FCC 47 CFR PART 15 SUBPART C

CERTIFICATION TEST REPORT

For

Wireless surveillance camera outdoor IP 66USA

MODEL NUMBER: HG03329A-US, HG03329B-US

FCC ID: 2AJ9O-HG3329

REPORT NUMBER: 4788127402.1-2

ISSUE DATE: August 24, 2017

Prepared for

Lidl US, LLC
3500 S. Clark Street, Arlington, VA 22202, United States

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
--	08/24/2017	Initial Issue	

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Summary of Test Results			
Clause	**Test Items**	FCC/IC Rules	Test Results
1	6dB Bandwidth and 99% Bandwidth	FCC 15.247 (a) (2) RSS-247 Clause 5.2 (a)	Complied
2	Peak Conducted Output Power	FCC 15.247 (b) (3) RSS-247 Clause 5.4 (e)	Complied
3	Power Spectral Density	FCC 15.247 (e) RSS-247 Clause 5.2 (b)	Complied
4	Conducted Bandedge and Spurious Emission	FCC 15.247 (d) RSS-247 Clause 5.5	Complied
5	Radiated Bandedge and Spurious Emission	FCC 15.247 (d) FCC 15.209 FCC 15.205 RSS-247 Clause 5.5 RSS-GEN Clause 8.9	Complied
6	Conducted Emission Test For AC Power Port	FCC 15.207 RSS-GEN Clause 8.8	Complied
7	Antenna Requirement	FCC 15.203 RSS-GEN Clause 8.3	Complied
Remark: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device.			

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Lidl US, LLC
Address:	3500 S. Clark Street, Arlington, VA 22202, United States

Manufacturer Information

Company Name:	Lidl US, LLC
Address:	3500 S. Clark Street, Arlington, VA 22202, United States

Factory Information

Company Name:	Lidl US, LLC
Address:	3500 S. Clark Street, Arlington, VA 22202, United States

EUT Name:	Wireless surveillance camera outdoor IP 66 USA
Model:	HG03329A-US, HG03329B-US
Sample Status:	Normal
Sample ID:	SQELF170719-002-02E
Brand:	N/A
Sample Received:	August 05, 2017
Date of Tested:	August 06, 2017~August 21, 2017

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	PASS

Tested By : 

Leo Liu
Engineer

Check By: 

Shawn Wen
Laboratory Leader

Approved By:

Stephen Guo

Laboratory Manager

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

Test Location	Dongguan Dongdian Testing Service Co., Ltd
Address	No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Dongguan City, Guangdong Province, 523808, China
Accreditation Certificate	Dongguan Dongdian Testing Service Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until January 31, 2018. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 270092, Renewal date March 11, 2015, valid time is until March 11, 2018. The 3m Alternate Test Site of Dongguan Dongdian Testing Service Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 10288A on April 23, 2015, valid time is until April 23, 2018.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Bandwidth	1.1%
Peak Output Power(Conducted)(Spectrum analyzer)	0.86dB(10 MHz ≤ f < 3.6GHz);
	1.38dB(3.6GHz≤ f < 8GHz)
Peak Output Power(Conducted)(Power Sensor)	0.74dB
Dwell Time	0.6%
Conducted spurious emissions	0.86dB(10 MHz ≤ f < 3.6GHz);
	1.40dB(3.6GHz≤ f < 8GHz)
	1.66dB(8GHz≤ f < 22GHz)
Uncertainty for radio frequency (RBW<20KHz)	3×10-8
Temperature	0.4℃
Humidity	2%
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1GHz-25GHz)	4.10dB(1-6GHz)
	4.40dB (6GHz-25Gz)
Uncertainty for Power line conduction emission test	3.32dB (150kHz-30MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Equipment	Wireless surveillance camera outdoor IP 66 USA
Model Name	HG03329A-US, HG03329B-US
Radio Technology	IEEE802.11b/g/n HT20/n HT40
Operation frequency	IEEE 802.11b: 2412MHz—2462MHz IEEE 802.11g: 2412MHz—2462MHz IEEE 802.11n HT20: 2412MHz—2462MHz IEEE 802.11n HT40: 2422MHz—2452MHz
Modulation	IEEE 802.11b: DSSS(CCK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11n HT40: OFDM (64QAM, 16QAM, QPSK,BPSK)
Adapter	Input: AC 100-240V, 50-60Hz Output: DC 5V 1.5A

5.2. MAXIMUM OUTPUT POWER

Frequency Range (MHz)	Number of Transmit Chains (NTX)	Bluetooth Mode	Frequency (MHz)	Channel Number	Max PK Conducted Power (dBm)
2400-2483.5	1	IEEE 802.11b	2412-2462	1-11[11]	17.98
2400-2483.5	1	IEEE 802.11g	2412-2462	1-11[11]	16.99
2400-2483.5	1	IEEE 802.11nHT20	2412-2462	1-11[11]	16.24
2400-2483.5	1	IEEE 802.11nHT40	2422-2452	3-9[7]	15.89

5.3. CHANNEL LIST

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	4	2425	7	2442	10	2457
2	2417	5	2432	8	2447	11	2462
3	2422	6	2437	9	2452	N/A	N/A

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel (MHz)
IEEE 802.11b	LCH :CH01 2412
	MCH: CH06 2437
	HCH: CH11 2462
IEEE 802.11g	LCH :CH01 2412
	MCH: CH06 2437
	HCH: CH11 2462
IEEE 802.11n HT20	LCH :CH01 2412
	MCH: CH06 2437
	HCH: CH11 2462
IEEE 802.11n HT40	LCH :CH03 2422
	MCH: CH06 2437
	HCH: CH09 2452

5.5. THE WORSE CASE CONFIGURATIONS

Test Software Version	QRCT (V3.0-00230) from QUALCOMM			
Test Mode	Setting TX Power	Setting data rate (Mbps)	TX Pattern	TX Power Control
IEEE 802.11b	9	CCK_1Mbps	PN7_PATTERN	TXPowerForce_OLPC
	9	CCK_1Mbps	PN7_PATTERN	TXPowerForce_OLPC
	9	CCK_1Mbps	PN7_PATTERN	TXPowerForce_OLPC
IEEE 802.11g	12	NO HT_6Mbps	PN7_PATTERN	TXPowerForce_OLPC
	12	NO HT_6Mbps	PN7_PATTERN	TXPowerForce_OLPC
	12	NO HT_6Mbps	PN7_PATTERN	TXPowerForce_OLPC
IEEE 802.11n HT20	12	HT20_MCS_0_20	PN7_PATTERN	TXPowerForce_OLPC
	12	HT20_MCS_0_20	PN7_PATTERN	TXPowerForce_OLPC
	12	HT20_MCS_0_20	PN7_PATTERN	TXPowerForce_OLPC
IEEE 802.11n HT40	12	HT40+MCS_0_40	PN7_PATTERN	TXPowerForce_OLPC
	12	HT40+MCS_0_40	PN7_PATTERN	TXPowerForce_OLPC
	12	HT40+MCS_0_40	PN7_PATTERN	TXPowerForce_OLPC

5.6. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
1	2412-2462	external Antenna with reversed polarity NON standard antenna port	3.0

Test Mode	Transmit and Receive Mode	Description
IEEE 802.11b	☒1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
IEEE 802.11g	☒1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
IEEE 802.11n HT20	☒1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.
IEEE 802.11n HT40	☒1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

FCC DOC APPROVED

Item	Equipment	Brand Name	Model Name	P/N
1	Laptop	DELL	Latitude D610	00045-534-136-300

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	USB Type C	shielded	0.55	N/A

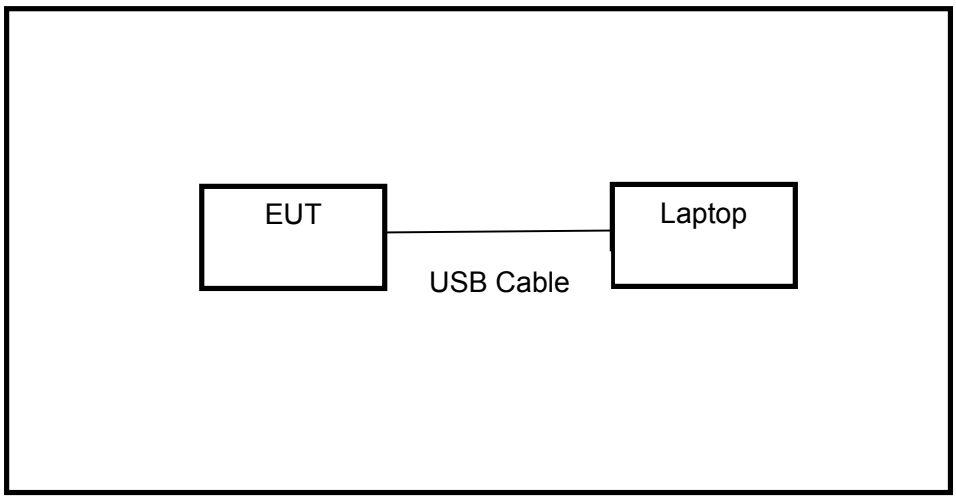
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	N/A	N/A	N/A	N/A

TEST SETUP

The EUT can work in engineering mode with firmware REALTEK through a Laptop.

SETUP DIAGRAM FOR TESTS



5.8. MEASURING INSTRUMENT AND SOFTWARE USED

Instrument (Conducted for RF Port)						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due. Date
☑	Spectrum Analyzer	Agilent	E4447A	MY50180031	Jul.06, 2017	Jul.06, 2018
☑	Spectrum analyzer	R&S	FSU26	1166.1660.26	Oct.16, 2016	Oct.16, 2017
☑	Power Sensor	Agilent	U2021XA	MY55150010	Apr.04, 2017	Apr.04, 2018
☑	Power Sensor	Agilent	U2021XA	MY55150011	Apr.18, 2017	Apr.18, 2018
☑	Attenuator	Mini-Circuits	BW-S10W2	101109	Aug.18, 2016 Aug.18, 2017	Aug.18, 2017 Aug.18, 2018
☑	RF Cable	Micable	C10-01-01-1	100309	Aug.18, 2016 Aug.18, 2017	Aug.18, 2017 Aug.18, 2018
☑	Test Software	JS Tonscend	JS1120-2	Ver.2.5	N/A	N/A
☑	USB Data acquisition	Agilent	U2531A	TW55043503	N/A	N/A
☑	Auto control Unit	JS Tonscend	JS0806-2	158060010	N/A	N/A
Instrument (Radiated Tests)						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
☑	EMI Test Receiver	R&S	ESU8	100316	Oct.16, 2016	Oct.16, 2017
☑	Spectrum analyzer	R&S	FSU26	1166.1660.26	Oct.16, 2016	Oct.16, 2017
☑	Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Oct.16, 2016	Oct.16, 2017
☑	Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Oct.27, 2016	Oct.27, 2017
☑	Double Ridged Horn Antenna	R&S	HF907	100276	Oct.12, 2016	Oct.12, 2017
☑	Pre-amplifier	A.H.	PAM-0118	360	Oct.16, 2016	Oct.16, 2017
☑	RF Cable	HUBSER	CP-X2	W11.03	Oct.16, 2016	Oct.16, 2017
☑	RF Cable	HUBSER	CP-X1	W12.02	Oct.16, 2016	Oct.16, 2017
☑	MI Cable	HUBSER	C10-01-01-1M	1091629	Oct.16, 2016	Oct.16, 2017
☑	Test software	Audix	E3	V 6.11111b	N/A	N/A
Instrument (Line Conducted Emission (AC Main))						
Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Expired date
☑	Test Receiver	R&S	ESU8	100316	Oct.16, 2016	Oct.16, 2017
☑	LISN 1	R&S	ENV216	101109	Oct.16, 2016	Oct.16, 2017
☑	LISN 2	R&S	ESH2-Z5	100309	Oct.16, 2016	Oct.16, 2017

☑	Pulse Limiter	R&S	ESH3-Z2	101242	Oct.16, 2016	Oct.16, 2017
☑	CE Cable 1	HUBSER	ESU8/RF2	W10.01	Oct.16, 2016	Oct.16, 2017
☑	Test software	Audix	E3	V 6.11111b	N/A	N/A

6. MEASUREMENT METHODS

Clause	Test Items	FCC/IC Rules	Test Results
1	6dB Bandwidth	FCC 15.247 (a) (2)	Complied
2	Peak Conducted Output Power	FCC 15.247 (b) (3)	Complied
3	Power Spectral Density	FCC 15.247 (e)	Complied
4	Conducted Bandedge and Spurious Emission	FCC 15.247 (d)	Complied
5	Radiated Bandedge and Spurious Emission	FCC 15.247 (d) FCC 15.209 FCC 15.205	Complied
6	Conducted Emission Test For AC Power Port	FCC 15.207	Complied
7	Antenna Requirement	FCC 15.203	Complied
Remark: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device.			

7. ANTENNA PORT TEST RESULTS

7.1. 6 dB DTS BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247(a)(2)	6 dB Bandwidth	>= 500KHz	2400-2483.5

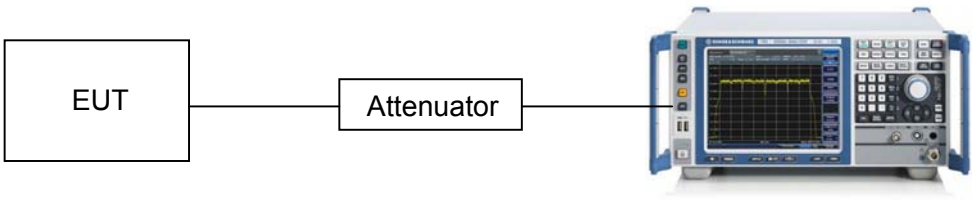
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100K
VBW	≥3 × RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



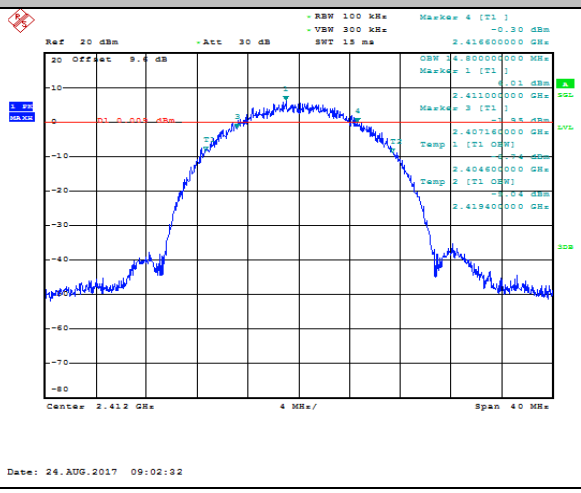
TEST CONDITIONS

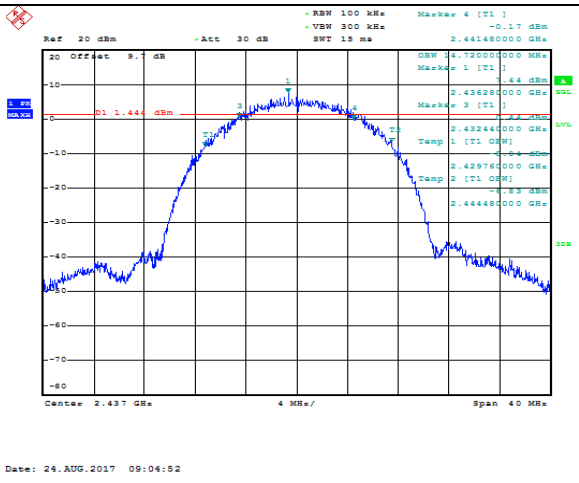
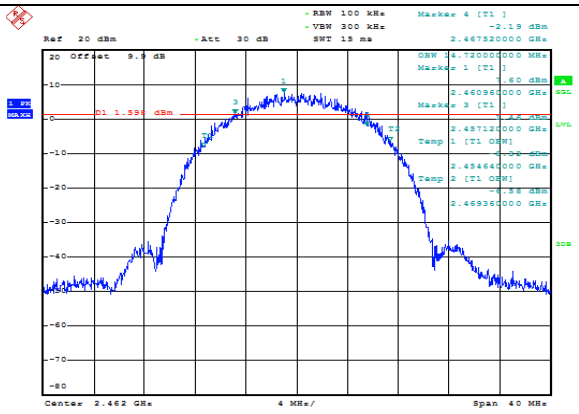
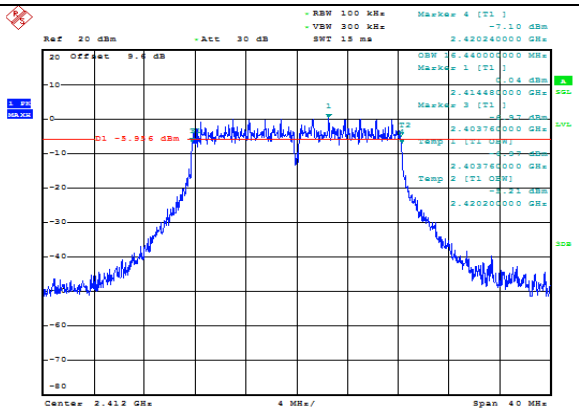
Temperature: 26.6°C
Relative Humidity: 58%
Test Voltage: DC 5V from external AC ADAPTER

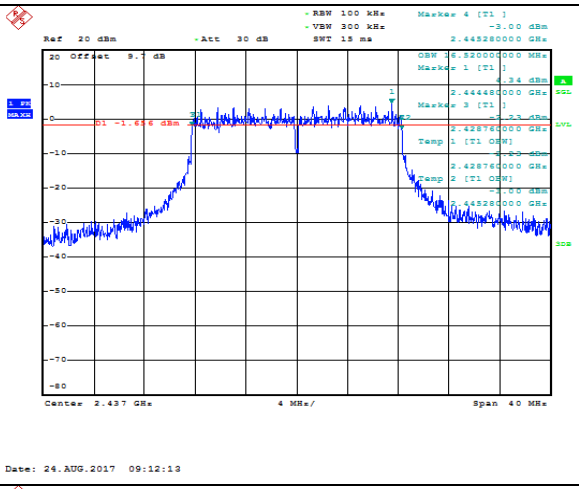
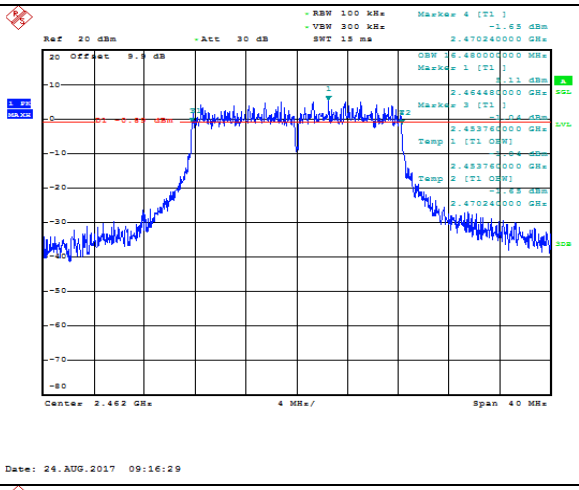
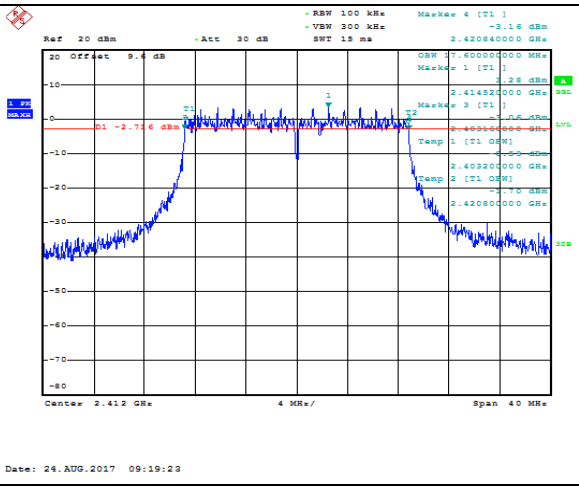
RESULTS

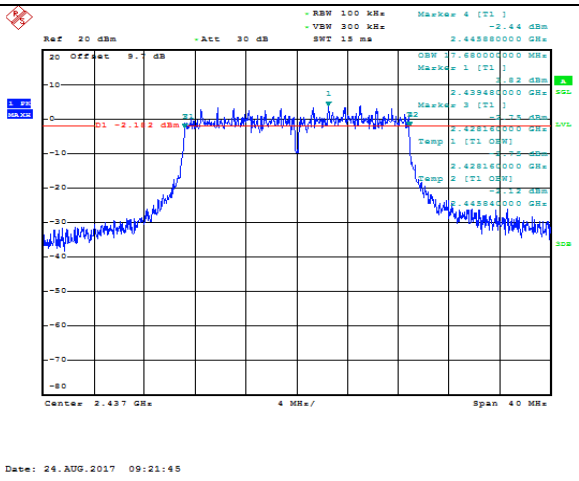
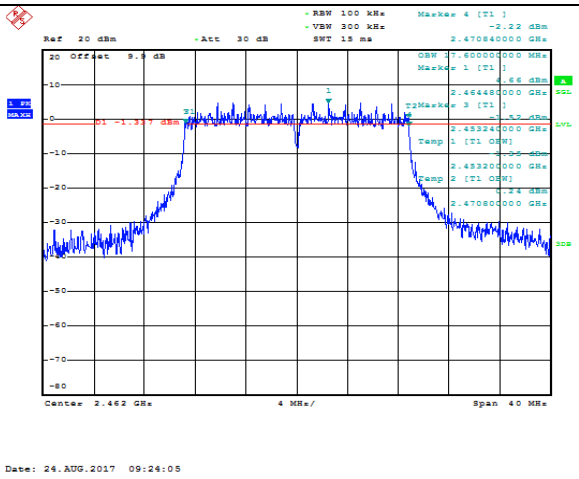
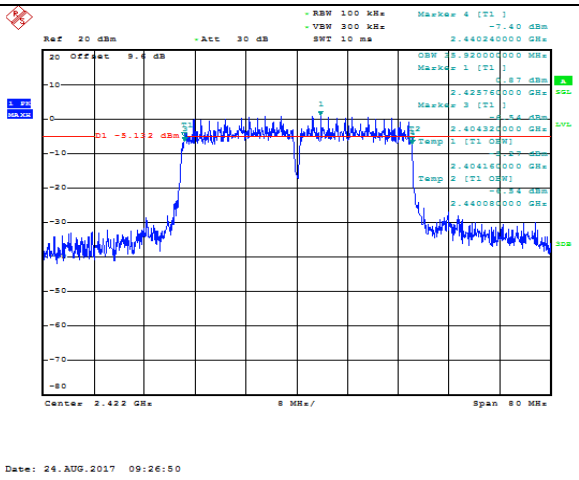
Mode	Channel	6dB Bandwidth [MHz]	Verdict
11B	LCH	9.440	PASS
11B	MCH	9.040	PASS
11B	HCH	10.400	PASS
11G	LCH	16.480	PASS
11G	MCH	16.520	PASS
11G	HCH	16.480	PASS
11N20	LCH	17.680	PASS
11N20	MCH	17.720	PASS
11N20	HCH	17.600	PASS
11N40	LCH	35.920	PASS
11N40	MCH	35.440	PASS
11N40	HCH	35.360	PASS

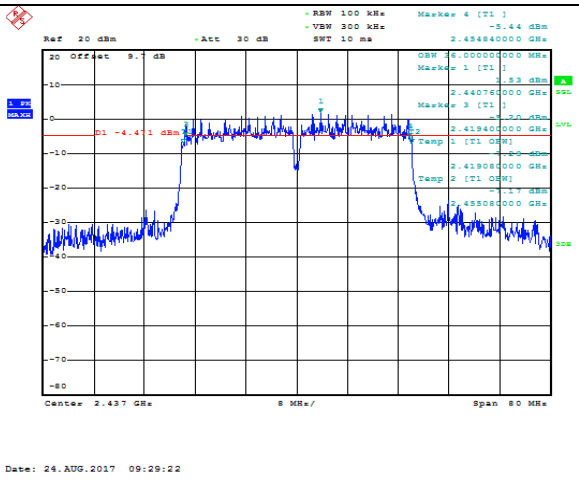
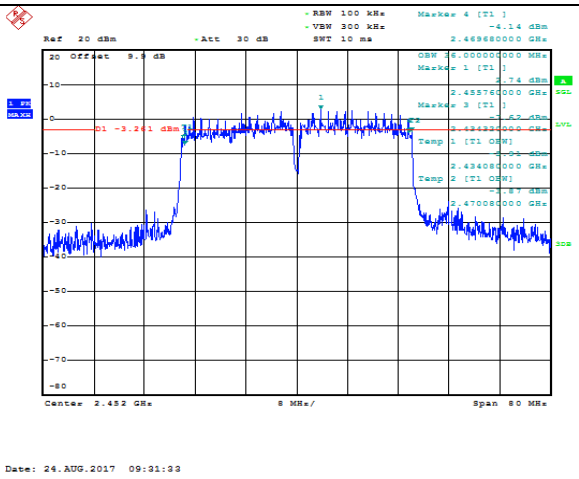
Test Graphs

Graphs For 6dB Bandwidth	
11B/LCH	

11B/MCH	
11B/HCH	
11G/LCH	

11G/MCH	
11G/HCH	
11N20/LCH	

11N20/MCH	
11N20/HCH	
11N40/LCH	

11N40/MCH	
11N40/HCH	

7.2. PEAK CONDUCTED OUTPUT POWER

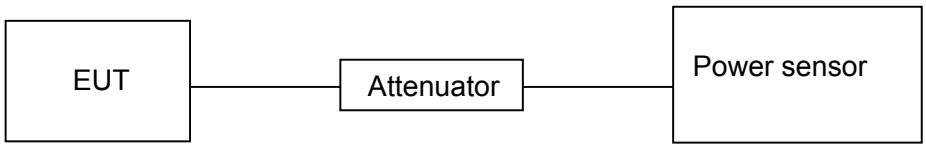
LIMITS

FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC 15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5

TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.
Measure peak power each channel.

TEST SETUP



TEST CONDITIONS

Temperature: 26.6°C
Relative Humidity: 58%
Test Voltage: DC 5V from external AC ADAPTER

RESULTS

Mode	Channel	Peak.Power [dBm]	Verdict
11B	LCH	16.88	PASS
11B	MCH	17.19	PASS
11B	HCH	17.98	PASS
11G	LCH	16.17	PASS
11G	MCH	16.99	PASS
11G	HCH	16.85	PASS
11N20	LCH	16.06	PASS
11N20	MCH	16.18	PASS
11N20	HCH	16.24	PASS
11N40	LCH	15.26	PASS
11N40	MCH	15.89	PASS
11N40	HCH	15.78	PASS

7.3. POWER SPECTRAL DENSITY

LIMITS

FCC Part15 (15.247) Subpart C			
Section	Test Item	Limit	Frequency Range (MHz)
FCC §15.247 (e)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5

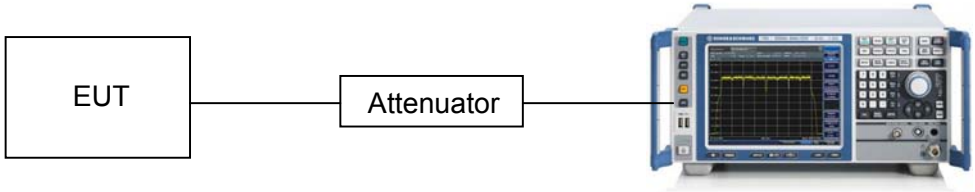
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	3 kHz ≤ RBW 100 ≤ kHz
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST SETUP



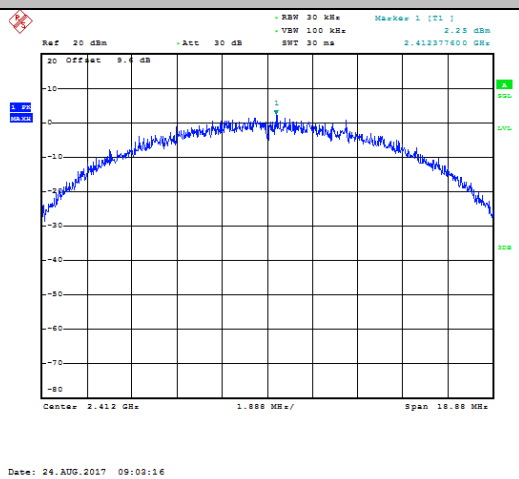
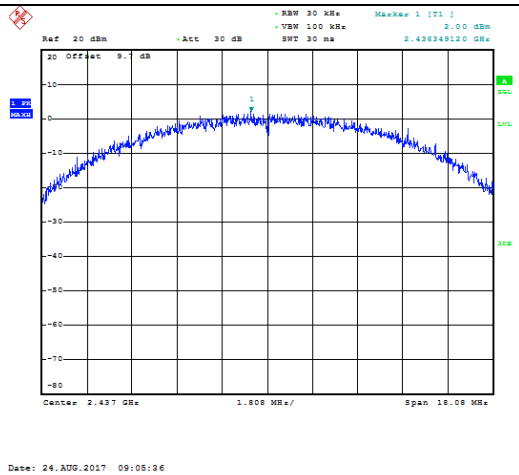
TEST CONDITIONS

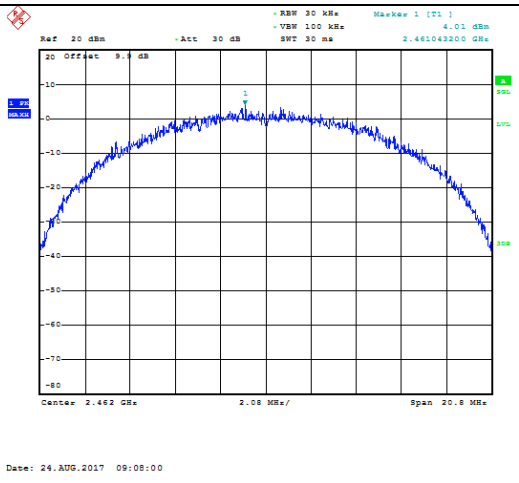
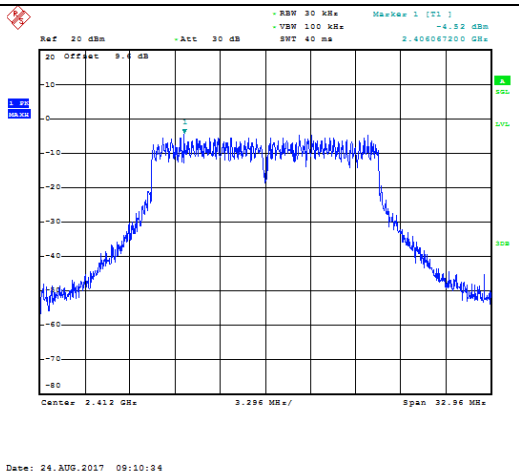
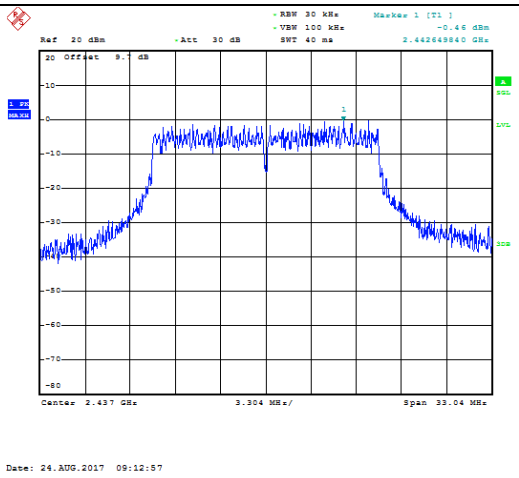
Temperature: 27°C
Relative Humidity: 60%
Test Voltage: DC 5V from external AC ADAPTER

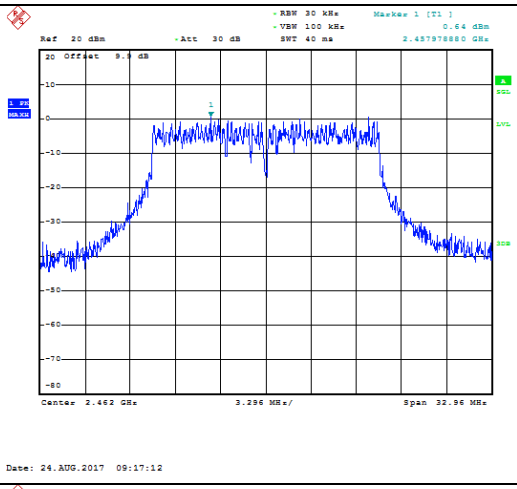
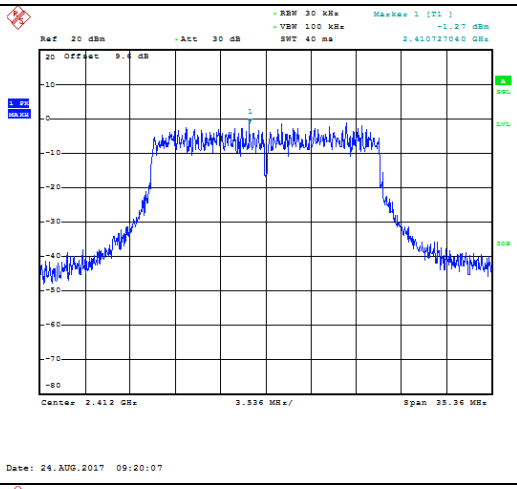
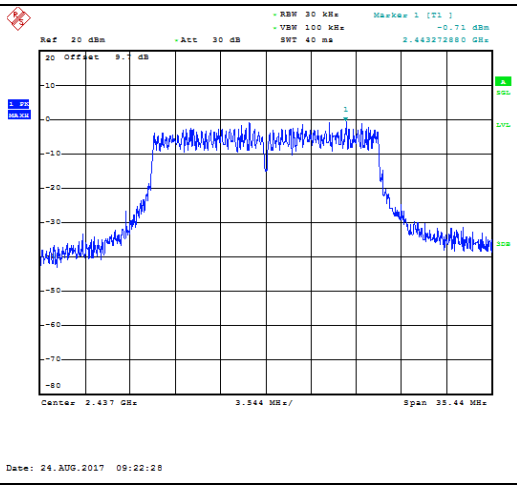
RESULTS

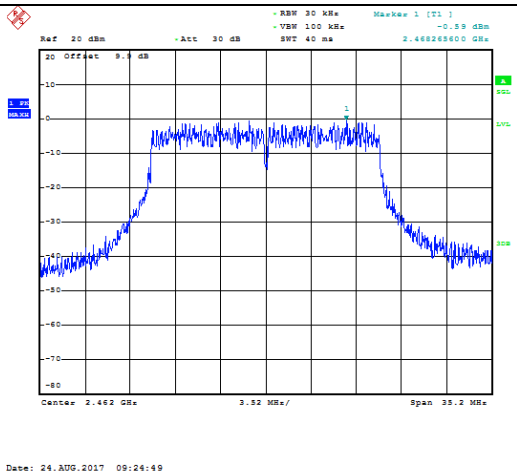
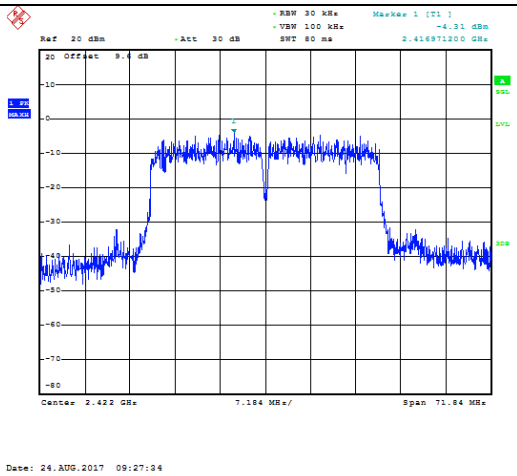
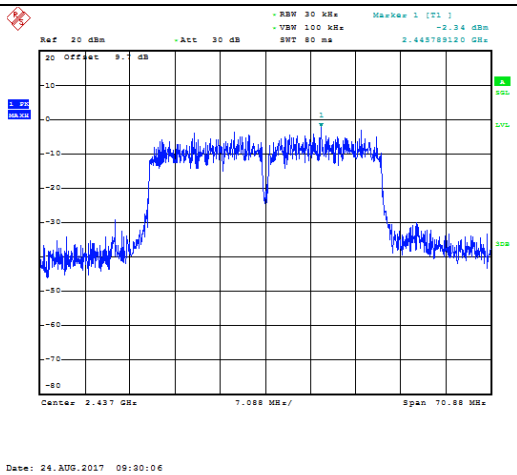
Mode	Channel	Meas.Level [dBm/30kHz]	Verdict
11B	LCH	2.25	PASS
11B	MCH	2.00	PASS
11B	HCH	4.01	PASS
11G	LCH	-4.52	PASS
11G	MCH	-0.46	PASS
11G	HCH	0.64	PASS
11N20	LCH	-1.27	PASS
11N20	MCH	-0.71	PASS
11N20	HCH	-0.59	PASS
11N40	LCH	-4.31	PASS
11N40	MCH	-2.34	PASS
11N40	HCH	-1.65	PASS

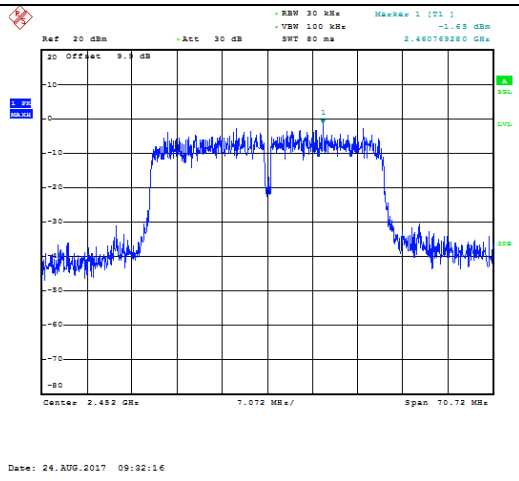
Test Graphs

Graphs	
11B/LCH	
11B/MCH	

11B/HCH	
11G/LCH	
11G/MCH	

11G/HCH	
11N20/LCH	
11N20/MCH	

11N20/HCH	
11N40/LCH	
11N40/MCH	

11N40/HCH	

7.4. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

LIMITS

FCC Part15 (15.247) Subpart C		
Section	Test Item	Limit
FCC §15.247 (d)	Conducted Bandedge and Spurious Emissions	at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power

TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

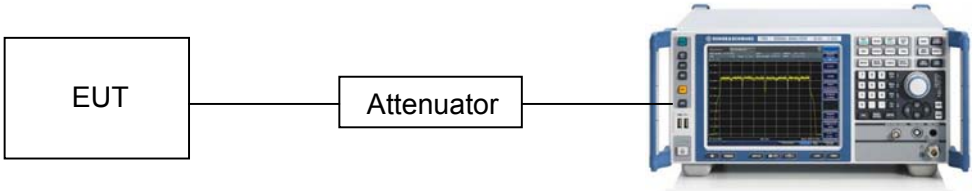
Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	100K
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum PSD level.

Span	Set the center frequency and span to encompass frequency range to be measured
Detector	Peak
RBW	100K
VBW	≥3 × RBW
measurement points	≥span/RBW
Trace	Max hold
Sweep time	Auto couple.

Use the peak marker function to determine the maximum amplitude level**.**

TEST SETUP

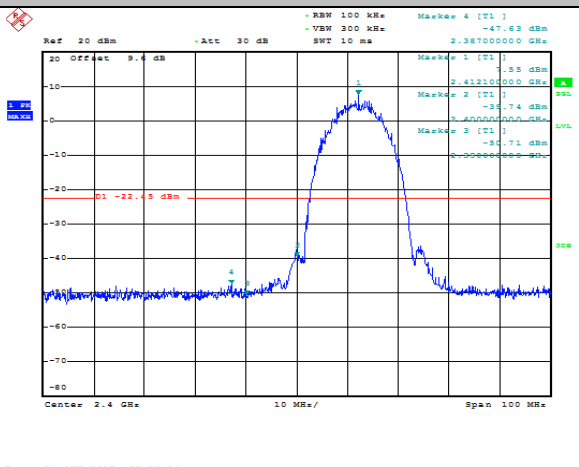
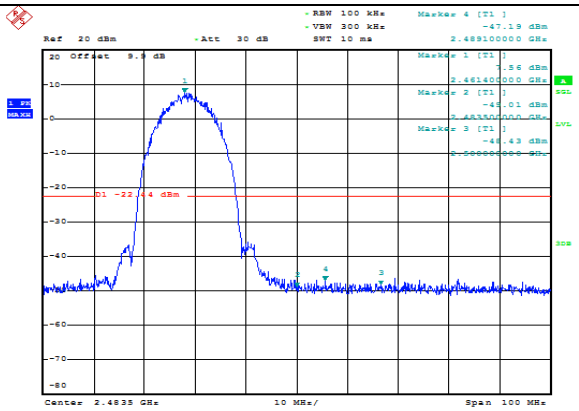


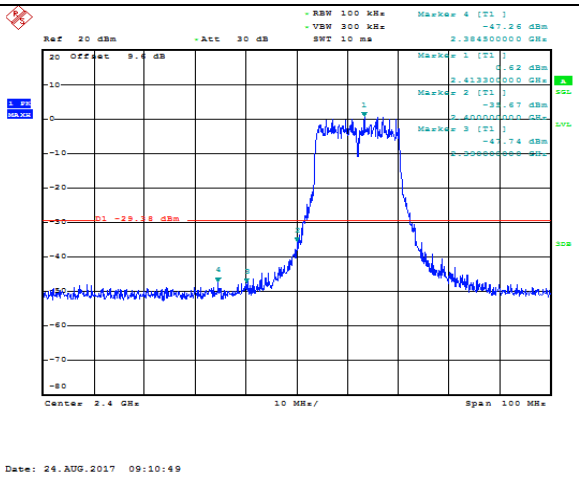
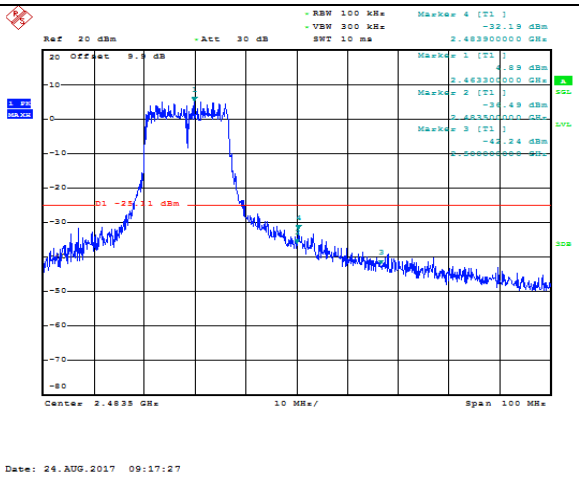
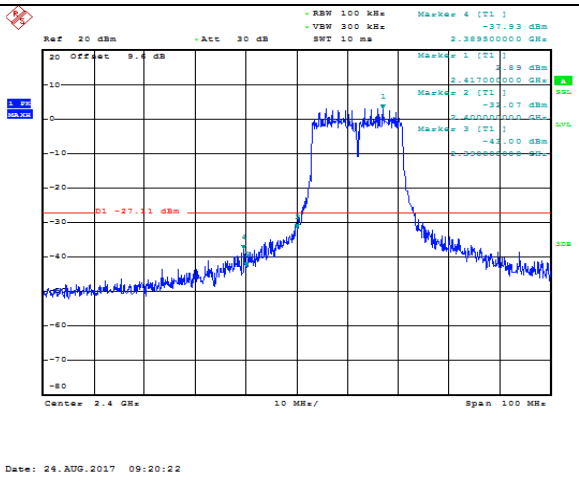
TEST CONDITIONS

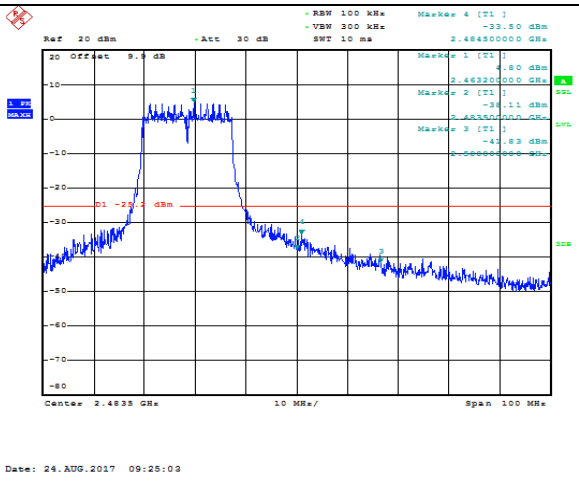
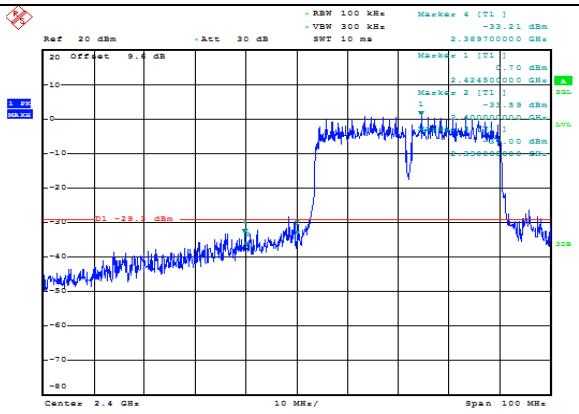
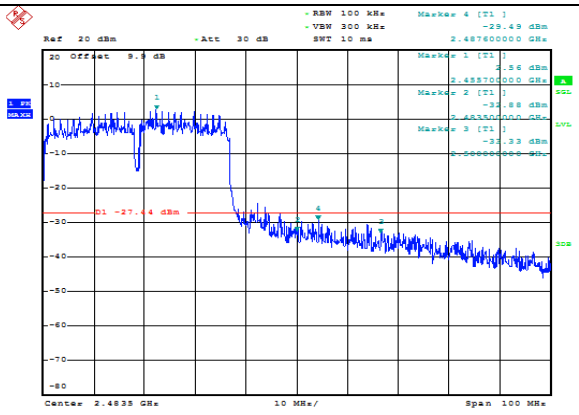
Temperature: 27°C
Relative Humidity: 60%
Test Voltage: DC 5V from external AC ADAPTER

RESULTS

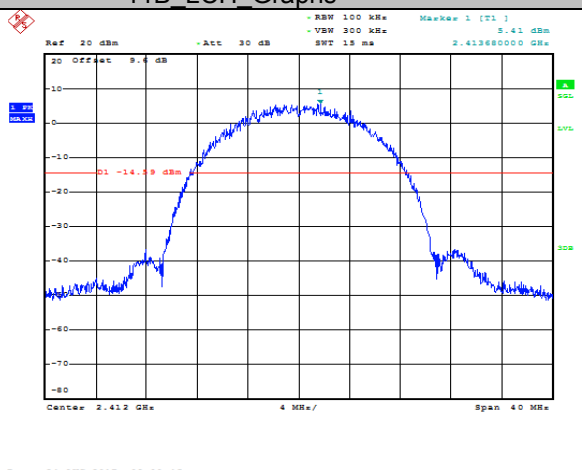
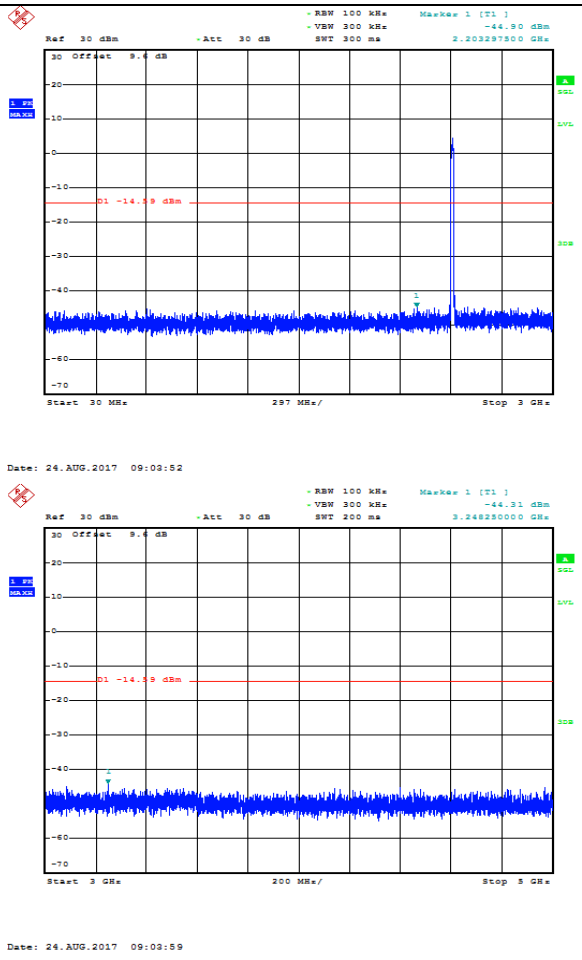
Band-edge:

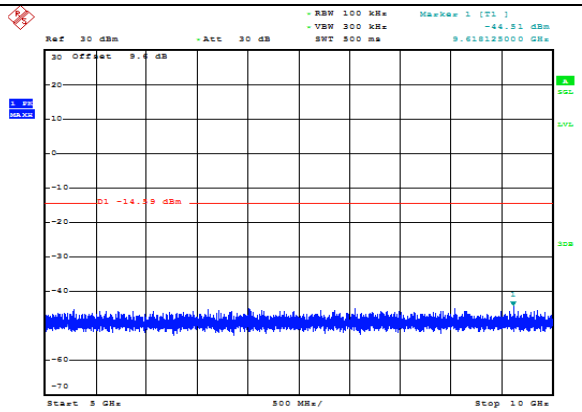
Graphs	
11B/LCH	
11B/HCH	

11G/LCH	
11G/HCH	
11N20/LCH	

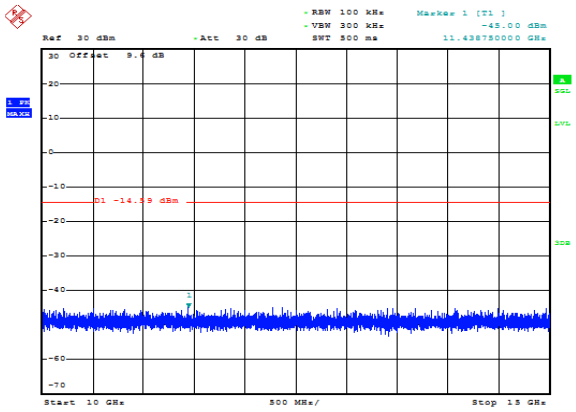
11N20/HCH	
11N40/LCH	
11N40/HCH	

Spurious Emissions:

11B_LCH_Graphs	
11B/LCH	
11B/LCH	



Date: 24.AUG.2017 09:04:07



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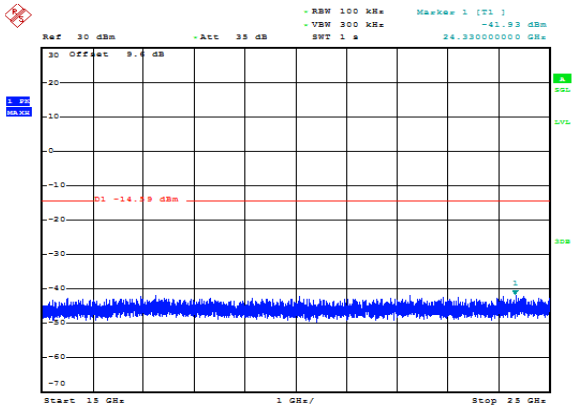

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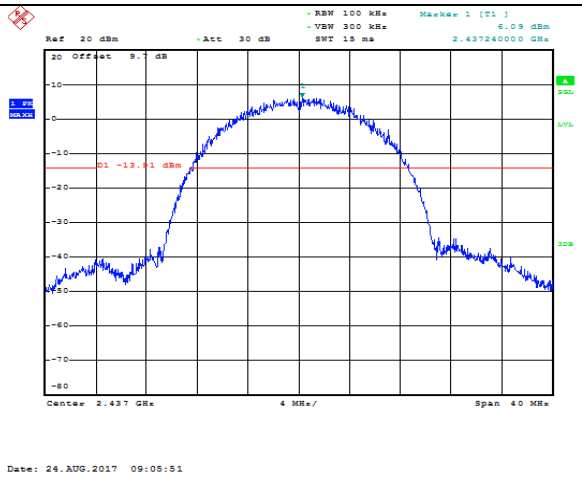
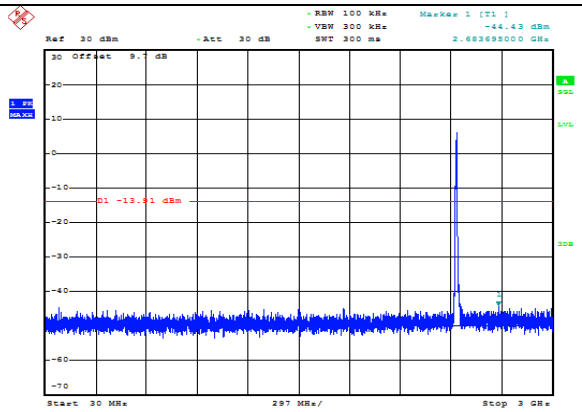
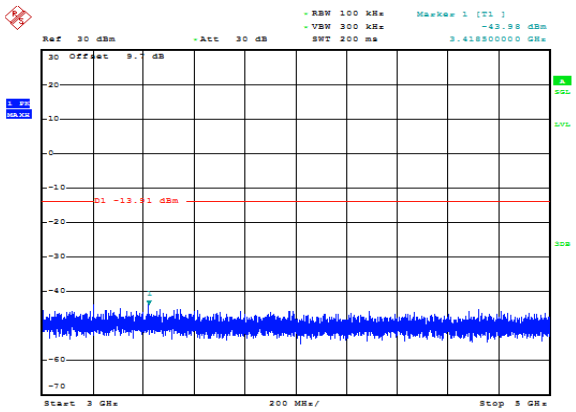
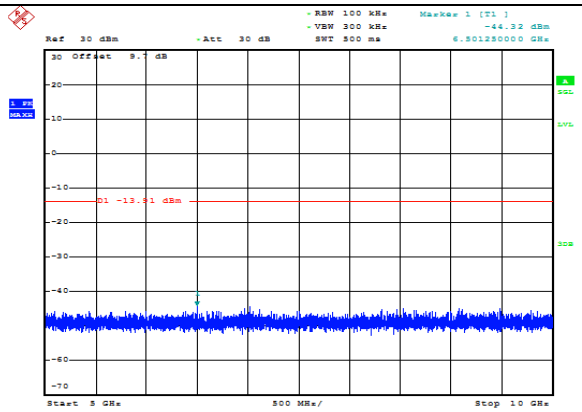
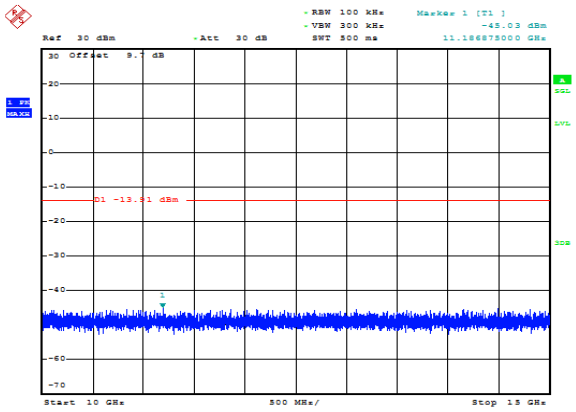
11B_MCH_Graphs

11B/MCH	
11B/MCH	 



Date: 24.AUG.2017 09:06:12



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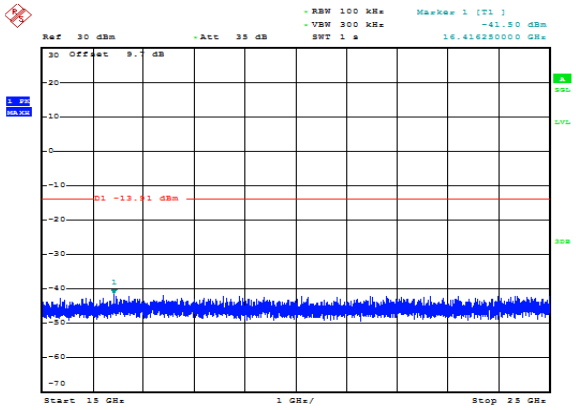

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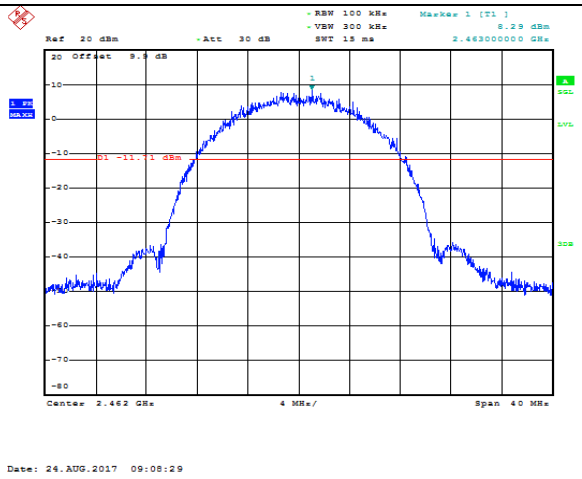
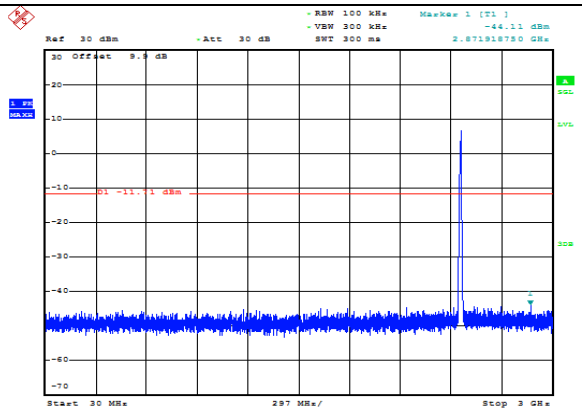
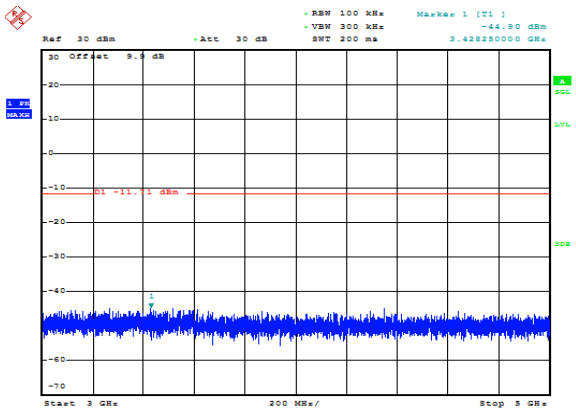
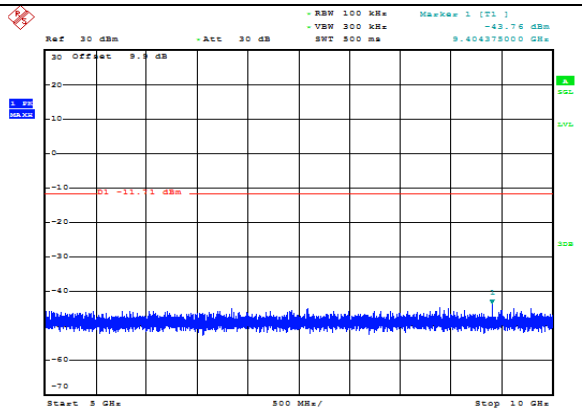
11B_HCH_Graphs

11B/HCH	
11B/HCH	 



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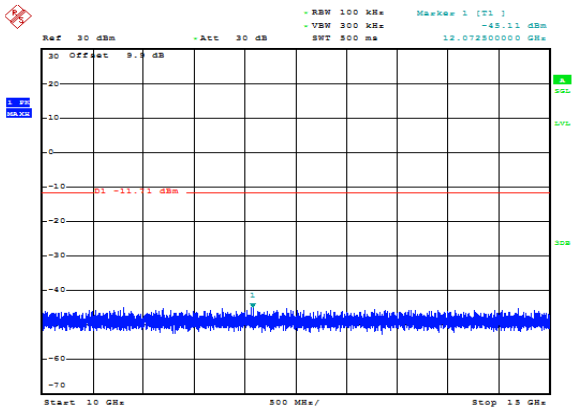

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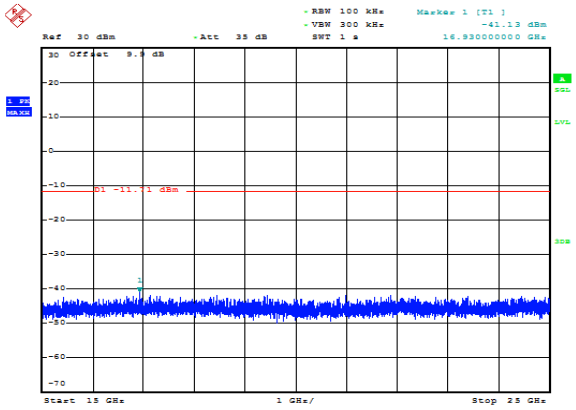

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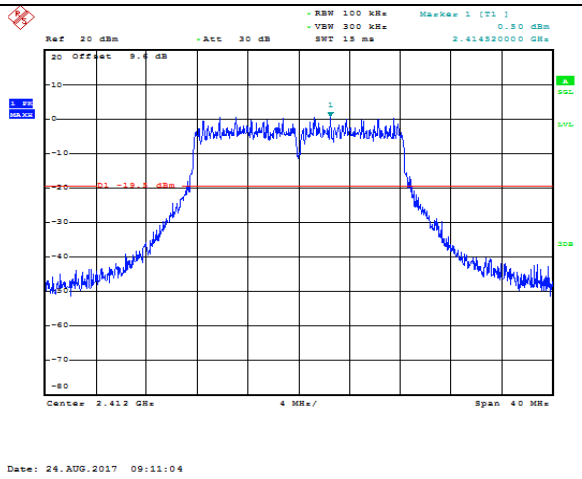
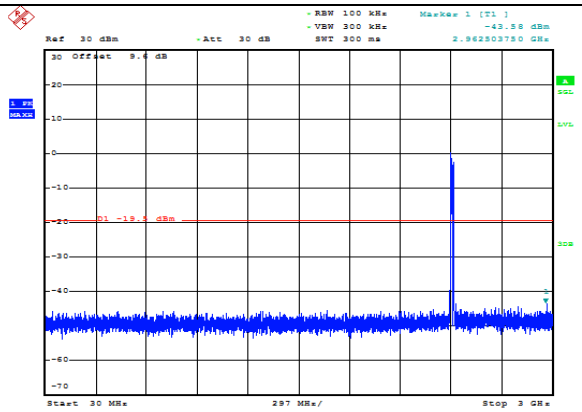
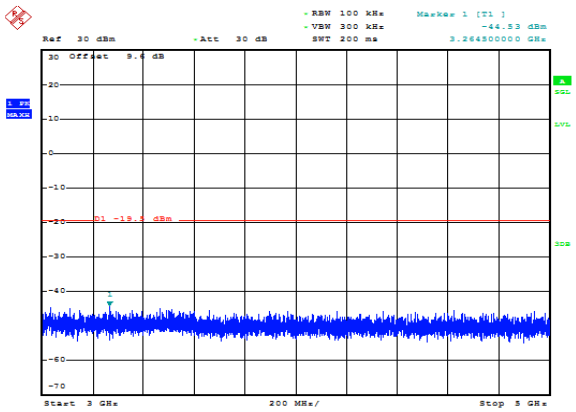
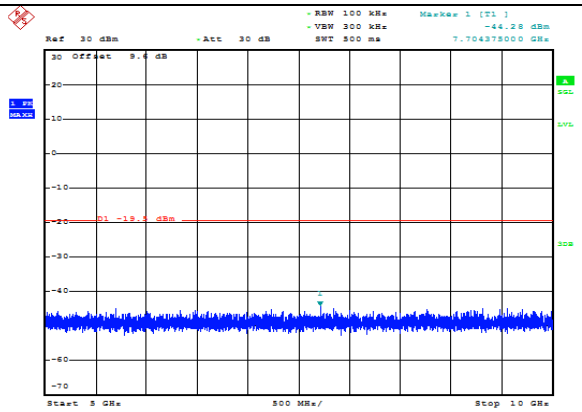
11G_LCH_Graphs

11G/LCH	
11G/LCH	 



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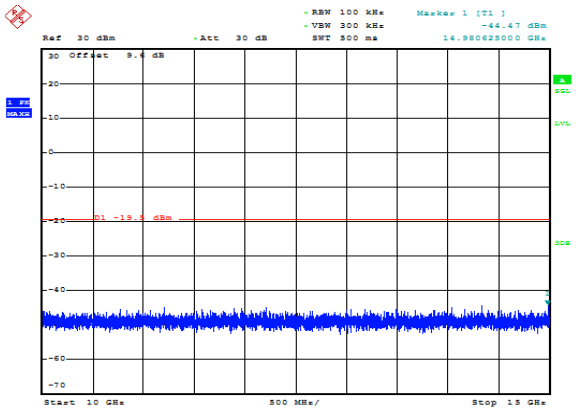

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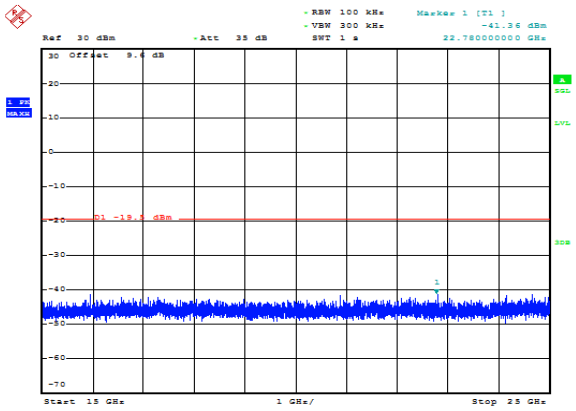
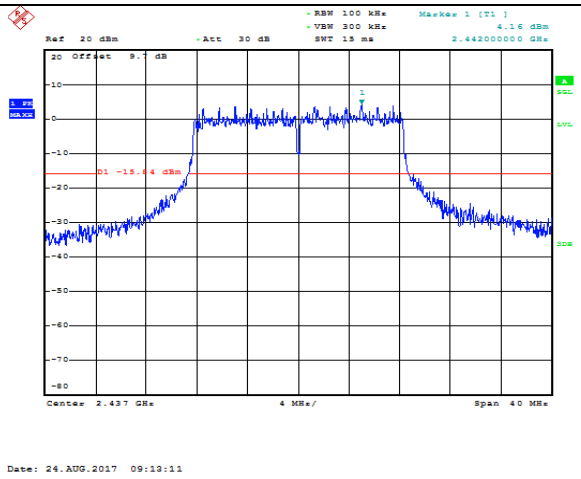
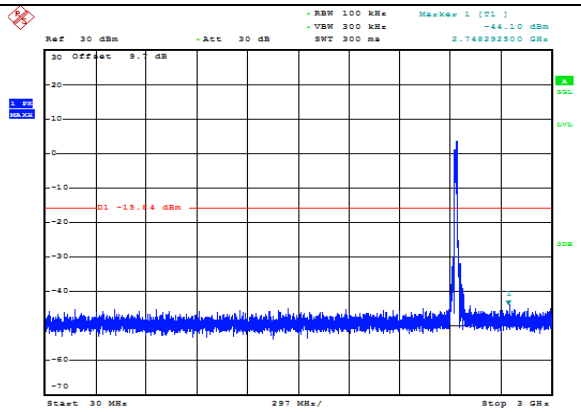
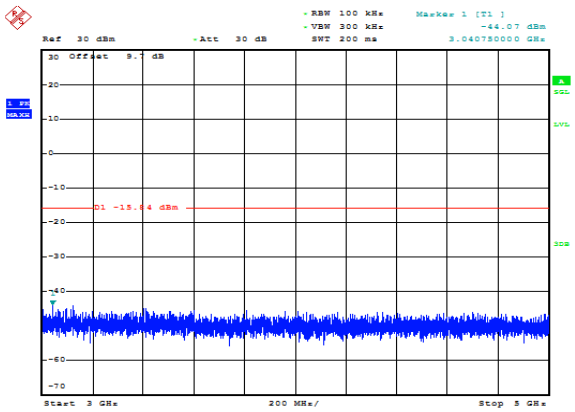
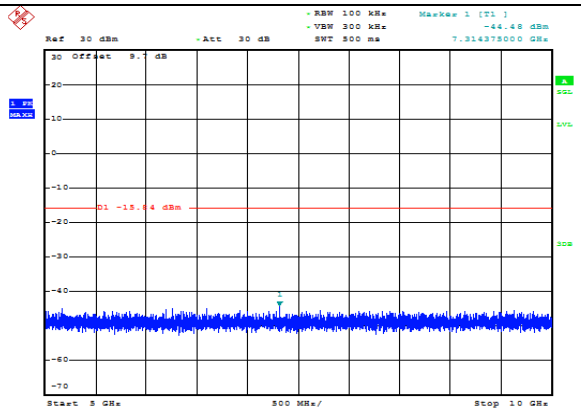


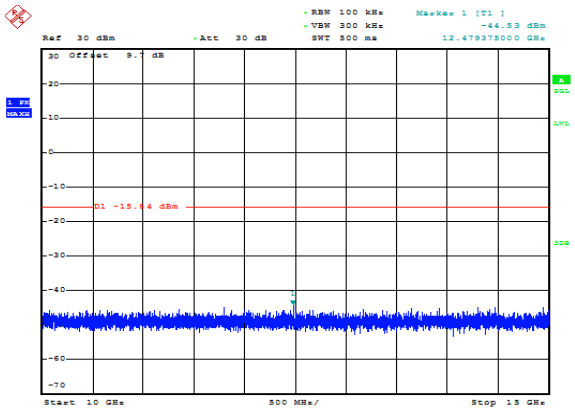
Date: 24.AUG.2017 09:11:42

11G_MCH_Graphs

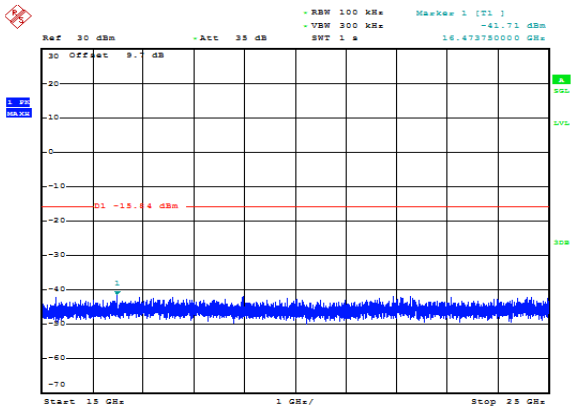
11G/MCH	
11G/MCH	 



Date: 24.AUG.2017 09:13:33

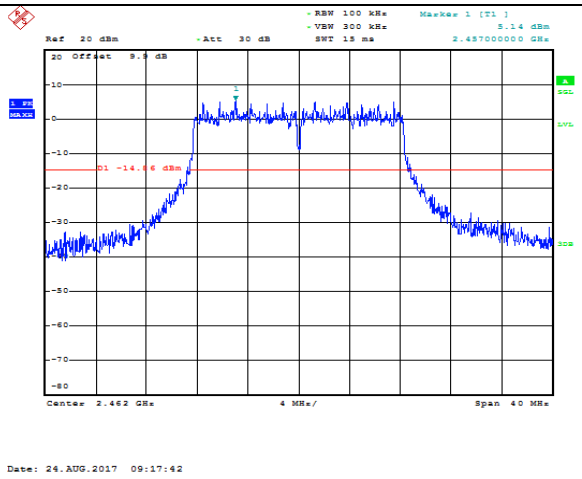
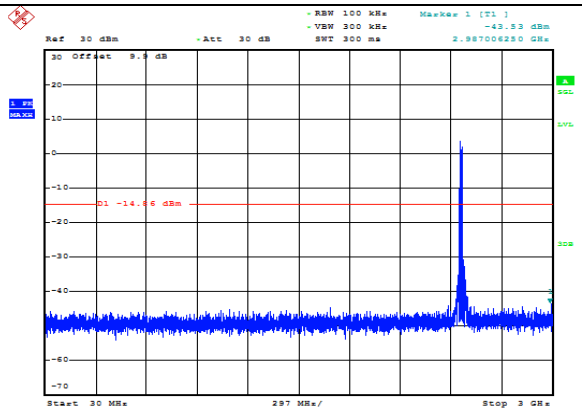
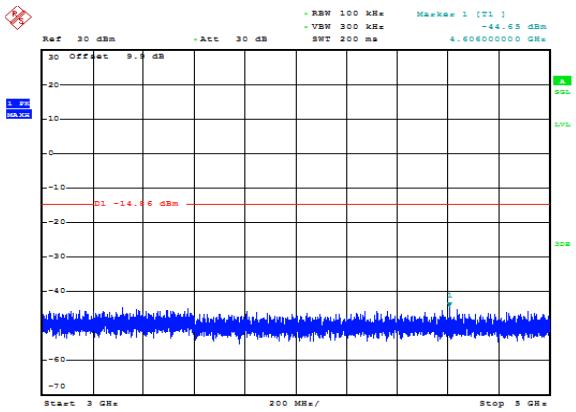


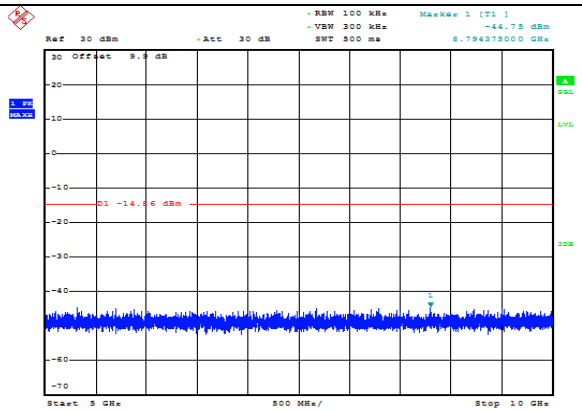
Date: 24.AUG.2017 09:13:41



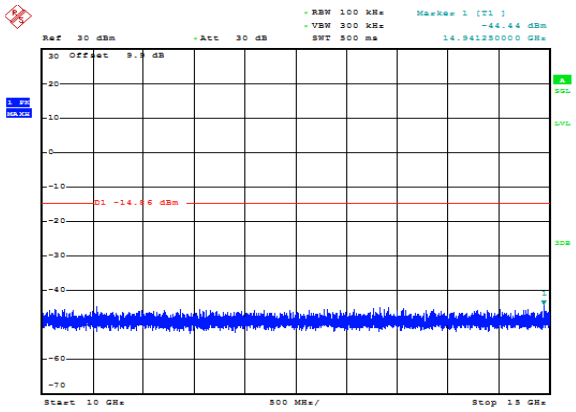
Date: 24.AUG.2017 09:13:49

11G_HCH_Graphs

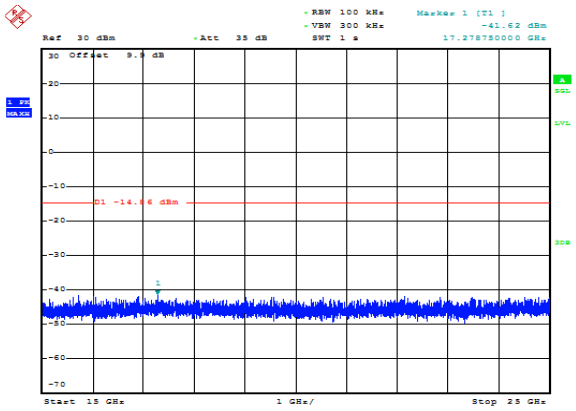
11G/HCH	
11G/HCH	 



Date: 24.AUG.2017 09:18:03

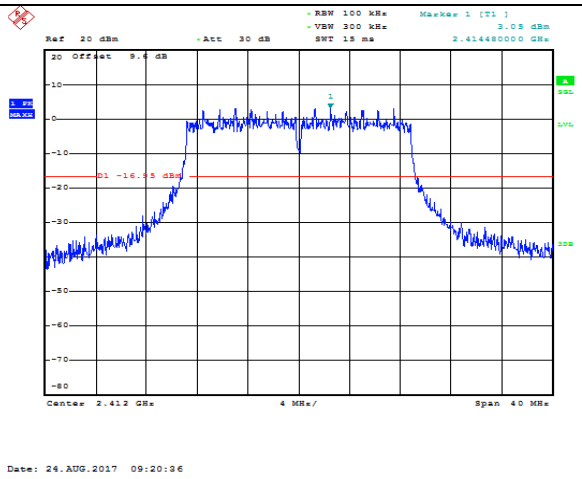
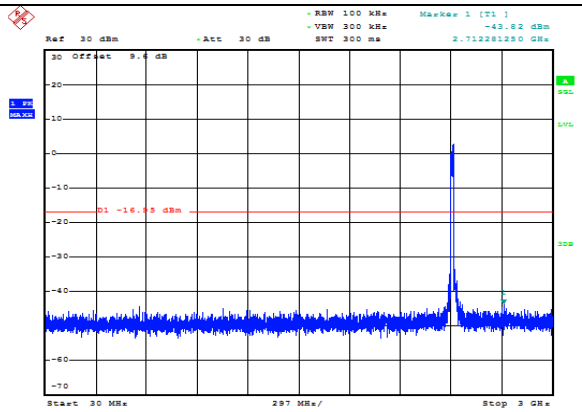
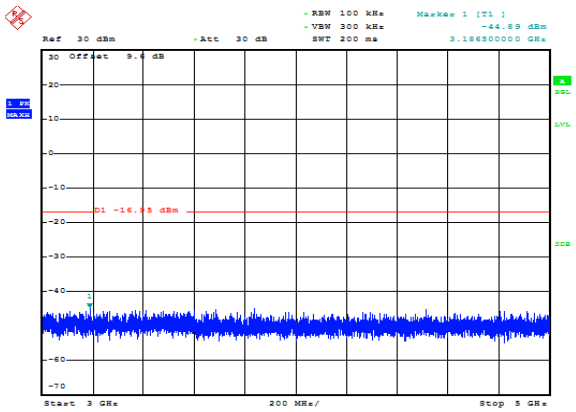


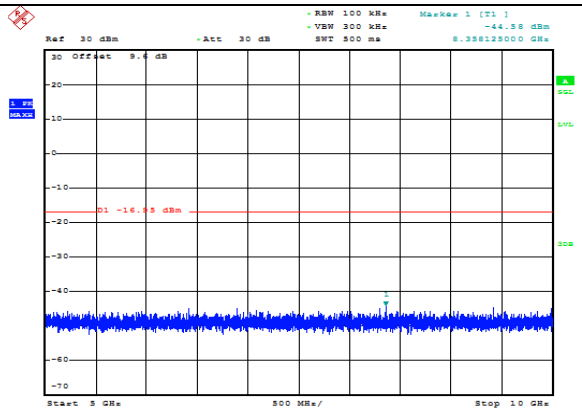
Date: 24.AUG.2017 09:18:11



Date: 24.AUG.2017 09:18:20

11N20_LCH_Graphs

11N20/LCH	
11N20/LCH	 



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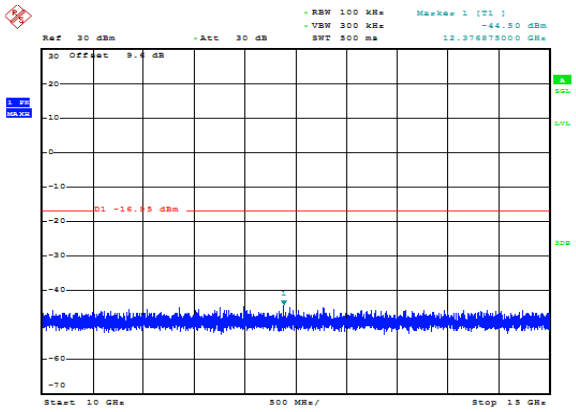

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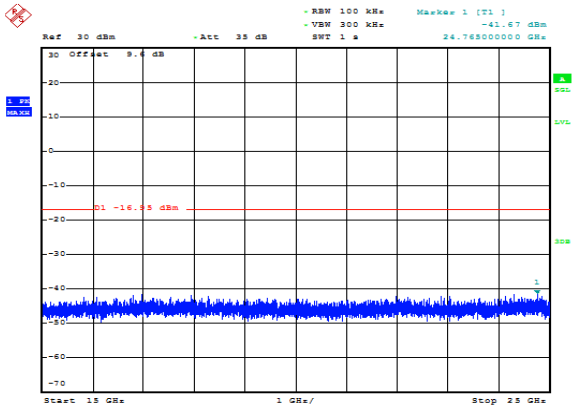

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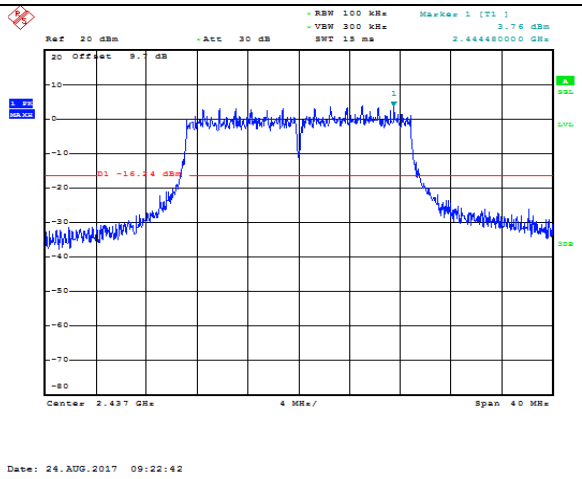
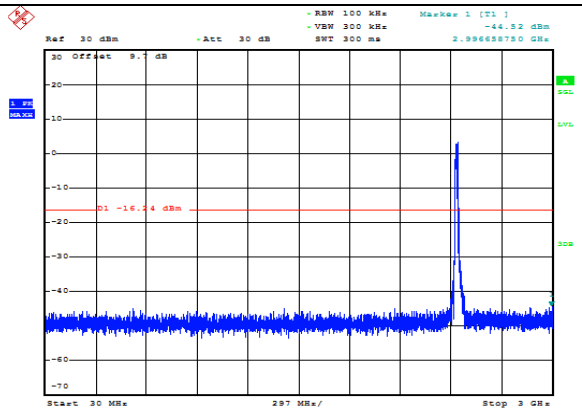
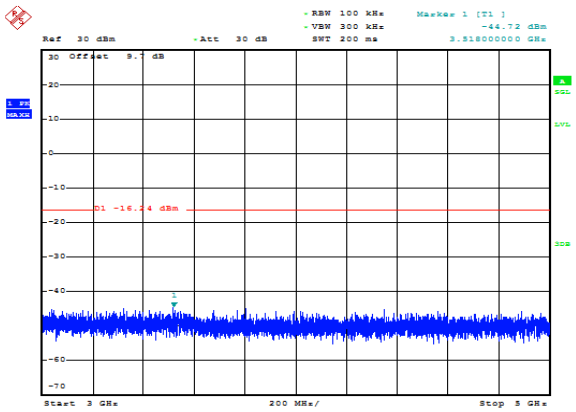
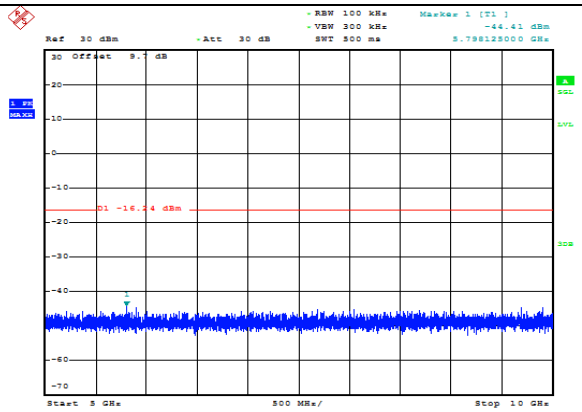
11N20/MCH	
11N20/MCH	 



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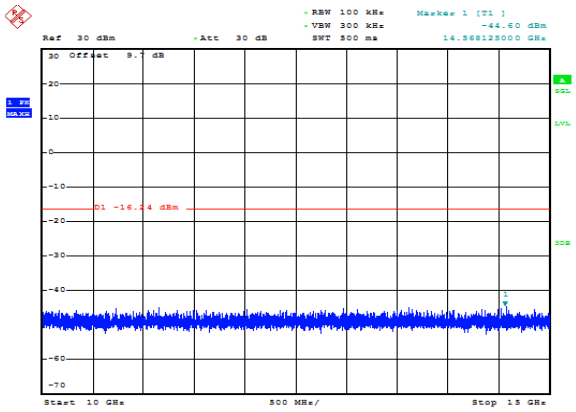

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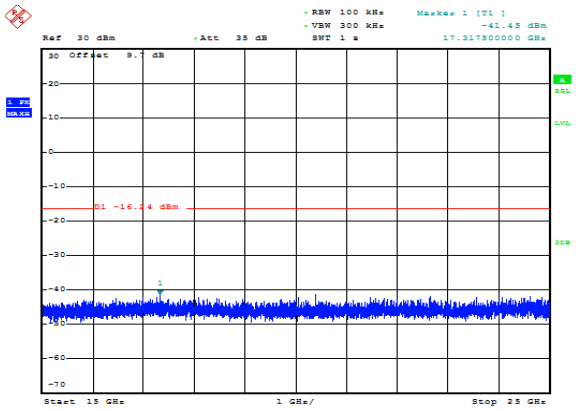

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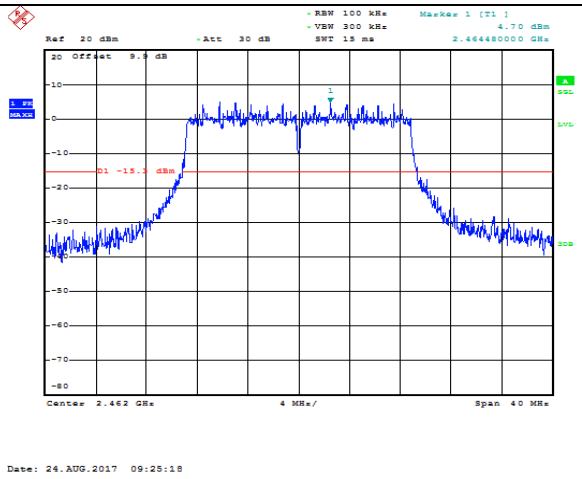
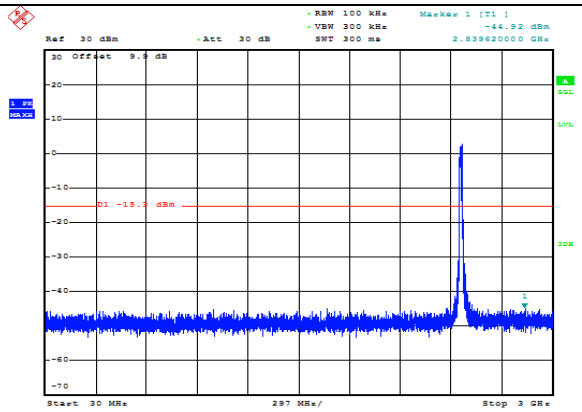
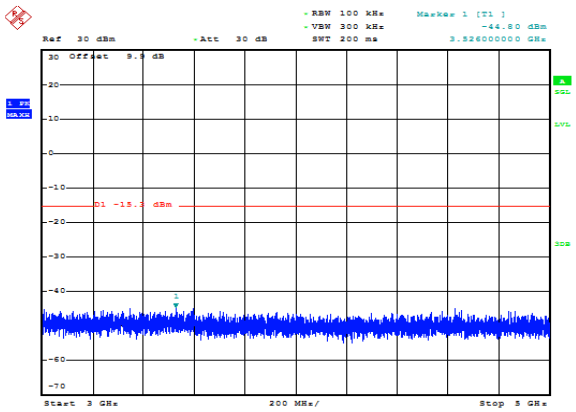
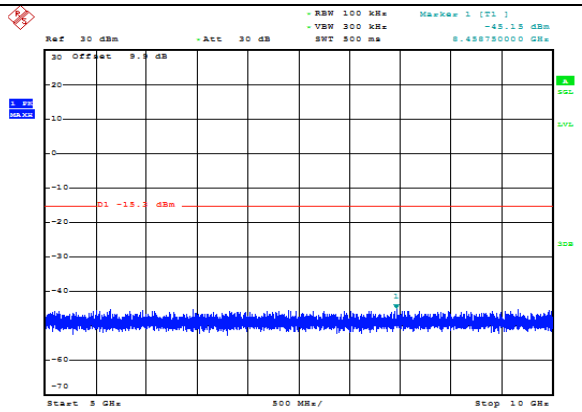
11N20_HCH_Graphs

11N20/HCH	
11N20/HCH	 



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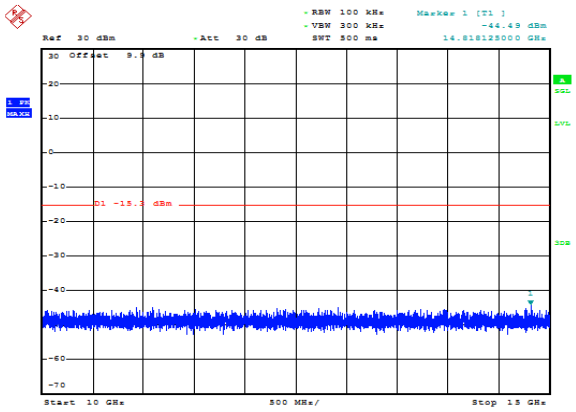

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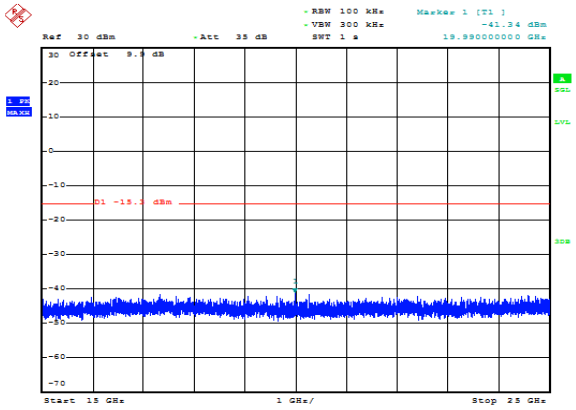

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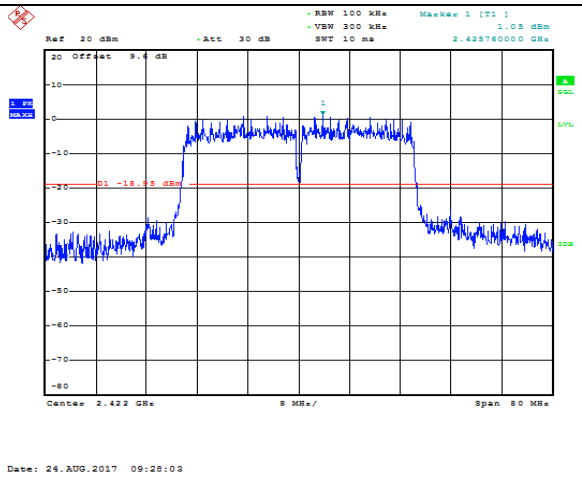
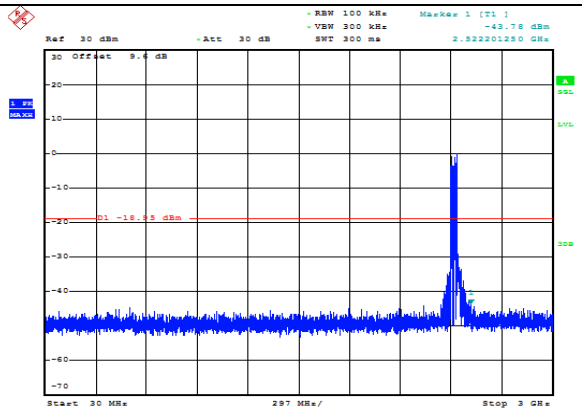
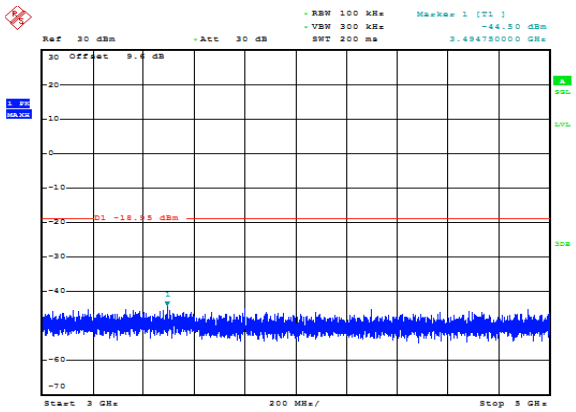
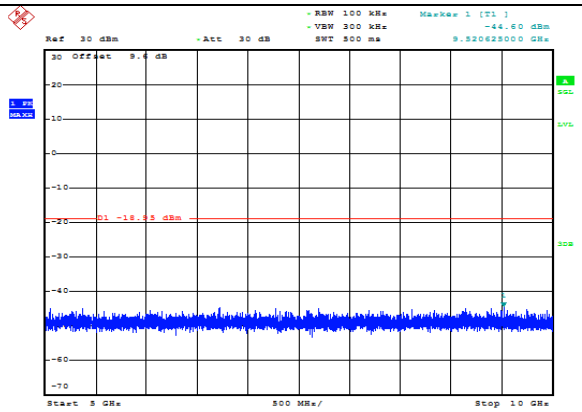
11N40_LCH_Graphs

11N40/LCH	
11N40/LCH	 



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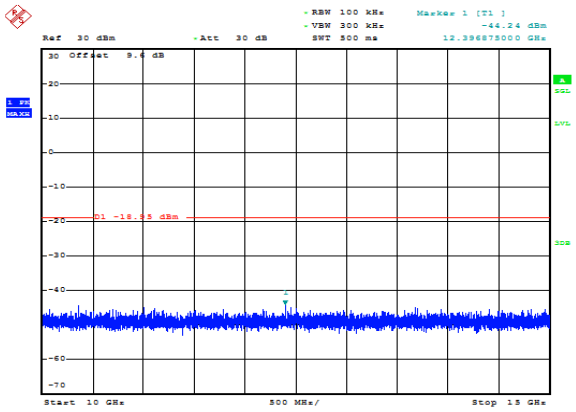

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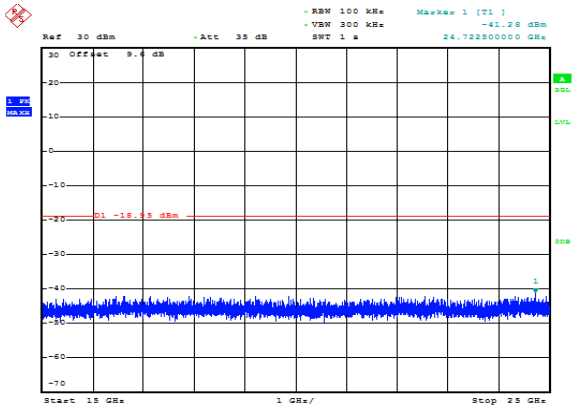

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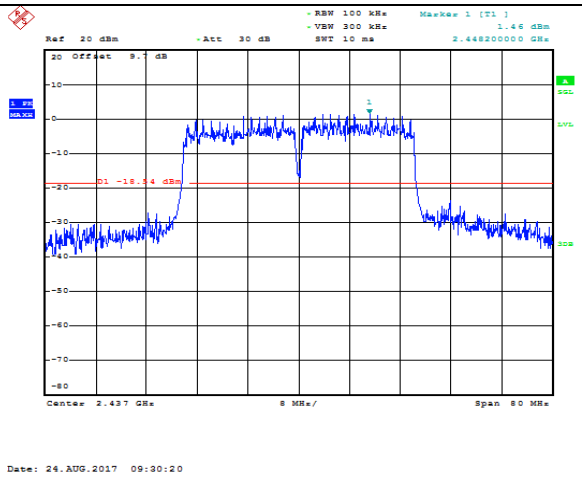
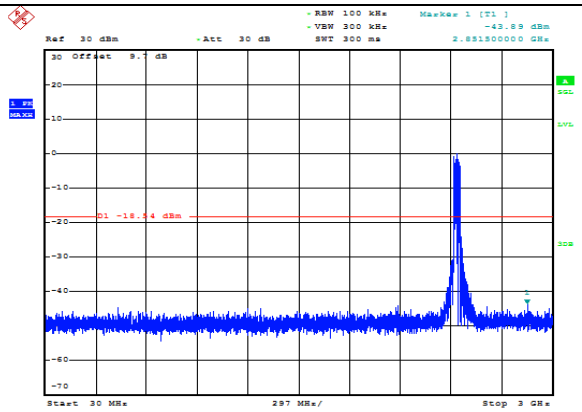
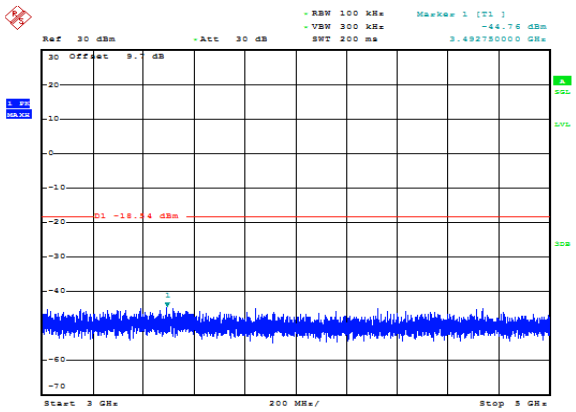
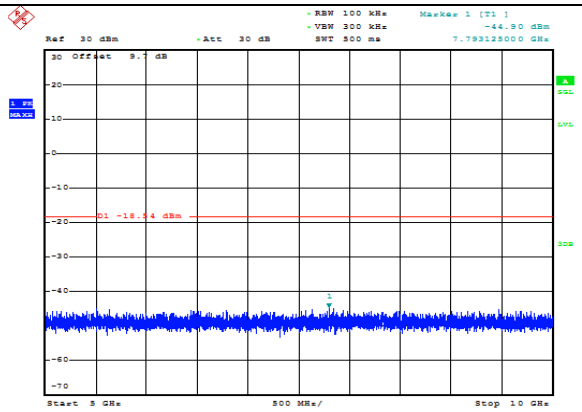
11N40_MCH_Graphs

11N40/MCH	
11N40/MCH	 



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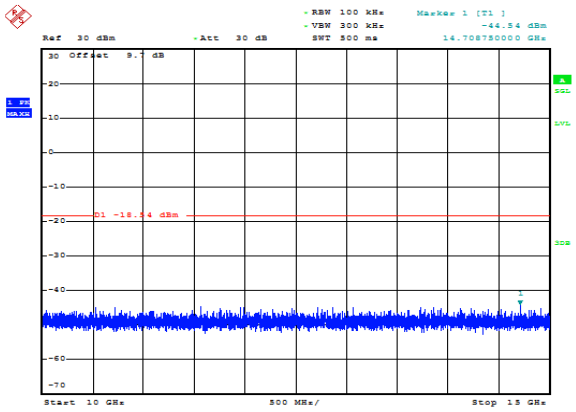

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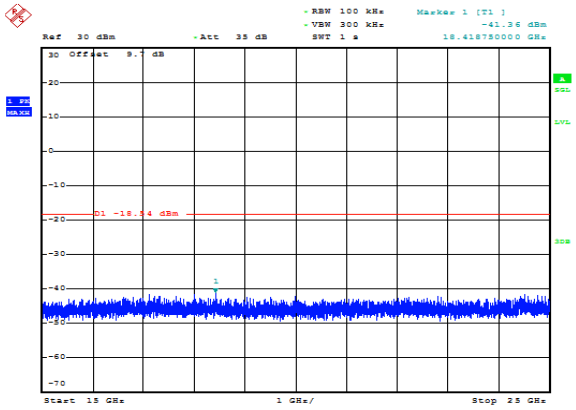

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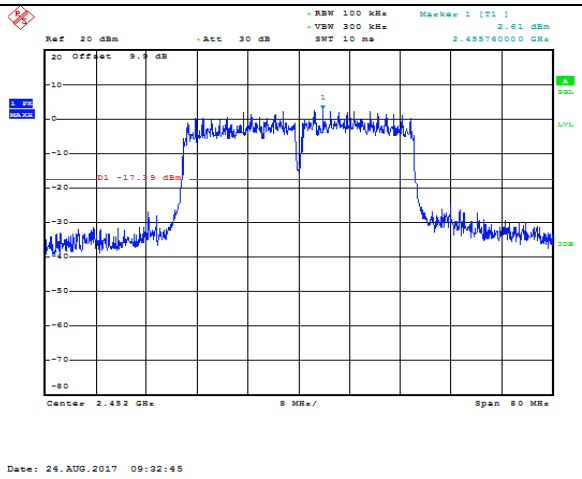
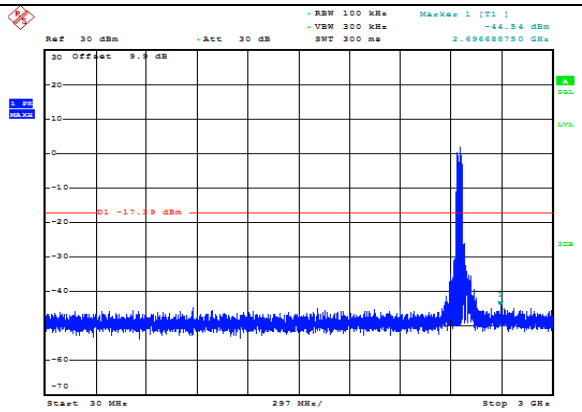
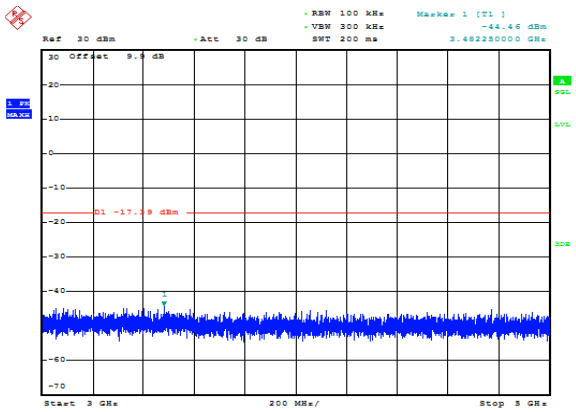
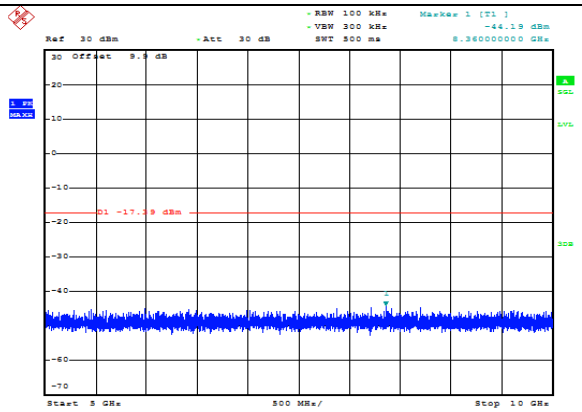
11N40/HCH	
11N40/HCH	 



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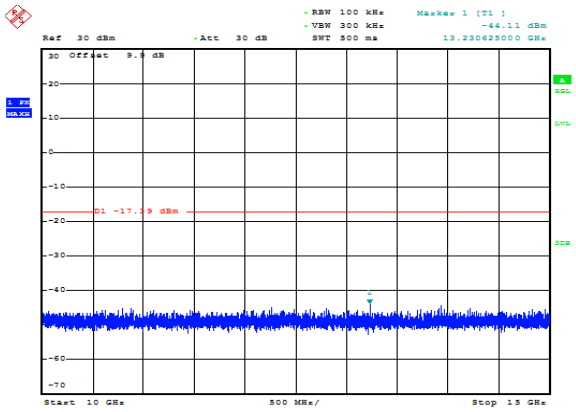

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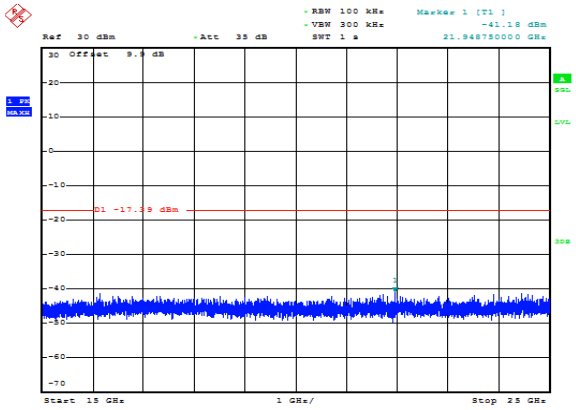

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8. RADIATED TEST RESULTS

8.1. LIMITS AND PROCEDURE

LIMITS

Please refer to FCC §15.205 and §15.209

Radiation Disturbance Test Limit for FCC (Class B)(9KHz-1GHz)

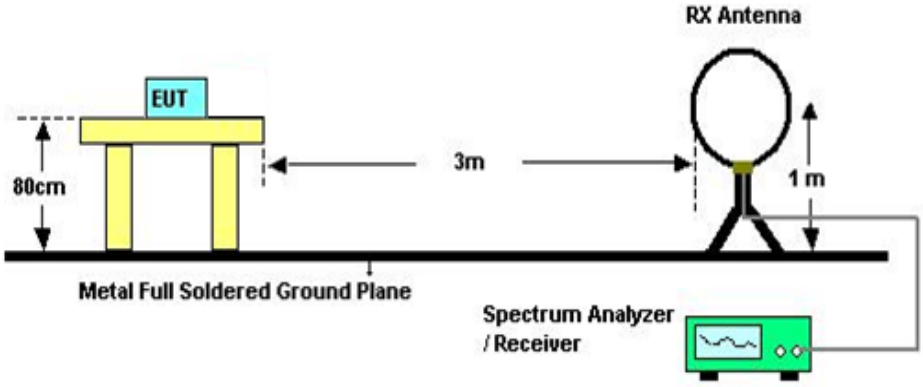
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

Radiation Disturbance Test Limit for FCC (Above 1G)

Frequency (MHz)	dB(uV/m) (at 3 meters)	
	Peak	Average
Above 1000	74	54

TEST SETUP AND PROCEDURE

Below 30MHz



The setting of the spectrum analyser

RBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
VBW	200Hz (From 9kHz to 0.15MHz)/ 9KHz (From 0.15MHz to 30MHz)
Sweep	Auto
Detector	Peak/QP/ Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 0.8 meter above ground.

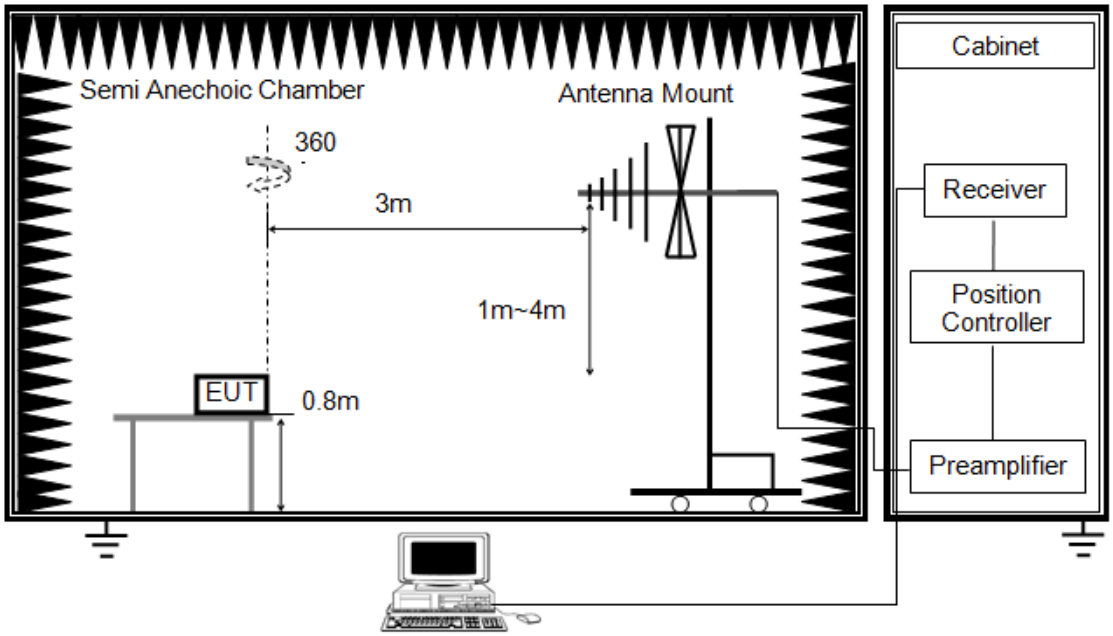
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. For the actual test configuration, please refer to the related item in this test report (Photographs of the Test Configuration)

Below 1G



The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 0.8 meter above ground.

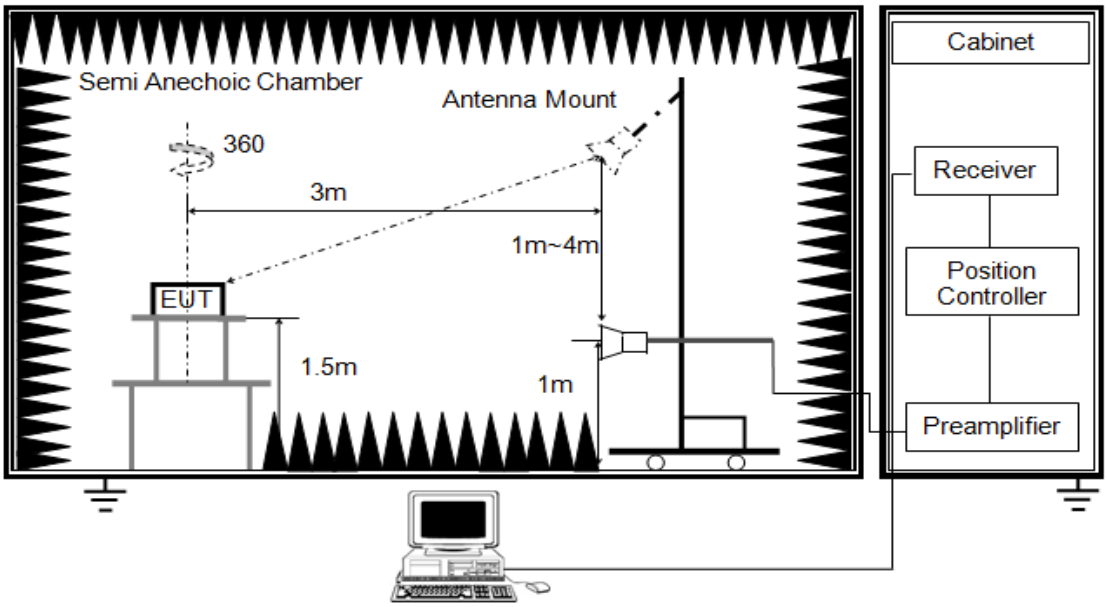
4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

6. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

7. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)

ABOVE 1G



The setting of the spectrum analyser

RBW	1M
VBW	3M
Sweep	Auto
Detector	Peak and CISPR Average
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.10-2013.

2. The EUT was arranged to its worst case and then tune the antenna tower (1.5 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 1.5 meter above ground.

4. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.

5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

6. For measurement above 1GHz, the emission measurement will be measured by the peak detector and the AV detector.

7. For the actual test configuration, please refer to the related Item in this test report (Photographs of the Test Configuration)

TEST CONDITIONS

Temperature: 23.5°C
Relative Humidity: 59.2%
Test Voltage: 3.8Vdc