

Report on the Radio Testing

For

SmarDTV (UK) Limited

on

S55

Report no. TRA-031431-00-45-00A

3rd April 2017

Report Number: TRA-031431-00-45-00A
Issue: A

REPORT ON THE RADIO TESTING OF A
SmarDTV (UK) Limited
S55
WITH RESPECT TO SPECIFICATION
FCC 47CFR Subpart E

TEST DATE: From 22-2-2017 to 23-3-2017

Written by:

Alan Wong
Radio Test Engineer

Approved by:



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John Charters
Department Manager - Radio

Date:

3rd April 2017

Disclaimers:

- [1] THIS DOCUMENT MAY BE REPRODUCED ONLY IN ITS ENTIRETY AND WITHOUT CHANGE
[2] THE RESULTS CONTAINED IN THIS DOCUMENT RELATE ONLY TO THE ITEM(S) TESTED



1 Revision Record

<i>Issue Number</i>	<i>Issue Date</i>	<i>Revision History</i>
A	27-3-2017	Original

2 Summary

TEST REPORT NUMBER:	TRA-031431-00-45-00A
WORKS ORDER NUMBER:	TRA-031431-00
PURPOSE OF TEST:	Testing of radio frequency equipment per the relevant authorization procedure of chapter 47 of CFR (code of federal regulations) Part 2, subpart J.
TEST SPECIFICATION:	47CFR15 Subpart E
EQUIPMENT UNDER TEST (EUT):	S55
FCC IDENTIFIER:	DKN-AVAD1
ISED:	1707A-AVAD1
EUT SERIAL NUMBER:	Sample S7
MANUFACTURER/AGENT:	SmarDTV (UK) Limited
ADDRESS:	Beckside Design Centre Millennium Business Park Station Rd Steeton Keighley West Yorkshire BD20 6QW United Kingdom
CLIENT CONTACT:	Chris Wordley ☎ 01535 659000 ✉ chris.wordley@smardtv.com
ORDER NUMBER:	POR01505
TEST DATE:	From 22-2-2017 to 23-3-2017
TESTED BY:	Alan Wong Element Hull

2.1 Test Summary

Test Method and Description		Requirement Clause		Applicable to this equipment	Result / Note
		47CFR15			
Radiated spurious emissions (restricted bands of operation and cabinet radiation)		15.205	RSSGEN Issue 4	☒	PASS
AC power line conducted emissions		15.207	RSSGEN Issue 4	☐	NOTE1
Occupied bandwidth		15.407(e)	RSS 247 Issue 1 Section 6.2	☐	NOTE2
Output power	Conducted	15.407(a)	RSS 247 Issue 1 Section 6.2	☐	NOTE2
	PSD			☐	
	RPE			☐	
Conducted / radiated RF power out-of-band		15.407(b)	RSS 247 Issue 1 Section 6.2	☐	NOTE2
Duty cycle		15.35(c)	RSSGEN Issue 4	☐	NOTE2
TPC and DFS		15.407(h)	RSS 247 Issue 1 Section 6.3	☐	NOTE3
U-NII detection bandwidth		15.407(h)(2)	RSS 247 Issue 1 Section 6.3	☐	NOTE3
CAC		15.407(h)(2)(ii)	RSS 247 Issue 1 Section 6.3	☐	NOTE3
In-service monitoring		15.407(h)(2)(iii) & 15.407(h)(2)(iv)	RSS 247 Issue 1 Section 6.3	☐	NOTE3
Statistical performance check		-	RSS 247 Issue 1 Section 6.3	☐	NOTE3

Notes:

NOTE1: Battery power operation only, with an internal fully charged Lithium-ion battery.
NOTE2: Only radiated emission results are included in this test report. The conducted measurements for the BTLE module are contained within report TRA-029575-02-45-02A.
NOTE3: See Test report TRA-029575-02-45-07A

The results contained in this report relate only to the items tested, in the condition at time of test, and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

The apparatus was set-up and exercised using the configurations, modes of operation and arrangements defined in this report only. Any modifications made are identified in Section 8 of this report.

Particular operating modes, apparatus monitoring methods and performance criteria required by the standards tested to have been performed except where identified in Section 5.2 of this test report (Deviations from Test Standards).

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4 Introduction

This report TRA-031431-00-45-00A presents the results of the Radio testing on a SmarDTV (UK) Limited, S55 to specification 47CFR15 Radio Frequency Devices and RSS-247 Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSS) and Licence-Exempt Local Area Network (LE-LAN) Devices.

The testing was carried out for SmarDTV (UK) Limited by Element, at the address(es) detailed below.

☒	Element Hull Unit E South Orbital Trading Park Hedon Road Hull HU9 1NJ UK	☐	Element Skelmersdale Unit 1 Pendle Place Skelmersdale West Lancashire WN8 9PN UK
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This report details the configuration of the equipment, the test methods used and any relevant modifications where appropriate.

FCC Site Listing:

The test laboratory is accredited for the above sites under the US-EU MRA, Designation number UK0009.

IC Registration Number(s):

Element Skelmersdale	3930B
Element Hull	3483A

The test site requirements of ANSI C63.4-2014 are met up to 1GHz.

The test site SVSWR requirements of CISPR 16-1-4:2010 are met over the frequency range 1 GHz to 18 GHz.

5 Test Specifications

5.1 Normative References

- FCC 47 CFR Ch. I – Part 15 – Radio Frequency Devices.
- FCC KDB Publication 905462 D02 v01r02 – Compliance measurement procedures for unlicensed-national information infrastructure devices operating in the 5250-5350 MHz and 5470-5725 MHz bands incorporating dynamic frequency selection.
- ANSI C63.10-2013 – American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.
- ANSI C63.4-2014 – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
- RSS-247 — Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

5.2 Deviations from Test Standards

Only radiated emission results are included in this test report. The conducted measurements for the 5GHz WiFi module are contained within report TRA-029575-02-45-08A. The manufacturer declared that no changes to the module were made.

6 Glossary of Terms

S	denotes a section reference from the standard, not this document
AC	Alternating Current
ANSI	American National Standards Institute
BW	bandwidth
C	Celsius
CAC	Channel Availability Check
CFR	Code of Federal Regulations
CW	Continuous Wave
dB	decibel
dBm	dB relative to 1 milliwatt
DC	Direct Current
DFS	Dynamic Frequency Selection
DSSS	Direct Sequence Spread Spectrum
EIRP	Equivalent Isotropically Radiated Power
ERP	Effective Radiated Power
EUT	Equipment Under Test
FCC	Federal Communications Commission
FHSS	Frequency Hopping Spread Spectrum
Hz	hertz
IC	Industry Canada
ITU	International Telecommunication Union
LBT	Listen Before Talk
LE-LAN	Licence-Exempt Local Area Network
m	metre
max	maximum
MIMO	Multiple Input and Multiple Output
min	minimum
MRA	Mutual Recognition Agreement
N/A	Not Applicable
PCB	Printed Circuit Board
PDF	Portable Document Format
Pt-mpt	Point-to-multipoint
Pt-pt	Point-to-point
PSD	Power Spectral Density
RF	Radio Frequency
RH	Relative Humidity
RMS	Root Mean Square
Rx	receiver
s	second
SVSWR	Site Voltage Standing Wave Ratio
TPC	Transmitter Power Control
Tx	transmitter
UKAS	United Kingdom Accreditation Service
U-NII	Unlicensed-National Information Infrastructure
V	volt
W	watt
Ω	ohm

7 Equipment Under Test

7.1 EUT Identification

- Name: S55
- Serial Number: Sample S7
- Model Number: S55
- Software Revision: RF Test Software
- Build Level: Pre-production

7.2 System Equipment

Equipment listed below forms part of the overall test setup and is required for equipment functionality and/or monitoring during testing. The compliance levels achieved in this report relate only to the EUT and not items given in the following list.

HD 1080p video source with HDMI output and power supply unit
RNDIS USB Hub device and power supply unit
Laptop computer and power supply

7.3 EUT Mode of Operation

7.3.1 Transmission

The mode of operation for transmit tests was as follows...

The EUT was connected via an RNDIS USB hub, to a laptop computer. The computer executed 5 GHz WiFi EUT control software, named Broadcom MTOOL for setting operating channel, bandwidth, data rate and power.

The same USB connection was also charging the EUT battery at the same time.

7.3.2 Reception

No receiver tests were performed.

7.4 EUT Radio Frequency Parameters

7.4.1 General

Frequency of operation:	From 5150 MHz to 5850 MHz
Modulation type(s):	IEEE802.11a/n/ac
Occupied channel bandwidth(s):	20 / 40 / 80 MHz
Channel spacing:	IEEE802.11a/n/ac
Declared output power(s):	Power table included for all modes/channels
Warning against use of alternative antennas in user manual (yes/no):	N/A: The antennae are internal and completely inaccessible to the user
Nominal Supply Voltage:	Lithium-ion Battery at 3.7 V d.c.
Frequency stability:	+/- 25ppm in OFDM, +/- 20ppm in all other modes
Location of notice for license exempt use:	The FCC part 15.19(a) statement is in the online user manual
Method of prevention of use on non-US frequencies:	Firmware country code is factory set and it cannot be changed in user interface

7.4.2 Antennas

Type:	Embedded
Frequency range:	4.9 – 5.9 GHz
Impedance:	50 ohms
VSWR:	< 2:1
Gain:	2.7 dBi peak gain at 5.2 GHz and 2.7 dBi peak gain at 5.8 GHz
Polarisation:	Non polar
Beam width:	N/A: Not directional.
Connector type:	50 ohm, 1.13mm diameter, micro coax cable, U.FL compatible cable connector (optional), cable mounted EMI ferrites (optional)
Dimensions:	17.2 x 17.2 x 0.8 mm
Weight:	0.51 g (0.018 oz)
Environmental limits:	Operating: -40° C to +75° C (-40° F to +167° F) Storage: -40° C to +85° C (-40° F to +185° F) 0% to 95% non-condensing
Mounting:	U. FL compatible cable connector

7.4.3 Product specific declarations

Multiple antenna configuration(s), e.g. MIMO:	It uses the following operating schemes (without beamforming): • SISO (single antenna transmission) • SM-MIMO (multiple antenna transmission, uncorrelated) • STBC (multiple antenna transmission, uncorrelated) • CDD (multiple antenna transmission, correlated)
Fixed pt-pt operations (yes/no):	No
Software security description:	Signed and AES-128 Encrypted Firmware with RSA-2048 & SHA256 Authentication (User not accessible to configuration part)
TDWR interference information in users manual (yes/no):	No

7.5 EUT Description

The EUT is a converter for HDMI video streams and then transmits then data over a WiFi network.

Power table for CDD MNSS1 operation

<i>Channel Bandwidth (MHz) / Channel Number</i>	<i>Data Rate in MNSS1 mode</i>	<i>Quarter dBm setting (q dBm)</i>
20 / 36	MCS0	44
20 / 36	MCS8	44
20 / 52	MCS0	62
20 / 52	MCS8	52
20 / 64	MCS0	56
20 / 64	MCS8	52
20 / 100	MCS0	60
20 / 100	MCS8	44
20 / 140	MCS0	62
20 / 140	MCS8	44
20 / 144	MCS0	62
20 / 144	MCS8	44
20 / 149	MCS0	52
20 / 149	MCS8	44
20 / 165	MCS0	56
20 / 165	MCS8	44
40 / 38	MCS0	44
40 / 38	MCS9	44
40 / 54	MCS0	62
40 / 54	MCS9	52
40 / 62	MCS0	52
40 / 62	MCS9	44
40 / 102	MCS0	46
40 / 102	MCS9	40
40 / 134	MCS0	62
40 / 134	MCS9	48
40 / 142	MCS0	62
40 / 142	MCS9	48
40 / 151	MCS0	42
40 / 151	MCS9	42
40 / 159	MCS0	48
40 / 159	MCS9	48
80 / 42	MCS0	44
80 / 42	MCS9	44
80 / 58	MCS0	52
80 / 58	MCS9	44
80 / 106	MCS0	48
80 / 106	MCS9	42
80 / 138	MCS0	58
80 / 138	MCS9	42
80 / 155	MCS0	50
80 / 155	MCS9	42

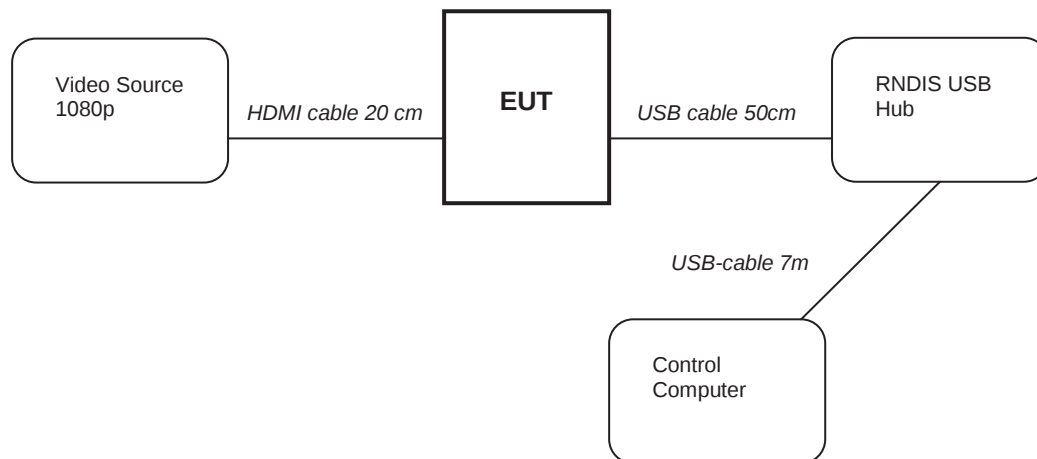
8 Modifications

No modifications were performed during this assessment.

9 EUT Test Setup

9.1 Block Diagram

The following diagram shows basic EUT interconnections with cable type and cable lengths identified. Note that the EUT was powered by its internal Li-Ion battery, fully charged through the USB Hub, which was connected to a d.c. power supply unit. The video source was connected to its power adapter. The Control computer was placed outside the test chamber.



9.2 *General Set-up Photograph*

Please refer to document number TRA-031431-PHOTOS as the client has requested photographs are held short term confidential.

10 General Technical Parameters

10.1 Normal Conditions

The E U T was tested under the normal environmental conditions of the test laboratory, except where otherwise stated. The normal power source applied was an internal Lithium Ion battery, at nominal 3.7 V dc, which was fully charged via the USB connection, every time.

10.2 Varying Test Conditions

Variation of supply voltage is required to ensure stability of the declared output power and frequency. During carrier power testing the following variations were made:

	Category	Nominal	Variation
☐	Mains	110V ac +/-2%	85% and 115%
☒	Battery	3.7 V Lithium Ion	3.0 – 4.2 V d.c.

11 Radiated emissions

11.1 Definitions

Spurious emissions

Emissions on a frequency or frequencies, which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions.

Restricted bands

A frequency band in which intentional radiators are permitted to radiate only spurious emissions but not fundamental signals.

11.2 Test Parameters

Test Location:	Element Hull
Test Chamber:	Wireless Laboratory 2 (Lab16)
Test Standard and Clause:	ANSI C63.10-2013, Clause 6.5 and 6.6
EUT Channels / Frequencies Measured:	Low / Mid / High
EUT Channel Bandwidths:	20 / 40 / 80 MHz
Deviations From Standard:	None
Measurement BW:	30 MHz to 1 GHz: 120 kHz Above 1 GHz: 1 MHz
Measurement Detector:	Up to 1 GHz: quasi-peak Above 1 GHz: RMS average and Peak

Environmental Conditions (Normal Environment)

Temperature: 20 °C	+15 °C to +35 °C (as declared)
Humidity: 37 %RH	20%RH to 75%RH (as declared)
Supply: 3.7 V dc	Fully charged Li-ion battery

Test Limits

15.407(b):

(1) For transmitters operating in the 5.15–5.25 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25–5.35 GHz band: All emissions outside of the 5.15–5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47–5.725 GHz band: All emissions outside of the 5.47–5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725–5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

11.3 Test Method

With the EUT setup as per section 9 of this report and connected as per Figure i, the emissions from the EUT were measured on a spectrum analyzer / EMI receiver.

Radiated electromagnetic emissions from the EUT are checked first by preview scans. Preview scans for all spectrum and modulation characteristics are checked, using a peak detector and where applicable worst-case determined for function, operation, orientation, etc. for both vertical and horizontal polarisations. Pre-scan plots are shown with a peak detector and 100kHz RBW.

If the EUT connects to auxiliary equipment and is table or floor standing, the configurations prescribed in ANSI C63.10 are followed. Alternatively, a layout closest to normal use (as declared by the provider) is employed, (see EUT setup photographs for more detail).

Emissions between 30 MHz and 1 GHz are measured using calibrated broadband antennas. Emissions above 1 GHz are characterized using standard gain horn antennas. Pre-amplifiers and filters are used where required. Care is taken to ensure that test receiver resolution bandwidth, video bandwidth and detector type(s) meet the regulatory requirements.

For both horizontal and vertical polarizations, the EUT is then rotated through 360 degrees in azimuth until the highest emission is detected. At the previously determined azimuth the test antenna is raised and lowered from 1 to 4 m in height until a maximum emission level is detected, this maximum value is recorded.

Power values measured on the test receiver / analyzer are converted to field strength, FS, in dBµV/m at the regulatory distance, using:

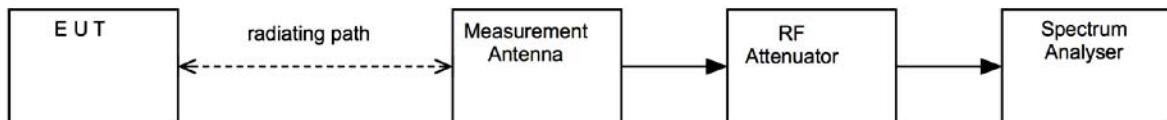
$$FS = PR + CL + AF - PA + DC - CF$$

Where,

PR is the power recorded on the receiver / spectrum analyzer in dBµV;
CL is the cable loss in dB;
AF is the test antenna factor in dB/m;
PA is the pre-amplifier gain in dB (where used);
DC is the duty correction factor in dB (where used, e.g. where average detector on pulsed harmonic understates the power);
CF is the distance factor in dB (where measurement distance different to limit distance);

This field strength value is then compared with the regulatory limit.

Figure i Test Setup



Test Setup Photograph(s)

Please refer to document number TRA-031431-PHOTOS as the client has requested photographs are held short term confidential.

11.4 Test Equipment

<i>Equipment Description</i>	<i>Manufacturer</i>	<i>Equipment Type</i>	<i>Element No</i>	<i>Due For Calibration</i>
For 30-200 MHz	EMCO	Biconical Antenna	RFG095	17/05/2019
For 200-1000MHz	EMCO	Log Periodic Antenna	RFG191	17/05/2019
For 1-18 GHz	EMCO	Horn Antenna	RFG129	09/02/2018
Spectrum Analyser	R&S	FSU46	REF910	05/07/2017
N-Type RF coaxial cable	Unknown	Cable	REF884	04/12/2017
Pre-Amp (9kHz – 1GHz)	Sonoma	310	REF927	30/06/2018
Short SMA RF Cable	AtlanTec	Cable	REF2165	09/12/2017
Cable	Teledyne	5m 2.92mm	REF919	05/10/2017
Pre-Amp (1 – 26.5GHz)	Agilent	8449B	REF913	02/02/2018
EMI / SA	R&S	ESU	RFG701	29/12/2017
For 18-26.5 GHz	Q-Par	Horn Antenna	RFG629	30/09/2017
For 26.5-40 GHz	FM	Horn Antenna	REF820	19/07/18
Ferrite Lined Chamber	Rainford	SARS	REF886	21/07/17

11.5 Test Results

Emissions not related to transmitter in the frequency range from 30 MHz to 1000 MHz

<i>Frequency (MHz)</i>	<i>Quasi-Peak (dBμV/m)</i>	<i>Limit (dBμV/m)</i>	<i>Quasi-Peak (μV/m)</i>	<i>Limit (μV/m)</i>	<i>Result</i>
32.596	22.2	40.0	12.9	100	PASS
41.293	30.4	40.0	33.1	100	PASS
43.741	31.5	40.0	37.6	100	PASS
43.913	31.5	40.0	37.6	100	PASS
71.333	31.7	40.0	38.5	100	PASS
113.517	30.5	43.5	33.5	150	PASS
119.995	22.9	43.5	14.0	150	PASS
122.153	31.0	43.5	35.5	150	PASS
120.017	41.9	43.5	124.5	150	PASS
133.349	33.5	43.5	47.3	150	PASS
148.347	35.0	43.5	56.2	150	PASS
236.403	31.6	46.0	38.0	200	PASS
237.044	32.1	46.0	40.3	200	PASS
266.531	33.1	46.0	45.2	200	PASS
445.051	39.0	46.0	89.1	200	PASS
480.054	38.0	46.0	79.4	200	PASS
532.961	44.8	46.0	173.8	200	PASS
593.390	44.6	46.0	169.8	200	PASS
741.754	44.2	46.0	162.2	200	PASS
799.439	42.0	46.0	125.9	200	PASS
799.503	44.5	46.0	167.9	200	PASS
798.460	26.4	46.0	20.9	200	PASS
799.487	39.9	46.0	98.9	200	PASS
890.107	45.2	46.0	182.0	200	PASS
906.718	23.7	46.0	15.3	200	PASS
949.391	28.2	46.0	25.7	200	PASS
959.967	33.5	46.0	47.3	200	PASS
960.110	36.2	46.0	64.6	200	PASS

Emissions not related to transmitter in the frequency range from 1000 MHz to 5000 MHz

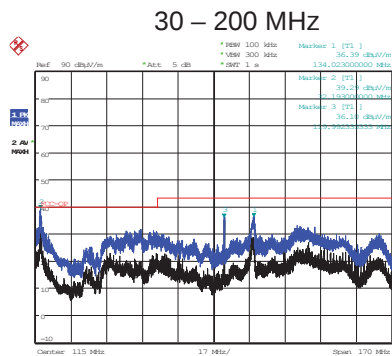
<i>Frequency (MHz)</i>	<i>Peak (dBμV/m)</i>	<i>Limit (dBμV/m)</i>	<i>Peak (μV/m)</i>	<i>Limit (μV/m)</i>	<i>Result</i>
1319.000	42.2	74	129.2	5000	PASS
1332.538	58.1	74	803.5	5000	PASS
1332.670	61.0	74	1122.0	5000	PASS
1563.642	46.1	74	201.8	5000	PASS
1598.770	66.8	74	2187.8	5000	PASS
1598.798	64.5	74	1678.8	5000	PASS
1599.967	49.7	74	305.4	5000	PASS
1865.316	53.5	74	473.2	5000	PASS
2225.378	50.5	74	335.0	5000	PASS
2332.440	47.2	74	229.1	5000	PASS
2373.692	62.9	74	1391.2	5000	PASS
2393.498	48.9	74	278.6	5000	PASS
2398.367	62.9	74	1391.2	5000	PASS
2398.416	58.6	74	851.1	5000	PASS
2398.964	52.3	74	412.1	5000	PASS
2464.300	52.8	74	438.4	5000	PASS
2931.250	50.7	74	342.8	5000	PASS
3464.300	59.8	74	978.1	5000	PASS
3464.738	53.8	74	489.8	5000	PASS
3506.644	51.4	74	371.5	5000	PASS
3729.867	54.2	74	510.4	5000	PASS
3730.867	69.4	74	2940.2	5000	PASS
4984.765	51.5	74	374.4	5000	PASS
4985.582	54.8	74	548.1	5000	PASS

Emissions not related to transmitter in the frequency range from 1000 MHz to 5000 MHz

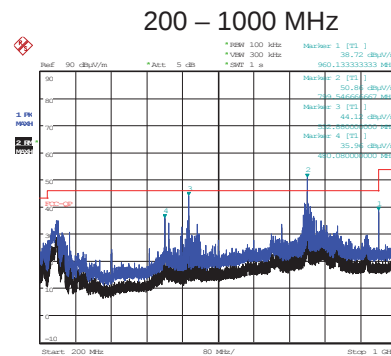
<i>Frequency (MHz)</i>	<i>Average (dBμV/m)</i>	<i>Limit (dBμV/m)</i>	<i>Average (μV/m)</i>	<i>Limit (μV/m)</i>	<i>Result</i>
1319.000	36.6	54	67.7	500	PASS
1332.538	37.9	54	78.5	500	PASS
1332.670	39.3	54	92.3	500	PASS
1563.642	30.5	54	33.5	500	PASS
1598.770	37.3	54	73.3	500	PASS
1598.798	33.7	54	48.4	500	PASS
1599.967	47.9	54	249.7	500	PASS
1865.316	36.0	54	63.1	500	PASS
2225.378	49.4	54	295.1	500	PASS
2332.440	33.1	54	45.2	500	PASS
2373.692	47.1	54	226.1	500	PASS
2393.498	37.4	54	74.1	500	PASS
2398.367	38.1	54	80.6	500	PASS
2398.416	40.0	54	100.0	500	PASS
2398.964	37.9	54	78.5	500	PASS
2464.300	50.6	54	338.0	500	PASS
2931.250	36.8	54	69.2	500	PASS
3464.300	33.8	54	48.9	500	PASS
3464.738	38.7	54	86.1	500	PASS
3506.644	57.6	54	758.6	500	PASS
3729.867	47.4	54	234.4	500	PASS
3730.867	38.1	54	80.0	500	PASS
4984.765	41.0	54	112.2	500	PASS
4985.582	44.4	54	165.7	500	PASS

U-NII-1 and U-NII-2A 802.11

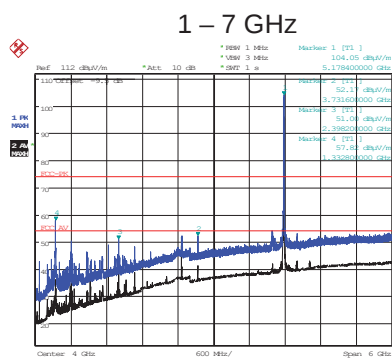
EUT operating mode and data rate: Channel 36, 20 MHz Bandwidth, MCS0NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity



Date: 12.MAR.2017 14:55:16

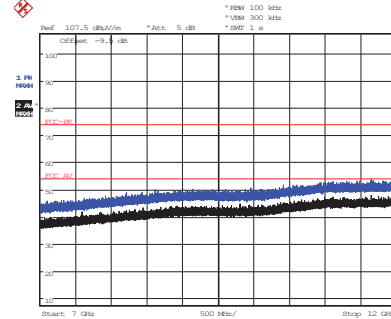


Date: 11.MAR.2017 12:32:54



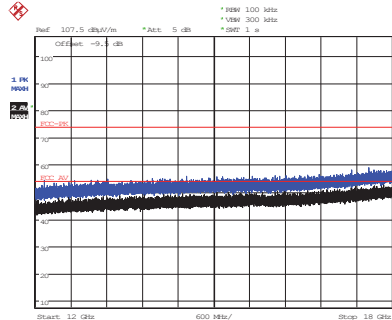
Date: 18.MAR.2017 11:50:33

7 – 12 GHz with HPF for above 7 GHz



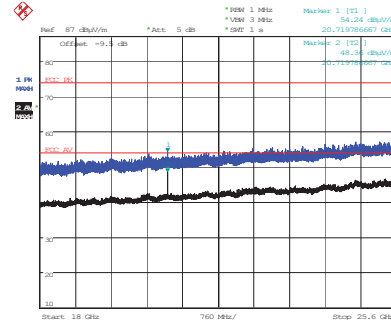
Date: 19.MAR.2017 11:26:04

12 – 18 GHz with HPF for above 7 GHz



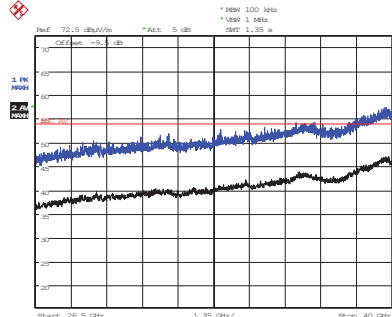
Date: 19.MAR.2017 12:42:34

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:39:57

26.5 – 40 GHz with HPF for above 7 GHz

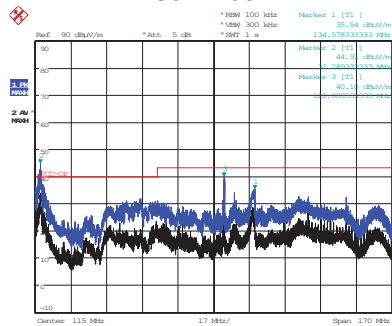


Date: 23.MAR.2017 12:39:21

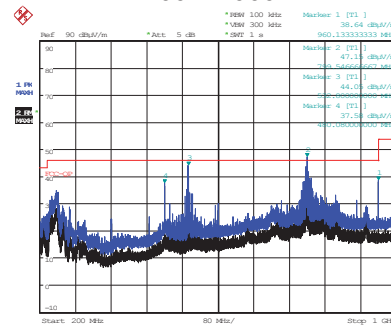
Note: HPF means High Pass Filter

EUT operating mode and data rate: Channel 36, 20 MHz Bandwidth, MCS8NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

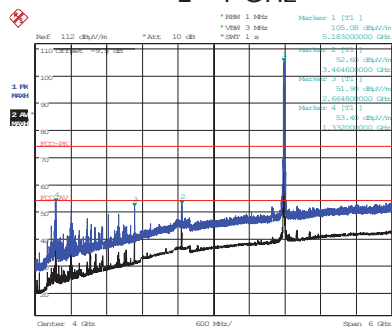
30 – 200 MHz



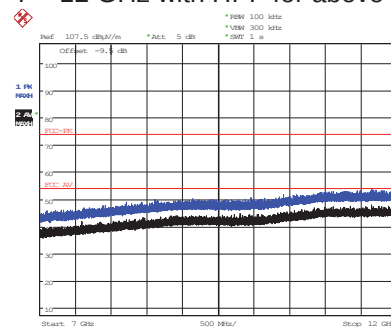
200 – 1000 MHz



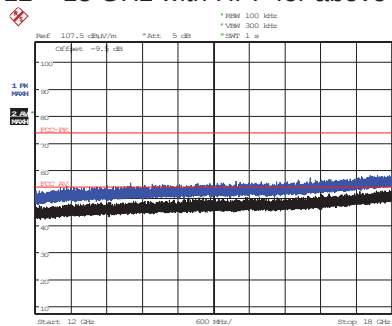
1 – 7 GHz



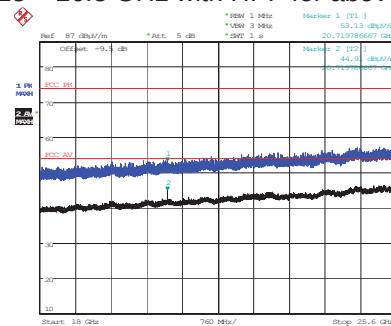
7 – 12 GHz with HPF for above 7 GHz



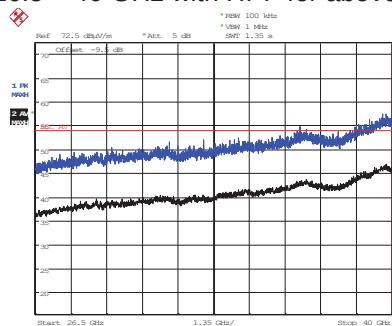
12 – 18 GHz with HPF for above 7 GHz



18 – 26.5 GHz with HPF for above 7 GHz



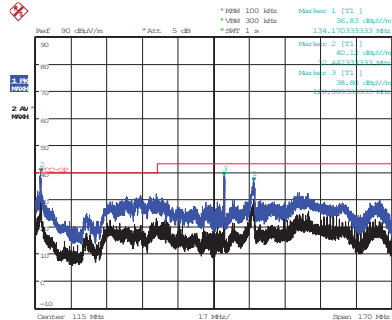
26.5 – 40 GHz with HPF for above 7 GHz



Note: HPF means High Pass Filter

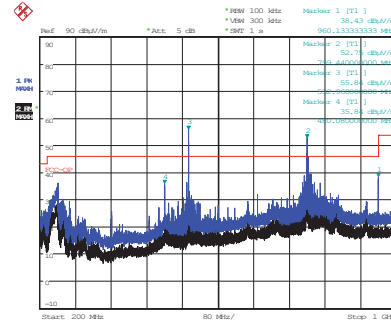
EUT operating mode and data rate: Channel 52, 20 MHz Bandwidth, MCS0NSS1 Data Rate, 62q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



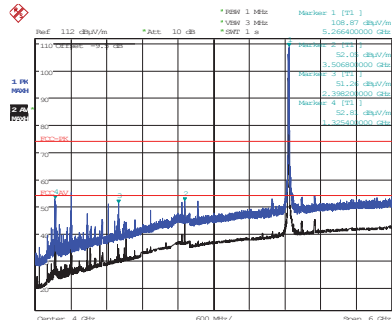
Date: 12.MAR.2017 15:07:49

200 – 1000 MHz



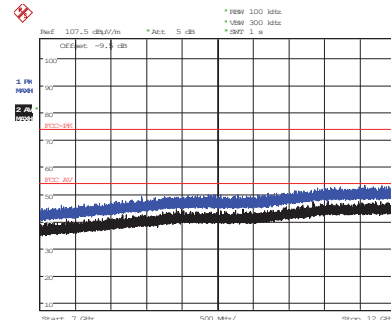
Date: 11.MAR.2017 12:38:25

1 – 7 GHz



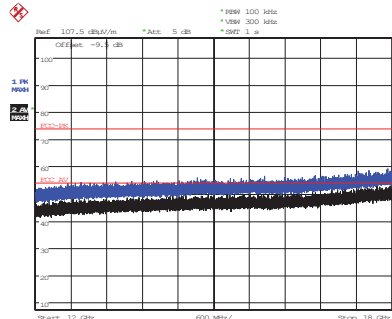
Date: 18.MAR.2017 11:59:00

7 – 12 GHz with HPF for above 7 GHz



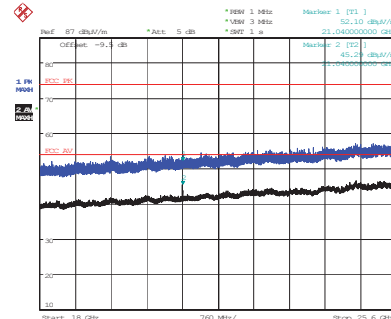
Date: 19.MAR.2017 11:30:39

12 – 18 GHz with HPF for above 7 GHz



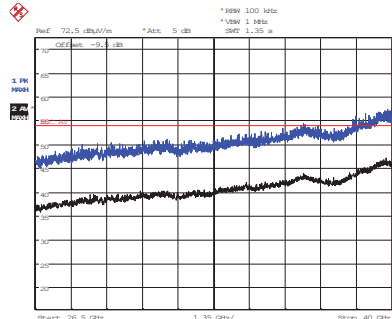
Date: 19.MAR.2017 12:39:23

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:45:39

26.5 – 40 GHz with HPF for above 7 GHz

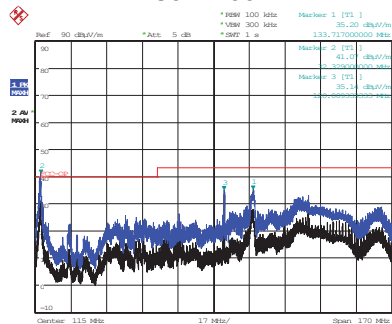


Date: 23.MAR.2017 12:44:50

Note: HPF means High Pass Filter

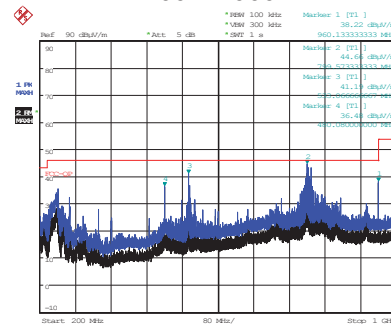
EUT operating mode and data rate: Channel 52, 20 MHz Bandwidth, MCS8NSS1 Data Rate, 52q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



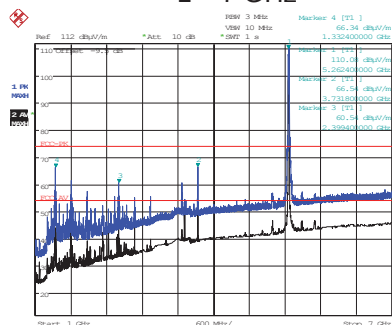
Date: 12.MAR.2017 15:12:34

200 – 1000 MHz



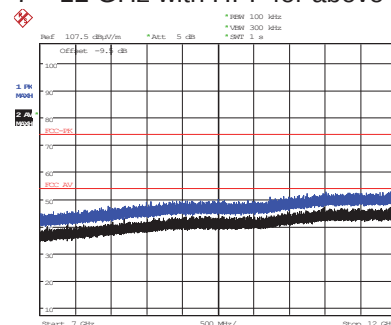
Date: 11.MAR.2017 12:42:55

1 – 7 GHz



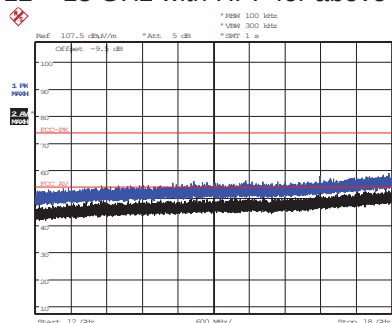
Date: 16.MAR.2017 15:00:35

7 – 12 GHz with HPF for above 7 GHz



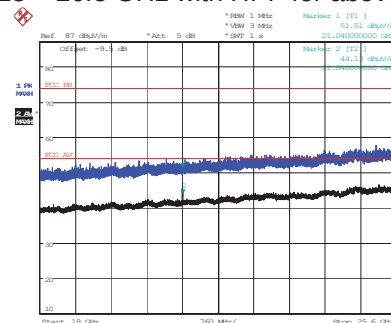
Date: 19.MAR.2017 11:32:40

12 – 18 GHz with HPF for above 7 GHz



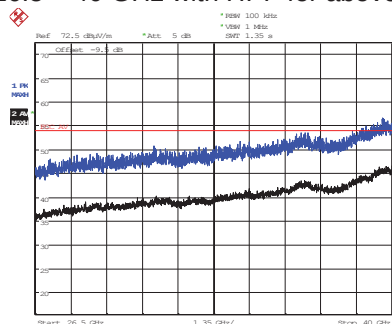
Date: 19.MAR.2017 12:37:58

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:47:37

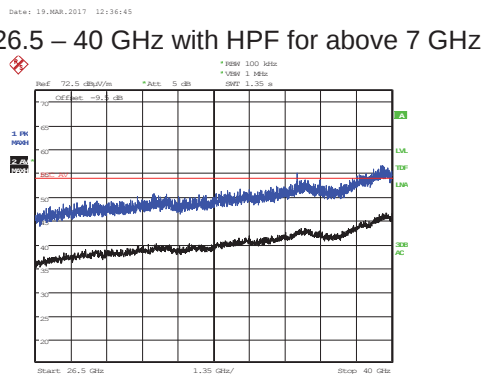
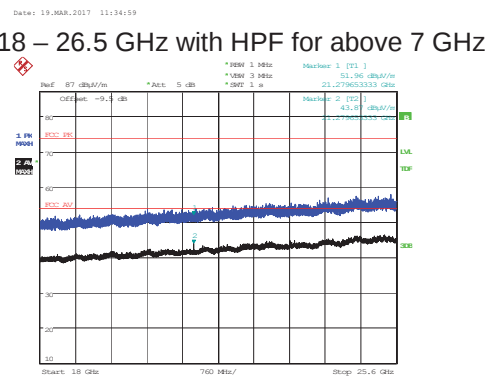
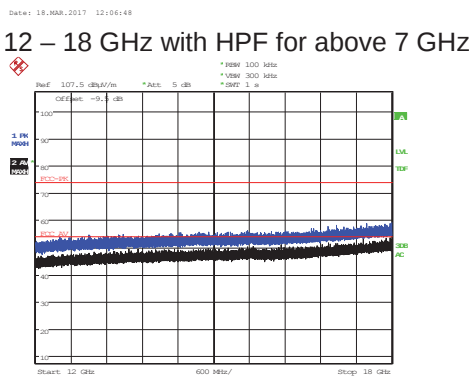
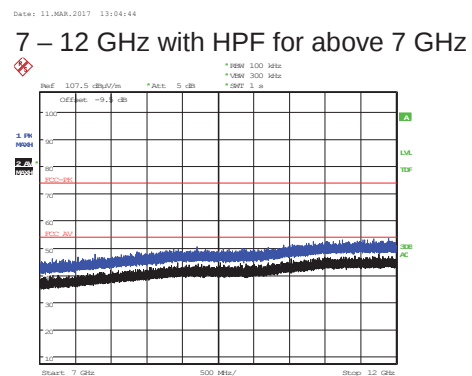
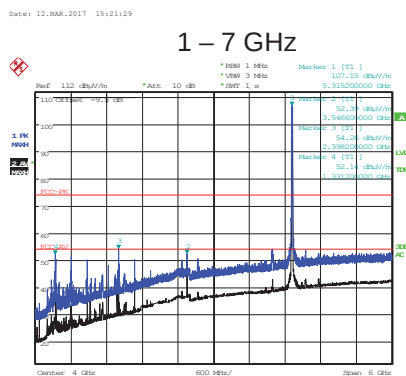
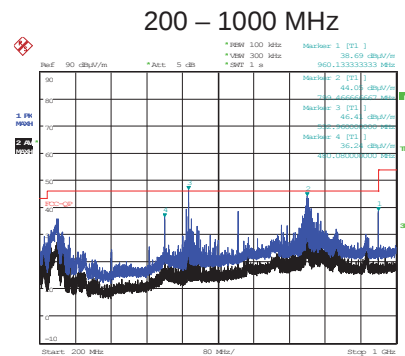
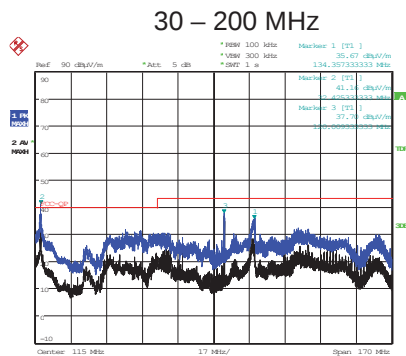
26.5 – 40 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 12:45:22

Note: HPF means High Pass Filter

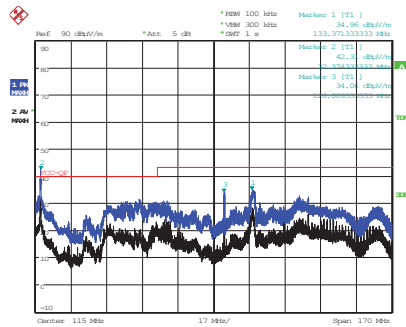
EUT operating mode and data rate: Channel 64, 20 MHz Bandwidth, MCS0NSS1 Data Rate, 56q dBm Power Setting and Cyclic Delay Diversity



Note: HPF means High Pass Filter

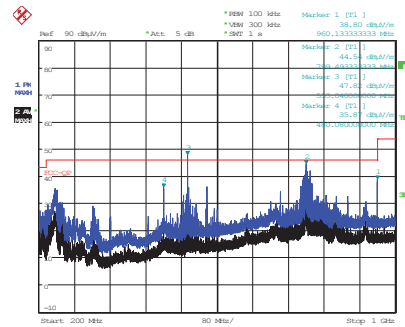
EUT operating mode and data rate: Channel 64, 20 MHz Bandwidth, MCS8NSS1 Data Rate, 52q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



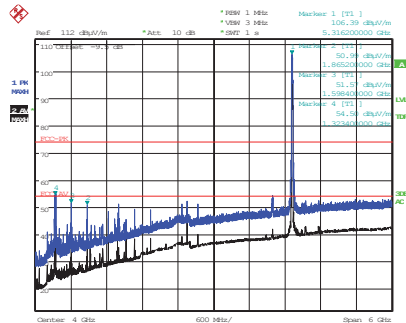
Date: 12.MAR.2017 15:28:41

200 – 1000 MHz



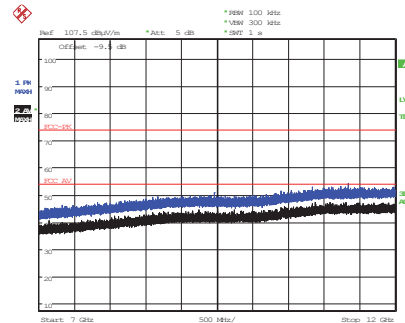
Date: 11.MAR.2017 12:54:51

1 – 7 GHz



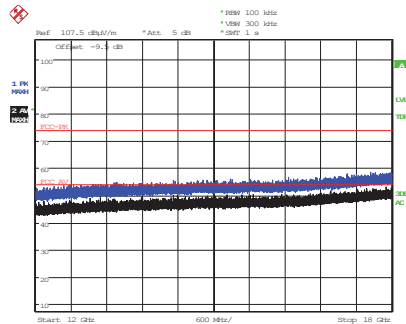
Date: 18.MAR.2017 12:10:38

7 – 12 GHz with HPF for above 7 GHz



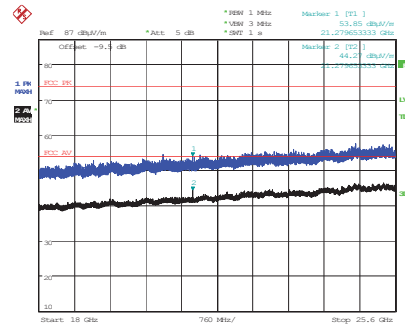
Date: 19.MAR.2017 11:39:23

12 – 18 GHz with HPF for above 7 GHz



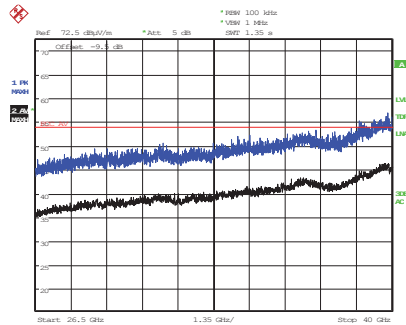
Date: 19.MAR.2017 12:34:24

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:52:31

26.5 – 40 GHz with HPF for above 7 GHz

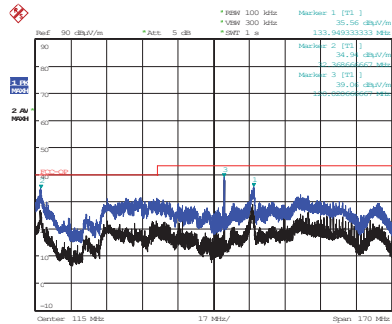


Date: 23.MAR.2017 12:46:03

Note: HPF means High Pass Filter

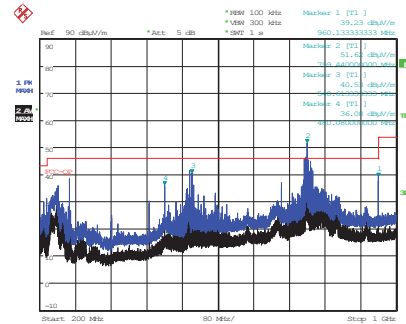
EUT operating mode and data rate: Channel 38, 40 MHz Bandwidth, MCS0NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



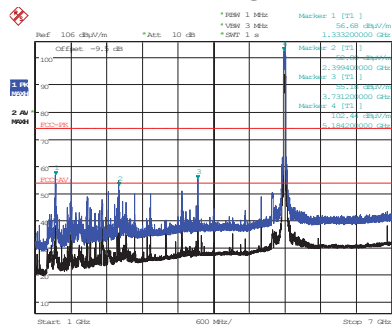
Date: 12.MAR.2017 10:51:55

200 – 1000 MHz



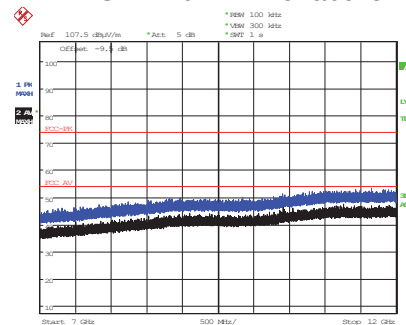
Date: 11.MAR.2017 14:41:16

1 – 7 GHz



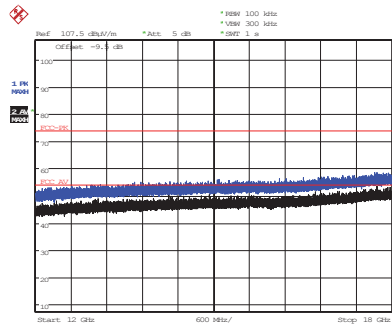
Date: 14.MAR.2017 15:36:37

7 – 12 GHz with HPF for above 7 GHz



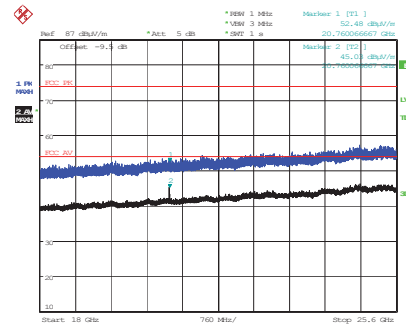
Date: 19.MAR.2017 09:54:53

12 – 18 GHz with HPF for above 7 GHz



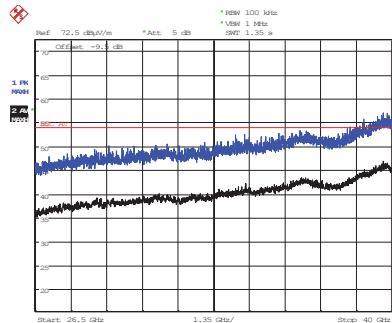
Date: 19.MAR.2017 12:49:38

18 – 26.5 GHz with HPF for above 7 GHz



Date: 22.MAR.2017 16:27:21

26.5 – 40 GHz with HPF for above 7 GHz

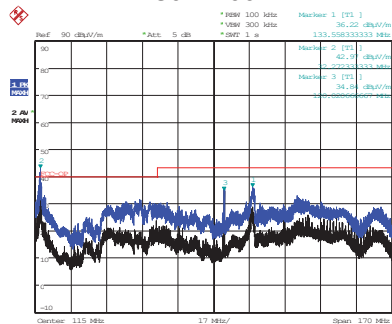


Date: 23.MAR.2017 12:34:35

Note: HPF means High Pass Filter

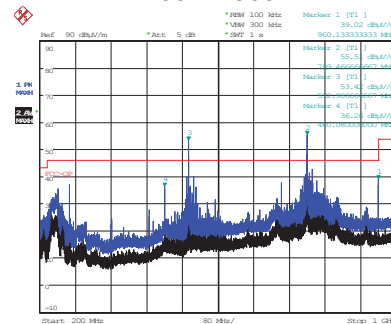
EUT operating mode and data rate: Channel 38, 40 MHz Bandwidth, MCS9NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



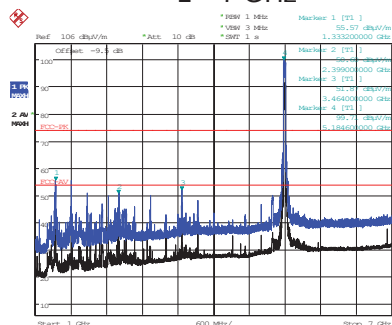
Date: 12.MAR.2017 12:55:40

200 – 1000 MHz



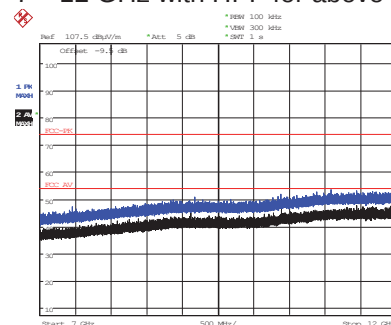
Date: 11.MAR.2017 14:46:43

1 – 7 GHz



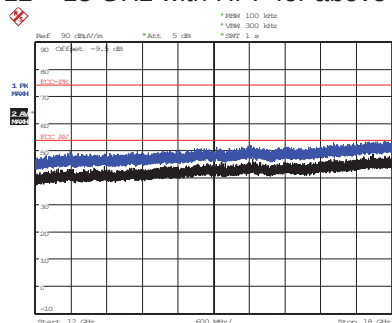
Date: 14.MAR.2017 15:39:53

7 – 12 GHz with HPF for above 7 GHz



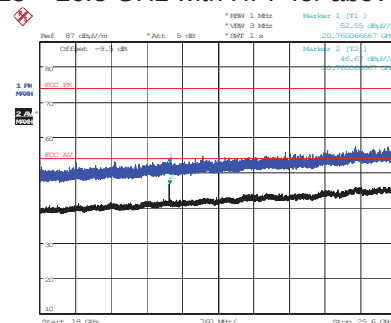
Date: 19.MAR.2017 09:58:10

12 – 18 GHz with HPF for above 7 GHz



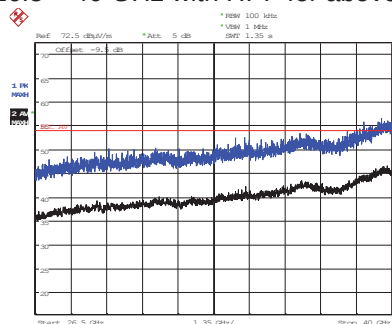
Date: 19.MAR.2017 12:56:01

18 – 26.5 GHz with HPF for above 7 GHz



Date: 22.MAR.2017 16:29:40

26.5 – 40 GHz with HPF for above 7 GHz

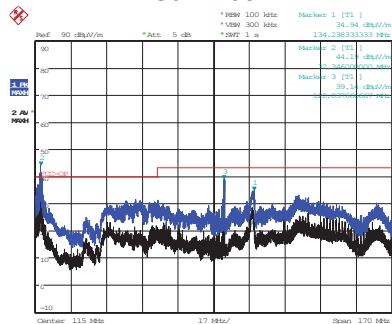


Date: 23.MAR.2017 12:34:21

Note: HPF means High Pass Filter

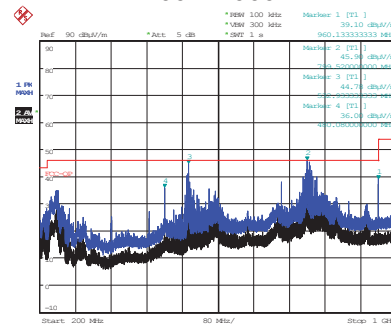
EUT operating mode and data rate: Channel 54, 40 MHz Bandwidth, MCS0NSS1 Data Rate, 62q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



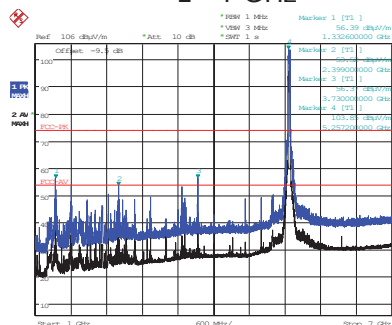
Date: 12.MAR.2017 13:00:22

200 – 1000 MHz



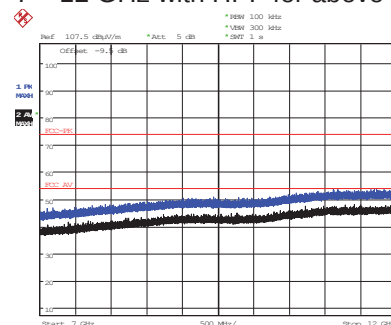
Date: 11.MAR.2017 14:53:07

1 – 7 GHz



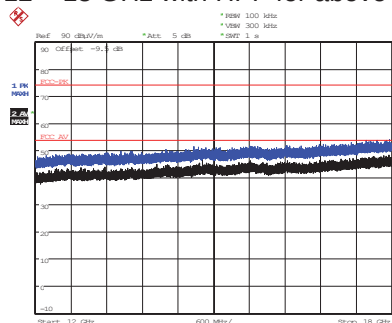
Date: 14.MAR.2017 15:46:30

7 – 12 GHz with HPF for above 7 GHz



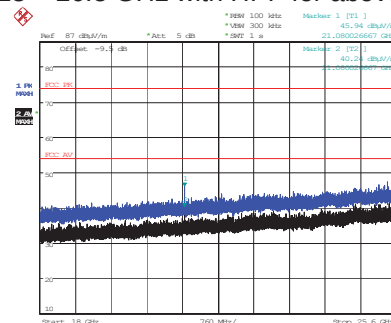
Date: 19.MAR.2017 11:12:35

12 – 18 GHz with HPF for above 7 GHz



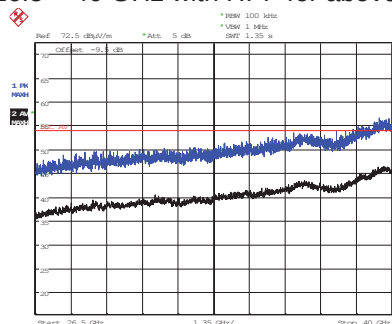
Date: 19.MAR.2017 12:59:30

18 – 26.5 GHz with HPF for above 7 GHz



Date: 22.MAR.2017 16:21:11

26.5 – 40 GHz with HPF for above 7 GHz

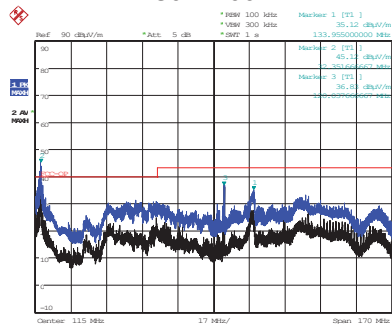


Date: 23.MAR.2017 12:17:31

Note: HPF means High Pass Filter

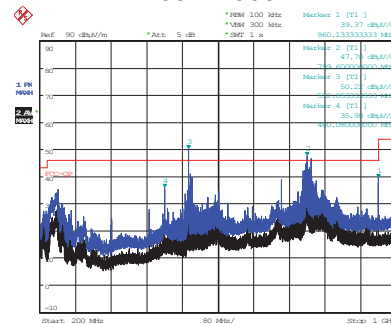
EUT operating mode and data rate: Channel 54, 40 MHz Bandwidth, MCS9NSS1 Data Rate, 52q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



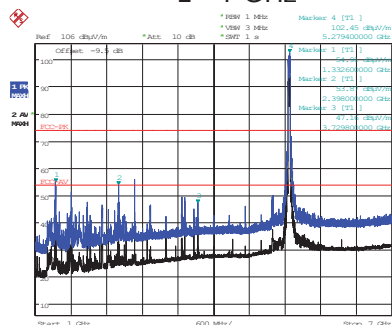
Date: 12.MAR.2017 13:10:02

200 – 1000 MHz



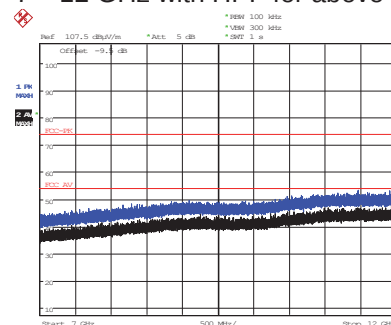
Date: 11.MAR.2017 14:56:07

1 – 7 GHz



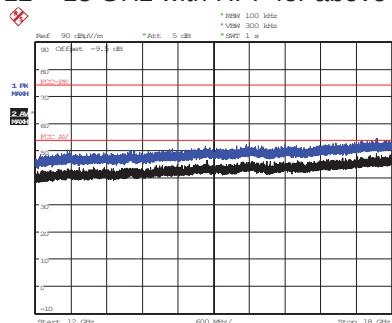
Date: 14.MAR.2017 15:49:39

7 – 12 GHz with HPF for above 7 GHz



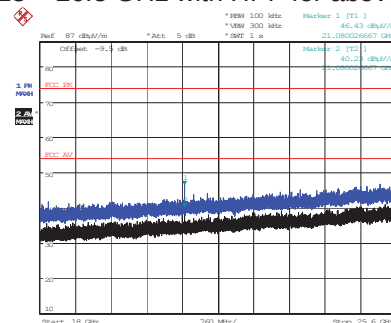
Date: 19.MAR.2017 11:14:43

12 – 18 GHz with HPF for above 7 GHz



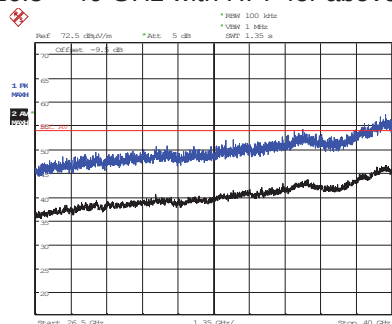
Date: 19.MAR.2017 13:03:53

18 – 26.5 GHz with HPF for above 7 GHz



Date: 22.MAR.2017 16:17:27

26.5 – 40 GHz with HPF for above 7 GHz

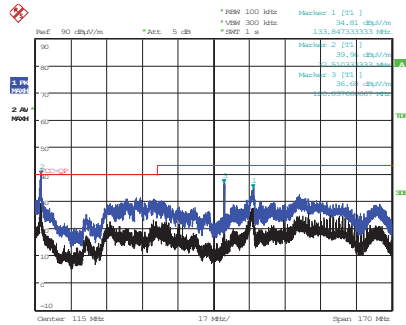


Date: 23.MAR.2017 12:16:42

Note: HPF means High Pass Filter

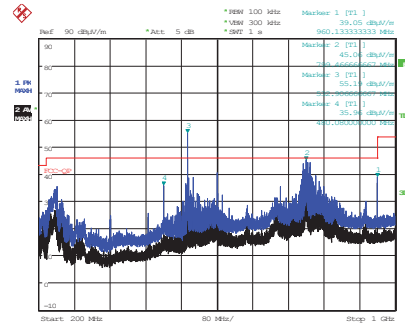
EUT operating mode and data rate: Channel 62, 40 MHz Bandwidth, MCS0NSS1 Data Rate, 52q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



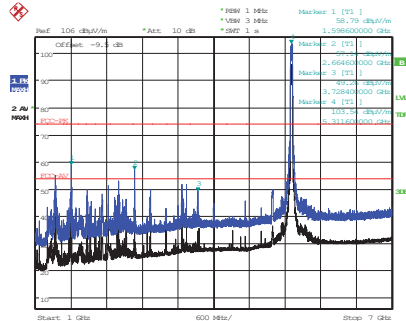
Date: 12.MAR.2017 13:15:31

200 – 1000 MHz



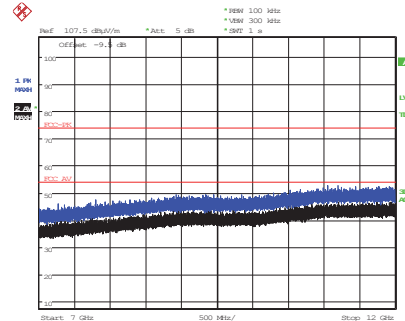
Date: 11.MAR.2017 14:59:38

1 – 7 GHz



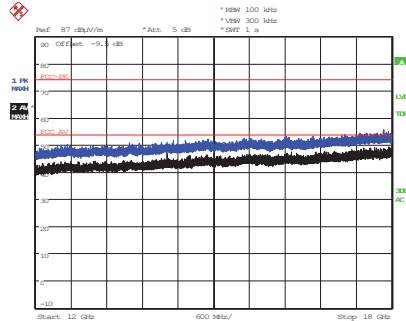
Date: 14.MAR.2017 16:04:03

7 – 12 GHz with HPF for above 7 GHz



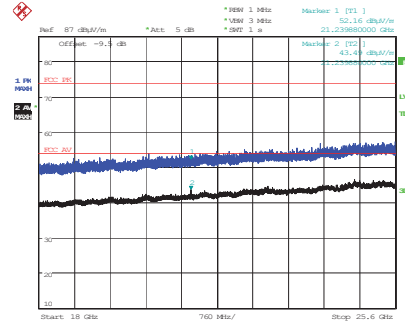
Date: 19.MAR.2017 11:15:11

12 – 18 GHz with HPF for above 7 GHz



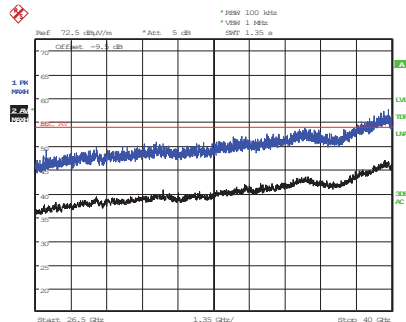
Date: 19.MAR.2017 13:10:09

18 – 26.5 GHz with HPF for above 7 GHz



Date: 22.MAR.2017 16:35:21

26.5 – 40 GHz with HPF for above 7 GHz

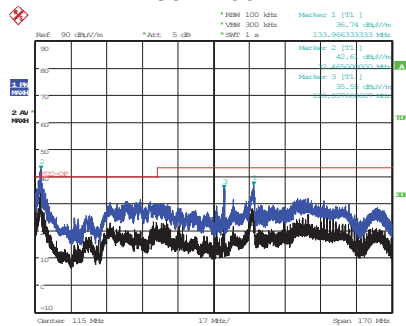


Date: 23.MAR.2017 12:19:02

Note: HPF means High Pass Filter

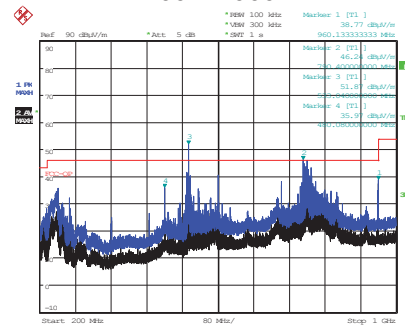
EUT operating mode and data rate: Channel 62, 40 MHz Bandwidth, MCS9NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



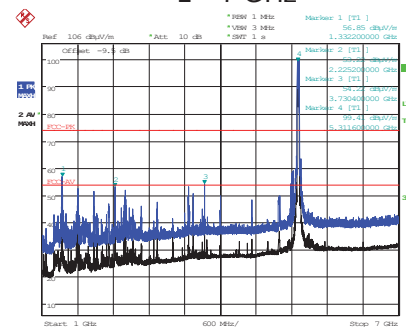
Date: 12.MAR.2017 13:20:20

200 – 1000 MHz



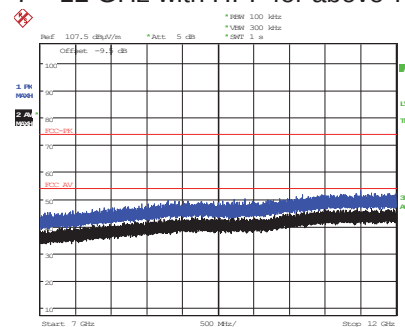
Date: 11.MAR.2017 15:03:22

1 – 7 GHz



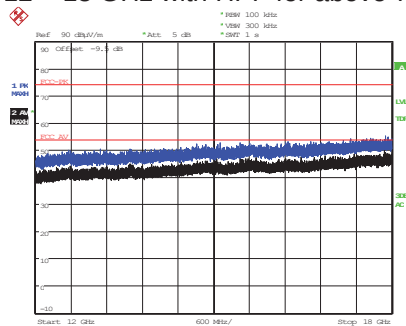
Date: 14.MAR.2017 16:07:07

7 – 12 GHz with HPF for above 7 GHz



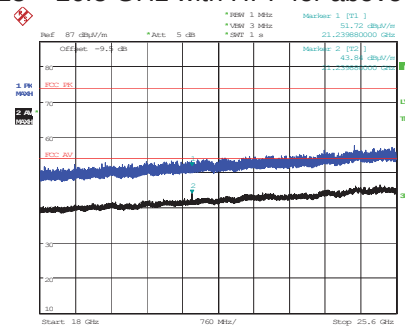
Date: 19.MAR.2017 11:15:44

12 – 18 GHz with HPF for above 7 GHz



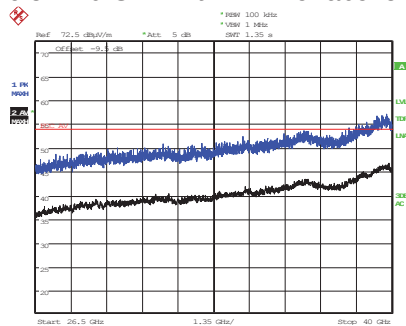
Date: 19.MAR.2017 13:11:41

18 – 26.5 GHz with HPF for above 7 GHz



Date: 22.MAR.2017 16:37:33

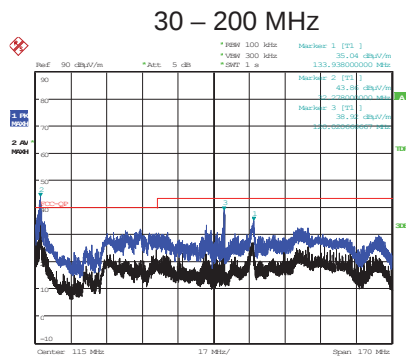
26.5 – 40 GHz with HPF for above 7 GHz



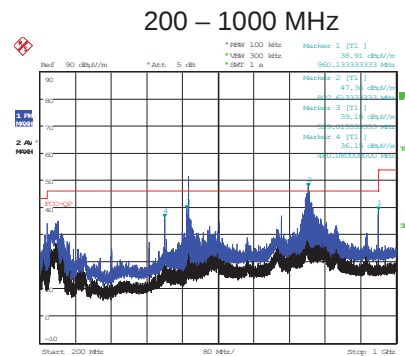
Date: 23.MAR.2017 12:20:02

Note: HPF means High Pass Filter

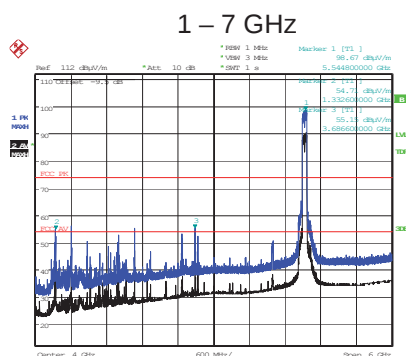
EUT operating mode and data rate: Channel 42, 80 MHz Bandwidth, MCS0NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity



Date: 12.MAR.2017 11:49:07

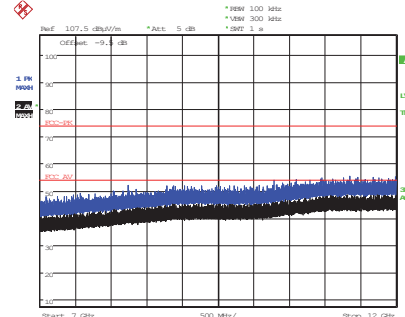


Date: 11.MAR.2017 16:19:51



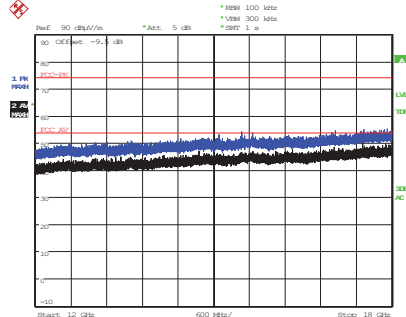
Date: 22.MAR.2017 10:04:56

7 – 12 GHz with HPF for above 7 GHz



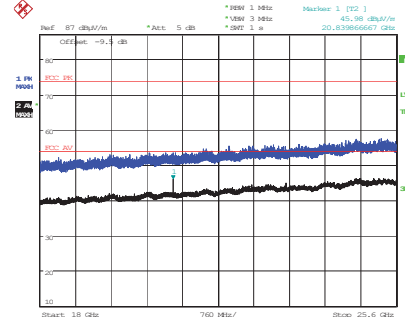
Date: 19.MAR.2017 09:06:54

12 – 18 GHz with HPF for above 7 GHz



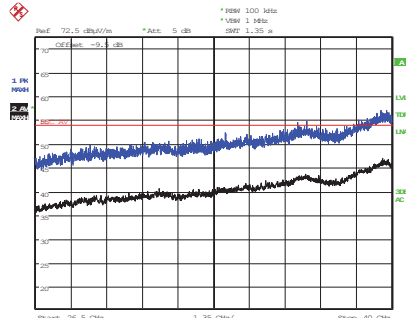
Date: 19.MAR.2017 13:37:52

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 08:29:38

26.5 – 40 GHz with HPF for above 7 GHz

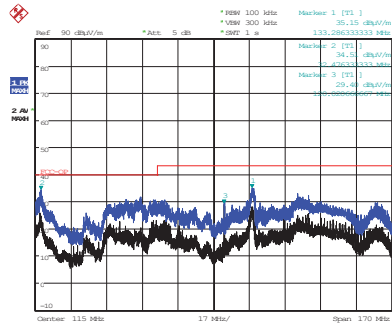


Date: 23.MAR.2017 12:01:11

Note: HPF means High Pass Filter

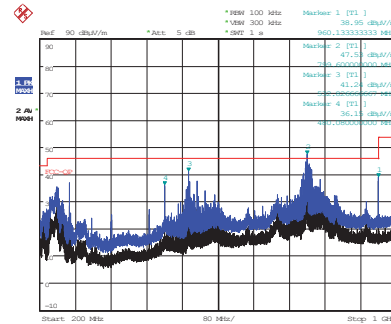
EUT operating mode and data rate: Channel 42, 80 MHz Bandwidth, MCS9NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



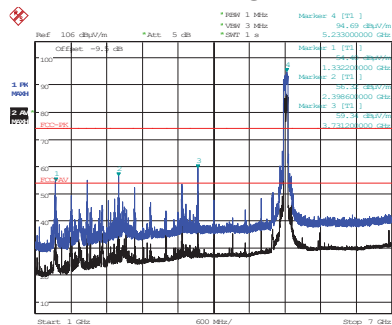
Date: 12.MAR.2017 11:53:34

200 – 1000 MHz



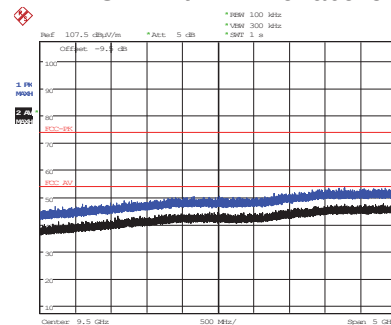
Date: 11.MAR.2017 16:25:24

1 – 7 GHz



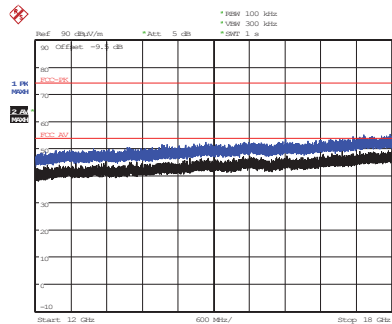
Date: 14.MAR.2017 13:37:02

7 – 12 GHz with HPF for above 7 GHz



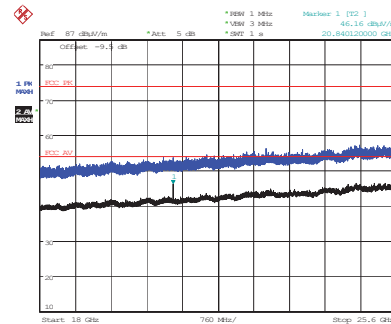
Date: 19.MAR.2017 09:18:58

12 – 18 GHz with HPF for above 7 GHz



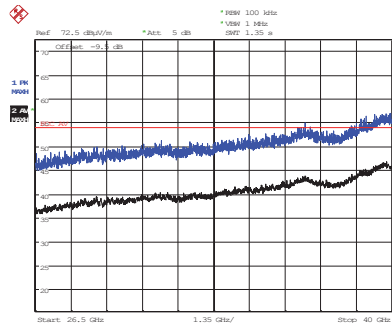
Date: 19.MAR.2017 13:39:54

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 08:32:47

26.5 – 40 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 12:03:34

Note: HPF means High Pass Filter

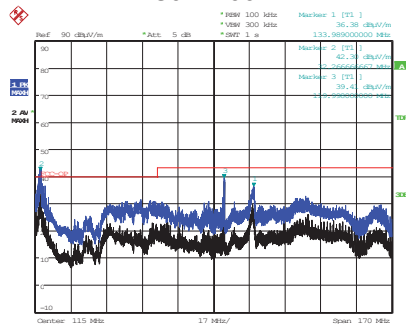
The figure displays eight spectral plots arranged in a 4x2 grid, showing noise floor and signal levels across different frequency ranges. Each plot includes technical parameters such as Res BW, Span, and various markers.

- Top Left (30 – 200 MHz):** Shows a noise floor around -100 dBm/Hz. Key parameters: Res BW 100 kHz, Span 170 MHz, Center 115 MHz. Markers include 35.06 dBm/Hz, 38.06 dBm/Hz, and 43.02 dBm/Hz.
- Top Right (200 – 1000 MHz):** Shows a noise floor around -100 dBm/Hz. Key parameters: Res BW 100 kHz, Span 80 MHz, Center 200 MHz. Markers include 39.05 dBm/Hz, 44.05 dBm/Hz, 45.36 dBm/Hz, and 46.05 dBm/Hz.
- Middle Left (1 – 7 GHz):** Shows a noise floor around -100 dBm/Hz. Key parameters: Res BW 100 kHz, Span 7 GHz, Center 600 MHz. Markers include 2.388600000 GHz, 3.465600000 GHz, and 5.126600000 GHz.
- Middle Right (7 – 12 GHz with HPF for above 7 GHz):** Shows a noise floor around -100 dBm/Hz. Key parameters: Res BW 100 kHz, Span 5 GHz, Center 9.5 GHz. Markers include 107.5 dBm/Hz, 107.5 dBm/Hz, and 107.5 dBm/Hz.
- Bottom Left (12 – 18 GHz with HPF for above 7 GHz):** Shows a noise floor around -100 dBm/Hz. Key parameters: Res BW 100 kHz, Span 6 GHz, Center 12 GHz. Markers include 107.5 dBm/Hz, 107.5 dBm/Hz, and 107.5 dBm/Hz.
- Bottom Right (18 – 26.5 GHz with HPF for above 7 GHz):** Shows a noise floor around -100 dBm/Hz. Key parameters: Res BW 100 kHz, Span 8 GHz, Center 18 GHz. Markers include 107.5 dBm/Hz, 107.5 dBm/Hz, and 107.5 dBm/Hz.

Note: HPF means High Pass Filter

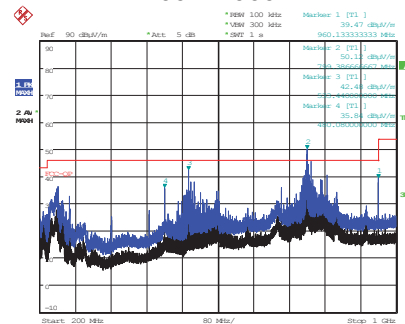
EUT operating mode and data rate: Channel 58, 80 MHz Bandwidth, MCS9NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



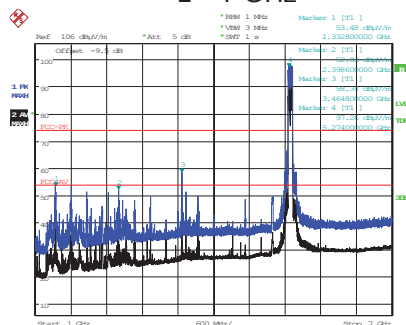
Date: 12.MAR.2017 12:10:06

200 – 1000 MHz



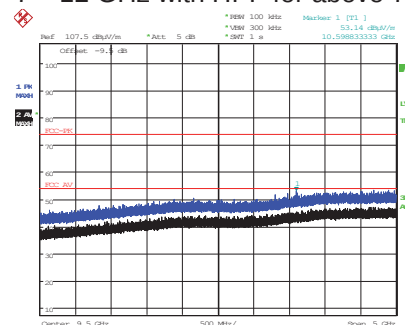
Date: 11.MAR.2017 16:30:23

1 – 7 GHz



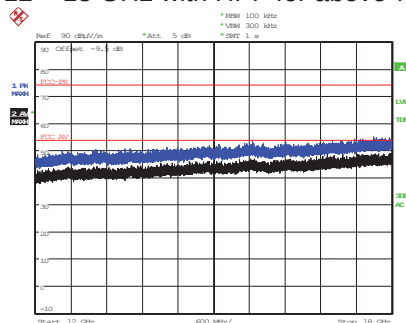
Date: 14.MAR.2017 14:23:16

7 – 12 GHz with HPF for above 7 GHz



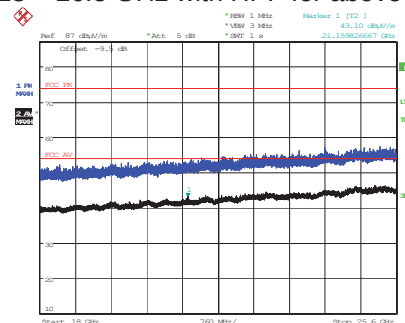
Date: 19.MAR.2017 09:25:10

12 – 18 GHz with HPF for above 7 GHz



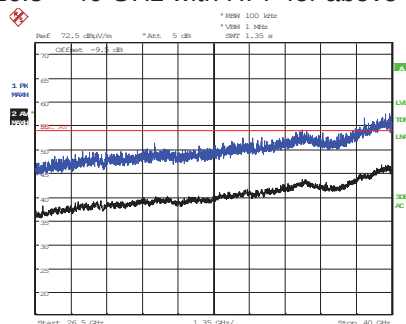
Date: 19.MAR.2017 13:44:32

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 08:38:07

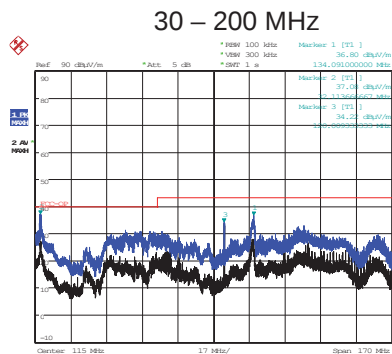
26.5 – 40 GHz with HPF for above 7 GHz



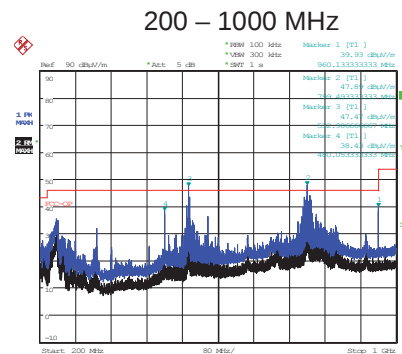
Date: 23.MAR.2017 11:55:59

Note: HPF means High Pass Filter

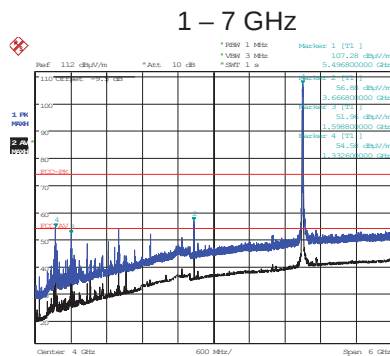
EUT operating mode and data rate: Channel 100, 20 MHz Bandwidth, MCS0NSS1 Data Rate, 60q dBm Power Setting and Cyclic Delay Diversity



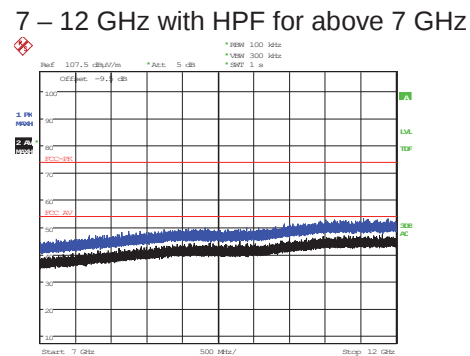
Date: 12.MAR.2017 15:33:53



Date: 11.MAR.2017 11:57:14

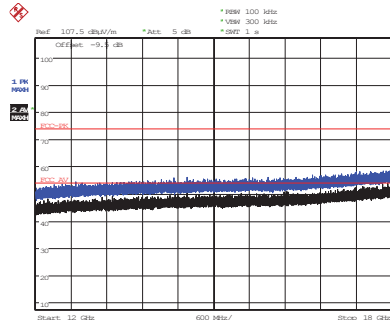


Date: 18.MAR.2017 12:14:14



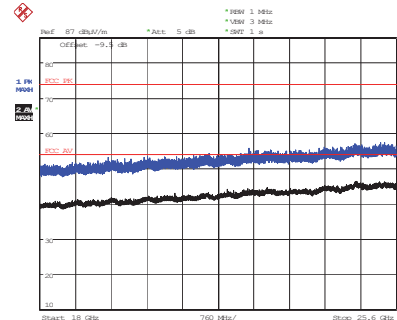
Date: 19.MAR.2017 11:41:48

12 – 18 GHz with HPF for above 7 GHz



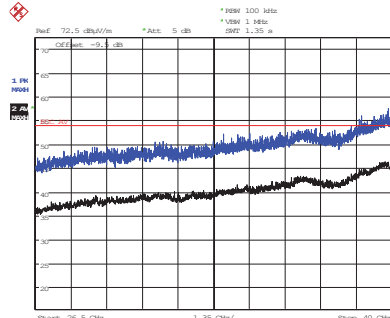
Date: 19.MAR.2017 12:32:23

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:55:37

26.5 – 40 GHz with HPF for above 7 GHz

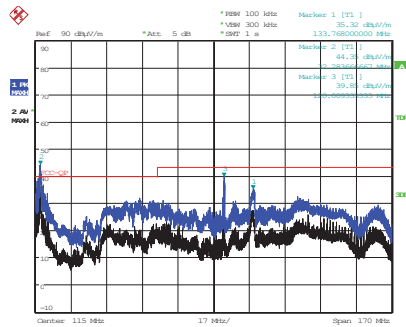


Date: 22 MAR 2017 12:46:16

Note: HPF means High Pass Filter

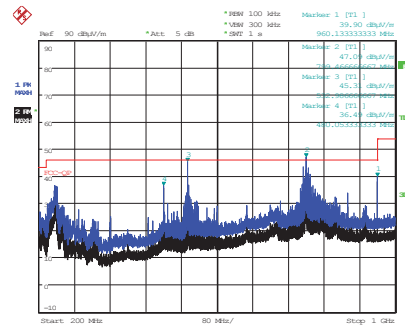
EUT operating mode and data rate: Channel 100, 20 MHz Bandwidth, MCS8NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



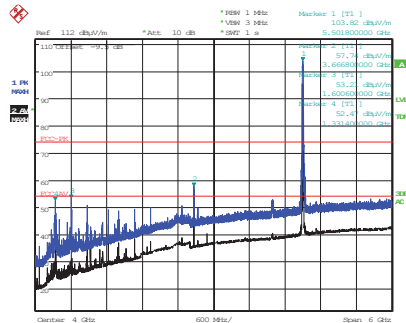
Date: 12.MAR.2017 15:38:49

200 – 1000 MHz



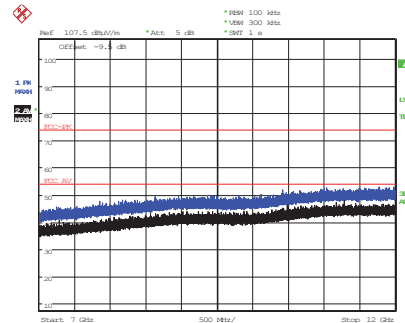
Date: 11.MAR.2017 12:06:03

1 – 7 GHz



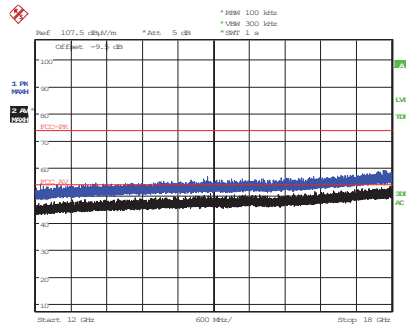
Date: 18.MAR.2017 12:16:55

7 – 12 GHz with HPF for above 7 GHz



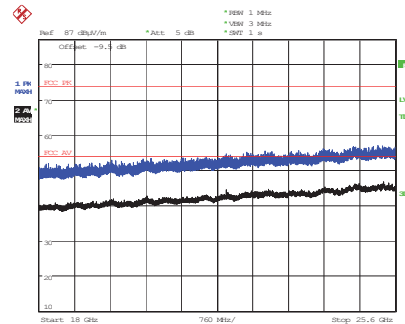
Date: 19.MAR.2017 11:43:49

12 – 18 GHz with HPF for above 7 GHz



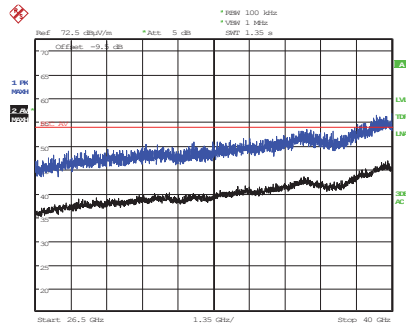
Date: 19.MAR.2017 12:30:33

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 07:29:07

26.5 – 40 GHz with HPF for above 7 GHz

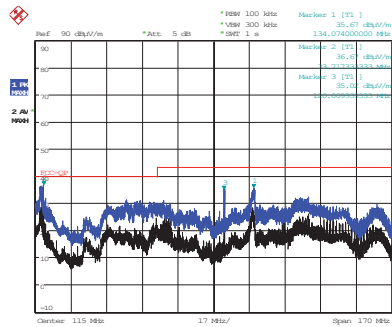


Date: 23.MAR.2017 12:46:43

Note: HPF means High Pass Filter

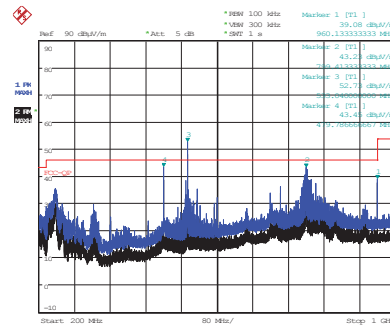
EUT operating mode and data rate: Channel 140, 20 MHz Bandwidth, MCS0NSS1 Data Rate, 62q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



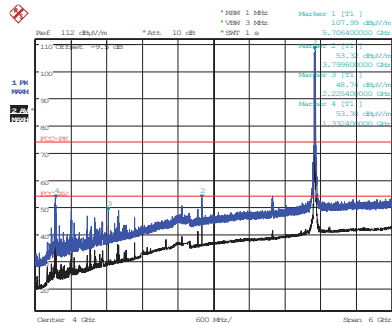
Date: 12.MAR.2017 15:45:33

200 – 1000 MHz



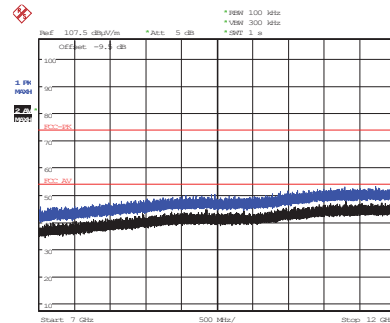
Date: 11.MAR.2017 12:13:20

1 – 7 GHz



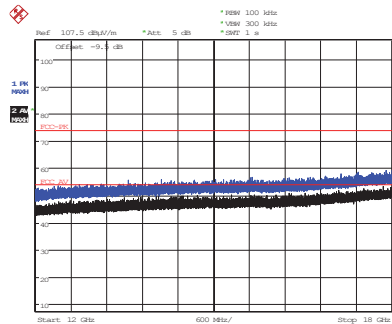
Date: 18.MAR.2017 12:20:12

7 – 12 GHz with HPF for above 7 GHz



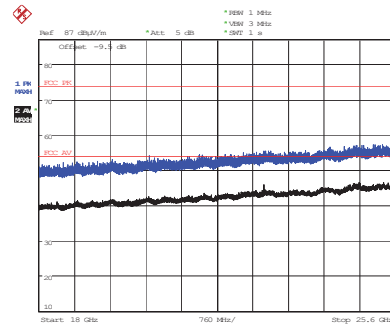
Date: 19.MAR.2017 11:45:53

12 – 18 GHz with HPF for above 7 GHz



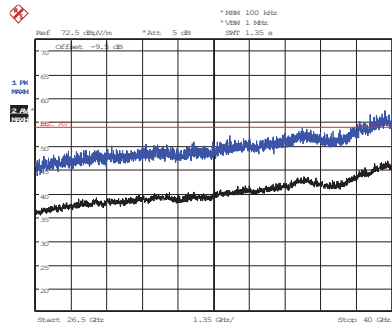
Date: 19.MAR.2017 12:28:23

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 07:04:13

26.5 – 40 GHz with HPF for above 7 GHz

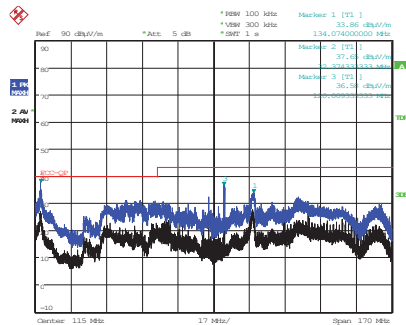


Date: 23.MAR.2017 12:47:08

Note: HPF means High Pass Filter

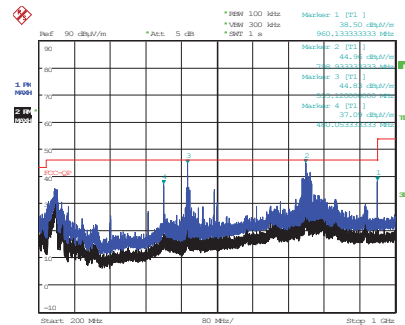
EUT operating mode and data rate: Channel 140, 20 MHz Bandwidth, MCS8NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



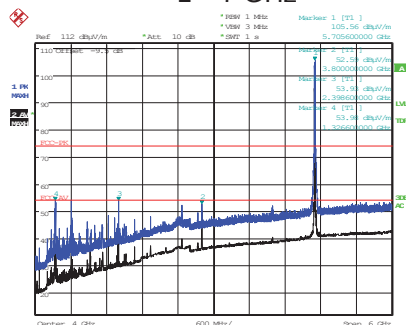
Date: 12.MAR.2017 15:49:20

200 – 1000 MHz



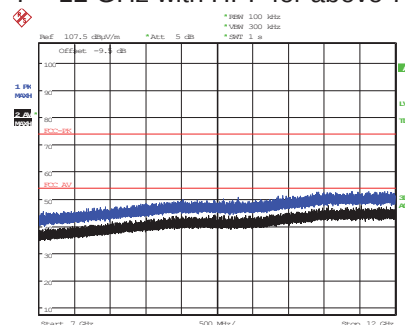
Date: 11.MAR.2017 12:09:35

1 – 7 GHz



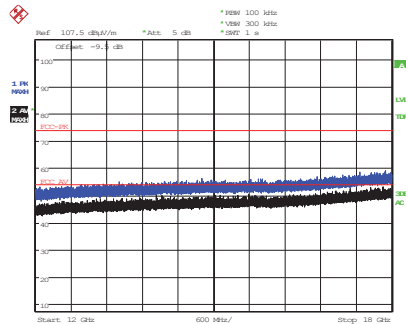
Date: 18.MAR.2017 12:25:08

7 – 12 GHz with HPF for above 7 GHz



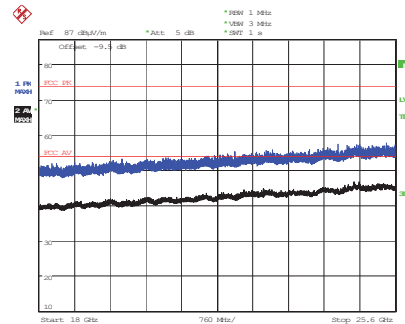
Date: 19.MAR.2017 11:48:22

12 – 18 GHz with HPF for above 7 GHz



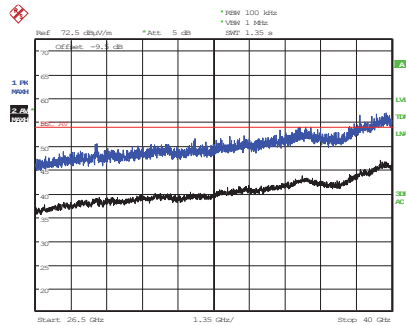
Date: 19.MAR.2017 12:26:24

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 07:09:00

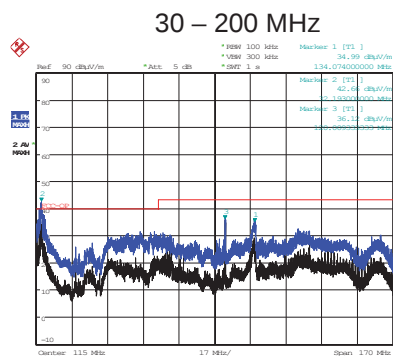
26.5 – 40 GHz with HPF for above 7 GHz



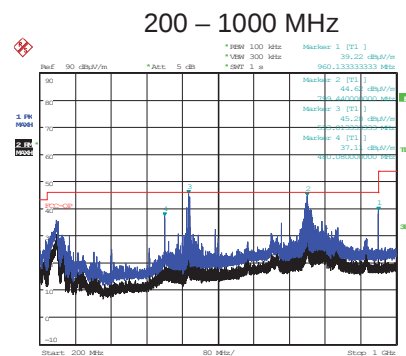
Date: 23.MAR.2017 12:48:34

Note: HPF means High Pass Filter

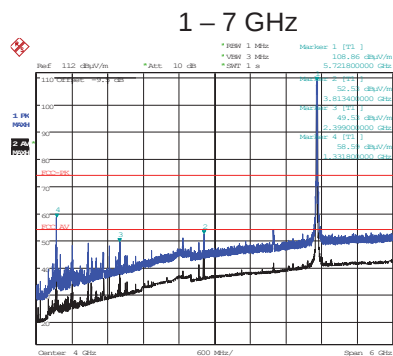
EUT operating mode and data rate: Channel 144, 20 MHz Bandwidth, MCS0NSS1 Data Rate, 62q dBm Power Setting and Cyclic Delay Diversity



Date: 12.MAR.2017 15:53:41

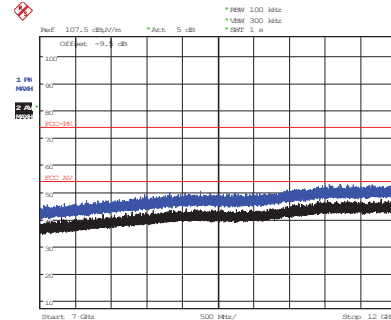


Date: 11.MAR.2017 12:20:40



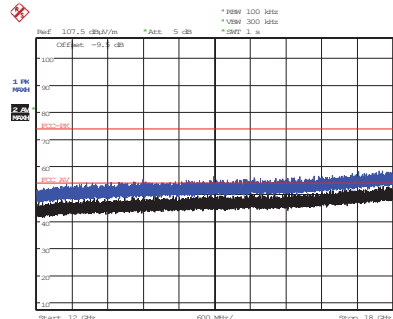
Date: 18.MAR.2017 12:27:55

7 – 12 GHz with HPF for above 7 GHz



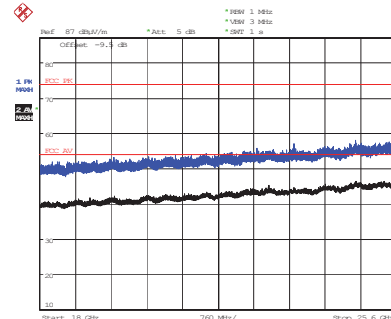
Date: 19.MAR.2017 11:50:39

12 – 18 GHz with HPF for above 7 GHz



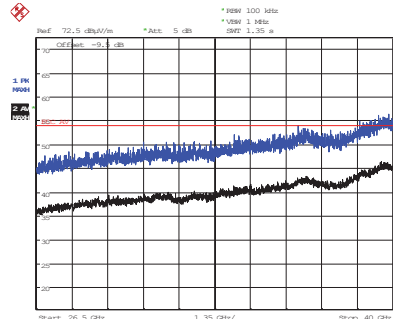
Date: 19.MAR.2017 12:24:02

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 07:14:07

26.5 – 40 GHz with HPF for above 7 GHz

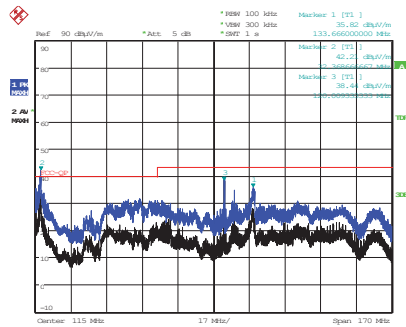


Date: 23.MAR.2017 12:53:03

Note: HPF means High Pass Filter

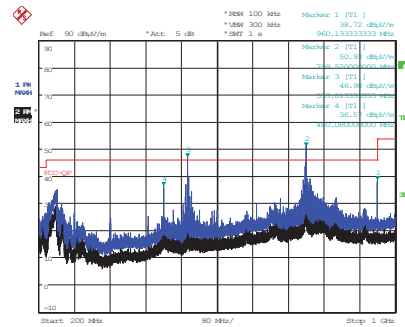
EUT operating mode and data rate: Channel 144, 20 MHz Bandwidth, MCS8NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



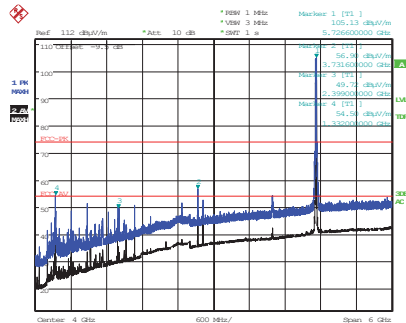
Date: 12.MAR.2017 15:57:21

200 – 1000 MHz



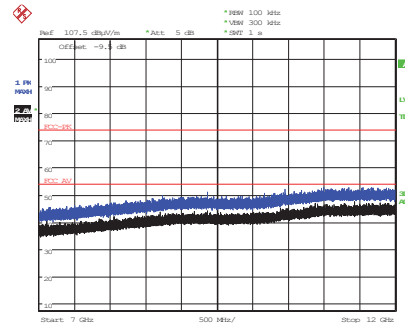
Date: 11.MAR.2017 12:24:25

1 – 7 GHz



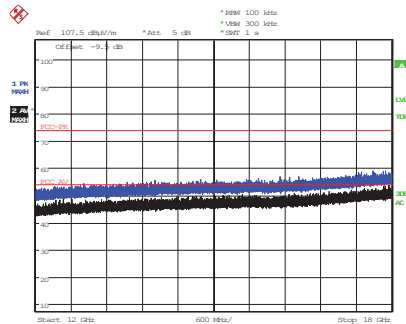
Date: 18.MAR.2017 12:30:38

7 – 12 GHz with HPF for above 7 GHz



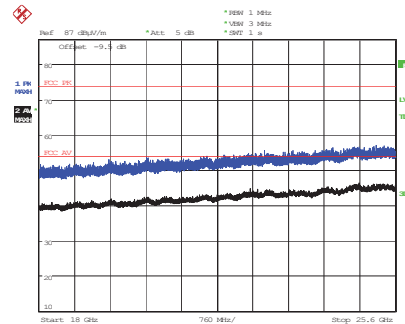
Date: 19.MAR.2017 11:52:39

12 – 18 GHz with HPF for above 7 GHz



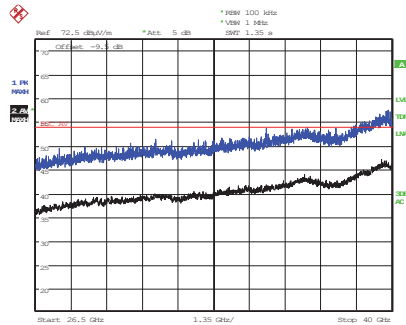
Date: 19.MAR.2017 12:23:10

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 07:16:41

26.5 – 40 GHz with HPF for above 7 GHz

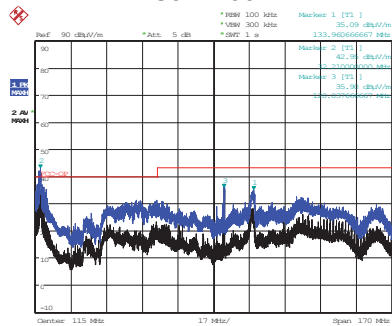


Date: 23.MAR.2017 12:52:43

Note: HPF means High Pass Filter

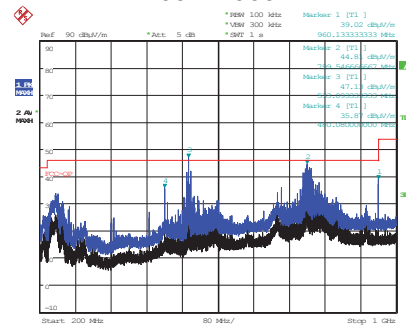
EUT operating mode and data rate: Channel 102, 40 MHz Bandwidth, MCS0NSS1 Data Rate, 46q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



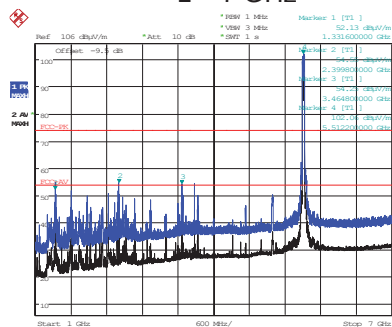
Date: 12.MAR.2017 13:24:53

200 – 1000 MHz



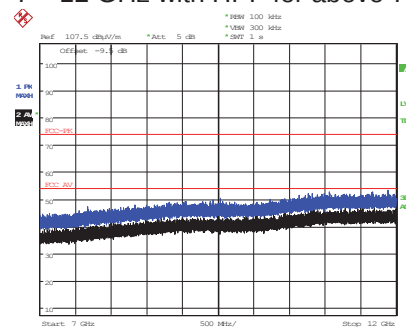
Date: 11.MAR.2017 15:14:34

1 – 7 GHz



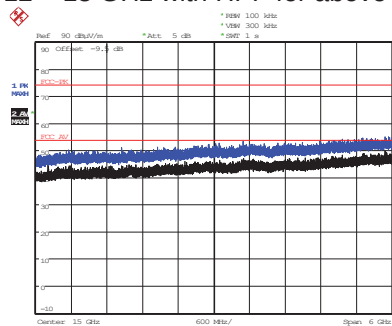
Date: 14.MAR.2017 16:10:22

7 – 12 GHz with HPF for above 7 GHz



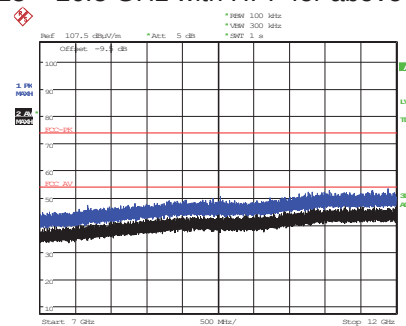
Date: 19.MAR.2017 11:16:18

12 – 18 GHz with HPF for above 7 GHz



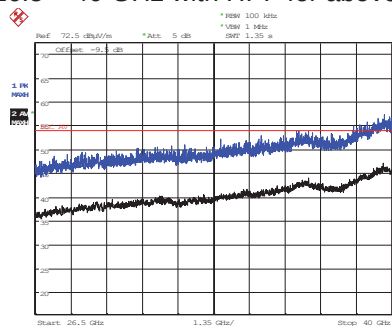
Date: 19.MAR.2017 13:14:28

18 – 26.5 GHz with HPF for above 7 GHz



Date: 19.MAR.2017 11:16:18

26.5 – 40 GHz with HPF for above 7 GHz

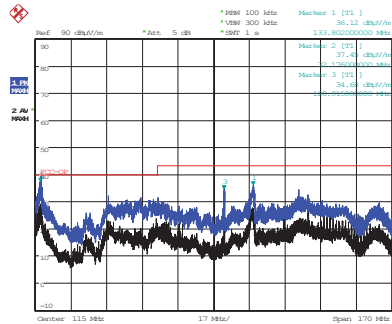


Date: 23.MAR.2017 12:21:11

Note: HPF means High Pass Filter

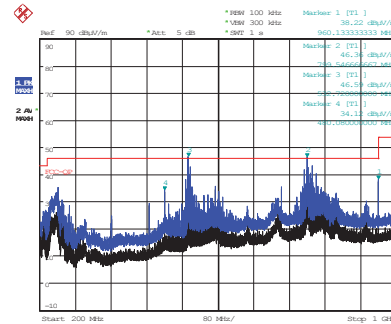
EUT operating mode and data rate: Channel 102, 40 MHz Bandwidth, MCS9NSS1 Data Rate, 40q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



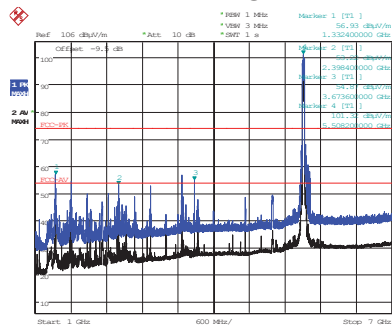
Date: 12.MAR.2017 13:29:03

200 – 1000 MHz



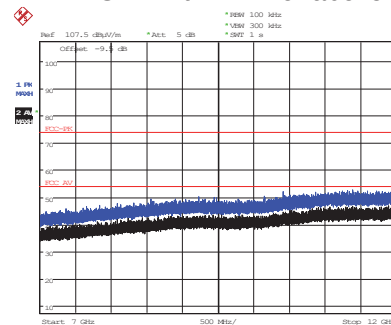
Date: 11.MAR.2017 15:20:23

1 – 7 GHz



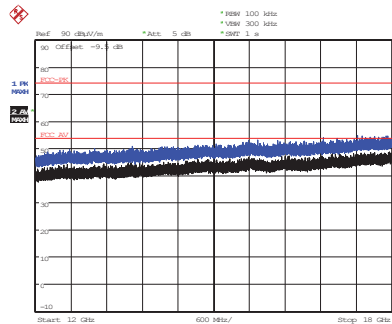
Date: 14.MAR.2017 16:14:33

7 – 12 GHz with HPF for above 7 GHz



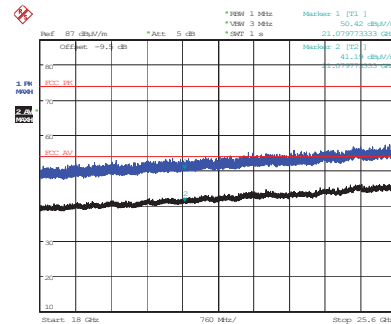
Date: 19.MAR.2017 11:17:00

12 – 18 GHz with HPF for above 7 GHz



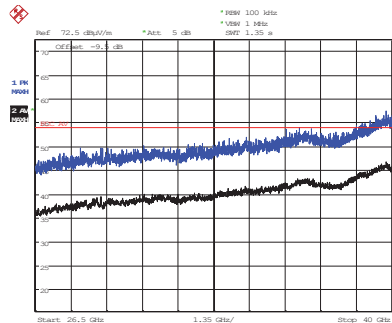
Date: 19.MAR.2017 13:15:24

18 – 26.5 GHz with HPF for above 7 GHz



Date: 22.MAR.2017 16:53:02

26.5 – 40 GHz with HPF for above 7 GHz

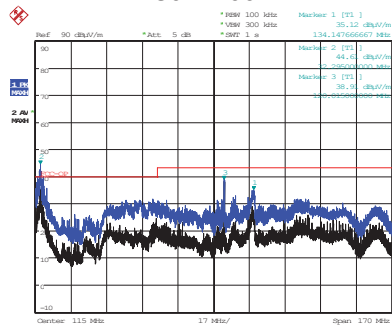


Date: 23.MAR.2017 12:21:54

Note: HPF means High Pass Filter

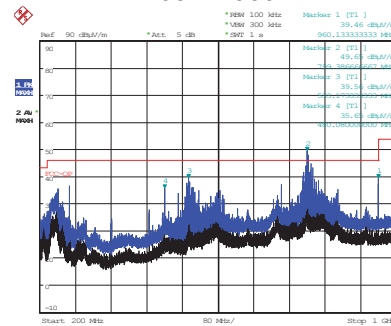
EUT operating mode and data rate: Channel 134, 40 MHz Bandwidth, MCS0NSS1 Data Rate, 62q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



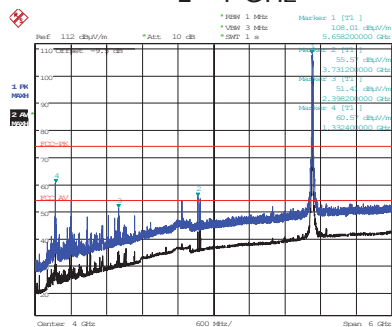
Date: 12.MAR.2017 14:20:25

200 – 1000 MHz



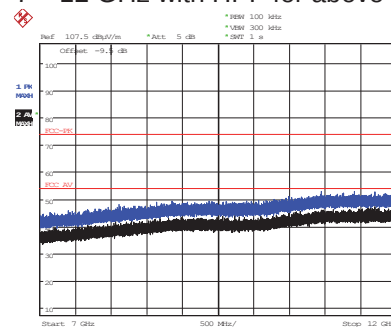
Date: 11.MAR.2017 15:26:06

1 – 7 GHz



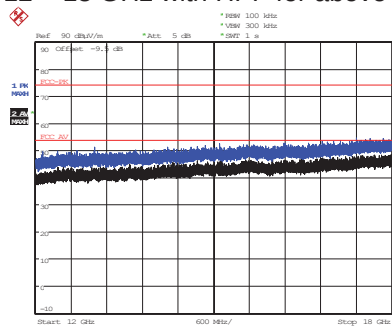
Date: 16.MAR.2017 10:53:47

7 – 12 GHz with HPF for above 7 GHz



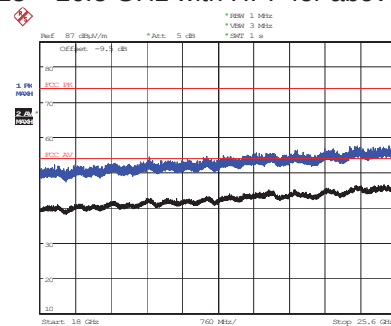
Date: 19.MAR.2017 11:17:38

12 – 18 GHz with HPF for above 7 GHz



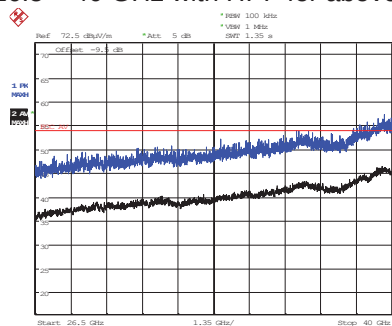
Date: 19.MAR.2017 13:17:10

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:03:33

26.5 – 40 GHz with HPF for above 7 GHz

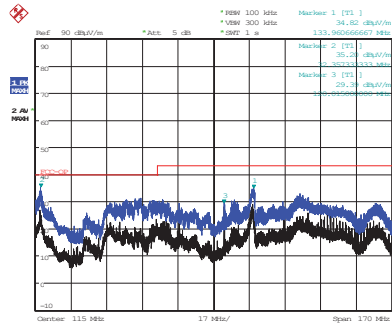


Date: 23.MAR.2017 12:20:53

Note: HPF means High Pass Filter

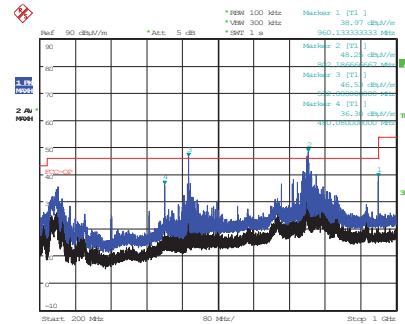
EUT operating mode and data rate: Channel 134, 40 MHz Bandwidth, MCS9NSS1 Data Rate, 48q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



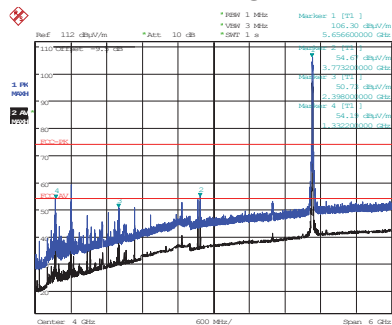
Date: 12.MAR.2017 14:25:05

200 – 1000 MHz



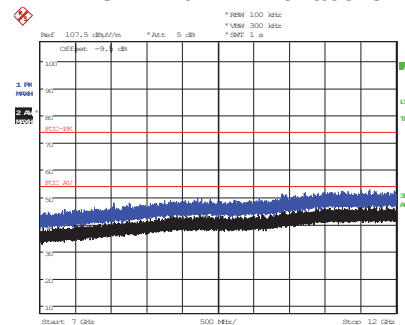
Date: 11.MAR.2017 15:30:35

1 – 7 GHz



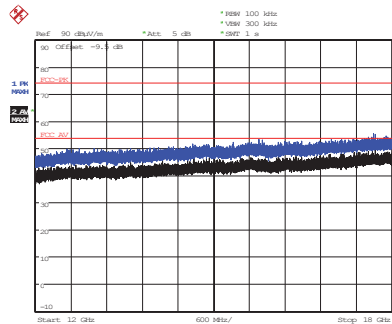
Date: 18.MAR.2017 10:58:55

7 – 12 GHz with HPF for above 7 GHz



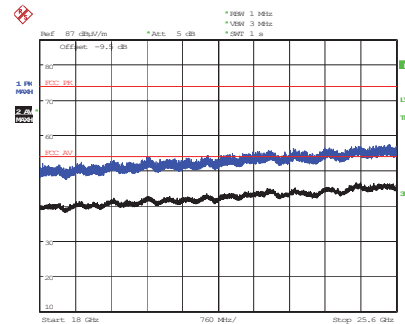
Date: 19.MAR.2017 11:18:12

12 – 18 GHz with HPF for above 7 GHz



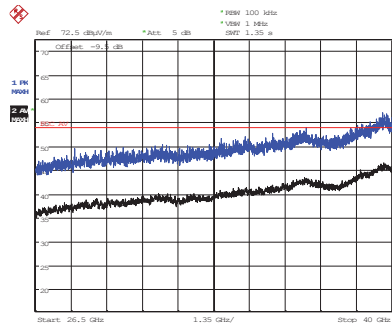
Date: 19.MAR.2017 13:18:33

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:11:27

26.5 – 40 GHz with HPF for above 7 GHz

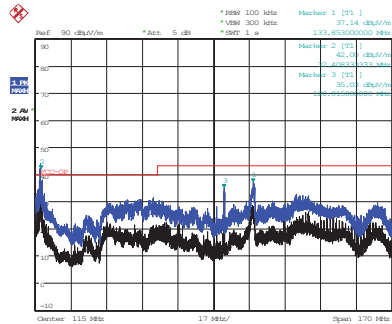


Date: 23.MAR.2017 12:22:25

Note: HPF means High Pass Filter

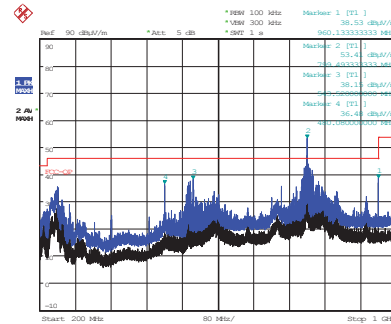
EUT operating mode and data rate: Channel 142, 40 MHz Bandwidth, MCS0NSS1 Data Rate, 62q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



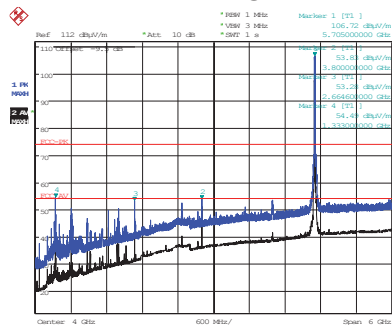
Date: 12.MAR.2017 14:29:22

200 – 1000 MHz



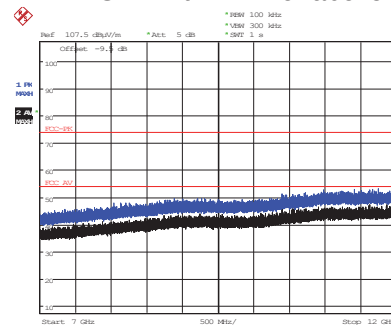
Date: 11.MAR.2017 15:36:02

1 – 7 GHz



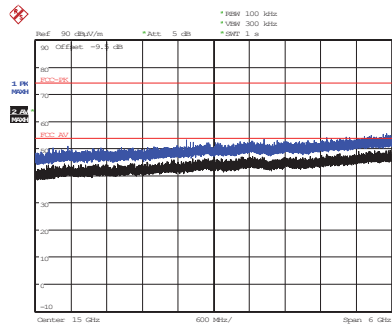
Date: 18.MAR.2017 11:03:49

7 – 12 GHz with HPF for above 7 GHz



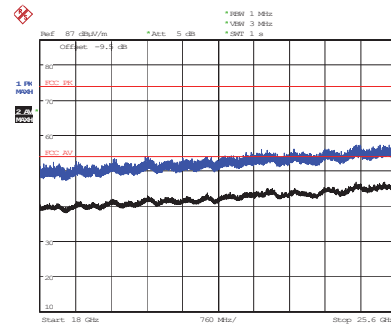
Date: 19.MAR.2017 11:18:40

12 – 18 GHz with HPF for above 7 GHz



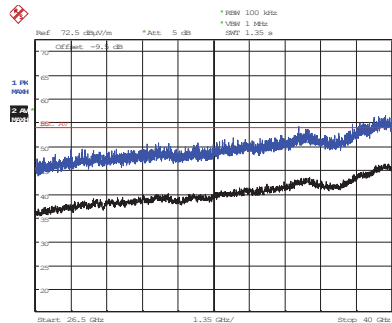
Date: 19.MAR.2017 13:20:40

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:18:05

26.5 – 40 GHz with HPF for above 7 GHz

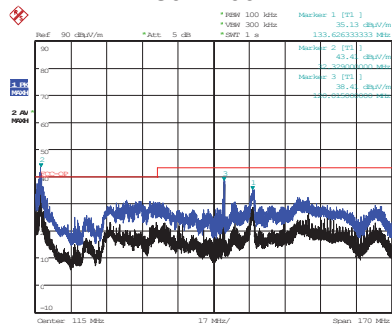


Date: 23.MAR.2017 12:23:47

Note: HPF means High Pass Filter

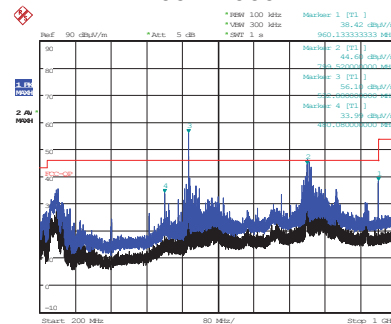
EUT operating mode and data rate: Channel 142, 40 MHz Bandwidth, MCS9NSS1 Data Rate, 48q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



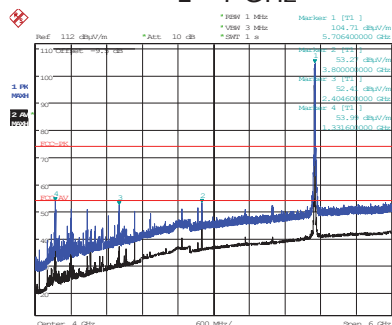
Date: 12.MAR.2017 14:34:20

200 – 1000 MHz



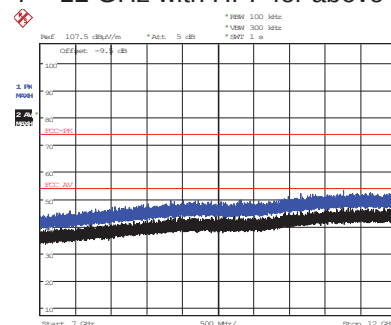
Date: 11.MAR.2017 15:41:09

1 – 7 GHz



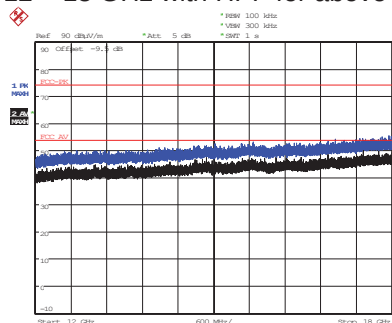
Date: 18.MAR.2017 11:06:46

7 – 12 GHz with HPF for above 7 GHz



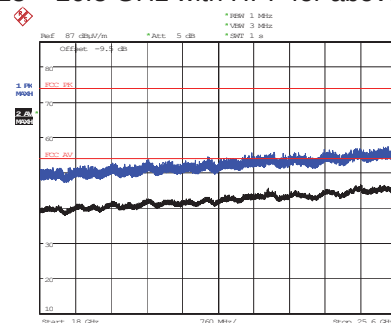
Date: 19.MAR.2017 11:19:16

12 – 18 GHz with HPF for above 7 GHz



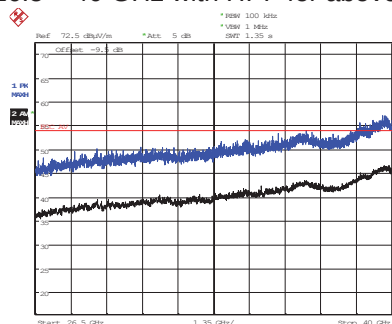
Date: 19.MAR.2017 13:23:44

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:14:44

26.5 – 40 GHz with HPF for above 7 GHz

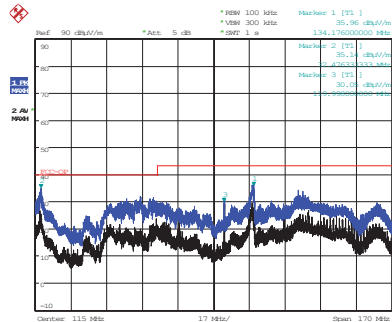


Date: 23.MAR.2017 12:22:58

Note: HPF means High Pass Filter

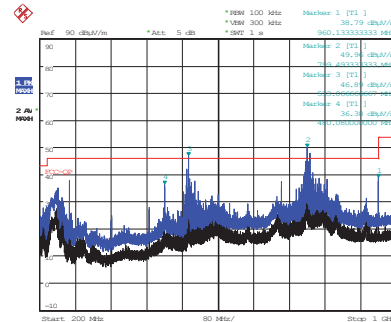
EUT operating mode and data rate: Channel 106, 80 MHz Bandwidth, MCS0NSS1 Data Rate, 48q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



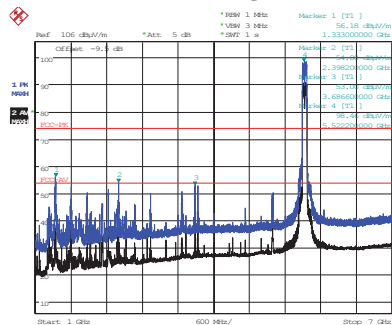
Date: 12.MAR.2017 10:21:14

200 – 1000 MHz



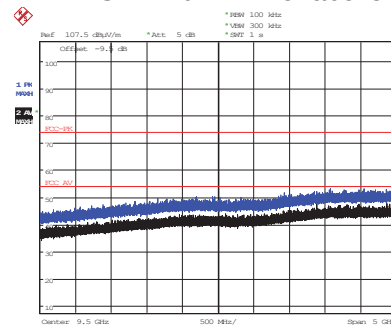
Date: 11.MAR.2017 16:42:03

1 – 7 GHz



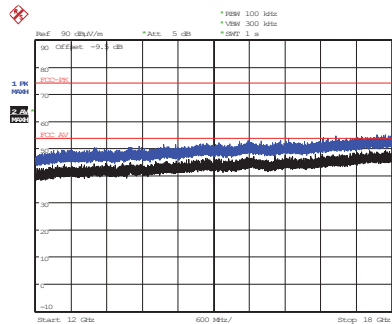
Date: 14.MAR.2017 14:29:25

7 – 12 GHz with HPF for above 7 GHz



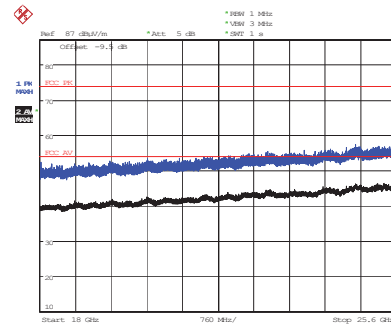
Date: 19.MAR.2017 09:33:05

12 – 18 GHz with HPF for above 7 GHz



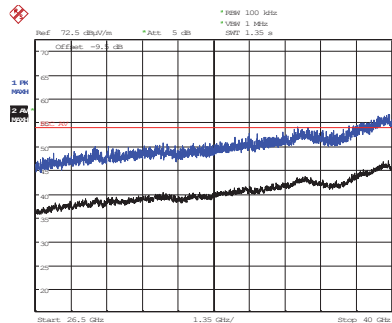
Date: 19.MAR.2017 13:47:26

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 09:03:20

26.5 – 40 GHz with HPF for above 7 GHz

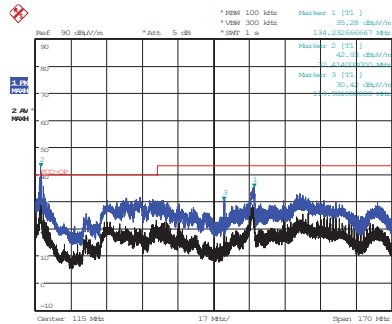


Date: 23.MAR.2017 11:50:45

Note: HPF means High Pass Filter

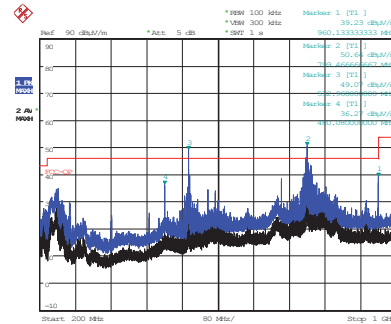
EUT operating mode and data rate: Channel 106, 80 MHz Bandwidth, MCS9NSS1 Data Rate, 42q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



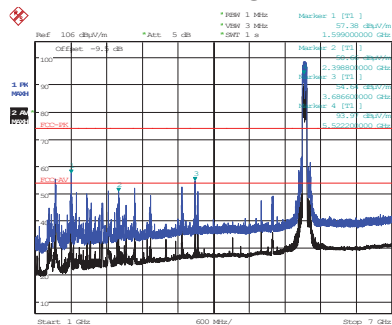
Date: 12.MAR.2017 12:26:04

200 – 1000 MHz



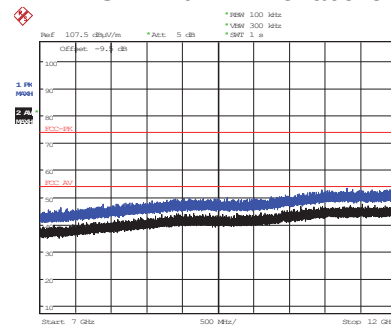
Date: 11.MAR.2017 16:50:39

1 – 7 GHz



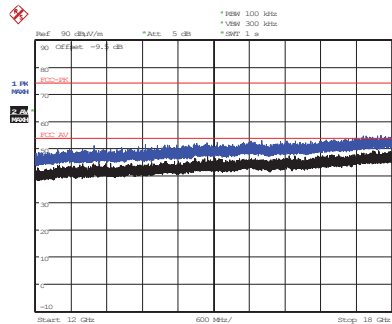
Date: 14.MAR.2017 14:32:55

7 – 12 GHz with HPF for above 7 GHz



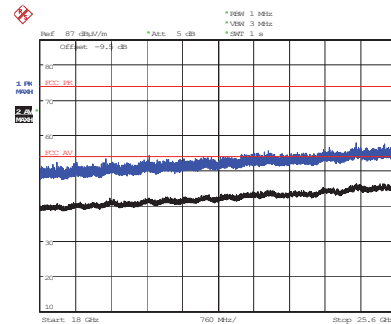
Date: 19.MAR.2017 09:30:38

12 – 18 GHz with HPF for above 7 GHz



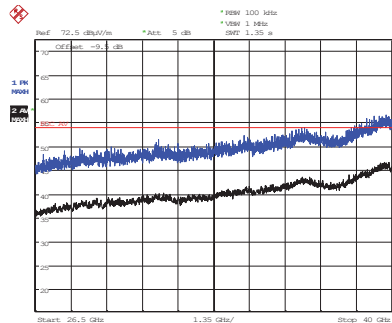
Date: 19.MAR.2017 13:49:26

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 09:07:14

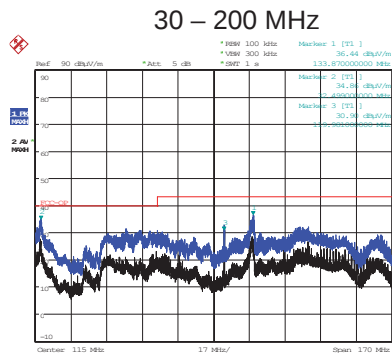
26.5 – 40 GHz with HPF for above 7 GHz



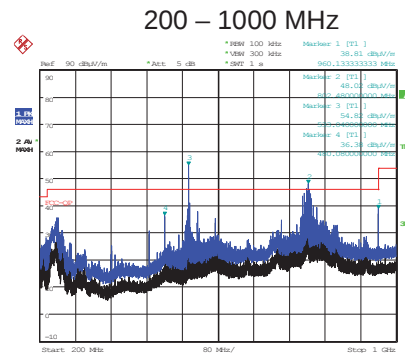
Date: 23.MAR.2017 11:51:26

Note: HPF means High Pass Filter

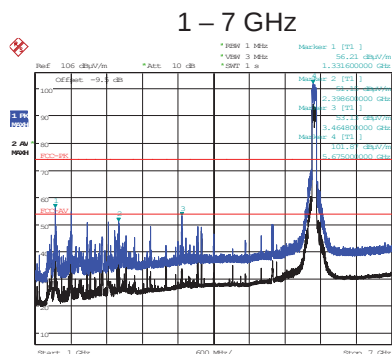
EUT operating mode and data rate: Channel 138, 80 MHz Bandwidth, MCS0NSS1 Data Rate, 58q dBm Power Setting and Cyclic Delay Diversity



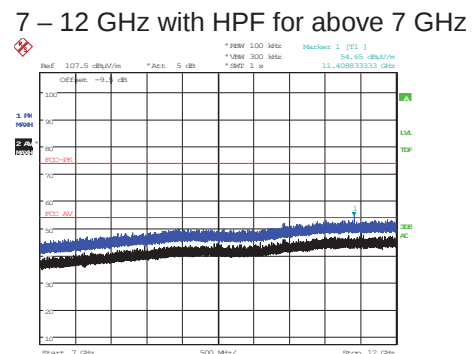
Date: 12.MAR.2017 10:31:41



Date: 11.MAR.2017 16:55:07

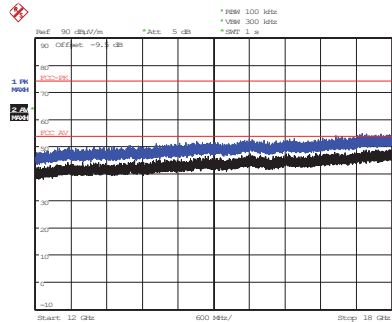


Date: 14.MAR.2017 15:22:13



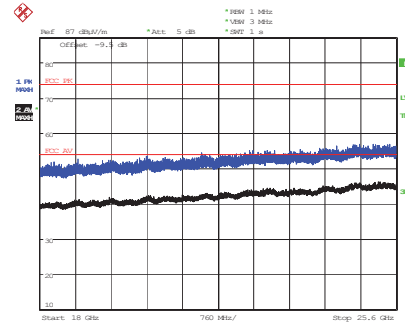
Date: 19.MAR.2017 09:39:41

12 – 18 GHz with HPF for above 7 GHz



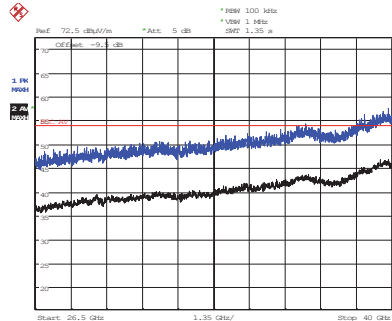
Date: 19.MAR.2017 13:51:25

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 09:09:57

26.5 – 40 GHz with HPF for above 7 GHz

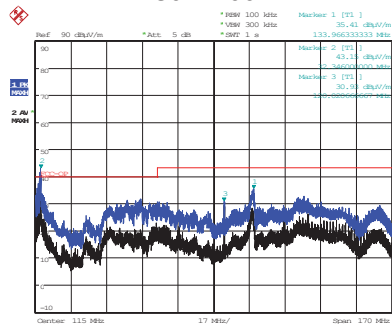


Date: 23.MAR.2017 11:46:06

Note: HPF means High Pass Filter

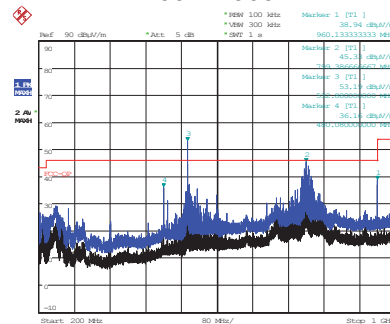
EUT operating mode and data rate: Channel 138, 80 MHz Bandwidth, MCS9NSS1 Data Rate, 42q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



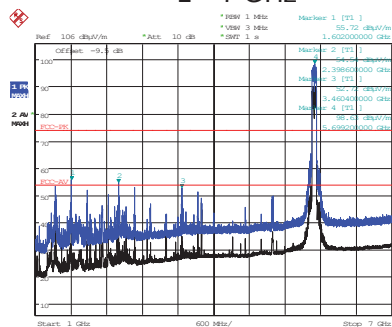
Date: 12.MAR.2017 12:35:08

200 – 1000 MHz



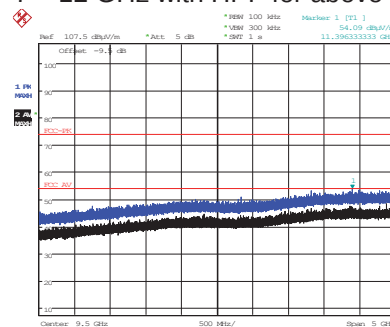
Date: 11.MAR.2017 16:59:21

1 – 7 GHz



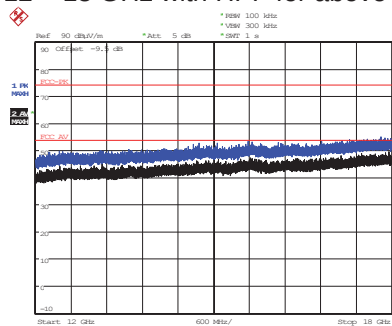
Date: 14.MAR.2017 15:27:21

7 – 12 GHz with HPF for above 7 GHz



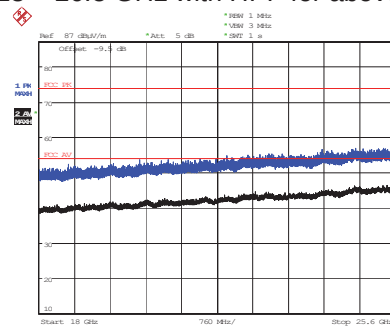
Date: 19.MAR.2017 09:36:10

12 – 18 GHz with HPF for above 7 GHz



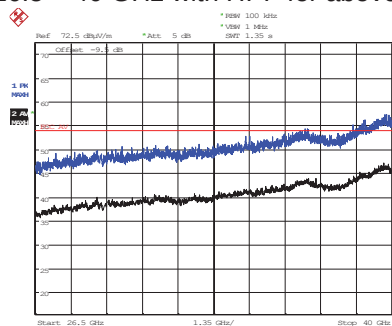
Date: 19.MAR.2017 13:53:55

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 09:49:52

26.5 – 40 GHz with HPF for above 7 GHz

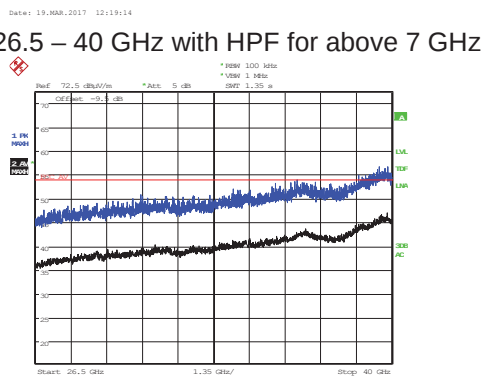
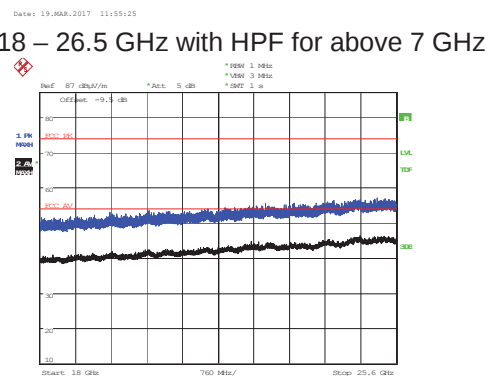
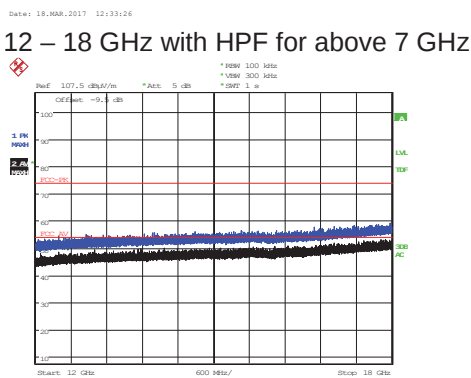
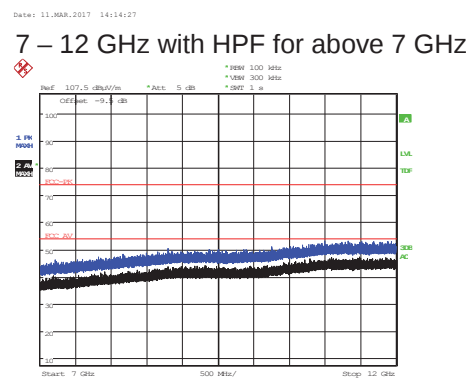
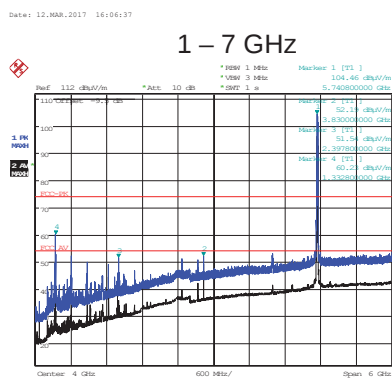
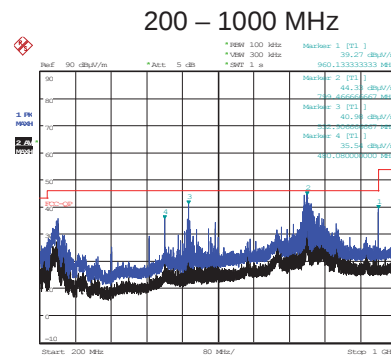
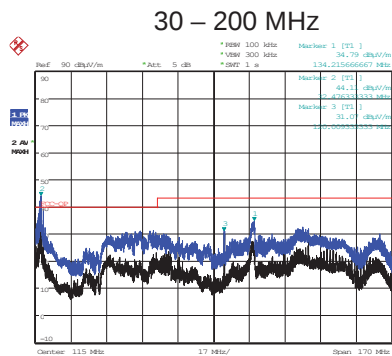


Date: 23.MAR.2017 11:48:45

Note: HPF means High Pass Filter

U-NII-3 802.11

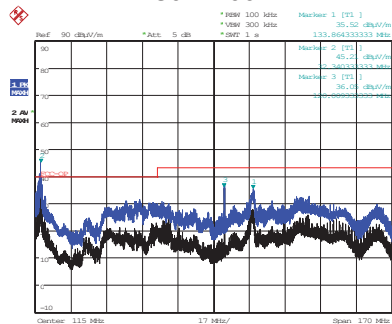
EUT operating mode and data rate: Channel 149, 20 MHz Bandwidth, MCS0NSS1 Data Rate, 52q dBm Power Setting and Cyclic Delay Diversity



Note: HPF means High Pass Filter

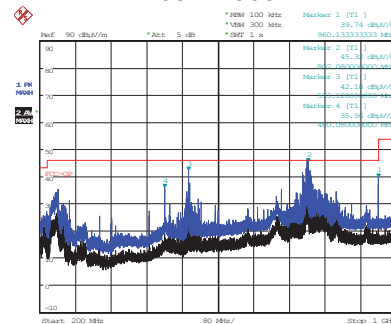
EUT operating mode and data rate: Channel 149, 20 MHz Bandwidth, MCS8NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



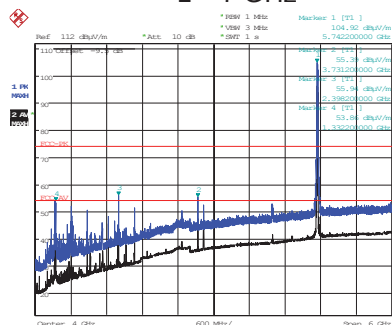
Date: 12.MAR.2017 16:10:29

200 – 1000 MHz



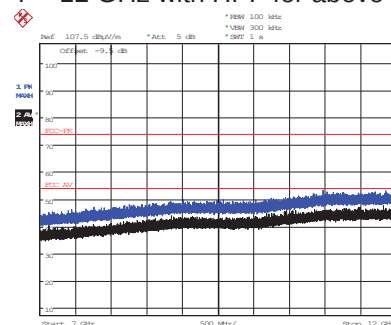
Date: 11.MAR.2017 14:20:25

1 – 7 GHz



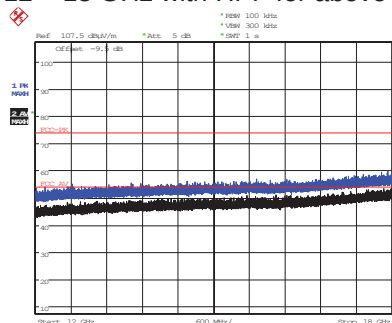
Date: 18.MAR.2017 12:35:56

7 – 12 GHz with HPF for above 7 GHz



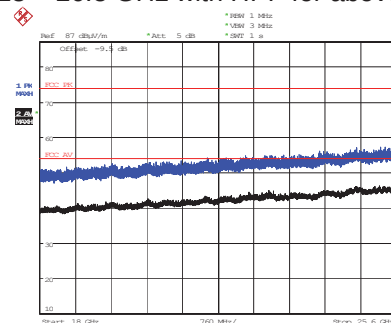
Date: 19.MAR.2017 11:57:37

12 – 18 GHz with HPF for above 7 GHz



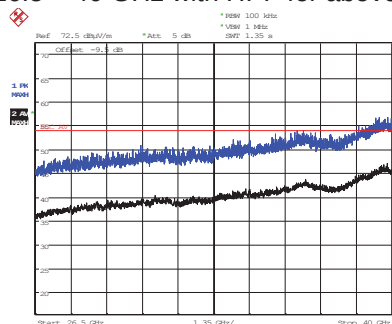
Date: 19.MAR.2017 12:14:48

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 07:19:17

26.5 – 40 GHz with HPF for above 7 GHz

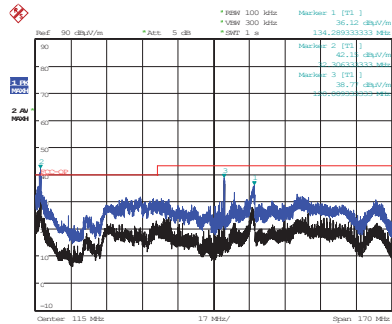


Date: 23.MAR.2017 12:53:27

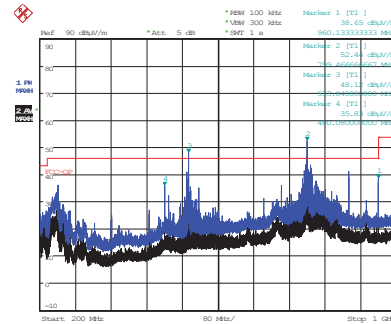
Note: HPF means High Pass Filter

EUT operating mode and data rate: Channel 165, 20 MHz Bandwidth, MCS0NSS1 Data Rate, 56q dBm Power Setting and Cyclic Delay Diversity

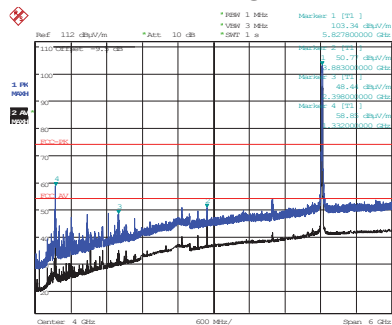
30 – 200 MHz



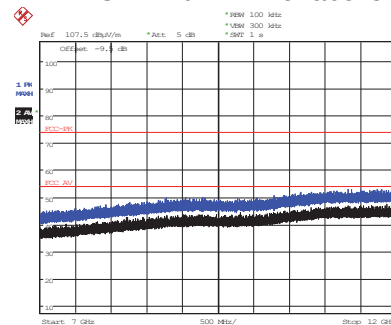
200 – 1000 MHz



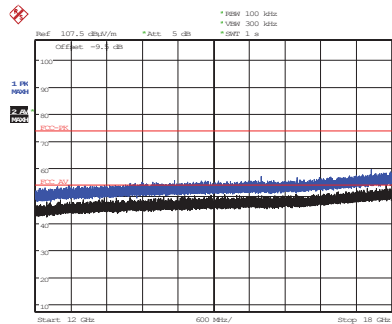
1 – 7 GHz



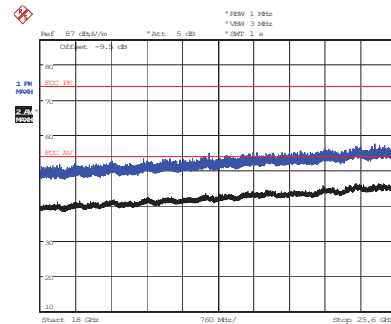
7 – 12 GHz with HPF for above 7 GHz



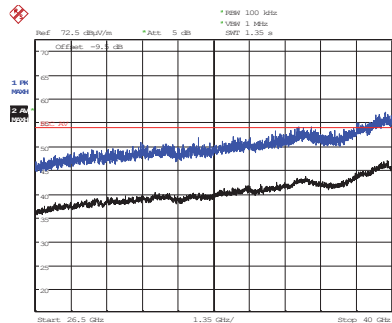
12 – 18 GHz with HPF for above 7 GHz



18 – 26.5 GHz with HPF for above 7 GHz



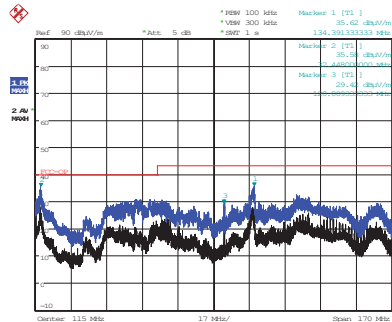
26.5 – 40 GHz with HPF for above 7 GHz



Note: HPF means High Pass Filter

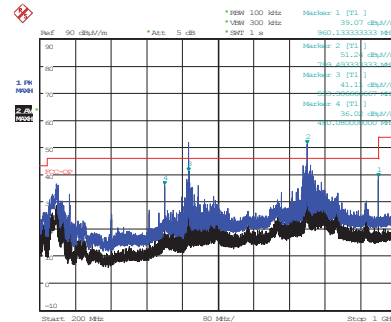
EUT operating mode and data rate: Channel 165, 20 MHz Bandwidth, MCS8NSS1 Data Rate, 44q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



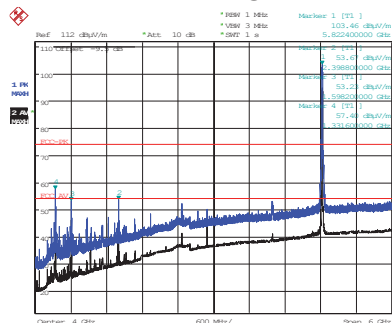
Date: 12.MAR.2017 16:19:46

200 – 1000 MHz



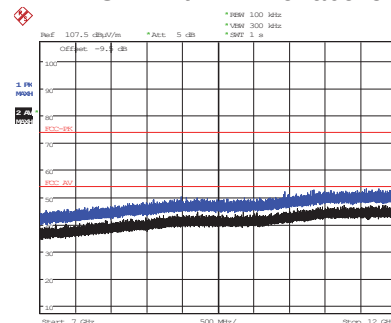
Date: 11.MAR.2017 14:30:25

1 – 7 GHz



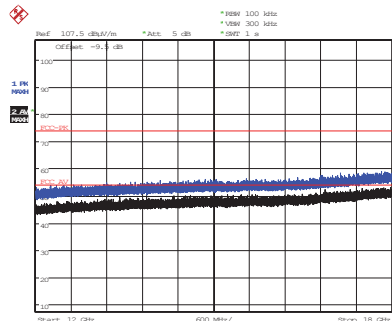
Date: 18.MAR.2017 12:45:02

7 – 12 GHz with HPF for above 7 GHz



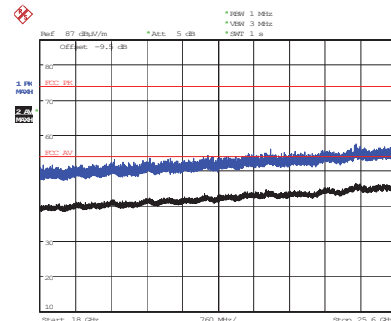
Date: 19.MAR.2017 12:02:55

12 – 18 GHz with HPF for above 7 GHz



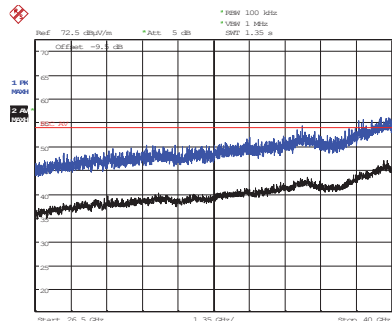
Date: 19.MAR.2017 12:09:12

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 07:23:42

26.5 – 40 GHz with HPF for above 7 GHz

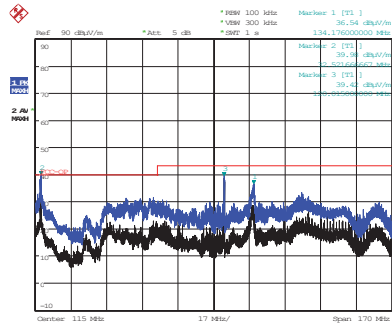


Date: 23.MAR.2017 12:54:19

Note: HPF means High Pass Filter

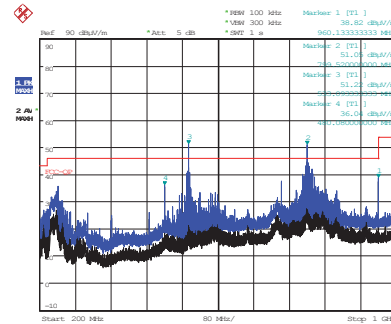
EUT operating mode and data rate: Channel 151, 40 MHz Bandwidth, MCS0NSS1 Data Rate, 42q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



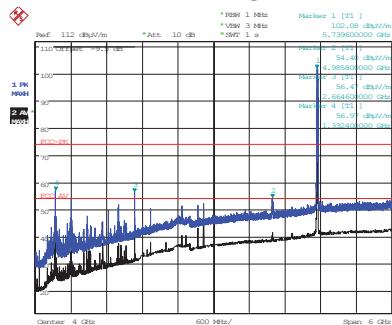
Date: 12.MAR.2017 14:38:42

200 – 1000 MHz



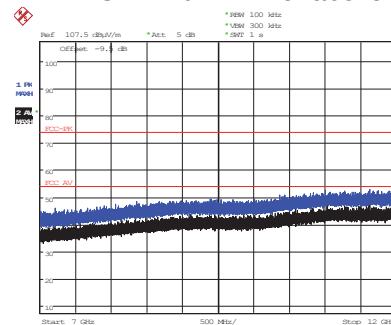
Date: 11.MAR.2017 15:48:25

1 – 7 GHz



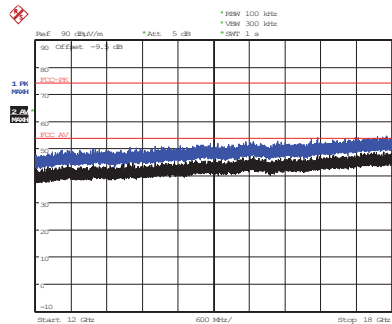
Date: 18.MAR.2017 11:15:34

7 – 12 GHz with HPF for above 7 GHz



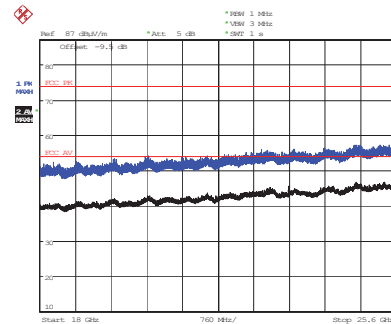
Date: 19.MAR.2017 11:19:47

12 – 18 GHz with HPF for above 7 GHz



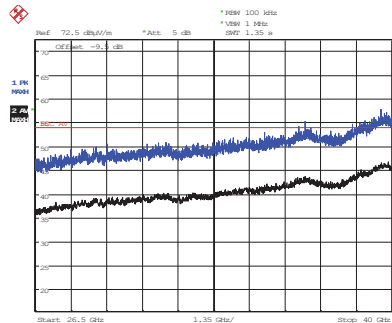
Date: 19.MAR.2017 13:25:07

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:20:53

26.5 – 40 GHz with HPF for above 7 GHz

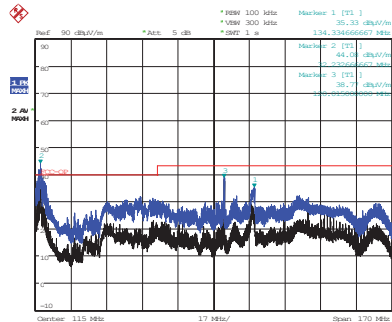


Date: 23.MAR.2017 12:24:36

Note: HPF means High Pass Filter

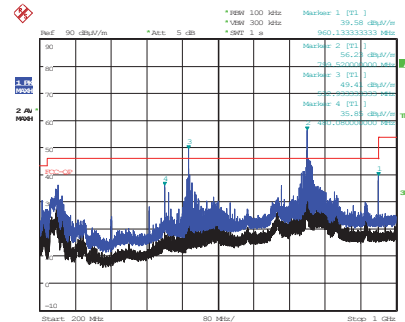
EUT operating mode and data rate: Channel 151, 40 MHz Bandwidth, MCS9NSS1 Data Rate, 42q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



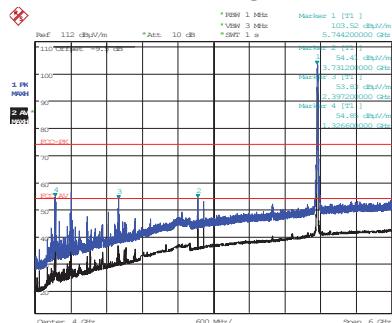
Date: 12.MAR.2017 14:42:23

200 – 1000 MHz



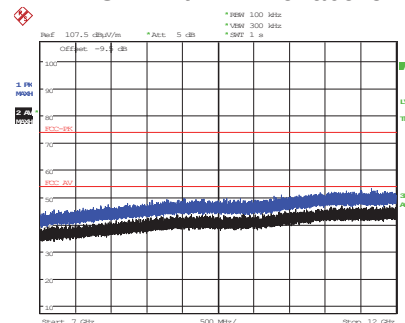
Date: 11.MAR.2017 15:53:35

1 – 7 GHz



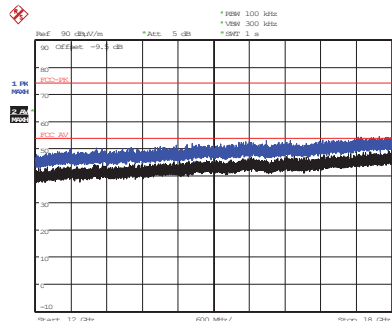
Date: 18.MAR.2017 11:30:11

7 – 12 GHz with HPF for above 7 GHz



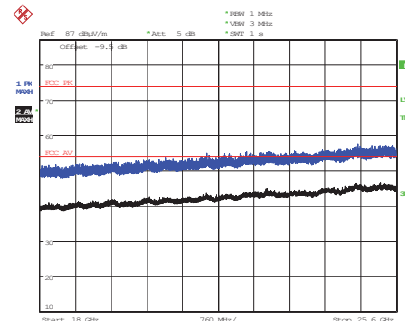
Date: 19.MAR.2017 11:28:30

12 – 18 GHz with HPF for above 7 GHz



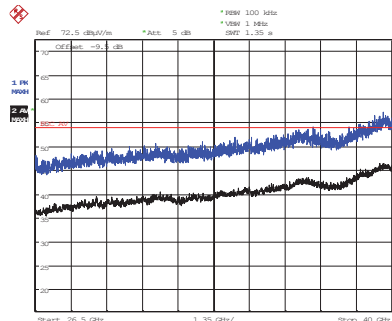
Date: 19.MAR.2017 13:26:21

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:24:17

26.5 – 40 GHz with HPF for above 7 GHz

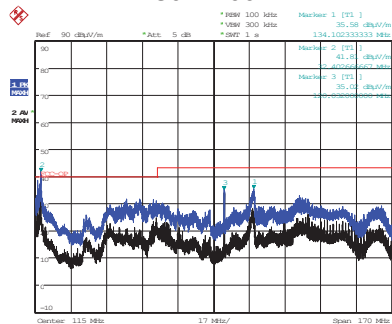


Date: 23.MAR.2017 12:25:12

Note: HPF means High Pass Filter

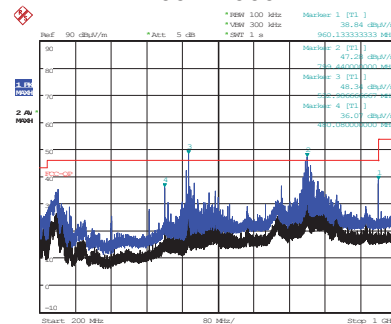
EUT operating mode and data rate: Channel 159, 40 MHz Bandwidth, MCS0NSS1 Data Rate, 48q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



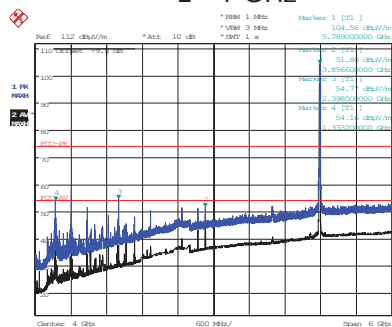
Date: 12.MAR.2017 14:45:48

200 – 1000 MHz



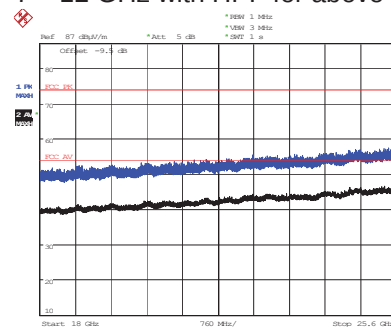
Date: 11.MAR.2017 15:58:32

1 – 7 GHz



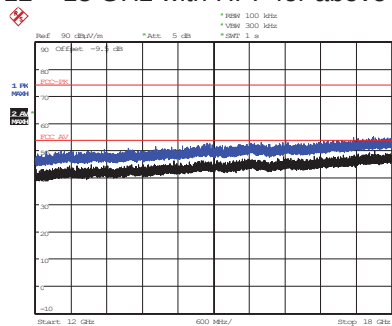
Date: 18.MAR.2017 11:35:35

7 – 12 GHz with HPF for above 7 GHz



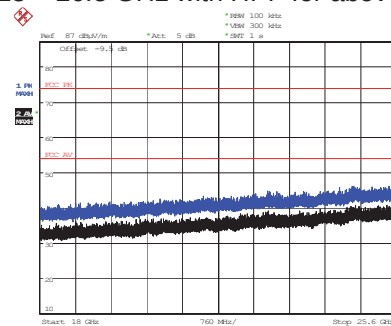
Date: 23.MAR.2017 06:29:32

12 – 18 GHz with HPF for above 7 GHz



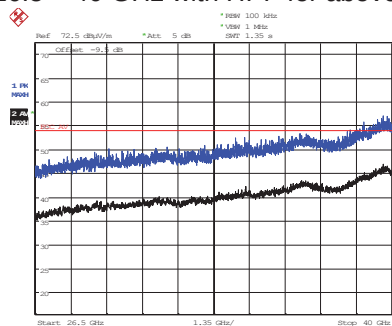
Date: 19.MAR.2017 13:29:37

18 – 26.5 GHz with HPF for above 7 GHz



Date: 22.MAR.2017 16:14:55

26.5 – 40 GHz with HPF for above 7 GHz

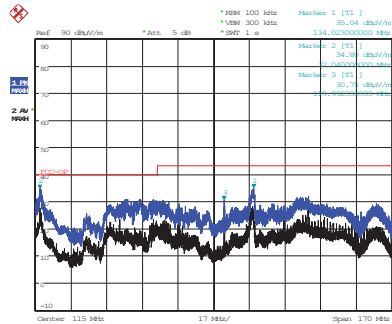


Date: 23.MAR.2017 12:34:35

Note: HPF means High Pass Filter

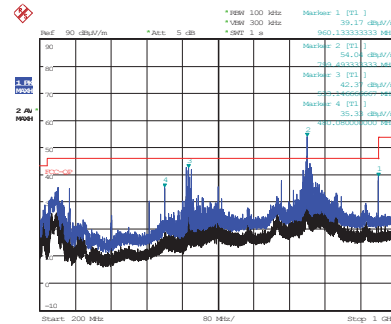
EUT operating mode and data rate: Channel 159, 40 MHz Bandwidth, MCS9NSS1 Data Rate, 48q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



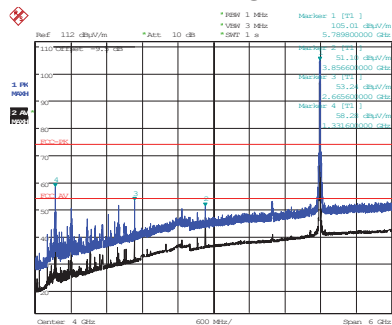
Date: 12.MAR.2017 14:49:41

200 – 1000 MHz



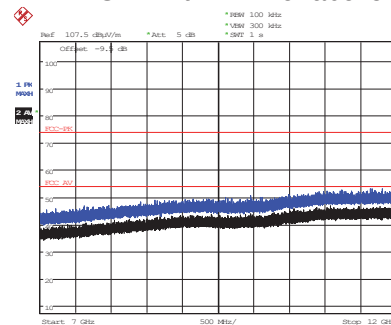
Date: 11.MAR.2017 16:04:01

1 – 7 GHz



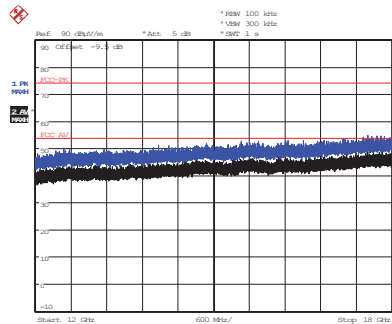
Date: 18.MAR.2017 11:38:03

7 – 12 GHz with HPF for above 7 GHz



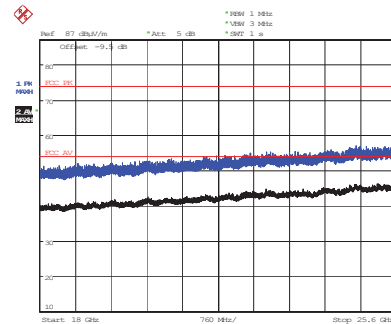
Date: 19.MAR.2017 11:21:27

12 – 18 GHz with HPF for above 7 GHz



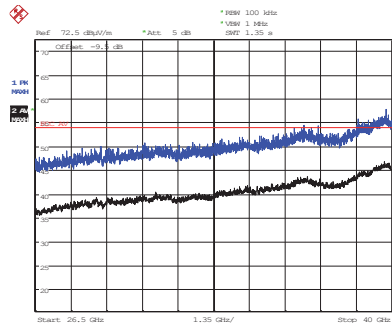
Date: 19.MAR.2017 13:30:27

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 06:26:35

26.5 – 40 GHz with HPF for above 7 GHz

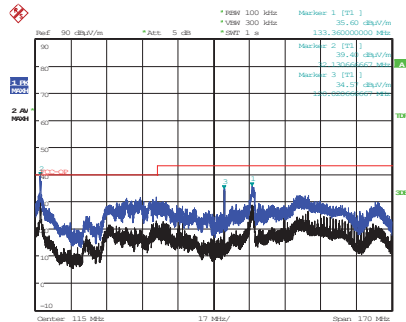


Date: 23.MAR.2017 12:27:04

Note: HPF means High Pass Filter

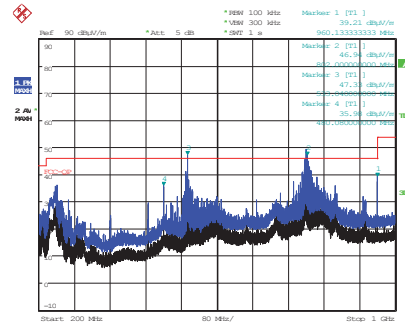
EUT operating mode and data rate: Channel 155, 80 MHz Bandwidth, MCS0NSS1 Data Rate, 50q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



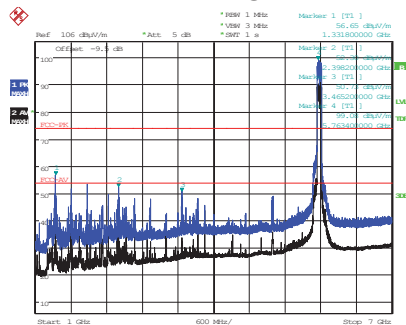
Date: 12.MAR.2017 12:40:28

200 – 1000 MHz



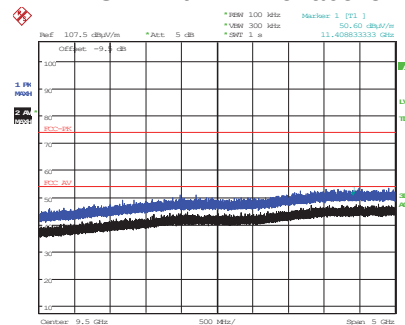
Date: 11.MAR.2017 17:03:37

1 – 7 GHz



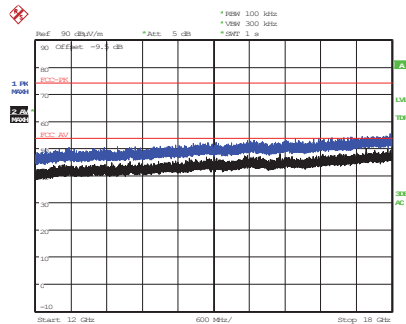
Date: 14.MAR.2017 15:07:22

7 – 12 GHz with HPF for above 7 GHz



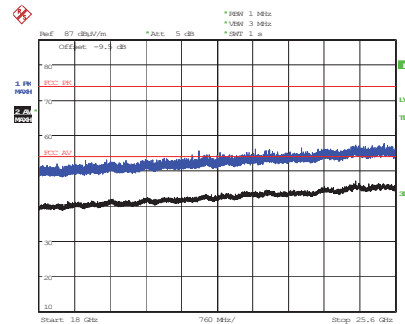
Date: 19.MAR.2017 09:48:00

12 – 18 GHz with HPF for above 7 GHz



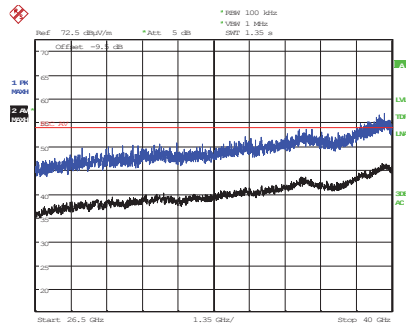
Date: 19.MAR.2017 13:56:39

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 09:45:46

26.5 – 40 GHz with HPF for above 7 GHz

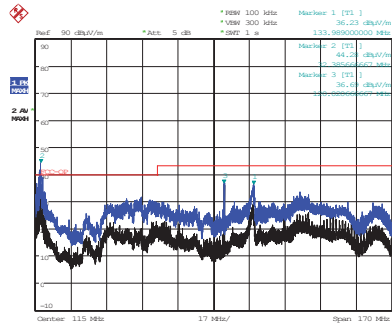


Date: 23.MAR.2017 11:43:43

Note: HPF means High Pass Filter

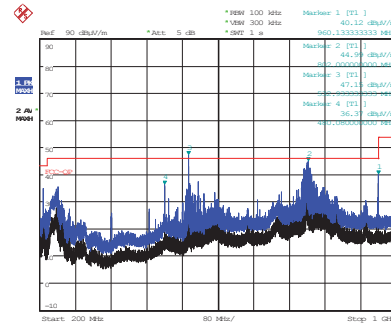
EUT operating mode and data rate: Channel 155, 80 MHz Bandwidth, MCS9NSS1 Data Rate, 42q dBm Power Setting and Cyclic Delay Diversity

30 – 200 MHz



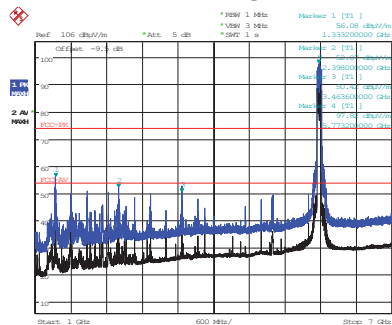
Date: 12.MAR.2017 12:43:57

200 – 1000 MHz



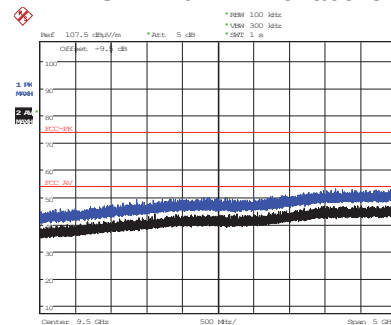
Date: 11.MAR.2017 17:06:34

1 – 7 GHz



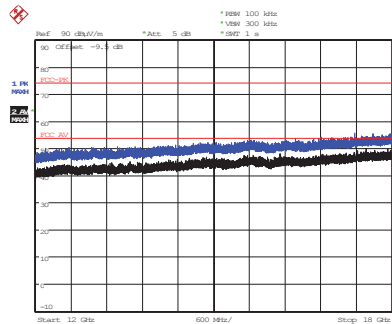
Date: 14.MAR.2017 15:10:24

7 – 12 GHz with HPF for above 7 GHz



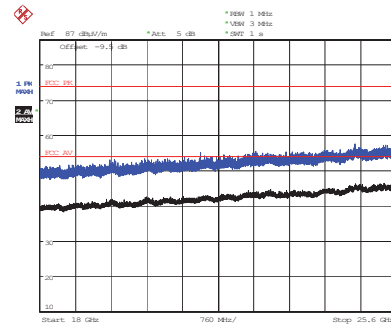
Date: 19.MAR.2017 09:51:12

12 – 18 GHz with HPF for above 7 GHz



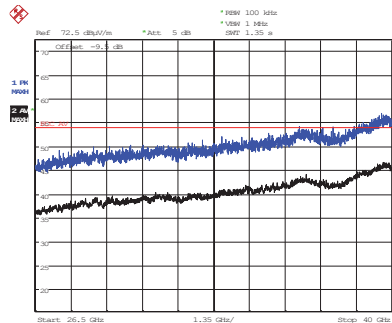
Date: 19.MAR.2017 14:00:07

18 – 26.5 GHz with HPF for above 7 GHz



Date: 23.MAR.2017 09:19:09

26.5 – 40 GHz with HPF for above 7 GHz

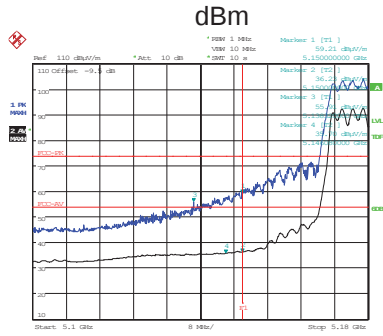


Date: 23.MAR.2017 11:43:10

Note: HPF means High Pass Filter

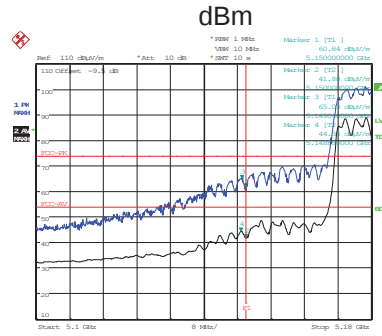
U-NII-1 and U-NII-2A Lower Band Edge Plots

Channel 36 BW=20MHz MCS8NSS1 44q



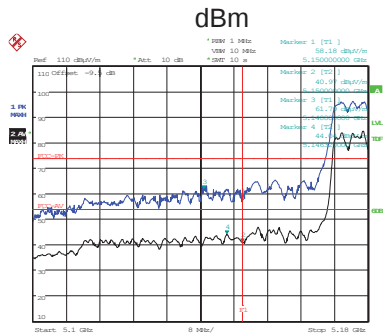
Date: 22.FEB.2017 18:03:39

Channel 38 BW=40MHz MCS9NSS1 44q



Date: 22.FEB.2017 17:57:01

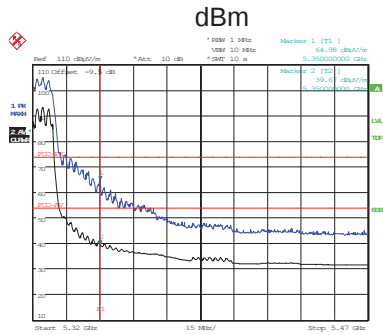
Channel 42 BW=80MHz MCS9NSS1 44q



Date: 22.FEB.2017 18:00:54

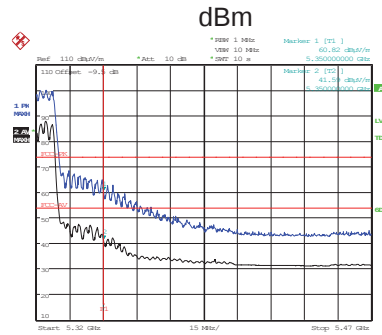
U-NII-1 and U-NII-2A Upper Band Edge Plots

Channel 64 BW=20MHz MCS8NSS1 52q



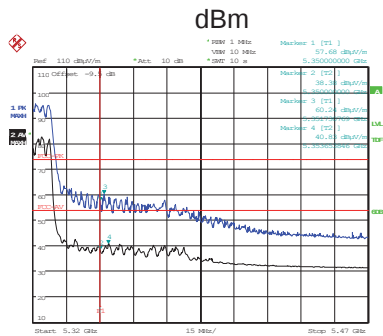
Date: 23.FEB.2017 11:07:16

Channel 62 BW=40MHz MCS9NSS1 44q



Date: 23.FEB.2017 11:15:31

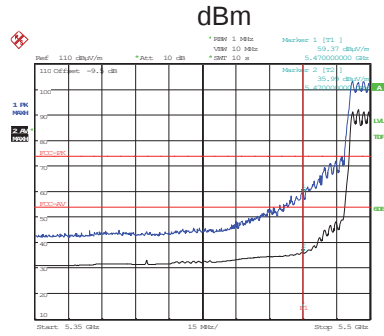
Channel 58 BW=80MHz MCS9NSS1 44q



Date: 23.FEB.2017 11:20:55

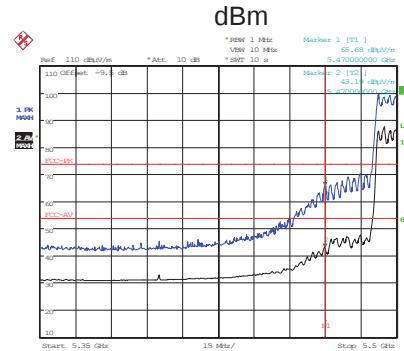
U-NII-2C Lower Band Edge Plots

Channel 100 BW=20MHz MCS8NSS1 44q



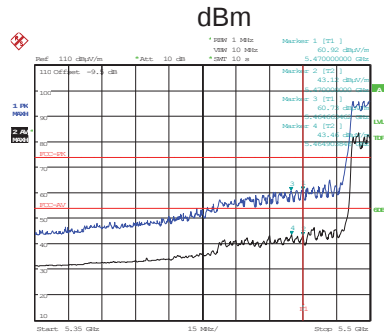
Date: 23.FEB.2017 11:32:45

Channel 102 BW=40MHz MCS9NSS1 40q



Date: 23.FEB.2017 11:28:12

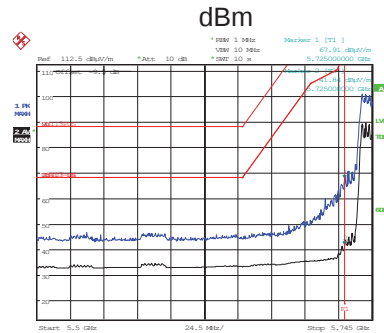
Channel 106 BW=80MHz MCS9NSS1 42q



Date: 23.FEB.2017 11:24:18

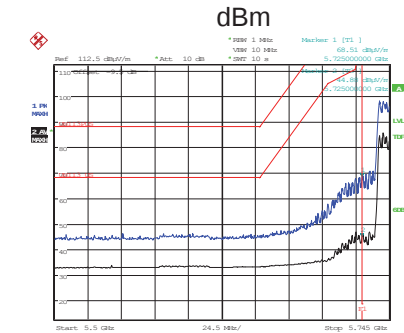
U-NII-3 Lower Band Edge Plots

Channel 149 BW=20MHz MCS8NSS1 44q



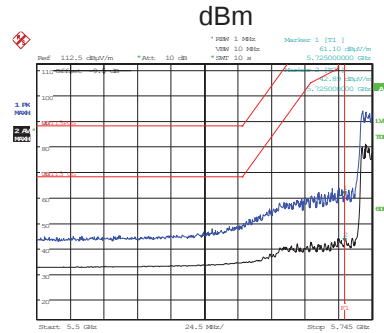
Date: 23.FEB.2017 11:41:15

Channel 151 BW=40MHz MCS9NSS1 42q



Date: 23.FEB.2017 11:59:32

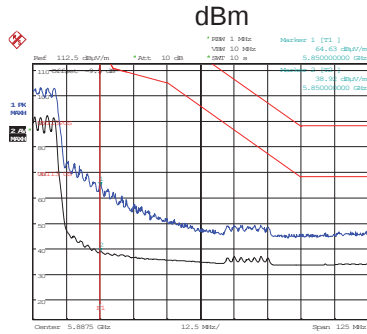
Channel 155 BW=80MHz MCS9NSS1 42q



Date: 23.FEB.2017 11:55:12

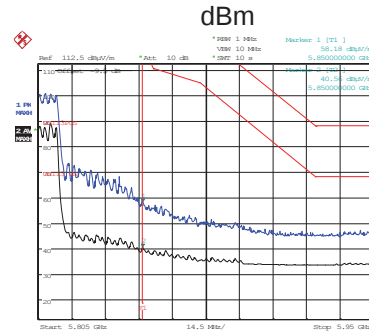
U-NII-3 Upper Band Edge Plots

Channel 165 BW=20MHz MCS8NSS1 44q



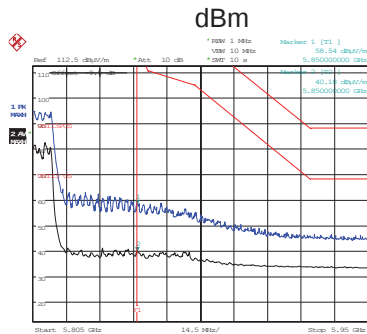
Date: 23.FEB.2017 12:21:25

Channel 159 BW=40MHz MCS9NSS1 48q



Date: 23.FEB.2017 12:04:43

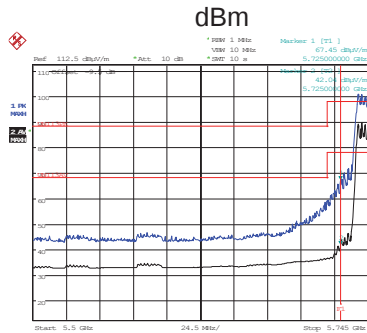
Channel 155 BW=80MHz MCS9NSS1 42q



Date: 23.FEB.2017 11:58:32

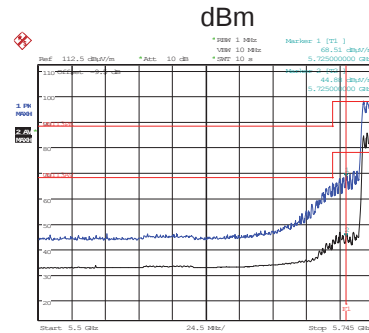
U-NII-3 Lower Band Edge Plots (Industry Canada)

Channel 149 BW=20MHz MCS8NSS1 44q



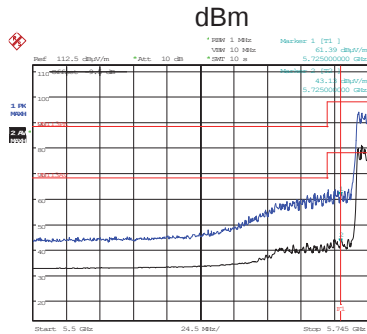
Date: 23.FEB.2017 11:42:29

Channel 151 BW=40MHz MCS9NSS1 42q



Date: 23.FEB.2017 11:50:02

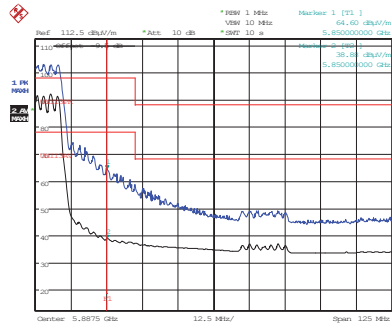
Channel 155 BW=80MHz MCS9NSS1 42q



Date: 23.FEB.2017 11:53:42

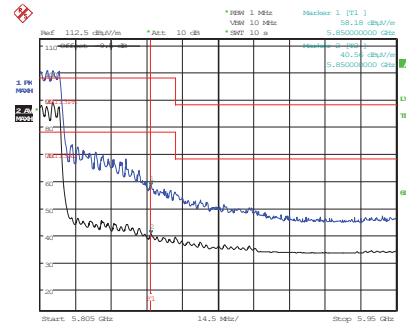
U-NII-3 Upper Band Edge Plots (Industry Canada)

Channel 165 BW=20MHz MCS8NSS1 44q
dBm



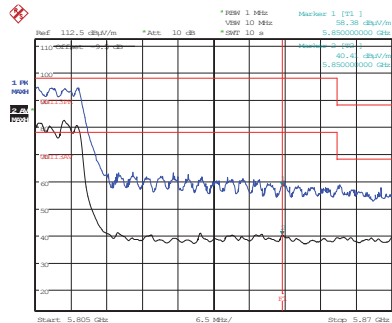
Date: 23.FEB.2017 12:20:51

Channel 159 BW=40MHz MCS9NSS1 48q
dBm



Date: 23.FEB.2017 12:05:07

Channel 155 BW=80MHz MCS9NSS1 42q
dBm



Date: 23.FEB.2017 11:56:56

12 Measurement Uncertainty

Calculated Measurement Uncertainties

All statements of uncertainty are expanded standard uncertainty using a coverage factor of 1.96 to give a 95% confidence:

[1] Radiated spurious emissions

Uncertainty in test result (30MHz – 1GHz) = **4.6dB**,

Uncertainty in test result (1GHz – 18GHz) = **4.7dB**

[2] AC power line conducted emissions

Uncertainty in test result = **3.4dB**

[3] Occupied bandwidth

Uncertainty in test result = **15.5%**

[4] Conducted carrier power

Uncertainty in test result (Power Meter) = **1.08dB**

[5] Conducted / radiated RF power out-of-band

Uncertainty in test result – Up to 8.1GHz = **3.31dB**

Uncertainty in test result – 8.1GHz – 15.3GHz = **4.43dB**

Uncertainty in test result (30MHz – 1GHz) = **4.6dB**,

Uncertainty in test result (1GHz – 18GHz) = **4.7dB**

[6] Power spectral density

Uncertainty in test result (Spectrum Analyser) = **2.48dB**