TEST REPORT

Part 15 Subpart C 15.247

Equipment under test	DUAL-MODE BABY MONITOR
Model name	SEM-3057WN
Derivative model	SEM-3055WN
FCC ID	NLMSEM3057WN
Applicant	Hanwha Techwin Co., Ltd.
Manufacturer	RDI Technology (Shenzhen) Co.,Ltd.
Date of test(s)	2016.12.29 ~ 2017.01.09
Date of issue	2017.01.10

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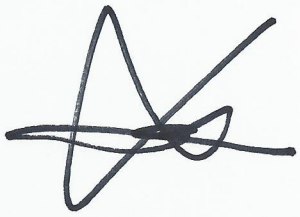	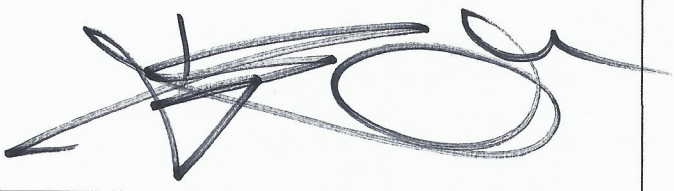
Kwon-se Kim Test engineer	Jeff Do Technical manager

Revision history

Revision	Date of issue	Test report No.	Description
-	2017.01.10	KES-RF-17T0002	Initial

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1. General information

Applicant:	Hanwha Techwin Co., Ltd.
Applicant address:	1204, Changwon-daero, Seongsan-gu, Changwon-si Gyeongsangnam-do, South Korea
Test site:	KES Co., Ltd.
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FCC rule part(s):	15.247
FCC ID:	NLMSEM3057WN
Test device serial No.:	☒ Production ☐ Pre-production ☐ Engineering

1.1. EUT description

Equipment under test	DUAL-MODE BABY MONITOR
Frequency range	FHSS : 2 408 ㎒ ~ 2 468 ㎒ BT : 2 402 ㎒ ~ 2 480 ㎒
Model:	SEM-3057WN
Derivative model	SEM-3055WN
Modulation technique	FHSS, GFSK
Number of channels	FHSS : 16 BT : 40
Antenna specification	FHSS Antenna type : Dipole, Peak gain: 2.0 dBi BT Antenna type : Patch, Peak gain: 2.14 dBi
Power source	DC 3.7 V (Rechargeable Battery)

15.247(a)(1) that the rx input bandwidths shift frequencies in synchronization with the transmitted

15.247(g): The system is designed to comply with all of the regulations in Section 15.247 when the transmitter is presented with a continuous data (or information) system.

15.247(h): The system does not coordinate it channels selection/ hopping sequence with other frequency hopping systems for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters.

Pseudorandom frequency hopping sequence
The channel is represented by a pseudo-random hopping sequence hopping through the 16 RF channels.

Equal hopping frequency use
All channels are used equally on average.

Example of a 16 hopping sequence in data mode:
12, 14, 03, 16, 02, 05, 10, 06, 09, 01, 13, 07, 11, 08, 15, 04

1.2. Test configuration

The **Hanwha Techwin Co., Ltd. DUAL-MODE BABY MONITOR FCC ID: NLMSEM3057WN** was tested per the guidance of ANSI C63.10-2013 and DA 00-705. ANSI C63.10-2013 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing.

1.3. Frequency/channel operations

Ch.	Frequency (㎒)
01	2408
.	.
.	.
09	2440
.	.
.	.
16	2468

1.4. Accessory information

Applicant	Equipment	Manufacturer	Model	Power source
-	-	-	-	-

1.5. Device modifications

N/A

1.6. Derivation model information

Software of derivation model is different from the basic model. The circuit diagram and hardware are fundamentally same. It is for model management purpose.

2. Summary of tests

Reference	Test description	Test results
15.247(a)(1)(iii)	20 dB bandwidth	Pass
15.247(b)(1)	Output power	Pass
15.247(a)(1)	Channel separation	Pass
15.247(a)(1)(iii)	Number of channels	Pass
15.247(a)(1)(iii)	Time of occupancy	Pass
15.205, 15.209	Radiated restricted band and emission	Pass
15.207(d)	Conducted band edge and out of band emissions	Pass
15.207(a)	AC conducted emissions	Pass

3. Test results

3.1. 20 dB bandwidth

Test procedure

DA 00-705

Test setting

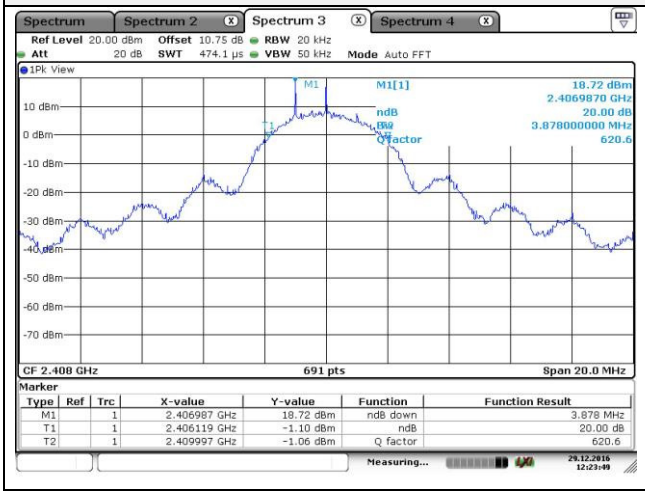
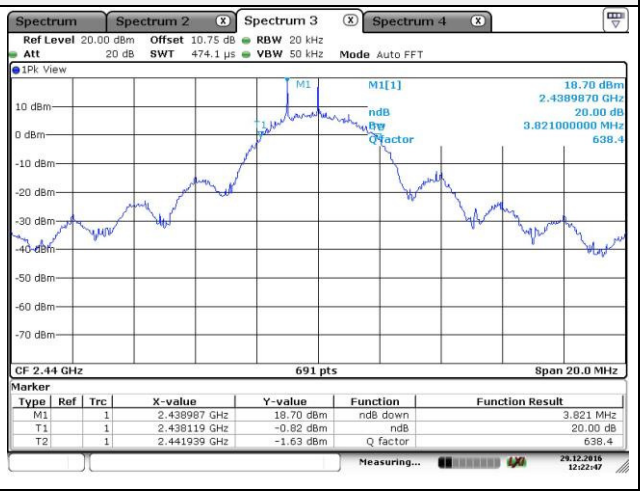
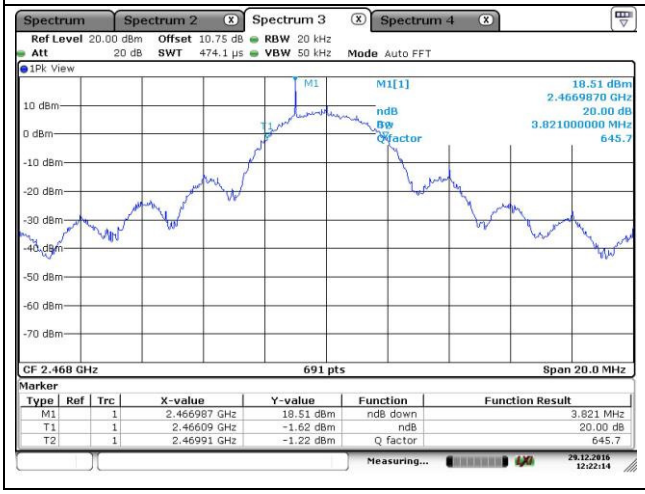
1. Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel
2. RBW ≥ 1% of the 20 dB bandwidth
3. VBW ≥ RBW
4. Sweep = auto
5. Detector function = peak
6. Sweep = auto couple
7. Trace mode = max hold

Limit

Not applicable

Test results

Frequency(㎒)	20 dB bandwidth(㎒)	Limit(㎒)
2 408	3.878	0.5
2 440	3.821	
2 468	3.821	

GFSK	
	
	N/A

3.2. Peak output power

Test procedure

DA 00-705

Test setting

1. Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
2. RBW > the 20 dB bandwidth of the emission being measured
3. VBW ≥ RBW
4. Sweep = Auto
5. Detector function = Peak
6. Trace = Max hold

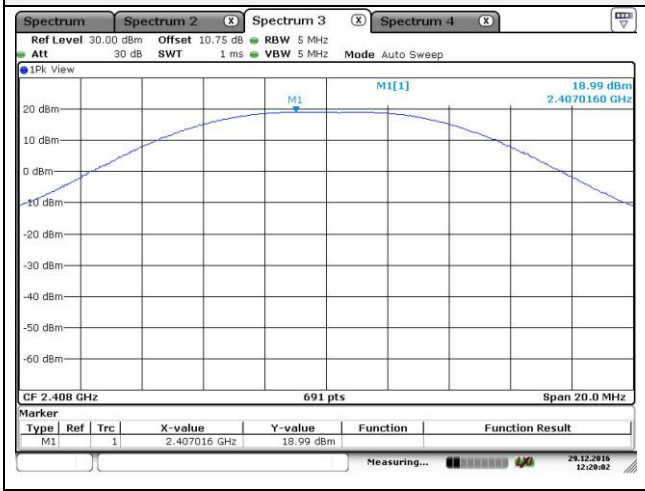
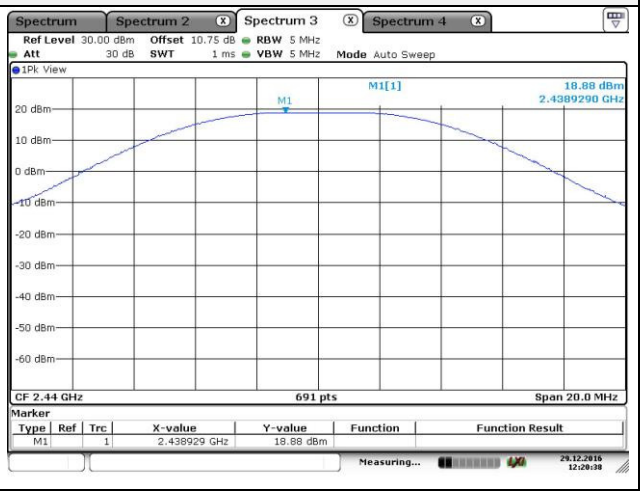
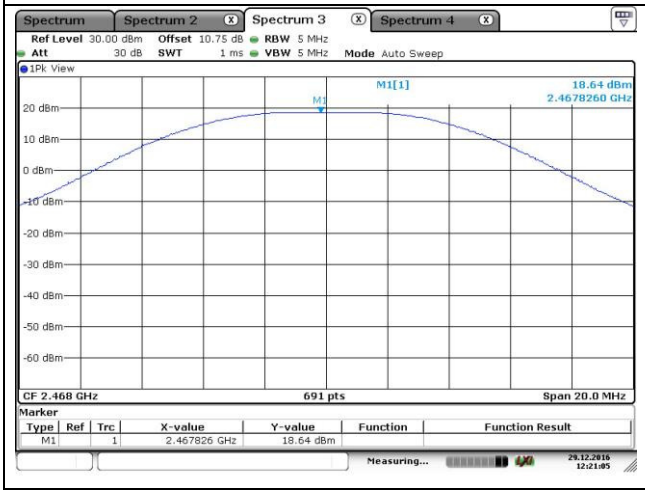
Limit

According to §15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 ㎑ or the 20 ㏈ bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 ㎽.

According to §15.247(b)(1), For frequency hopping systems operating in the 2 400 ~ 2 483.5 ㎒ employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5 725 ~ 5 805 ㎒ band: 1 Watt.

Test results

Frequency(㎒)	Channel no.	Measured power (㏈m)	Peak Power Limit (㏈m)
2 408	01	18.99	20.97
2 440	09	18.88	20.97
2 468	16	18.64	20.97

GFSK	
	
	N/A

3.3. Carrier frequency separation

Test procedure

DA 00-705

Test Setting

1. The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:
2. Span = wide enough to capture the peaks of two adjacent channels
3. Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span
4. Video (or Average) Bandwidth (VBW) ≥ RBW
5. Sweep = auto
6. Detector function = peak
7. Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section. Submit this plot.

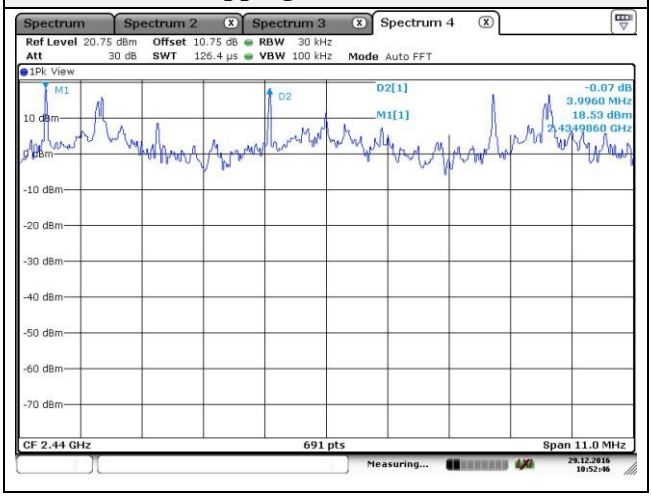
Limit

According to 15.247(a)(1), frequency hopping system operating in 2 400 ~ 2 483.5 ㎒. Band may have hopping channel carrier frequencies that are separated by 25 ㎑ or two-third of 20 ㏈ bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 ㎽.

Test results

Frequency(㎒)	Channel no.	Channel Separation (㎒)
2 440	09	3.996

Hopping mode_GFSK



3.4. Number of hopping frequency

Test procedure

DA 00-705

Test setting

1. The EUT must have its hopping function enabled.
2. Frequency range: 2 400 ㎒ ~ 2 483.5 ㎒
3. Span = the frequency band of operation
4. RBW = 300 ㎑ (≥ 1% of the span)
5. VBW = 1 ㎒ (≥ RBW)
6. Sweep = auto
7. Detector function = peak
8. Trace = max hold

All the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

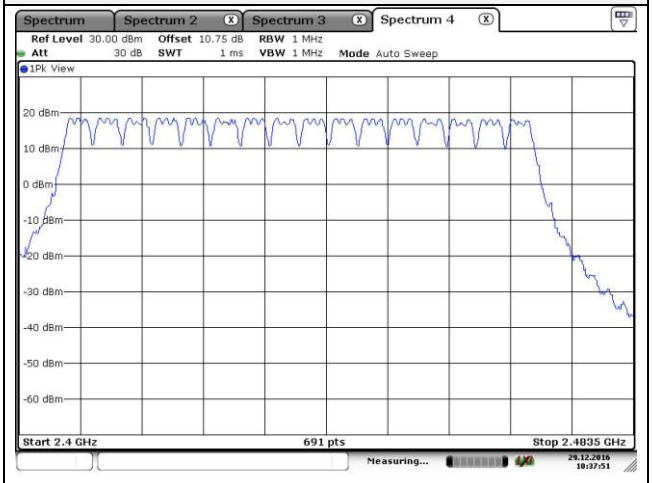
Limit

According to 15.247(a)(1)(iii), for frequency hopping system operating in the 2 400 ~ 2 483.5 ㎒ bands shall use at least 15 hopping frequencies.

Test results

Frequency	Number of hopping frequency	Limit
2 408 ~ 2 468 ㎒	16	≥ 15

Hopping mode_GFSK



3.5. Time of occupancy

Test procedure

DA 00-705

Test setting

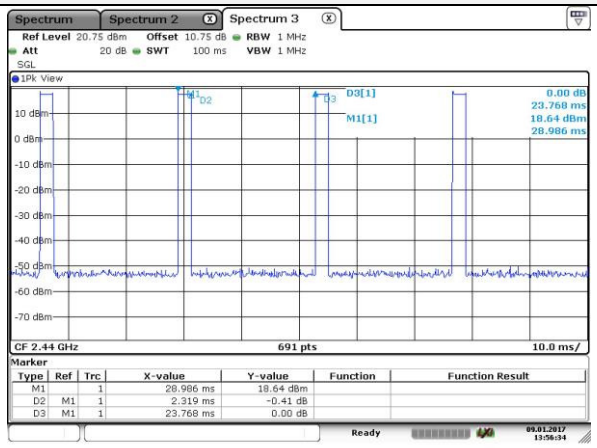
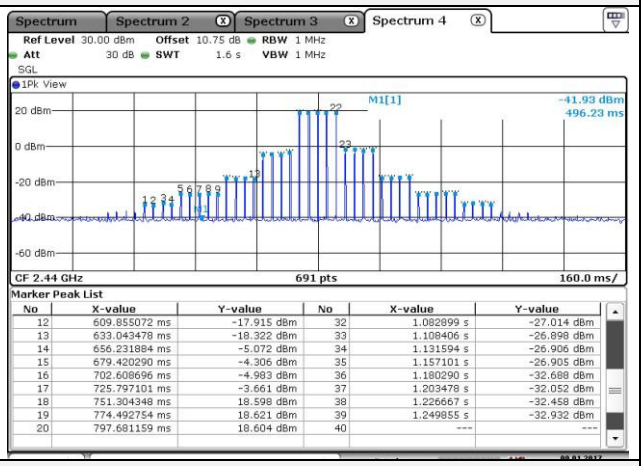
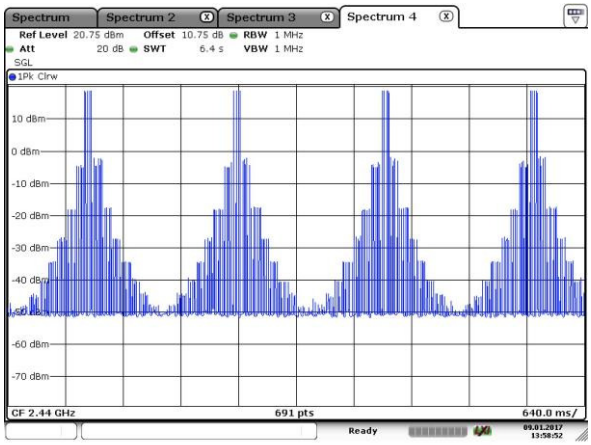
1. The EUT must have its hopping function enabled.
2. Span = zero span, centered on a hopping channel
4. RBW = 1 ㎒
5. VBW = 1 ㎒ (≥ RBW)
6. Sweep = as necessary to capture the entire dwell time per hopping channel
7. Detector function = peak
8. Trace = max hold

Limit

According to 15.247(a)(1)(iii), for frequency hopping system operating in the 2 400 ~ 2 483.5 ㎒ band, the average time of occupancy on any frequency shall not be greater than 0.4 second within a 6.4 second period.

A period time = 0.4(s) × 16 = 6.4(s)

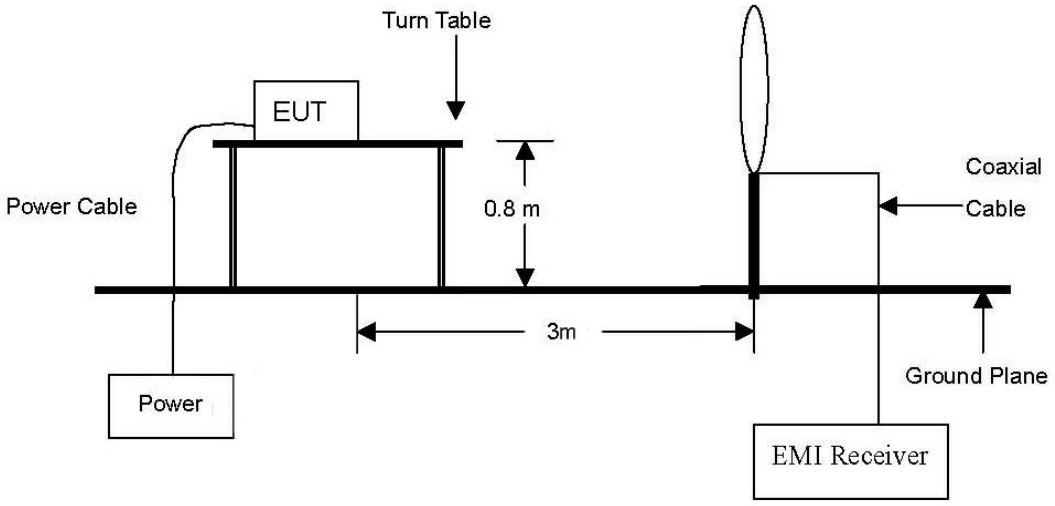
Frequency (㎒)	Burst time (ms)	Burst number	Time of occupancy (ms)	Limit (ms)
2 440	2.319	156	361.764	400

Burst time(㎳) = 2.319	Burst number within 1.6 s = 39
	
Burst number within 6.4 s = 39 × 4 = 156	
	N/A

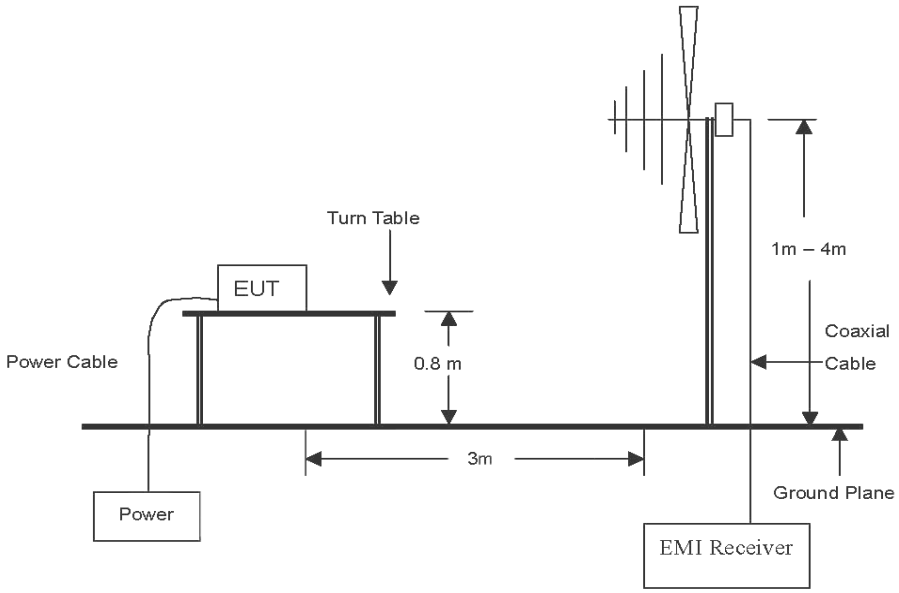
3.6 Radiated restricted band and emissions

Test setup

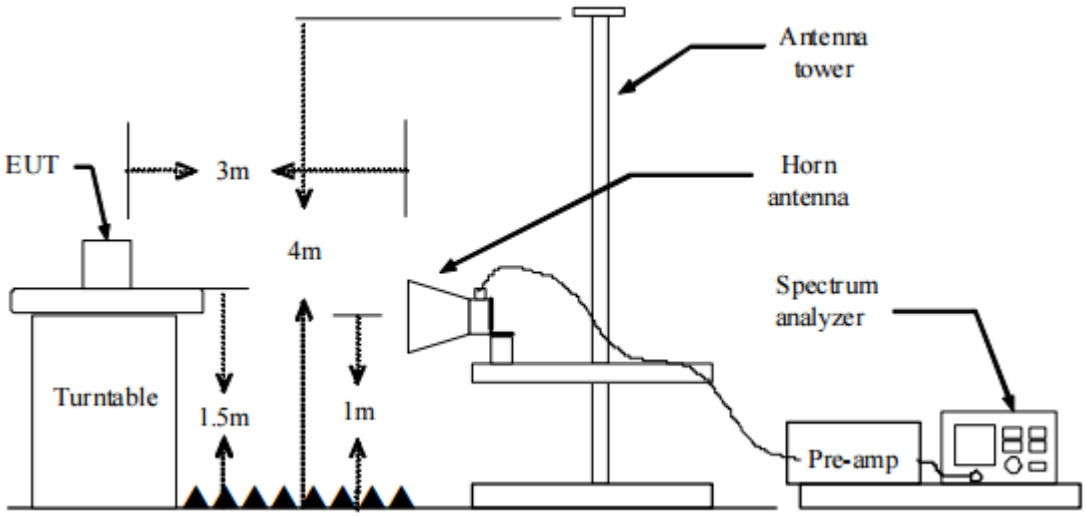
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒ Emissions.



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 the tenth harmonic of the highest fundamental frequency or to 40 ㎓ emissions, whichever is lower.



Test procedure

1. The EUT is placed on a turntable, which is 0.8 m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until the measurements for all frequencies are complete.
7. Spectrum analyzer settings for $f < 1$ ㎓:
   Span = wide enough to fully capture the emission being measured
   RBW = 100 ㎑
   VBW ≥ RBW
   Sweep = auto
   Detector function = quasi peak
   Trace = max hold
8. Spectrum analyzer settings for $f \geq 1$ ㎓: Peak
   Span = wide enough to fully capture the emission being measured
   RBW = 1 ㎒
   VBW ≥ RBW
   Sweep = auto
   Detector function = peak
   Trace = max hold
9. Spectrum analyzer settings for $f \geq 1$ ㎓: Average
   Span = wide enough to fully capture the emission being measured
   RBW = 1 ㎒
   VBW ≥ 1/T ㎐, where T= pulse width in seconds
   Sweep = auto
   Detector function = average
   Trace = max hold
10. Duty Cycle Correction Factor (16 channel hopping)
    a. Time to cycle through all channels = $\Delta t = \tau$[㎳] × 16 channels = 37.104 ㎳, where τ = pulse width
    b. 100 ㎳/ Δt[㎳] = H → Round up to next highest integer, H '=1
    c. Worst Case Dwell Time = τ[㎳] × H' = 2.319 ㎳
    d. Duty Cycle Correction = 20log (Worst Case Dwell Time/ 100㎳) ㏈ = -32.69 ㏈

Note:

1. The spectrum is measured from 9 ㎑ to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1 ㎓. Above 1 ㎓, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported however emissions whose levels were not within 20 ㏈ of the respective limits were not reported.
2. When Average result is different from peak result over 20 ㏈ (over-averaging), according to 15.35 (c), as a "duty cycle correction factor", pulse averaging with 20 log(duty cycle) has to be used.
   Duty cycle correction factor = 20log(dwell time/100 ㎳)
3. Emissions below 18 ㎓ were measured at a 3 meter test distance while emissions above 18 ㎓ were measured at a 1 meter test distance with the application of a distance correction factor.
4. Average test would be performed if the peak result were greater than the average limit.
5. Field strength(㏈㎶/m) = Level(㏈㎶) + Correction factors(㏈/m) + Cable loss(㏈) + or F_d(㏈)
6. Correction factors(㏈/m) = Antenna factor(㏈/m) + Cable loss(㏈) + or Amp. gain(㏈)
7. Margin(㏈) = Limit(㏈㎶/m) - Field strength(㏈㎶/m)
8. To get a maximum emission level from the EUT, the EUT was moved throughout the XY, XZ and YZ planes.
9. f < 30 ㎒, extrapolation factor of 40 ㏈/decade of distance. $F_d = 40\log(D_m / Ds)$
   $f \geq$ 30 ㎒, extrapolation factor of 20 ㏈/decade of distance. $F_d = 20\log(D_m / Ds)$

Where:

F_d = Distance factor in ㏈
D_m = Measurement distance in meters
D_s = Specification distance in meters

Limit

According to 15.209(a), for an intentional radiator devices, the general required of field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values：

Frequency (㎒)	Distance (Meters)	Radiated (㎶/m)
0.009 ~ 0.490	300	2 400 / F(㎑)
0.490 ~ 1.705	30	24 000 / F(㎑)
1.705 ~ 30.0	30	30
30 ~ 88	3	100**
88 ~ 216	3	150**
216 ~ 960	3	200**
Above 960	3	500

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

Test results (Below 30 ㎒)

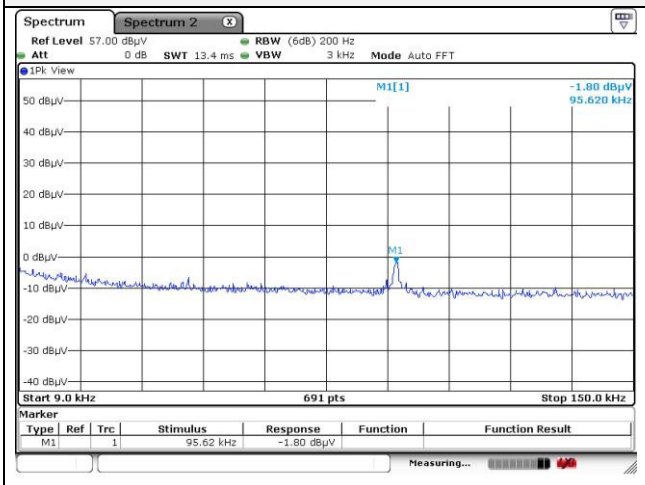
Mode: GFSK

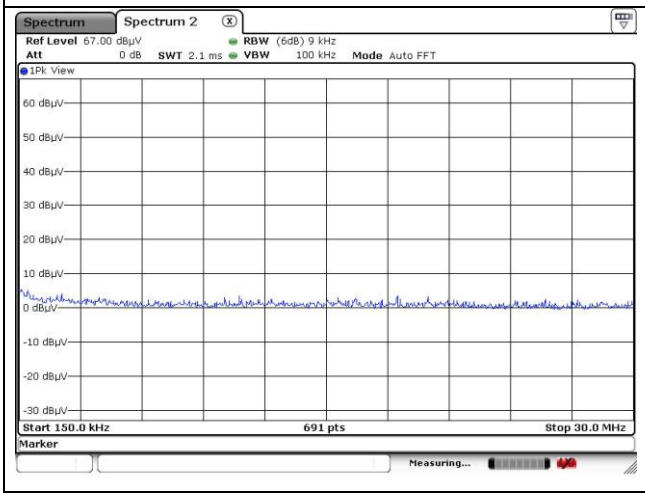
Distance of measurement: 3 meter

Channel: 01 (Worst case)

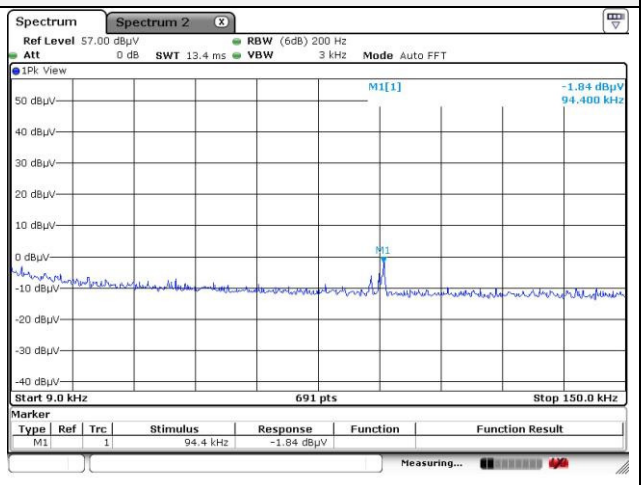
Frequency (㎒)	Level (dB㎶)	Ant. Pol. (H/V)	CF (dB)	F_d (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
No spurious emissions were detected within 20 ㏈ of the limit							

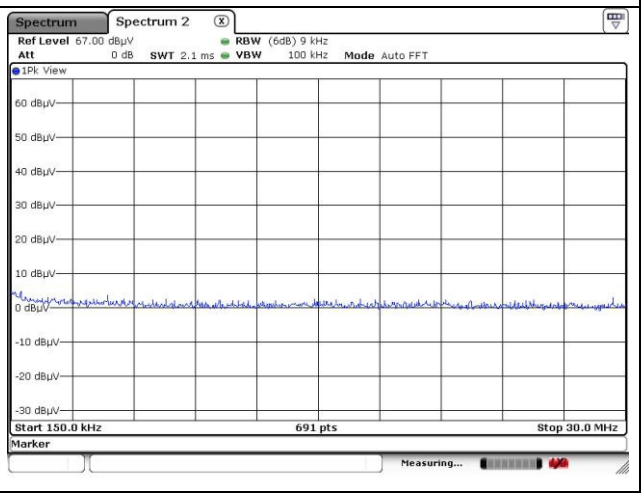
Horizontal





Vertical

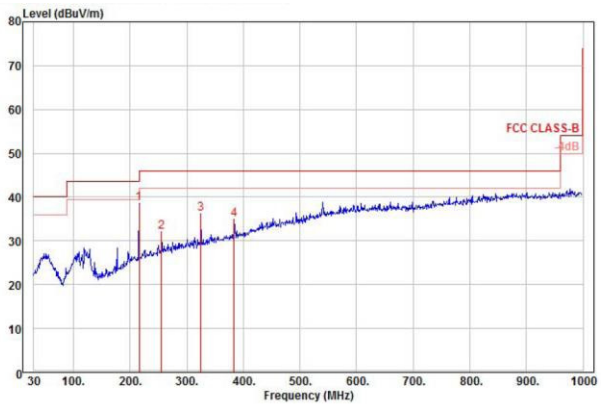




Test results (Below 1 000 ㎒)

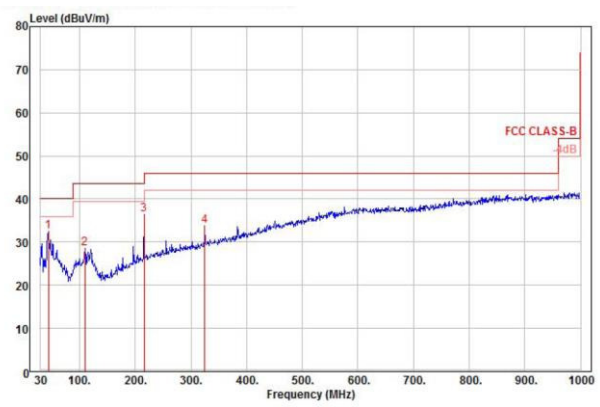
Mode:	GFSK
Distance of measurement:	3 meter
Channel:	01 (Worst case)

Horizontal



	Freq	Level	Read Level	Ant Factor	Cable Loss	Preamp Factor	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dB	dB	dBuV/m	dB		
1 pp	216.24	38.57	25.50	11.64	1.43	0.00	46.00	-7.43		horizontal
2	256.01	32.03	17.94	12.47	1.62	0.00	46.00	-13.97		horizontal
3	324.88	36.20	20.35	13.96	1.89	0.00	46.00	-9.80		horizontal
4	384.05	34.82	17.45	15.33	2.04	0.00	46.00	-11.18		horizontal

Vertical



	Freq	Level	Read Level	Ant Factor	Cable Loss	Preamp Factor	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dB/m	dB	dB	dBuV/m	dB		
1 pp	43.58	32.50	18.45	13.41	0.64	0.00	40.00	-7.50		vertical
2	109.54	28.59	16.73	10.82	1.04	0.00	43.50	-14.91		vertical
3	216.24	36.38	23.31	11.64	1.43	0.00	46.00	-9.62		vertical
4	324.88	33.75	17.90	13.96	1.89	0.00	46.00	-12.25		vertical

Note.

1. All spurious emission at channels are almost the same below 1 ㎓, so that low channel was chosen at representative in final test.
2. To get a maximum emission level from the EUT, the EUT was moved throughout the XY, XZ and YZ planes.

Test results (Above 1 000 ㎒)

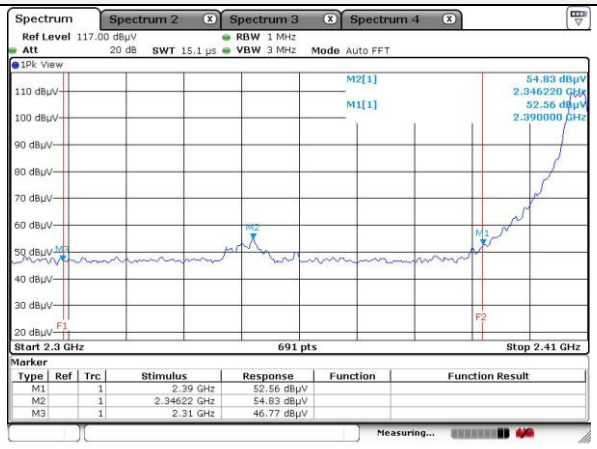
Mode: GFSK

Distance of measurement: 3 meter

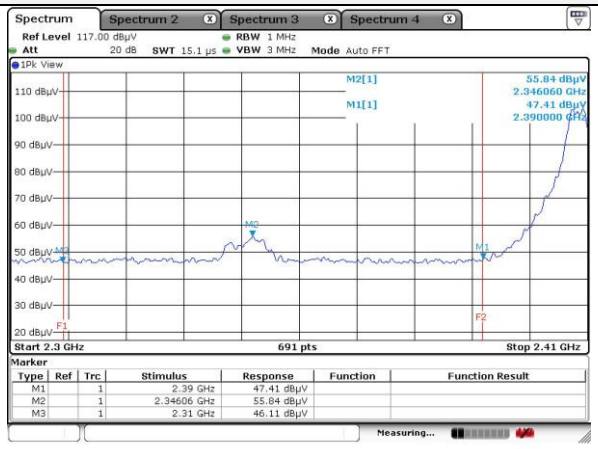
Channel: 01

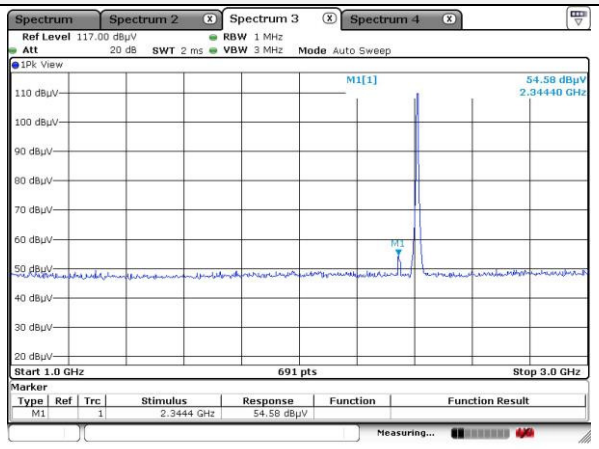
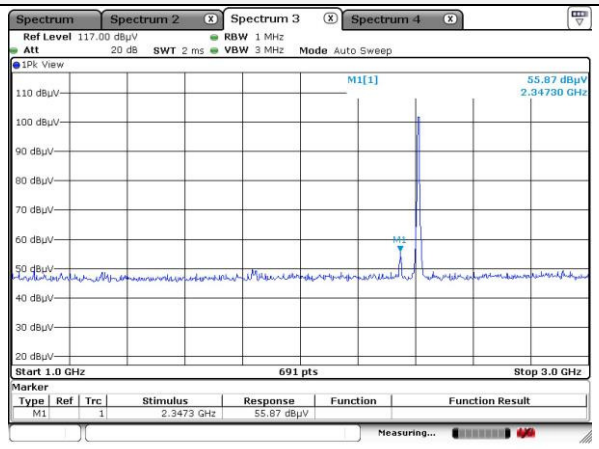
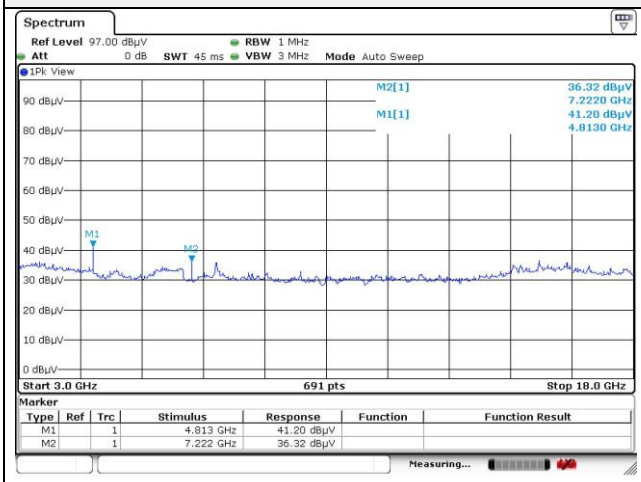
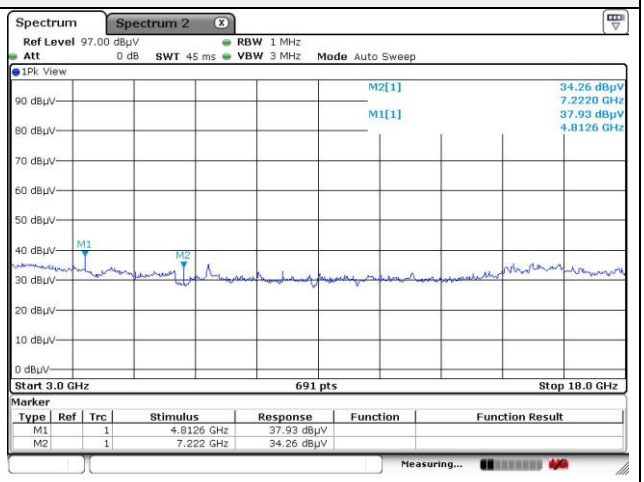
Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
2344.40	54.58	Peak	H	-1.95	-	52.63	74.00	21.37
2346.22	54.83	Peak	H	-1.95	-	52.88	74.00	21.12
2347.30	55.87	Peak	V	-1.95	-	53.92	74.00	20.08
2347.34	55.84	Peak	V	-1.95	-	53.89	74.00	20.11
2390.00	52.56	Peak	H	-1.86	-	50.70	74.00	23.30
2390.00	47.41	Peak	V	-1.86	-	45.55	74.00	28.45
4812.60	37.93	Peak	V	6.55	-	44.48	74.00	29.52
4813.00	41.20	Peak	H	6.56	-	47.76	74.00	26.24
7222.00	36.32	Peak	H	13.80	-	50.12	74.00	23.88
7222.00	34.26	Peak	V	13.80	-	48.06	74.00	25.94

Restricted band // Horizontal // Peak



Restricted band // Vertical // Peak



Horizontal // Peak for 1 ㎓ to 3 ㎓	Vertical // Peak for 1 ㎓ to 3 ㎓
	
Horizontal // Peak for 3 ㎓ to 18 ㎓	**Vertical // Peak for 3 ㎓ to 18 ㎓**
	

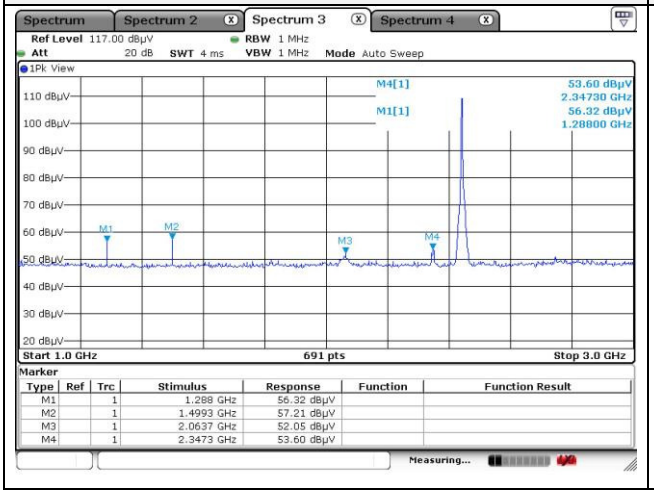
Mode: GFSK

Distance of measurement: 3 meter

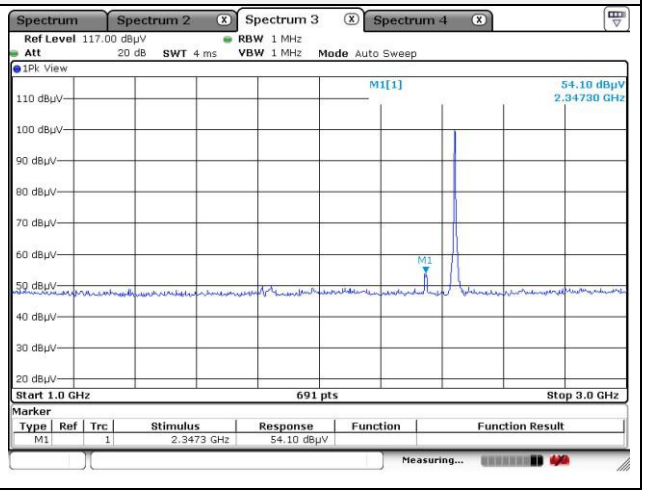
Channel: 09

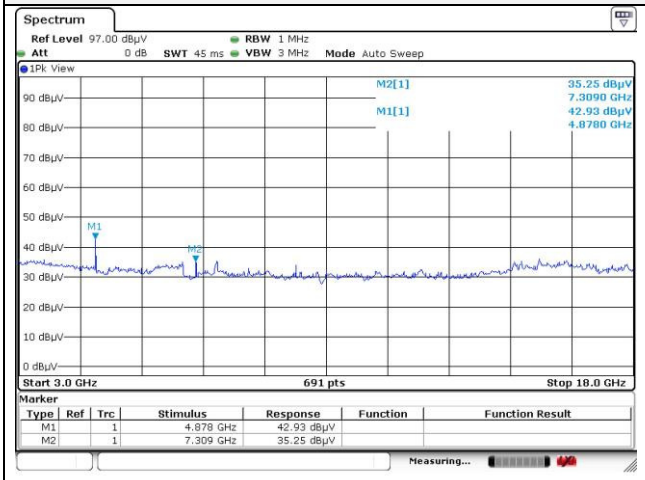
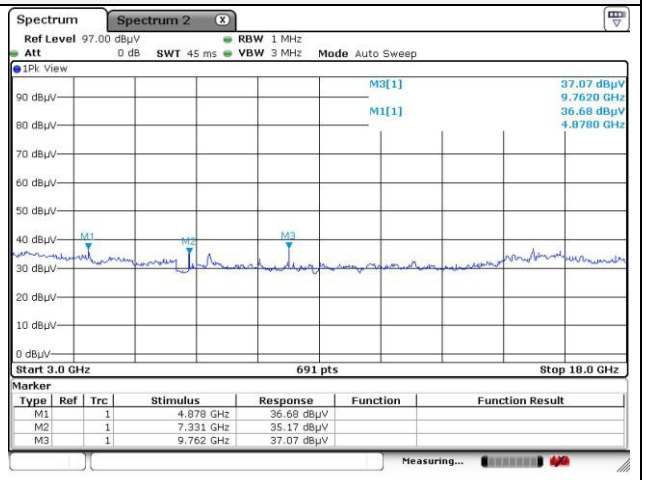
Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
1288.00	56.32	Peak	H	-8.56	-	47.76	74.00	26.24
1499.30	57.21	Peak	H	-7.43	-	49.78	74.00	24.22
2063.70	52.05	Peak	H	-2.70	-	49.35	74.00	24.65
2347.30	53.60	Peak	H	-1.95	-	51.65	74.00	22.35
2347.30	54.10	Peak	V	-1.95	-	52.15	74.00	21.85
4878.00	42.93	Peak	H	7.01	-	49.94	74.00	24.06
4878.00	36.68	Peak	V	7.01	-	43.69	74.00	30.31
7309.00	35.25	Peak	H	17.22	-	52.47	74.00	21.53
7331.00	35.17	Peak	V	18.08	-	53.25	74.00	20.75
9762.00	37.07	Peak	V	13.41	-	50.48	74.00	23.52

Horizontal // Peak for 1 ㎓ to 3 ㎓



Vertical // Peak for 1 ㎓ to 3 ㎓



Horizontal // Peak for 3 ㎓ to 18 ㎓	Vertical // Peak for 3 ㎓ to 18 ㎓
	

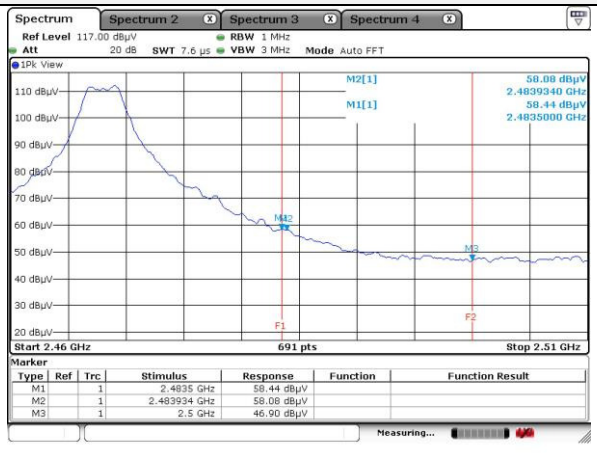
Mode: GFSK

Distance of measurement: 3 meter

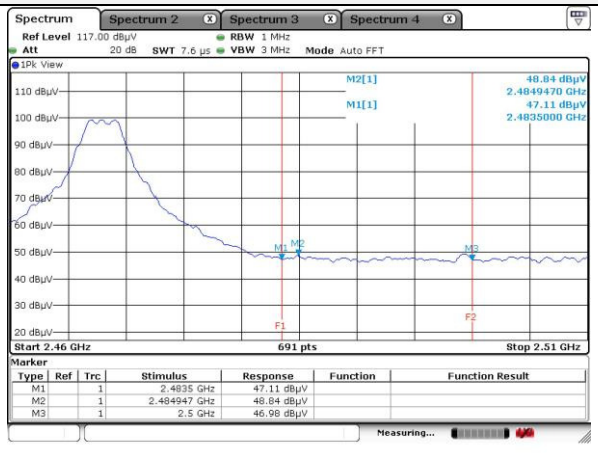
Channel: 16

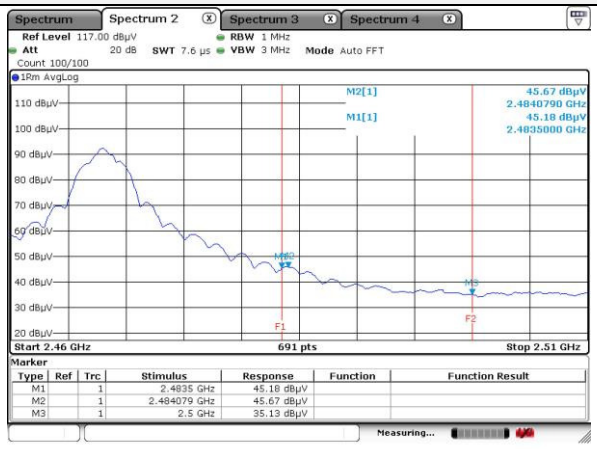
Frequency (㎒)	Level (dB㎶)	Detect mode	Ant. Pol. (H/V)	CF (dB)	DCF (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
2347.30	52.33	Peak	H	-1.95	-	50.38	74.00	23.62
2347.30	54.68	Peak	V	-1.95	-	52.73	74.00	21.27
2483.50	58.44	Peak	H	-1.60	-	56.84	74.00	17.16
2483.50	45.18	Average	H	-1.60	-32.69	10.89	54.00	43.11
2483.93	58.08	Peak	H	-1.60	-	56.48	74.00	17.52
2484.08	45.67	Average	H	-1.60	-32.69	11.38	54.00	42.62
2483.50	47.11	Peak	V	-1.60	-	45.51	74.00	28.49
2484.95	48.84	Peak	V	-1.59	-	47.25	74.00	26.75
4943.00	42.12	Peak	H	7.46	-	49.58	74.00	24.42
4943.00	36.01	Peak	V	7.46	-	43.47	74.00	30.53
7396.00	35.55	Peak	V	20.63	-	56.18	74.00	17.82
7396.00	20.64	Average	V	20.63	-32.69	8.58	54.00	45.42
9870.00	36.69	Peak	V	13.40	-	50.09	74.00	23.91

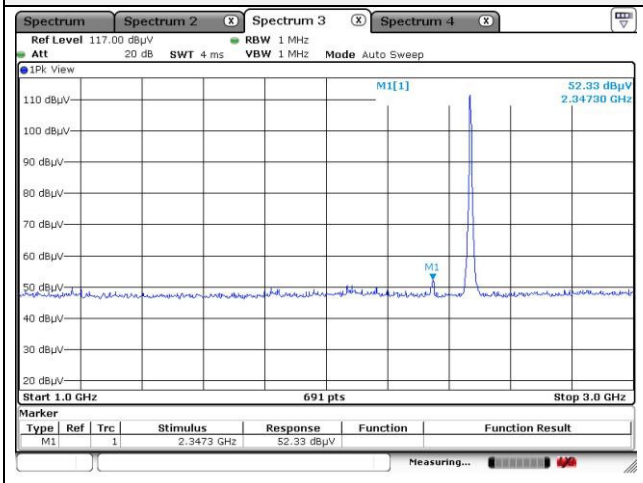
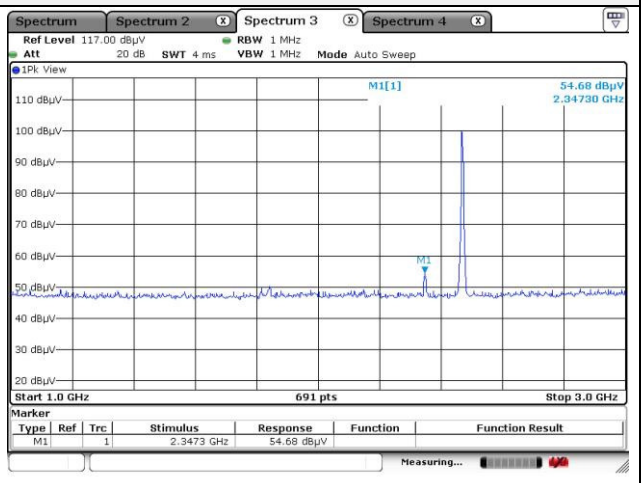
Restricted band // Horizontal // Peak

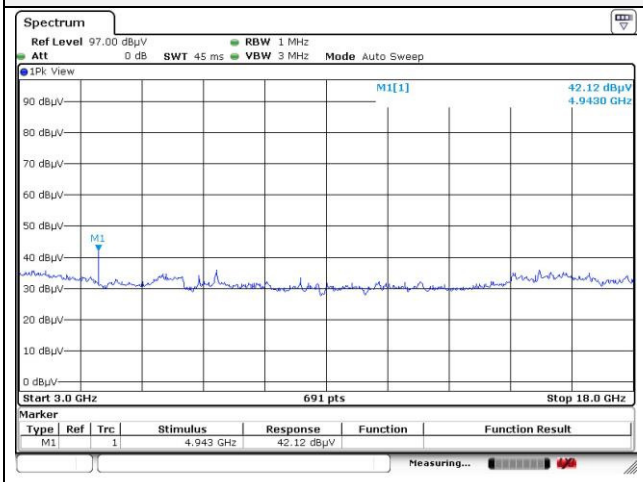
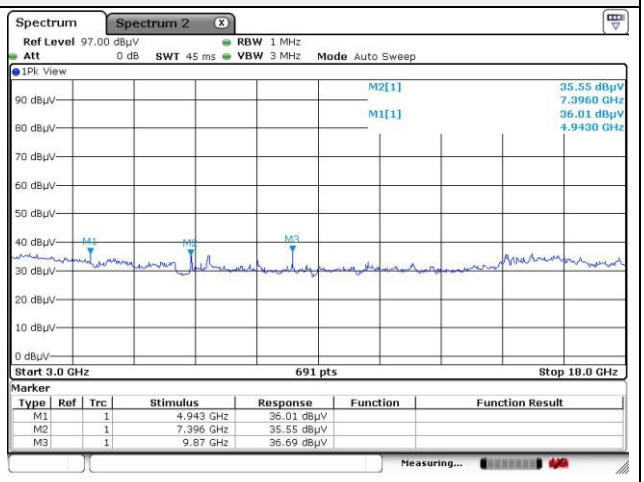


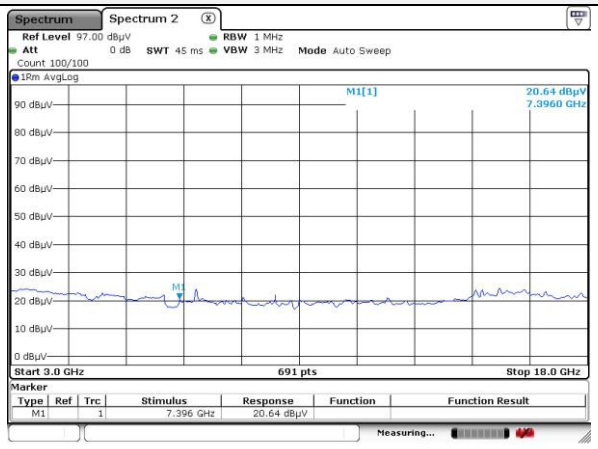
Restricted band // Vertical // Peak



Restricted band // Horizontal // Average	Restricted band // Vertical // Average
	N.A

Horizontal // Peak for 1 ㎓ to 3 ㎓	Vertical // Peak for 1 ㎓ to 3 ㎓
	

Horizontal // Peak for 3 ㎓ to 18 ㎓	Vertical // Peak for 3 ㎓ to 18 ㎓
	

Horizontal // Average for 3 ㎓ to 18 ㎓	Vertical // Average for 3 ㎓ to 18 ㎓
N/A	

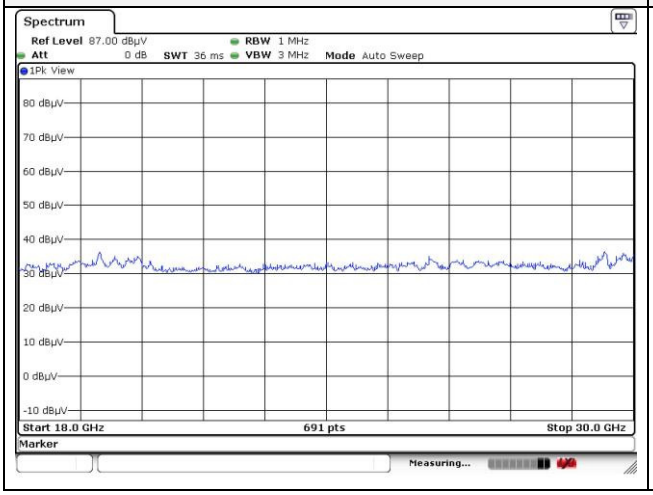
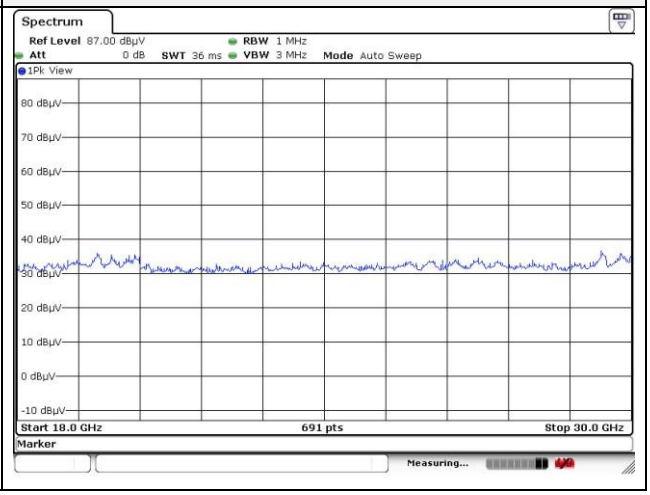
Test results (18 ㎓ to 30 ㎓)

Mode: GFSK

Distance of measurement: 3 meter

Channel: 01(Worst case)

Frequency (㎒)	Level (dB㎶)	Ant. Pol. (H/V)	CF (dB)	F_d (dB)	Field strength (dB㎶/m)	Limit (dB㎶/m)	Margin (dB)
No spurious emissions were detected within 20㏈ of the limit							

Horizontal	Vertical
	

Note.

1. Average test would be performed if the peak result were greater than the average limit.
2. Actual = Reading + AFCL(Ant. factor – Amp. gain + Cable loss) + DCF(Duty cycle correction factor)
3. Duty cycle correction factor = 20log(dwell time/100 ㎳)

3.7 Conducted spurious emissions & band edge

Test procedure

DA 00-705

Test setting

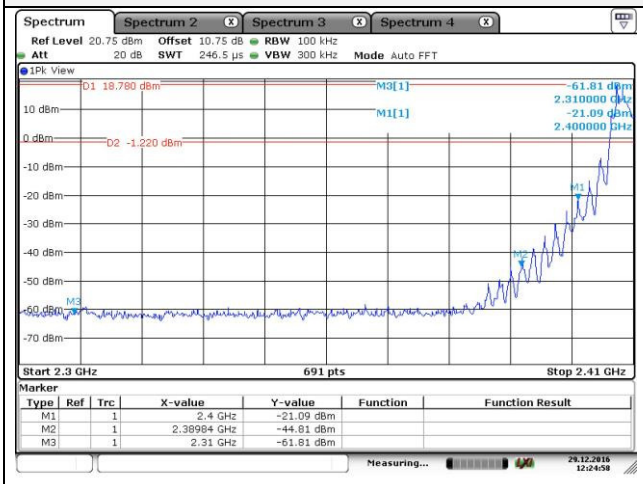
1. Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic.
2. RBW = 100 ㎑
3. VBW ≥ 300 ㎑
4. Detector = Peak
5. Number of sweep points ≥ 2 × Span/RBW
7. Trace mode = max hold
8. Sweep time = auto couple
9. The trace was allowed to stabilize

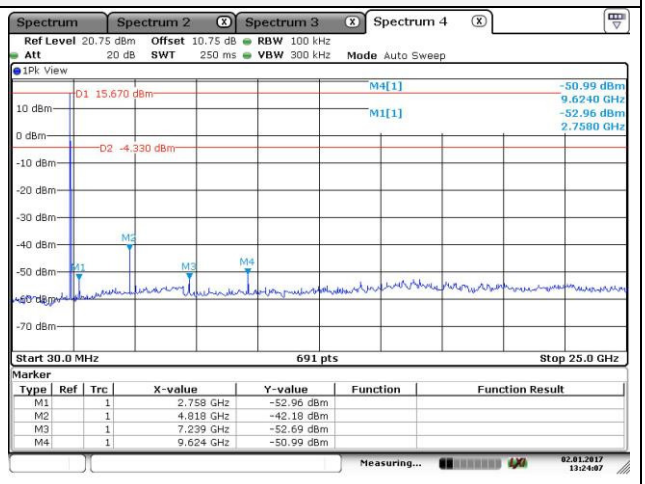
Limit

According to 15.247(d), in any 100 ㎑ bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 ㏈ below that in the 100 ㎑ bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval , as permitted under paragraph(b)(3) of this section , the attenuation required under this paragraph shall be 30 ㏈ instead of 20 ㏈. Attenuation below the general limits specified in section 15.209(a) is not required. In addition, radiated emission which in the restricted band, as define in section 15.205(a), must also comply the radiated emission limits specified in section 15.209(a) (see section 15.205(c))

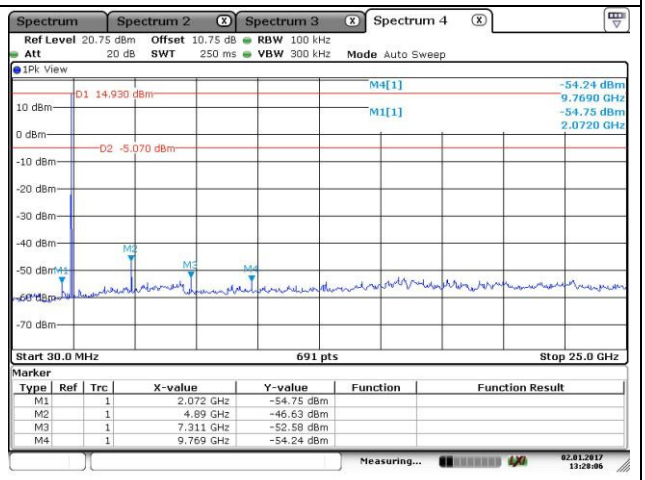
Test results

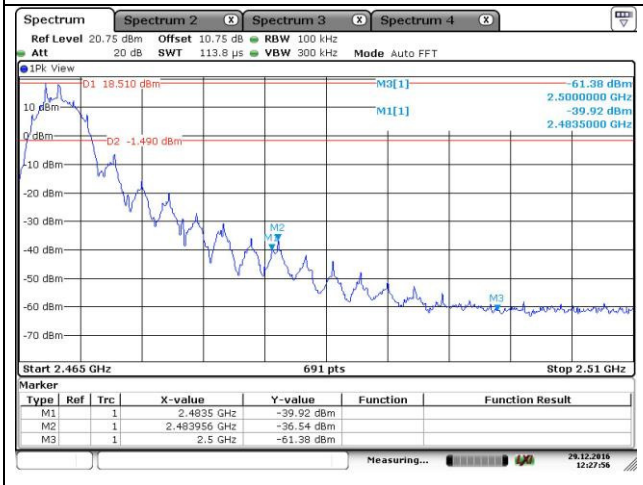
GFSK

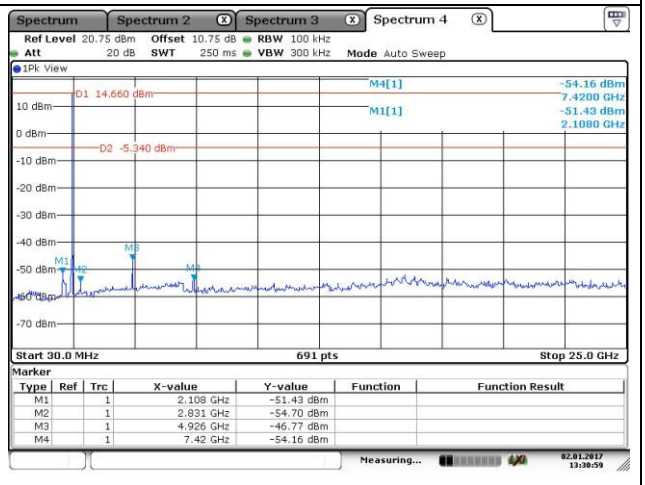




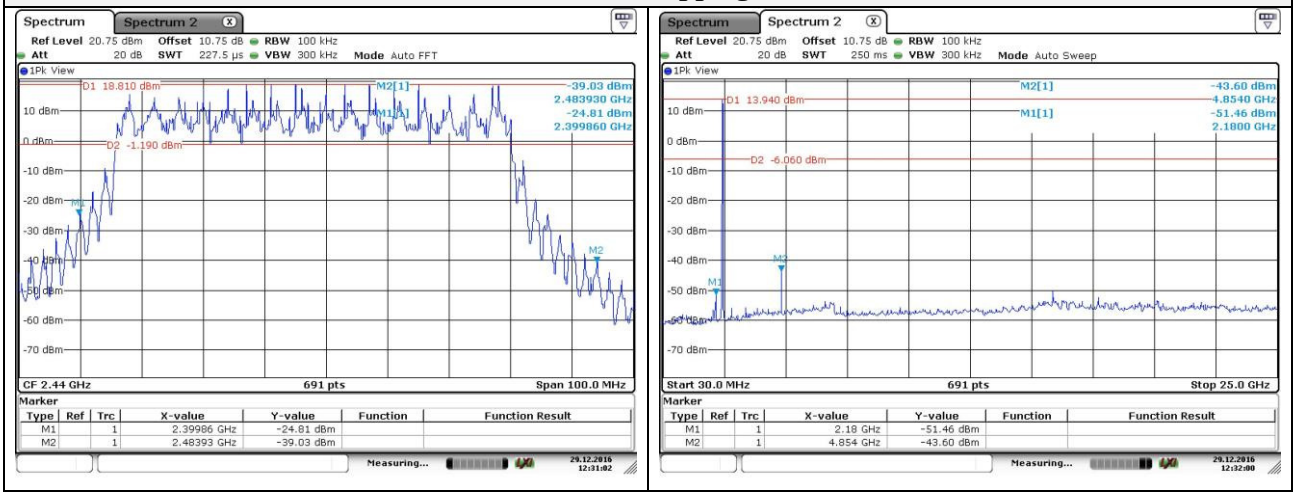
N/A







GFSK_Hopping



3.8. AC conducted emissions

Limit

According to 15.207(a), for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50uH/50 ohm line impedance stabilization network (LISN). Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequencies ranges.

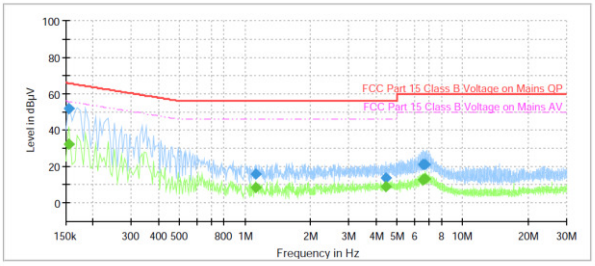
Frequency of Emission (㎒)	Conducted limit (dB㎶/m)	
	Quasi-peak	Average
0.15 – 0.50	66 - 56*	56 - 46*
0.50 – 5.00	56	46
5.00 – 30.0	60	50

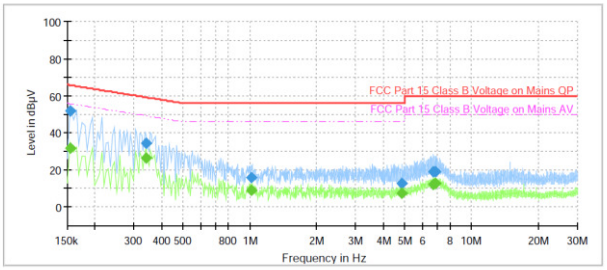
Note:

1. All AC line conducted spurious emission are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and the appropriate frequencies. All data rates and modes were investigated for conducted spurious emission. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section.
2. Both Cable loss and LISN factor are included in measurement level(QP Level or AV Level

Test results

Hot Line





Neutral Line

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	32.15	55.73	23.58	1000.0	9.000	L1	21.1
0.155000	51.71	---	65.73	14.02	1000.0	9.000	L1	21.1
1.115000	---	8.50	46.00	37.50	1000.0	9.000	L1	20.1
1.115000	16.07	---	56.00	39.93	1000.0	9.000	L1	20.1
4.425000	---	8.99	46.00	37.01	1000.0	9.000	L1	19.8
4.425000	13.76	---	56.00	42.24	1000.0	9.000	L1	19.8
6.595000	---	12.87	50.00	37.13	1000.0	9.000	L1	19.8
6.595000	21.03	---	60.00	38.97	1000.0	9.000	L1	19.8
6.695000	---	13.25	50.00	36.75	1000.0	9.000	L1	19.8
6.695000	21.07	---	60.00	38.93	1000.0	9.000	L1	19.8

Final_Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.155000	---	32.04	55.73	23.69	1000.0	9.000	N	21.1
0.155000	51.97	---	65.73	13.76	1000.0	9.000	N	21.1
0.340000	---	26.30	49.20	22.90	1000.0	9.000	N	20.8
0.340000	34.66	---	59.20	24.54	1000.0	9.000	N	20.8
1.015000	---	9.18	46.00	36.82	1000.0	9.000	N	20.2
1.015000	15.65	---	56.00	40.35	1000.0	9.000	N	20.2
4.820000	---	7.54	46.00	38.46	1000.0	9.000	N	19.8
4.820000	12.67	---	56.00	43.33	1000.0	9.000	N	19.8
6.745000	---	12.23	50.00	37.77	1000.0	9.000	N	19.8
6.745000	19.23	---	60.00	40.77	1000.0	9.000	N	19.8
6.845000	---	12.57	50.00	37.43	1000.0	9.000	N	19.8
6.845000	18.88	---	60.00	41.12	1000.0	9.000	N	19.8

Appendix A. Measurement equipment

Equipment	Manufacturer	Model	Serial No.	Calibration interval	Calibration due.
Spectrum Analyzer	R&S	FSV30	10076	1 year	2017.07.06
Spectrum Analyzer	R&S	FSV40	101002	1 year	2017.07.06
8360B Series Swept Signal Generator	HP	83630B	3844A00786	1 year	2017.01.25
PSG Analog Signal Generator	Agilent	E8257C	US42340237	1 year	2017.07.05
Attenuator	KEYSIGHT	8493C	82509	1 year	2017.01.25
Loop Antenna	R&S	HFH2-Z2.335.4711.52	826532	2 years	2017.03.03
Trilog-broadband antenna	SCHWARZBECK	VULB 9163	9168-713	2 years	2017.05.15
Horn Antenna	A.H.	SAS-571	781	2 years	2017.05.07
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170550	2 years	2017.04.30
High Pass Filter	WAINWRIGHT INSTRUMENT	WHJS3000-10TT	1	1 year	2017.07.04
Low Pass Filter	WEINSCHEL	WLK1.0/18G-10TT	1	1 year	2017.07.04
Preamplifier	HP	8449B	3008A00538	1 year	2017.07.05
Broadband Amplifier	SCHWARZBECK	BBV-9721	PS9721-003	1 year	2017.01.25
EMI Test Receiver	R&S	ESR3	101781	1 year	2017.05.03
EMI Test Receiver	R&S	ESU26	100552	1 year	2017.04.24
EMI Test Receiver	R&S	ESR3	101783	1 year	2017.05.03
LISN	R&S	ENV216	101137	1 year	2017.02.04

Peripheral devices

Device	Manufacturer	Model No.	Serial No.
-	-	-	-