

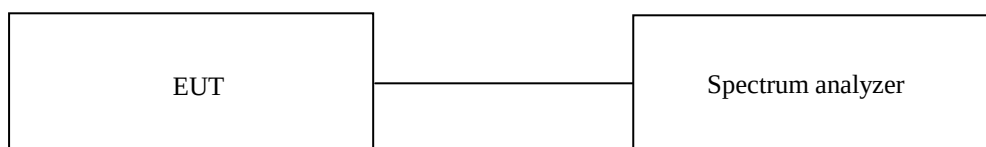
12. 100 kHz BANDWIDTH OUTSIDE THE FREQUENCY BAND

12.1 Operating environment

Temperature : 21 °C
Relative humidity : 45 % R.H

12.2 Test set-up for conducted measurement

The antenna output of the EUT was connected to the spectrum analyzer. The resolution and video bandwidth is set to 100 kHz, and peak detection was used.



12.3 Test set-up for radiated measurement

The radiated emissions measurements were performed on the 3 m semi anechoic chamber. The EUT was placed on turntable approximately 1.5 m above the ground plane.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and maximum emission levels at each frequency recorded. The system was rotated 360°, and the antenna was varied in the height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for horizontal and vertical polarization of the receiving antenna.

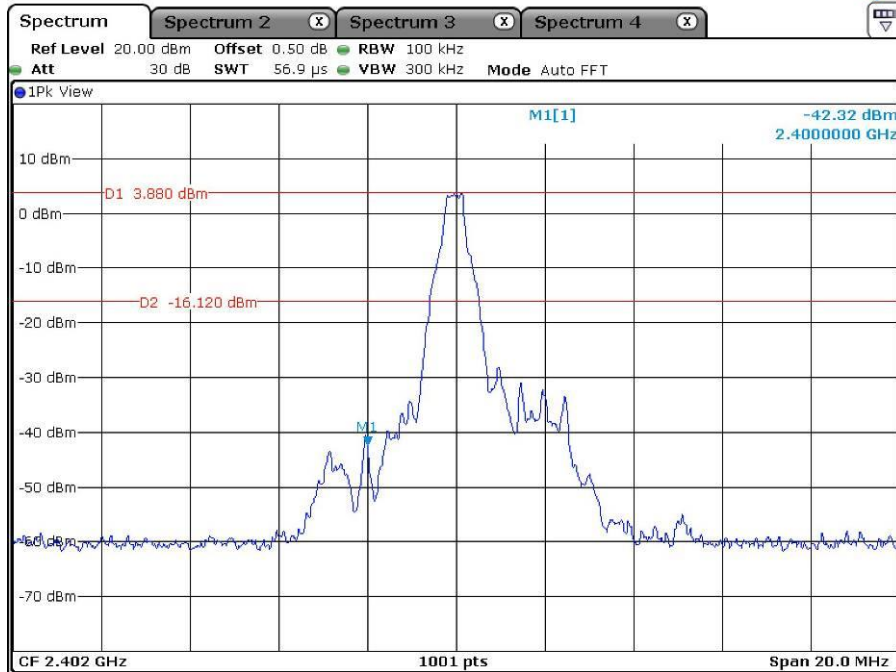
12.4 Test equipment used

	Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ -	FSV40	Rohde & Schwarz	Signal Analyzer	101009	Apr. 05, 2017 (1Y)
■ -	ESU	Rohde & Schwarz	EMI Test Receiver	100261	Apr. 06, 2017 (1Y)
■ -	310N	Sonoma Instrument	Pre-Amplifier	312544	Apr. 05, 2017 (1Y)
■ -	BBV9718	Schwarzbeck	Amplifier	310	Sep. 01, 2017 (1Y)
■ -	SCU40A	Rohde & Schwarz	Signal Conditioning unit	100436	Apr. 04, 2017 (1Y)
■ -	DT3000-3t	Innco System	Turn Table	DT3000/093	N/A
■ -	MA-4000XPET	Innco System	Antenna Master	MA4000/509	N/A
■ -	VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-421	Apr. 15, 2016 (2Y)
■ -	BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	May 26, 2017 (2Y)
■ -	BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170179	Jul. 28, 2017 (2Y)

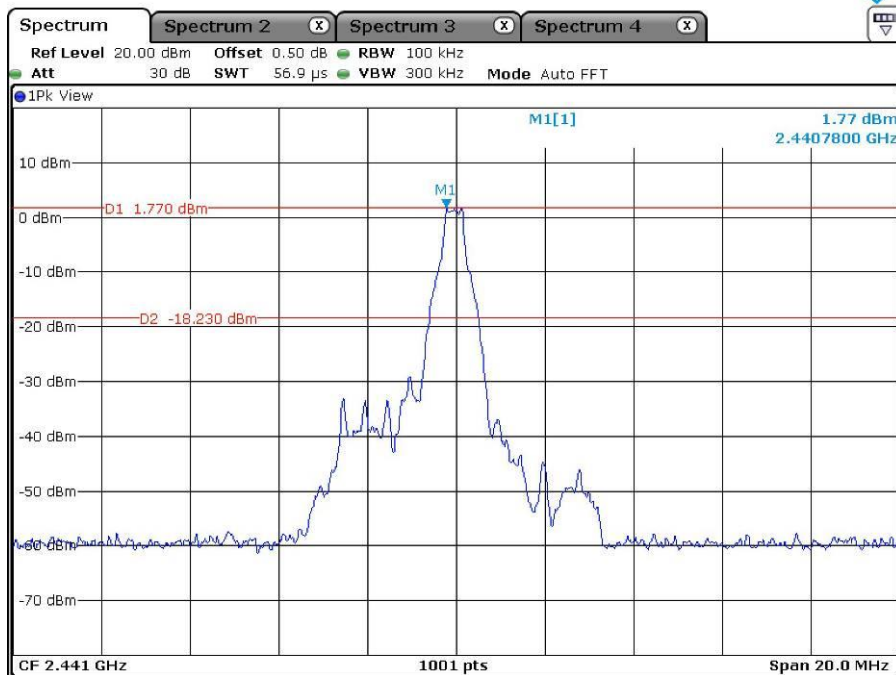
All test equipment used is calibrated on a regular basis.

12.5 Test data for conducted emission

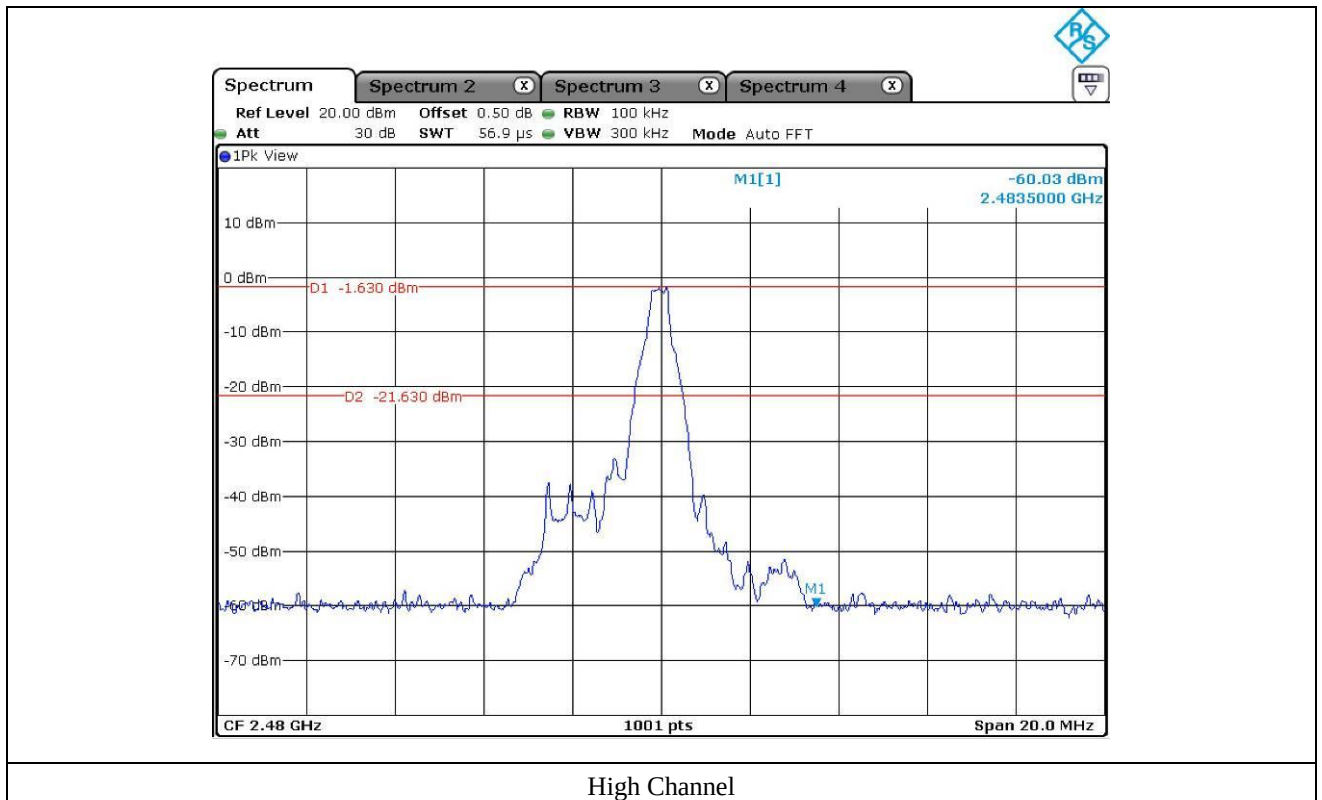
12.5.1 Test data for 1 Mbps



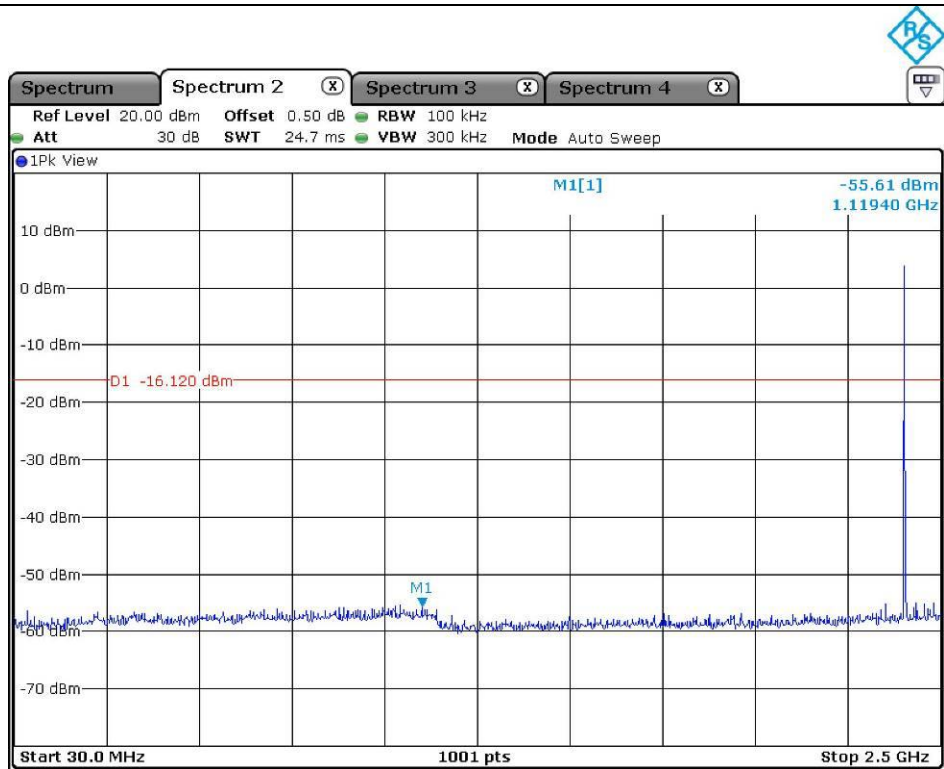
Low Channel



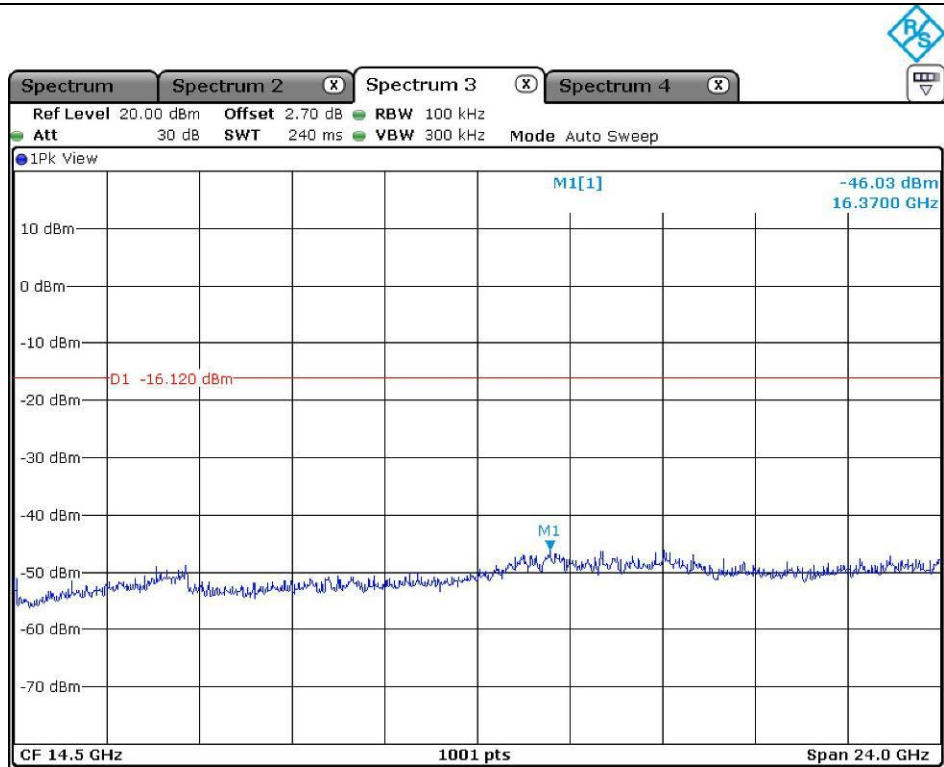
Middle Channel



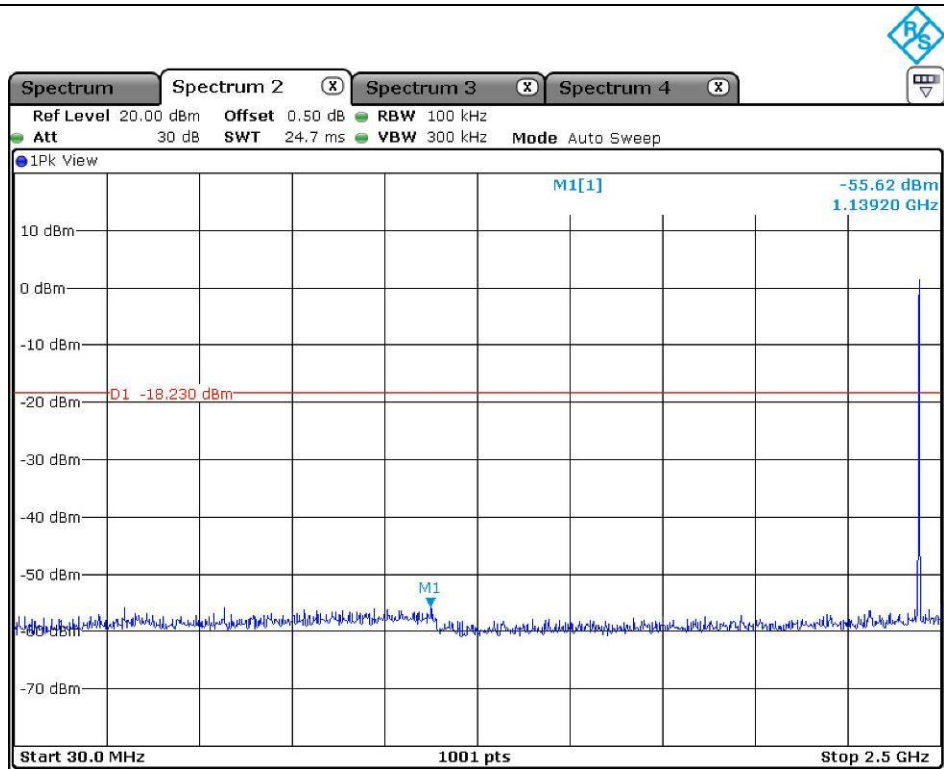
High Channel



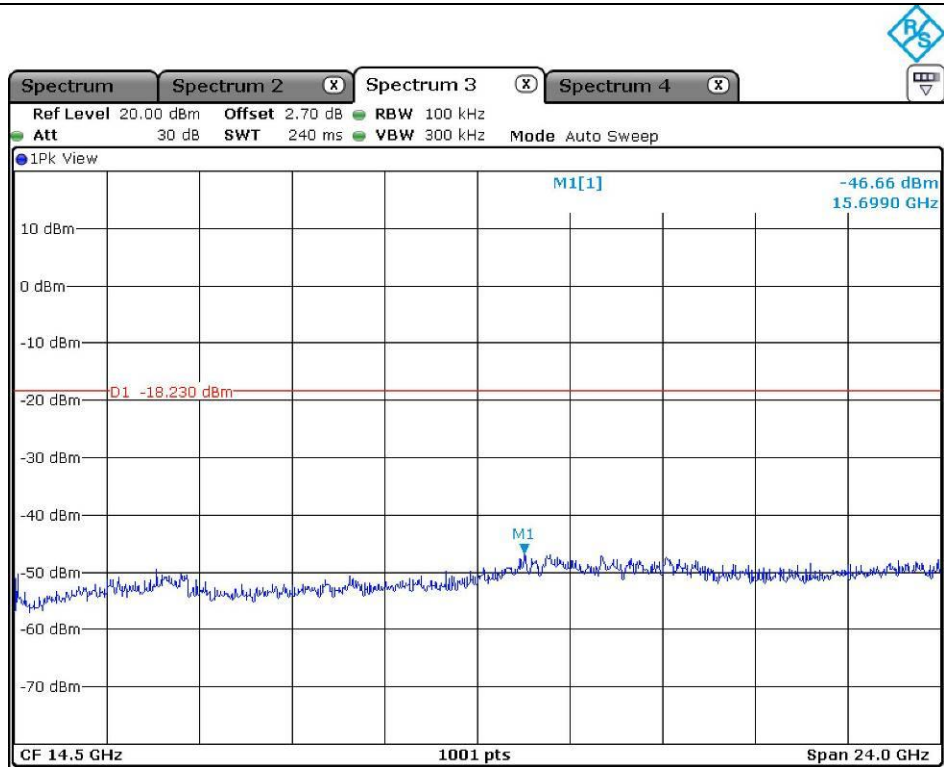
Low Channel



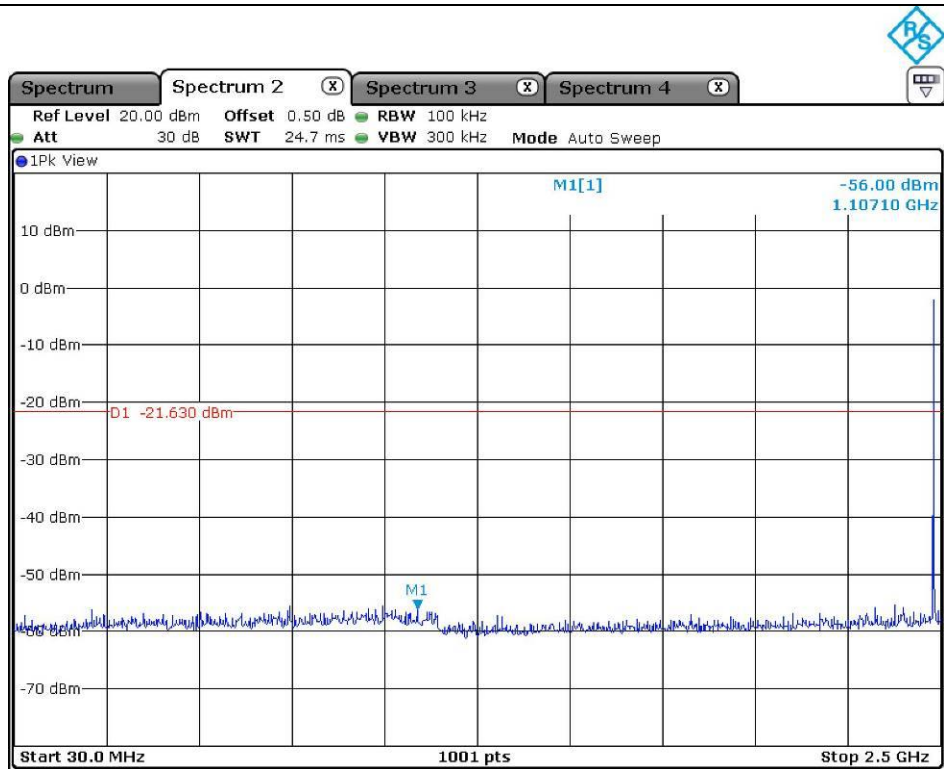
Low Channel



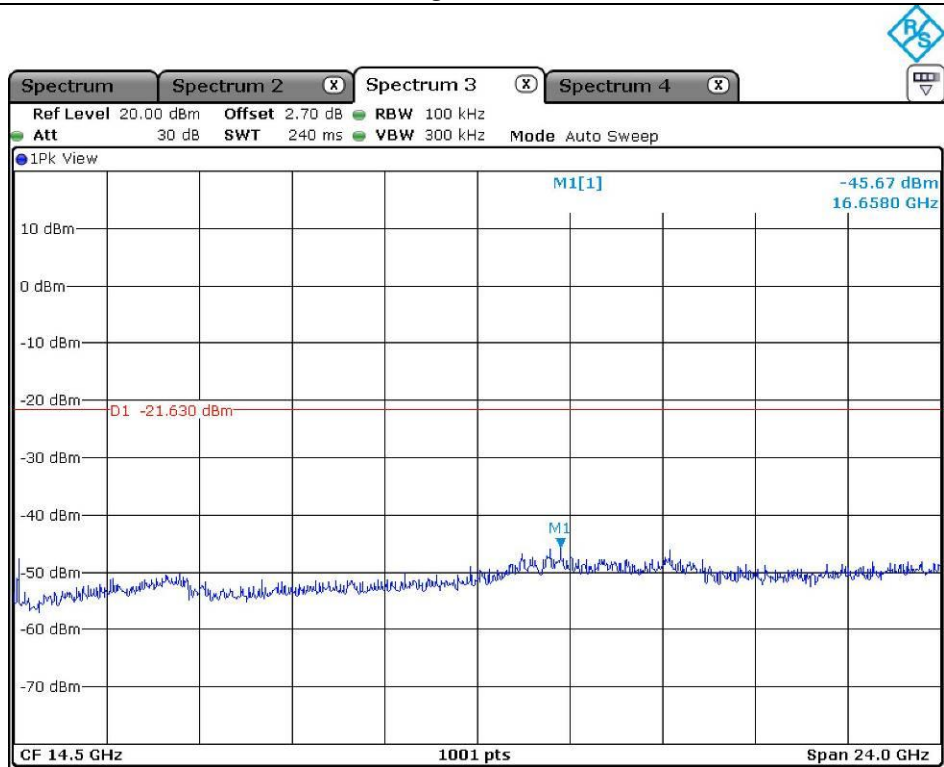
Middle Channel



Middle Channel

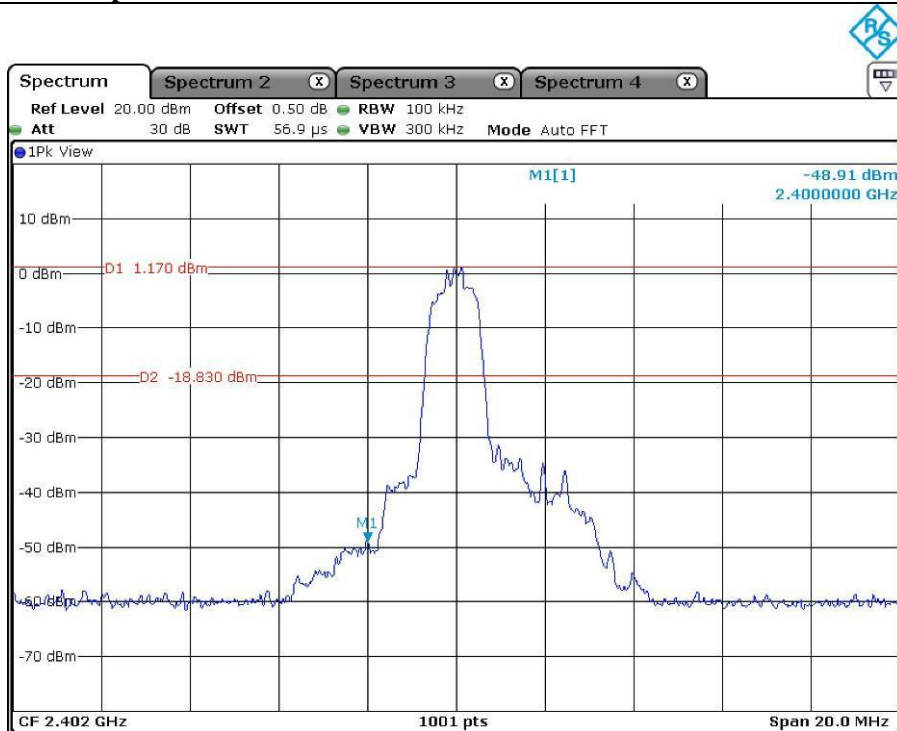


High Channel

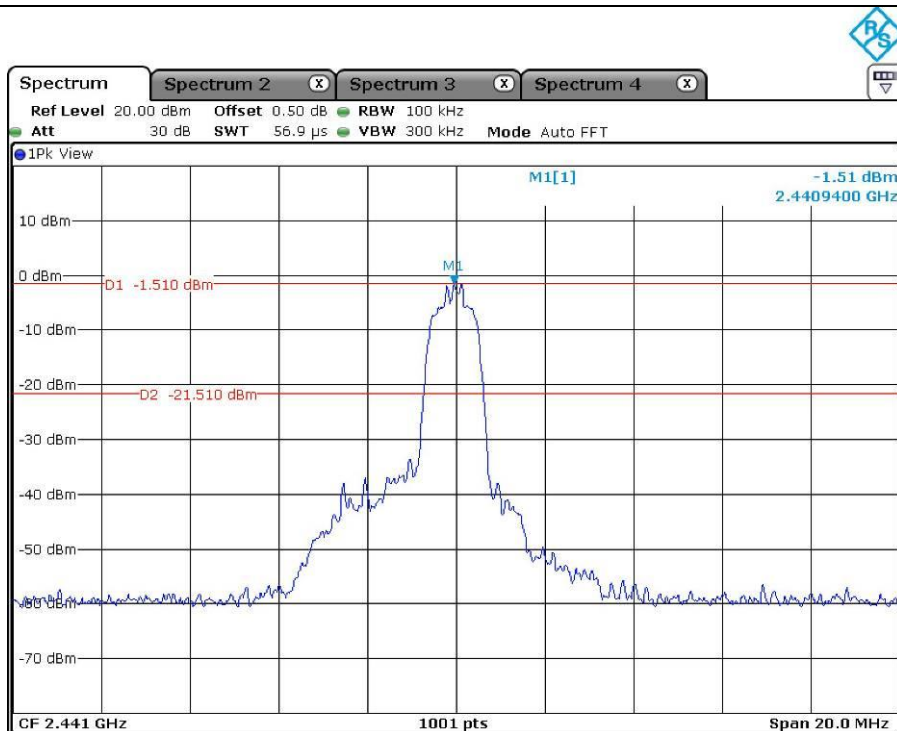


High Channel

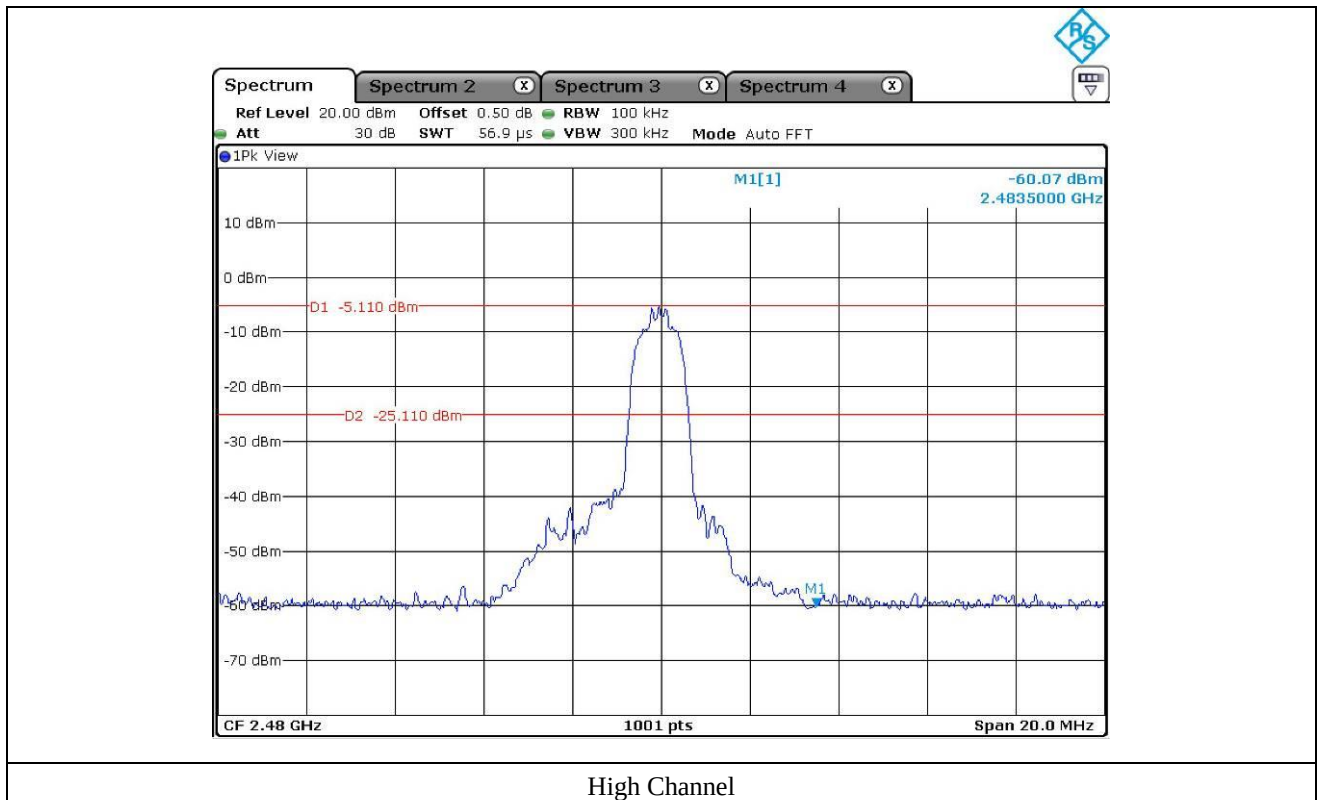
12.5.2 Test data for 2 Mbps

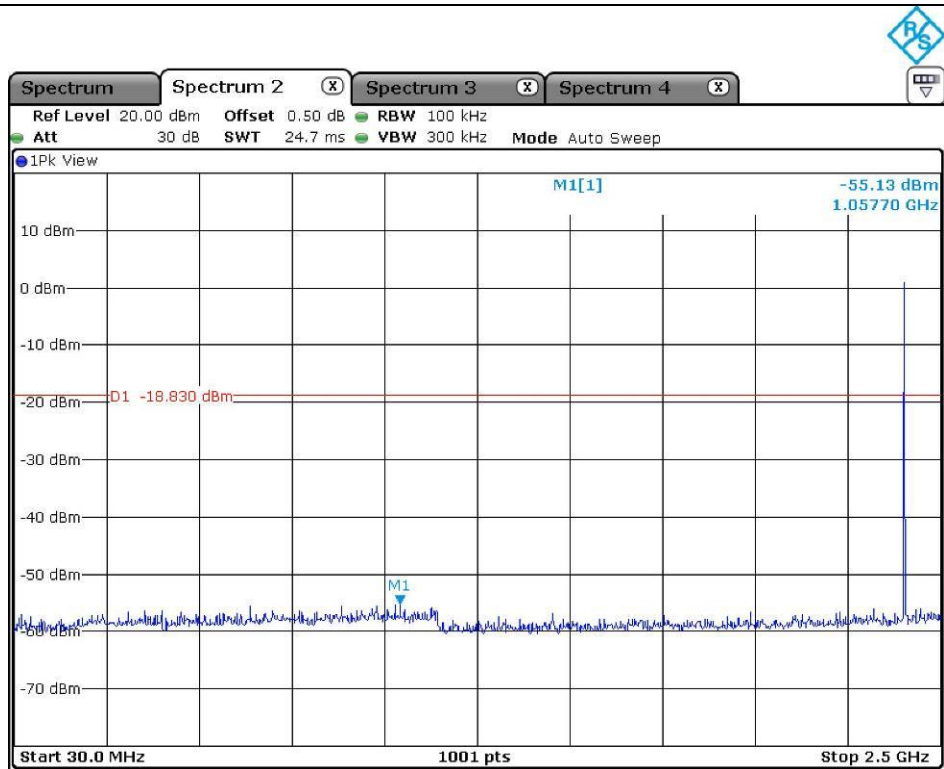


Low Channel

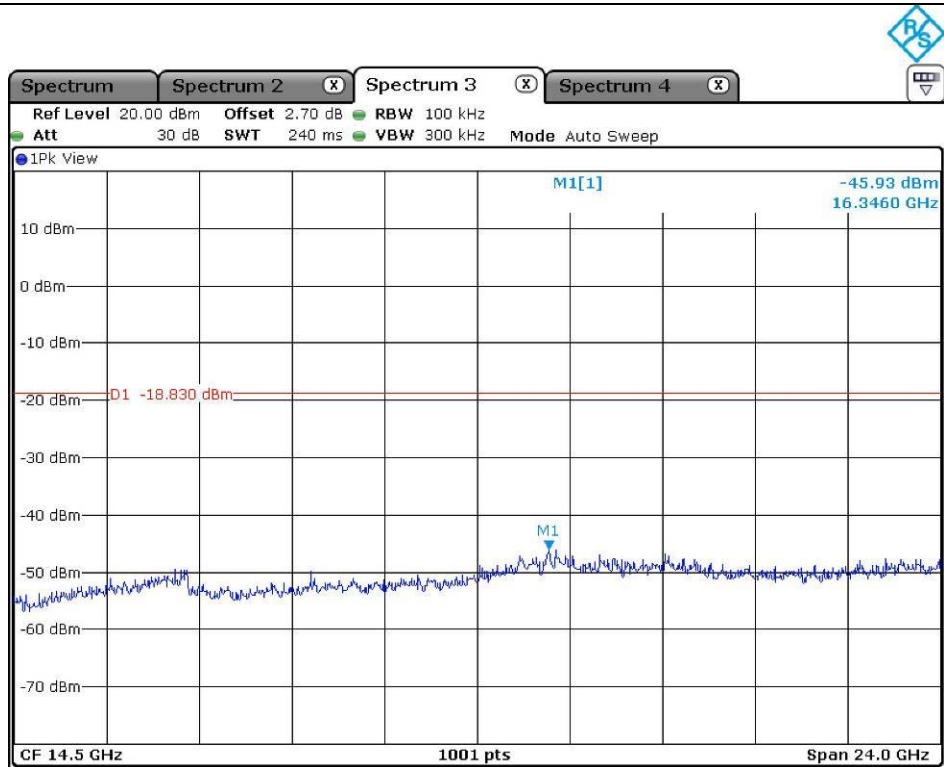


Middle Channel

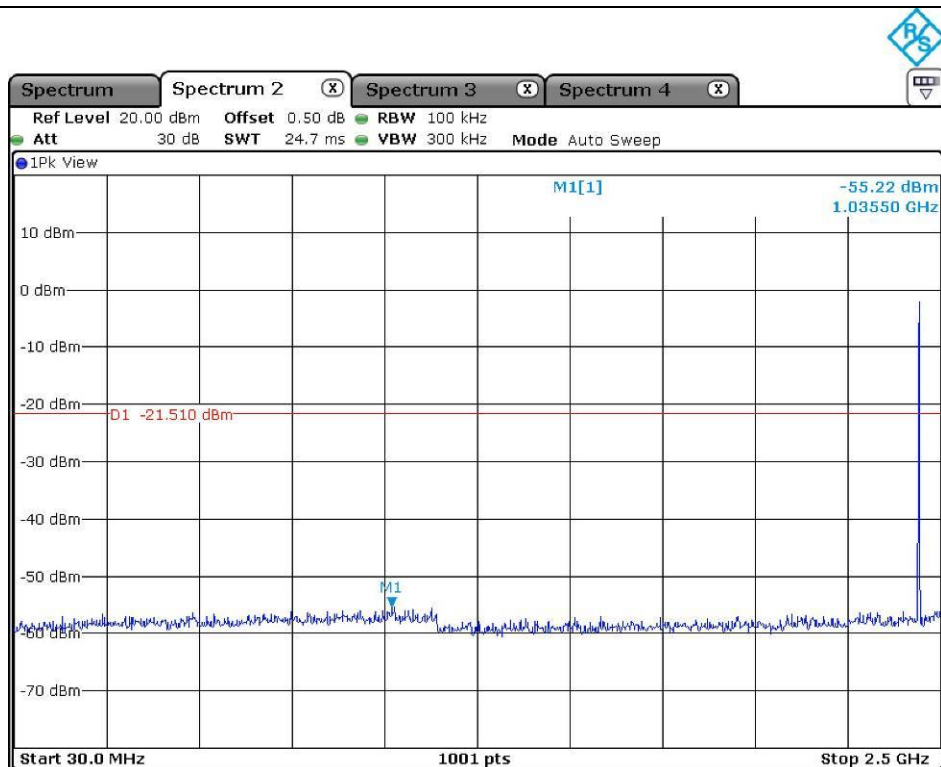




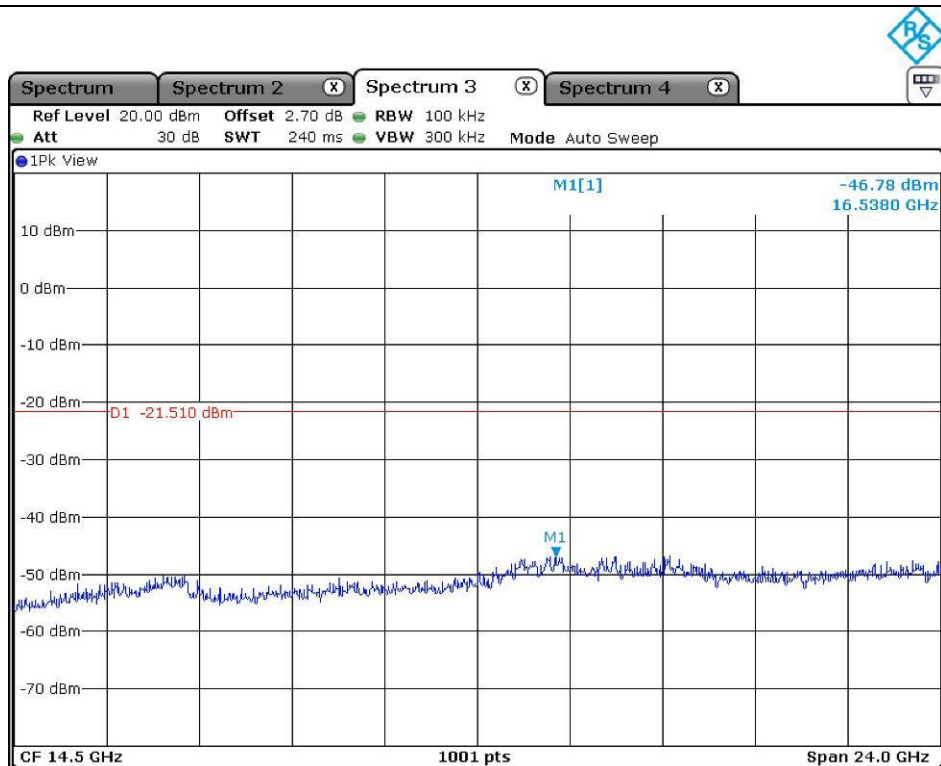
Low Channel



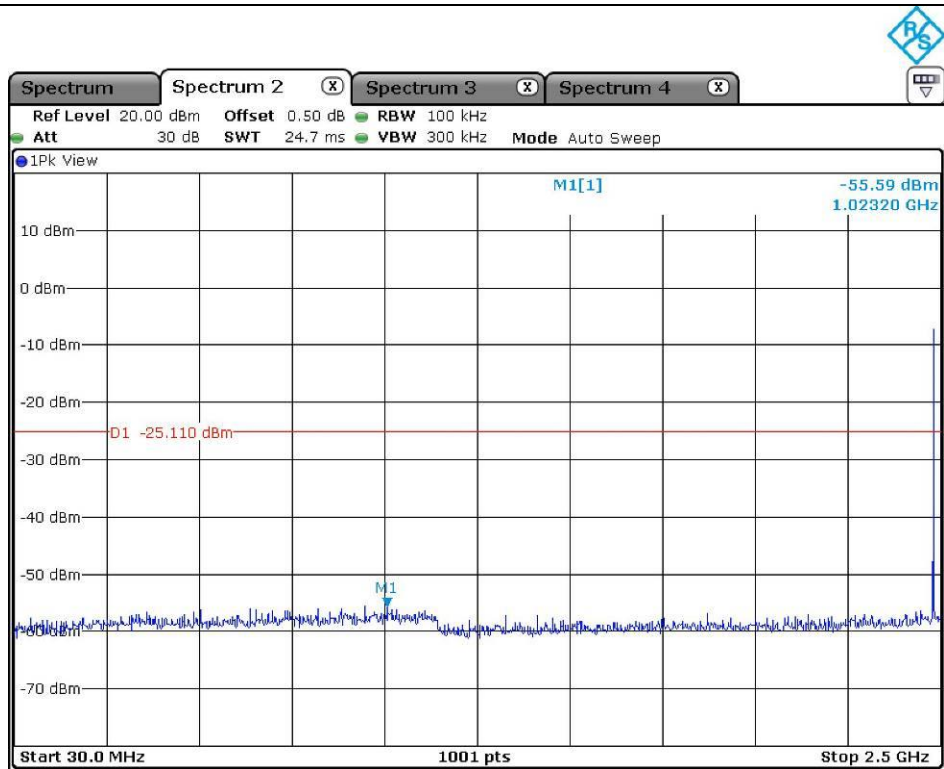
Low Channel



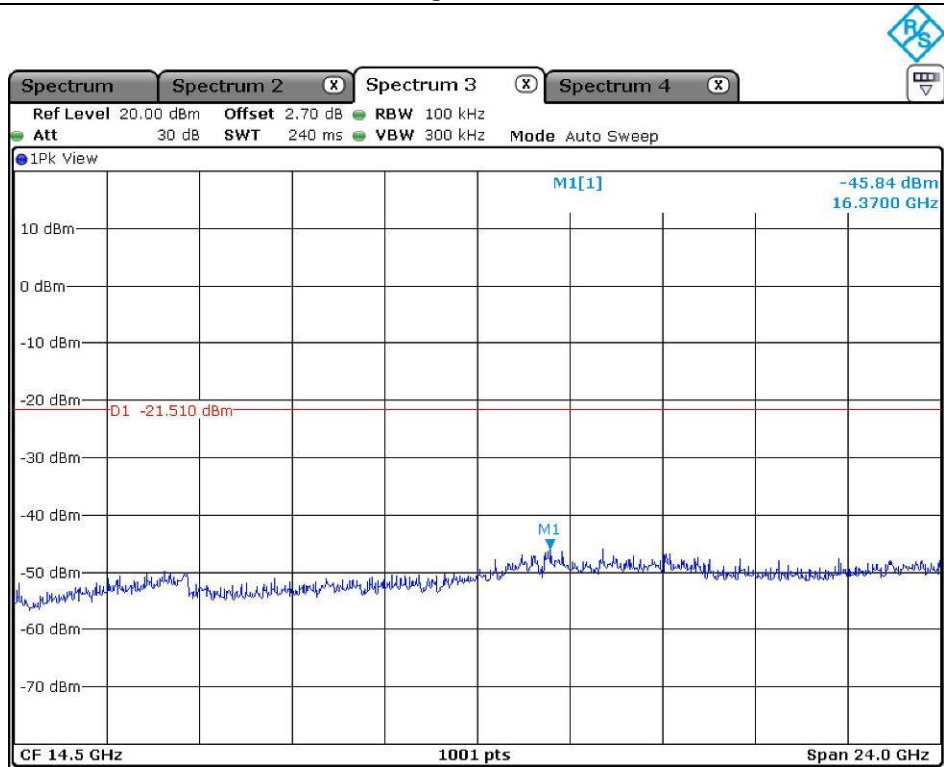
Middle Channel



Middle Channel

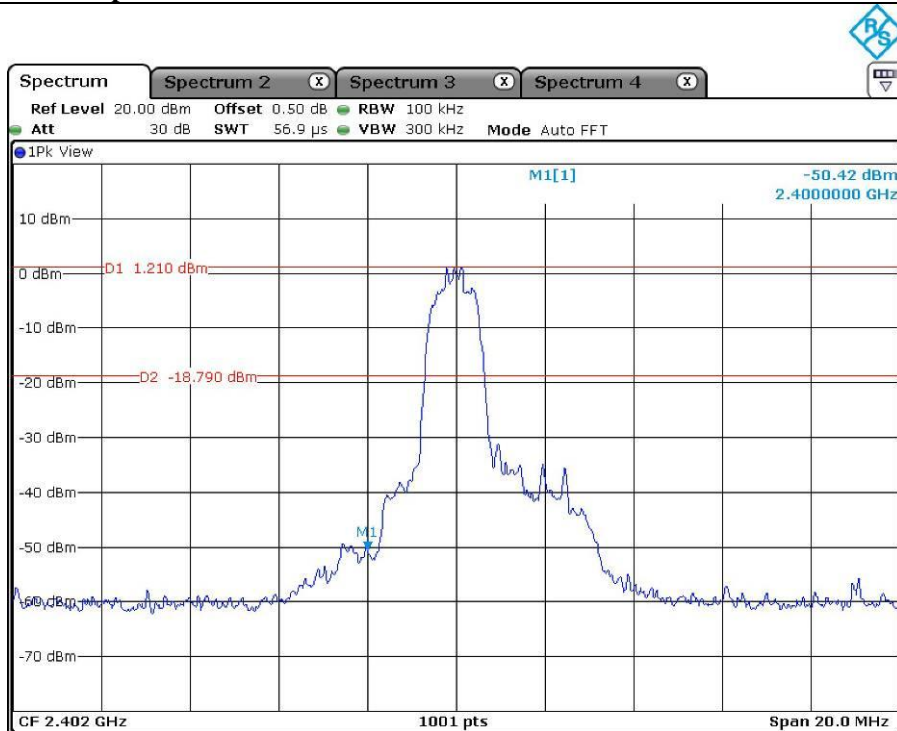


High Channel

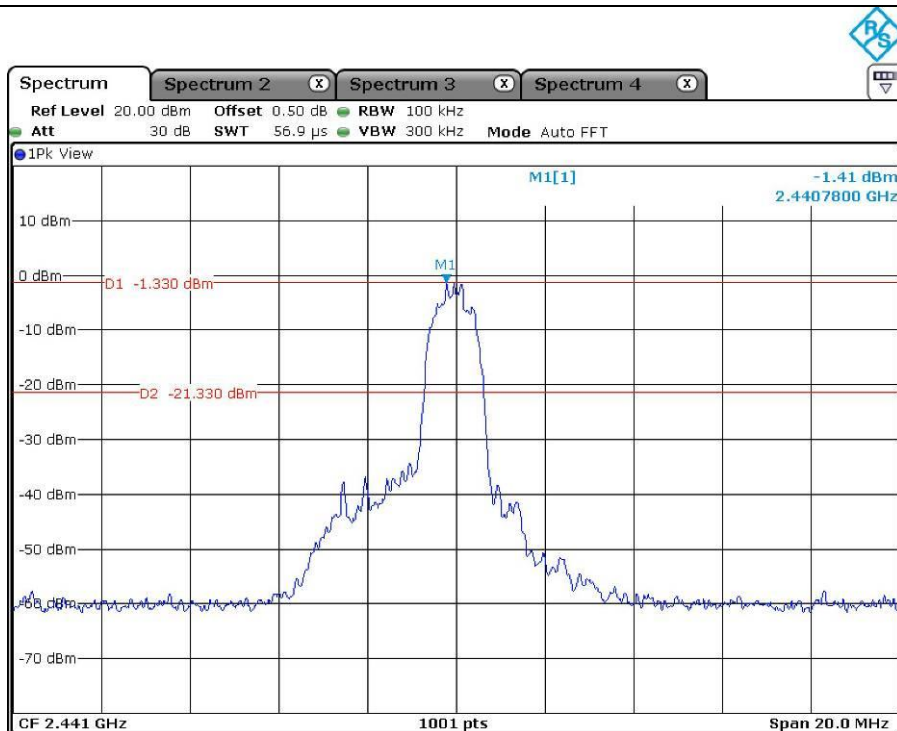


High Channel

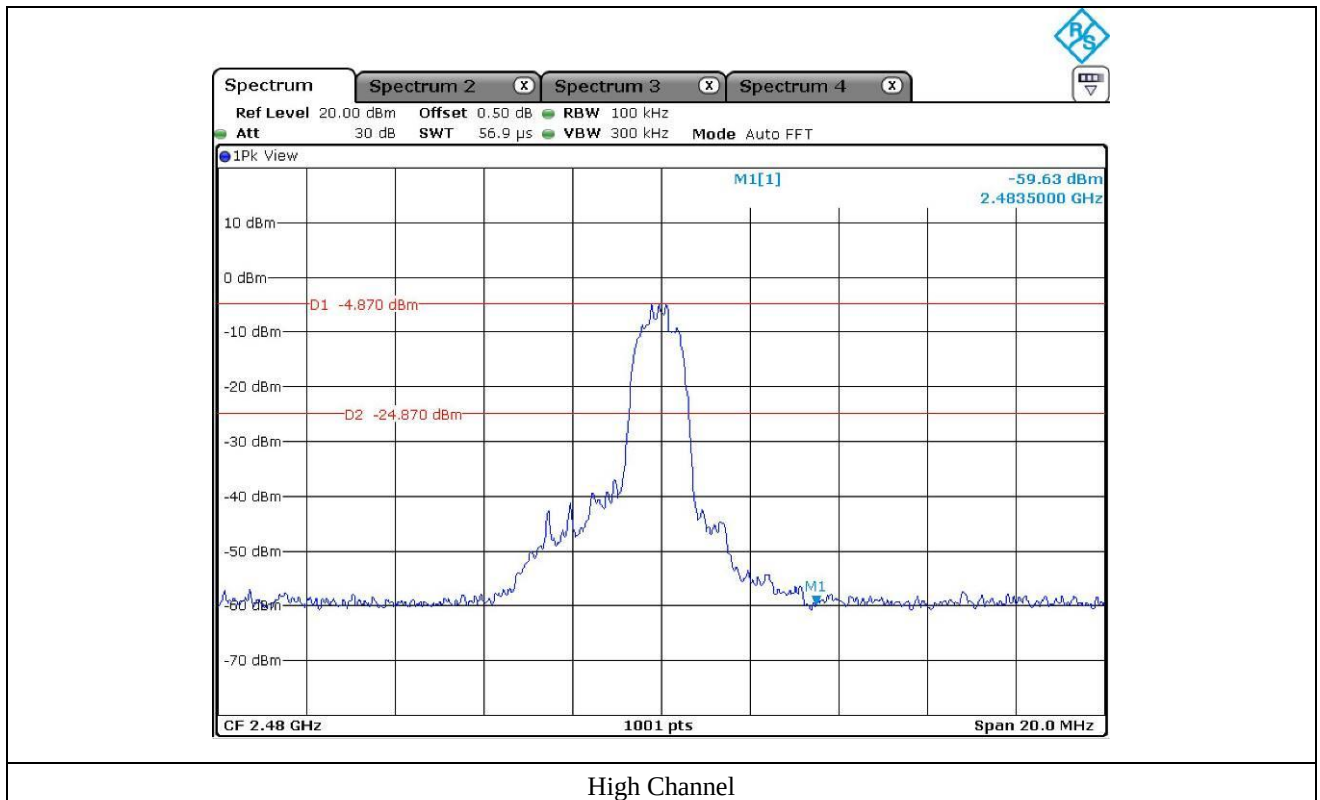
12.5.3 Test data for 3 Mbps

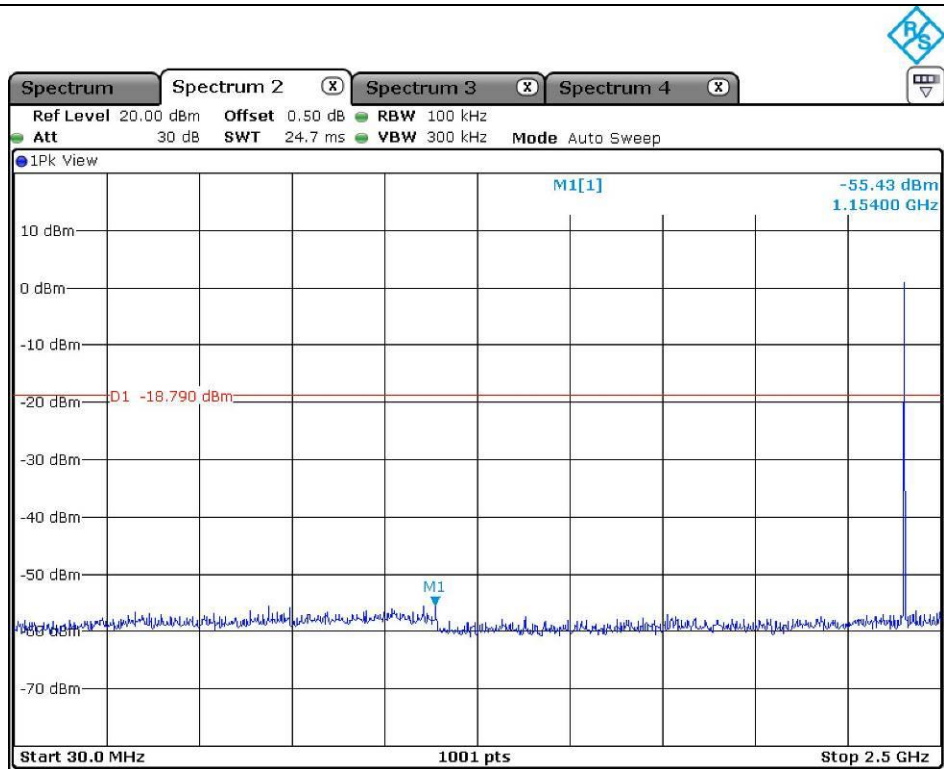


Low Channel

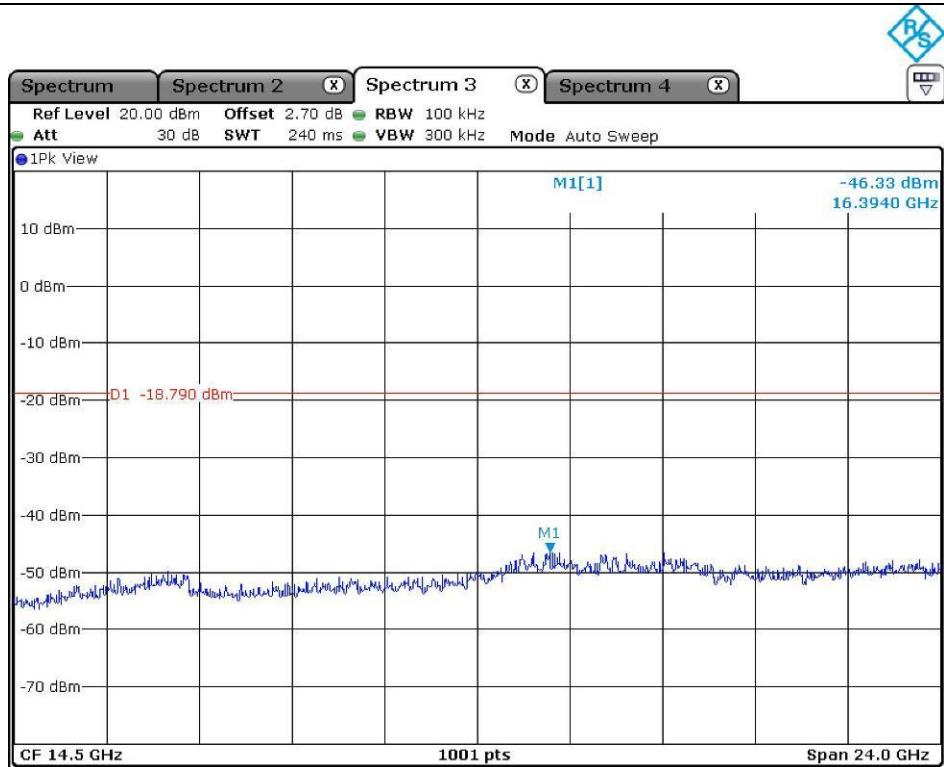


Middle Channel

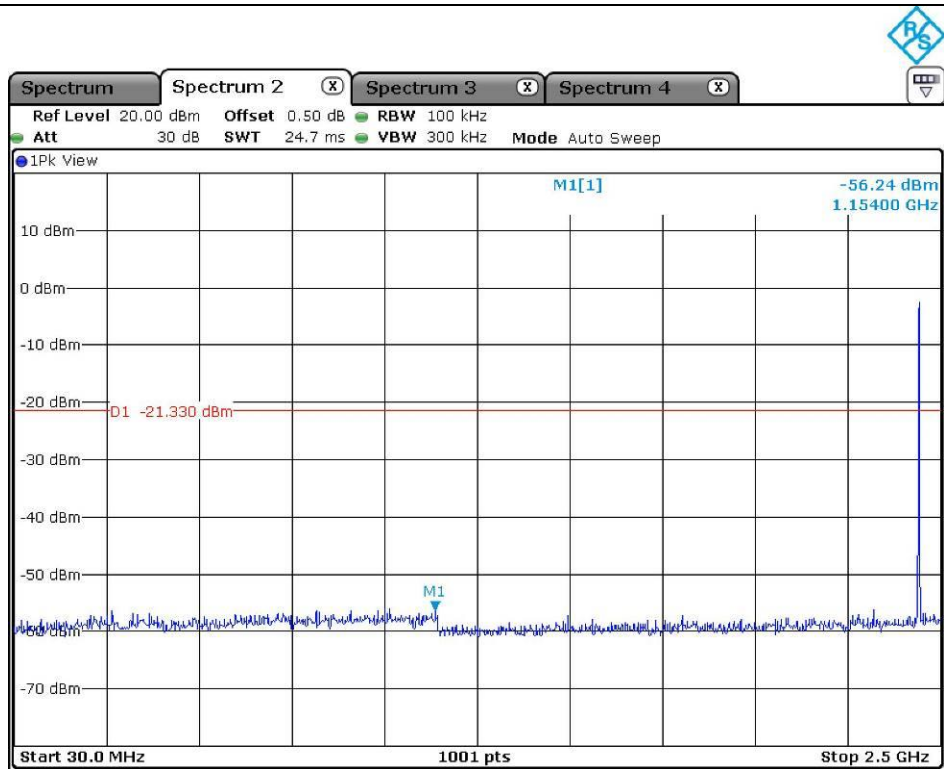




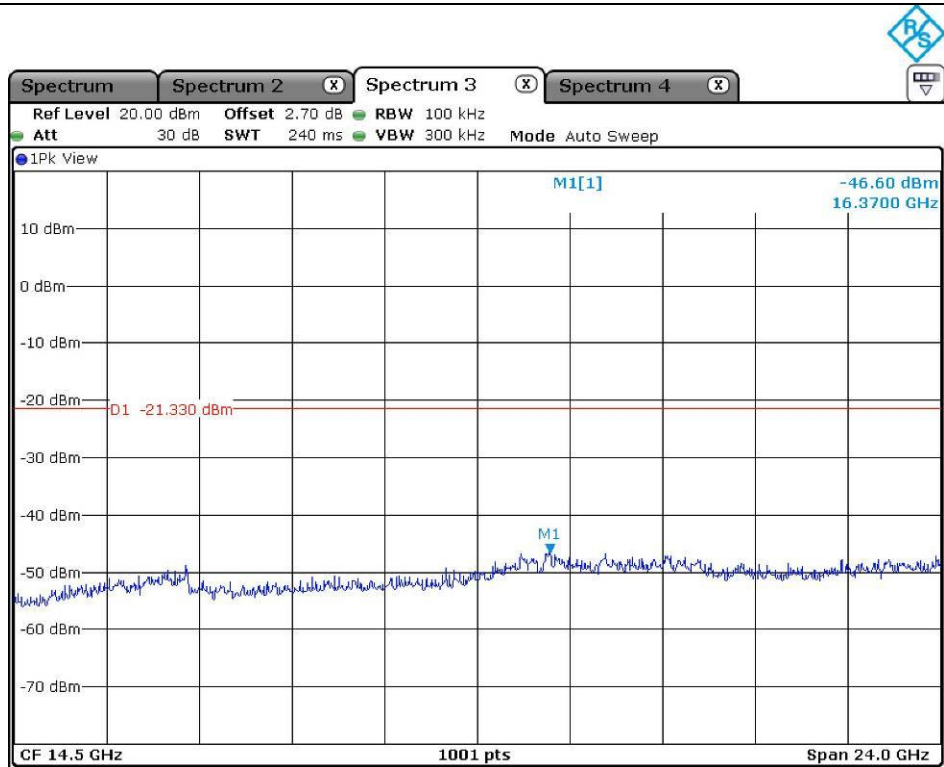
Low Channel



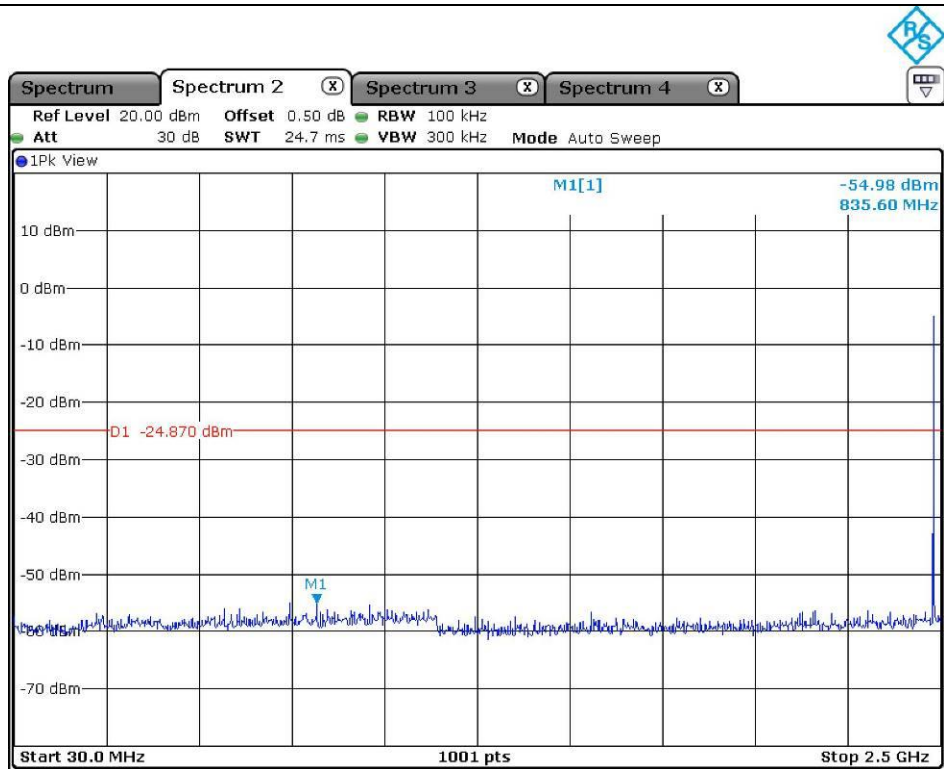
Low Channel



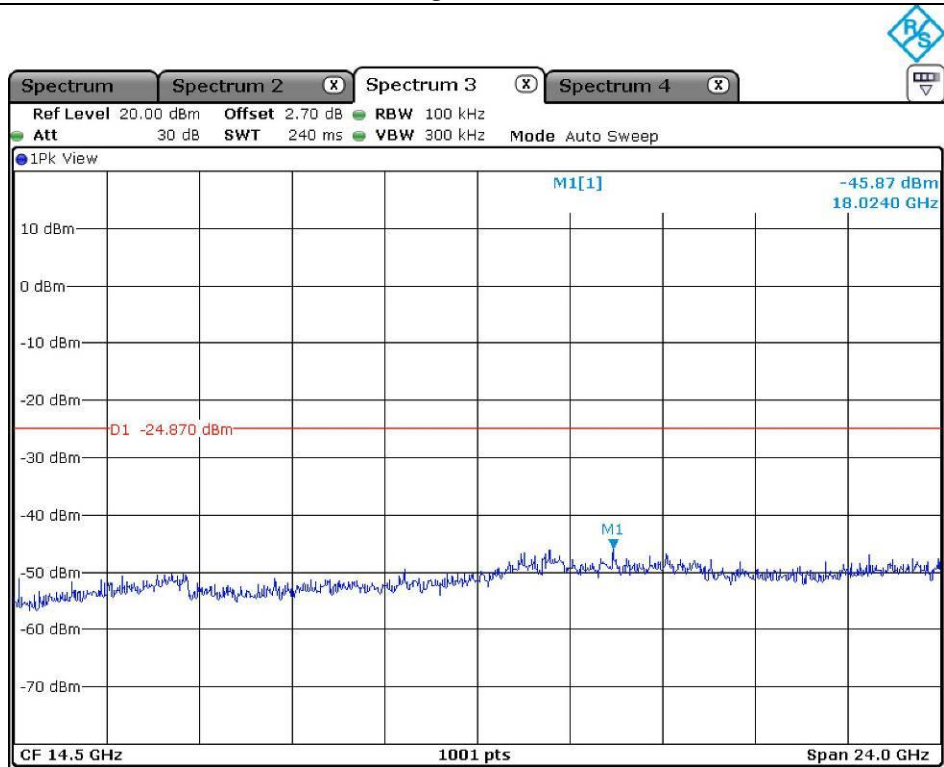
Middle Channel



Middle Channel



High Channel



High Channel

12.6 Test data for Transmitting mode radiated emission

12.6.1 Radiated Emission which fall in the Restricted Band

12.6.1.1 Test data for 1 Mbps

- Test Date : October 24, 2017 ~ October 31, 2017
- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
2.390 000	31.87	Peak	H	27.47	11.35	40.07	30.62	74.00	43.38
	20.53	Average	H				19.28	54.00	34.72
	31.62	Peak	V				30.37	74.00	43.63
	20.87	Average	V				19.62	54.00	34.38
Test Data for High Channel									
2.483 500	34.06	Peak	H	27.47	11.38	40.10	32.81	74.00	41.19
	24.91	Average	H				23.66	54.00	30.34
	32.52	Peak	V				31.27	74.00	42.73
	22.55	Average	V				21.30	54.00	32.70

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical



Tested by: Tae-Ho, Kim / Manager

12.6.1.2 Test data for 2 Mbps

- Test Date : October 24, 2017 ~ October 31, 2017
- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
2.390 000	30.17	Peak	H	27.47	11.35	40.07	28.92	74.00	45.08
	18.06	Average	H				16.81	54.00	37.19
	29.01	Peak	V				27.76	74.00	46.24
	18.36	Average	V				17.11	54.00	36.89
Test Data for High Channel									
2.483 500	34.67	Peak	H	27.47	11.38	40.10	33.42	74.00	40.58
	23.13	Average	H				21.88	54.00	32.12
	30.26	Peak	V				29.01	74.00	44.99
	20.78	Average	V				19.53	54.00	34.47

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical



Tested by: Tae-Ho, Kim / Manager

12.6.1.3 Test data for 3 Mbps

- Test Date : October 24, 2017 ~ October 31, 2017
- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode
1 MHz and RMS Detector for Average Mode
- Video bandwidth : 3 MHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
2.390 000	33.84	Peak	H	27.47	11.35	40.07	32.59	74.00	41.41
	18.09	Average	H				16.84	54.00	37.16
	31.26	Peak	V				30.01	74.00	43.99
	17.88	Average	V				16.63	54.00	37.37
Test Data for High Channel									
2.483 500	33.46	Peak	H	27.47	11.38	40.10	32.21	74.00	41.79
	24.59	Average	H				23.34	54.00	30.66
	32.96	Peak	V				31.71	74.00	42.29
	24.00	Average	V				22.75	54.00	31.25

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical



Tested by: Tae-Ho, Kim / Manager

12.6.2 Radiated Emission which fall in the Band Edge

12.6.2.1 Test data for 1 Mbps

- Test Date : October 24, 2017 ~ October 31, 2017
- Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode
- Video bandwidth : 300 kHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
2.400 000	54.84	Peak	H	27.47	11.36	40.08	53.59	74.00	20.41
	49.33	Average	H				48.08	54.00	5.92
	52.12	Peak	V				50.87	74.00	23.13
	46.17	Average	V				44.92	54.00	9.08

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain



Tested by: Tae-Ho, Kim / Manager

12.6.2.2 Test data for 2 Mbps

- Test Date : October 24, 2017 ~ October 31, 2017
- Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode
- Video bandwidth : 300 kHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
2.400 000	55.29	Peak	H	27.47	11.36	40.08	54.04	74.00	19.96
	50.11	Average	H				48.86	54.00	5.14
	49.96	Peak	V				48.71	74.00	25.29
	48.19	Average	V				46.94	54.00	7.06

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain



Tested by: Tae-Ho, Kim / Manager

12.6.2.3 Test data for 3 Mbps

- Test Date : October 24, 2017 ~ October 31, 2017
- Resolution bandwidth : 100 kHz and Peak Detector for Peak Mode
100 kHz and RMS Detector for Average Mode
- Video bandwidth : 300 kHz for Peak and Average Mode
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
2.400 000	56.38	Peak	H	27.47	11.36	40.08	55.13	74.00	18.87
	50.21	Average	H				48.96	54.00	5.04
	52.77	Peak	V				51.52	74.00	22.48
	46.22	Average	V				44.97	54.00	9.03

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical

Margin (dB) = Limits (dBμV/m) - Total Level (dBμV/m)

Total Level = Reading + Antenna Factor + Cable Loss – Pre-Amplifier Gain



Tested by: Tae-Ho, Kim / Manager

12.6.3 Spurious & Harmonic Radiated Emission above 1 GHz

12.6.3.1 Test data for 1 Mbps

- Test Date : October 24, 2017 ~ October 31, 2017
- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
4 804.00	38.04	Peak	H	30.70	16.10	40.60	44.24	73.98	29.74
	31.92	Average	H				38.12	53.98	15.86
	34.04	Peak	V				40.24	73.98	33.74
	29.91	Average	V				36.11	53.98	17.87
Test Data for Middle Channel									
4 882.00	40.72	Peak	H	30.90	16.30	40.60	47.32	73.98	26.66
	33.29	Average	H				39.89	53.98	14.09
	38.08	Peak	V				44.68	73.98	29.30
	30.67	Average	V				37.27	53.98	16.71
Test Data for High Channel									
4 960.00	38.66	Peak	H	31.00	16.50	40.60	45.56	73.98	28.42
	30.99	Average	H				37.89	53.98	16.09
	36.96	Peak	V				43.86	73.98	30.12
	31.82	Average	V				38.72	53.98	15.26

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "*" Frequency fall in restricted band



Tested by: Tae-Ho, Kim / Manager

12.6.3.2 Test data for 2 Mbps

- Test Date : October 24, 2017 ~ October 31, 2017
- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
4 804.00	38.47	Peak	H	30.70	16.10	40.60	44.67	73.98	29.31
	32.82	Average	H				39.02	53.98	14.96
	33.20	Peak	V				39.40	73.98	34.58
	32.89	Average	V				39.09	53.98	14.89
Test Data for Middle Channel									
4 882.00	41.94	Peak	H	30.90	16.30	40.60	48.54	73.98	25.44
	30.50	Average	H				37.10	53.98	16.88
	35.10	Peak	V				41.70	73.98	32.28
	33.19	Average	V				39.79	53.98	14.19
Test Data for High Channel									
4 960.00	40.08	Peak	H	31.00	16.50	40.60	46.98	73.98	27.00
	31.34	Average	H				38.24	53.98	15.74
	39.47	Peak	V				46.37	73.98	27.61
	32.69	Average	V				39.59	53.98	14.39

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "*" Frequency fall in restricted band



Tested by: Tae-Ho, Kim / Manager

12.6.3.3 Test data for 3 Mbps

- Test Date : October 24, 2017 ~ October 31, 2017
- Resolution bandwidth : 1 MHz and Peak Detector for Peak Mode for the emissions fall in restricted band,
1 MHz and RMS Detector for Average Mode for the emissions fall in restricted band
100 kHz for Peak Mode for the emissions outside restricted band
- Video bandwidth : 3 MHz for Peak and Average Mode
- Frequency range : 1 GHz ~ 26.5 GHz
- Measurement distance : 3 m
- Duty Cycle : 100 %
- Result : PASSED

Frequency (GHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	Amp Gain	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
Test Data for Low Channel									
4 804.00	37.32	Peak	H	30.70	16.10	40.60	43.52	73.98	30.46
	33.03	Average	H				39.23	53.98	14.75
	33.73	Peak	V				39.93	73.98	34.05
	27.51	Average	V				33.71	53.98	20.27
Test Data for Middle Channel									
4 882.00	38.97	Peak	H	30.90	16.30	40.60	45.57	73.98	28.41
	31.94	Average	H				38.54	53.98	15.44
	36.45	Peak	V				43.05	73.98	30.93
	28.28	Average	V				34.88	53.98	19.10
Test Data for High Channel									
4 960.00	36.47	Peak	H	31.00	16.50	40.60	43.37	73.98	30.61
	32.49	Average	H				39.39	53.98	14.59
	37.19	Peak	V				44.09	73.98	29.89
	32.12	Average	V				39.02	53.98	14.96

Tabulated test data for Restricted Band

Remark: "H": Horizontal, "V": Vertical, "*" Frequency fall in restricted band



Tested by: Tae-Ho, Kim / Manager

13. RADIATED EMISSION TEST

13.1 Operating environment

Temperature : 24.3 °C
Relative humidity : 43.9 % R.H.

13.2 Test set-up

The radiated emissions measurements were on the 3 m semi anechoic chamber. The EUT and other support equipment were placed on a non-conductive turntable above the ground plane. The interconnecting cables from outside test site were inserted into ferrite clamps at the point where the cables reach the turntable.

The frequency spectrum from 30 MHz to 26.5 GHz was scanned and emission levels maximized at each frequency recorded. The system was rotated 360°, and the antenna was varied in height between 1.0 m and 4.0 m in order to determine the maximum emission levels. This procedure was performed for both horizontal and vertical polarization of the receiving antenna.

13.3 Test equipment used

Model Number	Manufacturer	Description	Serial Number	Last Cal.
■ - FSV40	Rohde & Schwarz	Signal Analyzer	101009	Apr. 05, 2017 (1Y)
■ - ESU	Rohde & Schwarz	EMI Test Receiver	100261	Apr. 06, 2017 (1Y)
■ - 310N	Sonoma Instrument	Pre-Amplifier	312544	Apr. 05, 2017 (1Y)
■ - BBV9718	Schwarzbeck	Amplifier	310	Sep. 01, 2017 (1Y)
■ - DT3000-3t	Innco System	Turn Table	DT3000/093	N/A
■ - MA-4000XPET	Innco System	Antenna Master	MA4000/509	N/A
■ - VULB9163	Schwarzbeck	TRILOG Broadband Antenna	9163-421	Apr. 15, 2016 (2Y)
■ - BBHA9120D	Schwarzbeck	Horn Antenna	BBHA9120D295	May 26, 2017 (2Y)
■ - BBHA 9170	Schwarzbeck	Horn Antenna	BBHA9170179	Jul. 28, 2017 (2Y)

All test equipment used is calibrated on a regular basis.

13.4 Test data for 1 Mbps

13.4.1 Test data for 30 MHz ~ 1 000 MHz

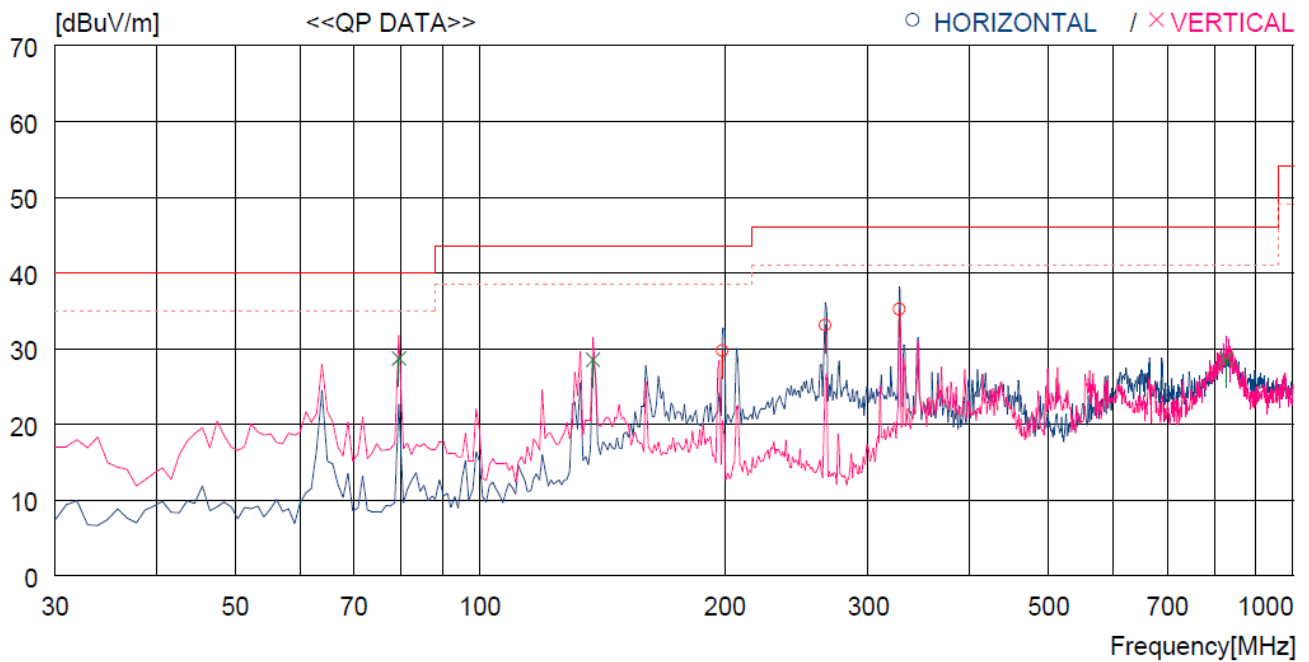
-. Test Date : October 24, 2017 ~ October 31, 2017

-. Resolution bandwidth : 120 kHz

-. Frequency range : 30 MHz ~ 1 000 MHz

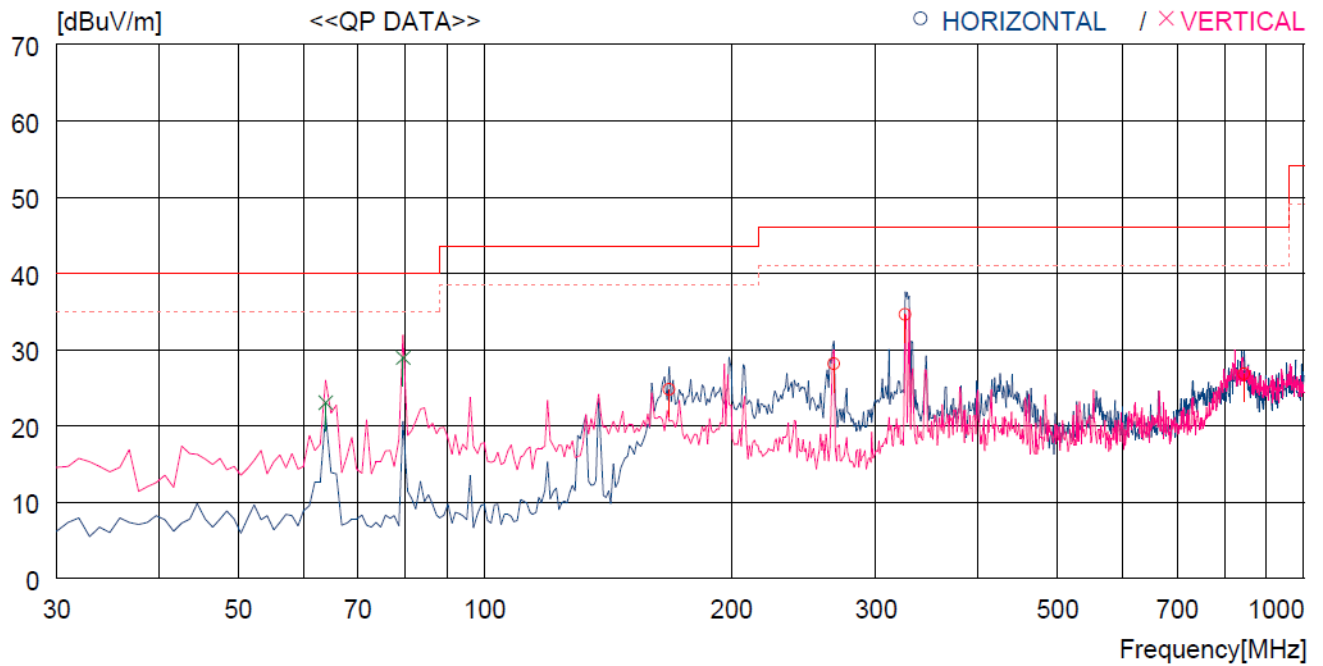
-. Measurement distance : 3 m

-. Operating condition : Low Channel



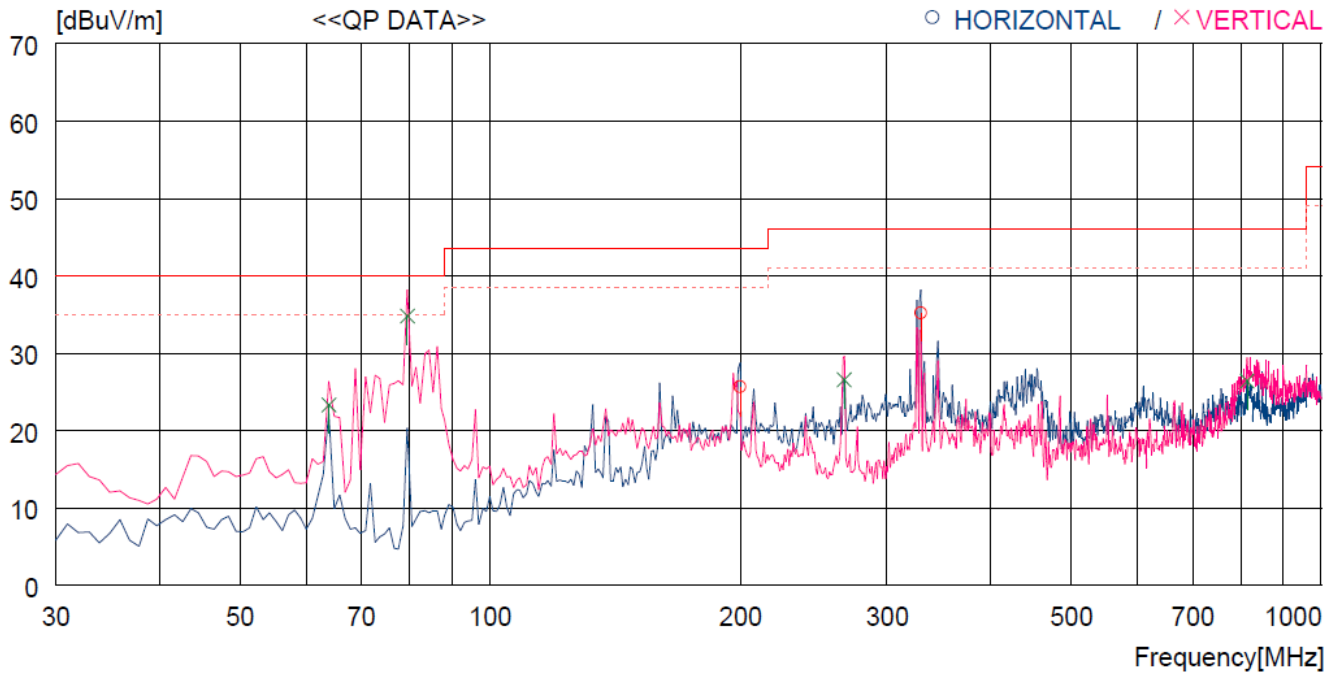
No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	QP	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	198.780	49.1	10.5	3.3	33.2	29.7	43.5	13.8	100	0
2	265.710	50.1	12.3	3.8	33.1	33.1	46.0	12.9	100	0
3	327.790	50.1	14.0	4.2	33.1	35.2	46.0	10.8	100	0
----- Vertical -----										
4	79.470	52.0	7.6	2.2	33.1	28.7	40.0	11.3	100	14
5	137.670	50.4	8.2	2.8	32.9	28.5	43.5	15.0	100	58
6	827.331	34.2	20.9	6.6	33.1	28.6	46.0	17.4	100	7

Operating condition : Middle Channel



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	167.740	45.9	8.8	3.1	33.0	24.8	43.5	18.7	100	133
2	266.680	45.1	12.3	3.8	33.1	28.1	46.0	17.9	100	133
3	325.850	49.6	13.9	4.2	33.1	34.6	46.0	11.4	100	106
4	845.761	32.0	21.1	6.7	33.0	26.8	46.0	19.2	100	133
----- Vertical -----										
5	63.950	42.3	11.9	1.9	33.1	23.0	40.0	17.0	100	176
6	79.470	52.2	7.6	2.2	33.1	28.9	40.0	11.1	100	194

Operating condition : High Channel



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	199.750	45.0	10.5	3.3	33.2	25.6	43.5	17.9	100	188
2	329.730	50.0	14.1	4.2	33.1	35.2	46.0	10.8	100	219
----- Vertical -----										
3	63.950	42.6	11.9	1.9	33.1	23.3	40.0	16.7	100	180
4	79.470	58.1	7.6	2.2	33.1	34.8	40.0	5.2	100	180
5	266.680	43.6	12.3	3.8	33.1	26.6	46.0	19.4	100	174
6	813.752	32.3	20.7	6.6	33.2	26.4	46.0	19.6	100	162

Tested by: Tae-Ho, Kim / Manager

13.4.2 Test data for Below 30 MHz

- . Test Date : October 24, 2017 ~ October 31, 2017
- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.								

13.4.3 Test data for above 1 GHz

- . Test Date : October 24, 2017 ~ October 31, 2017
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 26.5 GHz
- . Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.								



Tested by: Tae-Ho, Kim / Manager

13.5 Test data for 2 Mbps

13.5.1 Test data for 30 MHz ~ 1 000 MHz

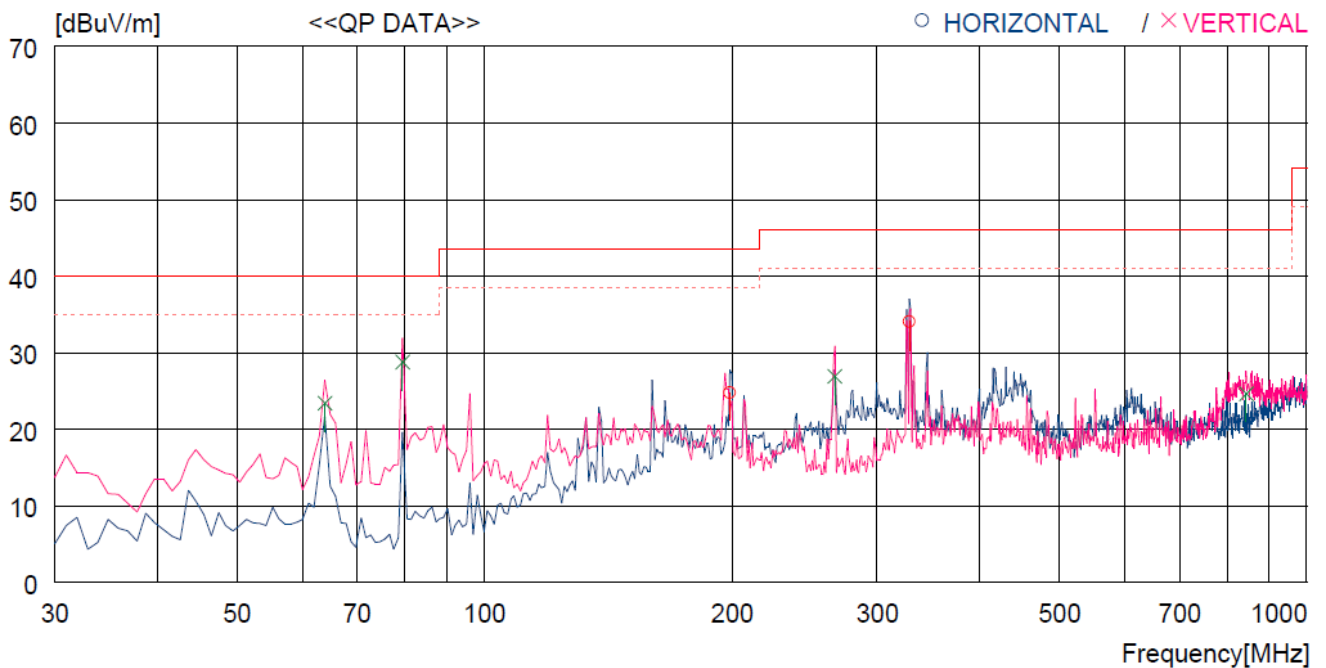
-. Test Date : October 24, 2017 ~ October 31, 2017

-. Resolution bandwidth : 120 kHz

-. Frequency range : 30 MHz ~ 1 000 MHz

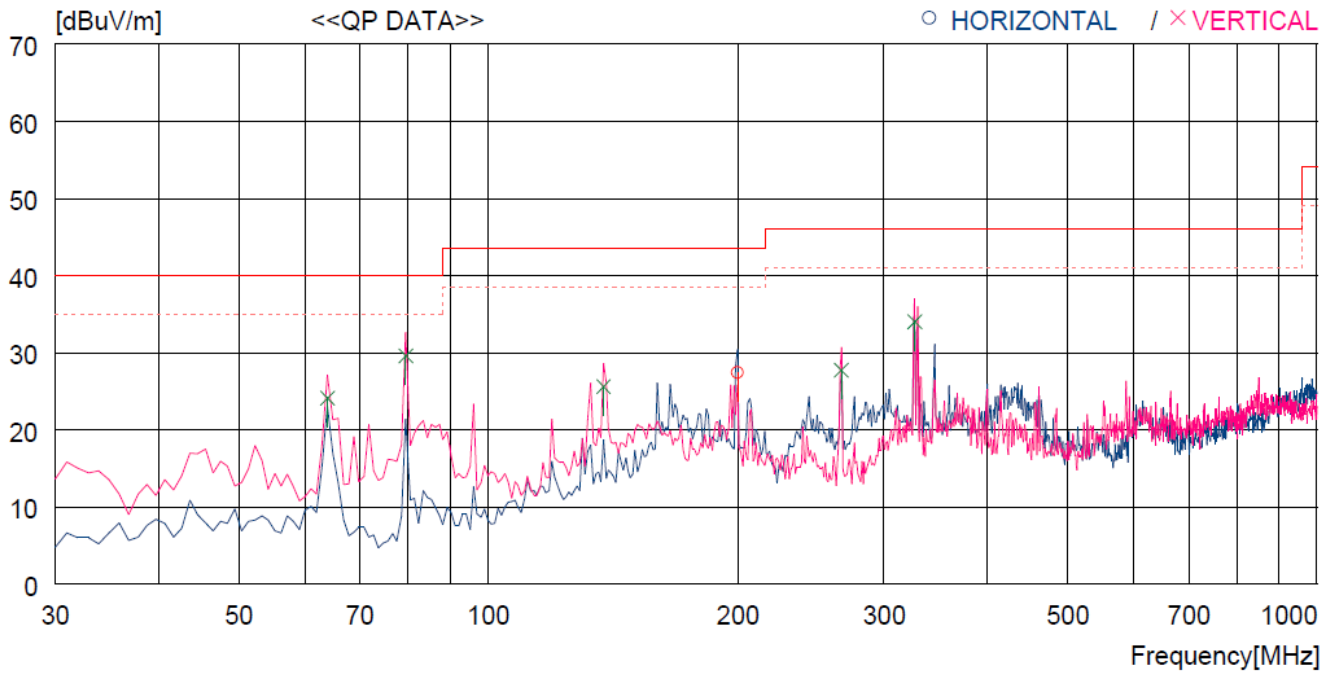
-. Measurement distance : 3 m

-. Operating condition : Low Channel



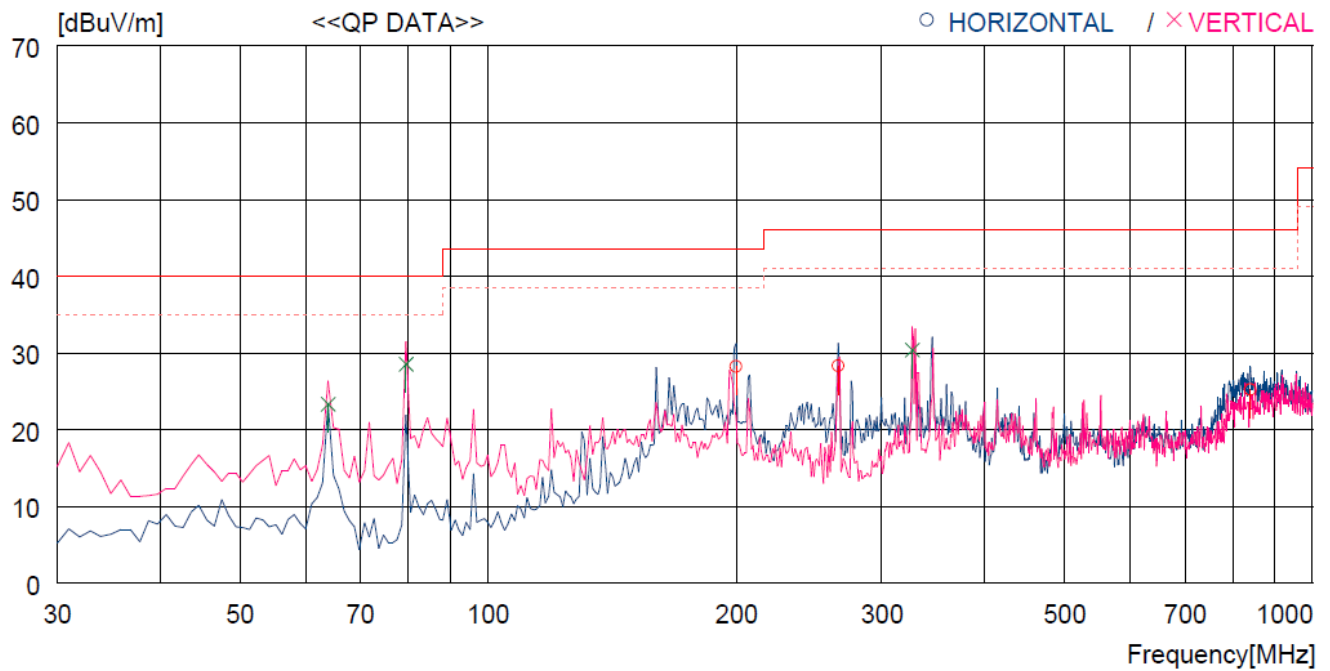
No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	QP	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
		[dBuV]	[dB]							
----- Horizontal -----										
1	198.780	44.2	10.5	3.3	33.2	24.8	43.5	18.7	100	198
2	328.760	48.9	14.0	4.2	33.1	34.0	46.0	12.0	100	198
----- Vertical -----										
3	63.950	42.7	11.9	1.9	33.1	23.4	40.0	16.6	100	174
4	79.470	52.1	7.6	2.2	33.1	28.8	40.0	11.2	100	188
5	266.680	43.9	12.3	3.8	33.1	26.9	46.0	19.1	100	188
6	843.821	29.9	21.0	6.7	33.0	24.6	46.0	21.4	100	188

Operating condition : Middle Channel



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	199.750	46.8	10.5	3.3	33.2	27.4	43.5	16.1	100	181
----- Vertical -----										
2	63.950	43.4	11.9	1.9	33.1	24.1	40.0	15.9	100	215
3	79.470	52.9	7.6	2.2	33.1	29.6	40.0	10.4	100	208
4	137.670	47.5	8.2	2.8	32.9	25.6	43.5	17.9	100	220
5	266.680	44.7	12.3	3.8	33.1	27.7	46.0	18.3	100	220
6	326.820	49.0	13.9	4.2	33.1	34.0	46.0	12.0	100	215

Operating condition : High Channel



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	QP	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	199.750	47.6	10.5	3.3	33.2	28.2	43.5	15.3	100	165
2	265.710	45.3	12.3	3.8	33.1	28.3	46.0	17.7	100	165
3	840.911	30.5	21.0	6.7	33.0	25.2	46.0	20.8	100	159
----- Vertical -----										
4	63.950	42.6	11.9	1.9	33.1	23.3	40.0	16.7	100	176
5	79.470	51.8	7.6	2.2	33.1	28.5	40.0	11.5	100	176
6	326.820	45.4	13.9	4.2	33.1	30.4	46.0	15.6	100	176

Tested by: Tae-Ho, Kim / Manager

13.5.2 Test data for Below 30 MHz

- . Test Date : October 24, 2017 ~ October 31, 2017
- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.								

13.5.3 Test data for above 1 GHz

- . Test Date : October 24, 2017 ~ October 31, 2017
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 26.5 GHz
- . Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.								



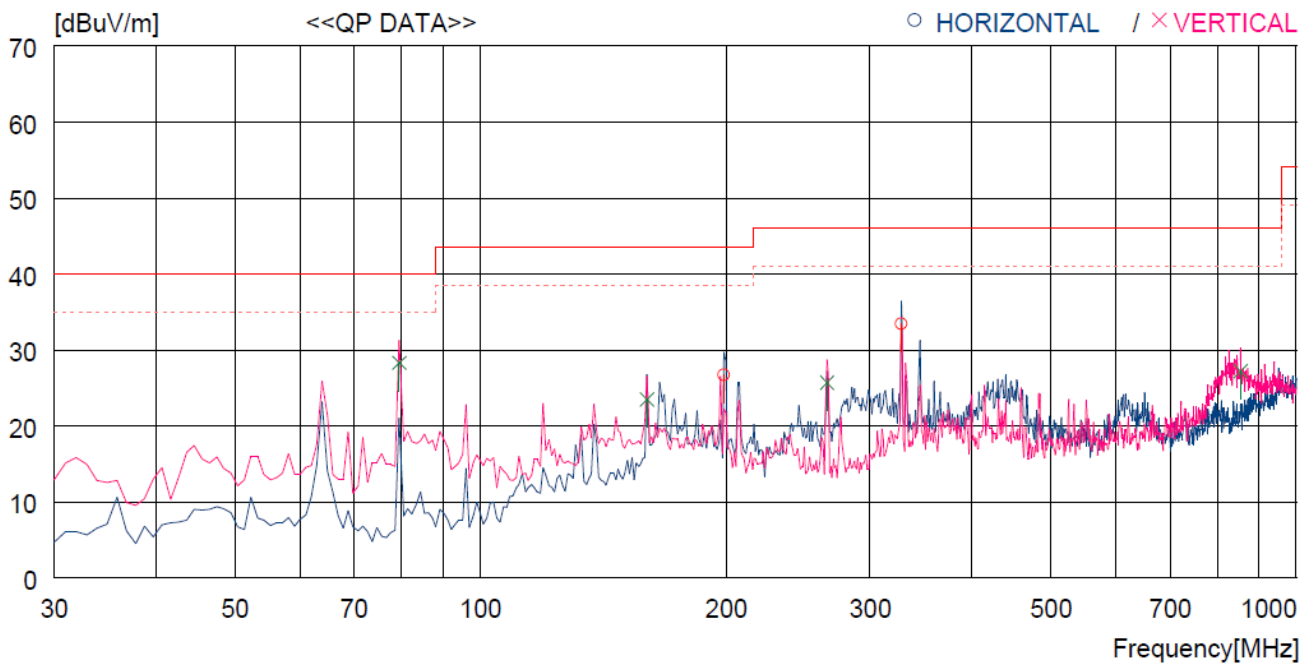
Tested by: Tae-Ho, Kim / Manager

13.6 Test data for 3 Mbps

13.6.1 Test data for 30 MHz ~ 1 000 MHz

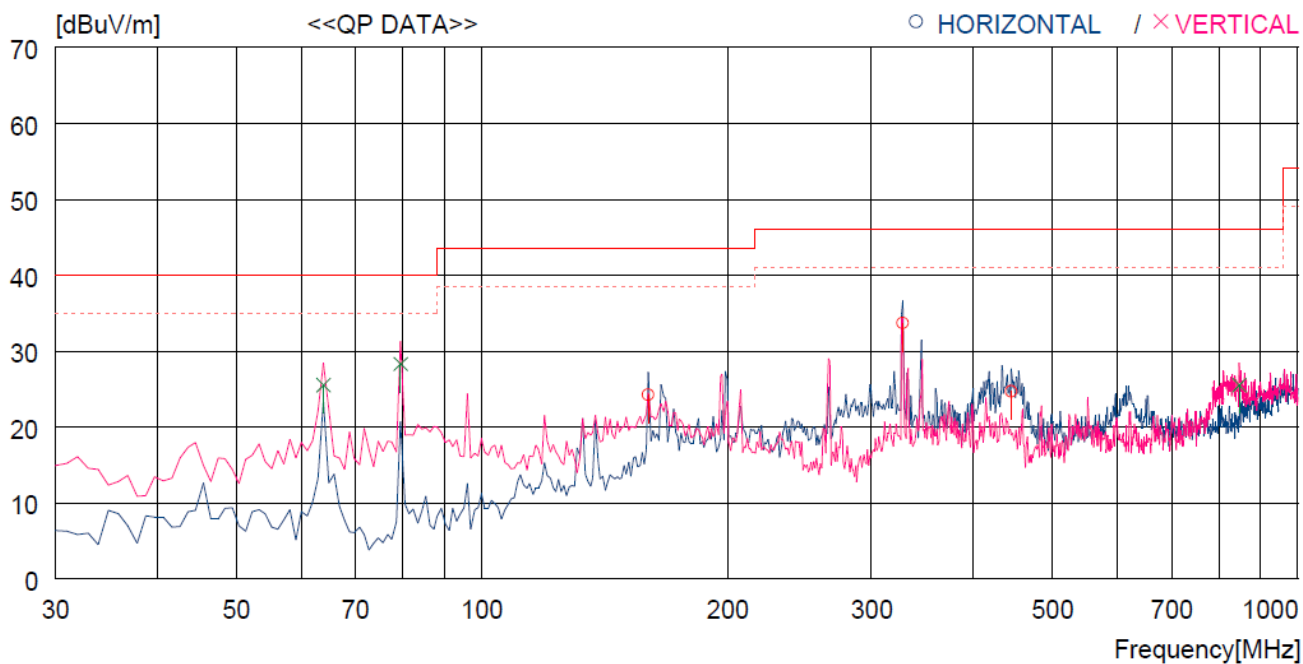
-. Test Date : October 24, 2017 ~ October 31, 2017
 -. Resolution bandwidth : 120 kHz
 -. Frequency range : 30 MHz ~ 1 000 MHz
 -. Measurement distance : 3 m

-. Operating condition : Low Channel



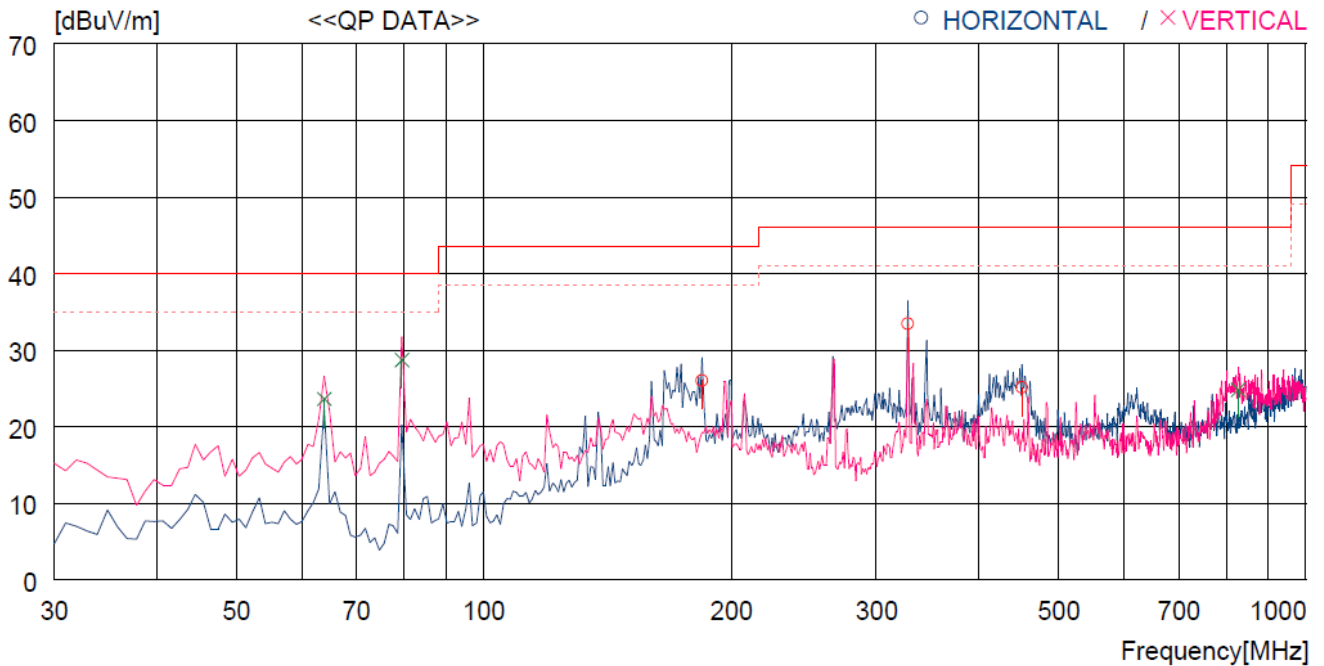
No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	QP	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	198.780	46.1	10.5	3.3	33.2	26.7	43.5	16.8	100	187
2	327.790	48.3	14.0	4.2	33.1	33.4	46.0	12.6	100	201
----- Vertical -----										
3	79.470	51.6	7.6	2.2	33.1	28.3	40.0	11.7	100	172
4	159.980	45.1	8.4	3.0	33.0	23.5	43.5	20.0	100	159
5	265.710	42.7	12.3	3.8	33.1	25.7	46.0	20.3	100	178
6	853.520	32.2	21.2	6.8	33.0	27.2	46.0	18.8	100	178

Operating condition : Middle Channel



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	QP	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	159.980	45.8	8.4	3.0	33.0	24.2	43.5	19.3	100	208
2	327.790	48.6	14.0	4.2	33.1	33.7	46.0	12.3	100	195
3	445.161	36.6	16.5	4.8	33.2	24.7	46.0	21.3	100	208
----- Vertical -----										
4	63.950	44.8	11.9	1.9	33.1	25.5	40.0	14.5	100	183
5	79.470	51.6	7.6	2.2	33.1	28.3	40.0	11.7	100	175
6	846.731	30.7	21.1	6.7	33.0	25.5	46.0	20.5	100	168

Operating condition : High Channel



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	[dBuV]	FACTOR	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	184.230	46.0	9.9	3.2	33.1	26.0	43.5	17.5	100	209
2	327.790	48.3	14.0	4.2	33.1	33.4	46.0	12.6	100	196
3	450.981	37.0	16.4	4.9	33.2	25.1	46.0	20.9	100	196
----- Vertical -----										
4	63.950	42.9	11.9	1.9	33.1	23.6	40.0	16.4	100	173
5	79.470	52.0	7.6	2.2	33.1	28.7	40.0	11.3	100	173
6	827.331	30.4	20.9	6.6	33.1	24.8	46.0	21.2	100	173

Tested by: Tae-Ho, Kim / Manager

13.6.2 Test data for Below 30 MHz

- . Test Date : October 24, 2017 ~ October 31, 2017
- . Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)
- . Frequency range : 9 kHz ~ 30 MHz
- . Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.								

13.6.3 Test data for above 1 GHz

- . Test Date : October 24, 2017 ~ October 31, 2017
- . Resolution bandwidth : 1 MHz for Peak and Average Mode
- . Video bandwidth : 1 MHz for Peak Mode, 10 Hz for Average Mode
- . Frequency range : 1 GHz ~ 26.5 GHz
- . Measurement distance : 3 m

Frequency (MHz)	Reading (dB μ V)	Ant. Pol. (H/V)	Ant. Factor (dB/m)	Cable Loss	Amp Gain	Emission Level(dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
It was not observed any emissions from the EUT.								



Tested by: Tae-Ho, Kim / Manager