

商品電磁相容形式實驗報告

產品名稱

無線電錶

申請廠商

施耐德電機股份有限公司

製造廠商

施耐德電機(法國)有限公司

銘牌標示及主要特性

AC 110V/60Hz

商標或廠牌

Schneider Electric

型式(號)

A9MEM1570

該產品樣品試驗依據之試驗標準

LP0002; 3.10.1節

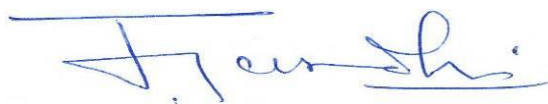
試驗結果

合格

受理日期：2019年4月01日

完成日期：2019年4月10日

蓋章：



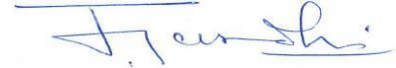
NCC RADIO TEST REPORT

Report Reference No...... M80620J652

Compiled by (+ signature)..... Kevin Bothmann



Approved by (+ signature)..... Jay Gandhi



Date of issue..... 2019-04-10

Applicant's name 施耐德電機股份有限公司

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Manufacture's Name 施耐德電機(法國)有限公司

Address ZI des Agriers 16021 Angoulême cedex France

Test specification:

Standard LP0002; 3.10.1 節

Test procedure EIA 603、ANSI、FCC/47 CFR/2.1046、2.1047、2.1049、2.1051、2.1053 and 2.1055

Non-standard test method..... N/A

Test item description

Product name 無線電錶

Brand name Schneider Electric

Model and/or type reference A9MEM1570

Rating(s)..... AC 110V/60Hz

Testing Laboratory information:

Testing Laboratory Name Electro Magnetic Test, Inc.

Address 1547 Plymouth Street, Mountain View, CA 94043

CAB Identifier Number US0036

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Testing

Date of receipt of test item..... Apr. 01, 2019

Date (s) of performance of tests..... Apr. 02~09, 2019

Date of Issue Apr. 10, 2019

Test Result **Pass**

GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Electro Magnetic Test, Inc., which is an independent testing and consulting firm. The test report is based on testing performed Electro Magnetic Test, Inc. personnel according to the measurement procedure described in the test specification given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Federal Government.

Electro Magnetic Test, Inc. is recognized by the following agencies for performing EMI/EMC testing:

COUNTRY	AGENCY	IDENTIFYING #
USA	Federal Communications Commission (FCC) (EMT's test site is recognized by the FCC)	Registration Number: 90576
USA, Canada, Taiwan, Australia/New Zealand, European Community	National Voluntary Lab Accreditation Program (NVLAP) (EMT is accredited by NVLAP. A copy of the NVLAP Scope Of Accreditation is available upon request.)	Lab Code: 200147-0
Canada	Industry Canada	File No.: IC 2804
Japan	Voluntary Control Council For Interference (VCCI)	See Below
	Open Field Test Site "A"	R-589
	Mains Conducted Emissions Test Site "A"	C-604
	Telecom Conducted Emissions Test Site "A"	T-1655
	3 Meter Semi-Anechoic Chamber Site "E"	R-3227
	3 Meter Semi-Anechoic Chamber Site "E" (1GHz – 6GHz)	G-219
	Mains Conducted Emissions Test Site "E"	C-35793
	Telecom Conducted Emissions Test Site "E"	T-1715
Korea	Ministry of Information and Communication's Radio Research Laboratory (RRL) under the Asia Pacific Economic Cooperation (APEC) Mutual Recognition Arrangement (A copy of the Scope Of Accreditation is available upon request)	US0036
Taiwan	Bureau Of Standards, Metrology and Inspection (BSMI)	Reference Number: SL2-IN-E-1024
Australia / New Zealand	Australian Communications Authority (AUSTEL)	*

***THESE AGENCIES DO NOT ISSUE AN IDENTIFYING NUMBER TO TEST LABS.**

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

LP0002: 2018 revised			
Standard Section	Test Item	Judgment	Remark
2.3	Conducted Emission	PASS	None
3.10.1(5)/2.8	Radiated Spurious Emission	PASS	None
3.10.1(2)	Peak Output Power	PASS	None
3.10.1(6.2.1)	6dB Occupied Bandwidth	PASS	None
3.10.1(6.2.2)	Power Density	PASS	None
3.10.1(5)/2.8	Restricted Bands	PASS	None
3.10.1(3)	Antenna Requirement	PASS	None

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report

1.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expanded 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 Test	1.38dB
2	Radiated Emission Test	3.17dB
3	RF power,conducted	0.16dB
4	Spurious emissions,conducted	0.21dB
5	All emissions,radiated(<1G)	4.68dB
6	All emissions,radiated(>1G)	4.89dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	無線電錶	
Brand Name	Schneider Electric	
Model Name	A9MEM1570	
OEM Brand/Model Name	N/A	
Product Description	The EUT is a 無線電錶.	
	Operation Frequency:	2405~2480 MHz
	Modulation Type:	GFSK
	Bit Rate of Transmitter	250kps
	Number Of Channel	16
	Antenna Designation:	Please see Note 3.
	Antenna Gain(Peak)	0 dBi
	Output Power:	1.45 dBm
Channel List	Please refer to the Note 2.	
Power Rating	AC 110V/60Hz	
Connecting I/O Port(s)	Please refer to the User's Manual	
Products Covered	N/A	
EUT Modification(s)	N/A	

Note:

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

Description of Channel:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2405	09	2445
02	2410	10	2450
03	2415	11	2455
04	2420	12	2460
05	2425	13	2465
06	2430	14	2470
07	2435	15	2475
08	2440	16	2480

- 3.

Table for Filed Antenna

Ant	Manufacturer	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	Schneider Electric	N/A	PCB antenna	N/A	0	ANT

2.2 DESCRIPTION OF TEST MODES

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

Pretest Mode	Description
Mode 1	Transmit mode
Mode 2	Link mode

For Conducted Emission	
Final Test Mode	Description
Mode 2	Link mode

For Radiated Emission	
Final Test Mode	Description
Mode 1	Transmit mode

Note:

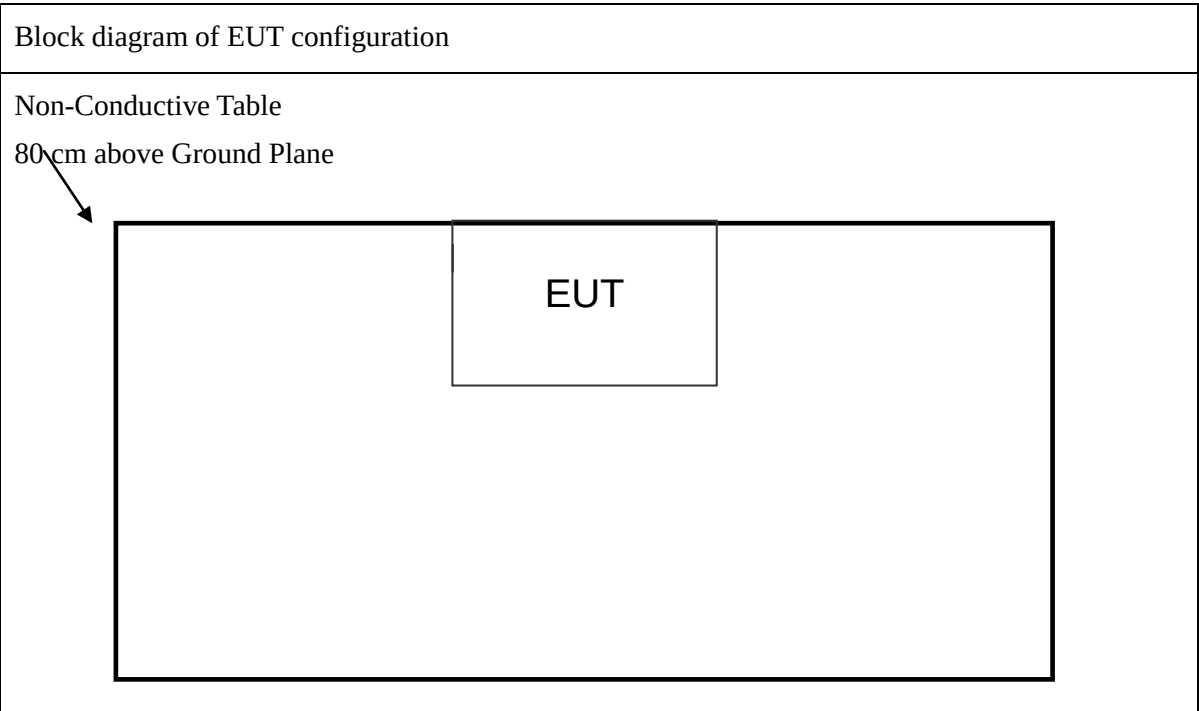
- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) For all tests the worst-case was selected as the table above, the data of the worst-case is shown in the report.

2.3 TABLE OF PARAMETERS OF TEXT SOFTWARE SETTING

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.

Test software Version	Test program: BT4.0 Single Module		
Frequency	2405 MHz	2440 MHz	2480 MHz
Parameters(1Mbps)	Default	Default	Default

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.5 DESCRIPTION OF SUPPORT UNITS (CONDUCTED MODE)

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.	Note
1	N/A	N/A	N/A	N/A	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1#	N/A	N/A	N/A	N/A

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.
- (3) “YES” means “shielded” or “with ferrite core”; “NO” means “unshielded” or “without ferrite core”

2.5.1 EQUIPMENTS LIST FOR ALL TEST ITEMS

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Spectrum Analyzer	Hewlett Packard	8566B	3013A07296	Apr. 29, 2018	1 Year
RF Preselector	Hewlett Packard	85685A	3010A01157	Apr. 29, 2018	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650	2521A00584	Apr. 29, 2018	1 Year
Preamplifier	Com Power	PA-102	1482	Apr. 29, 2018	1 Year
RF Attenuator	Mini-Circuits	CAT-10	Asset #1000	Apr. 29, 2018	1 Year
LISN	Com Power	LI-200	12012	Apr. 29, 2018	1 Year
LISN	Com Power	LI-200	12214	Apr. 29, 2018	1 Year
LISN	Com Power	LI-200	1767	Apr. 29, 2018	1 Year
LISN	Com Power	LI-200	1768	Apr. 29, 2018	1 Year
Biconical Antenna	Com Power	AB-100	01557	Apr. 29, 2018	1 Year
Log Periodic Antenna	Com Power	AL-100	16037	Apr. 29, 2018	1 Year
Horn Antenna	Com Power	AHA-118	711054	Apr. 29, 2018	1 Year
Antenna Mast	Com Power	AM-400	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Dell, Inc.	DHS	DNSV641	N/A	N/A
Printer	Hewlett Packard	C8124A	CN39B2234T	N/A	N/A
Plotter	Hewlett Packard	7470A	2308A96499	N/A	N/A

EMI Test Equipment (Continued)

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
EMI Receiver	Rohde & Schwarz	ESU40	100127	Apr. 29, 2018	1 Year
BiConiLog Antenna	ETS-Lindgren	3142D	00102183	Apr. 29, 2018	1 Year
Horn Antenna	ETS-Lindgren	3117	00109294	Apr. 29, 2018	1 Year
Preamplifier	Rohde & Schwarz	TS-PR18	100056	Apr. 29, 2018	1 Year
Antenna Mast	ETS-Lindgren	2175	00095727	N/A	N/A
Turntable	ETS-Lindgren	2187-3.0	00118231	N/A	N/A
Computer	Acer	Aspire 8930	85100050123	N/A	N/A
Multi-Function Controller	ETS-Lindgren	2090	00102270	N/A	N/A
Loop Antenna	ARA	PLA-1030/B	1029	Apr. 29, 2018	1 Year
Spectrum Analyzer	Agilent	E4407B	MY45108040	Apr. 29, 2018	1 Year

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5			66 - 56 *	56 - 46 *	CISPR
0.50 -5.0			56.00	46.00	CISPR
5.0 -30.0			60.00	50.00	CISPR

0.15 -0.5			66 - 56 *	56 - 46 *	LP0002
0.50 -5.0			56.00	46.00	LP0002
5.0 -30.0			60.00	50.00	LP0002

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

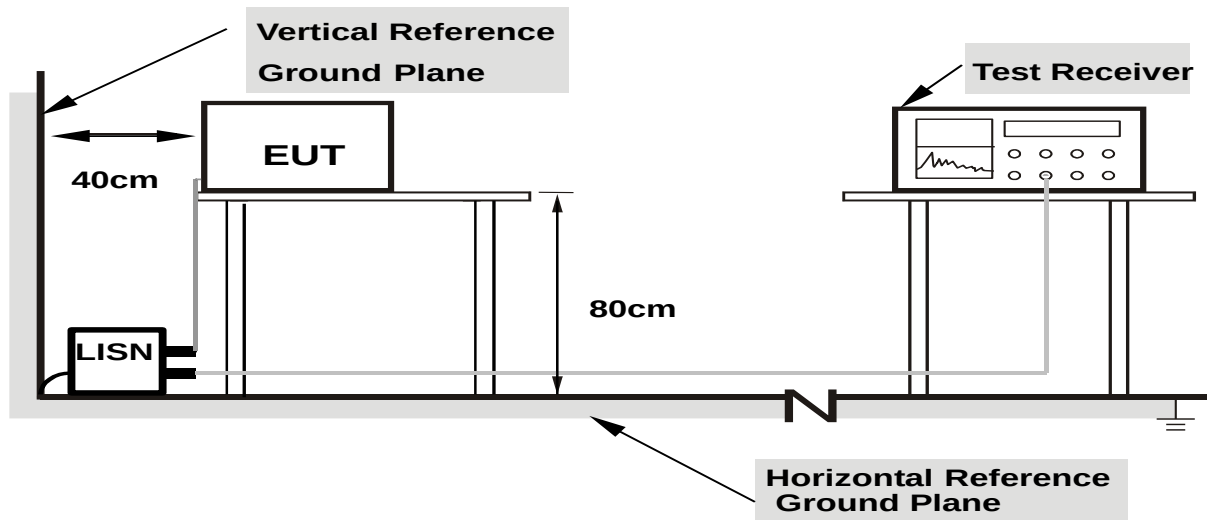
3.1.2 TEST PROCEDURE

- The EUT 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 equipments powered from additional LISN(s). The LISN provide 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 at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

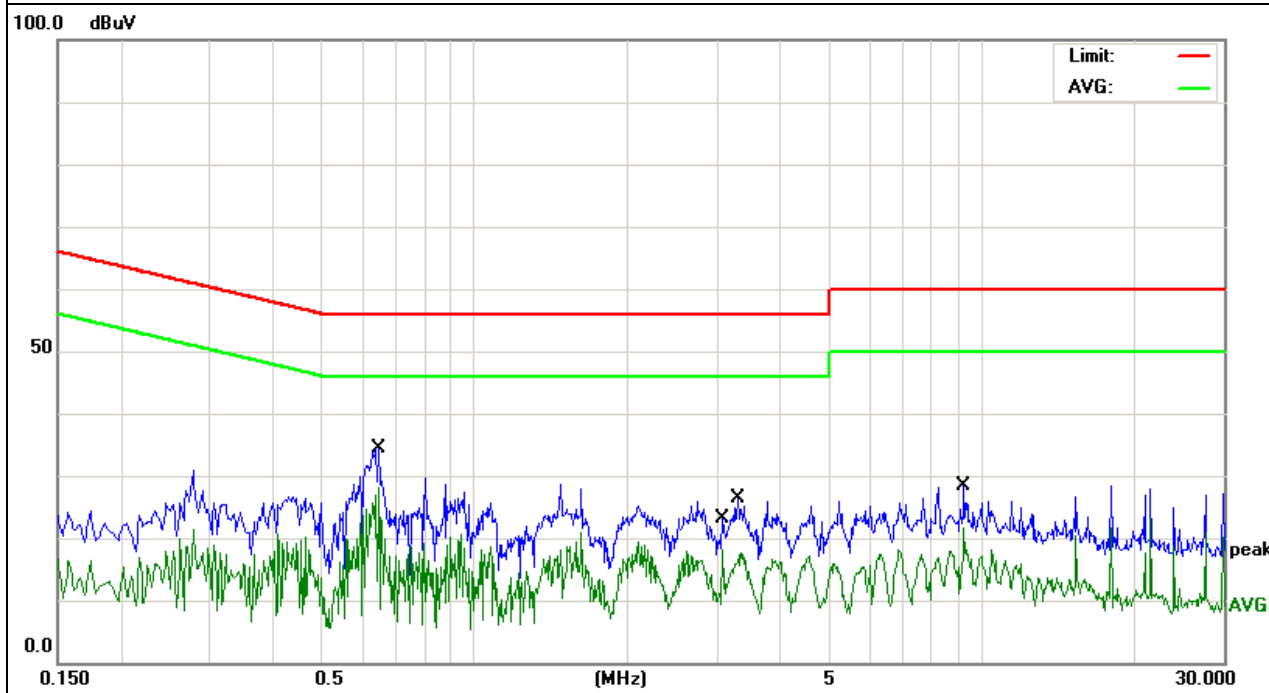
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 TEST RESULTS

EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	TX	Polarization :	Line
Test Power :	AC 110V/60Hz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
0.6460	24.46	9.95	34.41	56.00	-21.59	Quasi-Peak
0.6460	18.17	9.95	28.12	46.00	-17.88	Average
3.3100	16.43	9.98	26.41	56.00	-29.59	Quasi-Peak
3.0740	8.06	9.98	18.04	46.00	-27.96	Average
9.2299	18.19	10.15	28.34	60.00	-31.66	Quasi-Peak
9.2299	11.47	10.15	21.62	50.00	-28.38	Average

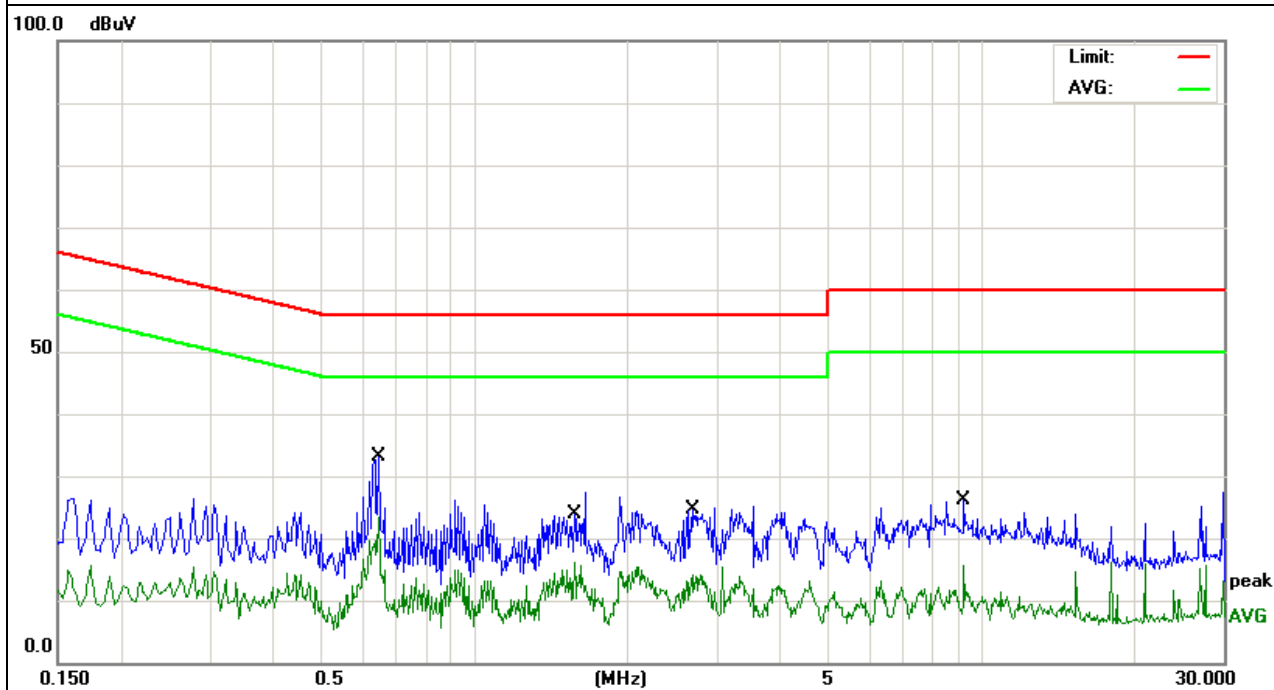
Remark: Factor = LISN factor + Cable Loss + Pulse limiter.



EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	TX	Polarization :	Neutral
Test Power :	AC 110V/60Hz		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
0.6460	23.13	9.95	33.08	56.00	-22.92	Quasi-Peak
0.6460	13.48	9.95	23.43	46.00	-22.57	Average
2.6980	14.69	9.97	24.66	56.00	-31.34	Quasi-Peak
1.5700	6.19	9.93	16.12	46.00	-29.88	Average
9.2340	16.08	10.16	26.24	60.00	-33.76	Quasi-Peak
9.2340	5.39	10.16	15.55	50.00	-34.45	Average

Remark: Factor = LISN factor + Cable Loss + Pulse limiter.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 2.7, then the 2.8 limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

- (1) The limit for radiated test was performed according to LP0002.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

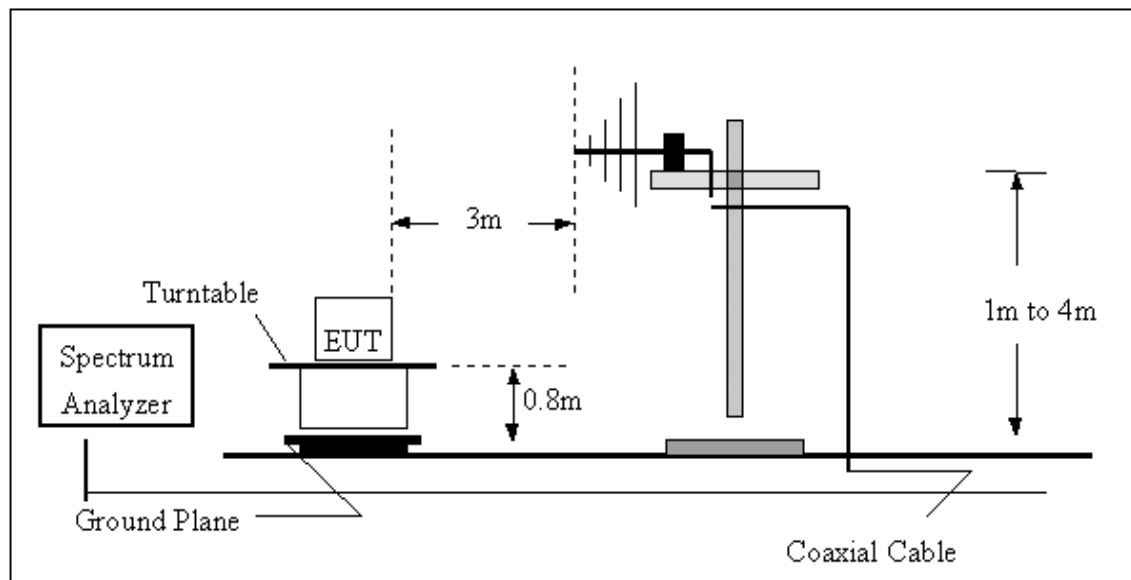
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

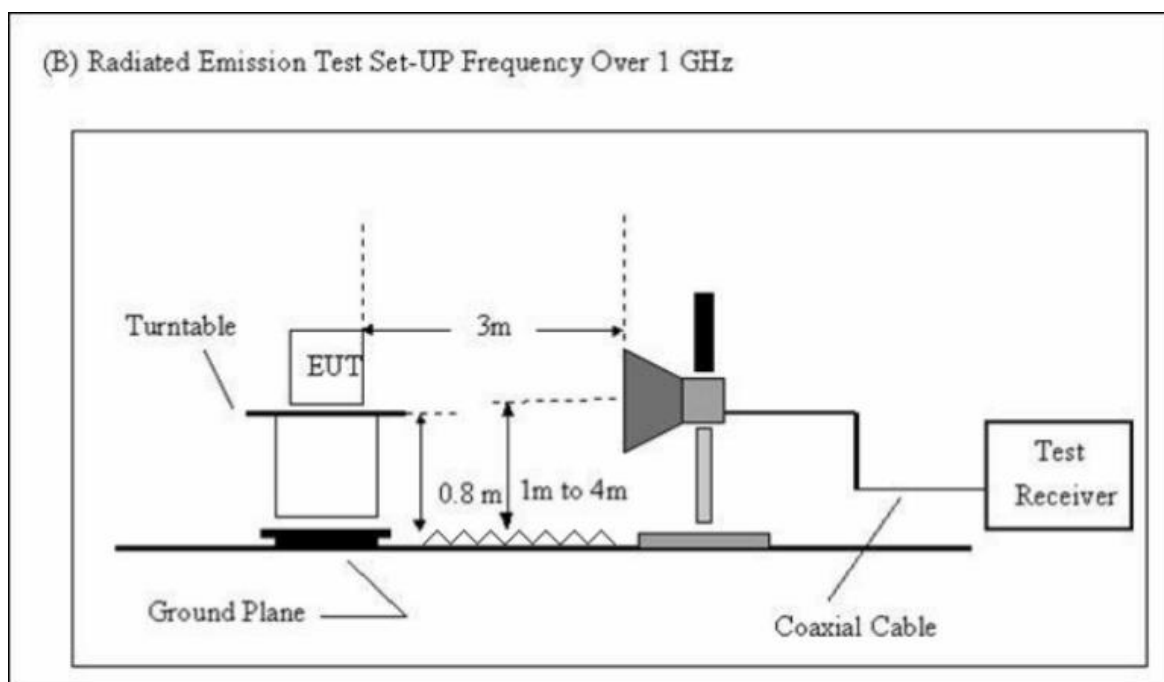
- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 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.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.2.3 TEST SETUP

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



3.2.4 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.

3.2.5 TEST RESULTS (BLOW 30MHZ)

There is not detected blow 30MHz.

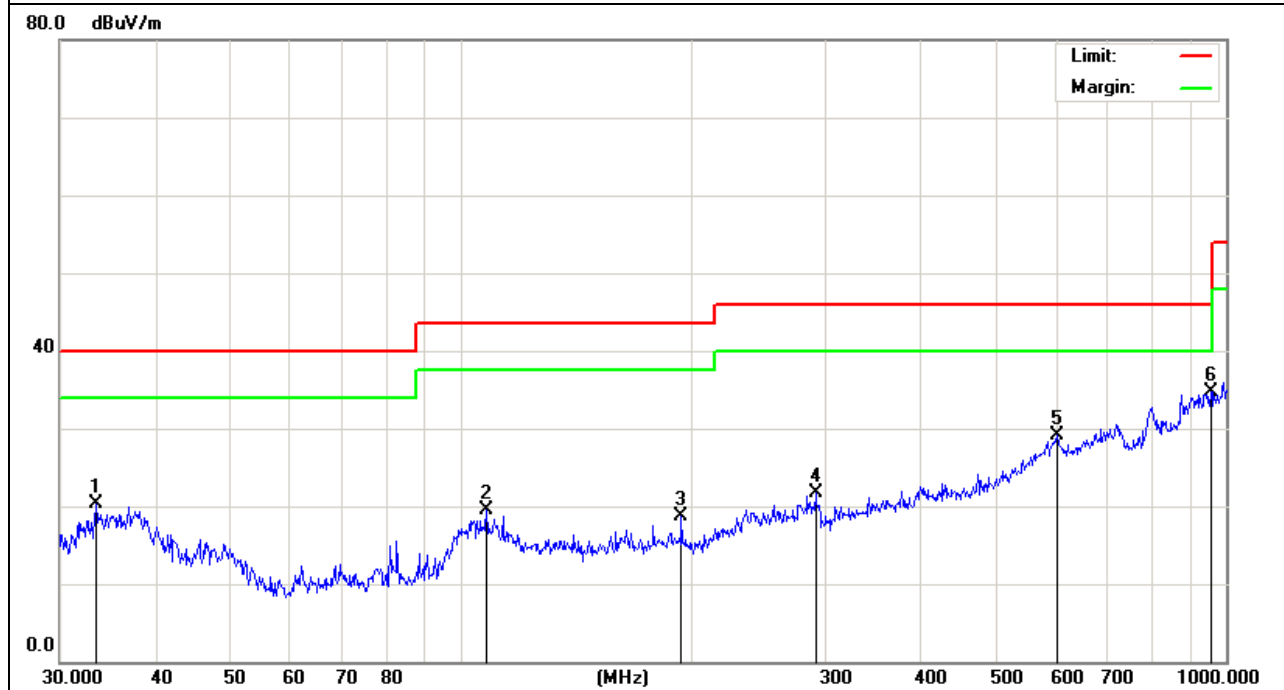
3.2.6 TEST RESULTS (BETWEEN30 – 1000 MHZ)

EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	TX	Polarization :	Horizontal
Test Power :	AC 110V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
33.4448	37.13	-16.89	20.24	40.00	-19.76	Quasi-Peak
108.2667	32.75	-13.30	19.45	43.50	-24.05	Quasi-Peak
194.4533	33.21	-14.55	18.66	43.50	-24.84	Quasi-Peak
291.0360	31.50	-9.72	21.78	46.00	-24.22	Quasi-Peak
601.4265	29.87	-0.70	29.17	46.00	-16.83	Quasi-Peak
955.4380	30.80	4.00	34.80	46.00	-11.20	Quasi-Peak

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

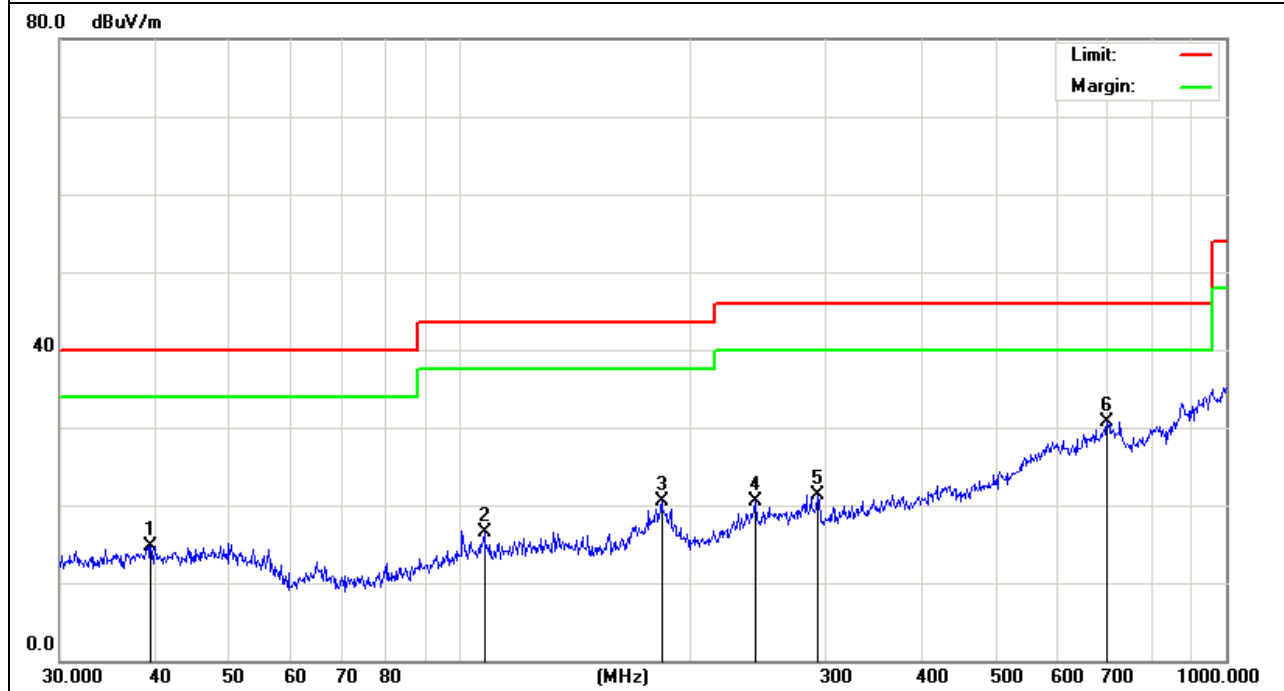


EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	TX	Polarization :	Vertical
Test Power :	AC 110V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
39.4371	29.13	-14.36	14.77	40.00	-25.23	Quasi-Peak
107.5101	31.72	-15.31	16.41	43.50	-27.09	Quasi-Peak
183.2005	30.99	-10.39	20.60	43.50	-22.90	Quasi-Peak
242.5253	31.87	-11.41	20.46	46.00	-25.54	Quasi-Peak
293.0842	31.19	-9.87	21.32	46.00	-24.68	Quasi-Peak
699.3046	30.51	0.14	30.65	46.00	-15.35	Quasi-Peak

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



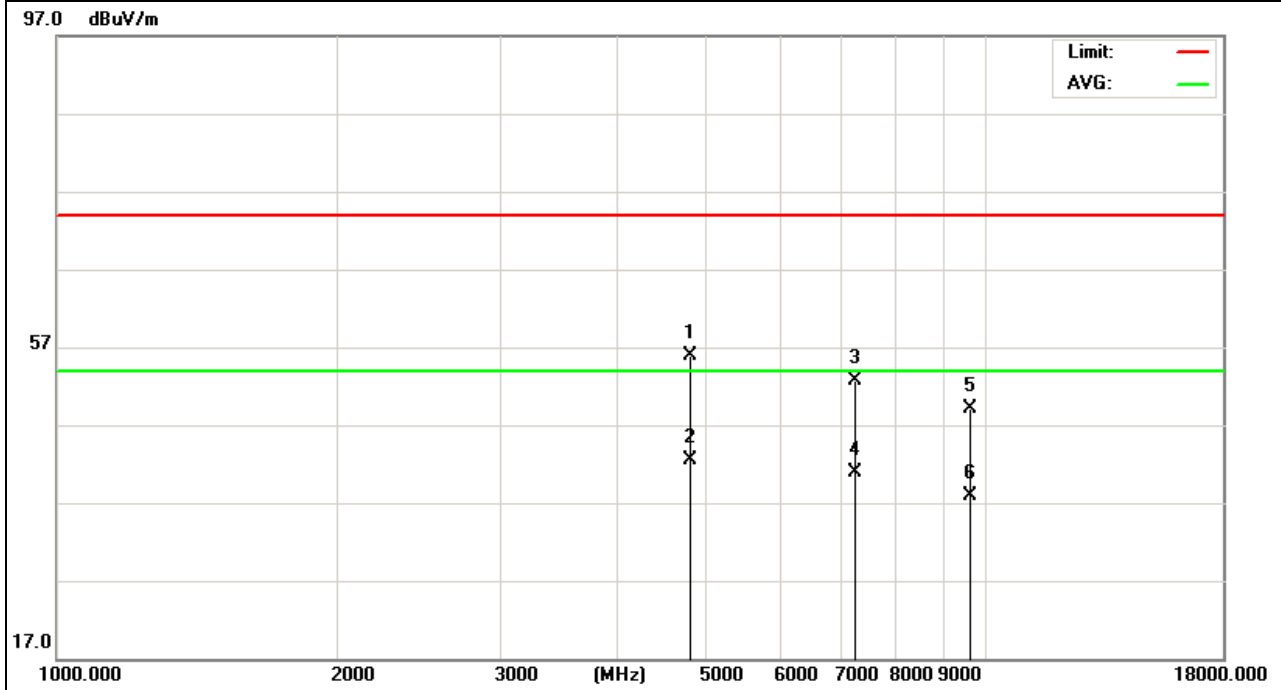
3.2.7 TEST RESULTS (ABOVE 1000 MHZ)

EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	Mode1(2405MHz)	Polarization :	Horizontal
Test Power :	AC 110V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4810.0000	50.59	5.06	55.65	74.00	-18.35	peak
4810.0000	37.48	5.06	42.54	54.00	-11.46	AVG
7215.0000	45.72	7.03	52.75	74.00	-21.25	peak
7215.0000	33.86	7.03	40.89	54.00	-13.11	AVG
9620.0000	38.65	10.63	49.28	74.00	-24.72	peak
9620.0000	27.32	10.63	37.95	54.00	-16.05	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

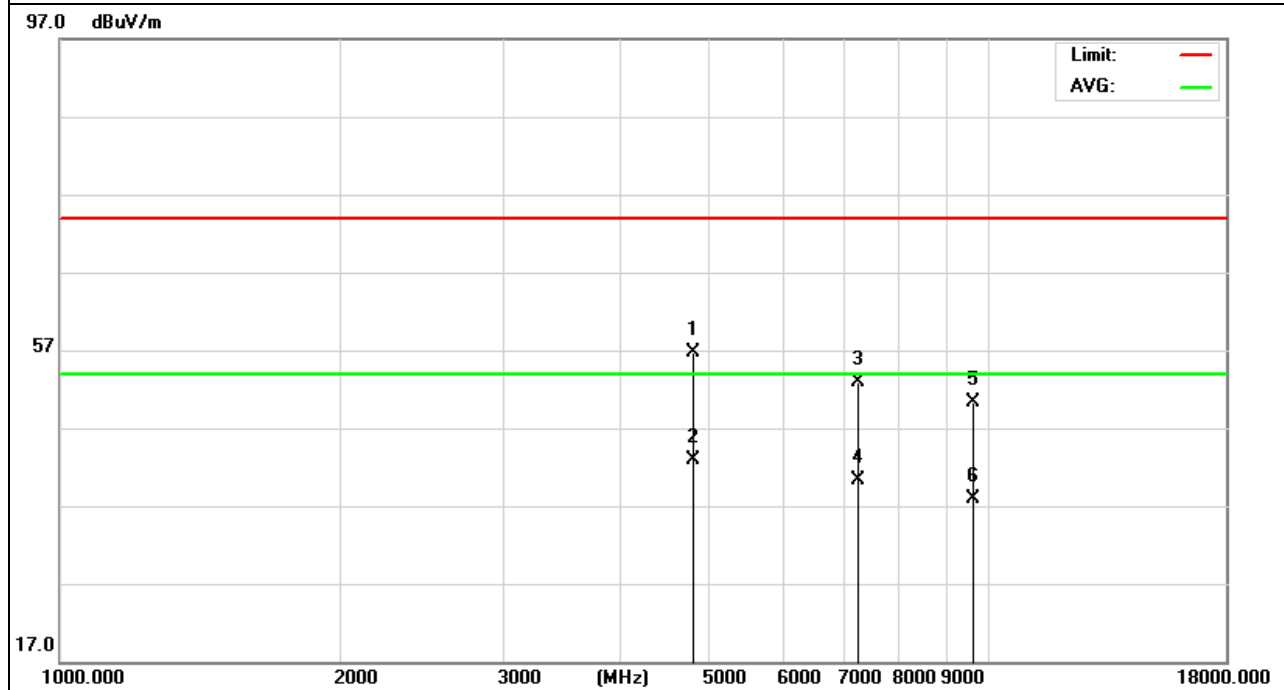


EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	Mode1(2405MHz)	Polarization :	Vertical
Test Power :	AC 110V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4810.0000	51.82	5.06	56.88	74.00	-17.12	peak
4810.0000	37.89	5.06	42.95	54.00	-11.05	AVG
7215.0000	45.73	7.03	52.76	74.00	-21.24	peak
7215.0000	33.18	7.03	40.21	54.00	-13.79	AVG
9620.0000	39.79	10.63	50.42	74.00	-23.58	peak
9620.0000	27.38	10.63	38.01	54.00	-15.99	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

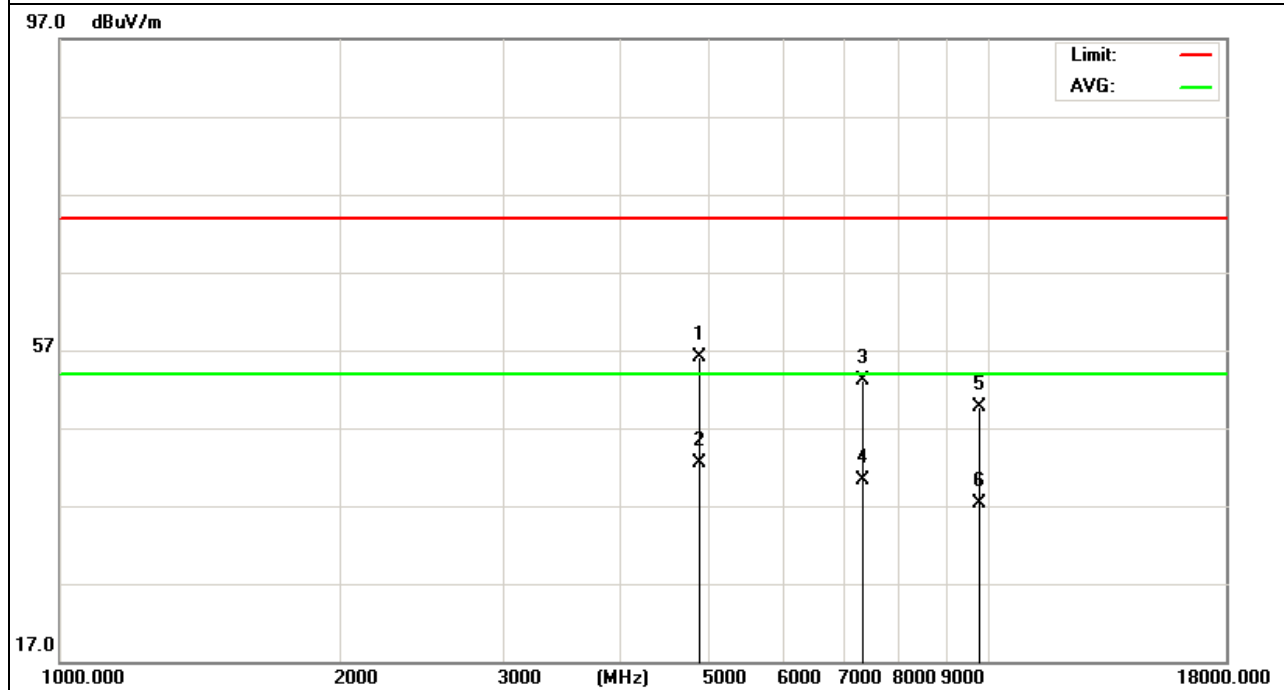


EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	Mode1(2440MHz)	Polarization :	Horizontal
Test Power :	AC 110V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4880.0000	50.82	5.14	55.96	74.00	-18.04	peak
4880.0000	37.49	5.14	42.63	54.00	-11.37	AVG
7320.0000	45.61	7.54	53.15	74.00	-20.85	peak
7320.0000	32.68	7.54	40.22	54.00	-13.78	AVG
9760.0000	38.27	11.39	49.66	74.00	-24.34	peak
9760.0000	25.82	11.39	37.21	54.00	-16.79	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

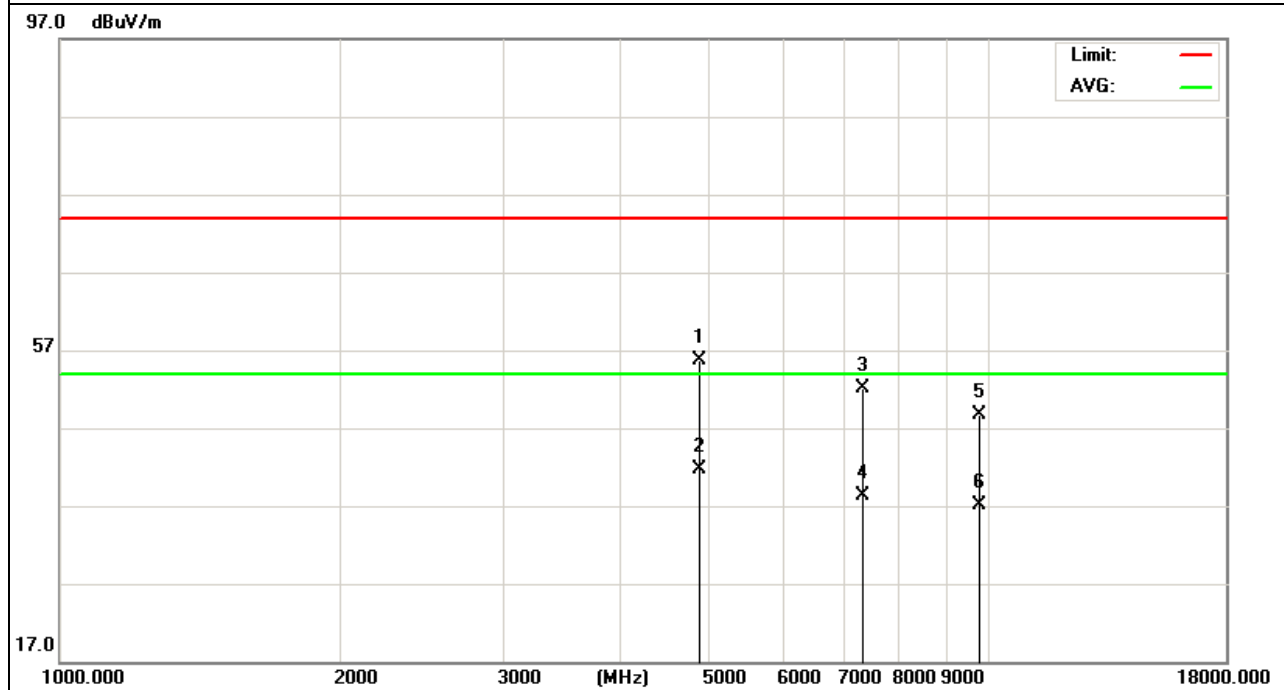


EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	Mode1(2440MHz)	Polarization :	Vertical
Test Power :	AC 110V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4880.0000	50.52	5.14	55.66	74.00	-18.34	peak
4880.0000	36.68	5.14	41.82	54.00	-12.18	AVG
7320.0000	44.51	7.54	52.05	74.00	-21.95	peak
7320.0000	30.74	7.54	38.28	54.00	-15.72	AVG
9760.0000	37.38	11.39	48.77	74.00	-25.23	peak
9760.0000	25.72	11.39	37.11	54.00	-16.89	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

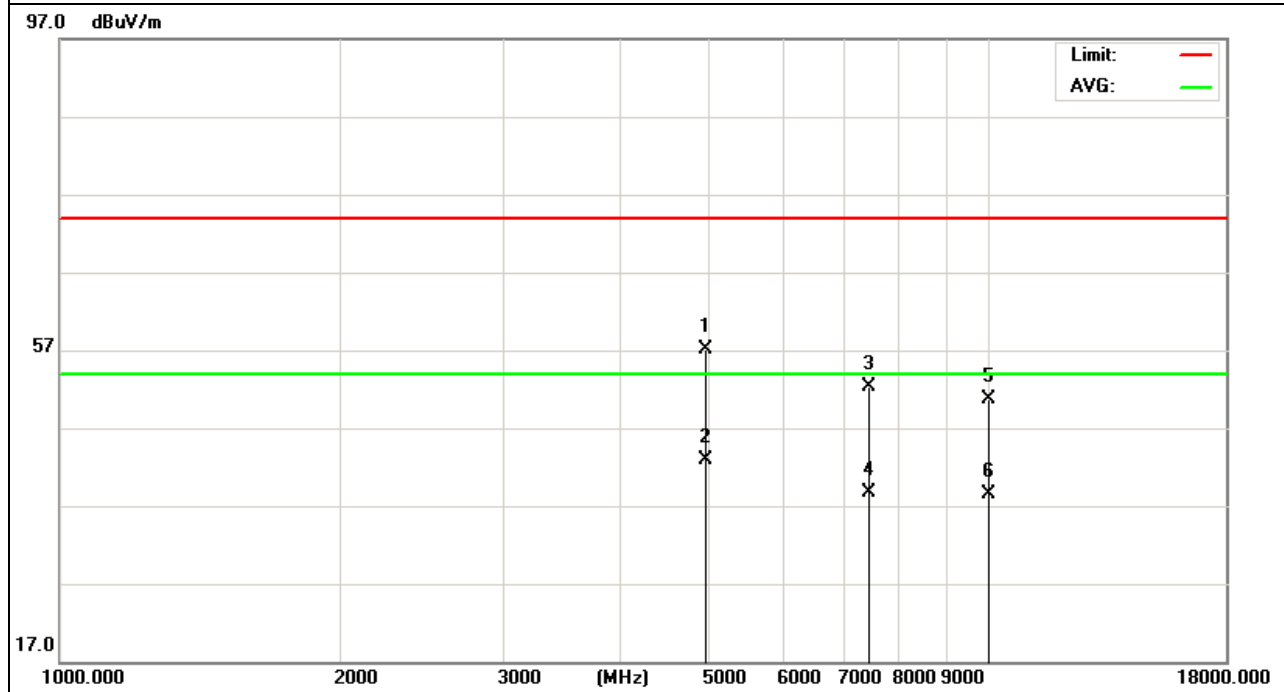


EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	Mode1(2480MHz)	Polarization :	Horizontal
Test Power :	AC 110V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4960.0000	51.79	5.22	57.01	74.00	-16.99	peak
4960.0000	37.63	5.22	42.85	54.00	-11.15	AVG
7440.0000	44.28	8.06	52.34	74.00	-21.66	peak
7440.0000	30.72	8.06	38.78	54.00	-15.22	AVG
9920.0000	38.41	12.29	50.70	74.00	-23.30	peak
9920.0000	26.22	12.29	38.51	54.00	-15.49	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

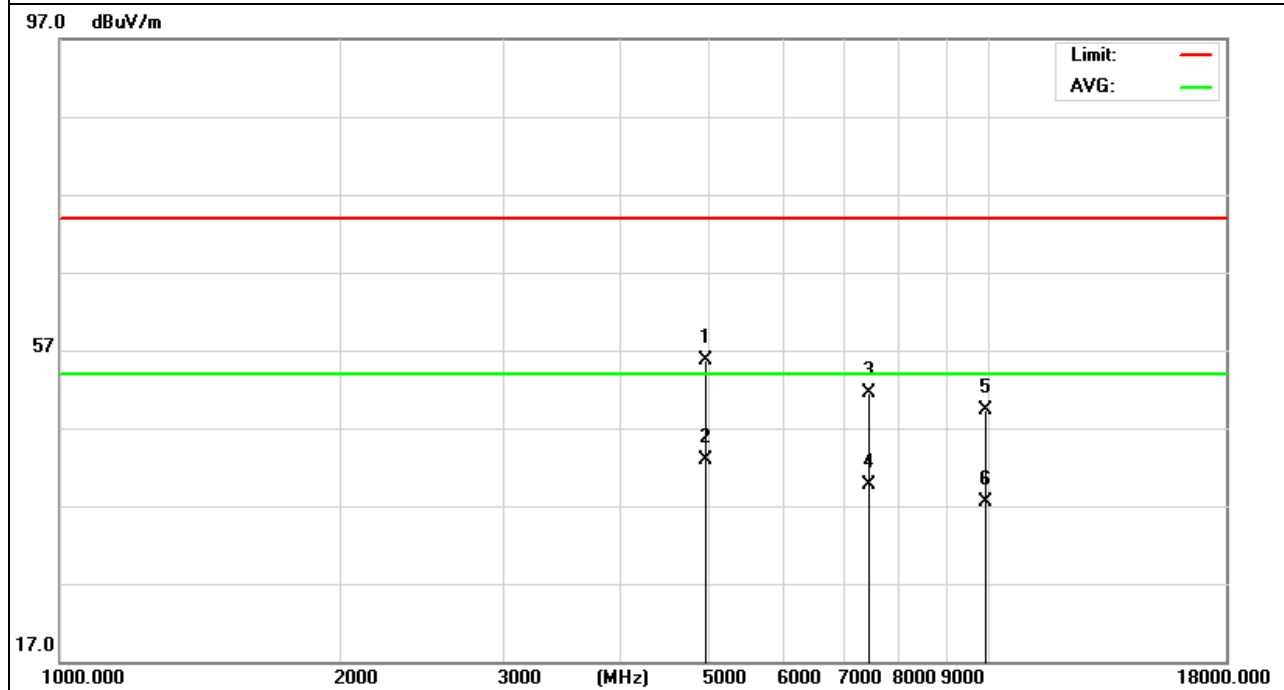


EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2019-04-08
Test Mode :	Mode1(2480MHz)	Polarization :	Vertical
Test Power :	AC 110V/60Hz		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4960.0000	50.52	5.22	55.74	74.00	-18.26	peak
4960.0000	37.68	5.22	42.90	54.00	-11.10	AVG
7440.0000	43.43	8.06	51.49	74.00	-22.51	peak
7440.0000	31.61	8.06	39.67	54.00	-14.33	AVG
9920.0000	37.22	12.29	49.51	74.00	-24.49	peak
9920.0000	25.47	12.29	37.76	54.00	-16.24	AVG

Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



3.2.8 TEST RESULTS (RESTRICTED BANDS REQUIREMENTS)

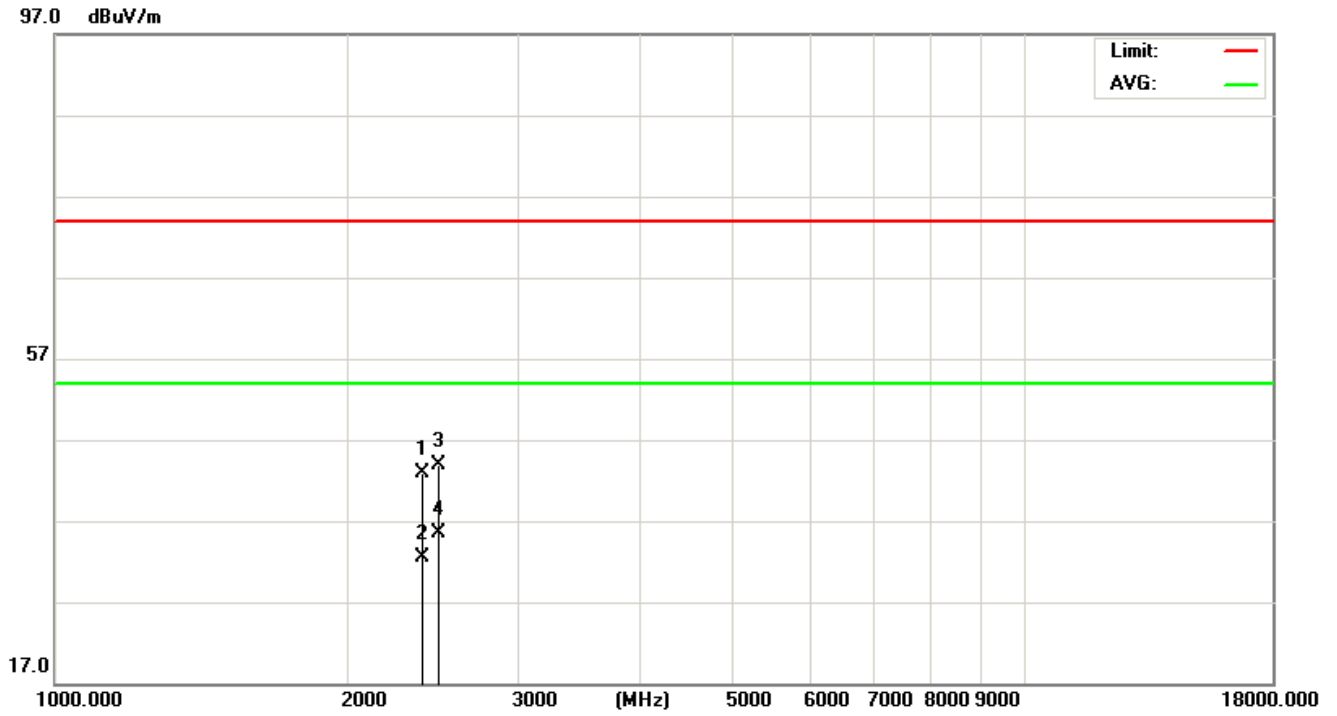
EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Test Data	2019-04-08
Pressure :	1010 hPa	Relative Humidity:	54%
Test Mode :	Mode 1	Test Voltage :	AC 110V/60Hz
Note :	1. The transmitter was setup to transmit at the lowest channel. Then the field strength was measured at 2310-2390 MHz. 2. The transmitter was setup to transmit at the highest channel. Then the field strength was measured at 2483.5-2500 MHz. 3. The data of 2390MHz and 2483.5MHz was the worst.		

Test Mode	Ant.Pol. H/V	Freq. (MHz)	Reading		Ant/CF CF(dB)	Act		Limit	
			Peak (dBuv)	AV (dBuv)		Peak (dBuv/m)	AV (dBuv/m)	Peak (dBuv/m)	AV (dBuv/m)
Mode 1	V	2390.00	48.82	38.58	-5.79	43.03	32.79	74.00	54.00
	H	2390.00	47.19	36.21	-5.79	41.40	30.42	74.00	54.00
	V	2483.50	48.76	40.51	-4.98	43.78	35.53	74.00	54.00
	H	2483.50	46.55	38.73	-4.98	41.57	33.75	74.00	54.00

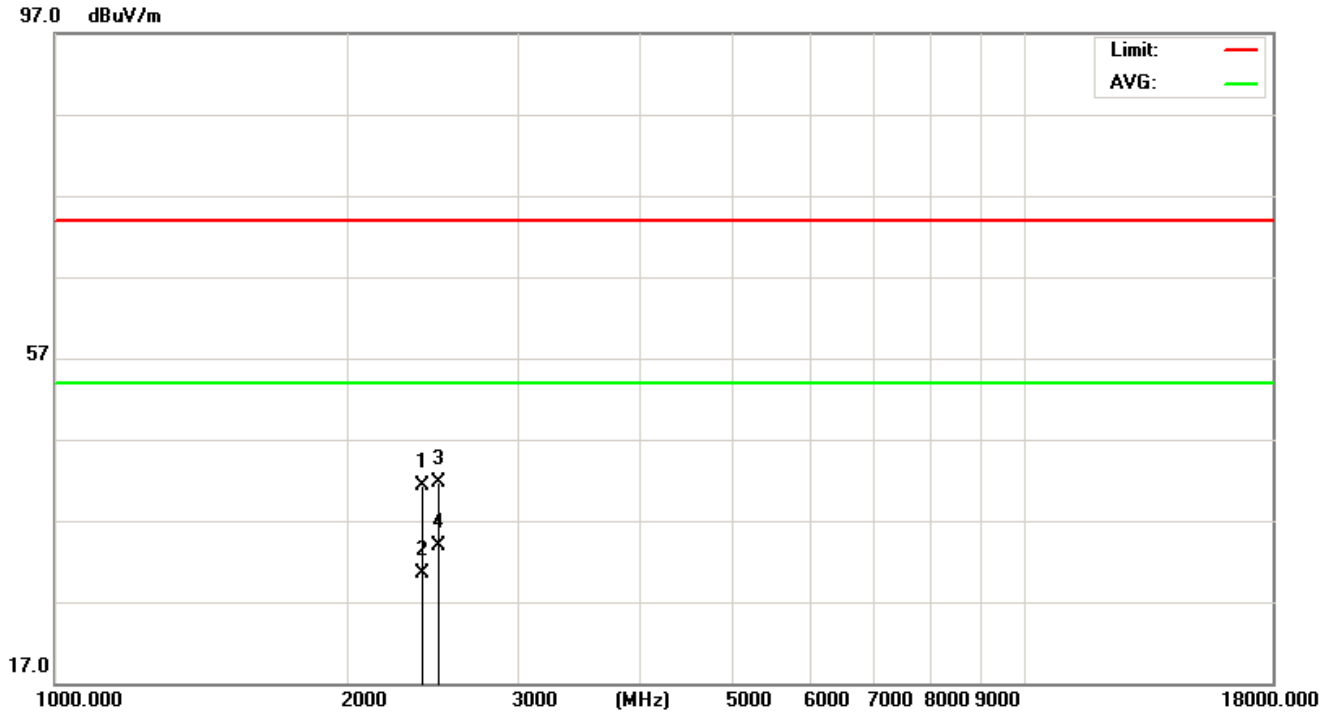
Remark :

- (1) Radiated emissions measured in frequency range above 1000MHz were made with an instrument using Peak detector mode
- (2) 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
- (3) Corr.Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Horizontal



Vertical



Test result: The unit does meet the NCC requirements.

4. OCCUPIED BANDWIDTH TEST

4.1 APPLIED PROCEDURES / LIMIT

LP0002				
Section	Test Item	Limit	Frequency Range (MHz)	Result
3.10.1(6.2.1)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	$>$ Measurement Bandwidth or Channel Separation
RB	100 kHz (6dB Bandwidth) / 100 kHz (Channel Separation)
VB	300 kHz (6dB Bandwidth) / 300 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

4.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting: RBW= 100KHz, VBW=100KHz, Sweep time = Auto.

4.1.2 TEST SETUP



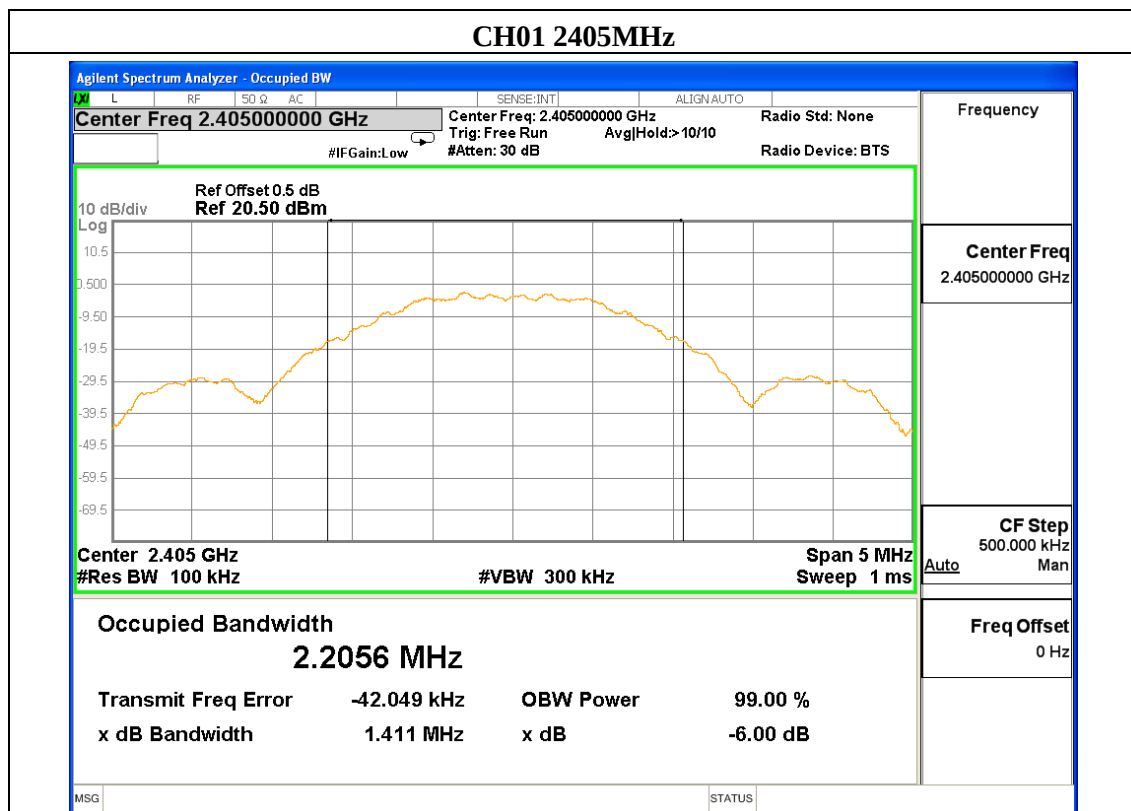
4.1.3 EUT OPERATION CONDITIONS

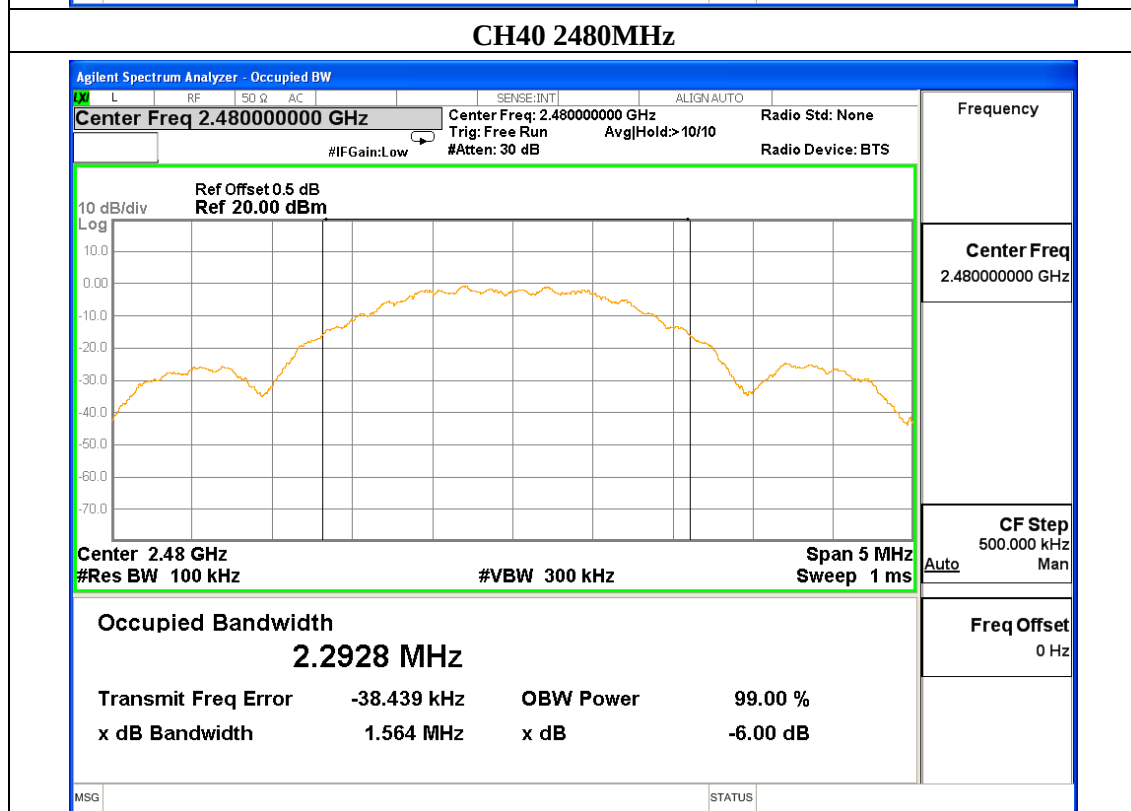
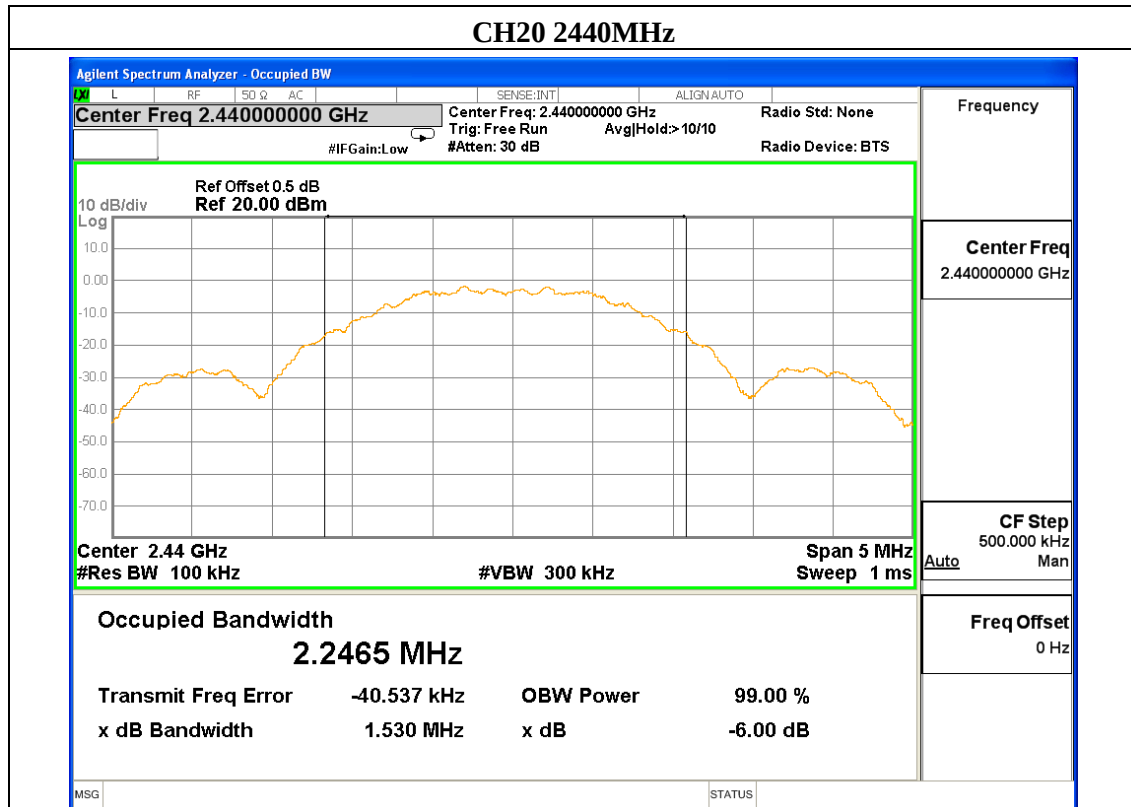
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.1.4 TEST RESULTS

EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	53%
Pressure :	1010 hPa	Test Power :	AC 110V/60Hz
Test Mode :	Mode 1		

Test Mode	Test Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (kHz)
Mode 1	CH01	2405	2.2056	≥ 500
	CH20	2440	2.2465	≥ 500
	CH40	2480	2.2928	≥ 500





5. POWER DENSITY

5.1 APPLIED PROCEDURES / LIMIT

LP0002				
Section	Test Item	Limit	Frequency Range (MHz)	Result
3.10.1(6.2.2)	Power density	8dBm	2400-2483.5	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	> Operating Frequency Range
RB	3 kHz
VB	10 kHz
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

5.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 3KHz, VBW=10KHz.

5.1.2 TEST SETUP



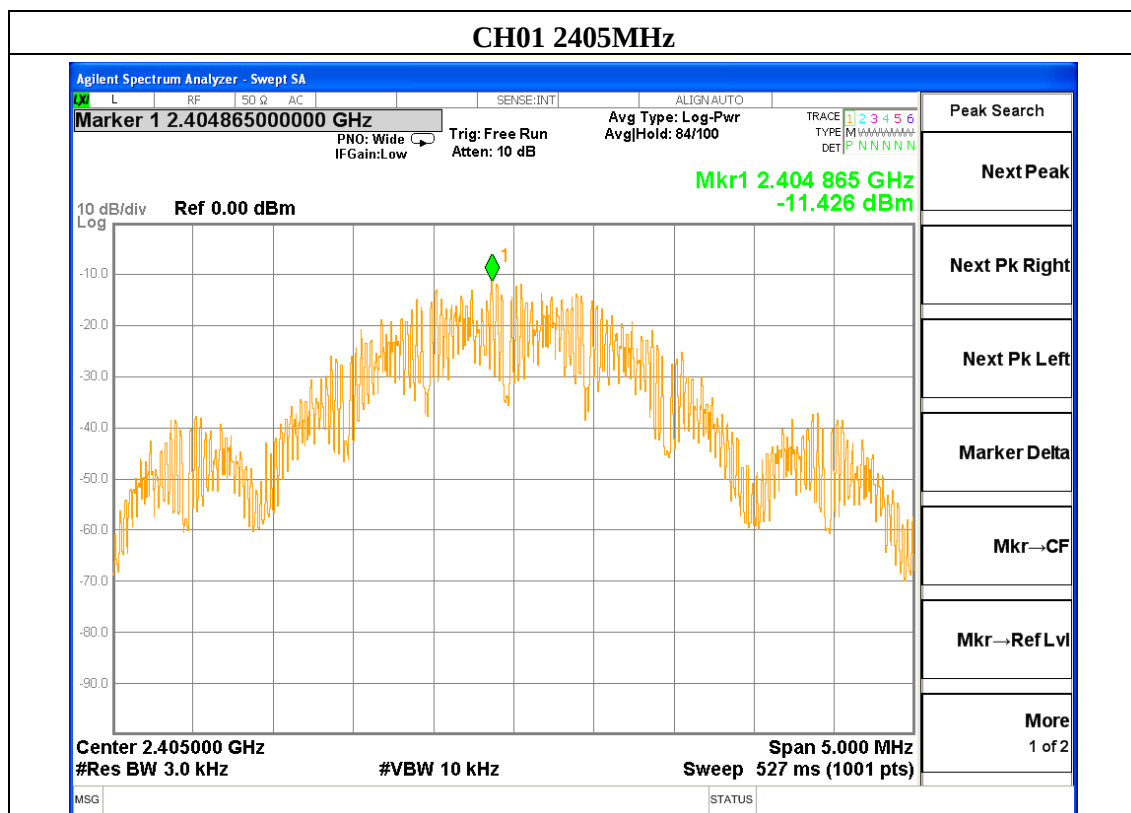
5.1.3 EUT OPERATION CONDITIONS

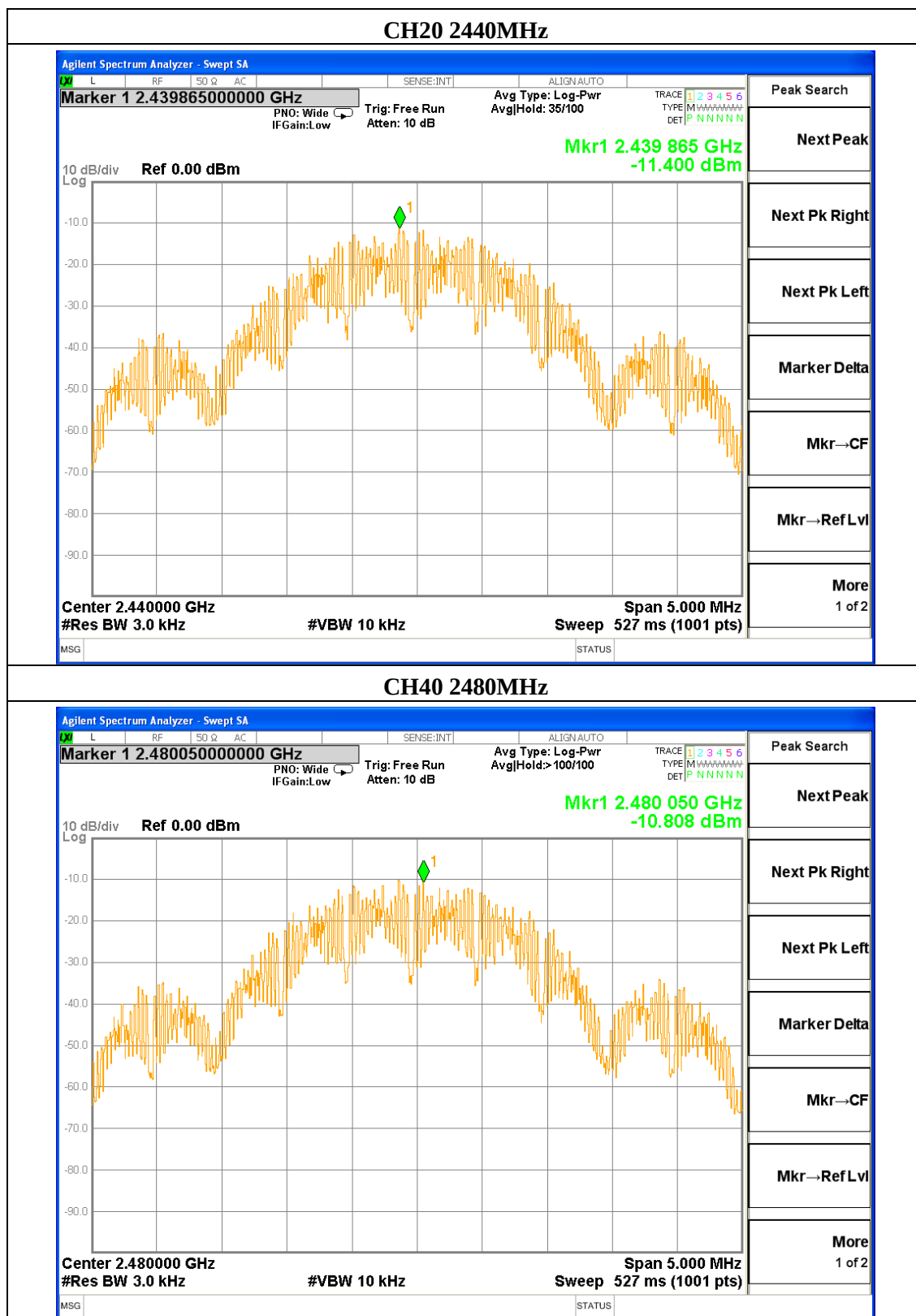
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

5.1.4 TEST RESULTS

EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	53%
Pressure :	1010 hPa	Test Voltage :	AC 110V/60Hz
Test Mode :	Mode 1		

Test Channel	Frequency(MHz)	Power Density(dBm)	LIMIT(dBm)
CH01	2405 MHz	-11.426	8.00
CH20	2440 MHz	-11.400	8.00
CH40	2480 MHz	-10.808	8.00




CH40 2480MHz

Agilent Spectrum Analyzer - Swept SA

Marker 1 2.480050000000 GHz

PN0: Wide IFGain: Low

Trig: Free Run Atten: 10 dB

Avg Type: Log-Pwr AvgHold: 100/100

TRACE 1 2 3 4 5 6

TYPE M M M M M M M M

DET P N N N N N

Mkr1 2.480 050 GHz

-10.808 dBm

10 dB/div Ref 0.00 dBm

Log

Center 2.480000 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 5.000 MHz Sweep 527 ms (1001 pts)

MSG

STATUS

Peak Search

Next Peak

Next Pk Right

Next Pk Left

Marker Delta

Mkr→CF

Mkr→Ref Lvl

More 1 of 2

6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

LP0002				
Section	Test Item	Limit	Frequency Range (MHz)	Result
3.10.1(2)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

- a. The EUT was directly connected to the Power Sensor&PC

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION 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.

6.1.5 TEST RESULTS

EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	26 °C	Relative Humidity :	53%
Pressure :	1010 hPa	Test Voltage :	AC 110V/60Hz
Test Mode :	Mode 1		

Test Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit(dBm)	Result
CH01	2405 MHz	0.79	30	PASS
CH20	2440 MHz	1.32	30	PASS
CH40	2480 MHz	1.45	30	PASS

7. ANTENNA CONDUCTED SPURIOUS EMISSION

7.1 APPLIED PROCEDURES / LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the modulation products of the spreading sequence, the information sequence and the carrier frequency shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power or shall not exceed the general levels specified in Section 2.8.

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

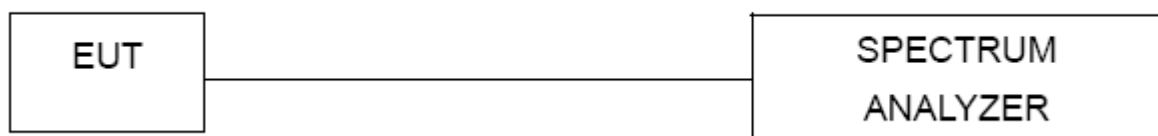
The following table is the setting of the spectrum analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	100 MHz
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 10Hz for Average
RB / VB (other emission)	100 KHz /300 KHz for Peak

7.1.1 TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=300KHz, Sweep time = Auto.

7.1.2 TEST SETUP



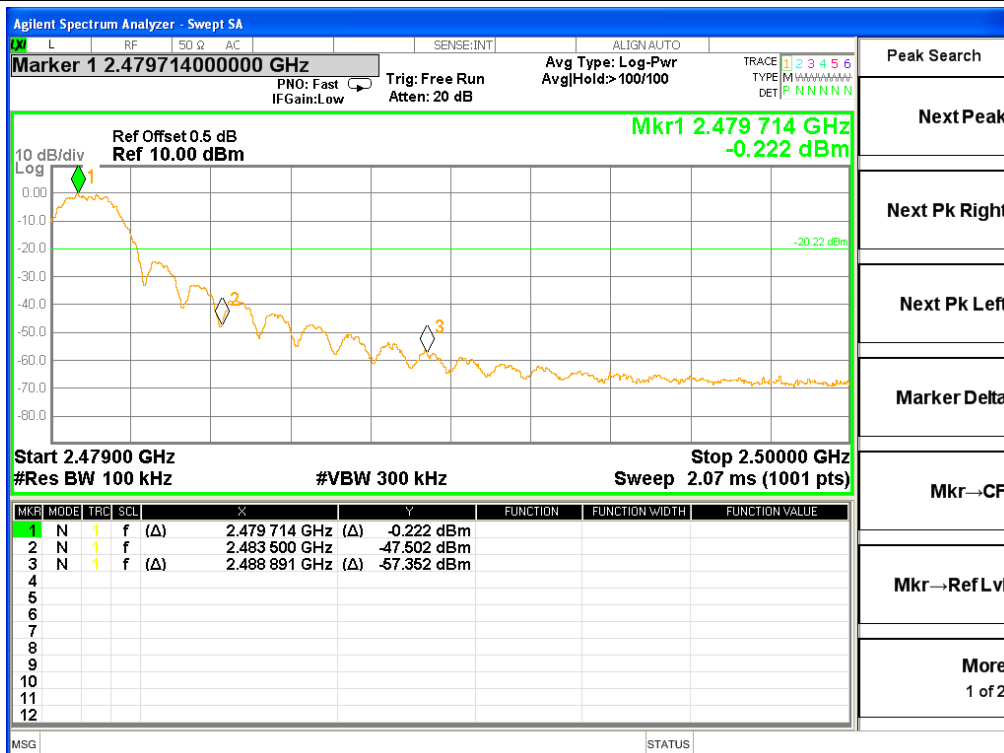
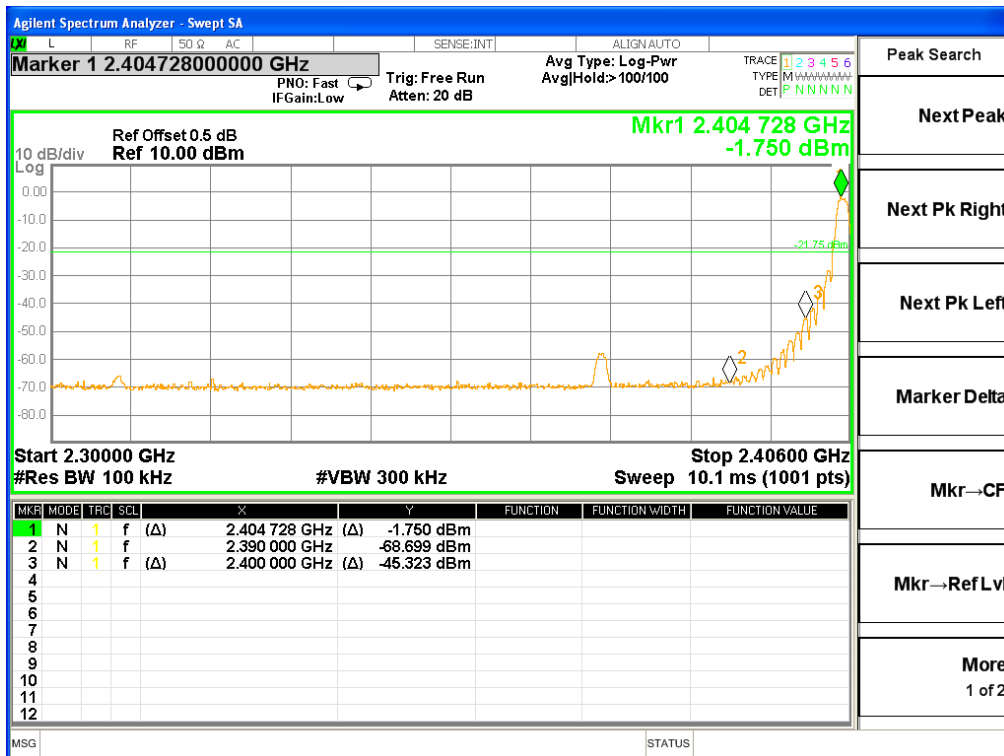
7.1.3 EUT OPERATION CONDITIONS

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.

7.1.4 TEST RESULTS

EUT :	無線電錶	Model Name :	A9MEM1570
Temperature :	25 °C	Relative Humidity :	53%
Pressure :	1010 hPa	Test Voltage :	AC 110V/60Hz
Test Mode:	Mode 1		

in any 100kHz bandwidth outside the low frequency band	in any 100 kHz bandwidth outside the high frequency band
Pass	Pass
Result	
In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.	



8. ANTENNA REQUIREMENT

8.1 STANDARD REQUIREMENT

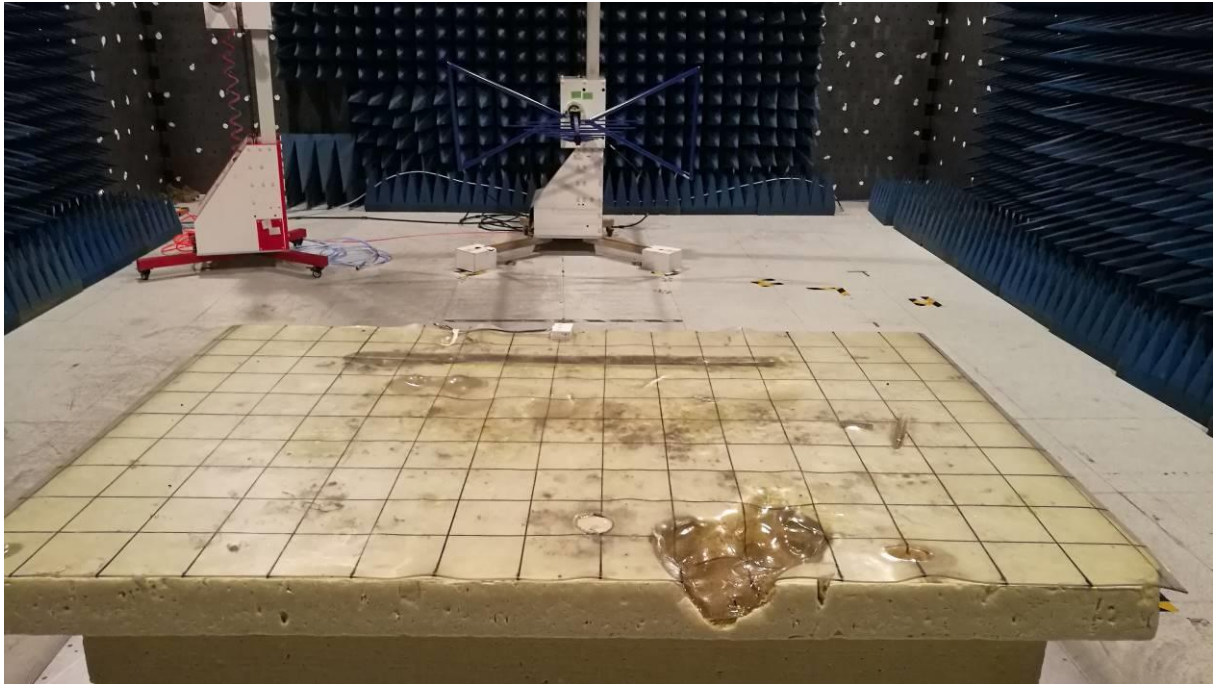
3.10.3.1.1 requirement: Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

8.2 EUT ANTENNA

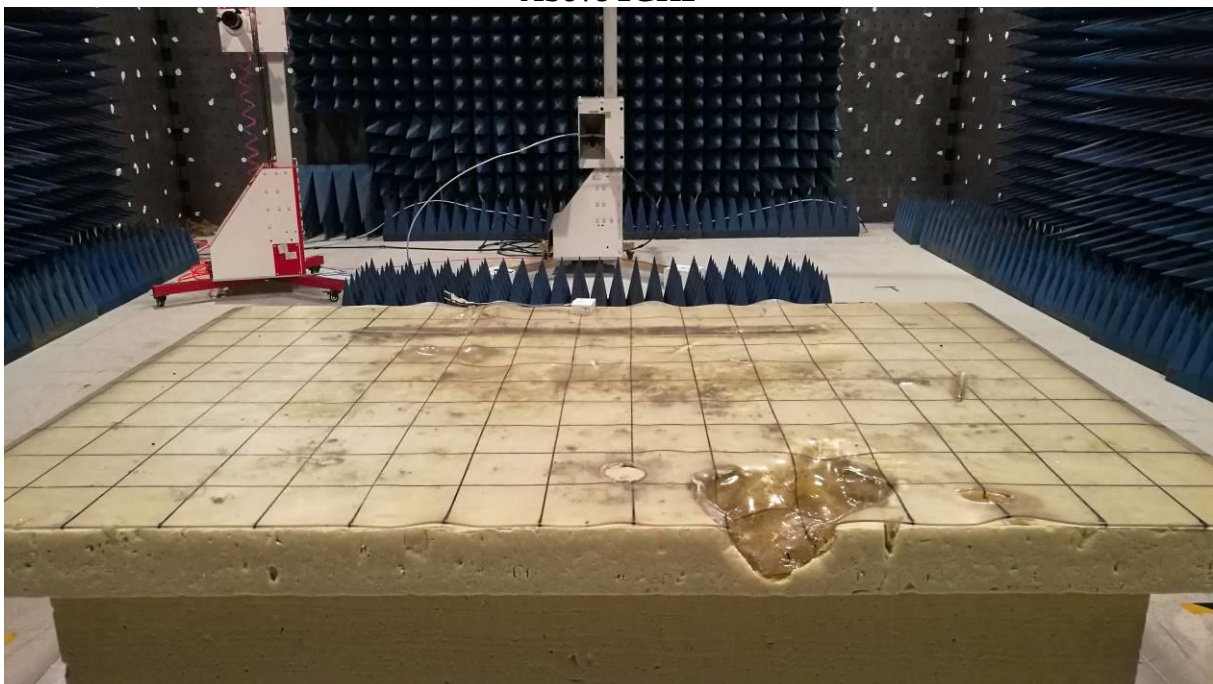
The antenna is an PCB antenna and no consideration of replacement. It comply with the standard requirement.

9. EUT TEST PHOTO

**Radiated Measurement Photos
30MHz-1GHz**



**Radiated Measurement Photos
Above 1GHz**



Conducted Measurement Photos