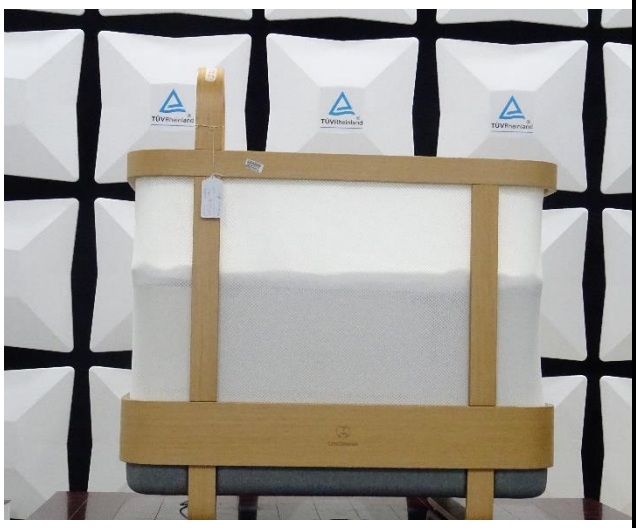
Prüfbericht – Produkte
Test Report - Products

Certificate No. : 4271.01

Prüfbericht-Nr.: *Test report no.:*	**ULR-TC568822300000064F**	**Auftrags-Nr.:** *Order no.:*	**146681475 010**	Seite 1 von 36 *Page 1 of 36*
Kunden-Referenz-Nr.: *Client reference no.:*	2130858	**Auftragsdatum:** *Order date:*	2022-05-03	
Auftraggeber: *Client:*	Cradlewise Incorporated, 479 Jessie street, San Francisco CA, 94103			
Prüfgegenstand: *Test item:*	Cradlewise Smart Crib	**Serien-Nr.:** *serial no.:*	2205-00001-LT1	
Bezeichnung: *Identification:*	2V0			
Auftrags-Inhalt: *Order content:*	Testing and issue of Test Report with Grant Certificate			
Prüfgrundlage: *Test specification:*	FCC Part 15 Subpart C 15.247, 15.207, 15.205, 15.209			
Wareneingangsdatum: *Date of sample receipt:*	2022.05.18			
Prüfmuster-Nr & *Test sample no &*	A003263032-001 & A003263032-002			
Prüfzeitraum: *Testing period:*	2022.05.18 - 2022.05.26			
Ort der Prüfung: *Place of testing:*	Wireless laboratory, Bangalore			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (India) Pvt.Ltd., 27/B, 2nd Cross, Electronic City Phase1 Bangalore -560 100, India FCC Test site registration number: 496599 ISED Test site registration number: 3466E-1			
Prüfergebnis*: *Test result*:*	Pass			



geprüft von: *tested by:*

Datum: *Date:* **2022.06.20** M.V. Naveen Kumar

Stellung / *Position:* **M.V.Naveen Kumar** Engineer

genehmigt von: *authorized by:*

Ausstellatum: *Issue date:* **2022.08.09** M.K.N

Stellung / *Position:* **Madhu K.N** Senior Engineer

Sonstiges / *Other:* FCC ID: 2A6EK-SC-6275S-001

Zustand des Prüfgegenstandes bei Anlieferung: *Condition of the test item at delivery:* **Prüfmuster vollständig und unbeschädigt** ***Test item complete and undamaged***

* Legende:	1 = sehr gut	2 = gut	3 = befriedigend	4 = ausreichend	5 = mangelhaft
	P(ass) = entspricht o.g. Prüfgrundlage(n)		F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	N/A = nicht anwendbar	N/T = nicht getestet
** Legend:*	*1 = very good*	*2 = good*	*3 = satisfactory*	*4 = sufficient*	*5 = poor*
	P(ass) = passed a.m. test specification(s)		*F(ail) = failed a.m. test specification(s)*	*N/A = not applicable*	*N/T = not tested*

Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens.
This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.

V05

TEST SUMMARY

Test Item	Applicable Standard FCC	Result
Maximum conducted (Peak) output power	FCC 15.247(b)(1)	Pass
Maximum Power Spectral Density	FCC 15.247(e)	NA
20dB Bandwidth	FCC 15.247(a)(iii)	*N/T
Channel Frequency Seperation	15.247(a)(1)	*N/T
Number of Hopping Channels	15.247(a)(iii)	*N/T
Time of Occupancy(Dwell Time)	15.247(a)(iii)	*N/T
Emissions in non-restricted frequency bands	FCC 15.247(d)	*N/T
Spurious Radiated Emissions and Restricted Bands of Operation	FCC 15.209 / FCC 15.205	Pass
Conducted Emissions on a.c power Lines	FCC 15.207	Pass
Antenna Requirement	FCC 15.203	Pass

Note:

NA: Not Applicable

*N/T: Not tested – These test cases are not tested, the product uses certified RF module **WIFI+BT Combo Module** from **Askey Computer Corporation.,** with **FCC ID: H8N-AP6275S & IC : 1353A-AP6275S.** Issued by the **MRT Technology (Suzhou) Co., Ltd**

Product Category: Electronics Testing
Test Discipline: EMC Test Facility

REVISION HISTORY OF THIS REPORT

Report Number	Version	Description	Issue date
ULR-TC568822300000064F	01	Initial issue of report	2022.08.09

Table of Contents

1 GENERAL REMARKS 5
1.1 Attachments 5
2 TEST SITES 6
2.1 Testing Facilities 6
2.2 List of Test and Measurement Instruments 6
3 GENERAL PRODUCT INFORMATION 8
3.1 Product Function and Intended Use 8
3.1 Ratings and System Details of Equipment under Test 8
3.2 Measurement Uncertainty: 9
4 TEST SET-UP AND OPERATION MODE 10
4.1 Principle of Configuration Selection 10
4.2 Test Operation and Test Software 10
4.3 Special Accessories and Auxiliary Equipment 10
4.4 Simultaneous Transmission 10
4.5 Countermeasures to achieve EMC Compliance 10
4.6 List of frequencies 10
4.7 Report references 11
5 Operational Description 12
6 TEST METHODOLOGY 13
6.1 Conducted Spurious Emission AC Power line Test 13
6.1.1 Test Setup Configuration 13
6.2 Radiated Emission Test 14
6.2.1 Test Setup Configuration 14
7 TEST RESULTS 16
7.1 Maximum conducted (Peak) output power 16
7.2 Spurious Radiated Emissions & Restricted Bands of Operation 19
8 Conducted Emission on AC Power Lines 32
9 LIST OF TABLES 36
10 Power level used for 1, 2, 3 Mbps 36

1 GENERAL REMARKS

1.1 Attachments

All attachments are part of this test report and are issued in separate document

1. Test Setup photos
2. EUT External Photos
3. EUT Internal Photos
4. FCC Label and Label Location
5. Block Diagram
6. Specification of EUT
7. Schematic Diagrams
8. Bill of Material
9. User Manual
10. Maximum Permissible Exposure Information

2 TEST SITES

2.1 Testing Facilities

1. TÜV Rheinland (India) Pvt.Ltd.,
   27/B, 2nd Cross,
   ElectronicCityPhase1
   Bangalore – 560 100,
   India

   Radiated Measurement site type :
   Fully anechoic chamber (used for above 1 GHz measurements)

2. TUV Rheinland (India) Pvt.Ltd.,
   108 , Beside ISBR Business School,
   Electronic city Phase I
   Bangalore - 560 100.
   India

   Radiated Measurement site type :
   Semi anechoic chamber (used for below 1 GHz measurements)

2.2 List of Test and Measurement Instruments

Table 1: List of test and measurement instruments

Equipment	Manufacturer	Model Name	Serial Number	Firmware Versions	Calibration Due Date	Periodicity	Test Facility
EMI Receiver	Rohde & Schwarz	ESW 44	101732	4.73 SP5	19.08.2022	Yearly	Radiated Spurious Emission
EMI Receiver	Rohde & Schwarz	ESW 44	101733	1.72SP1	12.02.2023	Yearly	
Active loop antenna	Frankonia	LAX-18	LAX-10-800	-	31.01.2023	Yearly	
Balloon and Biconical Antenna	Schwarzbeck	VHBB-9124 / BBA-9106	1028	-	03.02.2023	Yearly	
Log - Periodical Antenna	Schwarzbeck	VUSLP-9111B	9111B-111	-	04.02.2023	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-1944	-	03.07.2022	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-0904	-	06.07.2022	Yearly	
Semi Anechoic Chamber	Frankonia	-	-	-	-	-	
Fully Anechoic Chamber	Albatross	-	-	-	-	-	
Spectrum Analyser	Agilent Technologies	E4407B	US41192 772	A.14.06	15.12.2022	Yearly	Antenna-Port Conducted test
EMI Receiver	Rohde & Schwarz	ESR7	101133	-	14.07.2022	Yearly	Conducted AC Power line Test
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100811	-	29.07.2022	Yearly	
LISN	Rohde & Schwarz	ENV216	100022	-	07.10.2022	Yearly	

Table 2: Instrument application Software versions

SL. No.	Test Type	Application software	Version
1	Radiated spurious emission measurement in 10mtr-SAC	BAT EMC	3.20.0.17
2	Radiated spurious emission measurement in FAC	EMC 32	10.60.00

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

Cradlewise smart crib is a self-soothing crib that automatically rocks the baby to sleep. It has an in-built baby monitor that senses the baby's wake-ups, and in response bounces and plays music. Cradlewise's baby monitor has an in-built night vision camera. It converts from a bassinet to a crib, so it can be used for up to 24-month-old baby.

3.1 Ratings and System Details of Equipment under Test

Table 3: Ratings and System Details as declared by Client*

Radio Protocol	Bluetooth
Operating Frequency Range	2400MHz-2483.5MHz
No. of Channels	79
Channel Spacing	1MHz
Transmitting Power Level	Refer Clause 10
Maximum Measured peak conducted power	-11.57 dBm (3Mbps 2402MHz)
Modulation	GFSK, pi/4-DQPSK,8-DPSK
Data Rates	1Mbps,2Mbps,3Mbps
Number of antennas	1
Antenna Gain	2.0dBi (max peak gain)
Antenna Type	Molex 2042811100 balanced, dipole-type antenna
Supply Voltage to Product	12VDC through AC/DC Adapter
Environmental conditions	Storage temp: : 5℃ to +60℃ Relative Humidity 5% < to <95%
	Operating Temp: 5℃ to +40℃ Relative Humidity 10%< to <90%
EUT Dimension(L x W x H)	1070mm x970mm x 638mm

***Disclaimer**: The information/data is supplied by the client and the same is considered to arrive at the final value. Any changes made apart from the specified specification, can directly impact on the tests results. Refer the products user manual for more details.

Note: Product **Cradlewise Smart Crib** has multiple protocols. All the supported wireless protocols and their respective test results are issued in separate test reports, refer clause 4.7 Report references

3.2 Measurement Uncertainty:

Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of *k* = 2

Table 4: Measurement Uncertainty

Parameter	Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3 dB
Unwanted Emissions, conducted	±3 dB
All emissions, radiated	±6 dB
Temperature	±3 ℃
Supply Voltages	±3 %
Time	±5 %

Note: The Listed Measurement Uncertainties are the worst-case uncertainty, for the respective test cases. Above Table is for reporting purpose only and not used in determining Final Pass/Fail verdict.

4 TEST SET-UP AND OPERATION MODE

4.1 Principle of Configuration Selection

Transmission was enabled with highest possible duty cycle on low, mid and high channel.

4.2 Test Operation and Test Software

Hardware Version : 2V0

Software version : 3.00

Software Name: Cradlewise smart crib firmware

Hardware Name: Cradlewise smart crib

4.3 Special Accessories and Auxiliary Equipment

- None

4.4 Simultaneous Transmission

This product supports Simultaneous transmission

4.5 Countermeasures to achieve EMC Compliance

- No

4.6 List of frequencies

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
2400 – 2483.5 BT(BDR+EDR)	**0**	**2402**
	1	2403
	2	2404
	3	2405
	:	:
	:	:
	:	:
	37	2439
	38	2440
	39	**2441**
	40	2442
	:	:
	:	:
	:	:
	74	2476
	75	2477
	:	:
	:	:
	78	**2480**

Table 5: List of Bluetooth center Frequencies

Channel used for Bluetooth testing

Channel low : 2402MHz

Channel mid : 2441MHz

Channel high : 2480MHz

Note:

TUV Sample Identification number : A003263032-001– Radiated test Sample
A003263032-002– Conducted test Sample

4.7 Report references

Note: Product **Cradlewise Smart Crib** has multiple protocols. All the supported wireless protocols and their respective test results are issued in saparate test reports, following table lists the report numbers.

Radio Protocol	**Report Number**
RF test report for Wi-Fi (2.4GHz) & BLE (2.4GHz)	ULR-TC568822300000063F
RF test report for Wi-Fi (5GHz)	ULR-TC568822300000062F
RF test report for Bluetooth (2.4GHz) – (This report)	**ULR-TC568822300000064F**

5 Operational Description

The smart crib runs on 12V DC power supply supplied by an AC to DC adapter connected to 110V 60Hz AC supply. It relies on cameras and microphones to detect signs of the baby waking up. In response to these signs the cradle starts an up and down movement using a motor and starts playing white noise/music using a speaker. The product connects to the internet using Wi-Fi and allows caregivers to monitor the baby on their phones using an app. The night vision features allow unobtrusive monitoring at night too.

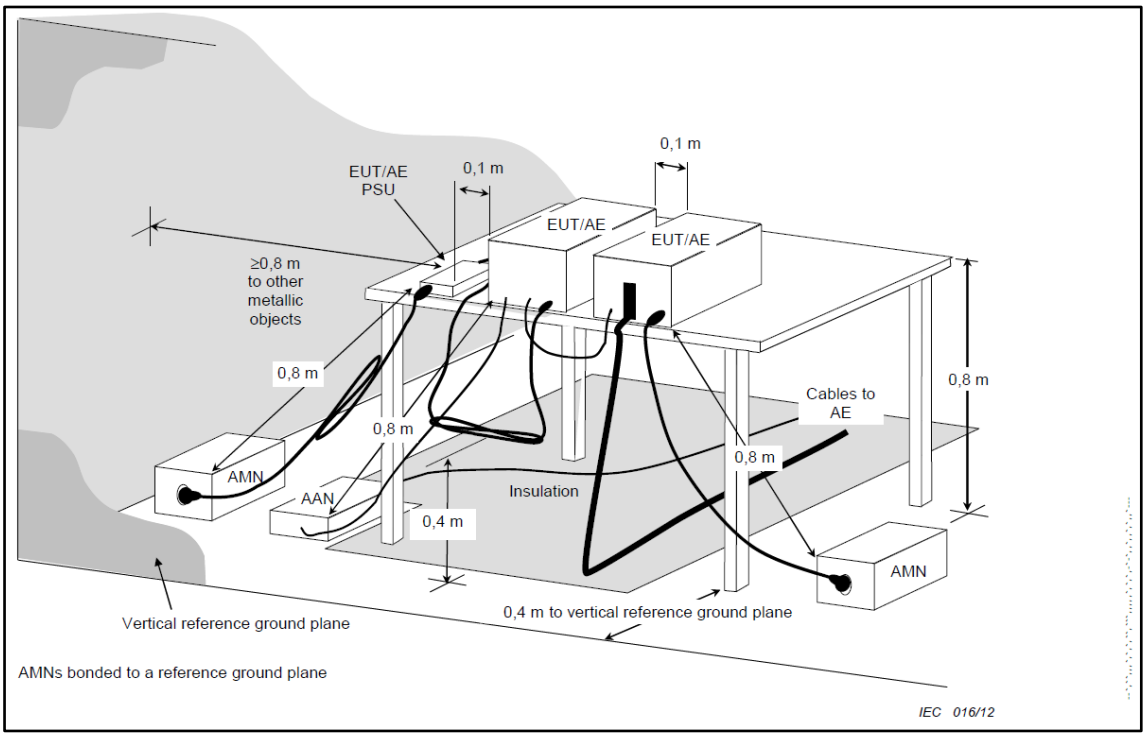
6 TEST METHODOLOGY

6.1 Conducted Spurious Emission AC Power line Test

Measured levels of ac power-line conducted emission across the 50Ω LISN port (to which the EUT is connected). All emission voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord by the use of mating plugs and receptacles on the LISN, if used. Equipment shall be tested with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended by the manufacturer.

The device is placed on the test table, raised 80cm above the referance ground plane. The vertical conducting plane is located 40cm to the rear of the device. AC Conducted emission measurement is made over frequency range from 150kHz to 30MHz, this measurement was performed with EUT powered by 2 methods and both method are tested individually, one with an AC adaptor with 110V AC 60Hz supply and second with Wireless charger with supply 110V AC 60Hz.

6.1.1 Test Setup Configuration



6.2 Radiated Emission Test

The radiated emission measurement was performed according to the procedures in ANSI C63.10-2013. The equipment under test (EUT) was placed at the middle of the 80 cm high turntable for below 1 GHz & 1.5 m height for above 1 GHz measurement, and the EUT is 3 meters far from the measuring antenna. The turntable was rotated 360˚ for obtaining the maximum emission. The height of the measuring antennas was scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained. The measurement above 1000 MHz was performed by horn antenna, The measurement below 30 MHz was performed by loop antenna, Measurement from 30 MHz to 200 MHz was performed by Baloon and Biconical Antenna, and mesurement from 200 MHz to 1 GHz was performed by Log-Periodic Antenna.

The EUT was rotated around the X-, Y-, and Z-Axis and the results from worst case axis are recorded

6.2.1 Test Setup Configuration

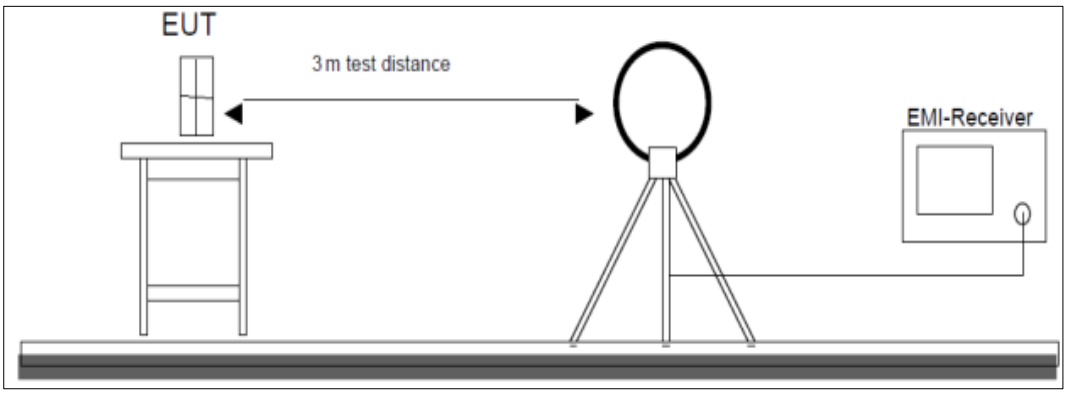


Figure 1: Frequency Range 9 kHz- 30 MHz

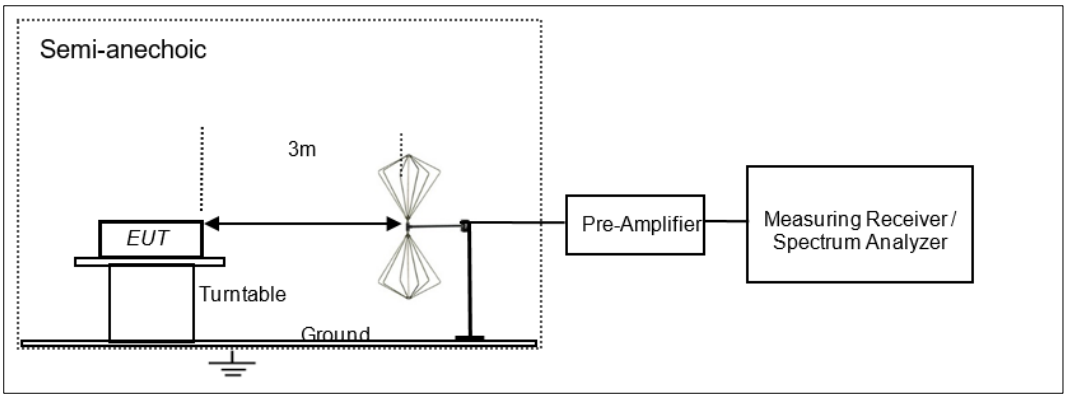


Figure 2: Frequency Range 30 MHz – 200 MHz

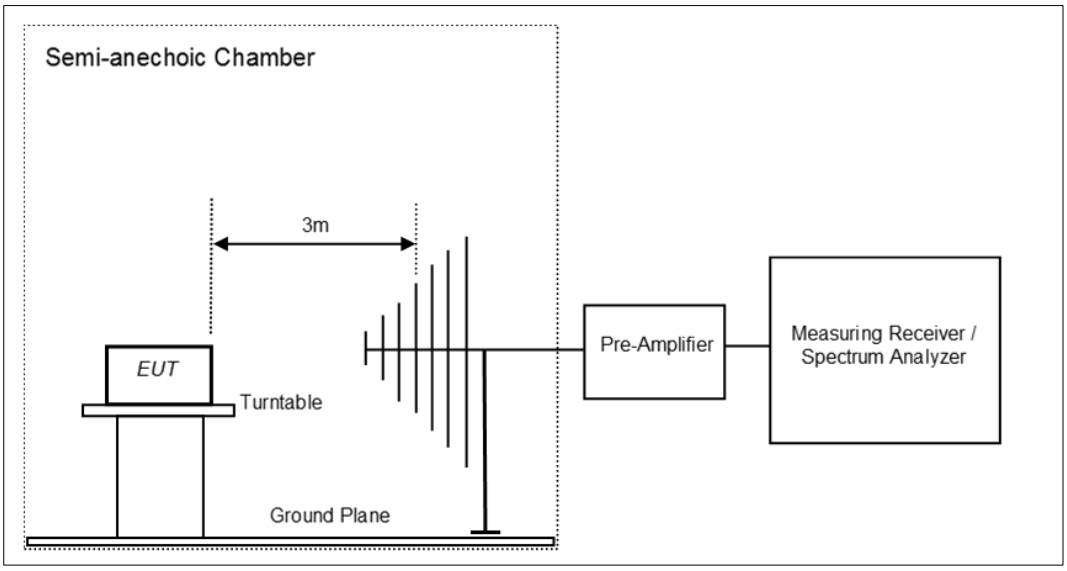


Figure 3: Frequency Range 200 MHz - 1GHz

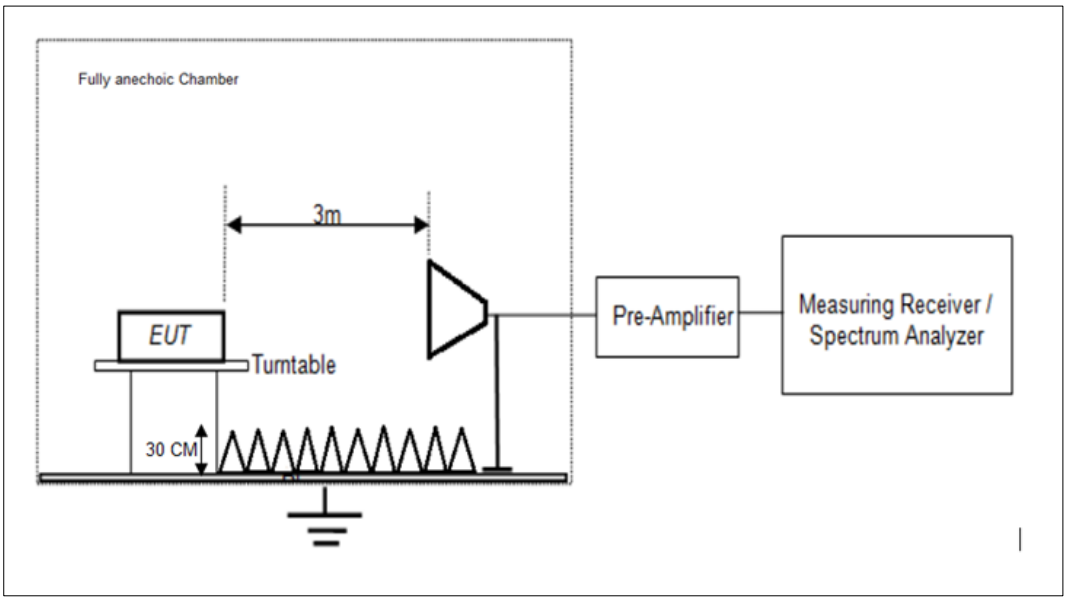


Figure 4: Frequency Range above 1 GHz

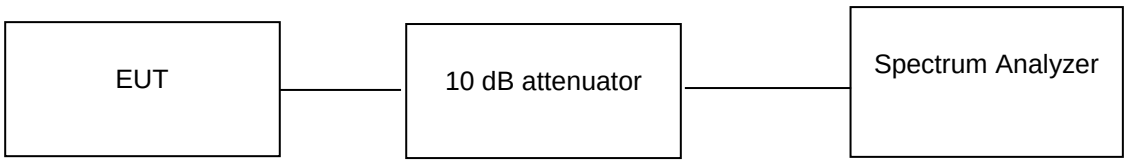
7 TEST RESULTS

7.1 Maximum conducted (Peak) output power

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (b)(1)
Test Method	Subclause 7.8.5 of ANSI C63.10
Measurement Bandwidth	1 MHz
Detector	Peak
Port of testing	Antenna port
Requirement	Power ≤ 1 W (30 dBm)

Test Setup



Test Condition

Normal Test Condition:

Temperature (Norm) = + 22.3 °C Voltage = 12VDC through AC to DC Adaptor Relative humidity: 62%

KDB Guidelines applied:

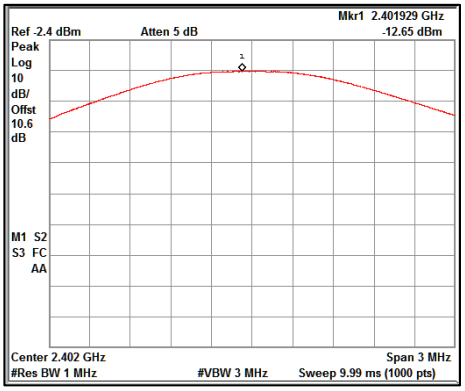
Measurements were made as per section 10 b (6) (i) in KDB 558074 D01 15.247 Measurement Guidance v05r02.

Test results:

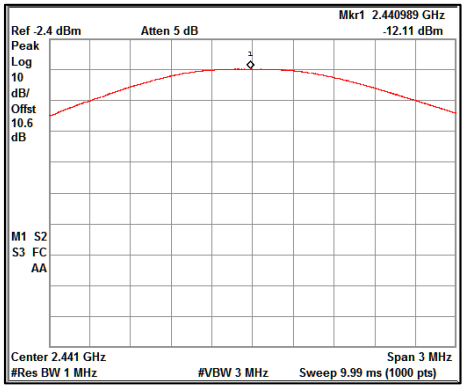
Note:
1. All the losses are included during measurement and final values are mentioned in the test report.
2. Total Peak Output power (dBm) = Measured Peak power (dBm) + Attenuator factor (10dB) + Cable loss (0.6dB)
3. This product do not support additional beamforming gain / directional gain, it uses signal antenna and hence directional gain of the single antenna is 2.00 dBi.

Data rate (Mbps)	Channel Frequency (MHz)	Measured Power (dBm)	Power Limit (dBm)
1	2402	-12.65	30
	2441	-12.11	30
	2480	-12.31	30
2	2402	-11.82	30
	2441	-13.05	30
	2480	-14.22	30
3	2402	-11.57	30
	2441	-12.90	30
	2480	-14.07	30

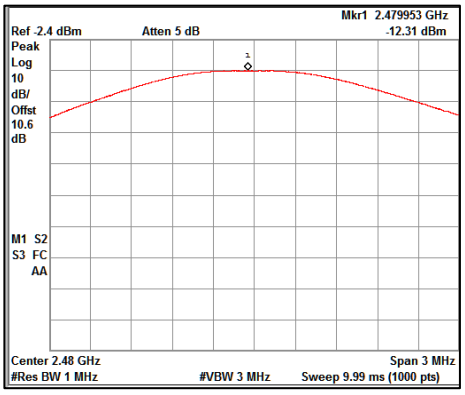
Test Plots:



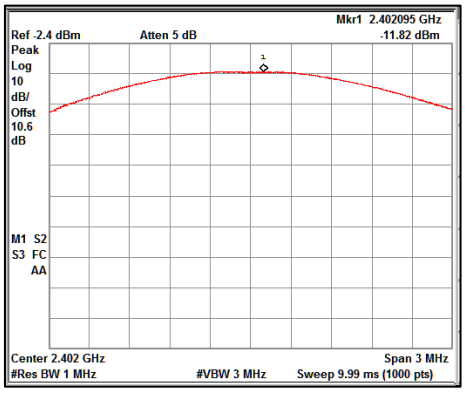
Channel Frequency: 2402MHz@1Mbps



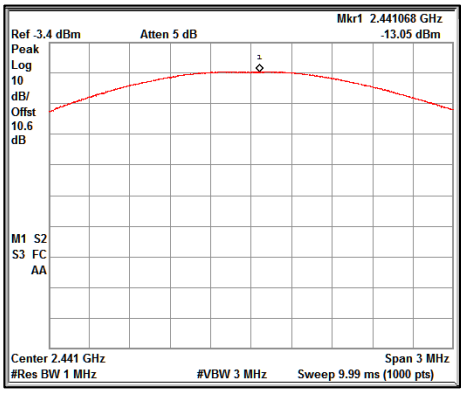
Channel Frequency: 2441MHz@1Mbps



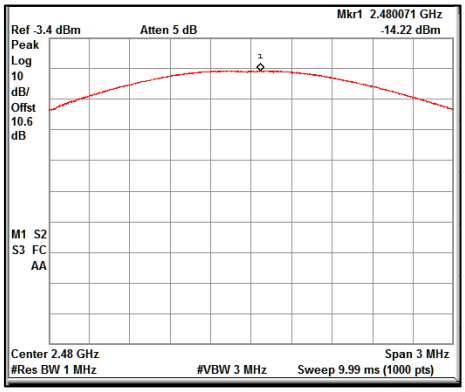
Channel Frequency: 2480MHz@1Mbps



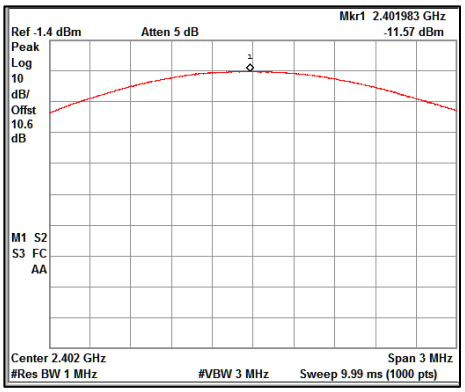
Channel Frequency: 2402MHz@2Mbps



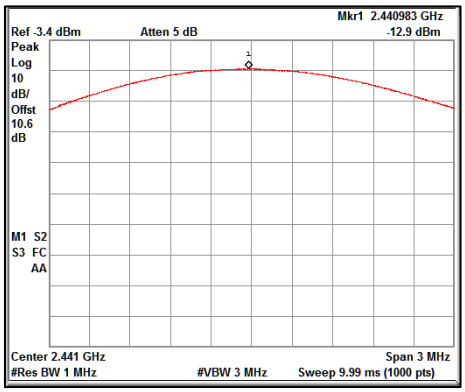
Channel Frequency: 2441MHz@2Mbps



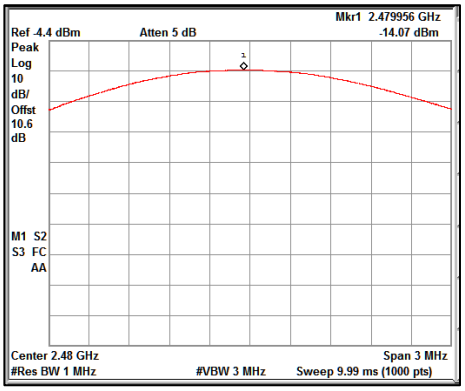
Channel Frequency: 2480MHz@2Mbps



Channel Frequency: 2402MHz@3Mbps



Channel Frequency: 2441MHz@3Mbps



Channel Frequency: 2480MHz@3Mbps

7.2 Spurious Radiated Emissions & Restricted Bands of Operation

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (d) / (15.209 & 15.205)
Test Method	ANSI C63.10.2013
Measurement Location	Fully anechoic chamber
Measurement Bandwidth	100 kHz for frequency range < 1GHz 1 MHz for Frequency range >1GHz
Detector	Refer remarks below
Measuring Distance	3 m
Requirement	As per the limits mentioned in the below table
Test setup	Refer 6 TEST METHODOLOGY

Table 6: Transmitter limits for Radiated emission

Frequency (MHz)	Field strength (µV/m)	Field strength (dBµV/m)	Distance of Measurement (m)
0.009 – 0.490	2400/F(kHz)	48.50 – 13.80	300*
0.490 – 1.705	24000/F(kHz)	33.80 – 23.00	30*
1.705 -30	30	29.54	30*
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Remark: * The limit shows in the table above of frequency range 0.009 – 0.490, 0.490 – 1.705 MHz and 1.705-30MHz is at 300 meter, 30 meter and 30 meter range respectively, which corresponds to 128.51 – 93.80, 73.80 – 62.96 and 69.54 dBµV/m at 3m range by extrapolation calculation and the measurement of loop antenna.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Condition:

Temperature (Norm) = + 23.2 °C Voltage = 12VDC Through AC/DC Adapter Relative humidity: 62%

Test results:

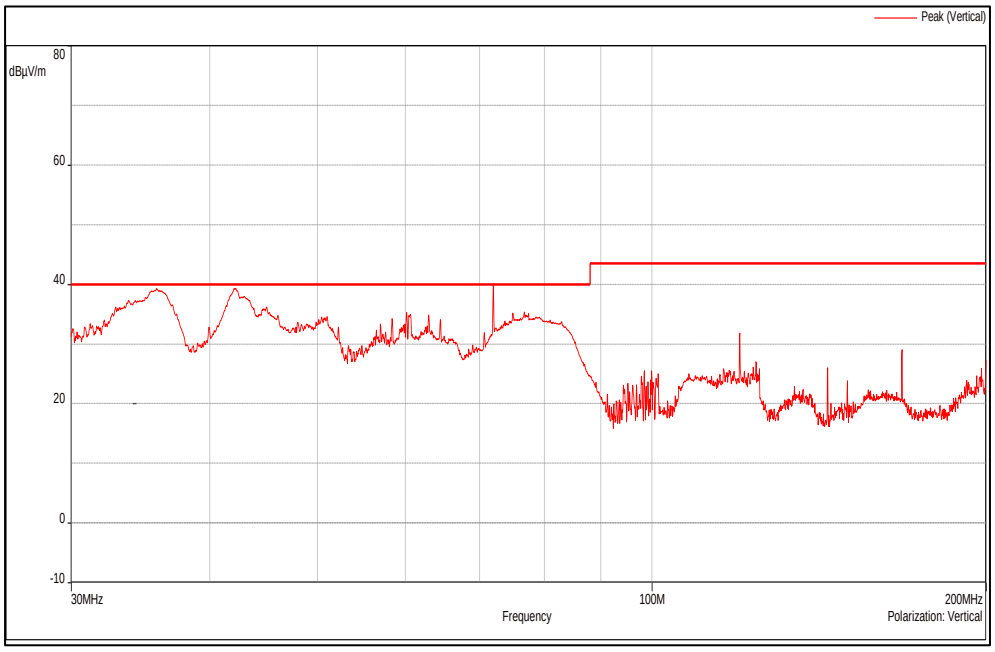
Note: All the losses are included during measurement and final values are mentioned in the test report. Refer TEST METHODOLOGYFor more details

Test results for frequency range 9kHz – 30MHz

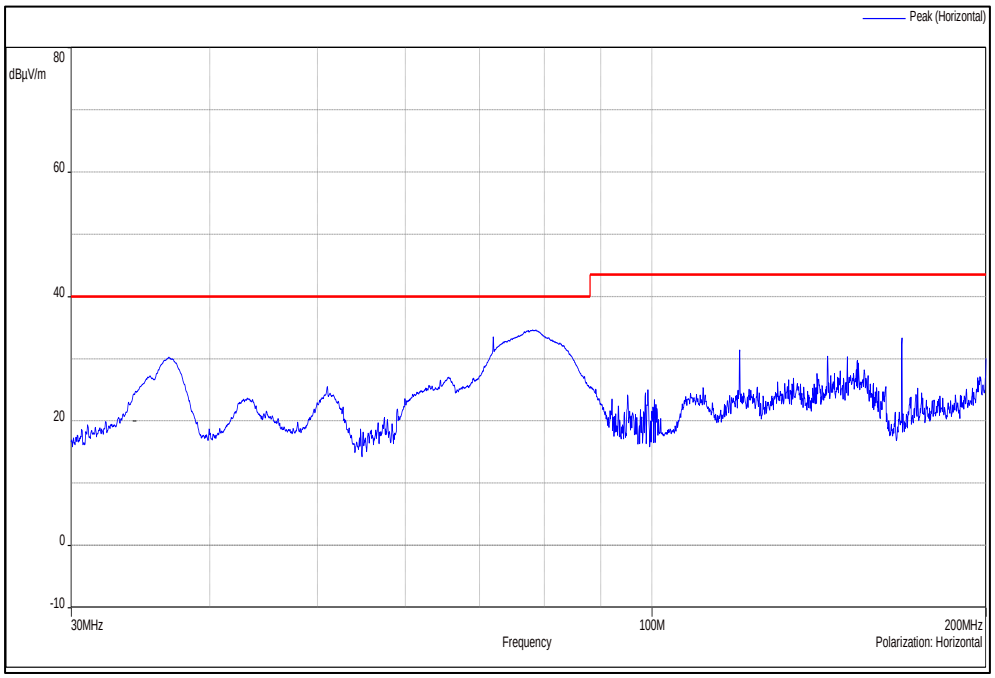
No emissions found in frequency range 9 kHz to 30 MHz, and measured levels are below 20dB from the limit line, hence not reported

Test results for frequency range 30MHz – 1GHz

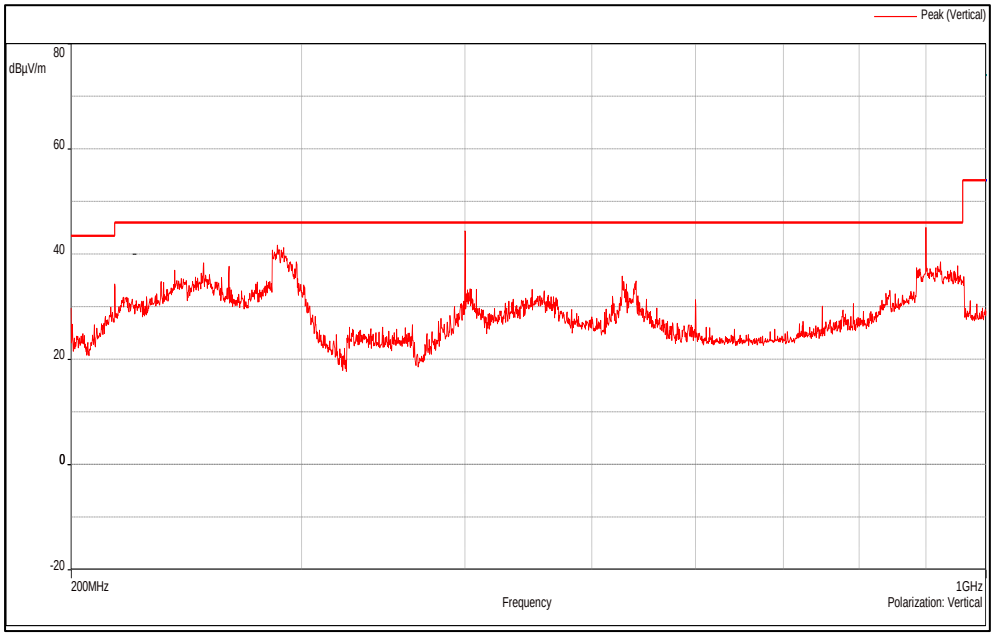
Antenna Polarization	Measured Frequency (MHz)	Measured Quasi peak value (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	36.40	37.18	40.00	-2.82
	42.28	36.94	40.00	-3.06
	71.97	36.78	40.00	-3.22
	287.46	28.99	46.00	-17.01
	288.20	26.71	46.00	-19.29
	290.70	28.23	46.00	-17.77
	399.99	41.73	46.00	-4.27
	900.00	39.54	46.00	-6.46
Horizontal	78.56	32.93	40.00	-7.07
	287.61	35.33	46.00	-10.67
	291.13	32.65	46.00	-13.35
	296.10	34.54	46.00	-11.46
	399.95	42.21	46.00	-3.79
	528.01	33.67	46.00	-12.33
	599.97	39.16	46.00	-6.84
	899.96	44.48	46.00	-1.52



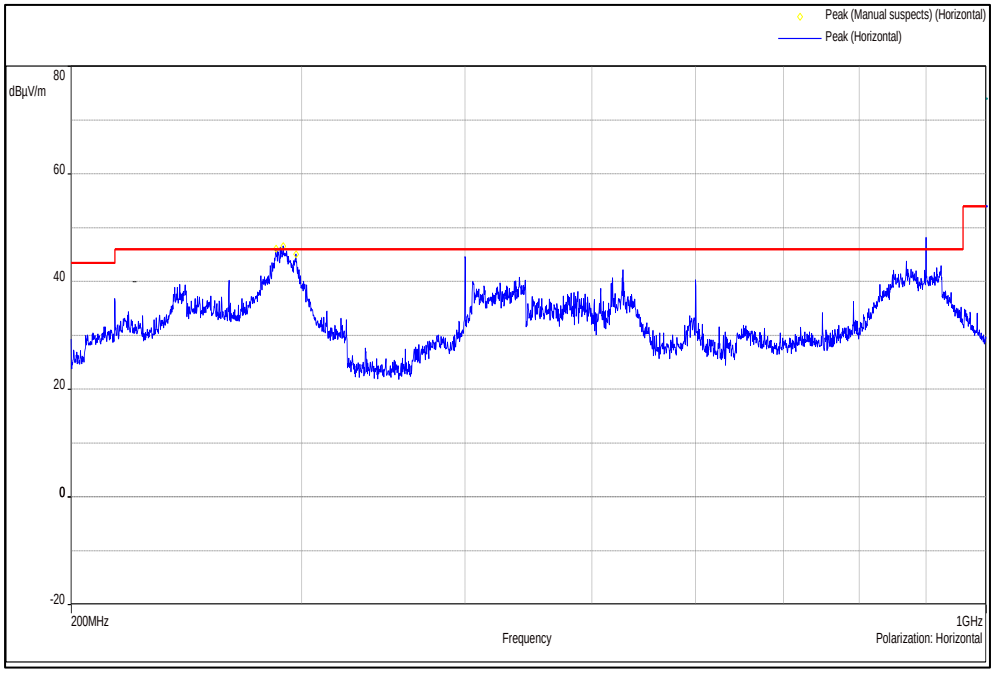
Channel Frequency 30MHz – 200MHz **Polarization Vertical**



Channel Frequency 30MHz – 200MHz **Polarization Horizontal**



Channel Frequency 200MHz – 1GHz **Polarization Vertical**



Channel Frequency 200MHz – 1GHz **Polarization Horizontal**

Test results for the frequencies in the range 1 GHz to 26.5 GHz

Data Rate: 1Mbps

Channel Frequency (MHz)	Frequency (MHz)	Antenna Polarization	Emission level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	2402(Pk)	Vertical	77.51	-	-
	2402(Av)		74.56	-	-
	2390(Pk)		41.28	74.00*	-32.72
	2390(Av)		23.96	54.00*	-30.04
	4804(Pk)		44.20	74.00	-29.80
	4804(Av)		34.22	54.00	-19.78
	7206(Pk)		46.79	74.00	-27.21
	7206(Av)		34.53	54.00	-19.47
	2402(Pk)	Horizontal	79.69	-	-
	2402(Av)		76.75	-	-
	2390(Pk)		40.54	74.00*	-33.46
	2390(Av)		26.33	54.00*	-27.67
	4804(Pk)		45.27	74.00	-28.73
	4804(Av)		36.37	54.00	-17.63
	7206(Pk)		47.02	74.00	-26.98
	7206(Av)		34.59	54.00	-19.41
2441	2441(Pk)	Vertical	74.78	-	-
	2441(Av)		71.73	-	-
	4882(Pk)		43.50	74.00	-30.50
	4882(Av)		33.42	54.00	-20.58
	7323(Pk)		49.57	74.00	-24.43
	7323(Av)		34.96	54.00	-19.04
	2441(Pk)	Horizontal	76.31	-	-
	2441(Av)		73.34	-	-
	4882(Pk)		42.58	74.00	-31.42
	4882(Av)		29.89	54.00	-24.11
	7323(Pk)		47.37	74.00	-26.63
	7323(Av)		35.10	54.00	-18.90
2480	2480(Pk)	Vertical	73.98	-	-
	2480(Av)		70.93	-	-
	2483.5(Pk)		42.46	74.00*	-31.54
	2483.5(Av)		25.96	54.00*	-28.04
	4960(Pk)		42.24	74.00	-31.76
	4960(Av)		30.88	54.00	-23.12
	7440(Pk)		47.46	74.00	-26.54
	7440(Av)		34.73	54.00	-19.27
	2480(Pk)	Horizontal	75.62	-	-
	2480(Av)		72.57	-	-
	2483.5(Pk)		42.49	74.00*	-31.51
	2483.5(Av)		23.81	54.00*	-30.19
	4960(Pk)		43.09	74.00	-30.91
	4960(Av)		33.21	54.00	-20.79
	7440(Pk)		46.49	74.00	-27.51
	7440(Av)		34.67	54.00	-19.33

*** : Indicate restricted band of operation §15.205**
Pk: Peak Detector; Av: Average Detector

Data Rate: 2Mbps

Channel Frequency (MHz)	Frequency (MHz)	Antenna Polarization	Emission level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	2402(Pk)	Vertical	76.03	-	-
	2402(Av)		70.44	-	-
	2390(Pk)		42.49	74.00*	-31.51
	2390(Av)		24.04	54.00*	-29.96
	4804(Pk)		43.03	74.00	-30.97
	4804(Av)		31.88	54.00	-22.12
	7206(Pk)		46.63	74.00	-27.37
	7206(Av)		34.70	54.00	-19.30
	2402(Pk)	Horizontal	79.26	-	-
	2402(Av)		73.52	-	-
	2390(Pk)		41.10	74.00*	-32.90
	2390(Av)		24.01	54.00*	-29.99
	4804(Pk)		44.58	74.00	-29.42
	4804(Av)		33.39	54.00	-20.61
	7206(Pk)		46.05	74.00	-27.95
	7206(Av)		34.65	54.00	-19.35
2441	2441(Pk)	Vertical	72.10	-	-
	2441(Av)		66.34	-	-
	4882(Pk)		42.11	74.00	-31.89
	4882(Av)		29.74	54.00	-24.26
	7323(Pk)		48.64	74.00	-25.36
	7323(Av)		34.92	54.00	-19.08
	2441(Pk)	Horizontal	73.80	-	-
	2441(Av)		68.06	-	-
	4882(Pk)		42.84	74.00	-31.16
	4882(Av)		31.18	54.00	-22.82
	7323(Pk)		47.01	74.00	-26.99
	7323(Av)		34.93	54.00	-19.07
2480	2480(Pk)	Vertical	72.98	-	-
	2480(Av)		67.20	-	-
	2483.5(Pk)		42.66	74.00*	-31.34
	2483.5(Av)		23.79	54.00*	-30.21
	4960(Pk)		42.12	74.00	-31.88
	4960(Av)		29.48	54.00	-24.52
	7440(Pk)		47.39	74.00	-26.61
	7440(Av)		34.78	54.00	-19.22
	2480(Pk)	Horizontal	74.05	-	-
	2480(Av)		68.27	-	-
	2483.5(Pk)		37.87	74.00*	-36.13
	2483.5(Av)		23.74	54.00*	-30.26
	4960(Pk)		41.44	74.00	-32.56
	4960(Av)		29.99	54.00	-24.01
	7440(Pk)		47.40	74.00	-26.60
	7440(Av)		34.77	54.00	-19.23

*** : Indicate restricted band of operation §15.205**
Pk: Peak Detector; Av: Average Detector

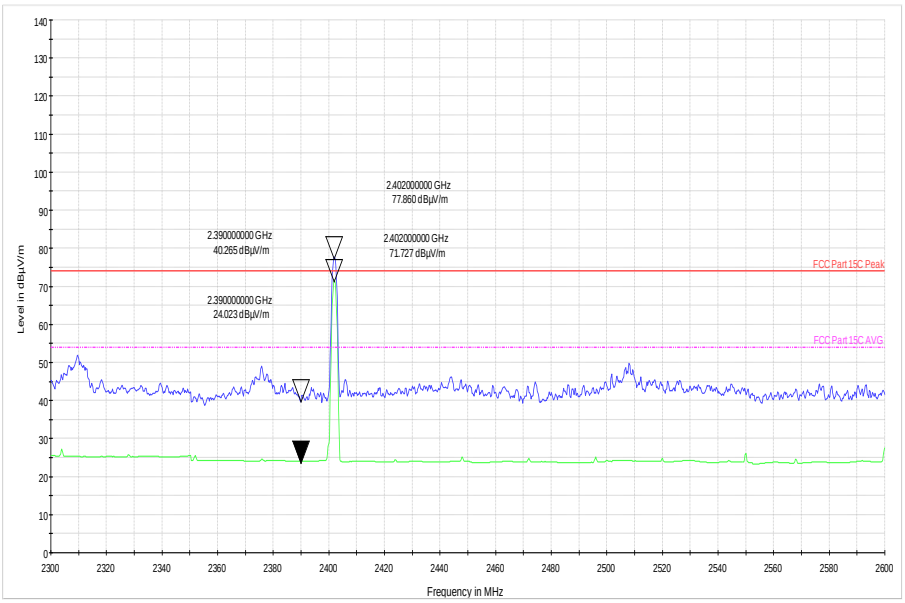
Data Rate: 3Mbps

Channel Frequency (MHz)	Frequency (MHz)	Antenna Polarization	Emission level (dBµV/m)	Limit (dBµV/m)	Margin (dB)
2402	**2402(Pk)**	**Vertical**	**77.86**	**-**	**-**
	2402(Av)		**71.72**	**-**	**-**
	2390(Pk)		40.26	74.00*	-33.74
	2390(Av)		24.02	54.00*	-29.98
	4804(Pk)		43.74	74.00	-30.26
	4804(Av)		31.05	54.00	-22.95
	7206(Pk)		46.74	74.00	-27.26
	7206(Av)		34.74	54.00	-19.26
	2402(Pk)	**Horizontal**	**79.97**	**-**	**-**
	2402(Av)		**73.80**	**-**	**-**
	2390(Pk)		41.64	74.00*	-32.36
	2390(Av)		24.03	54.00*	-29.97
	4804(Pk)		44.06	74.00	-29.94
	4804(Av)		33.60	54.00	-20.40
	7206(Pk)		46.98	74.00	-27.02
	7206(Av)		34.72	54.00	-19.28
2441	2441(Pk)	Vertical	72.12	-	-
	2441(Av)		65.88	-	-
	4882(Pk)		42.53	74.00	-31.47
	4882(Av)		29.96	54.00	-24.04
	7323(Pk)		46.80	74.00	-27.20
	7323(Av)		34.81	54.00	-19.19
	2441(Pk)	Horizontal	74.21	-	-
	2441(Av)		68.00	-	-
	4882(Pk)		42.30	74.00	-31.70
	4882(Av)		30.96	54.00	-23.04
	7323(Pk)		47.03	74.00	-26.97
	7323(Av)		34.83	54.00	-19.17
2480	2480(Pk)	Vertical	71.95	-	-
	2480(Av)		65.73	-	-
	2483.5(Pk)		41.51	74.00*	-32.49
	2483.5(Av)		23.74	54.00*	-30.26
	4960(Pk)		42.07	74.00	-31.93
	4960(Av)		29.40	54.00	-24.60
	7440(Pk)		46.94	74.00	-27.06
	7440(Av)		34.77	54.00	-19.23
	2480(Pk)	Horizontal	74.65	-	-
	2480(Av)		68.50	-	-
	2483.5(Pk)		41.88	74.00*	-32.12
	2483.5(Av)		23.73	54.00*	-30.27
	4960(Pk)		41.41	74.00	-32.59
	4960(Av)		29.88	54.00	-24.12
	7440(Pk)		47.45	74.00	-26.55
	7440(Av)		34.77	54.00	-19.23

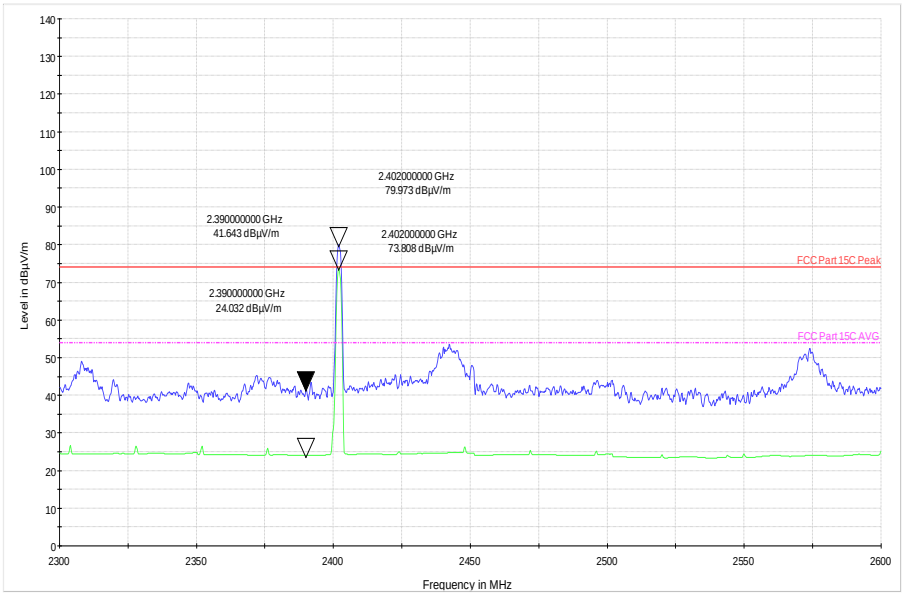
*** : Indicate restricted band of operation §15.205**
Pk: Peak Detector; Av: Average Detector

Test plots:

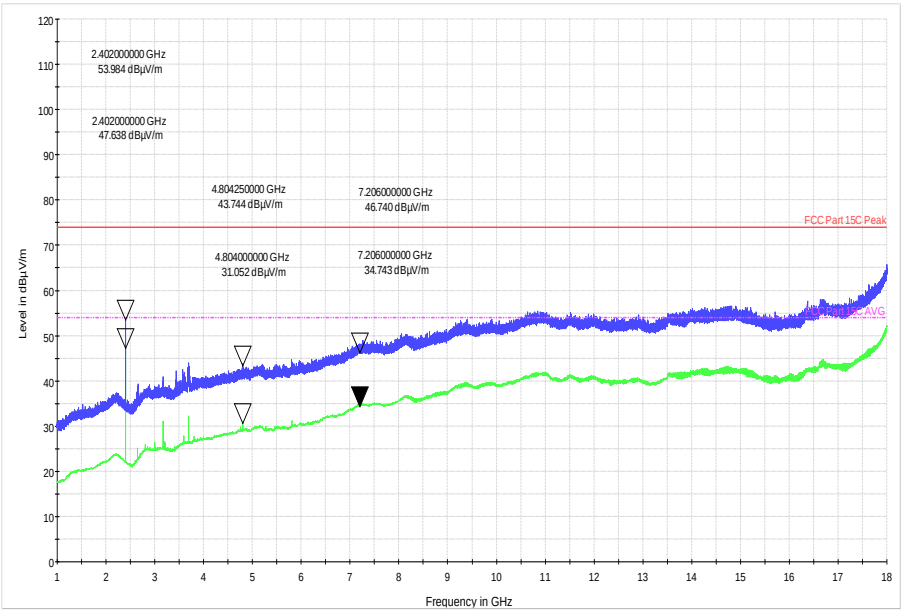
Data Rate: 3Mbps



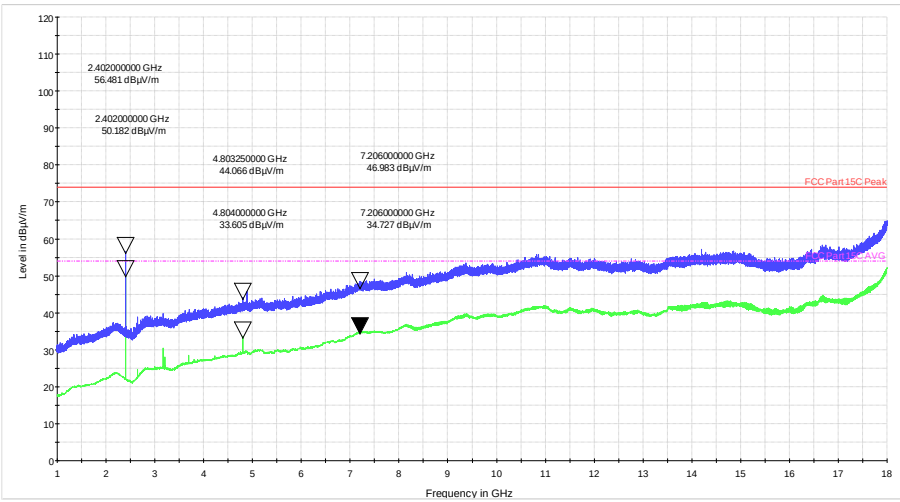
Channel Frequency: 2402MHz **Polarization: Vertical**



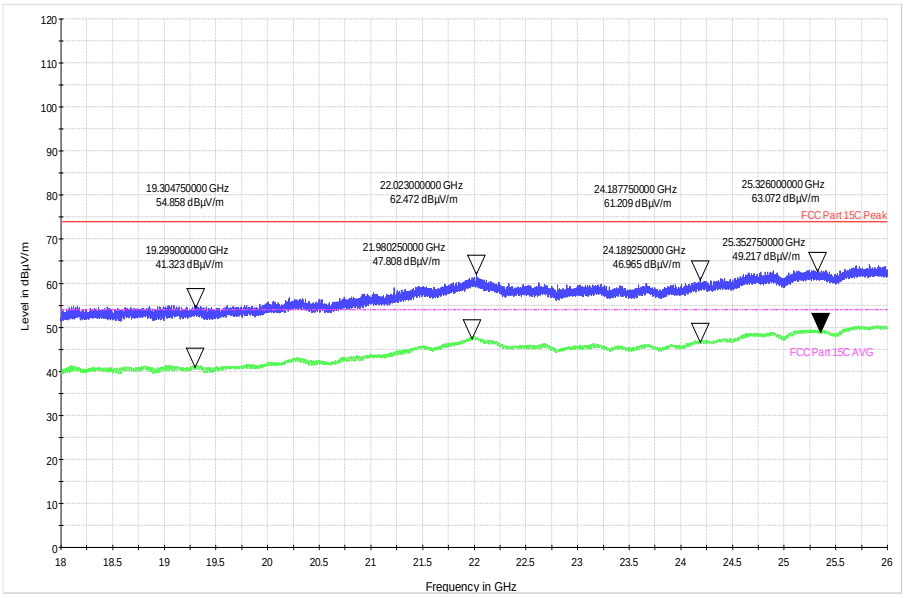
Channel Frequency: 2402MHz **Polarization: Horizontal**



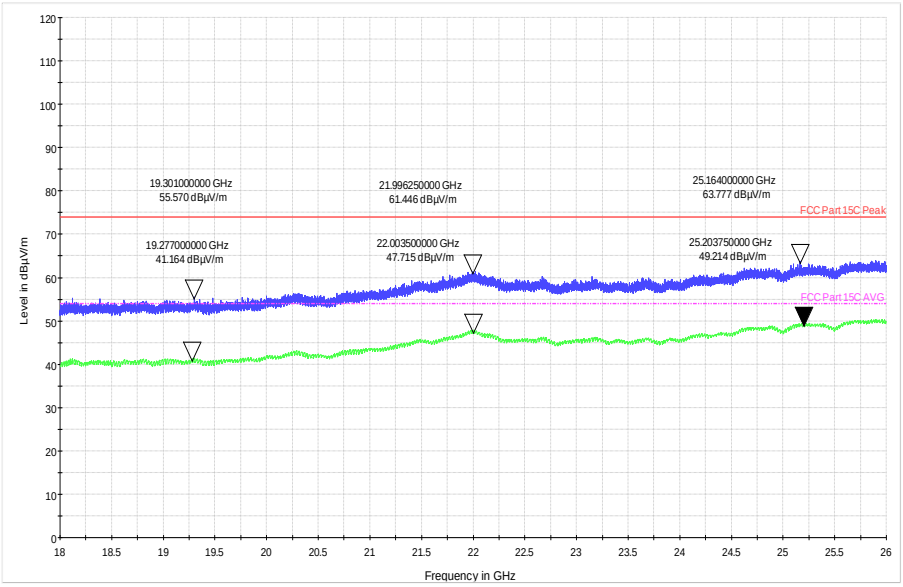
Frequency range: 1GHz-18GHz **Polarization: Vertical**



Frequency range: 1GHz-18GHz **Polarization: Horizontal**



Frequency range: 18GHz to 26GHz **Polarization: Vertical**



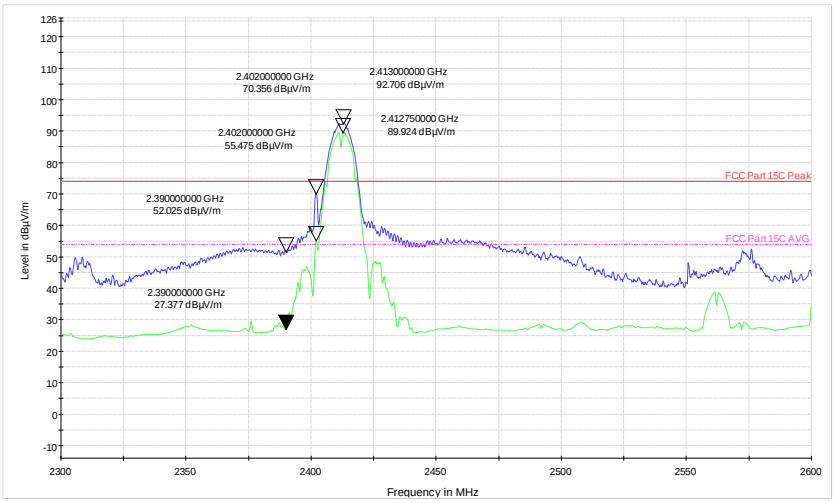
Frequency range: 18GHz to 26GHz **Polarization: Horizontal**

Simultaneous Operation of Wi-Fi 2.4GHz & BT

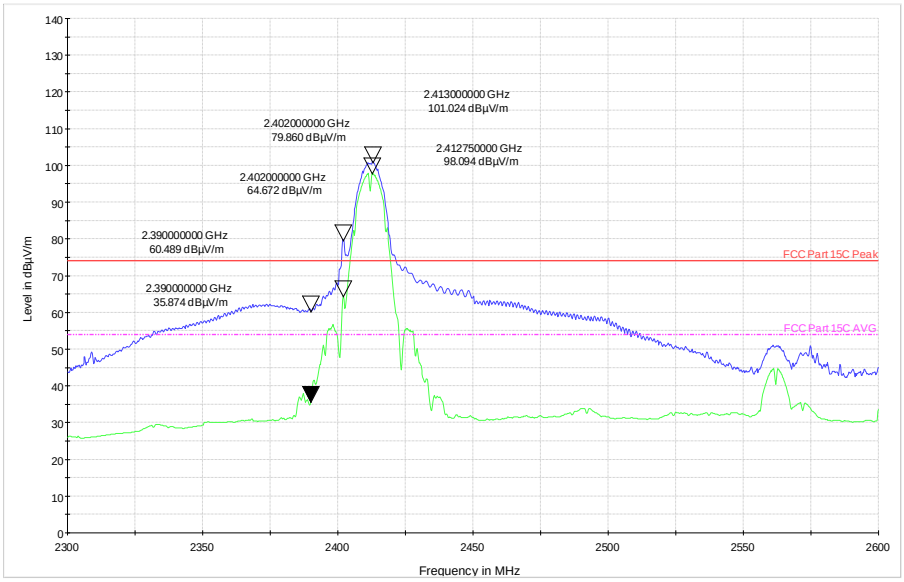
Antenna Polarization	Frequency (MHz)	Emission (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	2402(Pk)	70.21	-	-
	2402(Av)	53.22	-	-
	2412(Pk)	89.51	-	-
	2412(Av)	86.02	-	-
	2390(Pk)	52.23	74*	-21.77
	2390(Av)	26.79	54*	-27.21
	4804(Pk)	40.40	74	-33.60
	4804(Av)	28.67	54	-25.33
	4824(Pk)	46.84	74	-27.16
	4824(Av)	41.40	54	-12.60
	7206(Pk)	47.49	74	-26.51
	7206(Av)	34.97	54	-19.03
	7236(Pk)	49.93	74	-24.07
	7236(Av)	36.96	54	-17.04
Horizontal	2402(Pk)	79.86	-	-
	2402(Av)	64.67	-	-
	2412(Pk)	101.02	-	-
	2412(Av)	98.09	-	-
	2390(Pk)	60.48	74*	-13.52
	2390(Av)	35.87	54*	-18.13
	4804(Pk)	40.88	74	-33.12
	4804(Av)	29.41	54	-24.59
	4824(Pk)	53.19	74	-20.81
	4824(Av)	50.25	54	-3.75
	7206(Pk)	46.88	74	-27.12
	7206(Av)	34.99	54	-19.01
	7236(Pk)	47.66	74	-26.34
	7236(Av)	35.57	54	-18.43

*** : Indicate restricted band of operation §15.205**
Pk: Peak Detector; Av: Average Detector

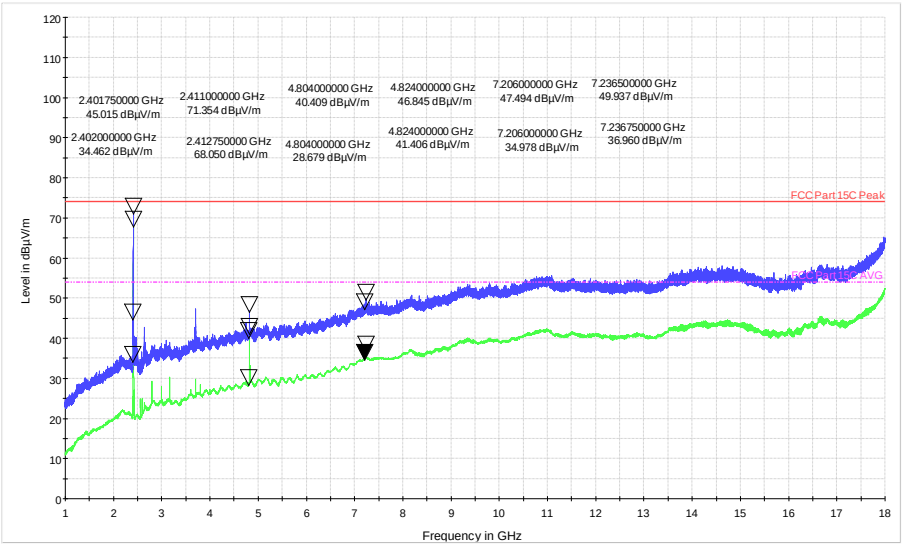
Test Plots:



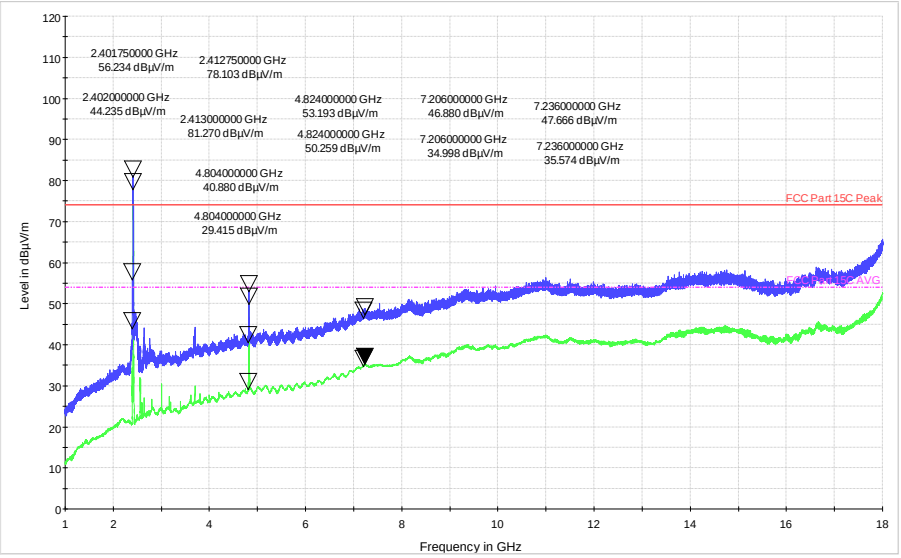
Polarization: Vertical



Polarization: Horizontal



Frequency range: 1GHz-18GHz **Polarization: Vertical**



Frequency range: 1GHz-18GHz **Polarization: Horizontal**

8 Conducted Emission on AC Power Lines

Result ***Pass***

Test Specification	:	FCC Part 15 Section 15.207
Test Method	:	ANSI C 63.10-2013
Testing Location	:	Screened room
Measurement Bandwidth	:	9kHz
Frequency Range	:	150kHz – 30MHz
Supply Voltage	:	110VAC,60Hz
Test Method	:	Refer TEST METHODOLOGY

***Note: The product has tested with AC to DC adapter**

Limits of section 15.207

Frequency of emission (MHz)	**Conducted limit (dBµV)**	
	Quasi-peak (dBµV)	**Average (dBµV)**
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

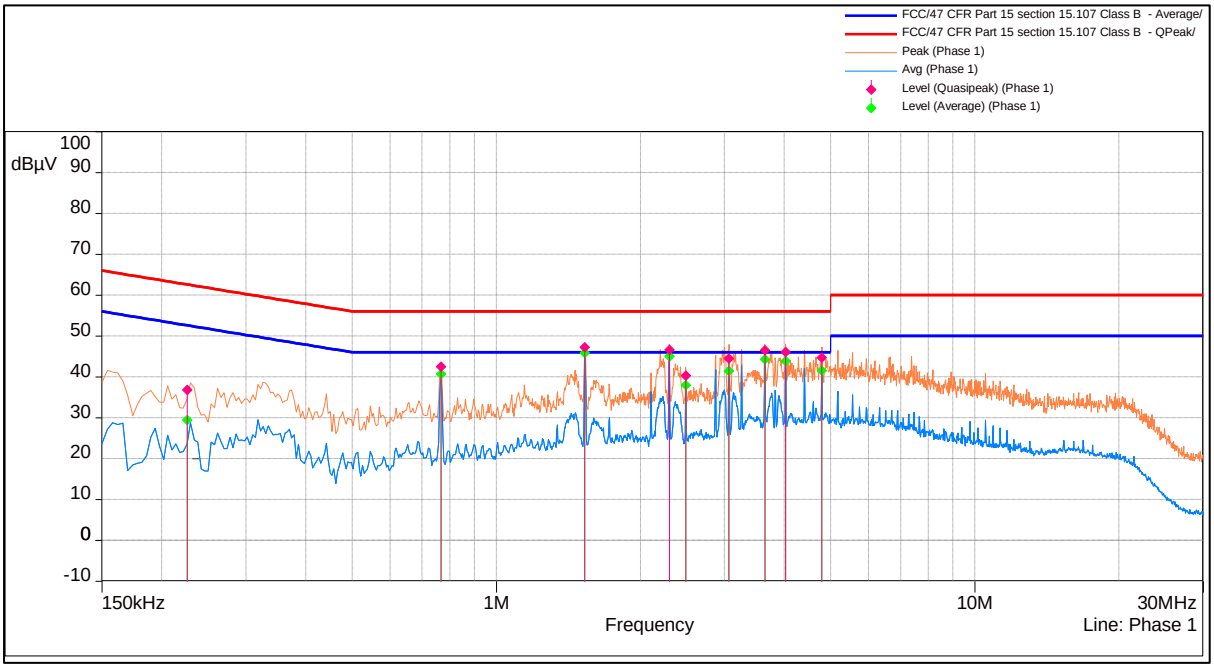
* Decreases with the logarithm of the frequency

Test Conditions:

Normal Temperature = +24°C Voltage (V norm) = 110V AC (Through AC to DC Adapter) Relative Humidity = 64%

Test result:

Power: 110VAC 60Hz_LINE



Line Graph

Quasipeak:-

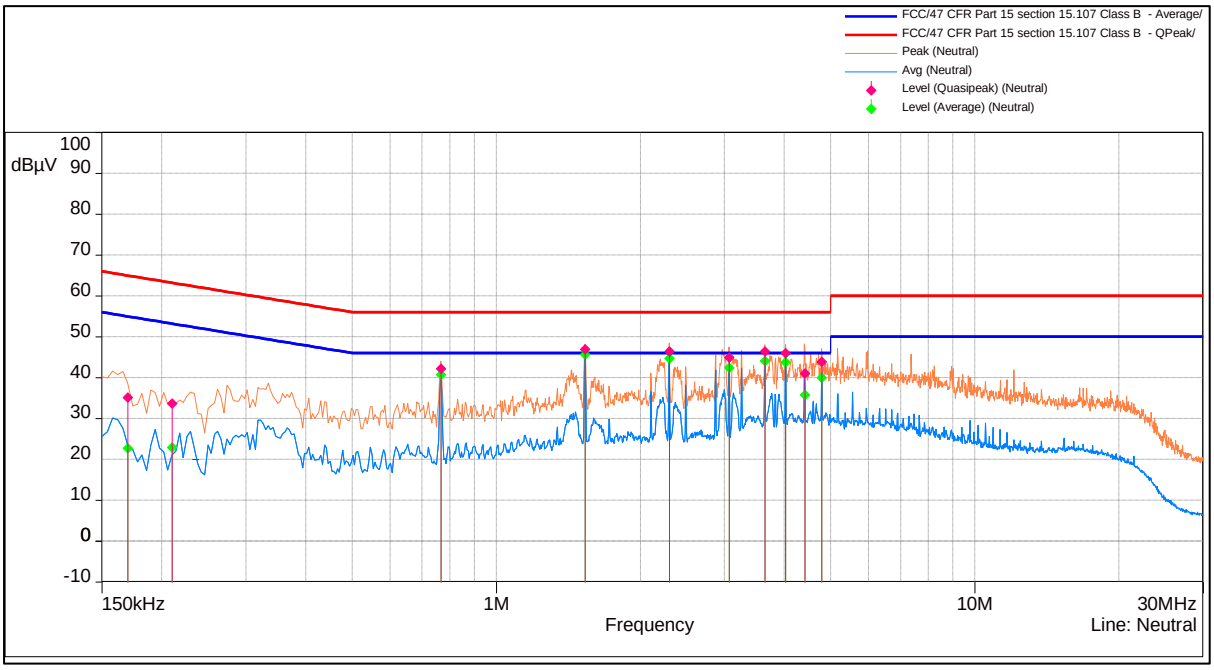
Frequency (MHz)	Pos	Correction (dB)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Comments
1.53175	Phase 1	19.69	47.25	56	-8.75	Pass
2.2998	Phase 1	19.69	46.63	56	-9.37	Pass
3.63845	Phase 1	19.7	46.53	56	-9.47	Pass
4.02155	Phase 1	19.71	46.1	56	-9.9	Pass
4.7873	Phase 1	19.7	44.72	56	-11.28	Pass
3.0624	Phase 1	19.7	44.48	56	-11.52	Pass
0.76645	Phase 1	19.66	42.49	56	-13.51	Pass
2.48955	Phase 1	19.69	40.37	56	-15.63	Pass
0.2273	Phase 1	19.56	36.83	62.6	-25.77	Pass

Average:-

Frequency (MHz)	Pos	Correction (dB)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Comments
1.53175	Phase 1	19.69	45.9	46	-0.1	Pass
2.2998	Phase 1	19.69	45.04	46	-0.96	Pass
3.63845	Phase 1	19.7	44.32	46	-1.68	Pass
4.02155	Phase 1	19.71	43.9	46	-2.1	Pass
4.7873	Phase 1	19.7	41.57	46	-4.43	Pass
3.0624	Phase 1	19.7	41.5	46	-4.5	Pass
0.76645	Phase 1	19.66	40.76	46	-5.24	Pass
2.48955	Phase 1	19.69	37.99	46	-8.01	Pass
0.2273	Phase 1	19.56	29.46	52.6	-23.13	Pass

Line Table

Power: 110VAC 60Hz_NEUTRAL



Neutral Graph

Quasipeak:-

Frequency (MHz)	Pos	Correction (dB)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Comments
1.5331	Neutral	19.7	46.96	56	-9.04	Pass
2.29665	Neutral	19.69	46.4	56	-9.6	Pass
3.6398	Neutral	19.71	46.4	56	-9.6	Pass
4.0229	Neutral	19.71	45.98	56	-10.02	Pass
3.0651	Neutral	19.7	44.94	56	-11.06	Pass
4.7855	Neutral	19.71	43.87	56	-12.13	Pass
0.76645	Neutral	19.67	42.19	56	-13.81	Pass
4.4105	Neutral	19.71	41.11	56	-14.89	Pass
0.20975	Neutral	19.55	33.68	63.21	-29.52	Pass
0.17195	Neutral	19.55	35.16	64.96	-29.8	Pass

Average:-

Frequency (MHz)	Pos	Correction (dB)	Level (dBµV)	Limit (dBµV)	Margin (dB)	Comments
1.5331	Neutral	19.7	45.72	46	-0.28	Pass
2.29665	Neutral	19.69	44.75	46	-1.25	Pass
3.6398	Neutral	19.71	44.15	46	-1.85	Pass
4.0229	Neutral	19.71	43.82	46	-2.18	Pass
3.0651	Neutral	19.7	42.39	46	-3.61	Pass
0.76645	Neutral	19.67	40.71	46	-5.29	Pass
4.7855	Neutral	19.71	40	46	-6	Pass
4.4105	Neutral	19.71	35.75	46	-10.25	Pass
0.20975	Neutral	19.55	22.99	53.21	-30.22	Pass
0.17195	Neutral	19.55	22.79	54.96	-32.17	Pass

Neutral Table

9 LIST OF TABLES

Table 1: List of test and measurement instruments 6
Table 2: Instrument application Software versions 7
Table 3: Ratings and System Details as declared by Client* 8
Table 4: Measurement Uncertainty 9
Table 5: List of Bluetooth center Frequencies 10
Table 6: Transmitter limits for Radiated emission 19

10 Power level used for 1, 2, 3 Mbps

Channel Frequency (MHz)	Power level index
2402	0
2441	0
2480	0

*******END OF TEST REPORT*******