



CONFORMANCE TEST REPORT FOR FCC 47 CFR, Part 15 Subpart C

Report No.: 18-03-MAS-113-01

Client: Optex Co Ltd
Product: INDOOR/OUTDOOR SENSOR TRANSMITTER
Model: TD-20U
FCC ID: DC9TD-20U

Manufacturer/supplier: Optex Co Ltd

Date test item received: 2018/03/27
Date test campaign completed: 2019/05/06
Date of issue: 2019/05/06

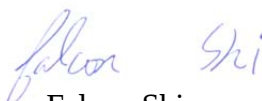
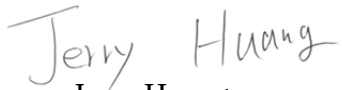
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Total number of pages of this test report: 28 pages

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Internal photos 7 pages

Setup photos 3 pages

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Manufacturer : Optex Co Ltd
Address : 5-8-12, Ogoto Otsu-shi, Shiga-Ken 520-0101, Japan
EUT : INDOOR/OUTDOOR SENSOR TRANSMITTER
Trade name : OPTEX
Model No. : TD-20U
Power Source : DC 9V (Battery)
Regulations applied : FCC 47 CFR, Part 15 Subpart C

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1. GENERAL INFORMATION

1.1 Product Description

- a) Type of EUT : INDOOR/OUTDOOR SENSOR TRANSMITTER
 b) Model No. : TD-20U
 c) Serial No. : ----
 d) FCC ID : DC9TD-20U
 e) Working Frequency : 418.0073 MHz

1.2 Characteristics of Device:

This device will alert you when a vehicle or person enters your driveway. It can also be used in your home, office or back yard to alert you whenever someone passes by the Sensor.

1.3 Test Methodology

Both Conducted and radiated testing were performed according to the procedures of ANSI C63.10 (2013).

The equipment under test was operated continuously in its normal operating mode for the purpose of the measurements. In order to secure the continuous operation of the device under test, the circuit rewired by the manufacturer to affect its intended operation.

The receiving antenna was varied from 1 to 4 meters and the wooden turntable was rotated through 360 degrees to obtain the highest reading on the field strength meter or on the display of the spectrum analyzer. And also, each emission was to be maximized by changing the orientation of the equipment INDOOR/OUTDOOR SENSOR TRANSMITTER under test.

1.4 Test Facility

The anechoic chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wenming Rd. Guishan Dist. Taoyuan City 33383, Taiwan, R.O.C.

This site has been accreditation as a FCC filing site.

1.5 Test Summary

Requirement	FCC Paragraph #	Test Pass
Radiated Emission	15.231(b)(e)&15.209	☒
Bandwidth of Emission	15.231(c)	☒
Conducted Emission	15.207	☒
Limit of Transmission Time	15.231(a)&15.231(e)	☒

2. DEFINITION AND LIMITS

2.1 Definition

Intentional radiator:

A device that intentionally generates and emits radio frequency energy by radiation or induction.

2.2 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

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

** : Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz

2.3 Limitation

(1) Conducted Emission Limits :

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the conducted limit is the following:

Frequency MHz	Quasi Peak dB μ V	Average dB μ V
0.15 - 0.5	66-56	56-46
0.5 - 5.0	56	46
5.0 - 30.0	60	50

(2) Radiated Emission Limits :

According to 15.231(b), In addition to the provisions of §15.205, the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Frequency Band (MHz)	Field strength of Fundamental (uV/m)	Field strength of Spurious (uV/m)
40.66-40.70	2250	225
70-130	1250	125
130-174	*1,250 to 3,750	*125 to 375
174-260	3750	375
260-470	*3,750 to 12,500	*375 to 1250
Above 470	12500	1250

* Linear interpolations.

- (1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.
- (2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.
- (3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

According to 15.231 (e), Intentional radiators may operate at a periodic rate exceeding that specified in paragraph (a) of this section and may be employed for any type of operation, including operation prohibited in paragraph (a) of this section, provided the intentional radiator complies with the provisions of paragraphs (b) through (d) of this section, except the field strength table in paragraph (b) of this section is replaced by the following:

Frequency Band (MHz)	Field strength of Fundamental (uV/m)	Field strength of Spurious (uV/m)
40.66-40.70	1,000	100
70-130	500	50
130-174	*500 to 1,500	*50 to 150
174-260	1,500	150
260-470	*1,500 to 5,000	*150 to 500
Above 470	5,000	500

* Linear interpolations.

According to 15.205 (b), the field strength of emissions appearing within the Restricted Bands shall not exceed. The general radiated limits in 15.209, as following table:

Frequency (MHz)	Field Strength		Measurement Distance (meters)
	μ V/meter	dB μ V/meter	
30 - 88	100	40.0	3
88 - 216	150	43.5	3
216 - 960	200	46.0	3
Above 960	500	54.0	3

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

(3) Bandwidth of the emission

According to 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.

(4) Limit of transmission time

According to 15.231(a), The provisions of this section are restricted to periodic operation within the band 40.66-40.70 MHz and above 70 MHz. Except as shown in paragraph (e) of this section, the intentional radiator is restricted to the transmission of a control signal such as those used with alarm systems, door openers, remote switches, etc. Continuous transmissions, voice, video and the radio control of toys are not permitted. Data is permitted to be sent with a control signal. The following conditions shall be met to comply with the provisions for this periodic operation:

- (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.
- (2) A transmitter activated automatically shall cease transmission within 5 seconds after activation.
- (3) Periodic transmissions at regular predetermined intervals are not permitted. However, polling or supervision transmissions, including data, to determine system integrity of transmitters used in security or safety applications are allowed if the total duration of transmissions does not exceed more than two seconds per hour for each transmitter. There is no limit on the number of individual transmissions, provided the total transmission time does not exceed two seconds per hour.
- (4) Intentional radiators which are employed for radio control purposes during emergencies involving fire, security, and safety of life, when activated to signal an alarm, may operate during the pendency of the alarm condition.
- (5) Transmission of set-up information for security systems may exceed the transmission duration limits in paragraphs (a)(1) and (a)(2) of this section, provided such transmissions are under the control of a professional installer and do not exceed ten seconds after a manually operated switch is released or a transmitter is activated automatically. Such set-up information may include data.

According to 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.

2.4 Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device :

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.5 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

To comply with the FCC RF exposure compliance requirement, this device and its antenna must not be co-located or operating to conjunction with any other antenna or
INDOOR/OUTDOOR SENSOR TRANSMITTER.

3. SYSTEM TEST CONFIGURATION

3.1 Justification

For the purposes of this test report ancillary equipment is defined as equipment which is used in conjunction with the EUT to provide operational and control features to the EUT during the test.

3.2 Devices for Tested System

Device	Manufacture	Model	Cable Description
* INDOOR/OUTDOOR SENSOR TRANSMITTER	Optex Co Ltd	TD-20U	----

Remark :

- 1.“*” means equipment under test.

4. RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For periodic operation intentional radiator, the radiated emission shall comply with § 15.231(b).

4.2 Measurement Procedure

A.Preliminary Measurement For Portable Devices.

For portable devices, the following procedure was performed to determine the maximum emission axis of EUT (X , Y and Z axis):

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antennna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. The axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.
4. The position in which the maximum noise occurred was “X axis”. (Please see the test setup photos)

B. Final Measurement

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively.
2. For emission frequencies measured below 1 GHz, it is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions. For emission frequencies measured above 1 GHz, a pre-scan be performed with a 1 meter measuring distance before final test.
3. For emission frequencies measured below and above 1 GHz, set the spectrum analyzer on a 120 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

Note : A filter was used to avoid pre-amplifier saturated when measure TX operation mode.

5. Repeat step 4 until all frequencies need to be measured were complete.
6. Repeat step 5 with search antenna in vertical polarized orientations.
7. Check the three frequencies of highest emission with varying the datarate, placement of ANT.cables associated with EUT to obtain the worse case and record the result.

Figure 1 : Frequencies measured below 1 GHz configuration

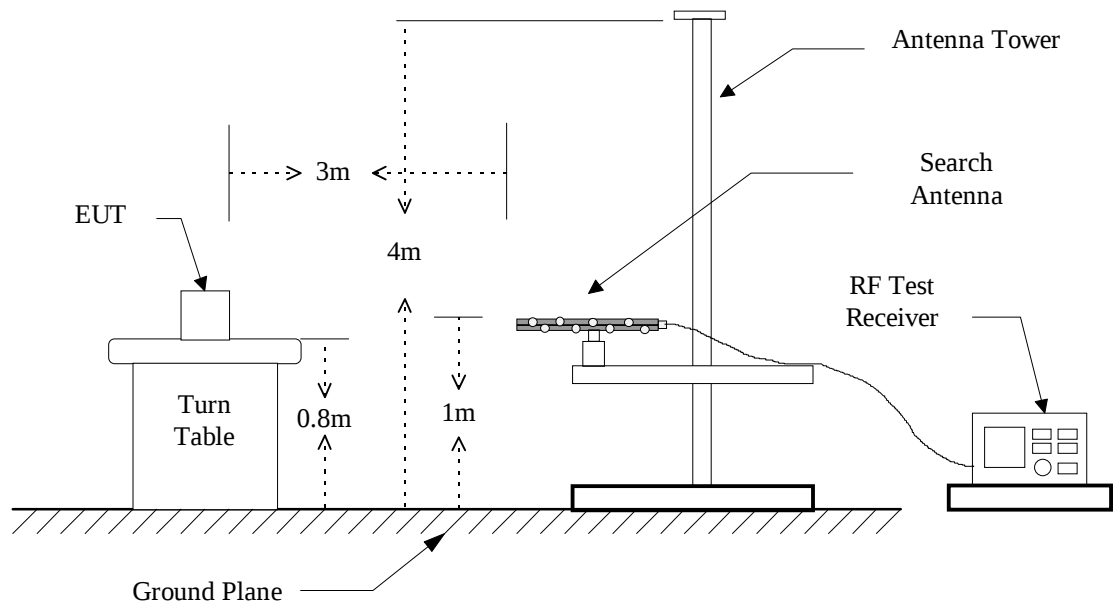
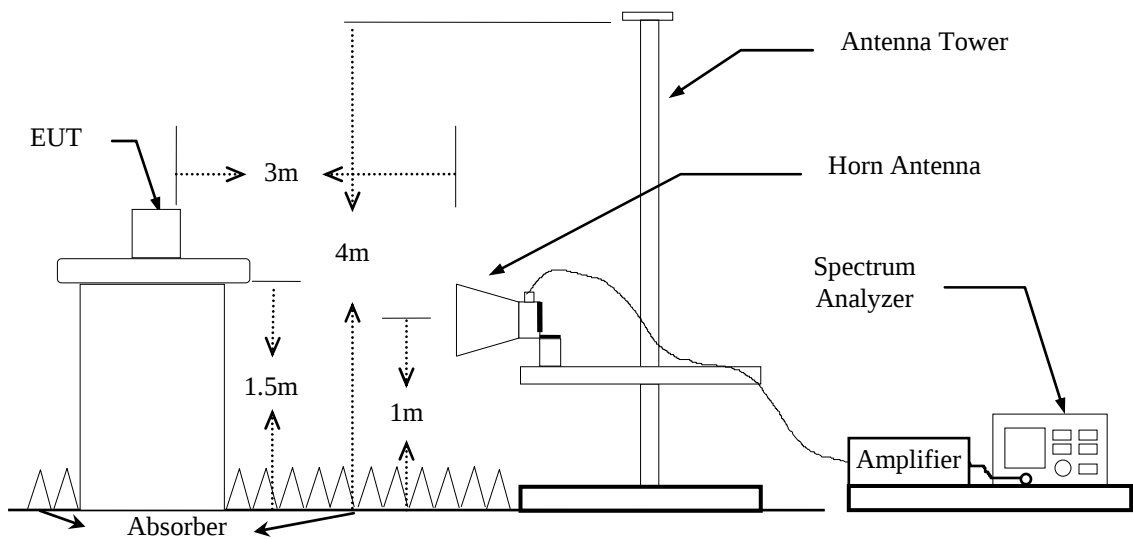


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Test Data

4.3.1 Fundamental and Harmonic of Transmitter

Operated mode : TransmittingTest Date : Aug.30, 2018Temperature : 21°CHumidity : 63%

Frequency (MHz)	Ant Pol H/V	Reading (dBUV/m) @3m		Correct Factor (dB)	Duty Factor (dB)	Result (dBUV/m) @3m			Limit (dBUV/m) @3m			Margin (dB)
		Peak	QP			Peak	QP	AVG	Peak	QP	AVG	
Fundamental												
418.0073	H	67.2	----	25.7	-16.2	92.9	----	76.7	100.3	----	80.3	-3.6
418.0073	V	68.6	----	25.7	-16.2	94.3	----	78.1	100.3	----	80.3	-2.2
Harmonic												
836.0146	H	47.8	----	5.0	-16.2	52.8	----	36.6	80.3	----	60.3	-23.7
836.0146	V	50.6	----	5.0	-16.2	55.6	----	39.4	80.3	----	60.3	-20.9
1254.0219	H	54.5	----	-12.1	-16.2	42.4	----	26.2	80.3	----	60.3	-34.1
1254.0219	V	53.1	----	-12.1	-16.2	41.0	----	24.8	80.3	----	60.3	-35.5
*1672.0292	H	----	----	-9.7	-16.2	----	----	----	74.0	----	54.0	----
*1672.0292	V	54.0	----	-9.7	-16.2	44.3	----	28.1	74.0	----	54.0	-25.9
2090.0365	H	----	----	-7.4	-16.2	----	----	----	80.3	----	60.3	----
2090.0365	V	----	----	-7.4	-16.2	----	----	----	80.3	----	60.3	----
2508.0438	H	----	----	-6.3	-16.2	----	----	----	80.3	----	60.3	----
2508.0438	V	----	----	-6.3	-16.2	----	----	----	80.3	----	60.3	----
2926.0511	H	49.3	----	-4.9	-16.2	44.4	----	28.2	80.3	----	60.3	-32.1
2926.0511	V	49.5	----	-4.9	-16.2	44.6	----	28.4	80.3	----	60.3	-31.9
3344.0584	H	----	----	-3.5	-16.2	----	----	----	80.3	----	60.3	----
3344.0584	V	50.3	----	-3.5	-16.2	46.8	----	30.6	80.3	----	60.3	-29.7
*3762.0657	H	----	----	-2.0	-16.2	----	----	----	74.0	----	54.0	----
*3762.0657	V	----	----	-2.0	-16.2	----	----	----	74.0	----	54.0	----
*4180.0730	H	----	----	-1.0	-16.2	----	----	----	74.0	----	54.0	----
*4180.0730	V	----	----	-1.0	-16.2	----	----	----	74.0	----	54.0	----

Note:

1. Peak Result = Peak Reading + Correct Factor
2. AVG Result = Peak Result + Duty Factor
3. If the result of peak value is under the limit of average, the average value doesn't need to be measured.
4. "*" means the frequency is in the Restricted Bands.
5. Remark "----" means that the emissions level is too low to be measured.
6. Please refer to page13-14 for chart

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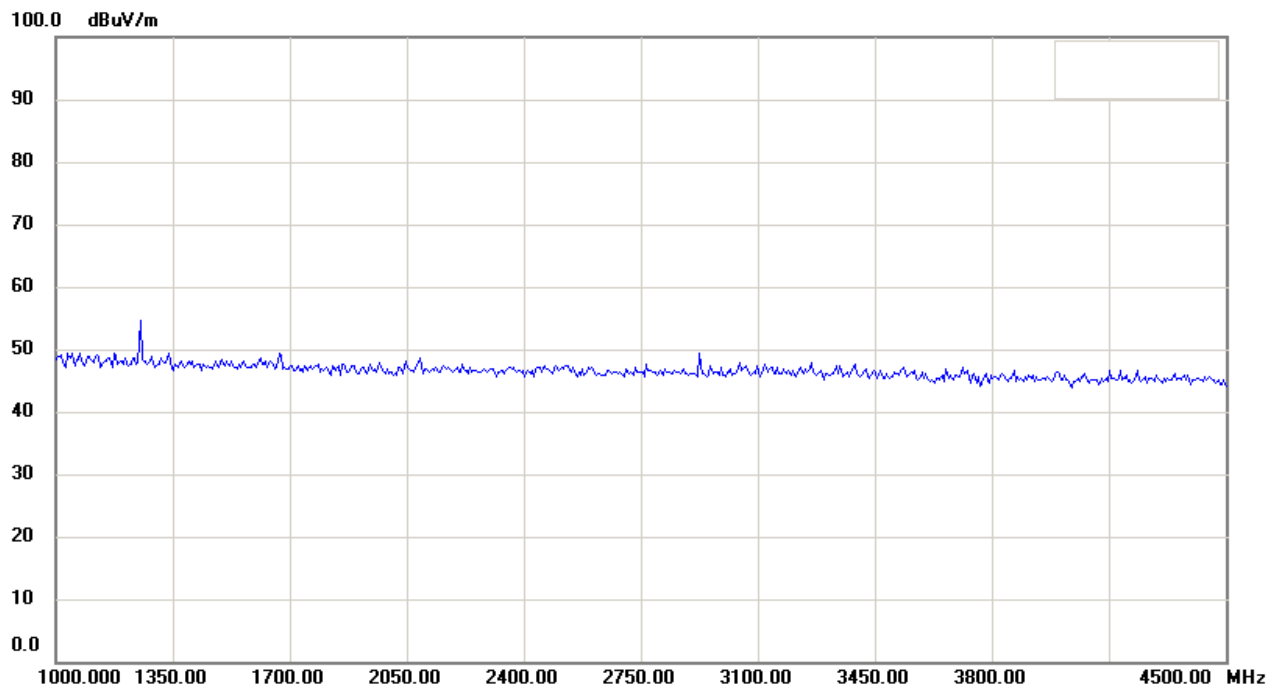
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Date: 2018/8/30

Temperature: 21 °C

Time: AM 10:23:10

Humidity: 63 %



Condition:

EUT: IINDOOR/OUTDOOR SENSOR
TRANSMITTER

Polarization:

Horizontal

Distance:

3m

Model:

TD-20U

Test Mode:

TX-UUT3

Note:

Operator: Phillip

File: 18-03-MAS-
113_Debug3_Above1G

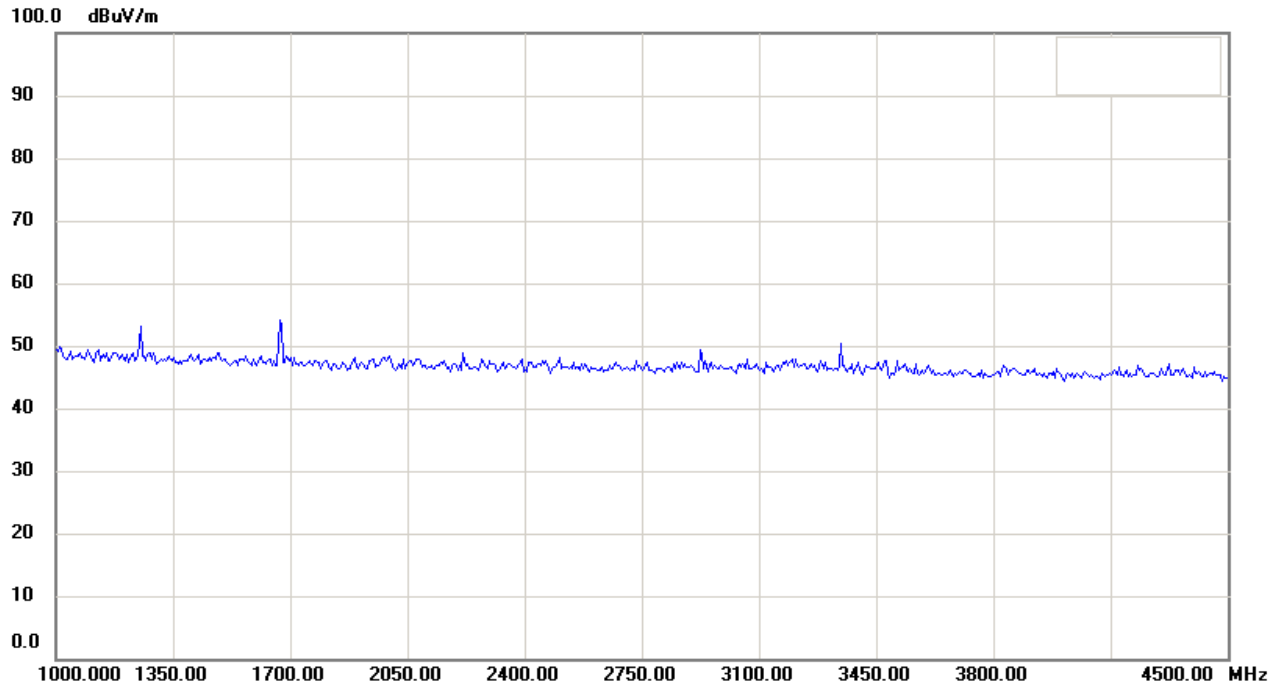
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Date: 2018/8/30

Temperature: 21 °C

Time: AM 10:19:40

Humidity: 63 %



Condition:
EUT: IINDOOR/OUTDOOR SENSOR
TRANSMITTER
Model: TD-20U
Test Mode: TX-UUT3
Note: Operator: Phillip

Polarization: Vertical
Distance: 3m

4.3.2 Other Emission

A. below1GHz

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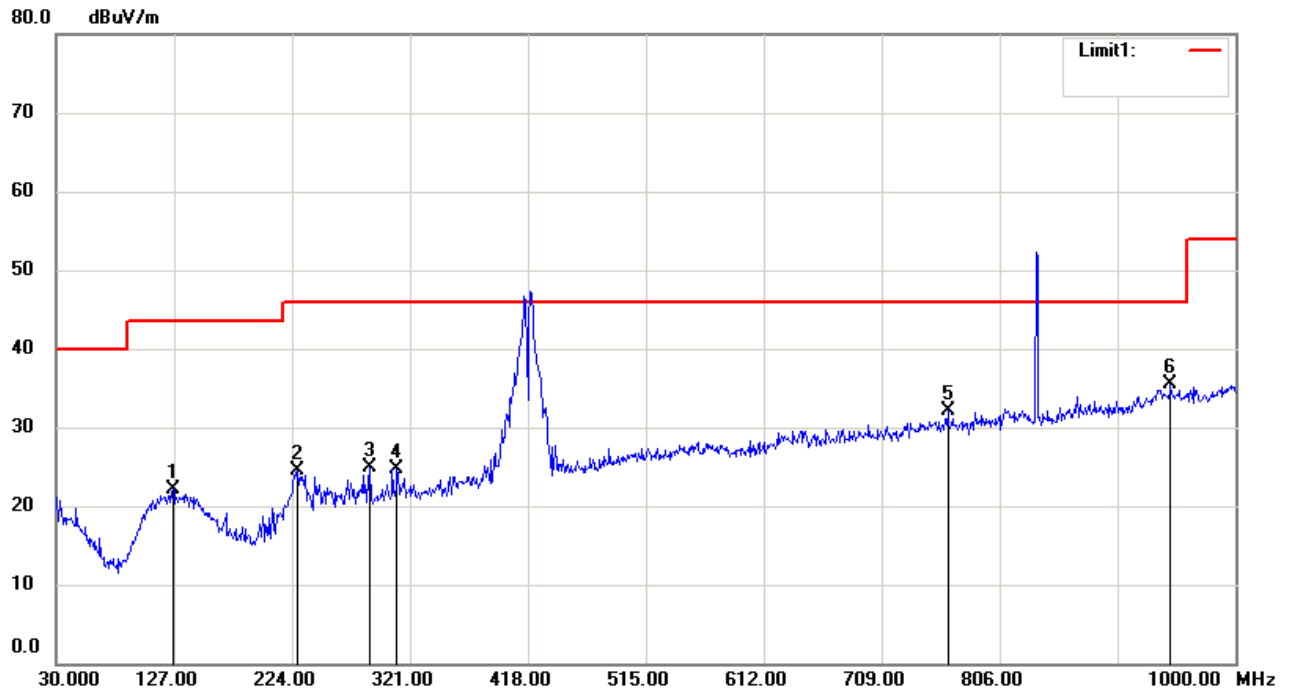
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Date: 2018/8/6

Temperature: 21 °C

Time: PM 02:08:51

Humidity: 63 %



Condition: FCC Part15 RE-Class B_30-1000MHz
 EUT: IINDOOR/OUTDOOR SENSOR
 TRANSMITTER
 Model: TD-20U
 Test Mode: TX-UUT3
 Note: Operator: Phillip

Polarization: Horizontal
 Distance: 3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	126.0300	27.59	peak	-5.39	22.20	43.50	-21.30
2	228.8500	32.79	peak	-8.31	24.48	46.00	-21.52
3	288.0200	29.86	peak	-5.02	24.84	46.00	-21.16
4	310.3300	29.29	peak	-4.63	24.66	46.00	-21.34
5	763.3200	28.71	peak	3.44	32.15	46.00	-13.85
6	946.6500	27.69	peak	7.73	35.42	46.00	-10.58

File: 18-03-MAS-
113_Debug3

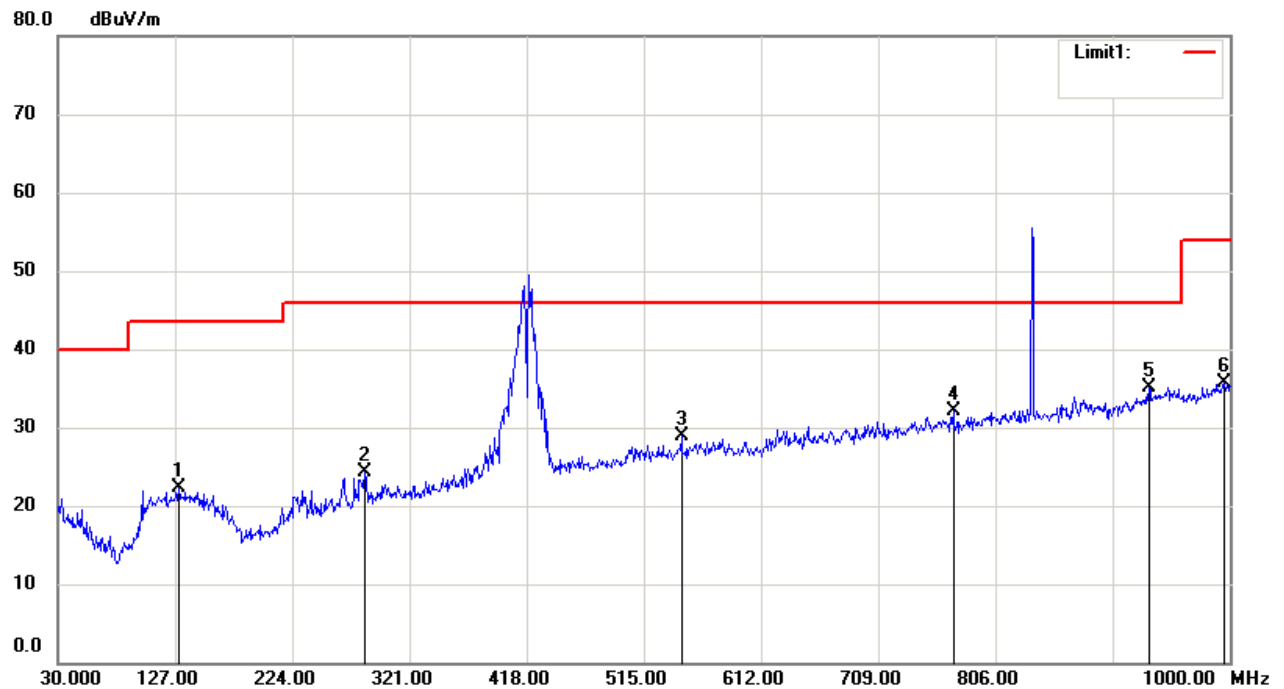
Data: #16

Date: 2018/8/6

Temperature: 21 °C

Time: PM 02:13:28

Humidity: 63 %



Condition: FCC Part15 RE-Class B_30-1000MHz
 EUT: IINDOOR/OUTDOOR SENSOR
 TRANSMITTER
 Model: TD-20U
 Test Mode: TX-UUT3
 Note: Operator: Phillip

Polarization: Vertical
 Distance: 3m

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	129.9100	27.57	peak	-5.31	22.26	43.50	-21.24
2	284.1400	29.41	peak	-5.17	24.24	46.00	-21.76
3	546.0400	29.04	peak	-0.14	28.90	46.00	-17.10
4	771.0800	28.59	peak	3.58	32.17	46.00	-13.83
5	933.0700	27.88	peak	7.19	35.07	46.00	-10.93
6	995.1500	27.00	peak	8.75	35.75	54.00	-18.25

B. above 1GHz

Frequency	Ant	Reading	Correct	Duty	Result @3m	Limit @3m	Margins
(MHz)	Pol	(dBuV)	Factor	Factor	(dBuV/m)	(dBuV/m)	
	H / V	Peak	(dB)	(dB)	Peak AVG	Peak AVG	(dB)
Radiated emission frequencies above 1 GHz to 5GHz were too low to be measured.							

- Note: 1. Place of Measurement: Measuring site of the ETC.
2. Item of margin shown in above table refer to average limit.
3. Remark “---” means that the emissions level is too low to be measured.
4. If the peak result is under the average limit, that is deemed to meet the average limit.
5. If there is only peak result, item “Margin” referred to “peak result – average limit”.
6. The radiation emissions have been measured to beyond the tenth harmonic of the fundamental frequency and show the significant frequencies, other means the value is too low to be detected.
7. The estimated measurement uncertainty of the result measurement is
- $\pm 4.6\text{dB}$ ($30\text{MHz} \leq f < 300\text{MHz}$).
 - $\pm 4.4\text{dB}$ ($300\text{MHz} \leq f < 1000\text{MHz}$).
 - $\pm 4.1\text{dB}$ ($1\text{GHz} \leq f \leq 18\text{GHz}$).
 - $\pm 4.4\text{dB}$ ($18\text{GHz} < f \leq 40\text{GHz}$).

4.4 Field Strength Calculation

(a) Field Strength:

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

$$\text{RESULT} = \text{READING} + \text{CORR. FACTOR}$$

where CORR. FACTOR = Antenna FACTOR + Cable FACTOR

(b) Duty Factor:

$$20\log\frac{1.0833(ms)\times 4 + 0.5666(ms)\times 13 + 0.3167(ms)\times 12}{100(ms)} = -16.2\text{dB}$$

The plotted graph of Duty Factor please see page 20~ 22

4.5 Radiated Test Equipment

The following instrument are used for radiated emissions measurement:

Equipment	Manufacturer	Model No.
EMI Receiver	R&S	ESCI
BiLog Antenna	ETC	MCTD 2786
Horn Antenna	EMCO	3115
PRE-Amplifier	Agilent	8449B
PRE-Amplifier	Agilent	8447D
Spectrum Analyzer	Rohde & Schwarz	FSU46

Software: LZ-RF (Ver. ETC-3A2)

Note: The standards used to perform this calibration are traceable to NML/ROC, NIST/USA and NPL.

4.6 Measuring Instrument Setup

Measuring instrument setup in measured frequency band when specified detector function is used :

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	EMI Test Receiver	Peak	120 kHz	300 kHz
1000 to 4500	EMI Test Receiver	Peak	1 MHz	1 MHz

File: 2018

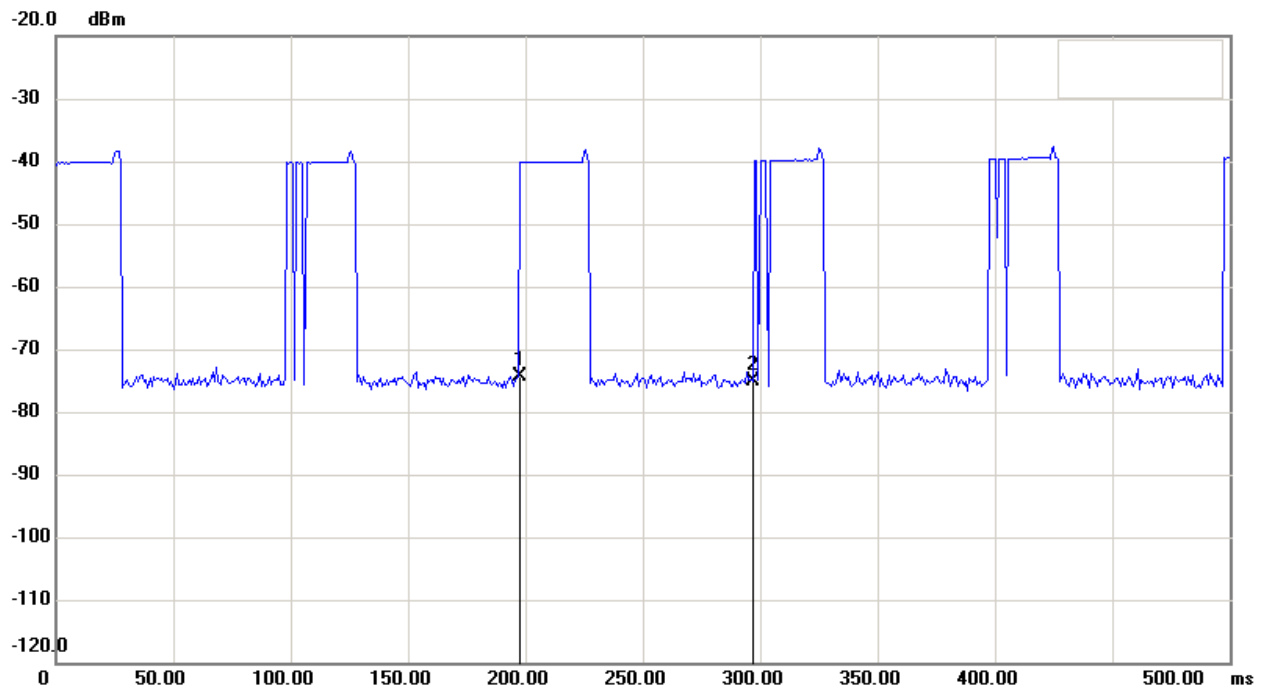
Data: #9

Date: 2018/8/17

Temperature: 25 °C

Time: PM 02:03:45

Humidity: 60 %



Condition:

EUT: IINDOOR/OUTDOOR SENSOR
TRANSMITTER

RF Conducted

Sweep Time: 500ms Att.: 10dB

Model: TD-20U

RBW: 1000 KHz

VBW: 1000 KHz

Test Mode: TX-UUT3

Note: Operator: Phillip

No.	Sweep time(ms)	Level(dBm)
1	196.6667	-74.35
2	296.6667	-75.23

No.		Δ Time(ms)	Δ Level(dB)
1	mk2-mk1	100	-0.88

File: 2018

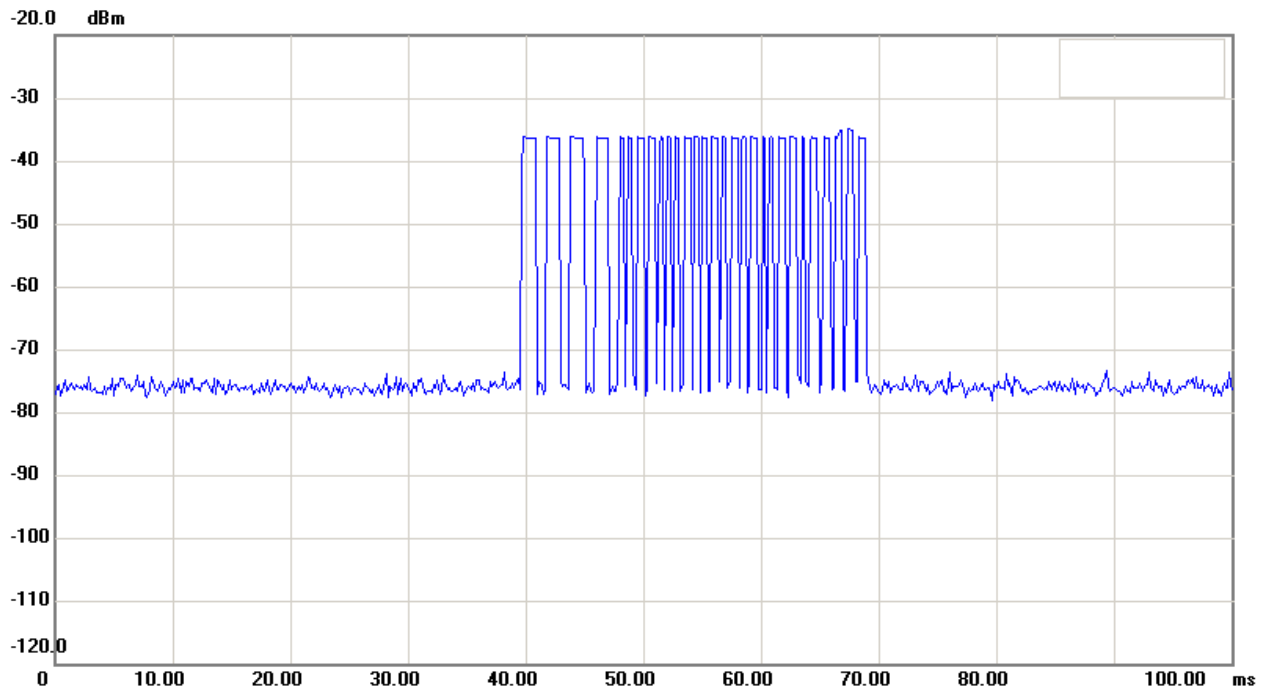
Data: #8

Date: 2018/8/17

Temperature: 25 °C

Time: PM 02:03:13

Humidity: 60 %



Condition:

EUT: IINDOOR/OUTDOOR SENSOR
TRANSMITTER

Model: TD-20U

Test Mode: TX-UUT3

Note: Operator: Phillip

RF Conducted

Sweep Time: 100ms Att.: 10dB

RBW: 1000 KHz VBW: 1000 KHz

File: 2018

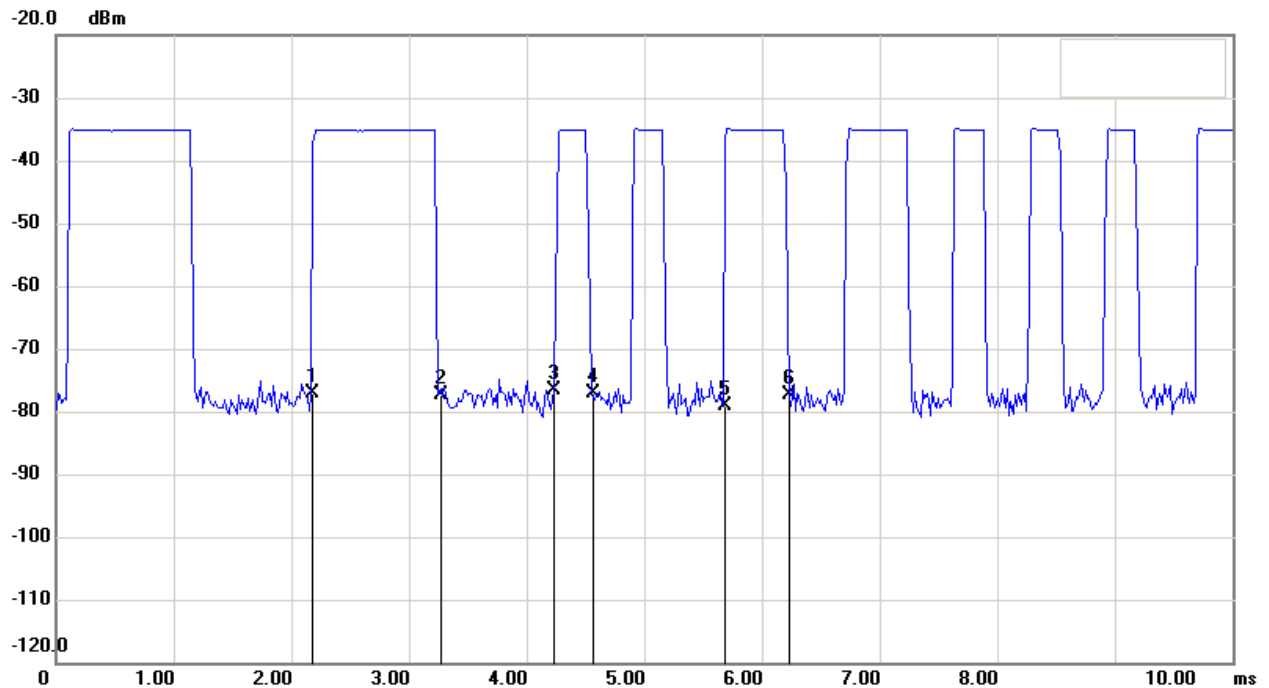
Data: #6

Date: 2018/8/17

Temperature: 25 °C

Time: PM 01:59:35

Humidity: 60 %



Condition:

EUT: INDOOR/OUTDOOR SENSOR
TRANSMITTER

RF Conducted

Sweep Time: 10ms Att.: 10dB

Model:

TD-20U

RBW: 1000 KHz

VBW: 1000 KHz

Test Mode:

TX-UUT3

Note:

Operator: Phillip

No.	Sweep time(ms)	Level(dBm)
1	2.1667	-77.03
2	3.2500	-77.46
3	4.2333	-76.69
4	4.5500	-77.24
5	5.6667	-79.09
6	6.2333	-77.49

No.		Δ Time(ms)	Δ Level(dB)
1	mk2-mk1	1.0833	-0.43
2	mk4-mk3	0.3167	-0.55
3	mk6-mk5	0.5666	1.6

5. BANDWIDTH OF EMISSION

5.1 Applicable Standard Plot Graphic of Bandwidth

According to 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 20dB down from the modulated carrier.

5.2 Test Equipment

Equipment	Manufacturer	Model No.
Spectrum Analyzer	Agilent	E4446A

Software: LZ-RF (Ver. ETC-3A2)

5.3 Test Result

Test Date : Aug. 17, 2018 Temperature : 25°C Humidity : 60%

Center Frequency	418.0073 MHz
Limit	$418.0073 \text{ MHz} \times 0.25\% = 1045.018 \text{ kHz}$
20dB Bandwidth of Emission	49.5 kHz
Chart	Page 24
Result	PASS

File: 2018

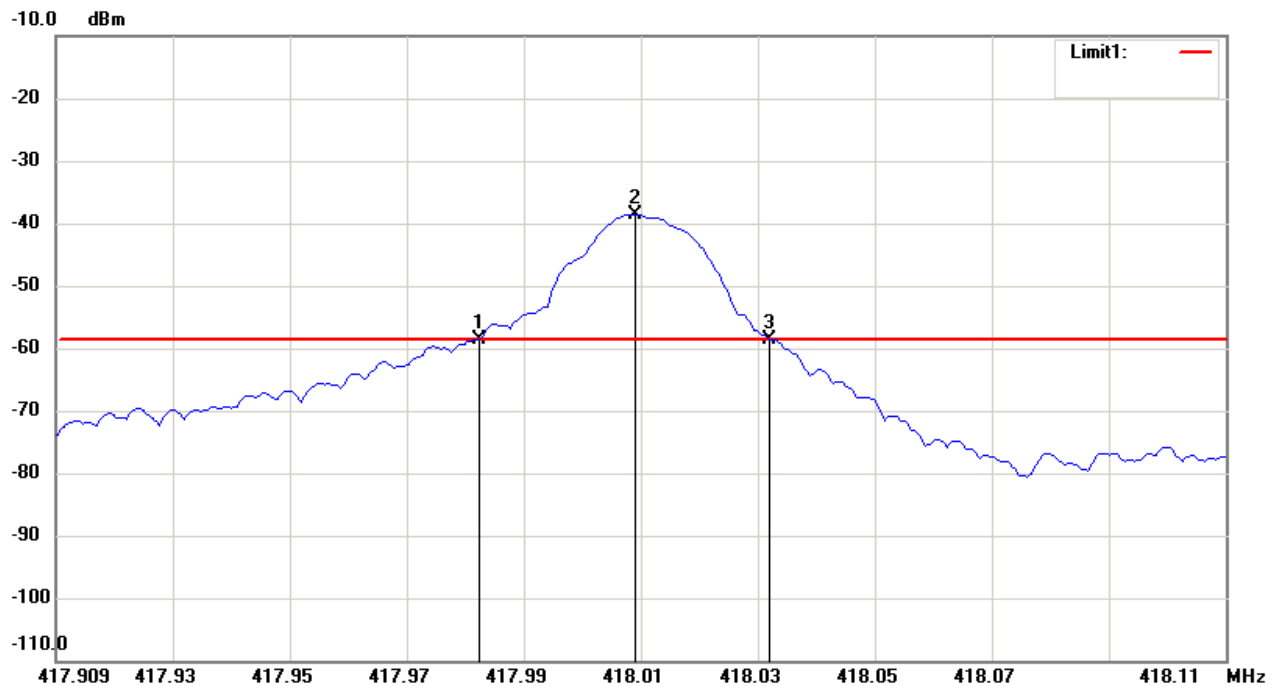
Data: #11

Date: 2018/8/17

Temperature: 25 °C

Time: PM 02:19:10

Humidity: 60 %



Condition:

EUT: IINDOOR/OUTDOOR SENSOR
TRANSMITTER

RF Conducted

Sweep Time: 1.92ms Att.: 10dB

Model:

TD-20U

RBW: 10 KHz

VBW: 30 KHz

Test Mode:

TX-UUT3

Note:

Operator: Phillip

No.	Frequency(MHz)	Level(dBm)
1	417.9810	-58.58
2	418.0073	-38.55
3	418.0305	-58.72

No.		Δ Frequency(MHz)	Δ Level(dB)
1	mk3-mk1	0.0495	-0.14

6. CONDUCTED EMISSION MEASUREMENT

This EUT is excused from investigation of conducted emission, for it is powered by battery only.

According to §15.207 (c), measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

7. LIMIT OF TRANSMISSION TIME

7.1 Applicable Standard

☒ According to 15.231(a)(1), a manually operated transmission shall employ a switch that will automatically deactivate the transmission within not more than 5 seconds of being released.

☐ According to 15.231(a)(2), a transmitter activated automatically shall cease transmission within 5 seconds after activation.

7.2 Test Equipment

Equipment	Manufacturer	Model No.
Spectrum Analyzer	Agilent	E4446A
Software: LZ-RF (Ver. ETC-3A2)		

7.3 Test Result

Test Date : Aug. 17, 2018 Temperature : 25°C Humidity : 60%

The motion sensor controls the switch.

This transmitter is operated by manual and active time is 0.967 second after being released.

Note : Please refer to page 27 for chart

File: 2018

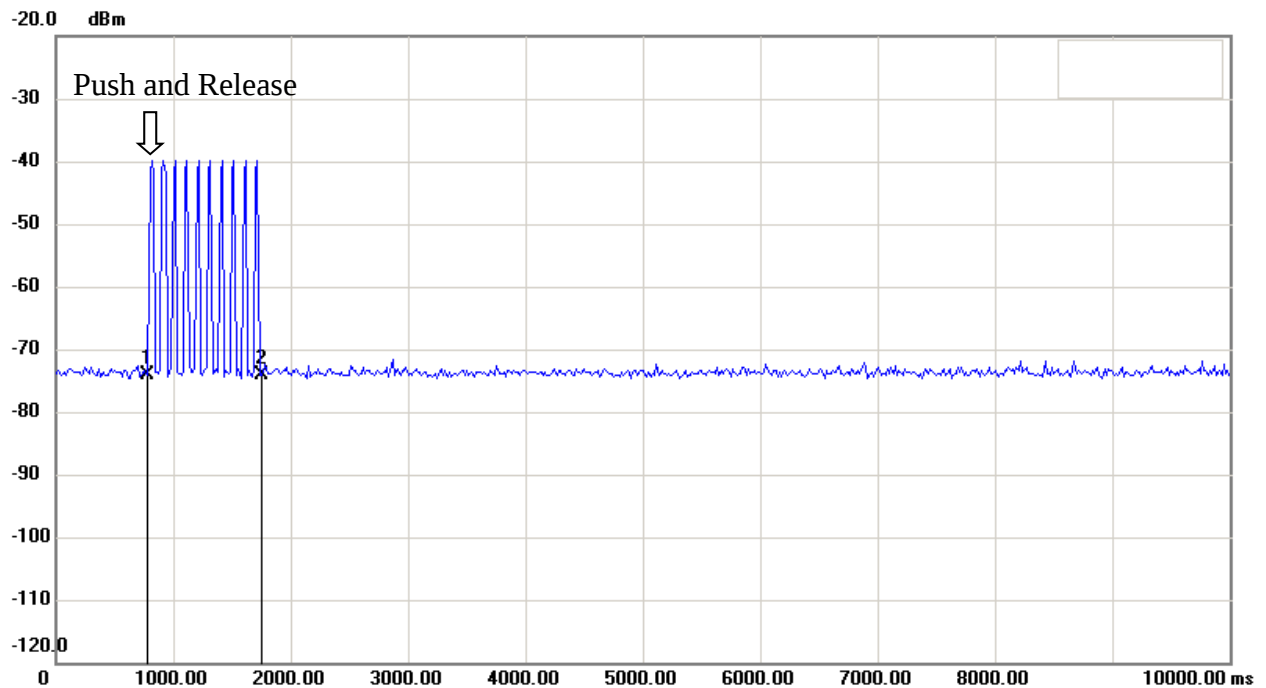
Data: #10

Date: 2018/8/17

Temperature: 25 °C

Time: PM 02:09:46

Humidity: 60 %



Condition:

EUT: IINDOOR/OUTDOOR SENSOR
TRANSMITTER

RF Conducted

Sweep Time: 10000ms Att.: 10dB

Model:

TD-20U

RBW: 1000 KHz

VBW: 1000 KHz

Test Mode:

TX-UUT3

Note:

Operator: Phillip

No.	Sweep time(ms)	Level(dBm)
1	783.3333	-74.07
2	1750.0000	-74.16

No.		Δ Time(ms)	Δ Level(dB)
1	mk2-mk1	966.6667	-0.09

8. EQUIPMENTS LIST FOR TESTING

Equipment	Manufacturer	Model No.	S/N	Calibration Date	Next Cal. Due
EMI Receiver	R&S	ESCI	13054423-001	01/19/2018	01/18/2019
BiLog Antenna	ETC	MCTD 2786	BL11M03003	05/12/2018	05/11/2019
Horn Antenna	EMCO	3115	13059201-001	11/29/2017	11/28/2018
PRE-Amplifier	Agilent	8449B	13040709-001	01/04/2018	01/03/2019
PRE-Amplifier	Agilent	8447D	13040715-002	04/23/2018	04/22/2019
Spectrum Analyzer	R&S	FSU46	13040904-001	01/08/2018	01/07/2019
Spectrum Analyzer	Agilent	E4446A	13052013-001	12/27/2017	12/26/2018