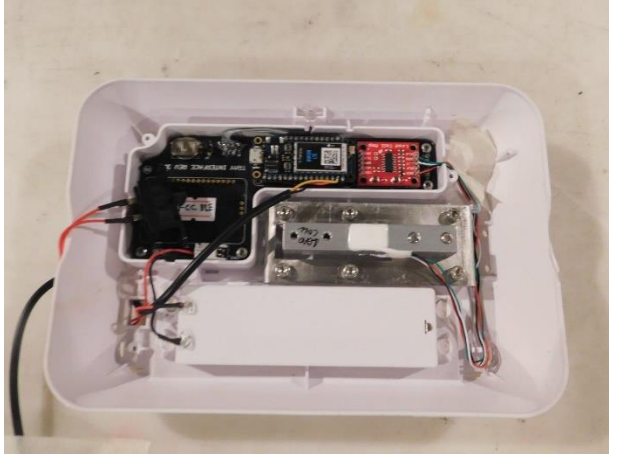


Prüfbericht-Nr.: <i>Test report no.:</i>	ULR-TC568821300000030F	Auftrags-Nr.: <i>Order no.:</i>	166542461 0010	Seite 1 von 38 Page 1 of 38
Kunden-Referenz-Nr.: <i>Client reference no.:</i>	NA	Auftragsdatum: <i>Order date:</i>	2021-03-31	
Auftraggeber: <i>Client:</i>	The Procter & Gamble Company 1 P&G Plaza Cincinnati, OH 45202			
Prüfgegenstand: <i>Test item:</i>	Tide Smart Tray			
Bezeichnung .: <i>Identification .:</i>	3995	Serien -Nr.: <i>Serial no.:</i>	104	
Auftrags-Inhalt: <i>Order content:</i>	Testing & Issue of Grant Certificate			
Prüfgrundlage: <i>Test specification:</i>	FCC Part 2, Part 22H, Part 24E, Part 27			
Wareneingangsdatum: <i>Date of sample receipt:</i>	2021-04-16			
Prüfmuster-Nr.: <i>Test sample no:</i>	A003035526-001			
Prüfzeitraum: <i>Testing period:</i>	2021-04-24 - 2021-05-03			
Ort der Prüfung: <i>Place of testing:</i>	Wireless Test Laboratory			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland (India) Pvt. Ltd, #27/B, 2nd Cross Road, Electronic City Phase-1, Bengaluru-560100, India. FCC Test site registration number: 496599			
Prüfergebnis*: <i>Test result*:</i>	Pass			
geprüft von: <i>tested by:</i>	genehmigt von: <i>authorized by:</i>			
Datum: <i>Date:</i>	2021-04-19	Ausstellatum: <i>Issue date:</i>	2021-06-17	
Stellung / Position:	M.V.Naveen Kumar Engineer	Stellung / Position:	Mahammadgouse Kaladagi Assistant Manager	
Sonstiges / Other:	FCC ID: 2AG9A921101			
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>			
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable
5 = mangelhaft N/T = nicht getestet				
5 = poor 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. <i>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.</i>				

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TEST SUMMARY

Test Item	FCC Clause	Results
Conducted Output Average Power and Peak to Average Power Ratio	§ 2.1046 § 24.232 § 27.50	Pass
Equivalent Isotropic Radiated power (EIRP) / Effective Radiated Power(dBm)	§ 22.913 § 24.232 § 27.50	Pass
Field strength of spurious radiation	§ 2.1053 § 22.917 § 24.238 § 27.53	Pass
Frequency Stability	§ 2.1055 § 22.355 § 24.235 § 27.54	N/T
Emission Bandwidth and Occupied Bandwidth	§ 2.1049	N/T
Band Edge	§ 22.917 § 24.238 § 27.53	N/T
Conducted Spurious Emissions	§ 2.1051 § 22.917 § 24.238 § 27.53	N/T
Conducted Emission	§ 15.207	N/A

Note:

1. N/T: Not Tested
2. N/A: Not Applicable
3. The product **Tide Smart Tray** uses pre-certified RF module with FCC ID: 2AEMI-BRN402; hence the above mentioned test cases are excluded and which can be found in the module test report of respective FCC Id

Product Category: Electronics Testing
Test Discipline: EMC Test Facility

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REVISION HISTORY OF THIS REPORT

Report Number	Version	Description	Issue date
ULR-TC568821300000030F	01	Issue of test report	2021-06-11
ULR-TC568821300000030F	02	Updated Reviewer Comments	2021-06-17

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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 DIAGRAM

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	ESU 40	100288	4.43 SP3	09.06.2021	Yearly	Radiated measurements
EMI Receiver	Rohde & Schwarz	ESW 44	101773	1.72.SP1	27.01.2022	Yearly	
Active loop antenna	Frankonia	LAX-10	LAX-10-800	-	27.02.2022	Yearly	
Baloon and Biconical Antenna	Schwarzbeck mess-elektronik	VHBB-9124 / BBA-9106	01028	-	02.09.2021	Yearly	
Log Periodic Antenna	Schwarzbeck mess-elektronik	VUSLP-9111B	9111B-111	-	31.08.2021	Yearly	
Horn Antenna	Frankonia	HAX-18	802	-	01.03.2022	Yearly	
Horn Antenna	ETS	116706	00107323	-	02.03.2022	Yearly	
Semi Anechoic Chamber	Frankonia	-	-	-	-	-	
Fully Anechoic Chamber	Albatross	-	-	-	-	-	Antenna - Port Measurements
Power Splitter	Mini Circuits	ZN4PD1-63HP-S+	SF015301638	-	01.10.2021	Yearly	
30dB Attenuator	Mini Circuits	BW-N30W5+		-	01.10.2021	Yearly	
USB Wideband Power Sensor	Boonton	55006	10231	-	09.01.2022	Yearly	
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	158345	-	04.07.2021	Yearly	

Table 2: Instrument application Software versions

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

3 GENERAL PRODUCT INFORMATION

3.1 Product Function and Intended Use

Proxime Smart Tray is a battery powered, single product auto-replenishment tray, which can connect to internet via cellular. It has Bluetooth capability which is used for calibration.

User experience: User puts a bottle of Tide on the tray. As the bottle is used, the weight reduces. When it gets to a critical level, it automatically triggers an e-Commerce purchase, which ships a replacement bottle to the consumer

3.2 Ratings and System Details of Equipment under Test

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

3. Ratings and System Details as declared by Client			
Operating Radio Protocol	LTE CAT M1		
Operating Frequency Bands	Band	UL Frequency (MHz)	DL Frequency (MHz)
	2	UL 1850MHz to 1910MHz	1930.7MHz to 1989.3MHz
	4	UL 1710MHz to 1755MHz	2110.7MHz to 2154.3MHz
	5	UL 824MHz to 849MHz	869.7MHz to 893.3MHz
	12	UL 699MHz to 716MHz	729MHz to 746MHz
Cellular Bandwidth	1.4 MHz		
Modulation	QPSK & 16QAM		
Power class	Power Class 3: 23 dBm		
Number of antennas	1		
Antenna gain & antenna type	PCB Antenna (Taoglas) 698 to 3000 MHz, Gain: 5.00		
Operating voltage range	4.8 to 6.4 Volts DC		
Environmental conditions	Storage		-30°C to 75° C
	Operating		10°C to 40° C
Dimensions (LxWxH)	228.6 mm x 160 mm x 49.4 mm		

***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 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
RF output power, conducted	± 0.51 dB
Power Spectral Density, conducted	± 0.85 dB
Unwanted Emissions, conducted	± 2.58 dB
SAC, radiated measurement	± 3.67 dB
FAC, radiated measurement	± 4.95 dB
Temperature	± 3 °C
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 the help of CMW 500 on low, middle & high channels for LTE as mentioned in below table 6

4.2 Operation and Software of the EUT

EUT Firmware name (FVIN) : Cellular_logs.bin
EUT Firmware version : NA
Hardware Name(HVIN) : TRAY INTERFACE
Hardware Version : REV 3.0

4.3 Test modes – data rates and modulations

- None

4.4 Special Accessories and Auxiliary Equipment

- None

4.5 Countermeasures to achieve EMC Compliance

- None

4.6 Report Reference

Note: Product Tide Smart Tray has supports multiple protocols. All the supported wireless protocols and their respective test results are issued in separate test reports.

SL No:	RF Protocol	Report Name
1	LTE	ULR-TC568821300000030F
2	BLE	ULR-TC568821300000029F

4.7 Simultaneous Operation

Product does not supports the simultaneous operation which means either one of the radio will work

Table 5: TUV Sample identification details

Samples used for Testing	S/N Number
Antenna port measurement	A003035526-001
Radiated mode test	

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Table 6: Mode of Operation

LTE CAT M1 Band 2			LTE CAT M1 Band 4		
Channel Bandwidth	1.4MHz		Channel Bandwidth	1.4MHz	
	Channel	Frequency (MHz)		Channel	Frequency (MHz)
Low Channel	18607	1850.7	Low Channel	19957	1710.7
Mid Channel	18900	1880.0	Mid Channel	20175	1732.5
High Channel	19913	1909.2	High Channel	20393	1754.2

LTE CAT M1 Band 5			LTE CAT M1 Band 12		
Channel Bandwidth	1.4MHz		Channel Bandwidth	1.4MHz	
	Channel	Frequency (MHz)		Channel	Frequency (MHz)
Low Channel	20407	824.7	Low Channel	23017	699.7
Mid Channel	20528	836.8	Mid Channel	23095	707.5
High Channel	20642	848.2	High Channel	23173	715.2

Note: As the device Tide Smart Tray does not support Band 13, hence it's not been tested; customer has declared that LTE Band 13 is disabled with Software, which was originally supported by LTE module;

5 Operational Description of the product

Tide Smart Tray is a battery powered, single product auto-replenishment tray, which can connect to internet via cellular. It is calibrated using Bluetooth before being sent to consumer.

Tide Smart Tray can be made ON using a Power Switch at the bottom. After Power On Consumer puts a bottle of Tide on the Tray. For the first two hours, Tray records/stores the Tide bottle weight every 30 mins and after two hours it records/stores Tide bottle weight every one hour. After every 12 hours, it connects to internet using Cellular and transfer 12 hour weight measurement data to cloud. As the bottle is used, the weight reduces. When it gets to a critical level, it automatically triggers an e-commerce purchase, which ships a replacement bottle to the consumer.

6 Block Diagram of the product

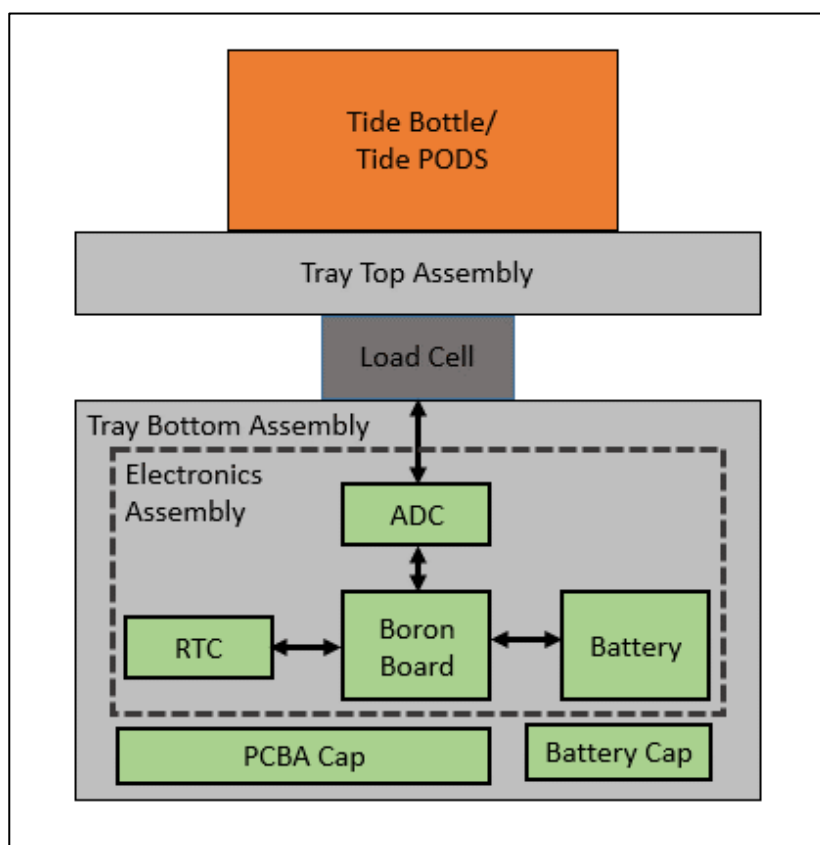
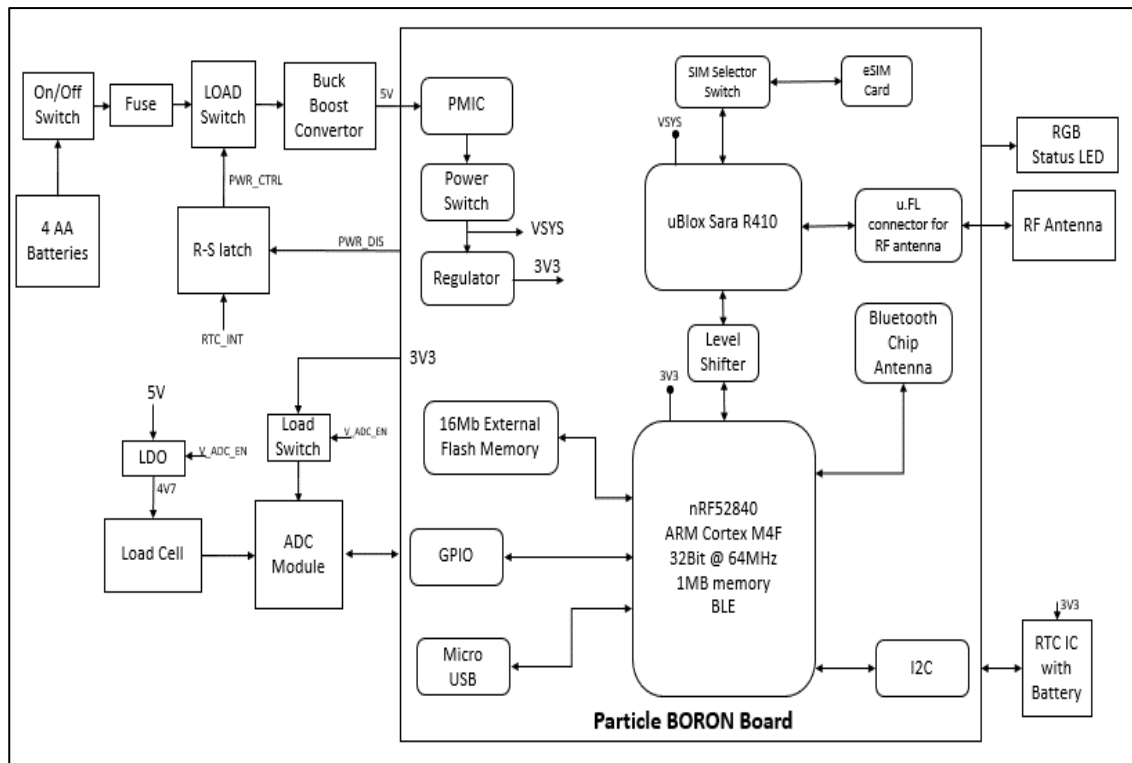


Figure 1: System Architecture



7 TEST METHODOLOGY

7.1 Radiated Emission Test

Frequency Range 9 kHz - 30 MHz

Test performed as per ANSI C63.4-2014 section 8.3

The loop Antenna was placed at 1m above the ground plane & EUT is 3 meters far from the measuring antenna. With 3m measurement distance, correction data were applied to the measured results. The test arrangement, measuring antenna guidelines and operational configurations in 8.2.1 and 8.2.2, shall be followed. The measurement antenna shall be positioned with its plane perpendicular to the ground at the Specified distance, when perpendicular to the ground plane, the lowest height of the magnetic antenna shall be 1 m above the ground and shall be positioned at the specified distance from the EUT. EUT & its associates are placed on non-conducting table of 0.8m height which is placed on the turn table, For each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable. The report shall list worst case emission results, for each of the parallel & perpendicular orientations.

7.1.1 Test Setup Configuration

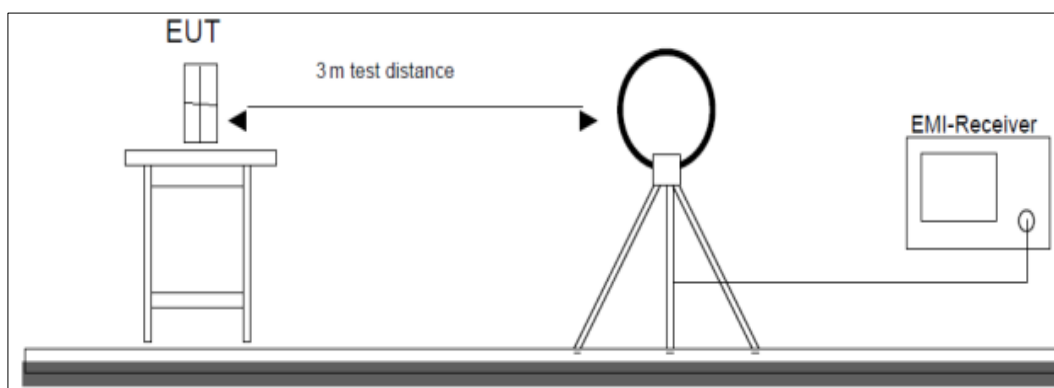


Figure 1: Frequency Range 9 kHz- 30 MHz

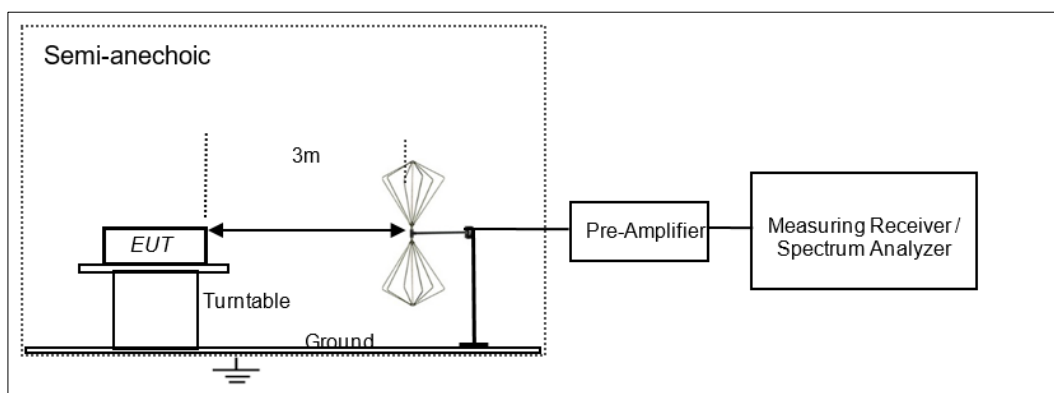


Figure 2: Frequency Range 30 MHz – 200 MHz

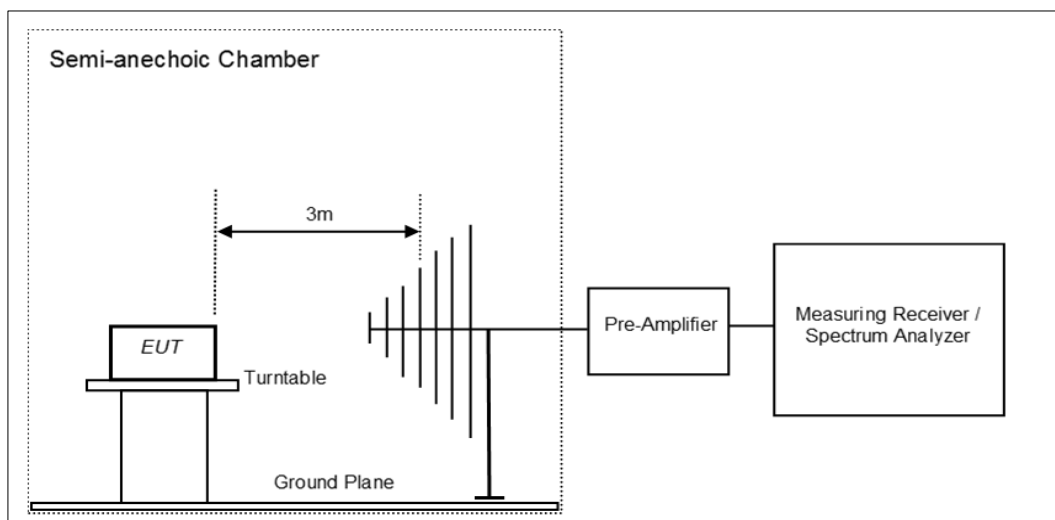


Figure 3: Frequency Range 200 MHz - 1GHz

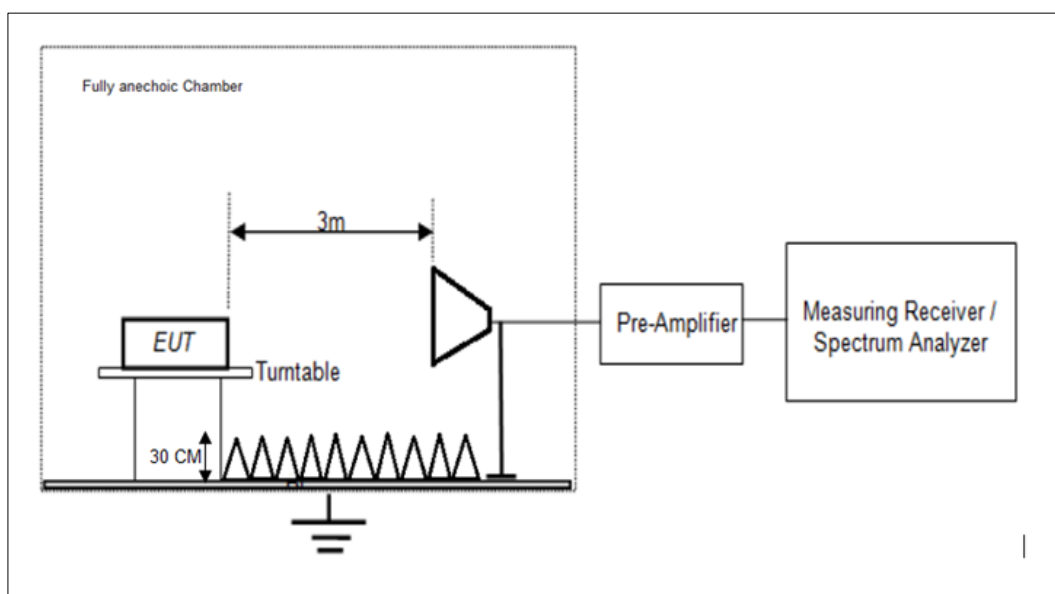


Figure 4: Frequency Range above 1 GHz

Frequency Range 30MHz to 10th harmonics of the highest fundamental frequency

Test performed as per ANSI C63.26-2015

ERP/EIRP Radiated Power & Radiated spurious emission test are performed as below.

All the radiated emission measurements are performed in accordance with common requirement specified in 5.5.2 and Pre-test site path loss correction factors are used to adjust the EUT emission data in place of two step substitution method (as defined in Annex B of ANSI C63.26-2015).

The equipment under test is placed on non-conductive table at 3m away from the receive antenna in accordance with above mentioned standard. Turn table is rotated through 360 degree, and receiver antenna height is varied in order to determine the level of maximum emission. The maximum emission level and position of the maximized emission is recorded with use of spectrum analyzer.

Using pre-test site path loss to determine EUT emission power:

- 1) EUT emission powers are calculated using the following equation:

$$\text{Emission Power} = \text{EUT}_{\text{Prec}} [\text{dBm EIRP}] + P_L [\text{dB}]$$

where

EUT_{Prec} = power of the emission measured at the test receiver during EUT measurements.

P_L = path loss determined on the frequency of the EUT emission or calculated using linear interpolation between site characterization frequencies.

- 2) This is the level to be compared against the regulatory limit as it is the emission power referenced back to the EUT on the test site.

8 TEST RESULTS

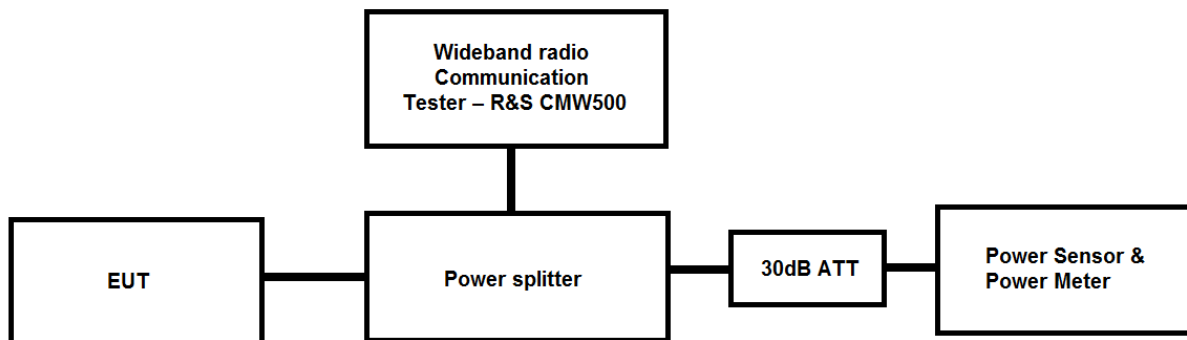
8.1 Conducted Output Average Power

Result

Pass

Test Specification	FCC Part §2.1046 , §24.232, §27.50
Test Method / Procedure	ANSI C63.26-2015 971168 D01 Power Meas License Digital Systems v03r01
Measurement Bandwidth(RBW)	≥ OBW
Detector function	Peak / Average
Requirement	NA

Test Setup:



Environmental conditions:

Temperature (Norm) = + 22.3 °C Voltage = 6 Volts DC (4 AA Batteries - 1.5 Volts each)

Relative humidity = 62 %

KDB Guidelines applied:

Measurements were made as per section 5.1.3 section 5.2.4 and section 5.7.3 in KDB 971168 D01 Power Meas License Digital Systems v03r01.

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Test results:

Note:

1. All the losses are included during measurement and final values are mentioned in the test report.
2. Total Average Output power (dBm) = Measured Average power (dBm) + Attenuator factor (30dB) + Power Splitter (6 dB) + Cable loss (1dB)
3. ERP, EIRP = P_T (Total Average Output power in dBm) + G_T (Gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP))
4. G_T (dBd) = G_T (dBi) - dB

Table 7: Conducted Power Results

Band	Modulation	Bandwidth (MHz)	RB Size / RB Offset	Channel No	Channel Frequency (MHz)	Measured Peak Power (dBm)	Measured Average Power (dBm)
2	QPSK	1.4	6/0	18607	1850.7	23.2	17.64
				18900	1880	23.2	17.73
				19193	1909.2	22.91	17.1
	16QAM			18607	1850.7	23.5	17.62
				18900	1880	23.74	17.67
				19193	1909.2	23.76	17.03
4	QPSK	1.4		19957	1710.7	23.34	17.93
				20175	1732.5	23.54	18.04
				20393	1754.3	22.66	17.78
	16QAM			19957	1710.7	24.12	17.99
				20175	1732.5	23.95	18.02
				20393	1754.3	23.43	17.84
5	QPSK	1.4		20407	824.7	25.31	18.93
				20528	836.8	25.61	19.08
				20642	848.2	25.54	19.08
	16QAM			20407	824.7	25.35	18.97
				20528	836.8	25.5	19.13
				20642	848.2	25.5	19.06
12	QPSK	1.4		23017	699.7	25.95	19.6
				23095	707.5	26.21	19.5
				23173	715.3	26.06	19.59
	16QAM			23017	699.7	25.88	19.65
				23095	707.5	26.09	19.63
				23173	715.2	26.03	19.58

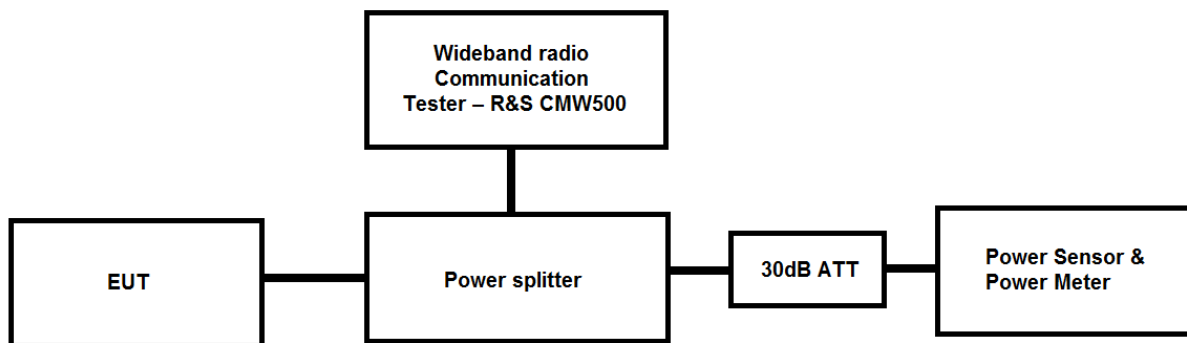
8.2 Peak to Average Power Ratio (PAPR)

Result

Pass

Test Specification	FCC Part §2.1046 , §24.232, §27.50
Test Method / Procedure	ANSI C63.26-2015 971168 D01 Power Meas License Digital Systems v03r01
Measurement Bandwidth(RBW)	≥ OBW
Detector function	Peak / Average
Requirement	PAPR ≤ 13dB

Test Setup:



Environmental conditions:

Temperature (Norm) = + 22.3 °C Voltage = 6 Volts DC (4 AA Batteries - 1.5 Volts each)
Relative humidity = 62 %

KDB Guidelines applied:

Measurements were made as per section 5.1.3 in KDB 971168 D01 Power Meas License Digital Systems v03r01.

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Test results:

Note:

1. All the losses are included during measurement and final values are mentioned in the test report.
2. Total Average Output power (dBm) = Measured Average power (dBm) + Attenuator factor (30dB) + Power Splitter (6 dB) + Cable loss (1dB)
3. PAPR (dB) = Measured Peak Power(dBm) – Measured Average Power(dBm)
4. Added a Duty correction factor to a measured average value
5. Duty correction factor(dB) = $10 \cdot \log(1/D)$ where D is duty cycle, this factor is added to the measured results and final readings are reported in the below table

Table 8: PAPR of test Results

Band	Modulation	Bandwidth (MHz)	RB Size / RB Offset	Channel No	Channel Frequency (MHz)	Measure d Peak Power (dBm)	Measure d Average power (dBm)	PAPR
2	QPSK	1.4	6/0	18607	1850.7	23.2	17.64	5.56
				18900	1880.0	23.2	17.73	5.47
				19193	1909.2	22.91	17.1	5.81
	16QAM			18607	1850.7	23.5	17.62	5.88
				18900	1880.0	23.74	17.67	6.07
				19193	1909.2	23.76	17.03	6.73
4	QPSK	1.4	6/0	19957	1710.7	23.34	17.93	5.41
				20175	1732.5	23.54	18.04	5.5
				20393	1754.3	22.66	17.78	4.88
	16QAM			19957	1710.7	24.12	17.99	6.13
				20175	1732.5	23.95	18.02	5.93
				20393	1754.3	23.43	17.84	5.59
5	QPSK	1.4	6/0	20407	824.7	25.31	18.93	6.38
				20528	836.8	25.61	19.08	6.53
				20642	848.2	25.54	19.08	6.46
	16QAM			20407	824.7	25.35	18.97	6.38
				20528	836.8	25.5	19.13	6.37
				20642	848.2	25.5	19.06	6.44
12	QPSK	1.4	6/0	23017	699.7	25.95	19.6	6.35
				23095	707.5	26.21	19.5	6.71
				23173	715.3	26.06	19.59	6.47
	16QAM			23017	699.7	25.88	19.65	6.23
				23095	707.5	26.09	19.63	6.46
				23173	715.2	26.03	19.58	6.45

8.3 Equivalent Isotropic Radiated Power (EIRP) / Effective Radiated Power (ERP)

Result

Pass

Test Specification	FCC Part §22.913 , §24.232, §27.50
Test Method / Procedure	ANSI C63.26-2015 971168 D01 Power Meas License Digital Systems v03r01
Measurement Bandwidth(RBW)	100 kHz for Frequency range of < 1GHz 1 MHz for Frequency range of > 1GHz
Detector function	Peak
Measurement Distance	3m
Requirement	As per the limits mentioned in the below table
Test Setup	Refer TEST METHODOLOGY

FCC Clause

Requirements

FCC Part 27	The EIRP of mobile transmitter and auxiliary test transmitters must not exceed 1 Watts
FCC Part 27.50(b)(9)	Control station and mobile stations transmitting in the 746-757 MHz, and 776-788 MHz bands are limited to 30 watts ERP
FCC Part 27.50(c)(9)	Control station and mobile stations in the 698-746MHz band are limited to 30 watts ERP
FCC Part 27.50(c)(10)	Portable stations in the 698-746MHz band are limited to 3 watts ERP
FCC Part 22.913(a)(2)	The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts
FCC 24.232(b)	The EIRP of mobile transmitters and auxiliary test transmitters must not exceed 2 watts

Environmental conditions:

Temperature (Norm) = + 24 °C Voltage = 6 Volts DC (4 AA Batteries - 1.5 Volts each)

Relative humidity = 62 %

KDB Guidelines applied :

All the radiated emission measurements are performed in accordance with common requirement specified in 5.5.2 and Pre-test site path loss correction factors are used to adjust the EUT emission data in place of two step substitution method as defined in Annex B of ANSI C63.26-2015

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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

This product only support full RB at 1.4 MHz and does not support reduced RBs and RB positions, also does not support other bandwidths hence measurement is performed for 1.4MHz BW (full RB)

Table 9: ERP/EIRP Test results

LTE Band 2							
Modulation	Bandwidth	Frequency (MHz)	Channel	RB Size / RB Offset	Polarization	EIRP (dBm)	Limit (dBm)
QPSK	1.4	1850.7	18607	6/0	Vertical	17.76	33
					Horizontal	20.97	33
		1880	18900	6/0	Vertical	16.42	33
					Horizontal	21.9	33
		1909.2	19192	6/0	Vertical	15.19	33
					Horizontal	24.43	33
16QAM	1.4	1850.7	18607	6/0	Vertical	14.75	33
					Horizontal	18.12	33
		1880	18900	6/0	Vertical	13.13	33
					Horizontal	19.23	33
		1909.2	19192	6/0	Vertical	14.32	33
					Horizontal	21.22	33

LTE Band 4							
Modulation	Bandwidth	Frequency (MHz)	Channel	RB Size / RB Offset	Polarization	EIRP (dBm)	Limit (dBm)
QPSK	1.4	1710.7	19957	6/0	Vertical	17.11	30
					Horizontal	20.5	30
		1732.5	20175	6/0	Vertical	18.45	30
					Horizontal	20.84	30
		1754.2	20392	6/0	Vertical	18.8	30
					Horizontal	20.73	30
16QAM	1.4	1710.7	19957	6/0	Vertical	14.22	30
					Horizontal	18.21	30
		1732.5	20175	6/0	Vertical	17.19	30
					Horizontal	18.23	30
		1754.2	20392	6/0	Vertical	18.21	30
					Horizontal	19.27	30

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LTE Band 5							
Modulation	Bandwidth	Frequency (MHz)	Channel	RB Size / RB Offset	Polarization	ERP (dBm)	Limit (dBm)
QPSK	1.4	824.7	20407	6/0	Vertical	15.45	38.45
					Horizontal	22.11	38.45
		836.8	20528	6/0	Vertical	16.84	38.45
					Horizontal	22.22	38.45
		848.2	20642	6/0	Vertical	17.4	38.45
					Horizontal	23.49	38.45
16QAM	1.4	824.7	20407	6/0	Vertical	14.21	38.45
					Horizontal	21.45	38.45
		836.8	20528	6/0	Vertical	15.23	38.45
					Horizontal	22.1	38.45
		848.2	20642	6/0	Vertical	17.1	38.45
					Horizontal	20.98	38.45

Modulation	Bandwidth	Frequency (MHz)	Channel	RB Size / RB Offset	Polarization	ERP (dBm)	Limit (dBm)
QPSK	1.4 MHz	699.7	23017	6/0	Vertical	12.2	44.77
					Horizontal	22.67	44.77
		707.8	23098	6/0	Vertical	12.81	44.77
					Horizontal	19.54	44.77
		715.2	23172	6/0	Vertical	13.63	44.77
					Horizontal	23.19	44.77
QPSK	1.4 MHz	699.7	23017	6/0	Vertical	11.98	44.77
					Horizontal	21.56	44.77
		707.8	23098	6/0	Vertical	11.19	44.77
					Horizontal	20.25	44.77
		715.2	23172	6/0	Vertical	12.76	44.77
					Horizontal	21.22	44.77

8.4 Field Strength of Spurious Radiation

Result	Pass
Specification	FCC Part §2.1053, §22.917 (a), §24.238(a)(b), §27.53 (g)
Test Method / Procedure	ANSI C63.26-2015
Measurement Bandwidth (RBW)	100 kHz for frequency range < 1GHz 1 MHz for Frequency range >1GHz
Detector Function	Peak
Measuring Distance	3 m
Requirement	The power of any emission outside the authorized frequency range must be attenuated below the transmitting power (P) by a factor of at least 43+10log(P) dB
Test setup	Refer TEST METHODOLOGY

Environmental conditions:

Temperature (Norm) = + 24 °C Voltage = 6 Volts DC (4 AA Batteries - 1.5 Volts each)
Relative humidity = 62 %

KDB Guidelines applied :

All the radiated emission measurements are performed in accordance with common requirement specified in 7 971168 D01 Power Meas License Digital Systems v03r01 and Pre-test site path loss correction factors are used to adjust the EUT emission data in place of two step substitution method (as defined in Annex B of ANSI C63.26-2015)

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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

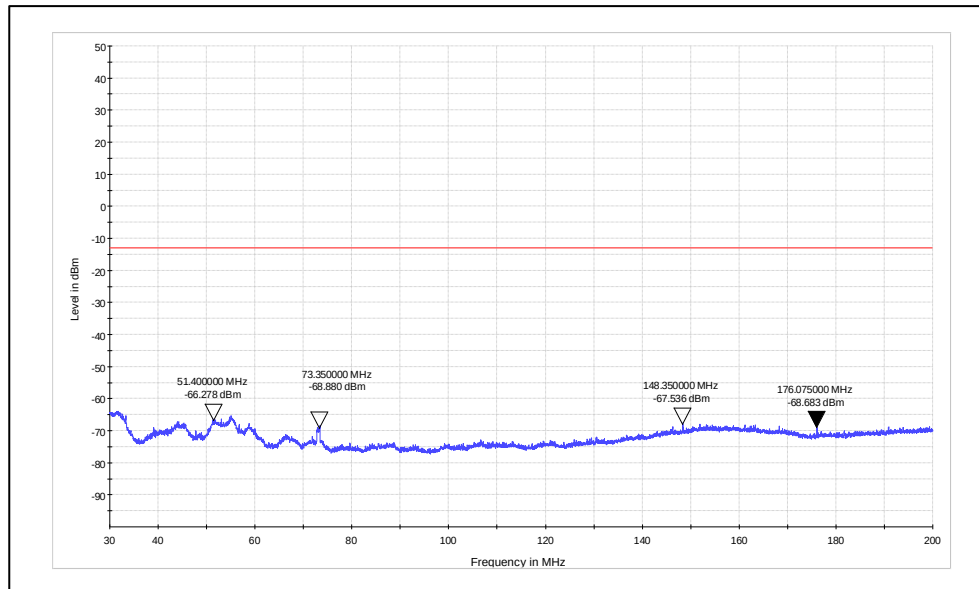
Test Result:

Frequency range 9KHz to 30MHz

NA

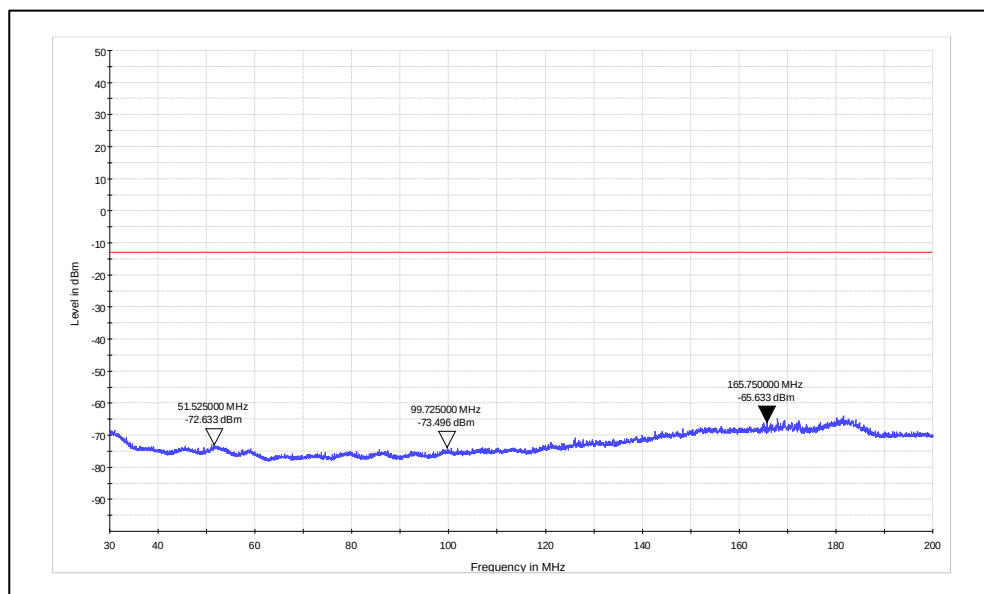
Frequency range 30MHz to 200MHz

Frequency range (MHz)	Antenna Polarization	Measured Frequency (MHz)	Measured e.i.r.p Value (dBm)	Limit (dBm)	Margin (dB)
30-200MHz	Vertical	51.4	-66.27	-13	-53.27
		73.35	-68.88	-13	-55.88
		148.35	-67.53	-13	-54.53
		176.07	-68.68	-13	-55.68
	Horizontal	51.52	-72.63	-13	-59.63
		99.72	-73.49	-13	-60.49
		165.75	-65.63	-13	-52.63



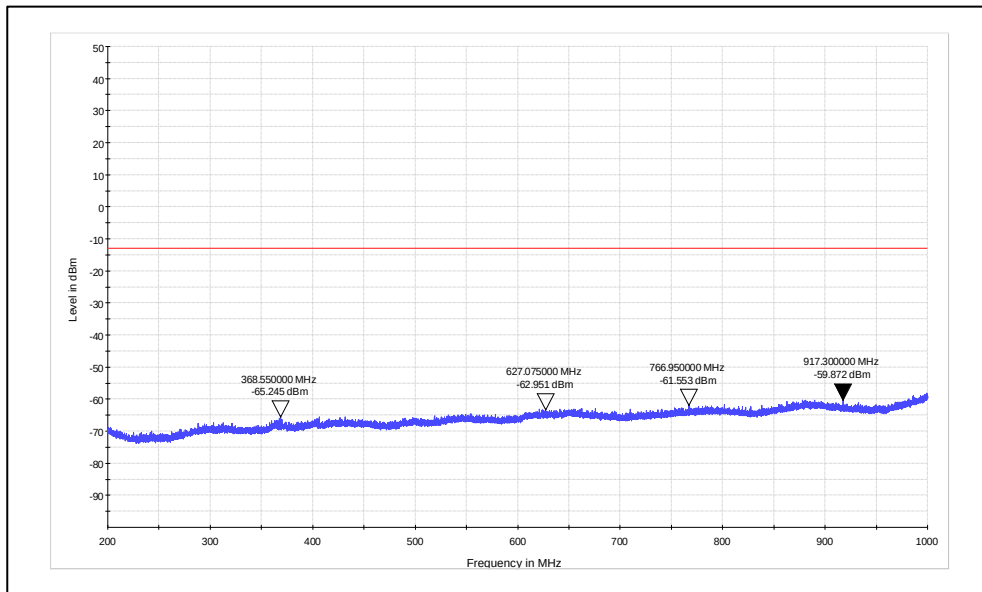
Vertical Polarization

Frequency range: 30MHz-200MHz



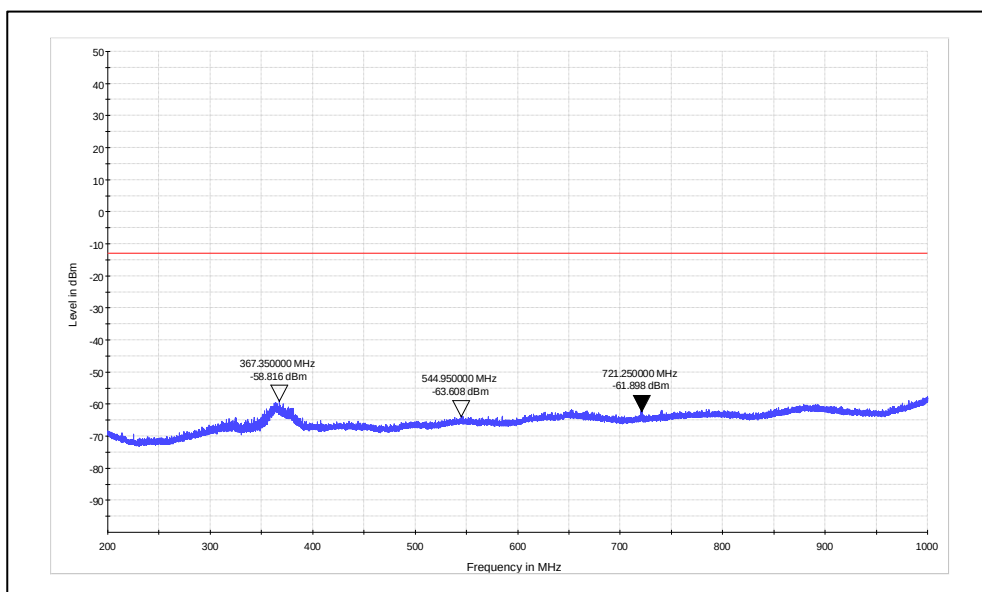
Frequency range: 30MHz-200MHz

Frequency range (MHz)	Antenna Polarization	Measured Frequency (MHz)	Measured e.i.r.p Value (dBm)	Limit (dBm)	Margin (dB)
200-1GHz	Vertical	365.55	-65.24	-13.00	-52.24
		627.07	-62.95	-13.00	-49.95
		766.95	-61.55	-13.00	-48.55
		917.3	-59.87	-13.00	-46.87
	Horizontal	367.35	-58.81	-13.00	-45.81
		544.95	-63.6	-13.00	-50.6
		721.25	-61.89	-13.00	-48.89



Vertical Polarization

Frequency range: 200MHz-1GHz



Horizontal Polarization

Frequency range: 200MHz-1GHz

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Test Results: above 1GHz

Band	Modulation	Cell Bandwidth (MHz)	Antenna Polarization	Channel Frequency MHz)	Measured Frequency (MHz)	Measured Spurious	Limit	Margin
						(dBm)	(dBm)	(dB)
2	QPSK	1.4	Vertical	1850.7	3701.4	-42.29	-13	-29.29
					5552.1	-45.78	-13	-32.78
					7402.8	-48.84	-13	-35.84
			Horizontal		3701.4	-42.26	-13	-29.26
					5552.1	No Harmonics		
					7402.8			
			Vertical	1880	3760	-44.03	-13	-31.03
					5640	-37.36	-13	-24.36
					7520	-45.97	-13	-32.97
			Horizontal		3760	-47.71	-13	-34.71
					5640	-41.43	-13	-28.43
					7520	No Harmonics		
			Vertical	1909.3	3818.6	-49.34	-13	-36.34
					5727.9	-45.08	-13	-32.08
					7637.2	-47.44	-13	-34.44
			Horizontal		3818.6	-43.7	-13	-30.7
					5727.9	-42.34	-13	-29.34
					7637.2	No Harmonics		

Band	Modulation	Cell Bandwidth (MHz)	Antenna Polarization	Channel Frequency (MHz)	Measured Frequency (MHz)	Measured Spurious	Limit	Margin
						(dBm)	(dBm)	(dB)
4	QPSK	1.4	Vertical	1710.7	3421.4	-45.49	-13	-32.49
					5132.1	-47.57	-13	-34.57
					6842.8	No Harmonics		
					3421.4	-42.64	-13	-29.64
					5132.1	-48.69	-13	-35.69
					6842.8	No Harmonics		
			Horizontal	1732.5	3465	-43.79	-13	-30.79
					5197.5	No Harmonics		
					6930			
					3465	-42.61	-13	-29.61
					5197.5	No Harmonics		
					6930			
			Vertical	1754.2	3508.4	-41.22	-13	-28.22
					5262.6	-45.77	-13	-32.77
					7016.8	No Harmonics		
					3508.4	-43.31	-13	-30.31
					5262.6	No Harmonics		
					7016.8			
Horizontal								

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Band	Modulation	Cell Bandwidth (MHz)	Antenna Polarization	Channel Frequency (MHz)	Measured Frequency (MHz)	Measured Spurious	Limit	Margin		
						(dBm)	(dBm)	(dB)		
5	QPSK	1.4	Vertical	824.7	1649.4	-43.7	-13	-30.7		
					2474.1	-44.75	-13	-31.75		
					3298.8	-53.78	-13	-40.78		
					Horizontal	824.7	1649.4	-44.03	-13	-31.03
							2474.1	-34.93	-13	-21.93
							3298.8	-48.9	-13	-35.9
			Vertical	836.8			1673.6	-38.29	-13	-25.29
							2510.4	-39.75	-13	-26.75
							3347.2	-53.71	-13	-40.71
					4184.7	-45.63	-13	-32.63		
					Horizontal	836.8	1673.6	-37	-13	-24
							2510.4	-36.37	-13	-23.37
			3347.2	-53.31			-13	-40.31		
			4184.7	-45.5			-13	-32.5		
			Vertical	848.2			1696.4	-35.5	-13	-22.5
							2544.6	-35.36	-13	-22.36
					3392.8	-47.02	-13	-34.02		
					4241	-42.38	-13	-29.38		
					Horizontal	848.2	1696.4	-31.33	-13	-18.33
							2544.6	-37.08	-13	-24.08
			3392.8	-46.18			-13	-33.18		
			4241	-45.81			-13	-32.81		

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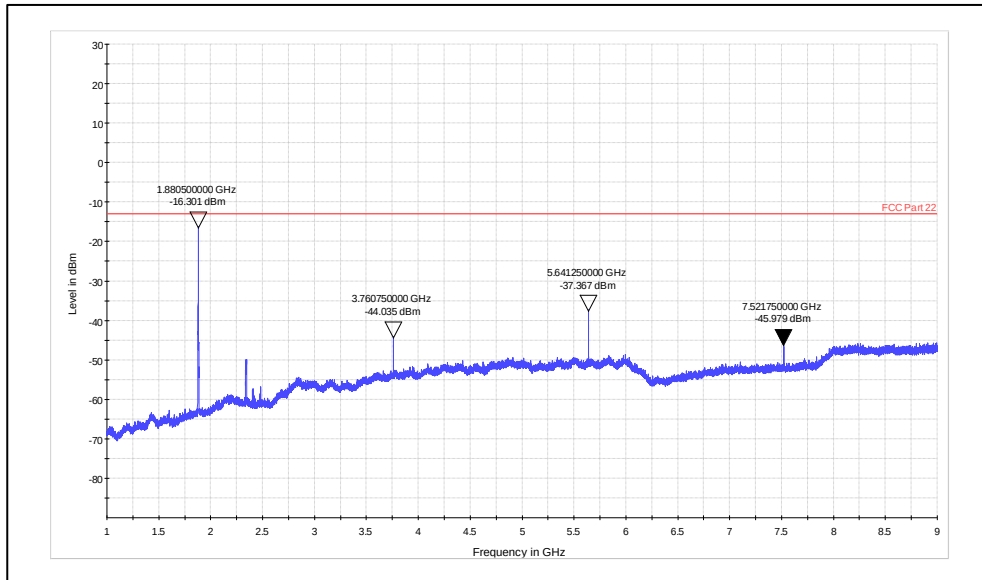
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Band	Modulation	Cell Bandwidth (MHz)	Antenna Polarization	Channel Frequency (MHz)	Measured Frequency (MHz)	Measured Spurious (dBm)	Limit (dBm)	Margin (dB)
12	QPSK	1.4	Vertical	699.7	1399.4	-41.49	-13	-28.49
					2099.1	-33.38	-13	-20.38
					2798.8	-42.3	-13	-29.3
					3498.5	-34.31	-13	-21.31
					4198.2	-46.05	-13	-33.05
			Horizontal		1399.4	-30.07	-13	-17.07
					2099.1	-35.99	-13	-22.99
					2798.8	-42.66	-13	-29.66
					3498.5	-36.27	-13	-23.27
					4198.2	-42.11	-13	-29.11
			Vertical	707.5	1415	-37.96	-13	-24.96
					2122.5	-31.15	-13	-18.15
					2830	-42.89	-13	-29.89
					3537.5	-37.81	-13	-24.81
					4245	-43.49	-13	-30.49
			Horizontal		1415	-29.45	-13	-16.45
					2122.5	-33.78	-13	-20.78
					2830	-44.24	-13	-31.24
					3537.5	-36.7	-13	-23.7
					4245	-43.41	-13	-30.41
			Vertical	715.2	1430.4	-35.43	-13	-22.43
					2145.6	-30.73	-13	-17.73
					2860.8	-44.27	-13	-31.27
					3576	-36.01	-13	-23.01
					4291.2	-42.03	-13	-29.03
			Horizontal		1430.4	-25.96	-13	-12.96
					2145.6	-33.6	-13	-20.6
					2860.8	-43.54	-13	-30.54
					3576	-38.31	-13	-25.31
					4291.2	-41.02	-13	-28.02

Note: Only worst case as reported

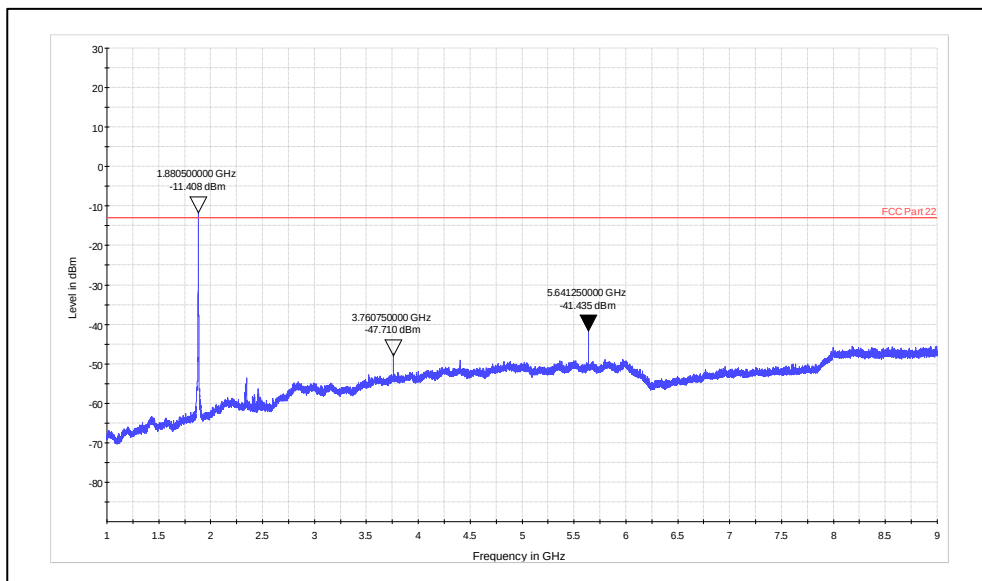
Band 2:

Channel Fequency: 1880MHz



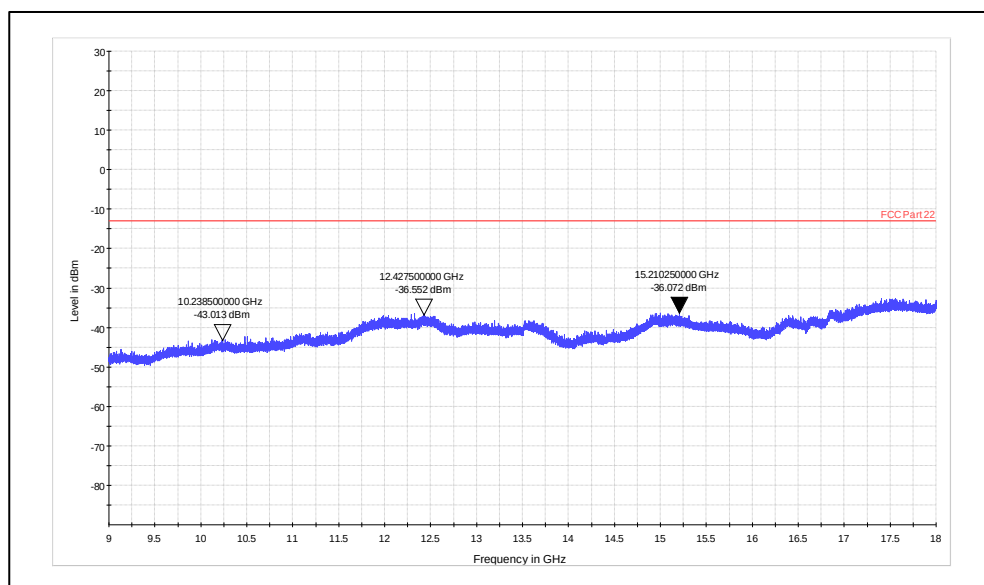
Frequency range: 1GHz-9GHz

Polarization: Vertical



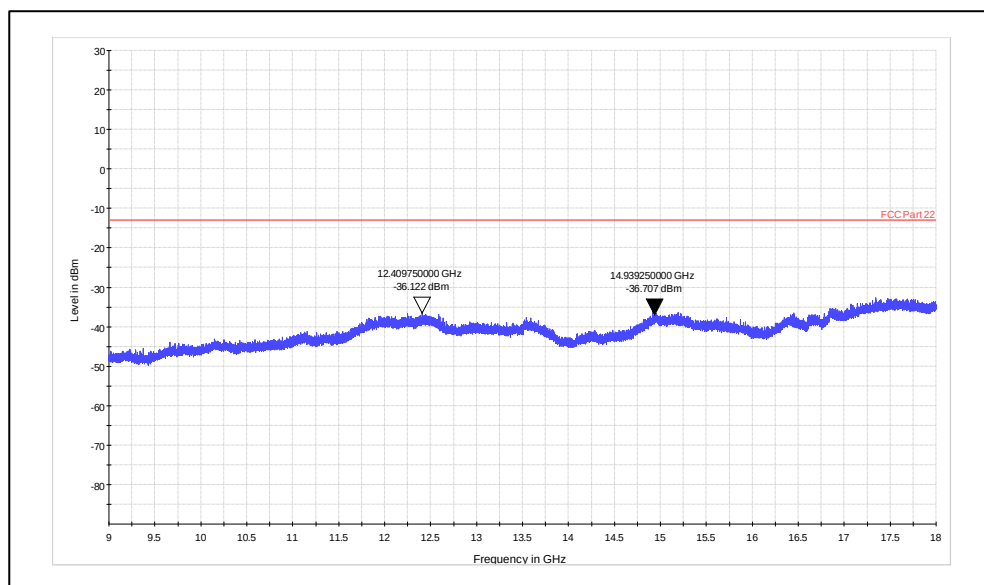
Frequency range: 1GHz-9GHz

Polarization: Horizontal



Frequency range: 9GHz-18GHz

Polarization: Vertical

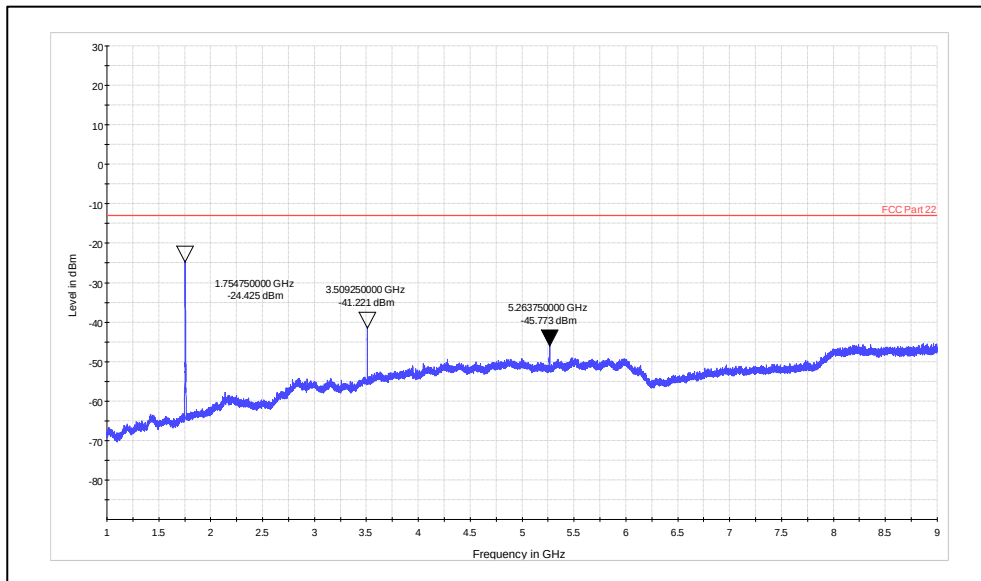


Frequency range: 9GHz-18GHz

Polarization: Horizontal

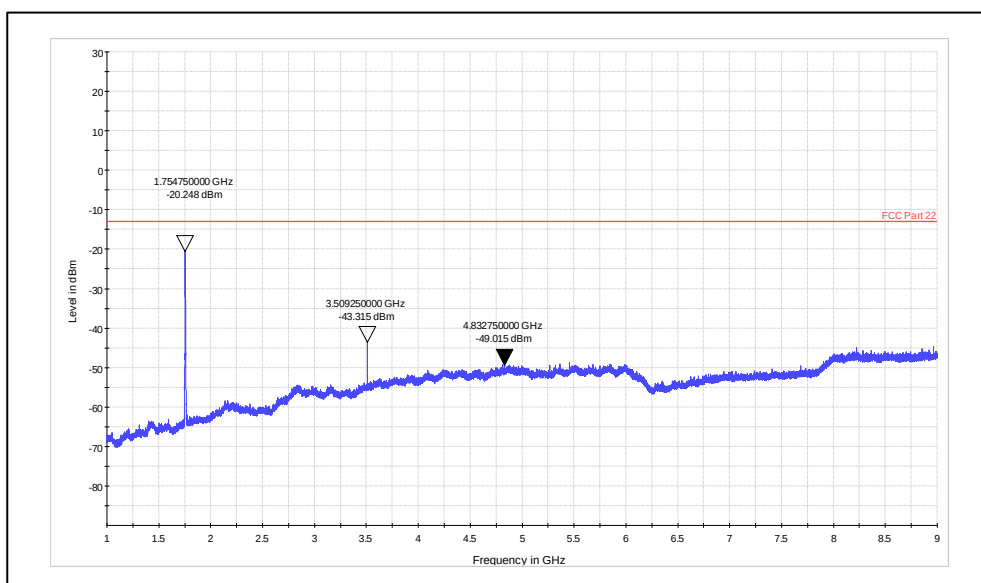
Band 4:

Channel Frequency: 1754.2MHz



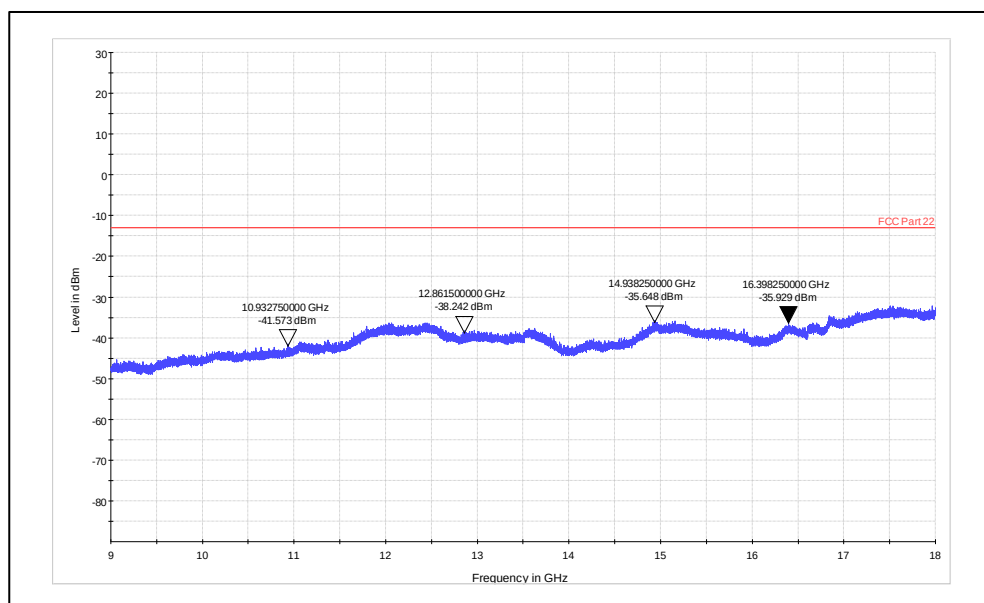
Frequency range: 1GHz-9GHz

Polarization: Vertical



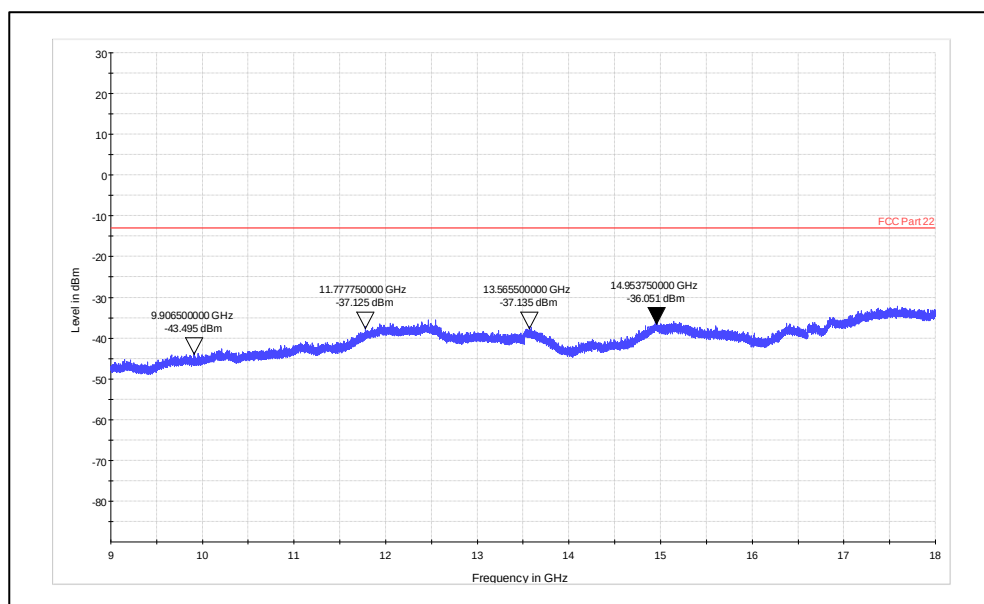
Frequency range: 1GHz-9GHz

Polarization: Horizontal



Frequency range: 9GHz-18GHz

Polarization: Vertical



Frequency range: 9GHz-18GHz

Polarization: Horizontal

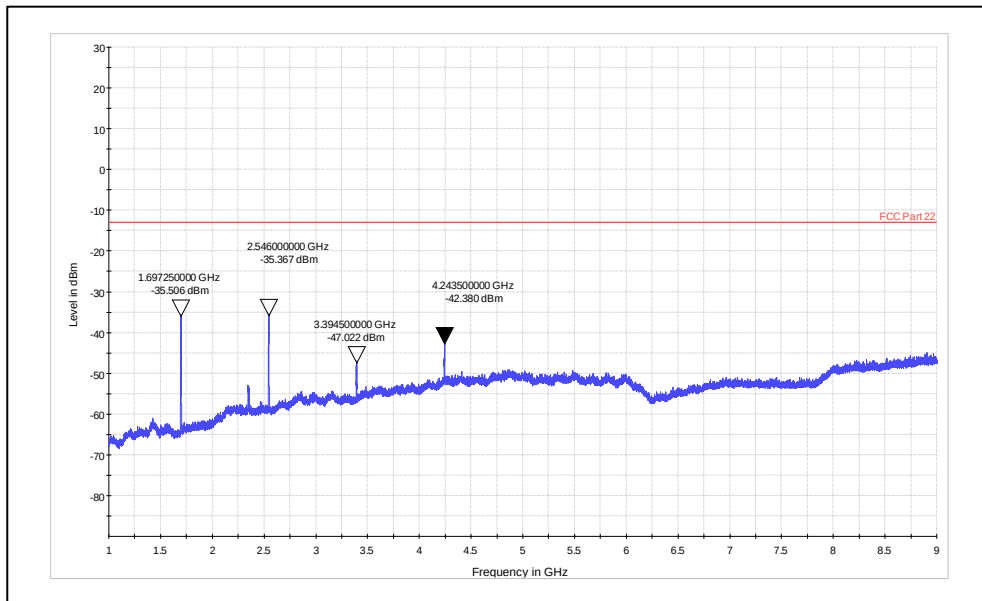
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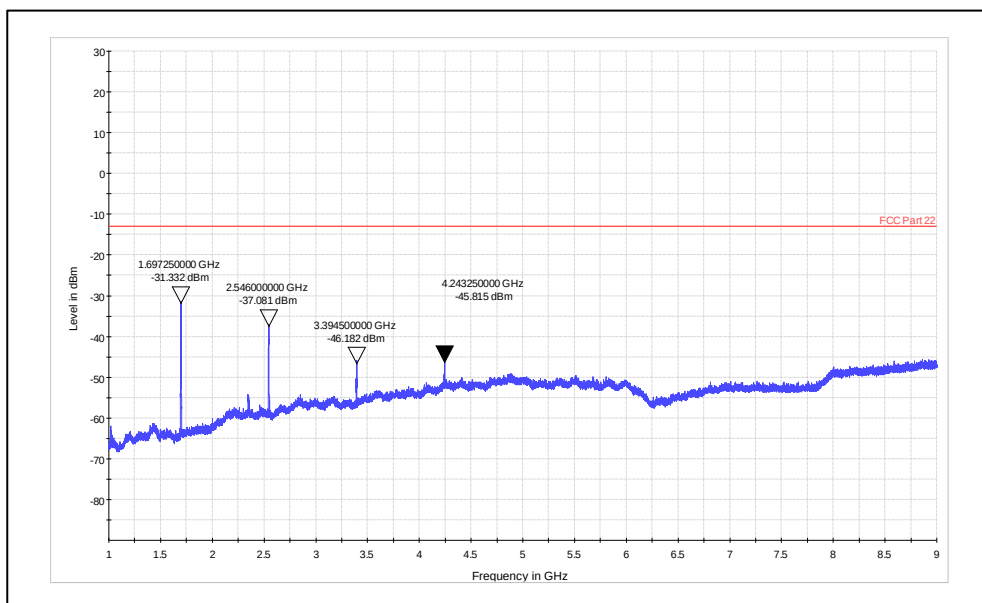
Band: 5

Channel Frequency: 848.2MHz



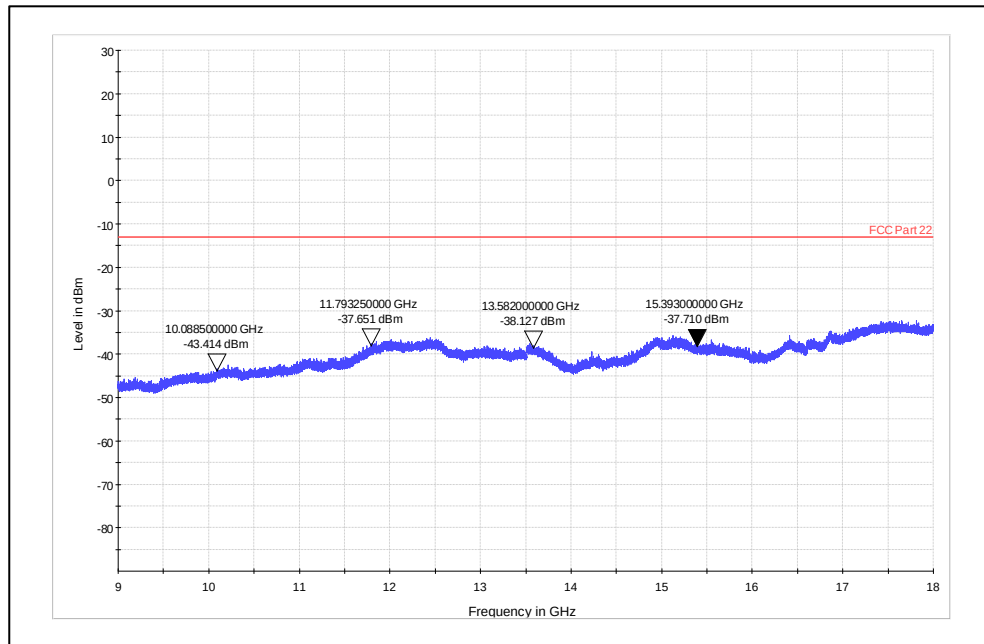
Frequency range: 1GHz-9GHz

Polarization: Vertical



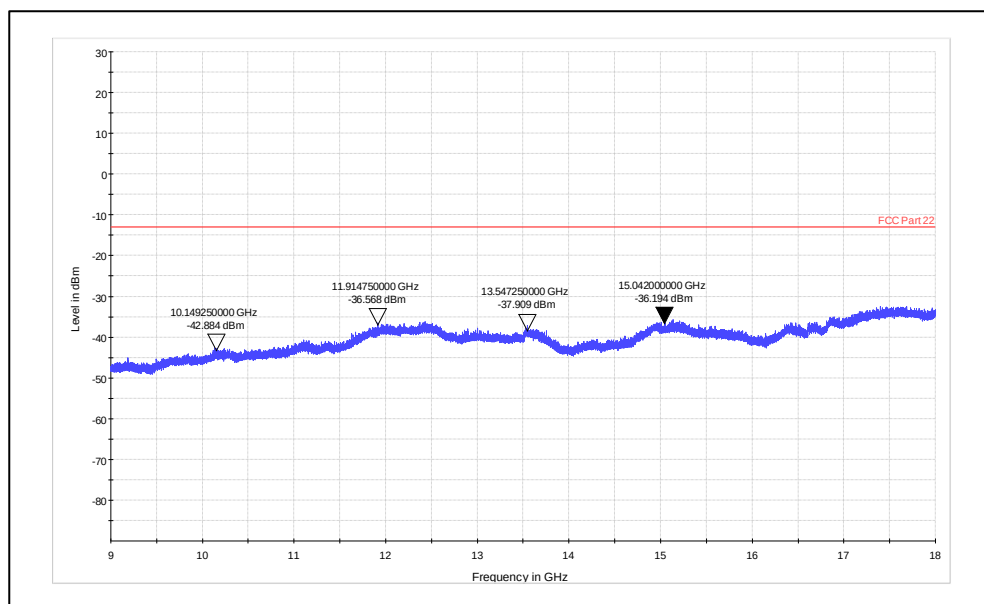
Frequency range: 1GHz-9GHz

Polarization: Horizontal



Frequency range: 9GHz-18GHz

Polarization: Vertical



Frequency range: 9GHz-18GHz

Polarization: Horizontal

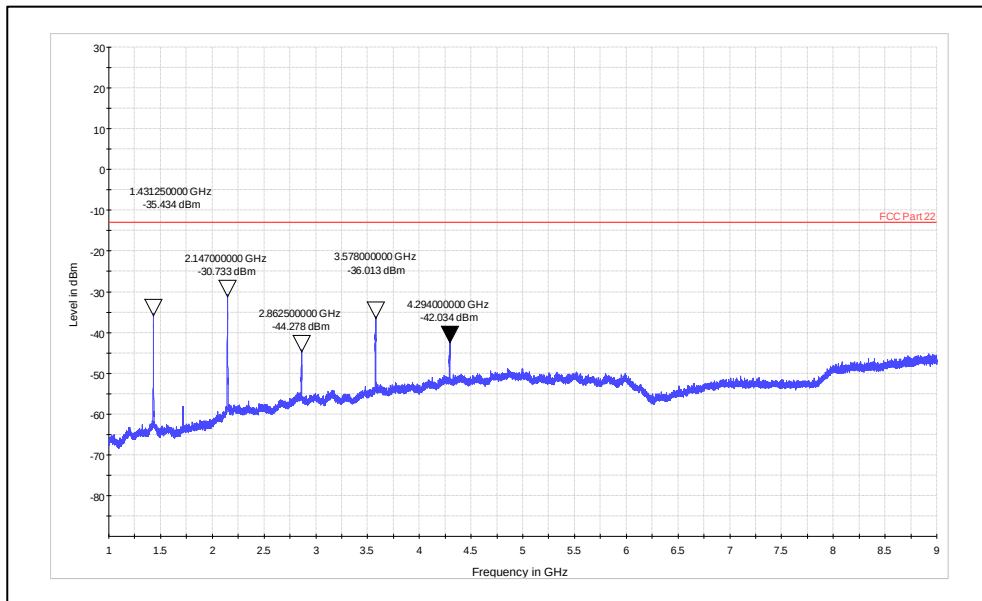
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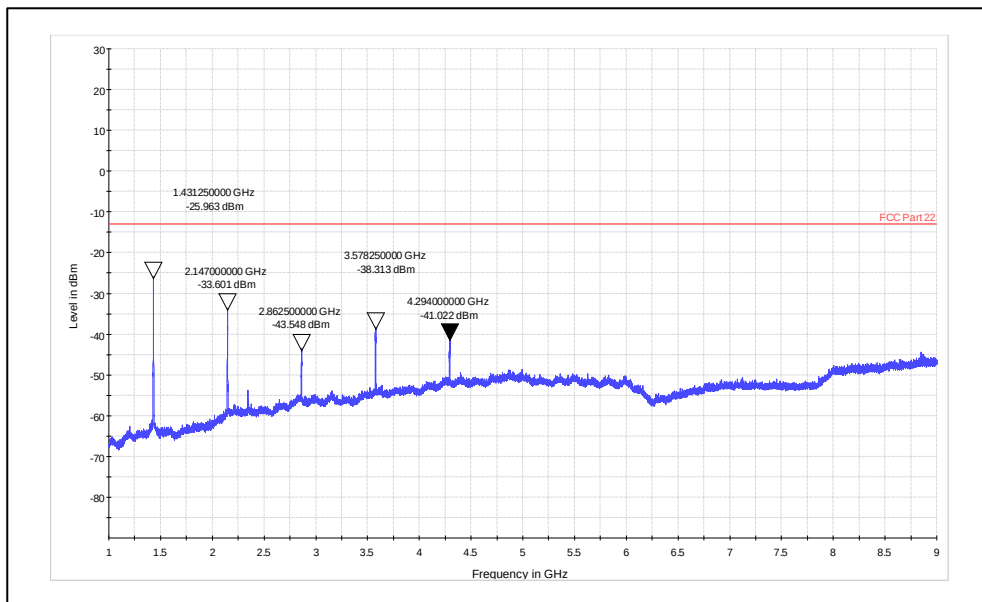
Band 12:

Channel Frequency: 715.2MHz



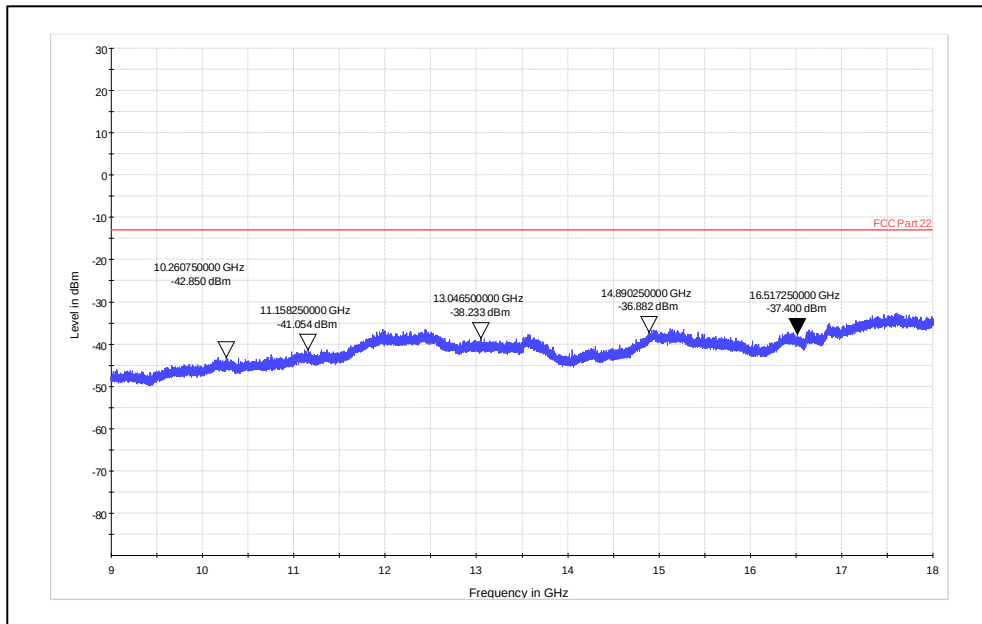
Frequency range: 1GHz-9GHz

Polarization: Vertical



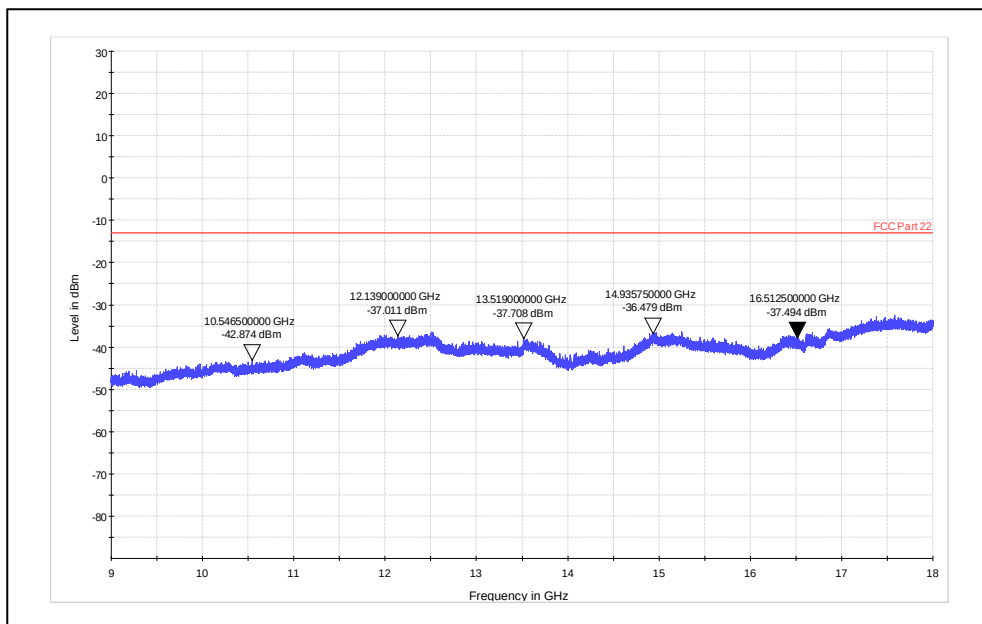
Frequency range: 1GHz-9GHz

Polarization: Horizontal



Frequency range: 9GHz-18GHz

Polarization: Vertical



Frequency range: 9GHz-18GHz

Polarization: Horizontal

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