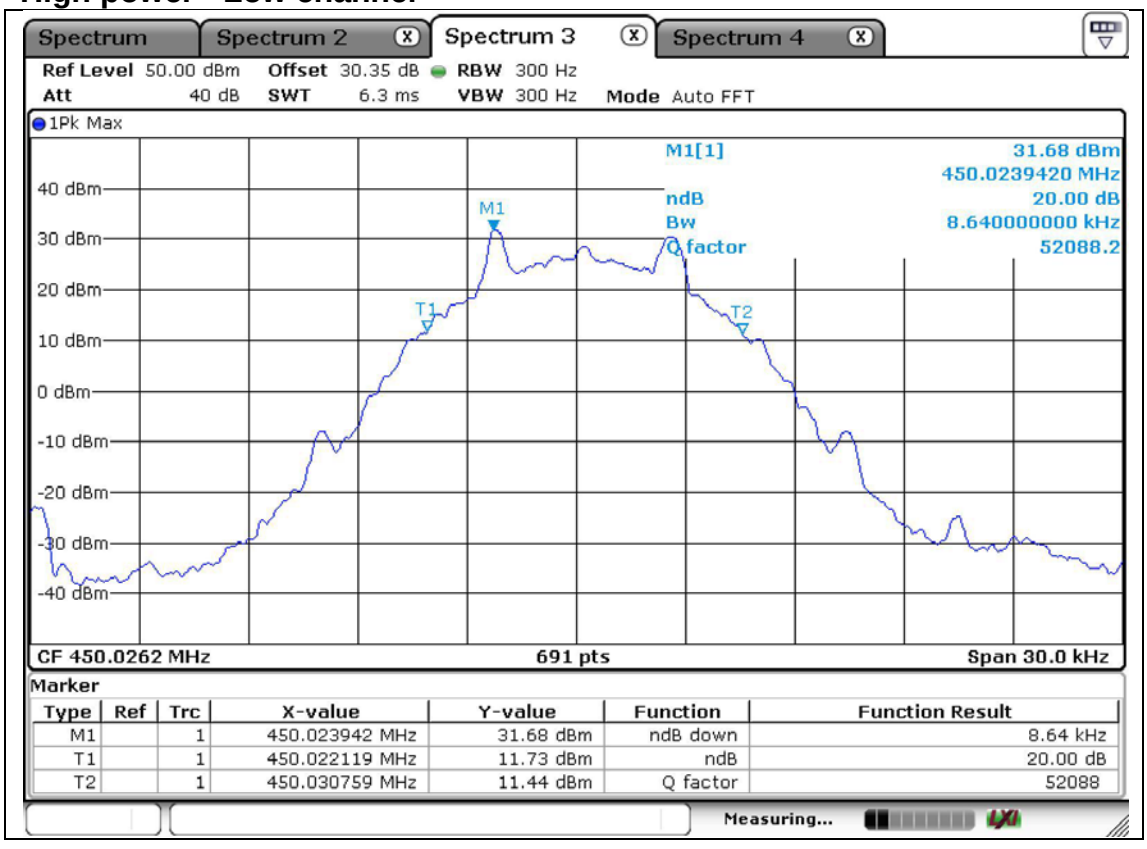
Low power - Middle channel



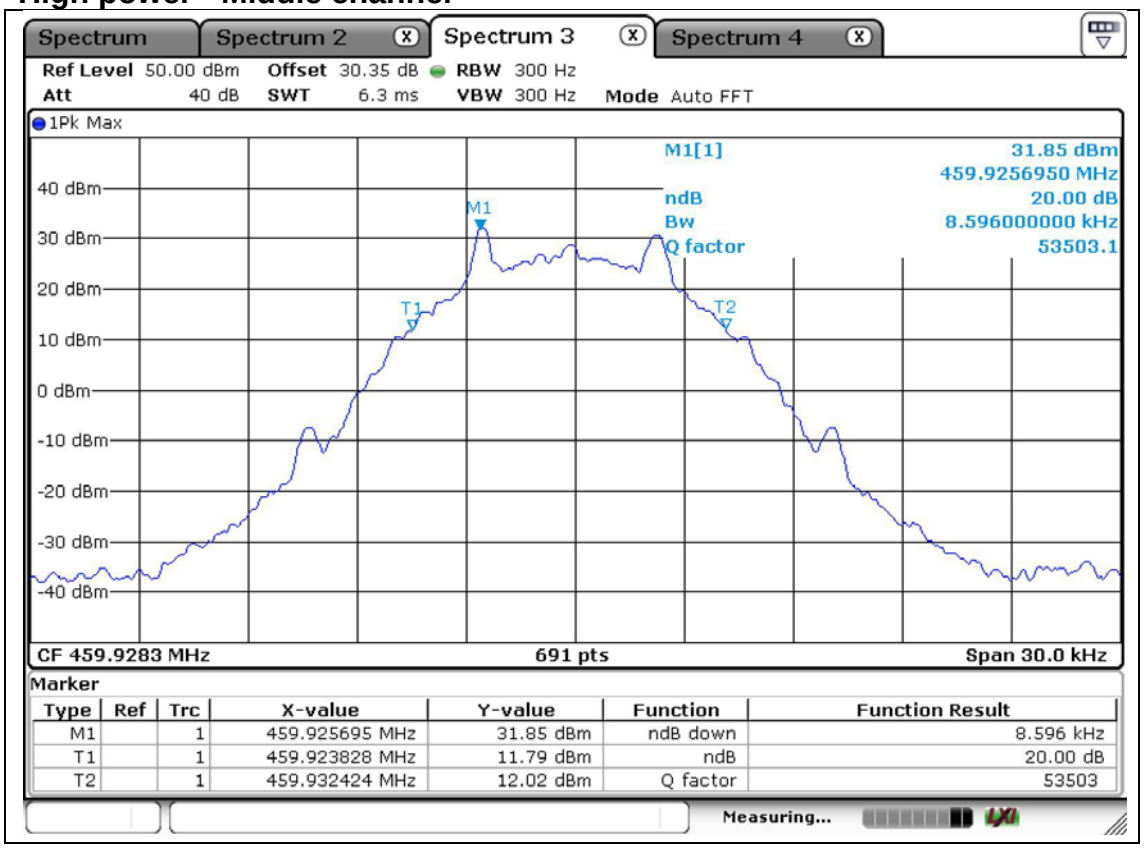
Low power - High channel



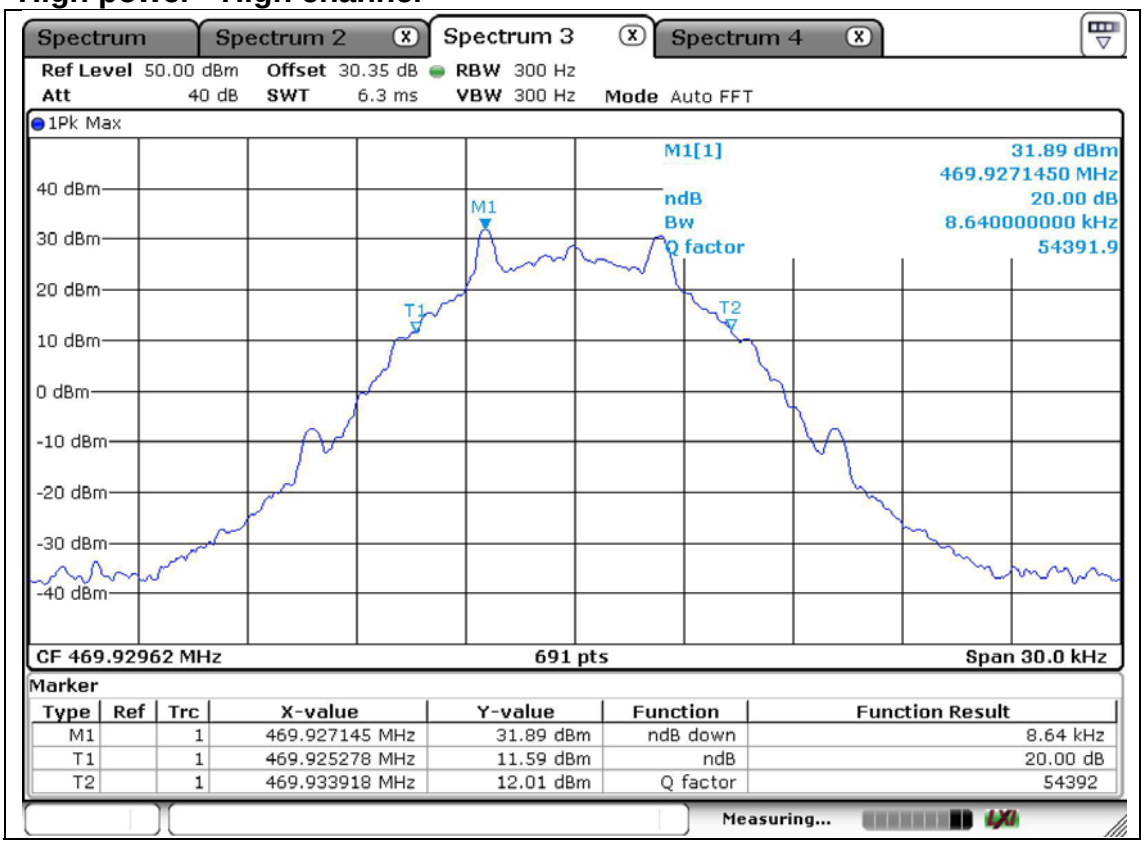
High power - Low channel



High power - Middle channel



High power - High channel



3.3. Emission mask

3.3.1. Test setup

3.3.2. Test procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator
2. Use the following spectrum analyzer setting,
   Span = 120 ㎑
   RBW = 100 ㎐
   VBW = 100 ㎐ (≥ RBW)
   Sweep = auto
   Detector function = peak
   Trace = max hold
3. Mark the peak frequency with maximum peak power as the center of the display of the spectrum analyzer.
4. Record the power spectrum analyzer and compare to the mask.

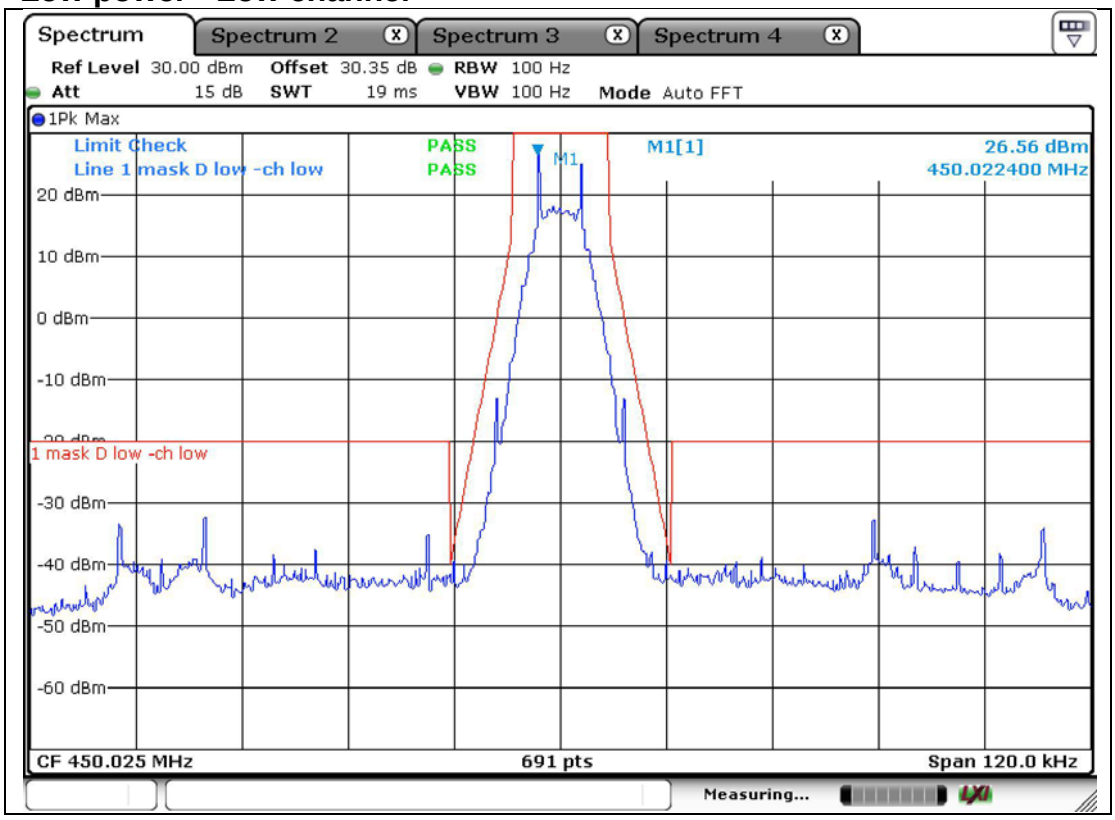
3.3.3. Limit

According to FCC part 90.210(d) Emission Mask D – 12.5 ㎑ channel bandwidth equipment. For transmitters designed to operate with a 12.5 ㎑ channel bandwidth, any emission must be attenuated below the power(P) of the highest emission contained within the authorized bandwidth as follows:

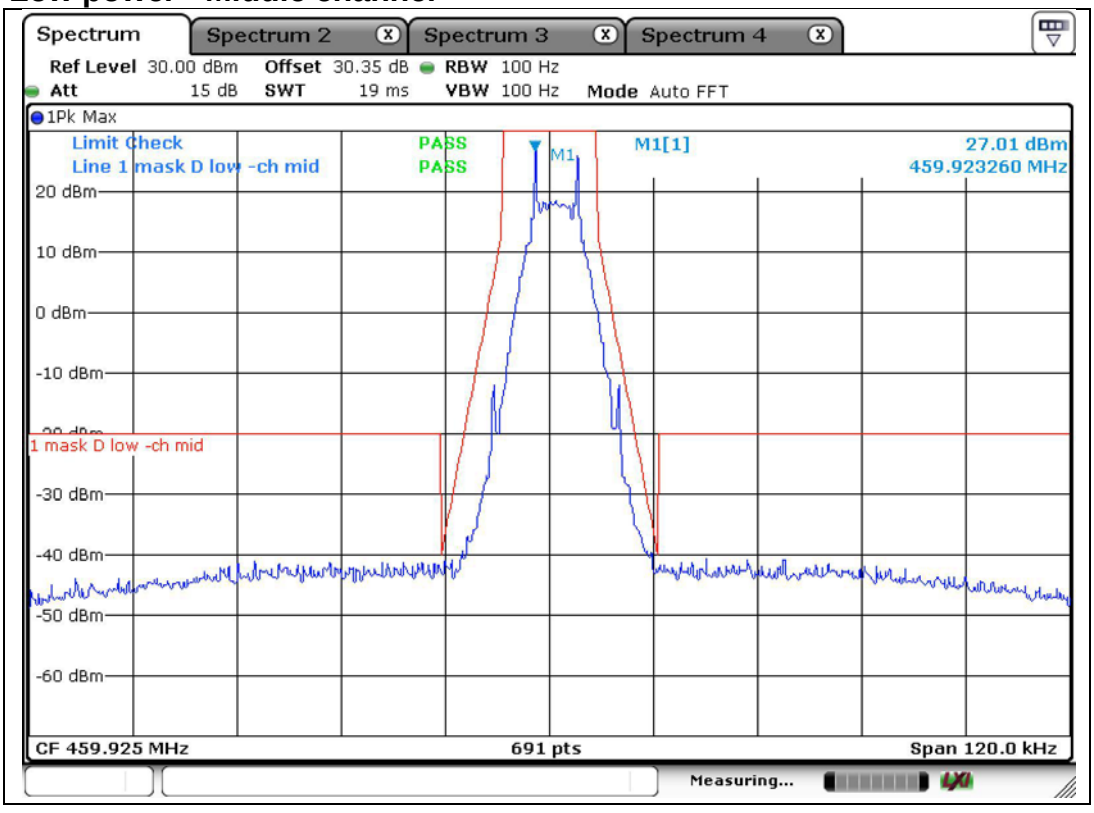
(1) On any frequency from the center of the authorized bandwidth f_0 to 5.625 ㎑ removed from f_0: Zero ㏈.
(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in ㎑) of more than 5.625 ㎑, but no more than 12.5 ㎑: At least 7.27 (fd-2.88 ㎑) ㏈.
(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in ㎑) of more than 12.5 ㎑: At least 50 + 10log(P) ㏈ or 70 ㏈, whichever is the lesser attenuation.

3.3.4. Test results

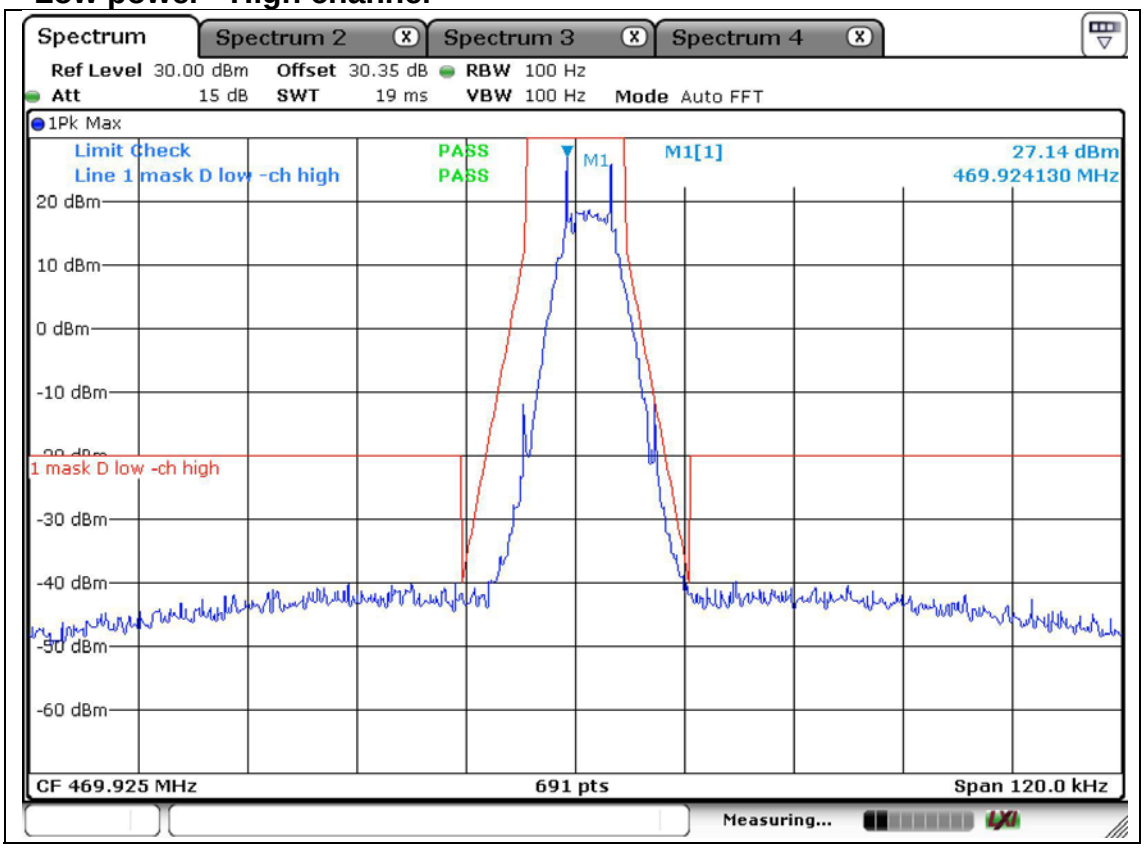
Low power - Low channel



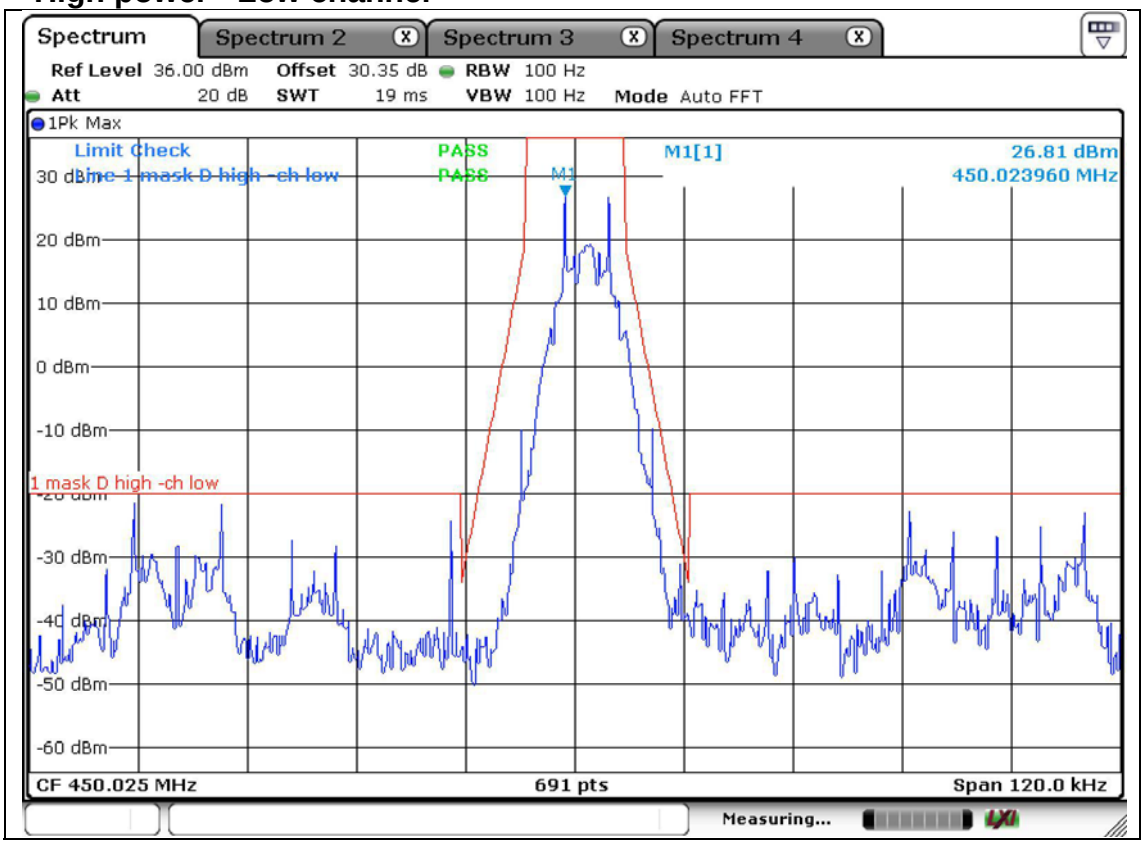
Low power - Middle channel



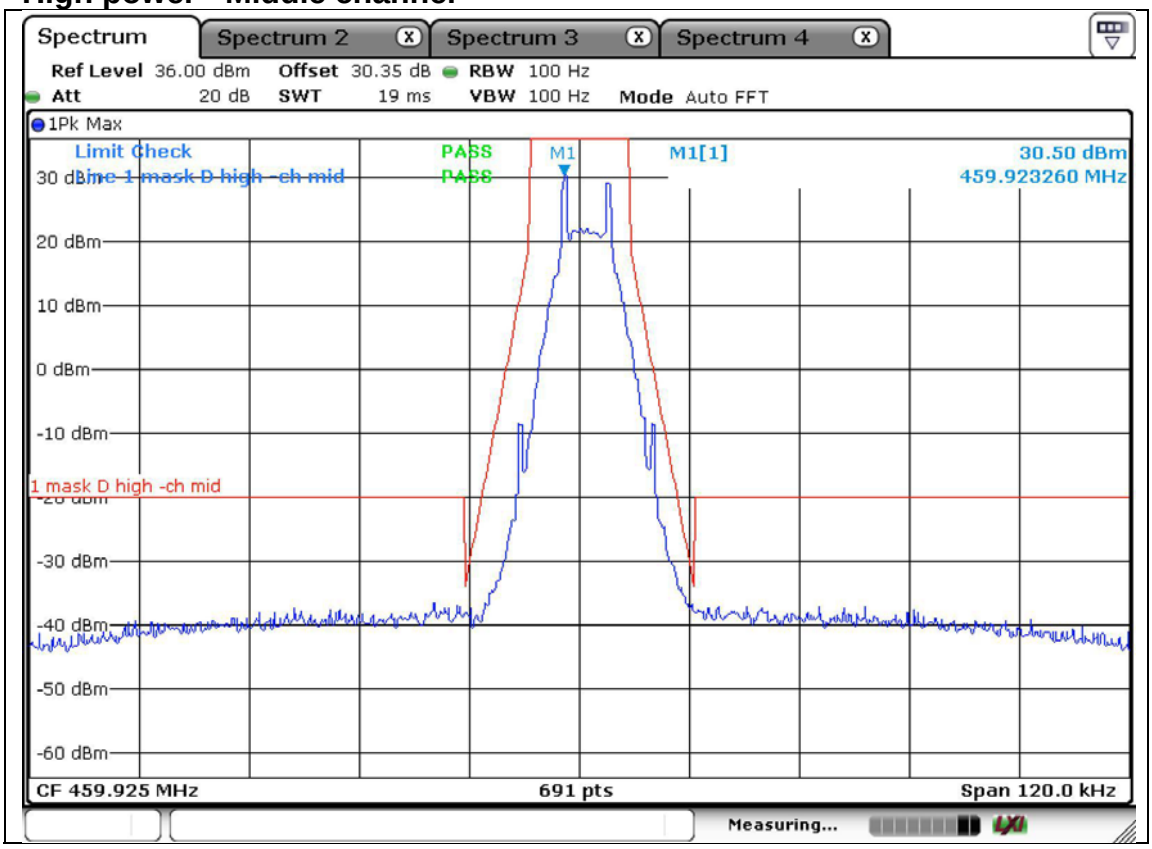
Low power - High channel



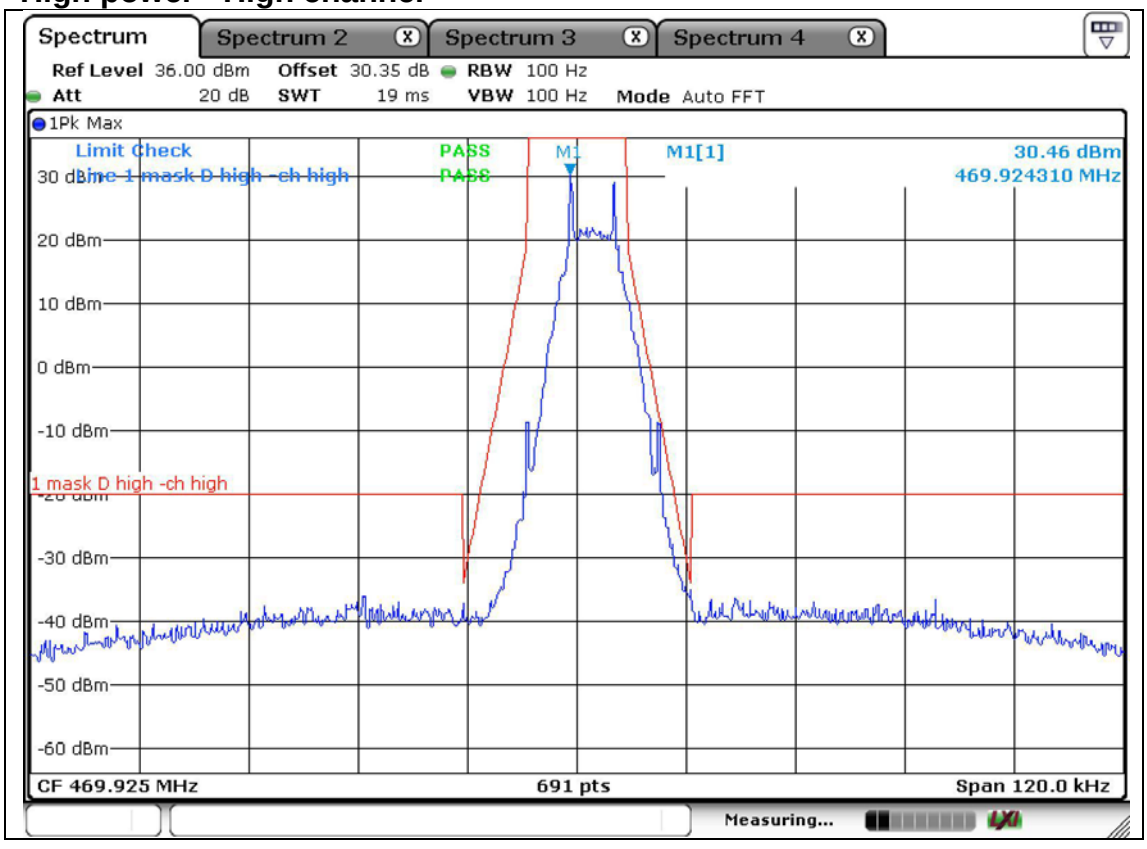
High power - Low channel



High power - Middle channel



High power - High channel



3.4. Conducted spurious emissions

3.4.1. Test setup

3.4.2. Test procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator
2. Use the following spectrum analyzer setting,
   Span = 30 ㎒ to 5 ㎓
   RBW = 100 ㎑
   VBW = 100 ㎑ (≥ RBW)
   Sweep = auto
   Detector function = peak
   Trace = max hold

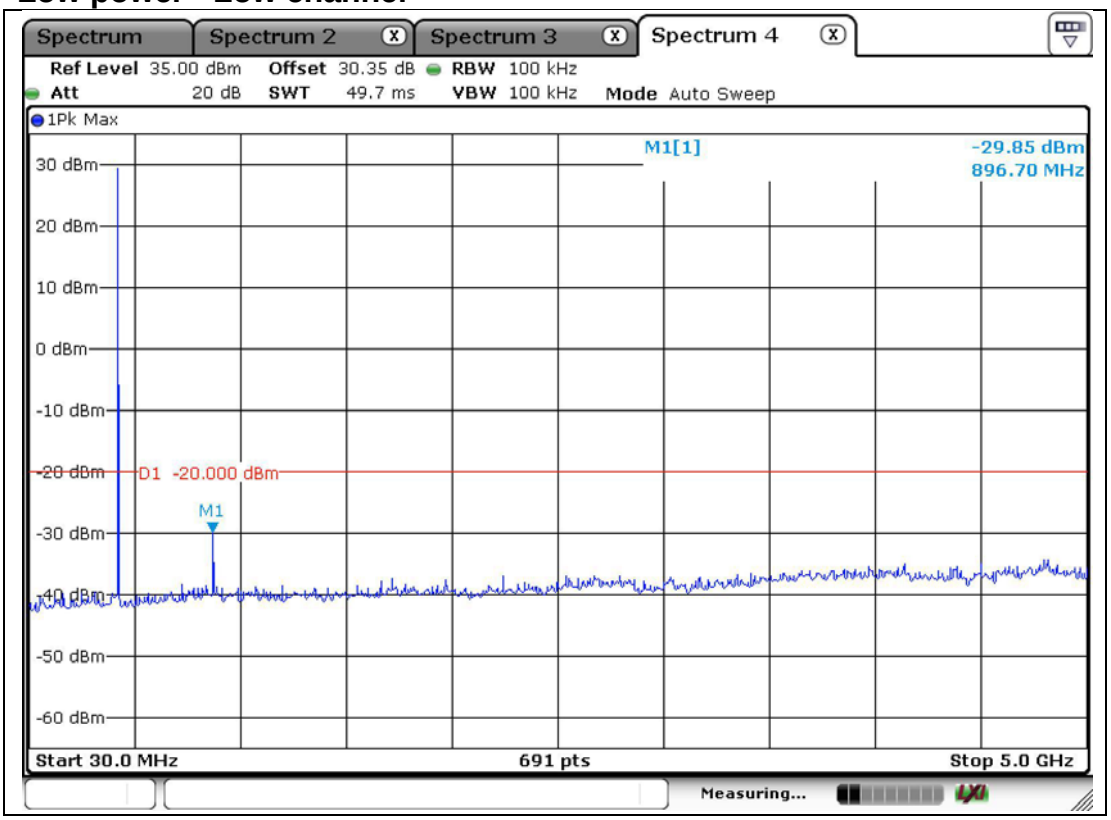
3.4.3. Limit

According to FCC part 90.210(d) Emission Mask D – 12.5 ㎑ channel bandwidth equipment. For transmitters designed to operate with a 12.5 ㎑ channel bandwidth, any emission must be attenuated below the power(P) of the highest emission contained within the authorized bandwidth as follows:

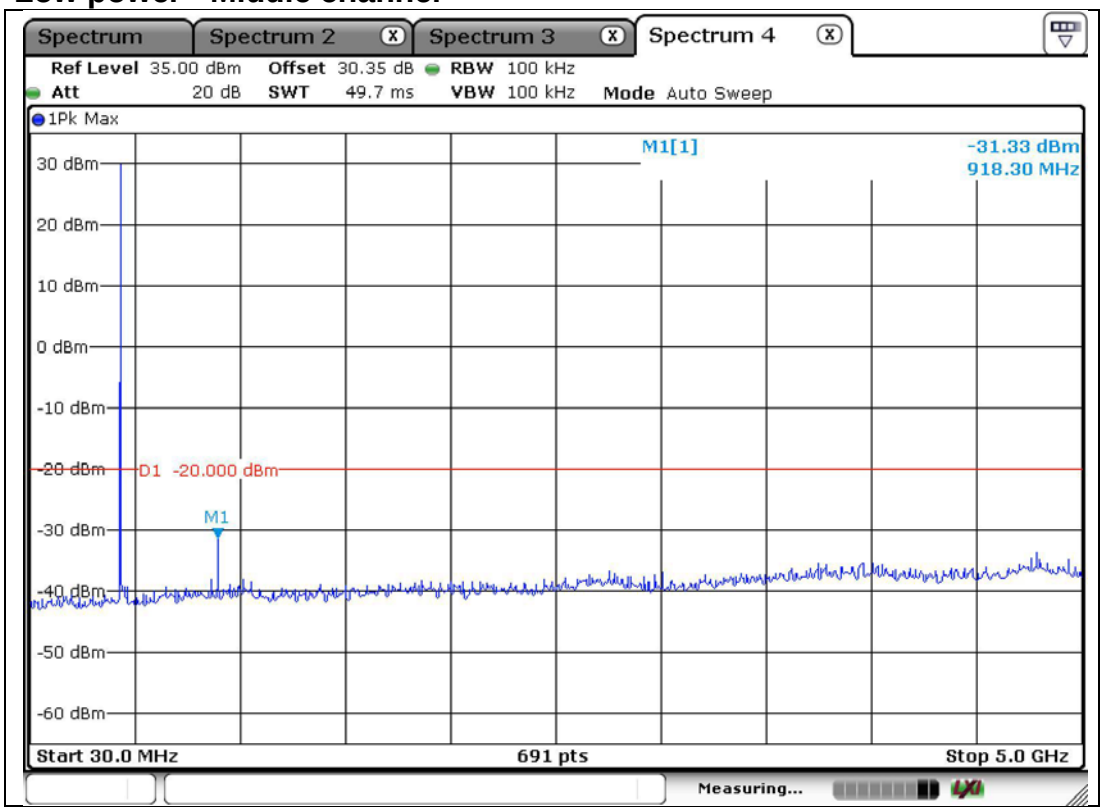
(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (fd in ㎑) of more than 12.5 ㎑: At least 50 + 10log(P) ㏈ or 70 ㏈, whichever is the lesser attenuation.

3.4.4. Test results

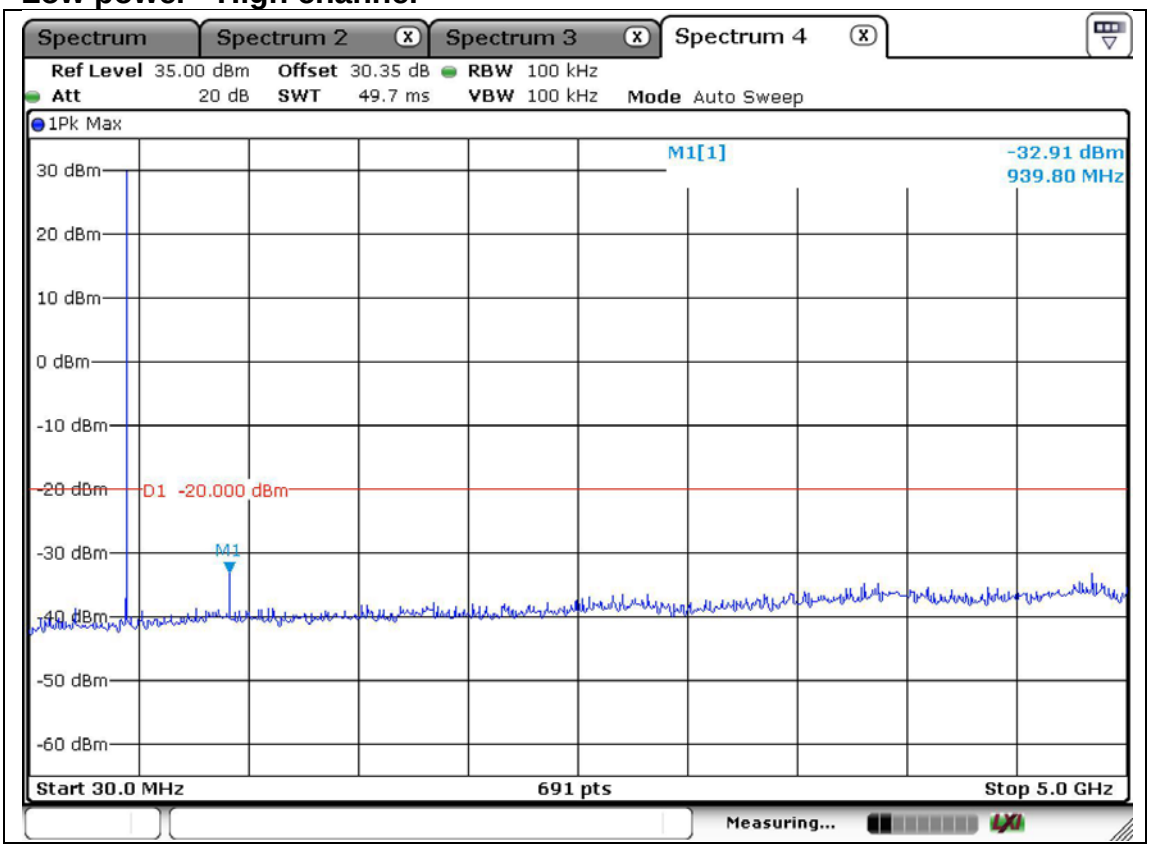
Low power - Low channel



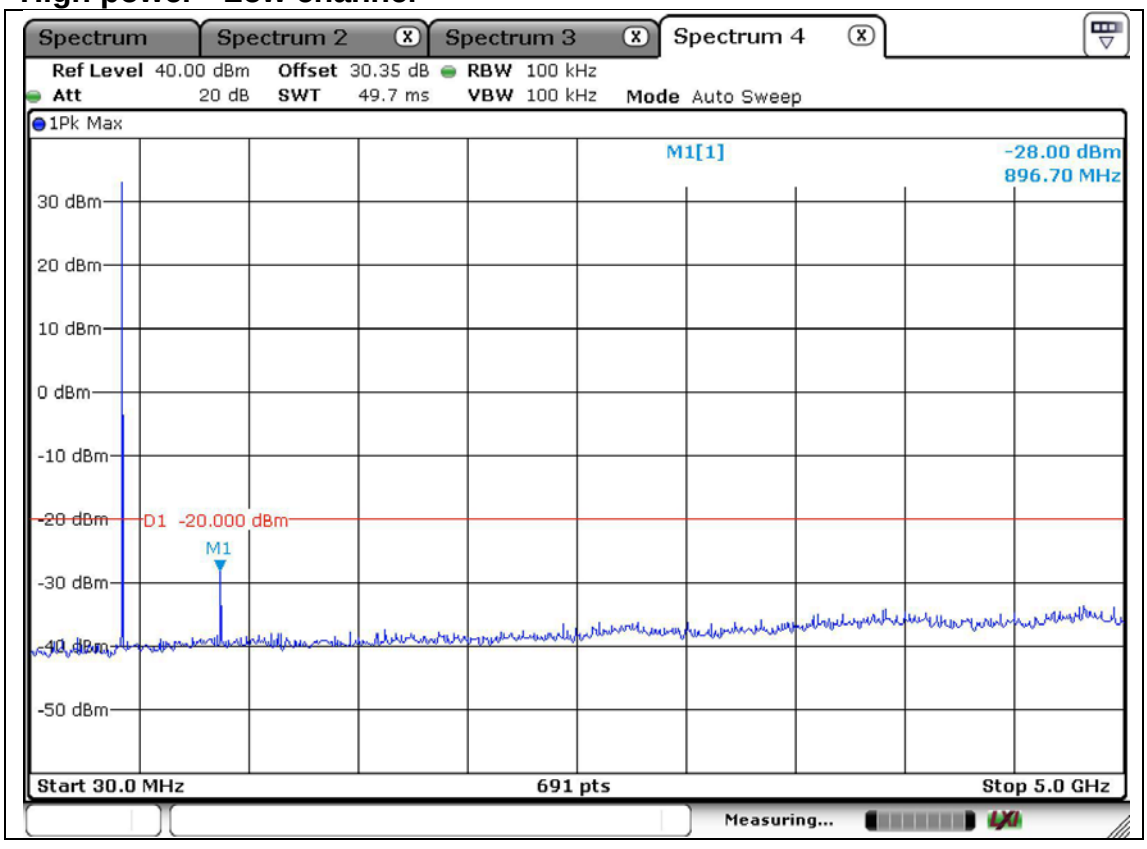
Low power - Middle channel



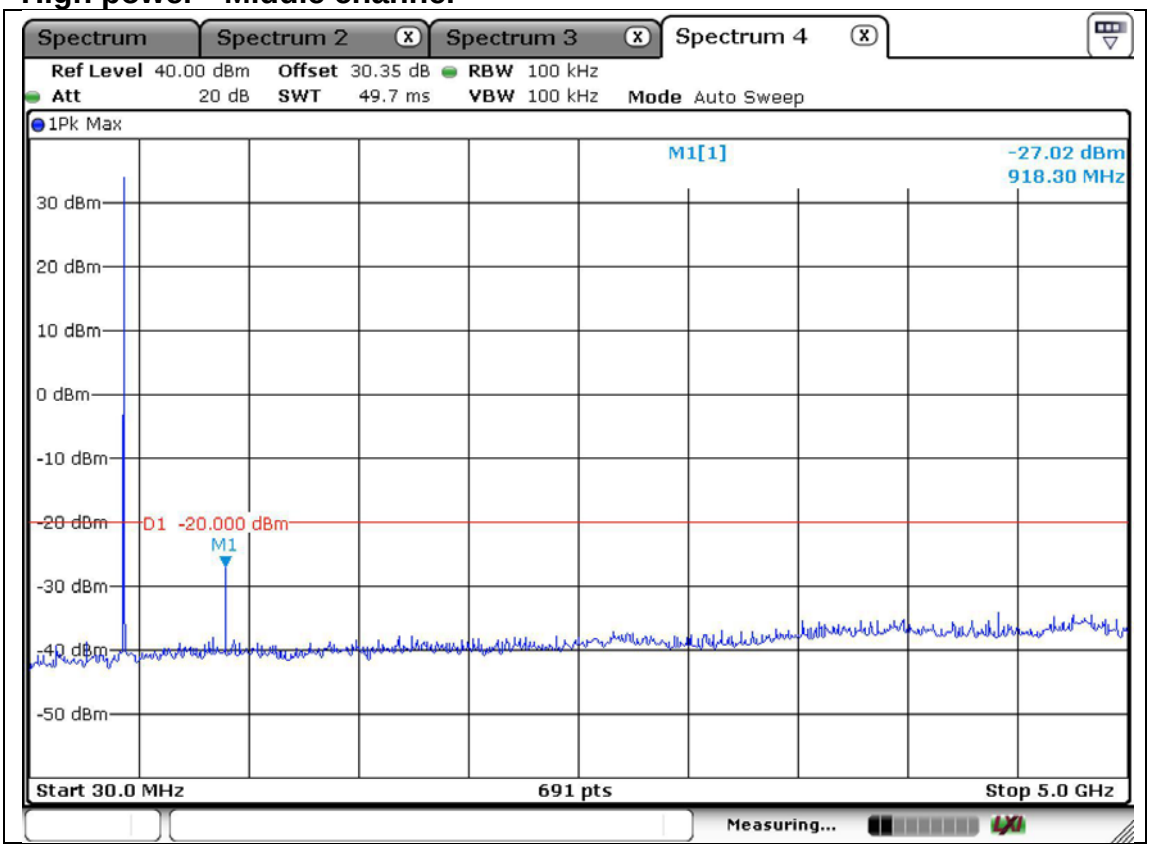
Low power - High channel



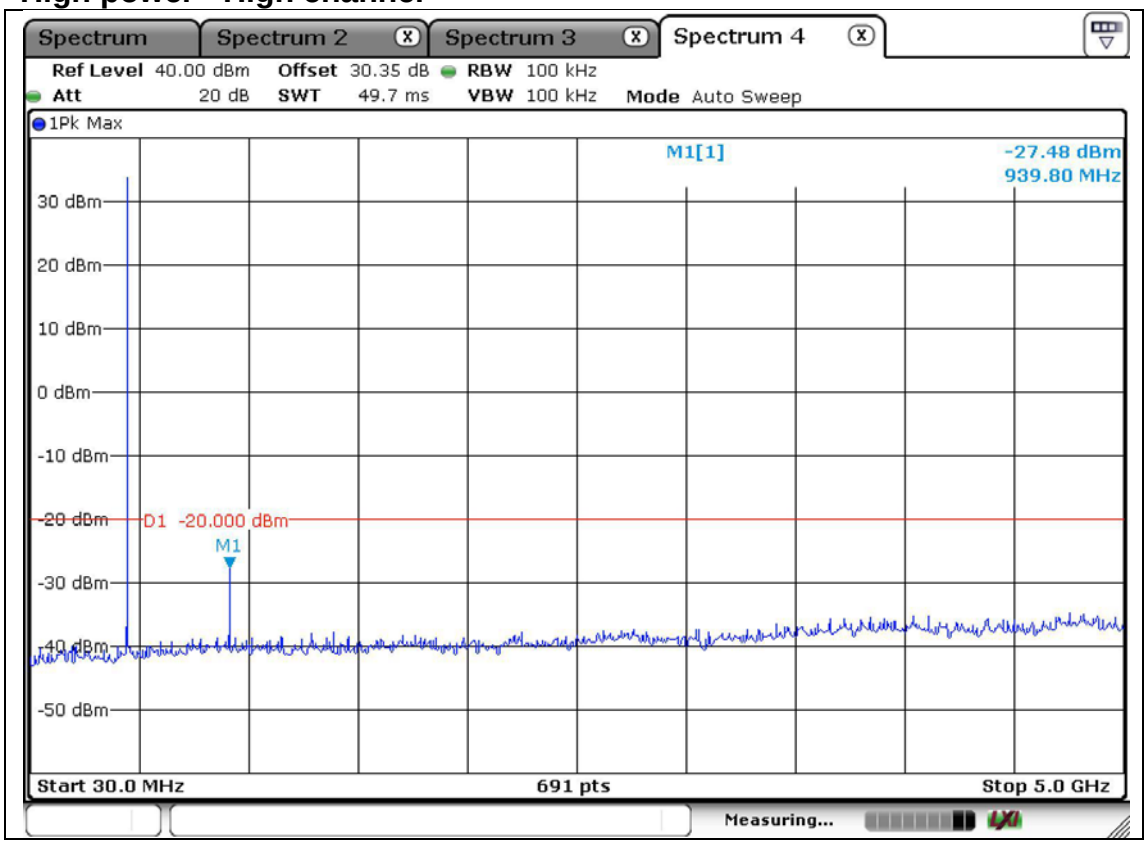
High power - Low channel



High power - Middle channel

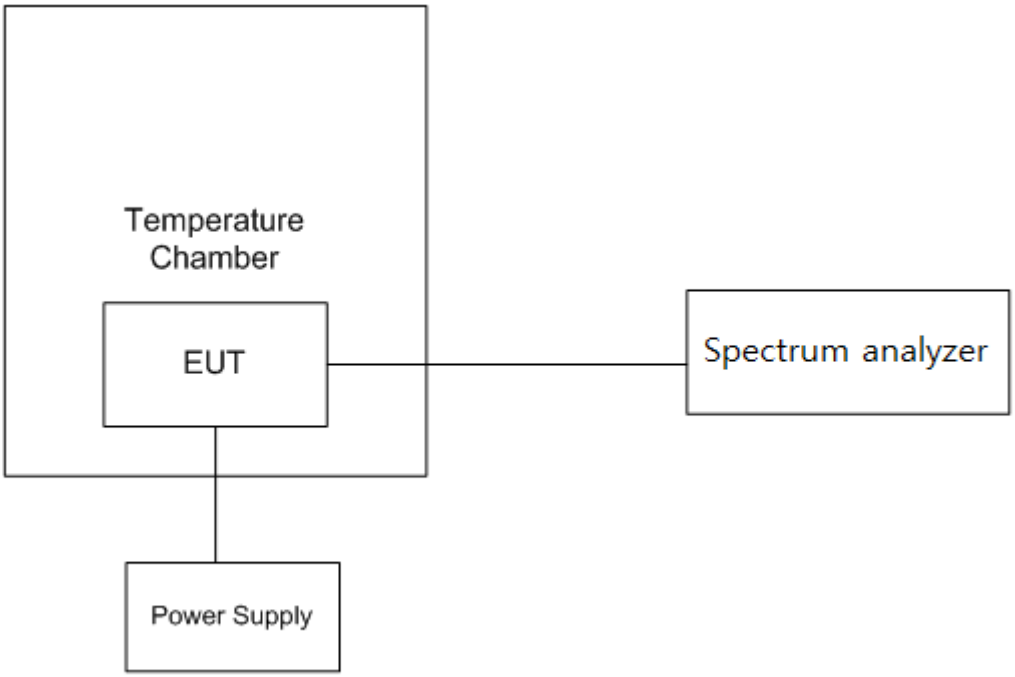


High power - High channel



3.5. Frequency stability

3.5.1. Test setup



3.5.2. Test procedure

1. The transmitter output was connected to the spectrum analyzer through an attenuator.
2. The transmission time was measured with the spectrum analyzer using,
   RBW=1 ㎑,
   VBW=1 ㎑.
3. Set the temperature of chamber to -30℃. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. While maintaining a constant temperature inside the chamber, turn the EUT on and measure the EUT operating frequency.
4. Repeat step 2 with a 10℃ decreased per stage until the highest temperature 50℃ is measured, record all measured frequencies on each temperature step.

3.5.3. Limit

1. According to FCC part 2 section 2.1055(a)(1), the frequency stability shall be measured with variation of ambient temperature from -30 ℃ to +50 ℃ centigrade.
2. According to FCC part section 2.1055(d)(2), for battery powered equipment the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.
3. According to FCC part 90 section 90.213, (a) Unless noted elsewhere, transmitters used in the services overned by this part must have a minimum frequency stability as specified in the following table.

Minimum Frequency Stability [Parts per million (ppm)]

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	[1,2,3]100	100	200
25-50	20	20	50
72-76	5		50
150-174	[5,11]5	[6]5	[4.6]50
216-220	1.0		1.0
220-222[12]	0.1	1.5	1.5
421-512	[7,11,14]2.5	[8]5	[8]5
806-809	[14]1.0	1.5	1.5
809-824	[14]1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	[14]0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928[13]	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	[9]300	300	300
Above 2450[10]			

[1]Fixed and base stations with over 200 watts transmitter power must have a frequency stability of 50 ppm except for equipment used in the Public Safety Pool where the frequency stability is 100 ppm.
[2]For single sideband operations below 25 ㎒, the carrier frequency must be maintained within 50 ㎐ of the authorized carrier frequency.
[3]Travelers information station transmitters operating from 530 ~ 1 700 ㎑ and transmitters exceeding 200 watts peak envelope power used for disaster communications and long distance circuit operations pursuant to §90.242 and §90.264 must maintain the carrier frequency to within 20 ㎐ of the authorized frequency.
[4]Stations operating in the 154.45 to 154.49 ㎒ or the 173.2 to 173.4 ㎒ bands must have a frequency stability of 5 ppm.
[5]In the 150 ~ 174 ㎒ band, fixed and base stations with a 12.5 ㎑ channel bandwidth must have a frequency stability of 2.5 ppm. Fixed and base stations with a 6.25 ㎑ channel bandwidth must have a frequency stability of 1.0 ppm.
[6]In the 150 ~ 174 ㎒ band, mobile stations designed to operate with a 12.5 ㎑ channel bandwidth or designed to operate on a frequency specifically designated for itinerant use or designed for low-power operation of two watts or less, must have a frequency stability of 5.0 ppm. Mobile stations designed to operate with a 6.25 ㎑ channel bandwidth must have a frequency stability of 2.0 ppm.

[7]In the 421 ~ 512 ㎒ band, fixed and base stations with a 12.5 ㎑ channel bandwidth must have a frequency stability of 1.5 ppm. Fixed and base stations with a 6.25 ㎑ channel bandwidth must have a frequency stability of 0.5 ppm.
[8]In the 421 ~ 512 ㎒ band, mobile stations designed to operate with a 12.5 ㎑ channel bandwidth must have a frequency stability of 2.5 ppm. Mobile stations designed to operate with a 6.25 ㎑ channel bandwidth must have a frequency stability of 1.0 ppm.
[9]Fixed stations with output powers above 120 watts and necessary bandwidth less than 3 ㎑ must operate with a frequency stability of 100 ppm. Fixed stations with output powers less than 120 watts and using time-division multiplex, must operate with a frequency stability of 500 ppm.
[10]Except for DSRCS equipment in the 5 850 ~ 5 925 ㎒ band, frequency stability is to be specified in the station authorization. Frequency stability for DSRCS equipment in the 5 850 ~ 5 925 ㎒ band is specified in subpart M of this part.
[11]Paging transmitters operating on paging-only frequencies must operate with frequency stability of 5 ppm in the 150 ~ 174 ㎒ band and 2.5 ppm in the 421 ~ 512 ㎒ band.
[12]Mobile units may utilize synchronizing signals from associated base stations to achieve the specified carrier stability.
[13]Fixed non-multilateration transmitters with an authorized bandwidth that is more than 40 ㎑ from the band edge, intermittently operated hand-held readers, and mobile transponders are not subject to frequency tolerance restrictions.
[14]Control stations may operate with the frequency tolerance specified for associated mobile frequencies.

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

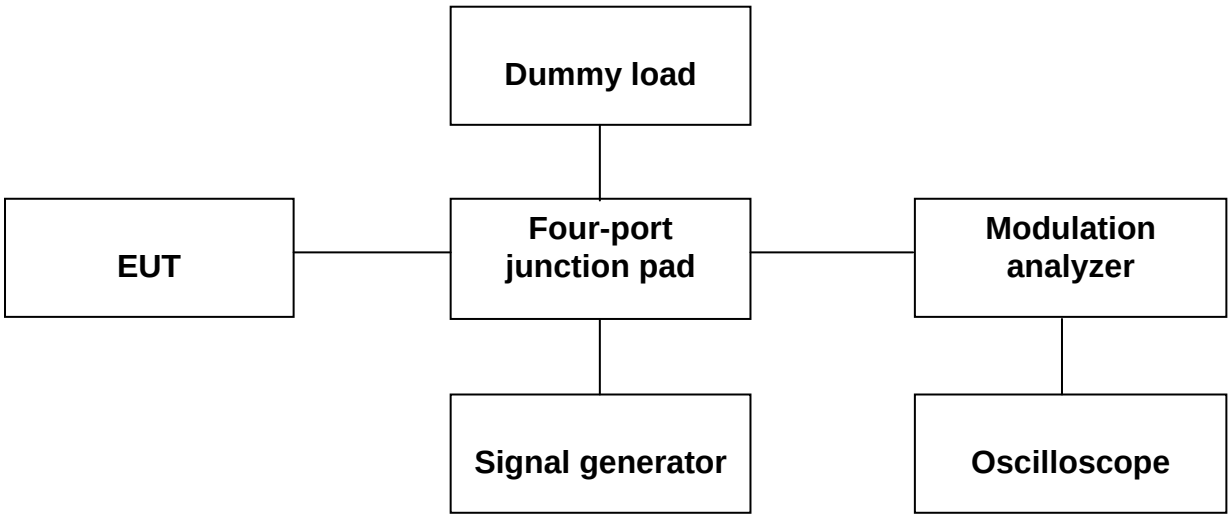
3.5.4. Test results

Assigned frequency: 450.025 MHz (Low channel)

Test voltage	Test voltage (V)	Temp. (℃)	Measure Frequency (MHz)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Limit (ppm)
100 %	3.8	-30	450.024 688	312	0.69	2.5
		-20	450.024 657	343	0.76	
		-10	450.025 144	144	0.32	
		0	450.025 869	869	1.93	
		10	450.025 951	951	2.11	
		20	450.025 544	544	1.21	
		30	450.025 909	909	2.02	
		40	450.025 887	887	1.97	
		50	450.025 940	940	2.09	
115 %	4.37	20	450.025 889	889	1.98	
Battery end point	2.97	20	450.025 650	650	1.44	

3.6. Transient frequency behavior of the transmitter

3.6.1. Test setup



3.6.2. Test procedure

1. Set the signal generator to the assigned transmitter frequency and modulate it with a 1 ㎑ tone at ±12.5 ㎑ deviation and set its output level to -15 ㏈m.
2. Key the transmitter.
3. Supply sufficient attenuation via the RF attenuator to provide an input level to the test receiver that is 40 ㏈ below the test receiver maximum allowed input power when the transmitter is operating at its rated power level.
4. Unkey the transmitter.
5. Adjust the RF level of the signal generator to provide RF power into the RF power meter equal to the level this signal generator RF level shall be maintained throughout the rest of the measurement.
6. Connect the output of the RF combiner network to the input of the Modulation analyzer.
7. Set the horizontal sweep rate on the storage oscilloscope to 10 milliseconds per division and adjust the display to continuously view the 1 000 ㎐ tone. Adjust the vertical amplitude control of the oscilloscope to display the 1 000 ㎐ at ±4 divisions vertically centered on the display.
8. Key the transmitter and observe the stored display. once the modulation Analyzer demodulator has been captured by the transmitter power, the display will show the frequency difference from the assigned frequency to the actual transmitter frequency versus time. The instant when the 1 ㎑ test signal is completely suppressed (including any capture time due to phasing) is considered to be t_{on}. The trace should be maintained within the allowed divisions during the period t_1 and t_2. See the figure in the appropriate standards section.
9. During the time from the end of t_2 to the beginning of t_3 the frequency difference should not exceed the limits set by the FCC in 47 CFR 90.214 and outlined in 3.2.2.

The allowed limit is equal to the transmitter frequency times its FCC frequency tolerance times ±4 display divisions divided by 12.5 ㎑.

10. Key the transmitter and observe the stored display. The trace should be maintained within the allowed divisions after the end of t_2 and remain within it until the end of the trace. See the figure in the appropriate standards sections.
11. To test the transient frequency behavior during the period t_3 the transmitter shall be keyed.
12. Adjust the oscilloscope trigger controls so it will trigger on a decreasing magnitude from the Modulation analyzer, at 1 division from the right side of the display, when the transmitter is turned off. Set the controls to store the display. The moment when the 1 ㎑ test signal starts to rise is considered to provide to t_{off} .
13. The transmitter shall be unkeyed.
14. Observe the display. The trace should remain within the allowed divisions during period t_3. See the figures in the appropriate standards section.

3.6.3. Limit

According to FCC 90.214, Transmitters designed to operate in the 150 ~ 174 ㎒ and 421 ~ 512 ㎒ frequency bands must maintain transient frequencies within the maximum frequency difference limits during the time intervals indicated:

Time intervals[1,2]	Maximum frequency Difference[3]	All equipment	
		150 to 174 MHz	421 to 512 MHz
Transient frequency behavior for equipment designed to operate on 25 kHz channel			
t1[4] ----------	± 25.0 kHz	5.0 ms	10.0 ms
t2 ----------	± 12.5 kHz	20.0 ms	25.0 ms
t3[4] ----------	± 25.0 kHz	5.0 ms	10.0 ms
Transient frequency behavior for equipment designed to operate on 12.5 kHz channel			
t1[4] ----------	± 12.5 kHz	5.0 ms	10.0 ms
t2 ----------	± 6.25 kHz	20.0 ms	25.0 ms
t3[4] ----------	± 12.5 kHz	5.0 ms	10.0 ms
Transient frequency behavior for equipment designed to operate on 6.25 kHz channel			
t1[4] ----------	± 6.25 kHz	5.0 ms	10.0 ms
t2 ----------	± 3.125 kHz	20.0 ms	25.0 ms
t3[4] ----------	± 6.25 kHz	5.0 ms	10.0 ms

[1] t_{on} is the instant when a 1 ㎑ test signal is completely suppressed, including any capture time due to phasing.
t_1 is the time period immediately following t_{on}.
t_2 is the time period immediately following t_1.
t_3 is the time period from the instant when the transmitter is turned off until t_{off}.
t_{off} is the instant when the 1 ㎑ test signal starts to rise.

[2] During the time from the end of t_2 to the beginning of t_3, the frequency difference must not exceed the limits specified in §90.213.

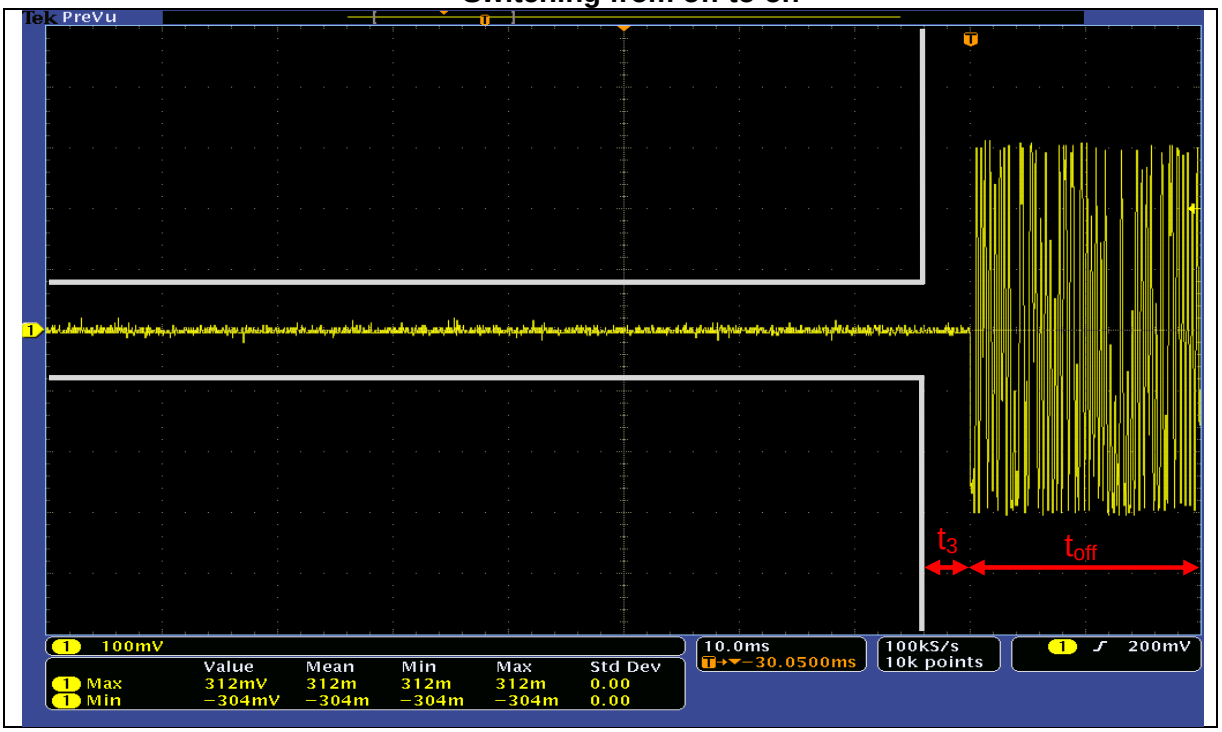
[3] Difference between the actual transmitter frequency and the assigned transmitter frequency.

[4] If the transmitter carrier output power rating is 6 watts or less, the frequency difference during this time may exceed the maximum frequency difference for this period.

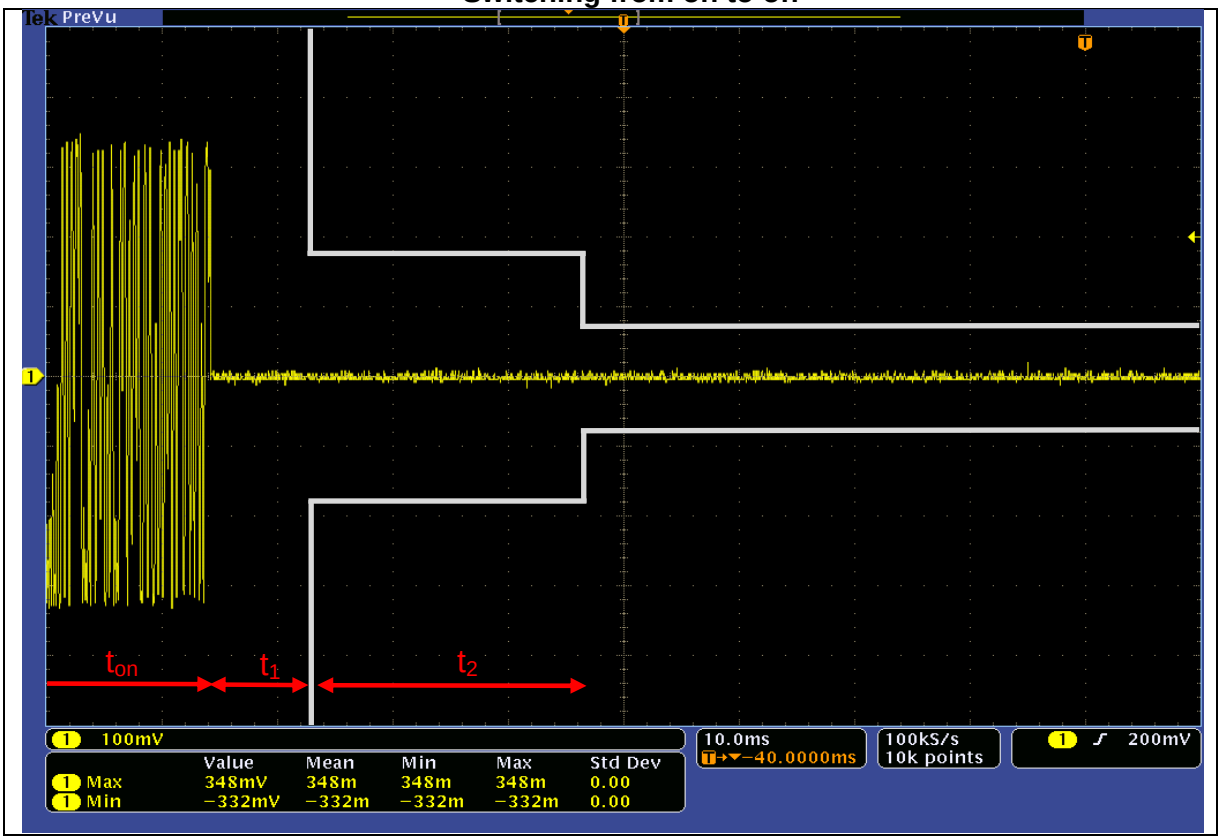
3.6.4. Test results

Low power - Low ch.

Switching from off to on

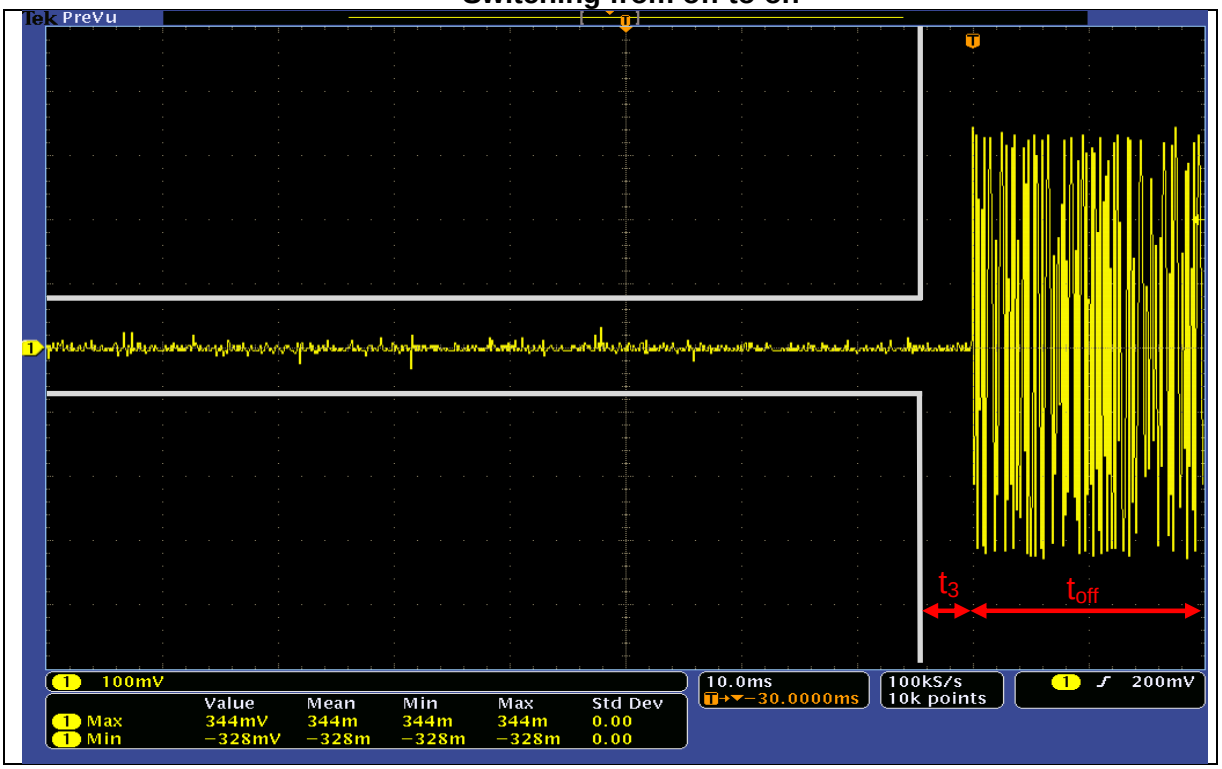


Switching from on to off

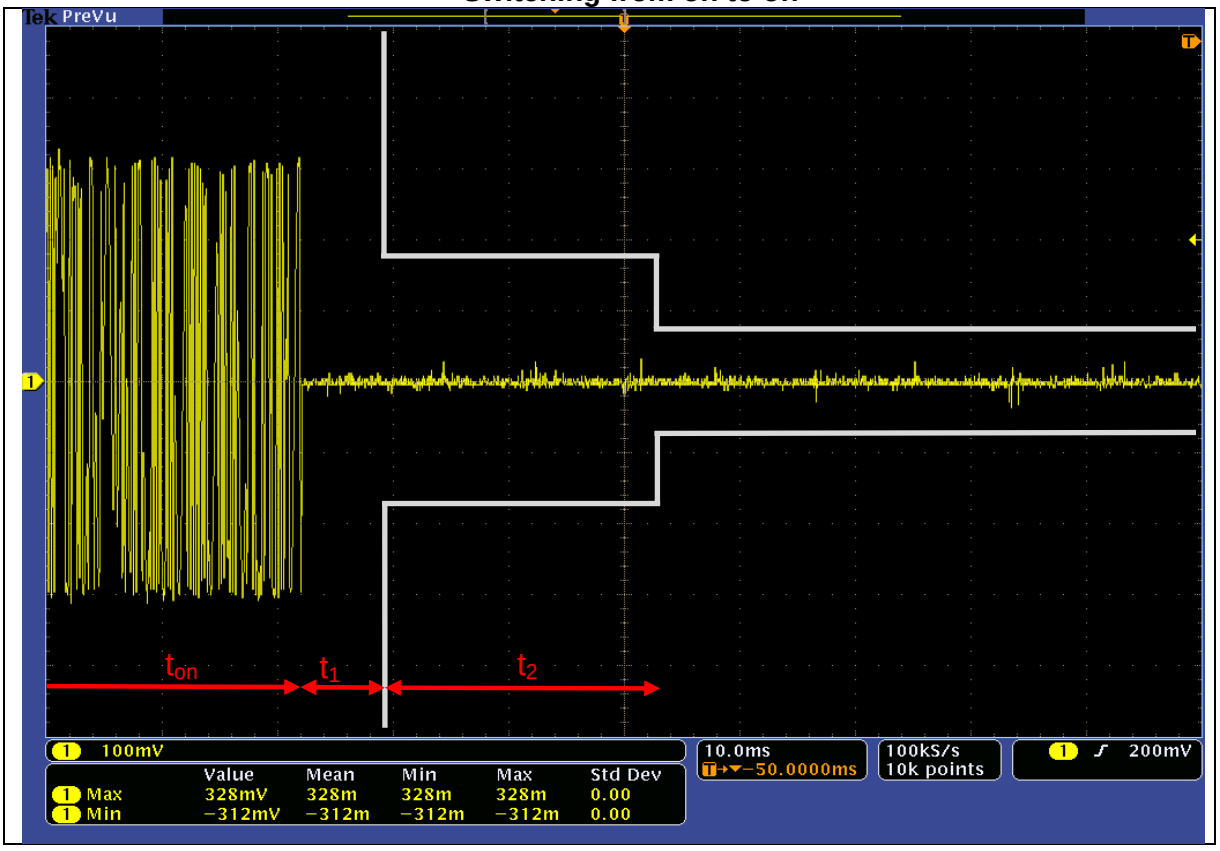


Low power - Mid ch.

Switching from off to on

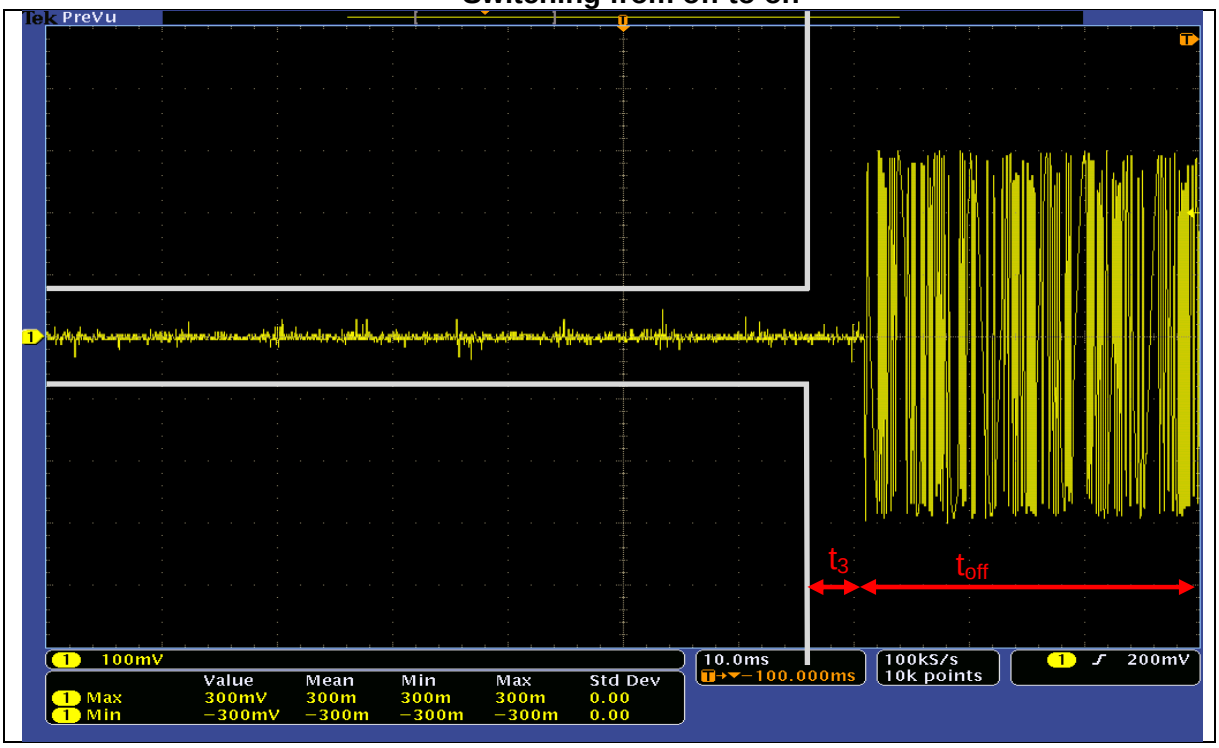


Switching from on to off

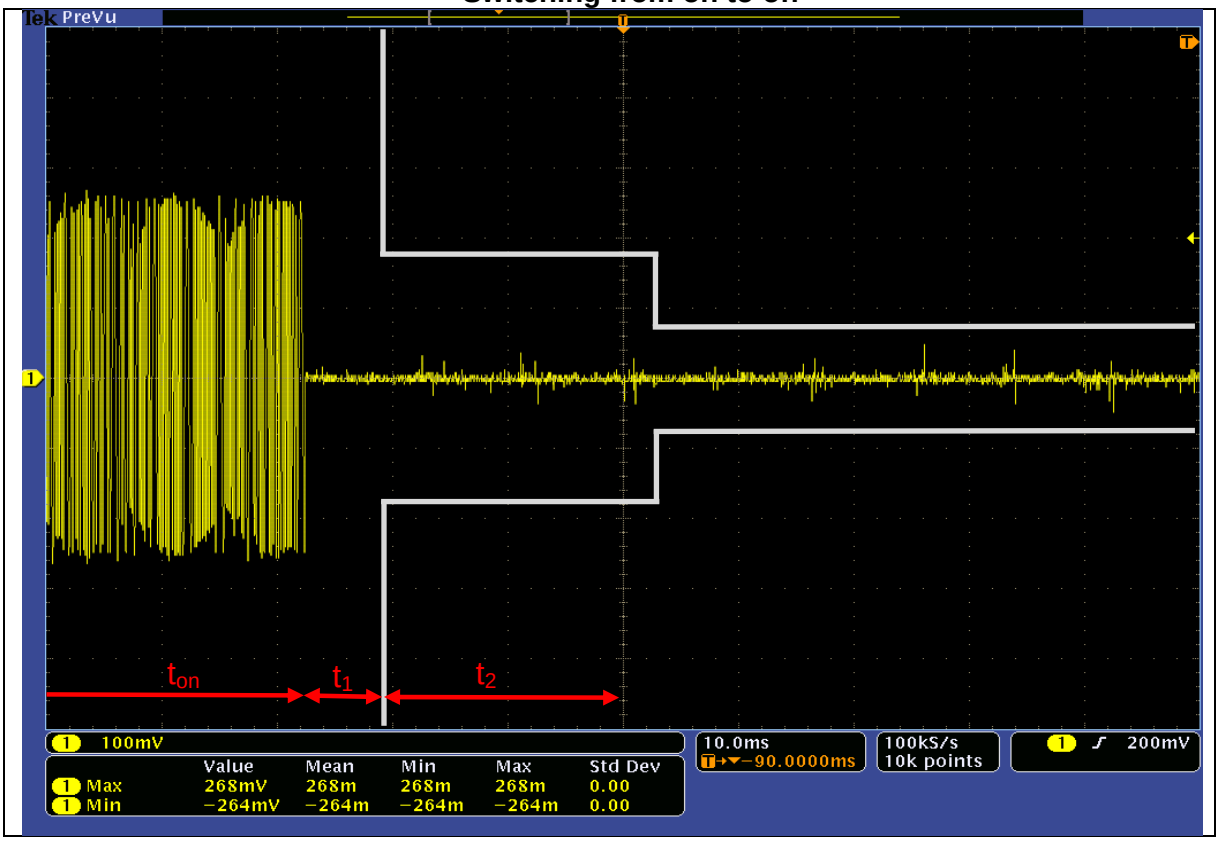


Low power - High ch.

Switching from off to on



Switching from on to off



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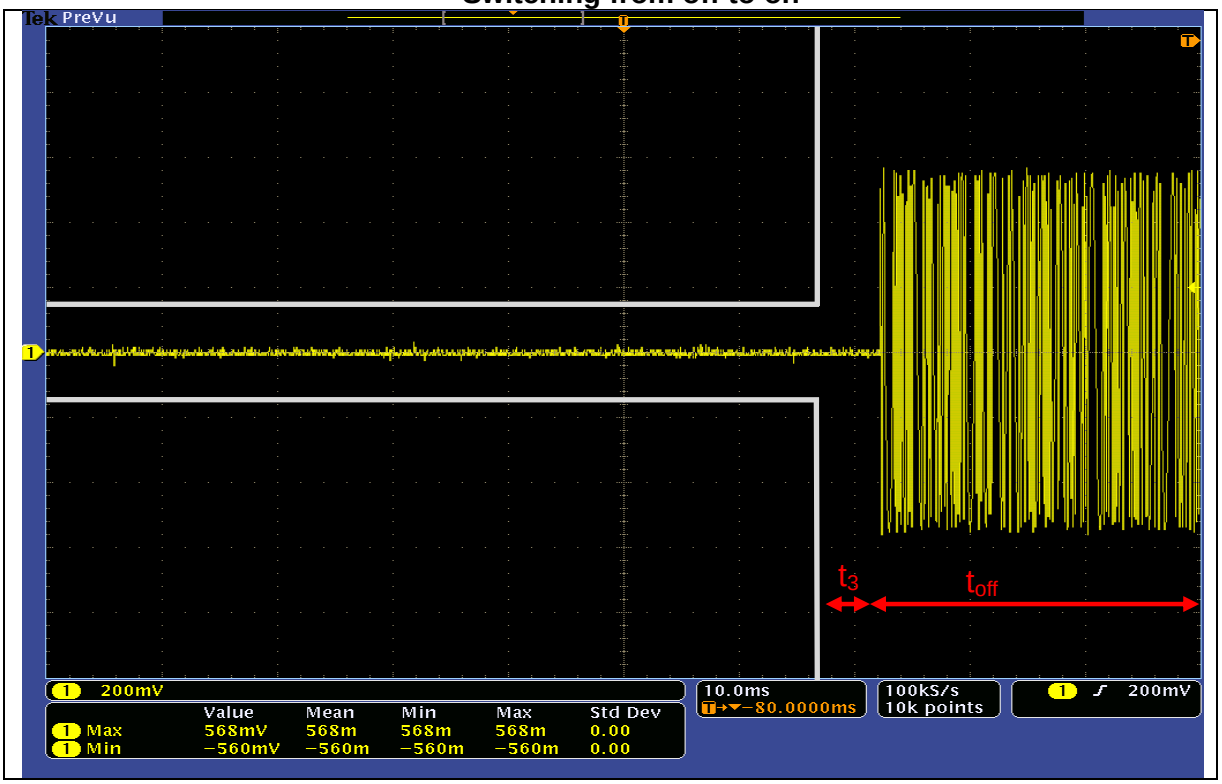
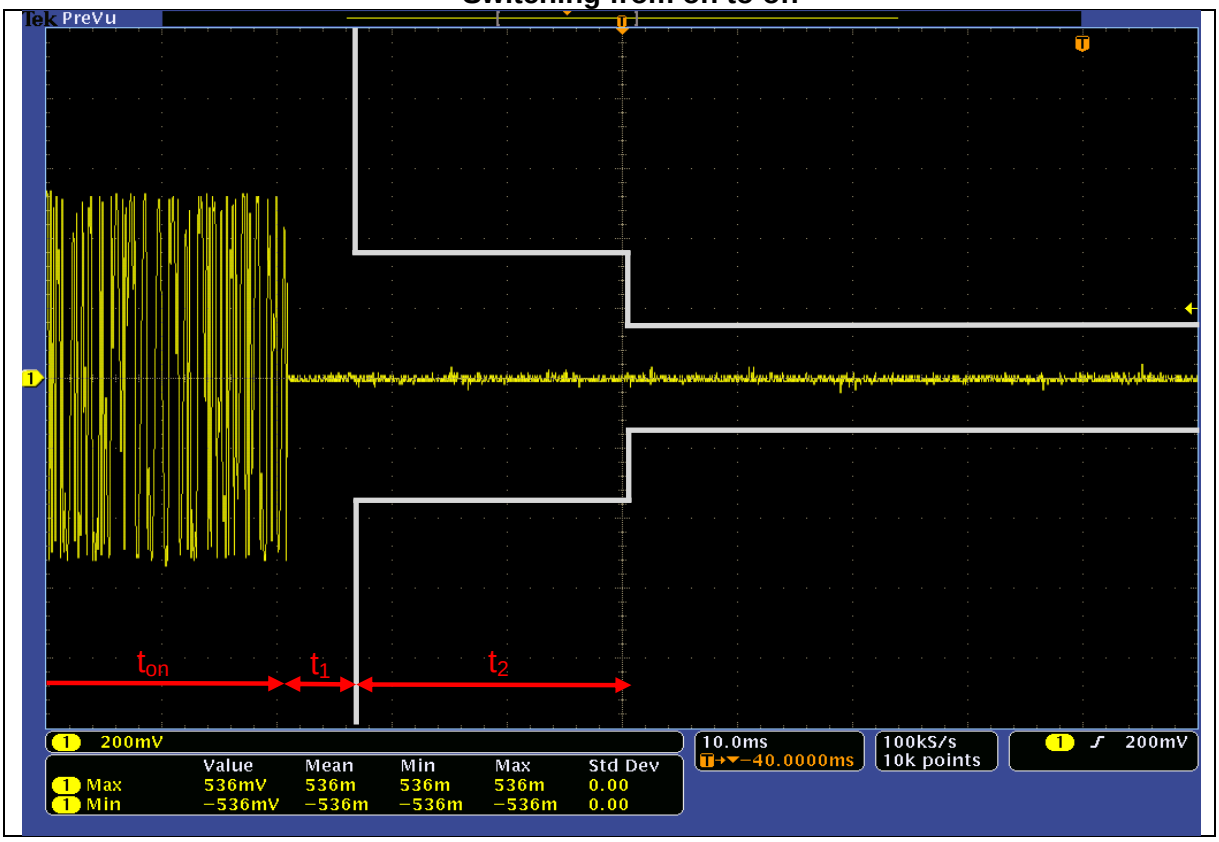
High power - Low ch.

Switching from off to on

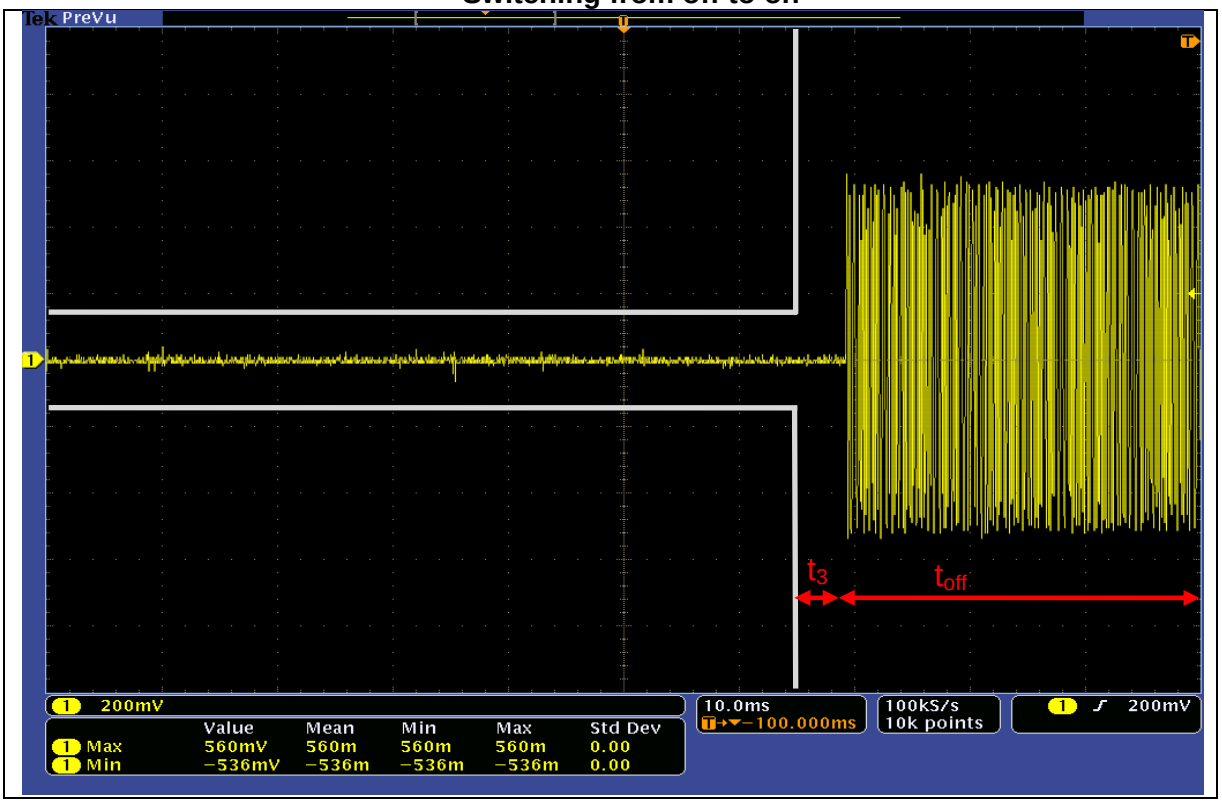


Switching from on to off

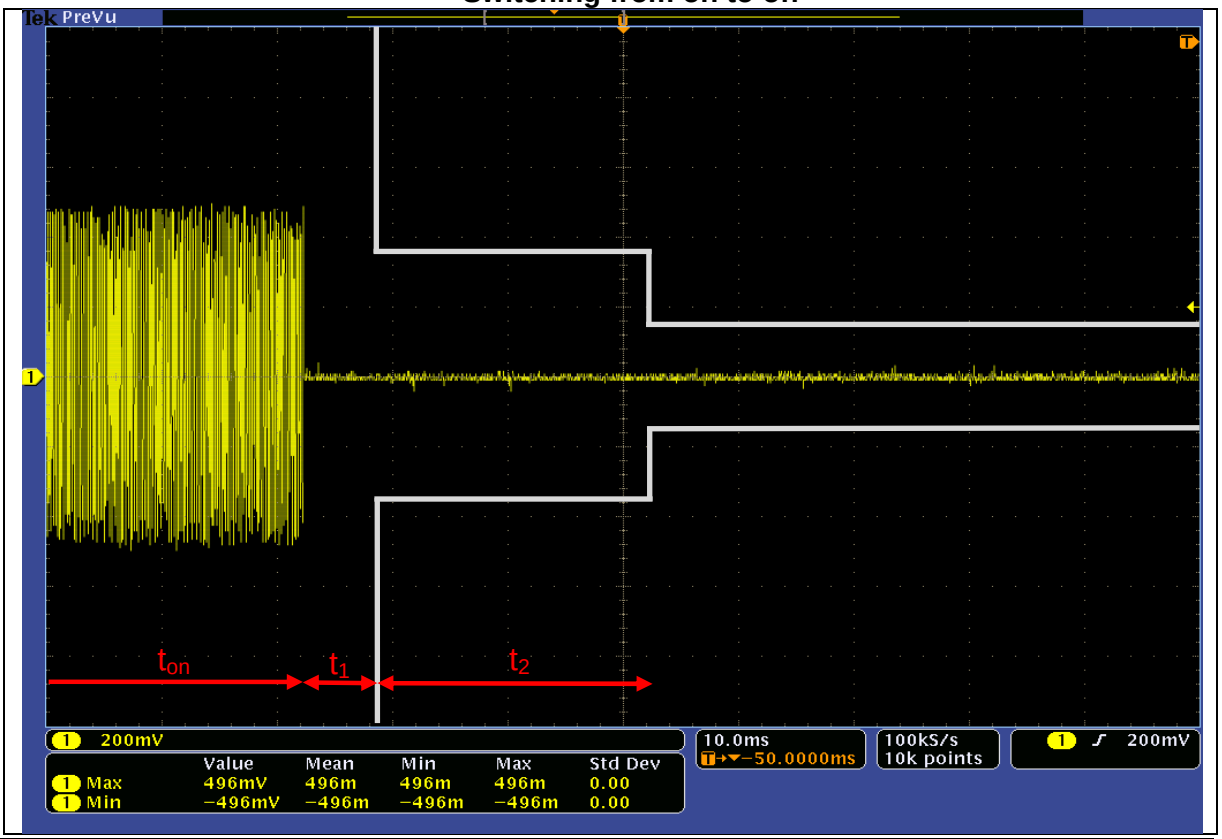


High power - Mid ch.

Switching from off to on

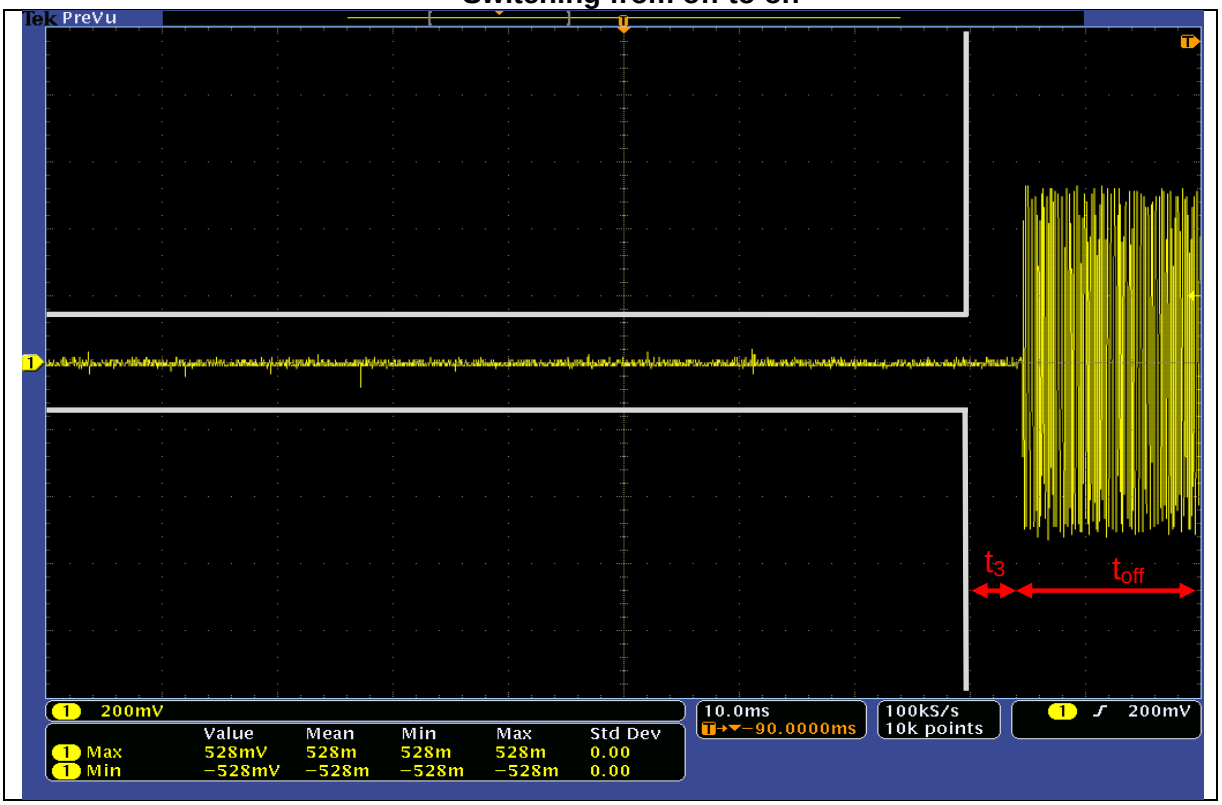


Switching from on to off

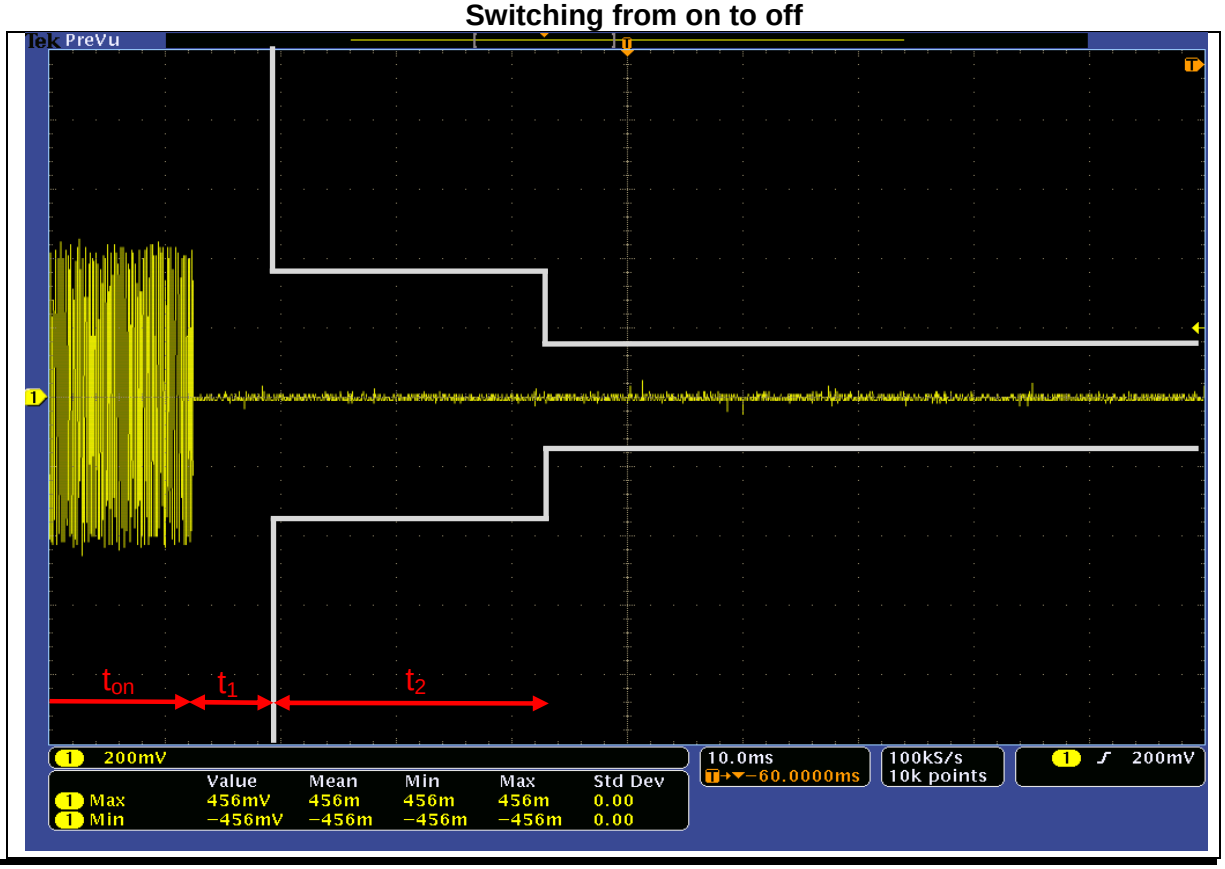


High power - High ch.

Switching from off to on



Switching from on to off

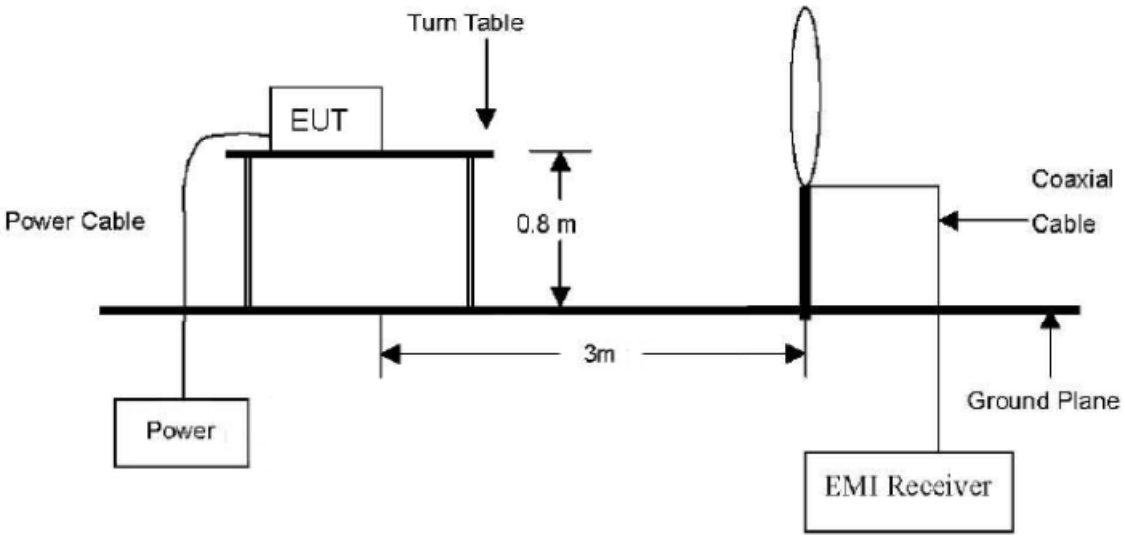


3.7. Radiated spurious emissions

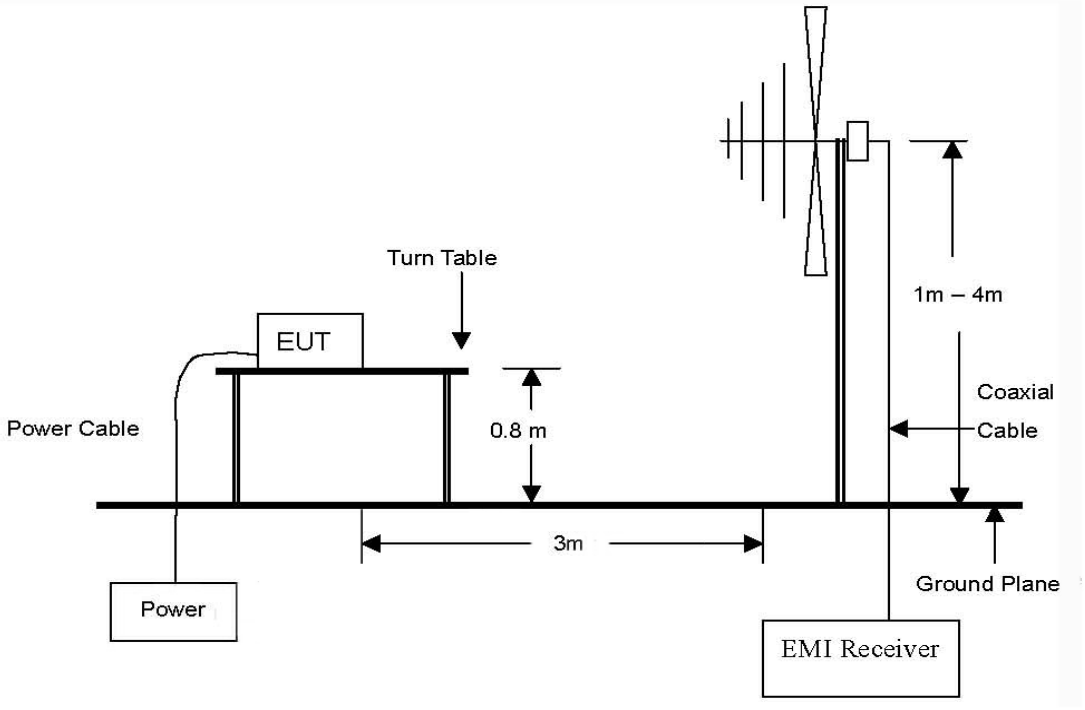
3.7.1. Test setup

Radiated spurious emissions from the EUT were measured according to the dictates of ***ANSI-TIA-603-D-2010***

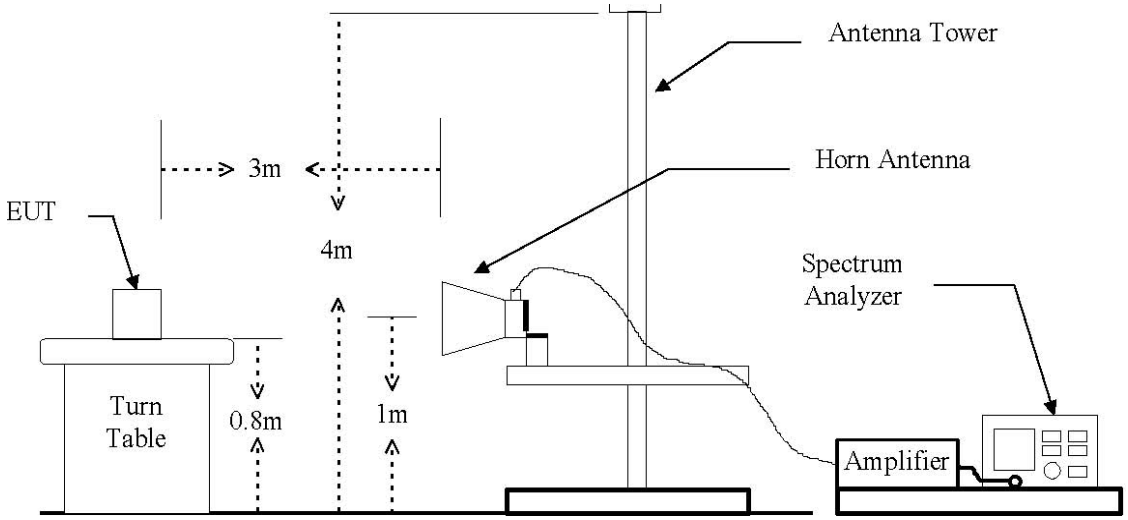
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz Emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 ㎒ to 1 ㎓ emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 1 ㎓ to 26.5 ㎓ emissions.



3.7.2. Test procedure

Radiated spurious emissions from the EUT were measured according to the dictates of ***ANSI-TIA-603-D-2010***

The EUT was positioned on a non-conductive turntable, 0.8m above the ground plane.
The radiated emission at the fundamental frequency was measured at 3 m distance with a test antenna and spectrum analyzer.
Worst case emission was recorded with the rotation of the turntable and the raising and lowering of the test antenna.
ERP was measured using a substitution method.
The EUT was replaced by reference antenna connected to a signal generator.
The test of spurious radiated emission has been carried out with the validated test software.
The measurements below 1GHz were performed with a measurement bandwidth of 100 kHz, above 1GHz with a bandwidth of 1MHz.
Spurious emission limits near the carrier are defined by a emission mask.

3.7.3. Limit

According to §90.210(d), Spurious attenuated in dB = 50 + 10 log(Power output in watts)

⇨ Low power = 50 + 10 log(1) = <u>50.00 dBc</u>

High power = 50 + 10 log (2.5) = <u>53.97 dBc</u>

3.7.4. Test results

Ambient temperature: 23℃
Relative humidity: 45 % R.H.

Frequency (MHz)	Mode	Output power (dBm)	Output power (W)	Rated power (W)
450.025	Low power	29.65	0.923	1
	High power	33.41	2.193	2.5
459.925	Low power	29.76	0.946	1
	High power	33.63	2.307	2.5
469.925	Low power	29.88	0.973	1
	High power	33.54	2.260	2.5

A. Low channel (450.025 ㎒)

Radiated emissions			Ant.	Correction factors			Total		Limit
Frequency (㎒)	Reading (dB㎶)	Detector mode	Pol.	Ant. factor (dB/m)	CL (dB)	AMP Gain (dB)	Actual (dB㎶/m)	Actual (dB m)	Limit (dB m)
887.61	44.66	Peak	H	23.13	3.10	-	70.89	-24.31	-20.35
1 348.81	76.01	Peak	H	25.52	3.50	40.34	64.69	-30.51	-20.35
1 799.84	63.23	Peak	H	25.96	4.12	40.46	52.85	-42.35	-20.35
2 251.66	56.38	Peak	H	26.56	4.54	40.83	46.65	-48.55	-20.35
2 698.33	55.95	Peak	H	27.19	4.86	41.19	46.81	-48.39	-20.35
3 147.87	50.32	Peak	H	27.89	5.30	41.13	42.38	-52.82	-20.35

※ Remark
1. Actual = Reading + Ant. factor + CL (Cable loss) - AMP Gain
2. The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.

The frequency spectrum from 30 ㎒ to 5 000 ㎒ was investigated. Emission levels are not reported much lower than the limits by over 20 dB. All reading values are peak values.
To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes.

B. Middle channel (459.925 ㎒)

Radiated emissions			Ant.	Correction factors			Total		Limit
Frequency (㎒)	Reading (dB㎶)	Detector mode	Pol.	Ant. factor (dB/m)	CL (dB)	AMP Gain (dB)	Actual (dB㎶/m)	Actual (dB m)	Limit (dB m)
906.48	43.78	Peak	H	23.31	3.13	-	70.22	-24.98	-20.35
1 378.13	73.43	Peak	H	25.53	3.54	40.39	62.11	-33.09	-20.35
1 838.96	65.30	Peak	H	26.01	4.17	40.47	55.01	-40.19	-20.35
2 300.60	54.40	Peak	H	26.62	4.56	40.91	44.67	-50.53	-20.35
2 761.92	57.23	Peak	H	27.28	4.92	41.05	48.38	-46.82	-20.35
3 222.05	62.26	Peak	H	28.02	5.38	41.20	54.46	-40.74	-20.35

C. High channel (469.925 ㎒)

Radiated emissions			Ant.	Correction factors			Total		Limit
Frequency (㎒)	Reading (dB㎶)	Detector mode	Pol.	Ant. factor (dB/m)	CL (dB)	AMP Gain (dB)	Actual (dB㎶/m)	Actual (dB m)	Limit (dB m)
932.27	43.22	Peak	H	23.57	3.18	-	69.97	-25.23	-20.35
1 408.08	68.73	Peak	H	25.54	3.58	40.42	57.43	-40.77	-20.35
1 878.92	59.64	Peak	H	26.06	4.23	40.48	49.45	-45.75	-20.35
2 350.60	57.15	Peak	H	26.69	4.59	40.98	47.45	-47.75	-20.35
2 821.95	53.66	Peak	H	27.37	4.98	40.97	45.04	-50.16	-20.35
3 292.08	62.13	Peak	H	28.14	5.45	41.27	54.45	-40.75	-20.35

※ Remark

1. Actual = Reading + Ant. factor + CL (Cable loss) - AMP Gain
2. The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.

The frequency spectrum from 30 ㎒ to 5 000 ㎒ was investigated. Emission levels are not reported much lower than the limits by over 20 ㏈. All reading values are peak values.
To get a maximum emission levels from the EUT, the EUT was moved throughout the XY, XZ, and YZ planes.