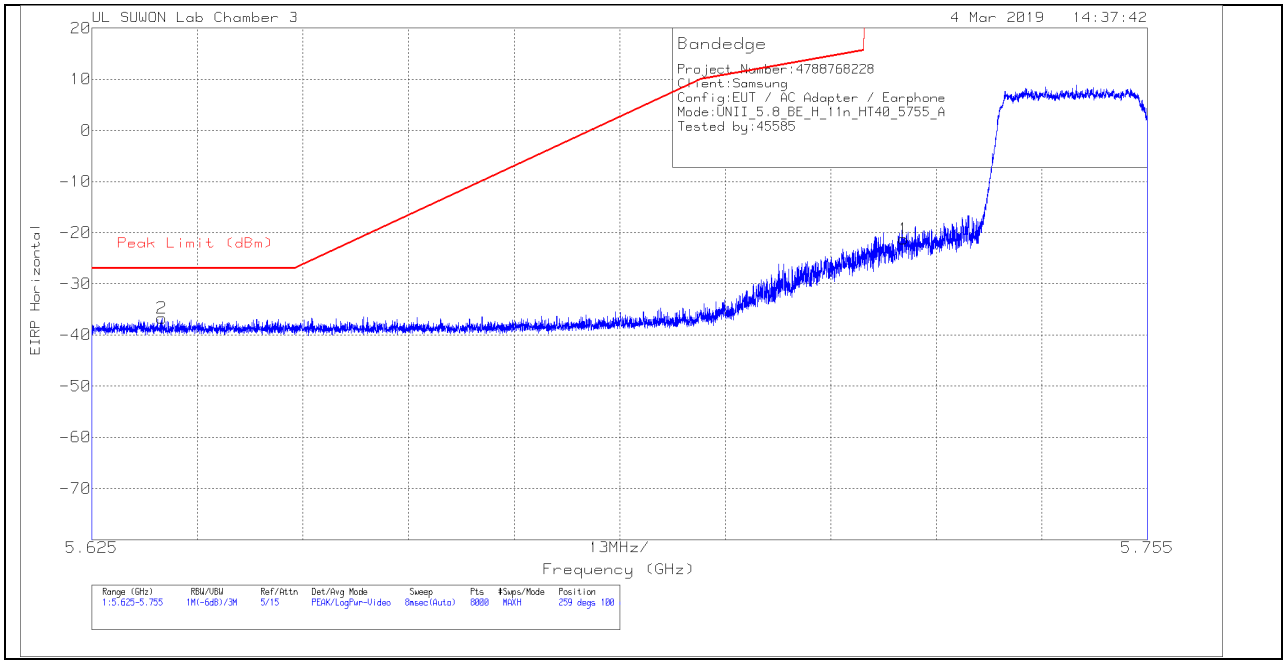
11.4.7. TX ABOVE 1GHz 802.11n HT40 2Tx CDD MODE IN THE 5.8GHz BAND BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

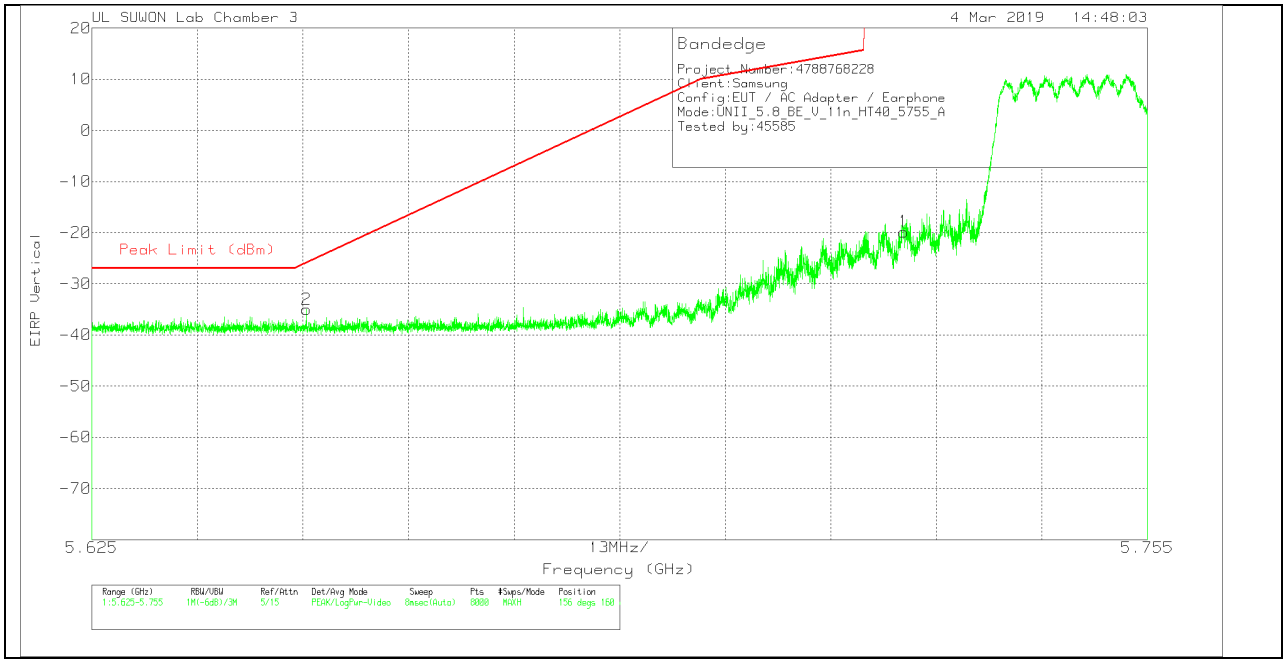
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-49.94	Pk	34.8	-17.9	11.8	0	-21.24	278.95	-300.19	259	100	H
2	5.634	-64.9	Pk	34.7	-18.3	11.8	0	-36.7	-27	-9.7	259	100	H

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

Trace Markers

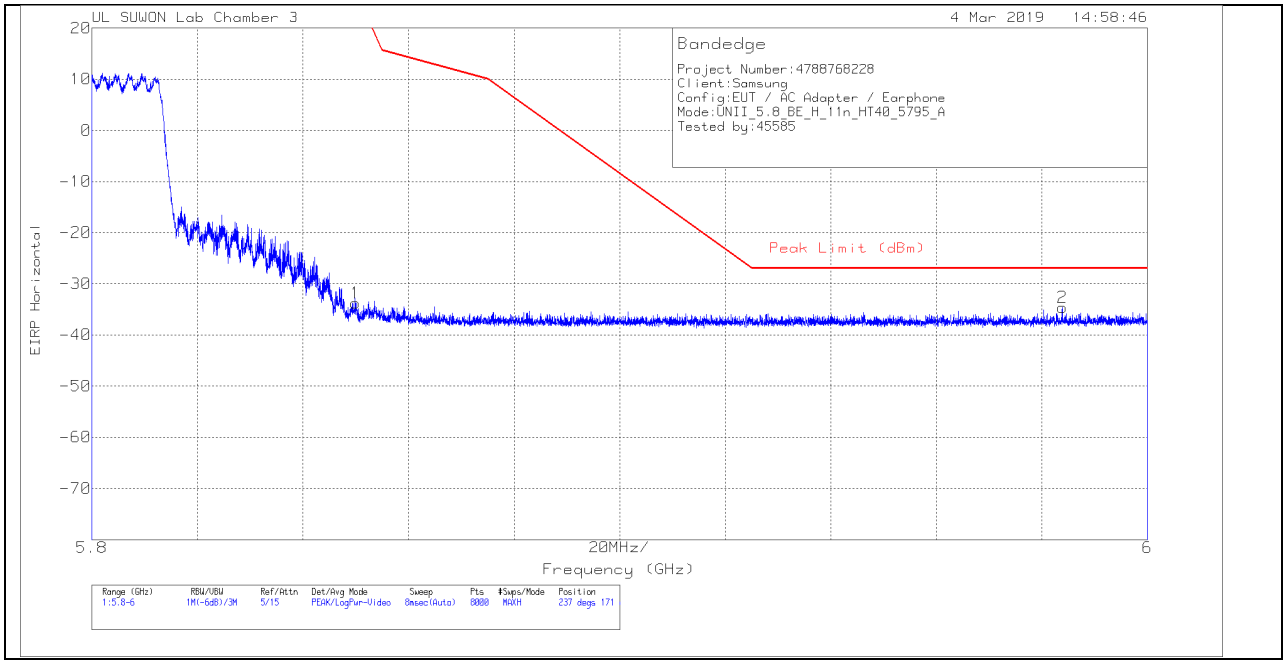
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-48.52	Pk	34.8	-17.9	11.8	0	-19.82	278.95	-298.77	156	160	V
2	5.651	-63.44	Pk	34.7	-18.1	11.8	0	-35.04	-25.96	-9.08	156	160	V

Pk - Peak detector

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

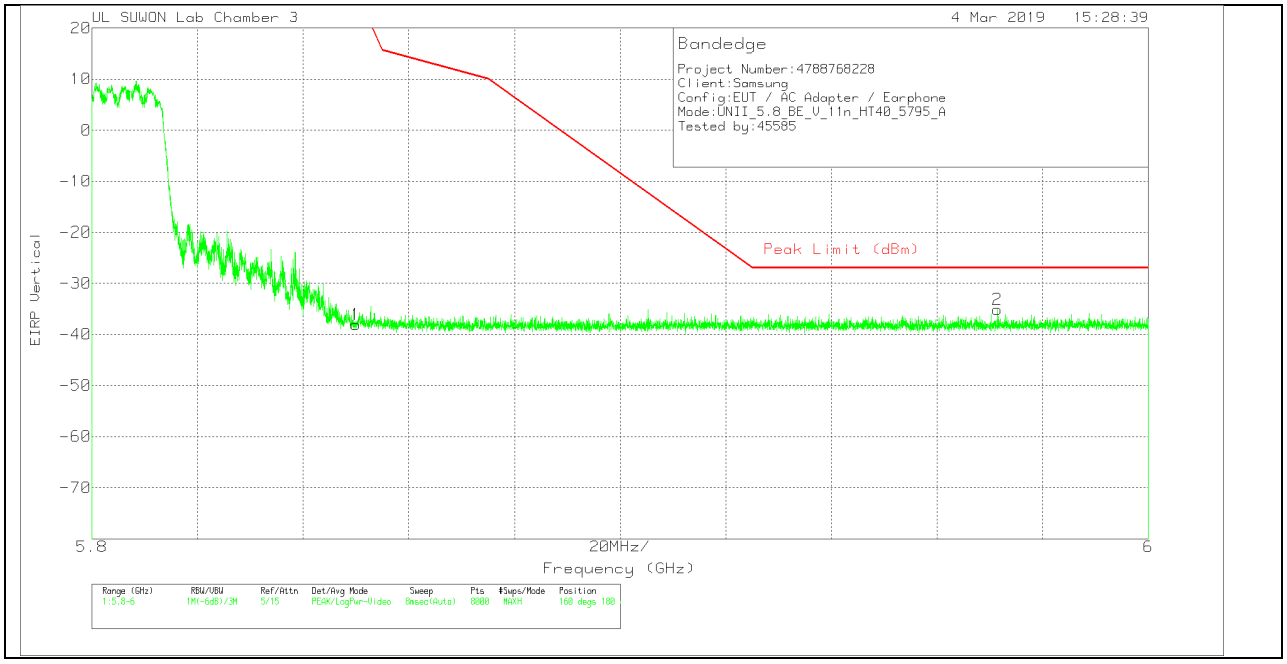
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-62.88	Pk	35	-17.7	11.8	0	-33.78	26.99	-60.77	237	171	H
2	5.984	-63.85	Pk	35.1	-17.7	11.8	0	-34.65	-27	-7.65	237	171	H

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

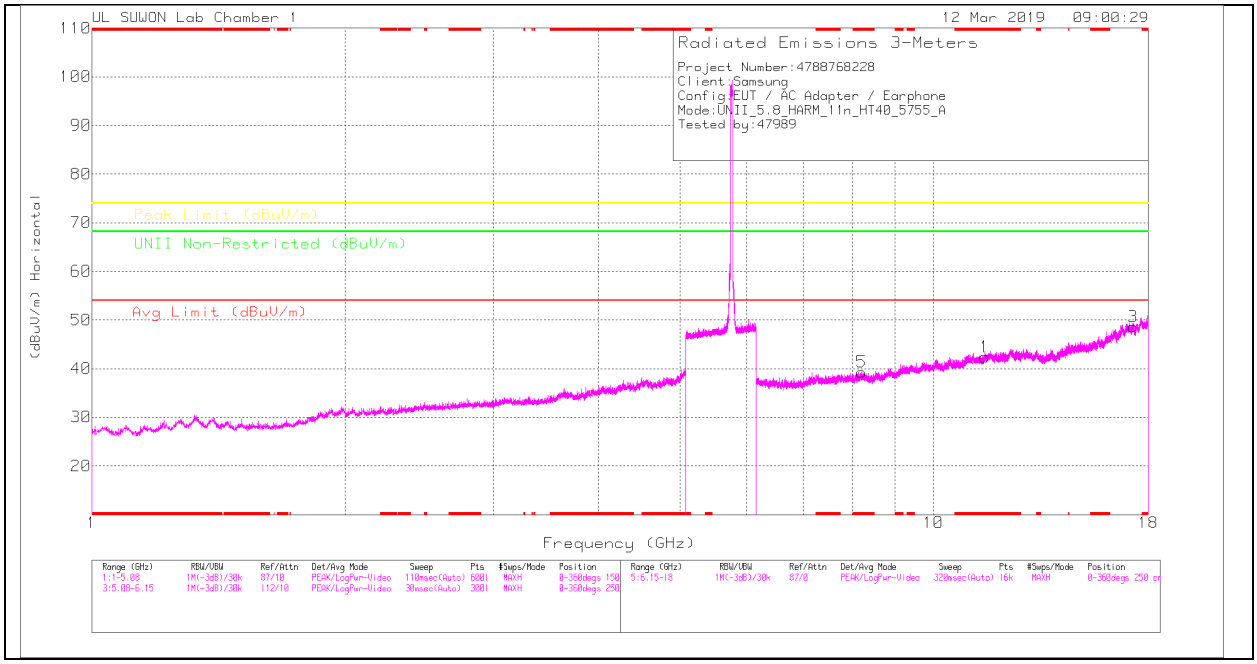
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-67.15	Pk	35	-17.7	11.8	0	-38.05	26.99	-65.04	160	180	V
2	5.971	-64.29	Pk	35.1	-17.7	11.8	0	-35.09	-27	-8.09	160	180	V

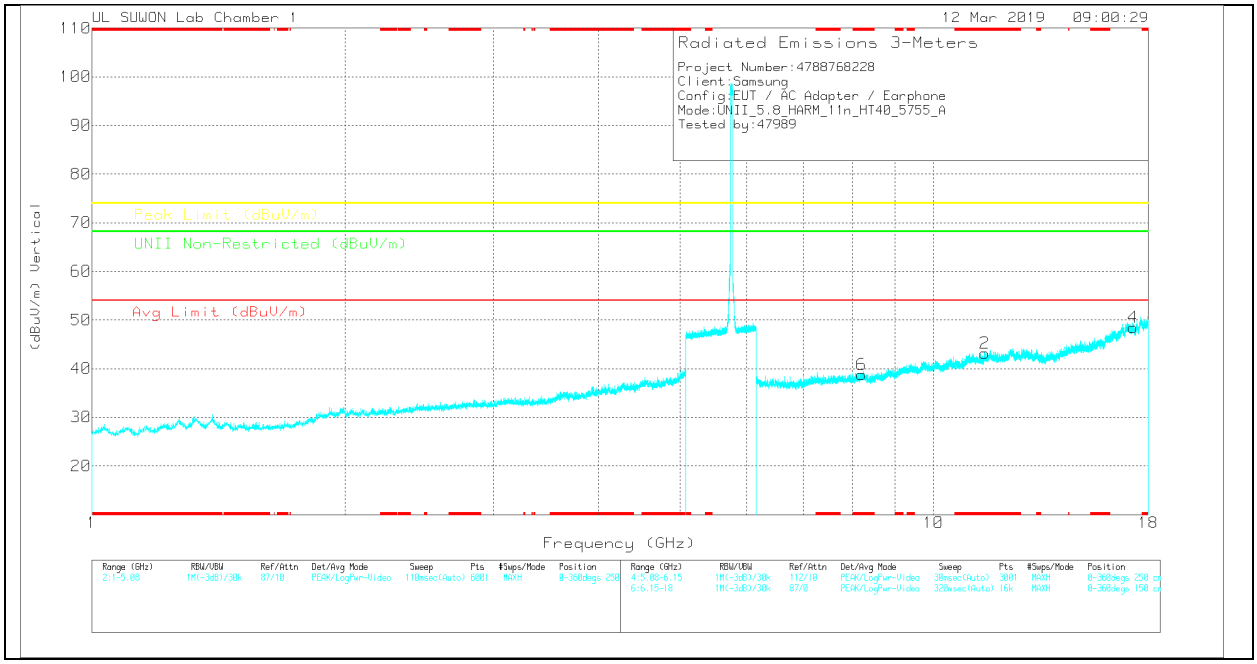
Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LOW CHANNEL DATA

Trace Markers

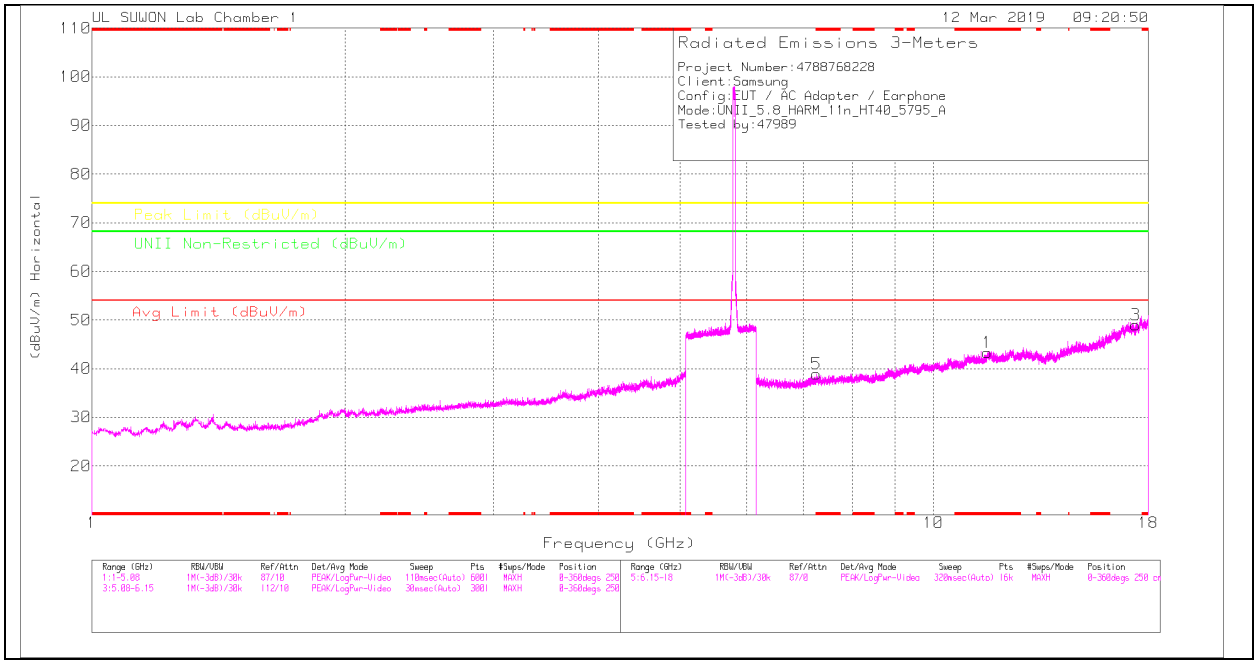
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 11.51	26.23	PK	38.5	-22.3	0	42.43	-	-	74	-31.57	-	-	0-360	150	H
3	17.266	23.75	PK	41.3	-16.4	0	48.65	-	-	-	-	68.2	-19.55	0-360	150	H
5	* 8.219	28.37	PK	36.4	-25.5	0	39.27	-	-	74	-34.73	-	-	0-360	250	H
2	* 11.51	26.93	PK	38.5	-22.3	0	43.13	-	-	74	-30.87	-	-	0-360	250	V
4	17.265	23.7	PK	41.3	-16.5	0	48.5	-	-	-	-	68.2	-19.7	0-360	150	V
6	* 8.216	27.88	PK	36.4	-25.5	0	38.78	-	-	74	-35.22	-	-	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

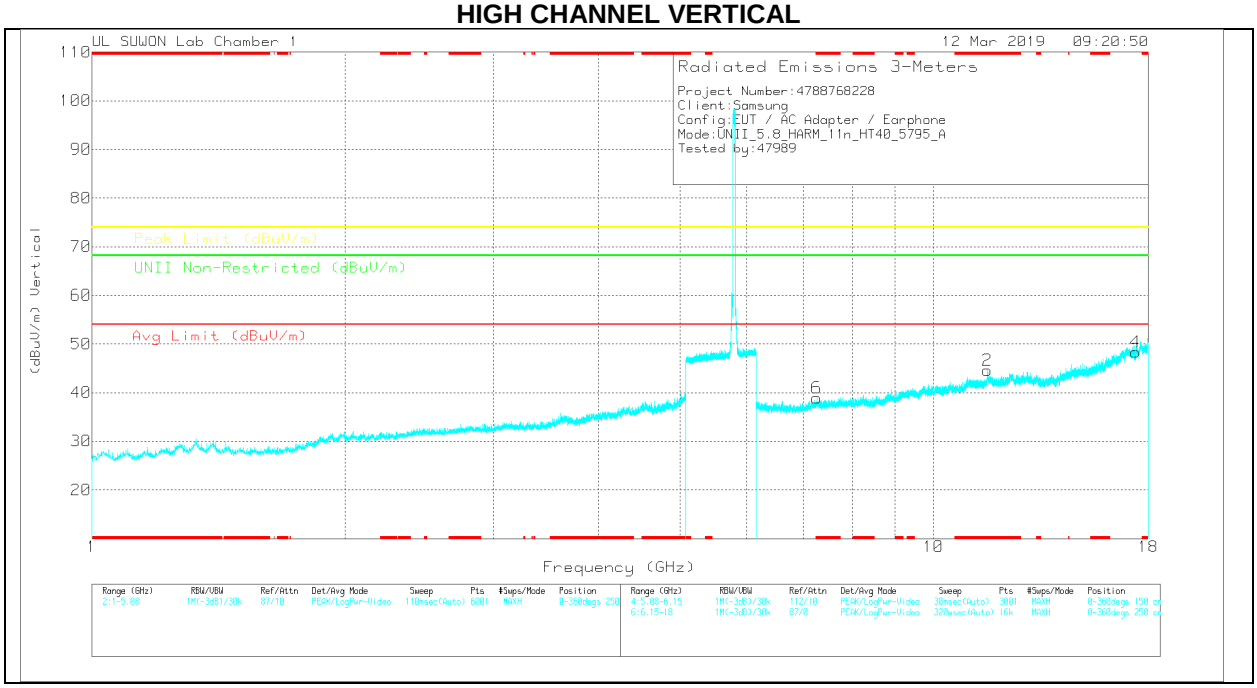
Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 11.595	27.07	PK	38.6	-22.4	0	43.27	-	-	74	-30.73	-	-	0-360	250	H
3	17.391	24.84	PK	41.2	-17.1	0	48.94	-	-	-	-	68.2	-19.26	0-360	150	H
5	* 7.262	29.86	PK	35.8	-26.8	0	38.86	-	-	74	-35.14	-	-	0-360	250	H
2	* 11.593	28.37	PK	38.6	-22.4	0	44.57	-	-	74	-29.43	-	-	0-360	250	V
4	17.39	24.24	PK	41.2	-17.1	0	48.34	-	-	-	-	68.2	-19.86	0-360	150	V
6	* 7.265	29.97	PK	35.8	-26.9	0	38.87	-	-	74	-35.13	-	-	0-360	250	V

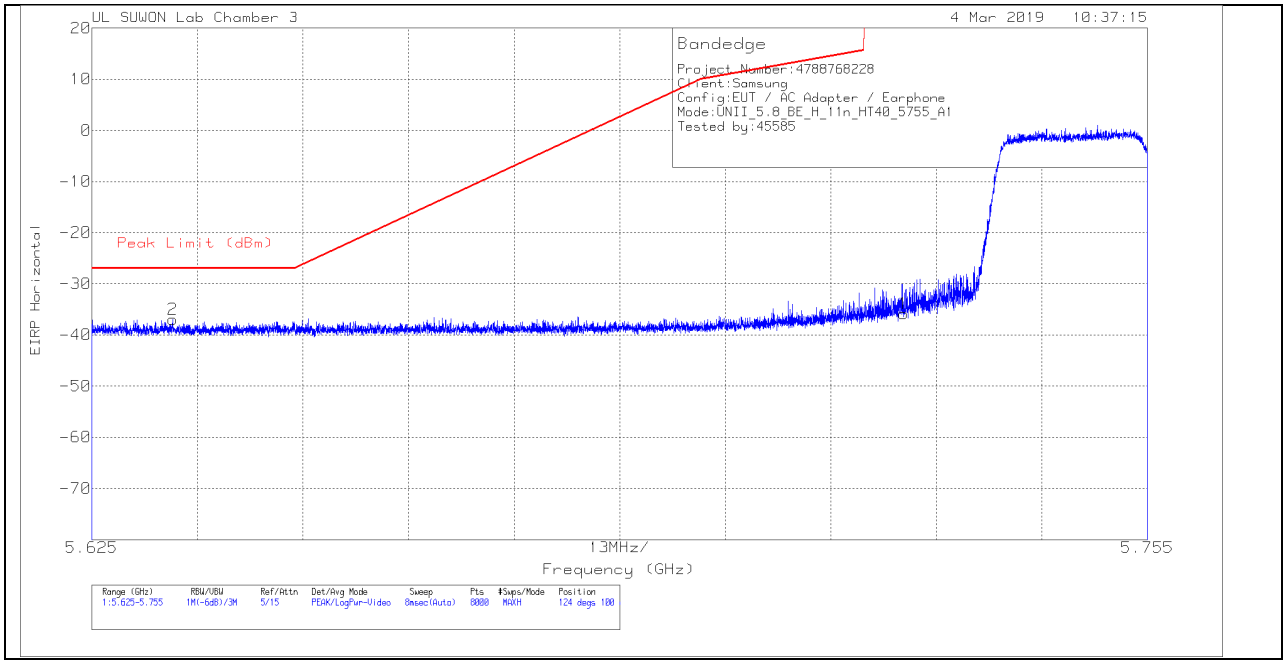
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

11.4.8.TX ABOVE 1GHz 802.11n HT40 1Tx ANT1 IN THE 5.8GHz BAND BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

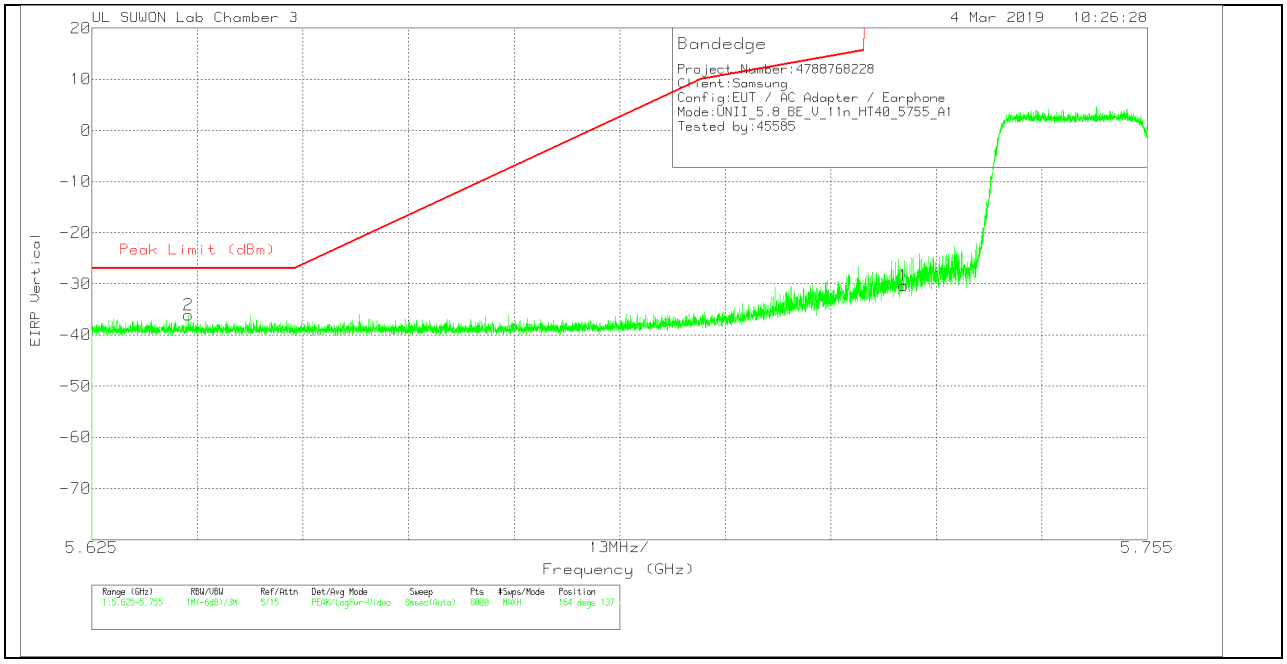
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-64.59	Pk	34.8	-17.9	11.8	0	-35.89	278.95	-314.84	124	100	H
2	5.635	-65.22	Pk	34.7	-18.2	11.8	0	-36.92	-27	-9.92	124	100	H

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

Trace Markers

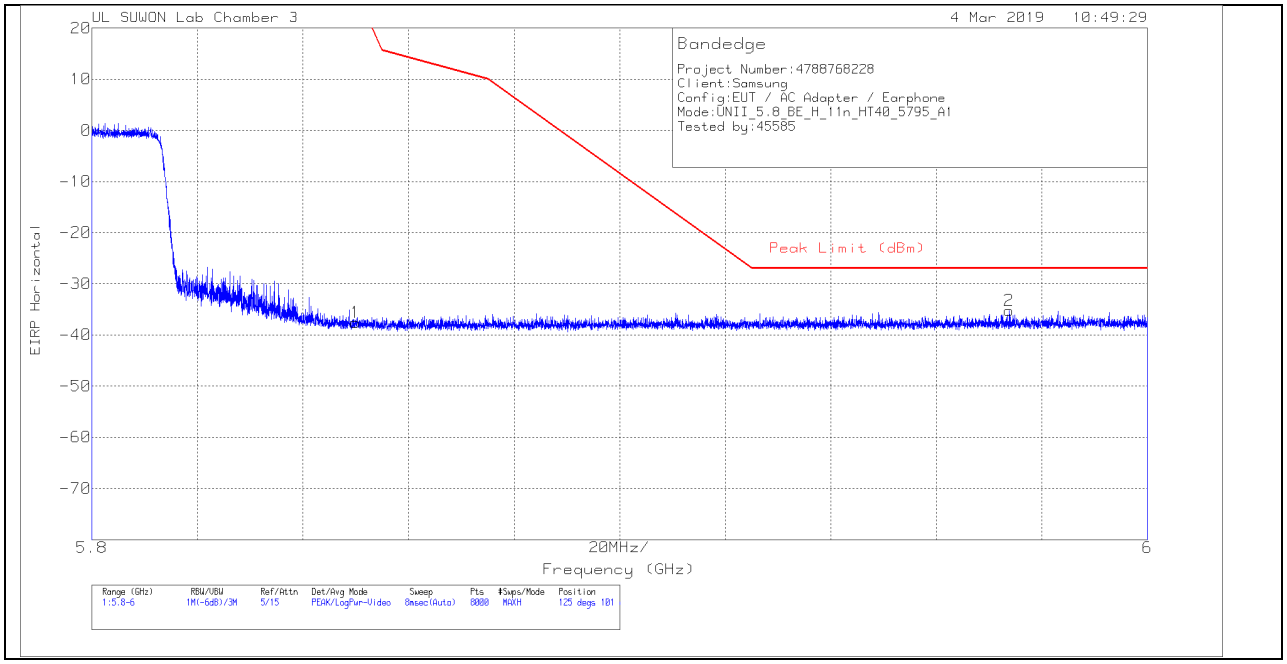
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-59.07	Pk	34.8	-17.9	11.8	0	-30.37	278.95	-309.32	164	137	V
2	5.637	-64.36	Pk	34.7	-18.2	11.8	0	-36.06	-27	-9.06	164	137	V

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

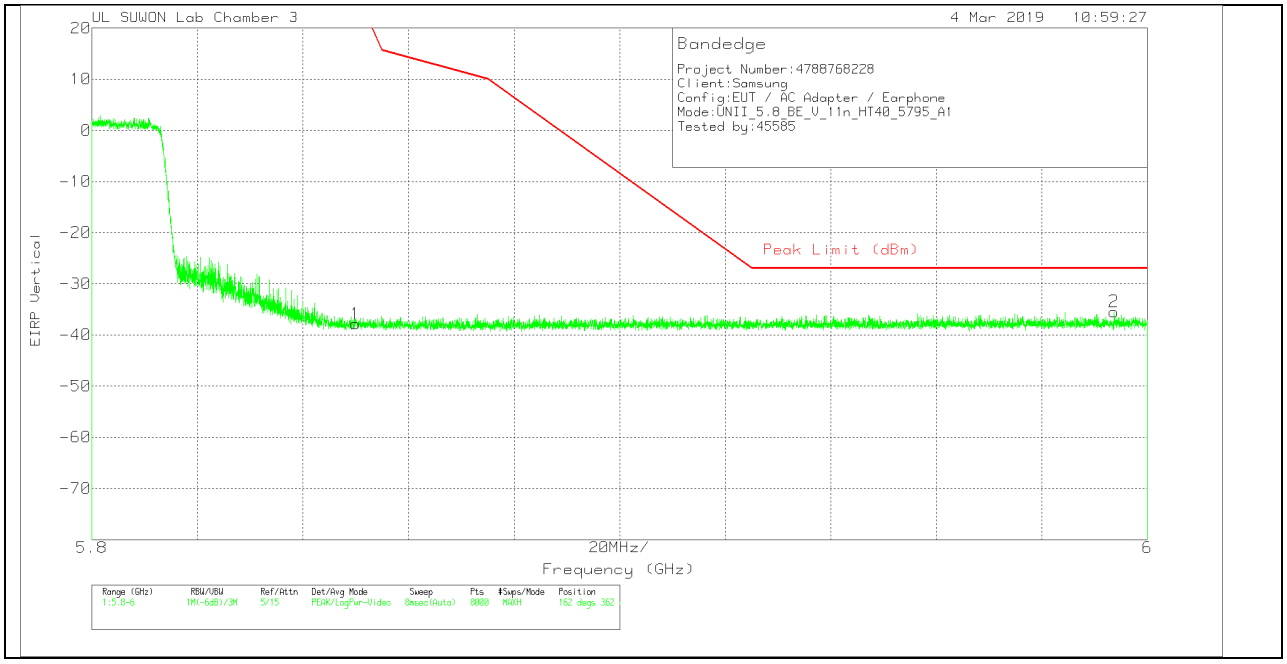
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-66.63	Pk	35	-17.7	11.8	0	-37.53	26.99	-64.52	125	101	H
2	5.974	-64.47	Pk	35.1	-17.7	11.8	0	-35.27	-27	-8.27	125	101	H

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

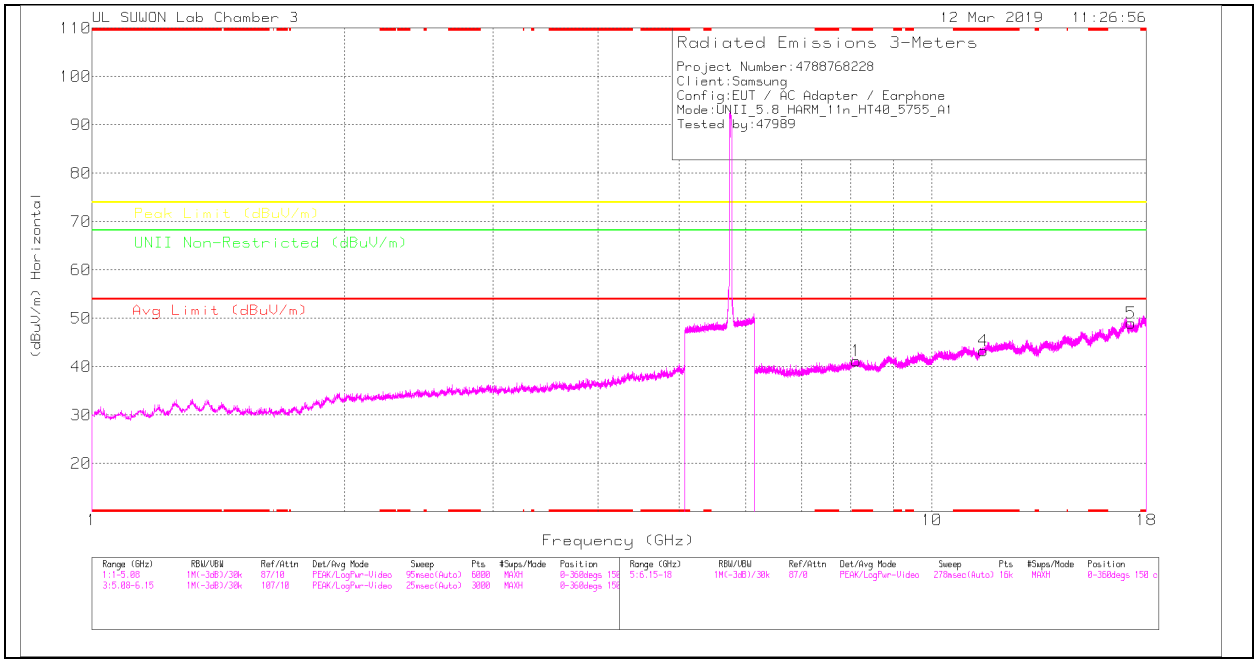
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-66.93	Pk	35	-17.7	11.8	0	-37.83	26.99	-64.82	162	362	V
2	5.994	-64.62	Pk	35.1	-17.7	11.8	0	-35.42	-27	-8.42	162	362	V

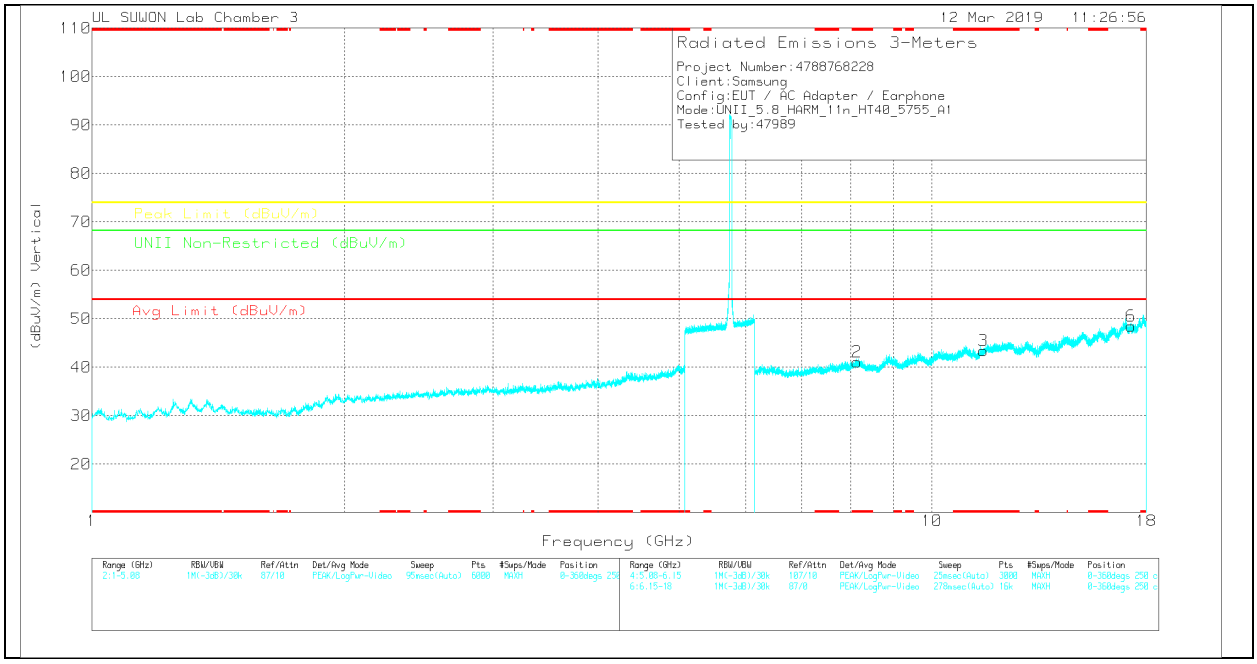
Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LOW CHANNEL DATA

Trace Markers

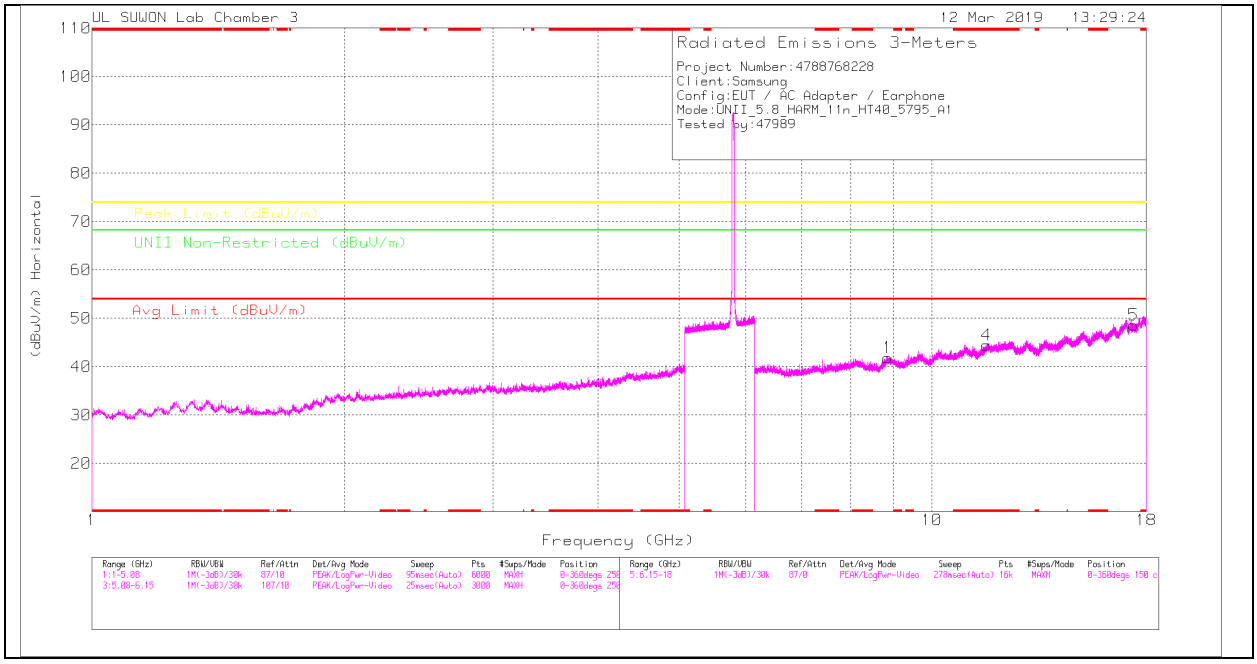
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00205959	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 8.128	26.68	PK	36.3	-21.8	0	41.18	-	-	74	-32.82	-	-	0-360	250	H
4	* 11.507	24.32	PK	38.5	-19.5	0	43.32	-	-	74	-30.68	-	-	0-360	150	H
5	17.256	22.76	PK	41.3	-15	0	49.06	-	-	-	-	68.2	-19.14	0-360	150	H
2	* 8.141	26.62	PK	36.3	-21.8	0	41.12	-	-	74	-32.88	-	-	0-360	250	V
3	* 11.512	24.46	PK	38.5	-19.5	0	43.46	-	-	74	-30.54	-	-	0-360	150	V
6	17.253	22.17	PK	41.3	-15	0	48.47	-	-	-	-	68.2	-19.73	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

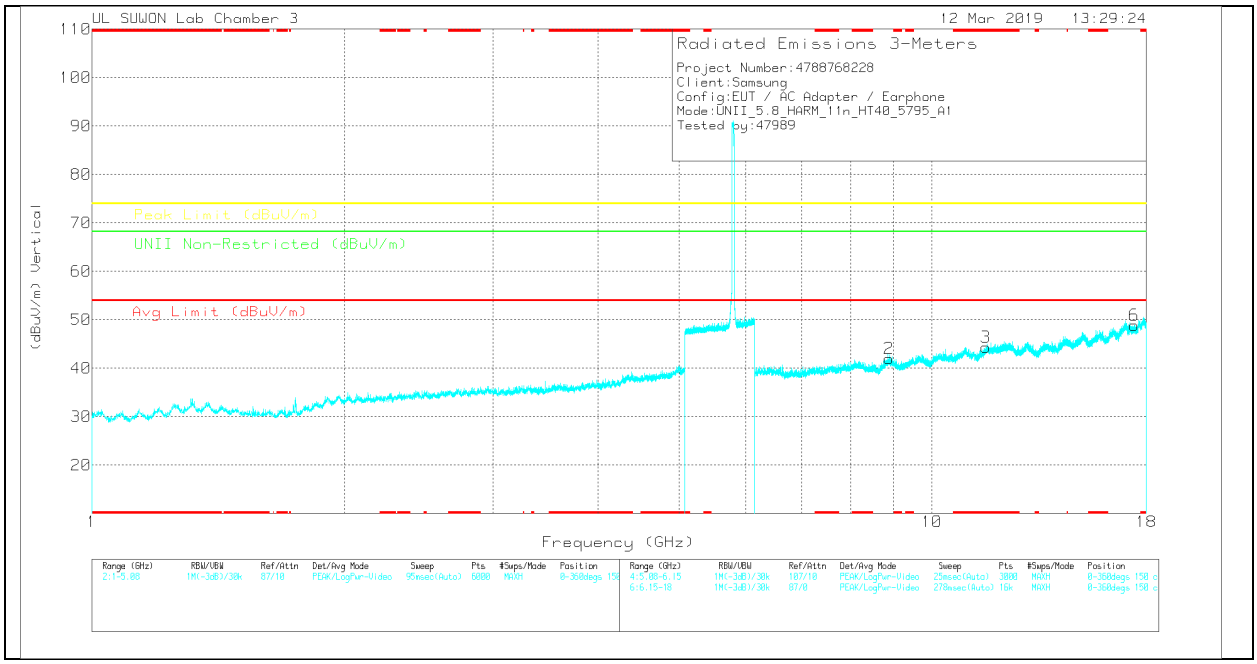
Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00205959	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	8.864	26.14	PK	36.5	-20.8	0	41.84	-	-	-	-	68.2	-26.36	0-360	150	H
4	* 11.604	25.57	PK	38.6	-19.7	0	44.47	-	-	74	-29.53	-	-	0-360	250	H
5	17.383	22.61	PK	41.2	-15.2	0	48.61	-	-	-	-	68.2	-19.59	0-360	250	H
2	8.889	26.35	PK	36.5	-20.9	0	41.95	-	-	-	-	68.2	-26.25	0-360	150	V
3	* 11.595	25.57	PK	38.6	-19.8	0	44.37	-	-	74	-29.63	-	-	0-360	150	V
6	17.402	22.87	PK	41.2	-15.2	0	48.87	-	-	-	-	68.2	-19.33	0-360	250	V

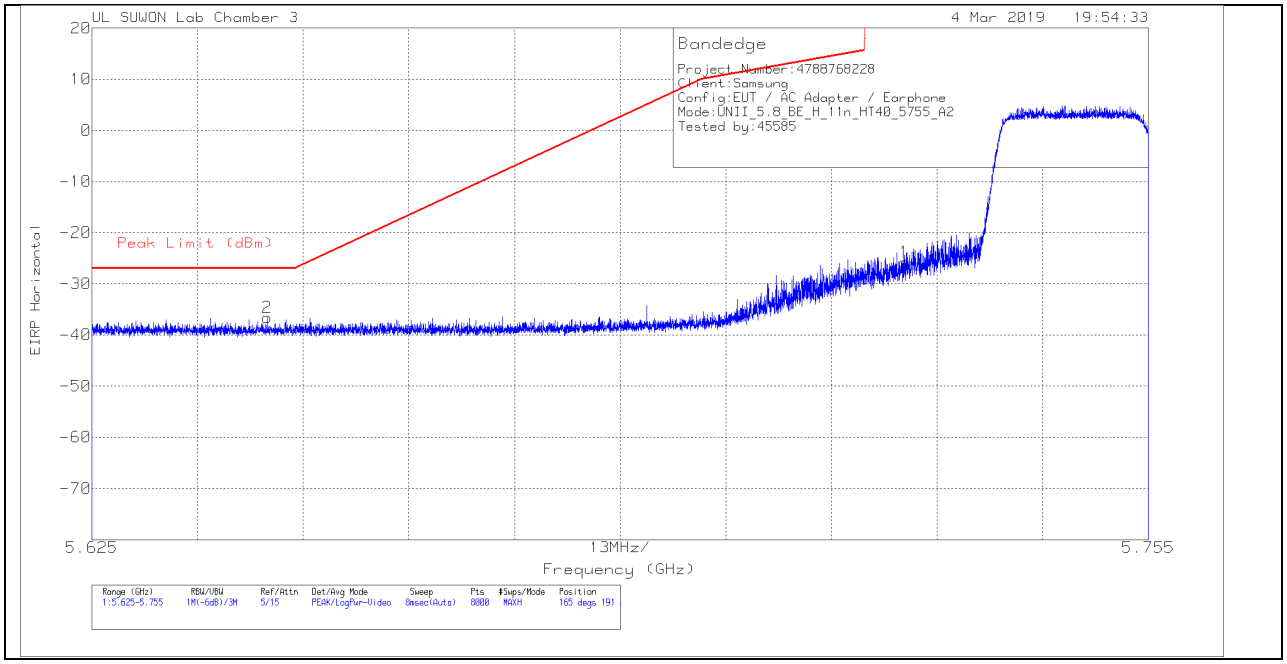
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

11.4.9.TX ABOVE 1GHz 802.11n HT40 1Tx ANT2 IN THE 5.8GHz BAND BANDEDGE (LOW CHANNEL)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

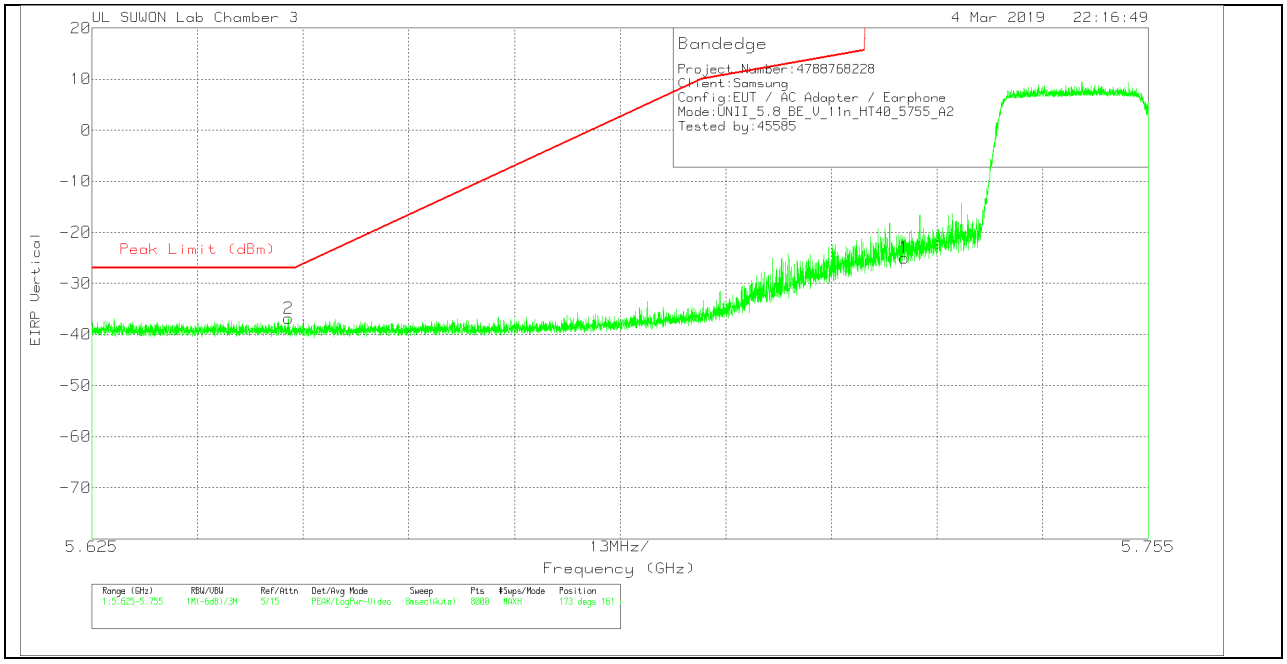
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-54.5	Pk	34.8	-17.9	11.8	0	-25.8	278.95	-304.75	165	191	H
2	5.647	-64.91	Pk	34.7	-18.2	11.8	0	-36.61	-27	-9.61	165	191	H

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

Trace Markers

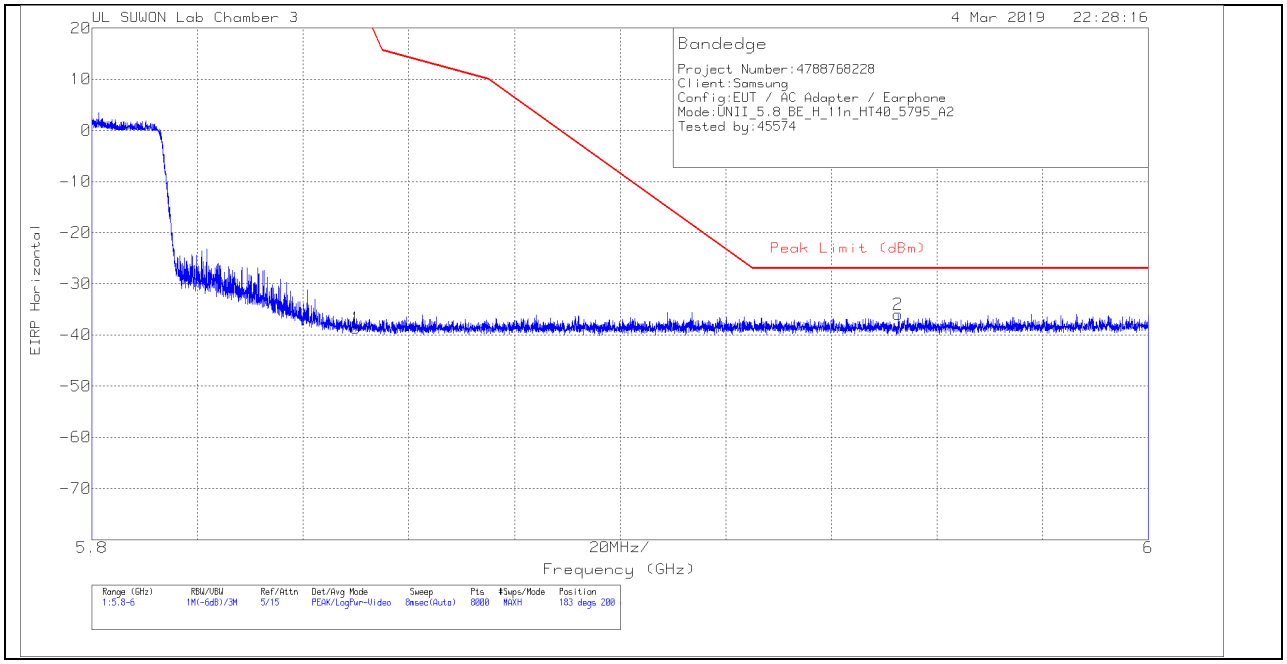
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-53.68	Pk	34.8	-17.9	11.8	-24.98	278.95	-303.93	173	161	V
2	5.649	-65.12	Pk	34.7	-18.2	11.8	-36.82	-27	-9.82	173	161	V

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

BANDEDGE (HIGH CHANNEL)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

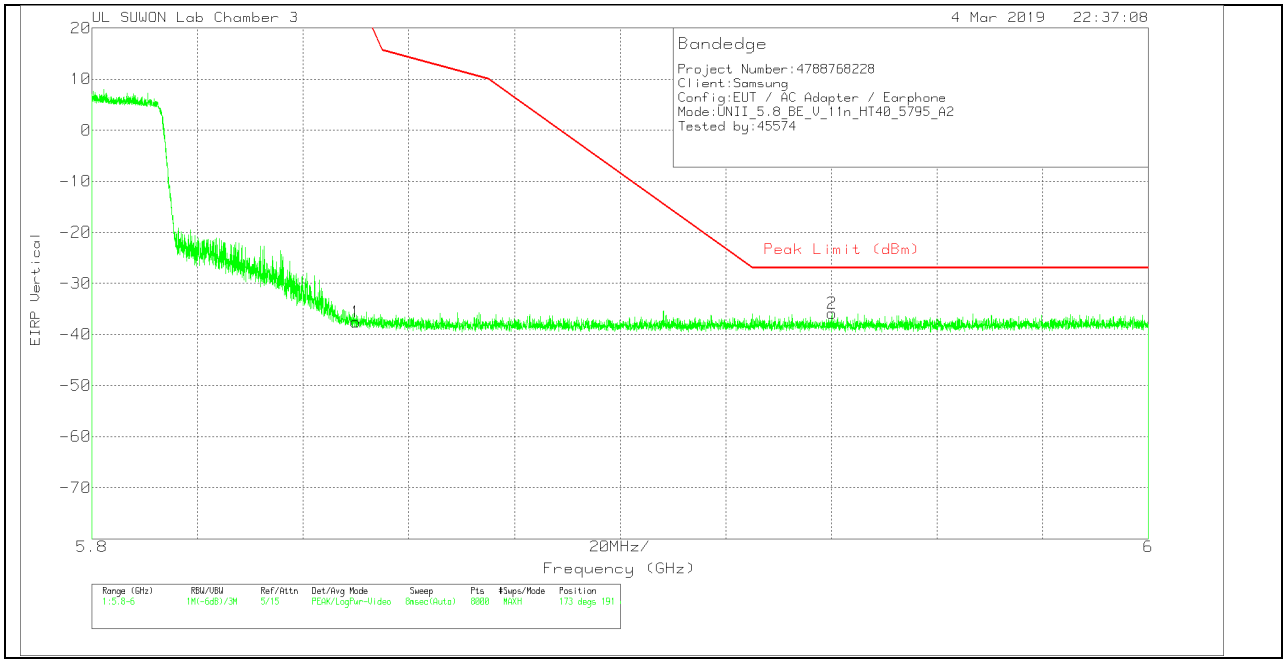
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-67.82	Pk	35	-17.7	11.8	-38.72	26.99	-65.71	183	200	H
2	5.953	-65.13	Pk	35.1	-17.7	11.8	-35.93	-27	-8.93	183	200	H

Pk - Peak detector

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

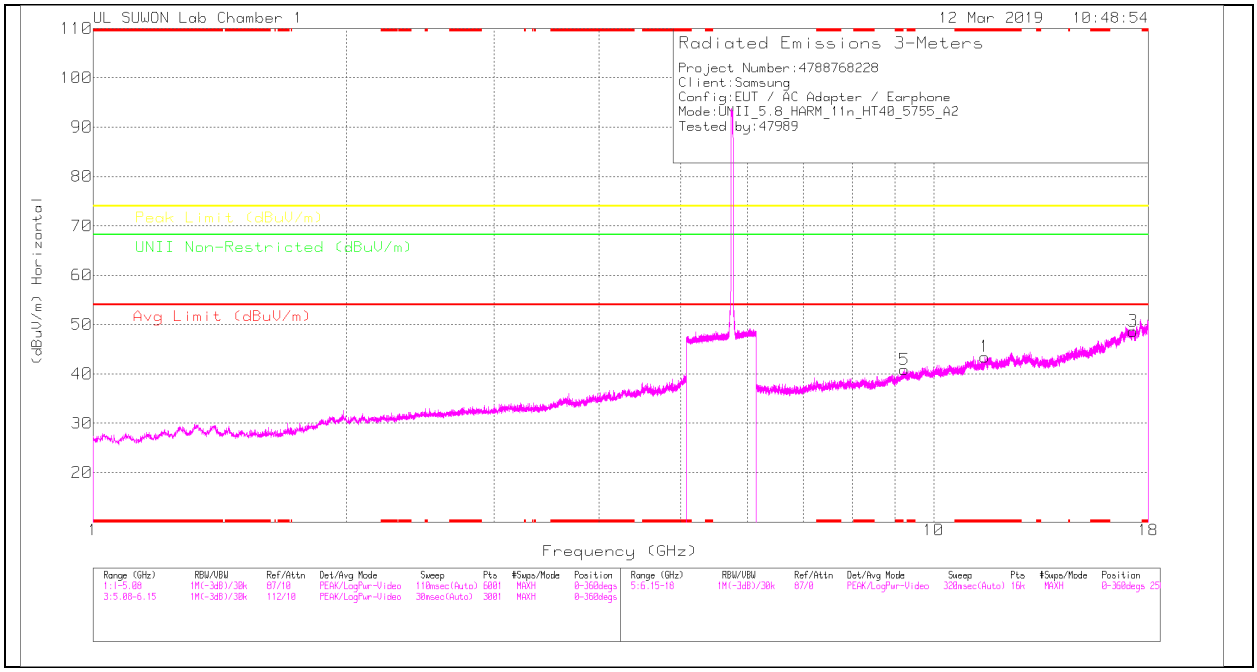
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-66.7	Pk	35	-17.7	11.8	-37.6	26.99	-64.59	173	191	V
2	5.94	-65.08	Pk	35.1	-17.7	11.8	-35.88	-27	-8.88	173	191	V

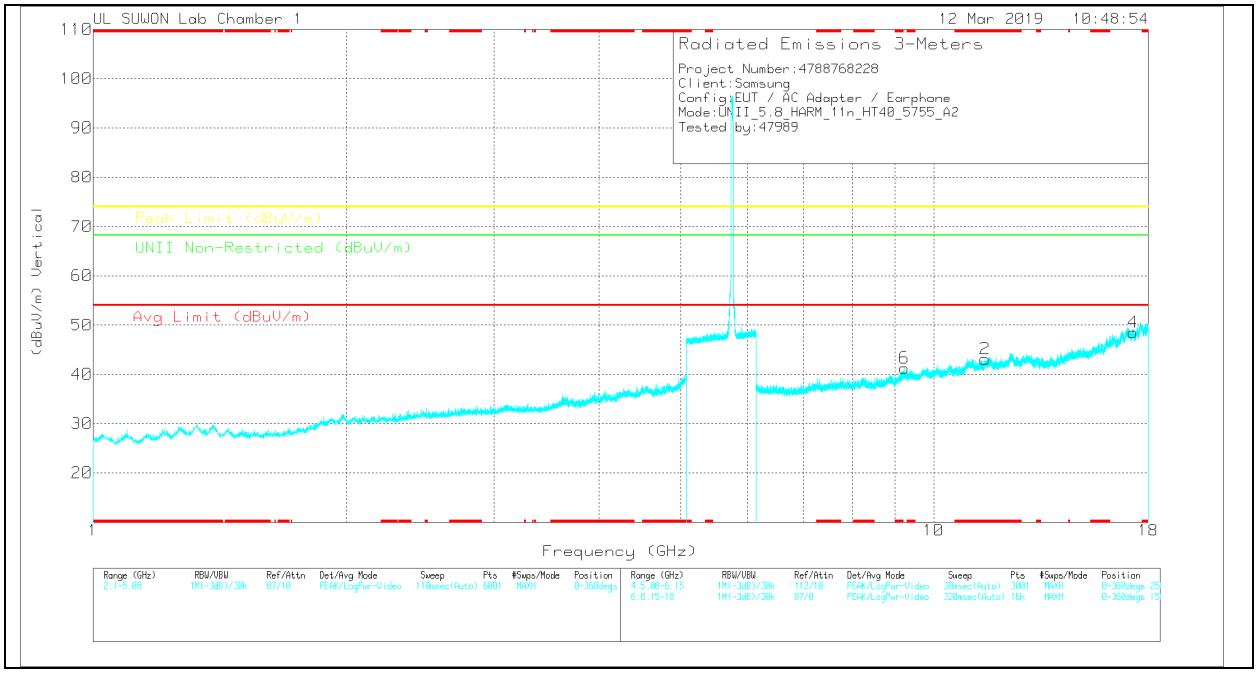
Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LOW CHANNEL HORIZONTAL



LOW CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LOW CHANNEL DATA

Trace Markers

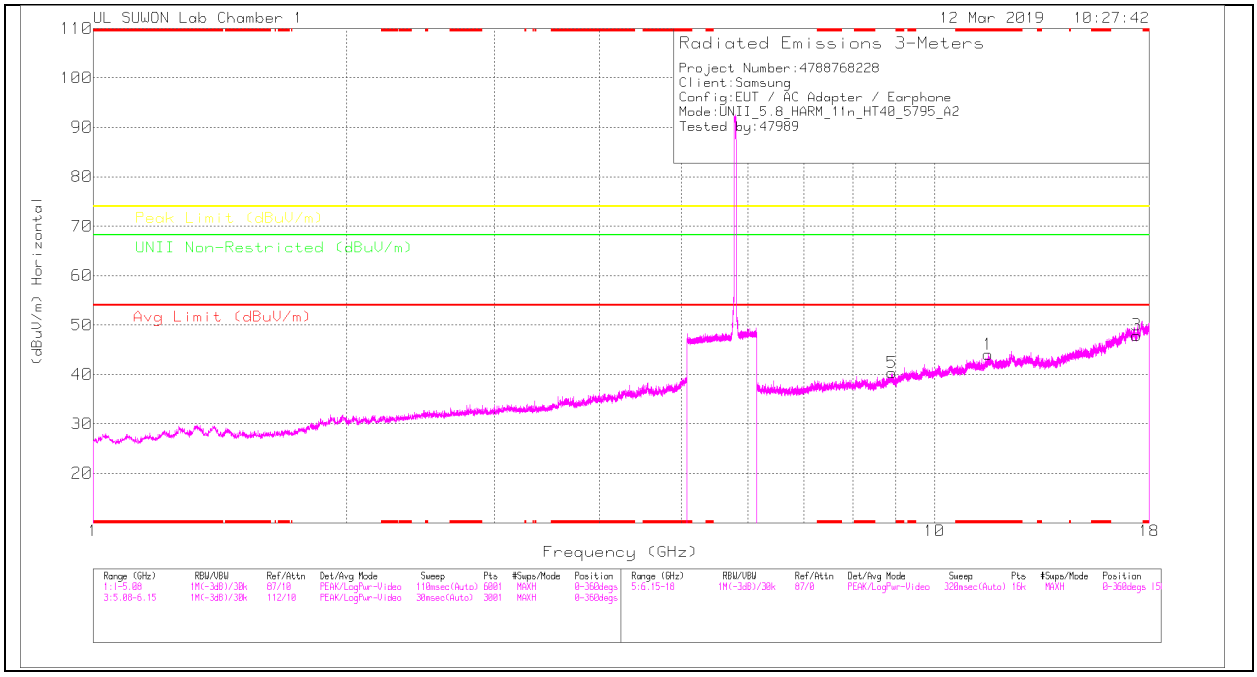
Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 11.51	27.28	PK	38.5	-22.3	0	43.48	-	-	74	-30.52	-	-	0-360	250	H
3	17.268	23.87	PK	41.3	-16.5	0	48.67	-	-	-	-	68.2	-19.53	0-360	250	H
5	9.229	27.56	PK	36.7	-23.4	0	40.86	-	-	-	-	68.2	-27.34	0-360	250	H
2	* 11.512	26.91	PK	38.5	-22.3	0	43.11	-	-	74	-30.89	-	-	0-360	150	V
4	17.265	23.69	PK	41.3	-16.5	0	48.49	-	-	-	-	68.2	-19.71	0-360	250	V
6	9.23	27.98	PK	36.7	-23.4	0	41.28	-	-	-	-	68.2	-26.92	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

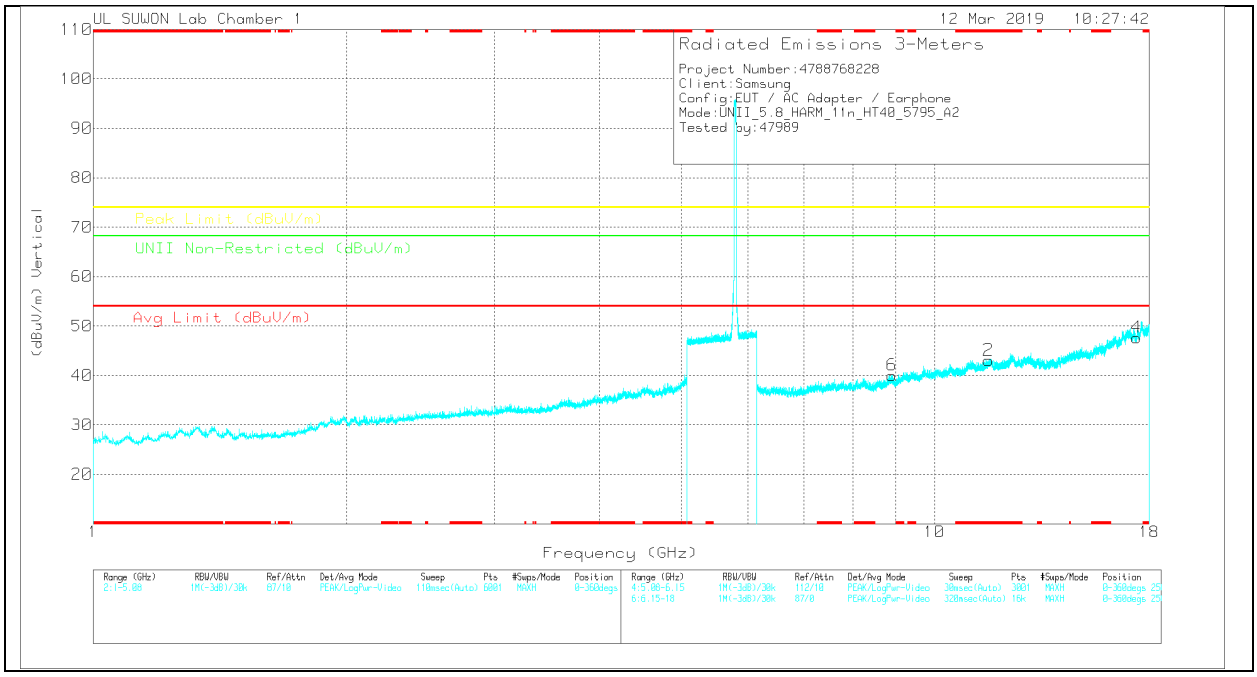
Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL HORIZONTAL



HIGH CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

HIGH CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 11.587	27.92	PK	38.6	-22.5	0	44.02	-	-	74	-29.98	-	-	0-360	250	H
3	17.386	23.93	PK	41.2	-17.2	0	47.93	-	-	-	-	68.2	-20.27	0-360	150	H
5	8.907	27.77	PK	36.6	-24	0	40.37	-	-	-	-	68.2	-27.83	0-360	250	H
2	* 11.592	26.87	PK	38.6	-22.4	0	43.07	-	-	74	-30.93	-	-	0-360	250	V
4	17.385	23.68	PK	41.2	-17.2	0	47.68	-	-	-	-	68.2	-20.52	0-360	150	V
6	8.904	27.34	PK	36.6	-23.9	0	40.04	-	-	-	-	68.2	-28.16	0-360	150	V

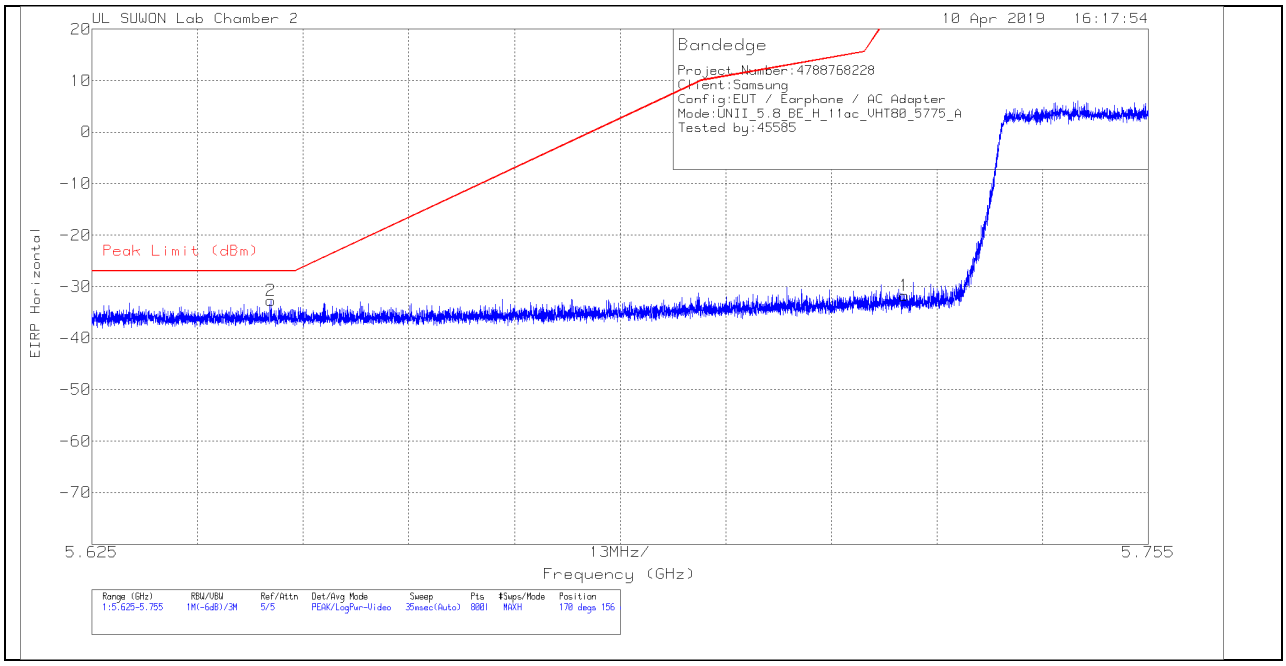
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

11.4.10. TX ABOVE 1GHz 802.11ac VHT80 2Tx CDD MODE IN THE 5.8GHz BAND BANDEDGE (Lower side)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

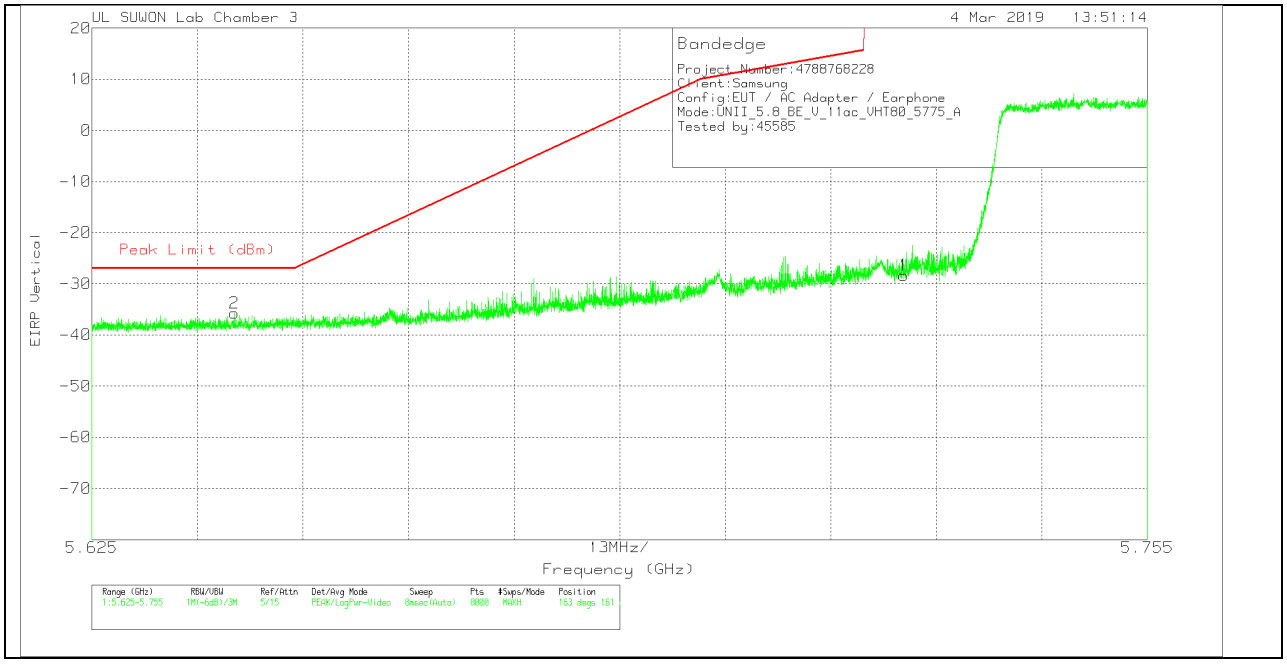
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	170531_3117[00 168724]	Path_2_10dB	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-62.42	Pk	34.5	-15.6	11.8	0	-31.72	26.97	-58.69	170	156	H
2	5.647	-63.22	Pk	34.4	-15.7	11.8	0	-32.72	-27	-5.72	170	156	H

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

Trace Markers

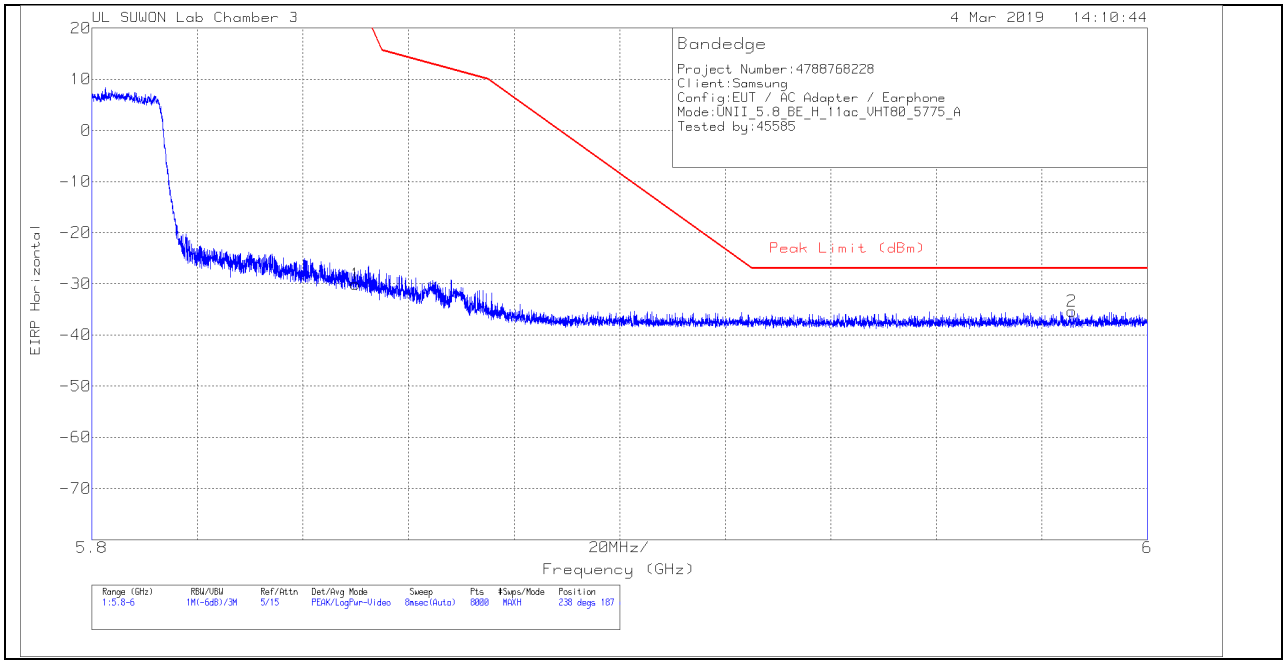
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-57.11	Pk	34.8	-17.9	11.8	0	-28.41	278.95	-307.36	163	161	V
2	5.643	-64.07	Pk	34.7	-18.2	11.8	0	-35.77	-27	-8.77	163	161	V

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

BANDEDGE (Upper side)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

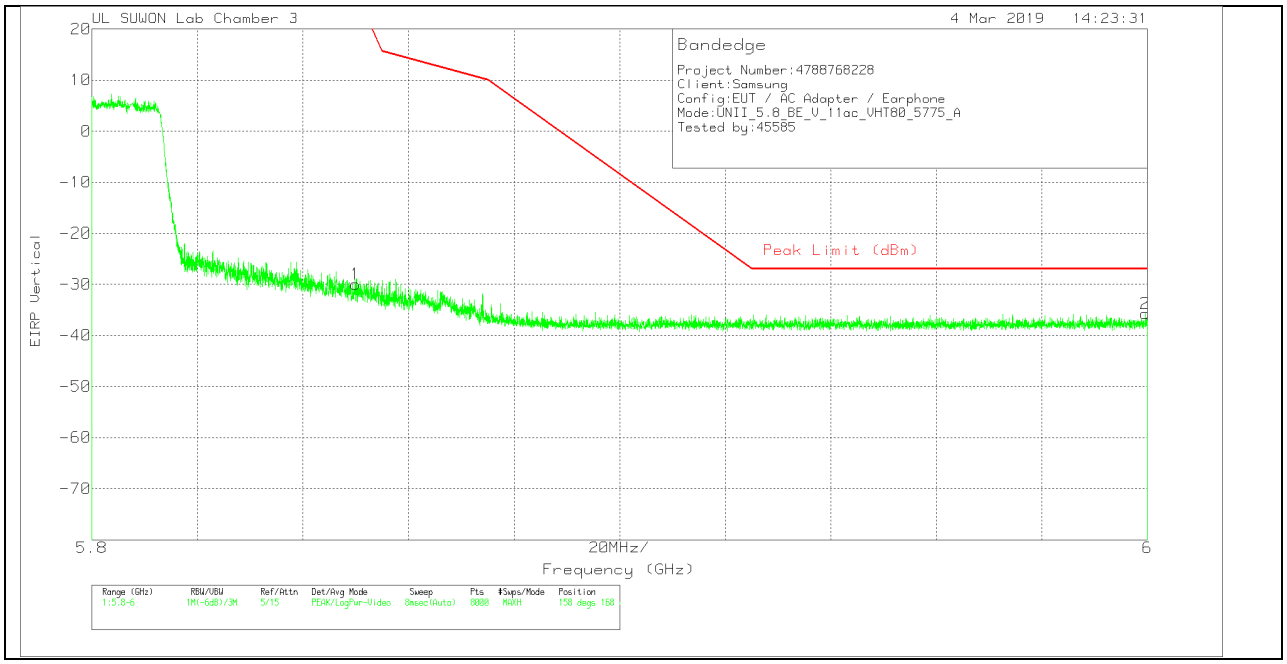
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-59.23	Pk	35	-17.7	11.8	0	-30.13	26.99	-57.12	238	187	H
2	5.986	-64.51	Pk	35.1	-17.7	11.8	0	-35.31	-27	-8.31	238	187	H

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

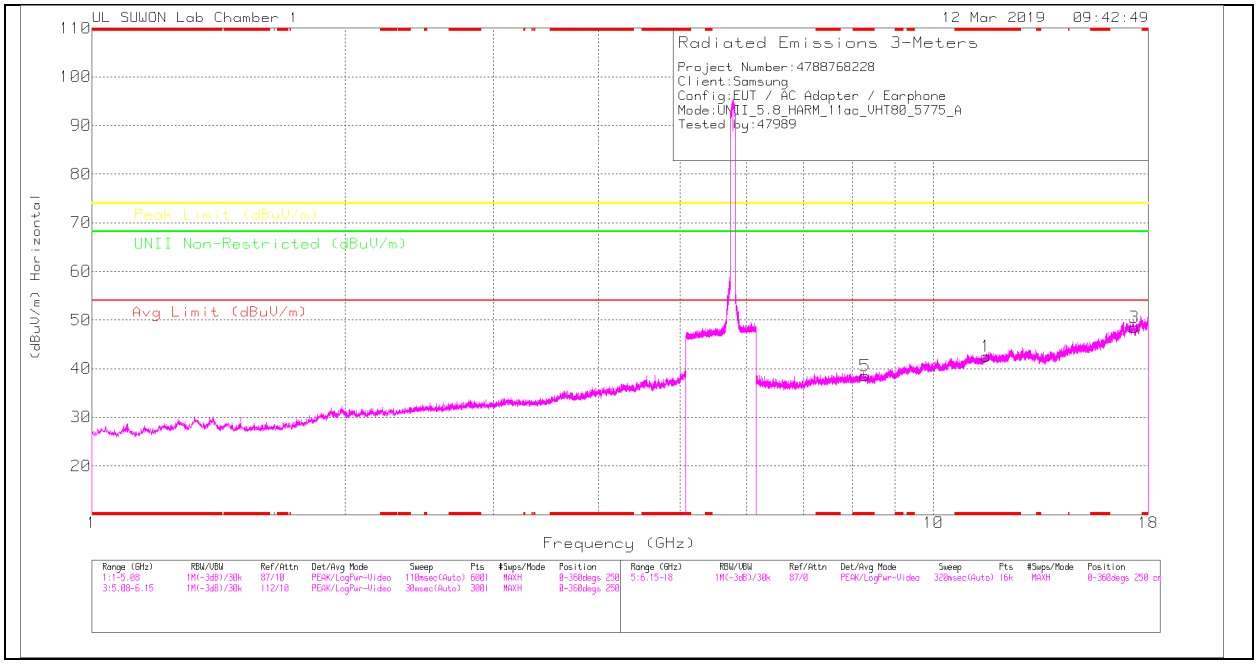
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-59.02	Pk	35	-17.7	11.8	0	-29.92	26.99	-56.91	158	168	V
2	6	-64.99	Pk	35.1	-17.6	11.8	0	-35.69	-27	-8.69	158	168	V

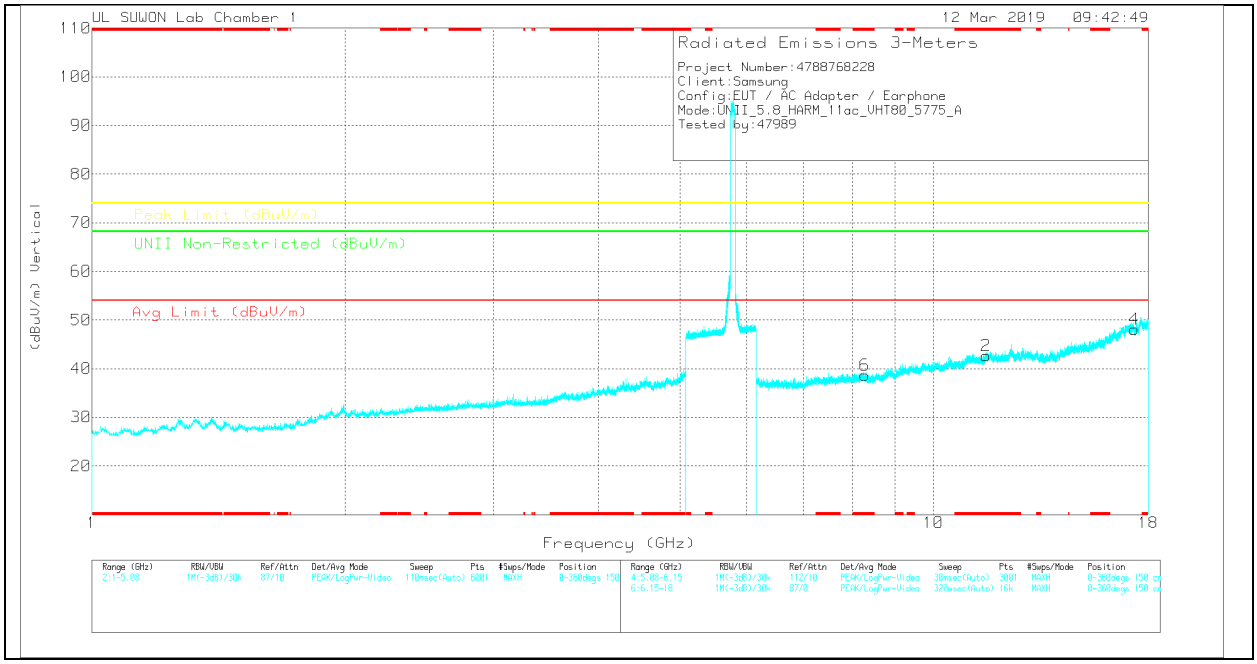
Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 11.549	26.49	PK	38.5	-22.5	0	42.49	-	-	74	-31.51	-	-	0-360	150	H
3	17.323	24.2	PK	41.3	-17	0	48.5	-	-	-	-	68.2	-19.7	0-360	150	H
5	* 8.294	27.41	PK	36.4	-25.3	0	38.51	-	-	74	-35.49	-	-	0-360	250	H
2	* 11.551	26.56	PK	38.6	-22.5	0	42.66	-	-	74	-31.34	-	-	0-360	150	V
4	17.32	23.84	PK	41.3	-17	0	48.14	-	-	-	-	68.2	-20.06	0-360	150	V
6	* 8.288	27.54	PK	36.4	-25.3	0	38.64	-	-	74	-35.36	-	-	0-360	150	V

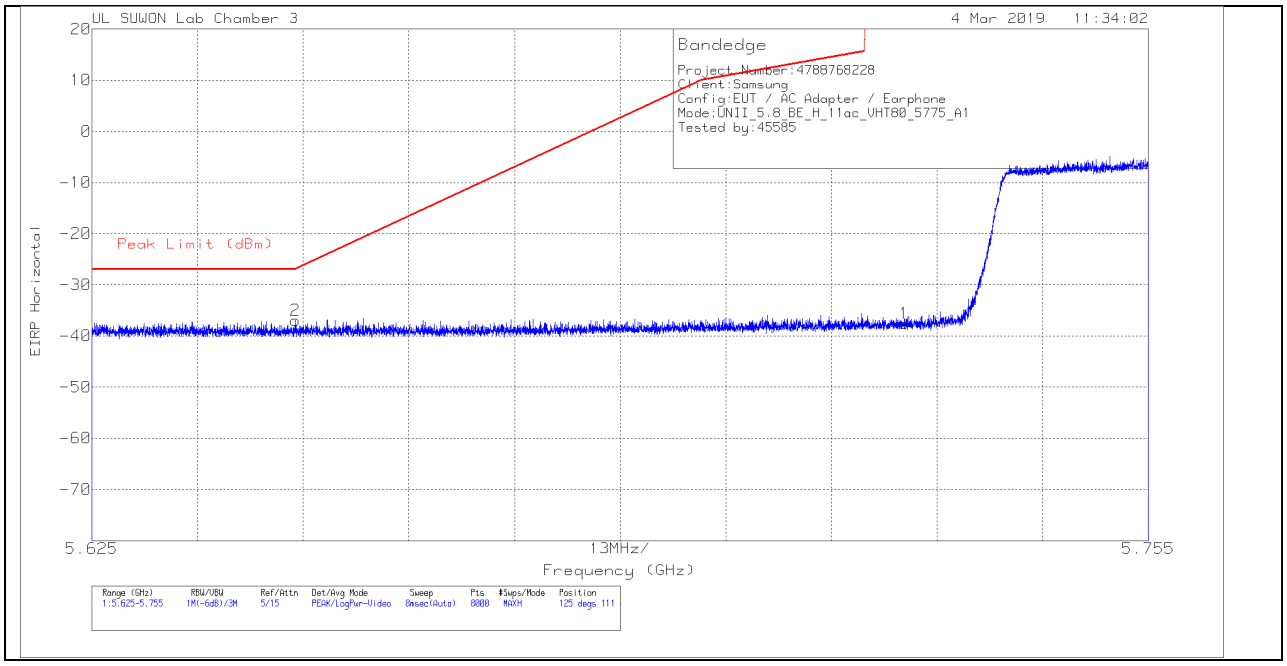
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

11.4.11. TX ABOVE 1GHz 802.11ac VHT80 1Tx ANT1 IN THE 5.8GHz BAND BANDEDGE (Lower side)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

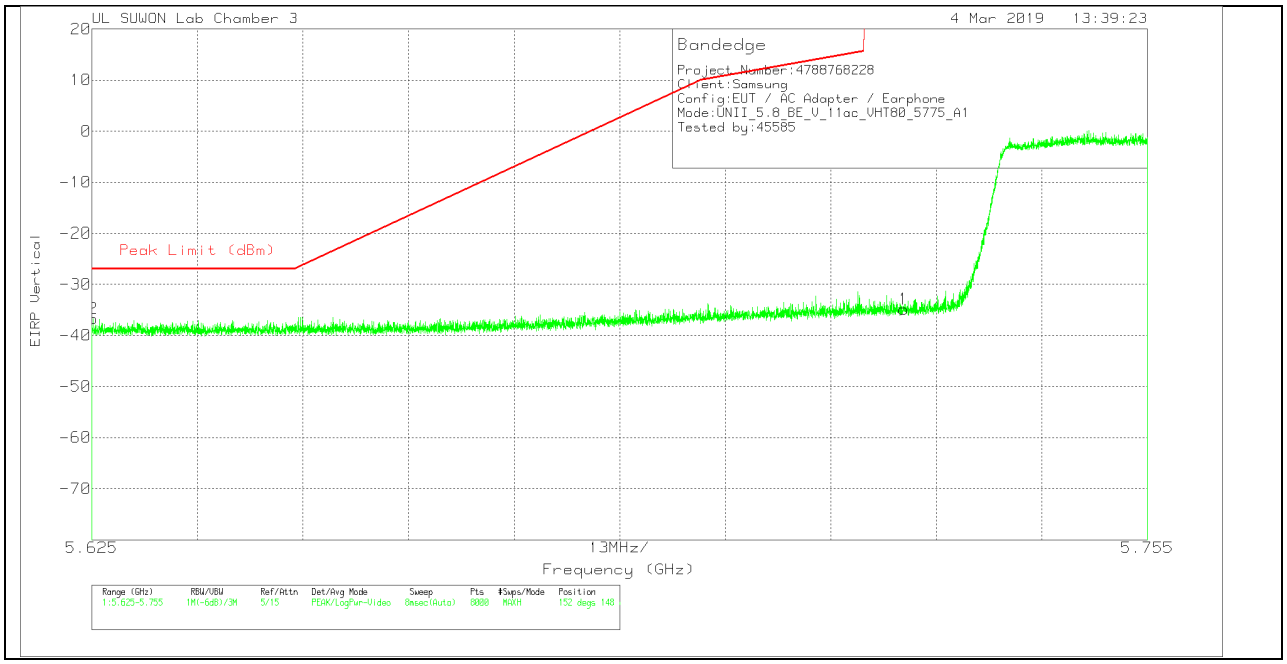
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-66.21	Pk	34.8	-17.9	11.8	0	-37.51	278.95	-316.46	125	111	H
2	5.65	-65.27	Pk	34.7	-18.2	11.8	0	-36.97	-26.97	-10	125	111	H

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

Trace Markers

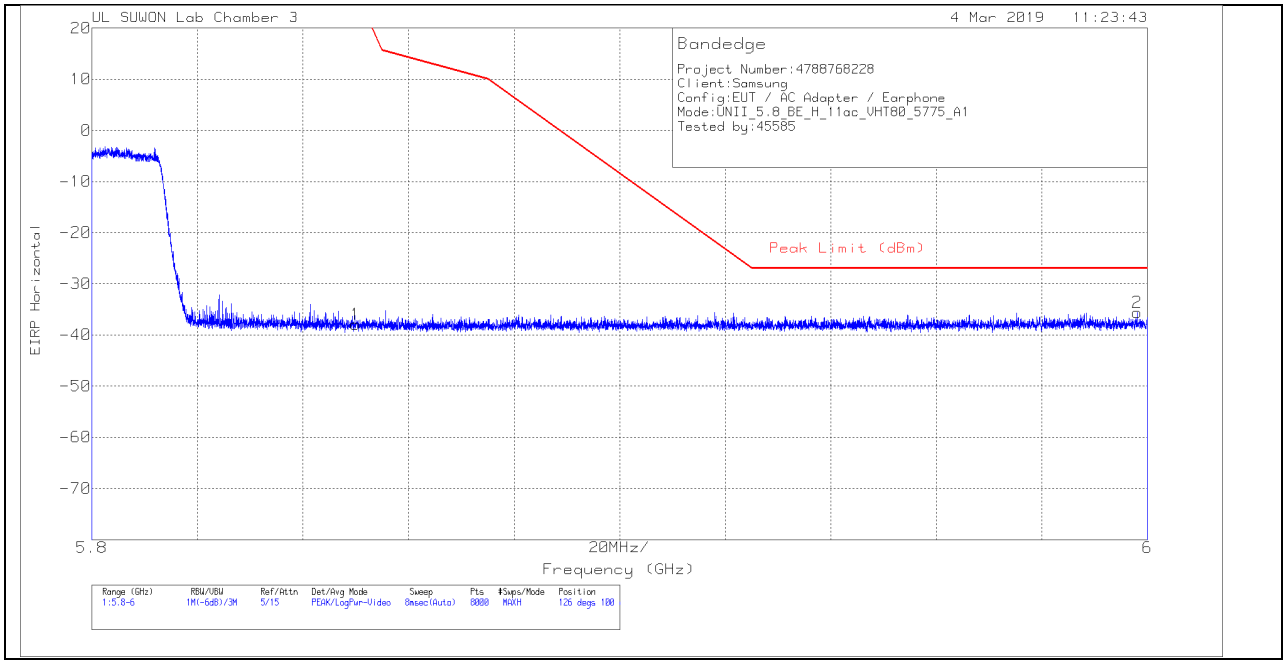
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-63.52	Pk	34.8	-17.9	11.8	0	-34.82	278.95	-313.77	152	148	V
2	5.625	-64.87	Pk	34.7	-18.3	11.8	0	-36.67	-27	-9.67	152	148	V

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

BANDEDGE (Upper side)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

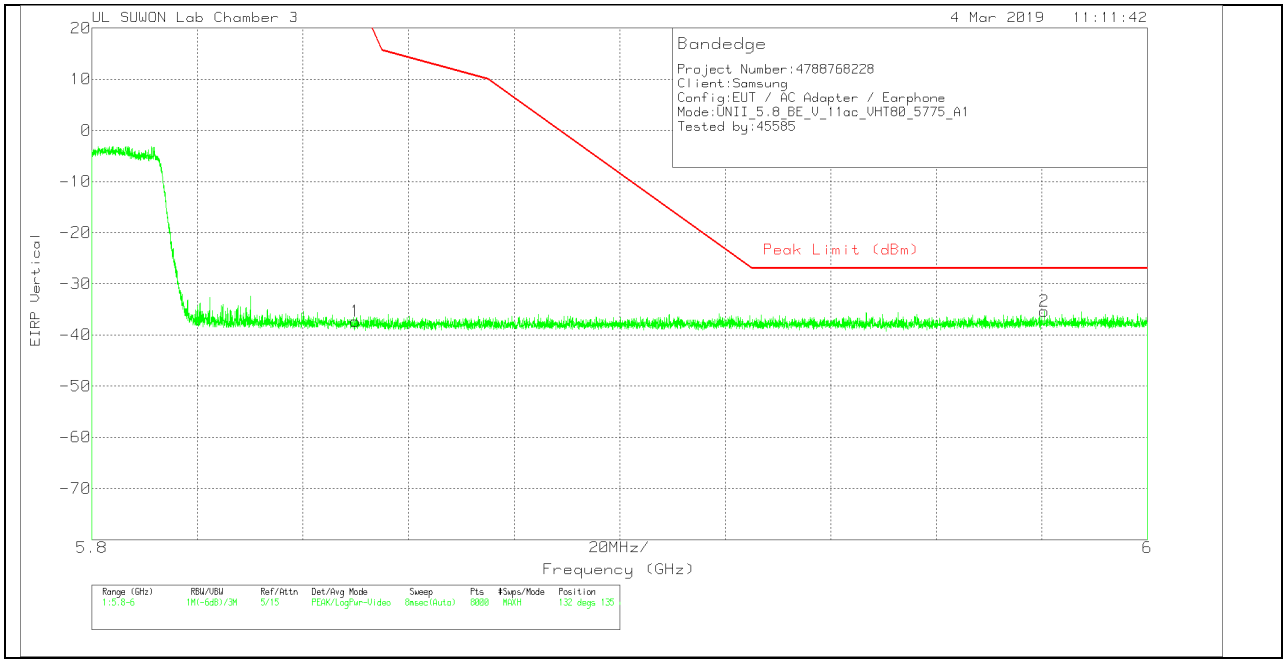
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-66.99	Pk	35	-17.7	11.8	0	-37.89	26.99	-64.88	126	100	H
2	5.998	-64.86	Pk	35.1	-17.6	11.8	0	-35.56	-27	-8.56	126	100	H

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

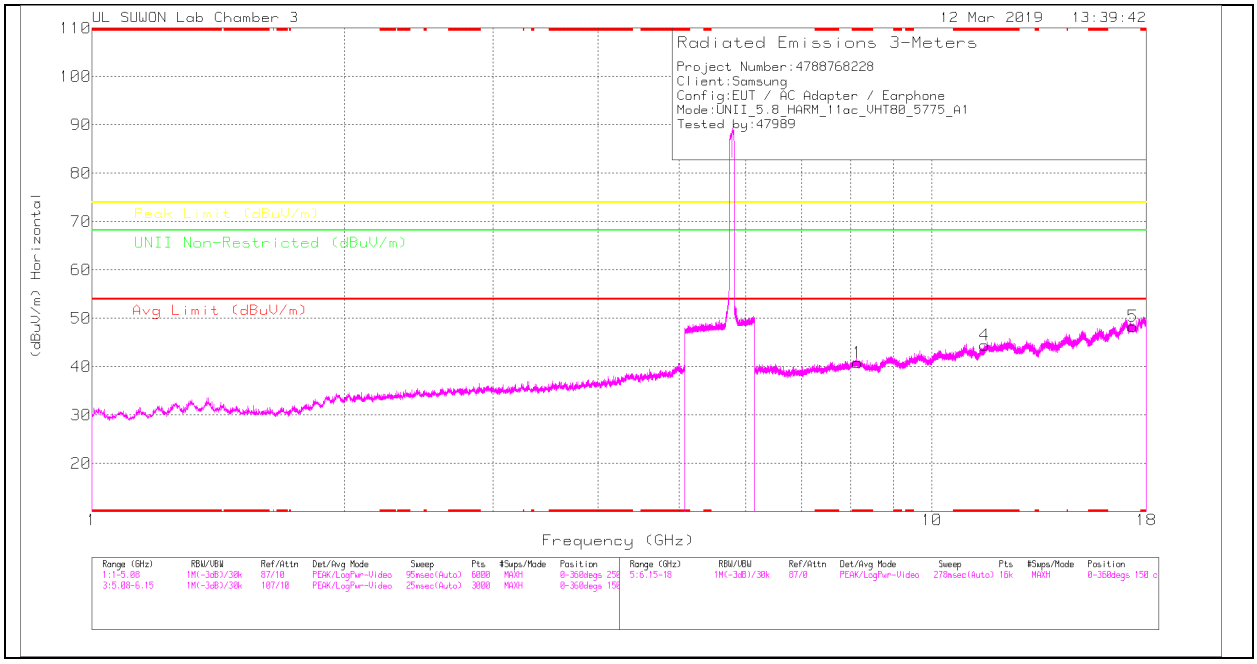
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	DC Corr (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-66.37	Pk	35	-17.7	11.8	0	-37.27	26.99	-64.26	132	135	V
2	5.98	-64.58	Pk	35.1	-17.7	11.8	0	-35.38	-27	-8.38	132	135	V

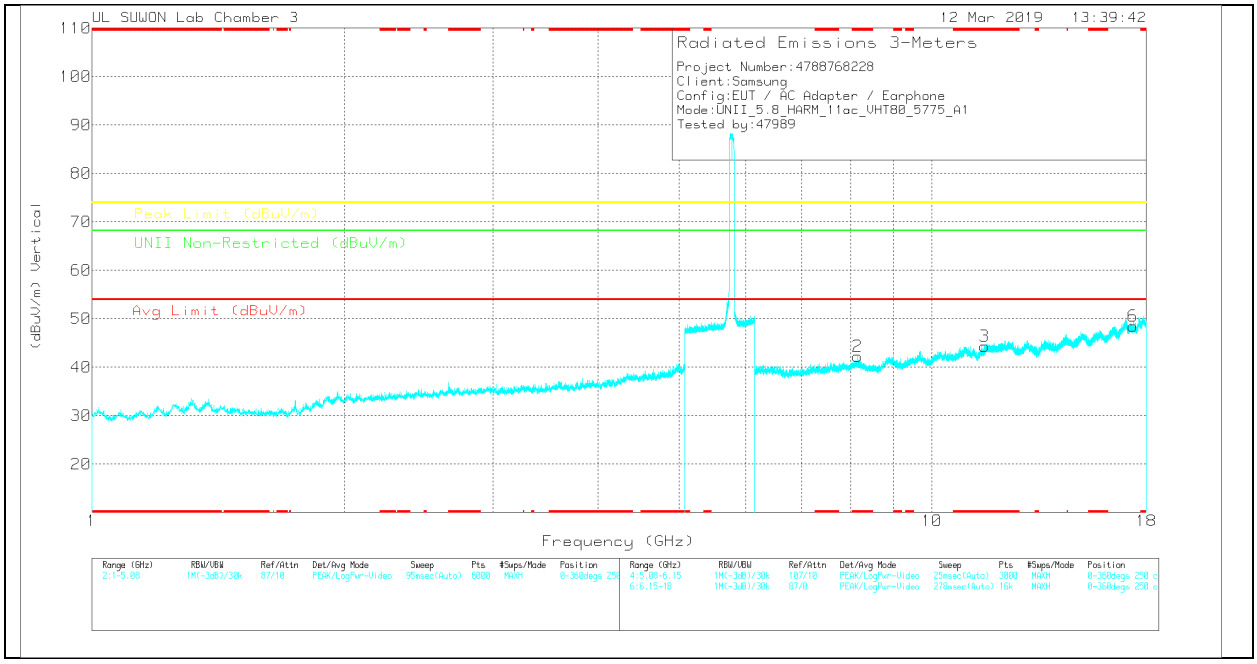
Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00205959	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 8.153	26.34	PK	36.3	-21.8	0	40.84	-	-	74	-33.16	-	-	0-360	250	H
4	* 11.559	25.65	PK	38.6	-19.8	0	44.45	-	-	74	-29.55	-	-	0-360	250	H
5	17.347	22.59	PK	41.2	-15.4	0	48.39	-	-	-	-	68.2	-19.81	0-360	150	H
2	* 8.159	27.67	PK	36.3	-21.7	0	42.27	-	-	74	-31.73	-	-	0-360	250	V
3	* 11.555	25.48	PK	38.6	-19.7	0	44.38	-	-	74	-29.62	-	-	0-360	149	V
6	17.35	22.72	PK	41.2	-15.4	0	48.52	-	-	-	-	68.2	-19.68	0-360	149	V

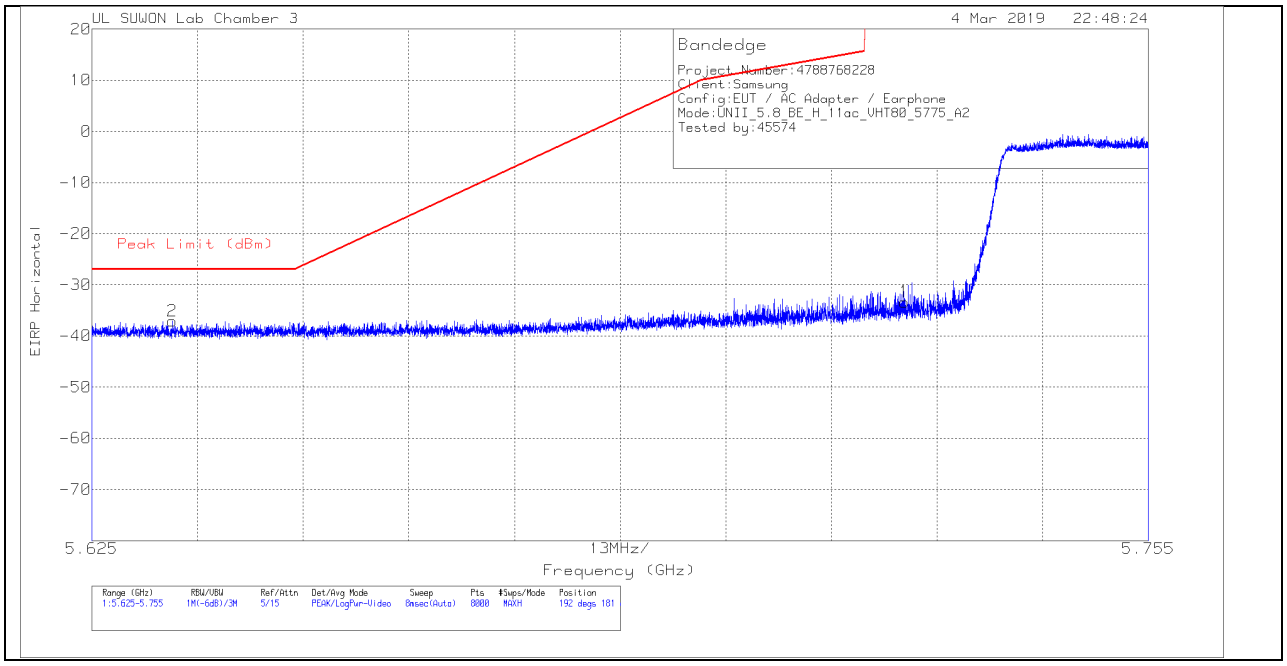
* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

11.4.12. TX ABOVE 1GHz 802.11ac VHT80 1Tx ANT2 IN THE 5.8GHz BAND BANDEDGE (Lower side)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

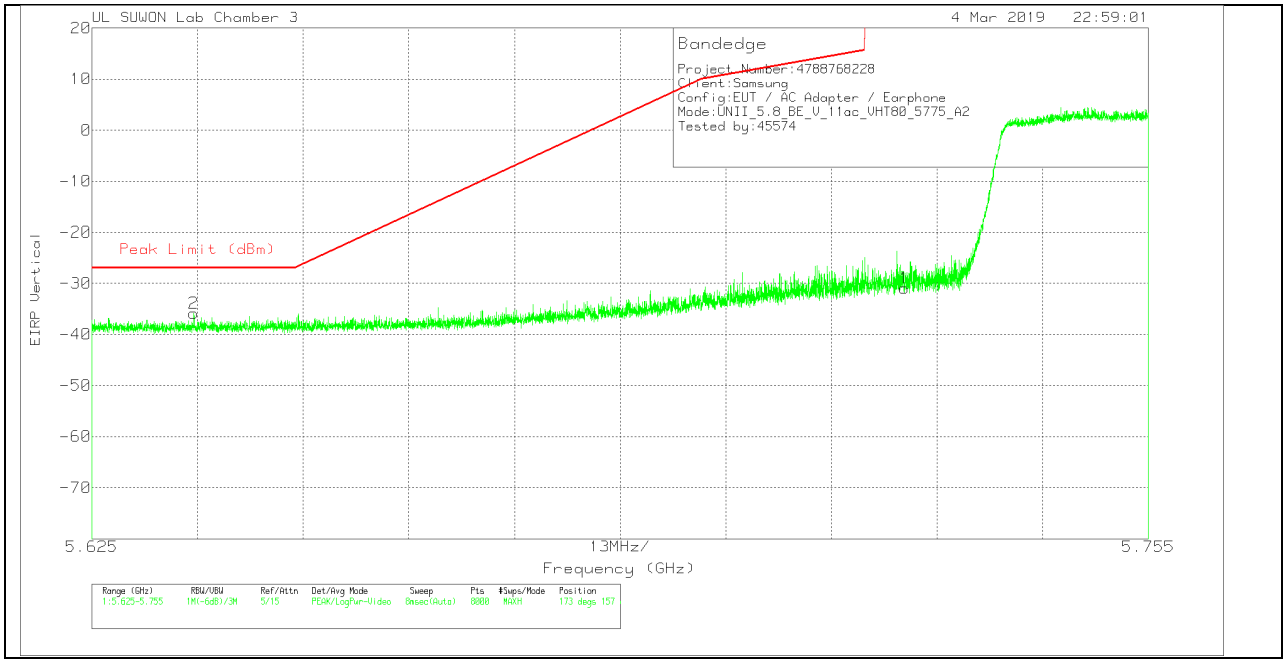
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-62.03	Pk	34.8	-17.9	11.8	-33.33	278.95	-312.28	192	181	H
2	5.635	-65.42	Pk	34.7	-18.2	11.8	-37.12	-27	-10.12	192	181	H

Pk - Peak detector

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

Trace Markers

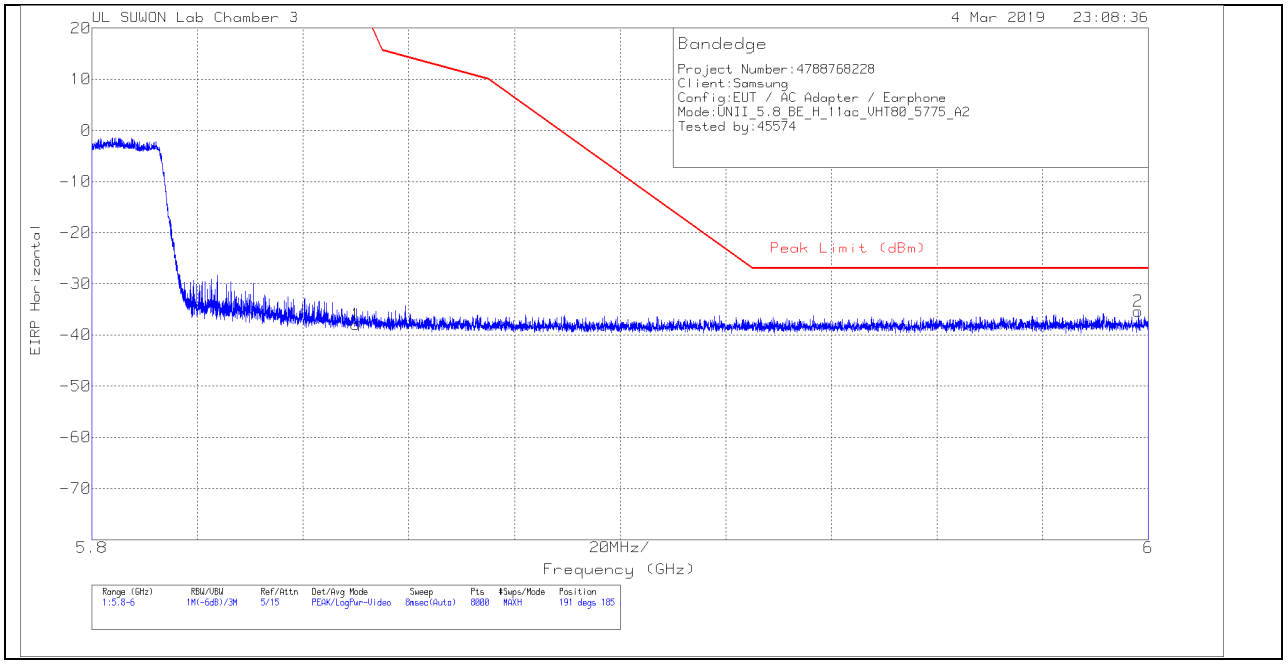
Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.725	-59.66	Pk	34.8	-17.9	11.8	-30.96	278.95	-309.91	173	157	V
2	5.638	-64.09	Pk	34.7	-18.2	11.8	-35.79	-27	-8.79	173	157	V

Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

BANDEDGE (Upper side)

HORIZONTAL PEAK PLOT



HORIZONTAL DATA

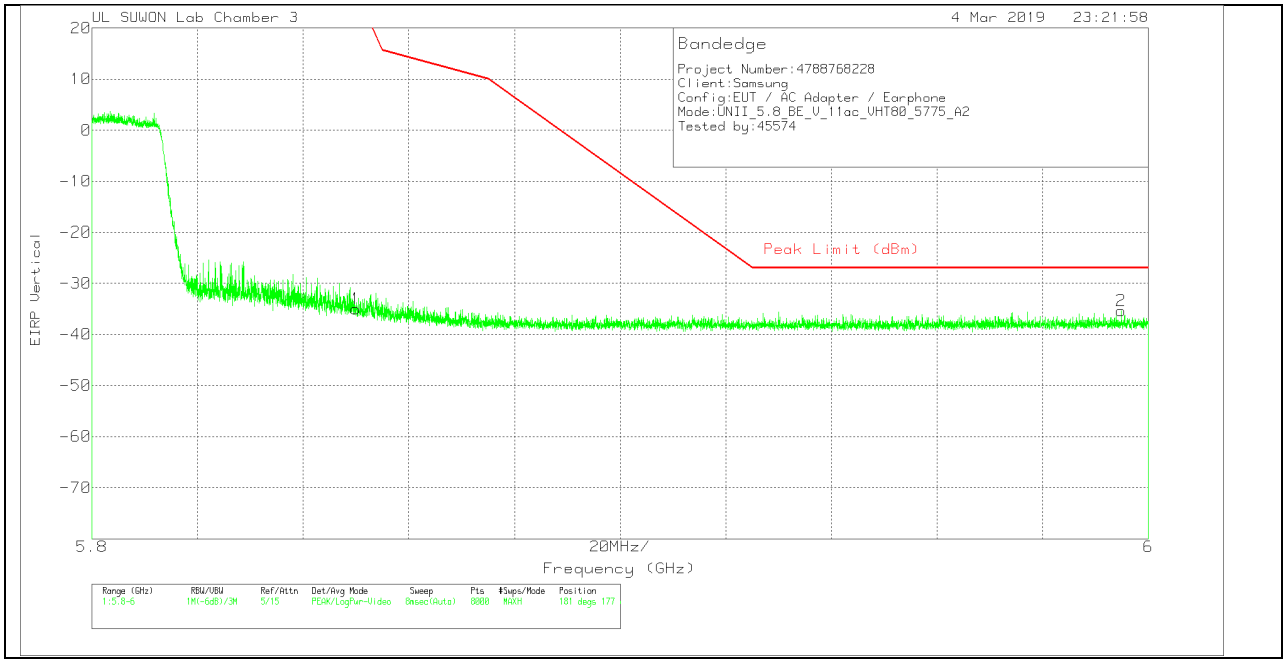
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-67.08	Pk	35	-17.7	11.8	-37.98	26.99	-64.97	191	185	H
2	5.998	-64.63	Pk	35.1	-17.6	11.8	-35.33	-27	-8.33	191	185	H

Pk - Peak detector

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

VERTICAL PEAK PLOT



VERTICAL DATA

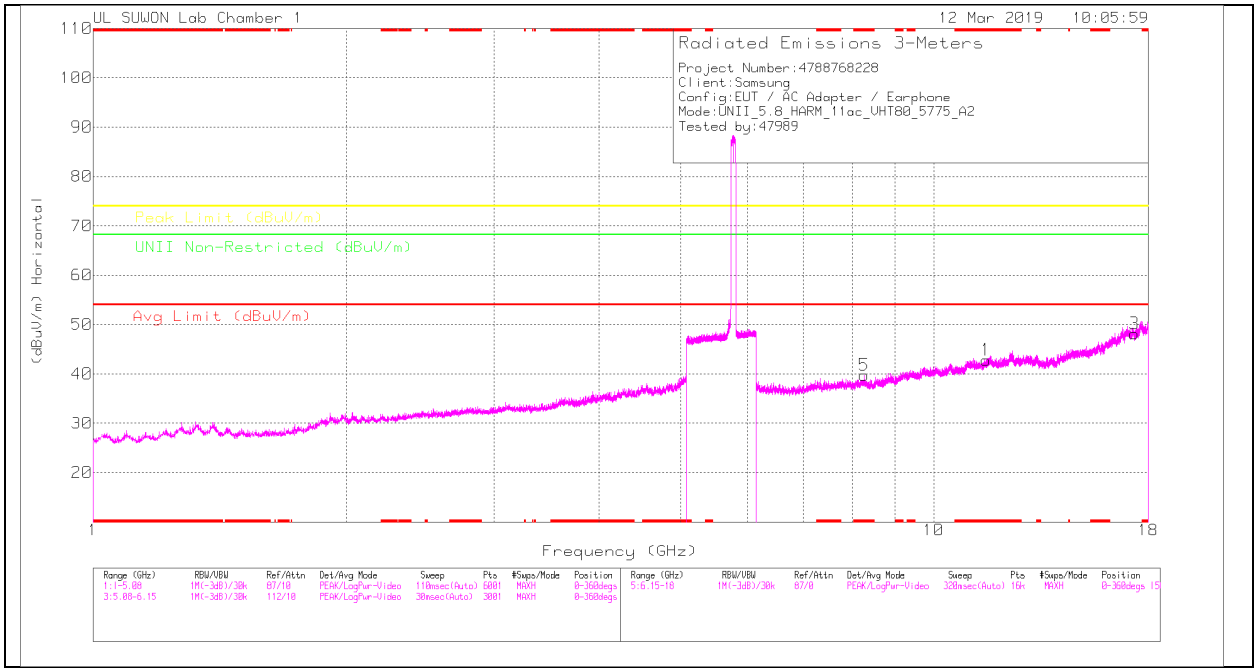
Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBm)	Det	3117_00205959	10dB[dB]	Conversion Factor (dB)	Corrected Reading EIRP	Peak Limit (dBm)	PK Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	5.85	-64.12	Pk	35	-17.7	11.8	-35.02	26.99	-62.01	181	177	V
2	5.995	-64.51	Pk	35.1	-17.7	11.8	-35.31	-27	-8.31	181	177	V

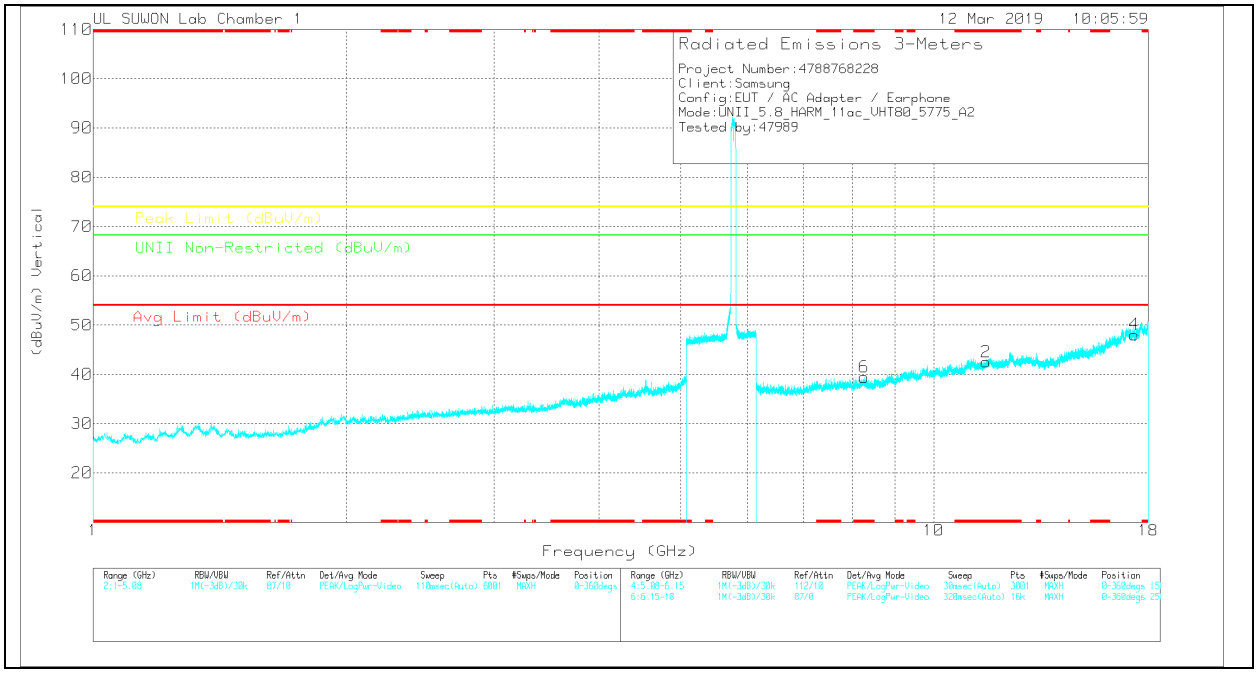
Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL HORIZONTAL



MID CHANNEL VERTICAL



Note: Emission was scanned up to 40GHz; No emissions were detected above the noise floor which was at least 20dB below the specification limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MID CHANNEL DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 11.544	26.71	PK	38.5	-22.4	0	42.81	-	-	74	-31.19	-	-	0-360	250	H
3	17.324	23.95	PK	41.3	-17.1	0	48.15	-	-	-	-	68.2	-20.05	0-360	250	H
5	* 8.262	28.64	PK	36.4	-25.3	0	39.74	-	-	74	-34.26	-	-	0-360	250	H
2	* 11.55	26.43	PK	38.6	-22.5	0	42.53	-	-	74	-31.47	-	-	0-360	150	V
4	17.328	24.05	PK	41.2	-17.2	0	48.05	-	-	-	-	68.2	-20.15	0-360	250	V
6	* 8.264	28.32	PK	36.4	-25.3	0	39.42	-	-	74	-34.58	-	-	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Note: Only peak measurement was performed. Because peak measurement result of unwanted emission is less than average limit (54dBuV/m).

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

11.5. Spurious Emissions for Simultaneous Transmission

Simultaneous TX Condition

Frequency	Supported	Comments
2.4 GHz Antenna 1 + 5 GHz Antenna 2	No	
2.4 GHz Antenna 2 + 5 GHz Antenna 1	No	
2.4 GHz Antenna 1 + 5 GHz Antenna 1	No	
2.4 GHz Antenna 2 + 5 GHz Antenna 2	No	
2.4 GHz Antenna 1 + 5 GHz MIMO	Yes	802.11b Tx + 5GHZ MIMO
2.4 GHz Antenna 2 + 5 GHz MIMO	Yes	802.11b Tx + 5GHZ MIMO
2.4 GHz MIMO + 5 GHz Antenna 1	No	
2.4 GHz MIMO + 5 GHz Antenna 2	No	
2.4 GHz MIMO + 5 GHz MIMO	Yes	RSDB MIMO
2.4 GHz Bluetooth Antenna 2 + 5 GHz MIMO	Yes	

NOTE
Target power of 802.11a and 802.11n HT20 mode in each UNII band are not same therefore, the lowest margin condition among the channels and modes were selected for test like below 4 cases.

11.5.1. Worst test case condition

	ANTENNA 1 - 2.4GHz	MIMO - 5GHz
Mode	802.11 b mode	802.11 a mode
Channel	6	165
Frequency	2437 MHz	5825 MHz
Data Rate	1 Mbps	6 Mbps

	ANTENNA 2 - 2.4GHz	MIMO - 5GHz
Mode	802.11 b mode	802.11 a mode
Channel	11	165
Frequency	2462 MHz	5825 MHz
Data Rate	1 Mbps	6 Mbps

	MIMO - 2.4GHz	MIMO - 5GHz
Mode	802.11 n mode	802.11 a mode
Channel	3	165
Frequency	2422 MHz	5825 MHz
Data Rate	MCS0	6 Mbps

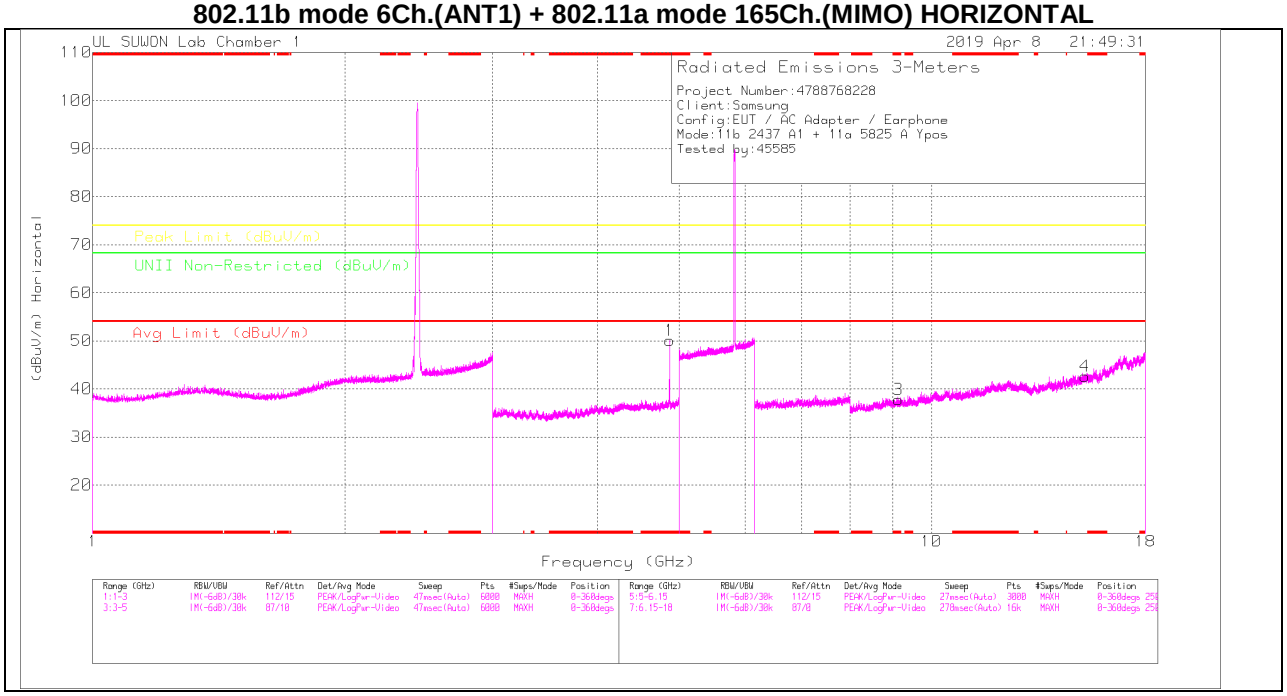
	ANTENNA 2 - 2.4GHz	MIMO - 5GHz
Mode	BT GFSK	802.11 a mode
Channel	39	165
Frequency	2441 MHz	5825 MHz
Data Rate	1 Mbps	6 Mbps

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

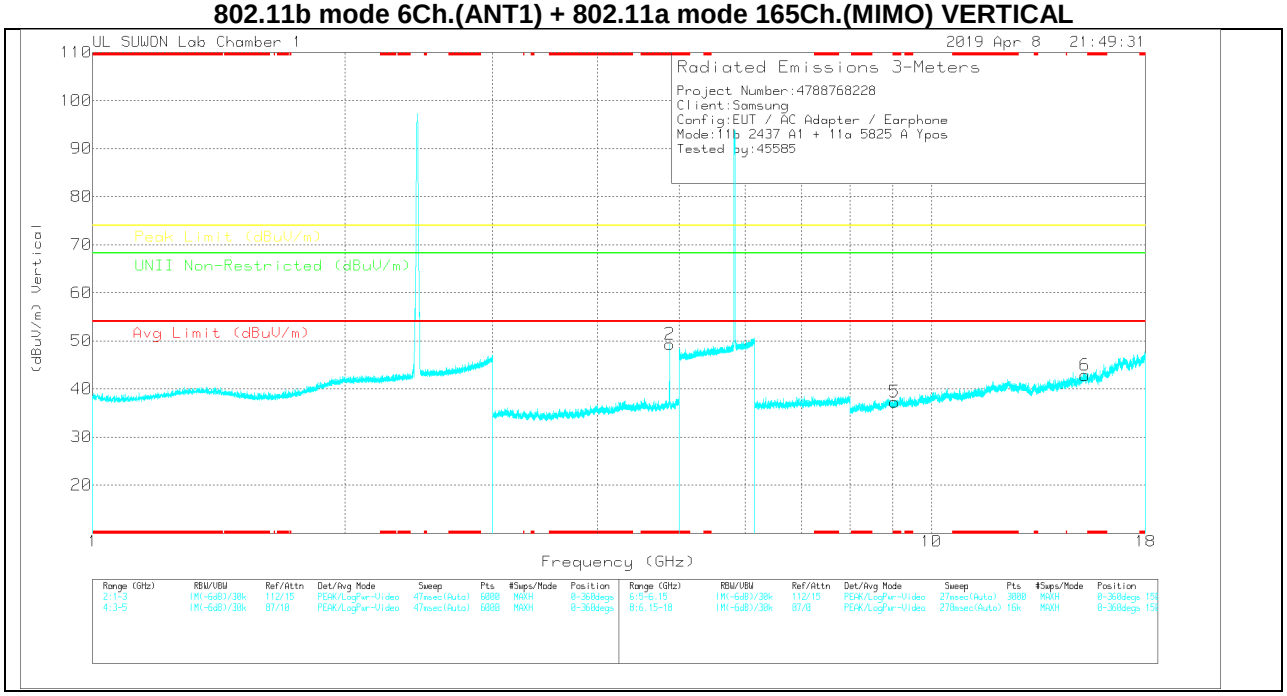
RESULTS

11.5.1.1. Spurious emission for Simultaneous Transmission CASE1

802.11b mode 6Ch.(ANT1) + 802.11a mode 165Ch.(MIMO) HORIZONTAL



802.11b mode 6Ch.(ANT1) + 802.11a mode 165Ch.(MIMO) VERTICAL



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

802.11b mode 6Ch.(ANT1) + 802.11a mode 165Ch.(MIMO) DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	5GHz_LP[dB]	DTS_Notch	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.87398	45.58	PK	34.2	-30.1	.4	0	50.08	-	-	74	-23.92	-	-	0-360	149	H
2	* 4.87431	44.82	PK	34.2	-30.1	.4	0	49.32	-	-	74	-24.68	-	-	0-360	249	V

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 9.1312	25	PK	36.6	-23.8	0	37.8	-	-	74	-36.2	-	-	0-360	250	H
4	15.24322	24.2	PK	40.2	-21.8	0	42.6	-	-	-	-	68.2	-25.6	0-360	150	H
5	* 9.03862	25.71	PK	36.6	-25	0	37.31	-	-	74	-36.69	-	-	0-360	250	V
6	15.241	24.53	PK	40.2	-21.9	0	42.83	-	-	-	-	68.2	-25.37	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

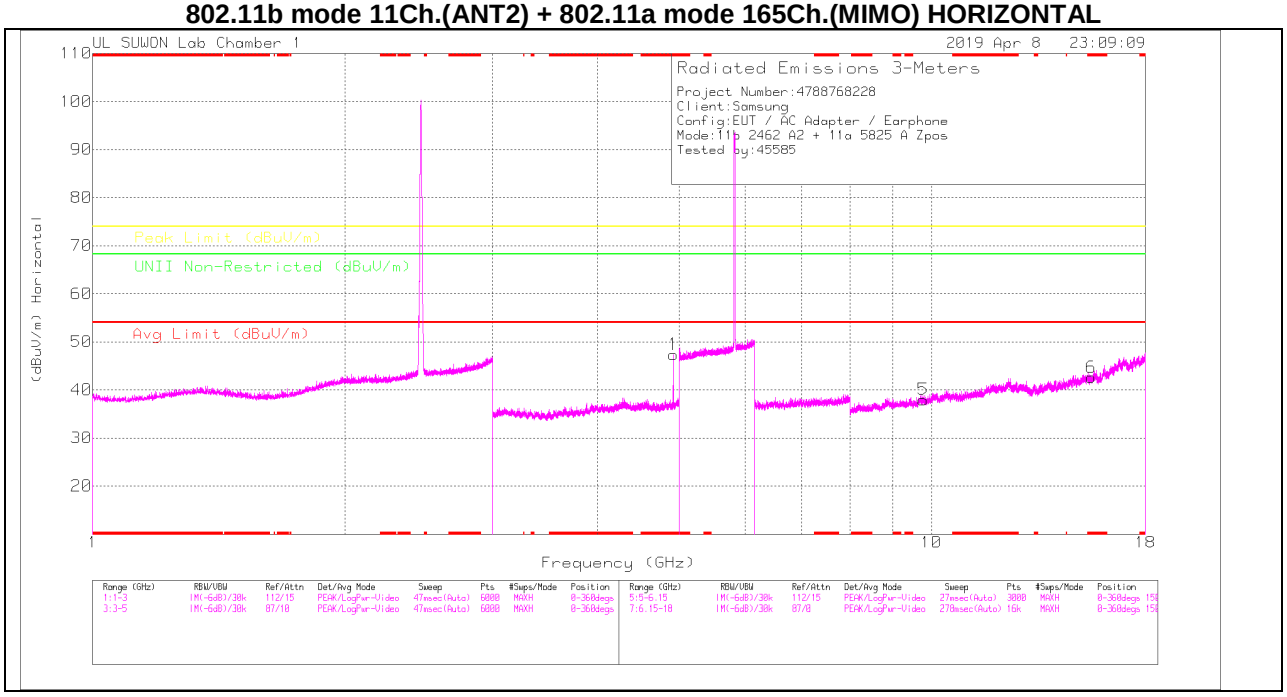
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	5GHz_LP[dB]	DTS_Notch	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.87416	50	PK2	34.2	-30.1	.4	0	54.5	-	-	74	-19.5	-	-	248	150	H
* 4.874	45.11	MAv1	34.2	-30.1	.4	0	49.61	54	-4.39	-	-	-	-	248	150	H
* 4.8742	48.9	PK2	34.2	-30.1	.4	0	53.4	-	-	74	-20.6	-	-	270	268	V
* 4.874	43.97	MAv1	34.2	-30.1	.4	0	48.47	54	-5.53	-	-	-	-	270	268	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

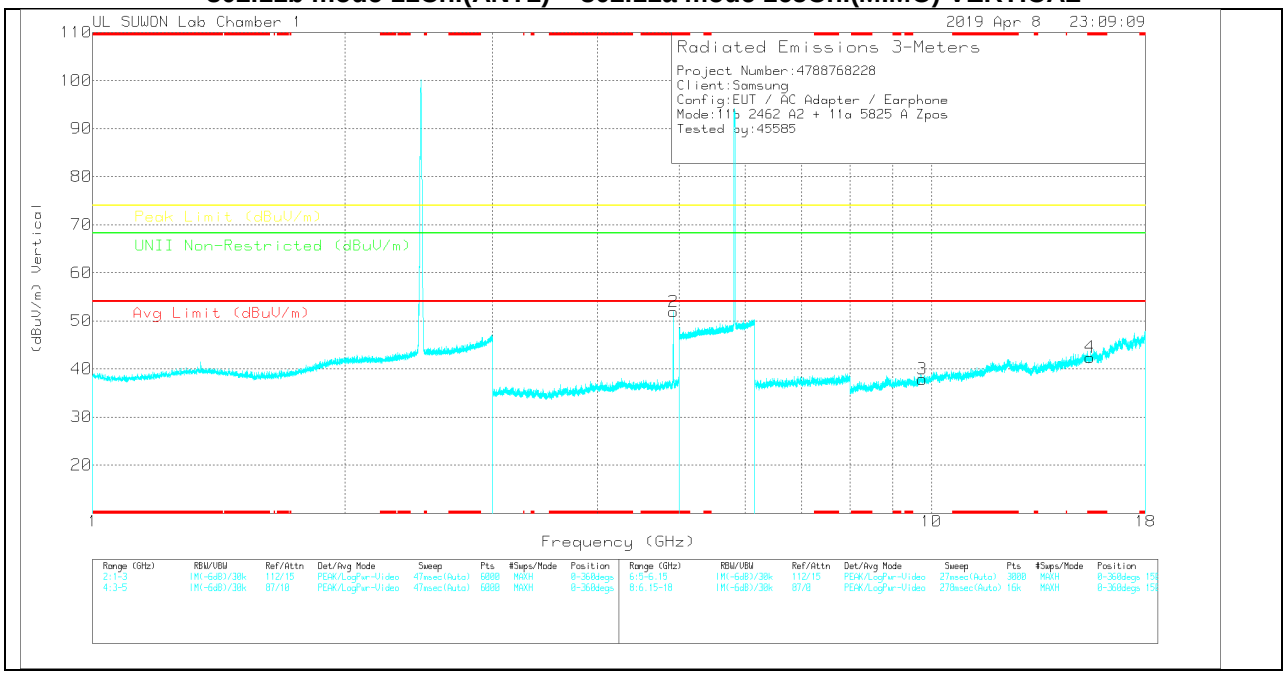
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

11.5.1.2. Spurious emission for Simultaneous Transmission CASE2

802.11b mode 11Ch.(ANT2) + 802.11a mode 165Ch.(MIMO) HORIZONTAL



802.11b mode 11Ch.(ANT2) + 802.11a mode 165Ch.(MIMO) VERTICAL



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

802.11b mode 11Ch.(ANT2) + 802.11a mode 165Ch.(MIMO) DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	5GHz_LP[dB]	DTS_Notch	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.92399	43.18	PK	34.2	-30.4	.4	0	47.38	-	-	74	-26.62	-	-	0-360	250	H
2	* 4.92399	47.69	PK	34.2	-30.4	.4	0	51.89	-	-	74	-22.11	-	-	0-360	150	V

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
5	9.77633	23.78	PK	37.3	-23.1	0	37.98	-	-	-	-	68.2	-30.22	0-360	150	H
6	* 15.50245	23.09	PK	40.1	-20.6	0	42.59	-	-	74	-31.41	-	-	0-360	150	H
3	9.75411	23.55	PK	37.2	-22.9	0	37.85	-	-	-	-	68.2	-30.35	0-360	250	V
4	* 15.45135	23.11	PK	40.1	-20.8	0	42.41	-	-	74	-31.59	-	-	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

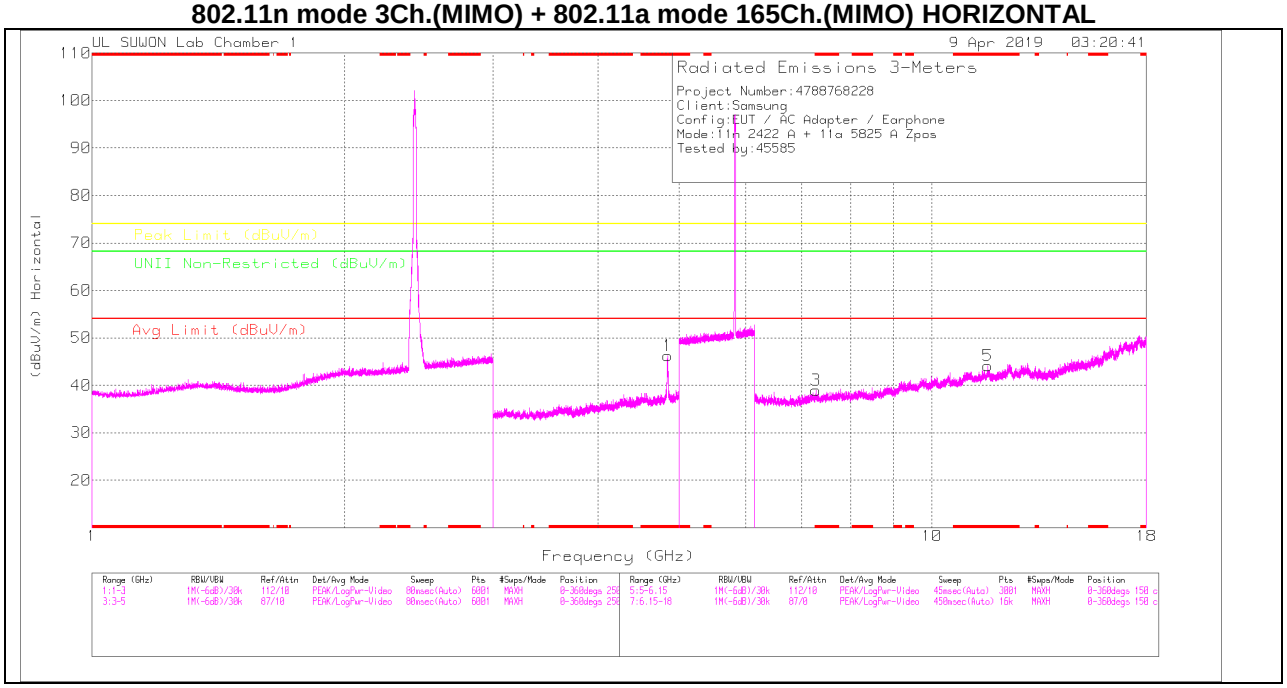
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	5GHz_LP[dB]	DTS_Notch	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.92419	49.5	PK2	34.2	-30.4	.4	0	53.7	-	-	74	-20.3	-	-	226	383	H
* 4.924	44.69	MAv1	34.2	-30.4	.4	0	48.89	54	-5.11	-	-	-	-	226	383	H
* 4.92403	50.88	PK2	34.2	-30.4	.4	0	55.08	-	-	74	-18.92	-	-	115	180	V
* 4.924	46.13	MAv1	34.2	-30.4	.4	0	50.33	54	-3.67	-	-	-	-	115	180	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

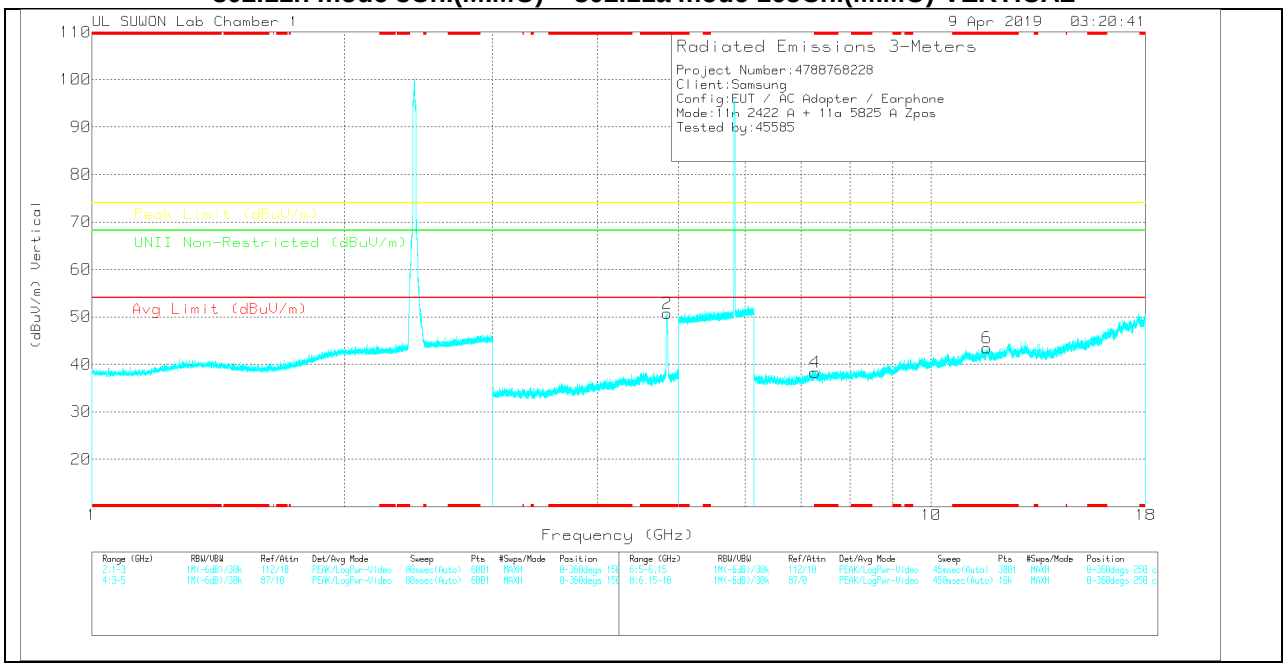
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

11.5.1.3. Spurious emission for Simultaneous Transmission CASE3

802.11n mode 3Ch.(MIMO) + 802.11a mode 165Ch.(MIMO) HORIZONTAL



802.11n mode 3Ch.(MIMO) + 802.11a mode 165Ch.(MIMO) VERTICAL



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

802.11n mode 3Ch.(MIMO) + 802.11a mode 165Ch.(MIMO) DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	5GHz_LP[dB]	DTS_Notch	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.844	41.69	PK	34.2	-30.1	.4	0	46.19	-	-	74	-27.81	-	-	0-360	150	H
2	* 4.844	46.27	PK	34.2	-30.1	.4	0	50.77	-	-	74	-23.23	-	-	0-360	250	V

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 7.273	30.12	PK	35.8	-26.9	0	39.02	-	-	74	-34.98	-	-	0-360	250	H
5	* 11.656	27.03	PK	38.7	-21.6	0	44.13	-	-	74	-29.87	-	-	0-360	250	H
4	* 7.273	29.43	PK	35.8	-26.9	0	38.33	-	-	74	-35.67	-	-	0-360	250	V
6	* 11.651	26.35	PK	38.7	-21.6	0	43.45	-	-	74	-30.55	-	-	0-360	150	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

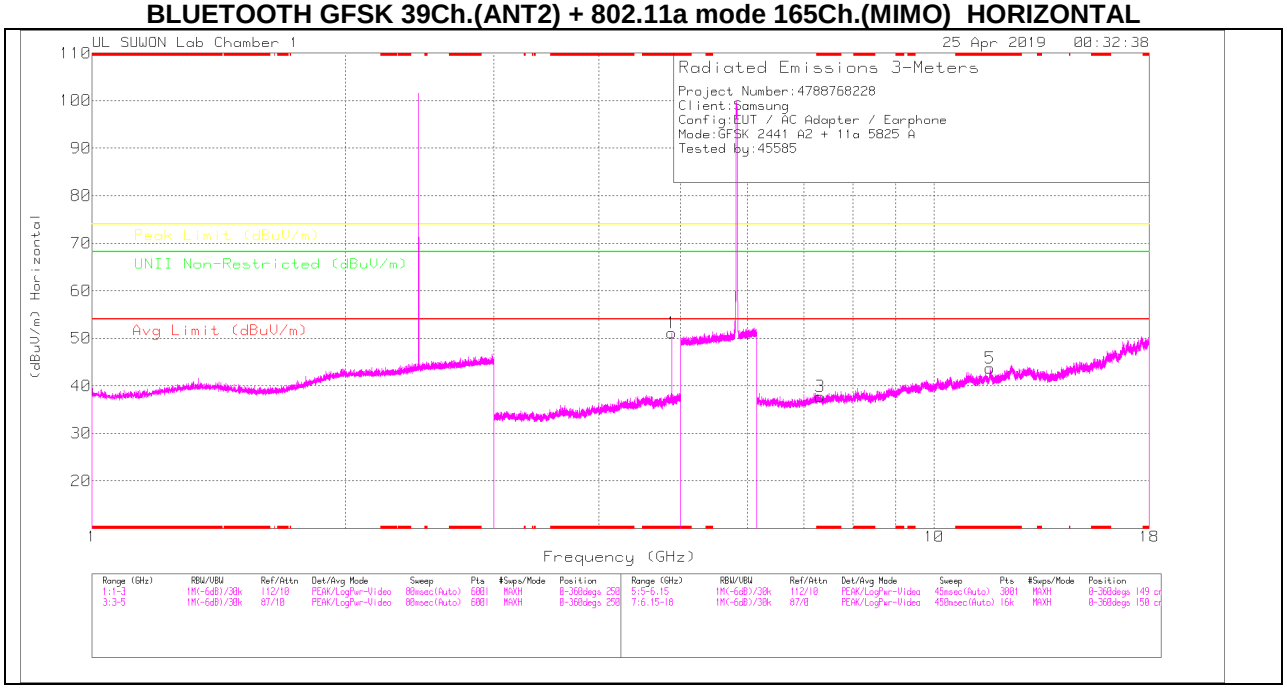
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	5GHz_LP[dB]	DTS_Notch	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.84	52.59	PK2	34.2	-30.1	.4	0	57.09	-	-	74	-16.91	-	-	343	127	H
* 4.842	38.92	MAv1	34.2	-30.1	.4	.09	43.51	54	-10.49	-	-	-	-	343	127	H
* 4.844	56.58	PK2	34.2	-30.1	.4	0	61.08	-	-	74	-12.92	-	-	163	156	V
* 4.844	43.7	MAv1	34.2	-30.1	.4	.09	48.29	54	-5.71	-	-	-	-	163	156	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK2 - KDB558074 Method: Maximum Peak
MAv1 - KDB558074 Option 1 Maximum RMS Average

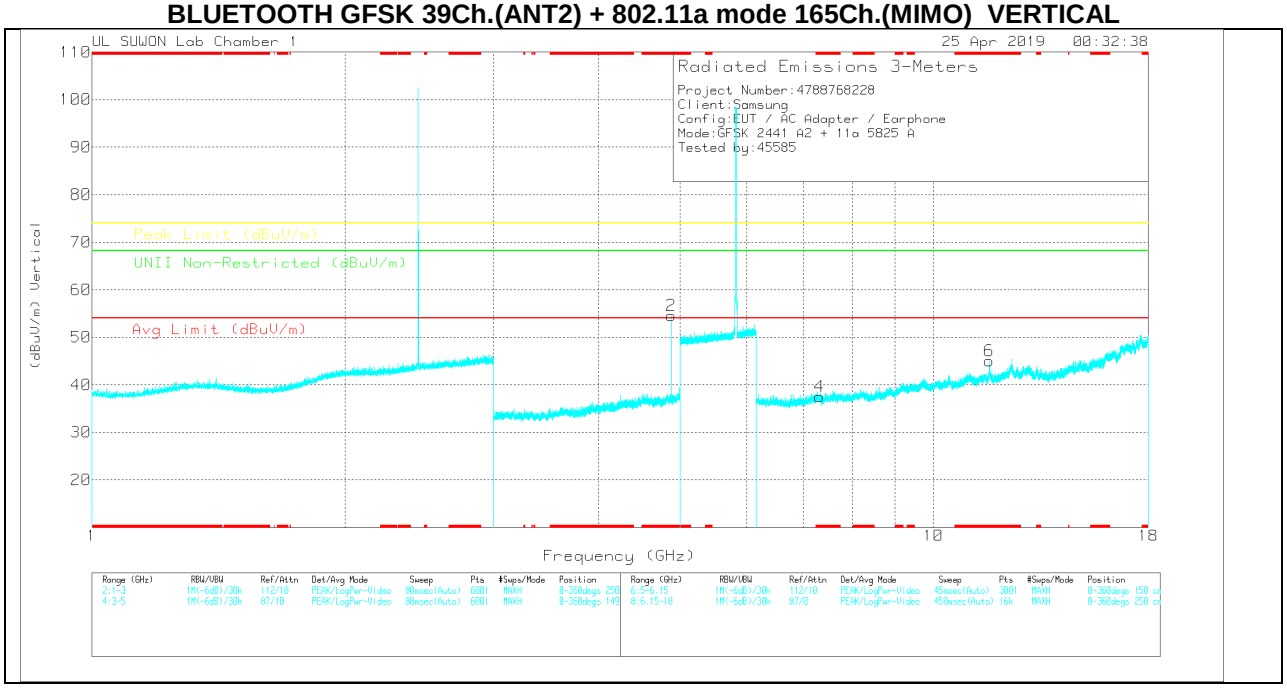
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

11.5.1.4. Spurious emission for Simultaneous Transmission CASE4

BLUETOOTH GFSK 39Ch.(ANT2) + 802.11a mode 165Ch.(MIMO) HORIZONTAL



BLUETOOTH GFSK 39Ch.(ANT2) + 802.11a mode 165Ch.(MIMO) VERTICAL



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

BLUETOOTH GFSK 39Ch.(ANT2) + 802.11a mode 165Ch.(MIMO) DATA

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	5GHz_LP[dB]	DTS_Notch	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	* 4.882	46.7	PK	34.2	-30.2	.4	0	51.1	-	-	74	-22.9	-	-	0-360	250	H
2	* 4.882	50.17	PK	34.2	-30.2	.4	0	54.57	-	-	74	-19.43	-	-	0-360	149	V

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	6GHz_HP[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
3	* 7.325	29.03	PK	35.8	-27.1	0	37.73	-	-	74	-36.27	-	-	0-360	250	H
5	* 11.649	26.76	PK	38.7	-21.7	0	43.76	-	-	74	-30.24	-	-	0-360	150	H
4	* 7.321	28.87	PK	35.8	-27.1	0	37.57	-	-	74	-36.43	-	-	0-360	250	V
6	* 11.65	28.08	PK	38.7	-21.7	0	45.08	-	-	74	-28.92	-	-	0-360	250	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PK – Peak Detector

Radiated Emissions

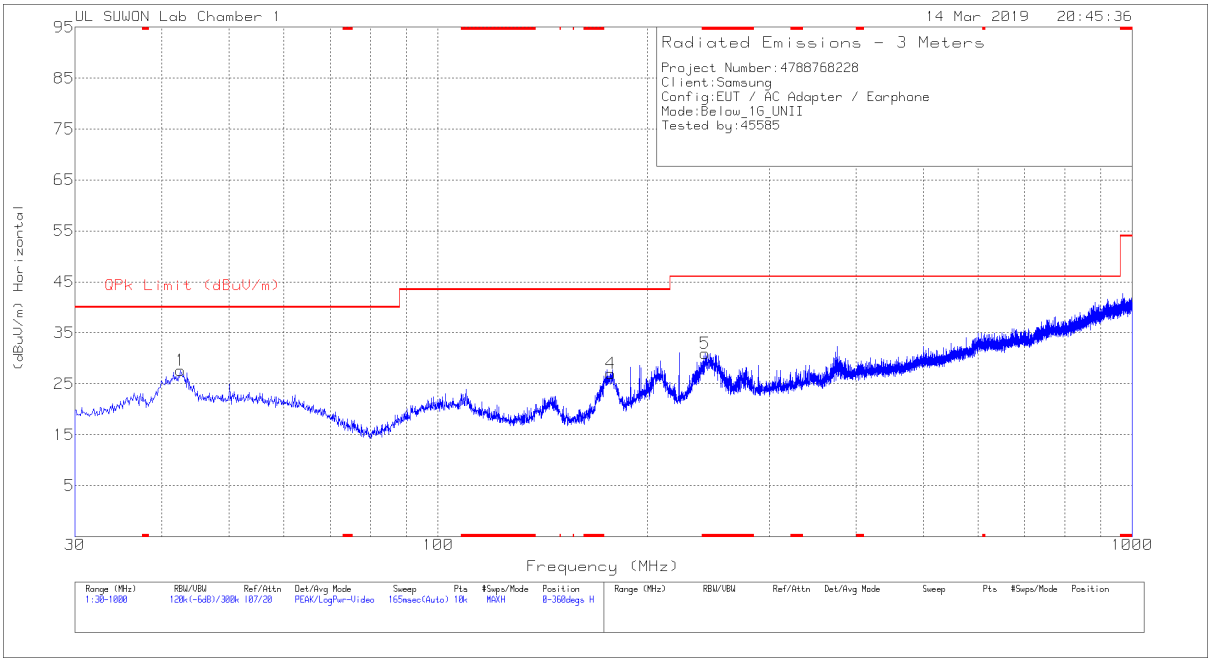
Frequency (GHz)	Meter Reading (dBuV)	Det	3117_00168717	5GHz_LP[dB]	DTS_Notch	DC Corr (dB)	Corrected Reading (dBuV/m)	Avg Limit (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Margin (dB)	UNII Non-Restricted (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
* 4.882	52.56	PKFH	34.2	-30.2	.4	0	56.96	-	-	74	-17.04	-	-	254	193	H
* 4.882	40.36	VA1T	34.2	-30.2	.4	1.14	45.9	54	-8.1	-	-	-	-	254	193	H
* 4.882	55.55	PKFH	34.2	-30.2	.4	0	59.95	-	-	74	-14.05	-	-	130	167	V
* 4.882	44.69	VA1T	34.2	-30.2	.4	1.14	50.23	54	-3.77	-	-	-	-	130	167	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
PKFH - FHSS: RB=100k/1MHz VB=3 x RB, Peak
VA1T - FHSS: Linear Voltage Average VB=1/Ton where: Ton is transmit duration

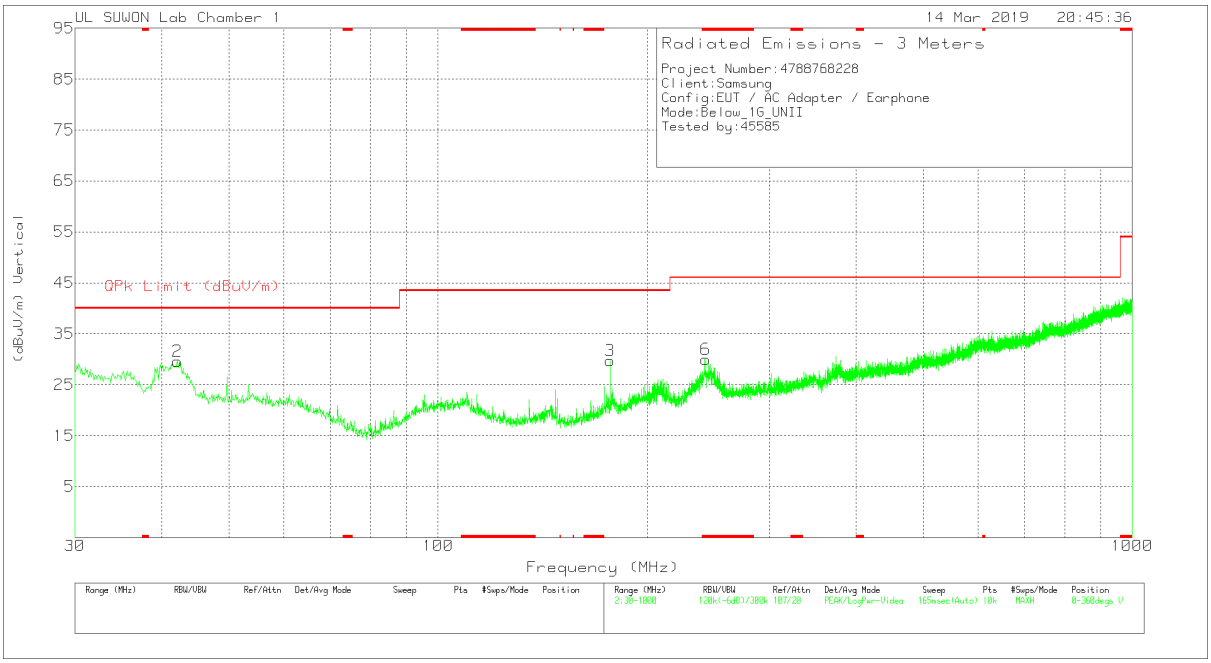
UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

12. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

Below 1G Data

Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	VULB9163_750	Below_1G[dB]	DC Corr (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	42.61	39.03	Pk	19.2	-30.6	0	27.63	40	-12.37	0-360	400	H
4	177.537	40.48	Pk	15.3	-28.8	0	26.98	43.52	-16.54	0-360	200	H
5	* 242.333	40.37	Pk	18.7	-28.1	0	30.97	46.02	-15.05	0-360	100	H
2	42.125	41.18	Pk	19.1	-30.7	0	29.58	40	-10.42	0-360	100	V
3	177.052	43.22	Pk	15.2	-28.7	0	29.72	43.52	-13.8	0-360	200	V
6	* 243.012	39.26	Pk	18.8	-28.1	0	29.96	46.02	-16.06	0-360	200	V

* - indicates frequency in CFR47 Pt 15 / IC RSS-Restricted Band
Pk - Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

13. AC POWER LINE CONDUCTED EMISSIONS

LIMITS

FCC §15.207 (a)

Frequency of Emission (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

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.10.

The receiver is set to a resolution bandwidth of 9 kHz. Peak detection is used unless otherwise noted as quasi-peak or average.

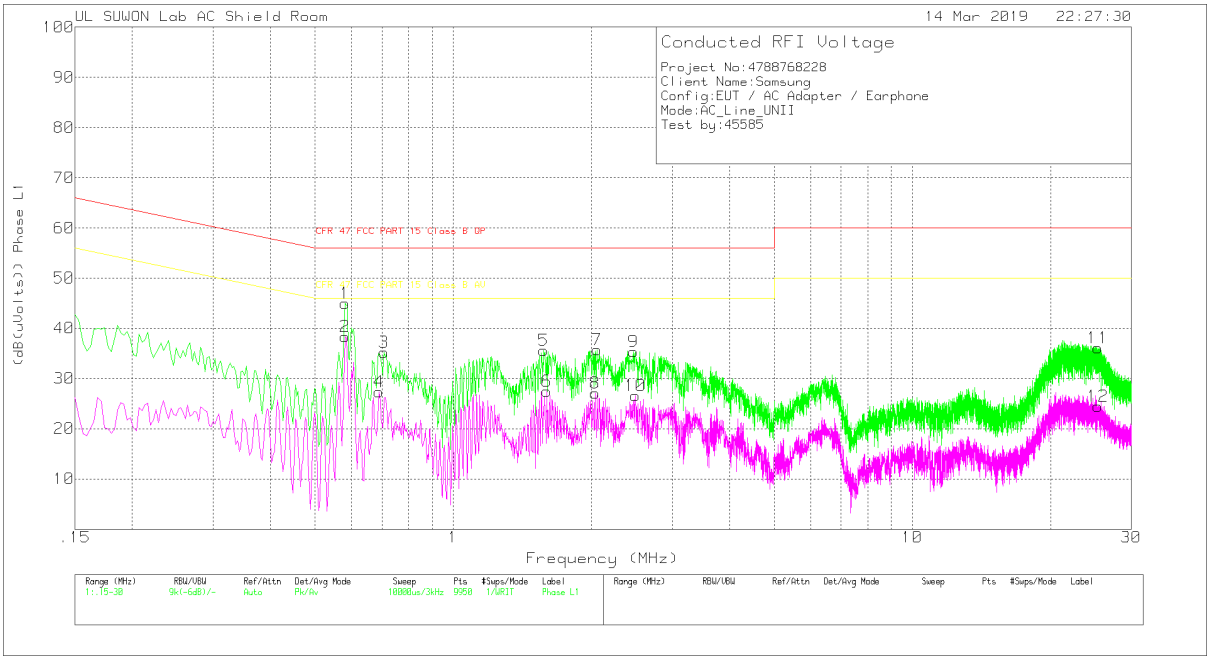
Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

6 WORST EMISSIONS

LINE 1 PLOT



LINE 1 RESULTS

Trace Markers

Range 1: Phase L1 .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ENV216_101836_With ex-cord_L1	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
1	.582	34.92	Pk	9.9	.2	45.02	56	-10.98	-	-
2	.582	28.29	Av	9.9	.2	38.39	-	-	46	-7.61
3	.708	25.1	Pk	9.9	.2	35.2	56	-20.8	-	-
4	.69	17.2	Av	9.9	.2	27.3	-	-	46	-18.7
5	1.575	25.47	Pk	9.8	.3	35.57	56	-20.43	-	-
6	1.599	17.38	Av	9.8	.3	27.48	-	-	46	-18.52
7	2.058	25.65	Pk	9.8	.3	35.75	56	-20.25	-	-
8	2.037	17.05	Av	9.8	.3	27.15	-	-	46	-18.85
9	2.469	25.07	Pk	10	.3	35.37	56	-20.63	-	-
10	2.493	16.24	Av	10	.3	26.54	-	-	46	-19.46
11	25.365	25.08	Pk	10.7	.3	36.08	60	-23.92	-	-
12	25.347	13.42	Av	10.7	.3	24.42	-	-	50	-25.58

Pk - Peak detector
Av - Average detection

Quasi-Peak Emissions

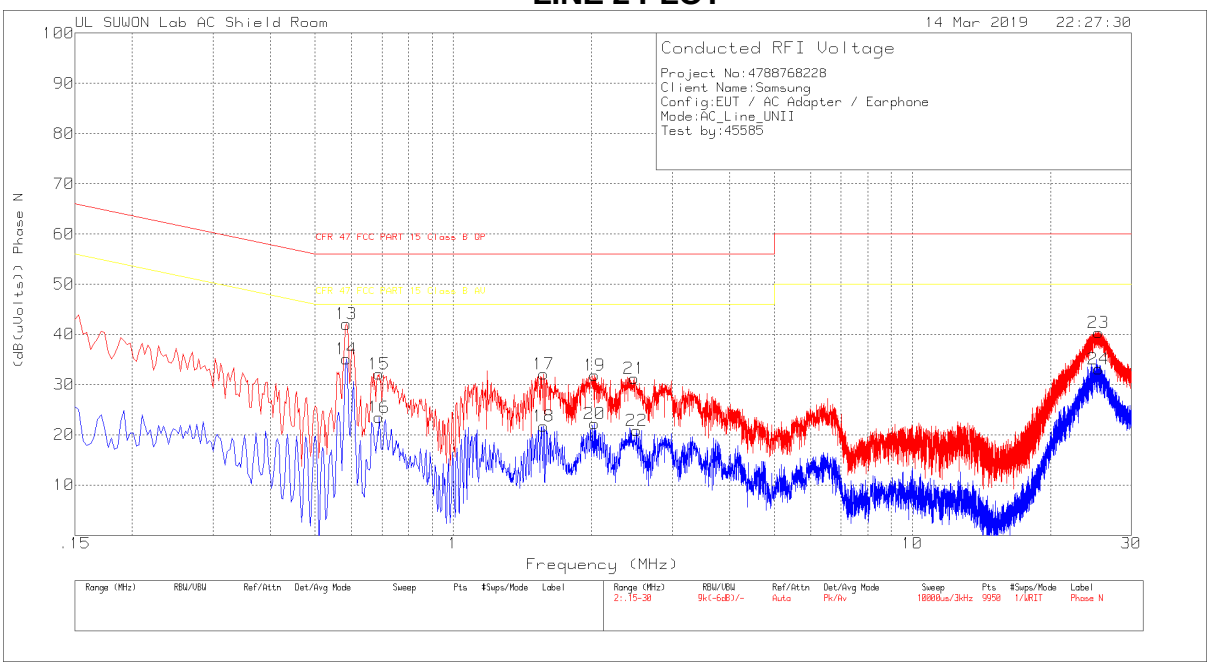
Range 1: Phase L1 .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	ENV216_101836_With ex-cord_L1	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
.58275	34.1	Qp	9.9	.2	44.2	56	-11.8	-	-

Qp - Quasi-Peak detector

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

LINE 2 PLOT



LINE 2 RESULTS

Trace Markers

Range 2: Phase N .15 - 30MHz

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	ENV216_101836_With ex-cord_N	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
13	.585	31.95	Pk	9.9	.2	42.05	56	-13.95	-	-
14	.585	25	Av	9.9	.2	35.1	-	-	46	-10.9
15	.69	21.97	Pk	9.9	.2	32.07	56	-23.93	-	-
16	.69	13.36	Av	9.9	.2	23.46	-	-	46	-22.54
17	1.575	22.12	Pk	9.7	.3	32.12	56	-23.88	-	-
18	1.575	11.67	Av	9.7	.3	21.67	-	-	46	-24.33
19	2.031	21.85	Pk	9.7	.3	31.85	56	-24.15	-	-
20	2.031	12.16	Av	9.7	.3	22.16	-	-	46	-23.84
21	2.478	21.23	Pk	9.7	.3	31.23	56	-24.77	-	-
22	2.508	10.87	Av	9.7	.3	20.87	-	-	46	-25.13
23	25.476	29.39	Pk	10.7	.3	40.39	60	-19.61	-	-
24	25.464	22.15	Av	10.7	.3	33.15	-	-	50	-16.85

Pk - Peak detector
Av - Average detection

Quasi-Peak Emissions

Range 2: Phase N .15 - 30MHz

Frequency (MHz)	Meter Reading (dBuV)	Det	ENV216_101836_With ex-cord_N	CABLELOSS(dB)	Corrected Reading (dB(uVolts))	CFR 47 FCC PART 15 Class B QP	Margin (dB)	CFR 47 FCC PART 15 Class B AV	Margin (dB)
.58425	30.63	Qp	9.9	.2	40.73	56	-15.27	-	-

Qp - Quasi-Peak detector

UL Korea, Ltd. Suwon Laboratory FORM ID: FCC_15E
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675 Korea TEL: (031) 337-9902,FAX: (031) 213-5433
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14. DYNAMIC FREQUENCY SELECTION

14.1. OVERVIEW

14.1.1. LIMITS

FCC

§15.407 (h), FCC KDB 905462 D02 “COMPLIANCE MEASUREMENT PROCEDURES FOR UNLICENSED-NATIONAL INFORMATION INFRASTRUCTURE DEVICES OPERATING IN THE 5250-5350 MHz AND 5470-5725 MHz BANDS INCORPORATING DYNAMIC FREQUENCY SELECTION” and KDB 905462 D03 “U-NII CLIENT DEVICES WITHOUT RADAR DETECTION CAPABILITY”.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

Table 1: Applicability of DFS requirements prior to use of a channel

Requirement	Operational Mode		
	Master	Client (without radar detection)	Client (with radar detection)
Non-Occupancy Period	Yes	Not required	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Table 2: Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client **(without DFS)**	Client **(with DFS)**
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar DFS	Client (without DFS)
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required
Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in all 20 MHz channel blocks and a null frequency between the bonded 20 MHz channel blocks.		

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

Table 3: Interference Threshold values, Master or Client incorporating In-Service Monitoring

Maximum Transmit Power	Value (see notes)
E.I.R.P. ≥ 200 mill watt	-64 dBm
E.I.R.P. < 200 mill watt and power spectral density < 10 dBm/MHz	-62 dBm
E.I.R.P. < 200 mill watt that do not meet power spectral density requirement	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna **Note 2:** Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response. **Note 3:** E.I.R.P. is based on the highest antenna gain. For MIMO devices refer to KDB publication 662911 D01.	

Table 4: DFS Response requirement values

Parameter	Value
Non-occupancy period	30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds (See Note 1)
Channel Closing Transmission Time	200 milliseconds + approx. 60 milliseconds over remaining 10 second period. (See Notes 1 and 2)
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. (See Note 3)
Note 1: *Channel Move Time* and the *Channel Closing Transmission Time* should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. **Note 2:** The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions. **Note 3:** During the *U-NII Detection Bandwidth* detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (usec)	PRI (usec)	Pulses	Minimum Percentage of Successful Detection	Minimum Trials
0	1	1428	18	See Note 1	See Note 1
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in table 5a	Roundup: {(1/360) x (19 x 10^6 PRI_{usec})}	60%	30
		Test B: 15 unique PRI values randomly selected within the range of 518-3066 usec. With a minimum increment of 1 usec, excluding PRI values selected in Test A			
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120
Note 1: Short Pulse Radar Type 0 should be used for the *Detection Bandwidth* test, *Channel Move Time*, and *Channel Closing Time* tests.					

Table 6 – Long Pulse Radar Test Signal

Radar Waveform Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

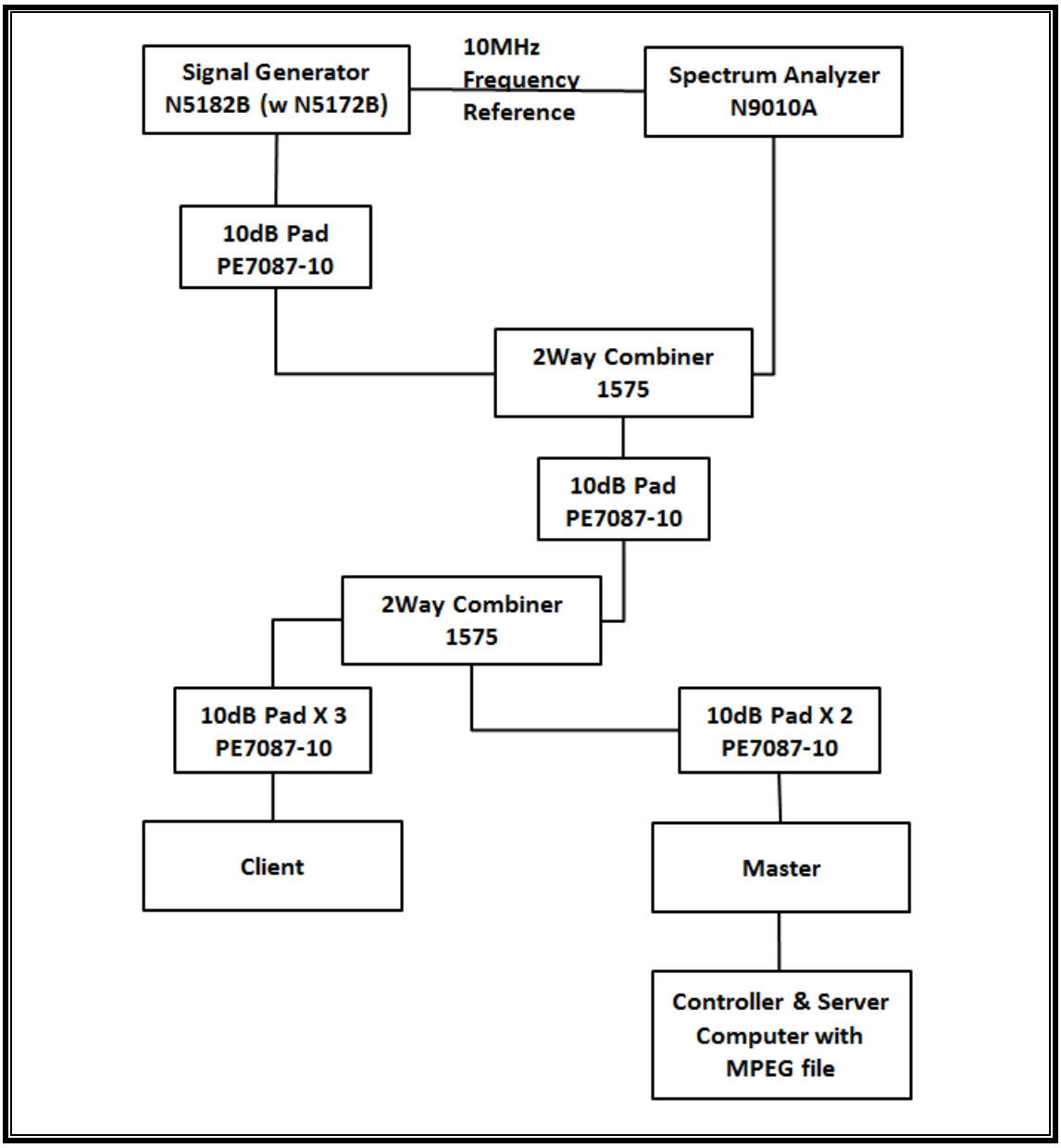
Table 7 – Frequency Hopping Radar Test Signal

Radar Waveform Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Trials
6	1	333	9	0.333	300	70%	30

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14.1.1. TEST AND MEASUREMENT SYSTEM

CONDUCTED METHOD SYSTEM BLOCK DIAGRAM



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

SYSTEM OVERVIEW

The short pulse and long pulse signal generating system utilizes the Keysite Signal Studio for Pulse Building as N5172B. The Vector Signal Generator has been validated by the NTIA. The hopping signal generating system utilizes the CCS simulated hopping method and system, which has been validated by the DoD, FCC and NTIA. The software selects waveform parameters from within the bounds of the signal type on a random basis using uniform distribution.

The short pulse types 1, 2, 3 and 4, and the long pulse type 5 parameters are randomized at run-time.

The hopping type 6 pulse parameters are fixed while the hopping sequence is based on the August 2005 NTIA Hopping Frequency List. The initial starting point randomized at run-time and each subsequent starting point is incremented by 475. Each frequency in the 100-length segment is compared to the boundaries of the EUT Detection Bandwidth and the software creates a hopping burst pattern in accordance with Section 7.4.1.3 Method #2 Simulated Frequency Hopping Radar Waveform Generating Subsystem of KDB 905462 D02. The frequency of the signal generator is incremented in 1 MHz steps from F_L to F_H for each successive trial. This incremental sequence is repeated as required to generate a minimum of 30 total trials and to maintain a uniform frequency distribution over the entire Detection Bandwidth.

The signal monitoring equipment consists of a spectrum analyzer. The aggregate ON time is calculated by multiplying the number of bins above a threshold during a particular observation period by the dwell time per bin, with the analyzer set to peak detection and max hold.

SYSTEM CALIBRATION

A 50-ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to a horn antenna via a coaxial cable, with the reference level offset set to (horn antenna gain – coaxial cable loss). The signal generator is set to CW mode. The amplitude of the signal generator is adjusted to yield a level of –64 dBm as measured on the spectrum analyzer.

Without changing any of the instrument settings, the spectrum analyzer is reconnected to the Common port of the Spectrum Analyzer Combiner/Divider. The Reference Level Offset of the spectrum analyzer is adjusted so that the displayed amplitude of the signal is –64 dBm.

The spectrum analyzer displays the level of the signal generator as received at the antenna ports of the Master Device. The interference detection threshold may be varied from the calibrated value of –64 dBm and the spectrum analyzer will still indicate the level as received by the Master Device.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

ADJUSTMENT OF DISPLAYED TRAFFIC LEVEL

A link is established between the Master and Slave and the distance between the units is adjusted as needed to provide a suitable received level at the Master and Slave devices. The video test file is streamed to generate WLAN traffic. The monitoring antenna is adjusted so that the WLAN traffic level, as displayed on the spectrum analyzer, is at lower amplitude than the radar detection threshold.

TEST AND MEASUREMENT EQUIPMENT

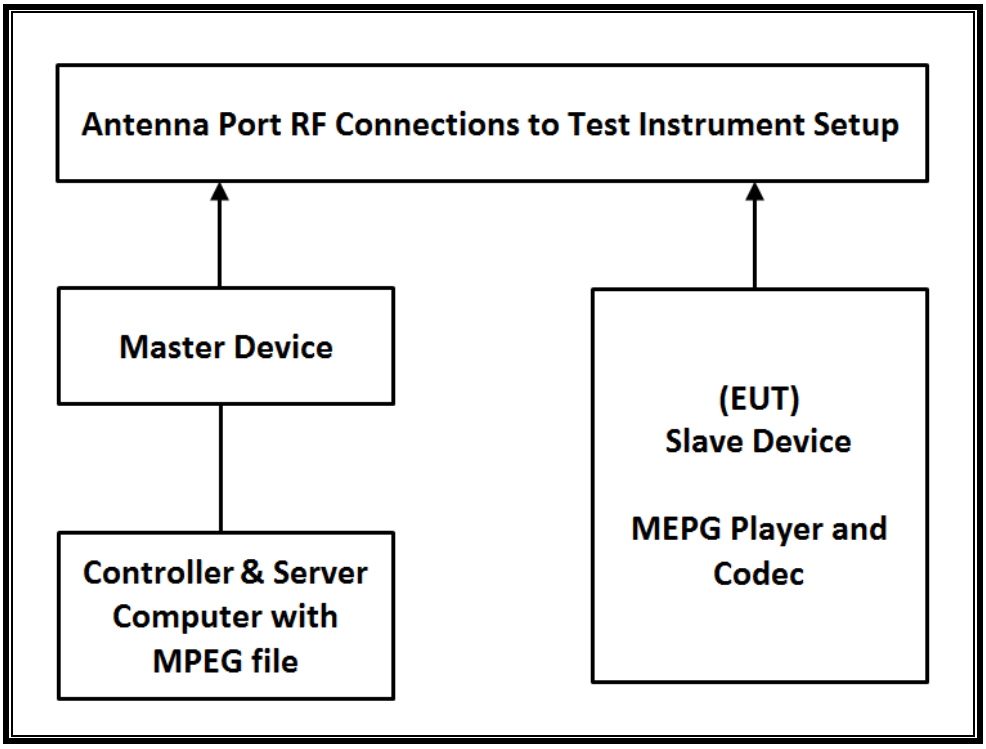
The following test and measurement equipment was utilized for the DFS tests documented in this report:

TEST EQUIPMENT LIST					
Description	**Manufacturer**	**Model**	**S/N**	**Cal Due**	**Next Cal Due**
Spectrum Analyzer, 7 GHz	Agilent / HP	N9010A	MY54200580	08-07-18	08-07-19
Vector Signal Generator, 6GHz	Agilent / HP	N5182B	MY53051241	08-07-18	08-07-19

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14.1.2. SETUP OF EUT

CONDUCTED METHOD EUT TEST SETUP



SUPPORT EQUIPMENT

The following support equipment was utilized for the DFS tests documented in this report:

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Wireless Access Point	Cisco	AIR-CAP3702E-A-K9	FTX182276QX	LDK102087
Notebook PC (Controller/Server)	HP	HP EliteDesk 800 G1 TWR	CZC4125J25	DoC

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14.1.3. DESCRIPTION OF EUT

The EUT operates over the 5250-5350 MHz and 5470-5725 MHz ranges.

The EUT is a Slave Device without Radar Detection.

The highest power level within these bands is 20.90 dBm in the 5250-5350 MHz band and 20.80 dBm in the 5470-5725 MHz band.

The antenna assembly utilized two antenna.
Gain of antenna 1 : -4.42 dBi for UNII 2A and -3.99 dBi for UNII 2C.
Gain of antenna 2 : -3.55 dBi for UNII 2A and -3.55 dBi for UNII 2C.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for procedural adjustments, the required conducted threshold at the antenna port is –64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

The EUT uses one transmitter/receiver chain connected to an antenna to perform radiated tests.

WLAN traffic that meets or exceeds the minimum required loading was generated by transferring a data stream from the controller/server PC to the EUT using iPerf version 2.0.5 software package.

TPC is not required since the maximum EIRP is less than 500 mW (27 dBm).

The EUT utilizes the 802.11ac architecture. Three nominal channel bandwidths are implemented: 20 MHz, 40 MHz and 80 MHz.

The software installed in the access point is 12.4(25d)JA1.

UNIFORM CHANNEL SPREADING

This requirement is not applicable to Slave radio devices.

OVERVIEW OF MASTER DEVICE WITH RESPECT TO §15.407 (h) REQUIREMENTS

The Master Device is a Cisco Access Point, FCC ID: LDK102087. The minimum antenna gain for the Master Device is 6 dBi.

The rated output power of the Master unit is > 23dBm (EIRP). Therefore the required interference threshold level is –64 dBm. After correction for procedural adjustments, the required radiated threshold at the antenna port is –64 + 1 = -63 dBm.

The calibrated radiated DFS Detection Threshold level is set to –64 dBm. The tested level is lower than the required level hence it provides a margin to the limit.

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14.2. RESULTS FOR 20 MHz BANDWIDTH

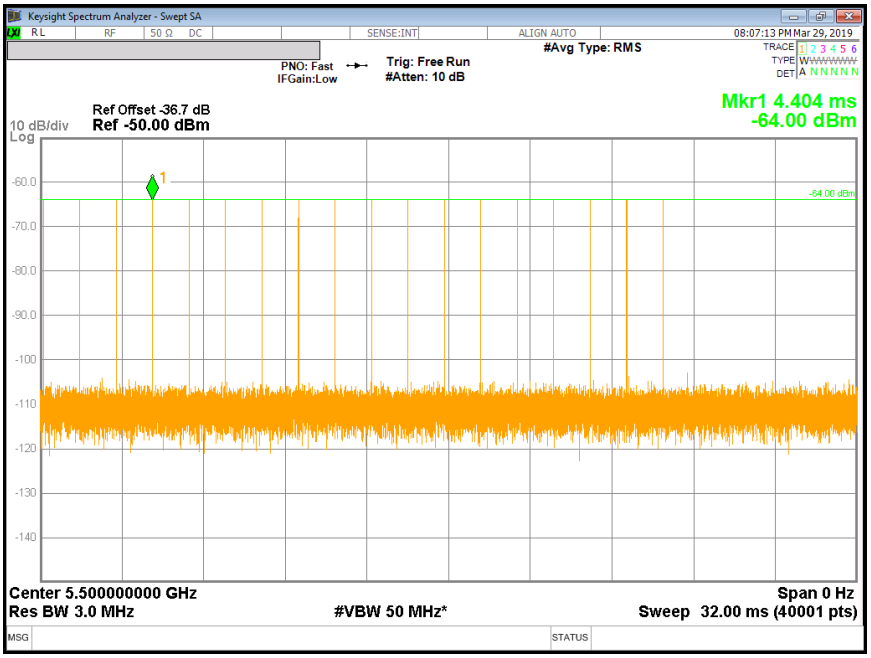
14.2.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5500 MHz.

14.2.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

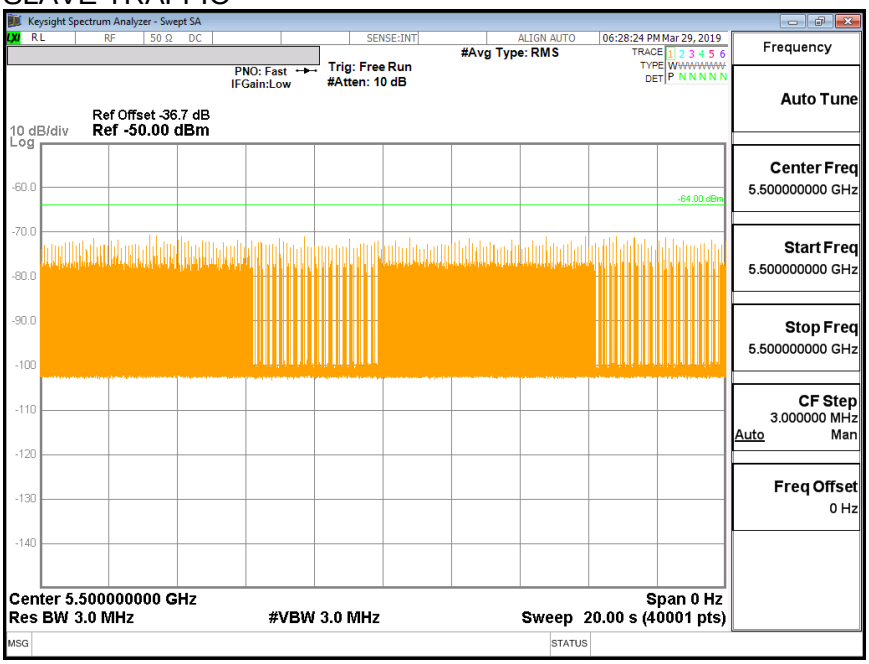
SHORT PULSE RADAR TYPE 0 AT MASTER



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

TRAFFIC

SLAVE TRAFFIC



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14.2.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

14.2.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

Channel Move Time (sec)	Limit (sec)
0.761	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
5.250	60

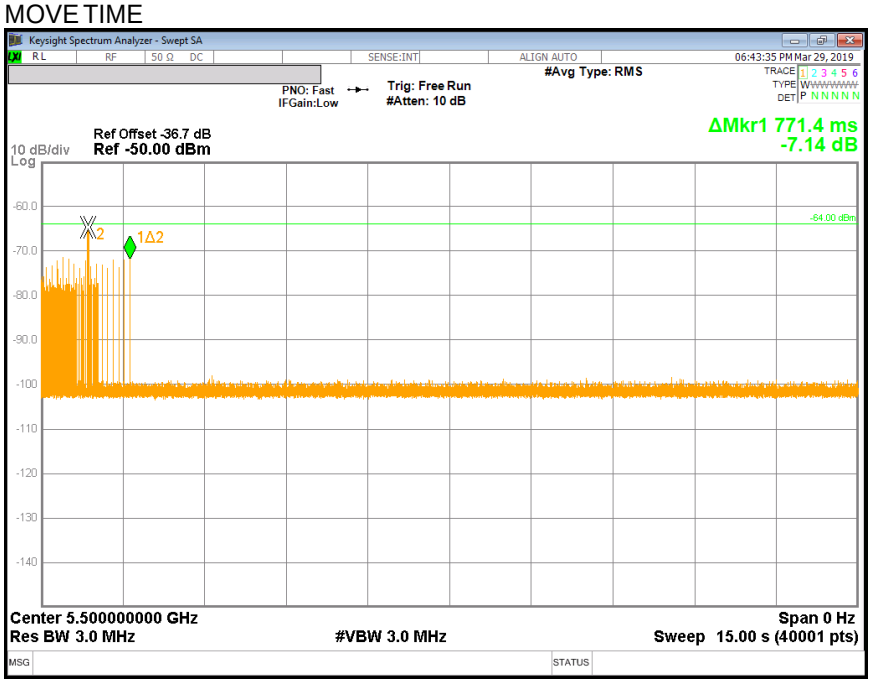
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

MOVE TIME & CHANNEL CLOSING TIME

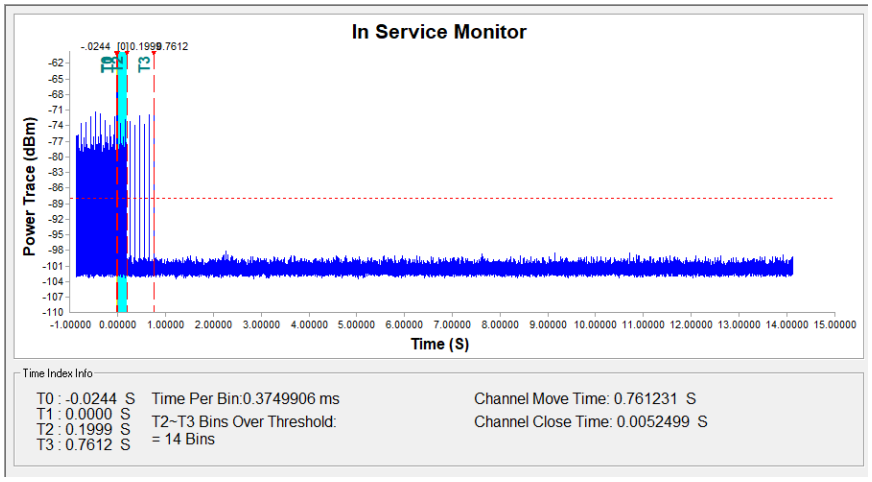
AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.

MOVE TIME



MOVE TIME & AGGREGATE CHANNEL CLOSING TRANSMISSION TIME



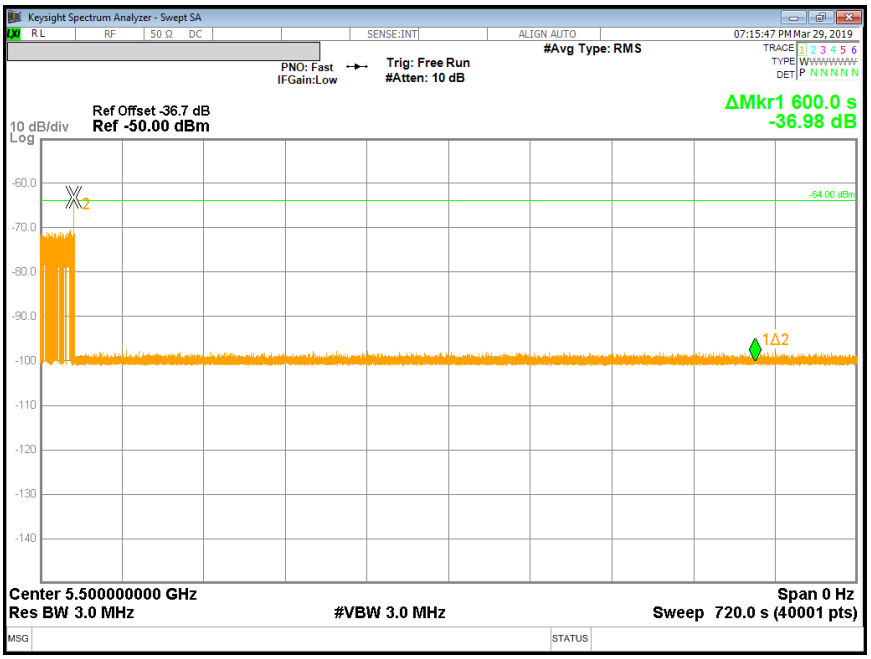
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

NON-OCCUPANCY PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.

10-MINUTE BEACON MONITORING PERIOD



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14.3. RESULTS FOR 40 MHz BANDWIDTH

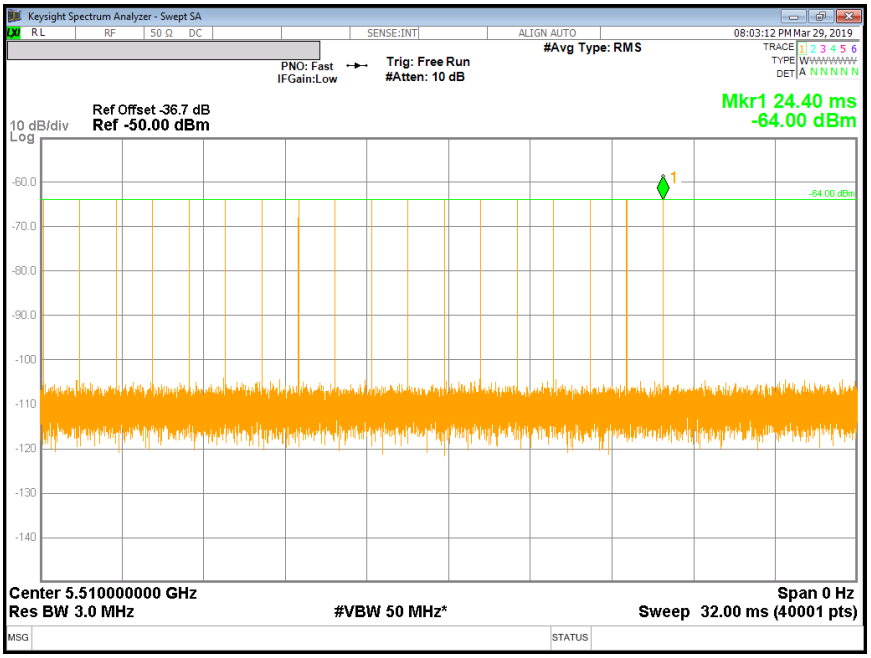
14.3.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5510 MHz.

14.3.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

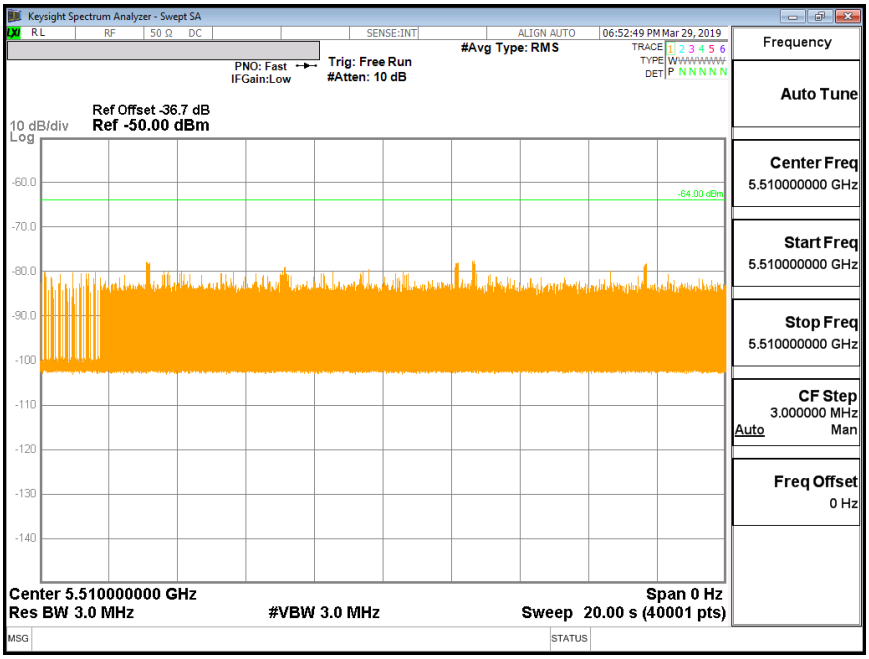
SHORT PULSE RADAR TYPE 0 AT MASTER



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

TRAFFIC

SLAVE TRAFFIC



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14.3.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

14.3.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

Channel Move Time (sec)	Limit (sec)
0.792	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
5.625	60

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

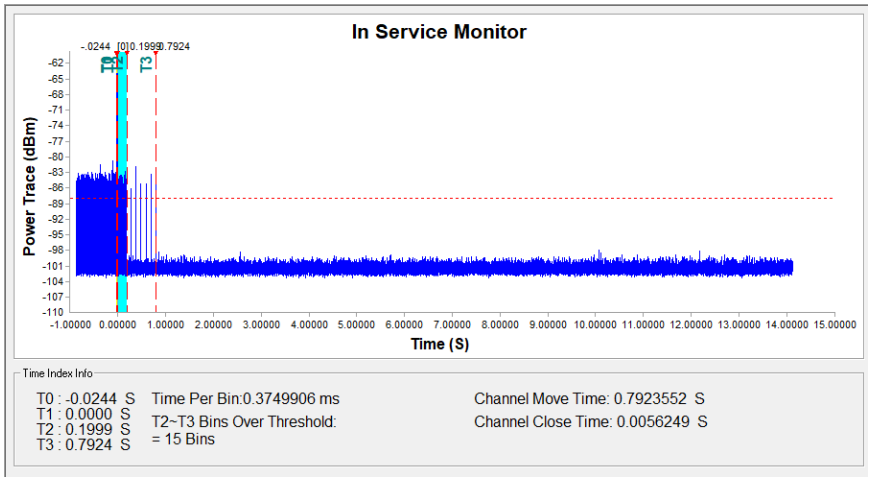
MOVE TIME & CHANNEL CLOSING TIME

AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.

MOVE TIME

MOVE TIME & AGGREGATE CHANNEL CLOSING TRANSMISSION TIME



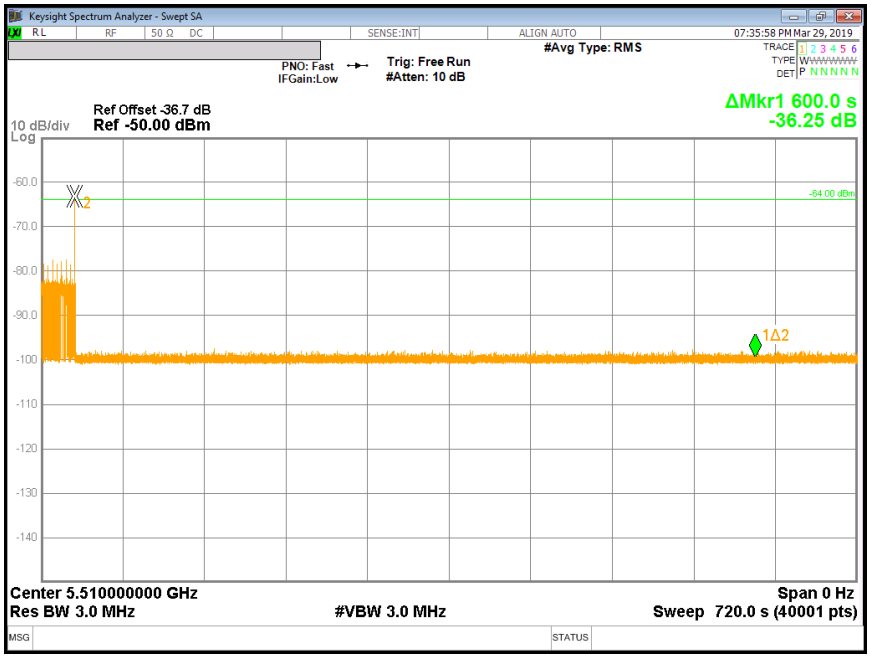
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

NON-OCCUPANCY PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.

10-MINUTE BEACON MONITORING PERIOD



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14.4. RESULTS FOR 80 MHz BANDWIDTH

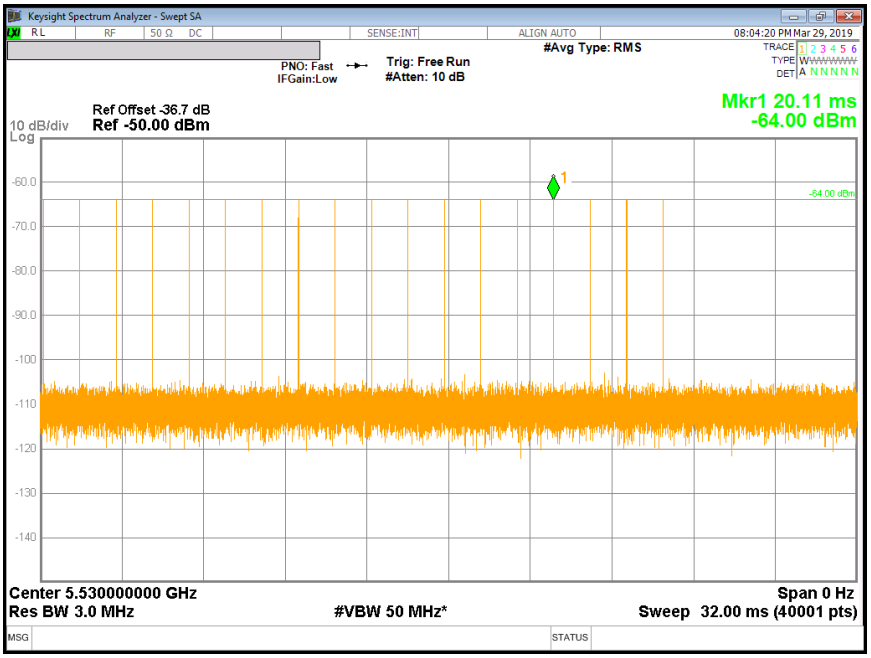
14.4.1. TEST CHANNEL

All tests were performed at a channel center frequency of 5530 MHz.

14.4.2. RADAR WAVEFORM AND TRAFFIC

RADAR WAVEFORM

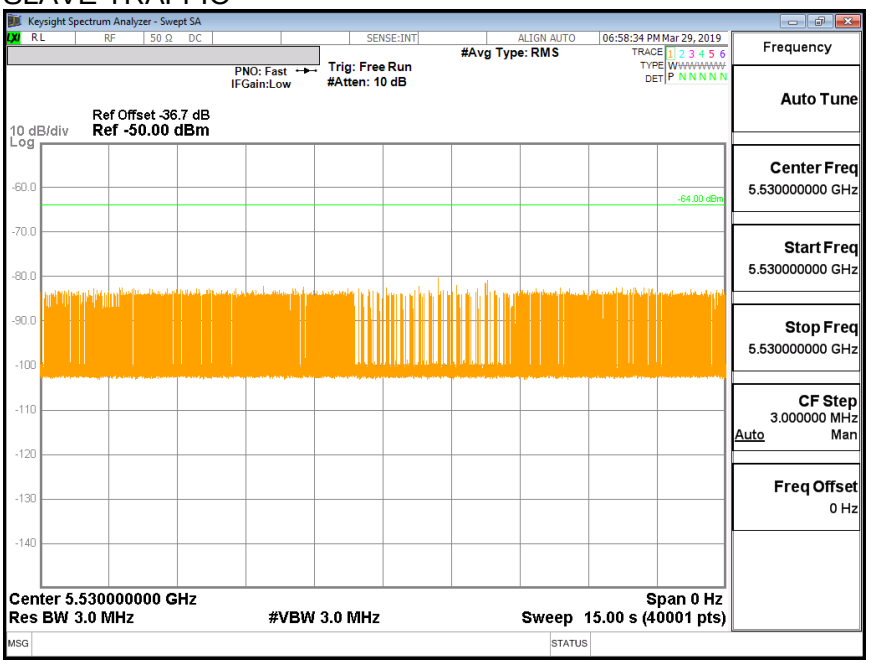
SHORT PULSE RADAR TYPE 0 AT MASTER



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

TRAFFIC

SLAVE TRAFFIC



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

14.4.3. OVERLAPPING CHANNEL TESTS

RESULTS

These tests are not applicable.

14.4.4. MOVE AND CLOSING TIME

REPORTING NOTES

The reference marker is set at the end of last radar pulse.

The delta marker is set at the end of the last WLAN transmission following the radar pulse. This delta is the channel move time.

The aggregate channel closing transmission time is calculated as follows:

Aggregate Transmission Time =
(Number of analyzer bins showing transmission) * (dwell time per bin)

The observation period over which the aggregate time is calculated begins at (Reference Marker + 200 msec) and ends no earlier than (Reference Marker + 10 sec).

RESULTS

Channel Move Time (sec)	Limit (sec)
0.759	10

Aggregate Channel Closing Transmission Time (msec)	Limit (msec)
3.375	60

UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

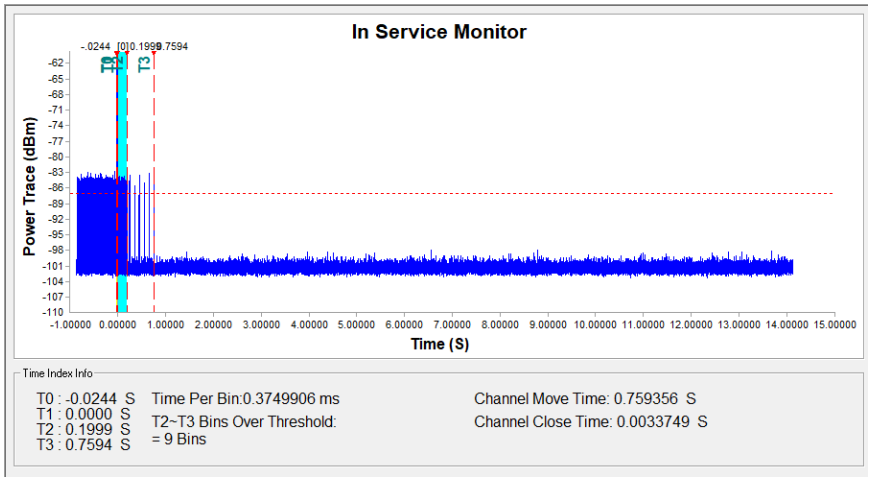
MOVE TIME & CHANNEL CLOSING TIME

AGGREGATE CHANNEL CLOSING TRANSMISSION TIME

No transmissions are observed during the aggregate monitoring period.

MOVE TIME

MOVE TIME & AGGREGATE CHANNEL CLOSING TRANSMISSION TIME



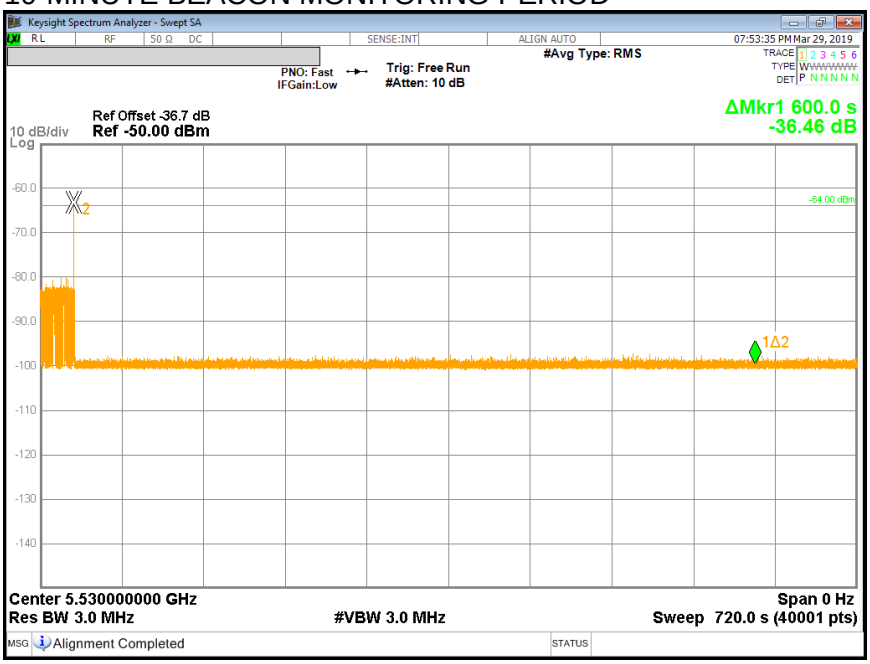
UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.

NON-OCCUPANCY PERIOD

RESULTS

No EUT transmissions were observed on the test channel during the 10-minute observation time.

10-MINUTE BEACON MONITORING PERIOD



UL Korea, Ltd. Confidential
This report shall not be reproduced except in full, without the written approval of UL Korea, Ltd.