

RF TEST REPORT

Report No.: SZ25080439W02

Applicant : SHENZHEN AONI ELECTRONIC CO.,LTD

Product Name : Smart Battery Doorbell Camera

Brand Name : MERKURY or aoni

Model Name : MI-CW093-115

Series Model : ER02301,GN-CW121-101,GNC-CW121-101,ER05301,
ER06XYZ,ER02XYZ,ER05XYZ,(X=0-9, Y=0-9 ,
Z=0-9 ,stands for marketing purpose)

FCC ID : Z63-ER02301

Test Standard : FCC Part 15, Subpart C, Section 15.231

Date of Sample Arrival : Jul.29, 2025

Date of Test : Jul.29, 2025~Aug.29, 2025

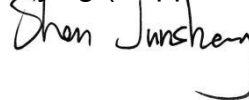
Issue Date : Aug.29, 2025



Edited by:



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REVISION HISTORY

Rev.	Issue Date	Revisions	Revised by
A0	Aug.29, 2025	Initial Release	Shen Junsheng



Summary of Test Result

Standard Section	Test Item	Result	Remark
15.207	Conducted Emission	PASS	
15.209 /15.231.(b)	Radiated Spurious Emission	PASS	
15.231.(b)	Field Strength of Fundamental Emissions	PASS	
15.231(a)(1)	Transmission requirement	PASS	
15.231(C)	20dB&99% Bandwidth	PASS	
15.203	Antenna Requirement	PASS	
15.35	Duty Cycle	PASS	



1. GENERAL INFORMATION

1.1. APPLICANT

Name : SHENZHEN AONI ELECTRONIC CO.,LTD
Address : No.5,Bldg.,Honghui Industrial Park,2nd Liuxian Road,Xin'An streets,
Bao'an District,ShenZhen,China

1.2. MANUFACTURER

Name : SHENZHEN AONI ELECTRONIC CO.,LTD
Address : No.5,Bldg.,Honghui Industrial Park,2nd Liuxian Road,Xin'An streets,
Bao'an District,ShenZhen,China

1.3. FACTORY

Name : Aoni Intelligent Technology (Zhongshan) Co., LTD
Address : Floor 4,5,6,7,8,9, Building 2, NO. 138, Lefeng South Road, Lianfeng, Xiaolan Town,
Zhongshan City, Guangdong Province

2.1 GENERAL DESCRIPTION OF THE EUT

General Information	
Equipment Name:	Smart Battery Doorbell Camera
Brand Name:	MERKURY or aoni
Model Name:	MI-CW093-115
Series Model:	ER02301,GN-CW121-101,GNC-CW121-101,ER05301,ER06XYZ,ER02XYZ,ER05XYZ,(X=0-9, Y=0-9 , Z=0-9 ,stands for marketing purpose)
Model Difference:	They are only different in model, color and appearance, while the rest is the same.
Sample No:	202507180015001
Frequency band:	433.92MHz
Modulation Type:	ASK
Antenna type:	Spring Antenna
Antenna gain:	-8.81dBi
Power supply:	DC 3.7V From Battery
Battery:	Rated Voltage: 3.7V Capacity: 4400mAh
Adapter:	Input:100-240V~50/60Hz 0.2A Max Output:DC 5V/1.0A
Hardware version:	ER02301-V1.0
Software version:	v3.0.0.088
Connecting I/O Port(s):	Refer to the remark below.

Remark :

The above information of EUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

2.2 DESCRIPTION OF THE TEST MODES

For Conducted test items and Radiated spurious emissions:

Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

Pretest Mode	Description
Mode 1	TX Mode

Note:

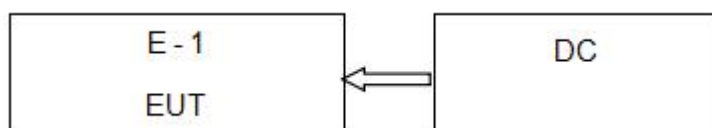
For the test results, the EUT had been tested with all conditions, but only the worst case was shown in test report.

For AC Power-Line Conducted Emission

Pretest Mode	Description
Mode 1	TX Mode

2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During test, Keep EUT is in continuous transmission mode, Both open button and closed button have been tested, The two keys were tested to assess and only record the worst case in the report (Open button).





2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

NO.	Unit	Brand	Model	Description
1	PC	Redmi G	2021Ryzen	N/A
2	USB Line	/	/	/

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 LABORATORY INFORMATION

Laboratory Name	Shenzhen Morlab Communications Technology Co., Ltd.
Laboratory Address	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone	+86 755 36698555
Facsimile	+86 755 36698525
FCC Designation Number	CN1192
FCC Test Firm Registration Number	226174

2.6 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 %**.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.68\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.988\text{dB}$
3	All emissions, radiated 9K-30MHz	$\pm 2.84\text{dB}$
4	All emissions, radiated 30M- 1GHz	$\pm 4.39\text{dB}$
5	All emissions, radiated 1 G-6 GHz	$\pm 5.10\text{dB}$
6	All emissions, radiated >6 G	$\pm 5.48\text{dB}$
7	Conducted Emission (9kHz- 150kHz)	$\pm 2.79\text{dB}$
8	Conducted Emission (150kHz-30MHz)	$\pm 2.80\text{dB}$

2.7 EQUIPMENTS LIST

2.7.1 Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	Calibrated due until	Cal. Interval
Signal analyzer	Agilent	N9020A	MY50200811	2025.03.17	2026.03.16	1 year
Amplifier	JPT	JPA0118-55-303A	1910001800055000	2025.03.24	2026.03.23	1 year
Amplifier	JPT	JPA-10M1G32	21010100035001	2025.03.17	2026.03.16	1 year
Antenna/Turntable Controller	Brilliant	N/A	N/A	N/A	N/A	N/A
Loop Antenna(9kHz-30 MHz)	Daze	ZN30900C	20077	2025.05.13	2026.05.12	1 year
Bilog Antenna	SCHWARZBECK	VULB 9168	01174	2025.05.20	2026.05.19	1 year
Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120D	02334	2025.05.20	2026.05.19	1 year
Horn Antenna	COM-POWER	AH-1840	10100008	2025.07.27	2026.07.26	1 year
Thermometer	DeLi	N/A	N/A	2025.08.01	2026.07.31	1 year
Test Software	FALA	EMC-RI(Ver.4A2)	N/A	N/A	N/A	N/A
Wideband radio communication tester	R&S	CMW500	101331	2025.07.28	2026.07.27	1 year
Spectrum analyzer	R&S	FSV40-N	101761	2025.07.28	2026.07.27	1 year

2.7.2 Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	Calibrated due until	Cal. Interval
Power sensor-Card reader	Cesheng	smu 1003	16I00054SN016	2025.03.19	2026.03.18	1 year
Adjustable Attenuator	Agilent	8494B	MY42144015	2025.07.28	2026.07.27	1 year
Adjustable Attenuator	Agilent	8496B	MY42143776	2025.07.28	2026.07.27	1 year
Environmental Test Chamber	KSON	THS-B6C-150	9159K	2025.03.17	2026.03.16	1 year
Signal analyzer	Keysight	N9020A	MY50510136	2025.07.18	2026.07.17	1 year
Vector signal generator	Agilent	N5182A	MY48180764	2025.07.18	2026.07.17	1 year
Analog signal generator	Keysight	N5182B	MY57300196	2025.07.18	2026.07.17	1 year
Wideband radio communication tester	R&S	CMW500	101331	2025.07.28	2026.07.27	1 year
Switch Box	Cesheng	smu 1003	WCS20221215	2025.03.19	2026.03.18	1 year
Thermometer	DeLi	N/A	N/A	2025.08.01	2026.07.31	1 year
Test Software	Cesheng	WCS-WC N	N/A	N/A	N/A	N/A

2.7.3 Conducted Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	Calibrated due until	Cal. Interval
EMI Test Receiver	R&S	ESPI	100679	2025.03.17	2026.03.16	1 year
LISN	R&S	ENV216	101300	2025.03.17	2026.03.16	1 year
LISN	R&S	ENV216	100333	2025.03.17	2026.03.16	1 year
CE Cable	Chuangce xing	2M	EMI0014	N/A	N/A	N/A
Temperature & Humidity	Deli	Deli	EMI0015	2025.08.01	2026.07.31	1 year
Testing Software	FALA	EZ-EMC(Ver.EMC-C ON 3A1.1)	EMI0044	N/A	N/A	N/A

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table .

FREQUENCY (MHz)	Class B (dBuV)		Standard
	Quasi- peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	56.00	46.00	CISPR
5.0 -30.0	60.00	50.00	CISPR

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of “ * ” marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

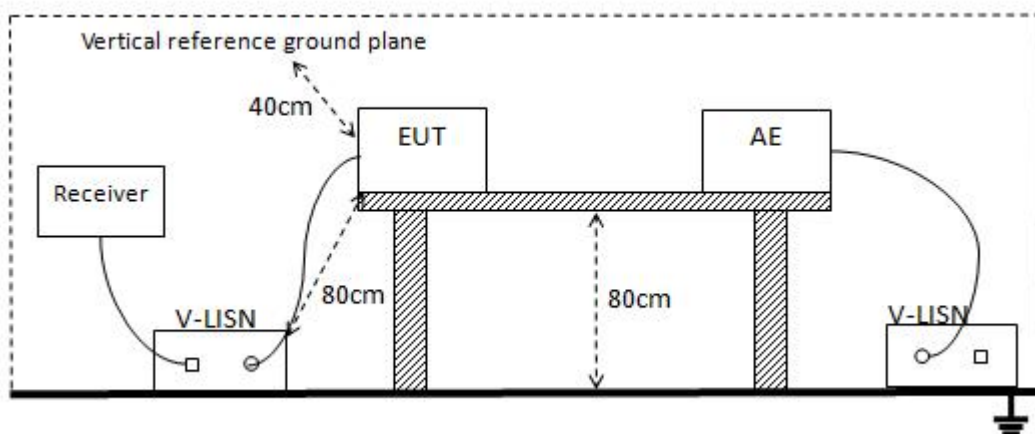
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.2 TEST PROCEDURE

- a. The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN is at least 80 cm from the nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3 TEST SETUP

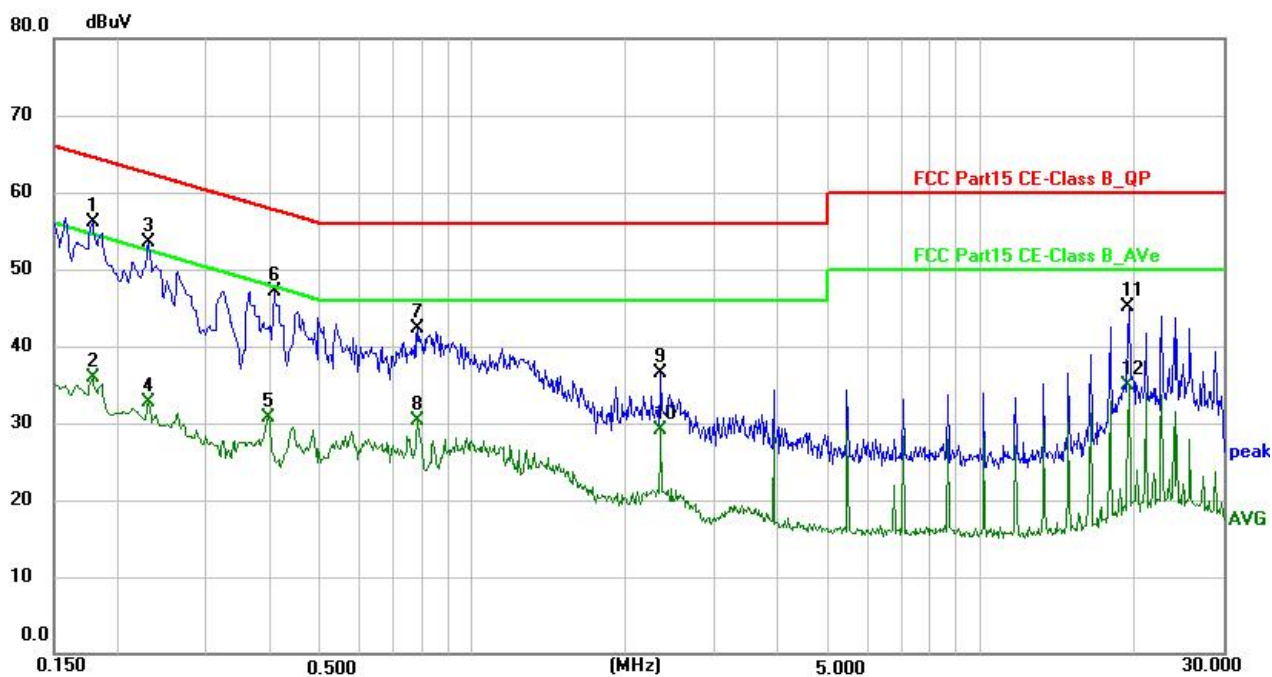


3.4 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

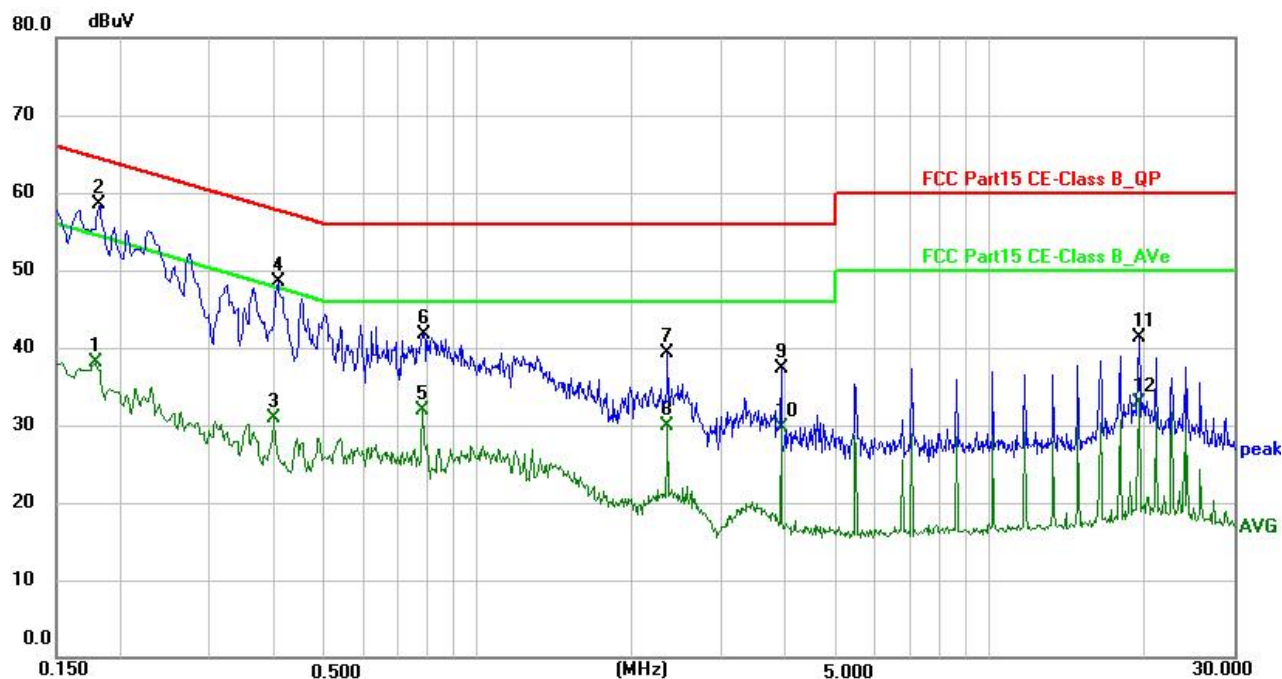
3.5 TEST RESULTS

Temperature:	25°C	Relative Humidity:	54%
Test Mode:	TX(433.92MHz)	Test Voltage:	AC 120V 60Hz
Result:	PASS	Phase :	L



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1780	36.66	19.44	56.10	64.58	-8.48	peak
2	0.1780	16.42	19.44	35.86	54.58	-18.72	AVG
3	0.2300	34.04	19.43	53.47	62.45	-8.98	peak
4	0.2300	13.37	19.43	32.80	52.45	-19.65	AVG
5	0.3940	11.28	19.48	30.76	47.98	-17.22	AVG
6	0.4060	27.62	19.48	47.10	57.73	-10.63	peak
7	0.7820	22.82	19.51	42.33	56.00	-13.67	peak
8	0.7820	10.76	19.51	30.27	46.00	-15.73	AVG
9	2.3460	16.98	19.61	36.59	56.00	-19.41	peak
10	2.3460	9.42	19.61	29.03	46.00	-16.97	AVG
11	19.5459	23.47	21.70	45.17	60.00	-14.83	peak
12	19.5459	13.11	21.70	34.81	50.00	-15.19	AVG

Temperature:	25°C	Relative Humidity:	50%
Test Mode:	TX(433.92MHz)	Test Voltage:	AC 120V 60Hz
Result:	PASS	Phase :	N



No.	Frequency (MHz)	Reading Level(dBuV)	Factor (dB)	Measurement(dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1780	18.60	19.42	38.02	54.58	-16.56	AVG
2	0.1819	39.08	19.42	58.50	64.40	-5.90	peak
3	0.3980	11.49	19.47	30.96	47.90	-16.94	AVG
4	0.4060	29.12	19.47	48.59	57.73	-9.14	peak
5	0.7820	12.34	19.50	31.84	46.00	-14.16	AVG
6	0.7860	22.29	19.50	41.79	56.00	-14.21	peak
7	2.3460	19.65	19.60	39.25	56.00	-16.75	peak
8	2.3460	10.37	19.60	29.97	46.00	-16.03	AVG
9	3.9100	17.65	19.74	37.39	56.00	-18.61	peak
10	3.9100	9.96	19.74	29.70	46.00	-16.30	AVG
11	19.5500	19.79	21.45	41.24	60.00	-18.76	peak
12	19.5500	11.44	21.45	32.89	50.00	-17.11	AVG

4. RADIATED EMISSION MEASUREMENT

4.1 RADIATED EMISSION LIMITS

In case the emission fall within the restricted band specified on Part 15.205(a), then the Part 15.209(a) and Part 15.231(b) limit in the table below has to be followed.

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

According to §15.231(b), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	¹ 1,250 to 3,750	¹ 125 to 375
174-260	3,750	375
260-470	¹ 3,750 to 12,500	¹ 375 to 1,250
Above 470	12,500	1,250

NOTE:

1. Linear interpolations.
2. The lower limit shall apply at the transition frequencies.
3. Emission level (dBuV/m) = 20 log Emission level (uV/m).
4. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



LIMITS OF RESTRICTED FREQUENCY BANDS

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (GHz)
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

Spectrum Parameter	Setting
Detector	Peak
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 3MHz

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



4.2 TEST PROCEDURE

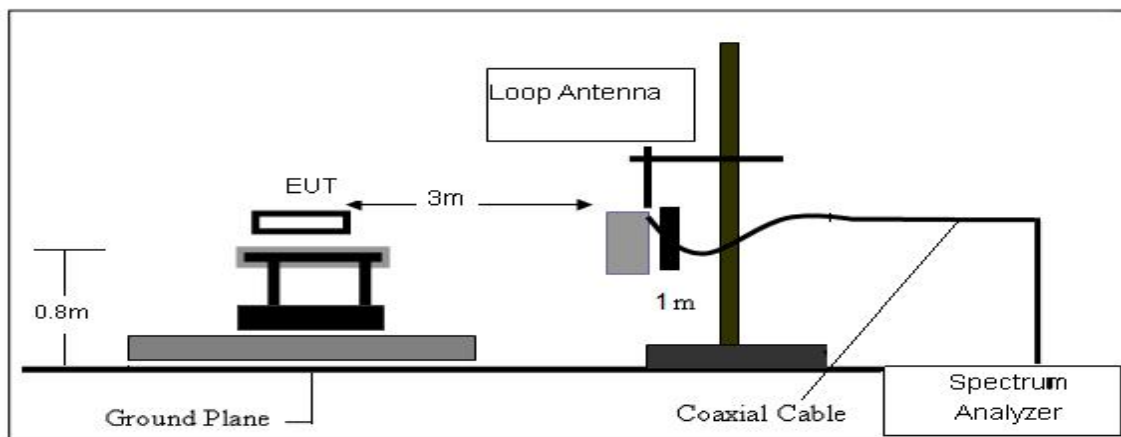
- a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz, and above 1GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meters (above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment shall be 0.8 m (above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarization of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

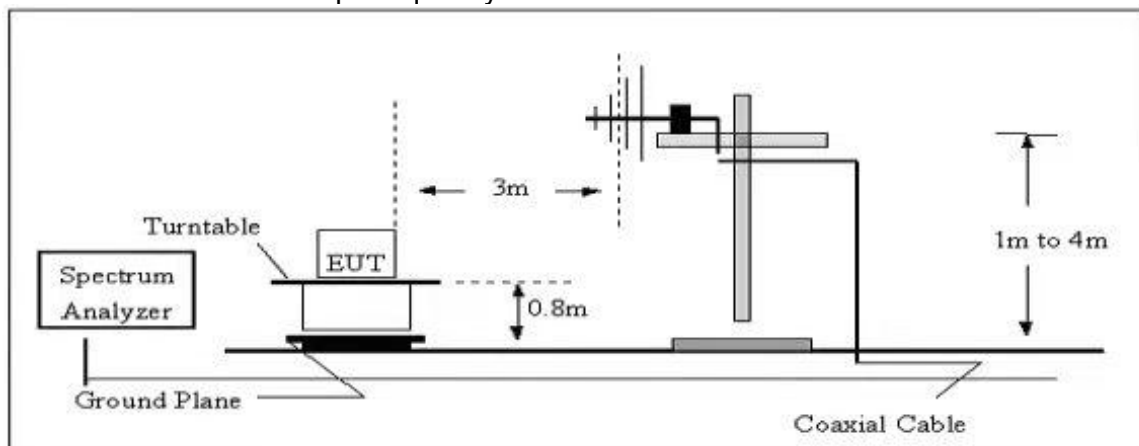
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

4.3 TEST SETUP

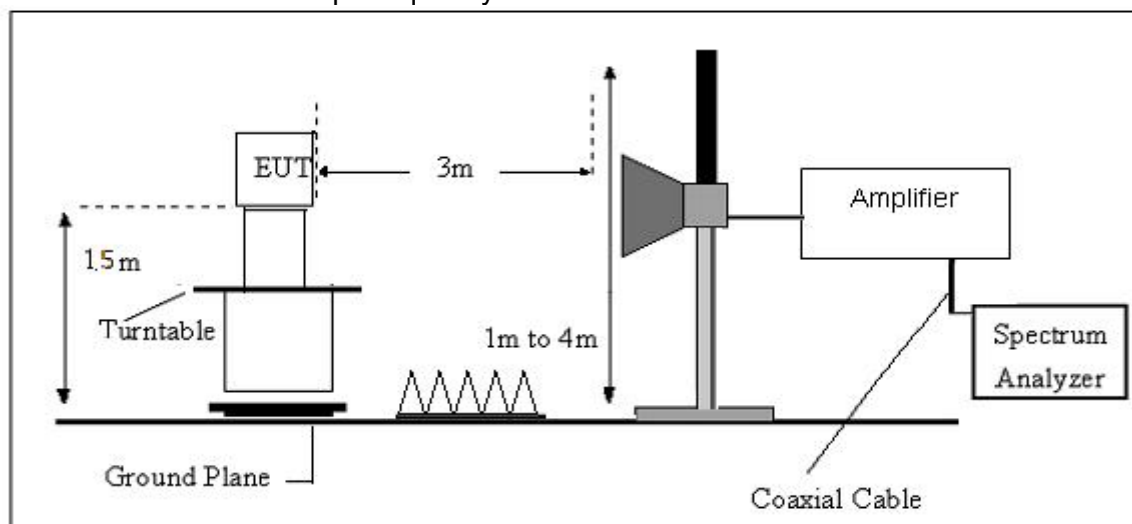
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



4.4 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



4.5 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

$$\text{Factor} = AF + CL - AG$$

4.6 TEST RESULTS

Field Strength of Fundamental Emissions and Field strength of spurious emissions Value					
Operating Frequency (MHz)	Field Strength (dBuV/m)	Detector	Limit @3m (dBuV/m)	Margin (dB)	Antenna
433.92	65.82	Peak	100.82	-35.00	Horizontal
	65.81	Peak	100.82	-35.01	Vertical
867.84	43.12	Peak	80.82	-37.08	Horizontal
	38.41	Peak	80.82	-41.79	Vertical
433.92	58.99	Avg	80.82	-21.21	Horizontal
	58.98	Avg	80.82	-21.22	Vertical
867.84	36.29	Avg	60.82	-24.53	Horizontal
	31.58	Avg	60.82	-29.24	Vertical

(Radiated Emission<30MHz (9kHz-30MHz, H-field))

Temperature:	25°C	Relative Humidity	52%RH
Test Voltage:	DC 3.7V	Polarization:	N/A
Test Mode:	TX Mode		

Note:

- 1.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
- 2.Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);
Limit line = specific limits(dBuV) + distance extrapolation factor.
3. The verdict please refer to the A.6 field strength of fundamental emissions and field strength of spurious emissions value.
- 4.Limit field strength of fundamental: $20 \cdot \log((12500-3750)/(470-260)+(f_c-260)+3750)$ dBuV/m+20dB =100.82dBuV/m@3m (PK).
5. Limit field strength of harmonics: $20 \cdot \log((1250-375)/(470-260)+(f_c-260)+375)$ dBuV/m+20dB =80.82dBuV/m@3m (PK).

(30MHz -1000MHz)

Temperature:	25°C	Relative Humidity:	52%RH
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	TX Mode		

Remark:

1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
- 3.Fundamental AV value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) =20Log(45.54%)=-6.83dB, Please see page 29.
4. " * ": Fundamental frequency.
5. " # ": Harmonic frequency.

Antenna Horizontal



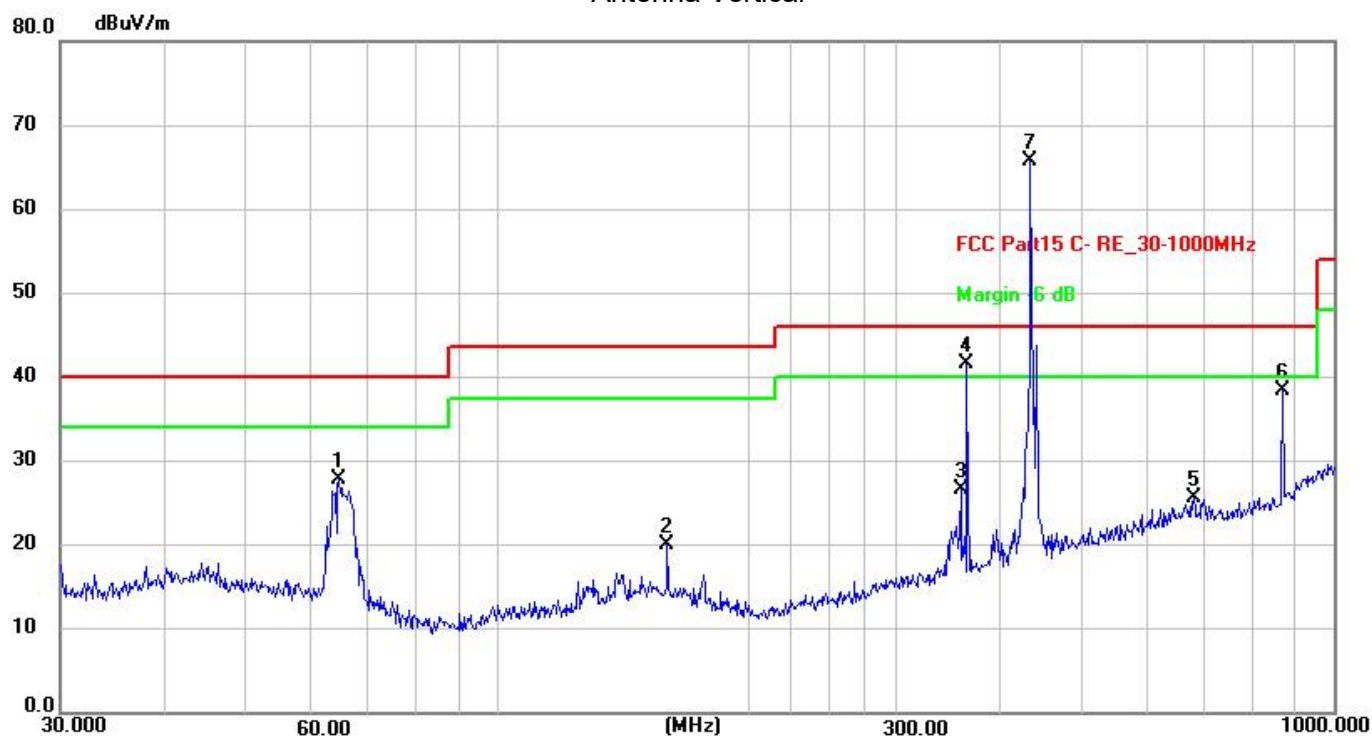
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	65.8030	47.68	-25.65	22.03	40.00	-17.97	peak
2	139.8507	45.84	-24.97	20.87	43.50	-22.63	peak
3	332.5187	52.66	-21.93	30.73	46.00	-15.27	peak
4	389.3548	49.54	-20.69	28.85	46.00	-17.15	peak
5*	433.92	85.12	-19.30	65.82	100.82	-35.00	peak
6	701.7610	48.59	-13.36	35.23	46.00	-10.77	peak
7 #	867.8400	54.38	-11.26	43.12	80.82	-37.08	peak

Temperature:	25°C	Relative Humidity:	52%RH
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	TX Mode		

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. Fundamental AV value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) =20Log(45.54%)=-6.83dB, Please see page 29.
4. " * ": Fundamental frequency.
5. " # ": Harmonic frequency.

Antenna Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	64.6594	53.31	-25.53	27.78	40.00	-12.22	peak
2	159.7844	43.68	-23.64	20.04	43.50	-23.46	peak
3	357.9286	48.11	-21.38	26.73	46.00	-19.27	peak
4	364.2595	62.87	-21.24	41.63	46.00	-4.37	peak
5	679.9600	39.29	-13.66	25.63	46.00	-20.37	peak
6#	867.8400	49.67	-11.26	38.41	80.82	-41.79	peak
7*	433.9200	85.11	-19.30	65.81	100.82	-35.01	peak

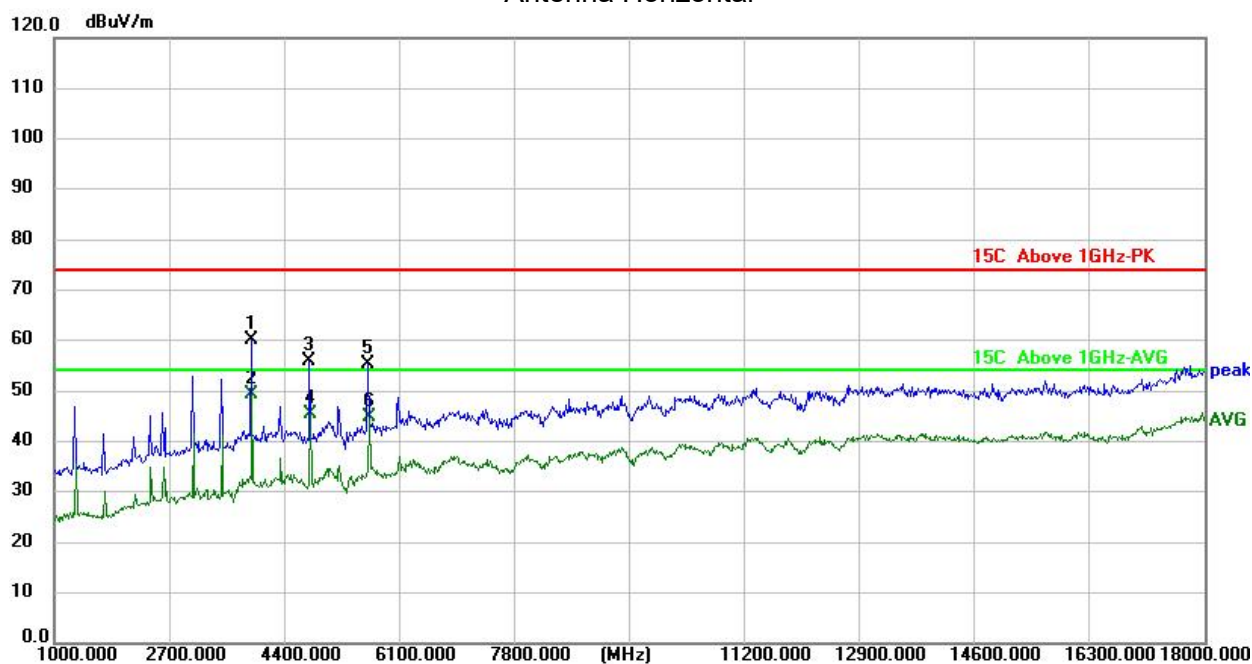
(1000MHz -5000MHz)

Temperature:	25°C	Relative Humidity:	52%RH
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	TX Mode		

Remark:

1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
- 3.Fundamental AV value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) =20Log(45.54%)=-6.83dB, Please see page 29.
4. " # ": Harmonic frequency.

Antenna Horizontal



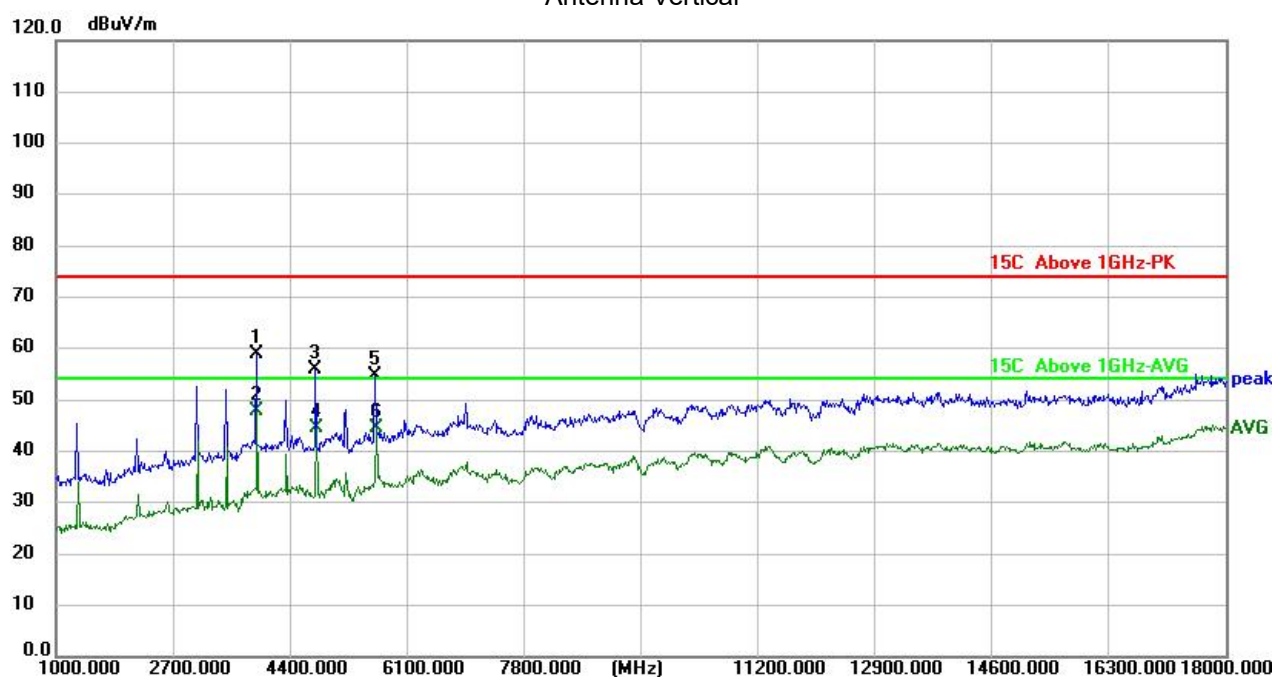
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	3907.000	69.42	-9.14	60.28	74.00	-13.72	peak
2	3924.000	58.29	-9.09	49.20	54.00	-4.80	AVG
3	4774.000	62.00	-6.06	55.94	74.00	-18.06	peak
4	4791.000	51.36	-5.95	45.41	54.00	-8.59	AVG
5	5641.000	59.51	-4.30	55.21	74.00	-18.79	peak
6	5658.000	48.90	-4.20	44.70	54.00	-9.30	AVG

Temperature:	25°C	Relative Humidity:	52%RH
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	TX Mode		

Remark:

1. Margin = Result (Result =Reading + Factor)–Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain
3. Fundamental AV value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) =20Log(45.54%)=-6.83dB, Please see page 29.
4. " # ": Harmonic frequency.

Antenna Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	3907.000	68.23	-9.14	59.09	74.00	-14.91	peak
2	3924.000	56.85	-9.09	47.76	54.00	-6.24	AVG
3	4774.000	62.01	-6.06	55.95	74.00	-18.05	peak
4	4791.000	50.48	-5.95	44.53	54.00	-9.47	AVG
5	5641.000	59.16	-4.30	54.86	74.00	-19.14	peak
6	5658.000	48.83	-4.20	44.63	54.00	-9.37	AVG

5. BANDWIDTH TEST

5.1 LIMIT

FCC Part15.231, Subpart C			
Section	Test Item	Limit	Result
15.231(C)	20 Bandwidth	The 20dB bandwidth of the emissions shall not exceed 0.25% of the center frequency	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth
RB	10 kHz (20dB Bandwidth)
VB	30 kHz (20dB Bandwidth)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.2 TEST SETUP



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. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier.

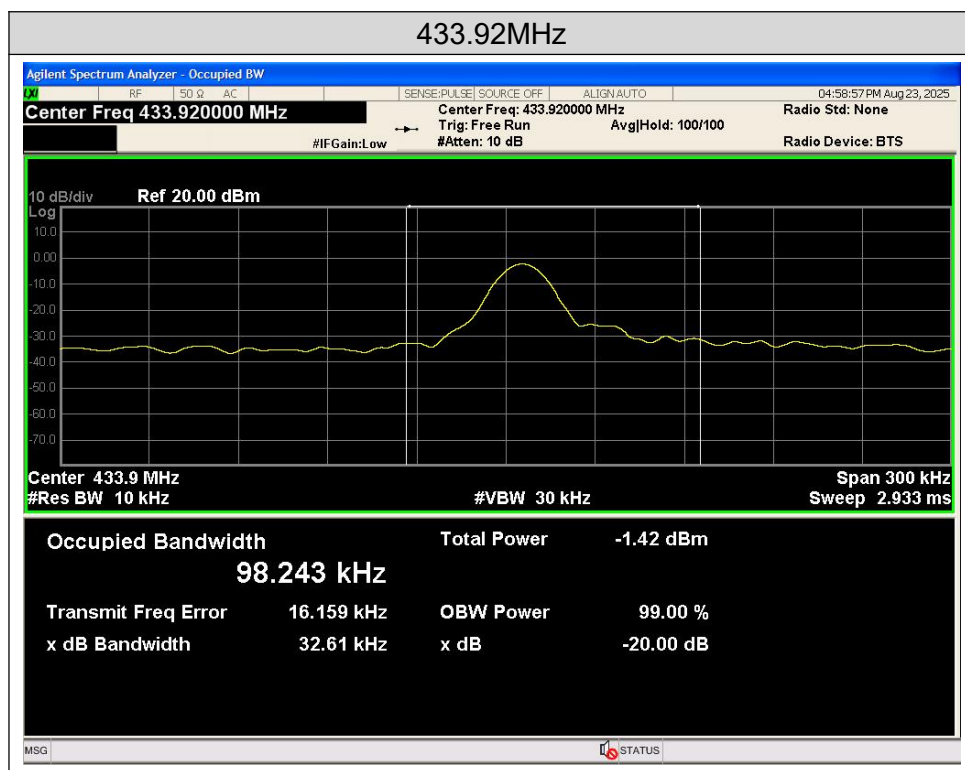
5.3 EUT OPERATION CONDITIONS

TX mode.



5.4 TEST RESULTS

Centre Frequency	Measurement		
	20dB Bandwidth (kHz)	Limit(kHz)	Frequency Range (MHz)
433.92	32.61	1084.75	PASS





6. DUTY CYCLE

6.1 TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.

The Duty Cycle Was Determined By The Following Equation: To Calculate The Actual Field Intensity, The Duty Cycle Correction Factor In Decibel Is Needed For Later Use And Can Be Obtained From Following Conversion

Duty Cycle(%)=Total On Interval In A Complete Pulse Train/ Length Of A Complete Pulse Train * %

Duty Cycle Correction Factor(Db)=20 * Log10(Duty Cycle(%))

6.2 TEST SETUP

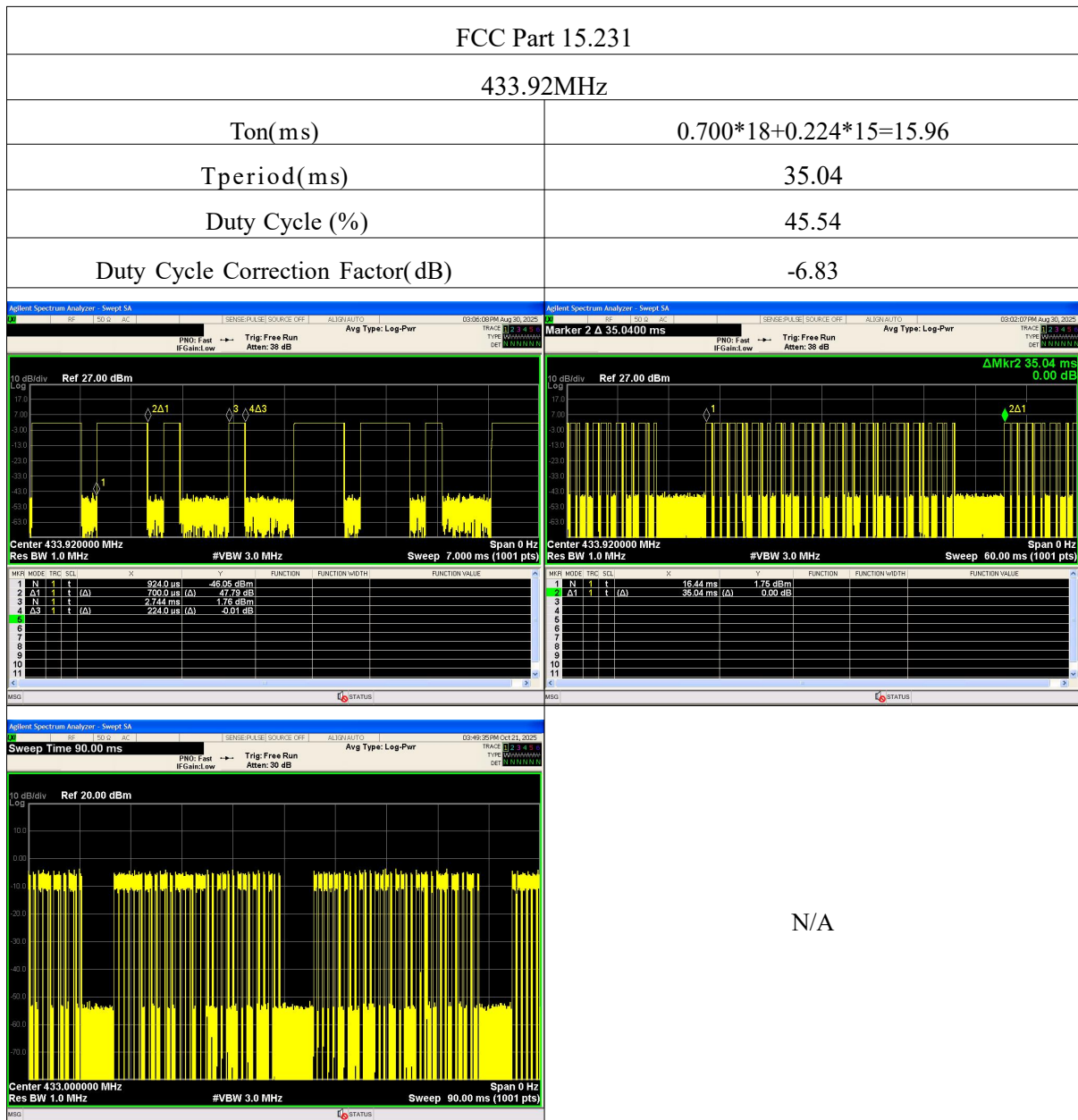


6.3 EUT OPERATION CONDITIONS

TX mode.



6.4 TEST RESULTS



7. AUTOMATICALLY DEACTIVATE

7.1 STANDARD REQUIREMENT

A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

7.2 TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.

Spectrum Setting: RBW= 1MHz, VBW=3MHz, Sweep time = 40ms.

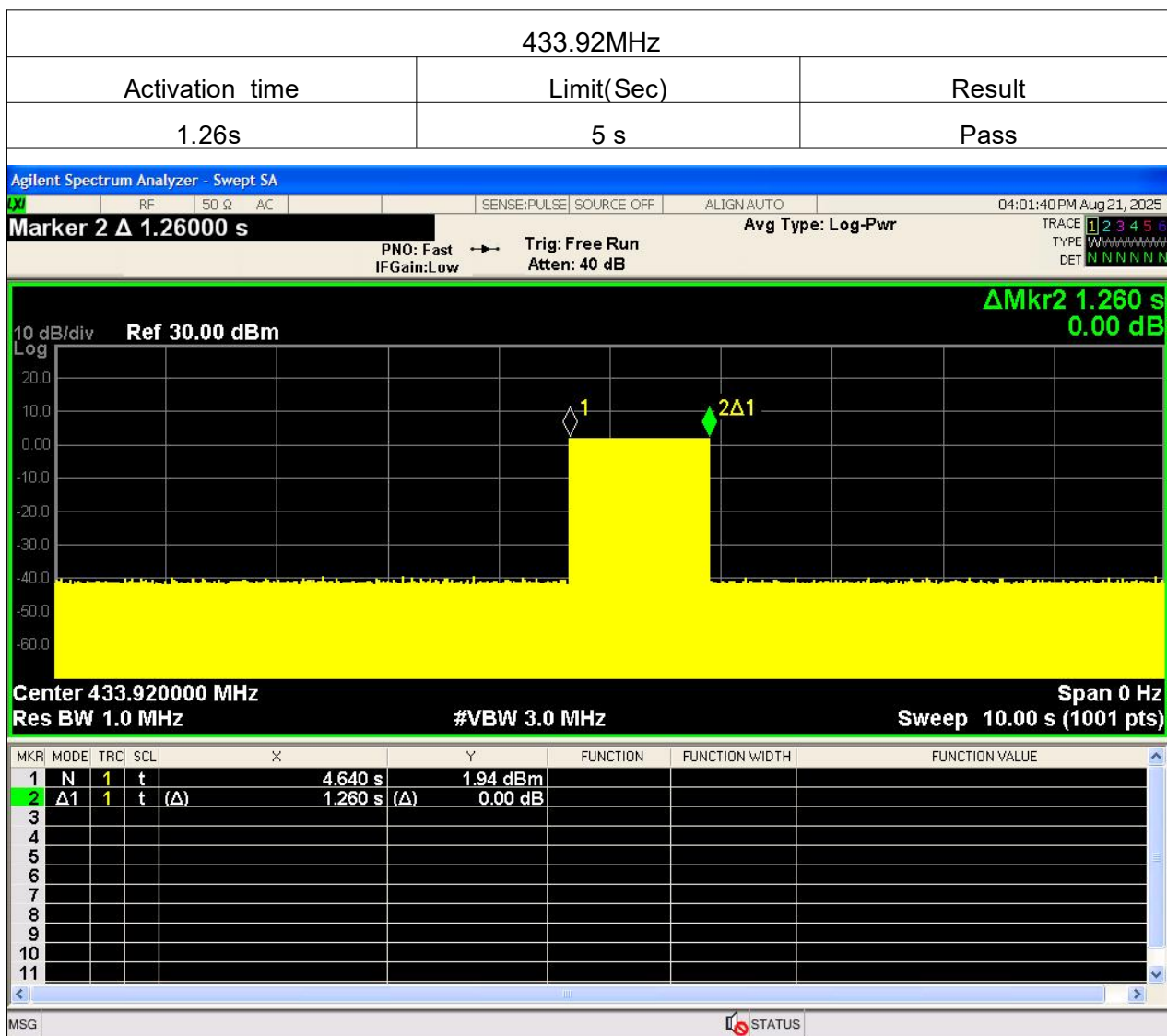
Set the EUT to transmit by manually operated. Use the "View" function of SPA to find the transmission time of being released.

7.3 TEST SETUP





7.4 TEST RESULTS





8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

FCC Part 15 Paragraph 15.203, 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 to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

8.2 EUT ANTENNA

The EUT antenna is Spring Antenna. It conforms to the standard requirements.



9. TEST SETUP PHOTOGRAPHS

Please refer to the Appendix F.

10. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

External Please refer to the Appendix G.

Internal Please refer to the Appendix H.

※※※※※END OF THE REPORT※※※※※