
FCC Test Report

Report No.: AGC16740241105FR01

FCC ID : WQ8-SK2431

APPLICATION PURPOSE : Original Equipment

PRODUCT DESIGNATION : UNIVERSAL SMART KEY

BRAND NAME : AUTEL

MODEL NAME : IKEYLR005AL

APPLICANT : Autel Intelligent Technology Corp., Ltd.

DATE OF ISSUE : Jan. 09, 2025

STANDARD(S) : FCC Part 15 Subpart C §15.231

REPORT VERSION : V1.0

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jan. 09, 2025	Valid	Initial Release

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1. General Information

Applicant	Autel Intelligent Technology Corp., Ltd.
Address	Floor 2, Caihong Keji Building, 36 Hi-tech North Six Road, Songpingshan Community, Xili, Nanshan, Shenzhen 518055, China
Manufacturer	Autel Intelligent Technology Corp., Ltd.
Address	Floor 2, Caihong Keji Building, 36 Hi-tech North Six Road, Songpingshan Community, Xili, Nanshan, Shenzhen 518055, China
Factory	Autel Intelligent Technology Corp., Ltd. Guangming Branch
Address	7F&6F, East Wing, Building 2, and 6F of Electronical Building, Yanxiang Industrial Zone, Gaoxin Rd, Dongzhou Community of Guangming New District, Shenzhen
Product Designation	UNIVERSAL SMART KEY
Brand Name	AUTEL
Test Model	IKEYLR005AL
Series Model(s)	N/A
Difference Description	N/A
Date of receipt of test item	Nov. 21, 2024
Date of Test	Nov. 21, 2024~Jan. 09, 2025
Deviation from Standard	No any deviation from the test method
Condition of Test Sample	Normal
Test Result	Pass
Test Report Form No	AGCER-FCC-SRD1-V1

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

Prepared By



Cici Li
(Project Engineer)

Jan. 09, 2025

Reviewed By



Calvin Liu
(Reviewer)

Jan. 09, 2025

Approved By



Angela Li
(Authorized Officer)

Jan. 09, 2025

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2. Product Information

2.1 Product Technical Description

Operation Frequency	315MHz, 433.92MHz	
Hardware Version	SK2431_V1	
Software Version	V01.01.00	
Modulation Type	ASK, FSK	
Number of channels	2	
Field Strength of Fundamental	315.0MHz: 63.31dB μ V/m(PK)@3m 57.80dB μ V/m(AV)@3m	433.92MHz: 79.75dB μ V/m(PK)@3m 73.73dB μ V/m(AV)@3m
Antenna Designation	PCB Antenna	
Antenna Gain	315MHz: -21.43dBi, 433MHz:-26.30dBi	
Power Supply	DC 3V (alkaline dry battery AAA*2)	

2.2 Test Frequency List

Channel Number	Test Frequency
01	433.92 MHz
02	315.00 MHz

Note: According to manufacturer's requirements, periodic operation in the band 40.66-40.70 MHz and above 70MHz

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2.3 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: **WQ8-SK2431**, 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 Special Accessories

Not available for this EUT intended for grant.

2.6 Equipment Modifications

Not available for this EUT intended for grant.

2.7 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 315MHz:-21.43dBi and 433MHz:-26.30dBi.

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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 (°C)	15 - 35
Relative humidity range	20 % - 75 %
Pressure range (kPa)	86 - 106
Power supply	DC 3V

3.4 Measurement Uncertainty

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

C	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 2.9 \text{ dB}$
Uncertainty of Radiated Emission for 9kHz-30MHz	$U_c = \pm 3.9 \text{ dB}$
Uncertainty of Radiated Emission for 30MHz-1GHz	$U_c = \pm 3.9 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.9 \text{ dB}$
Uncertainty of Conducted Spurious Emissions for 9kHz-40GHz	$U_c = \pm 2.7 \text{ dB}$
Uncertainty of Occupied Channel Bandwidth	$U_c = \pm 2.0 \%$
Uncertainty of Dwell Time	$U_c = \pm 0.2 \%$

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3.5 List of Equipment Used

● 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-EM-A152	6dB Attenuator	Eeatsheep	LM-XX-6-5W	N/A	2023-06-09	2025-06-08
☒	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
☒	N/A	Induction Antenna	N/A	1#	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

● 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	V.RA-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

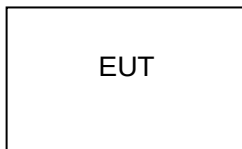
The EUT configuration for testing is installed on RF field strength measurement to meet the Commission's requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

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
☐ Test Accessories Come From The Manufacturer

No.	Equipment	Model No.	Manufacturer	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	§15.231(a)	Provision for Momentary Operation	Pass
3	§15.231	Field Strength of Fundamental	Pass
4	§15.209	Radiated Emission	Pass
5	§15.205(a)	Restricted Bands of Operation	Pass
6	§15.231(c)	-20dB Bandwidth	Pass
7	§15.207	AC Power Line Conducted Emission	N/A

Note: 1.N/A means not applicable

Note: 2. The device under test is battery-powered and does not require evaluation of AC Power Line Conducted Emission.

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5. Description of Test Modes

Summary table of Test Cases	
Test Item	Equipment Type / Modulation
	Short Range Wireless Device/ ASK/FSK
Radiated & Conducted Test Cases	Mode 1: Normal Transmission Operation at 315.00MHz_ASK Mode 2: Normal Transmission Operation at 315.00MHz_FSK Mode 3: Normal Transmission Operation at 433.92MHz_ASK Mode 4: Normal Transmission Operation at 433.92MHz_FSK
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. Power is the default.

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6. Provision for Momentary Operation

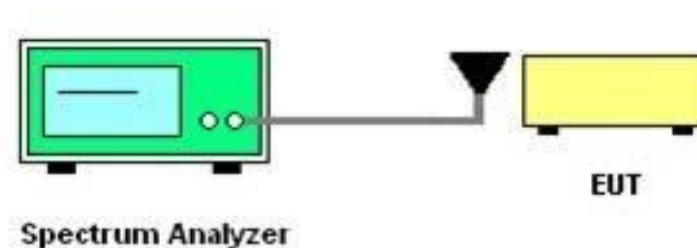
6.1 Provisions Applicable

- ☒ (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
- ☐ (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
- ☐ (3) Periodic transmissions at regular predetermined intervals are not permitted.
However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.
- ☐ (4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.
- ☐ (5) Transmission of set-up information for security systems may exceed the transmission duration limits in (1) and (2) above, provided such transmission are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

6.2 Measurement Procedure

1. Set the parameters of SPA as below:
2. Centre frequency = Operation Frequency
3. RBW=8MHz, VBW=50MHz Span: 0Hz Sweep time: 5s
4. Set the EUT to transmit by manually operated. Use the "View" function of SPA to find the transmission time of being released.
5. Record the data and Reported.

6.3 Measurement Setup (Block Diagram of Configuration)



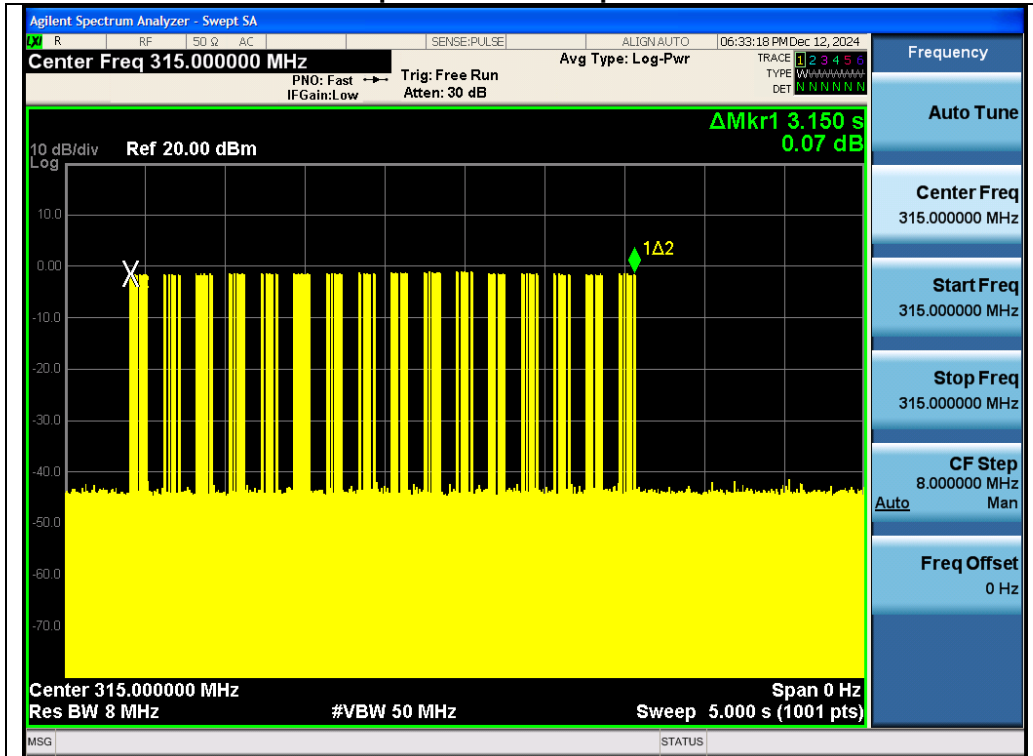
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6.4 Measurement Result

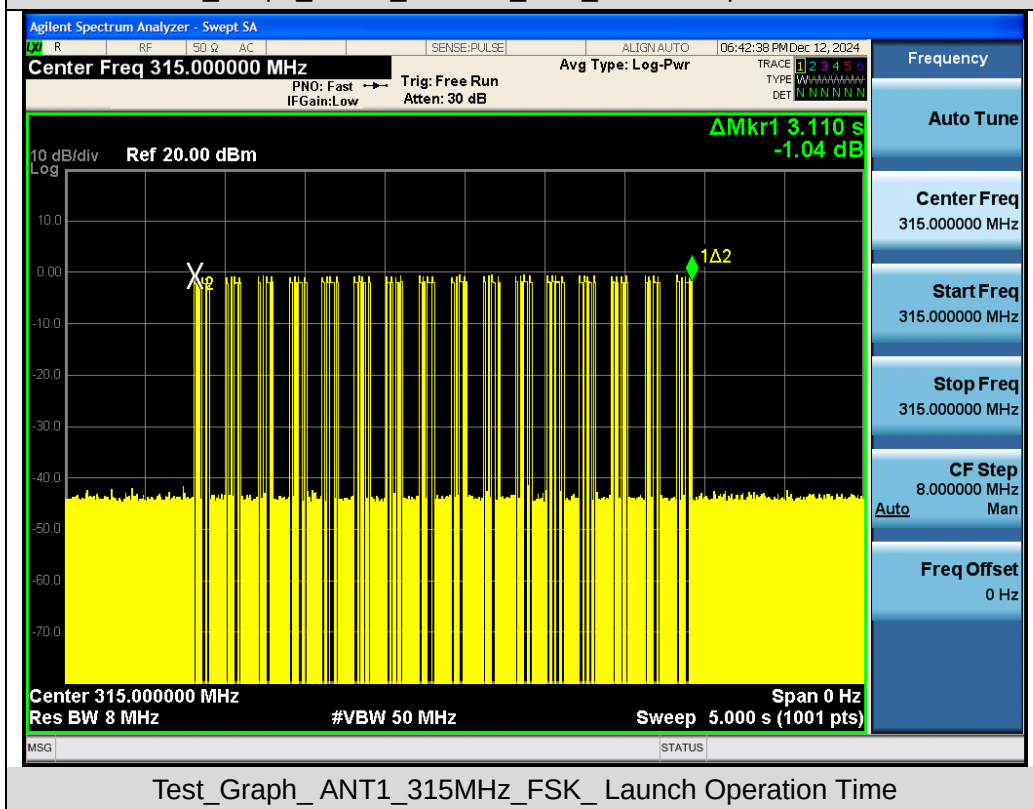
Test Mode	Test Frequency (MHz)	Measure launch time (s)	Limits (s)	Result
SRD_TX_ASK	315.00	3.150	≤ 5	Pass
SRD_TX_FSK	315.00	3.110	≤ 5	Pass
SRD_TX_ASK	433.92	3.085	≤ 5	Pass
SRD_TX_FSK	433.92	3.080	≤ 5	Pass

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Test Graphs of Launch Operation Time

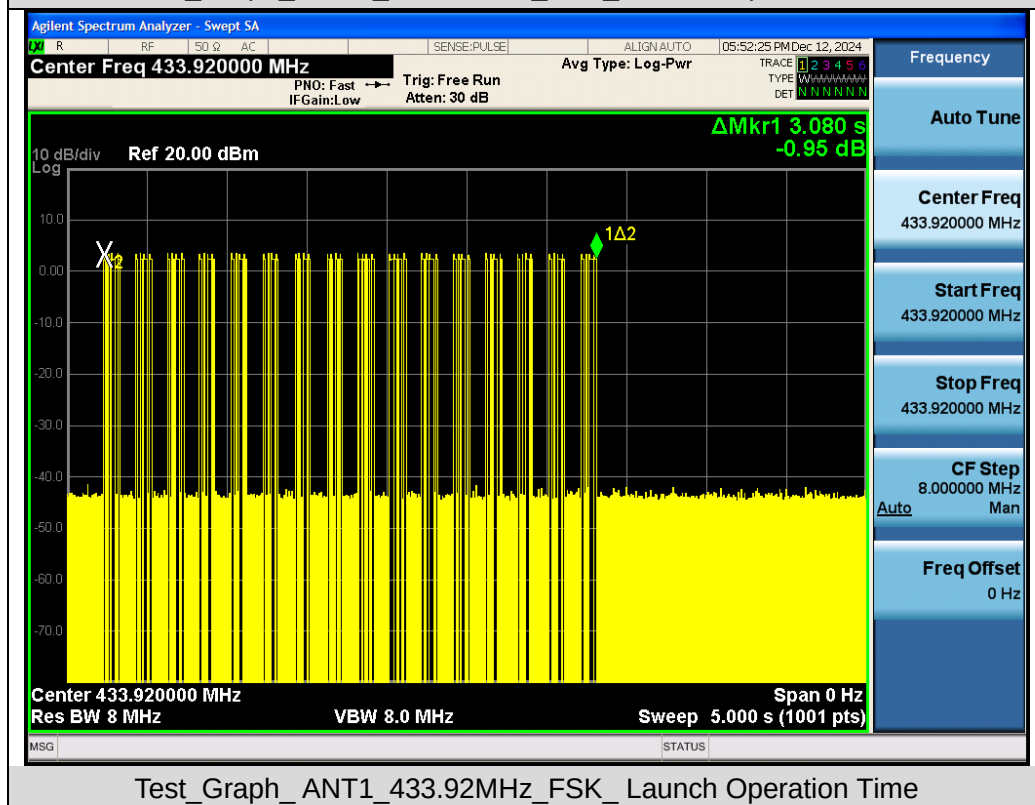
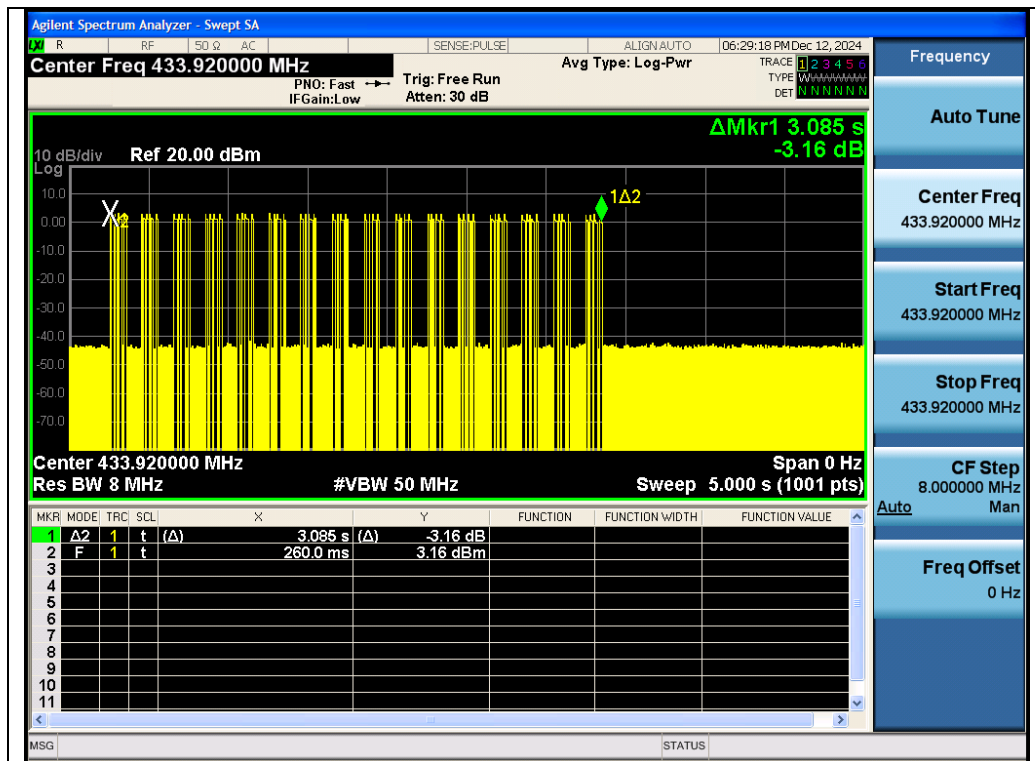


Test_Graph_ ANT1_315MHz_ASK_ Launch Operation Time



Test_Graph_ ANT1_315MHz_FSK_ Launch Operation Time

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7. Duty Cycle of Correction Factor

7.1 Provisions Applicable

According to FCC Part 15.231 (b)(2) and 15.35 (c), For pulse operation transmitter, the averaging pulsed emissions are calculated by peak value of measured emission plus duty cycle factor.

7.2 Measurement Procedure

After the antenna of the EUT is connected, the output signal of the EUT is received by the connected test antenna

To the spectrum analyzer. Set the center frequency to the actual working frequency of the EUT, and then set the spectrum analyzer to Zero Span for

Release time reading. During the test, the switch is released and the EUT is automatically closed

1. Set the parameters of SPA as below:

Centre frequency = Operation Frequency

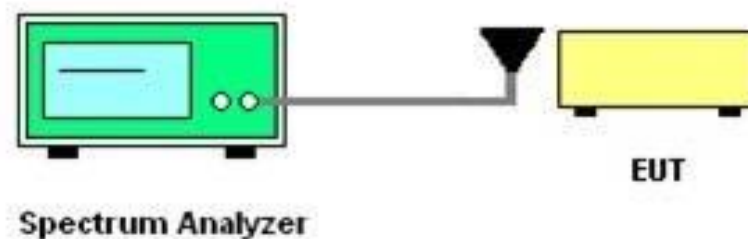
RBW=8MHz, VBW=50MHz

Span: 0Hz

Sweep time: more than two pulse trains or more than each type of pulse occupancy time

2. Set the EUT to transmit by manually operated. Use the "Delta mark" function of SPA to find the period time between two pulse trains and each type of pulse occupancy time.
3. Record the plots and Reported.

7.3 Measurement Setup (Block Diagram of Configuration)



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7.4 Measurement Result

■ Mode 1:315MHz, ASK

Type of Pules	Width of Pules (ms)	Quantity of Pules (pcs)	Transmission Time (ms)	Total Time (Ton) (ms)
Pules 1	14	1	14	53
Pules 2	21	1	21	
Pules 3	7	1	7	
Pules 4	11	1	11	

Test Period (Tp) (ms)	Total Time (Ton) (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
100	53	53.00	-5.51

■ Mode 2:315MHz, FSK

Type of Pules	Width of Pules (ms)	Quantity of Pules (pcs)	Transmission Time (ms)	Total Time (Ton) (ms)
Pules 1	13	1	13	50
Pules 2	20	1	20	
Pules 3	7	1	7	
Pules 4	10	1	10	

Test Period (Tp) (ms)	Total Time (Ton) (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
100	50	50.00	-6.02

■ Mode 3: 433.92MHz ,ASK

Type of Pules	Width of Pules (ms)	Quantity of Pules (pcs)	Transmission Time (ms)	Total Time (Ton) (ms)
Pules 1	14	1	14	50
Pules 2	19	1	19	
Pules 3	7	1	7	
Pules 4	10	1	10	

Test Period (Tp) (ms)	Total Time (Ton) (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
100	50	50.00	-6.02

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■ Mode 4: 433.92MHz ,FSK

Type of Pules	Width of Pules (ms)	Quantity of Pules (pcs)	Transmission Time (ms)	Total Time (Ton) (ms)
Pules 1	14	1	14	51
Pules 2	20	1	20	
Pules 3	7	1	7	
Pules 4	10	1	10	

Test Period (Tp) (ms)	Total Time (Ton) (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
100	51	51.00	-5.85

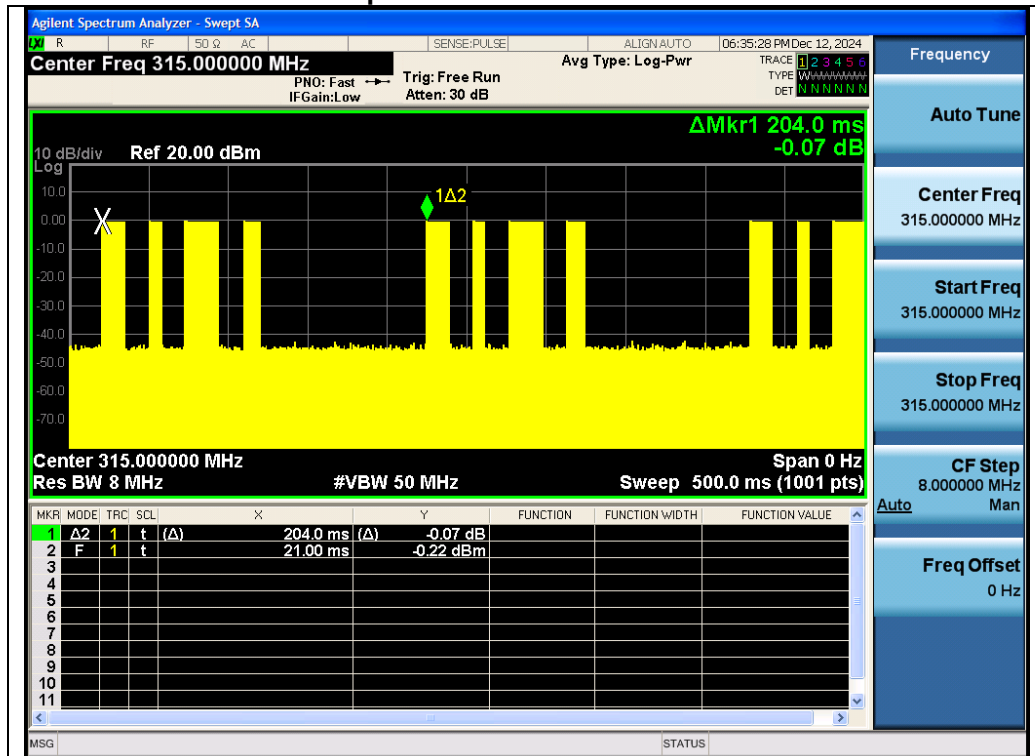
Note 1: Duty Cycle Factor=20 log (Duty Cycle)

Note 2: The maximum reference value of the test cycle is 100ms.

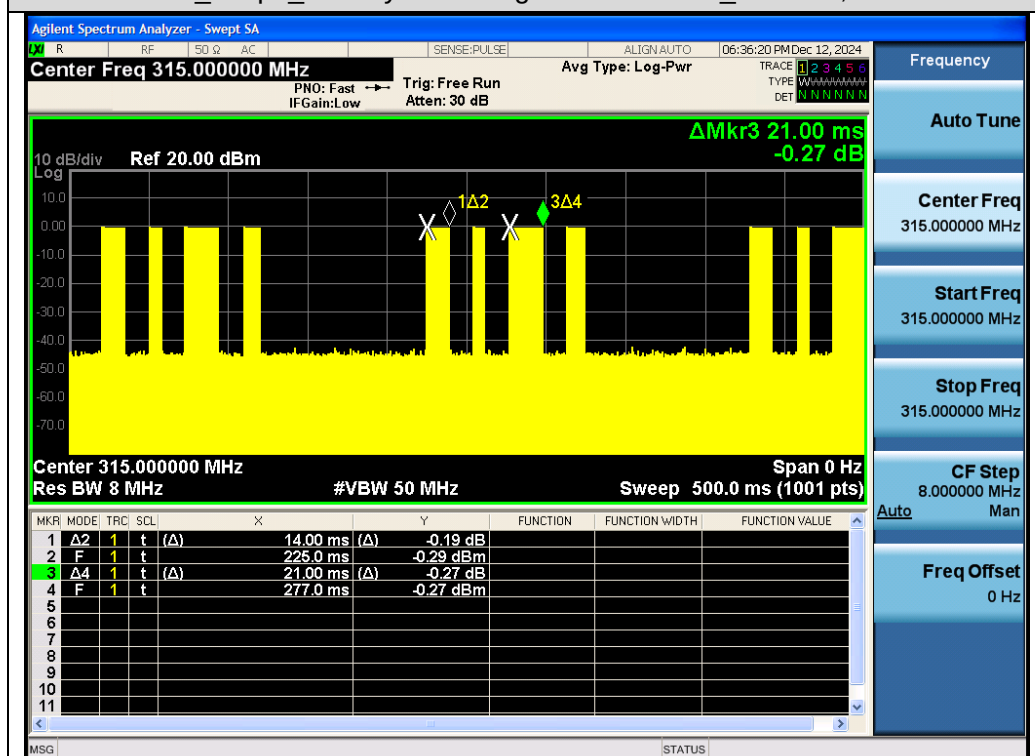
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Test Graphs of Pulse Emission Time Test

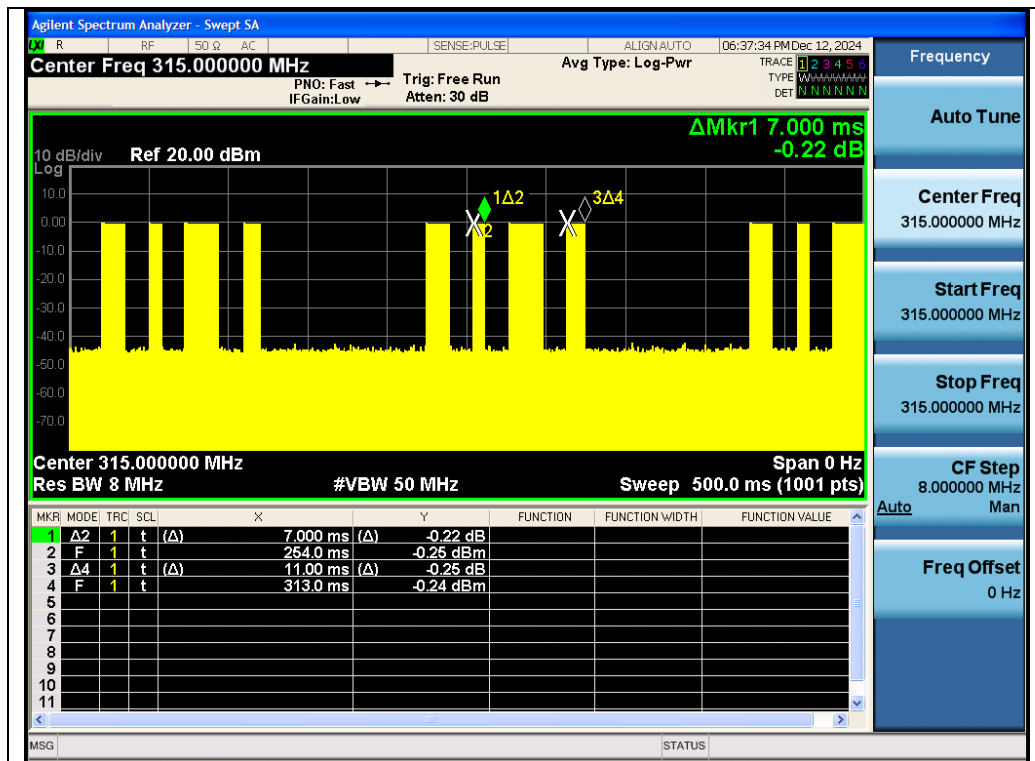


Test_Graph_Full Cycle Testing Demonstration_315MHz, ASK

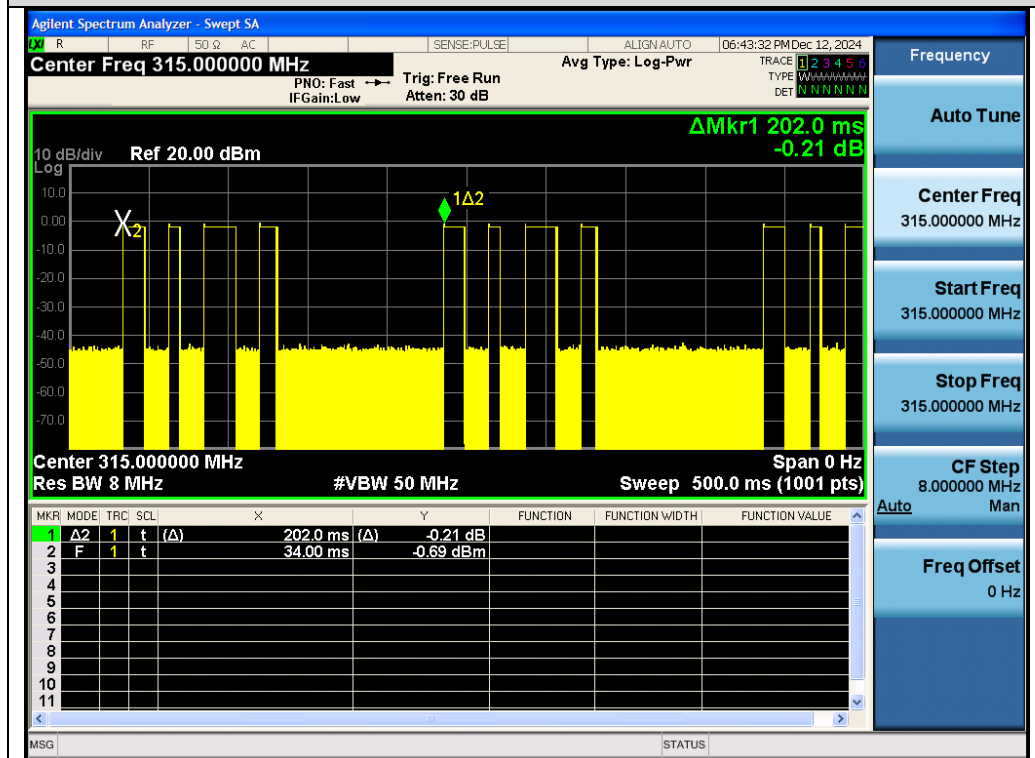


Test_Graph_Long Pulse_Pulse Type 1_315MHz, ASK

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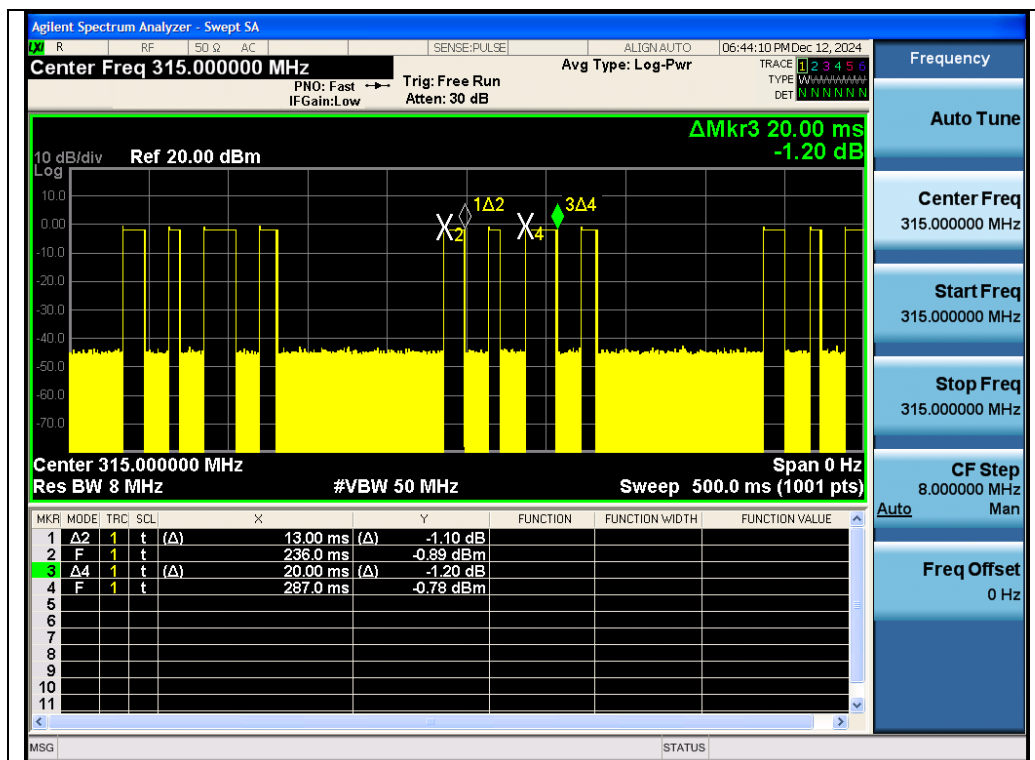


Test_Graph_ Short Pulse_ Pulse Type 2_315MHz, ASK

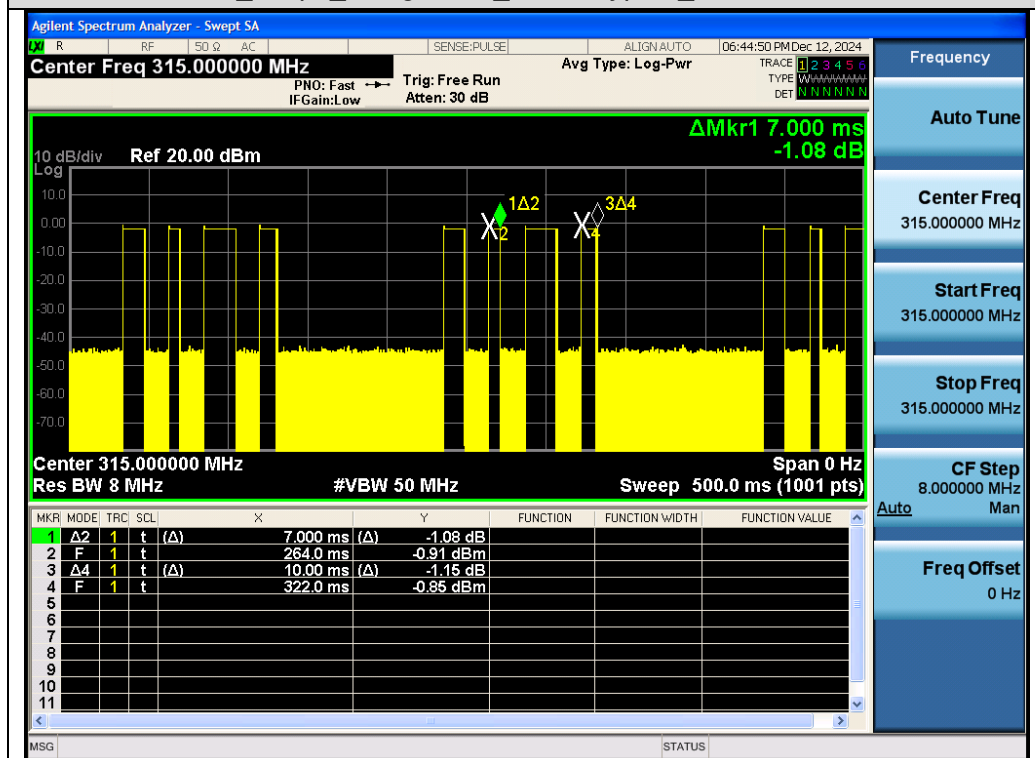


Test_Graph_ Full Cycle Testing Demonstration_315MHz, FSK

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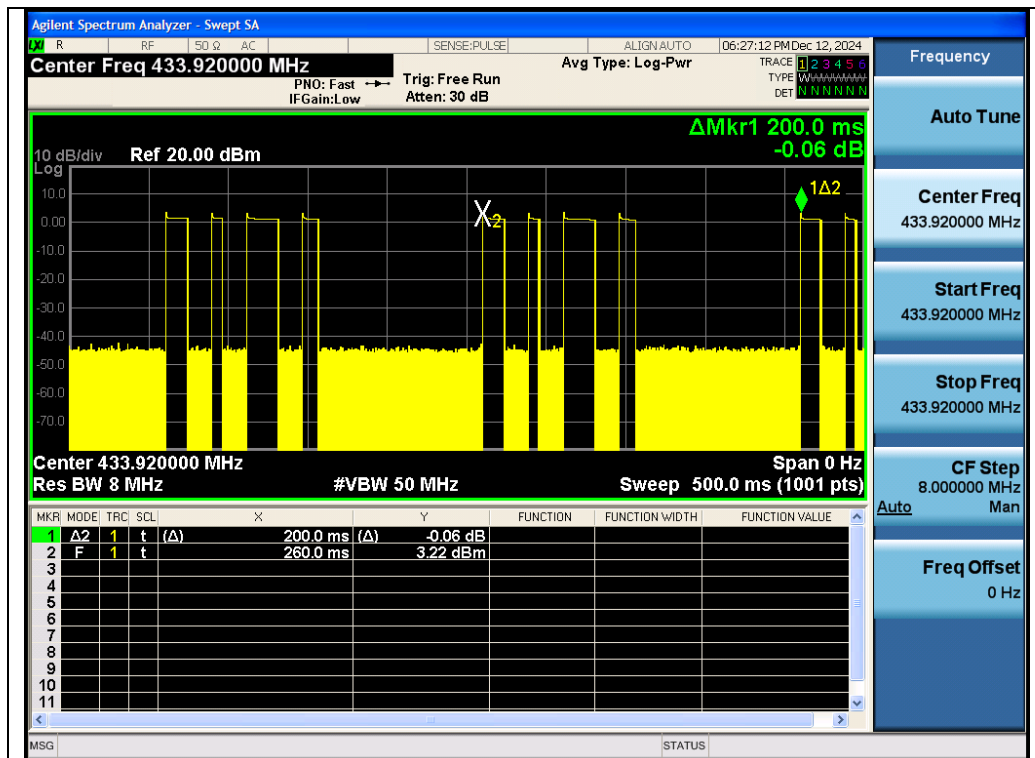
Test_Graph_Long Pulse_Pulse Type 1_315MHz, FSK



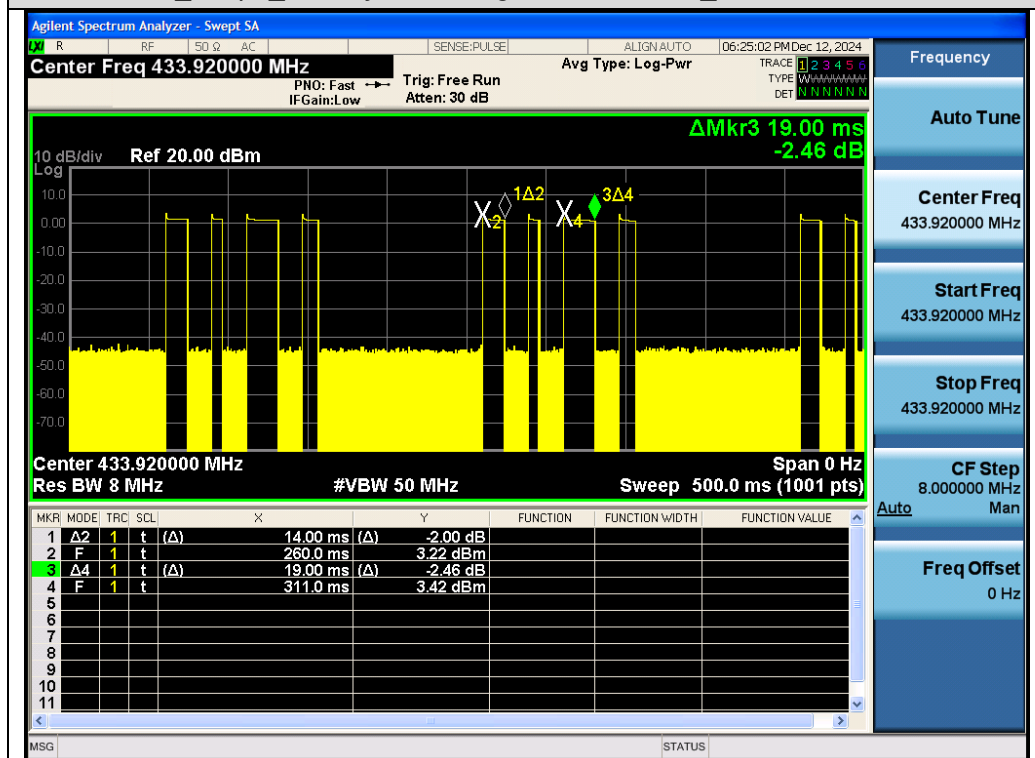
Test_Graph_Short Pulse_Pulse Type 2_315MHz, FSK

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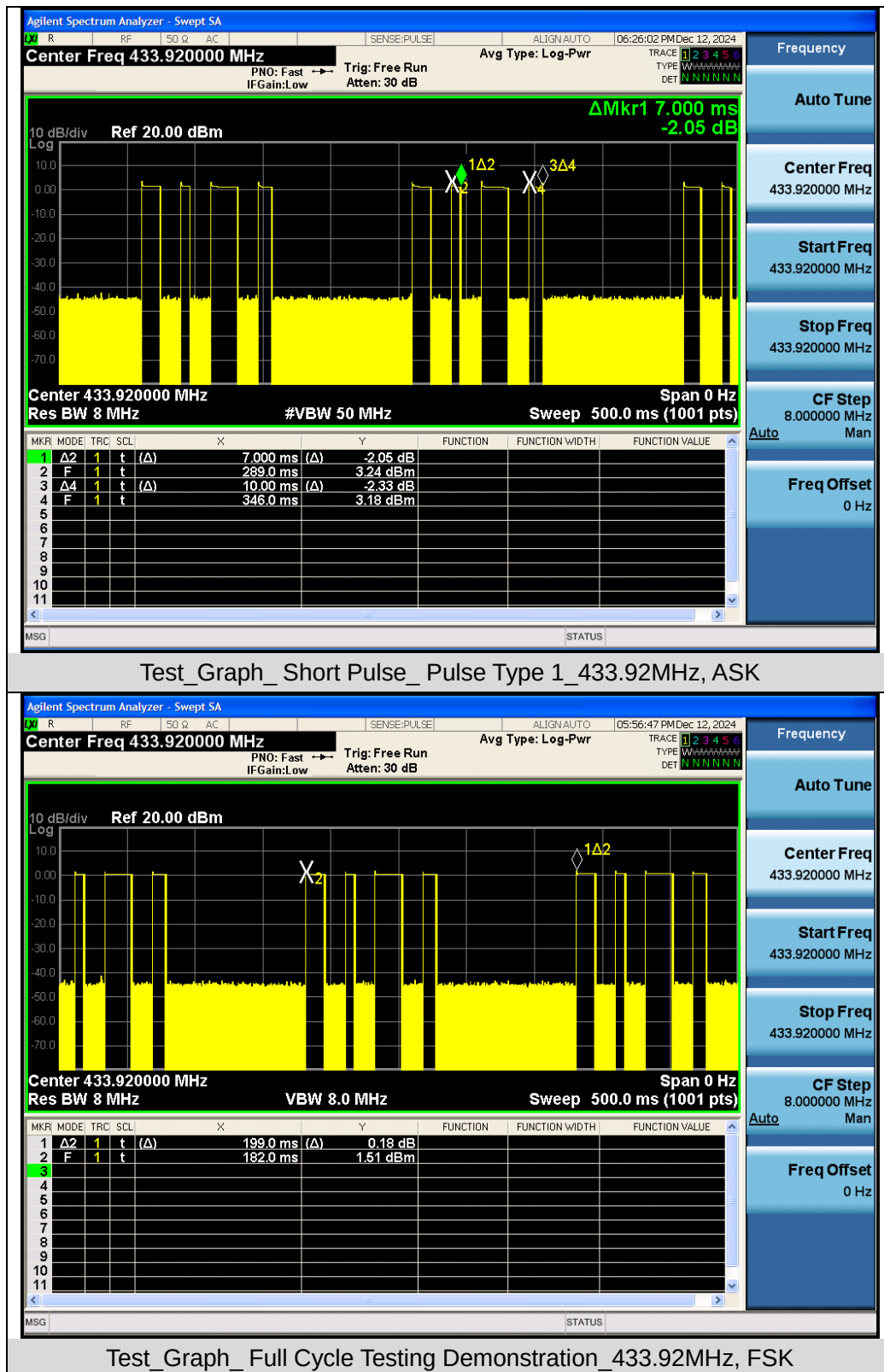


Test_Graph_ Full Cycle Testing Demonstration_433.92MHz, ASK

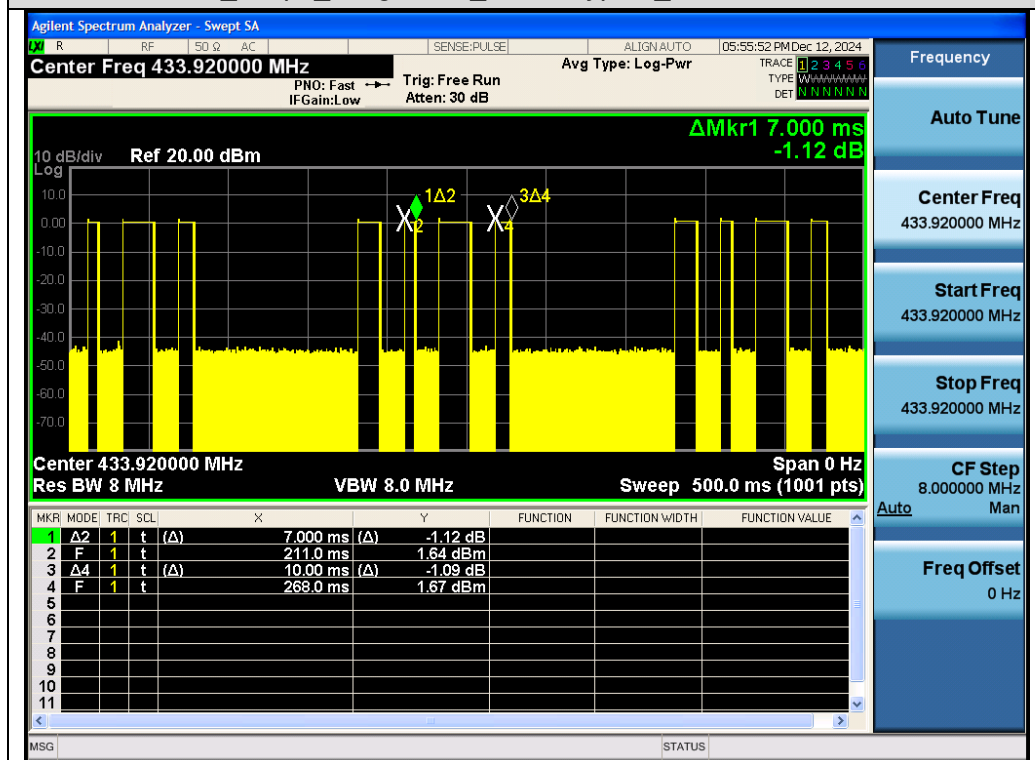
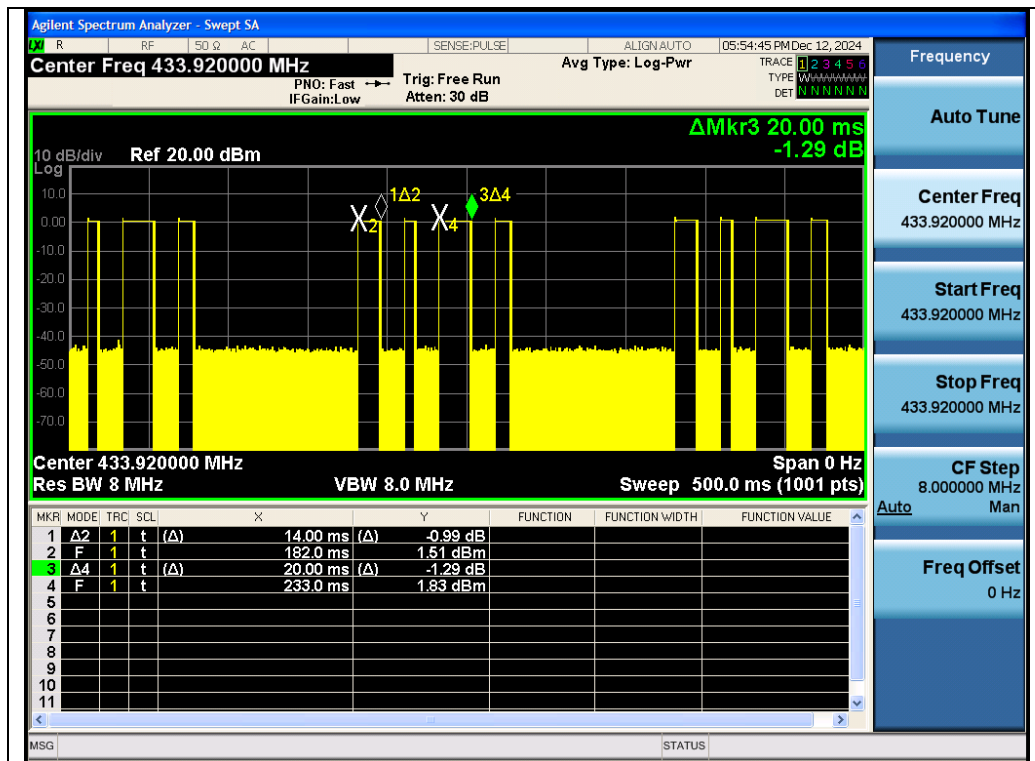


Test_Graph_Long Pulse_ Pulse Type 1_433.92MHz, ASK

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8. Field Strength of Fundamental and Radiated Emission

8.1 Provisions Applicable

- 15.209 Limit in the below table has to be followed:

Frequency (MHz)	Distance Meters	Field Strengths Limit	
		$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
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	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Remark:

- 1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V/m}$
- 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.

- 15.231(b) Limit in the below table has to be followed:

Fundamental Frequency	Field Strength of Fundamental (microvolts/meter)	Field Strength of Harmonics (microvolts/meter)
40.66-40.70MHz	2250	225
70-130MHz	1250	125
130-174MHz	1250 to 3750	125 to 375
174-260MHz	3750	375
260-470MHz	3750 to 12500	375 to 1250
Above 470MHz	12500	1250

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15.231(e) Limit in the below table has to be followed:

Fundamental Frequency	Field Strength of Fundamental (microvolts/meter)	Field Strength of Harmonics (microvolts/meter)
40.66-40.70MHz	1000	100
70-130MHz	500	50
130-174MHz	500 to 1500	50 to 150
174-260MHz	1500	150
260-470MHz	1500 to 5000	150 to 500
Above 470MHz	5000	500

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.

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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.

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

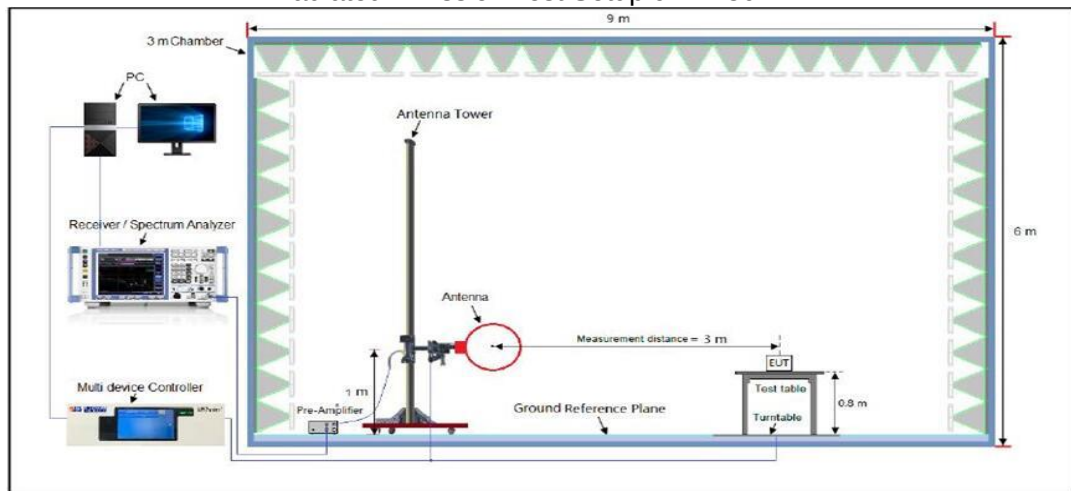
Spectrum Parameter	Test Setting
Start ~Stop Frequency	9KHz~150KHz/RB 200Hz for QP
Start ~Stop Frequency	150KHz~30MHz/RB 9KHz for QP
Start ~Stop Frequency	30MHz~1000MHz/RB 120KHz for QP
Start ~Stop Frequency	1GHz~26.5GHz 1MHz/3MHz for Peak, 1MHz/3MHz for Average

Receiver Parameter	Test 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

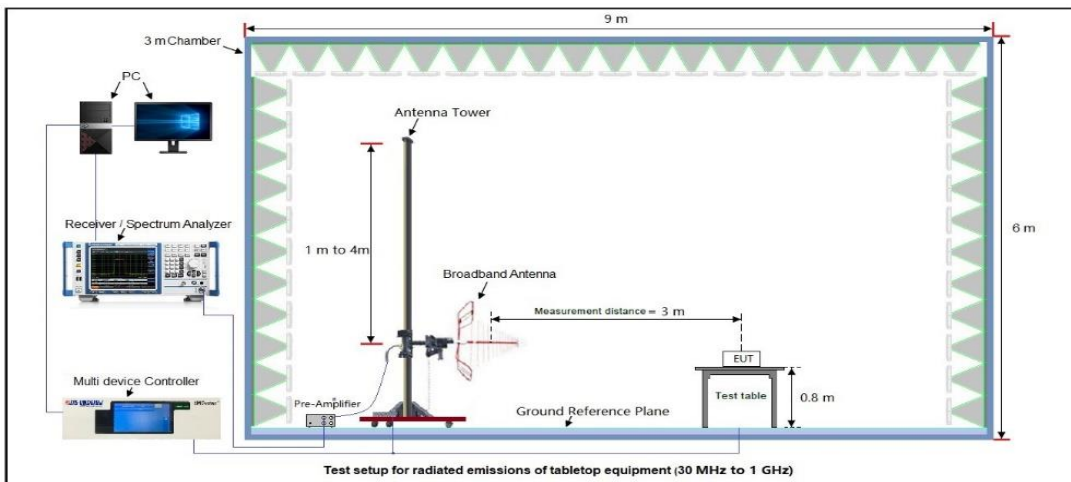
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8.3 Measurement Setup (Block Diagram of Configuration)

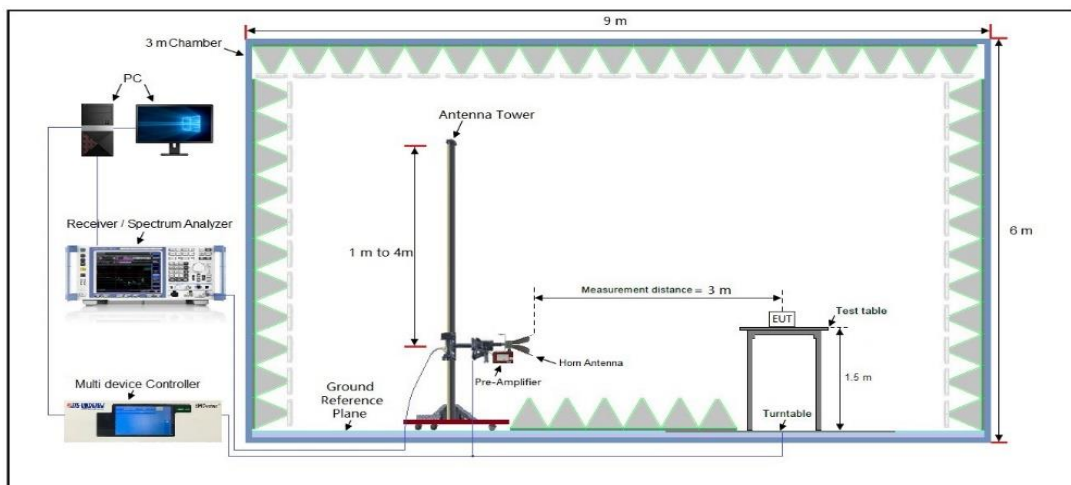
Radiated Emission Test Setup 9kHz-30MHz



Radiated Emission Test Setup 30MHz-1000MHz



Radiated Emission Test Setup Above 1000MHz



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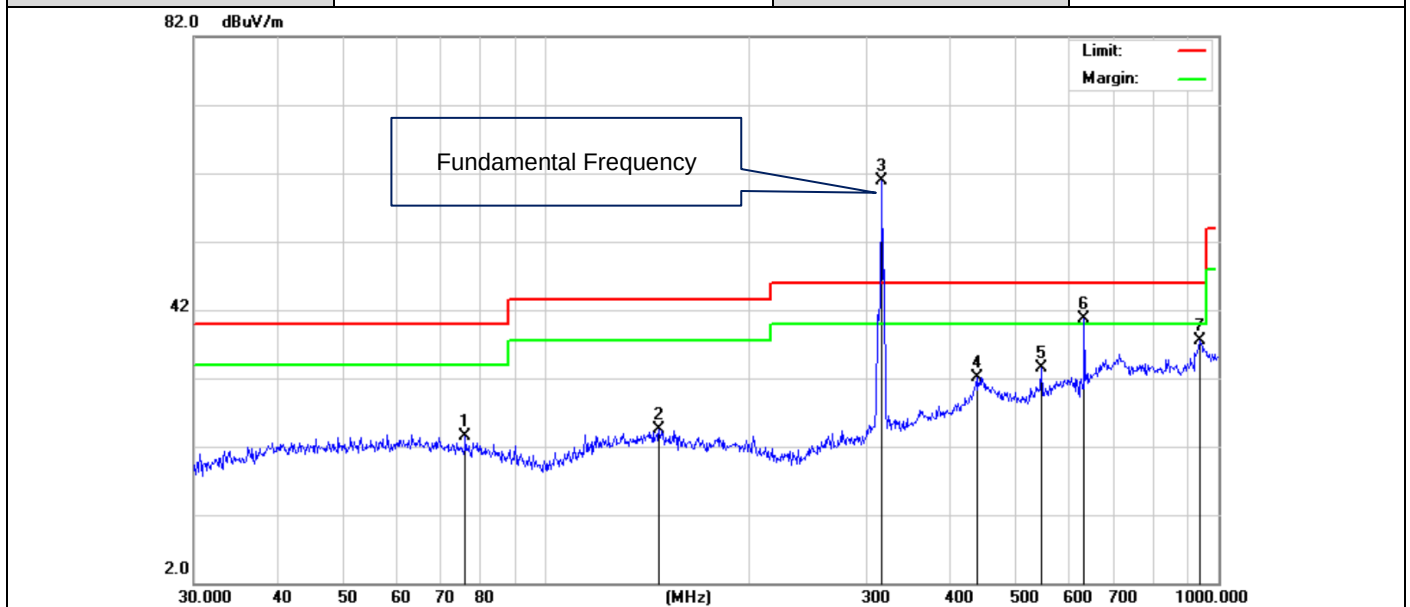
8.4 Measurement Result

Radiated Emission from 9kHz~30MHz

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

Radiated Emission from 30MHz~1000MHz

EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



Suspected Data List_ Peak Detection

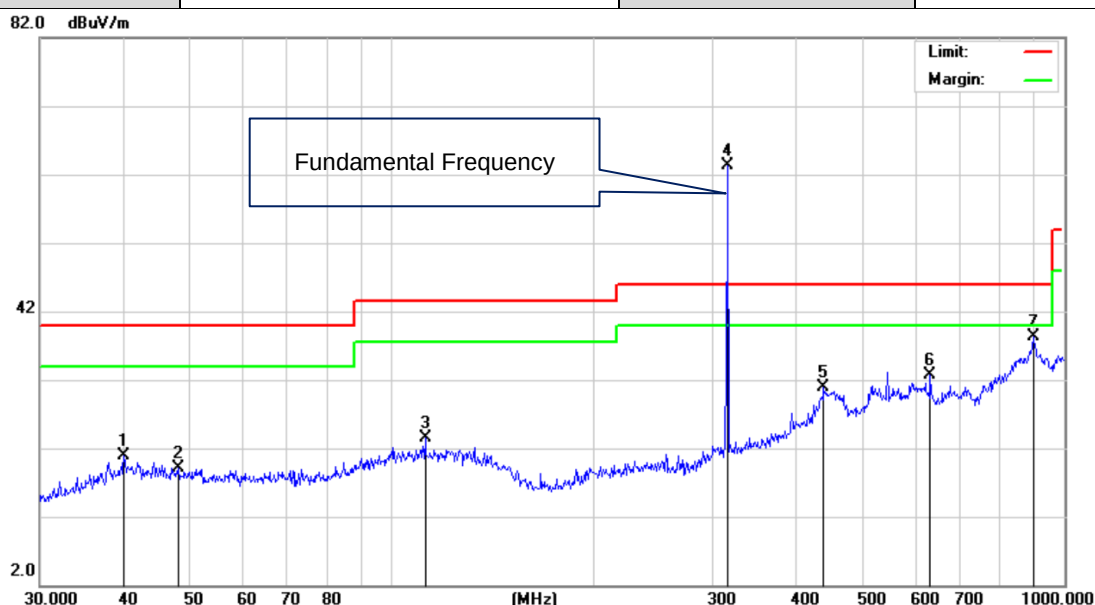
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	75.9772	23.46	16.94	40.00	16.54	150	112	Vertical
2	147.4036	24.48	18.20	43.50	19.02	150	156	Vertical
3	315.000	60.92	19.98	95.62	34.70	150	131	Vertical
4	437.1197	32.13	25.64	46.00	13.87	150	100	Vertical
5	545.1825	33.55	24.67	46.00	12.45	150	144	Vertical
6	630.000	40.73	25.37	75.62	34.89	150	129	Vertical
7	938.8325	37.52	30.84	46.00	8.48	150	80	Vertical

Final Data Result_ Average Detection

NO.	Freq. [MHz]	PK Level [dBμV/m]	Duty cycle factor(dB)	AV Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	315.000	60.92	-5.51	55.41	75.62	20.21	Vertical
2	630.000	40.73	-5.51	35.22	55.62	20.40	Vertical

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EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal



Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.9941	21.00	13.90	40.00	19.0	150	112	Horizontal
2	48.1625	19.03	13.33	40.00	20.97	150	156	Horizontal
3	112.1304	23.57	16.32	43.50	19.93	150	131	Horizontal
4	315.000	63.31	16.50	95.62	32.31	150	100	Horizontal
5	438.6553	30.83	24.81	46.00	15.17	150	144	Horizontal
6	630.000	32.70	24.09	75.62	42.92	150	129	Horizontal
7	900.1473	38.34	31.78	46.00	7.66	150	80	Horizontal

Final Data Result_ Average Detection

NO.	Freq. [MHz]	PK Level [dBμV/m]	Duty cycle factor(dB)	AV Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	315.000	63.31	-5.51	57.80	75.62	17.82	Horizontal
2	630.000	38.34	-5.51	32.83	55.62	22.79	Horizontal

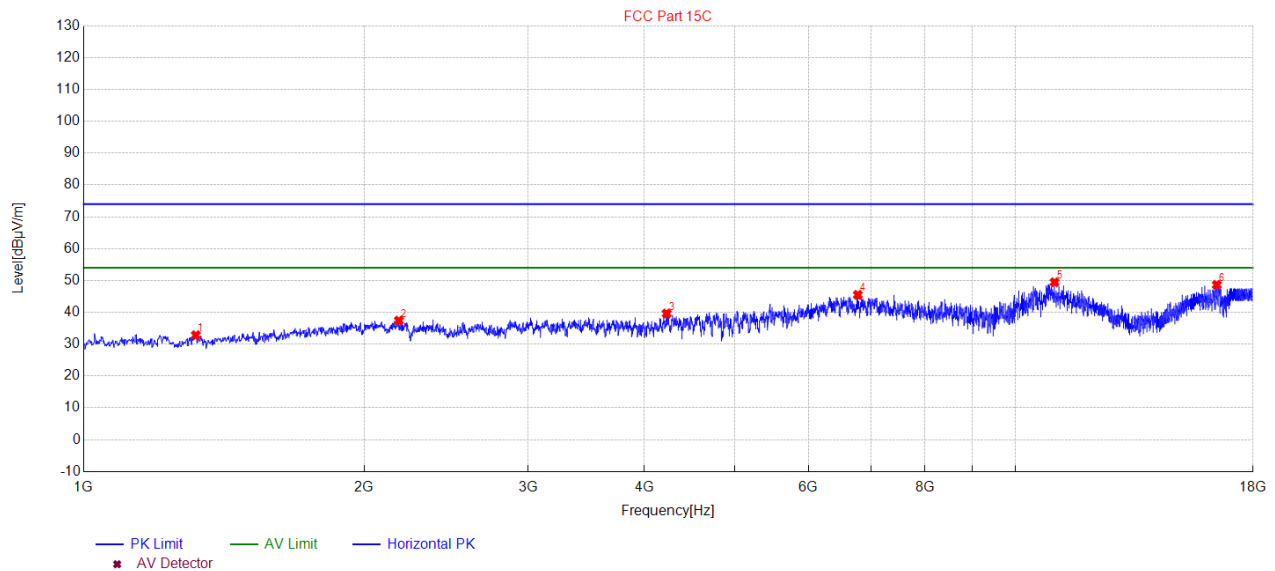
RESULT: PASS

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

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Radiated Emission from Above 1GHz

EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Horizontal



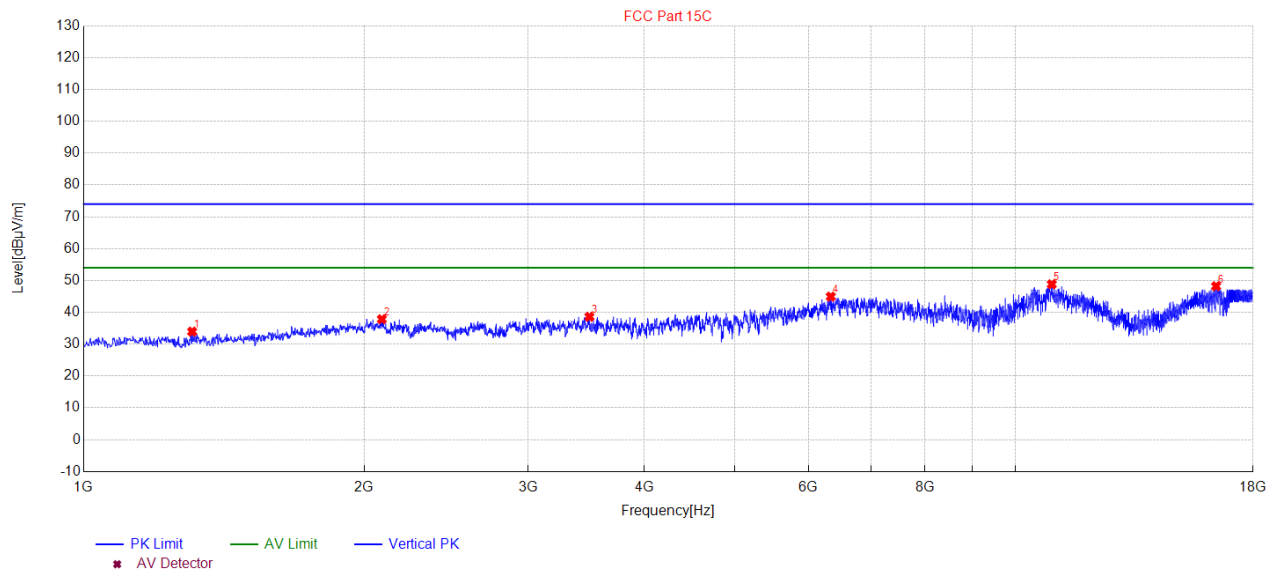
Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1319.631963	32.81	-17.83	74.00	41.19	150	359	Horizontal
2	2179.917992	37.39	-12.98	74.00	36.61	150	38	Horizontal
3	4225.222522	39.61	-9.03	74.00	34.39	150	42	Horizontal
4	6777.177718	45.48	-4.00	74.00	28.52	150	42	Horizontal
5	11020.80208	49.44	2.62	74.00	24.56	150	48	Horizontal
6	16457.945795	48.62	5.56	74.00	25.38	150	114	Horizontal

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Radiated Emission from Above 1GHz

EUT	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 1	Antenna	Vertical



Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1307.730773	33.94	-17.85	74.00	40.06	150	301	Vertical
2	2089.808981	37.84	-13.19	74.00	36.16	150	39	Vertical
3	3490.749075	38.59	-10.66	74.00	35.41	150	41	Vertical
4	6338.533853	44.94	-4.79	74.00	29.06	150	50	Vertical
5	10944.294429	48.80	2.48	74.00	25.20	150	70	Vertical
6	16427.342734	48.20	5.51	74.00	25.80	150	220	Vertical

RESULT: PASS

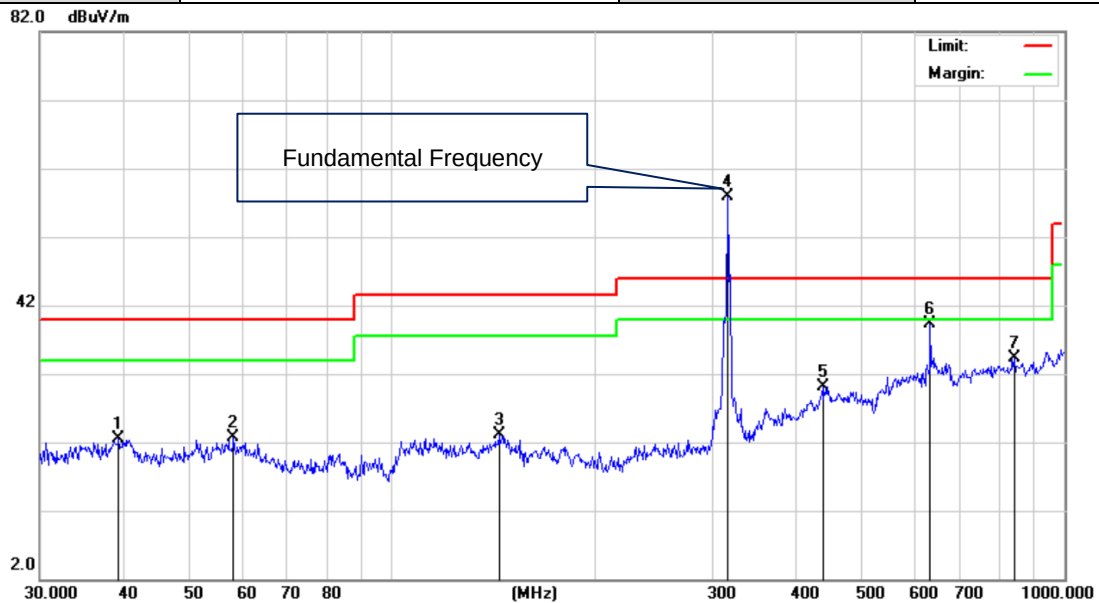
Note:

- Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Measure result.
- The "Factor" value can be calculated automatically by software of measurement system.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Radiated Emission from 30MHz~1000MHz

EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical



Suspected Data List_ Peak Detection

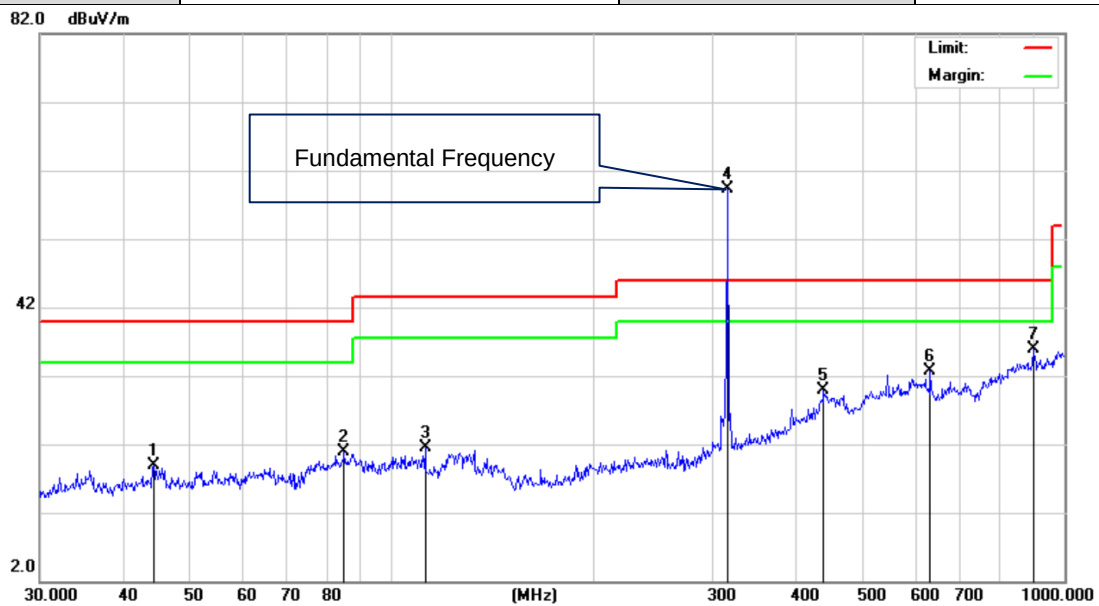
NO.	Freq. [MHz]	Level [dBuV/m]	Factor [dB]	Limit [dBuV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.2991	22.44	16.67	40.00	23.33	150	120	Vertical
2	58.2030	22.78	17.08	40.00	22.92	150	116	Vertical
3	144.3348	23.08	18.20	43.50	25.30	150	119	Vertical
4	315.0000	57.92	19.98	95.62	75.64	150	162	Vertical
5	437.1197	30.13	25.64	46.00	20.36	150	185	Vertical
6	630.000	39.23	25.37	75.62	50.25	150	174	Vertical
7	842.1295	34.27	27.56	46.00	18.44	150	90	Vertical

Final Data Result_ Average Detection

NO.	Freq. [MHz]	PK Level [dBuV/m]	Duty cycle factor(dB)	AV Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Polarity
1	315.000	57.92	-6.02	51.90	75.62	23.72	Vertical
2	630.000	39.23	-6.02	33.21	55.62	22.41	Vertical

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EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal



Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	44.2751	18.82	13.60	40.00	26.40	150	134	Horizontal
2	84.9993	20.95	13.87	40.00	26.13	150	117	Horizontal
3	112.1304	21.57	16.32	43.50	27.18	150	163	Horizontal
4	315.0000	59.31	16.50	95.62	79.12	150	119	Horizontal
5	438.6553	29.83	24.81	46.00	21.19	150	152	Horizontal
6	630.0000	32.70	24.09	75.62	51.53	150	174	Horizontal
7	900.1473	35.84	31.78	46.00	14.22	150	100	Horizontal

Final Data Result_ Average Detection

NO.	Freq. [MHz]	PK Level [dBμV/m]	Duty cycle factor(dB)	AV Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	315.000	59.31	-6.02	53.29	75.62	22.33	Horizontal
2	630.000	32.70	-6.02	26.68	55.62	28.94	Horizontal

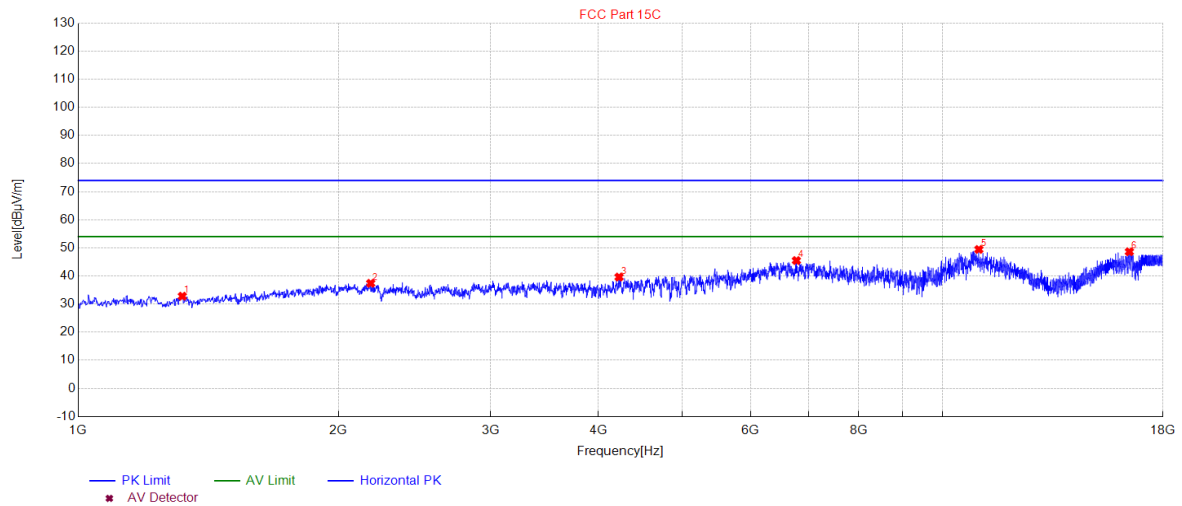
RESULT: PASS

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

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Radiated Emission from Above 1GHz

EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Horizontal



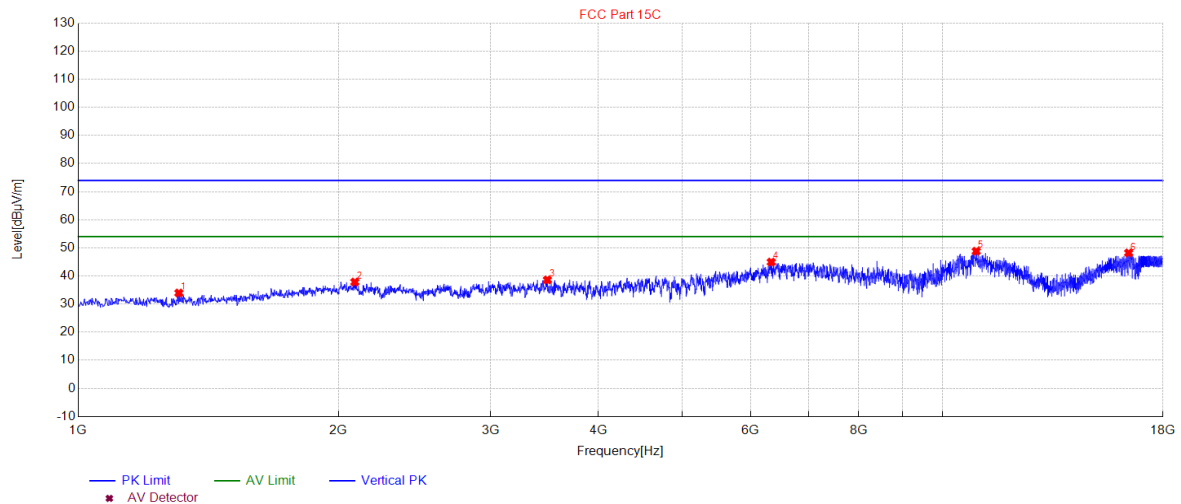
Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1319.631963	32.81	-17.83	74.00	41.19	150	30	Horizontal
2	2179.917992	37.39	-12.98	74.00	36.61	150	270	Horizontal
3	4225.222522	39.61	-9.03	74.00	34.39	150	320	Horizontal
4	6777.177718	45.48	-4.00	74.00	28.52	150	50	Horizontal
5	11020.80208	49.44	2.62	74.00	24.56	150	250	Horizontal
6	16457.945795	48.62	5.56	74.00	25.38	150	260	Horizontal

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Radiated Emission from Above 1GHz

EUT	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 2	Antenna	Vertical



Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1307.730773	33.94	-17.85	74.00	40.06	150	200	Vertical
2	2089.808981	37.84	-13.19	74.00	36.16	150	150	Vertical
3	3490.749075	38.59	-10.66	74.00	35.41	150	90	Vertical
4	6338.533853	44.94	-4.79	74.00	29.06	150	250	Vertical
5	10944.294429	48.80	2.48	74.00	25.20	150	60	Vertical
6	16427.342734	48.20	5.51	74.00	25.80	150	230	Vertical

RESULT: PASS

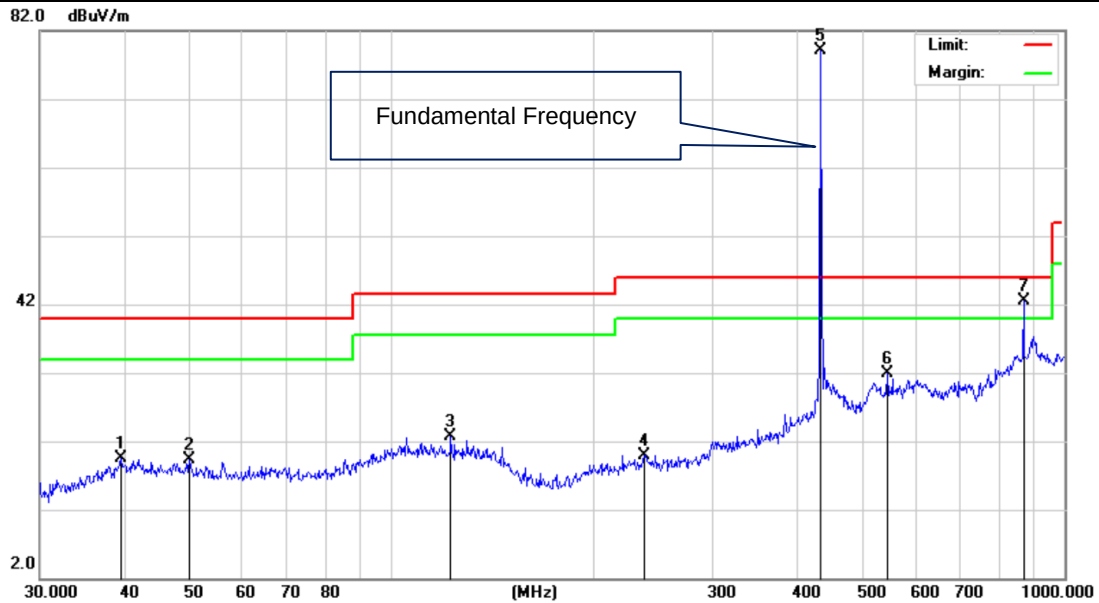
Note:

- Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Measure result.
- The "Factor" value can be calculated automatically by software of measurement system.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

Radiated Emission from 30MHz~1000MHz

EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical



Suspected Data List_ Peak Detection

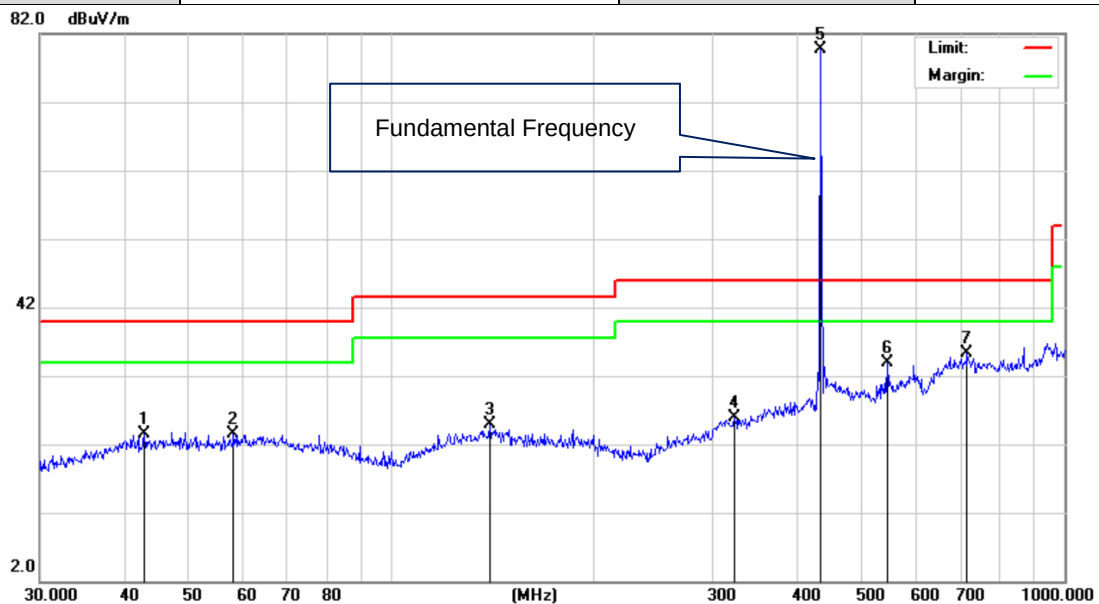
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.5756	19.41	13.72	40.00	20.59	150	140	Vertical
2	50.0566	19.33	13.20	40.00	20.67	150	202	Vertical
3	122.4039	22.68	16.26	43.50	20.82	150	160	Vertical
4	237.4759	19.87	15.27	46.00	26.13	150	200	Vertical
5	433.92	79.11	23.82	100.82	21.71	150	80	Vertical
6	545.1825	31.97	23.98	46.00	14.03	150	109	Vertical
7	867.84	42.48	29.19	80.82	38.34	150	60	Vertical

Final Data Result_ Average Detection

NO.	Freq. [MHz]	PK Level [dBμV/m]	Duty cycle factor(dB)	AV Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	433.92	79.11	-6.02	73.09	75.62	2.53	Vertical
2	867.84	42.48	-6.02	36.46	55.62	19.16	Vertical

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EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal



Suspected Data List _ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	42.8997	23.59	16.93	40.00	16.41	150	170	Horizontal
2	58.2030	23.43	17.08	40.00	16.57	150	202	Horizontal
3	139.8507	24.88	18.20	43.50	18.62	150	156	Horizontal
4	323.3204	25.87	20.18	46.00	20.13	150	80	Horizontal
5	433.92	79.75	25.15	100.82	21.07	150	40	Horizontal
6	545.1825	33.95	24.67	46.00	12.05	150	189	Horizontal
7	867.84	35.33	28.68	80.82	45.49	150	60	Horizontal

Final Data Result _ Average Detection

NO.	Freq. [MHz]	PK Level [dBμV/m]	Duty cycle factor(dB)	AV Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	433.92	79.75	-6.02	73.73	75.62	1.89	Horizontal
2	867.84	35.33	-6.02	29.31	55.62	26.31	Horizontal

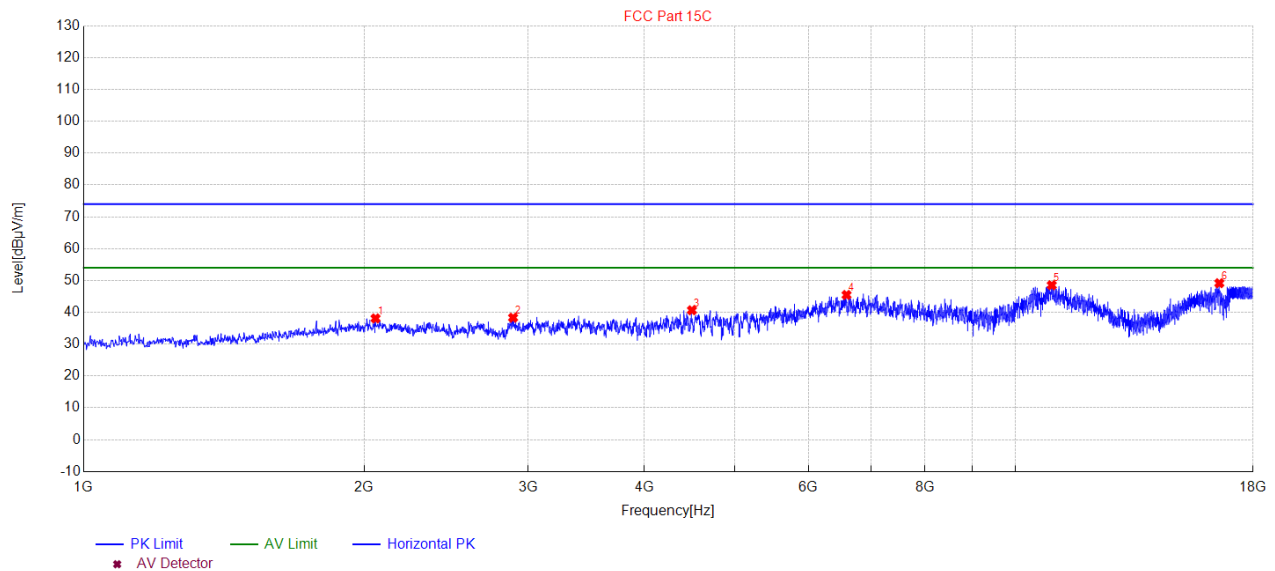
RESULT: PASS

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

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Radiated Emission from Above 1GHz

EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Horizontal



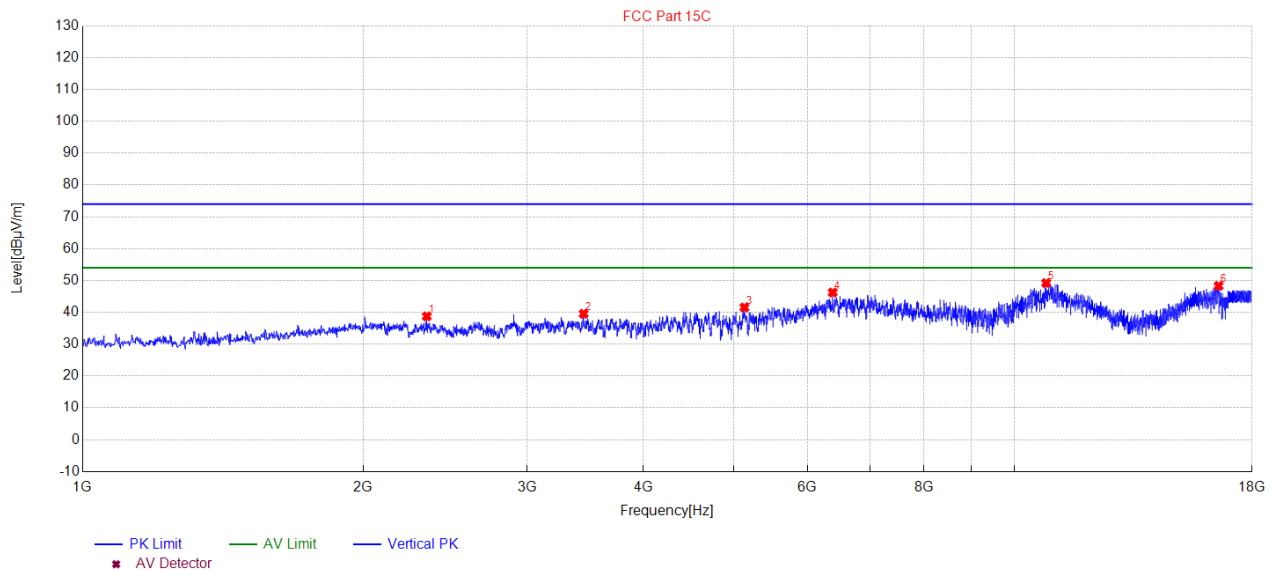
Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2057.505751	38.08	-13.27	74.00	35.92	150	296	Horizontal
2	2890.589059	38.31	-12.02	74.00	35.69	150	23	Horizontal
3	4497.249725	40.65	-7.90	74.00	33.35	150	100	Horizontal
4	6590.159016	45.45	-4.33	74.00	28.55	150	160	Horizontal
5	10944.294429	48.51	2.48	74.00	25.49	150	100	Horizontal
6	16559.955996	49.15	5.69	74.00	24.85	150	114	Horizontal

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Radiated Emission from Above 1GHz

EUT	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 3	Antenna	Vertical



Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	2341.434143	38.73	-12.59	74.00	35.27	150	259	Vertical
2	3449.944995	39.56	-10.77	74.00	34.44	150	40	Vertical
3	5133.113311	41.53	-7.54	74.00	32.47	150	80	Vertical
4	6384.438444	46.23	-4.70	74.00	27.77	150	160	Vertical
5	10820.182018	49.18	2.07	74.00	24.82	150	180	Vertical
6	16571.857186	48.30	5.70	74.00	25.70	150	270	Vertical

RESULT: PASS

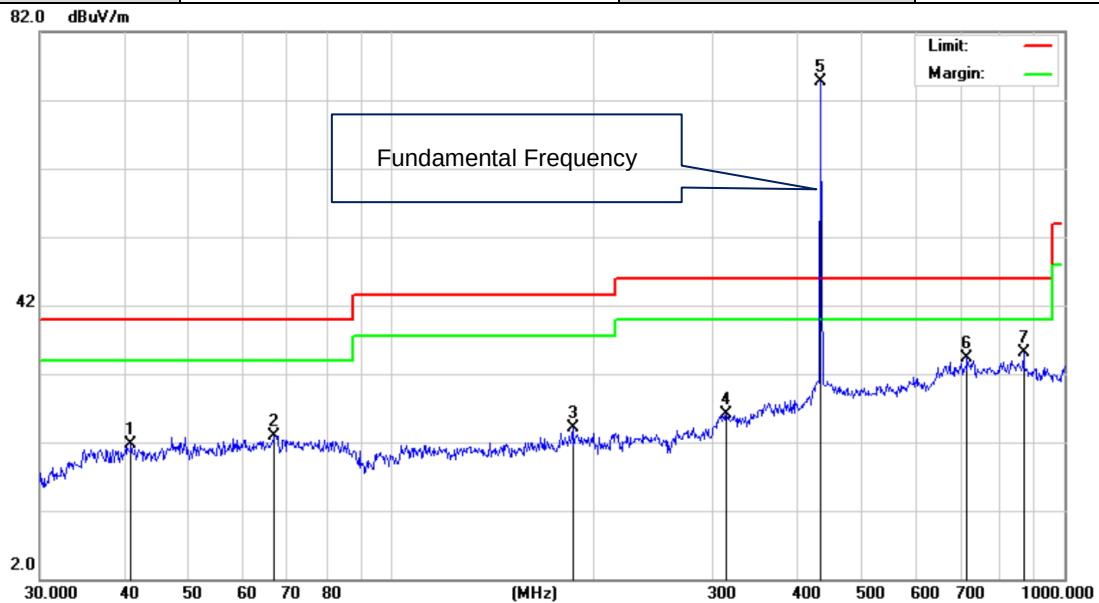
Note:

- Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Measure result.
- The "Factor" value can be calculated automatically by software of measurement system.

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Radiated Emission from 30MHz~1000MHz

EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Vertical



Suspected Data List_ Peak Detection

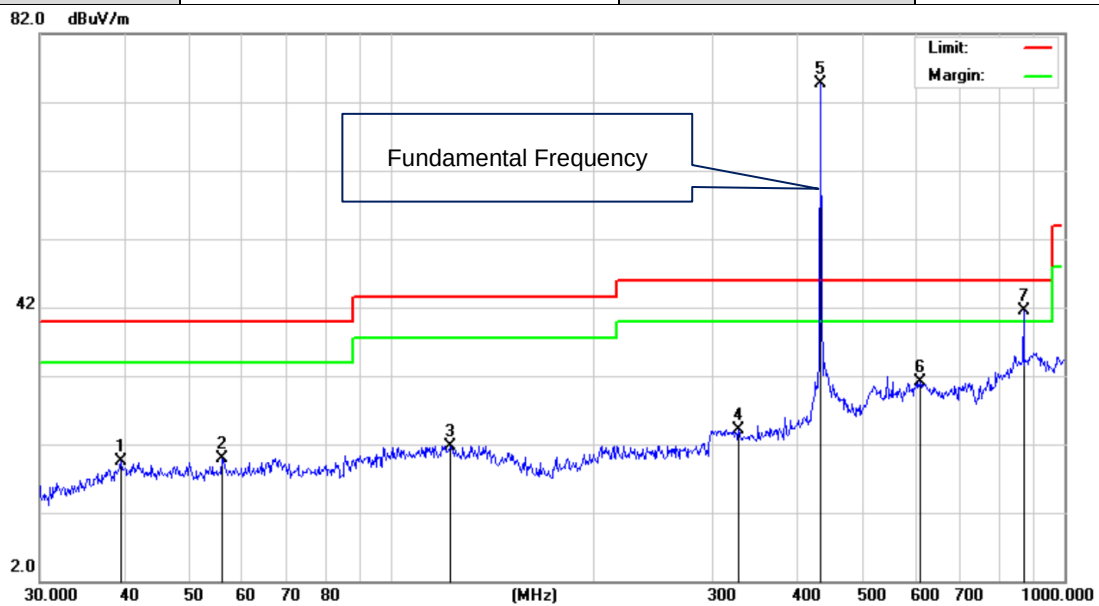
NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.9881	21.71	16.91	40.00	23.09	150	70	Vertical
2	66.9668	23.00	17.03	40.00	22.97	150	123	Vertical
3	185.7881	24.02	18.33	43.50	25.17	150	147	Vertical
4	314.3765	26.07	19.91	46.00	26.09	150	166	Vertical
5	433.92	74.75	25.15	100.82	75.67	150	149	Vertical
6	716.6820	34.33	28.68	46.00	17.32	150	141	Vertical
7	867.84	35.02	27.73	80.82	53.09	150	150	Vertical

Final Data Result_ Average Detection

NO.	Freq. [MHz]	PK Level [dBμV/m]	Duty cycle factor(dB)	AV Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	433.92	74.75	-5.85	68.9	75.62	6.72	Vertical
2	867.84	35.02	-5.85	29.17	55.62	26.45	Vertical

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EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Horizontal



Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.5756	19.41	13.72	40.00	26.28	150	163	Horizontal
2	56.0007	19.82	12.78	40.00	27.22	150	174	Horizontal
3	121.9754	21.76	16.28	43.50	27.22	150	166	Horizontal
4	327.8872	24.07	16.74	46.00	29.26	150	149	Horizontal
5	433.92	74.61	23.82	100.82	77.00	150	179	Horizontal
6	609.9215	31.03	25.15	46.00	20.85	150	133	Horizontal
7	867.84	41.48	29.19	80.82	51.63	150	60	Horizontal

Final Data Result_ Average Detection

NO.	Freq. [MHz]	PK Level [dBμV/m]	Duty cycle factor(dB)	AV Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	433.92	74.61	-5.85	68.76	75.62	6.86	Horizontal
2	867.84	41.48	-5.85	35.63	55.62	19.99	Horizontal

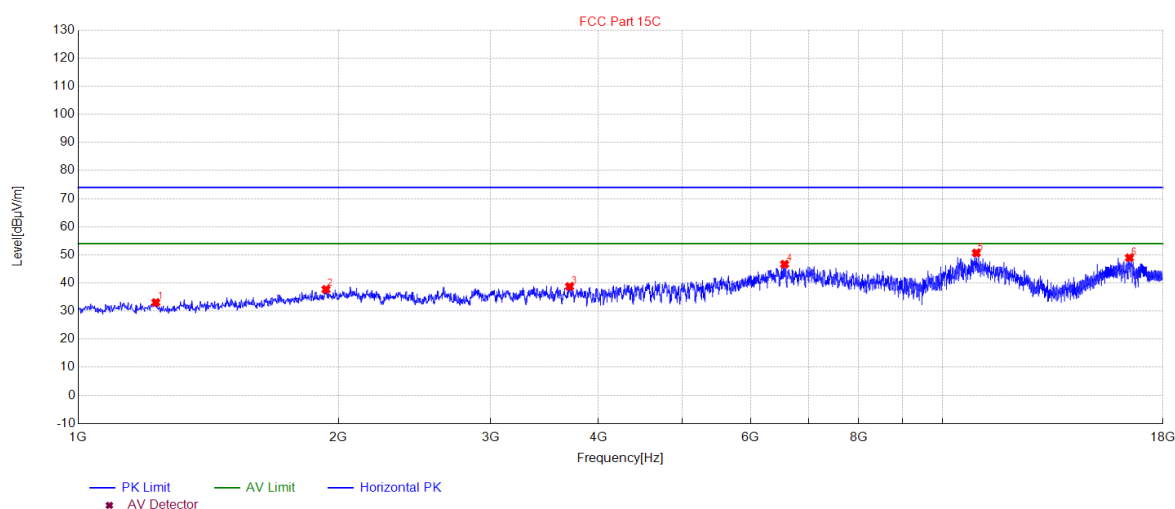
RESULT: PASS

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

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Radiated Emission from Above 1GHz

EUT Name	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Horizontal



Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1229.522952	33.05	-17.97	74.00	40.95	150	270	Horizontal
2	1935.093509	37.69	-13.94	74.00	36.31	150	80	Horizontal
3	3703.270327	38.73	-10.37	74.00	35.27	150	250	Horizontal
4	6568.056806	46.67	-4.37	74.00	27.33	150	150	Horizontal
5	10945.9946	50.67	2.48	74.00	23.33	150	180	Horizontal
6	16461.346135	48.97	5.57	74.00	25.03	150	80	Horizontal

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the “Dedicated Testing/Inspection Stamp” is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

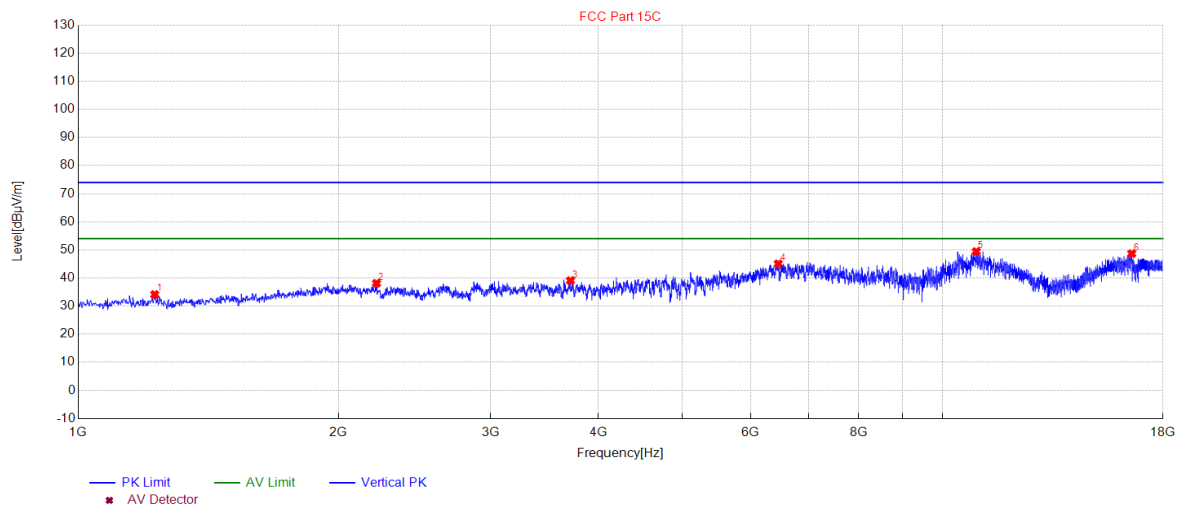
Attestation of Global Compliance(Shenzhen)Co., Ltd

Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/

Radiated Emission from Above 1GHz

EUT	UNIVERSAL SMART KEY	Model Name	IKEYLR005AL
Temperature	25° C	Relative Humidity	55.4%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	Mode 4	Antenna	Vertical



Suspected Data List_ Peak Detection

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1226.122612	34.11	-17.98	74.00	39.89	150	30	Vertical
2	2213.921392	38.11	-12.89	74.00	35.89	150	270	Vertical
3	3711.771177	39.05	-10.36	74.00	34.95	150	110	Vertical
4	6457.545755	45.05	-4.57	74.00	28.95	150	120	Vertical
5	10945.9946	49.39	2.48	74.00	24.61	150	190	Vertical
6	16561.656166	48.66	5.69	74.00	25.34	150	110	Vertical

RESULT: PASS

Note:

- Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Measure result.
- The "Factor" value can be calculated automatically by software of measurement system.

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9. -20dB Bandwidth Measurement

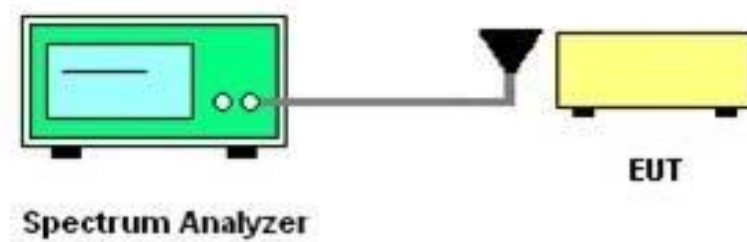
9.1 Provisions Applicable

According to FCC Part 15.231(c), The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier

9.2 Measurement Procedure

1. Set the parameters of SPA as below:
2. Centre frequency = Operation Frequency
3. RBW=3kHz, VBW=10kHz
4. Span: 300kHz/500kHz
5. Sweep time: Auto
6. Set the EUT to continue transmitting mode. Allow the trace to stabilize. Use the “N dB down” function of SPA to define the bandwidth.
7. Record the plots and Reported.

9.3 Measurement Setup (Block Diagram of Configuration)



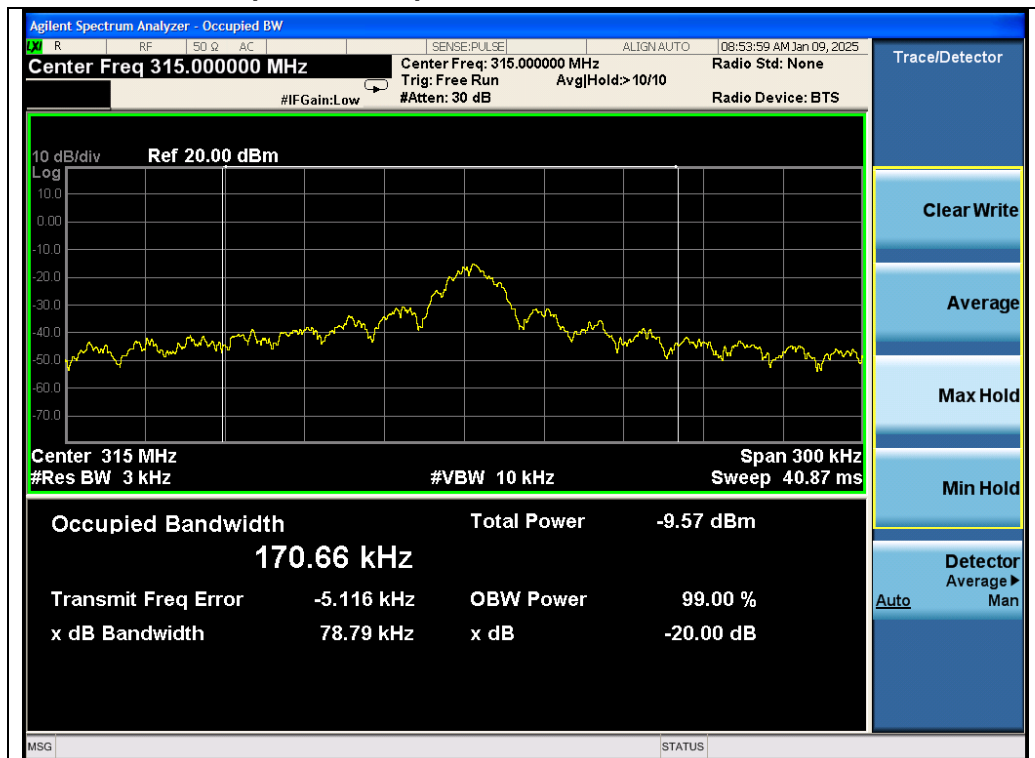
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9.4 Measurement Result

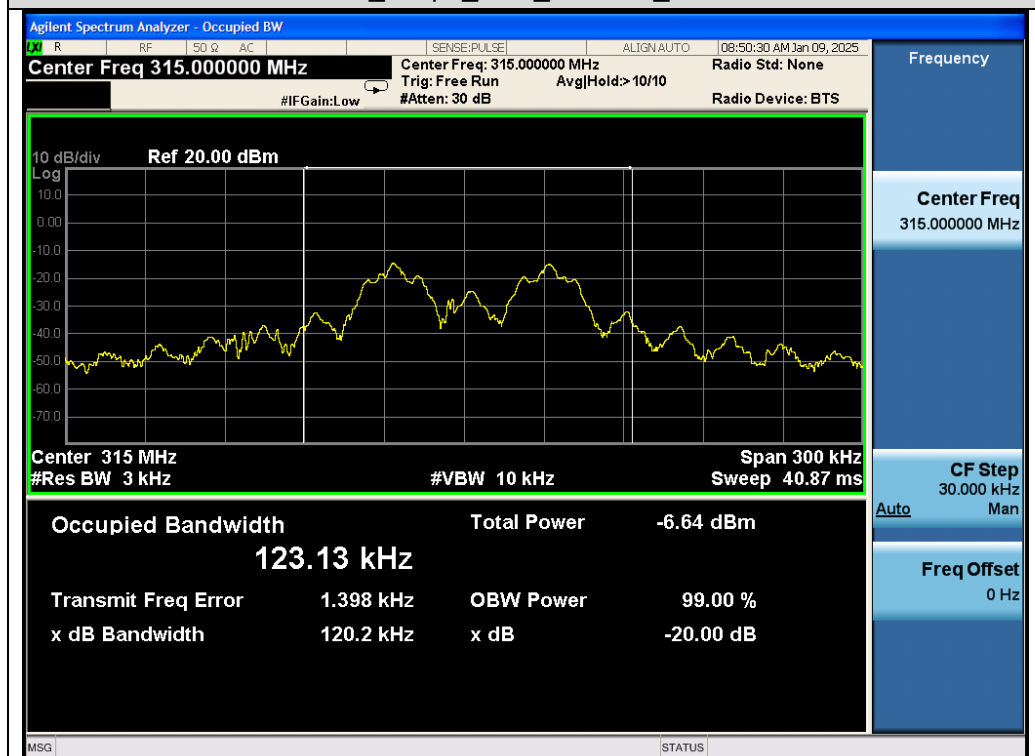
Test Data of Bandwidth Measurement					
Test Mode	Test Channel (MHz)	99% Occupied Bandwidth (kHz)	-20dB Bandwidth (kHz)	Limits (kHz)	Pass or Fail
Mode 1	315	170.66	78.79	787.5	Pass
Mode 2	315	123.13	120.20	787.5	Pass
Mode 3	433.92	235.20	78.25	1084.8	Pass
Mode 4	433.92	154.48	121.30	1084.8	Pass

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Test Graphs of Occupied Bandwidth and -20dB Bandwidth

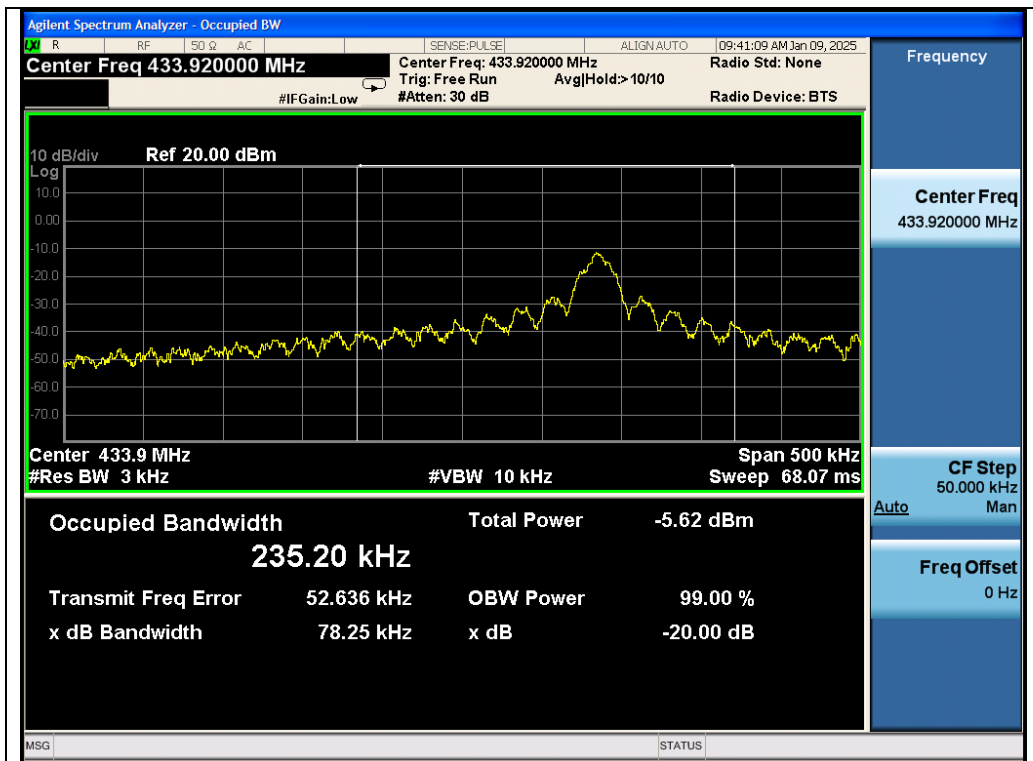


Test_Graph_ASK_315MHz_OBW

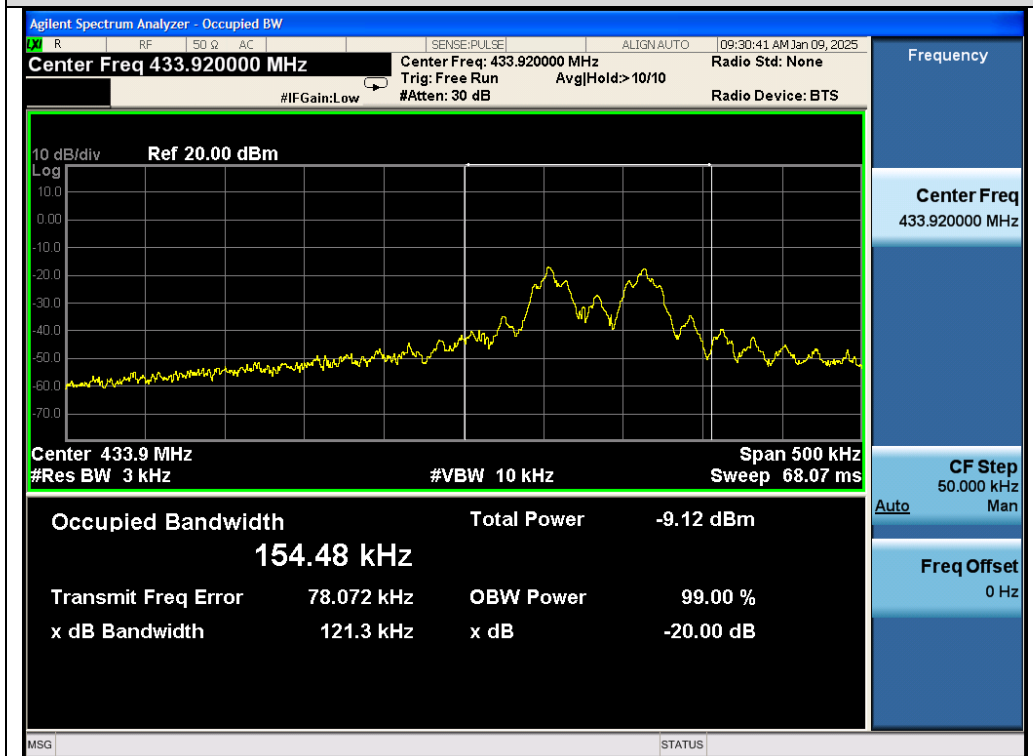


Test_Graph_FSK_315MHz_OBW

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Test_Graph_ASK_433.92MHz_OBW



Test_Graph_FSK_433.92MHz_OBW

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10. AC Power Line Conducted Emission Test

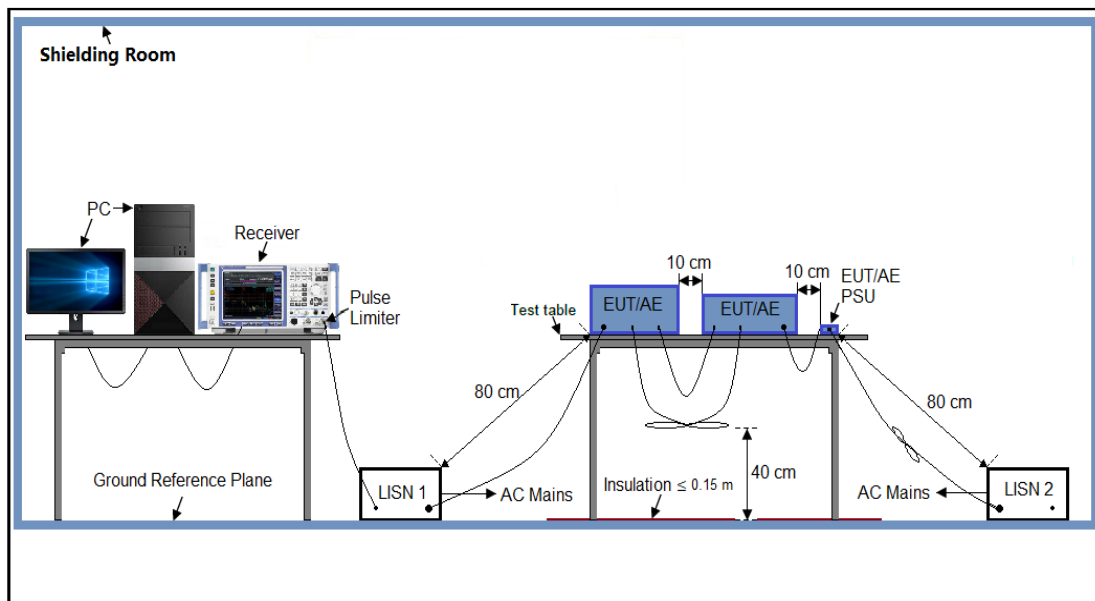
10.1 Measurement Limit

Frequency Range	Maximum RF Line Voltage	
	Q.P. (dB μ V)	Average (dB μ V)
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

10.2 Measurement Setup (Block Diagram of Configuration)



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10.3 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 3V 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 50ohm 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.

10.4 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.

10.5 Measurement Result

Not Applicable

Note: This device is battery powered, there is no AC power supply

Appendix I: Photographs of Test Setup

Refer to the Report No.: AGC16740241105AP01

Appendix II: Photographs of Test EUT

Refer to the Report No.: AGC16740241105AP02

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

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