FCC TEST REPORT
FCC ID: QOAST-IVB

Product：	Alarm Control Panel
Trade Name：	Focus®
Model Name：	ST-IVB
Serial Model：	N/A
Report No.：	NTEK- 2012NT1214550F

Prepared for

Shenzhen Meian Technology Co.,Ltd .

No.32,Lanshui Rd,Longdong,Longgang District,Shenzhen,China

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

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TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Meian Technology Co.,Ltd .
Address	:	No.32,Lanshui Rd,Longdong,Longgang District,Shenzhen,China
Manufacture's Name	:	Shenzhen Meian Technology Co.,Ltd .
Address	:	No.32,Lanshui Rd,Longdong,Longgang District,Shenzhen,China

Product description

Product name	:	Alarm Control Panel
Model and/or type reference	:	ST-IVB
Serial Model：		N/A
Rating(s)	:	DC 3.7V
Standards	:	FCC Part15.231
Test procedure		ANSI C63.4-2003

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test	:	
Date (s) of performance of tests	:	11 Dec 2012 ~16 Dec 2012
Date of Issue	:	06 Jan 2013
Test Result	:	**Pass**

Testing Engineer : Apple Huang

(Apple Huang)

Technical Manager : Tom Zhang

(Tom Zhang)

Authorized Signatory : Bovey Yang

(Bovey Yang)

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.231)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.231b	Radiated Spurious Emission	Pass	
15.231c	Occupied Bandwidth	Pass	
15.231a(1)	Deactivation Time	Pass	

1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd
Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.
FCC Registration No.:238937; IC Registration No.:9270A-1

1.2 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** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Alarm Control Panel
Trade Name	Focus®
Model Name	ST-IVB
Serial Model	N/A
Model Difference	N/A
Product Description	The EUT is a Alarm Control Panel Product Type: Remote Control Operation Frequency: 433.98MHz Modulation Type: FSK Number Of Channel: 1CH. Antenna Designation: Build-in ANT Antenna Gain(Peak): 0.8dBi Output Power: 72.64 dBuV/m @3m(AV Max.) More details of EUT technical specification, please refer to the User's Manual.
Channel List	N/A
Adapter	Model:SAW30-150-2000 INPUT:100-240V~, 50/60Hz,0.8A OUTPUT:15V,2000mA
Battery	DC 3.7V

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.

Table for Filed Antenna

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	Build-in ANT	N/A	0.8	Antenna

Operation principle:

When its tamper switch damaged. It can find alarm situation through the wired areas of the wired connections. Or it receives the alarm information from the detection terminals through the wireless module receiver. Through the wireless module to send out the data, and to make the linked siren to give an alarm

2.2 DESCRIPTION OF TEST MODES

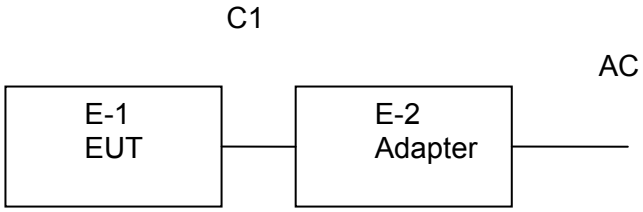
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	TX

For Conducted Emission	
Final Test Mode	Description
Mode 1	TX

For Radiated Emission	
Final Test Mode	Description
Mode 1	TX

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Alarm Control Panel	Focus®	ST-IVB	N/A	EUT
E-2	Adapter	--	SAW30-150-2000	–	–

Item	Shielded Type	Ferrite Core	Length	Note
C1	N/A	N/A	1m	

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 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4407B	160400005	Jul. 06. 2013	1 year
2	Test Receiver	R&S	ESPI	101318	Jul. 06. 2013	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	Jul. 06. 2013	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	Jul. 06. 2013	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	Jul. 06. 2013	1 year
6	Horn Antenna	EM	EM-AH-10180	2011071402	Jul. 06. 2013	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	Jul. 06. 2013	1 year
8	Amplifier	EM	EM-30180	060538	Jul. 06. 2013	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 06. 2013	1 year
10	Power Meter	R&S	NRVS	100696	Jul. 06. 2013	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619.05	Jul. 06. 2013	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	Jul. 06. 2013	1 year
2	LISN	R&S	ENV216	101313	Jul. 06. 2013	1 year
3	LISN	EMCO	3816/2	00042990	Jul. 06. 2013	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	Jul. 06. 2013	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	Jul. 06. 2013	1 year
6	Absorbing clamp	R&S	MOS-21	100423	Jul. 06. 2013	1 year

3. ANTENNA REQUIREMENT

3.1 STANDARD REQUIREMENT

15.203 requirements: For intentional device, according to 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.

3.2 EUT ANTENNA

The EUT antenna is Build-in ANT. It complies with the standard requirement.

3.3 CONDUCTED EMISSION MEASUREMENT

3.3.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	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 *	LP002.
0.50 -5.0			56.00	46.00	LP002.
5.0 -30.0			60.00	50.00	LP002.

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

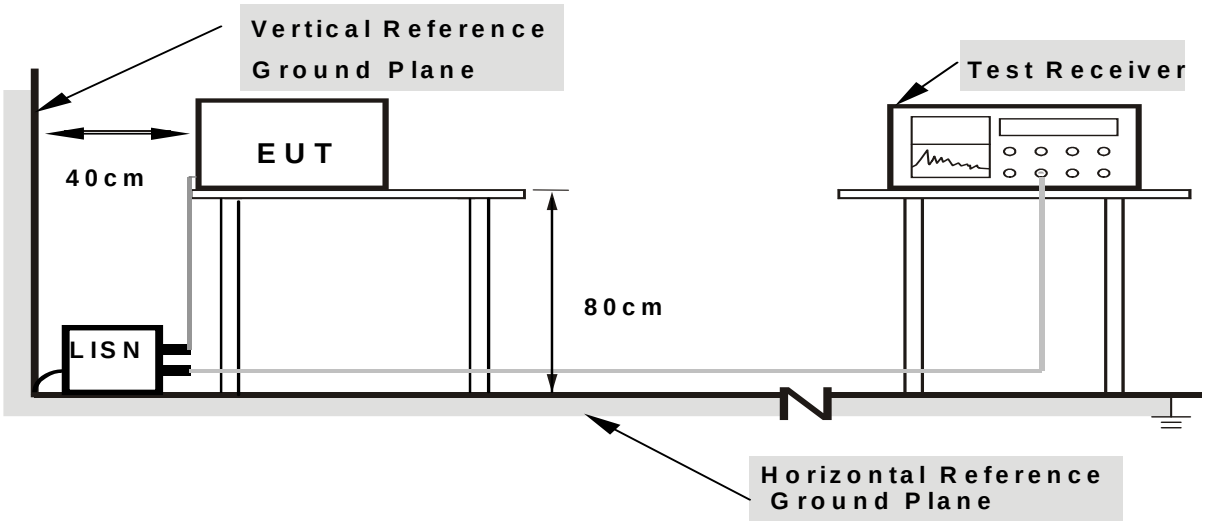
3.3.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 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 at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP



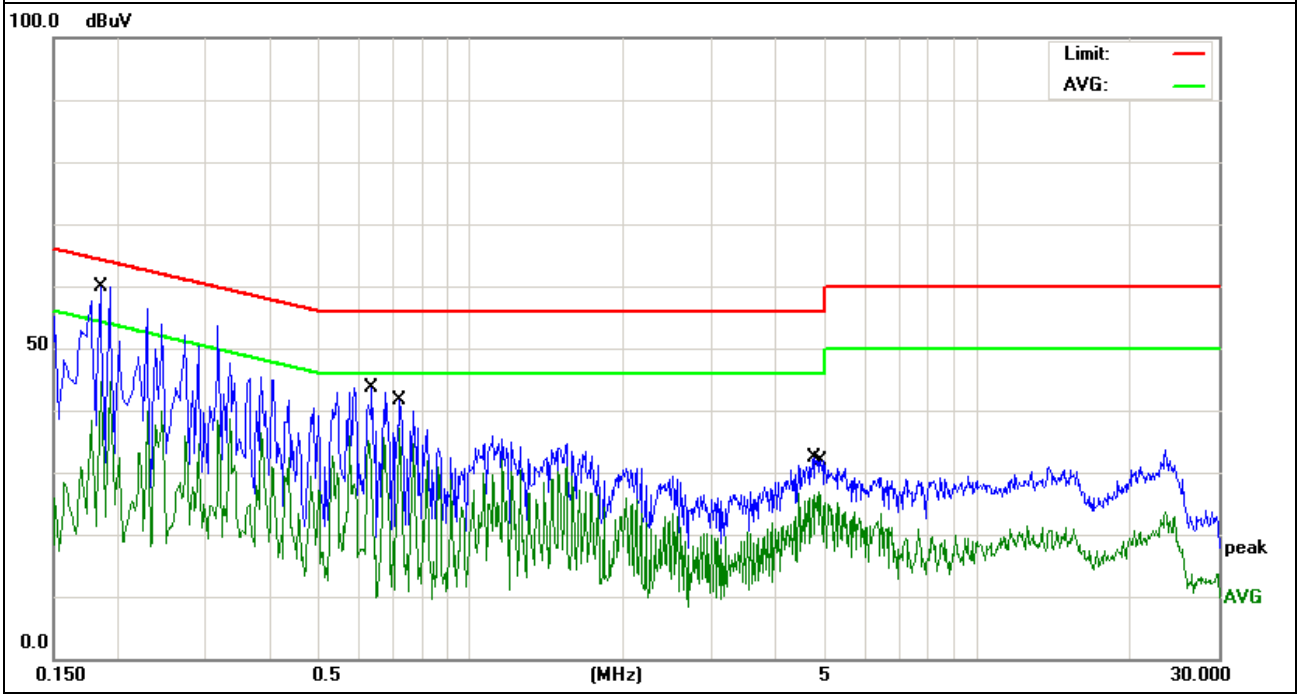
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.2.5 TEST RESULT

EUT：	Alarm Control Panel	Model Name. ：	ST-IVB
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 15V from adapter AC 120V/60Hz	Test Mode：	Mode 1

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.186	50.17	9.79	59.96	64.21	-4.25	QP
0.186	34.81	9.79	44.6	54.21	-9.61	AVG
0.638	33.47	10.2	43.67	56	-12.33	QP
0.726	26.93	10.2	37.13	46	-8.87	AVG
4.7779	22.09	10.37	32.46	56	-23.54	QP
4.8739	16.44	10.38	26.82	46	-19.18	AVG

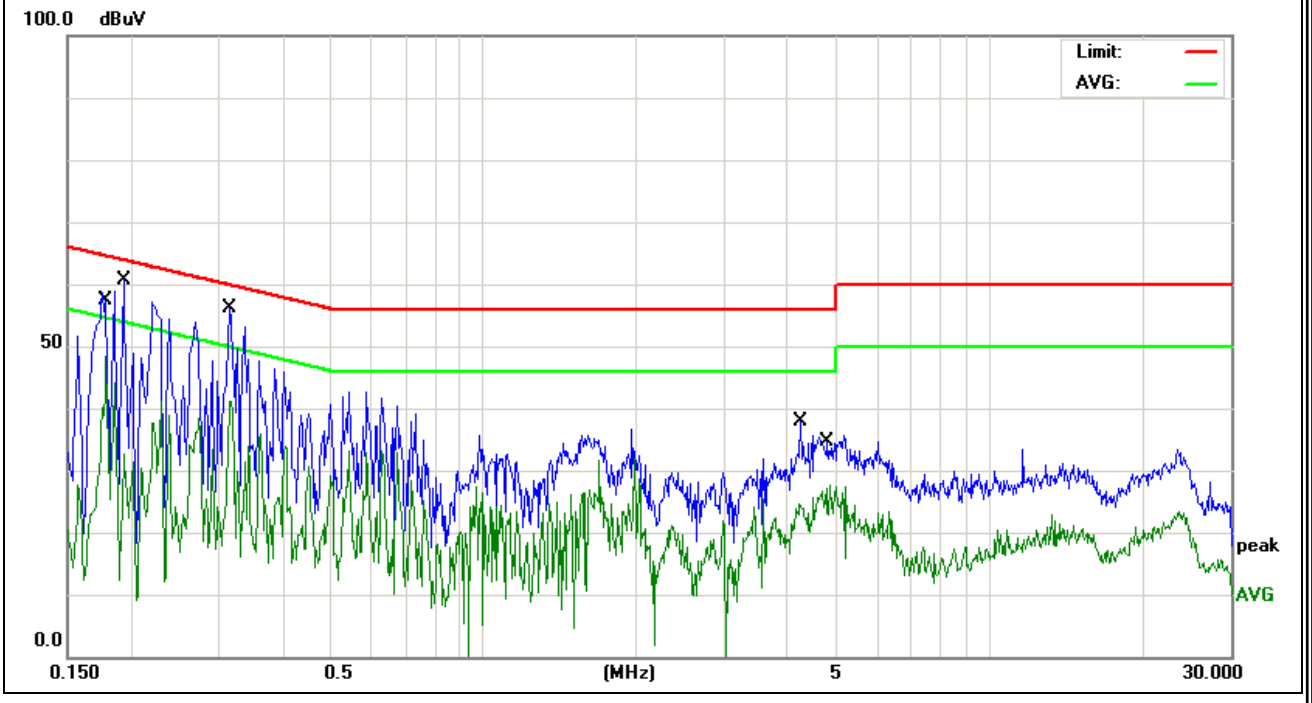
Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



EUT：	Alarm Control Panel	Model Name. ：	ST-IVB
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 15V from adapter AC 120V/60Hz	Test Mode：	Mode 1

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV)	(dBμV)	(dB)	
0.1785	38.52	9.79	48.31	54.55	-6.24	AVG
0.194	50.75	9.78	60.53	63.86	-3.33	QP
0.314	46.3	9.93	56.23	59.86	-3.63	QP
0.318	31.16	9.94	41.1	49.76	-8.66	AVG
4.2419	27.47	10.34	37.81	56	-18.19	QP
4.8338	17.2	10.37	27.57	46	-18.43	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



3.4 RADIATED EMISSION MEASUREMENT

3.4.1 Radiated Emission Limits (FCC 15.209)

Frequencies (MHz)	Field Strength (micorvolts/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

Note:

(1) The tighter limit applies at the band edges.

(2) Emission level (dBuV/m)=20log Emission level (uV/m).

LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.231)

Fundamental Frequency (MHz)	Field Strength of fundamental (microvolts/meter)	Field Strength of Unwanted Emissions (microvolts/meter)
40.66 - 40.70	1,000	100
70 - 130	500	50
130 - 174	500 to 1,500 **	50 to 1,50 **
174 - 260	1,500	1,50
260 - 470	1,500 to 5,000 **	1,50 to 5,00 **
Above 470	5,000	5,00

Notes:

(1) ** linear interpolations

[Where F is the frequency in MHz, the formulas for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, uV/m at 3 meters = 22.72727(F) - 2454.545; for the band 260-470 MHz, uV/m at 3 meters = 16.6667(F) - 2833.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.] The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in 93 Section 15.209, whichever limit permits a higher field strength.

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

Receiver Parameter	Setting
Attenuation	Auto
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

3.4.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

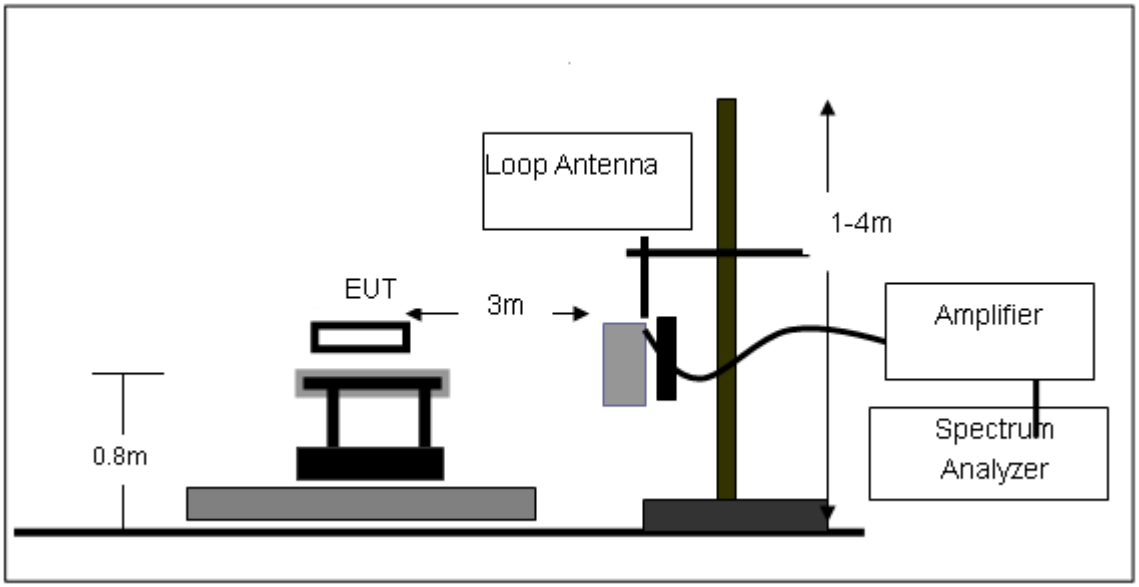
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.4.3 DEVIATION FROM TEST STANDARD

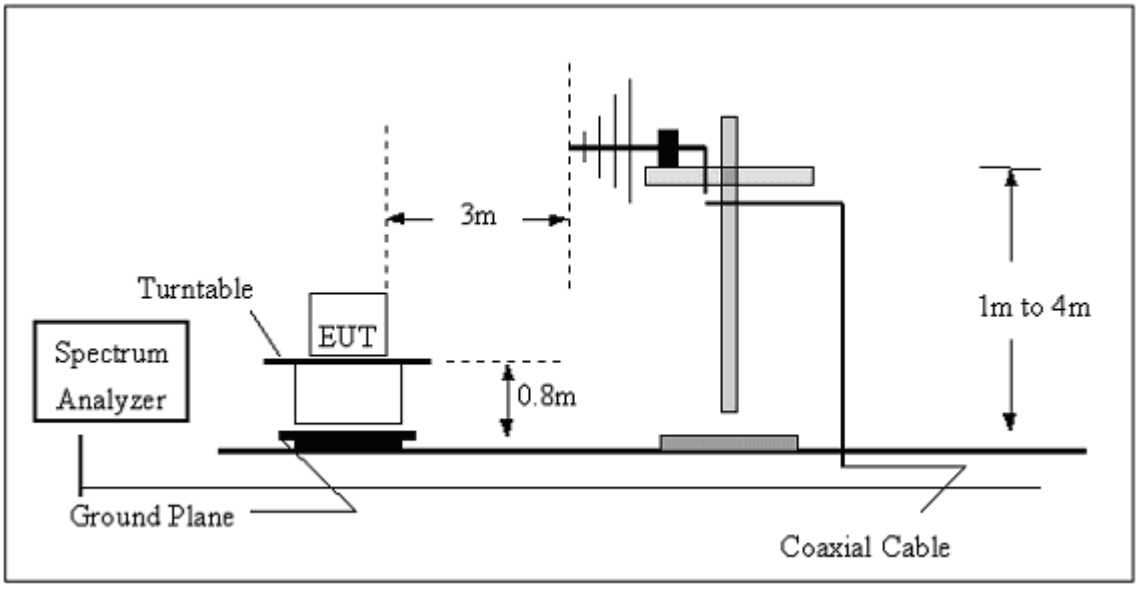
No deviation

3.4.4 TEST SETUP

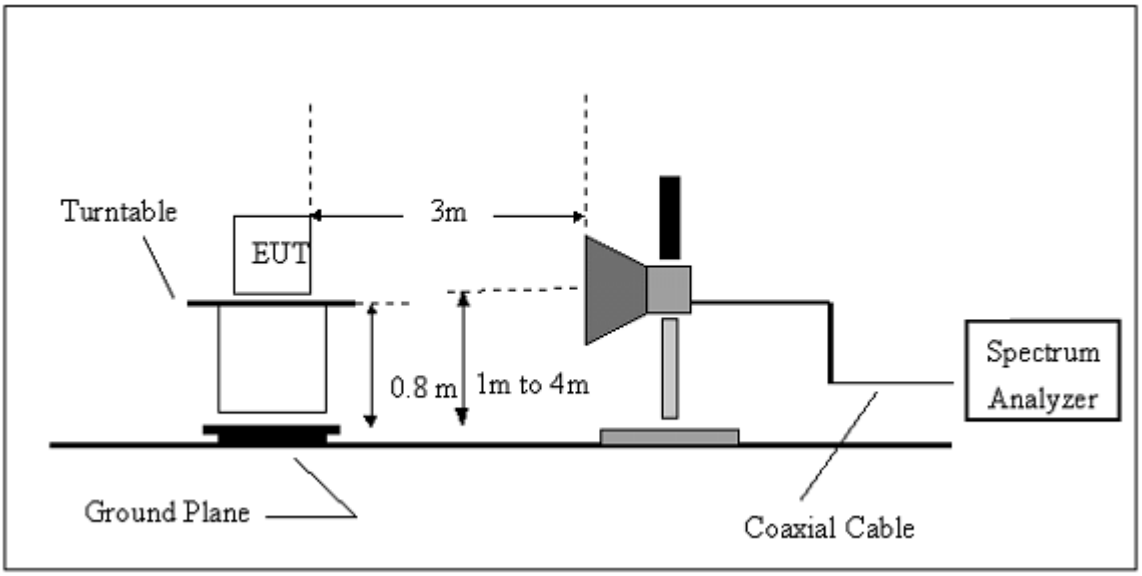
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.4.5 TEST RESULTS (BLOW 30MHz)

EUT：	Alarm Control Panel	Model Name. ：	ST-IVB
Temperature：	20 ℃	Relative Humidtity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 15V from adapter AC 120V/60Hz
Test Mode ：	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =20 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

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3.4.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

The duty cycle is simply the on time divided by the period:

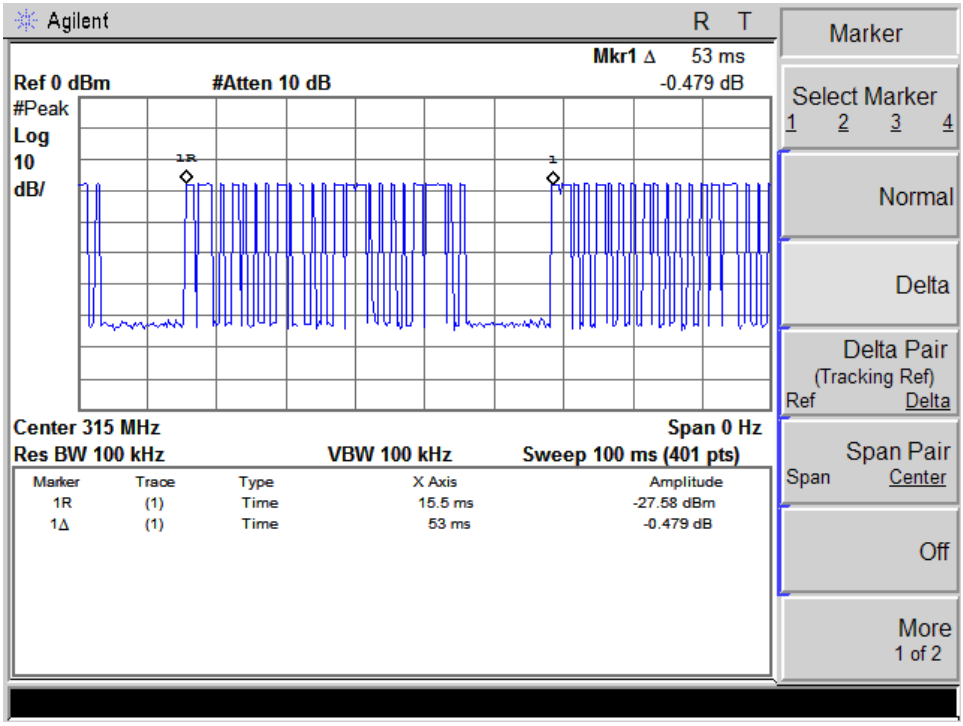
The duration of one cycle = 53ms

Effective period of the cycle = (10×1.20) + (15×0.425) ms= 18.375ms

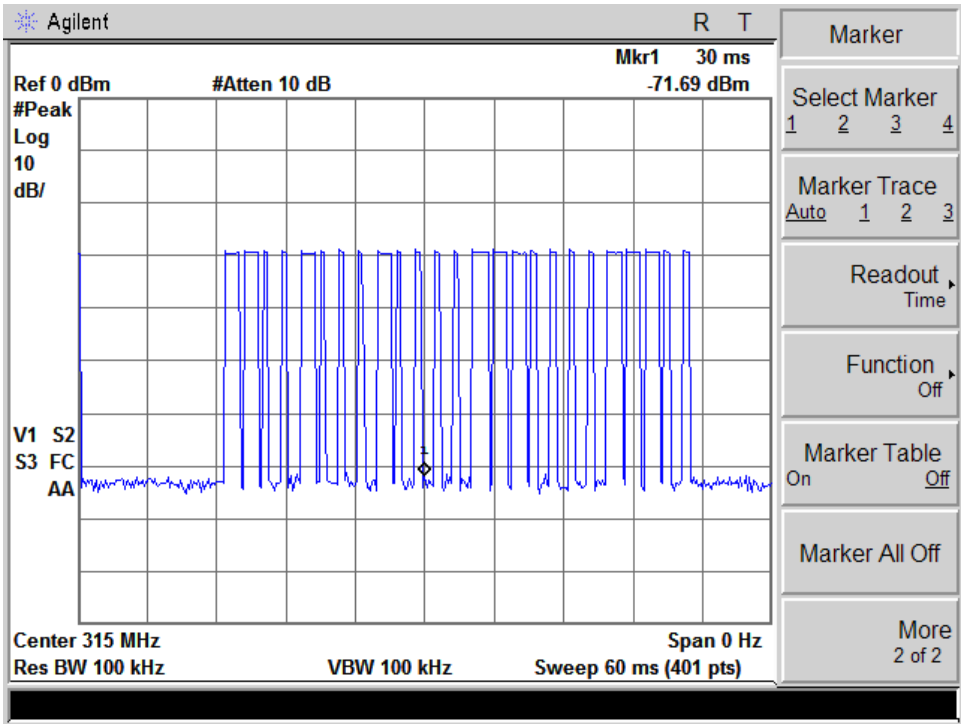
DC = 18.375ms/53ms = 0.346

Therefore, the average factor is found by 20log0.346 = -9.20dB

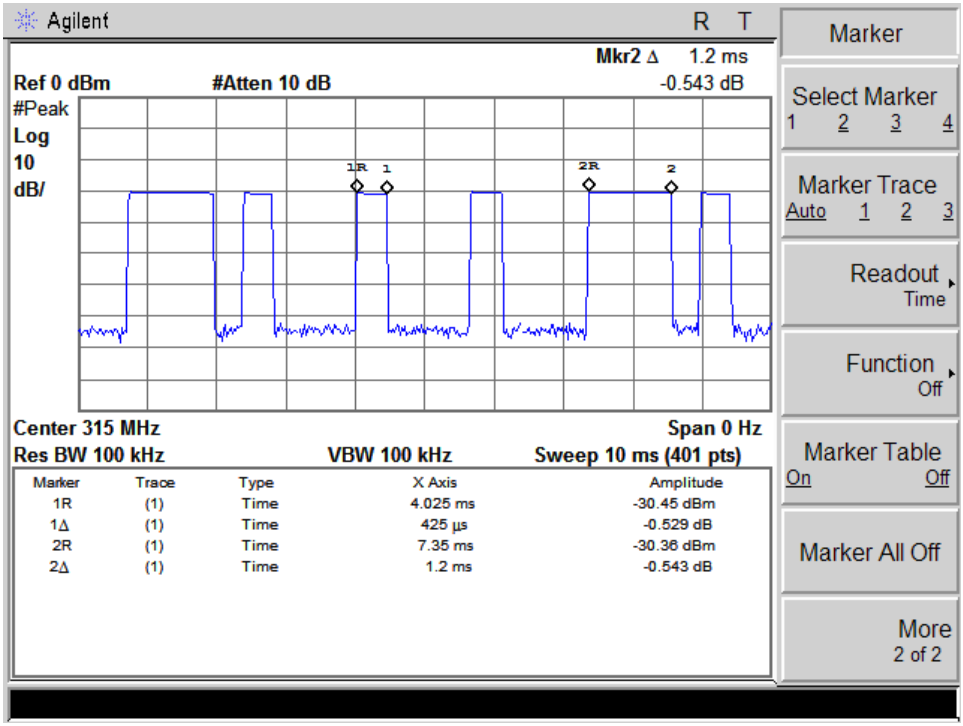
The duration of one cycle



10 long 'on' signals and 15 short 'on' signals



long signal and short signal time



EUT：	Alarm Control Panel	Model Name ：	ST-IVB
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 15V from adapter AC 120V/60Hz
Test Mode ：	TX	Polarization：	Horizontal

Frequency	Average Factor	Field Strength	Field Strength	Limit(PK)	Limit(AV)	State
MHz	dB	dBuV/m (PK)	dBuV/m (AV)	dBuV/m	dBuV/m	
433.980	-9.20	81.84	72.64	100.82	80.82	pass
869.1301	-9.20	50.22	41.02	80.82	60.82	pass
1737.500	-9.20	52.77	--	74.00	54.00	pass
2175.000	-9.20	48.23	--	80.82	60.82	pass
--	--	--	--	74.00	54.00	pass

EUT：	Alarm Control Panel	Model Name ：	ST-IVB
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Test Voltage ：	DC 15V from adapter AC 120V/60Hz
Test Mode ：	TX	Polarization：	Vertical

Frequency	Average Factor	Field Strength	Field Strength	Limit(PK)	Limit(AV)	State
MHz	dB	dBuV/m (PK)	dBuV/m (AV)	dBuV/m	dBuV/m	
433.980	-9.20	79.65	70.45	100.82	80.82	pass
869.1301	-9.20	49.34	40.14	80.82	60.82	pass
1737.500	-9.20	45.84	--	74.00	54.00	pass
2175.000	-9.20	52.33	--	80.82	60.82	pass
--	--	--	--	74.00	54.00	pass

Note:

1. Emissions attenuated more than 20 dB below the permissible value are not reported.
2. FCC Limit for Average Measurement = 41.6667(433.98)-7083.3333 = 10999.1811uV/m =80.82dBuV/m
3. Field Strength(AV) = Field Strength(PK)+ Average Factor.
4. The signal bandwidth was measured and less then 100KHz RBW, so PDCF factor is not required.

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4. BANDWIDTH TEST

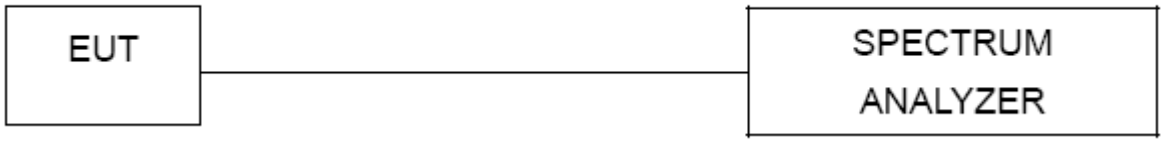
4.1 TEST PROCEDURE

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.
Limit: 433.98MHz*0.25%=1.08MHz

4.2 DEVIATION FROM STANDARD

No deviation.

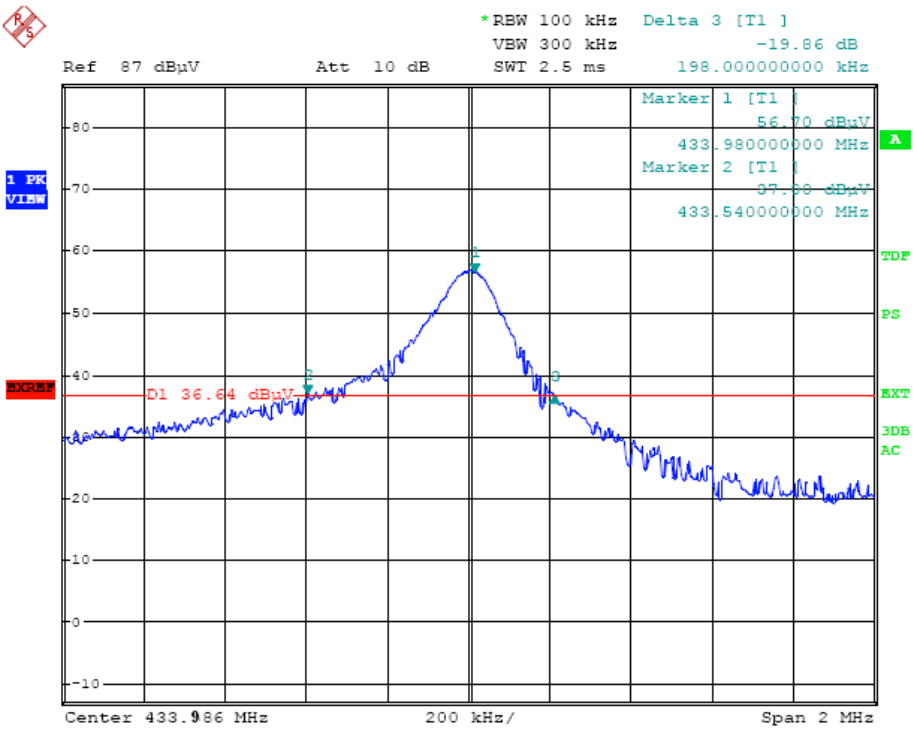
4.3 TEST SETUP



4.4 TEST RESULTS

EUT：	Alarm Control Panel	Model Name ：	ST-IVB
Temperature：	26 ℃	Relative Humidity：	53%
Pressure：	1020 hPa	Test Power ：	DC 15V from adapter AC 120V/60Hz
Test Mode ：	TX		

Frequency (MHz)	20 dBc Bandwidth (MHz)	Limit (MHz)
433.98	0.198	1.08



5. PERIODIC RATE EXCEEDING

5.1 REQUIREMENTS

47 CFR FCC Part 15 Subpart C, section 15.231(a)/(e):

If devices complying with 47 CFR FCC Part 15 Subpart C, section 15.231(a).

(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 paragraphs 15.231(a) of this section, 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.

If devices complying with 47 CFR FCC Part 15 Subpart C, section 15.231(e)

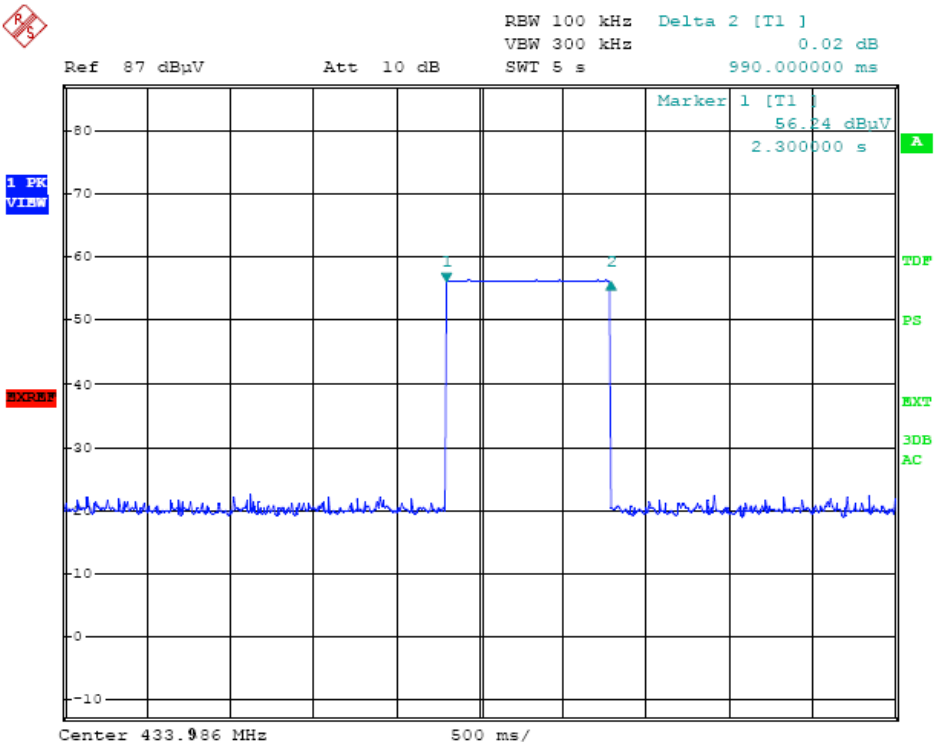
Intentional radiators may operate at a periodic rate exceeding that specified in section 15.231(a) and may be employed for any type of operation, including operation prohibited section 15.231(a).

5.2 TEST RESULTS

EUT：	Alarm Control Panel	Model Name ：	ST-IVB
Temperature：	26 ℃	Relative Humidity：	53%
Pressure：	1020 hPa	Test Power ：	DC 15V from adapter AC 120V/60Hz
Test Mode ：	TX		

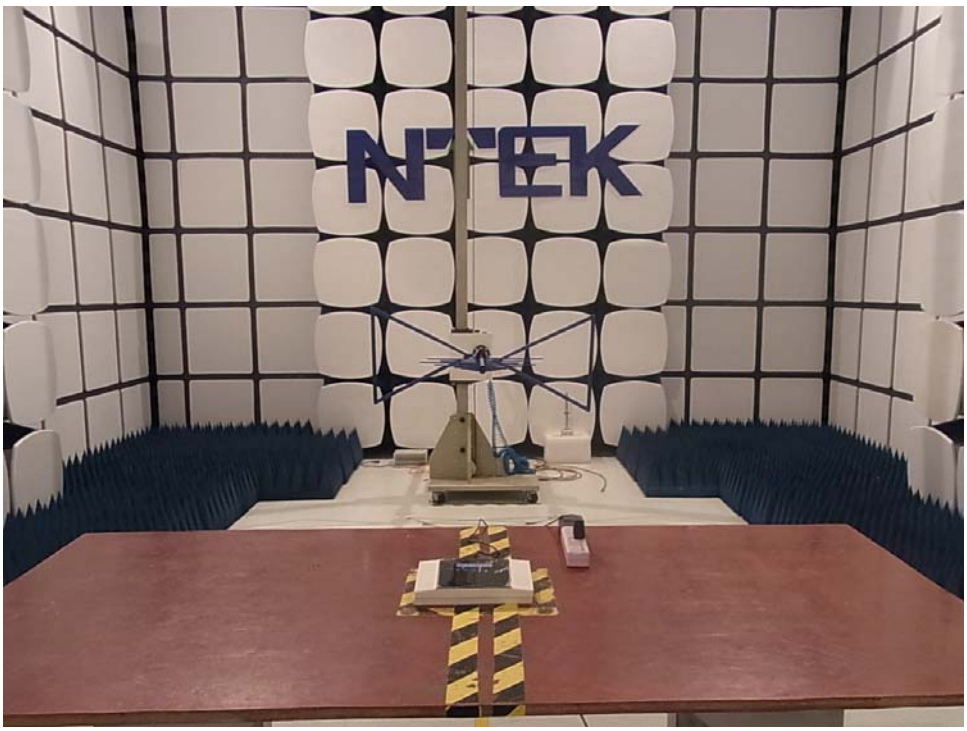
THE DURATION OF EACH TRANSMISSION	LIMIT	RESULT
2.3s	<5s	PASS
A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.		

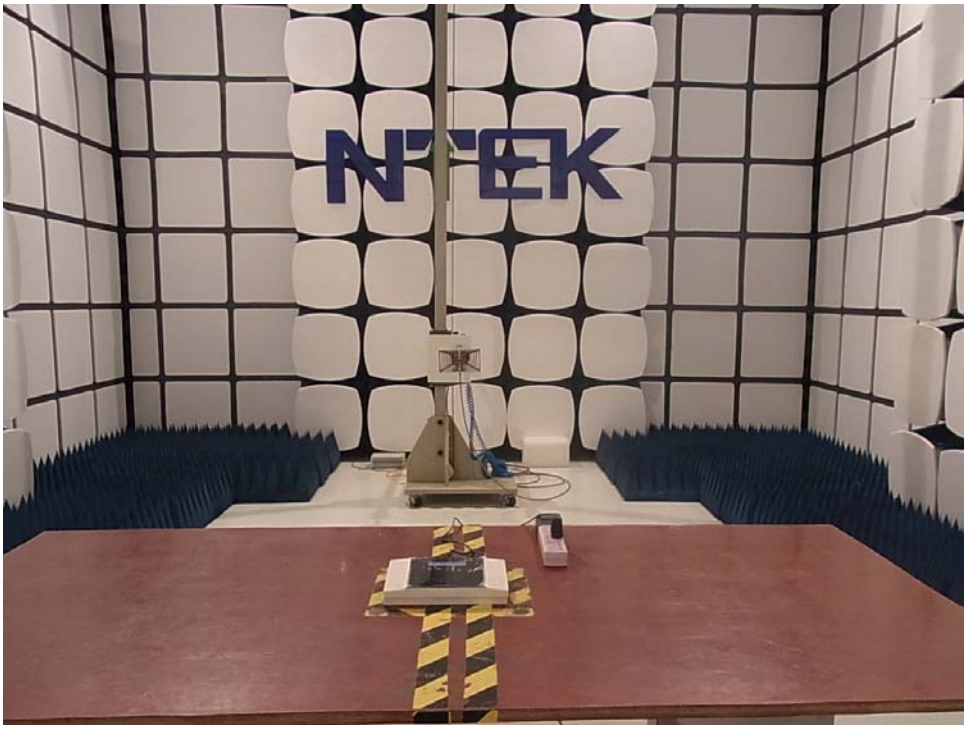
Each transmission time



6. EUT TEST PHOTO

Radiated Measurement Photos





Conducted Measurement Photos