FCC TEST REPORT

Report No: STS1712388W02

Issued for

DewertOkin GmbH

Weststr. 1,32278 Kirchlengern, Germany

Product Name:	RF-TOPLINE
Brand Name:	N/A
Model Name:	A1125
Series Model:	N/A
FCC ID:	O3YRFA1125
Test Standard:	FCC Part 15.249

Shenzhen STS Test Services Co., Ltd.
1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
TEL: +86-755 3688 6288 FAX: +86-755 3688 6277 E-mail:sts@stsapp.com

TEST RESULT CERTIFICATION

Applicant's name :	DewertOkin GmbH
Address :	Weststr. 1,32278 Kirchlengern, Germany
Manufacture's Name :	DewertOkin GmbH
Address :	Weststr. 1,32278 Kirchlengern, Germany

Product description

Product Name .....:	RF-TOPLINE
Brand Name .....:	N/A
Model Name.....:	A1125
Series Model .....:	N/A
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 performance of tests :	02 Jan. 2018 ~ 11 Jan. 2018
Date of Issue :	15 Jan. 2018
Test Result :	**Pass**

Testing Engineer : Sean She

(Sean she)

Technical Manager : Hakim. Hou

(Hakim.hou)

Authorized Signatory : Vita Li

(Vita Li)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	15 Jan. 2018	STS1712388W02	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	N/A	
15.203	Antenna Requirement	Pass	
15.249	Radiated Spurious Emission	Pass	
15.205	Radiated Band Edge Emission	Pass	
15.249	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. : 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
CNAS Registration No.: L7649; FCC Registration No.: 625569
IC Registration No.: 12108A; A2LA Certificate No.: 4338.01;

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **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	Conducted Emission (9KHz-150KHz)	±2.88dB
2	Conducted Emission (150KHz-30MHz)	±2.67dB
3	RF power,conducted	±0.71dB
4	Spurious emissions,conducted	±0.63dB
5	All emissions,radiated (9KHz-30MHz)	±3.02dB
6	All emissions,radiated (30MHz-200MHz)	±3.80dB
7	All emissions,radiated (200MHz-1000MHz)	±3.97dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product Name	RF-TOPLINE
Trade Name	N/A
Model Name	A1125
Series Model	N/A
Model Difference	N/A
Product Description	The EUT is a RF-TOPLINE Operation Frequency: 2403-2480MHz Modulation Type: GFSK Antenna Designation: PCB Antenna Antenna Gain(Peak): 1 dBi Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.
Power Supply	DC 4.5V from battery
Hardware version number	V1.3
Software version number	R1

Note:

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

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	A1125	PCB Antenna	N/A	1	Antenna

2.2 DESCRIPTION OF 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..

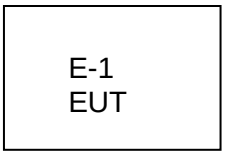
Pretest Mode	Description	Data/Modulation
Mode 1	TX CH01	GFSK
Mode 2	TX CH02	GFSK
Mode 3	TX CH03	GFSK

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

2.3 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



2.4 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.	Serial No.	Note

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESW	101535	2017.06.01	2018.05.31
Bilog Antenna	TESEQ	CBL6111D	34678	2017.03.24	2018.03.23
Horn Antenna	Schwarzbeck	BBHA 9120D (1201)	9120D-1343	2017.03.06	2018.03.05
Operational Manual Passive Loop (9K--30MHz)	ETS	6512	00165355	2017.03.06	2018.03.05
Pre-mplifier (0.1M-3GHz)	EM	EM330	60538	2017.03.12	2018.03.11
PreAmplifier	Agilent	8449B	60538	2017.10.15	2018.10.14
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2017.10.15	2018.10.14
Semi-anechoic chamber	Changling	966	N/A	2017.10.15	2018.10.14

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2017.10.15	2018.10.14
LISN	R&S	ENV216	101242	2017.10.15	2018.10.14
conduction Cable	EM	C01	N/A	2017.03.12	2018.03.11
Temperature & Humitidy	Mieo	HH660	N/A	2017.10.15	2018.10.14

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 15.249 limit in the table below has to be followed.

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.

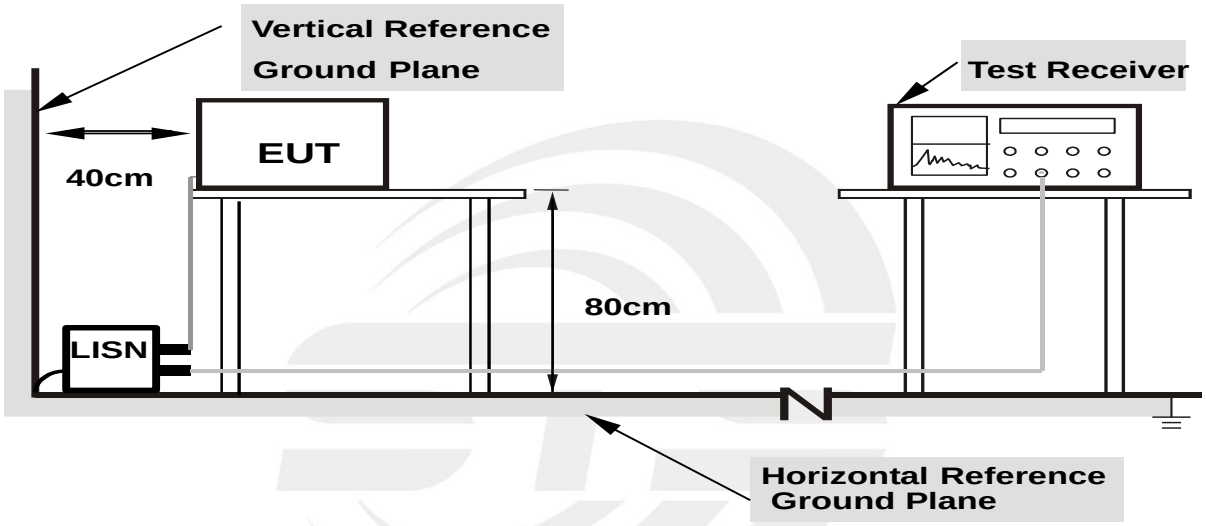
The following table is the setting of the receiver

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

3.1.2 TEST PROCEDURE

a. The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments 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.

3.1.3 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 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 RESULTS

Temperature:	23.5 ℃	Relative Humidity:	59%
Test Voltage:	AC 120V/60Hz	Phase:	L/N
Test Mode:	N/A		

Note: not applicable.

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

20dBc 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 15.209(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.

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 arotating 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 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)

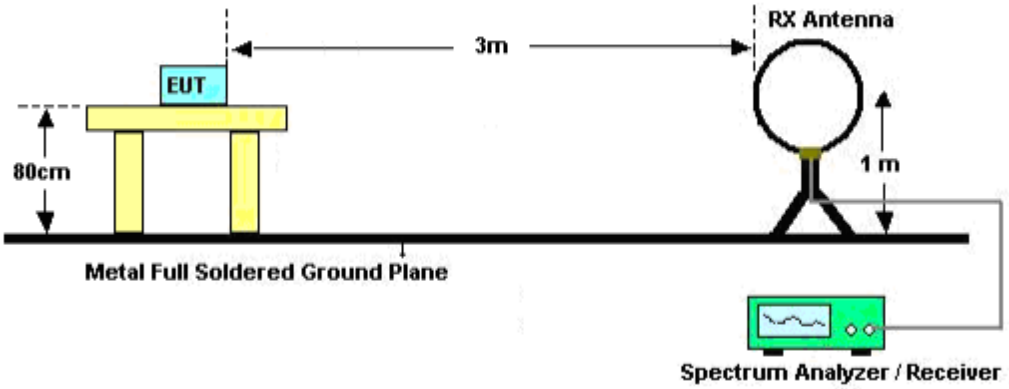
g. For the actual test configuration, please refer to the related Item –EUT Test Photos.
Note: Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

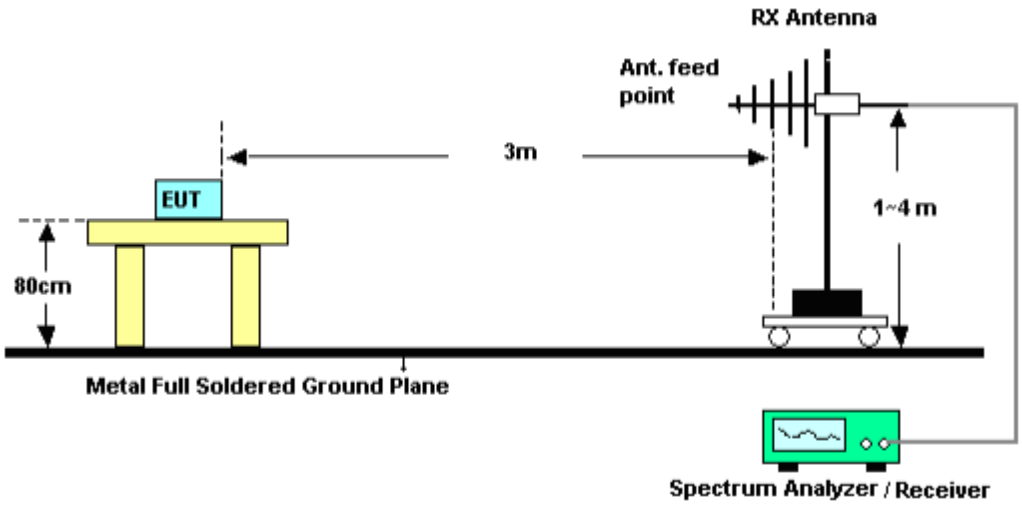
No deviation

3.2.4 TEST SETUP

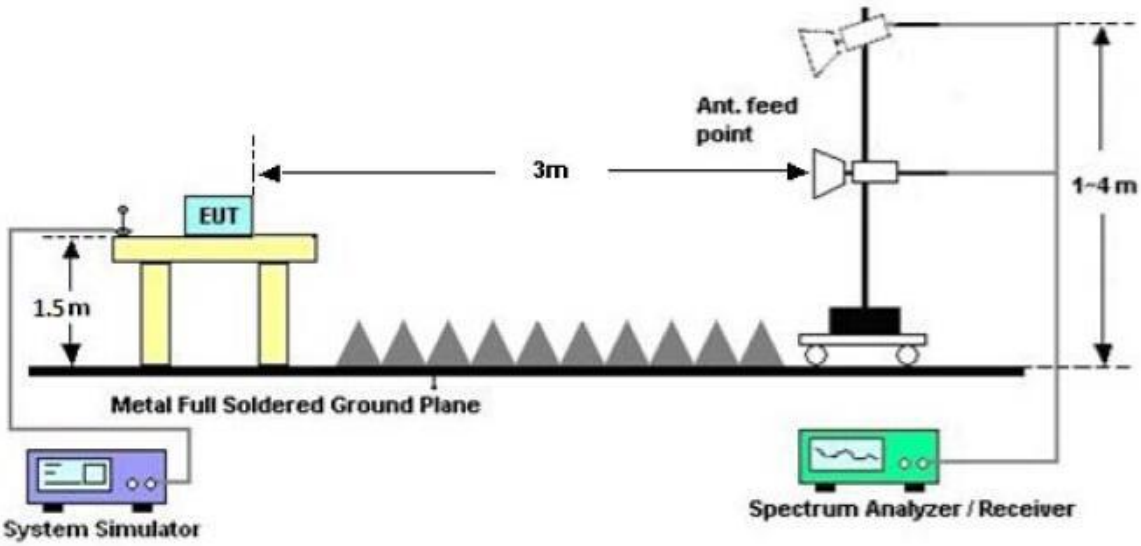
（A）Radiated Emission Test-Up Frequency Below 30MHz



（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:

FS = RA + AF + CL - AG

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

Frequency	FS	RA	AF	CL	AG	Factor
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG

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 ℃	Relative Humidity:	59%
Test Voltage:	DC 4.5V from battery	Polarization:	---
Test Mode:	N/A		

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 (specific distance/test distance)(dB);

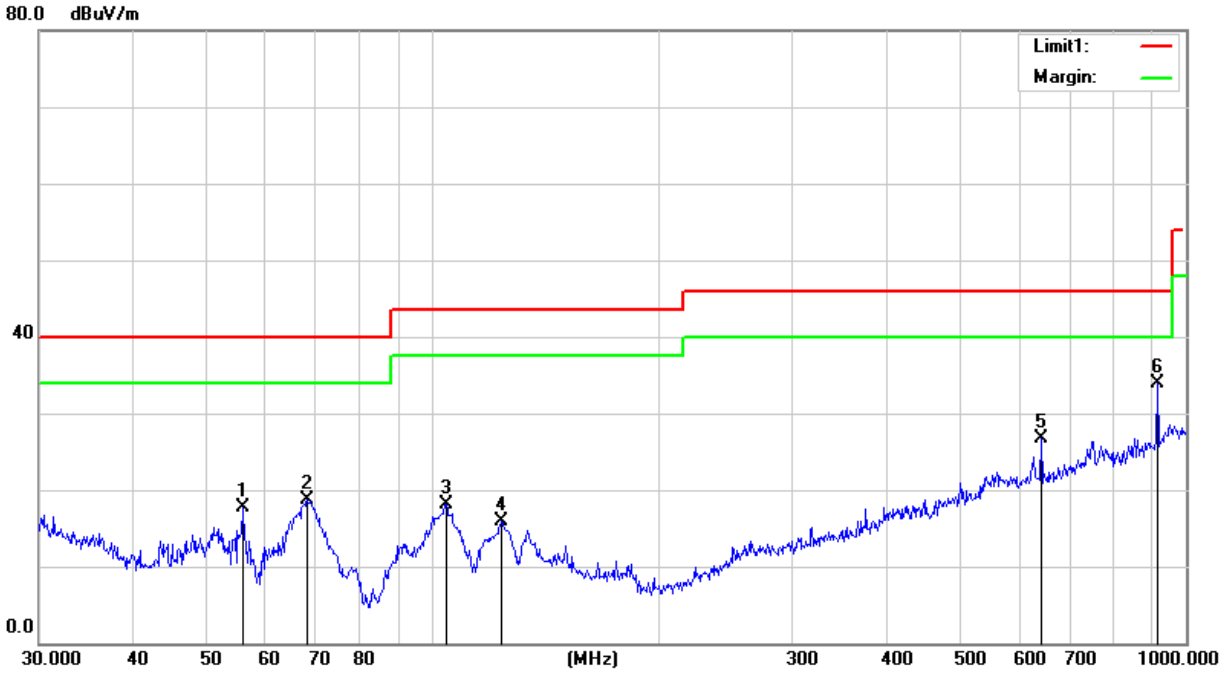
Limit line = specific limits(dBuv) + distance extrapolation factor.

Between 30MHz – 1000 MHz Radiation Spurious

Temperature:	24.6 ℃	Relative Humidity:	58%
Test Voltage:	DC 4.5V	Phase:	Horizontal
Test Mode:	Mode 1/2/3(Model 1 worst)		

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
56.0007	40.82	-23.19	17.63	40.00	-22.37	QP
68.1514	42.81	-24.15	18.66	40.00	-21.34	QP
104.1701	36.96	-18.84	18.12	43.50	-25.38	QP
123.2655	33.47	-17.65	15.82	43.50	-27.68	QP
642.8613	33.07	-6.34	26.73	46.00	-19.27	QP
916.0687	35.56	-1.71	33.85	46.00	-12.15	QP

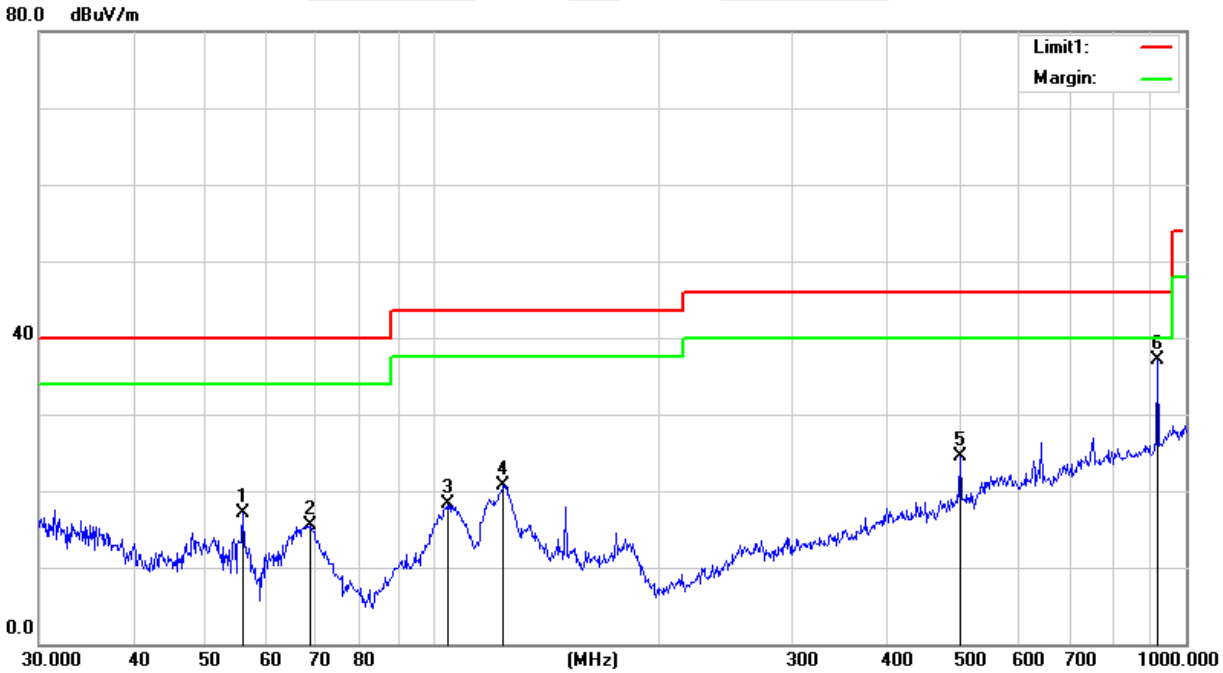
Remark:
1. All readings are Quasi-Peak .
2. Margin = Result (Result =Reading + Factor)–Limit



Temperature:	24.6 ℃	Relative Humidity:	58%
Test Voltage:	DC 4.5V	Phase:	Vertical
Test Mode:	Mode 1/2/3(Model 1 worst)		

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
56.0007	40.20	-23.19	17.01	40.00	-22.99	QP
68.6310	39.58	-24.14	15.44	40.00	-24.56	QP
104.5361	37.08	-18.81	18.27	43.50	-25.23	QP
124.1330	38.41	-17.64	20.77	43.50	-22.73	QP
501.1790	33.42	-8.90	24.52	46.00	-21.48	QP
916.0687	38.77	-1.71	37.06	46.00	-8.94	QP

Remark:
1. All readings are Quasi-Peak.
2. Margin = Result (Result =Reading + Factor)–Limit



Fundamental frequency:

PK

Frequency (MHz)	Reading (dBμV/m)	Amplifier	Loss	Antenna Factor	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin(dB)	Polarization
	PEAK	（dB）	（dB）	（dB/m）		PEAK	PEAK	PEAK	
2403	95.734	44.40	6.03	27.60	-10.77	84.97	114	-29.03	Vertical
2403	93.687	44.40	6.03	27.60	-10.77	82.92	114	-31.08	Horizontal
2440	87.176	44.40	6.04	27.63	-10.73	76.45	114	-37.55	Vertical
2440	85.263	44.40	6.04	27.63	-10.73	74.54	114	-39.46	Horizontal
2480	91.414	44.40	6.06	27.66	-10.68	80.74	114	-33.26	Vertical
2480	89.243	44.40	6.06	27.66	-10.68	78.57	114	-35.43	Horizontal

AV

Frequency (MHz)	Reading (dBμV/m)	Amplifier	Loss	Antenna Factor	Factor(dB) Corr.	Result (dBμV/m)	Limit (dBμV/m)	Margin(dB)	Polarization
	AV	（dB）	（dB）	（dB/m）		AV	PEAK	PEAK	
2403	75.445	44.40	6.03	27.60	-10.77	64.68	94	-29.32	Vertical
2403	74.673	44.40	6.03	27.60	-10.77	63.91	94	-30.09	Horizontal
2440	67.882	44.40	6.04	27.63	-10.73	57.16	94	-36.84	Vertical
2440	65.134	44.40	6.04	27.63	-10.73	54.41	94	-39.59	Horizontal
2480	71.856	44.40	6.06	27.66	-10.68	61.18	94	-32.82	Vertical
2480	69.154	44.40	6.06	27.66	-10.68	58.48	94	-35.52	Horizontal

Note: RBW>20BW; VBW=3xRBW

Above 1G Radiation Spurious

Frequency (MHz)	Reading (dBμV)	Amplifier （dB）	Loss （dB）	Antenna Factor （dB/m）	Corrected Factor （dB）	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Low Channel (2403 MHz)										
3264.71	49.18	44.70	6.70	28.20	-9.80	39.38	74.00	-34.62	PK	Vertical
3264.71	39.60	44.70	6.70	28.20	-9.80	29.80	54.00	-24.20	AV	Vertical
3264.76	48.78	44.70	6.70	28.20	-9.80	38.98	74.00	-35.02	PK	Horizontal
3264.76	38.31	44.70	6.70	28.20	-9.80	28.51	54.00	-25.49	AV	Horizontal
4806.51	59.42	44.20	9.04	31.60	-3.56	55.86	74.00	-18.14	PK	Vertical
4806.51	38.92	44.20	9.04	31.60	-3.56	35.36	54.00	-18.64	AV	Vertical
4806.50	59.34	44.20	9.04	31.60	-3.56	55.78	74.00	-18.22	PK	Horizontal
4806.50	39.09	44.20	9.04	31.60	-3.56	35.53	54.00	-18.47	AV	Horizontal
5359.71	45.40	44.20	9.86	32.00	-2.34	43.06	74.00	-30.94	PK	Vertical
5359.71	37.21	44.20	9.86	32.00	-2.34	34.87	54.00	-19.13	AV	Vertical
5359.78	45.30	44.20	9.86	32.00	-2.34	42.96	74.00	-31.04	PK	Horizontal
5359.78	37.19	44.20	9.86	32.00	-2.34	34.85	54.00	-19.15	AV	Horizontal
7209.94	50.85	43.50	11.40	35.50	3.40	54.25	74.00	-19.75	PK	Vertical
7209.94	33.37	43.50	11.40	35.50	3.40	36.77	54.00	-17.23	AV	Vertical
7209.78	51.31	43.50	11.40	35.50	3.40	54.71	74.00	-19.29	PK	Horizontal
7209.78	33.66	43.50	11.40	35.50	3.40	37.06	54.00	-16.94	AV	Horizontal

Frequency (MHz)	Reading (dBμV)	Amplifier （dB）	Loss （dB）	Antenna Factor （dB/m）	Corrected Factor （dB）	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
Middle Channel (2440 MHz)										
3264.73	49.07	44.70	6.70	28.20	-9.80	39.27	74.00	-34.73	PK	Vertical
3264.73	38.89	44.70	6.70	28.20	-9.80	29.09	54.00	-24.91	AV	Vertical
3264.60	49.01	44.70	6.70	28.20	-9.80	39.21	74.00	-34.79	PK	Horizontal
3264.60	38.34	44.70	6.70	28.20	-9.80	28.54	54.00	-25.46	AV	Horizontal
4880.50	59.06	44.20	9.04	31.60	-3.56	55.50	74.00	-18.50	PK	Vertical
4880.50	39.43	44.20	9.04	31.60	-3.56	35.87	54.00	-18.13	AV	Vertical
4880.52	59.16	44.20	9.04	31.60	-3.56	55.60	74.00	-18.40	PK	Horizontal
4880.52	39.46	44.20	9.04	31.60	-3.56	35.90	54.00	-18.10	AV	Horizontal
5359.71	46.15	44.20	9.86	32.00	-2.34	43.81	74.00	-30.19	PK	Vertical
5359.71	37.14	44.20	9.86	32.00	-2.34	34.80	54.00	-19.20	AV	Vertical
5359.81	45.61	44.20	9.86	32.00	-2.34	43.27	74.00	-30.73	PK	Horizontal
5359.81	38.23	44.20	9.86	32.00	-2.34	35.89	54.00	-18.11	AV	Horizontal
7320.97	51.71	43.50	11.40	35.50	3.40	55.11	74.00	-18.89	PK	Vertical
7320.97	33.07	43.50	11.40	35.50	3.40	36.47	54.00	-17.53	AV	Vertical
7320.79	51.02	43.50	11.40	35.50	3.40	54.42	74.00	-19.58	PK	Horizontal
7320.79	33.73	43.50	11.40	35.50	3.40	37.13	54.00	-16.87	AV	Horizontal

Frequency (MHz)	Reading (dBμV)	Amplifier （dB）	Loss （dB）	Antenna Factor （dB/m）	Corrected Factor （dB）	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
High Channel (2480 MHz)										
3264.88	48.54	44.70	6.70	28.20	-9.80	38.74	74.00	-35.26	PK	Vertical
3264.88	38.15	44.70	6.70	28.20	-9.80	28.35	54.00	-25.65	AV	Vertical
3264.79	48.92	44.70	6.70	28.20	-9.80	39.12	74.00	-34.88	PK	Horizontal
3264.79	37.97	44.70	6.70	28.20	-9.80	28.17	54.00	-25.83	AV	Horizontal
4960.30	59.05	44.20	9.04	31.60	-3.56	55.49	74.00	-18.51	PK	Vertical
4960.30	38.40	44.20	9.04	31.60	-3.56	34.84	54.00	-19.16	AV	Vertical
4960.40	58.78	44.20	9.04	31.60	-3.56	55.22	74.00	-18.78	PK	Horizontal
4960.40	39.50	44.20	9.04	31.60	-3.56	35.94	54.00	-18.06	AV	Horizontal
5359.64	46.12	44.20	9.86	32.00	-2.34	43.78	74.00	-30.22	PK	Vertical
5359.64	37.55	44.20	9.86	32.00	-2.34	35.21	54.00	-18.79	AV	Vertical
5359.65	46.54	44.20	9.86	32.00	-2.34	44.20	74.00	-29.80	PK	Horizontal
5359.65	37.71	44.20	9.86	32.00	-2.34	35.37	54.00	-18.63	AV	Horizontal
7440.96	52.00	43.50	11.40	35.50	3.40	55.40	74.00	-18.60	PK	Vertical
7440.96	33.19	43.50	11.40	35.50	3.40	36.59	54.00	-17.41	AV	Vertical
7440.79	50.73	43.50	11.40	35.50	3.40	54.13	74.00	-19.87	PK	Horizontal
7440.79	32.92	43.50	11.40	35.50	3.40	36.32	54.00	-17.68	AV	Horizontal

Note:

1) Factor = Antenna Factor + Cable Loss – Pre-amplifier.
   Emission Level = Reading + Factor

2) The frequency emission of peak points that did not show above the forms are below the limit, the frequency emission is mainly from the environment noise.

(Radiation Band edge)

Frequency (MHz)	Reading (dBμV)	Amplifier （dB）	Loss （dB）	Antenna Factor （dB/m）	Corrected Factor （dB）	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
GFSK										
2400.00	68.32	43.80	4.91	25.90	-12.99	55.33	74	-18.67	PK	Vertical
2400.00	53.96	43.80	4.91	25.90	-12.99	40.97	54	-13.03	AV	Vertical
2400.00	68.37	43.80	4.91	25.90	-12.99	55.38	74	-18.62	PK	Horizontal
2400.00	52.80	43.80	4.91	25.90	-12.99	39.81	54	-14.19	AV	Horizontal
2483.50	69.46	43.80	5.12	25.90	-12.78	56.68	74	-17.32	PK	Vertical
2483.50	53.03	43.80	5.12	25.90	-12.78	40.25	54	-13.75	AV	Vertical
2483.50	69.78	43.80	5.12	25.90	-12.78	57.00	74	-17.00	PK	Horizontal
2483.50	53.32	43.80	5.12	25.90	-12.78	40.54	54	-13.46	AV	Horizontal

Low measurement frequencies is range from 2310 to 2400 MHz, high measurement frequencies is range from 2483.5 to 2500 MHz.

Only show the worst point data of the emissions in the frequency 2310-2400 MHz and 2483.5-2500 MHz.

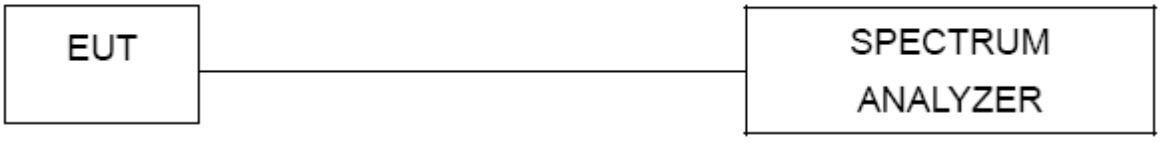
4. BANDWIDTH TEST

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= 30KHz, VBW≧RBW, Sweep time = Auto.

4.2 TEST SETUP



4.3 EUT OPERATION CONDITIONS

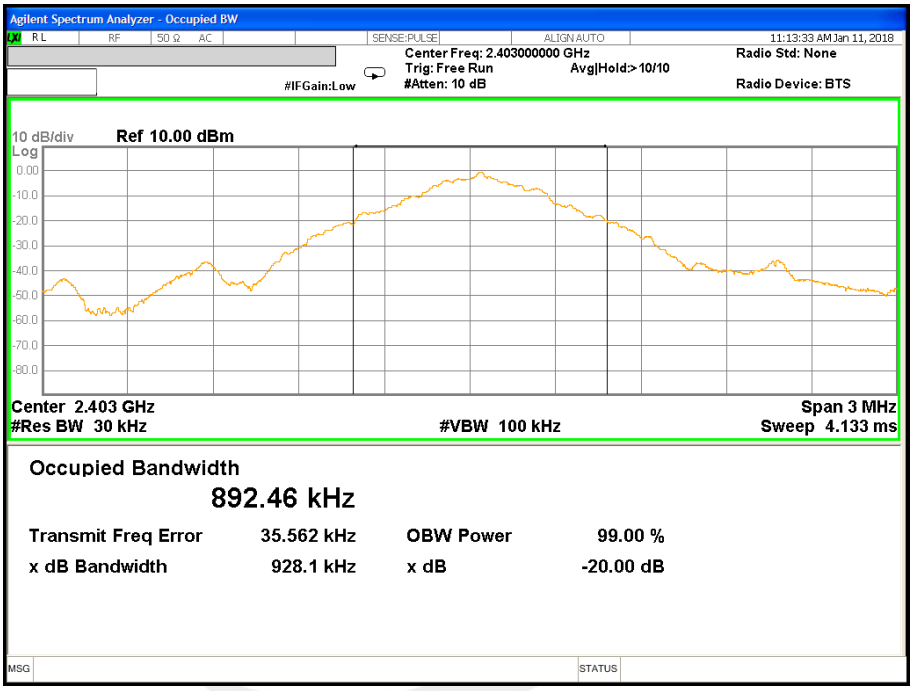
TX mode.

4.4 TEST RESULTS

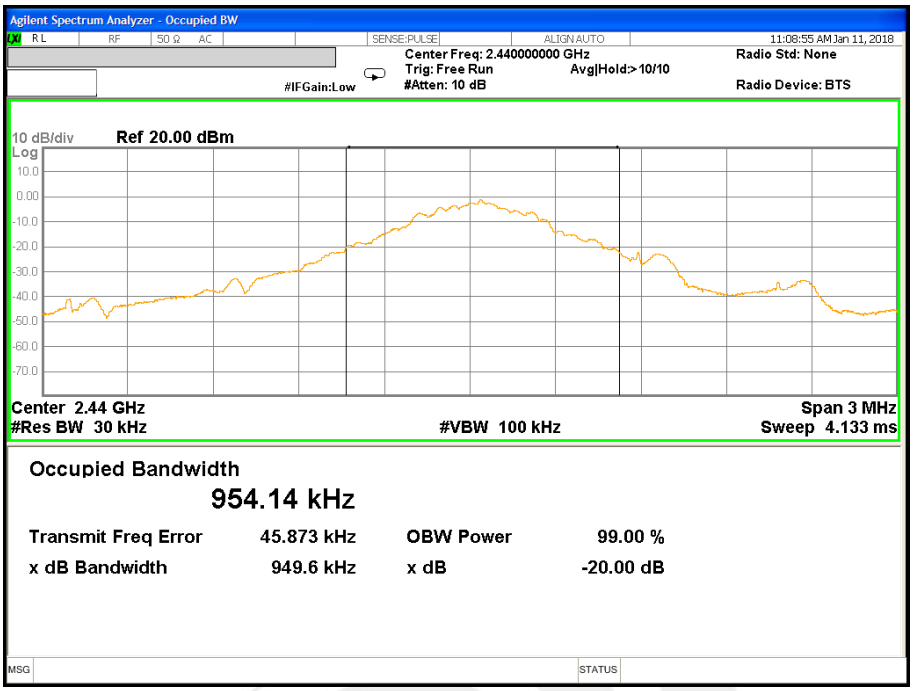
Temperature:	25 ℃	Relative Humidity:	50%
Test Voltage:	DC 29 V		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (MHz)	99% Bandwidth (MHz)
CH01	2403	0.928	0.892
CH02	2440	0.950	0.954
CH03	2480	0.922	0.906

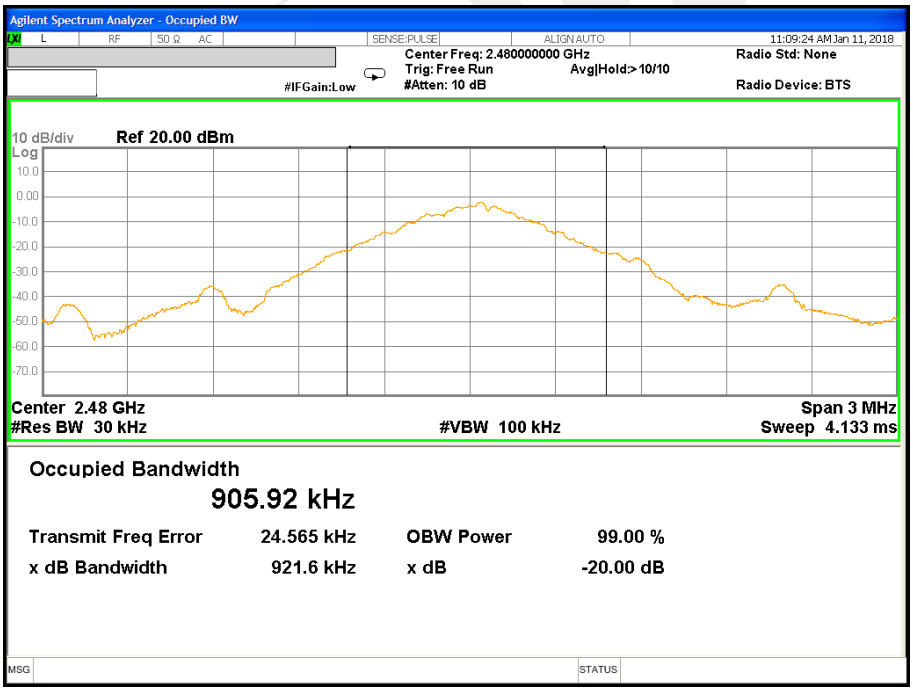
The Lowest Channel:2403MHz



The Middle Channel:2440MHz



The High Channel: 2480MHz



5. ANTENNA REQUIREMENT

5.1 STANDARD REQUIREMENT

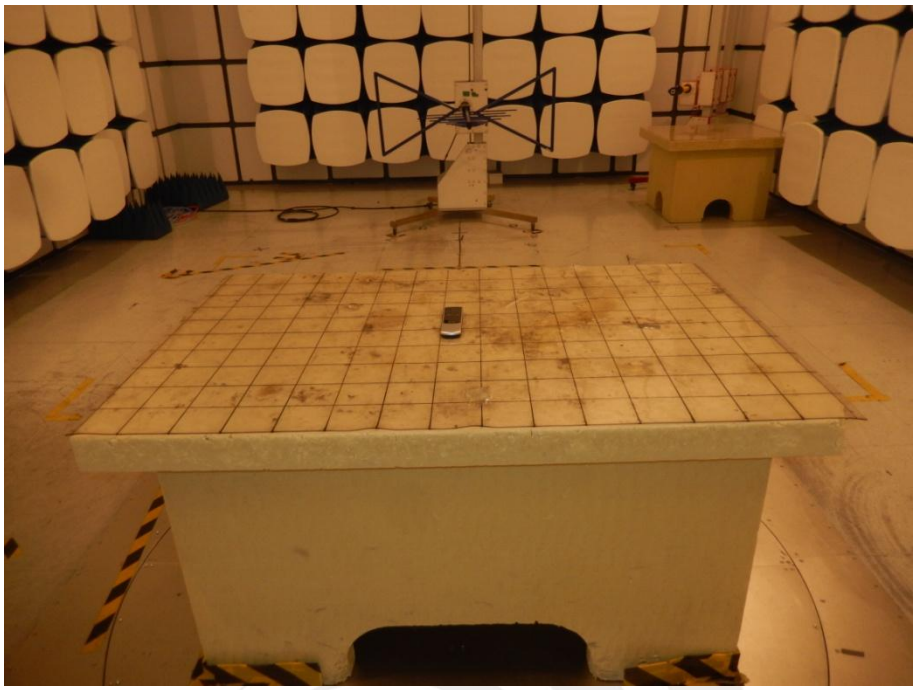
According to the FCC Part 15 Paragraph 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

5.2 EUT ANTENNA

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

APPENDIX- PHOTOS OF TEST SETUP

Radiated Measurement Photos



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