FCC TEST REPORT

Report No:STS2003164W01

Issued for

MiMOMax Wireless Limited

540 Wairakei Road, Christchurch, 8053 New Zealand

Product Name:	800MHz Tornado Transceiver
Brand Name:	MiMOMax Wireless
Model Name:	MWL-TORNADO-*E A/B/C*
Series Model:	N/A
FCC ID:	XMK-MMXTRNB005
Test Standard:	FCC Part 90 Rules

Shenzhen STS Test Services Co., Ltd.
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TEST RESULT CERTIFICATION

Applicant's name.....: MiMOMax Wireless Limited

Address .....: 540 Wairakei Road, Christchurch, 8053 New Zealand

Manufacture's Name .....: MiMOMax Wireless Limited

Address .....: 540 Wairakei Road, Christchurch, 8053 New Zealand

Product description

Product Name .....: 800MHz Tornado Transceiver

Brand Name .....: MiMOMax Wireless

Model Name.....: MWL-TORNADO-*E A/B/C*

Series Model .....: N/A

Test Standards .....: FCC Part 90 Rules

Test procedure.....: C63.26-2015

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

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Date of Test ..... :

Date of performance of tests ..... : 30 Aug. 2018 ~12 Sept. 2018

Date of Issue ..... : 04 Mar. 2020

Test Result..... : Pass

Testing Engineer : Chris chen

(Chris chen)

Technical Manager : Sean She

(Sean she)

Authorized Signatory : Vita

(Vita Li)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	14 Sept. 2018	STS1809014W01	ALL	Initial Issue
00	04 Mar. 2020	STS2003164W01	ALL	Updated Product Name.

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part 90			
Standard	Item	Result	Remarks
FCC Part 90.205	Maximum Transmitter Power	PASS	
FCC Part 90.209	Occupied Bandwidth	PASS	
FCC Part 90.210	Emission Mask	PASS	
FCC Part 90.221	Adjacent channel power	PASS	
FCC Part 90.210	Transmitter Radiated Spurious Emssion	PASS	
FCC Part 90.210	Spurious Emssion on Antenna Port	PASS	
FCC Part 90.213	Frequency Stability Test	PASS	

NOTE:

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

1.1 TEST FACILITY

SHENZHEN STS TEST SERVICES CO., LTD
Add. : A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China
FCC test Firm Registration Number: 625569
IC test Firm Registration Number: 12108A
A2LA Certificate No.: 4338.01

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	RF power, conducted	±0.70dB
2	Spurious emissions, conducted	±1.19dB
3	Spurious emissions, radiated((>1G)	±2.83dB
4	Spurious emissions, radiated(<1G)	±3.01dB
5	Temperature	±0.5°C
6	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product Name:	800MHz Tornado Transceiver
Brand Name:	MiMOMax Wireless
Model Name:	MWL-TORNADO-*E A/B/C*
Series Model:	N/A
Model Difference description:	N/A
Operation Frequency Range	Frequency Range: 806MHz ~ 869MHz
Maximum Transmitter Power:	24.228dBm
Channel Separation:	12.5KHz and 25.0KHz
Modulation type:	QPSK,16QAM,64QAM,256QAM
Emission Designator:	12.5KHz: 10K5W1W 25KHz: 21K2W1W
Power Rating:	Input: DC 24V/1.1A
Temperature Range:	-30℃-70℃
Test frequency list:	See Note 5
Software version number:	R04.03.04
Hardware version number:	IP001

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
2. Note: The product has the same digital working characters when operating in both two digitized voice/data mode. So only one set of test results for digital modulation modes are provided in this test report.
3. Please refer to Appendix B for the photographs of the EUT. For more details, please refer to the User's manual of the EUT.
4. Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	MiMOMax Wireless	MWL-TORNADO-*E A/B/C*	External Panel antenna, omni antenna	N/A	External Panel antenna: 10dBi,12dBi and 16dBi omni antenna:5dBi and 8dBi	Antenna

The EUT antenna is External Antenna. No antenna other than that furnished by the responsible party shall be used with the device.

5. Test frequency list

Frequency band (MHz)	Channel Separation	Test Channel	Test Frequency (MHz)
851-854	12.5kHz	CH1	851.00625
806-809		CH2	806.00625

Frequency band (MHz)	Channel Separation	Test Channel	Test Frequency (MHz)
854-869	25kHz	CH3	868.9875
809-824		CH4	823.9875
854-869		CH5	860.00
809-824		CH6	815.00

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test,please see the above listed frequency for testing.

2.2 EUT OPERATION MODE

The EUT has been tested under typical operating condition and The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

2.3 DESCRIPTION OF TEST MODES

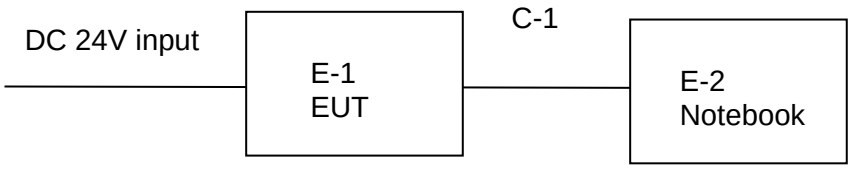
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Final Test Mode	Modulation	Channel Separation	Frenquency
Model 1	QPSK	12.5kHz	851.00625
Model 2	QPSK		806.00625
Model 3	16QAM		851.00625
Model 4	16QAM		806.00625
Model 5	64QAM		851.00625
Model 6	64QAM		806.00625
Model 7	256QAM		851.00625
Model 8	256QAM		806.00625
Model 9	QPSK	25kHz	868.9875
Model 10	QPSK		823.9875
Model 11	QPSK		860.00
Model 12	QPSK		815.00
Model 13	16QAM		868.9875
Model 14	16QAM		823.9875
Model 15	16QAM		860.00
Model 16	16QAM		815.00
Model 17	64QAM		868.9875
Model 18	64QAM		823.9875
Model 19	64QAM		860.00
Model 20	64QAM		815.00
Model 21	256QAM		868.9875
Model 22	256QAM		823.9875
Model 23	256QAM		860.00
Model 24	256QAM		815.00

Model 1:
The equipment is set with QPSK modulation and 12.5KHz bandwidth for transmitter,powered by DC 24V.
Model 2:
The equipment is set with QPSK modulation and 12.5KHz bandwidth for transmitter,powered by DC 24V.
Model 3:
The equipment is set with 16QAM modulation and 12.5KHz bandwidth for transmitter,powered by DC 24V.
Model 4:
The equipment is set with 16QAM modulation and 12.5KHz bandwidth for transmitter,powered by DC 24V.
Model 5:
The equipment is set with 64QAM modulation and 12.5KHz bandwidth for transmitter,powered by DC 24V.
Model 6:
The equipment is set with 64QAM modulation and 12.5KHz bandwidth for transmitter,powered by DC 24V.
Model 7:
The equipment is set with 256QAM modulation and 12.5KHz bandwidth for transmitter, powered by DC 24V.
Model 8:
The equipment is set with 256QAM modulation and 12.5KHz bandwidth for transmitter, powered by DC 24V.
Model 9:
The equipment is set with QPSK modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 10:
The equipment is set with QPSK modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 11:
The equipment is set with QPSK modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 12:
The equipment is set with QPSK modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 13:
The equipment is set with 16QAM modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 14:
The equipment is set with 16QAM modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 15:
The equipment is set with 16QAM modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 16:
The equipment is set with 16QAM modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 17:
The equipment is set with 64QAM modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 18:
The equipment is set with 64QAM modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 19:
The equipment is set with 64QAM modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.

Model 20:
The equipment is set with 64QAM modulation and 25.0KHz bandwidth for transmitter,powered by DC 24V.
Model 21:
The equipment is set with 256QAM modulation and 25.0KHz bandwidth for transmitter, powered by DC 24V.
Model 22:
The equipment is set with 256QAM modulation and 25.0KHz bandwidth for transmitter, powered by DC 24V.
Model 23:
The equipment is set with 256QAM modulation and 25.0KHz bandwidth for transmitter, powered by DC 24V.
Model 24:
The equipment is set with 256QAM modulation and 25.0KHz bandwidth for transmitter, powered by DC 24V.
Note:
(1) Due to the different configuration and test, in this list only some worse mode. The worst test data of the worse modeis reported by this report.

2.4 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-2	Notebook	HP	500-320cx	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
C-1	Network line	N/A	120cm	N/A

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

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

(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.6 TEST EQUIPMENT

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Signal Analyzer	Agilent	N9020A	MY49100060	2017.10.15	2018.10.14
Signal Generator	Agilent	N5182A	MY46240556	2017.10.15	2018.10.14
Audio Generator	TRONSON	TAG-101	20030212	2017.10.15	2018.10.14
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2018.11.01
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1343	2017.10.27	2018.10.26
50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2017.10.15	2018.10.14
Pre-mplifier (0.1M-3GHz)	EM	EM330	60538	2018.03.11	2019.03.10
PreAmplifier (1G-26.5GHz)	Agilent	8449B	60538	2017.10.15	2018.10.14
Attenuator	HP	8494B	DC-18G	2017.10.15	2018.10.14
programmable power supply	Agilent	3642A	STS-S095	N.C.R	N.C.R
AC Power Source	APC	KDF-11010G	F214050035	N.C.R	N.C.R
Audio analyzer	R&S	UPL	100689	2018.03.08	2019.03.07
RF COMMUNICATION TEST SET	HP	N8920A	348A05658	2017.10.15	2018.10.14

3. MAXIMUM TRANSMITTER POWER

3.1 LIMITS

Per FCC Part 2.1046 and Part 90.205: Maximum ERP is dependent upon the station's antenna HAAT and required service area.

The output power shall not exceed by more than 20 percent either the output power shown in the Radio Equipment List [available in accordance with §90.203(a)(1)] for transmitters included in this list or when not so listed, the manufacturer's rated output power for the particular transmitter specifically listed on the authorization.

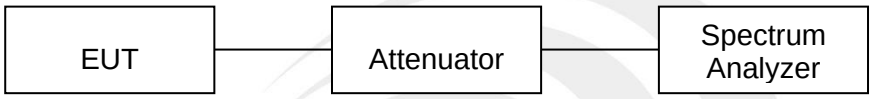
3.2 TEST PROCEDURE

Measurements shall be made to establish the radio frequency power delivered by the transmitter the standard output termination. The power output shall be monitored and recorded and no adjustment shall be made to the transmitter after the test has begun, except as noted bellow:
If the power output is adjustable, measurements shall be made for the highest and lowest power levels. The EUT connect to the Spectrum Analyzer through 30 dB attenuator.

3.3 DEVIATION FROM TEST STANDARD

No deviation

3.4 TEST SETUP BLOCK DIAGRAM



3.5 TEST RESULT

Modulation Type	Channel Sparation	Test Channel	Test Frequency (MHz)	Test Results (dBm)	Test Results (W)
Un-modulation	12.5KHz	CH1	851.00625	23.971	0.250
		CH2	806.00625	23.949	0.248
Un-modulation	25KHz	CH3	868.9875	24.228	0.265
		CH4	823.9875	24.011	0.252
Un-modulation	25KHz	CH5	860	24.071	0.255
		CH6	815	23.920	0.247

Note: The rated power is 0.25W, the power limits is 0.2W~0.3W.

4. OCCUPIED BANDWIDTH

4.1 LIMIT

Occupied Bandwidth: The EUT was connected to the spectrum analyzer via the main RF connector, and through an appropriate attenuator. The EUT was controlled to transmit its maximum power. Then the bandwidth of 99% power can be measured by the spectrum analyzer. The maximum authorized bandwidth shall not be more than that normally authorized for digital data mode.

4.2 MEASUREMENT PROCEDURE

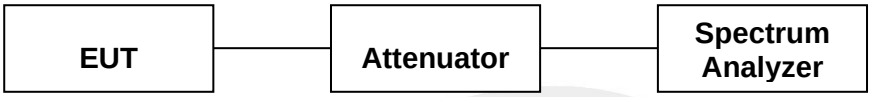
a. The EUT was connected to the spectrum analyzer through sufficent attenuation.

b. Set EUT as digital data mode.

c. Set SPA Center Frequency=fundamental frequency, RBW=300Hz, VBW=3KHz, span =15KHz or 30KHz.

e Set SPA Max hold. Mark peak, Set 99% Occupied Bandwidth.

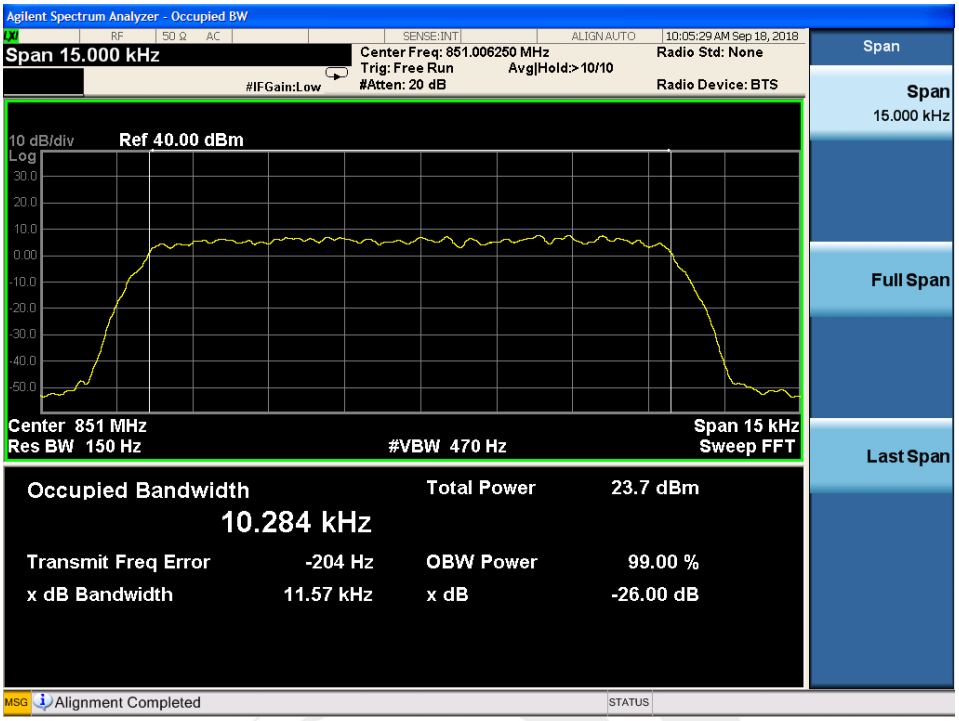
4.3 TEST SETUP BLOCK DIAGRAM



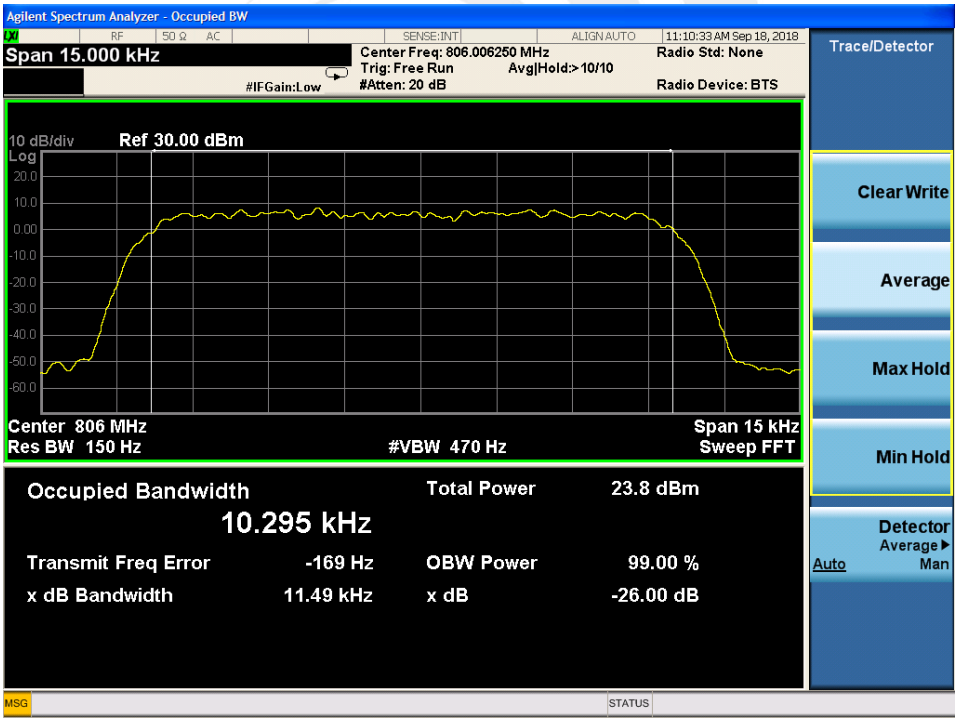
4.4 TEST RESULT

Modulation Type	Channel Sparation	Operation Mode	Test Channel	Test Frequency (MHz)	Occupied Bandwidth (KHz)
					99%
QPSK	12.5KHz	Mode 1	CH1	851.00625	10.284
		Mode 2	CH2	806.00625	10.295
16QAM	12.5KHz	Mode 3	CH1	851.00625	10.298
		Mode 4	CH2	806.00625	10.367
64QAM	12.5KHz	Mode 5	CH1	851.00625	10.298
		Mode 6	CH2	806.00625	10.303
256QAM	12.5KHz	Mode 7	CH1	851.00625	10.302
		Mode 8	CH2	806.00625	10.203

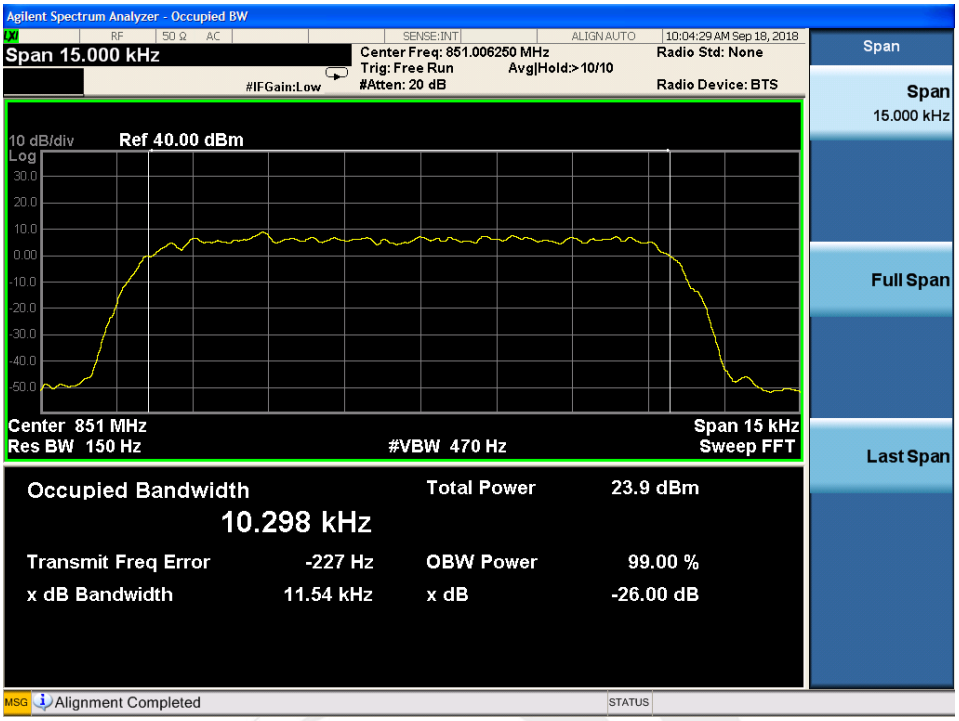
CH 1 Model 1



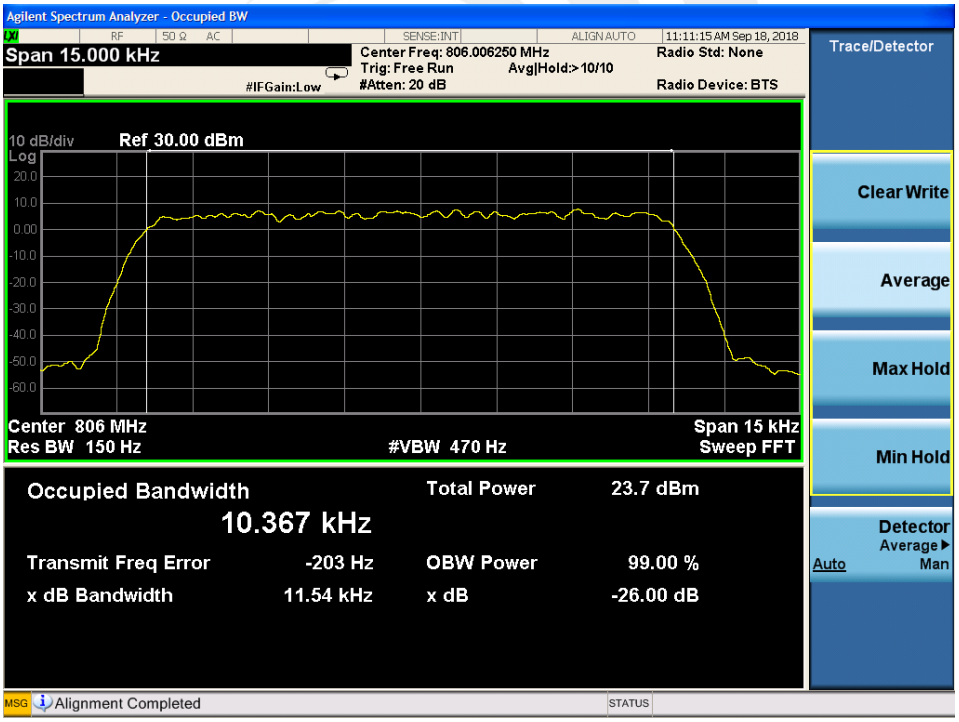
CH 2 Model 2



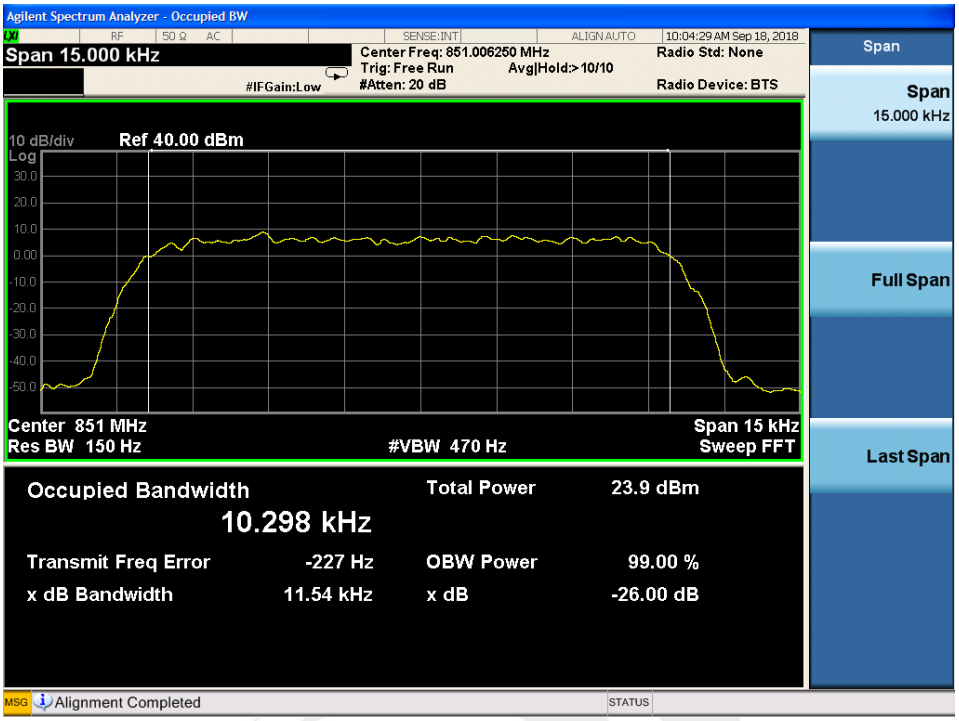
CH 1 Model 3



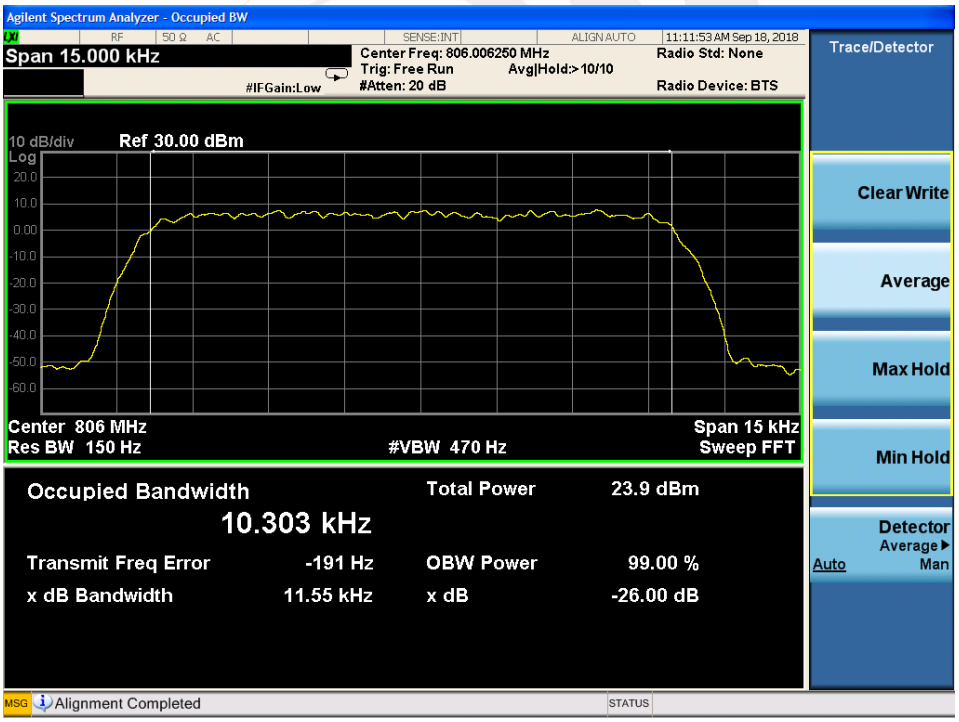
CH 2 Model 4



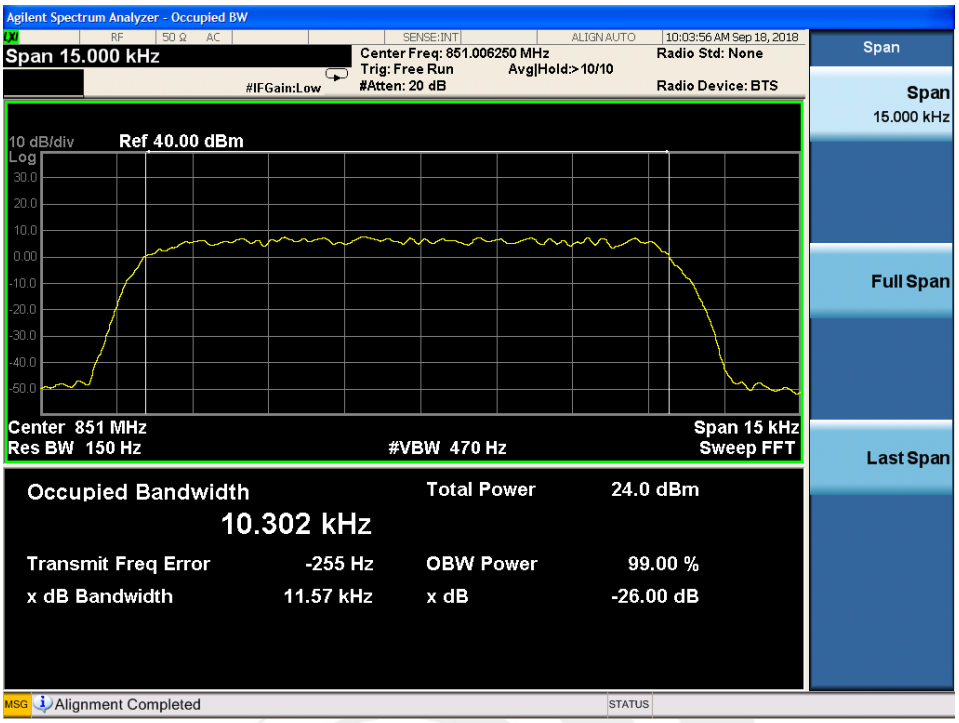
CH 1 Model 5



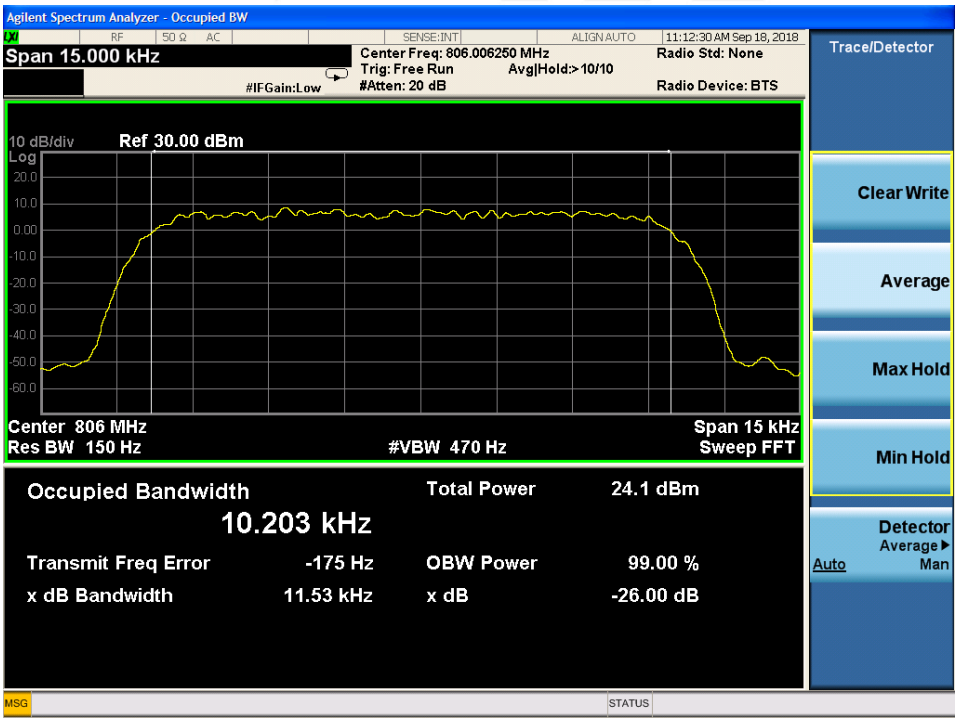
CH 2 Model 6



CH 1 Model 7

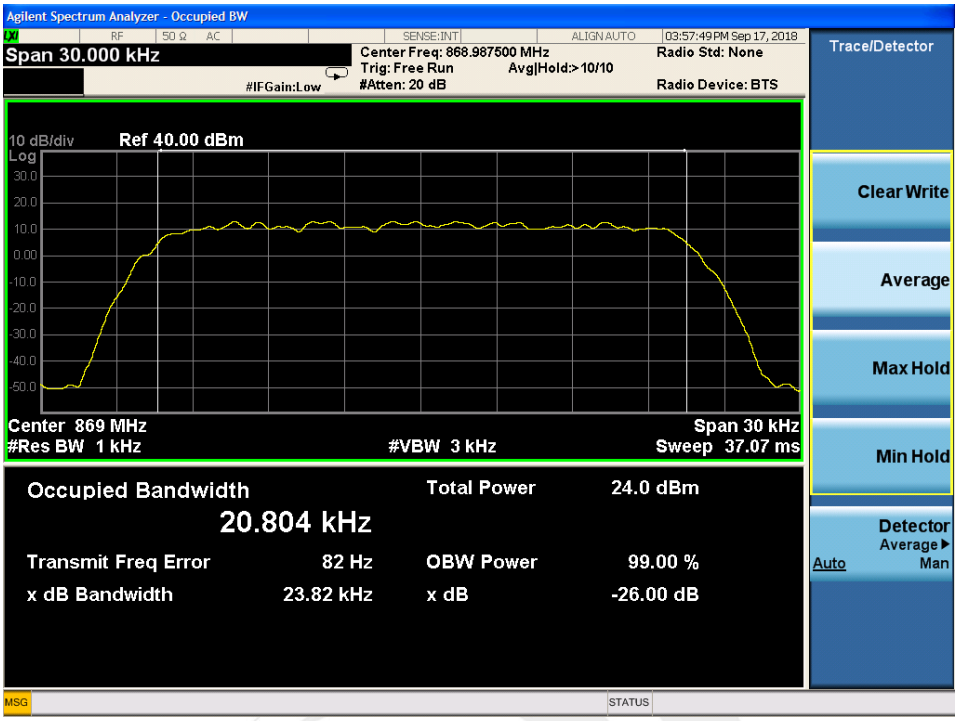


CH 2 Model 8

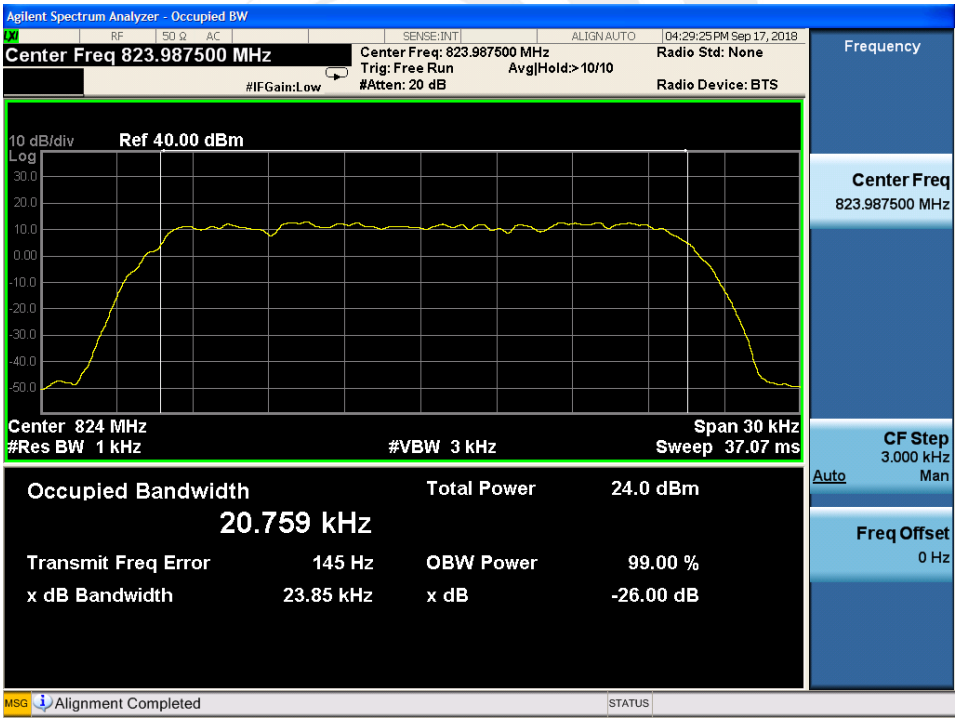


Modulation Type	Channel Sparation	Operation Mode	Test Channel	Test Frequency (MHz)	Occupied Bandwidth (KHz)
					99%
QPSK	25.0KHz	Mode 9	CH3	868.9875	20.804
		Mode 10	CH4	823.9875	20.759
		Mode 11	CH5	860.00	20.892
		Mode 12	CH6	815.00	20.859
16QAM	25.0KHz	Mode 13	CH3	868.9875	20.804
		Mode 14	CH4	823.9875	20.863
		Mode 15	CH5	860.00	20.852
		Mode 16	CH6	815.00	20.884
64QAM	25.0KHz	Mode 17	CH3	868.9875	20.849
		Mode 18	CH4	823.9875	20.767
		Mode 19	CH5	860.00	20.904
		Mode 20	CH6	815.00	20.957
256QAM	25.0KHz	Mode 21	CH3	868.9875	20.833
		Mode 22	CH4	823.9875	20.997
		Mode 23	CH5	860.00	21.025
		Mode 24	CH6	815.00	20.902

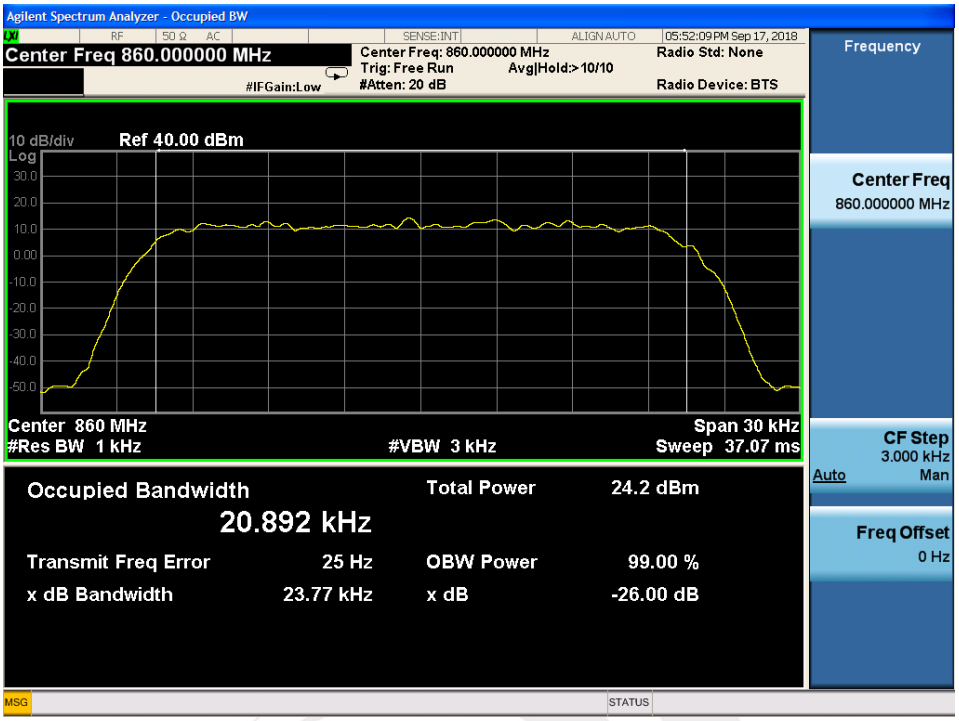
CH 3 Model 9



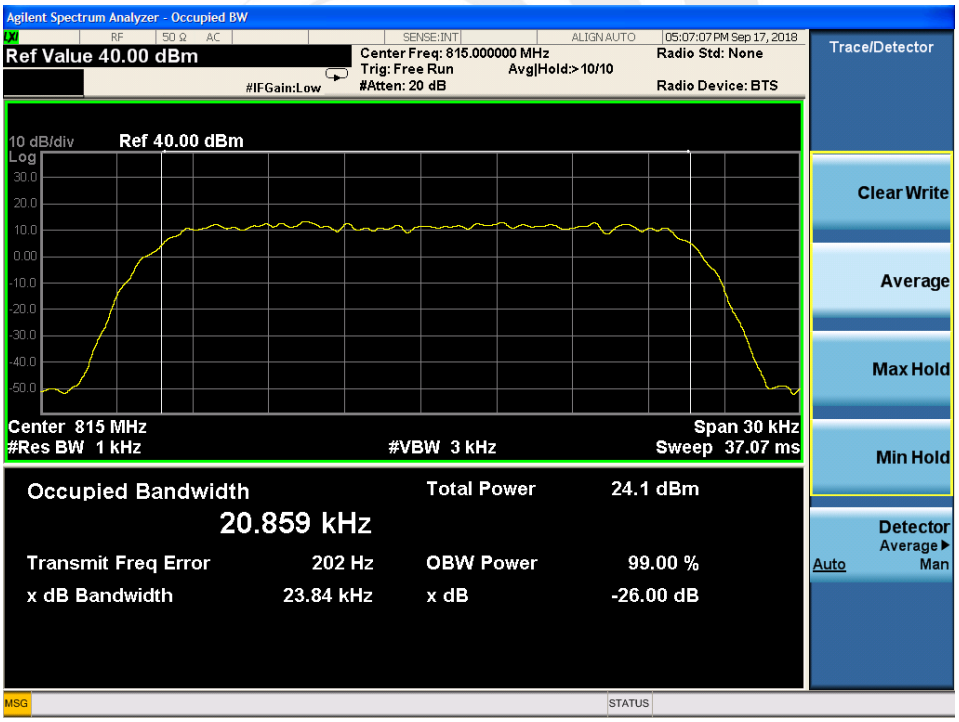
CH 4 Model 10



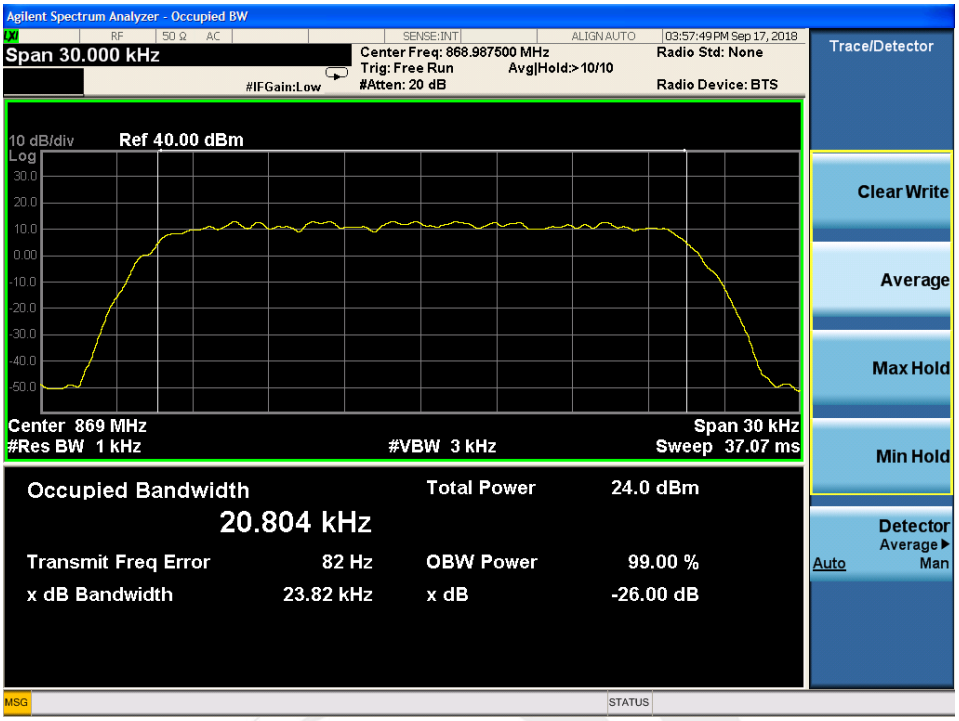
CH 5 Model 11



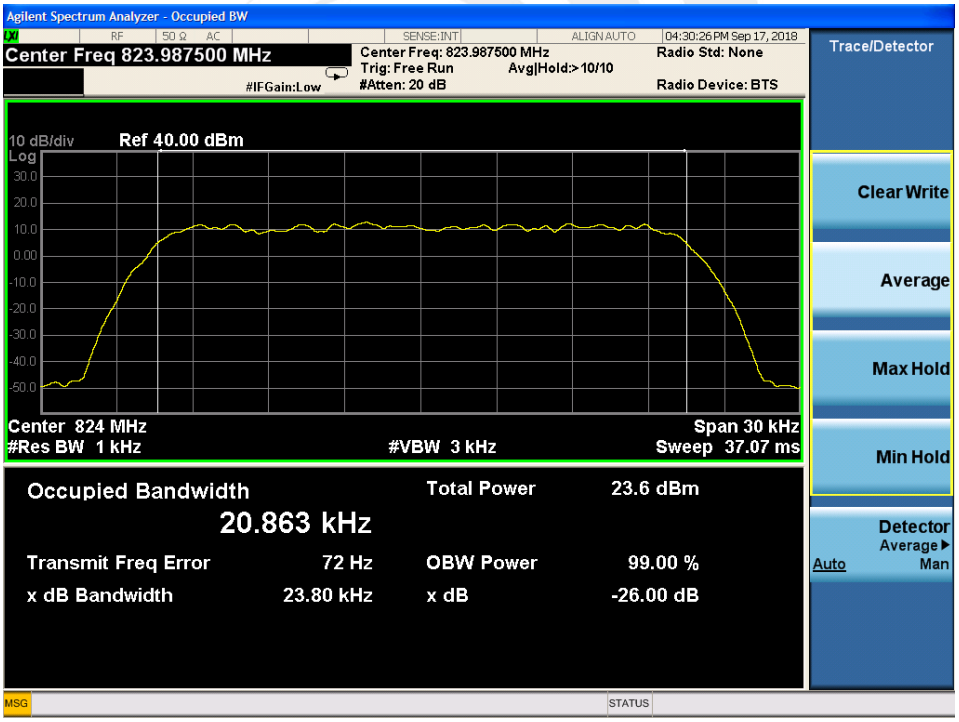
CH 6 Model 12



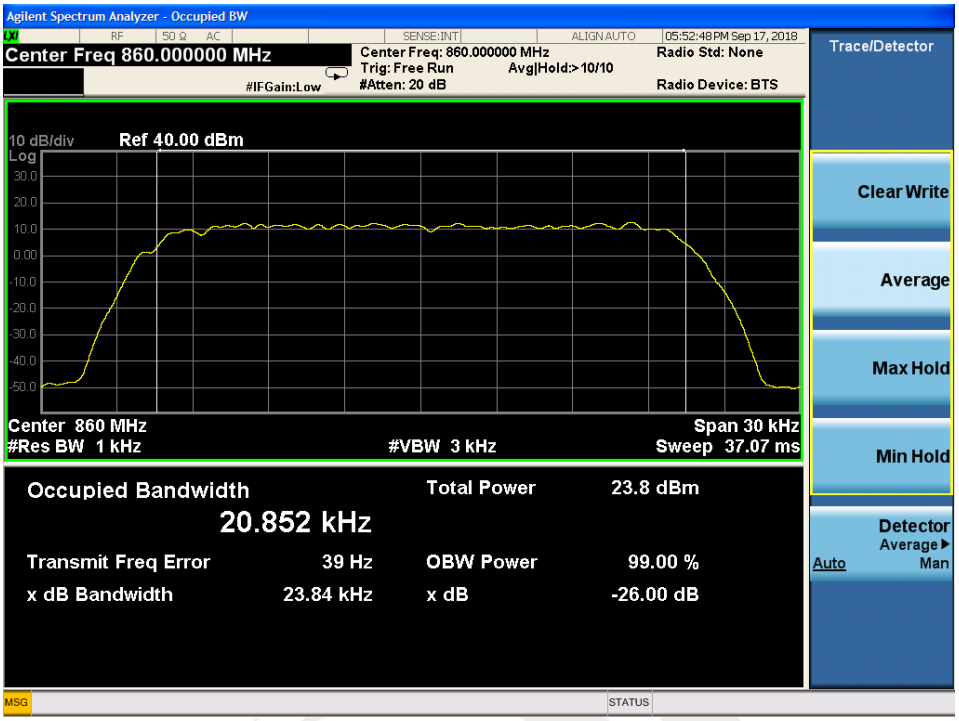
CH 3 Model 13



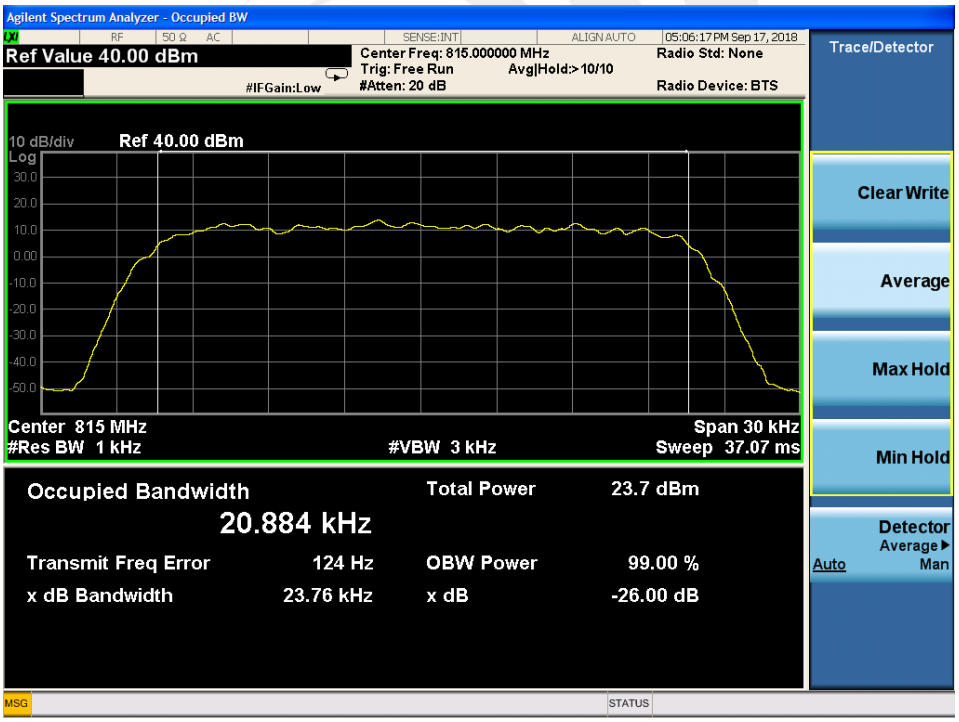
CH 4 Model 14



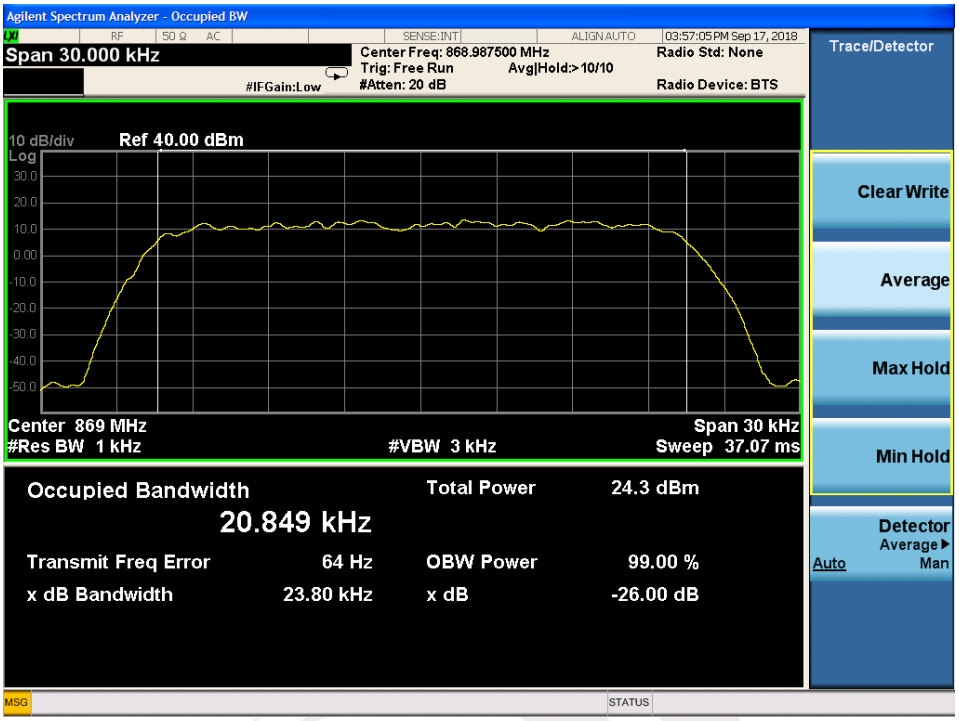
CH 5 Model 15



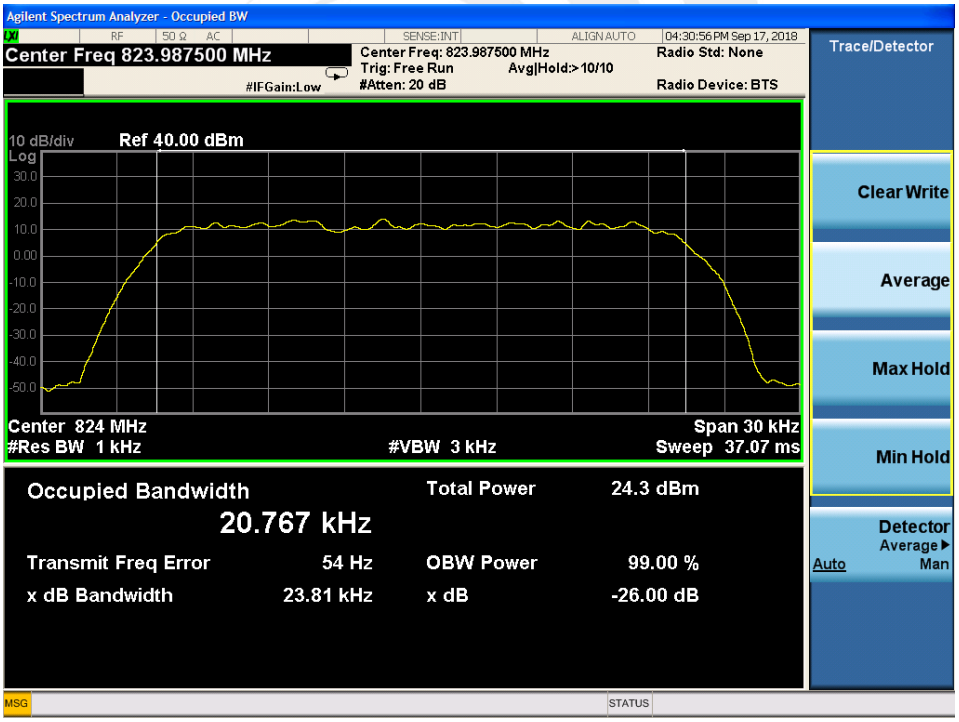
CH 6 Model 16



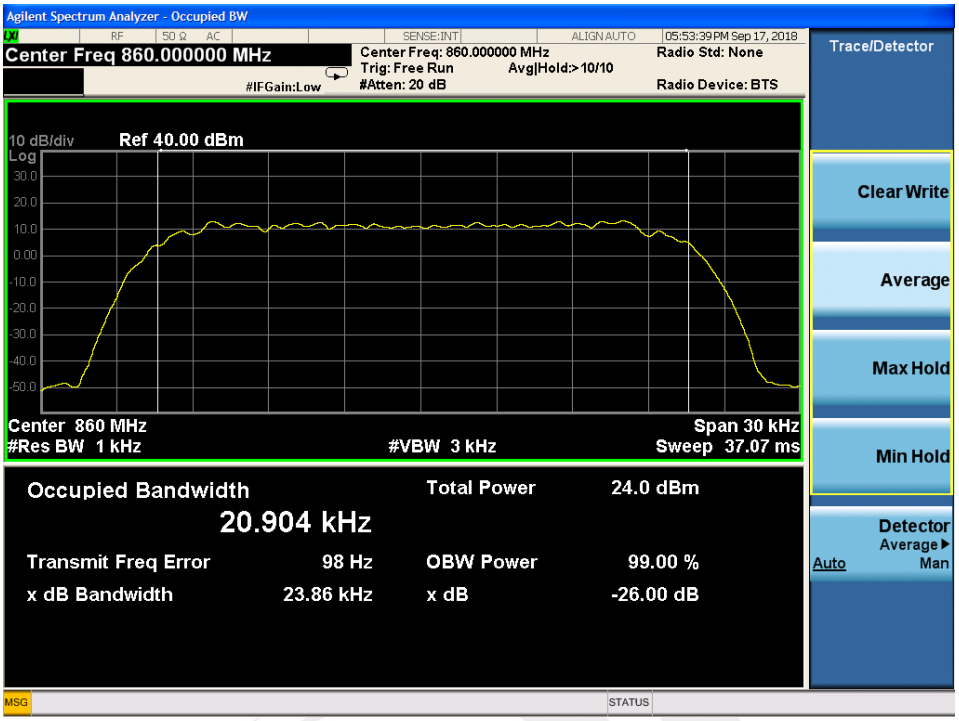
CH 3 Model 17



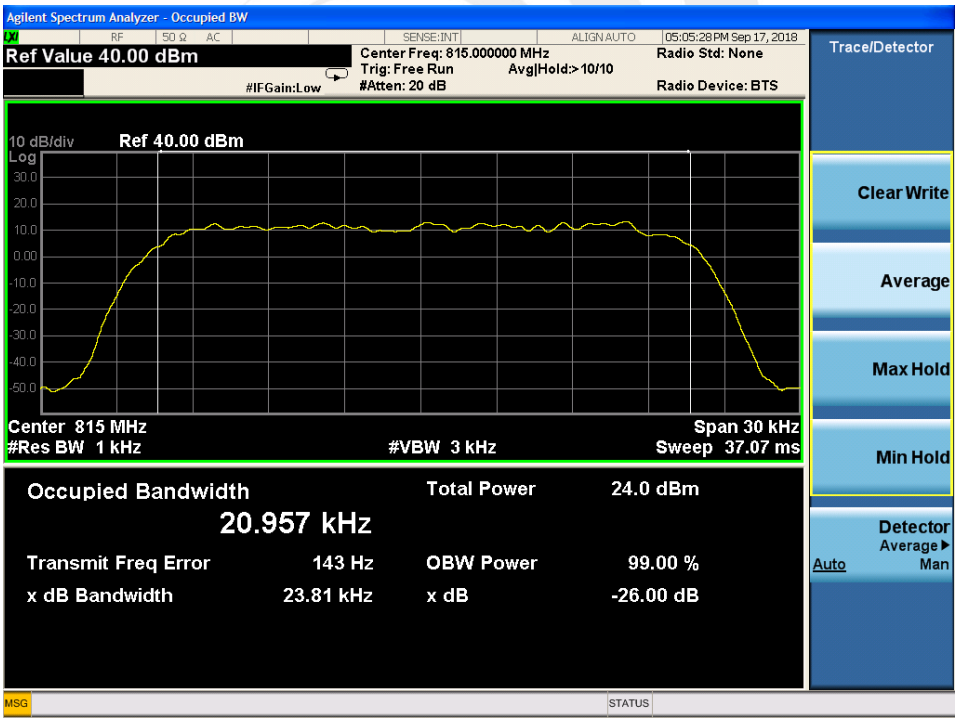
CH 4 Model 18



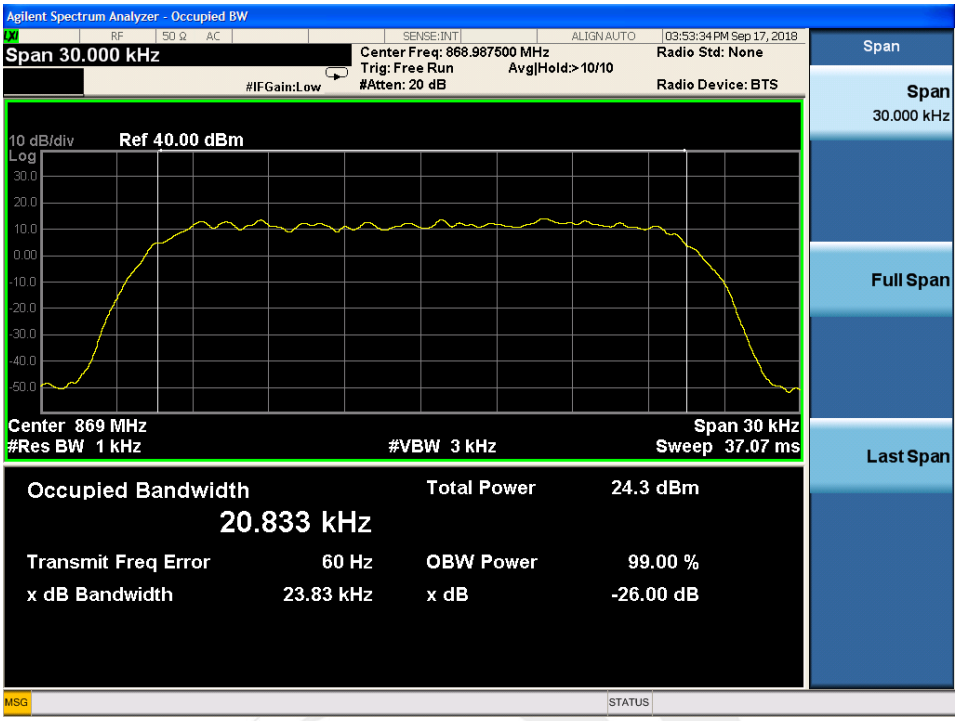
CH 5 Model 19



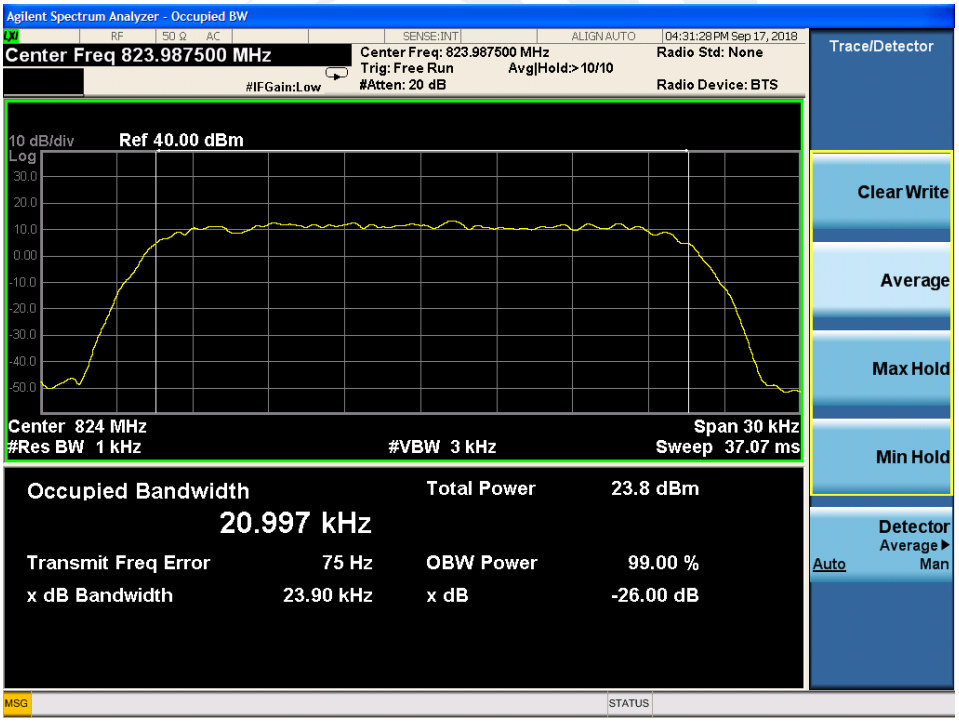
CH 6 Model 20



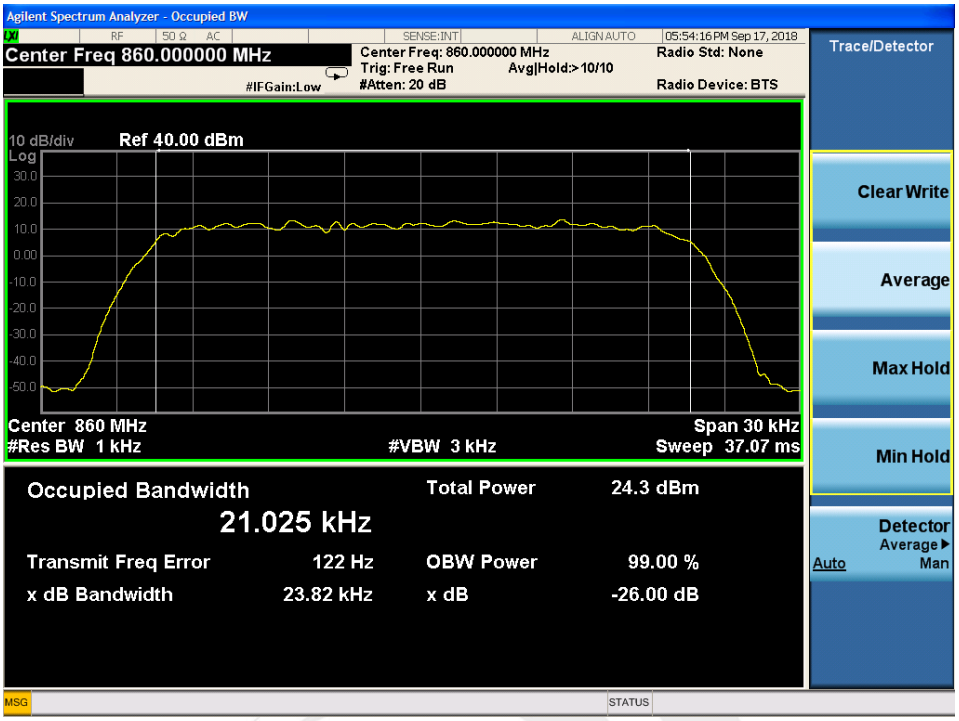
CH 3 Model 21



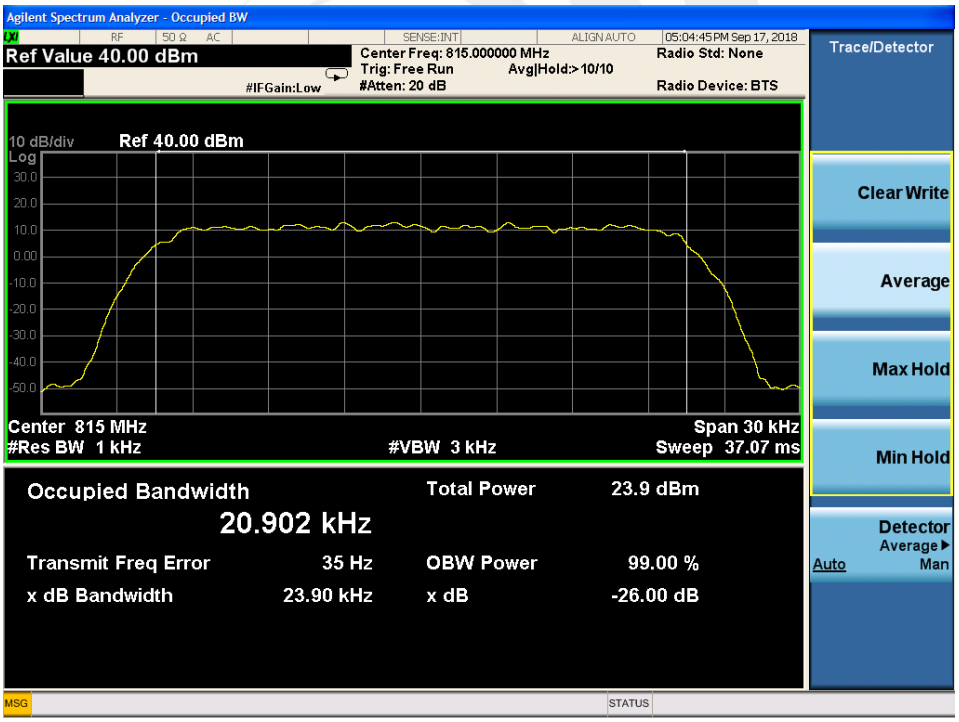
CH 4 Model 22



CH 5 Model 23



CH 6 Model 24



5. EMISSION MASK

5.1 PROVISIONS APPLICABLE

(h) Emission Mask H. For transmitters that are not equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as follows:

(1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of 4 kHz or less: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 4 kHz, but no more than 8.5 kHz: At least 107 log (f_d/4) dB;

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 8.5 kHz, but no more than 15 kHz: At least 40.5 log (f_d/1.16) dB;

(4) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 15 kHz, but no more than 25 kHz: At least 116 log (f_d/6.1) dB;

(5) On any frequency removed from the center of the authorized bandwidth by more than 25 kHz: At least 43 + 10 log (P) dB.

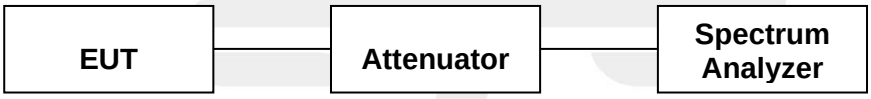
5.2 MEASUREMENT PROCEDURE

a. The EUT was connected to the spectrum analyzer through sufficent attenuation.

b. Set EUT as digital data mode.

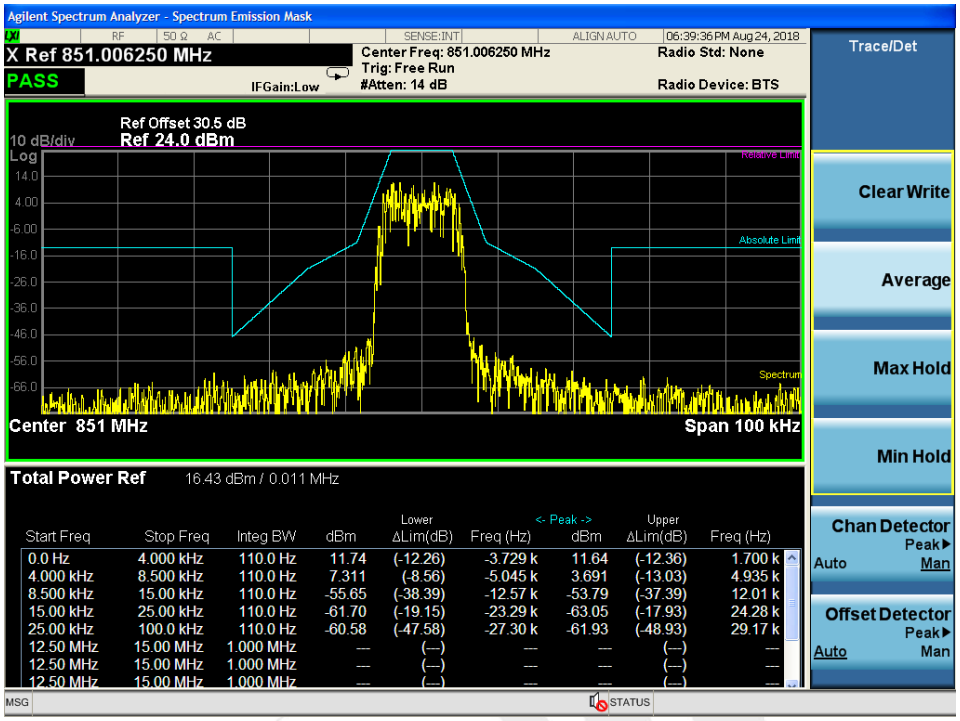
c. Set SPA Center Frequency=fundamental frequency, RBW=1kHz, VBW=3KHz, span =100KHz.

5.3 TEST SETUP BLOCK DIAGRAM



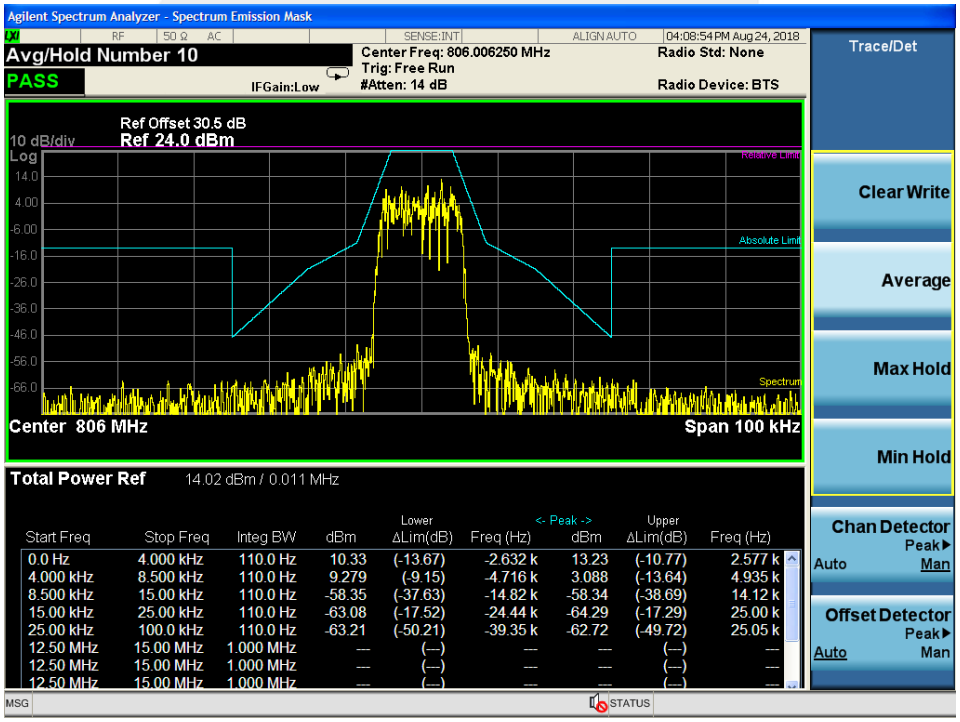
5.4 MEASUREMENT RESULT

CH 1 Model 1



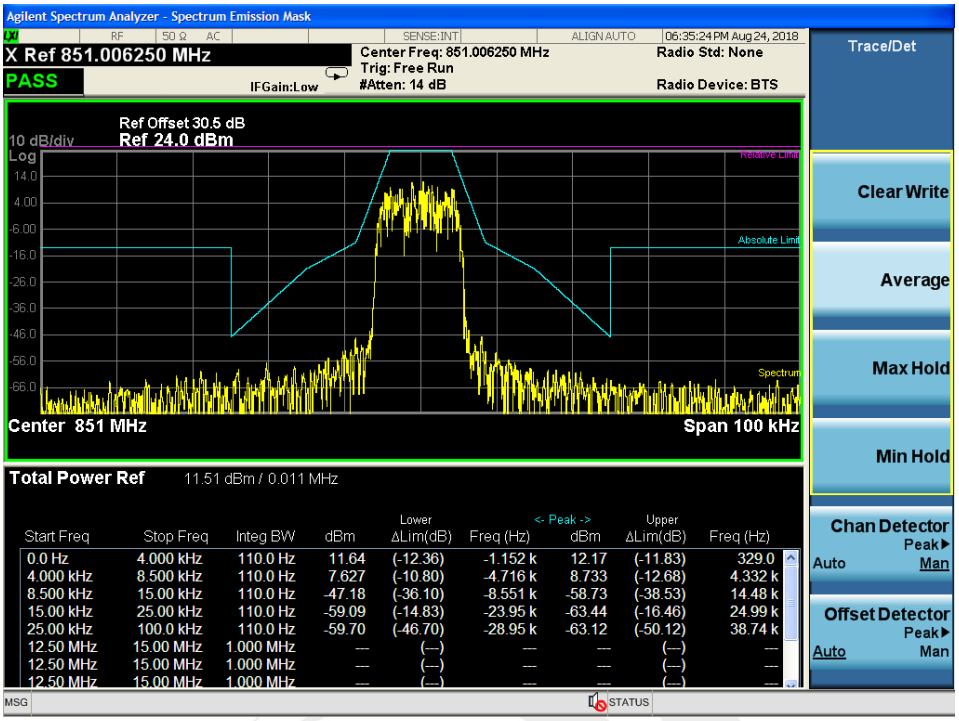
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	4.000 kHz	110.0 Hz	11.74	(-12.26)	-3.729 k	11.64	(-12.36)	1.700 k
4.000 kHz	8.500 kHz	110.0 Hz	7.311	(-8.56)	-5.045 k	3.691	(-13.03)	4.935 k
8.500 kHz	15.00 kHz	110.0 Hz	-55.65	(-38.39)	-12.57 k	-53.79	(-37.39)	12.01 k
15.00 kHz	25.00 kHz	110.0 Hz	-61.70	(-19.15)	-23.29 k	-63.05	(-17.93)	24.28 k
25.00 kHz	100.0 kHz	110.0 Hz	-60.58	(-47.58)	-27.30 k	-61.93	(-48.93)	29.17 k
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

CH 2 Model 2



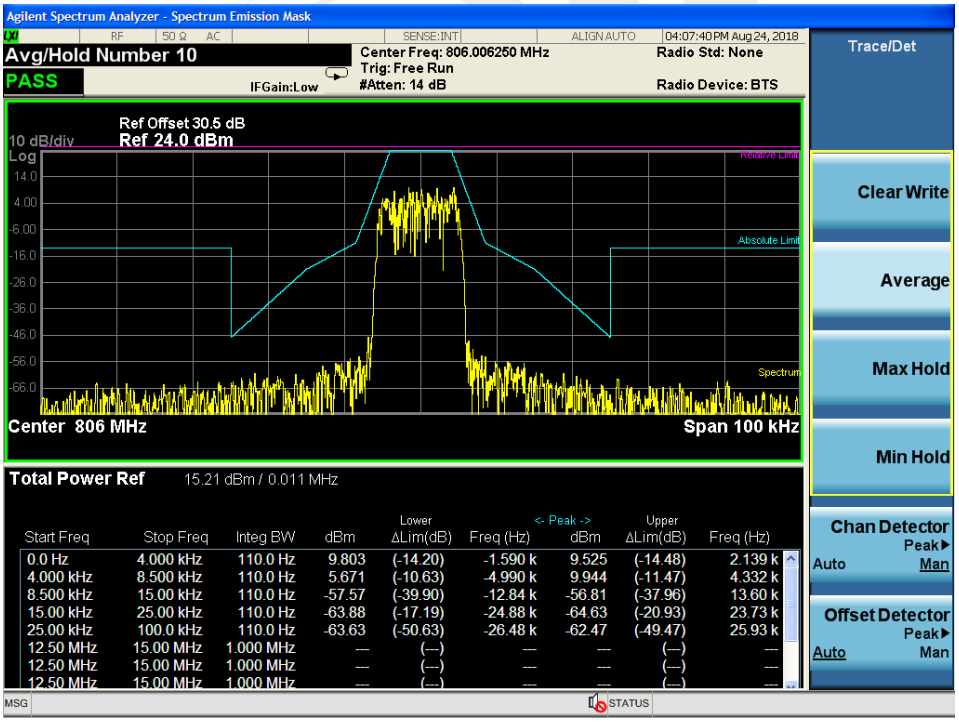
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	4.000 kHz	110.0 Hz	10.33	(-13.67)	-2.632 k	13.23	(-10.77)	2.577 k
4.000 kHz	8.500 kHz	110.0 Hz	9.279	(-9.15)	-4.716 k	3.088	(-13.64)	4.935 k
8.500 kHz	15.00 kHz	110.0 Hz	-58.35	(-37.63)	-14.82 k	-58.34	(-38.69)	14.12 k
15.00 kHz	25.00 kHz	110.0 Hz	-63.08	(-17.52)	-24.44 k	-64.29	(-17.29)	25.00 k
25.00 kHz	100.0 kHz	110.0 Hz	-63.21	(-50.21)	-39.35 k	-62.72	(-49.72)	25.05 k
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

CH 1 Model 3



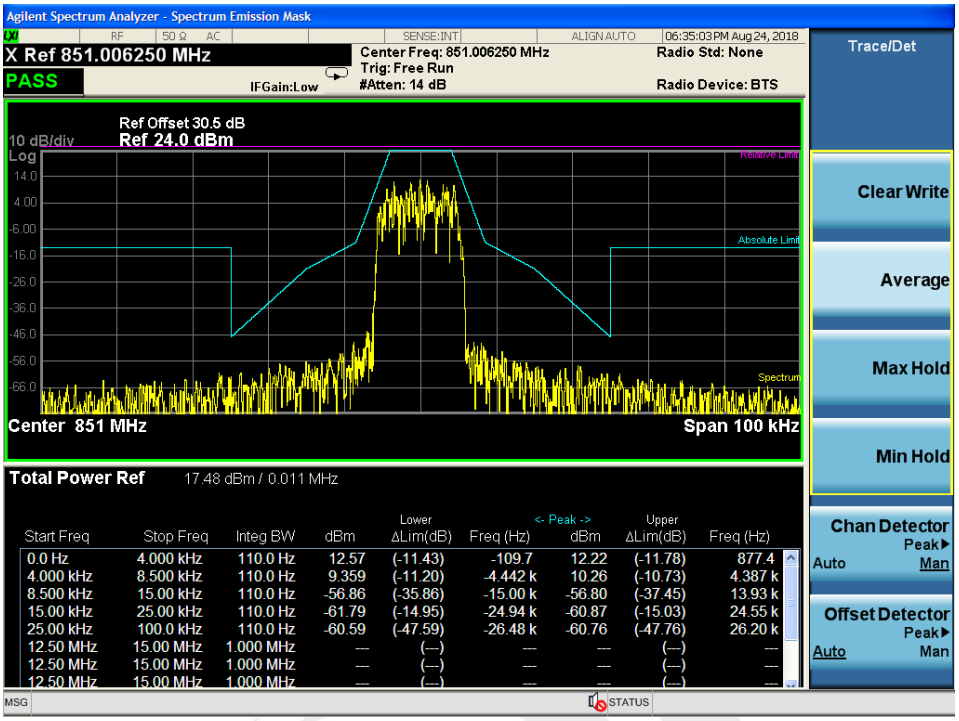
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	4.000 kHz	110.0 Hz	11.64	(-12.36)	-1.152 k	12.17	(-11.83)	329.0
4.000 kHz	8.500 kHz	110.0 Hz	7.627	(-10.80)	-4.716 k	8.733	(-12.68)	4.332 k
8.500 kHz	15.00 kHz	110.0 Hz	-47.18	(-36.10)	-8.551 k	-58.73	(-38.53)	14.48 k
15.00 kHz	25.00 kHz	110.0 Hz	-59.09	(-14.83)	-23.95 k	-63.44	(-16.46)	24.99 k
25.00 kHz	100.0 kHz	110.0 Hz	-59.70	(-46.70)	-28.95 k	-63.12	(-50.12)	38.74 k
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

CH 2 Model 4



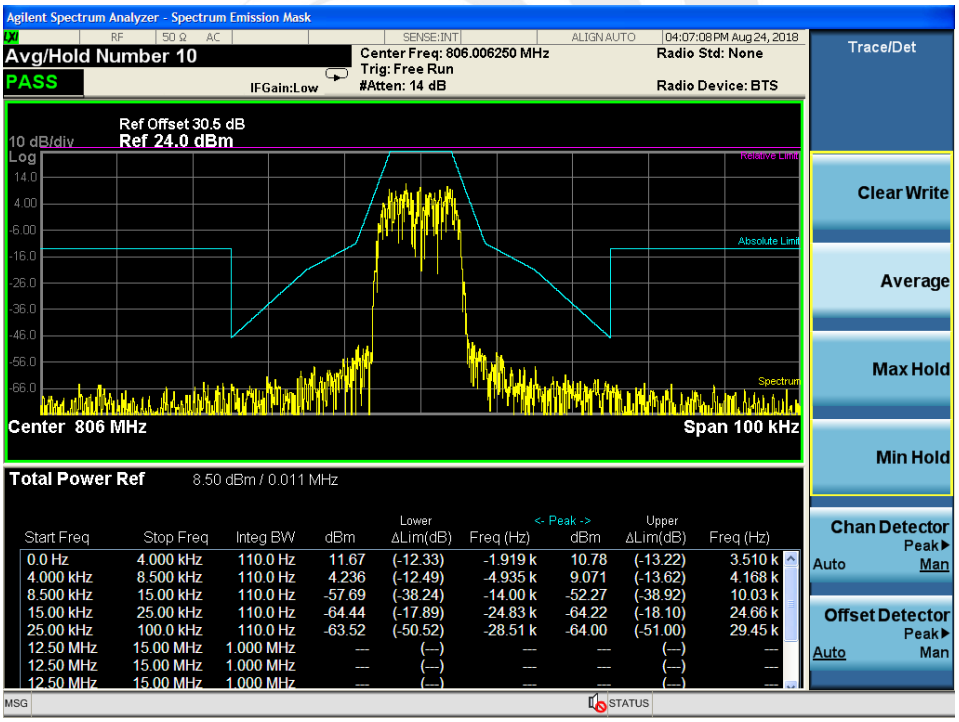
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	4.000 kHz	110.0 Hz	9.803	(-14.20)	-1.590 k	9.525	(-14.48)	2.139 k
4.000 kHz	8.500 kHz	110.0 Hz	5.671	(-10.63)	-4.990 k	9.944	(-11.47)	4.332 k
8.500 kHz	15.00 kHz	110.0 Hz	-57.57	(-39.90)	-12.84 k	-56.81	(-37.96)	13.60 k
15.00 kHz	25.00 kHz	110.0 Hz	-63.88	(-17.19)	-24.88 k	-64.63	(-20.93)	23.73 k
25.00 kHz	100.0 kHz	110.0 Hz	-63.63	(-50.63)	-26.48 k	-62.47	(-49.47)	25.93 k
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

CH 1 Model 5



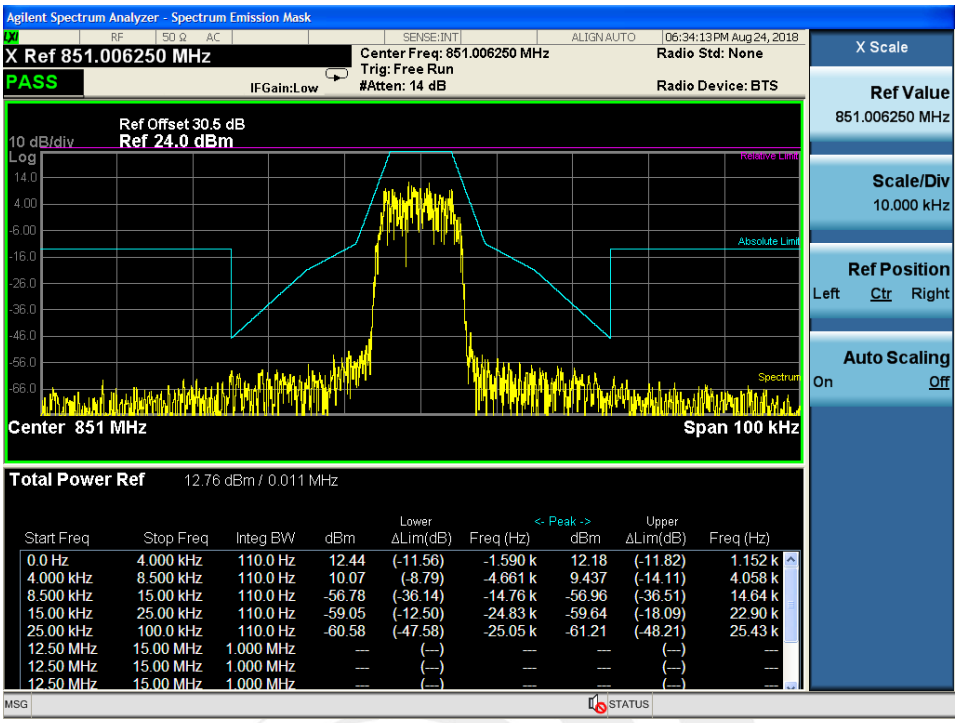
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	4.000 kHz	110.0 Hz	12.57	(-11.43)	-109.7	12.22	(-11.78)	877.4
4.000 kHz	8.500 kHz	110.0 Hz	9.359	(-11.20)	-4.442 k	10.26	(-10.73)	4.387 k
8.500 kHz	15.00 kHz	110.0 Hz	-56.86	(-35.86)	-15.00 k	-56.80	(-37.45)	13.93 k
15.00 kHz	25.00 kHz	110.0 Hz	-61.79	(-14.95)	-24.94 k	-60.87	(-15.03)	24.55 k
25.00 kHz	100.0 kHz	110.0 Hz	-60.59	(-47.59)	-26.48 k	-60.76	(-47.76)	26.20 k
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

CH 2 Model 6

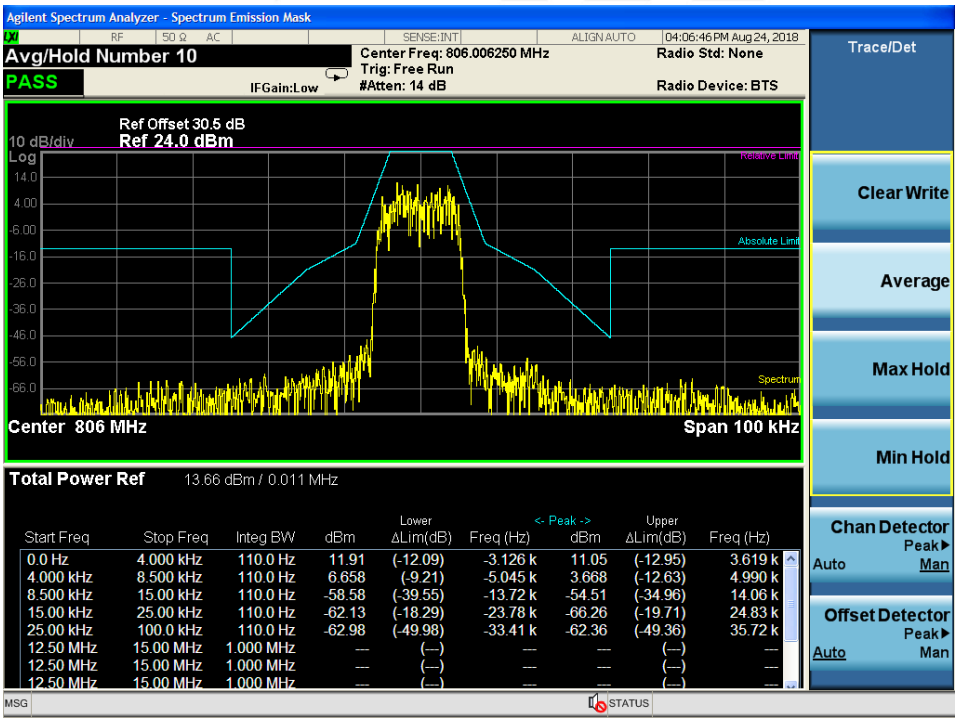


Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
0.0 Hz	4.000 kHz	110.0 Hz	11.67	(-12.33)	-1.919 k	10.78	(-13.22)	3.510 k
4.000 kHz	8.500 kHz	110.0 Hz	4.236	(-12.49)	-4.935 k	9.071	(-13.62)	4.168 k
8.500 kHz	15.00 kHz	110.0 Hz	-57.69	(-38.24)	-14.00 k	-52.27	(-38.92)	10.03 k
15.00 kHz	25.00 kHz	110.0 Hz	-64.44	(-17.89)	-24.83 k	-64.22	(-18.10)	24.66 k
25.00 kHz	100.0 kHz	110.0 Hz	-63.52	(-50.52)	-28.51 k	-64.00	(-51.00)	29.45 k
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---
12.50 MHz	15.00 MHz	1.000 MHz	---	(---)	---	---	(---)	---

CH 1 Model 7



CH 2 Model 8



6. ADJACENT CHANNEL POWER

6.1 PROVISIONS APPLICABLE

a. §90.221

Frequency offset	Maximum ACP (dBc) for devices less than 15 watts	Maximum ACP (dBc) for devices 15 watts and above
25 kHz	−55 dBc	−55 dBc
50 kHz	−65 dBc	−65 dBc
75 kHz	−65 dBc	−70 dBc

b. In any case, no requirement in excess of −36 dBm shall apply.

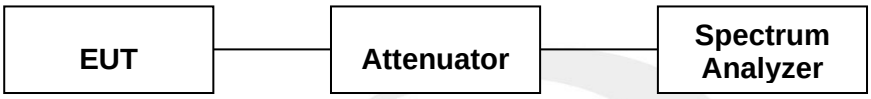
6.2 MEASUREMENT PROCEDURE

a. The EUT was connected to the spectrum analyzer through sufficent attenuation.

b. Set EUT as digital data mode.

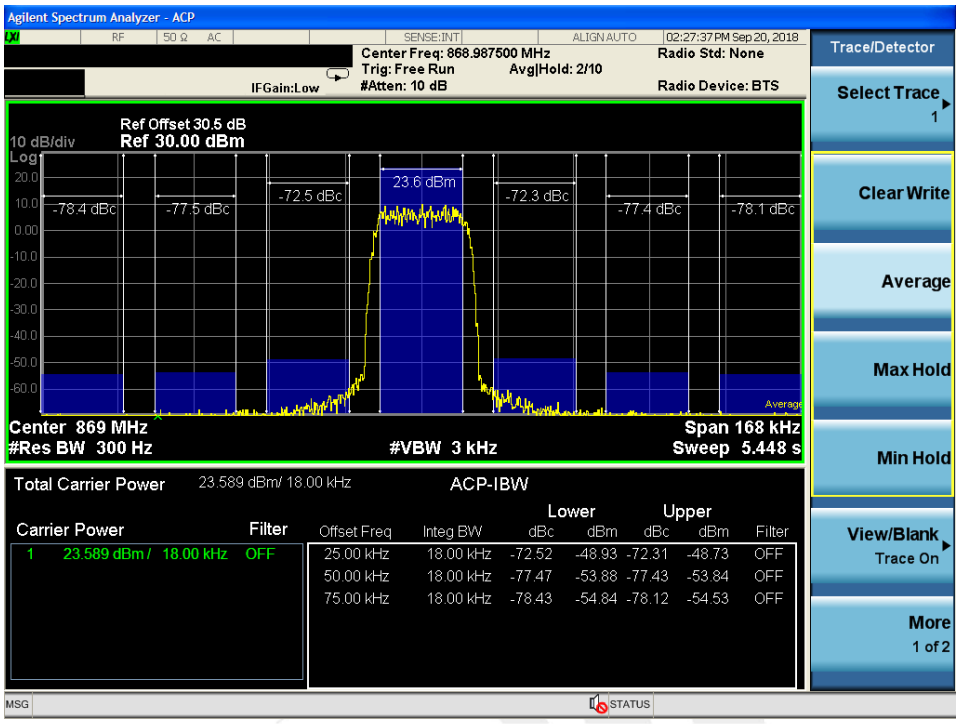
c. Set SPA Center Frequency=fundamental frequency, RBW=300Hz, VBW=1KHz, span =180KHz.

6.3 TEST SETUP BLOCK DIAGRAM

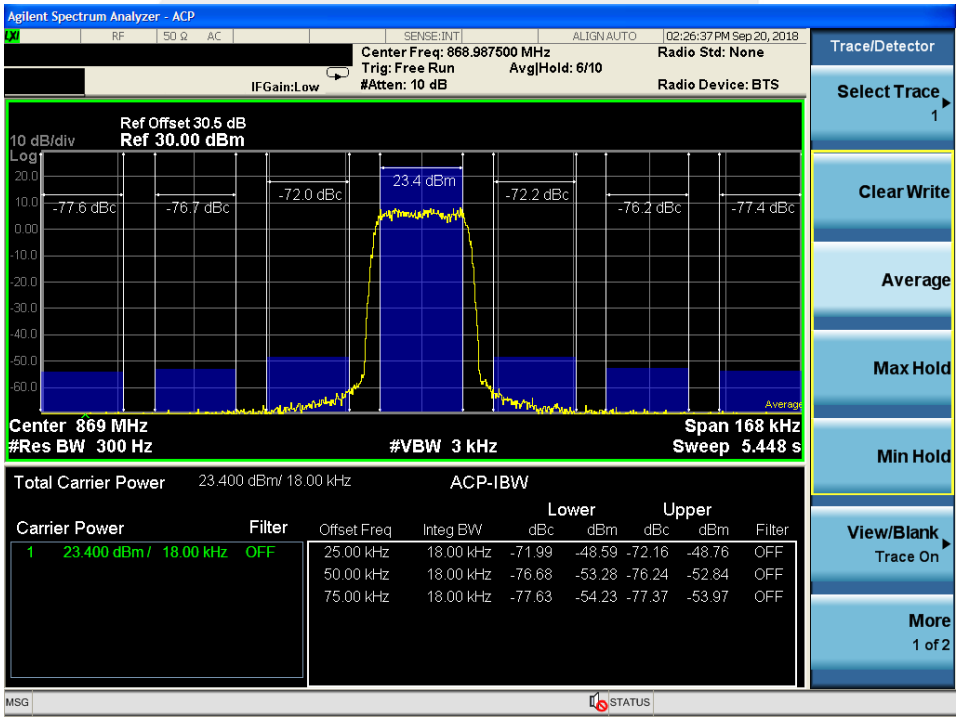


6.4 TEST RESULT

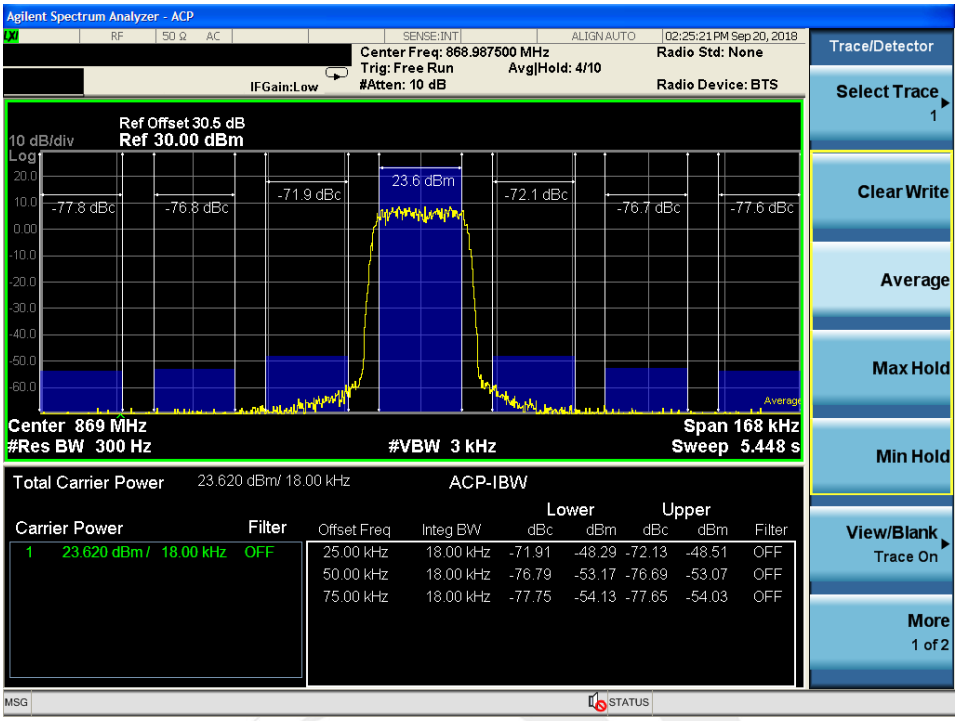
CH 3 Model 9



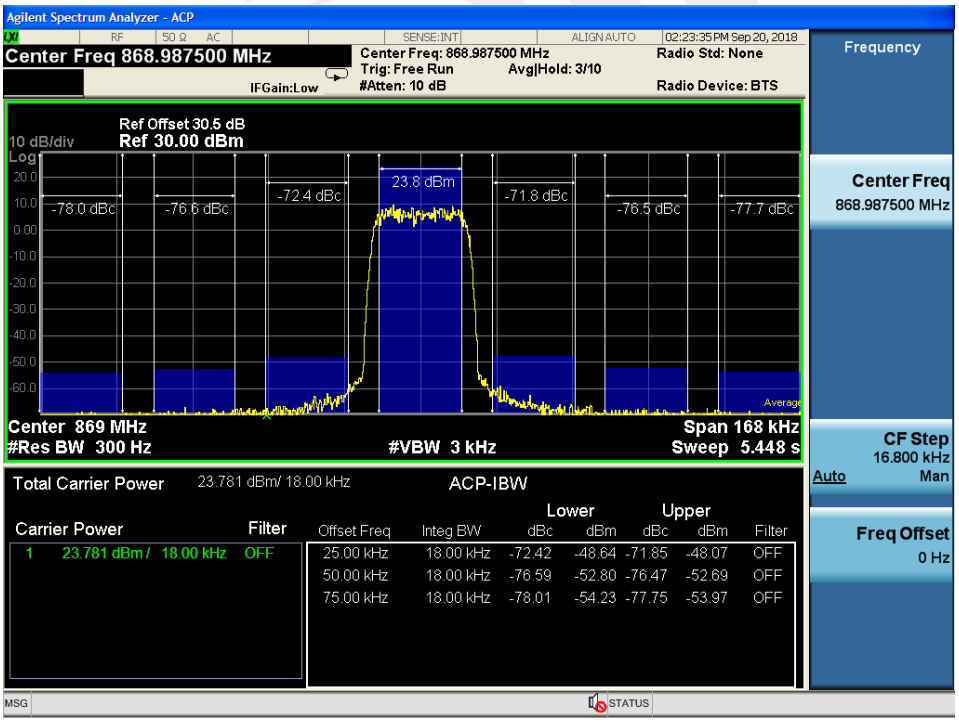
CH 3 Model 13



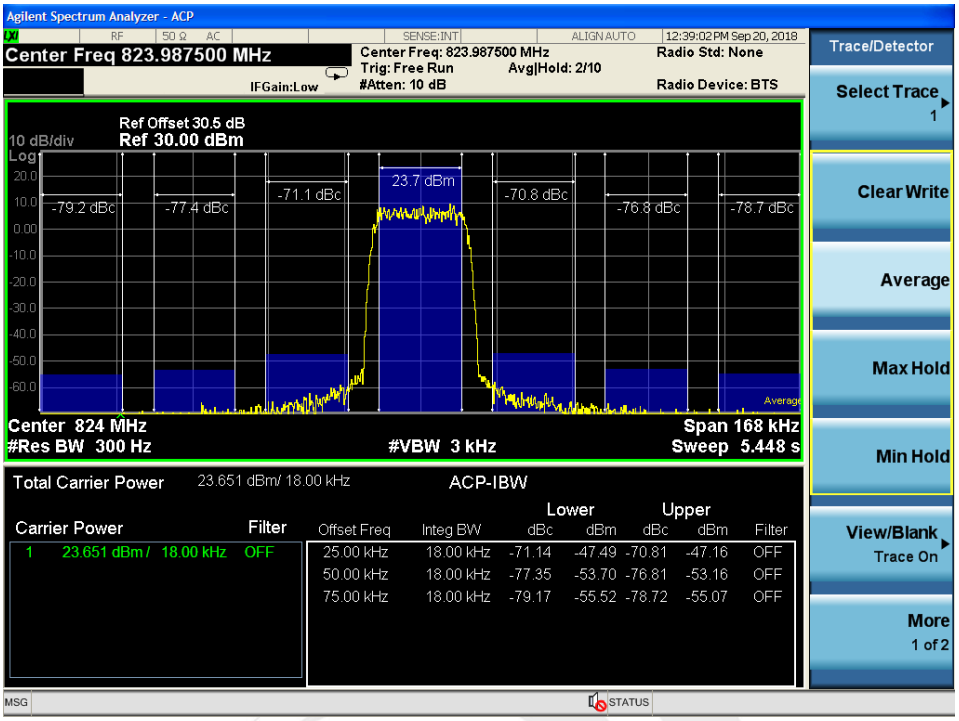
CH 3 Model 17



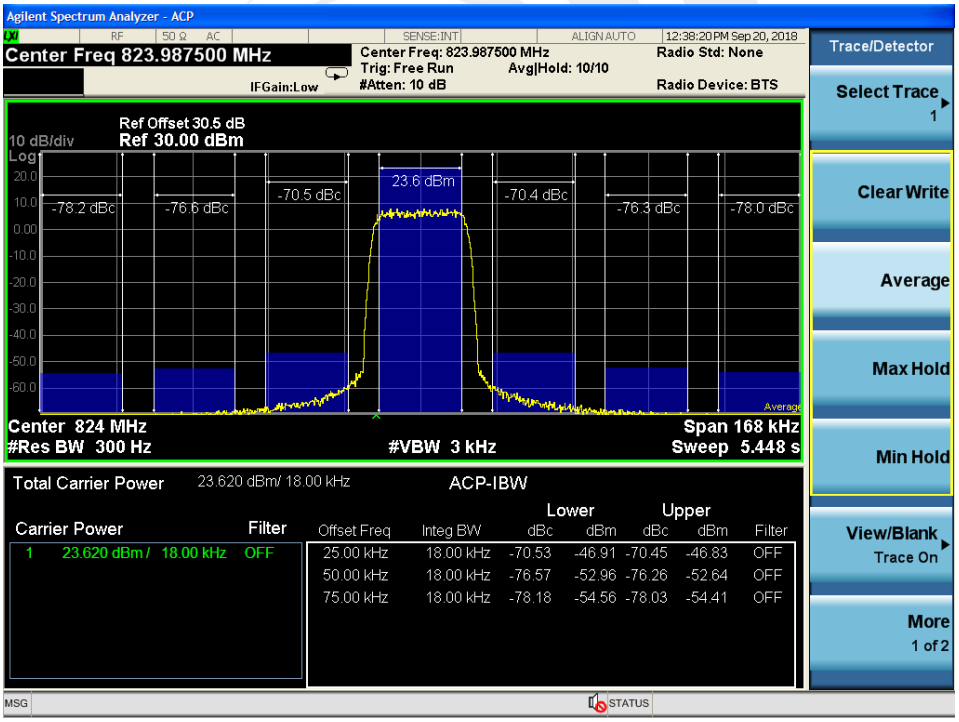
CH 3 Model 21



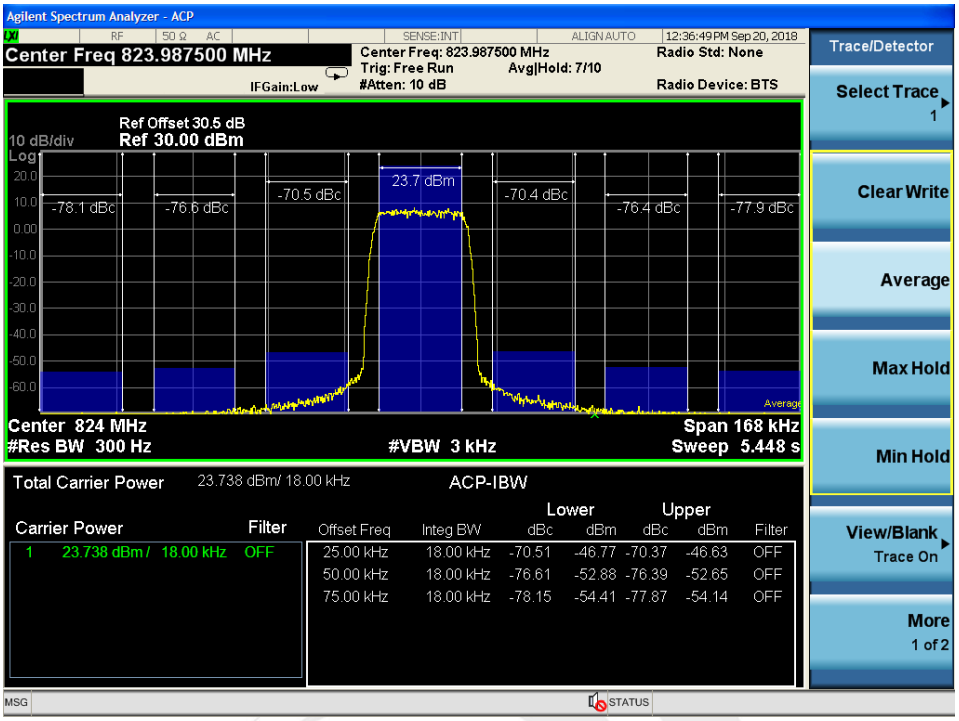
CH 4 Model 10



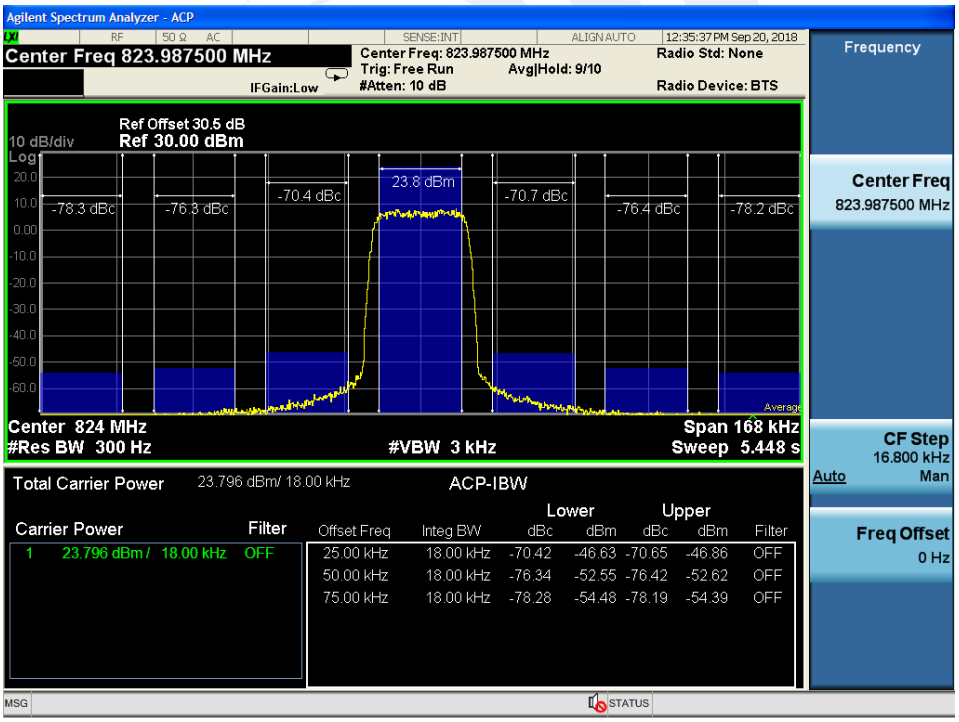
CH 4 Model 14



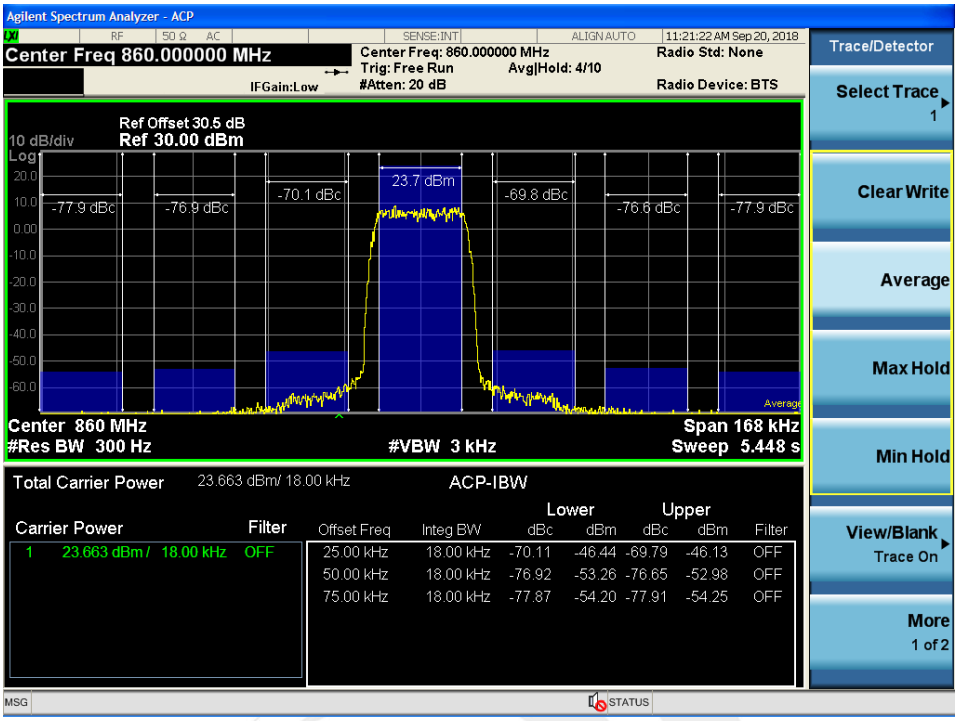
CH 4 Model 18



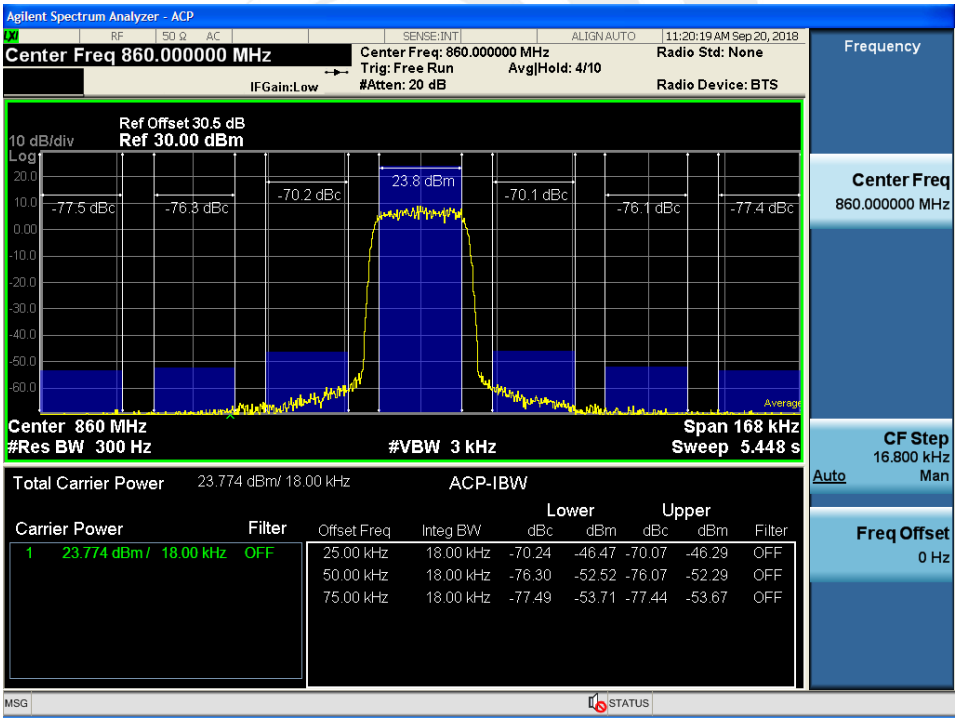
CH 4 Model 22



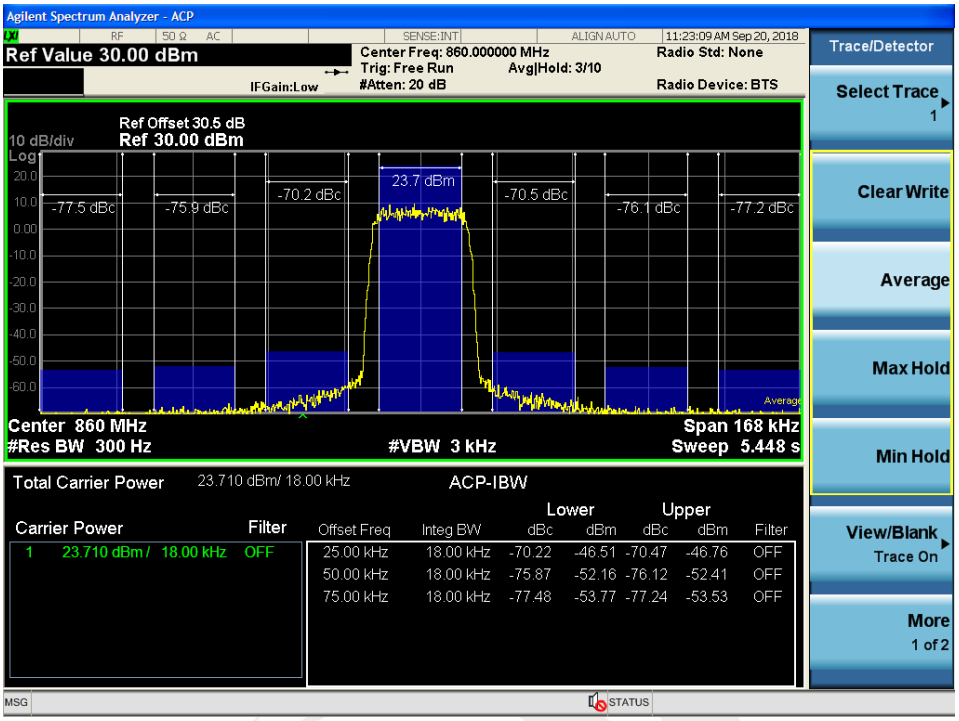
CH 5 Model 11



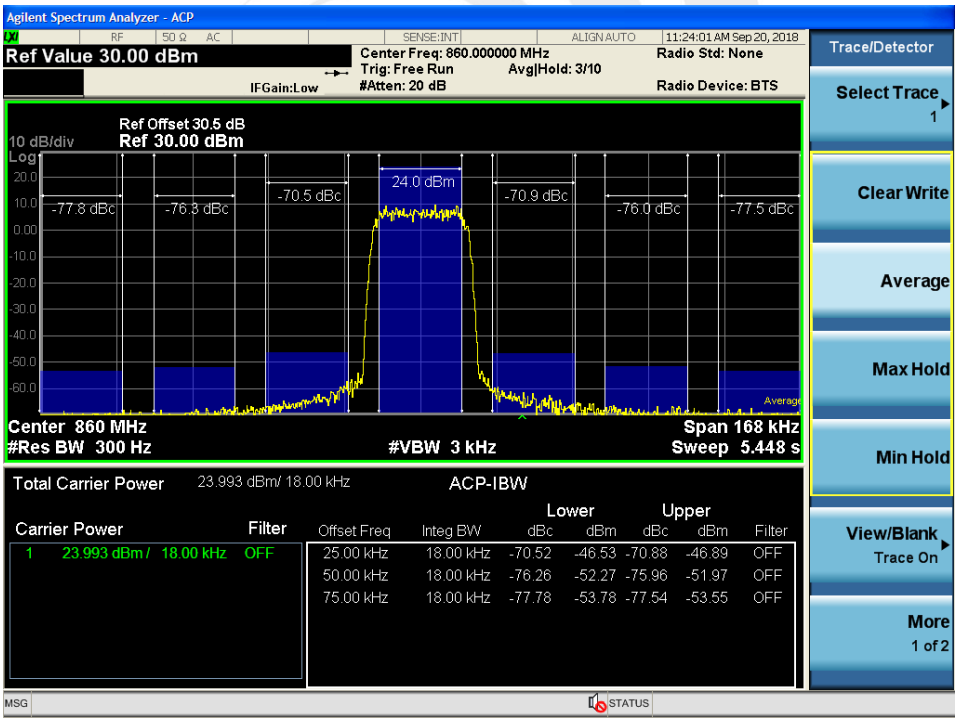
CH 5 Model 15



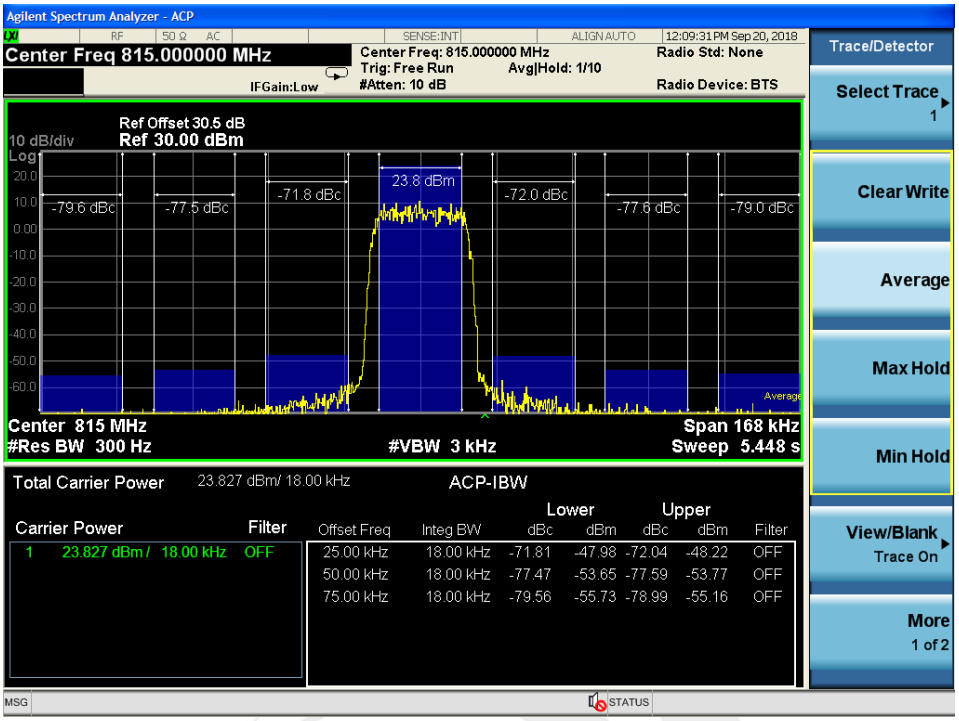
CH 5 Model 19



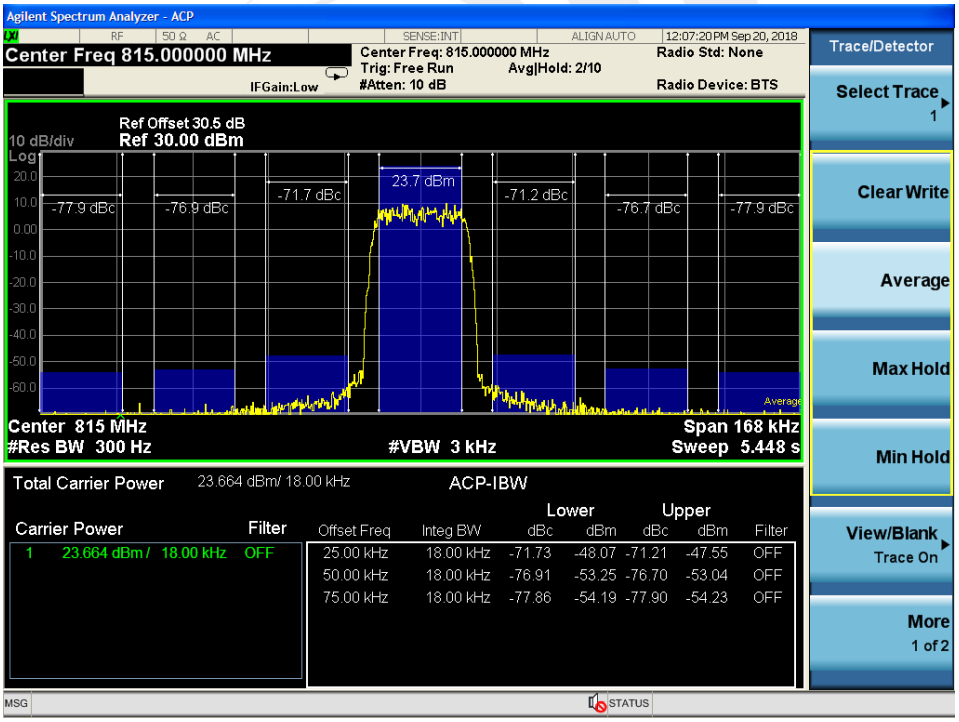
CH 5 Model 23



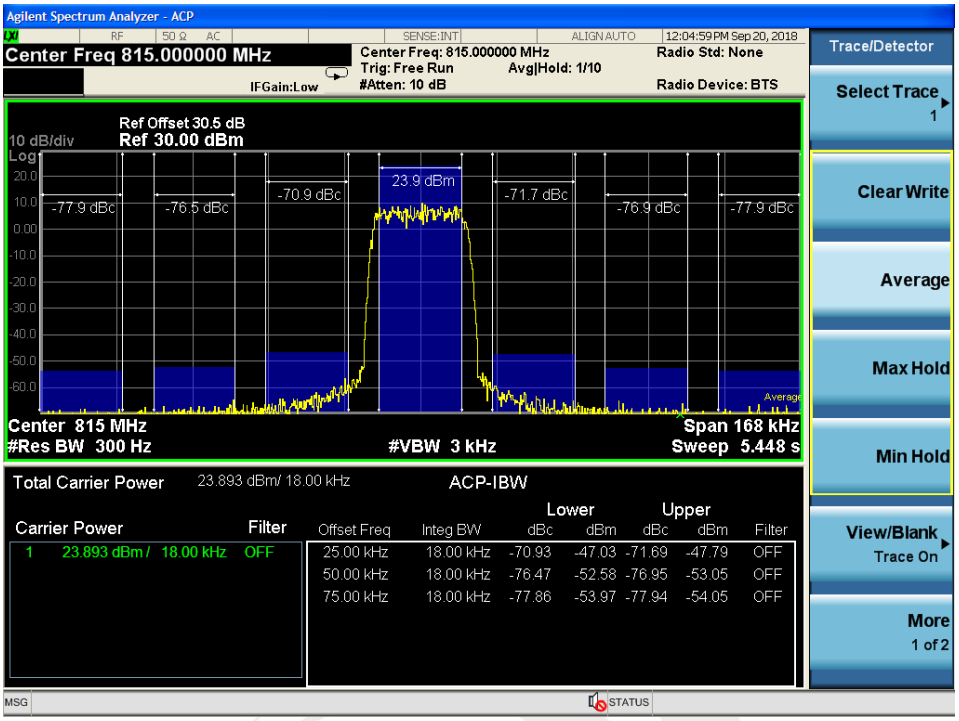
CH 6 Model 12



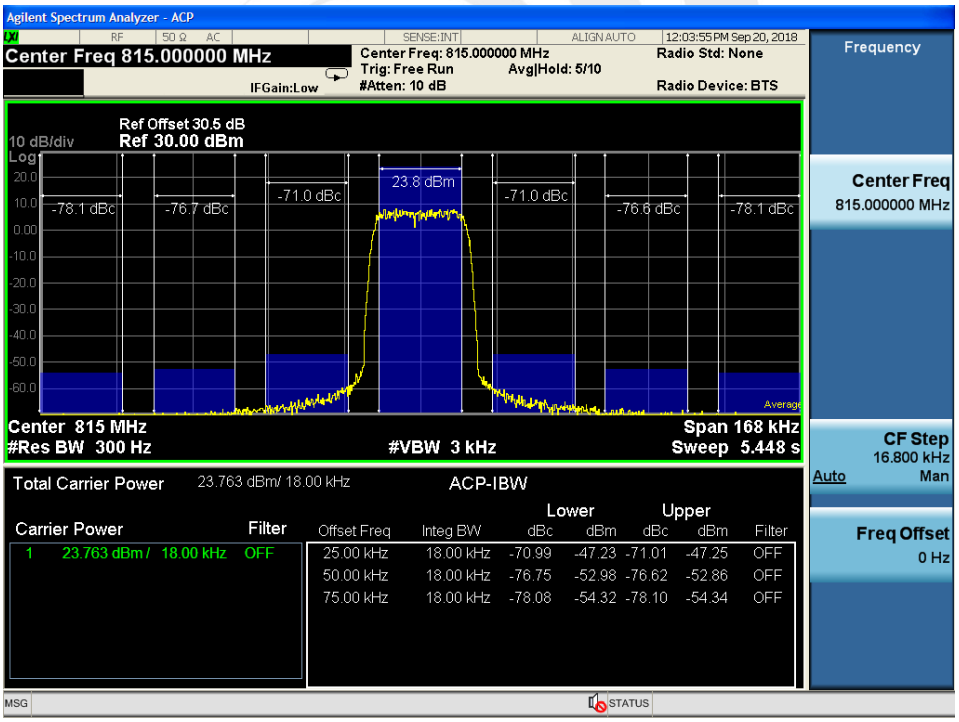
CH 6 Model 16



CH 6 Model 20



CH 6 Model 24



7. TRANSMITTER RADIATED SPURIOUS EMSSION

7.1 PROVISIONS APPLICABLE

According to the TIA/EIA 603 test method, and according to Section 90.210, the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with 12.5 KHz channel bandwidth:

(1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of 4 kHz or less: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 4 kHz, but no more than 8.5 kHz: At least 107 log (f_d/4) dB;

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 8.5 kHz, but no more than 15 kHz: At least 40.5 log (f_d/1.16) dB;

(4) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 15 kHz, but no more than 25 kHz: At least 116 log (f_d/6.1) dB;

(5) On any frequency removed from the center of the authorized bandwidth by more than 25 kHz: At least 43 + 10 log (P) dB.

For transmitters designed to transmit with 25 KHz channel separation and equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as following:

(1) On any frequency removed from the assigned frequency by more than 75 kHz, the attenuation of any emission must be at least 43 + 10 log (P_{watts}) dB.

7.2 TEST PROCEDURE

a. EUT was placed on a 1.50 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. for emission measurements. The height of receiving antenna is 1.50 m. Detected emissions were maximized at each frequency by rotating the EUT through 360° and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequencies in six channels were measured with peak detector.

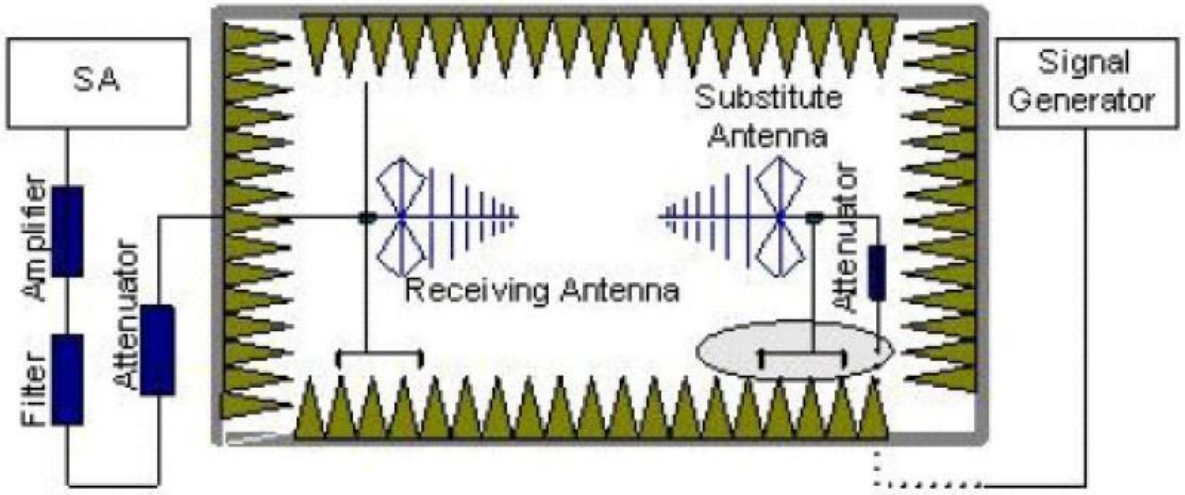
b. A log-periodic antenna or double-ridged waveguide horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.

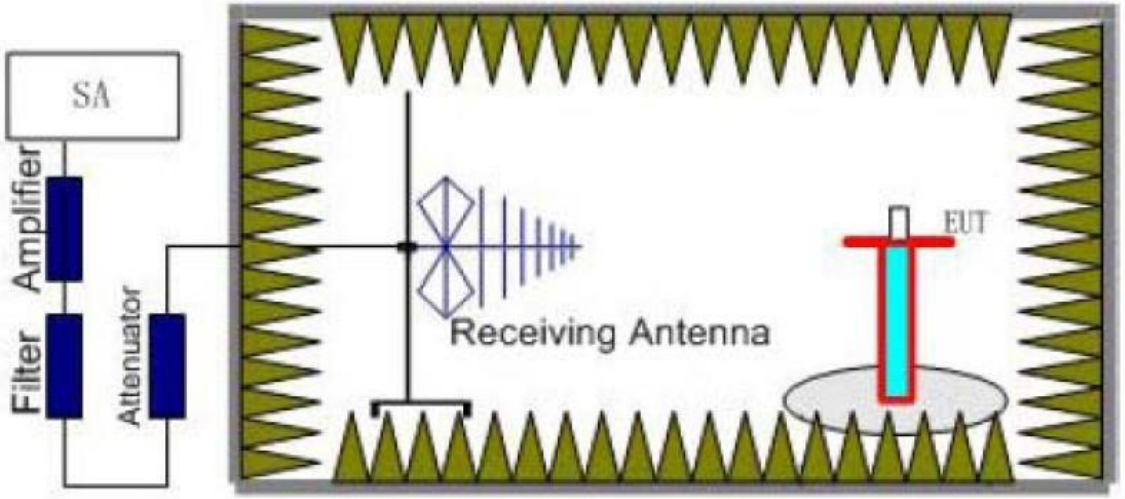
c. The EUT is then put into continuously transmitting mode at its maximum power level during the test.Set Test Receiver or Spectrum RBW=1MHz,VBW=3MHz for above 1GHz and RBW=100KHz,VBW=300KHz for 30MHz to 1GHz, And the maximum value of the receiver should be recorded as (P_r).

d. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

e. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test. The measurement results are obtained as described below:
Amplifier for substituation test; The measurement results are amend as described below:
Power(EIRP)=P_{Mea}- P_{cl}+ G_a

7.3 TEST CONFIGURATION





7.4 TEST RESULT

CH 1				Model 1			
Frequency	Result					Limit (dBm)	Conclusion
	P_{meas} (dBm)	Cable loss	Antenna Gain(dBi)	P_{Meas} E.I.R.P(dBm)	Polarization Of Max. EIRP		
1702.0125	-55.35	3.17	9.8	-48.72	Horizontal	-13.00	Pass
2553.01875	-53.14	3.47	10.7	-45.91	Horizontal	-13.00	Pass
3404.025	-53.28	3.93	12.3	-44.91	Horizontal	-13.00	Pass
1702.0125	-52.85	3.17	9.8	-46.22	Vertical	-13.00	Pass
2553.01875	-52.17	3.47	10.7	-44.94	Vertical	-13.00	Pass
3404.025	-51.94	3.93	12.3	-43.57	Vertical	-13.00	Pass

CH 2				Model 2			
Frequency	Result					Limit (dBm)	Conclusion
	P_{meas} (dBm)	Cable loss	Antenna Gain(dBi)	P_{Meas} E.I.R.P(dBm)	Polarization Of Max. EIRP		
1612.0125	-52.73	2.85	9.4	-46.18	Horizontal	-13.00	Pass
2418.01875	-55.56	3.47	10.5	-48.53	Horizontal	-13.00	Pass
3224.025	-52.08	4.17	11.8	-44.45	Horizontal	-13.00	Pass
1612.0125	-55.17	2.85	9.4	-48.62	Vertical	-13.00	Pass
2418.01875	-52.25	3.47	10.5	-45.22	Vertical	-13.00	Pass
3224.025	-55.49	4.17	11.8	-47.86	Vertical	-13.00	Pass

CH 3				Model 9			
Frequency	Result					Limit (dBm)	Conclusion
	P_{meas} (dBm)	Cable loss	Antenna Gain(dBi)	P_{Meas} E.I.R.P(dBm)	Polarization Of Max. EIRP		
1737.975	-54.62	3.17	9.8	-47.99	Horizontal	-13.00	Pass
2606.9625	-54.17	3.47	10.7	-46.94	Horizontal	-13.00	Pass
3475.95	-53.88	3.93	12.3	-45.51	Horizontal	-13.00	Pass
1737.975	-55.71	3.17	9.8	-49.08	Vertical	-13.00	Pass
2606.9625	-53.94	3.47	10.7	-46.71	Vertical	-13.00	Pass
3475.95	-52.87	3.93	12.3	-44.50	Vertical	-13.00	Pass

CH 4				Model 10			
Frequency	Result					Limit (dBm)	Conclusion
	P_{meas} (dBm)	Cable loss	Antenna Gain(dBi)	P_{Meas} E.I.R.P(dBm)	Polarization Of Max. EIRP		
1647.975	-55.10	2.85	9.4	-48.55	Horizontal	-13.00	Pass
2471.9625	-55.37	3.47	10.5	-48.34	Horizontal	-13.00	Pass
3295.95	-51.09	4.17	11.8	-43.46	Horizontal	-13.00	Pass
1647.975	-56.47	2.85	9.4	-49.92	Vertical	-13.00	Pass
2471.9625	-54.26	3.47	10.5	-47.23	Vertical	-13.00	Pass
3295.95	-53.79	4.17	11.8	-46.16	Vertical	-13.00	Pass

CH 5				Model 11			
Frequency	Result					Limit (dBm)	Conclusion
	Pmeas (dBm)	Cable loss	Antenna Gain(dBi)	PMeas E.I.R.P(dBm)	Polarization Of Max. EIRP		
1720	-54.11	3.17	9.8	-47.48	Horizontal	-13.00	Pass
2580	-53.48	3.47	10.7	-46.25	Horizontal	-13.00	Pass
3440	-52.63	3.93	12.3	-44.26	Horizontal	-13.00	Pass
1720	-55.18	3.17	9.8	-48.55	Vertical	-13.00	Pass
2580	-53.64	3.47	10.7	-46.41	Vertical	-13.00	Pass
3440	-54.17	3.93	12.3	-45.80	Vertical	-13.00	Pass

CH 6				Model 12			
Frequency	Result					Limit (dBm)	Conclusion
	Pmeas (dBm)	Cable loss	Antenna Gain(dBi)	PMeas E.I.R.P(dBm)	Polarization Of Max. EIRP		
1630	-54.24	2.85	9.4	-47.69	Horizontal	-13.00	Pass
2445	-54.73	3.47	10.5	-47.70	Horizontal	-13.00	Pass
3260	-51.29	4.17	11.8	-43.66	Horizontal	-13.00	Pass
1630	-55.47	2.85	9.4	-48.92	Vertical	-13.00	Pass
2445	-54.26	3.47	10.5	-47.23	Vertical	-13.00	Pass
3260	-54.55	4.17	11.8	-46.92	Vertical	-13.00	Pass

Note: $EIRP=P_{Mea}(dBm)-P_{cl}(dB)+G_a(dBi)$

We were not recorded other points as values lower than limits

8. SPURIOUS EMSSION ON ANTENNA PORT

8.1 PROVISIONS APPLICABLE

According to the TIA/EIA 603 test method, and according to Section 90.210, the power of each unwanted emission shall be less than Transmitted Power as specified below for transmitters designed to operate with 12.5 KHz channel bandwidth:

(1) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of 4 kHz or less: Zero dB.

(2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 4 kHz, but no more than 8.5 kHz: At least 107 log (f_d/4) dB;

(3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 8.5 kHz, but no more than 15 kHz: At least 40.5 log (f_d/1.16) dB;

(4) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 15 kHz, but no more than 25 kHz: At least 116 log (f_d/6.1) dB;

(5) On any frequency removed from the center of the authorized bandwidth by more than 25 kHz: At least 43 + 10 log (P) dB.

For transmitters designed to transmit with 25 KHz channel separation and equipped with an audio low-pass filter, the power of any emission must be attenuated below the unmodulated carrier power (P) as following:

(1) On any frequency removed from the assigned frequency by more than 75 kHz, the attenuation of any emission must be at least 43 + 10 log (P_{watts}) dB.

8.2 MEASUREMENT PROCEDURE

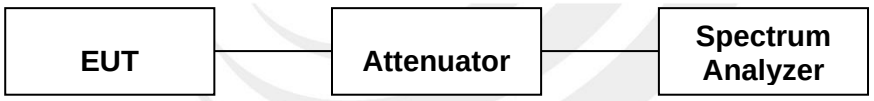
a. The EUT was connected to the spectrum analyzer through sufficent attenuation.

b. Sufficient scans were taken to show any out of band emission up to 10th. Harmonic for the lower and the highest frequency range.

c. Set EUT as digital data mode.

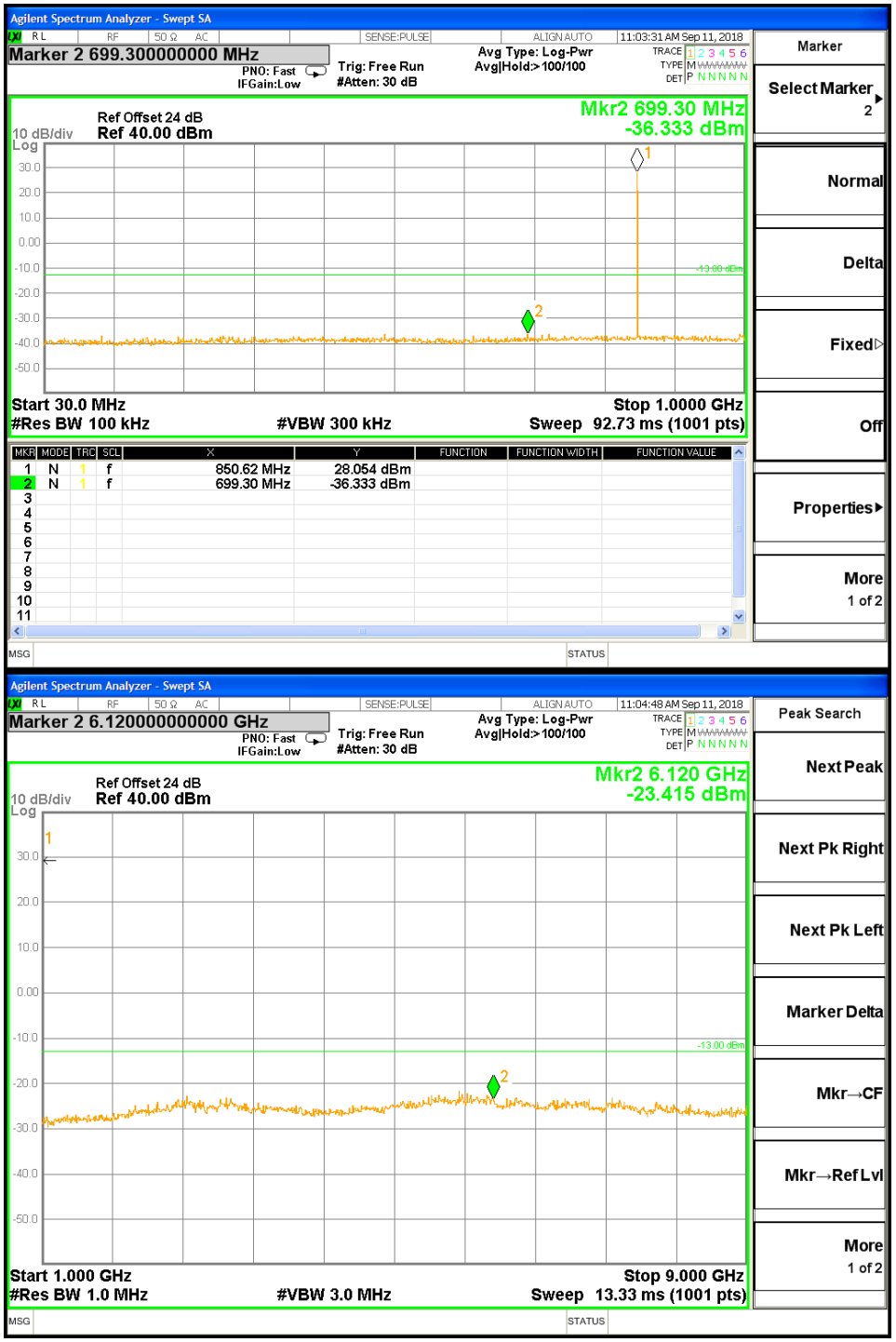
d Set RBW 100kHz, VBW 300 kHz in the frequency band 30MHz to 1GHz,while set RBW=1MHz. VBW=3MHz from the 1GHz to 10th Harmonic.

8.3 TEST SETUP BLOCK DIAGRAM

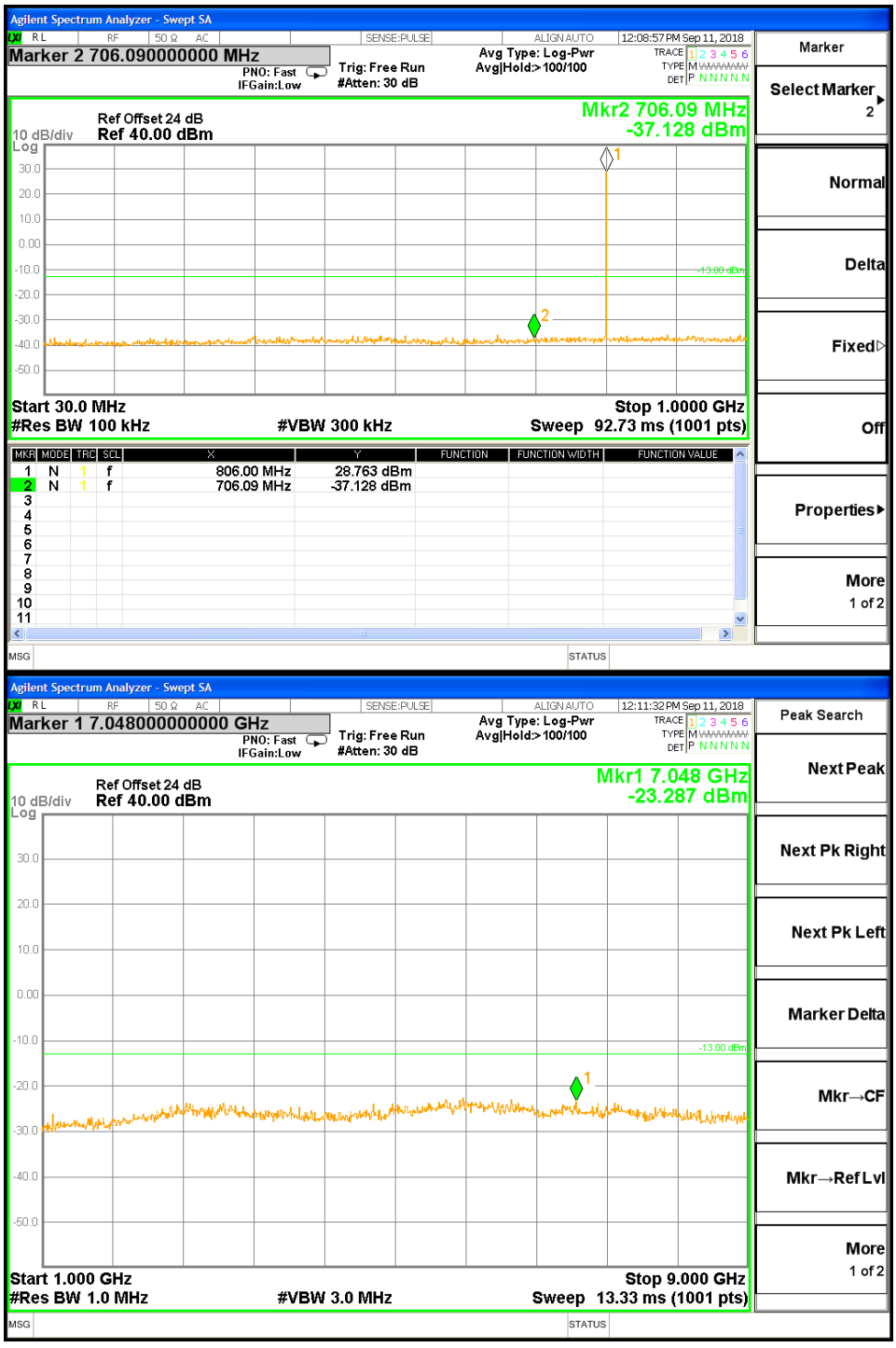


8.4 TEST RESULT

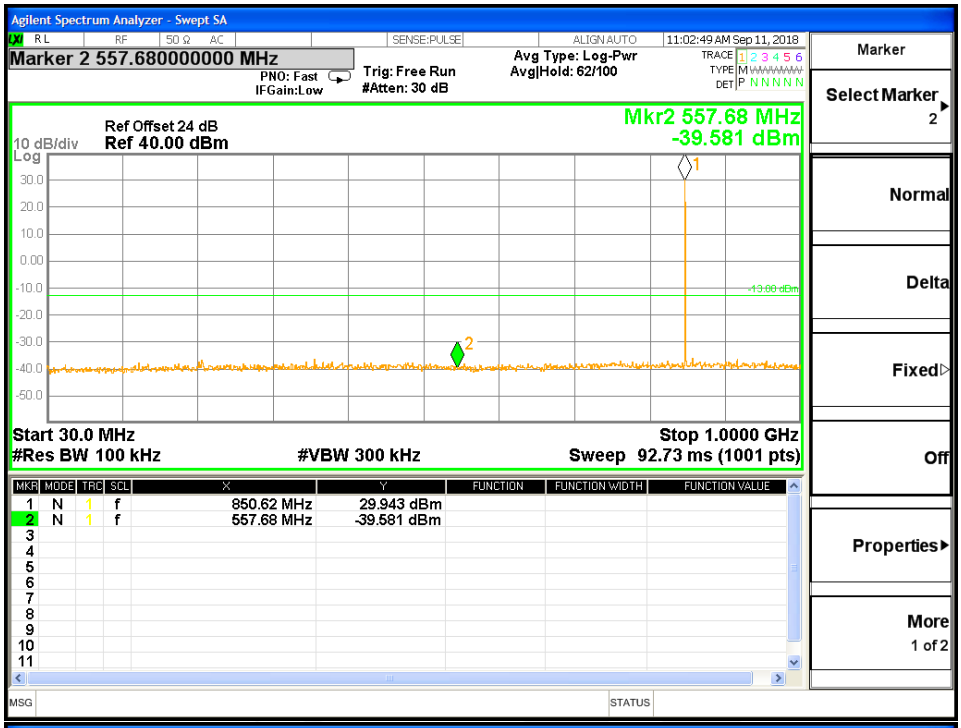
CH 1 Model 1

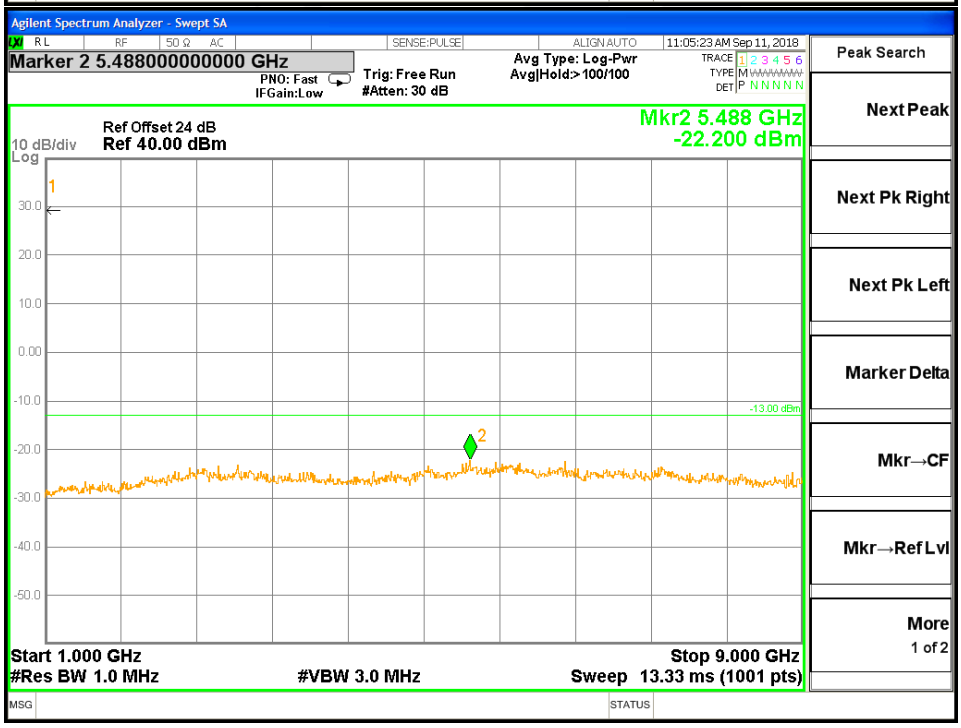


CH 2 Model 2

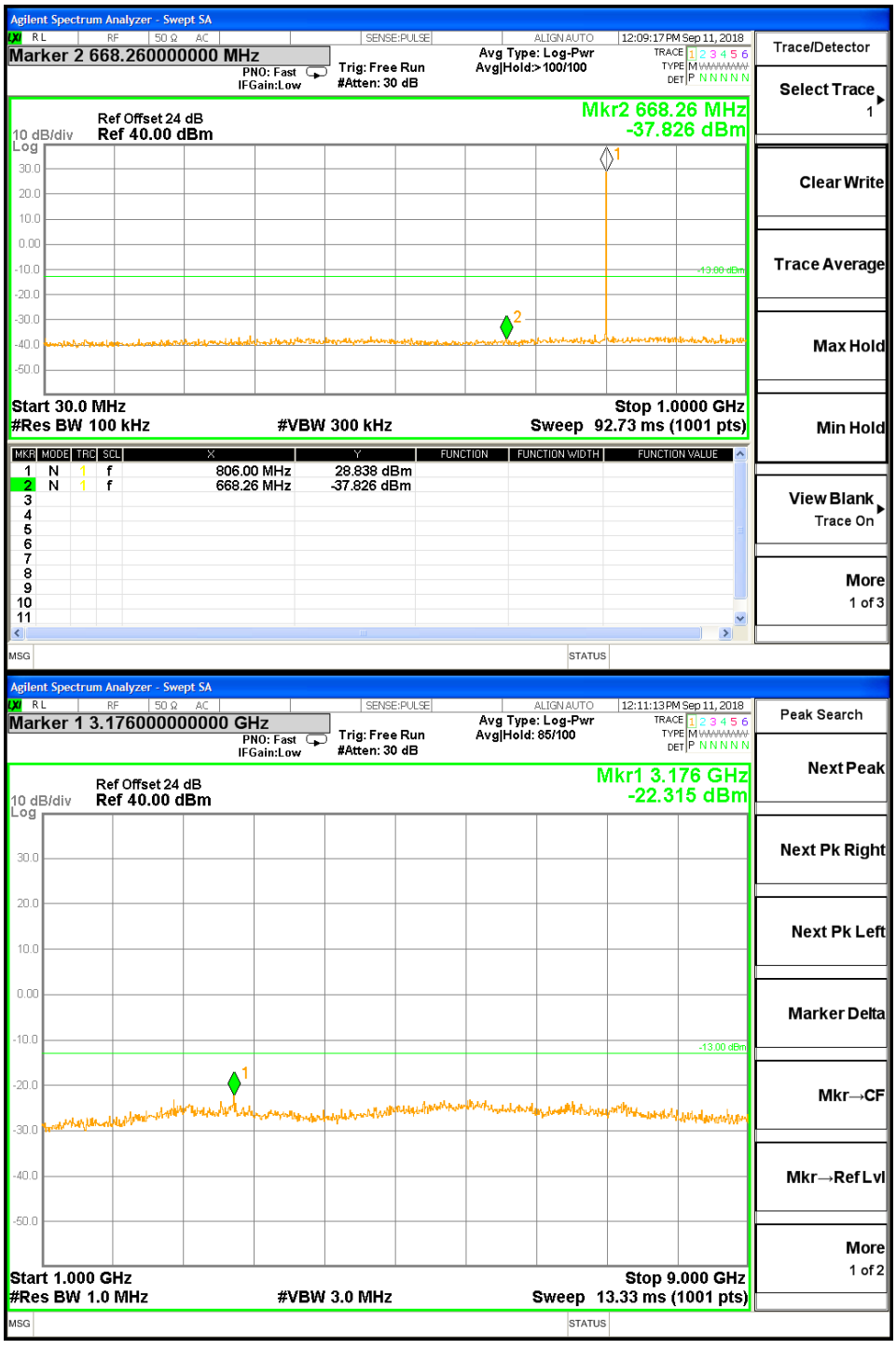

Agilent Spectrum Analyzer - Swept SA
Marker 2 706.090000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:08:57 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr2 706.09 MHz
-37.128 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 806.00 MHz 28.763 dBm
2 N 1 f 706.09 MHz -37.128 dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS
Agilent Spectrum Analyzer - Swept SA
Marker 1 7.048000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:11:32 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 7.048 GHz
-23.287 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

CH 1 Model 3

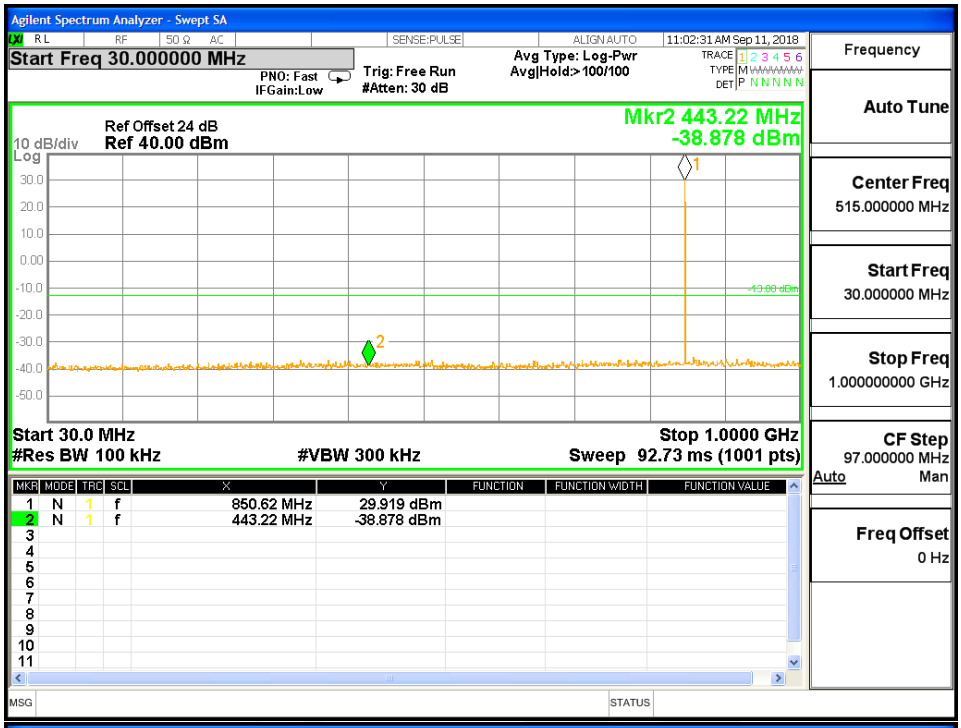

Agilent Spectrum Analyzer - Swept SA
Marker 2 557.680000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 62/100
11:02:49 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 557.68 MHz
-39.581 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 850.62 MHz 29.943 dBm
2 N 1 f 557.68 MHz -39.581 dBm
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2

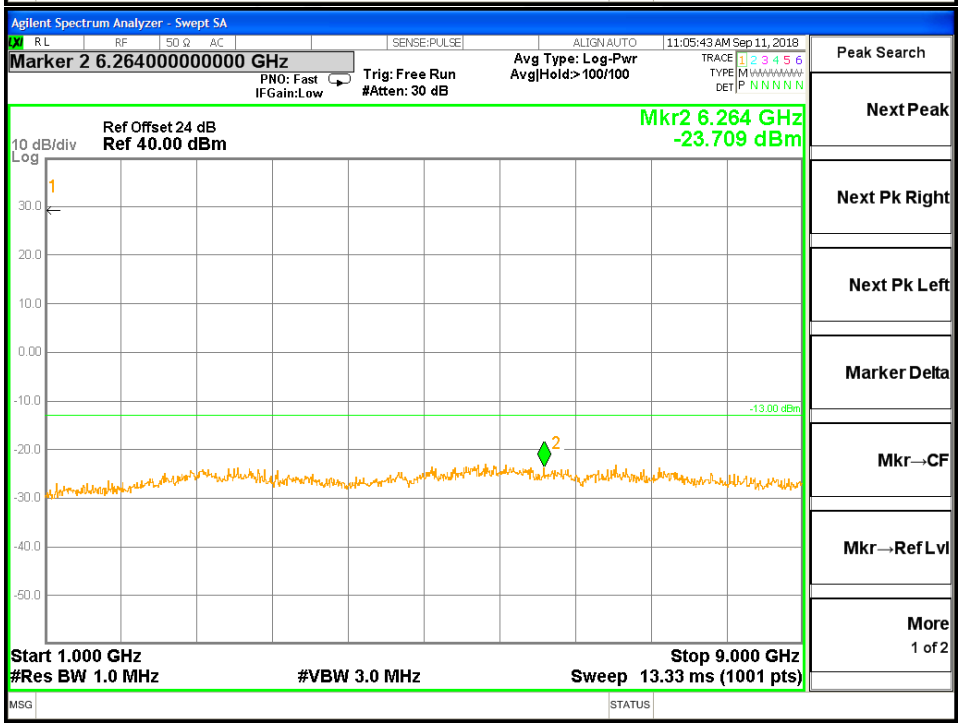

Agilent Spectrum Analyzer - Swept SA
Marker 2 5.488000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:05:23 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 5.488 GHz
-22.200 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

CH 2 Model 4

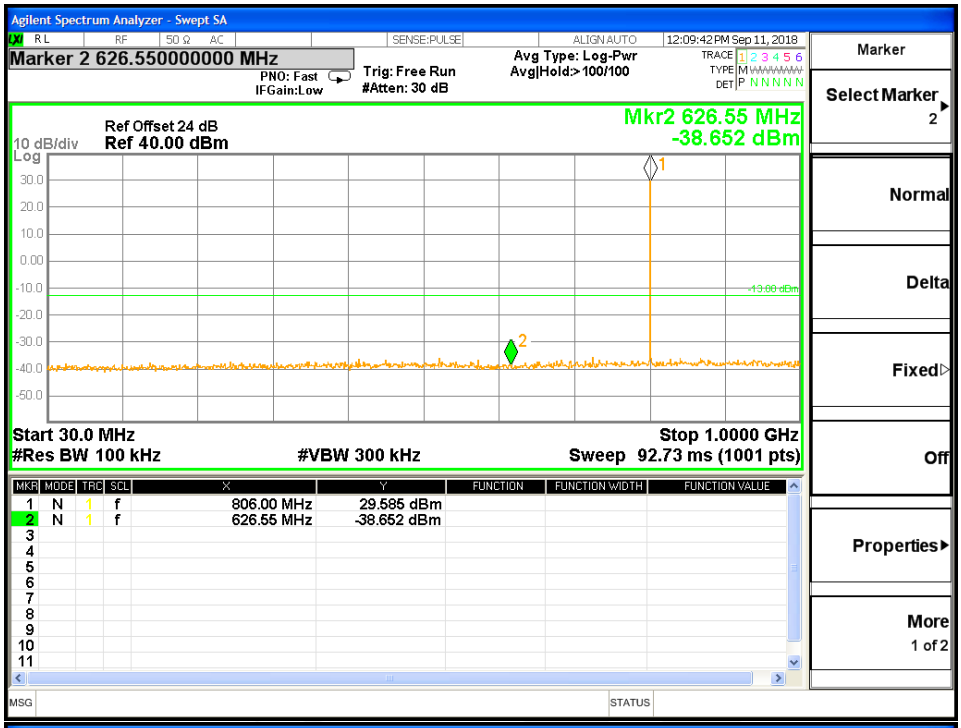

Agilent Spectrum Analyzer - Swept SA
Marker 2 668.260000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:09:17 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 668.26 MHz
-37.826 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 806.00 MHz 28.838 dBm
2 N 1 f 668.26 MHz -37.826 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3
Agilent Spectrum Analyzer - Swept SA
Marker 1 3.176000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 85/100
12:11:13 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr1 3.176 GHz
-22.315 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

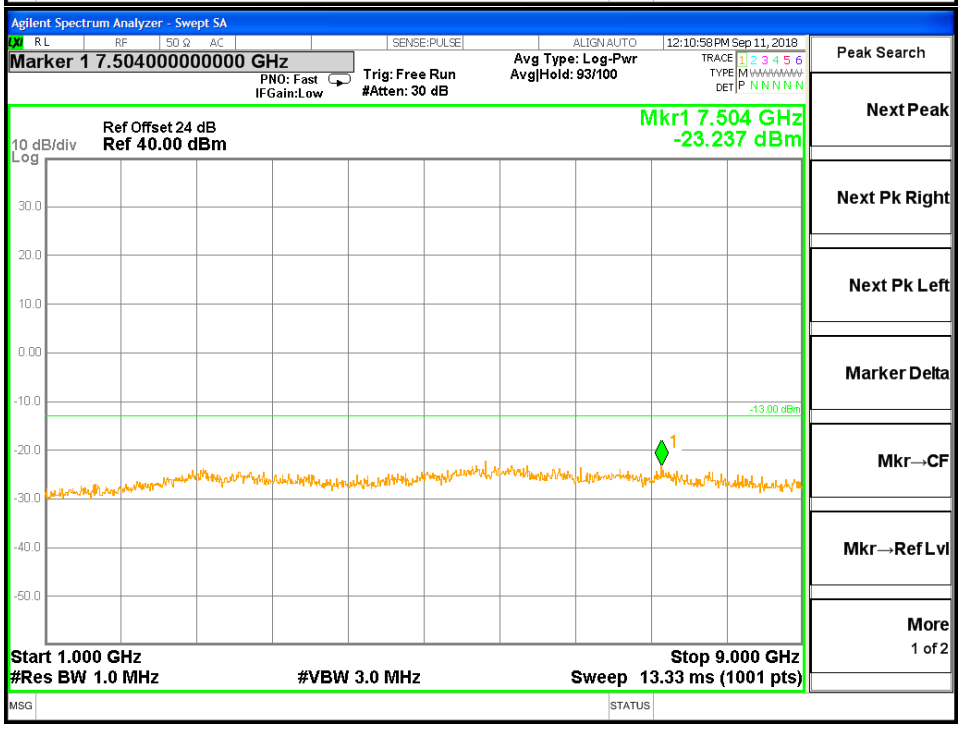
CH 1 Model 5


Agilent Spectrum Analyzer - Swept SA
Start Freq 30.000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:02:31 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 443.22 MHz
-38.878 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 850.62 MHz 29.919 dBm
2 N 1 f 443.22 MHz -38.878 dBm
Frequency
Auto Tune
Center Freq
515.000000 MHz
Start Freq
30.000000 MHz
Stop Freq
1.000000000 GHz
CF Step
97.000000 MHz
Auto
Man
Freq Offset
0 Hz

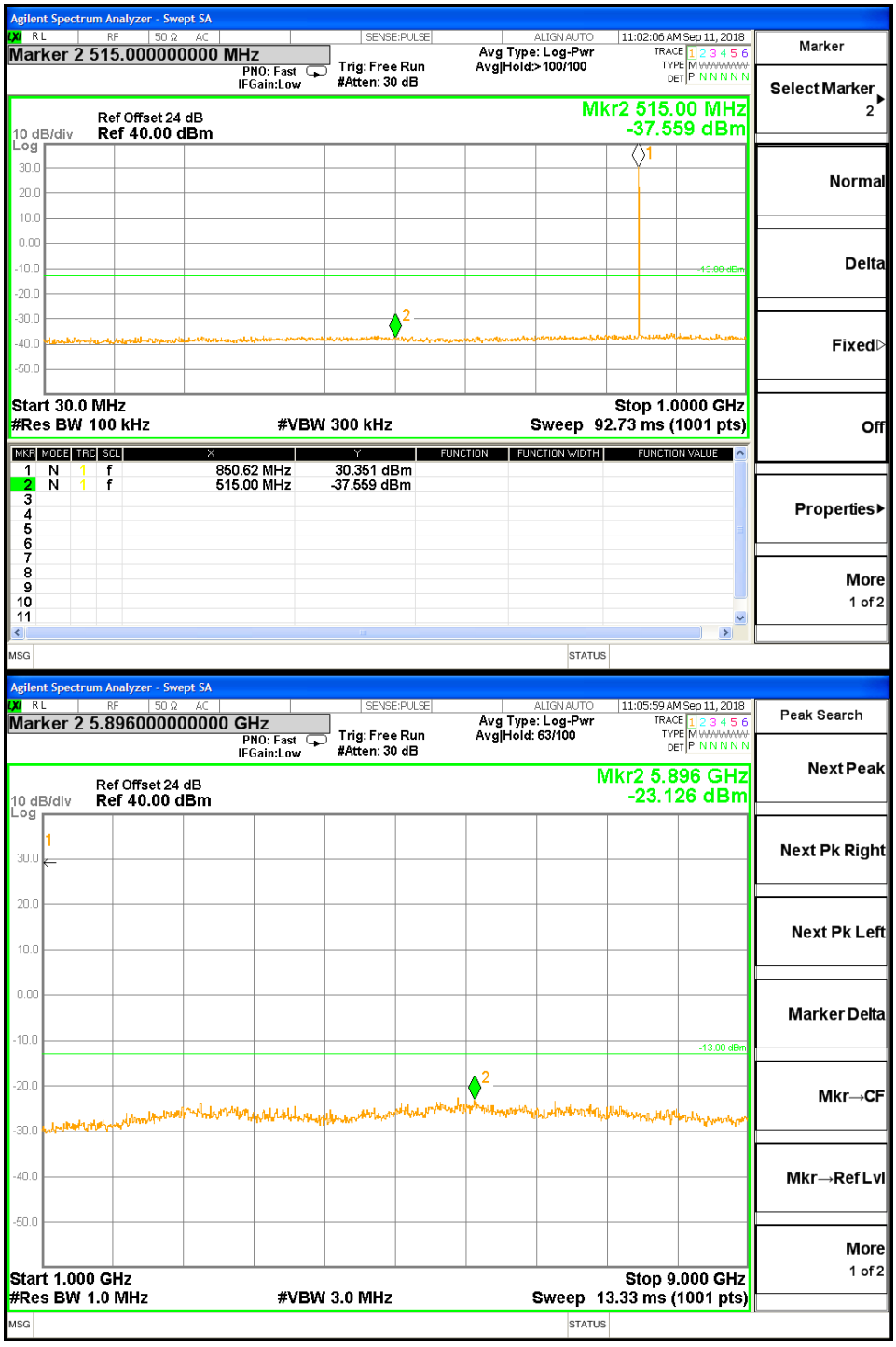

Agilent Spectrum Analyzer - Swept SA
Marker 2 6.264000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:05:43 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 6.264 GHz
-23.709 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

CH 2 Model 6


Agilent Spectrum Analyzer - Swept SA
Marker 2 626.550000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:09:42 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr2 626.55 MHz
-38.652 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 806.00 MHz 29.585 dBm
2 N 1 f 626.55 MHz -38.652 dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 7.504000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 93/100
12:10:58 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 7.504 GHz
-23.237 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

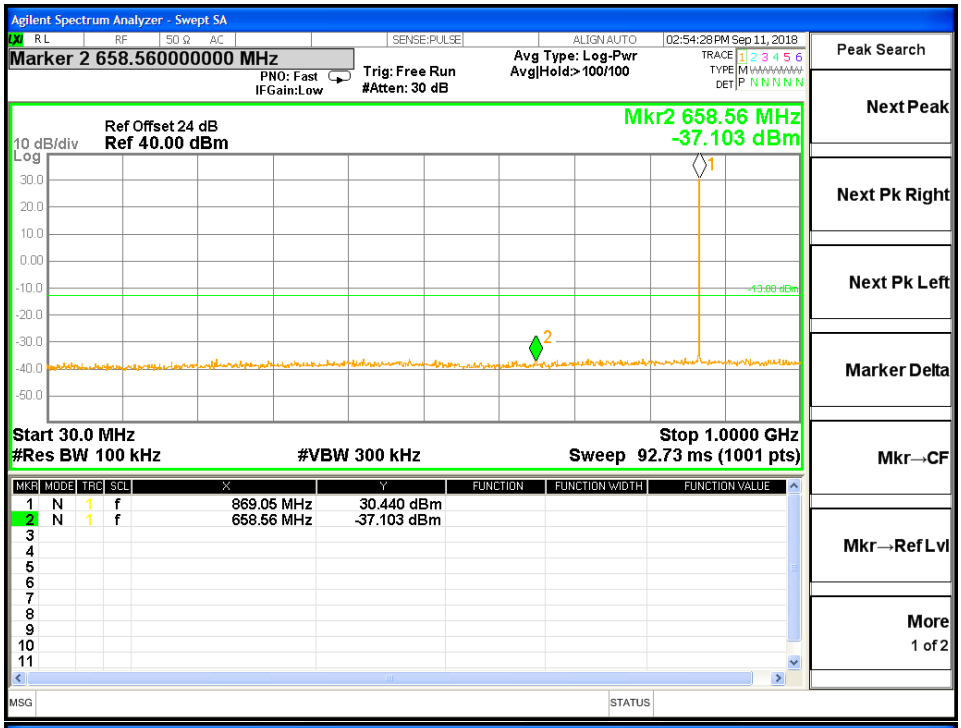
CH 1 Model 7

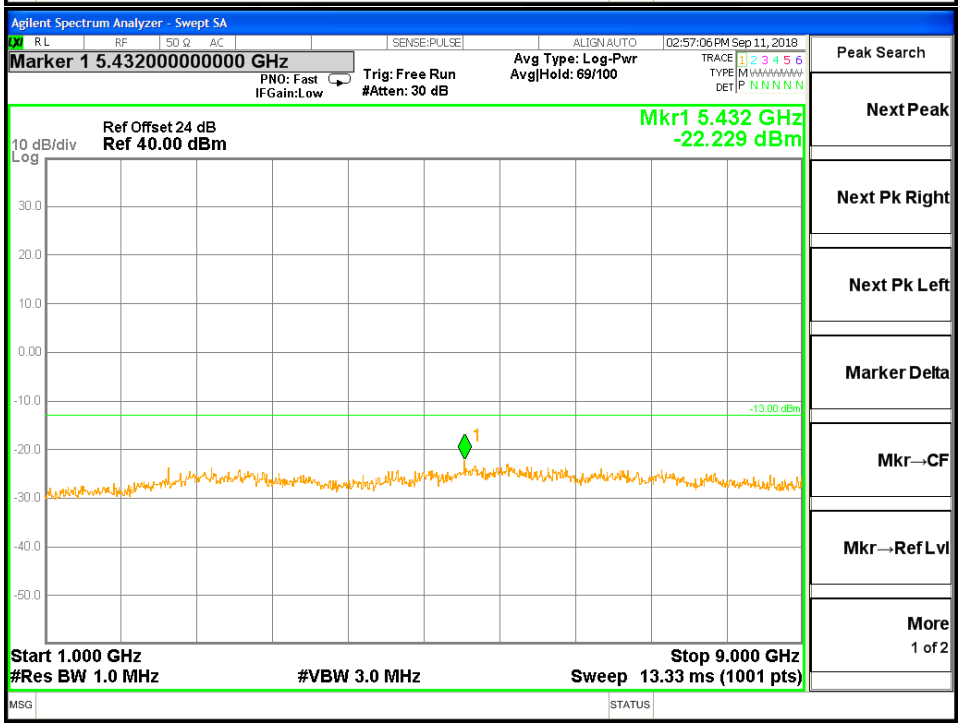

Agilent Spectrum Analyzer - Swept SA
Marker 2 515.000000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:02:06 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr2 515.00 MHz
-37.559 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 850.62 MHz 30.351 dBm
2 N 1 f 515.00 MHz -37.559 dBm
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2
Agilent Spectrum Analyzer - Swept SA
Marker 2 5.896000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 63/100
11:05:59 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr2 5.896 GHz
-23.126 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2

CH 2 Model 8

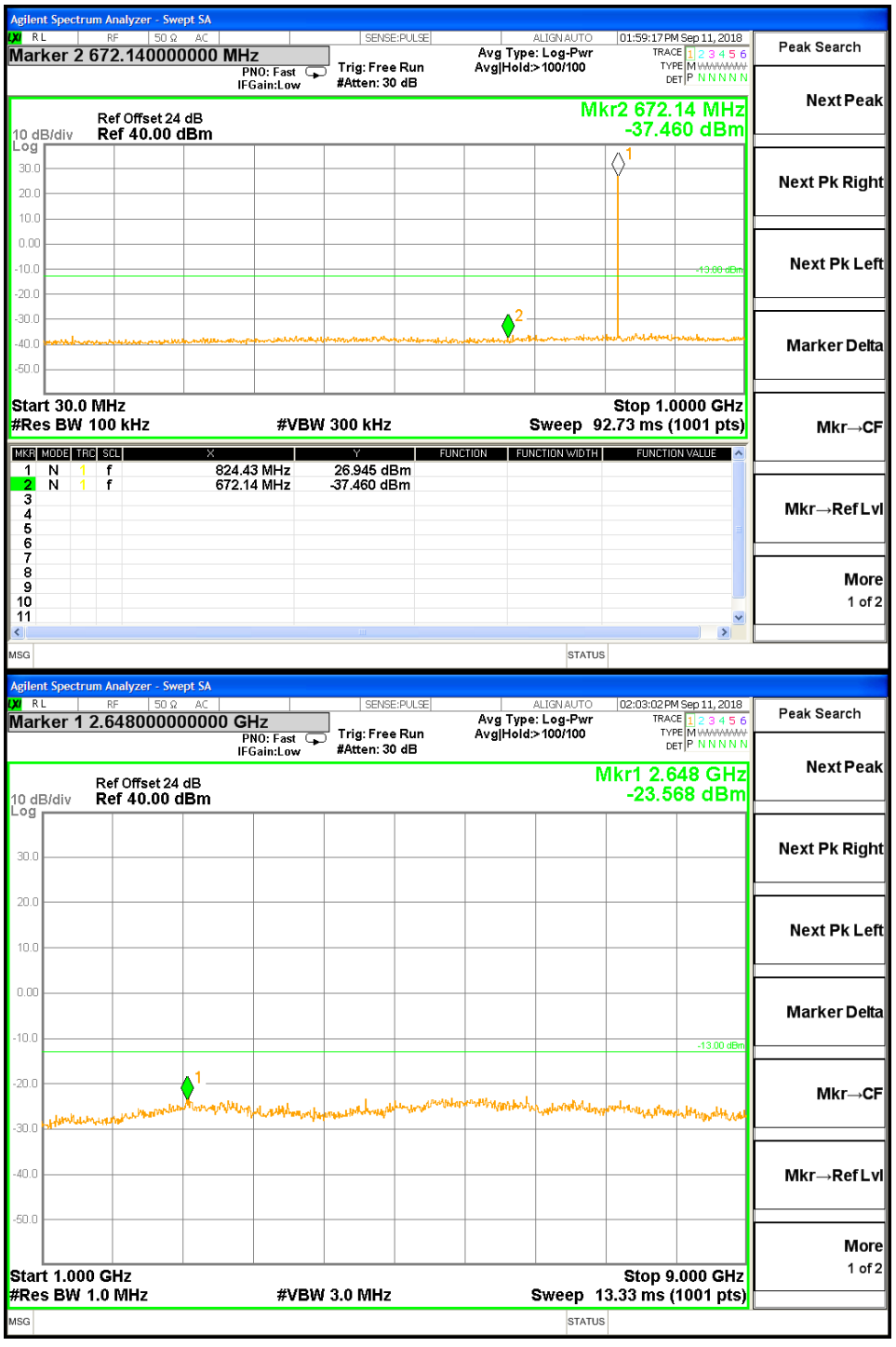

Agilent Spectrum Analyzer - Swept SA
Marker 2 706.090000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:10:07 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr2 706.09 MHz
-36.956 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 806.00 MHz 28.812 dBm
2 N 1 f 706.09 MHz -36.956 dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS
Agilent Spectrum Analyzer - Swept SA
Marker 1 5.552000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
12:10:40 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 5.552 GHz
-23.119 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

CH 3 Model 9

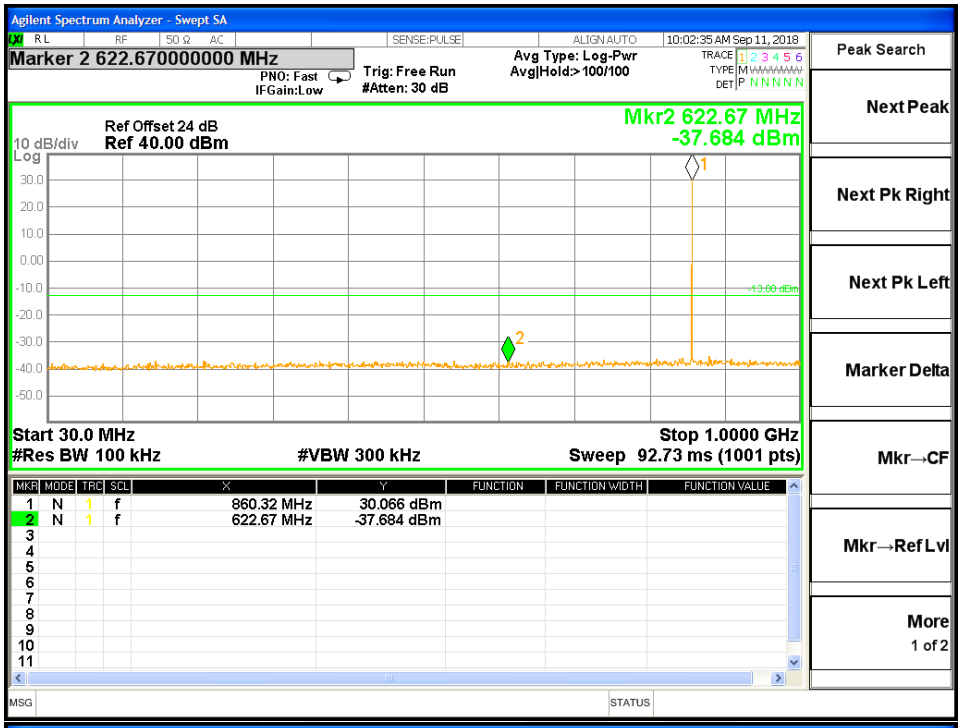

Agilent Spectrum Analyzer - Swept SA
Marker 2 658.560000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:54:28 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr2 658.56 MHz
-37.103 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 869.05 MHz 30.440 dBm
2 N 1 f 658.56 MHz -37.103 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

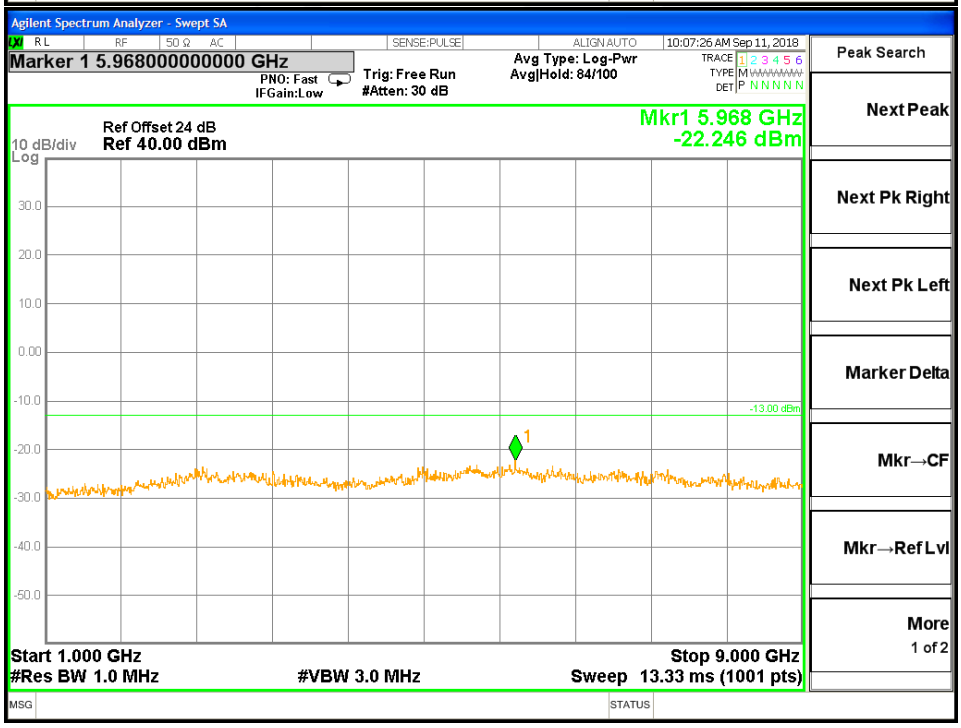

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.432000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 69/100
02:57:06 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr1 5.432 GHz
-22.229 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

CH 4 Model 10

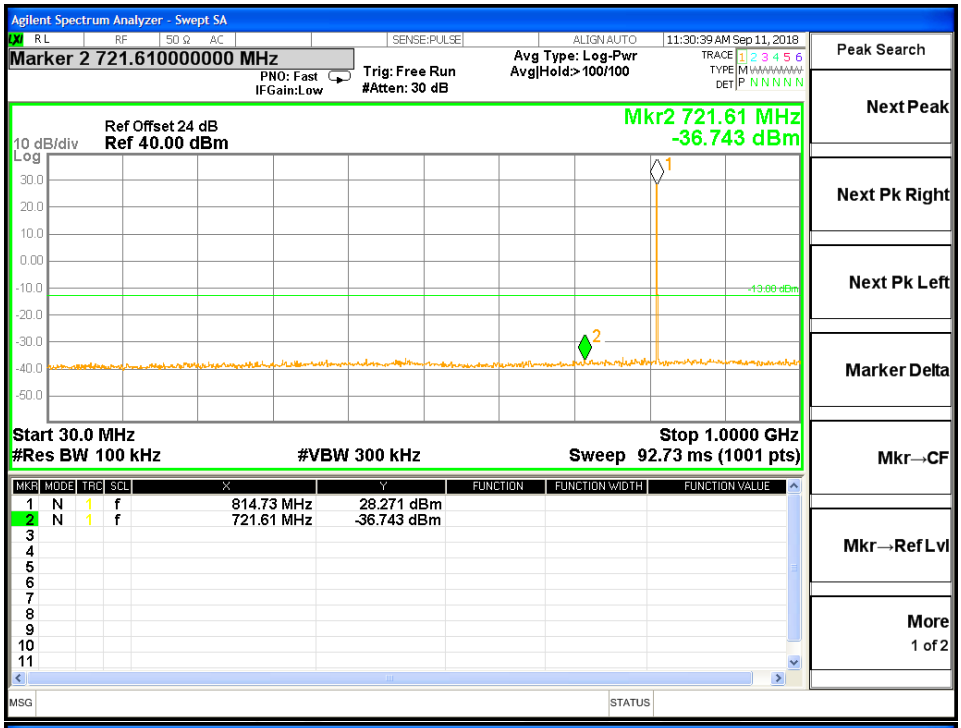

Agilent Spectrum Analyzer - Swept SA
Marker 2 672.140000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
01:59:17 PM Sep 11, 2018
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr2 672.14 MHz
-37.460 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 824.43 MHz 26.945 dBm
2 N 1 f 672.14 MHz -37.460 dBm
MSG
STATUS
Agilent Spectrum Analyzer - Swept SA
Marker 1 2.648000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:03:02 PM Sep 11, 2018
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 2.648 GHz
-23.568 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
MSG
STATUS

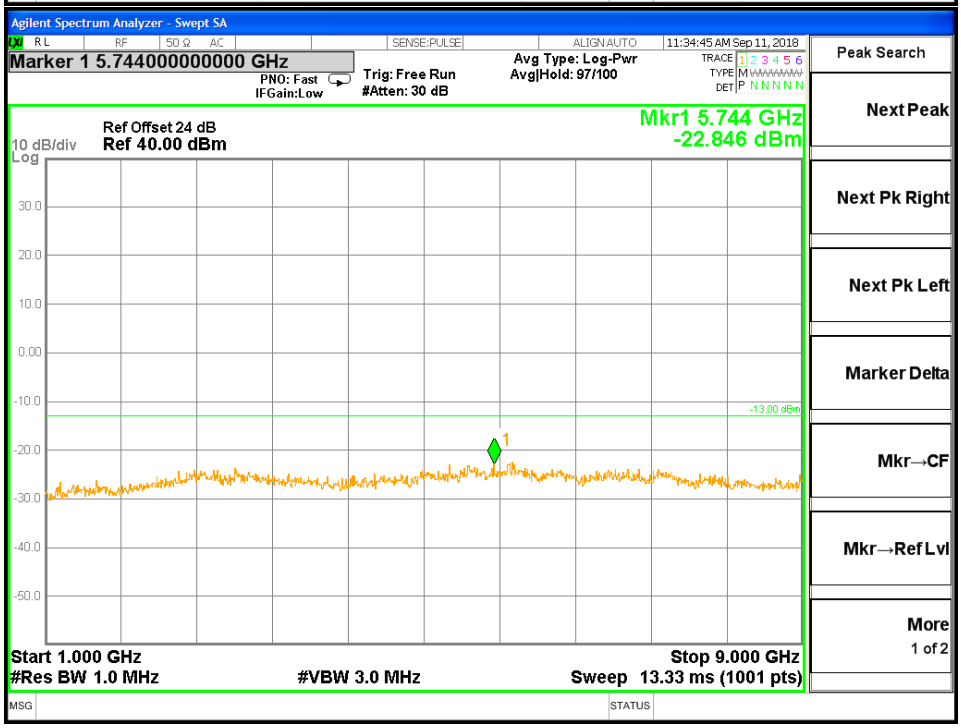
CH 5 Model 11


Agilent Spectrum Analyzer - Swept SA
Marker 2 622.670000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:02:35 AM Sep 11, 2018
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr2 622.67 MHz
-37.684 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 860.32 MHz 30.066 dBm
2 N 1 f 622.67 MHz -37.684 dBm
MSG
STATUS

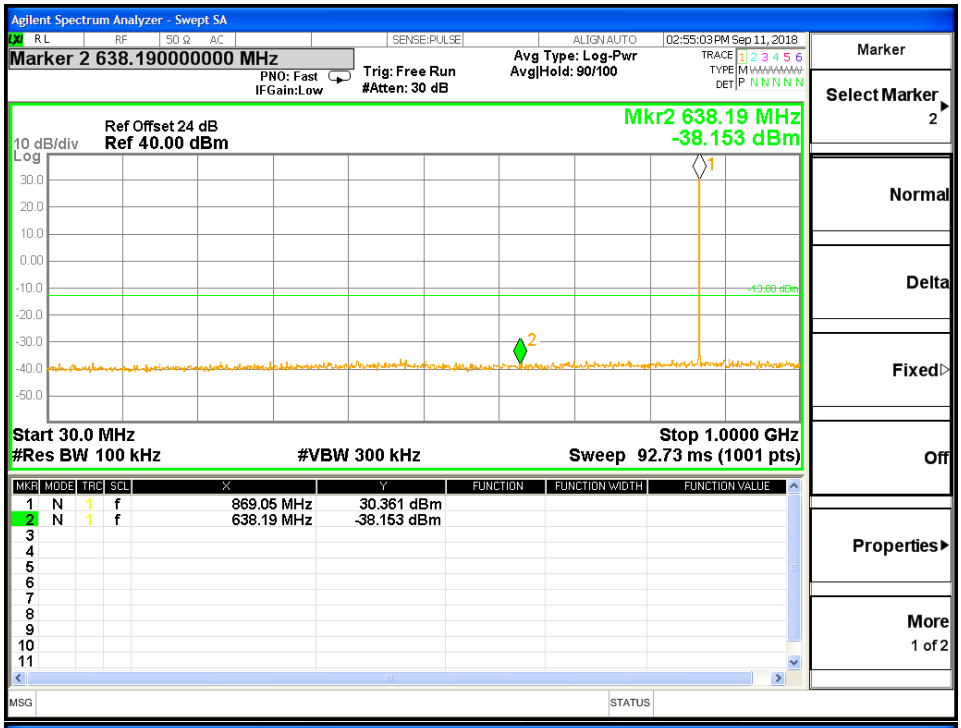

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.968000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 84/100
10:07:26 AM Sep 11, 2018
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 5.968 GHz
-22.246 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
MSG
STATUS

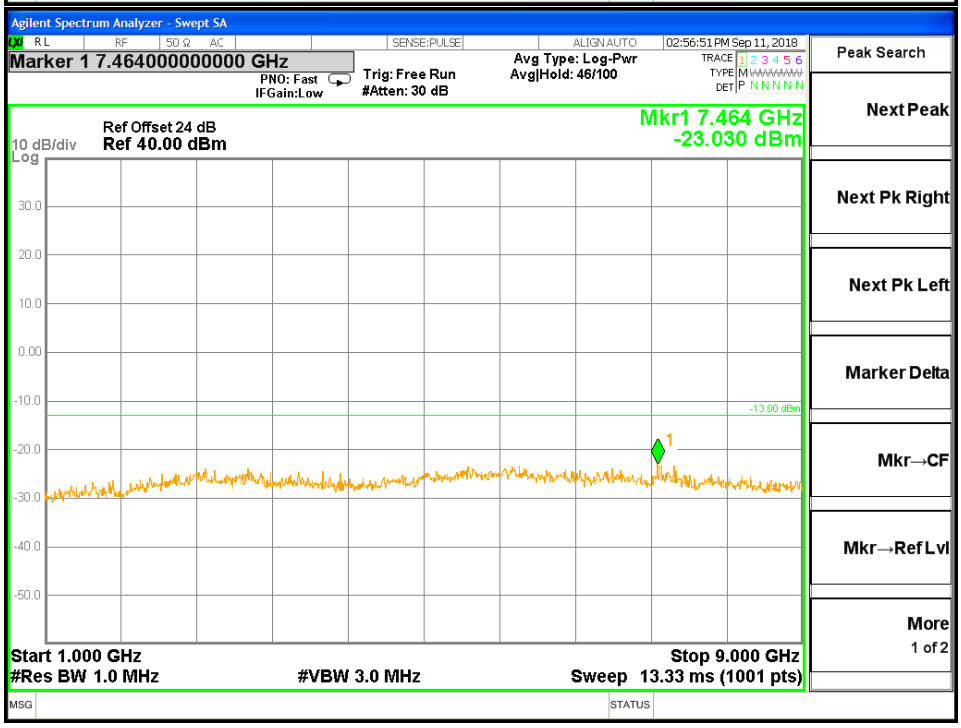
CH 6 Model 12


Agilent Spectrum Analyzer - Swept SA
Marker 2 721.610000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:30:39 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr2 721.61 MHz
-36.743 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 814.73 MHz 28.271 dBm
2 N 1 f 721.61 MHz -36.743 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

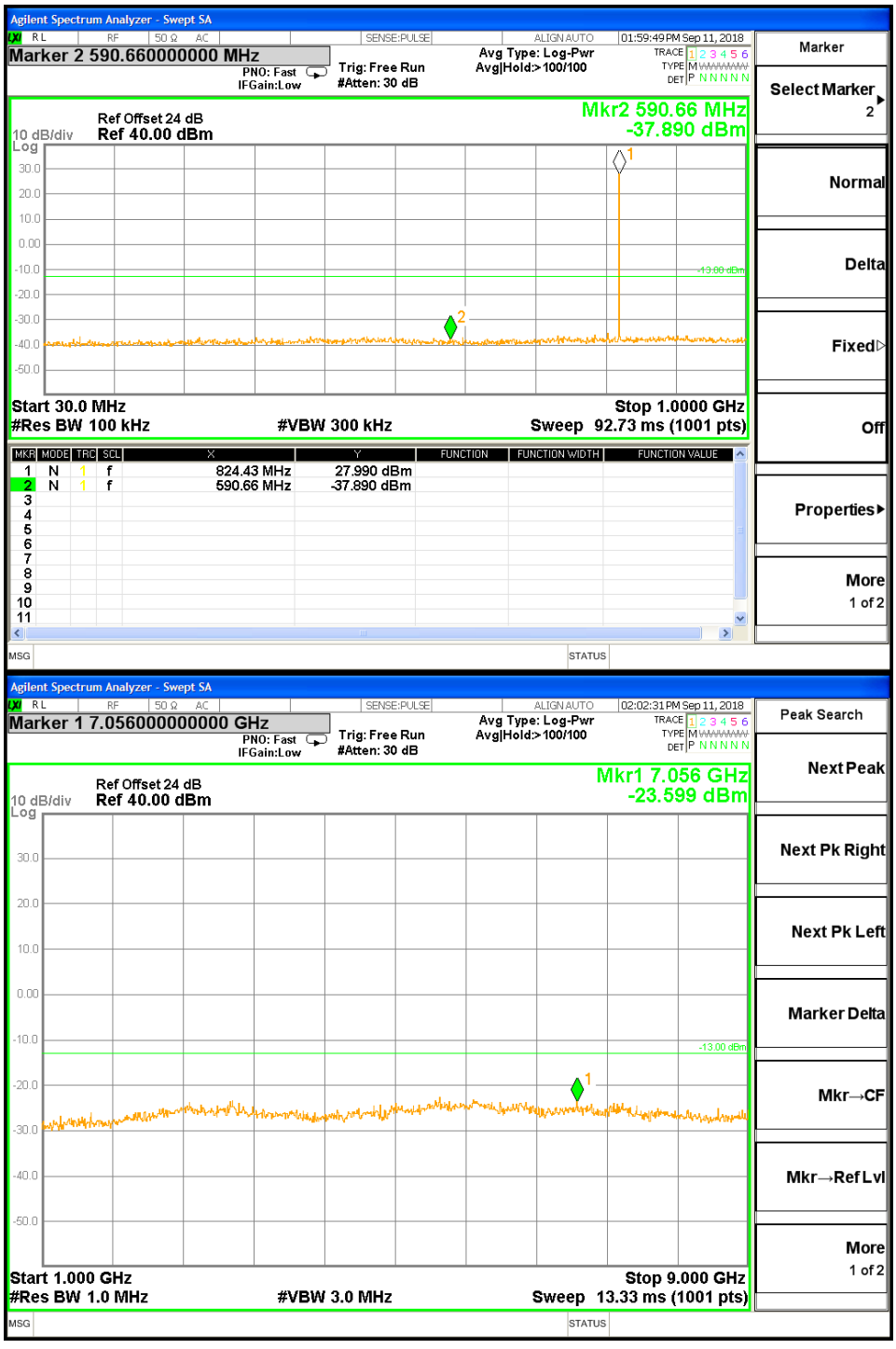

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.744000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 97/100
11:34:45 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr1 5.744 GHz
-22.846 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

CH 3 Model 13

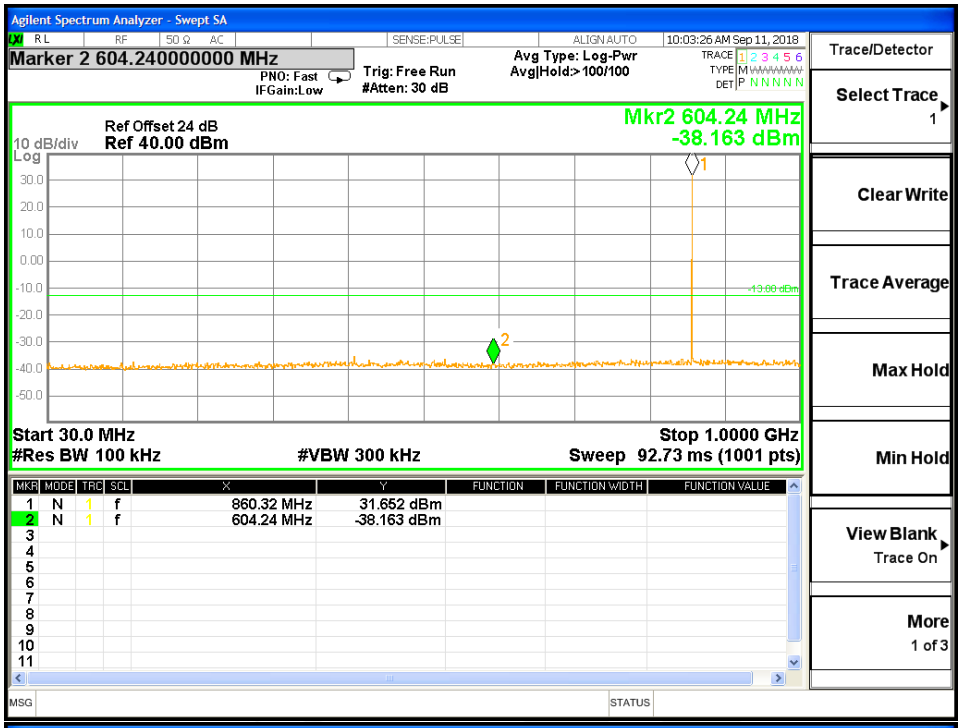

Agilent Spectrum Analyzer - Swept SA
Marker 2 638.190000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 90/100
02:55:03 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr2 638.19 MHz
-38.153 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 869.05 MHz 30.361 dBm
2 N 1 f 638.19 MHz -38.153 dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS

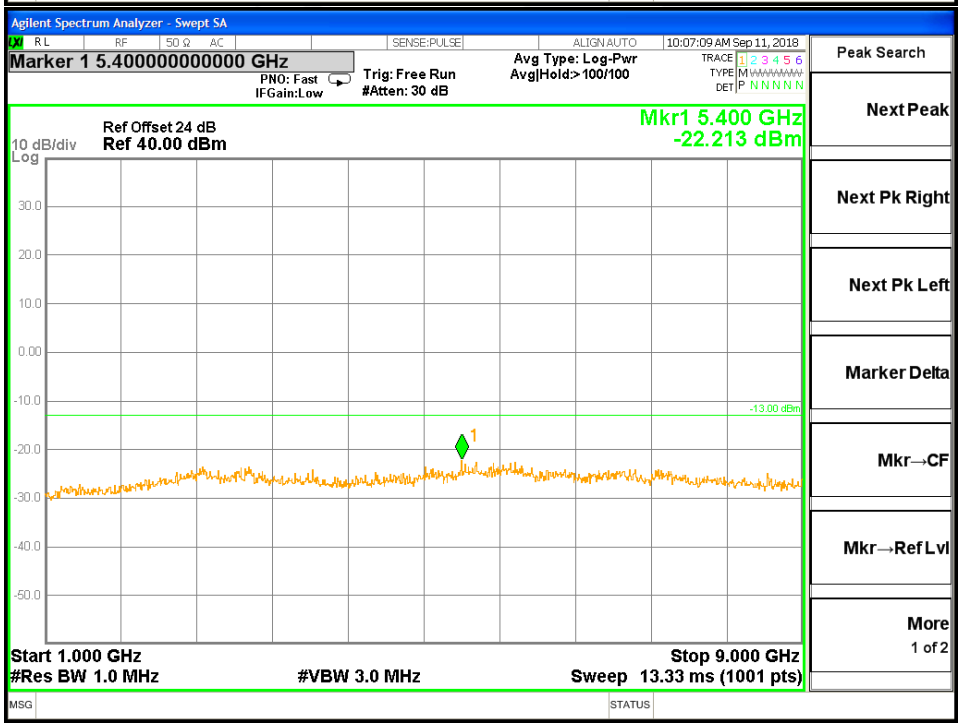

Agilent Spectrum Analyzer - Swept SA
Marker 1 7.464000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 46/100
02:56:51 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 7.464 GHz
-23.030 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

CH 4 Model 14

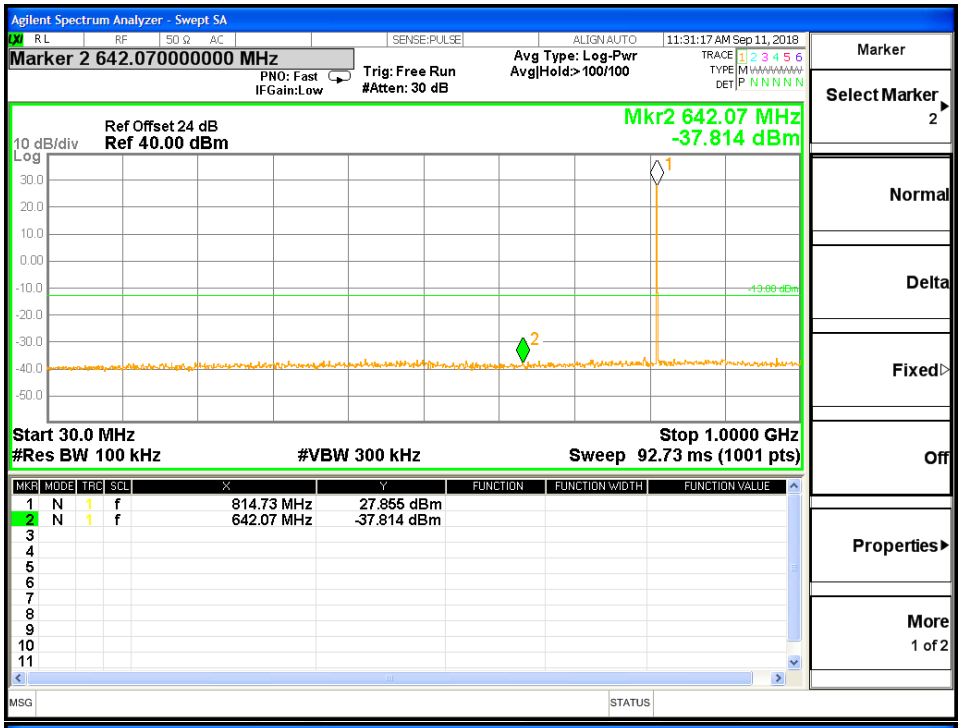

Agilent Spectrum Analyzer - Swept SA
Marker 2 590.660000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
01:59:49 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr2 590.66 MHz
-37.890 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 824.43 MHz 27.990 dBm
2 N 1 f 590.66 MHz -37.890 dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS
Agilent Spectrum Analyzer - Swept SA
Marker 1 7.056000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:02:31 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 7.056 GHz
-23.599 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

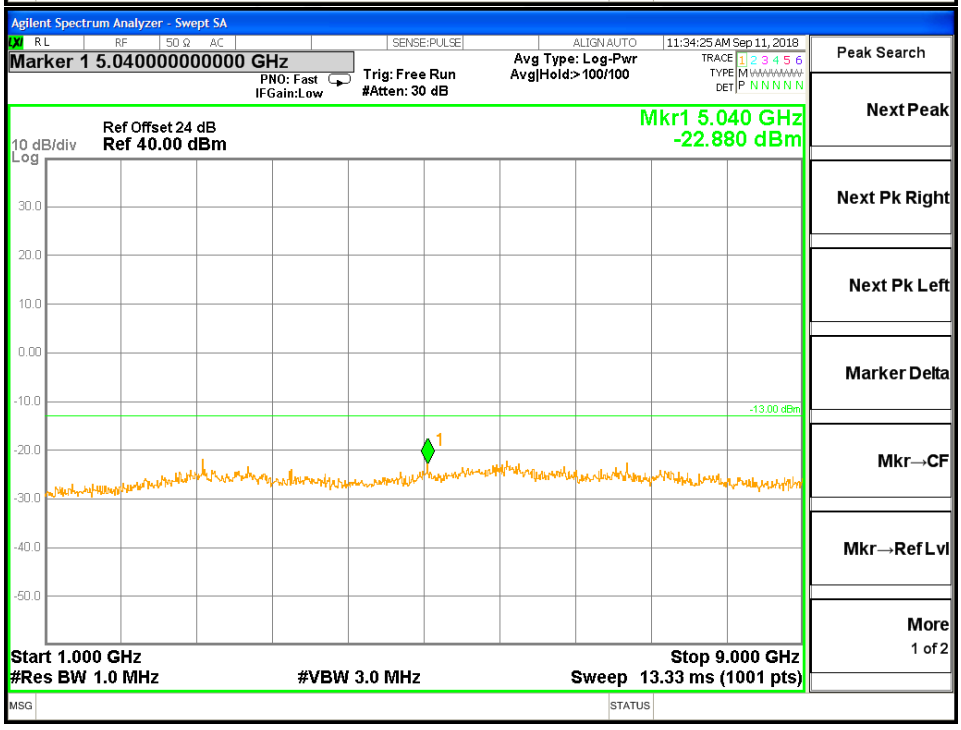
CH 5 Model 15


Agilent Spectrum Analyzer - Swept SA
Marker 2 604.240000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:03:26 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 604.24 MHz
-38.163 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 860.32 MHz 31.652 dBm
2 N 1 f 604.24 MHz -38.163 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3

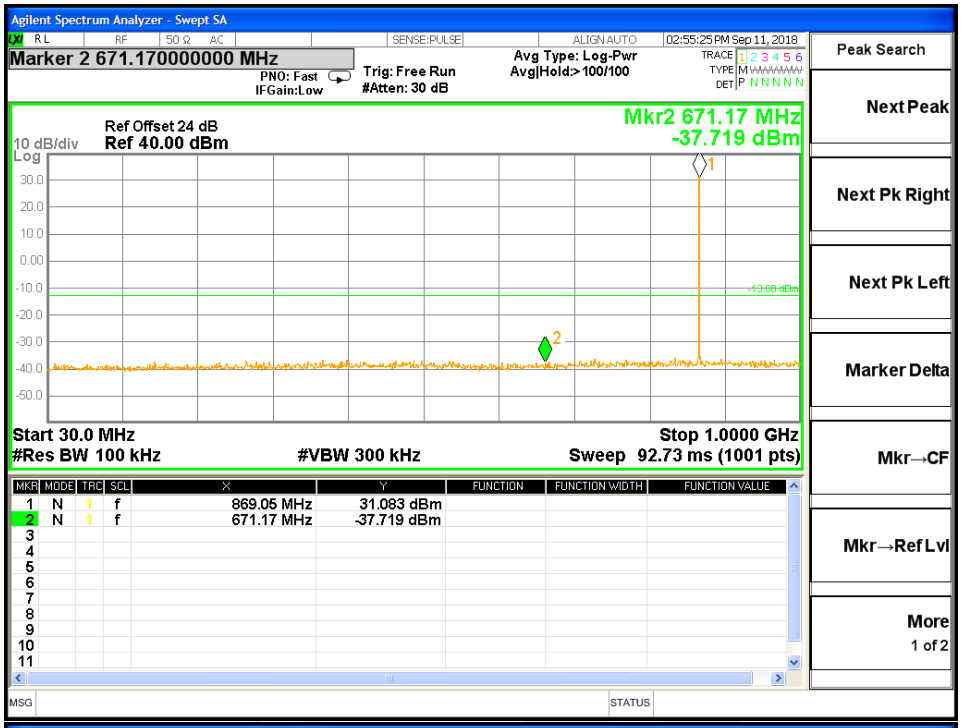

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.400000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:07:09 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr1 5.400 GHz
-22.213 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

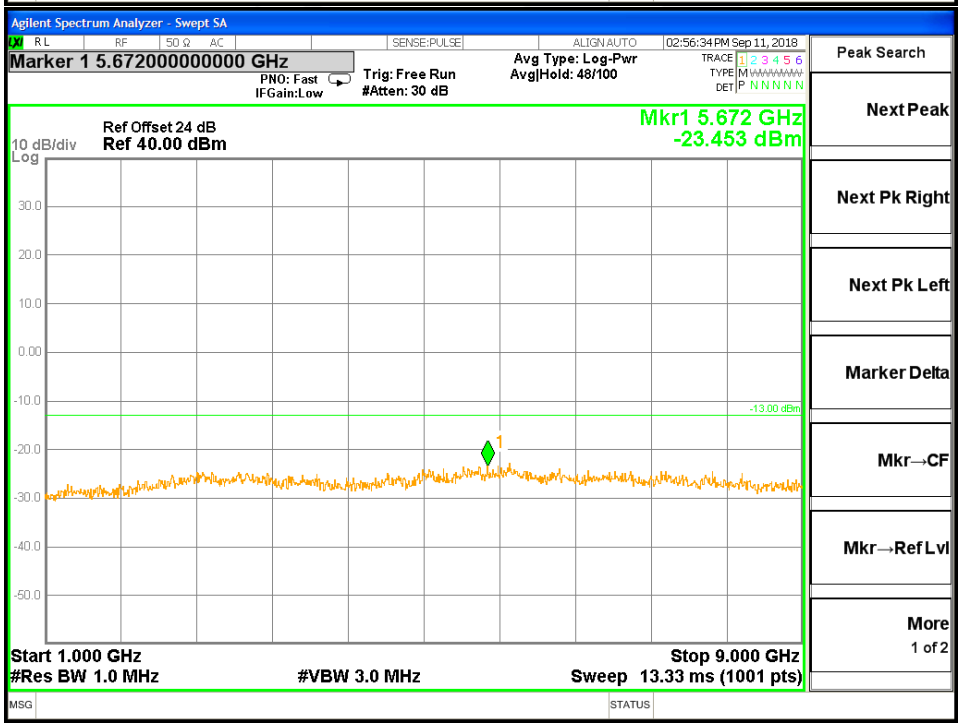
CH 6 Model 16


Agilent Spectrum Analyzer - Swept SA
Marker 2 642.070000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:31:17 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr2 642.07 MHz
-37.814 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 814.73 MHz 27.855 dBm
2 N 1 f 642.07 MHz -37.814 dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS

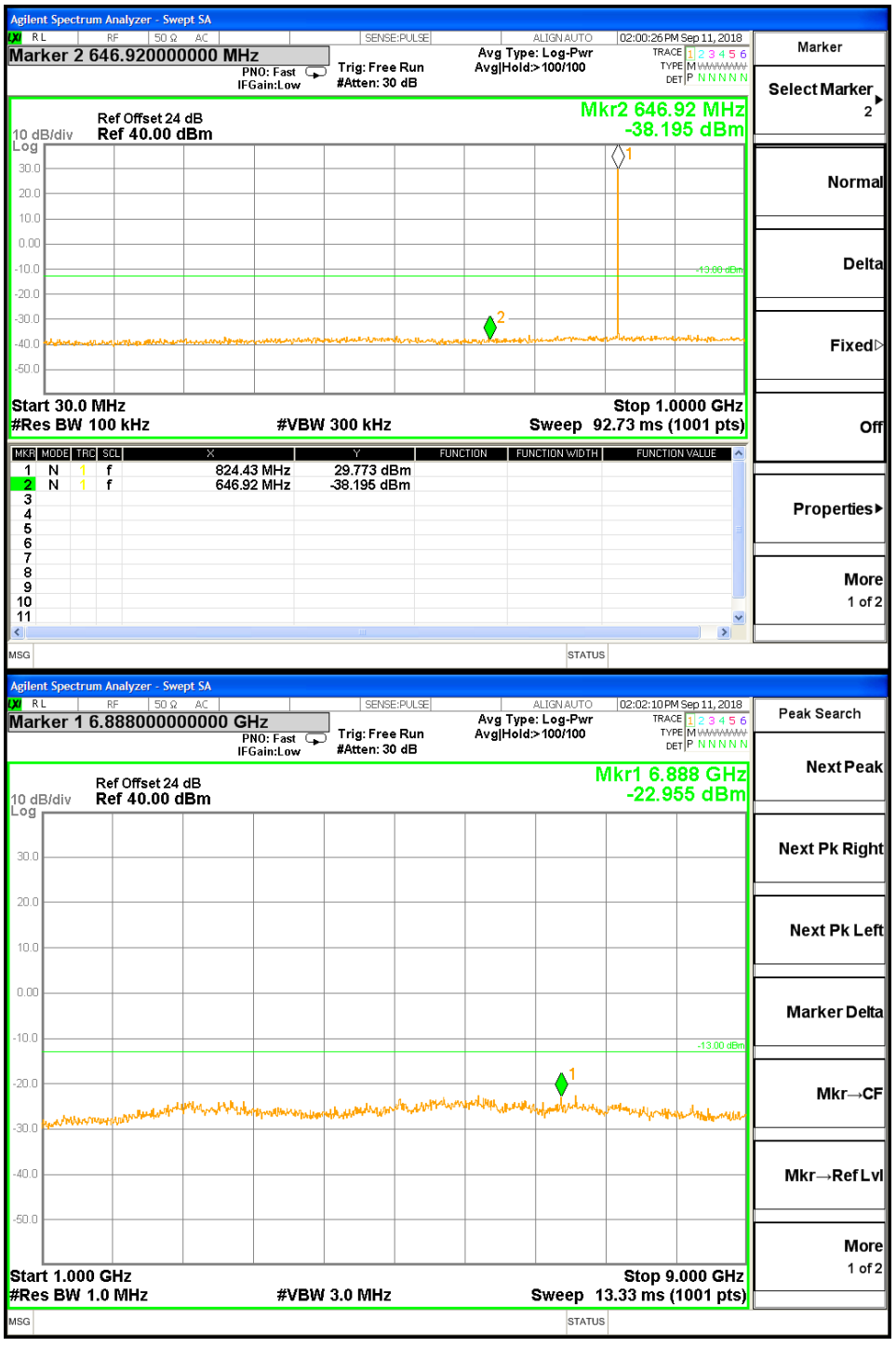

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.040000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:34:25 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr1 5.040 GHz
-22.880 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

CH 3 Model 17

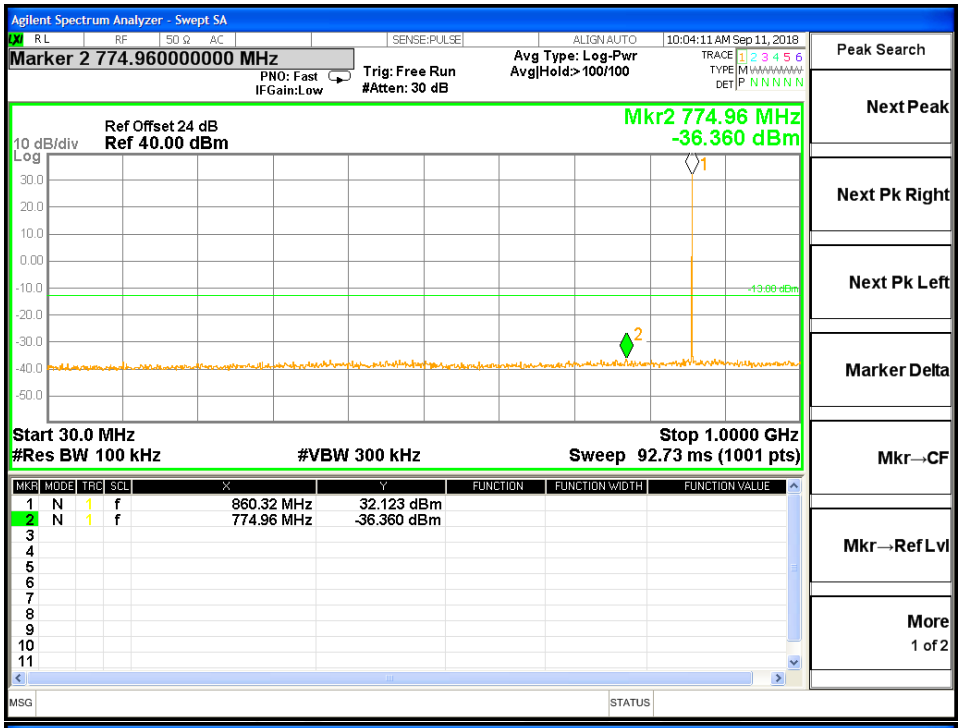

Agilent Spectrum Analyzer - Swept SA
Marker 2 671.170000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:55:25 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr2 671.17 MHz
-37.719 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 869.05 MHz 31.083 dBm
2 N 1 f 671.17 MHz -37.719 dBm
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

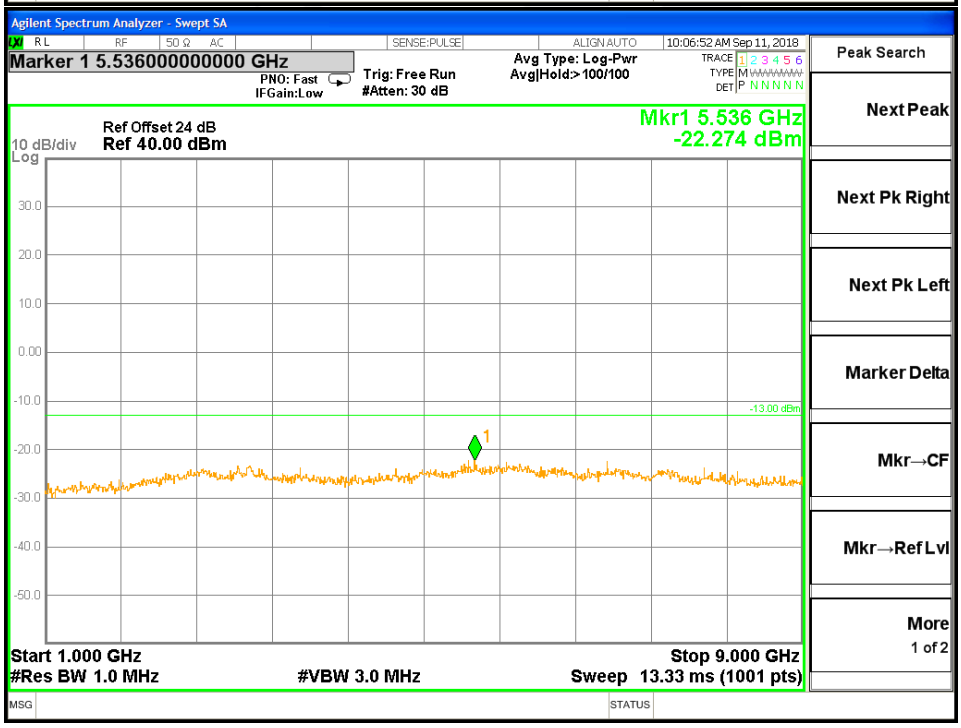

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.672000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 48/100
02:56:34 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 5.672 GHz
-23.453 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

CH 4 Model 18

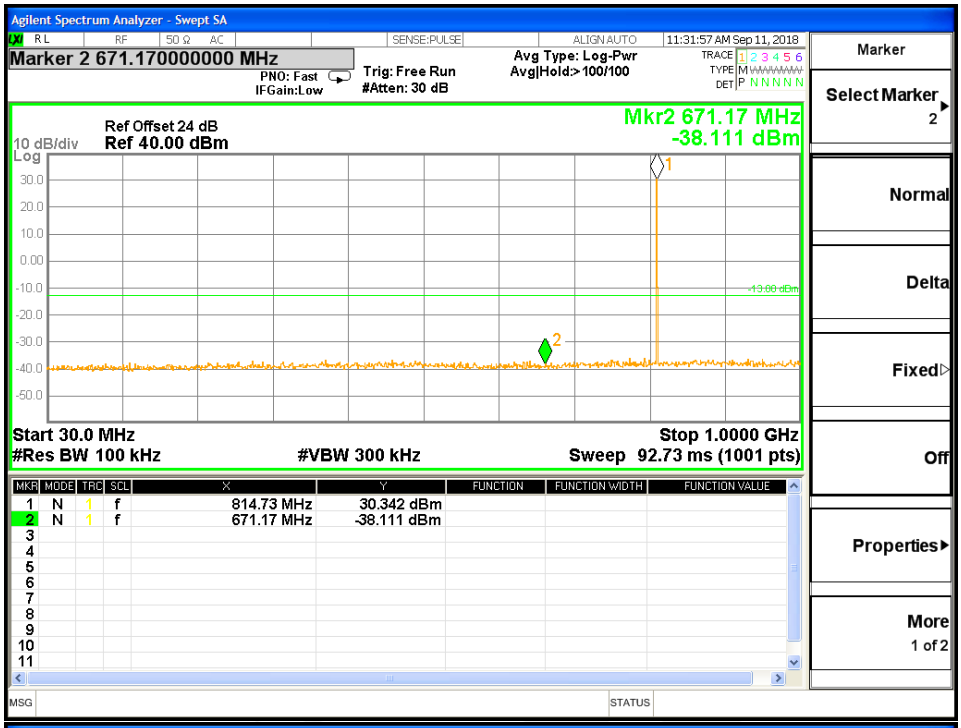

Agilent Spectrum Analyzer - Swept SA
Marker 2 646.920000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:00:26 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 646.92 MHz
-38.195 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 824.43 MHz 29.773 dBm
2 N 1 f 646.92 MHz -38.195 dBm
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2
MSG
STATUS
Agilent Spectrum Analyzer - Swept SA
Marker 1 6.888000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:02:10 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr1 6.888 GHz
-22.955 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

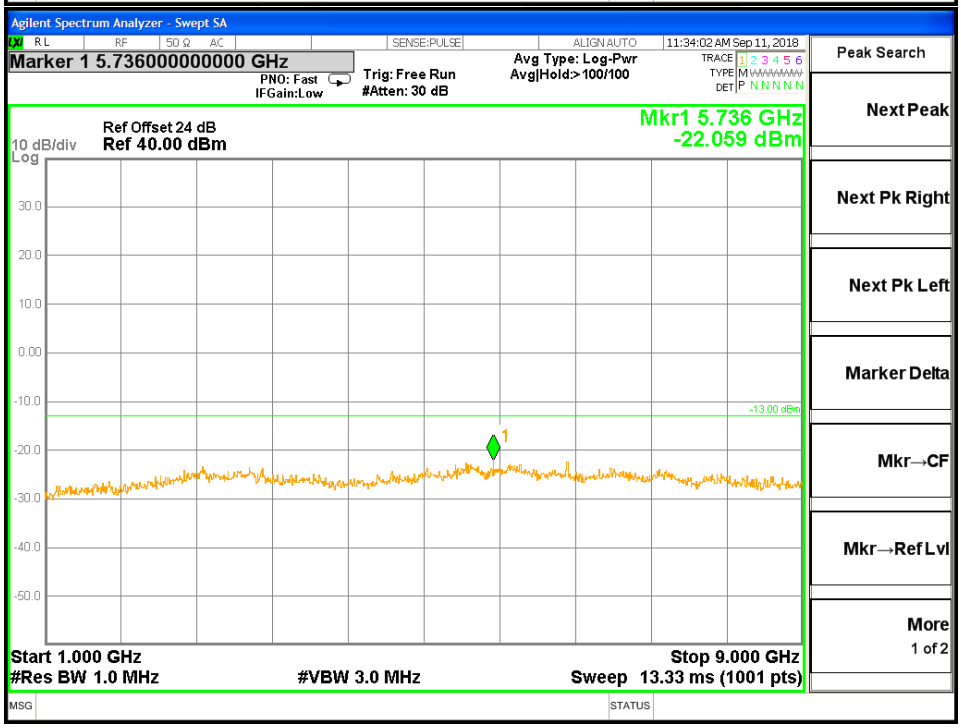
CH 5 Model 19


Agilent Spectrum Analyzer - Swept SA
Marker 2 774.960000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:04:11 AM Sep 11, 2018
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr2 774.96 MHz
-36.360 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 860.32 MHz 32.123 dBm
2 N 1 f 774.96 MHz -36.360 dBm
MSG
STATUS

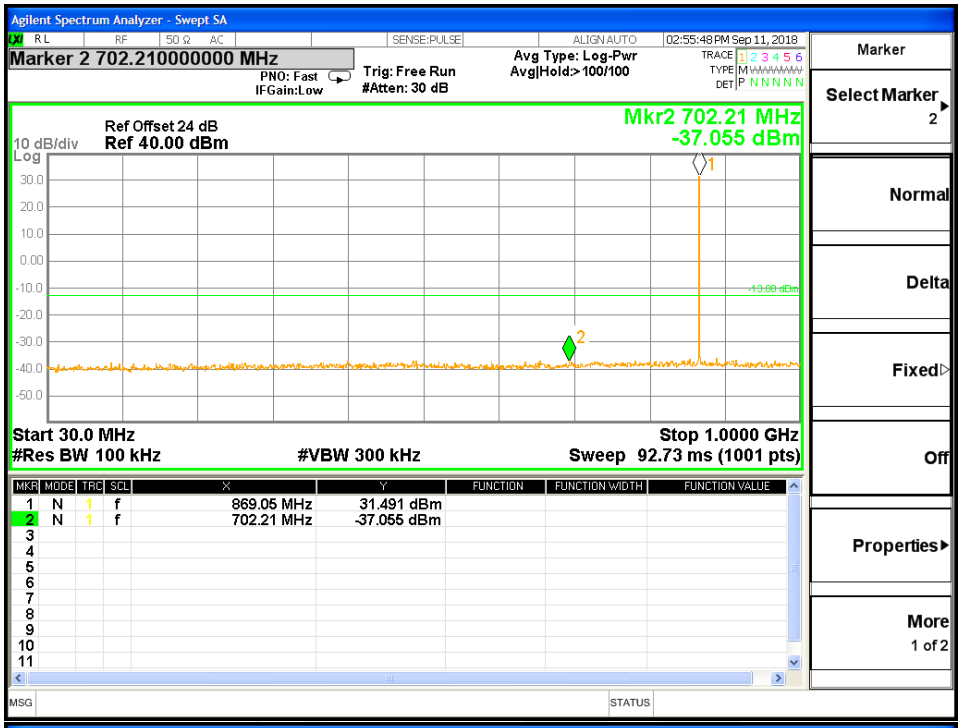

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.536000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:06:52 AM Sep 11, 2018
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
Ref Offset 24 dB
10 dB/div
Log
Ref 40.00 dBm
Mkr1 5.536 GHz
-22.274 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
MSG
STATUS

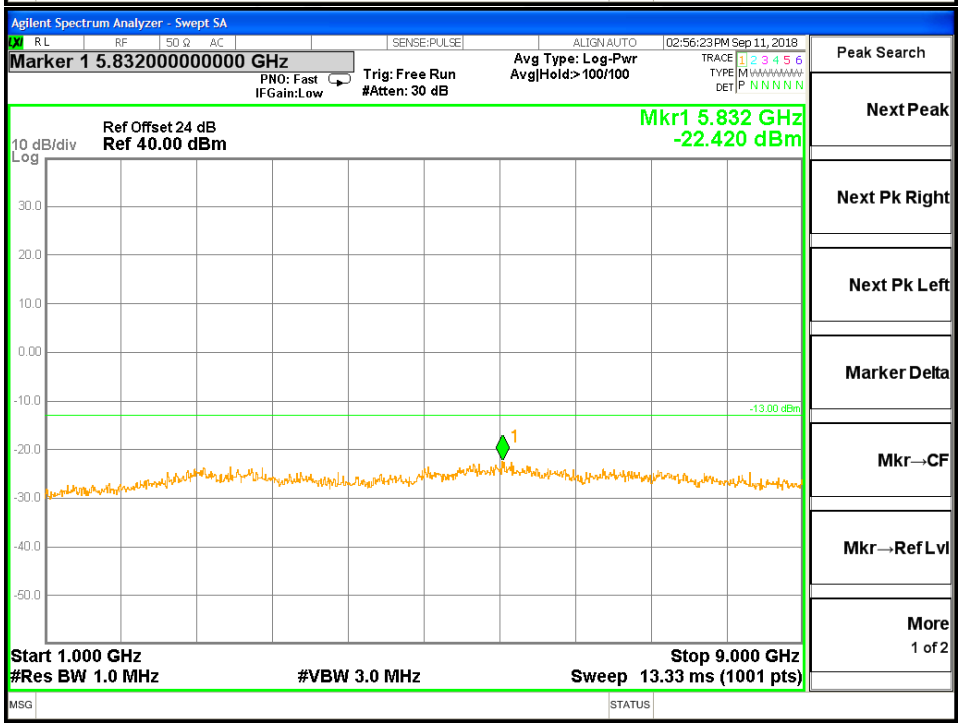
CH 6 Model 20


Agilent Spectrum Analyzer - Swept SA
Marker 2 671.170000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:31:57 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 671.17 MHz
-38.111 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 814.73 MHz 30.342 dBm
2 N 1 f 671.17 MHz -38.111 dBm
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2
MSG
STATUS

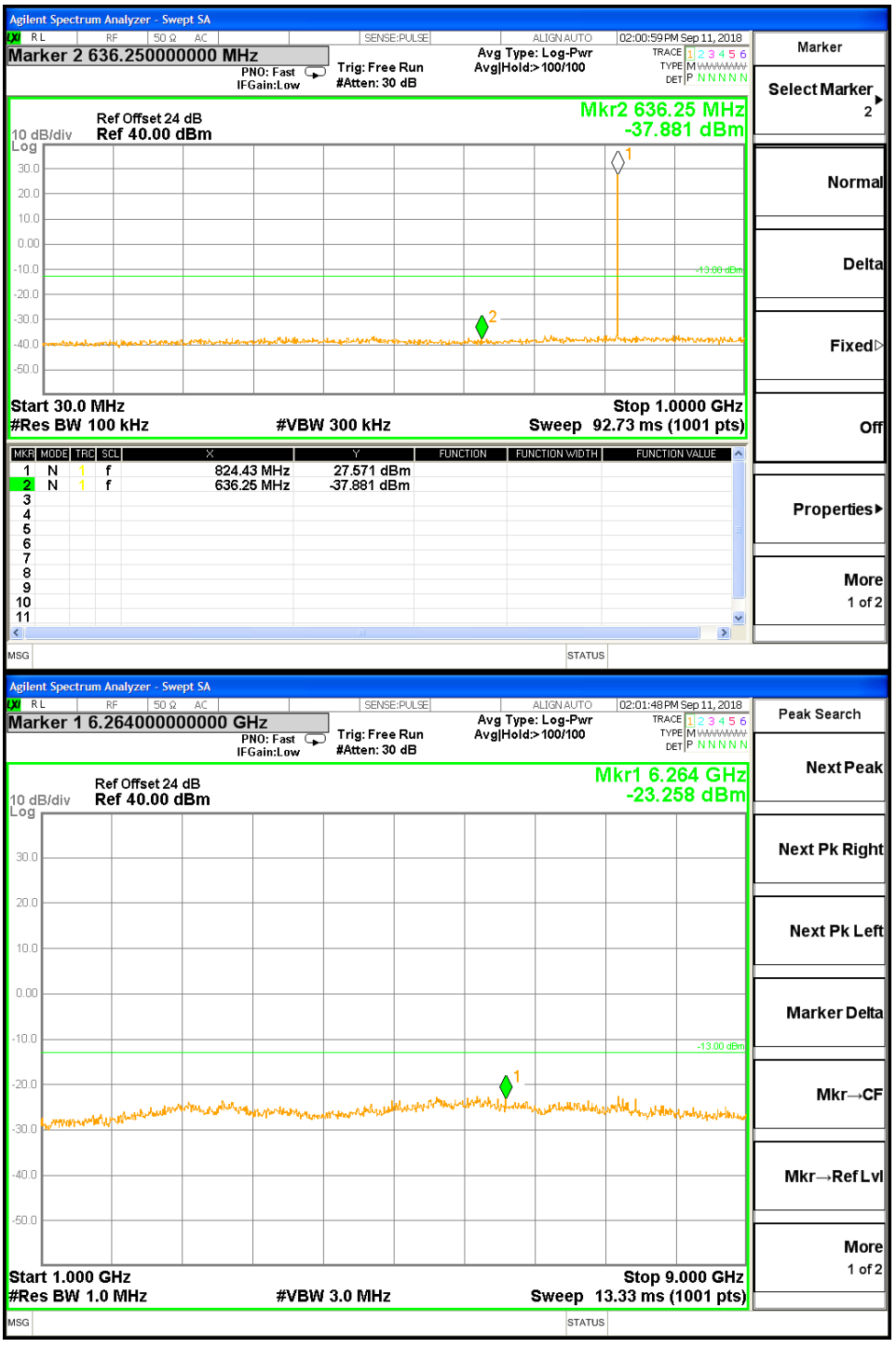

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.736000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:34:02 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr1 5.736 GHz
-22.059 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

CH 3 Model 21

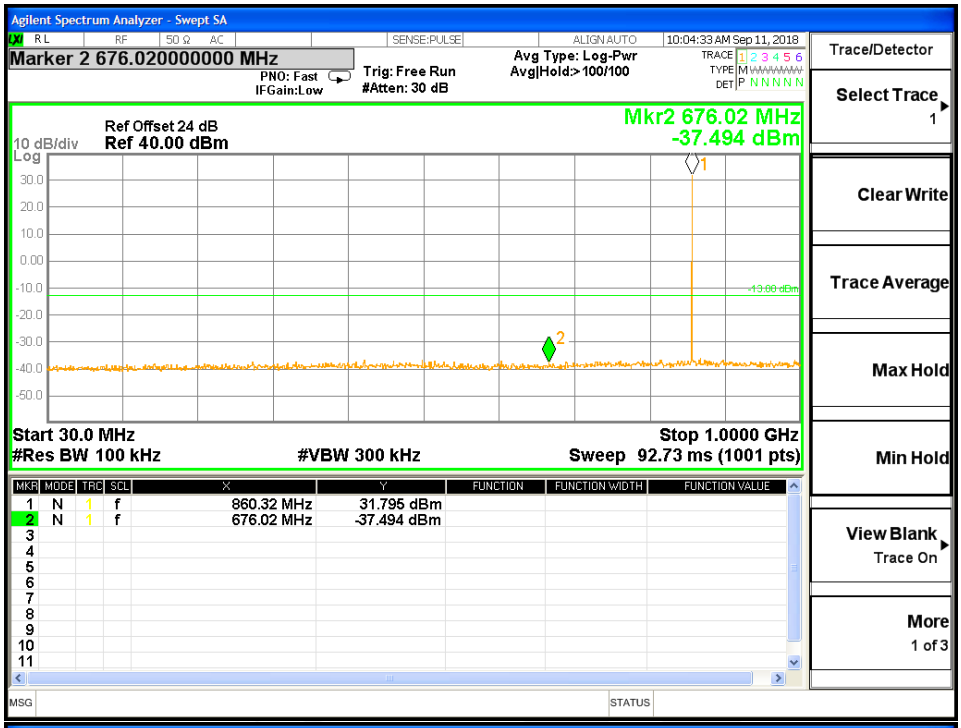

Agilent Spectrum Analyzer - Swept SA
Marker 2 702.210000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:55:48 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr2 702.21 MHz
-37.055 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 869.05 MHz 31.491 dBm
2 N 1 f 702.21 MHz -37.055 dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS

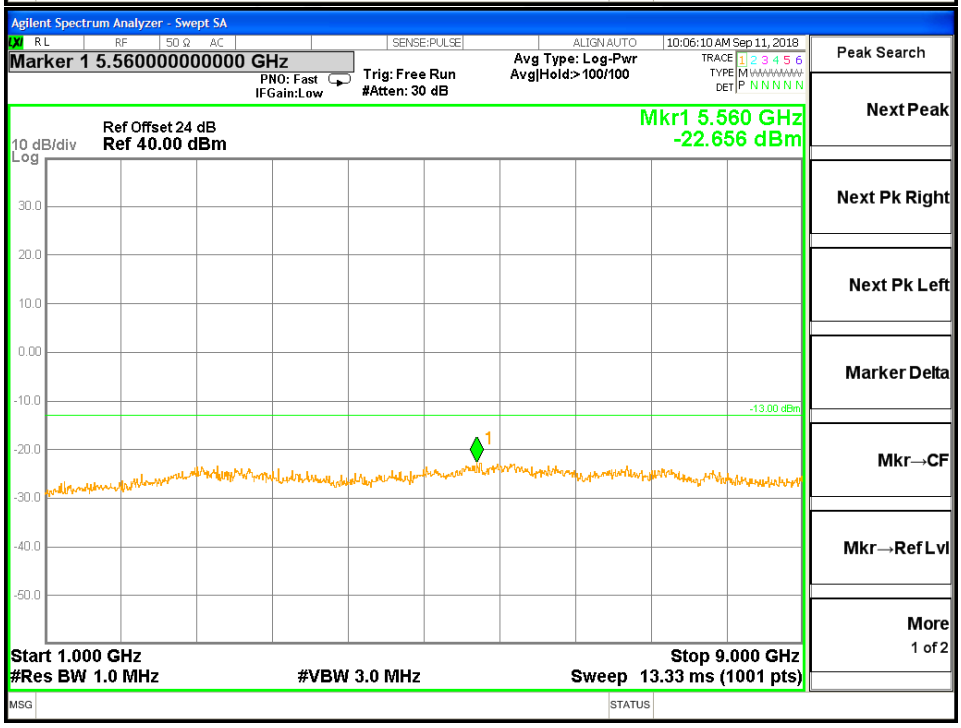

Agilent Spectrum Analyzer - Swept SA
Marker 1 5.832000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:56:23 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Log
Mkr1 5.832 GHz
-22.420 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

CH 4 Model 22

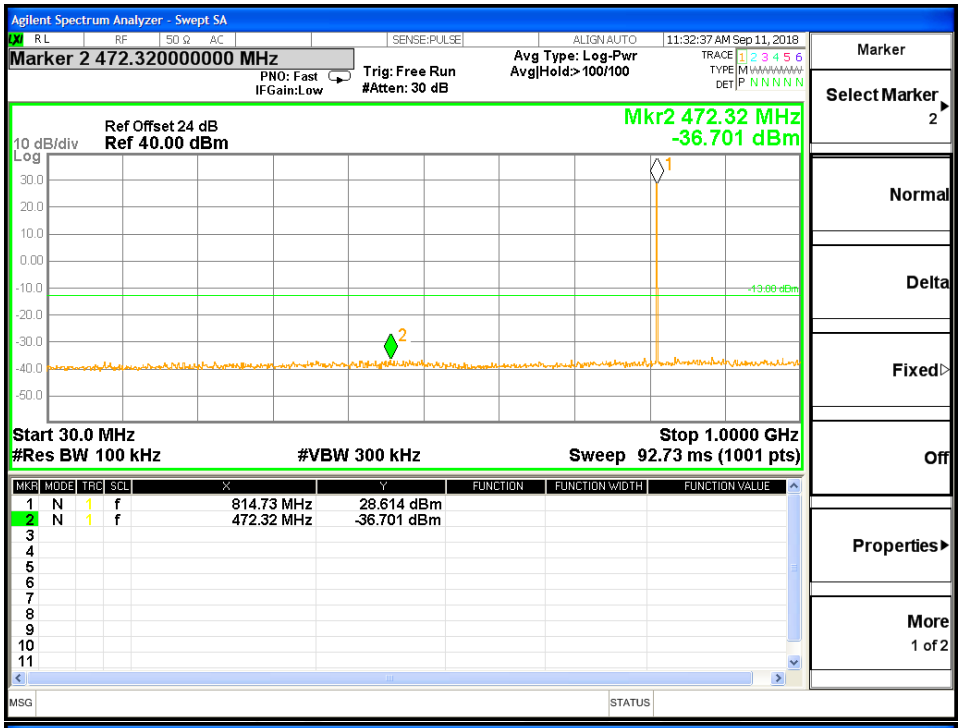

Agilent Spectrum Analyzer - Swept SA
Marker 2 636.250000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:00:59 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 636.25 MHz
-37.881 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 824.43 MHz 27.571 dBm
2 N 1 f 636.25 MHz -37.881 dBm
Marker
Select Marker 2
Normal
Delta
Fixed
Off
Properties
More 1 of 2
MSG
STATUS
Agilent Spectrum Analyzer - Swept SA
Marker 1 6.264000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
02:01:48 PM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr1 6.264 GHz
-23.258 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2
MSG
STATUS

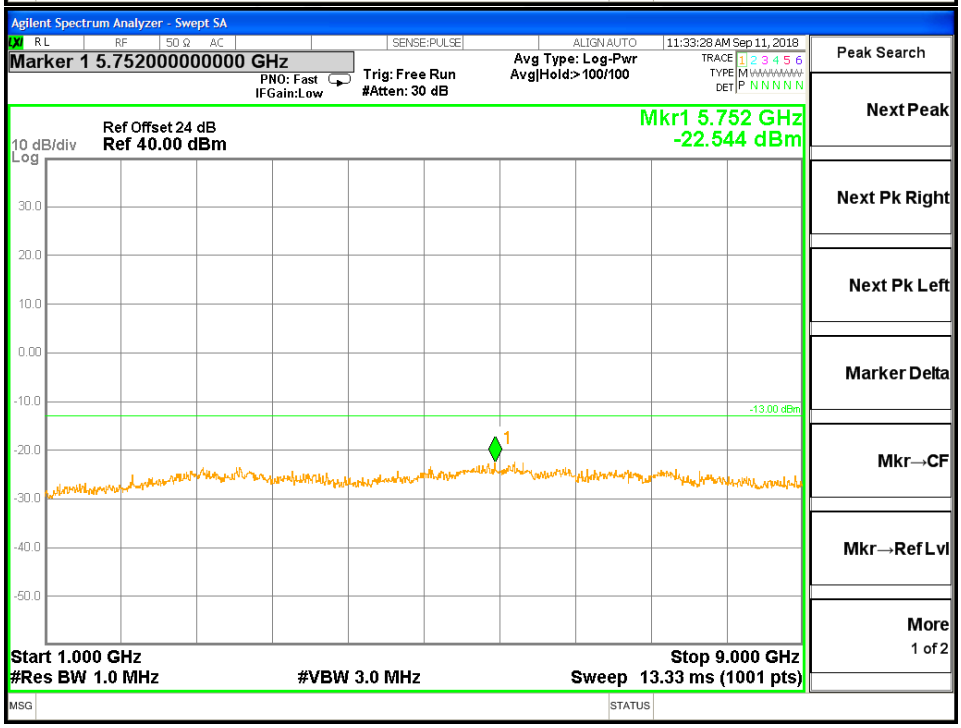
CH 5 Model 23


Agilent Spectrum Analyzer - Swept SA
Marker 2 676.020000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:04:33 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 676.02 MHz
-37.494 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 860.32 MHz 31.795 dBm
2 N 1 f 676.02 MHz -37.494 dBm
Trace/Detector
Select Trace 1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank Trace On
More 1 of 3


Agilent Spectrum Analyzer - Swept SA
Marker 1 5.560000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10:06:10 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr1 5.560 GHz
-22.656 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More 1 of 2

CH 6 Model 24


Agilent Spectrum Analyzer - Swept SA
Marker 2 472.320000000 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:32:37 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr2 472.32 MHz
-36.701 dBm
-13.00 dBm
Start 30.0 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 1.0000 GHz
Sweep 92.73 ms (1001 pts)
1 N 1 f 814.73 MHz 28.614 dBm
2 N 1 f 472.32 MHz -36.701 dBm
Marker
Select Marker
Normal
Delta
Fixed
Off
Properties
More
1 of 2
MSG
STATUS


Agilent Spectrum Analyzer - Swept SA
Marker 1 5.752000000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
11:33:28 AM Sep 11, 2018
Ref Offset 24 dB
10 dB/div
Ref 40.00 dBm
Mkr1 5.752 GHz
-22.544 dBm
-13.00 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 9.000 GHz
Sweep 13.33 ms (1001 pts)
Peak Search
Next Peak
Next Pk Right
Next Pk Left
Marker Delta
Mkr→CF
Mkr→Ref Lvl
More
1 of 2
MSG
STATUS

9. FREQUENCY STABILITY

9.1 PROVISIONS APPLICABLE

1) According to FCC Part 2 Section 2.1055 (a)(1), the frequency stability shall be measured with variation of ambient temperature from -30℃ to +70℃ centigrade.
2) According to FCC Part 2 Section 2.1055 (a) (2), for battery powered equipment, the frequency stability shall be measured with reducing primary supply voltage to the battery operating end point, which is specified by the manufacture.
3) Vary primary supply voltage from 85 to 115 percent of the nominal value.
4)

		Mobile stations	
Frequency range (MHz)	Fixed and base stations	Over 2 watts output power	2 watts or less output power
Below 25	[1 2 3]100	100	200
25-50	20	20	50
72-76	5		50
150-174	[5 11]5	[6]5	[4 6]50
216-220	1.0		1.0
220-222[12]	0.1	1.5	1.5
421-512	[7 11 14]2.5	[8]5	[8]5
806-809	[14]1.0	1.5	1.5
809-824	[14]1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	[14]0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928[13]	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	[9]300	300	300
Above 2450[10]			

9.2 MEASUREMENT PROCEDURE

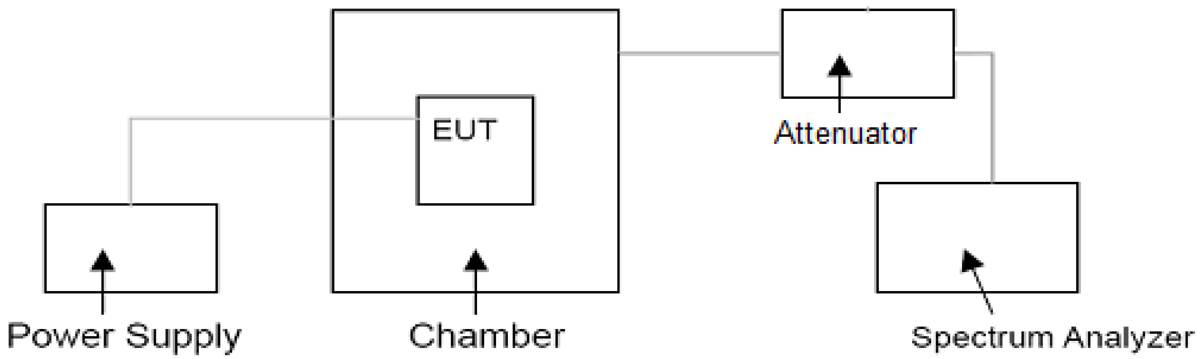
a. The EUT was connected to the spectrum analyzer through sufficent attenuation.

b. The EUT was set in the climate chamber and connected to an external DC power supply

c. After temperature stabilization (approx. 20 min for each stage), the frequency for the lower, the middle and the highest frequency range was recorded.

d For Frequency stability Vs. Voltage the EUT was connected to a DC power supply and the voltage was adjusted in the required ranges. The result was recorded.

9.3 TEST SETUP BLOCK DIAGRAM



9.4 TEST RESULT

CH 1 Mode 1

Temperature (°C)	Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	ppm	Limit	Result
-30	Normal Voltage	851.00625	851.0067	0.529	1.0 ppm	PASS
-20		851.00625	851.0065	0.294		
-10		851.00625	851.0065	0.294		
0		851.00625	851.0067	0.529		
10		851.00625	851.0065	0.294		
20		851.00625	851.0067	0.529		
30		851.00625	851.0063	0.059		
40		851.00625	851.0065	0.294		
50		851.00625	851.0067	0.529		
60		851.00625	851.0065	0.294		
70		851.00625	851.0066	0.411		
25	Maximum Voltage	851.00625	851.0065	0.294		
	BEP	851.00625	851.0067	0.529		

CH 2 Mode 2

Temperature (°C)	Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	ppm	Limit	Result
-30	Normal Voltage	806.00625	806.0067	0.558	1.0 ppm	PASS
-20		806.00625	806.0066	0.434		
-10		806.00625	806.0065	0.310		
0		806.00625	806.0065	0.310		
10		806.00625	806.0067	0.558		
20		806.00625	806.0067	0.558		
30		806.00625	806.0063	0.062		
40		806.00625	806.0066	0.434		
50		806.00625	806.0067	0.558		
60		806.00625	806.0065	0.310		
70		806.00625	806.0063	0.062		
25	Maximum Voltage	806.00625	806.0067	0.558		
	BEP	806.00625	806.0065	0.310		

CH 3 Mode 9

Temperature (°C)	Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	ppm	Limit	Result
-30	Normal Voltage	868.98750	868.9880	0.575	1.5 ppm	PASS
-20		868.98750	868.9880	0.575		
-10		868.98750	868.9879	0.460		
0		868.98750	868.9881	0.690		
10		868.98750	868.9881	0.690		
20		868.98750	868.9881	0.690		
30		868.98750	868.9881	0.690		
40		868.98750	868.9878	0.345		
50		868.98750	868.9879	0.460		
60		868.98750	868.9875	0.000		
70		868.98750	868.9878	0.345		
25	Maximum Voltage	868.98750	868.9880	0.575		
	BEP	868.98750	868.9877	0.230		

CH 4 Mode 10

Temperature (°C)	Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	ppm	Limit	Result
-30	Normal Voltage	823.98750	823.9880	0.607	1.5 ppm	PASS
-20		823.98750	823.9878	0.364		
-10		823.98750	823.9881	0.728		
0		823.98750	823.9881	0.728		
10		823.98750	823.9881	0.728		
20		823.98750	823.9879	0.485		
30		823.98750	823.9880	0.607		
40		823.98750	823.9880	0.607		
50		823.98750	823.9881	0.728		
60		823.98750	823.9877	0.243		
70		823.98750	823.9879	0.485		
25	Maximum Voltage	823.98750	823.9880	0.607		
	BEP	823.98750	823.9878	0.364		

CH 5 Mode 11

Temperature (°C)	Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	ppm	Limit	Result
-30	Normal Voltage	860.00000	860.0005	0.581	1.5 ppm	PASS
-20		860.00000	860.0006	0.698		
-10		860.00000	860.0006	0.698		
0		860.00000	860.0004	0.465		
10		860.00000	860.0006	0.698		
20		860.00000	860.0003	0.349		
30		860.00000	860.0005	0.581		
40		860.00000	860.0002	0.233		
50		860.00000	860.0006	0.698		
60		860.00000	860.0005	0.581		
70		860.00000	860.0006	0.698		
25	Maximum Voltage	860.00000	860.0000	0.000		
	BEP	860.00000	860.0002	0.233		

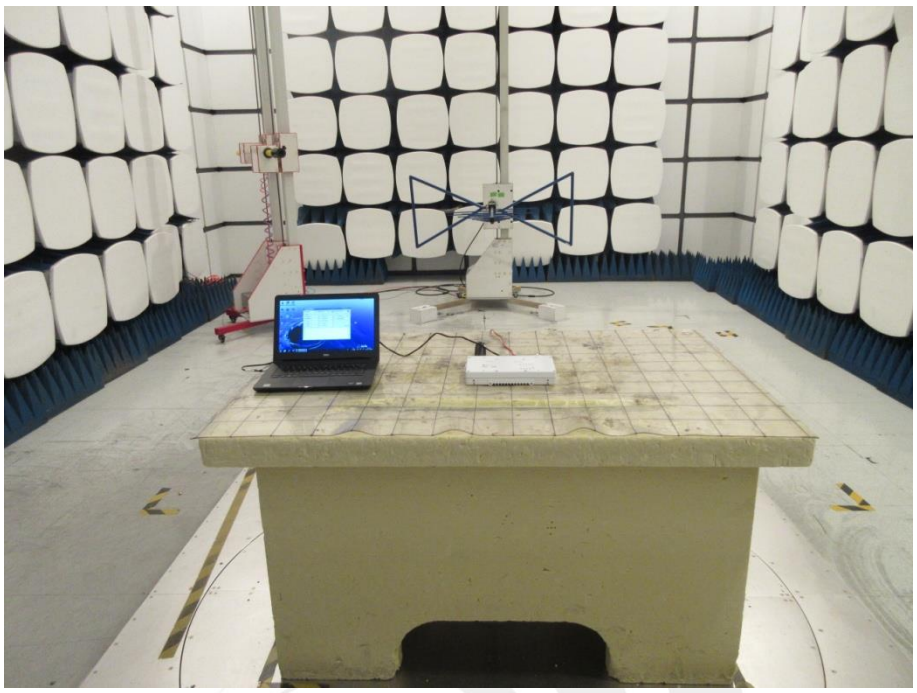
CH 6 Mode 12

Temperature (°C)	Voltage (V)	Nominal Frequency (MHz)	Measured Frequency (MHz)	ppm	Limit	Result
-30	Normal Voltage	815.00000	815.0005	0.613	1.5 ppm	PASS
-20		815.00000	815.0006	0.736		
-10		815.00000	815.0004	0.491		
0		815.00000	815.0004	0.491		
10		815.00000	815.0006	0.736		
20		815.00000	815.0006	0.736		
30		815.00000	815.0006	0.736		
40		815.00000	815.0005	0.613		
50		815.00000	815.0006	0.736		
60		815.00000	815.0005	0.613		
70		815.00000	815.0002	0.245		
25	Maximum Voltage	815.00000	815.0005	0.613		
	BEP	815.00000	815.0005	0.613		

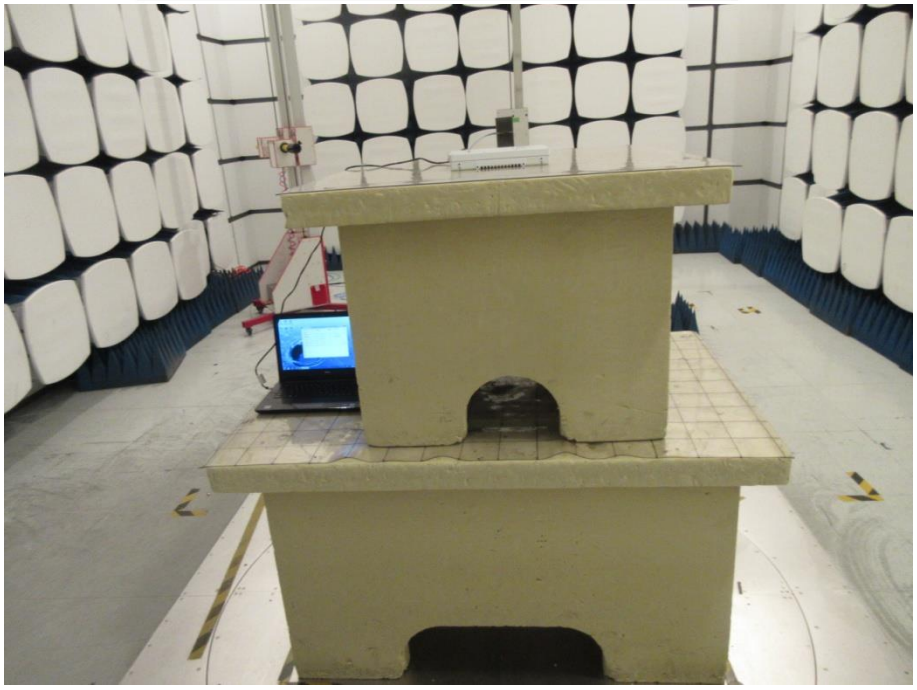
10. PHOTOS OF TEST SETUP

Radiated Measurement Photos

30MHz- 1GHz



Above 1GHz



※※※※※END OF THE REPORT※※※※※