

TEST REPORT



CTK Co., Ltd.
(Ho-dong), 113, Yejik-ro, Cheoin-gu,
Yongin-si, Gyeonggi-do, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2018-03729
Page (1) / (55) Pages

1. Client

- Name : SOLUM CO.,LTD.
- Address : 4,5,6th F, 357, Guseong-ro, Giheung-gu, Gyeonggi-do, Yongin-si, Republic of Korea
- Date of Receipt : 2018-10-24

2. Manufacturer

- Name #1 : SOLUM VINA CO., LTD
- Address #1 : Plot B3, Ba Thien 2 Industrial park, Thien Ke Ward, Binh Xuten District, Vinh Phuc Province, 281200.,Peple's Republic of Vietnam
- Name : SOLUM CO.,LTD.
- Address : 4,5,6th F, 357, Guseong-ro, Giheung-gu, Gyeonggi-do, Yongin-si, Republic of Korea

3. Use of Report : For FCC Certification & Canadian Certification

4. Test Sample / Model : USB Gateway / SLG-DM101


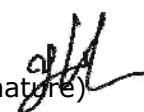
5. Date of Test : 2018-11-07 to 2018-11-23

6. Test Standard(method) used : FCC 47 CFR part 15 subpart C 15.247,
ANSI C63.10-2013, RSS-210

7. Testing Environment : Temp.: (23 ± 1) °C, Humidity: (48 ± 1) % R.H.

8. Test Results : Compliance

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Affirmation	Tested by Bongseok Kim: (Signature) 	Technical Manager Young-taek Lee: (Signature) 
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2018-11-28

Republic of KOREA **CTK Co., Ltd.**



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REPORT REVISION HISTORY

Date	Revision	Page No
2018-11-28	Issued (CTK-2018-03729)	all

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1. General Product Description

1.1 Client Information

Company	SOLUM CO.,LTD.
Contact Point	4,5,6th F, 357, Guseong-ro, Giheung-gu, Gyeonggi-do, Yongin-si, Republic of Korea
Contact Person	Name : CHANG SOO YANG E-mail : cs.yang@solu-m.com Tel : +81 31-8006-7650


1.2 Product Information

FCC ID	2AFWN-SLG-DM101
IC	22800-SLGDM101
Product Description	USB Gateway
Basic Model name	SLG-DM101
Variant Model name	-
Operating Frequency	2 405 MHz - 2 480 MHz
RF Output Power	5.64 dBm(3.664 mW)
Antenna Specification	Antenna type #1 : Dipole Antenna Peak Gain : 2.37 dBi Antenna type #2 : Dipole Antenna Peak Gain : 2.97 dBi
Number of channels	16
Channel Spacing	5 MHz
Type of Modulation	OQPSK
Power Source	DC 5.0 V
RF Power setting in Test SW	Initial value
Firmware Version Id Number(FVIN)	6.0.24.4

1.3 Peripheral Devices

-For Conducted Measurement and Radiated Measurement

Device	Manufacturer	Model No.	Serial No.
Notebook	HP Inc.	HP Probook 650 G1	5CG5114K13
AC Adapter	HP Inc.	PPP012D-S	677777-003





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2. Facility and Accreditations

2.1 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yong-in-si, Gyeonggi-do, Korea.

2.2 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Registration Number	Logo
USA	FCC	FCC Part 15 & 18 EMI (Electromagnetic Interference / Emission)	805871	
CANADA	ISED	IC EMI (3/10m test site)	8737A-2	
JAPAN	VCCI	VCCI V-3 EMI (Electromagnetic Interference / Emission)	C-986 T-1843 R-3627 G-387	
KOREA	NRRA	EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity)	KR0025	

2.3 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.



3. Test Specifications

3.1 Standards

Section in FCC	Section in RSS	Requirement(s)	Status (Note 1)	Test Condition
15.247(a)	RSS-247 5.2(a)	6 dB Bandwidth	C	Conducted
15.247(e)	RSS-247 5.2(b)	Transmitter power spectral density	C	
15.247(b)	RSS-247 5.4(d)	Maximum peak conducted output power	C	
15.247(d)	RSS-247 5.5	Unwanted emission	C	
15.209	RSS-Gen 6.13	Transmitter emission	C	Radiated
15.207(a)	RSS-Gen 8.8	AC Conducted Emission	C	Line Conducted
<i>Note 1:</i> C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable				
<i>Note 2:</i> The data in this test report are traceable to the national or international standards.				
<i>Note 3:</i> The sample was tested according to the following specification: FCC Part 15.247, ANSI C63.10-2013, RSS-247 Issue 2				
<i>Note 4:</i> The tests were performed according to the method of measurements prescribed in KDB No.558074.				

3.2 Mode of operation during the test

The EUT is operated in a manner representative of the typical of the equipments. During at testing, system components were manipulated within the confines of typical usage to maximize each emission. All modulation modes were tests. The results are only attached worst cases.

Test Frequency

Lowest channel	Middle channel	Highest channel
2 405 MHz	2 445 MHz	2 480 MHz

Antenna Port

Antenna port
RF #1
RF #2

Test mode

Modulation	Duty Cycle
OQPSK	60.82 %



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3.3 Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.
Coverage factor $k = 2$, Confidence levels of 95 %

Description	Uncertainty
Conducted RF Output Power	1.5 dB
Occupied Bandwidth	0.1 MHz
Unwanted Emission(conducted)	3.0 dB
Radiated Emissions ($f \leq 1$ GHz)	4.0 dB
Radiated Emissions ($f > 1$ GHz)	5.0 dB



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4. Technical Characteristic Test

4.1 6dB Bandwidth & 99% Bandwidth

Test Procedures(ANSI C63.10-2013 6.9.2)

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Procedures(ANSI C63.10-2013 6.9.3)

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 100 kHz
- b) VBW $\geq 3 \times$ RBW
- c) Detector = peak
- d) Trace mode = Max hold
- e) Sweep = auto couple
- f) Allow trace to fully stabilize
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Limit :

6 dB Bandwidth > 500 kHz



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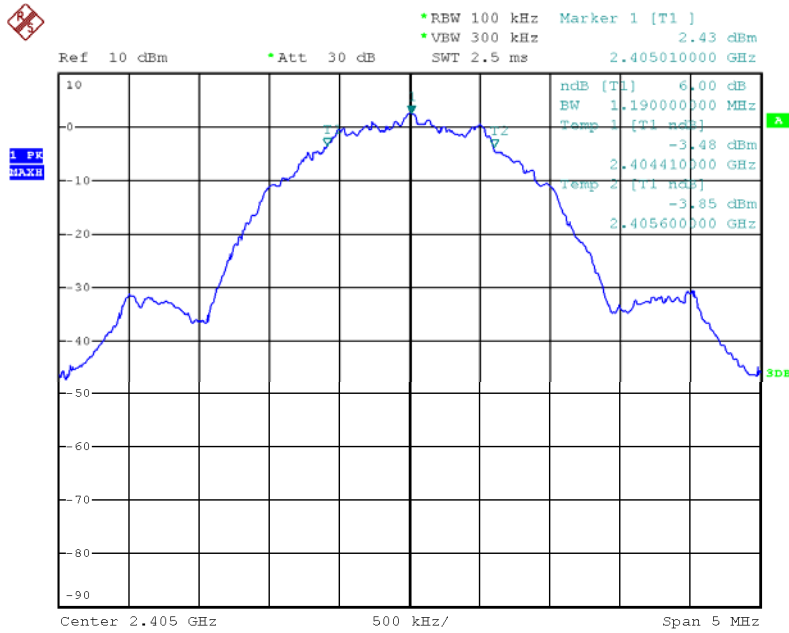
Test Data :

Test Mode [Antenna Port]	Channel	Frequency [MHz]	6 dB Bandwidth [MHz]	99% Bandwidth [MHz]	Result
RF #1	Low	2 405	1.19	2.03	Complies
	Middle	2 445	1.17	2.03	Complies
	High	2 480	1.19	2.02	Complies
RF #2	Low	2 405	1.16	2.01	Complies
	Middle	2 445	1.17	2.01	Complies
	High	2 480	1.17	2.01	Complies

See next pages for actual measured spectrum plots.

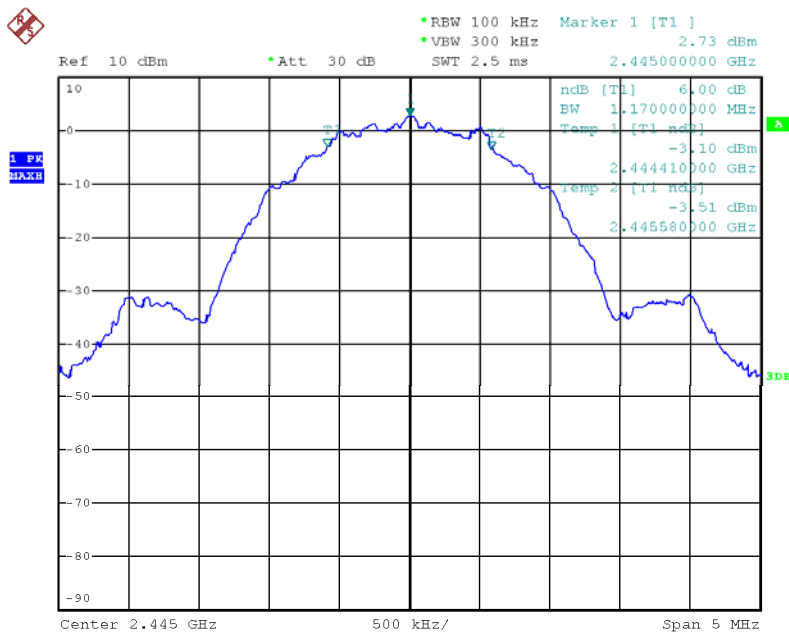
Test Mode : RF #1

**6 dB Bandwidth[MHz]
 Low channel (2 405 MHz)**



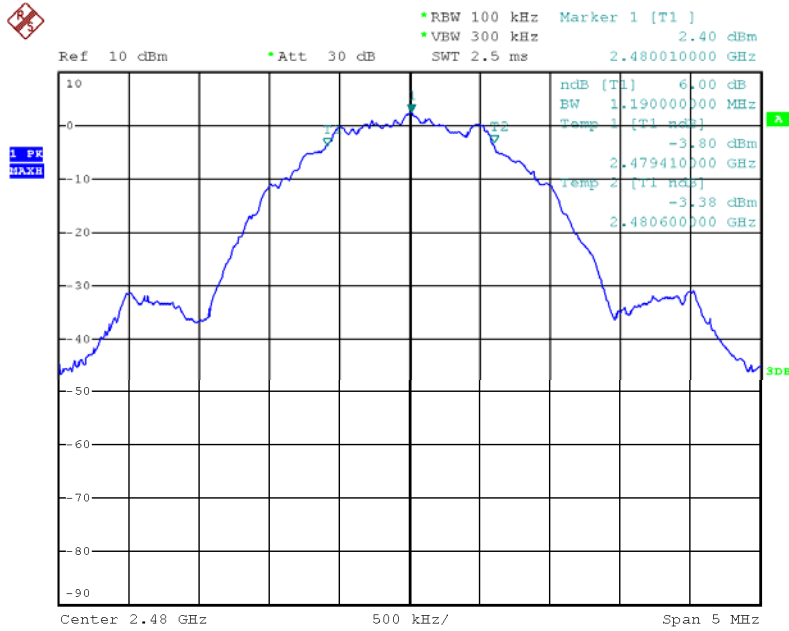
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Middle channel (2 445 MHz)



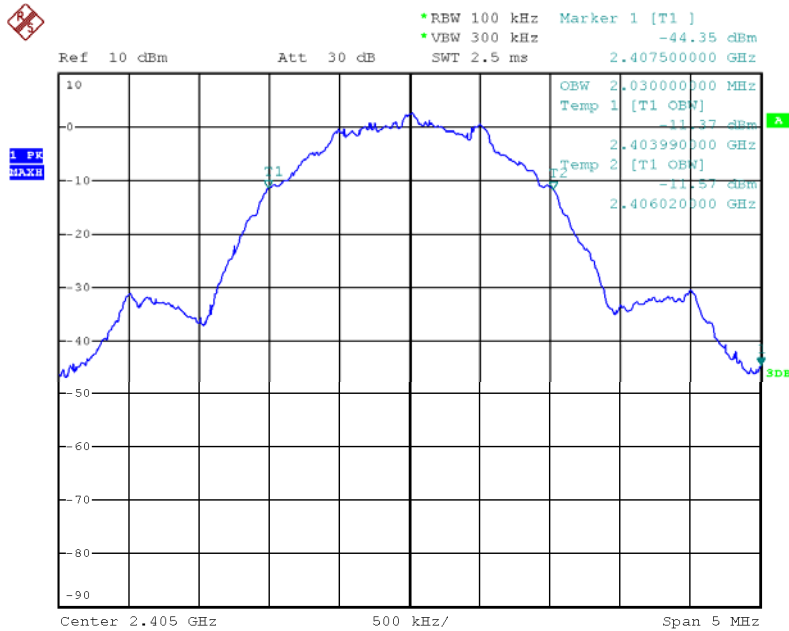
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High channel (2 480 MHz)



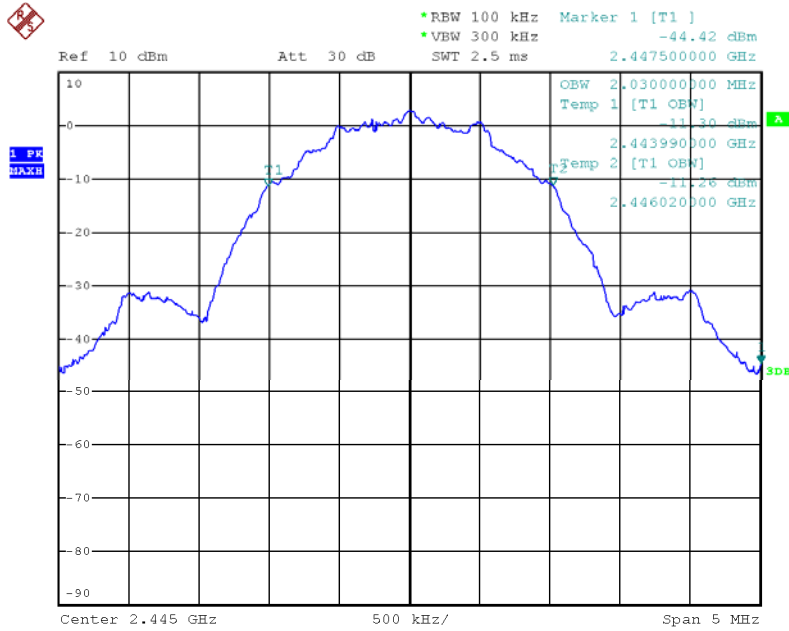
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99% Bandwidth[MHz] Low channel (2 405 MHz)



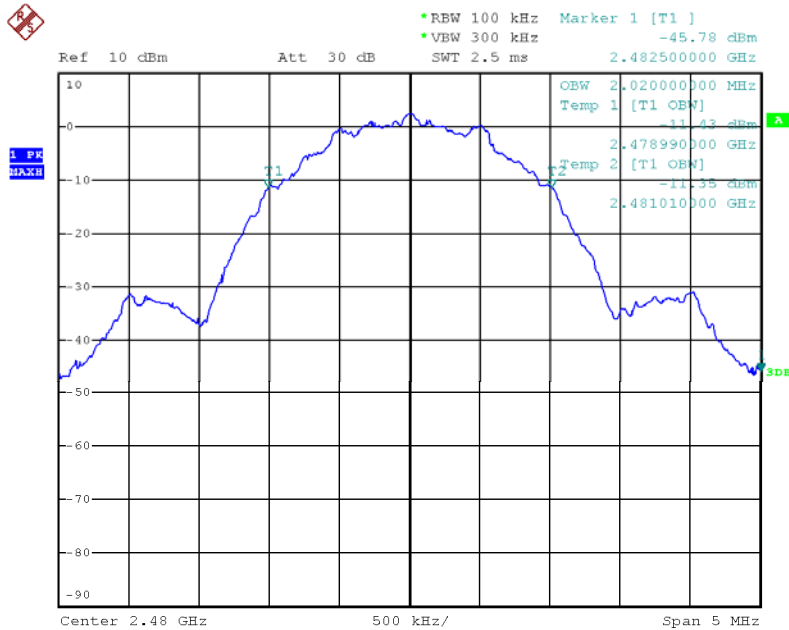
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Middle channel (2 445 MHz)



Date: 7.NOV.2018 22:52:06

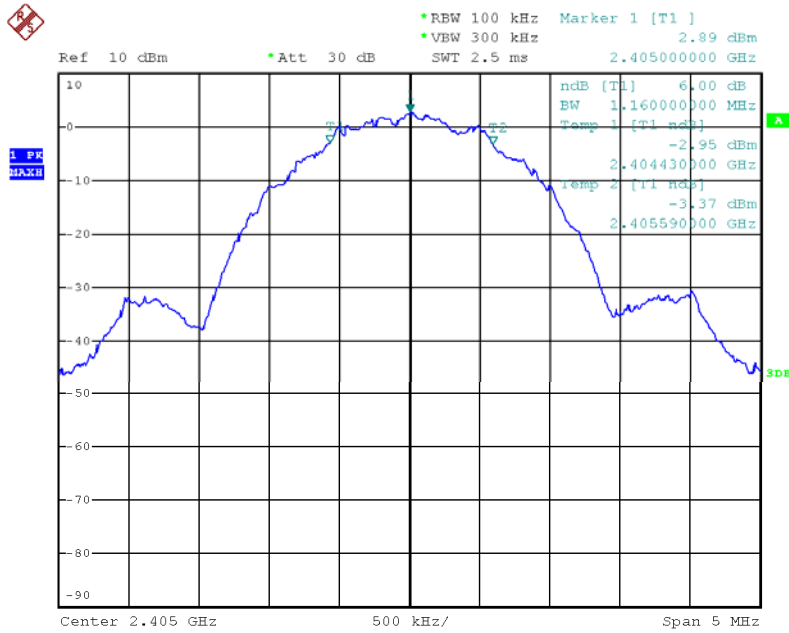
High channel (2 480 MHz)



Date: 7.NOV.2018 22:54:10

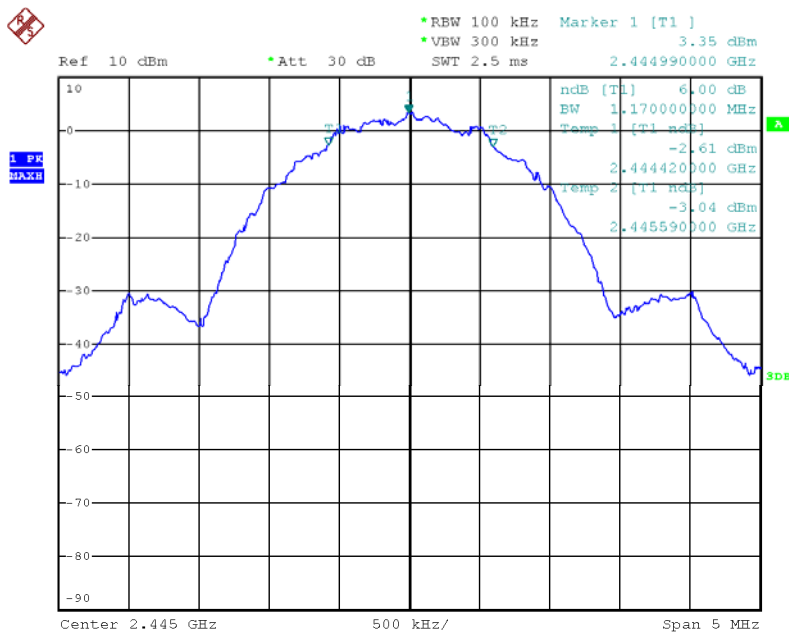
Test Mode : RF #2

**6 dB Bandwidth[MHz]
Low channel (2 405 MHz)**



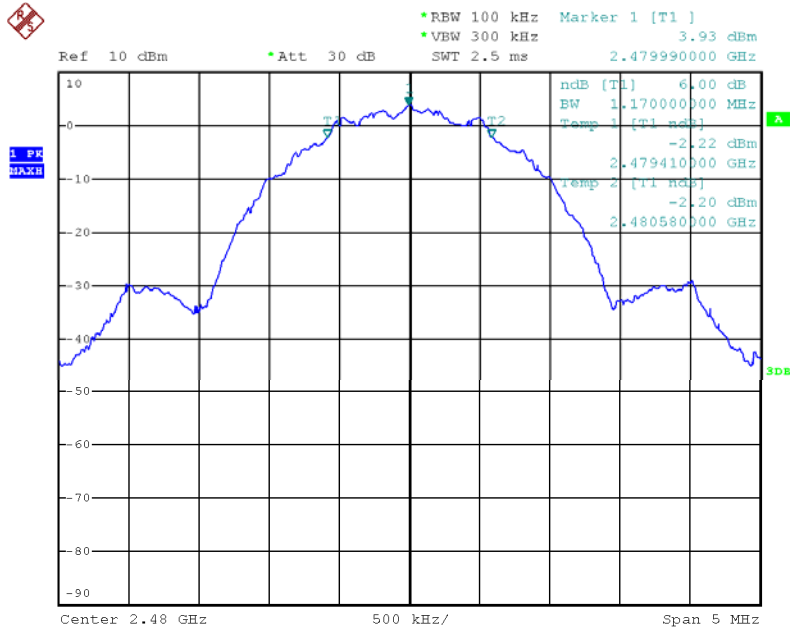
Date: 7.NOV.2018 23:02:12

Middle channel (2 445 MHz)



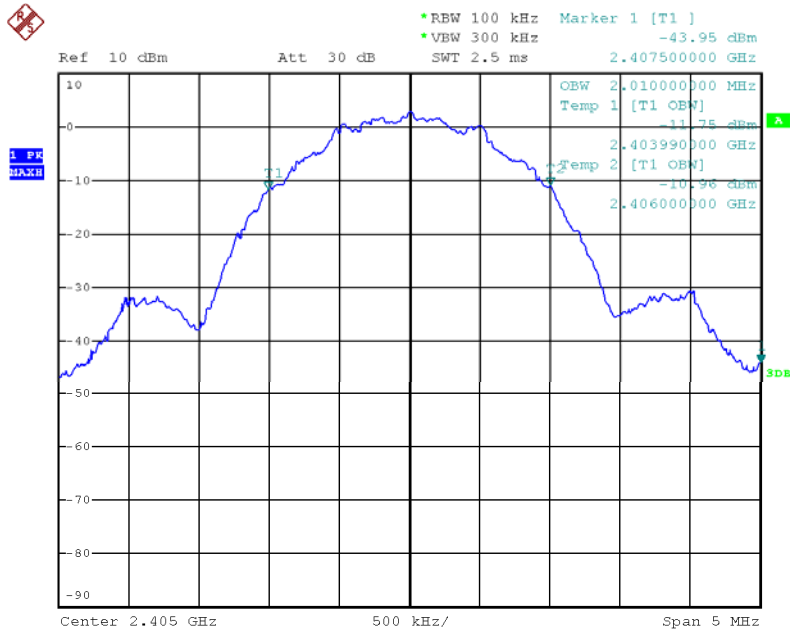
Date: 7.NOV.2018 23:04:45

High channel (2 480 MHz)



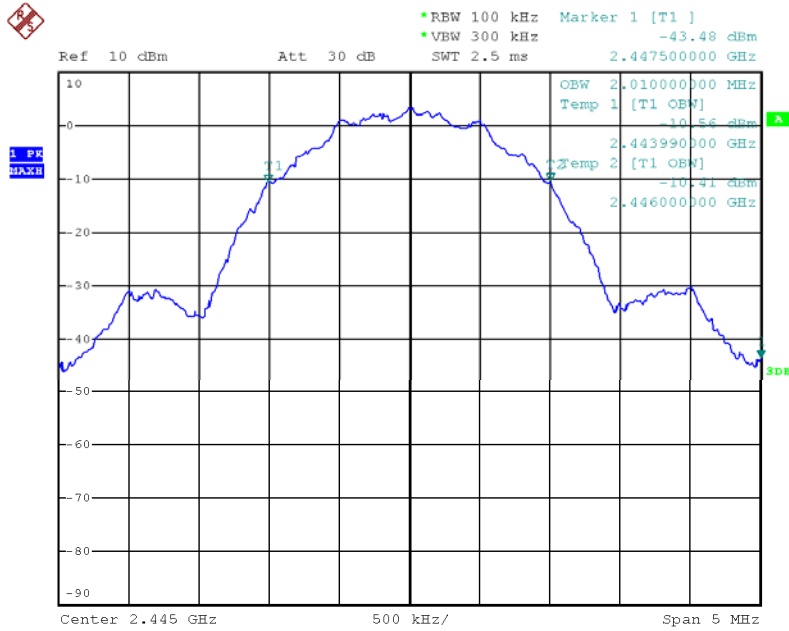
Date: 7.NOV.2018 23:06:50

99% Bandwidth[MHz] Low channel (2 405 MHz)



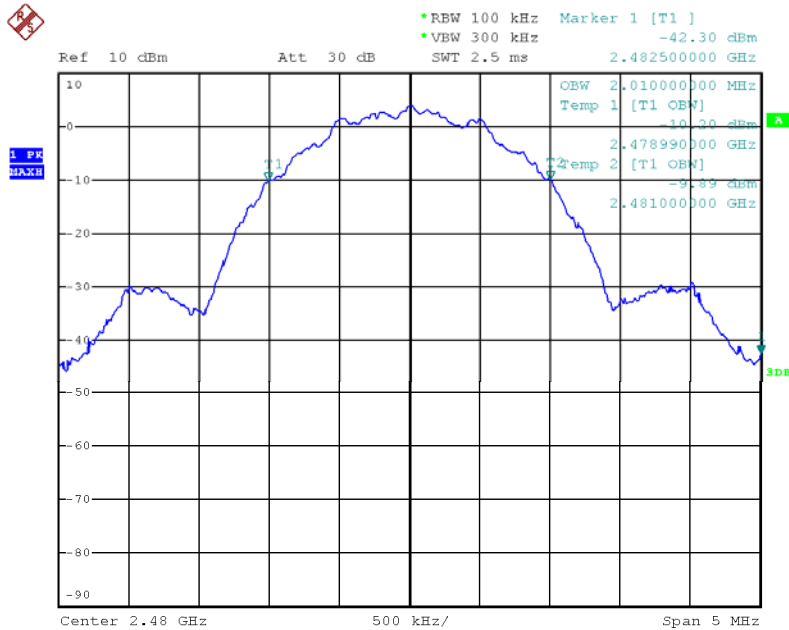
Date: 7.NOV.2018 23:02:26

Middle channel (2 445 MHz)



Date: 7.NOV.2018 23:04:59

High channel (2 480 MHz)



Date: 7.NOV.2018 23:07:05

4.2 Maximum peak Conducted Output Power

Test Procedures(ANSI C63.10-2013 11.9.1)

The following procedure can be used when the maximum available RBW of the instrument is less than the DTS bandwidth:

Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) RBW \geq DTS Bandwidth
- b) VBW \geq 3 x RBW
- c) span \geq 3 x RBW
- d) Sweep time = auto couple
- e) Detector = peak
- f) Trace mode= max hold
- g) Allow trace to fully stabilize
- h) Use peak marker function to determine the peak amplitude level.

Limit :

Maximum Output Power < 1 W (30 dBm)

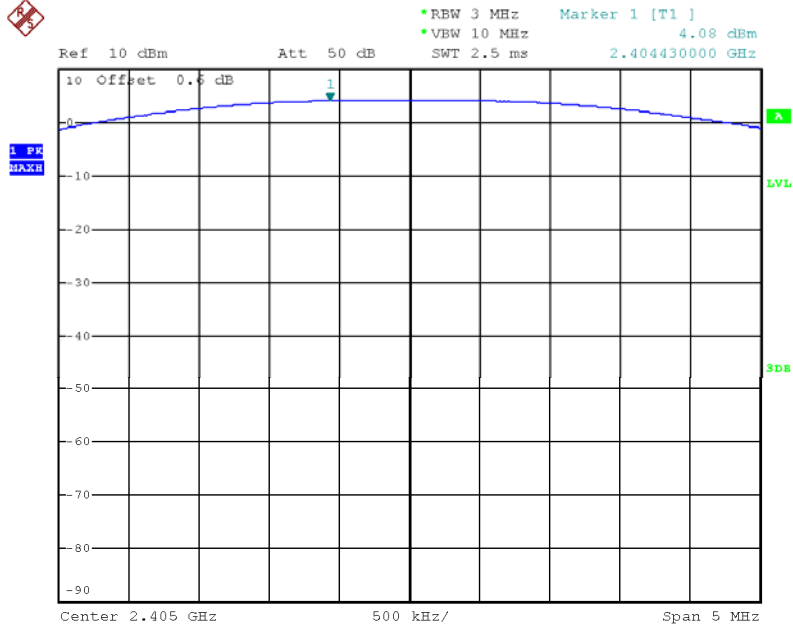
Test Data :

Test Mode [Antenna Port]	Channel	Frequency [MHz]	Measurement data [dBm]	Limit [dBm]	Result
RF #1	Low	2 405	4.08	30	Complies
	Middle	2 445	4.20	30	Complies
	High	2 480	4.05	30	Complies
RF #2	Low	2 405	4.54	30	Complies
	Middle	2 445	4.93	30	Complies
	High	2 480	5.64	30	Complies

See next pages for actual measured spectrum plots.

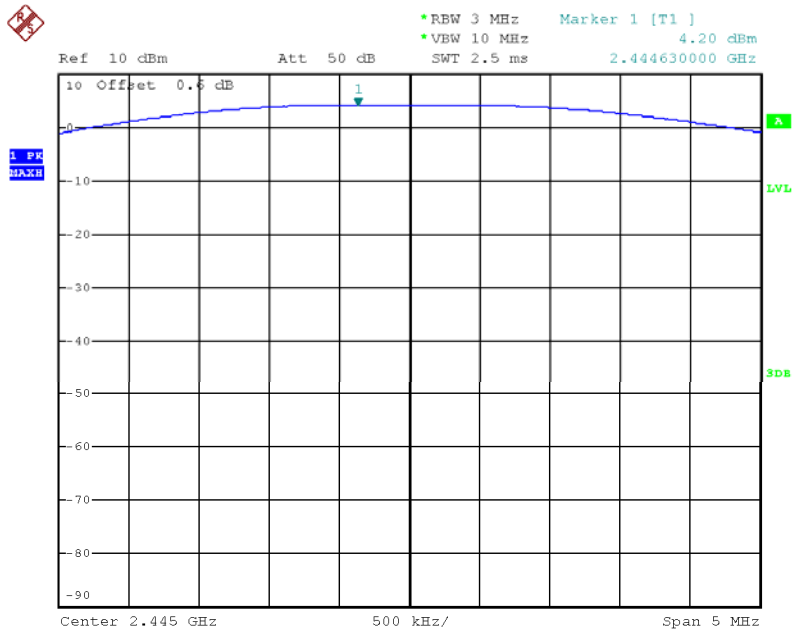
Test Mode : RF #1

Low channel (2 405 MHz)



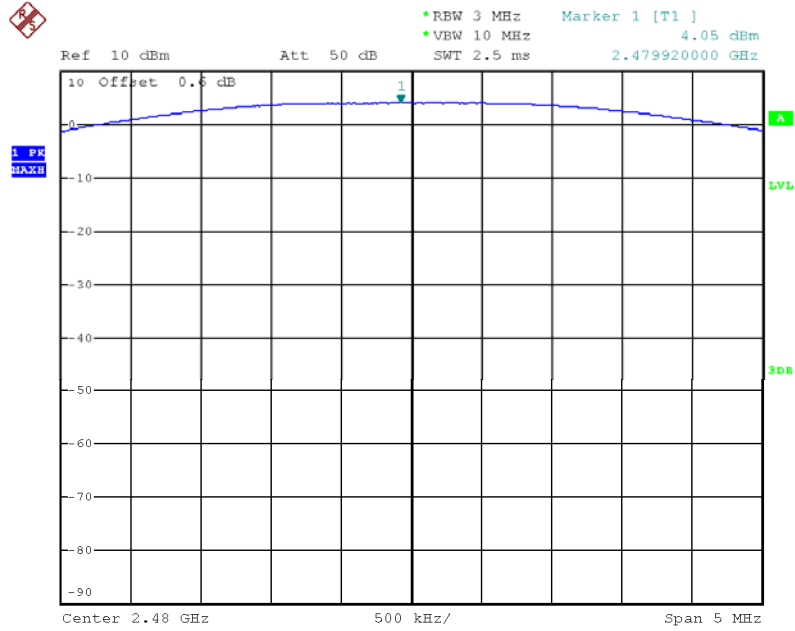
Date: 7.NOV.2018 22:48:59

Middle channel (2 445 MHz)



Date: 7.NOV.2018 22:51:21

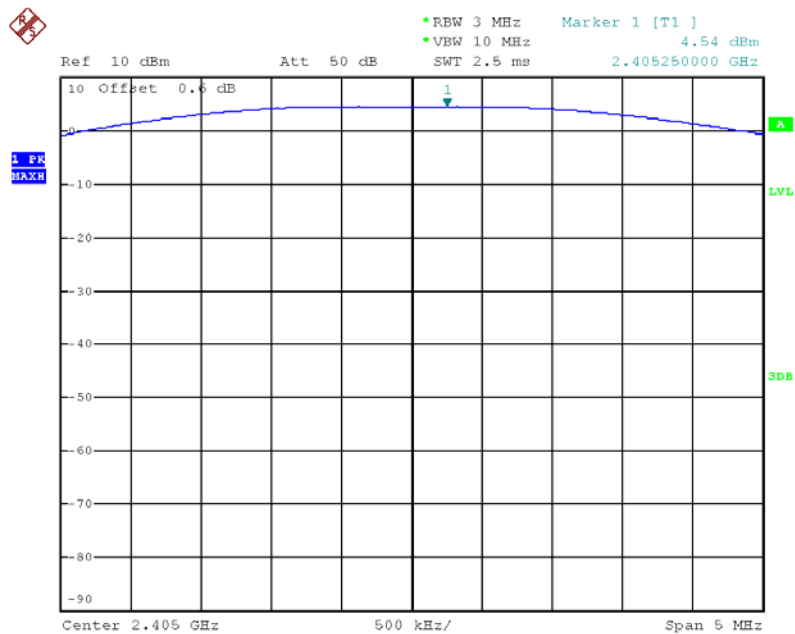
High channel (2 480 MHz)



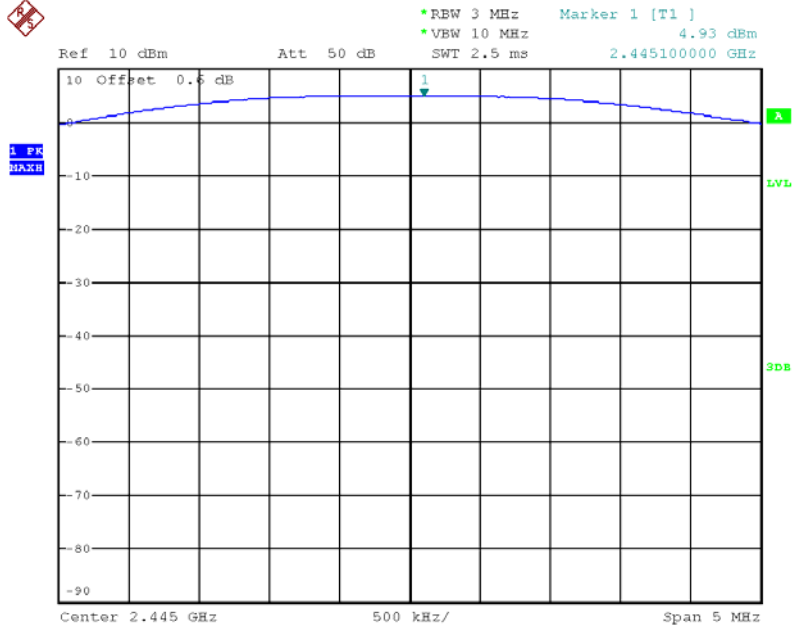
Date: 7.NOV.2018 22:53:25

Test Mode : RF #2

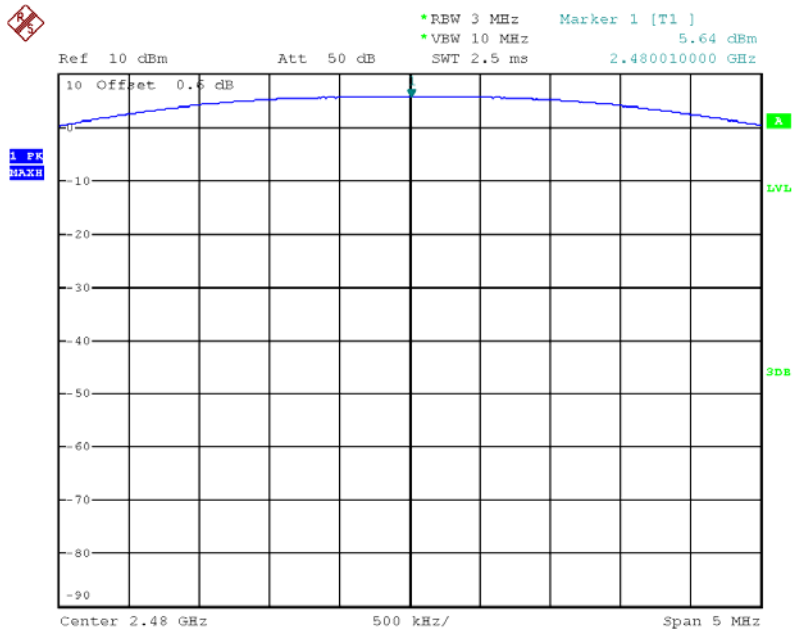
Low channel (2 405 MHz)



Middle channel (2 445 MHz)



High channel (2 480 MHz)





4.3 Power Spectral Density

Test Procedures(ANSI C63.10-2013 11.10.2)

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance.

Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) RBW : $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
- b) VBW $\geq 3 \times \text{RBW}$
- c) span $\geq 1.5 \times \text{DTS bandwidth}$
- d) Sweep time = auto couple
- e) Detector = peak
- f) Trace mode= max hold
- g) Allow trace to fully stabilize
- h) Use the peak marker function to determine the maximum amplitude level within the RBW.

Limit :

Power Spectral Density < 8 dBm @ 3 kHz BW

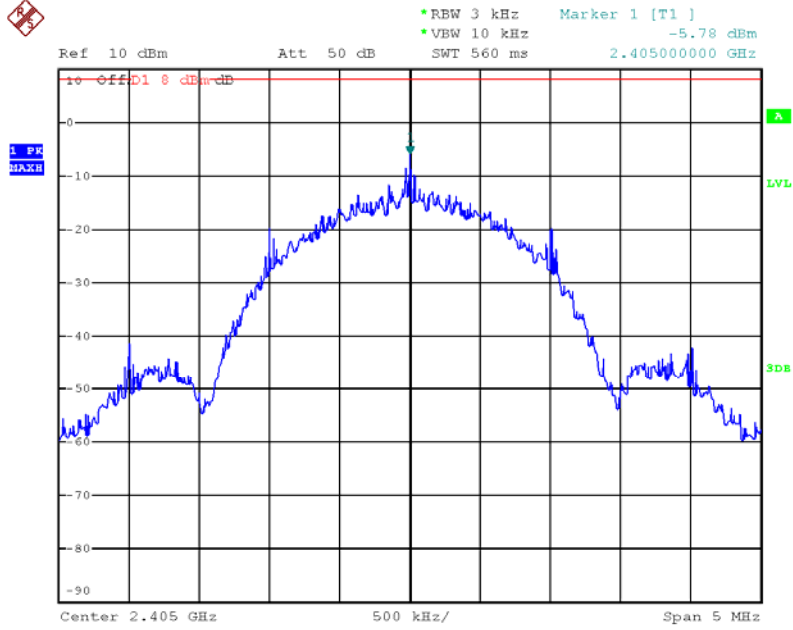
Test Data :

Test Mode [Antenna Port]	Channel	Frequency [MHz]	Measurement data [dBm]	Limit [dBm]	Result
RF #1	Low	2 405	-5.78	8	Complies
	Middle	2 445	-5.69	8	Complies
	High	2 480	-5.78	8	Complies
RF #2	Low	2 405	-8.34	8	Complies
	Middle	2 445	-8.37	8	Complies
	High	2 480	-8.45	8	Complies

See next pages for actual measured spectrum plots.

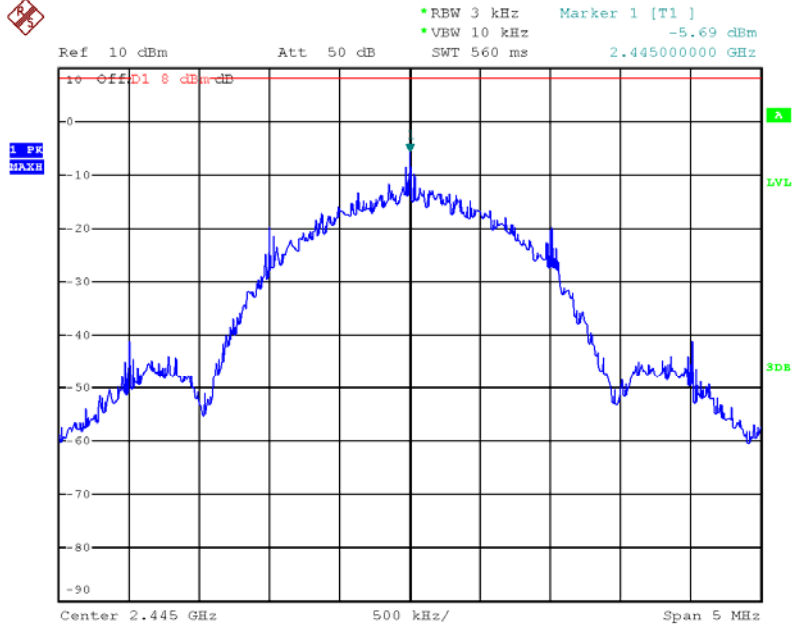
Test Mode : RF #1

Low channel (2 405 MHz)



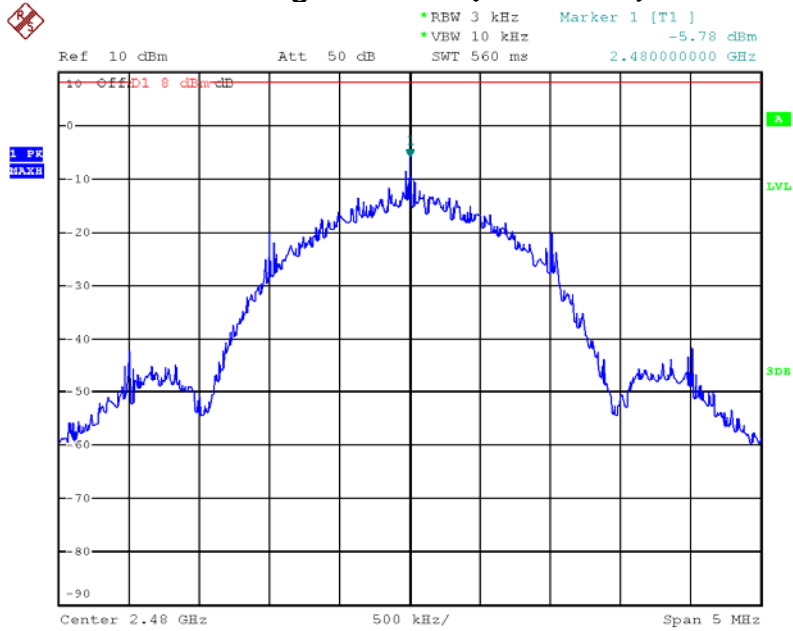
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Middle channel (2 445 MHz)



Date: 7.NOV.2018 22:51:38

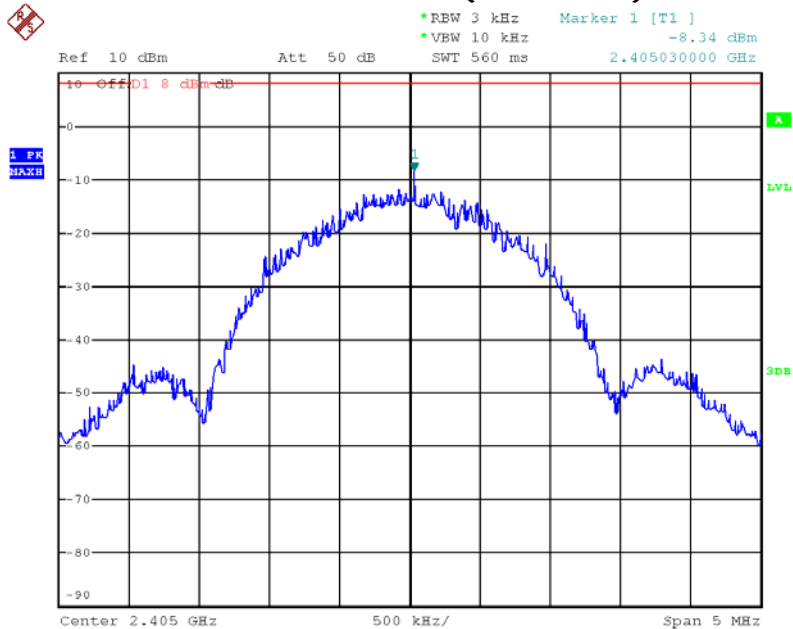
High channel (2 480 MHz)



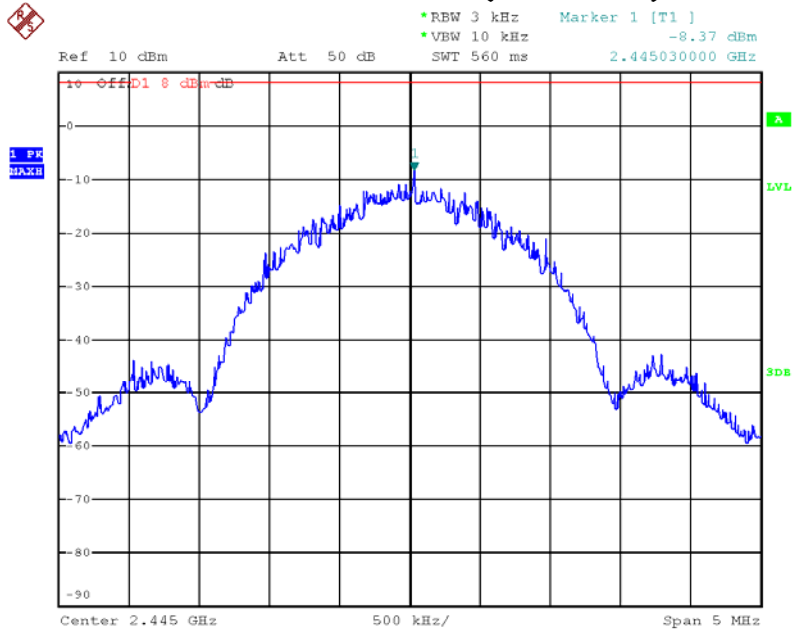
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Test Mode : RF #2

Low channel (2 405 MHz)

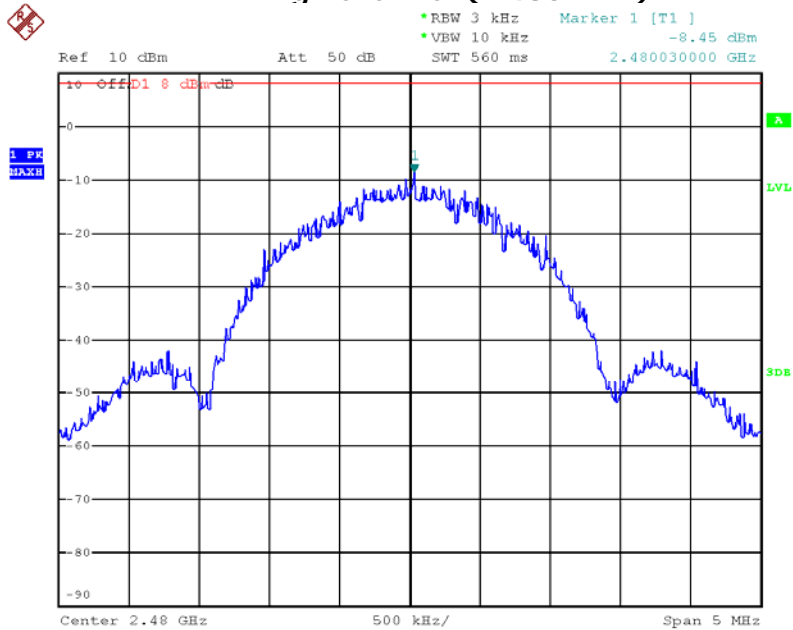


Middle channel (2 445 MHz)



Date: 7.NOV.2018 23:04:30

High channel (2 480 MHz)



Date: 7.NOV.2018 23:06:36



4.4 Band Edge & Conducted Spurious emission

Test Procedures(ANSI C63.10-2013 11.11.3)

The Unwanted emission from the EUT were measured according to the dictates PKPSD measurement procedure in section 11.11 of ANSI C63.10-2013.

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section 5.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) RBW = 100 kHz
- b) VBW $\geq 3 \times$ RBW
- c) Detector = peak
- d) Sweep time = auto couple
- e) Trace mode= max hold
- f) Allow trace to fully stabilize
- g) Use the peak marker function to determine the maximum amplitude level.

Limit :

Emission level < 20 dBc

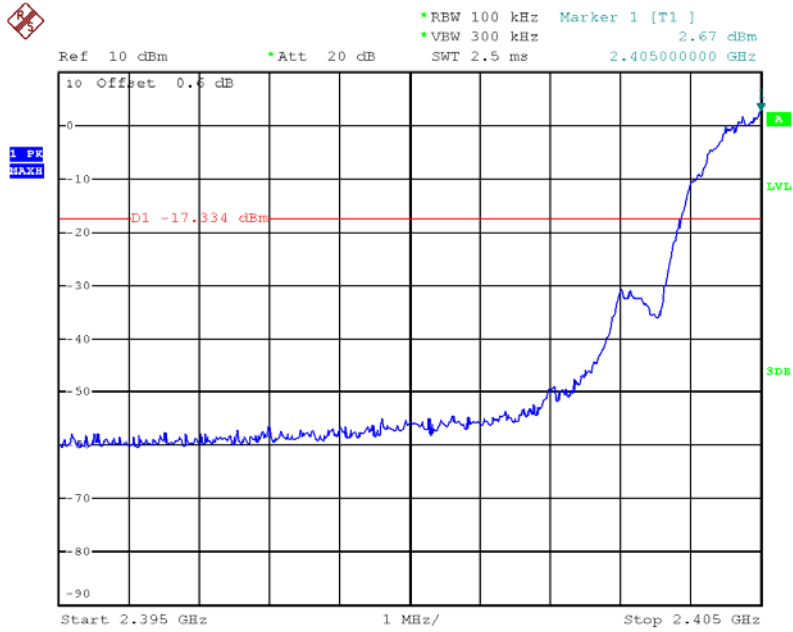
Test results: Complies

- All conducted emission in any 100kHz bandwidth outside of the spread spectrum band was at least 20dB lower than the highest in-band spectral density. Therefore the applying equipment meets the requirement.

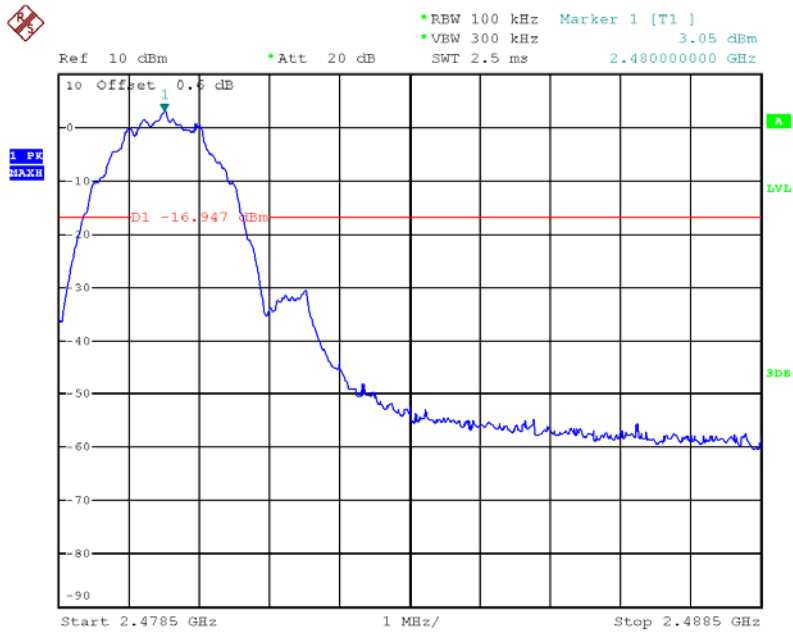
See next pages for actual measured spectrum plots.

Test Mode : RF #1

Band-edge

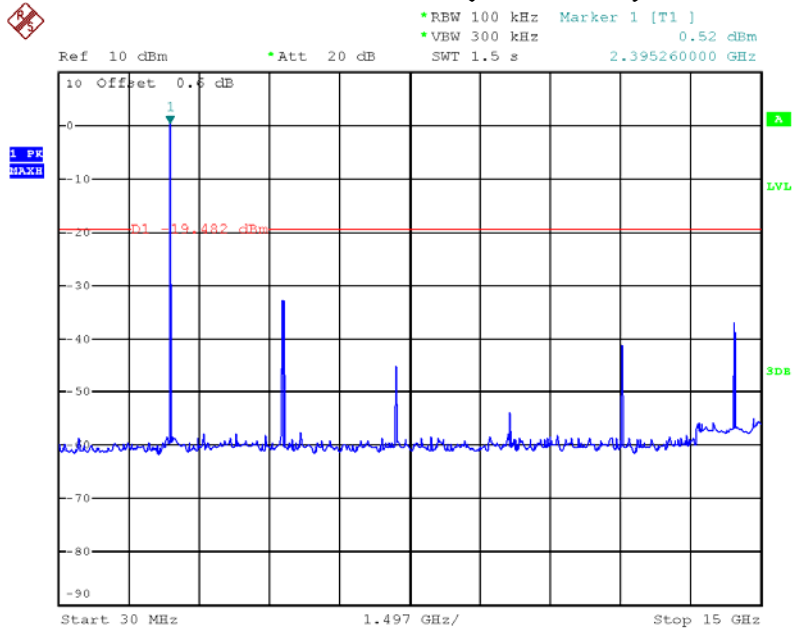


Date: 7.NOV.2018 22:50:30

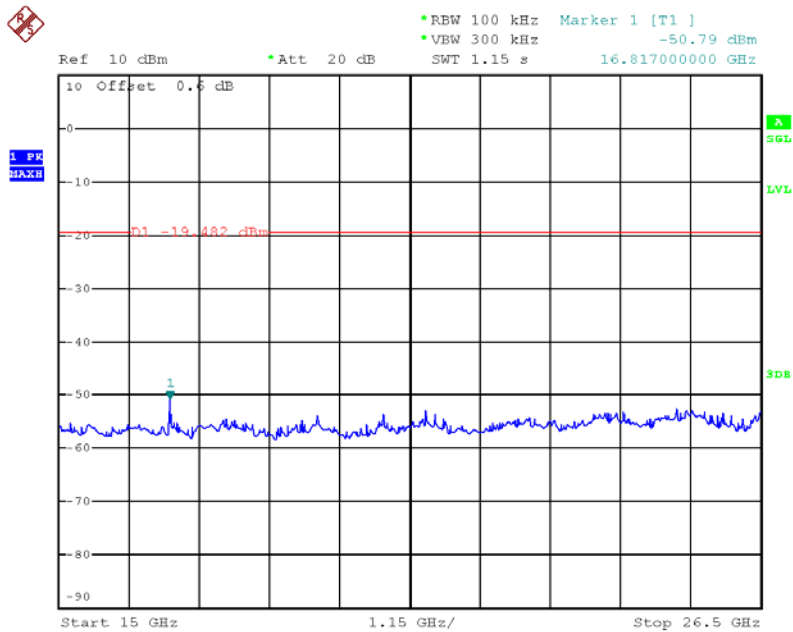


Date: 7.NOV.2018 22:54:56

Conducted Spurious emission Low channel (2 405 MHz)

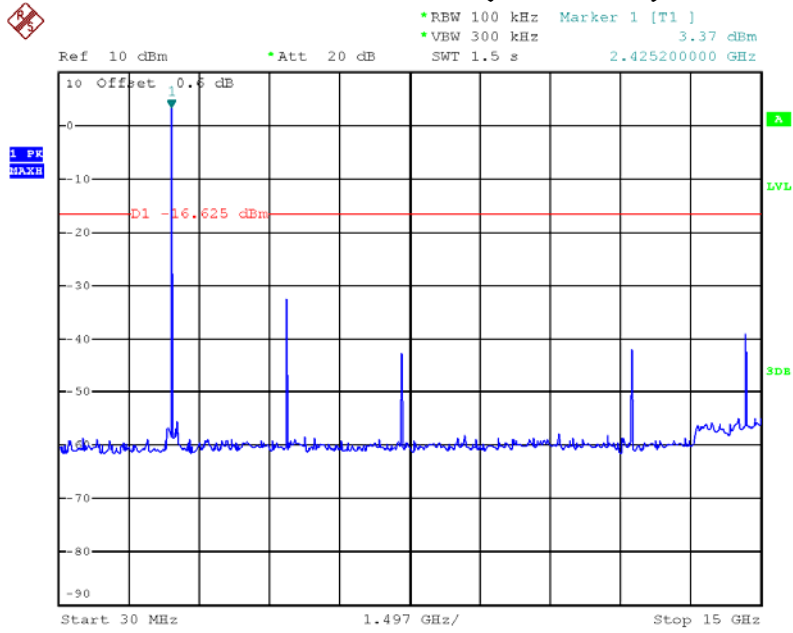


Date: 7.NOV.2018 22:50:00

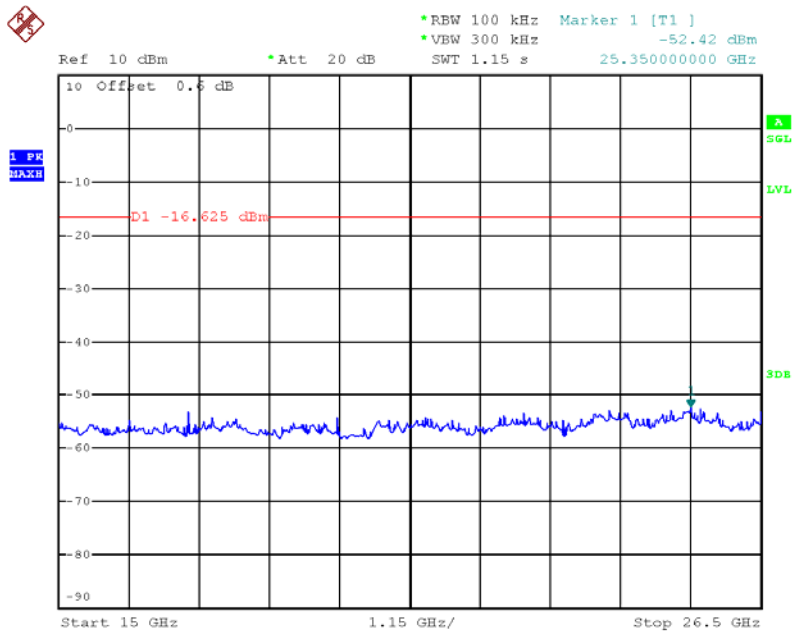


Date: 7.NOV.2018 22:50:14

Middle channel (2 445 MHz)

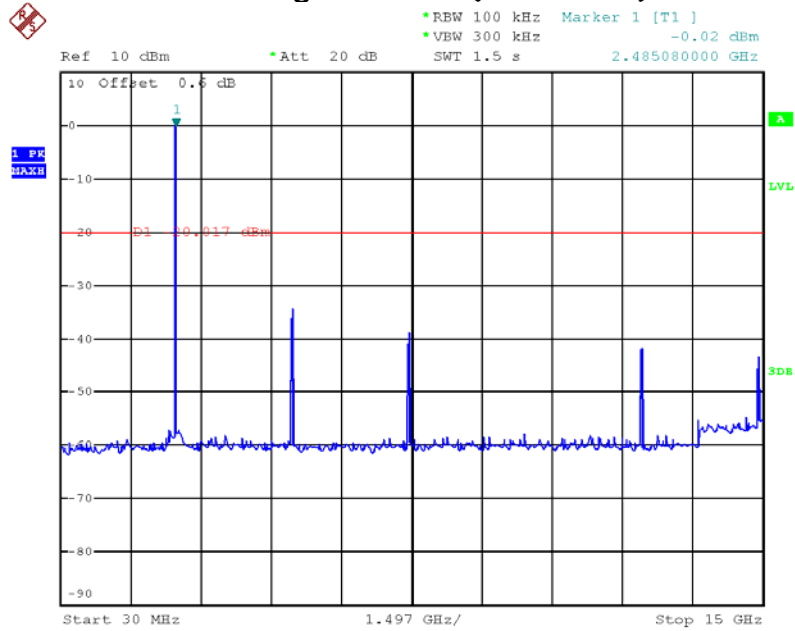


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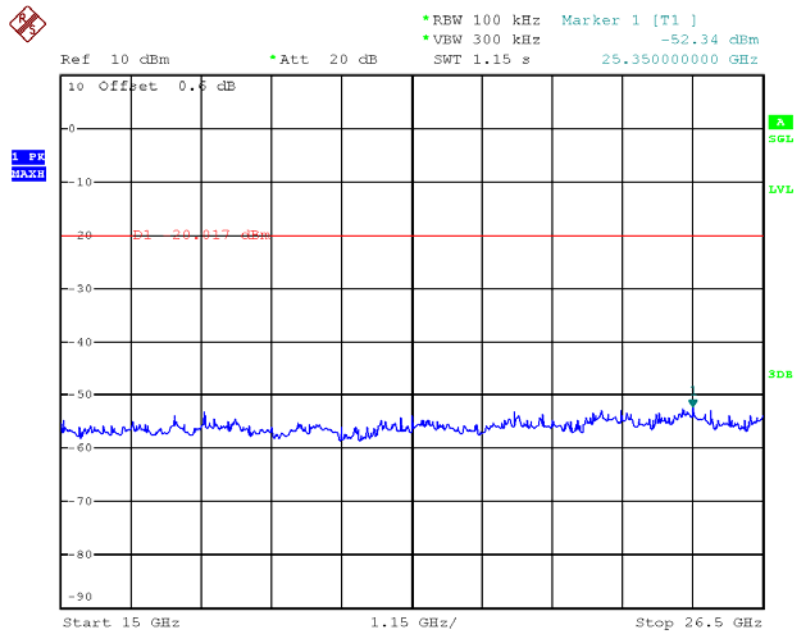


Date: 7.NOV.2018 22:52:36

High channel (2 480 MHz)



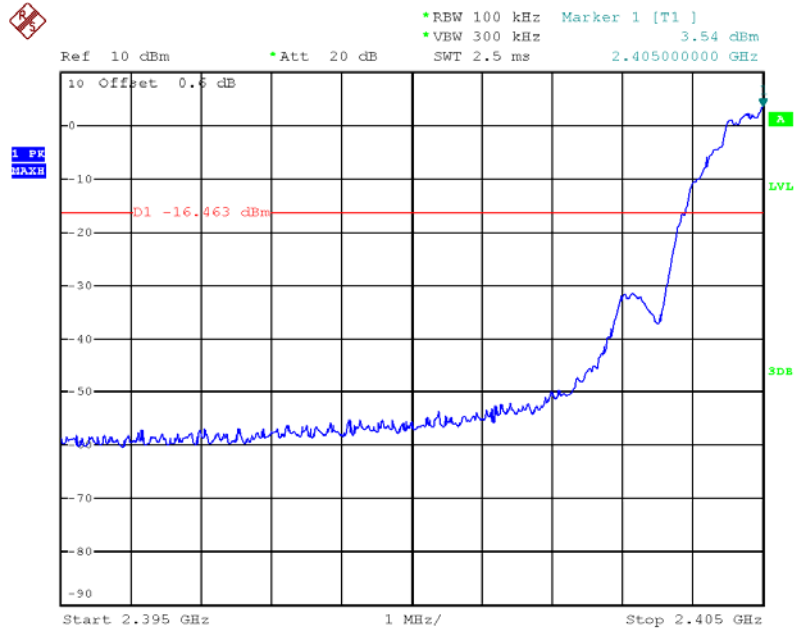
Date: 7.NOV.2018 22:54:26



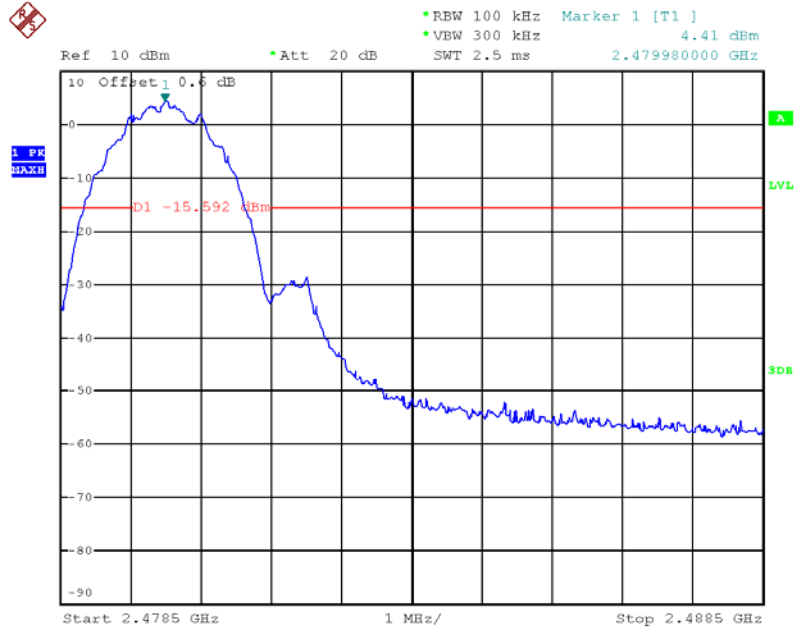
Date: 7.NOV.2018 22:54:40

Test Mode : RF #2

Band-edge

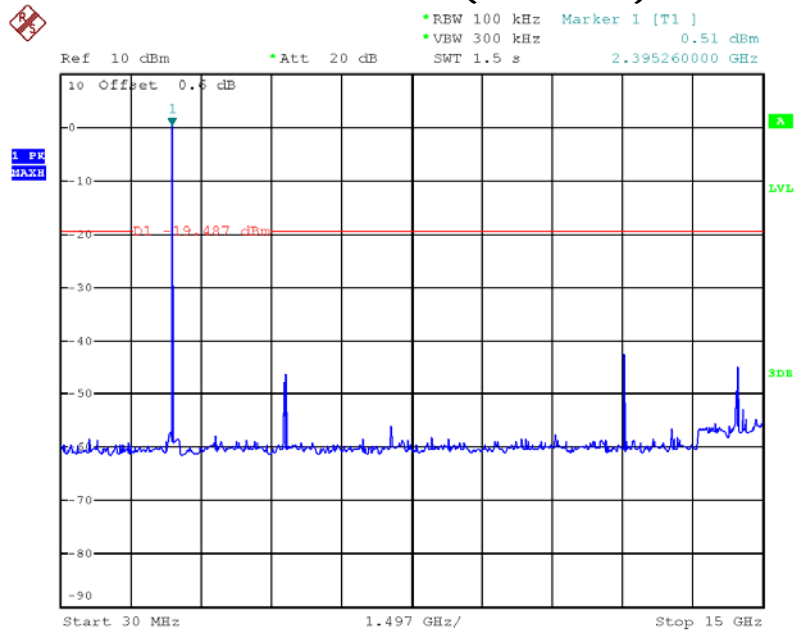


Date: 7.NOV.2018 23:03:12

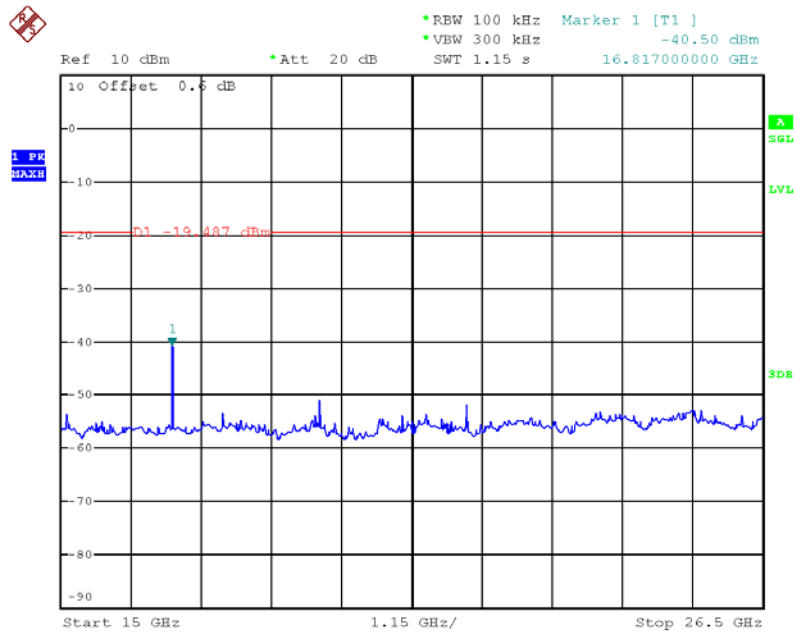


Date: 7.NOV.2018 23:07:51

Conducted Spurious emission Low channel (2 405 MHz)

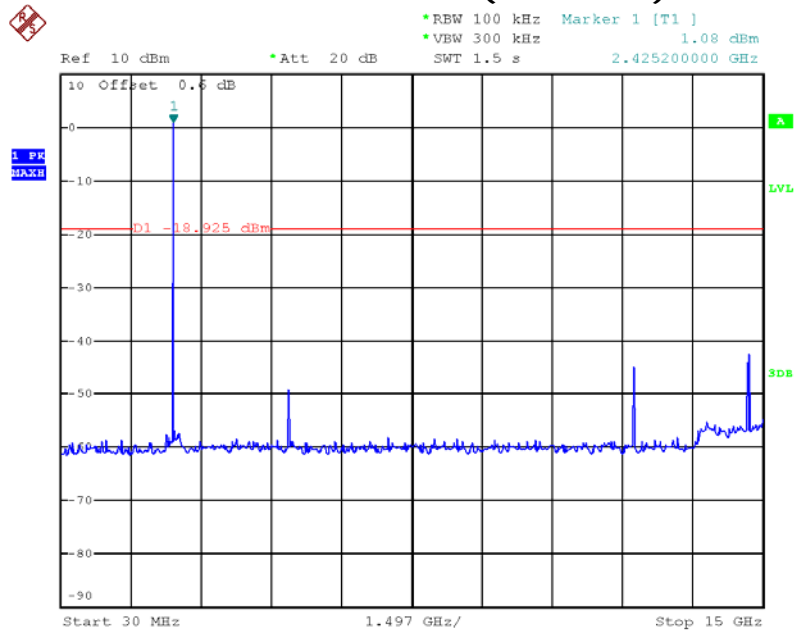


Date: 7.NOV.2018 23:16:43

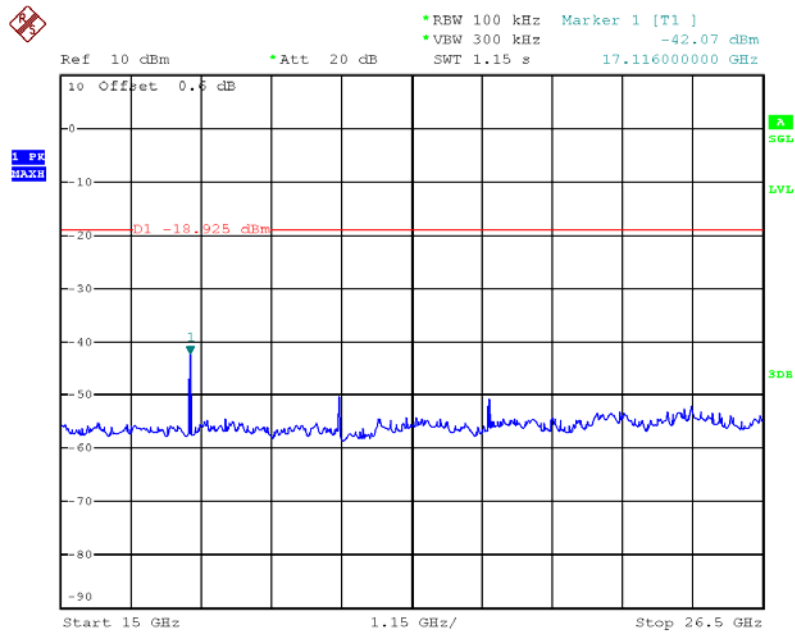


Date: 7.NOV.2018 23:16:57

Middle channel (2 445 MHz)

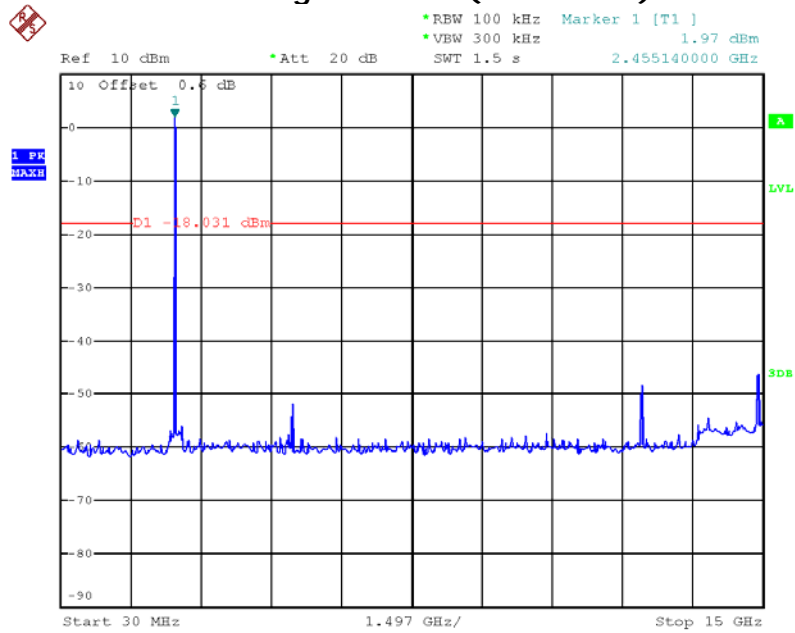


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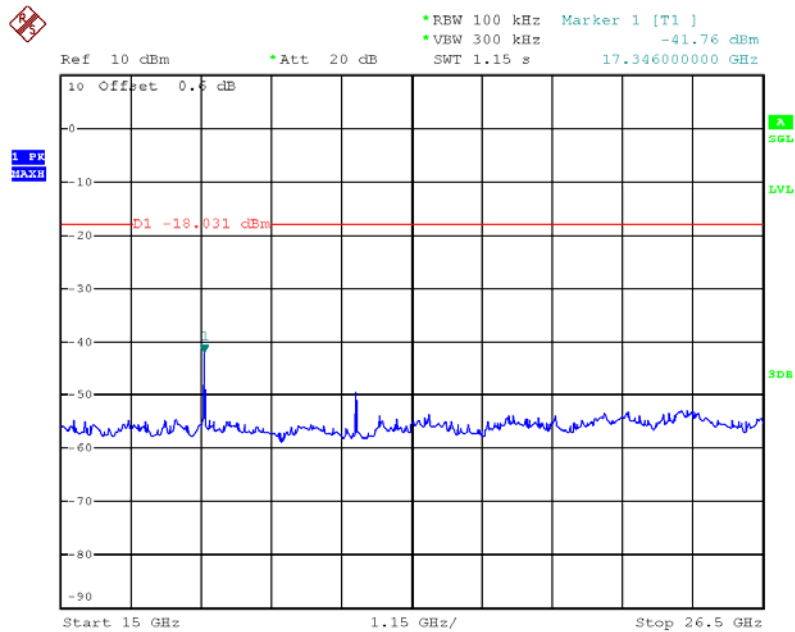


Date: 7.NOV.2018 23:17:52

High channel (2 480 MHz)



Date: 7.NOV.2018 23:18:28



Date: 7.NOV.2018 23:18:42



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4.5 Radiated Emission

Test Location

- 10 m SAC (test distance : 10 m, 3 m)
 3 m SAC (test distance : 3 m)

Test Procedures

- 1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
- 2) In the frequency range above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emissions levels at both horizontal and vertical polarizations should be tested.

Instrument Settings

Frequency Range = 9 kHz ~ 25 GHz (2.4 GHz 10th harmonic)

- a) RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz, 9 kHz for $f < 30$ MHz
- b) VBW \geq RBW
- c) Sweep time = auto couple



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Limit :

FCC Part 15 § 15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

Table 1. Restricted Frequency Bands

MHz	MHz	MHz	MHz	MHz	GHz
0.09-0.11	8.37626-8.38675	73-74.6	399.9-410	2690-2900	10.6-12.7
¹ 0.495-0.505	8.41425-8.41475	74.8-75.2	608-614	3260-3267	13.25-13.4
2.1735-2.1905	12.29-12.293	108-121.94	960-1240	3332-3339	14.47-14.5
4.125-4.128	12.51975-12.52025	123-138	1300-1427	3345.8-3358	15.35-16.2
4.17725-4.17775	12.57675-12.57725	149.9-150.05	1435-1626.5	3600-4400	17.7-21.4
4.20725-4.20775	13.36-13.41	156.52475-156.52525	1645.5-1646.5	4500-5150	22.01-23.12
6.215-6.218	16.42-16.423	156.7-156.9	1660-1710	5350-5460	23.6-24
6.26775-6.26825	16.69475-16.69525	162.0125-167.17	1718.8-1722.2	7250-7750	31.2-31.8
6.31175-6.31225	16.80425-16.80475	167.72-173.2	2200-2300	8025-8500	36.43-36.5
8.291-8.294	25.5-25.67	240-285	2310-2390	9000-9200	² Above 38.6
8.362-8.366	37.5-38.25	322-335.4	2483.5-2500	9300-9500	

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§ 15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.



FCC Part 15 § 15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table :

Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table 2. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

Table 2. General Field Strength Limits for Licence-Exempt Transmitters

Frequency(MHz)	Field Strength uV/m@3m	Field Strength dBuV/m@3m	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46	3
Above 960	500	54	3

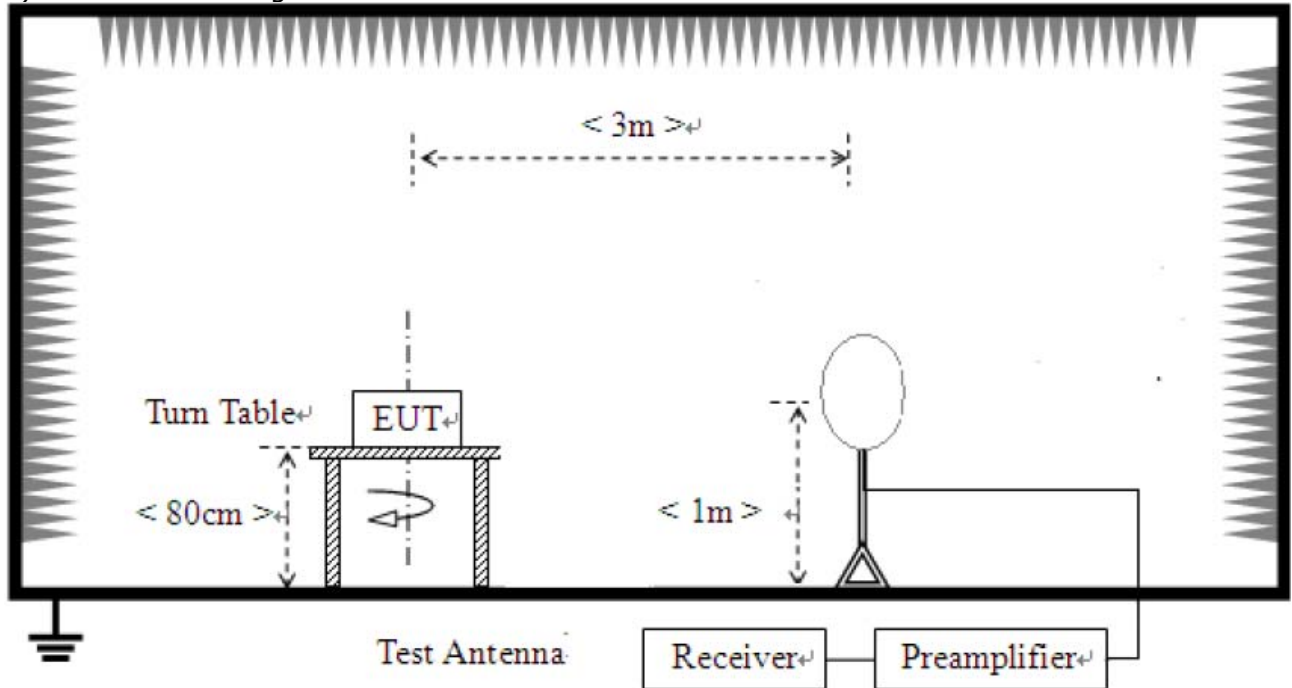
** Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

Note :

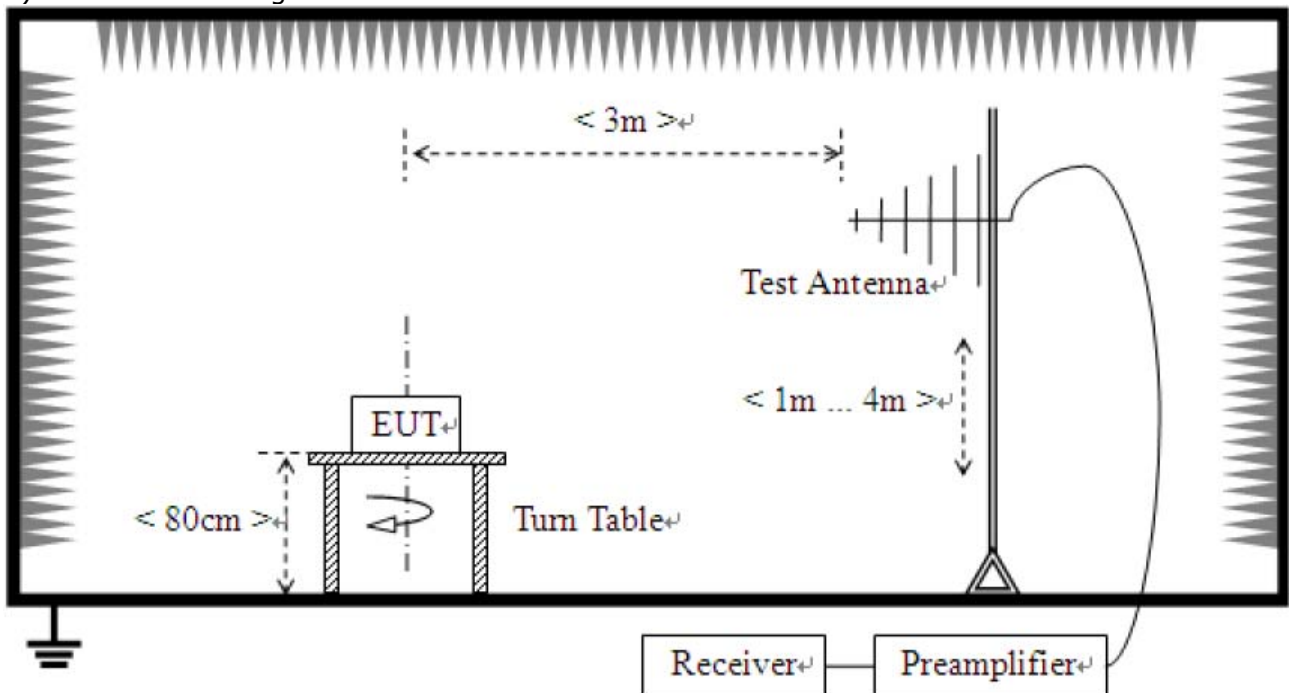
- 1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
- 2) For above 1 GHz, limit field strength of harmonics : 54 dBuV/m@3m (AV) and 74 dBuV/m@3m (PK)
- 3) For measurement above 1GHz, the resolution bandwidth is set to 1 MHz and video bandwidth is set to 1 MHz for peak measurement and 10 Hz for average measurement.(Duty Cycle is > 98%,)
- 4) Duty Cycle is < 98%, VBW setting will need to > 1/T.

Test Setup:

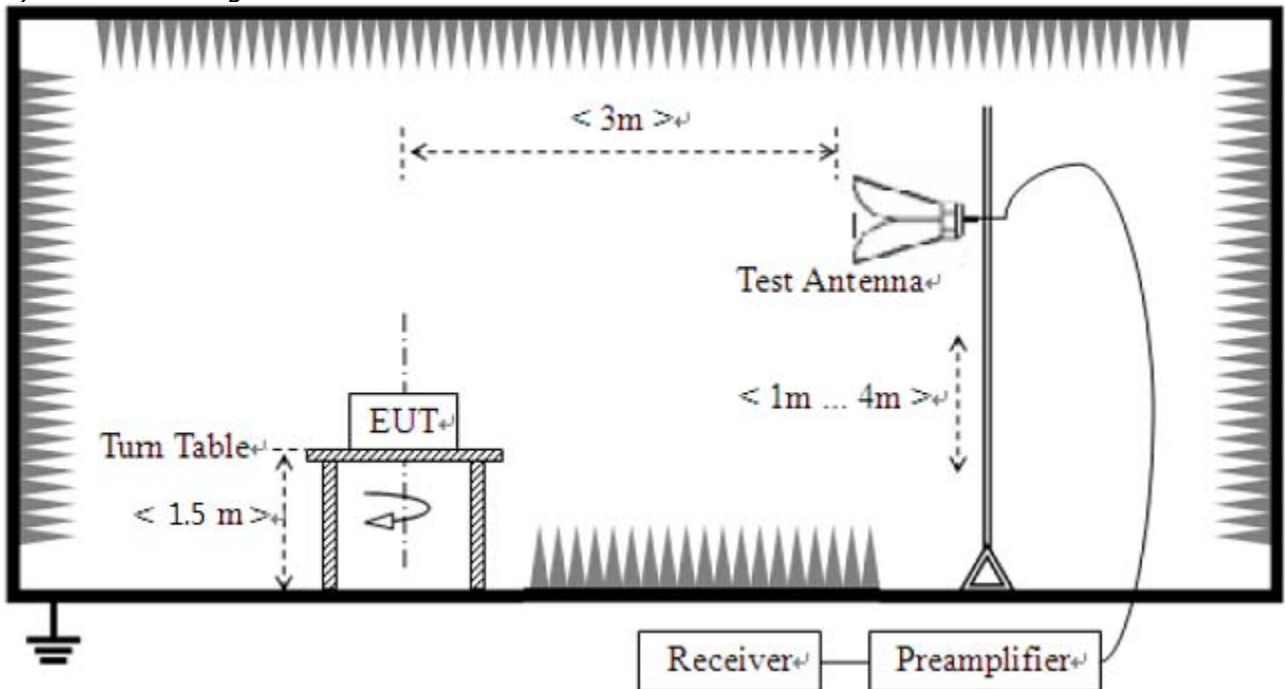
- 1) For field strength of emissions from 9 kHz to 30 MHz



- 2) For field strength of emissions from 30 MHz to 1 GHz



3) For field strength of emissions above 1 GHz



Test results

1) 9 kHz to 30 MHz

The requirements are:

Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
-	-	-	See note

Note :

The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance} / \text{test distance})$ (dB)

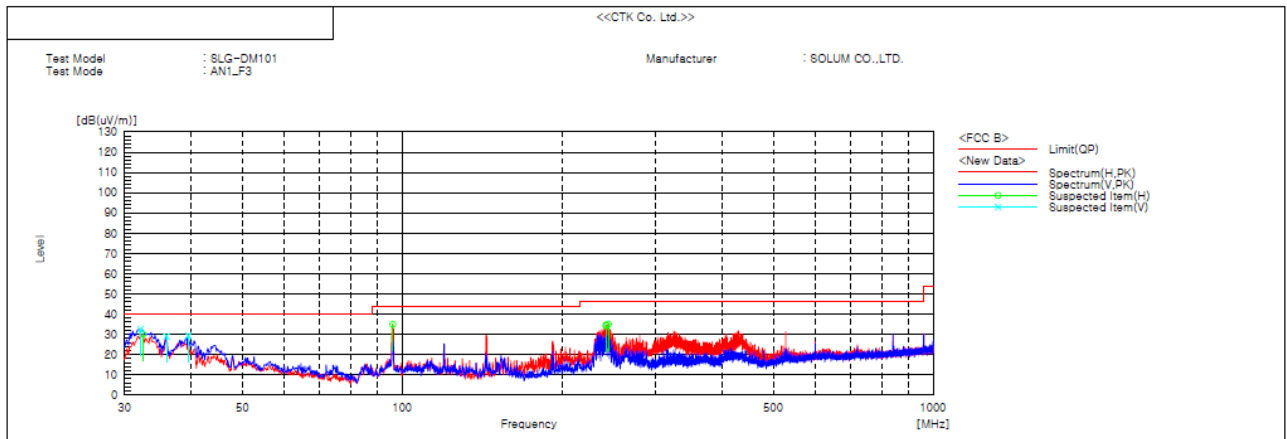
2) 30 MHz to 1 GHz

Test mode : Antenna type #1, RF #1, High Channel(Worst case)

The requirements are:

Complies

Test Data



Spectrum Selection

Horizontal Polarization									
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit OP [dB(uV/m)]	Margin OP [dB]	Height [cm]	Angle [deg]	Remark
1	96.083	49.3	-14.4	34.9	43.5	8.6	99.8	31.8	
2	32.504	45.3	-15.1	30.2	40.0	9.8	99.8	159.1	
3	244.578	48.0	-13.0	35.0	46.0	11.0	99.8	79.2	
4	242.510	47.6	-13.1	34.5	46.0	11.5	99.8	93.0	
5	242.074	47.6	-13.1	34.5	46.0	11.5	99.8	93.0	

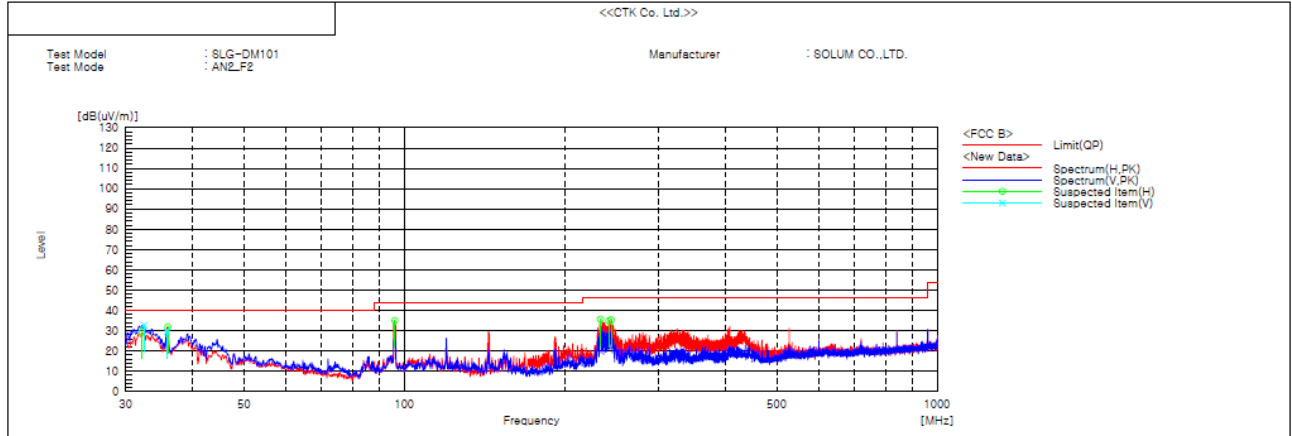
Vertical Polarization									
No.	Frequency [MHz]	Reading [dB(uV)]	c.f [dB(1/m)]	Result PK [dB(uV/m)]	Limit OP [dB(uV/m)]	Margin OP [dB]	Height [cm]	Angle [deg]	Remark
1	32.177	47.7	-15.1	32.6	40.0	7.4	99.8	136.1	
2	39.580	42.9	-13.5	29.4	40.0	10.6	99.8	328.1	
3	35.988	44.0	-14.9	29.1	40.0	10.9	99.8	50.3	

Test mode : Antenna type #1, RF #2, Middle(Worst case)

The requirements are:

Complies

Test Data



Spectrum Selection

--- Horizontal Polarization ---									
No.	Frequency	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	[dB(uV)]	[dB(1/m)]	PK	OP	OP	[cm]	[deg]	
1	32.177	44.2	-15.1	29.1	40.0	10.9	99.8	132.7	
2	35.988	46.8	-14.9	31.9	40.0	8.1	99.8	99.4	
3	96.083	49.5	-14.4	35.1	43.5	8.4	99.8	31.2	
4	233.365	49.1	-13.4	35.7	46.0	10.3	99.8	294.6	
5	242.074	47.9	-13.1	34.8	46.0	11.2	99.8	99.4	
6	244.578	46.4	-13.0	35.4	46.0	10.6	99.8	99.4	

--- Vertical Polarization ---									
No.	Frequency	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	[dB(uV)]	[dB(1/m)]	PK	OP	OP	[cm]	[deg]	
1	32.504	47.8	-15.1	32.7	40.0	7.3	99.8	46.2	
2	35.879	44.5	-14.9	29.6	40.0	10.4	99.8	46.2	



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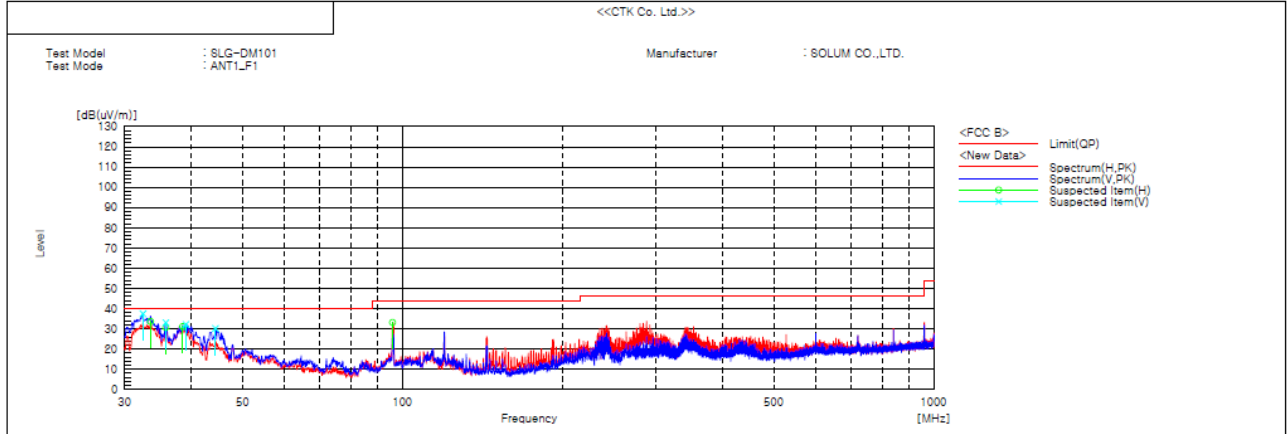
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Test mode : Antenna type #2, RF #1, Low Channel(Worst case)

The requirements are:

Complies

Test Data



Spectrum Selection

--- Horizontal Polarization ---									
No.	Frequency	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	[dB(uV)]	[dB(1/m)]	PK	OP	OP	[cm]	[deg]	
				[dB(uV/m)]	[dB(uV/m)]	[dB]			
1	33.593	48.6	-15.0	33.6	40.0	6.4	99.8	147.9	
2	35.879	45.7	-14.9	30.8	40.0	9.2	99.8	147.9	
3	38.601	45.2	-14.0	31.2	40.0	8.8	99.8	147.9	
4	95.865	47.7	-14.5	33.2	43.5	10.3	99.8	9.2	

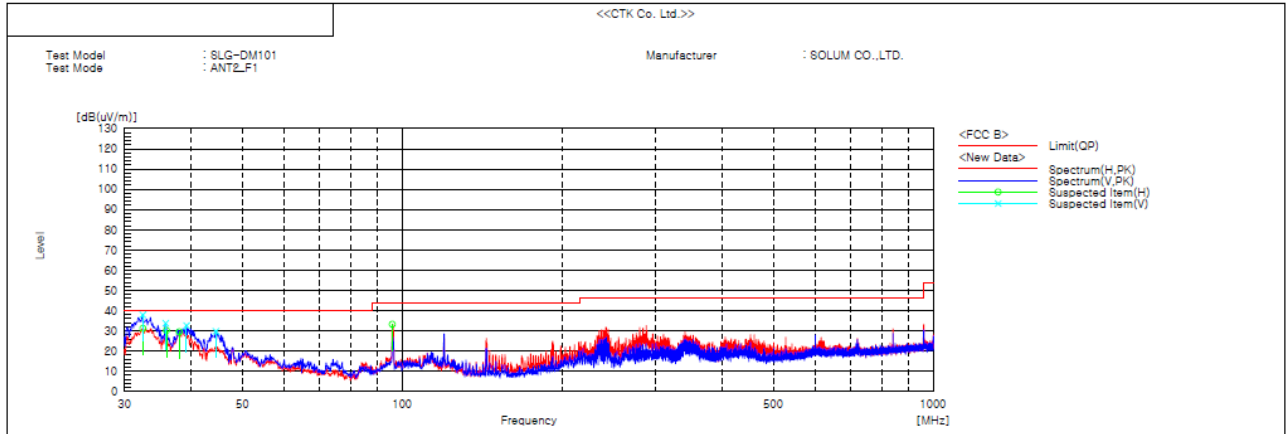
--- Vertical Polarization ---									
No.	Frequency	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	[dB(uV)]	[dB(1/m)]	PK	OP	OP	[cm]	[deg]	
				[dB(uV/m)]	[dB(uV/m)]	[dB]			
1	32.504	52.6	-15.1	37.5	40.0	2.5	99.8	43.0	
2	35.879	48.0	-14.9	33.1	40.0	6.9	99.8	338.7	
3	39.145	45.9	-13.7	32.2	40.0	7.8	99.8	338.7	
4	44.479	42.7	-12.4	30.3	40.0	9.7	99.8	43.0	

Test mode : Antenna type #2, RF #2, Low Channel(Worst case)

The requirements are:

Complies

Test Data



Spectrum Selection

--- Horizontal Polarization ---									
No.	Frequency	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	[dB(uV)]	[dB(1/m)]	PK [dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	32.504	46.3	-15.1	31.2	40.0	8.8	99.8	137.5	
2	35.988	45.2	-14.9	30.3	40.0	9.7	99.8	125.3	
3	38.056	43.7	-14.2	29.5	40.0	10.5	99.8	125.3	
4	95.865	47.8	-14.5	33.3	43.5	10.2	99.8	10.5	

--- Vertical Polarization ---									
No.	Frequency	Reading	c.f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]	[dB(uV)]	[dB(1/m)]	PK [dB(uV/m)]	[dB(uV/m)]	[dB]	[cm]	[deg]	
1	32.504	53.1	-15.1	38.0	40.0	2.0	99.8	66.1	
2	35.879	48.7	-14.9	33.8	40.0	6.2	99.8	39.7	
3	39.254	46.3	-13.7	32.6	40.0	7.4	99.8	39.7	
4	44.568	42.2	-12.4	29.8	40.0	10.2	99.8	39.7	

Remark :

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(Correction factor)
3. Correction factor = Antenna factor + Cable loss + 6 dB attenuator - Amp Gain
4. This data is the Peak(PK) value.



3) 1 GHz to 25 GHz

The requirements are:

Complies

Test Data

Test mode : Antenna type #1, Lowest frequency(2 405 MHz)

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	7 214.32	V	56.30	6.00	62.30	74.00	11.70	Peak
	7 214.32	V	44.50	6.00	50.50	54.00	3.50	Average
RF #2	4 810.00	H	52.54	1.30	53.84	74.00	20.16	Peak
	4 810.00	H	45.95	1.30	47.25	54.00	6.75	Average

Test mode : Antenna type #1, Middle frequency(2 445 MHz)

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	7 334.52	V	54.60	5.90	60.50	74.00	13.50	Peak
	7 334.52	V	43.90	5.90	49.80	54.00	4.20	Average
RF #2	4 890.00	H	49.70	1.40	51.10	74.00	22.90	Peak
	4 890.00	H	41.08	1.40	42.48	54.00	11.52	Average

Test mode : Antenna type #1, Highest frequency(2 480 MHz)

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	4 959.07	H	62.80	1.40	64.20	74.00	9.80	Peak
	4 959.07	H	49.10	1.40	50.50	54.00	3.50	Average
RF #2	4 960.00	H	50.42	1.40	51.82	74.00	22.18	Peak
	4 960.00	H	37.85	1.40	39.25	54.00	14.75	Average

Test mode : Antenna type #2, Lowest frequency(2 405 MHz)

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	7 214.32	V	55.00	6.00	61.00	74.00	13.00	Peak
	7 214.32	V	41.20	6.00	47.20	54.00	6.80	Average
RF #2	4 810.00	H	49.64	1.30	52.29	74.00	21.71	Peak
	4 810.00	H	44.77	1.30	46.07	54.00	7.93	Average

Test mode : Antenna type #2, Middle frequency(2 445 MHz)

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	4 890.39	H	59.20	1.40	60.60	74.00	13.40	Peak
	4 890.39	H	46.80	1.40	48.20	54.00	5.80	Average
RF #2	4 890.00	H	46.54	1.40	49.29	74.00	24.71	Peak
	4 890.00	H	40.44	1.40	41.84	54.00	12.16	Average

Test mode : Antenna type #2, Highest frequency(2 480 MHz)

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	4 959.07	H	61.30	1.40	62.70	74.00	11.30	Peak
	4 959.07	H	48.40	1.40	49.80	54.00	4.20	Average
RF #2	4 960.00	H	48.35	1.40	50.26	74.00	23.74	Peak
	4 960.00	H	42.03	1.40	43.43	54.00	10.57	Average

*Result = Reading + c.f(correction factor)

Remarks

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Result = Reading + c.f(correction factor)
3. Correction factor = Antenna factor + Cable loss - Amp Gain

4) Restricted Frequency Bands

Test frequency range : 2 310 MHz – 2 390 MHz
Test mode : Antenna type #1

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	2 375.56	H	51.54	-4.07	47.47	74.00	26.53	Peak
	2 375.56	H	43.05	-4.07	38.98	54.00	15.02	Average
RF #2	2 375.43	H	50.17	-4.07	46.10	74.00	27.90	Peak
	2 375.43	H	44.52	-4.07	40.45	54.00	13.55	Average

Test mode : Antenna type #2

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	2 375.89	H	52.11	-4.07	48.04	74.00	25.96	Peak
	2 375.89	H	48.61	-4.07	44.54	54.00	9.46	Average
RF #2	2 375.96	H	52.31	-4.07	48.24	74.00	25.76	Peak
	2 375.96	H	49.36	-4.07	45.29	54.00	8.71	Average

Test frequency range : 2 483.5 MHz – 2 500 MHz
Test mode : Antenna type #1

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	2 483.50	H	50.98	-3.90	47.08	74.00	26.92	Peak
	2 483.50	H	43.57	-3.90	39.67	54.00	14.33	Average
RF #2	2 483.50	H	57.57	-3.90	53.67	74.00	20.33	Peak
	2 483.50	H	43.64	-3.90	39.74	54.00	14.26	Average

Test mode : Antenna type #2

Antenna port	Frequency [MHz]	Ant. Pol. (V/H)	Reading [dBuV/m]	c.f [dB/m]	Result* [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Remark
RF #1	2 483.50	H	56.35	-3.90	52.45	74.00	21.55	Peak
	2 483.50	H	45.34	-3.90	41.44	54.00	12.56	Average
RF #2	2 483.50	H	56.92	-3.90	53.02	74.00	20.98	Peak
	2 483.50	H	47.07	-3.90	43.17	54.00	10.83	Average

*Result = Reading + c.f(correction factor)

Remarks

1. The Unwanted emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.
2. Correction factor = Antenna factor + Cable loss - Amp Gain



4.6 AC Power Line Conducted Emissions

A radio apparatus that is designed to be connected to the public utility (AC) power line shall ensure that the radio frequency voltage, which is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz-30 MHz, shall not exceed the limits.

Instrument Settings

IF Band Width: 9 kHz

Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.

Amplitude measurements were performed with a quasi-peak detector and an average detector.

Limit

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average**
0.15 ~ 0.5	66 to 56*	56 to 46*
0.5 ~ 5	56	46
5 ~ 30	60	50

* The level decreases linearly with the logarithm of the frequency.

** A linear average detector is required.

Test Results

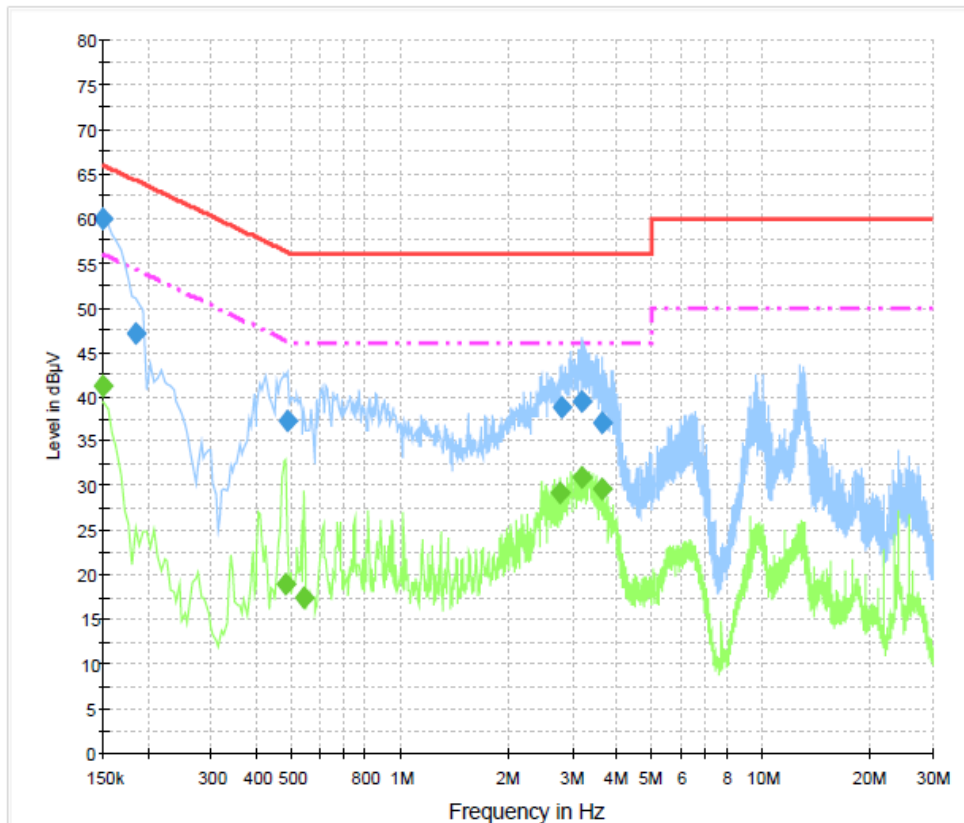
The requirements are:

Complies

Test Data

Test mode : Antenna type #1, RF #1 (Worst case)
[L1]

Class B_L1



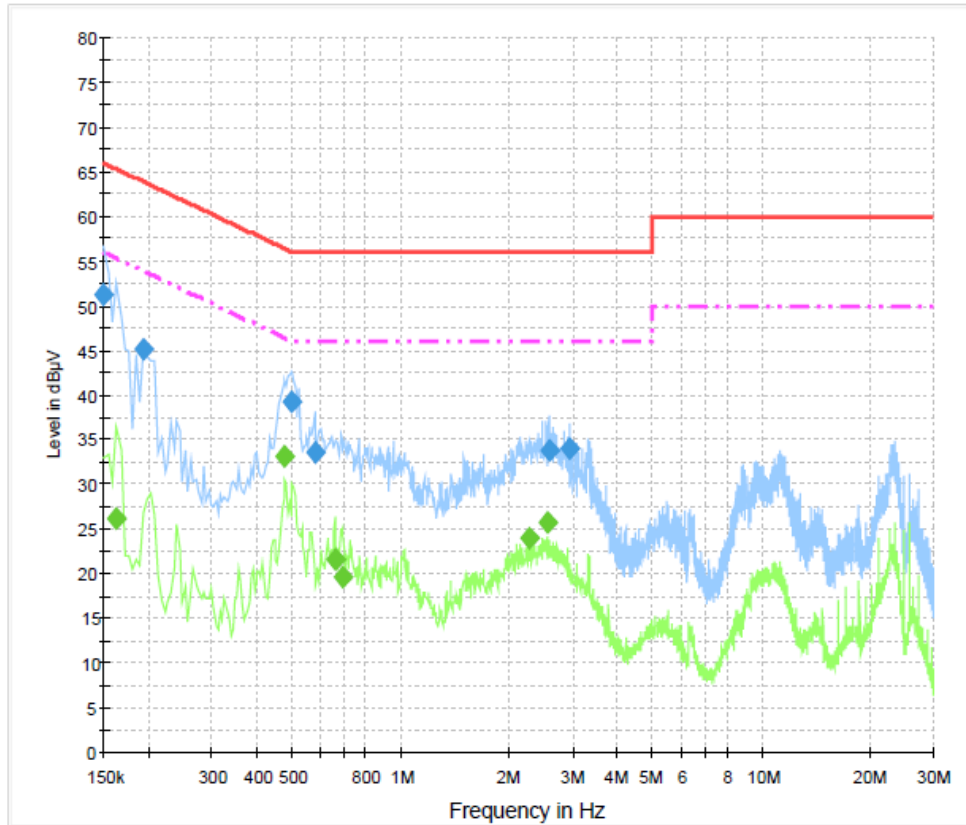
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	59.9	1000.0	9.000	On	L1	9.8	6.1	66.0
0.186000	47.2	1000.0	9.000	On	L1	9.9	17.0	64.2
0.487500	37.2	1000.0	9.000	On	L1	9.9	19.0	56.2
2.814000	38.8	1000.0	9.000	On	L1	9.8	17.2	56.0
3.174000	39.5	1000.0	9.000	On	L1	9.8	16.5	56.0
3.615000	37.2	1000.0	9.000	On	L1	9.8	18.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	41.2	1000.0	9.000	On	L1	9.8	14.8	56.0
0.483000	18.9	1000.0	9.000	On	L1	9.9	27.4	46.3
0.541500	17.5	1000.0	9.000	On	L1	9.9	28.5	46.0
2.769000	29.2	1000.0	9.000	On	L1	9.8	16.8	46.0
3.196500	31.0	1000.0	9.000	On	L1	9.8	15.0	46.0
3.646500	29.6	1000.0	9.000	On	L1	9.8	16.4	46.0

[NEUTRAL]
Class B_N



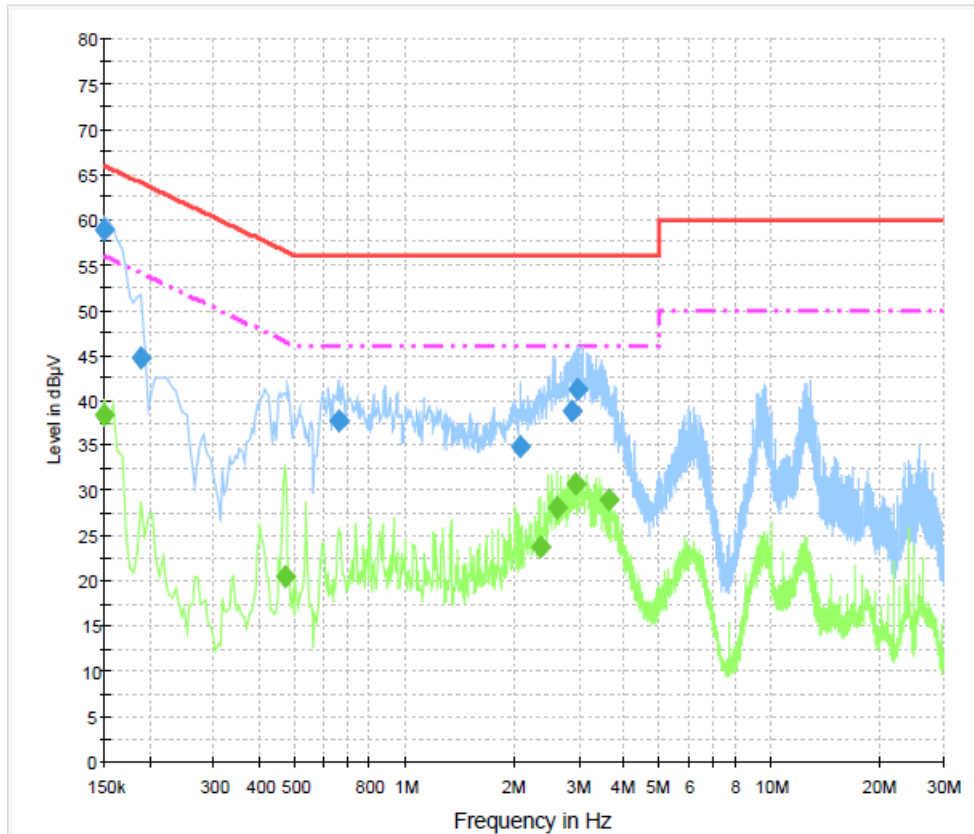
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	51.3	1000.0	9.000	On	N	9.8	14.7	66.0
0.195000	45.2	1000.0	9.000	On	N	9.9	18.6	63.8
0.501000	39.3	1000.0	9.000	On	N	9.9	16.7	56.0
0.577500	33.6	1000.0	9.000	On	N	9.9	22.4	56.0
2.575500	33.8	1000.0	9.000	On	N	9.8	22.2	56.0
2.953500	33.9	1000.0	9.000	On	N	9.8	22.1	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	26.2	1000.0	9.000	On	N	9.8	29.1	55.3
0.478500	33.1	1000.0	9.000	On	N	9.9	13.2	46.4
0.658500	21.5	1000.0	9.000	On	N	9.9	24.5	46.0
0.690000	19.6	1000.0	9.000	On	N	9.9	26.4	46.0
2.265000	24.0	1000.0	9.000	On	N	9.8	22.0	46.0
2.544000	25.8	1000.0	9.000	On	N	9.8	20.2	46.0

Test mode : Antenna type #1, RF #2(Worst case)
[L1]
Class B_L1



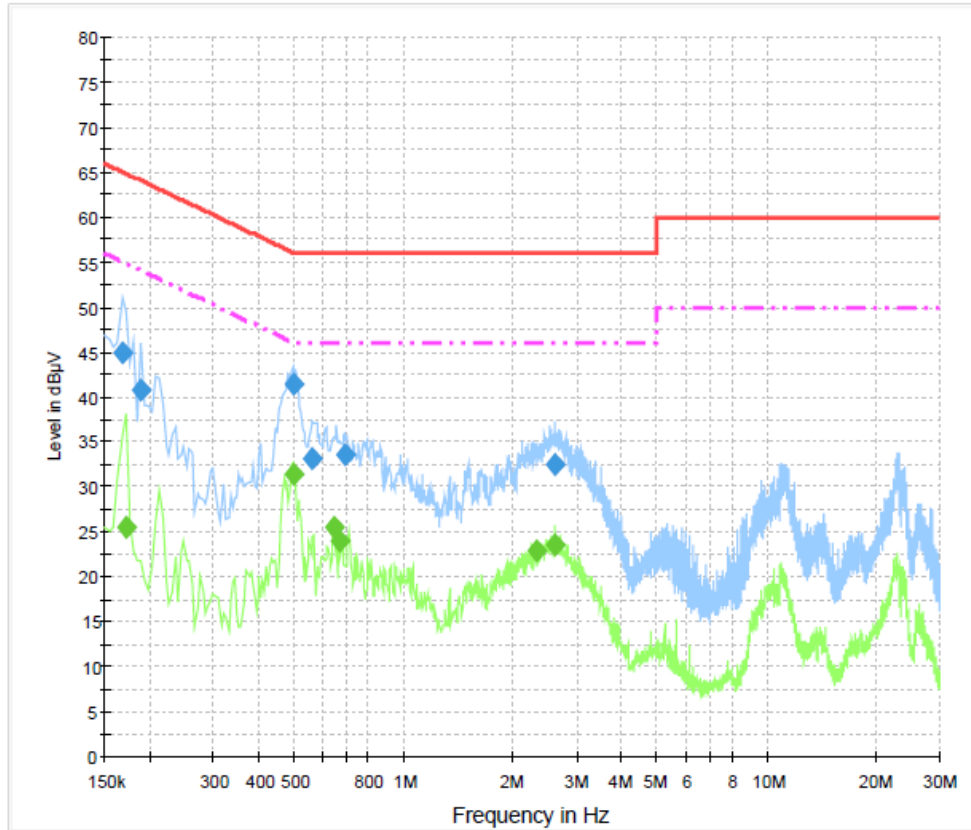
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	58.9	1000.0	9.000	On	L1	9.8	7.1	66.0
0.190500	44.8	1000.0	9.000	On	L1	9.9	19.3	64.0
0.658500	37.7	1000.0	9.000	On	L1	9.9	18.3	56.0
2.076000	34.8	1000.0	9.000	On	L1	9.8	21.2	56.0
2.872500	38.9	1000.0	9.000	On	L1	9.8	17.1	56.0
2.967000	41.1	1000.0	9.000	On	L1	9.8	14.9	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	38.3	1000.0	9.000	On	L1	9.8	17.7	56.0
0.469500	20.4	1000.0	9.000	On	L1	9.9	26.1	46.5
2.346000	23.8	1000.0	9.000	On	L1	9.8	22.2	46.0
2.611500	28.2	1000.0	9.000	On	L1	9.8	17.8	46.0
2.949000	30.8	1000.0	9.000	On	L1	9.8	15.2	46.0
3.615000	28.9	1000.0	9.000	On	L1	9.8	17.1	46.0

[NEUTRAL]
Class B_N



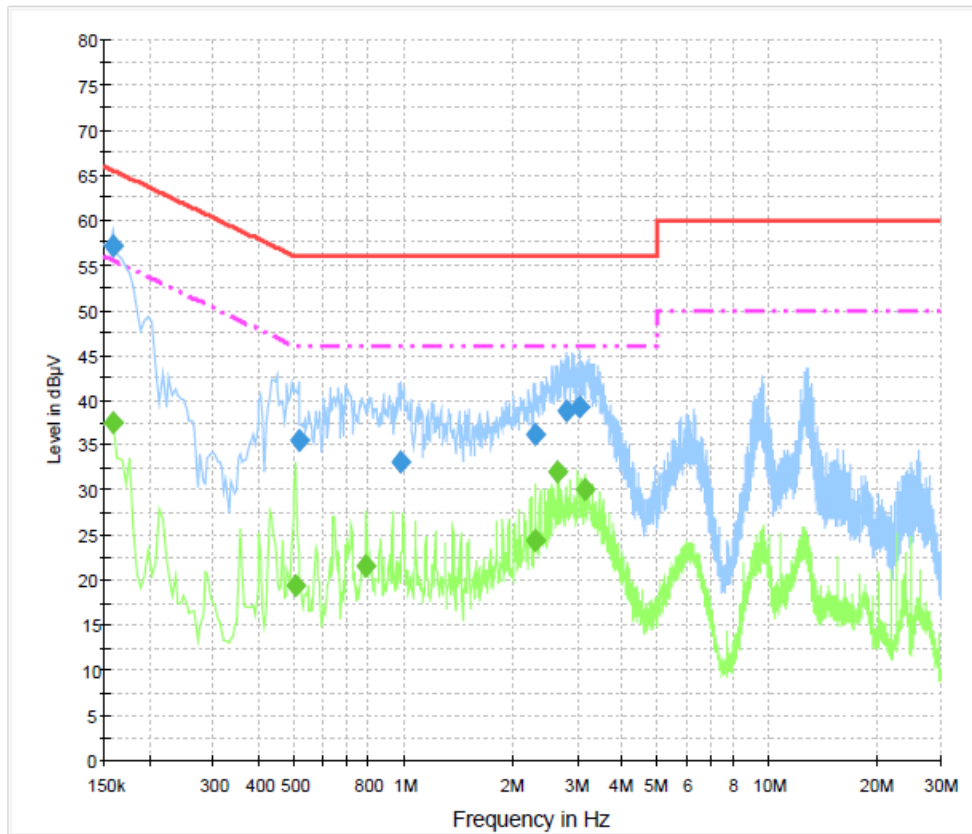
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	44.8	1000.0	9.000	On	N	9.8	20.3	65.1
0.190500	40.8	1000.0	9.000	On	N	9.9	23.2	64.0
0.496500	41.4	1000.0	9.000	On	N	9.9	14.6	56.1
0.564000	33.1	1000.0	9.000	On	N	9.9	22.9	56.0
0.690000	33.6	1000.0	9.000	On	N	9.9	22.4	56.0
2.625000	32.4	1000.0	9.000	On	N	9.8	23.6	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.172500	25.4	1000.0	9.000	On	N	9.8	29.4	54.8
0.496500	31.3	1000.0	9.000	On	N	9.9	14.8	46.1
0.645000	25.6	1000.0	9.000	On	N	9.9	20.4	46.0
0.667500	24.1	1000.0	9.000	On	N	9.9	21.9	46.0
2.319000	23.0	1000.0	9.000	On	N	9.8	23.0	46.0
2.625000	23.5	1000.0	9.000	On	N	9.8	22.5	46.0

Test mode : Antenna type #2, RF #1(Worst case)
[L1]
Class B_L1



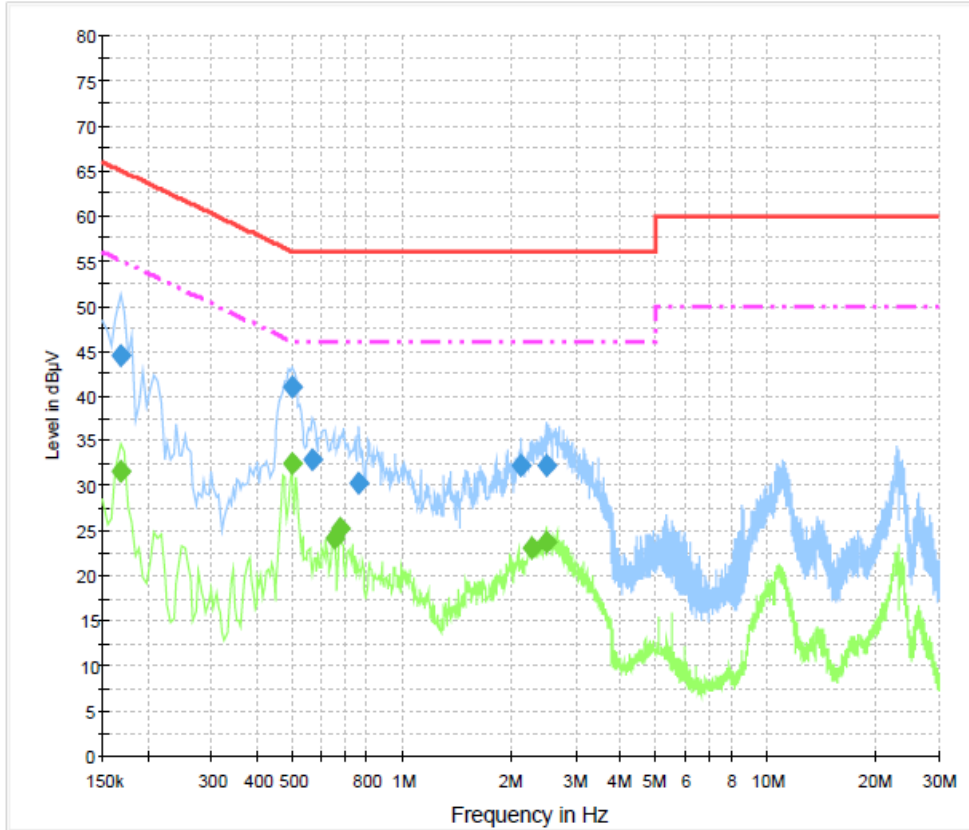
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	57.1	1000.0	9.000	On	L1	9.8	8.4	65.5
0.514500	35.5	1000.0	9.000	On	L1	9.9	20.5	56.0
0.987000	33.1	1000.0	9.000	On	L1	9.8	22.9	56.0
2.305500	36.2	1000.0	9.000	On	L1	9.8	19.8	56.0
2.805000	38.9	1000.0	9.000	On	L1	9.8	17.1	56.0
3.043500	39.3	1000.0	9.000	On	L1	9.8	16.7	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	37.5	1000.0	9.000	On	L1	9.8	18.0	55.5
0.505500	19.4	1000.0	9.000	On	L1	9.9	26.6	46.0
0.789000	21.6	1000.0	9.000	On	L1	9.8	24.4	46.0
2.301000	24.4	1000.0	9.000	On	L1	9.8	21.6	46.0
2.661000	32.1	1000.0	9.000	On	L1	9.8	13.9	46.0
3.165000	30.1	1000.0	9.000	On	L1	9.8	15.9	46.0

[NEUTRAL]
Class B_N



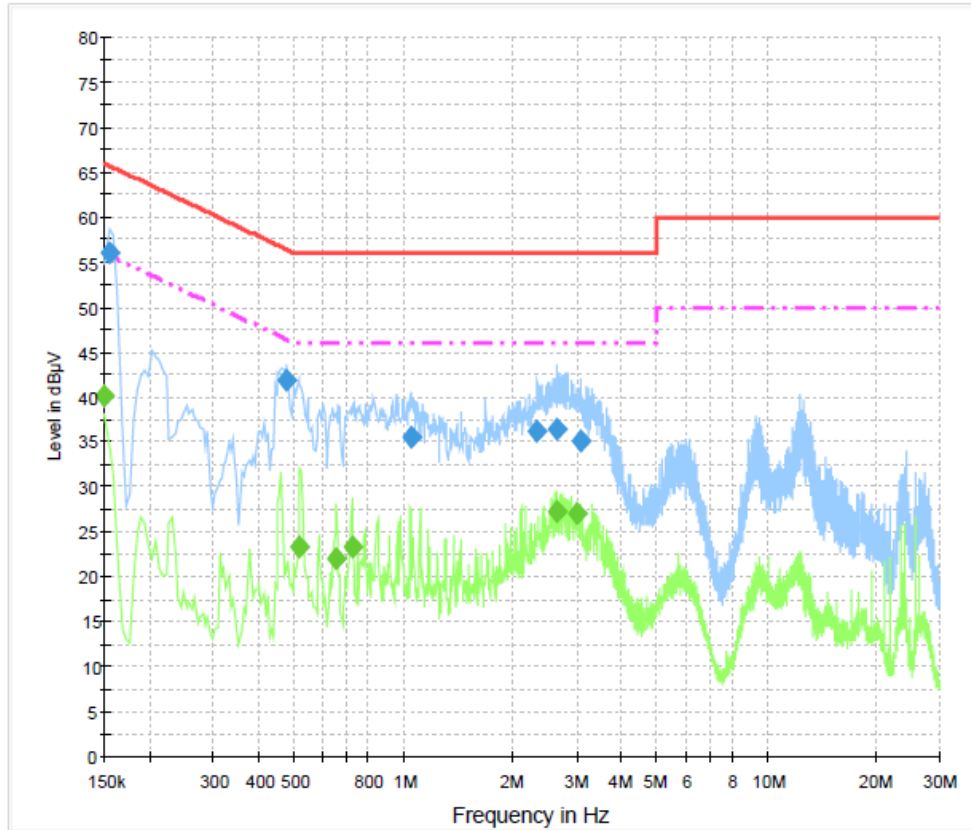
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	44.6	1000.0	9.000	On	N	9.8	20.5	65.1
0.501000	41.0	1000.0	9.000	On	N	9.9	15.0	56.0
0.568500	33.0	1000.0	9.000	On	N	9.9	23.0	56.0
0.762000	30.3	1000.0	9.000	On	N	9.9	25.7	56.0
2.121000	32.2	1000.0	9.000	On	N	9.8	23.8	56.0
2.485500	32.2	1000.0	9.000	On	N	9.8	23.8	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	31.7	1000.0	9.000	On	N	9.8	23.4	55.1
0.496500	32.4	1000.0	9.000	On	N	9.9	13.7	46.1
0.649500	24.3	1000.0	9.000	On	N	9.9	21.7	46.0
0.676500	25.4	1000.0	9.000	On	N	9.9	20.6	46.0
2.278500	23.1	1000.0	9.000	On	N	9.8	22.9	46.0
2.485500	23.7	1000.0	9.000	On	N	9.8	22.3	46.0

Test mode : Antenna type #2, RF #2(Worst case)
[L1]
Class B_L1



Final Result 1

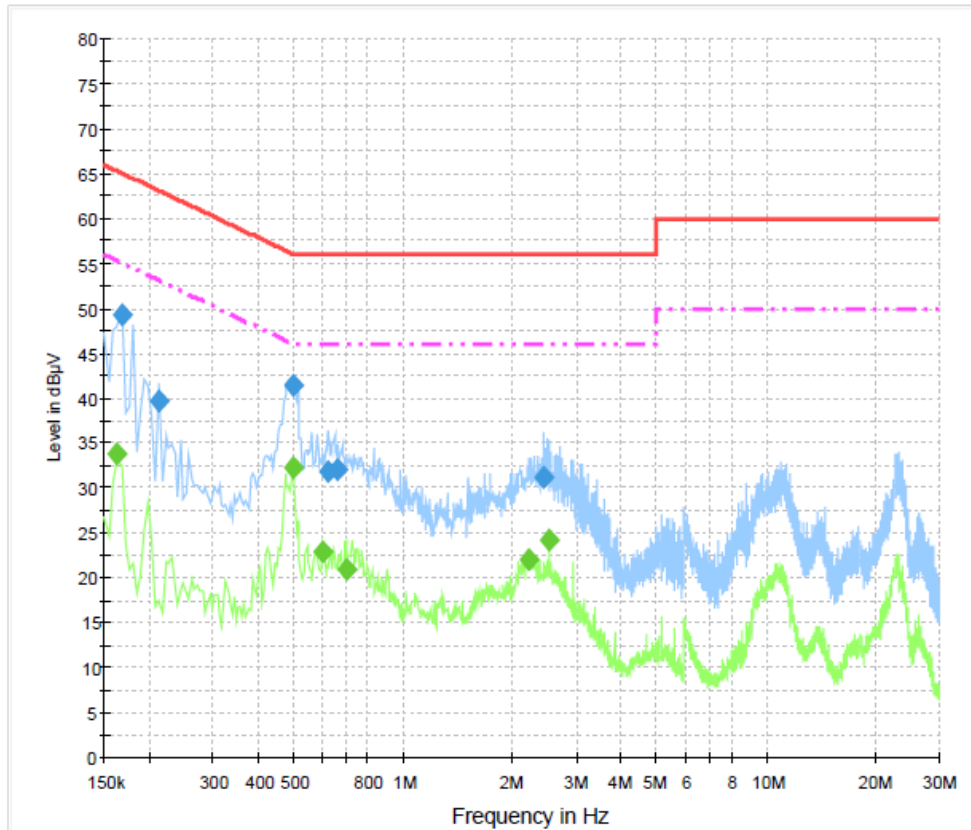
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.154500	56.1	1000.0	9.000	On	L1	9.8	9.7	65.8
0.478500	41.8	1000.0	9.000	On	L1	9.9	14.5	56.4
1.050000	35.6	1000.0	9.000	On	L1	9.8	20.4	56.0
2.341500	36.2	1000.0	9.000	On	L1	9.8	19.8	56.0
2.652000	36.5	1000.0	9.000	On	L1	9.8	19.5	56.0
3.084000	35.1	1000.0	9.000	On	L1	9.8	20.9	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	40.0	1000.0	9.000	On	L1	9.8	16.0	56.0
0.519000	23.3	1000.0	9.000	On	L1	9.9	22.7	46.0
0.654000	22.0	1000.0	9.000	On	L1	9.9	24.0	46.0
0.721500	23.4	1000.0	9.000	On	L1	9.9	22.6	46.0
2.634000	27.3	1000.0	9.000	On	L1	9.8	18.7	46.0
3.003000	26.9	1000.0	9.000	On	L1	9.8	19.1	46.0

[NEUTRAL]

Class B_N



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	49.2	1000.0	9.000	On	N	9.8	15.8	65.1
0.213000	39.8	1000.0	9.000	On	N	9.8	23.3	63.1
0.496500	41.4	1000.0	9.000	On	N	9.9	14.6	56.1
0.622500	31.8	1000.0	9.000	On	N	9.9	24.2	56.0
0.663000	32.1	1000.0	9.000	On	N	9.9	23.9	56.0
2.445000	31.1	1000.0	9.000	On	N	9.8	24.9	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	33.8	1000.0	9.000	On	N	9.8	21.5	55.3
0.496500	32.3	1000.0	9.000	On	N	9.9	13.8	46.1
0.604500	22.8	1000.0	9.000	On	N	9.9	23.2	46.0
0.699000	20.9	1000.0	9.000	On	N	9.9	25.1	46.0
2.224500	22.0	1000.0	9.000	On	N	9.8	24.0	46.0
2.517000	24.2	1000.0	9.000	On	N	9.8	21.8	46.0



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Report No.:
 CTK-2018-03729
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APPENDIX A – Test Equipment Used For Tests

No.	Name of Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
1	Signal Analyzer	R&S	FSP-30	100994	2018-10-25	2019-10-25
2	Signal Generator	Rohde & Schwarz	SMB100A	175528	2018-10-24	2019-10-24
3	DC Power Supply	Agilent	E3632A	MY40011638	2018-10-24	2019-10-24
4	EMI Test Receiver	Rohde & Schwarz	ESCI7	100814	2018-10-25	2019-10-25
5	Bilog Antenna	Schaffner	CBL6111C	2551	2018-05-10	2020-05-10
6	Active Loop Antenna	SCHWARZBECK	FMZB 1513	1513-125	2018-05-02	2020-05-02
7	6dB Attenuator	R&S	DNF	272.4110.50-2	2018-10-25	2019-10-25
8	AMPLIFIER	SONOMA	310	291721	2018-02-02	2019-02-02
9	EMI Test Receiver	Rohde & Schwarz	ESU40	100336	2018-02-01	2019-02-01
10	Preamplifier	Agilent	8449B	3008A02011	2017-11-30	2018-11-30
11	Horn Antenna	ETS-Lindgren	3117	00154525	2017-09-14	2019-09-14
12	Horn Antenna	ETS-Lindgren	3116	00062916	2017-04-25	2019-04-25
13	RF Cable (conducted)	Junkosha Inc.	MWX221	1510S087	2018-02-02	2019-02-02
14	RF Cable (Radiated)	HUBER+SUHNER	SUCOFLEX 104	MY27558/4	2018-02-02	2019-02-02
15	RF Cable (Radiated)	HUBER+SUHNER	SUCOFLEX 104	N/A (below 1GHz)	2018-02-02	2019-02-02
16	RF Cable (Radiated)	HUBER+SUHNER	SUCOFLEX 104	MY27573/4	2017-11-30	2018-11-30
17	RF Cable (Radiated)	HUBER+SUHNER	SUCOFLEX 106	N/A (above 1GHz)	2017-11-30	2018-11-30
18	Dual-Tracking DC Power Supply	Topward Electric Instruments Co.,Ltd.	6303D	711196	2018-01-30	2019-01-30
19	Band Reject Filter	Micro Tronics	BRM50702	G233	2018-01-26	2019-01-26

APPENDIX B – EUT Photographs

Antenna type #1



Antenna type #2

