FCC Radio Test Report

FCC ID: RNE00609A2TX

This report concerns: ☒**Original Grant**

Project No.	:	2008C138
Equipment	:	Tower sensor
Brand Name	:	ACURITE, CRAFTSMAN
Test Model	:	00609A2TX
Series Model	:	CMXWDCR01137-TX,CMXWDCR01134-TX
Applicant	:	Chaney Instrument Co.
Address	:	Flat 09,19/F.,Metro Centre Phase I,32 Lam Hing Street, Kowloon Bay,Kowloon, Hong Kong,China.
Manufacturer	:	Chaney Instrument Co.
Address	:	Flat 09,19/F.,Metro Centre Phase I,32 Lam Hing Street, Kowloon Bay,Kowloon, Hong Kong,China.
Factory	:	Chaney Instrument Co.
Address	:	Flat 09,19/F.,Metro Centre Phase I,32 Lam Hing Street, Kowloon Bay,Kowloon, Hong Kong,China.
Date of Receipt	:	Aug. 24, 2020
Date of Test	:	Aug. 26, 2020 ~ Sep. 04, 2020
Issued Date	:	Sep. 29, 2020
Report Version	:	R02
Test Sample	:	Engineering Sample No.: DG2020082422
Standard(s)	:	FCC Part15, Subpart C(15.231) ANSI C63.10-2013

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

Simon Ling

Prepared by : Simon Ling

Ethan Ma

Approved by : Ethan Ma

ilac-MRA A2LA ACCREDITED

Certificate #5123.02

Add: No.3, Jinshagang 1st Road, Shixia, Dalang Town,Dongguan, Guangdong, China.

Tel: +86-769-8318-3000

Web: www.newbtl.com

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

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BTL's laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.
Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

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REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue.	Sep. 10, 2020
R01	Changed the series models and applicant, manufacturer, factory's address.	Sep. 27, 2020
R02	Added 99% bandwidth on page of 42.	Sep. 29, 2020

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart C (15.231)				
Standard(s) Section	**Test Item**	**Test Result**	**Judgment**	**Remark**
15.207	AC Power Line Conducted Emissions	Appendix A	N/A	**NOTE (1)**
15.209 & 15.231(e)	Radiated Spurious Emission	Appendix B Appendix C Appendix D	PASS	------
15.231(c)	20dB Occupied Bandwidth Measurement	Appendix E	PASS	------
15.231(e)	Timing Testing	Appendix F	PASS	------

Note:

(1) “N/A” denotes test is not applicable in this test report

1.1 TEST FACILITY

The test facilities used to collect the test data in this report is at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.
BTL's test firm number for FCC: 357015
BTL's designation number for FCC: CN1240

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))
The BTL measurement uncertainty as below table:

A. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
DG-CB03	CISPR	9kHz ~ 30MHz	V	3.79
		9kHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	4.88
		30MHz ~ 200MHz	H	4.14
		200MHz ~ 1,000MHz	V	4.62
		200MHz ~ 1,000MHz	H	4.80
		1GHz ~ 6GHz	-	4.58
		6GHz ~ 18GHz	-	5.18
		18GHz ~ 26.5GHz	-	3.62
		26.5GHz ~ 40GHz	-	4.00

B. Other Measurement:

Test Item	Uncertainty
Bandwidth	±3.8 %
Temperature	±0.08°C
Humidity	±1.5%
Supply voltages	±0.3 %

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Test Voltage	Tested By
Radiated Emissions-9K-30MHz	25°C	50%	DC 3V	Sheldon Ou
Radiated Emissions-30 MHz to 1GHz	25°C	50%	DC 3V	Sheldon Ou
Radiated Emissions-Above 1000 MHz	25°C	50%	DC 3V	Sheldon Ou
Bandwidth	25°C	50%	DC 3V	Hayden Chen
Timing Testing	25°C	50%	DC 3V	Hayden Chen

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Tower sensor
Brand Name	ACURITE, CRAFTSMAN
Test Model	00609A2TX
Series Model	CMXWDCR01137-TX,CMXWDCR01134-TX
Model Difference(s)	Only differ in model name and packaging
Power Source	Supplied from 2*AA battery
Power Rating	DC 3V
Product Type	Momentarily operated devices
Operation Frequency	433.92 MHz
Modulation Type	OOK
Number Of Channel	1CH, 433.92 MHz
Antenna Designation	Loop antenna
Field Strength	75.84dBuV/m (Peak Max.)

Note:

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

2.2 DUTY CYCLE

DWELL TIME OF PERIODIC OPERATION MEASUREMENT

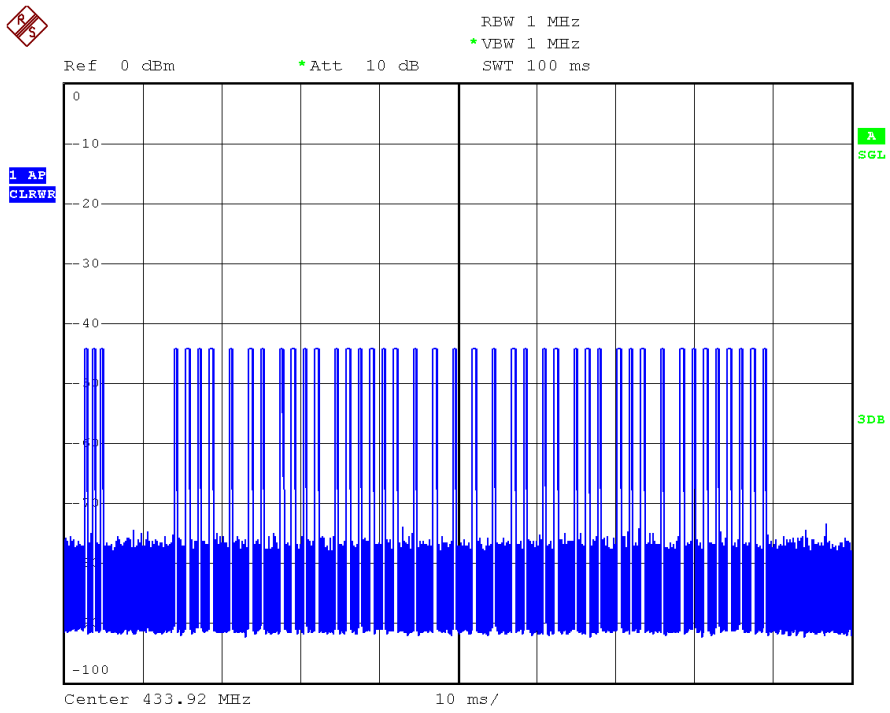
Duty Cycle = (N1*L1+N2*L2+…+Nn-1*Ln-1+Nn*Ln)/100 or T

Duty Cycle = (0.50*22+0.502*22)/100
= 22.04/100
= 22.04%

Average Reading = Peak Reading (dBuV/m) + 20log (Duty cycle)

Average Reading = Peak+20*log (Duty Cycle) = Peak – 13.16

Total Time



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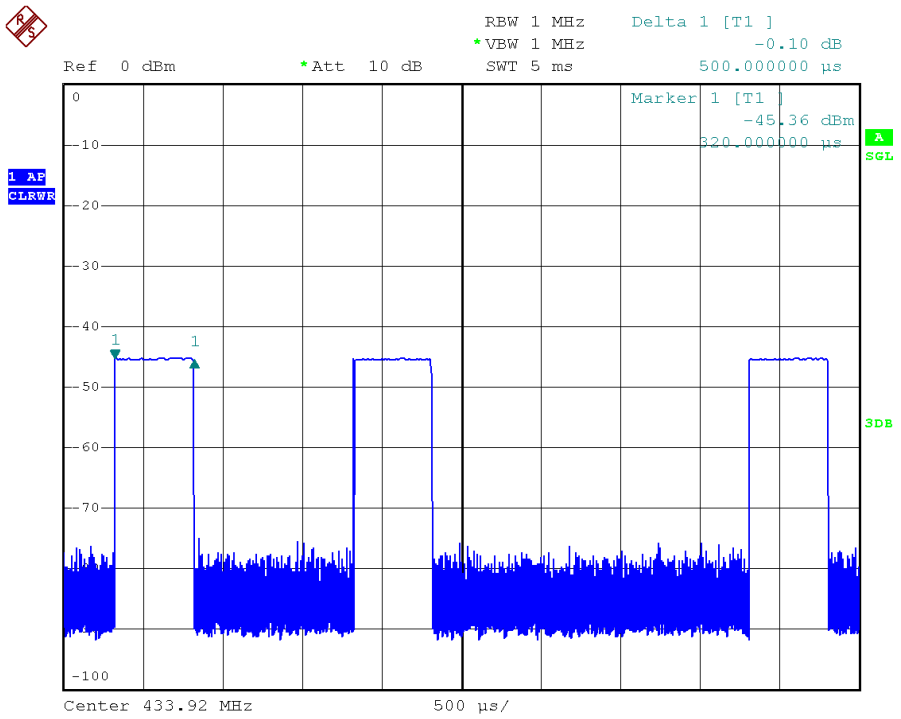
On Time: 0.50ms*22



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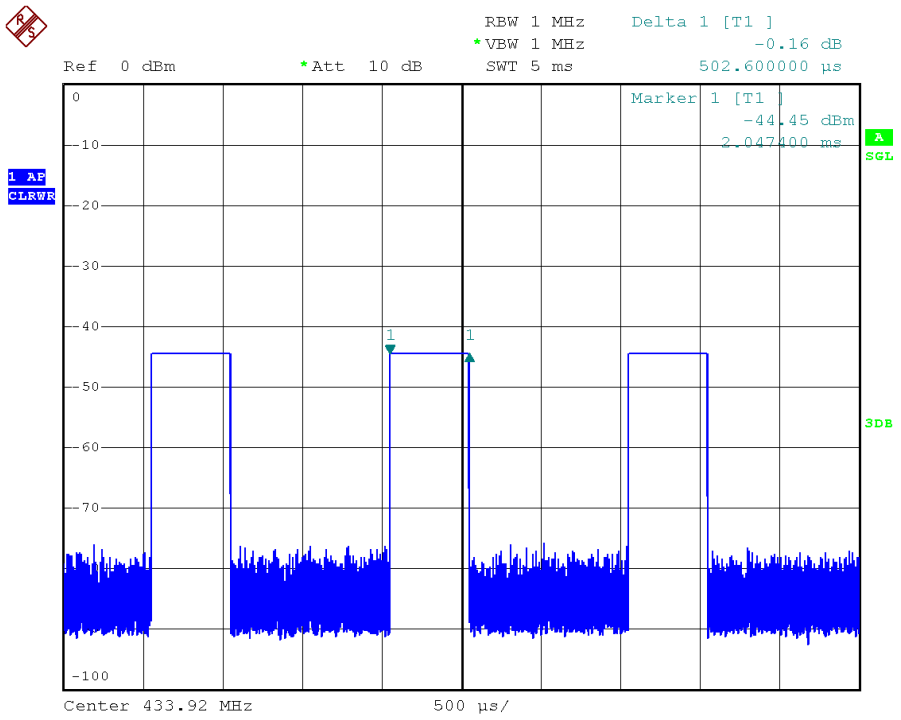

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2.3 DESCRIPTION OF TEST MODES

The test system was pre-tested based on the consideration of all possible combinations of EUT operation mode.

Pretest Mode	Description
Mode 1	TX Mode

Following mode(s) was (were) found to be the worst case(s) and selected for the final test.

Radiated emissions test	
Final Test Mode	Description
Mode 1	TX Mode

Conducted test	
Final Test Mode	Description
Mode 1	TX Mode

Note:

(1) The EUT is considered a portable unit, it was pre-tested on the positioned of each 3 axis. The worst case was found positioned on Y-plane. Therefore only the test data of this Y-plane was used for radiated emission measurement test.

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

2.5 DESCRIPTION OF SUPPORT UNITS

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.
-	-	-	-	-

Item	Cable Type	Shielded Type	Ferrite Core	Length
-	-	-	-	-

3. AC POWER LINE CONDUCTED EMISSIONS TEST

3.1 LIMIT

Frequency of Emission (MHz)	Conduct d Limit (dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56*	56 to 46*
0.5 - 5.0	56	46
5.0 - 30.0	60	50

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

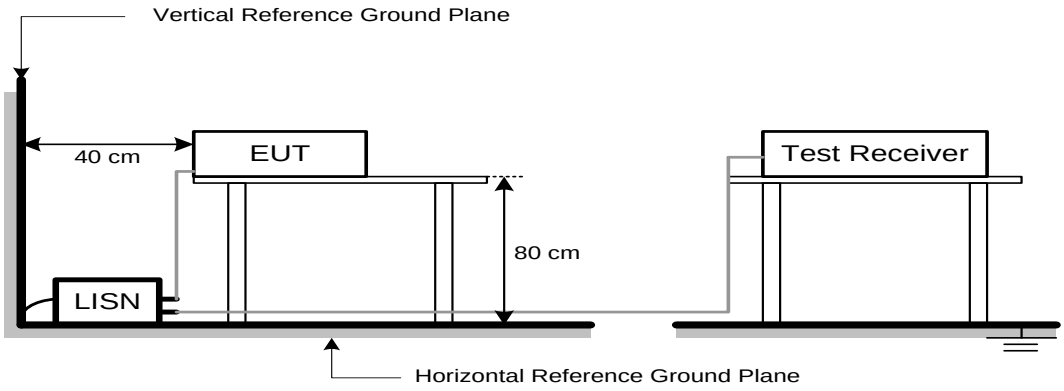
3.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment 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 DEVIATION FROM TEST STANDARD

No deviation

3.4 TEST SETUP



3.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical function (as a customer would normally use it), EUT was programmed to be in continuously transmitting data or hopping on mode.

3.6 TEST RESULTS

Please refer to the Appendix A.

Remark:

(1) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform in this case, a "*" marked in AVG Mode column of Interference Voltage Measured.

(2) Measuring frequency range from 150 kHz to 30 MHz.

4. RADIATED EMISSION TEST

4.1 LIMIT

Frequency Band (MHz)	Fundamental EmissionsLimit(uV/m) at 3m
40.66-40.70	1000
70-130	500
130-174	500-1500(**)
174-260	1500
260-470	1500-5000(**)
Above 470	5000

1. Linear interpolations, the formulas for calculating the maximum permitted fundamental field strengths are as follows:
   (1) For the band 130 - 174 MHz, μV/m at 3 meters = 2.272727×(operating frequency, MHz) – 245.4545;
   (2) For the band 260 - 470 MHz, μV/m at 3 meters =1.66667×(operating frequency, MHz) – 283.33333.
   So the field strength of emission limits has been calculated in below table.

Carrier Frequency (MHz)	Fundamental EmissionsLimit(dBuV/m) at 3m
433.92 MHz	72.87 (Average)
433.92 MHz	92.87 (Peak)

4.2 SETTING

Receiver Parameter	Setting
Attenuation	Auto
Center Frequency	Fundamental Frequency
RBW	120 kHz
Detector	Peak / Average

4.3 RADIATED EMISSIONS MEASUREMENT

Devices complying with 47 CFR FCC part 15 subpart C, section 15.231(e). The field strength of emissions from intentional radiators at 3 meters operated under this Section shall not exceed the following:

Frequency Band (MHz)	Spurious EmissionsLimit(uV/m) at 3m
40.66-40.70	100
70-130	50
130-174	50-150(**)
174-260	150
260-470	150-500(**)
Above 470	500

**1. Linear interpolations, the formulas for calculating the maximum permitted fundamental field strengths are as follows:

(1) For the band 130 - 174 MHz, μV/m at 3 meters =2.272727×(operating frequency, MHz) – 245.4545;

(2) For the band 260 - 470 MHz, μV/m at 3 meters =1.66667×(operating frequency, MHz) – 283.33333.

(3) The maximum permitted unwanted emissions level is 20 dB below the maximum permitted fundamental level. In addition field strength of any emissions which appear inside of the restriction band shall not exceed the general radiated emissions limits in Section 15.209(a).

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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000 MHz)

Frequency (MHz)	(dBuV/m at 3 m)	
	Peak	Average
Above 1000	74	54

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz for PK/AVG detector
Start ~ Stop Frequency	90kHz~110kHz for QP detector
Start ~ Stop Frequency	110kHz~490kHz for PK/AVG detector
Start ~ Stop Frequency	490kHz~30MHz for QP detector
Start ~ Stop Frequency	30MHz~1000MHz for QP detector

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

4.4 TEST PROCEDURE

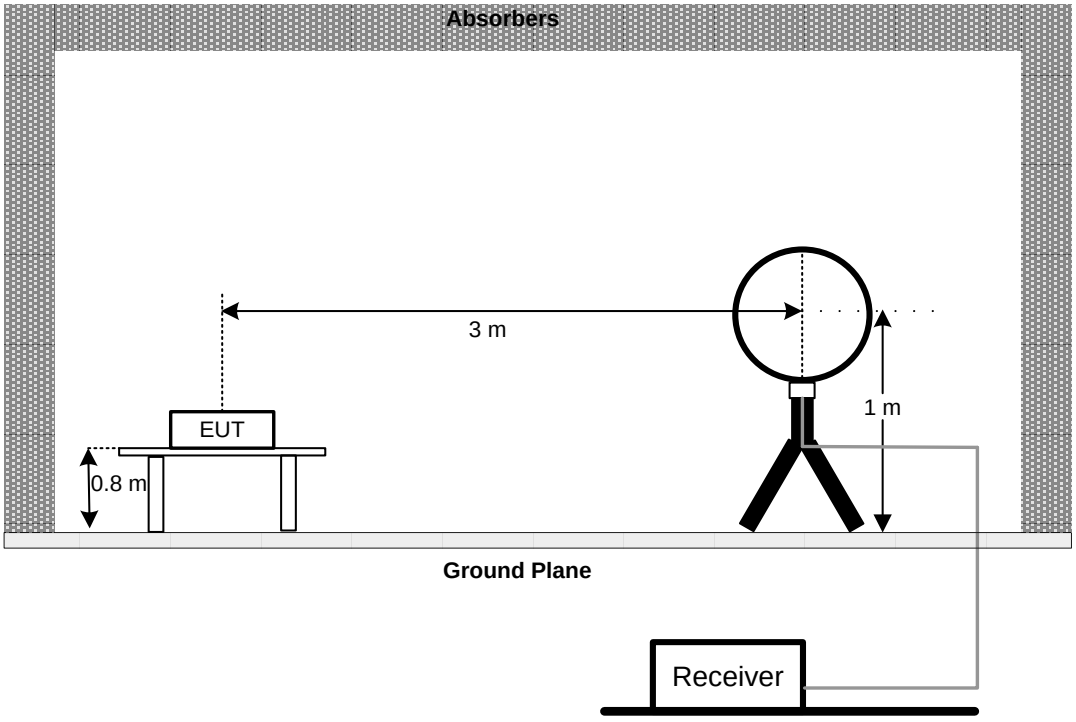
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8 m or 1.5 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform. (below 1GHz)
h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform. (above 1GHz)
i. For the actual test configuration, please refer to the related Item – EUT Test Photos.

4.5 DEVIATION FROM TEST STANDARD

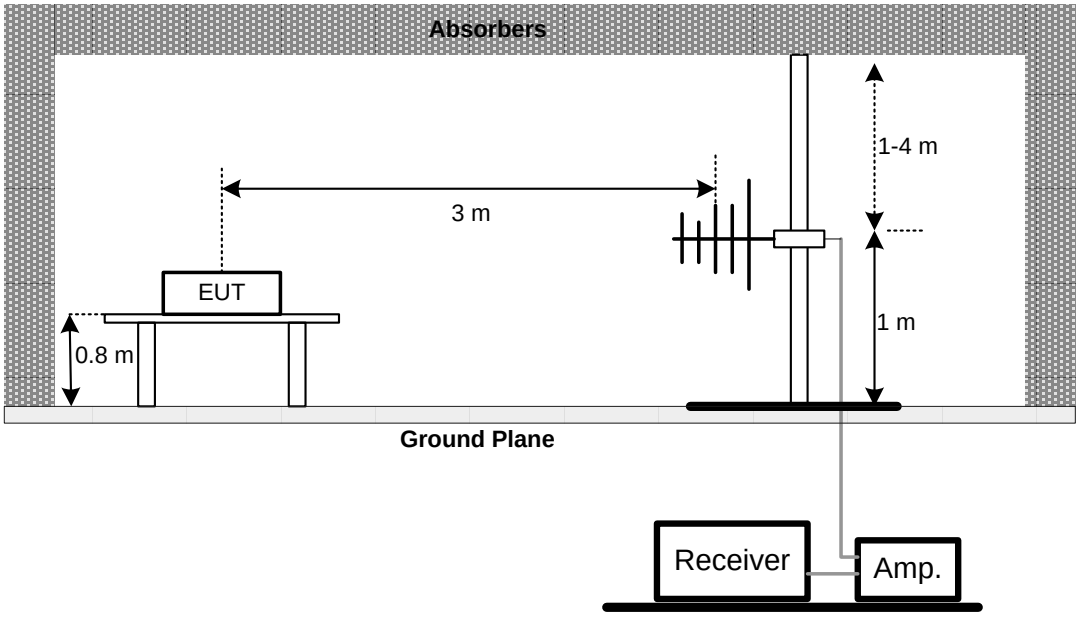
No deviation

4.6 TEST SETUP

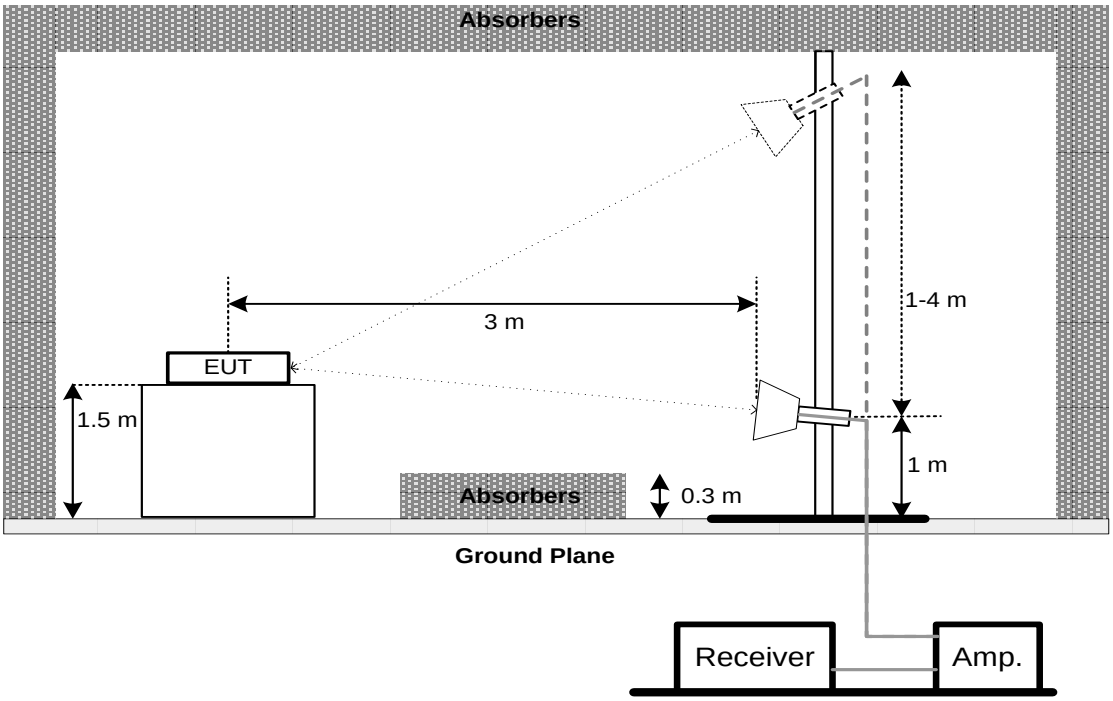
9 kHz to 30 MHz



30 MHz to 1 GHz



Above 1 GHz



4.7 TEST RESULT - 9 kHz TO 30 MHz

Please refer to the Appendix B.

Remark:

(1) Distance extrapolation factor = 40 log (specific distance / test distance) (dB).
(2) Limit line = specific limits (dBuV) + distance extrapolation factor.

4.8 TEST RESULT - 30 MHz TO 1000 MHz

Please refer to the Appendix C.

4.9 TEST RESULTS - ABOVE 1000 MHz

Please refer to the Appendix D.

Remark:

(1) No limit: This is fundamental signal, the judgment is not applicable.
For fundamental signal judgment was referred to Peak output test.

5. 20dB SPECTRUM BANDWIDTH MEASUREMENT

5.1 LIMIT

The bandwidth of the emissions shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. So the emission bandwidth limits have been calcuated in below table.

Fundamental Frequency	20dB Bandwidth Limits (MHz)
433.92 MHz	1.0848

5.1 SETTING

Please refer to section 5 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> 20dB Bandwidth
RB	10 kHz
VB	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.2 TEST PROCEDURES

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 10 kHz and the video bandwidth of 10 kHz were used.
3. Measured the spectrum width with power higher than 20dB below carrier.

5.3 TEST SETUP LAYOUT

5.4 TEST DEVIATION

There is no deviation with the original standard.

5.5 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously transmitting mode.

5.6 TESTRESULTS

Please refer to the Appendix E.

6. TIMING TESTING

6.1 LIMIT

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.

6.1 SETTING

Please refer to section 6 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	Zero Span
RB	1MHz
VB	1MHz
Detector	Peak
Trace	Max Hold
Sweep Time	60 seconds

6.2 TEST PROCEDURES

1. The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
2. The resolution bandwidth of 1MHz and the video bandwidth of 1MHz were used.

6.3 TEST SETUP LAYOUT

6.4 TEST DEVIATION

There is no deviation with the original standard.

6.5 EUT OPERATION DURING TEST

The EUT was programmed to be in normal mode.

6.6 TEST RESULTS

Please refer to the Appendix F.

7. MEASUREMENT INSTRUMENTS LIST

Radiated Emissions - 9 kHz to 30 MHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	EM	EM-6876-1	230	Apr. 16, 2021
2	Cable	N/A	RG 213/U	N/A	May 29, 2021
3	EMI Test Receiver	R&S	ESCI	100895	Feb. 28, 2021
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
5	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

Radiated Emissions - 30 MHz to 1 GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarzbeck	VULB9160	9160-3232	Mar. 09, 2021
2	Amplifier	HP	8447D	2944A09673	Aug. 11, 2021
3	Receiver	Agilent	N9038A	MY52130039	Jul. 25, 2021
4	Cable	emci	LMR-400(30MHz-1GHz)(8m+5m)	N/A	May 22, 2021
5	Controller	CT	SC100	N/A	N/A
6	Controller	MF	MF-7802	MF780208416	N/A
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
8	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

Radiated Emission Measurement - Above 1GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double Ridged Guide Antenna	ETS	3115	75789	May 12, 2021
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jul. 07, 2021
3	Amplifier	Agilent	8449B	3008A02333	Mar. 01, 2021
4	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 07, 2021
5	Receiver	Agilent	N9038A	MY52130039	Jul. 25, 2021
6	Controller	CT	SC100	N/A	N/A
7	Controller	MF	MF-7802	MF780208416	N/A
8	Cable	N/A	EMC104-SM-SM-6000	N/A	May 09, 2021
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
10	Filter	STI	STI15-9912	N/A	Jul. 25, 2021
11	966 Chambe Room	RM	9*6*6m	N/A	Jul. 25, 2021

Duty Cycle					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Jul. 25, 2021
2	RF Cable	Tongkaichuan	N/A	N/A	N/A

20dB Spectrum Bandwidth Measurement					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Jul. 25, 2021
2	RF Cable	Tongkaichuan	N/A	N/A	N/A
3	Attenuator	WOKEN	6SM3502	VAS1214NL	Feb. 11, 2021

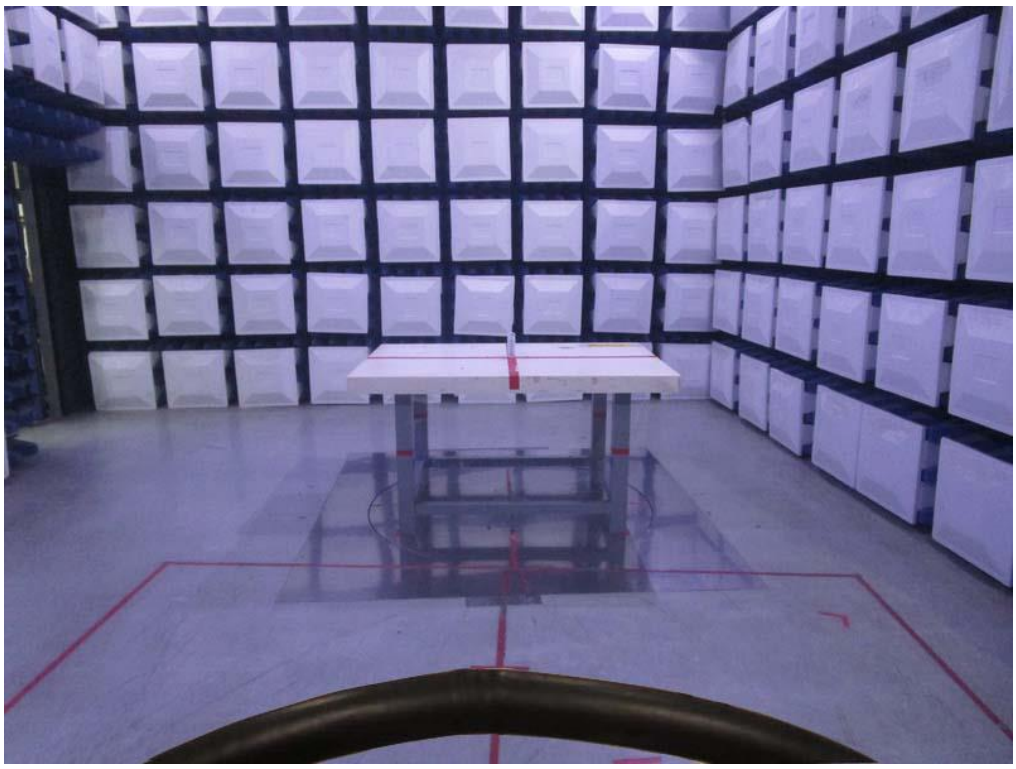
Timing Testing					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Jul. 25, 2021
2	RF Cable	Tongkaichuan	N/A	N/A	N/A
3	Attenuator	WOKEN	6SM3502	VAS1214NL	Feb. 11, 2021

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

8. EUT TEST PHOTO

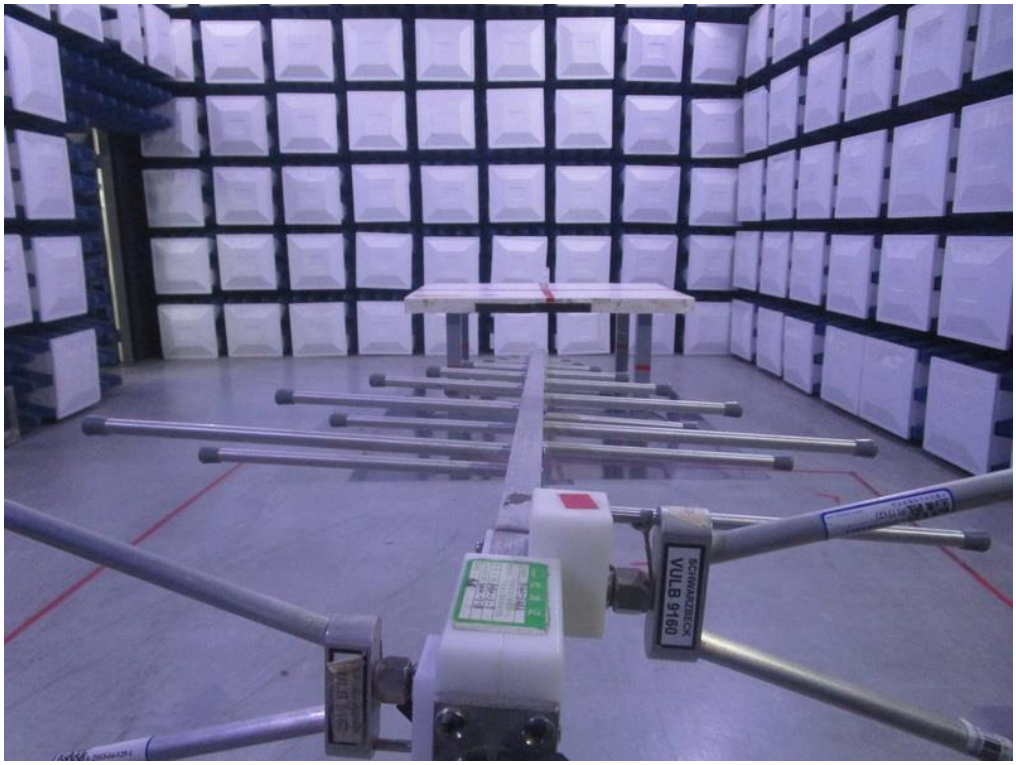
Radiated Emissions Test Photos

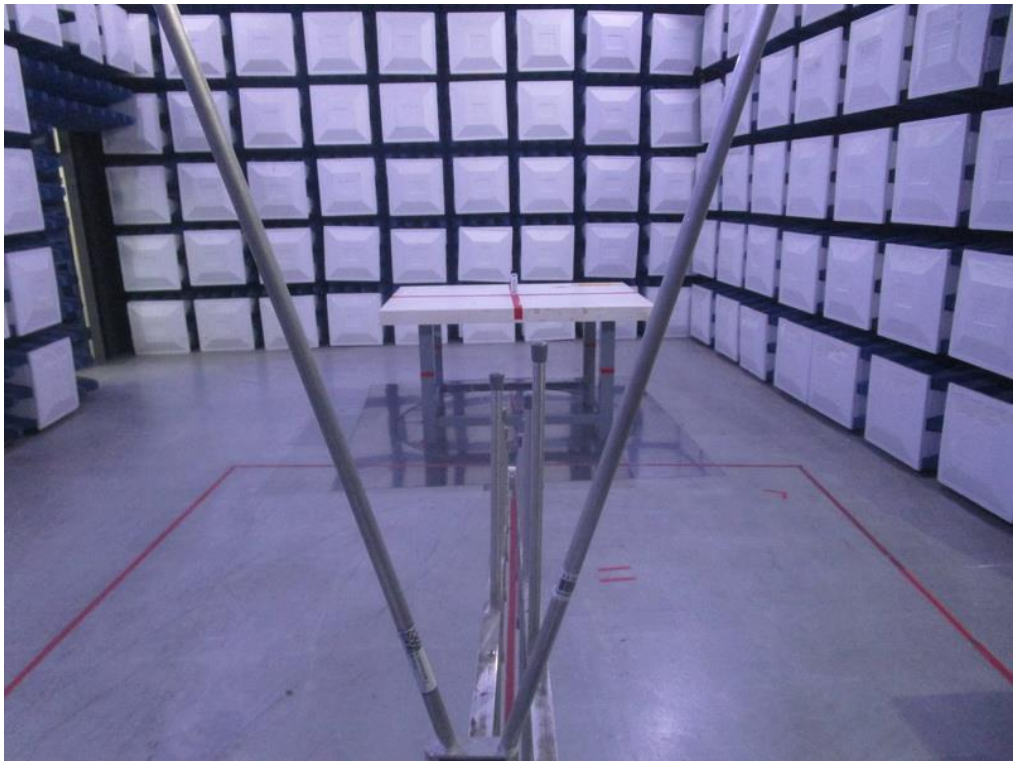
9KHz to 30MHz



Radiated Emissions Test Photos

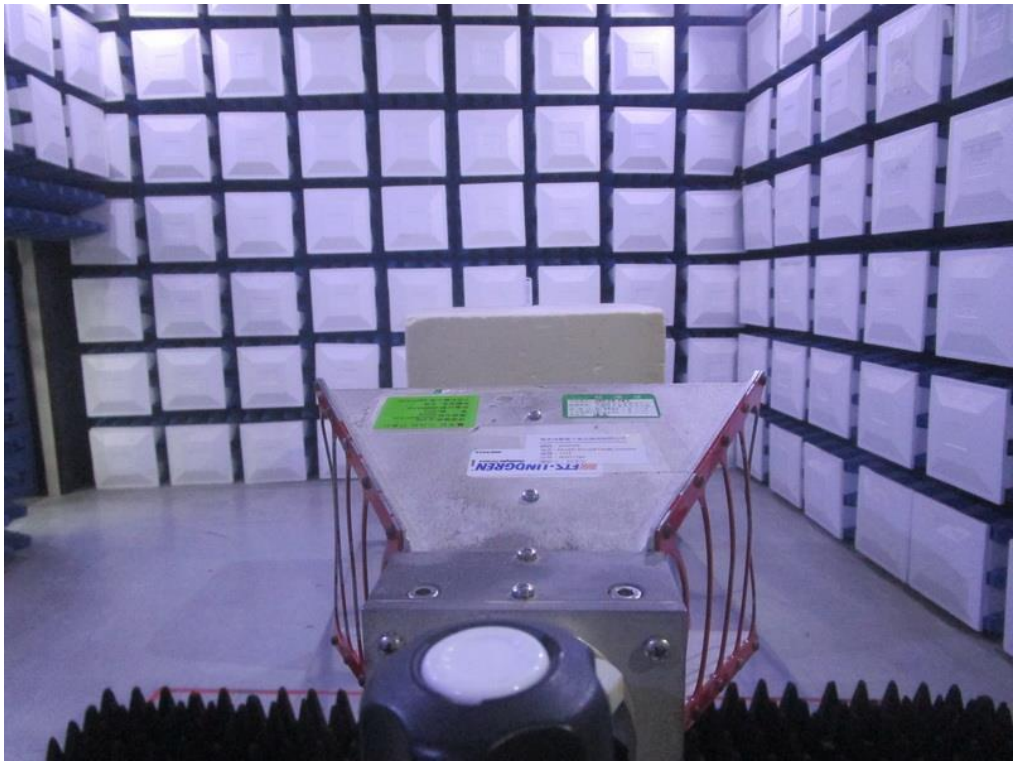
30MHz to 1000MHz





Radiated Emissions Test Photos

Above 1000MHz



APPENDIX A - AC POWER LINE CONDUCTED EMISSIONS

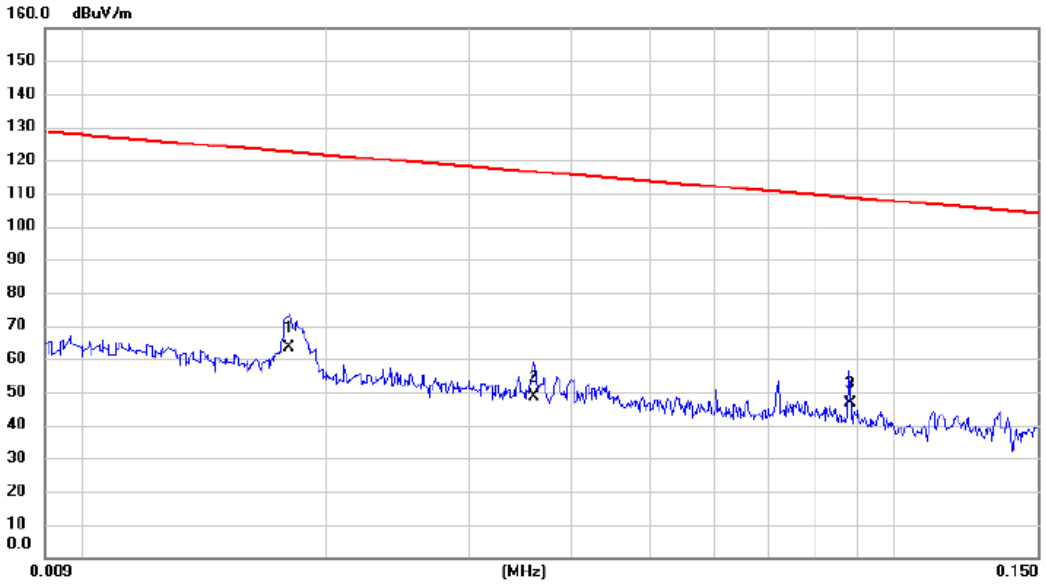
Test Mode: N/A

Note: “N/A” denotes test is not applicable to this device.

APPENDIX B - RADIATED EMISSION - 9 KHZ TO 30 MHZ

Test Mode:	TX Mode

Ant 0°

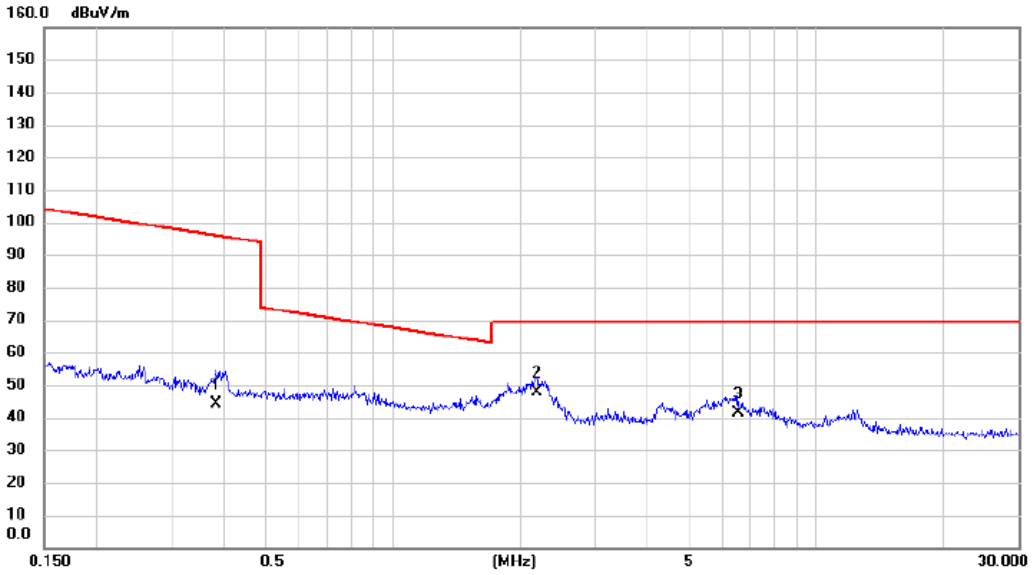


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0180	49.58	13.84	63.42	122.50	-59.08	AVG	
2		0.0360	35.89	12.79	48.68	116.48	-67.80	AVG	
3		0.0881	33.98	12.65	46.63	108.71	-62.08	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX Mode

Ant 0°

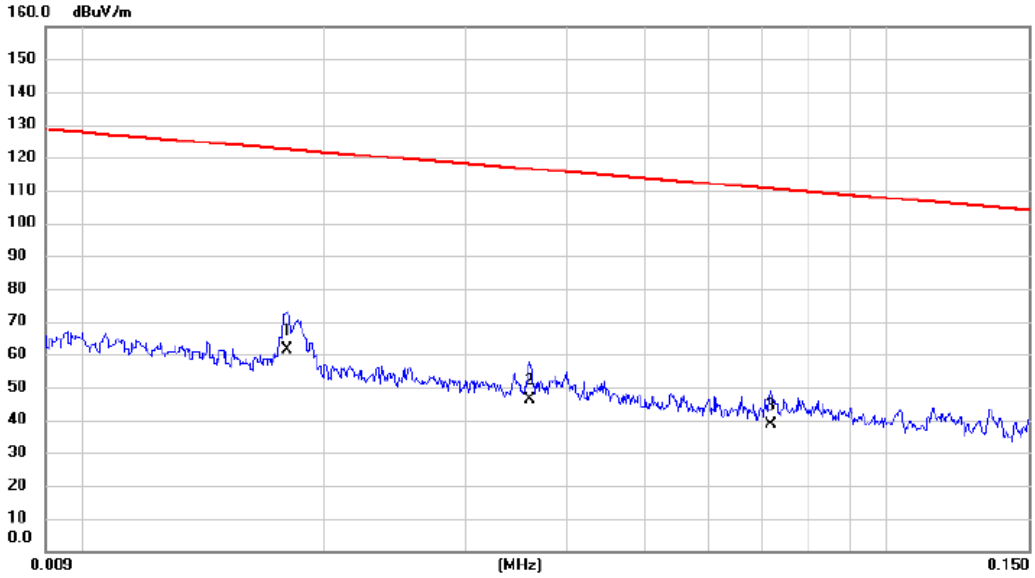


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.3832	31.86	12.30	44.16	95.94	-51.78	AVG	
2	*	2.1898	36.52	11.21	47.73	69.54	-21.81	QP	
3		6.5227	30.15	11.21	41.36	69.54	-28.18	QP	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX Mode

Ant 90°

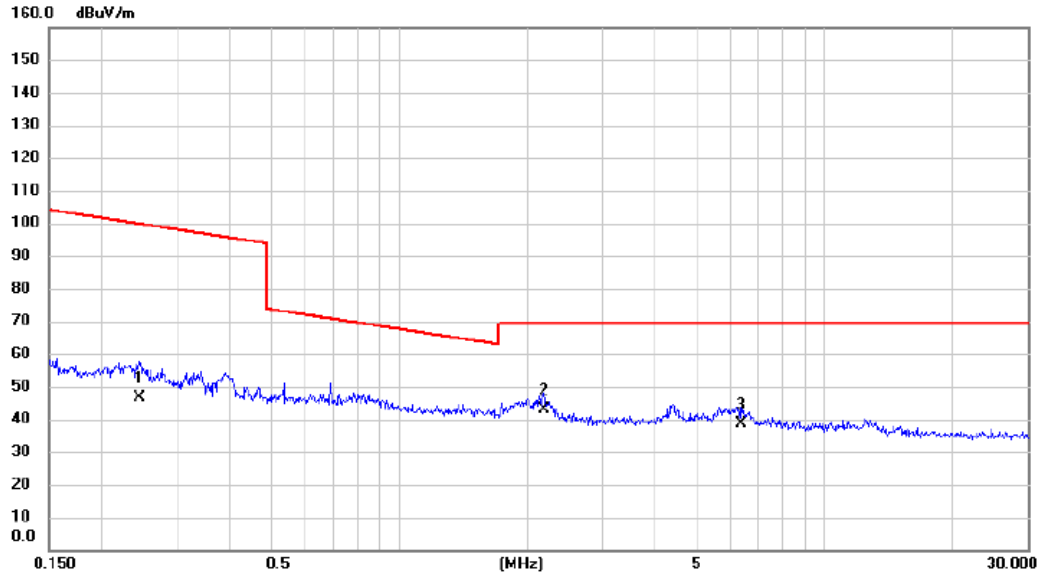


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	0.0180	47.58	13.84	61.42	122.50	-61.08	AVG	
2		0.0360	33.59	12.79	46.38	116.48	-70.10	AVG	
3		0.0718	25.86	12.55	38.41	110.48	-72.07	AVG	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

Test Mode:	TX Mode

Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.2455	34.13	12.65	46.78	99.80	-53.02	AVG	
2	*	2.1898	31.85	11.21	43.06	69.54	-26.48	QP	
3		6.3520	27.52	11.20	38.72	69.54	-30.82	QP	

REMARKS:
(1) Measurement Value = Reading Level + Correct Factor.
(2) Margin Level = Measurement Value - Limit Value.

APPENDIX C - RADIATED EMISSION - 30MHZ TO 1000MHZ

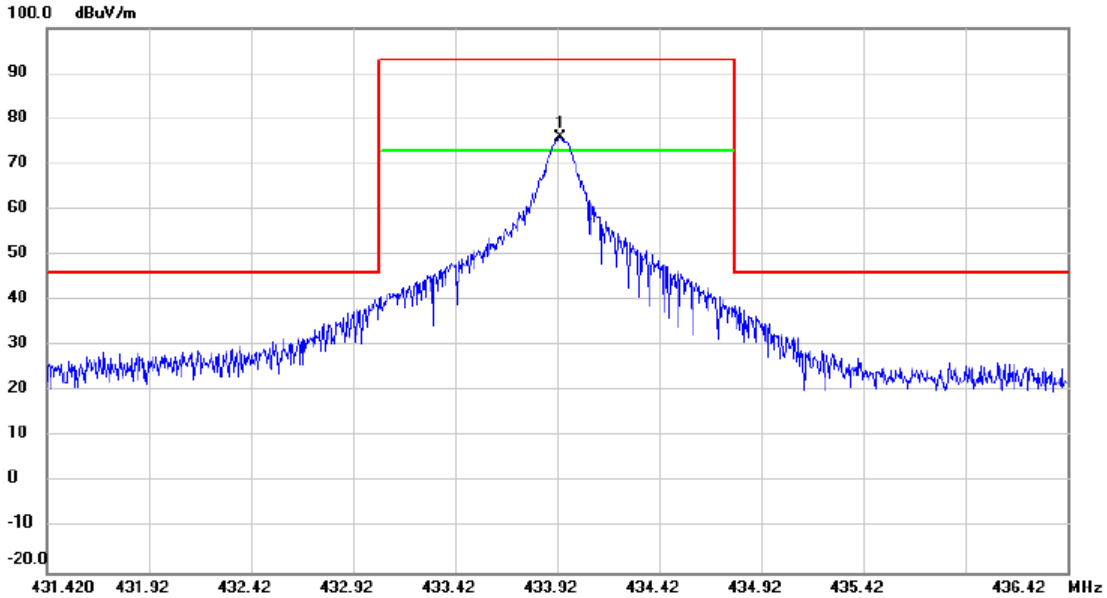
Test Mode :	TX Mode
About the duty cycle correction factor calculated, please refer to the page 9~10	

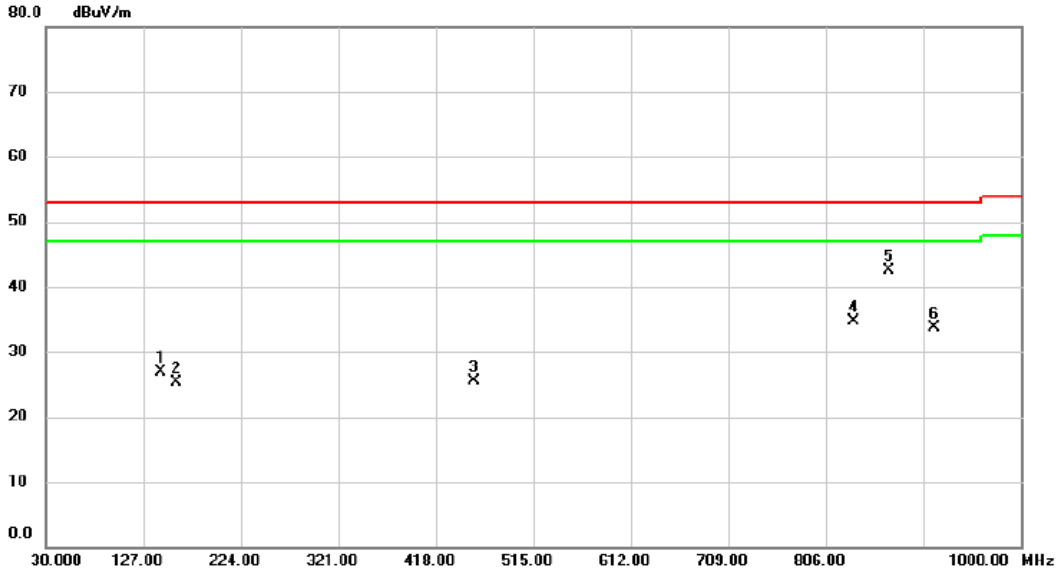
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
433.940	V	83.91		-8.07	75.84	62.68	92.87	72.87	Z/F
868.080	V	43.96		-1.53	42.43	29.27	72.87	52.87	Z/H

Remark:

(1) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle), Final AV=PK – 13.16

Orthogonal Axis: Y
TX 433.92 MHz (Fundamental frequency, Vertical)





No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		144.460	39.20	-12.29	26.91	52.87	-25.96	peak	
2		159.980	35.90	-10.67	25.23	52.87	-27.64	peak	
3		455.830	33.13	-7.59	25.54	52.87	-27.33	peak	
4		833.160	36.78	-2.01	34.77	52.87	-18.10	peak	
5	*	868.080	43.96	-1.53	42.43	52.87	-10.44	peak	
6		913.670	34.56	-0.81	33.75	52.87	-19.12	peak	

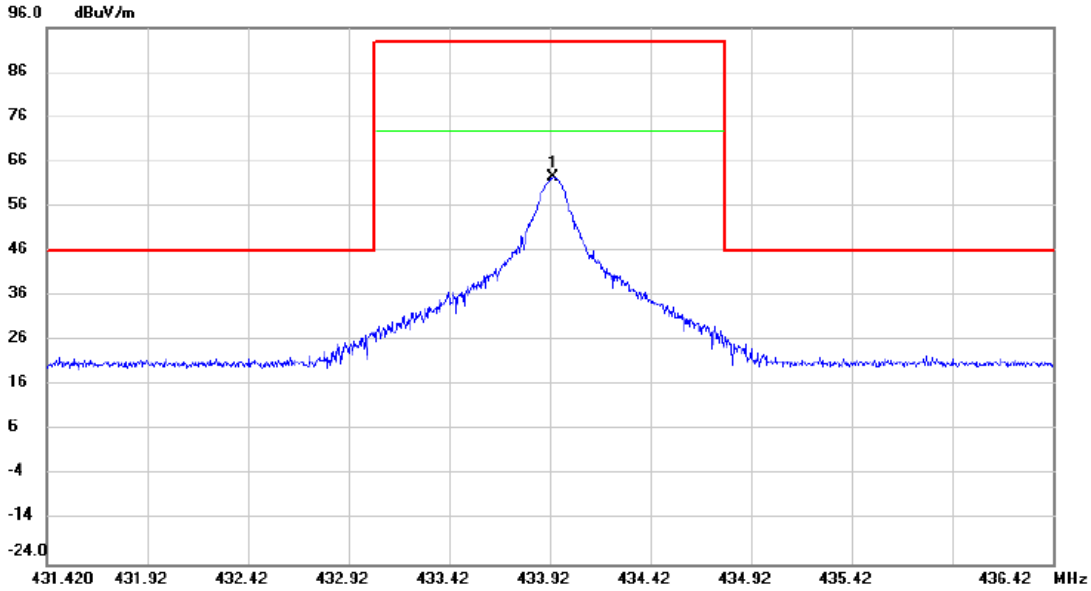
Test Mode :	TX Mode
About the duty cycle correction factor calculated, please refer to the page 9~10	

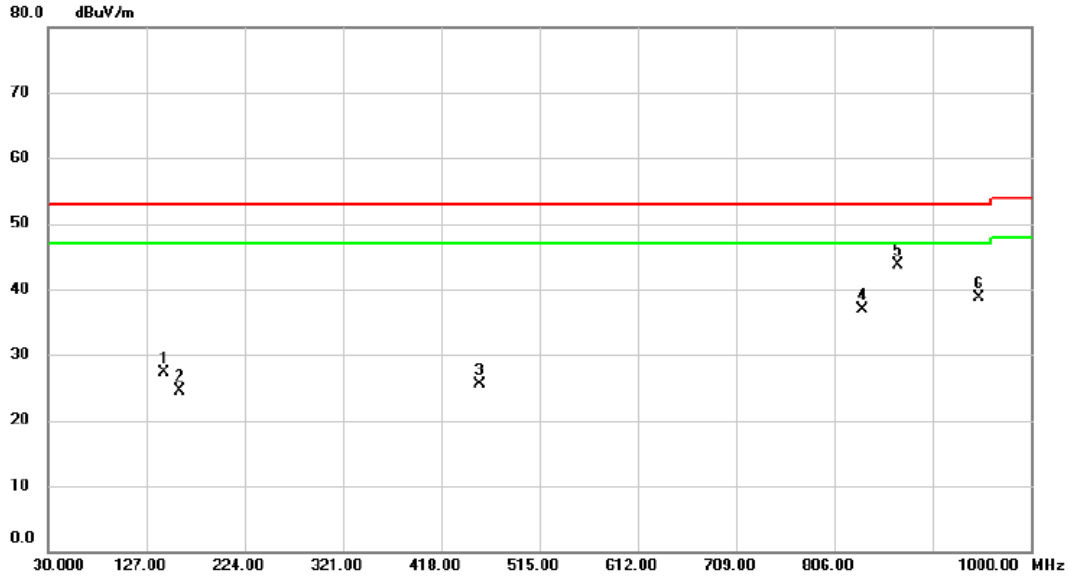
Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Note
		Peak (dBuV)	AV (dBuV)		Peak (dBuV/m)	AV (dBuV/m)	Peak (dBuV/m)	AV (dBuV/m)	
433.940	H	70.53		-8.07	62.46	49.30	92.87	72.87	Z/F
868.080	H	45.17		-1.53	43.64	30.03	72.87	52.87	Z/H

Remark:

(1) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle), Final AV=PK – 13.16

Orthogonal Axis: Y
TX 433.92 MHz (Fundamental frequency, *Horizontal*)



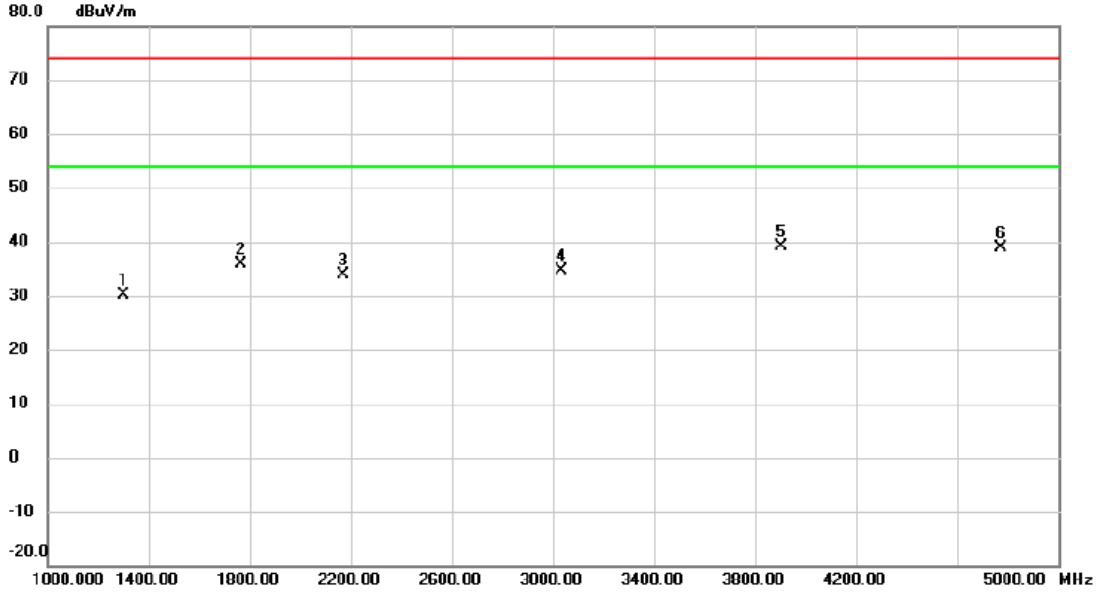


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		144.460	39.53	-12.29	27.24	52.87	-25.63	peak	
2		159.980	35.20	-10.67	24.53	52.87	-28.34	peak	
3		455.830	33.08	-7.59	25.49	52.87	-27.38	peak	
4		833.160	38.98	-2.01	36.97	52.87	-15.90	peak	
5	*	868.080	45.17	-1.53	43.64	52.87	-9.23	peak	
6		948.590	38.58	0.09	38.67	52.87	-14.20	peak	

APPENDIX D - RADIATED EMISSION - ABOVE 1000MHz

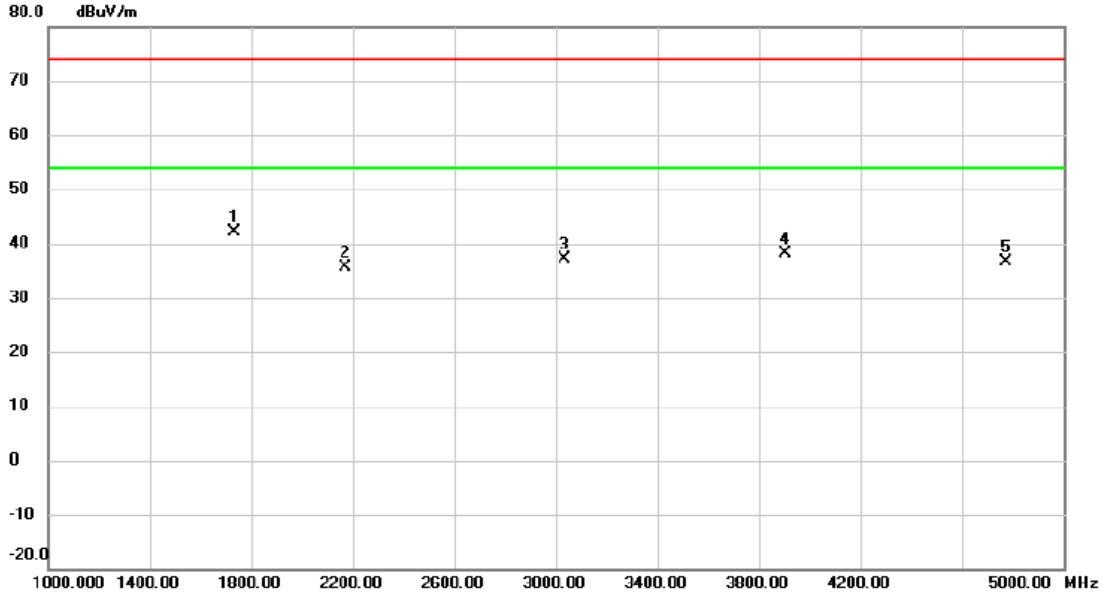
Test Mode :	TX Mode
About the duty cycle correction factor calculated, please refer to the page 9~10	

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	
		(dBuV)	(dBuV)		(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
1300.00	V	36.00		-5.83	30.17	17.01	74.00	54.00	-43.83	-36.99	Z/E
1764.00	V	39.43		-3.53	35.90	22.74	74.00	54.00	-38.10	-31.26	Z/E
2168.00	V	35.85		-1.94	33.91	20.75	74.00	54.00	-40.09	-33.25	Z/E
3036.00	V	33.92		0.66	34.58	21.42	74.00	54.00	-39.42	-32.58	Z/E
3904.00	V	35.71		3.35	39.06	25.90	74.00	54.00	-34.94	-28.10	Z/E
4772.00	V	33.80		5.18	38.98	25.82	74.00	54.00	-35.02	-28.18	Z/E



Test Mode :	TX Mode
About the duty cycle correction factor calculated, please refer to the page 9~10	

Freq. (MHz)	Ant.Pol. H/V	Reading		Ant./CF CF(dB)	Act.		Limit		Margin		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	
		(dBuV)	(dBuV)		(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
1732.00	H	45.94		-3.71	42.23	29.07	74.00	54.00	-31.77	-24.93	Z/E
2168.00	H	37.50		-1.94	35.56	22.40	74.00	54.00	-38.44	-31.60	Z/E
3036.00	H	36.40		0.66	37.06	23.90	74.00	54.00	-36.94	-30.10	Z/E
3904.00	H	34.82		3.35	38.17	25.01	74.00	54.00	-35.83	-28.99	Z/E
4772.00	H	31.48		5.18	36.66	23.50	74.00	54.00	-37.34	-30.50	Z/E

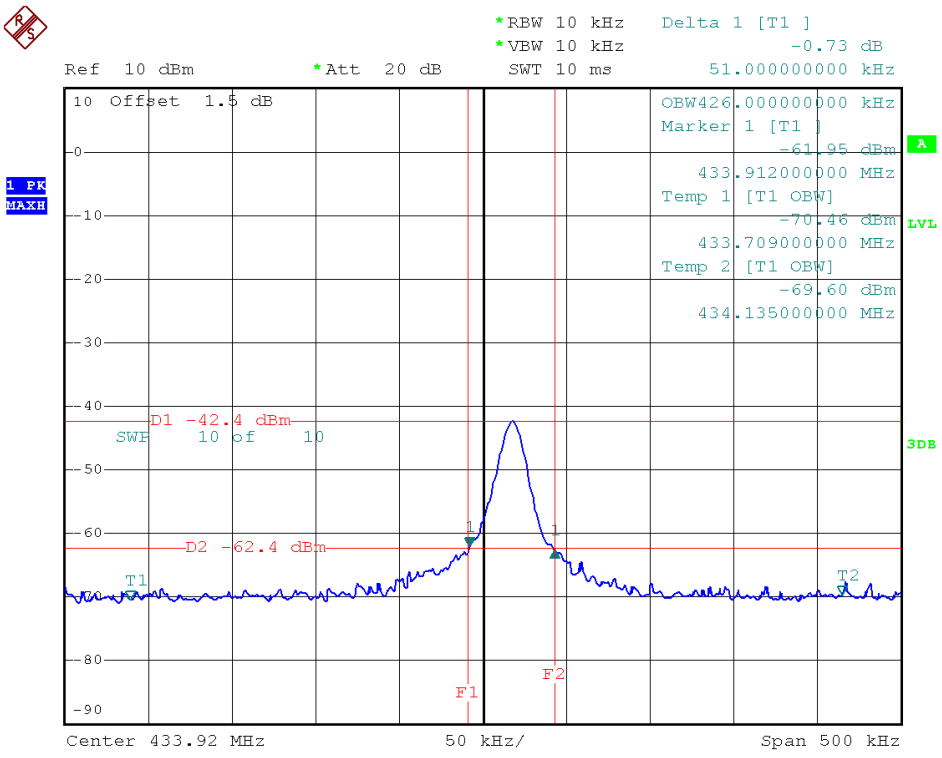


APPENDIX E - 20dB SPECTRUM BANDWIDTH

Test Mode :	TX Mode

Frequency (MHz)	20dB Bandwidth (MHz)	99% Occupied BW (MHz)	20 dB BW Limits (MHz)
433.92	0.0510	0.4260	1.0848

TX Mode



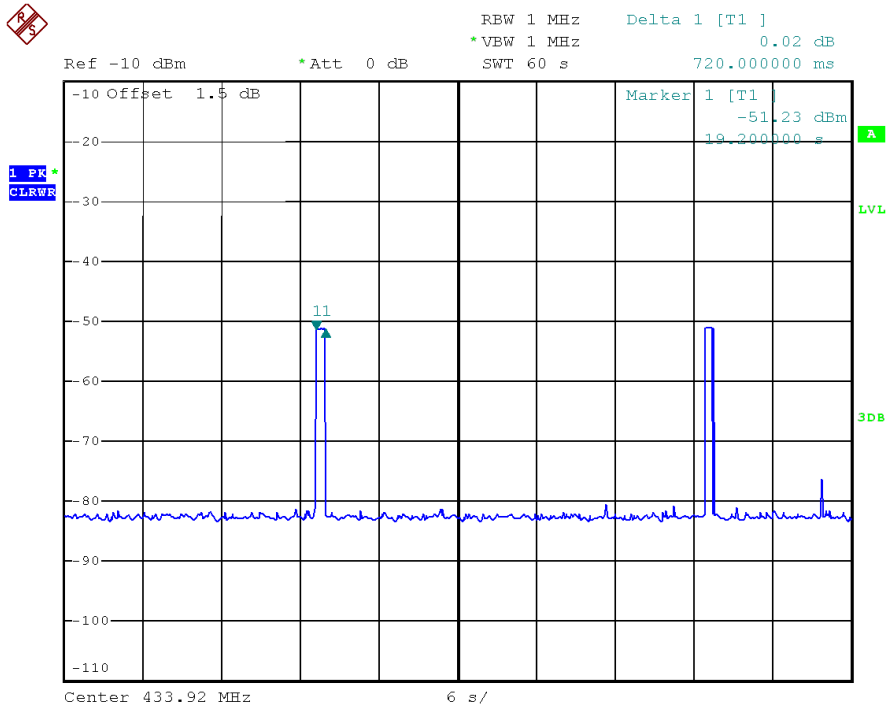
Date: 2.SEP.2020 15:17:25

APPENDIX F - TIMING TESTING

Test Mode :	TX Mode

Frequency (MHz)	On Time (Sec)	Limit (Sec)
433.92	0.72	<1S

On Time

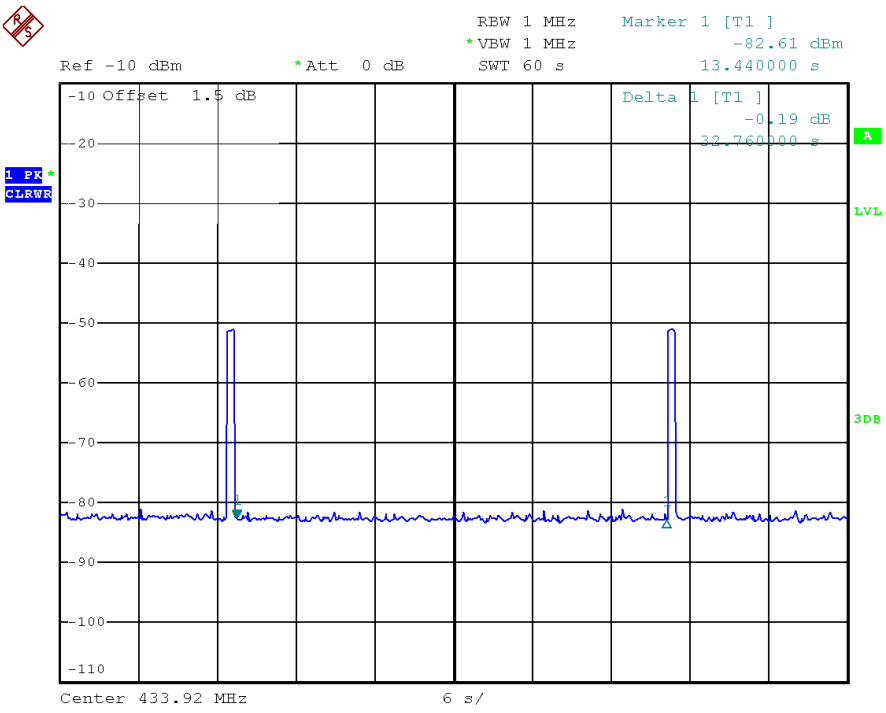


Date: 4.SEP.2020 16:27:53

Test Mode :	TX Mode

Frequency (MHz)	Off Time (Sec)	Limit (Sec)
433.92	32.76	>10S

Off Time



Date: 4.SEP.2020 16:31:31

End of Test Report