FCC Test Report

Part 15 subpart C

Client Information:

Applicant:	Yantai Wiscloud Cloud Computing Co., Ltd.
Applicant add.:	Room738,Science and Technology Building,No.133 Yingchun Street,Laishan District, Yantai, Shandong

Product Information:

Product Name:	Multi-frequency / Infrared Control Signal Transmitter (CST)
Model No.:	Wis-IR
Derivative model No.:	N/A
Brand Name:	iWiscloud
FCC ID:	2AKLZWIS-IR

Standards: CFR 47 FCC PART 15 SUBPART C:2016 section 231

Prepared By:

Dongguan Yaxu (AiT) Technology Limited

Add. : No. 22, Jinqianling Third Street, Jitigang, Huangjiang, Dongguan, Guangdong, China.

Date of Receipt:	Oct. 10, 2016	Date of Test:	Oct. 10~Nov. 14, 2016
Date of Issue:	Nov. 14, 2016	Test Result:	Pass

This device described above has been tested by Dongguan Yaxu (AiT) Technology Limited, 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.

*This test report must not be used by the client to claim product endorsement by any agency of the U.S. government.

Reviewed by: Seal-Chen **Approved by:**

1 Contents

2 Test Summary

2.1 Compliance with FCC Part 15 subpart C

Test	Test Requirement	Standard Paragraph	Result
Antenna Requirement	FCC Part 15 C:2016	Section 15.203	**PASS**
Conduction Emissions	FCC Part 15 C:2016	Section 15.207(a)	**PASS**
Radiated Emissions	FCC Part 15 C:2016	Section 15.209,15.231(b)	**PASS**
Occupied Bandwidth	FCC Part 15 C:2016	Section 15.231(c)	**PASS**
Transmit time	FCC Part 15 C:2016	Section 15.231(e)	**PASS**

Remark:
EUT: In this whole report EUT means Equipment Under Test.
Tx: In this whole report Tx (or tx) means Transmitter.
Rx: In this whole report Rx (or rx) means Receiver.
RF: In this whole report RF means Radio Frequency.
ANSI C63.10: the detail version is ANSI C63.10:2013 in the whole report.

2.2 Measurement Uncertainty

All measurements involve certain levels of uncertainties, the maximum value of the uncertainty as below:

No.	Item	Uncertainty
1	Conducted Emission Test	1.20dB
2	Radiated Emission Test	3.30dB
3	RF power,conducted	0.16dB
4	RF power density,conducted	0.24dB
5	Spurious emissions,conducted	0.21dB
6	All emissions,radiated(<1G)	4.68dB
7	All emissions,radiated(>1G)	4.89dB

3 General Information

3.1 General Description of EUT

Manufacturer:	Yantai Wiscloud Cloud Computing Co., Ltd.
Manufacturer Address:	Intersection of Jin Shan Road and Wen Zhou Road,in laixi,Qingdao,Shandong
EUT Name:	Multi-frequency / Infrared Control Signal Transmitter (CST)
Model No.:	Wis-IR
Operation frequency:	433.92MHz
Modulation Technology:	FSK
Antenna Type:	Integral Antenna
Antenna Gain:	Maximum 1.5 dBi
Brand Name:	iWiscloud
H/W No.:	A1
S/W No.:	0.1
Serial No.:	N/A
Power Supply Range:	100~250VAC, 50~60Hz
Power Supply:	120 VAC, 60Hz
Power Cord:	N/A

3.2 Test Location

All tests were performed at:
Dongguan Yaxu (AiT) Technology Limited
No.22, Jinqianling Third Street, Jitigang, Huangjiang, Dongguan, Guangdong, China
The FCC Registration No. of Dongguan Yaxu (AiT) Technology Limited is 248337.

Description of Channel:	
Channel	Frequency (MHz)
01	433.92

4 Description of Test conditions

4.1 E.U.T. Operation

Test Voltage: AC 120V/60Hz

Requirements: **15.31(e)**: For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Temperature: 20.0 -25.0 °C

Humidity: 38-50 % RH

Atmospheric Pressure: 1000 -1010 mbar

Test frequencies and frequency range: According to the 15.31(m) Measurements on intentional radiators or receivers, other than TV broadcast receivers, shall be performed and, if required, reported for each band in which the device can be operated with the device operating at the number of frequencies in each band specified in the following table:

According to the 15.33 (a) For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:

Number of fundamental frequencies to be tested in EUT transmit band

Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

Frequency range of radiated emission measurements

Lowest frequency generated in the device	Upper frequency range of measurement
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified

Remark:Test frequency is 433.92MHz.

4.2 EUT Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	signal cable
1	N/A	N/A	N/A	N/A	N/A	N/A

4.3 Test Peripheral List

No.	Equipment	Manufacturer	EMC Compliance	Model No.	Serial No.	Power cord	signal cable
1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

5 Equipments List for All Test Items

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	SIGNAL ANALYZER	R&S	FSV40	101470	2016.06.29	2017.06.28
2	EMI Measuring Receiver	R&S	ESR	101660	2016.06.29	2017.06.28
3	Low Noise Pre Amplifier	Tsj	MLA-10K01-B01-27	1205323	2016.06.29	2017.06.28
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2016.06.29	2017.06.28
5	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2016.06.29	2017.06.28
6	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2016.06.29	2017.06.28
7	SHF-EHF Horn	SCHWARZBECK	BBHA9170	BBHA9170367	2016.06.29	2017.06.28
8	Loop Antenna	ETS	6512	00165355	2016.06.29	2017.06.28
9	Radiated Cable 1#（30MHz-1GHz）	FUJIKURA	5D-2W	01	2016.06.29	2017.06.28
10	Radiated Cable 2# (1GHz -40GHz)	FUJIKURA	10D2W	02	2016.06.29	2017.06.28
11	Conducted Cable 1#(9KHz-30MHz)	FUJIKURA	1D-2W	01	2016.06.29	2017.06.28

6 Test Result

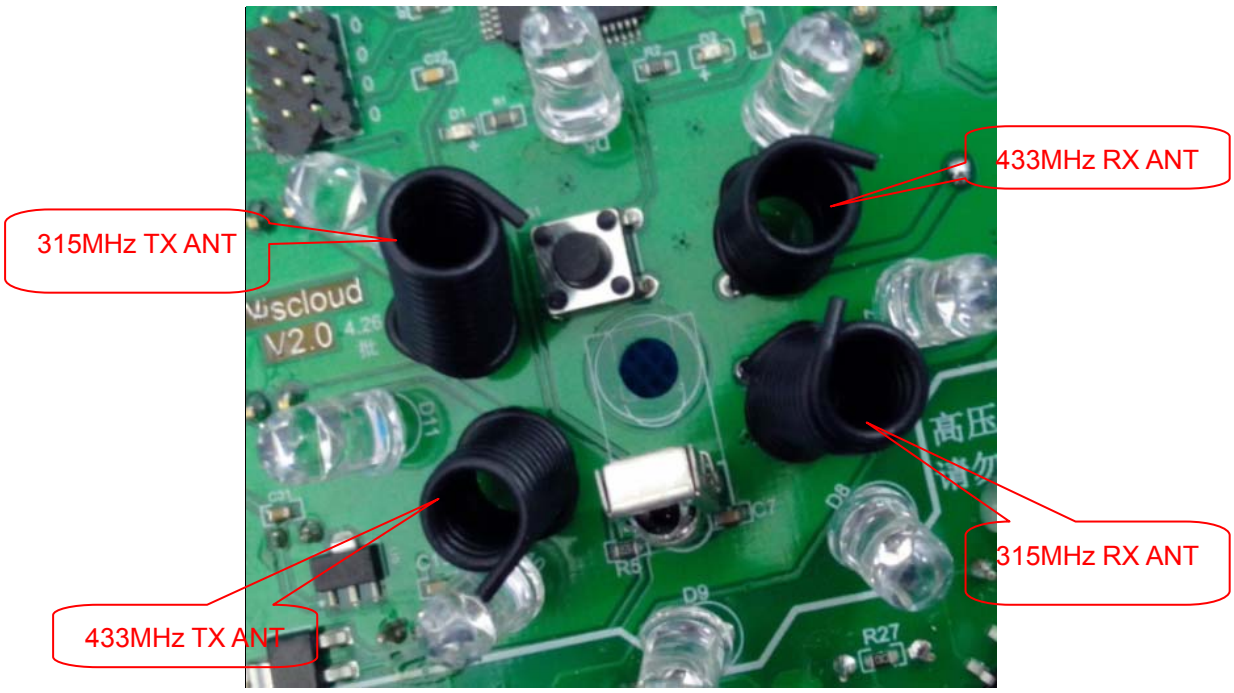
6.1 Antenna Requirement

6.1.1 Standard requirement

15.203 Requirement: 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.

6.1.2 EUT Antenna

The antenna is Integral Antenna. The maximum gain of the antenna is 1.5 dBi.



Test result: The unit does meet the FCC requirements.

6.2 Conducted Emissions at Mains Terminals 150 kHz to 30 MHz

Test Requirement: FCC Part 15 C section 15.207

Test Method: ANSI C63.10: Clause 6.2

Frequency Range: 150 kHz to 30 MHz

Detector: Peak for pre-scan (9 kHz Resolution Bandwidth)

Test Limit

Limits for conducted disturbance at the mains ports

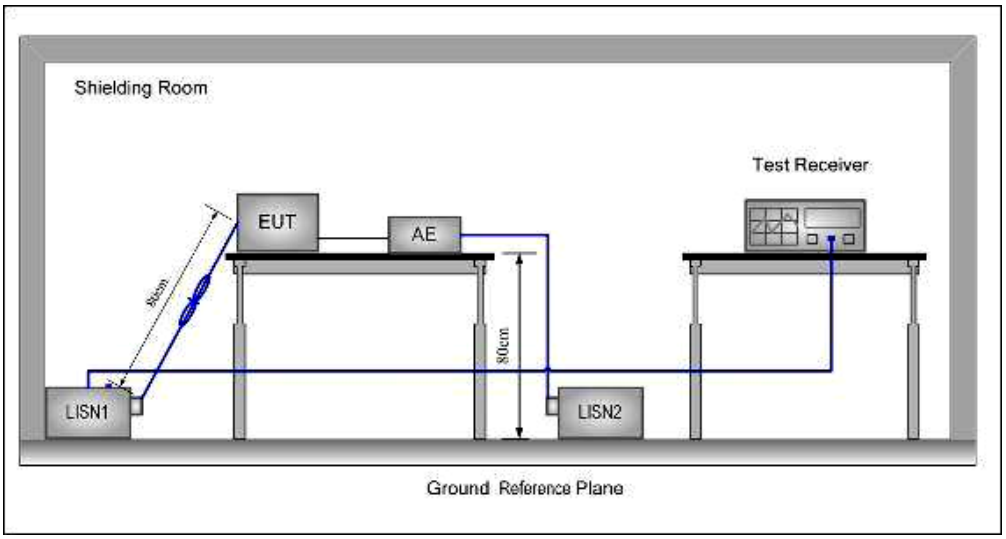
Frequency Range (MHz)	Limit dB(μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
NOTE 1 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

EUT Operation:

Test in normal operating mode. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Test Configuration:



Test procedure:

1. The mains terminal disturbance voltage test was conducted in a shielded room.

2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

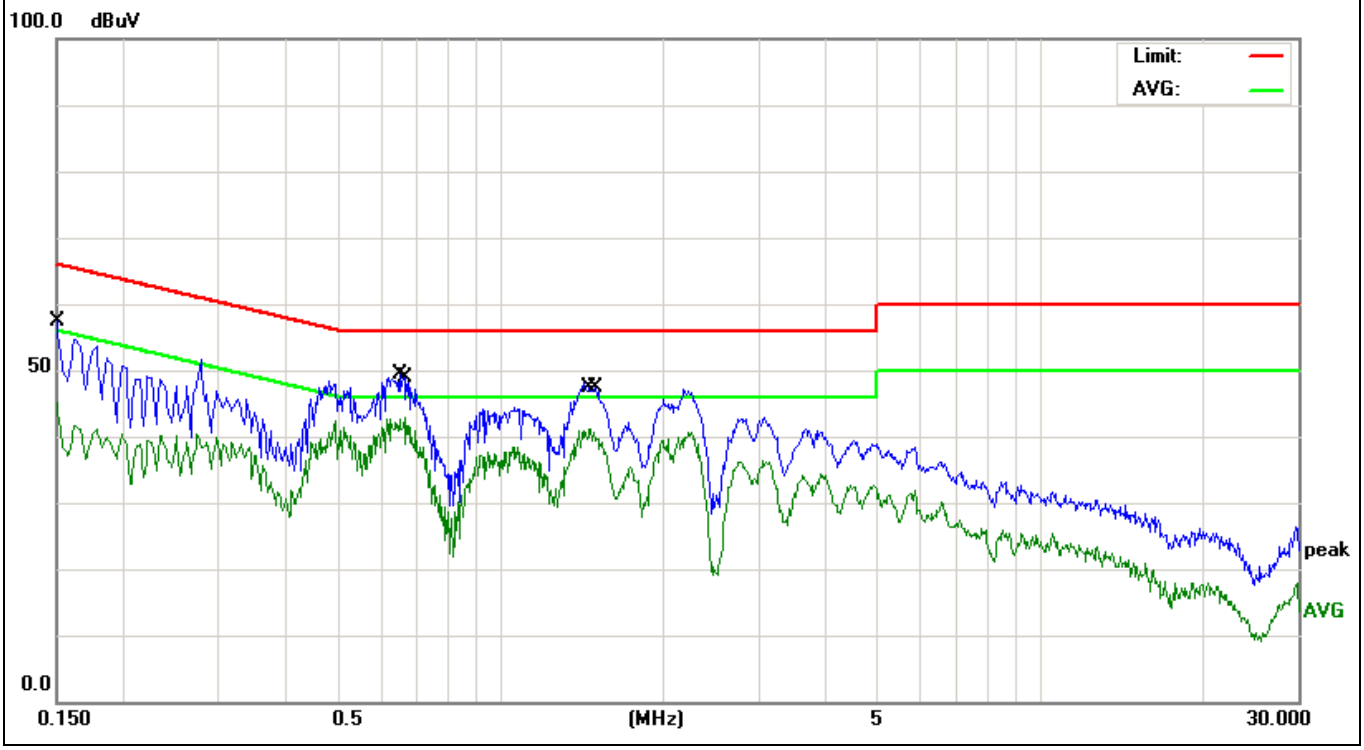
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0,8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0,8 m from the LISN 2.

6.2.1 Test results

EUT：	Multi-frequency / Infrared Control Signal Transmitter (CST)	Model Name. ：	Wis-IR
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date :	2016-11-10
Test Mode：	TX CH01	Phase :	Line
Test Voltage ：	AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Over (dB)	Detector
0.1500	45.44	11.94	57.38	66.00	-8.62	Quasi-Peak
0.1500	33.08	11.94	45.02	56.00	-10.98	Average
0.6500	39.39	9.99	49.38	56.00	-6.62	Quasi-Peak
0.6620	32.86	9.98	42.84	46.00	-3.16	Average
1.5020	37.29	9.97	47.26	56.00	-8.74	Quasi-Peak
1.4700	31.12	9.96	41.08	46.00	-4.92	Average

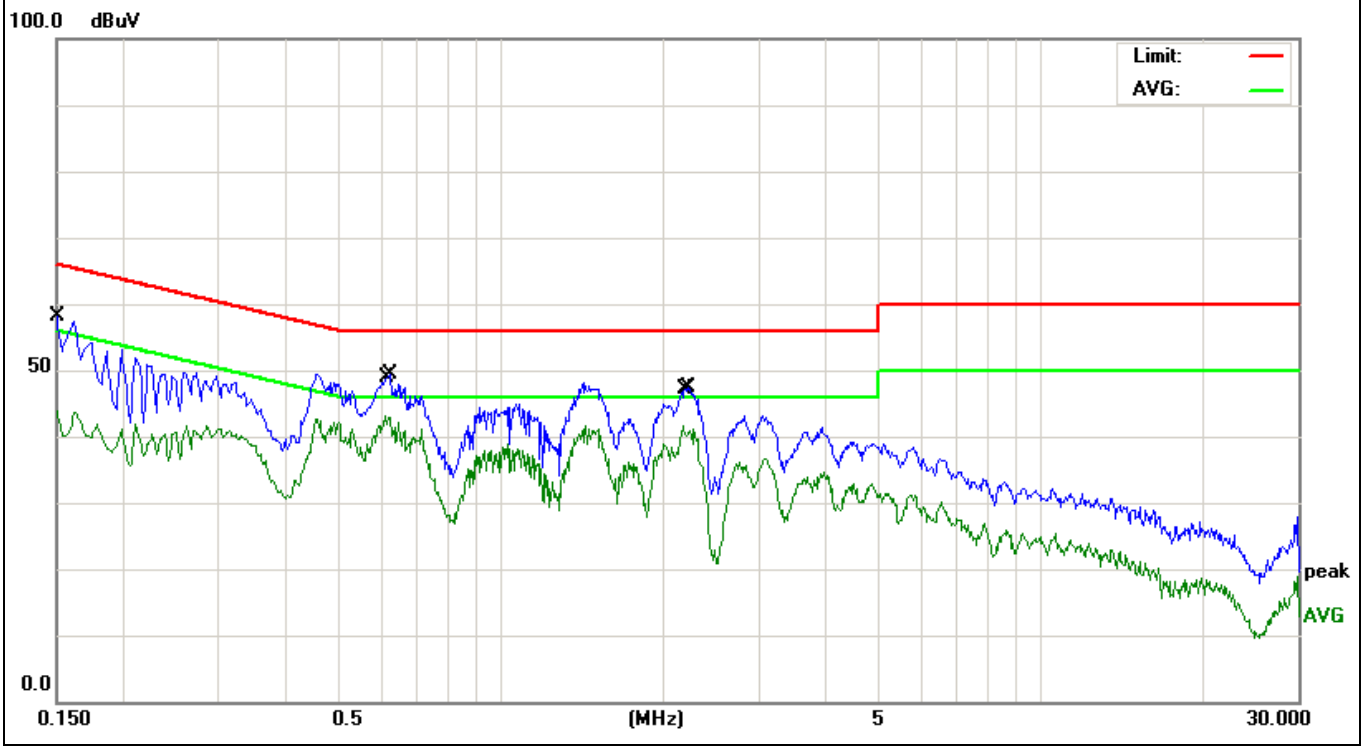
Remark: Factor = LISN factor + Cable Loss + Pulse limiter factor.



EUT：	Multi-frequency / Infrared Control Signal Transmitter (CST)	Model Name. ：	Wis-IR
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Test Date :	2016-11-10
Test Mode：	TX CH01	Phase :	Neutral
Test Voltage ：	AC 120V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor(dB)	Emission Level (dBμV)	Limits (dBμV)	Over (dB)	Detector
0.1500	46.18	11.94	58.12	65.99	-7.87	Quasi-Peak
0.1500	32.05	11.94	43.99	55.99	-12.00	Average
0.6100	32.88	9.99	42.87	46.00	-3.13	Quasi-Peak
0.6260	39.29	9.99	49.28	56.00	-6.72	Average
2.1700	31.54	10.00	41.54	46.00	-4.46	Quasi-Peak
2.2180	37.38	10.00	47.38	56.00	-8.62	Average

Remark: Factor = LISN factor + Cable Loss + Pulse limiter factor.



6.3 Transmit time

6.3.1 Applied procedures / Limit

Regulation 15.231 (e) In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

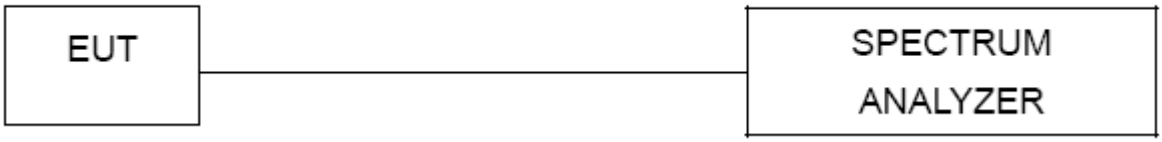
6.3.2 Test procedure

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: RBW=100kHz, VBW≧RBW, Sweep time=10s, Detector Function=Peak.

6.3.3 Deviation from standard

No deviation.

6.3.4 Test setup

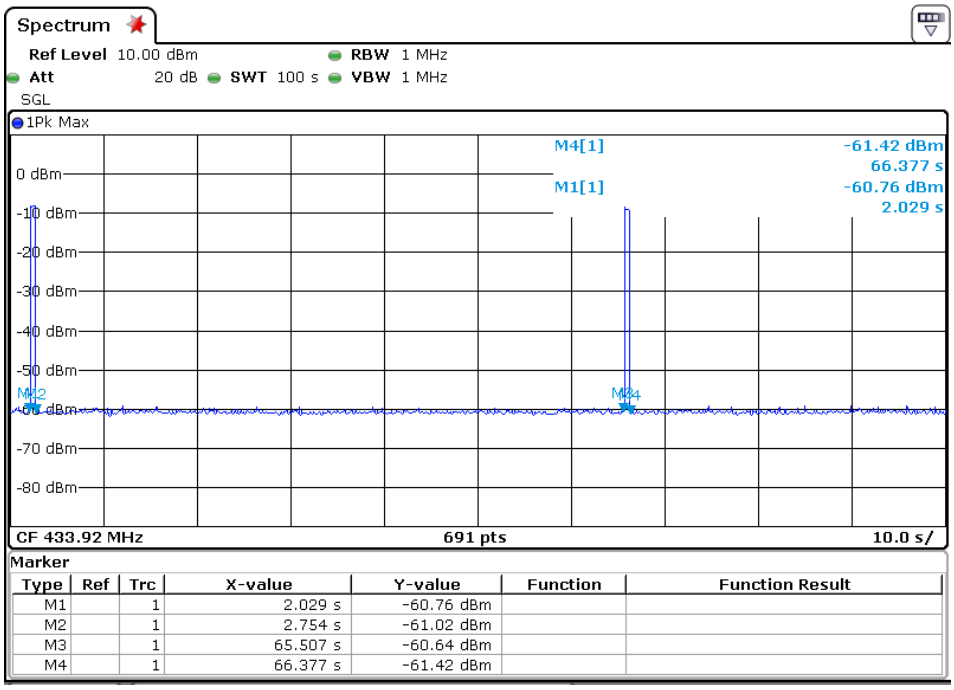


6.3.5 Test results

EUT：	Multi-frequency / Infrared Control Signal Transmitter (CST)	Model Name ：	Wis-IR
Temperature：	23 ℃	Relative Humidity：	60%
Pressure：	1010 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX CH01		

Item	Duration of each transmission (Td)	Silent period between transmissions(Ts)
Time	0.87s	62.753s
Limit	⩽1 s	⩾10 s and 30*Td

Channel 01: 433.92MHz



6.4 Radiated Emissions Measurement

6.4.1 Applied procedures / Limit

Test Requirement:	FCC Part15 C section 15.231(e)	
Test Method:	ANSI C63.10: Clause 6.4, 6.5 and 6.6	
Measurement Distance:	3 m (Semi-Anechoic Chamber)	
Test Status:	Test in transmitting mode.	
Requirements:	the field strength of emissions from intentional radiators operated under this Section shall not exceed the following:	
Fundamental Frequency MHz	Field Strength of Fundamental (dBμV/m @ 3 m)	Field Strength of Harmonics and Spurious Emissions (dBμV/m @ 3 m)
40.66 to 40.70	60.00	40.00
70 to 130	53.98	33.98
130 to 174	53.98 to 63.52	33.98 to 43.52
174 to 260	63.52	43.52
260 to 470	63.52 to 73.98	43.52 to 53.98
Above 470	73.98	53.98
Detector:	Peak for pre-scan	
	QP for 30MHz to1000 MHz:120 kHz resolution bandwidth Peak for Above 1 GHz: 1 MHz resolution bandwidth	
** 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, μV/m at 3 meters = 22.72727(F) - 2454.545; for the band 260-470 MHz, μV/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 fundamental frequency of the EUT is 433.92 MHz The limit for average or QP field strength dBuv/m for the fundamental emission= 72.86 dBμV/m No fundamental is allowed in the restricted bands. The limit for average field strength dBuv/m for the spurious emission=52.86 dBuV/m.Spurious in the restricted bands must be less than 52.86 dBuV/m or 15.209, whichever limit permits a higher field strength.		

And according 15.35(a)

15.35(a) On any frequency or frequencies below or equal to 1000 MHz, the limits shown are based on measuring equipment employing a CISPR quasi-peak detector function and related measurement bandwidths, unless otherwise specified. The specifications for the measuring instrument using the CISPR quasi-peak detector can be found in Publication 16 of the International Special Committee on Radio Interference (CISPR) of the International Electrotechnical Commission. As an alternative to CISPR quasi-peak measurements, the responsible party, at its option, may demonstrate compliance with the emission limits using measuring equipment employing a peak detector function, properly adjusted for such factors as pulse desensitization, as long as the same bandwidths as indicated for CISPR quasi-peak measurements are employed.

Note: For pulse modulated devices with a pulse-repetition frequency of 20 Hz or less and for which CISPR quasi-peak measurements are specified, compliance with the regulations shall be demonstrated using measuring equipment employing a peak detector function, properly adjusted for such factors as pulse desensitization, using the same measurement bandwidths that are indicated for CISPR quasi-peak measurements.

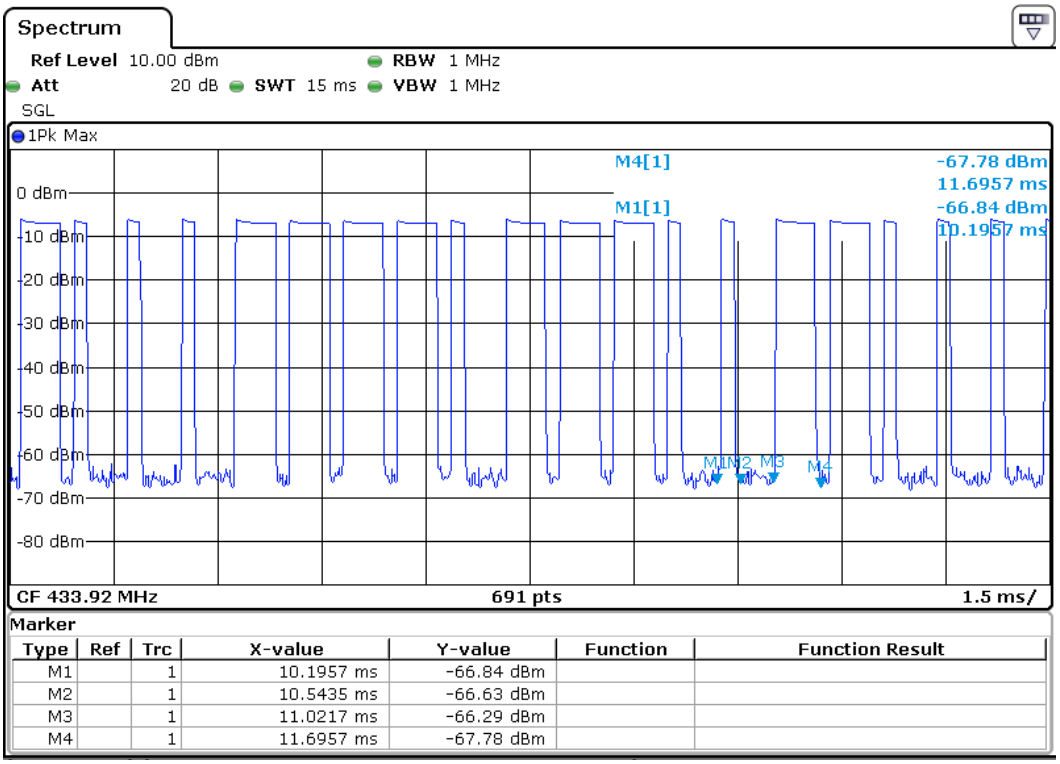
According to 15.35 (b) Unless otherwise specified, on any frequency or frequencies above 1000 MHz, the radiated emission limits are based on the use of measurement instrumentation employing an average detector function. Unless otherwise specified, measurements above 1000 MHz shall be performed using a minimum resolution bandwidth of 1 MHz. When average radiated emission measurements are specified in this part, including average emission measurements below 1000 MHz, there also is a limit on the peak level of the radio frequency emissions. Unless otherwise specified, e.g., see §§ 15.250, 15.252, 15.255, and 15.509-15.519 of this part, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device, e.g., the total peak power level. Note that the use of a pulse desensitization correction factor may be needed to determine the total peak emission level. The instruction manual or application note for the measurement instrument should be consulted for determining pulse desensitization factors, as necessary.

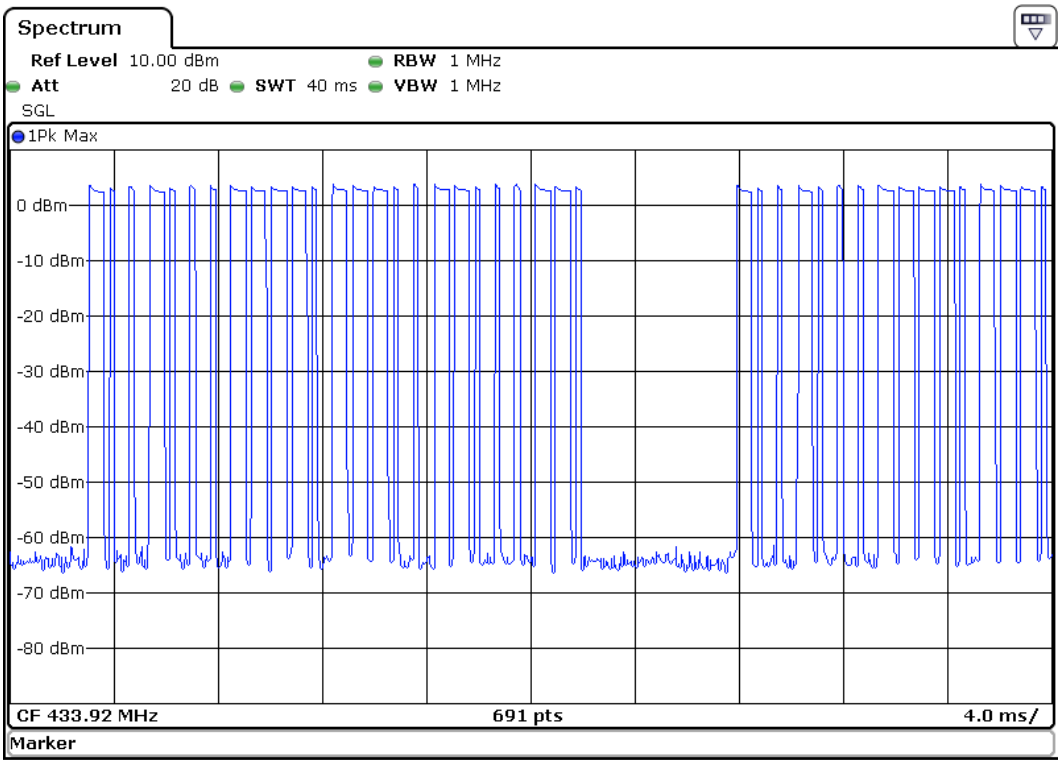
The average correction factor is computed by analyzing the on time in 100ms over one complete pulse train. Analysis of the remote transmitter on time in one complete pulse train, therefore the average value of fundamental frequency is: Average = Peak value + 20log (Duty cycle), where the duty factor is calculated from following formula:

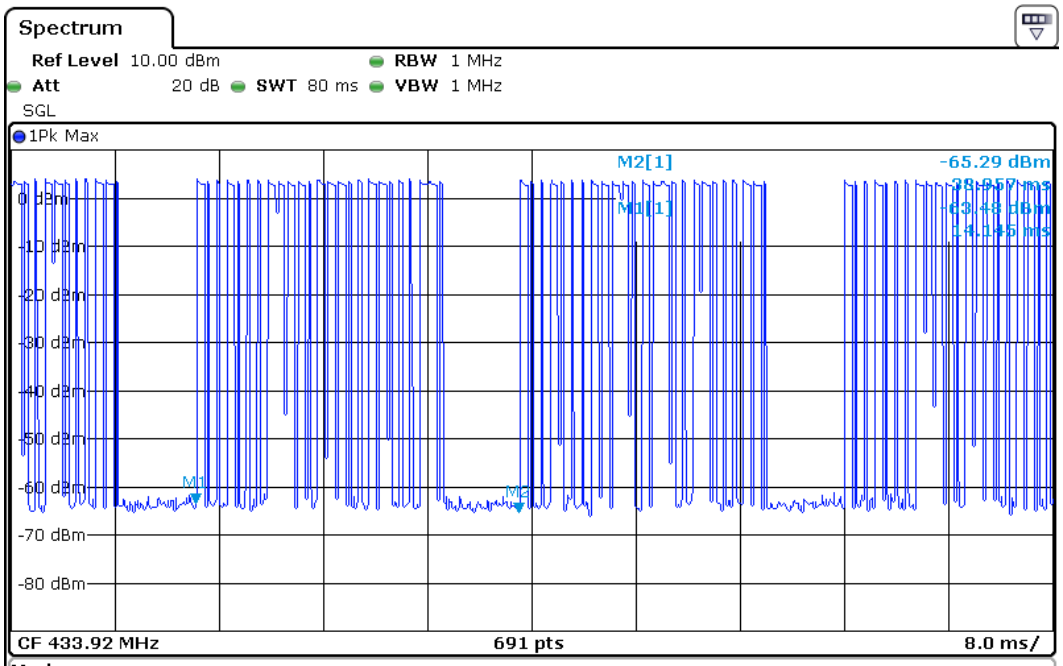
20log (Duty cycle) = 20log(T_{pulse} (12.5494/24.812)) =20log(0.5213)= -5.92dB

Here T_{pulse} =(0.2608 x 12+ 0.7246 x 13)= 12.5494(ms)

Please refer to below plots for more details.


Spectrum
Ref Level 10.00 dBm
RBW 1 MHz
Att 20 dB SWT 15 ms VBW 1 MHz
SGL
1Pk Max
M4[1]
-67.78 dBm
11.6957 ms
M1[1]
-66.84 dBm
10.1957 ms
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 433.92 MHz
691 pts
1.5 ms/
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 10.1957 ms -66.84 dBm
M2 1 10.5435 ms -66.63 dBm
M3 1 11.0217 ms -66.29 dBm
M4 1 11.6957 ms -67.78 dBm


Spectrum
Ref Level 10.00 dBm
RBW 1 MHz
Att 20 dB SWT 40 ms VBW 1 MHz
SGL
1Pk Max
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
-80 dBm
CF 433.92 MHz
691 pts
4.0 ms/
Marker



Marker

Type	Ref	Trc	X-value	Y-value	Function	Function Result
M1		1	14.145 ms	-63.48 dBm		
M2		1	38.957 ms	-65.29 dBm		

6.4.2 Test procedure

Test Procedure:

1)9 kHz to 30 MHz emissions:

For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.10. The centre of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT, During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

2)30 MHz to 1 GHz emissions:

For testing performed with the bi-log type antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360º, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

3)1 GHz to 25 GHz emissions:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2007 was used to perform radiated emission test above 1 GHz.

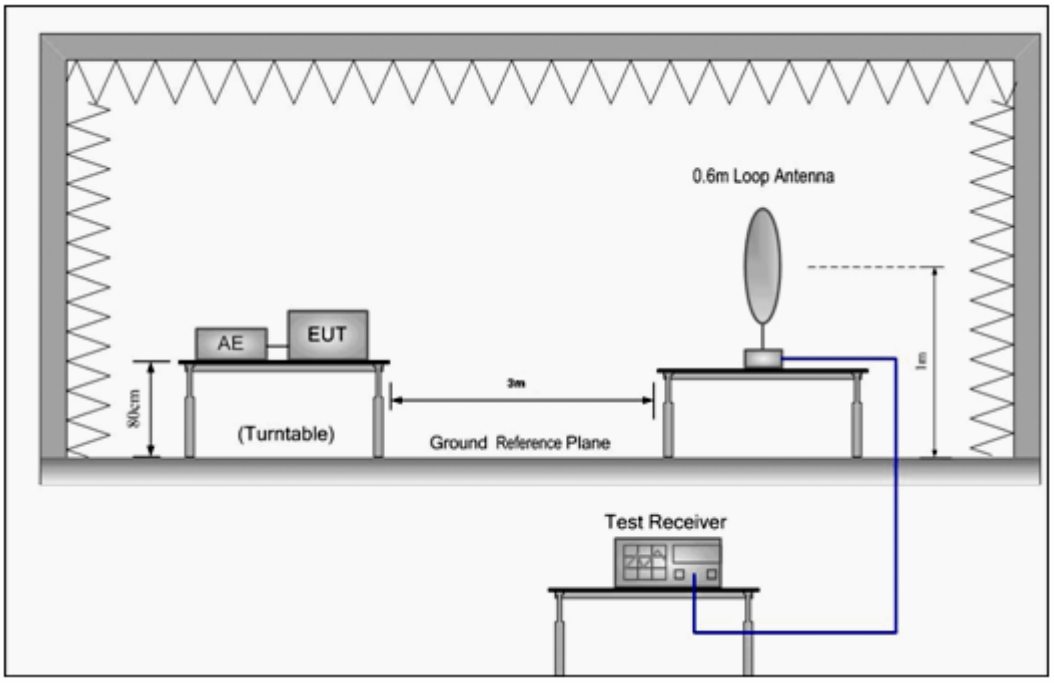
For testing performed with the horn antenna, testing was performed in accordance to ANSI C63.10. The measurement is performed with the EUT rotated 360º, the antenna height scan between 1m and 4m, and the antenna rotated to repeat the measurement for both the horizontal and vertical antenna polarizations.

For the radiated emission test above 1GHz:

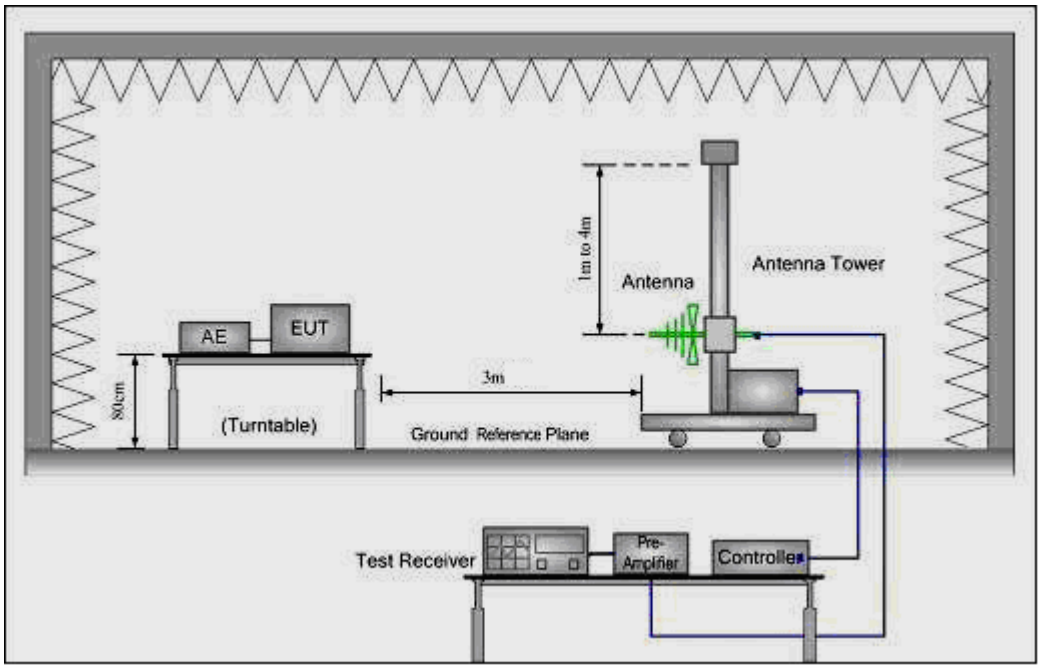
Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. 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.

Test Configuration:

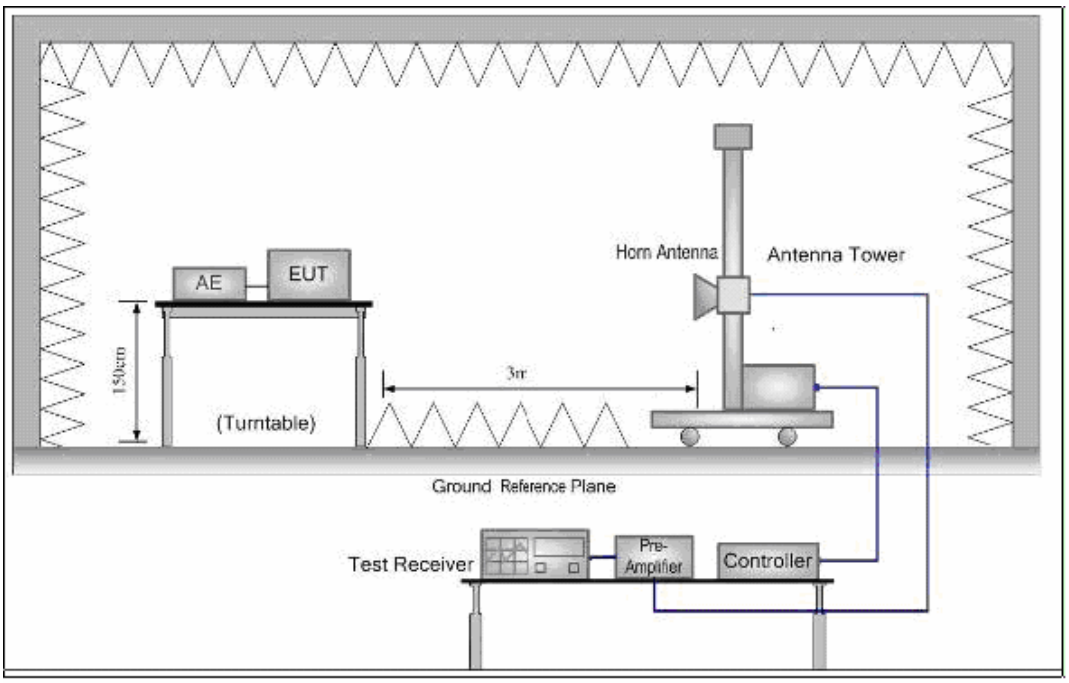
1) 9 kHz to 30 MHz emissions:



2) 30 MHz to 1 GHz emissions:



3) 1 GHz to 25 GHz emissions:



The field strength is calculated by adding the Antenna Factor, Cable Loss & Per-amplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna, Factor + Cable Loss – Preamplifier Factor

1) Fundamental emission:

Antenna polarization: Horizontal:

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
433.92	78.75	-9.00	69.75	72.86	-3.11	QP

Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
433.92	79.56	-9.00	70.56	72.86	-2.30	QP

Y: rotate EUT by 90° vertically.

X: rotate EUT by 90° clockwise.

Z: EUT as Radiated Emission test setup photograph in section 6 of this report.

Remark: Radiated Emission test setup photograph in section 6 of this report is the worst case and reported.

2) other emissions:

The receive was scanned from the lowest frequency generated within the EUT to 5 GHz.When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. The worst case emissions were reported.

An initial pre-scan was performed in the 3 m chamber using the spectrum analyzer in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bilog antenna with 2 orthogonal polarities.

The field strength is calculated by adding the Antenna Factor, Cable Factor & Peramplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Factor –Peramplifier Factor.

The following test results were performed on the EUT.

Since the peak emission level is lower than the average limit, the average emission level does not need to show.

Test the EUT in transmitting mode.

6.4.3 Test Result

9 kHz~30 MHz Field Strength of Unwanted Emissions.Quasi-Peak Measurement

The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

EUT：	Multi-frequency / Infrared Control Signal Transmitter (CST)	Model Name ：	Wis-IR
Temperature：	23 ℃	Test Data	2016-11-10
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	TX CH01	Test Voltage ：	AC 120V/60Hz
Measurement Distance	3 m	Frenqucy Range	30MHz to 1GHz
RBW/VBW	100KHz / 300KHz for spectrum, RBW=120KHz for receiver.		

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
31.6202	32.54	-15.37	17.17	40.00	-22.83	QUASIPEAK
65.1145	36.58	-17.44	19.14	40.00	-20.86	QUASIPEAK
89.5899	38.24	-16.88	21.36	43.50	-22.14	QUASIPEAK
183.2005	41.02	-11.34	29.68	43.50	-13.82	QUASIPEAK
440.1963	31.47	-6.68	24.79	46.00	-21.21	QUASIPEAK
938.8326	**32.61**	**3.51**	**36.12**	**46.00**	**-9.88**	**QUASIPEAK**

(b) Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
35.2512	**53.68**	**-16.78**	**36.90**	**40.00**	**-3.10**	**QUASIPEAK**
64.8865	49.85	-19.20	30.65	40.00	-9.35	QUASIPEAK
91.4949	54.26	-18.20	36.06	43.50	-7.44	QUASIPEAK
187.7530	43.73	-15.79	27.94	43.50	-15.56	QUASIPEAK
356.6758	31.83	-7.73	24.10	46.00	-21.90	QUASIPEAK
952.0937	33.23	3.77	37.00	46.00	-9.00	QUASIPEAK

EUT：	Multi-frequency / Infrared Control Signal Transmitter (CST)	Model Name ：	Wis-IR
Temperature：	23 ℃	Test Data	2016-11-10
Pressure：	1010 hPa	Relative Humidity：	60%
Test Mode ：	TX CH01	Test Voltage ：	AC 120V/60Hz
Measurement Distance	3 m	Frenqucy Range	1GHz to 5GHz
RBW/VBW	1MHz/1MHz for Peak, 1MHz/10Hz for Average.		

(a) Antenna polarization: Horizontal

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1301.76	53.25	-10.33	42.92	60.83	-17.91	PEAK
1735.68	41.76	-9.52	32.24	60.83	-28.59	PEAK
2169.60	**50.33**	**-7.69**	**42.64**	**60.83**	**-18.19**	**PEAK**
3037.44	41.96	-1.59	40.37	60.83	-20.46	PEAK

Frequency (MHz)	**20log (Duty cycle) (dB)**	**Peak Level (dBμV)**	**Average Level (dBμV/m)**	**Limit (dBμV/m)**	**Margin (dB)**	**Antenna polarization**
1301.76	-5.92	42.92	36.91	40.83	-3.92	AVG
1735.68		32.24	29.29	40.83	-11.54	AVG
2169.60		**42.64**	**37.08**	**40.83**	**-3.75**	**AVG**
3037.44		40.37	36.36	40.83	-4.47	AVG

(b) Antenna polarization: Vertical

Frequency (MHz)	Reading Level (dBuV)	Correct Factor (dB)	Measure Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type
1301.76	**52.91**	**-10.33**	**42.58**	**60.83**	**-18.25**	**PEAK**
1735.68	43.72	-9.52	34.20	60.83	-26.63	PEAK
2169.60	49.68	-7.69	41.99	60.83	-18.84	PEAK
3037.44	41.24	-1.59	39.65	60.83	-21.18	PEAK

Frequency (MHz)	**20log (Duty cycle) (dB)**	**Peak Level (dBμV)**	**Average Level (dBμV/m)**	**Limit (dBμV/m)**	**Margin (dB)**	**Antenna polarization**
1301.76	-5.92	**42.58**	**36.66**	**40.83**	**-4.17**	**AVG**
1735.68		34.20	28.28	40.83	-12.55	AVG
2169.60		41.99	36.07	40.83	-4.76	AVG
3037.44		39.65	33.73	40.83	-7.10	AVG

Note: Measurement Level = Reading Level + Factor
Average Correct Factor= Ant Factor + Cable Loss+ Averaging factor
Factor=Ant Factor + Cable Loss
Channel 01: 433.92 MHz

Remark:
According to 15.35 (b) When average radiated emission measurements are specified in the regulations, including emission measurements below 1000 MHz, there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules, e.g., see Section 15.255.

6.5 BANDWIDTH TEST

6.5.1 Applied procedures / Limit

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. 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.
Bandwidth (20dB) Limit = 0.25% * f(MHz) = 0.25% * 433.92MHz = 1084.8kHz

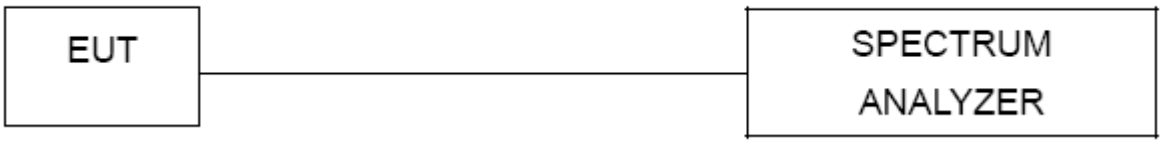
6.5.2 Test procedure

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
b. Spectrum Setting: RBW= 30KHz, VBW≧RBW, Sweep time = Auto.

6.5.3 Deviation from standard

No deviation.

6.5.4 Test setup

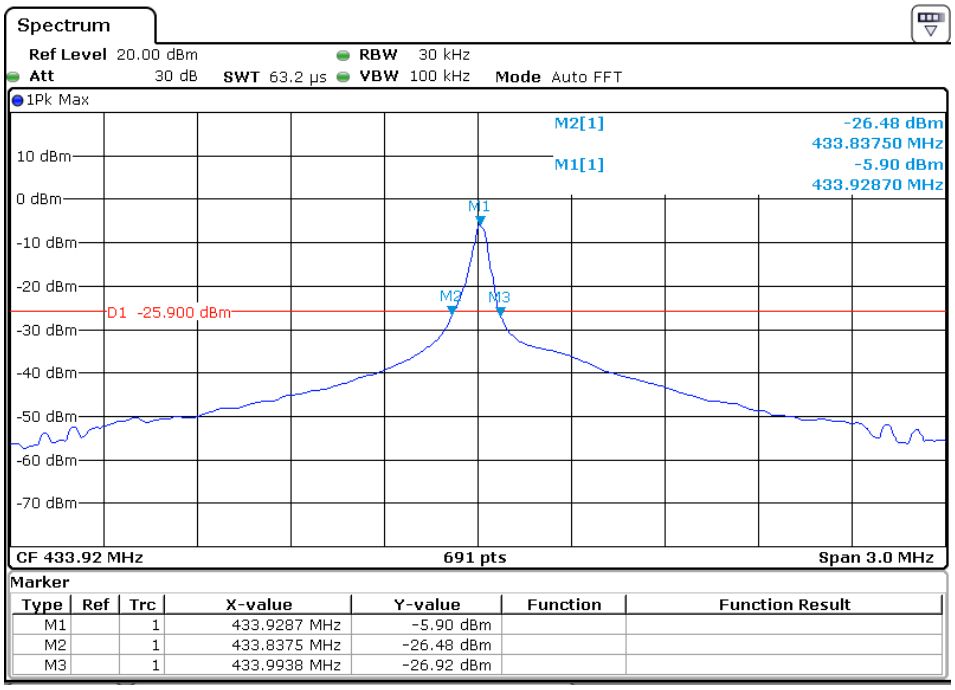


6.5.5 Test results

EUT：	Multi-frequency / Infrared Control Signal Transmitter (CST)	Model Name ：	Wis-IR
Temperature：	23 ℃	Relative Humidity：	60%
Pressure：	1010 hPa	Test Power ：	AC 120V/60Hz
Test Mode ：	TX CH01		

Test Mode	Test Channel	Frequency (MHz)	20 dB Bandwidth (KHz)	Limit （kHz）	**Result**
TX	CH01	433.92	156.3	1084.8	Pass

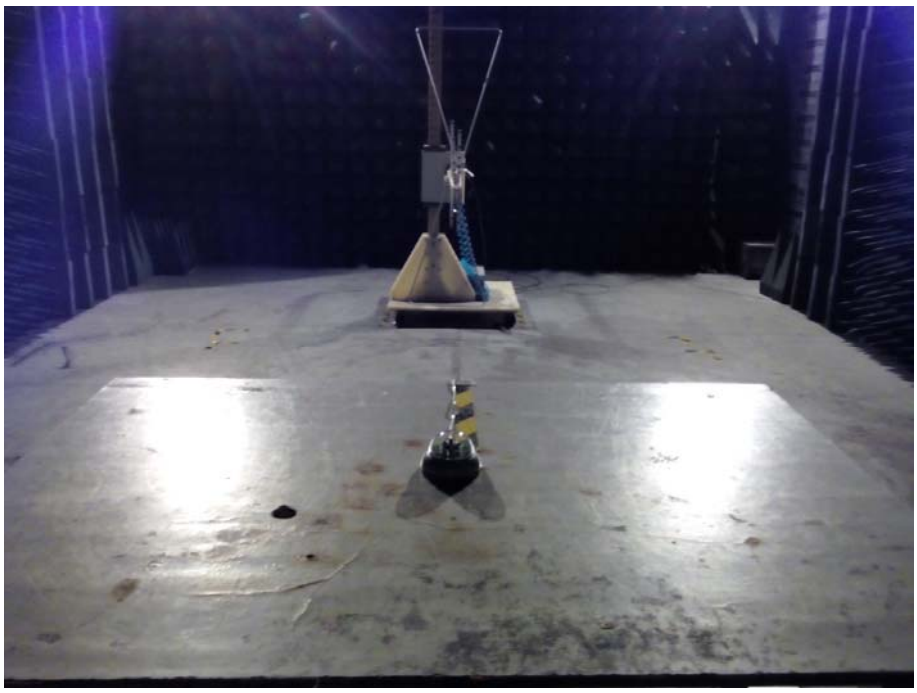
Channel 01: 433.92MHz



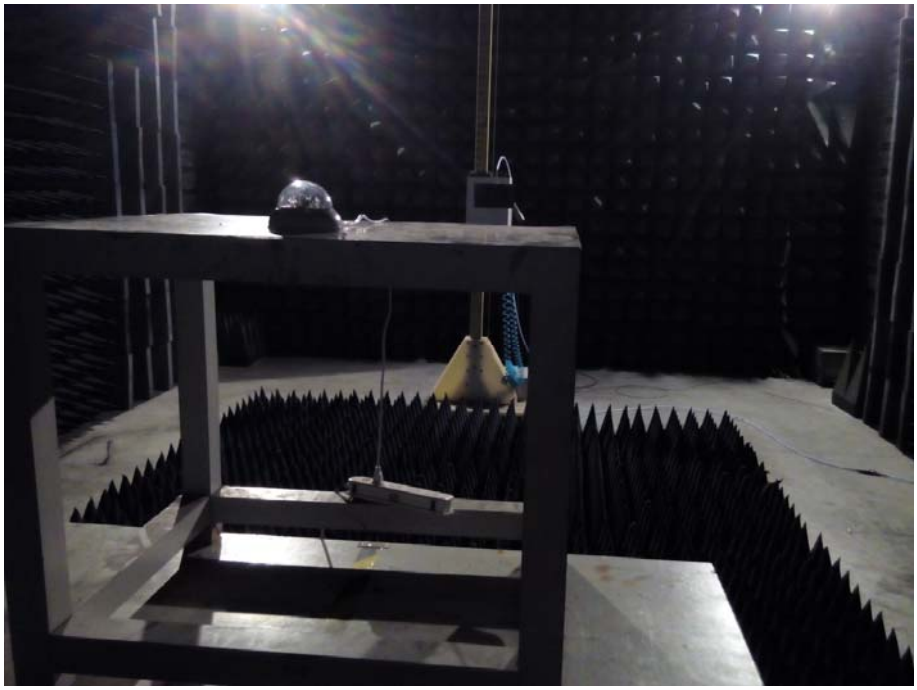
7 Photographs

7.1 Radiated Emission Test Setup

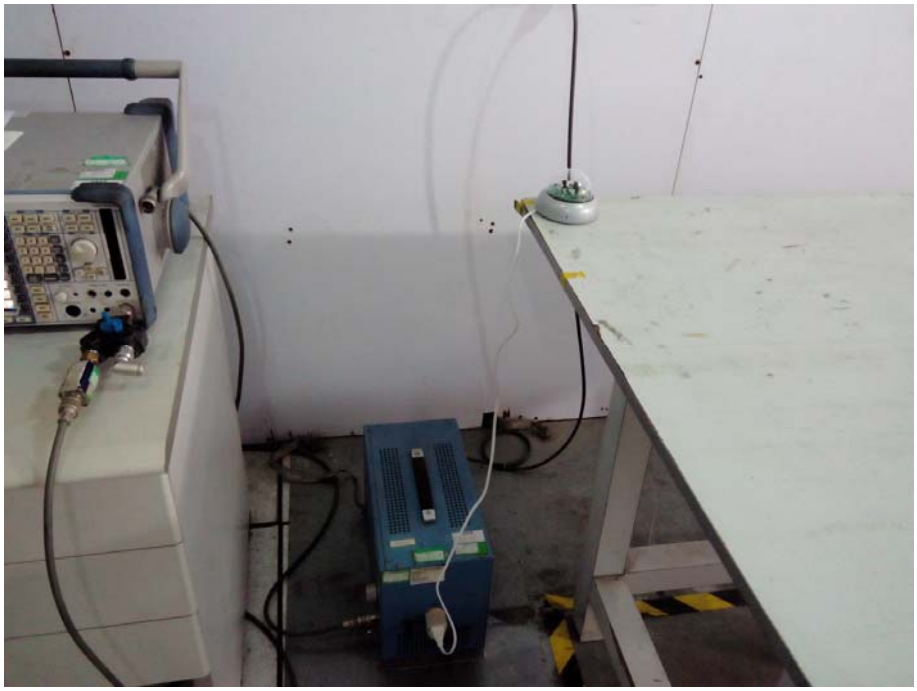
Below 1G



Above 1G



7.2 Conducted Emission Test Setup



8 APPENDIX-Photographs of EUT Constructional Details

Please refer to report E-F1612005-1.

End of Report