FCC Test Report

Report No.: AGC15705240936FR01

FCC ID	:	2BHJX-UHM11BR2424
APPLICATION PURPOSE	:	Original Equipment
PRODUCT DESIGNATION	:	Remote
BRAND NAME	:	N/A
MODEL NAME	:	DR-UHM11B, DR-STK21B, DR-ATM21B
APPLICANT	:	Shenzhen Ameta Technology Co., Ltd.
DATE OF ISSUE	:	Oct. 15, 2024
STANDARD(S)	:	FCC Part 15 Subpart C §15.249
REPORT VERSION	:	V1.0

Attestation Of Global Compliance (Shenzhen) Co., Ltd

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Oct. 15, 2024	Valid	Initial Release

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1. General Information

Applicant	Shenzhen Ameta Technology Co., Ltd.
Address	501, BLDG4, Pingshan MinQi Technology Park, No. 65 Lishan Road, Pingshan Community, Taoyuan Street, Nanshan District, Shenzhen, Guangdong, China
Manufacturer	Shenzhen Ameta Technology Co., Ltd.
Address	501, BLDG4, Pingshan MinQi Technology Park, No. 65 Lishan Road, Pingshan Community, Taoyuan Street, Nanshan District, Shenzhen, Guangdong, China
Factory	Shenzhen Ameta Technology Co., Ltd.
Address	501, BLDG4, Pingshan MinQi Technology Park, No. 65 Lishan Road, Pingshan Community, Taoyuan Street, Nanshan District, Shenzhen, Guangdong, China
Product Designation	Remote
Brand Name	N/A
Test Model	DR-UHM11B
Series Model(s)	DR-STK21B, DR-ATM21B
Difference Description	All the same except the model name
Date of receipt of test item	Sep. 24, 2024
Date of Test	Sep. 24, 2024 –Oct. 15, 2024
Deviation from Standard	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Test Report Form No	AGCER-FCC-NTX-V1

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By	Cici Li (Project Engineer)	Oct. 15, 2024
Reviewed By	Calvin Liu (Reviewer)	Oct. 15, 2024
Approved By	Max Zhang Authorized Officer	Oct. 15, 2024

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2. Product Information

2.1 Product Technical Description

Equipment Specification	Low Power Short Range Equipment
Frequency Band	2400MHz-2483.5MHz
Operation Frequency Range	2440MHz-2475MHz
Modulation Type	GFSK
Number of channels	36
Channel Separation	1MHz
Field Strength of Fundamental	87.16dBμV/m (Peak)
Hardware Version	HM-M10T
Software Version	HM-M10T
Antenna Designation	Monopole Antenna
Antenna Gain	0.5dBi
Power Supply	DC 4.5V by battery
Adapter Information	N/A

2.2 Test Frequency List

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
01	2440	13	2452	25	2464
02	2441	14	2453	26	2465
03	2442	15	2454	27	2466
04	2443	16	2455	28	2467
05	2444	17	2456	29	2468
06	2445	18	2457	30	2469
07	2446	19	2458	31	2470
08	2447	20	2459	32	2471
09	2448	21	2460	33	2472
10	2449	22	2461	34	2473
11	2450	23	2462	35	2474
12	2451	24	2463	36	2475

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2.3 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: 2BHJX-UHM11BR2424, filing to comply with Part 2, Part 15 of the Federal Communication Commission rules.

2.4 Test Methodology

The tests were performed according to following standards:

No.	Identity	Document Title
1	FCC 47 CFR Part 2	Frequency allocations and radio treaty matters; general rules and regulations
2	FCC 47 CFR Part 15	Radio Frequency Devices
3	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

2.5 Antenna Requirement

Standard Requirement
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.
EUT Antenna:
The non-detachable antenna inside the device cannot be replaced by the user at will. The gain of the antenna is 0.5dBi.

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3. Test Environment

3.1 Address of the Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories).

A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

IC-Registration No.: 24842 (CAB identifier: CN0063)

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

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3.3 Environmental Conditions

	Normal Conditions
Temperature range (℃)	15 - 35
Relative humidity range	20 % - 75 %
Pressure range (kPa)	86 - 106
Power supply	DC 4.5V by battery

3.4 Measurement Uncertainty

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

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	U_c = ±2.9 dB
Uncertainty of Radiated Emission below 1GHz	U_c = ±3.9 dB
Uncertainty of Radiated Emission above 1GHz	U_c = ±4.9 dB
Uncertainty of total RF power, conducted	U_c = ±0.8 dB
Uncertainty of RF power density, conducted	U_c = ±2.6 dB
Uncertainty of spurious emissions, conducted	U_c = ±2 %
Uncertainty of Occupied Channel Bandwidth	U_c = ±2 %

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3.5 List of Equipment Use

● RF Conducted Test System							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
☒	AGC-ER-E036	Spectrum Analyzer	Agilent	N9020A	MY49100060	2024-05-24	2025-05-23
☒	AGC-ER-E062	Power Sensor	Agilent	U2021XA	MY54110007	2024-02-01	2025-01-31
☒	AGC-ER-E063	Power Sensor	Agilent	U2021XA	MY54110009	2024-02-01	2025-01-31
☒	AGC-ER-A001	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-09-21	2025-09-20
☒	AGC-ER-E083	Signal Generator	Agilent	E4421B	US39340815	2024-05-23	2025-05-22
☒	N/A	RF Connection Cable	N/A	1#	N/A	Each time	N/A
☒	N/A	RF Connection Cable	N/A	2#	N/A	Each time	N/A

● Radiated Spurious Emission							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
☒	AGC-EM-E046	EMI Test Receiver	R&S	ESCI	10096	2024-02-01	2025-01-31
☐	AGC-EM-E116	EMI Test Receiver	R&S	ESCI	100034	2024-05-24	2025-05-23
☒	AGC-EM-E061	Spectrum Analyzer	Agilent	N9010A	MY53470504	2024-05-28	2025-05-27
☒	AGC-EM-E086	Loop Antenna	ZHINAN	ZN30900C	18051	2024-03-05	2026-03-04
☒	AGC-EM-E001	Wideband Antenna	SCHWARZBECK	VULB9168	D69250	2023-05-11	2025-05-10
☒	AGC-EM-E029	Broadband Ridged Horn Antenna	ETS	3117	00034609	2024-03-31	2025-03-30
☒	AGC-EM-E082	Horn Antenna	SCHWARZBECK	BBHA 9170	#768	2023-09-24	2025-09-23
☒	AGC-EM-E146	Pre-amplifier	ETS	3117-PA	00246148	2024-07-24	2026-07-23
☒	AGC-EM-A119	2.4G Filter	SongYi	N/A	N/A	2024-05-23	2025-05-22
☒	AGC-EM-A138	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08
☐	AGC-EM-A139	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08

● AC Power Line Conducted Emission							
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. Date (YY-MM-DD)	Next Cal. Date (YY-MM-DD)
☐	AGC-EM-E045	EMI Test Receiver	R&S	ESPI	101206	2024-05-28	2025-05-27
☐	AGC-EM-A130	6dB Attenuator	Eeatsheep	LM-XX-6-5W	DC-6GZ	2023-06-09	2025-06-08
☐	AGC-EM-E023	AMN	R&S	100086	ESH2-Z5	2024-05-28	2025-05-27

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● Test Software					
Used	Equipment No.	Test Equipment	Manufacturer	Model No.	Version Information
☐	AGC-EM-S001	CE Test System	R&S	ES-K1	V1.71
☐	AGC-EM-S003	RE Test System	FARA	EZ-EMC	VRA-03A
☒	AGC-EM-S004	RE Test System	Tonscend	TS^{+} Ver2.1(JS32-RE)	4.0.0.0
☒	AGC-ER-S012	BT/WIFI Test System	Tonscend	JS1120-2	2.6
☒	AGC-EM-S011	RSE Test System	Tonscend	TS+-Ver2.1(JS36-RSE)	4.0.0.0

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4.System Test Configuration

4.1 EUT Configuration

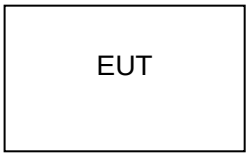
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

4.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

4.3 Configuration of Tested System

Radiated Emission Configure:



4.4 Equipment Used In Tested System

The following peripheral devices and interface cables were connected during the measurement:

☐ Test Accessories Come From The Laboratory

No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
1	--	--	--	--	--

☐ Test Accessories Come From The Manufacturer

No.	Equipment	Manufacturer	Model No.	Specification Information	Cable
1	--	--	--	--	--

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4.5 Summary of Test Results

Item	FCC Rules	Description of Test	Result
1	§15.203	Antenna Equipment	Pass
2	§15.249(a)	Field Strength of Fundamental	Pass
3	§15.209&§15.249(d)	Radiated Emission& Band Edge	Pass
4	§15.205	Restricted Bands of Operation	Pass
5	§15.215	20dB Bandwidth	Pass
6	§15.207	AC Power Line Conducted Emission	Pass/N/A (See Note 2)

Note:

1. N/A means not applicable
2. This device is not AC powered and does not require this test.

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5. Description of Test Modes

Summary Table of Test Cases	
Test Item	Equipment type / Modulation
	Short Distance and Low Power Consumption/ GFSK
Radiated & Conducted Test Cases	Mode 1: Normal Transmission on channel 01 (Battery powered) Mode 2: Normal Transmission on channel 18 (Battery powered) Mode 2: Normal Transmission on channel 36 (Battery powered)
AC Conducted Emission	N/A

Note:
1. Only the result of the worst case was recorded in the report, if no other cases.
2. The battery is full-charged during the test.
3. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
4. For Conducted Test method, a temporary antenna connector is provided by the manufacture.
5. The fixed-frequency transmission of the prototype is debugged through the buttons or software declared by the manufacturer.

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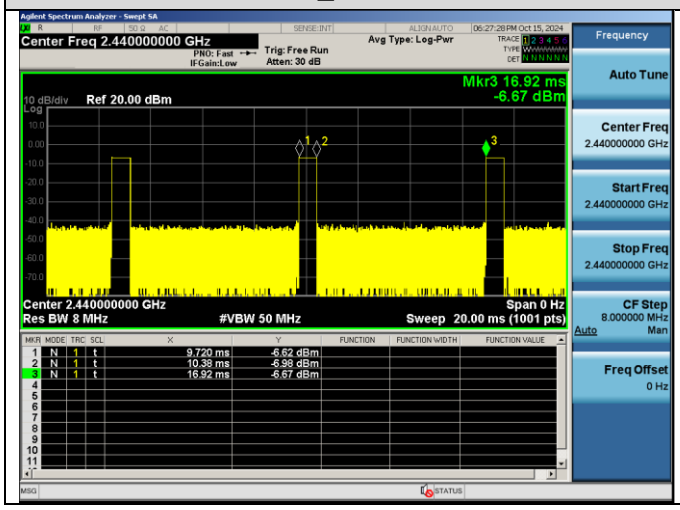
6. Duty Cycle Measurement

The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = Peak. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

Operating mode	T(μs)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/ T Minimum VBW (kHz)
GFSK_2440MHz	660	9.17	10.38	1.52

Remark:
1. Duty Cycle factor = 10 * log (1/ Duty cycle)
2. The duty cycle of each frequency band mode reflects the determination requirements of the low channel measurement value

The test plots as follows:

GFSK_2440MHz	
	

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7. 20dB Bandwidth Measurement

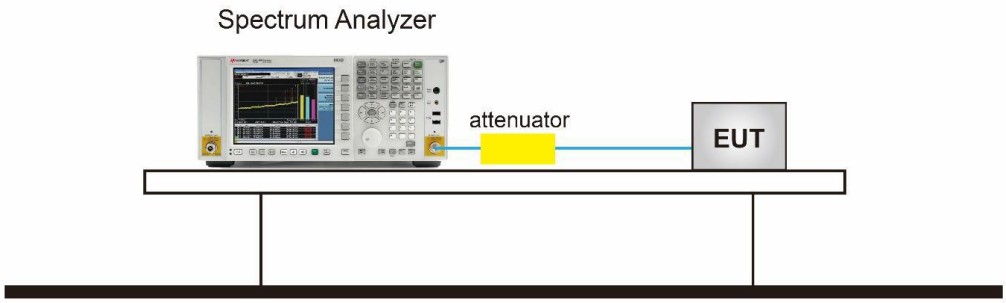
7.1 Provisions Applicable

N/A

7.2 Measurement Procedure

1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 30 kHz. Set the Video bandwidth (VBW) = 100 kHz. In order to make an accurate measurement.
4. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the emission bandwidth and set the Video bandwidth (VBW) ≥ 3 * RBW.
5. Measure and record the results in the test report.

7.3 Measurement Setup (Block Diagram of Configuration)



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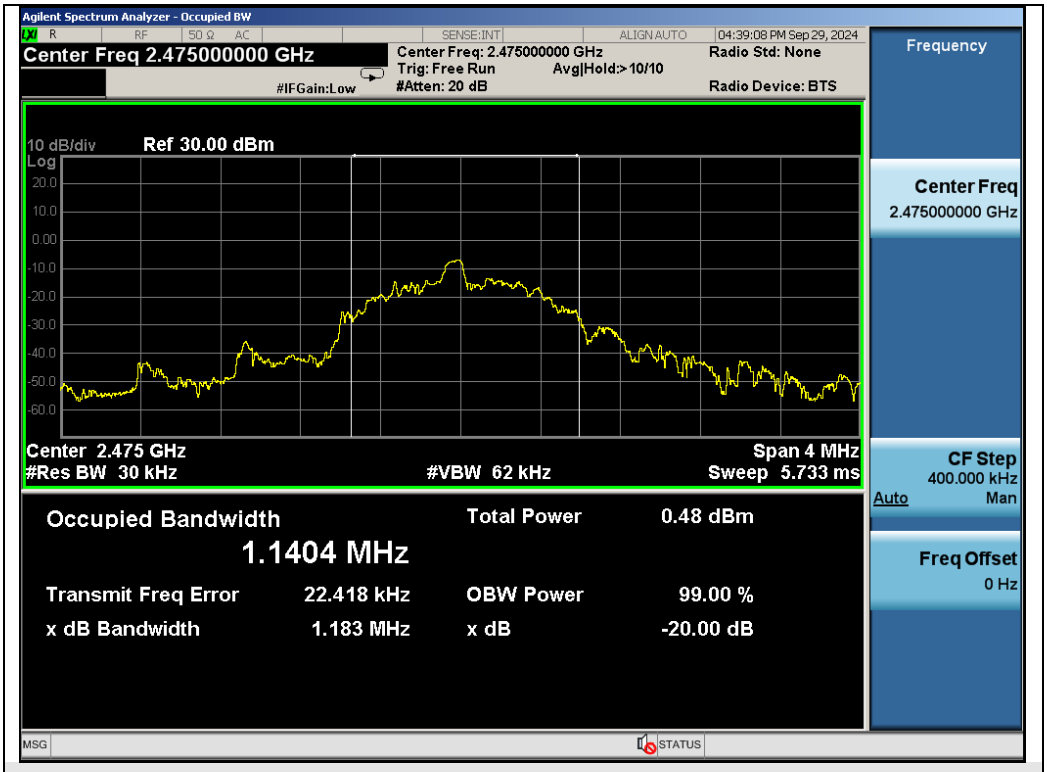
7.4 Measurement Results

Test Data of Occupied Bandwidth and -20dB Bandwidth					
Test Mode	Test Frequency (MHz)	Occupied Bandwidth (MHz)	-20dB Bandwidth (MHz)	Limits (MHz)	Pass or Fail
GFSK	2440	1.1404	1.183	N/A	Pass
	2457	1.4525	1.458	N/A	Pass
	2475	1.2981	1.264	N/A	Pass

Test Graphs of Occupied Bandwidth and -20 Bandwidth



Test_Graph_GFSK_ANT1_2440_OBW

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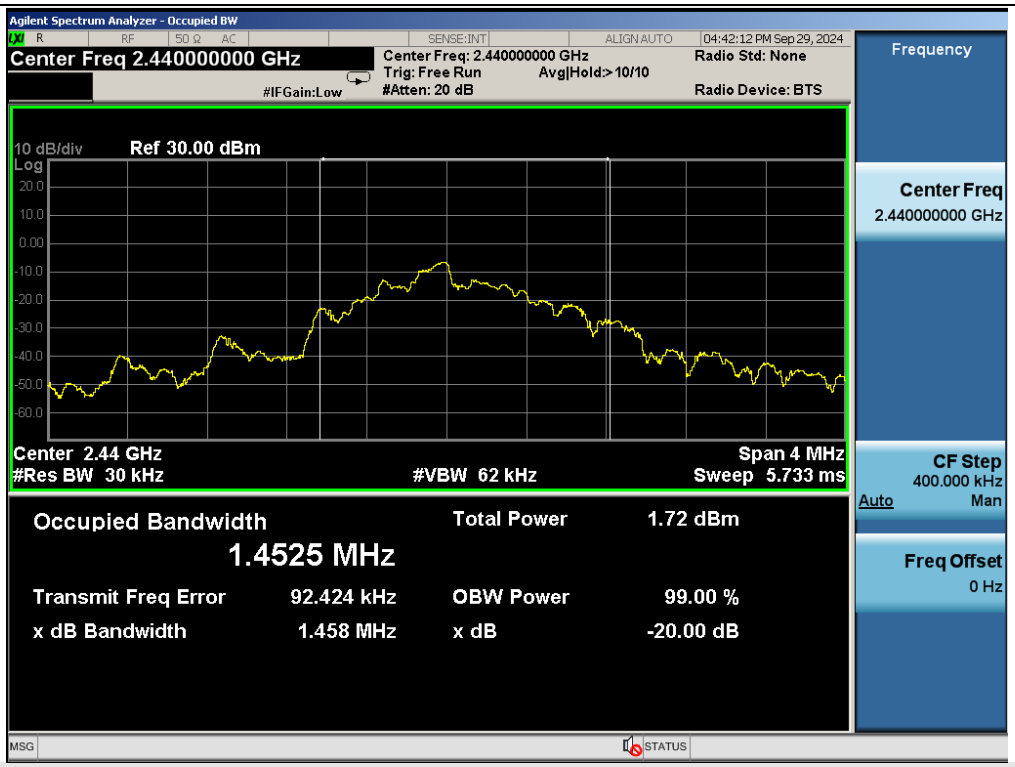
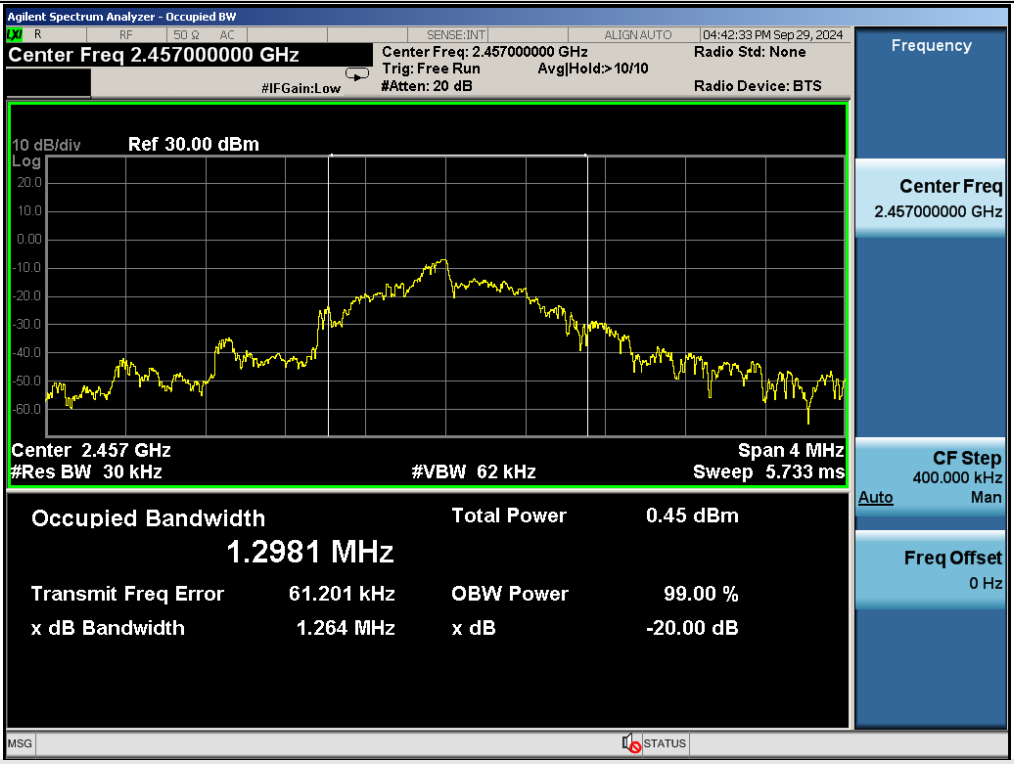


Test_Graph_GFSK_ANT1_2457_OBW



Test_Graph_GFSK_ANT1_2475_OBW

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8. Field Strength of Fundamental and Radiated Spurious Emission

8.1 Measurement Limit

15.249 Limit in the below table has to be followed:

Frequency Range	Field Strength of Fundamental (millivolts/meter)	Field Strength of Harmonics (microvolts/meter)
900-928MHz	50	500
2400-2483.5MHz	50	500
5725-5875MHz	50	500
24.0-24.25GHz	250	2500

15.209 Limit in the below table has to be followed:

Frequency Range (MHz)	Distance Meters	Field Strengths Limit	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	---
1.705 ~ 30	30	30	---
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Remark:
1) Emission level dBμV = 20 log Emission level μV/m.
2) The smaller limit shall apply at the cross point between two frequency bands.
3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

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8.2 Measurement Procedure

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

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- The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Start ~Stop Frequency	9kHz~150kHz/RB 200Hz for QP
Start ~Stop Frequency	150kHz~30MHz/RB 9kHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120kHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average

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

- The following is the test setup of Field Strength of Fundamental:
  - Peak detection: RBW is greater than the main frequency OBW, VBW=50MHz / Sweep=AUTO
  - Average detection: RBW is greater than the main frequency OBW, VBW=50MHz / Sweep=AUTO
- The following is the test setup of Band Edge:

The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.

- Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
  - Peak detection: RBW=1MHz, VBW=3MHz / Sweep=AUTO
  - Average detection: RBW=1MHz; VBW=1/T / Sweep=AUTO (Duty cycle is less than 98%)
  - Average detection: RBW=1MHz; VBW=3M / Sweep=AUTO
  - Other procedures refer to clause 7.2.

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- **Quasi-Peak Measurements below 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as shown in the table above
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

- **Peak Measurements above 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

- **Average Measurements above 1GHz (Method VB)**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW setting requirements are as follows:
4. If the EUT is configured to transmit with duty cycle ≥ 98%, set VBW = 10 Hz.
5. If the EUT duty cycle is < 98%, set VBW ≥ 1/T. T is the minimum transmission duration.
6. Detector = Peak
7. Sweep time = auto
8. Trace mode = max hold
8. Trace was allowed to stabilize

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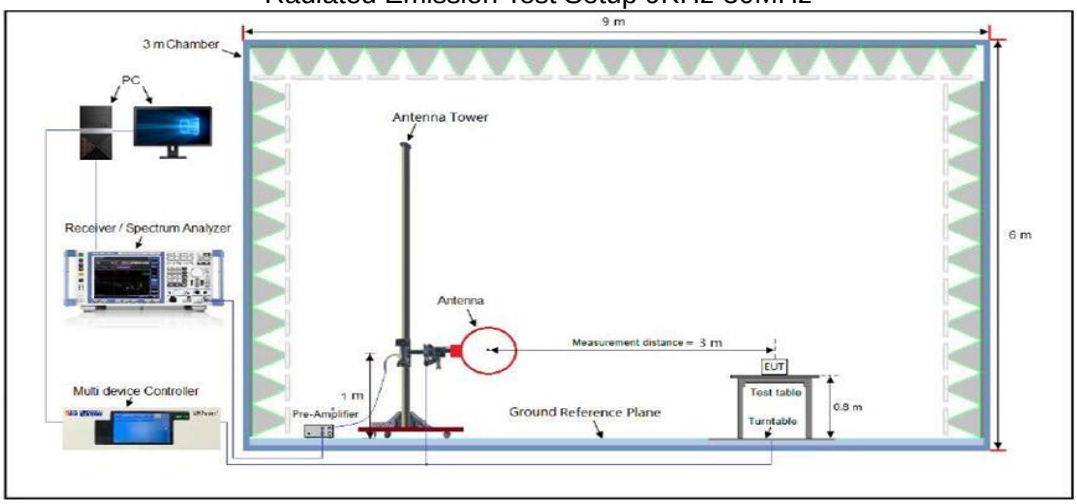
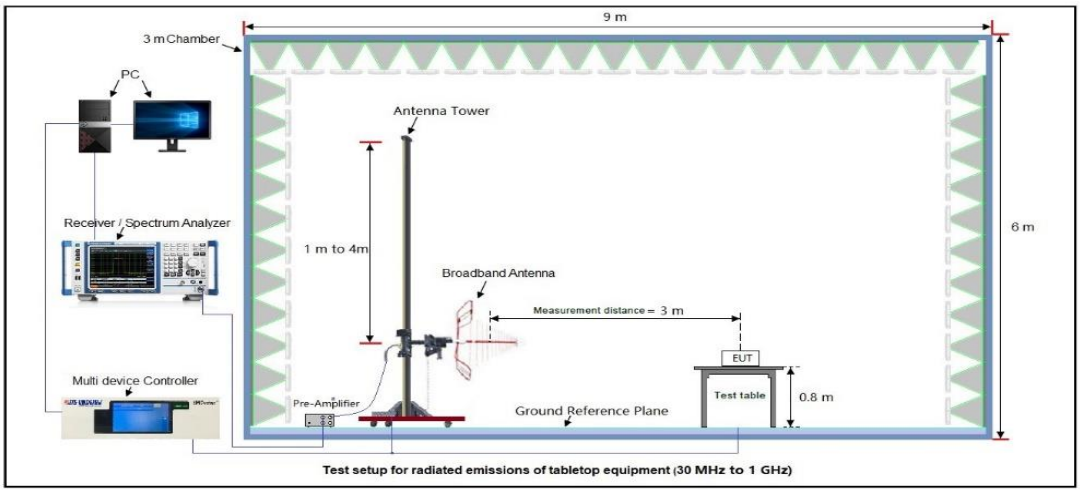
8.3 Measurement Setup (Block Diagram of Configuration)

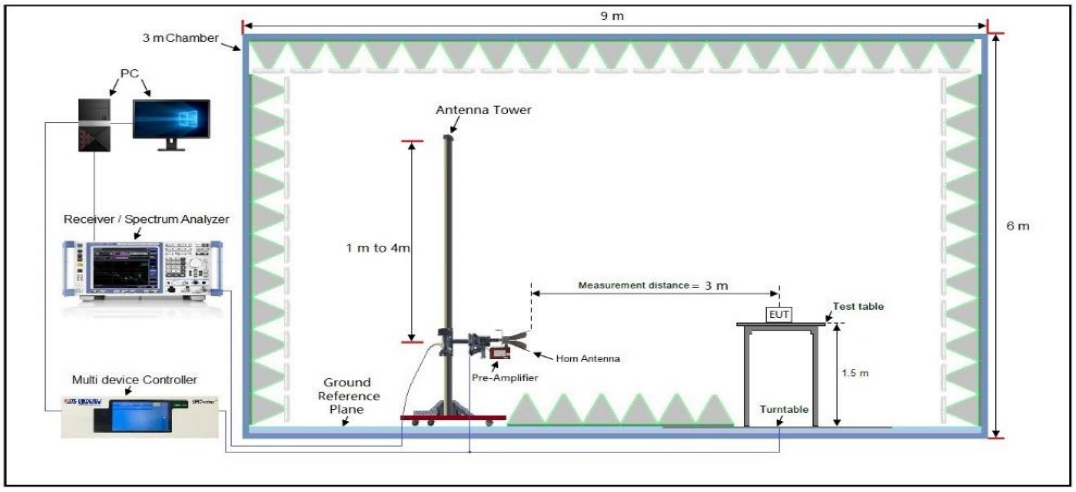
Radiated Emission Test Setup 9KHz-30MHz



Radiated Emission Test Setup 30MHz-1000MHz



Radiated Emission Test Setup Above 1000MHz



8.4 Measurement Result

Field Strength of Fundamental

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EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9 %
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 1	**Antenna**	Horizontal/ Vertical

Peak Value					
Frequency (MHz)	Measured Level@3m (dBμV/m)	Correction Factor dB/m	Field Strength (dBμV/m)	Limit @3m (dBμV/m)	Polarity
2440	48.33	34.18	86.51	114.00	Horizontal
2440	45.36	34.96	80.32	114.00	Vertical
2457	49.27	34.66	83.93	114.00	Horizontal
2457	46.93	34.35	81.28	114.00	Vertical
2475	52.87	34.29	87.16	114.00	Horizontal
2475	47.37	34.96	82.33	114.00	Vertical
Average Value					
Frequency (MHz)	Measured Level@3m (dBμV/m)	Correction Factor dB/m	Field Strength (dBμV/m)	Limit @3m (dBμV/m)	Polarity
2440	50.61	34.99	85.60	94.00	Horizontal
2440	45.30	34.92	80.22	94.00	Vertical
2457	47.08	34.35	81.43	94.00	Horizontal
2457	45.34	34.27	79.61	94.00	Vertical
2475	49.73	34.90	84.63	94.00	Horizontal
2475	44.22	34.14	78.36	94.00	Vertical

RESULT: Pass

Note: Corr. Factor= Antenna Factor (dB/m) + Cable Loss (dB)

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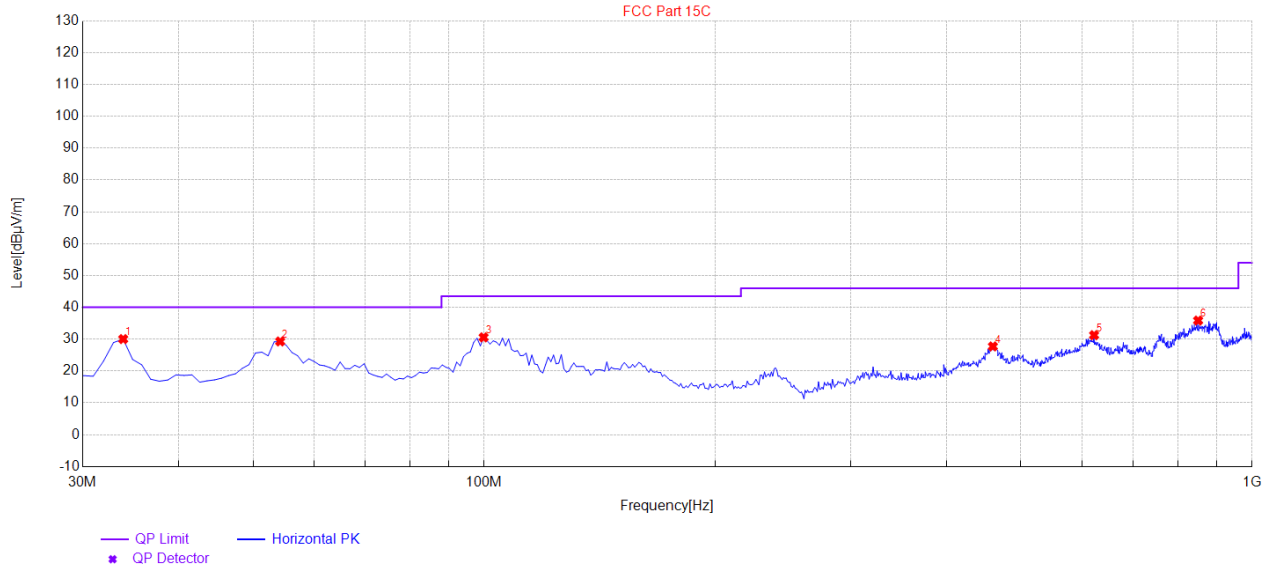
Radiated Emission Below 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20dB below the permissible value need not be reported.

Radiated Emission Test Results at 30MHz-1GHz			
EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 1	**Antenna Polarity**	Horizontal



Final Data List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	33.88	30.02	12.12	40.00	9.98	100	50	Horizontal
2	54.25	29.28	16.35	40.00	10.72	100	280	Horizontal
3	99.84	30.57	17.03	43.50	12.93	100	350	Horizontal
4	459.71	27.72	24.69	46.00	18.28	100	10	Horizontal
5	622.67	31.24	25.55	46.00	14.76	100	290	Horizontal
6	850.62	35.85	29.70	46.00	10.15	100	250	Horizontal

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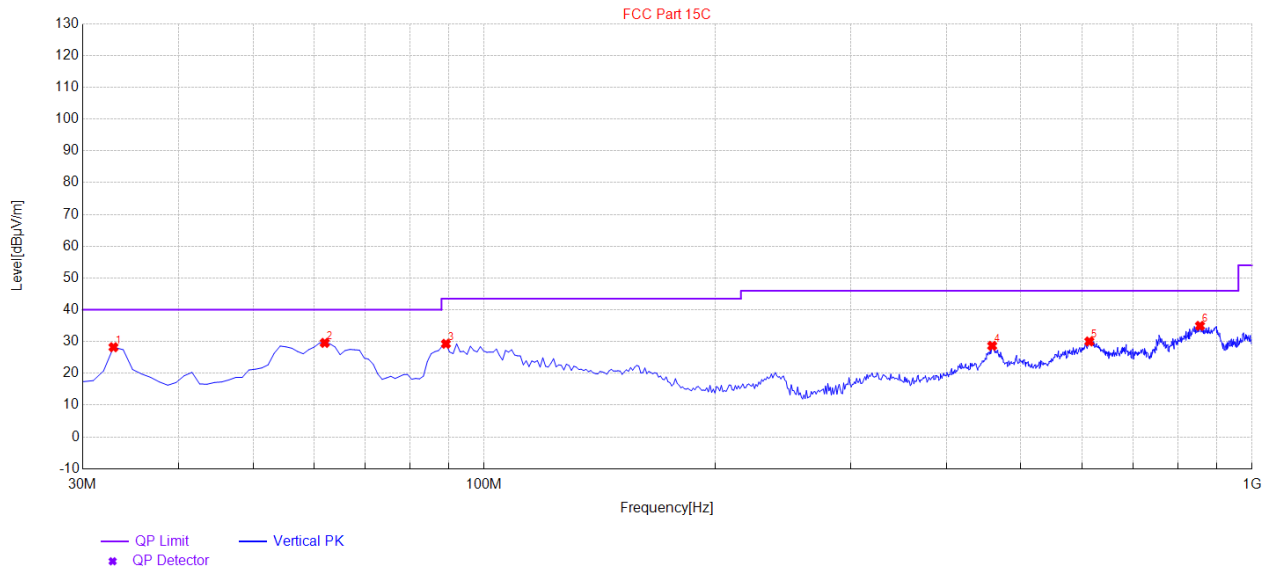
Radiated Emission Test Results at 30MHz-1GHz			
EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 1	**Antenna Polarity**	Vertical



Final Data List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	32.91	28.22	12.41	40.00	11.78	100	250	Vertical
2	62.01	29.58	17.23	40.00	10.42	100	210	Vertical
3	89.17	29.29	13.88	43.50	14.21	100	150	Vertical
4	458.74	28.66	24.41	46.00	17.34	100	170	Vertical
5	613.94	30.03	25.24	46.00	15.97	100	150	Vertical
6	855.47	34.94	29.86	46.00	11.06	100	60	Vertical

RESULT: Pass

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

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Radiated Emissions Test Results for Above 1GHz

EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 1	**Antenna Polarity**	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4880.000	46.68	0.08	46.76	74	-27.24	peak
4880.000	37.18	0.08	37.26	54	-16.74	AVG
7320.000	41.93	2.21	44.14	74	-29.86	peak
7320.000	32.28	2.21	34.49	54	-19.51	AVG

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

EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 1	**Antenna Polarity**	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4880.000	46.82	0.08	46.90	74	-27.10	peak
4880.000	37.20	0.08	37.28	54	-16.72	AVG
7320.000	41.29	2.21	43.50	74	-30.50	peak
7320.000	32.01	2.21	34.22	54	-19.78	AVG

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

RESULT: Pass

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Radiated Emissions Test Results for Above 1GHz

EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 2	**Antenna Polarity**	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4914.000	46.48	0.08	46.56	74	-27.44	peak
4914.000	37.67	0.08	37.75	54	-16.25	AVG
7371.000	41.71	2.21	43.92	74	-30.08	peak
7371.000	32.30	2.21	34.51	54	-19.49	AVG

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

EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 2	**Antenna Polarity**	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4914.000	46.46	0.08	46.54	74	-27.46	peak
4914.000	37.49	0.08	37.57	54	-16.43	AVG
7371.000	41.33	2.21	43.54	74	-30.46	peak
7371.000	32.35	2.21	34.56	54	-19.44	AVG

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

RESULT: Pass

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Radiated Emissions Test Results for Above 1GHz

EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 3	**Antenna Polarity**	Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4950.000	47.00	0.08	47.08	74	-26.92	peak
4950.000	37.72	0.08	37.80	54	-16.20	AVG
7425.000	41.66	2.21	43.87	74	-30.13	peak
7425.000	32.17	2.21	34.38	54	-19.62	AVG

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

EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9%
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 3	**Antenna Polarity**	Vertical

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Value Type
4950.000	46.70	0.08	46.78	74	-27.22	peak
4950.000	37.67	0.08	37.75	54	-16.25	AVG
7425.000	41.40	2.21	43.61	74	-30.39	peak
7425.000	32.40	2.21	34.61	54	-19.39	AVG

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

RESULT: Pass

Note:

1. The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.
2. Factor = Antenna Factor + Cable loss – Pre-amplifier gain, Margin =Emission Level-Limit.
3. The “Factor” value can be calculated automatically by software of measurement system.

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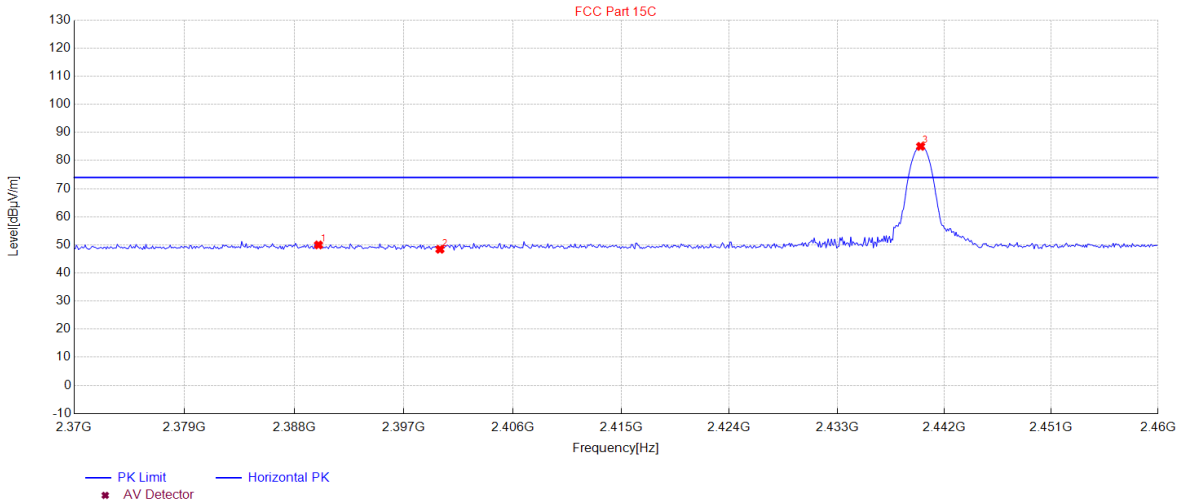
Band Edge Emission Test Results for Restricted Bands

EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9 %
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 1	**Antenna Polarity**	Horizontal

Test Graph for Peak Measurement



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390	49.97	34.40	74.00	24.03	150	266	Horizontal
2	2400	48.42	34.43	74.00	25.58	150	71	Horizontal
3	2440	85.04	34.54	74.00	-11.04	150	12	Horizontal

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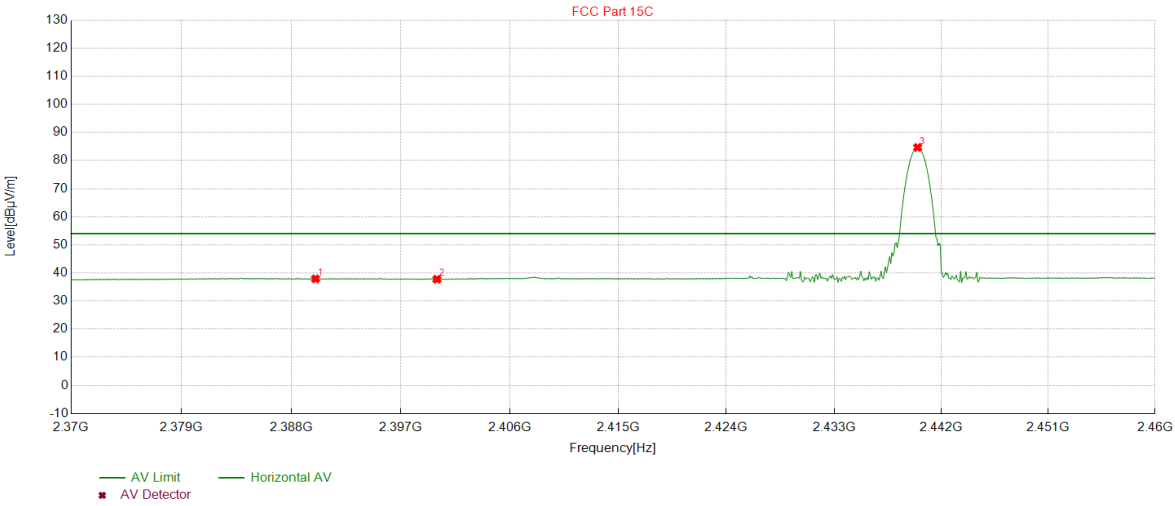
Test Graph for Average Measurement



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390	37.90	34.40	54.00	16.10	150	114	Horizontal
2	2400	37.74	34.43	54.00	16.26	150	293	Horizontal
3	2440	84.65	34.54	54.00	-30.65	150	9	Horizontal

RESULT: Pass

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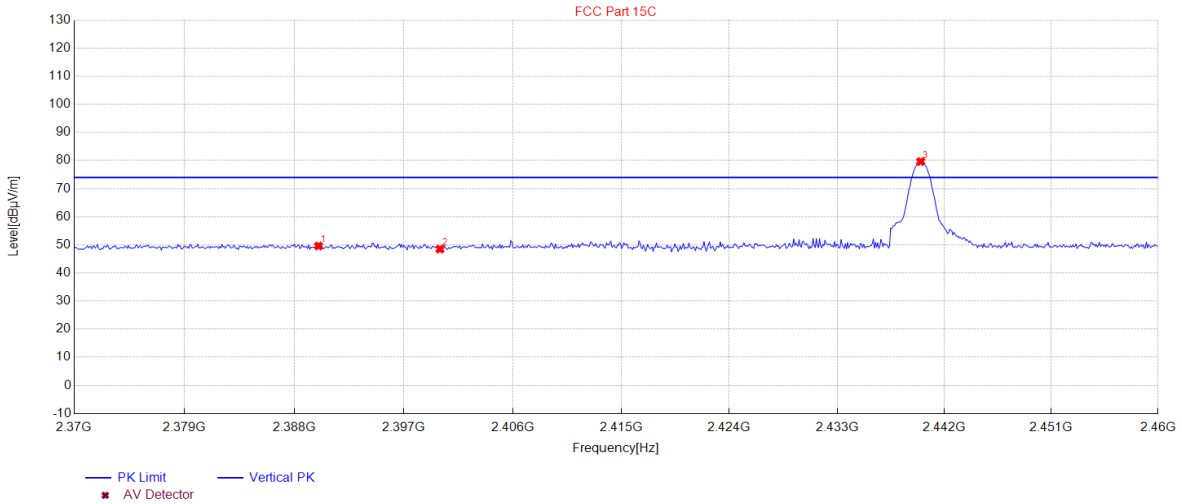
Band Edge Emission Test Results for Restricted Bands

EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9 %
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 1	**Antenna Polarity**	Vertical

Test Graph for Peak Measurement



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390	49.61	34.40	74.00	24.39	150	90	Vertical
2	2400	48.49	34.43	74.00	25.51	150	308	Vertical
3	2440	79.64	34.54	74.00	-5.64	150	168	Vertical

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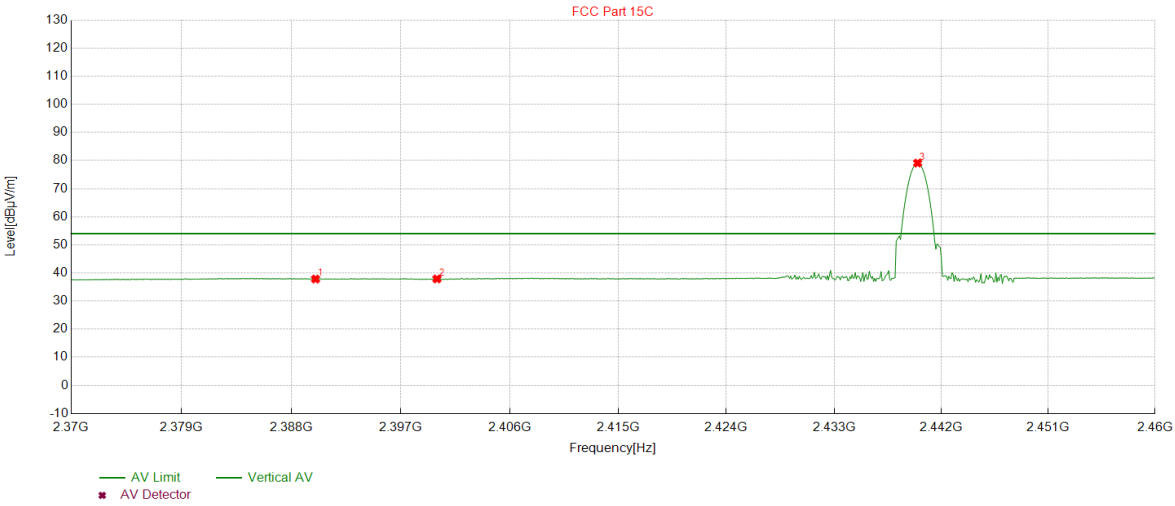
Test Graph for Average Measurement



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2390	37.83	34.40	54.00	16.17	150	358	Vertical
2	2400	37.87	34.43	54.00	16.13	150	74	Vertical
3	2440	79.10	34.54	54.00	-25.10	150	169	Vertical

RESULT: Pass

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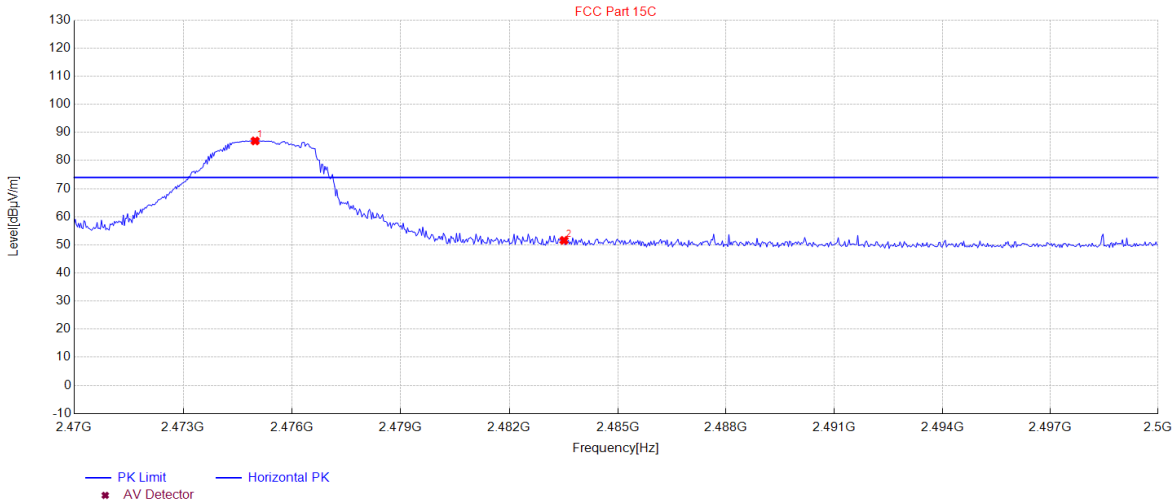
Band Edge Emission Test Results for Restricted Bands

EUT Name	Remote	Model Name	DR-UHM11B
Temperature	22.2℃	Relative Humidity	57.9 %
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna Polarity	Horizontal

Test Graph for Peak Measurement



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2474.984	86.98	34.63	74.00	-12.98	150	37	Horizontal
2	2483.513	51.59	34.66	74.00	22.41	150	358	Horizontal

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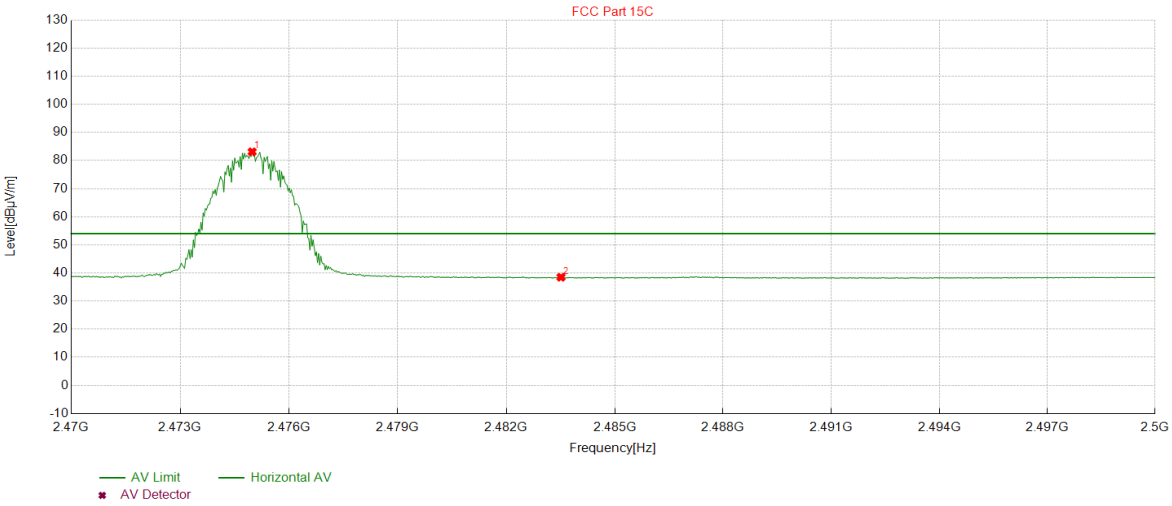
Test Graph for Average Measurement



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2474.984	83.11	34.63	54.00	-29.11	150	51	Horizontal
2	2483.513	38.47	34.66	54.00	15.53	150	328	Horizontal

RESULT: Pass

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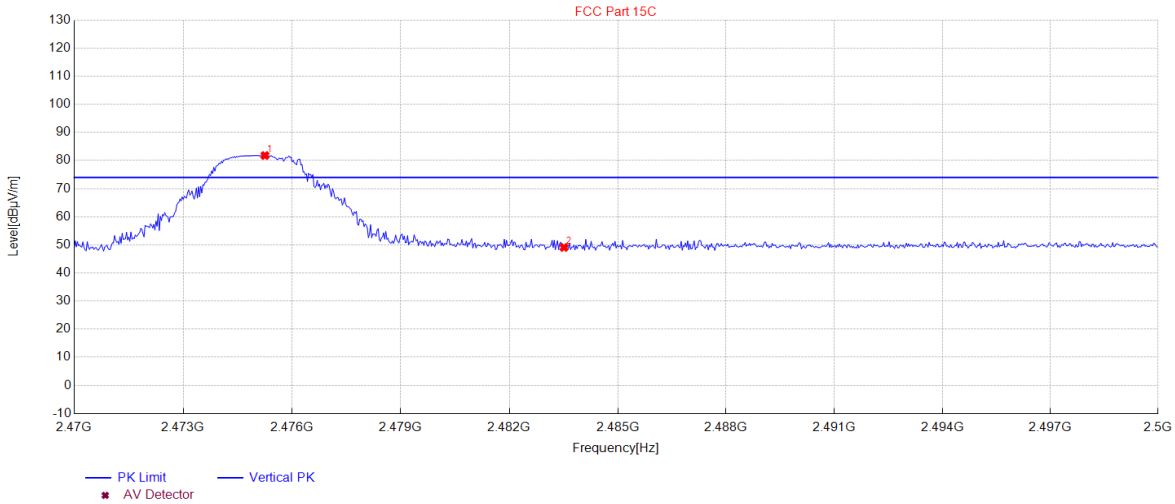
Band Edge Emission Test Results for Restricted Bands

EUT Name	Remote	**Model Name**	DR-UHM11B
Temperature	22.2℃	**Relative Humidity**	57.9 %
Pressure	960hPa	**Test Voltage**	Normal Voltage
Test Mode	Mode 3	**Antenna Polarity**	Vertical

Test Graph for Peak Measurement



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2475.255	81.79	34.65	114	-7.79	150	171	Vertical
2	2483.513	49.08	34.66	74.00	24.92	150	176	Vertical

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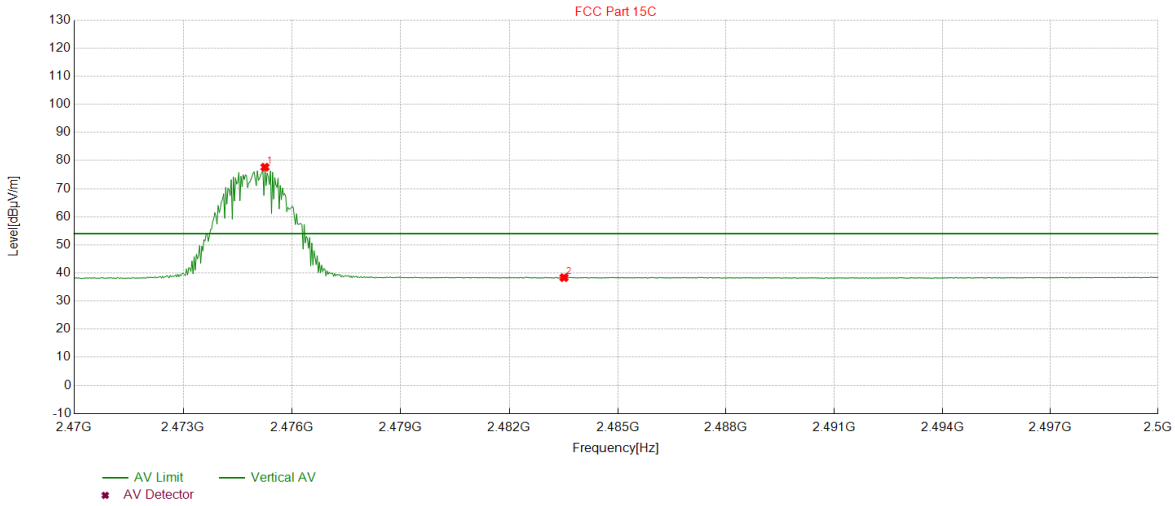
Test Graph for Average Measurement



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2475.255	77.64	34.65	54.00	-23.64	150	166	Vertical
2	2483.513	38.35	34.66	54.00	15.65	150	278	Vertical

RESULT: Pass

Note:

1) Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
2) The factor had been edited in the “Input Correction” of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB(µV) to represent the Amplitude. Use the F dB(µV/m) to represent the Field Strength. So A=F.

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9. AC Power Line Conducted Emission

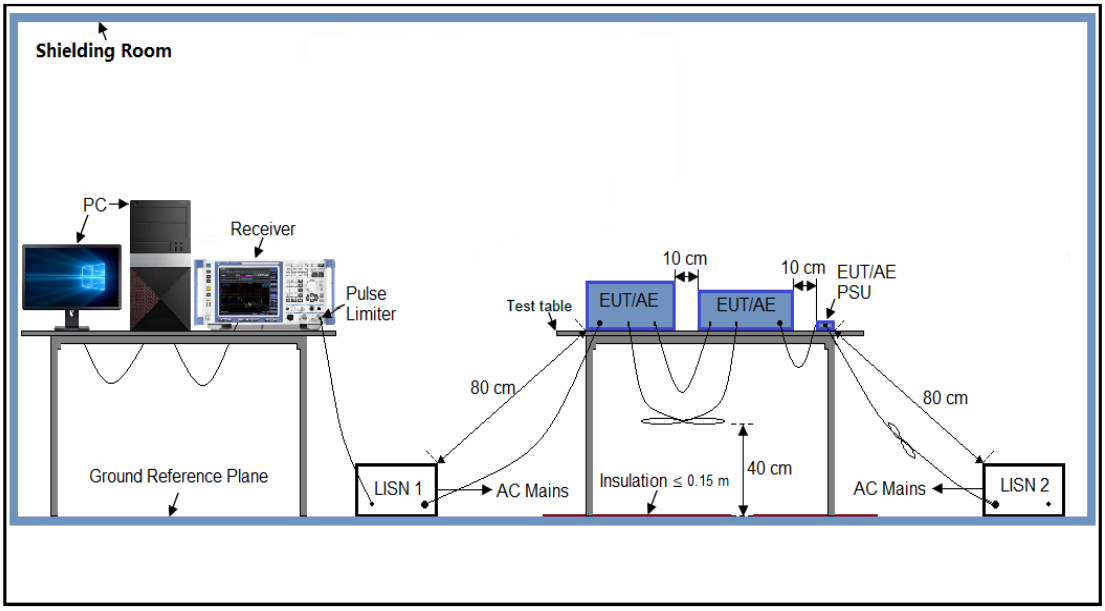
9.1 Measurement Limit

Frequency	Maximum RF Line Voltage	
	Q.P. (dBμV)	Average (dBμV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

9.2 Measurement Setup (Block Diagram of Configuration)



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9.3 Preliminary Procedure of Line Conducted Emission Test

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipment received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC 4.5V power from battery.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

9.4 Final Procedure of Line Conducted Emission Test

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

9.5 Measurement Resul

N/A

Note: This device is not AC powered and does not require this test.

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Appendix I: Photographs of Test Setup

Refer to the Report No.: AGC15705240936AP01

Appendix II: Photographs of Test EUT

Refer to the Report No.: AGC15705240936AP02

-----End of Report-----

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Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

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