

# RADIO TEST REPORT

## FCC ID: 2AG2K-CD003TX

**Product :** COMPANION CORAL

**Trade Mark :** N/A

**Model Name :** CD003-COR

**Family Model :** N/A

**Report No. :** S20122801403001

### Prepared for

A&H Design Group, Ltd.

6/F, Room 601, Liby Center, Liwan District, No.2 Luju Road, Guangzhou,  
Guangdong, China

### Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an  
District Shenzhen, Guangdong, China

Tel.: +86-755-6115 9388 Fax.: +86-755-6115 6599

Website: <http://www.ntek.org.cn>

TEST RESULT CERTIFICATION

Applicant's name : A&H Design Group, Ltd.
Address: 6/F, Room 601, Liby Center, Liwan District, No.2 Lujia Road, Guangzhou, Guangdong, China
Manufacturer's Name : TOPARC TECHNOLOGY (SHENZHEN) CO.,LTD.
Address: 101 And 1-4 Floors Of Workshop No. 23-1 Longteng Road, Baoan Community, Yuanshan Street, Longgang Shenzhen, CHINA

Product description

Product name : COMPANION CORAL
Model and/or type reference : CD003-COR
Family Model: N/A
Rating(s) : DC 3V from battery

Standards : FCC Part15.249

Test procedure : ANSI C63.10-2013

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of NTEK, this document may be altered or revised by NTEK, personnel only, and shall be noted in the revision of the document.

Date of Test :
Date (s) of performance of tests: 28 Dec. 2020 ~19 Feb. 2021
Date of Issue : 19 Feb. 2021
Test Result : Pass

Testing Engineer : [Signature] (Allen Liu)

Technical Manager : [Signature] (Jason Chen)

Authorized Signatory : [Signature] (Alex Li)

**Table of Contents**

**Page**

<b>1 . SUMMARY OF TEST RESULTS</b>	<b>4</b>
1.1 TEST FACILITY	5
1.2 MEASUREMENT UNCERTAINTY	5
<b>2 . GENERAL INFORMATION</b>	<b>6</b>
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST MODES	8
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	9
2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	10
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	11
<b>3 . ANTENNA REQUIREMENT</b>	<b>12</b>
3.1 STANDARD REQUIREMENT	12
3.2 EUT ANTENNA	12
3.3 CONDUCTED EMISSION MEASUREMENT	13
3.3.1 POWER LINE CONDUCTED EMISSION LIMITS	13
3.3.2 TEST PROCEDURE	14
3.3.3 DEVIATION FROM TEST STANDARD	14
3.3.4 TEST SETUP	14
3.3.5 TEST RESULT	15
3.4 RADIATED EMISSION MEASUREMENT	16
3.4.1 RADIATED EMISSION LIMITS	16
3.4.2 TEST PROCEDURE	17
3.4.3 DEVIATION FROM TEST STANDARD	17
3.4.4 TEST RESULTS (BELOW 30MHZ)	19
3.4.5 TEST RESULTS (BELOW 1000 MHZ)	20
3.4.6 TEST RESULTS (ABOVE 1000 MHZ)	22
3.4.7 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)	28
<b>4 . FREQUENCY TOLERANCE</b>	<b>32</b>
4.1 FREQUENCY TOLERANCE LIMITS	32
4.2 TEST PROCEDURE	32
4.3 TEST SETUP	32
4.4 TEST RESULTS	32
<b>5. BANDWIDTH TEST</b>	<b>34</b>
5.1 TEST PROCEDURE	34
5.2 DEVIATION FROM STANDARD	34
5.3 TEST SETUP	34
5.4 TEST RESULTS	35

**1. SUMMARY OF TEST RESULTS**

Test procedures according to the technical standards:

<b>FCC Part15, Subpart C (15.249)</b>			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.249 15.209	Radiated Spurious Emission	Pass	
15.249(2)	Frequency Tolerance	Pass	
15.249(a)	Fundamental Measurement	Pass	
15.205	Band Edge Emission	Pass	
15.215	Occupied Bandwidth	Pass	

### 1.1 TEST FACILITY

All measurement facilities used to collect the measurement data are located at 1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District Shenzhen, Guangdong, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

### LABORATORY ACCREDITATIONS AND LISTINGS

Site Description  
 CNAS-Lab. : The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006 (identical to ISO/IEC 17025:2005)  
 The Certificate Registration Number is L5516.

IC-Registration : The Certificate Registration Number is 9270A.  
 CAB identifier:CN0074

FCC- Accredited : Test Firm Registration Number: 463705.  
 Designation Number: CN1184

A2LA-Lab. : The Certificate Registration Number is 4298.01  
 This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories.  
 This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

Name of Firm : Shenzhen NTEK Testing Technology Co., Ltd.  
 Site Location : 1/F, Building E, Fenda Science Park Sanwei, Xixiang, Bao'an District Shenzhen, Guangdong, China

### 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	COMPANION CORAL
Trade Mark	N/A
Model Name	CD003-COR
Family Model	N/A
Model Difference	N/A
Product Description	The EUT is a COMPANION CORAL
	Operation Frequency: 2407-2477MHz
	Modulation Type: GFSK
	Antenna Designation: PCB Antenna
	Antenna Gain(Peak) 0 dBi
	Based on the application, features, or specification exhibited in User's Manual. More details of EUT technical specification, please refer to the User's Manual.
Channel List	Please refer to the Note 2.
Adapter	N/A
Battery	TX 3V
HW Version	N/A
SW Version	N/A

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Channel	Frequency(MHz)
01	2407
02	2445
03	2477

3.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	PCB Antenna	N/A	0	Antenna

## 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	CH01
Mode 2	CH02
Mode 3	CH03
Mode 4	Normal link

For Radiated Spurious Emission	
Pretest Mode	Description
Mode 1	CH01
Mode 2	CH02
Mode 3	CH03

For Conducted Emission	
Final Test Mode	Description
Mode 1	CH01
Mode 2	CH02
Mode 3	CH03
Mode 4	Normal link

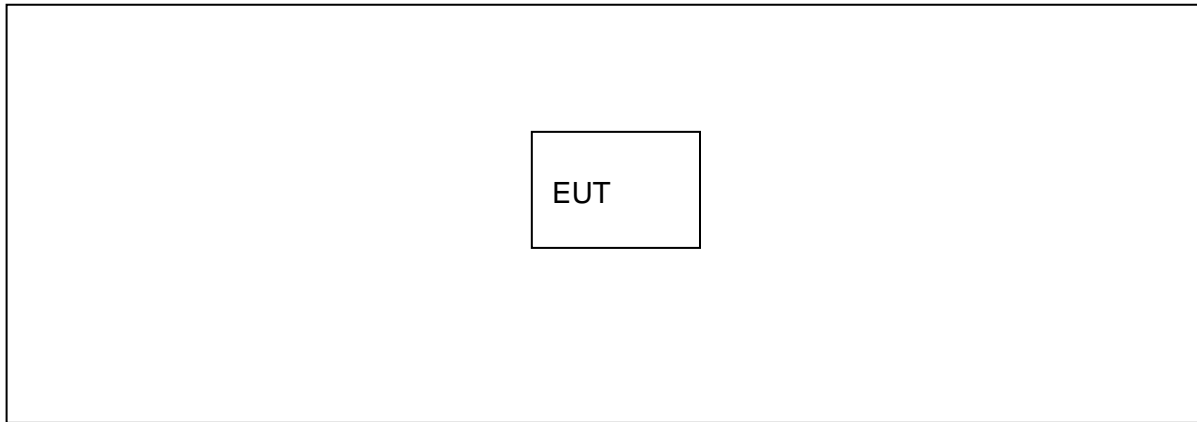
Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) For (BELOW 1000 MHz) radiated test cases, the worst mode Mode 3 was reported only, because this data rate has the highest RF output power at preliminary tests, and no other significantly frequencies found in conducted spurious emission.



### 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



**2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)**

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.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note

Item	Cable Type	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

### Radiation& Conducted Test equipment

	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	MY45108040	2020.05.11	2021.05.10	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2020.07.13	2021.07.12	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2020.08.07	2021.08.06	1 year
4	Test Receiver	R&S	ESPI7	101318	2020.05.11	2021.05.10	1 year
5	Bilog Antenna	TESEQ	CBL6111D	31216	2020.04.11	2021.04.10	1 year
6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2020.05.11	2023.05.10	3 year
7	Horn Antenna	EM	EM-AH-10180	2011071402	2020.04.11	2021.04.10	1 year
8	Broadband Horn Antenna	SCHWARZBECK	BBHA 9170	803	2020.11.19	2021.11.18	1 year
9	Amplifier	EMC	EMC051835SE	980246	2020.07.13	2021.07.12	1 year
10	Active Loop Antenna	SCHWARZBECK	FMZB 1519B	055	2020.11.19	2021.11.18	1 year
11	Power Meter	DARE	RPR3006W	15100041SN084	2020.07.13	2021.07.12	1 year
12	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2020.04.07	2023.04.06	3 year
13	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2020.04.07	2023.04.06	3 year
14	High Test Cable(1G-40G Hz)	N/A	R-03	N/A	2020.04.07	2023.04.06	3 year
15	High Test Cable(1G-40G Hz)	N/A	R-04	N/A	2020.04.07	2023.04.06	3 year
16	Filter	TRILTHIC	2400MHz	29	2020.04.13	2023.04.12	3 year
17	temporary antenna connector (Note)	NTS	R001	N/A	N/A	N/A	N/A

**Note:**

We will use the temporary antenna connector (soldered on the PCB board) When conducted test  
 And this temporary antenna connector is listed within the instrument list

### 3. ANTENNA REQUIREMENT

#### 3.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

#### 3.2 EUT ANTENNA

The EUT antenna is permanent attached PCB antenna (Gain:0dBi). It comply with the standard requirement.

**3.3 CONDUCTED EMISSION MEASUREMENT**

**3.3.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)**

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. \*Decreases with the logarithm of the frequency  
 2. The lower limit shall apply at the transition frequencies  
 3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

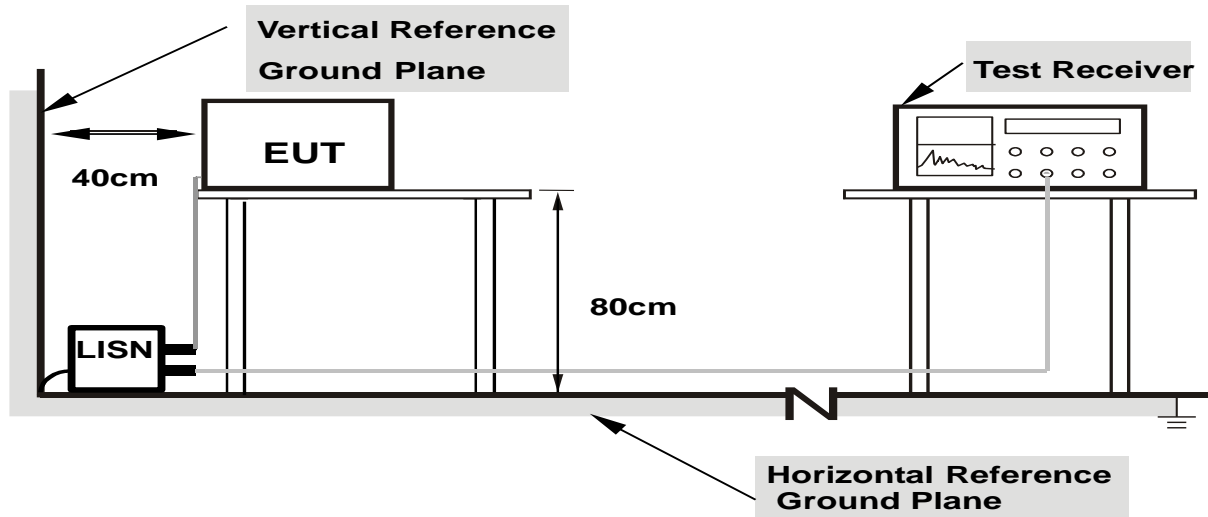
**3.3.2 TEST PROCEDURE**

- a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

**3.3.3 DEVIATION FROM TEST STANDARD**

No deviation

**3.3.4 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

**3.3.5 TEST RESULT**

EUT :	COMPANION CORAL	Model Name. :	CD003-COR
Temperature :	25 °C	Relative Humidity :	55%
Pressure :	1010hPa	Phase :	L
Test Voltage :	N/A	Test Mode :	N/A

Note: this product is battery powered and not suitable for AC terminal conduction test

### 3.4 RADIATED EMISSION MEASUREMENT

#### 3.4.1 Radiated Emission Limits ( FCC 15.209 )

Frequencies (MHz)	Field Strength (micorvolts/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
Frequency (MHz)	Limit (dBuV)	
30~88	40	3
88~216	43.5	3
216~960	46	3
960 -10000	54.00	3
*902 - 928	94.00	3

Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).
- (3) \*Note: This is the limit for the fundamental frequency.

#### LIMITS OF RADIATED EMISSION MEASUREMENT ( FCC 15.249)

Frequency of Emission (MHz)	Field Strength of fundamental ((millivolts /meter)	Field Strength of Harmonics (microvolts/meter)
2400-2483.5	50	500

Notes:

- (1) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



### 3.4.2 TEST PROCEDURE

- a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

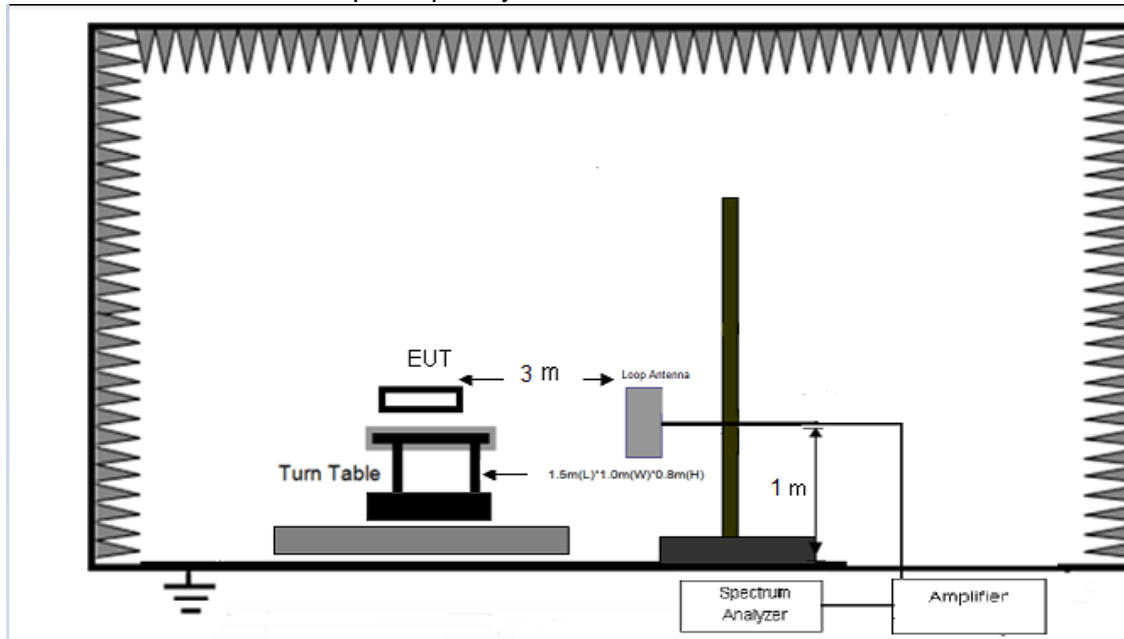
Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

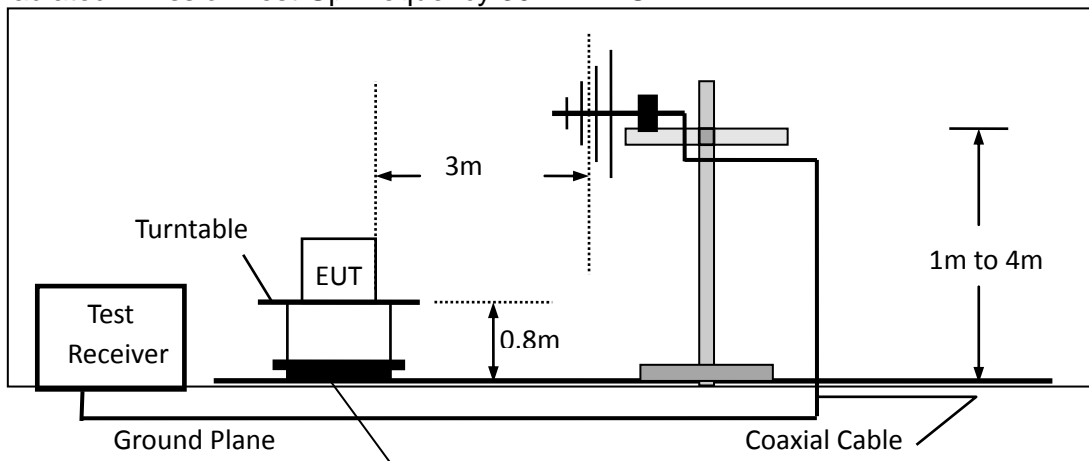
### 3.4.3 DEVIATION FROM TEST STANDARD

No deviation

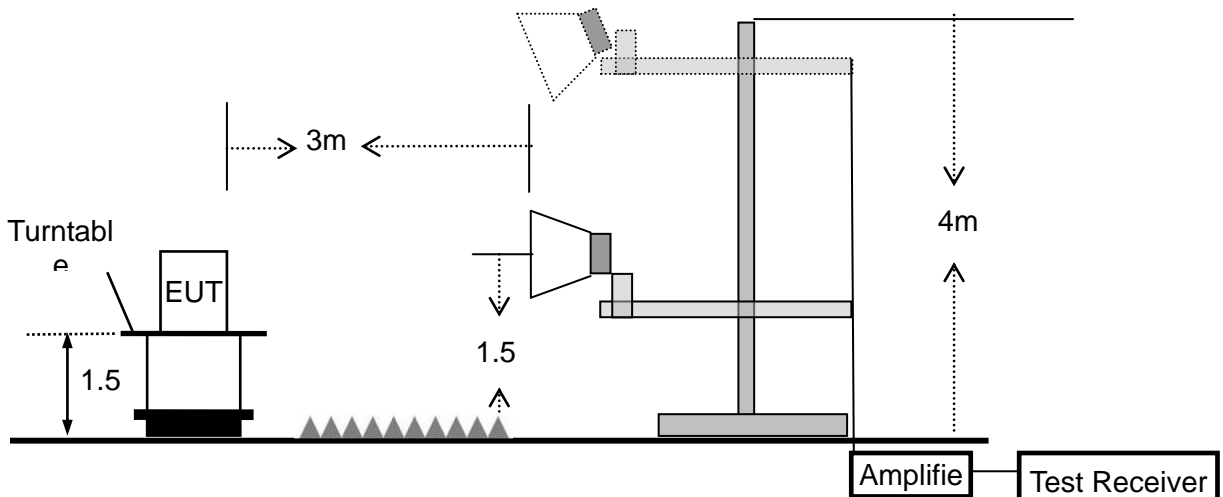
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



### 3.4.4 TEST RESULTS (BELOW 30MHz)

EUT :	COMPANION CORAL	Model Name. :	CD003-COR
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

**NOTE:**

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

Distance extrapolation factor =  $20 \log(\text{specific distance}/\text{test distance})$ (dB);

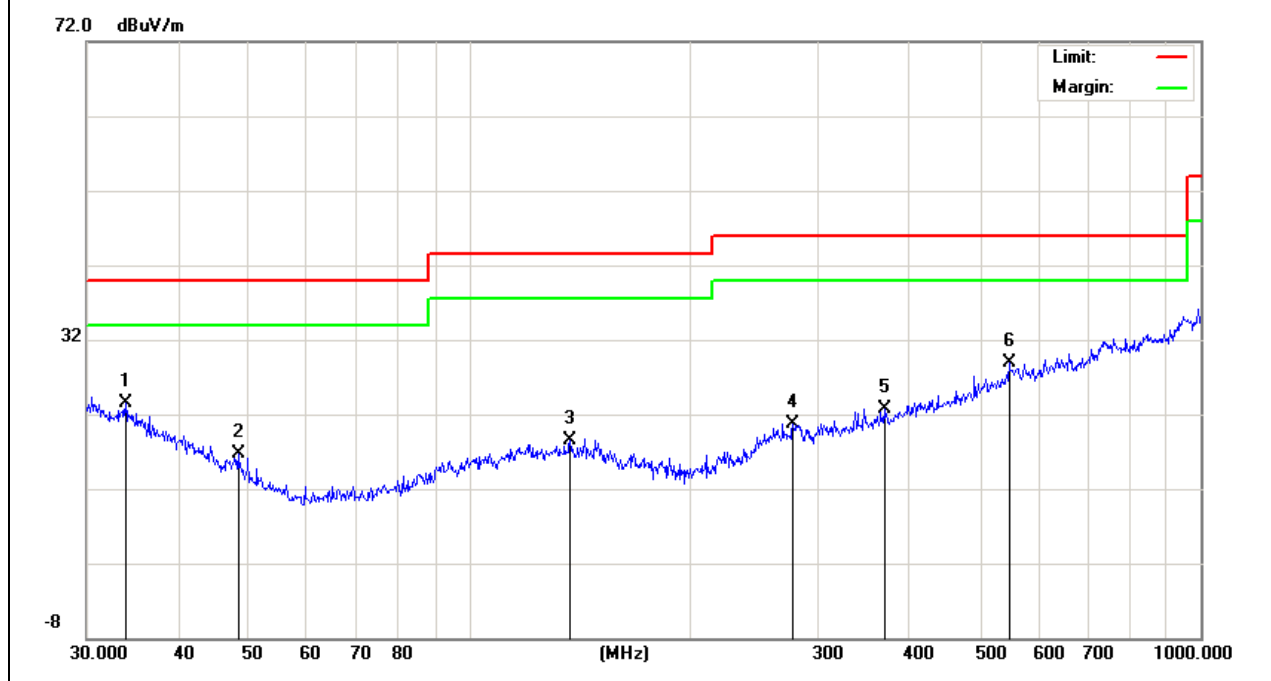
Limit line = specific limits(dBuv) + distance extrapolation factor.

### 3.4.5 TEST RESULTS (BELOW 1000 MHz)

EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	Model 4	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
33.9174	6.07	17.34	23.41	40.00	-16.59	QP
48.3318	6.05	10.58	16.63	40.00	-23.37	QP
137.4202	6.06	12.46	18.52	43.50	-24.98	QP
277.0935	5.63	15.13	20.76	46.00	-25.24	QP
369.4045	5.86	16.92	22.78	46.00	-23.22	QP
547.0977	6.58	22.33	28.91	46.00	-17.09	QP

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
Factor Including Cable loss and antenna coefficient

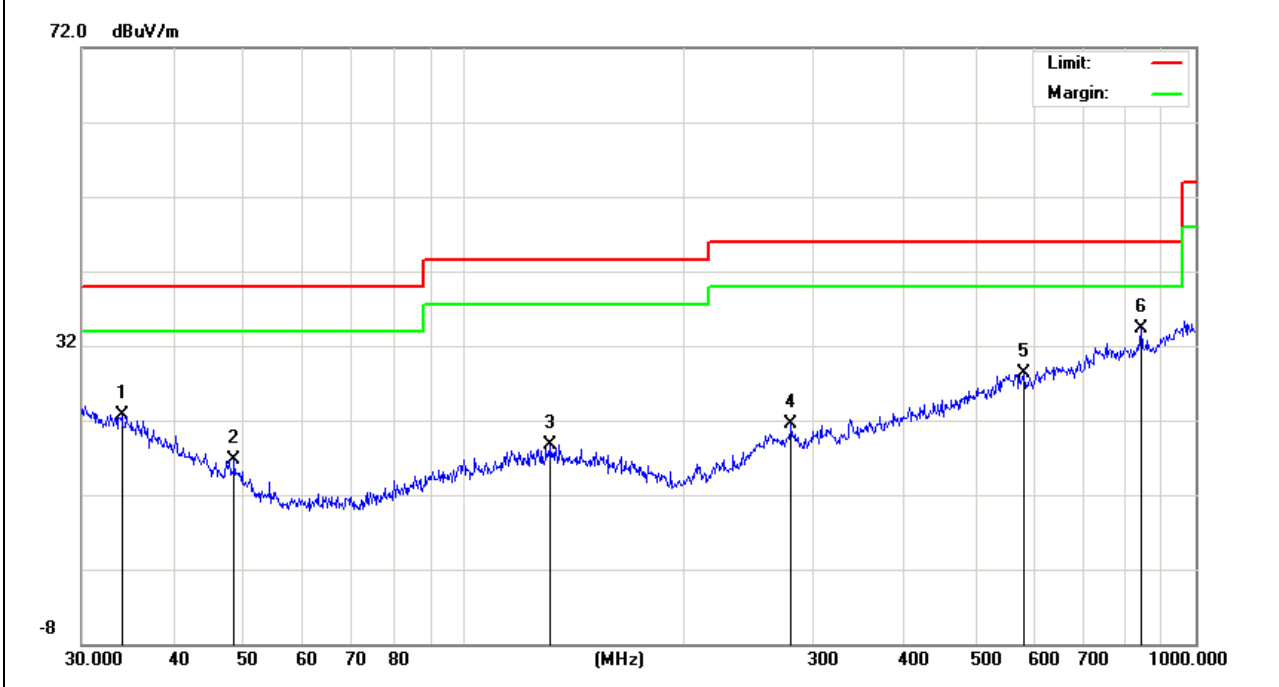


EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	Model 4	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
34.0363	5.33	17.30	22.63	40.00	-17.37	QP
48.5016	6.27	10.43	16.70	40.00	-23.30	QP
131.2965	6.16	12.55	18.71	43.50	-24.79	QP
280.0237	5.41	16.00	21.41	46.00	-24.59	QP
582.7424	6.45	21.82	28.27	46.00	-17.73	QP
842.1296	8.11	26.16	34.27	46.00	-11.73	QP

**Remark:**

Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
 Factor Including Cable loss and antenna coefficient

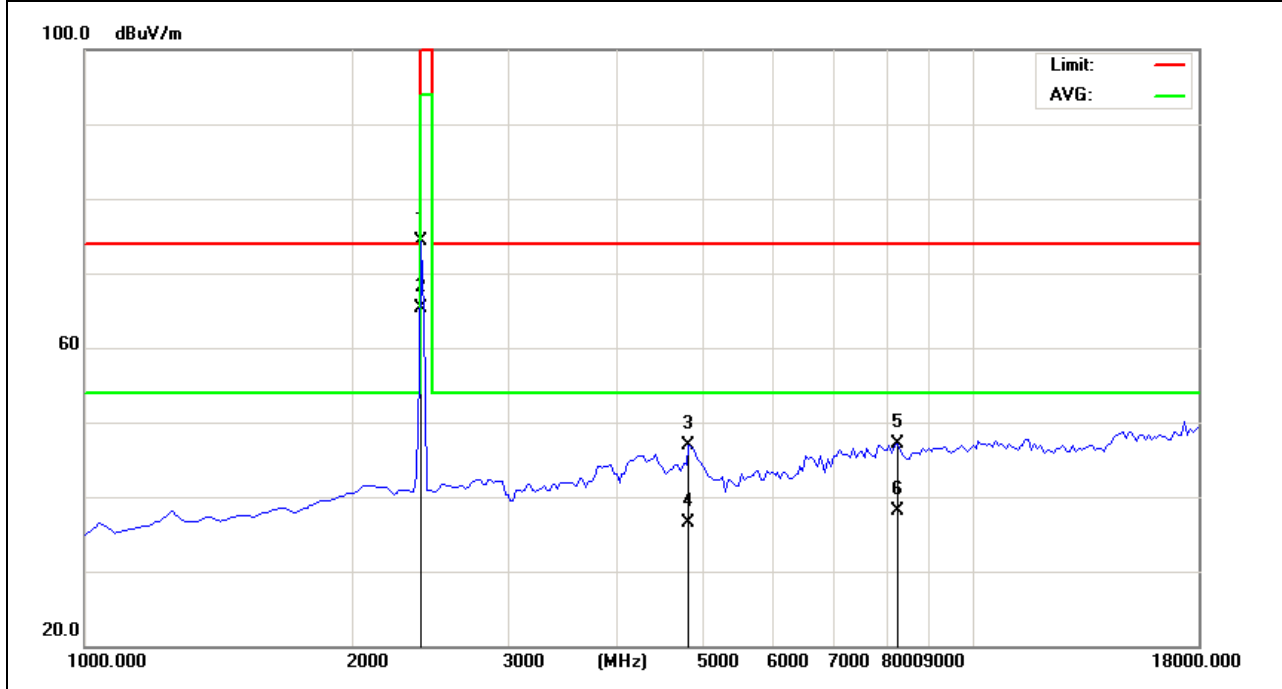


**3.4.6 TEST RESULTS (ABOVE 1000 MHZ)**

EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	Model 1	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2407.000	97.77	-23.45	74.32	114.0	-39.68	peak
2407.000	88.77	-23.45	65.32	94.00	-28.68	AVG
4825.000	60.80	-13.92	46.88	74.00	-27.12	peak
4825.000	50.37	-13.92	36.45	54.00	-17.55	AVG
8267.500	55.90	-8.84	47.06	74.00	-26.94	peak
8267.500	46.95	-8.84	38.11	54.00	-15.89	AVG

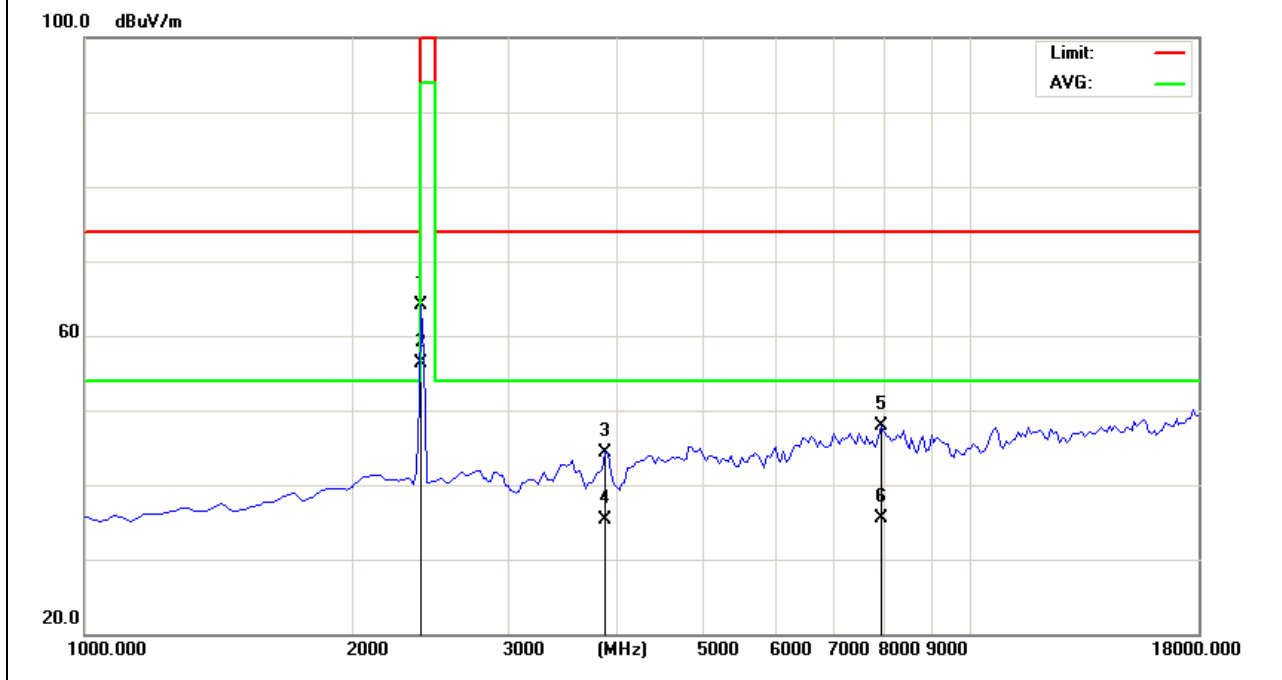
Remark:  
 Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
 No emission above 18GHz.



EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	Model 1	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2407.000	87.53	-23.45	64.08	114.0	-49.92	peak
2407.000	79.78	-23.45	56.33	94.00	-37.67	AVG
3890.000	61.29	-16.95	44.34	74.00	-29.66	peak
3890.000	52.20	-16.95	35.25	54.00	-18.75	AVG
7927.500	57.35	-9.39	47.96	74.00	-26.04	peak
7927.500	44.83	-9.39	35.44	54.00	-18.56	AVG

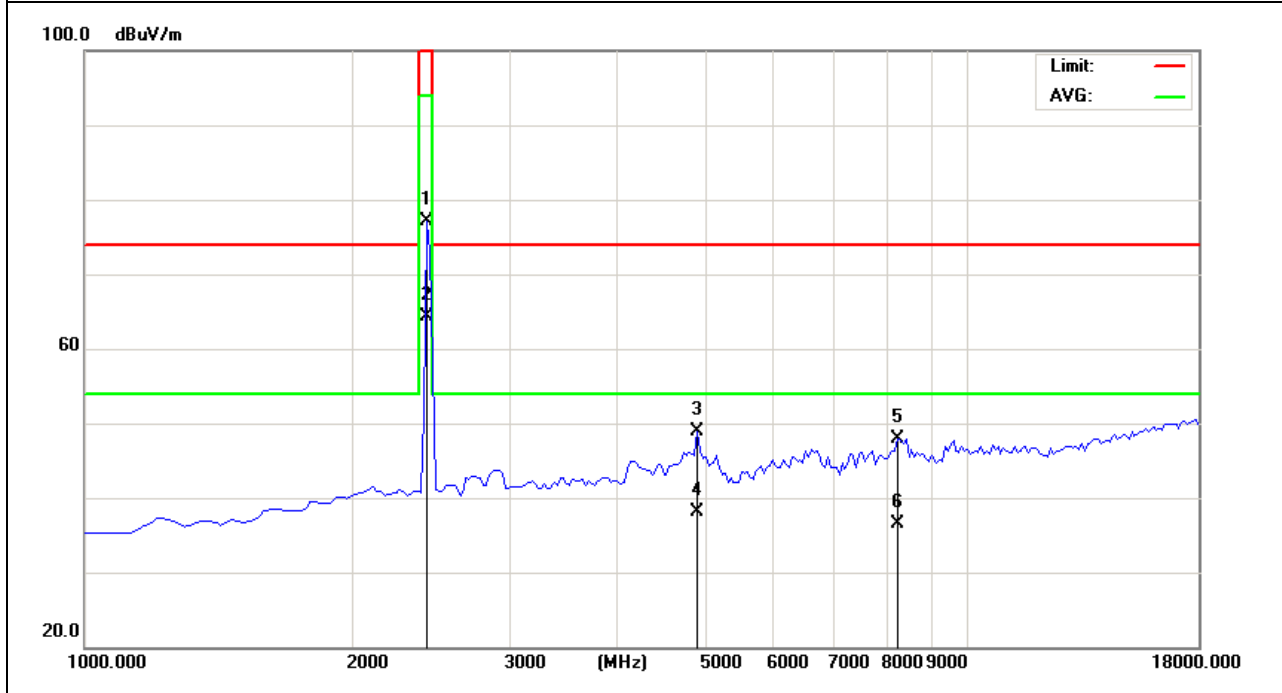
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
No emission above 18GHz.



EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	Model 2	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2445.000	100.55	-23.37	77.18	114.0	-36.82	peak
2445.000	87.58	-23.37	64.21	94.00	-29.79	AVG
4910.000	63.11	-14.17	48.94	74.00	-25.06	peak
4910.000	52.19	-14.17	38.02	54.00	-15.98	AVG
8267.500	56.71	-8.84	47.87	74.00	-26.13	peak
8267.500	45.28	-8.84	36.44	54.00	-17.56	AVG

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
No emission above 18GHz.

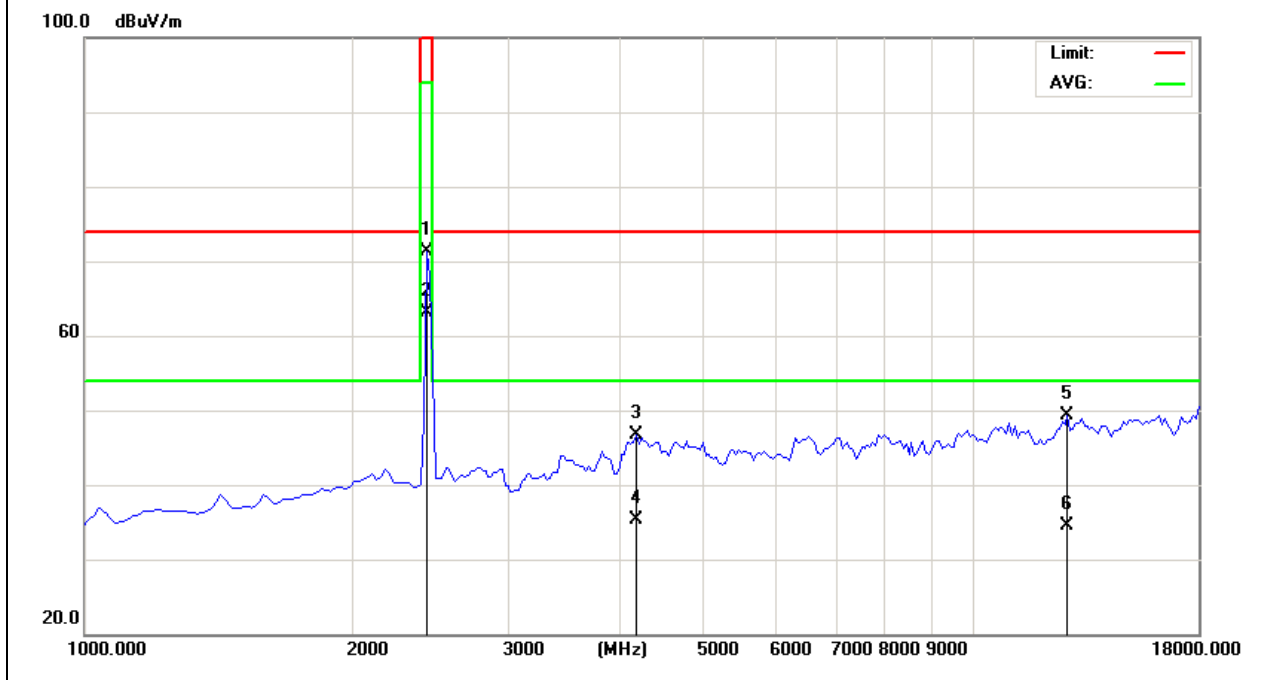




EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	Model 2	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2445.000	94.69	-23.37	71.32	114.0	-42.68	peak
2445.000	86.39	-23.37	63.02	94.00	-30.98	AVG
4187.500	62.76	-16.02	46.74	74.00	-27.26	peak
4187.500	51.27	-16.02	35.25	54.00	-18.75	AVG
12900.00	53.95	-4.56	49.39	74.00	-24.61	peak
12900.00	39.14	-4.56	34.58	54.00	-19.42	AVG

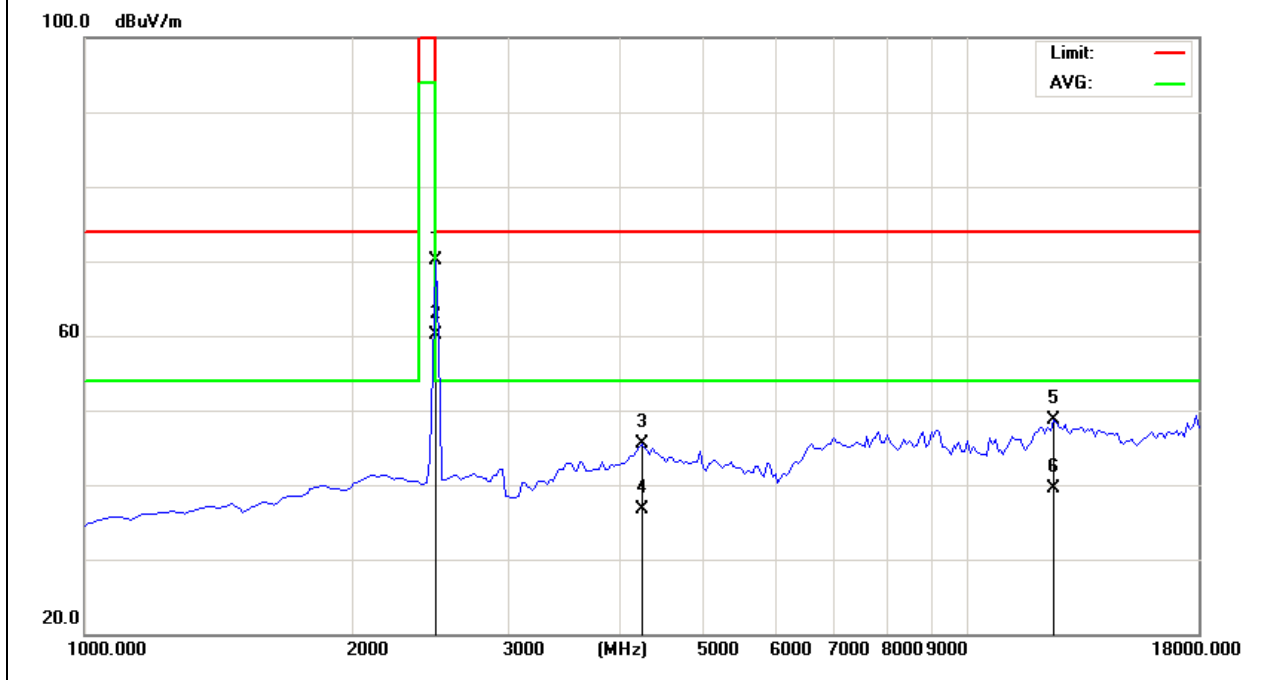
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
No emission above 18GHz.



EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	Model 3	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2477.000	93.49	-23.31	70.18	114.0	-43.82	peak
2477.000	83.33	-23.31	60.02	94.00	-33.98	AVG
4272.500	61.17	-15.65	45.52	74.00	-28.48	peak
4272.500	52.31	-15.65	36.66	54.00	-17.34	AVG
12390.00	53.97	-5.27	48.70	74.00	-25.30	peak
12390.00	44.75	-5.27	39.48	54.00	-14.52	AVG

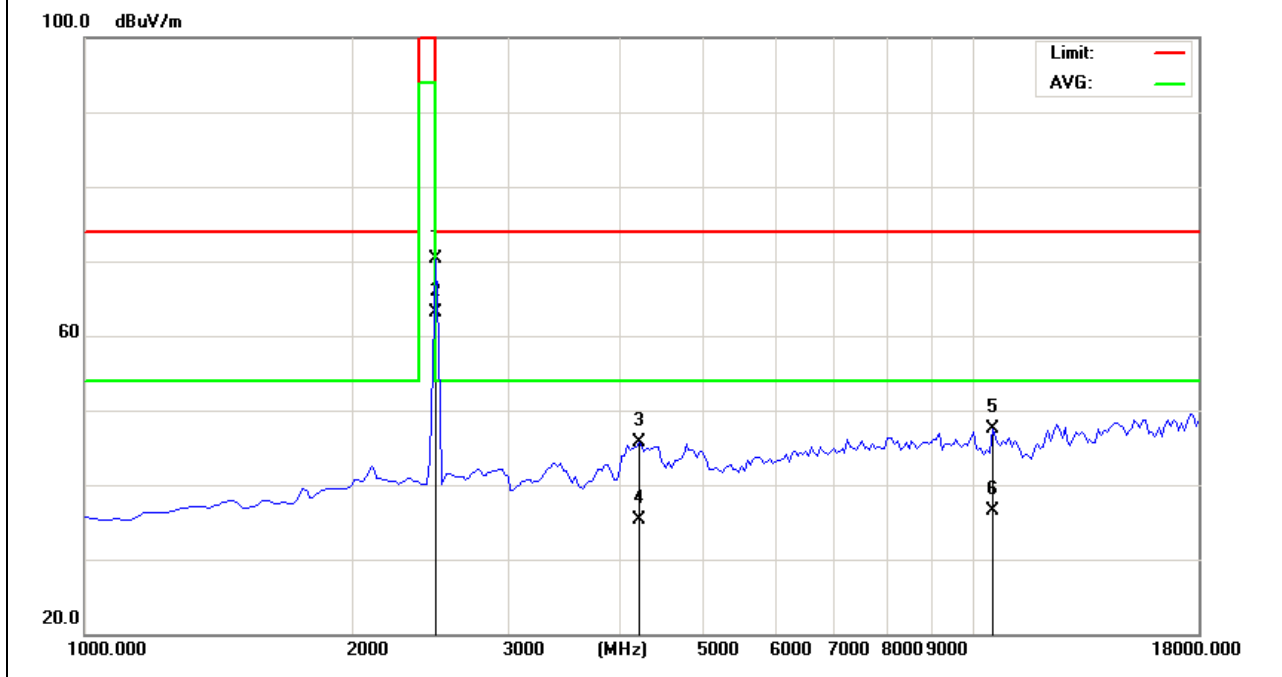
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
No emission above 18GHz.



EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	Model 3	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2477.000	93.62	-23.31	70.31	114.0	-43.69	peak
2477.000	86.33	-23.31	63.02	94.00	-30.98	AVG
4230.000	61.59	-15.84	45.75	74.00	-28.25	peak
4230.000	51.09	-15.84	35.25	54.00	-18.75	AVG
10562.50	53.28	-5.77	47.51	74.00	-26.49	peak
10562.50	42.22	-5.77	36.45	54.00	-17.55	AVG

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.  
No emission above 18GHz.



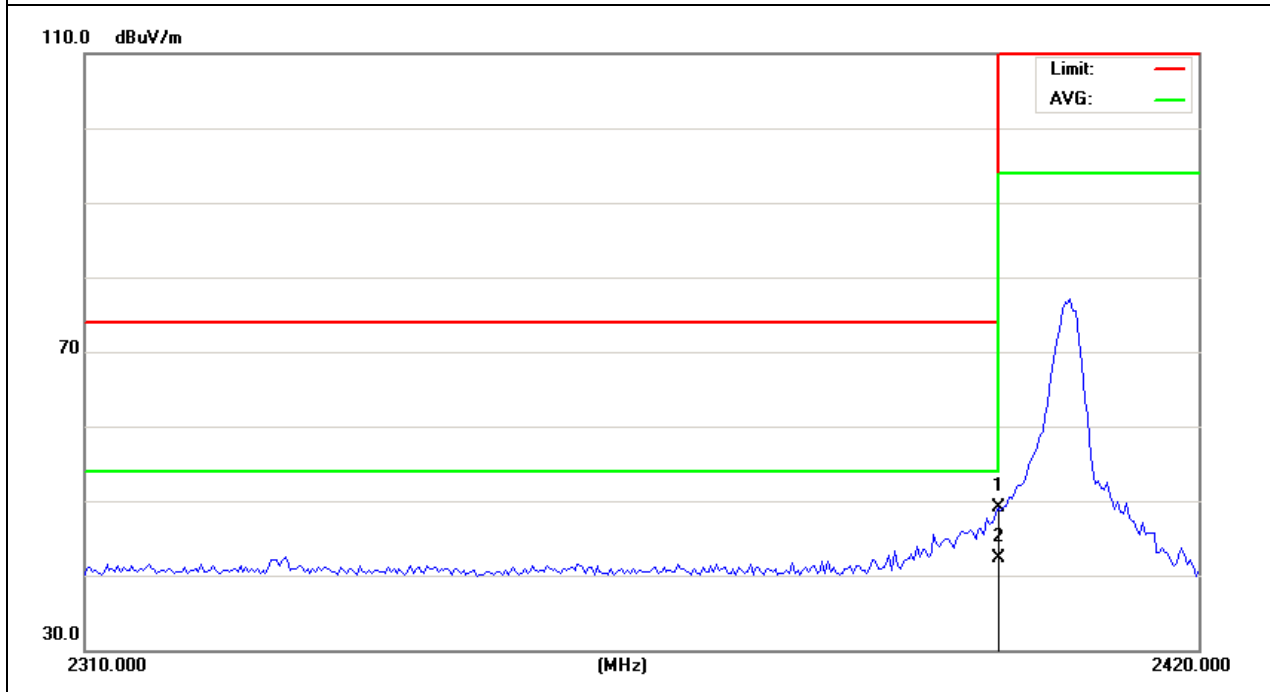
Note: EUT Pre-scan X/Y/Z orientation, only worst case is presented in the report(X orientation).

**3.4.7 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)**

EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	TX-2407MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400.000	72.58	-23.46	49.12	74.00	-24.88	peak
2400.000	65.66	-23.46	42.20	54.00	-11.80	AVG

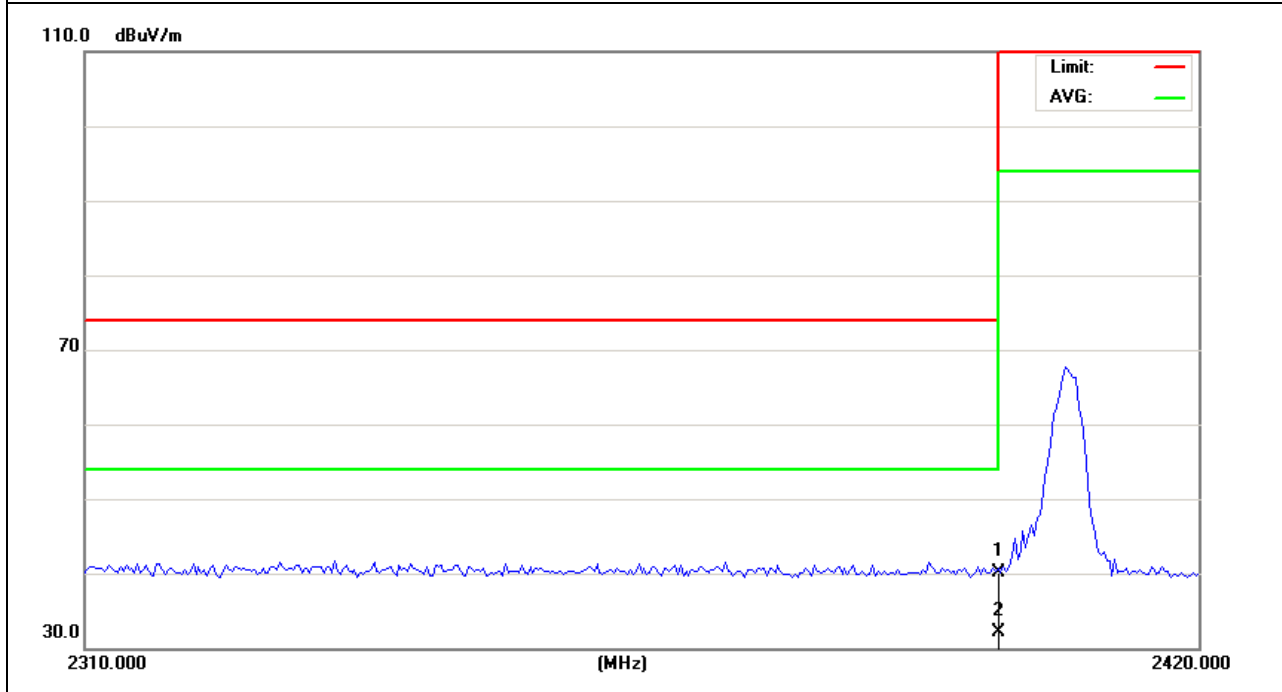
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	TX-2407MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2400.000	63.59	-23.46	40.13	74.00	-33.87	peak
2400.000	55.50	-23.46	32.04	54.00	-21.96	AVG

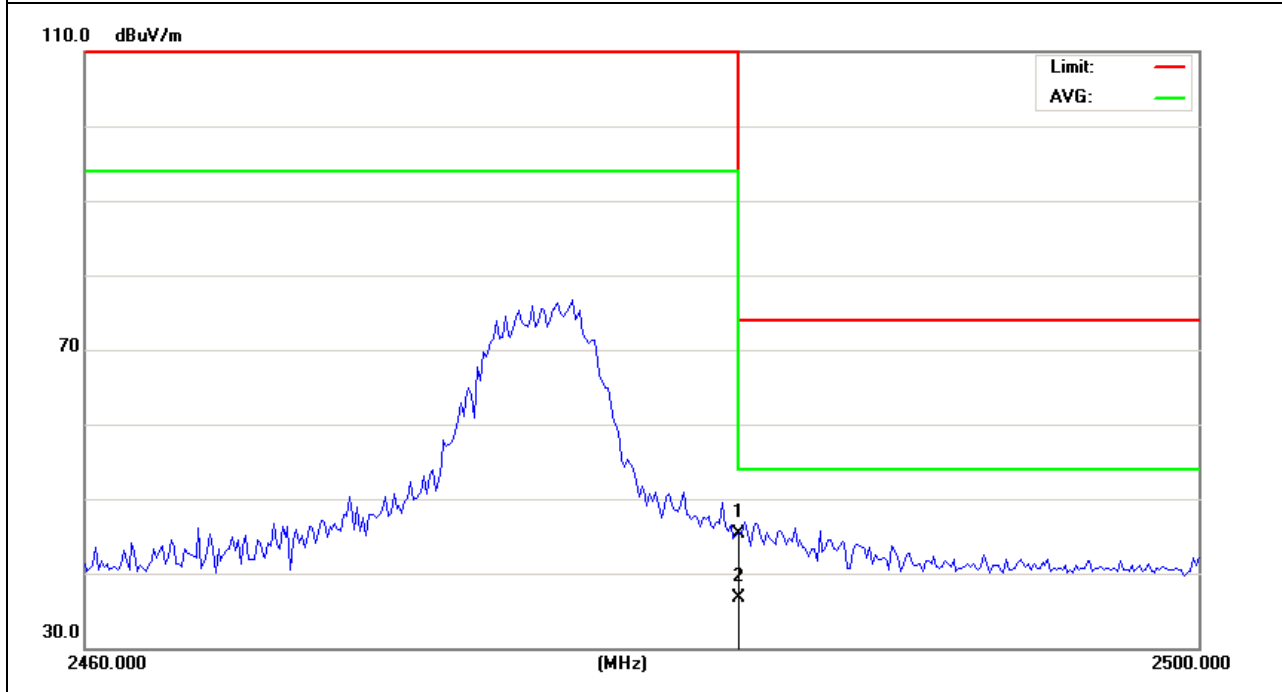
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	TX-2477MHz	Polarization :	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.500	68.68	-23.29	45.39	74.00	-28.61	peak
2483.500	59.95	-23.29	36.66	54.00	-17.34	AVG

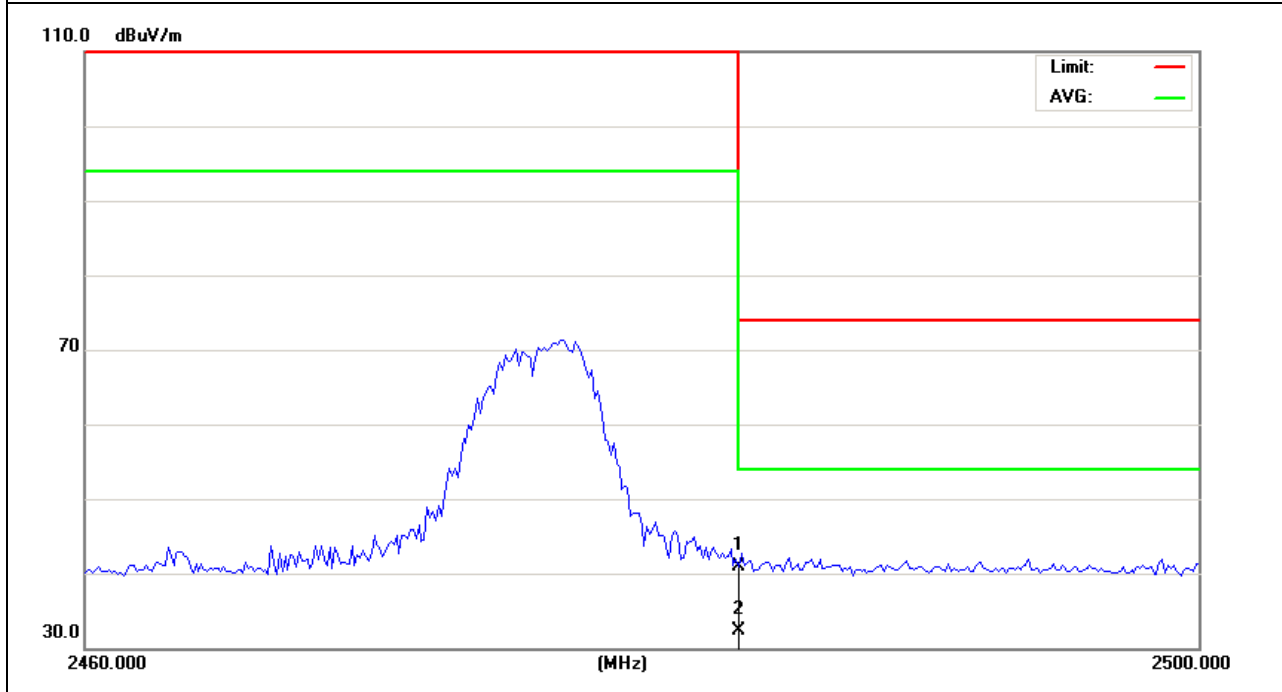
Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	25 °C	Relative Humidity :	51%
Pressure :	1010 hPa	Test Voltage :	DC 3V from battery
Test Mode :	TX-2477MHz	Polarization :	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.500	64.26	-23.29	40.97	74.00	-33.03	peak
2483.500	55.64	-23.29	32.35	54.00	-21.65	AVG

Remark:  
Factor = Antenna Factor + Cable Loss – Pre-amplifier.



#### 4. FREQUENCY TOLERANCE

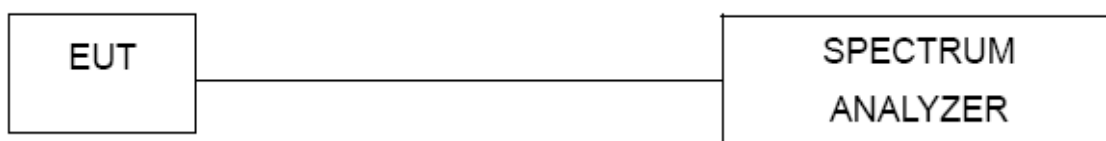
##### 4.1 FREQUENCY TOLERANCE LIMITS

The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.001\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

##### 4.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 10KHz, VBW $\geq$ RBW, Sweep time = Auto.

##### 4.3 TEST SETUP



##### 4.4 TEST RESULTS

EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	26 °C	Relative Humidity :	53%
Pressure :	1020 hPa	Test Power :	DC 3V from battery
Test Mode :	Model 1/2/3		

2407MHz

Voltage (V)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance	LIMIT
2.55	2407	2407.012	4.99	$\pm 10$
3	2407	2407.008	3.32	$\pm 10$
3.45	2407	2407.006	2.49	$\pm 10$

Temperature (°C)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance	LIMIT
-20	2407	2407.002	0.83	$\pm 10$
-10	2407	2407.006	2.49	$\pm 10$
0	2407	2407.007	2.91	$\pm 10$
10	2407	2407.005	2.08	$\pm 10$
20	2407	2407.006	2.49	$\pm 10$
30	2407	2407.004	1.66	$\pm 10$
40	2407	2407.006	2.49	$\pm 10$
50	2407	2407.007	2.91	$\pm 10$



2445MHz

Voltage (V)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance	LIMIT
2.55	2445	2445.01	4.09	±10
3	2445	2445.009	3.68	±10
3.45	2445	2445.008	3.27	±10

Temperature (°C)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance	LIMIT
-20	2445	2445.006	2.45	±10
-10	2445	2445.007	2.86	±10
0	2445	2445.003	1.23	±10
10	2445	2445.007	2.86	±10
20	2445	2445.004	1.64	±10
30	2445	2445.006	2.45	±10
40	2445	2445.007	2.86	±10
50	2445	2445.006	2.45	±10

2477MHz

Voltage (V)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance	LIMIT
2.55	2477	2477.009	3.63	±10
3	2477	2477.005	2.02	±10
3.45	2477	2477.002	0.81	±10

Temperature (°C)	Frequency(MHz)	Reading(MHz)	Frequency Tolerance	LIMIT
-20	2477	2477.002	0.81	±10
-10	2477	2477.001	0.40	±10
0	2477	2477.002	0.81	±10
10	2477	2477.003	1.21	±10
20	2477	2477.004	1.61	±10
30	2477	2477.003	1.21	±10
40	2477	2477.002	0.81	±10
50	2477	2477.005	2.02	±10

## 5. BANDWIDTH TEST

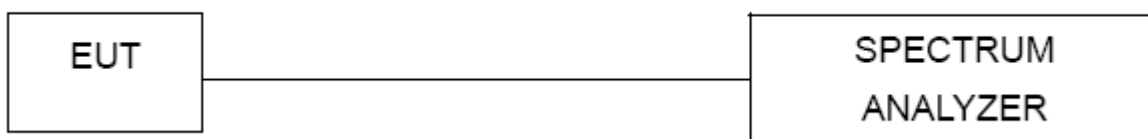
### 5.1 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- b. Spectrum Setting : RBW= 100KHz, VBW $\geq$ RBW, Sweep time = Auto.

### 5.2 DEVIATION FROM STANDARD

No deviation.

### 5.3 TEST SETUP



**5.4 TEST RESULTS**

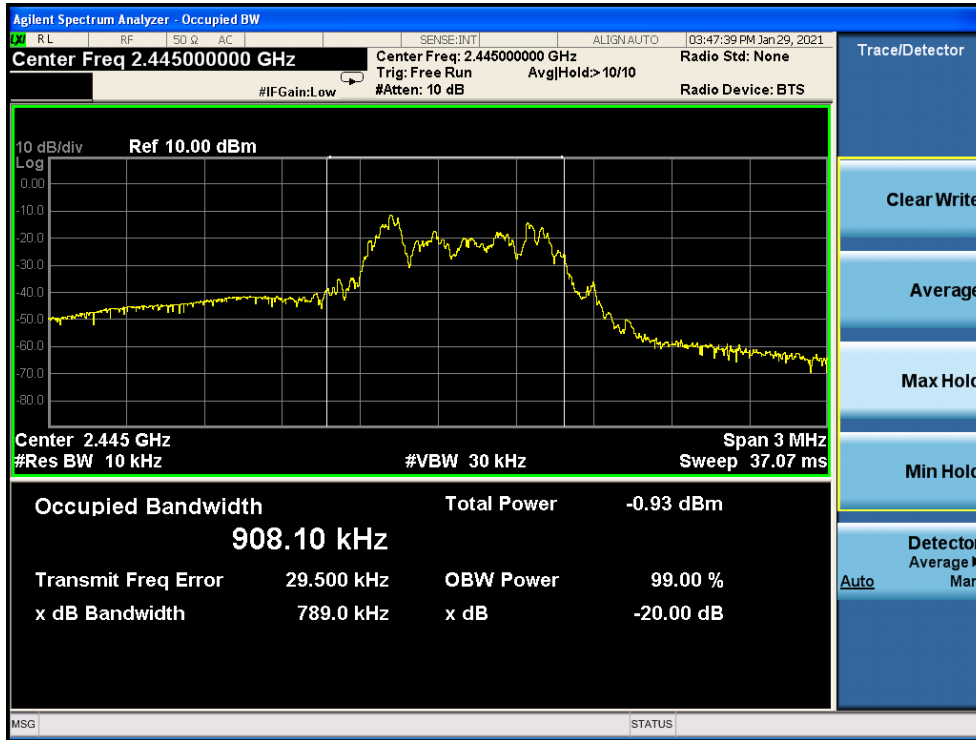
EUT :	COMPANION CORAL	Model Name :	CD003-COR
Temperature :	26 °C	Relative Humidity :	53%
Pressure :	1020 hPa	Test Power :	DC 3V from battery
Test Mode :	Model 1/2/3		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)
CH01	2407	0.7975
CH02	2445	0.789
CH03	2477	0.7942

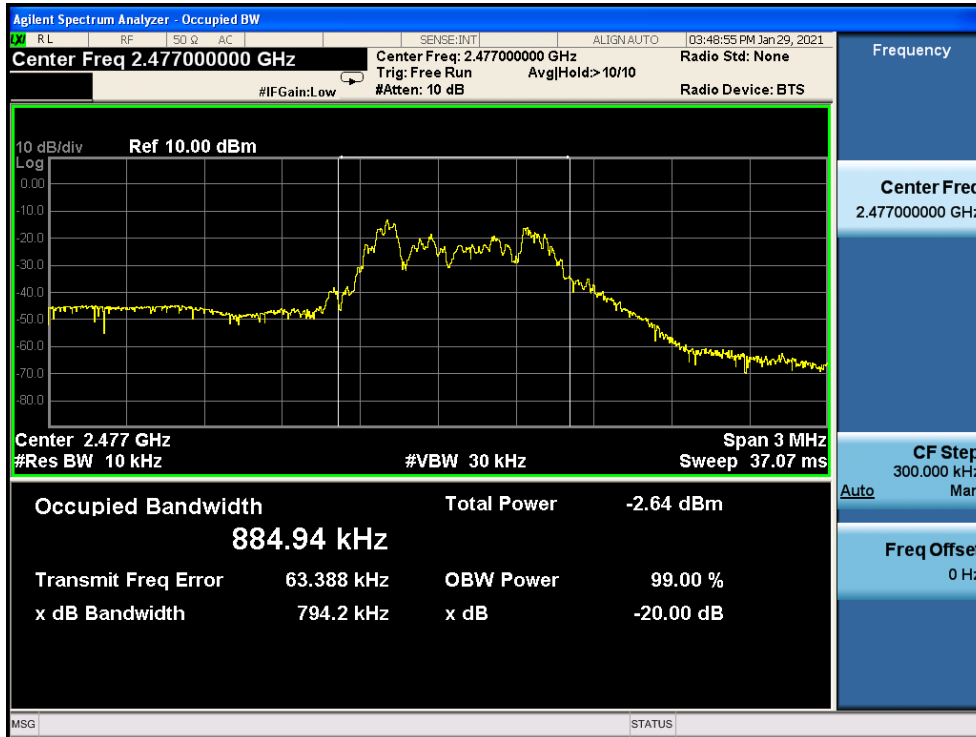
**2407 MHz**



2445 MHz



2477 MHz



END OF REPORT