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FCC TEST REPORT

Report No.: STS2008184W01

Issued for

Litum bilgi teknolojileri san. Ve dis tic. A.S

Sevket Ozcelik sok. No29 Alsancak izmir Turkey

Product Name:	Litum Anchor Endurance Litum Anchor Litum Gateway Endurance Litum Gateway Litum Collision Warning Forklift
Brand Name:	Litum
Model Name:	Anchor/Gateway Series
Series Model:	100,110,200,210,420
FCC ID:	2AW7W-100
Test Standard:	FCC Part 15.249

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**TEST RESULT CERTIFICATION**

Applicant's Name: Litum bilgi teknolojileri san. Ve dis tic. A.S

Address.....: Sevket Ozcelik sok. No29 Alsancak izmir Turkey

Manufacture's Name: Litum bilgi teknolojileri san. Ve dis tic. A.S

Address.....: Sevket Ozcelik sok. No29 Alsancak izmir Turkey

Product Description

Product Name: Litum Anchor Endurance
Litum Anchor
Litum Gateway Endurance
Litum Gateway
Litum Collision Warning Forklift

Brand Name: Litum

Model Name.....: Anchor/Gateway Series

Series Model: 100,110,200,210,420

Test Standards.....: FCC Part15.249

Test Procedure.....: ANSI C63.10-2013

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

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Date of Test.....:

Date of receipt of test item.....: 06 Aug. 2020

Date of performance of tests ...: 06 Aug. 2020 ~ 14 Sept. 2020

Date of Issue.....: 15 Sept. 2020

Test Result: **Pass**

Testing Engineer :

(Chris Chen)

Technical Manager :

(Sean she)

Authorized Signatory :

(Vita Li)





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**Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	15 Sept. 2020	STS2008184W01	ALL	Initial Issue





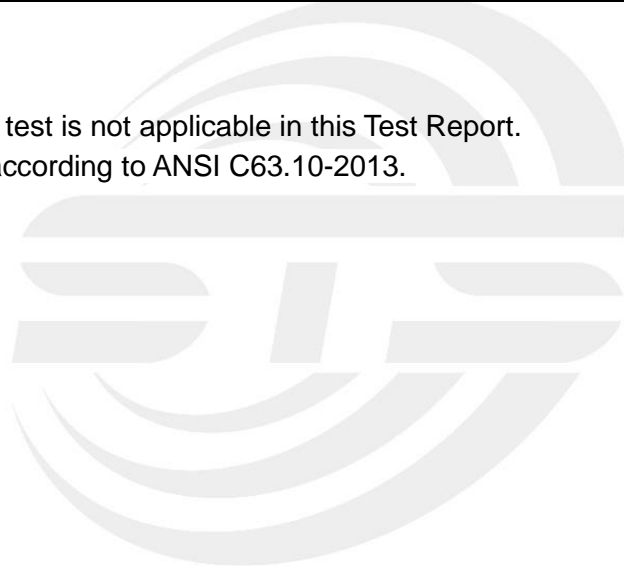
1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part 15.249 , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	Pass	
15.203	Antenna Requirement	Pass	
15.249	Radiated Spurious Emission	Pass	
15.205	Radiated Band Edge Emission & Field strength of fundamental	Pass	
15.215(c)	20dB Bandwidth	Pass	

NOTE:

- (1) 'N/A' denotes test is not applicable in this Test Report.
- (2) All tests are according to ANSI C63.10-2013.





1.1 TEST FACTORY

SHENZHEN STS TEST SERVICES CO., LTD

Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China

FCC test Firm Registration Number: 625569

IC test Firm Registration Number: 12108A

A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately **95 %**.

No.	Item	Uncertainty
1	RF output power, conducted	$\pm 0.68\text{dB}$
2	Unwanted Emissions, conducted	$\pm 2.988\text{dB}$
3	All emissions, radiated 30-1GHz	$\pm 5.6\text{dB}$
4	All emissions, radiated 1G-6GHz	$\pm 5.5\text{dB}$
5	All emissions, radiated >6G	$\pm 5.8\text{dB}$
6	Conducted Emission (9KHz-150KHz)	$\pm 3.37\text{dB}$
7	Conducted Emission (150KHz-30MHz)	$\pm 3.83\text{dB}$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Litum Anchor Endurance Litum Anchor Litum Gateway Endurance Litum Gateway Litum Collision Warning Forklift								
Trade Name	Litum								
Model Name	Anchor/Gateway Series								
Series Model	100,110,200,210,420								
Model Difference	Only different in shapes, battery and SW.(Note3)								
Product Description	<table border="1"> <tr> <td>Operation Frequency:</td><td>2475</td></tr> <tr> <td>Modulation Type:</td><td>BPSK</td></tr> <tr> <td>Antenna Designation:</td><td>Please refer to the Note 2.</td></tr> <tr> <td>Antenna Gain(Peak):</td><td>3.3dBi</td></tr> </table> <p>Based on the application, features, or specification exhibited in User Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User Manual.</p>	Operation Frequency:	2475	Modulation Type:	BPSK	Antenna Designation:	Please refer to the Note 2.	Antenna Gain(Peak):	3.3dBi
Operation Frequency:	2475								
Modulation Type:	BPSK								
Antenna Designation:	Please refer to the Note 2.								
Antenna Gain(Peak):	3.3dBi								
Power Rating	Input: AC 100~240V, 50/60Hz or +12/+24V DC								
Battery	Rated Voltage: 3.7V Charge Limit: 4.35V Capacity: 3000mAh								
Hardware version number	LT0201_0101								
Software version number	1001								
Connecting I/O Port(s)	Please refer to the Note 1.								

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the User Manual.
- Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	Litum	Anchor/Gateway Series	Planar Monopole	N/A	3.3dBi	Antenna

Model Name	Product Name	Battery	shape	SW
Anchor/Gateway Series				
100	Litum Anchor Endurance	have battery.	Same shapes, same material	The software is different and will not affect the Basic/RF functions
200	Litum Gateway Endurance	have battery.		
210	Litum Gateway	have battery.		
420	Litum Collision Warning Forklift	no battery.		
110	Litum Anchor	no battery.	different shapes, same material	



2.2 DESCRIPTION OF THE TEST MODES

For conducted test items and radiated spurious emissions

Each of these EUT operation mode(s) or test configuration mode(s) mentioned below was evaluated respectively.

Pretest Mode	Description	Data/Modulation
Mode 1	TX	BPSK

Note:

(1) All above mode have been measurement, only worst data was reported.

(2) We have be tested for all avaiable U.S. voltage and frequencies(For 120V,50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V,50/60Hz is shown in the report.

For AC Conducted Emission

Test Case	
AC Conducted Emission	Mode 2 : Keeping TX

2.3 TEST SOFTWARE AND POWER LEVEL

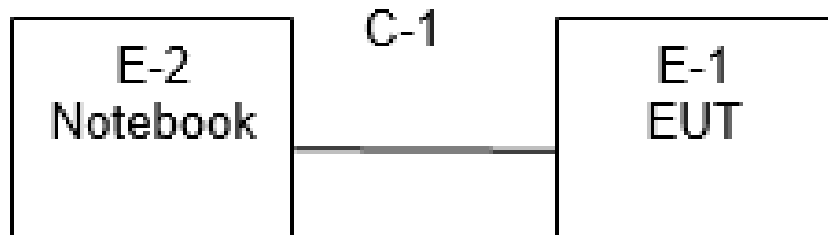
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

RF Function	Type	Mode Or Modulation type	Ant Gain(dBi)	Power Class	Software For Testing
Other SRD	2475MHz	2475MHz	3.3	Default	Tera Term

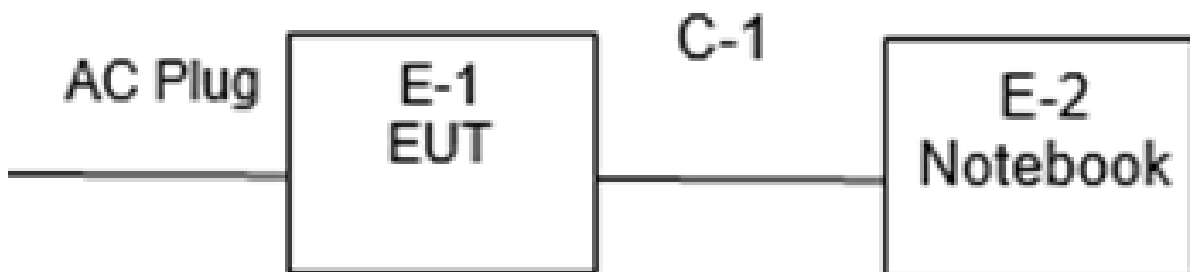
2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters.

Radiated Spurious Emission Test



Conducted Emission Test





2.5 DESCRIPTION OF NECESSARY ACCESSORIES AND 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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
N/A	N/A	N/A	N/A	N/A	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Length	Note
E-2	Notebook	Lenovo	ThinkPad E470	N/A	N/A
C-1	USB Cable	N/A	N/A	110cm	N/A

Note:

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



2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY51110105	2020.03.05	2021.03.04
Active loop Antenna	ZHINAN	ZN30900C	16035	2018.03.11	2021.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.01
Horn Antenna	SCHWARZBECK	BBHA 9120D(1201)	9120D-1343	2018.10.19	2021.10.18
SHF-EHF Horn Antenna (18G-40GHz)	A-INFO	LB-180400-KF	J211020657	2018.03.11	2021.03.10
Pre-Amplifier (0.1M-3GHz)	EM	EM330	060665	2019.10.09	2020.10.08
Pre-Amplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2019.10.12	2020.10.11
Pre-Amplifier (18G-40GHz)	SKET	LNPA-1840-50	SK2018101801	2019.10.12	2020.10.11
Temperature & Humidity	HH660	Mieo	N/A	2019.10.17	2020.10.16
turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 RE)			

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2019.10.09	2020.10.08
LISN	R&S	ENV216	101242	2019.10.09	2020.10.08
LISN	EMCO	3810/2NM	23625	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.12	2020.10.11
Test SW	FARAD	EZ-EMC(Ver.STSLAB-03A1 CE)			

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2019.10.09	2020.10.08
Signal Analyzer	Agilent	N9020A	MY49100060	2019.10.09	2020.10.08
Temperature & Humidity	HH660	Mieo	N/A	2019.10.12	2020.10.11
Test SW	FARAD	LZ-RF /LzRf-3A3			

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

The radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table.

FREQUENCY (MHz)	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

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.

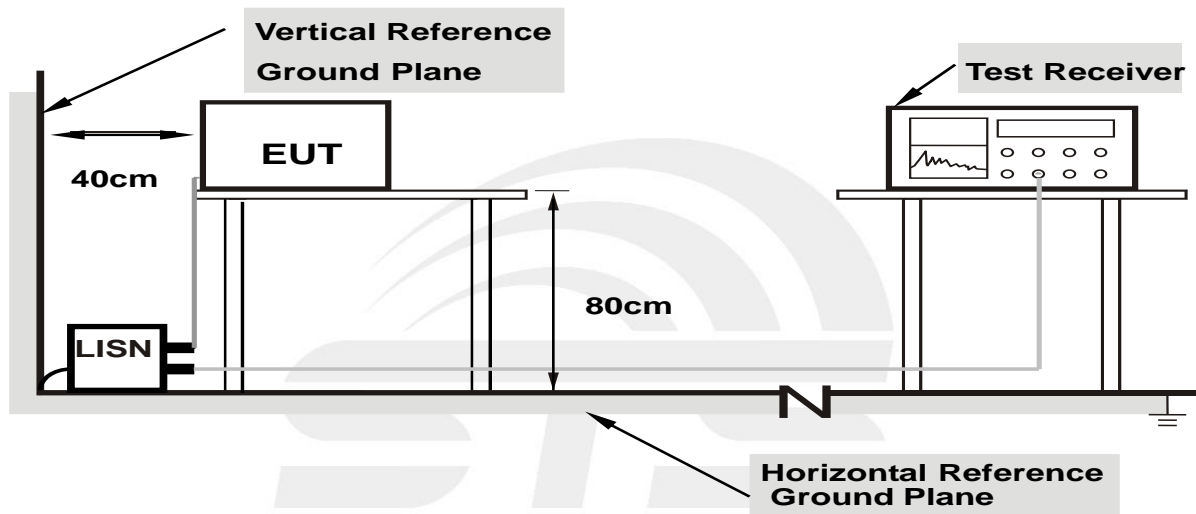
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

- The EUT is 0.8 m from the horizontal ground plane and 0.4 m from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments are powered from additional LISN(s). The LISN provides 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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.
- 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.
- LISN is at least 80 cm from the nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 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 cm from other units and other metal planes

3.1.4 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.



3.1.5 TEST RESULT

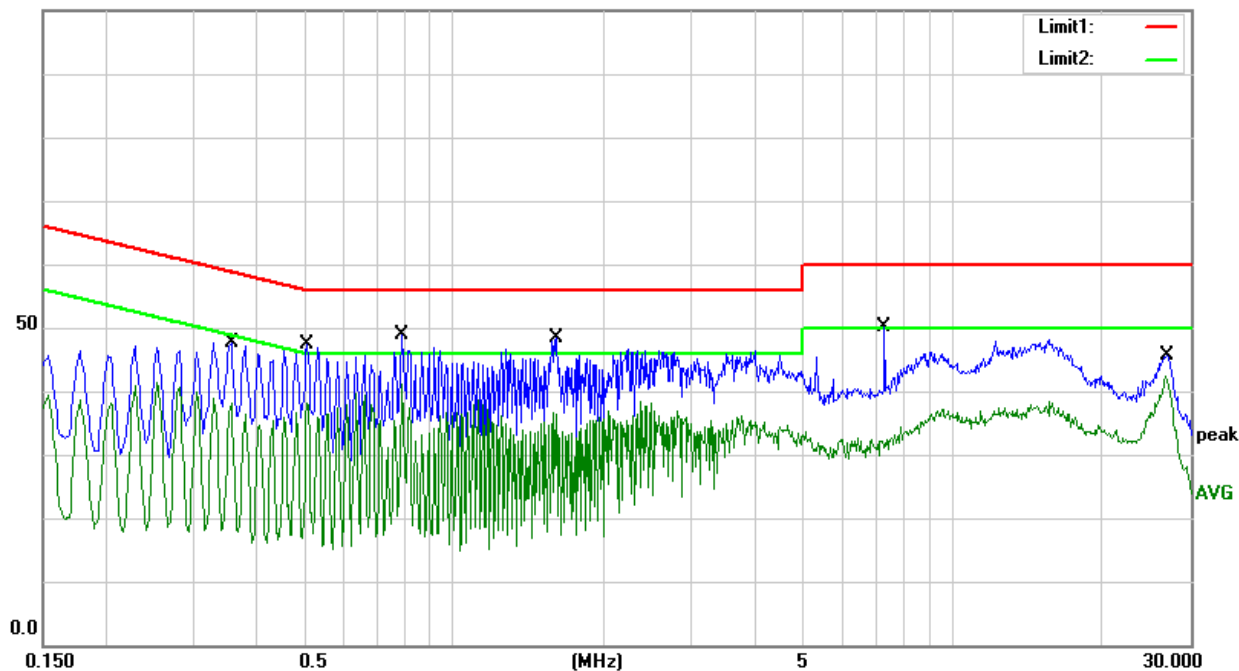
Temperature:	27.2 (C)	Relative Humidity:	69%RH
Test Voltage:	AC 120V/60Hz	Phase:	L
Test Mode:	Mode 2		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.3580	27.03	20.59	47.62	58.77	-11.15	QP
2	0.3580	17.65	20.59	38.24	48.77	-10.53	AVG
3	0.5100	27.00	20.47	47.47	56.00	-8.53	QP
4	0.5100	17.63	20.47	38.10	46.00	-7.90	AVG
5	0.7900	28.54	20.23	48.77	56.00	-7.23	QP
6	0.7900	20.94	20.23	41.17	46.00	-4.83	AVG
7	1.6020	28.38	20.10	48.48	56.00	-7.52	QP
8	1.6020	13.42	20.10	33.52	46.00	-12.48	AVG
9	7.3020	30.15	19.93	50.08	60.00	-9.92	QP
10	7.3020	12.24	19.93	32.17	50.00	-17.83	AVG
11	26.8420	24.96	20.63	45.59	60.00	-14.41	QP
12	26.8420	21.67	20.63	42.30	50.00	-7.70	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) – Limit
3. Factor = LISN factor + Cable loss + Limiter (10dB)

100.0 dBuV





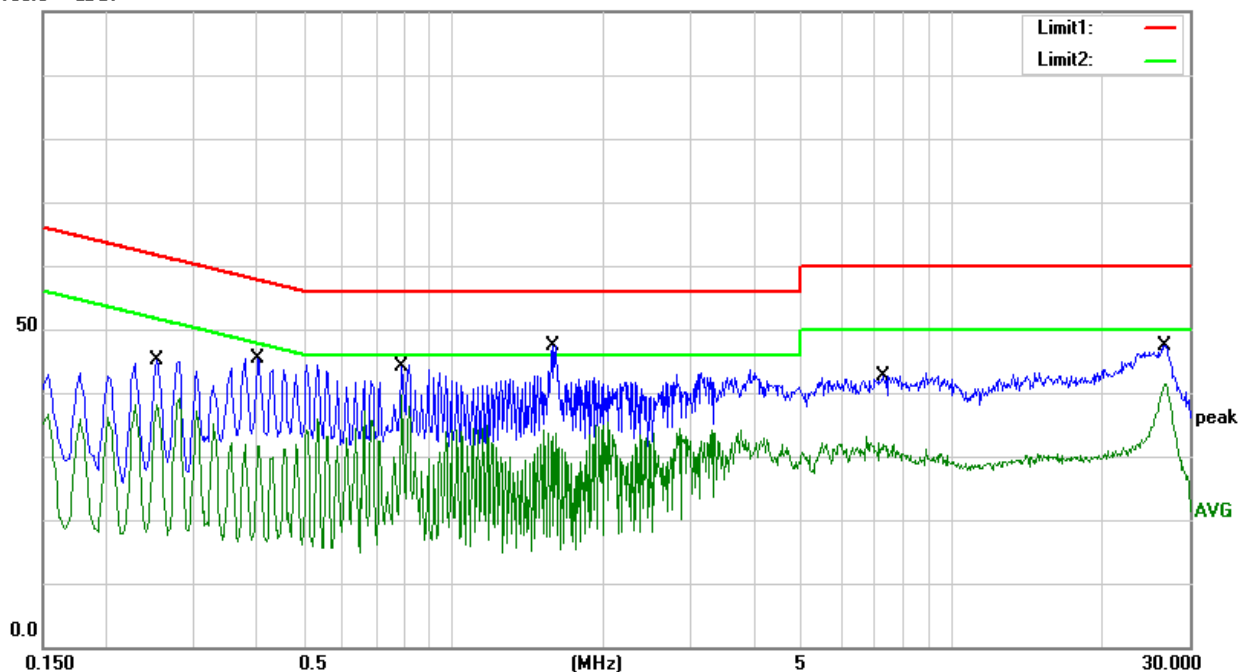
Temperature:	27.2 (C)	Relative Humidity:	69%RH
Test Voltage:	AC 120V/60Hz	Phase:	N
Test Mode:	Mode 2		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.2540	24.71	20.49	45.20	61.63	-16.43	QP
2	0.2540	17.64	20.49	38.13	51.63	-13.50	AVG
3	0.4060	24.91	20.49	45.40	57.73	-12.33	QP
4	0.4060	11.13	20.49	31.62	47.73	-16.11	AVG
5	0.7900	23.86	20.23	44.09	56.00	-11.91	QP
6	0.7900	19.33	20.23	39.56	46.00	-6.44	AVG
7	1.5780	27.28	20.10	47.38	56.00	-8.62	QP
8	1.5780	13.54	20.10	33.64	46.00	-12.36	AVG
9	7.2980	22.80	19.93	42.73	60.00	-17.27	QP
10	7.2980	11.98	19.93	31.91	50.00	-18.09	AVG
11	26.8380	26.86	20.63	47.49	60.00	-12.51	QP
12	26.8380	20.82	20.63	41.45	50.00	-8.55	AVG

Remark:

1. All readings are Quasi-Peak and Average values
2. Margin = Result (Result = Reading + Factor) – Limit
3. Factor = LISN factor + Cable loss + Limiter (10dB)

100.0 dBuV





3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on Part 15.249 and the Part 15.205(a)&15.209(a) limit in the table below has to be followed.

Standard FCC 15.209

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3
Above 1000	Other:74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	3

Standard FCC 15.249

Frequency of Emission (MHz)	Field Strength of fundamental (millivolts /meter)	Field Strength of Harmonics (microvolts/meter)
900~928	50	500
2400~2483.5	50	500
5725~5875	50	500
24000~242500	250	2500

Notes:

- (1) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.



LIMITS OF RESTRICTED FREQUENCY BANDS (Standard FCC 15.205)

FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (MHz)	FREQUENCY (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			

Spectrum Parameter	Setting
Detector	Peak/AV
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB (emission in restricted band)	>20BW
VB (emission in restricted band)	=3xRB

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
	90kHz~110kHz / RB 200Hz for QP
	110kHz~490kHz / RB 200Hz for PK & AV
	490kHz~30MHz / RB 9kHz for QP
	30MHz~1000MHz / RB 120kHz for QP



3.2.2 TEST PROCEDURE

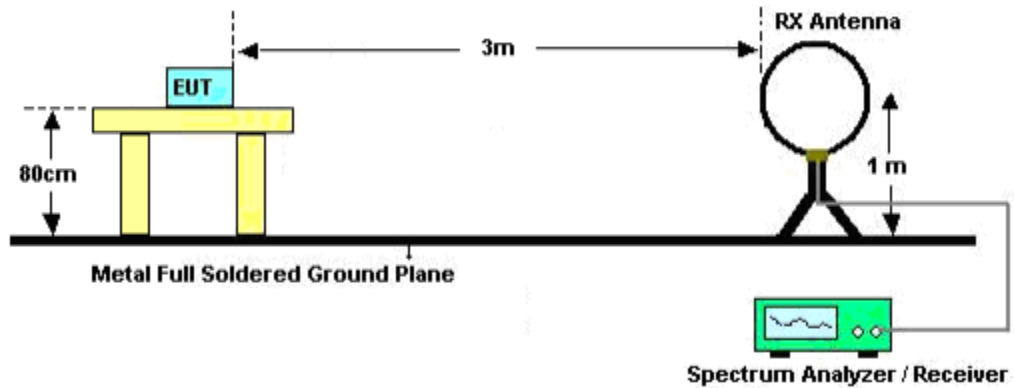
- a. The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation (Below 1GHz)
- b. The measuring distance of 3m 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 test antenna shall vary between 1m to 4m. Both horizontal and vertical polarization of the antenna are set to make the measurement.
- d. The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform (Below 1GHz)
- f. 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 Peak & AVG limits and then only Peak mode was measured, but AVG mode didn't perform. (Above 1GHz)
9. For the actual test configuration, please refer to the related Item –EUT Test Photos.
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

3.2.3 DEVIATION FROM TEST STANDARD

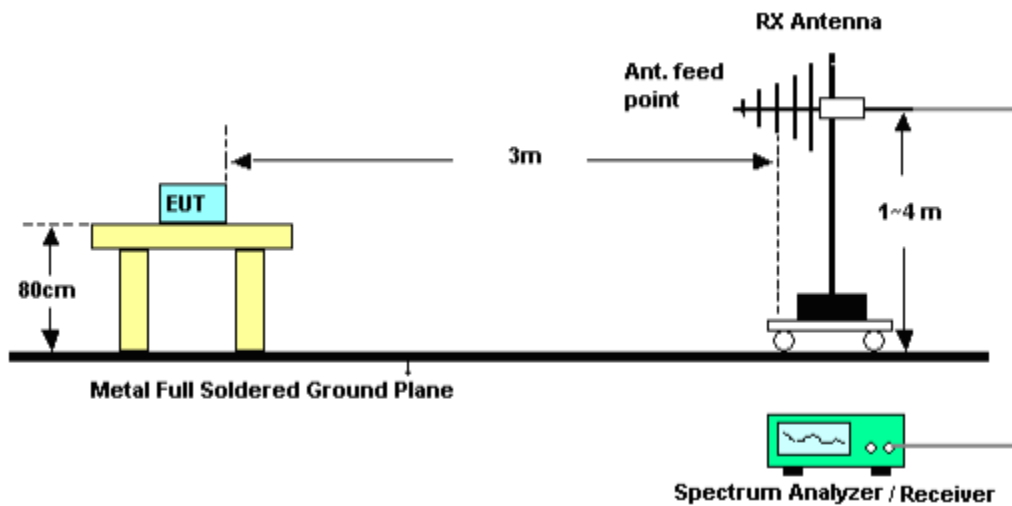
No deviation

3.2.4 TEST SETUP

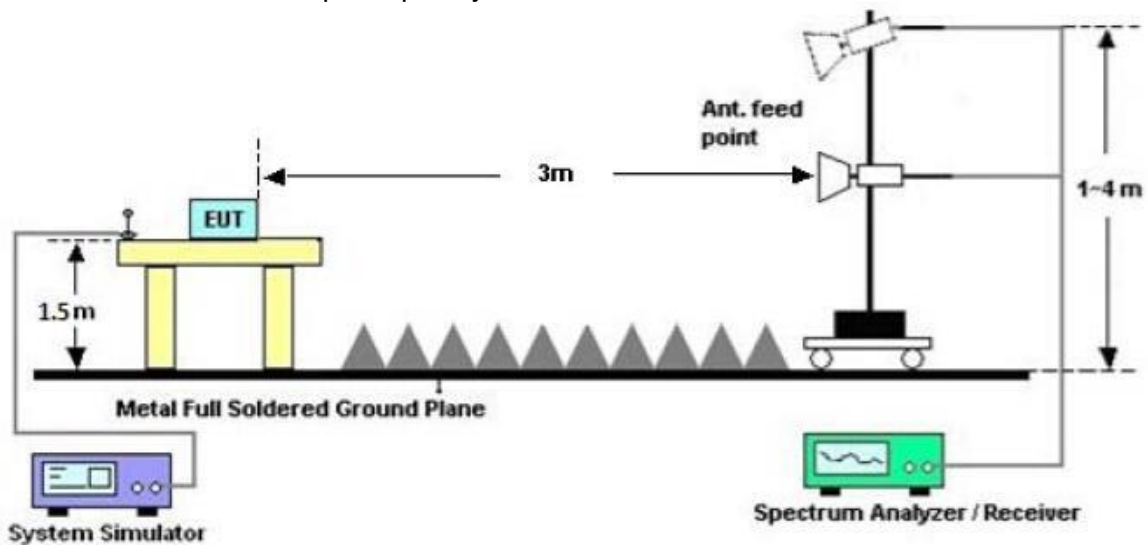
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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





3.2.5 FIELD STRENGTH CALCULATION

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

Margin=PL-PK L or AL- AV L; Margin only shown the worst case.

Where

PR = Peak Reading

AR = Average Reading

PL = Peak Level

AL = Average Level

AF = Antenna Factor

PK L = Peak Limit

AV L = AV Limit

For example

Frequency	PR	AR	AF	PL	AL	PK L	AV L	Margin
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dB)
2178	40.23	30.31	9.83	50.06	40.14	74.00	54.00	-13.86





3.2.6 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

Below 30 MHz

Temperature:	23.5(C)	Relative Humidity:	62%RH
Test Voltage:	DC 3.7V	Polarization:	---
Test Mode:	TX Mode		

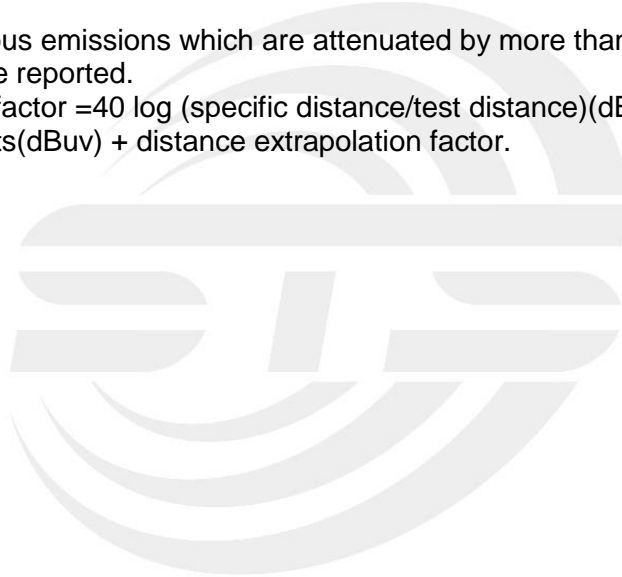
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.





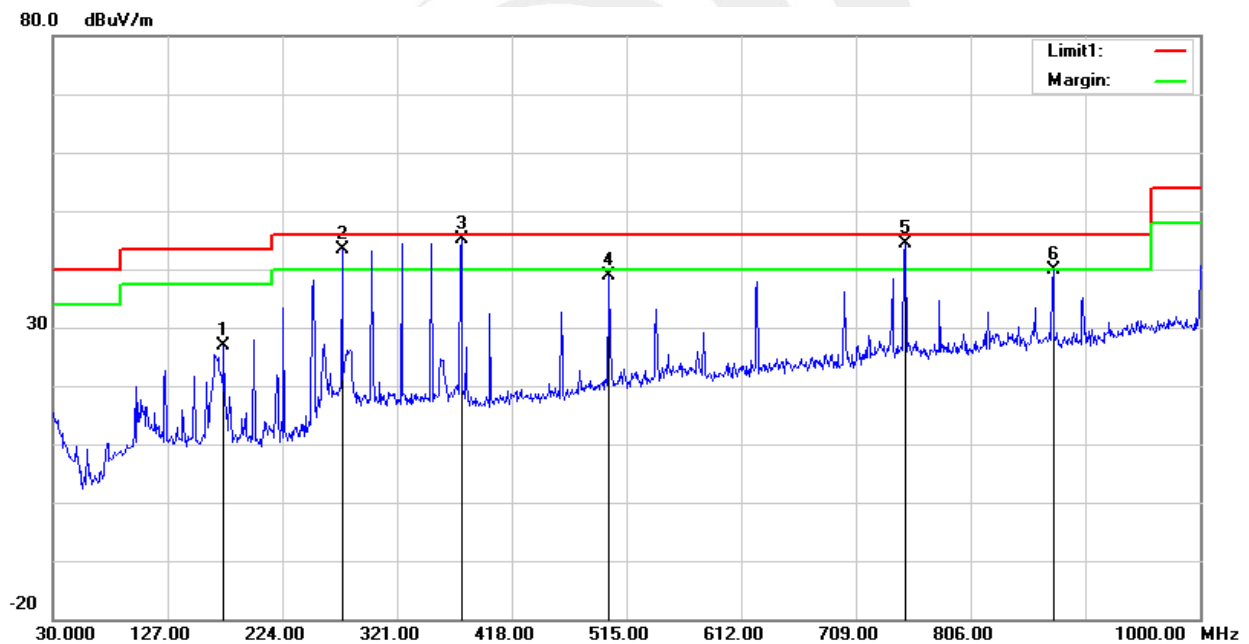
Between 30MHz – 1000 MHz Radiation Spurious

Temperature:	23.5(C)	Relative Humidity:	62%RH
Test Voltage:	DC 3.7V	Phase:	Horizontal
Test Mode:	Mode 1		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	174.5300	46.86	-20.02	26.84	43.50	-16.66	QP
2	274.4400	58.94	-15.44	43.50	46.00	-2.50	QP
3	375.3200	57.53	-12.37	45.16	46.00	-0.84	QP
4	500.4500	46.94	-8.01	38.93	46.00	-7.07	QP
5	750.7100	46.52	-2.16	44.36	46.00	-1.64	QP
6	875.8400	40.47	-0.61	39.86	46.00	-6.14	QP

Remark:

1. Margin = Result (Result =Reading + Factor)-Limit
2. Factor= Antenna factor+Cable attenuation factor(cable loss)-Amplifier gain



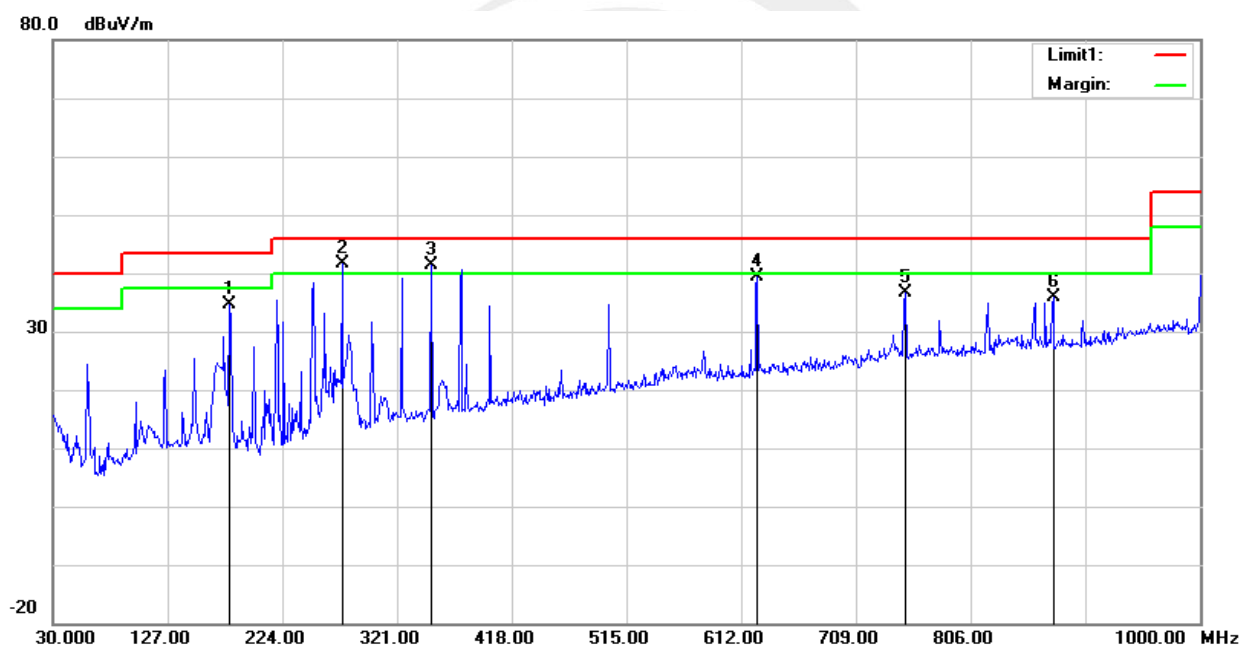


Temperature:	23.5(C)	Relative Humidity:	62%RH
Test Voltage:	DC 3.7V	Phase:	Vertical
Test Mode:	Mode 1		

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	179.3800	54.61	-20.02	34.59	43.50	-8.91	QP
2	274.4400	57.16	-15.44	41.72	46.00	-4.28	QP
3	350.1000	54.38	-13.06	41.32	46.00	-4.68	QP
4	625.5800	44.65	-5.25	39.40	46.00	-6.60	QP
5	750.7100	38.70	-2.16	36.54	46.00	-9.46	QP
6	875.8400	36.45	-0.61	35.84	46.00	-10.16	QP

Remark:

1. Margin = Result (Result = Reading + Factor) - Limit
2. Factor = Antenna factor + Cable attenuation factor (cable loss) - Amplifier gain





Above 1G Radiation Spurious

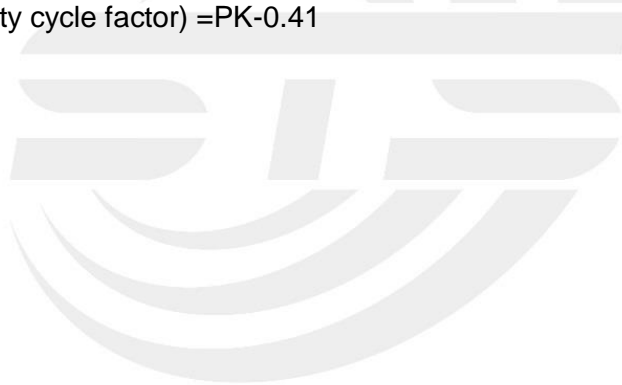
PK

Frequency	Meter Reading	Detector	Amplifier	Loss	Antenna Factor	Orrected Factor	Corrected Amplitude	FCC Part 15.249/15.209/205		RX Antenna
								Limit	Margin	
(MHz)	(dBμV/m)	(PK/QP/AV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
4950.07	61.23	PK	50.33	8.84	31.22	-10.27	50.96	74	-23.04	H
4950.07	60.34	PK	50.33	8.84	31.22	-10.27	50.07	74	-23.93	V
7424.90	58.05	PK	55.48	9.31	34.05	-12.12	45.93	74	-28.07	H
7424.90	56.57	PK	55.48	9.31	34.05	-12.12	44.45	74	-29.55	V
9899.87	61.58	PK	59.13	9.89	36.99	-12.25	49.33	74	-24.67	H
9899.87	60.39	PK	59.13	9.89	36.99	-12.25	48.14	74	-25.86	V

AV

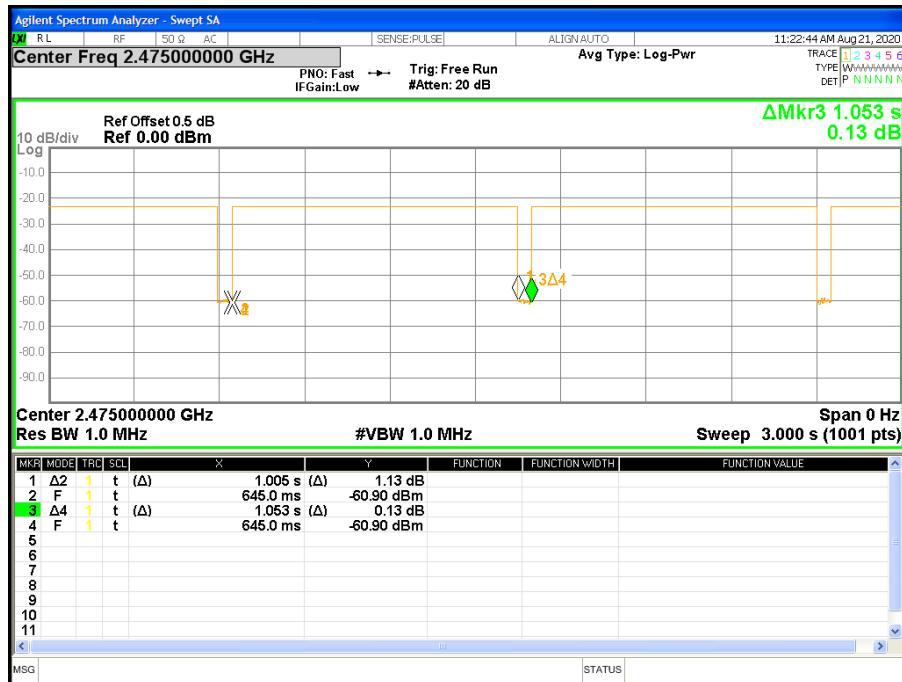
Frequency	PK Reading	Duty cycle factor	AV Reading	Orrected Factor	Corrected Amplitude	FCC Part 15.249/15.209/205		RX Antenna
						Limit	Margin	
(MHz)	(dBμV/m)	(dB)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	(H/V)
4950.07	61.23	0.41	60.82	-10.27	50.55	54.00	-3.45	H
4950.07	60.34	0.41	59.93	-10.27	49.66	54.00	-4.34	V
7424.90	58.05	0.41	57.64	-12.12	45.52	54.00	-8.48	H
7424.90	56.57	0.41	56.16	-12.12	44.04	54.00	-9.96	V
9899.87	61.58	0.41	61.17	-12.25	48.92	54.00	-5.08	H
9899.87	60.39	0.41	59.98	-12.25	47.73	54.00	-6.27	V

AV = Peak +20Log10(duty cycle factor) =PK-0.41





Duty cycle



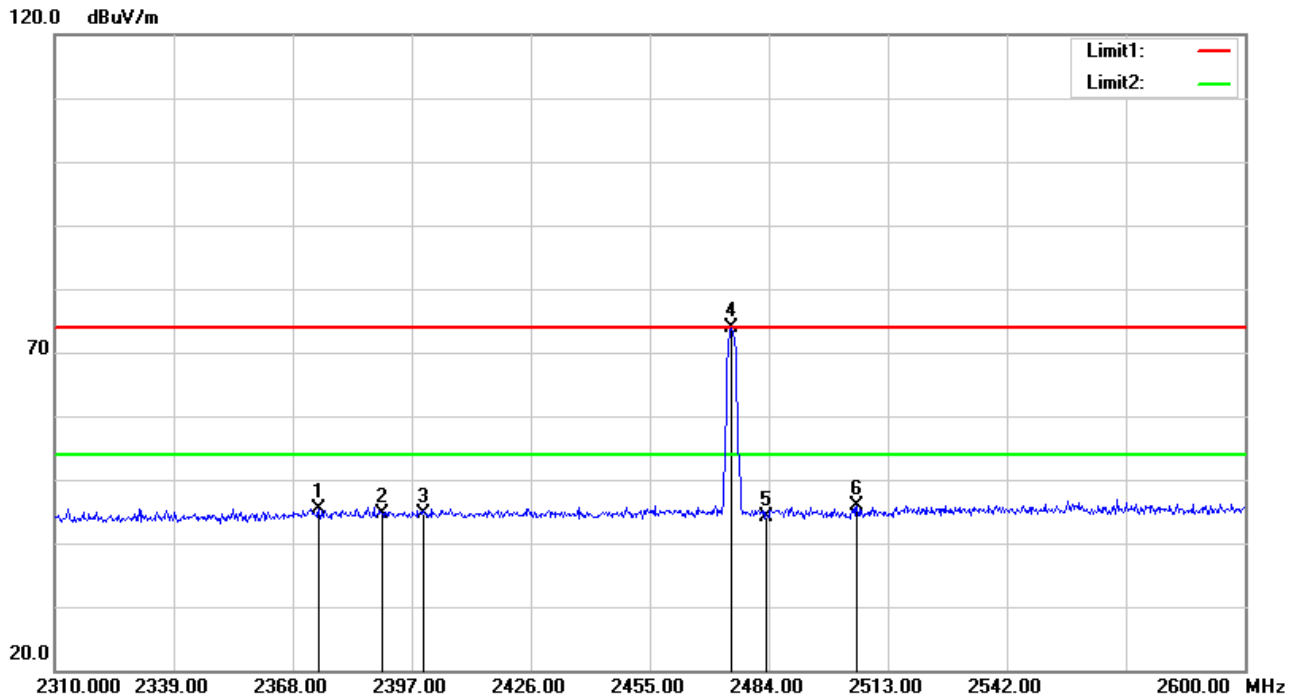
Ton (s)	Tp (s)	Duty Factor
1.005	1.053	0.41

Note: Duty Factor=20*LOG10(1/(Ton/Tp))



(Radiation Band edge)

Horizontal



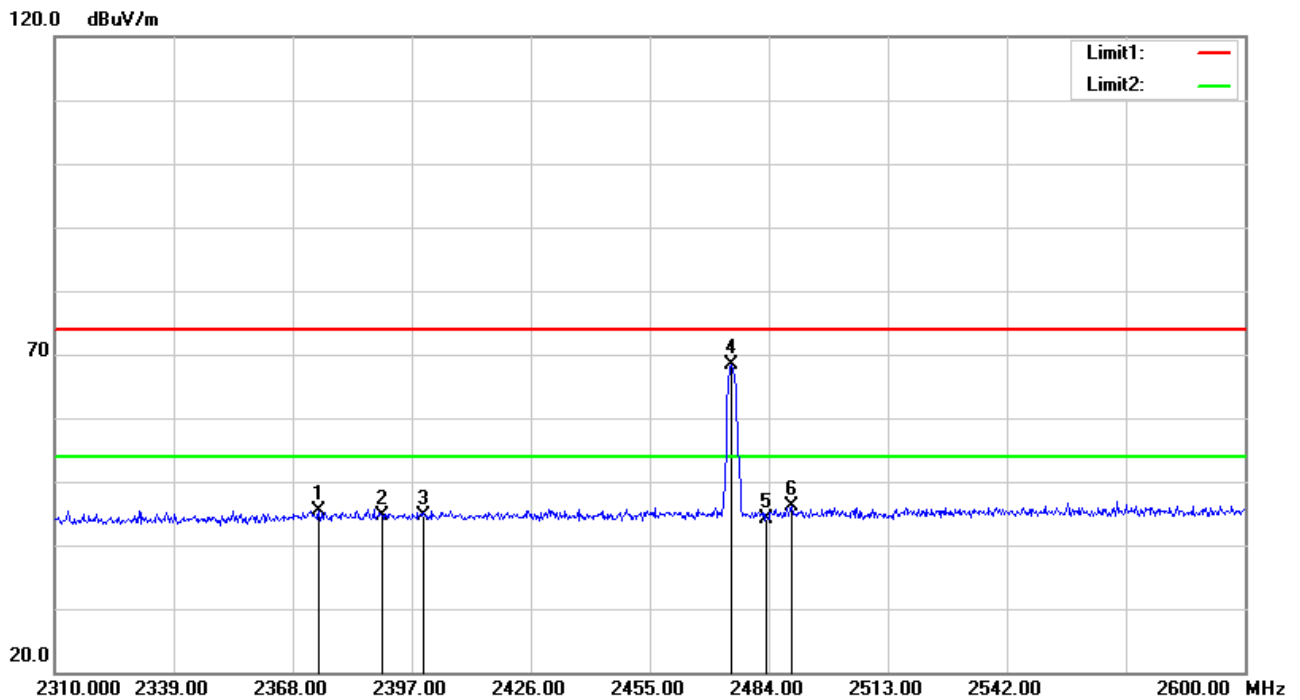
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2374.380	41.21	4.10	45.31	74.00	-28.69	peak
2	2390.000	40.36	4.34	44.70	74.00	-29.30	peak
3	2400.000	40.23	4.49	44.72	74.00	-29.28	peak
5	2483.500	39.57	4.60	44.17	74.00	-29.83	peak
6	2505.460	41.28	4.69	45.97	74.00	-28.03	peak

Fundamental Frequency

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Duty cycle Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4	2475.000	69.39	4.58	-	73.97	114.00	-40.03	peak
7	2475.000	69.39	4.58	0.41	73.56	94.00	-20.44	AV



Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2374.380	41.21	4.10	45.31	74.00	-28.69	peak
2	2390.000	40.36	4.34	44.70	74.00	-29.30	peak
3	2400.000	40.23	4.49	44.72	74.00	-29.28	peak
5	2483.500	39.57	4.60	44.17	74.00	-29.83	peak
6	2489.510	41.56	4.62	46.18	74.00	-27.82	peak

Fundamental Frequency

No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Duty cycle Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4	2475.000	63.85	4.59	-	68.44	114.00	-45.56	peak
7	2475.000	63.85	4.59	0.41	68.03	94.00	-25.97	AV



4. BANDWIDTH TEST

4.1 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 : $RBW = 30\text{KHz}$, $VBW \geq RBW$, Sweep time = Auto.

4.2 TEST SETUP



4.3 EUT OPERATION CONDITIONS

TX mode.

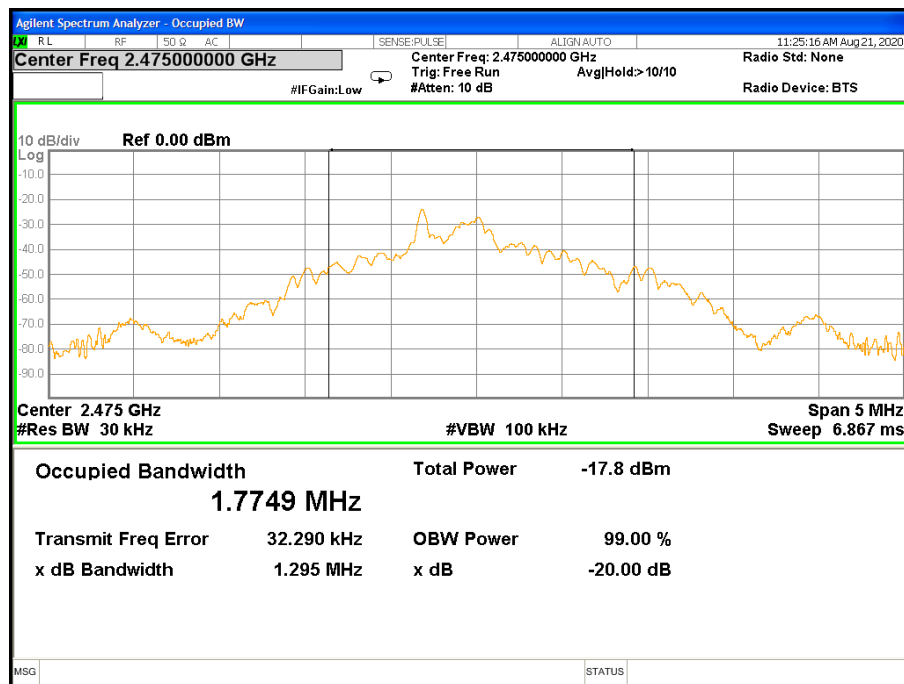




4.4 TEST RESULTS

Temperature:	25 °C	Relative Humidity:	50%
Test Voltage:	DC 3.7V		

Test Channel	Frequency(MHz)	20 dB Bandwidth(MHz)	99% Bandwidth(KHz)
CH01	2475	1.295	1.7749





5. ANTENNA REQUIREMENT

5.1 STANDARD REQUIREMENT

According to the FCC Part 15 Paragraph 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.

5.2 EUT ANTENNA

The EUT antenna is Planar Monopole Antenna. It conforms to the standard requirements.





APPENDIX- PHOTOS OF TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※

