

Huawei Technologies Co.,Ltd

Application
For
Certification

FCC ID: QIS-MEDIAQM310

MediaQ

Model: M310

WiFi Transceiver

Report No.: 130403024SZN-003

We hereby certify that the sample of the above item is considered to comply with the requirements of FCC Part 15, Subpart C for Intentional Radiator, mention 47 CFR [10-1-12]

Prepared and Checked by:

Approved by:

Sign on file

Lin Lin
Project Engineer

Billy Li
Supervisor
Date: April 8, 2013

- The test results reported in this test report shall refer only to the sample actually tested and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
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TRF no.: FCC 15C_Tx_b

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MEASUREMENT/TECHNICAL REPORT

Huawei Technologies Co.,Ltd - MODEL: M310

FCC ID: QIS-MEDIAQM310

This report concerns (check one) Original Grant Class II Change

Equipment Type: DTS - Part 15 Digital Transmission Systems (WiFi transmitter portion)

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? Yes No

If yes, defer until : _____
date

Company Name agrees to notify the Commission by: _____
date

of the intended date of announcement of the product so that the grant can be issued on that date.

Transition Rules Request per 15.37? Yes No

If no, assumed Part 15, Subpart C for intentional radiator - the new 47 CFR [10-01-12 Edition] provision.

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List of attached file

Exhibit Type	File Description	Filename
Cover Letter	Letter of Agency	agency.pdf
Test Report	Test Report	report.pdf
Test Setup Photo	Radiated Emission	radiated photos.pdf
Test Setup Photo	Conducted Emission	conducted photos.pdf
External Photo	External Photo	external photos.pdf
Internal Photo	Internal Photo	internal photos.pdf
Block Diagram	Block Diagram	block.pdf
Schematics	Circuit Diagram	circuit.pdf
Operation Description	Technical Description	descri.pdf
ID Label/Location	Label Artwork and Location	label.pdf
Cover Letter	Confidentiality Letter	request.pdf
RF Exposure report	RF exposure	RF exposure.pdf
User Manual	User Manual	manual.pdf/safety info.pdf

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EXHIBIT 1

SUMMARY OF TEST RESULTS

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1.0 Summary of Test

Huawei Technologies Co.,Ltd - MODEL: M310

FCC ID: QIS-MEDIAQM310

TEST	REFERENCE	RESULTS
Max. Output power	15.247(b)	Pass
6 dB Bandwidth	15.247(a)(2)	Pass
Max. Power Density	15.247(e)	Pass
Out of Band Antenna Conducted Emission	15.247(d)	Pass
Radiated Emission in Restricted Bands	15.247(d)	Pass
AC Conducted Emission	15.207	Pass
Antenna Requirement	15.203	Pass (See Notes)

Notes: The EUT uses Integral Antenna which in accordance to Section 15.203 is considered sufficient to comply with the provisions of this section.

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EXHIBIT 2

GENERAL DESCRIPTION

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2.0 General Description

2.1 Product Description

The Equipment Under Test (EUT) is a MediaQ, Model: M310 with internal WiFi function operating at 2412-2462MHz for 802.11b/g/n-HT20, 11 channels with 5MHz channel spacing, and operating at 2422-2452MHz for 802.11n-HT40, 7 channels with 5MHz channel spacing, and operating at 5745-5825MHz for 802.11n-HT20, 5 channels with 20MHz channel spacing, and operating at 5755-5795MHz for 802.11n-HT40, 2 channels with 40MHz channel spacing. It is powered by AC/DC Adapter (with input of 100 - 240Vac, 50/60Hz and output of DC5V, 2A). For more detailed features description, please refer to the user's manual.

Type of Modulation: DBPSK, DQPSK, BPSK, QPSK, 16QAM, 64QAM.

Antenna Type: Integral Antenna.

For electronic filing, the brief circuit description is saved with filename: descri.pdf.

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2.2 Related Submittal(s) Grants

This is an application for certification of:
DTS- Part 15 Digital Transmission Systems (WiFi transmitter portion)

Remaining portions are subject to the following procedures:

1. Bluetooth (2.1+EDR): 130403024SZN-001.
2. Bluetooth (4.0): 130403024SZN-002.
3. WiFi Transceiver (5G band): 130403024SZN-004.
4. MediaQ (Android 4.1): 130403024SZN-005.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.4 (2009) and KDB 558074. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise in the “**Justification Section**” of this Application. All other measurements were made in accordance with the procedures in part 2 of CFR 47.

2.4 Test Facility

The Semi-Anechoic chamber and shield room used to collect the radiated data and conducted data are **Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch** and located at 6F, Block D, Huahan Building, Langshan Road, Nanshan District, Shenzhen, P. R. China. This test facility and site measurement data have been fully placed on file with the FCC (Registration Number: 242492).

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EXHIBIT 3

SYSTEM TEST CONFIGURATION

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3.0 System Test Configuration

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, all cables were manipulated to produce worst case emissions. It was powered by AC/DC Adapter through 120V/60Hz during the test. Only the worst case data was reported.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000 MHz. The resolution is 1 MHz or greater for frequencies above 1000 MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

3.2 EUT Exercising Software

The EUT exercise program (provided by client) used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The worst case configuration is used in all specified testing.

The parameters of test software setting:

During the test, Channel and power controlling software provided by the applicant was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the application and is going to be fixed on the firmware of the end product.

Power Parameters of IEEE 802.11b/g/n (2.4G band: 2400-2483.5MHz)

Test software setting of IEEE 802.11b/g/n			
Channel No.	Output Power	Data rate	Modulation type
1,6,11	15.0	802.11b: 1-11Mbps	802.11b: DBPSK, DQPSK
	15.0	802.11g: 6-54Mbps	802.11g: BPSK, QPSK, 16QAM, 64QAM
1,6,11	15.0	802.11n-HT20: 6.5-130Mbps	802.11n: BPSK, QPSK, 16QAM, 64QAM
3,6,9	15.0	802.11n-HT40: 13.5-135Mbps	802.11n: BPSK, QPSK, 16QAM, 64QAM

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Power Parameters of IEEE 802.11a/n (5G band: 5725-5875MHz)

Test software setting of IEEE 802.11b/g/n			
Channel No.	Output Power	Data rate	Modulation type
149, 157, 165	15.0	802.11a: 6-54Mbps	802.11a: BPSK, QPSK, 16QAM, 64QAM
	15.0	802.11n-HT20: 6.5-130Mbps	802.11n: BPSK, QPSK, 16QAM, 64QAM
151, 159	15.0	802.11n-HT40: 6.5-130Mbps	802.11n: BPSK, QPSK, 16QAM, 64QAM

Note: When product operates on 802.11b/g/n-HT20(SISO)/n-HT40 mode (2.4Gband) & 802.11a/n-HT20/n-HT40 mode (5Gband), only one antenna 1 is used for transmission. The MIMO modes only apply on 802.11n-HT20 mode (2.4G band) and the both antennas can be used for transmission.

3.3 Special Accessories

Shielded USB cable with OTG port & shielded HDMI cable were attached with the EUT.

3.4 Measurement Uncertainty

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value.

3.5 Equipment Modification

Any modifications installed previous to testing by Huawei Technologies Co.,Ltd will be incorporated in each production model sold / leased in the United States.

No modifications were installed by Intertek Testing Services Shenzhen Ltd. Kejiyuan Branch.

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3.6 Support Equipment List and Description

Description	Manufacturer	Model No.
TV	Sony	KDL-24EX520
Earphone	G-Tide	3.5mm jack earphone
TF Card	Sandisk	TF/4GB
2 X USB Disk	Sandisk	USB/4GB
HDMI	MTC	Shielded, Length: 120cm
HDMI Terminal	MTC	TL-001
HDMI cable	Huawei	Shielded, Length: 17cm
USB Cable with OTG port	Huawei	Shielded, Length: 100cm OTG Length: 18cm
AC/DC Adapter (Huawei)	Huntkey	HW-050200U3W Input: 100-240Vac, 50/60Hz; Output: 5Vdc, 3A
	XinQiao	

Note: The Model: M310 has two different AC/DC Adapters as its alternative power supply device. Relevant tests with each adapter have already arranged and the worst case data is recorded in this report.

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EXHIBIT 4

MEASUREMENT RESULTS

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Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.0 Measurement Results

4.1 Maximum Conducted Output Power at Antenna Terminals, FCC Rules 15.247(b)(3):

- The antenna power of the EUT was connected to the input of a spectrum analyzer. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.
- The antenna port of the EUT was connected to the input of a spectrum analyzer. The analyzer was set according to the FCC KDB 558074 spectrum analyzer's integrated band power measurement function with band limits set equal to the EBW band edges and power was read directly in dBm. External attenuation and cable loss were compensated from the measured value.

For antennas with gains of 6 dBi or less, maximum allowed Transmitter output is 1 watt (+30 dBm).

Note:

1, When product operates on 802.11b/g/n-HT20 (SISO)/n-HT40 mode (2.4Gband) & 802.11a/n-HT20/n-HT40 mode (5Gband) only one antenna (antenna 1) is used for transmission. The MIMO modes only apply on 802.11n-HT20 mode (2.4G band) and both antennas (antenna 1 and antenna 0) can be used for transmission.

2, 2.4G band : Antenna 1 Gain: 3.3dBi, Antenna 0 Gain: 3.3dBi

3, 5G band : Antenna 1 Gain: 4.7dBi

IEEE 802.11b (Antenna Gain =3.3dBi) (DBPSK, 1Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	17.03	50.47
Middle Channel: 2437	17.07	50.93
High Channel: 2462	17.05	50.70

IEEE 802.11g (Antenna Gain =3.3dBi) (BPSK, 6Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	19.71	93.54
Middle Channel: 2437	19.86	96.83
High Channel: 2462	19.83	96.16

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IEEE 802.11n-HT20 (SISO) (Antenna Gain=3.3dBi) (BPSK, 6.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2412	19.52	89.54
Middle Channel: 2437	19.64	92.04
High Channel: 2462	19.77	94.84

IEEE 802.11n-HT20 (MIMO)(Antenna Gain=6.3dBi, Note3) (BPSK 13Mbps)			
Frequency (MHz)	Output in dBm		Output in mWatt Total power
	Ant 0	Ant 1	
Low Channel: 2412	18.04	18.71	137.97
Middle Channel: 2437	18.16	18.83	141.84
High Channel: 2462	18.11	18.81	140.74

IEEE 802.11n-HT40 (SISO) (Antenna Gain=3.3dBi) (BPSK, 13.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 2422	15.77	37.76
Middle Channel: 2437	16.33	42.95
High Channel: 2452	16.15	41.21

IEEE 802.11a (Antenna Gain =4.7dBi) (BPSK, 6Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 5745	18.71	74.30
Middle Channel: 5785	18.72	74.47
High Channel: 5825	18.59	72.28

IEEE 802.11n-HT20 (Antenna Gain =4.7dBi) (BPSK, 6.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 5745	18.77	75.34
Middle Channel: 5785	18.63	72.95
High Channel: 5825	18.73	74.64

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IEEE 802.11n-HT40 (Antenna Gain =4.7 Bi) (BPSK, 13.5Mbps)		
Frequency (MHz)	Output in dBm	Output in mWatt
Low Channel: 5755	17.58	57.28
High Channel: 5795	17.56	57.12

Note 1: For MIMO system of 802.11n-HT20 (2.4G band), total power is calculated by combining the output power of each antenna according to KDB662911.

Note 2: In MIMO, two WiFi Antenna are correlated, Directional gain = $G_{ANT} + 10 \log(N)$
 $\text{dBi} = 3.3 + 10 \log(2) = 6.3 \text{ dBi}$ according to KDB662911.

Note3: In MIMO mode of 802.11n-HT20 (2.4G band), the antenna gain 6.3dBi, so according to 15.247 the power limit is reduce to 29.7dBm.

Cable loss: 0.6 dB External Attenuation: 0 dB

Cable loss, external attenuation has been included in OFFSET function

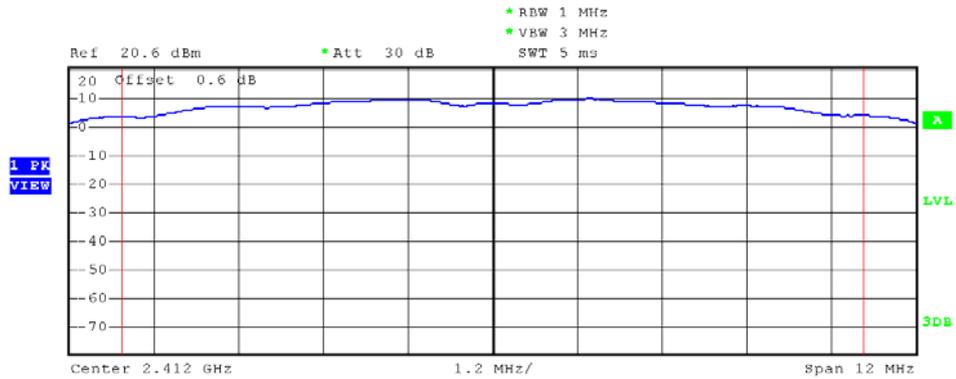
EUT dBm max. output level = 21.52dBm (802.11n-HT20 MIMO, 2437MHz)

For RF Exposure, the information is saved with filename: RF exposure.pdf.

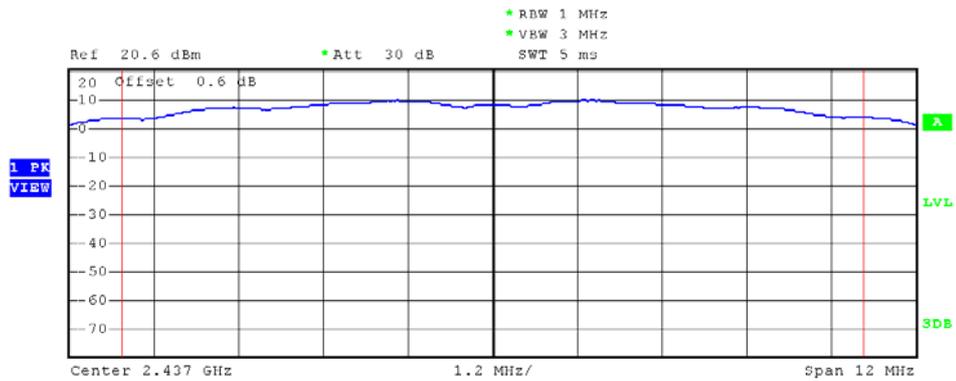
The test plots are attached as below.

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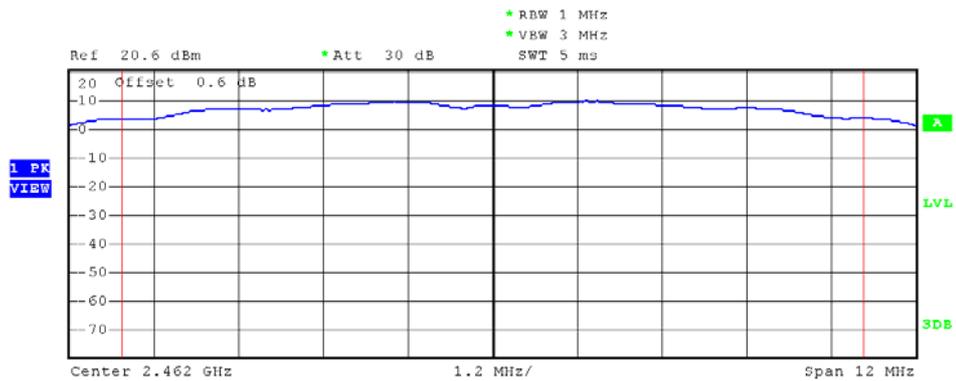
802.11b



Tx Channel
Bandwidth 10.5 MHz Power 17.03 dBm



Tx Channel
Bandwidth 10.5 MHz Power 17.07 dBm

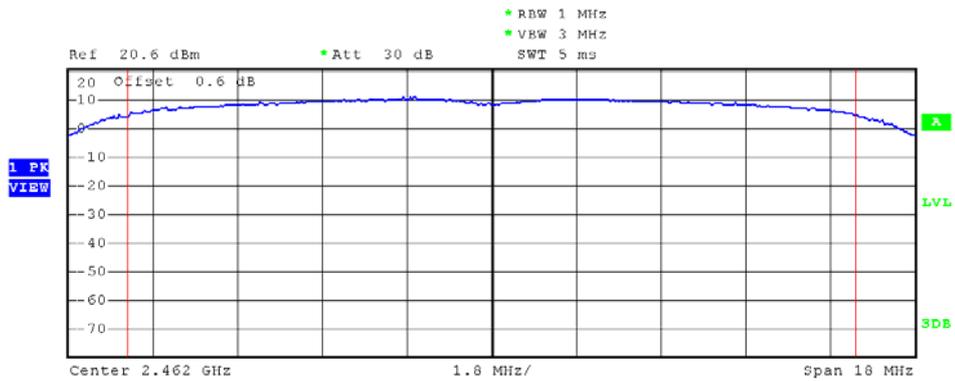
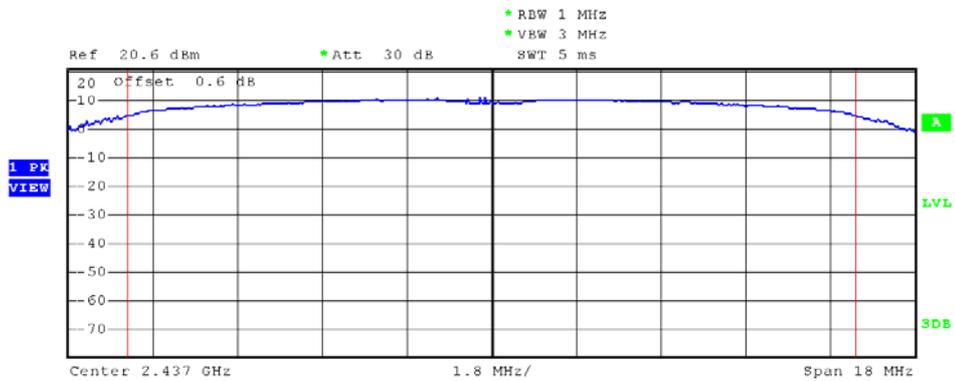
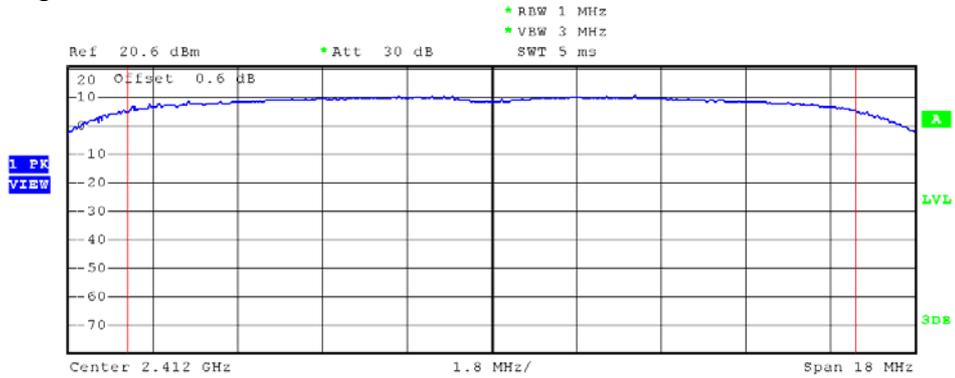


Tx Channel
Bandwidth 10.5 MHz Power 17.05 dBm

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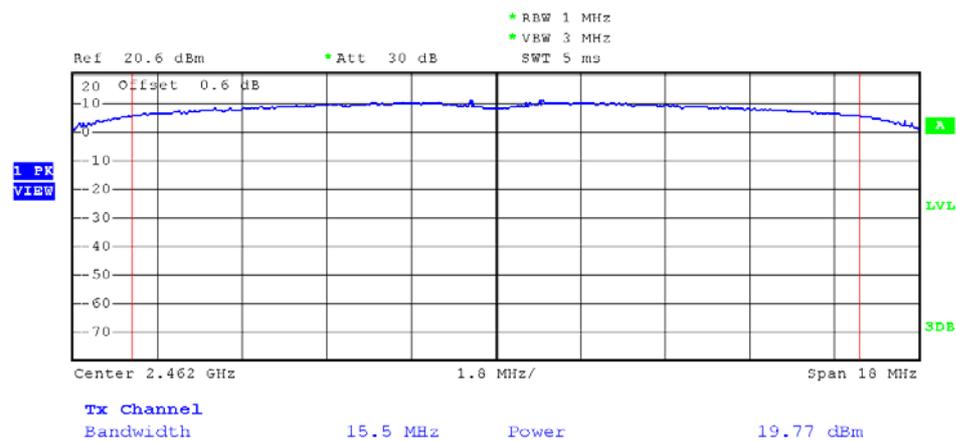
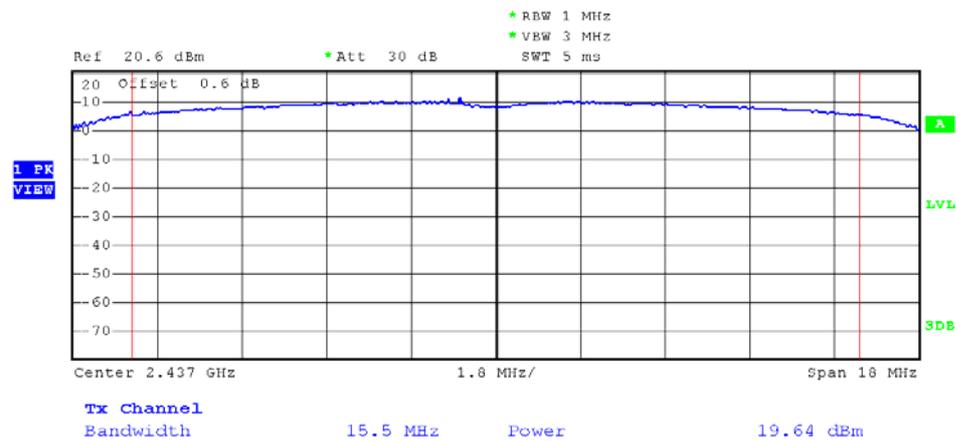
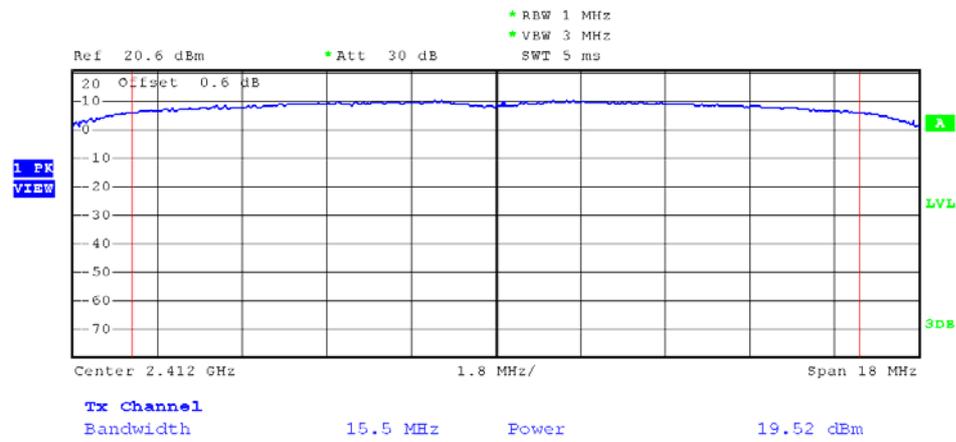
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802.11g



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802.11n-HT20 SISO

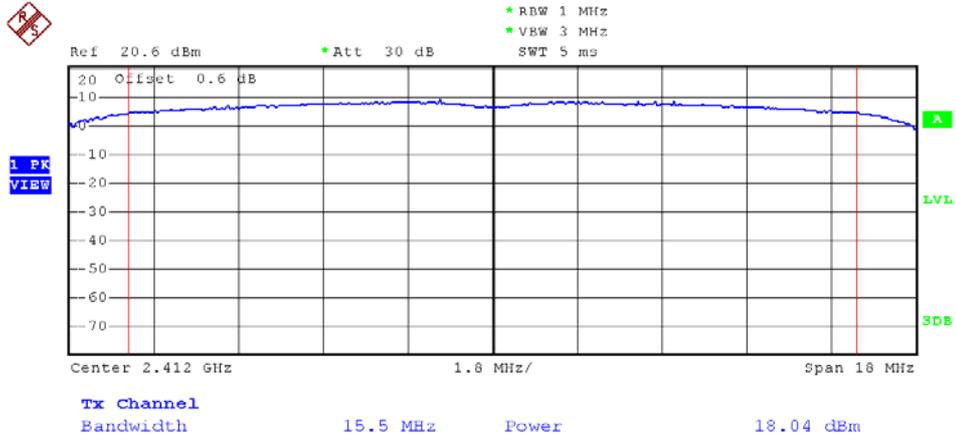


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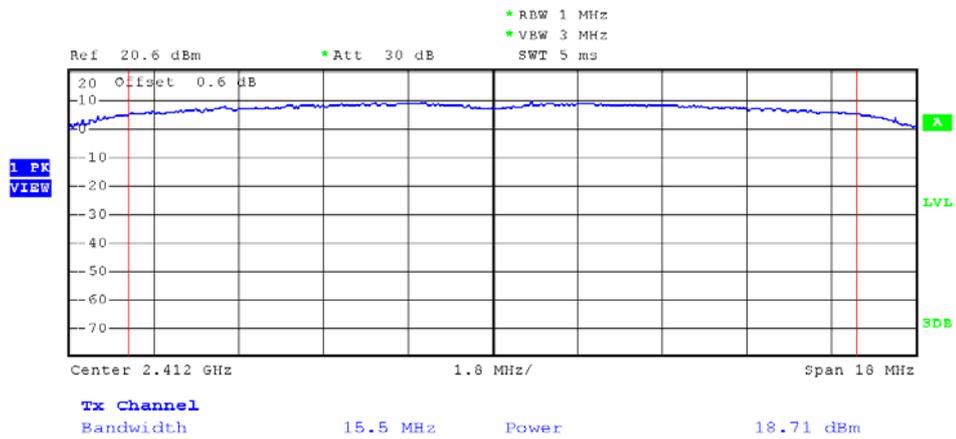
INTERTEK TESTING SERVICES

802.11n-HT20 MIMO

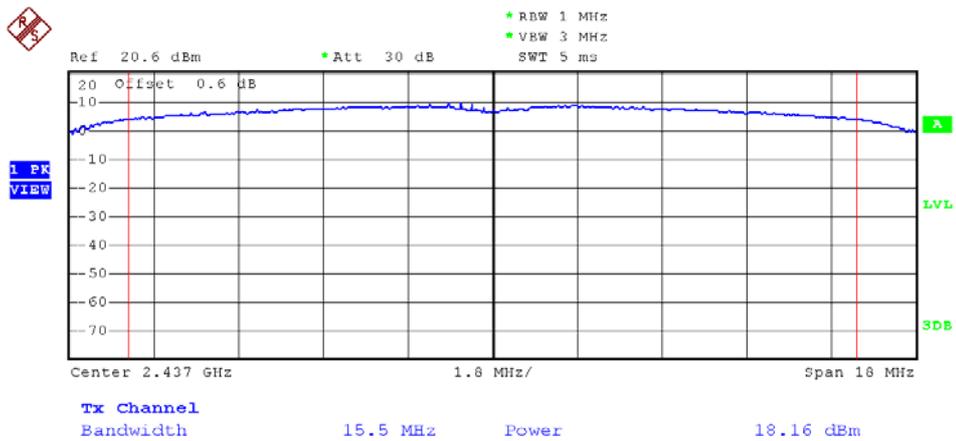
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ANT 1



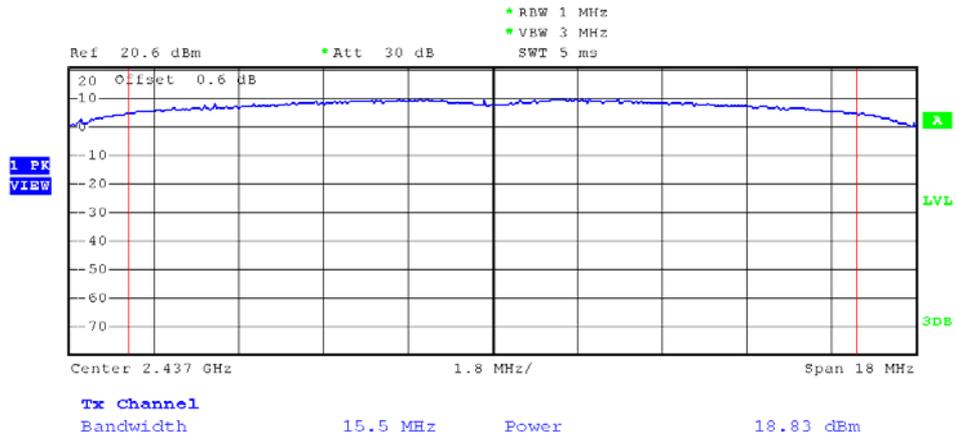
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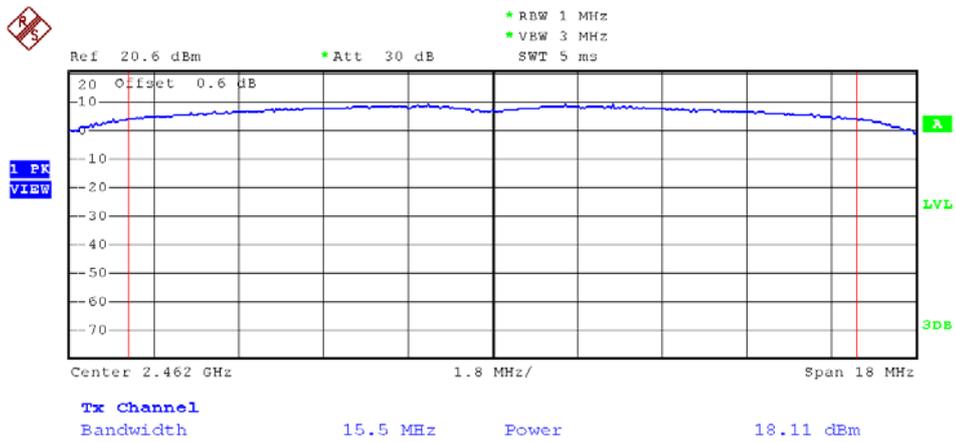
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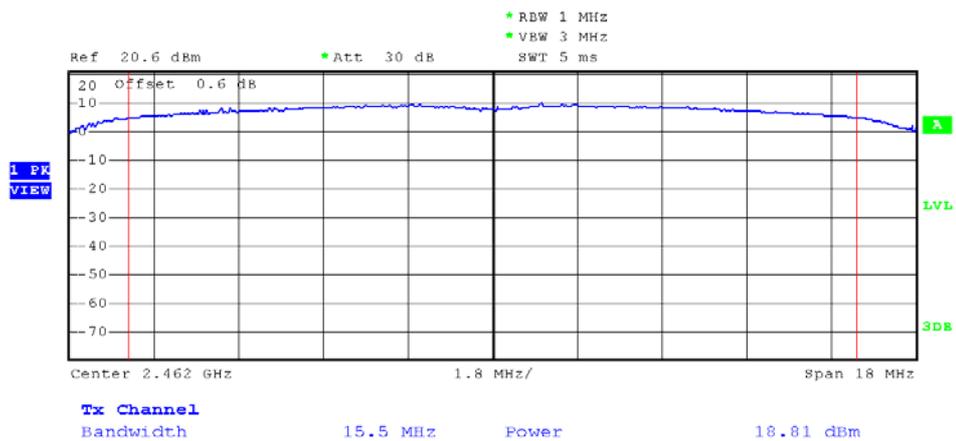
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ANT 0



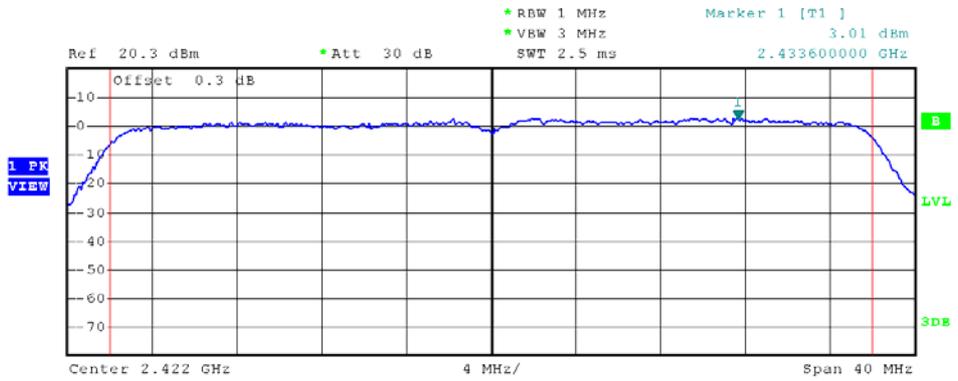
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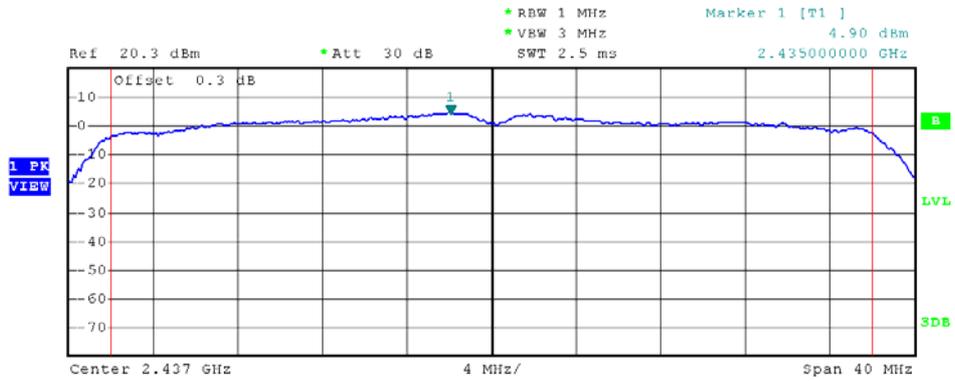
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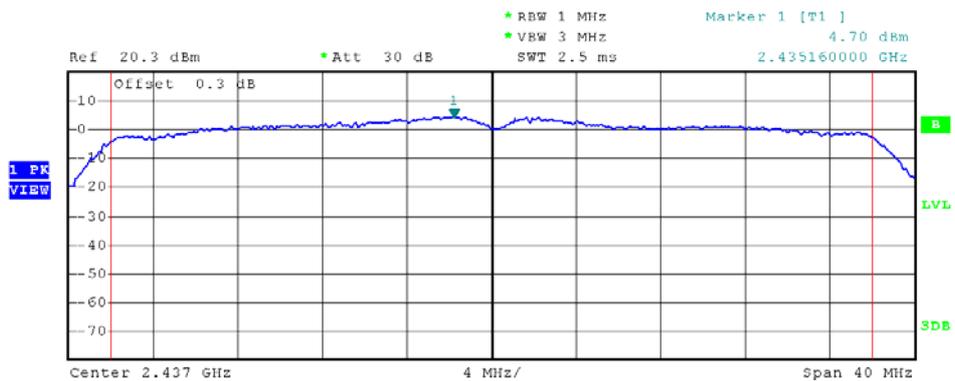
802.11n-HT40 SISO



Tx Channel
Bandwidth 36 MHz Power 15.77 dBm



Tx Channel
Bandwidth 36 MHz Power 16.33 dBm

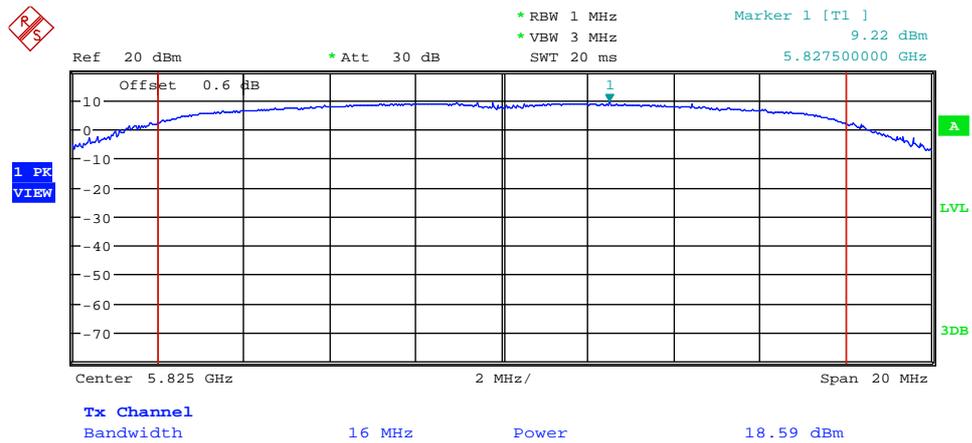
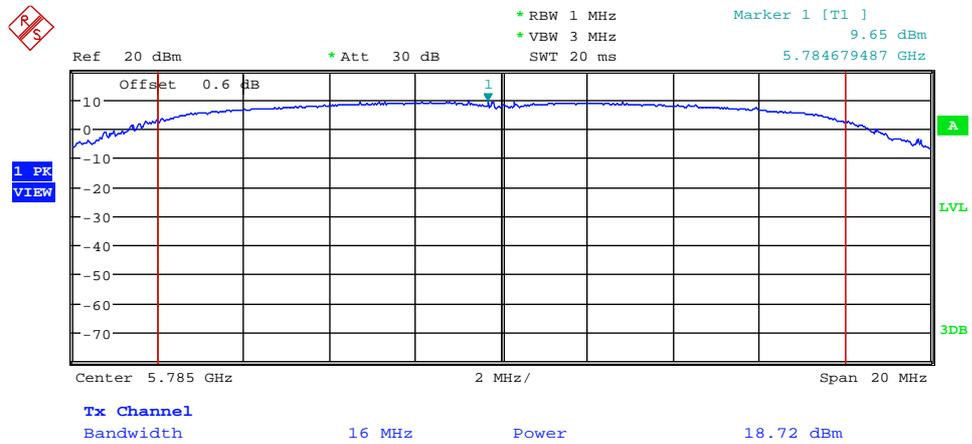
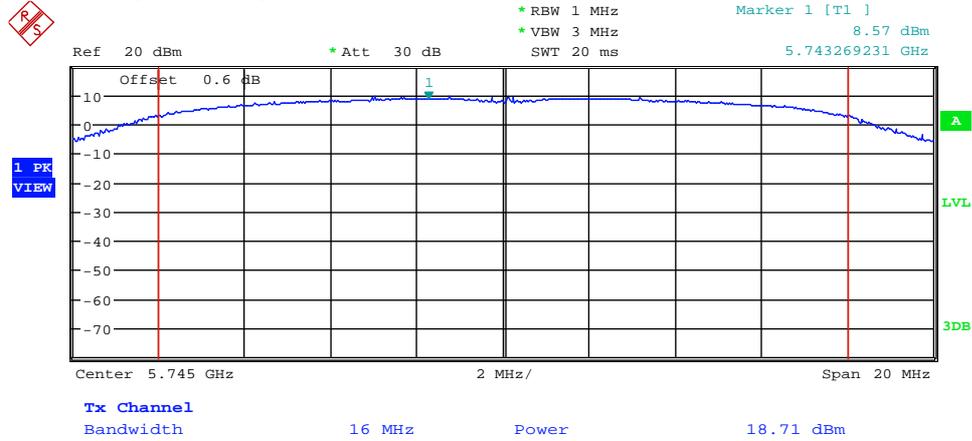


Tx Channel
Bandwidth 36 MHz Power 16.15 dBm

TRF no.: FCC 15C_TX_b
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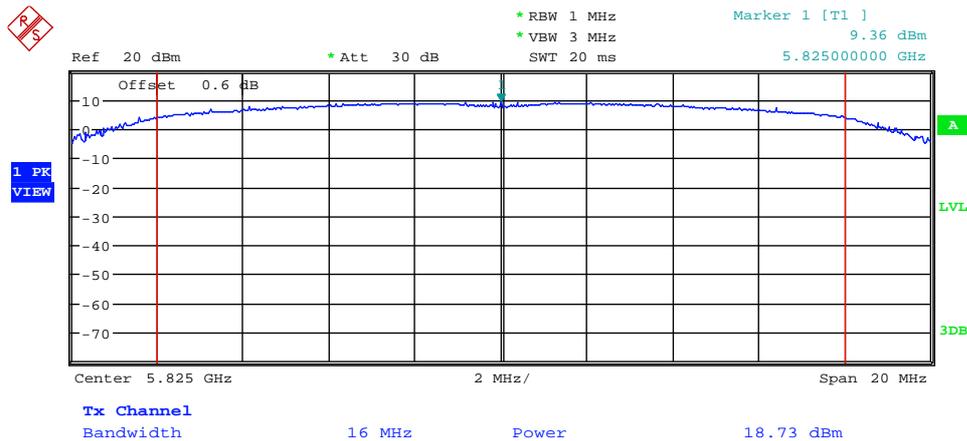
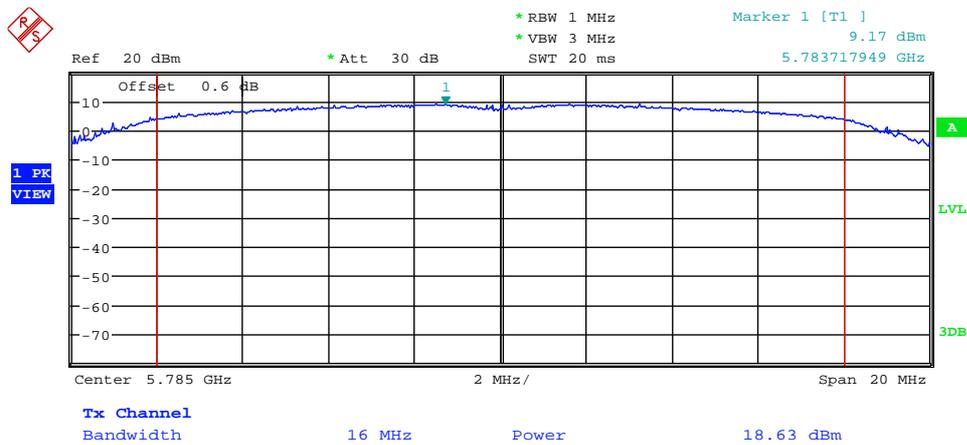
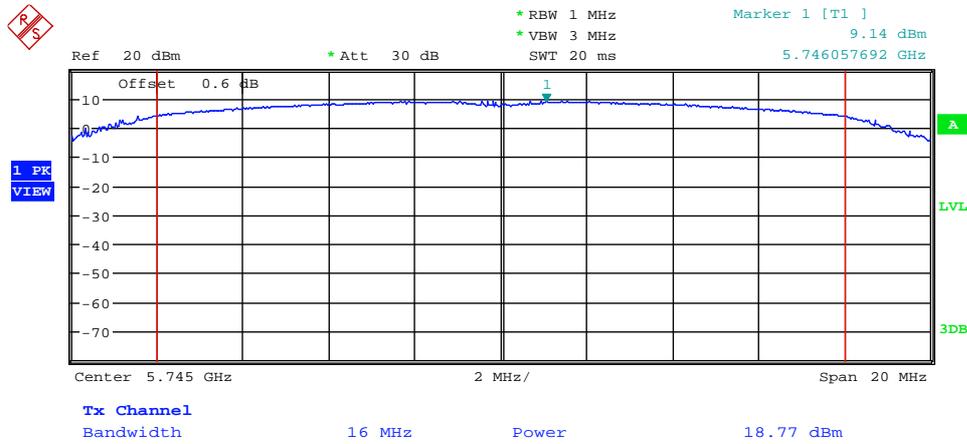
INTERTEK TESTING SERVICES

802.11a (5G band)



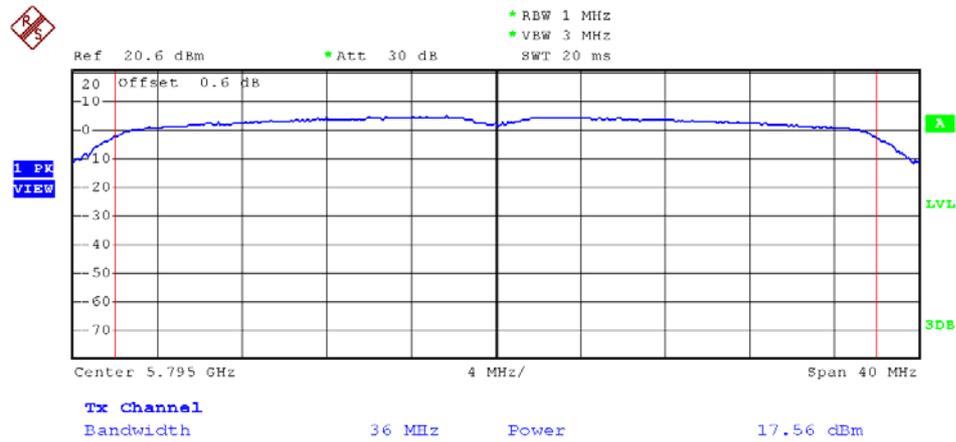
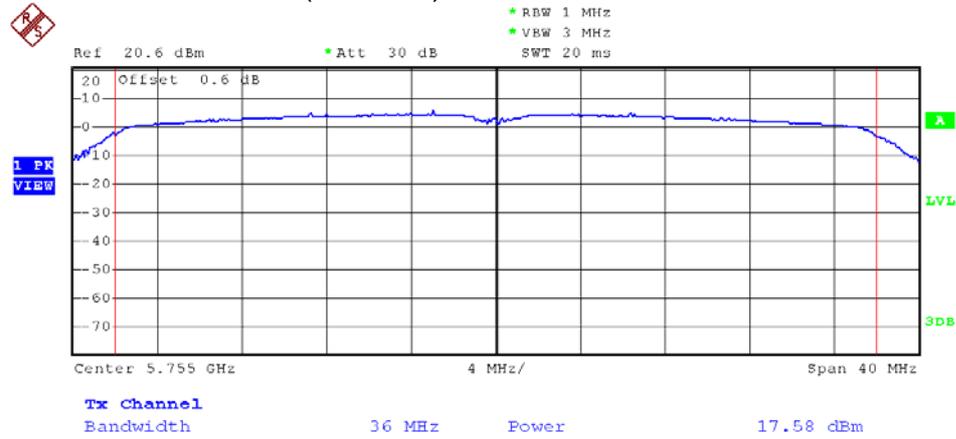
INTERTEK TESTING SERVICES

802.11n-HT20 SISO (5G band)



INTERTEK TESTING SERVICES

802.11n-HT40 SISO (5G band)



INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.2 Minimum 6 dB RF Bandwidth, FCC Rule 15.247(a)(2):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RES BW was set to 1-5 % of the emission bandwidth and not to exceed 100 KHz according to FCC KDB 558074. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. A PEAK output reading was taken, a DISPLAY line was drawn 6 dB lower than PEAK level. The 6dB bandwidth was determined from where the channel output spectrum intersected the display line.

Limit: The 6 dB Bandwidth is at least 500 kHz.

IEEE 802.11b (DBPSK 1Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	10.08
2437	10.08
2462	10.08

IEEE 802.11g (BPSK, 6Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	15.12
2437	15.12
2462	15.12

IEEE 802.11n-HT20 SISO(BPSK, 6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2412	15.12
2437	15.12
2462	15.12

INTERTEK TESTING SERVICES

IEEE 802.11n-HT20 MIMO (BPSK, 13Mbps)		
Frequency (MHz)	6 dB Bandwidth (MHz)	
	Ant0	Ant1
2412	15.15	15.12
2437	15.05	15.12
2462	15.15	15.08

IEEE 802.11n-HT40 (BPSK, 13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
2422	35.12
2437	35.12
2462	35.04

IEEE 802.11a (BPSK, 6Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
5745	15.16
5785	15.16
5825	15.10

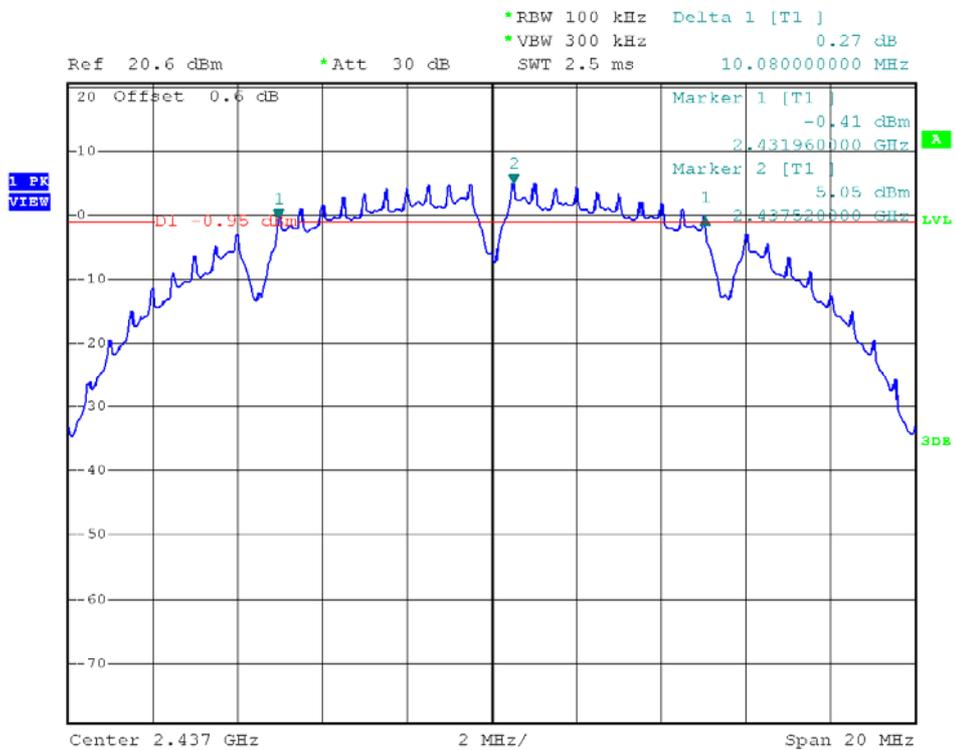
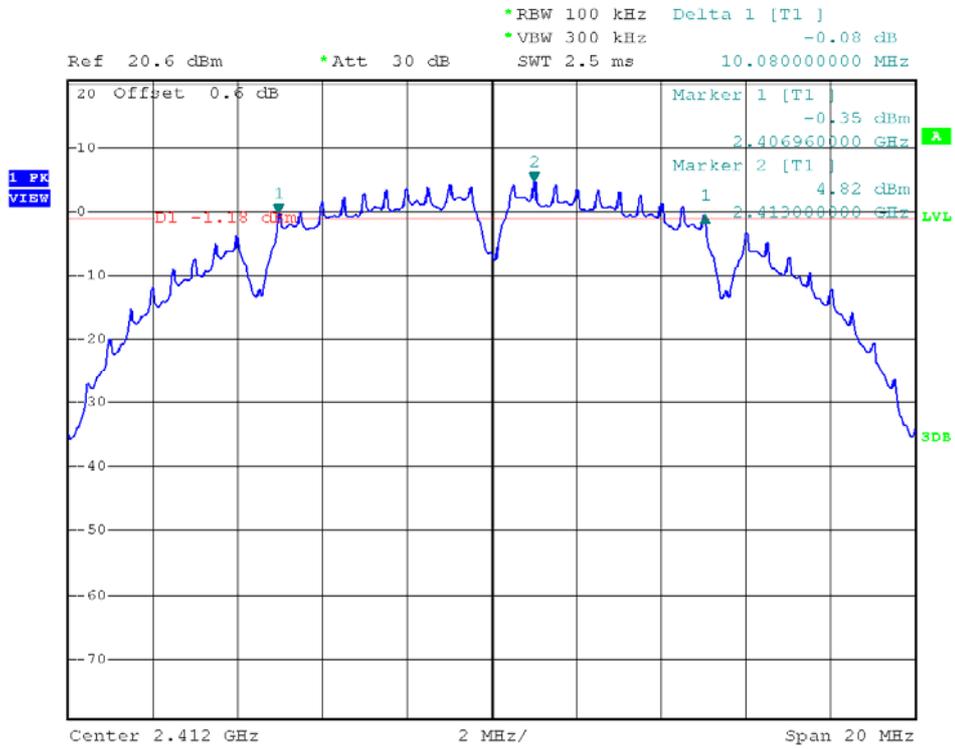
IEEE 802.11n-HT20 (BPSK, 6.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
5745	15.13
5785	15.16
5825	15.13

IEEE 802.11n-HT40 SISO(BPSK, 13.5Mbps)	
Frequency (MHz)	6 dB Bandwidth (MHz)
5755	35.12
5795	35.12

The test plots are attached as below.

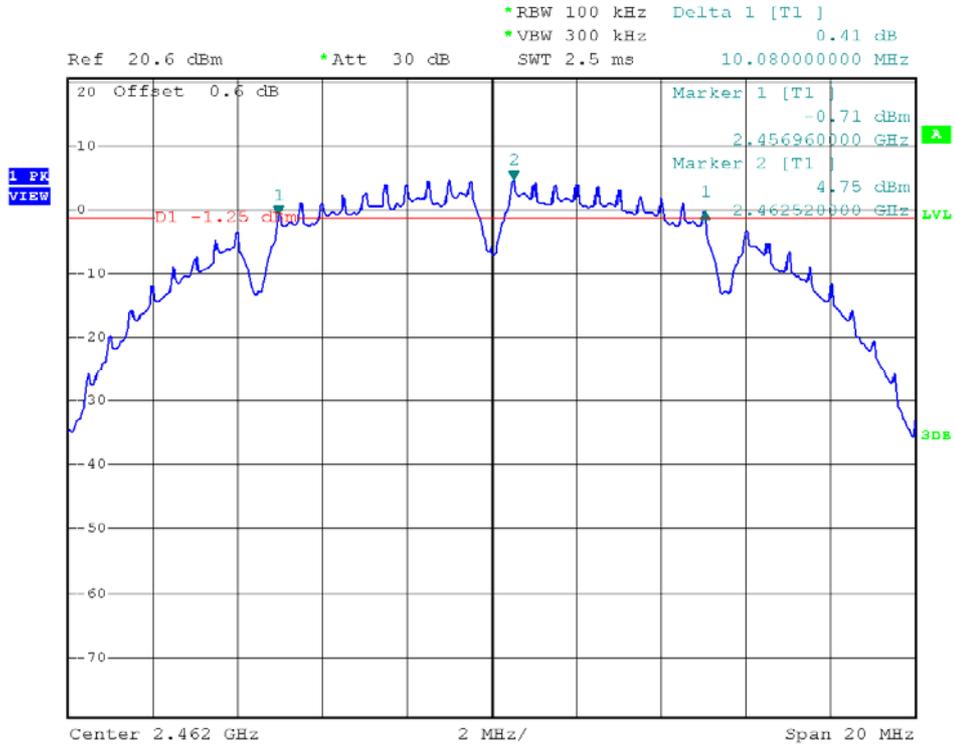
INTERTEK TESTING SERVICES

802.11b



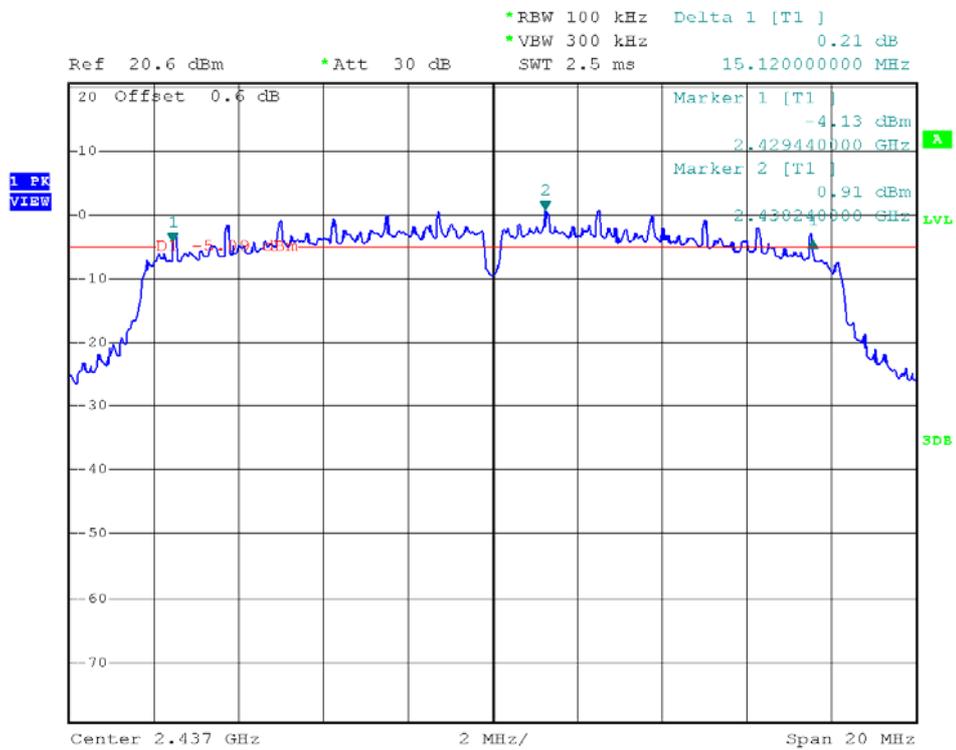
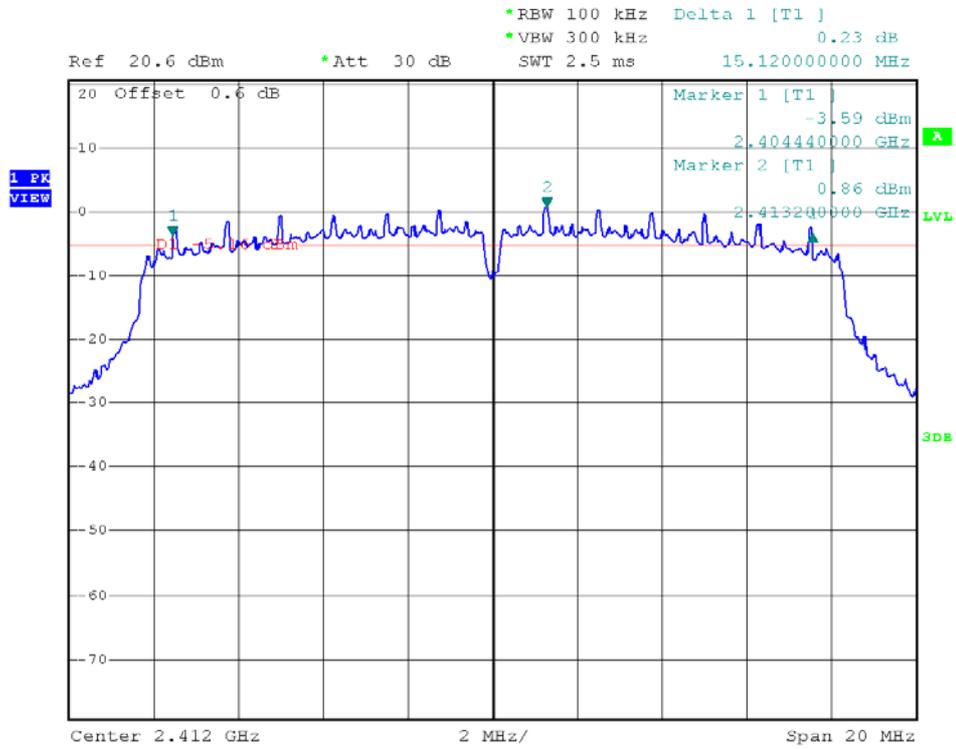
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 FCC ID: QIS-MEDIAQM310
 Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES



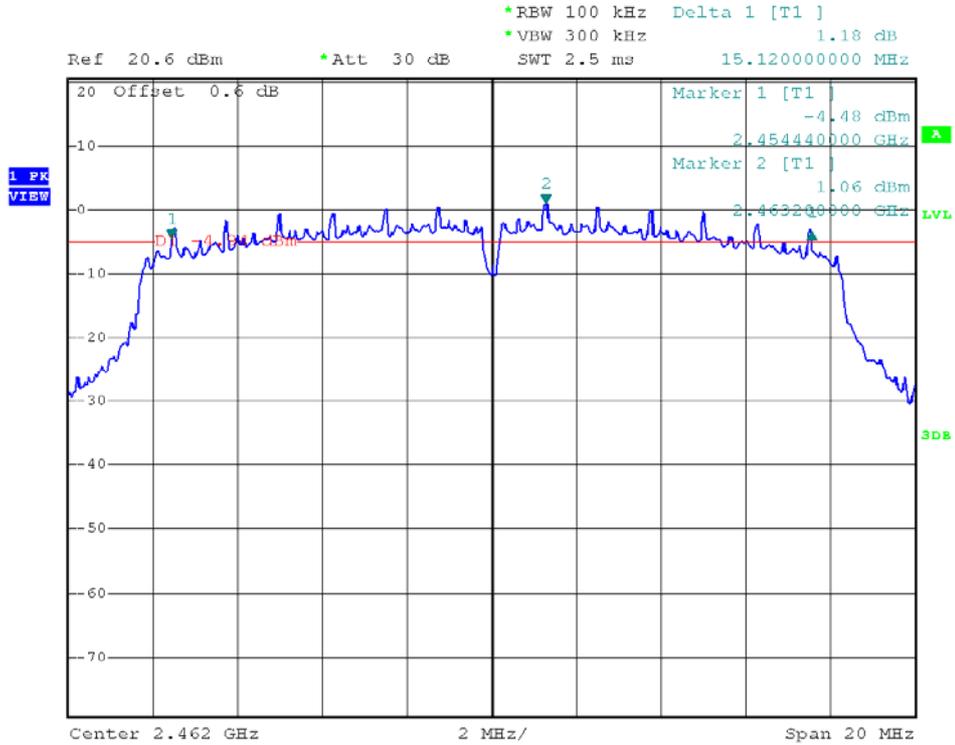
INTERTEK TESTING SERVICES

802.11g



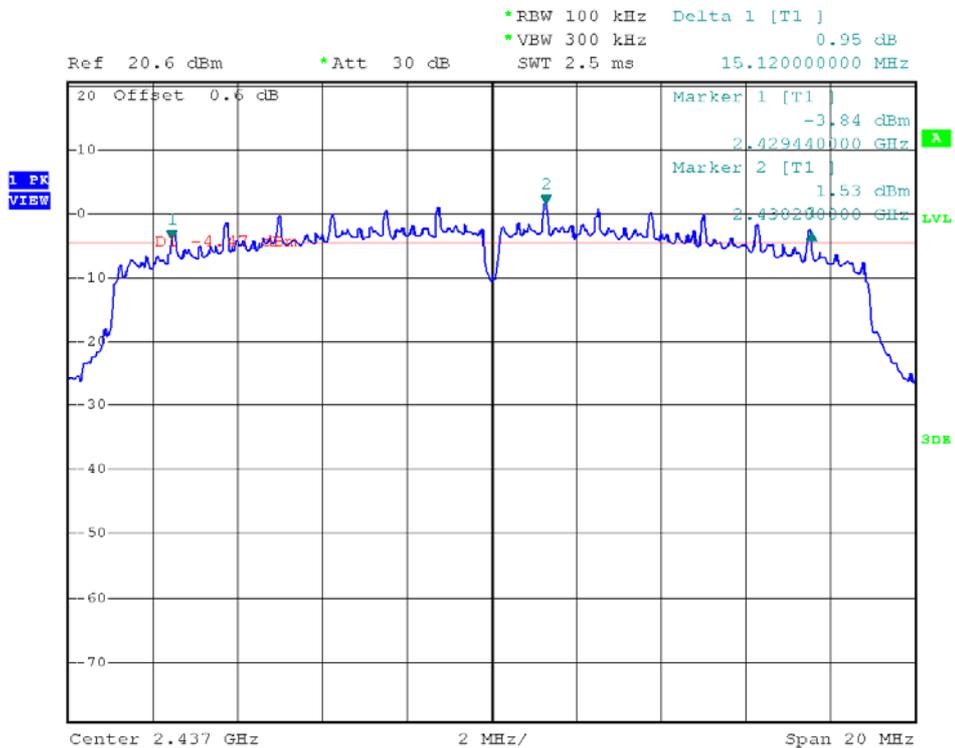
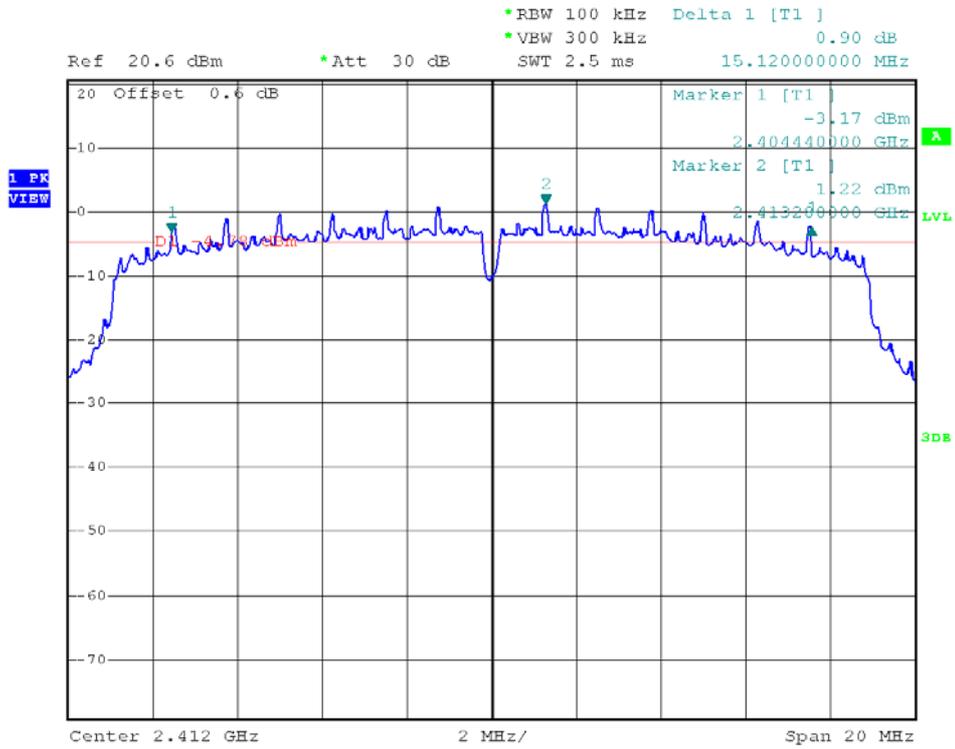
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 Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES



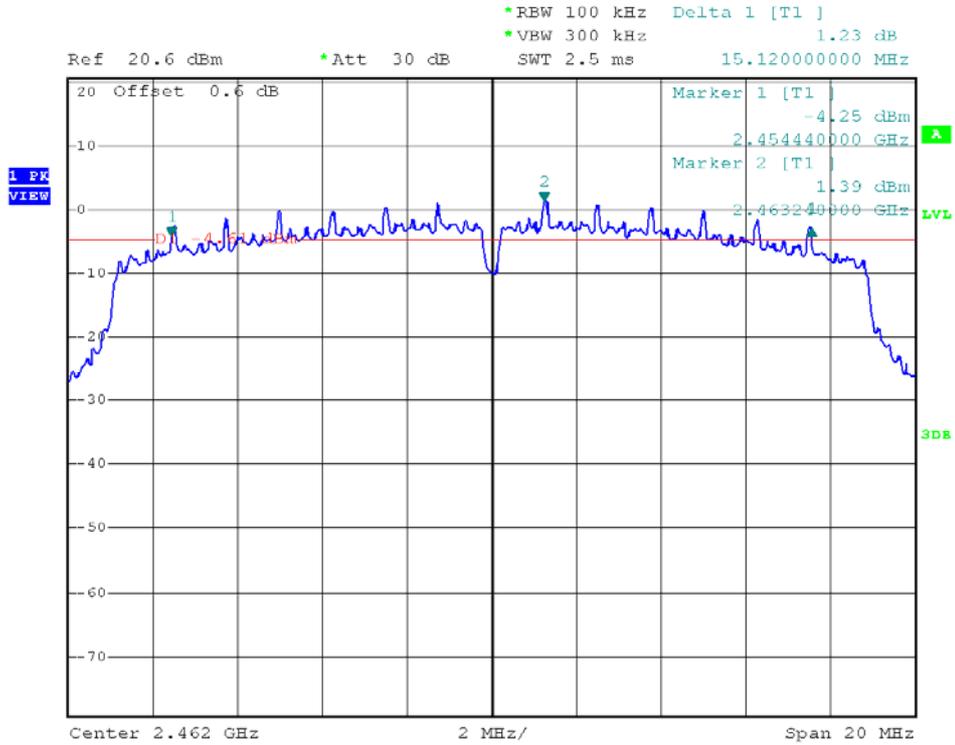
INTERTEK TESTING SERVICES

802.11n-HT20 SISO



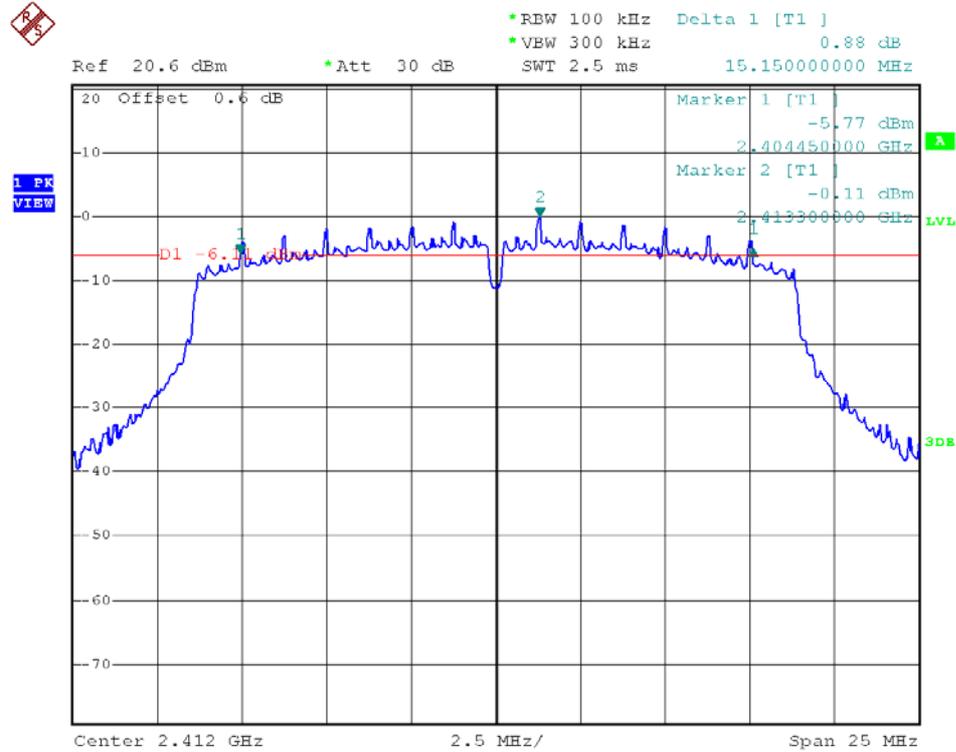
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Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

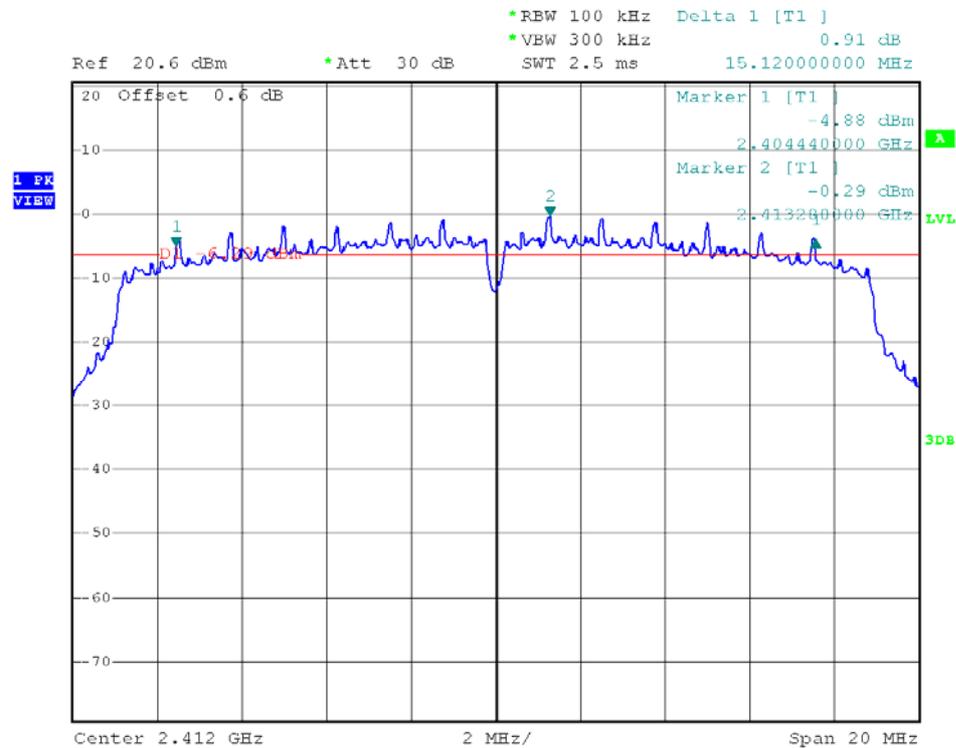


INTERTEK TESTING SERVICES

802.11n-HT20 MIMO Ant0

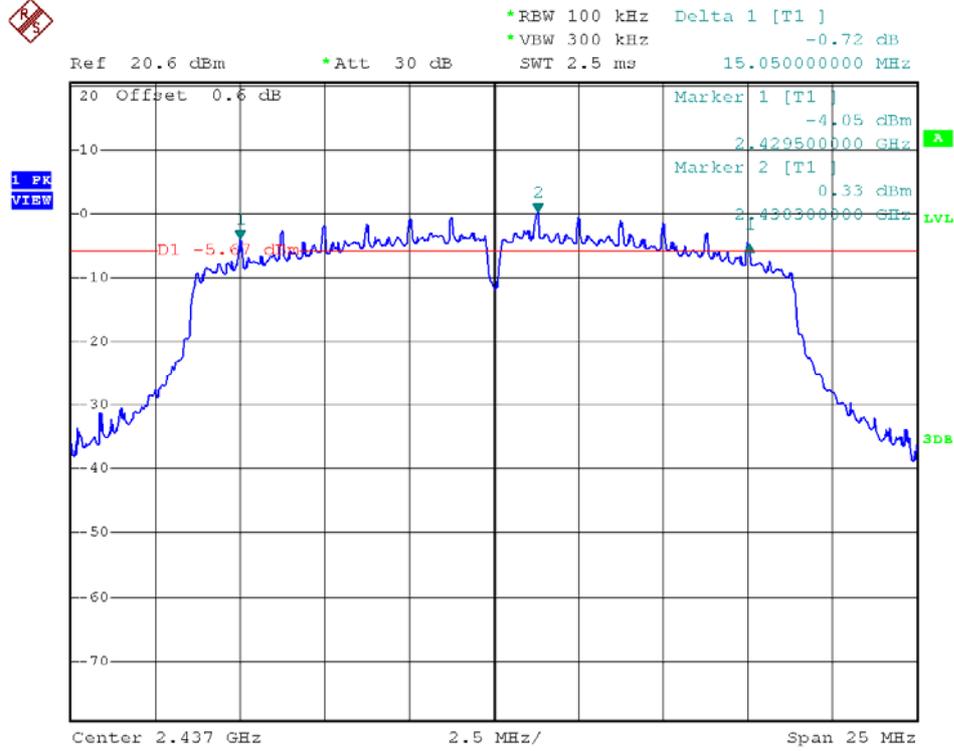


Ant1

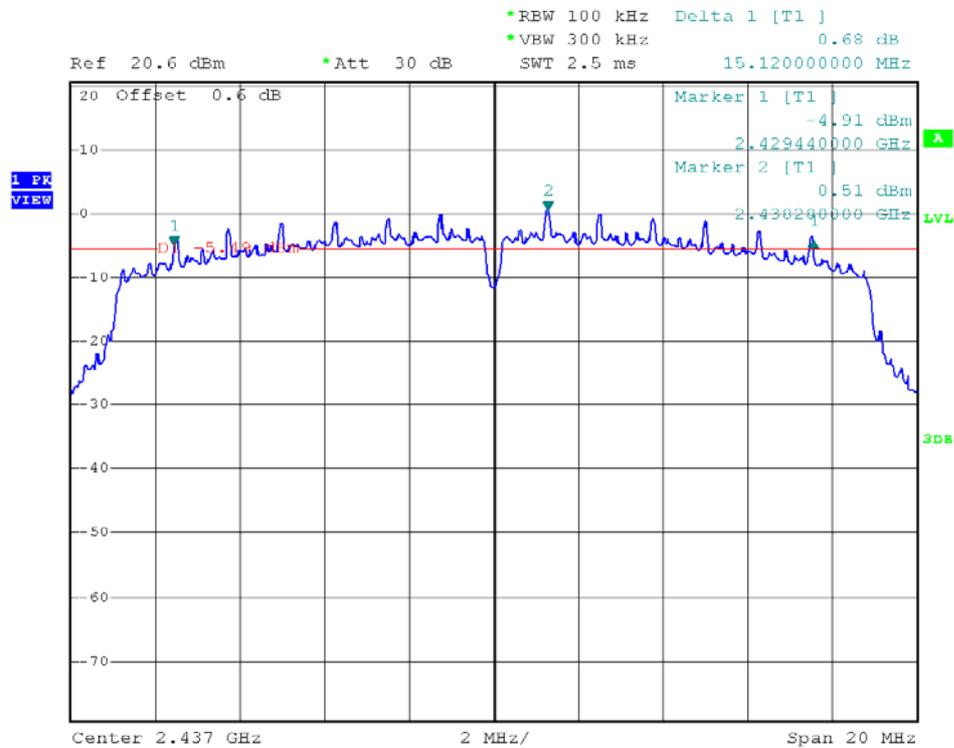


INTERTEK TESTING SERVICES

Ant0



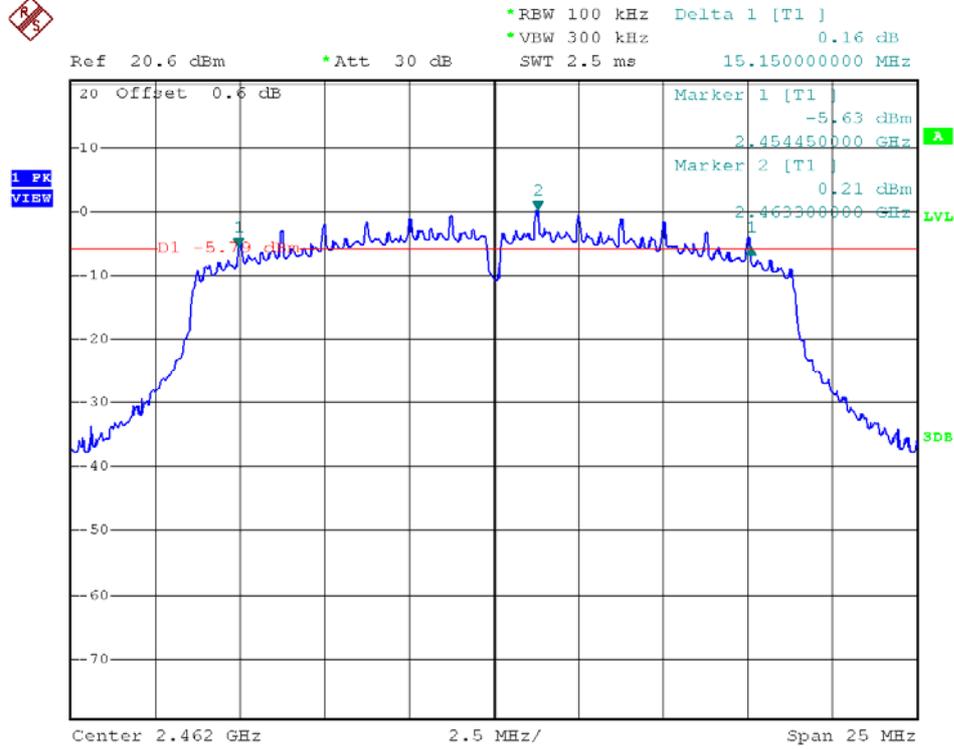
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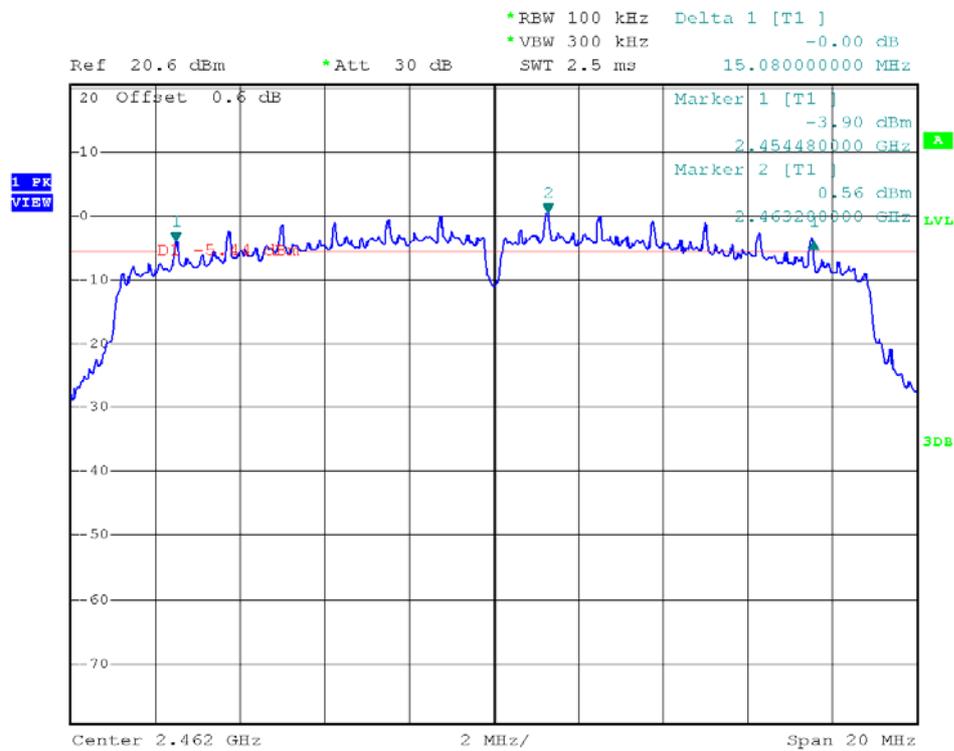
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INTERTEK TESTING SERVICES

Ant0



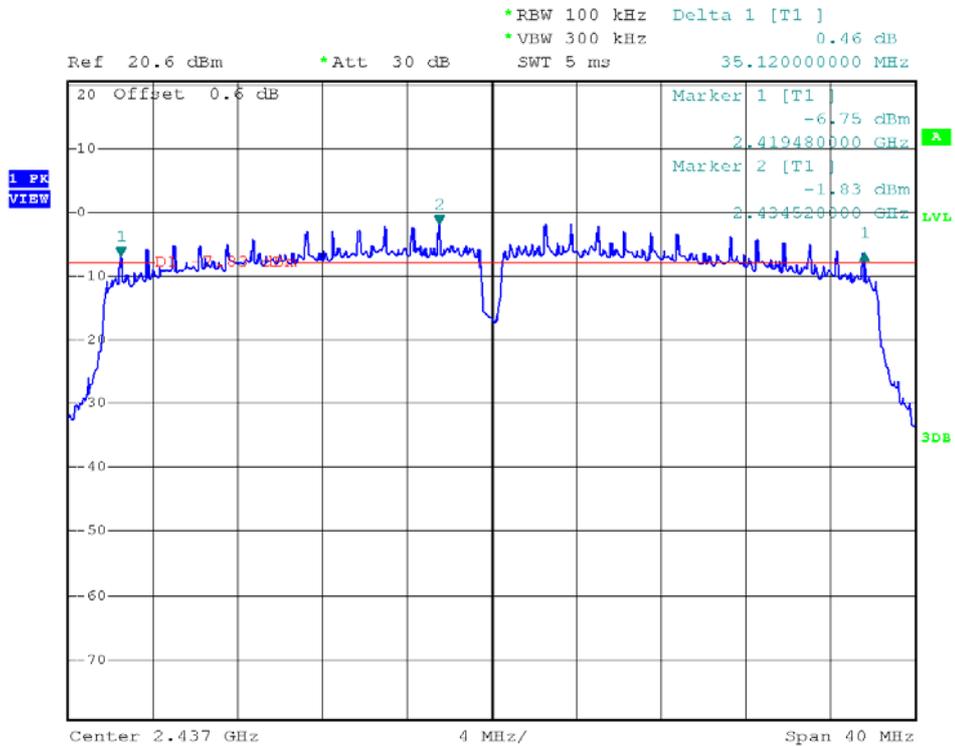
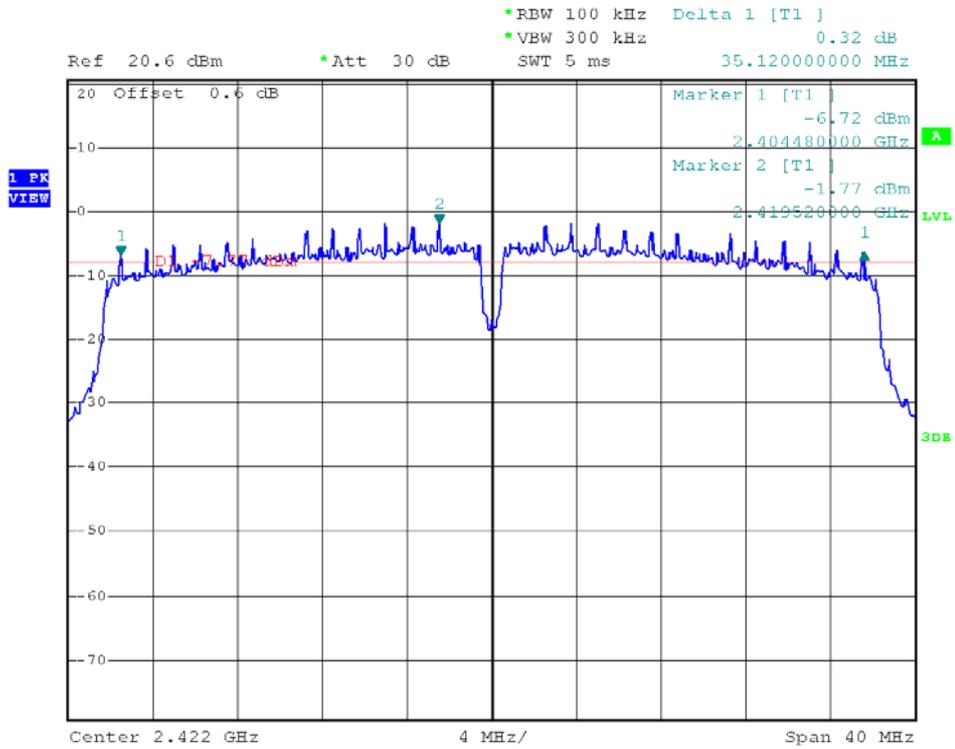
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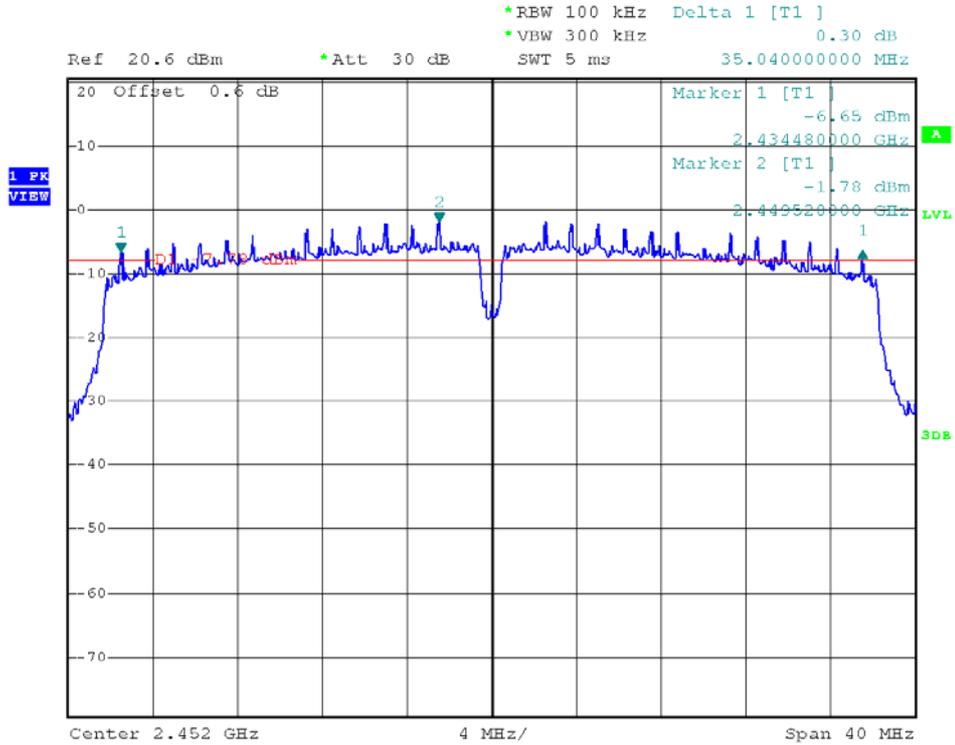
INTERTEK TESTING SERVICES

802.11n-HT40 SISO



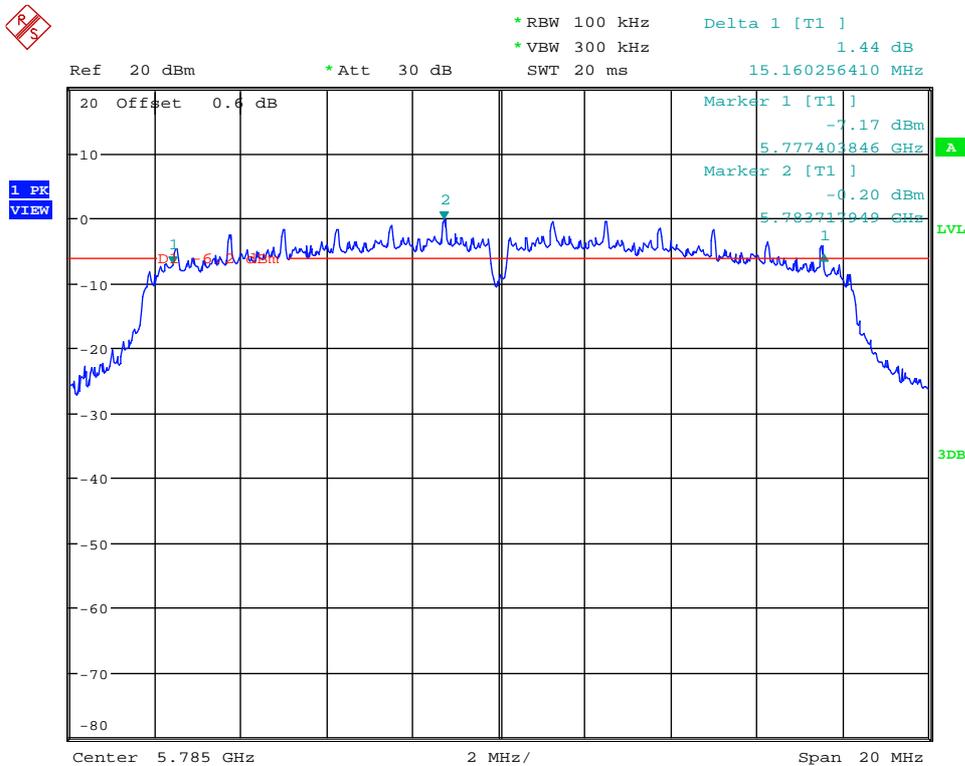
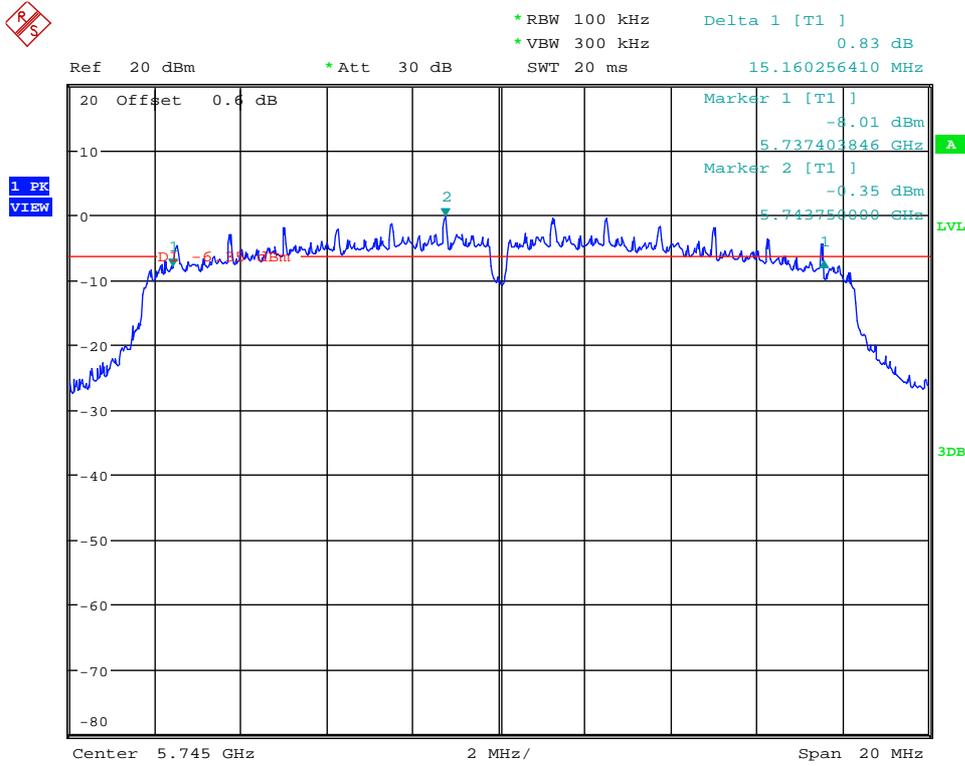
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INTERTEK TESTING SERVICES



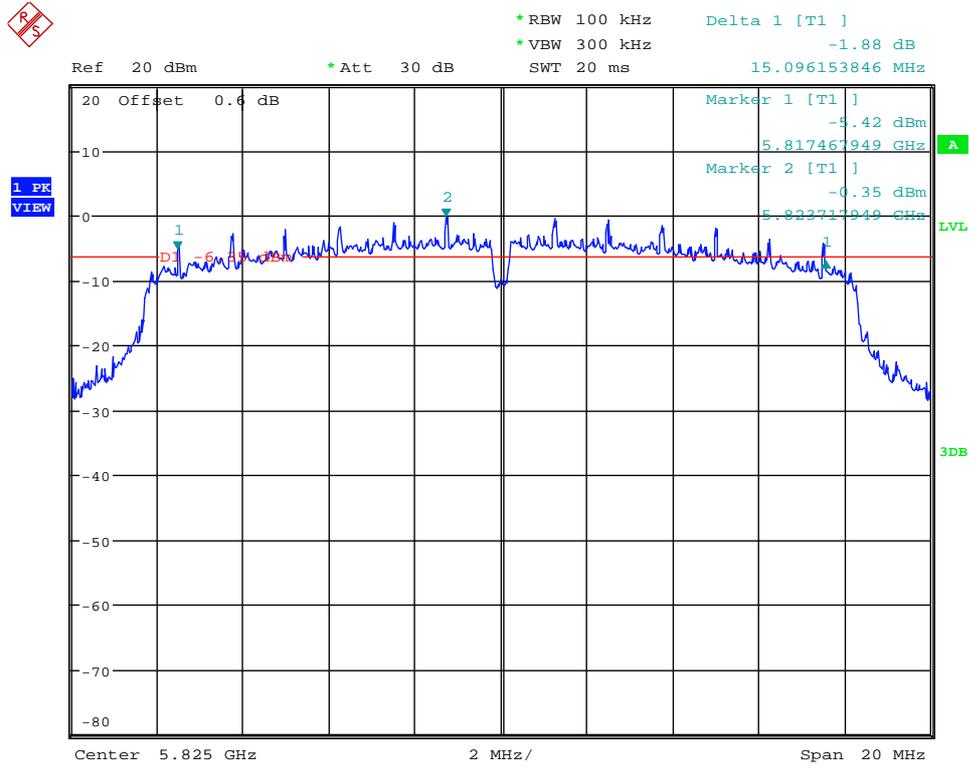
INTERTEK TESTING SERVICES

802.11a (5G band)



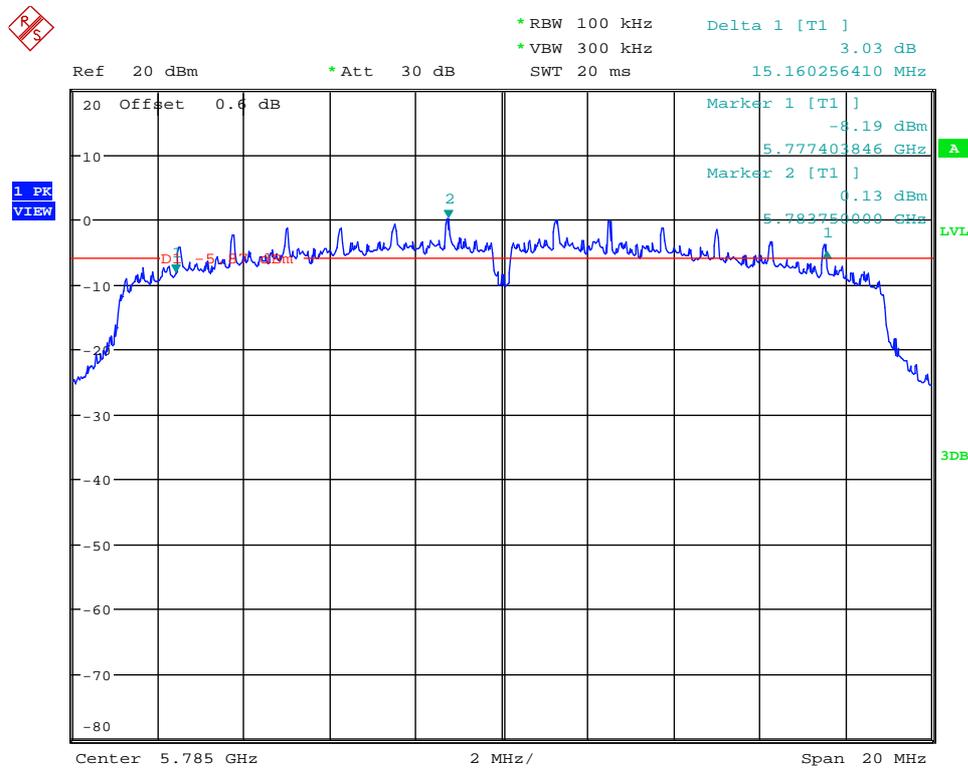
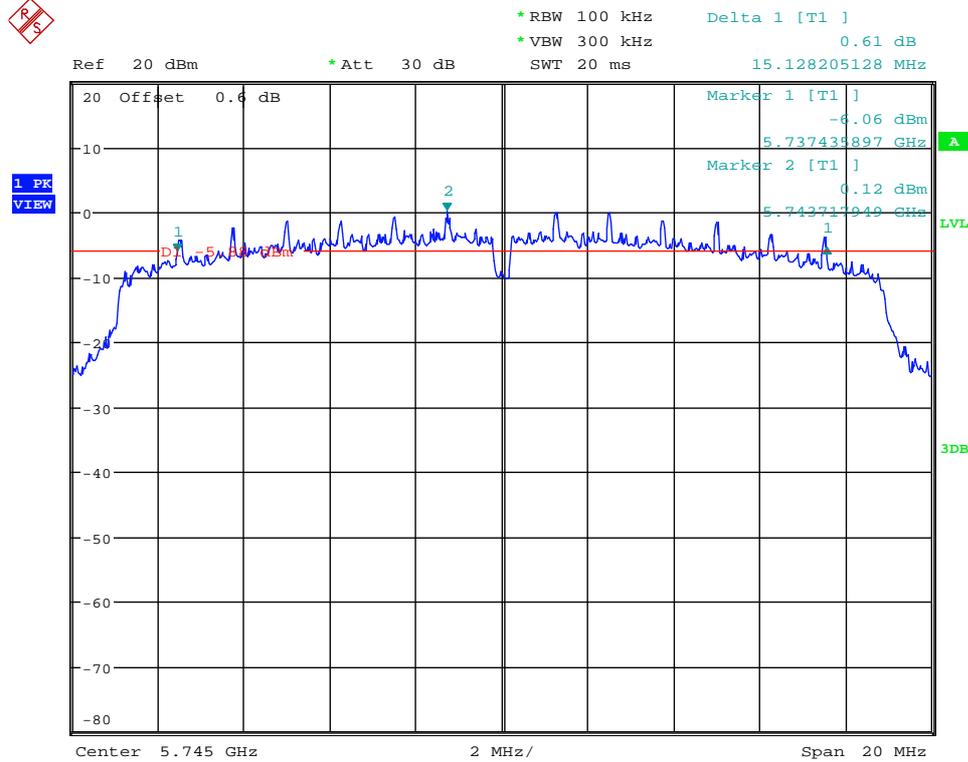
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INTERTEK TESTING SERVICES



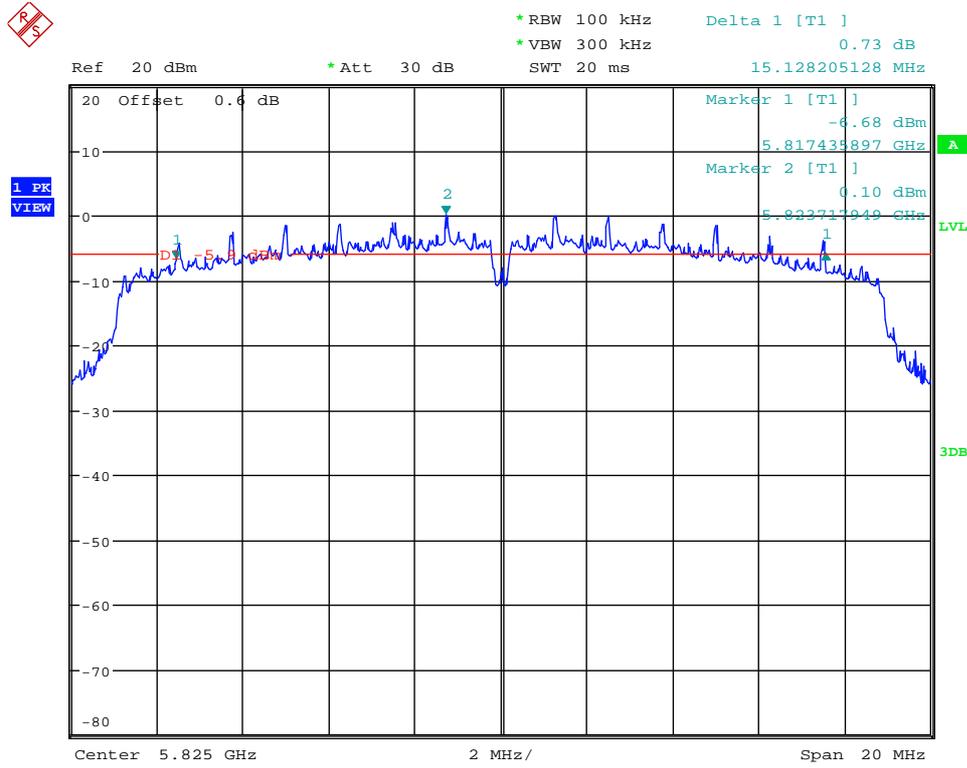
INTERTEK TESTING SERVICES

802.11n-HT20 SISO (5G band)



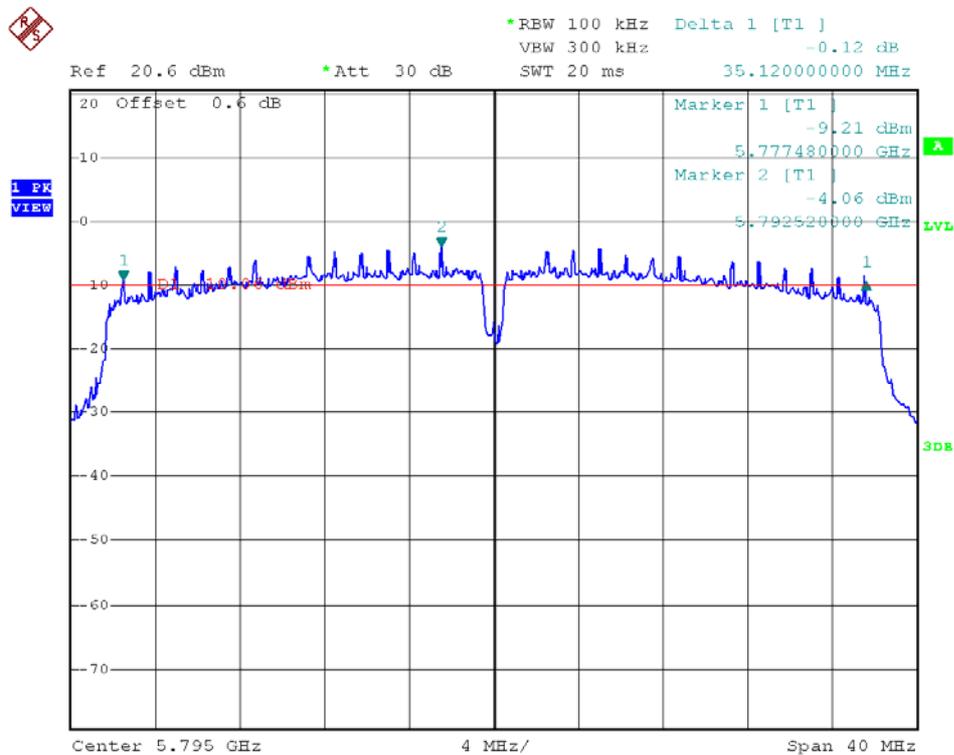
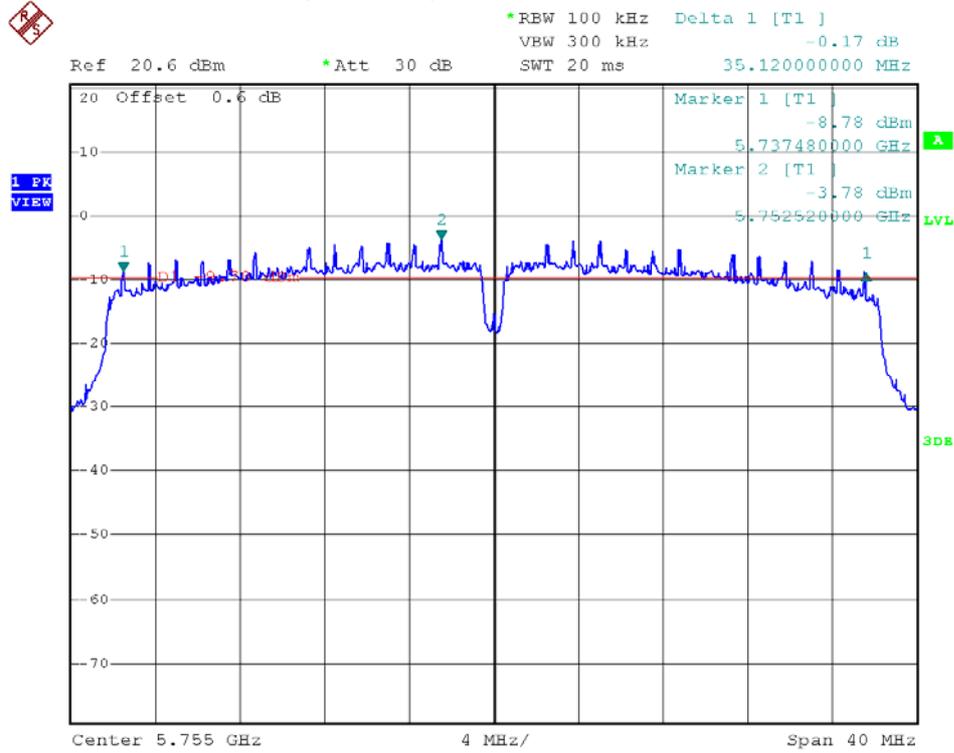
TRF no.: FCC 15C_TX_b
 FCC ID: QIS-MEDIAQM310
 Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES



INTERTEK TESTING SERVICES

802.11n-HT40 SISO (5G band)



INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.3 Maximum Power Density Reading, FCC Rule 15.247(e) :

The Measurement Procedure PKPSD was set according to the FCC KDB 558074.

Antenna output of the EUT was coupled directly to spectrum analyzer; if an external attenuator and/or cable was used, these losses are compensated for with the analyzer OFFSET function.

For MIMO system, both the antenna ports is checked, the worst case power density is calculated from the method of Measure by adding $10\log(2)$ according KDB662911.

Limit: The Power Density does not exceed 8dBm/ 3 kHz.

Unit: dBm

IEEE 802.11b (DBPSK, 1Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
2412	5.10
2437	4.83
2462	5.22

IEEE 802.11g (BPSK, 6Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
2412	0.27
2437	2.09
2462	1.28

IEEE 802.11n-HT20 SISO (BPSK, 6.5Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
2412	1.13
2437	1.71
2462	1.49

INTERTEK TESTING SERVICES

IEEE 802.11n-HT20 MIMO (BPSK, 13Mbps)			
Frequency (MHz)	Power Density with RBW 100KHz		
	Ant0	Ant1	Total
2412	-0.07	-0.02	2.99
2437	0.06	0.87	3.88
2462	0.12	0.65	3.66

IEEE 802.11n-HT40 SISO (BPSK, 13.5Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
2422	0.85
2437	-1.74
2452	-1.67

IEEE 802.11a SISO (BPSK, 6Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
5745	-0.58
5785	-0.17
5825	-0.39

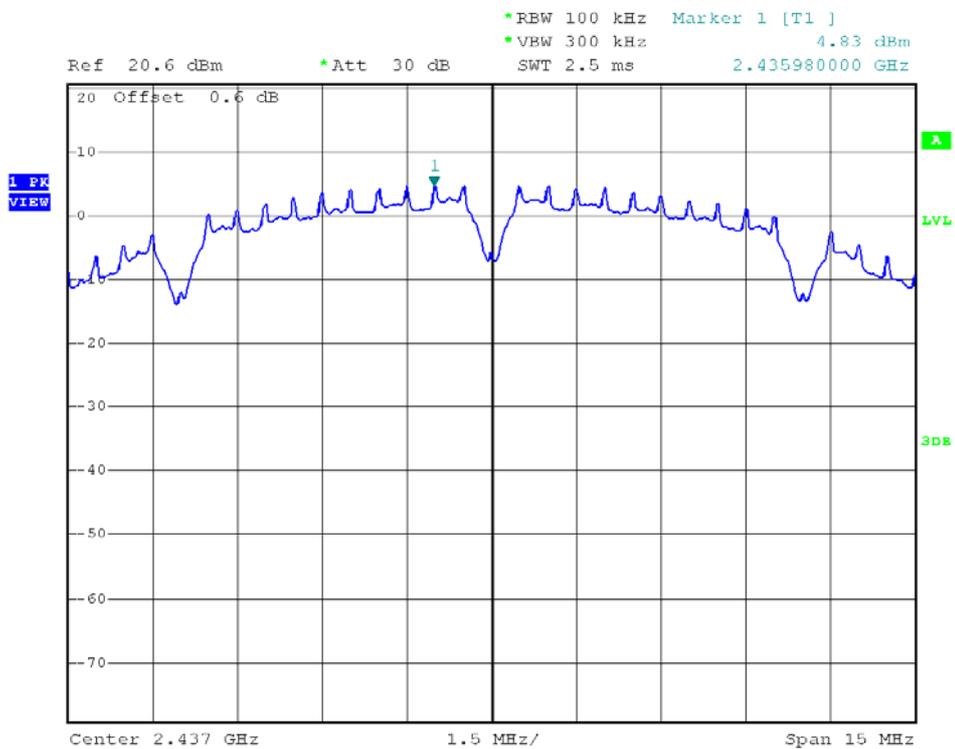
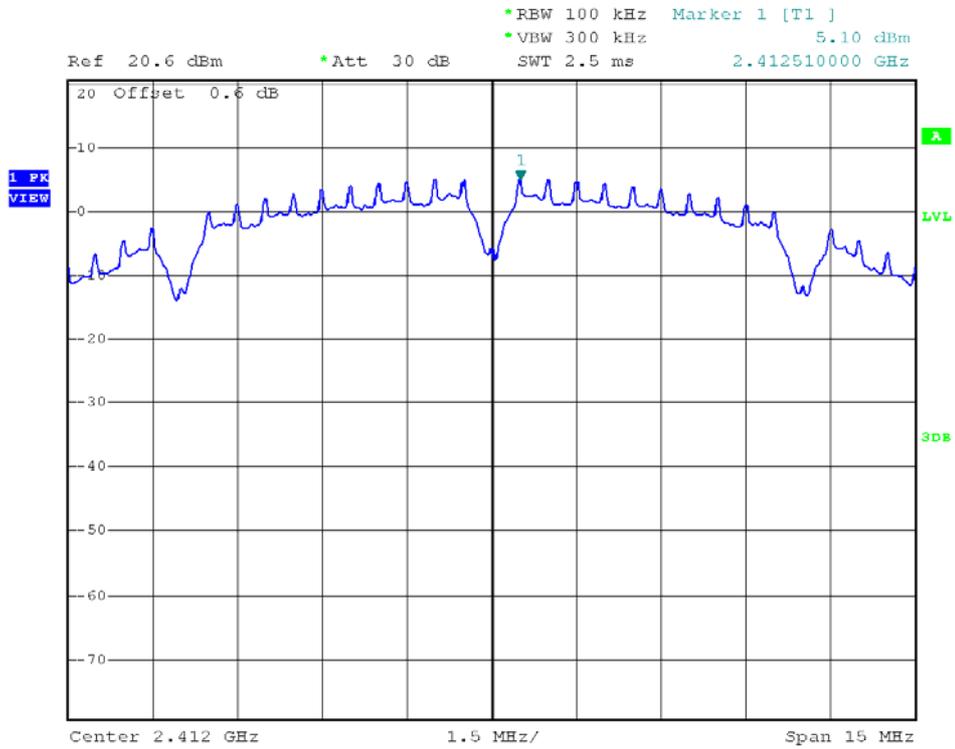
IEEE 802.11n-HT20 SISO (BPSK, 6.5Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
5745	0.09
5785	0.12
5825	0.13

IEEE 802.11n-HT40 SISO (BPSK, 13.5Mbps)	
Frequency (MHz)	Power Density with RBW 100KHz
5755	-4.07
5795	-3.48

The test plots are attached as below.

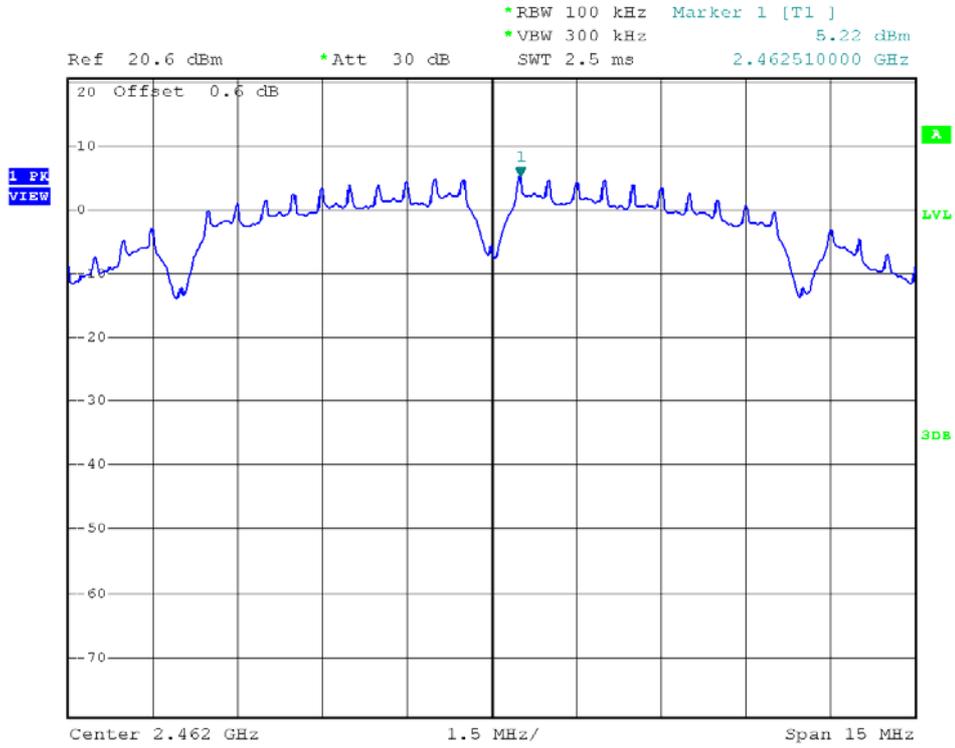
INTERTEK TESTING SERVICES

802.11b



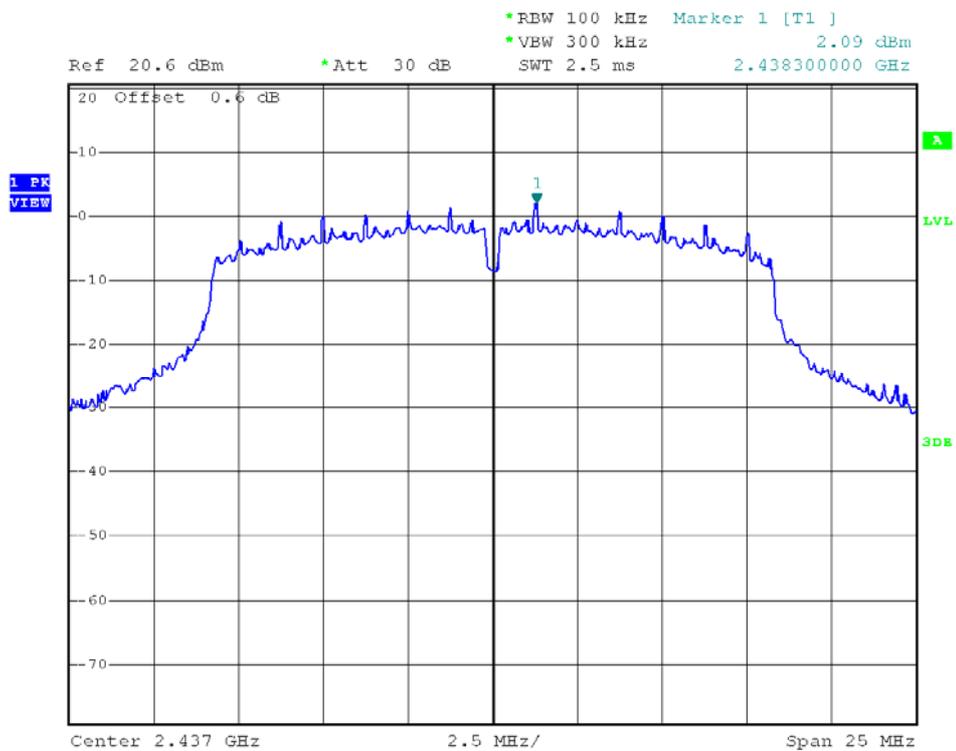
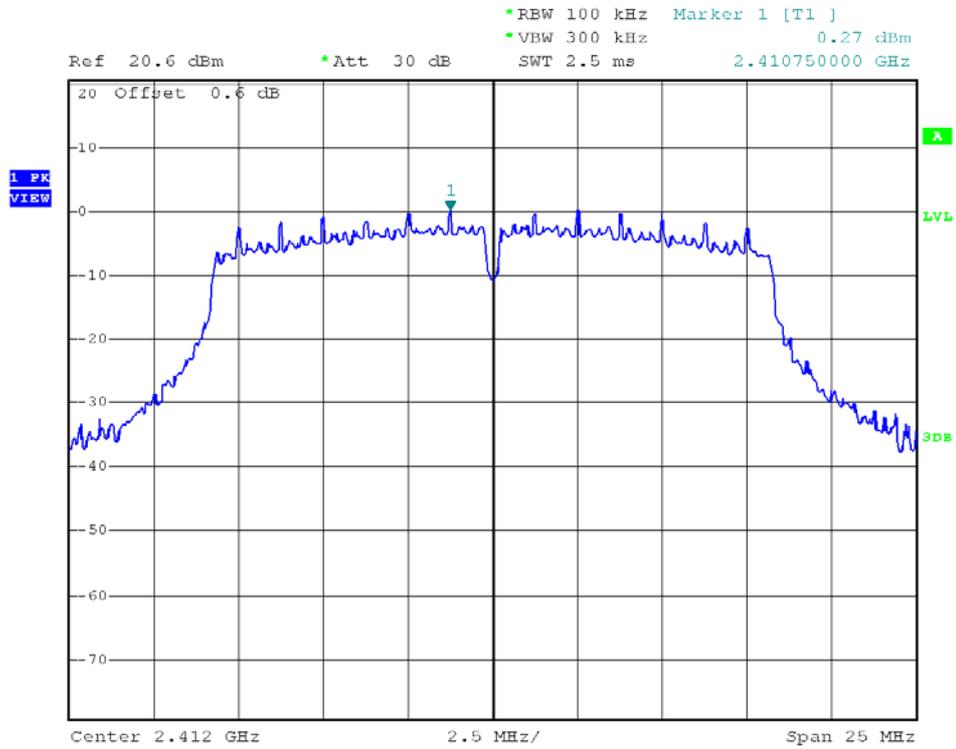
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FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES



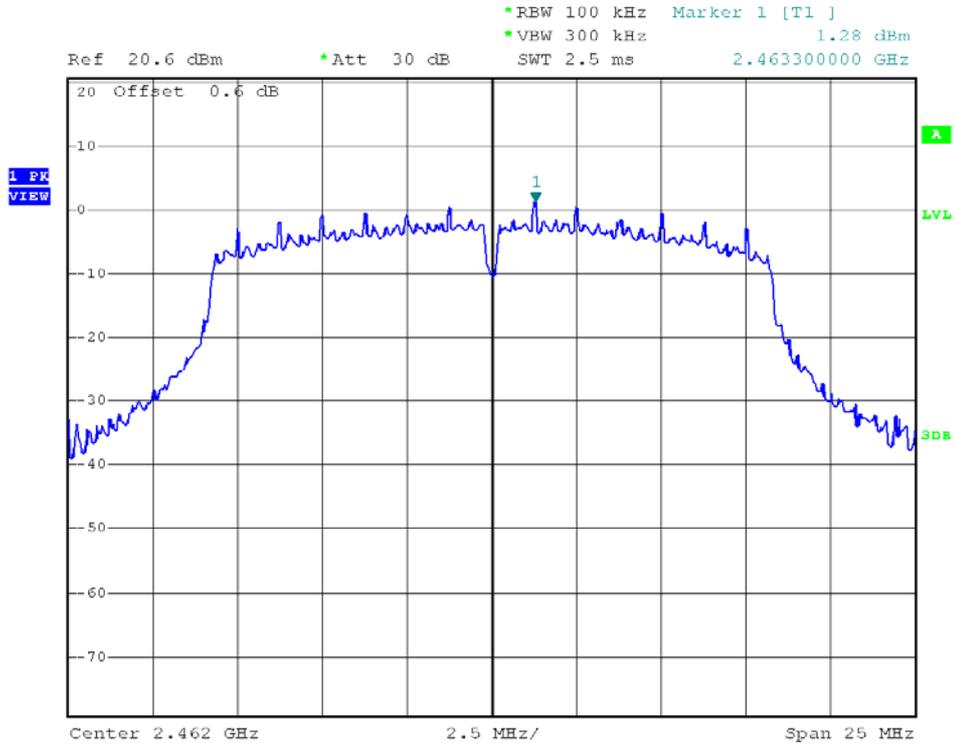
INTERTEK TESTING SERVICES

802.11g



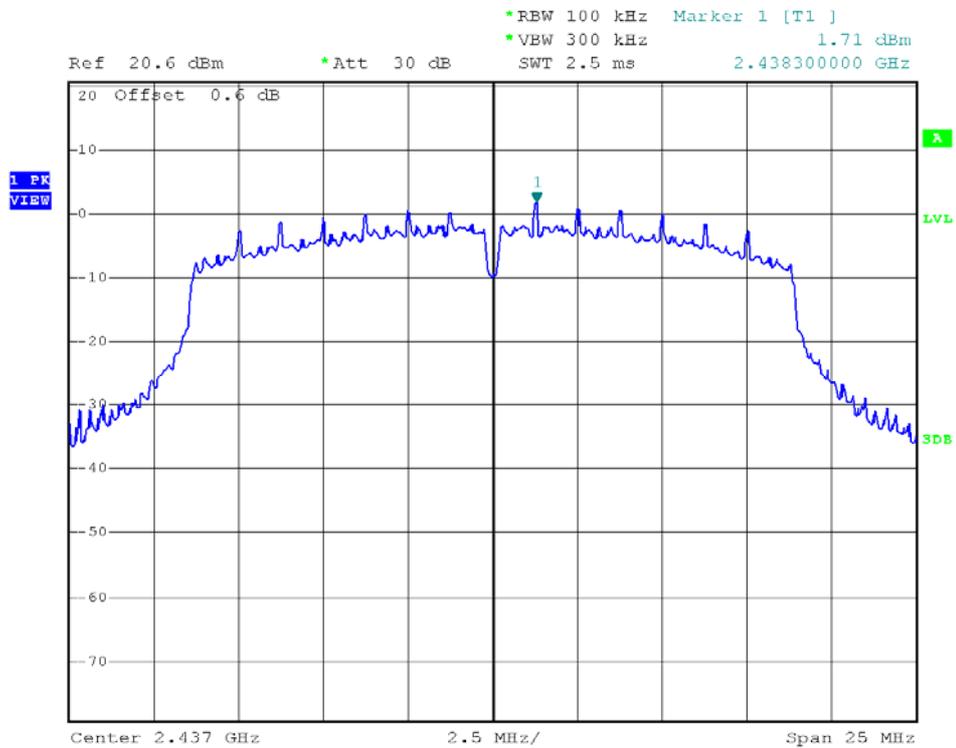
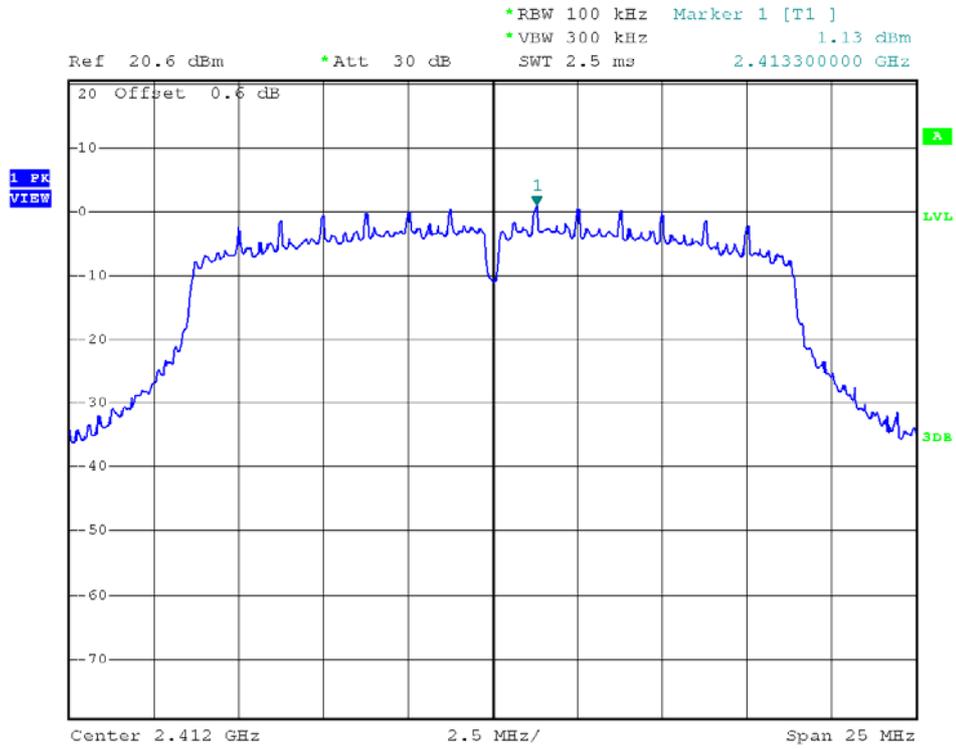
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Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES



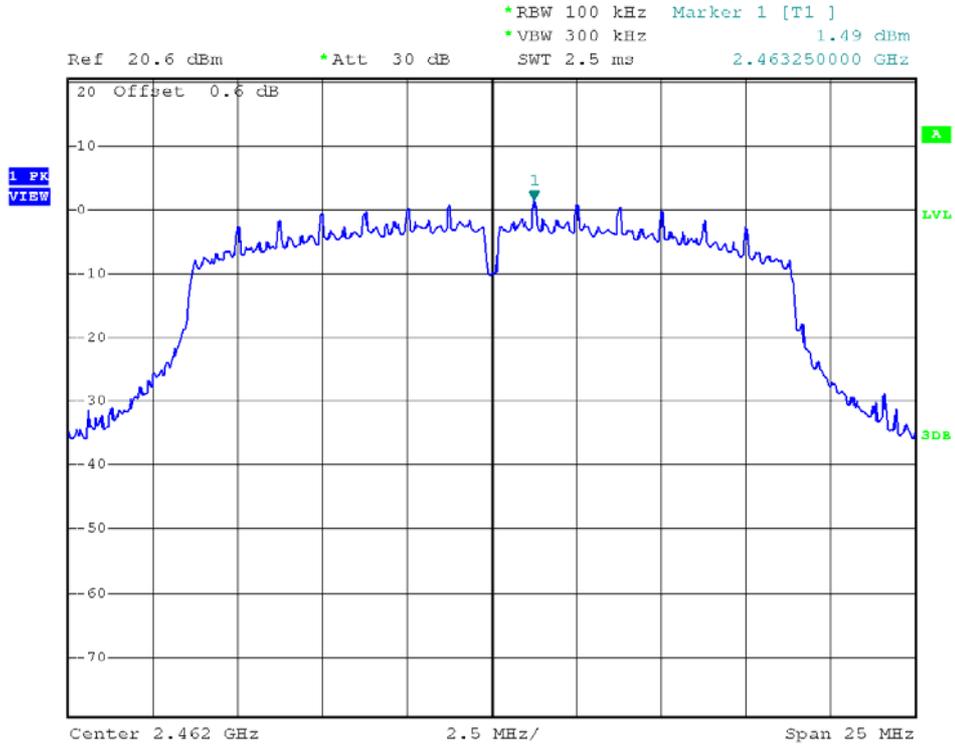
INTERTEK TESTING SERVICES

802.11n-HT20 SISO



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Report No.: 130403024SZN-003

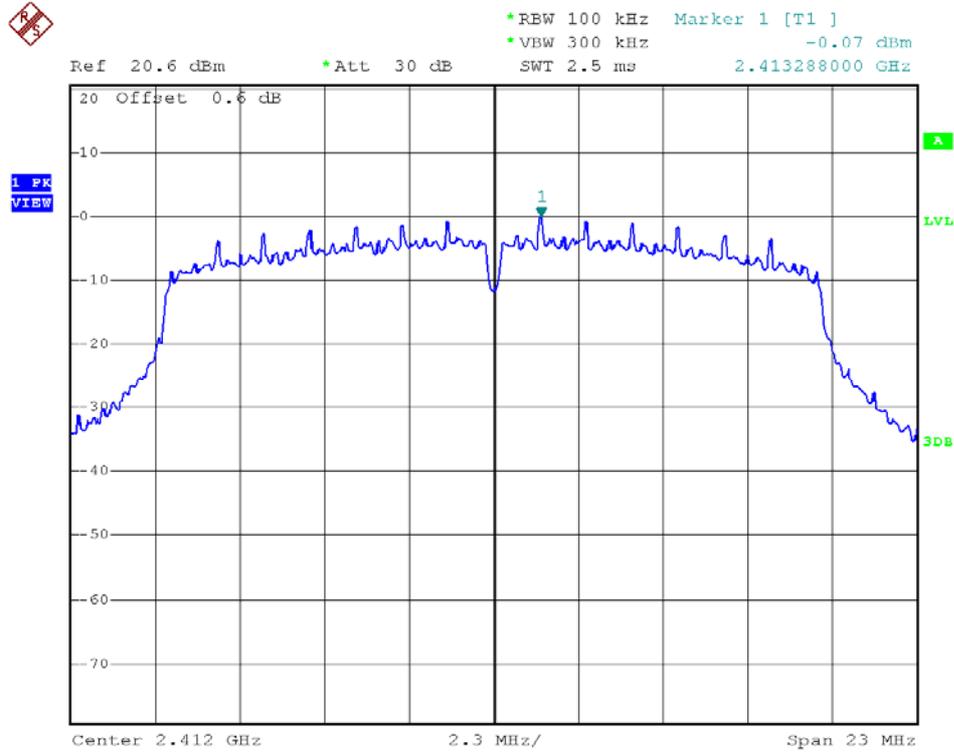
INTERTEK TESTING SERVICES



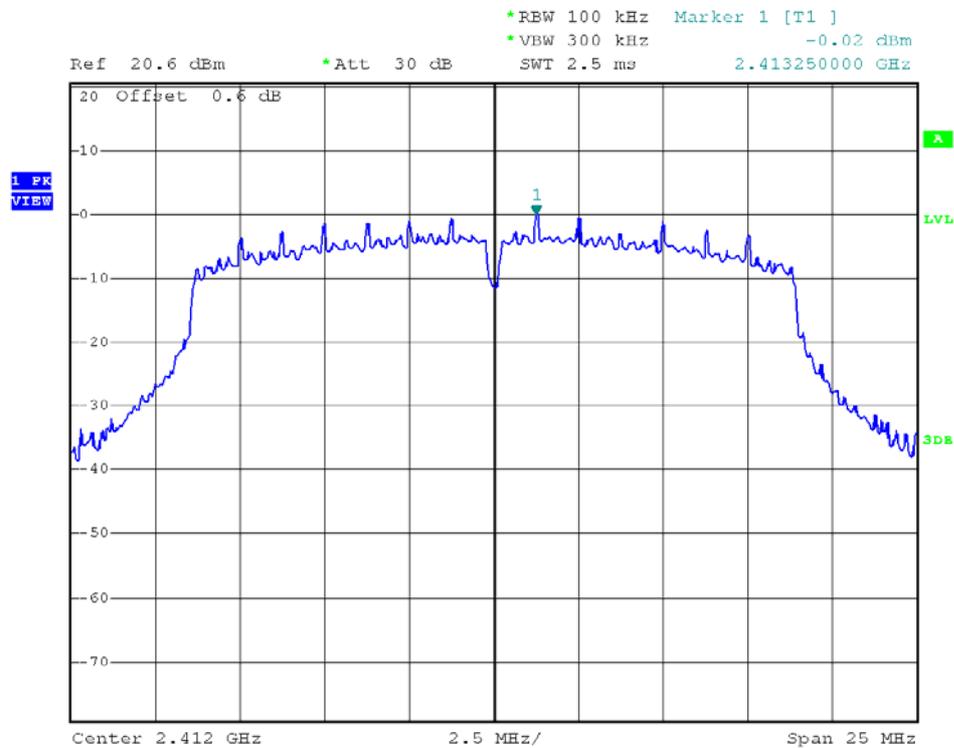
INTERTEK TESTING SERVICES

802.11n-HT20 MIMO

Ant0



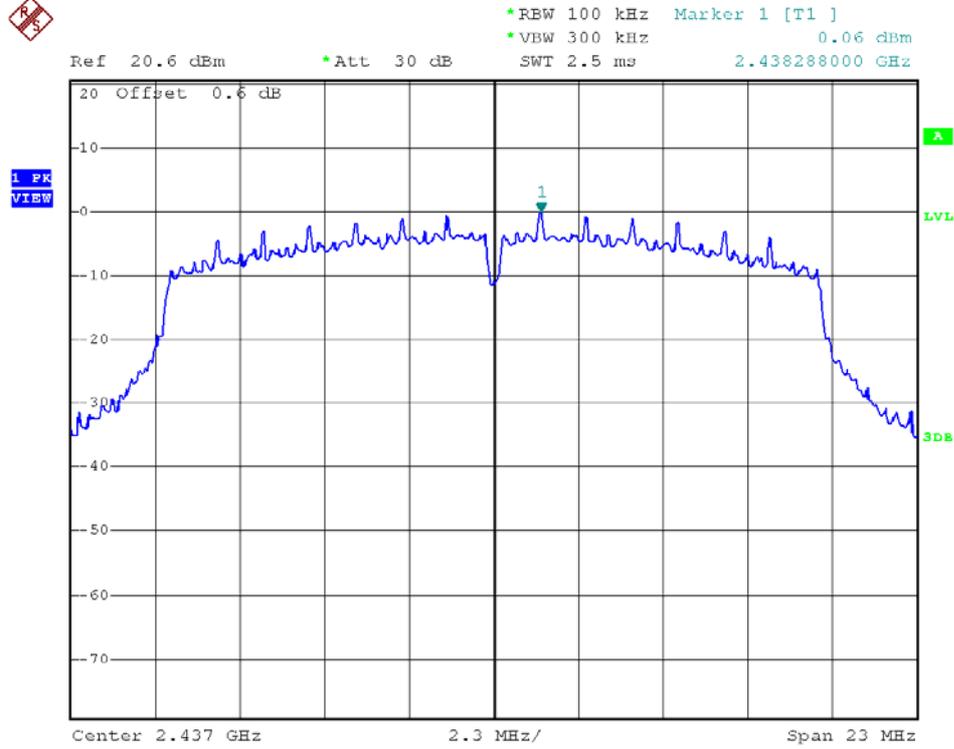
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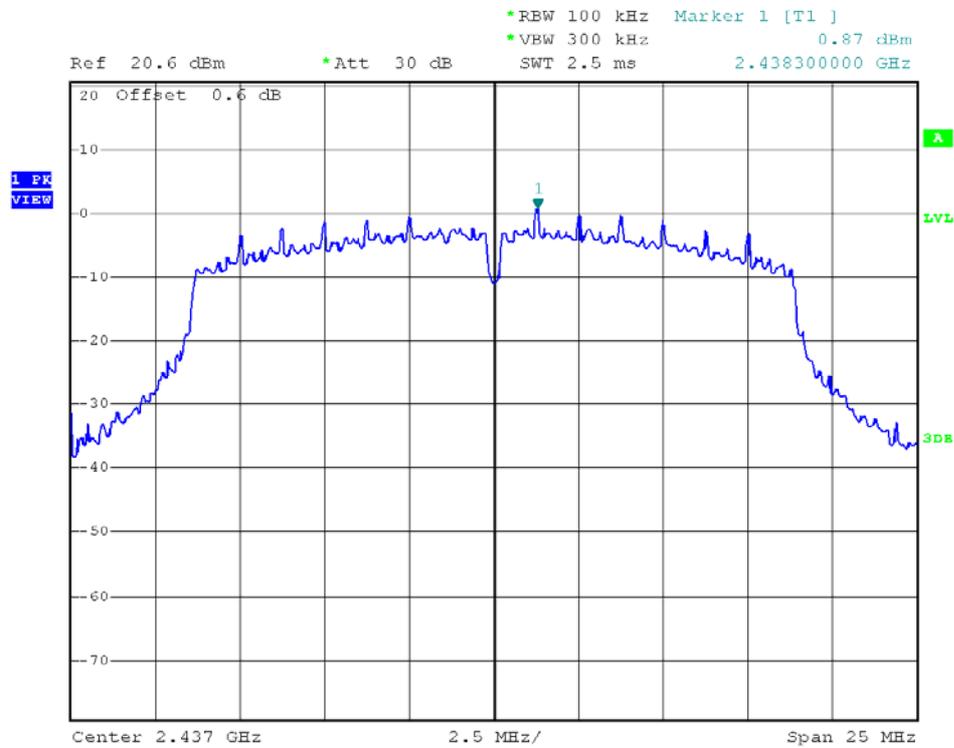
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INTERTEK TESTING SERVICES

Ant0



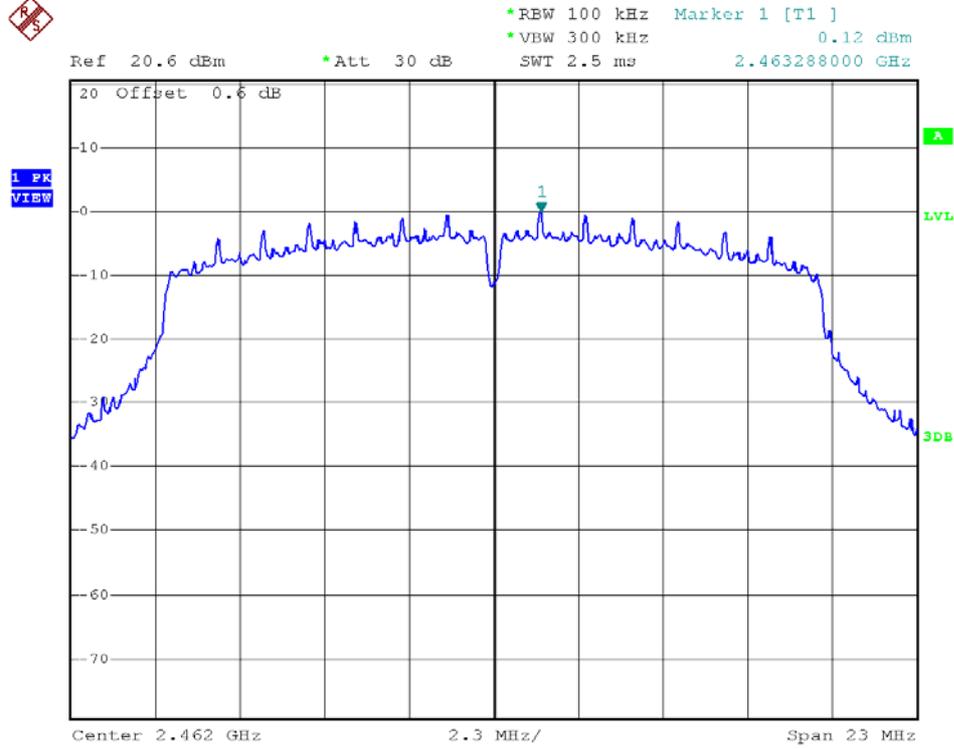
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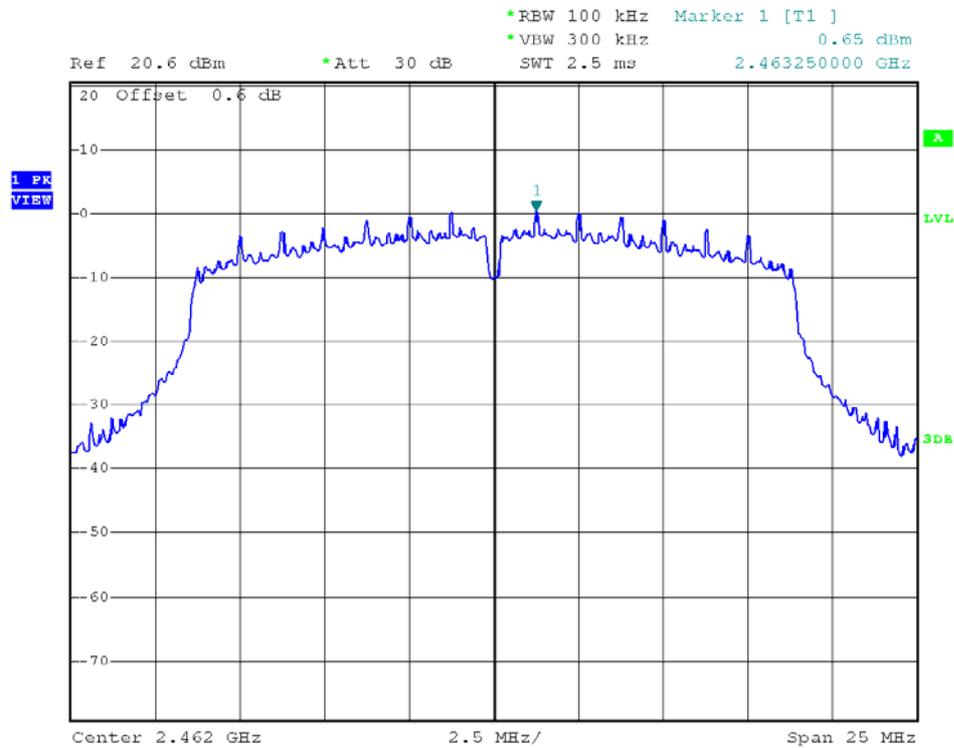
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Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

Ant0



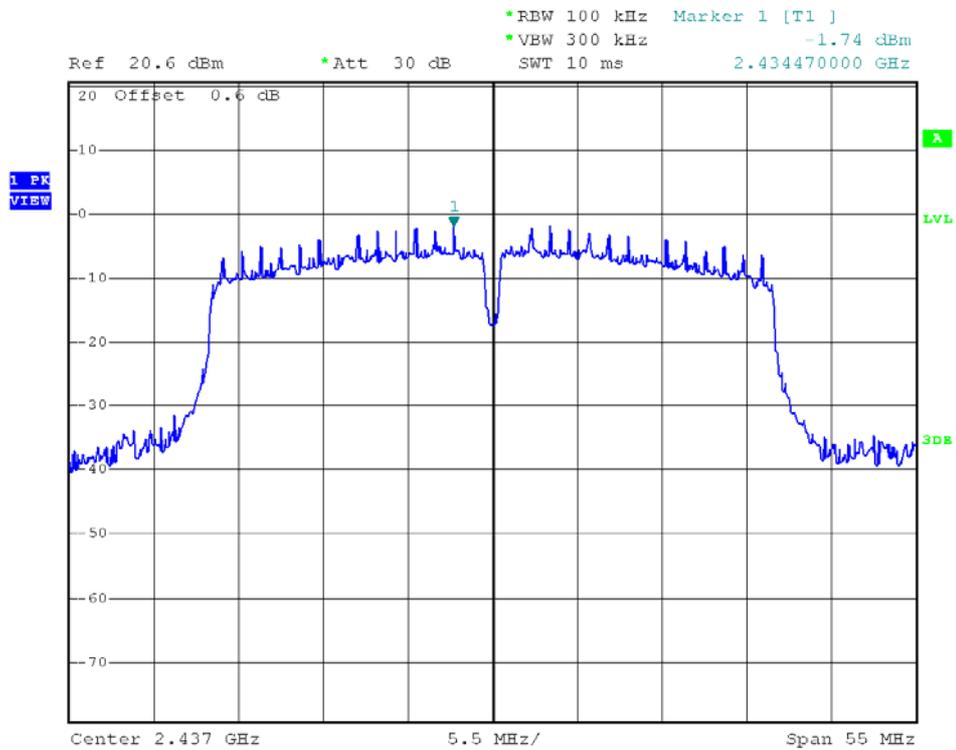
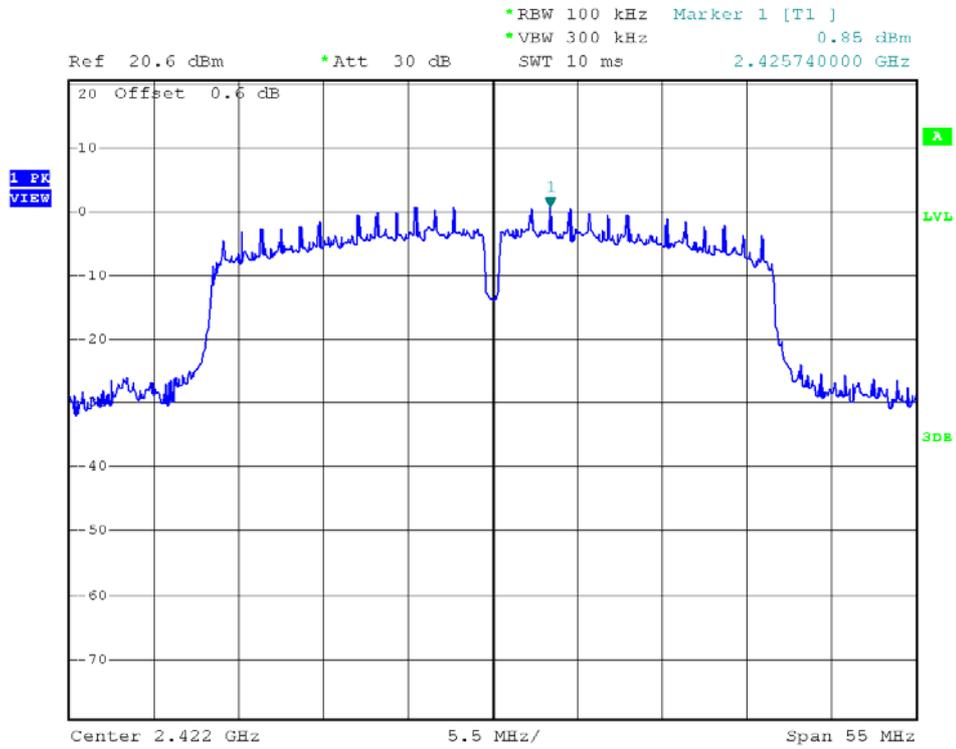
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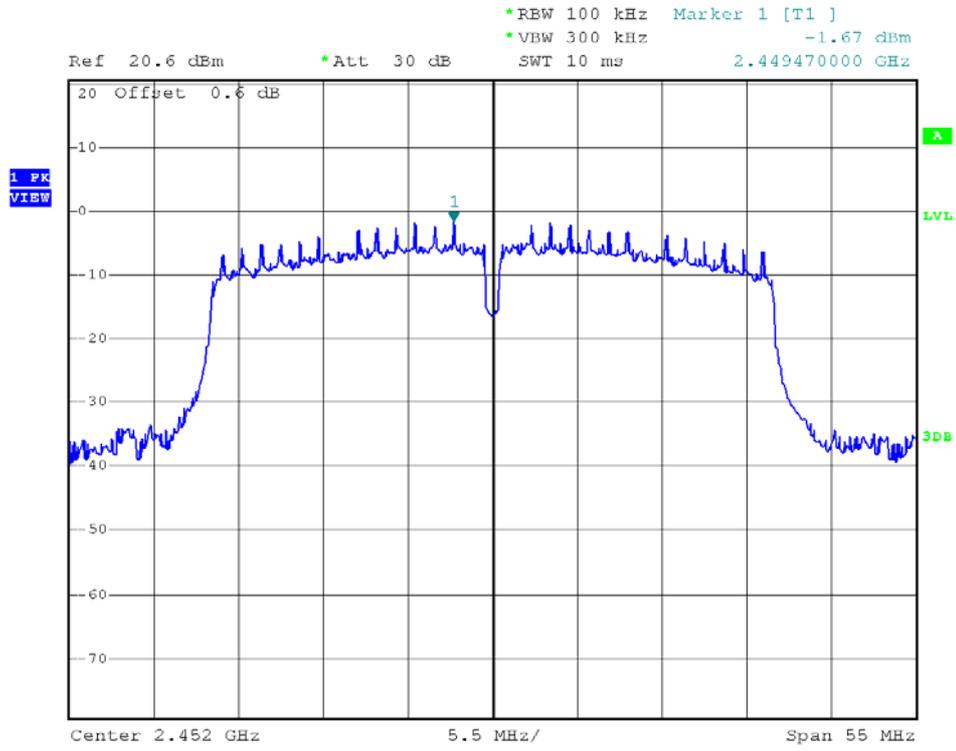
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802.11n-HT40 SISO



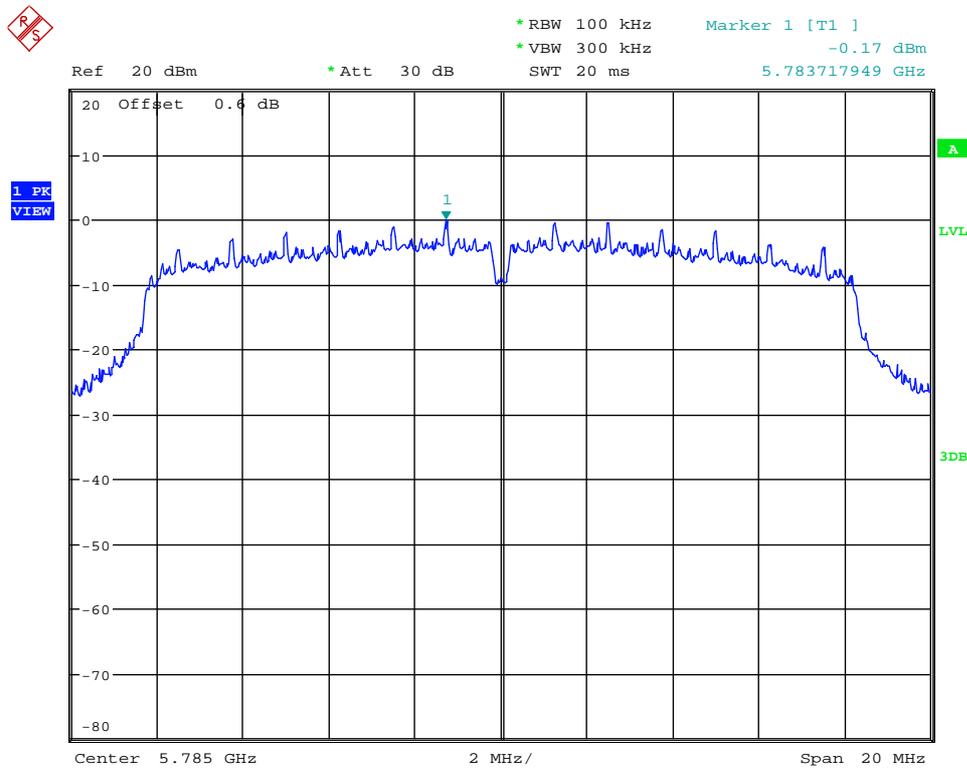
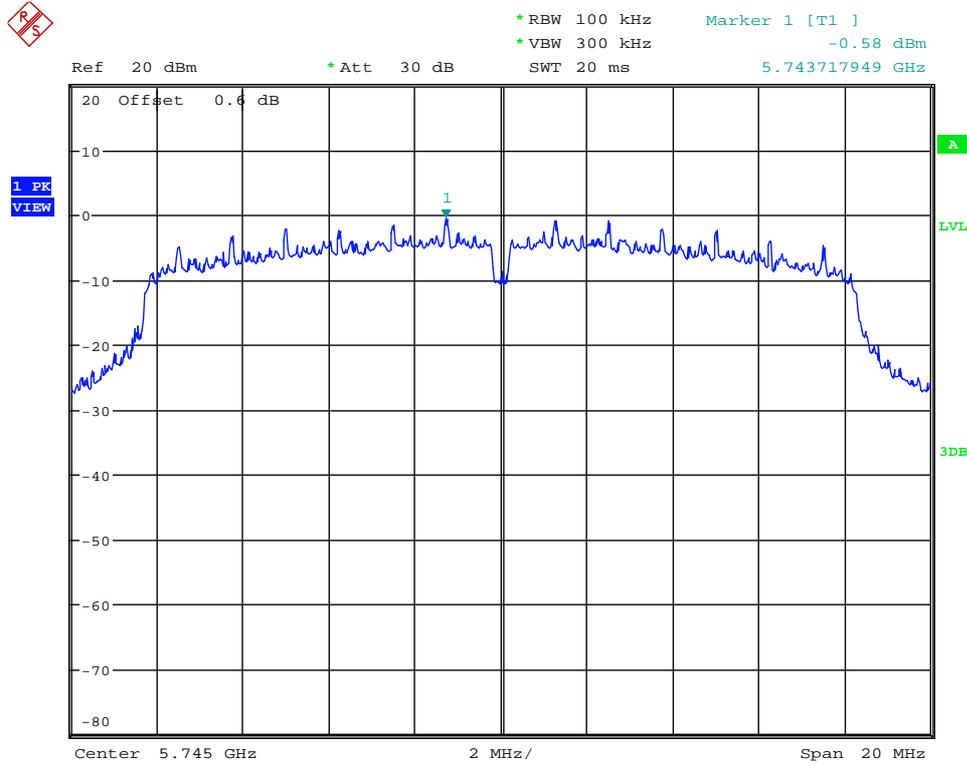
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INTERTEK TESTING SERVICES



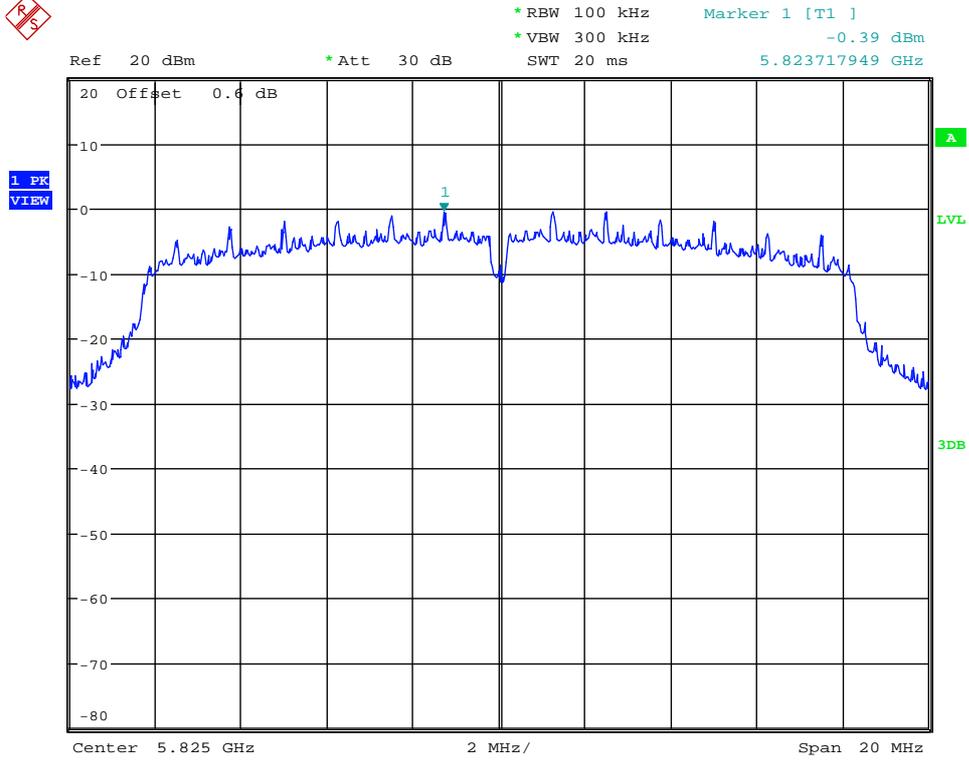
INTERTEK TESTING SERVICES

802.11a (5G band)



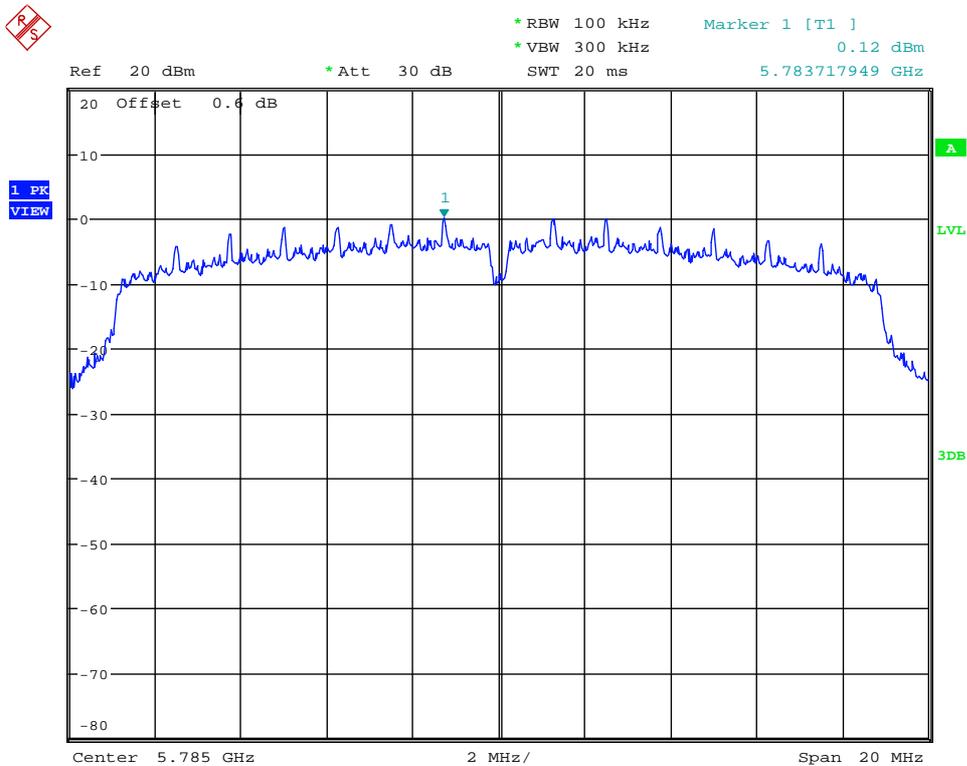
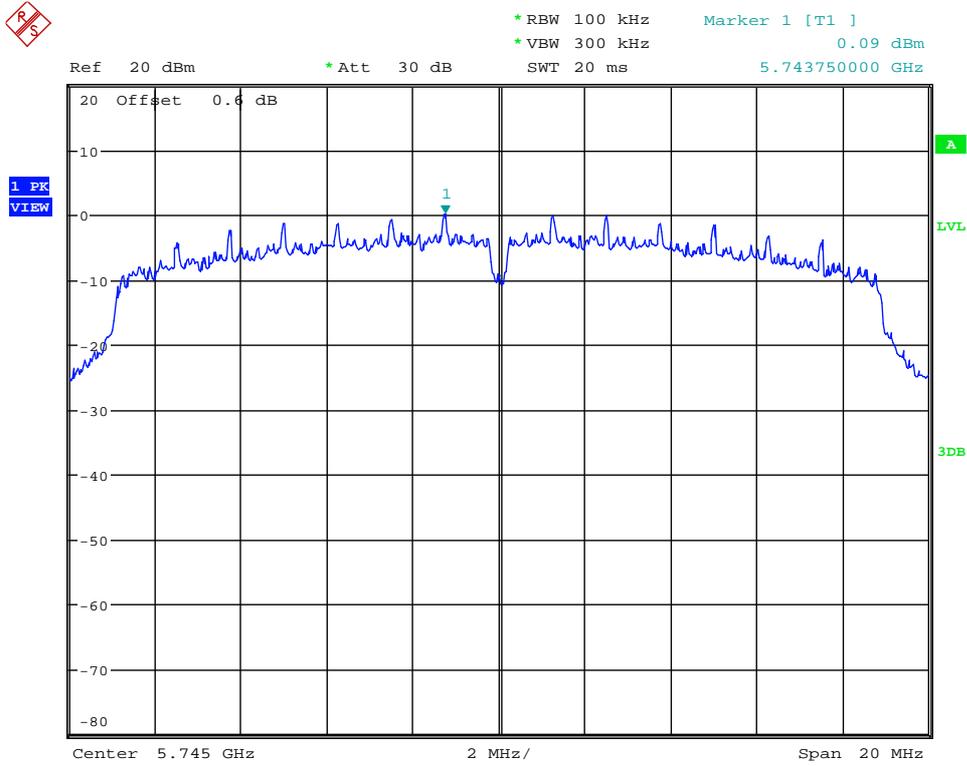
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INTERTEK TESTING SERVICES



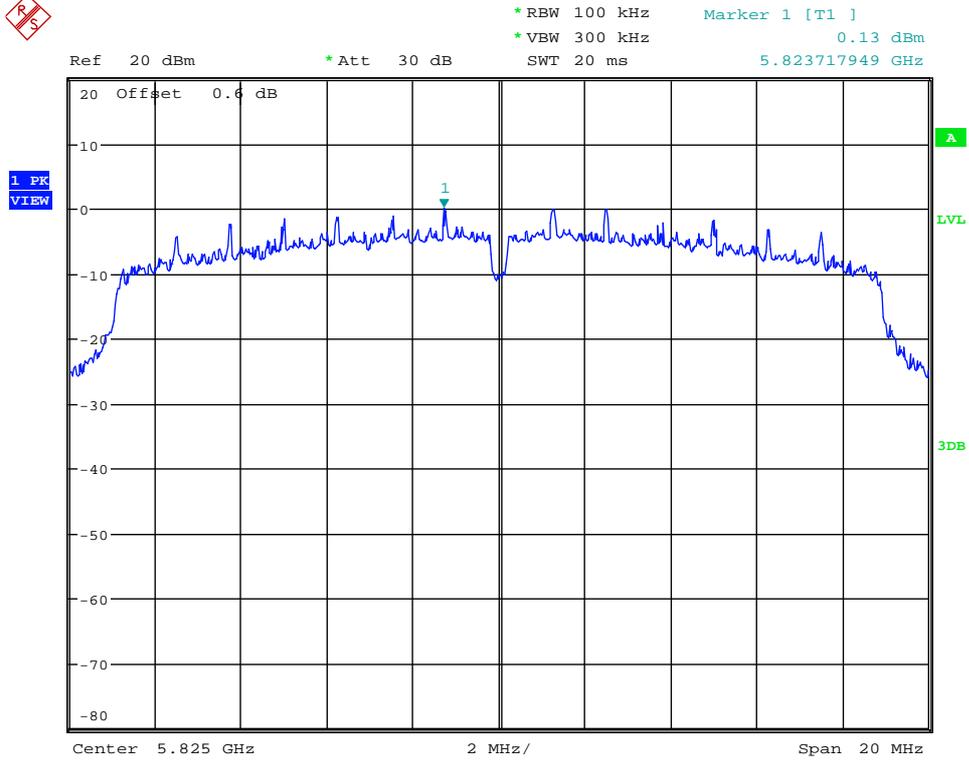
INTERTEK TESTING SERVICES

802.11n-HT20 SISO (5G band)



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FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

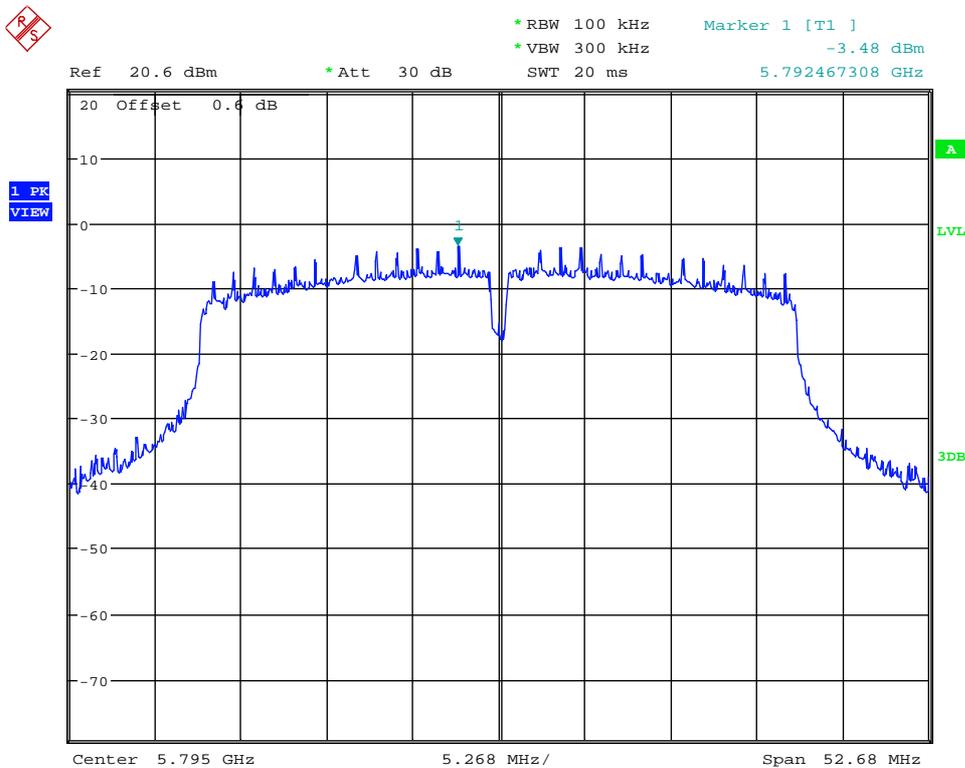
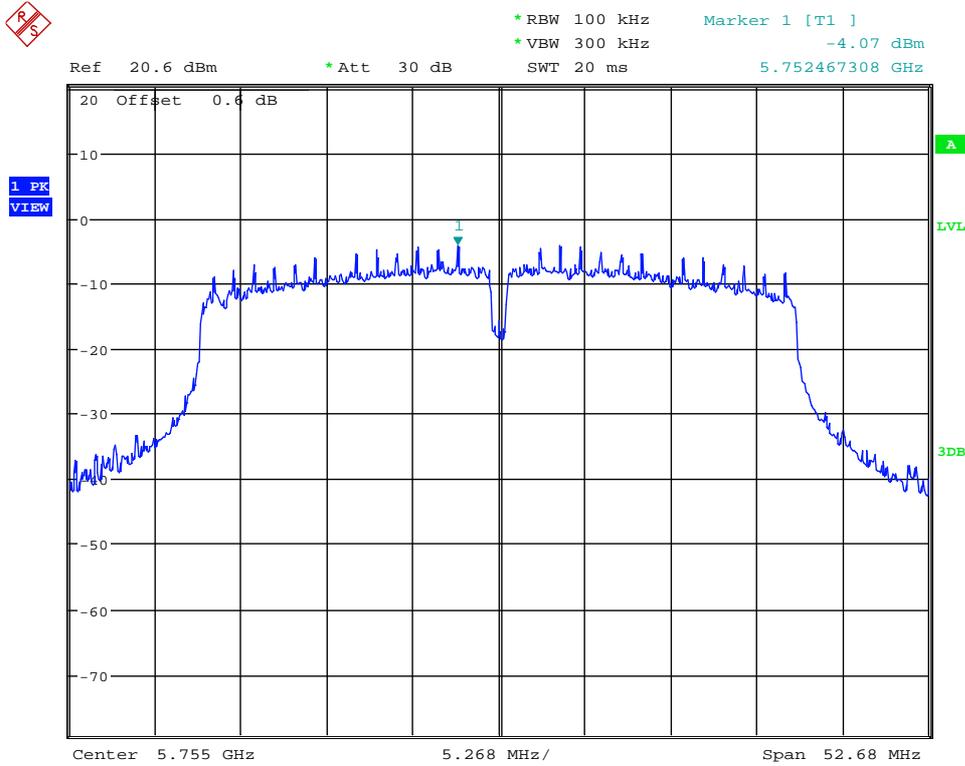
INTERTEK TESTING SERVICES



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT40 SISO (5G band)



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.4 Out of Band Conducted Emissions, FCC Rule 15.247(d)

In any 100 kHz bandwidth outside the EUT passband, the RF power produced by the modulation products of the spreading sequence, the information sequence, and the carrier frequency shall be at least 20dB below that of the maximum in-band 100 kHz emission, or else shall meet the general limits for radiated emissions at frequencies outside the passband, whichever results in lower attenuation. The Measurement Procedure was set according to the FCC KDB 558074.

All other types of emissions from the EUT shall meet the general limits for radiated frequencies outside the passband.

Refer to the attached test plot for out of band conducted emissions data with rate of 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n HT20 SISO, 13Mbps for 802.11n HT20 MIMO, 27Mbps for 802.11n HT40 SISO, 6Mbps for 802.11a SISO (5G band), 6.5Mbps for 802.11n-HT20 SISO (5G band), 13Mbps for 802.11n-HT40 SISO (5G band), The worst case Out of Band Conducted Emissions is derived from the method of Measure according KDB662911.

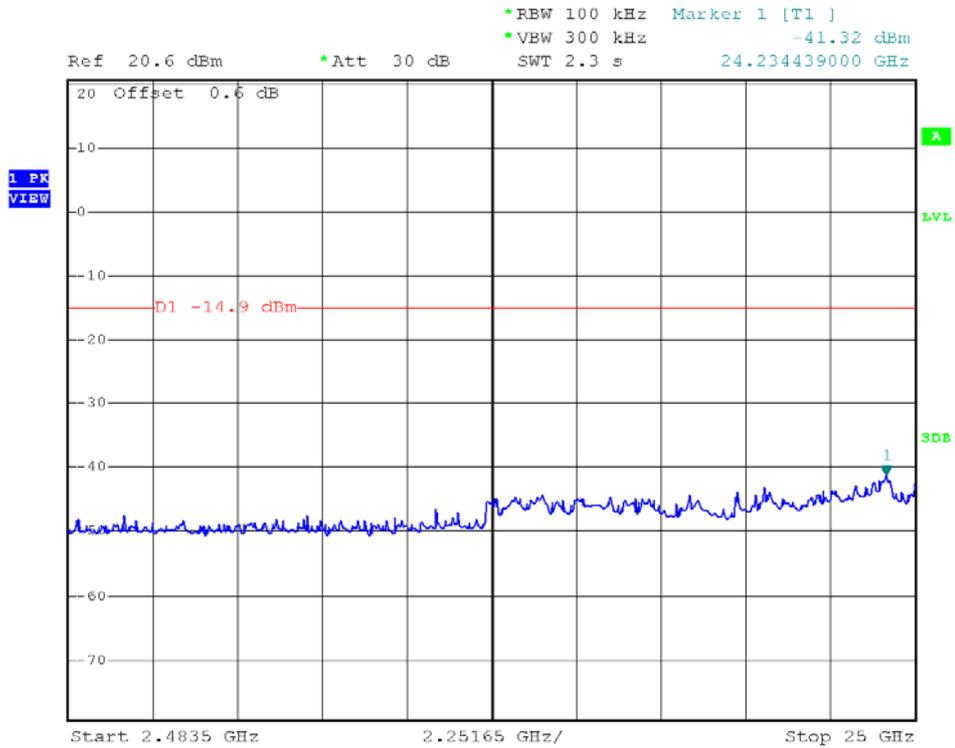
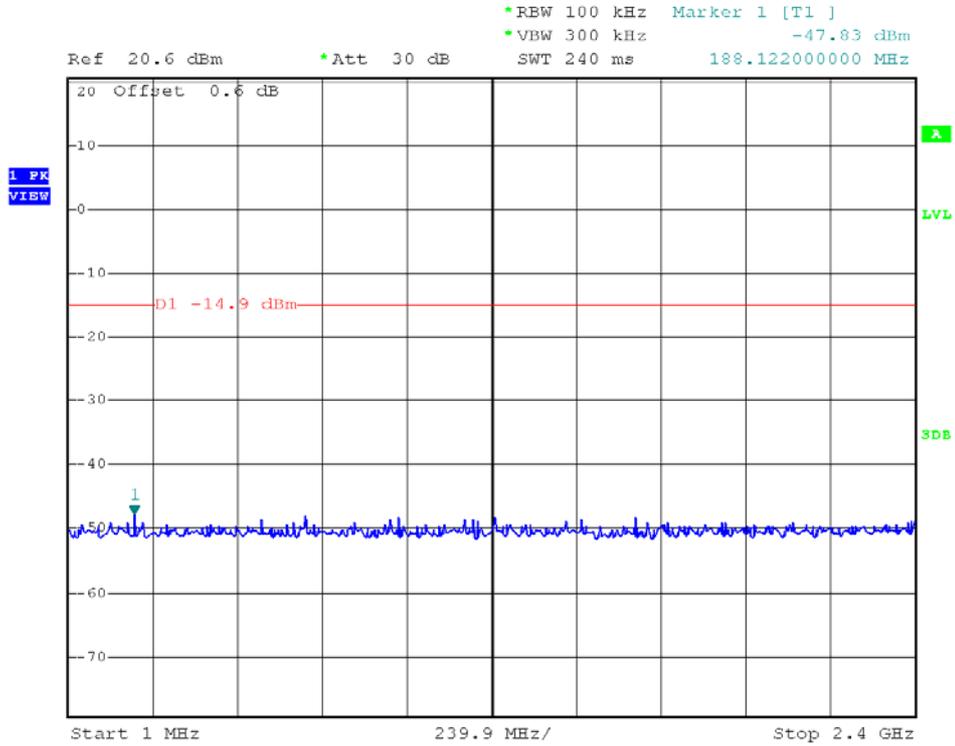
The test plots showed all spurious emission and up to the tenth harmonic was measured and they were found to be at least 20 dB below the highest level of the desired power in the passband.

The test plots are attached as below.

INTERTEK TESTING SERVICES

802.11b

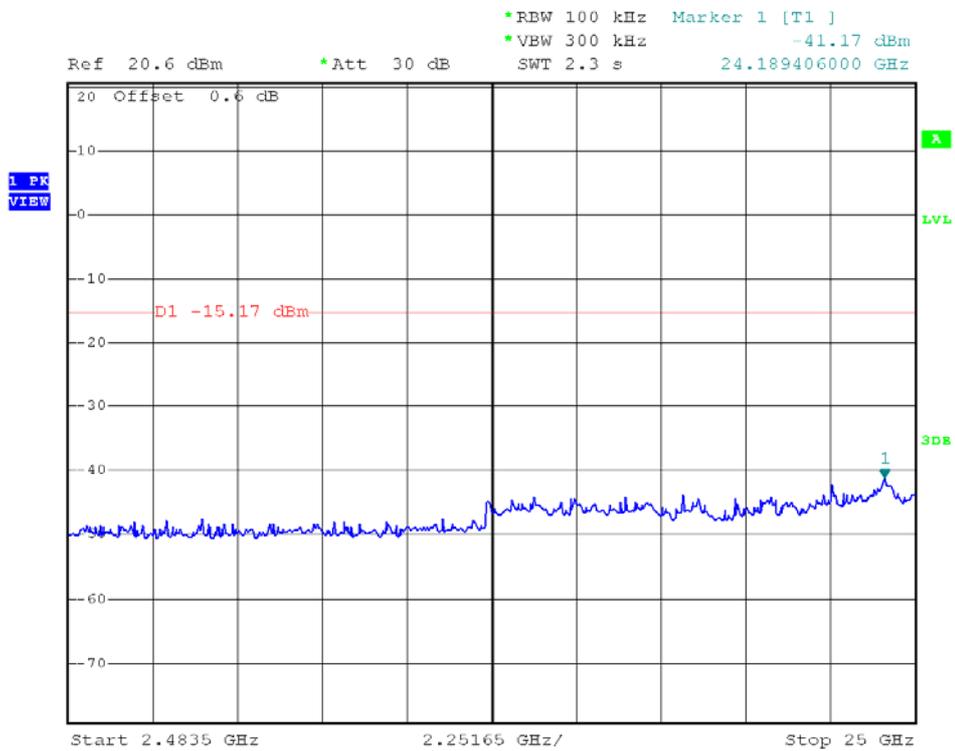
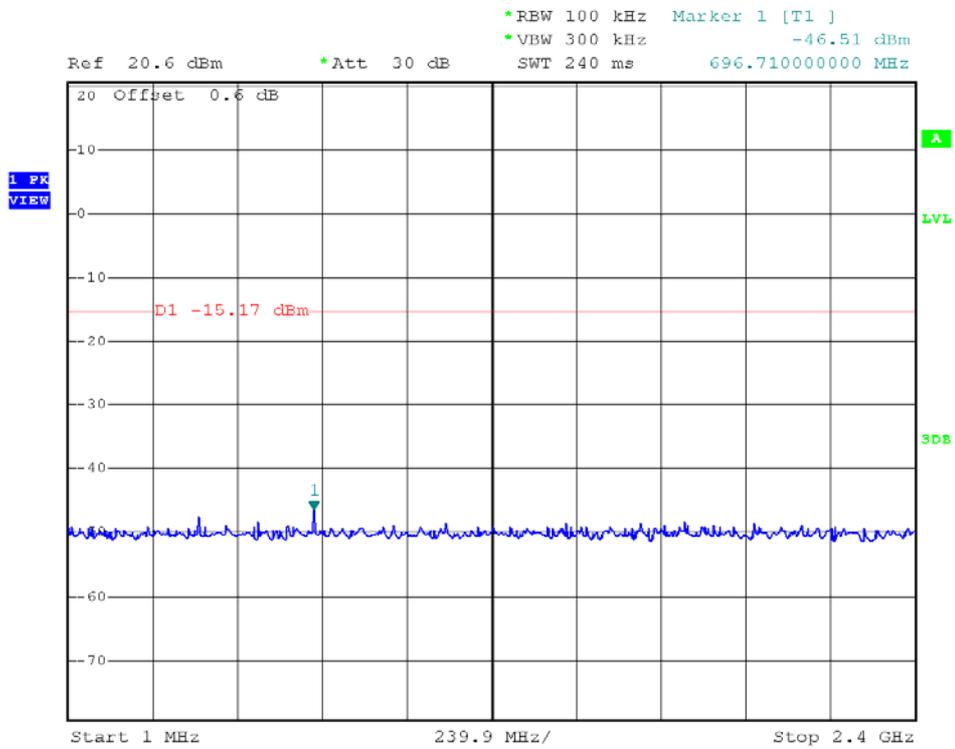
Channel 1 (2412MHz) Reference Level: 5.10dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

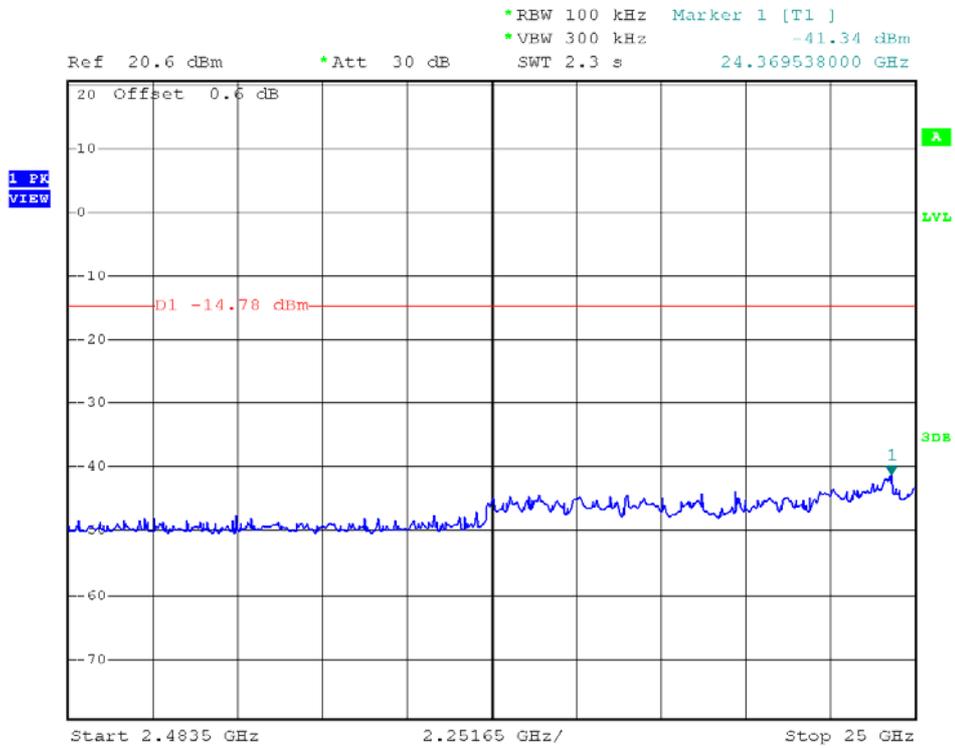
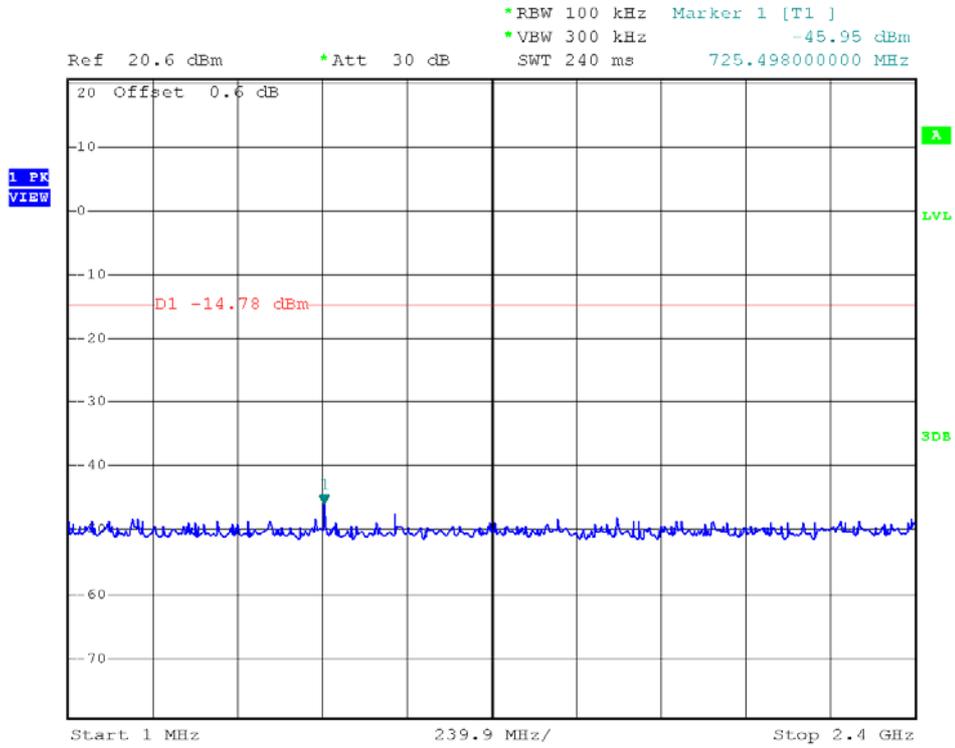
Channel 6 (2437MHz) Reference Level: 4.83dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

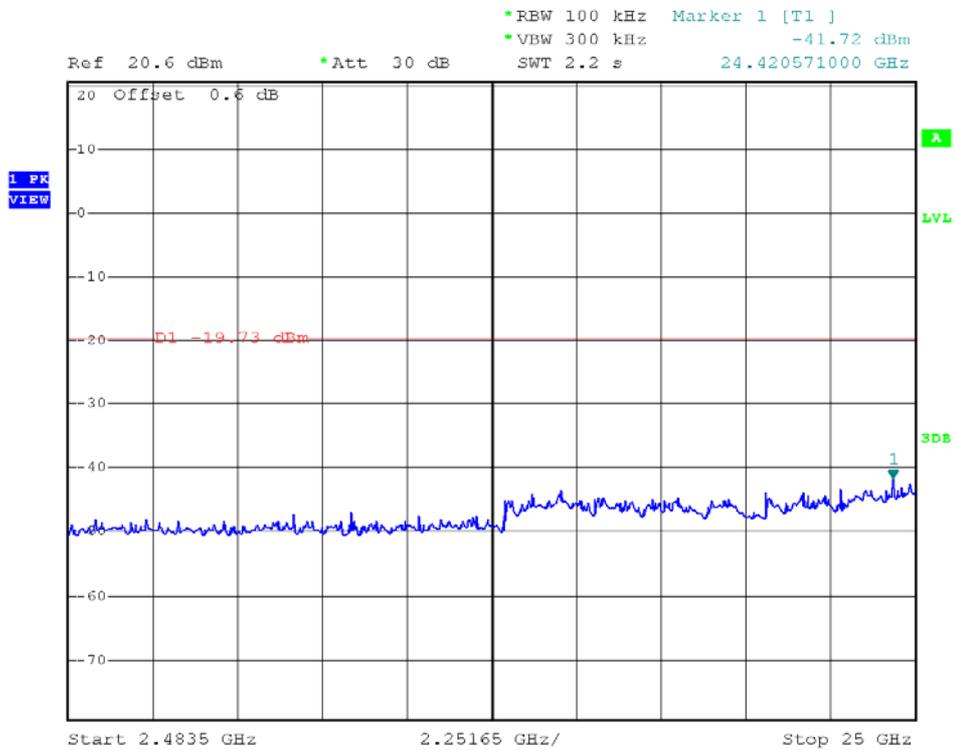
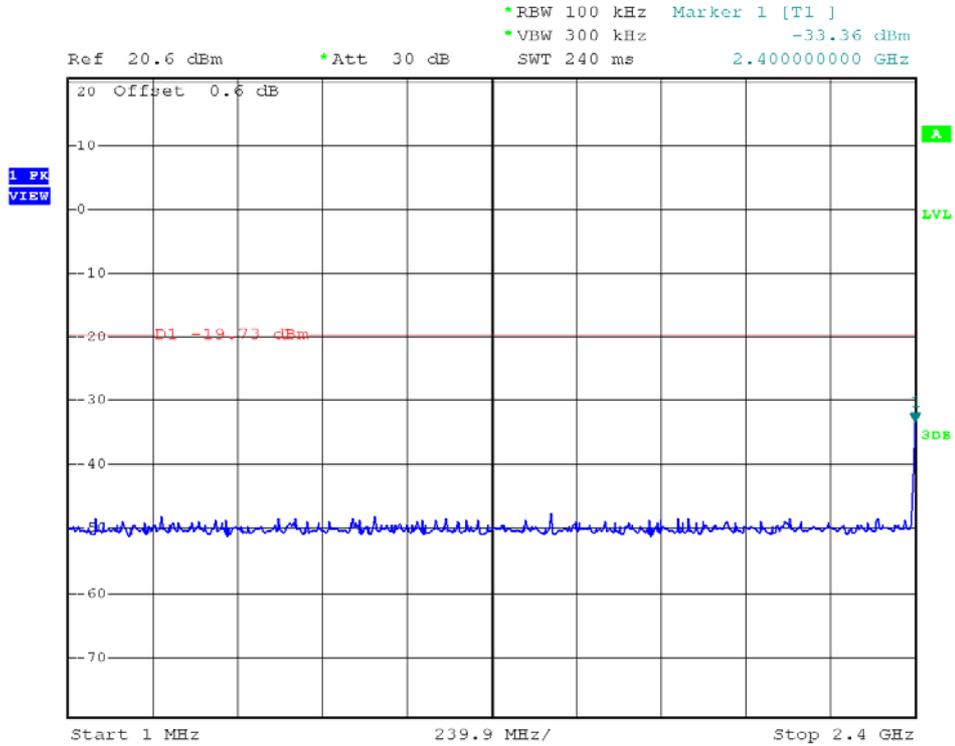
Channel 11 (2462MHz) Reference Level: 5.22dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

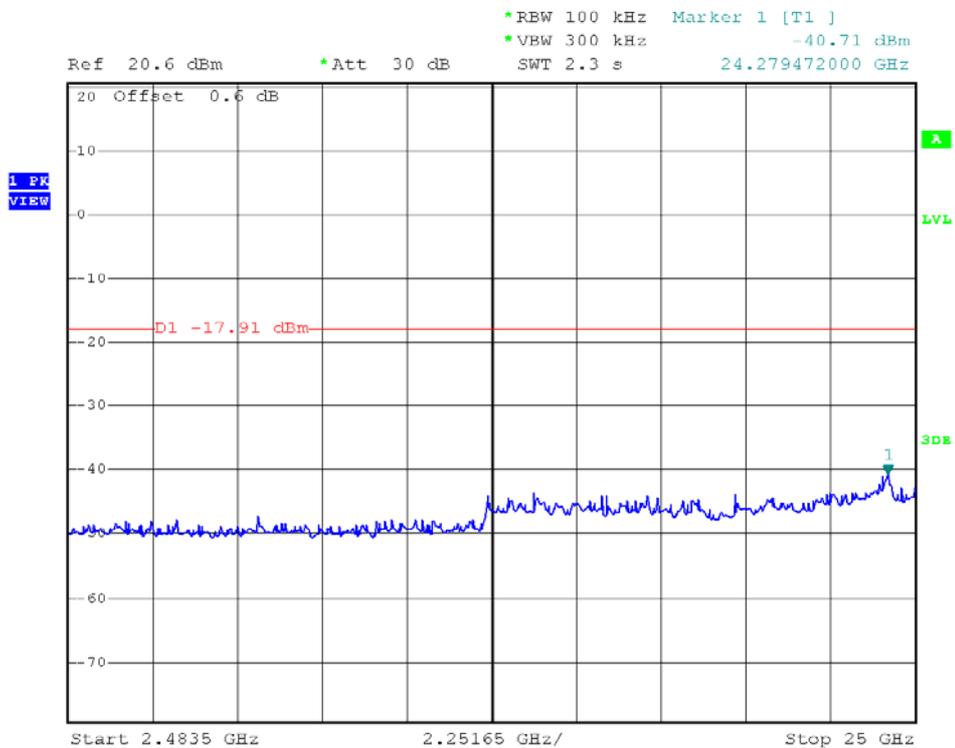
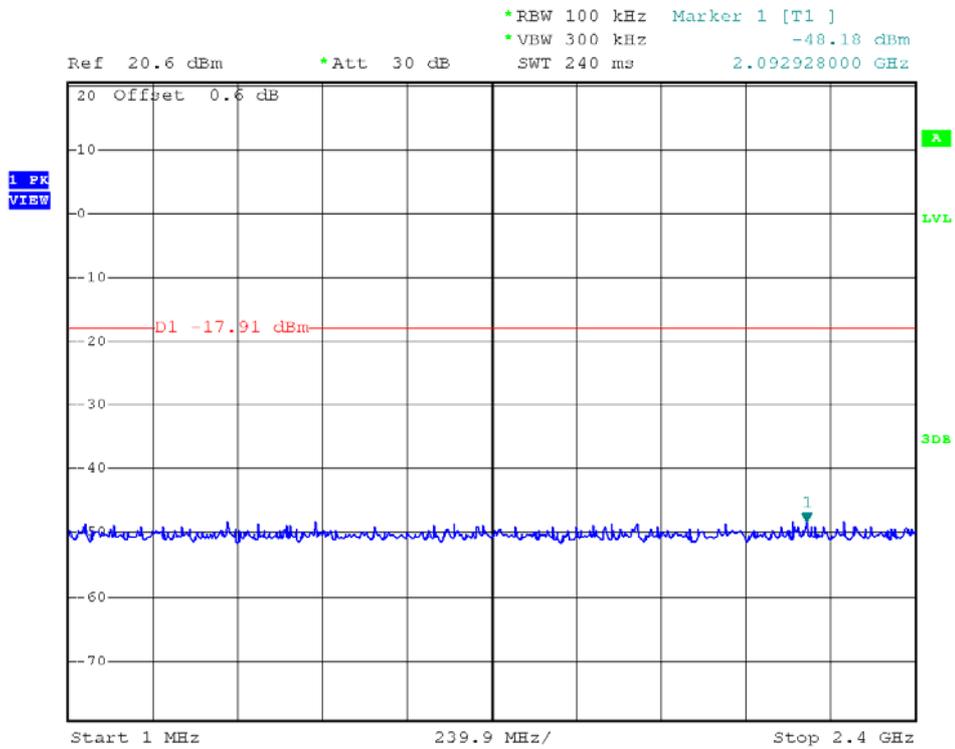
802.11g
Channel 1 (2412MHz) Reference Level: 0.27dBm



TRF no.: FCC 15C_TX_b
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Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

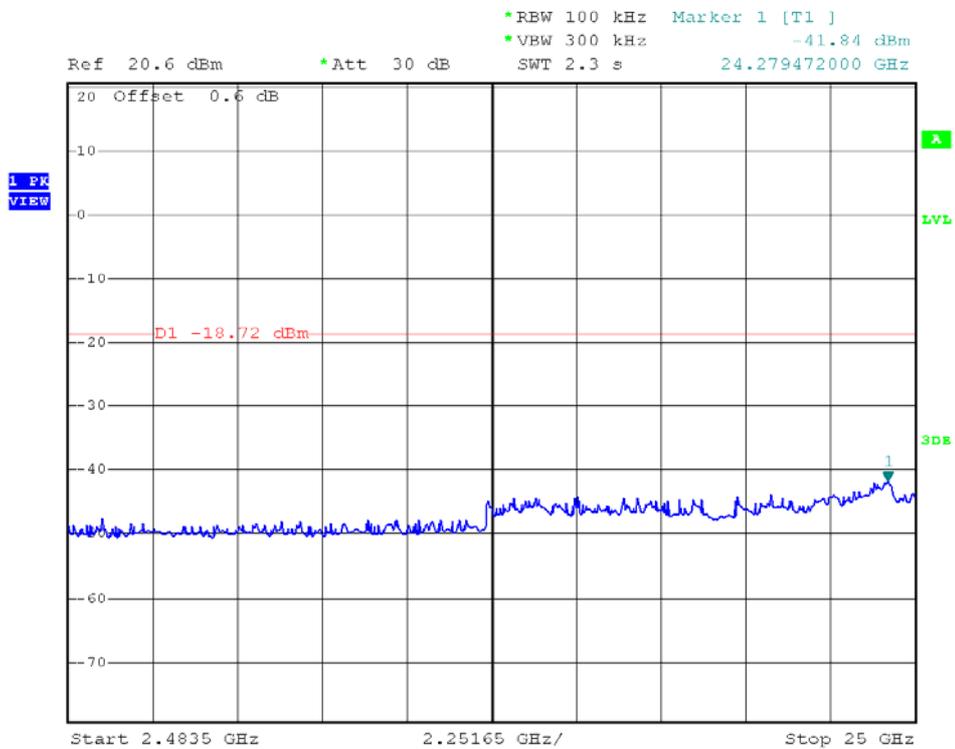
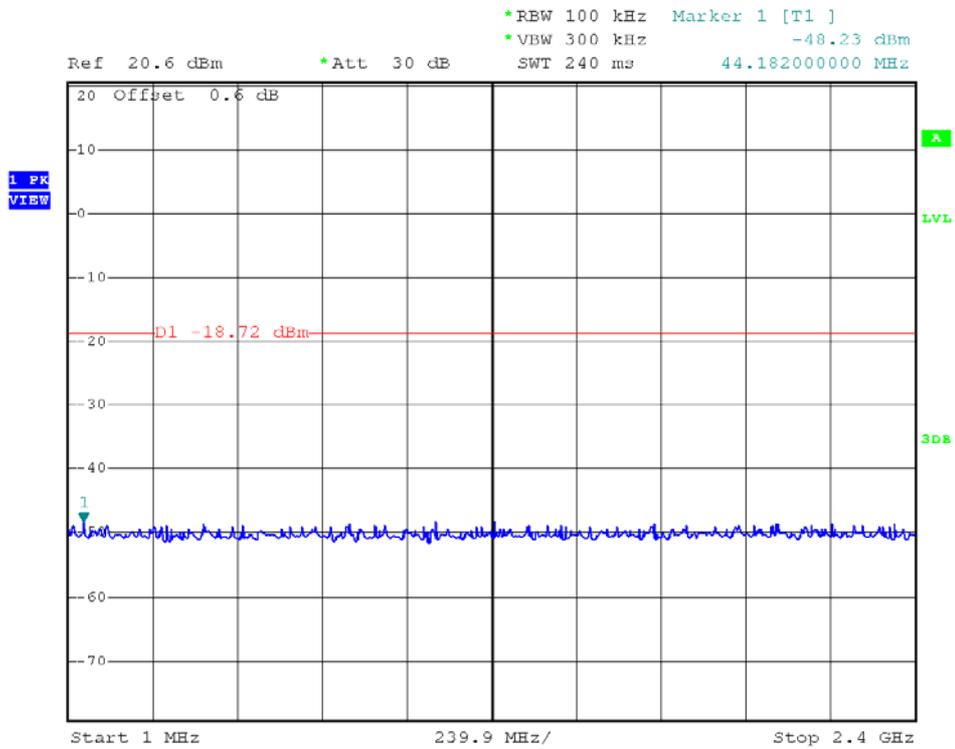
Channel 6 (2437MHz) Reference Level: 2.09dBm



TRF no.: FCC 15C_TX_b
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Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

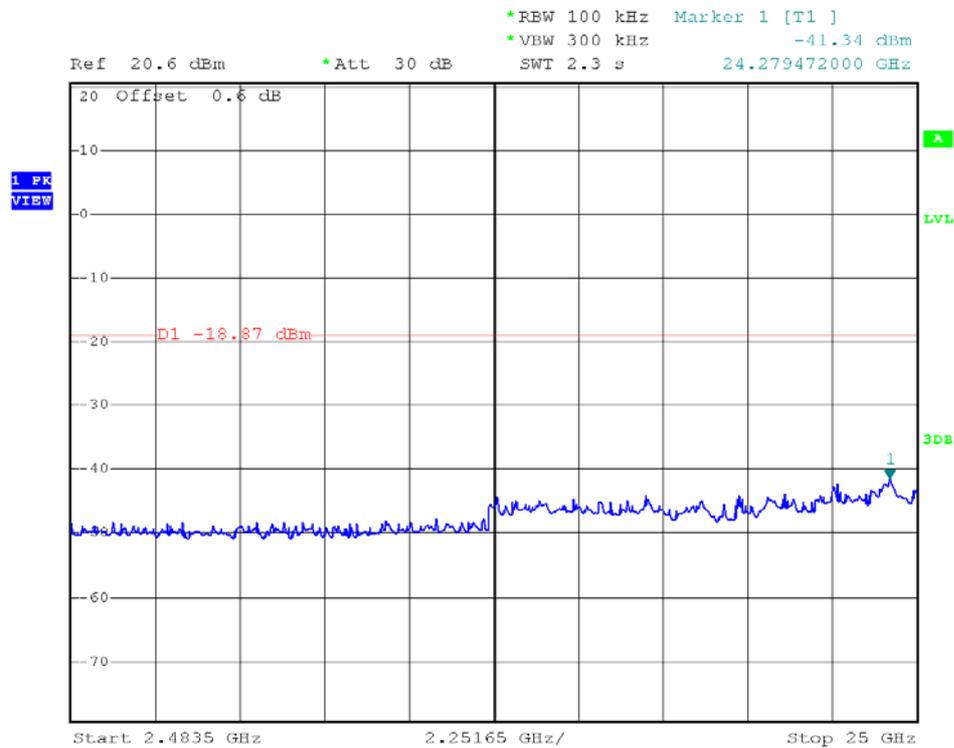
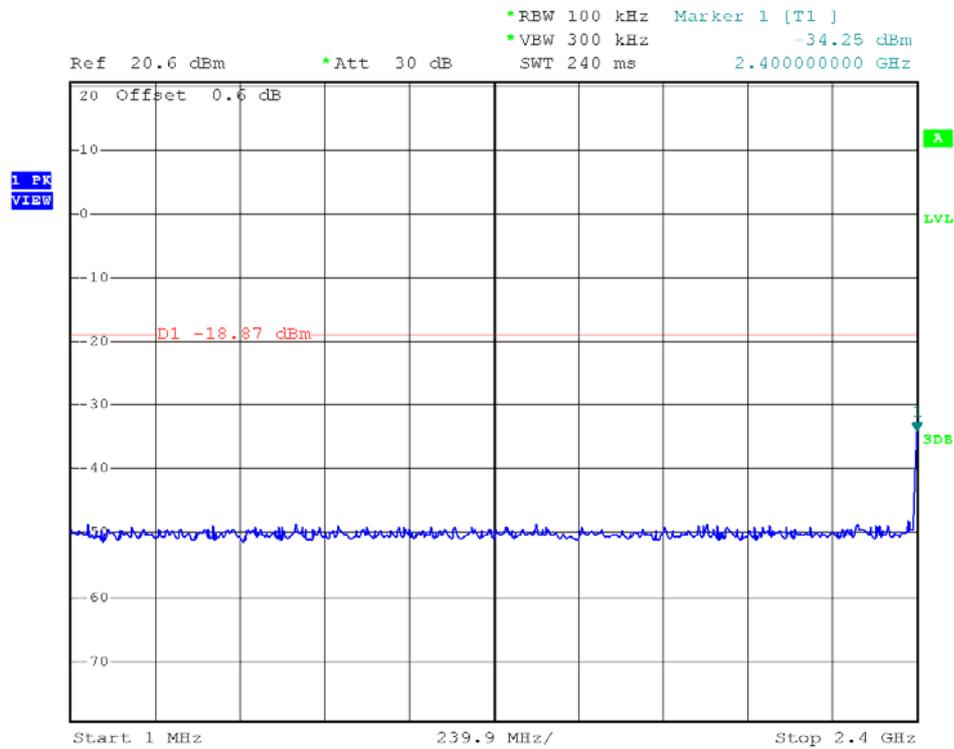
Channel 11 (2462MHz) Reference Level: 1.28dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

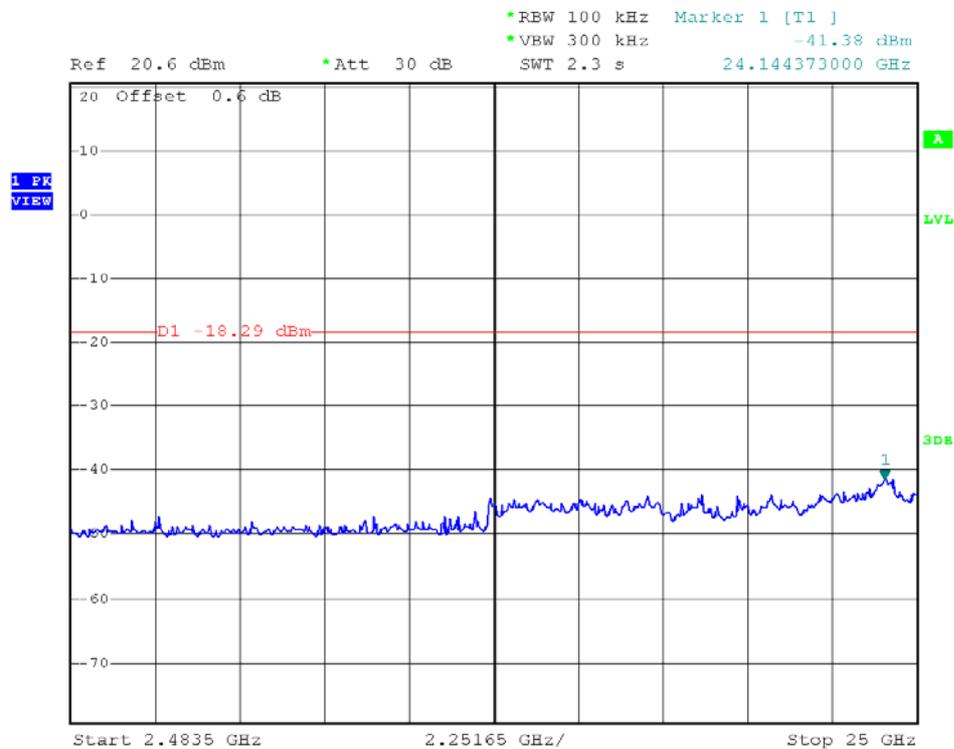
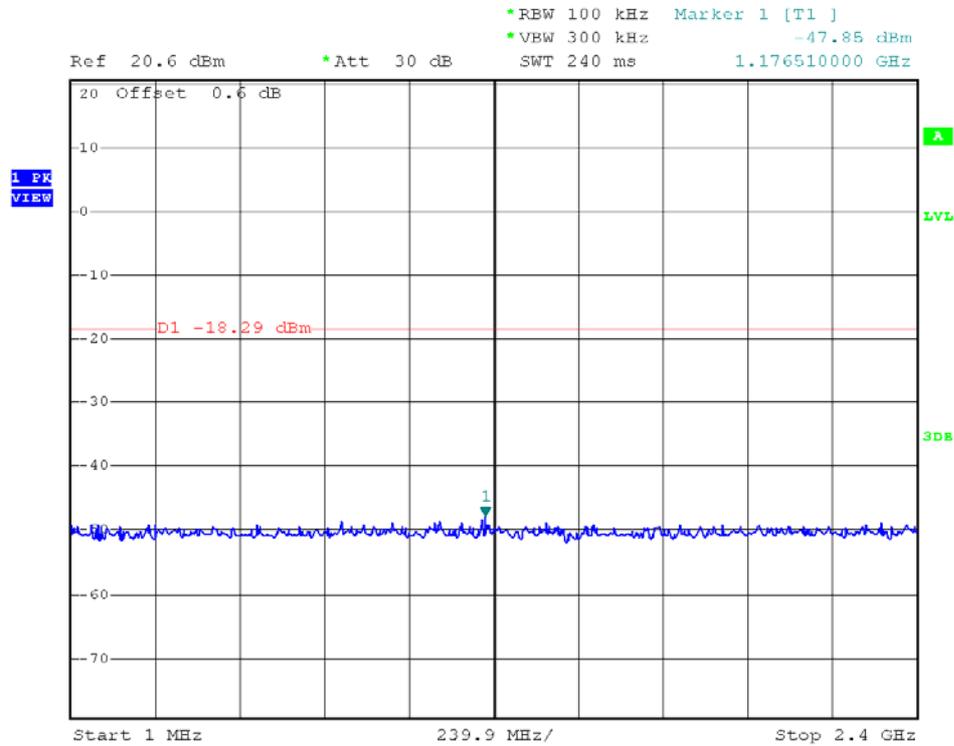
802.11n-HT20 SISO (2412MHz) Reference Level: 1.13dBm



TRF no.: FCC 15C_TX_b
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Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

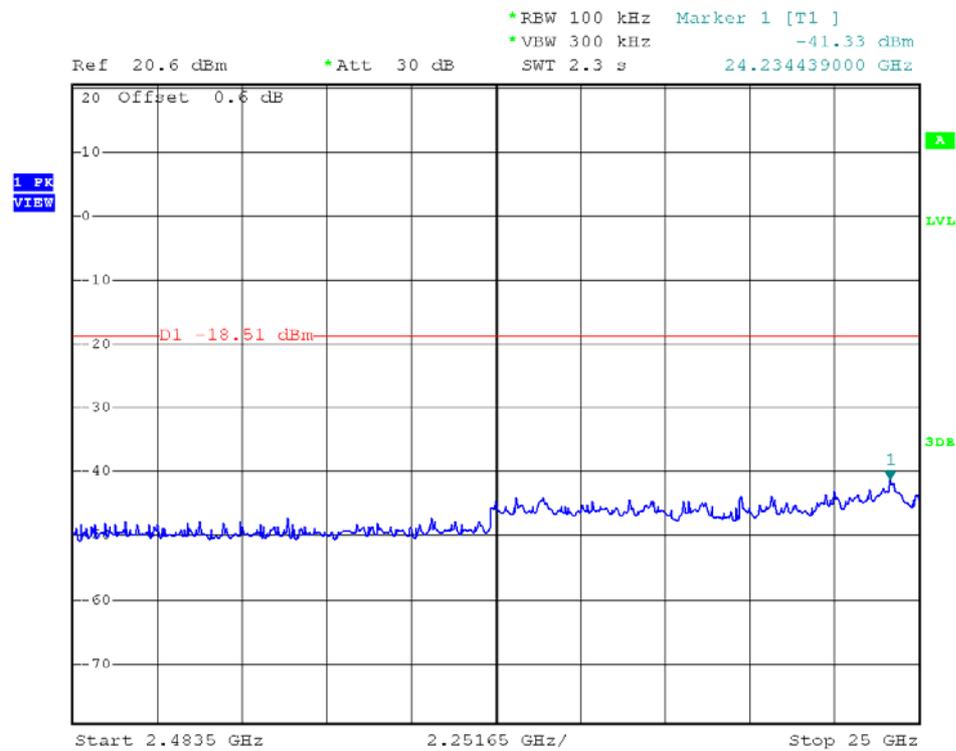
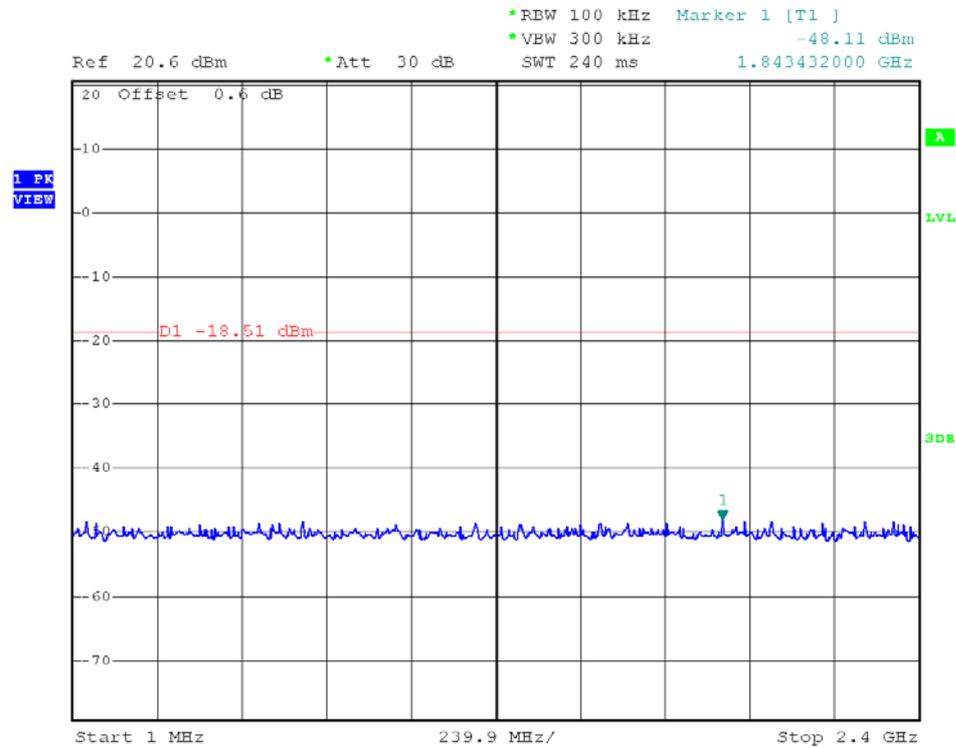
802.11n-HT20 SISO (2437MHz) Reference Level: 1.71dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT20 SISO (2462MHz) Reference Level: 1.49dBm

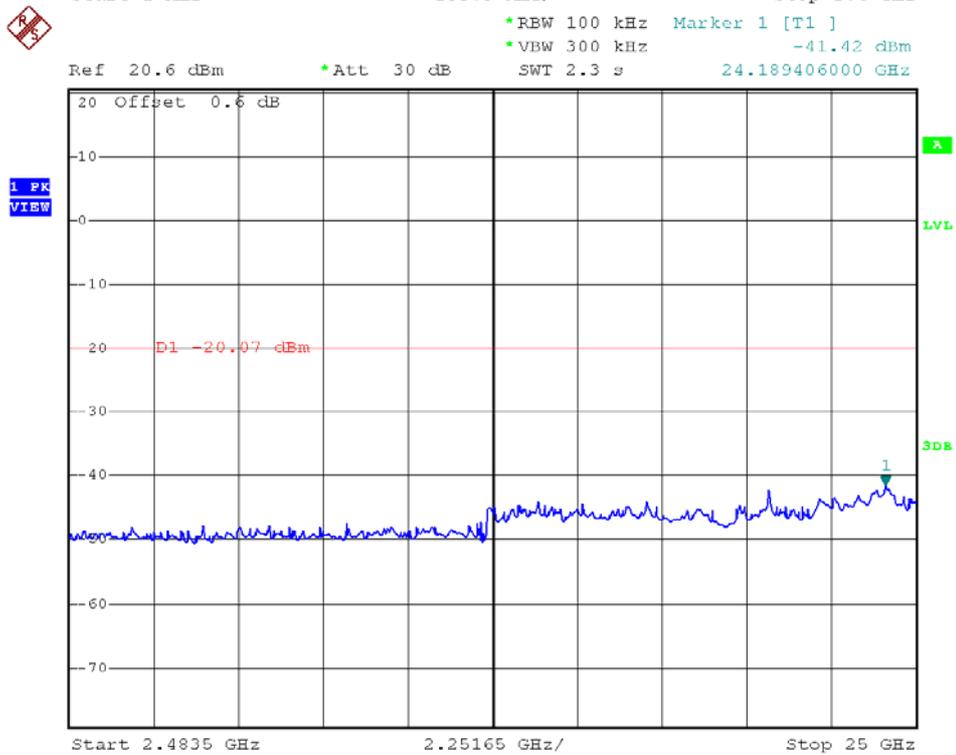
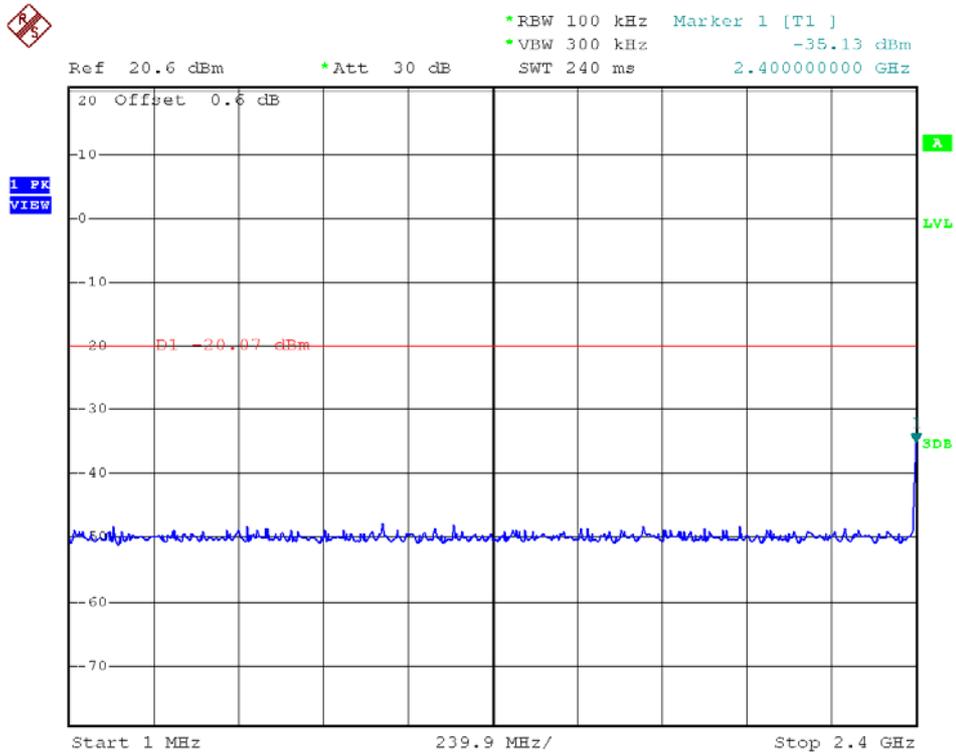


TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT20 MIMO

Channel 1 (2412MHz) Reference Level: -0.07dBm ANT 0

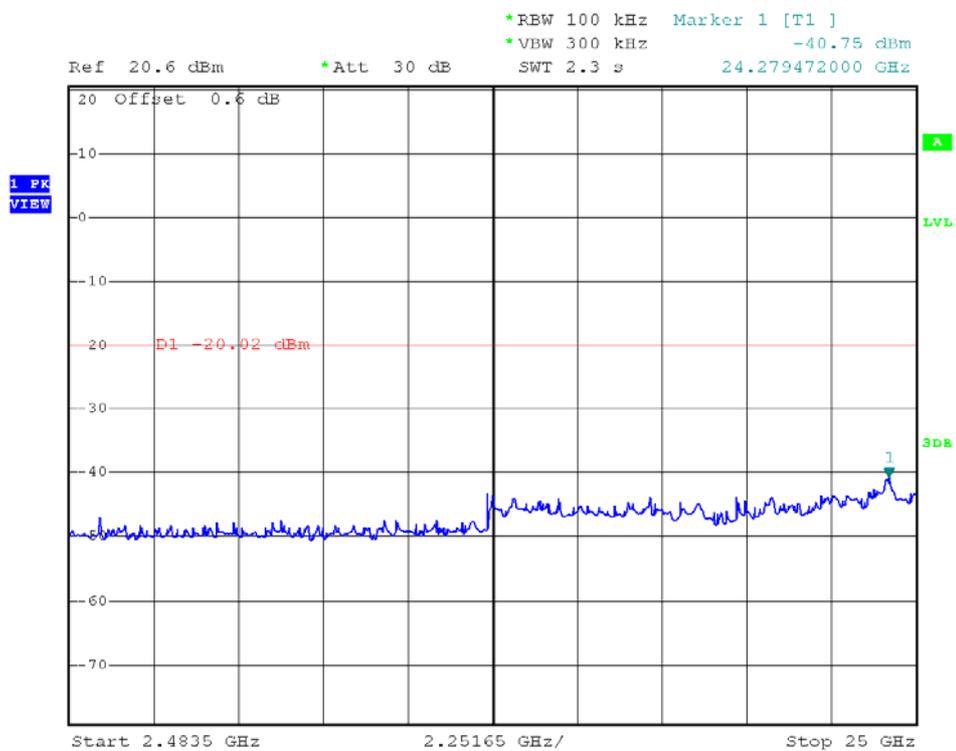
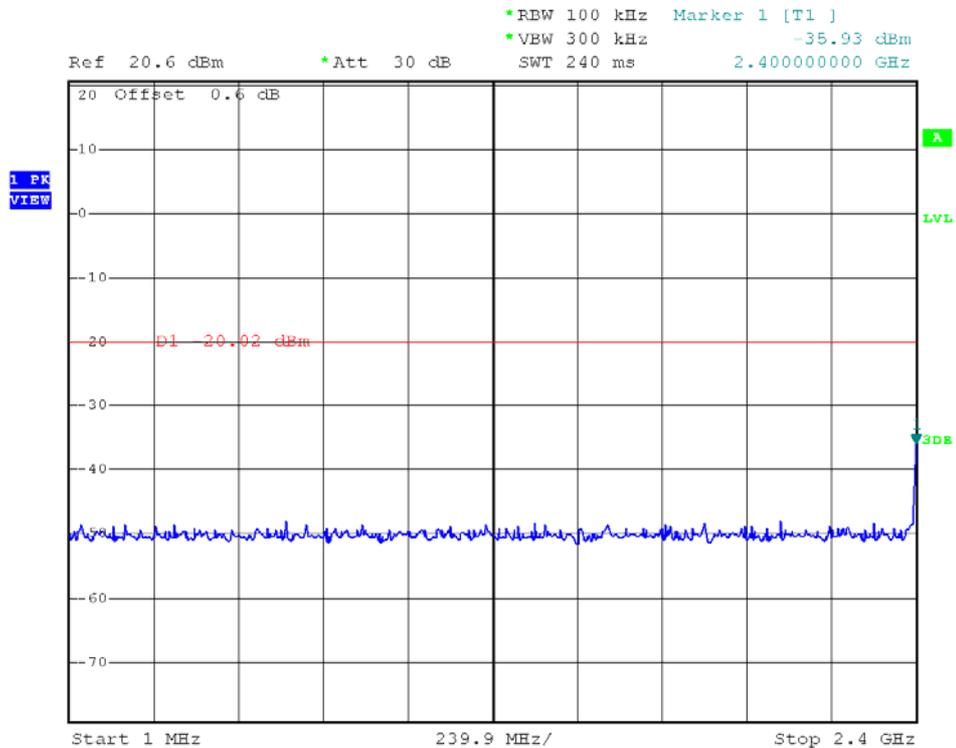


TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT20 MIMO

Channel 1 (2412MHz) Reference Level: -0.02dBm ANT 1

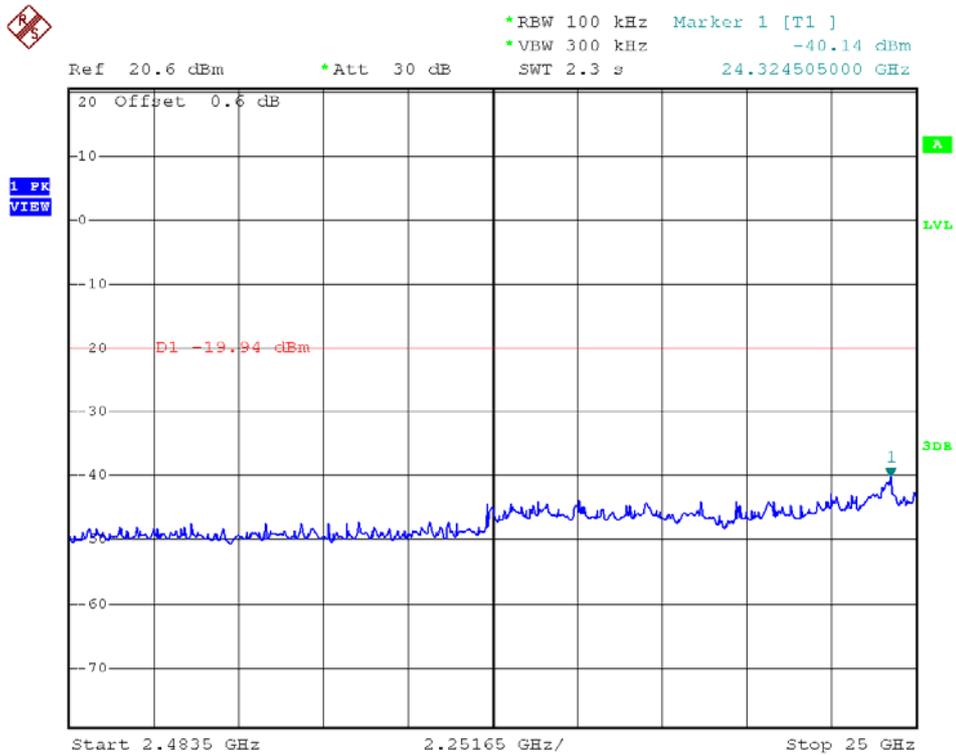
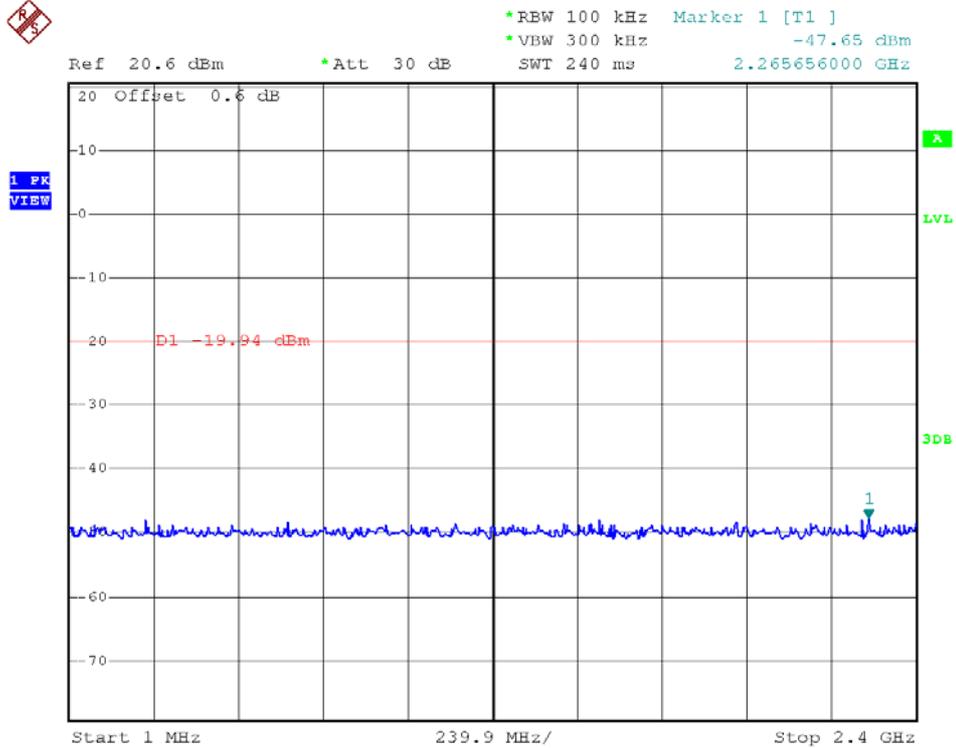


TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT20 MIMO

Channel 6 (2437MHz) Reference Level: 0.06dBm ANT 0

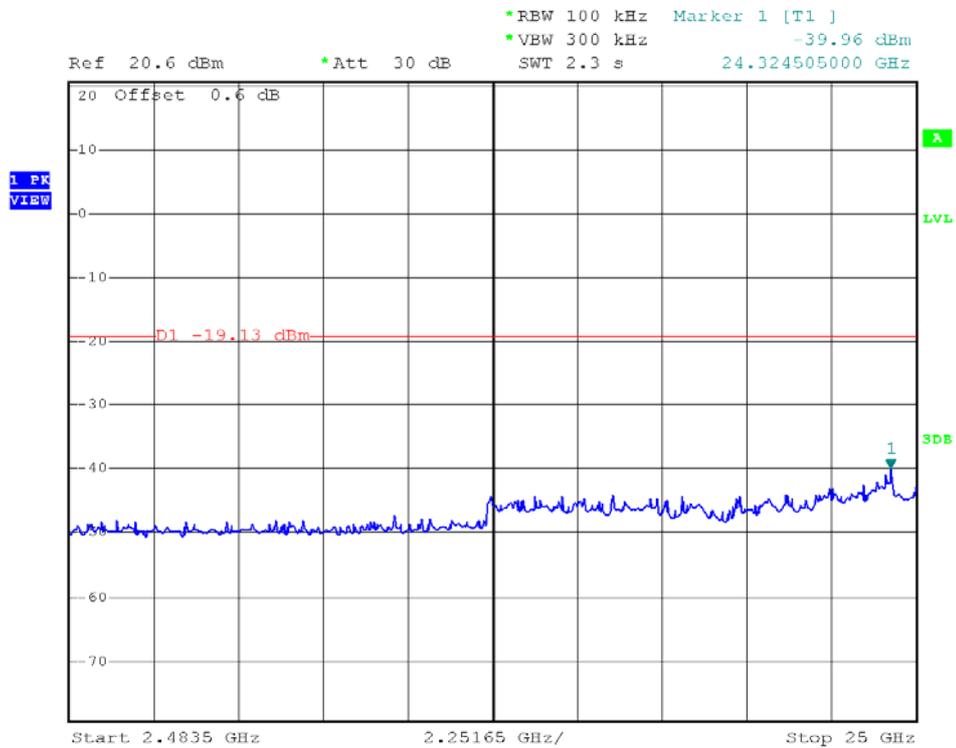
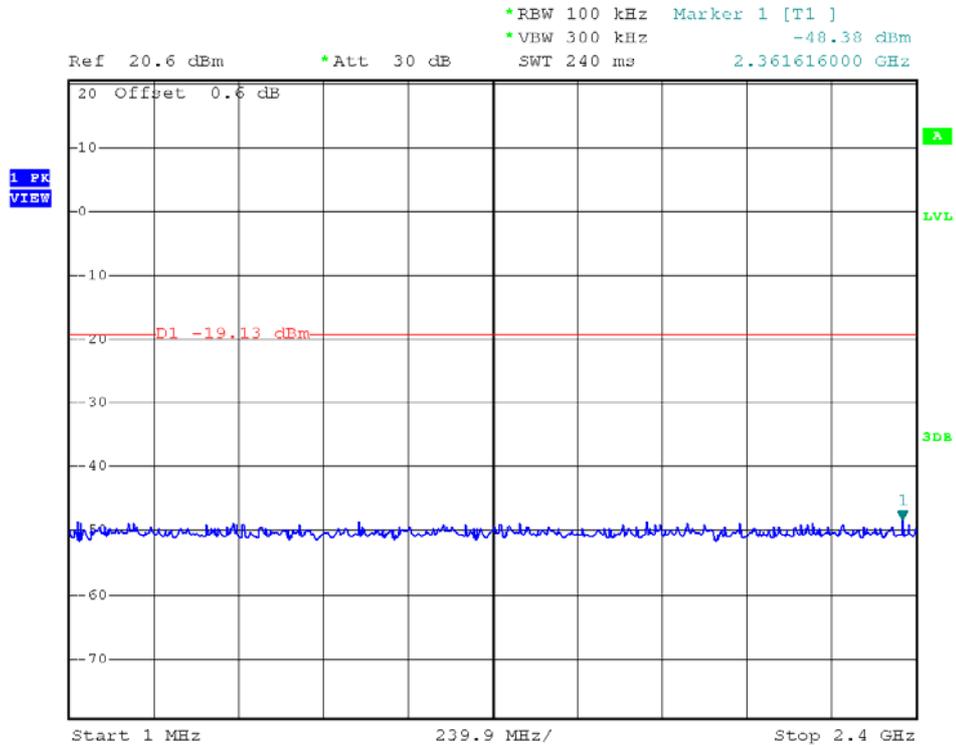


TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT20 MIMO

Channel 6 (2437MHz) Reference Level: 0.87dBm ANT 1

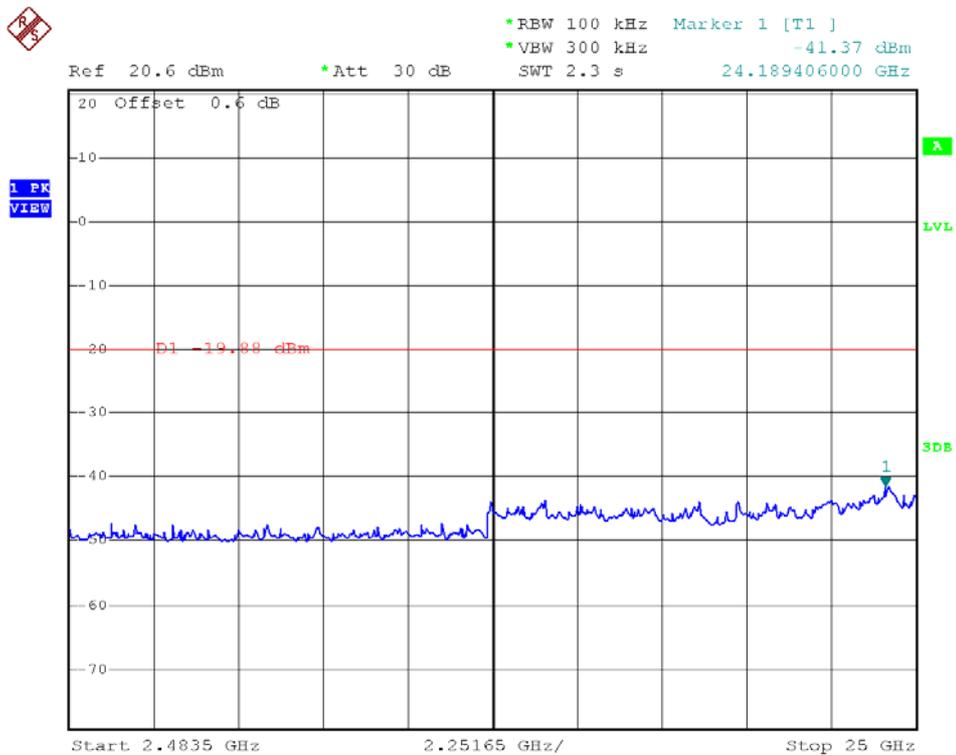
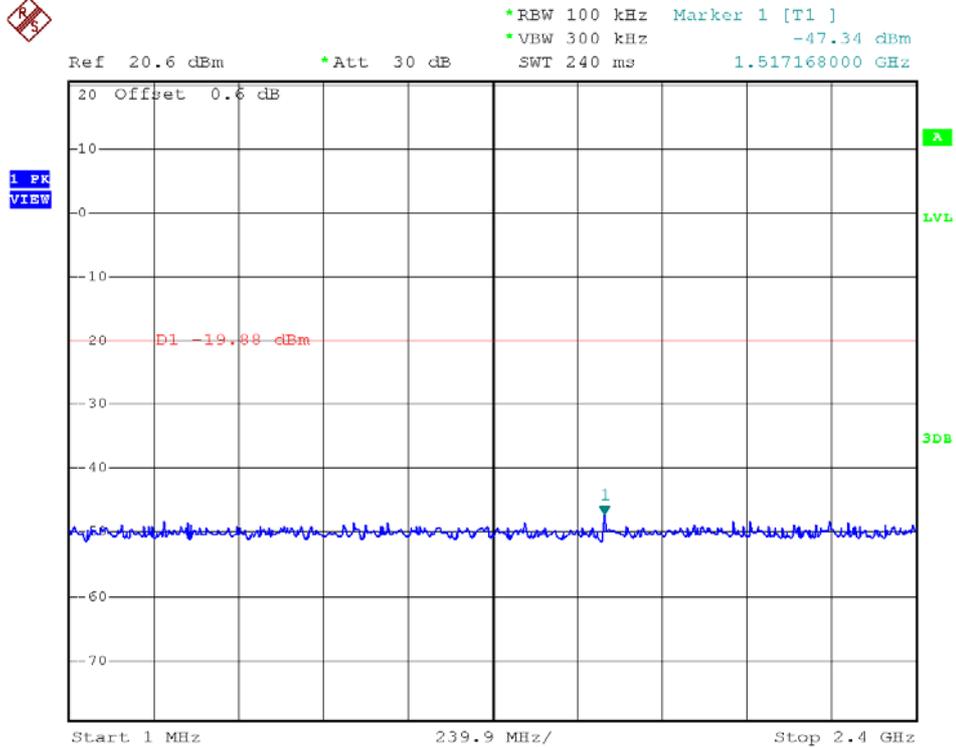


TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT20 MIMO

Channel 11 (2462MHz) Reference Level: 0.12dBm ANT 0

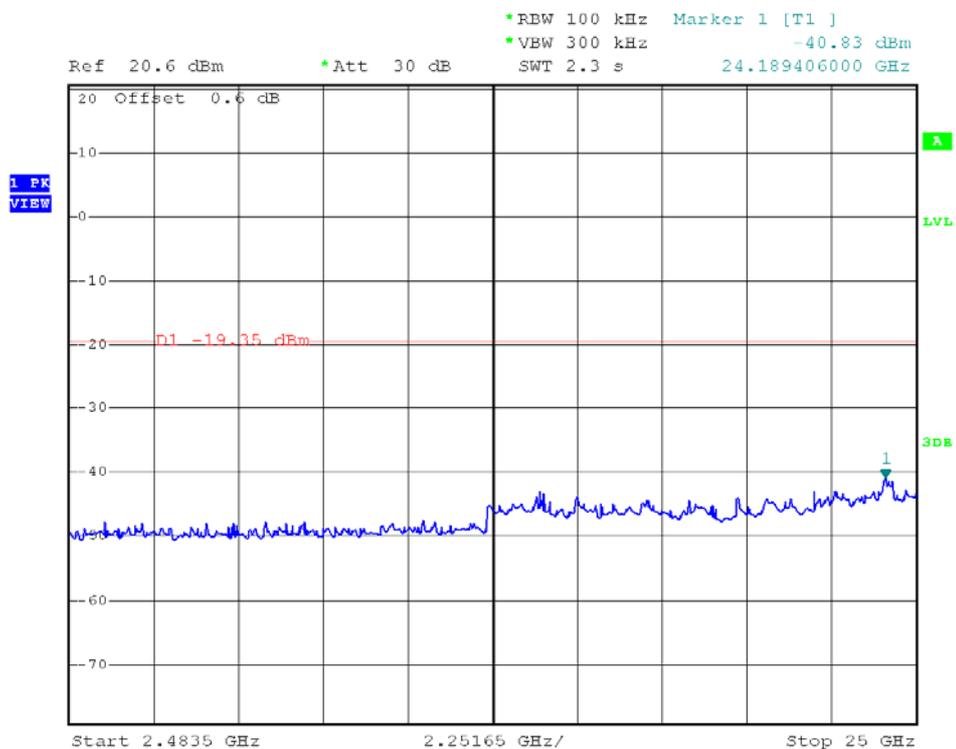
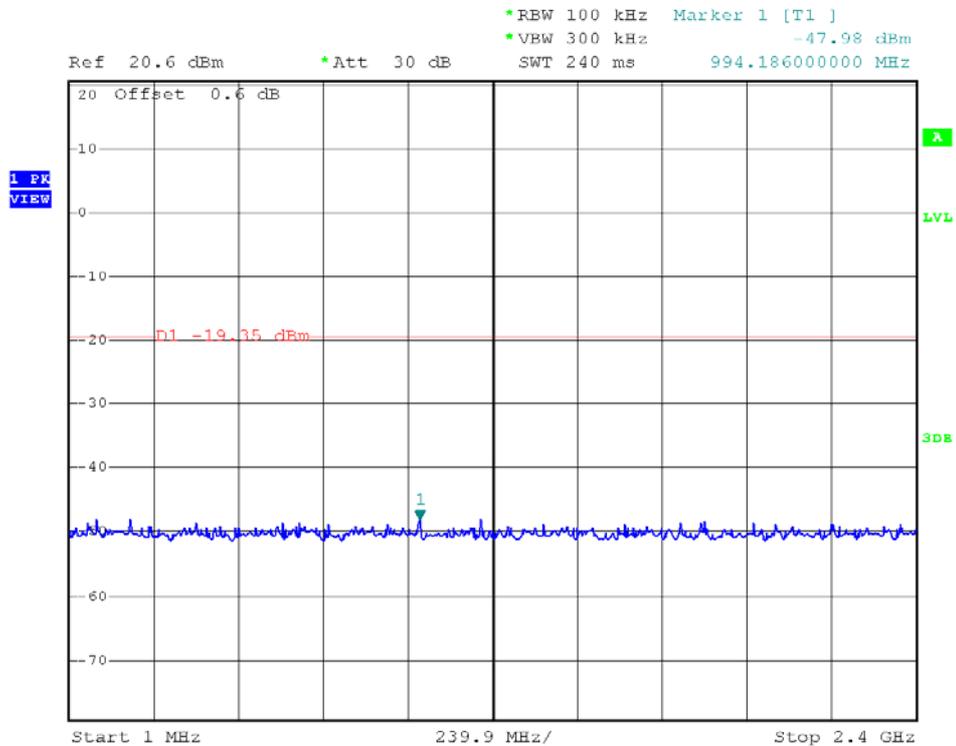


TRF no.: FCC 15C_TX_b
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 Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT20 MIMO

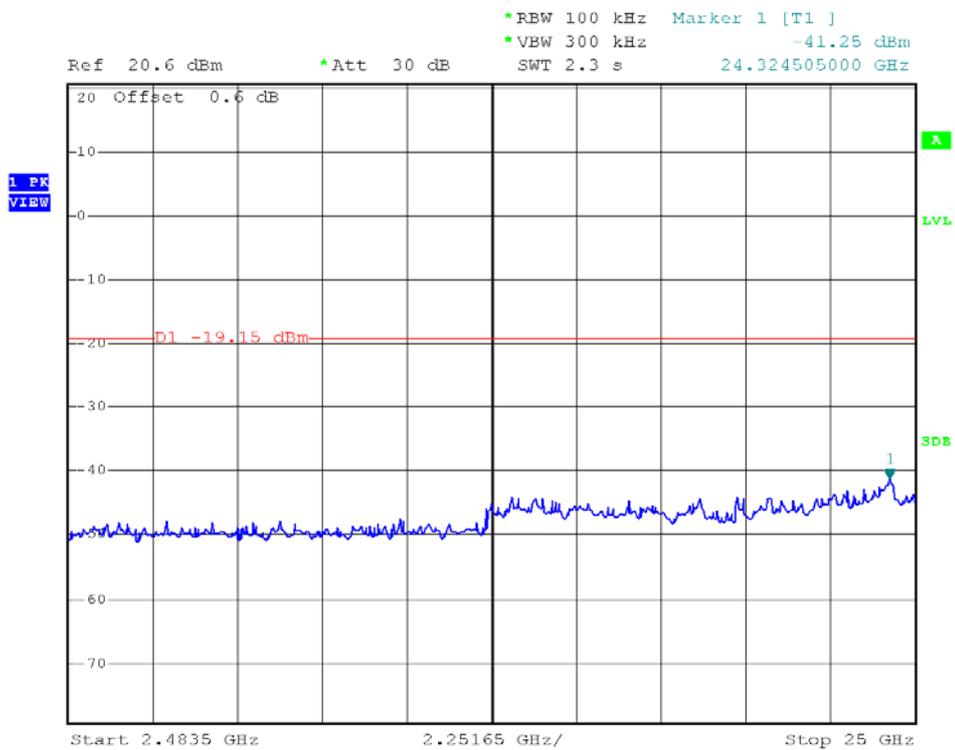
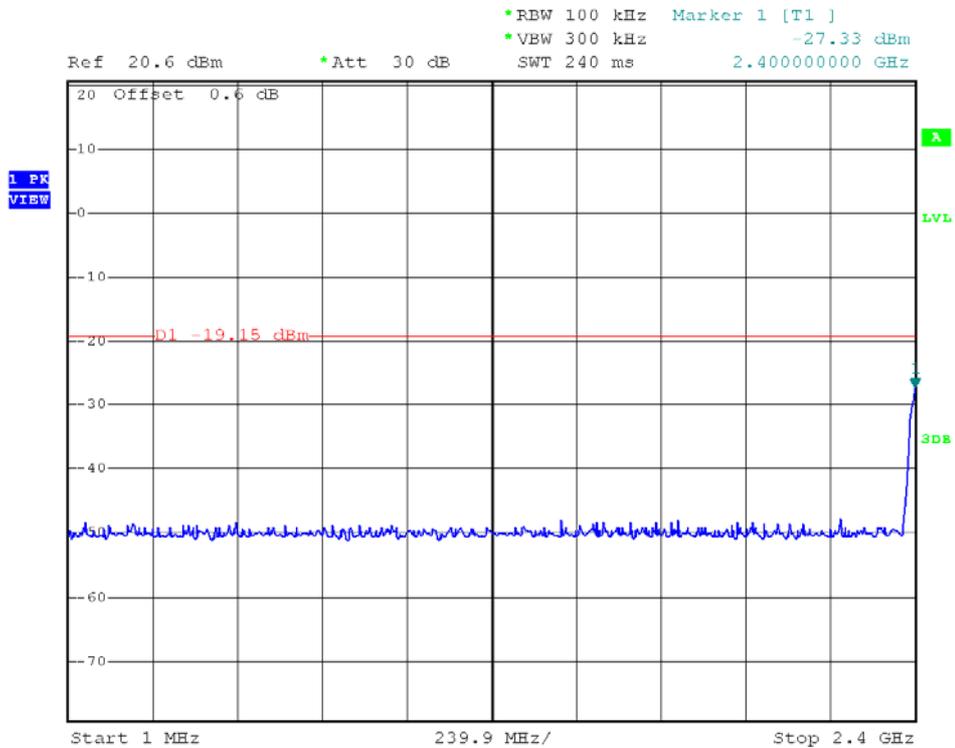
Channel 11 (2462MHz) Reference Level: 0.65dBm ANT 1



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT40 SISO
Channel 3 (2422MHz) Reference Level: 0.85dBm

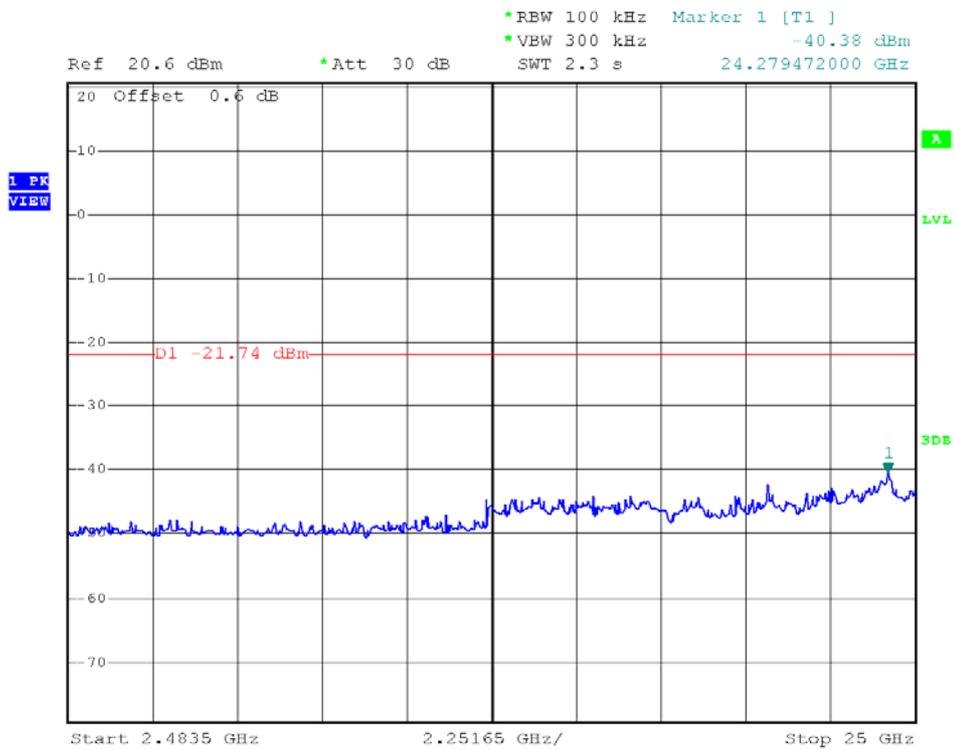
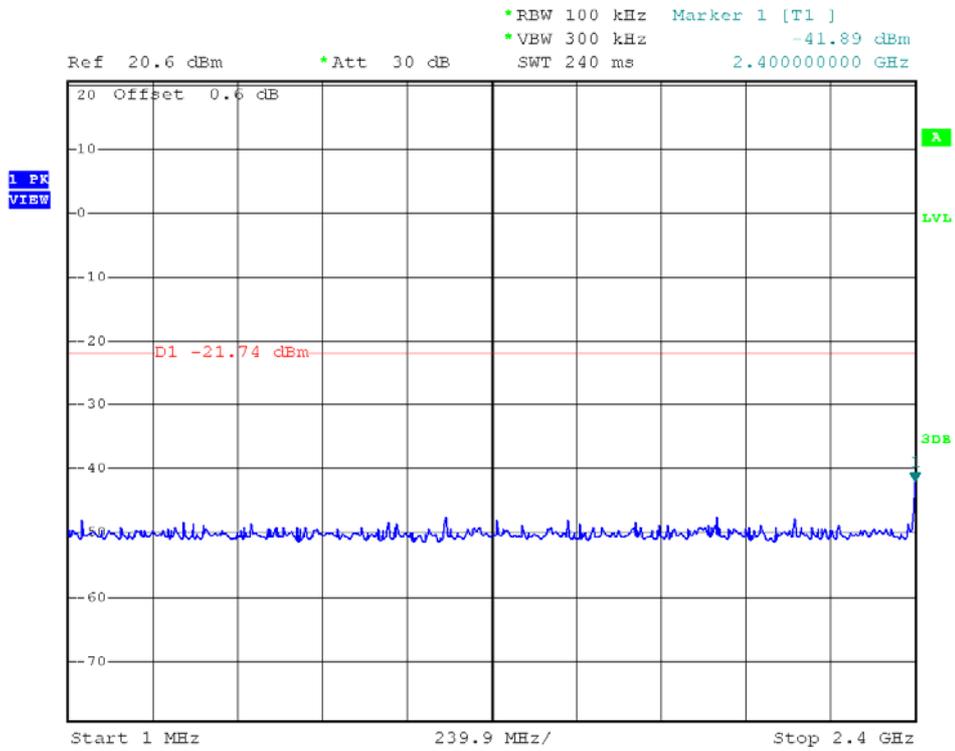


TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT40 SISO

Channel 6 (2437MHz) Reference Level: -1.74dBm

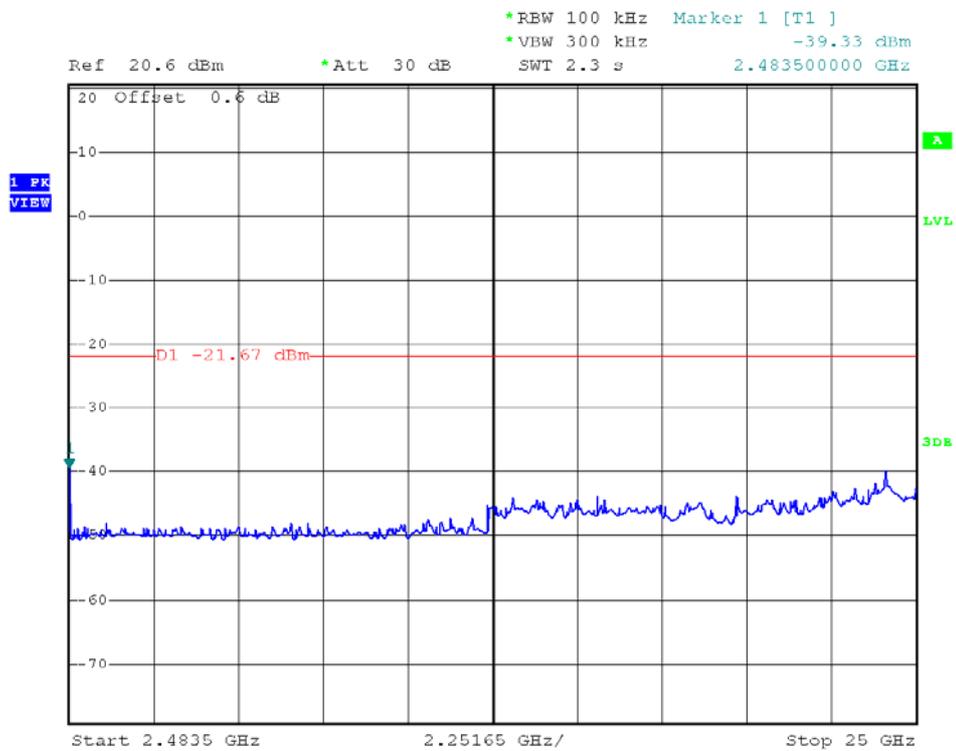
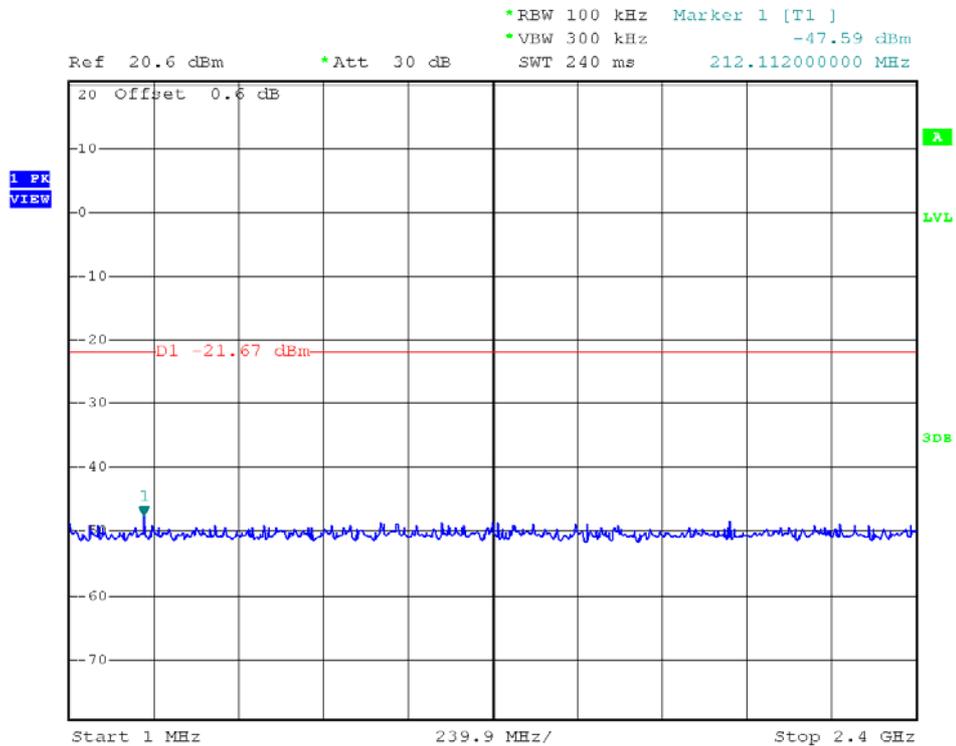


TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

802.11n-HT40 SISO

Channel 9 (2452MHz) Reference Level: -1.67dBm

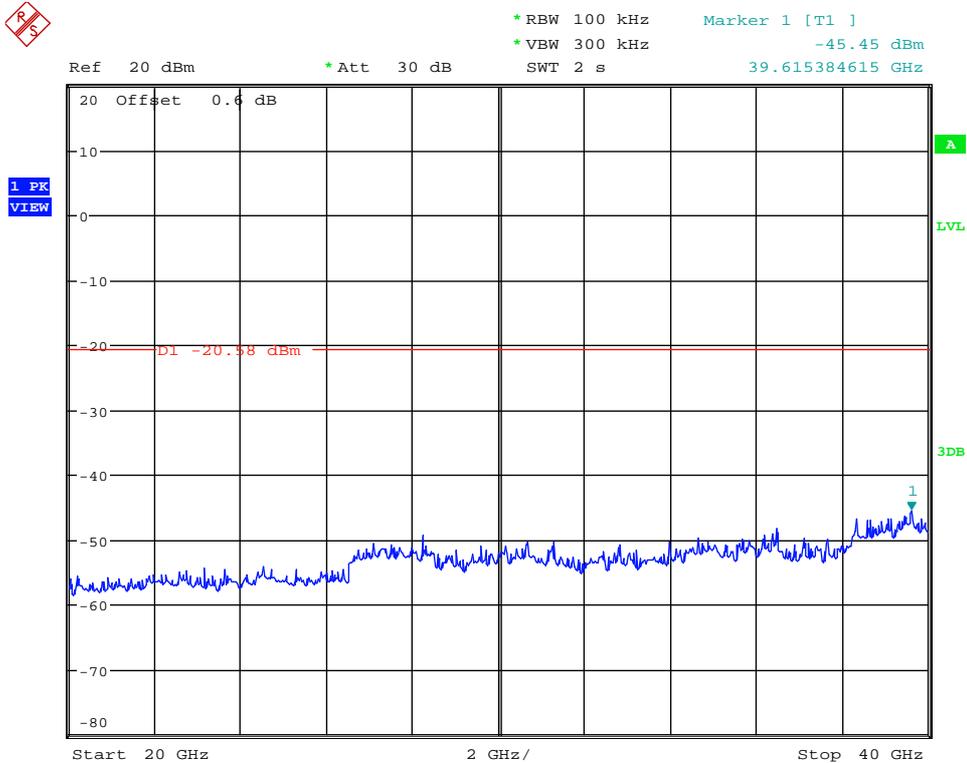
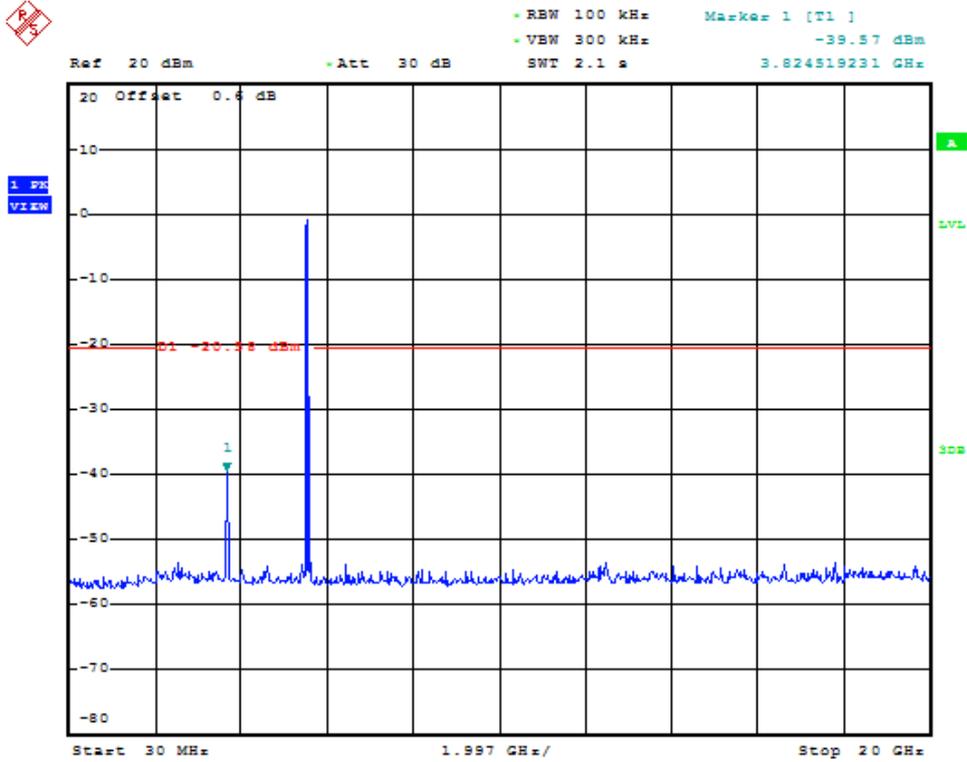


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FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

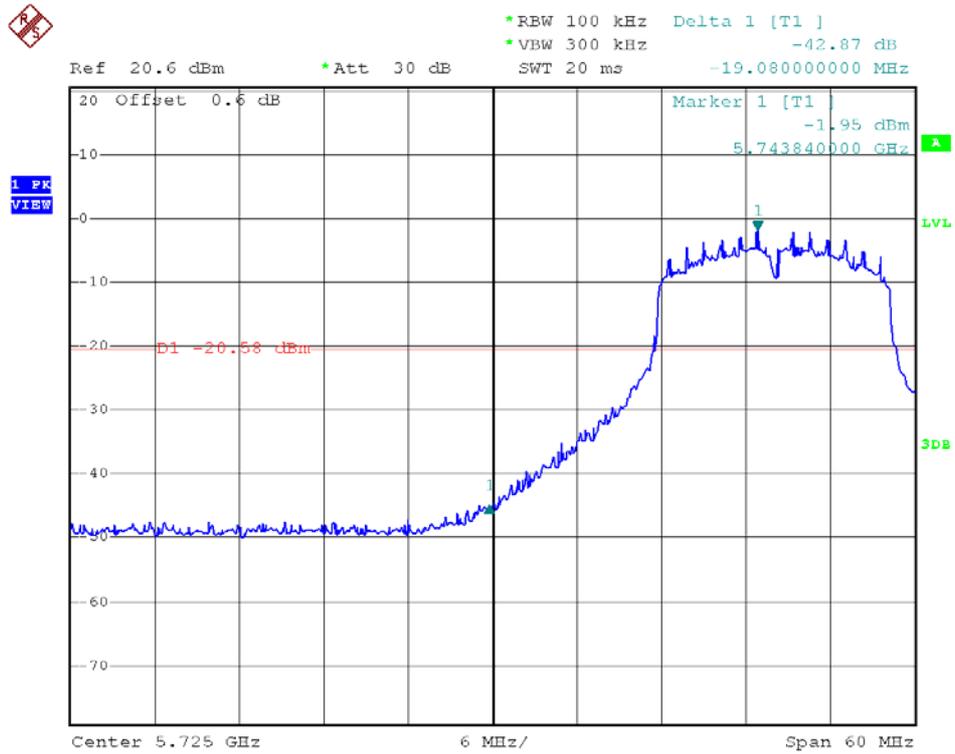
802.11a SISO

Channel 149 (5745MHz) Reference Level: -0.58dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

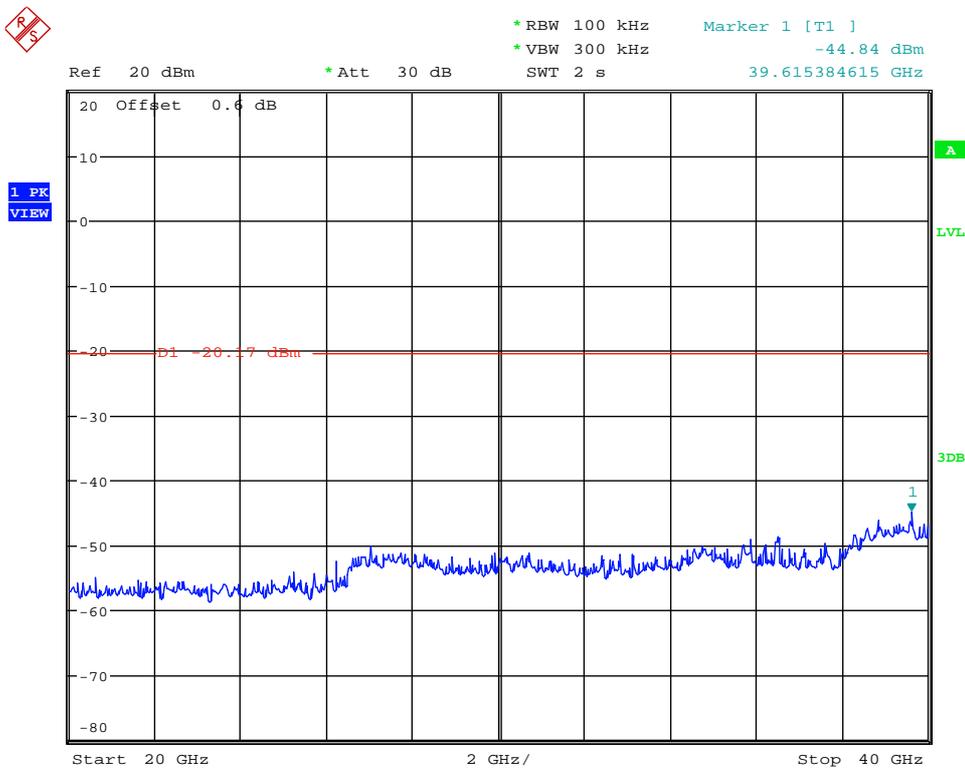
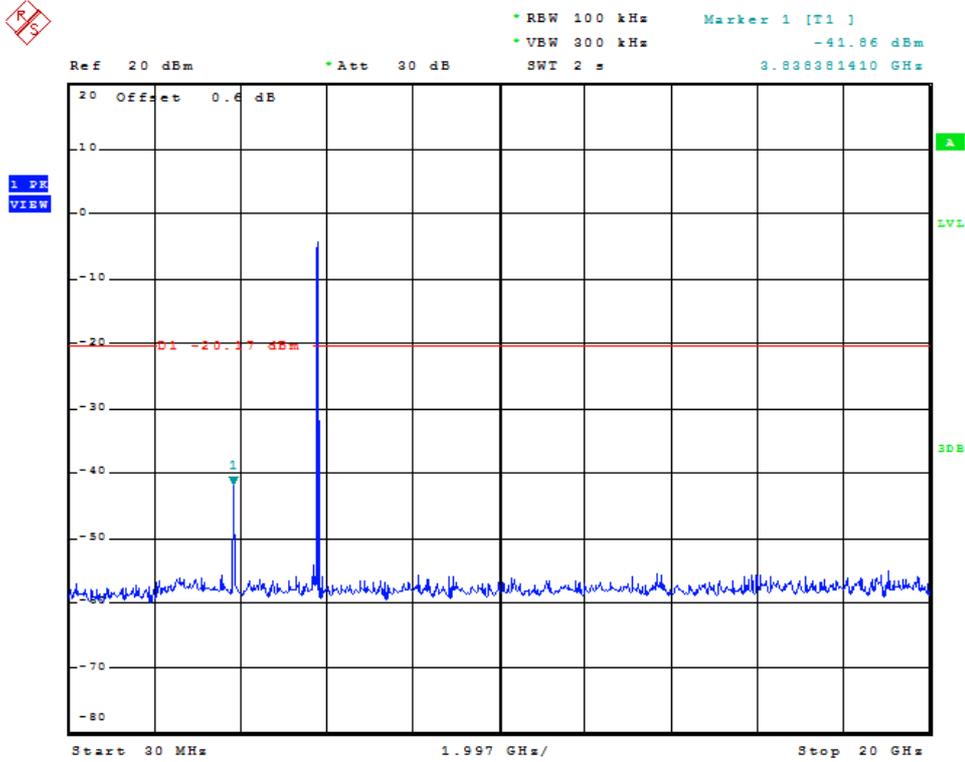
INTERTEK TESTING SERVICES



INTERTEK TESTING SERVICES

802.11a SISO

Channel 157 (5785MHz) Reference Level: -0.17dBm

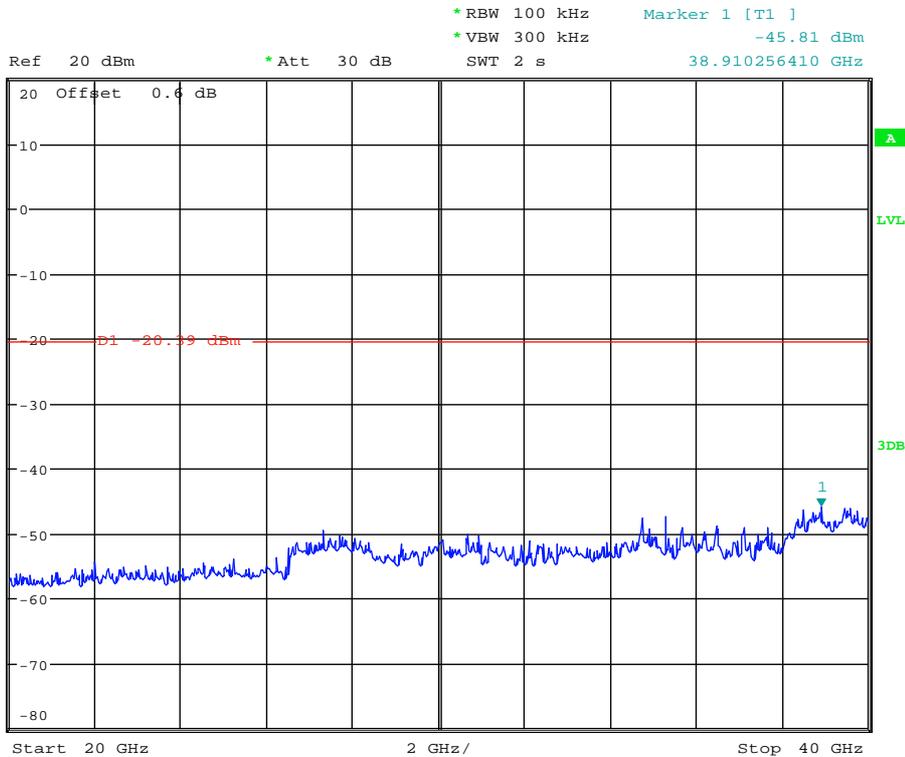
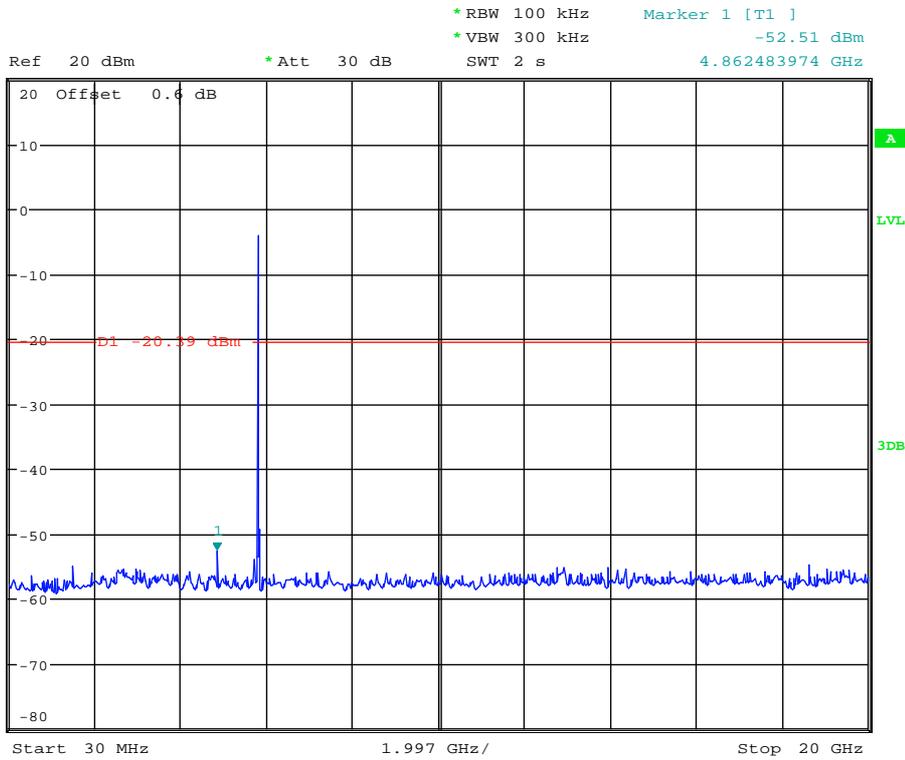


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FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

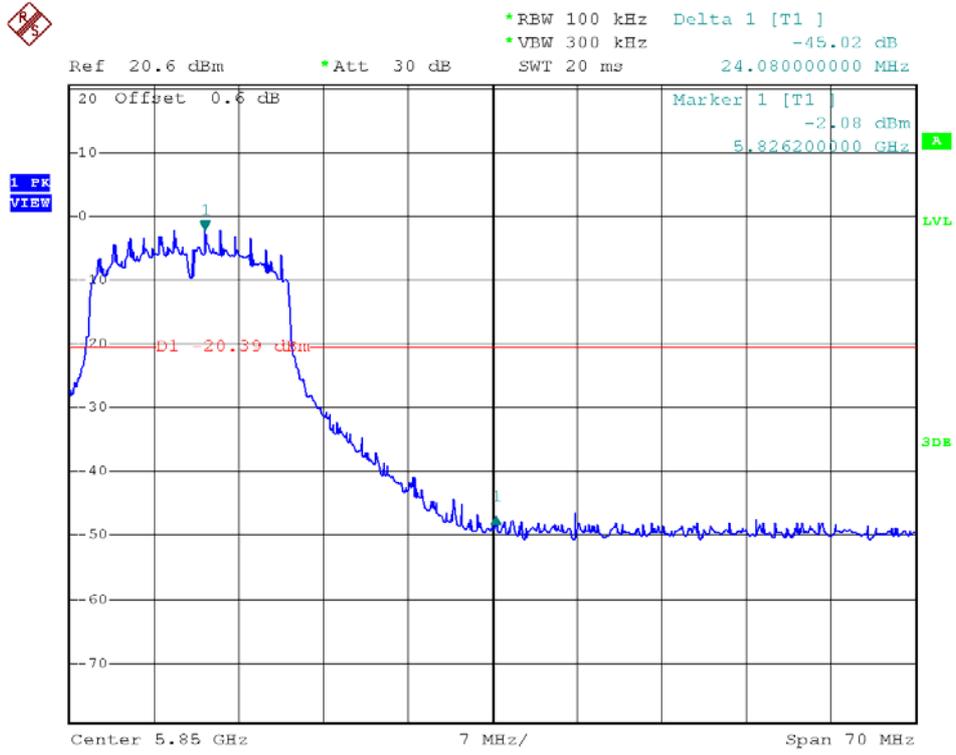
802.11a SISO

Channel 165 (5825MHz) Reference Level: -0.39dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

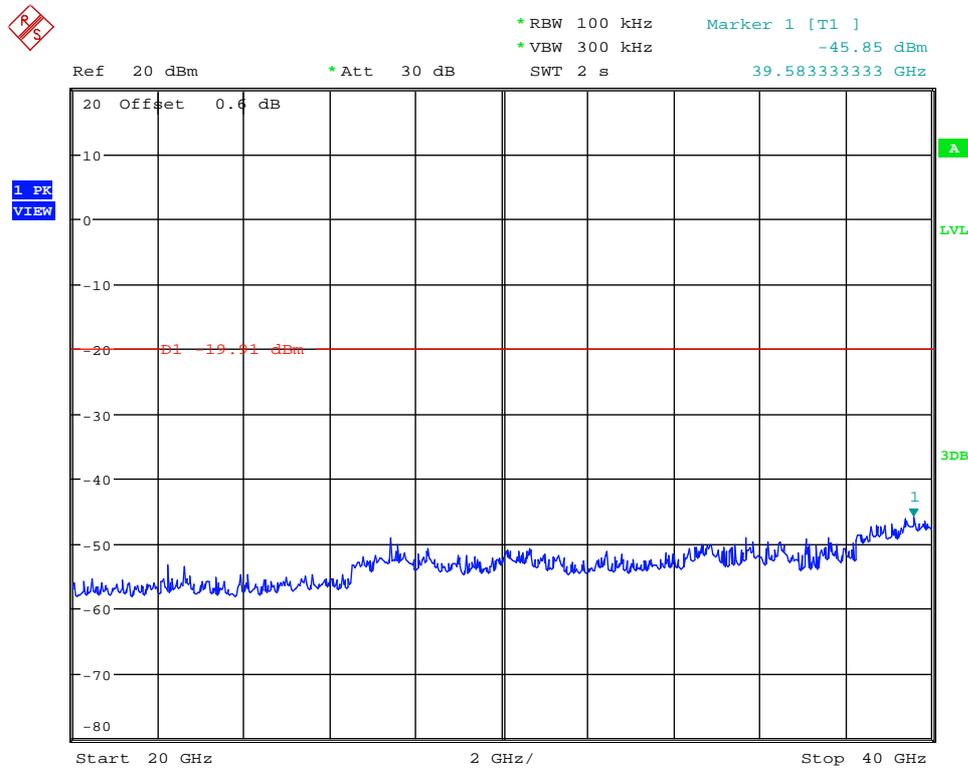
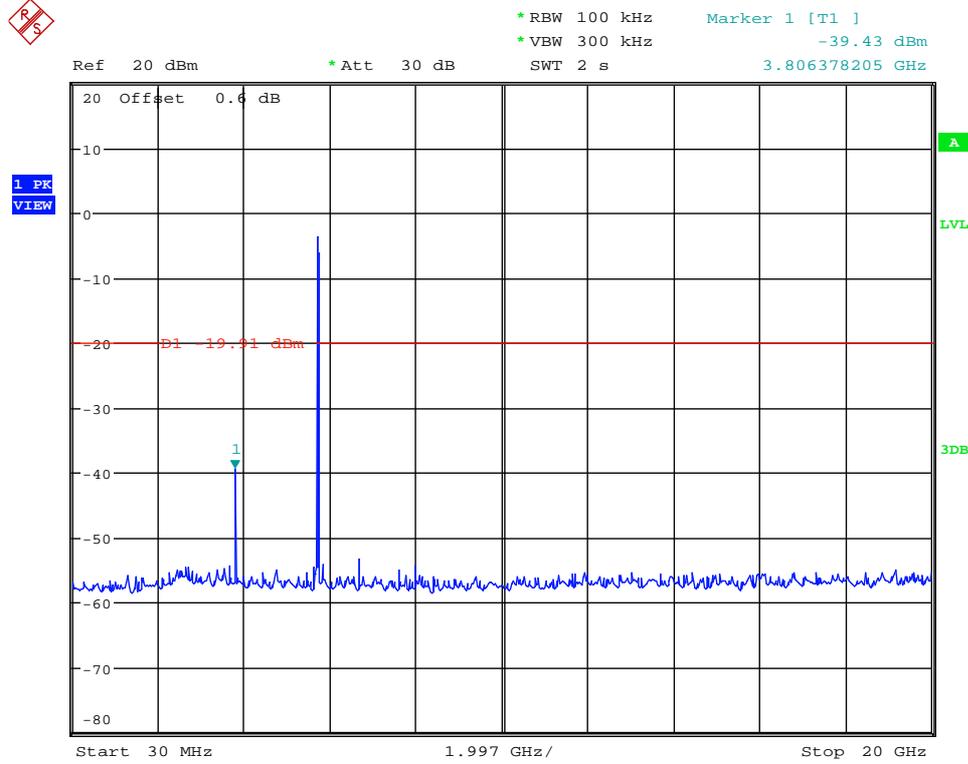
INTERTEK TESTING SERVICES



INTERTEK TESTING SERVICES

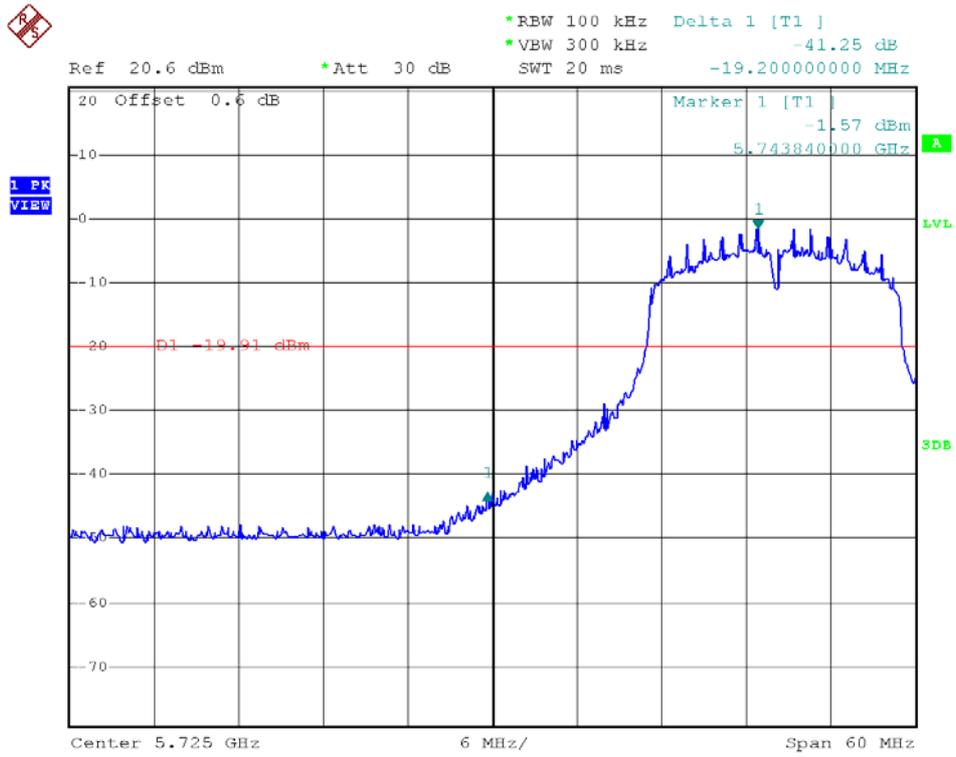
802.11n-HT20 SISO

Channel 149 (5745MHz) Reference Level: 0.09dBm



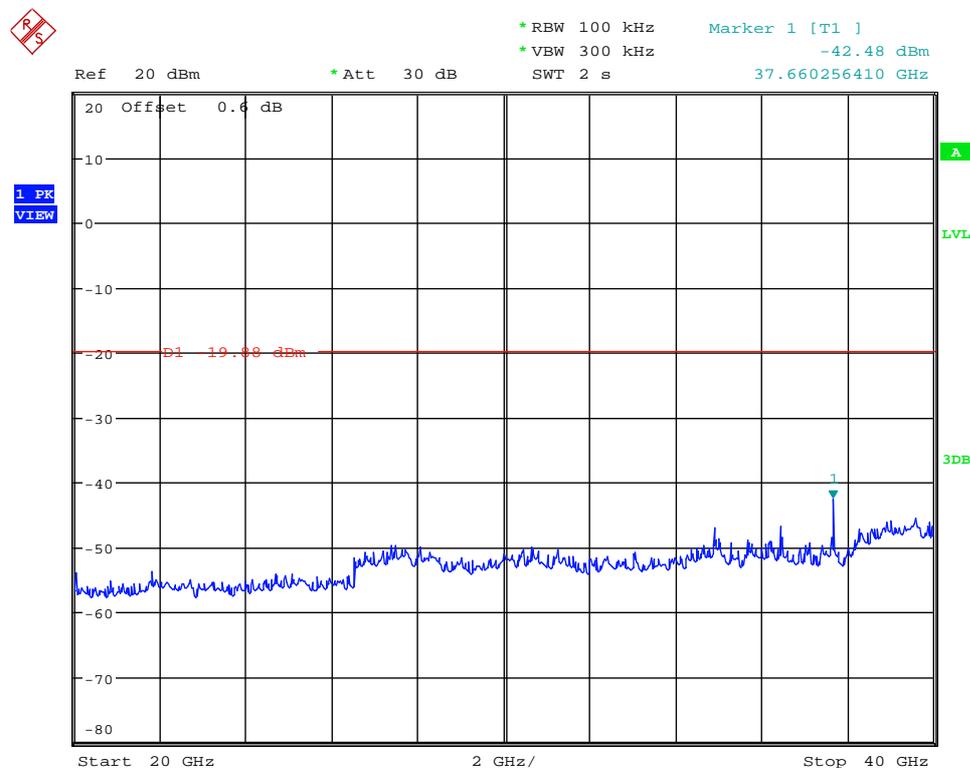
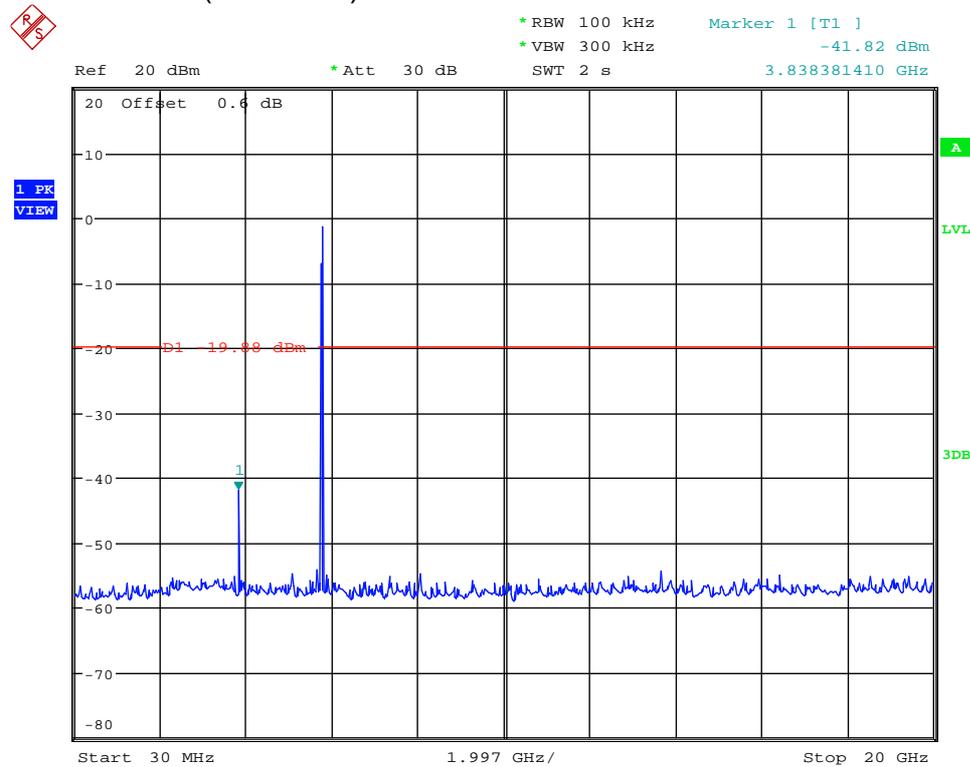
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FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES



INTERTEK TESTING SERVICES

802.11n-HT20 SISO
Channel 157 (5785MHz) Reference Level: 0.12dBm

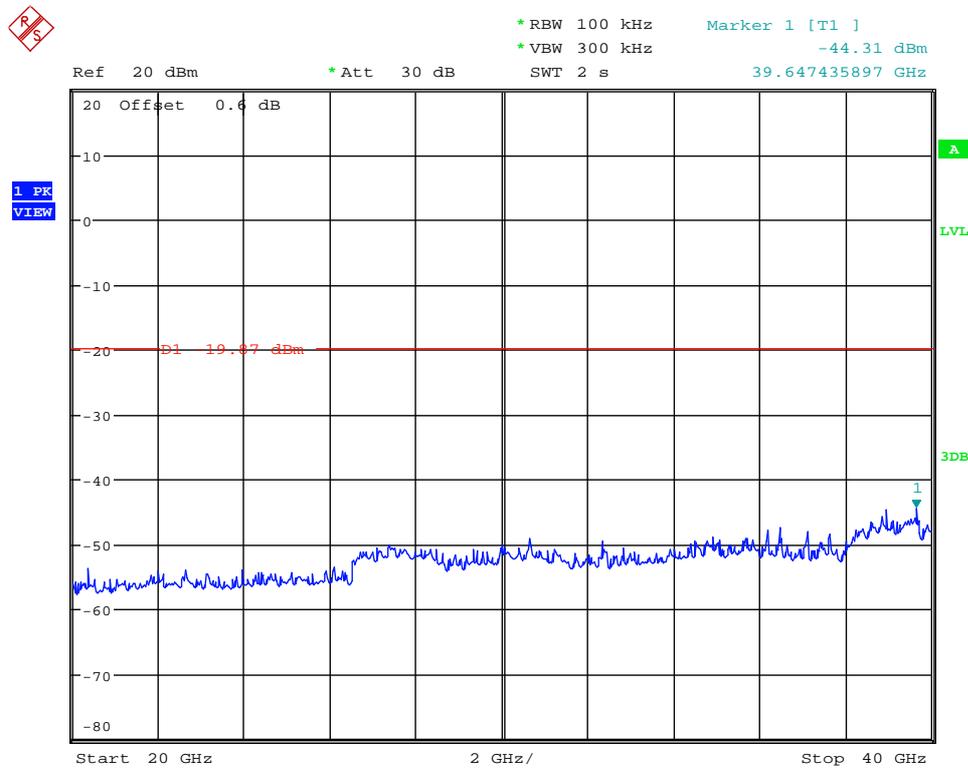
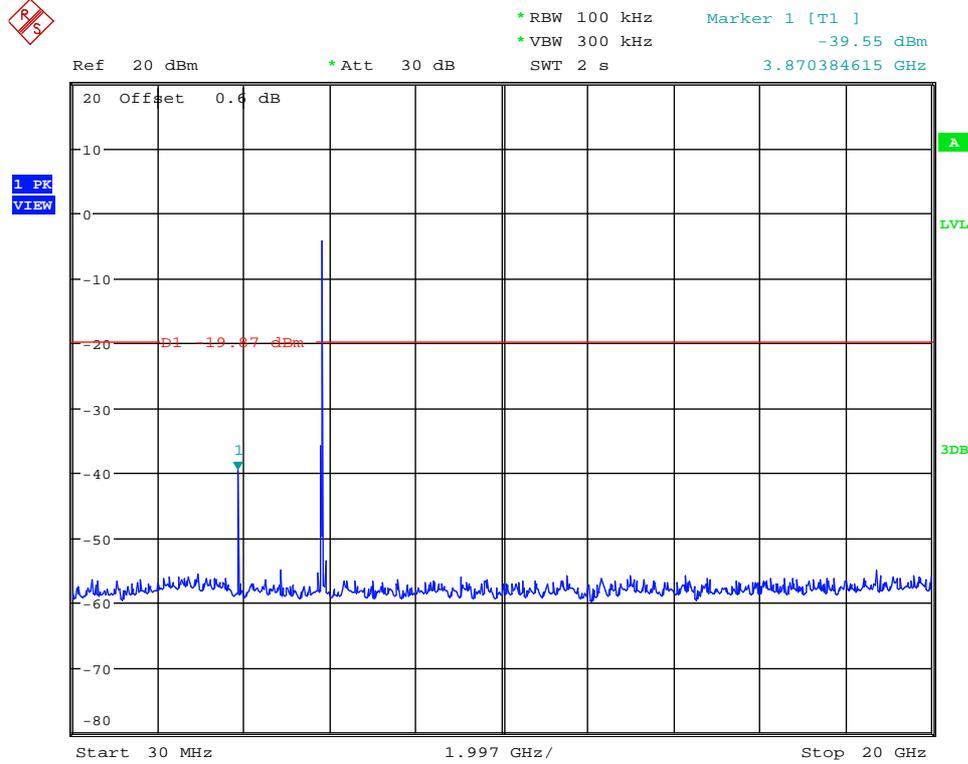


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Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

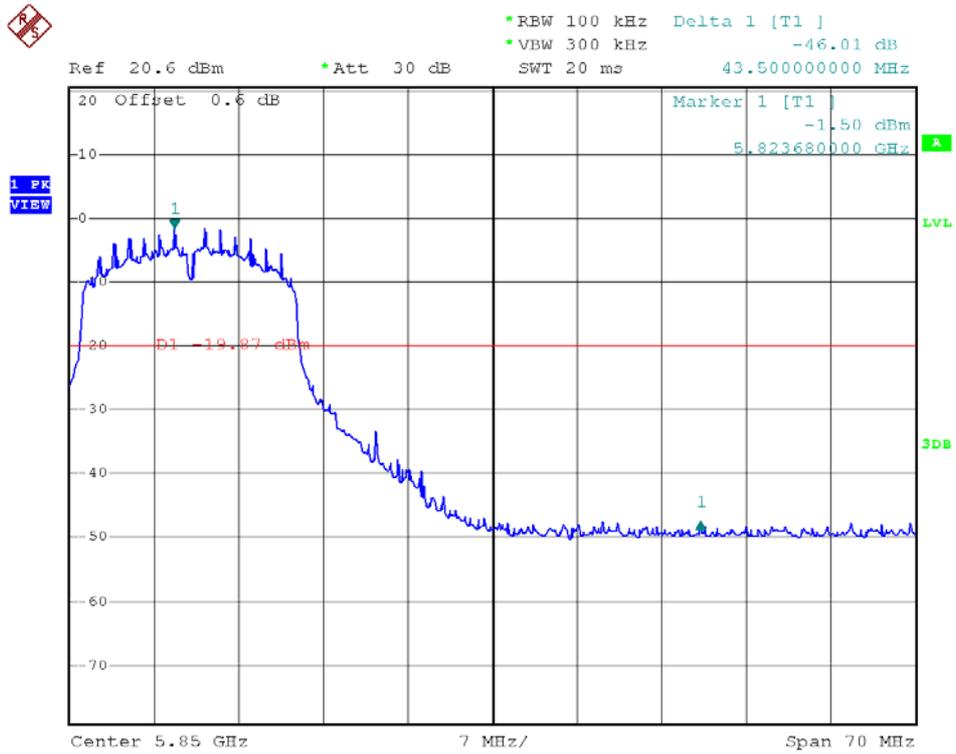
802.11n-HT20 SISO

Channel 165 (5825MHz) Reference Level: 0.13dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

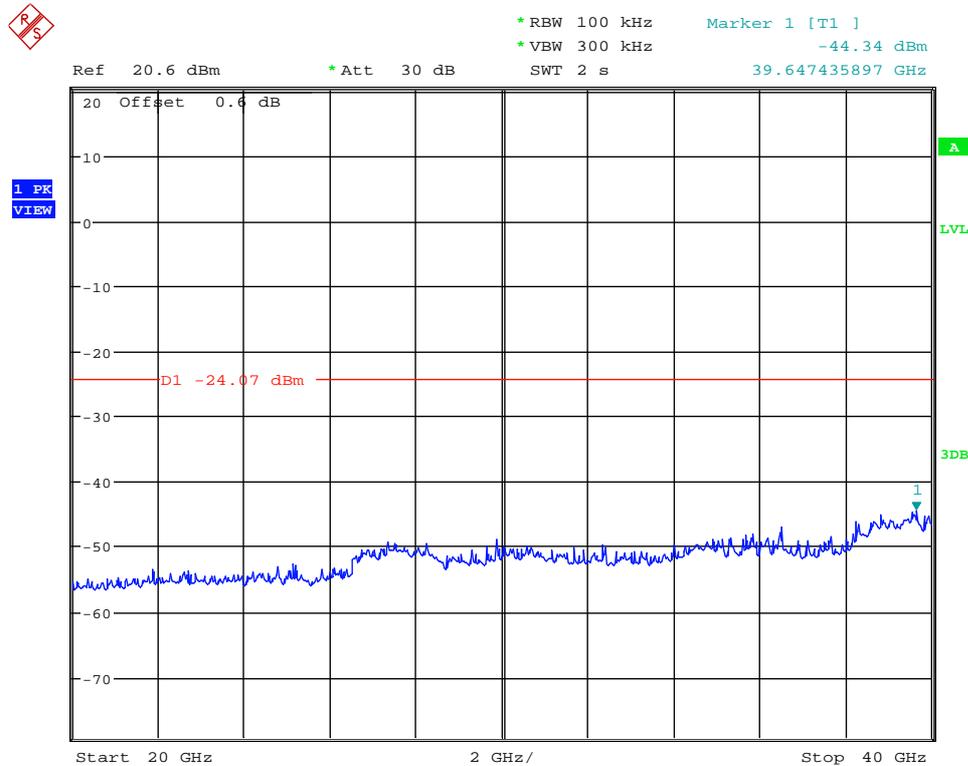
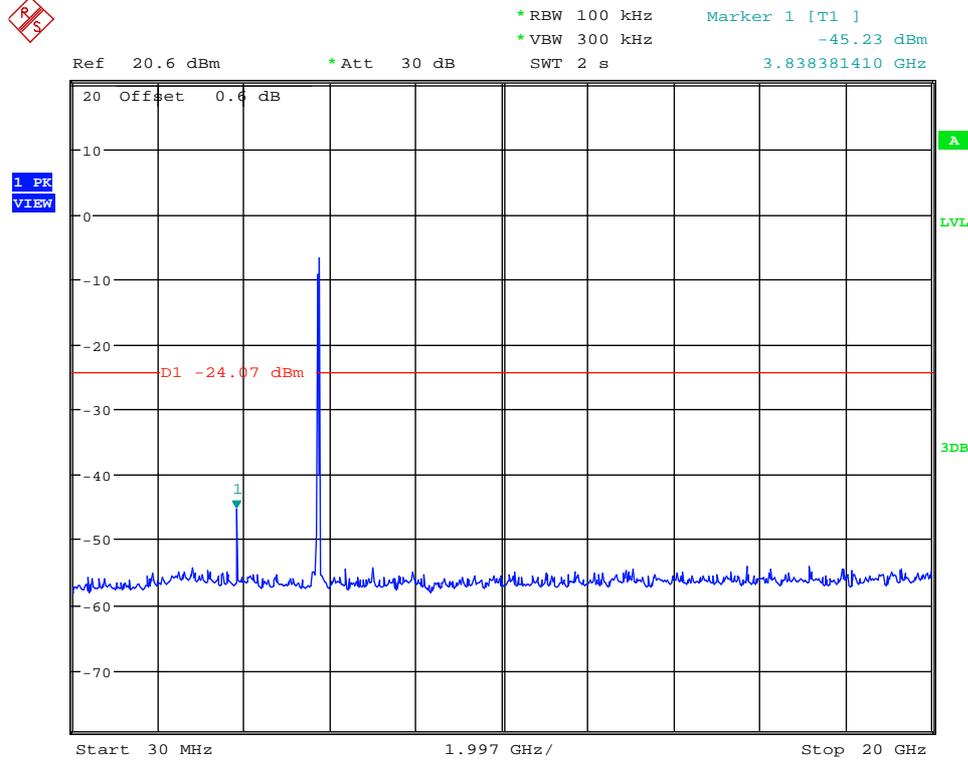
INTERTEK TESTING SERVICES



INTERTEK TESTING SERVICES

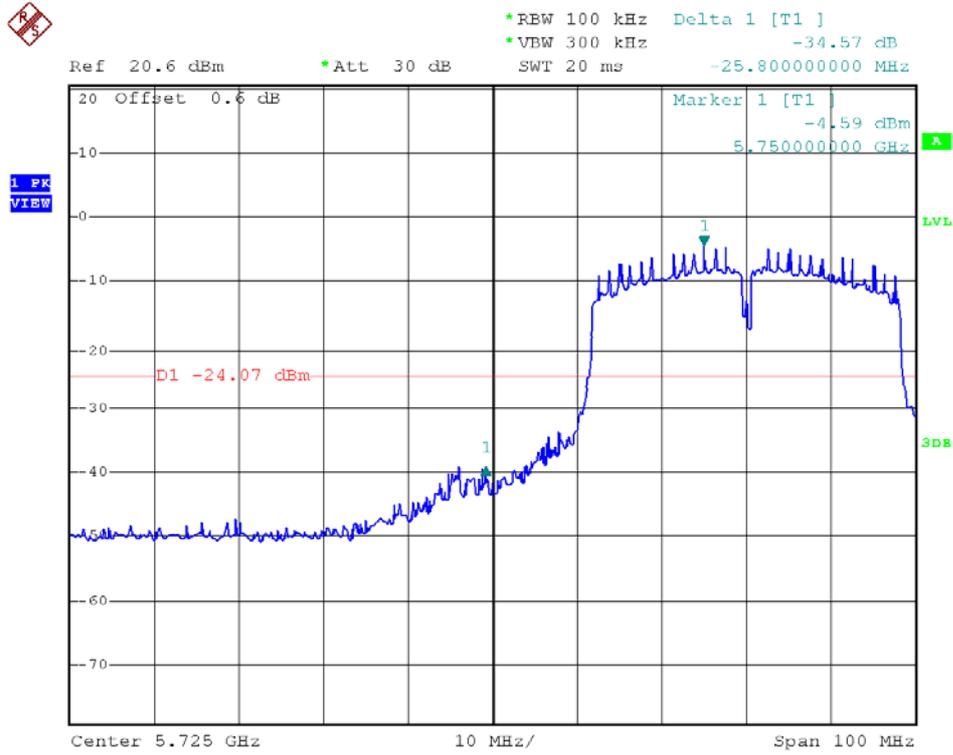
802.11n-HT40 SISO

Channel 151 (5755MHz) Reference Level: -4.07dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

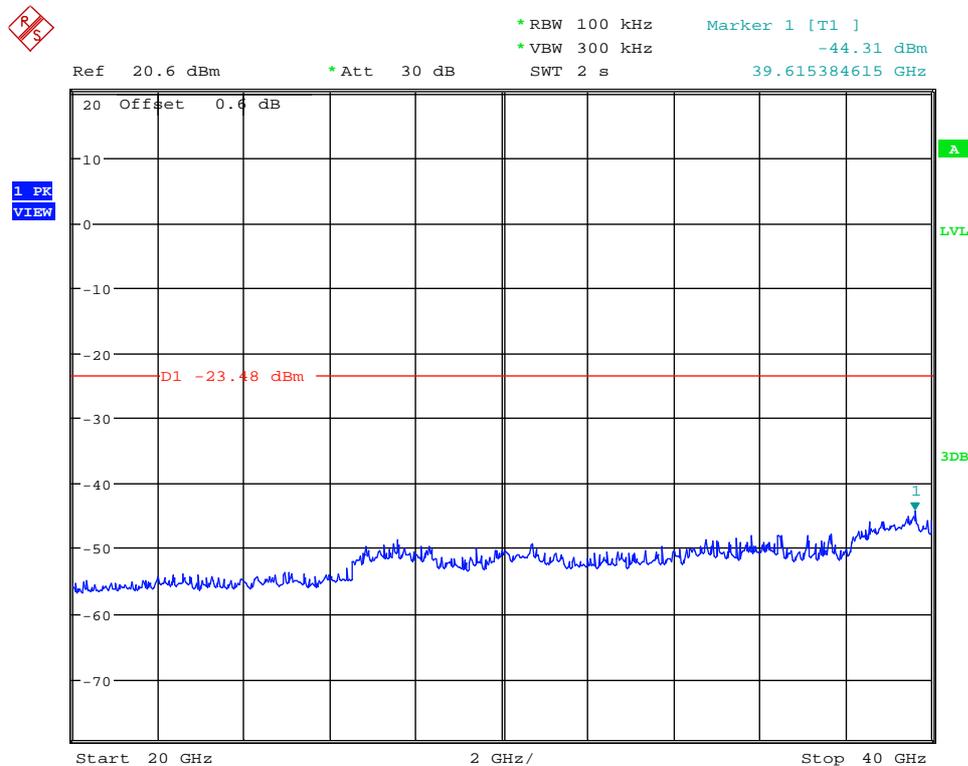
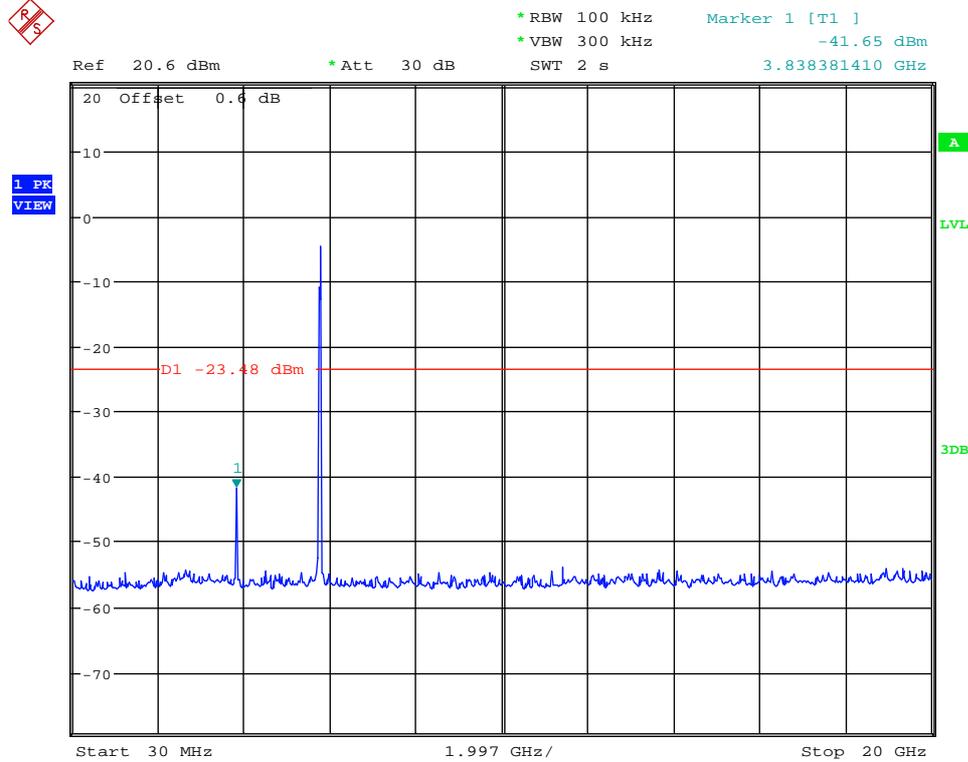
INTERTEK TESTING SERVICES



INTERTEK TESTING SERVICES

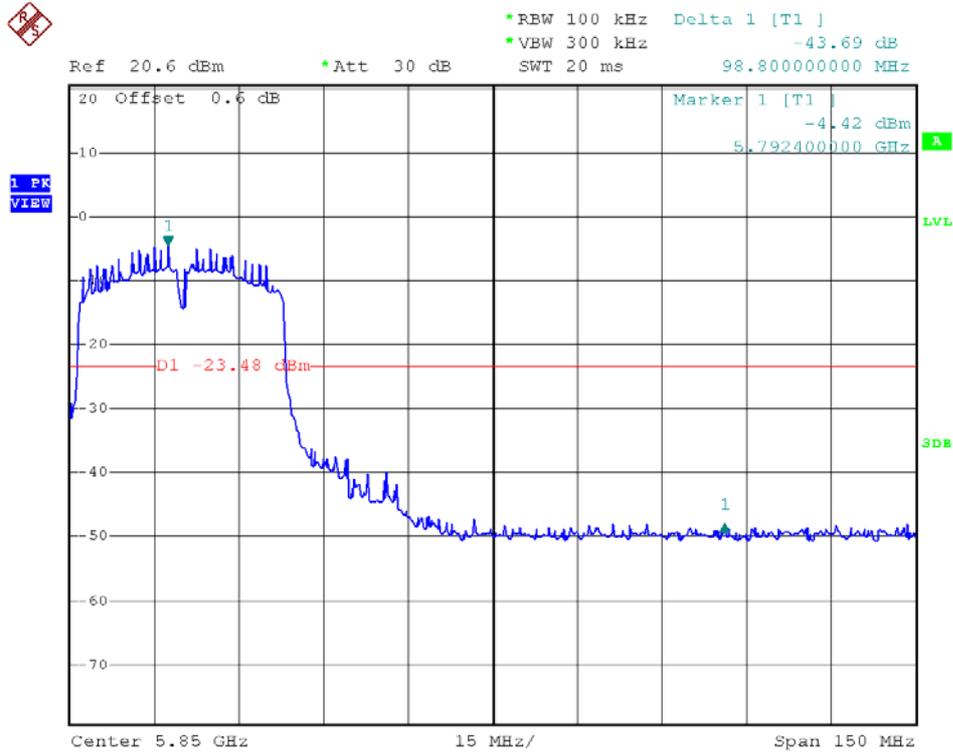
802.11n-HT40 SISO

Channel 159 (5795MHz) Reference Level: -3.48dBm



TRF no.: FCC 15C_TX_b
FCC ID: QIS-MEDIAQM310
Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES



INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.5 Out of Band Radiated Emissions (for emissions in 4.4 above that are less than 20dB below carrier), FCC Rule 15.247(d):

For out of band emissions that are close to or that exceed the 20dB attenuation requirement described in the specification, radiated measurements were performed at a 3m separation distance to determine whether these emissions complied with the general radiated emission requirement.

- Not required, since all emissions are more than 20dB below fundamental
- See attached data sheet

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.6 Transmitter Radiated Emissions in Restricted Bands, FCC Rule 15.35(b), (c):

Data is included of the worst case configuration (the configuration which resulted in the highest emission levels). A sample calculation, configuration photographs and data tables of the emissions are included. All measurements were performed with peak detection unless otherwise specified.

The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.7 Field Strength Calculation

The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below.

$$FS = RA + AF + CF - AG + PD$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB
- PD = Pulse Desensitization in dB

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

$$FS = RA + AF + CF - AG + PD$$

Example

Assume a receiver reading of 62.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB. The net field strength for comparison to the appropriate emission limit is 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

$$\begin{aligned} RA &= 62.0 \text{ dB}\mu\text{V} \\ AF &= 7.4 \text{ dB} \\ CF &= 1.6 \text{ dB} \\ AG &= 29.0 \text{ dB} \\ PD &= 0 \text{ dB} \\ FS &= 62 + 7.4 + 1.6 - 29 + 0 = 42 \text{ dB}\mu\text{V/m} \end{aligned}$$

$$\text{Level in mV/m} = \text{Common Antilogarithm} [(42 \text{ dB}\mu\text{V/m})/20] = 125.9 \mu\text{V/m}$$

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.8 Radiated Spurious Emission

Worst Case Radiated Spurious Emission 802.11n-HT20 at 17355MHz is passed by 4.1dB margin.

For the electronic filing, the worst case radiated emission configuration photographs are saved with filename: radiated photos.pdf.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: April 7, 2013

Model: M310

Worst Case Operating Mode: 802.11n HT20 MIMO (TX-Channel 06)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	40.598	30.3	20.0	12.9	23.2	40.0	-16.8
Horizontal	68.506	37.1	20.0	7.4	24.5	40.0	-15.5
Horizontal	136.093	45.3	20.0	7.5	32.8	43.5	-10.7
Vertical	223.302	41.3	20.0	11.9	33.2	46.0	-12.8
Vertical	256.883	44.4	20.0	12.1	36.5	46.0	-9.5
Vertical	742.058	36.1	20.0	22.6	38.7	46.0	-7.3

- NOTES:
1. Quasi-Peak detector is used except for others stated.
 2. All measurements were made at 3 meters. Harmonic emissions not detected at the 3-meter distances were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other harmonic emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. All emissions are below the QP limit.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11b (TX-Channel 01)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	58.8	36.1	35.5	58.2	74.0	-15.8
Horizontal	*2389.049	62.2	36.7	28.1	53.6	74.0	-20.4

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	38.8	36.1	35.5	38.2	54.0	-15.8
Horizontal	*2389.049	53.1	36.7	28.1	44.5	54.0	-9.5

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11b (TX-Channel 06)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	58.0	36.1	35.5	57.4	74.0	-16.6
Horizontal	*7311.000	58.7	36.2	36.5	59.0	74.0	-15.0

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	47.1	36.1	35.5	46.5	54.0	-7.5
Horizontal	*7311.000	48.0	36.2	36.5	48.3	54.0	-5.7

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: April 7, 2013

Model: M310

Mode: 802.11b (TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	56.3	36.1	35.5	55.7	74.0	-18.3
Horizontal	*2484.326	68.4	36.7	28.1	59.8	74.0	-14.2

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	47.7	36.1	35.5	47.1	54.0	-6.9
Horizontal	*2484.326	57.2	36.7	28.1	48.6	54.0	-5.4

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11g (TX-Channel 01)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	59.6	36.1	35.5	59.0	74.0	-15.0
Horizontal	*2389.429	69.8	36.7	28.1	61.2	74.0	-12.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	47.4	36.1	35.5	46.8	54.0	-7.2
Horizontal	*2389.429	58.1	36.7	28.1	49.5	54.0	-4.5

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310
Mode: 802.11g (TX-Channel 06)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	57.0	36.1	35.5	56.4	74.0	-17.6
Horizontal	*7311.000	59.5	36.2	36.5	59.8	74.0	-14.2

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	47.7	36.1	35.5	47.1	54.0	-6.9
Horizontal	*7311.000	47.9	36.2	36.5	48.2	54.0	-5.8

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11g (TX-Channel 11)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	56.5	36.1	35.5	55.9	74.0	-18.1
Horizontal	*2483.825	68.6	36.7	28.1	60.0	74.0	-14.0

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	47.1	36.1	35.5	46.5	54.0	-7.5
Horizontal	*2483.825	55.5	36.7	28.1	46.9	54.0	-7.1

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT20 (SISO) (TX-Channel 01)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	57.3	36.1	35.5	56.7	74.0	-17.3
Horizontal	*2389.337	67.5	36.7	28.1	58.9	74.0	-15.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	48.2	36.1	35.5	47.6	54.0	-6.4
Horizontal	*2389.337	56.5	36.7	28.1	47.9	54.0	-6.1

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT20 (SISO) (TX-Channel 06)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	57.5	36.1	35.5	56.9	74.0	-17.1
Horizontal	*7311.000	58.7	36.2	36.5	59.0	74.0	-15.0

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	46.1	36.1	35.5	45.5	54.0	-8.5
Horizontal	*7311.000	47.7	36.2	36.5	48.0	54.0	-6.0

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT20 (SISO) (TX-Channel 11)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	57.5	36.1	35.5	56.9	74.0	-17.1
Horizontal	*2483.681	68.3	36.7	28.1	59.7	74.0	-14.3

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	45.6	36.1	35.5	45.0	54.0	-9.0
Horizontal	*2483.681	55.4	36.7	28.1	46.8	54.0	-7.2

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT20 (MIMO) (TX-Channel 01)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	56.5	36.1	35.5	55.9	74.0	-18.1
Horizontal	*2388.332	67.3	36.7	28.1	58.7	74.0	-15.3

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4824.000	45.5	36.1	35.5	44.9	54.0	-9.1
Horizontal	*2388.332	54.6	36.7	28.1	46.0	54.0	-8.0

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT20 (MIMO) (TX-Channel 06)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	57.7	36.1	35.5	57.1	74.0	-16.9
Horizontal	*7311.000	60.0	36.2	36.5	60.3	74.0	-13.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	45.5	36.1	35.5	44.9	54.0	-9.1
Horizontal	*7311.000	46.1	36.2	36.5	46.4	54.0	-7.6

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: April 7, 2013

Model: M310

Mode: 802.11n-HT20 (MIMO) (TX-Channel 11)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	57.3	36.1	35.5	56.7	74.0	-17.3
Horizontal	*2483.580	67.9	36.7	28.1	59.3	74.0	-14.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4924.000	45.1	36.1	35.5	44.5	54.0	-9.5
Horizontal	*2483.580	55.4	36.7	28.1	46.8	54.0	-7.2

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT40 (SISO) (TX-Channel 03)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	59.4	36.1	34.6	57.9	74.0	-16.1
Horizontal	*2388.394	67.6	36.7	27.2	58.1	74.0	-15.9

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4844.000	47.4	36.1	34.6	45.9	54.0	-8.1
Horizontal	*2388.394	58.7	36.7	27.2	49.2	54.0	-4.8

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT40 (SISO) (TX-Channel 06)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	58.5	36.1	35.5	57.9	74.0	-16.1
Horizontal	*7311.000	59.6	36.2	36.5	59.9	74.0	-14.1

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4874.000	45.9	36.1	35.5	45.3	54.0	-8.7
Horizontal	*7311.000	45.6	36.2	36.5	45.9	54.0	-8.1

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

Date of Test: April 7, 2013

Model: M310

Mode: 802.11n-HT40 (SISO) (TX-Channel 09)

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	58.6	36.1	34.8	57.3	74.0	-16.7
Horizontal	*2484.098	68.2	36.7	27.7	59.2	74.0	-14.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*4904.000	45.3	36.1	34.8	44.0	54.0	-10.0
Horizontal	*2484.098	55.9	36.7	27.7	46.9	54.0	-7.1

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11a (SISO) (TX-Channel 149)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11490	52.0	35.3	41.2	57.9	74.0	-16.1
Horizontal	*17235	53.9	33.9	39.2	59.2	74.0	-14.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11490	42.5	35.3	41.2	48.4	54.0	-5.6
Horizontal	*17235	44.5	33.9	39.2	49.8	54.0	-4.2

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11a (SISO) (TX-Channel 157)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11570	52.9	35.3	41.2	58.8	74.0	-15.2
Horizontal	*17355	54.0	33.9	39.2	59.3	74.0	-14.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11570	42.8	35.3	41.2	48.7	54.0	-5.3
Horizontal	*17355	43.6	33.9	39.2	48.9	54.0	-5.1

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310
Mode: 802.11a (SISO) (TX-Channel 165)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11650	52.9	35.3	41.2	58.8	74.0	-15.2
Horizontal	*17475	53.9	33.9	39.2	59.2	74.0	-14.8

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11650	42.9	35.3	41.2	48.8	54.0	-5.2
Horizontal	*17475	44.2	33.9	39.2	49.5	54.0	-4.5

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT20 (SISO) (TX-Channel 149)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11490	51.7	35.3	41.2	57.6	74.0	-16.4
Horizontal	*17235	54.8	33.9	39.2	60.1	74.0	-13.9

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11490	42.4	35.3	41.2	48.3	54.0	-5.7
Horizontal	*17235	43.9	33.9	39.2	49.2	54.0	-4.8

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT20 (SISO) (TX-Channel 157)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11570	52.3	35.3	41.2	58.2	74.0	-15.8
Horizontal	*17355	55.5	33.9	39.2	60.8	74.0	-13.2

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11570	43.5	35.3	41.2	49.4	54.0	-4.6
Horizontal	*17355	44.6	33.9	39.2	49.9	54.0	-4.1

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT20 (SISO) (TX-Channel 165)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11650	52.2	35.3	41.2	58.1	74.0	-15.9
Horizontal	*17475	56.0	33.9	39.2	61.3	74.0	-12.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11650	42.7	35.3	41.2	48.6	54.0	-5.4
Horizontal	*17475	43.7	33.9	39.2	49.0	54.0	-5.0

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT40 (SISO) (TX-Channel 151)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11510	53.4	35.3	41.2	59.3	74.0	-14.7
Horizontal	*17265	55.0	33.9	39.2	60.3	74.0	-13.7

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11510	42.4	35.3	41.2	48.3	54.0	-5.7
Horizontal	*17265	44.2	33.9	39.2	49.5	54.0	-4.5

- NOTES:
1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
 2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
 3. Negative value in the margin column shows emission below limit.
 4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
 Model: M310
 Mode: 802.11n-HT40 (SISO) (TX-Channel 159)

Date of Test: April 7, 2013

Radiated Emissions

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Peak Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11590	53.4	35.3	41.2	59.3	74.0	-14.7
Horizontal	*17385	56.1	33.9	39.2	61.4	74.0	-12.6

Polarization	Frequency (MHz)	Reading (dB μ V)	Pre-Amp Gain (dB)	Antenna Factor (dB)	Net at 3m (dB μ V/m)	Average Limit at 3m (dB μ V/m)	Margin (dB)
Horizontal	*11590	42.4	35.3	41.2	48.3	54.0	-5.7
Horizontal	*17385	44.4	33.9	39.2	49.7	54.0	-4.3

- NOTES: 1. Peak detector is used for the emission measurement (RBW=1MHz, VBW=3MHz for Peak data; RBW=1MHz, VBW=10Hz for Average data).
2. All measurements were made at 3 meters. Radiated emissions not detected at the 3-meter distance were measured at 0.3-meter and an inverse proportional extrapolation was performed to compare the signal level to the 3-meter limit. No other radiated emissions than those reported were detected at a test distance of 0.3-meter.
3. Negative value in the margin column shows emission below limit.
4. Horn antenna used for the emission over 1000MHz.
- * Emission within the restricted band meets the requirement of section 15.205. The corresponding limit as per 15.209 is based on Quasi peak limit for frequencies below 1000 MHz and average limit for frequencies over 1000 MHz. The radio frequency emissions above 1GHz also meet corresponding 20dB permitted peak limit with a peak detector function.

INTERTEK TESTING SERVICES

4.9 Conducted Emission

Worst Case Live-Conducted emission at 0.155MHz is Passed by 4.0 dB margin

For electronic filing, the worst case conducted emission configuration photograph is saved with filename: conducted photos.pdf.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

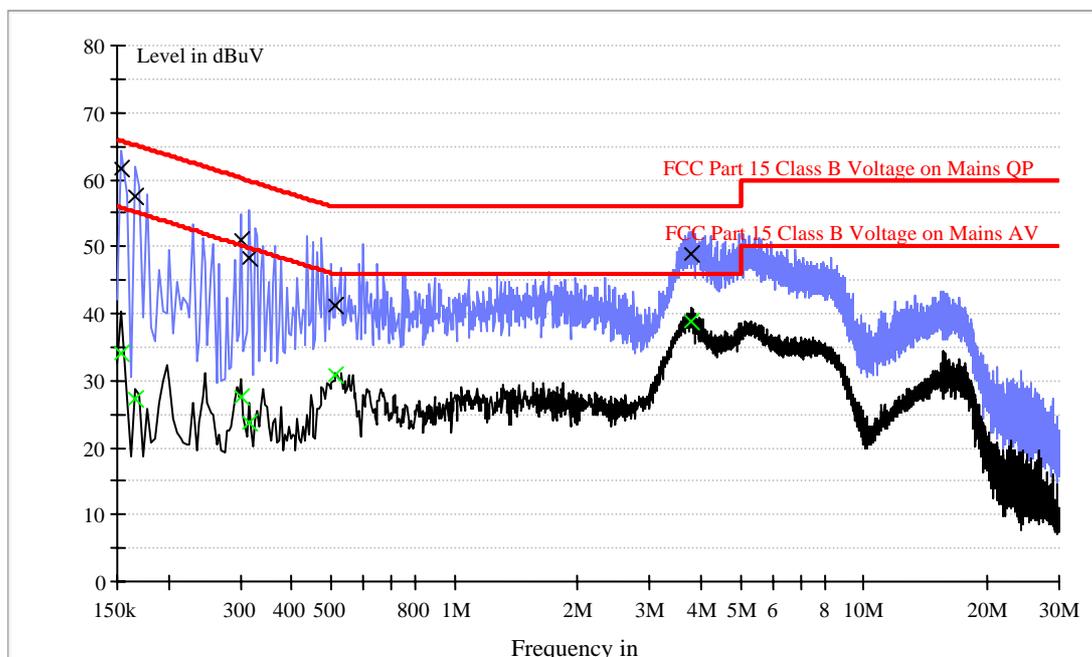
Date of Test: April 7, 2013

Model: M310

Worst Case Operating Mode: (802.11n-HT20 MIMO 2412MHz)

AC/DC Adapter: XinQiao

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.155	61.8	L1	9.6	4.0	65.8
0.166	57.6	L1	9.6	7.6	65.2
0.302	51.1	L1	9.6	9.1	60.2
0.314	48.3	L1	9.6	11.6	59.9
0.514	41.2	L1	9.6	14.8	56.0
3.806	48.9	L1	9.7	7.1	56.0

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.154	34.1	L1	9.6	21.7	55.8
0.166	27.1	L1	9.6	28.1	55.2
0.302	27.5	L1	9.6	22.7	50.2
0.314	23.6	L1	9.6	26.3	49.9
0.514	30.7	L1	9.6	15.3	46.0
3.806	38.8	L1	9.7	7.2	46.0

TRF no.: FCC 15C_TX_b

FCC ID: QIS-MEDIAQM310

Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd

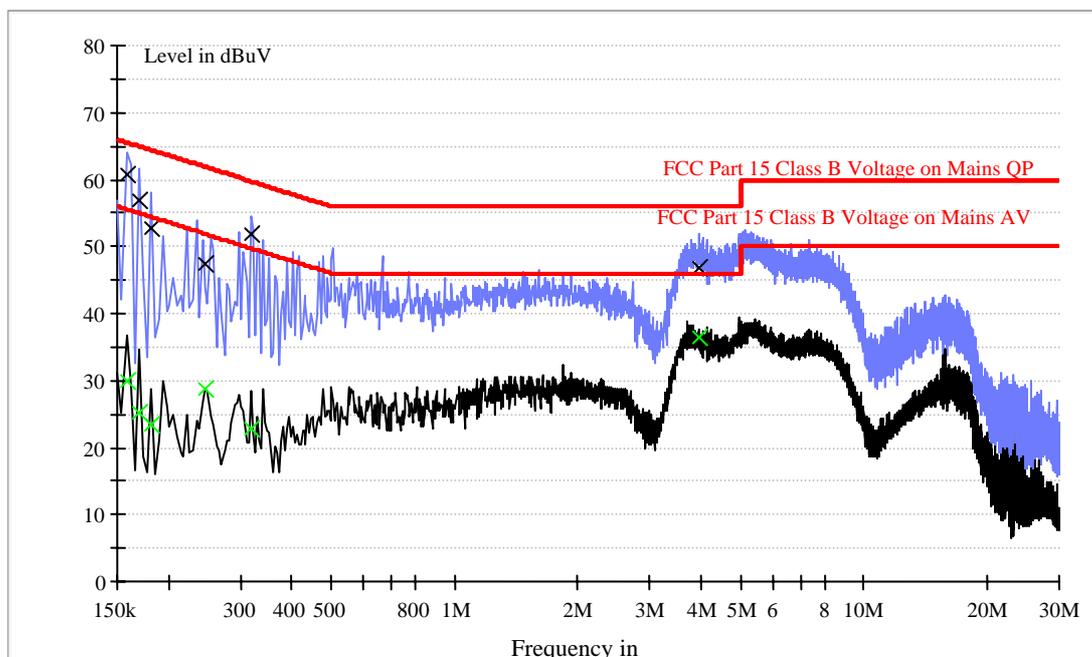
Date of Test: April 7, 2013

Model: M310

Worst Case Operating Mode: Transmit (802.11n-HT20 MIMO 2412MHz)

AC/DC Adapter: XinQiao

Conducted Emission Test - FCC



Result Table QP

Frequency (MHz)	QuasiPeak (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.158	60.7	N	9.7	4.9	65.6
0.170	56.8	N	9.7	8.2	65.0
0.182	52.6	N	9.6	11.8	64.4
0.246	47.3	N	9.6	14.6	61.9
0.318	52.0	N	9.6	7.8	59.8
3.970	46.8	N	9.7	9.2	56.0

Result Table AV

Frequency (MHz)	Average (dB μ V)	Line	Corr. (dB)	Margin (dB)	Limit (dB μ V)
0.158	29.9	N	9.7	25.7	55.6
0.170	25.2	N	9.7	29.8	55.0
0.182	23.4	N	9.6	31.0	54.4
0.246	28.8	N	9.6	23.1	51.9
0.318	22.7	N	9.6	27.1	49.8
3.970	36.5	N	9.7	9.5	46.0

TRF no.: FCC 15C_TX_b

FCC ID: QIS-MEDIAQM310

Report No.: 130403024SZN-003

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.10 Radiated Emissions from Digital Section of Transceiver, FCC Ref: 15.109

Not required - No digital part

Test results are attached

Included in the separated report.

INTERTEK TESTING SERVICES

Applicant: Huawei Technologies Co.,Ltd
Model: M310

Date of Test: April 7, 2013

4.11 Transmitter Duty Cycle Calculation and Measurements, FCC Rule 15.35(b), (c)

The EUT antenna output port was connected to the input of the spectrum analyzer. The analyzer center frequency was set to EUT RF channel carrier. The SWEP function on the analyzer was set to ZERO SPAN. The Transmitter ON time was determined from the resultant time-amplitude display:

	See attached spectrum analyzer chart (s) for Transmitter timing
	See Transmitter timing diagram provided by manufacturer
x	Not applicable, duty cycle was not used.

INTERTEK TESTING SERVICES

EXHIBIT 5

EQUIPMENT PHOTOGRAPHS

INTERTEK TESTING SERVICES

5.0 Equipment Photographs

For electronic filing, the photographs are saved with filename: external photos.doc & internal photos.pdf.

INTERTEK TESTING SERVICES

EXHIBIT 6

PRODUCT LABELLING

INTERTEK TESTING SERVICES

6.0 Product Labelling

For electronic filing, the FCC ID label artwork and location is saved with filename: label.pdf.

INTERTEK TESTING SERVICES

EXHIBIT 7

TECHNICAL SPECIFICATIONS

INTERTEK TESTING SERVICES

7.0 Technical Specifications

For electronic filing, the block diagram and circuit diagram are saved with filename: block&partlist.pdf and circuit.pdf respectively.

INTERTEK TESTING SERVICES

EXHIBIT 8

INSTRUCTION MANUAL

INTERTEK TESTING SERVICES

8.0 Instruction Manual

For electronic filing, preliminary copies of the Instruction Manual and Safety Information are saved with filename: manual.pdf and safety info.pdf.

This manual and safety information will be provided to the end-user with each unit sold/leased in the United States.

INTERTEK TESTING SERVICES

EXHIBIT 9

CONFIDENTIALITY REQUEST

INTERTEK TESTING SERVICES

9.0 **Confidentiality Request**

For electronic filing, the confidentiality request of the tested EUT is saved with filename: request.pdf.

INTERTEK TESTING SERVICES

EXHIBIT 10

MISCELLANEOUS INFORMATION

INTERTEK TESTING SERVICES

10.0 **Discussion of Pulse Desensitization**

The determination of pulse desensitivity was made in accordance with Hewlett Packard Application Note 150-2, *Spectrum Analysis ... Pulsed RF*.

Pulse desensitivity is not applicable for this device since the transmitter transmits the RF signal continuously.

INTERTEK TESTING SERVICES

EXHIBIT 11

TEST EQUIPMENT LIST

INTERTEK TESTING SERVICES

11.0 Test Equipment List

Equipment No.	Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Due Date
SZ061-03	BiConiLog Antenna	ETS	3142C	00066460	30-Jun-12	30-Jun-13
SZ185-01	EMI Receiver	R&S	ESCI	100547	22-Sep-12	22-Jun-13
SB9060	Spectrum Analyzer	R&S	FSQ	308005870	15-May-12	15-May-12
SZ061-09	Horn Antenna	ETS	3115	00092346	28-Nov-12	28-Nov-13
SZ061-07	Pyramidal Horn Antenna	ETS	3160-09	00083067	8-Sep-12	22-Jun-13
SZ061-06	Active Loop Antenna	Electro-Metrics	EM-6876	217	8-Dec-12	8-Jun-13
SZ056-03	Spectrum Analyzer	R&S	FSP 30	101148	22-Sep-12	22- Jun -13
SZ181-04	Preamplifier	Agilent	8449B	3008A02474	17-Nov-12	17-May-13
SZ188-01	Anechoic Chamber	ETS	RFD-F/A-100	4102	3-Dec-12	08-Jun-13
SZ062-02	RF Cable	RADIALL	RG 213U	--	17-Mar-12	17-Sep-13
SZ062-05	RF Cable	RADIALL	0.04-26.5GHz	--	29-Dec-12	29-Jun-13
SZ062-12	RF Cable	RADIALL	0.04-26.5GHz	--	29-Dec-12	29-Jun-13
SZ067-21	Notch Filter	Micro-Tronics	High-pass filter	--	12-Mar-13	12-Mar-14
SZ185-02	EMI Test Receiver	R&S	ESCI	100692	5-Nov-12	5-Nov-13
SZ187-01	Two-Line V-Network	R&S	ENV216	100072	5-Nov-12	5-Nov-13
SZ187-02	Two-Line V-Network	R&S	ENV216	100073	5-Nov-12	5-Nov-13
SZ188-03	Shielding Room	ETS	RFD-100	4100	10-Sep-12	10-Sep-13