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Report No.:
File reference No.:

FCC 1903224-04
2019-04-16

Applicant: Shenzhen Geniatech Inc., Ltd.

Product: Developer Board

Model No.: DB8,DB8WL,DB9,DB7,DB5,DB4,XPI,XPI-S905X,GTW390R,
GTW350,GTW410,GTW389,GTW360

Trademark: N/A

Test Standards: FCC Part 15 Subpart E, Paragraph 15.407 and RSS-247 Issue 2

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.10,FCC Part 15 Subpart C, Paragraph 15.247 and RSS-247 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: April 16, 2019

**Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to withdrawal at**

SHENZHEN TIMEWAY TESTING LABORATORIES

Room 512-519, 5/F., East Tower, Building 4, Anhua Industrial Zone, Futian District, Shenzhen, Guangdong, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



Special Statement:

The testing quality ability of our laboratory meet with “Quality Law of People’s Republic of China” Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAL-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of testing Laboratories.

FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

The report refers only to the sample tested and does not apply to the bulk.

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Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name : SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688

Fax: (755) 83442996

Site Listed with Federal Communications commission (FCC)

Registration Number: 744189

For 3m Anechoic Chamber

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-02

For 3m Anechoic Chamber

1.2 Applicant Details

Applicant: Shenzhen Geniatech Inc., Ltd.

Address: 18F, GDC Building, No 9th, Gaoxin Middle 3rd Road, Nanshan, Shenzhen, China

Telephone: --

Fax: --

1.3 Description of EUT

Product: Developer Board

Manufacturer: Shenzhen Geniatech Inc., Ltd.

Address: 18F, GDC Building, No 9th, Gaoxin Middle 3rd Road, Nanshan, Shenzhen, China

Brand Name: N/A

Additional Brand Name: N/A

Model Number: DB8

Additional Model Number: DB8WL,DB9,DB7,DB5,DB4,XPI,XPI-905X,GTW390R,GTW350, GTW410,GTW389, GTW360

Type of Modulation IEEE 802.11a/n (HT20/HT40) : OFDM(64QAM, 16QAM, QPSK, BPSK);

IEEE 802.11ac: BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM

Frequency Band 1: 5180MHz-5240MHz;

Band 4: 5745MHz-5805MHz

Channel Separation 802.11a/802.11n20:20MHz, 802.11n40:40MHz, 802.11ac : 80MHz

Air Data Rate IEEE 802.11a : 54, 48, 36, 24, 18, 12, 9, 6 Mbps

IEEE 802.11n/HT20: mcs0: 6.5Mbps, mcs1: 13Mbps, mcs2: 19.5Mbps, mcs3: 26Mbps, mcs4: 39Mbps, mcs5: 52Mbps, mcs6: 58.5Mbps, mcs7: 65Mbps

IEEE 802.11n/HT40: mcs0: 15Mbps, mcs1: 30Mbps, mcs2: 45Mbps, mcs3: 60Mbps, mcs4: 90Mbps, mcs5: 120Mbps, mcs6: 135Mbps, mcs7: 150Mbps

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IEEE 802.11ac: Up to 433.3Mbps

Antenna: Antenna: 2pcs External antenna with reversed polarity non standard unique antenna port.

Antenna Gain: Antenna Gain: Maximum 3.2dBi for each antenna, Directional gain = $3.2+10\log_2=6.21$ dBi

Test Mode: During testing, EUT was set to MIMO mode 100% duty cycle. 6Mbps air data rate was the worst case for 802.11a mode; mcs0 air data rate was the worst case for 802.11n mode; 23.9Mbps air data rate was the worst case for 802.11ac mode.

Frequency Selection By software

Input Voltage: DC12V

Power Adapter Model: FJ-SW1201500E; Input: 100-240V, 50/60HZ, 0.6A Max;
Output: 12V—, 1500mA

Each Channel Operation Frequency

Band 1					
802.11a / 11n HT20 / 802.11ac VHT20		802.11n HT40 / 802.11acVHT40		802.11ac VHT80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190 MHz	42	5210 MHz
40	5200 MHz	46	5230 MHz		
44	5220 MHz				
48	5240 MHz				
Band 4					
802.11a / 11n HT20 / 802.11ac VHT20		802.11n HT40 / 802.11acVHT40		802.11ac VHT80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745 MHz	151	5755 MHz	155	5775 MHz
153	5765 MHz	159	5795 MHz		
157	5785 MHz				
161	5805 MHz				

The selected test channels as follows:

Band 1					
802.11a / 11n HT20		802.11n HT40		802.11ac VHT80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	38	5190 MHz	42	5210 MHz
40	5200 MHz	46	5230 MHz		
48	5240 MHz				
Band 4					
802.11a / 11n HT20		802.11n HT40		802.11ac VHT80	
Channel	Frequency	Channel	Frequency	Channel	Frequency
149	5745 MHz	151	5755 MHz	155	5775 MHz
153	5765 MHz	159	5795 MHz		

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161	5805 MHz				
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Note: 802.11ac VHT20/VHT40 is similar with 802.11n HT20/HT40.

1.4 Submitted Sample: 2 Samples

1.5 Test Duration: 2019-03-25 to 2019-04-09

1.6 Test Uncertainty

Conducted Emissions Uncertainty =3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty =5%

1.7 Test Engineer

A handwritten signature in black ink that reads "Terry Tang".

The sample tested by _____

Print Name: Terry Tang

2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2018-06-22	2019-06-21
TWO Line-V-NETW	R&S	EZH3-Z5	100294	2018-06-22	2019-06-21
TWO Line-V-NETW	R&S	EZH3-Z5	100253	2018-06-22	2019-06-21
Ultra Broadband ANT	R&S	HL562	100157	2018-06-18	2019-06-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2018-06-22	2019-06-21
Loop Antenna	EMCO	6507	00078608	2018-06-25	2019-06-24
Spectrum	R&S	FSIQ26	100292	2018-06-22	2019-06-21
Horn Antenna	A-INFO	LB-180400-KF	J211060660	2018-06-25	2019-06-24
Horn Antenna	R&S	BBHA 9120D	9120D-631	2018-08-24	2019-08-23
Power meter	Anritsu	ML2487A	6K00003613	2018-08-22	2019-08-21
Power sensor	Anritsu	MA2491A	32263	2018-08-22	2019-08-21
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2018-07-04	2019-07-03
9*6*6 Anechoic	--	--	N/A	2018-02-07	2021-02-06

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EMI Test Receiver	RS	ESVB	826156/011	2018-06-22	2019-06-21
EMI Test Receiver	RS	ESH3	860904/006	2018-06-22	2019-06-21
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2018-06-22	2019-06-21
Spectrum	HP/Agilent	E4407B	MY50441392	2018-03-27	2019-03-26
Spectrum	RS	FSP	1164.4391.38	2019-01-20	2020-01-19
RF Cable	Zhengdi	ZT26-NJ-NJ-8M/FA	--	2018-05-24	2019-05-23
RF Cable	Zhengdi	7m	--	2018-03-17	2019-03-16
RF Switch	EM	EMSW18	060391	2018-06-22	2019-06-21
Pre-Amplifier	Schwarebeck	BBV9743	#218	2018-06-22	2019-06-21
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2018-08-05	2019-08-04
LISN	SCHAFFNER	NNB42	00012	2019-01-08	2020-01-07

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3.0 Technical Details

3.1 Summary of test results

The EUT has been tested according to the following specifications:			
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.207 & 15.407	Conducted Emission Test	PASS	Complies
FCC Part 15 Subpart E Paragraph 15.407 (b:1/4/5/6/7), Part 15.205 and Part 15.209	Undesirable Emission and Restrict band	PASS	Complies
FCC Part 15, Paragraph 15.407 (a)(1)(iv) (a)(3)	Output Power	PASS	Complies
FCC Part 15, Paragraph 15.407(e)	Bandwidth	PASS	Complies
FCC Part 15, Paragraph 15.407 (a)(1)(iv) (a)(3)	Peak Power Spectral Density	PASS	Complies
FCC Part 15, Paragraph 15.407(g)	Frequency Stability	PASS	Complies

3.2 Test Standards

FCC Part 15 Subpart & Subpart C, Paragraph 15.247, ANSI C63.10 :2013, ANSI C63.4 :2014
789033 D02 General UNII Test Procedures New Rules v01r04 and RSS-247 Issue 2

4.0 EUT Modification

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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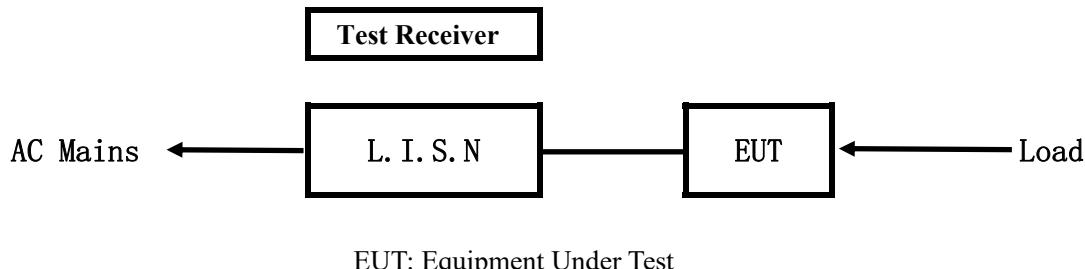
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5. Power Line Conducted Emission Test

5.1 Schematics of the test

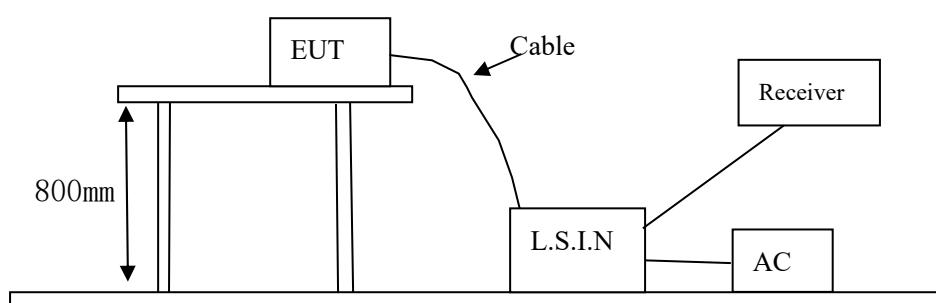


5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10–2013.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

A. EUT			
Device	Manufacturer	Model	FCC ID
Developer Board	Shenzhen Geniatech Inc., Ltd.	DB8, ,DB8WL, DB9,DB7,DB5,DB4,XPI, XPI-S905X,GTW390R,GTW350, GTW410,GTW389,GTW360	ZJU-D19EC5

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B. Internal Device

Device	Manufacturer	Model	Rating

C. Peripherals

Device	Manufacturer	Model	Rating

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10 -2013.

- A Setup the EUT and simulators as shown on follow
B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207 and 15.107

Frequency (MHz)	Class A Limits (dB μ V)		Class B Limits (dB μ V)	
	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
0.15 ~ 0.50	79.0	66.0	66.0~56.0	56.0~46.0*
0.50 ~ 5.00	73.0	60.0	56.0	46.0
5.00 ~ 30.00	73.0	60.0	60.0	50.0

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The tighter limit shall apply at the transition frequencies

5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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A: Conducted Emission on Live Terminal (150kHz to 30MHz)

EUT Operating Environment

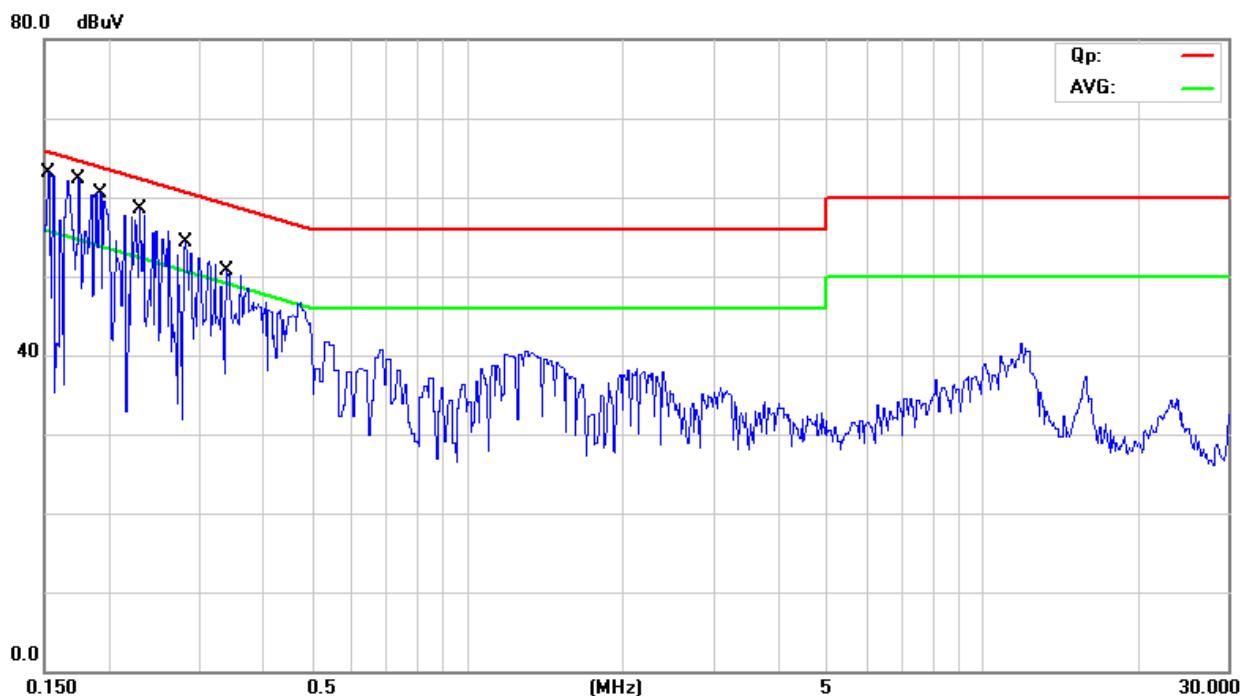
Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keeping WIFI Transmitting

Equipment Level: Class B

Results: PASS

Please refer to following diagram for individual



No.	Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit	Over	Detector	Comment
			dBuV	dB	dBuV	dB			
1	0.1526	50.26	9.78	60.04	65.86	-5.82	QP		
2	0.1526	23.46	9.78	33.24	55.86	-22.62	AVG		
3	0.1753	50.46	9.77	60.23	64.71	-4.48	QP		
4	0.1753	21.34	9.77	31.11	54.71	-23.60	AVG		
5	0.1928	50.68	9.76	60.44	63.92	-3.48	QP		
6	0.1928	29.65	9.76	39.41	53.92	-14.51	AVG		
7	0.2296	48.84	9.75	58.59	62.46	-3.87	QP		
8	0.2296	18.94	9.75	28.69	52.46	-23.77	AVG		

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B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

EUT Operating Environment

Temperature: 26°C Humidity: 65%RH Atmospheric Pressure: 101 KPa

EUT set Condition: Keeping WIFI Transmitting

Equipment Level: Class B

Results: Pass

Please refer to following diagram for individual



No.	Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit	Over	Detector	Comment
			dBuV	dB	dBuV	dB			
1	*	0.1544	39.38	9.78	49.16	65.76	-16.60	QP	
2		0.1544	15.72	9.78	25.50	55.76	-30.26	AVG	
3		0.1710	37.36	9.77	47.13	64.91	-17.78	QP	
4		0.1710	14.34	9.77	24.11	54.91	-30.80	AVG	
5		0.2000	35.45	9.75	45.20	63.61	-18.41	QP	
6		0.2000	12.33	9.75	22.08	53.61	-31.53	AVG	
7		0.2296	30.44	9.75	40.19	62.46	-22.27	QP	
8		0.2296	8.21	9.75	17.96	52.46	-34.50	AVG	
9		0.2630	28.19	9.75	37.94	61.34	-23.40	QP	
10		0.2630	6.79	9.75	16.54	51.34	-34.80	AVG	
11		0.3127	24.98	9.76	34.74	59.90	-25.16	QP	
12		0.3127	3.27	9.76	13.03	49.90	-36.87	AVG	
13		0.3784	22.27	9.76	32.03	58.31	-26.28	QP	

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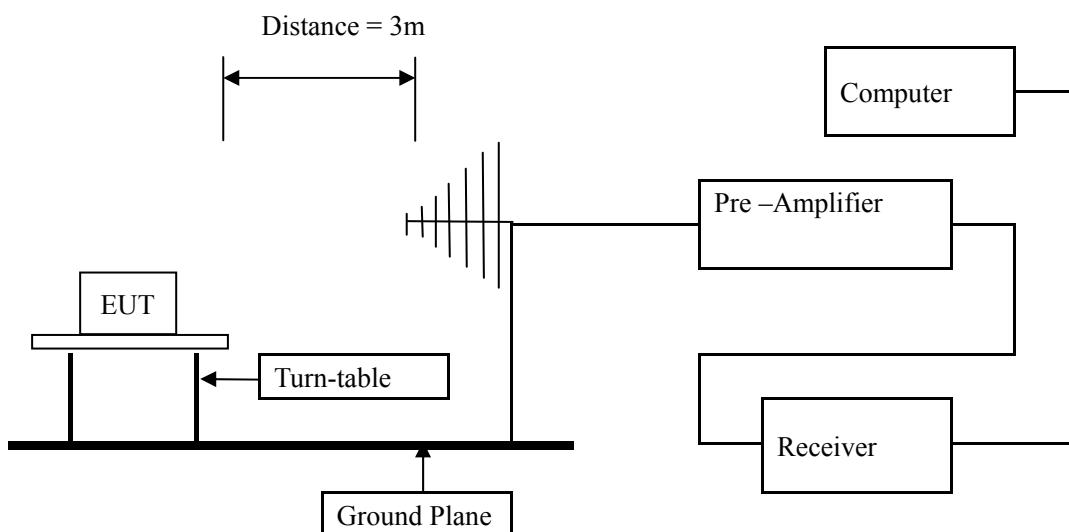


6 Undesirable Emission and Restrict band

6.1 Test Method and test Procedure:

- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No.744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 40 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=1MHz, VBW=3MHz and PK detector. Measurements were made at 3 meters.
- (4) The antenna height is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a “QP” in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.

Block diagram of Test setup



6.2 Configuration of The EUT

Same as section 5.3 of this report

6.3 EUT Operating Condition

Same as section 5.4 of this report.

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6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109

Frequency Range (MHz)	Distance (m)	Field strength (dB μ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

- (1) For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27dBm/MHz
- (2) For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27dBm/MHz.

Note:

1. RF Voltage (dBuV) = $20 \log_{10}$ RF Voltage (uV)
2. In the Above Table, the higher limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

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Test result

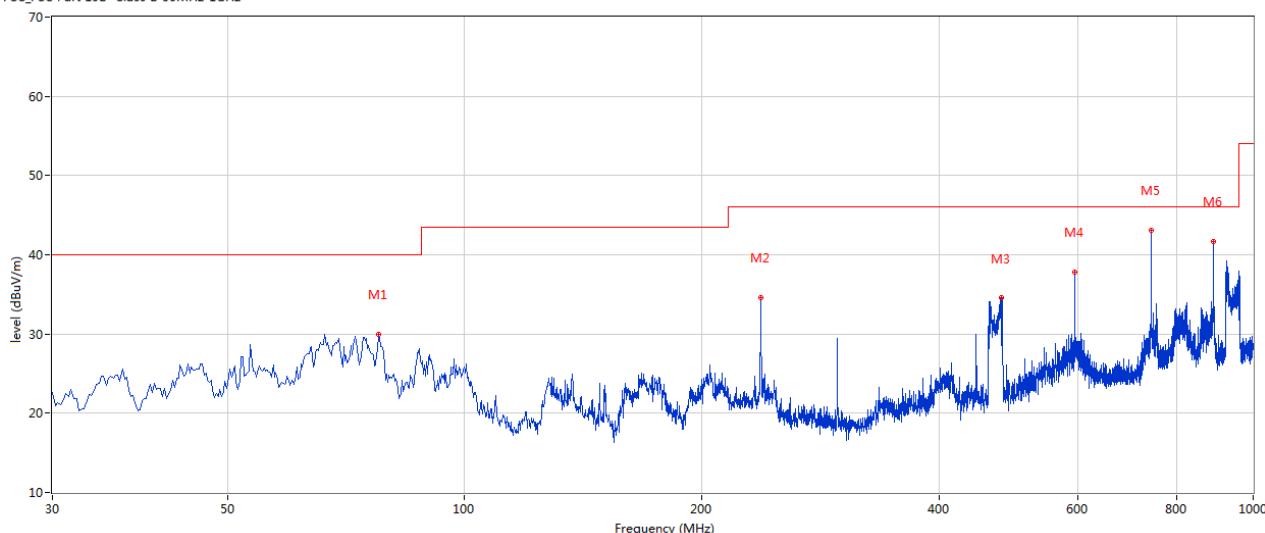
General Radiated Emission Data and Harmonics Radiated Emission Data

Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: Keeping WIFI Transmitting

Results: Pass

FCC_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	77.761	29.96	-17.54	40.0	-10.04	Peak	7.00	100	V	Pass
2	237.528	34.62	-12.41	46.0	-11.38	Peak	41.00	100	V	Pass
3	479.483	34.54	-7.43	46.0	-11.46	Peak	156.00	100	V	Pass
4	593.914	37.84	-5.25	46.0	-8.16	Peak	114.00	100	V	Pass
5	742.529	42.11	-3.47	46.0	-3.89	Peak	200.00	100	V	Pass
6	890.902	42.72	-1.91	46.0	-3.28	Peak	1.00	100	V	Pass

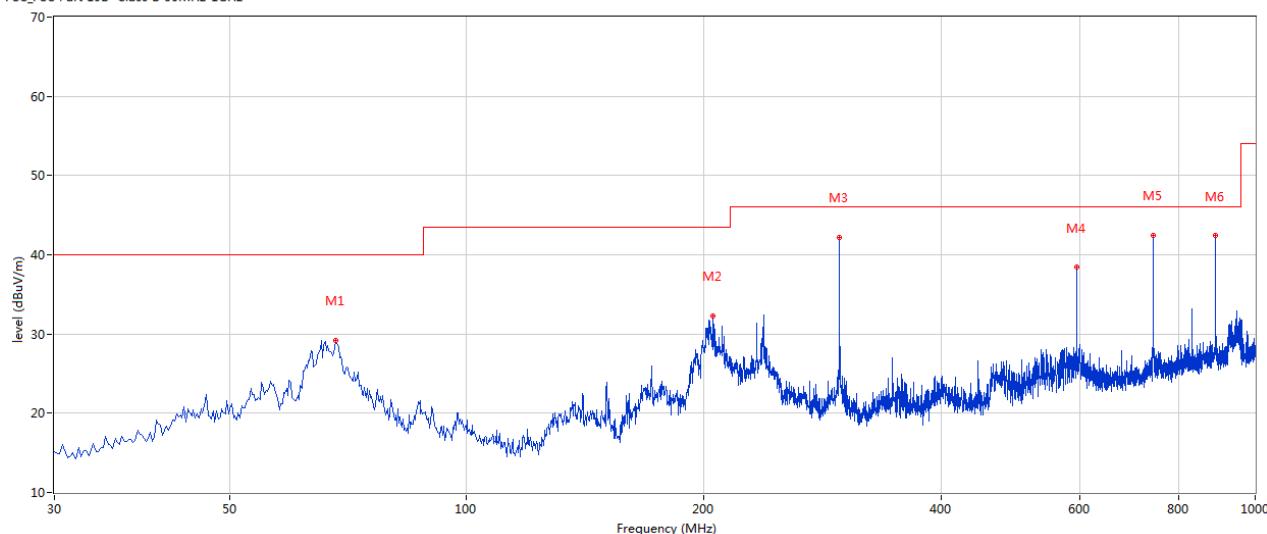
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FCC_FCC Part 15B Class B 30MHz-1GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	68.305	29.16	-14.82	40.0	-10.84	Peak	66.00	100	H	Pass
2	205.284	32.33	-13.61	43.5	-11.17	Peak	0.00	100	H	Pass
3	296.926	42.17	-11.07	46.0	-3.83	Peak	127.00	100	H	Pass
4	593.914	38.40	-5.25	46.0	-7.60	Peak	140.00	100	H	Pass
5	742.529	42.50	-3.47	46.0	-3.50	Peak	0.00	100	H	Pass
6	890.902	42.41	-1.91	46.0	-3.59	Peak	0.00	100	H	Pass

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Operation Mode: Keeping Transmitting under CH36 for 802.11a

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5180.00	--	H	Fundamental Frequency
5180.00	--	V	
10360	--	H	74(Peak)/ 54(AV)
15540	--	V	74(Peak)/ 54(AV)
20720	--	H/V	74(Peak)/ 54(AV)
25900	--	H/V	74(Peak)/ 54(AV)
31080	--	H/V	74(Peak)/ 54(AV)
36260	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark “---” means that the emissions level is too low to be measured

3. For 802.11a 6Mbps is worse case mode

Operation Mode: Keeping Transmitting under CH40 for 802.11a

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5200.00	-	H	Fundamental Frequency
5200.00	--	V	
10400	--	H	74(Peak)/ 54(AV)
15600	--	V	74(Peak)/ 54(AV)
20800	--	H/V	74(Peak)/ 54(AV)
26000	--	H/V	74(Peak)/ 54(AV)
31200	--	H/V	74(Peak)/ 54(AV)
36400	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark “---” means that the emissions level is too low to be measured

3. For 802.11a 6Mbps is worse case mode

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Operation Mode: Keeping Transmitting under CH48 for 802.11a

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5240.00	--	H	Fundamental Frequency
5240.00	--	V	
10480	--	H	74(Peak)/ 54(AV)
15720	--	V	74(Peak)/ 54(AV)
20960	--	H/V	74(Peak)/ 54(AV)
26200	--	H/V	74(Peak)/ 54(AV)
31440	--	H/V	74(Peak)/ 54(AV)
36680	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark “---” means that the emissions level is too low to be measured

3. For 802.11a 6Mbps is worse case mode

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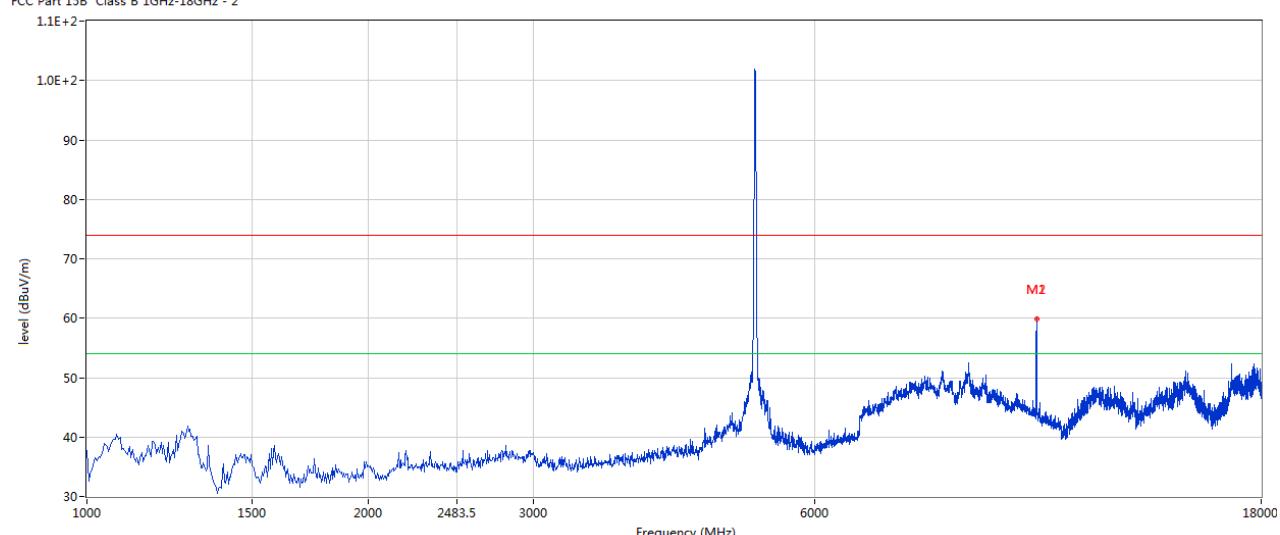
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Please refer to the following test plots for details:

CH36 for 11a at 6Mbps: Horizontal

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	10356.161	59.91	6.25	74.0	-14.09	Peak	268.00	100	H	Pass
2	10356.161	40.66	6.25	54.0	-13.34	AV	268.00	100	H	Pass

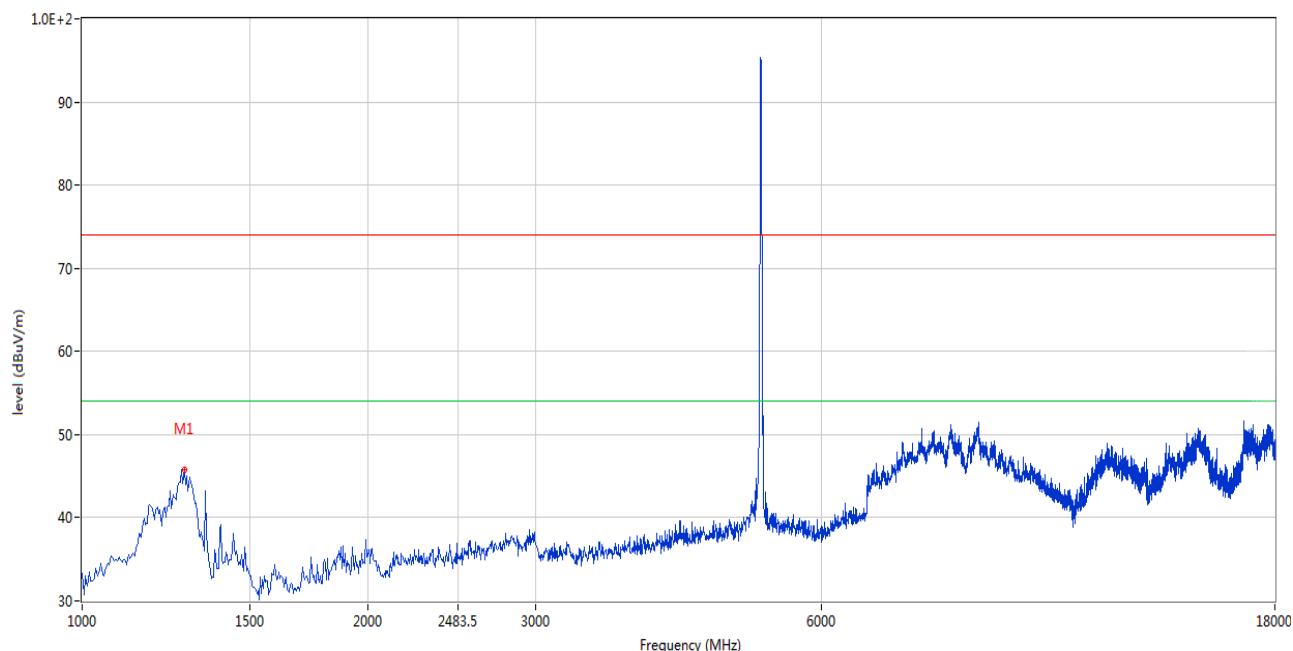
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**CH36 for 11a at 6Mbps: Vertical**

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1280.430	45.76	-8.37	74.0	-28.24	Peak	320.00	100	V	Pass

The report refers only to the sample tested and does not apply to the bulk.

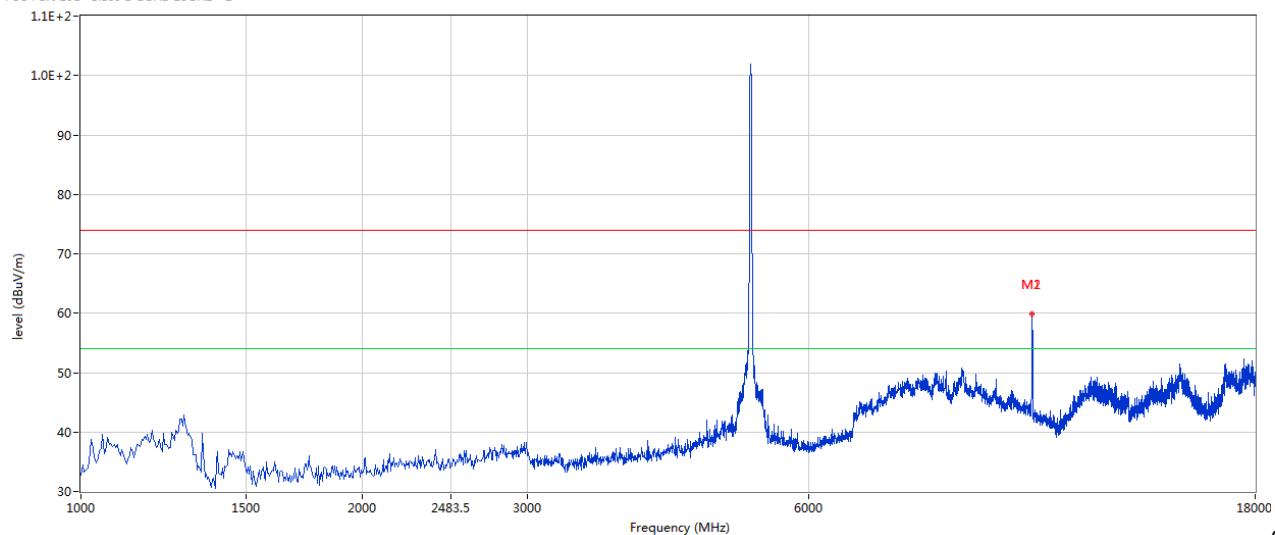
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CH40 for 11a at 6Mbps: Horizontal

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	10402.899	59.91	6.16	74.0	-14.09	Peak	269.00	100	H	Pass
2	10402.899	40.73	6.16	54.0	-13.27	AV	269.00	100	H	Pass

The report refers only to the sample tested and does not apply to the bulk.

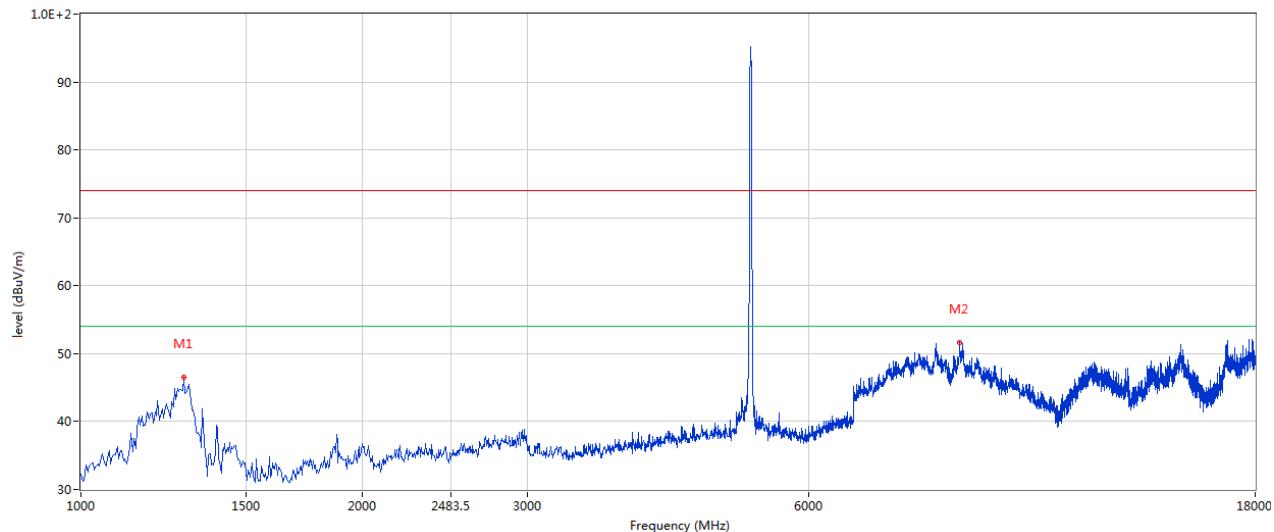
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CH40 for 11a at 6Mbps: Vertical

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1288.928	46.48	-8.31	74.0	-27.52	Peak	338.00	100	V	Pass
2	8690.577	51.58	8.00	74.0	-22.42	Peak	201.00	100	V	Pass

The report refers only to the sample tested and does not apply to the bulk.

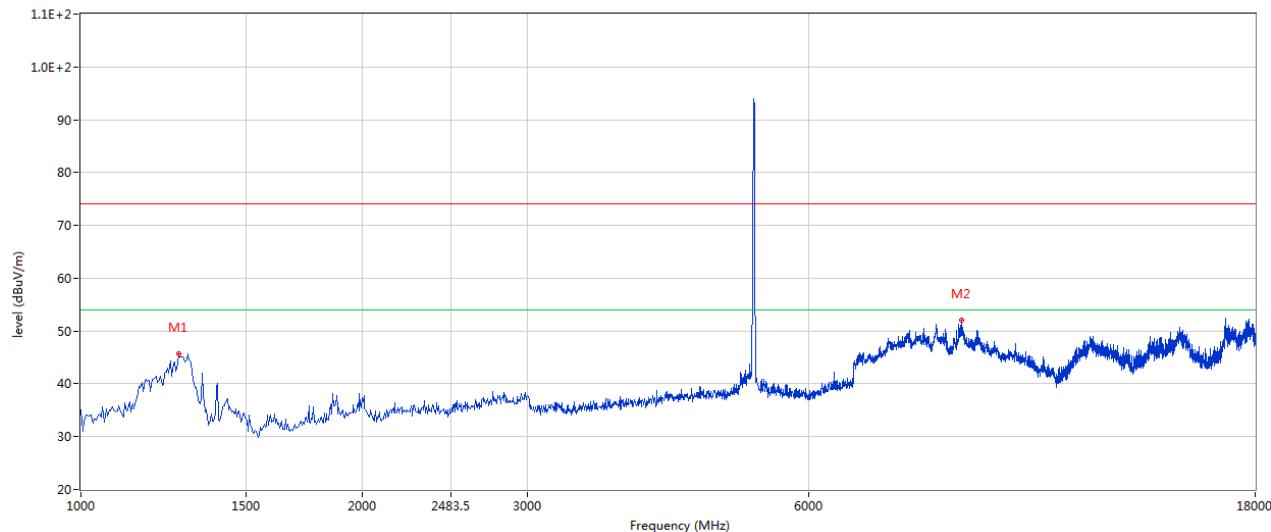
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CH48 for 11a at 6Mbps: Vertical

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1271.932	45.64	-8.43	74.0	-28.36	Peak	319.00	100	V	Pass
2	8745.814	52.04	7.97	74.0	-21.96	Peak	118.00	100	V	Pass

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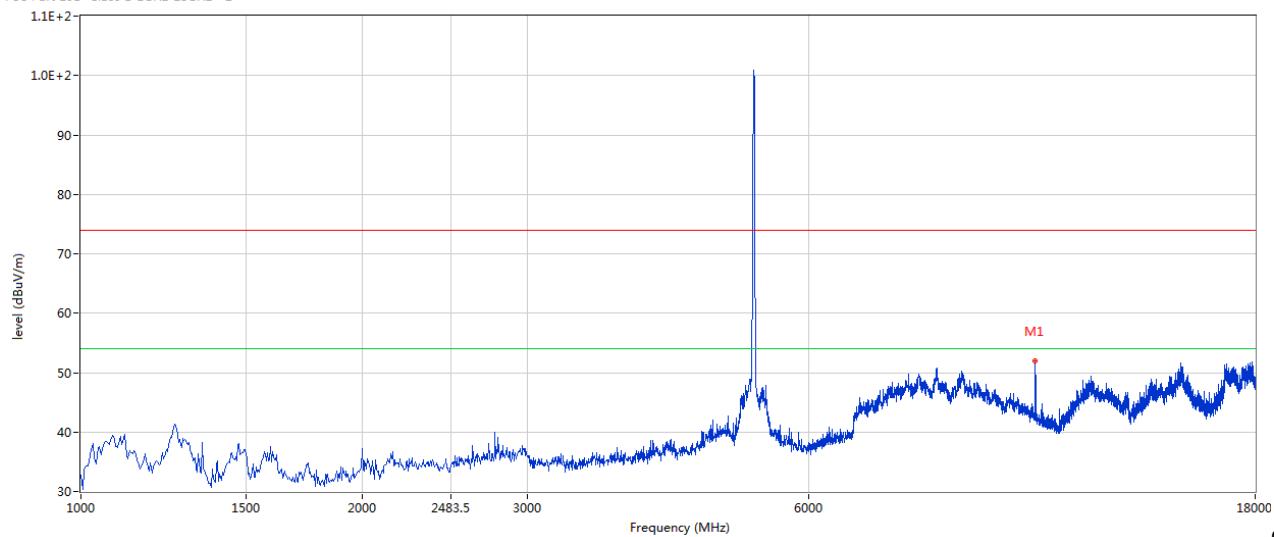
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CH48 for 11g at 6Mbps: Horizontal

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	10475.131	52.02	6.01	74.0	-21.98	Peak	41.00	100	H	Pass

Note: 1. For radiated Emissions from 18-40GHz, it is only the floor noise.

2. 802.11a is the worst case.

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Operation Mode: Keeping Transmitting under CH149 for 802.11a

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5745.00	--	H	Fundamental Frequency
5745.00	--	V	
11490	--	H	74(Peak)/ 54(AV)
17235	--	V	74(Peak)/ 54(AV)
22980	--	H/V	74(Peak)/ 54(AV)
28725	--	H/V	74(Peak)/ 54(AV)
34470	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark “---” means that the emissions level is too low to be measured

3. For 802.11a 6Mbps is worse case mode

Operation Mode: Keeping Transmitting under CH153 for 802.11a

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5765.00	--	H	Fundamental Frequency
5765.00	--	V	
11530	--	H	74(Peak)/ 54(AV)
17295	--	V	74(Peak)/ 54(AV)
23060	--	H/V	74(Peak)/ 54(AV)
28825	--	H/V	74(Peak)/ 54(AV)
34590	--	H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark “---” means that the emissions level is too low to be measured

3. For 802.11a 6Mbps is worse case mode

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Operation Mode: Keeping Transmitting under CH161 for 802.11a

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
5805.00	--	H	Fundamental Frequency
5805.00	--	V	
11610	--	H	74(Peak)/ 54(AV)
17415	--	V	74(Peak)/ 54(AV)
23220	--	H/V	74(Peak)/ 54(AV)
29025	--	H/V	74(Peak)/ 54(AV)
34830	--	H/V	74(Peak)/ 54(AV)

- Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit
2. Remark “---” means that the emissions level is too low to be measured
3. For 802.11a 6Mbps is worse case mode

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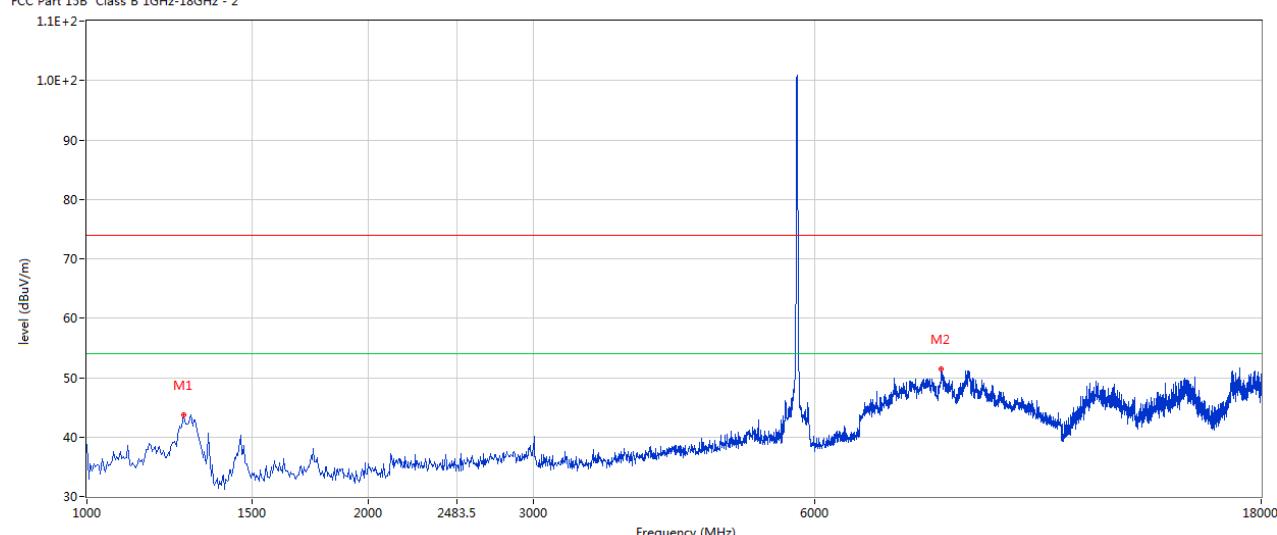
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Please refer to the following test plots for details:

CH149 for 11a at 6Mbps: Horizontal

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1267.683	43.73	-8.46	74.0	-30.27	Peak	42.00	100	H	Pass
2	8184.954	51.51	8.34	74.0	-22.49	Peak	5.00	100	H	Pass

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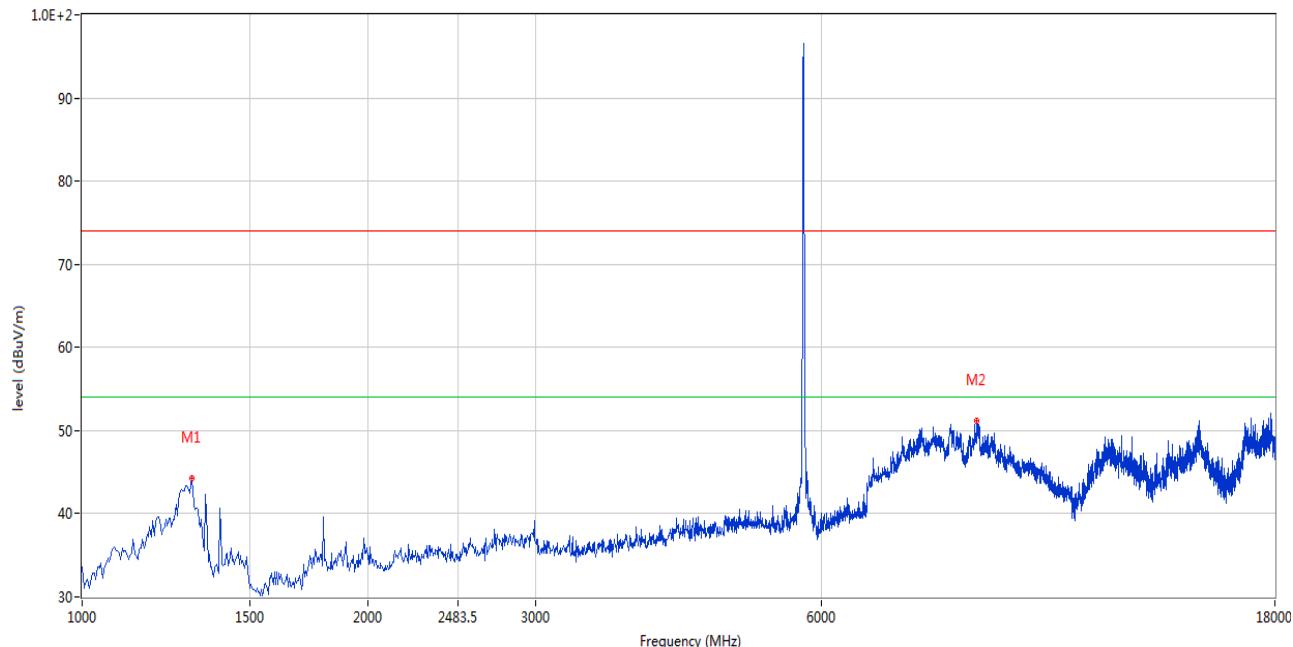
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CH149 for 11a at 6Mbps: Vertical

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1305.924	44.30	-8.23	74.0	-29.70	Peak	314.00	100	V	Pass
2	8745.814	51.12	7.97	74.0	-22.88	Peak	26.00	100	V	Pass

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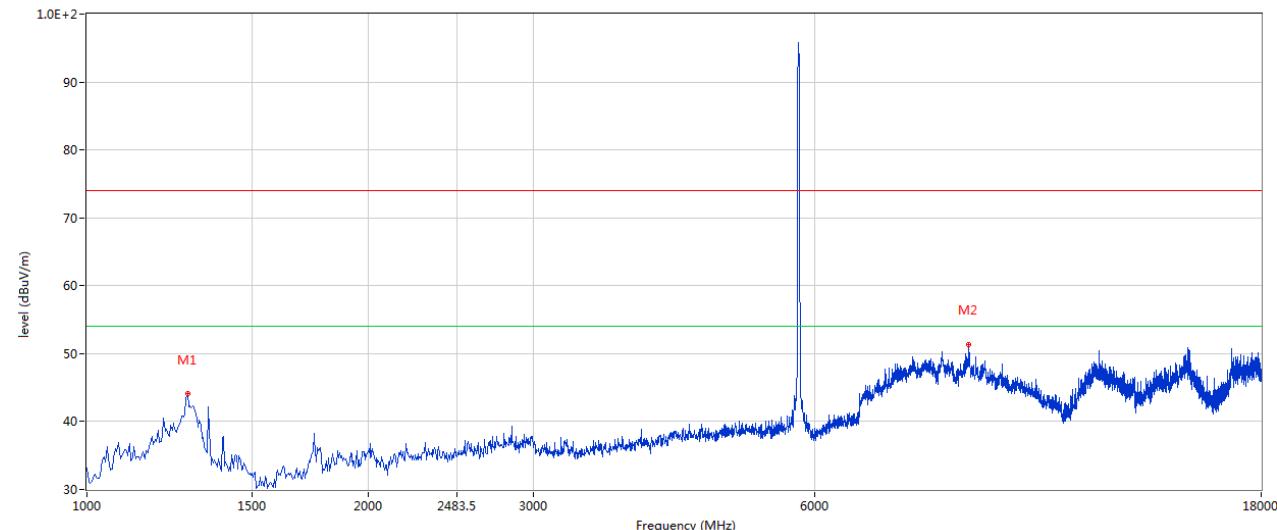
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CH153 for 11a at 6Mbps: Vertical

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1280.430	44.09	-8.37	74.0	-29.91	Peak	319.00	100	V	Pass
2	8762.809	51.39	7.96	74.0	-22.61	Peak	328.00	100	V	Pass

The report refers only to the sample tested and does not apply to the bulk.

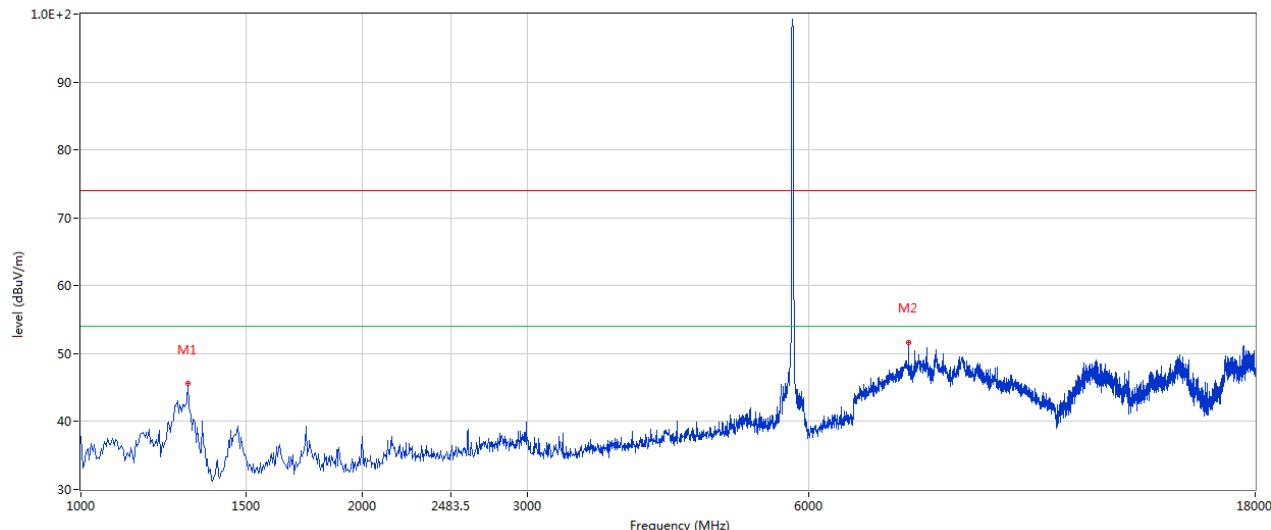
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CH153 for 11a at 6Mbps: Horizontal

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1250.687	39.89	-8.58	74.0	-34.11	Peak	37.00	100	H	Pass
2	7666.583	51.69	8.29	74.0	-22.31	Peak	288.00	100	H	Pass

The report refers only to the sample tested and does not apply to the bulk.

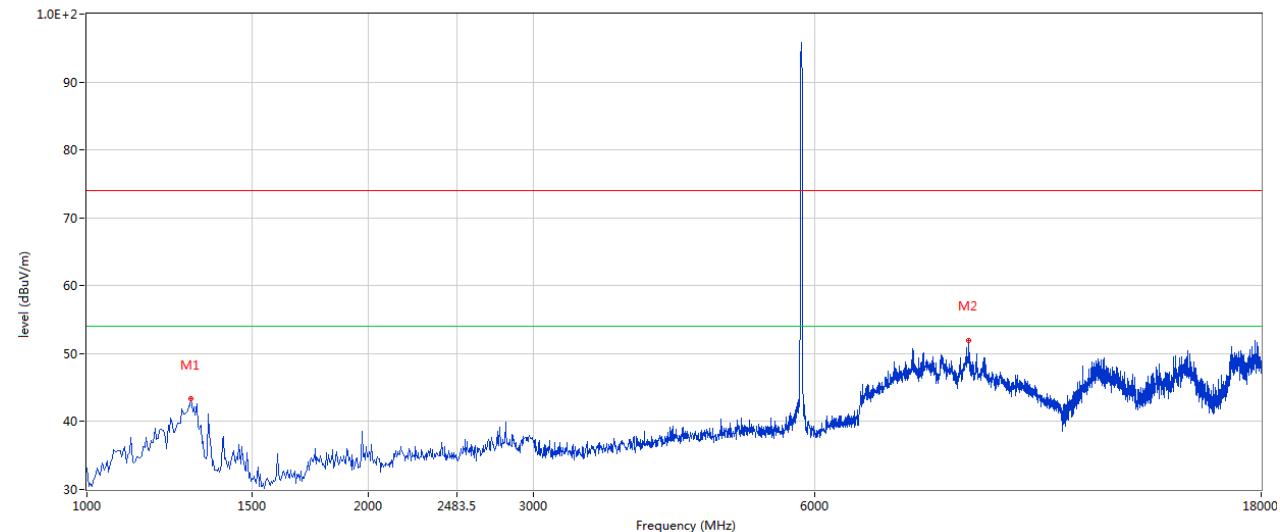
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CH161 for 11a at 6Mbps: Vertical

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1293.177	43.33	-8.28	74.0	-30.67	Peak	325.00	100	V	Pass
2	8762.809	51.98	7.96	74.0	-22.02	Peak	32.00	100	V	Pass

The report refers only to the sample tested and does not apply to the bulk.

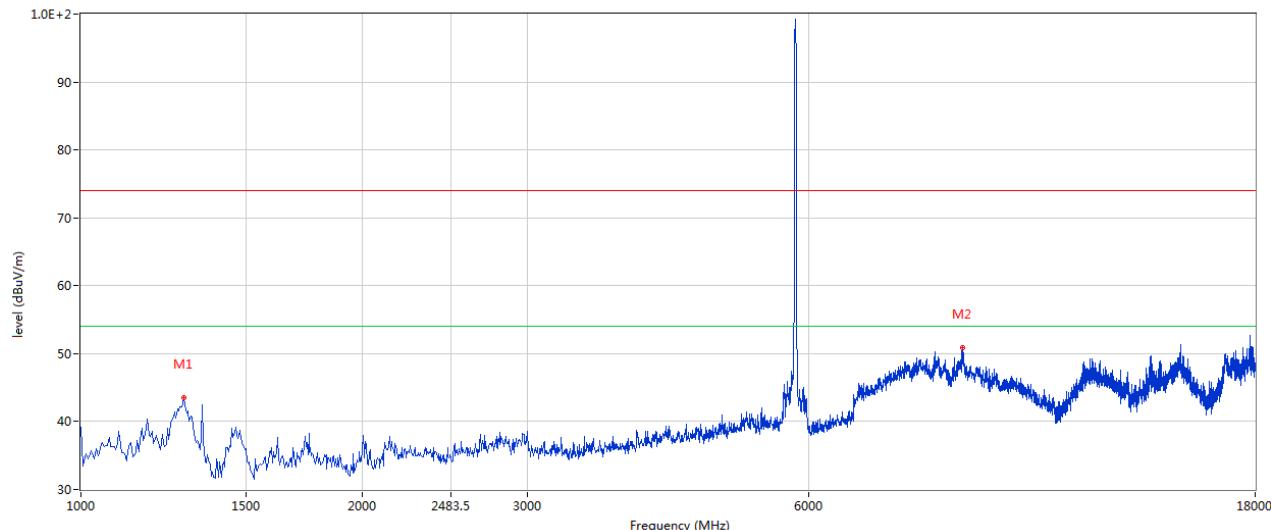
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CH161 for 11a at 6Mbps: Horizontal

FCC Part 15B Class B 1GHz-18GHz - 2



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1288.928	43.48	-8.31	74.0	-30.52	Peak	240.00	100	H	Pass
2	8750.062	50.84	7.97	74.0	-23.16	Peak	304.00	100	H	Pass

Note: 1. For radiated Emissions from 18-40GHz, it is only the floor noise.

3. 802.11a is the worst case.

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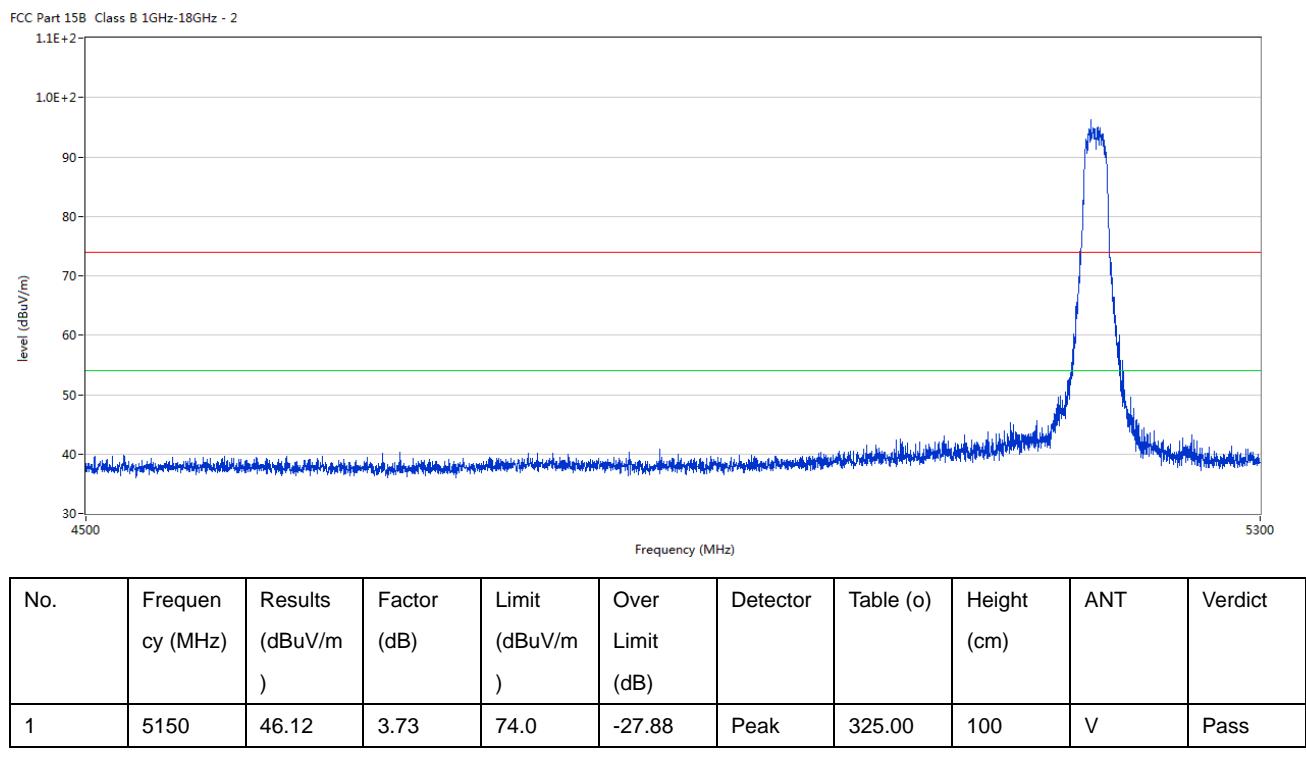


Undesirable emission test

All modes 802.11a / 11n HT20 / 802.11ac VHT20; 802.11n HT40 / 802.11acVHT40; 802.11ac VHT80 have been tested ,only worse case is reported

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5150	PK (dB μ V/m)	46.12 (PK)	Limit
	EIRP (dBm)	-49.08	
Polarity	Vertical		--

Test Figure



Remark: 1. According to KDB 789033 v01r03 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]=46.12 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 46.12 - 95.2 = -49.08 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement										
EUT	Developer Board		Test Mode:	Channel 36 (5180MHz)-11a						
Mode	Keeping Transmitting		Input Voltage	120V~						
Temperature	24 deg. C,		Humidity	56% RH						
Test Result:	Pass		Detector	PK						
5150	PK (dB μ V/m)	51.54 (PK)	Limit	-27dBm/MHz						
	EIRP (dBm)	-43.66								
Polarity	Horizontal		--	--						
Test Figure										
FCC Part 15B Class B 1GHz-18GHz - 2 										
No.	Frequen cy (MHz)	Results (dB μ V/m)	Factor (dB)	Limit (dB μ V/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	5150	51.54	3.73	74.0	-22.46	Peak	40.00	100	H	Pass

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]=51.54 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 51.54 - 95.2 = -43.66 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement					
EUT	Developer Board		Test Mode:	Channel 48 (5240MHz)-11a	
Mode	Keeping Transmitting		Input Voltage	120V~	
Temperature	24 deg. C,		Humidity	56% RH	
Test Result:	Pass		Detector	PK	
5250	PK (dB μ V/m)	61.44 (PK)		Limit	-27dBm/MHz
	EIRP (dBm)	-33.76			
Polarity	Horizontal				

Test Figure					
FCC Part 15B Class B 1GHz-18GHz - 2 					

No.	Frequency (MHz)	Results (dB μ V/m)	Factor (dB)	Limit (dB μ V/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	5250.000	61.44	3.55	74.0	-12.56	Peak	325.00	100	H	Pass
2	5250.000	42.25	3.55	54.0	-11.75	AV	325.00	100	H	Pass

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if $\text{E[dB}\mu\text{V/m]}=61.44 \text{ dB}\mu\text{V/m}$,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 61.44 - 95.2 = -33.76 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

The report refers only to the sample tested and does not apply to the bulk.

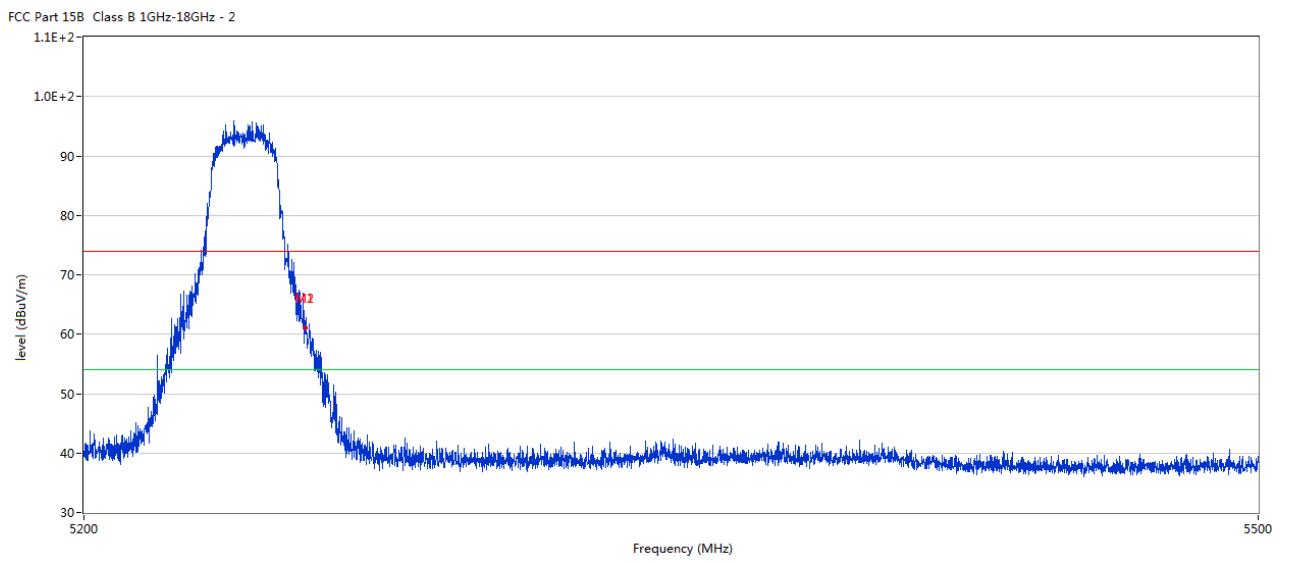
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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5250	PK (dB μ V/m)	61.06 (PK)	Limit
	EIRP (dBm)	-34.14	
Polarity	Vertical		--

Test Figure



No.	Frequency (MHz)	Results (dB μ V/m)	Factor (dB)	Limit (dB μ V/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	5250.000	61.06	3.55	74.0	-12.94	Peak	325.00	100	V	Pass
2	5250.000	41.55	3.55	54.0	-12.45	AV	325.00	100	V	Pass

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]=61.06 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 61.06 - 95.2 = -34.14 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement										
EUT	Developer Board	Test Mode:	Channel 149 (5745MHz)-11a							
Mode	Keeping Transmitting	Input Voltage	120V~							
Temperature	24 deg. C,	Humidity	56% RH							
Test Result:	Pass	Detector	PK							
5725	PK (dB μ V/m)	51.91 (PK)	Limit							
	EIRP (dBm)	-43.29								
Polarity	Horizontal	--	--							
Test Figure										
FCC Part 15B Class B 1GHz-18GHz - 2 										
No.	Frequency (MHz)	Results (dB μ V/m)	Factor (dB)	Limit (dB μ V/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	5725.000	51.91	3.83	74.0	-22.09	Peak	51.00	100	H	Pass

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m] = 51.91 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 51.91 - 95.2 = -43.29 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement										
EUT	Developer Board		Test Mode:	Channel 149 (5745MHz)-11a						
Mode	Keeping Transmitting		Input Voltage	120V~						
Temperature	24 deg. C,		Humidity	56% RH						
Test Result:	Pass		Detector	PK						
5725	PK (dB μ V/m)	52.82 (PK)	Limit	-17dBm/MHz						
	EIRP (dBm)	-42.38								
Polarity	Vertical		--	--						
Test Figure										
FCC Part 15B Class B 1GHz-18GHz - 2 										
No.	Frequency (MHz)	Results (dB μ V/m)	Factor (dB)	Limit (dB μ V/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	5725.000	52.82	3.83	74.0	-21.18	Peak	0.00	100	V	Pass

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 52.82 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 52.82 - 95.2 = -42.38 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement					
EUT	Developer Board		Test Mode:	Channel 161 (5805MHz)-11a	
Mode	Keeping Transmitting		Input Voltage	120V~	
Temperature	24 deg. C,		Humidity	56% RH	
Test Result:	Pass		Detector	PK	
5850	PK (dB μ V/m)	43.32 (PK)	Limit	-17dBm/MHz	
	EIRP (dBm)	-51.88			
Polarity	Horizontal		--	--	

Test Figure					
FCC Part 15B Class B 1GHz-18GHz - 2 					

No.	Frequency (MHz)	Results (dB μ V/m)	Factor (dB)	Limit (dB μ V/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	5850.000	43.32	3.83	74.0	-30.68	Peak	87.00	100	H	Pass

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 43.32 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 43.32 - 95.2 = -51.88 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement										
EUT	Developer Board		Test Mode:	Channel 161 (5805MHz)-11a						
Mode	Keeping Transmitting		Input Voltage	120V~						
Temperature	24 deg. C,		Humidity	56% RH						
Test Result:	Pass		Detector	PK						
5850	PK (dB μ V/m)	42.50 (PK)	Limit	-17dBm/MHz						
	EIRP (dBm)	-52.70								
Polarity	Vertical		--	--						
Test Figure										
FCC Part 15B Class B 1GHz-18GHz - 2 										
No.	Frequency (MHz)	Results (dB μ V/m)	Factor (dB)	Limit (dB μ V/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	5850.000	42.50	3.83	74.0	-31.50	Peak	360.00	100	V	Pass

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m] = 42.50 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 42.50 - 95.2 = -52.70 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5150	PK (dB μ V/m)	50.21 (PK)	Limit
	EIRP (dBm)	-44.99	
Polarity	Horizontal		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 50.21 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 50.21 - 95.2 = -44.99 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5150	PK (dB μ V/m)	45.89 (PK)	Limit
	EIRP (dBm)	-49.31	
Polarity	Vertical		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 45.89 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 45.89 - 95.2 = -49.31 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement				
EUT	Developer Board		Test Mode:	Channel 48 (5240MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5250	PK (dB μ V/m)	60.79 (PK)	Limit	-27dBm/MHz
	AV (dB μ V/m)	42.05 (AV)		
	EIRP (dBm)	-34.41		
Polarity	Horizontal			

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 60.79 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 60.79 - 95.2 = -34.41 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement				
EUT	Developer Board		Test Mode:	Channel 48 (5240MHz)-11n/HT20
Mode	Keeping Transmitting		Input Voltage	120V~
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
5250	PK (dB μ V/m)	59.28 (PK)	Limit	-27dBm/MHz
	AV (dB μ V/m)	41.33 (AV)		
	EIRP (dBm)	-35.92		
Polarity	Vertical		--	--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 59.28 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 59.28 - 95.2 = -35.92 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

The report refers only to the sample tested and does not apply to the bulk.

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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5725	PK (dB μ V/m)	48.67 (PK)	Limit
	EIRP (dBm)	-46.53	
Polarity	Horizontal		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 48.67 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 48.67 - 95.2 = -46.53 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5725	PK (dB μ V/m)	47.91 (PK)	Limit
	EIRP (dBm)	-47.29	
Polarity	Vertical		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 47.91 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 47.91 - 95.2 = -47.29 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5850	PK (dB μ V/m)	42.57 (PK)	Limit
	EIRP (dBm)	-52.63	
Polarity	Horizontal		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 42.57 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 42.57 - 95.2 = -52.63 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5850	PK (dB μ V/m)	41.83 (PK)	Limit
	EIRP (dBm)	-53.37	
Polarity	Vertical		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 41.83 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 41.83 - 95.2 = -53.37 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5150	PK (dB μ V/m)	48.70 (PK)	Limit
	EIRP (dBm)	-46.50	
Polarity	Horizontal		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 48.70 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 48.70 - 95.2 = -46.50 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5150	PK (dB μ V/m)	44.56 (PK)	Limit
	EIRP (dBm)	-50.64	
Polarity	Vertical		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 44.56 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 44.56 - 95.2 = -50.64 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5250	PK (dB μ V/m)	59.87(PK)	Limit
	AV (dB μ V/m)	41.05(AV)	
	EIRP (dBm)	-35.33	
Polarity	Horizontal		

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 59.87 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 59.87 - 95.2 = -35.33 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5250	PK (dB μ V/m)	59.17 (PK)	Limit
	AV (dB μ V/m)	40.83 (AV)	
	EIRP (dBm)	-36.03	
Polarity	Vertical		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 59.17 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 59.17 - 95.2 = -36.03 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

The report refers only to the sample tested and does not apply to the bulk.

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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5725	PK (dB μ V/m)	46.92 (PK)	Limit
	EIRP (dBm)	-48.28	
Polarity	Horizontal		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 46.92 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 46.92 - 95.2 = -48.28 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5725	PK (dB μ V/m)	47.25 (PK)	Limit
	EIRP (dBm)	-47.95	
Polarity	Vertical		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 47.25 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 47.25 - 95.2 = -47.95 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5850	PK (dB μ V/m)	40.57 (PK)	Limit
	EIRP (dBm)	-54.63	
Polarity	Horizontal		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 40.57 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 40.57 - 95.2 = -54.63 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5850	PK (dB μ V/m)	40.17 (PK)	Limit
	EIRP (dBm)	-55.03	
Polarity	Vertical		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 40.17 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 40.17 - 95.2 = -55.03 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5150	PK (dB μ V/m)	49.75 (PK)	Limit
	EIRP (dBm)	-45.45	
Polarity	Horizontal		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 49.75 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 49.75 - 95.2 = -45.45 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5150	PK (dB μ V/m)	50.32 (PK)	Limit
	EIRP (dBm)	-44.88	
Polarity	Vertical		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 50.32 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 50.32 - 95.2 = -44.88 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

3.5150MHz and 5250MHz all have been test ,only worse case is reported.

The report refers only to the sample tested and does not apply to the bulk.

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Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5850	PK (dB μ V/m)	42.39 (PK)	Limit
	EIRP (dBm)	-52.81	
Polarity	Horizontal		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 42.39 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 42.39 - 95.2 = -52.81 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

Restricted band Measurement			
EUT	Developer Board		Test Mode:
Mode	Keeping Transmitting		Input Voltage
Temperature	24 deg. C,		Humidity
Test Result:	Pass		Detector
5850	PK (dB μ V/m)	40.98 (PK)	Limit
	EIRP (dBm)	-54.22	
Polarity	Vertical		--

Remark: 1. According to KDB 789033 D02 General UNII Test Procedures New Rules v01 section G) d) (ii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows:

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2$$

For Example, if E[dB μ V/m]= 40.98 dB μ V/m,

$$\text{EIRP[dBm]} = \text{E[dB}\mu\text{V/m]} - 95.2 = 40.98 - 95.2 = -54.22 \text{ dBm}$$

2. RBW=1MHz, VBW=3MHz

3.5725MHz and 5850MHz all have been test ,only worse case is reported.

The report refers only to the sample tested and does not apply to the bulk.

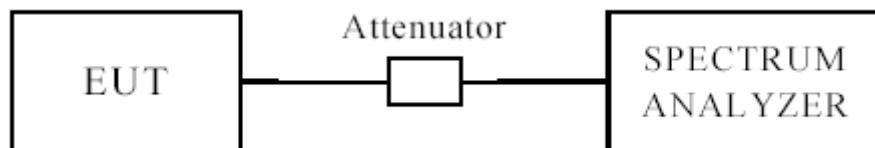
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7.0 Emission Bandwidth

7.1 Test Setup



7.3 Test Procedure for Emission Bandwidth

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set VBW > RBW
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission.
Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

7.4 Test Procedure for Minimum Bandwidth for the Band 5725-5850MHz

1. Set RBW = 100 kHz.
2. Set VBW $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

7.5 Test Procedure for 99% Bandwidth

1. Set center frequency to the nominal EUT channel center frequency
2. Set span = 1.5 times to 5.0 times OBW
3. Set RBW = 1% TO 5% of the OBW
4. Set VBW $\geq 3 \times$ RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Other, peak detection and max mode (until trace stabilizes) shall be used.
6. Use the 99% power bandwidth function of the instrument

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7.6 Test Result

EUT		Developer Board		Model	
Mode		802.11a		Input Voltage	
Temperature		24 deg. C,		Humidity	
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail
26dB Bandwidth					
36	5180	6	22.12	--	Pass
40	5200	6	22.12	--	Pass
48	5240	6	22.20	--	Pass
99% Bandwidth					
36	5180	6	17.07	--	Pass
40	5200	6	17.15	--	Pass
48	5240	6	17.15	--	Pass

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

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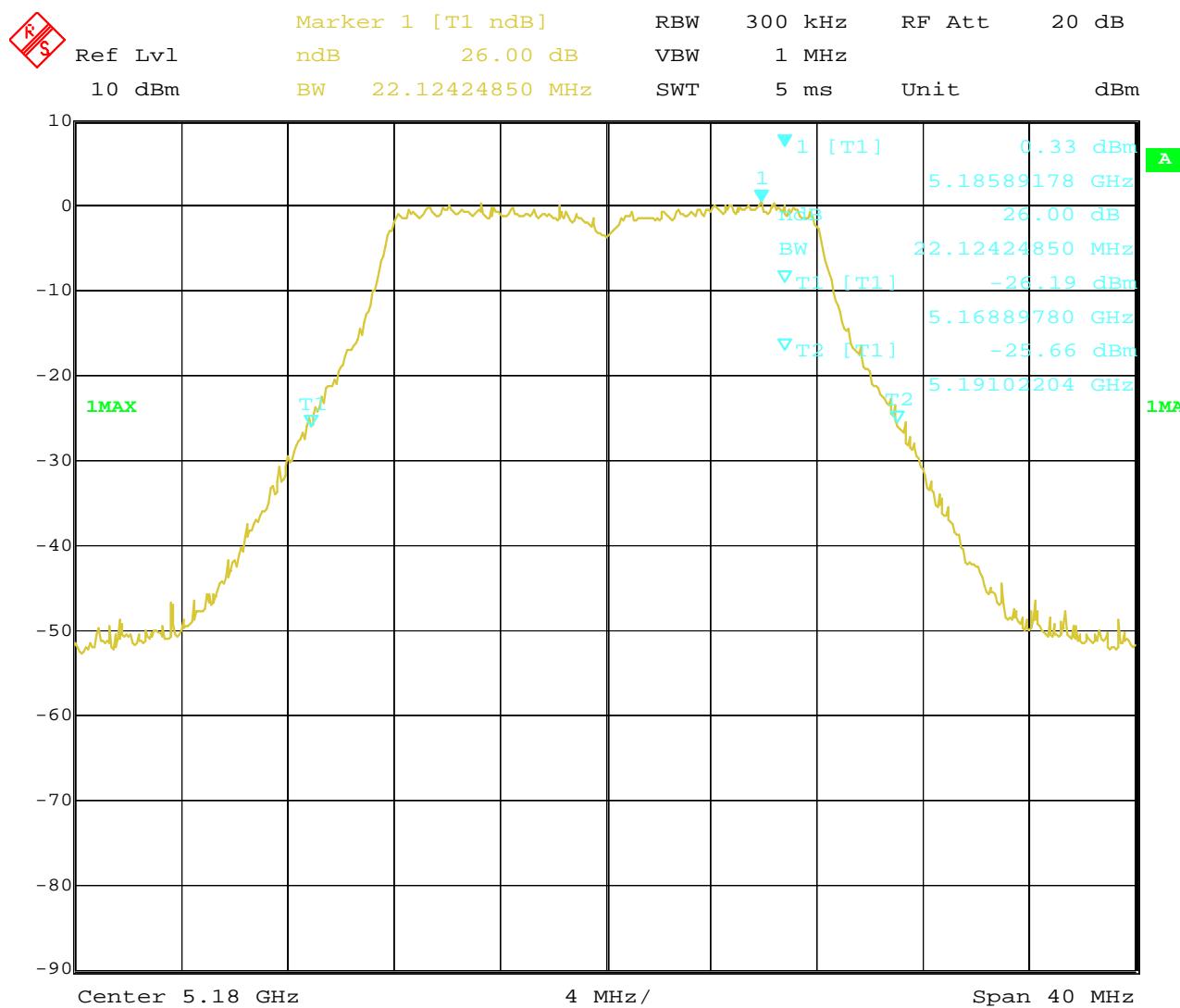
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Test Figure:

26dB Bandwidth

Channel 36



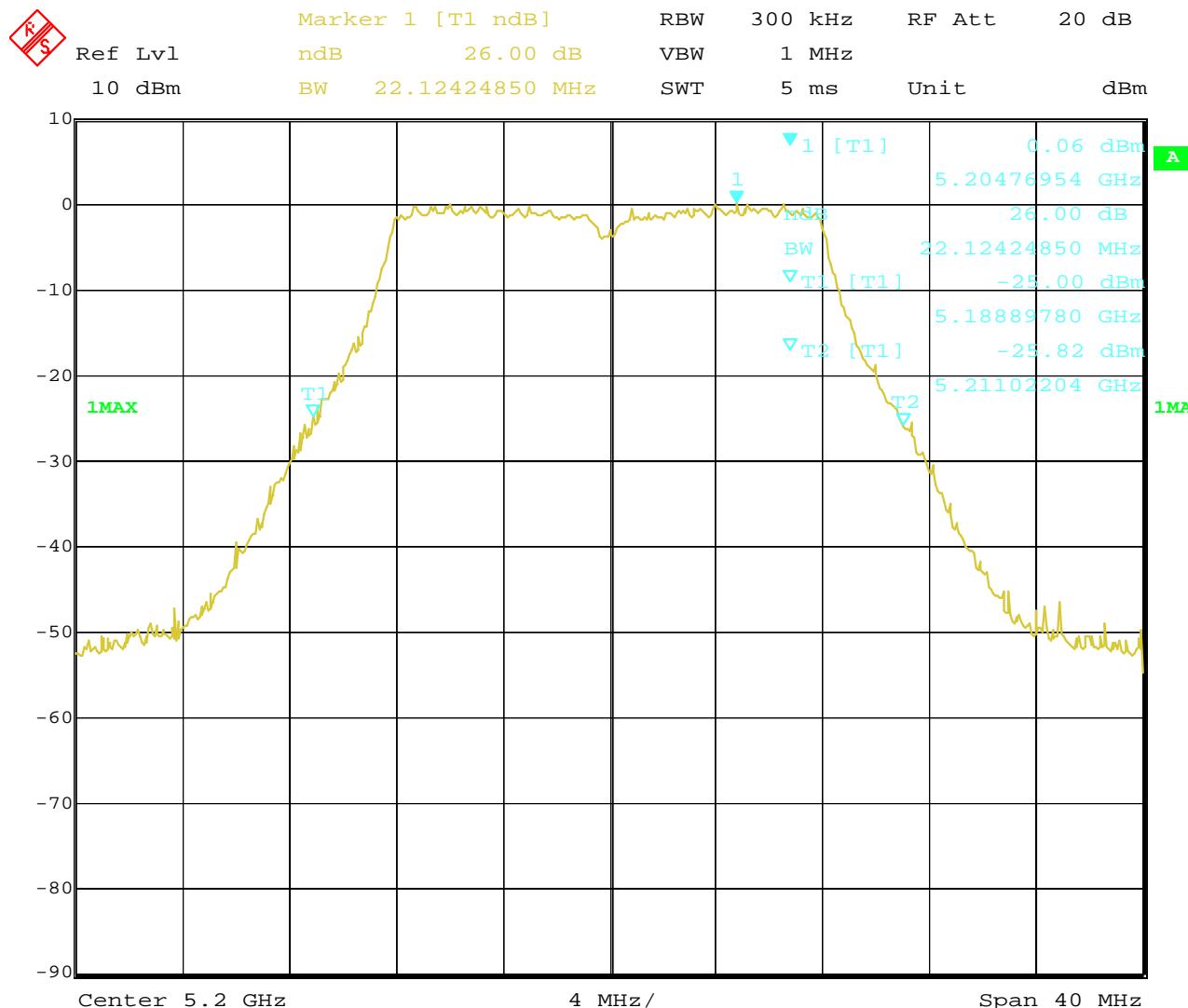
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 40



Date: 25.MAR.2019 11:05:37

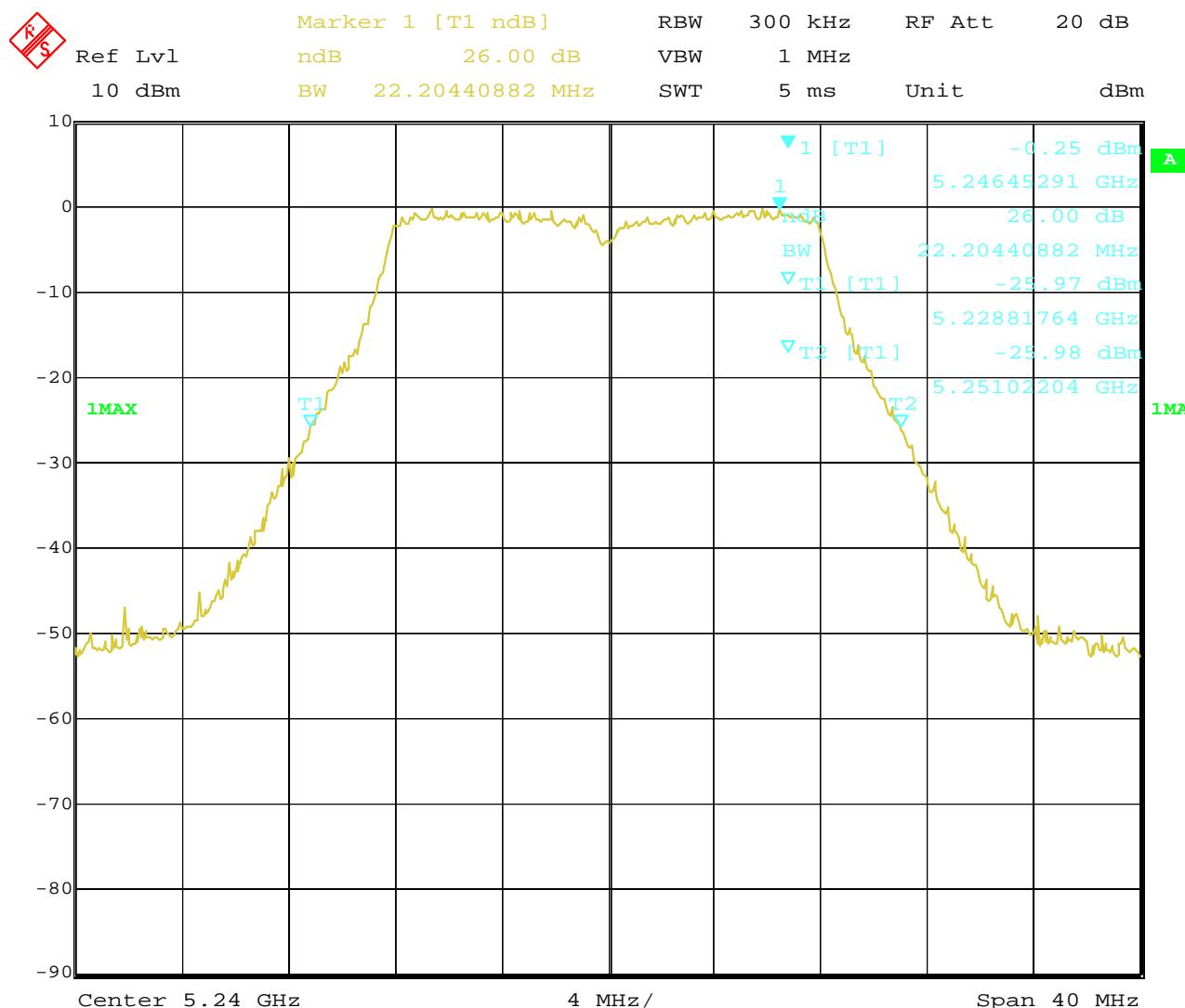
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 48



Date: 25.MAR.2019 11:06:57

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

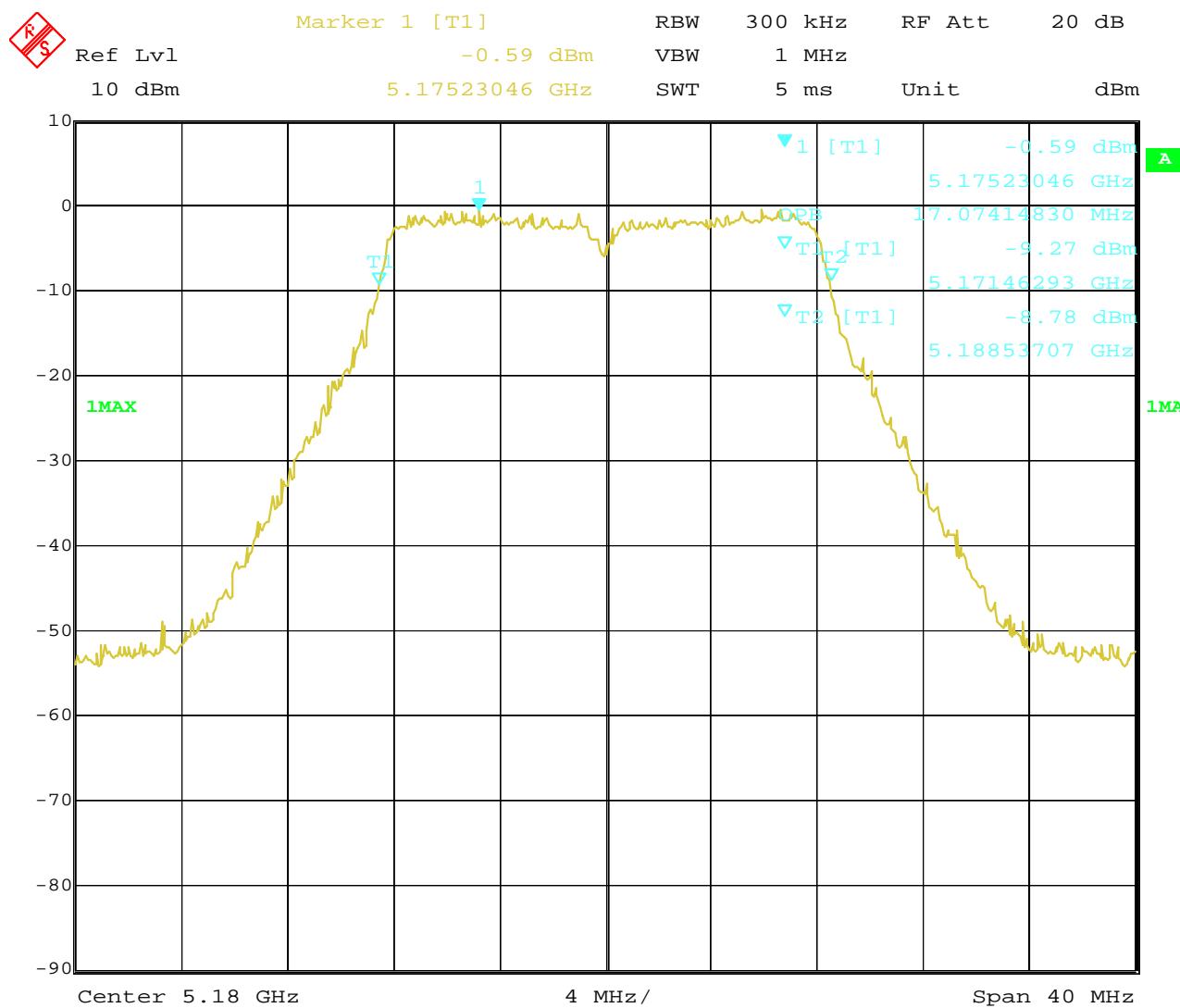
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Figure:

99% Bandwidth

Channel 36



Date: 25.MAR.2019 11:22:55

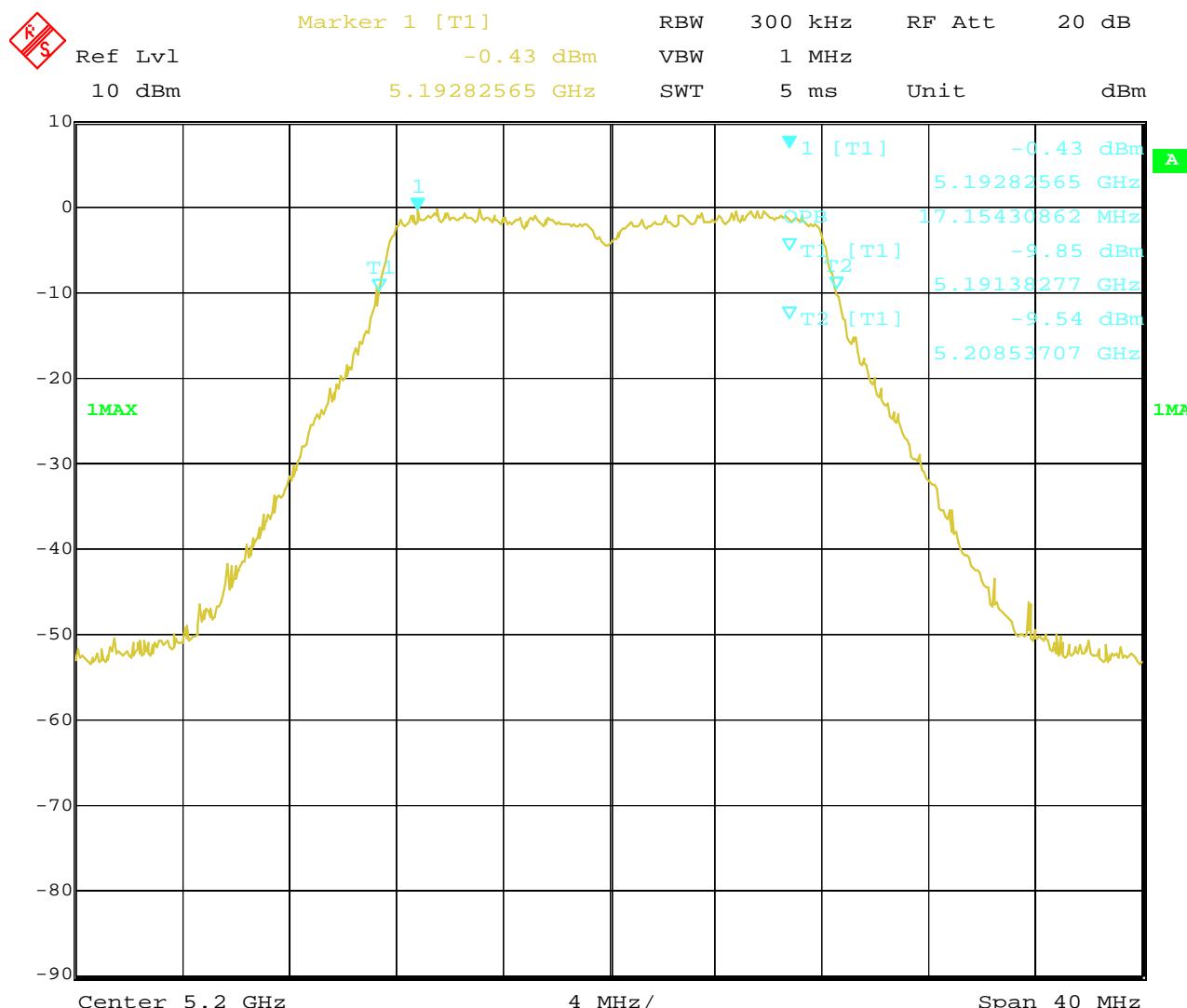
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 40



Date: 25.MAR.2019 11:24:26

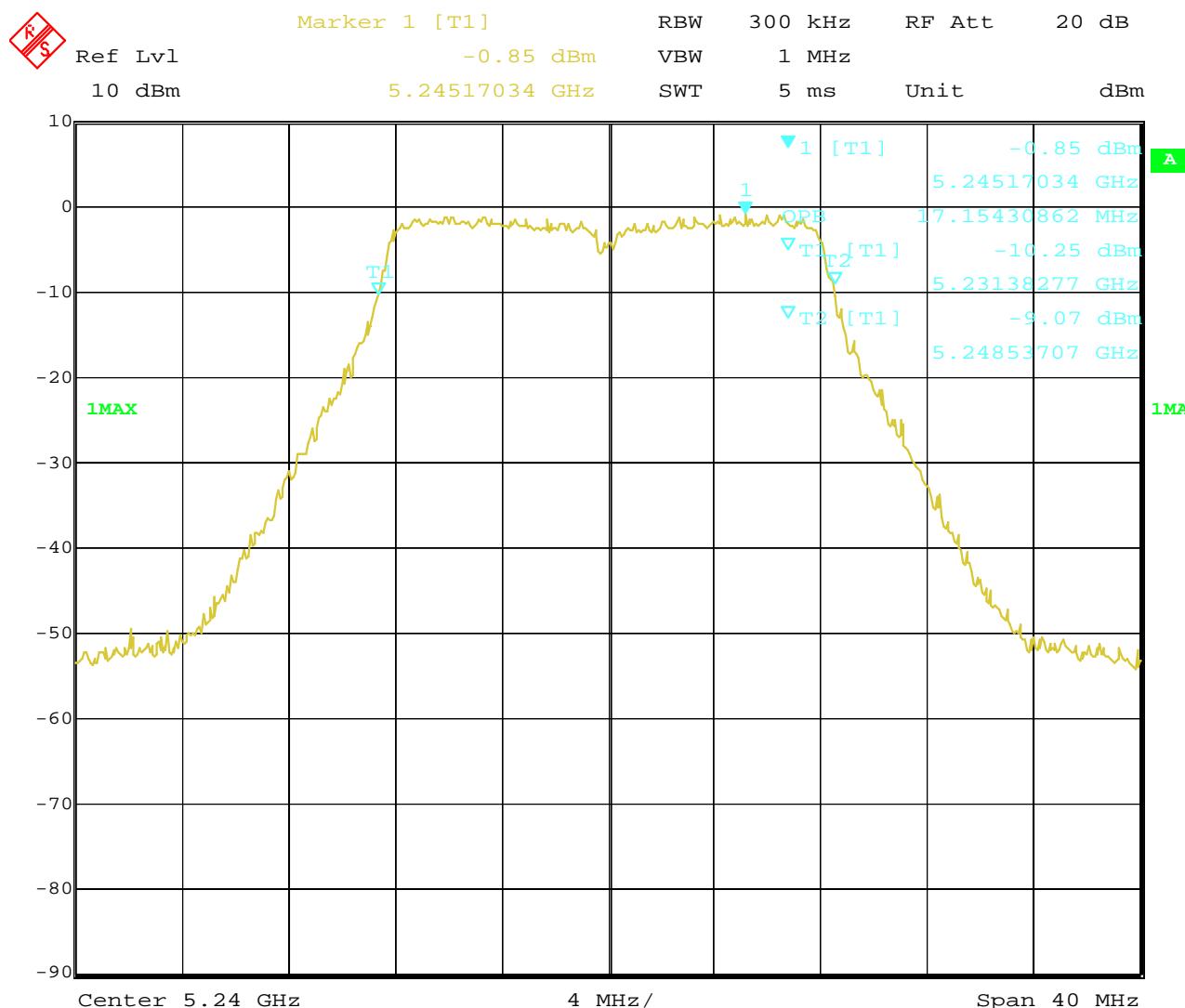
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 48



Date: 25.MAR.2019 11:25:16

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



EUT		Developer Board		Model		DB8
Mode		802.11a		Input Voltage		120V~
Temperature		24 deg. C,		Humidity		56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail	
26dB Bandwidth						
149	5745	6	21.72	--	Pass	
153	5765	6	22.04	--	Pass	
161	5805	6	21.88	--	Pass	
6dB Bandwidth						
149	5745	6	16.33	0.5	Pass	
153	5765	6	16.39	0.5	Pass	
161	5805	6	16.35	0.5	Pass	
99% Bandwidth						
149	5745	6	17.07	--	Pass	
153	5765	6	17.07	--	Pass	
161	5805	6	17.15	--	Pass	

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

The report refers only to the sample tested and does not apply to the bulk.

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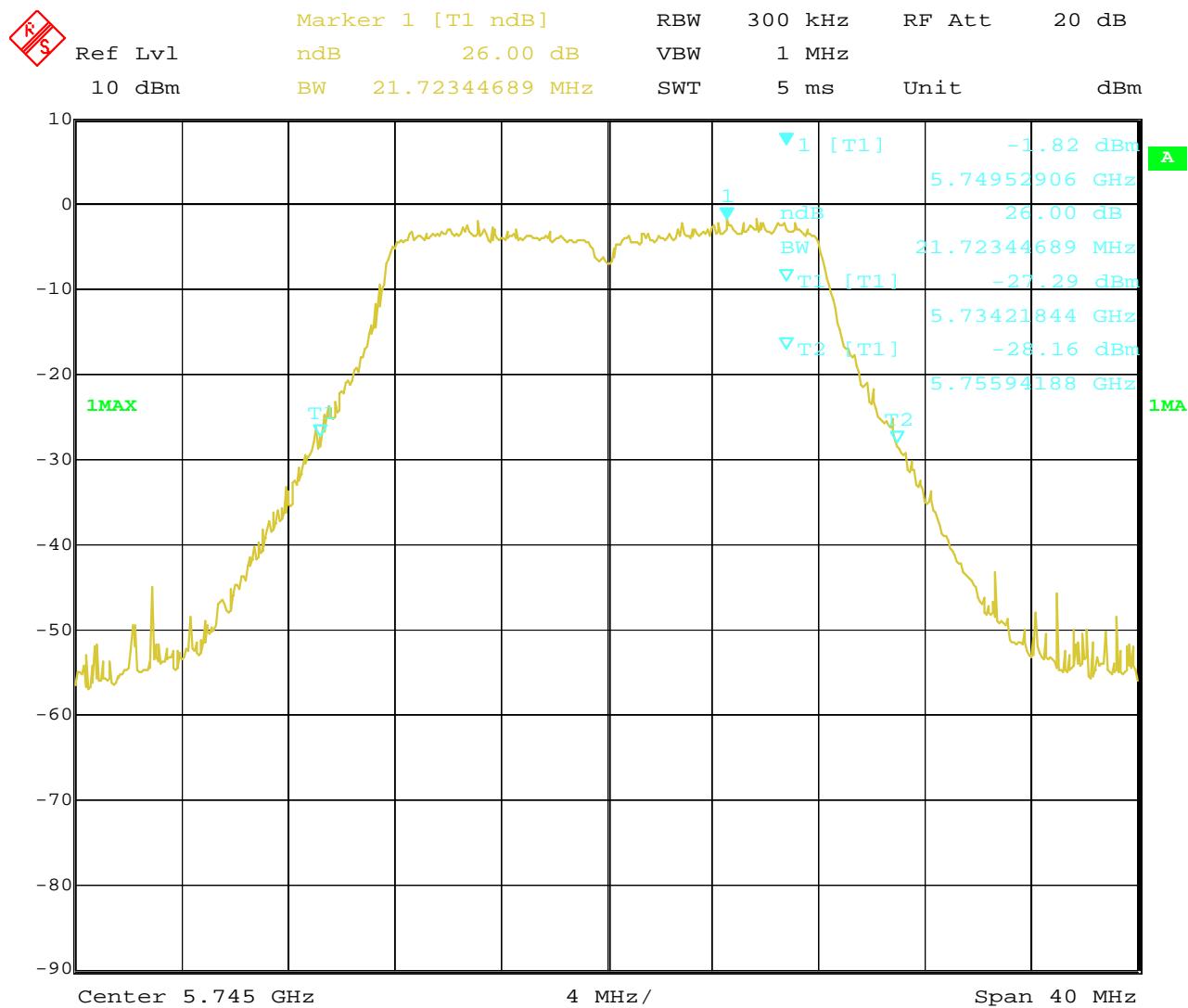
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Figure:

26dB Bandwidth

Channel 149



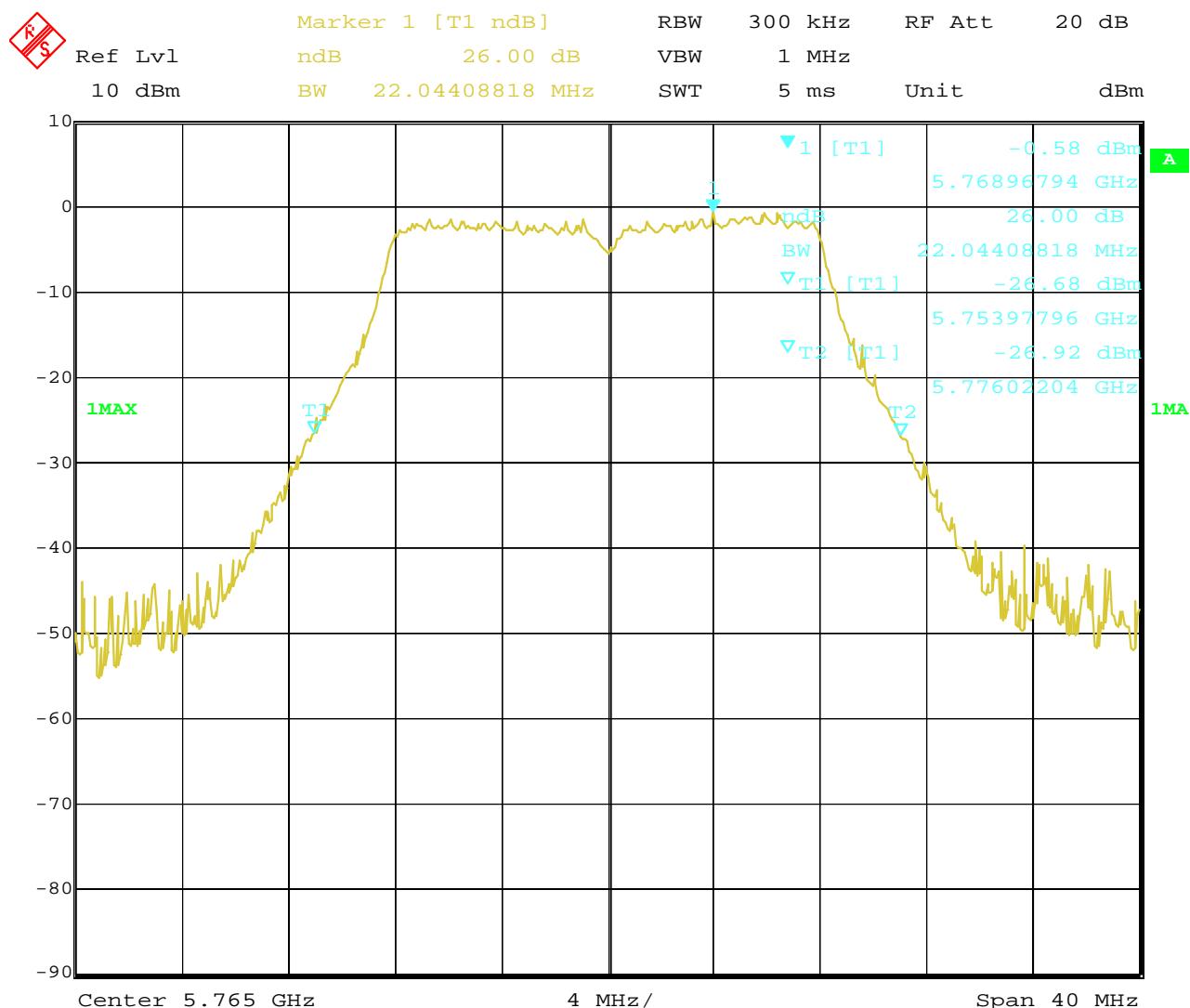
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 153



Date: 11.APR.2019 16:38:02

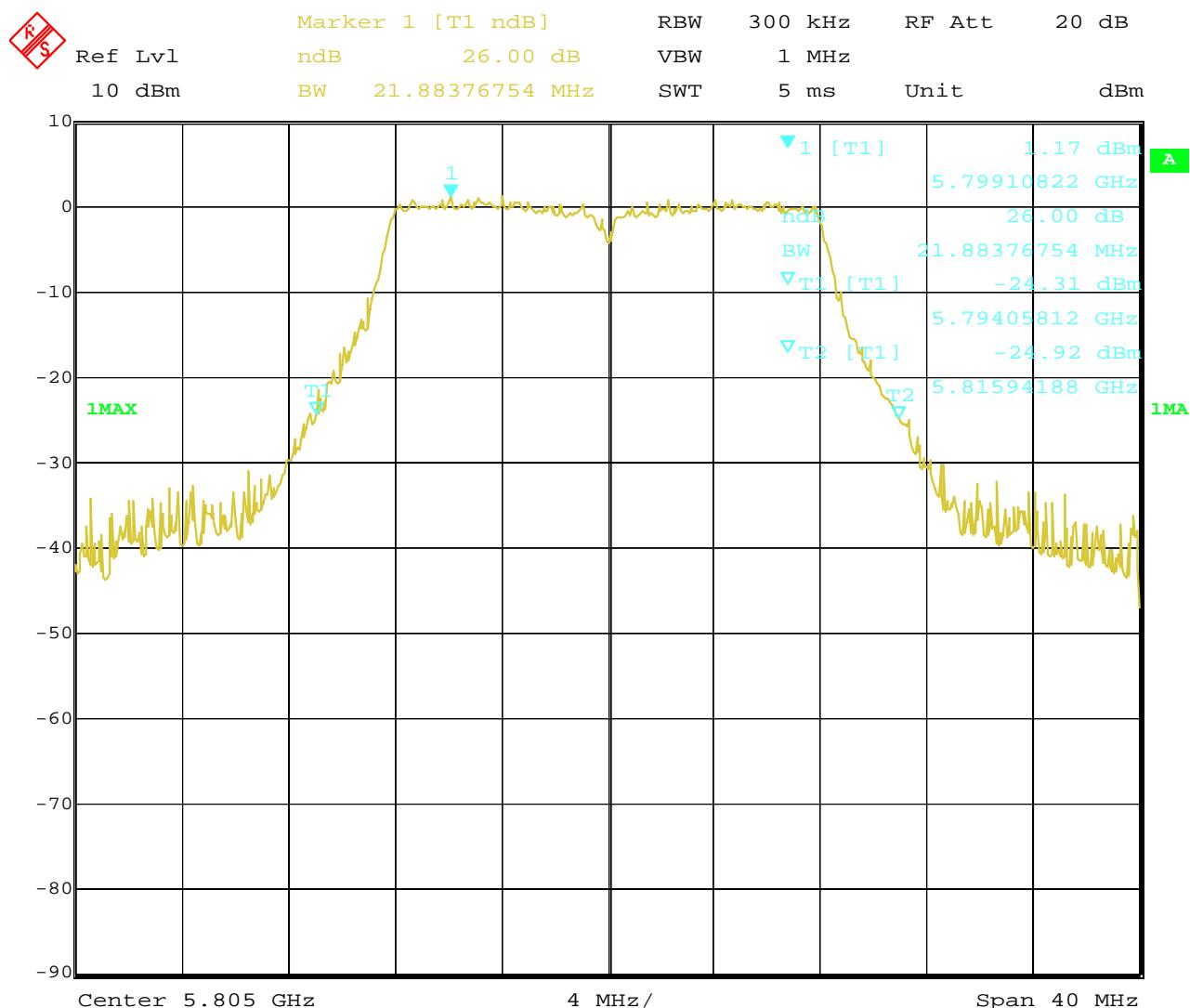
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 161



Date: 11.APR.2019 16:35:26

The report refers only to the sample tested and does not apply to the bulk.

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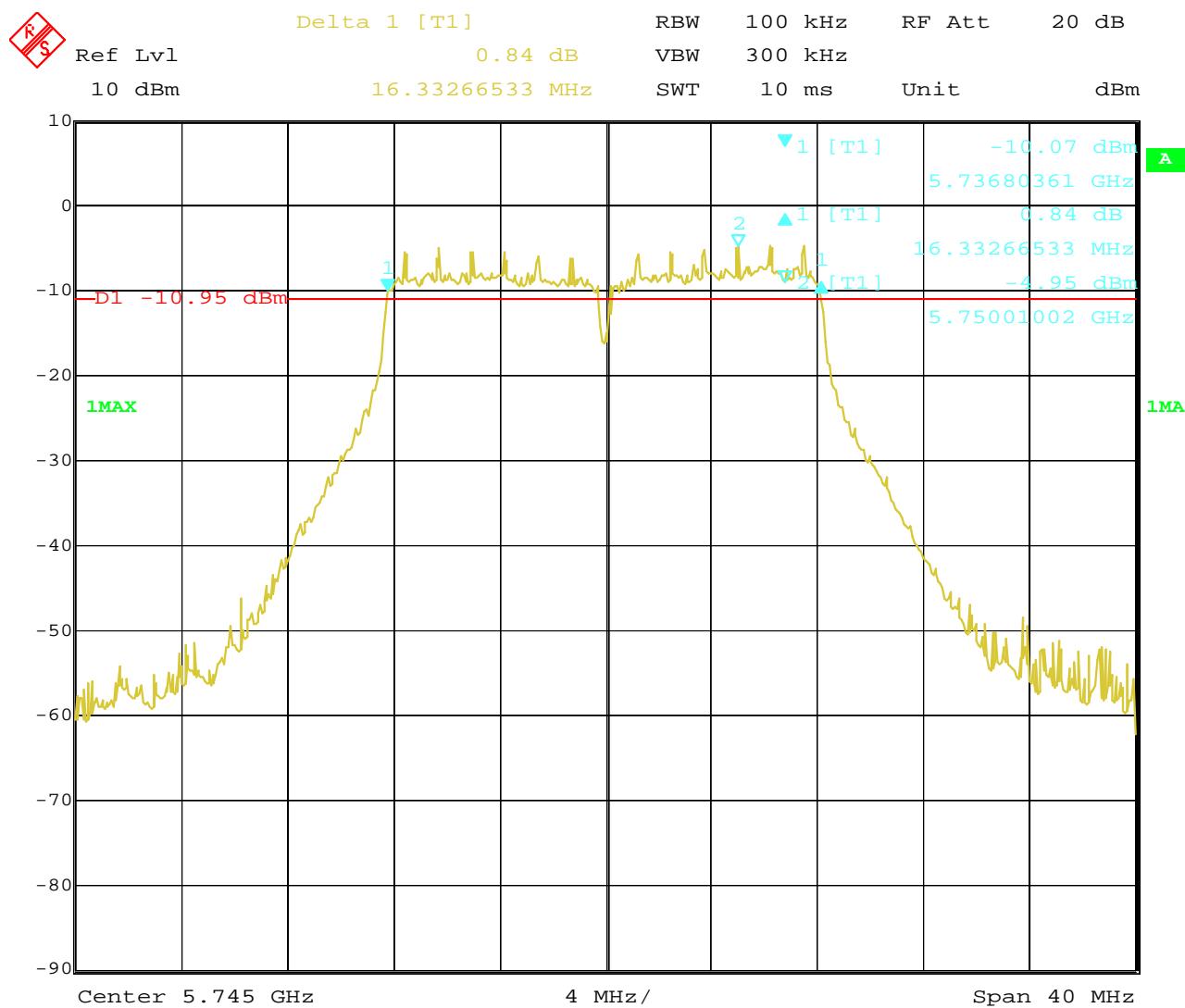
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Figure:

6dB Bandwidth

Channel 149



Date: 11.APR.2019 16:09:36

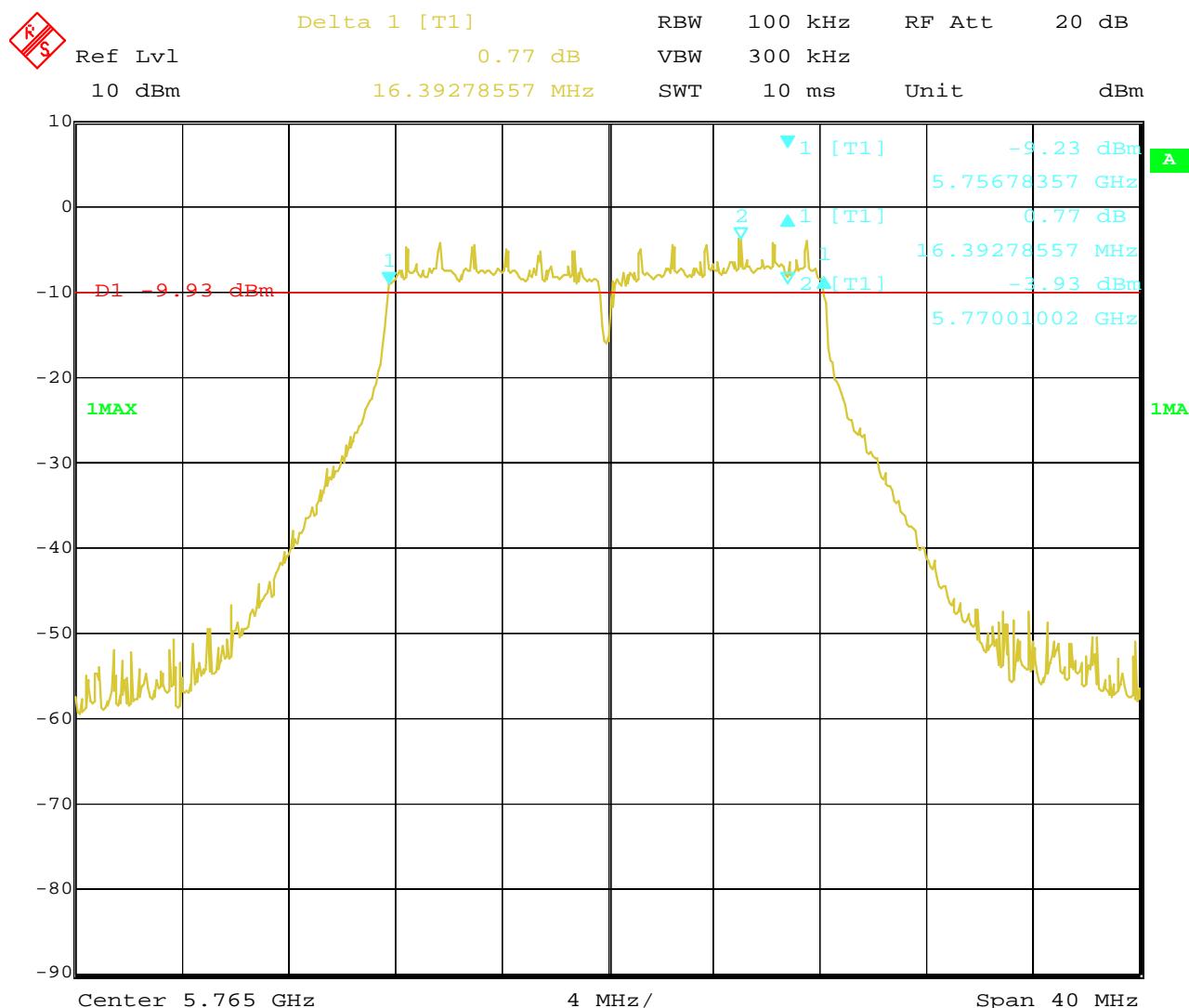
The report refers only to the sample tested and does not apply to the bulk.

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Channel 153



Date: 11.APR.2019 16:15:37

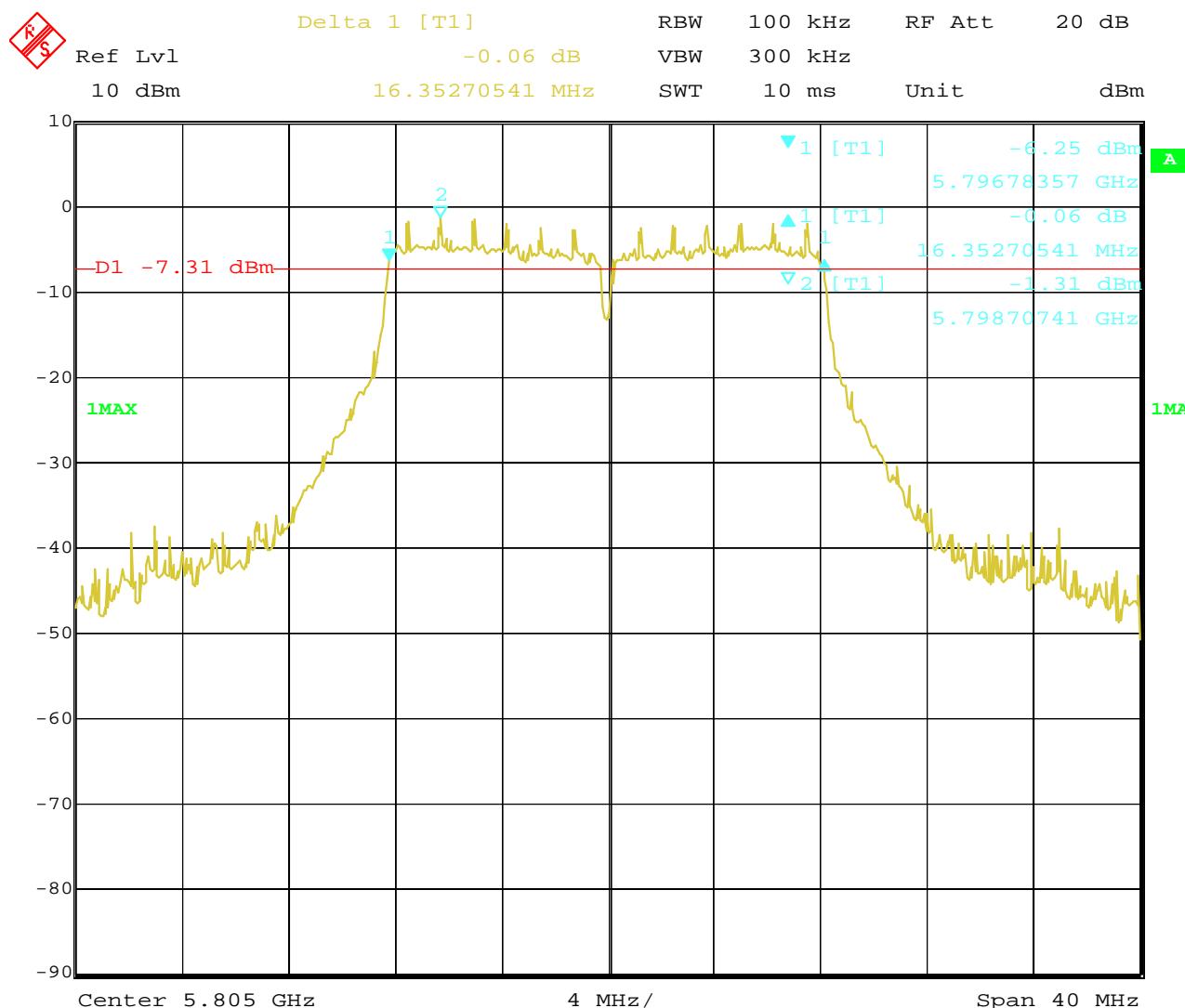
The report refers only to the sample tested and does not apply to the bulk.

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Channel 161



Date: 11.APR.2019 16:16:29

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced either in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

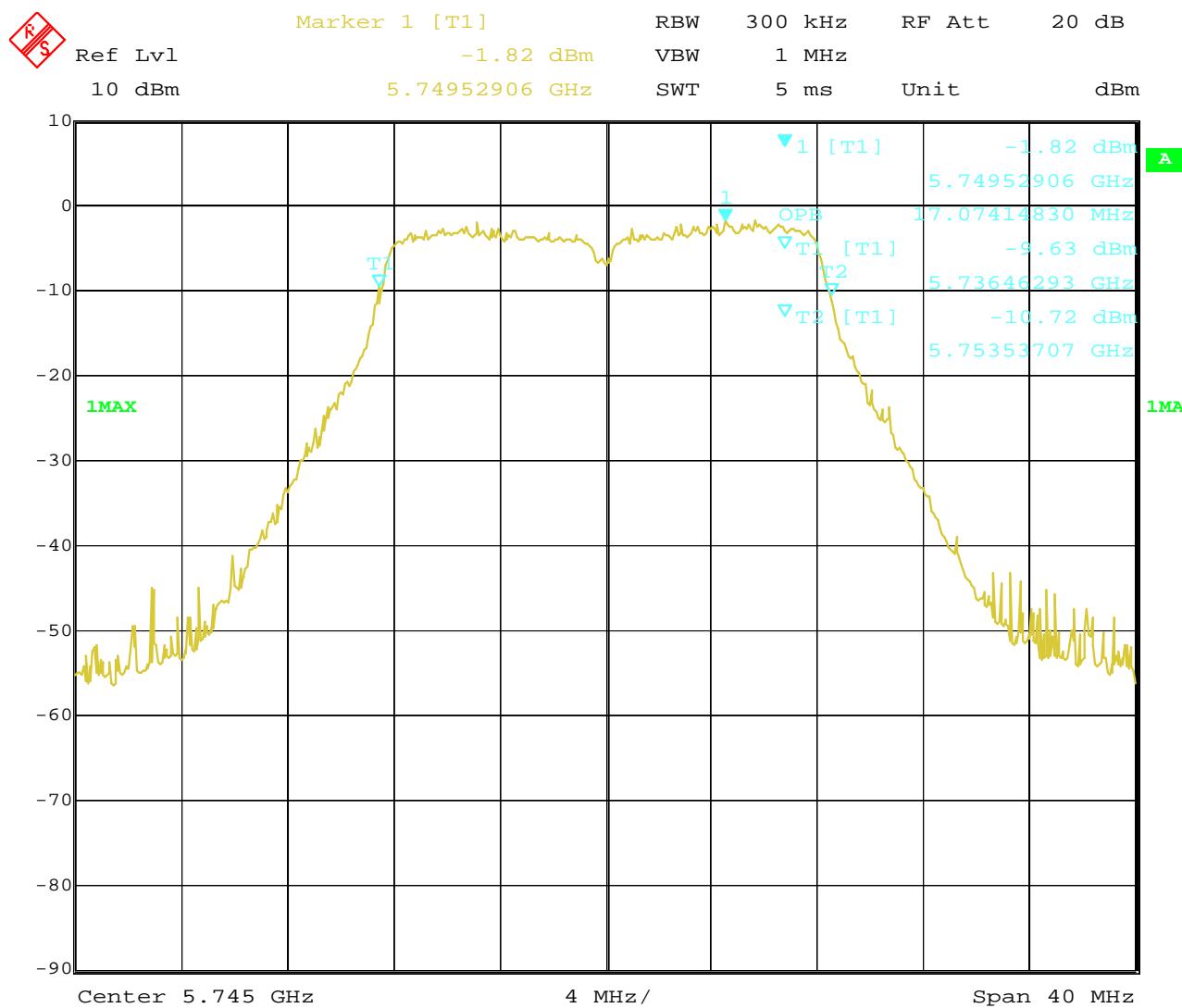
In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Figure:

99% Bandwidth

Channel 149



Date: 11.APR.2019 16:38:53

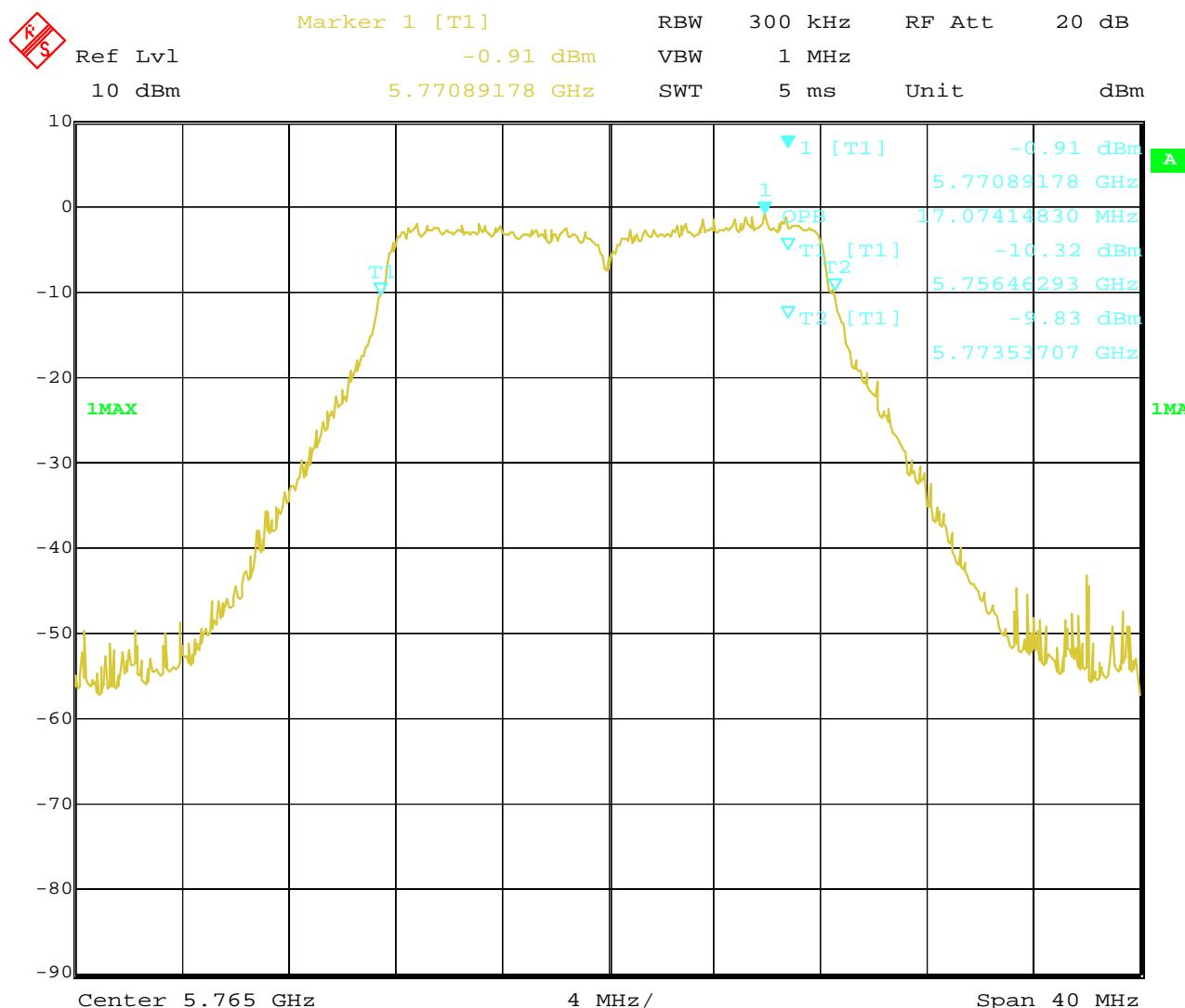
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

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Channel 153



Date: 11.APR.2019 16:36:14

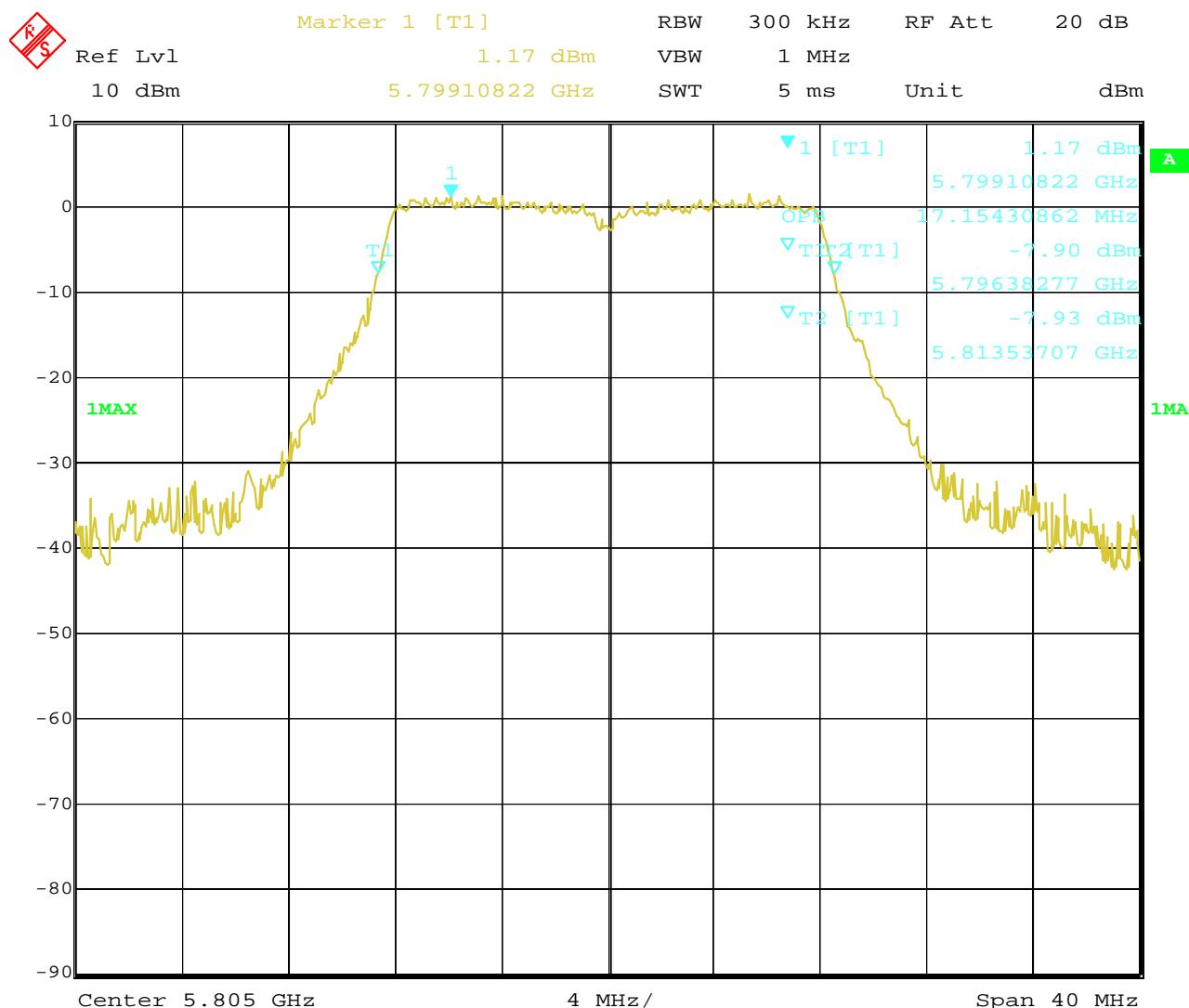
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

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Channel 161



Date: 11.APR.2019 16:35:42

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced either in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



EUT		Developer Board		Model		DB8
Mode		802.11n HT20		Input Voltage		120V~
Temperature		24 deg. C,		Humidity		56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail	
26dB Bandwidth						
36	5180	mcs0	22.69	--	Pass	
40	5200	mcs0	22.53	--	Pass	
48	5240	mcs0	22.61	--	Pass	
99% Bandwidth						
36	5180	mcs0	18.12	--	Pass	
40	5200	mcs0	18.12	--	Pass	
48	5240	mcs0	18.12	--	Pass	

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

The report refers only to the sample tested and does not apply to the bulk.

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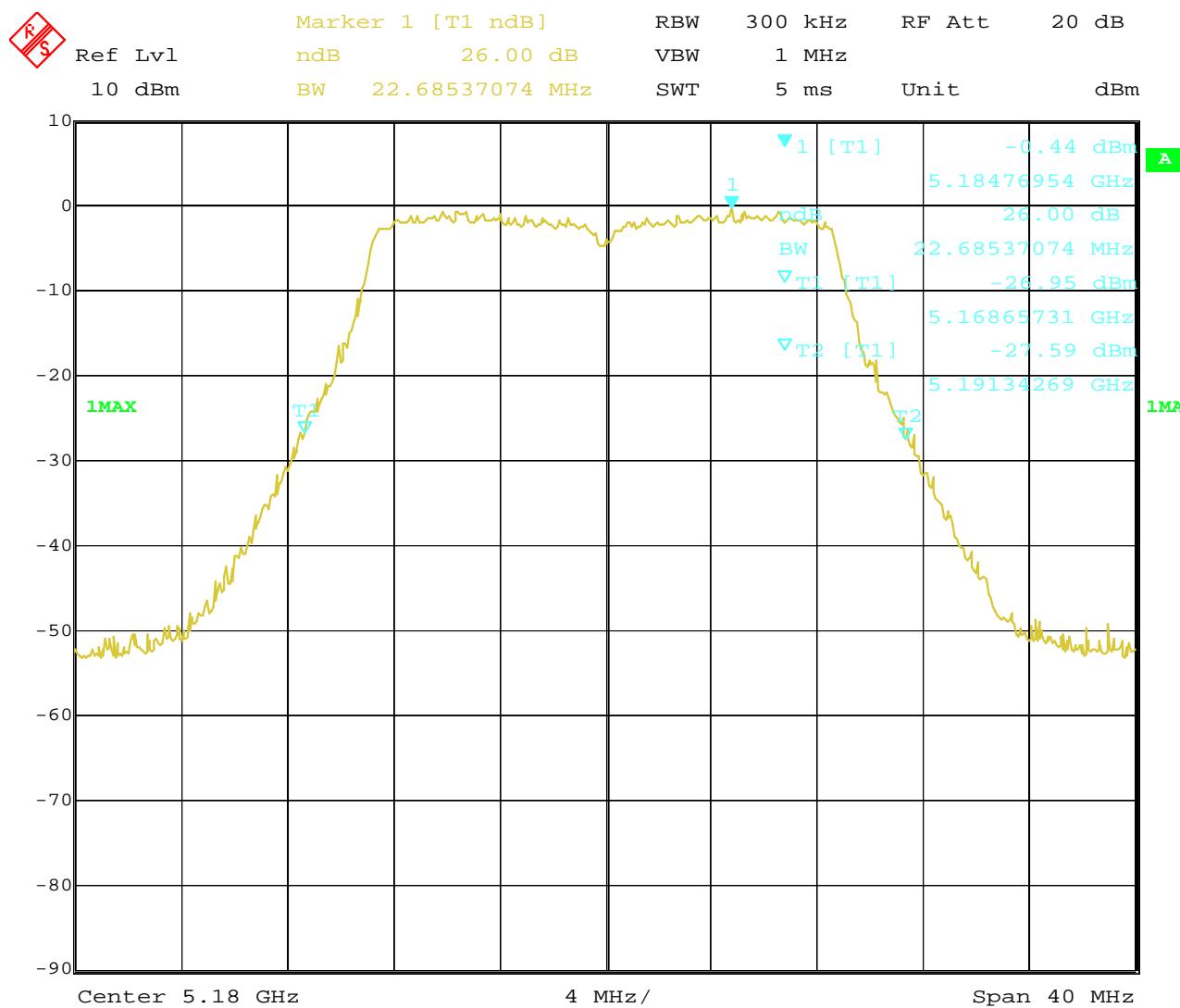
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 36



Date: 25.MAR.2019 11:10:00

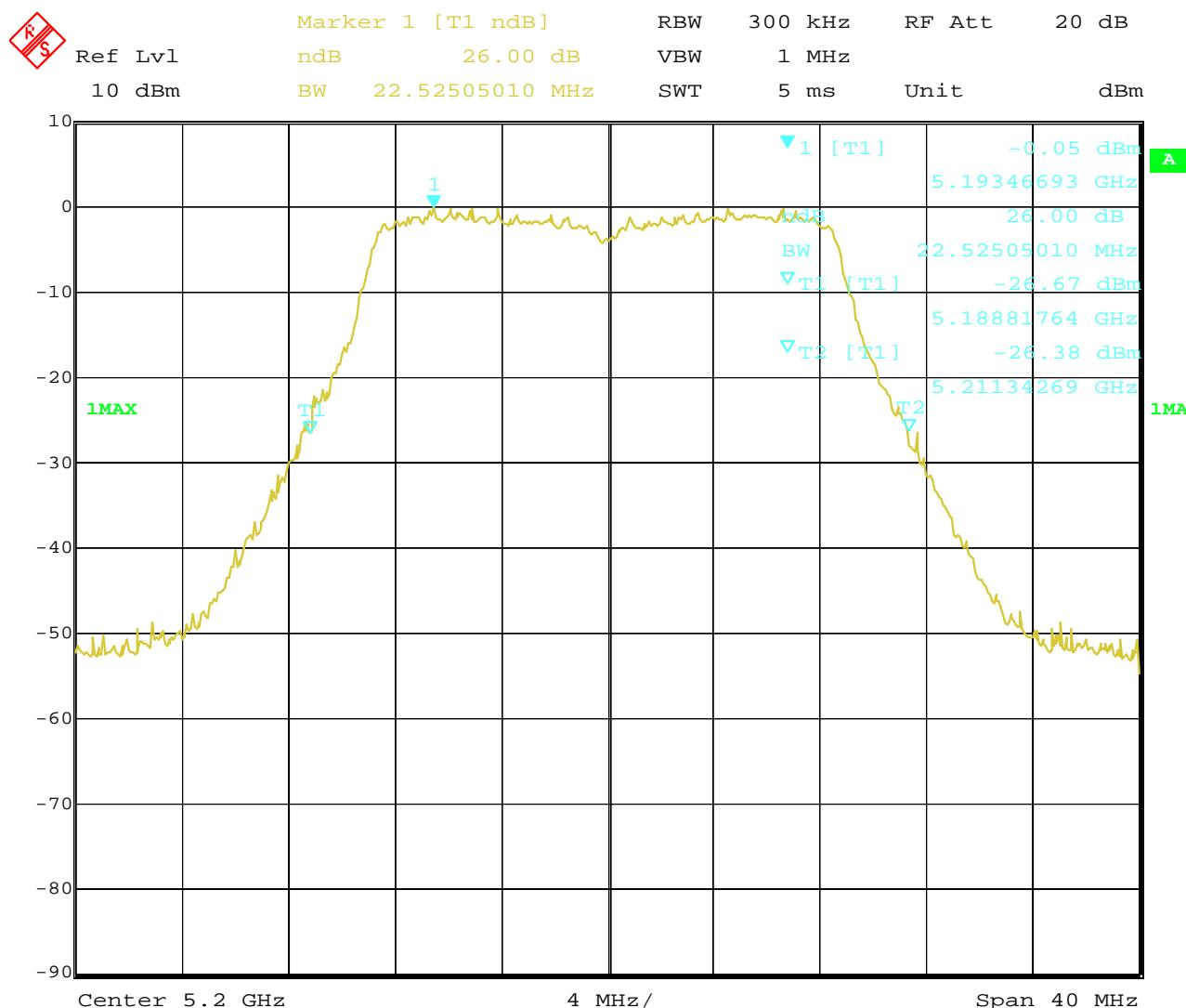
The report refers only to the sample tested and does not apply to the bulk.

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Channel 40



Date: 25.MAR.2019 11:08:56

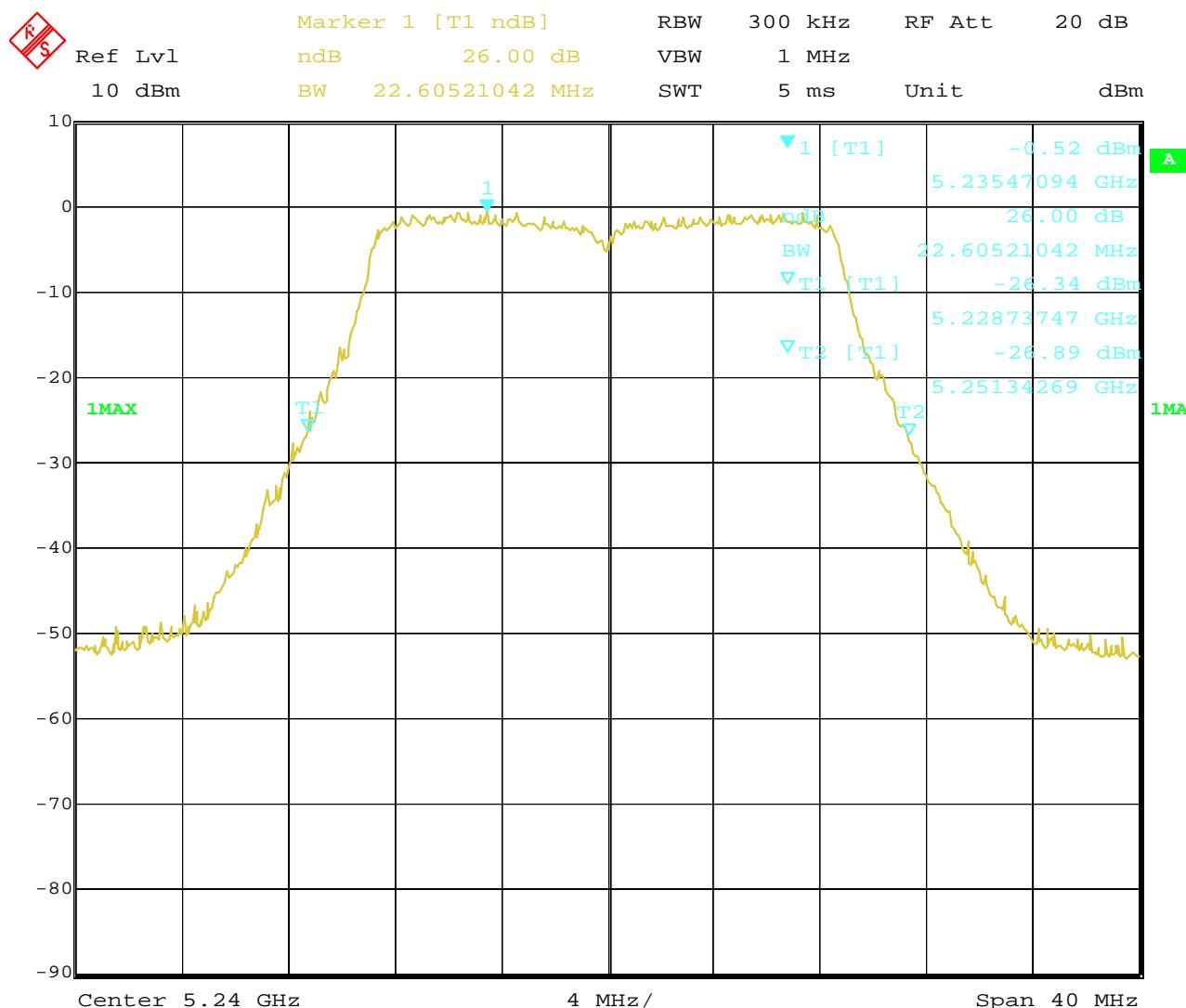
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 48



Date: 25.MAR.2019 11:07:56

The report refers only to the sample tested and does not apply to the bulk.

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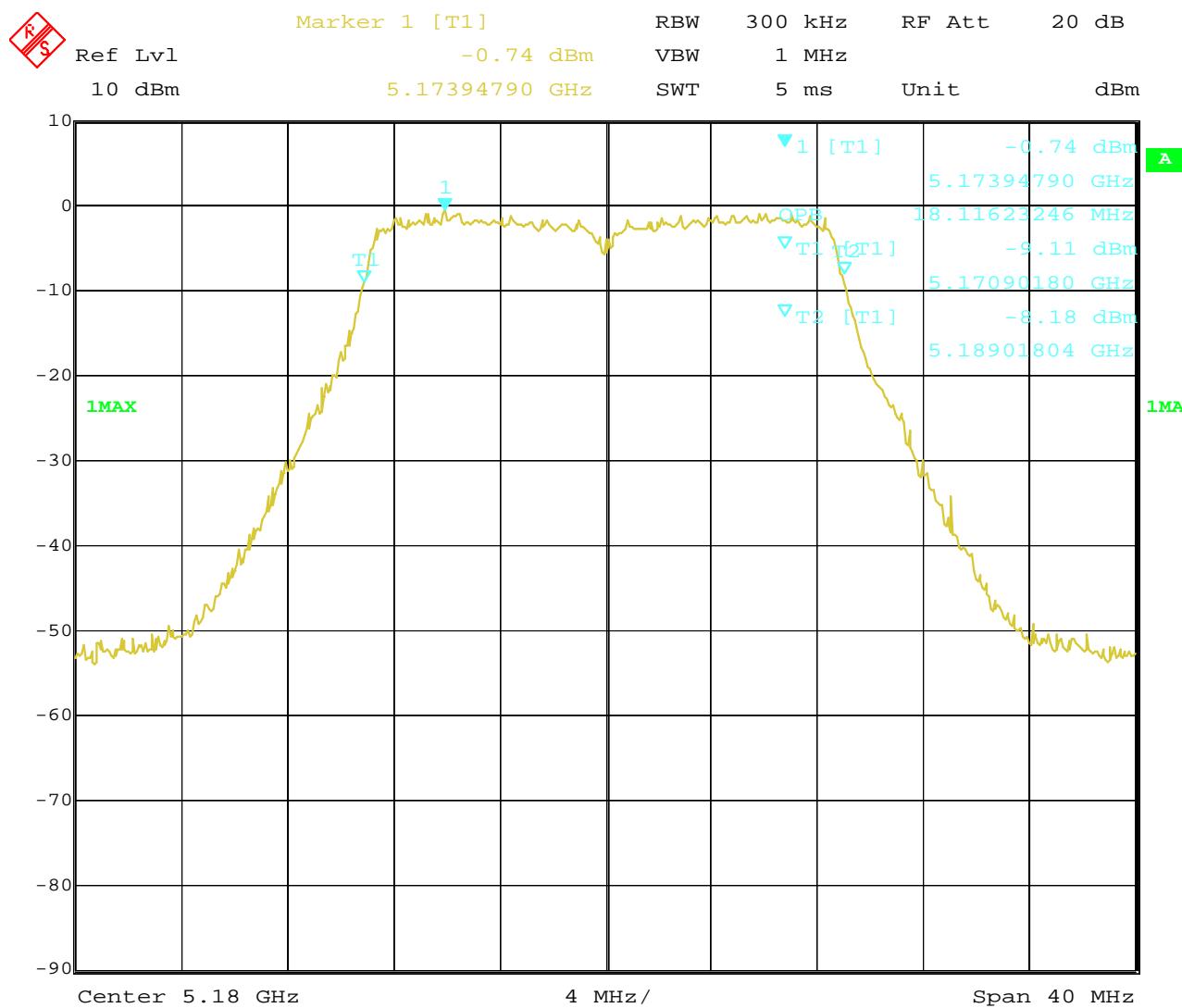
In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 36



Date: 25.MAR.2019 11:29:43

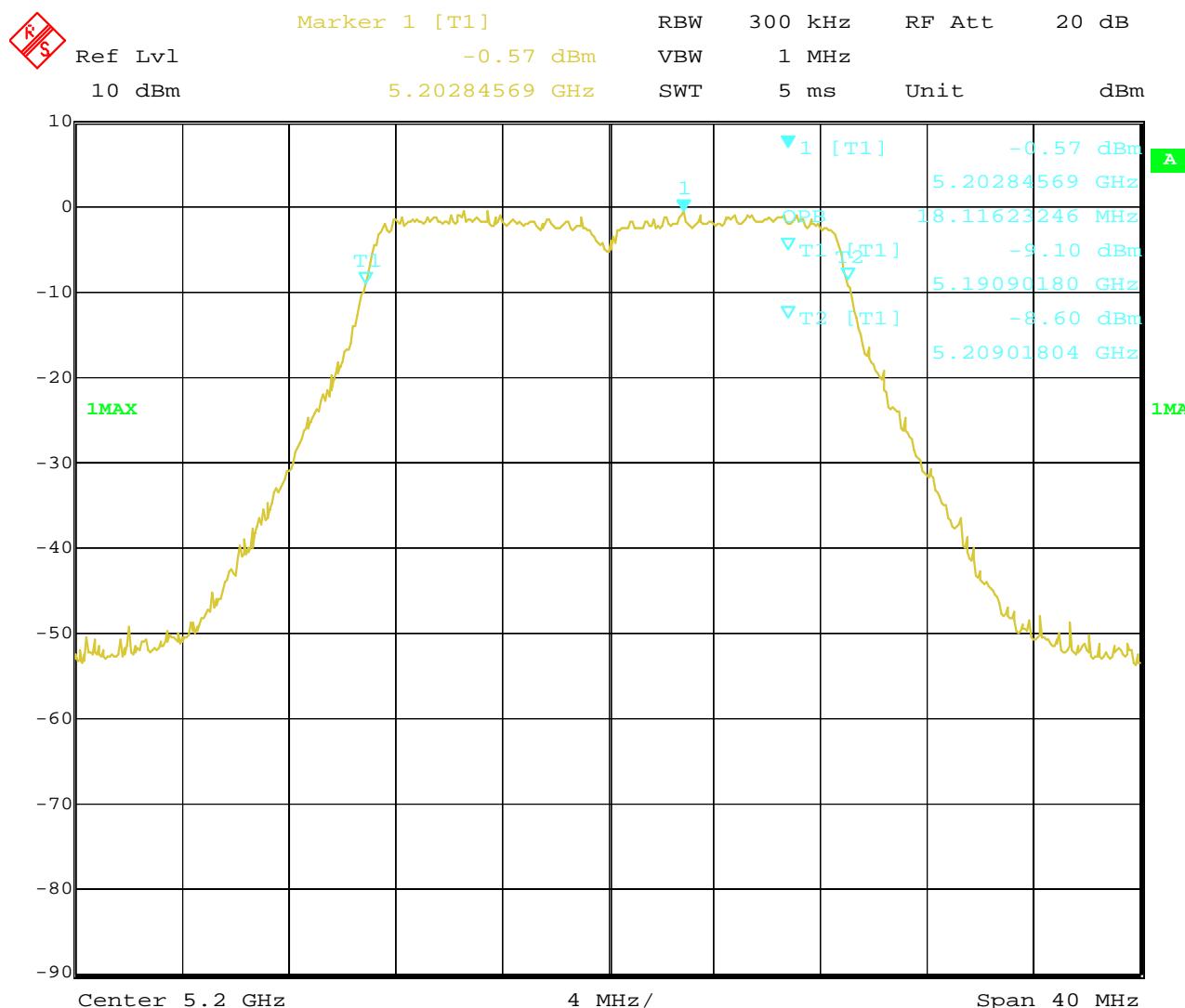
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Channel 40



Date: 25.MAR.2019 11:28:10

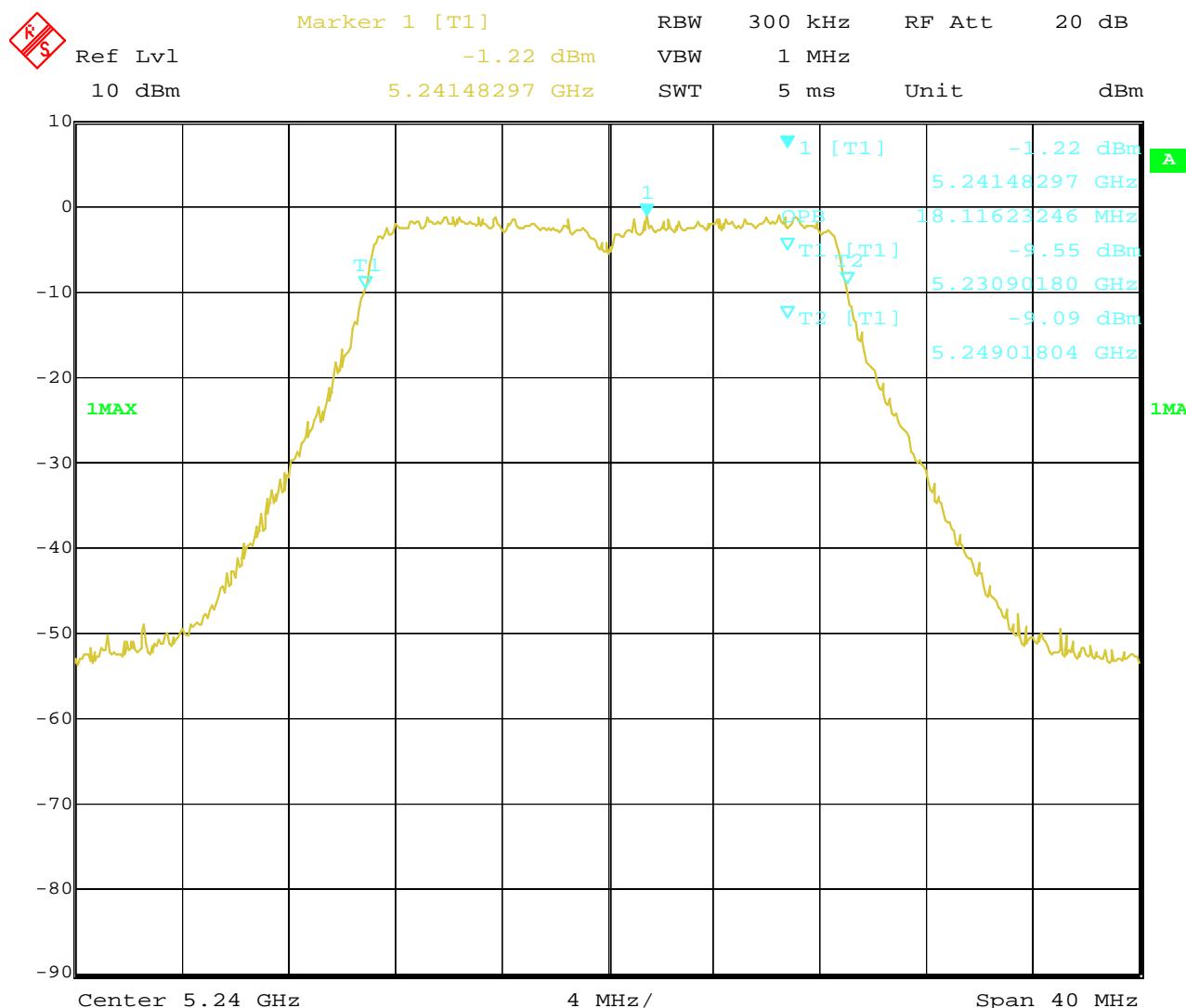
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 48



Date: 25.MAR.2019 11:26:23

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EUT		Developer Board		Model		DB8
Mode		802.11n HT20		Input Voltage		120V~
Temperature		24 deg. C,		Humidity		56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail	
26dB Bandwidth						
149	5745	6	22.44	--	Pass	
153	5765	6	22.04	--	Pass	
161	5805	6	22.36	--	Pass	
6dB Bandwidth						
149	5745	6	17.54	0.5	Pass	
153	5765	6	17.60	0.5	Pass	
161	5805	6	17.31	0.5	Pass	
99% Bandwidth						
149	5745	6	18.04	--	Pass	
153	5765	6	18.04	--	Pass	
161	5805	6	17.96	--	Pass	

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

The report refers only to the sample tested and does not apply to the bulk.

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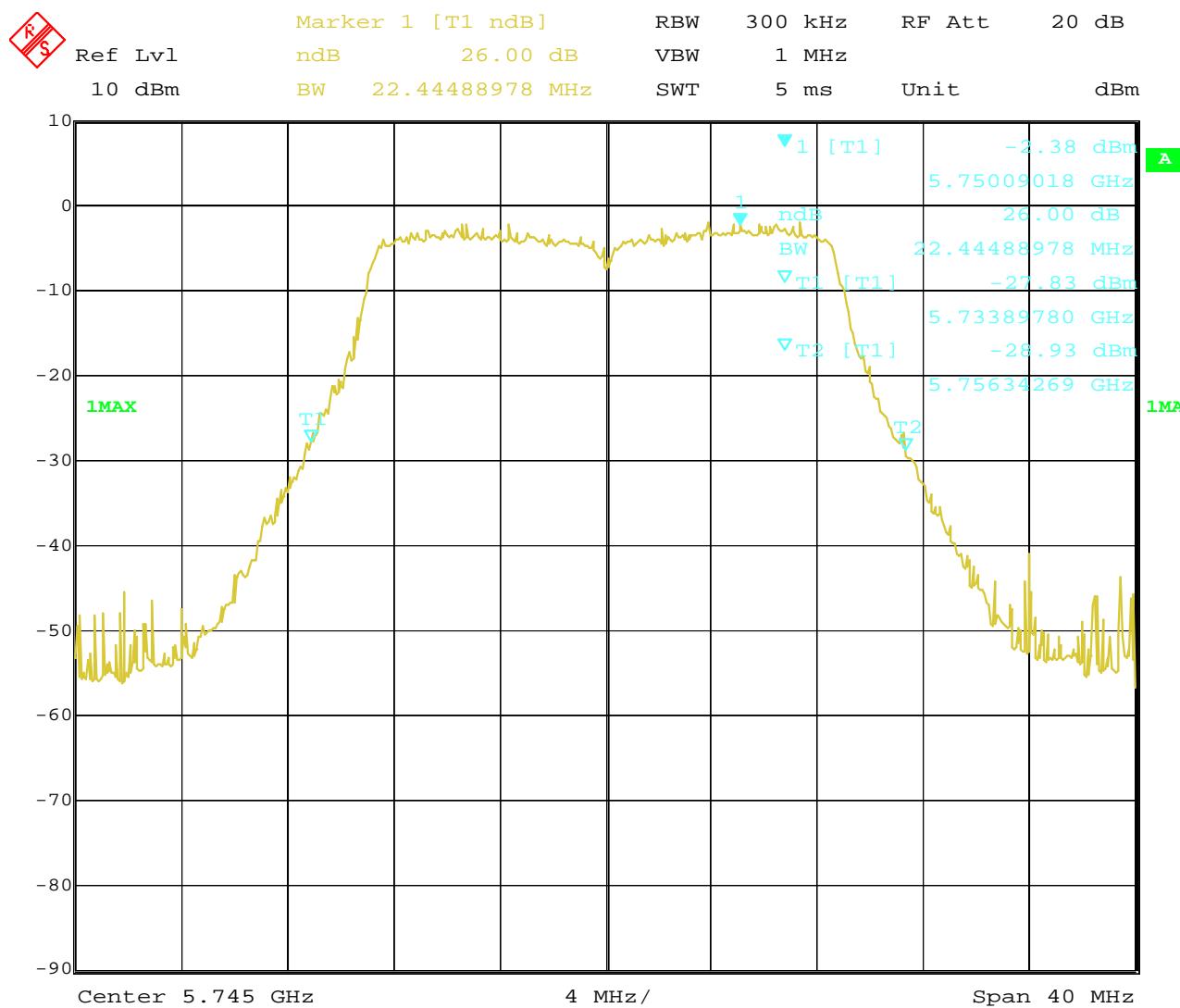
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 149



Date: 11.APR.2019 16:33:25

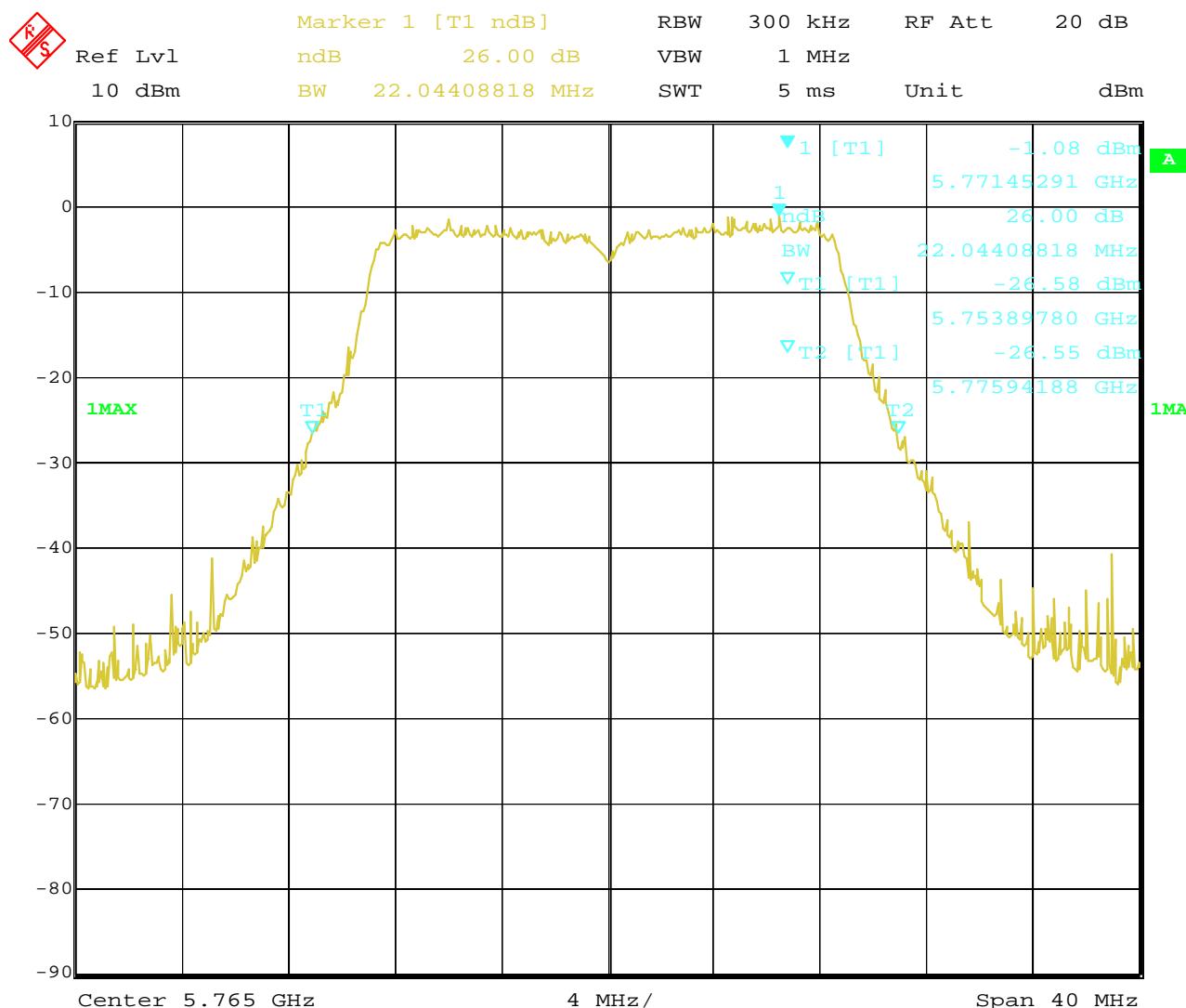
The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 153



Date: 11.APR.2019 16:33:51

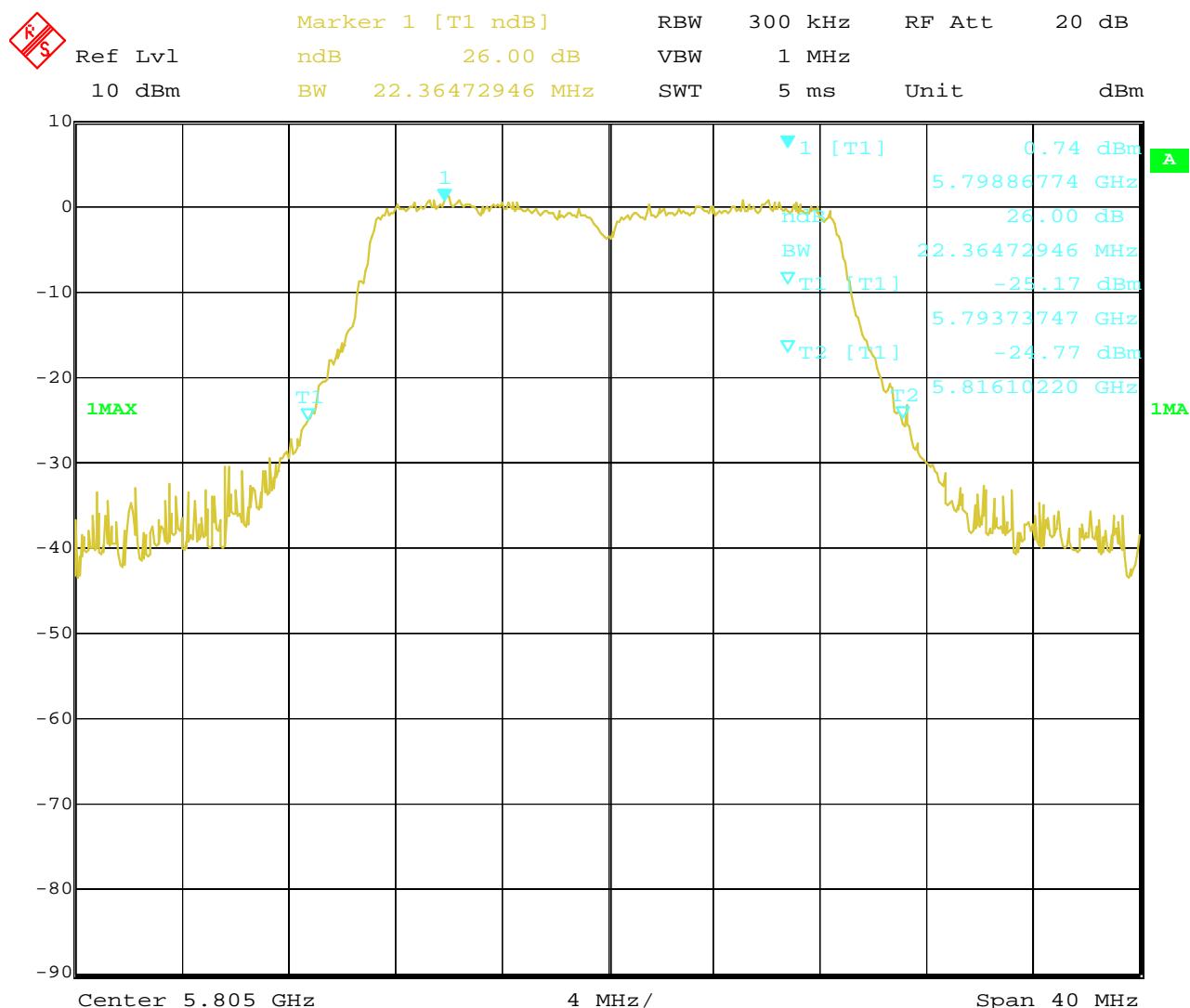
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Channel 161



Date: 11.APR.2019 16:34:52

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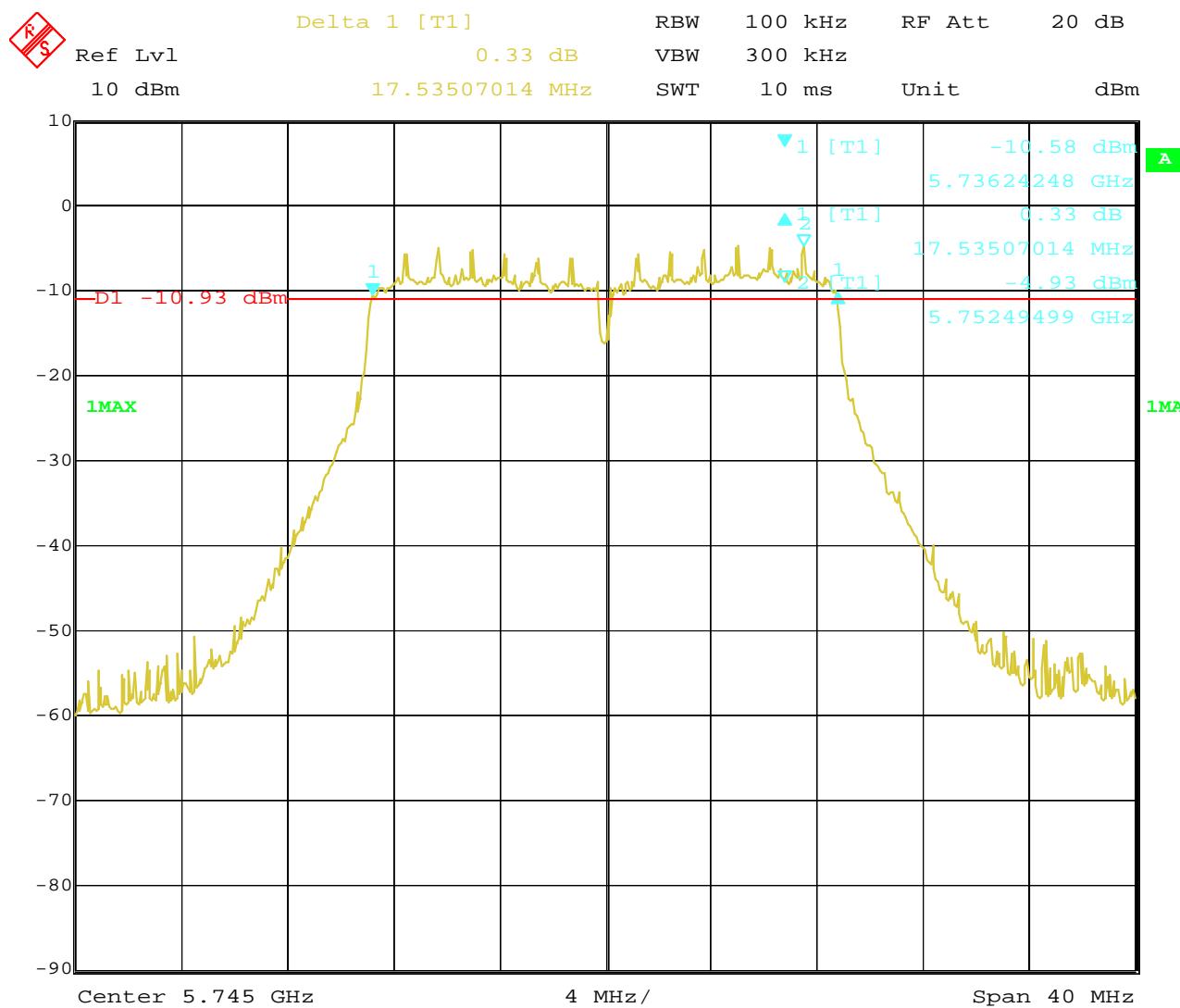
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

6dB Bandwidth

Channel 149



Date: 11.APR.2019 16:11:19

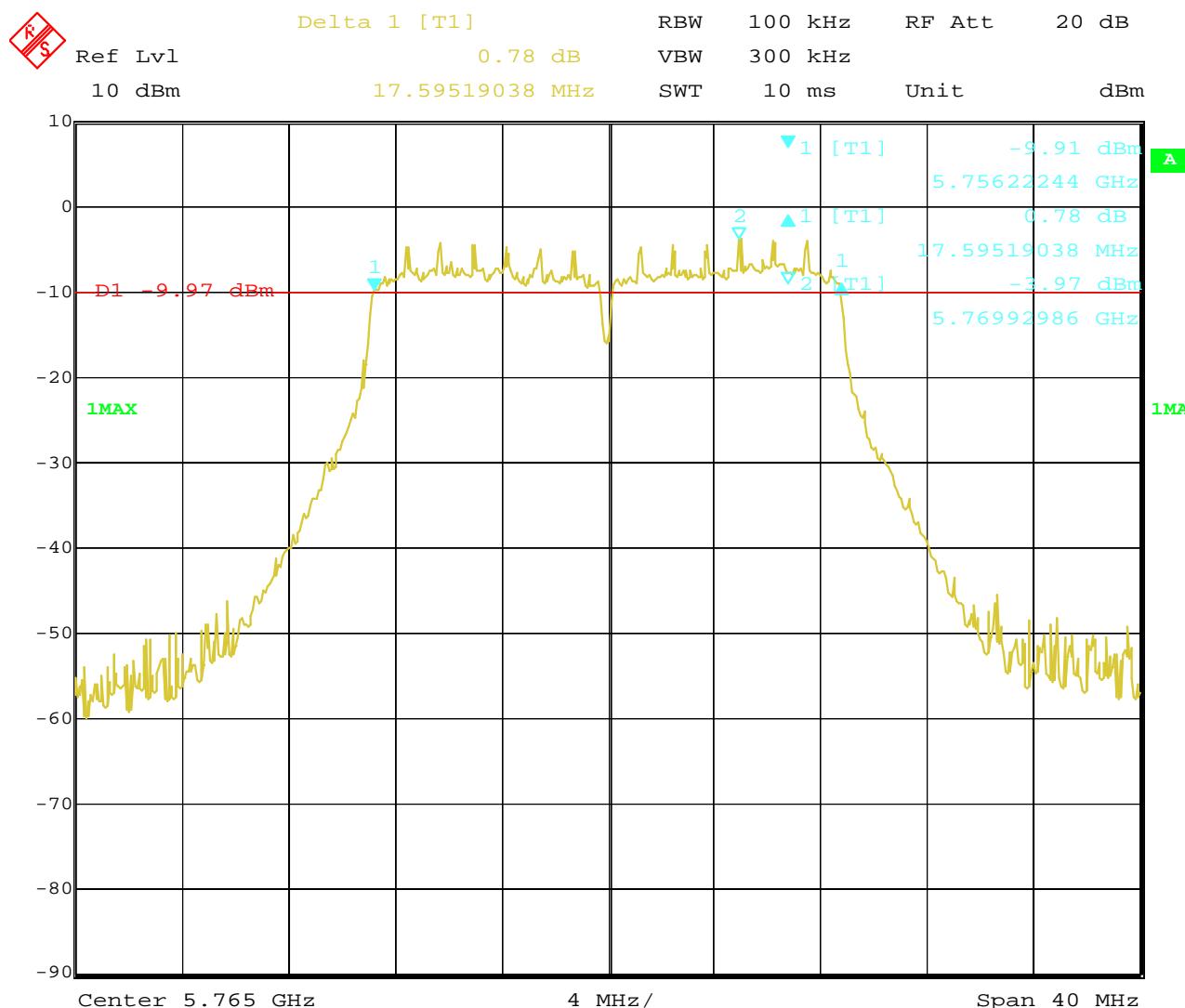
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Channel 153



Date: 11.APR.2019 16:14:40

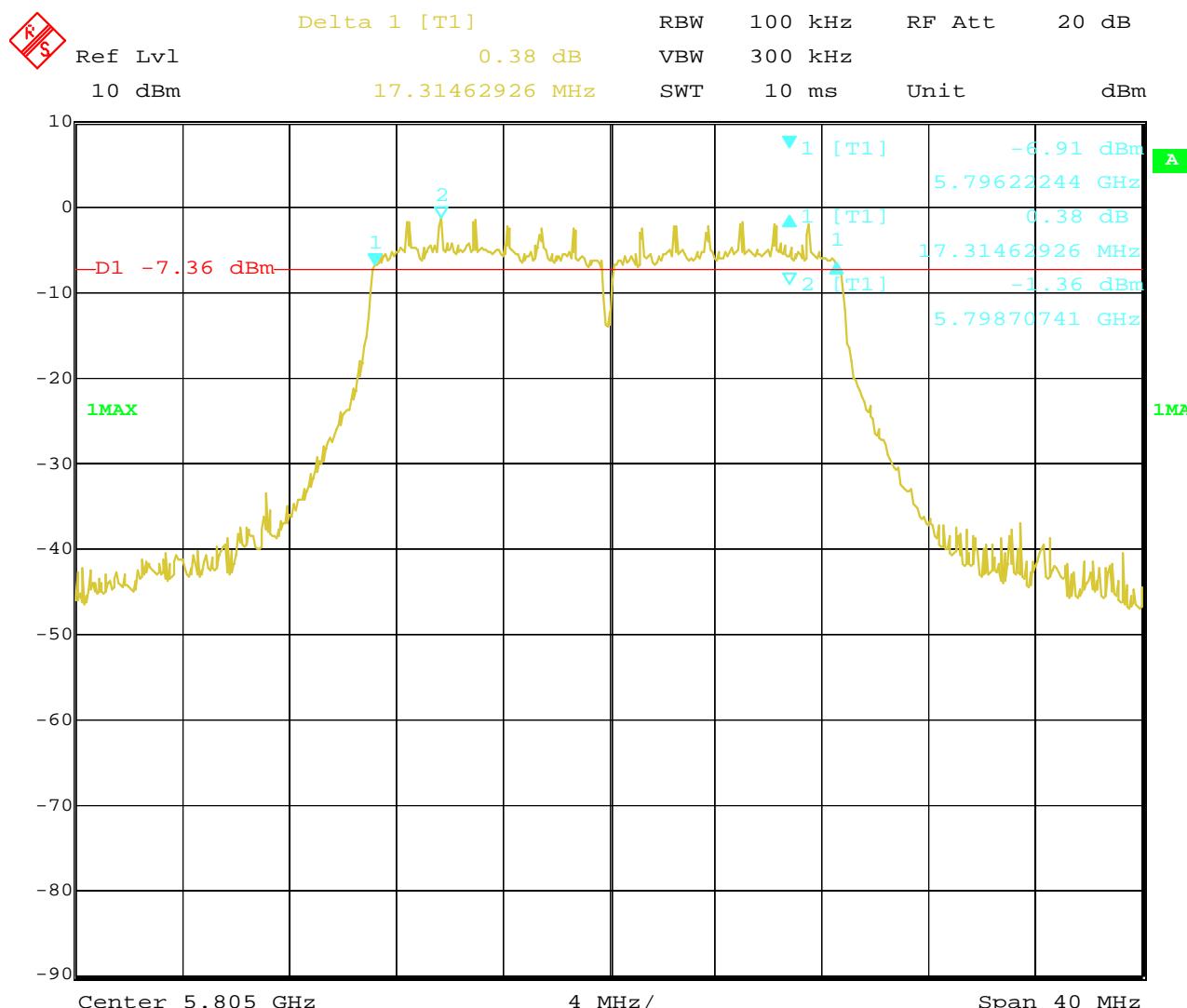
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Channel 161



Date: 11.APR.2019 16:17:35

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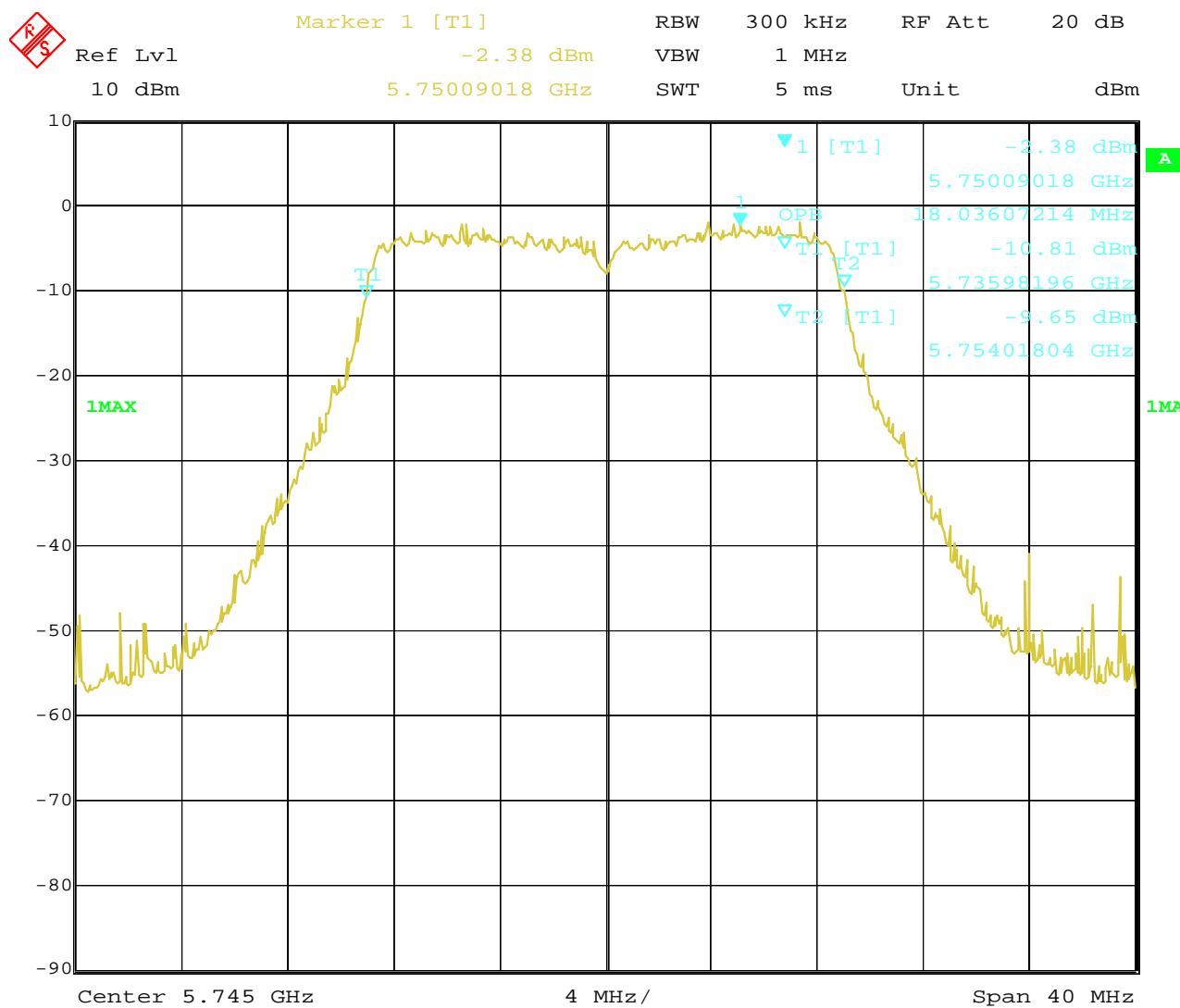
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 149



Date: 11.APR.2019 16:33:10

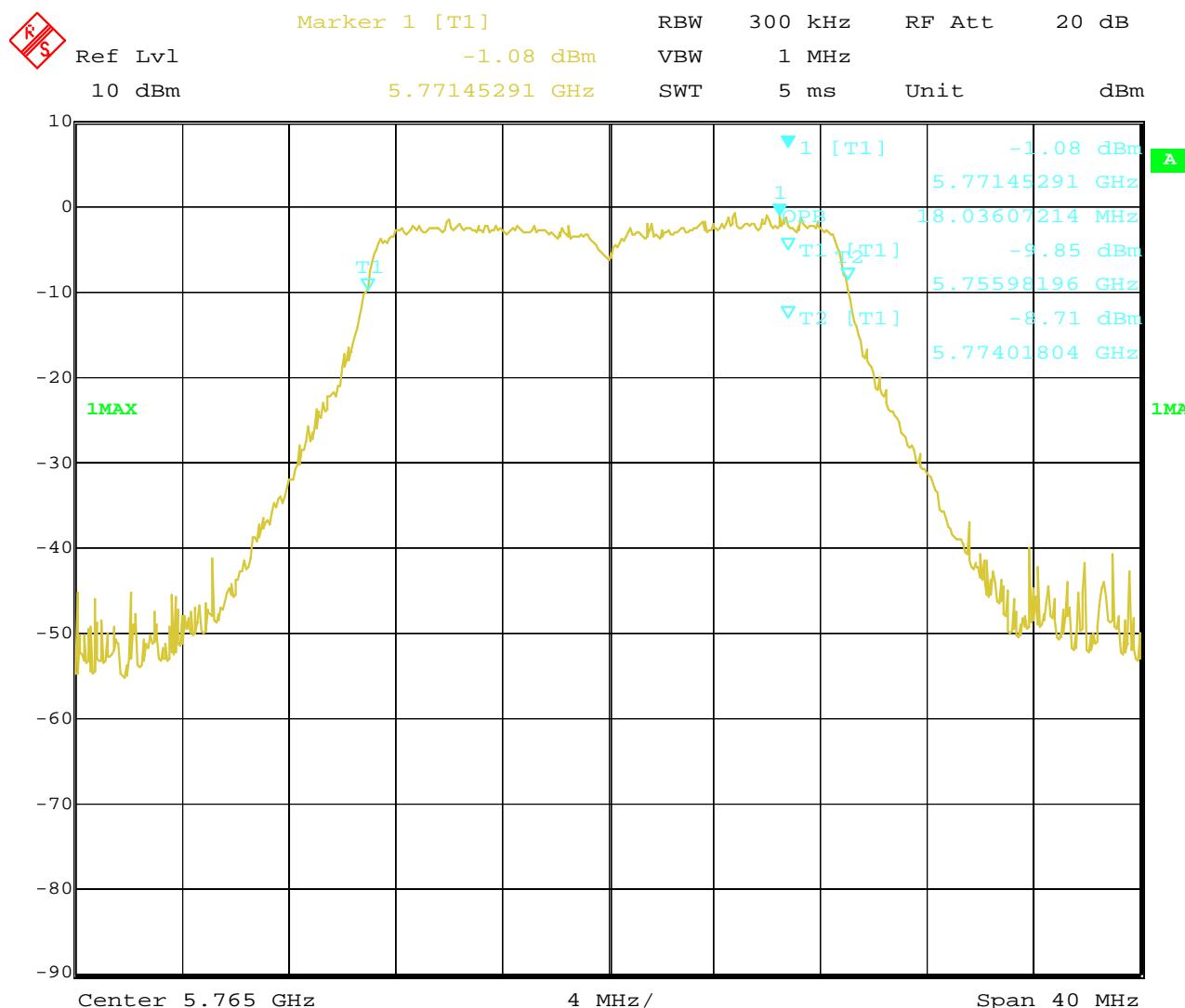
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Channel 153



Date: 11.APR.2019 16:34:12

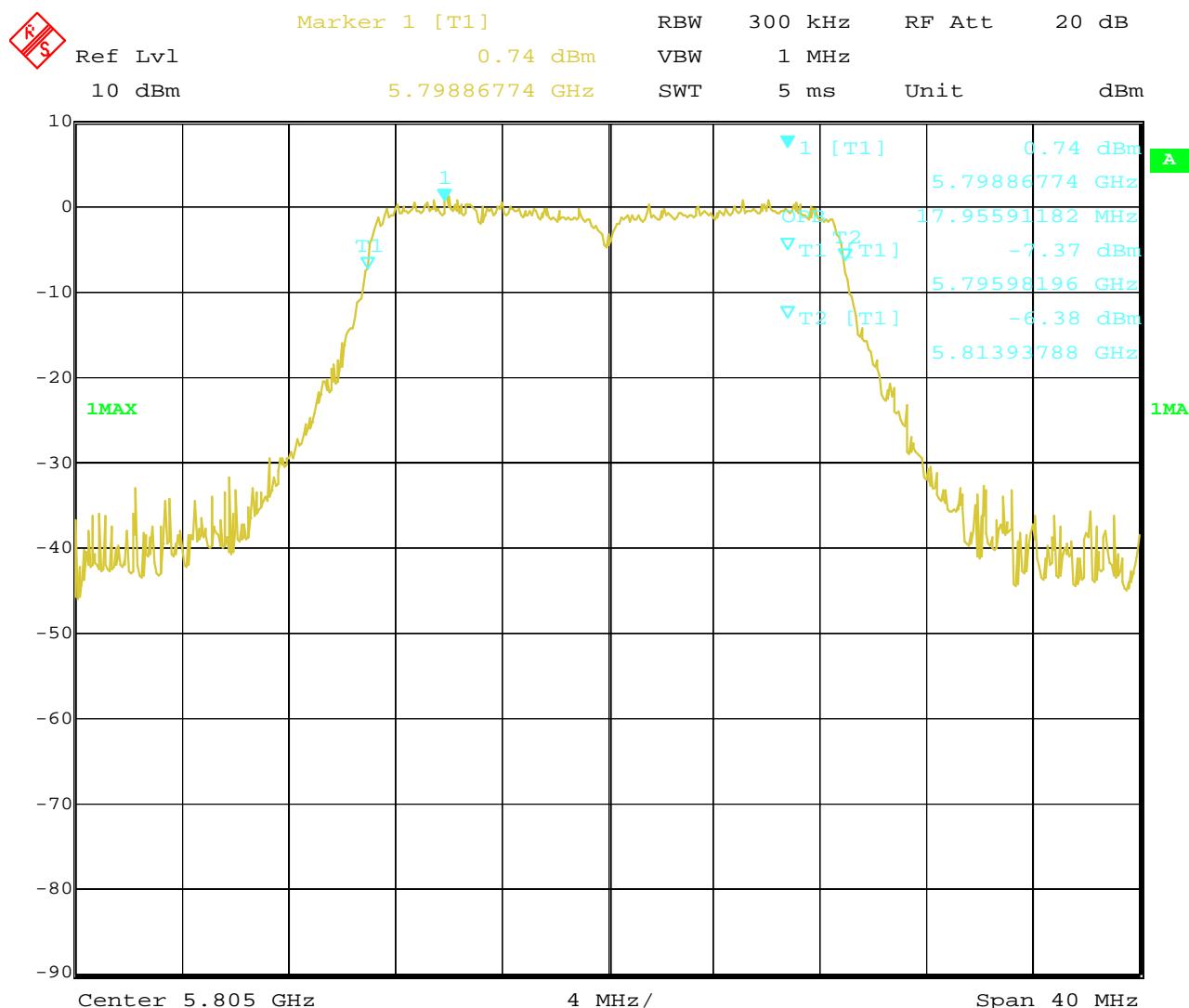
The report refers only to the sample tested and does not apply to the bulk.

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Channel 161



Date: 11.APR.2019 16:34:38

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EUT		Developer Board		Model		DB8			
Mode		802.11n HT40		Input Voltage		120V~			
Temperature		24 deg. C,		Humidity		56% RH			
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail				
26dB Bandwidth									
38	5190	mcs0	42.97	--	Pass				
46	5230	mcs0	43.29	--	Pass				
99% Bandwidth									
38	5190	mcs0	36.39	--	Pass				
46	5230	mcs0	36.39	--	Pass				

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

The report refers only to the sample tested and does not apply to the bulk.

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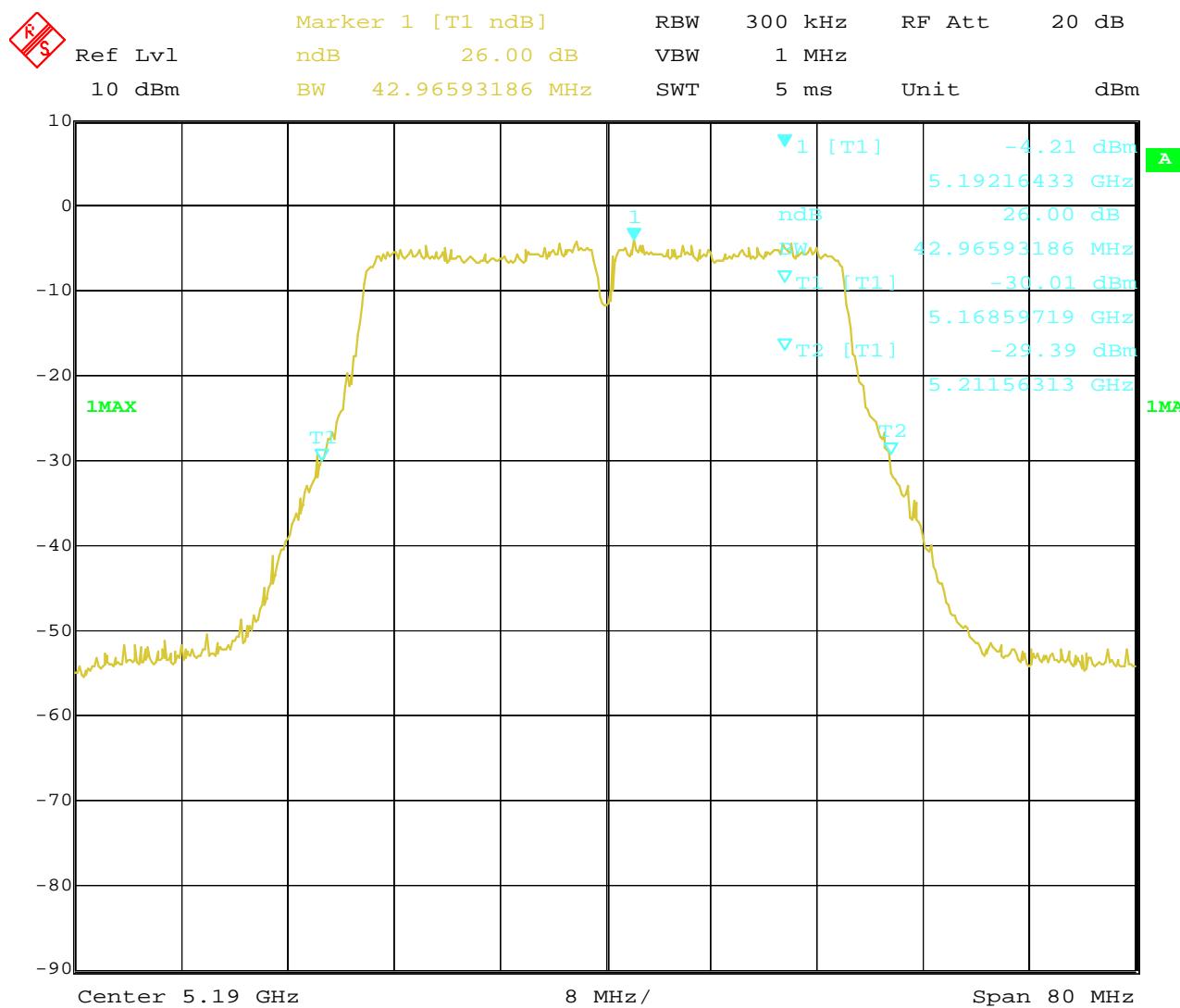
In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 38



Date: 25.MAR.2019 11:18:27

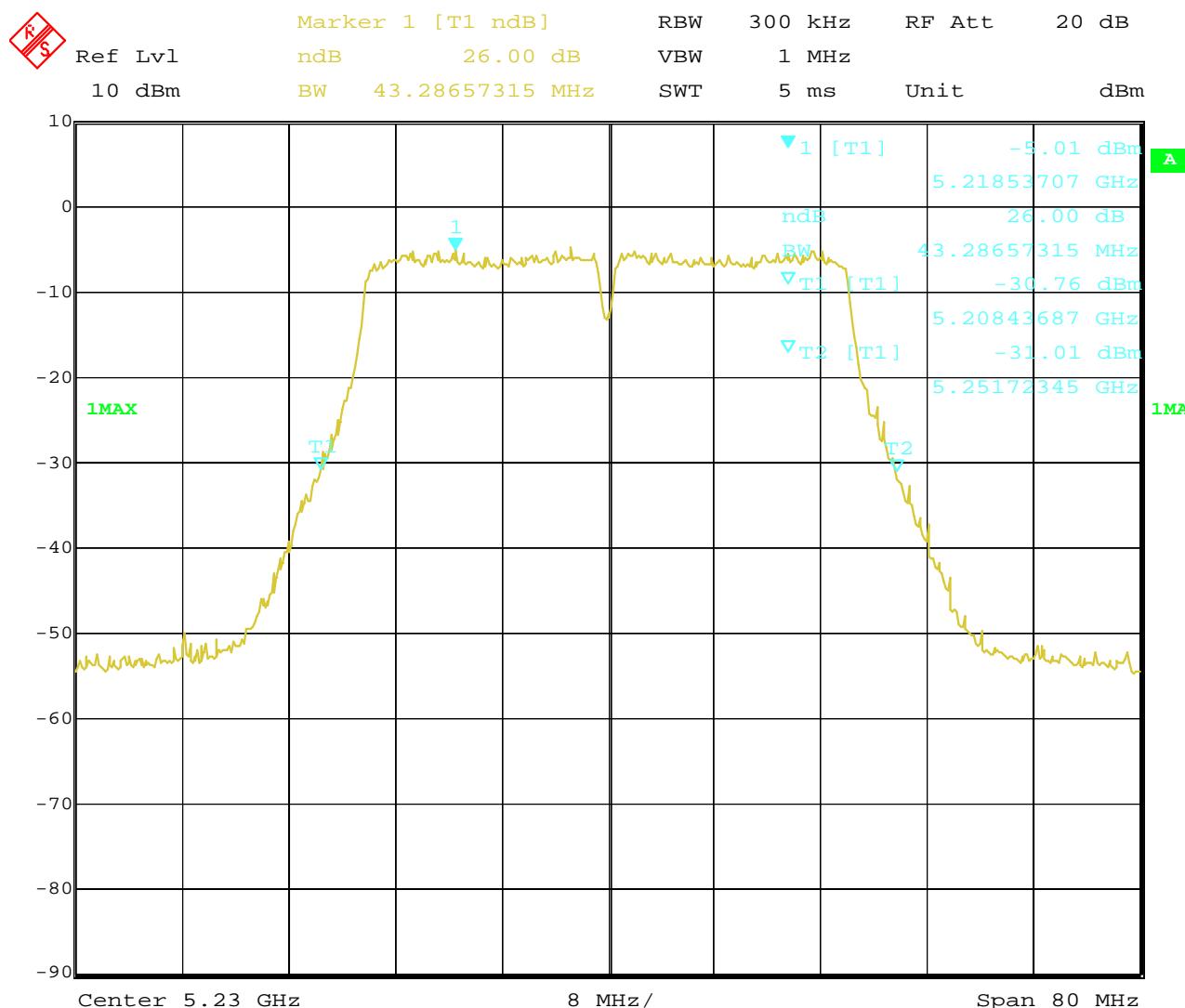
The report refers only to the sample tested and does not apply to the bulk.

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Channel 46



Date: 25.MAR.2019 11:19:42

The report refers only to the sample tested and does not apply to the bulk.

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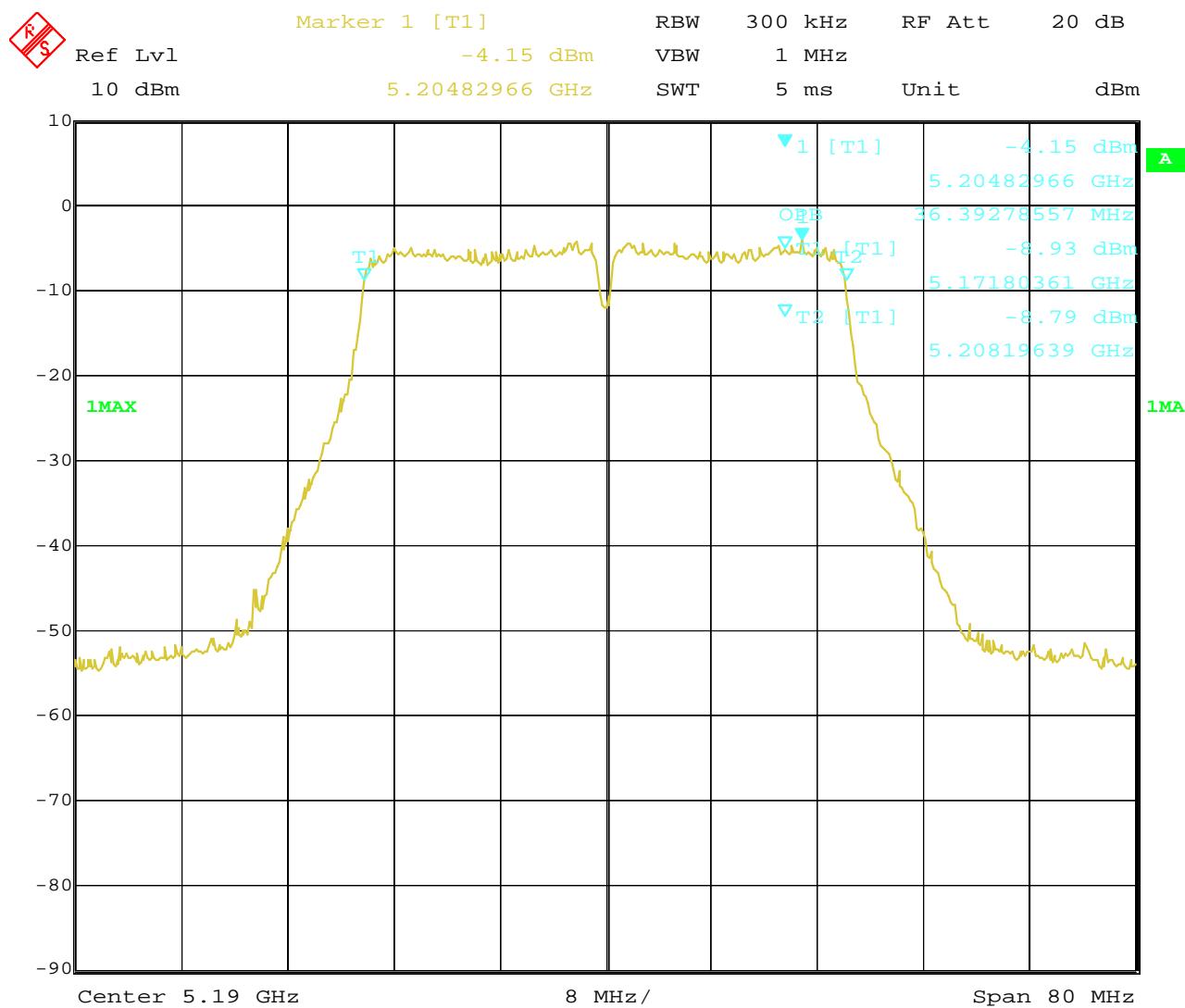
In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 38



Date: 25.MAR.2019 11:22:09

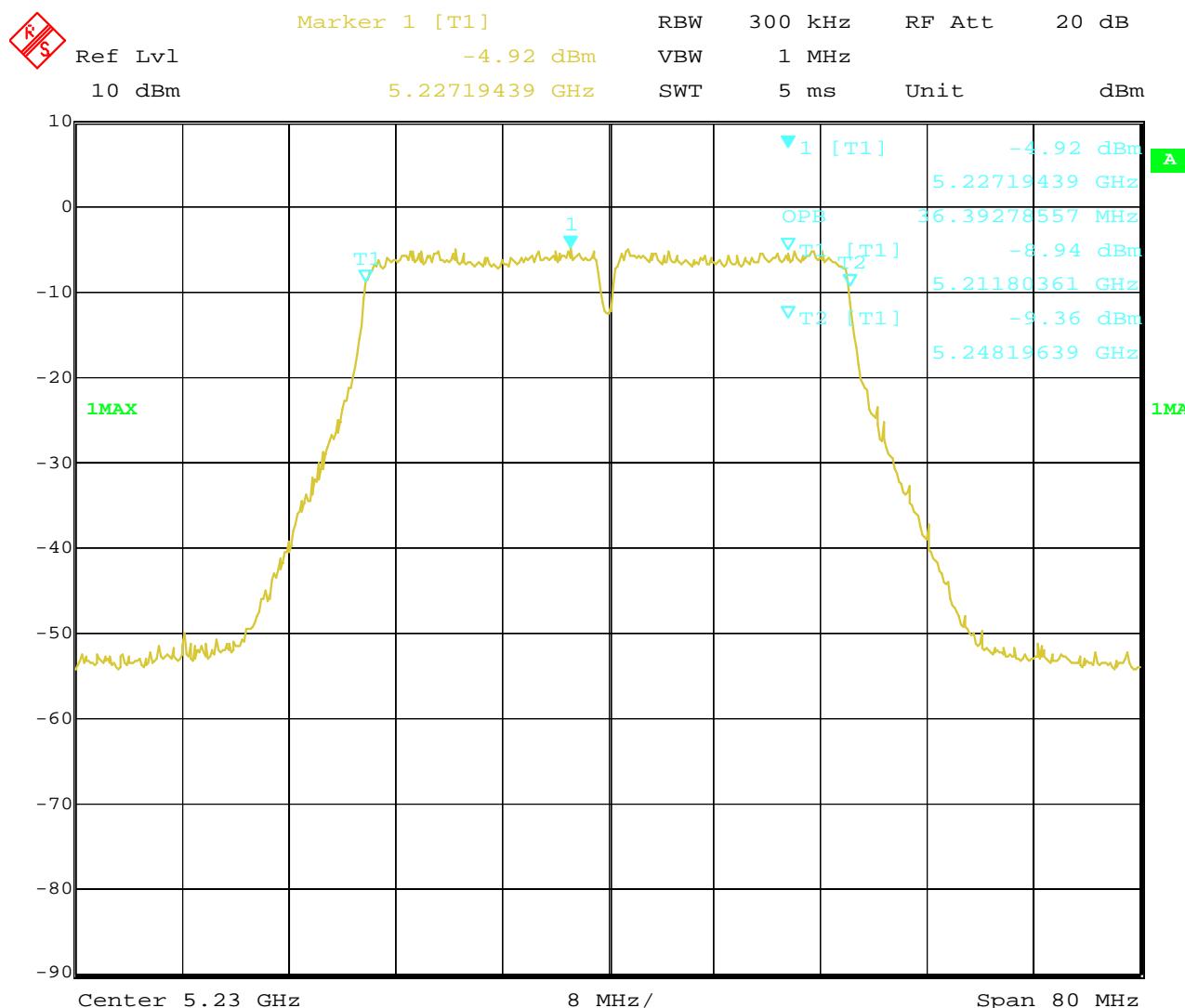
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Channel 46



Date: 25.MAR.2019 11:20:00

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EUT		Developer Board		Model		DB8
Mode		802.11n HT40		Input Voltage		120V~
Temperature		24 deg. C,		Humidity		56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail	
26dB Bandwidth						
151	5755	mcs0	42.65	--	Pass	
159	5795	mcs0	43.29	--	Pass	
6dB Bandwidth						
151	5755	mcs0	35.91	0.5	Pass	
159	5795	mcs0	35.99	0.5	Pass	
99% Bandwidth						
151	5755	mcs0	36.55	--	Pass	
159	5795	mcs0	36.39	--	Pass	

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

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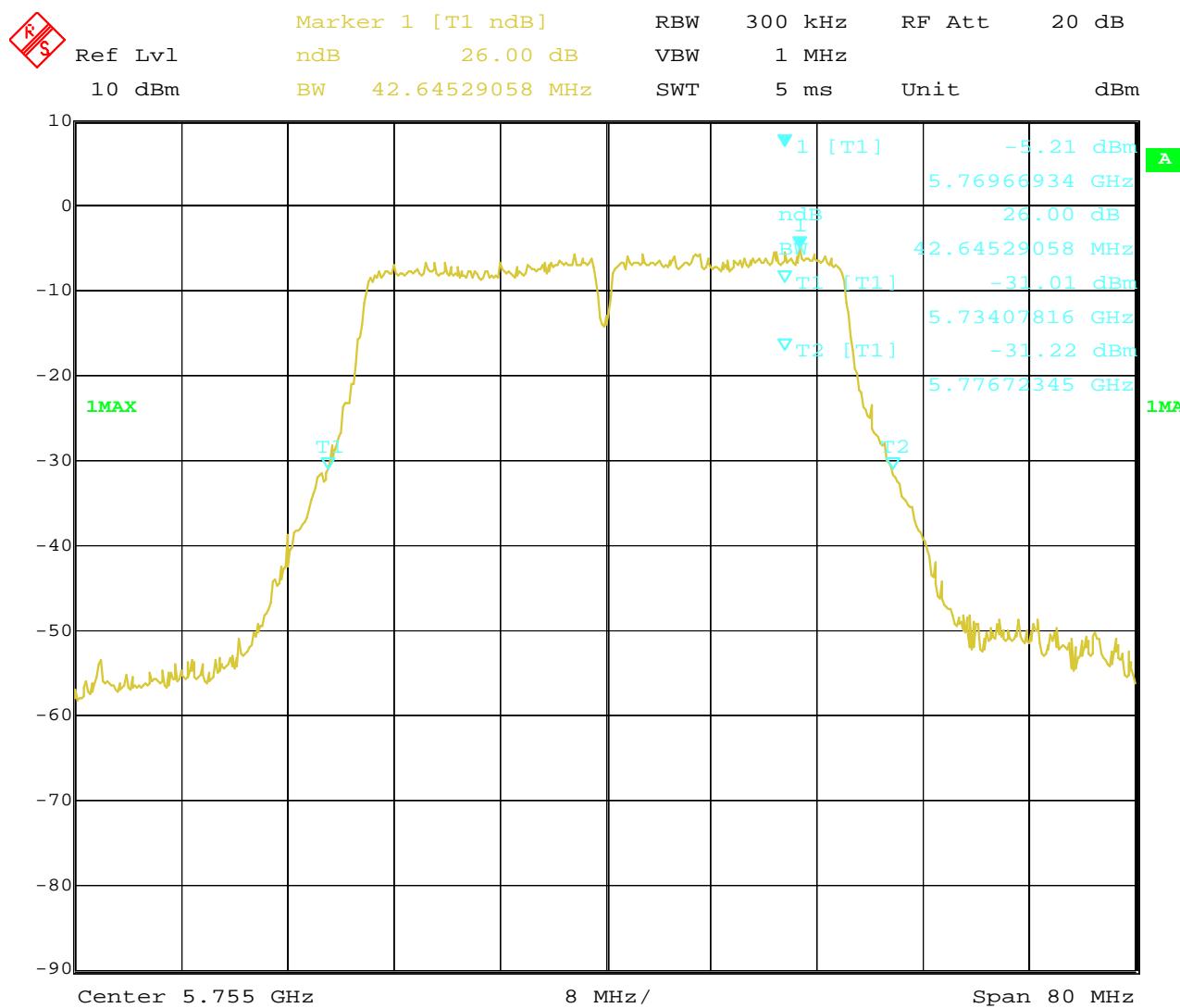
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 151



Date: 11.APR.2019 16:40:05

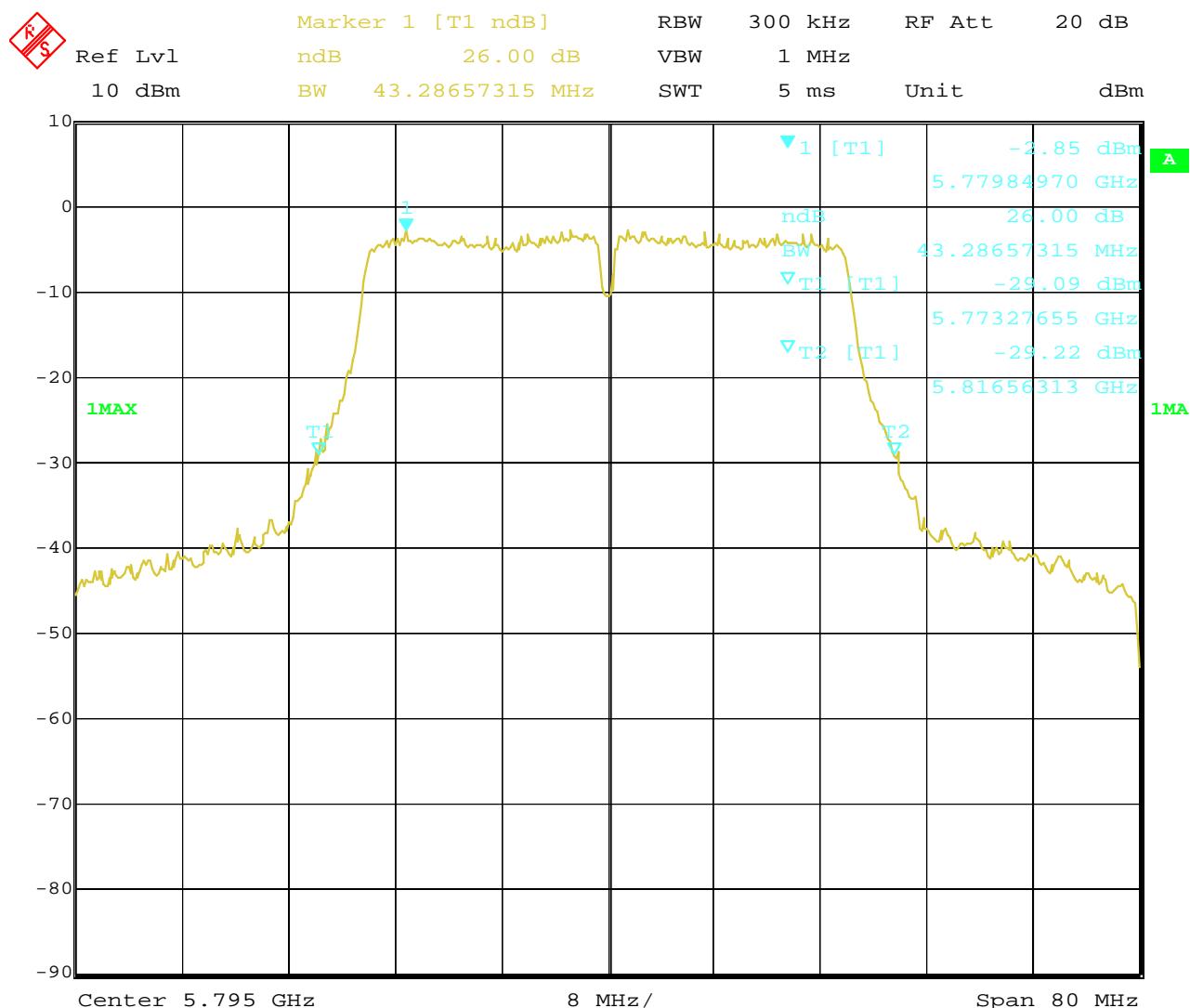
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Channel 159



Date: 11.APR.2019 16:40:50

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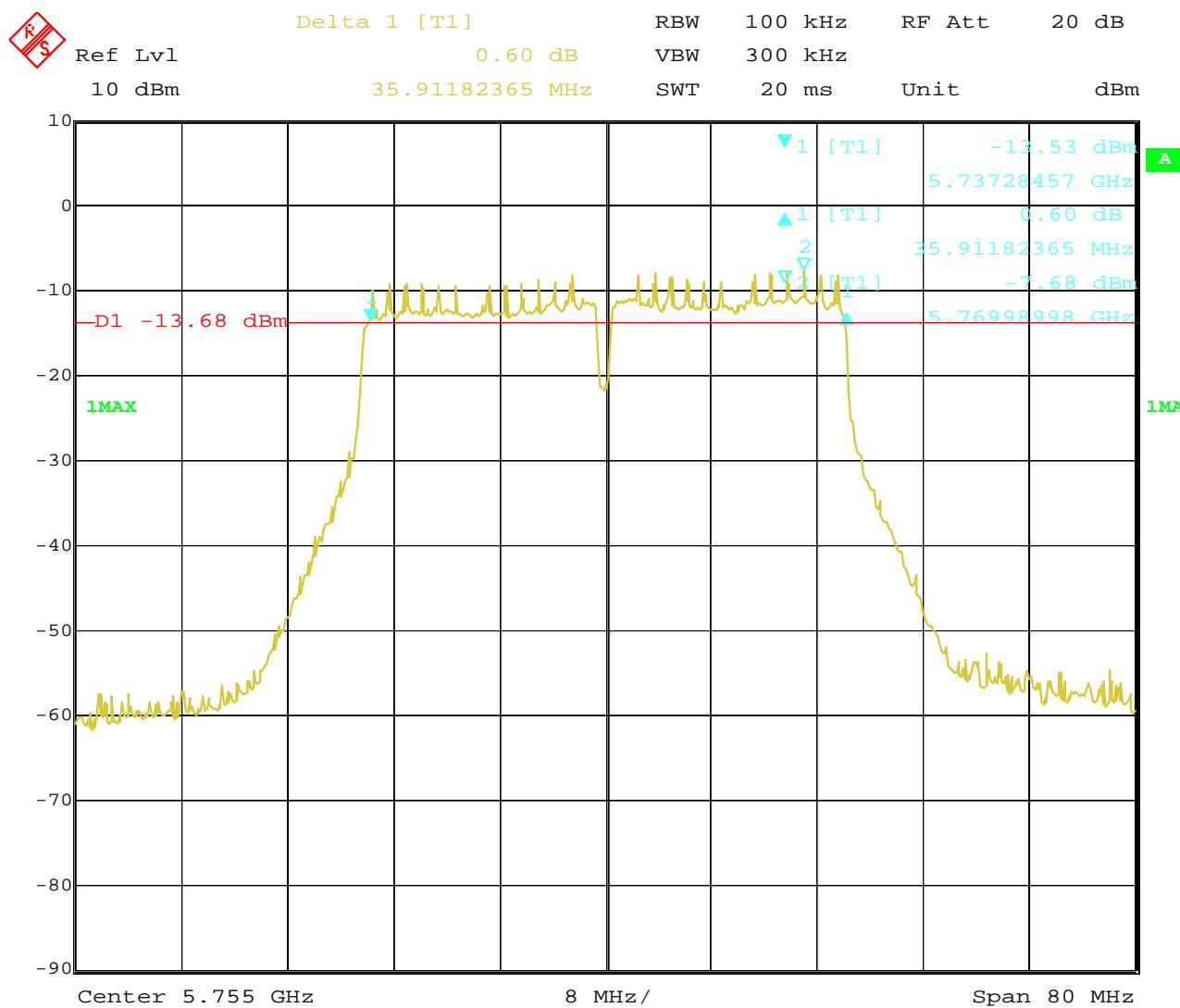
In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

6dB Bandwidth

Channel 151



Date: 11.APR.2019 16:03:49

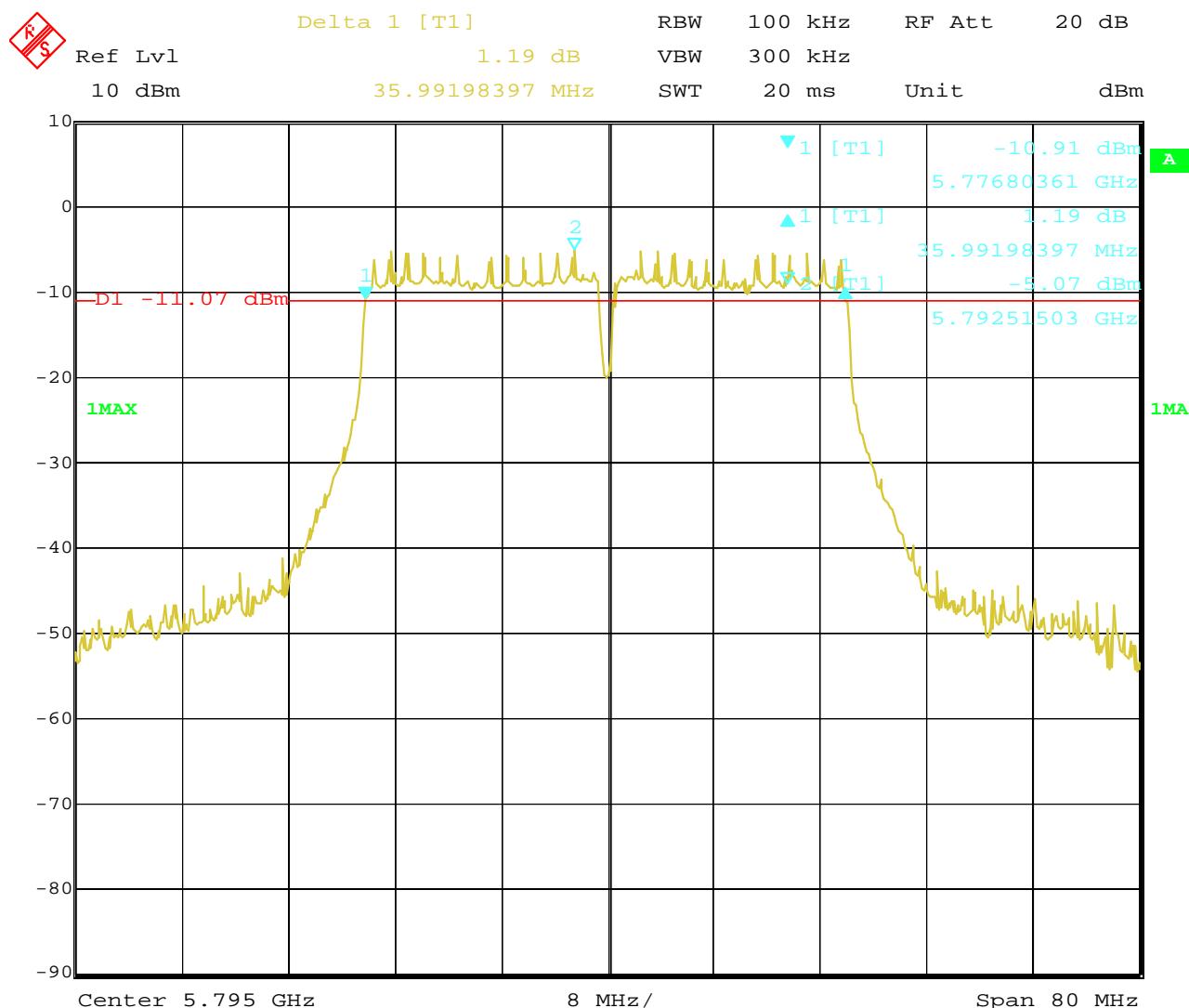
The report refers only to the sample tested and does not apply to the bulk.

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Channel 159



Date: 11.APR.2019 16:05:16

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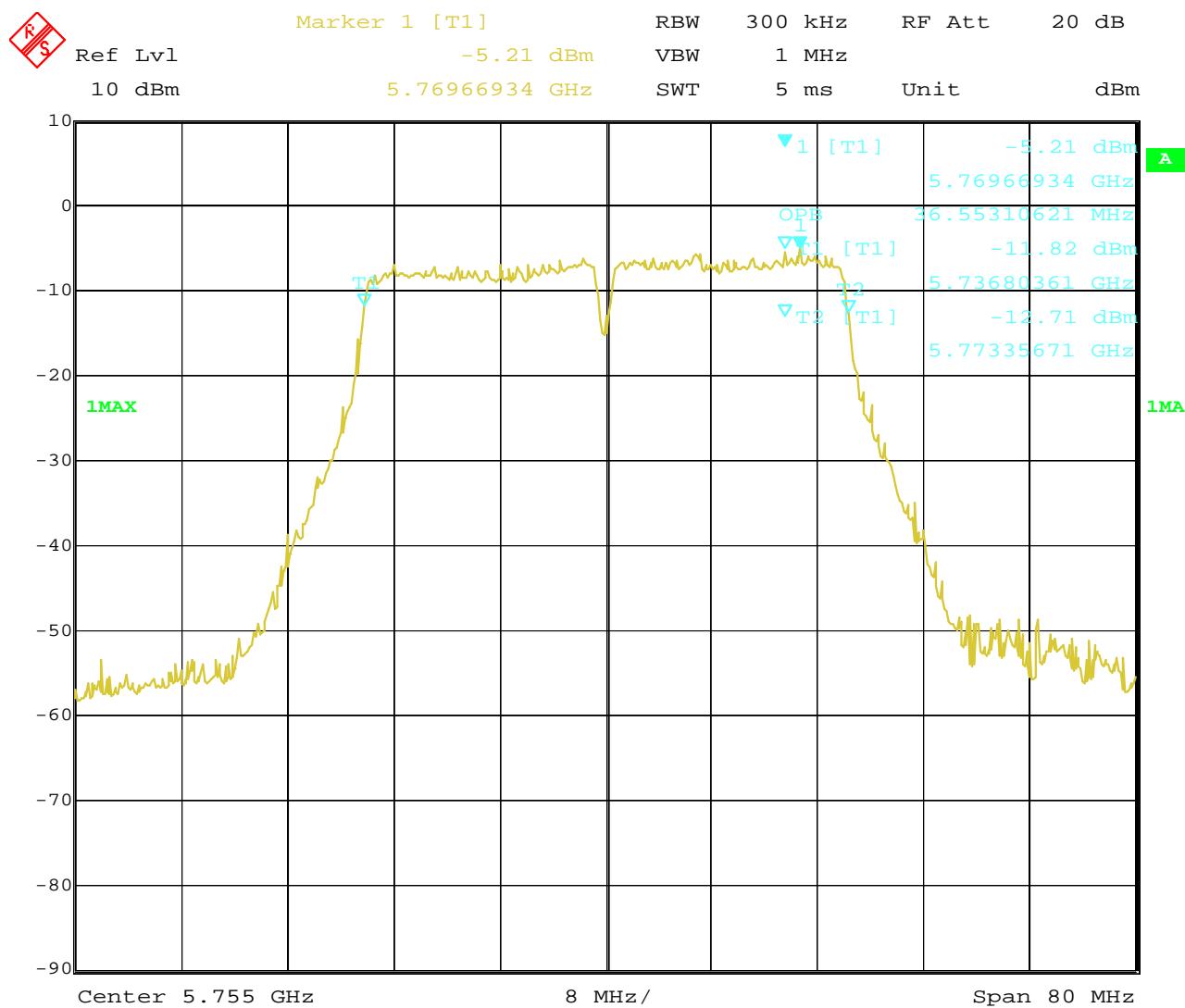
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 151



Date: 11.APR.2019 16:39:40

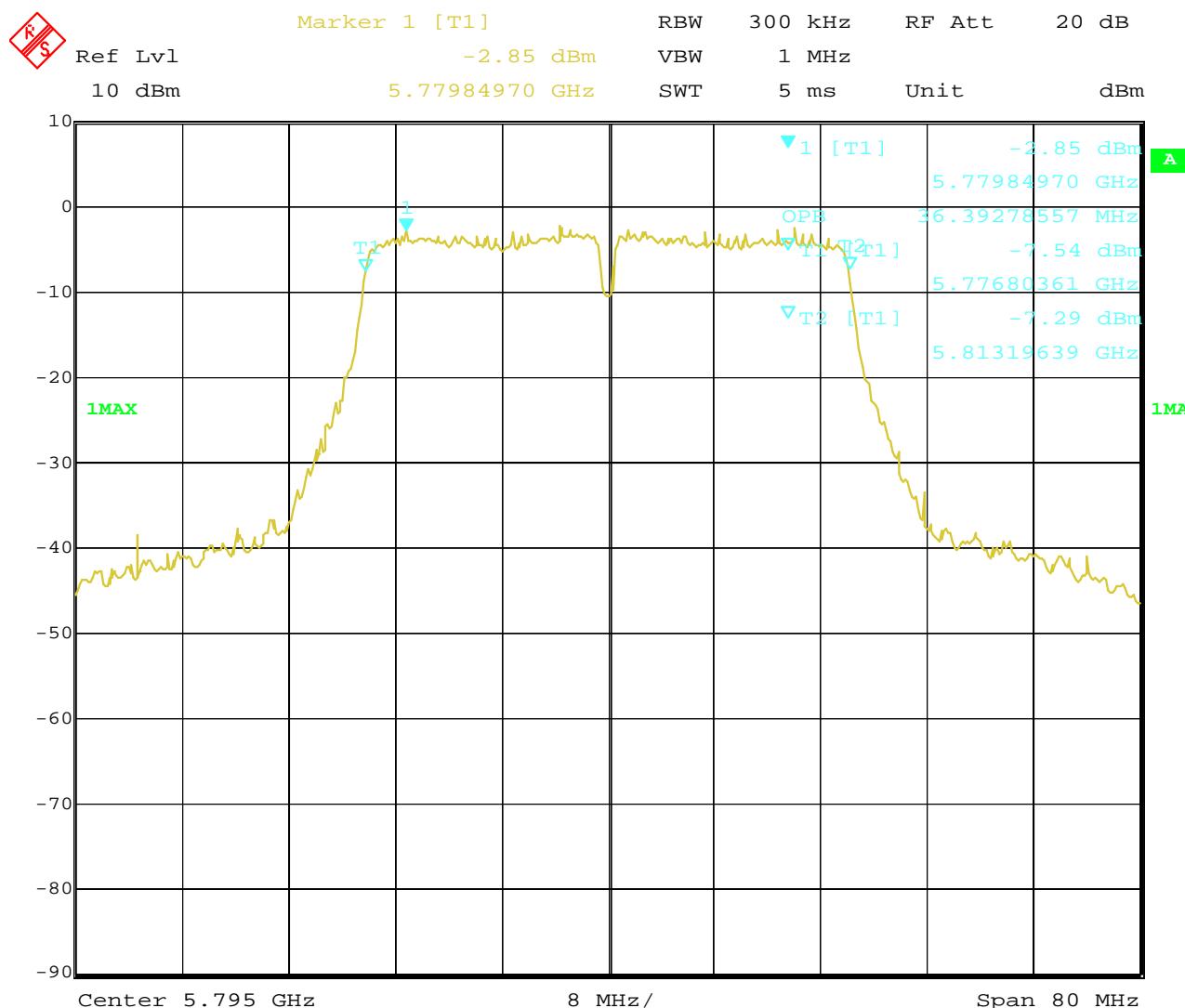
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Channel 159



Date: 11.APR.2019 16:41:01

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EUT		Developer Board		Model		DB8
Mode		802.11ac VHT20		Input Voltage		120V~
Temperature		24 deg. C,		Humidity		56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail	
26dB Bandwidth						
36	5180	mcs0	22.28	--	Pass	
40	5200	mcs0	22.20	--	Pass	
48	5240	mcs0	22.44	--	Pass	
99% Bandwidth						
36	5180	mcs0	18.03	--	Pass	
40	5200	mcs0	18.12	--	Pass	
48	5240	mcs0	18.12	--	Pass	

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

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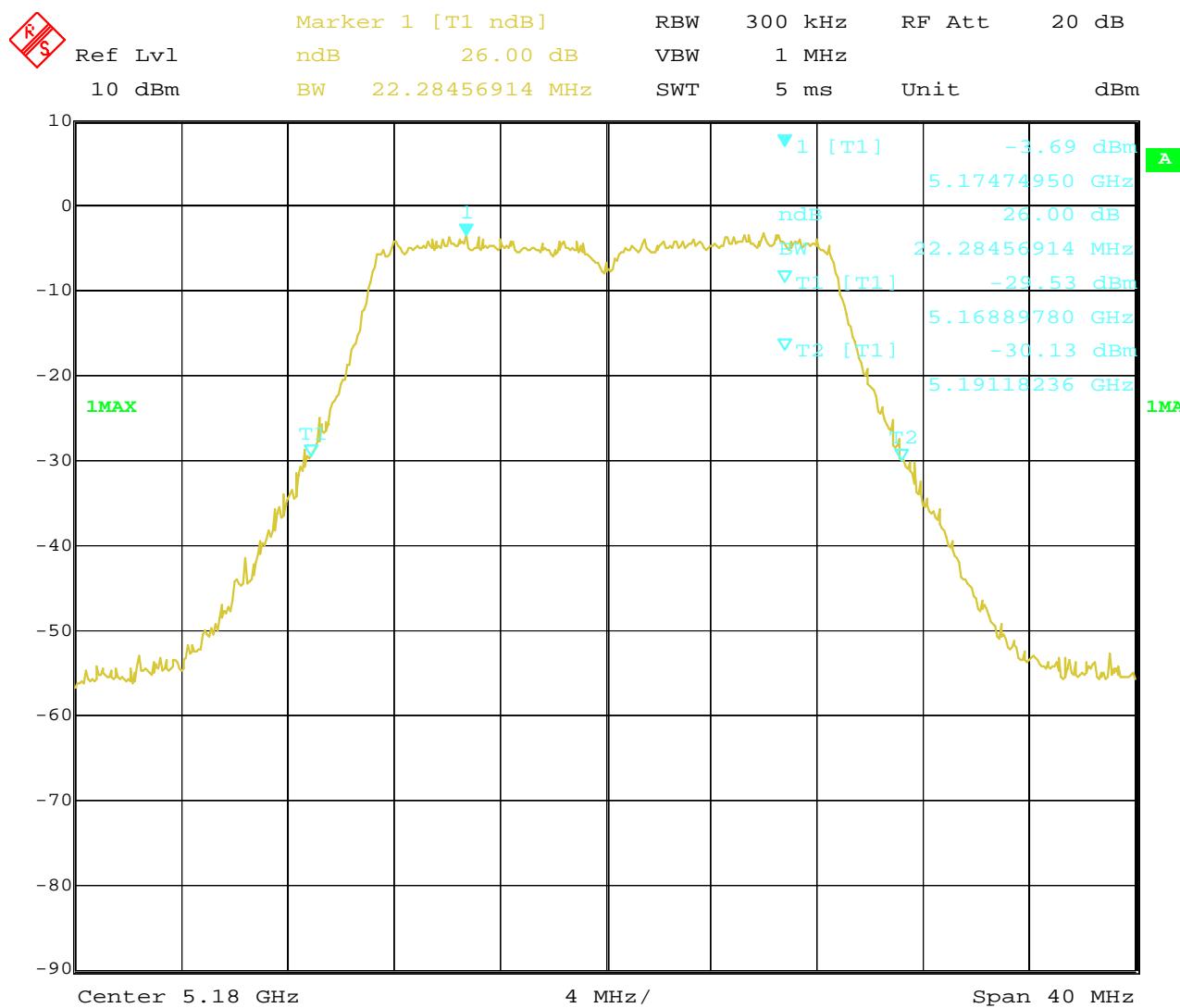
In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 36



Date: 11.APR.2019 16:28:49

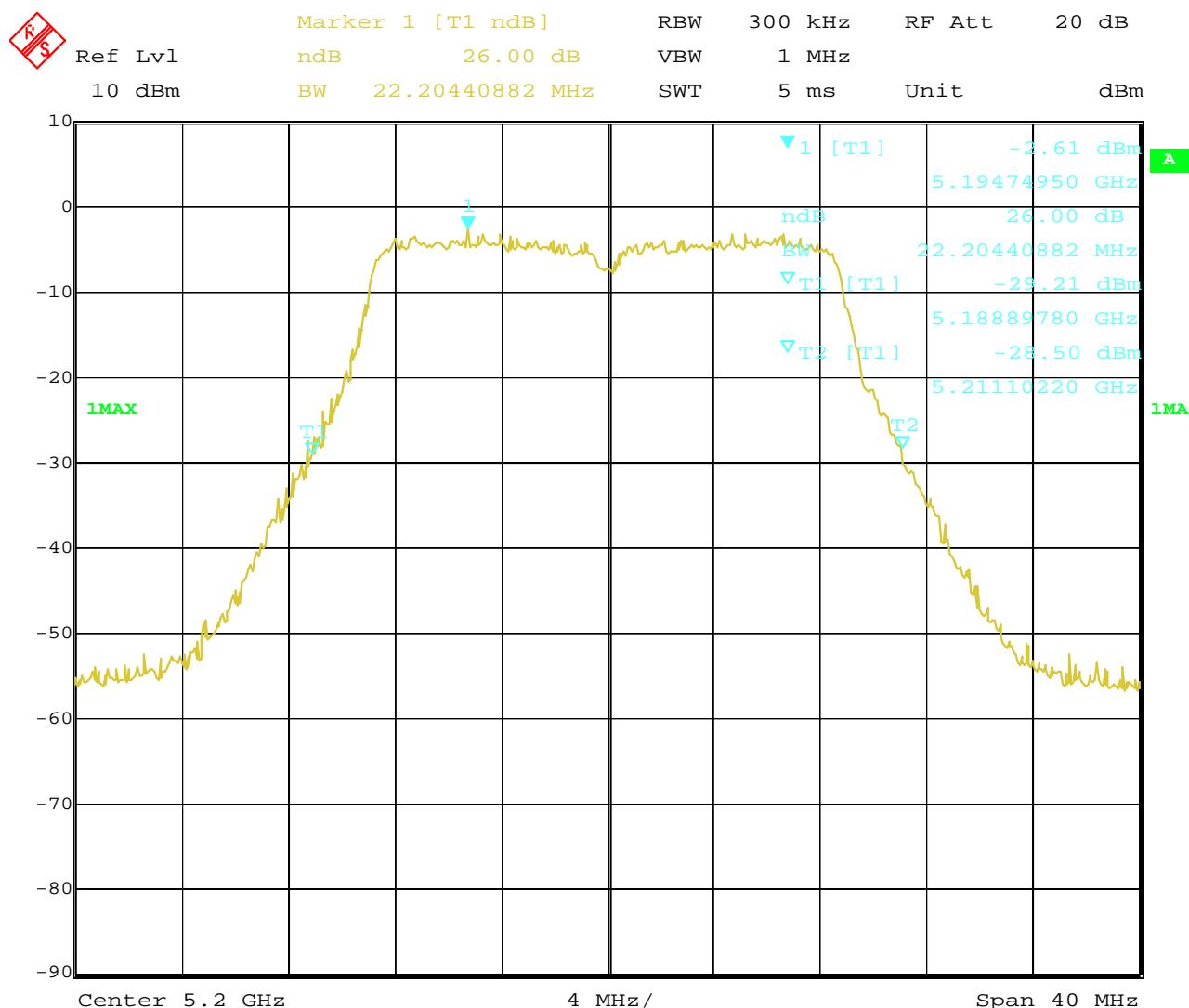
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Channel 40



Date: 11.APR.2019 16:29:16

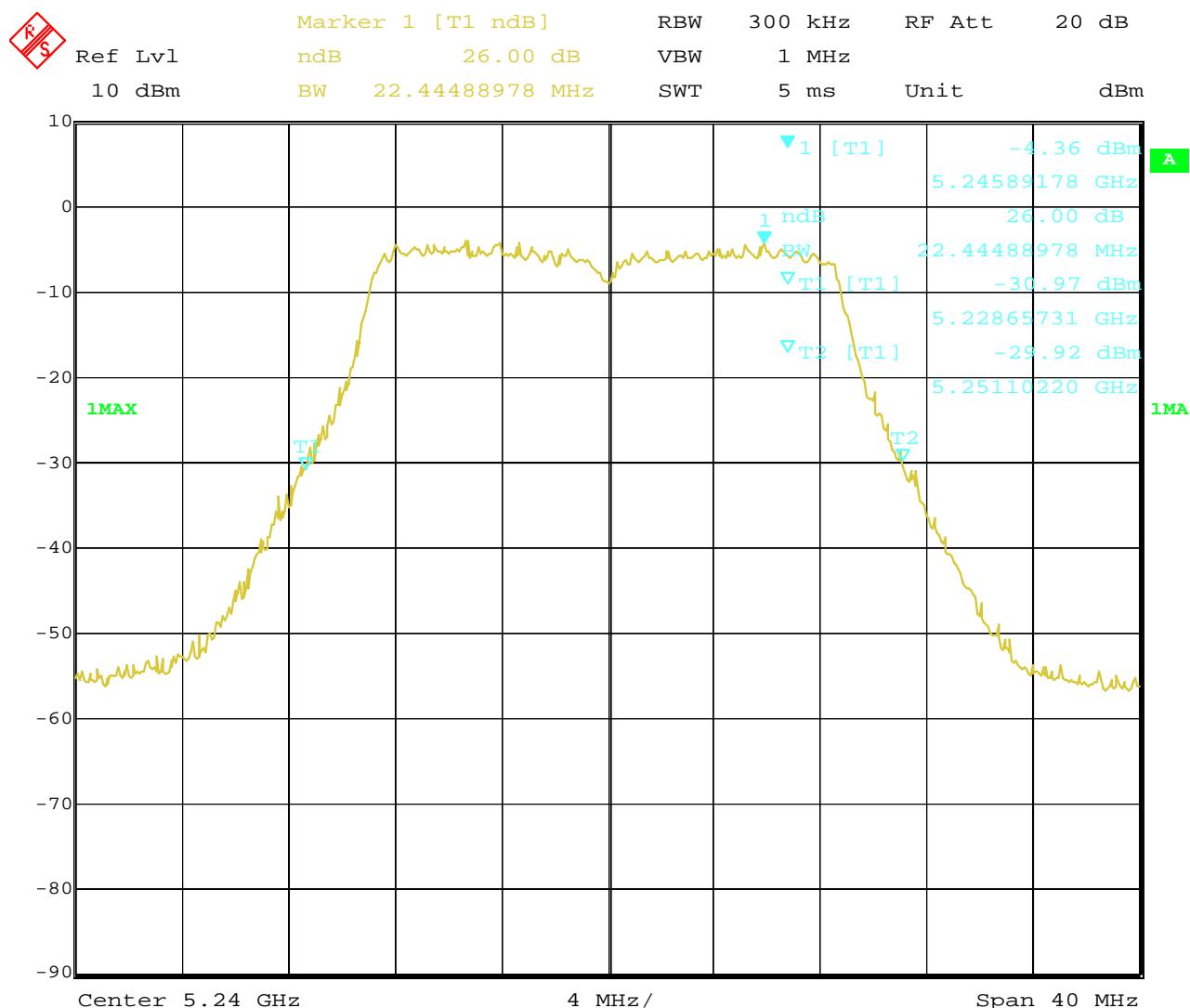
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Channel 48



Date: 11.APR.2019 16:30:20

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the SHENZHEN TIMEWAY TESTING LABORATORIES. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the SHENZHEN TIMEWAY TESTING LABORATORIES, to his customer, Supplier or others persons directly concerned. SHENZHEN TIMEWAY TESTING LABORATORIES, will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

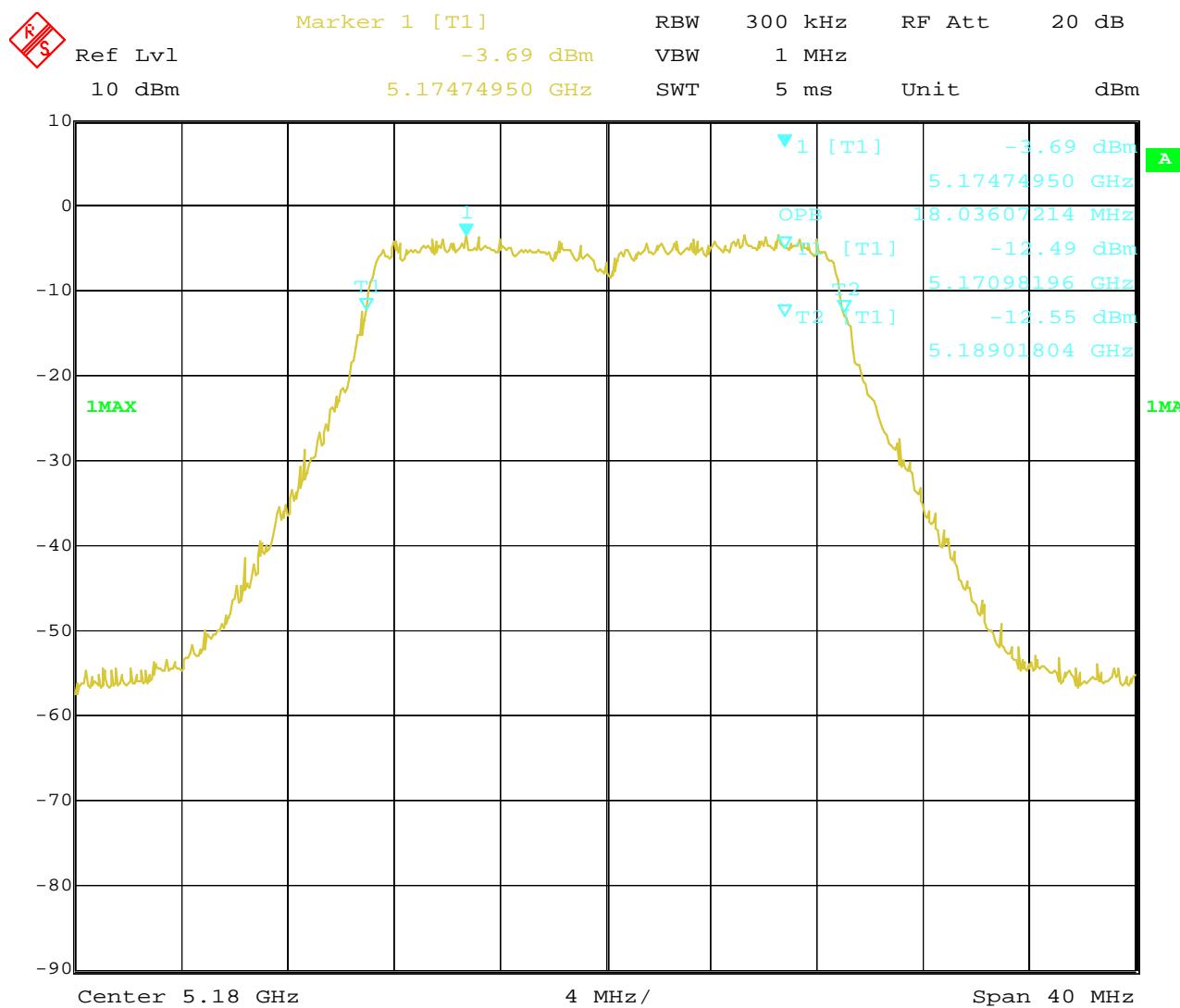
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 36



Date: 11.APR.2019 16:28:31

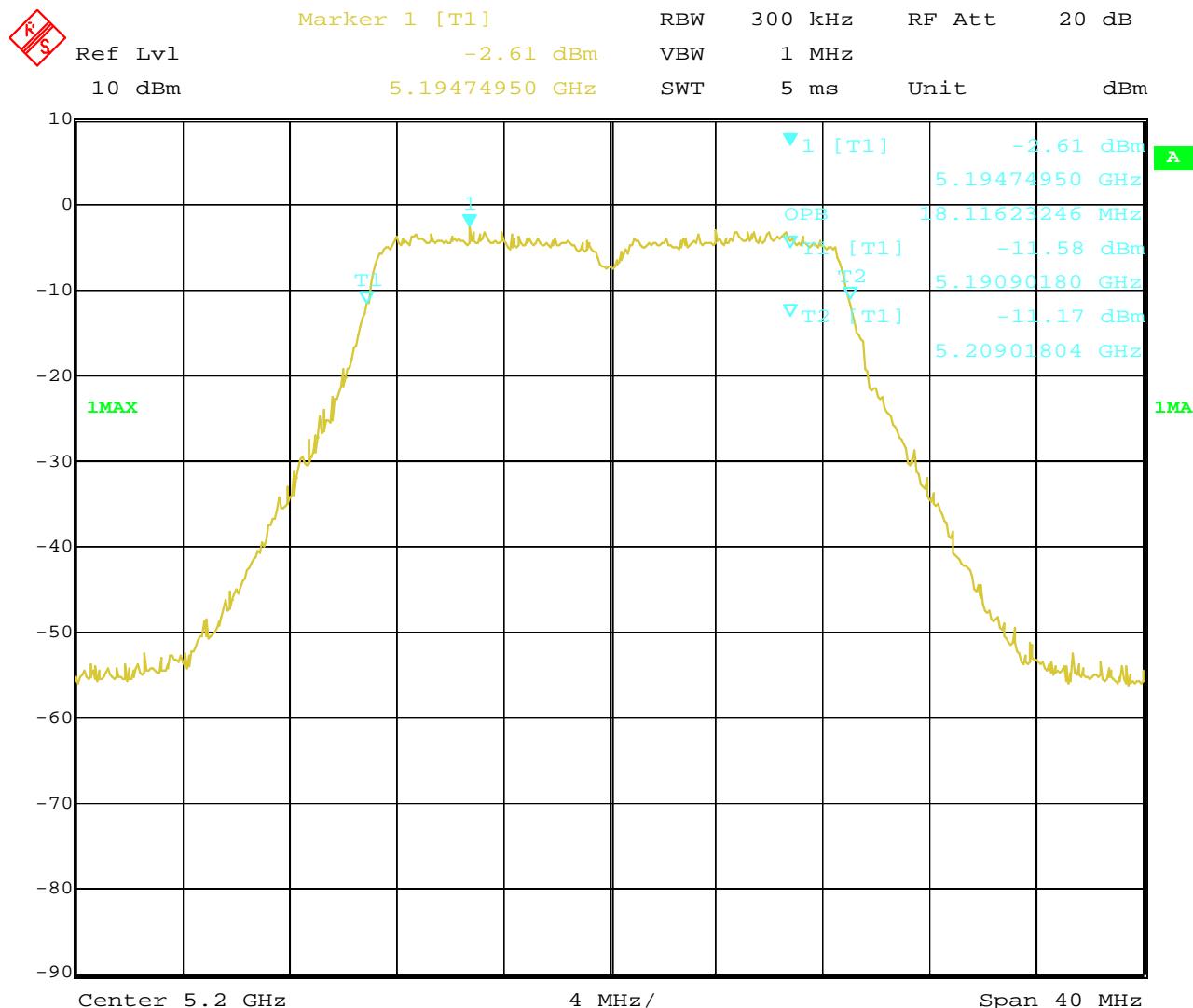
The report refers only to the sample tested and does not apply to the bulk.

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Channel 40



Date: 11.APR.2019 16:29:26

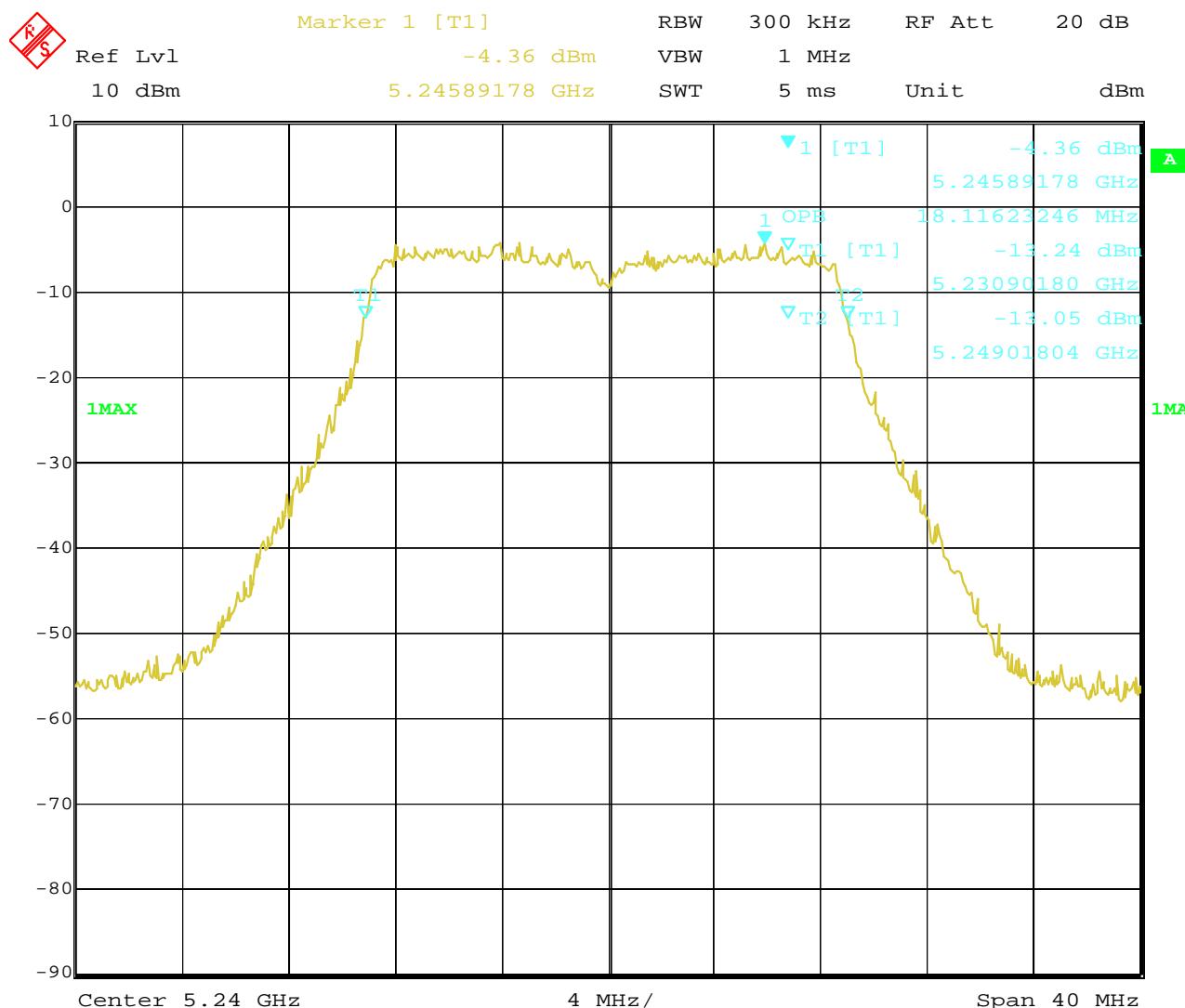
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 48



Date: 11.APR.2019 16:29:54

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EUT		Developer Board		Model		DB8
Mode		802.11ac VHT20		Input Voltage		120V~
Temperature		24 deg. C,		Humidity		56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail	
26dB Bandwidth						
149	5745	6	22.12	--	Pass	
153	5765	6	22.53	--	Pass	
161	5805	6	22.77	--	Pass	
6dB Bandwidth						
149	5745	6	17.54	0.5	Pass	
153	5765	6	17.60	0.5	Pass	
161	5805	6	17.31	0.5	Pass	
99% Bandwidth						
149	5745	6	18.04	--	Pass	
153	5765	6	18.04	--	Pass	
161	5805	6	18.20	--	Pass	

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

The report refers only to the sample tested and does not apply to the bulk.

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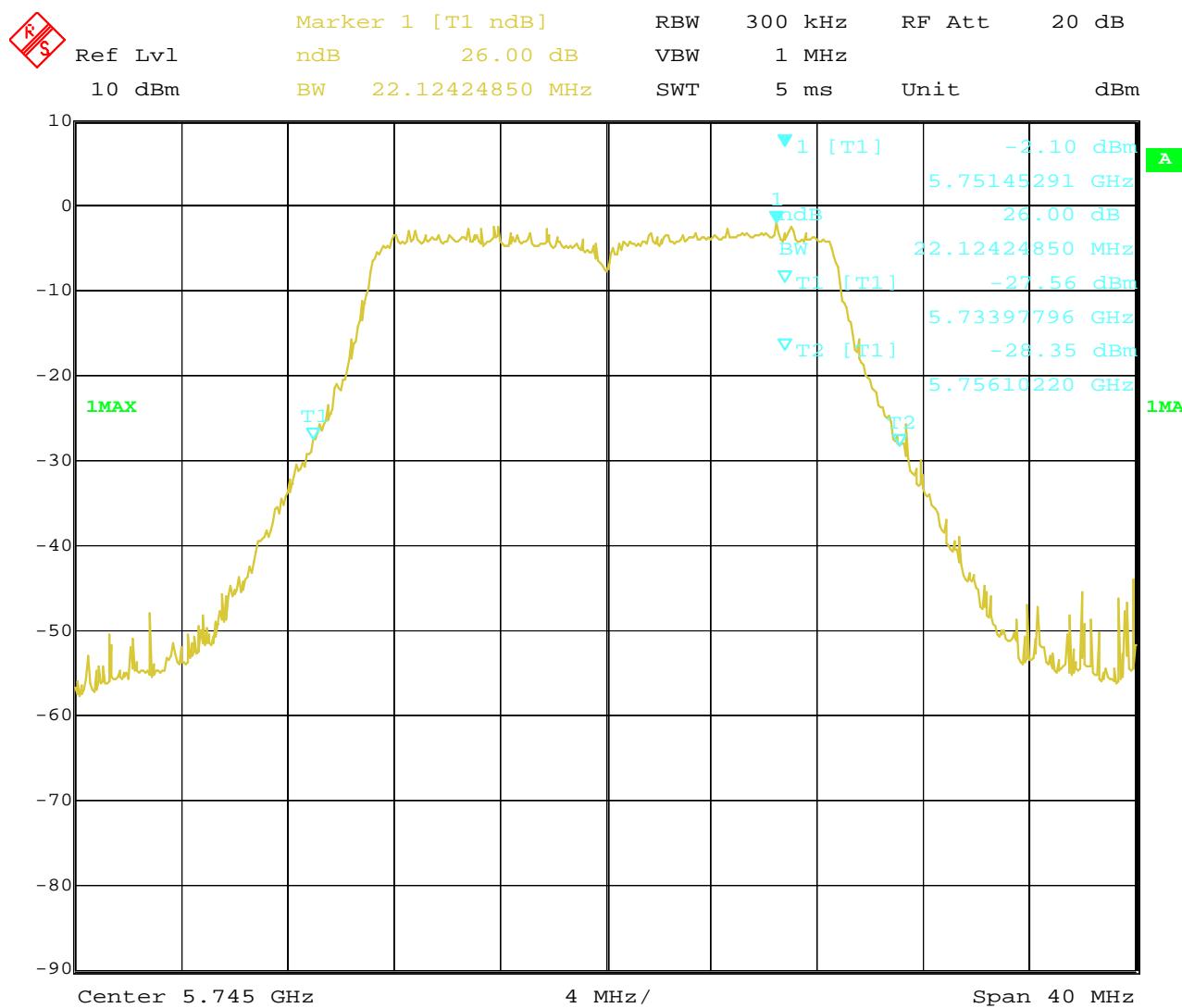
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 149



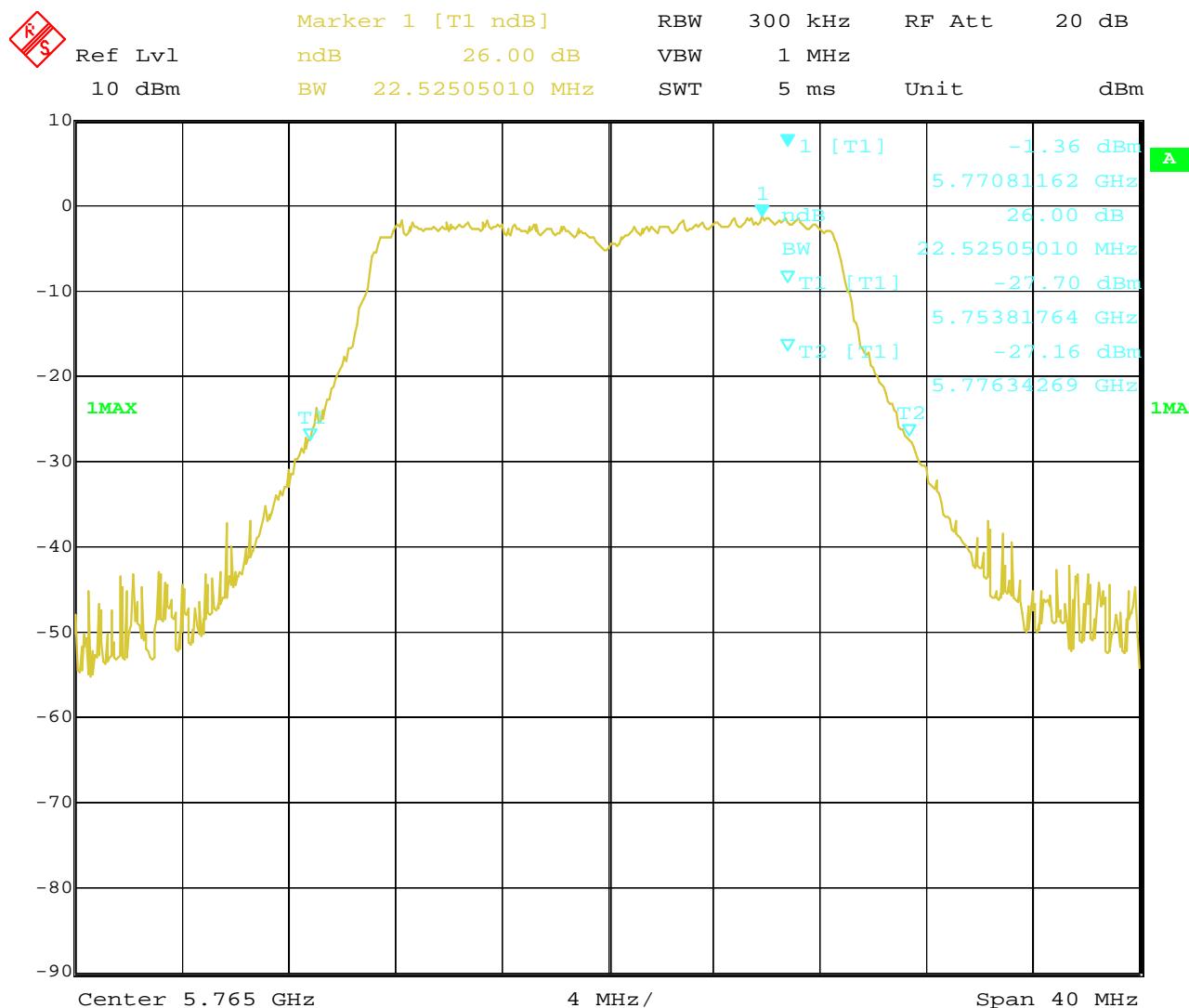
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 153



Date: 11.APR.2019 16:27:16

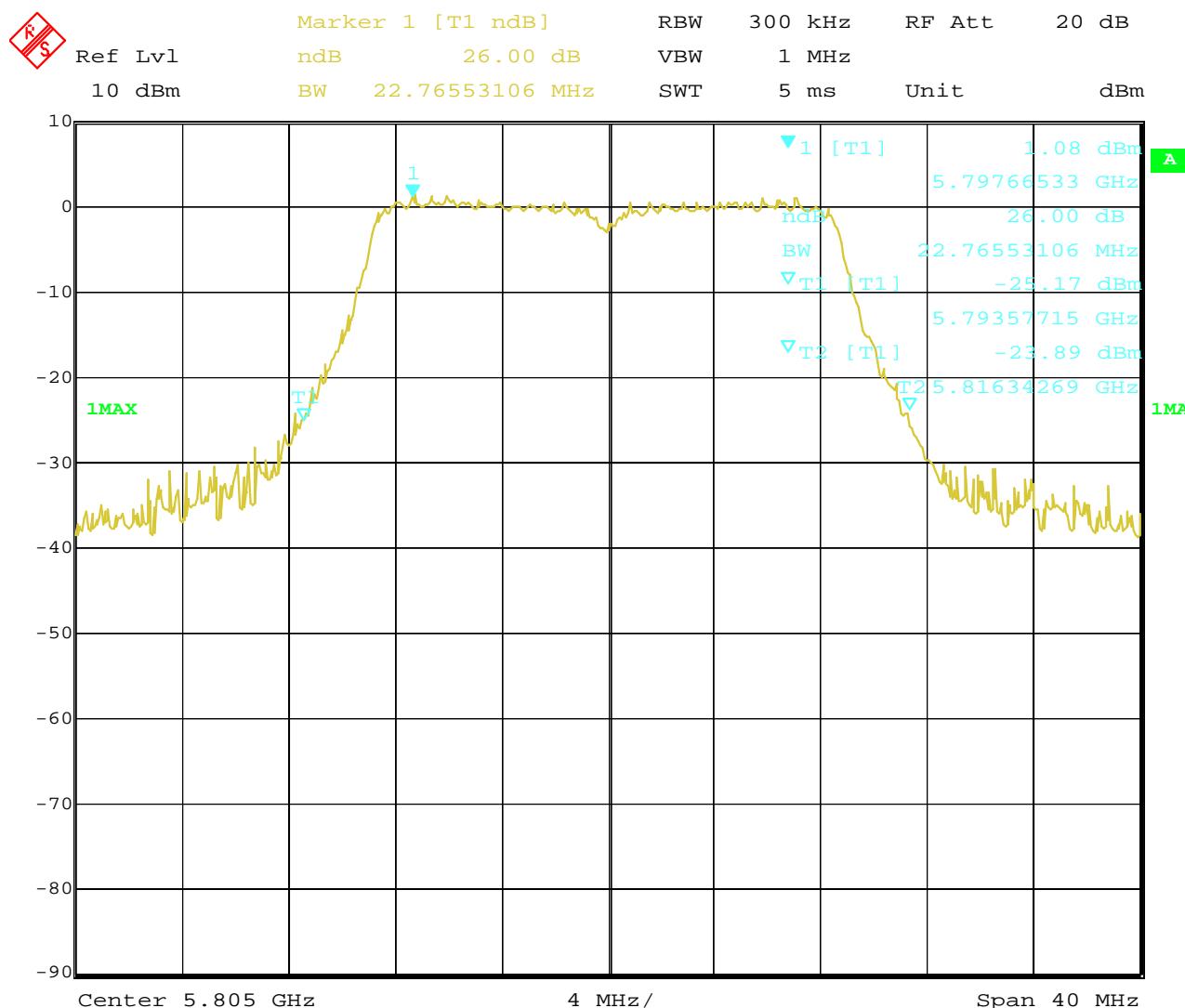
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 161



Date: 11.APR.2019 16:25:00

The report refers only to the sample tested and does not apply to the bulk.

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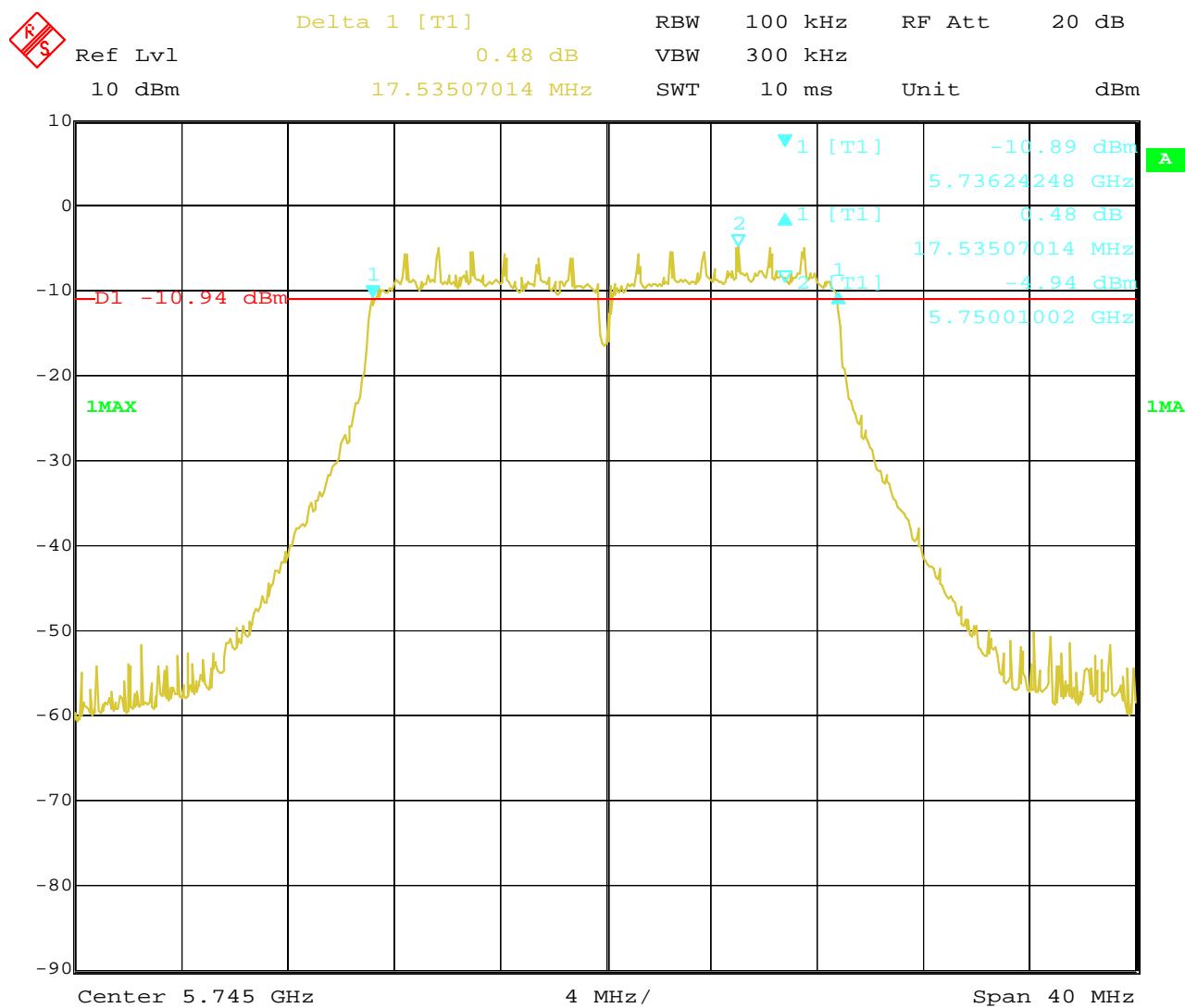
In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

6dB Bandwidth

Channel 149



Date: 11.APR.2019 16:12:27

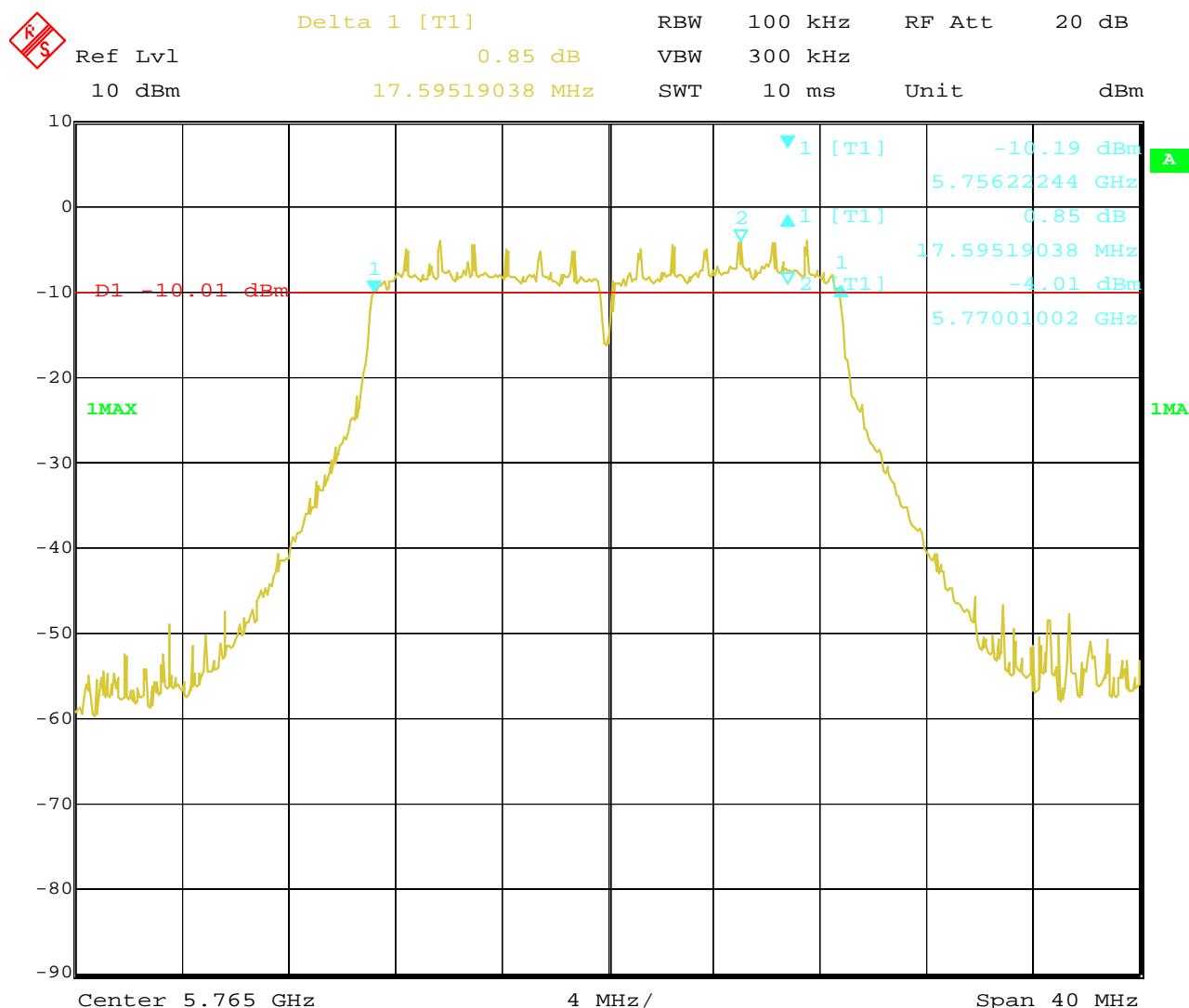
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 153



Date: 11.APR.2019 16:13:29

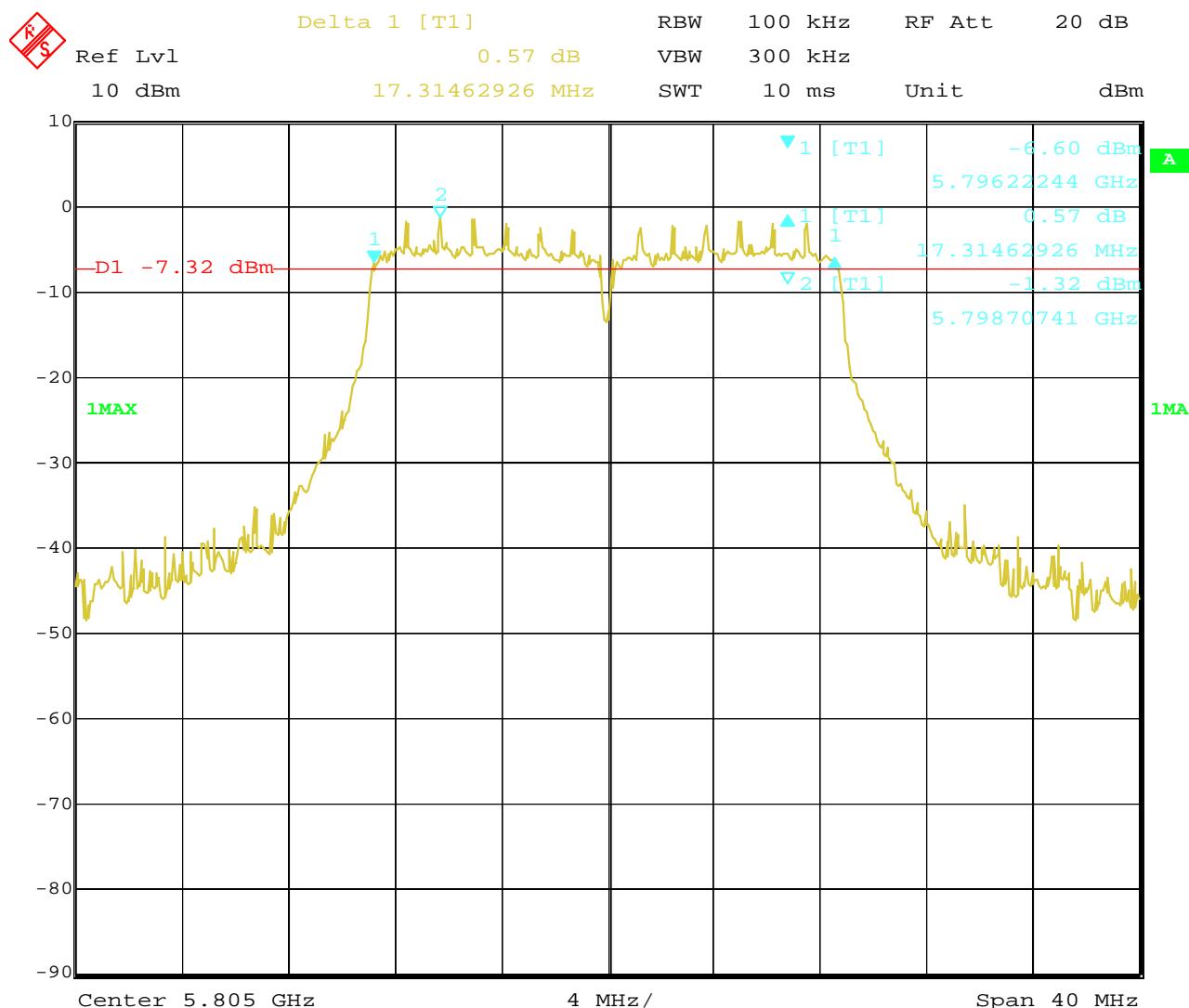
The report refers only to the sample tested and does not apply to the bulk.

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Channel 161



Date: 11.APR.2019 16:18:20

The report refers only to the sample tested and does not apply to the bulk.

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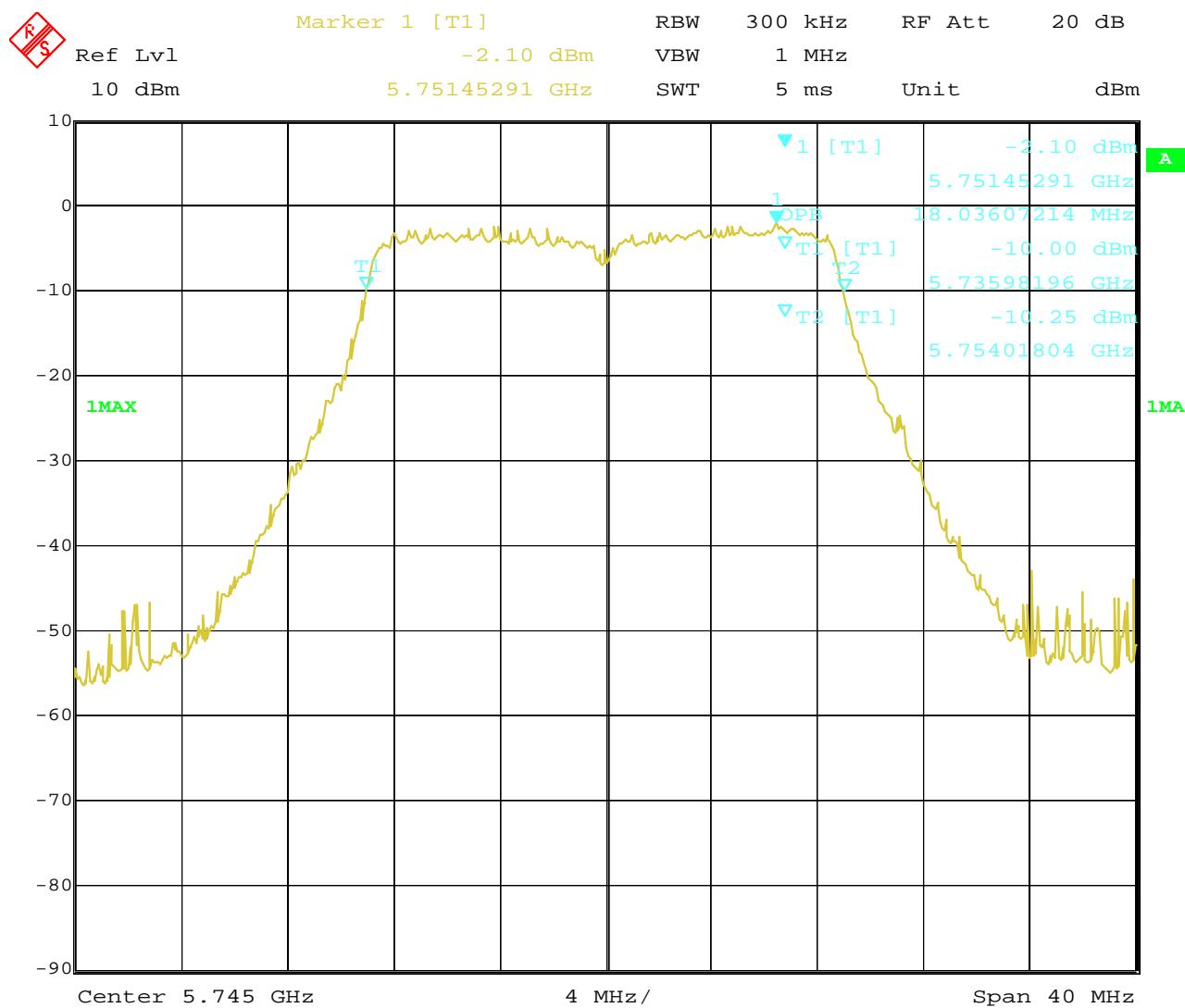
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 149



Date: 11.APR.2019 16:27:59

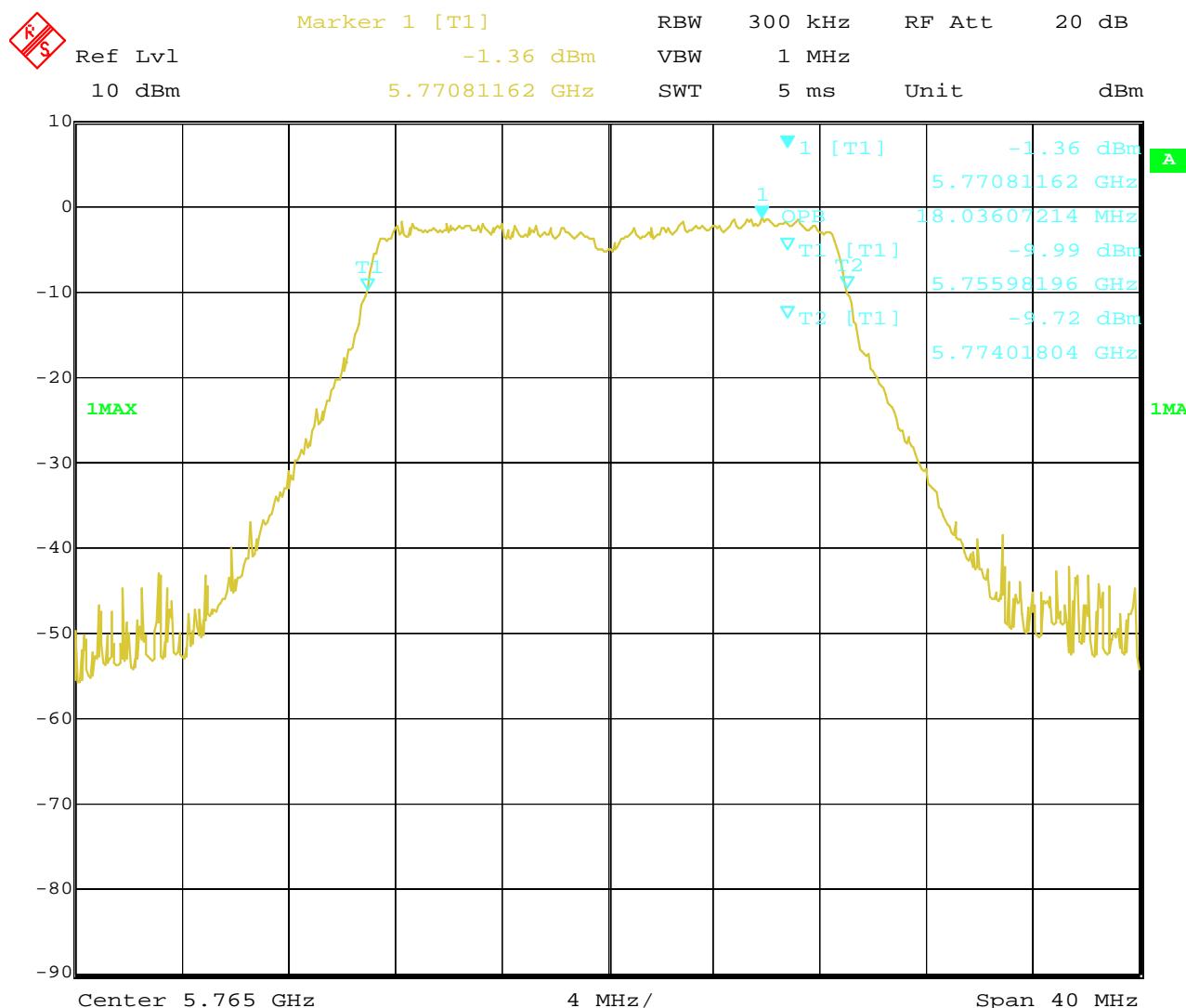
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Channel 153



Date: 11.APR.2019 16:26:53

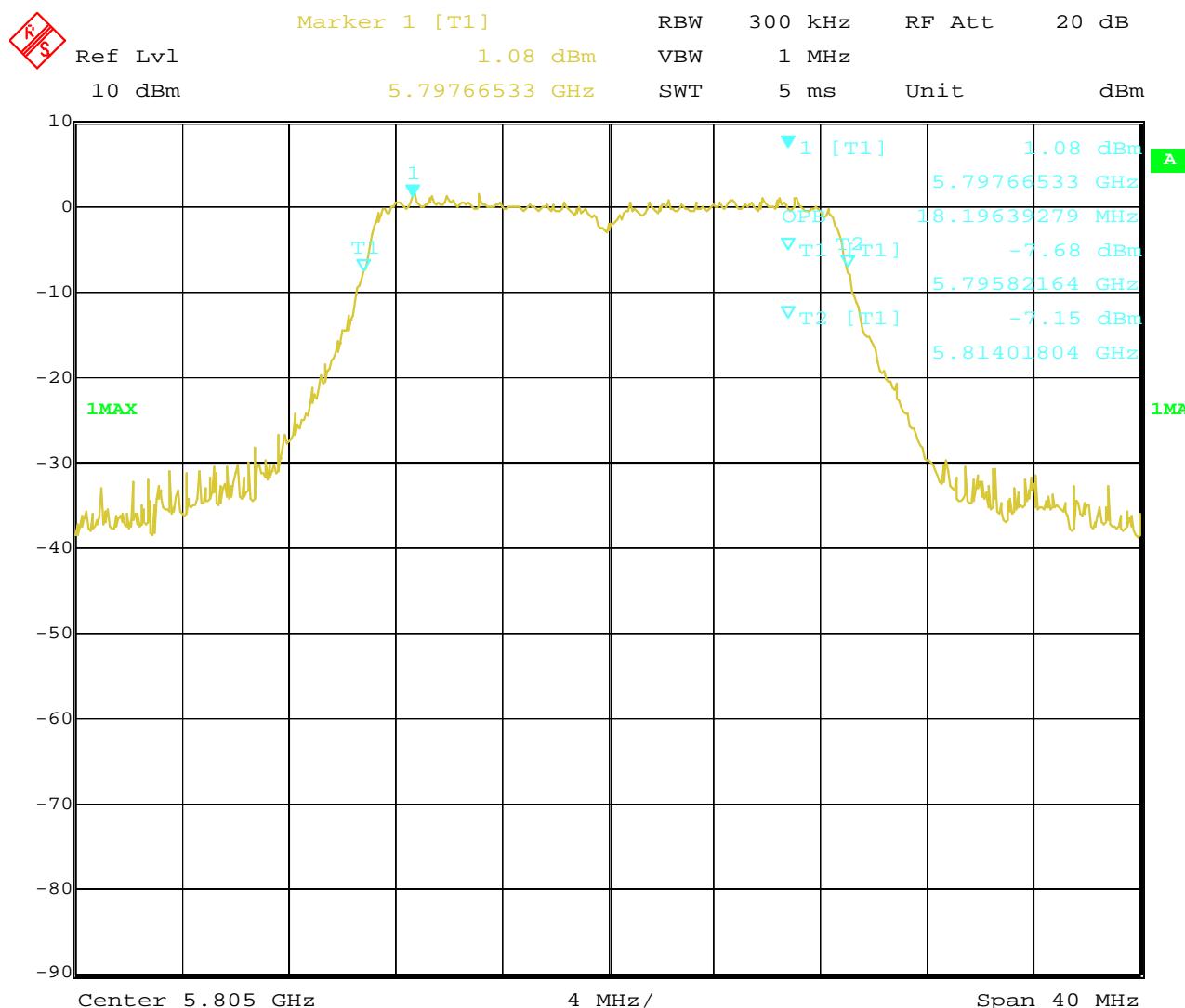
The report refers only to the sample tested and does not apply to the bulk.

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Channel 161



Date: 11.APR.2019 16:25:22

The report refers only to the sample tested and does not apply to the bulk.

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EUT		Developer Board		Model		DB8
Mode		802.11ac VHT40		Input Voltage		120V~
Temperature		24 deg. C,		Humidity		56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail	
26dB Bandwidth						
38	5190	mcs0	40.56	--	Pass	
46	5230	mcs0	40.72	--	Pass	
99% Bandwidth						
38	5190	mcs0	36.23	--	Pass	
46	5230	mcs0	36.23	--	Pass	

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

The report refers only to the sample tested and does not apply to the bulk.

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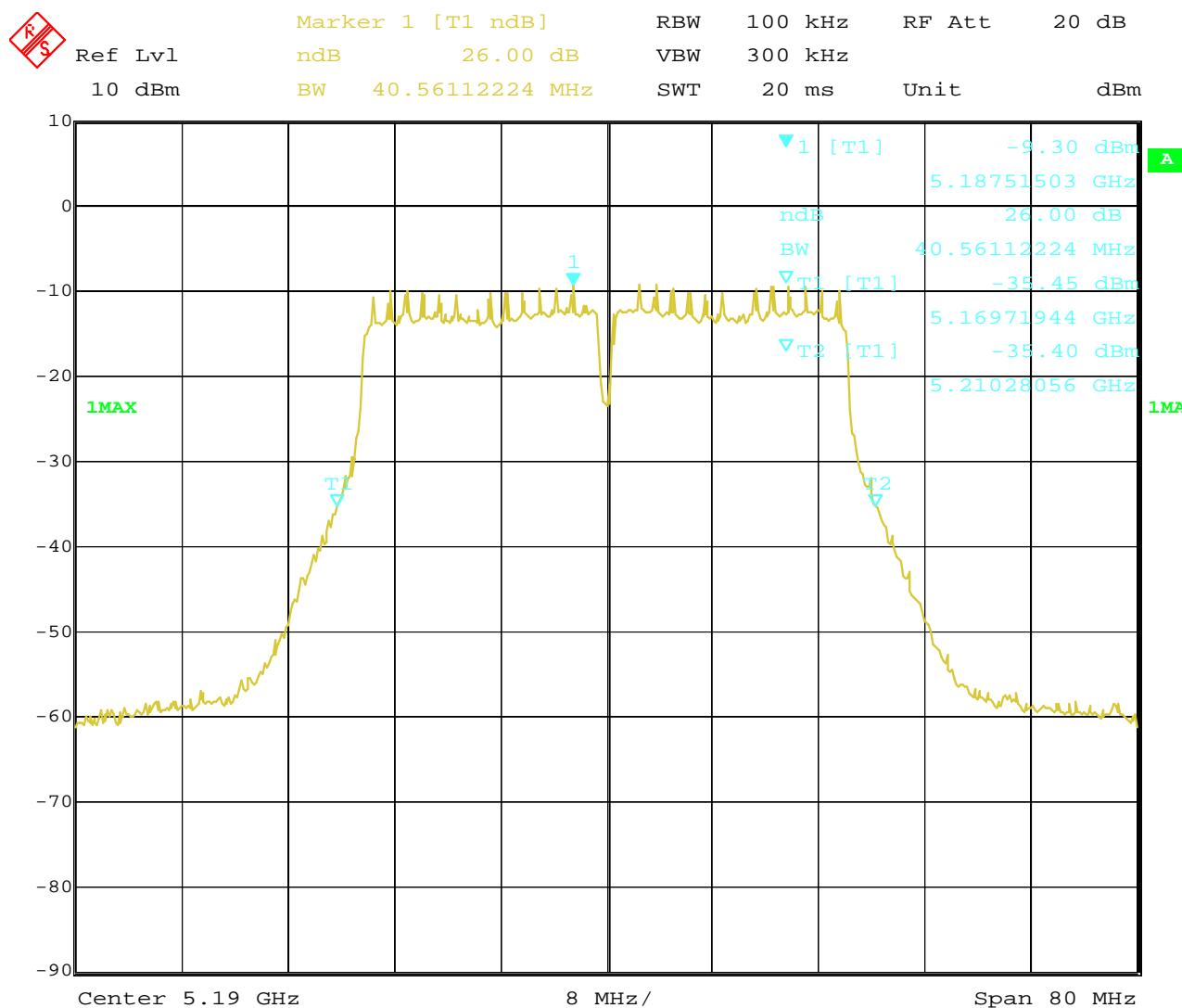
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 38



Date: 11.APR.2019 15:18:54

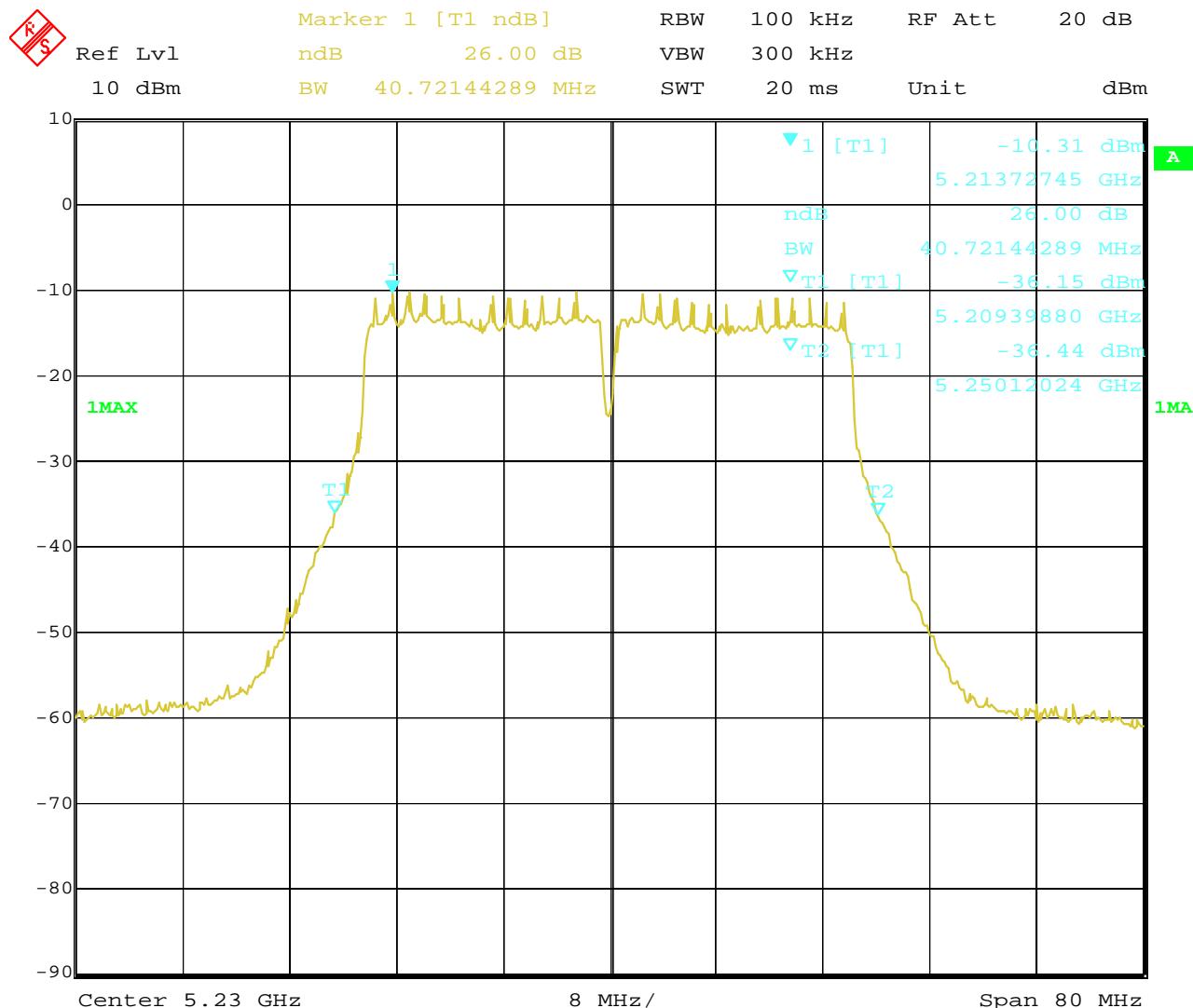
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Channel 46



Date: 11.APR.2019 15:21:05

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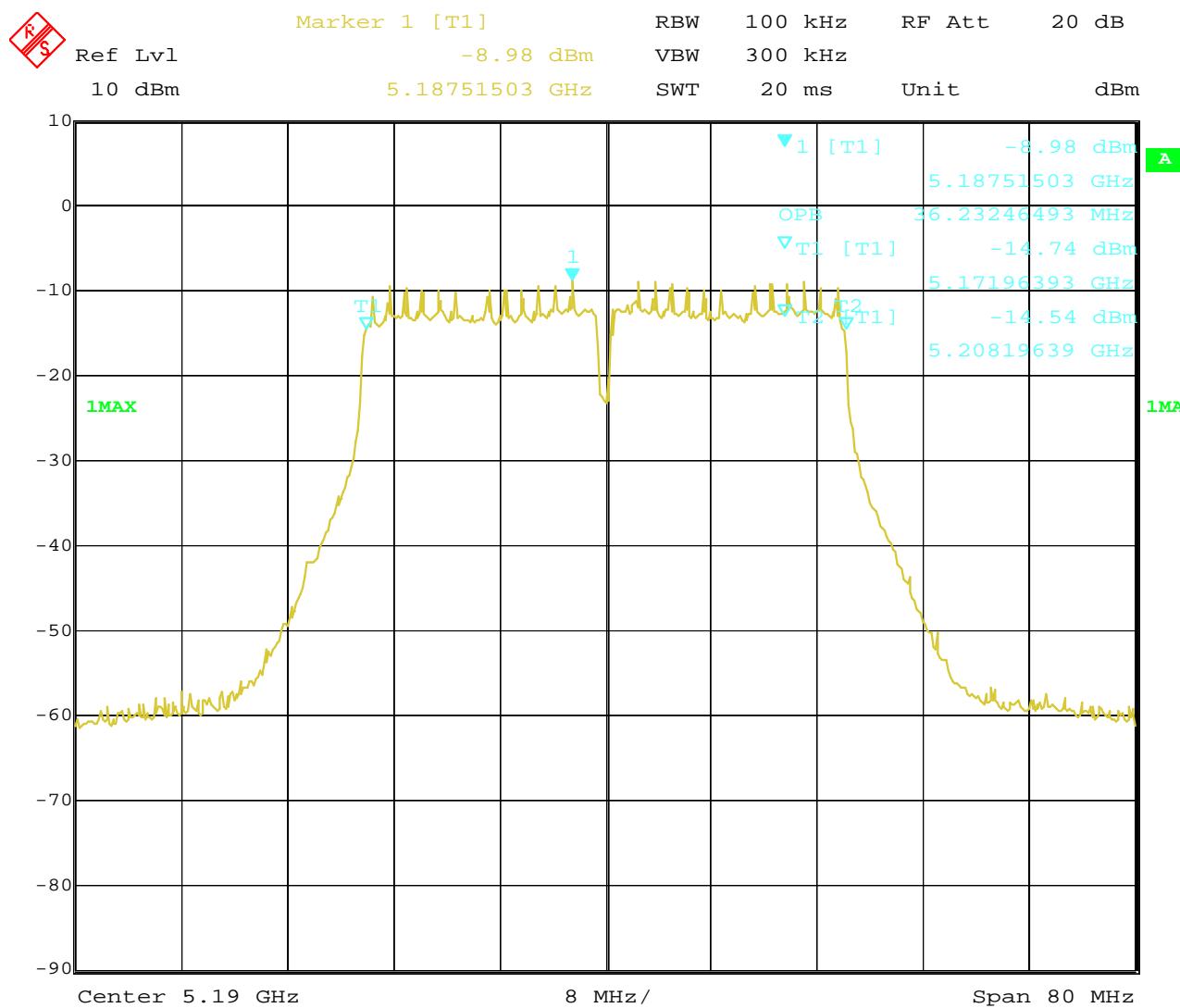
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 38



Date: 11.APR.2019 14:42:20

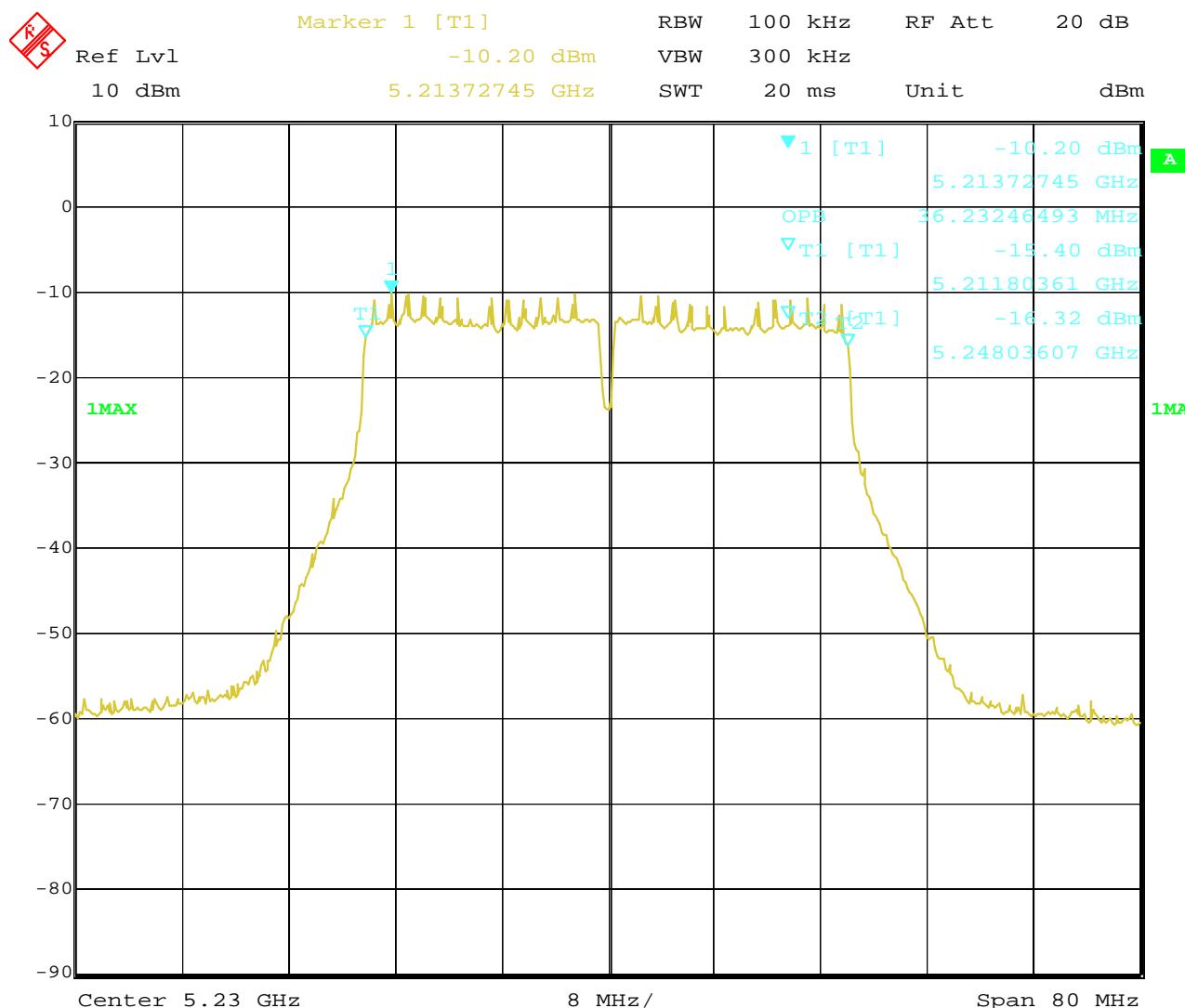
The report refers only to the sample tested and does not apply to the bulk.

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Channel 46



Date: 11.APR.2019 14:50:19

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EUT		Developer Board		Model		DB8
Mode		802.11ac VHT40		Input Voltage		120V~
Temperature		24 deg. C,		Humidity		56% RH
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail	
26dB Bandwidth						
151	5755	mcs0	42.81	--	Pass	
159	5795	mcs0	42.81	--	Pass	
6dB Bandwidth						
151	5755	mcs0	36.15	0.5	Pass	
159	5795	mcs0	35.99	0.5	Pass	
99% Bandwidth						
151	5755	mcs0	36.39	--	Pass	
159	5795	mcs0	36.39	--	Pass	

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

The report refers only to the sample tested and does not apply to the bulk.

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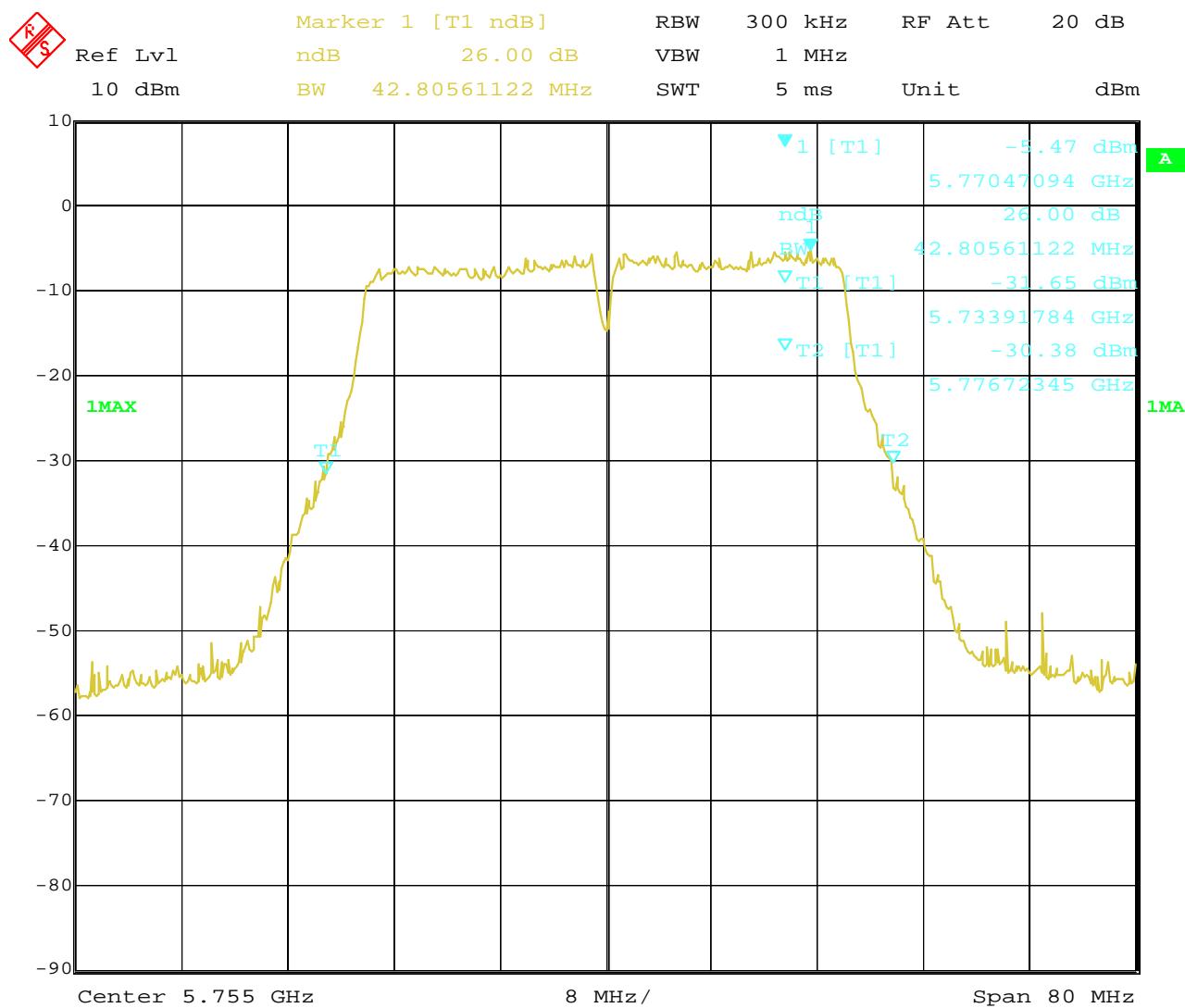
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 151



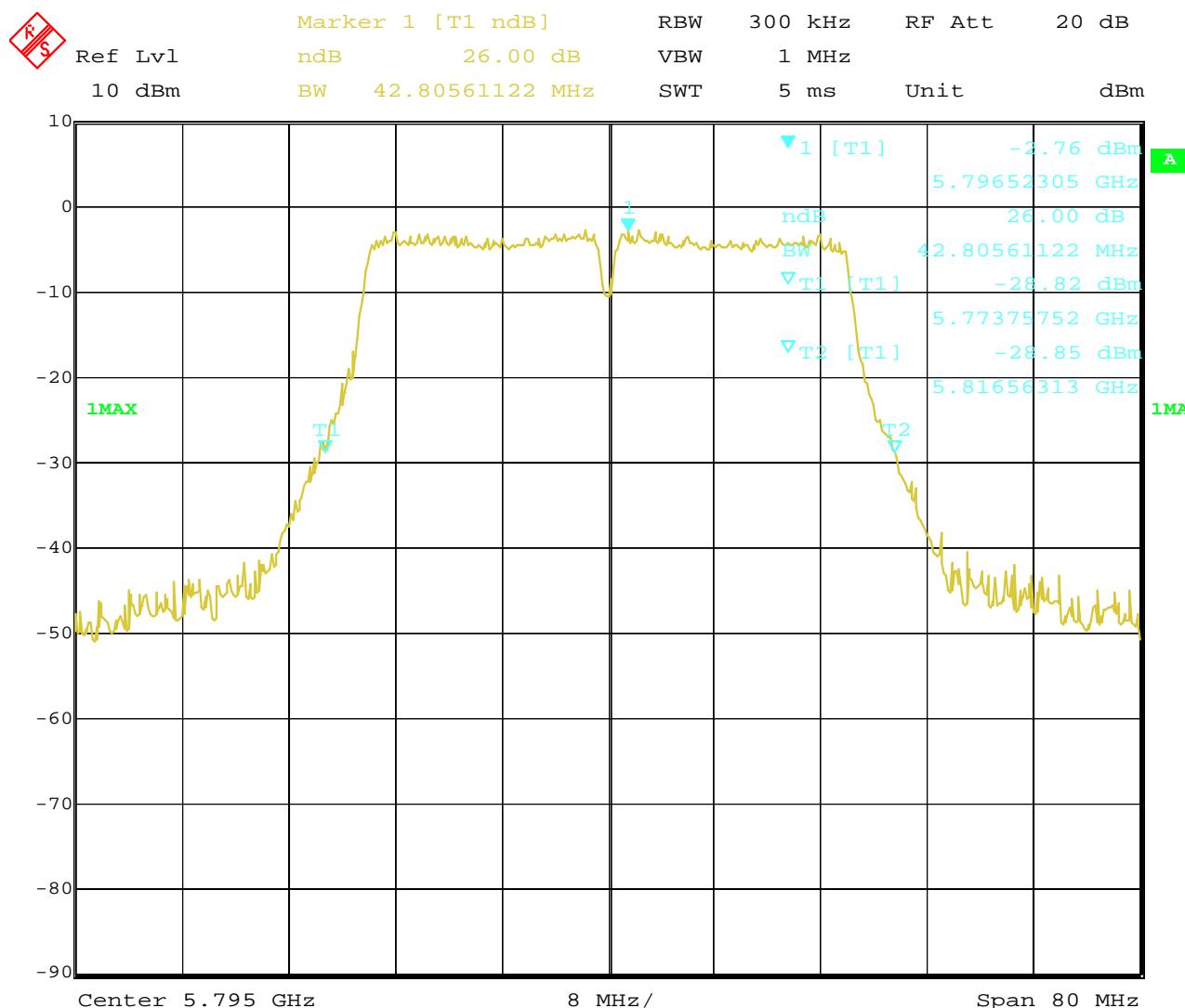
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Channel 159



Date: 11.APR.2019 16:42:05

The report refers only to the sample tested and does not apply to the bulk.

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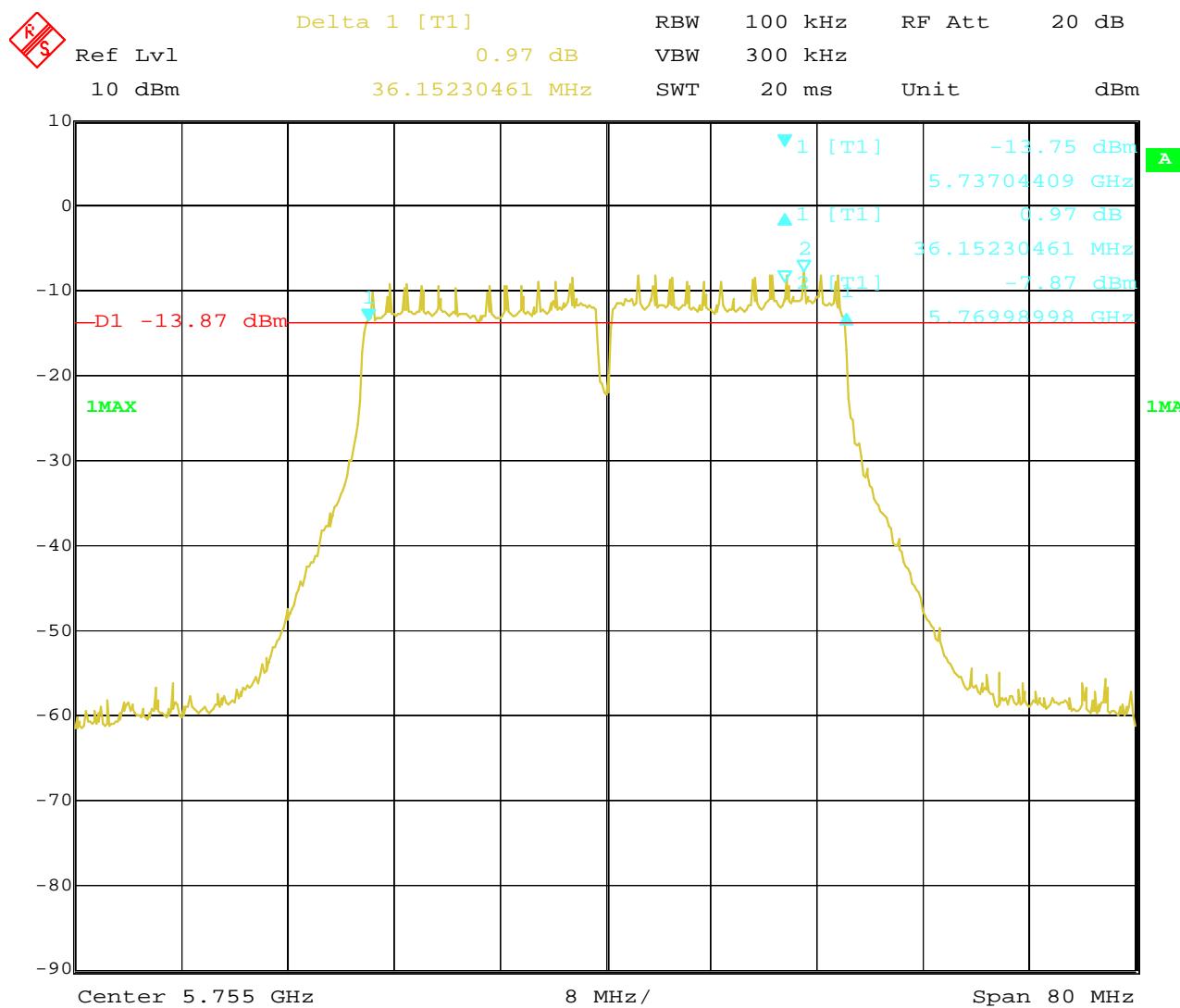
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

6dB Bandwidth

Channel 151



Date: 11.APR.2019 16:07:20

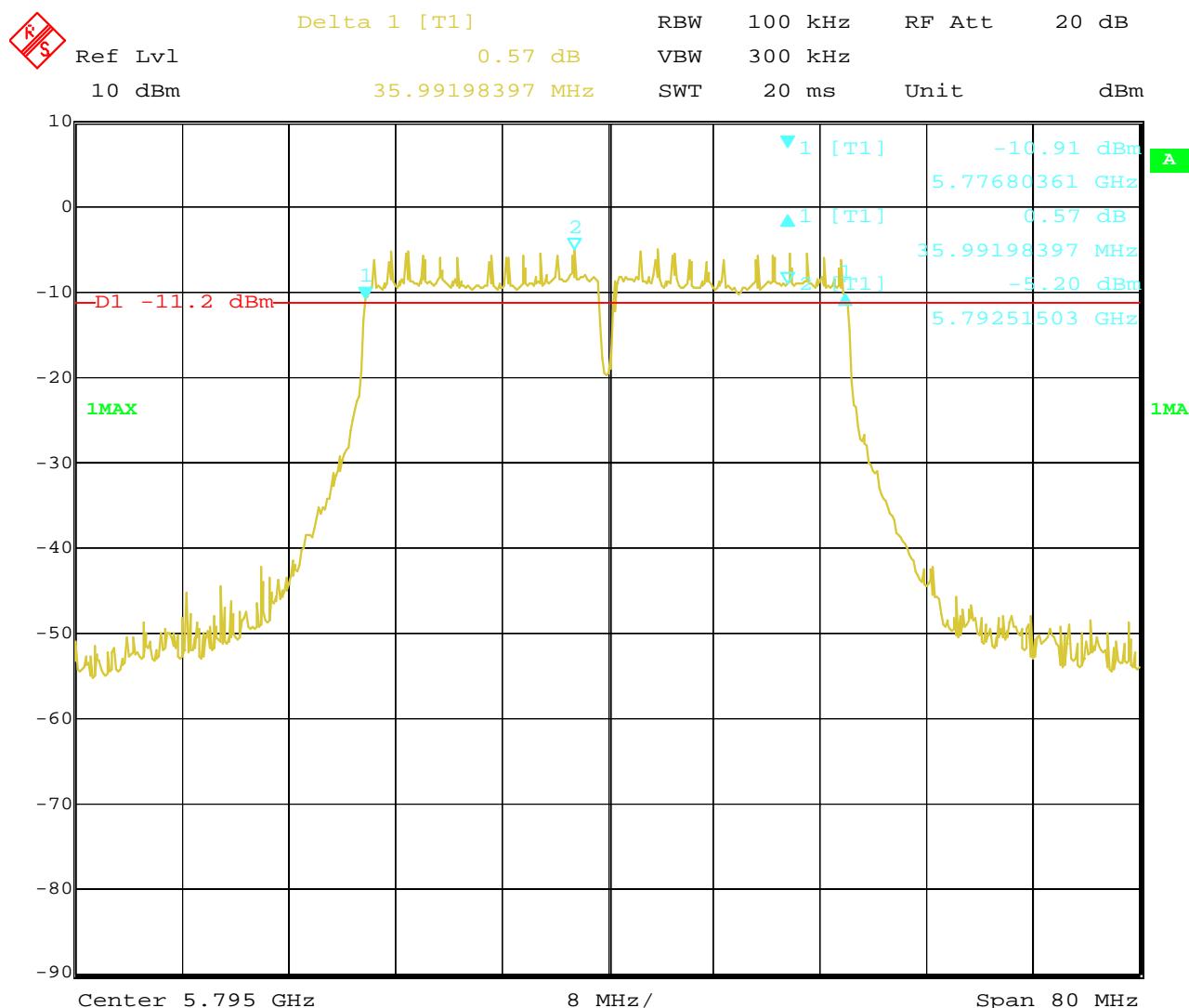
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Channel 159



Date: 11.APR.2019 16:06:07

The report refers only to the sample tested and does not apply to the bulk.

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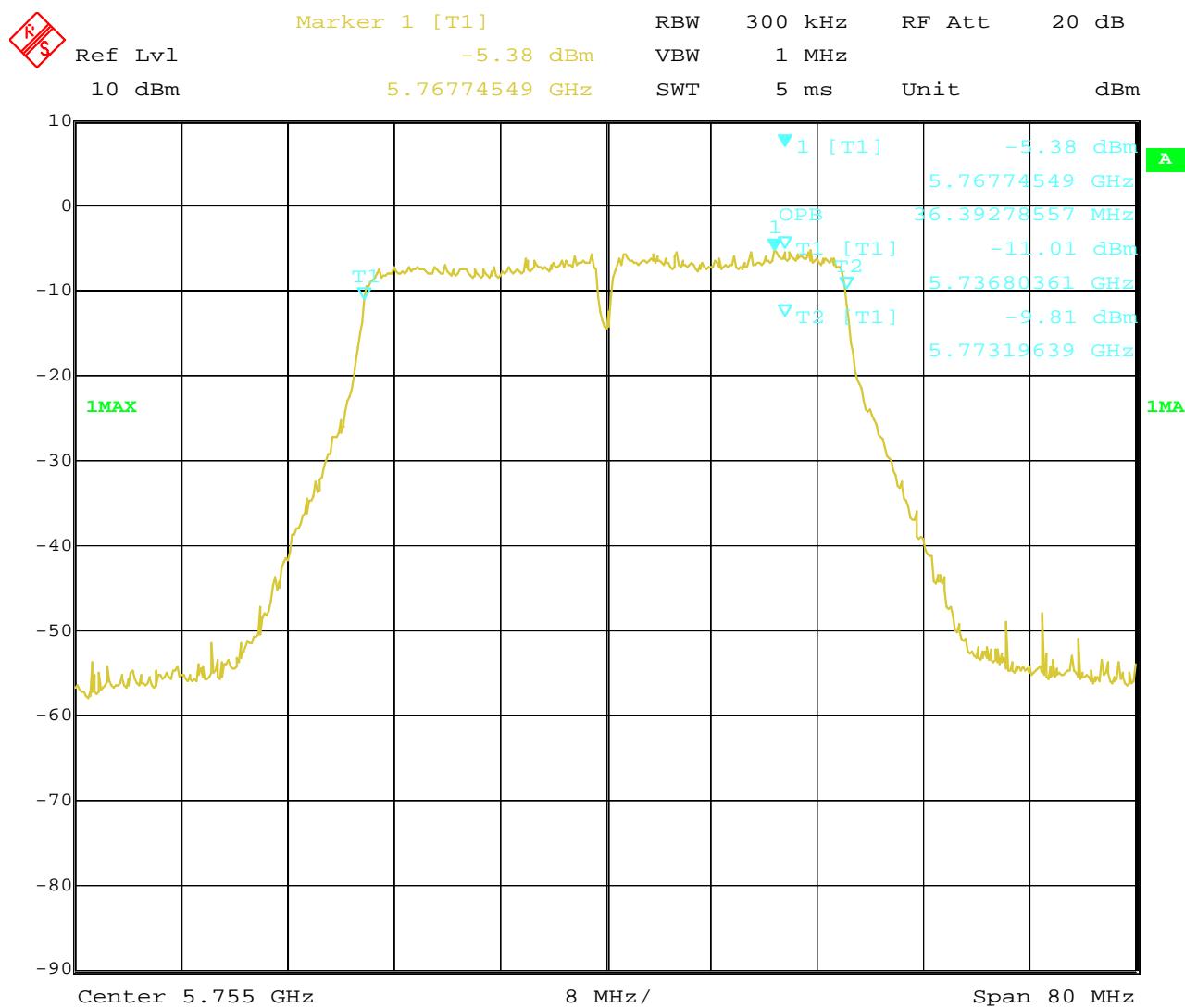
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 151



Date: 11.APR.2019 16:43:18

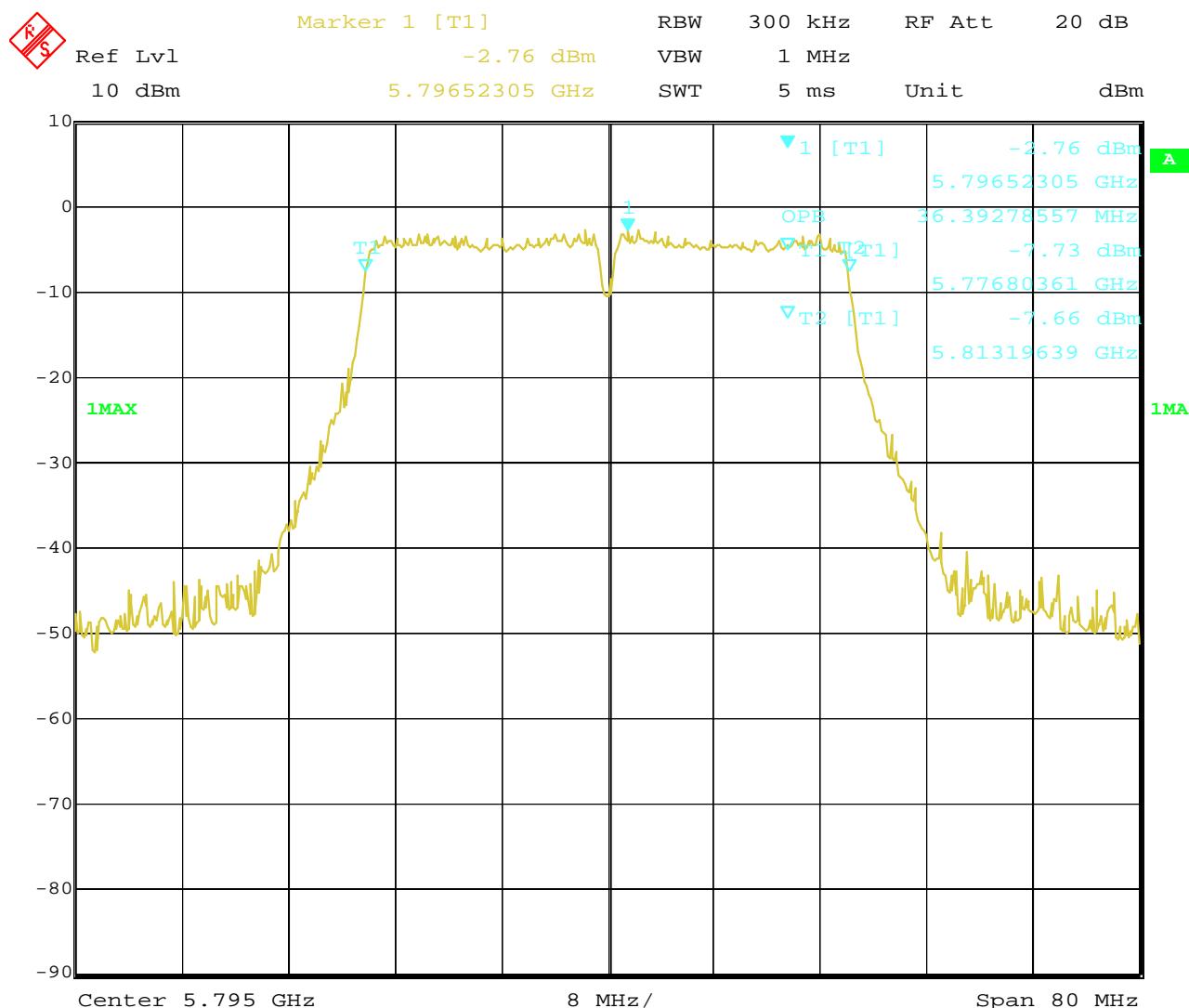
The report refers only to the sample tested and does not apply to the bulk.

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Channel 159



Date: 11.APR.2019 16:41:47

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EUT		Developer Board		Model		DB8			
Mode		802.11ac VHT80		Input Voltage		120V~			
Temperature		24 deg. C,		Humidity		56% RH			
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail				
26dB Bandwidth									
42	5210	23.9	82.73	--	Pass				
99% Bandwidth									
42	5210	23.9	75.35	--	Pass				

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

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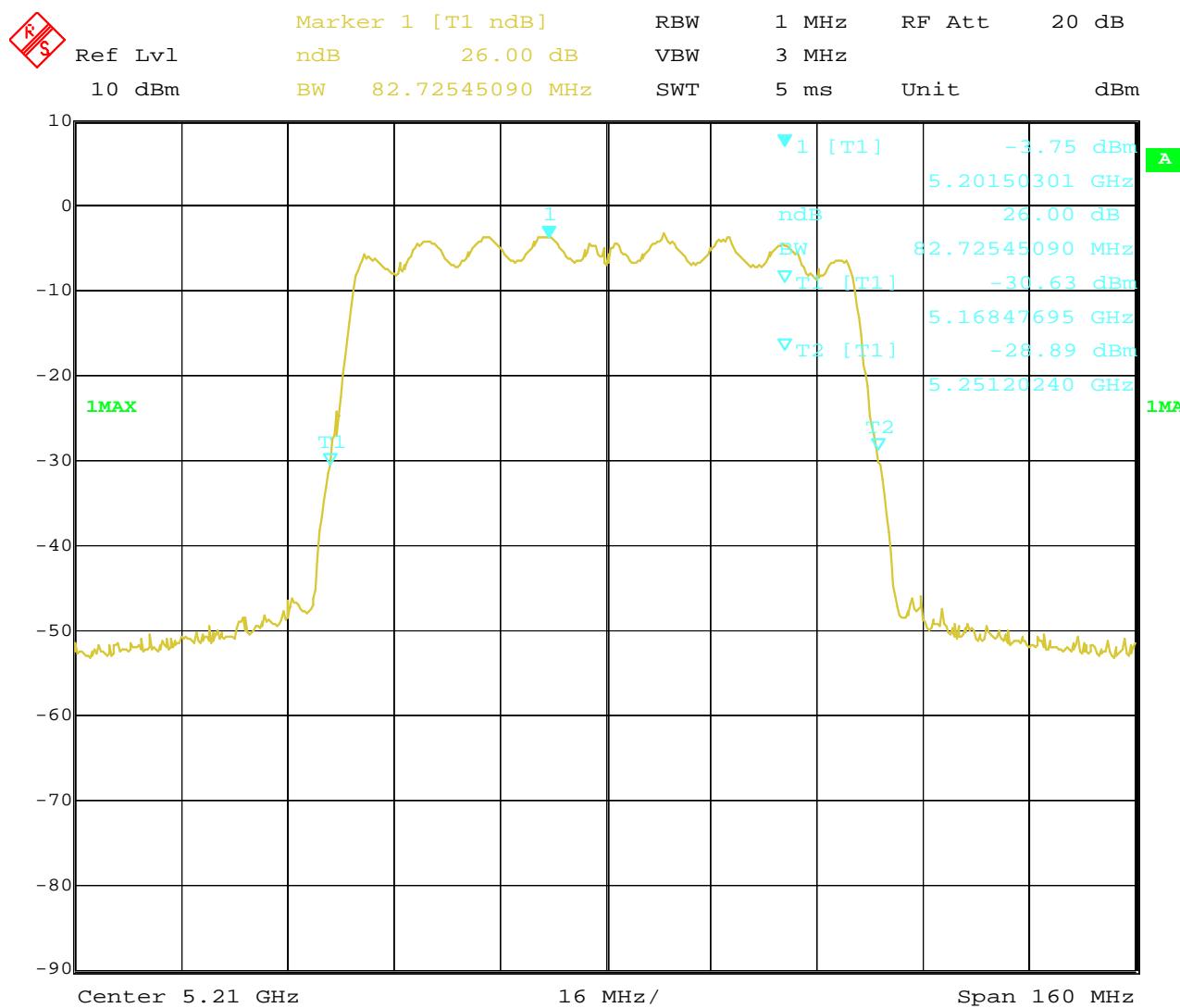
In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 42



Date: 11.APR.2019 16:47:36

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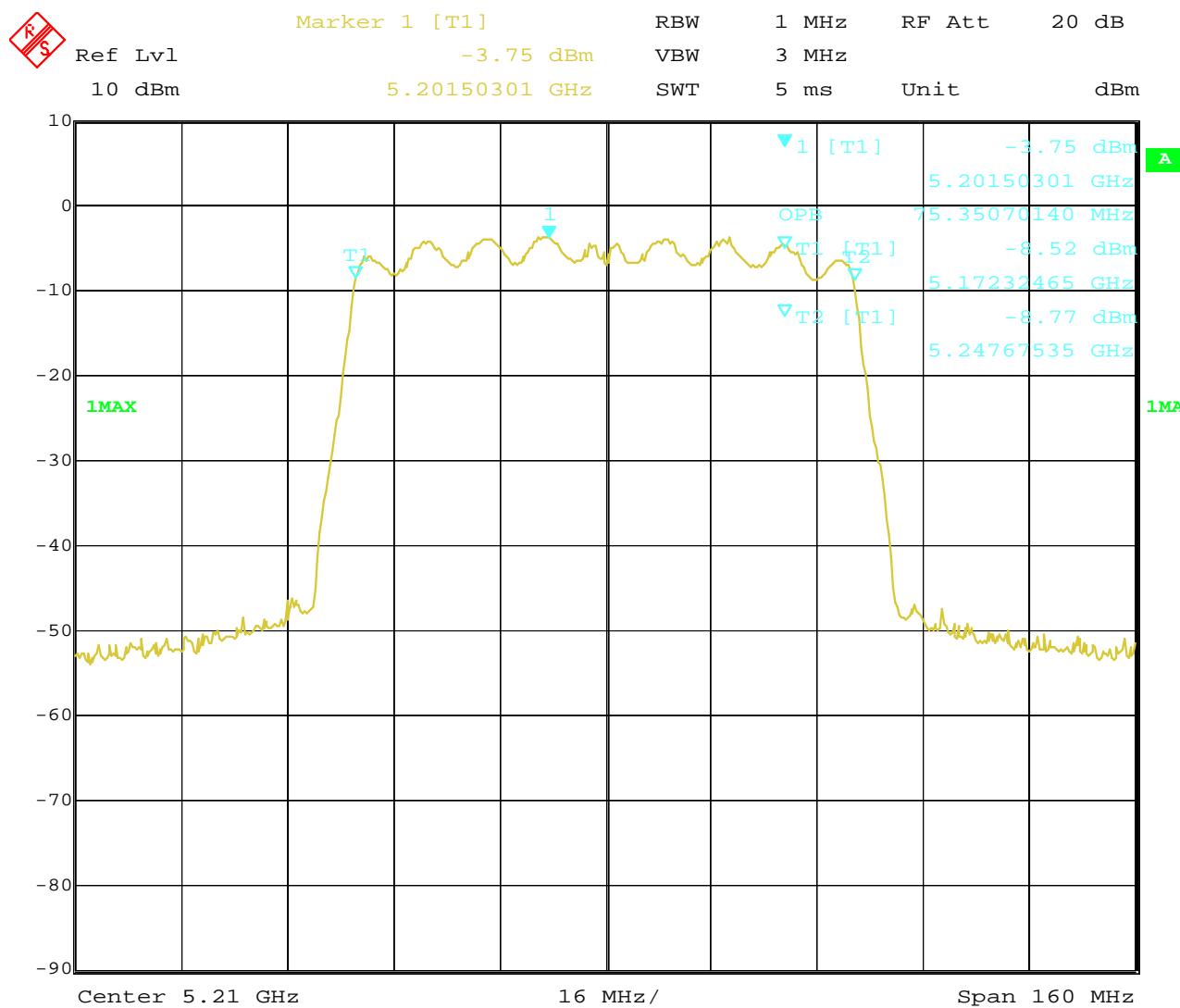
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 42



Date: 11.APR.2019 16:47:20

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EUT		Developer Board		Model		DB8			
Mode		802.11ac VHT80		Input Voltage		120V~			
Temperature		24 deg. C,		Humidity		56% RH			
Channel	Channel Frequency (MHz)	Data Transfer Rate (Mbps)	Bandwidth (MHz)	Minimum Limit (MHz)	Pass/ Fail				
26dB Bandwidth									
155	5775	23.9	82.40	--	Pass				
6dB Bandwidth									
155	5775	23.9	75.39	0.5	Pass				
99% Bandwidth									
155	5775	23.9	75.67	--	Pass				

Note: Ant1 and Ant 2 were tested and only the worst cased was recorded in the test report. Ant 1 was the worst case.

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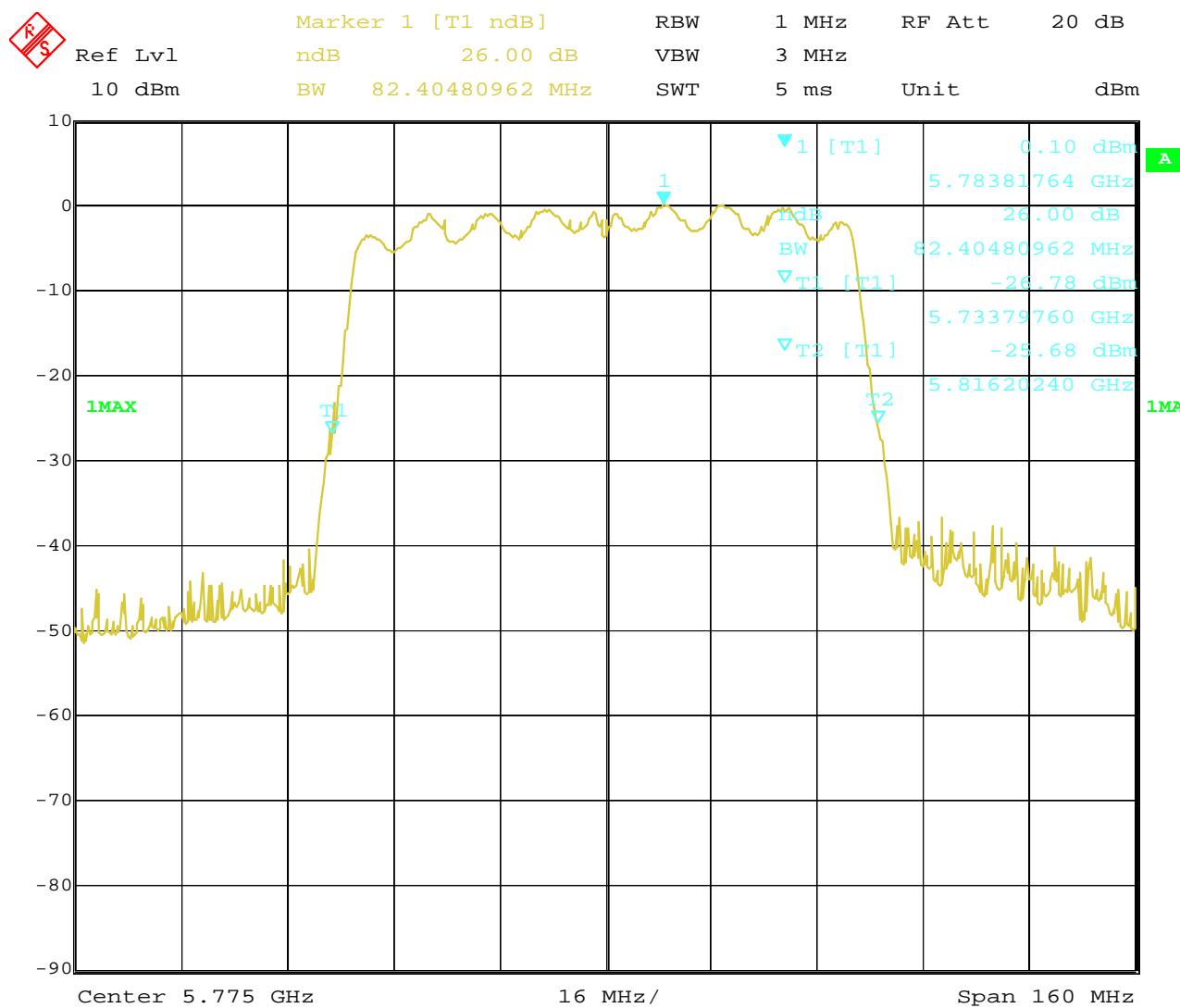
In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

26dB Bandwidth

Channel 155



Date: 11.APR.2019 16:48:20

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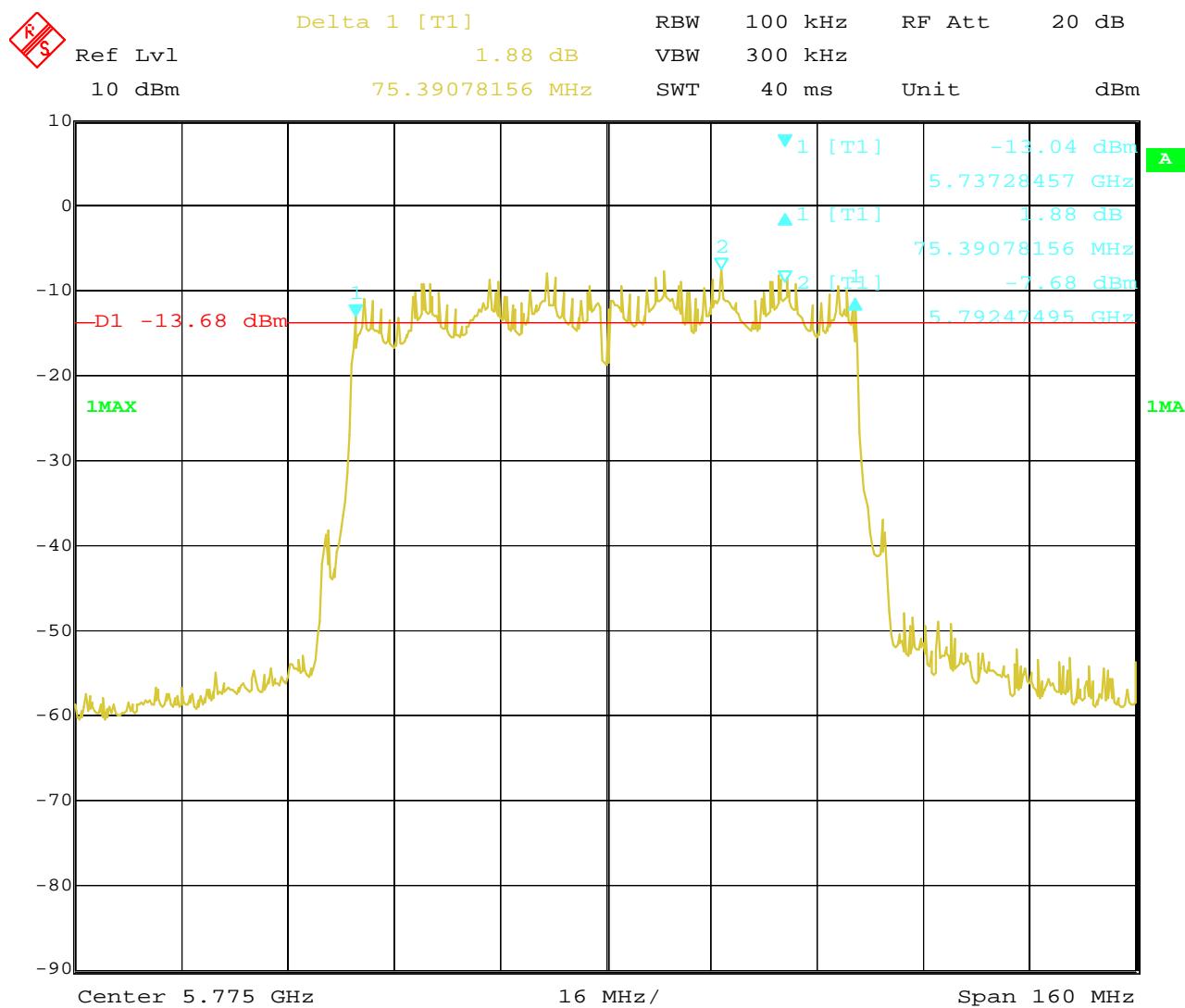
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

6dB Bandwidth

Channel 155



Date: 11.APR.2019 16:00:53

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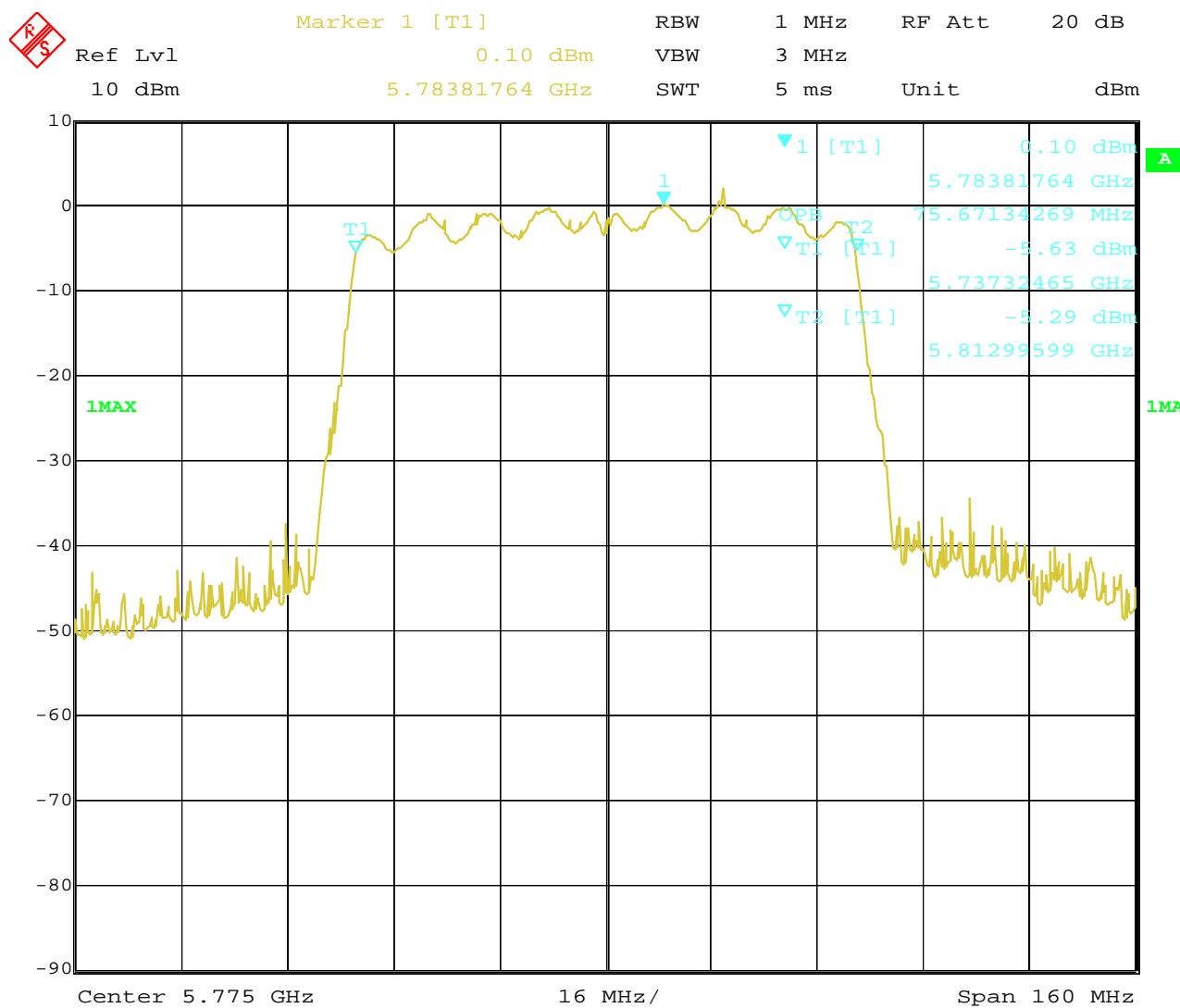
In the event of the improper use of the report, The SHENZHEN TIMEWAY TESTING LABORATORIES, reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Test Configure

99% Bandwidth

Channel 155



Date: 11.APR.2019 16:48:31

The report refers only to the sample tested and does not apply to the bulk.

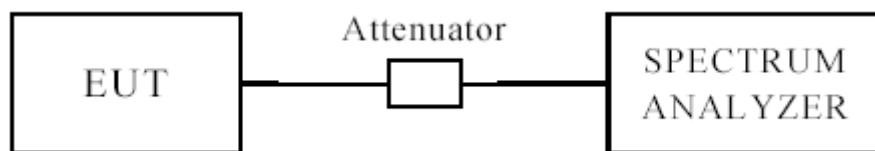
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8.0 Peak Transmit Power Measurement

8.1 Test Setup



8.2 Limits of Peak Transmit Power Measurement

Operation Band	EUT Category	Limit
U-NII-2A		For OEM devices installed in vehicles, the maximum e.i.r.p. shall not exceed 30 mW or $1.76 + 10 \log_{10} B^*$, dBm, whichever is less
	✓	For other devices, the maximum e.i.r.p. shall not exceed 200 mW or $10 + 10 \log_{10} B^*$, dBm, whichever power is less

Note: 1. Where B is the 99% emission bandwidth in MHz.

2. EIRP was measured, EIRP=AV Power +Antenna Gain

U-NII-2A	--	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	--	250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	--	1 Watt (30 dBm)

Note: 1. Where B is the 26dB emission bandwidth in MHz.

2. The average power was measured

8.3 Test Procedure

The average power output was measured with a Spectrum analyzer connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the average power was measured

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8.4 Test Results

EUT		Developer Board		Model		DB8		
Mode		802.11a		Input Voltage		120V~		
Temperature		24 deg. C,		Humidity		56% RH		
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Power (dBm)	Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
36	5180	5.63	3.66	5.50	3.55	8.58	22.38	Pass
40	5200	5.92	3.91	5.78	3.78	8.86	22.38	Pass
48	5240	5.89	3.88	5.80	3.80	8.85	22.38	Pass
149	5745	6.57	4.54	6.39	4.36	9.49	30	Pass
153	5765	7.40	5.50	7.27	5.33	10.34	30	Pass
161	5805	9.27	8.45	9.18	8.28	12.23	30	Pass

Note: 1. At final test to get the worst-case emission at 6Mbps for CH36, CH40, CH48, CH149, CH153 and CH161

2. The result basic equation calculation as follow:

$$\text{Average Power Output} = \text{AV Power Reading} + \text{Cable loss} + \text{Attenuator}$$

3. The worst case was recorded

4. Total power = Ant 1 + Ant 2

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EUT		Developer Board		Model		DB8		
Mode		802.11n HT20		Input Voltage		120V~		
Temperature		24 deg. C,		Humidity		56% RH		
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Power (dBm)	Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
36	5180	5.93	3.92	5.77	3.78	8.86	22.38	Pass
40	5200	6.12	4.09	6.01	3.99	9.07	22.38	Pass
48	5240	5.06	3.21	4.94	3.12	8.01	22.38	Pass
149	5745	6.36	4.33	6.22	4.19	9.30	30	Pass
153	5765	7.02	5.04	6.89	4.89	9.97	30	Pass
161	5805	9.19	8.30	9.07	8.07	12.14	30	Pass

Note: 1. At final test to get the worst-case emission at 6Mbps for CH36, CH40, CH48, CH149, CH153 and CH161

2. The result basic equation calculation as follow:

$$\text{Average Power Output} = \text{AV Power Reading} + \text{Cable loss} + \text{Attenuator}$$

3. The worse case was recorded
4. Total power = Ant 1 + Ant 2

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EUT		Developer Board		Model		DB8		
Mode		802.11n HT40		Input Voltage		120V~		
Temperature		24 deg. C,		Humidity		56% RH		
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Power (dBm)	Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
38	5190	2.09	1.62	2.01	1.59	5.07	23.01	Pass
46	5230	1.89	1.55	1.76	1.50	4.84	23.01	Pass
151	5755	3.39	2.18	3.31	2.14	6.35	30	Pass
159	5795	6.52	4.49	6.43	4.40	9.49	30	Pass

Note: 1. At final test to get the worst-case emission at 6Mbps for CH38, CH46, CH151, CH159

2. The result basic equation calculation as follow:

$$\text{Average Power Output} = \text{AV Power Reading} + \text{Cable loss} + \text{Attenuator}$$

2. The worse case was recorded

3. Total power = Ant 1 + Ant 2

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EUT		Developer Board		Model		DB8		
Mode		802.11ac VHT20		Input Voltage		120V~		
Temperature		24 deg. C,		Humidity		56% RH		
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Power (dBm)	Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
36	5180	5.58	3.61	5.45	3.51	8.52	22.38	Pass
40	5200	5.67	3.69	5.57	3.61	8.63	22.38	Pass
48	5240	4.50	2.82	4.39	2.75	7.46	22.38	Pass
149	5745	6.41	4.38	6.26	4.23	9.35	30	Pass
153	5765	7.46	5.57	7.38	5.47	10.43	30	Pass
161	5805	9.05	8.04	8.92	7.80	12.00	30	Pass

Note: 1. At final test to get the worst-case emission at mes0 (6.5Mbps) for CH36, CH40, CH48, CH149, CH153 and CH161

2. The result basic equation calculation as follow:

$$\text{Average Power Output} = \text{AV Power Reading} + \text{Cable loss} + \text{Attenuator}$$

3. The worse case was recorded

4. Total power = Ant 1 + Ant 2

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EUT		Developer Board		Model		DB8		
Mode		802.11ac VHT40		Input Voltage		120V~		
Temperature		24 deg. C,		Humidity		56% RH		
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Power (dBm)	Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
38	5190	2.21	1.66	2.13	1.63	5.17	23.01	Pass
46	5230	1.93	1.56	1.87	1.54	4.91	23.01	Pass
151	5755	3.43	2.20	3.29	2.13	6.36	30	Pass
159	5795	6.46	4.43	6.34	4.31	9.42	30	Pass

Note: 1. At final test to get the worst-case emission at mcs0 (13.5Mbps) for CH38, CH46, CH151, CH159

2. The result basic equation calculation as follow:

$$\text{Average Power Output} = \text{AV Power Reading} + \text{Cable loss} + \text{Attenuator}$$

4. The worse case was recorded

5. Total power = Ant 1 + Ant 2

EUT		Developer Board		Model		DB8		
Mode		802.11ac VHT80		Input Voltage		120V~		
Temperature		24 deg. C,		Humidity		56% RH		
Channel	Frequency (MHz)	Ant 1 Power		Ant 2 Power		Total Power (dBm)	Limit (dBm)	Pass/ Fail
		dBm	mW	dBm	mW			
42	5210	2.18	1.65	2.10	1.62	5.15	23.01	Pass
155	5775	5.22	3.33	5.16	3.28	8.20	30	Pass

Note: 1. At final test to get the worst-case emission at mcs0 (23.9Mbps) for CH38, CH46, CH151, CH159

2. The result basic equation calculation as follow:

$$\text{Average Power Output} = \text{AV Power Reading} + \text{Cable loss} + \text{Attenuator}$$

3. The worse case was recorded

4. Total power = Ant 1 + Ant 2

The report refers only to the sample tested and does not apply to the bulk.

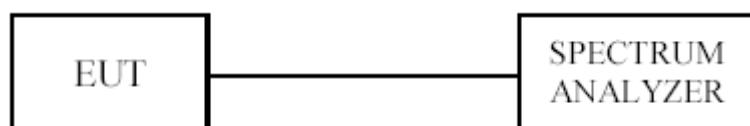
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9. Power Spectral Density Measurement

9.1 Test Setup



9.2 Limits of Power Spectral Density Measurement

Operation Band	Limit
U-NII-1	10dBm/MHz
U-NII-2A	11dBm/MHz
U-NII-2C	11dBm/MHz
U-NII-3	30dBm/500kHz

9.3 Test Procedure

1. The EUT was directly connected to the spectrum analyzer
2. Set the RBW = 1MHz.
3. Set the VBW = 3MHz.
4. Set the span to encompass the entire emissions bandwidth (EBW) of the signal
5. Detector = RMS
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.

Note: Because spectrum RS can not set RBW to be 500KHz, so only can set RBW to be 1MHz

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9.4 Test Result

EUT		Developer Board		Model	DB8	
Mode		802.11a 6Mbps		Input Voltage	120V~	
Temperature		24 deg. C,		Humidity	56% RH	
Channel	Frequency (MHz)	Ant1 Spectral Density	Factor	Total Spectral Density (dBm)	Limit (dBm)	Pass/ Fail
36	5180	-4.52	3.01	-1.51	10	Pass
40	5200	-4.24	3.01	-1.23	10	Pass
48	5240	-5.34	3.01	-2.33	10	Pass
149	5745	-3.52	3.01	-0.51	30	Pass
153	5765	-2.62	3.01	0.39	30	Pass
161	5805	-0.06	3.01	2.95	30	Pass

Note: 1. Total Spectral Density = Ant1 Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

The report refers only to the sample tested and does not apply to the bulk.

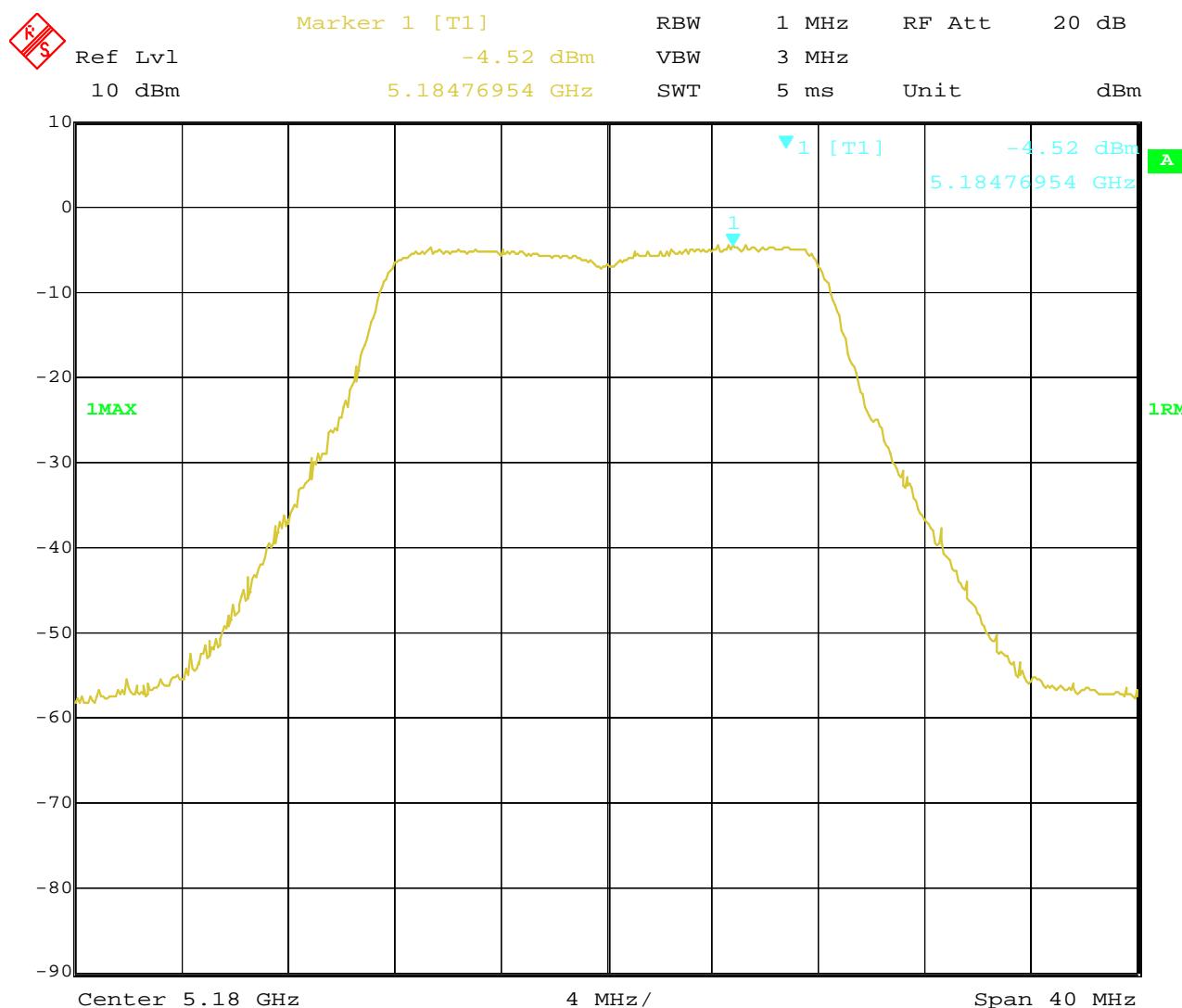
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9.5 Plots of Power Spectral Density Measurement

1.802.11a at 6Mbps of CH36



Date: 11.APR.2019 16:50:42

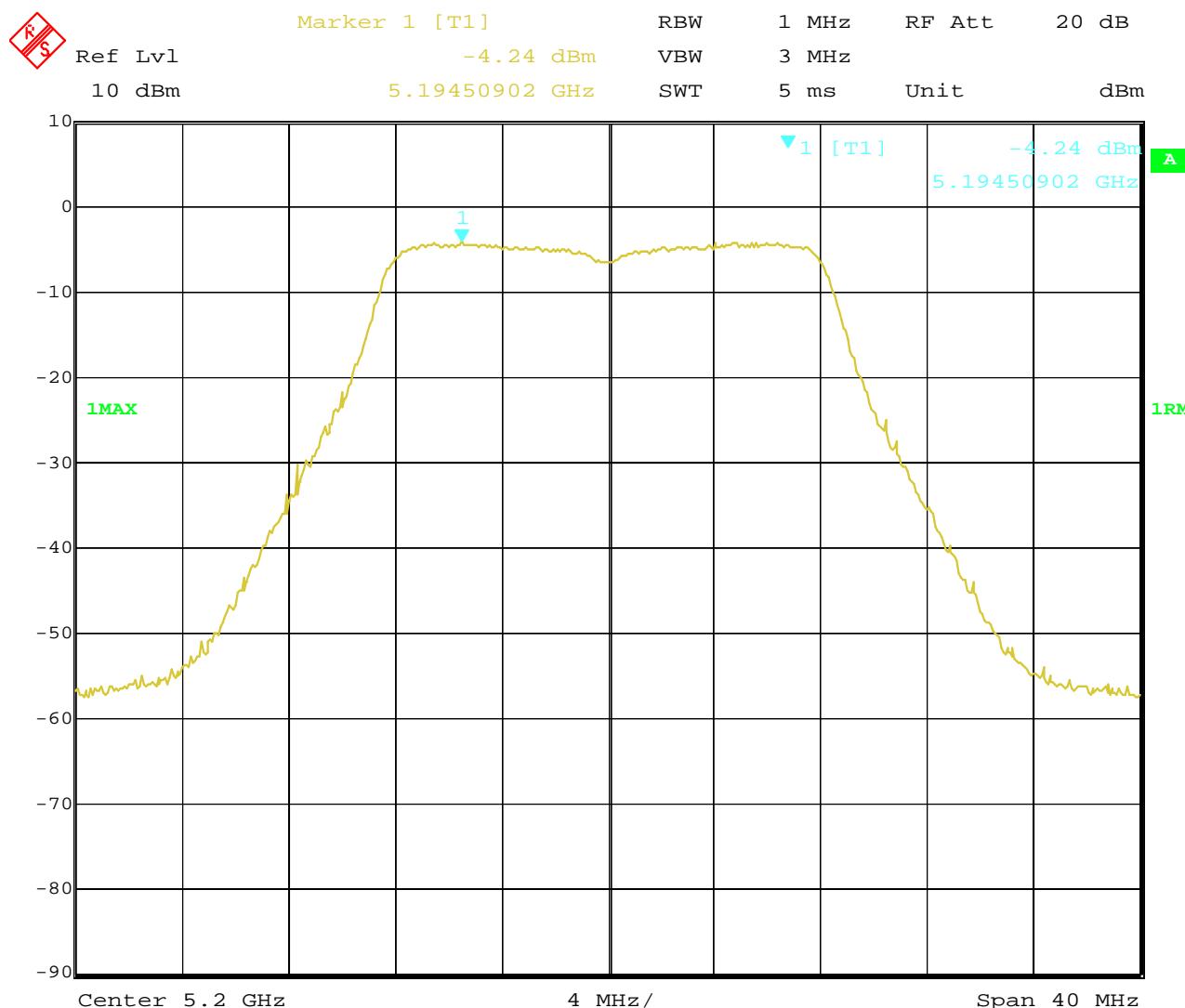
The report refers only to the sample tested and does not apply to the bulk.

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In the event of the improper use of the report, the SHENZHEN TIMEWAY TESTING LABORATORIES reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



2.802.11a at 6Mbps of CH40



Date: 11.APR.2019 16:52:45

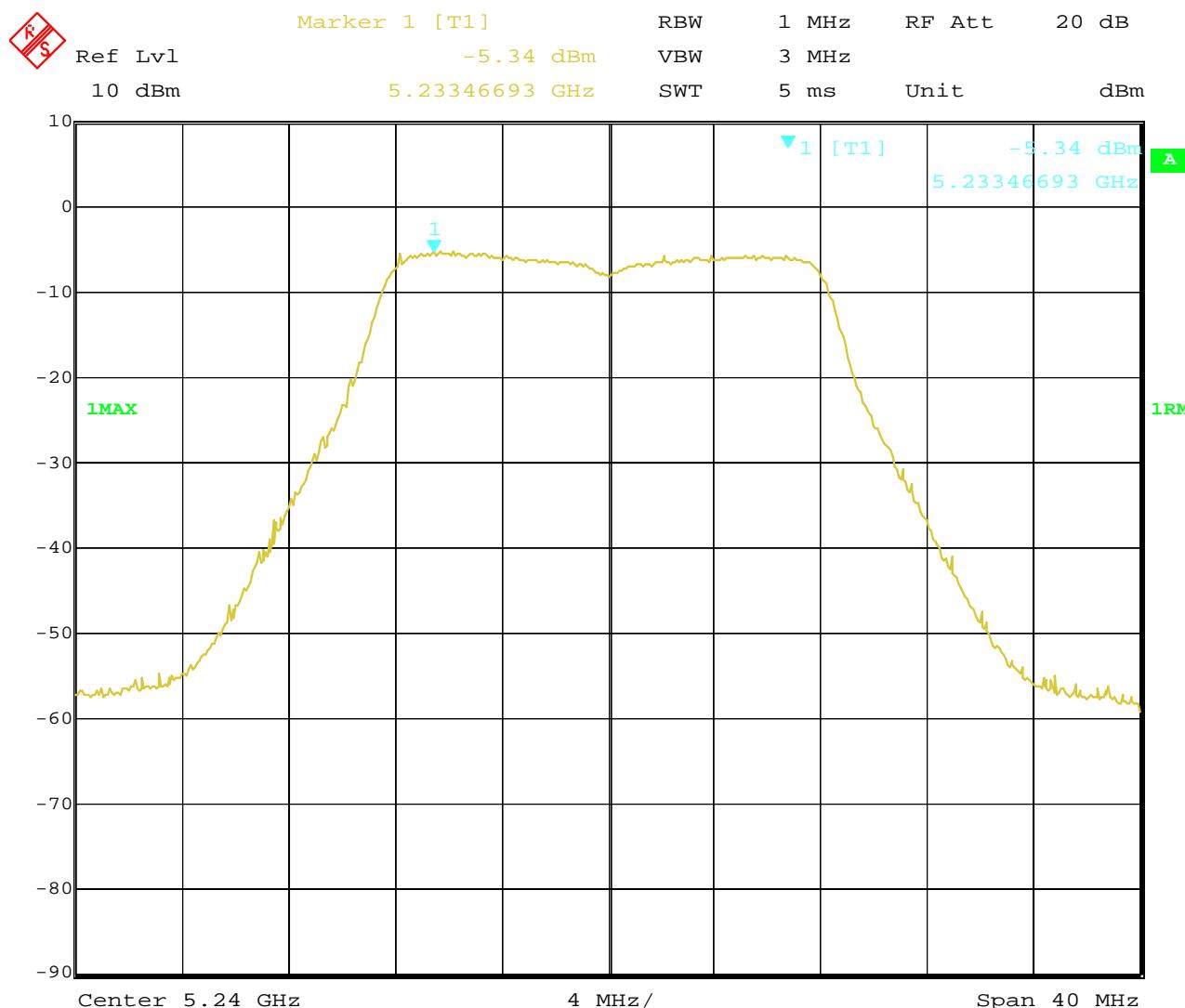
The report refers only to the sample tested and does not apply to the bulk.

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3.802.11a at 6Mbps of CH48



Date: 11.APR.2019 16:54:57

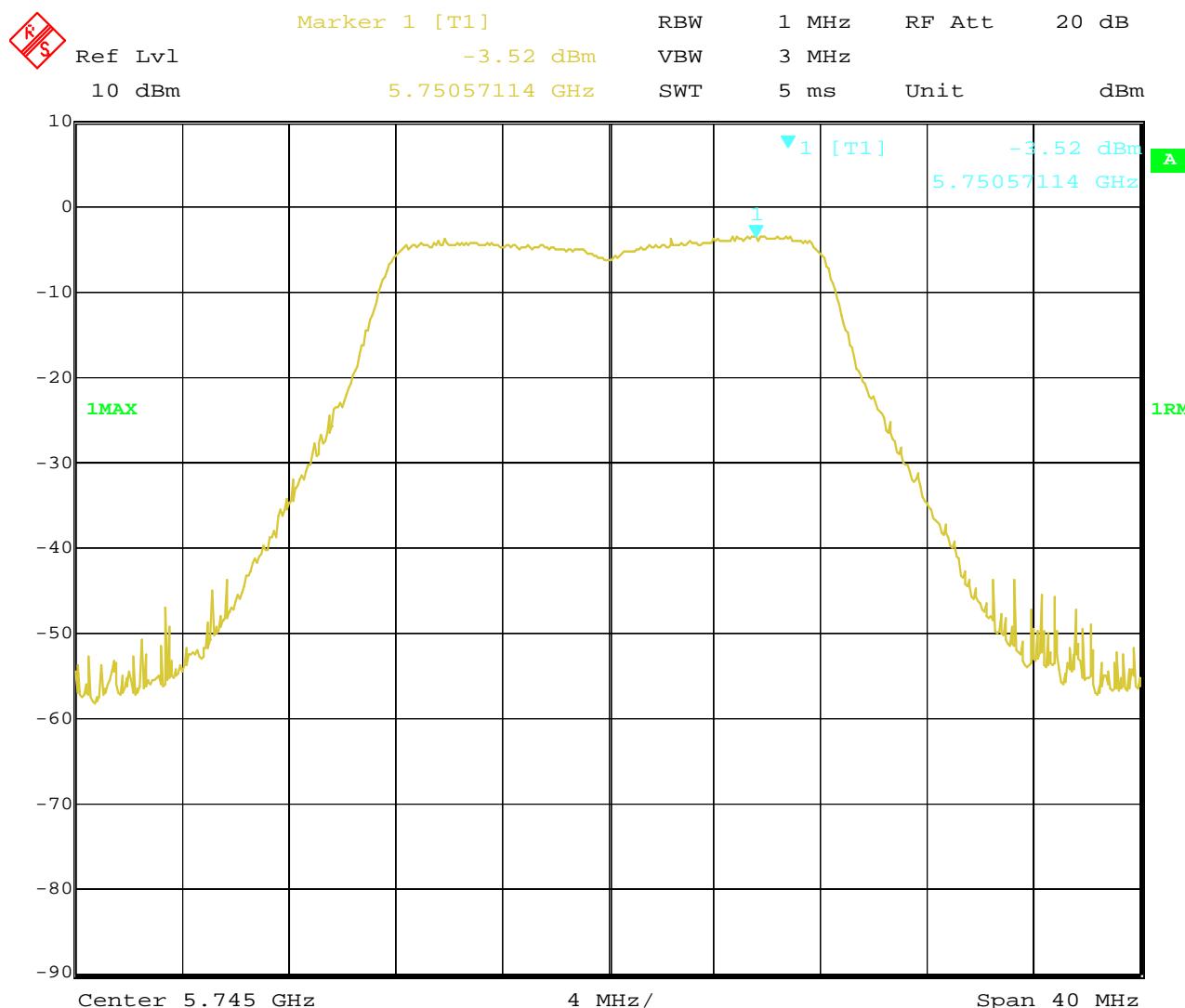
The report refers only to the sample tested and does not apply to the bulk.

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4.802.11a at 6Mbps of CH149



Date: 11.APR.2019 16:56:12

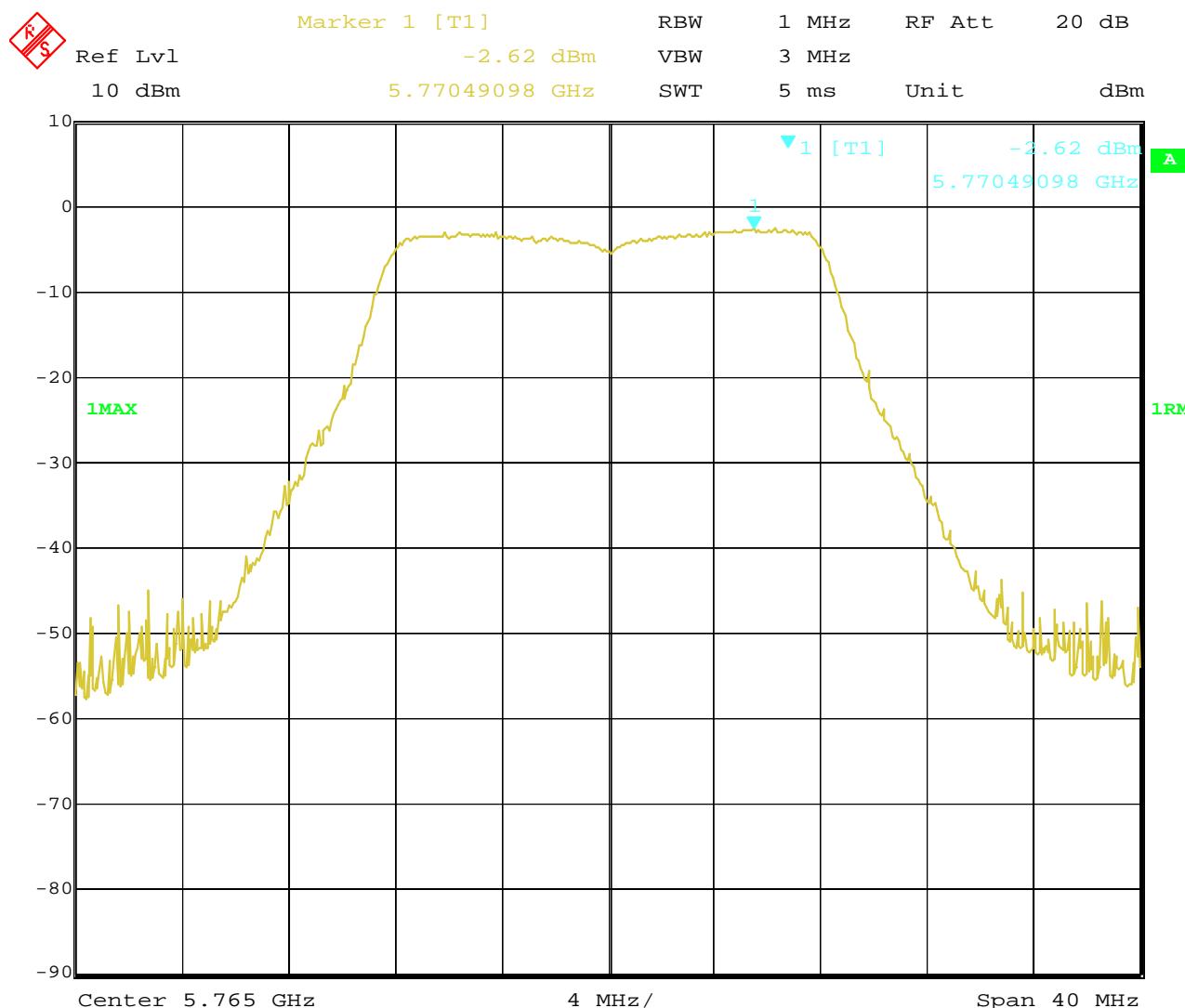
The report refers only to the sample tested and does not apply to the bulk.

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5.802.11a at 6Mbps of CH153



Date: 11.APR.2019 16:57:02

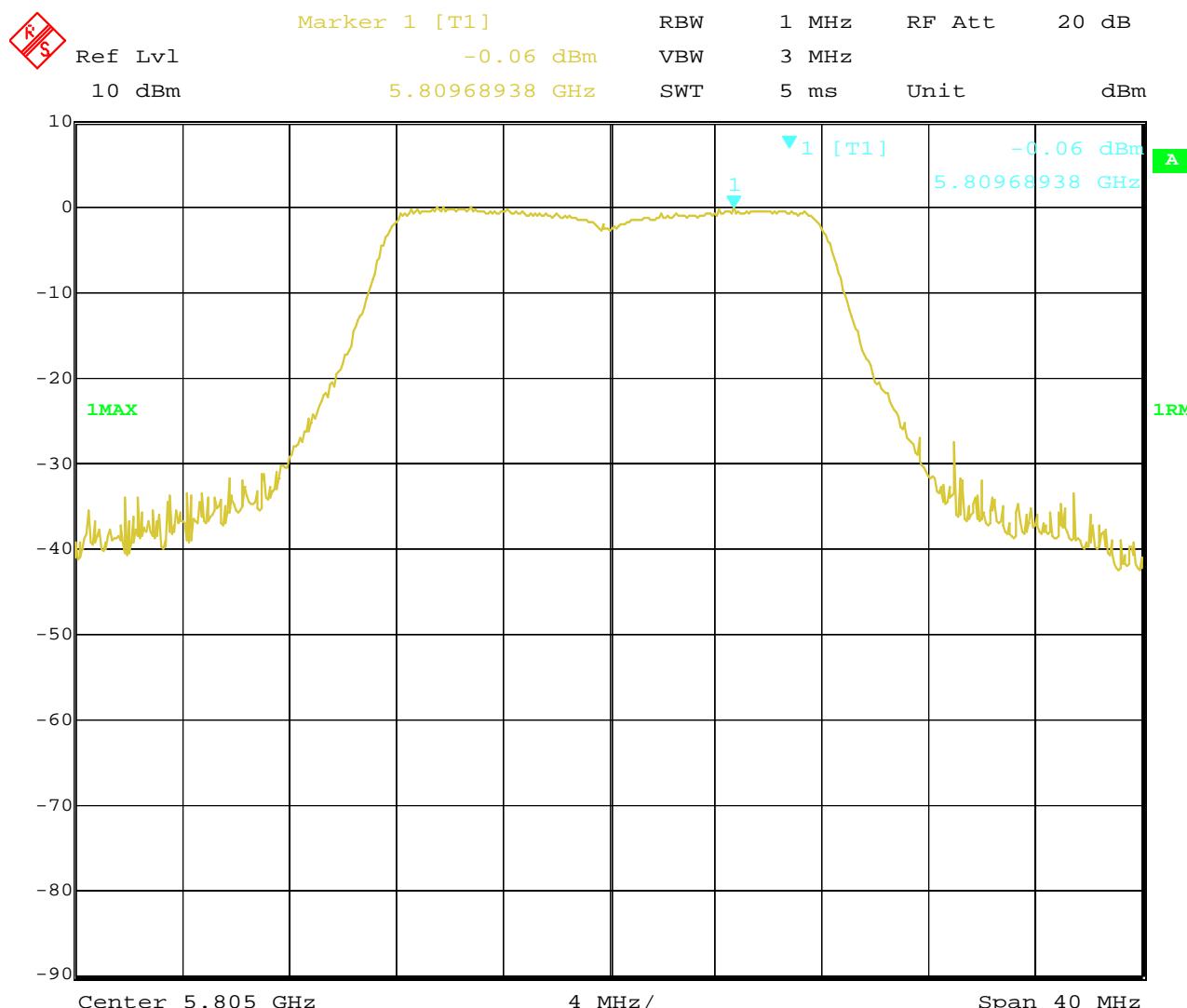
The report refers only to the sample tested and does not apply to the bulk.

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6.802.11a at 6Mbps of CH161



Date: 11.APR.2019 17:00:25

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EUT	Developer Board		Model	DB8		
Mode	802.11n HT20 mcs0		Input Voltage	120V~		
Temperature	24 deg. C,		Humidity	56% RH		
Channel	Frequency (MHz)	Ant1 Spectral Density	Factor	Total Spectral Density (dBm)	Limit (dBm)	Pass/ Fail
36	5180	-4.27	3.01	-1.26	10	Pass
40	5200	-4.13	3.01	-1.12	10	Pass
48	5240	-5.22	3.01	-2.21	10	Pass
149	5745	-3.65	3.01	-0.64	30	Pass
153	5765	-3.03	3.01	-0.02	30	Pass
161	5805	-0.38	3.01	2.63	30	Pass

Note: 1. Total Spectral Density = Ant1 Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

The report refers only to the sample tested and does not apply to the bulk.

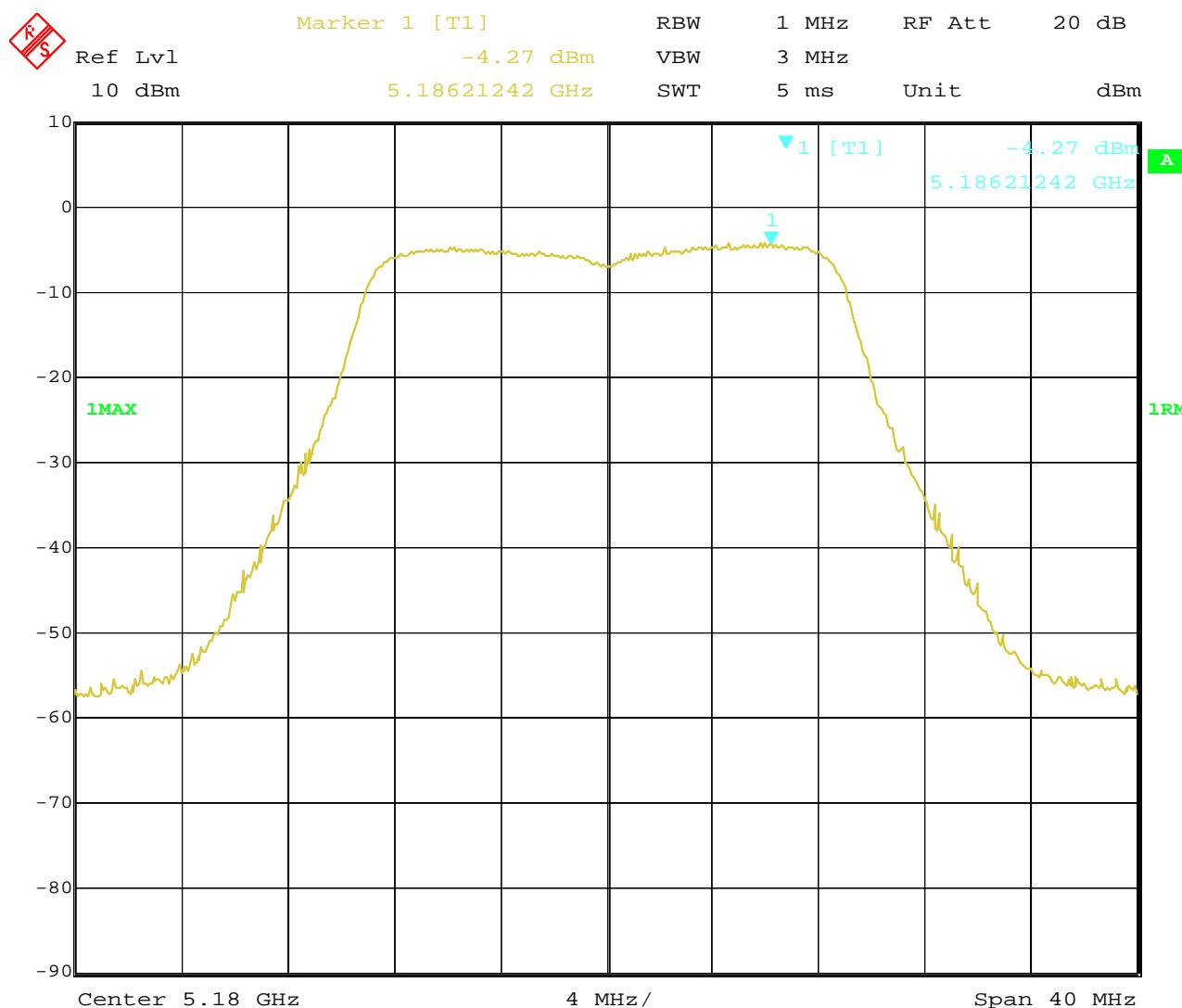
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Test Plots

1.802.11n at mcs0 of CH36



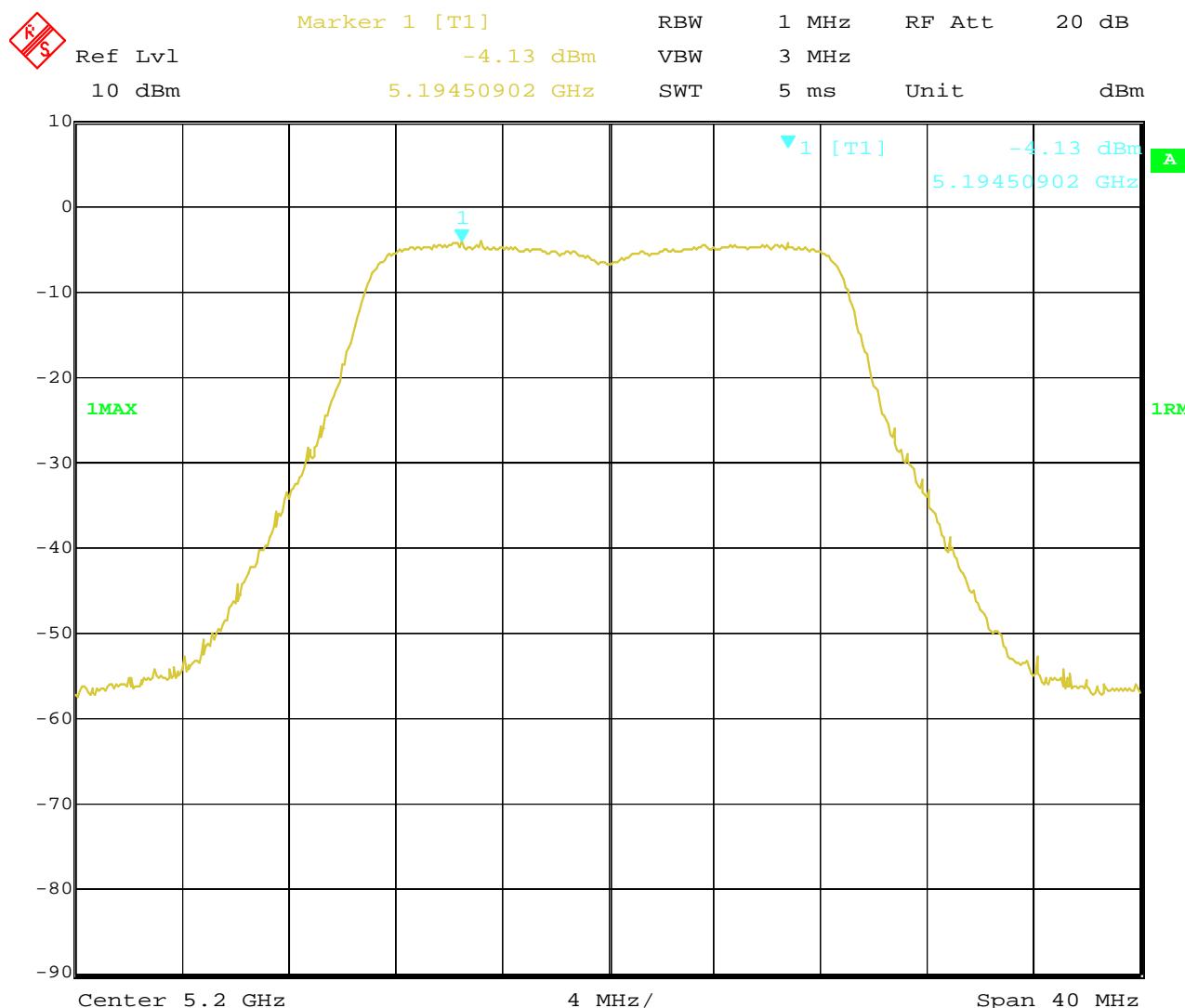
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2.802.11n at mcs0 of CH40



Date: 11.APR.2019 17:08:38

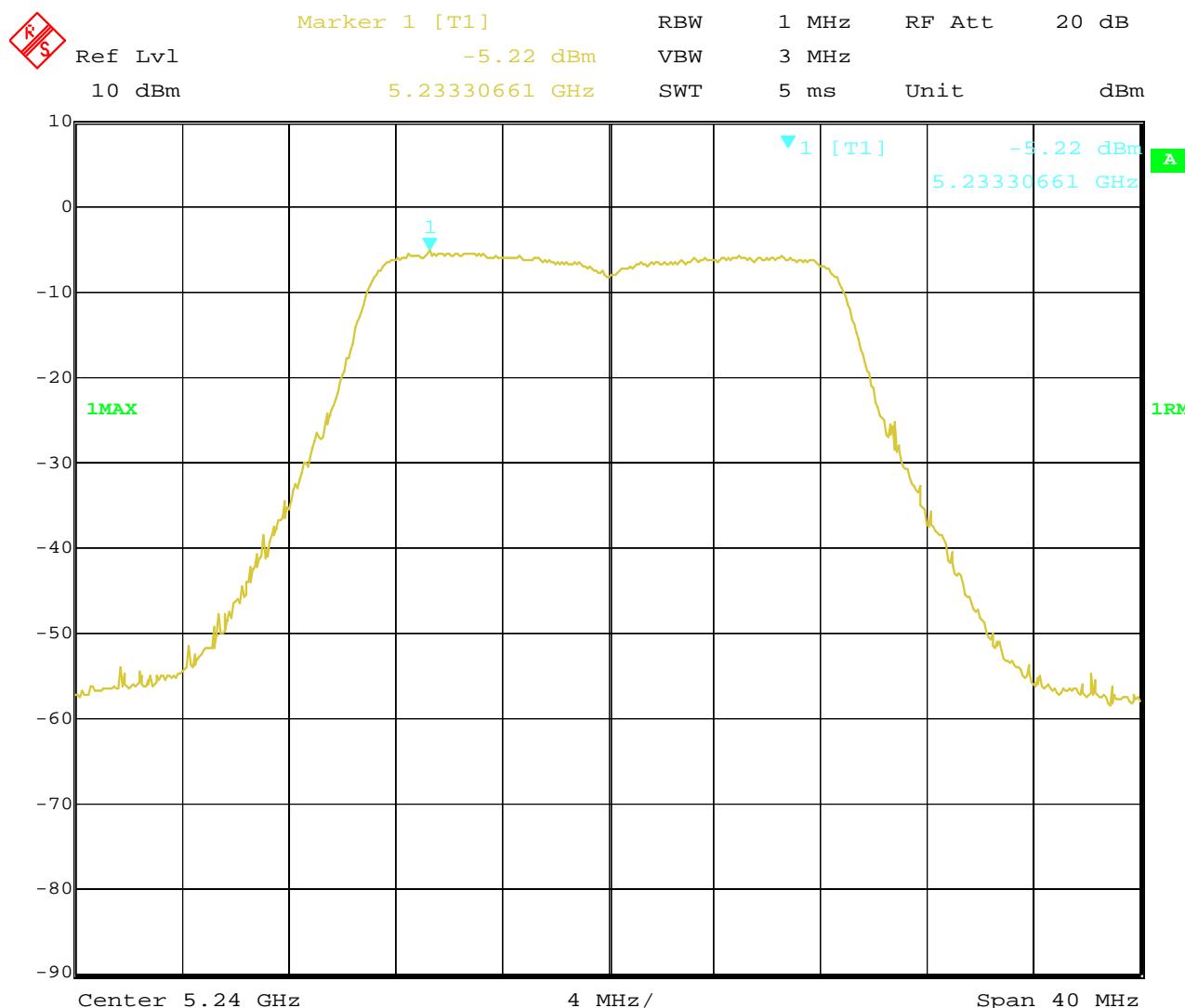
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3.802.11n at mcs0 of CH48



Date: 11.APR.2019 17:07:46

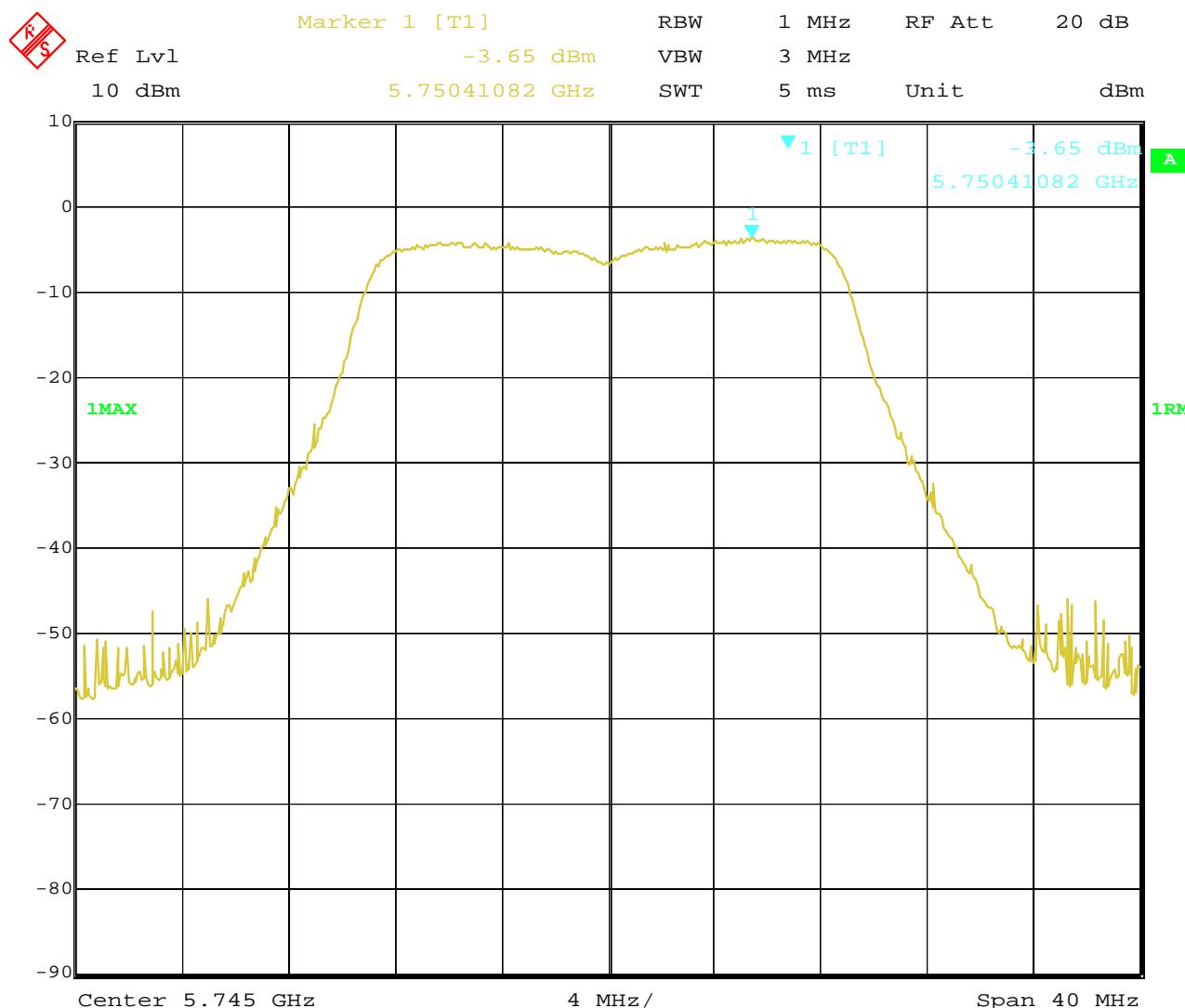
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4.802.11n at mcs0 of CH149



Date: 11.APR.2019 17:06:09

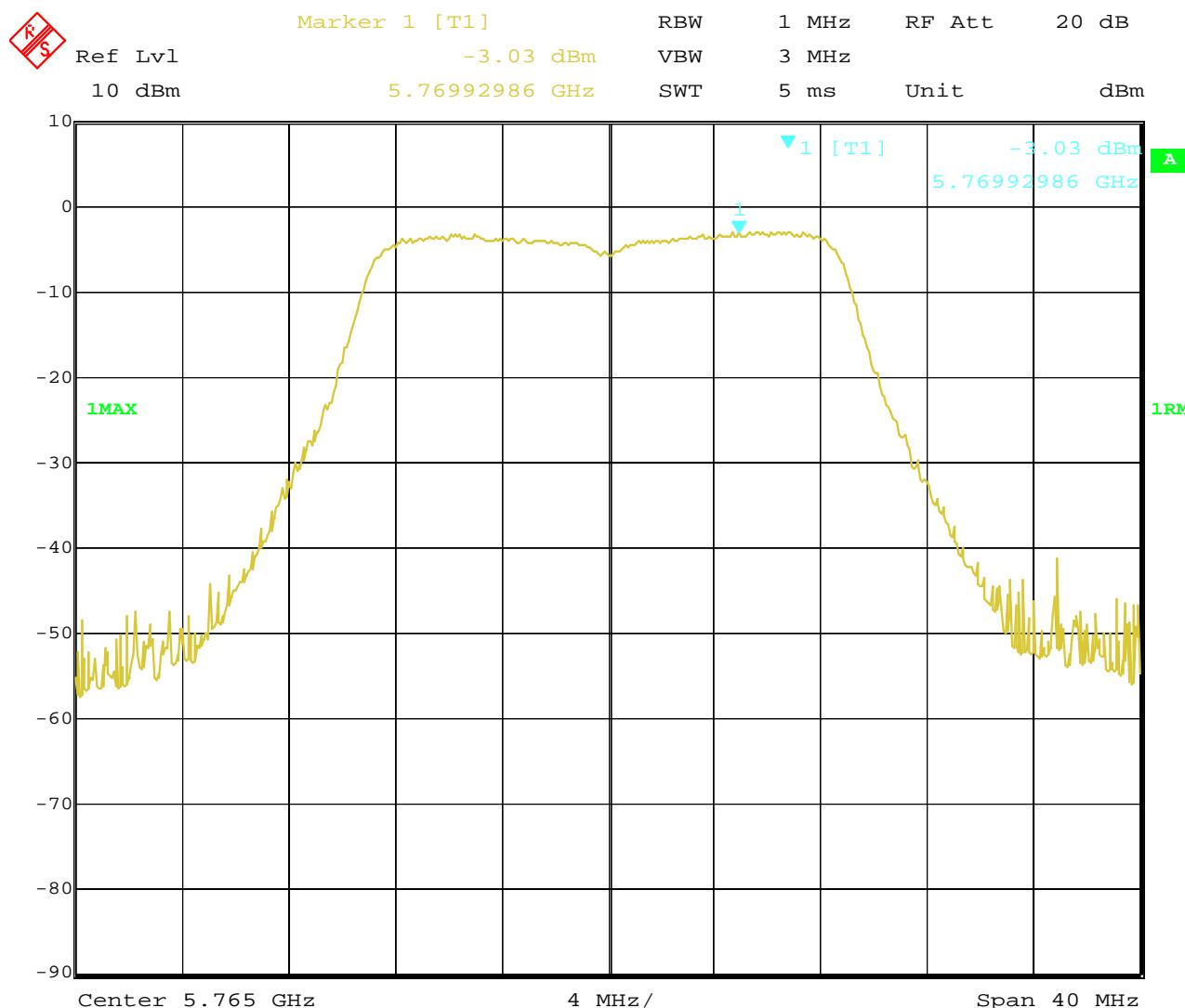
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5.802.11n at mcs0 of CH153



Date: 11.APR.2019 17:04:45

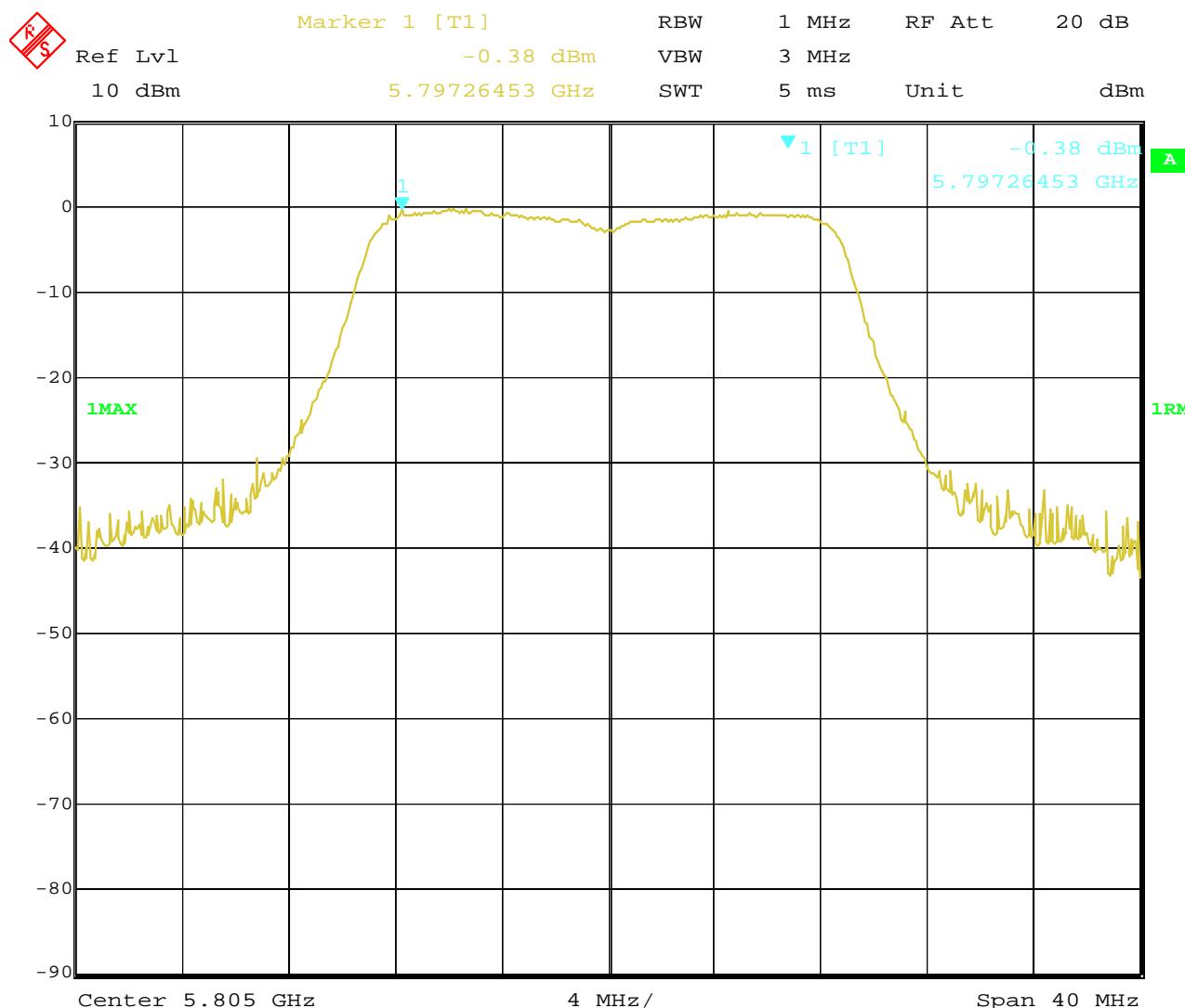
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6.802.11n at mcs0 of CH161



Date: 11.APR.2019 17:03:38

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EUT	Developer Board		Model	DB8		
Mode	802.11n HT40 mcs0		Input Voltage	120V~		
Temperature	24 deg. C,		Humidity	56% RH		
Channel	Frequency (MHz)	Ant1 Spectral Density	Factor	Total Spectral Density (dBm)	Limit (dBm)	Pass/ Fail
38	5190	-8.09	3.01	-5.08	10	Pass
46	5230	-8.93	3.01	-5.92	10	Pass
151	5755	-6.88	3.01	-3.87	30	Pass
159	5795	-3.96	3.01	-0.95	30	Pass

Note: 1. Total Spectral Density = Ant1 Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

The report refers only to the sample tested and does not apply to the bulk.

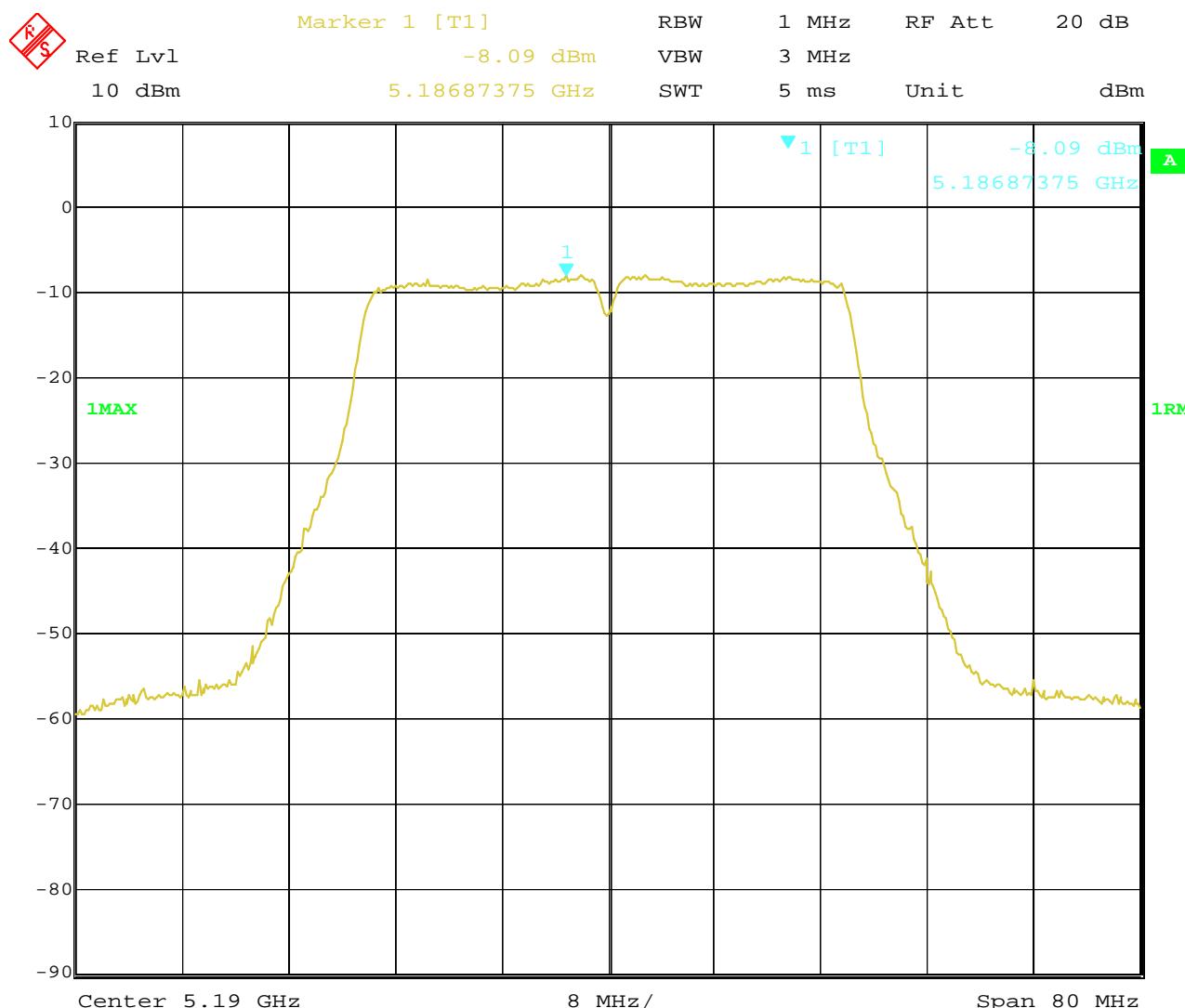
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Test Plots

1.802.11n HT40 at mcs0 of CH38



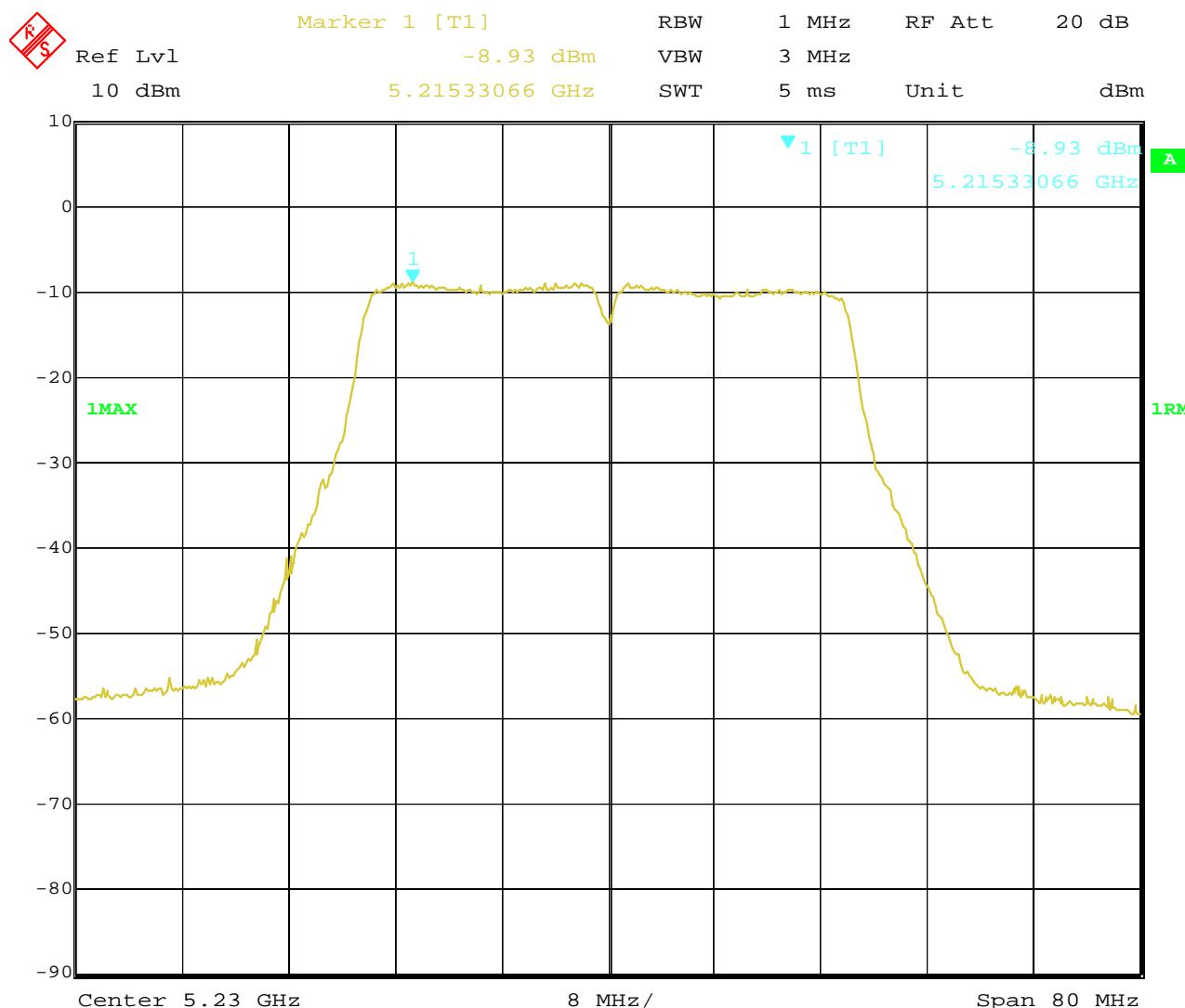
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2.802.11n HT40 at mcs0 of CH46



Date: 11.APR.2019 17:26:11

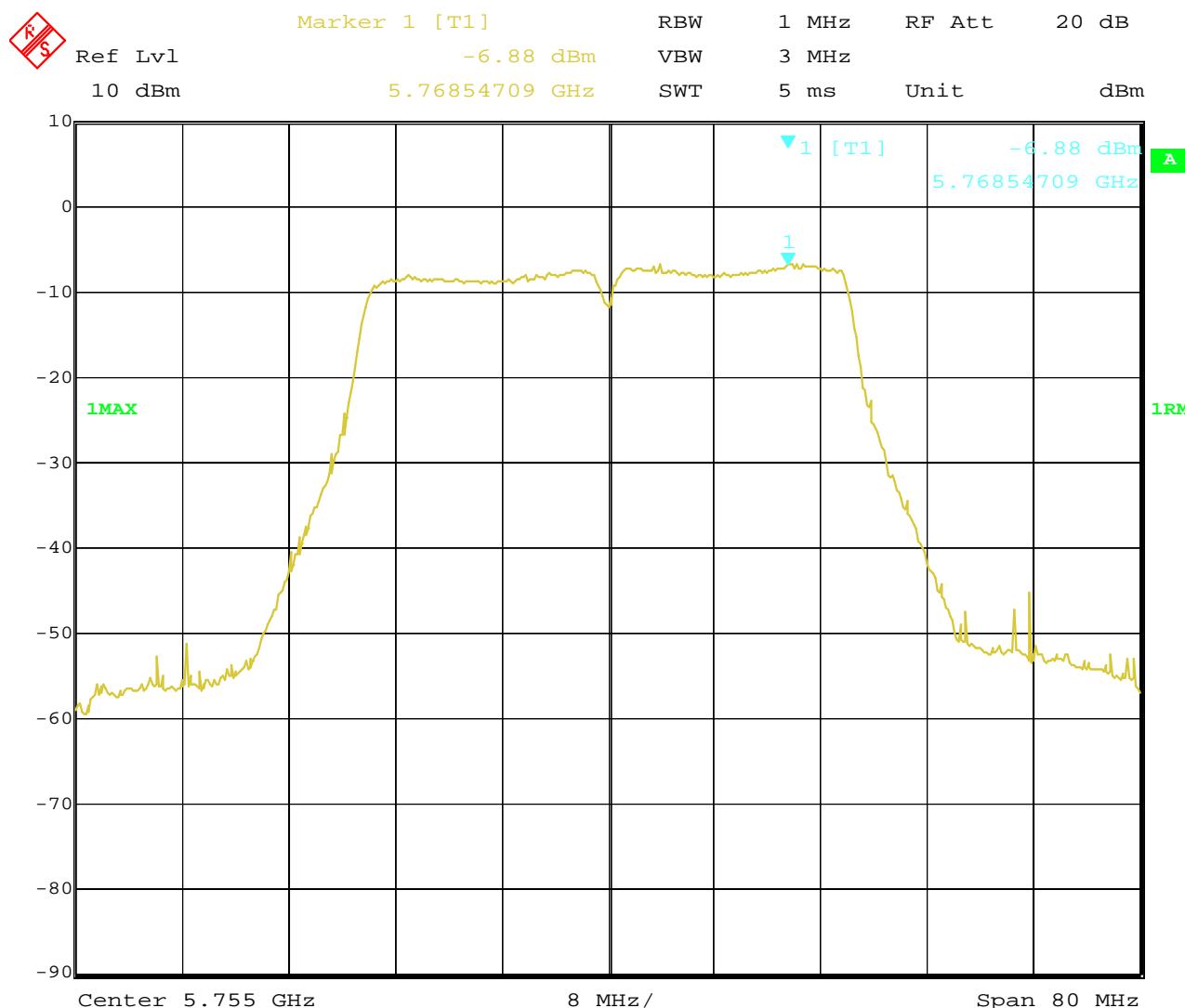
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3.802.11n HT40 at mcs0 of CH151



Date: 11.APR.2019 17:27:37

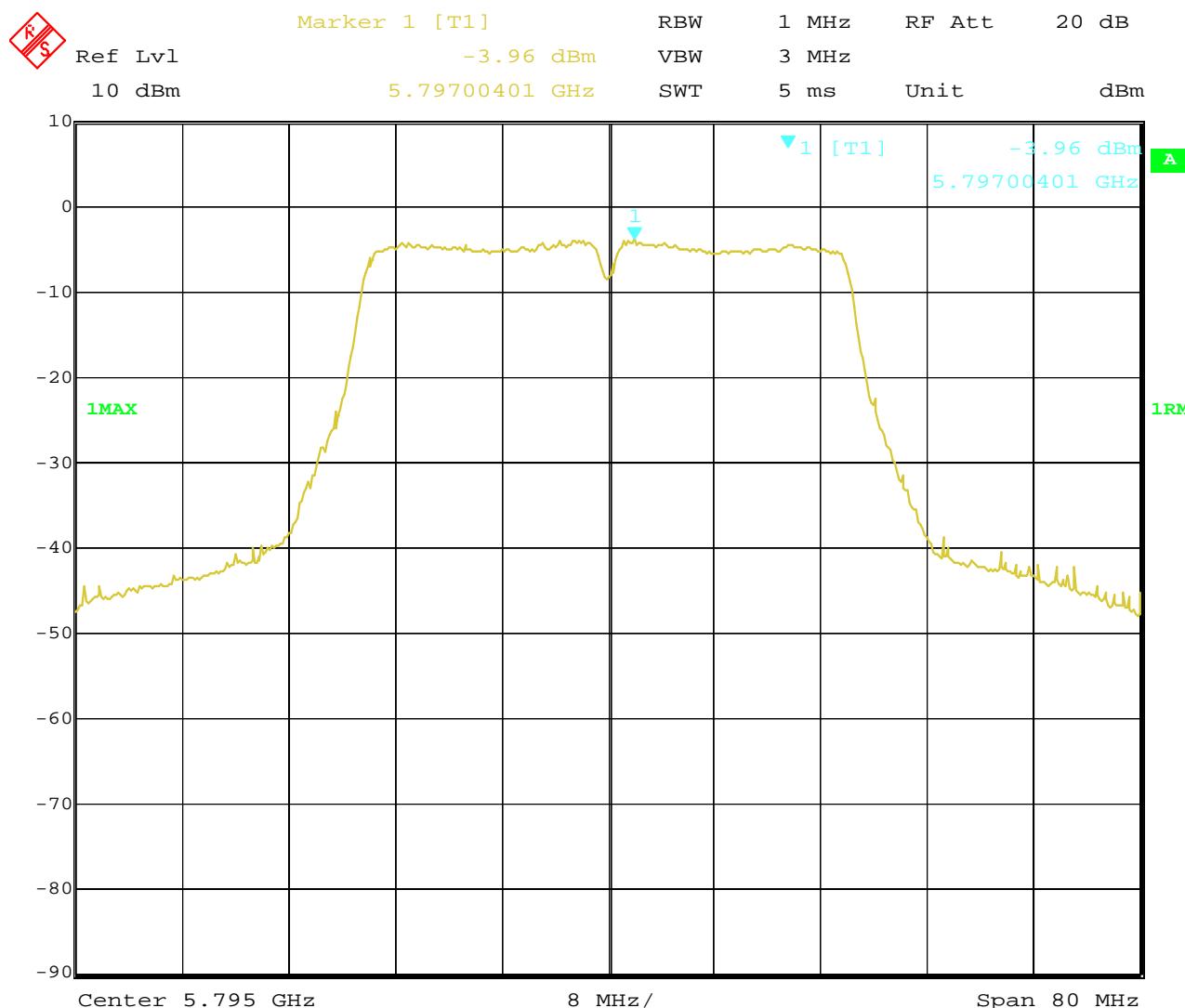
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4.802.11n HT40 at mcs0 of CH159



Date: 11.APR.2019 17:30:03

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EUT	Developer Board		Model	DB8		
Mode	802.11ac VHT20		Input Voltage	120V~		
Temperature	24 deg. C,		Humidity	56% RH		
Channel	Frequency (MHz)	Ant1 Spectral Density	Factor	Total Spectral Density (dBm)	Limit (dBm)	Pass/ Fail
36	5180	-4.52	3.01	-1.51	10	Pass
40	5200	-3.98	3.01	-0.97	10	Pass
48	5240	-5.52	3.01	-2.51	10	Pass
149	5745	-3.80	3.01	-0.79	30	Pass
153	5765	-2.83	3.01	0.18	30	Pass
161	5805	-0.24	3.01	2.77	30	Pass

Note: 1. Total Spectral Density = Ant1 Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

The report refers only to the sample tested and does not apply to the bulk.

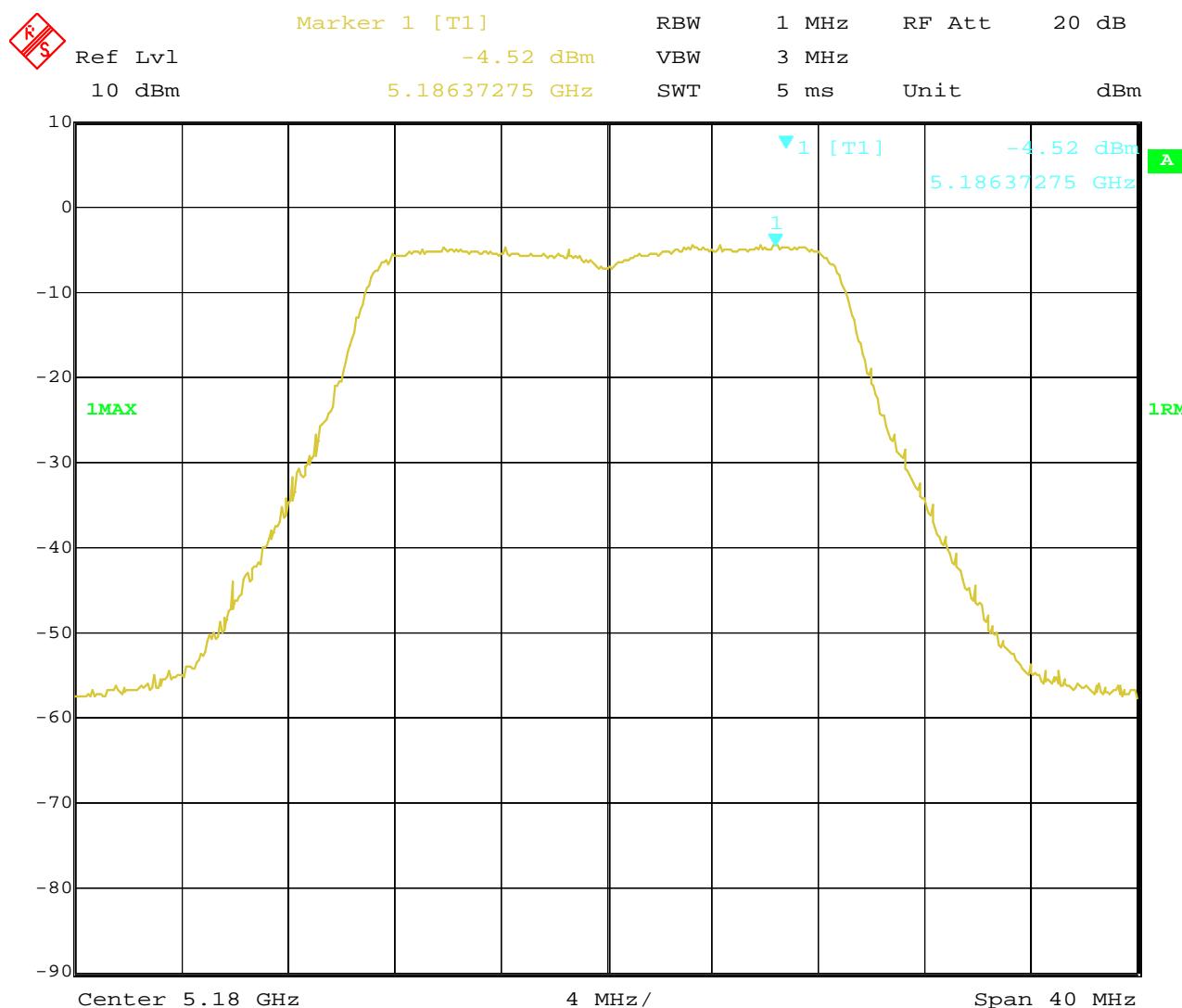
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Test Plots

1.802.11ac at mcs0 of CH36



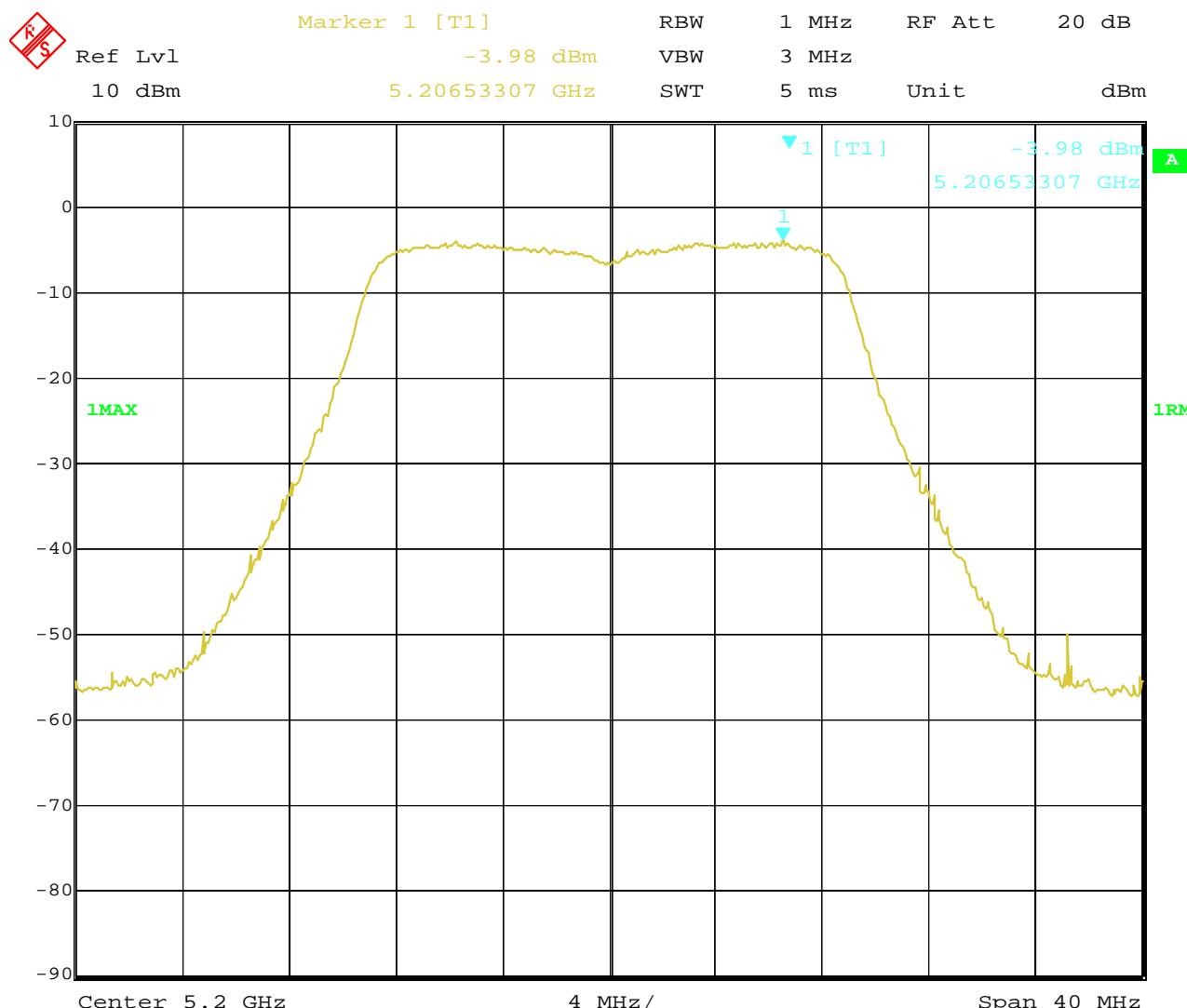
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2.802.11ac at mcs0 of CH40



Date: 11.APR.2019 17:14:10

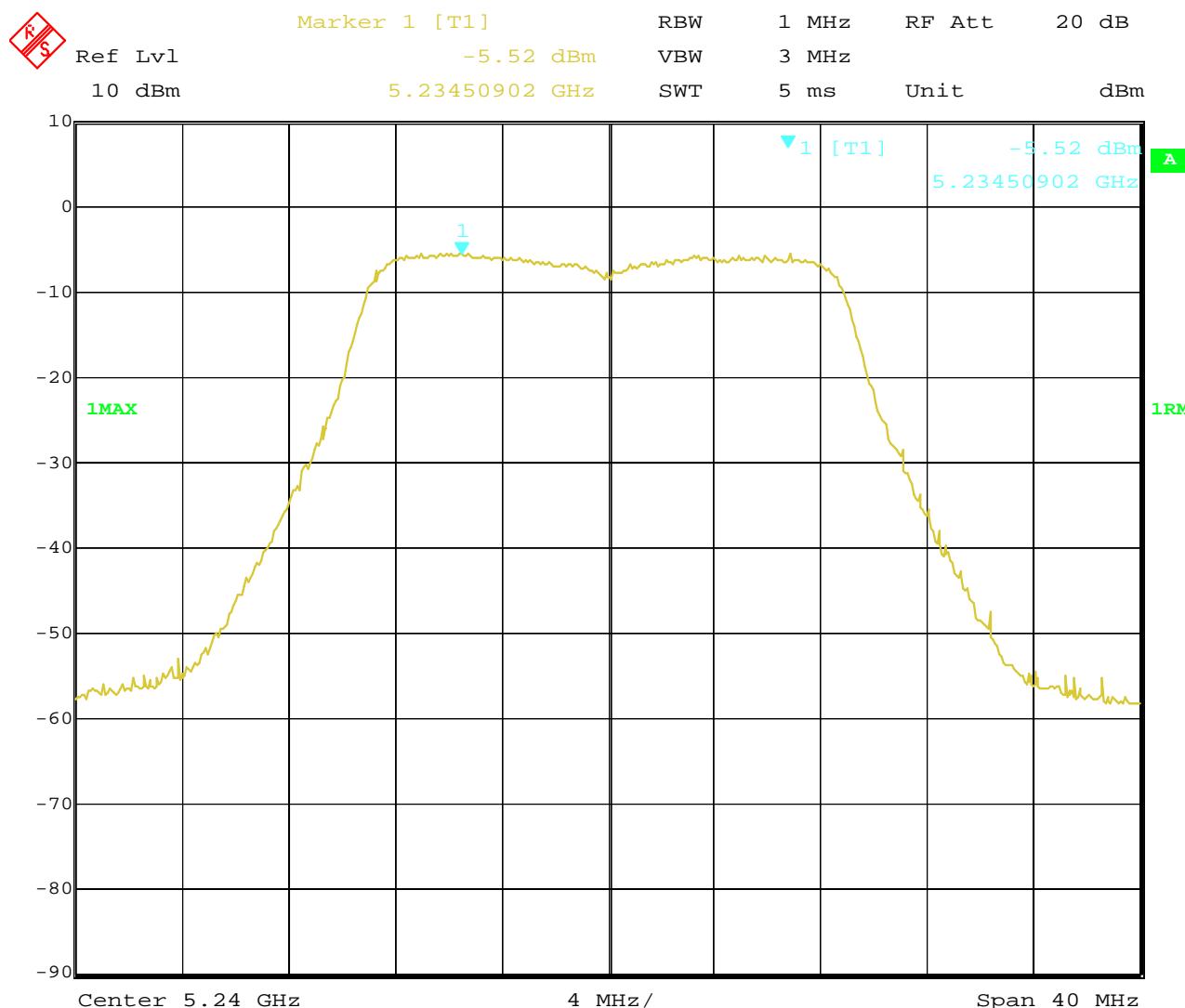
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3.802.11ac at mcs0 of CH48



Date: 11.APR.2019 17:15:09

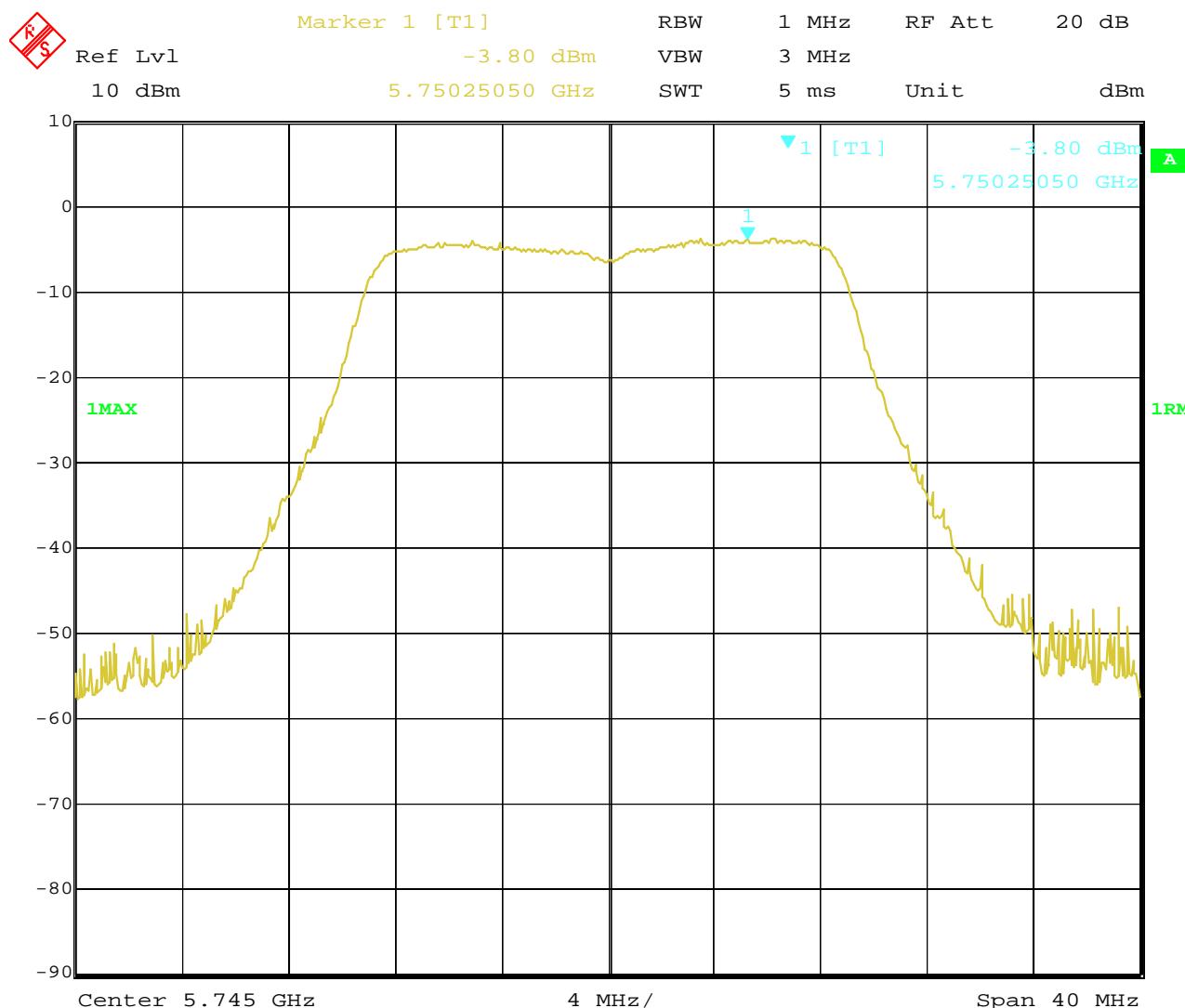
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4.802.11ac at mcs0 of CH149



Date: 11.APR.2019 17:17:00

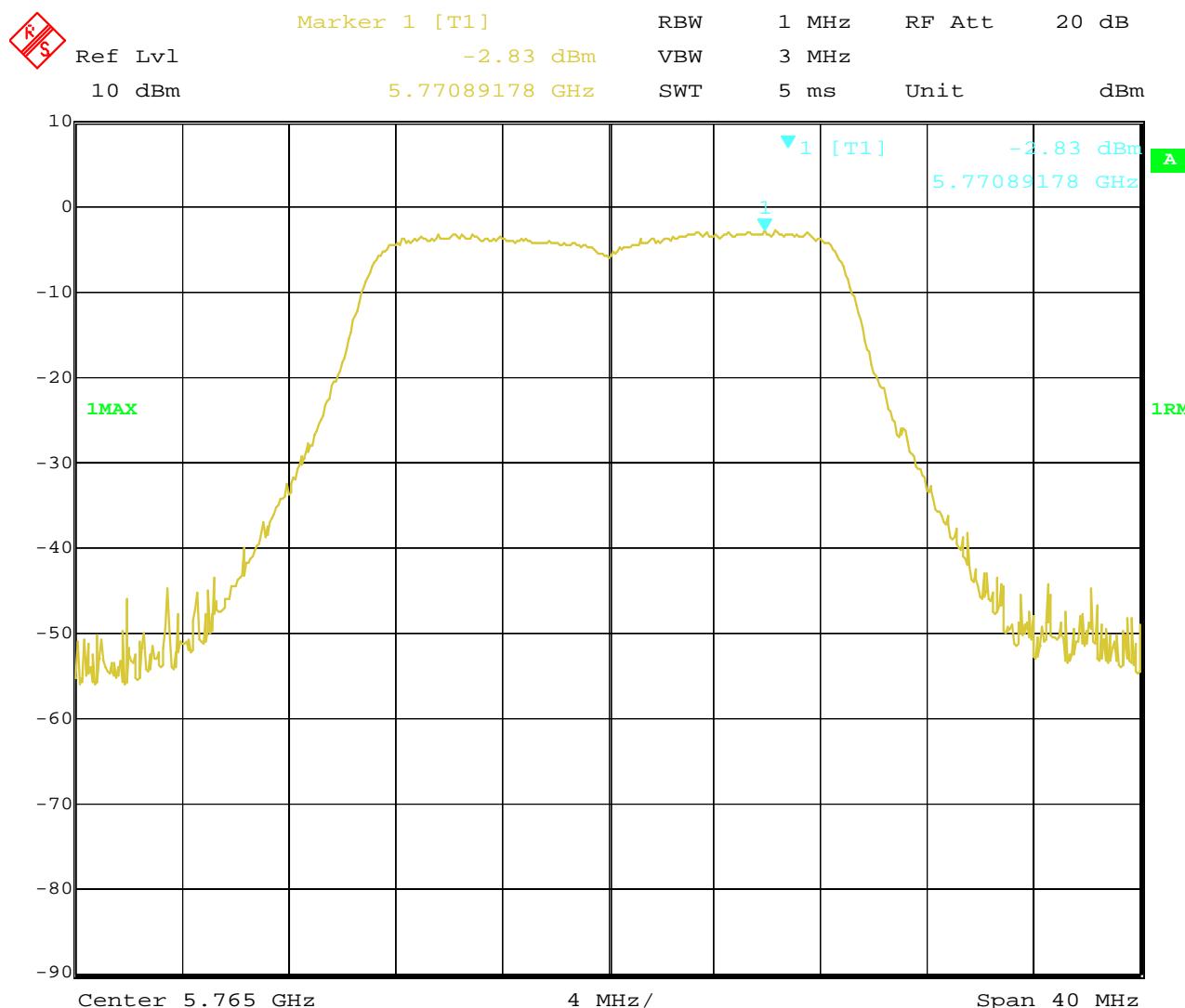
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5.802.11ac at mcs0 of CH153



Date: 11.APR.2019 17:18:48

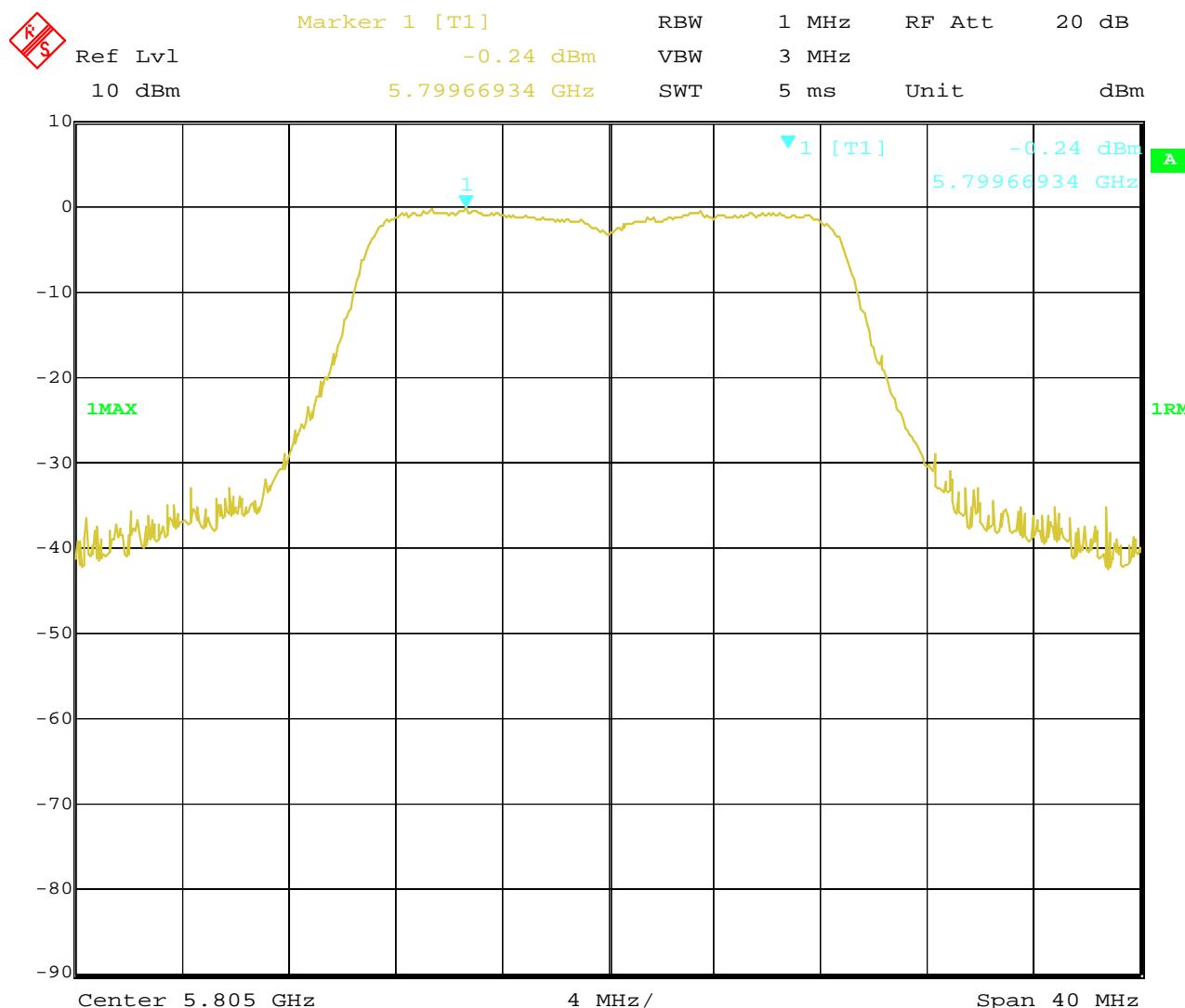
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6.802.11ac at mcs0 of CH161



Date: 11.APR.2019 17:21:23

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EUT	Developer Board		Model	DB8		
Mode	802.11ac VHT40		Input Voltage	120V~		
Temperature	24 deg. C,		Humidity	56% RH		
Channel	Frequency (MHz)	Ant1 Spectral Density	Factor	Total Spectral Density (dBm)	Limit (dBm)	Pass/ Fail
38	5190	-7.85	3.01	-4.84	10	Pass
46	5230	-8.92	3.01	-5.91	10	Pass
151	5755	-6.84	3.01	-3.83	30	Pass
159	5795	-4.05	3.01	-1.04	30	Pass

Note: 1. Total Spectral Density = Ant1 Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

The report refers only to the sample tested and does not apply to the bulk.

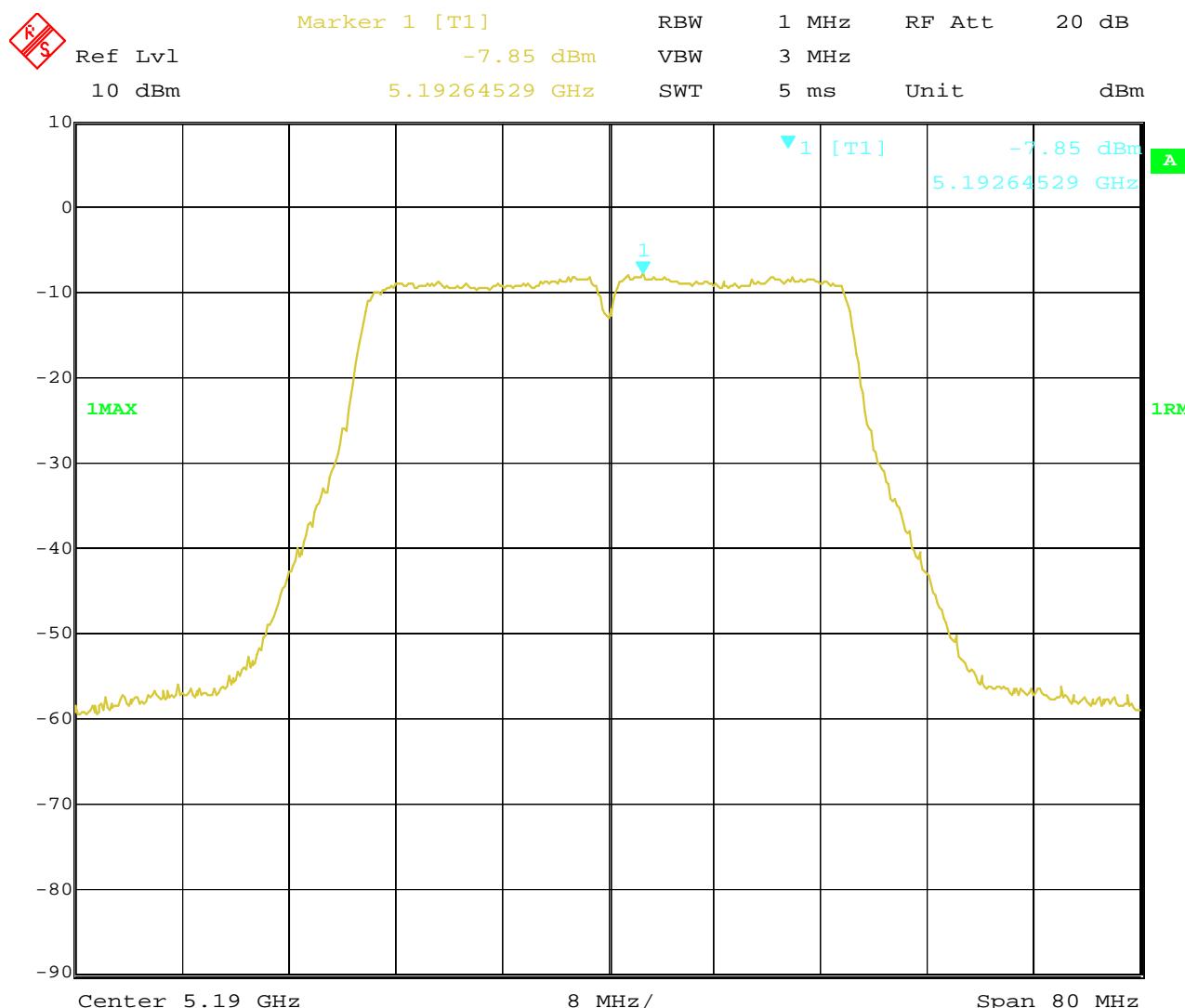
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Test Plots

1.802.11ac at mcs0 of CH38



Date: 11.APR.2019 17:36:04

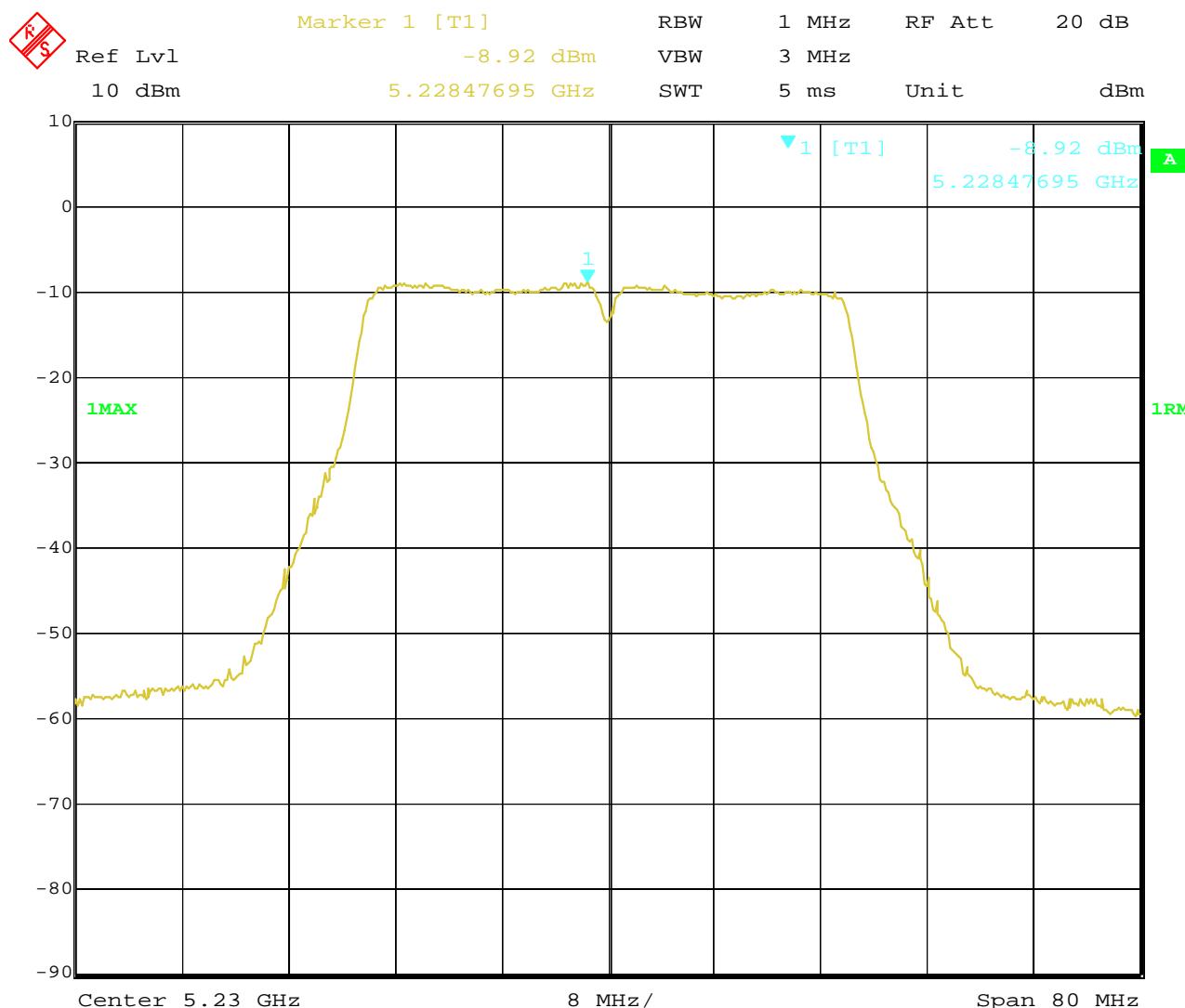
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2.802.11ac at mcs0 of CH46



Date: 11.APR.2019 17:35:03

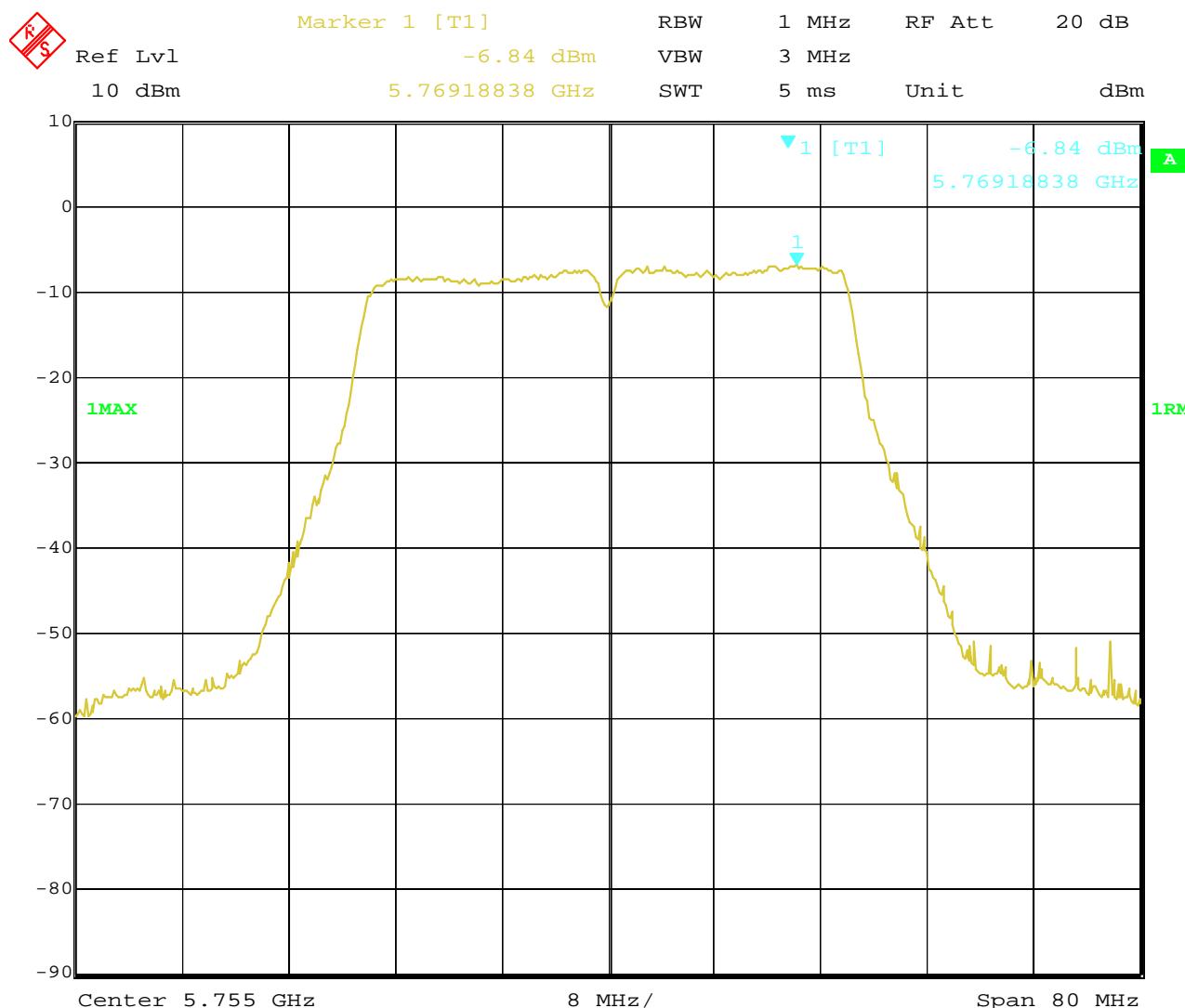
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3.802.11ac at mcs0 of CH151



Date: 11.APR.2019 17:33:01

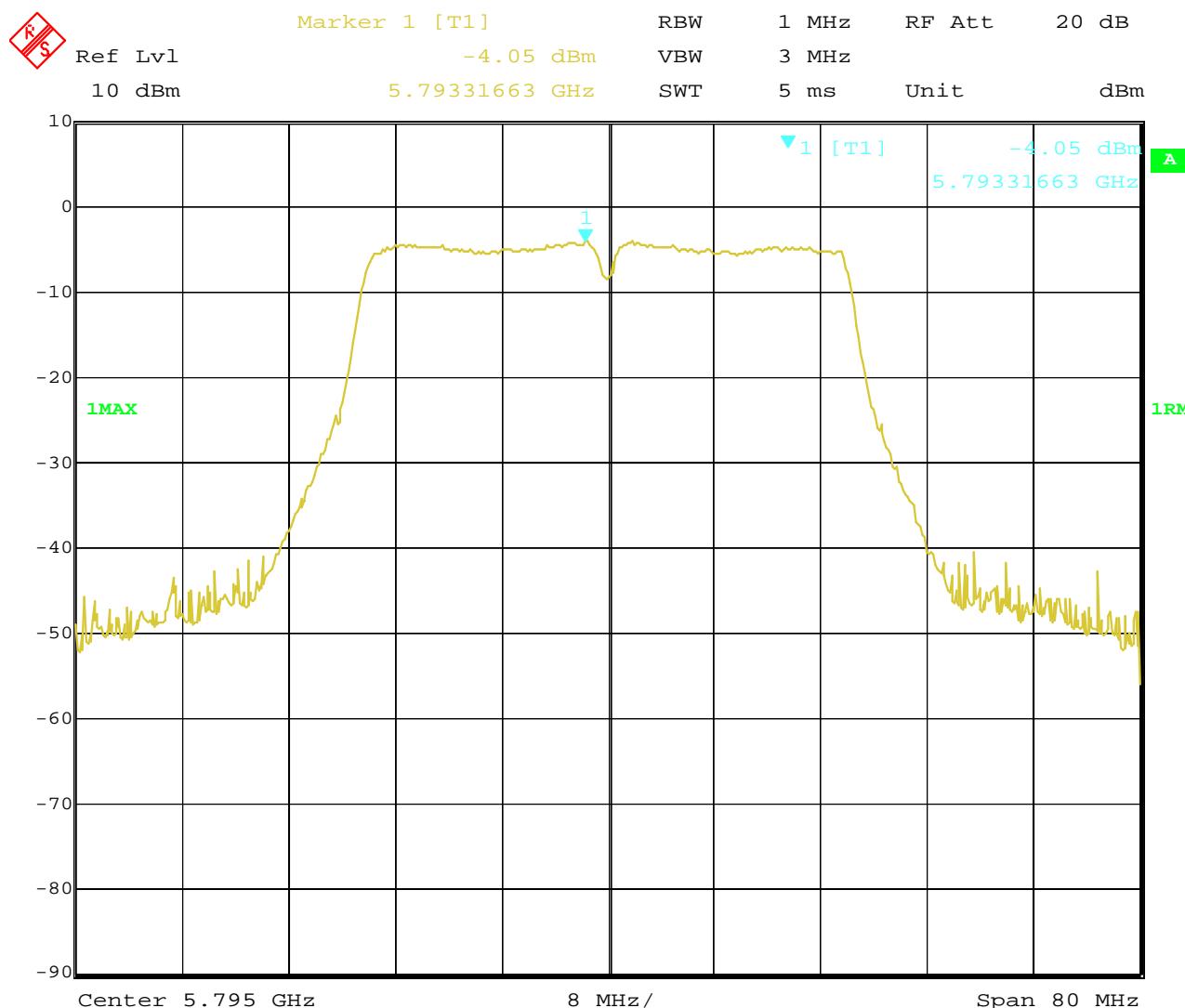
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4.802.11ac at mcs0 of CH159



Date: 11.APR.2019 17:31:27

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EUT	Developer Board		Model	DB8		
Mode	802.11ac VHT80		Input Voltage	120V~		
Temperature	24 deg. C,		Humidity	56% RH		
Channel	Frequency (MHz)	Ant1 Spectral Density	Factor	Total Spectral Density (dBm)	Limit (dBm)	Pass/ Fail
42	5210	-10.06	3.01	-7.05	10	Pass
155	5775	-7.02	3.01	-4.01	30	Pass

Note: 1. Total Spectral Density = Ant1 Spectral Density + Factor

2. Factor=10log2=3.01

3. Ant1 and Ant 2 were tested and Ant 1 was the worst case

The report refers only to the sample tested and does not apply to the bulk.

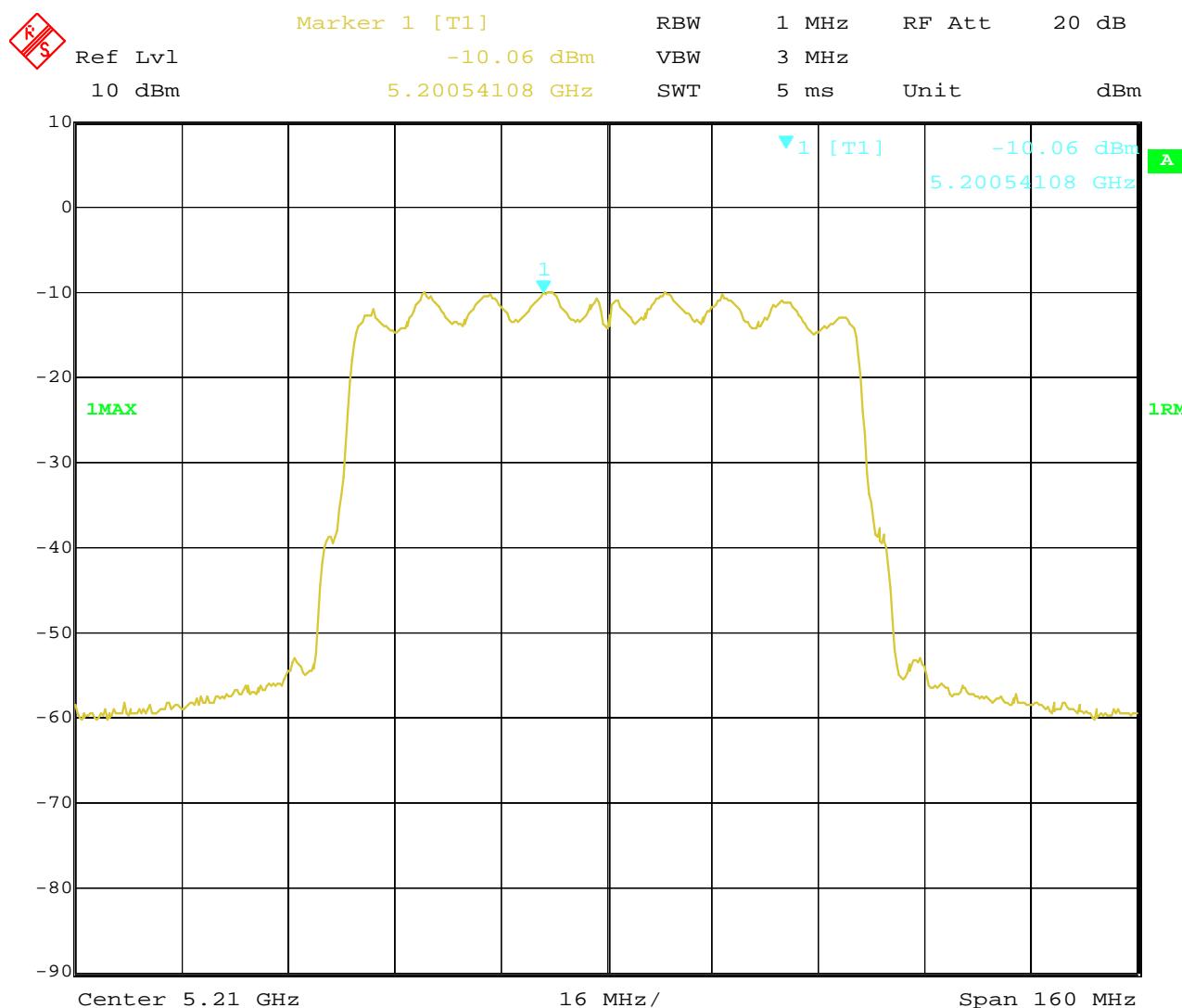
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Test Plots

1.802.11ac at 23.9Mbps of CH42



The report refers only to the sample tested and does not apply to the bulk.

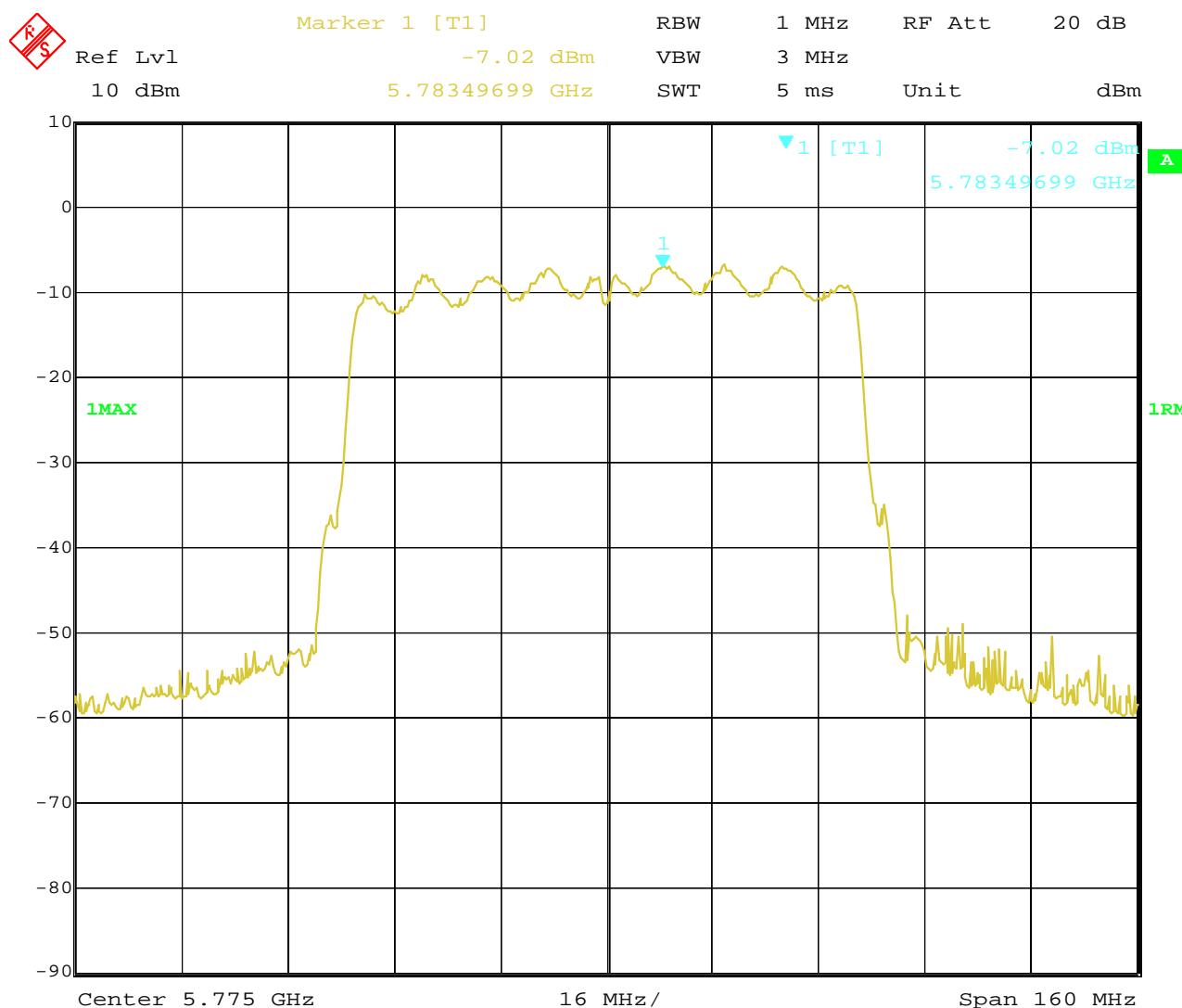
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Test Plots

2.802.11ac at 23.9Mbps of CH155



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10.0 Frequency Stability

10.1 Limits of Frequency Stability Measurement

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees

10.2 Test Procedure

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

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10.3 Test Result

Channel 36 (5180MHz)

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
138V	5179.9828
120V	5179.9841
102V	5179.9837
Max. Deviation (MHz)	0.0172
Max. Deviation (ppm)	3.3

Rated working voltage: 120V~

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5179.9822
-20	5179.9836
-10	5179.9827
0	5179.9831
10	5179.9846
20	5179.9827
30	5179.9805
40	5179.9821
50	5179.9819
Max. Deviation (MHz)	0.0195
Max. Deviation (ppm)	3.8

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Channel 149 (5745MHz)

Voltage vs. Frequency Stability

Voltage	Measurement Frequency (MHz)
138V	5744.9767
120V	5744.9783
102V	5744.9796
Max. Deviation (MHz)	0.0233
Max. Deviation (ppm)	4.1

Rated working voltage: 120V~

Temperature vs. Frequency Stability

Temperature (°C)	Measurement Frequency (MHz)
-30	5744.9722
-20	5744.9737
-10	5744.9755
0	5744.9740
10	5744.9729
20	5744.9758
30	5744.9761
40	5744.9737
50	5744.9764
Max. Deviation (MHz)	0.0278
Max. Deviation (ppm)	4.8

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11.0 Antenna Requirement

11.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

11.2 Antenna Connected construction

Antenna: 2pcs External antenna with reversed polarity non standard unique antenna port.

Antenna Gain: Maximum 3.2dBi for each antenna, Directional gain = $3.2+10\log_2=6.21\text{dBi}$

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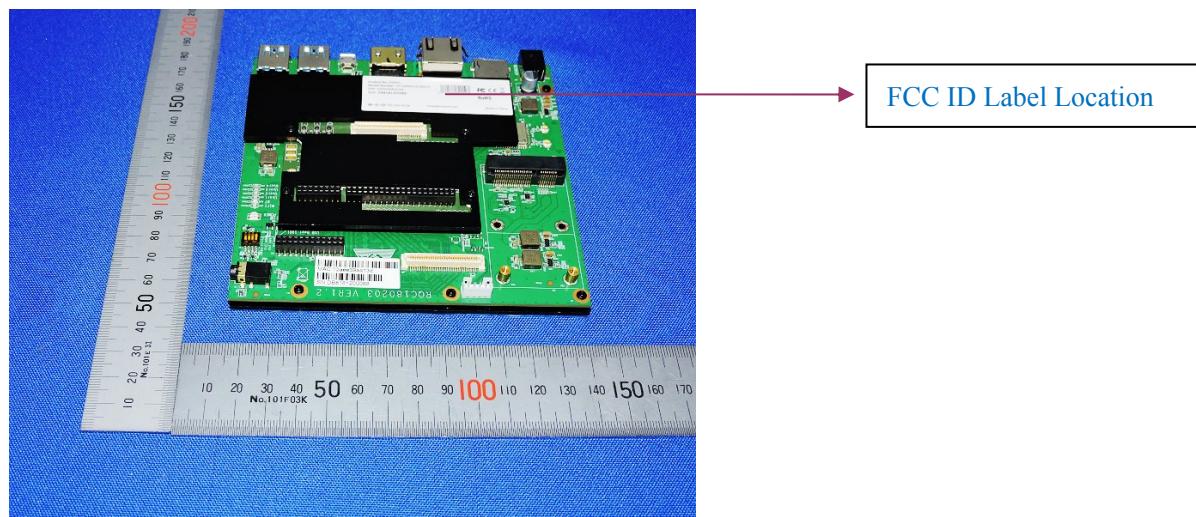
12.0 FCC ID Label

FCC ID: ZJU-D19EC5

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



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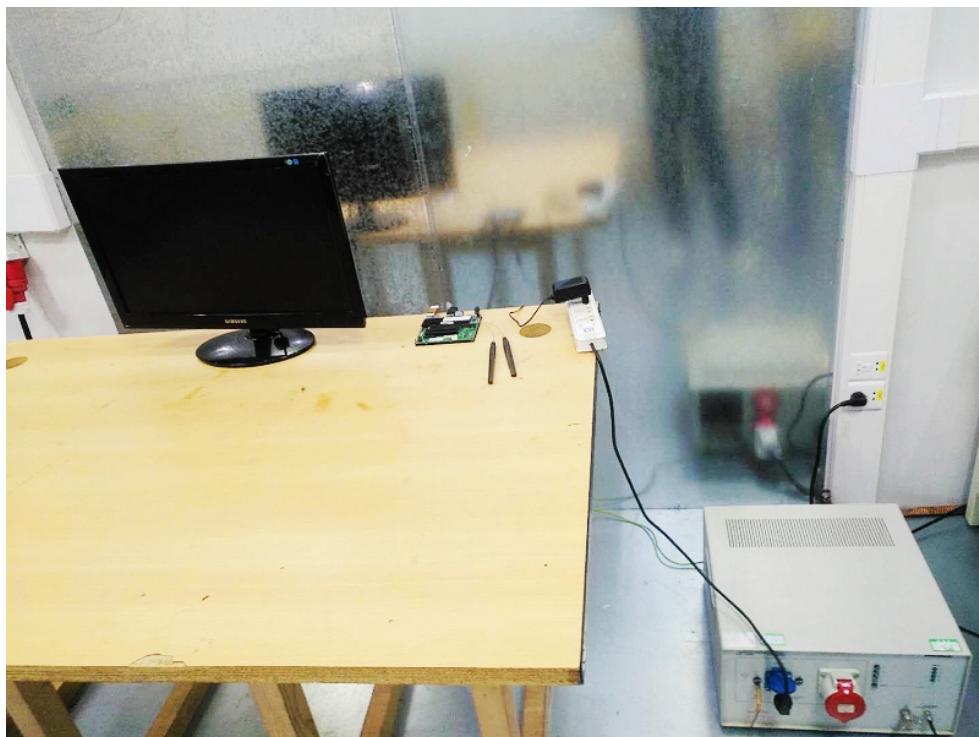
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13.0 Photo of testing

Conducted Emission Test Setup:



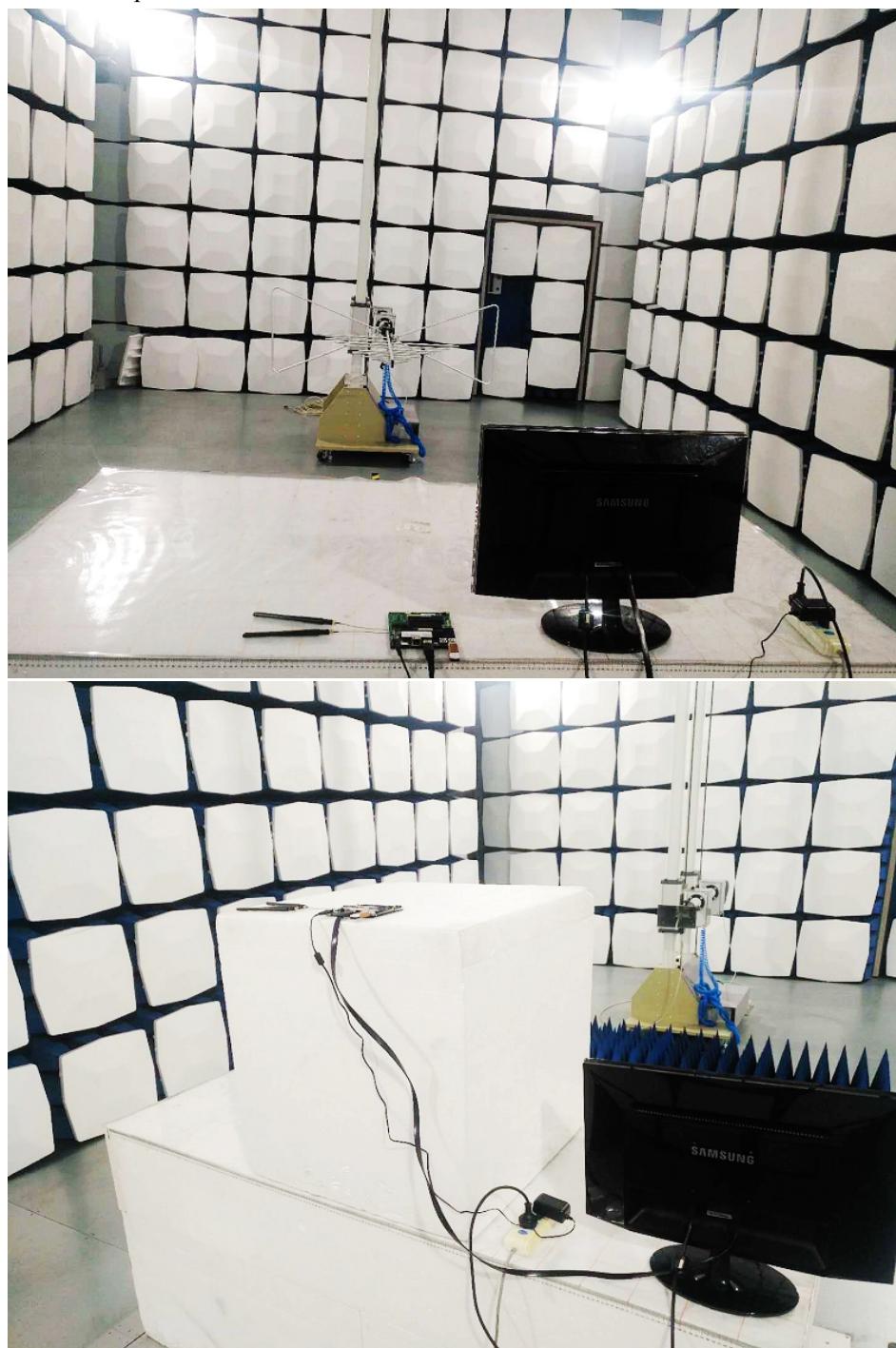
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Radiated Emission Test Setup:



Photos of EUT

Please see test report FCC1903224-01

End of the report

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