Prüfbericht-Nr.: *Test report no.:*	ULR-TC568822300000032F	**Auftrags-Nr.:** *Order no.:*	146643820 0010	Seite 1 von 88 *Page 1 of 88*
Kunden-Referenz-Nr.: *Client reference no.:*	2024735	**Auftragsdatum:** *Order date:*	2021-12-20	
Auftraggeber: *Client:*	1. HONEYWELL INTERNATIONAL INC 1860W, ROSE GARDEN LANE, AZ75,M-16-7988, PHOENIX, ARIZON, UNITED STATES 2. Honeywell LTD 500 Brooksbank Avenue, North Vancouver, BC, V7J 3S4; Canada			
Prüfgegenstand: *Test item:*	Field Device Access Point Gen3 Anchor			
Bezeichnung *Identification*	FDAP31, FDAP32, FDAP3P	**Serien -Nr.:** *Serial no.:* FC-00		
Auftrags-Inhalt: *Order content*:	Testing and issue of Test Report and Grant Certificate			
Prüfgrundlage: *Test specification:*	FCC Part 15 Subpart C 15.247,15.207, 15.205 & 15.209 RSS 247 Issue 2,RSS Gen Issue 5			
Wareneingangsdatum: *Date of sample receipt:*	2022-01-27			
Prüfmuster-Nr.: *Test sample no:*	A003207433-001			
Prüfzeitraum: *Testing period:*	2022-01-27 - 2022-02-23			
Ort der Prüfung: *Place of testing:*	Wireless laboratory, Bangalore			
Prüflaboratorium: *Testing laboratory:*	TÜV Rheinland (India) Pvt. Ltd. 27/B,2nd cross road, Electronic city Phase1, Banglore-560100, India FCC Test Site Registration No: 496599 IC Test Site Registration Number: 3466E-1			
Prüfergebnis*: *Test result*:*	Pass			

geprüft von: *tested by:*		**genehmigt von:** *authorized by:*	
Datum: *Date:* 2022-01-27		**Ausstellatum:** *Issue date:* 2022-05-20	
Stellung / *Position:*	**Yogesh V** Engineer	**Stellung** / *Position:*	**Lokesh Ramu** Manager
Sonstiges / *Other:*	FCC ID: S5751308987 IC: 573W-51308987		

Zustand des Prüfgegenstandes bei Anlieferung: **Prüfmuster vollständig und unbeschädigt**
Condition of the test item at delivery: ***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		Result
	FCC	ISED	
Maximum conducted (average) output power	FCC 15.247 (b)(3)	RSS 247 Issue 2, Section 5.4 (d)	Pass
Maximum Power Spectral Density	FCC 15.247(e)	RSS 247 Issue 2, Section 5.2 (b)	Pass
DTS Bandwidth	FCC 15.247(a)(2)	RSS 247 Issue 2, Section 5.2 (a)	Pass
Emissions in non-restricted frequency bands	FCC 15.247(d)	RSS 247 Issue 2, Section 5.5	Pass
Spurious Radiated Emissions and Restricted Bands of Operation	FCC 15.209 / FCC 15.205	RSS-Gen Issue 5, Section 8.9 /8.10	Pass
Conducted Spurious Emission on AC Power lines	FCC 15.207	RSS-Gen Issue 5,Section 8.8	Pass

Product Category: Electronics Testing
Test Discipline: EMC Test Facility

Note:

1. Host products Field device access point (FDAP) has following model variants, all the models are electrically identical & RF characteristics are similar, please refer the Previous FDAP Report.
   Model name Model number
   FDAP31
   FDAP32
   FDAP3P
2. Radio1 (ZigBee) module Considered as approved referring to previous FDAP report FCC ID: S5751307990 and IC:573W-51307990
3. BLE approved module as Listed FCC ID:XPYNINAB1 and IC 8595A-NINAB1
4. FDAP unit integrated with Three Transmitters as simultaneous operation.
   1. BLE transmitter
   2. Radio 1(GXRM transmitter)
   3. Radio2(Anchor Transmitter)

REVISION HISTORY OF THIS REPORT

Report Number	Version	Description	Issue date
ULR-TC568822300000032F	01	Initial issue of report	2022-05-20
ULR-TC568822300000032F	02	Reviewer comments updated	2022-06-06

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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

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

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
Active loop antenna	Schwarz beck	FMZB 1519 B	1519B-00111	-	27.04.2022	Yearly	Radiated Spurious Emission
Balun & Biconical Antenna	Schwarz beck Mess-Elektronik	BBA 9106+V HBB 9124	9124-1117	-	03.02.2023	Yearly	
Log - Periodical Antenna	Schwarzbeck Mess-Elektronik	VUSLP 9111B	9111B-324	-	04.02.2023	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9120 D	9120D-1944	-	11.05.2022	Yearly	
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-0904	-	06.05.2022	Yearly	
Semi Anechoic Chamber	Frankonia	-	-	-	-	-	
Fully Anechoic Chamber	Albatross	-	-	-	-	-	
EMI Receiver	Rohde & Schwarz	ESW 44	101732	4.73.SP5	19.05.2022	Yearly	
EMI Receiver	Rohde & Schwarz	ESW44	101773	1.72SP1	12.02.2023	Yearly	
Spectrum Analyzer	Agilent	E4407B	US41192772	A.14.06	15.12.2022	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
1	Radiated spurious emission measurement in 3Mtr-FAC	EMC 32	10.60.00

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

The Field Device Access Point (FDAP) is a ruggedized industrial radio device intended for use in hazardous location to provide wireless connectivity for Wireless compatible field devices. As an industrial meshing access point, FDAP provides secure and reliable wireless coverage for wireless field devices. It also serves as a routing access point for wireless field devices and is located between the wired DCS network and wireless field devices. In addition to this FDAP support the Real Time Location Sensing. (RTLS) with the Help of Anchor radio.

3.2 Ratings and System Details of Equipment under Test

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

Protocol		IEEE 802.15.4
Operating Frequency Range		2405 MHz – 2475 MHz
No. of Channels		15
Channel Spacing		5MHz
Tx Transmitting Power		18 dBm
Maximum Measured e.i.r.p		23.30dBm with gain of 5dBi antenna and 26.30dBm with gain of 8dBi antenna
Modulation		DSSS (O-QPSK)
Data Rate		250kbits/sec
Number of antennas		6
Antenna Gain & Antenna Type		Refer clause 3.3
Supply Voltage to Product		24V DC (AC - DC Adapter)
Environmental conditions	**Storage**	-40°C to +85°C
		Relative humidity 5% to 95% RH
	Operating	-40°C to +70°C
		Relative humidity 5% to 95% RH
EUT Dimension		217 x 319 x 379 mm (H x W x L)

*__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.

3.3 Antenna Details

Sl.No	Antenna description	Antenna gain (dBi)	Power level (dBm)	Antenna Type
1	AIR-ANT2480V-N	8	18	External antenna- Omni directional
2	AIR-ANT2450V-N	5	18	External antenna- Omni directional
3	L-COM HGV-2409U	8	18	External antenna- Omni directional
4	Laird Technologies-OD24M-5	5	18	External antenna- Omni directional
5	SG1015NM-2450-5dBi	5	18	External antenna- Omni directional
6	NINA-B112	1	Max as per original module	Integral antenna

3.4 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 transmission on low, mid and high channel.

4.2 Test Operation and Test Software

Hardware Version: FDAP 51156751-101, 102,103 (Rev B)

Software Version: FDAP Software (OW323.1-09.0)

Hardware version of identification Number (HVIN): FDAP 51156751-101, 102,103 (Rev B)

Firmware version of identification Number (FVIN): FDAP Software (OW323.1-09.0)

4.3 Special Accessories and Auxiliary Equipment

None

4.4 Simultaneous Transmission

Combinationations of Simultaneous Operations performed	**IEEE 802.15.4(Anchor 1)**
	IEEE 802.15.4(GXRM Transmitter)
	BLE

Note: Simultaneous Operation was performed with the above mentioned combination and worst case test results are mentionrd in this report.

4.5 Countermeasures to achieve EMC Compliance

None

4.6 List of frequencies

Frequency Band (MHz)	Channel No.	Channel Frequency (MHz)
2400 – 2483.5	**01**	**2405**
	02	2410
	03	2415
	04	2420
	05	2425
	06	2430
	07	2435
	08	**2440**
	09	2445
	10	2450
	11	2455
	12	2460
	13	2465
	14	2470
	15	**2475**

Table 5: List of EUT Center frequencies

Channel used for EUT testing
Channel low : 2405MHz

Channel mid : 2440MHz

Channel High : 2475MHz

Note:

1. TUV Sample Identification number : A003207433-001 – Radiated & Conducted test Sample

4.7 Report References

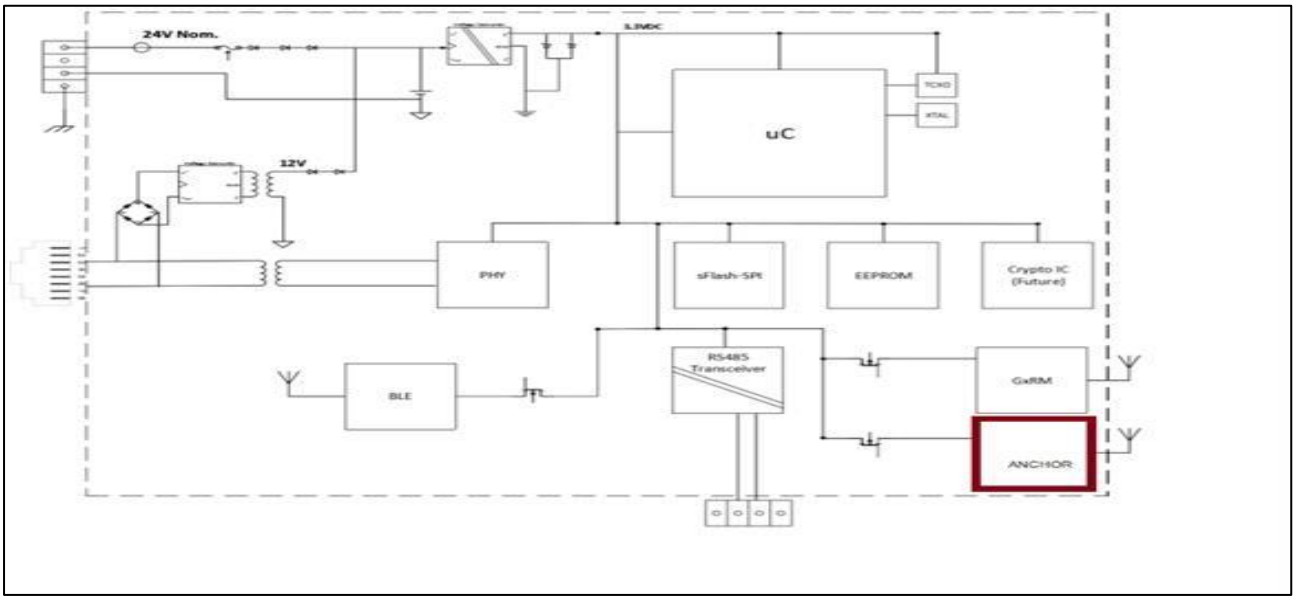
Note: Field Device Access Point (FDAP) has multiple protocols. All the supported wireless protocols and their respective test results are issued in separate test reports, following table lists the report numbers.

Radio Protocol	Report Number
RF test report for IEEE 802.15.4 (2.4GHz)– (This report)	ULR-TC568822300000032F
RF test report for Proprietary (2.4GHz)	ULR-TC568822300000033F
RF test report for Proprietary (2.4GHz)	ULR-TC568822300000034F

5 Operational Description

FDAP: It serves as a routing access point for wireless field devices and is located between the wired DCS network and wireless-based wireless field devices. Once deployed in the field, FDAPs self-discover and selforganize into a managed, secure, and redundant wireless field device mesh network. With FDAPs, wireless field devices do not have to route data from other field devices. The following figure illustrates how FDAPs are used in a OneWireless Network

6 Block Diagram



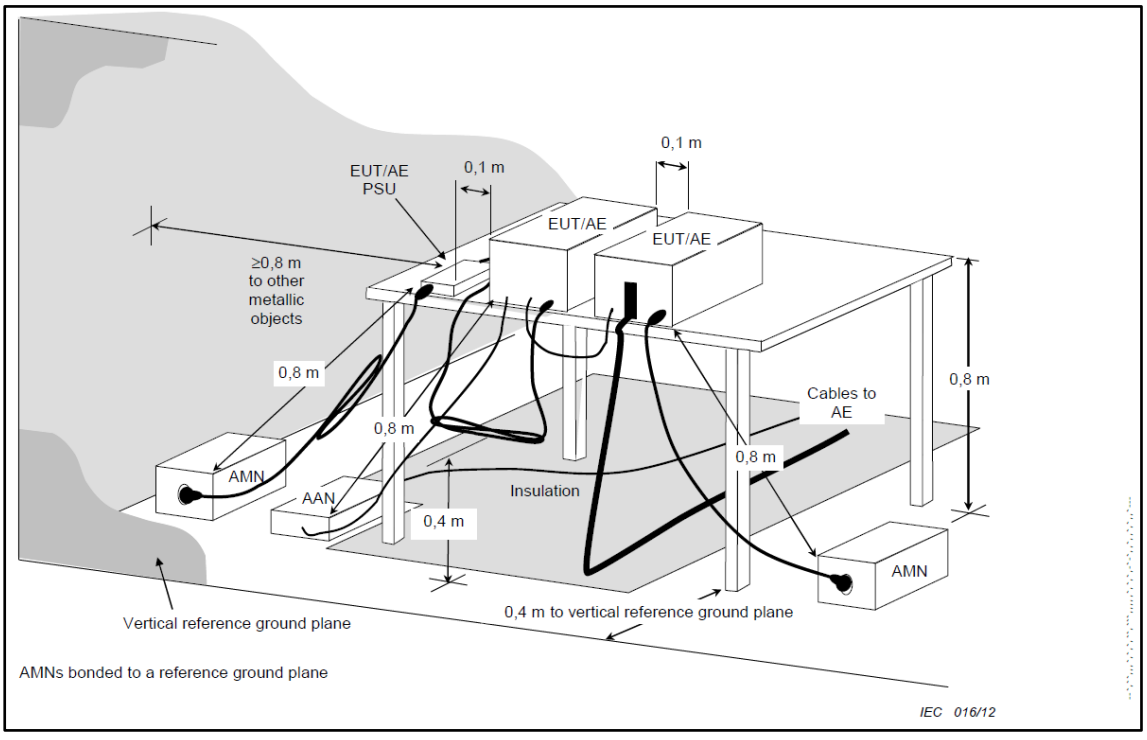
7 TEST METHODOLOGY

7.1 Conducted Spurious Emission Test on AC Power Line

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.

7.1.1 Test setup Configuration



7.2 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

7.2.1 Test Setup Configuration

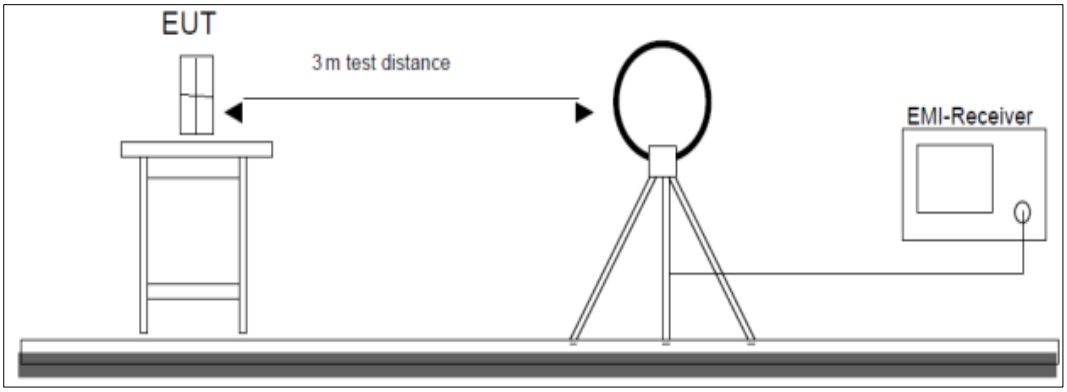


Figure 1: Frequency Range 9 kHz- 30 MHz

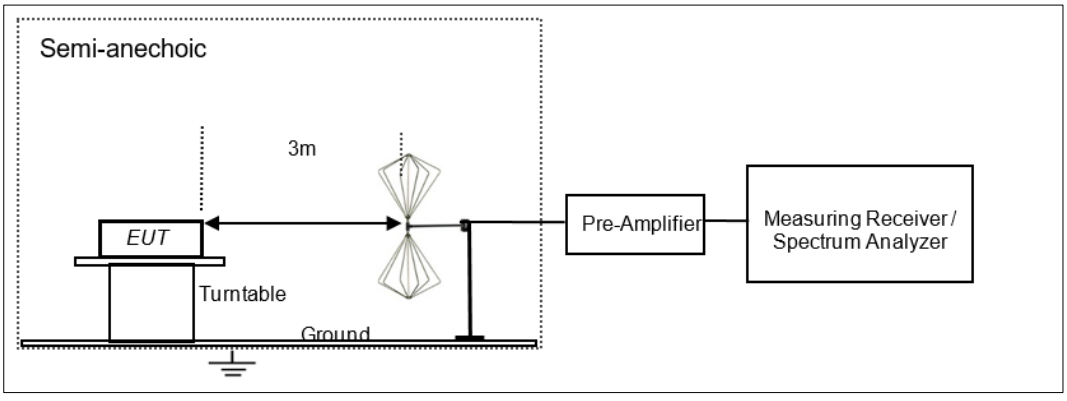


Figure 2: Frequency Range 30 MHz – 200 MHz

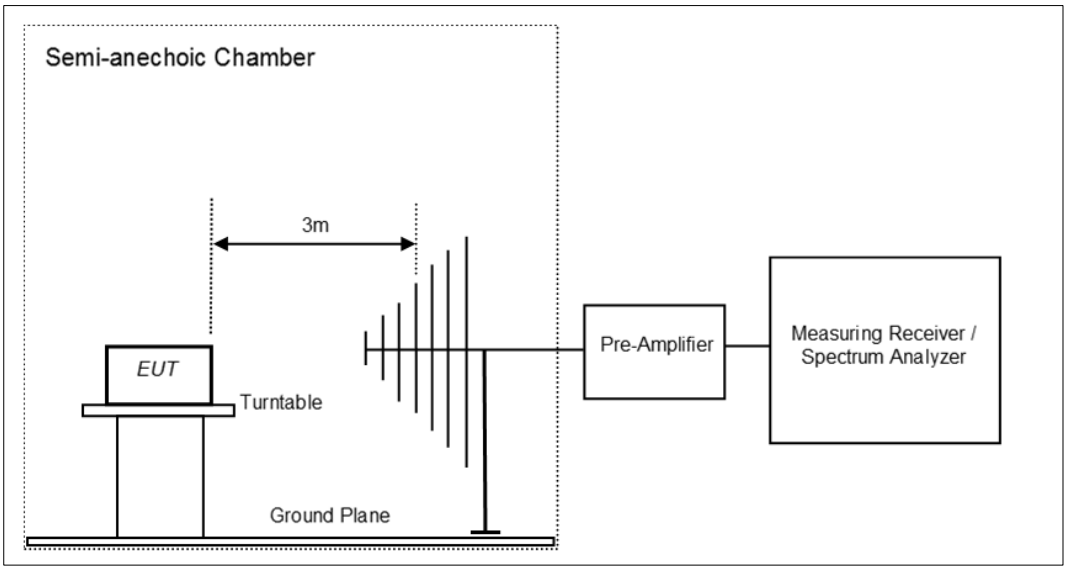


Figure 3: Frequency Range 200 MHz - 1GHz

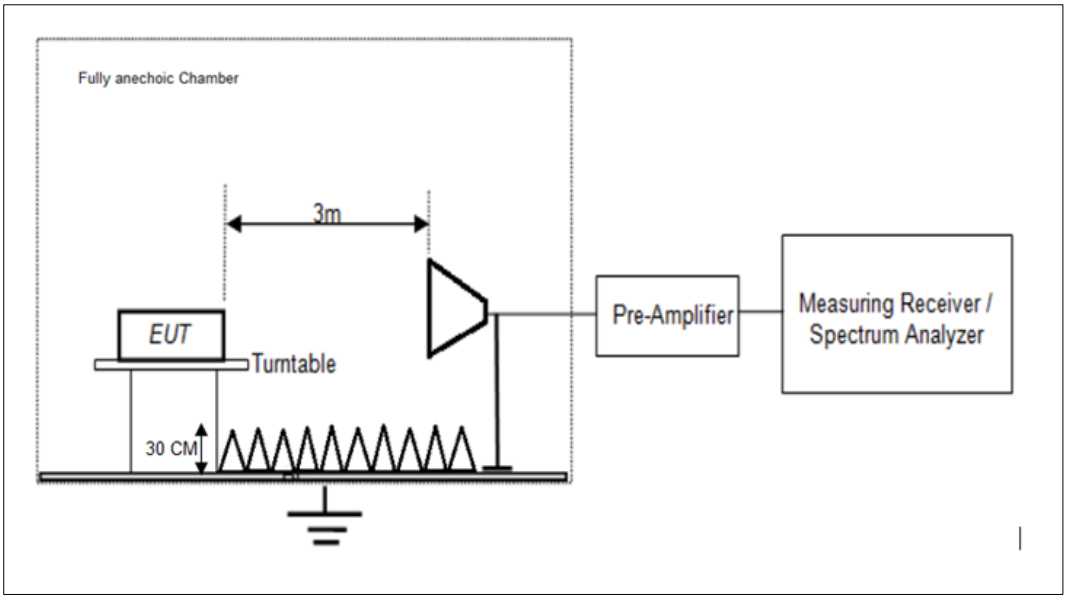


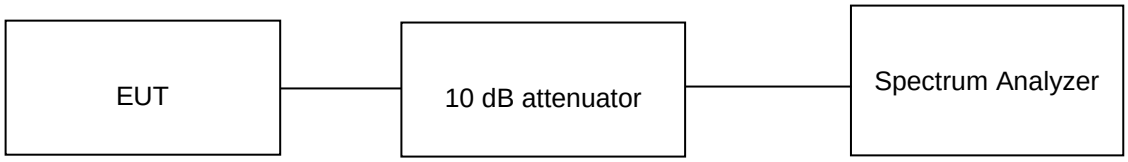
Figure 4: Frequency Range above 1 GHz

8 TEST RESULTS

8.1 Maximum Average Conducted Output Power

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (b)(3) / RSS 247 Issue 2, Section 5.4 (d)
Test Method	Subclause 11.9.2.2.2 of ANSI C63.10
Measurement Bandwidth	100KHz
Detector	Average
Port of testing	Antenna port
Requirement	Power ≤ 1 W (30 dBm) & e.i.r.p ≤ 4 W (36 dBm)



Test Condition

Normal Test Condition:

Temperature (Norm) = + 22.5°C Voltage = 24V DC (AC - DC Adapter) Relative humidity: 64%

KDB Guidelines applied:

Measurements were made as per section 8.3.2.2 in KDB 558074 D01 15.247 Measurement Guidance v05r02.

Test results:

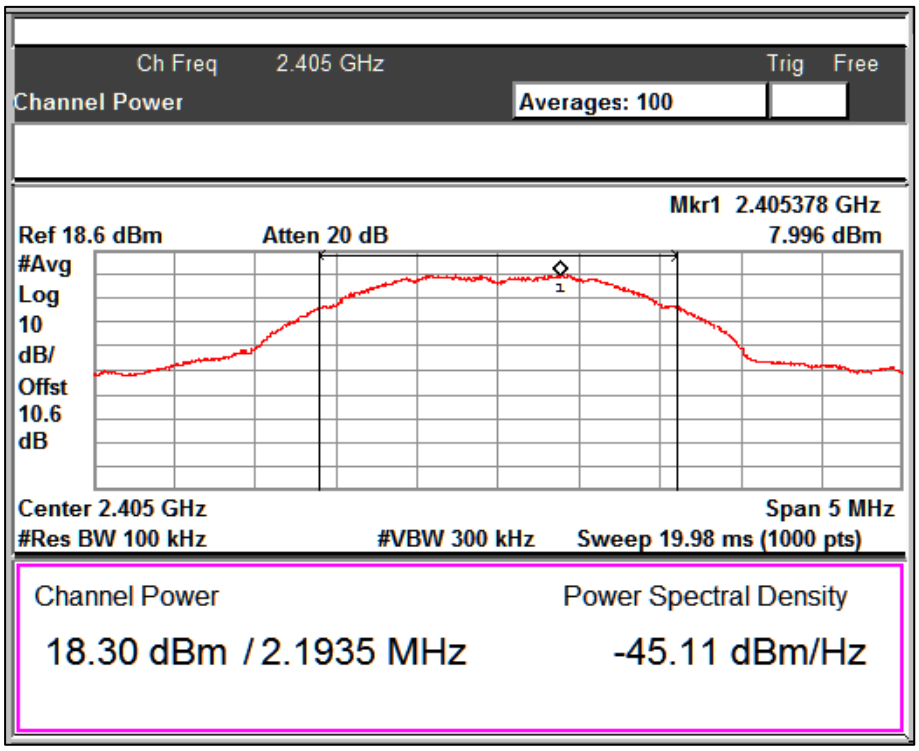
Note:
1. All the losses are included during measurement and final values are mentioned in the test report
2. Total Peak Output power (dBm) = Measured Peak power (dBm) + Attenuator factor (10dB) + Cable loss (0.6dB)
3. This product supports additional beamforming gain / directional gain, it uses dual antennas and hence Directional gain of the dual antennas are 5 dBi and 8dBi.

Transmitted power 18dBm and Antenna: AIR-ANT2450V-N (+5dBi gain)

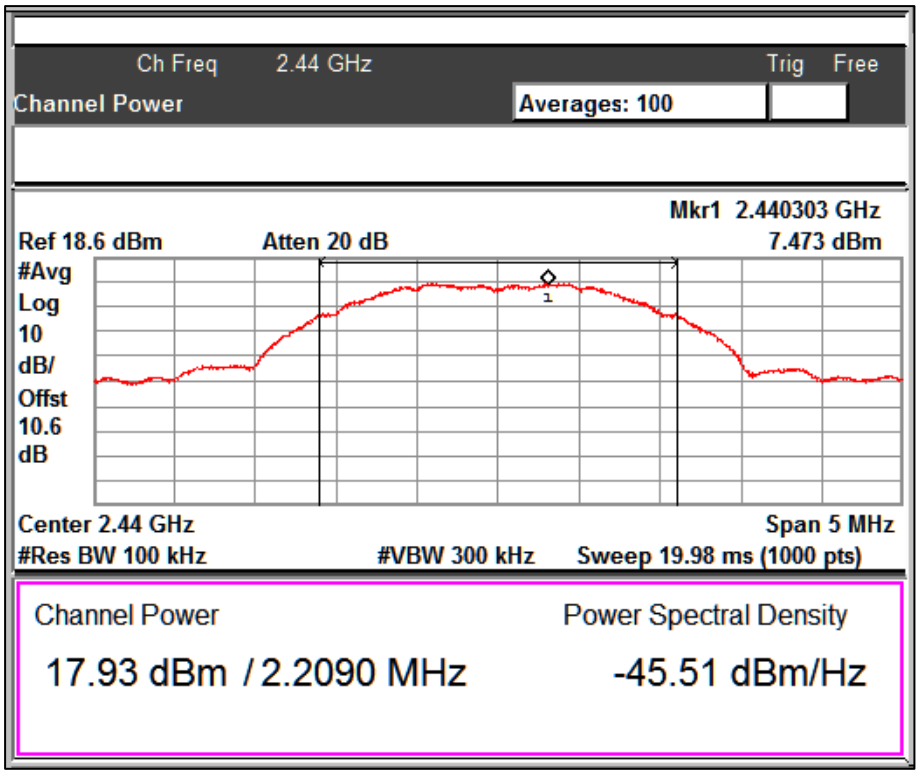
Data rate (Kbps)	Channel Frequency (MHz)	Measured Average Power (dBm)	Maximum e.i.r.p (dBm)	Power Limit (dBm)	e.i.r.p limit (dBm)
250	2405	18.30	23.30	30	36
	2440	17.93	22.93	30	36
	2475	17.24	22.24	30	36

Transmitted power 18dBm and Antenna: AIR-ANT2480V-N (+8dBi gain)

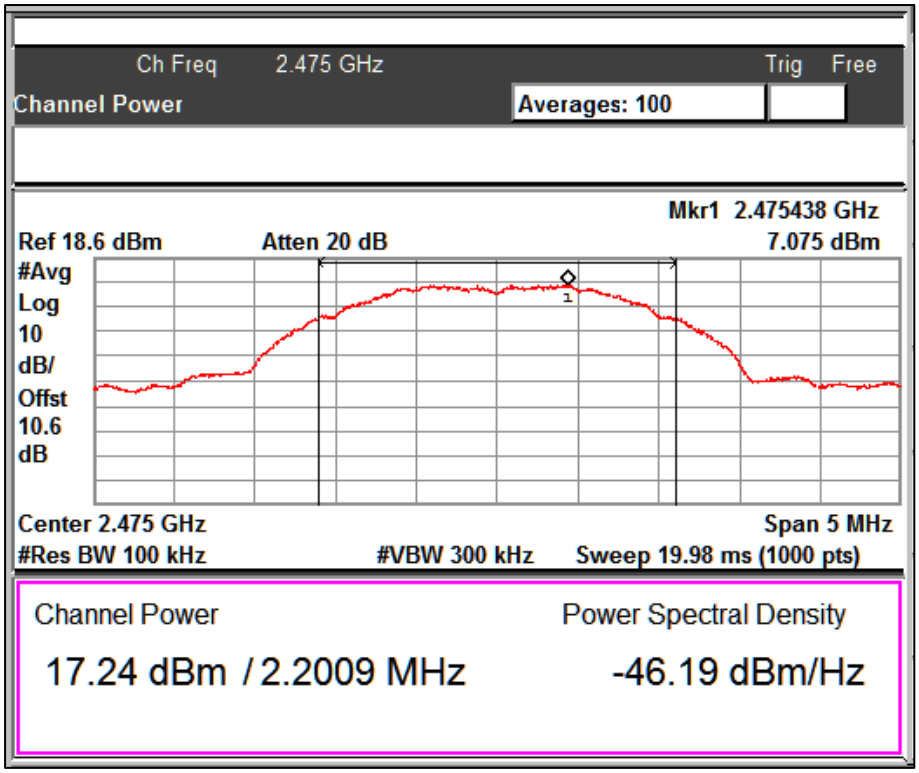
Data rate (Kbps)	Channel Frequency (MHz)	Measured Average Power (dBm)	Maximum e.i.r.p (dBm)	Power Limit (dBm)	e.i.r.p limit (dBm)
250	2405	18.30	26.30	30	36
	2440	17.93	25.93	30	36
	2475	17.24	25.24	30	36



Channel Frequency: 2405MHz



Channel Frequency: 2440MHz



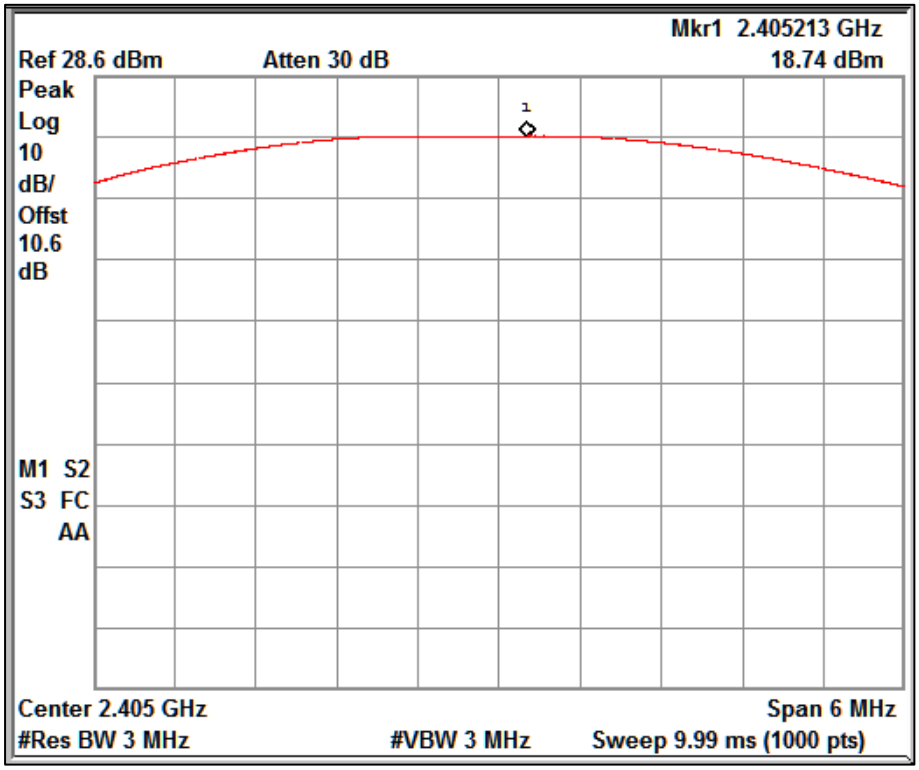
Channel Frequency: 2475MHz

Test results for spot check of Maximum Conducted Output power for GXRM Host

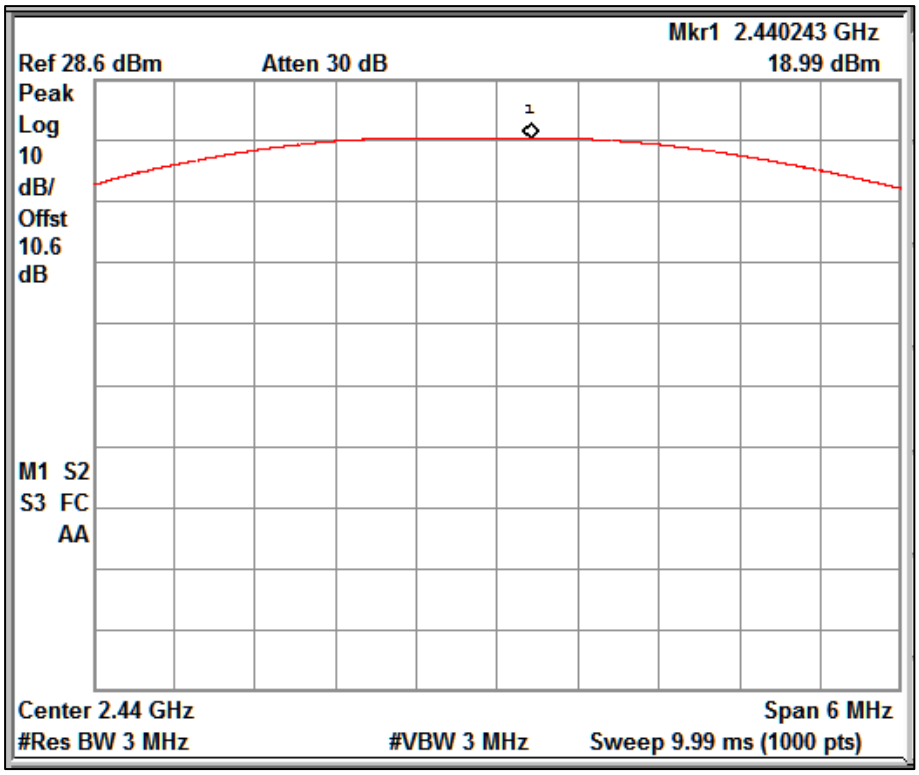
Transmitted power 20dBm and Antenna gain of 5dBi

Data rate (Kbps)	Channel Frequency (MHz)	Measured Average Power (dBm)	Maximum e.i.r.p (dBm)	Power Limit (dBm)	e.i.r.p limit (dBm)
250	2405	18.74	23.74	30	36
	2440	18.99	23.99	30	36
	2475	15.92	20.92	30	36

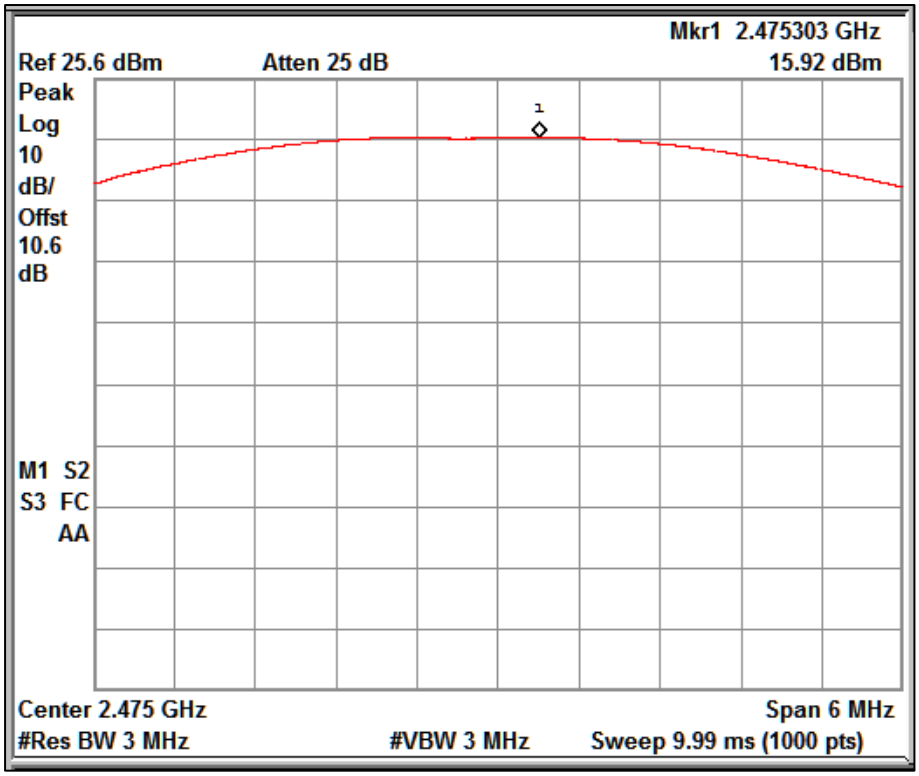
Test Plots:



Channel Frequency: 2405MHz



Channel Frequency: 2440MHz

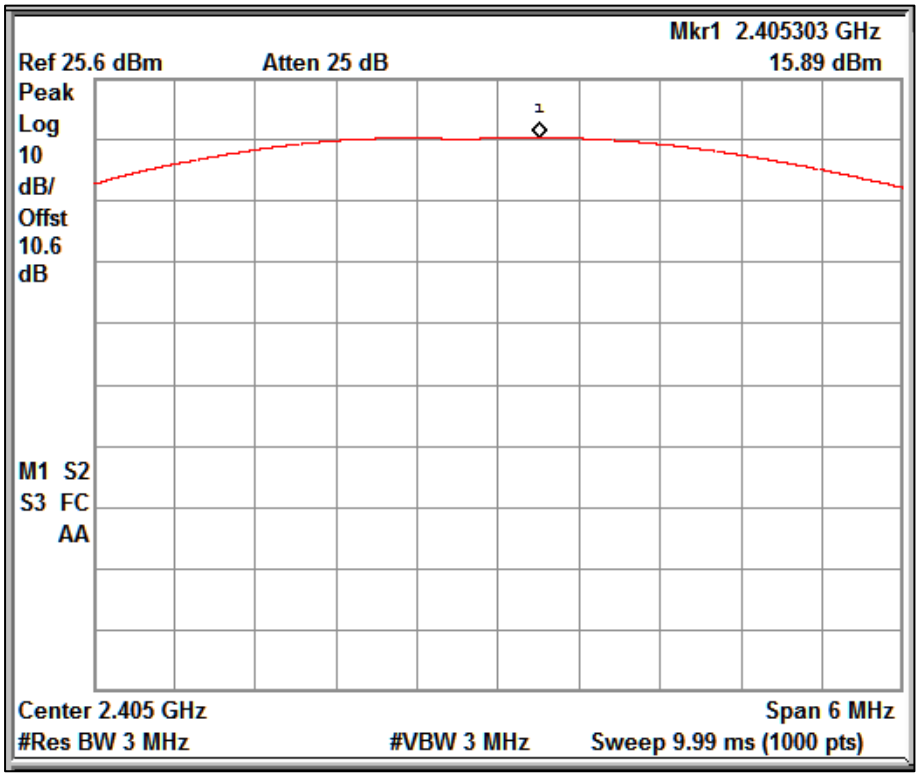


Channel Frequency: 2475MHz

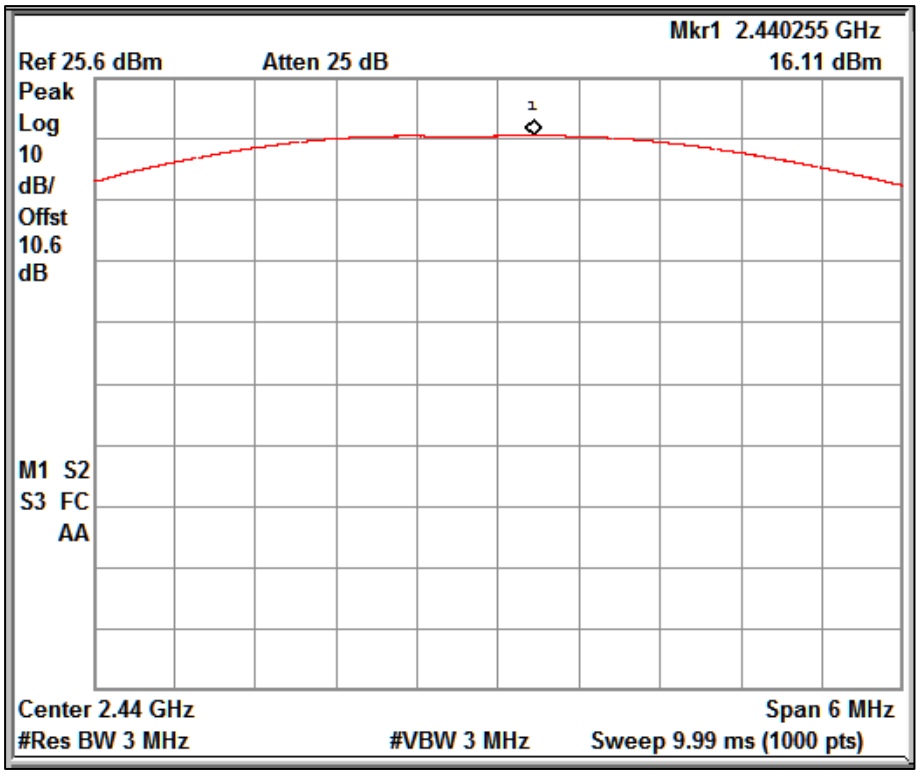
Transmitted power 17dBm and Antenna gain of 8dBi

Data rate (Kbps)	Channel Frequency (MHz)	Measured Average Power (dBm)	Maximum e.i.r.p (dBm)	Power Limit (dBm)	e.i.r.p limit (dBm)
250	2405	15.89	23.89	30	36
	2440	16.11	24.11	30	36
	2475	15.91	23.91	30	36

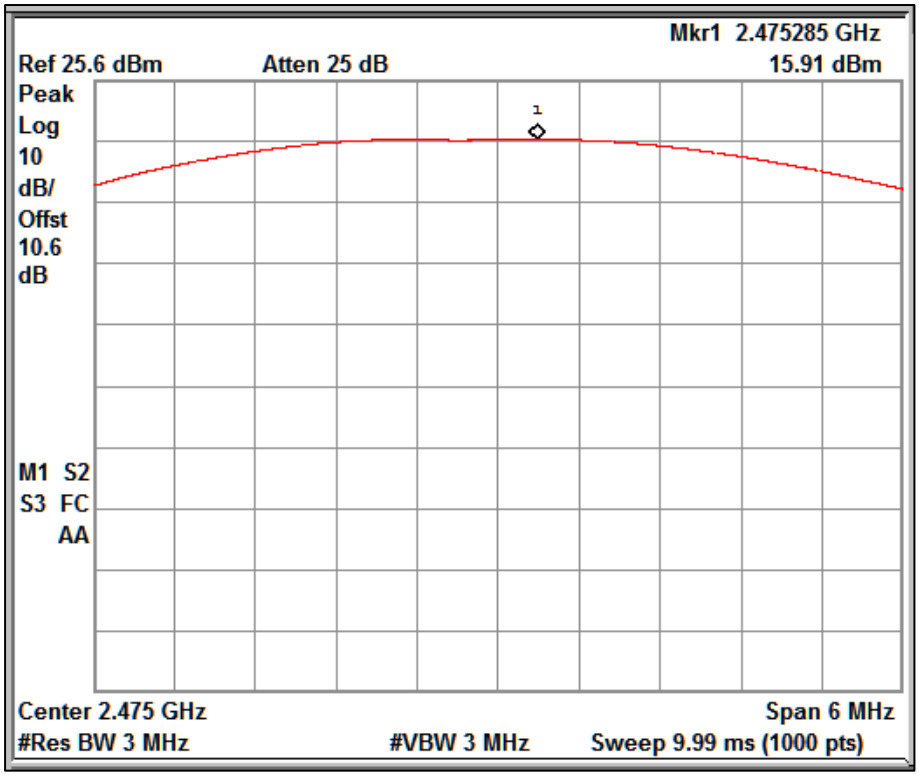
Test Plots:



Channel Frequency: 2405MHz



Channel Frequency: 2440MHz



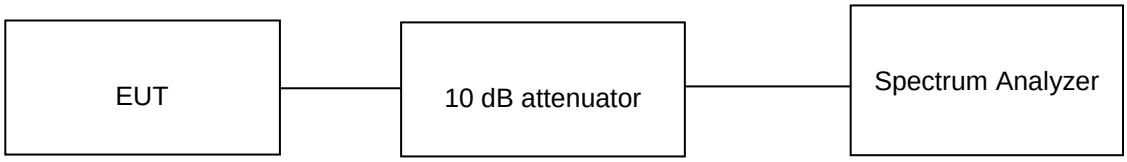
Channel Frequency: 2475MHz

8.2 Maximum Power Spectral Density

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (e) / RSS 247 Issue 2, Section 5.2 (b)
Test Method	Subclause 11.10.3 of ANSI C63.10
Measurement Bandwidth	3 kHz
Detector	Average sample detector mode
Port of testing	Antenna port
Requirement	For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = + 22.5°C Voltage = 24V DC (AC - DC Adapter) Relative humidity: 64%

KDB Guidelines applied:

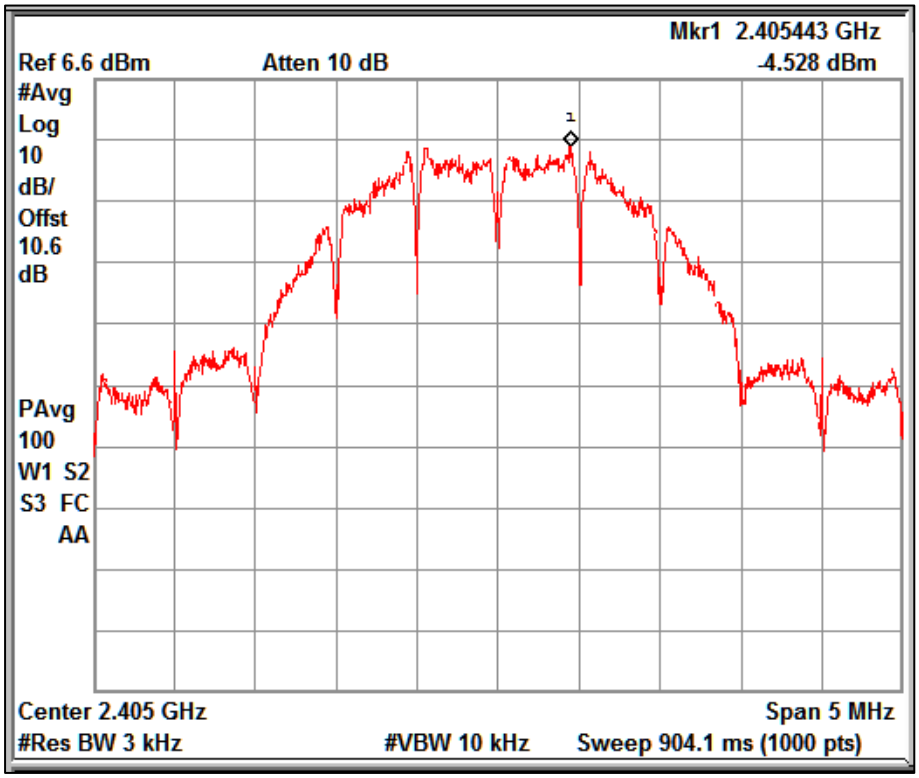
Measurements were made as per section 8.4 in KDB 558074 D01 15.247 Measurement Guidance v05r02.

Test results:

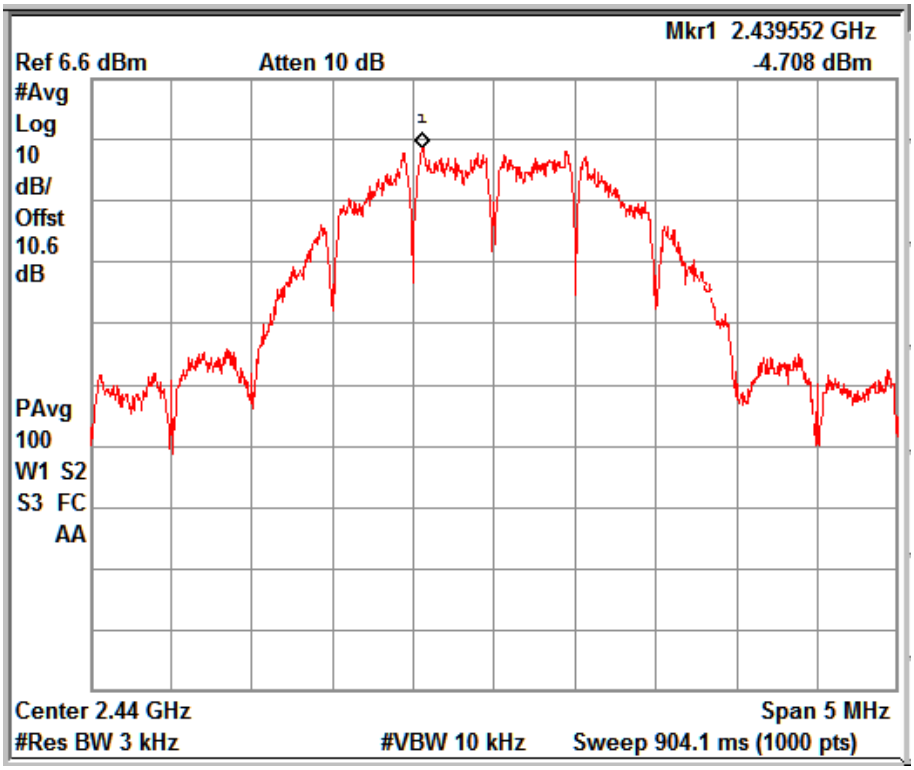
Note:
1. All the losses are included during measurement and final values are mentioned in the test report.
2. Total Average PSD (dBm) = Measured Average PSD (dBm) + Attenuator factor (10dB) + Cable loss (0.6dB)
3. This product supports additional beamforming gain / directional gain, it uses dual antennas and hence Directional gain of the dual antennas are 5 dBi and 8dBi

Antenna 1:

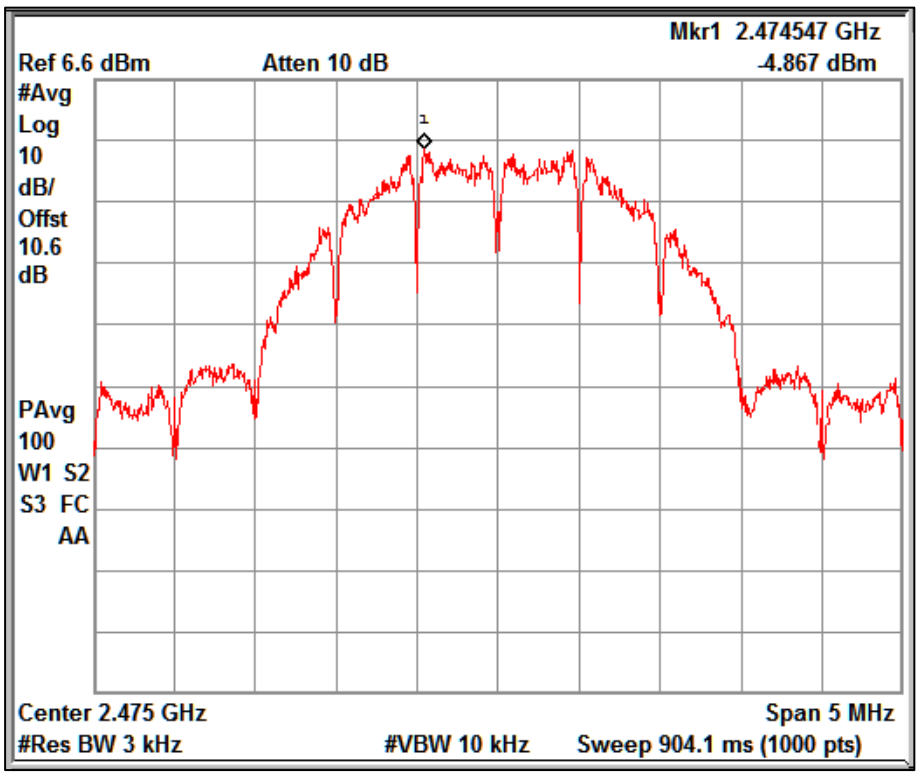
Data rate	Channel Frequency (MHz)	Measured average PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)
250Kbps	2405	-4.52	8.00
	2440	-4.70	8.00
	2475	-4.86	8.00



Channel Frequency: 2405MHz



Channel Frequency: 2440MHz



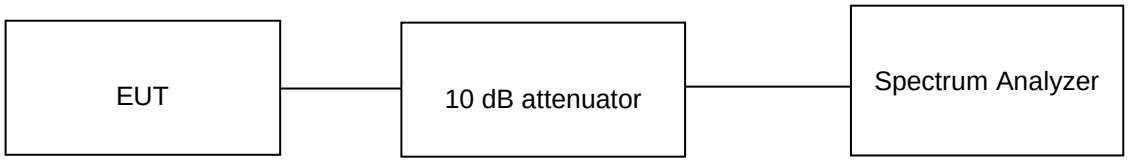
Channel Frequency: 2475MHz

8.3 Occupied bandwidth

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (a) (2) / RSS 247 Issue 2, Section 5.2 (a)
Test Method	Subclause 11.8.1 of ANSI C63.10
Measurement Bandwidth	100 kHz for x dB bandwidth 1% to 5% of OCB for 99% bandwidth
Detector	Peak
Port of testing	Antenna port
Requirement	The minimum 6 dB bandwidth shall be at least 500 kHz

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = + 22.5 °C Voltage = 24V DC (AC-DC Adapter) Relative humidity: 64%

KDB Guidelines applied:

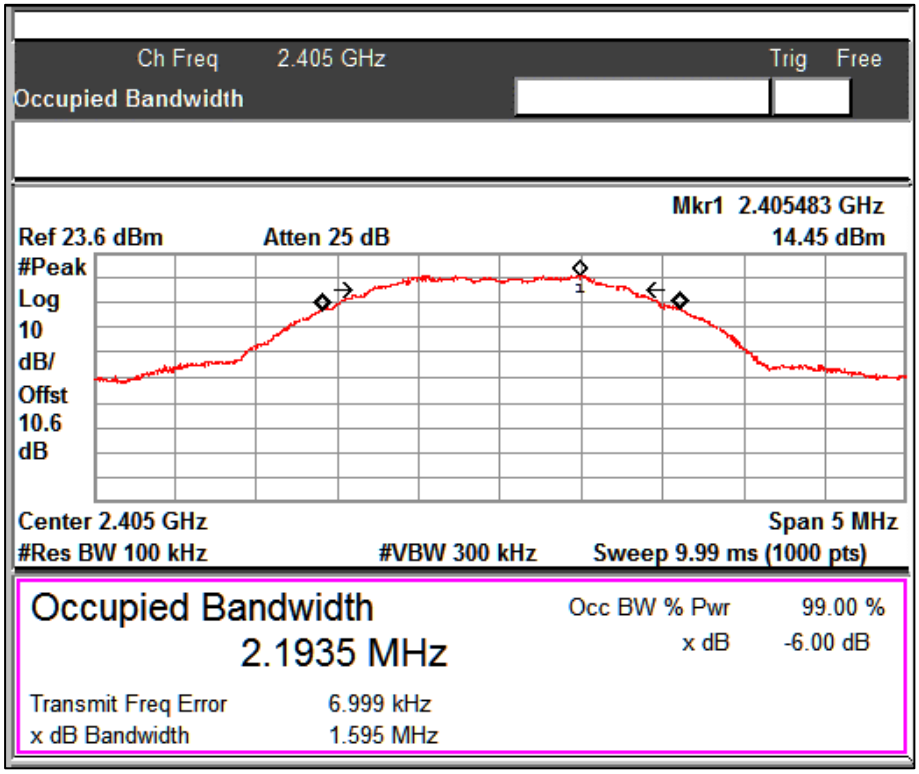
Measurements were made as per section 8.2 in KDB 558074 D01 15.247 Measurement Guidance v05r02.

Test results:

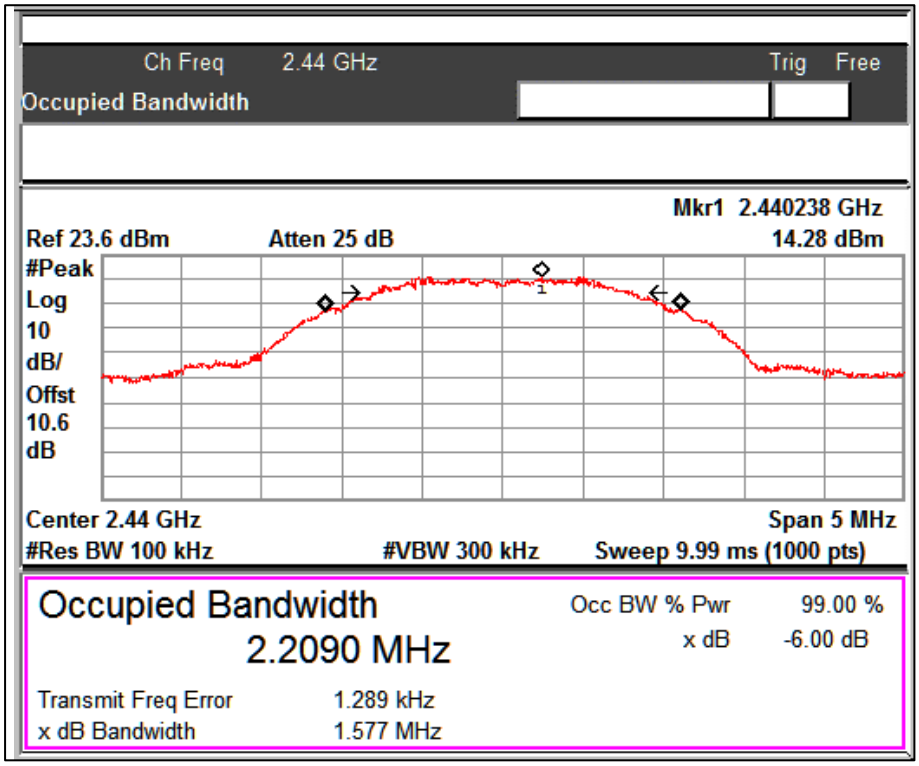
Note:
1. All the losses are included during measurement and final values are mentioned in the test report.
2. Total Peak Output power (dBm) = Measured Peak power (dBm) + Attenuator factor (10dB) + Cable loss (0.6dB)
3. This product supports additional beamforming gain / directional gain, it uses dual antennas and hence Directional gain of the dual antennas are 5 dBi and 8dBi

Antenna 1:

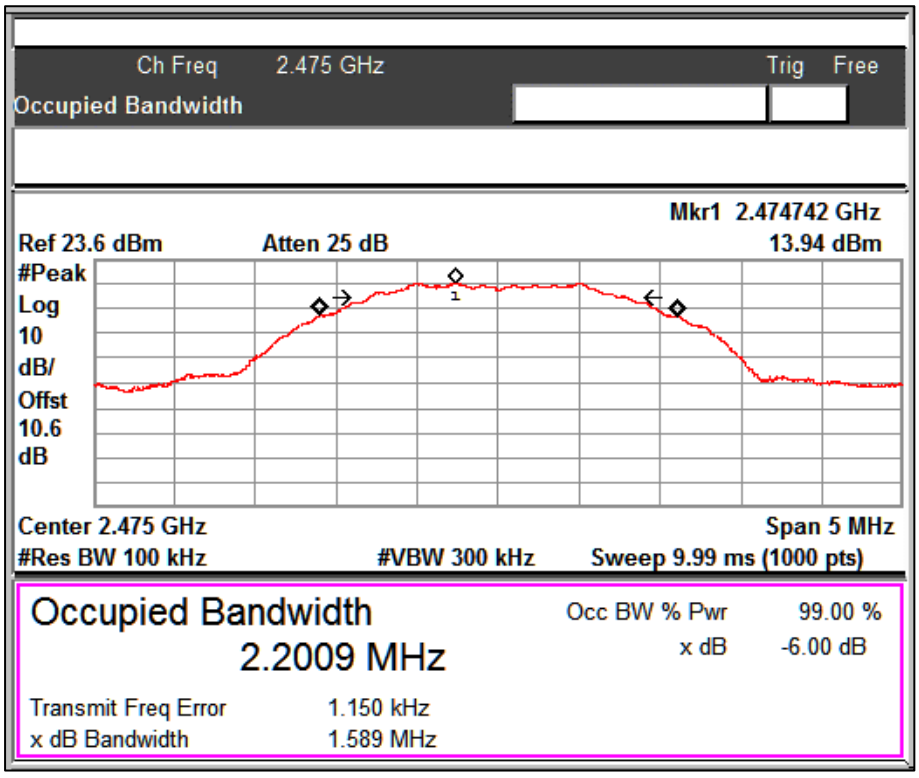
Data rate	Channel Frequency (MHz)	6 dB Bandwidth (MHz)	99% OBW (MHz)
250Kbps	2405	1.59	2.19
	2440	1.57	2.20
	2475	1.58	2.20



Channel Frequency: 2405MHz



Channel Frequency: 2440MHz



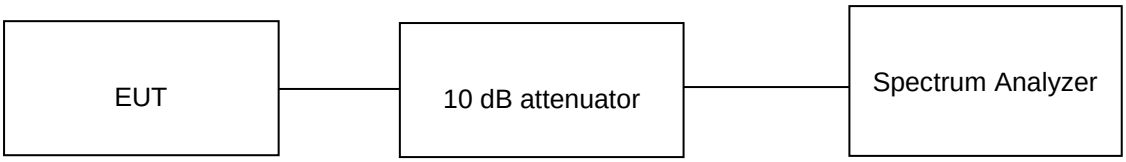
Channel Frequency: 2475MHz

8.4 Emissions in non-restricted frequency bands and Conducted Spurious Emission

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (d) / RSS 247 Issue 2, Section 5.5
Test Method	Subclause 11.11 of ANSI C63.10
Measurement Bandwidth	100 kHz
Detector	Peak
Port of testing	Antenna port
Requirement	In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits

Test Method:



Test Condition

Normal Test Condition:

Temperature (Norm) = + 22.5°C Voltage = 24V DC (AC - DC Adapter) Relative humidity: 64%

KDB Guidelines applied:

Measurements were made as per section 8.5 in KDB 558074 D01 15.247 Measurement Guidance v05r02.

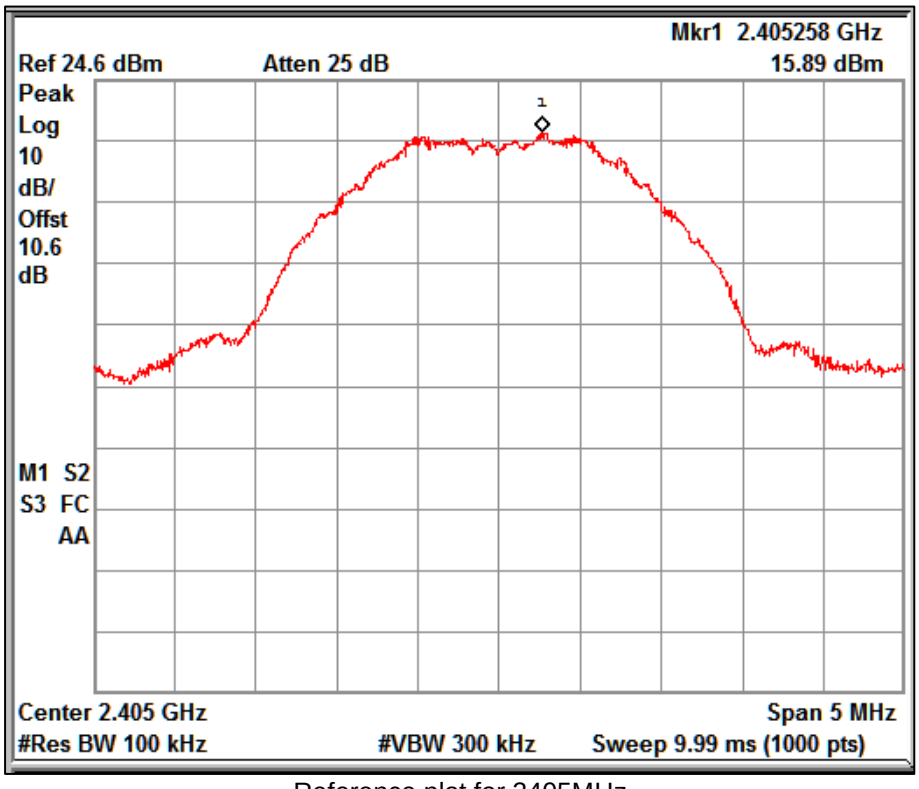
Test results:

Note:

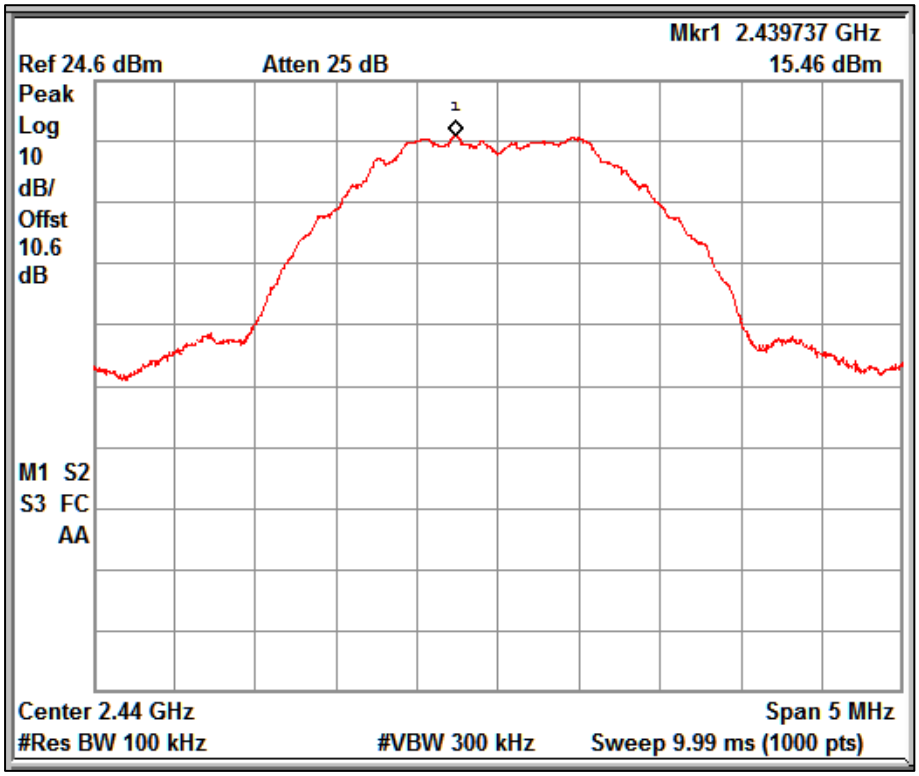
1. All the losses are included during measurement and final values are mentioned in the test report
2. Final Value (dBm) = Measured Value (dBm) + Attenuator factor (10dB) + Cable loss (0.6dB)
3. This product supports additional beamforming gain / directional gain, it uses dual antennas and hence Directional gain of the dual antennas are 5 dBi and 8dBi

8.4.1 Band edge and reference plots

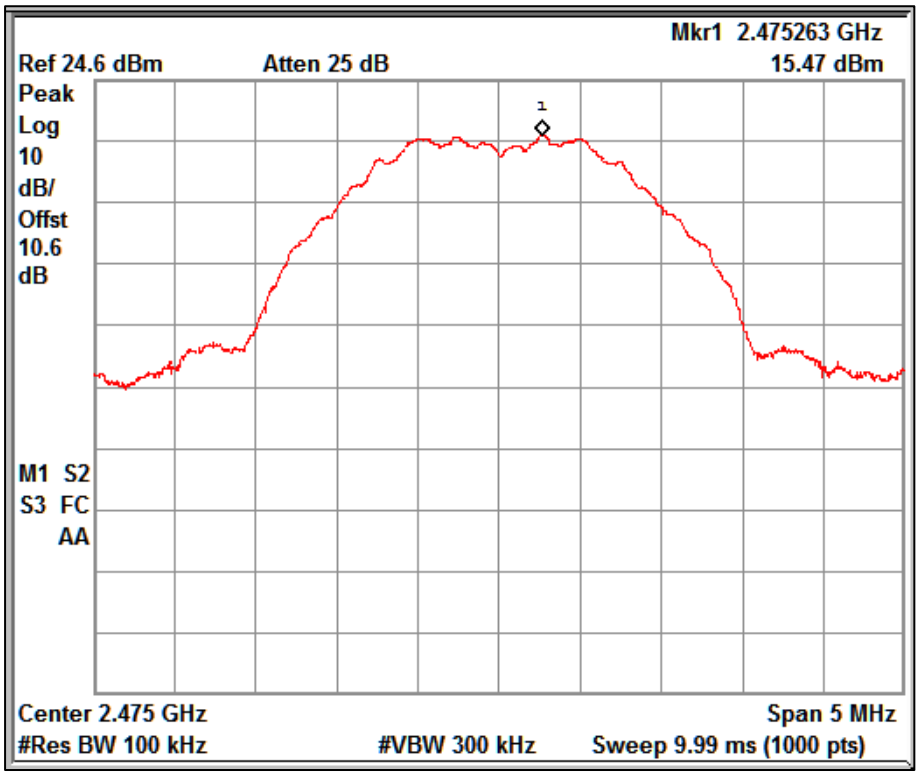
Channel Frequency (MHz)	Reference Value (B) (dBm)	Band edge Frequency (MHz)	Value at Band edge (A) (dBm)	A-B (dBc)	Limit (dBc)
2405	15.89	2400.00	-37.32	-53.21	-30
2475	15.47	2483.50	-40.42	-55.89	-30



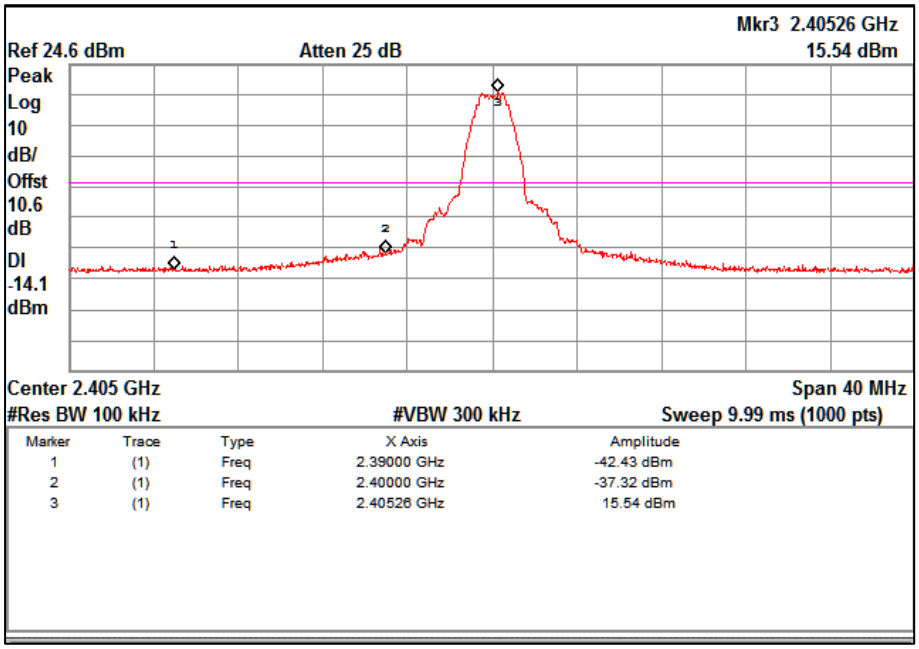
Reference plot for 2405MHz



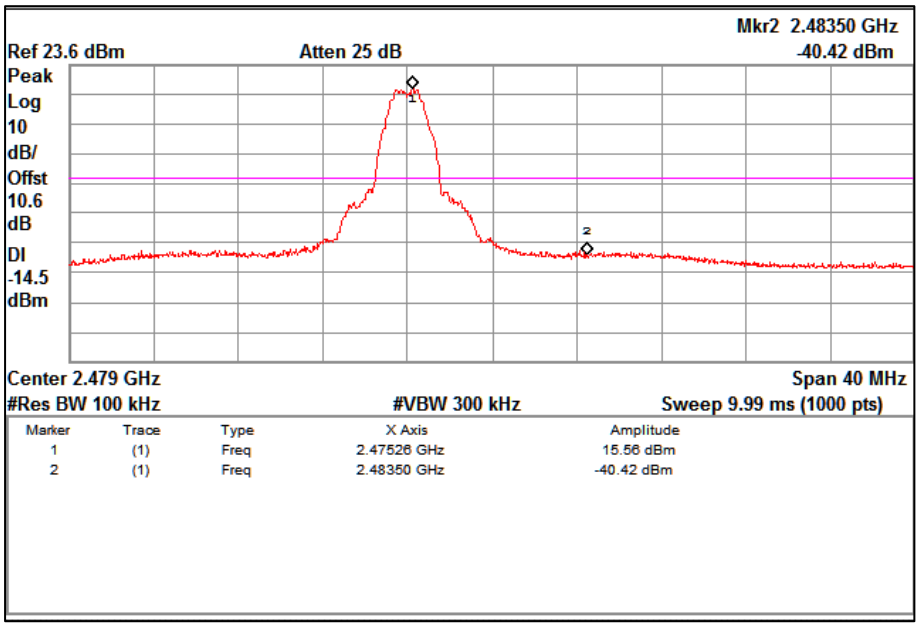
Reference plot for 2440MHz



Reference plot for 2475MHz

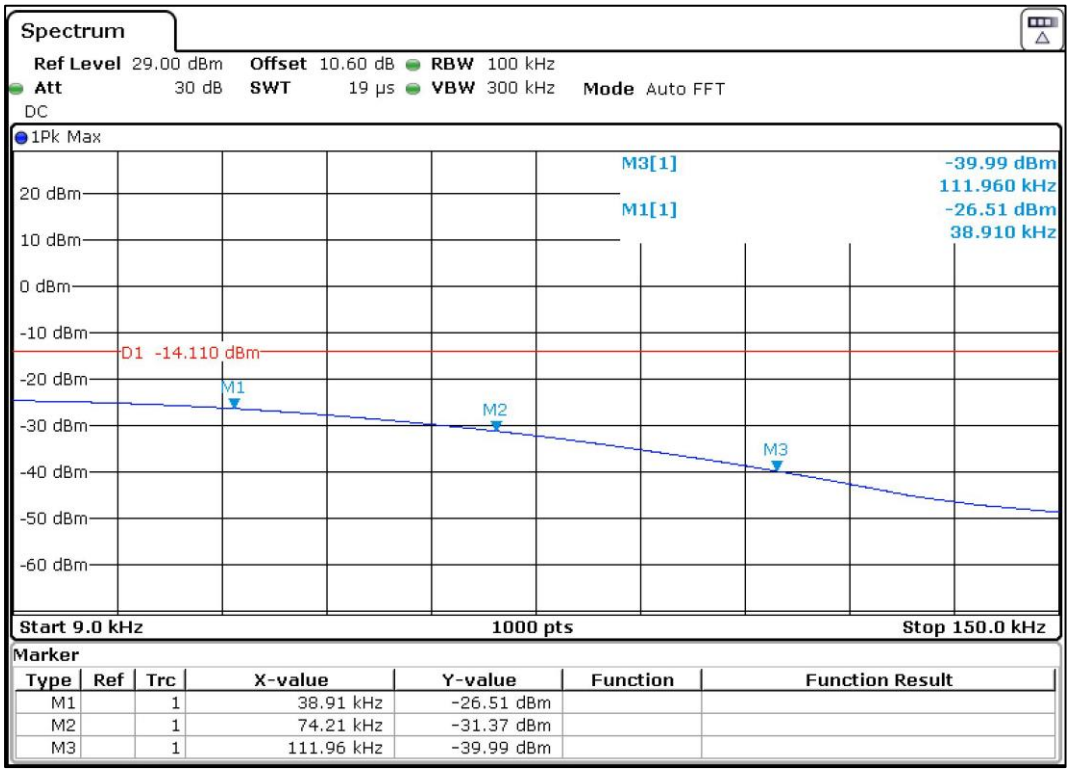


Band edge Channel Frequency 2405MHz

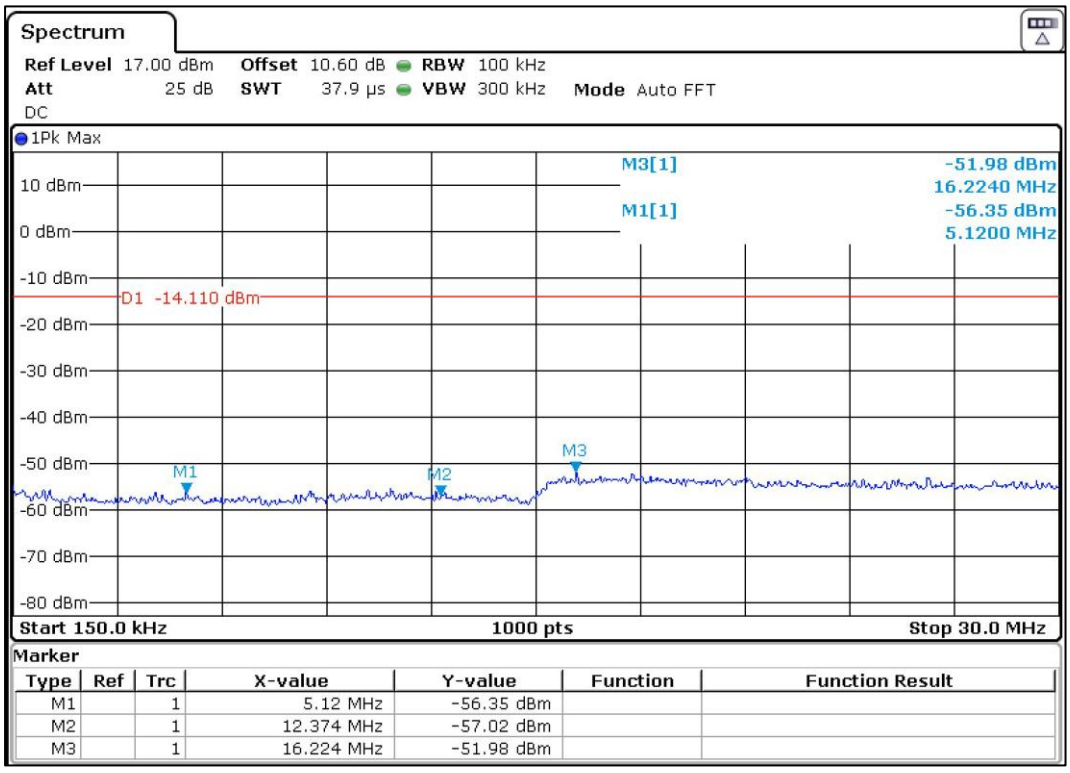


Band edge Channel Frequency 2475MHz

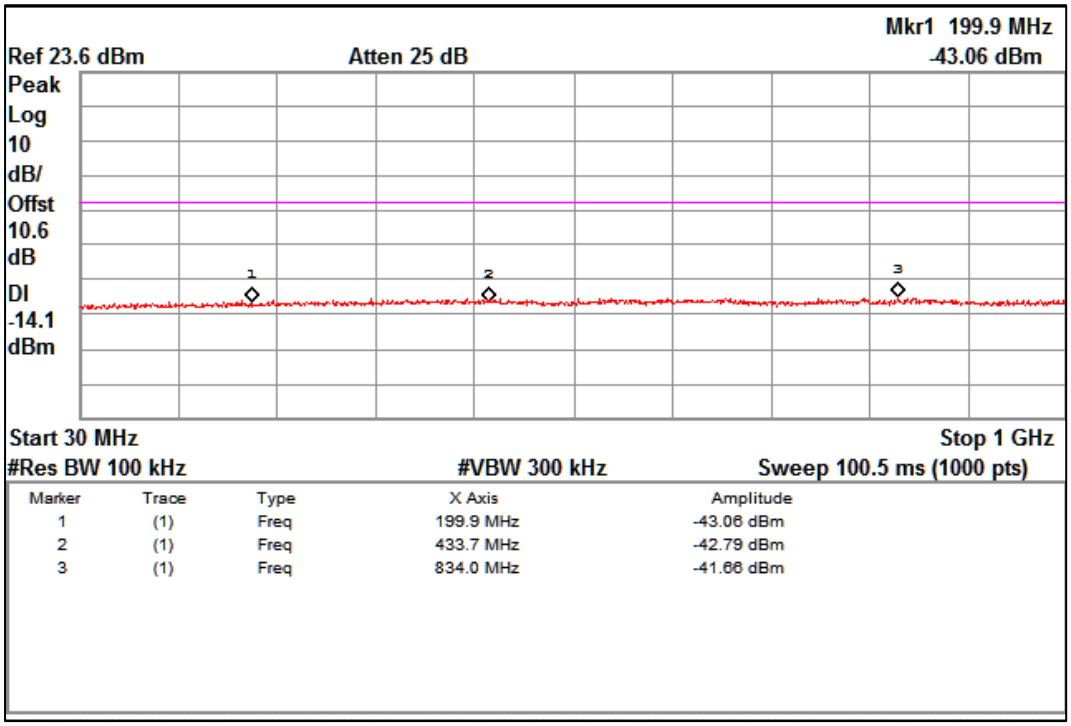
8.4.2 Out-Of-Band Emissions



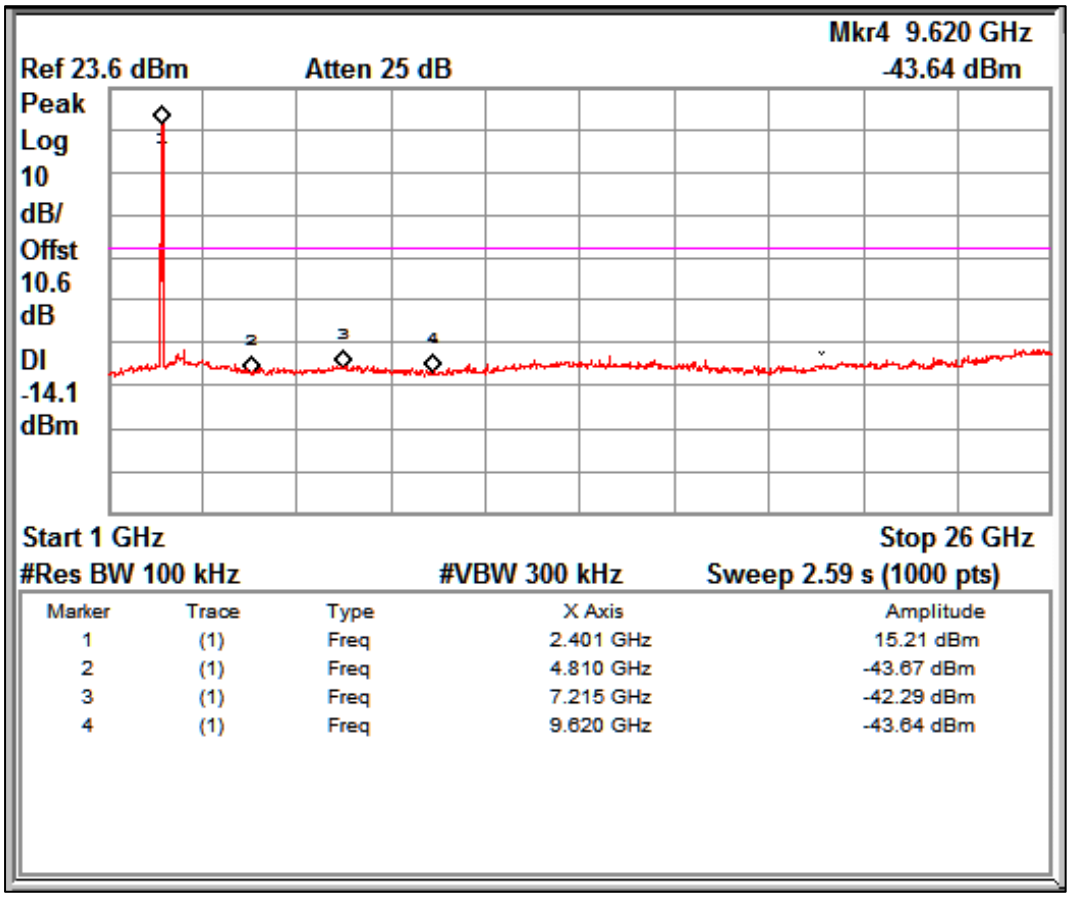
Channel Frequency 2405MHz Frequency Range 9KHz – 150KHz



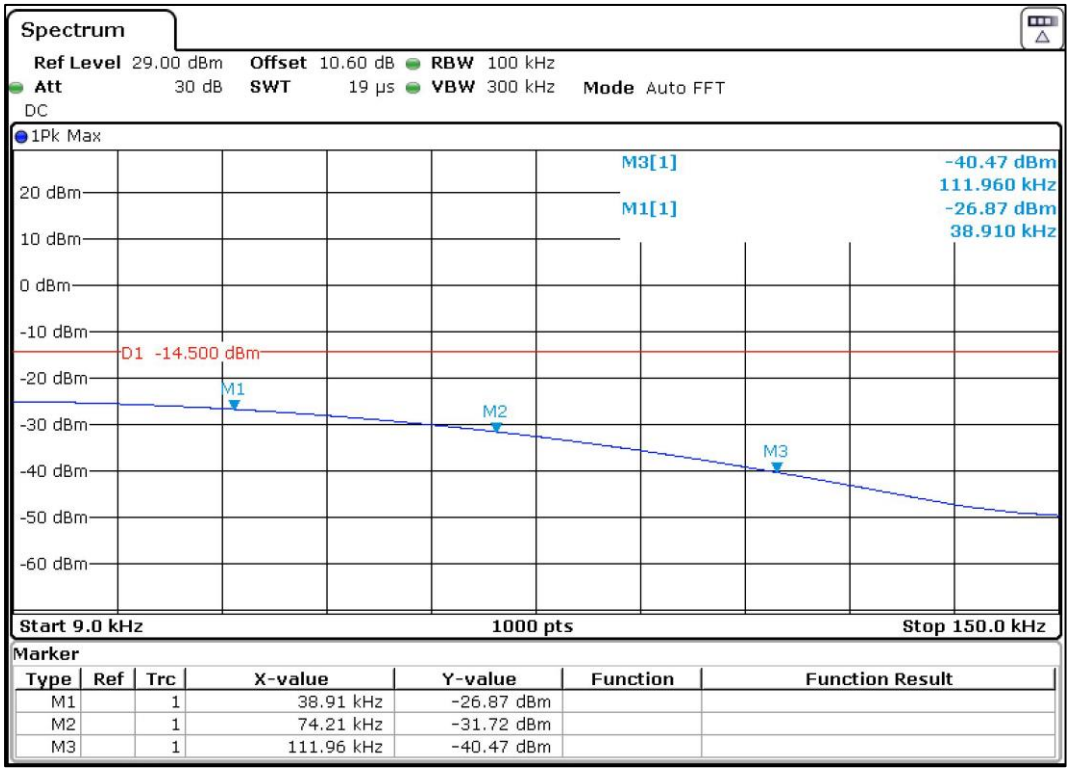
Channel Frequency 2405MHz Frequency Range 150KHz – 30MHz



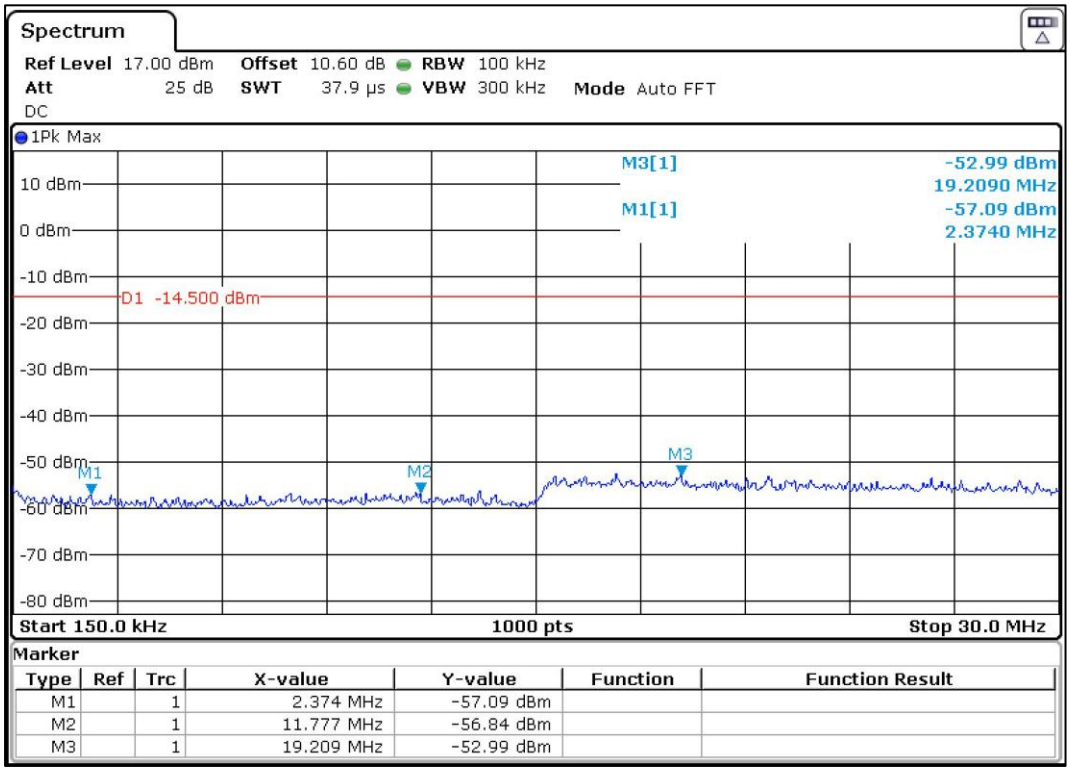
Channel Frequency 2405MHz Frequency Range 30MHz – 1GHz



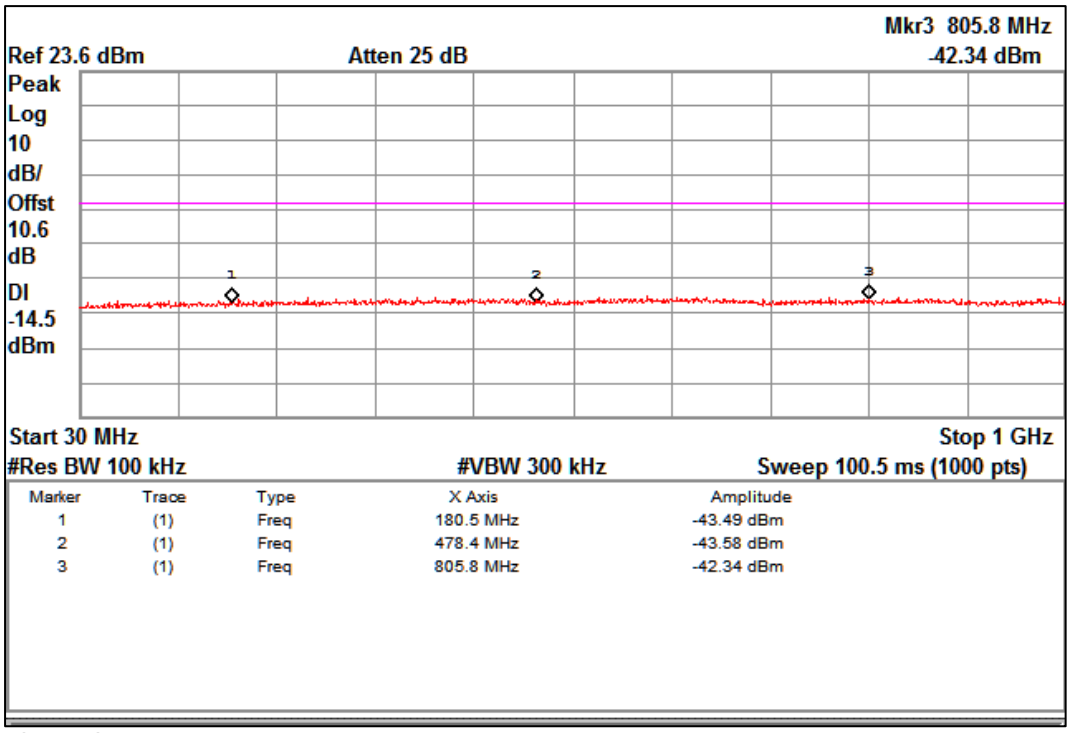
Channel Frequency 2405MHz Frequency Range 1GHz – 26GHz



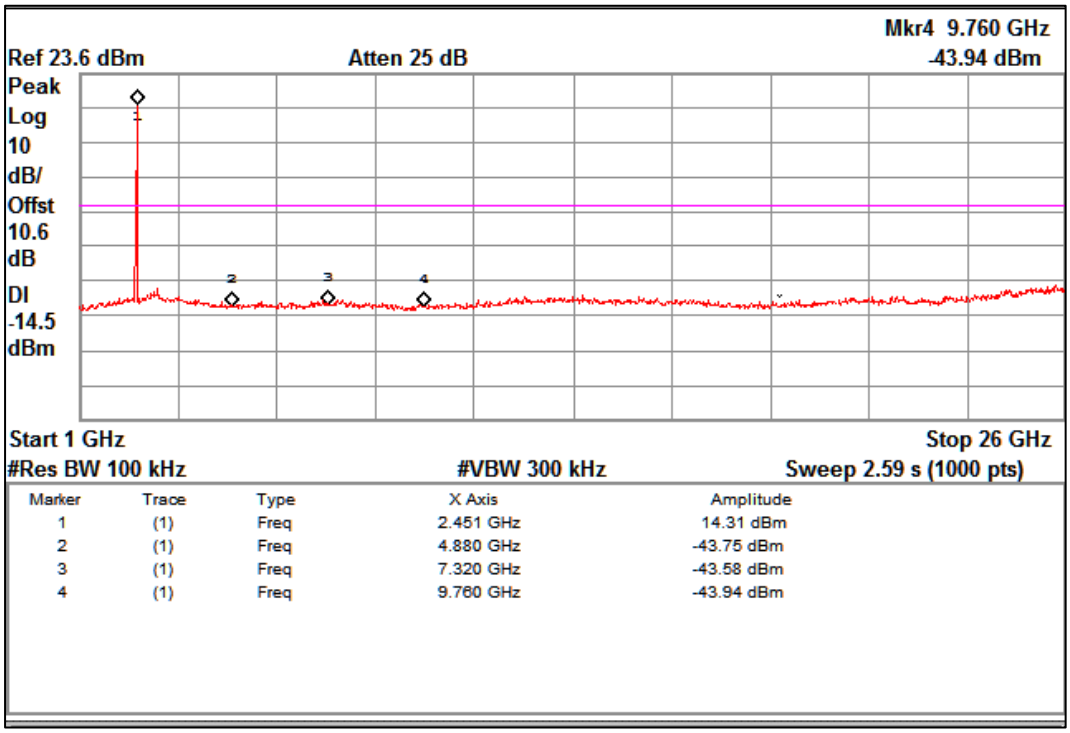
Channel Frequency 2440MHz Frequency Range 9KHz – 150KHz



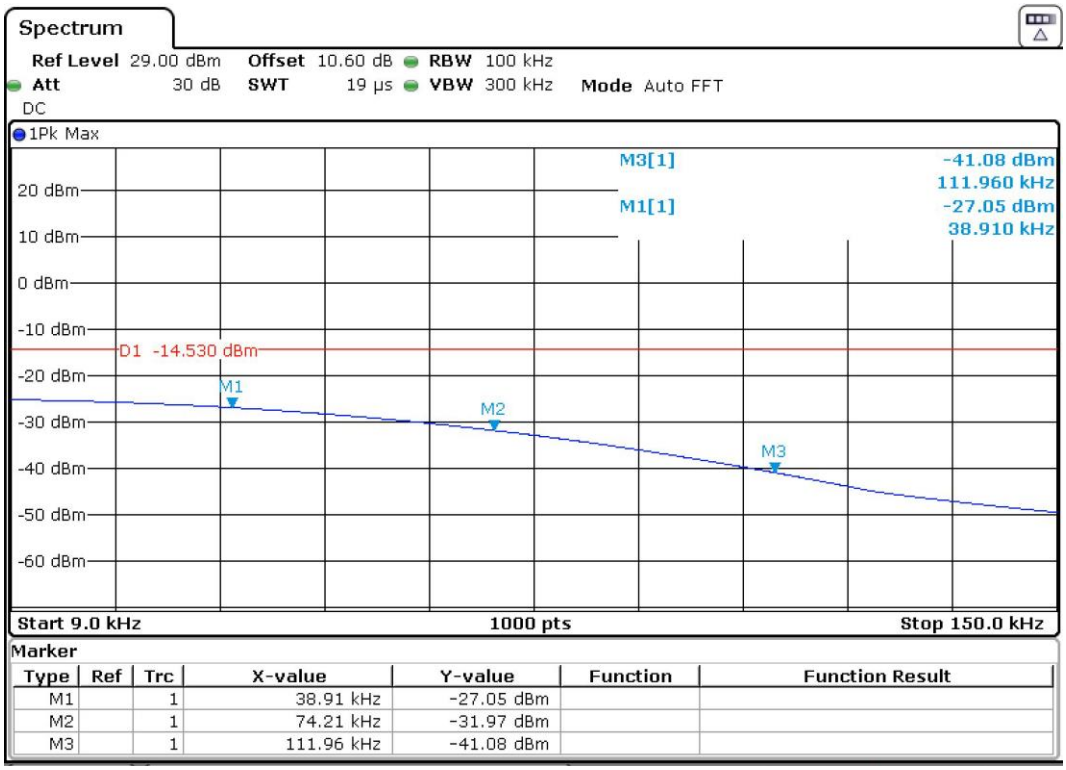
Channel Frequency 2440MHz Frequency Range 150KHz – 30MHz



Channel Frequency 2440MHz Frequency Range 30MHz – 1GHz



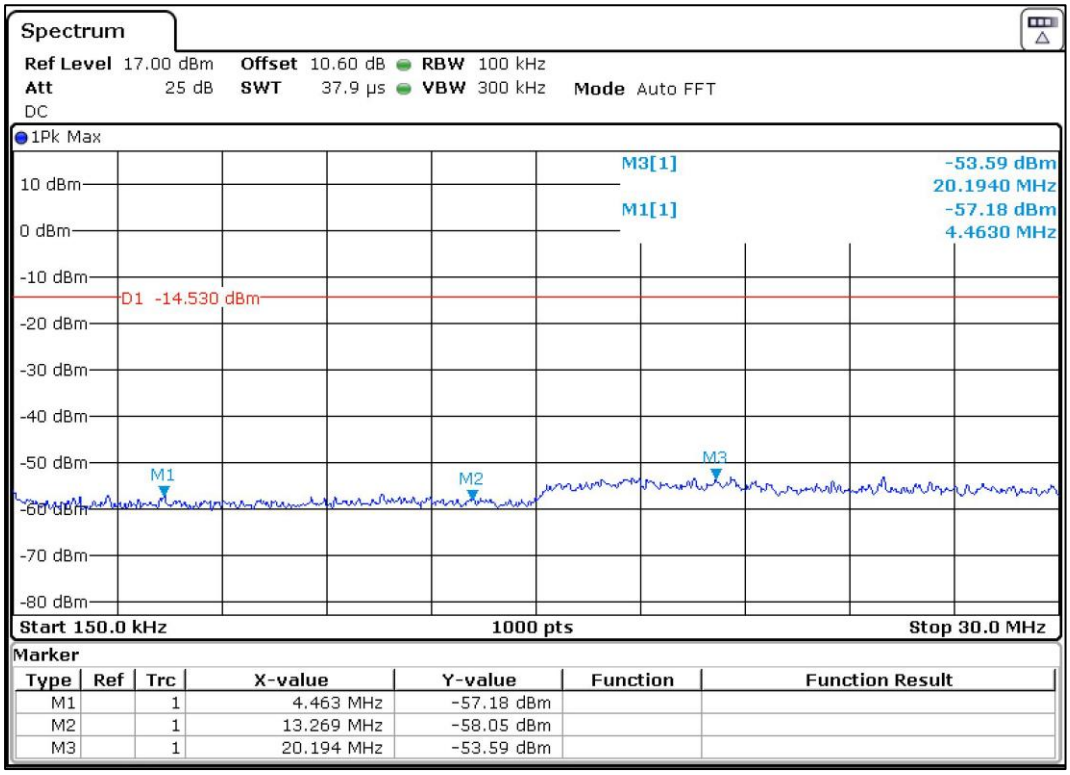
Channel Frequency 2440MHz Frequency Range 1GHz – 26GHz



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	38.91 kHz	-27.05 dBm		
M2		1	74.21 kHz	-31.97 dBm		
M3		1	111.96 kHz	-41.08 dBm		

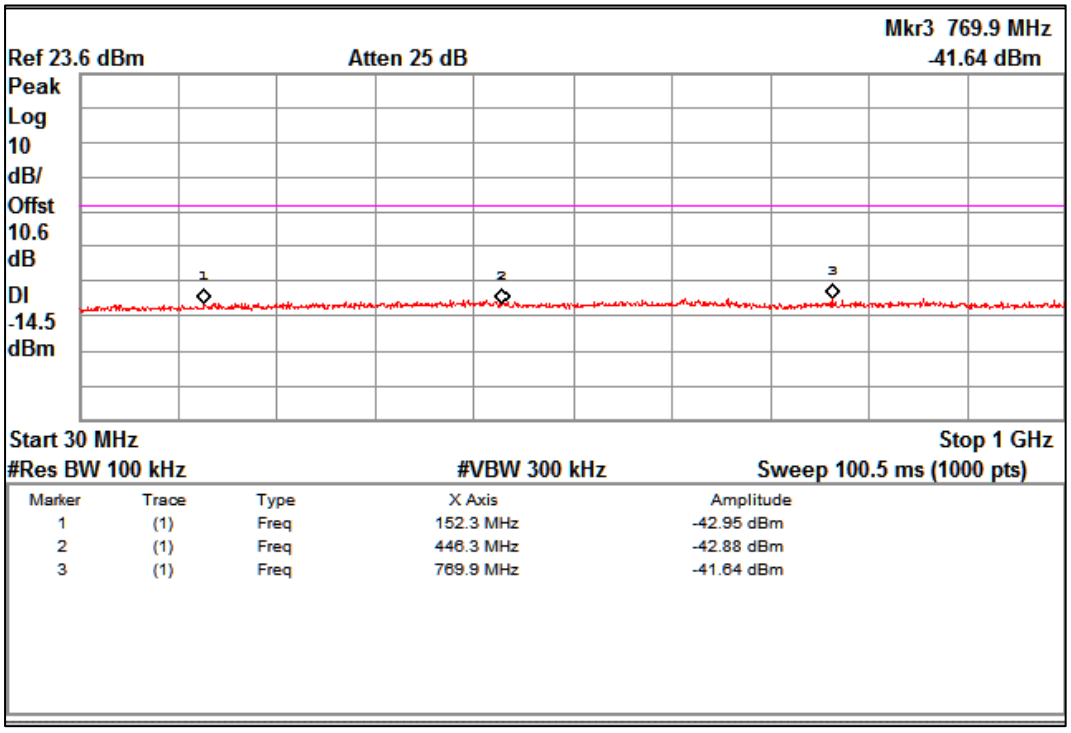
Channel Frequency 2475MHz Frequency Range 9KHz – 150KHz



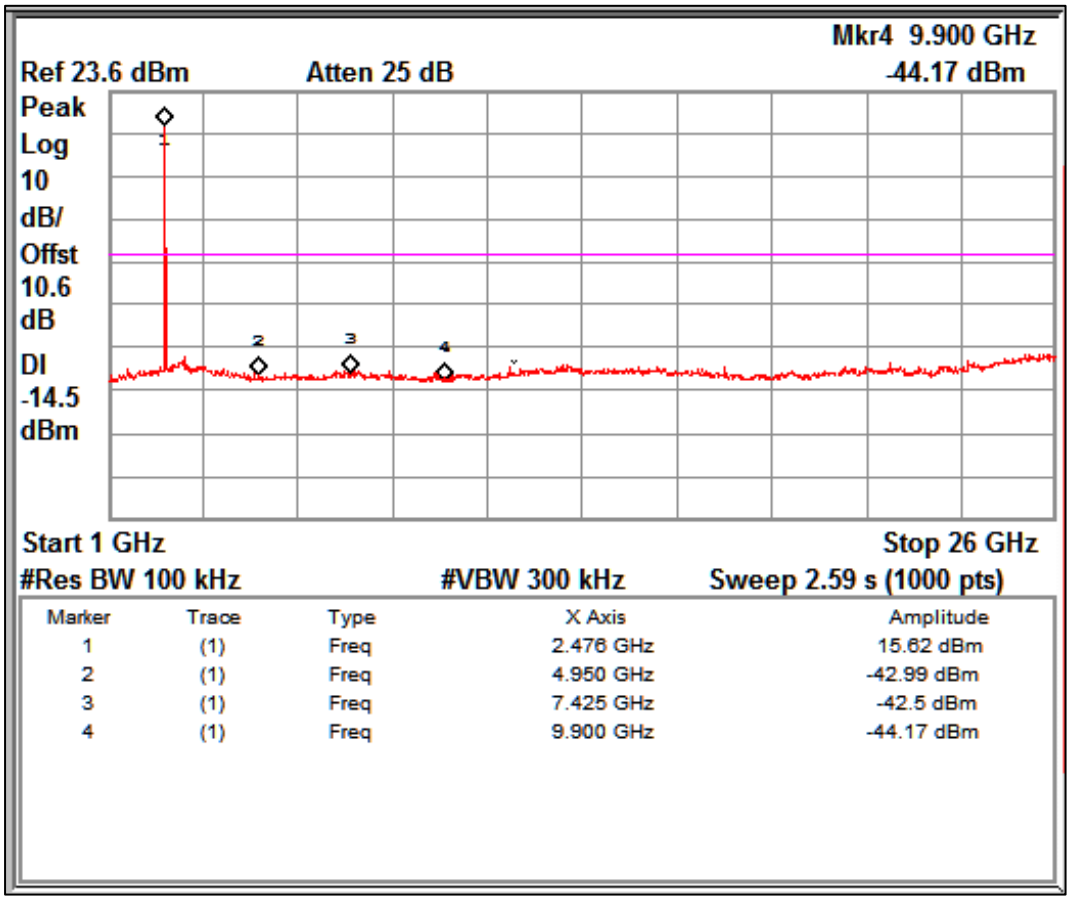
Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	4.463 MHz	-57.18 dBm		
M2		1	13.269 MHz	-58.05 dBm		
M3		1	20.194 MHz	-53.59 dBm		

Channel Frequency 2475MHz Frequency Range 150KHz – 30MHz



Channel Frequency 2475MHz Frequency Range 30MHz – 1GHz



Channel Frequency 2475MHz Frequency Range 1GHz – 26GHz

8.5 Spurious Radiated Emissions & Restricted Bands of Operation

Result ***Pass***

Test Specification	FCC part 15 Subpart C 15.247 (d) / (15.209 & 15.205) RSS-GEN issue 5 clause 8.9, 8.10
Test Method	ANSI C63.10
Measurement Location	Semi Anechoic Chamber 9kHz - 1 GHz Fully Anechoic Chamber 1 GHz - 26GHz
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 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 Conditions:

Temperature (Norm) = + 22.5°C Voltage = 24V DC (AC - DC Adapter) Relative humidity: 64%

Test results:

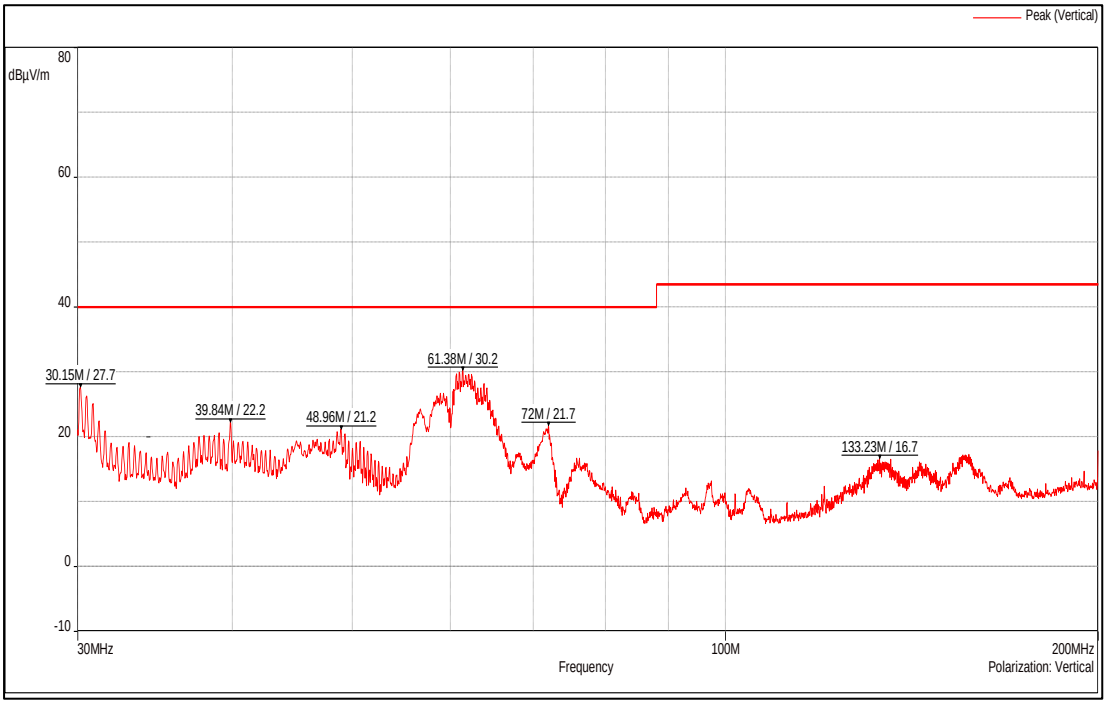
Note: All the losses are included during measurement and final values are mentioned in the test report. Refer TEST METHODOLOGY for more details

Test results for frequency range 9kHz – 30MHz

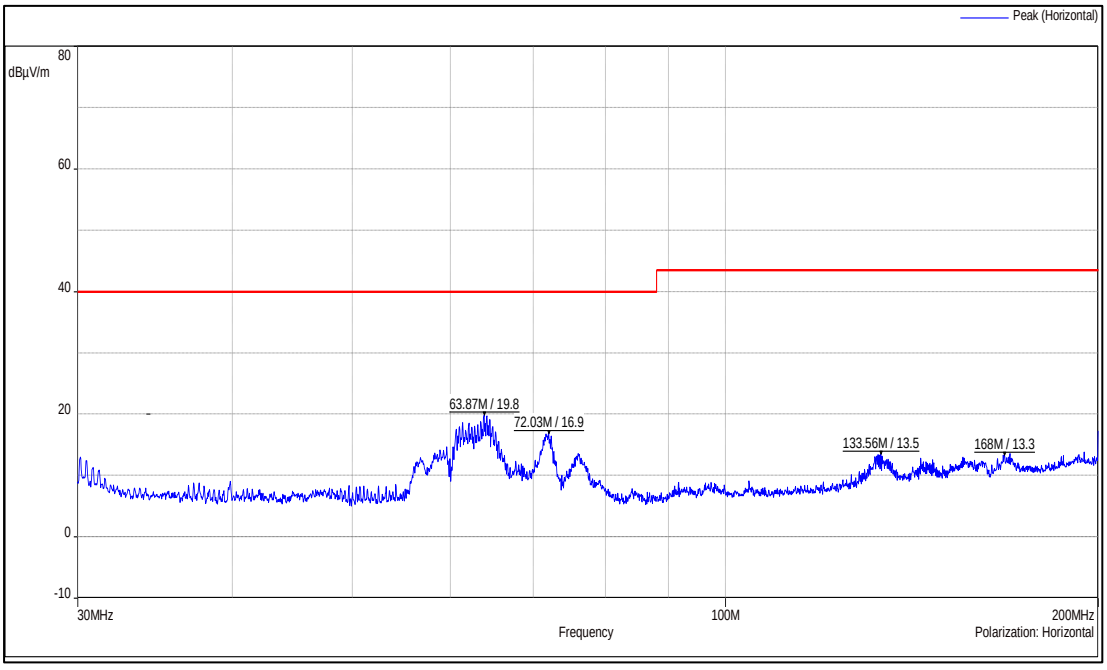
No emissions found in frequency range 9 kHz to 30 MHz, and measured levels are below 20dB from the limit line, hence not reported

Table 7: Test results for frequency range 30MHz – 1GHz

Antenna Polarization	Measured Frequency (MHz)	Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)
Vertical	30.15	27.70	40.00	-12.30
	39.84	22.20	40.00	-17.80
	48.96	21.20	40.00	-18.80
	61.38	30.20	40.00	-9.80
	72.00	21.70	40.00	-18.30
	133.23	16.70	43.50	-26.80
	221.18	22.70	46.00	-23.30
	536.03	29.20	46.00	-16.80
	600.20	36.70	46.00	-9.30
	728.69	36.00	46.00	-10.00
	821.75	33.00	46.00	-13.00
Horizontal	63.87	19.80	40.00	-20.20
	72.03	16.90	40.00	-23.10
	133.56	13.50	43.50	-30.00
	168.00	13.30	43.50	-30.20
	221.18	22.20	46.00	-23.80
	600.02	32.10	46.00	-13.90
	768.32	34.00	46.00	-12.00
	821.48	35.80	46.00	-10.20



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



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