

TEST REPORT

Applicant	Voyetra Turtle Beach, Inc.
Address	15822 Bernardo Center Drive, Suite 105, San Diego, CA 92127, USA

Manufacturer or Supplier	Voyetra Turtle Beach, Inc.
Address	15822 Bernardo Center Drive, Suite 105, San Diego, CA 92127, USA
Product	Wireless Keyboard
Brand Name	Turtle Beach
Model	KWBB0049
Additional Model & Model Difference	N/A
Date of tests	Jul. 30, 2026 ~ Aug. 04, 2026

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Andrew Sha Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	 Date: Aug. 19, 2026

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Test Report No.: RF2607WDG0110-1

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2607WDG0110-1	Original release	Aug. 19, 2026



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit.
15.205 15.209	Radiated Emission	PASS	Meet the requirement of limit.
15.247(d)	Out of Band Emission Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used

2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	9KHz ~ 30MHz	3.36dB
Radiated emissions	30MHz ~ 1GMHz	4.65dB
	1GHz ~ 18GHz	5.01dB
	18GHz ~ 40GHz	4.10dB
Occupied Channel Bandwidth	1GHz ~ 18GHz	$\pm 1.132 \times 10^{-4} \%$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Keyboard
MODEL NO.	KWBB0049
ADDITIONAL MODELS	N/A
FCC ID	XGB-KWBB0049
NOMINAL VOLTAGE	DC 3.7V from Li-ion battery or USB 5V from host unit
MODULATION TECHNOLOGY	GFSK (2Mbps)
OPERATING FREQUENCY	2403MHz ~ 2473MHz
PEAK OUTPUT POWER	1.901mW (Max. Measured)
ANTENNA TYPE	PCB Antenna, 3.94dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: Shielded, Detachable, 1.8m

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
3. Please refer to the EUT photo document (Reference No.: 2607WDG0110-1) for detailed product photo.



3.2 DESCRIPTION OF TEST MODES

5 channels are provided for GFSK 2Mbps:

Channel	Frequency (MHz)
1	2403
2	2425
3	2440
4	2461
5	2473



3.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis, power supply voltage range and antenna ports. The worst case was found when positioned on X axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	√	√	DC 5V powered by Adapter

Where

RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission

RE≥1G: Radiated Emission above 1GHz

APCM: Antenna Port Conducted Measurement

**RADIATED EMISSION TEST (BELOW 1GHz):**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
2.4GHz wireless	1 to 5	1, 3, 5	GFSK	2

For the test results, only the worst case was shown in test report.

RADIATED EMISSION TEST (ABOVE 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
2.4GHz wireless	1 to 5	1, 3, 5	GFSK	2

POWER LINE CONDUCTED EMISSION TEST:

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	TESTED CONDITION
2.4GHz wireless	2.4GHz wireless Link

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, antenna ports (if EUT with antenna diversity architecture), and packet types.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	DATA RATE (Mbps)
2.4GHz wireless	1 to 5	1, 3, 5	GFSK	2



TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE<1G	25deg. C, 55%RH	DC 5V from adapter	Ludius
RE≥1G	25deg. C, 55%RH	DC 5V from adapter	Ludius
PLC	25deg. C, 55%RH	DC 5V from adapter	Summer
APCM	20deg. C, 55%RH	DC 5V from adapter	Leo



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247

KDB558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2020

Note: All test items have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

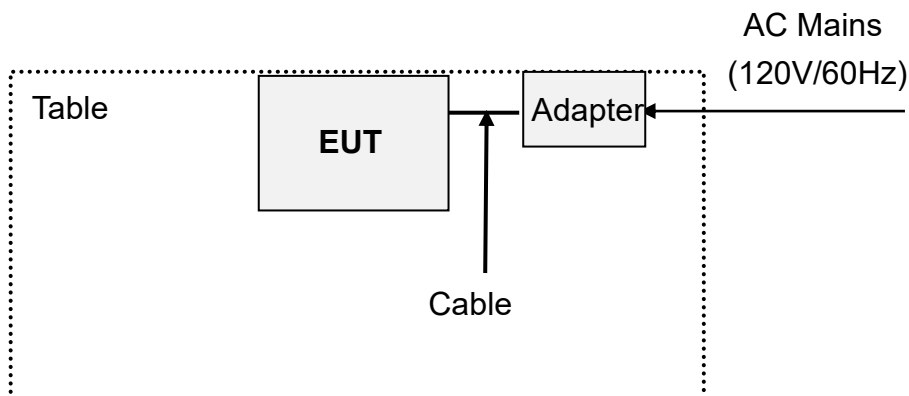
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	Provided by
1	Notebook	DELL	Latitude 5420	127710614	Lab
2	Adapter	N/A	C120A2400500PI	N/A	Lab

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.0m; DC Line: Unshielded, Detachable 1.5m.



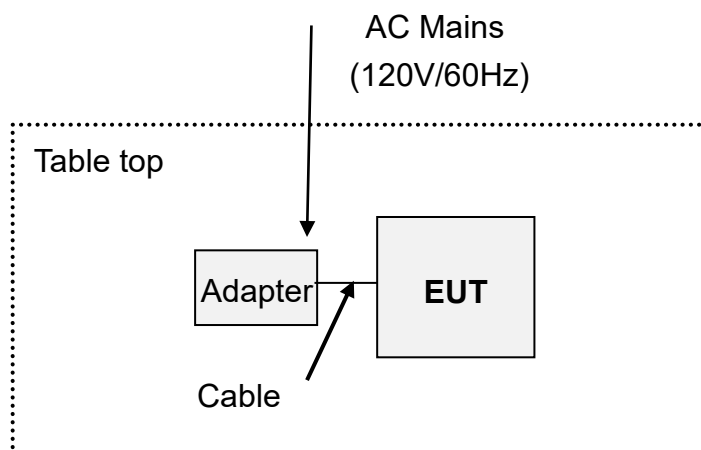
3.5 CONFIGURATION OF SYSTEM UNDER TEST

For Conducted Emission Test



Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).

For Radiated Emission Test

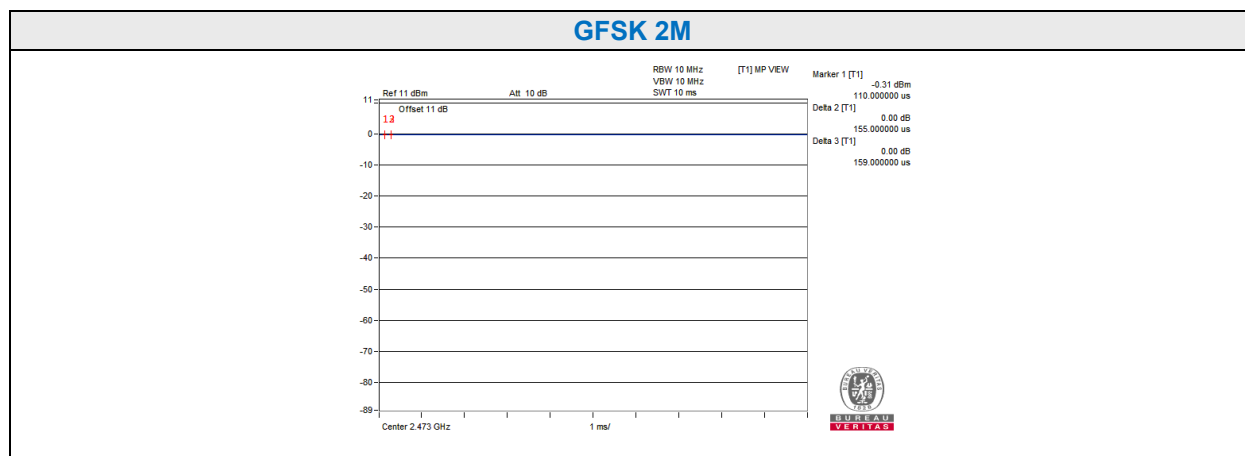


Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).



3.6 DUTY CYCLE OF TESET SIGNAL

Test Mode	On Time (ms)	Period (ms)	Duty Cycle (Linear)	Duty Cycle (%)	1/T Min. VBW (kHz)
GFSK 2M	/	/	/	100%	10





4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

- NOTE:** 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.
3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Oct. 10, 26
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Oct. 10, 26
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Oct. 09, 26
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jul. 07, 27
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A

NOTES:

1. The test was performed in shielded room 553.
2. Equipment are calibrated by calibration laboratory accredited to ISO/IEC 17025 by a mutually recognized Accreditation and all tests are conducted within a valid calibration cycle.
3. The calibration interval of all test equipment are one year.



4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

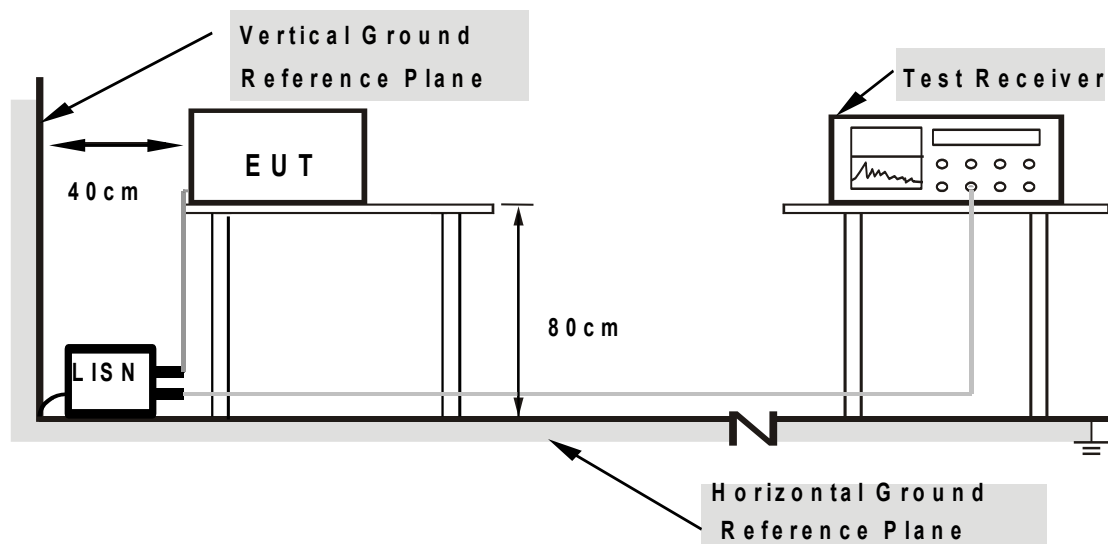
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.



4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN .

**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80
from other units and other metal planes**

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT OPERATING CONDITIONS

- a. Turned on the power and connected of all equipment.
- b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.



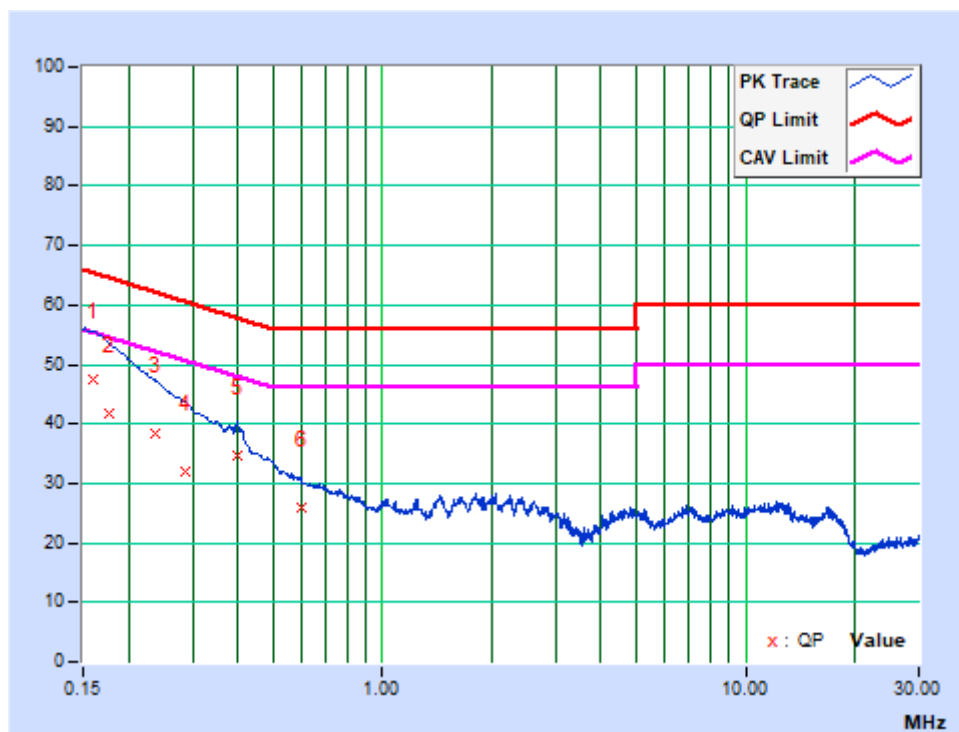
4.1.7 TEST RESULTS

CONDUCTED TEST DATA:

PHASE	Line	6dB BANDWIDTH	9kHz
-------	------	---------------	------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15924	9.62	37.87	10.35	47.49	19.97	65.50	55.50	-18.01	-35.53
2	0.17700	9.65	32.16	8.15	41.81	17.80	64.63	54.63	-22.82	-36.83
3	0.23550	9.71	28.78	7.77	38.49	17.48	62.25	52.25	-23.77	-34.78
4	0.28500	9.71	22.11	8.21	31.82	17.92	60.67	50.67	-28.85	-32.75
5	0.39750	9.77	24.99	23.88	34.76	33.65	57.91	47.91	-23.15	-14.26
6	0.59550	9.79	16.04	14.09	25.83	23.88	56.00	46.00	-30.17	-22.12

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.

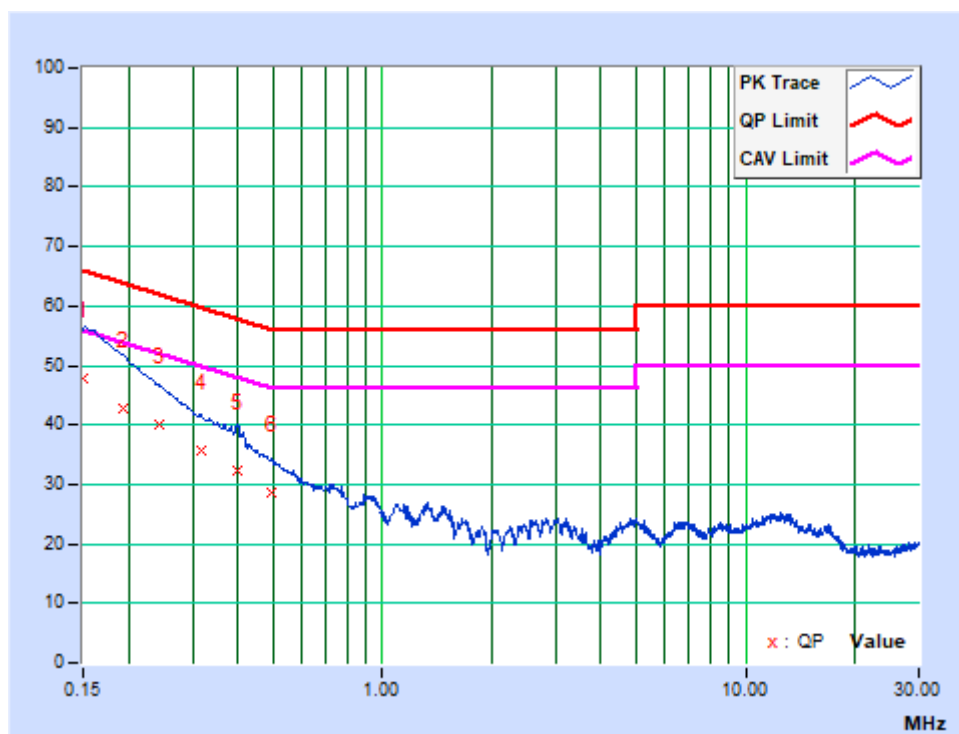




PHASE	Neutral	6dB BANDWIDTH	9kHz
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.63	38.07	12.71	47.70	22.34	66.00	56.00	-18.30	-33.66
2	0.19275	9.63	33.11	9.35	42.74	18.98	63.92	53.92	-21.18	-34.94
3	0.24225	9.64	30.52	7.58	40.16	17.22	62.02	52.02	-21.86	-34.80
4	0.31650	9.63	26.07	9.94	35.70	19.57	59.80	49.80	-24.10	-30.23
5	0.39806	9.63	22.53	20.90	32.16	30.53	57.89	47.89	-25.73	-17.36
6	0.49298	9.64	19.13	6.36	28.77	16.00	56.12	46.12	-27.35	-30.12

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.





4.2 RADIATED EMISSION MEASUREMENT

4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Oct. 09, 26
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Apr. 08, 27
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	Apr. 13, 27
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Feb. 12, 27
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-554	Dec. 14, 26
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	0085519	Oct. 11, 26
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	Apr. 19, 27
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May 16, 27
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Feb. 12, 27
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Oct. 10, 26

NOTE:

1. The test was performed in 966 Chamber.
2. Equipment are calibrated by calibration laboratory accredited to ISO/IEC 17025 by a mutually recognized Accreditation and all tests are conducted within a valid calibration cycle.
3. The FCC Site registration No. is 749762, and the designation number is CN1174.
4. The calibration interval of all test equipment are one year.



4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. For below 1GHz was used bilog antenna, and above 1GHz was used horn antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1.3m above the ground.
- g. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle > 98%) Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.



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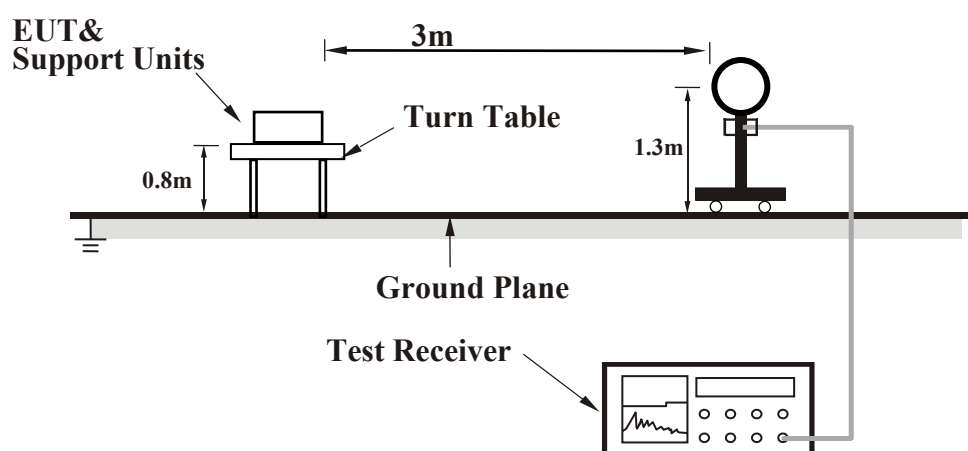
Test Report No.: RF2607WDG0110-1

4.2.4 DEVIATION FROM TEST STANDARD

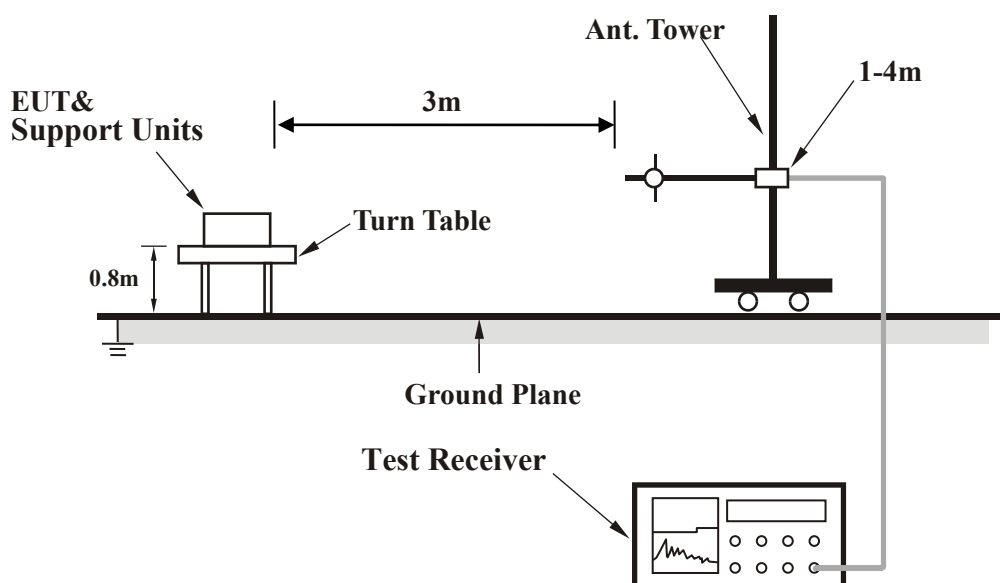
No deviation.

4.2.5 TEST SETUP

Below 30MHz test setup

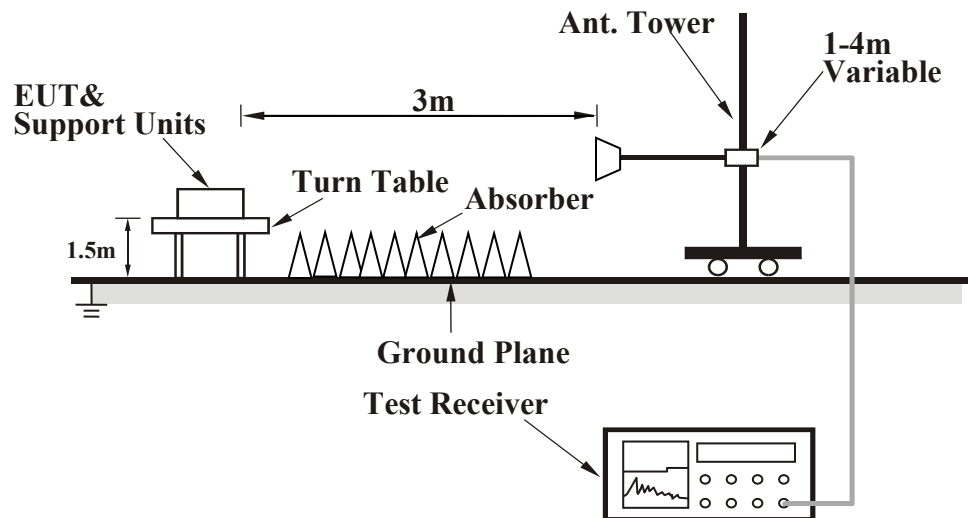


Below 1GHz test setup





Above 1GHz test setup



Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.



4.2.7 TEST RESULTS

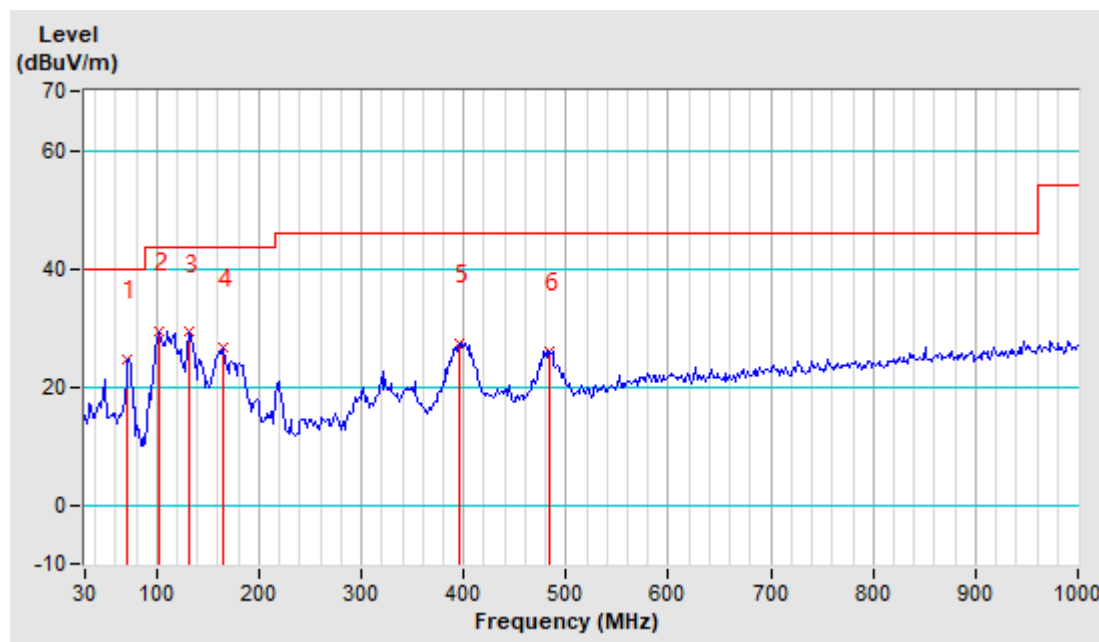
BELOW 1GHz WORST-CASE DATA:

CHANNEL	TX Channel 5	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	71.97	24.55	40.00	-15.45	112	316	43.59	-19.04
2	101.51	29.37	43.50	-14.13	165	299	50.25	-20.88
3	132.60	29.19	43.50	-14.31	148	227	46.71	-17.52
4	165.24	26.60	43.50	-16.90	150	358	43.48	-16.88
5	395.30	27.22	46.00	-18.78	150	252	40.44	-13.22
6	483.91	26.10	46.00	-19.90	150	269	37.24	-11.14

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value





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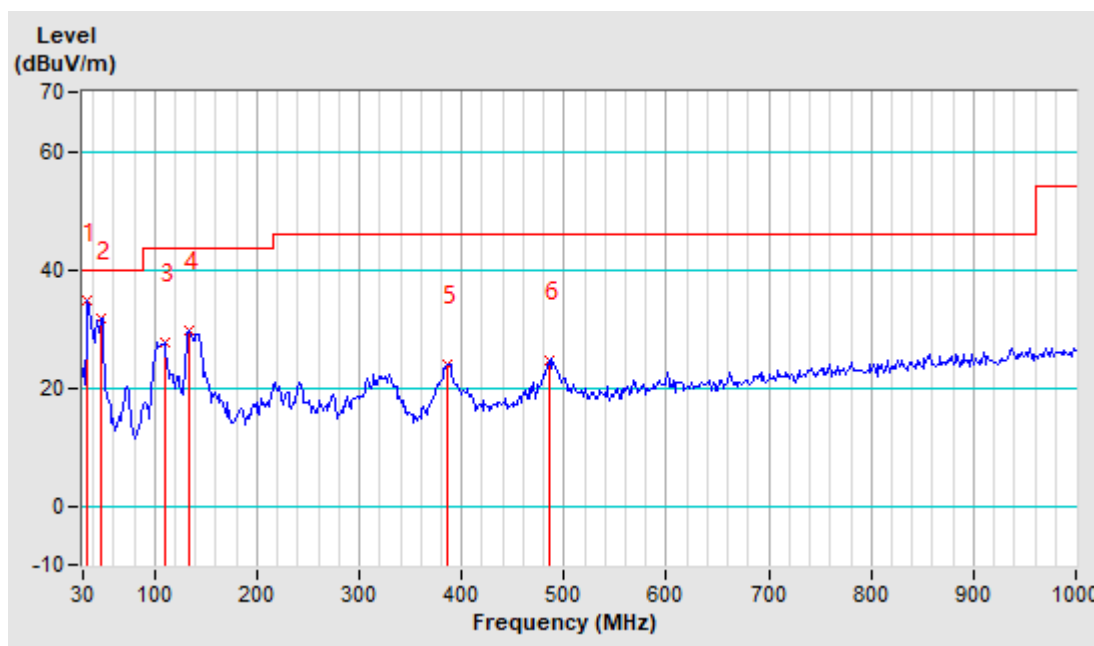
Test Report No.: RF2607WDG0110-1

CHANNEL	TX Channel 5	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.66	34.58	40.00	-5.42	134	0	52.19	-17.61
2	47.10	31.56	40.00	-8.44	154	0	48.24	-16.68
3	109.28	27.73	43.50	-15.77	109	19	47.61	-19.88
4	134.15	29.76	43.50	-13.74	100	77	47.14	-17.38
5	385.98	24.03	46.00	-21.97	100	60	37.51	-13.48
6	485.46	24.51	46.00	-21.49	180	0	35.61	-11.10

REMARKS:

1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value



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ABOVE 1GHz TEST DATA

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

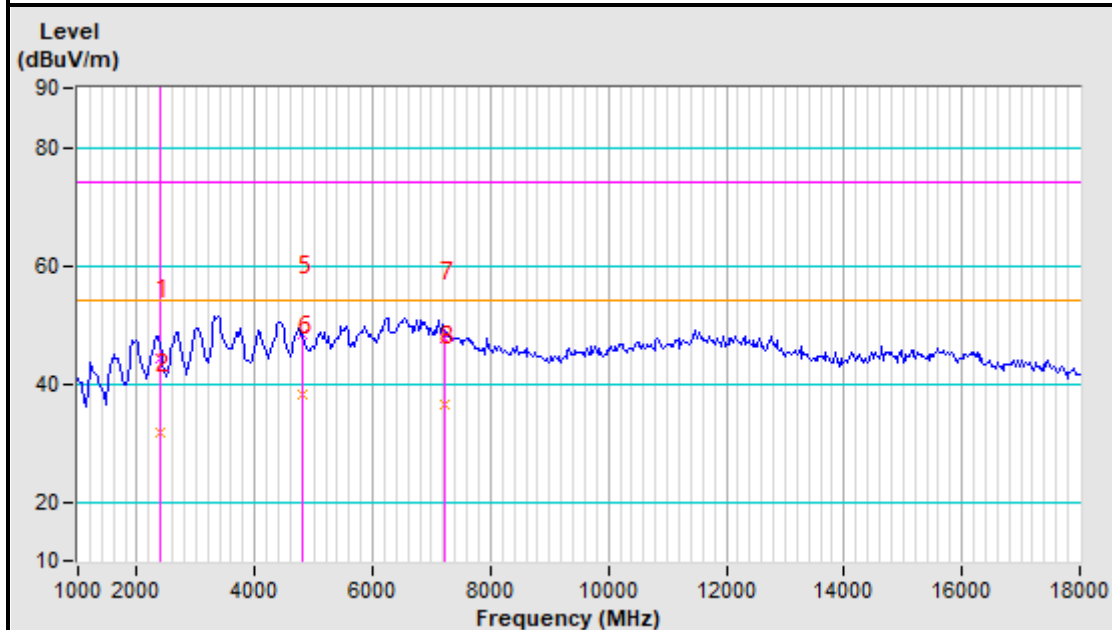
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	44.21 PK	74.00	-29.79	156	32	41.96	2.25
2	2390.00	31.85 AV	54.00	-22.15	156	32	29.60	2.25
3	*2403.00	92.89 PK			124	115	90.62	2.27
4	*2403.00	92.71 AV			124	115	90.44	2.27
5	4806.00	48.35 PK	74.00	-25.65	165	245	42.46	5.89
6	4806.00	38.25 AV	54.00	-15.75	165	245	32.36	5.89
7	7209.00	47.47 PK	74.00	-26.53	153	334	39.54	7.93
8	7209.00	36.59 AV	54.00	-17.41	153	334	28.66	7.93
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	45.38 PK	74.00	-28.62	178	55	43.13	2.25
2	2390.00	31.63 AV	54.00	-22.37	178	55	29.38	2.25
3	*2403.00	86.77 PK			153	66	84.50	2.27
4	*2403.00	86.02 AV			153	66	83.75	2.27
5	4806.00	48.02 PK	74.00	-25.98	193	22	42.13	5.89
6	4806.00	37.69 AV	54.00	-16.31	193	22	31.80	5.89
7	7209.00	47.58 PK	74.00	-26.42	125	214	39.65	7.93
8	7209.00	37.64 AV	54.00	-16.36	125	214	29.71	7.93

REMARKS:

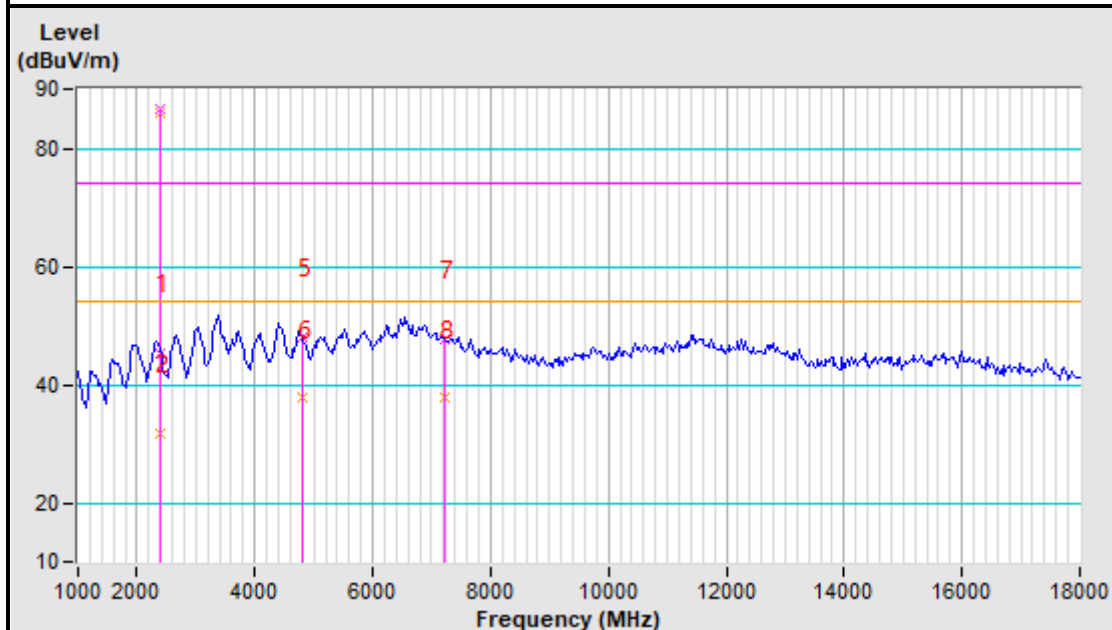
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



Horizontal



Vertical



Note: For 18GHz to 25GHz, the amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be recorded.



CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	91.73 PK			152	44	89.42	2.31
2	*2440.00	91.26 AV			152	44	88.95	2.31
3	4880.00	46.35 PK	74.00	-27.65	177	54	40.61	5.74
4	4880.00	35.29 AV	54.00	-18.71	177	54	29.55	5.74
5	7320.00	47.15 PK	74.00	-26.85	199	54	39.58	7.57
6	7320.00	37.45 AV	54.00	-16.55	199	54	29.88	7.57
ANTENNA POLARITY & TEST DISTANCE : VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	85.92 PK			155	156	83.61	2.31
2	*2440.00	85.33 AV			155	156	83.02	2.31
3	4880.00	46.08 PK	74.00	-27.92	106	33	40.34	5.74
4	4880.00	37.15 AV	54.00	-16.85	106	33	31.41	5.74
5	7320.00	47.22 PK	74.00	-26.78	162	142	39.65	7.57
6	7320.00	38.14 AV	54.00	-15.86	162	142	30.57	7.57

REMARKS:

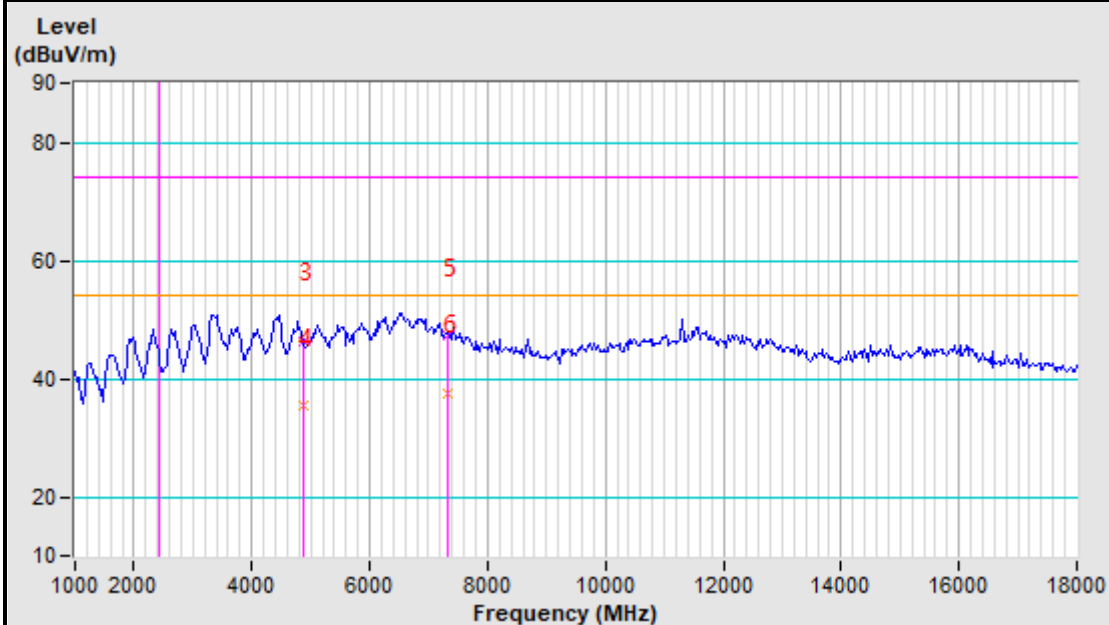
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



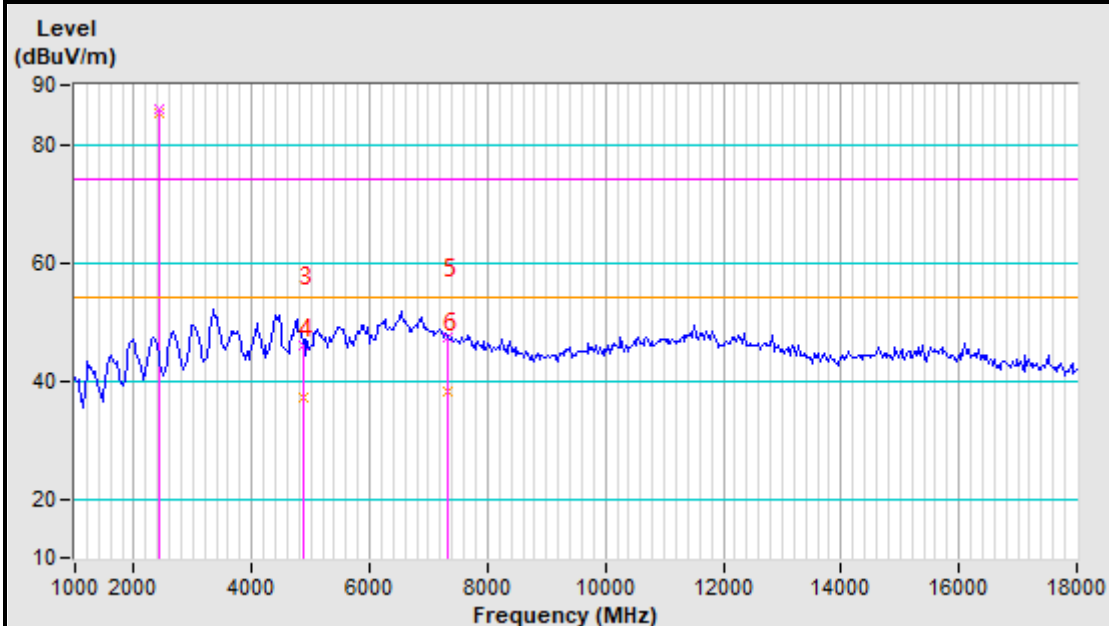
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Horizontal



Vertical



Note: For 18GHz to 25GHz, the amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be recorded.

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CHANNEL	TX Channel 5	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

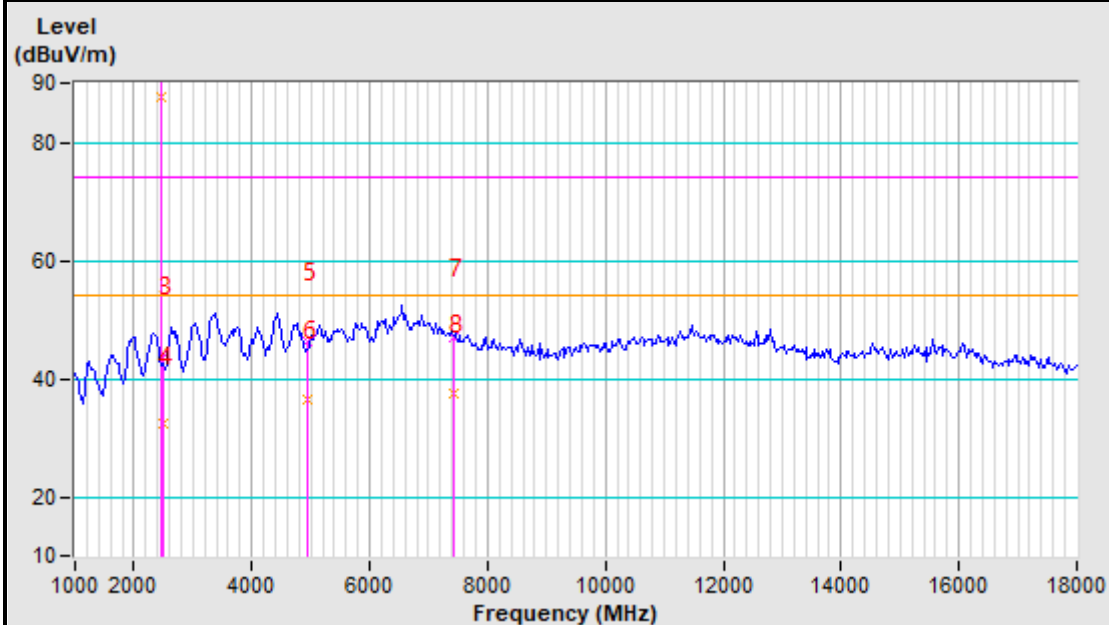
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2473.00	91.53 PK			152	214	89.18	2.35
2	*2473.00	87.57 AV			152	214	85.22	2.35
3	2483.50	44.13 PK	74.00	-29.87	152	178	41.77	2.36
4	2483.50	32.22 AV	54.00	-21.78	152	178	29.86	2.36
5	4946.00	46.20 PK	74.00	-27.80	152	113	40.60	5.60
6	4946.00	36.45 AV	54.00	-17.55	152	113	30.85	5.60
7	7419.00	47.11 PK	74.00	-26.89	134	118	39.88	7.23
8	7419.00	37.49 AV	54.00	-16.51	134	118	30.26	7.23
ANTENNA POLARITY & TEST DISTANCE : VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2473.00	85.76 PK			156	221	83.41	2.35
2	*2473.00	81.63 AV			156	221	79.28	2.35
3	2483.50	44.45 PK	74.00	-29.55	135	44	42.09	2.36
4	2483.50	32.91 AV	54.00	-21.09	135	44	30.55	2.36
5	4946.00	45.97 PK	74.00	-28.03	133	245	40.37	5.60
6	4946.00	35.18 AV	54.00	-18.82	133	245	29.58	5.60
7	7419.00	47.21 PK	74.00	-26.79	155	87	39.98	7.23
8	7419.00	38.52 AV	54.00	-15.48	155	87	31.29	7.23

REMARKS:

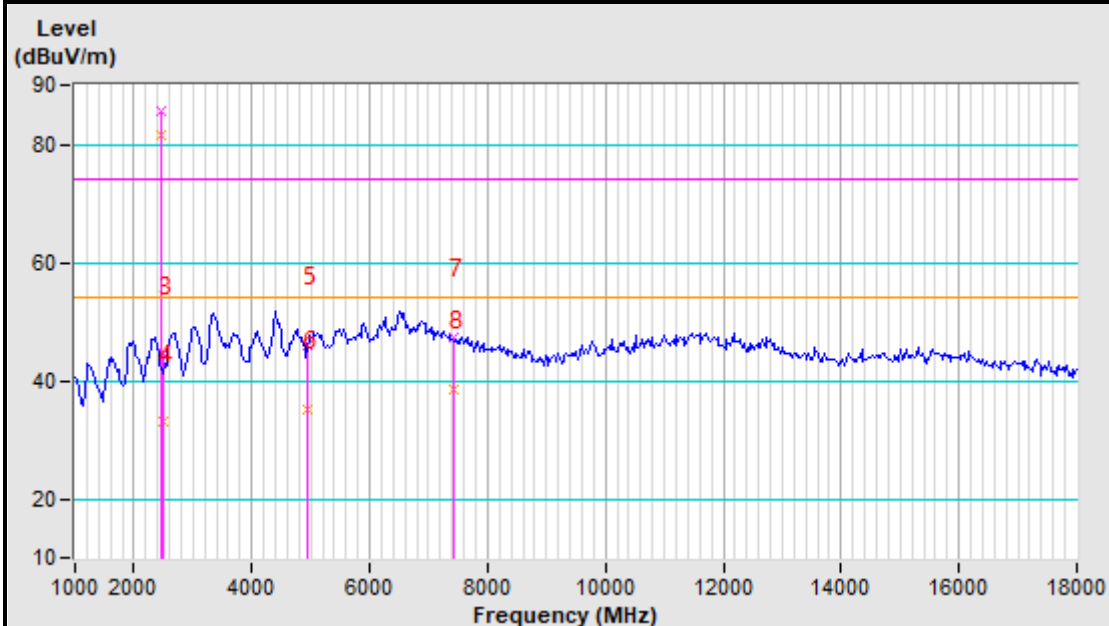
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
3. The emission levels of other frequencies were greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



Horizontal



Vertical



Note: For 18GHz to 25GHz, the amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be recorded.



4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Power Sensor	Keysight	U2021XA	MY57320002	Apr. 08, 27
Digital Multimeter	FLUKE	15B	12151063	Apr. 07, 27
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Oct. 10, 26
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101003	Oct. 09, 26
Signal Generator	Agilent	N5183A	MY50140980	Jul. 02, 27
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jul. 02, 27
Attenuator	MINI	BW-S10W2+	S130129FGE2	Jul. 02, 27
DC Source	Rohde&Schwarz	HMP2020	101295	Apr. 07, 27
Power Sensor	Keysight	U2021XA	MY57320002	Apr. 08, 27
Test software	ADT	ADT_RF Test Software V6.6.5.3	N/A	N/A

NOTE:

1. The test was performed in RF Oven room.
2. Equipment are calibrated by calibration laboratory accredited to ISO/IEC 17025 by a mutually recognized Accreditation and all tests are conducted within a valid calibration cycle.
3. The calibration interval of all test equipment are one year.



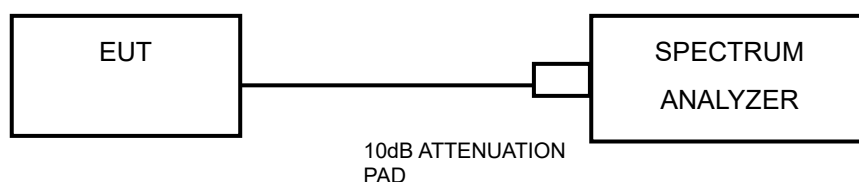
4.3.3 TEST PROCEDURE

1. Set RBW = 100K (shall be in the range of 1% to 5% of OBW, but not less than 100kHz).
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = No faster than coupled(auto) time.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

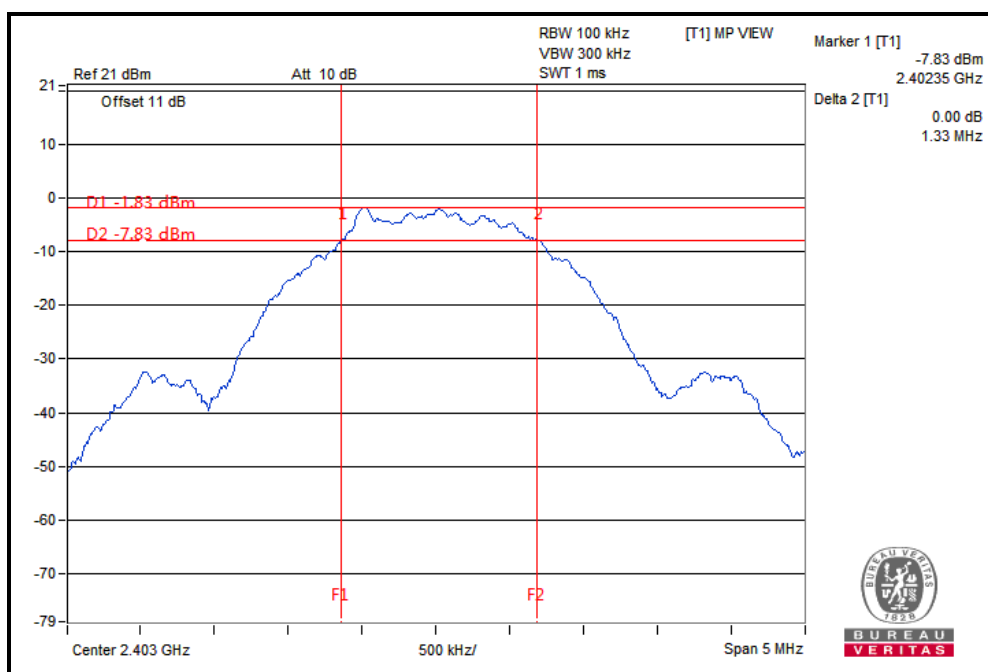
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



4.3.7 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2403	1.33	0.5	PASS
3	2440	1.30	0.5	PASS
5	2473	1.23	0.5	PASS

CH 1

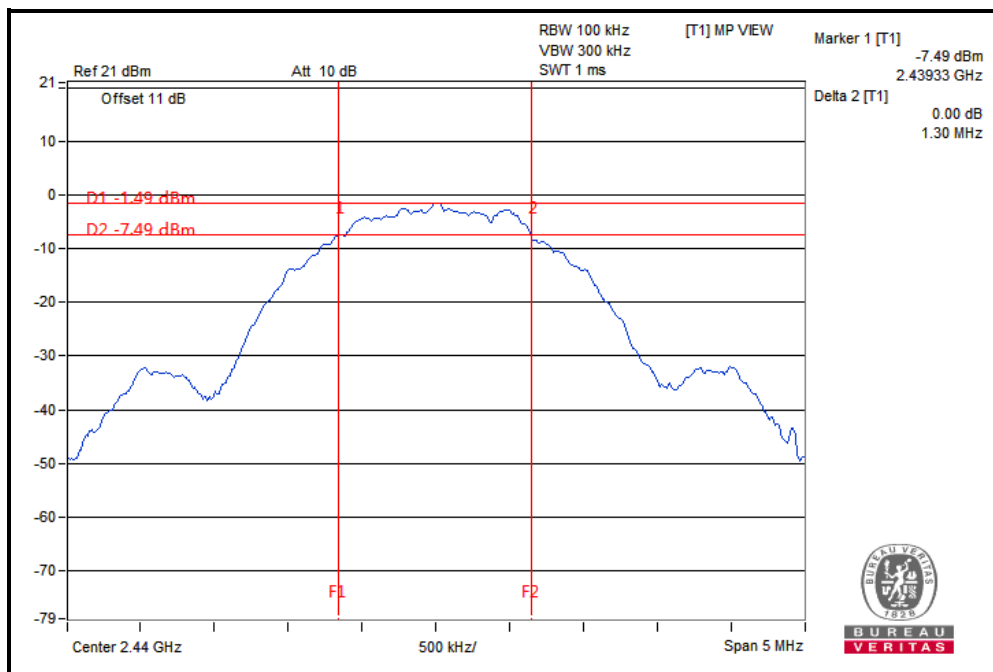




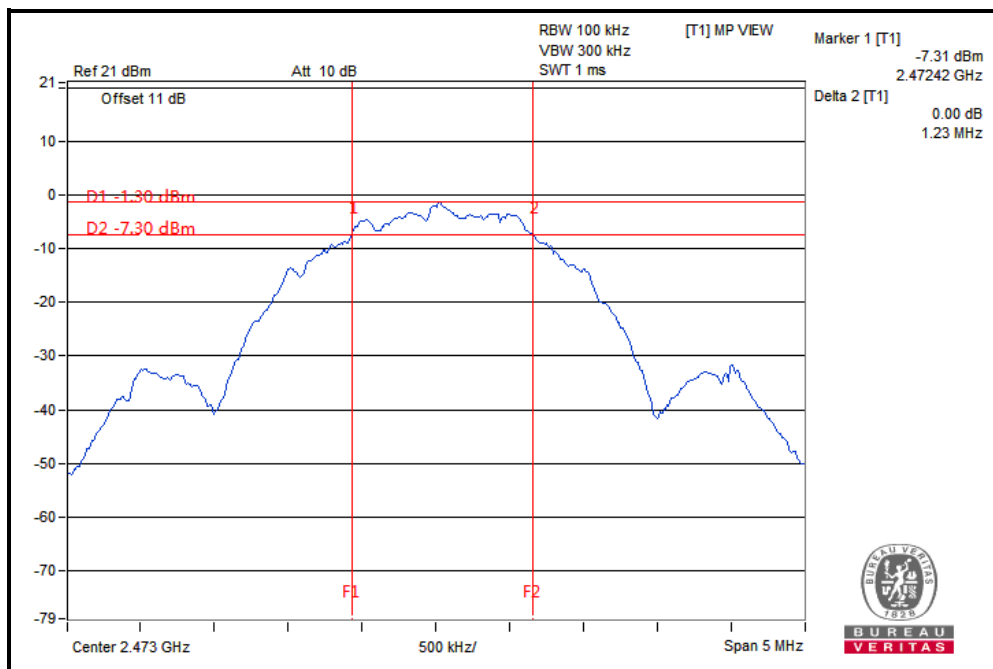
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CH 3



CH 5



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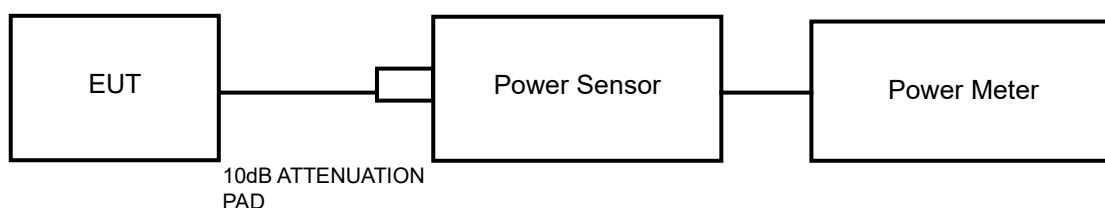


4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor and set the detector to PEAK. Record the power level.

An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor and set the detector to AVERAGE. Record the power level.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

**4.4.7 TEST RESULTS****4.4.7.1 MAXIMUM PEAK OUTPUT POWER**

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
1	2403	2.61	1.824	1	PASS
3	2440	2.75	1.884	1	PASS
5	2473	2.79	1.901	1	PASS

4.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
1	2403	-0.92
3	2440	-0.82
5	2473	-0.76

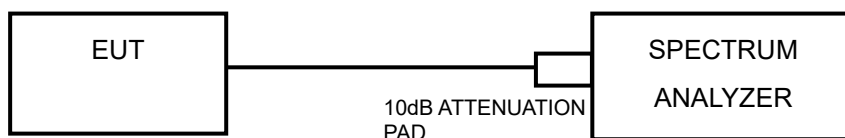


4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.5.4 TEST PROCEDURE

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set span > 1.5 times the DTS bandwidth.
- c) Set RBW to $3 \text{ kHz} \leq \text{RBW} \leq 100\text{KHz}$
- d) Set VBW $\geq 3 \times \text{RBW}$
- e) Detector = peak
- f) Sweep time = No faster than coupled(auto) time,
- g) Trace mode = max hold
- h) allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW(but no less than 3KHz) and repeat.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.



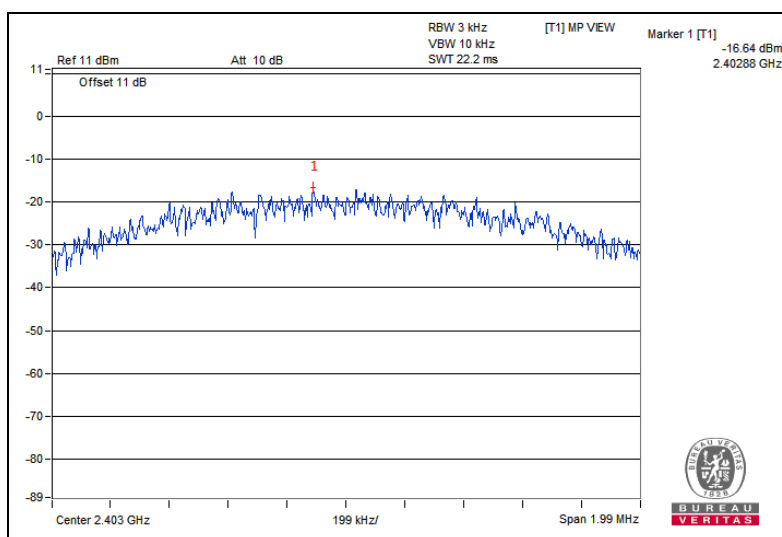
4.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 TEST RESULTS

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2403	-16.64	8	PASS
3	2440	-16.62	8	PASS
5	2473	-16.20	8	PASS

CH 1

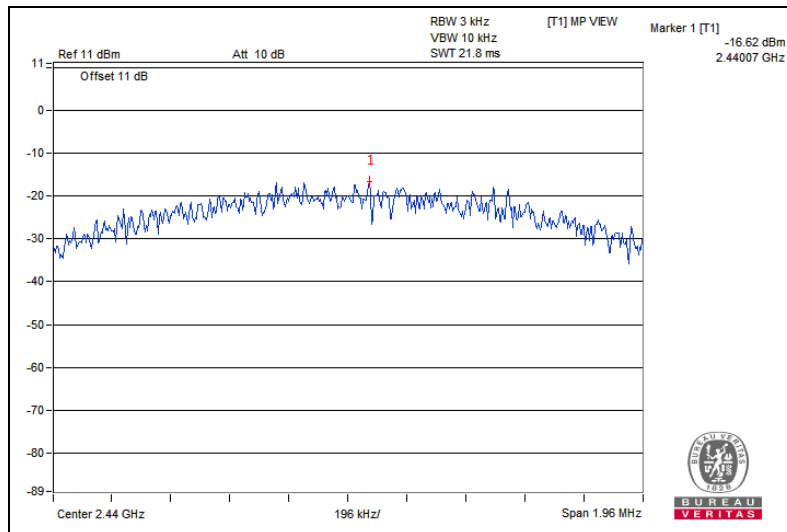




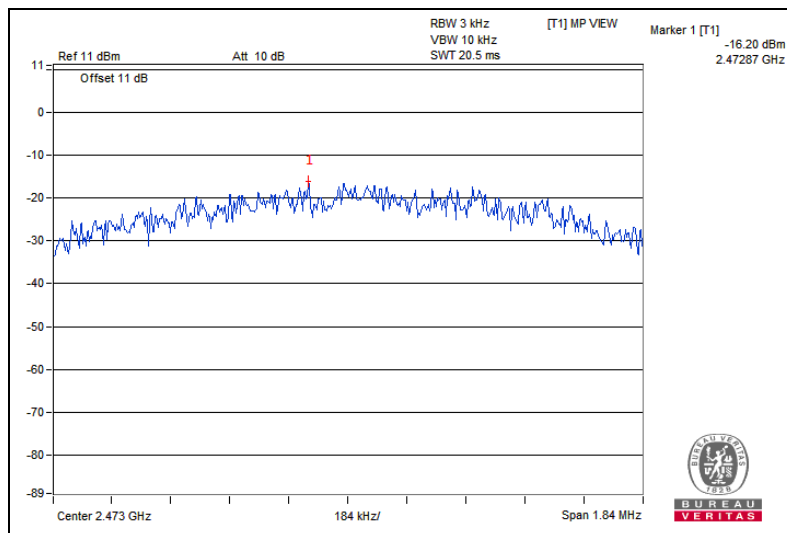
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CH 3



CH 5



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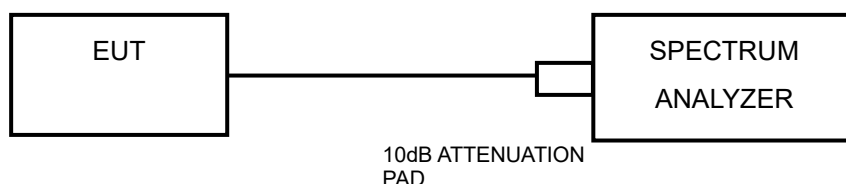


4.6 OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.3.2 to get information of above instrument.

4.6.4 TEST PROCEDURE

Measurement Procedure – Reference Level

1. Set instrument center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW = 100 kHz.
4. Set the VBW $\geq 100\text{kHz}$ (3x RBW).
5. Detector = peak.
6. Sweep time = No faster than coupled(auto) time.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum PSD level.



Measurement Procedure –Unwanted Emission Level

1. Set the center frequency and span to encompass frequency range to be measured.
2. Set RBW = 100 kHz.
3. Set VBW $\geq$ 300 kHz.
4. Detector = peak.
5. Sweep = No faster than coupled(auto) time.
6. Trace Mode = max hold.
7. Allow trace to fully stabilize.
8. Use the peak marker function to determine the maximum amplitude level.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

4.6.6 EUT OPERATING CONDITION

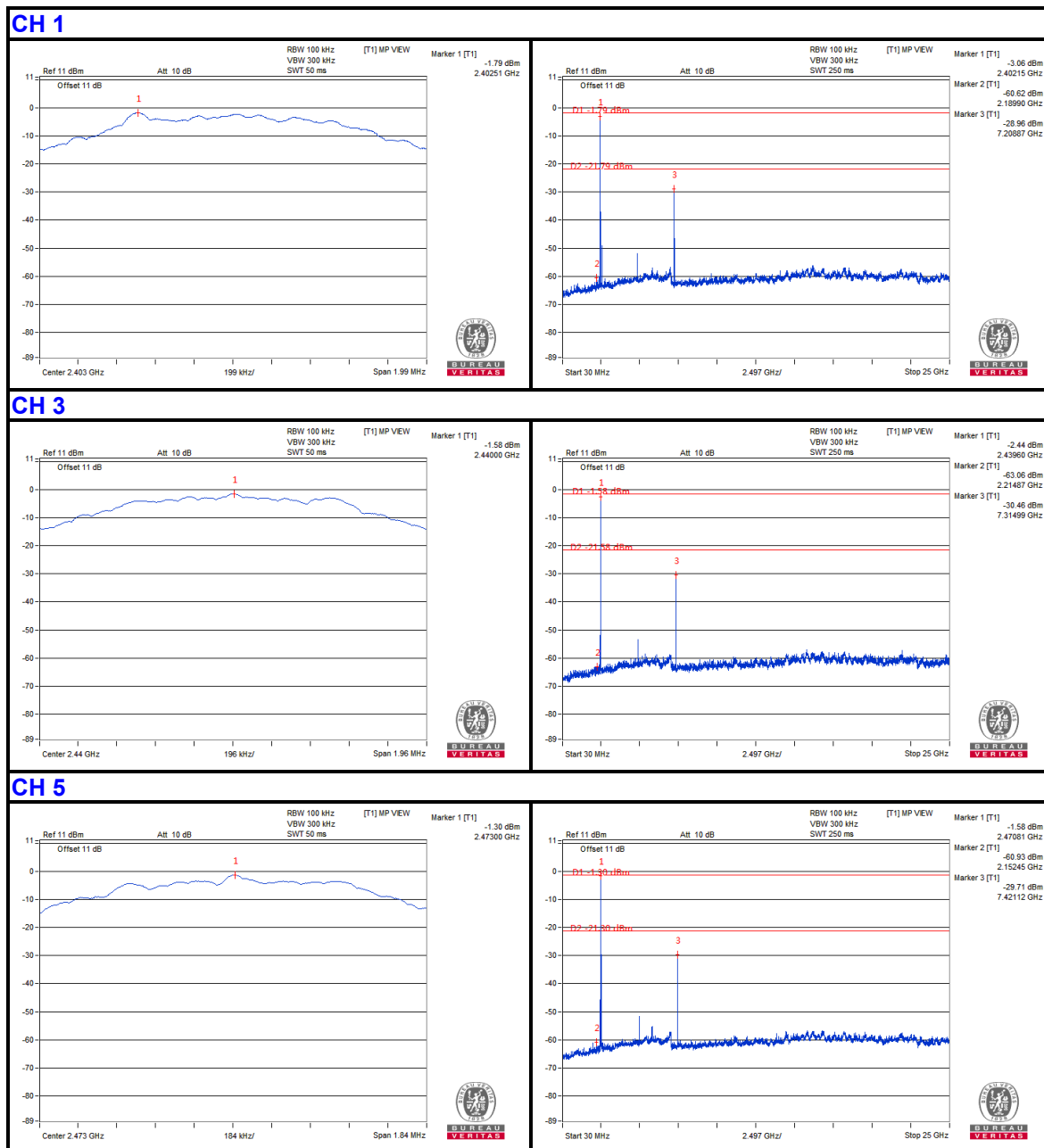
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4.6.7 TEST RESULTS



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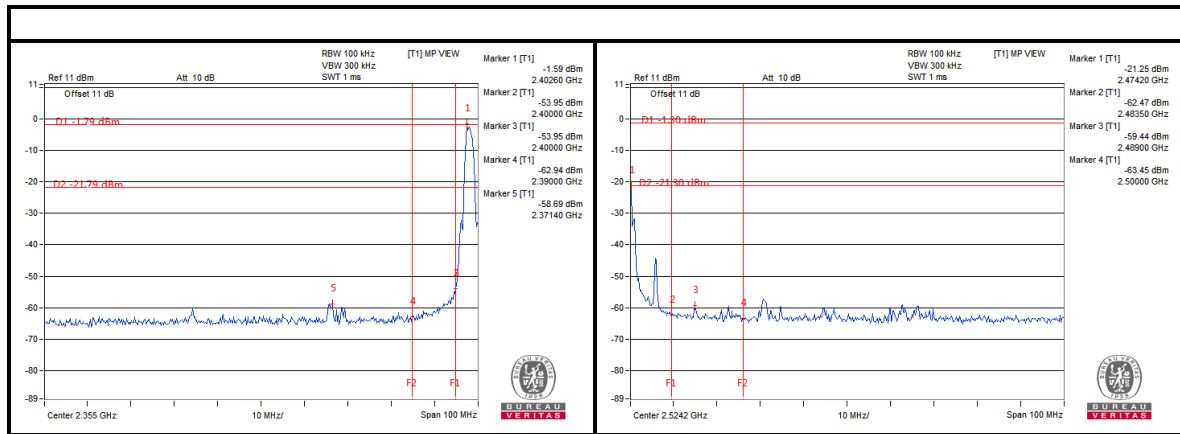
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Band Edge:



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5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



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6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications are made to the EUT by the lab during the test.

---END---