FCC Radio Test Report

FCC ID: OMOTX141V3

This report concerns (check one): ☒Original Grant ☐Class II Change

Project No.	:	1803C238
Equipment	:	REMOTE SENSOR TEMPERATURE/HUMIDITY
Test Model	:	TX141TH-BCHV3
Series Model	:	TX141TH-BV3, TX142THV3, TX141V3, TX141-BV3
Applicant	:	La Crosse Technology Ltd.
Address	:	2809 Losey Blvd. S. La Crosse Wisconsin 54601 United States

Date of Receipt	:	Mar. 23, 2018
Date of Test	:	Mar. 26, 2018 ~ Apr. 08, 2018
Issued Date	:	Jun. 08, 2018
Tested by	:	BTL Inc.

Testing Engineer : vincent.Tan
(Vincent Tan)

Technical Manager : Shawn xiao
(Shawn Xiao)

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NVLAP® TESTING NVLAP LAB CODE 200788-0

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).

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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.

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REPORT ISSUED HISTORY

Issued No.	Description	Issued Date
BTL-FCCP-1-1803C238	Original report.	Apr. 18, 2018
MDG1806006	The model names have changed.	Jun. 08, 2018

1. CERTIFICATION

Equipment	:	REMOTE SENSOR TEMPERATURE/HUMIDITY
Trade Name	:	LA CROSSE TECHNOLOGY
Test Model	:	TX141TH-BCHV3
Series Model		TX141TH-BV3, TX142THV3, TX141V3, TX141-BV3
Applicant	:	La Crosse Technology Ltd.
Manufacturer	:	La Crosse Technology
Address	:	2809 Losey Blvd. S. La Crosse Wisconsin 54601 United States
Factory	:	La Crosse Technology
Address	:	2809 Losey Blvd. S. La Crosse Wisconsin 54601 United States
Date of Test	:	Mar. 26, 2018 ~ Apr. 08, 2018
Test Sample	:	Enginnering Sample No. D180302538
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.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCP-1-1803C238) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of NVLAP according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

FCC Part15, Subpart C (15.231)			
Standard(s) Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	**NOTE (1)**
15.209& 15.231(e)	Radiated Spurious Emission	PASS	
15.231(c)	20dB Occupied Bandwidth Measurement	PASS	
15.231(e)	Timing Testing	PASS	

NOTE:

(1)" N/A" denotes test is not applicable to this device.
(2) EUT is used new battery.

2.1 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: 854385
BTL's designation number for FCC: CN5020

2.2 MEASUREMENT UNCERTAINTY

The measurement uncertainty figures shall be calculated according the methods described in the ETSI TR 100 028 and shall correspond to an expansion factor (coverage factor) k=1.96 or k=2(which provide confidence levels of respectively 90% and 95.45% in the case where the distributions characterizing the actual measurement uncertainties are normal (Gaussian)). Measurement Uncertainty for a Level of Confidence of 95 %, U=2xUc(y).

The BTL measurement uncertainty as below table:

A. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	9KHz ~ 30MHz	V	3.79
		9KHz ~ 30MHz	H	3.57
		30MHz ~ 200MHz	V	3.82
		30MHz ~ 200MHz	H	3.78
		200MHz ~ 1,000MHz	V	4.10
		200MHz ~ 1,000MHz	H	4.06

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB03 (3m)	CISPR	1GHz ~ 18GHz	V	3.12
		1GHz ~ 18GHz	H	3.68
		18GHz ~ 40GHz	V	4.15
		18GHz ~ 40GHz	H	4.14

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

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	REMOTE SENSOR TEMPERATURE/HUMIDITY	
Trade Name	ACURITE	
Test Model	TX141TH-BCHV3	
Series Model	TX141TH-BV3, TX142THV3, TX141V3, TX141-BV3	
Model Difference	Only differ in software, welding humidity and welding push switch.	
Product Description	Product Type	Remote Control Device
	Operation Frequency	433.92 MHz
	Modulation Type	ASK
	Number Of Channel	1CH, please see note 2.
	Antenna Designation	Loop antenna
	Field Strength	47.99dBuV/m (AV Max.)
PowerSource	Supplied from 2*AA battery.	
Power Rating	DC 3V	

Note:

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

Channel	Frequency (MHz)
01	433.92

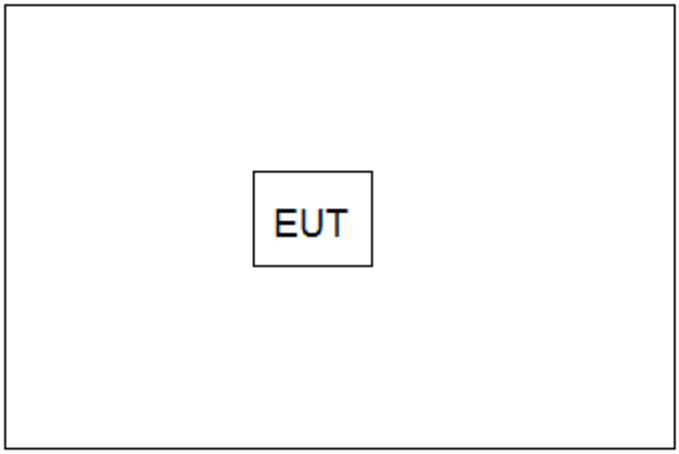
3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based 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.

Test Mode	Description
Mode 1	TX CH 433.92MHz

Note:
(1) The EUT is used new battery.
(2) 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 Z-plane. Therefore only the test data of this Z-plane was used for radiated emission measurement test.

3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.4 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.	FCC ID	Series No.
-	-	-	-	-	-

Item	Shielded Type	Ferrite Core	Length	Note
-	-	-	-	-

Note:

(1) For detachable type I/O cable should be specified the length in m in『Length』column.

4.EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 POWER LINE CONDUCTED EMISSIONLIMITS (Frequency Range 150KHz-30MHz)

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15 -0.5	66 to 56*	56 to 46*
0.50 -5.0	56	46
5.0 -30.0	60	50

Note:

(1) The limit of " * " decreases with the logarithm of the frequency

(2) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
Margin Level = Measurement Value - Limit Value

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

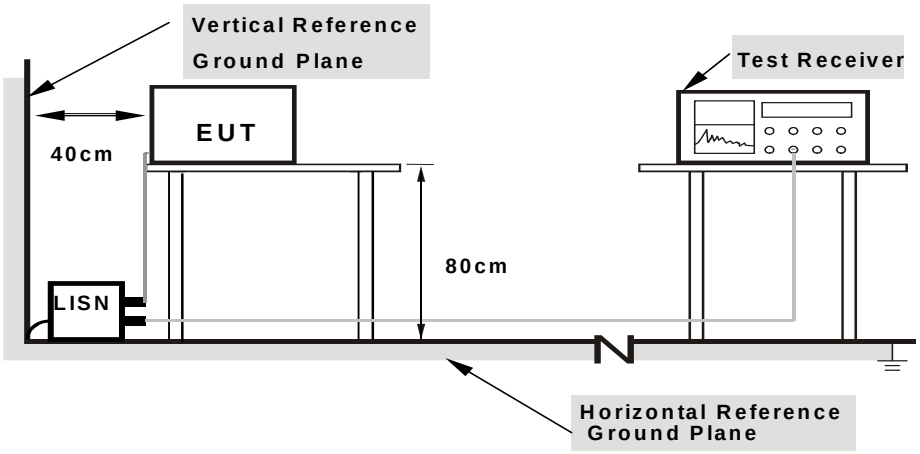
4.1.2 TEST PROCEDURE

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 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 groundplane 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.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 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

4.1.5 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.

4.1.6 EUT TEST CONDITIONS

Temperature: N/A
Relative Humidity: N/A

4.1.7 TEST RESULTS

Please refer to the Attachment 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 150KHz to 30MHz.
(3) " N/A" denotes test is not applicable to this device.

4.2 RADIATED EMISSION MEASUREMENT

4.2.1 FIELD STRENGTH OF FUNDAMENTAL EMISSIONS MEASUREMENT 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 = 22.72727×(operating frequency, MHz) - 2454.545;

(2) For the band 260 - 470 MHz, μV/m at 3 meters =16.6667×(operating frequency, MHz) - 2833.3333.

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)

4.2.2 MEASURING INSTRUMENTS AND SETTING (FIELD STRENGTH OF FUNDAMENTAL EMISSIONS)

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

4.2.3 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 = 22.72727×(operating frequency, MHz) - 2454.545;

(2) For the band 260 - 470 MHz, μV/m at 3 meters = 16.6667×(operating frequency, MHz) - 2833.3333.

(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

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

4.2.4 DWELL TIME OF PERIODIC OPERATION MEASUREMENT

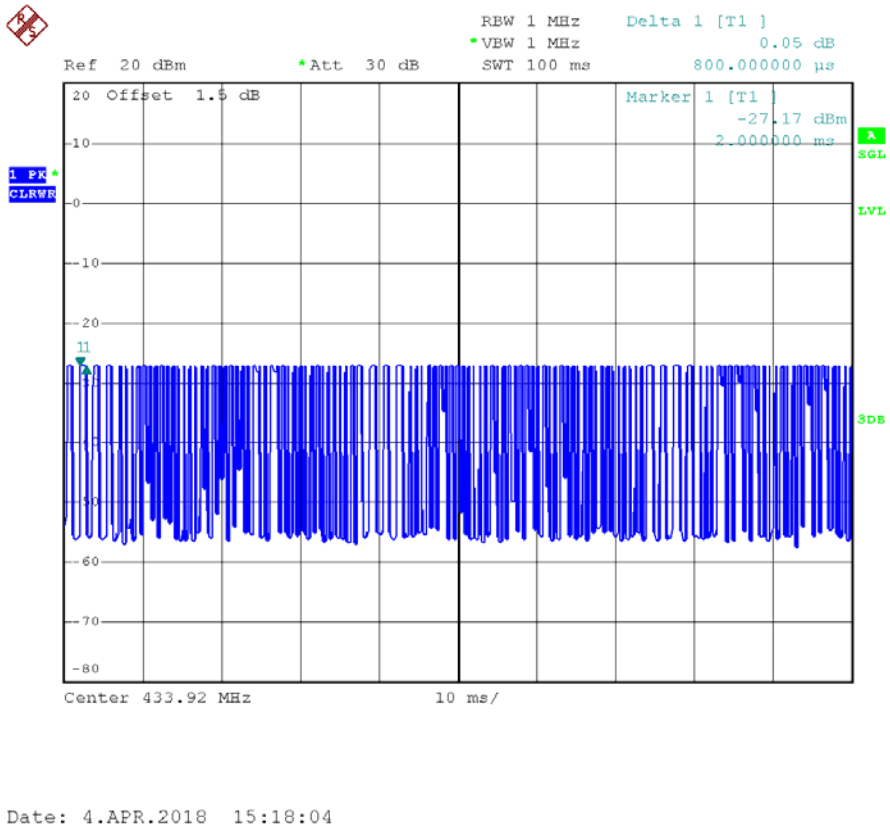
Duty Cycle = (N1*L1+N2*L2+…+Nn-1*Ln-1+Nn*Ln)/100 or T

Duty Cycle = (0.8*12+0.4*51+0.2*41)/100
=0.382

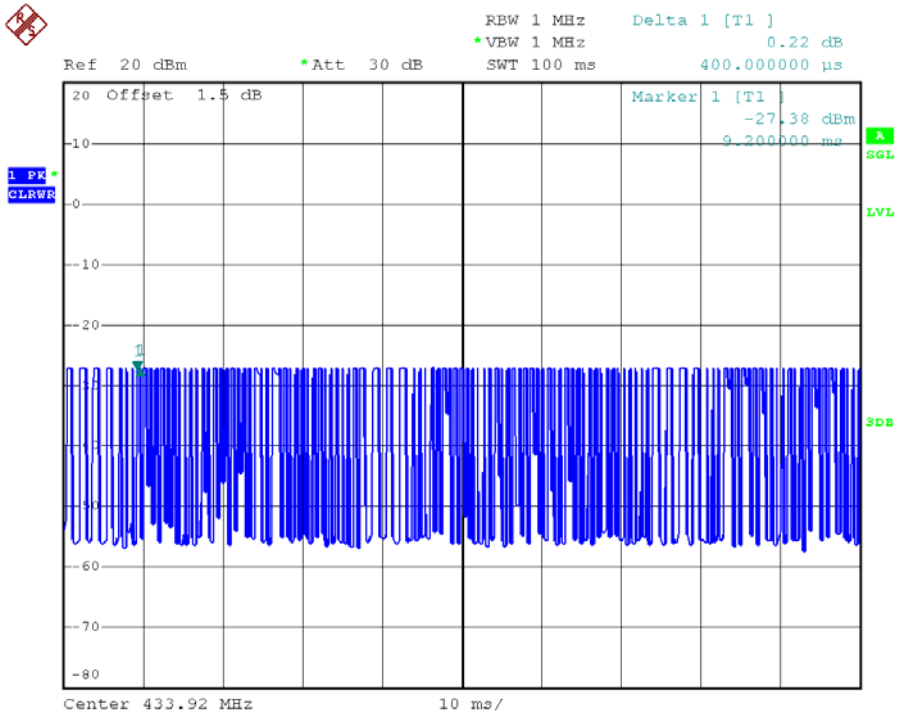
Average Reading =Peak Reading (dBuV/m)+ 20log (Duty cycle)

Average Reading = Peak value + 20log(Duty cycle) , AV=PK-8.36

On Time 1: 0.8ms*12



On Time 2: 0.4ms*51



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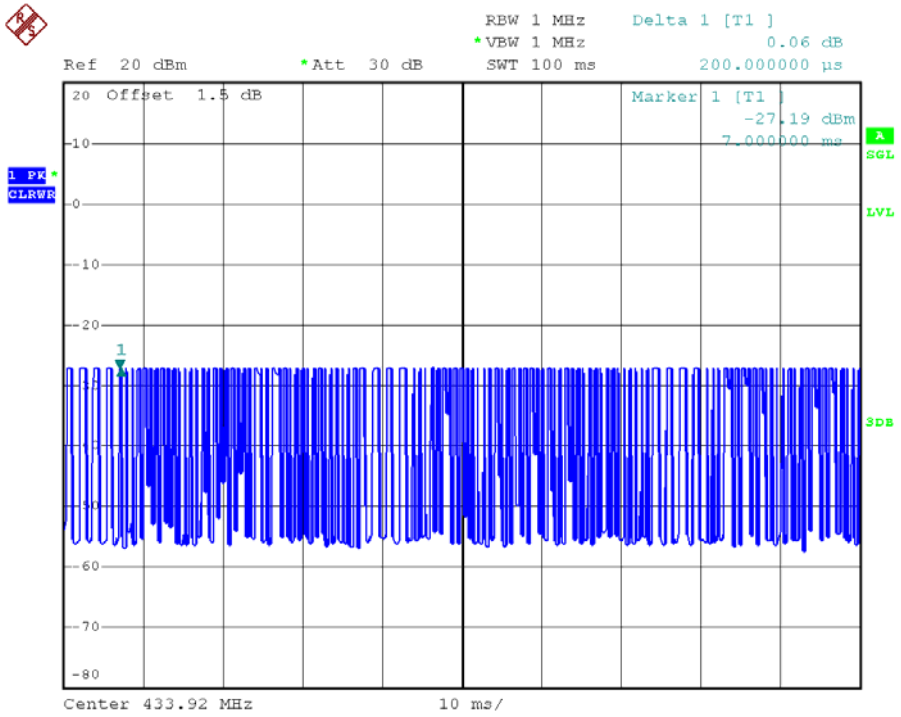
On Time 2: 0.2ms*41



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4.2.5 TEST PROCEDURE

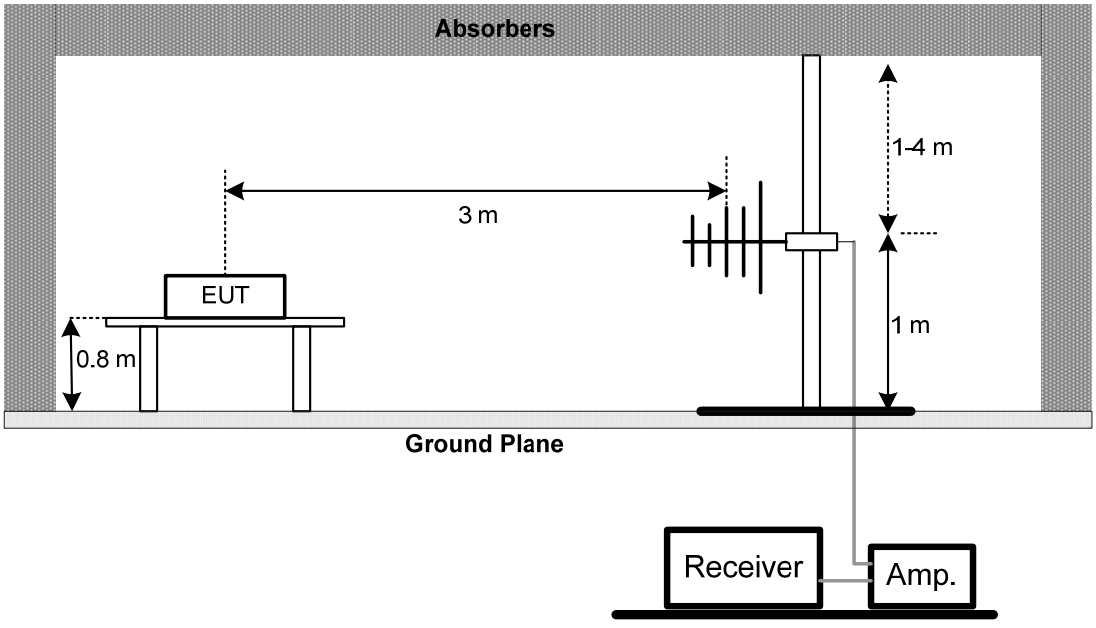
a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance 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.

4.2.6 DEVIATION FROM TEST STANDARD

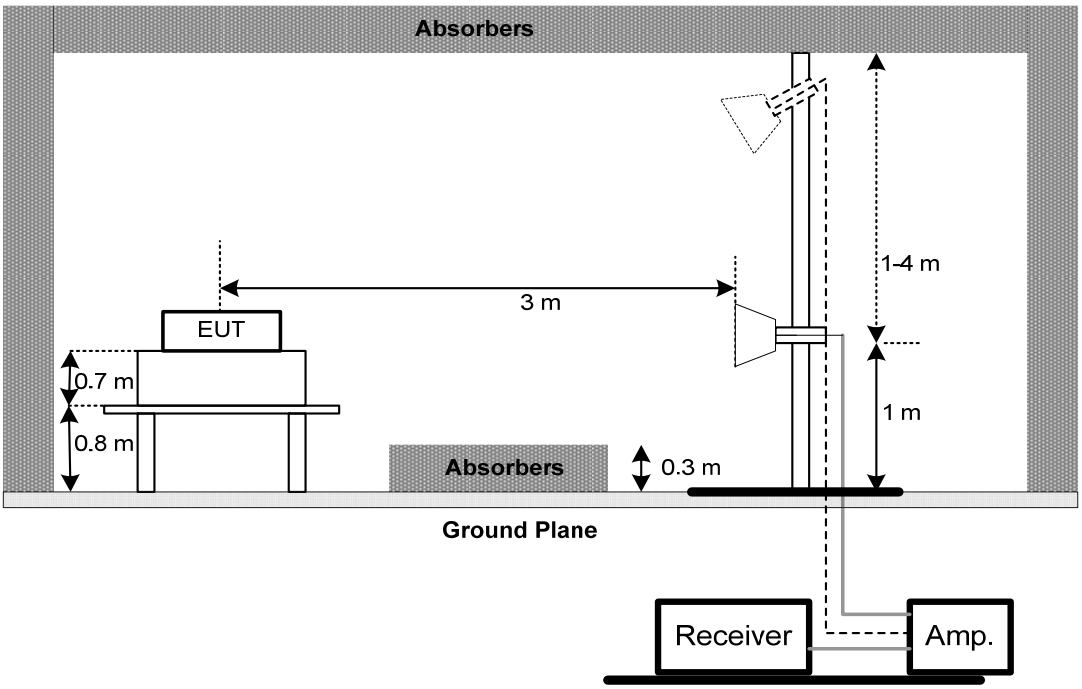
No deviation

4.2.7 TEST SETUP

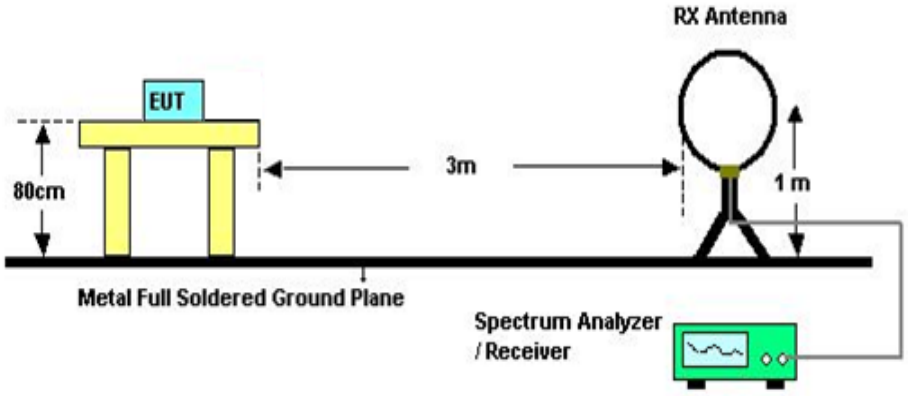
(A) Radiated Emission Test Set-Up Frequency Below 1 GHz



(B) Radiated Emission Test Set-Up Frequency Above 1 GHz



(C) For Radiated Emissions Below 30MHz



4.2.8 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **4.1.5** unless otherwise a special operating condition is specified in the follows during the testing.

4.2.9 EUT TEST CONDITIONS

Temperature: 24° C
Relative Humidity: 52%
Test Voltage: DC 3V

4.2.10 TEST RESULTS (9kHz to 30MHz)

Please refer to the Attachment B.

Remark:

(1) The amplitude of spurious emissions which are attenuated by more than 20 dB below the permissible value has no need to be reported.
(2) Distance extrapolation factor = 40 log (specific distance / test distance) (dB);.
(3) Limit line = specific limits (dBuV) + distance extrapolation factor..

4.2.11 TEST RESULTS (30MHz to 1000MHz)

Please refer to the Attachment C.

Remark:

(1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
(2) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
(3) EUT Orthogonal Axis:
"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand
(4) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

4.2.12 TEST RESULTS (Above 1000 MHz)

Please refer to the Attachment D.

Remark:

(1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode and AV detector mode of the emission
(2) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.
(3) EUT Orthogonal Axis:
"X" - denotes Laid on Table; "Y" - denotes Vertical Stand; "Z" - denotes Side Stand
(4) During the measurements above 1 GHz it is taken care of that the EUT is always within the 3 dB cone of radiation BW of the used antenna

5. 20dB SPECTRUM BANDWIDTH MEASUREMENT

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 MEASURING INSTRUMENTS AND 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 EUT TEST CONDITIONS

Temperature: 23° C
Relative Humidity: 55%
Test Voltage: DC 3V

5.7 TESTRESULTS

Please refer to the Attachment E.

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6. TIMING TESTING

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 MEASURING INSTRUMENTS AND SETTING

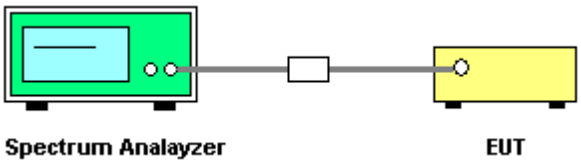
Please refer to section 6 in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	Zero Span
RB	1MHz
VB	1MHz
Detector	Peak
Trace	Max Hold
Sweep Time	100 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 EUT OPERATION DURING TEST

Temperature: 23° C
Relative Humidity: 55%
Test Voltage: DC 3V

6.7 TEST RESULTS

Please refer to the Attachment F.

7. MEASUREMENT INSTRUMENTS LIST AND SETTING

Radiated Emission Measurement - Below 1GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Antenna	Schwarbeck	VULB9160	9160-3232	Mar. 11, 2019
2	Amplifier	HP	8447D	2944A09673	Oct. 19, 2018
3	Receiver	Agilent	N9038A	MY52130039	Aug. 20, 2018
4	Cable	emci	LMR-400(30MHz-1 GHz)(8m+5m)	N/A	Jun. 26, 2018
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	Antenna	EM	EM-6876-1	230	Feb. 07, 2019

Radiated Emission Measurement - Above 1GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double Ridged Guide Antenna	ETS	3115	75789	Mar. 11, 2019
2	Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170319	Jun. 08, 2018
3	Amplifier	Agilent	8449B	3008A02274	Mar. 11, 2019
4	Microwave Preamplifier With Adaptor	EMC INSTRUMENT	EMC2654045	980039 & HA01	Mar. 11, 2019
5	Receiver	Agilent	N9038A	MY52130039	Aug. 20, 2018
6	Controller	CT	SC100	N/A	N/A
7	Controller	MF	MF-7802	MF780208416	N/A
8	Cable	emci	EMC104-SM-SM-1 2000(12m)	N/A	Jun. 26, 2018
9	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	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	Aug. 20, 2018
2	Attenuator	WOKEN	6SM3502	VAS1214NL	Mar. 11, 2019

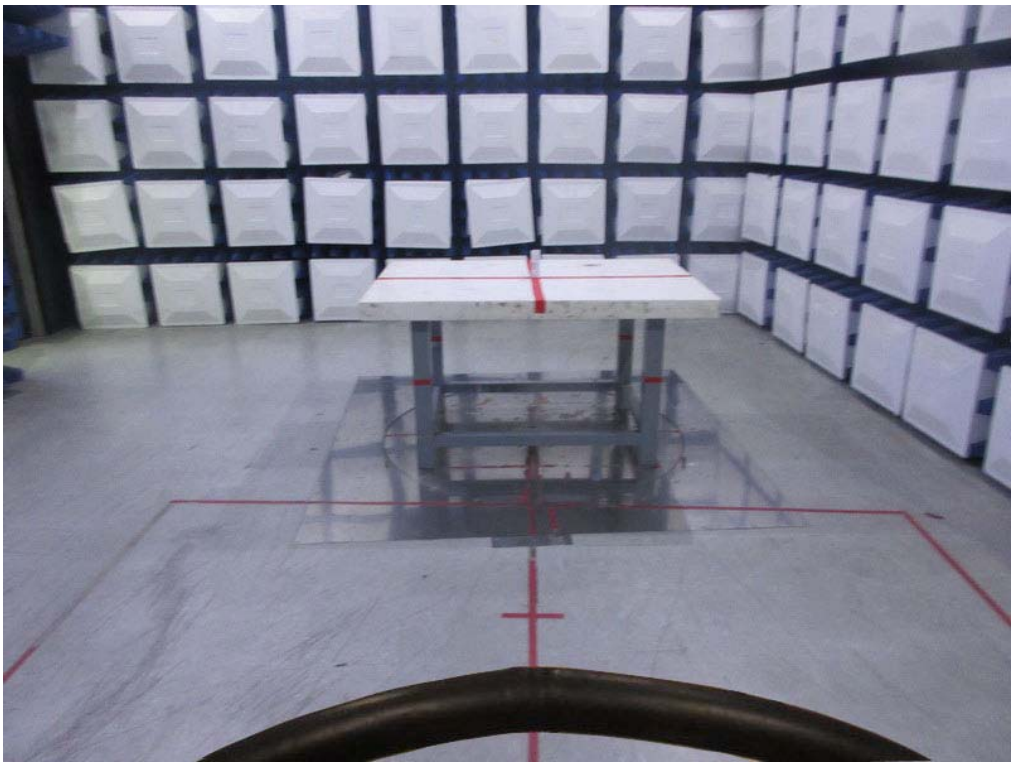
Timing Testing					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Spectrum Analyzer	R&S	FSP40	100185	Aug. 20, 2018
2	Attenuator	WOKEN	6SM3502	VAS1214NL	Feb. 13, 2019

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

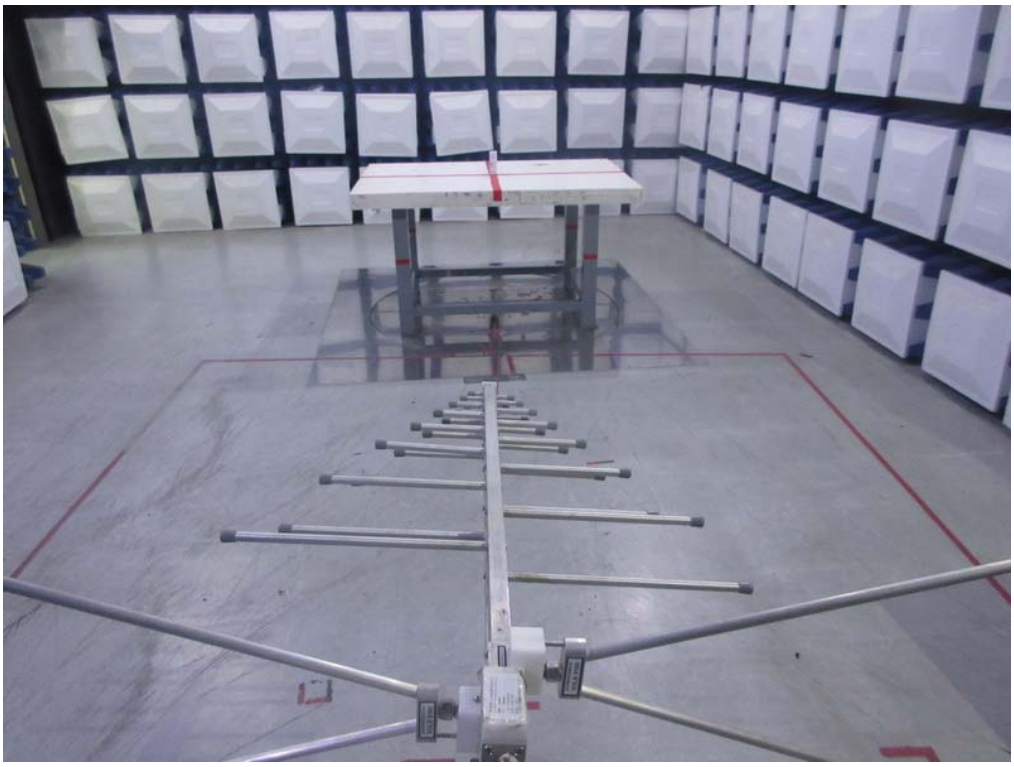
Radiated Measurement Photos

9KHz to 30MHz



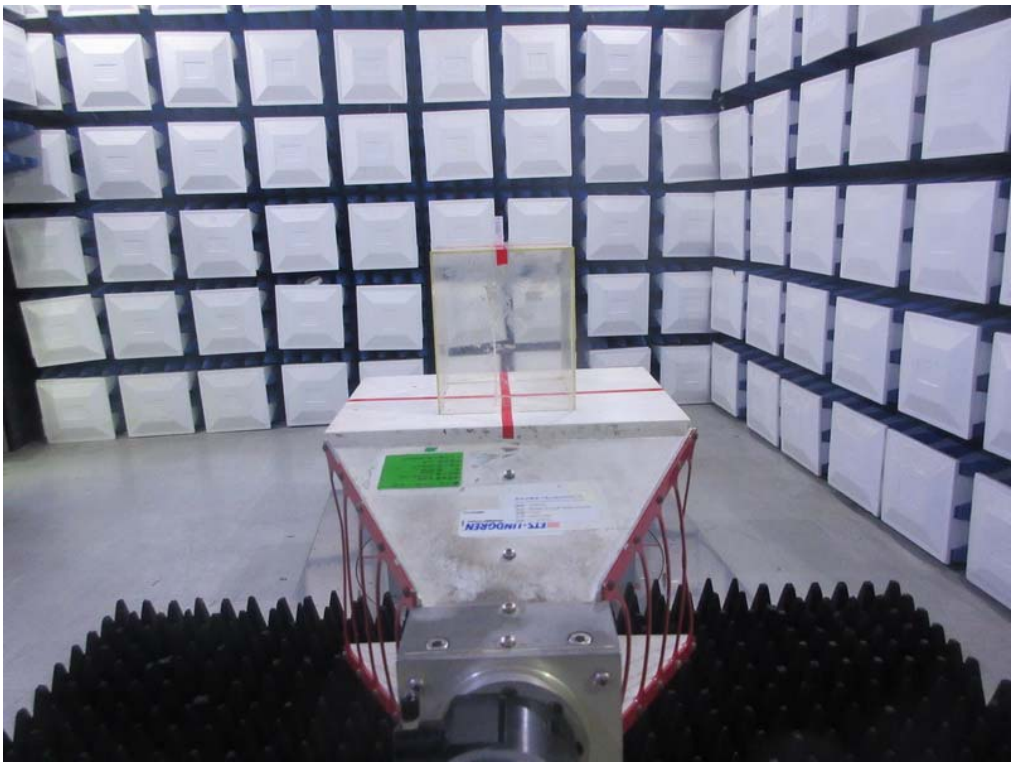
Radiated Measurement Photos

30MHz to 1000MHz



Radiated Measurement Photos

Above 1000MHz



ATTACHMENT A - CONDUCTED EMISSION

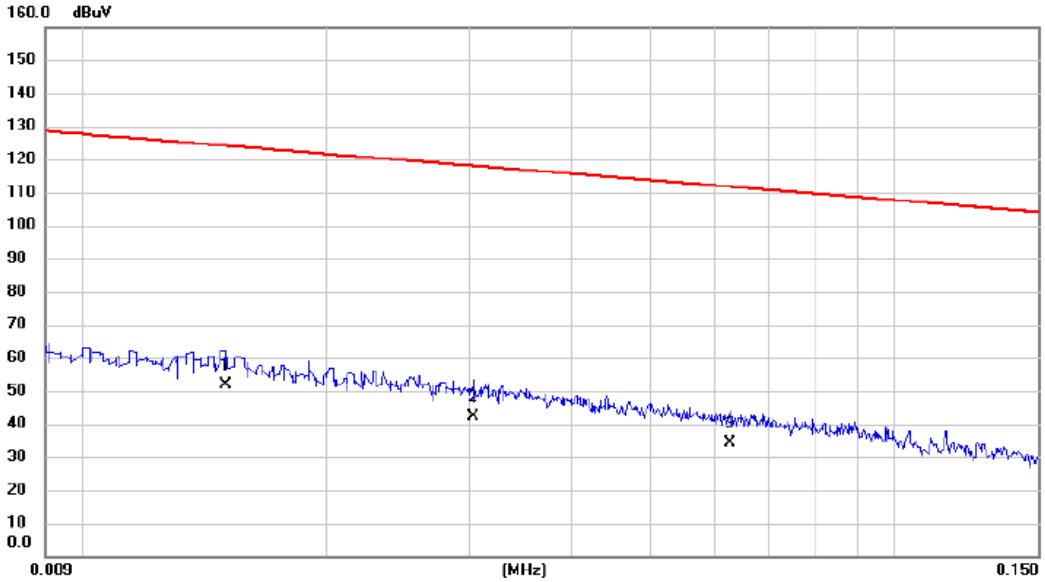
Test Mode: N/A

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

ATTACHMENT B - RADIATED EMISSION (9KHz to 30MHz)

Test Mode:	TX CH 433.92MHz

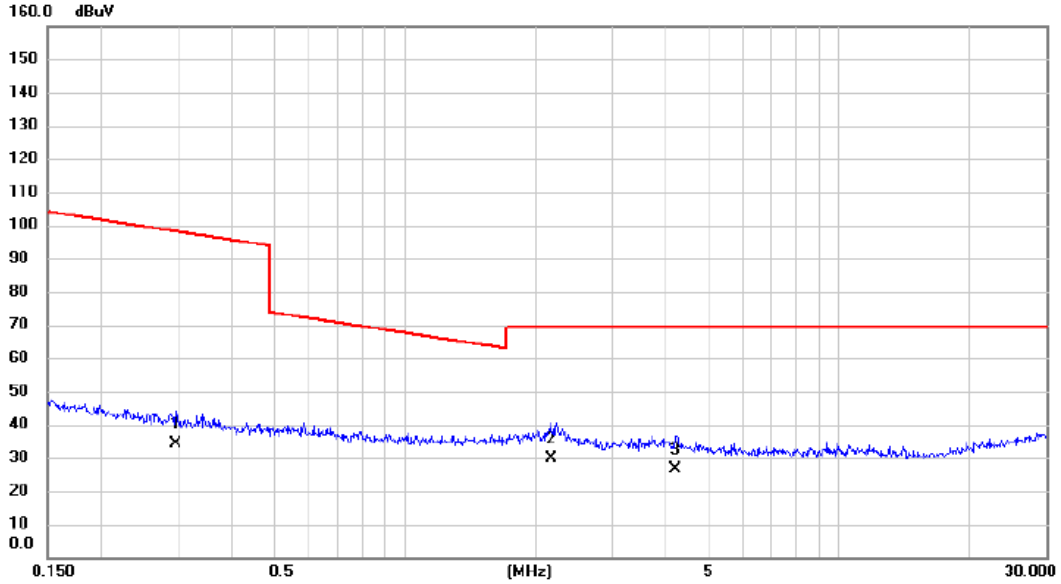
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.0150	31.50	20.27	51.77	124.08	-72.31	AVG	
2		0.0303	22.80	19.31	42.11	117.98	-75.87	AVG	
3		0.0627	15.60	18.48	34.08	111.66	-77.58	AVG	

Test Mode:	TX CH 433.92MHz

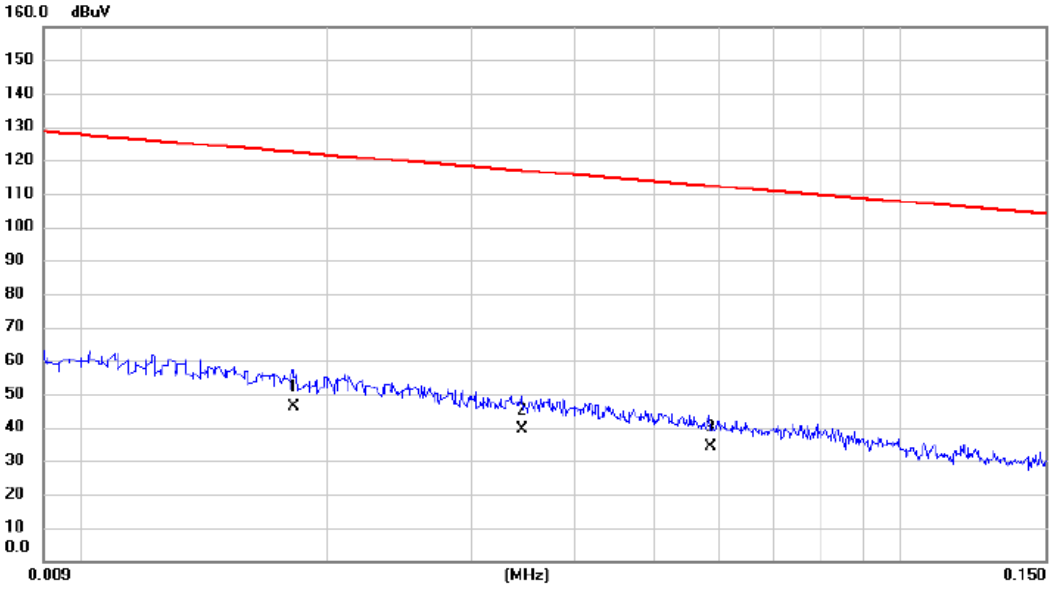
Ant 0°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2971	17.40	16.62	34.02	98.15	-64.13	AVG	
2	*	2.1783	14.30	15.46	29.76	69.54	-39.78	QP	
3		4.2018	11.60	14.83	26.43	69.54	-43.11	QP	

Test Mode:	TX CH 433.92MHz

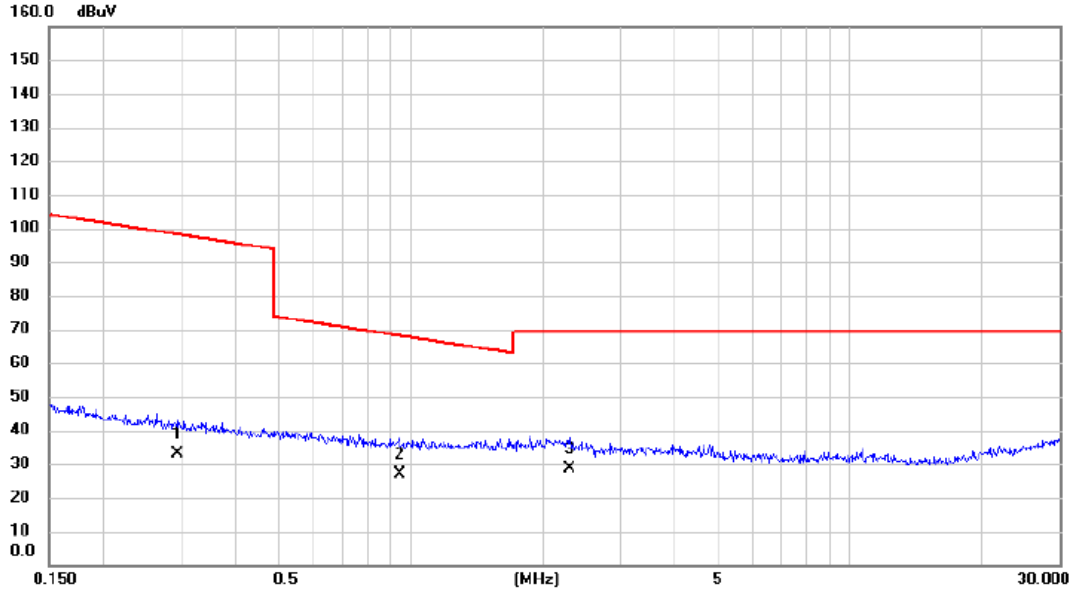
Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.0182	26.50	19.85	46.35	122.40	-76.05	AVG	
2		0.0345	20.10	19.18	39.28	116.85	-77.57	AVG	
3		0.0586	15.60	18.56	34.16	112.25	-78.09	AVG	

Test Mode:	TX CH 433.92MHz

Ant 90°



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2955	16.40	16.62	33.02	98.19	-65.17	AVG	
2		0.9431	11.20	15.96	27.16	68.11	-40.95	QP	
3	*	2.2968	13.20	15.43	28.63	69.54	-40.91	QP	

ATTACHMENT C - RADIATED EMISSION (30MHz to 1000MHz)

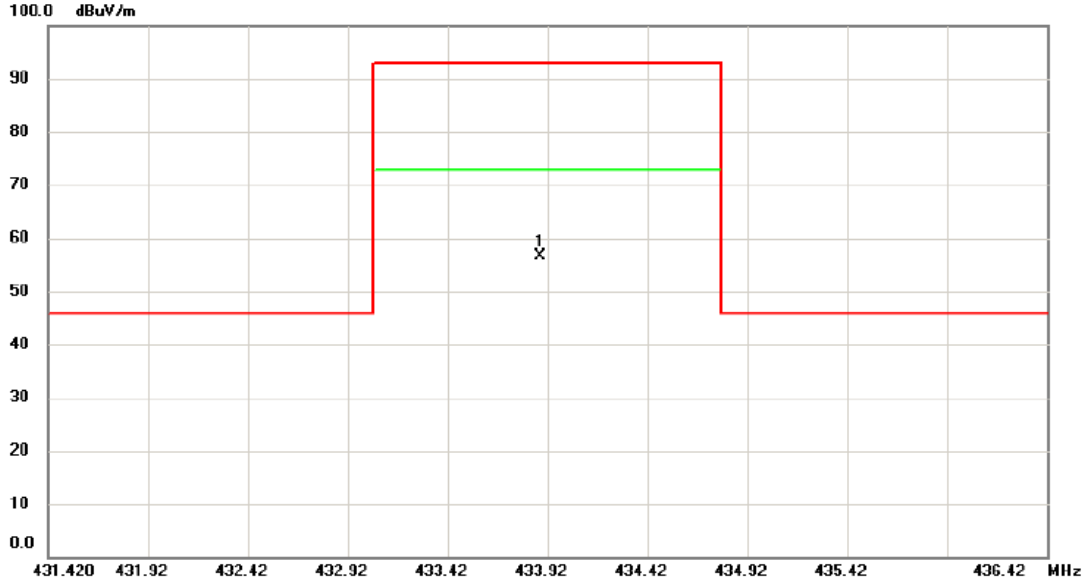
Test Mode :	TX CH 433.92MHz
About the duty cycle correction factor calculated, please refer to the page 16~18	

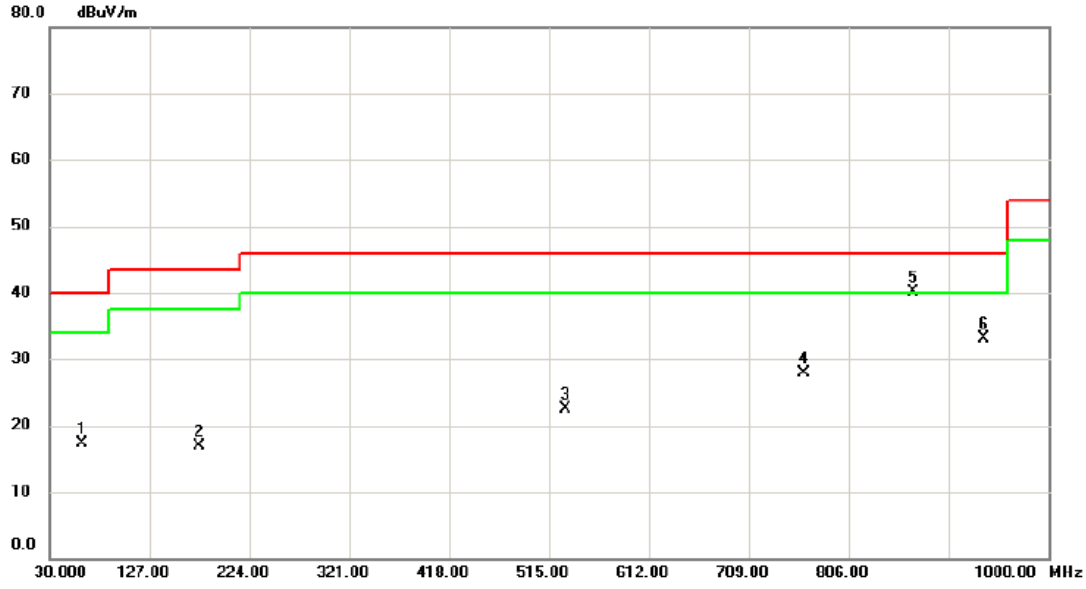
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
433.885	**V**	**67.06**		**-10.39**	**56.67**	**47.99**	**92.87**	**72.87**	**Z/F**
868.080	V	39.71		0.37	40.08	**31.40**	72.87	52.87	Z/H

Remark:

(1) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle), Final AV=PK-8.68

Orthogonal Axis: Z
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		62.010	31.95	-14.65	17.30	40.00	-22.70	peak	
2		175.500	29.11	-12.18	16.93	43.50	-26.57	peak	
3		530.520	30.62	-8.11	22.51	46.00	-23.49	peak	
4		762.350	30.12	-2.18	27.94	46.00	-18.06	peak	
5	*	868.080	39.71	0.37	40.08	46.00	-5.92	peak	
6		936.950	31.28	1.74	33.02	46.00	-12.98	peak	

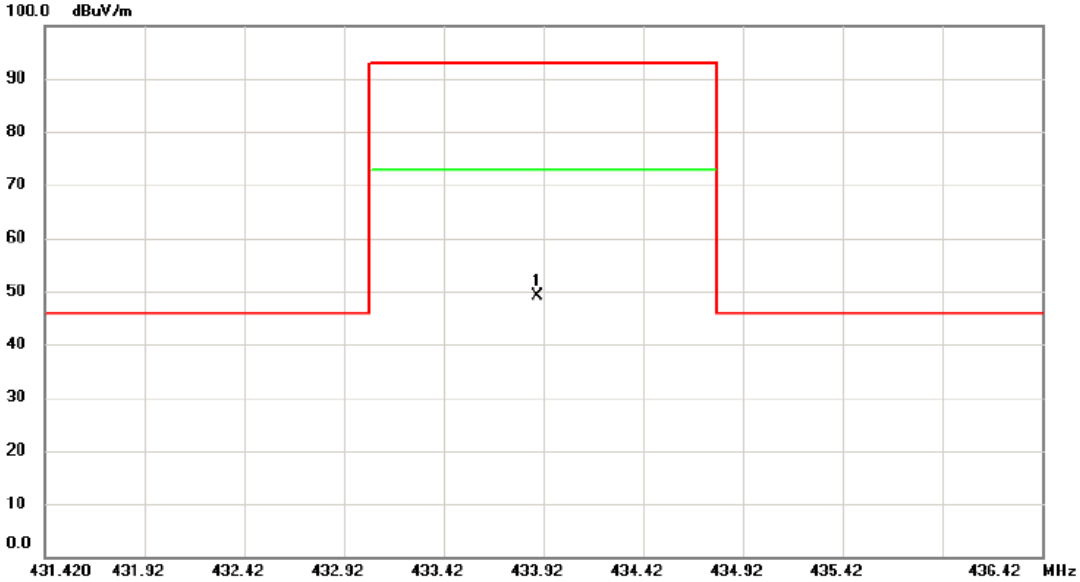
Test Mode :	TX CH 433.92MHz
About the duty cycle correction factor calculated, please refer to the page 16~18	

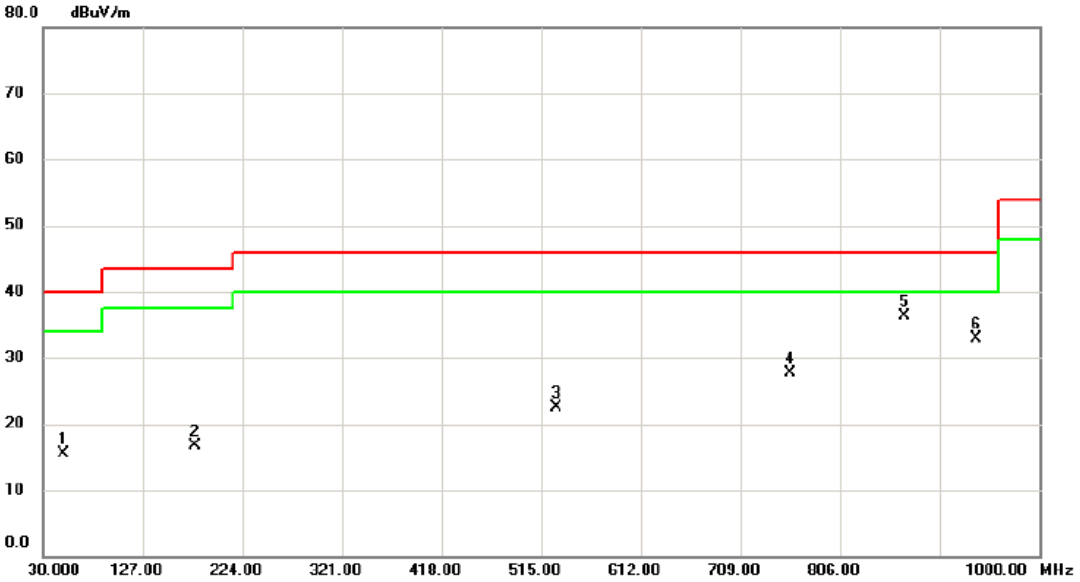
Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Note
		Peak	AV		Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
433.890	**H**	**59.51**		**-10.39**	**49.12**	**40.44**	**92.87**	**72.87**	**Z/F**
868.080	H	35.86		0.37	36.23	**27.55**	72.87	52.87	Z/H

Remark:

(1) The average value of fundamental frequency is:
Average = Peak value + 20log(Duty cycle), Final AV=PK-8.68

Orthogonal Axis: Z
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		50.370	29.11	-13.62	15.49	40.00	-24.51	peak	
2		178.410	28.80	-12.08	16.72	43.50	-26.78	peak	
3		529.550	30.64	-8.13	22.51	46.00	-23.49	peak	
4		757.500	29.97	-2.29	27.68	46.00	-18.32	peak	
5	*	868.080	35.86	0.37	36.23	46.00	-9.77	peak	
6		938.890	31.15	1.78	32.93	46.00	-13.07	peak	

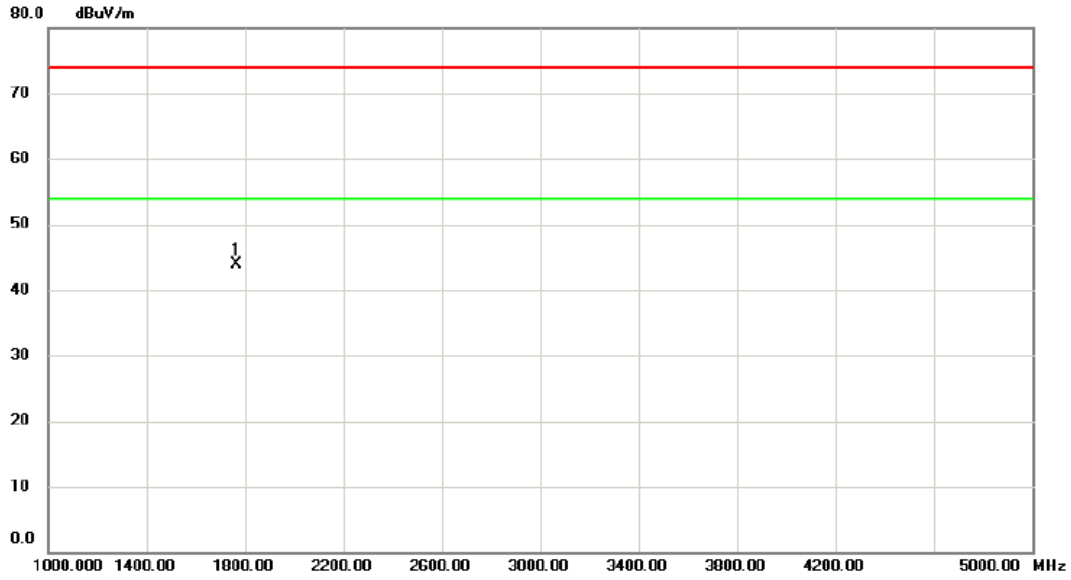
ATTACHMENT D - RADIATED EMISSION (ABOVE 1000MHz)

Test Mode :	TX CH 433.92MHz
About the duty cycle correction factor calculated, please refer to the page 16~18	

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Margin		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
1764.00	V	47.76		-3.95	43.81		74.00		-30.19		Z/E

Remark:

(1) Peak value is much lower than the limit, so AV value isn't shown on this test item.

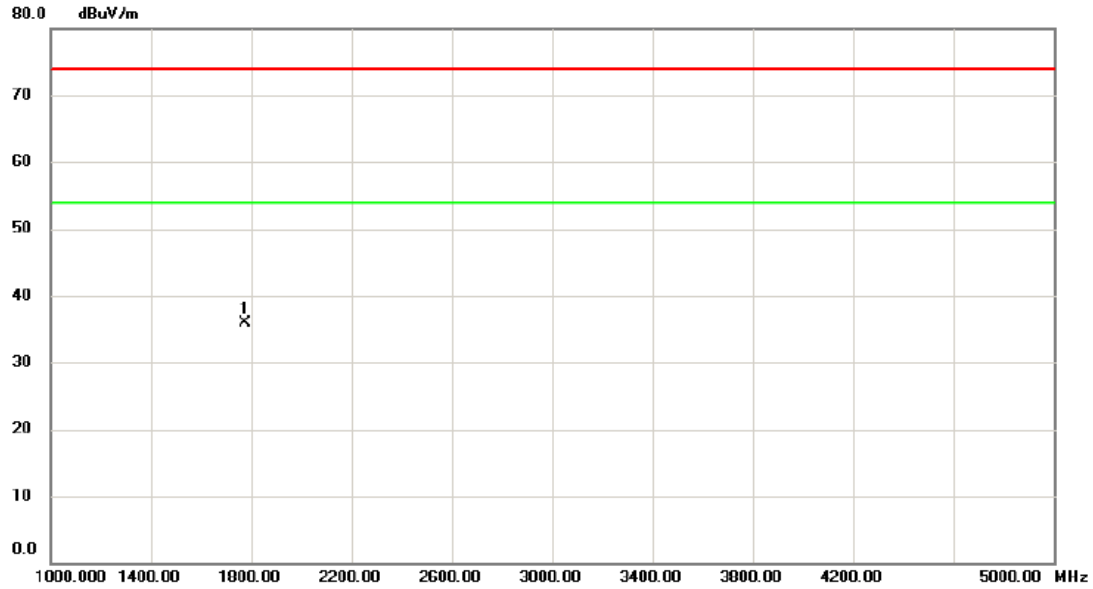


Test Mode :	TX CH 433.92MHz
About the duty cycle correction factor calculated, please refer to the page 16~18	

Freq.	Ant.Pol.	Reading		Ant./CF	Act.		Limit		Margin		Note
		Peak	AV		Peak	AV	Peak	AV	Peak	AV	
(MHz)	H/V	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	
1776.00	H	39.72		-3.87	35.85		74.00		-38.15		Z/E

Remark:

(1) Peak value is much lower than the limit, so AV value isn't shown on this test item.

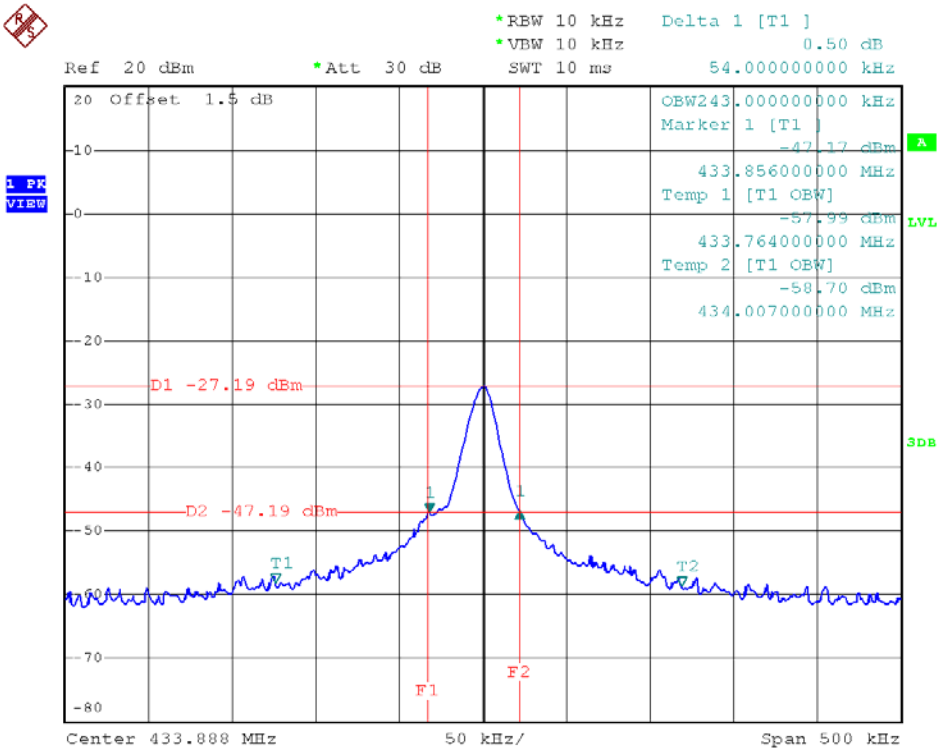


ATTACHMENT E - 20dB SPECTRUM BANDWIDTH

Test Mode:	TX CH 433.92MHz

Frequency (MHz)	20dB Bandwidth (kHz)	99% Occupied BW(kHz)	20 dB BW Limits (MHz)
433.92	54.00	243.00	1.0848

TX CH01

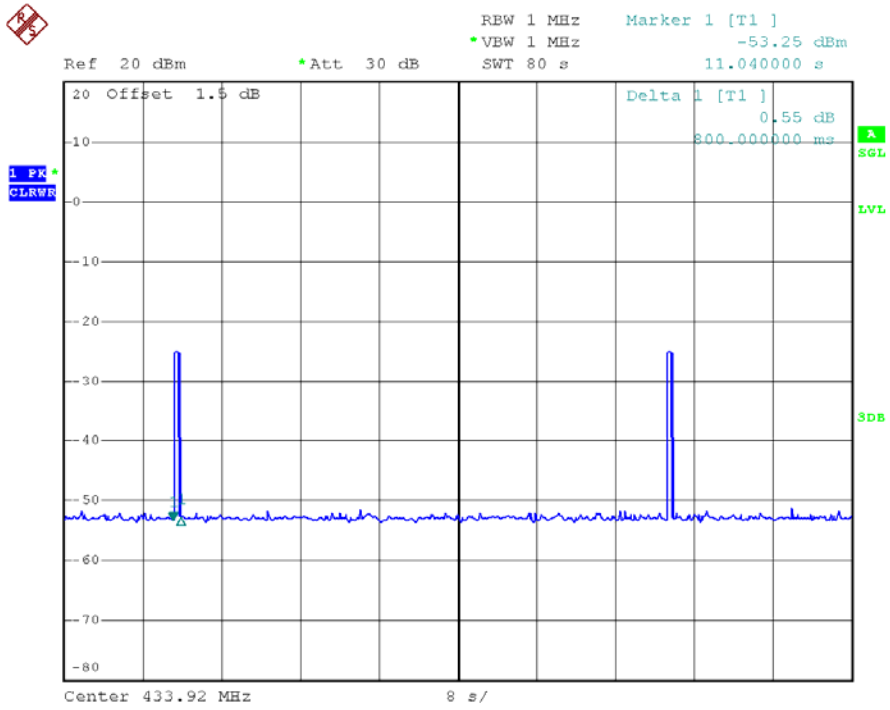


Date: 4.APR.2018 15:15:53

ATTACHMENT F - TIMING TESTING

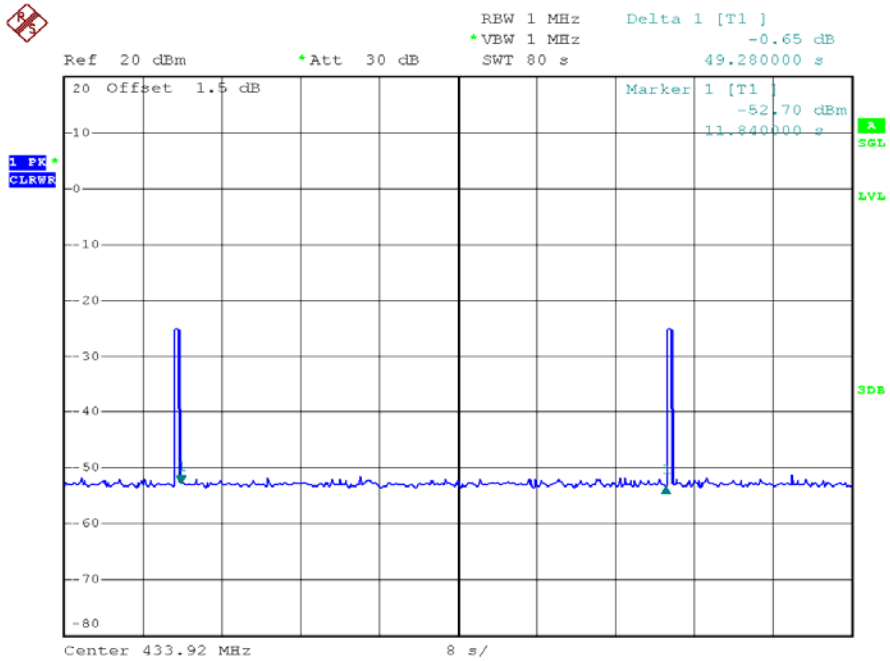
Test Mode:	TX CH 433.92MHz

On Time



Date: 4.APR.2018 15:40:32

Off Time



Date: 4.APR.2018 15:42:09