Spectrum Research & Testing Lab., Inc. No. 101-10, Ling 8, Shan-Tong Li, Chung-Li City, Taoyuan, Taiwan	**TEST REPORT**	Reference No.: A13062001 Report No.: FCC A13062001 FCC ID : NDAA07TCPU Page: 1 of 49 Date: Aug. 31, 2013

Product Name:	ALL-In-One Transmitter
Model No.:	A07 TCP/A07CP/A07C
Applicant:	Rm 1,3rd Fl.,No.77,Sec.1,Hsin Tai Wu Rd.,Hsi-Chih Dist,New Taipei City,Taiwan,R.O.C.221
Date of Receipt:	JUL. 05, 2013
Finished date of Test:	Aug. 30, 2013
Applicable Standards:	47 CFR Part 90 ANSI C63.4: 2009 TIA/EIA 603

We, **Spectrum Research & Testing Laboratory Inc.**, hereby certify that one sample of the above was tested in our laboratory with positive results according to the above-mentioned standards. The records in the report are an accurate account of the results. Details of the results are given in the subsequent pages of this report.

Tested By : _____ (Chi Wu) , Date: 2013/8/31

Approved By : _____ (Johnson Ho, Director) , Date: 8/31/2013

Testing Laboratory 1016

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1. DOCUMENT POLICY AND TEST STATEMENT

1.1 DOCUMENT POLICY

The report shall not be reproduced except in full, without the written approval of SRT Lab, Inc.

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

1.2 TEST STATEMENT

The test results in the report apply only to the unit tested by SRT Lab.

There was no deviation from the requirements of test standards during the test.

DC 12.0 V, 1A Power Source form AC Adapter USB Port, Ethernet Port, was used during the test.

1.3 EUT MODIFICATION

No modification in SRT Lab.

2. DESCRIPTION OF EUT AND TEST MODE

2.1 GENERAL DESCRIPTION OF EUT

Product	All-In-One Transmitter
Model No.	A07TCP/A07CP/A07C
Power Supply	DC 12.0V, 1A Power Source form AC Adapter STD-12012U2
Frequency Band	450- 454 MHz ,456- 470 MHz
Channel Spacing	12.5/25KHZ
Rated RF Output Power	29.98dBm(995mW)
Modulation Type	FSK
Mode of Operation	Simplex
Antenna Gain	0dBi
Antenna Type	Omni Antenna
Carrier Frequency	450- 454 MHz ,456- 470 MHz

NOTE：For more detailed information, please refer to the EUT's specification or user's manual provided by manufacturer.

2.2 DESCRIPTION OF EUT INTERNAL DEVICE

2.3 EUT OPERATING CONDITION

1. Setup the EUT and all peripheral devices.
2. Turn on the power of all equipment and EUT.
3. Set the EUT under continuous transmission condition, standby mode.

2.4 DESCRIPTION OF TEST MODE

Three channels of lower, medium and higher were chosen for test.

Mode	Frequency (MHz)
TX1	450MHZ
TX2	470MHZ
LINK	N/A
STANDBY	N/A

2.5 DESCRIPTION OF SUPPORT UNIT

The EUT was configured by the requirement All interface ports were connected to the appropriate support units via specific cables. The support units and cables are listed below.

NO	DEVICE	BRAND	MODEL #	FCC ID/DoC	CABLE
1	USB CABLE	N/A	N/A	N/A	1.8m unshielded power cable
2	Ethernet CABLE	N/A	N/A	N/A	1.6m unshielded data cable

3. DESCRIPTION OF APPLIED STANDARDS

The EUT is a wireless product. According to the specifications provided by the applicant, it must comply with the requirements of the following standards:

FCC Parts 2 and 90

TIA-603

All tests have been performed and recorded as the above standards.

3.1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications：

STANDARD SECTION	TEST TYPE AND LIMIT RESULTS	RESULTS
Part 2.1046, 90.205	RF Power Output	PASS
Part 90.213 & 2.1055	Frequency Stability	PASS
Part 90.214	Transient Frequency Behavior	PASS
Part 90.210 &2.1049	Emission Limitation & Occupied Bandwidth	PASS
Part 90,210	Field Strength of Spurious Radiation	PASS
PART 2.1047	Modulation Characteristics	PASS
Part 2.1051, 90.210	Spurious Emissions at Antenna Terminals	PASS

NOTE: The radiated emission testing was performed according to the procedures of ANSI C 63.4:2009; TIA/EIA 603.

4. EMISSIONS DESIGNATOR

Referencing Part 2.201 and 2.202 of the FCC Rules and Regulation and using the following formula the Emissions Designator(s) and Necessary Bandwidths were calculated.

Necessary Bandwidth:
B = 2M + 2DK
Frequency deviation (D) = 2.5 KHz to 4.5 KHz
Baud rate = 1200 baud
M = Baud / 2 = 1200 / 2 = 600
D = 2.5 KHz or 4.5 KHz and using K = 1
For the 2.5 KHz deviation:
B = 2 (600) + (2) (2500) (1) = 6200, so Emissions Designator = 6K20F1D
For the 4.5 KHz deviation:
B = 2 (600) + (2) (4500) (1) = 10200, so Emissions Designator = 10K2F1D

5. MODULATION CHARACTERISTICS: (PART 2.1047)

The device is set to 4.5KHz deviation as default value. It can be tuned up down to a 2.5KHz deviation. To Tuned up can not be made by end user. The procedure to tune up was attached when this application was submitted. Also, the modulation description as Section 2.1033(C)(13) requested was attached.

6. RF POWER OUTPUT (PART 2.1046, 90.205)

6.1 TEST PROCEDURE:

(1) Antenna was replaced with a short connector which was connected with an attenuator.

(2) The spectrum offset was adjusted to compensate the attenuator and losses caused by the connection.

6.2 TEST EQUIPMENT:

The following test equipment was used during the test：

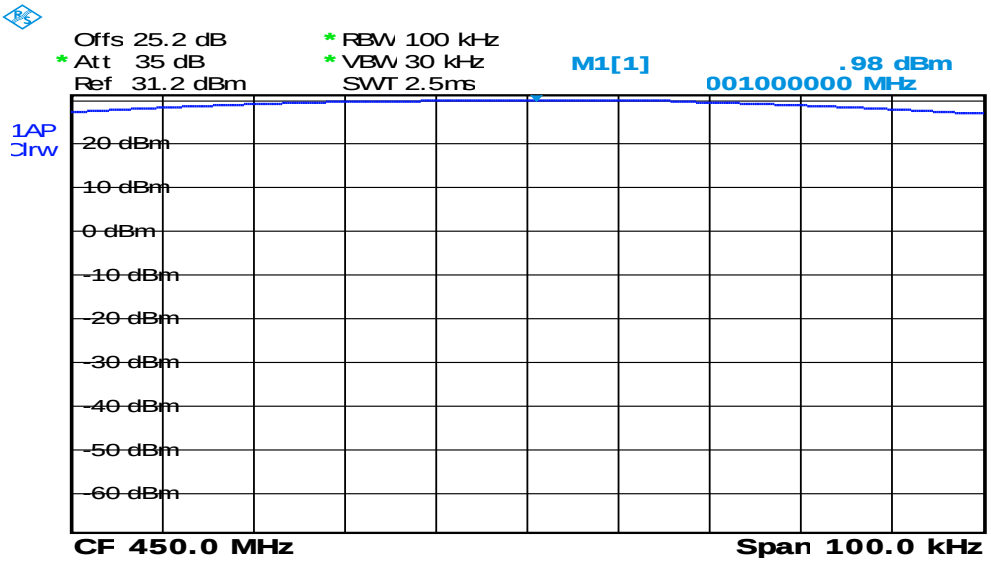
EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
EMITEST RECEIVER (INCLUDE SPECTRUM ANALYZER)	9 KHz ~ 6 GHz	ROHDE & SCHWARZ	ESL /100176	MAR. 28, 2014 ETC

NOTE：The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

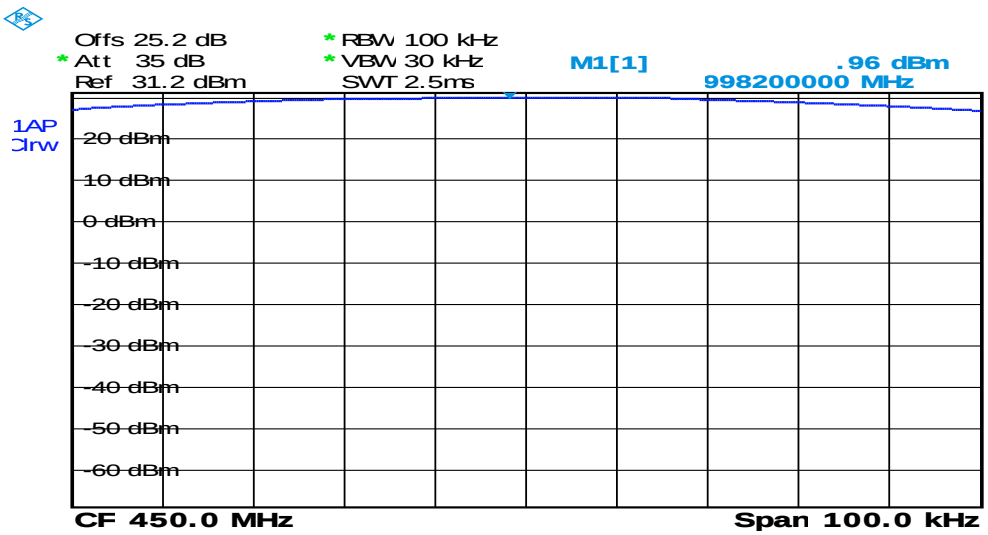
6.3 TEST RESULT:

Frequency (MHz)	Output power (dBm)	Power (mW)	Deviation
450.0000	29.98	995	4.5KHz
450.0000	29.96	990	2.5KHz

4.5KHz

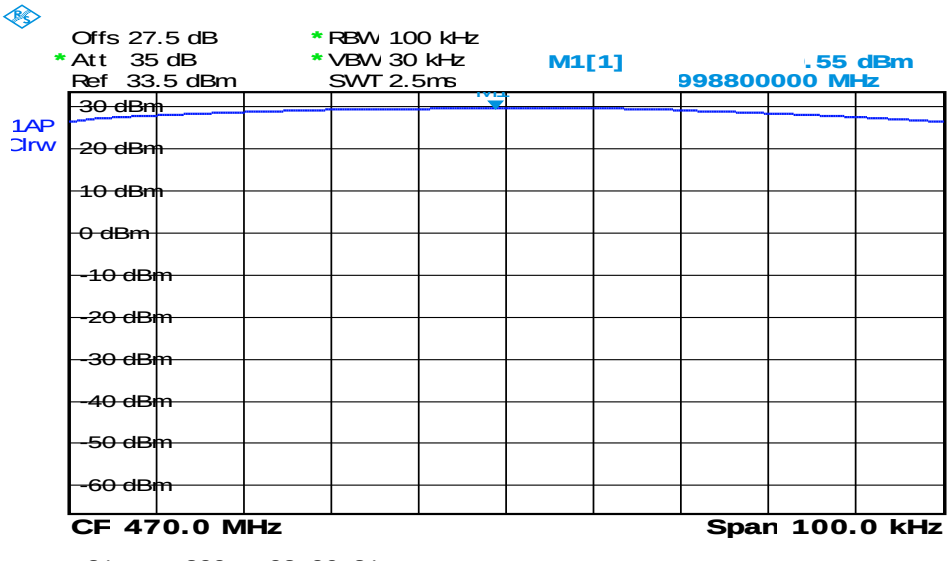


2.5KHz

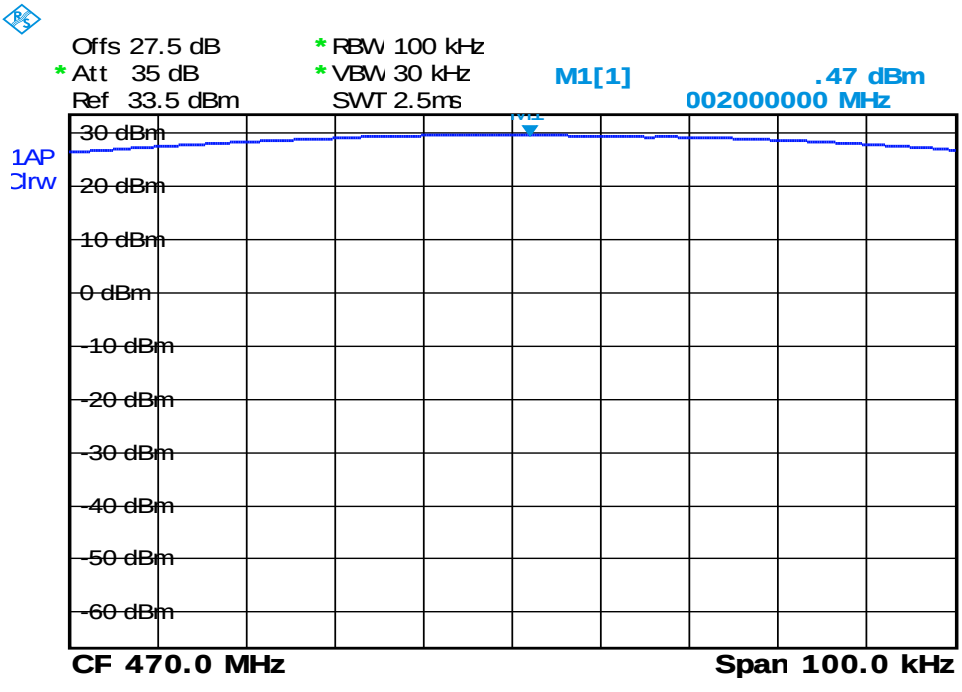


Frequency (MHz)	Output power (dBm)	Power (mW)	Deviation
470.0000	29.55	901	4.5KHz
470.0000	29.47	885	2.5KHz

4.5KHz



2.5KHz



7. OCCUPIED BANDWIDTH: (PART 2.1049)

7.1 TEST PROCEDURE:

(1) Set the ref level to the RF power output.

(2) Connect the EUT as procedure 4.1 (1) (2)

(3) Set the EUT at modulation mode.

7.2 TEST EQUIPMENT:

The following test equipment was used during the test：

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE oF CAL. & CAL. CENTER
EMITEST RECEIVER (INCLUDE SPECTRUM ANALYZER)	9 KHz ~ 6 GHz	ROHDE & SCHWARZ	ESL /100176	MAR. 28, 2014 ETC

NOTE：The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

7.3 LIMIT:

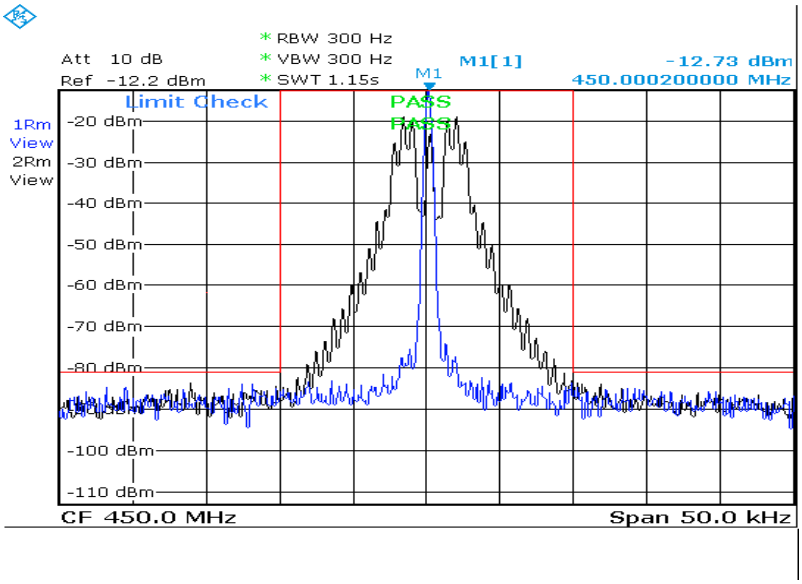
Emissions shall be attenuated below the mean output power of the transmitter as follows:

Frequency Range (MHz)	Maximum Authorized BW (KHz)	Channel Spacing (KHz)	Recommended Frequency Deviation (KHz)	FCC Applicable Mask
450,470	20.0	25	4.5	Mask G – Data
450,470	11.25	12.5	2.5	Mask G – Data

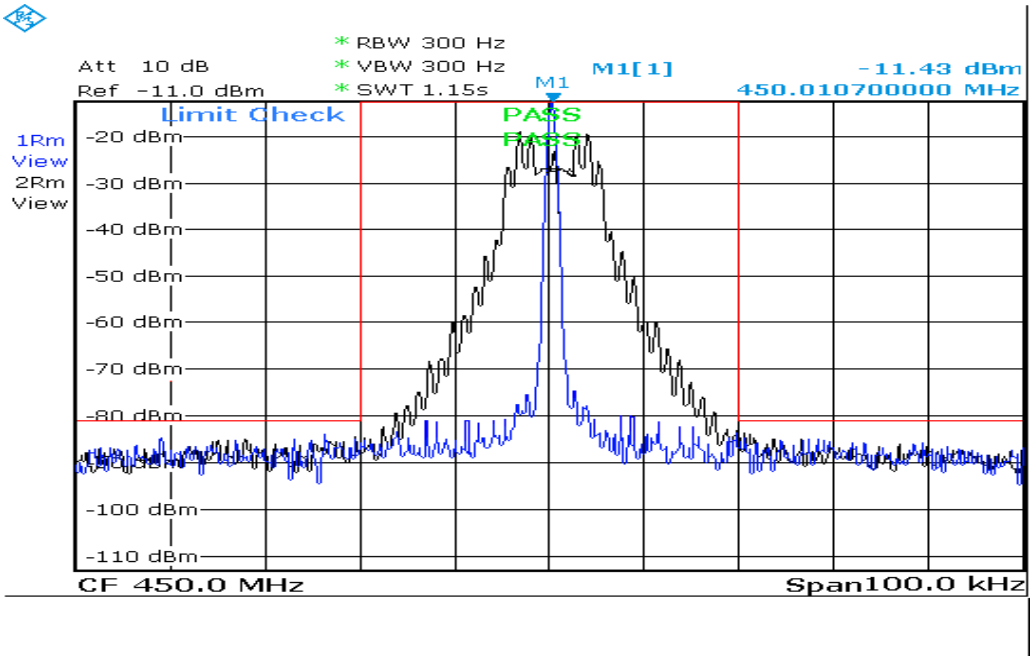
7.4 TEST RESULT:

Frequency (MHz)	Output power (dBm)	Limit (KHz)	Deviation
450.0000	Under limit	25.0	4.5KHz
450.0000	Under limit	12.5	2.5KHz

2.5KHz

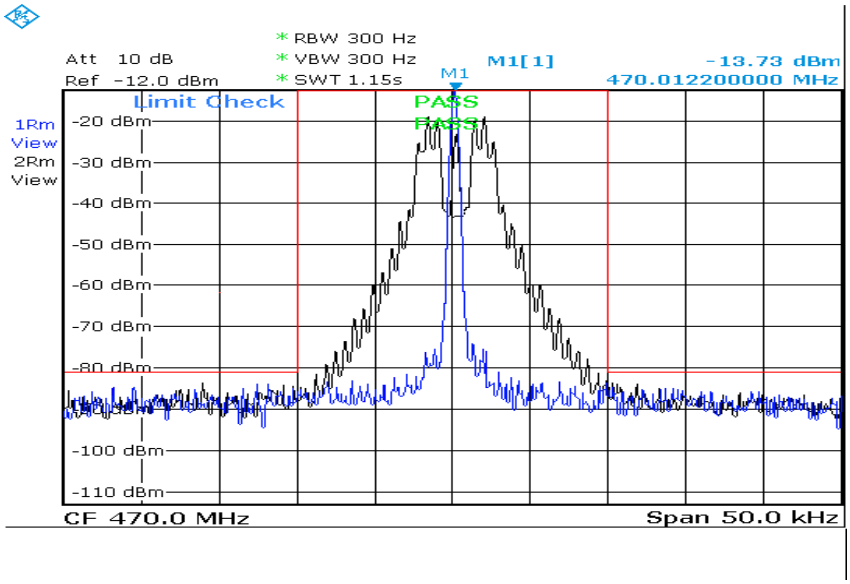


4.5KHz

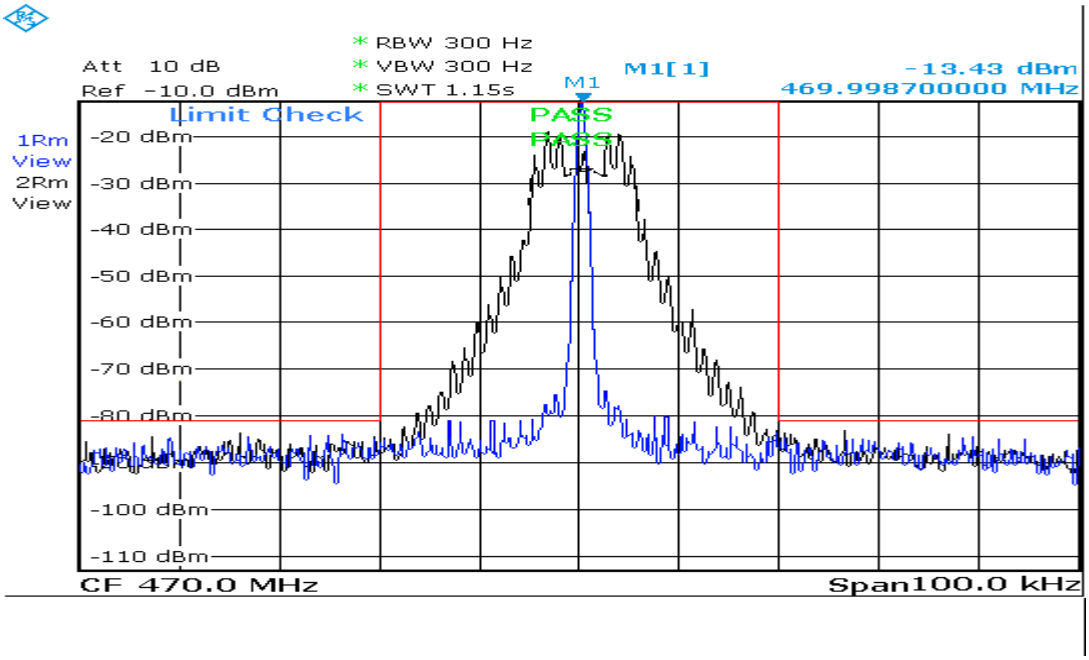


Frequency (MHz)	Output power (dBm)	Limit (KHz)	Deviation
470.0000	Under limit	25.0	4.5KHz
470.0000	Under limit	12.5	2.5KHz

2.5KHz

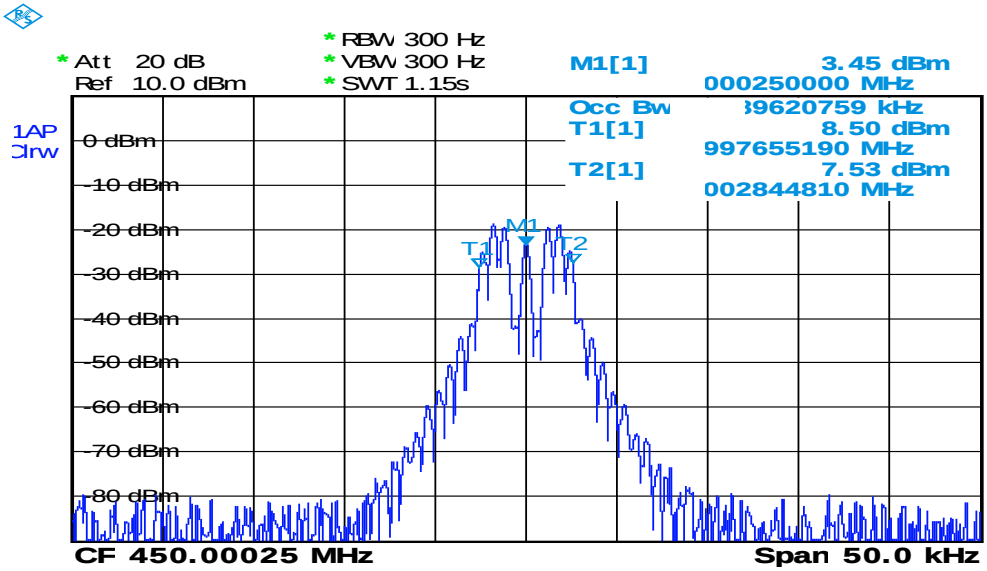


4.5KHz

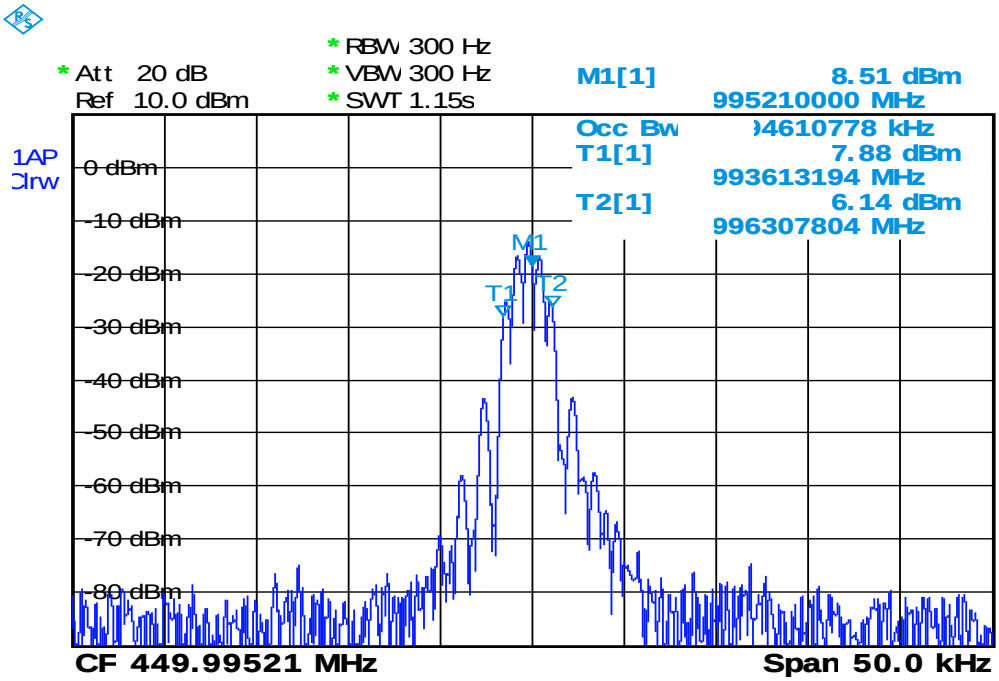


Frequency (MHz)	Output power (dBm)	99% Bandwidth	Limit (KHz)	Deviation
450.0000	Under limit	5.100KHz	20.00	4.5KHz
450.0000	Under limit	2.694KHz	11.25	2.5KHz

4.5KHz

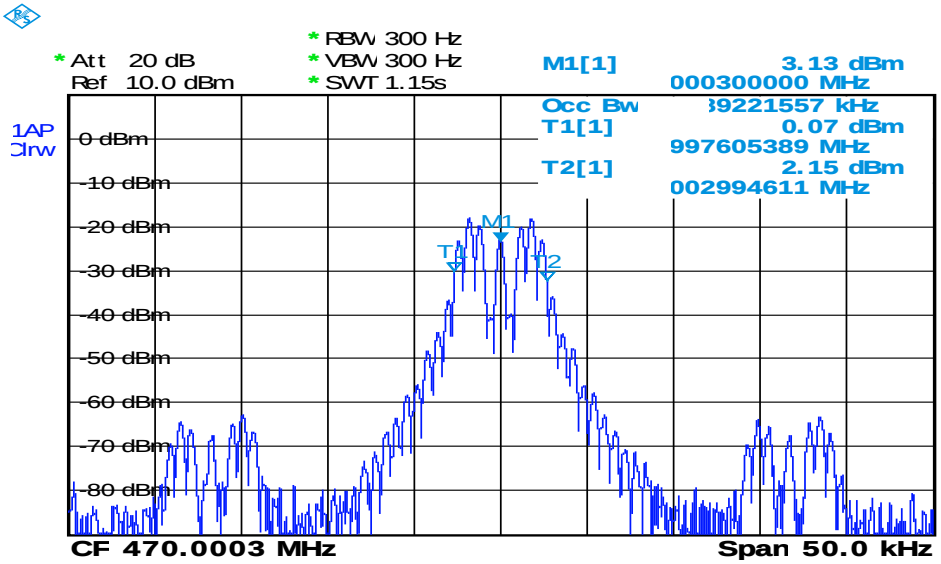


2.5KHz

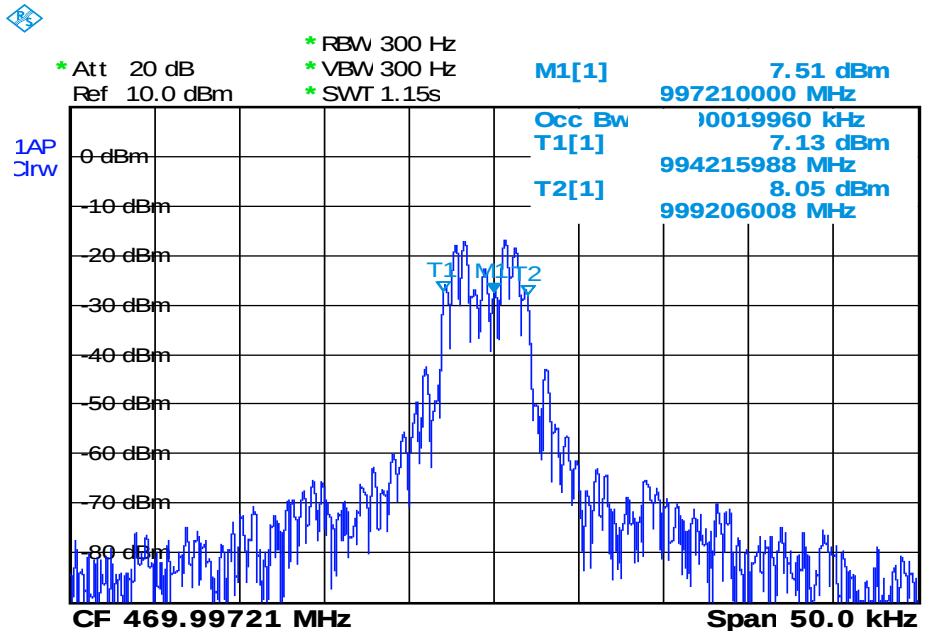


Frequency (MHz)	Output power (dBm)	99% Bandwidth	Limit (KHz)	Deviation
470.0000	Under limit	5.389KHz	20.00	4.5KHz
470.0000	Under limit	4.990KHz	11.25	2.5KHz

4.5KHz

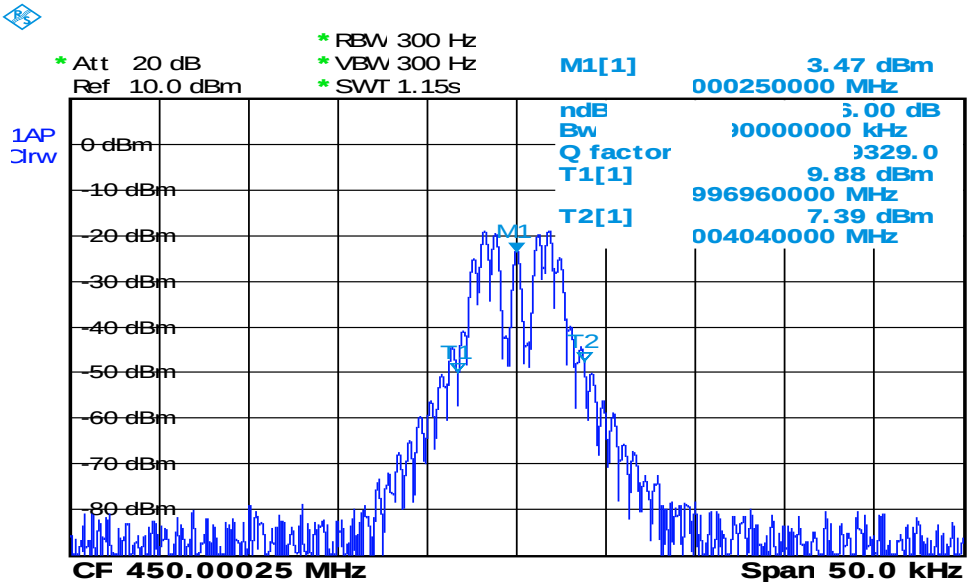


2.5KHz

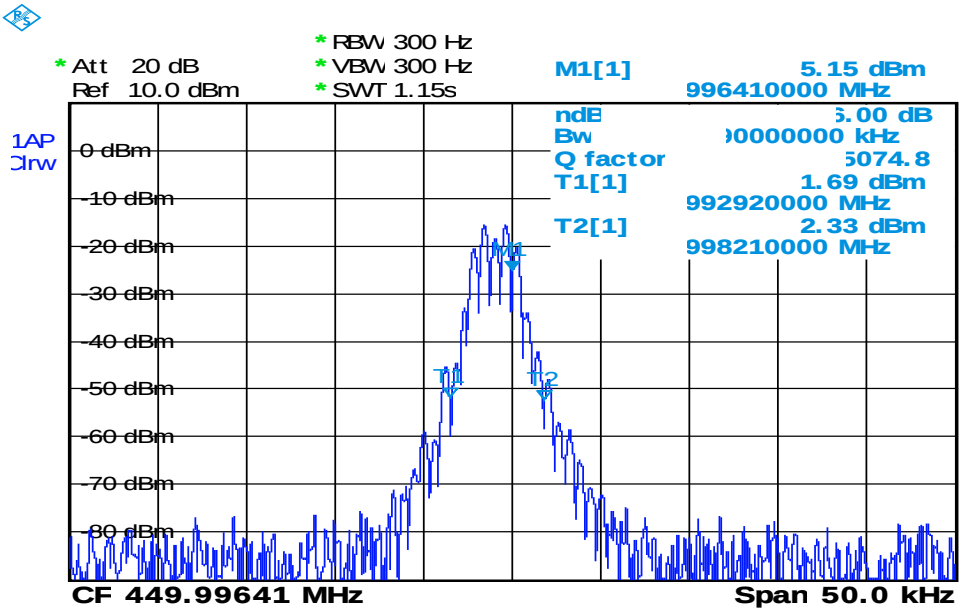


Frequency (MHz)	Output power (dBm)	26dB Bandwidth	Limit (KHz)	Deviation
450.0000	Under limit	7.090KHz	20.00	4.5KHz
450.0000	Under limit	5.200KHz	11.25	2.5KHz

4.5KHz

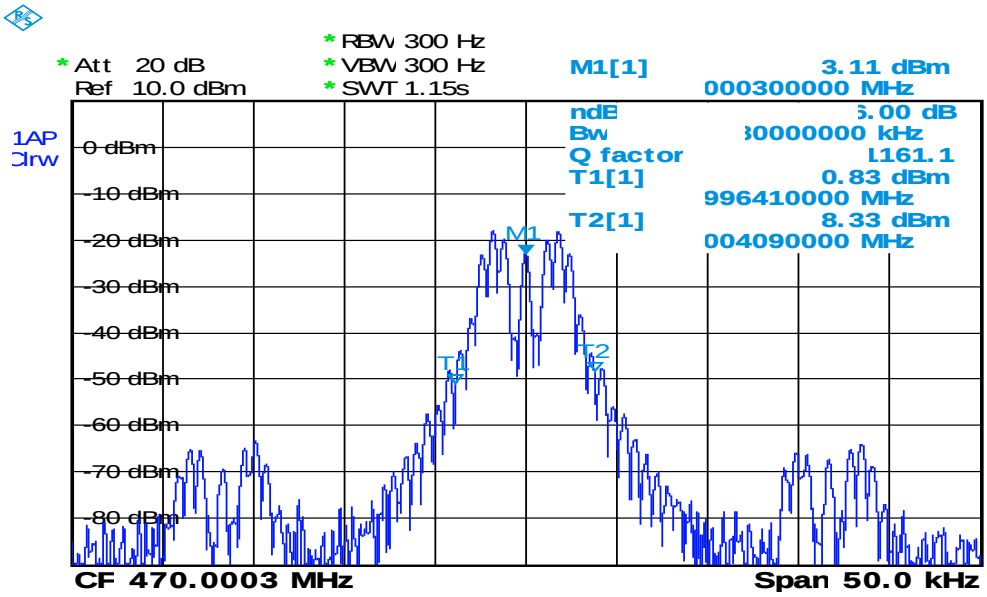


2.5KHz

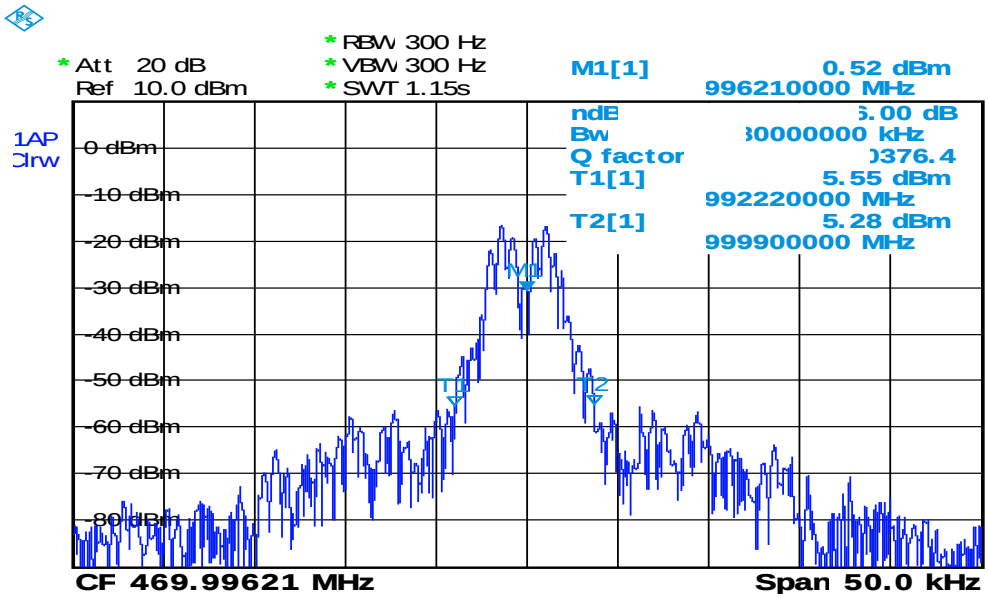


Frequency (MHz)	Output power (dBm)	26dB Bandwidth	Limit (KHz)	Deviation
470.0000	Under limit	7.68KHz	20.00	4.5KHz
470.0000	Under limit	7.68KHz	11.25	2.5KHz

4.5KHz



2.5KHz



8. TRANSIENT FREQUENCY BEHAVIOR (PART 90.214)

8.1 TEST PROCEDURE:

(1) Set-up followed by TIA/EIA 603. Section 1.2.19

(2) Use the EUT 1 with BW 25KHz and let it be unmodulated.

(3) Turn on the EUT and Record the plot.

(4) Turn off the EUT and Record the plot.

(5) Let the EUT modulated and repeat step (3) (4).

(6) Use the EUT 2 with BW 12.5KHz, repeat step (3) ~ (5).

8.2 TEST RESULT:

Deviation / Time Intervals		4.5KHz		2.5KHz	
		Max Frequency Difference	Result	Max Frequency Difference	Result
t1	10ms	±25.0KHz	Pass	±12.5KHz	Pass
t2	25ms	±12.5KHz	Pass	±6.25KHz	Pass
t3	10ms	±25.0KHz	Pass	±12.5KHz	Pass

8.3 TEST EQUIPMENT:

The following test equipment was used during the test：

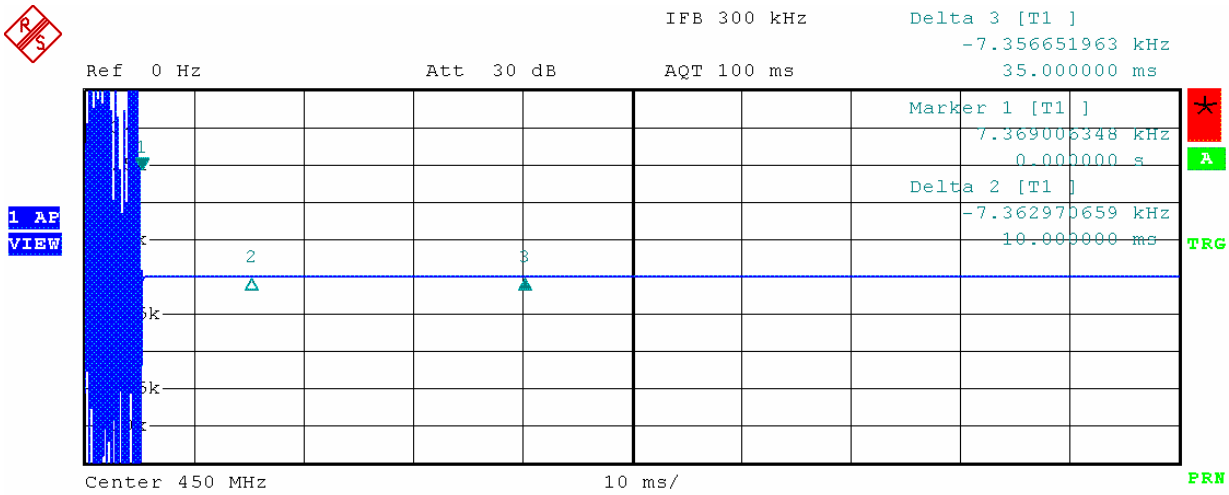
EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE oF CAL. & CAL. CENTER
Signal Generator	100 KHz ~ 1 GHz	HP	3636A02776	SEP. 18, 2013 ETC
EMITEST RECEIVER (INCLUDE SPECTRUM ANALYZER)	9 KHz ~ 6 GHz	ROHDE & SCHWARZ	ESL /100176	MAR. 28, 2014 ETC
Oscilloscope	500Mhz	HP	US39150351	NOV. 16, 2013 ETC

NOTE：The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

8.4 Test result

8.4.1 Keying criteria when the transmitter output power is switched on

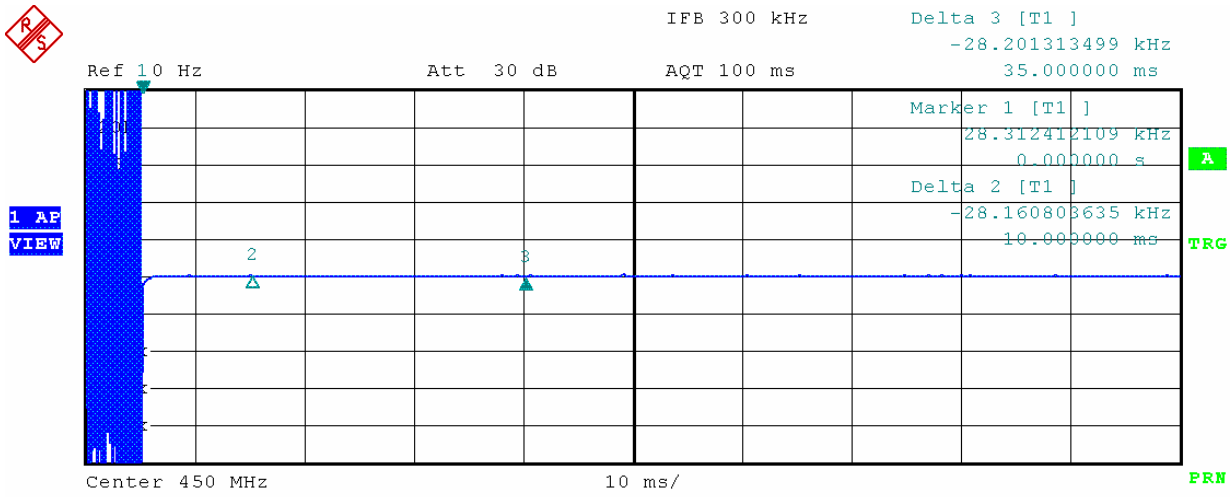
450MHZ-12.5K



Frequency Modulation Summary

Coupling	DC		Carrier Offset	-11.096 Hz
Deviation	+peak	22.70 kHz	Carrier Power	-11.13 dBm
	-peak	-27.04 kHz	Modulation Frequency	--- Hz
	±peak/2	24.87 kHz	Sampling Rate	31.25 kHz
	RMS	2.280 kHz	Record Length	3126
			Demod Bandwidth	25 kHz

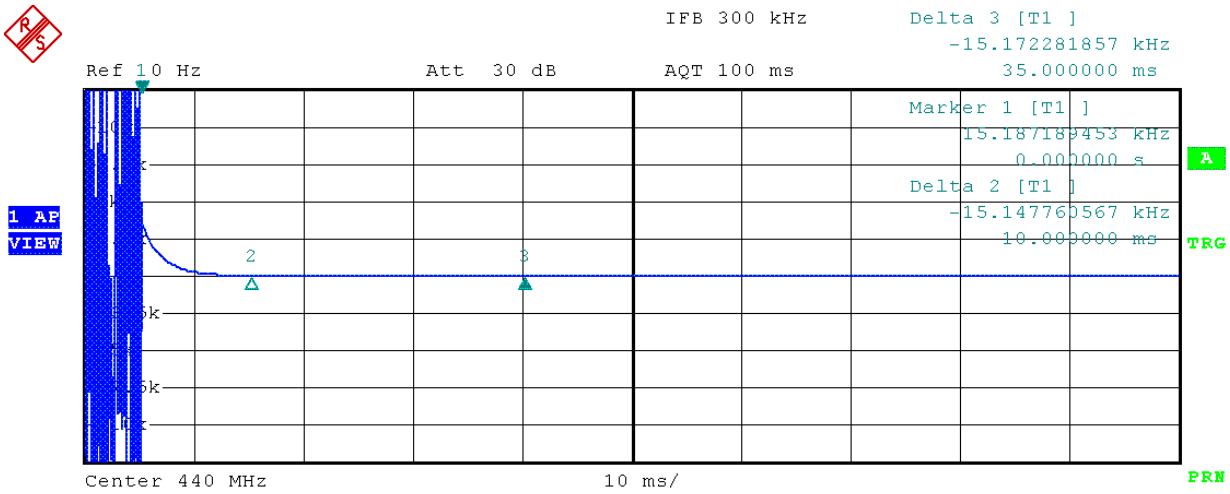
450MHZ-25K



Frequency Modulation Summary

Coupling	DC		Carrier Offset	79.153 Hz
Deviation	+peak	48.01 kHz	Carrier Power	-9.91 dBm
	-peak	-76.65 kHz	Modulation Frequency	--- Hz
	±peak/2	62.33 kHz	Sampling Rate	62.5 kHz
	RMS	4.346 kHz	Record Length	6251
			Demod Bandwidth	50 kHz

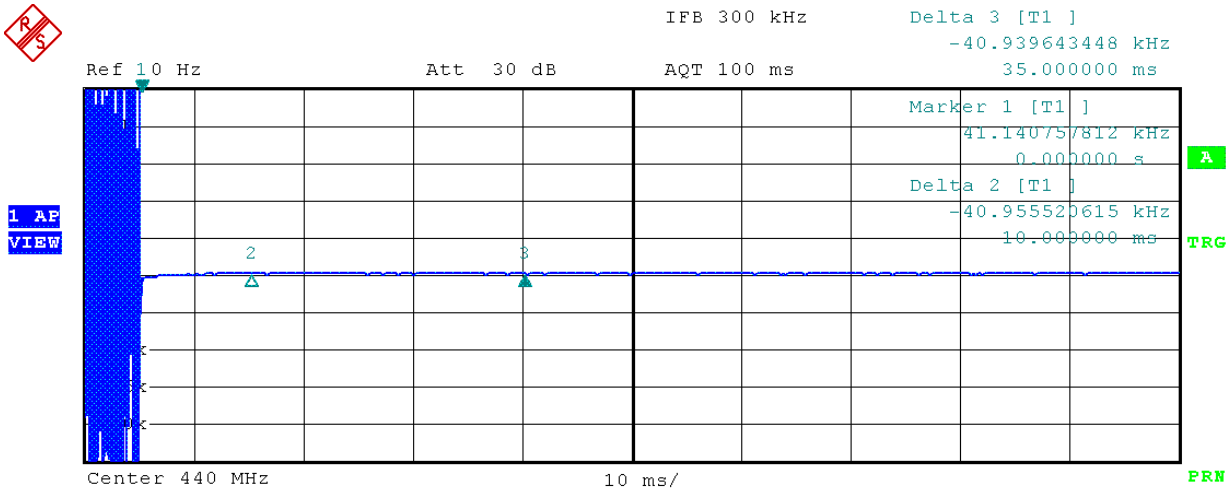
470MHZ-12.5K



Frequency Modulation Summary

Coupling	DC		Carrier Offset	-6.8164 Hz
Deviation	+peak	29.60 kHz	Carrier Power	-10.98 dBm
	-peak	-27.69 kHz	Modulation Frequency	--- Hz
	±peak/2	28.64 kHz	Sampling Rate	31.25 kHz
	RMS	2.363 kHz	Record Length	3126
			Demod Bandwidth	25 kHz

470MHZ-25K

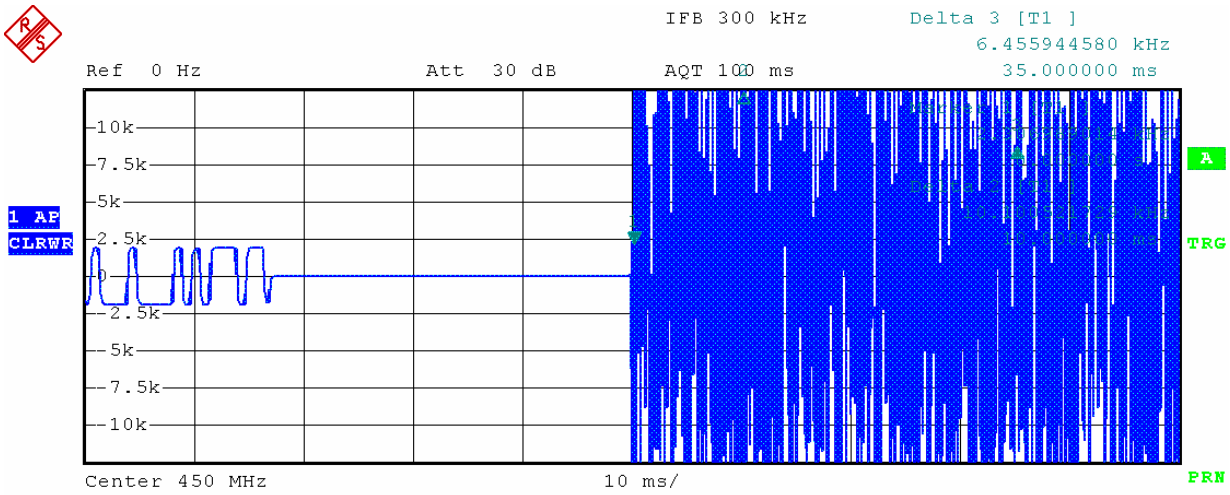


Frequency Modulation Summary

Coupling	DC		Carrier Offset	105.94 Hz
Deviation	+peak	48.86 kHz	Carrier Power	-10.20 dBm
	-peak	-44.30 kHz	Modulation Frequency	--- Hz
	±peak/2	46.58 kHz	Sampling Rate	62.5 kHz
	RMS	4.074 kHz	Record Length	6251
			Demod Bandwidth	50 kHz

8.4.2 Keying criteria when the transmitter output power is switched off

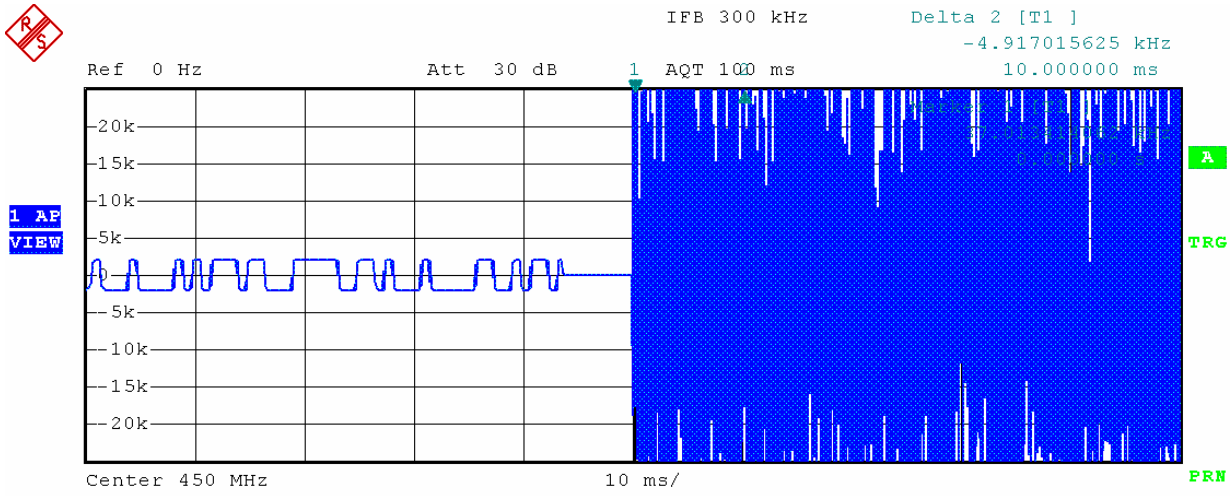
450MHZ-12.5K



Frequency Modulation Summary

Coupling	DC		Carrier Offset	355.63 Hz
Deviation	+peak	30.46 kHz	Carrier Power	-14.24 dBm
	-peak	-27.79 kHz	Modulation Frequency	--- Hz
	±peak/2	29.13 kHz	Sampling Rate	31.25 kHz
	RMS	6.878 kHz	Record Length	3126
			Demod Bandwidth	25 kHz

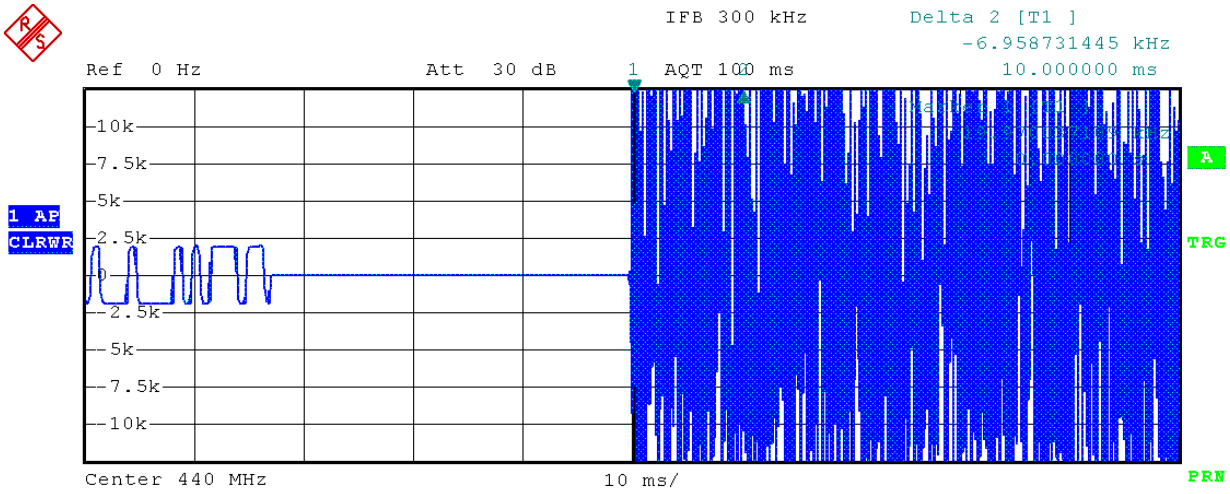
450MHZ-25K



Frequency Modulation Summary

Coupling	DC		Carrier Offset	-332.92 Hz
Deviation	+peak	56.10 kHz	Carrier Power	-12.94 dBm
	-peak	-50.45 kHz	Modulation Frequency	--- Hz
	±peak/2	53.27 kHz	Sampling Rate	62.5 kHz
	RMS	13.30 kHz	Record Length	6251
			Demod Bandwidth	50 kHz

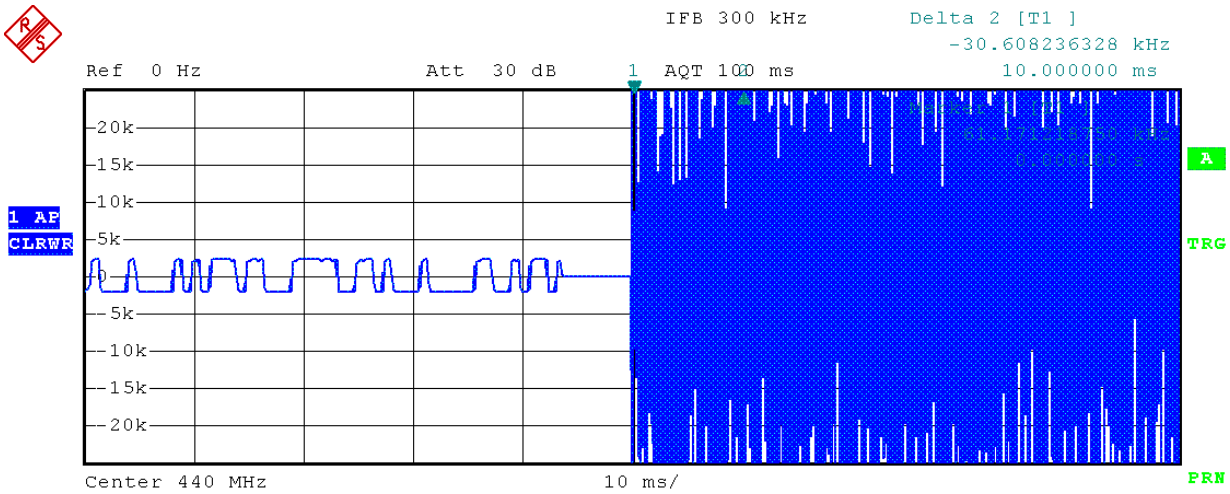
470MHZ-12.5K



Frequency Modulation Summary

Coupling	DC		Carrier Offset	76.491 Hz
Deviation	+peak	26.64 kHz	Carrier Power	-14.06 dBm
	-peak	-26.75 kHz	Modulation Frequency	--- Hz
	±peak/2	26.69 kHz	Sampling Rate	31.25 kHz
	RMS	6.909 kHz	Record Length	3126
			Demod Bandwidth	25 kHz

470MHZ-25K

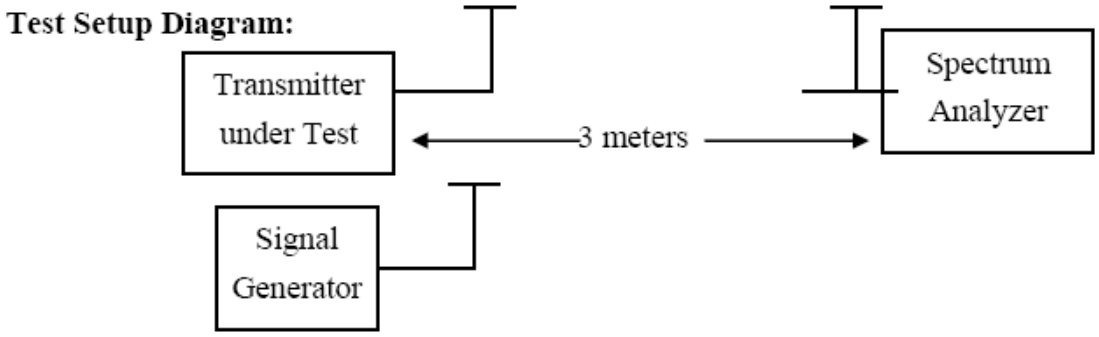


Frequency Modulation Summary

Coupling	DC		Carrier Offset	-321.70 Hz
Deviation	+peak	61.17 kHz	Carrier Power	-13.24 dBm
	-peak	-53.86 kHz	Modulation Frequency	--- Hz
	±peak/2	57.52 kHz	Sampling Rate	62.5 kHz
	RMS	13.41 kHz	Record Length	6251
			Demod Bandwidth	50 kHz

9. Field Strength of Spurious Radiation(Part 90.210)

9.1 TEST SET-UP



9.2 TEST EQUIPMENT

The following test equipment was used during the radiated emission test：

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM ANALYZER	9 kHz ~ 7GHz	ROHDE & SCHWARZ	FSP7 / 100289	APR. 12, 2014 ETC
BI-LOG ANTENNA	30 MHz ~ 2 GHz	SCHAFFNER	CBL6141A / 4181	JUN. 25, 2014 ETC
HORN ANTENNA	1 GHz ~ 18 GHz	EMCO	3115/ 9602-4681	DEC. 21, 2013 ETC
HORN ANTENNA	18 ~ 40 GHZ	ETS-LINDGREN	3116 /00032255	JAN. 07, 2014 ETC
ANECHOIC CHAMBER	3 M MEASUREMENT	SRT	A01 / SRT001	MAY. 13, 2014 SRT
COAXIAL CABLE	30 M	TIMES	LMR-400 / #30M	MAY. 21, 2014 ETC
FILTER	2 LINE, 30 A	FIL.COIL	FC-943 / 869	NCR
K-TYPE CABLE	UP TO 40 GHz, 3 m	HUBER+SUHNER	SF102-46/2*11SK 252 /MY2611/2	MAR. 07, 2014 ETC
K-TYPE CABLE	UP TO 40 GHz, 1 m	HUBER+SUHNER	SF 102-40/2*11 /23934/2	MAY. 24, 2014 ETC

NOTE：The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

9.3 TEST PROCEDURE

(1) Set-up followed by TIA/EIA-603 2.2.12 (Substitution Method)

9.4 LIMIT:

(1) 25kHz Channel Spacing: At least 43 + 10 log (P) dB

12.5kHz Channel Spacing: At least 50 + 10 log (P) dB

Channel Spacing	Channel(MHz)	Limit (Minimum dBc)
12.5KHz	450	49.87
	470	49.32
25KHz	450	42.94
	470	42.44

NOTE：The tabulated data shows the results of the radiated field strength emissions test. The spectrum was scanned per 30MHz to at least the tenth harmonic of the fundamental. This test was conducted per TIA / EIA STANDARD 603 using the substitution method.

9.5 TEST RESULT

450MHZ

Antenna Polarization: Horizontal Bandwidth: 25K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
450.01	0	42.94
900.09	71.16	
1800.00	82.67	
2250.00	84.22	

Antenna Polarization: Vertical Bandwidth: 25K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
1350.93	80.79	42.94
2700.00	83.69	
3150.00	86.82	
3600.00	87.59	
4050.10	88.61	
4500.00	89.12	

470MHZ

Antenna Polarization: Horizontal Bandwidth: 25K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
470.18	0	42.44
1410.95	77.24	
1880.51	79.56	
2349.30	83.34	

Antenna Polarization: Vertical Bandwidth: 25K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
940.44	67.62	42.44
2820.30	83.27	
3289.98	85.42	
3760.87	85.27	
4230.10	85.63	
4701.20	86.66	

450MHZ

Antenna Polarization: Horizontal Bandwidth: 12.5K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
900.09	72.56	49.87
1800.00	84.27	
2250.00	85.72	
4050.10	88.61	
4500.00	90.82	

Antenna Polarization: Vertical Bandwidth: 12.5K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
450.00	0	49.87
1350.93	82.72	
2700.71	85.49	
3148.89	87.62	
3600.00	89.19	

470MHZ

Antenna Polarization: Horizontal Bandwidth: 12.5K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
1410.45	78.54	49.32
1880.00	80.31	
2349.30	84.61	
3760.87	87.07	
4230.10	83.73	
4700.00	86.72	

Antenna Polarization: Vertical Bandwidth: 12.5K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
470.00	0	49.32
940.44	66.72	
2820.30	85.49	
3291.00	85.42	

10. SPURIOUS EMISSIONS AT ANTENNA TERMINALS (Part 2.1051, 90.210)

10.1 TEST EQUIPMENT

The following test equipment was used during the radiated emission test：

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE OF CAL. & CAL. CENTER
SPECTRUM ANALYZER	9 kHz ~ 7GHz	ROHDE & SCHWARZ	FSP7 / 100289	APR. 12, 2014 ETC

NOTE：The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

10.2 TEST PROCEDURE

(1) Set the ref level to the RF power output.

(2) Connect the EUT

(3) For deviation 12.5KHz.

(4) For deviation 25KHz.

10.3 TEST RESULT

(1) 25kHz Channel Spacing: At least 43 + 10 log (P) dB

12.5kHz Channel Spacing: At least 50 + 10 log (P) dB

Deviation(KHz)	Channel(MHz)	Limit (Minimum dBc)
12.5KHz	450	49.87
	470	49.32
25KHz	450	42.94
	470	42.44

NOTE：The spectrum was scanned per 30MHz to at least the tenth harmonic of the fundamental. This test was conducted per TIA / EIA STANDARD 603 using the substitution method.

450MHZ

Bandwidth: 25K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
450.01	0	42.94
900.09	65.16	
1350.93	73.79	
1800.00	72.67	
2250.00	74.22	
2700.00	74.69	
3150.00	76.82	
3600.00	75.59	
4050.10	75.61	
4500.00	76.12	

470MHZ

Bandwidth: 25K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
470.18	0	42.44
940.44	61.52	
1410.95	71.22	
1880.51	70.55	
2349.30	73.32	
2820.30	73.27	
3289.98	75.81	
3760.87	75.14	
4230.10	75.63	
4701.20	76.56	

450MHZ

Bandwidth: 12.5K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
450.01	0	49.87
900.09	54.26	
1350.93	65.53	
1800.00	65.56	
2250.00	64.82	
2700.00	66.59	
3150.00	67.62	
3600.00	69.39	
4050.10	70.53	
4500.00	68.55	

470MHZ

Bandwidth: 12.5K

Frequency (MHz)	Db Below Carrier (dB)	Limit Minimum (dBc)
470.18	0	49.32
940.44	57.55	
1410.95	64.34	
1880.51	65.42	
2349.30	66.24	
2820.30	65.27	
3289.98	65.42	
3760.87	63.77	
4230.10	66.63	
4701.20	66.66	

11. Frequency Stability (Part 2.1055, 90.213)

11.1 Test procedure: (Temperature)

(1) Frequency Stability &. temperature:

the reference frequency is 450MHz, 470MHz.(Ambient temperature 25℃,)

(2) The EUT was put in an Temperature & Humidity Chamber and set up the temperature of this chamber from -30℃ to +50℃ and recording the limit has been shift at ±2.5 PPM.

11.2 Test Equipment:

The following test equipment was used during the test：

EQUIPMENT/ FACILITIES	SPECIFICATIONS	MANUFACTURER	MODEL#/ SERIAL#	DUE DATE oF CAL. & CAL. CENTER
EMITEST RECEIVER (INCLUDE SPECTRUM ANALYZER)	9 KHz ~ 6 GHz	ROHDE & SCHWARZ	ESL /100176	MAR. 28, 2014 ETC
TEMPERATURE & HUMIDITY CHAMBER	-40 to 150°C 20 to 95%	KSON	THS-D4C-180-LN2/3324	OCT. 24, 2013 ETC
Oscilloscope	500MHz	HP	US39150351	NOV. 16, 2013 ETC

NOTE：The calibration interval of the above test equipment is one year and the calibrations are traceable to NML/ROC and NIST/USA.

11.3 Test Result:

450MHZ

Frequency (MHz)	Temperature(℃)	Frequency Stability (PPM)
449.998975	50	-2.27
449.999182	45	-1.81
449.999180	40	-1.82
449.999980	35	-0.04
450.000013	30	0.02
449.999990	25	-0.02
450.000111	20	0.24
450.000056	15	0.12
450.000118	10	0.26
450.000068	5	0.15
449.999963	0	-0.08
450.000046	-5	0.10
449.999126	-10	-1.94
449.999106	-15	-1.98
449.999087	-20	-2.02
449.999287	-25	-1.58
449.999211	-30	-1.75

470MHZ

Frequency (MHz)	Temperature(℃)	Frequency Stability (PPM)
469.998952	50	-2.22
469.999482	45	-1.10
469.999339	40	-1.40
469.999737	35	-0.55
469.999943	30	-0.12
470.000103	25	0.21
470.000085	20	0.18
470.000011	15	0.02
470.000091	10	0.19
470.000021	5	0.04
470.000042	0	0.08
470.000046	-5	0.10
469.999999	-10	0.00
469.999877	-15	-0.26
469.999887	-20	-0.24
469.999682	-25	-0.67
469.999694	-30	-0.65

11.4 Test procedure:(Voltage)

(1) Frequency Stability vs. voltage:

Nominal power is 12 V DC and the Frequency is 450MHz, 470MHz

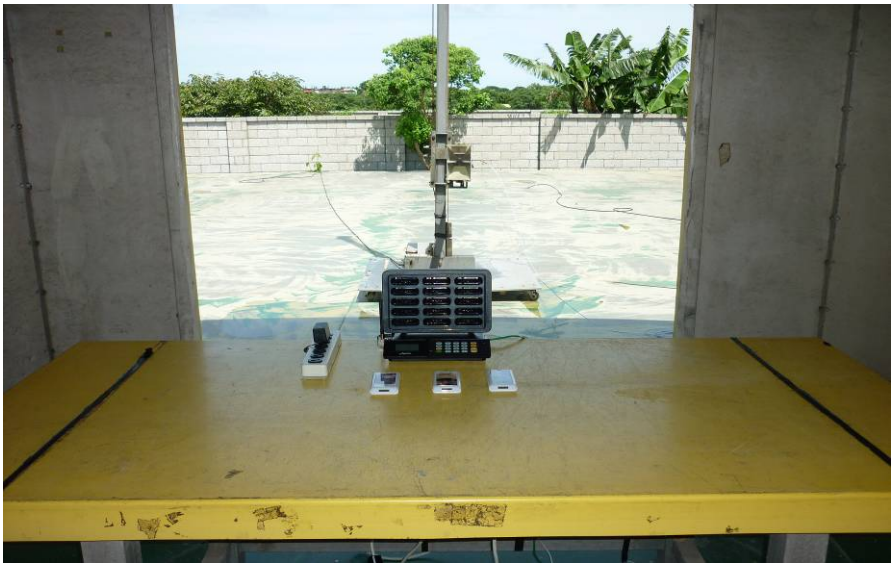
(2) The EUT was working power at 85% and 115% of nominal.

Supply Voltage(V)	Channel(MHz)	Frequency Stability (PPM)
10.20(85%)	450	0.23
	470	0.15
12.00(100%)	450	0.57
	470	0.61
13.80(115%)	450	-0.15
	470	-0.07

12. PHOTOS OF TESTING

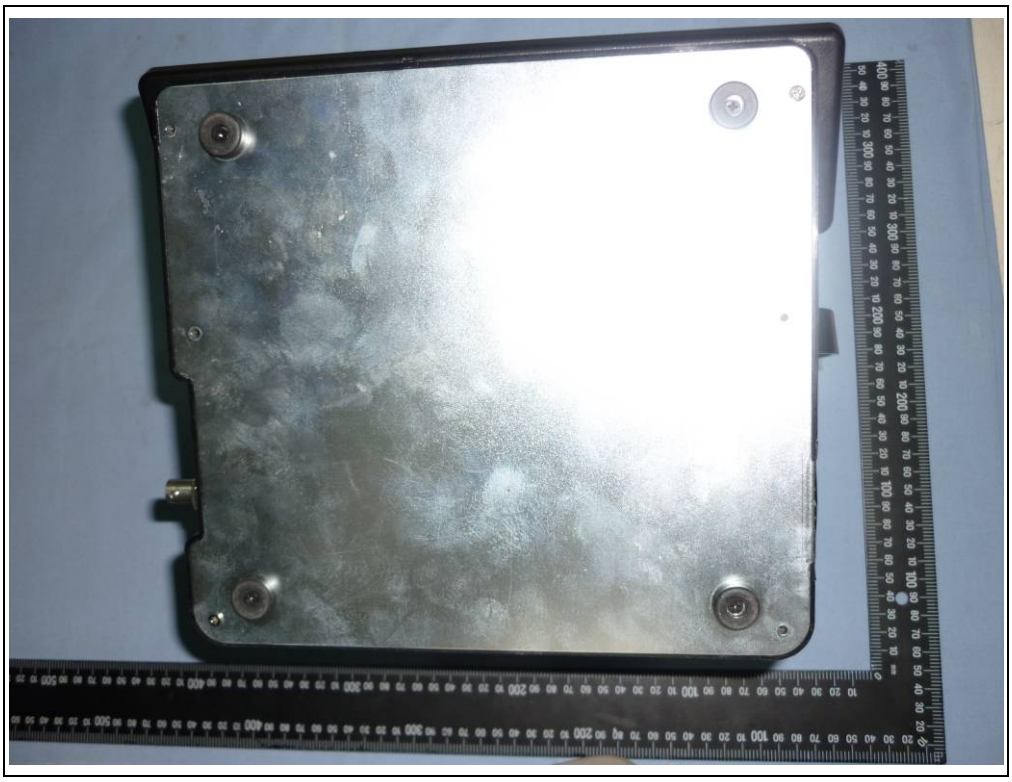
Radiated test (below 1G)

Radiated test (above 1G)



13. PHOTOS OF EUT

Exterior 1

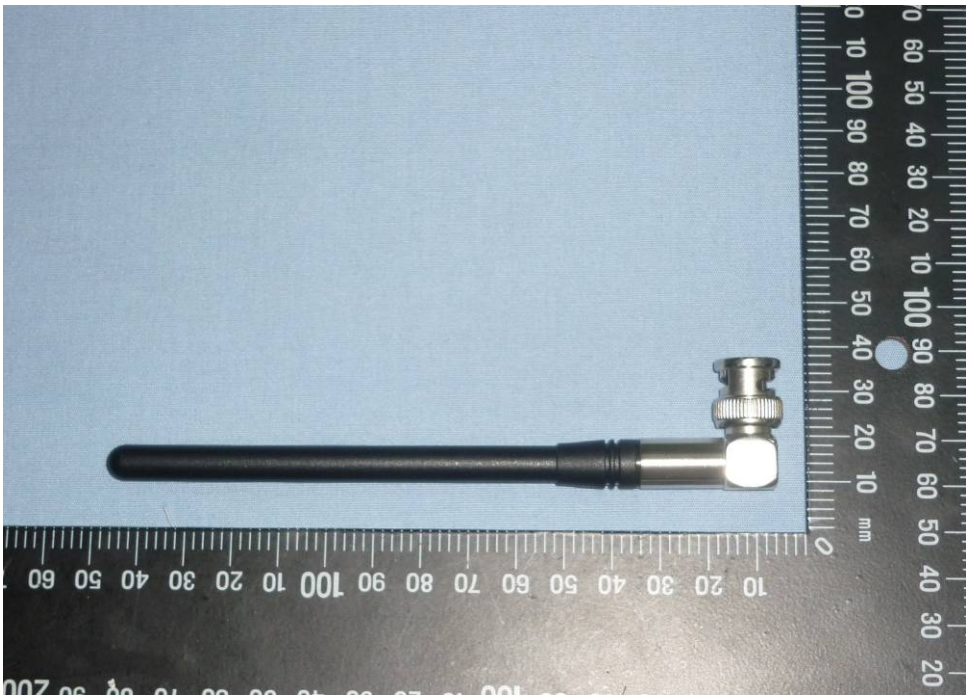


Exterior 2

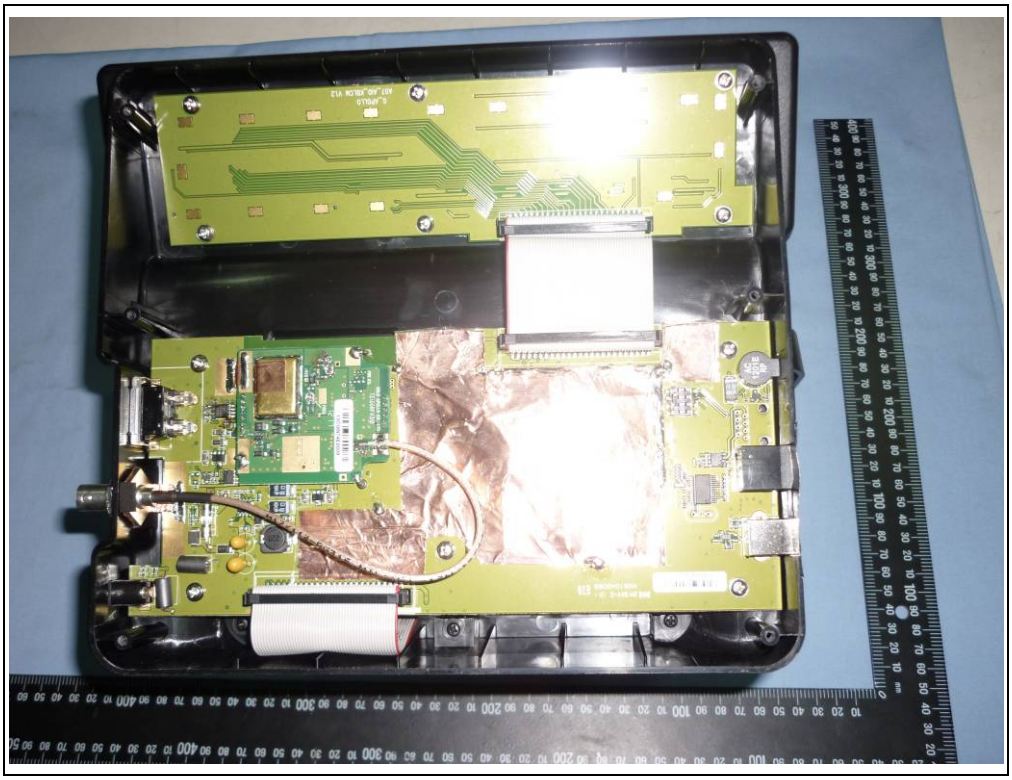
Exterior 3

Exterior 4

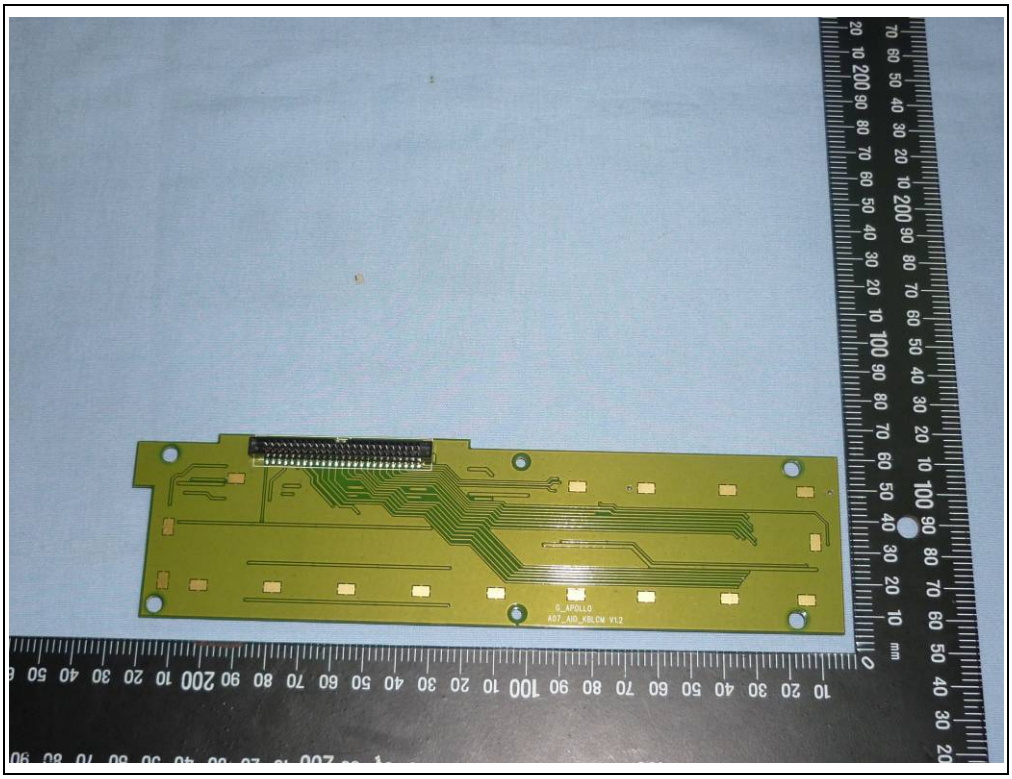
Exterior 6



Internal structure



PCB1-B



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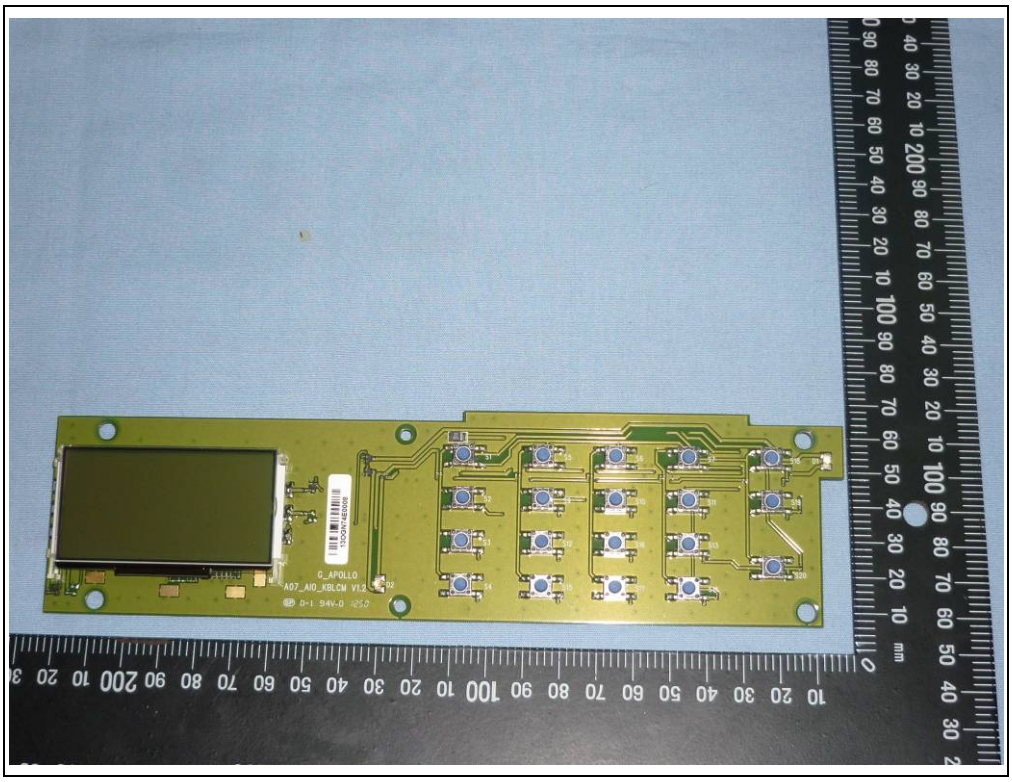
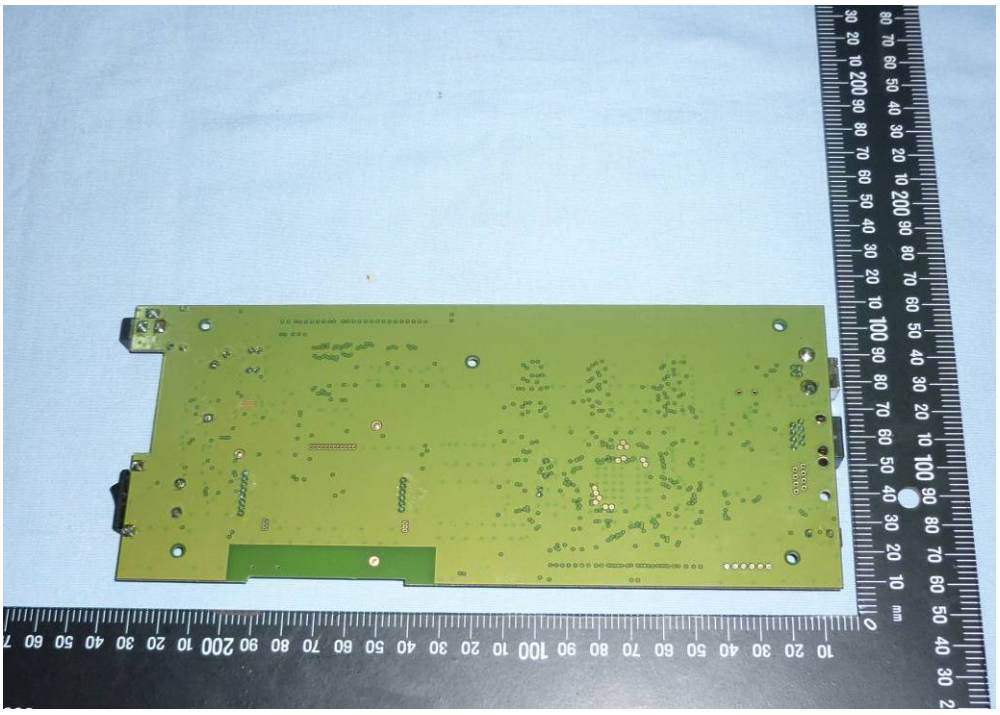


PCB2-B



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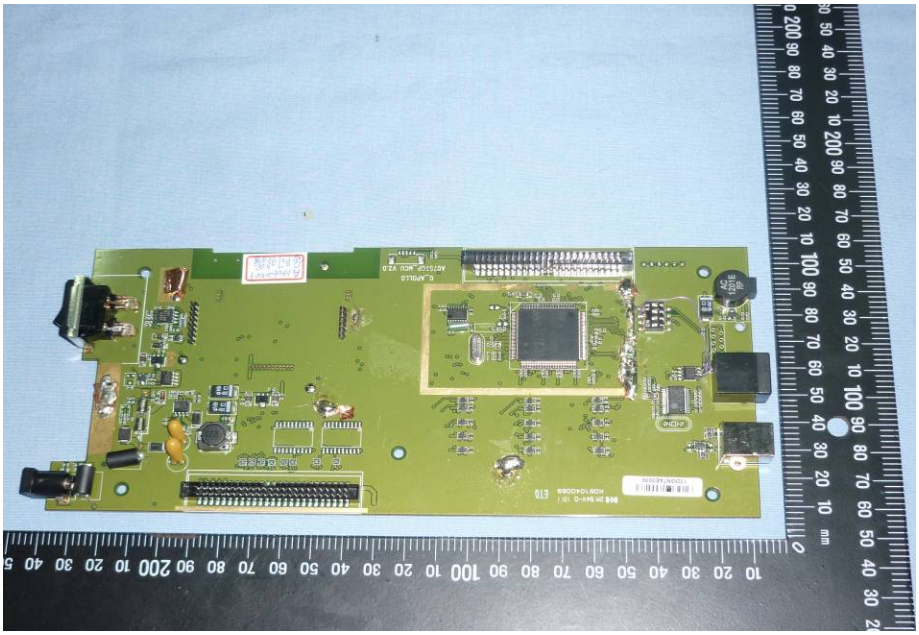
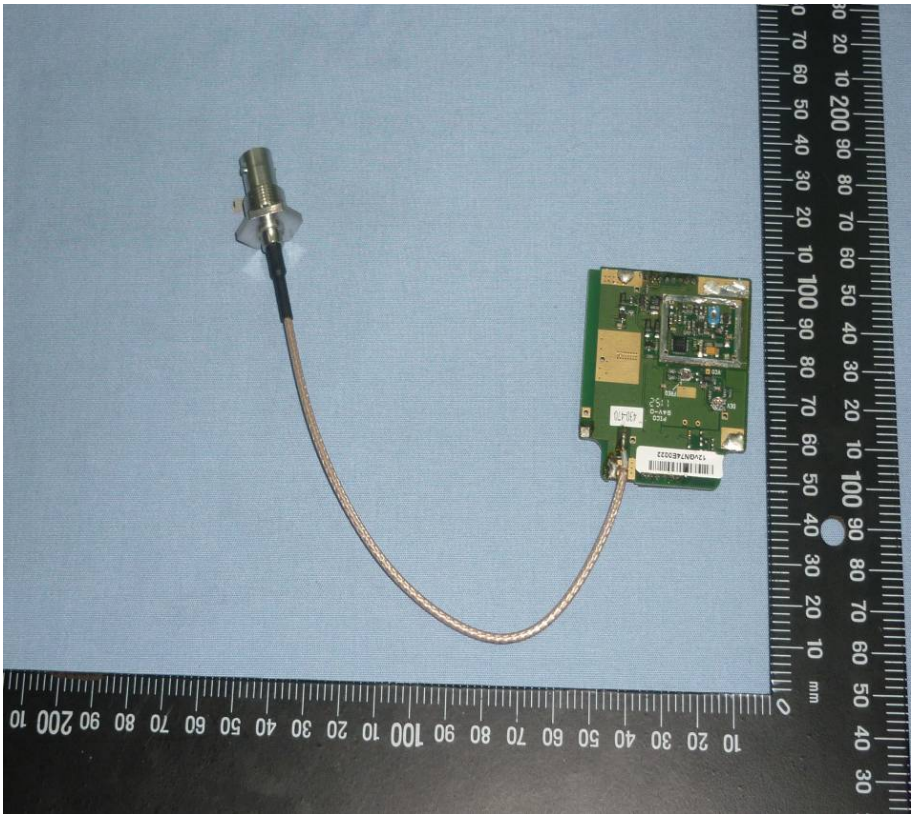
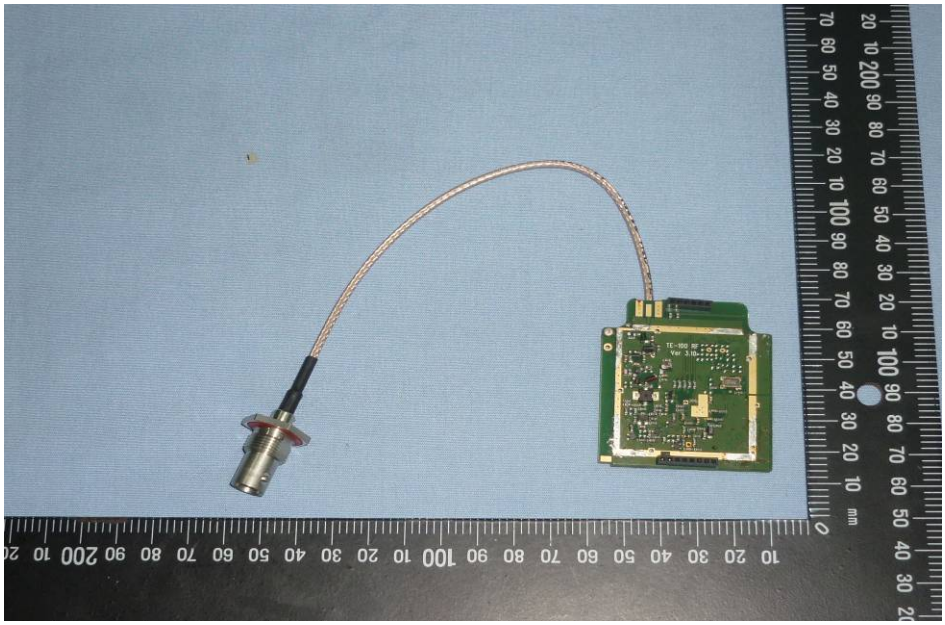


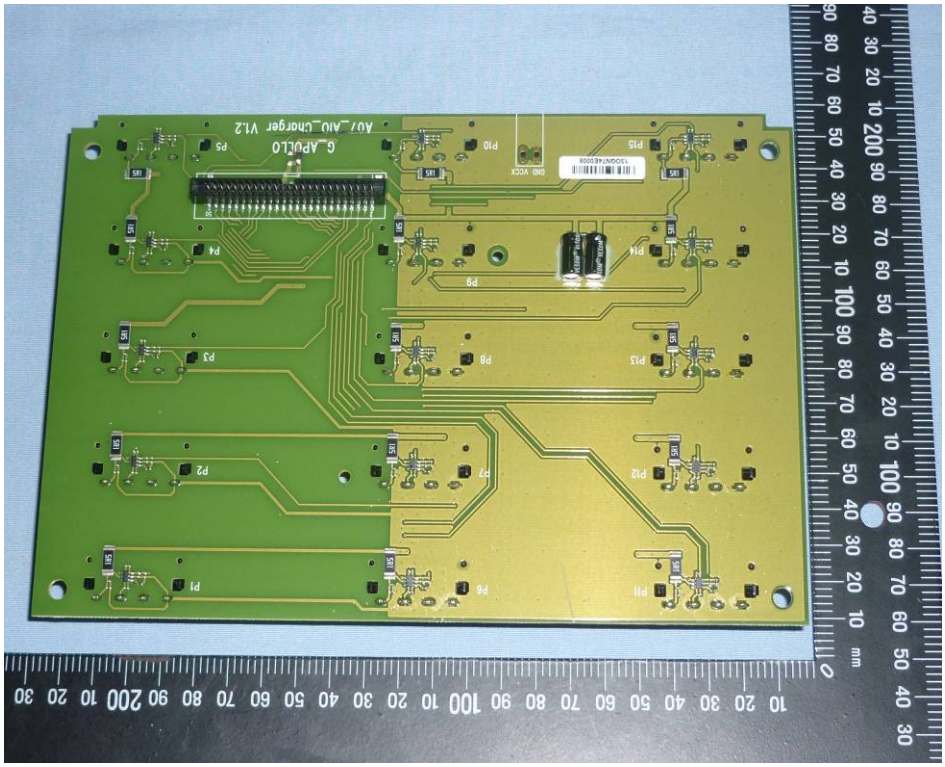
PCB3-B



PCB3-F



PCB4-B



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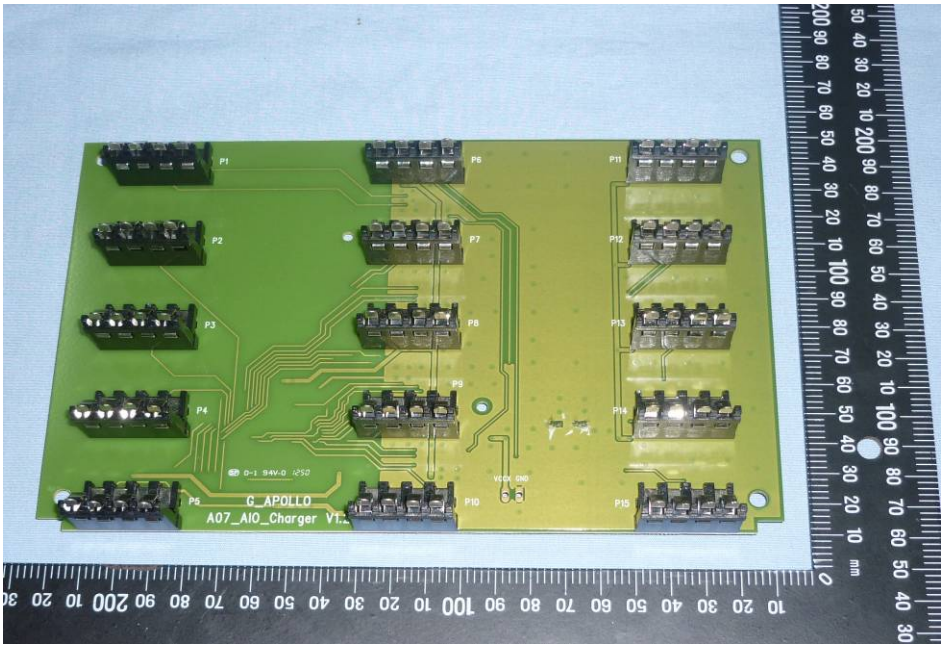

14. TERMS OF ABBREVIATION

AV.	Average detection
AZ(°)	Turn table azimuth
Correct.	Correction
EL(m)	Antenna height (meter)
EUT	Equipment Under Test
Horiz.	Horizontal direction
LISN	Line Impedance Stabilization Network
NSA	Normalized Site Attenuation
Q.P.	Quasi-peak detection
SRT Lab	Spectrum Research & Testing Laboratory, Inc.
Vert.	Vertical direction