RF TEST REPORT

GLOBAL TESTING & CERTIFICATIONS

YOUR CHOICE FOR- TCB FCB CB NB CAB RCB

Report No.:15030001-FCC-Part74

Supersede Report No.: N/A

Applicant	Beijing BBEF Science & Technology Co., Ltd.
Product Name	1.3kW ATSC TV transmitter
Model No.	BGTDV 31610
Serial No.	BGTDV 3169、BGTDV 31611、BGTDV 2862、BGTDV 25612、BGTDV 2365、BGTDV 2364
Test Standard	FCC Part 74: 2014, ANSI C63.4: 2014, ANSI/TIA 603-D 2010
Test Date	March 24th, 2015~May 20th, 2015
Issue Date	May 20th, 2015
Test Result	☑ Pass ☐ Fail
Equipment complied with the specification	☑
Equipment did not comply with the specification	☐

Winnie. Zhang	Chris You	
Winnie Zhang Test Engineer	Chris You Checked By	

This test report may be reproduced in full only

Test result presented in this test report is applicable to the tested sample only

Issued by:

SIEMIC (SHENZHEN-CHINA) LABORATORIES

Zone A, Floor 1, Building 2 Wan Ye Long Technology Park

South Side of Zhoushi Road, Bao’an District, Shenzhen, Guangdong China 518108

Phone: +86 0755 2601 4629801 Email: China@siemic.com.cn

Laboratories Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Scope
USA	EMC, RF/Wireless, SAR, Telecom
Canada	EMC, RF/Wireless, SAR, Telecom
Taiwan	EMC, RF, Telecom, SAR, Safety
Hong Kong	RF/Wireless, SAR, Telecom
Australia	EMC, RF, Telecom, SAR, Safety
Korea	EMI, EMS, RF, SAR, Telecom, Safety
Japan	EMI, RF/Wireless, SAR, Telecom
Singapore	EMC, RF, SAR, Telecom
Europe	EMC, RF, SAR, Telecom, Safety

This page has been left blank intentionally.

CONTENTS

1. Report Revision History

Report No.	Report Version	Description	Issue Date
15030001-FCC-Part74	NONE	Original	May 18th,2015

2. Customer information

Applicant Name	Beijing BBEF Science & Technology Co., Ltd.
Applicant Add	No.26, Area A, Tianzhu Airport Economic Development Zone, Shunyi District, Beijing, China
Manufacturer	Beijing BBEF Science & Technology Co., Ltd.
Manufacturer Add	No.26, Area A, Tianzhu Airport Economic Development Zone, Shunyi District, Beijing, China

3. Test site information

Lab performing tests	SIEMIC (Shenzhen-China) LABORATORIES
Lab Address	Zone A, Floor 1, Building 2 Wan Ye Long Technology Park South Side of Zhoushi Road, Bao' an District, Shenzhen, Guangdong China 518108
FCC Test Site No.	718246
IC Test Site No.	4842E-1
Test Software	N/A

4. Equipment under Test (EUT) Information

Description of EUT:	1.3kW ATSC TV transmitter
Main Model:	BGTDV 31610
Serial Model:	BGTDV 3169、BGTDV 31611、BGTDV 2862、BGTDV 25612、BGTDV 2365、BGTDV 2364
Date EUT received:	Mar 24, 2015
Test Date(s):	Mar 24, 2015 to May 18, 2015
Equipment Category：	TBC
Antenna Gain:	9.5dBi
Type of Modulation:	ATSC
RF Operating Frequency (ies):	470 MHz – 806 MHz
Max. Output Power(ERP):	70.64dBm
Number of Channels:	14-69
Port:	Power Port, Ethernet Port, USB Port, N type connector, SMA connector, BNC connector, 1 5/8" EIA;
Input Power:	Three Phases Input: AC 220V; 60Hz 30A
Trade Name :	NA
FCC ID:	2AEMGBBEF2015042301

Note:

1. The following information is provided to support the technical performance of the Beijing BBEF Science & Technology Co., Ltd. Digital TV Transmitter. The information is supplied for broadcast TV service according to applicable portions of FCC Rule Parts 74.
2. The information in this report is provided in support of verification that the transmitter meets the appropriate requirements. Measurements were recorded of spectrum and other appropriate data to demonstrate compliance.
   (Refer to Test Summary)
3. Measurements for these parameters were conducted at power output levels of 1,300 watts. Measurements were taken at the center frequency:
   Low channel: 14 channel=473 MHz
   Middle channel: 36 channel=605 MHz
   High channel: 69 channel=803 MHz

4. The differences of Series products are mainly due to different number of power amplifiers. Different number of power amplifiers causes different dividers, combiners, power amplifier power supplies and fans, while the equipment size and control system remains the same. So we select model BGTDV 31610 (have the maximum output power) to test. please refer to ANNEX D letter.

5. Test Summary

The product was tested in accordance with the following specifications.

All testing has been performed according to below product classification:

FCC Rules	Description of Test	Result
§74.735	Output Power	Compliance
§74.736	Emissions limit	Compliance
§74.794	Emissions mask	Compliance
§74.750	Radiated emission	Compliance
§74.761	Frequency tolerance	Compliance

Measurement Uncertainty

Emissions		
Test Item	Description	Uncertainty
Radiated Spurious Emissions	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
-	-	-

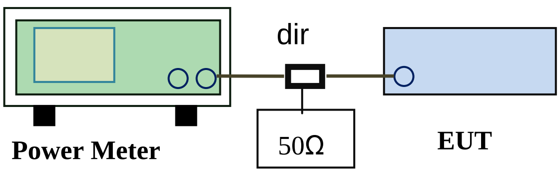
6. Measurements, Examination And Derived Results

6.1 Output Power

Temperature	23°C
Relative Humidity	53%
Atmospheric Pressure	1004mbar
Test date :	March 20, 2015
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§74.735	a)	The maximum peak effective radiated power (ERP) of an analog low power TV, TV translator, or TV booster station shall not exceed: (1) 3 kW for VHF channels 2-13; and (2) 150 kW for UHF channels 14-69.	☐
	b)	The maximum ERP of a digital low power TV, TV translator, or TV booster station (average power) shall not exceed: (1) 3 kW for VHF channels 2-13; and (2) 15 kW for UHF channels 14-69.	☑
	c)	The limits in paragraphs (a) and (b) apply separately to the effective radiated powers that may be obtained by the use of horizontally or vertically polarized transmitting antennas, providing the applicable provisions of §§74.705, 74.706, 74.707 and 74.709 are met. For either omnidirectional or directional antennas, where the ERP values of the vertically and horizontally polarized components are not of equal strength, the ERP limits shall apply to the polarization with the larger ERP. Applications proposing the use of directional antenna systems must be accompanied by the following: (1) Complete description of the proposed antenna system, including the manufacturer and model number of the proposed directional antenna. It is not acceptable to label the antenna with only a generic term such as “ Yagi” or “ Dipole” . A specific model number must be provided. In the case of individually designed antennas with no model number, or in the	☐

		case of a composite antenna composed of two or more individual antennas, the antenna should be described as a " custom" or " composite" antenna, as appropriate. A full description of the design of the antenna should also be submitted. (2) Relative field horizontal plane pattern (horizontal polarization only) of the proposed directional antenna. A value of 1.0 should be used for the maximum radiation. The plot of the pattern should be oriented so that 0° corresponds to the maximum radiation of the directional antenna or, alternatively in the case of a symmetrical pattern, to the line of symmetry. The 0° on the plot should be referenced to the actual azimuth with respect to true North. (3) A tabulation of the relative field pattern required in paragraph (c)(2), of this section. The tabulation should use the same zero degree reference as the plotted pattern, and be tabulated at least every 10°. In addition, tabulated values of all maximas and minimas, with their corresponding azimuths, should be submitted. (4) All horizontal plane patterns must be plotted to the largest scale possible on unglazed letter-size polar coordinate paper (main engraving approximately 18 cm × 25 cm (7 inches × 10 inches)) using only scale divisions and subdivisions of 1, 2, 2.5 or 5 times 10-nth. Values of field strength on any pattern less than 10% of the maximum field strength plotted on that pattern must be shown on an enlarged scale. (5) The horizontal plane patterns that are required are the patterns for the complete directional antenna system. In the case of a composite antenna composed of two or more individual antennas, this means that the patterns for the composite antenna composed of two or more individual antennas, not the patterns for each of the individual antennas, must be submitted.	
Test Setup			
Test Procedure	For Conducted Power: The transmitter output port was connected to Spectrum Analyzer via a directional		

	coupler with suitable 50 Ω load. The coupling value was 60 dB Set EUT at maximum power. Select lowest, middle, and highest channels for each band and different test mode. An offset of 60.1dB from the directional coupler and cable loss was added to the Power Viewer Plus program For ERP/EIRP: Calculate with antenna gain.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☑ Yes (See below) ☐ N/A

Test data

Channel	Channel frequency	Peak of output power	Peak of output power	Antenna Gain	ERP	ERP	Limit
	(MHz)	(W)	dBm	dBi	dBm	(W)	(W)
Low	473	1300	61.14	9.5	70.64	11588	15000
Middle	605	1300	61.14	9.5	70.64	11588	15000
High	803	1300	61.14	9.5	70.64	11588	15000

Test Photos

Low Channel

Middle Channel

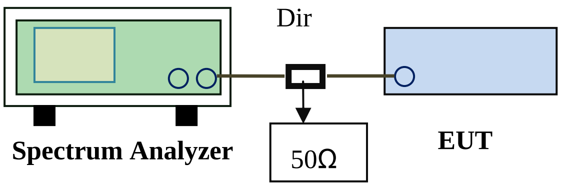
High Channel

6.2 Emission Bandwidth

Temperature	23°C
Relative Humidity	53%
Atmospheric Pressure	1004mbar
Test date :	March 24, 2015
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§74.736 & 74.750	a)	The license of a low power TV, TV translator, or TV booster station authorizes the transmission of the visual signal by amplitude modulation (A5) and the accompanying aural signal by frequency modulation (F3).	☑
	b)	Standard width television channels will be assigned and the transmitting apparatus shall be operated so as to limit spurious emissions to the lowest practicable value. Any emissions including intermodulation products and radio frequency harmonics which are not essential for the transmission of the desired picture and sound information shall be considered to be spurious emissions.	☑
	c)	Any emissions appearing on frequencies more than 3 MHz above or below the upper and lower edges, respectively, of the assigned channel shall be attenuated no less than: (1) 30 dB for transmitters rated at no more than 1 watt power output. (2) 50 dB for transmitters rated at more than 1 watt power output. (3) 60 dB for transmitters rated at more than 100 watts power output.	☐
	d)	Greater attenuation than that specified in paragraph (c) of this section may be required if interference results from emissions outside the assigned channel.	☐

Test Setup	
Test Procedure	According to ANSI/TIA-603-D 2010, Emission bandwidth method. The transmitter output port was connected to Spectrum Analyzer via a directional coupler with suitable 50 Ω load. The coupling value was 60.0 dB Set EUT at maximum power. Select lowest, middle, and highest channels for each band and different test mode. An loss of the directional coupler port is 60dB The cable loss of the cable which connect between Spectrum Analyzer and Directional Coupling monitoring port is for low/mid/high frequency is 10.9, 11, 11.20dB Respectively (only add this cable loss at the Spectrum)
Remark	N/A
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

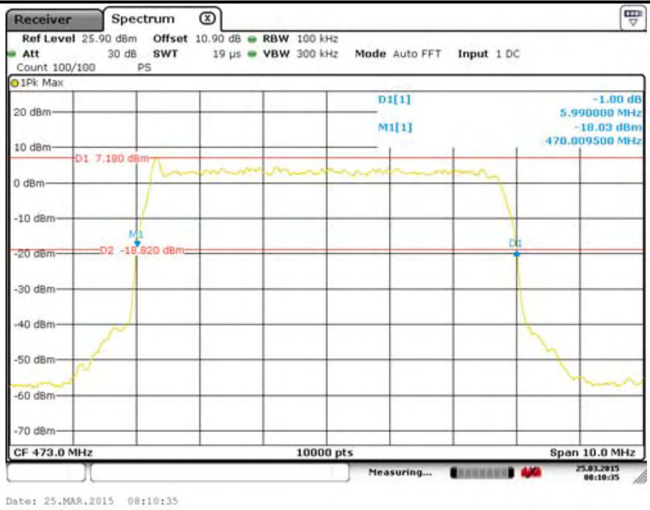
Test Plot ☑ Yes (See below) ☐ N/A

Test data

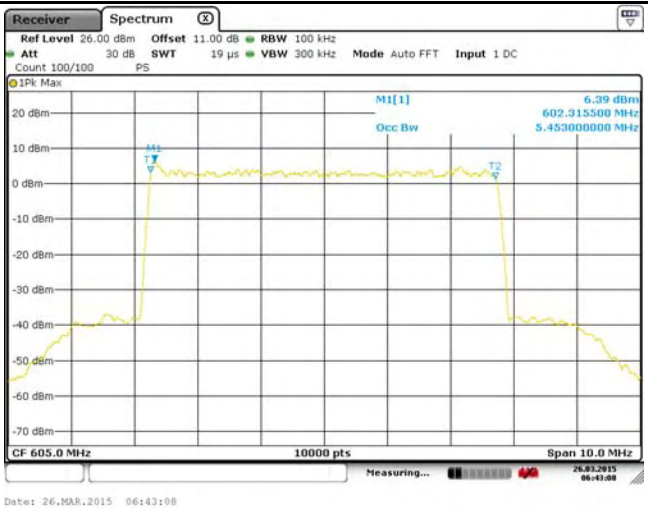
Channel	Channel frequency (MHz)	Emission bandwidth 99% (MHz)	Emission bandwidth 26dB(MHz)	Result
Low	473	5.539	5.990	Pass
Middle	605	5.453	5.688	Pass
High	803	5.440	5.695	Pass

Test plots

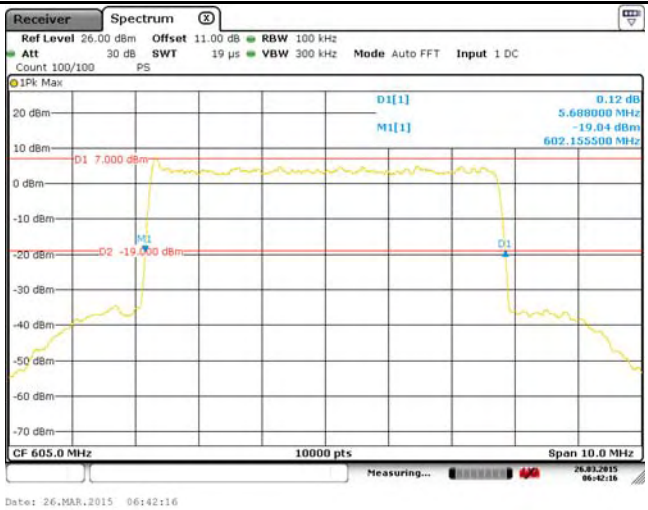
Low Channel (99%)



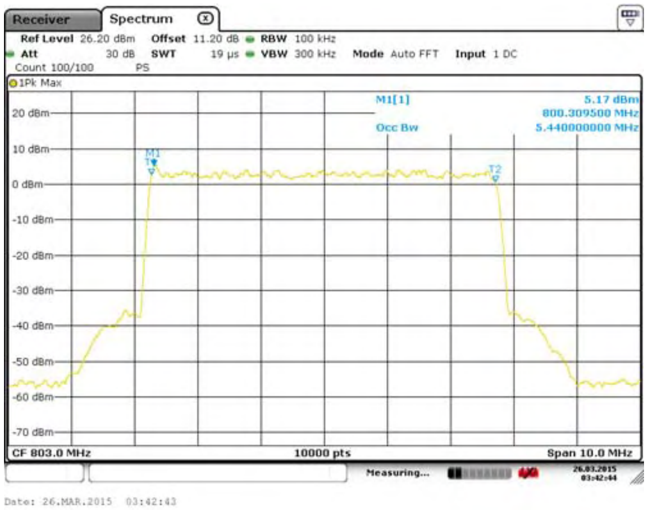
Low Channel (26dB)



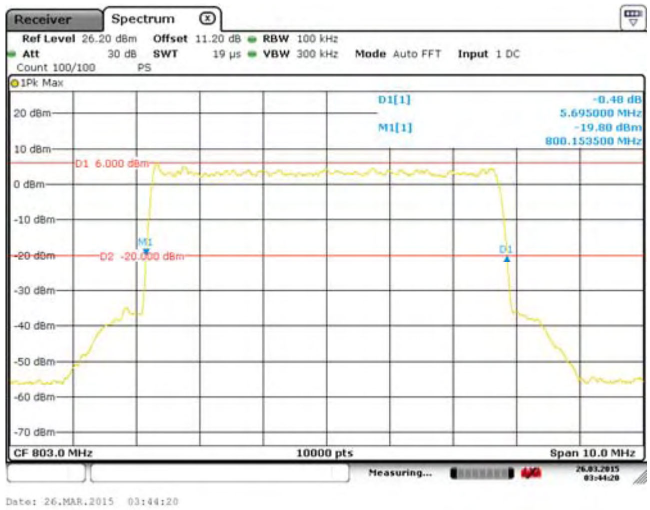
Middle Channel (99%)



Middle Channel (26dB)



High channel (99%)

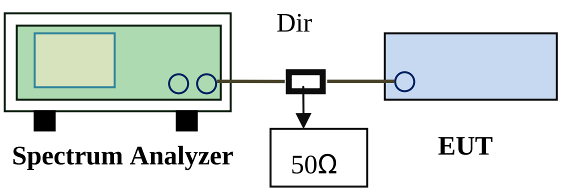


High channel (26dB)

6.3 Emissions Mask

Temperature	22°C
Relative Humidity	53%
Atmospheric Pressure	1012mbar
Test date :	March 28, 2015~May 20, 2015
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§74.794 (a)(2)(ii)	(a)(2) (ii)	Stringent mask. In the first 500 kHz from the channel edges, emissions must be attenuated no less than 47 dB. More than 3 MHz from the channel edges, emissions must be attenuated no less than 76 dB. At any frequency between 0.5 and 3 MHz from the channel edges, emissions must be attenuated no less than the value determined by the following formula: A(dB) = 47 + 11.5 (Δ f-0.5)	☑
§74.794 (b) (1)	(b) (1)	An FCC-certificated transmitter specifically certified for use on one or more of the above channels must include filtering with an attenuation of not less than 85 dB in the GPS bands, which will have the effect of reducing harmonics in the GPS bands from what is produced by the digital transmitter, and this attenuation must be demonstrated as part of the certification application to the Commission	NA
Test Setup §74.794 (a)(2)(ii)			
Test Setup §74.794 (b) (1)			
Test Procedure	According to ANSI/TIA-603-D 2010, Adjacent Channel Power method. The transmitter output port was connected to Spectrum Analyzer via a directional coupler with suitable 50 Ω load. The coupling value was 60.0 dB		

	Set EUT at maximum power. Select lowest, middle, and highest channels for each band and different test mode. Used Spectrum Analyzer connects to the Directional Coupling monitoring port to check the reference channel power and Adjacent power. The cable loss of the cable which connect between Spectrum Analyzer and Directional Coupling monitoring port is for low/mid/high frequency is 10.9, 11, 11.20dB Respectively (only add this cable loss at the Spectrum)
Remark	N/A
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☑ N/A

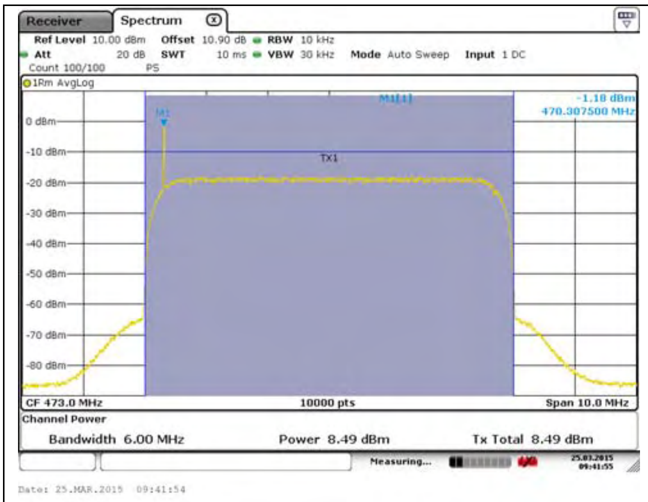
Low channel (Channel = 14; frequency = 473 MHz;)

Lower Adjacent Channel Power

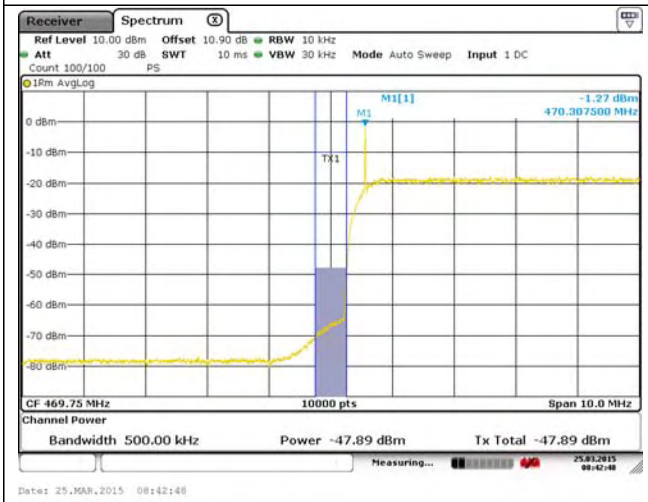
Sub band	frequency (MHz)	6 MHz channel power (dBm)	500 kHz channel power (dBm)	Sub band power dBc	Limit (dBc)	Result
-1	469.75	8.49	-47.89	-56.38	-47	Pass
-2	469.25	8.49	-57.22	-65.71	-49.9	Pass
-3	468.75	8.49	-61.43	-69.92	-55.6	Pass
-4	468.25	8.49	-61.78	-70.27	-61.4	Pass
-5	467.75	8.49	-61.80	-70.29	-67.1	Pass
-6	467.25	8.49	-70.44	-78.93	-71.9	Pass
-7	466.75	8.49	-70.69	-79.18	-76	Pass
-8	466.25	8.49	-70.82	-79.5	-76	Pass
-9	465.75	8.49	-71.01	-79.84	-76	Pass
-10	465.25	8.49	-71.35	-80.19	-76	Pass
-11	464.75	8.49	-71.70	-80.28	-76	Pass
-12	464.25	8.49	-71.79	-79.31	-76	Pass

Upper Adjacent Channel Power

Sub band	frequency (MHz)	6 MHz channel power (dBm)	500 kHz channel power (dBm)	Sub band power dBc	Limit (dBc)	Result
-1	476.25	8.49	-48.48	-56.97	-47	Pass
-2	476.75	8.49	-59.71	-68.2	-49.9	Pass
-3	477.25	8.49	-68.02	-76.51	-55.6	Pass
-4	477.75	8.49	-69.55	-78.04	-61.4	Pass
-5	478.25	8.49	-69.65	-78.14	-67.1	Pass
-6	478.75	8.49	-69.93	-78.42	-71.9	Pass
-7	479.25	8.49	-69.89	-78.38	-76	Pass
-8	479.75	8.49	-70.09	-78.58	-76	Pass
-9	480.25	8.49	-70.61	-79.1	-76	Pass
-10	480.75	8.49	-71.10	-79.59	-76	Pass
-11	481.25	8.49	-71.33	-79.82	-76	Pass
-12	481.75	8.49	-71.50	-79.99	-76	Pass

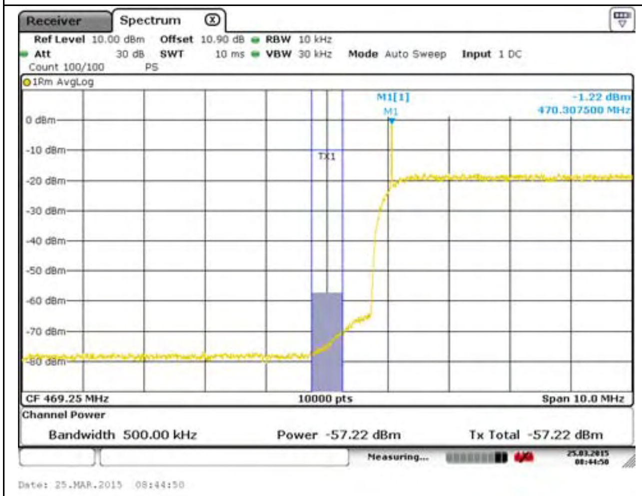


Reference Channel Power

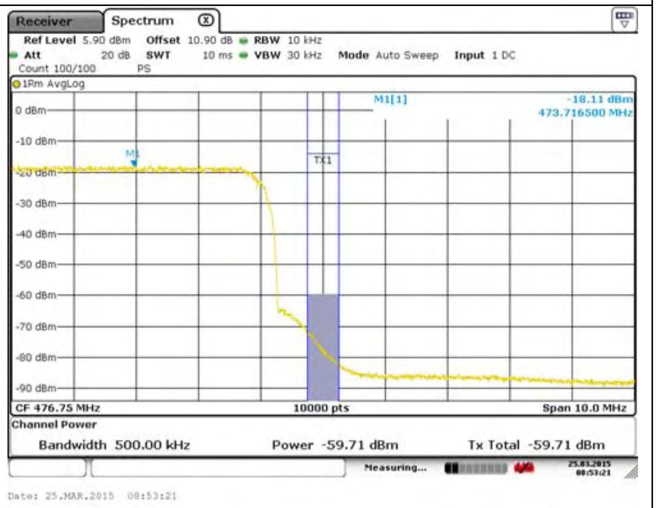


Lower sideband Sub band-1

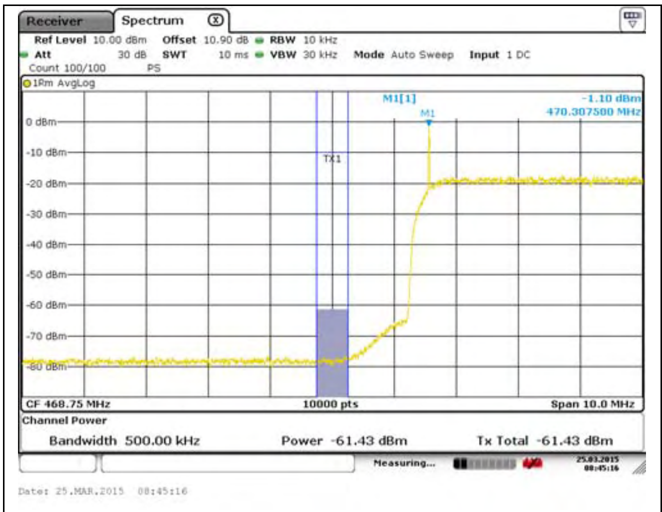
Upper sideband Sub band-1



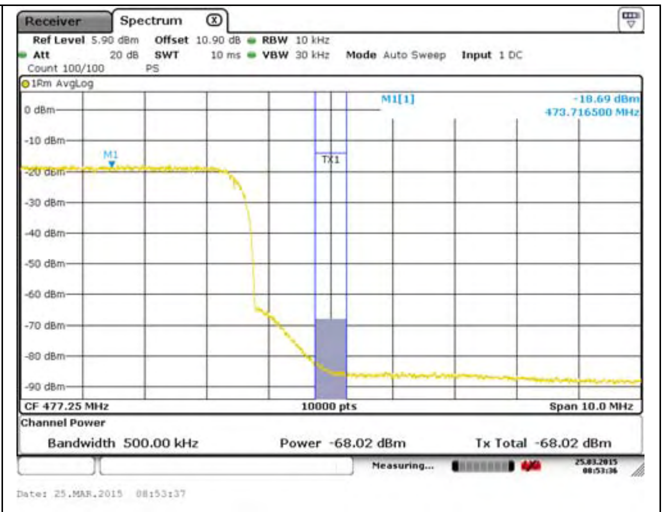
Lower sideband Sub band-2



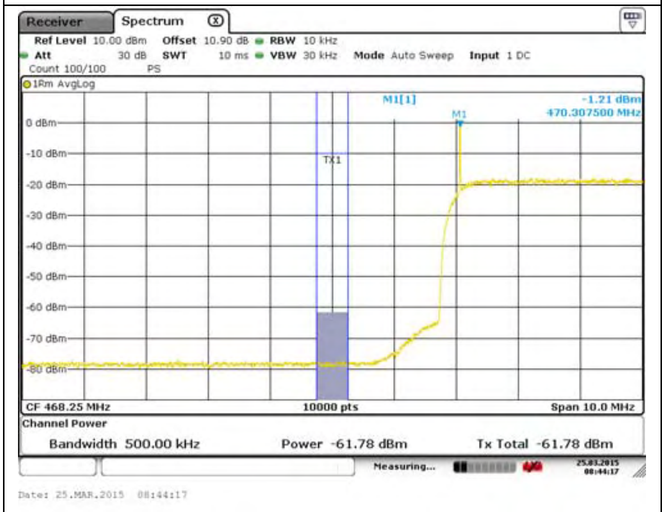
Upper sideband Sub band-2



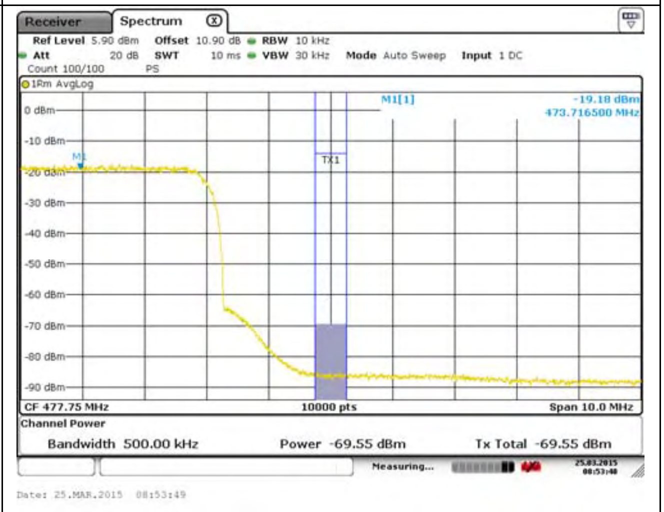
Lower sideband Sub band-3



Upper sideband Sub band-3

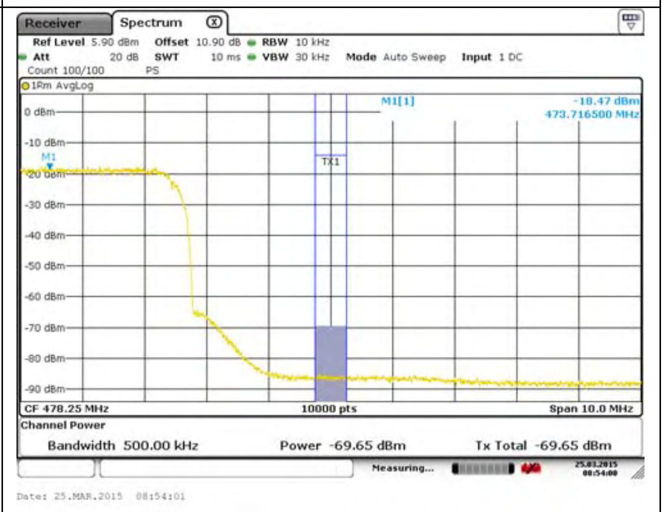


Lower sideband Sub band-4

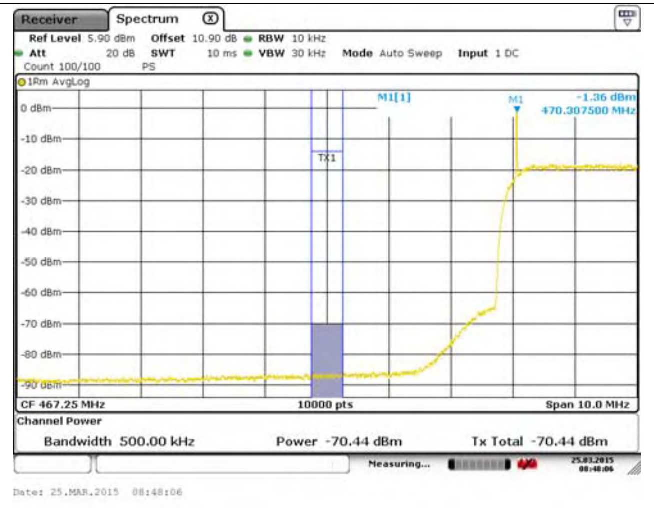


Upper sideband Sub band-4

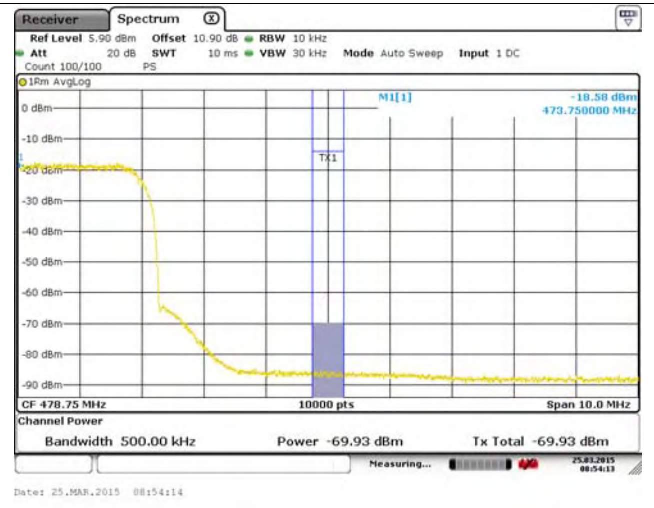
Lower sideband Sub band-5



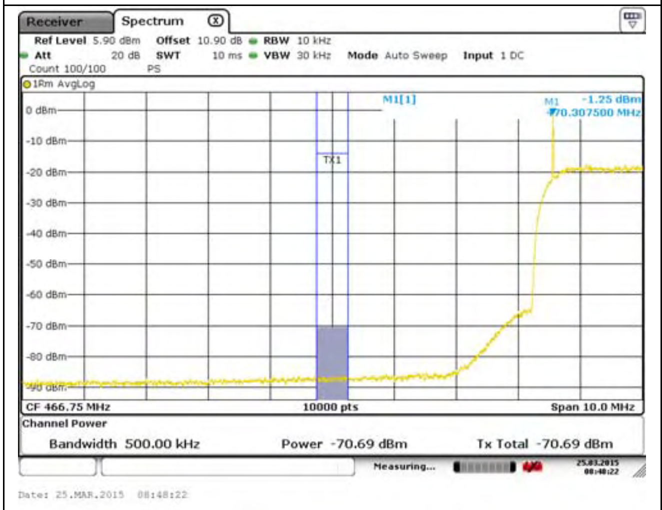
Upper sideband Sub band-5



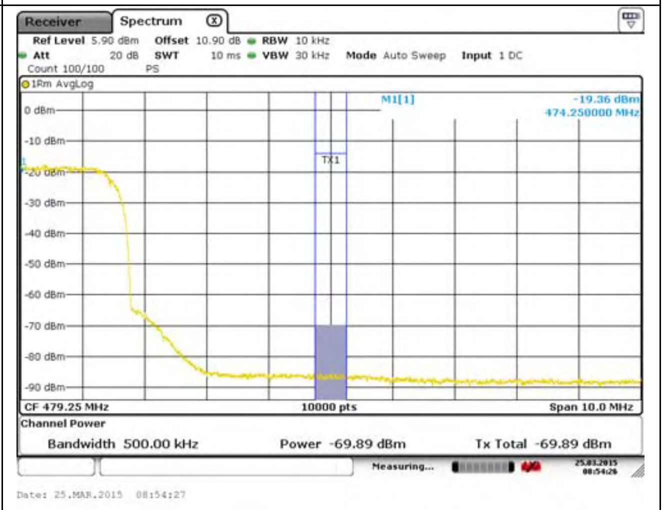
Lower sideband Sub band-6



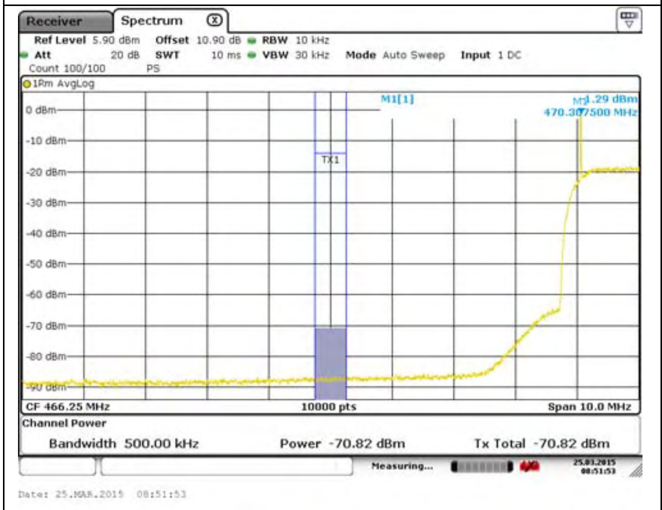
Upper sideband Sub band-6



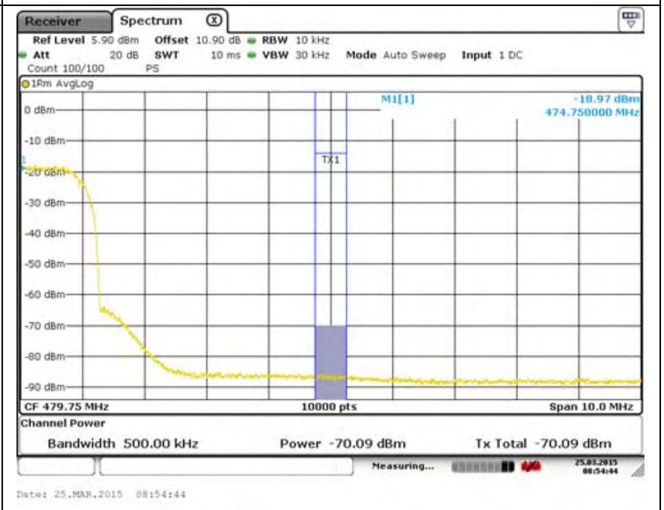
Lower sideband Sub band-7



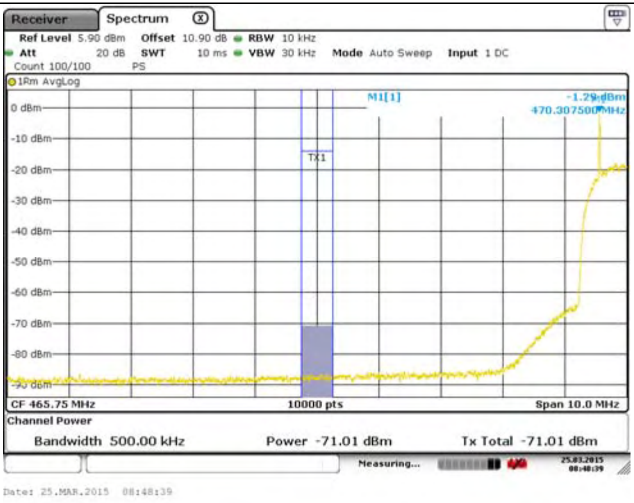
Upper sideband Sub band-7



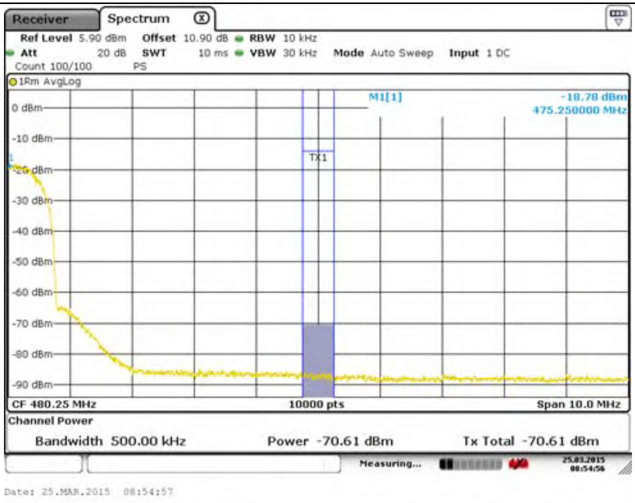
Lower sideband Sub band-8



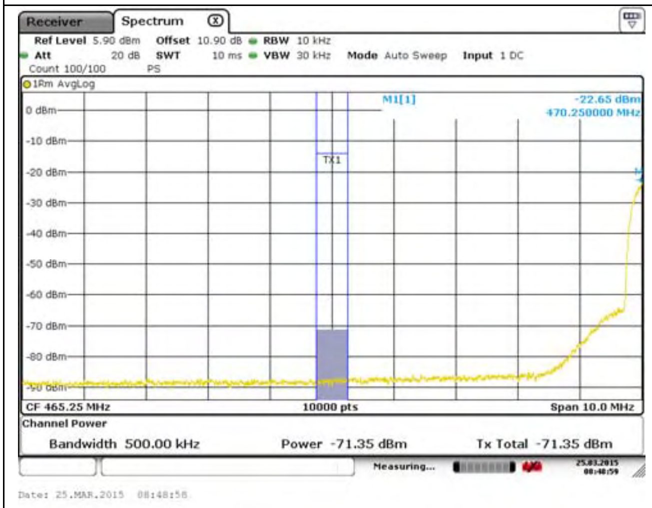
Upper sideband Sub band-8



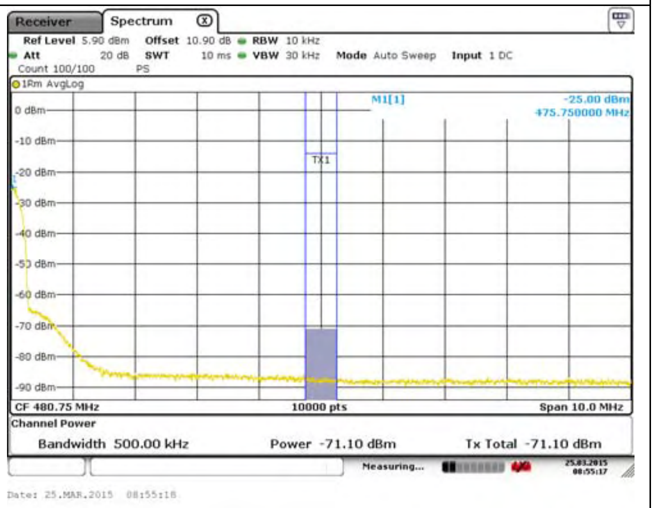
Lower sideband Sub band-9



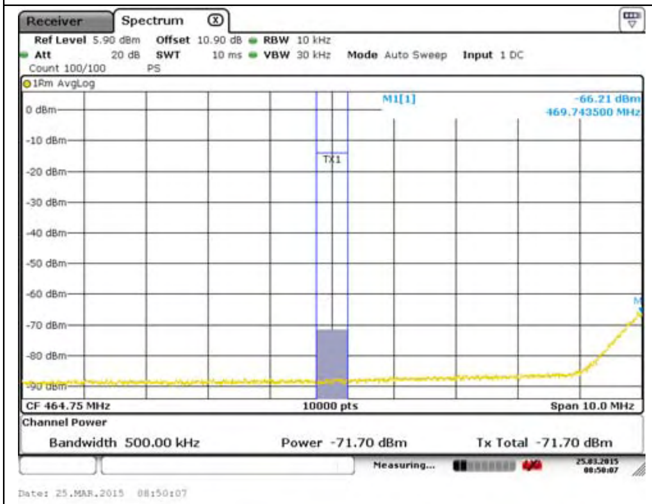
Upper sideband Sub band-9



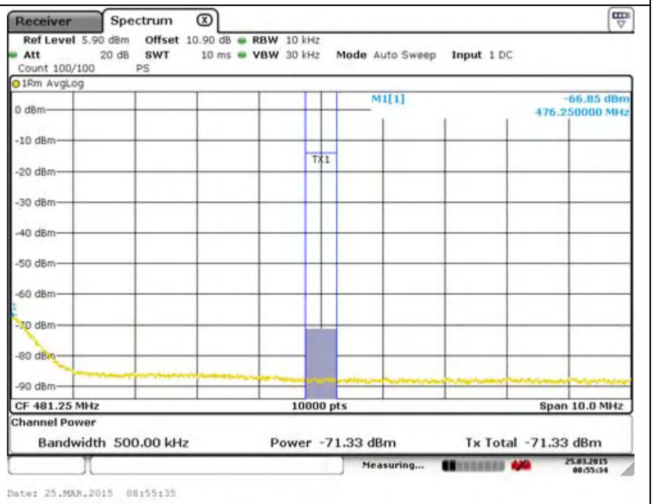
Lower sideband Sub band-10



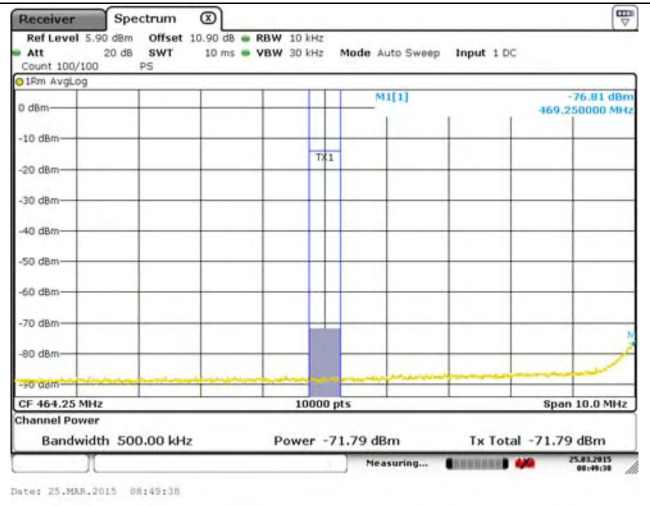
Upper sideband Sub band-10



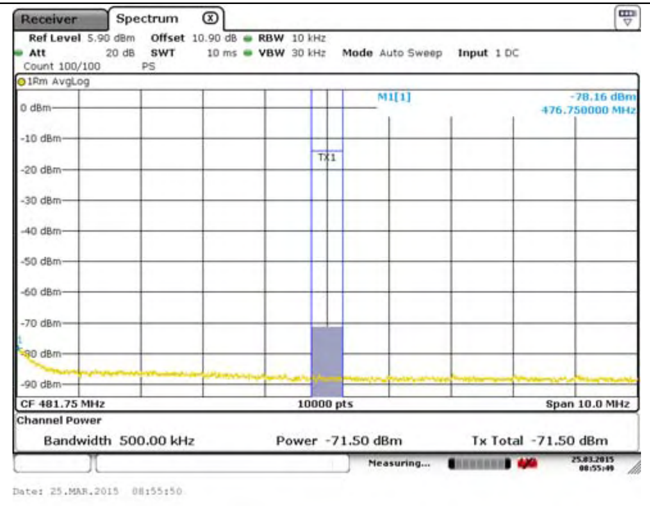
Lower sideband Sub band-11



Upper sideband Sub band-11



Lower sideband Sub band-12



Upper sideband Sub band-12

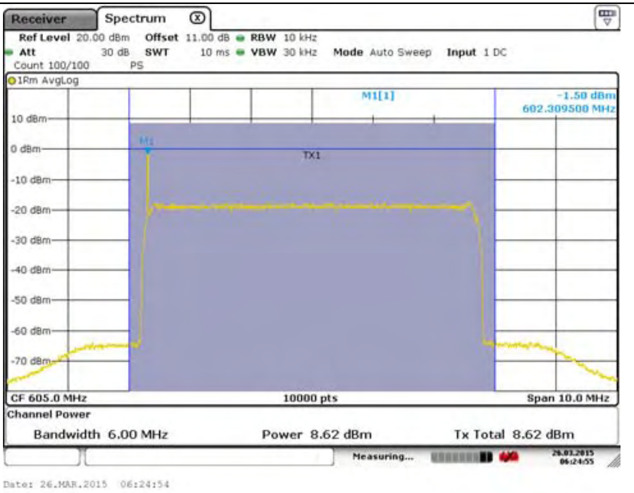
Middle channel (Channel = 36; frequency = 605 MHz;)

Lower Adjacent Channel Power

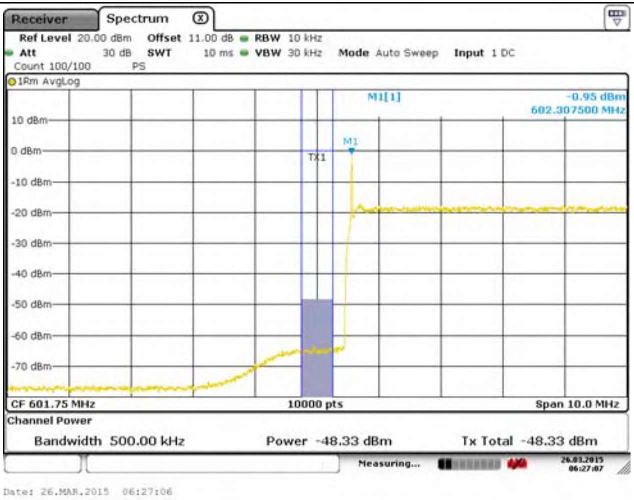
Sub band	frequency (MHz)	6 MHz channel power (dBm)	500 kHz channel power (dBm)	Sub band power dBc	Limit (dBc)	Result
-1	601.75	8.62	-48.33	-56.95	-47	Pass
-2	601.25	8.62	-49.30	-57.92	-49.9	Pass
-3	600.75	8.62	-53.57	-62.19	-55.6	Pass
-4	600.25	8.62	-58.56	-67.18	-61.4	Pass
-5	599.75	8.62	-66.67	-75.29	-67.1	Pass
-6	599.25	8.62	-68.95	-77.57	-71.9	Pass
-7	598.75	8.62	-69.84	-78.46	-76	Pass
-8	598.25	8.62	-69.96	-78.58	-76	Pass
-9	597.75	8.62	-70.41	-79.03	-76	Pass
-10	597.25	8.62	-70.44	-79.06	-76	Pass
-11	596.75	8.62	-70.60	-79.22	-76	Pass
-12	596.25	8.62	-70.61	-79.23	-76	Pass

Upper Adjacent Channel Power

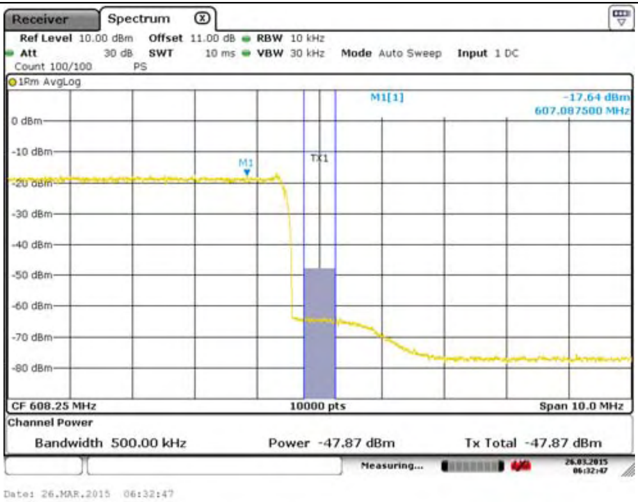
Sub band	frequency (MHz)	6 MHz channel power (dBm)	500 kHz channel power (dBm)	Sub band power dBc	Limit (dBc)	Result
-1	608.25	8.62	-47.87	-56.49	-47	Pass
-2	608.75	8.62	-49.02	-57.64	-49.9	Pass
-3	609.25	8.62	-52.64	-61.26	-55.6	Pass
-4	609.75	8.62	-58.04	-66.66	-61.4	Pass
-5	610.25	8.62	-66.20	-74.82	-67.1	Pass
-6	610.75	8.62	-68.94	-77.56	-71.9	Pass
-7	611.25	8.62	-69.65	-78.27	-76	Pass
-8	611.75	8.62	-70.09	-78.71	-76	Pass
-9	612.25	8.62	-70.13	-78.75	-76	Pass
-10	612.75	8.62	-70.31	-78.93	-76	Pass
-11	613.25	8.62	-70.37	-78.99	-76	Pass
-12	613.75	8.62	-70.46	-79.08	-76	Pass



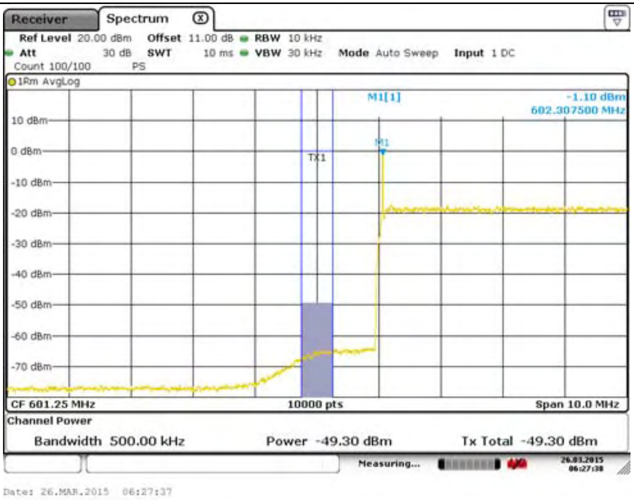
Reference Channel Power



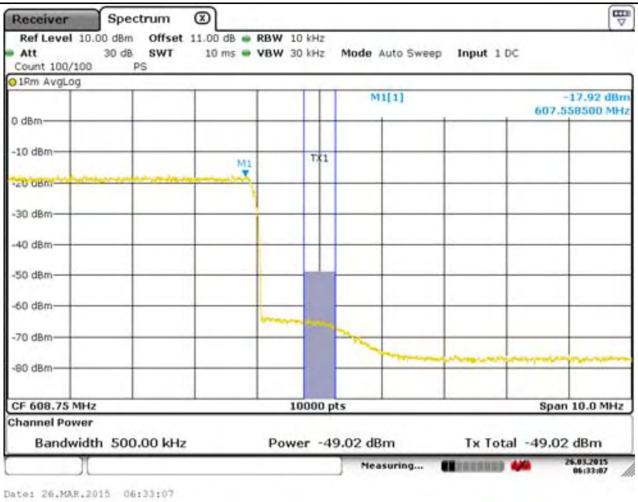
Lower sideband Sub band-1



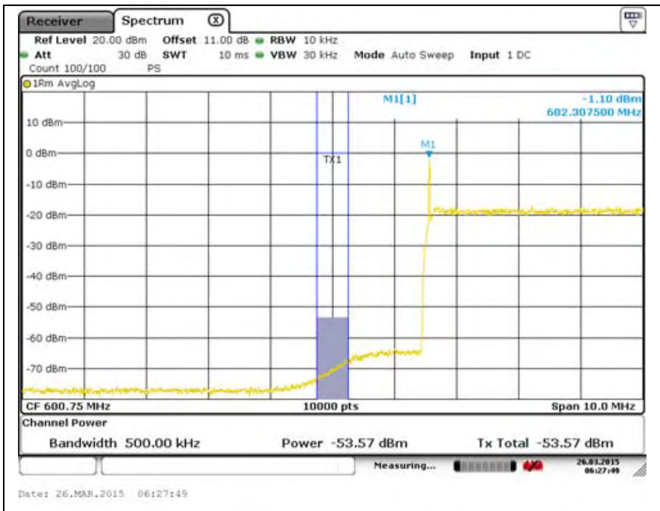
Upper sideband Sub band-1



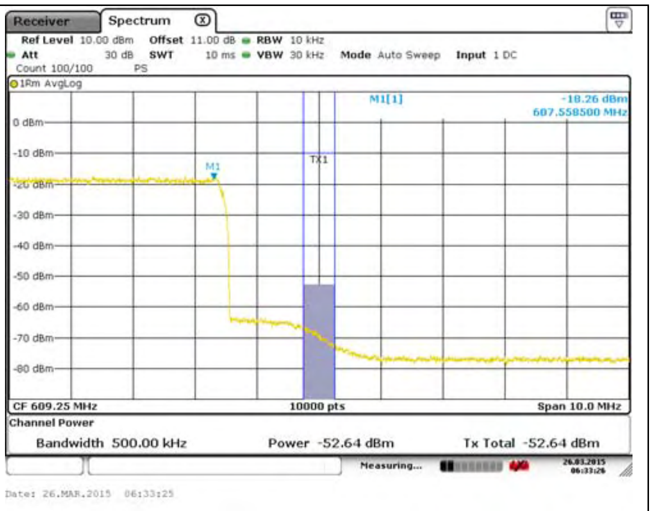
Lower sideband Sub band-2



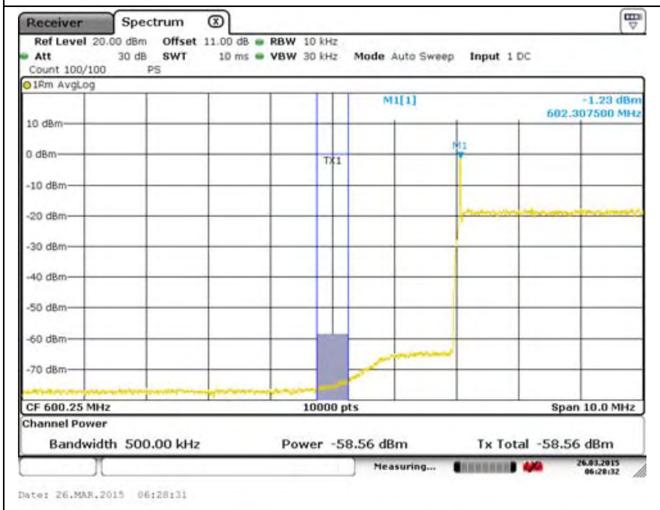
Upper sideband Sub band-2



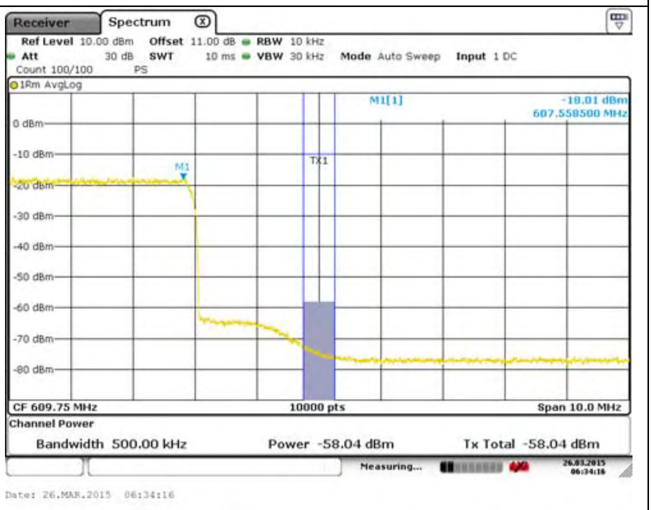
Lower sideband Sub band-3



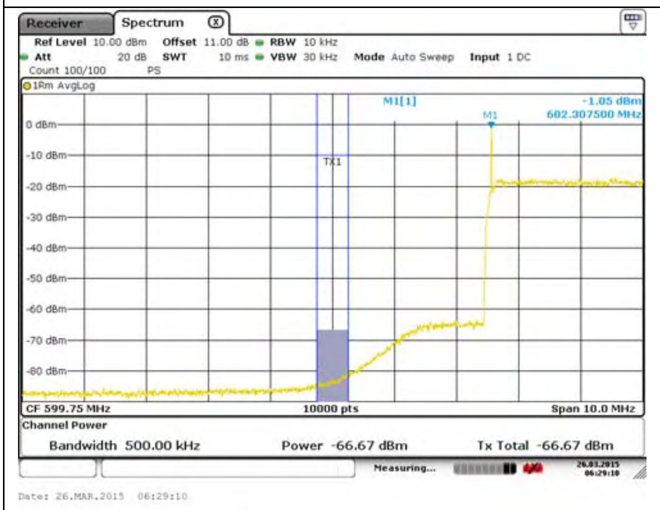
Upper sideband Sub band-3



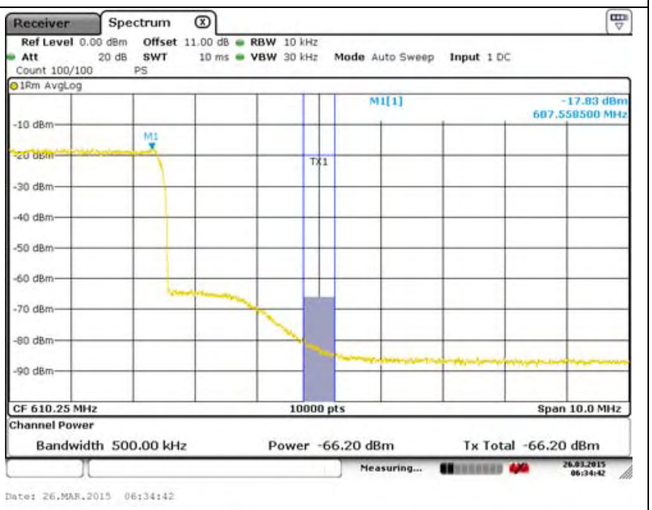
Lower sideband Sub band-4



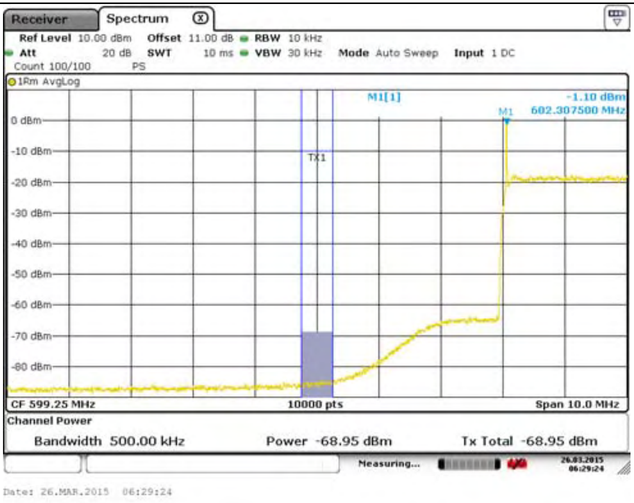
Upper sideband Sub band-4



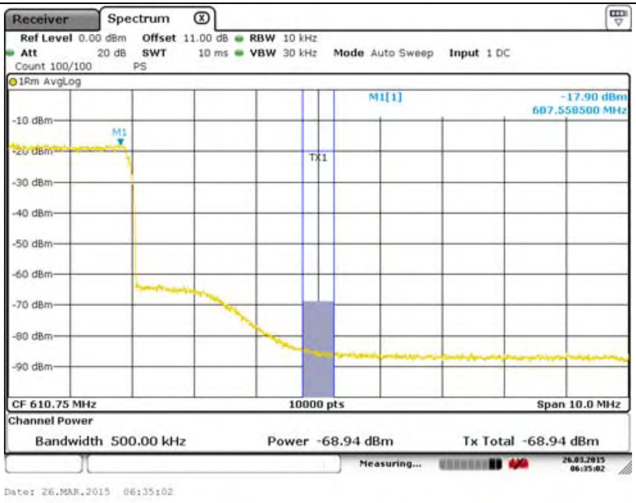
Lower sideband Sub band-5



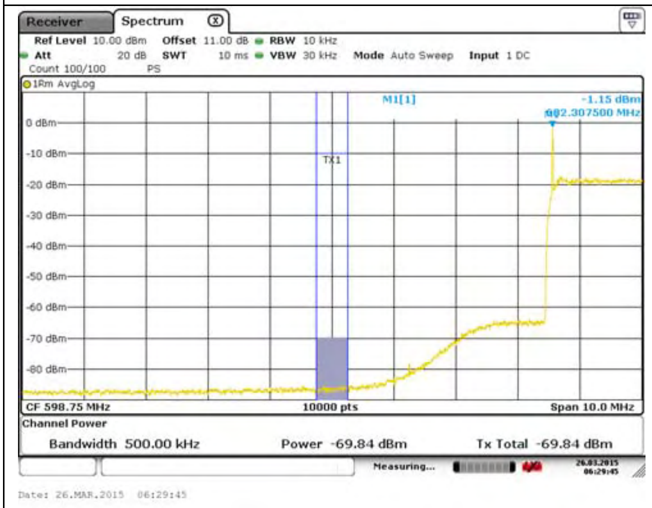
Upper sideband Sub band-5



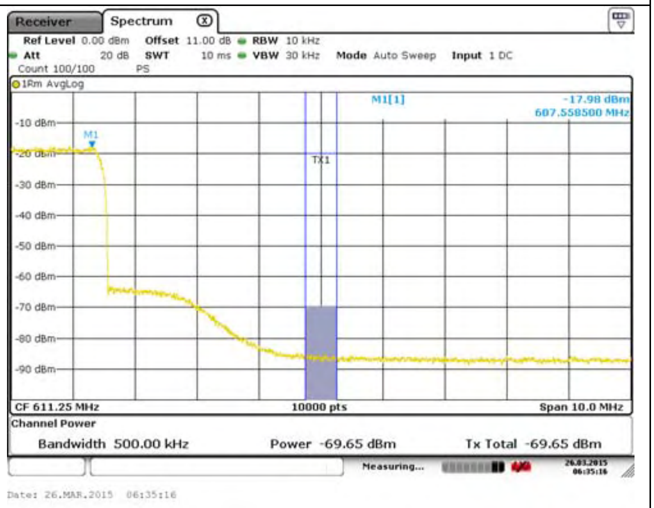
Lower sideband Sub band-6



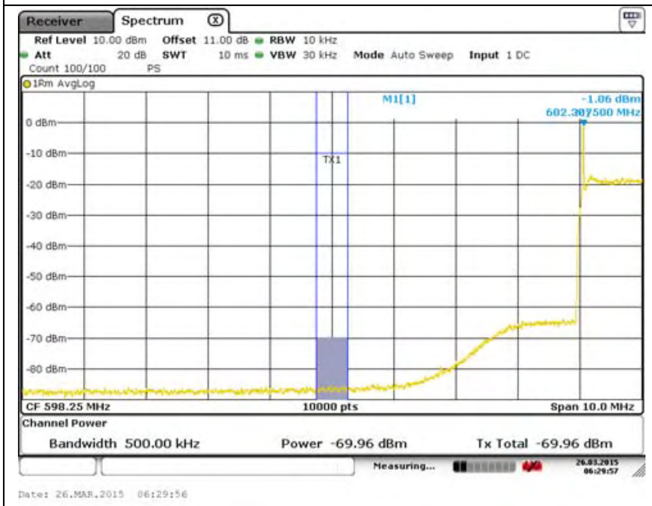
Upper sideband Sub band-6



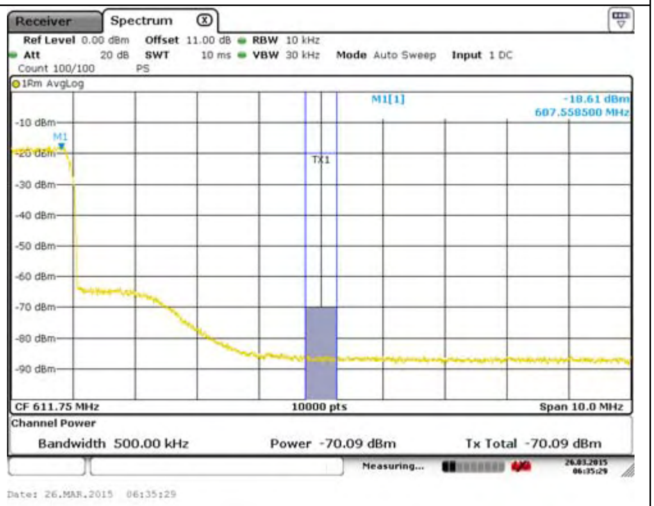
Lower sideband Sub band-7



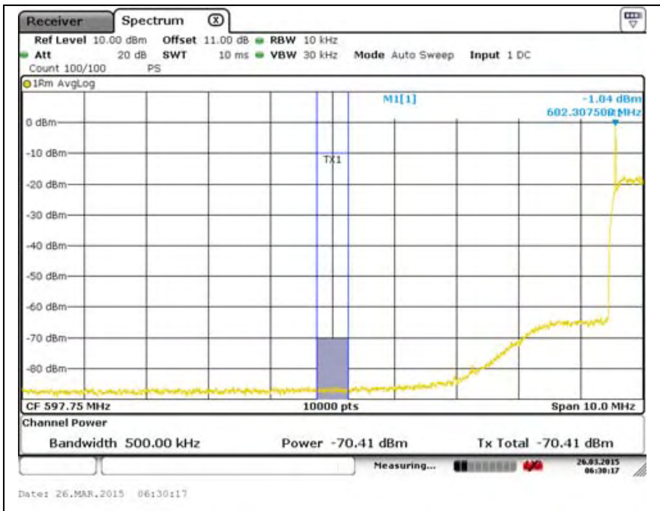
Upper sideband Sub band-7



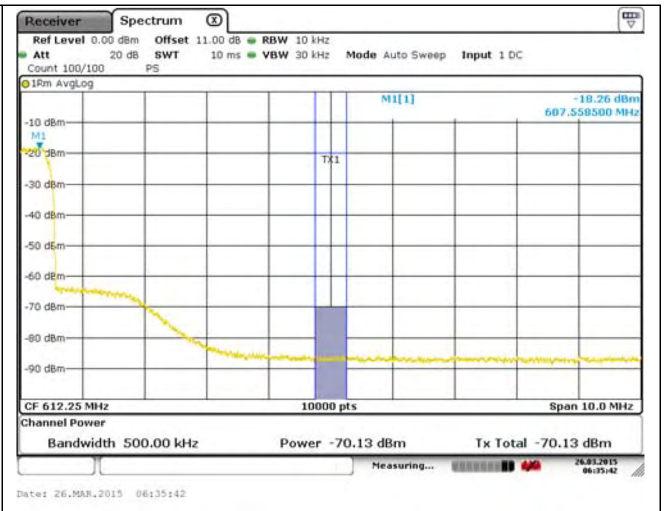
Lower sideband Sub band-8



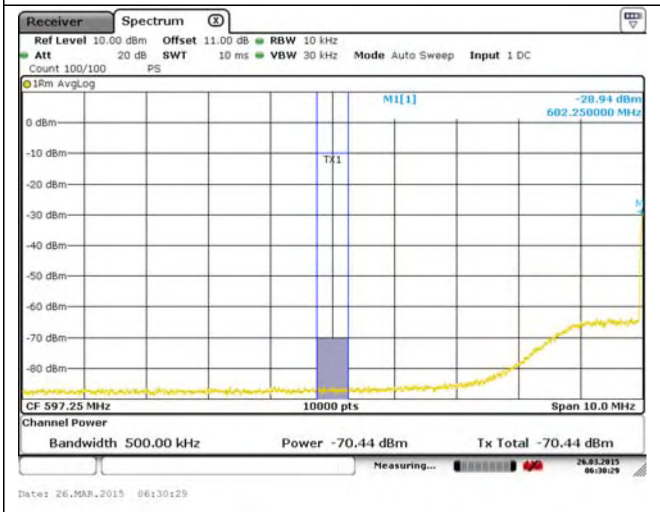
Upper sideband Sub band-8



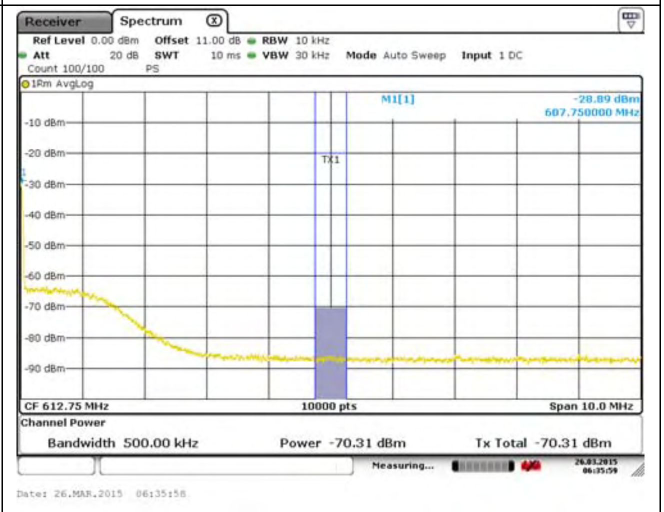
Lower sideband Sub band-9



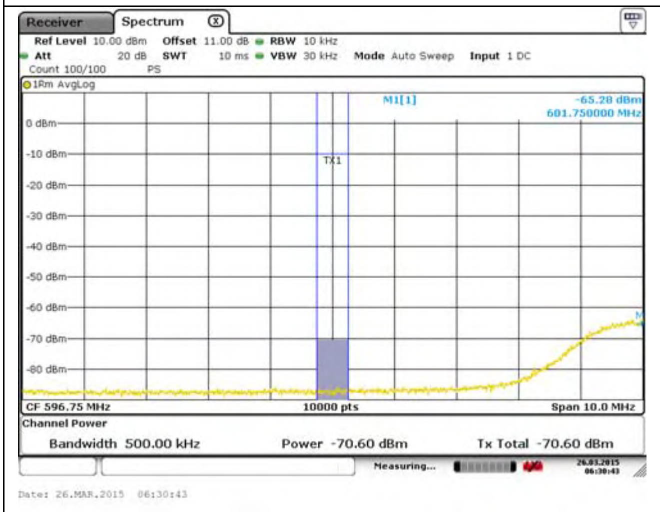
Upper sideband Sub band-9



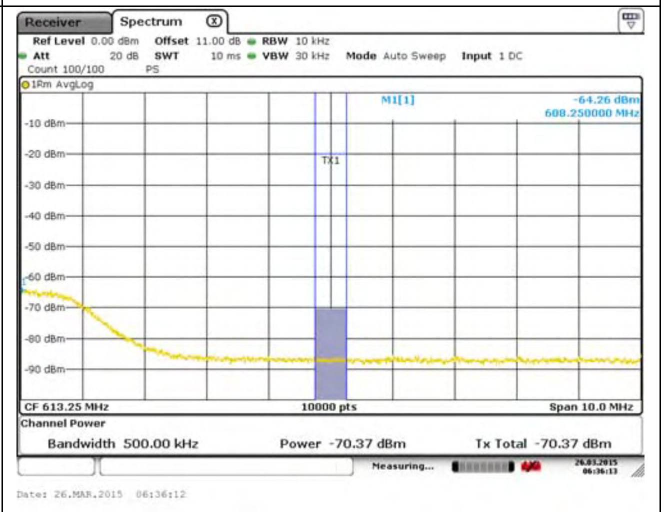
Lower sideband Sub band-10



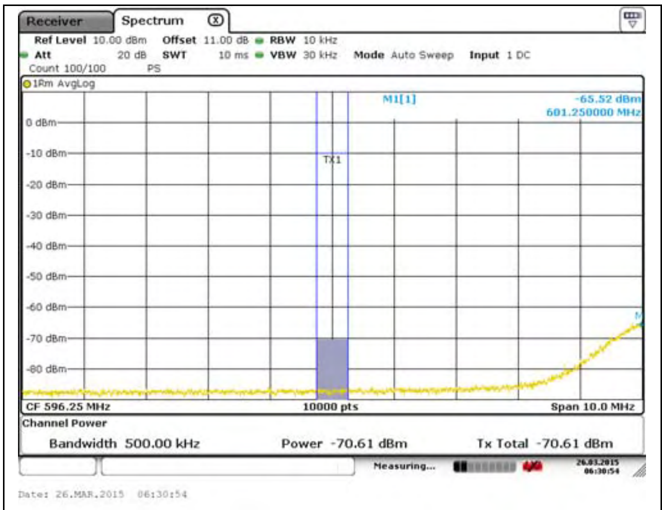
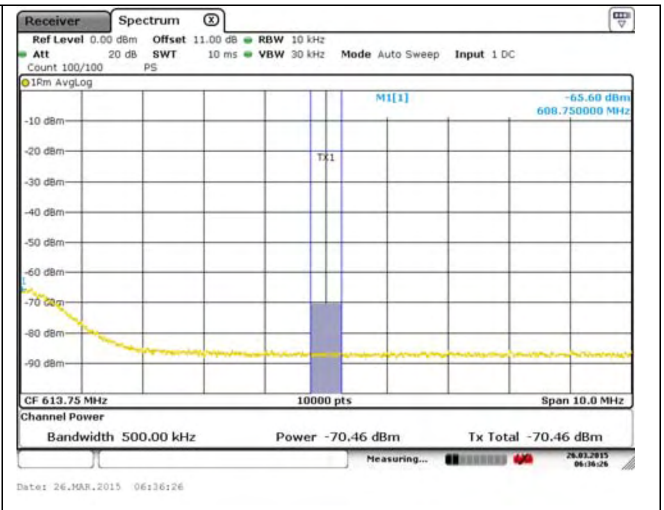
Upper sideband Sub band-10



Lower sideband Sub band-11



Upper sideband Sub band-11

	
Lower sideband Sub band-12	Upper sideband Sub band-12

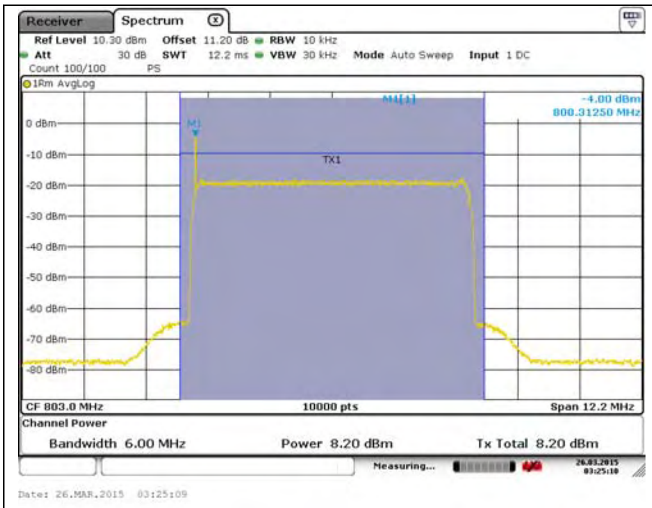
High channel (Channel = 69; frequency = 803 MHz;)

Lower Adjacent Channel Power

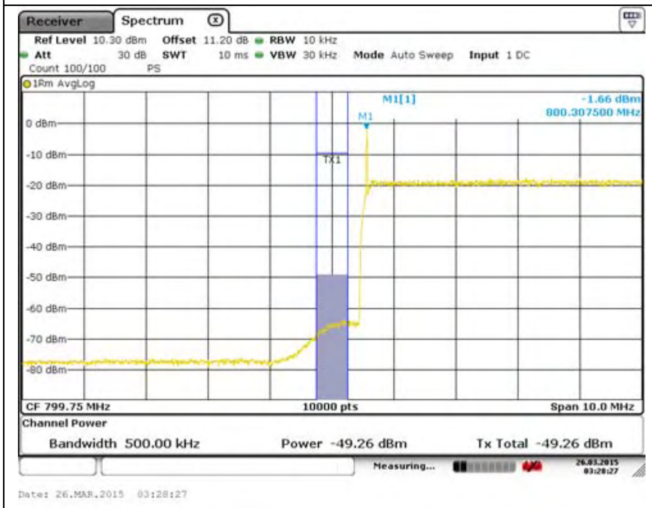
Sub band	frequency (MHz)	6 MHz channel power (dBm)	500 kHz channel power (dBm)	Sub band power dBc	Limit (dBc)	Result
-1	799.75	8.2	-49.26	-57.46	-47	Pass
-2	799.25	8.2	-55.98	-64.18	-49.9	Pass
-3	798.75	8.2	-60.61	-68.81	-55.6	Pass
-4	798.25	8.2	-60.65	-68.85	-61.4	Pass
-5	797.75	8.2	-60.57	-68.77	-67.1	Pass
-6	797.25	8.2	-70.06	-78.26	-71.9	Pass
-7	796.75	8.2	-70.38	-78.58	-76	Pass
-8	796.25	8.2	-70.47	-78.67	-76	Pass
-9	795.75	8.2	-70.54	-78.74	-76	Pass
-10	795.25	8.2	-70.7	-78.9	-76	Pass
-11	794.75	8.2	-70.88	-79.08	-76	Pass
-12	794.25	8.2	-70.9	-79.1	-76	Pass

Upper Adjacent Channel Power

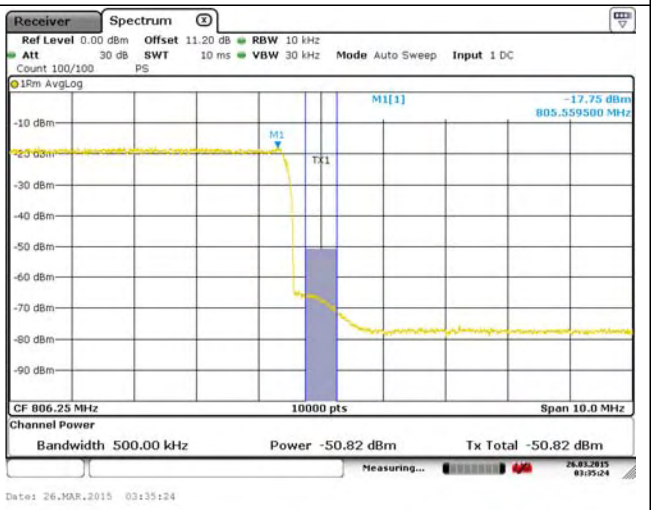
Sub band	frequency (MHz)	6 MHz channel power (dBm)	500 kHz channel power (dBm)	Sub band power dBc	Limit (dBc)	Result
-1	806.25	8.2	-50.82	-59.02	-47	Pass
-2	806.75	8.2	-57.74	-65.42	-49.9	Pass
-3	807.25	8.2	-60.76	-69.04	-55.6	Pass
-4	807.75	8.2	-60.70	-68.92	-61.4	Pass
-5	808.25	8.2	-60.66	-68.86	-67.1	Pass
-6	808.75	8.2	-69.79	-77.99	-71.9	Pass
-7	809.25	8.2	-69.86	-78.06	-76	Pass
-8	809.75	8.2	-70.20	-78.40	-76	Pass
-9	810.25	8.2	-70.35	-78.55	-76	Pass
-10	810.75	8.2	-70.56	-78.76	-76	Pass
-11	811.25	8.2	-70.90	-79.10	-76	Pass
-12	811.75	8.2	-70.89	-79.09	-76	Pass



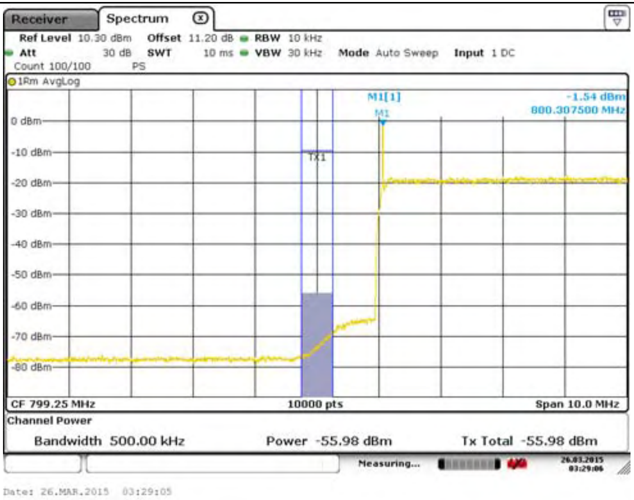
Reference Channel Power



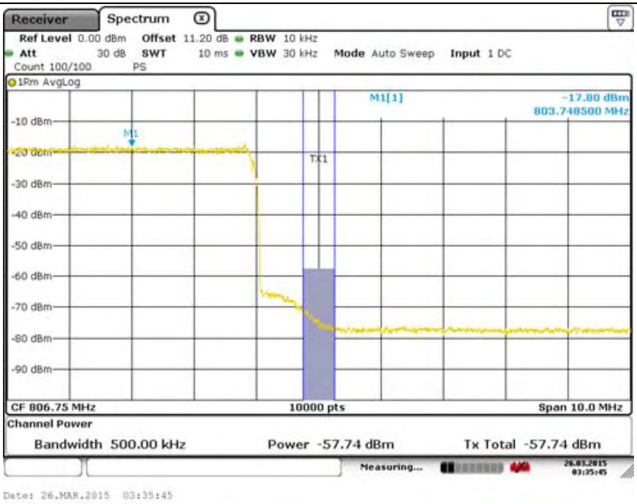
Lower sideband Sub band-1



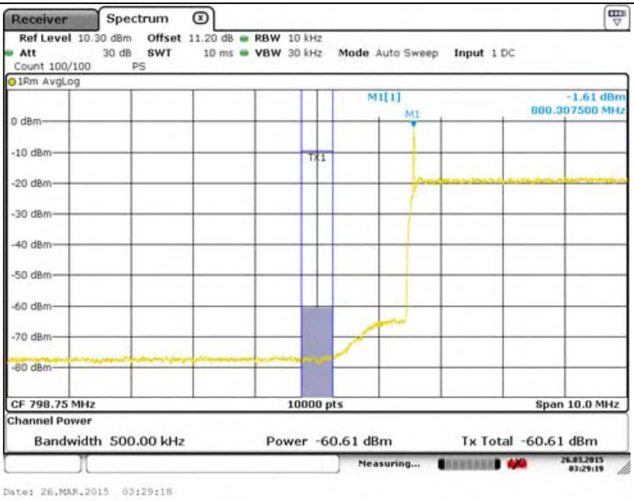
Upper sideband Sub band-1



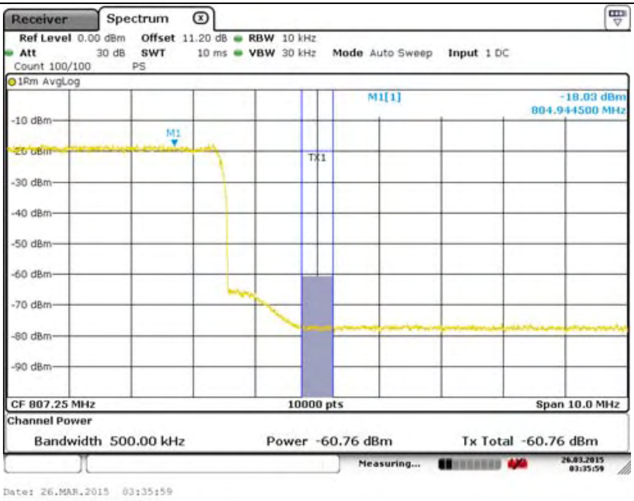
Lower sideband Sub band-2



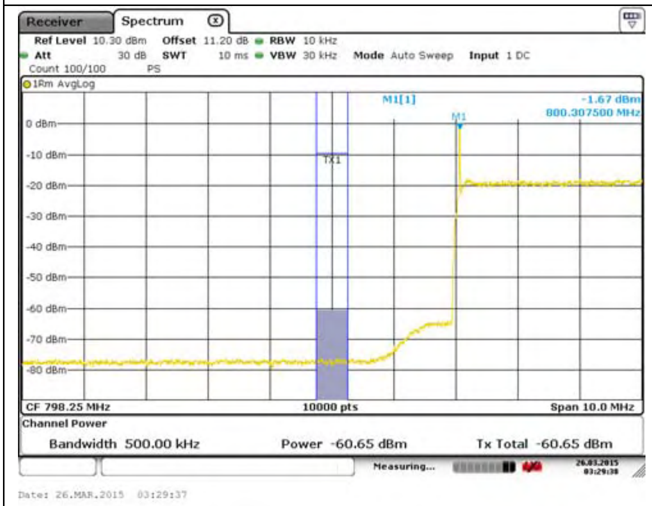
Upper sideband Sub band-2



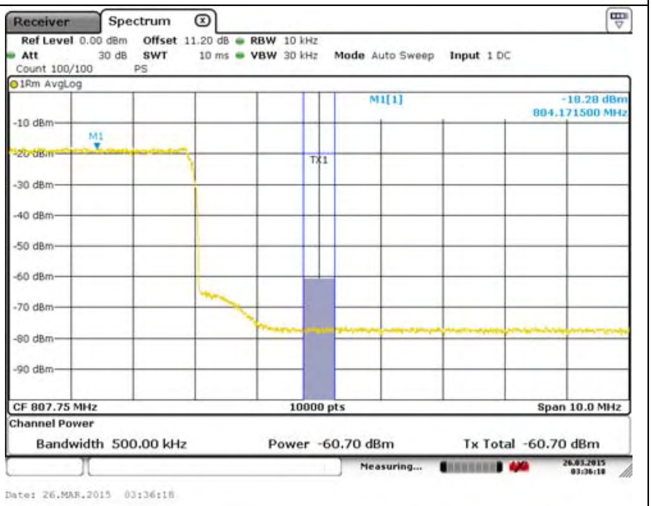
Lower sideband Sub band-3



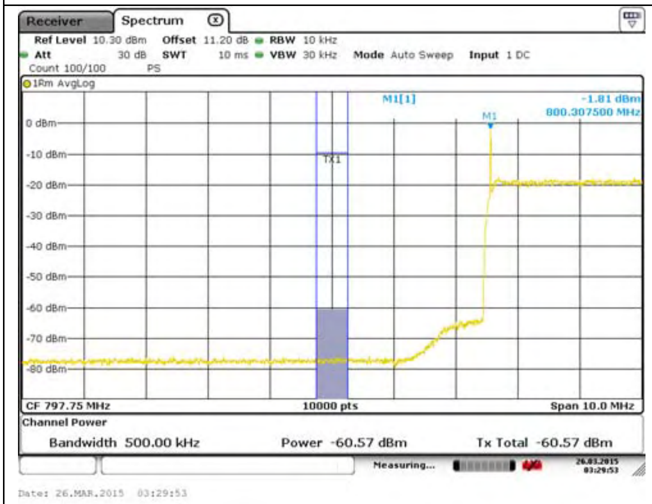
Upper sideband Sub band-3



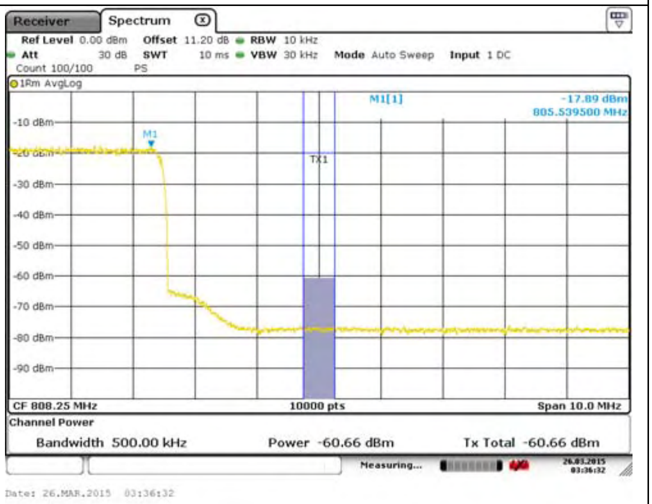
Lower sideband Sub band-4



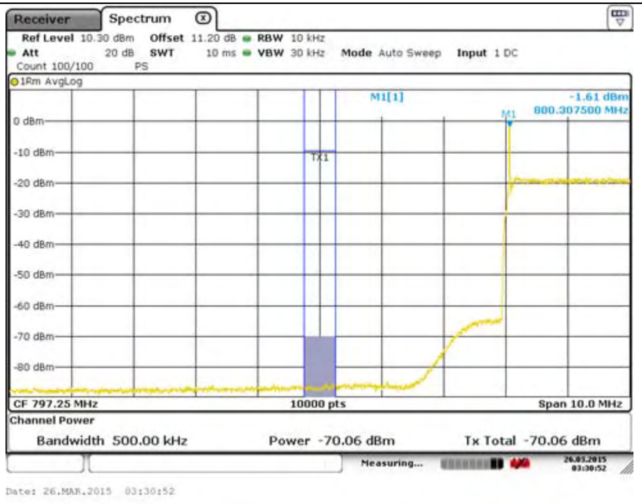
Upper sideband Sub band-4



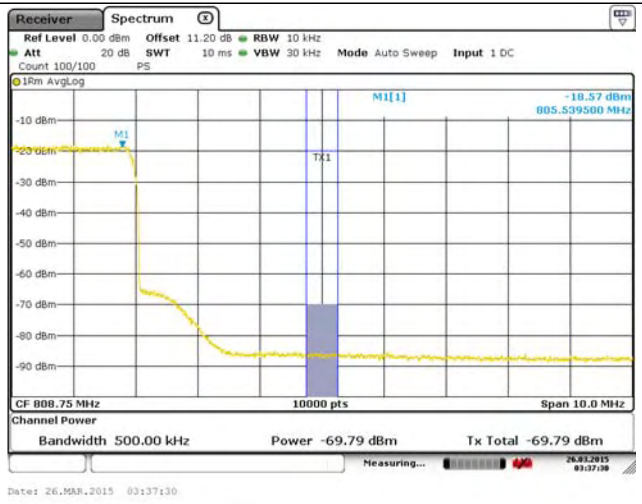
Lower sideband Sub band-5



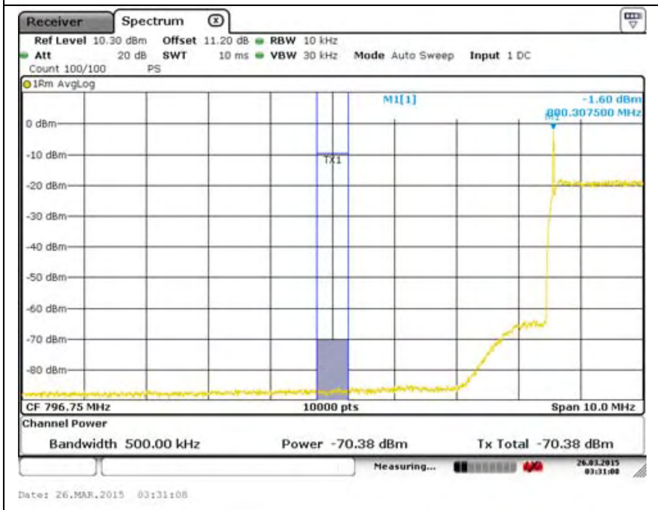
Upper sideband Sub band-5



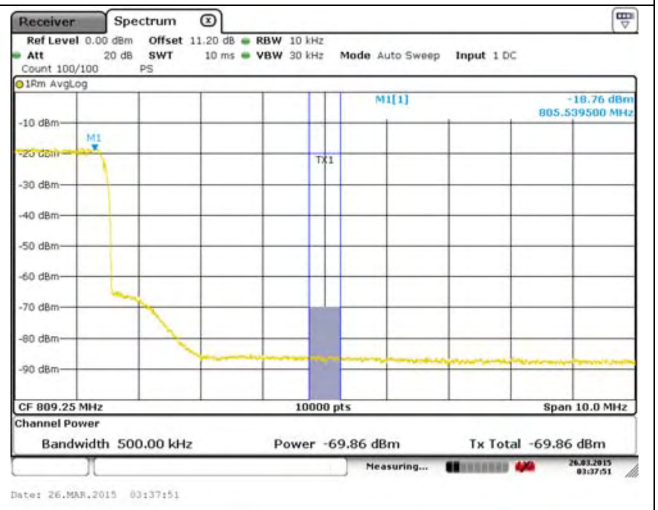
Lower sideband Sub band-6



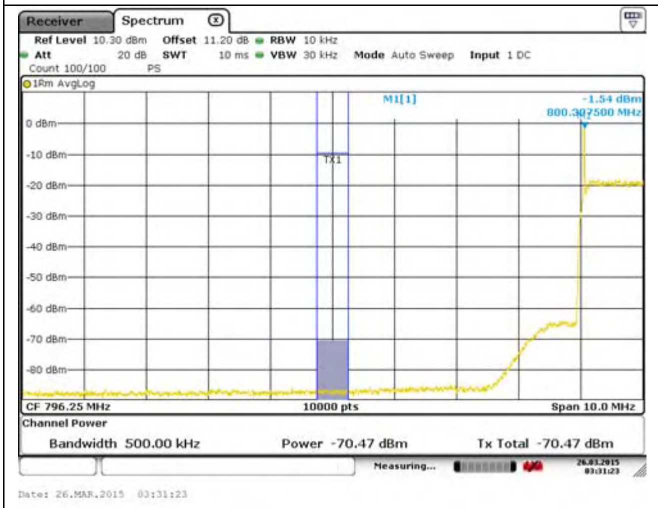
Upper sideband Sub band-6



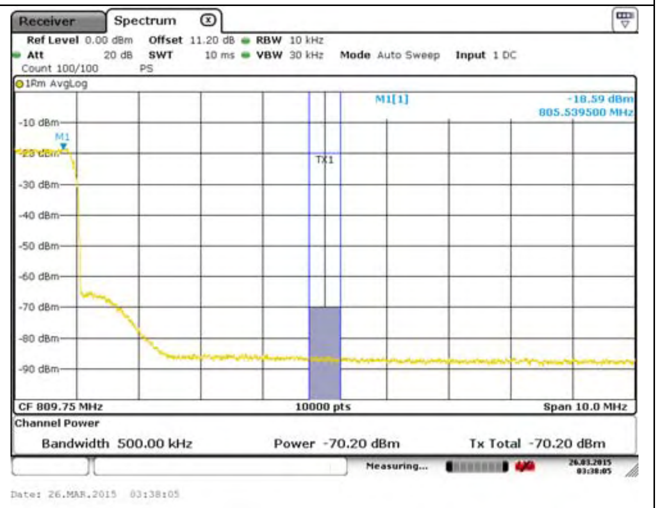
Lower sideband Sub band-7



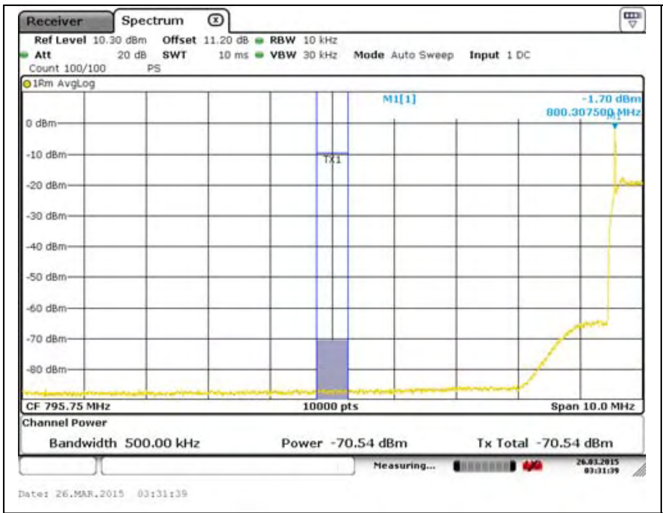
Upper sideband Sub band-7



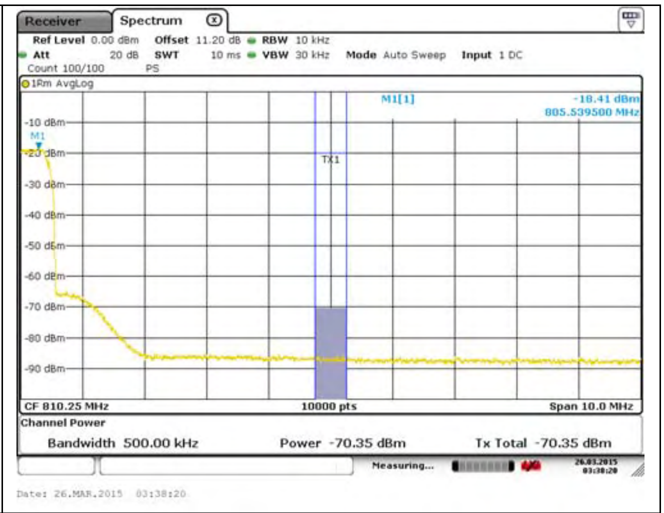
Lower sideband Sub band-8



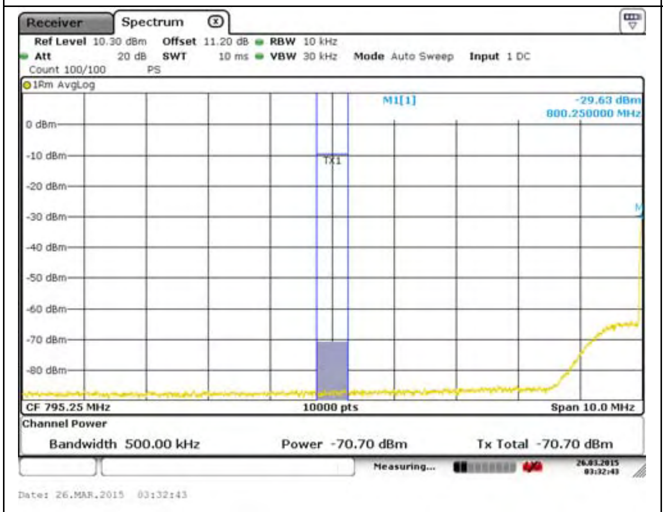
Upper sideband Sub band-8



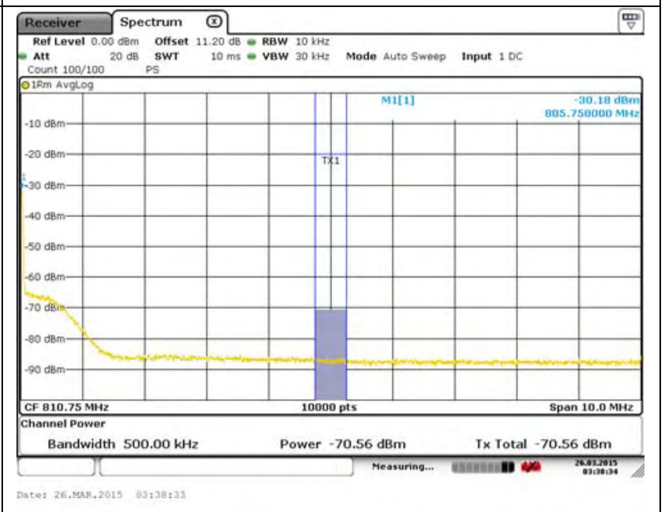
Lower sideband Sub band-9



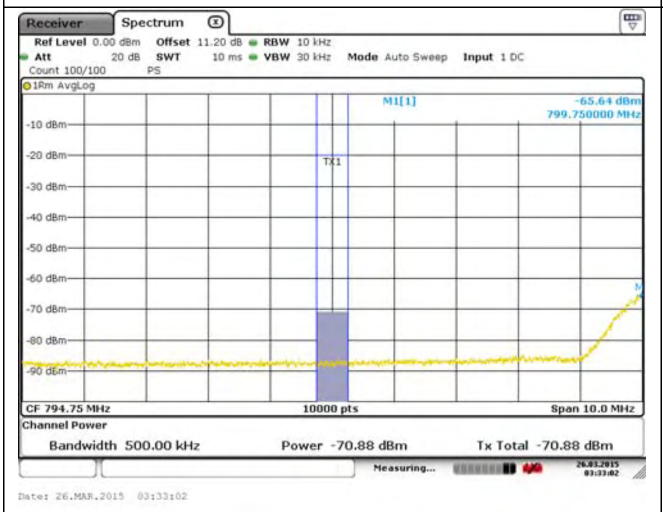
Upper sideband Sub band-9



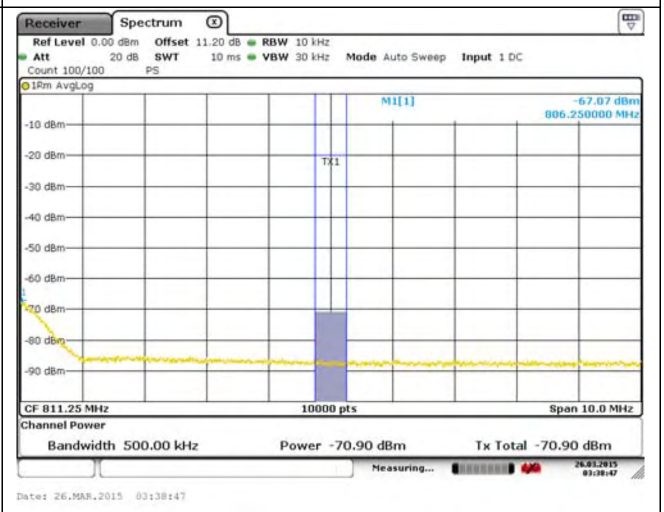
Lower sideband Sub band-10



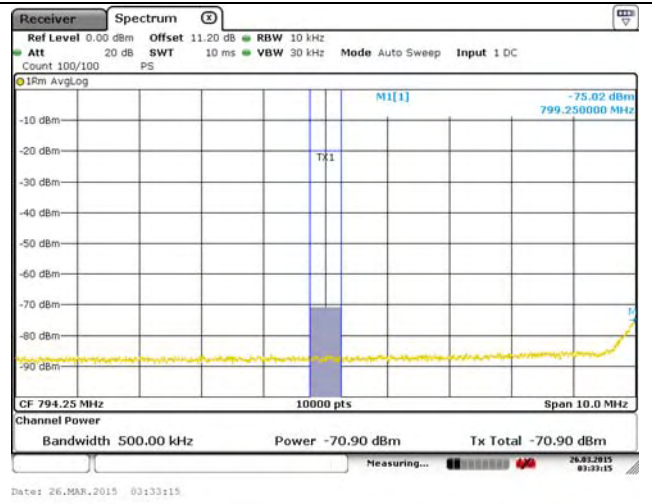
Upper sideband Sub band-10



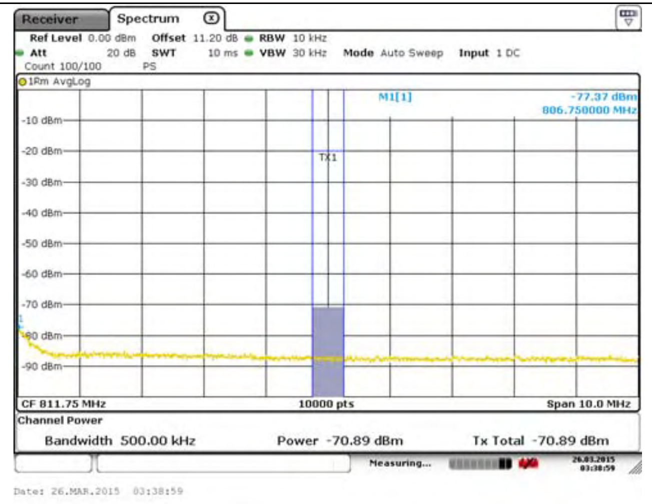
Lower sideband Sub band-11



Upper sideband Sub band-11



Lower sideband Sub band-12



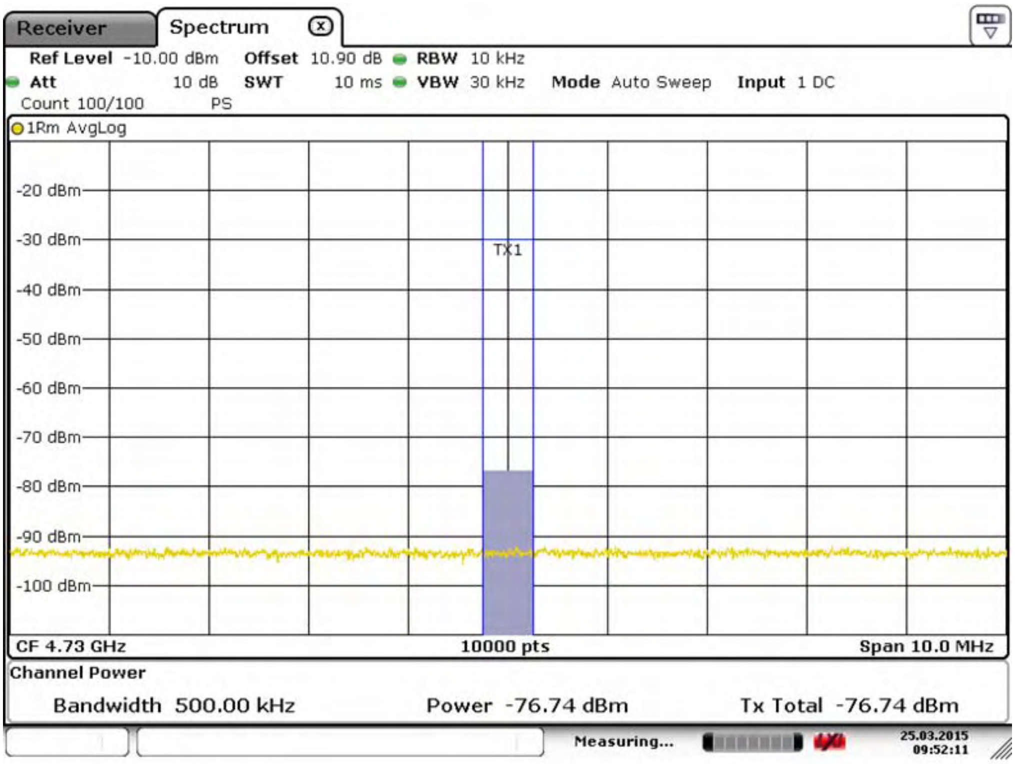
Upper sideband Sub band-12

Harmonic Spectrum with Dielectric Coupling

Lower Channel (473MHz)

Harmonic	frequency (MHz)	6 MHz reference channel power (dBm)	500 kHz Harmonic Channel power (dBm)	Calculate power(dBc)	Limit (dBc)	Result
1	473	8.62	-		-	Pass
2	946	8.62	-80.97	-89.59	-76	Pass
3	1419	8.62	-82.15	-90.77	-76	Pass
4	1892	8.62	-80.66	-89.28	-76	Pass
5	2365	8.62	-78.77	-87.39	-76	Pass
6	2838	8.62	-76.93	-85.55	-76	Pass
7	3311	8.62	-79.35	-87.97	-76	Pass
8	3784	8.62	-78.42	-87.04	-76	Pass
9	4257	8.62	-77.27	-85.89	-76	Pass
10	4730	8.62	-76.74	-85.36	-76	Pass

Worst case Harmonic Energy at 10th Harmonic

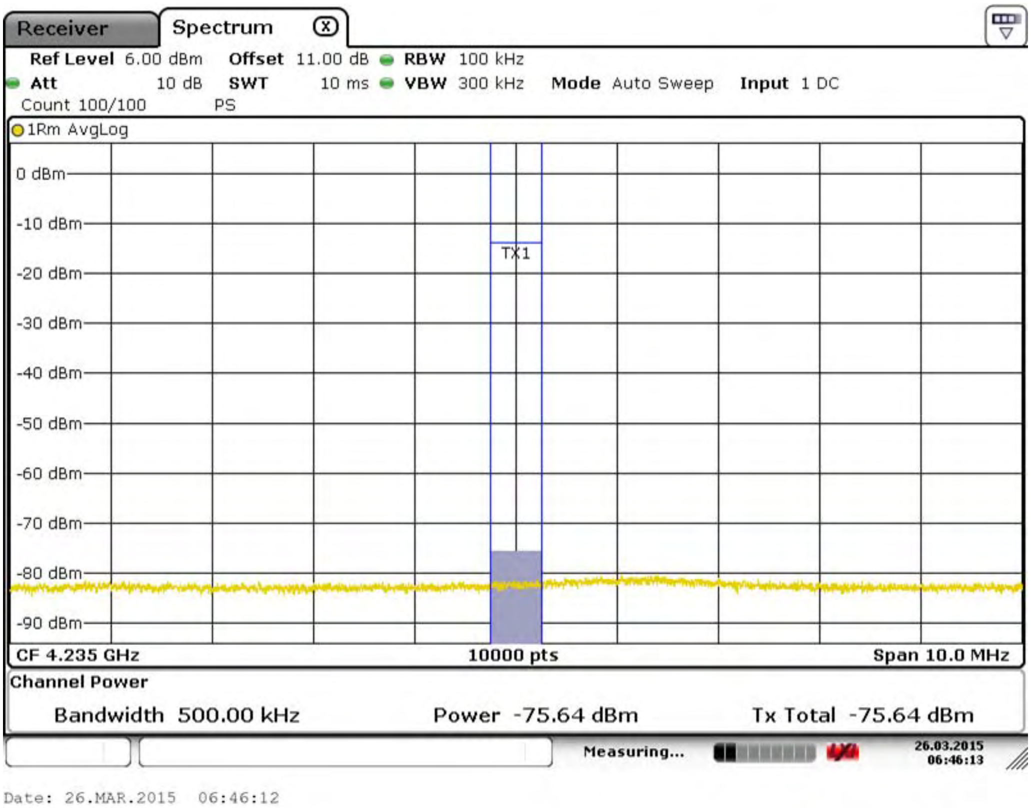


Date: 25.MAR.2015 09:52:11

Middle Channel (605MHz)

Harmonic	frequency (MHz)	6 MHz channel power (dBm)	500 kHz Harmonic Channel power (dBm)	Sub band power dBc	Limit (dBc)	Result
1	605	8.2	-		-	Pass
2	1210	8.2	-78.50	-86.7	-76	Pass
3	1815	8.2	-80.36	-88.56	-76	Pass
4	2420	8.2	-78.32	-86.52	-76	Pass
5	3025	8.2	-78.20	-86.4	-76	Pass
6	3630	8.2	-78.03	-86.23	-76	Pass
7	4235	8.2	-75.64	-83.84	-76	Pass
8	4840	8.2	-75.69	-83.89	-76	Pass
9	5445	8.2	-78.01	-86.21	-76	Pass
10	6050	8.2	-77.58	-85.78	-76	Pass

Worst case Harmonic Energy at 7th Harmonic

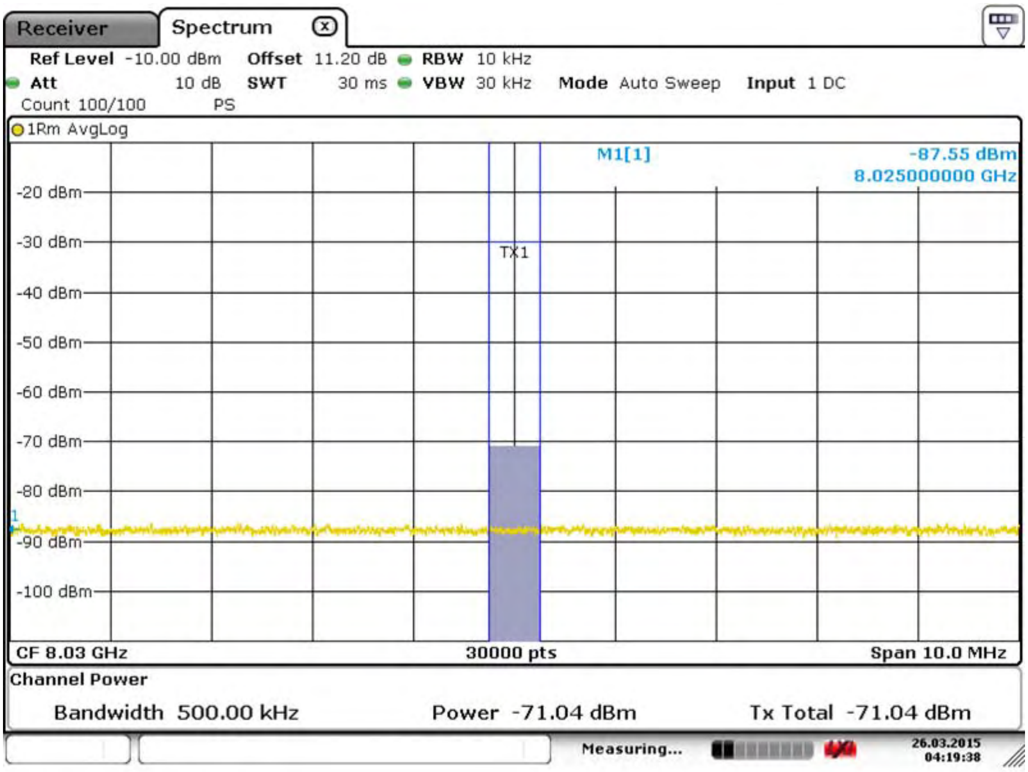


High Channel (803MHz)

Harmonic	frequency (MHz)	6 MHz channel power (dBm)	500 kHz Harmonic Channel power (dBm)	Sub band power dBc	Limit (dBc)	Result
1	803	8.2	-		-	Pass
2	1606	8.2	-77.10	-85.3	-76	Pass
3	2409	8.2	-78.41	-86.61	-76	Pass
4	3212	8.2	-78.97	-87.17	-76	Pass
5	4015	8.2	-77.33	-85.53	-76	Pass
6	4818	8.2	-76.34	-84.54	-76	Pass
7	5621	8.2	-78.65	-86.85	-76	Pass
8	6424	8.2	-76.00	-84.2	-76	Pass
9	7227	8.2	-71.45	-79.65	-76	Pass
10	8030	8.2	-71.04	-79.24	-76	Pass

Note: Calculate Power= reference channel power- Measured power

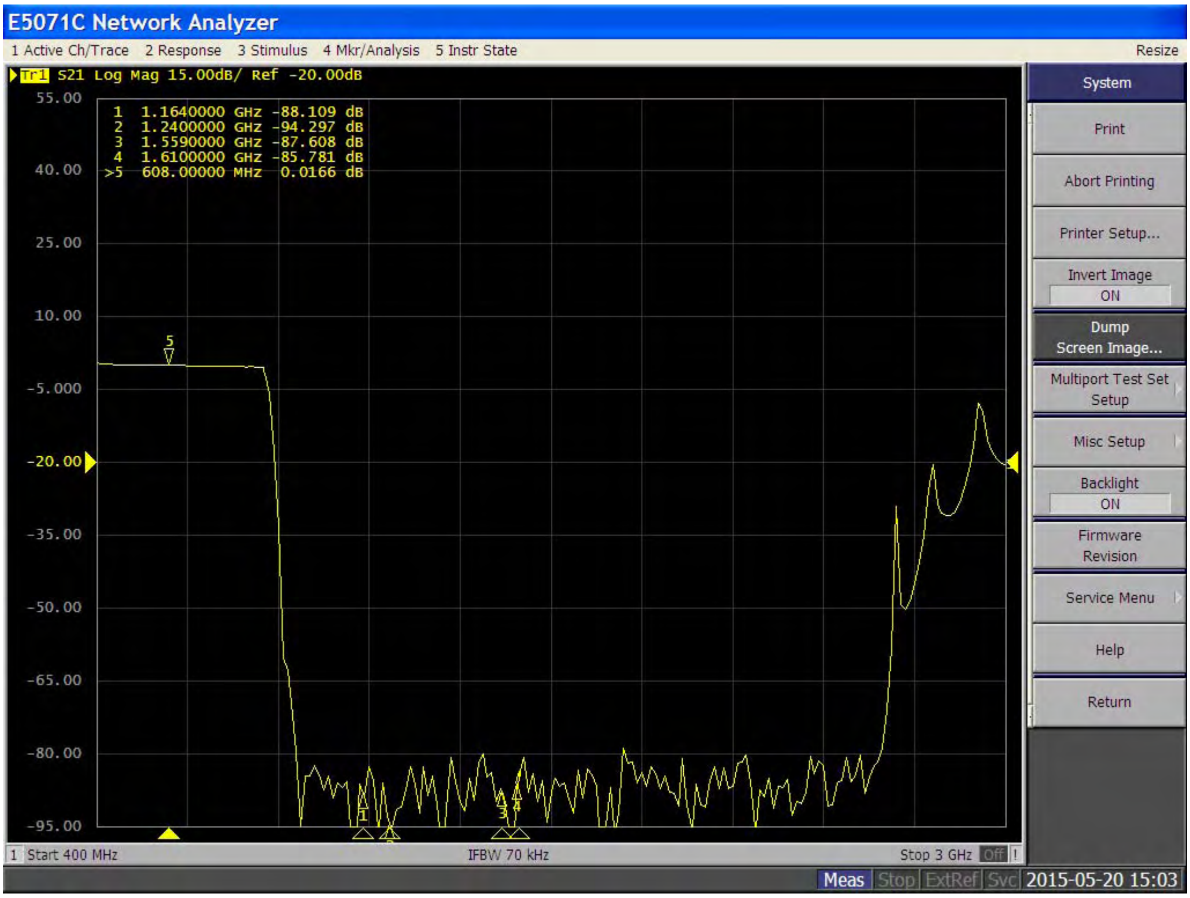
Worst case Harmonic Energy at 10th Harmonic



Date: 26.MAR.2015 04:19:38

Attenuation to GPS Band Frequencies

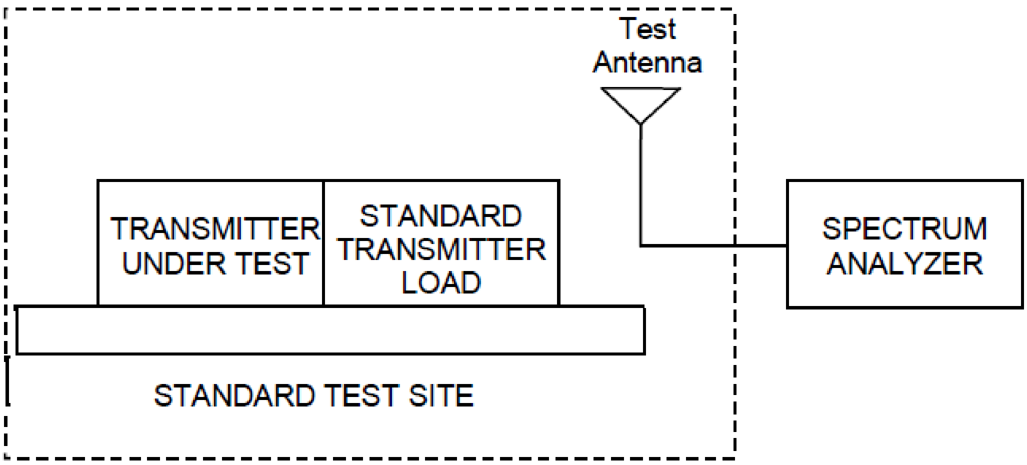
The Below network analyzer plot of the output filtering for this transmitter demonstrates compliance with emission attenuation requirements for GPS band protection as specified in FCC 74.794.

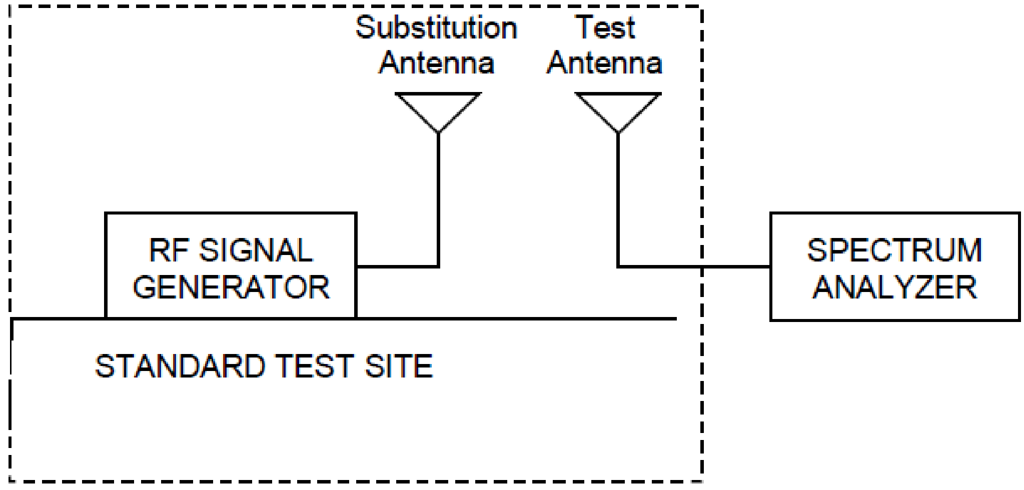


6.4 Radiated emission

Temperature	23oC
Relative Humidity	53%
Atmospheric Pressure	1004mbar
Test date :	March 26, 2015
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§74.750(a) (iii)	a)	Radio frequency harmonics of the visual and aural carriers, measured at the output terminals of the transmitter, shall be attenuated no less than 60 dB below the peak visual output power within the assigned channel. All other emissions appearing on frequencies more than 3 megacycles above or below the upper and lower edges, respectively, of the assigned channel shall be attenuated no less than	☐
	(i)	30 dB for transmitters rated at no more than 1 watt power output.	☐
	(ii)	50 dB for transmitters rated at more than 1 watt power output.	☐
	(iii)	60 dB for transmitters rated at more than 100 watts power output.	☑
Test Setup	 (set 1)		



(set 2)

Test Procedure

Method of Measurement Unwanted Emissions: Radiated Spurious (Non-Radiating Load)

a) Connect the equipment as illustrated.

b) Adjust the spectrum analyzer for the following settings:

1) Resolution Bandwidth = 100 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1GHz.

2) Video Bandwidth = 300 kHz for spurious emissions below 1 GHz, and 3 MHz for spurious emissions above 1 GHz.

3) Sweep Speed slow enough to maintain measurement calibration.

4) Detector Mode = Positive Peak.

c) Place the transmitter to be tested on the Floor.

d) Radiation from the device was measured at a distance of 10m(30MHz~1GHz) and 3m(above 1GHz) in 4 different physical rotation angles: 0, 90, 180 and 270 degrees (0 degrees being the front side of the device).

e) The transmitter was rotated 90 degrees for each of the measurement orientation. For each spurious frequency, raise and lower the test antenna at 2m high to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.

f) Repeat step e) for each spurious frequency with the test antenna polarized vertically.

g) Reconnect the equipment as illustrated.

h) Keep the spectrum analyzer adjusted as in step e).

i) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

j) Feed the substitution antenna at the transmitter end with a signal generator connected to

	the antenna by means of a non radiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna toobtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output. k) Repeat step j) with both antennas vertically polarized for each spurious frequency. l) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps k) and l) by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula: Pd(dBm) = Pg(dBm) – cable loss (dB) + antenna gain (dB) where: Pd is the dipole equivalent power and Pg is the generator output power into the substitution antenna. n) The Pd levels record in step m) are the absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following: Radiated spurious emissions (dB) = $10\ \log_{10}\left(\frac{TX\ power\ in\ watts}{0.001}\right) - the\ levels\ in\ step\ m)$ NOTE: It is permissible to use other antennas provided they can be referenced to a dipole.
Remark	N/A
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☐ N/A

Low channel power= 1300W ≈ 61.14 dBm,

Low channel (front side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
946	-26.22	V	5.8	0.78	-21.2	1.14	-22.34
946	-28.22	H	5.8	0.78	-23.2	1.14	-24.34
1419	-29.19	V	8.4	1.61	-22.4	1.14	-23.54
1419	-31.59	H	8.4	1.61	-27.3	1.14	-25.94
75.45	-52.78	V	6.3	0.26	-46.74	1.14	-47.88
52.19	-50.16	H	6.3	0.41	-44.27	1.14	-45.41

Low channel (left side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
946	-27.33	V	5.8	0.78	-22.31	1.14	-23.45
946	-29.09	H	5.8	0.78	-24.07	1.14	-25.21
1419	-30.17	V	8.4	1.61	-25.88	1.14	-24.52
1419	-33.66	H	8.4	1.61	-29.37	1.14	-28.01
75.45	-54.29	V	6.3	0.26	-48.25	1.14	-49.39
52.19	-51.27	H	6.3	0.41	-45.38	1.14	-46.52

Low channel (right side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
946	-28.39	V	5.8	0.78	-23.37	1.14	-24.51
946	-27.44	H	5.8	0.78	-22.42	1.14	-23.56
1419	-29.01	V	8.4	1.61	-24.72	1.14	-23.36
1419	-30.34	H	8.4	1.61	-26.05	1.14	-24.69
75.45	-51.32	V	6.3	0.26	-45.28	1.14	-46.42
52.19	-50.29	H	6.3	0.41	-44.4	1.14	-45.54

Low channel (rear side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
946	-23.09	V	5.8	0.78	-18.07	1.14	-19.21
946	-22.39	H	5.8	0.78	-17.37	1.14	-18.51
1419	-25.31	V	8.4	1.61	-21.02	1.14	-19.66

1419	-28.39	H	8.4	1.61	-24.1	1.14	-22.74
75.45	-45.98	V	6.3	0.26	-39.94	1.14	-41.08
52.19	-48.75	H	6.3	0.41	-42.86	1.14	-44

Middle channel power = 1300W ≈ 61.14 dBm

Middle channel (front side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1210	-23.12	V	6	1.48	-18.6	1.14	-19.74
1210	-23.45	H	6	1.48	-18.93	1.14	-20.07
324.8	-51.77	V	6.4	0.76	-46.13	1.14	-47.27
715.2	-53.87	H	6.8	0.91	-47.98	1.14	-49.12

Middle channel (left side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1210	-24.67	V	6	1.48	-20.15	1.14	-21.29
1210	-25.84	H	6	1.48	-21.32	1.14	-22.46
324.8	-49.76	V	6.4	0.76	-44.12	1.14	-45.26
715.2	-48.1	H	6.8	0.91	-42.21	1.14	-43.35

Middle channel (right side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1210	-22.89	V	6	1.48	-18.37	1.14	-19.51
1210	-21.77	H	6	1.48	-17.25	1.14	-18.39
324.8	-47.89	V	6.4	0.76	-42.25	1.14	-43.39
715.2	-49.09	H	6.8	0.91	-43.2	1.14	-44.34

Middle channel (rear side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1210	-21.59	V	6	1.48	-17.07	1.14	-18.21
1210	-22.57	H	6	1.48	-18.05	1.14	-19.19
324.8	-52.78	V	6.4	0.76	-47.14	1.14	-48.28
715.2	-50.16	H	6.8	0.91	-44.27	1.14	-45.41

High channel power= 1300W ≈ 61.14 dBm

High channel (front side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1606	-21.78	V	8.2	1.65	-17.63	1.14	-16.37
1606	-22.13	H	8.2	1.65	-17.98	1.14	-16.72
124.8	-49.77	V	6.3	0.57	-44.04	1.14	-45.18
315.2	-46.29	H	6.4	0.76	-40.65	1.14	-41.79

High channel (left side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1606	-20.33	V	8.2	1.65	-16.18	1.14	-14.92
1606	-22	H	8.2	1.65	-17.85	1.14	-16.59
124.8	-49.29	V	6.3	0.57	-43.56	1.14	-44.7
315.2	-48.48	H	6.4	0.76	-42.84	1.14	-43.98

High channel (right side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1606	-19.13	V	8.2	1.65	-14.98	1.14	-13.72
1606	-20.56	H	8.2	1.65	-16.41	1.14	-15.15
124.8	-49.64	V	6.3	0.57	-43.91	1.14	-45.05
315.2	-47.39	H	6.4	0.76	-41.75	1.14	-42.89

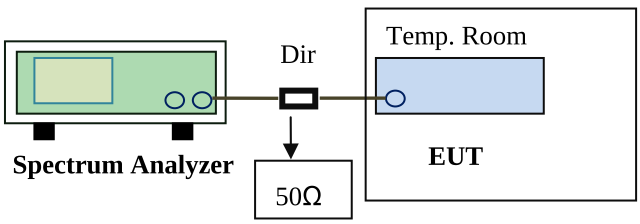
High channel (rear side)

Frequency (MHz)	Substituted level (dBm)	Polarity (H/V)	Antenna Gain Correction (dB)	Cable Loss (dB)	Corrected Reading (dBm)	Limit (dBm)	Margin (dB)
1606	-18.33	V	8.2	1.65	-14.18	1.14	-12.92
1606	-19.87	H	8.2	1.65	-15.72	1.14	-14.46
124.8	-46.29	V	6.3	0.57	-40.56	1.14	-41.7
315.2	-49.56	H	6.4	0.76	-43.92	1.14	-45.06

6.5 Frequency tolerance

Temperature	24°C
Relative Humidity	54%
Atmospheric Pressure	1005mbar
Test date :	March 26, 2015
Tested By :	Winnie Zhang

Requirement(s):

Spec	Item	Requirement	Applicable
§74.761		The licensee of a low power TV, TV translator, or TV booster station shall maintain the transmitter output frequencies as set forth below. The frequency tolerance of stations using direct frequency conversion of a received signal and not engaging in offset carrier operation as set forth in paragraph (d) of this section will be referenced to the authorized plus or minus 10 kHz offset, if any, of the primary station.	☐
	a	The visual carrier shall be maintained to within 0.02 percent of the assigned visual carrier frequency for transmitters rated at not more than 100 watts peak visual power.	☐
	b	The visual carrier shall be maintained to within 0.002 percent of the assigned visual carrier frequency for transmitters rated at more than 100 watts peak visual power.	☑
	c	The aural carrier of stations employing modulating equipment shall be maintained at 4.5 MHz ±1 kHz above the visual carrier frequency.	☐
	d	The visual carrier shall be maintained to within 1 kHz of the assigned channel carrier frequency if the low power TV, TV translator, or TV booster station is authorized with a specified offset designation in order to provide protection under the provisions of §74.705 or §74.707.	☐
Test Setup			

Test Procedure	a) Connect the equipment as illustrated. b) Operate the equipment in standby conditions for 15 minutes before proceeding. c) Record the carrier frequency of the transmitter as MCFMHz . d) Calculate the ppm frequency error by the following: $ppm\ error = \left(\frac{MCF_{MHz}}{ACF_{MHz}} - 1\right) * 10^6$ where MCFMHz is the Measured Carrier Frequency in MHz ACFMHz is the Assigned Carrier Frequency in MHz e) The value recorded in step d) is the carrier frequency stability.
Remark	
Result	☑ Pass ☐ Fail

Test Data ☑ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☐ N/A

Test data (Low frequency= 473 MHz)

Temperature (℃)	Voltage (AC 110V/60Hz 3 Phases)	Test frequency (MHz)	Measurement (ppm)	Limit (ppm)	Result
0	110V	472.9997450	5.4	20	Pass
10		472.9997450	5.4	20	Pass
20		472.9997350	5.6	20	Pass
30		472.9997250	5.8	20	Pass
40		472.9997450	5.4	20	Pass
50		472.9997650	5.0	20	Pass
30	121V	472.9997750	4.8	20	Pass
30	99V	472.9998750	2.6	20	Pass

Test data (Middle frequency= 605 MHz)

Temperature (℃)	Voltage (AC 110V/60Hz 3 Phases)	Test frequency (MHz)	Measurement (ppm)	Limit (ppm)	Result
0	110V	605.0000250	4.0	20	Pass
10		605.0000250	4.0	20	Pass
20		605.0000250	4.0	20	Pass
30		605.0000250	4.0	20	Pass
40		605.0000250	4.0	20	Pass
50		605.0000250	4.0	20	Pass
30	121V	605.0000420	4.0	20	Pass
30	99V	605.0000420	4.0	20	Pass

Test data (High frequency= 803 MHz)

Temperature (℃)	Voltage (AC 110V/60Hz 3 Phases)	Test frequency (MHz)	Measurement (ppm)	Limit (ppm)	Result
0	110V	803.0002230	2.8	20	Pass
10		803.0002230	2.8	20	Pass
20		803.0002220	2.8	20	Pass
30		803.0002250	2.8	20	Pass
40		803.0002240	2.8	20	Pass
50		803.0002230	2.8	20	Pass
30	121V	803.0001920	2.8	20	Pass
30	99V	803.0001750	2.8	20	Pass

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Due	In use
RF conducted test					
R&S EMI Receiver	ESR26	1316.3003K26-101264-BP	09/18/2014	09/17/2015	☑
AC Power Supply	HPA-3360	HP1412120346	09/18/2014	09/17/2015	☑
Agilent Power Meter	E4418B	MY41294989	06/14/2014	06/15/2015	☑
Radiated Emissions					
R&S EMI Receiver	ESR26	1316.3003K26-101264-BP	09/18/2014	09/17/2015	☑
Positioning Controller	UC3000	MF780208282	11/20/2014	11/19/2015	☑
Bilog Antenna (30MHz~6GHz)	JB6	A110712	09/22/2014	09/21/2015	☑
Bilog Antenna (30MHz~2GHz)	JB1	A112017	09/22/2014	09/21/2015	☑
A-INFOMW Horn Antenna (1~18GHz)	AH-118	71259	09/25/2014	09/24/2015	☑
EMCO Horn Antenna (1~18GHz)	AH-118	71283	09/25/2014	09/24/2015	☑
OPT010 AMPLIFIER(0.1~1300MHz)	8447E	2727A02430	09/02/2014	09/01/2015	☑
Microwave Preamplifier(0.5 ~ 18GHz)	PAM-118	443008	09/02/2014	09/01/2015	☑
Network Analyzer	E5071C	US39173518	09/20/2014	09/19/2014	

Annex B. EUT And Test Setup Photographs

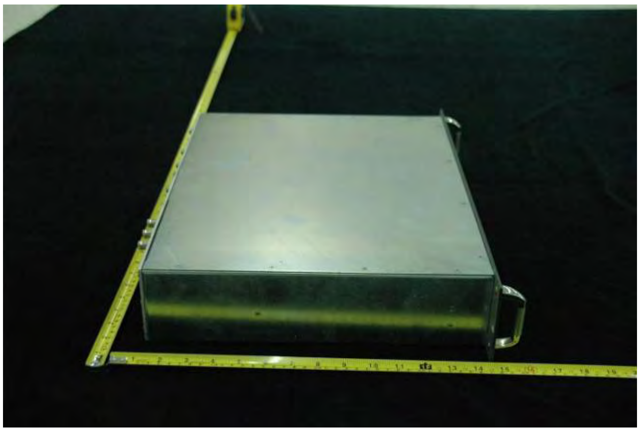
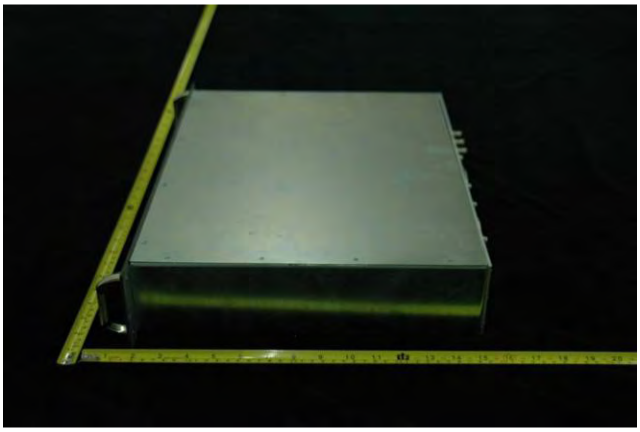
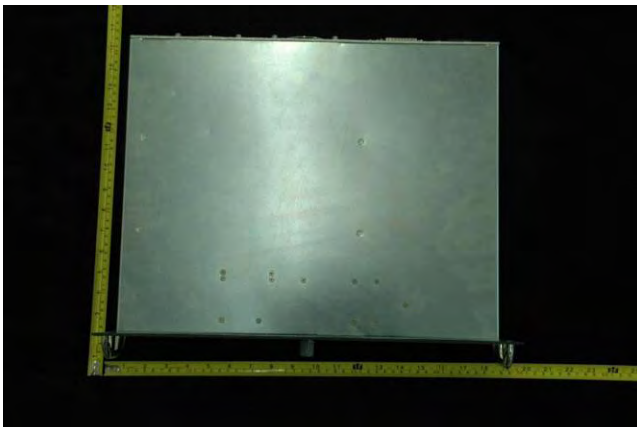
Annex B.i. Photograph: EUT External Photo

	
EUT - Front View	EUT – Left View
	
EUT - Right View	EUT - Rear View

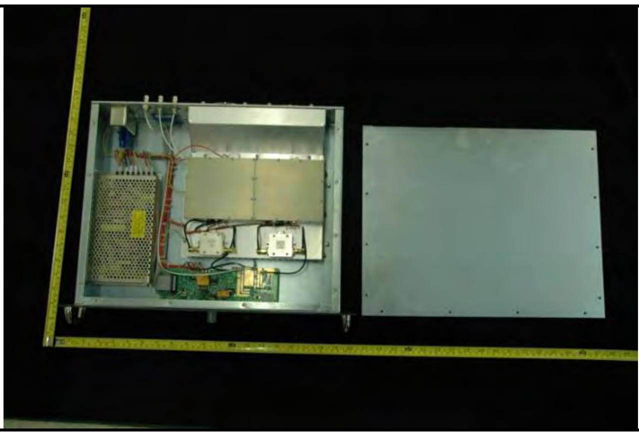
	
EUT - Antenna View	

Annex B.ii. Photograph: EUT Internal Photo

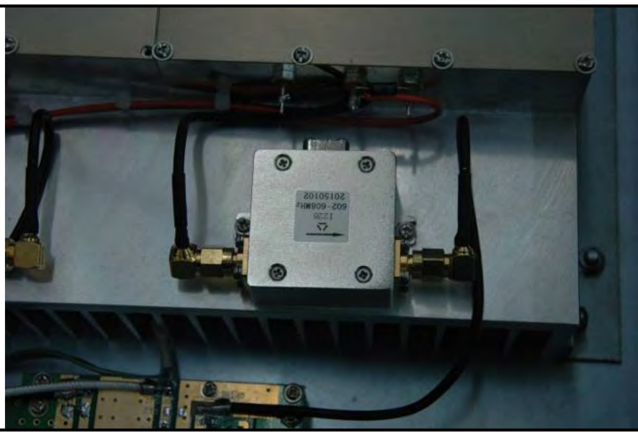
B1. Switch Module - external

	
Front View	Rear View
	
Left View	Right View
	
Top View	Bottom View

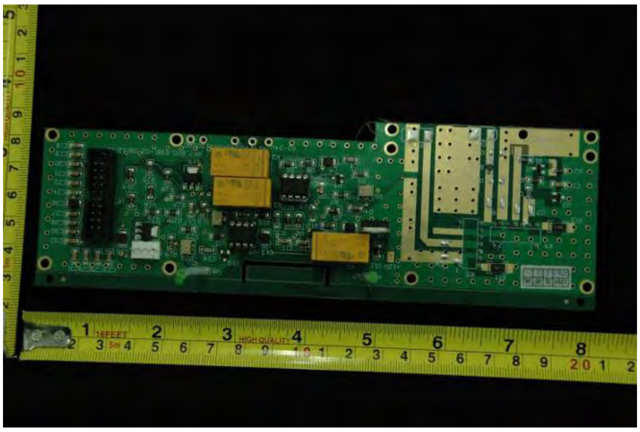
B2. Switch Module - internal



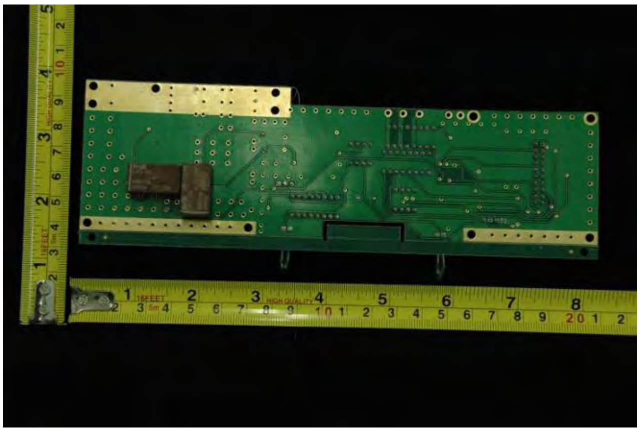
Uncover View



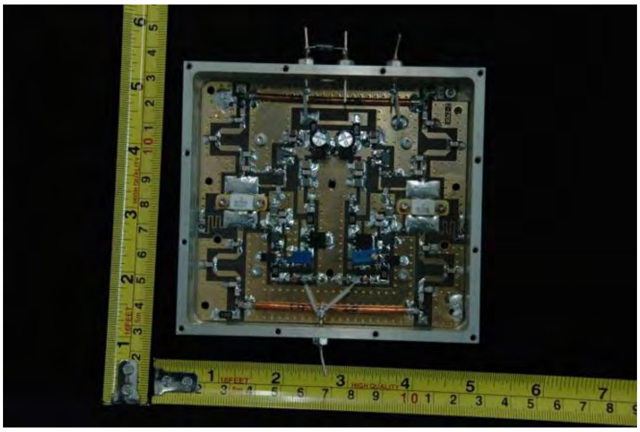
Isolators



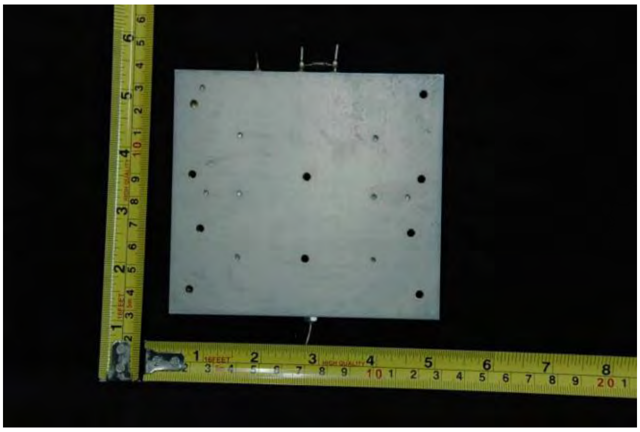
Switch board Top View



Switch board Bottom View

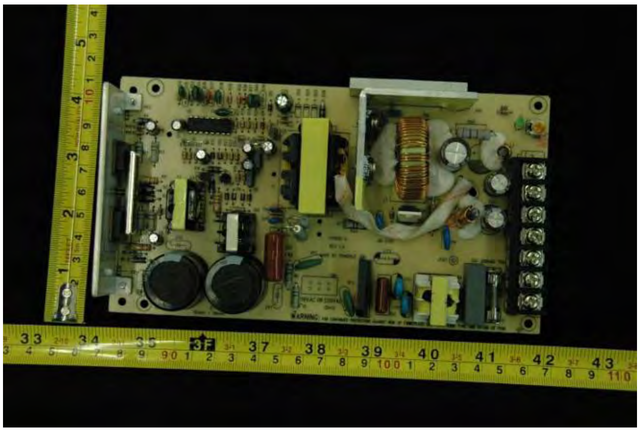


Amplifier board Top View

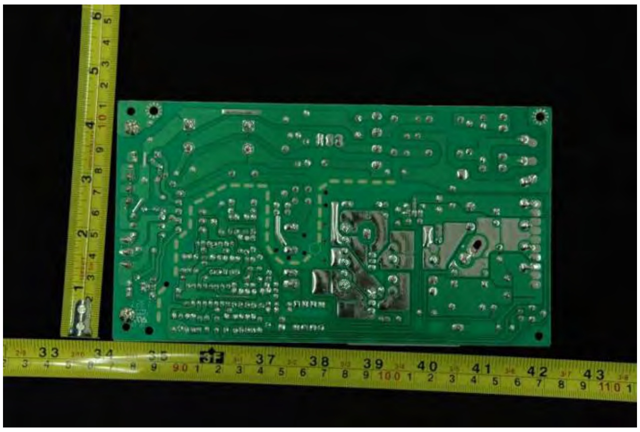


Amplifier board Bottom View

Power supply Front View

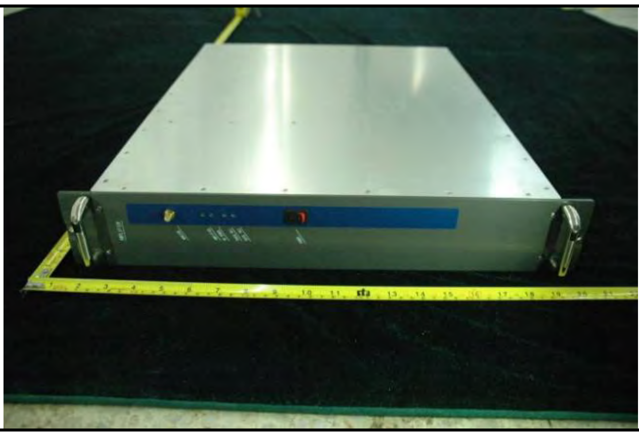
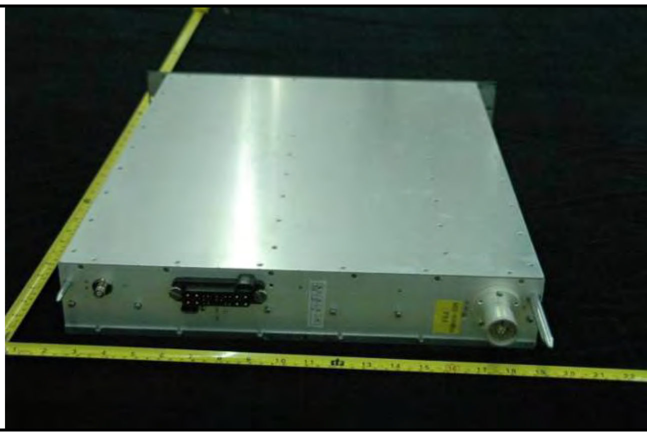
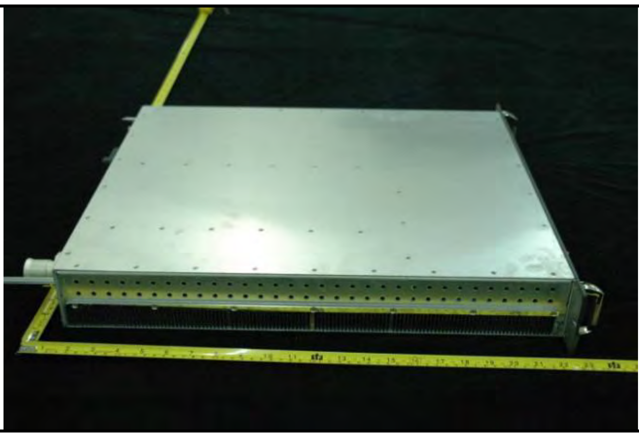
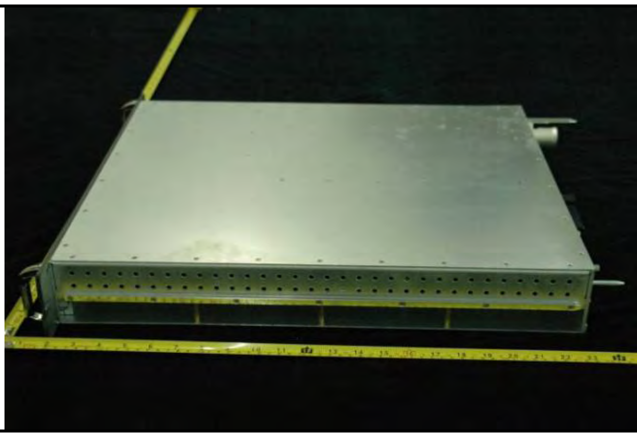
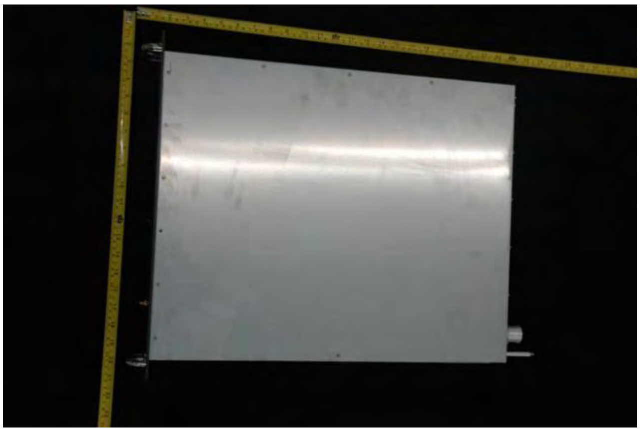
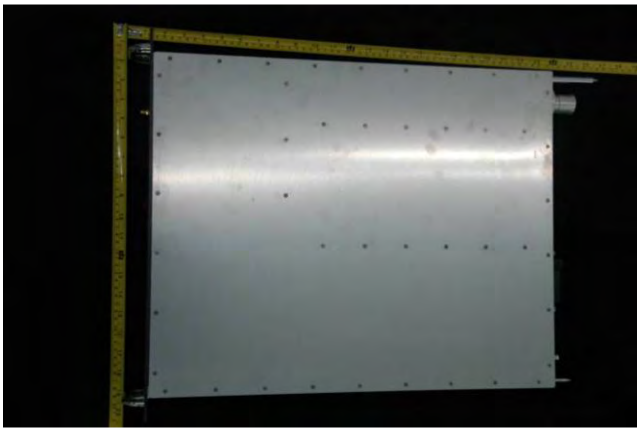


Power supply mainboard Top View

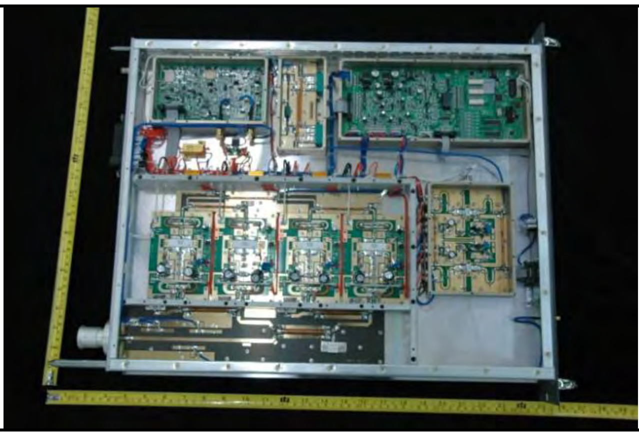
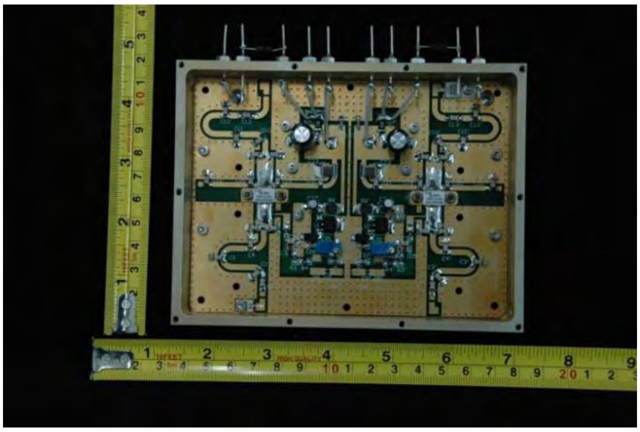
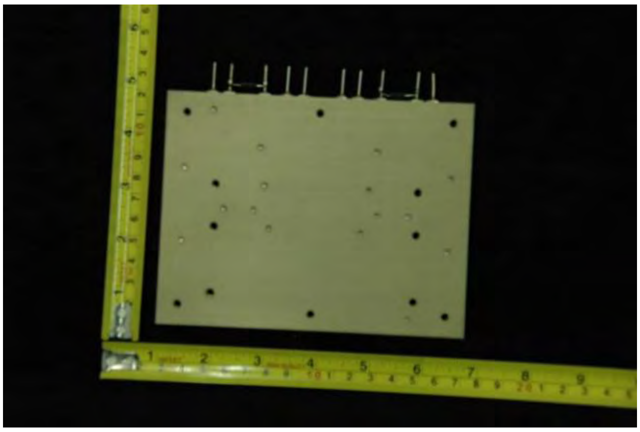
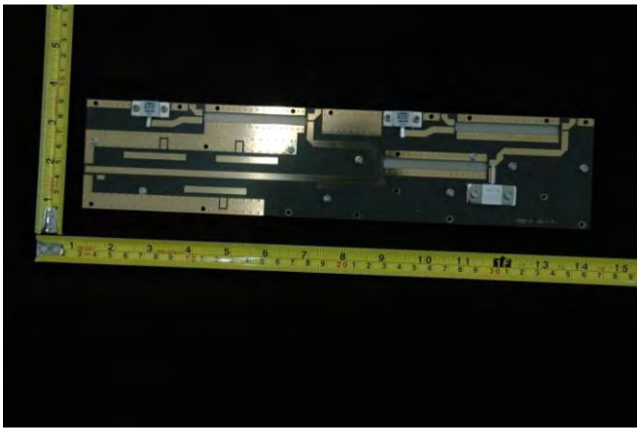
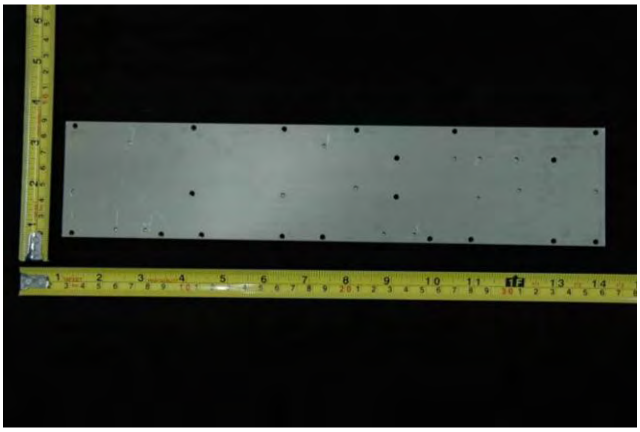


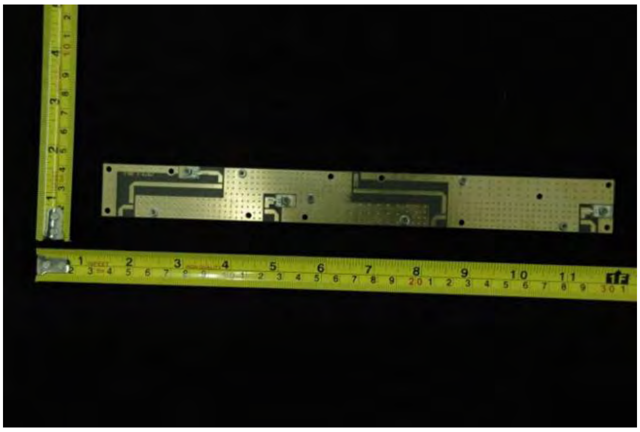
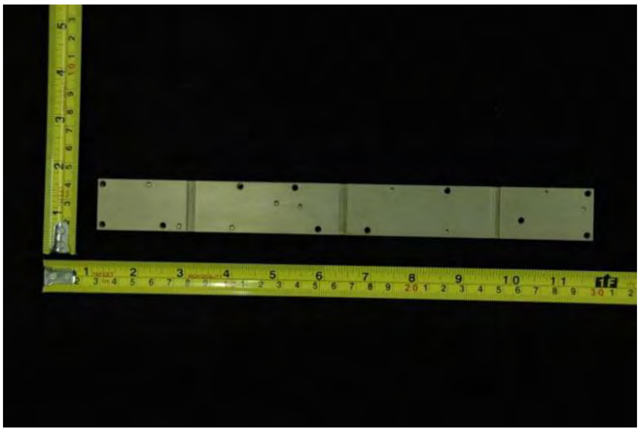
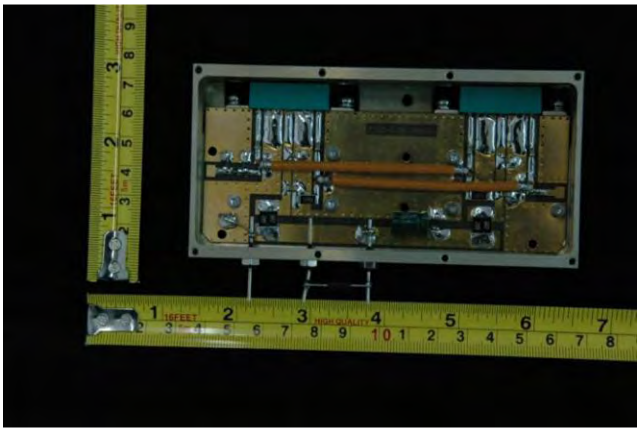
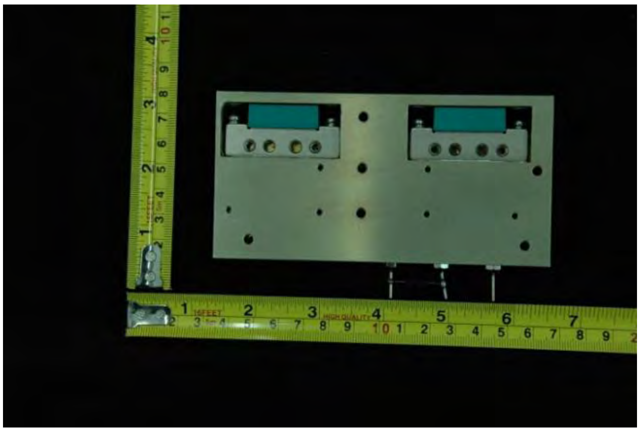
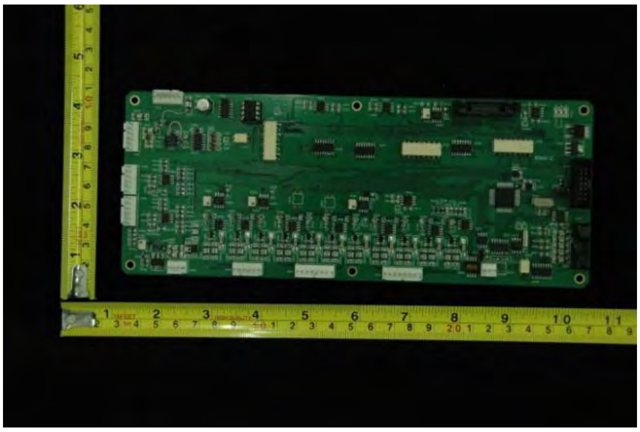
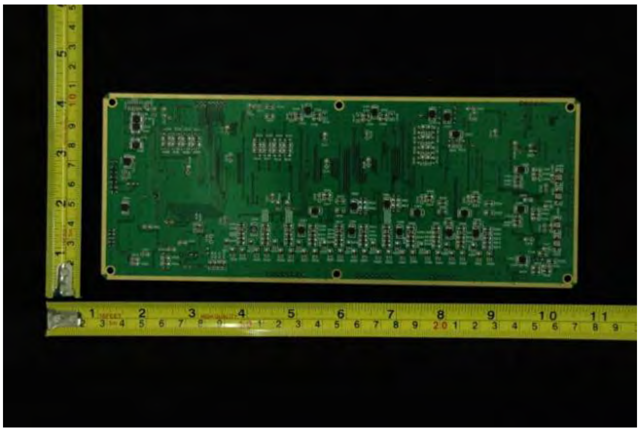
Power supply mainboard Bottom View

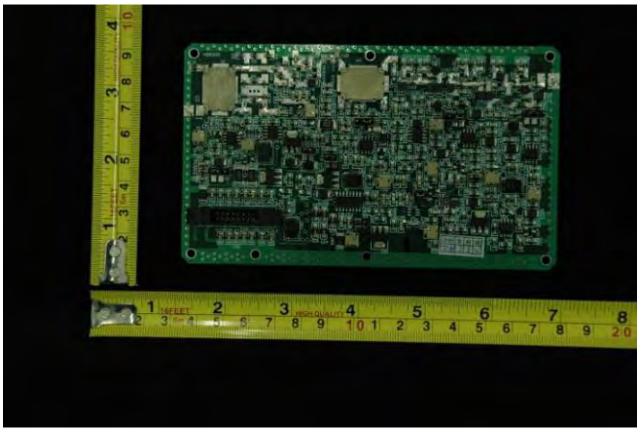
B3. PA - external

	
Front View	Rear View
	
Left View	Right View
	
Top View	Bottom View

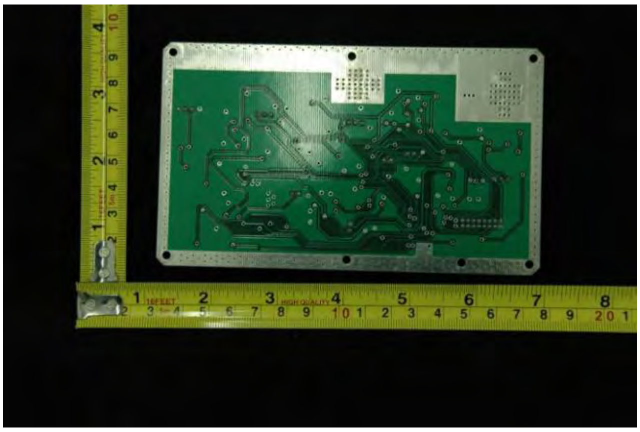
B4. PA - internal

	
Uncover View	
	
End pre-amplifier Top View	End pre-amplifier Bottom View
	
Synthesizer Top View	Synthesizer Bottom View

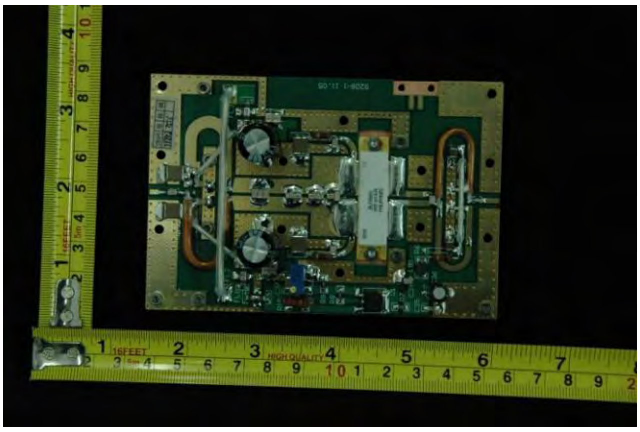
	
Splitter Top View	Splitter Bottom View
	
Pre-amplifier Top View	Pre-amplifier Bottom View
	
Monitoring sampling control board Top View	Monitoring sampling cortrol board Bottom View



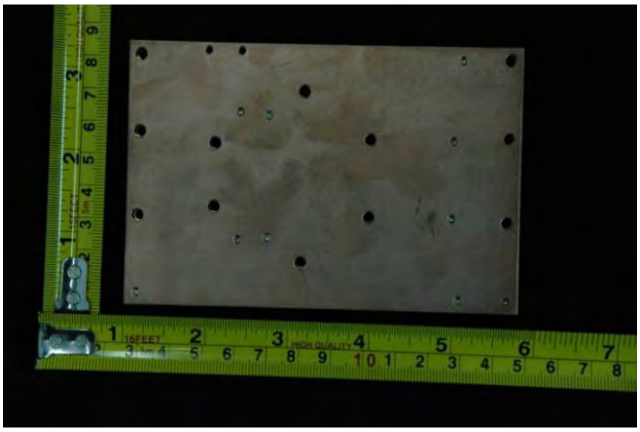
Input control board Top View



Input control board Bottom View

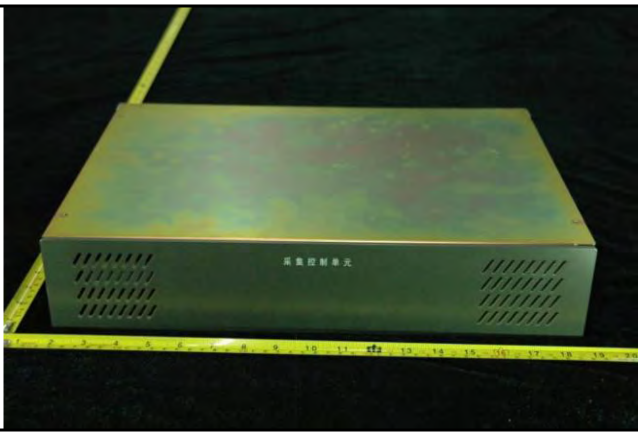


Final amplifier Top View



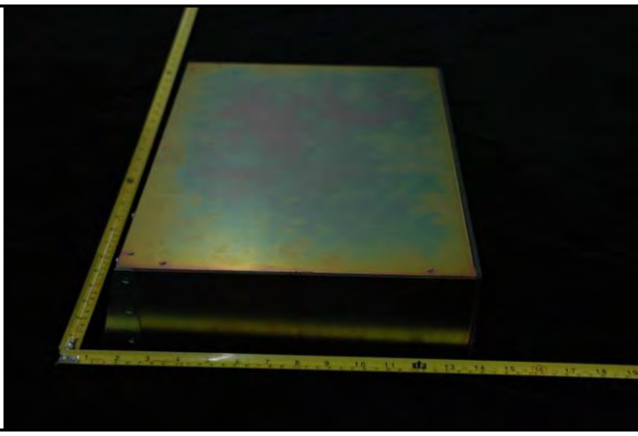
Final amplifier Bottom View

B5. Acquisition control unit-external

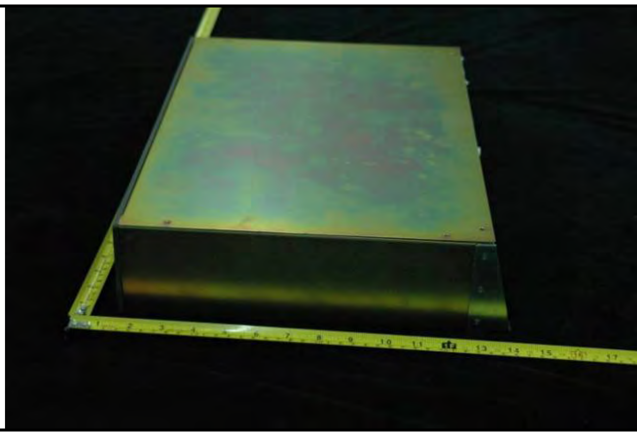


Front View

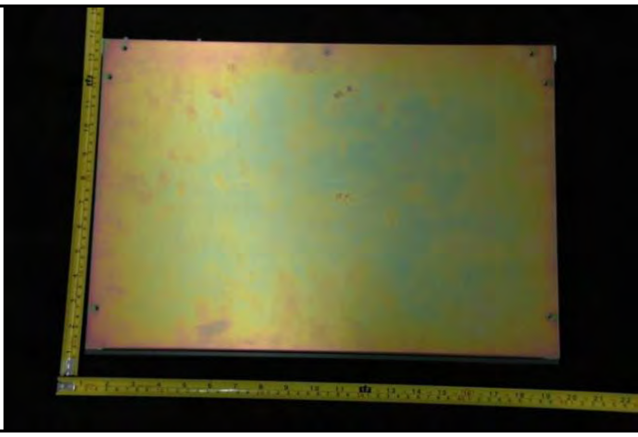
Rear View



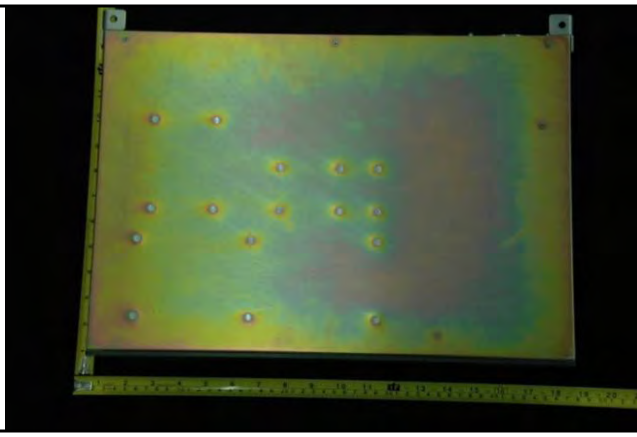
Left View



Right View

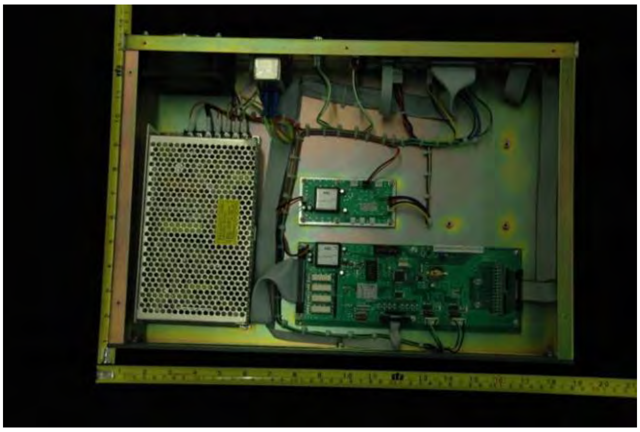
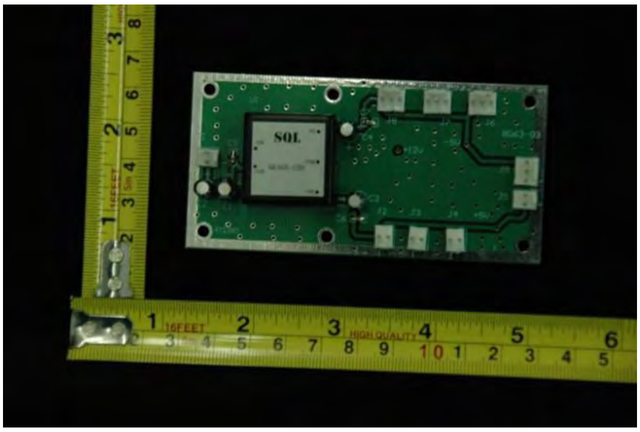
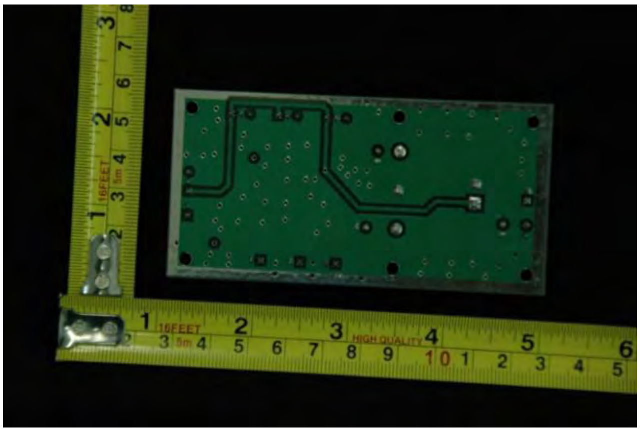
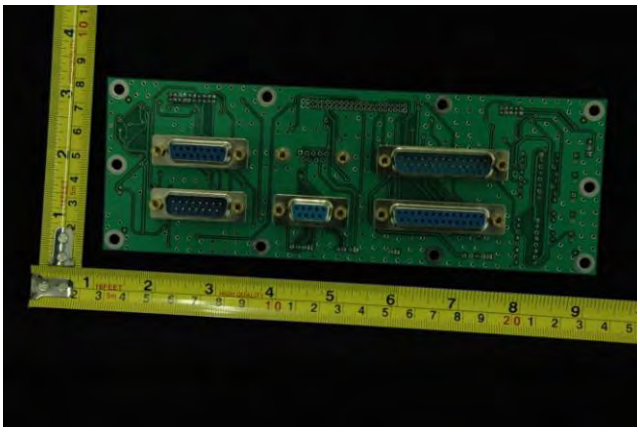
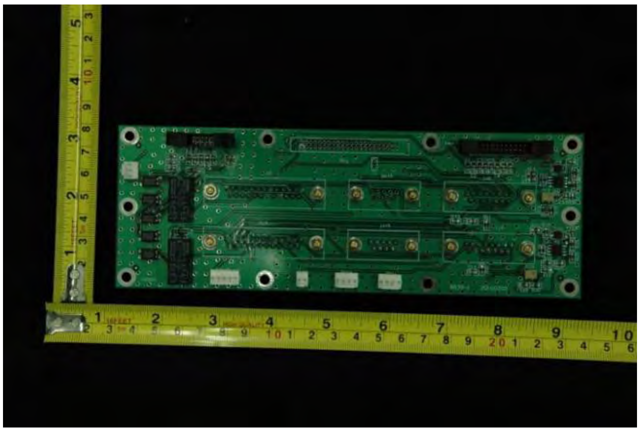


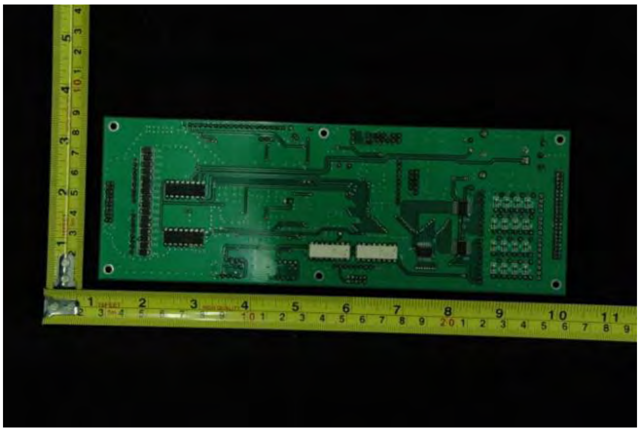
Top View



Bottom View

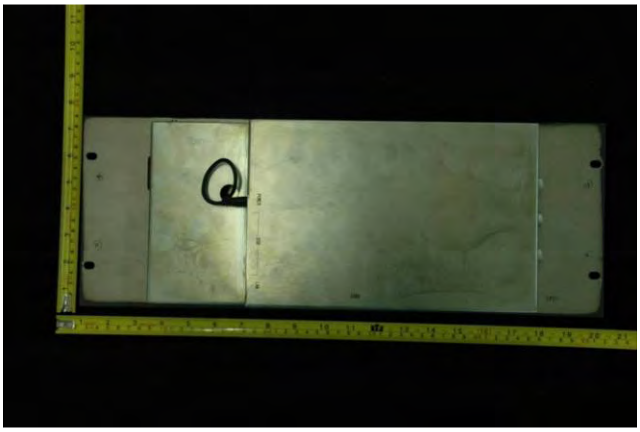
B6. Acquisition control unit-internal

	
Top View	
	
Power board Top View	Power board Bottom View
	
Control board Top View	Control board Bottom View

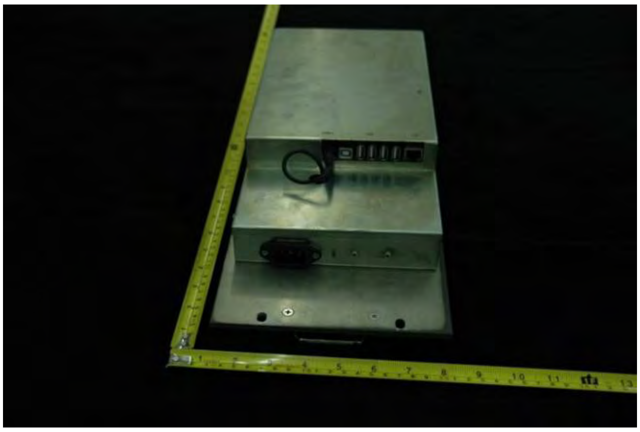
	
SCM control board Top View	SCM control board Bottom View

B7.Control unit-external

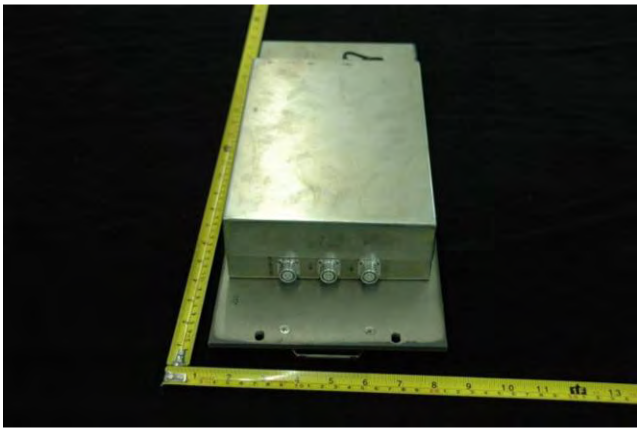
Front View



Rear View

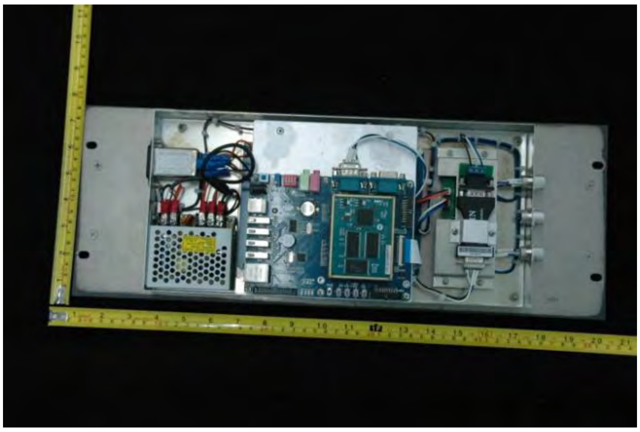


Left View

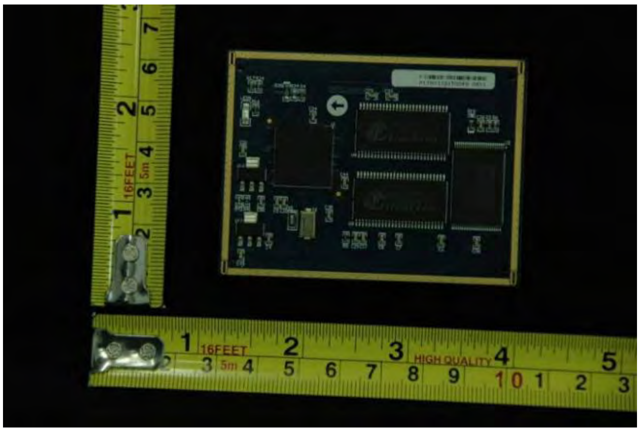


Right View

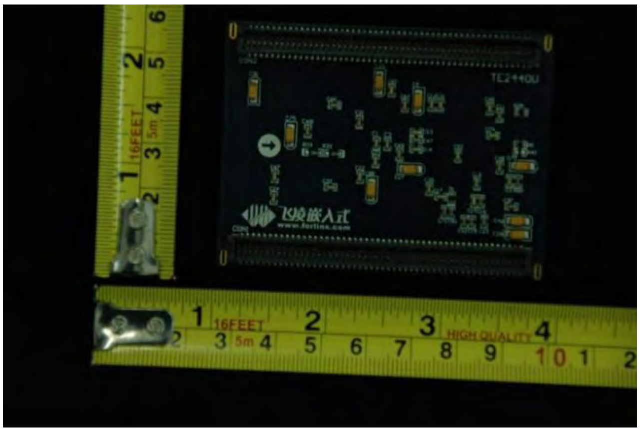
B8.Control unit-internal



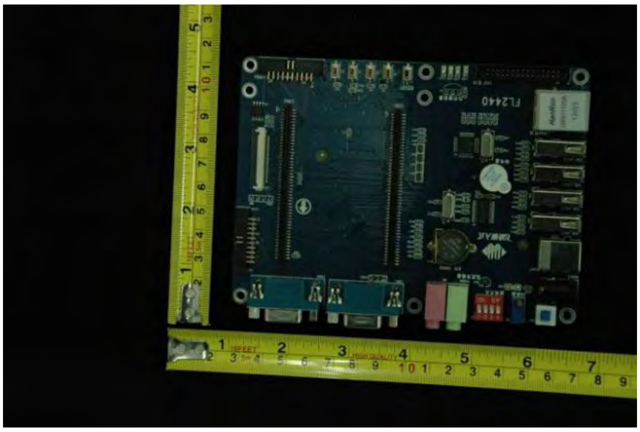
Uncover View



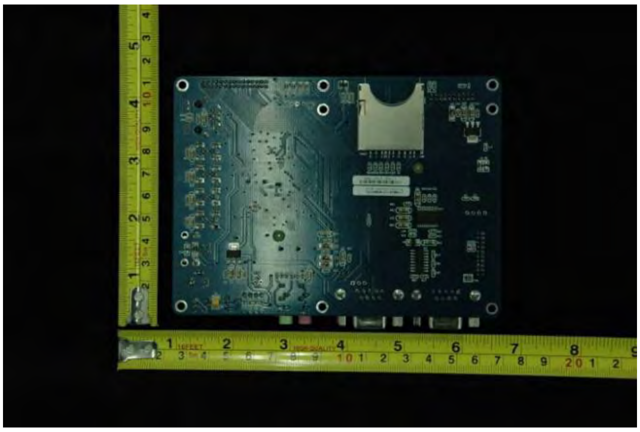
Core board Top View



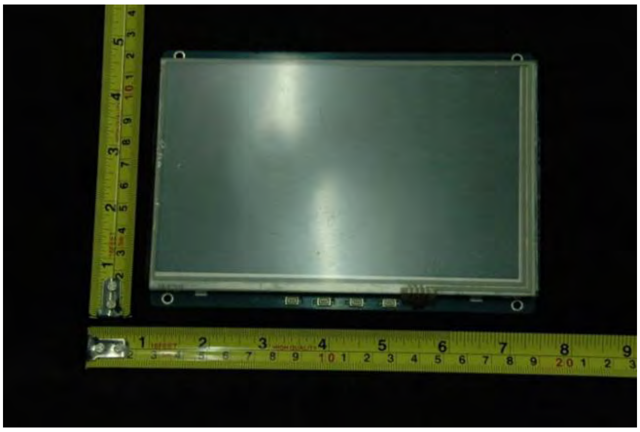
Core board Bottom View

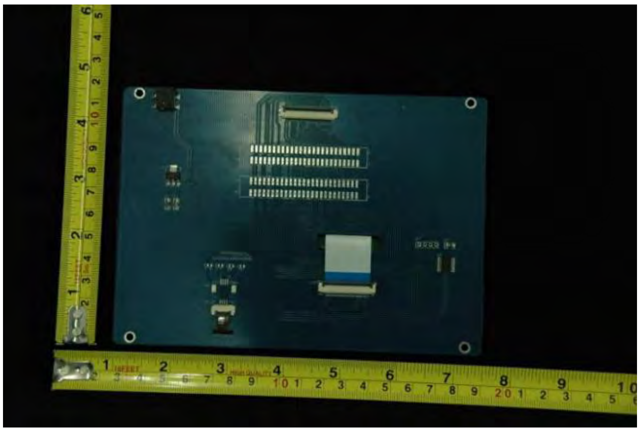


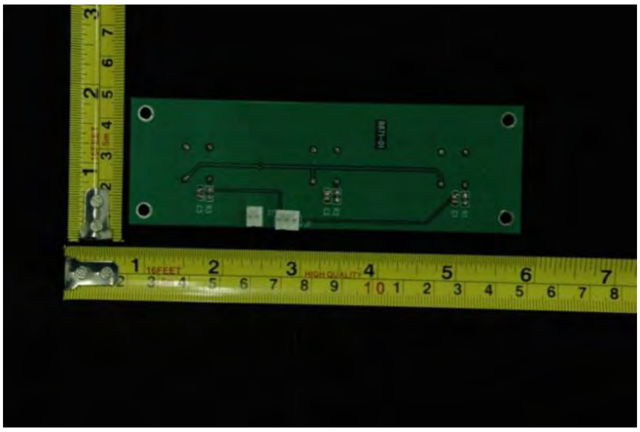
Mother board Top View

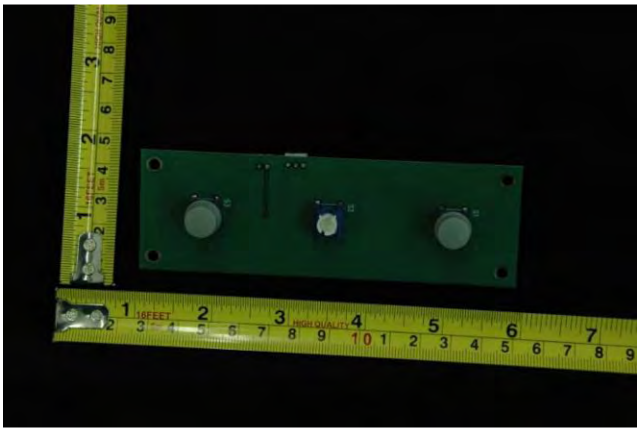


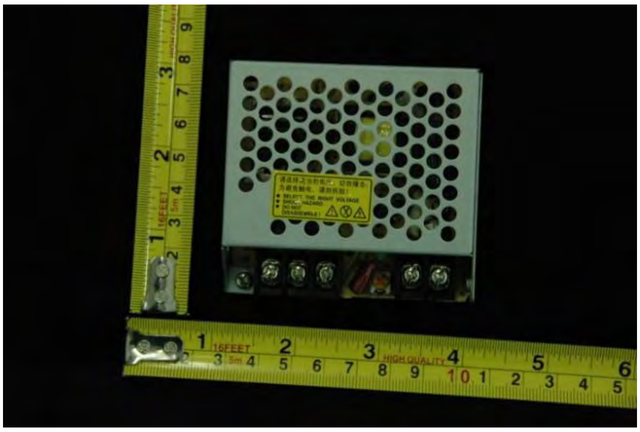
Mother board Bottom View


LCD Top View

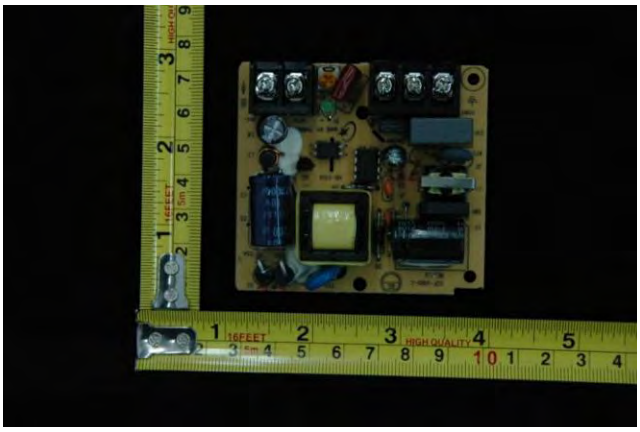
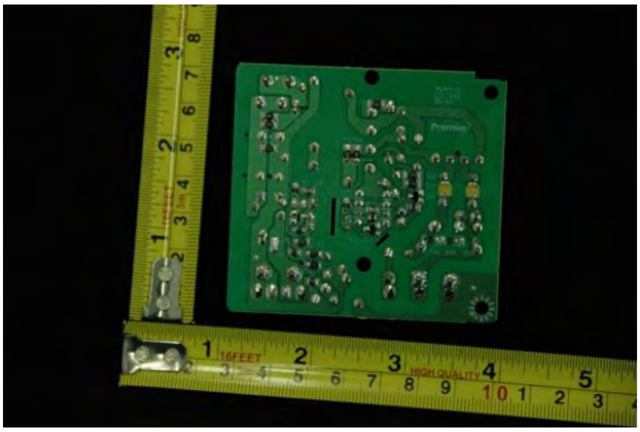

LCD Bottom View


Key board Top View


Key board Bottom View


Power supply Top View

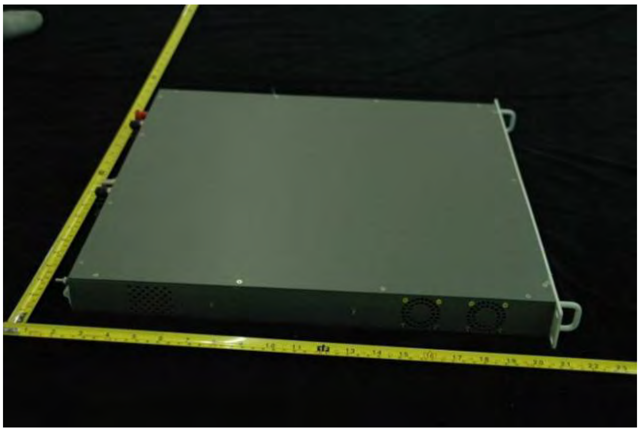

Power supply Bottom View

	
Power supply main board Top View	Power supply main board Bottom View

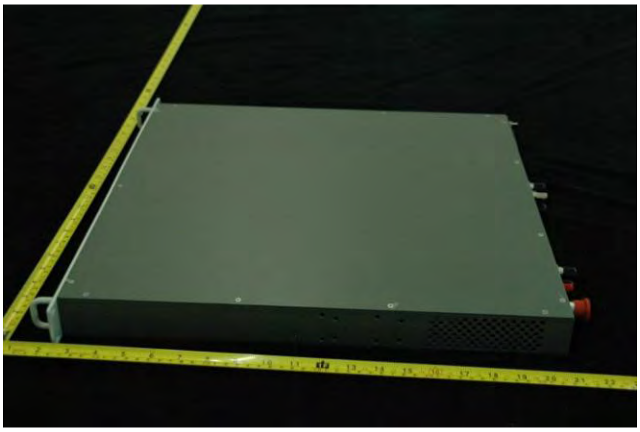
B9.Exciter-external

Front View

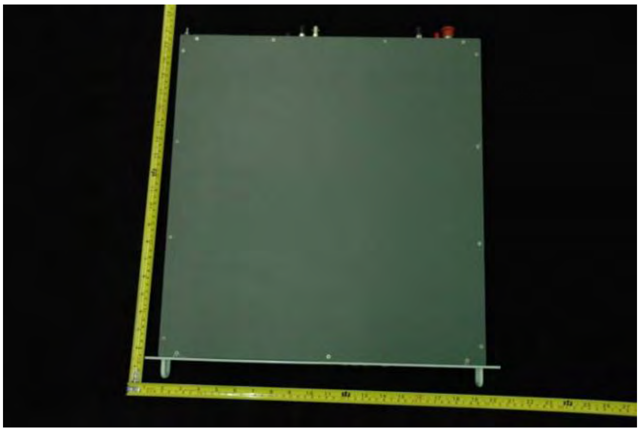
Rear View



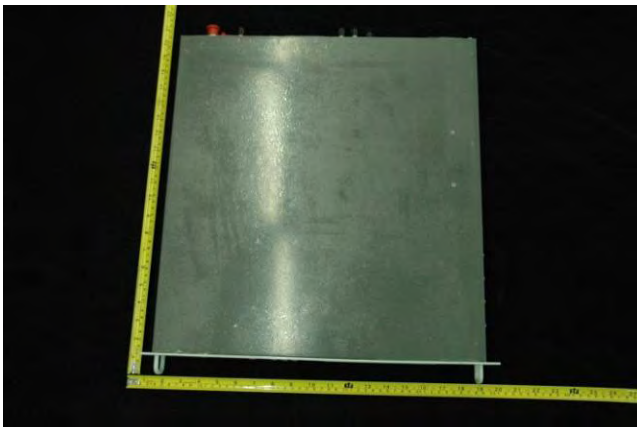
Left View



Right View

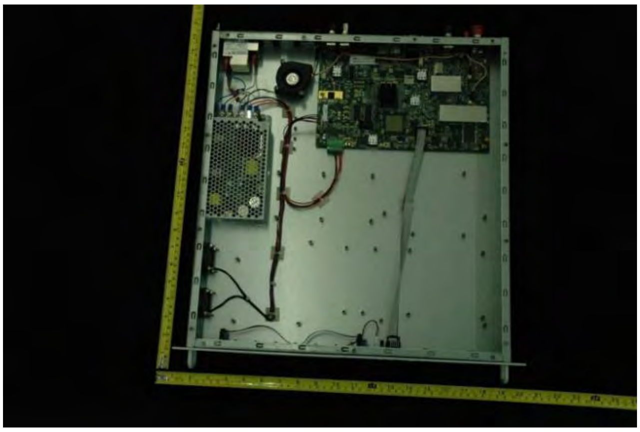


Top View



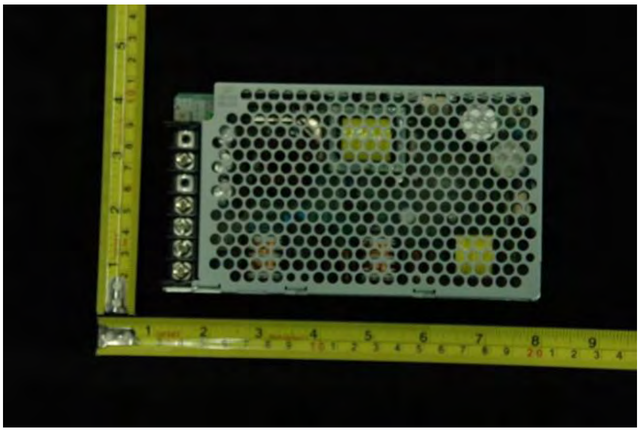
Bottom View

B10.Exciter-internal

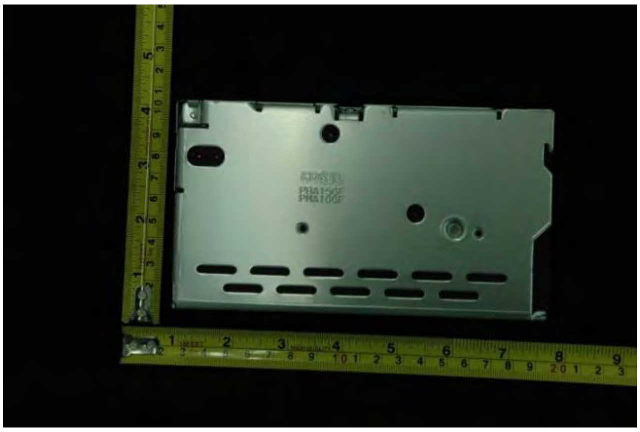


Uncover View

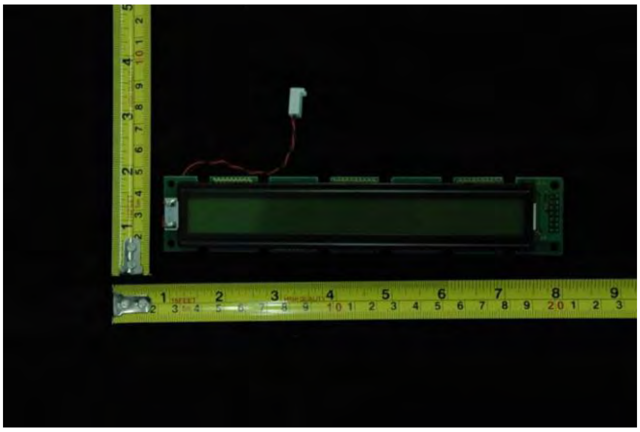
Power supply Front View



Power supply Top View

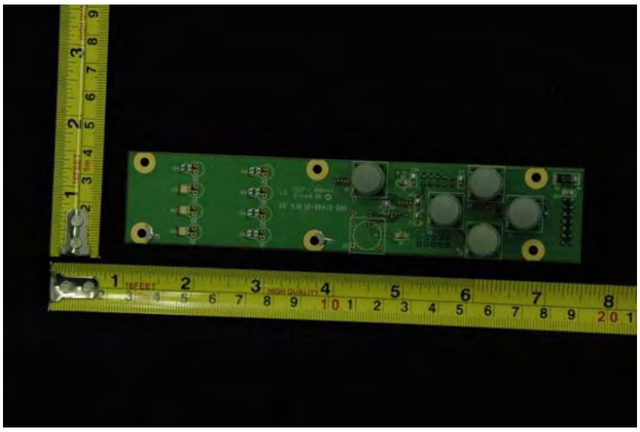


Power supply Bottom View

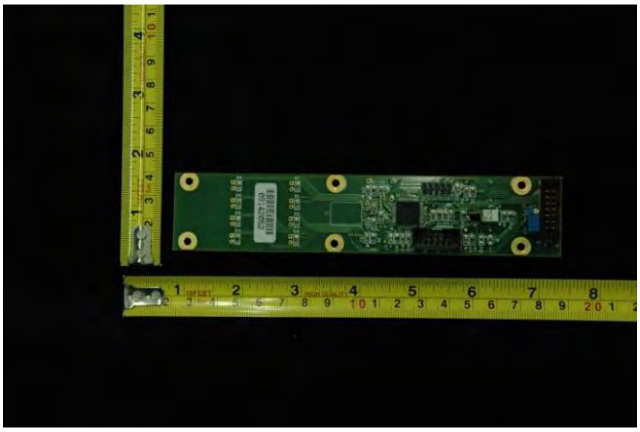


Disply Top View

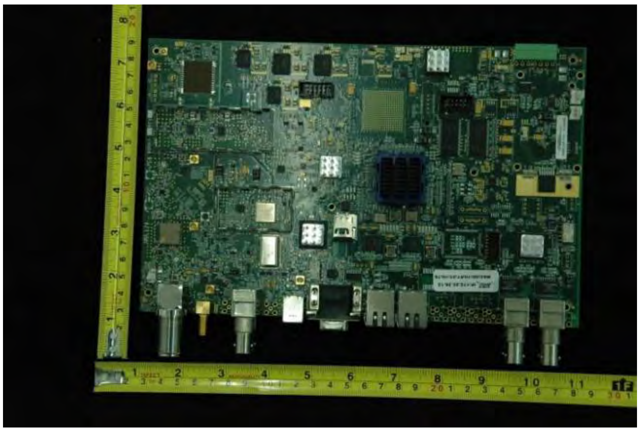
Disply Bottom View



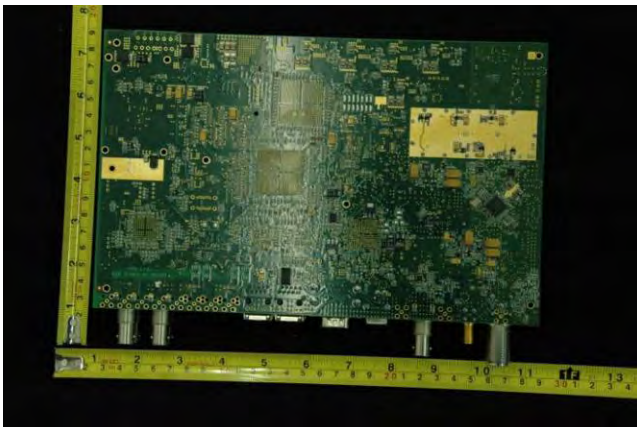
Key board Top View



Key board Bottom View

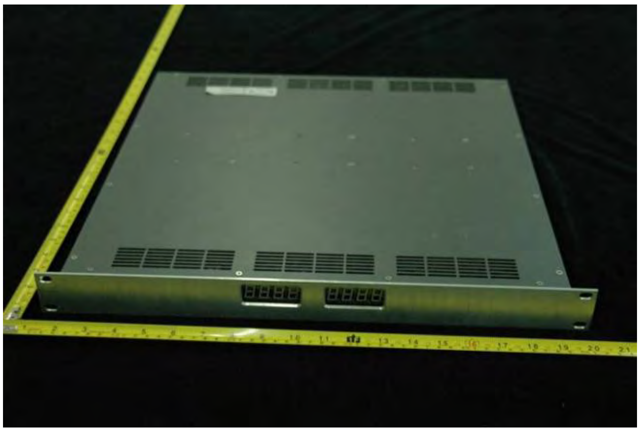


Main board Top View



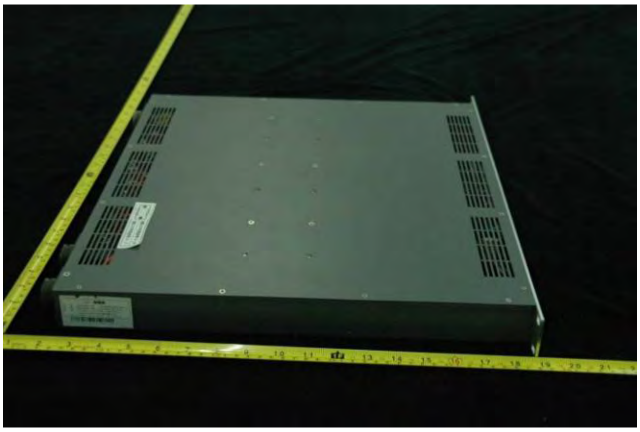
Main board Bottom View

B11. Power Supply-external

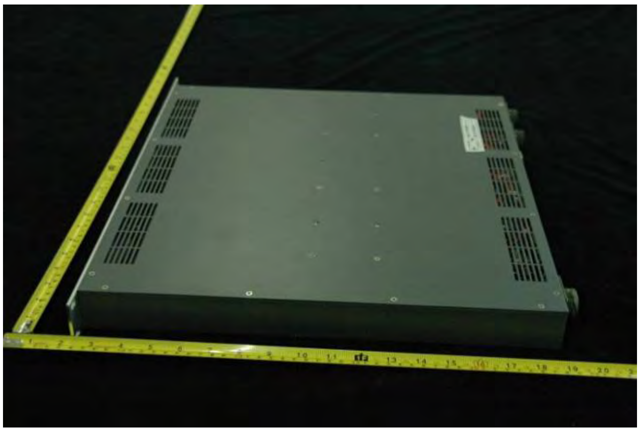


Front View

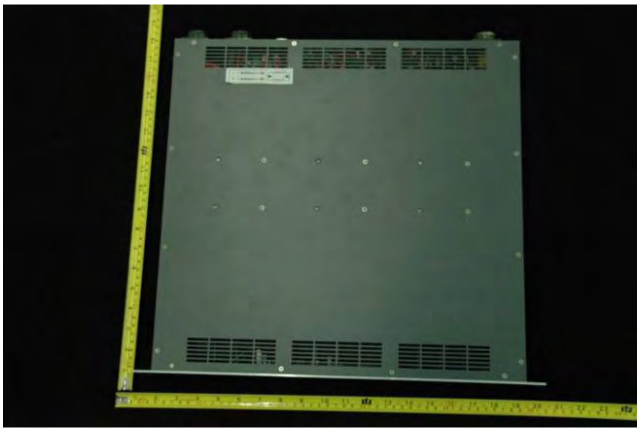
Rear View



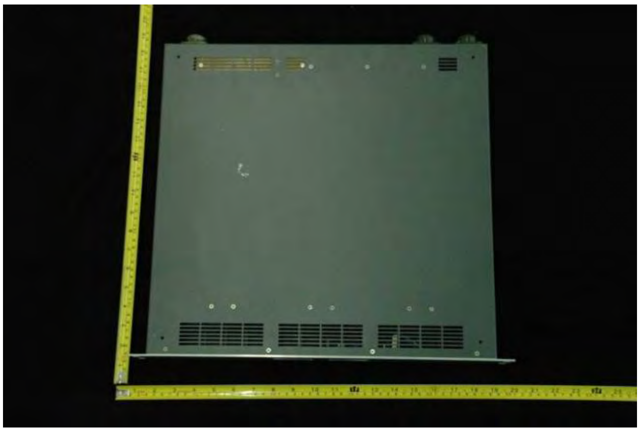
Left View



Right View

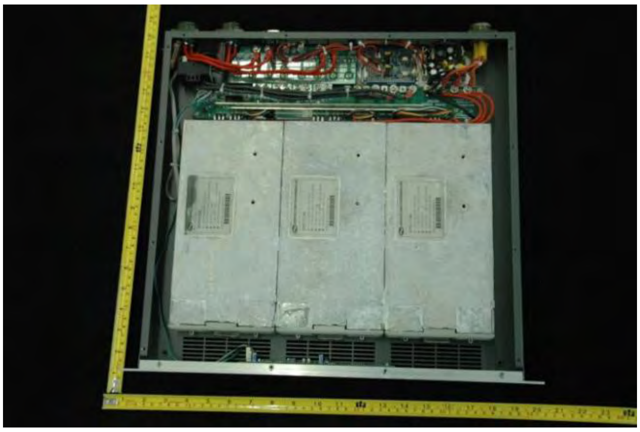
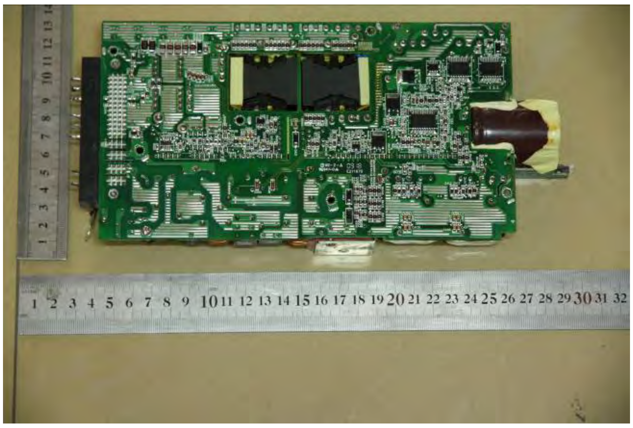


Top View

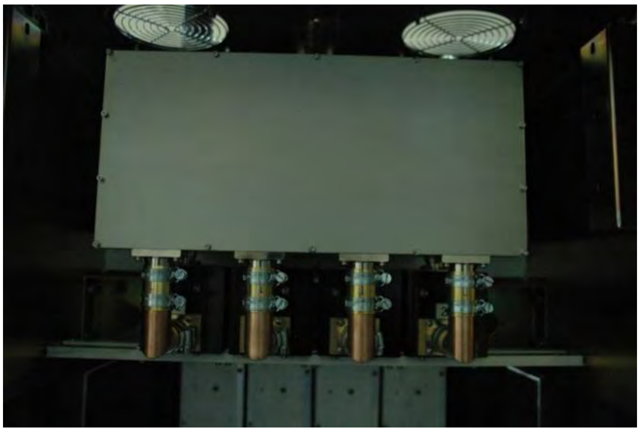


Bottom View

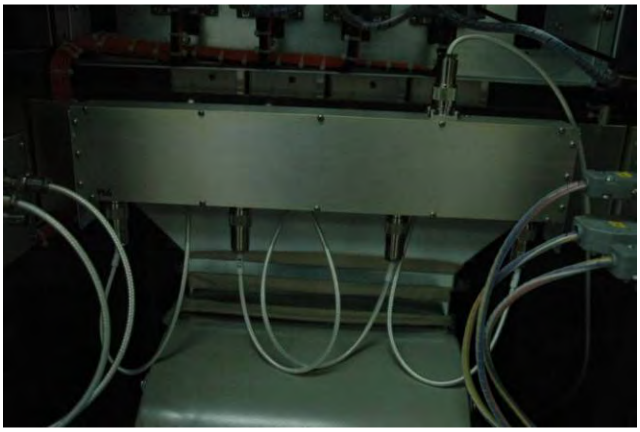
B12. Power supply-internal

	
Uncover View	
	
Power supply mainboard Top View	Power supply mainboard Bottom View

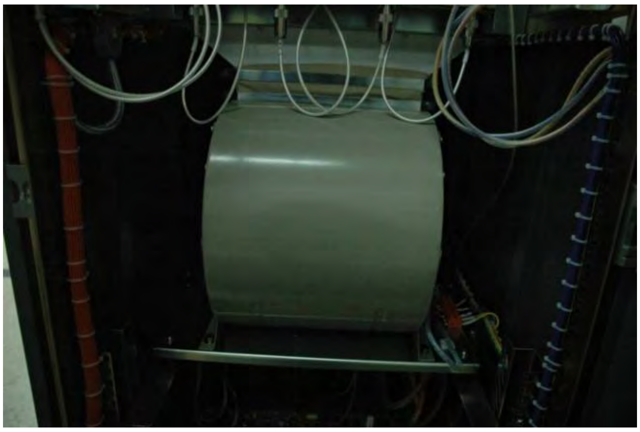
Accessories



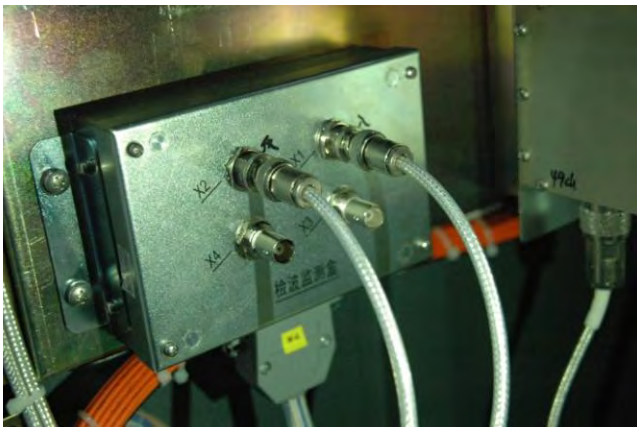
Synthesizer



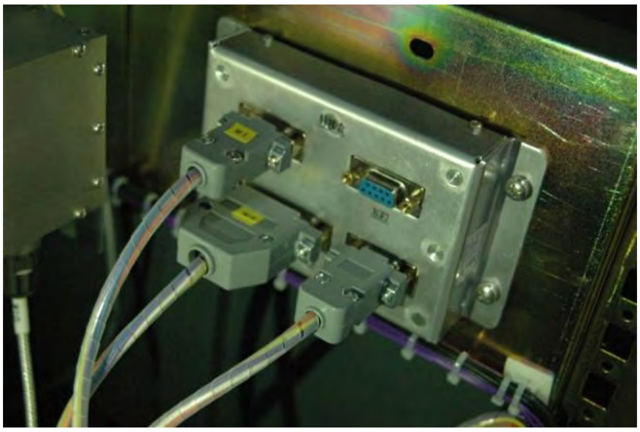
Splitter



Blower



Detection monitoring box



Adapter box

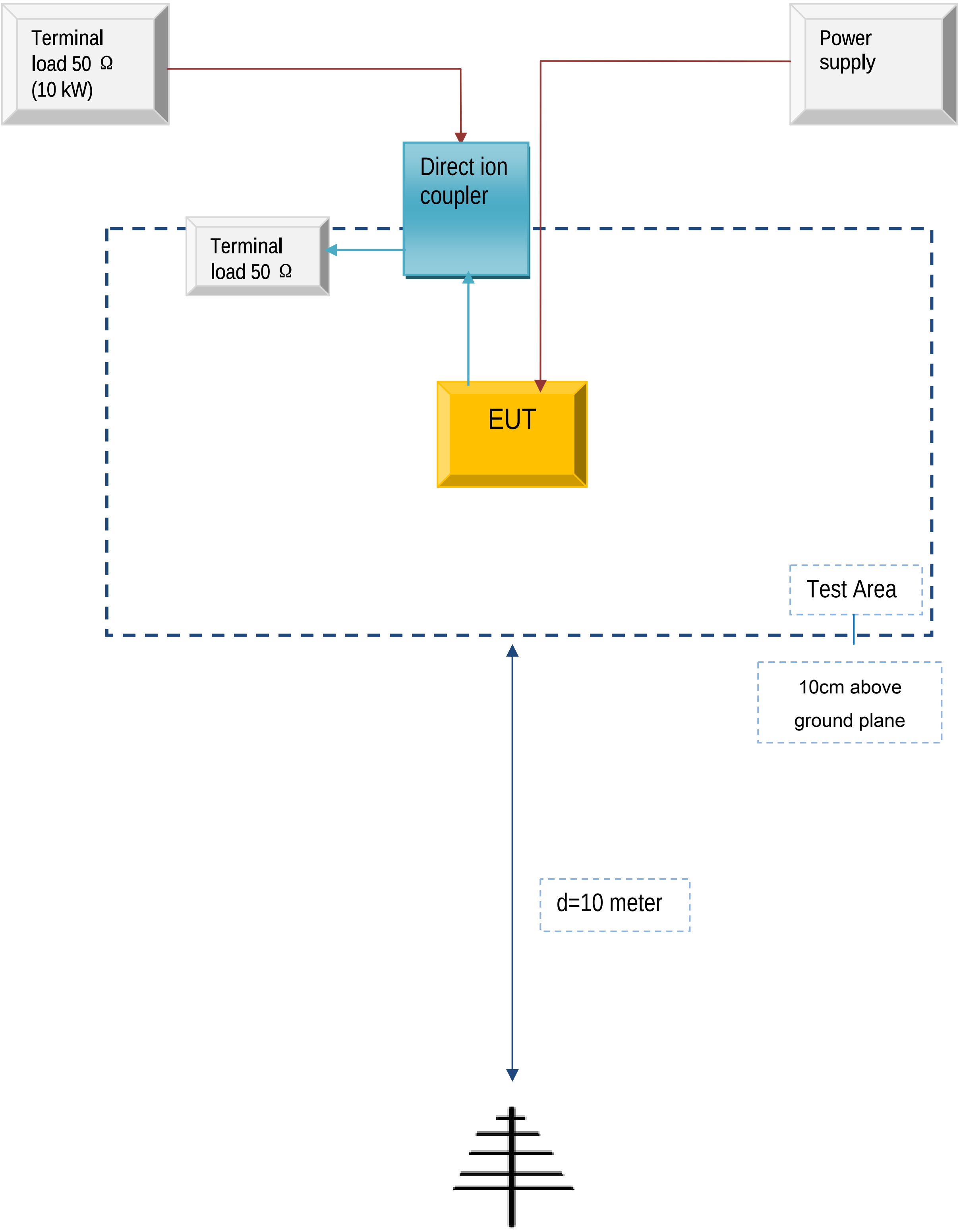
Annex B.iii. Photograph: Test Setup Photo

	
Radiated Spurious Emissions Test Setup Below 1GHz	Radiated Spurious Emissions Test Setup Above 1GHz

Annex C. TEST SETUP AND SUPPORTING EQUIPMENT

Annex C.ii. TEST SET UP BLOCK

Block Configuration Diagram for Radiated Emissions



Annex C. ii. SUPPORTING EQUIPMENT DESCRIPTION

The following is a description of supporting equipment and details of cables used with the EUT.

Manufacturer	Equipment Description	Model	Calibration Date	Calibration Due Date
BBEF	Directional coupler	PF2.969.6123	01/05/2015	01/04/2016
RF-BED	Terminal load	DLS-10kW	N/A	N/A

Annex D. DECLARATION OF SIMILARITY

北京北广科技股份有限公司
Beijing BBEF Science & Technology Co., Ltd
BBEF
北广科技 创造非凡

To：SIEMIC （Shenzhen-China）laboratories

Declaration Letter

For our business issue and marketing requirement, we would like to list below 7 model numbers on the FCC reports, the details difference as following:

Differences of Product Series Models

No.	Products Name	Product Model	Number of PA Unit	Power Divider Type	Power Combiner Type	Number of PA Power Supply	Number of blower	Remarks
1	1.3kW ATSC TV transmitter	BGTDV31610	4	One to four	Four to one	2	2	The differences of Series products are mainly due to different number of power amplifiers. Different number of power amplifiers causes different dividers, combiners, power amplifier power supplies and fans, while the equipment size and control system remains the same.
2	1.2kW ATSC TV transmitter	BGTDV3169	4	One to four	Four to one	2	2	
3	1kW ATSC TV transmitter	BGTDV31611	3	One to three	Three to one	2	2	
4	750W ATSC TV transmitter	BGTDV2862	2	One to two	Two to one	1	1	
5	500W ATSC TV transmitter	BGTDV25612	2	One to two	Two to one	1	1	
6	300W ATSC TV transmitter	BGTDV2365	1	No	No	1	1	
7	250W ATSC TV transmitter	BGTDV2364	1	No	No	1	1	

Thank you!

Print Name: Zhou Zhengyuan

Title (position): Deputy Director of Technology

Signature：周正源

T/F: 86+10-64357188 / 86+10-80489170

Company Address: No.26,Area A, Tianzhu Airport Economic Development Zone, Shunyi District, Beijing 101312 China

Email Address: snow_zzy@hotmail.com