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TEST REPORT

Report Reference No. ..... :	**CHTEW19030148**	Report verification:
Project No. ..... :	**SHT1902018202EW**	
FCC ID ..... :	**Q5EM50-4G**	
Applicant's name ..... :	**Kirisun Communication Co.,Ltd.**	
Address.....:	3rd Floor, Building A, Tongfang Information Habour, No.11 Langshan Road, Nanshan District, Shenzhen 518057, P.R.China	
Manufacturer.....:	Kirisun Communication Co.,Ltd.	
Address.....:	3rd Floor, Building A, Tongfang Information Habour, No.11 Langshan Road, Nanshan District, Shenzhen 518057, P.R.China	
Test item description ..... :	**PoC Trunked Mobile Radio**	
Trade Mark .....:	KIRISUN	
Model/Type reference.....:	M50	
Listed Model(s) .....:	iTALK 450	
Standard ..... :	**FCC CFR Title 47 Part 15 Subpart E Section 15.407**	
Date of receipt of test sample……...:	Feb 25, 2019	
Date of testing……..:	Feb 26, 2019- Mar 20, 2019	
Date of issue……....:	Mar 21, 2019	
Result..... ……..:	**PASS**	

Compiled by (position+printedname+signature)...:	File administrators Silvia Li	Silvia Li
Supervised by (position+printedname+signature)....:	Project Engineer Aaron Fang	Aaron.Fang
Approved by (position+printedname+signature)....:	RF Manager Hans Hu	Hans Hu

Testing Laboratory Name ..... :	**Shenzhen Huatongwei International Inspection Co., Ltd**
Address.....:	1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

Contents

1. TEST STANDARDS AND REPORT VERSION

1.1. Test Standards

The tests were performed according to following standards:
FCC Rules Part 15.407: General technical requirements.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices

KDB789033 D02 v02r01: GUIDELINES FOR COMPLIANCE TESTING OF UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) DEVICES PART 15, SUBPART E

1.2. Report Version

Revision No.	Date of issue	Description
N/A	2019-03-21	Original

2. TEST DESCRIPTION

Test Item	FCC Rule	Result	Test Engineer
Antenna Requirement	15.203	PASS	Jiongsheng Feng
Line Conducted Emissions (AC Main)	15.207	N/A	N/A
Maximum Conducted Output Power	15.407(a)	PASS	Jiongsheng Feng
Maximum Power Spectral Density	15.407(a)	PASS	Jiongsheng Feng
26dB Bandwidth and 99% Ocuppy bandwith	15.407(a)	PASS	Jiongsheng Feng
6dB Bandwidth	15.407(a)	PASS	Jiongsheng Feng
Band edge	15.407(b)	PASS	Jiongsheng Feng
Radiated Spurious Emissions	15.209	PASS	Shower Dai
Frequency Stability	15.407(g)	PASS	Jiongsheng Feng

Remark: The measurement uncertainty is not included in the test result.

3. SUMMARY

3.1. Client Information

Applicant:	Kirisun Communication Co.,Ltd.
Address:	3rd Floor, Building A, Tongfang Information Habour, No.11 Langshan Road, Nanshan District, Shenzhen 518057, P.R.China
Manufacturer:	Kirisun Communication Co.,Ltd.
Address:	3rd Floor, Building A, Tongfang Information Habour, No.11 Langshan Road, Nanshan District, Shenzhen 518057, P.R.China

3.2. Product Description

Name of EUT	PoC Trunked Mobile Radio		
Trade Mark:	KIRISUN		
Model No.:	M50		
Listed Model(s):	iTALK 450		
Power supply:	DC 12V		
5G WIFI			
Supported type:	☒ 802.11a	☒ 802.11n(HT20)	☒ 802.11n(HT40)
Function:	☐ Outdoor AP ☒ Client	☐ Indoor AP	☐ Fixed P2P
DFS type:	☐ master devices	☐ Slave devices with radar detection	☒ Slave devices without radar detection
Modulation:	BPSK, QPSK, 16QAM, 64QAM		
Operation frequency:	☒ Band I:	5150MHz~5250MHz	
	☒ Band II:	5250MHz~5350MHz	
	☒ Band III:	5470MHz~5725MHz	
Supported Bandwidth	20MHz:	802.11n, 802.11a	
	40MHz:	802.11n	
Antenna type:	Ceramic Antenna		
Antenna gain:	-4.0dBi		

3.3. Operation state

➢ **Frequency list**

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Band	Test Channel	20MHz		40MHz	
		Channel	Frequency (MHz)	Channel	Frequency (MHz)
I	CH_L	36	5180	38	5190
	CH_M	44	5220	-	-
	CH_H	48	5240	46	5230
II	CH_L	52	5260	54	5270
	CH_M	56	5280	-	-
	CH_H	64	5320	62	5310
III	CH_L	100	5500	102	5510
	CH_M	120	5600	118	5590
	CH_H	140	5700	134	5670

➢ **Data Rated**

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Mode	Data rate (worst mode)
802.11a	6Mbps
802.11n(HT20)	MCS0
802.11n(HT40)	MCS0

➢ **Test mode**

For RF test items
The engineering test program was provided and enabled to make EUT continuous transmit (duty cycle>98%).
For AC power line conducted emissions:
The EUT was set to connect with the WLAN AP under large package sizes transmission.
For Radiated suprious emissions test item:
The engineering test program was provided and enabled to make EUT continuous transmit(duty cycle>98%). The EUT in each of three orthogonal axis emissions had been tested ,but only the worst case (X axis) data Recorded in the report.

3.4. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

- ● - supplied by the manufacturer
- ○ - supplied by the lab

○	N/A	Manufacturer :	N/A
		Model No. :	N/A
○	N/A	Manufacturer :	N/A
		Model No. :	N/A

3.5. Modifications

No modifications were implemented to meet testing criteria.

4. TEST ENVIRONMENT

4.1. Address of the test laboratory

Laboratory:Shenzhen Huatongwei International Inspection Co., Ltd.
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China
Phone: 86-755-26748019 Fax: 86-755-26748089

4.2. Test Facility

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 3902.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 762235

Shenzhen Huatongwei International Inspection Co., Ltd. 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.

IC-Registration No.:5377B-1

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No.: 5377B-1.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

4.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

4.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors in calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to TR-100028-01 “Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1” and TR-100028-02 “Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2” and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd. quality system according to ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Here after the best measurement capability for Shenzhen Huatongwei International Inspection Co., Ltd. is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.63 dB	(1)
Conducted spurious emissions 9kHz~40GHz	0.63 dB	(1)
Conducted Disturbance 150kHz~30MHz	3.35 dB	(1)
Radiated Emissions below 1GHz	4.28 dB	(1)
Radiated Emissions above 1GHz	5.16 dB	(1)
Occupied Bandwidth	69 Hz	(1)
Frequency error	69 Hz	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

4.5. Equipments Used during the Test

Conducted Emissions						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm-dd-yy)	Next Cal. (mm-dd-yy)
1	EMI Test Receiver	R&S	ESCI	101247	10/27/2018	10/26/2019
2	Artificial Mains	SCHWARZBECK	NNLK 8121	573	10/27/2018	10/26/2019
3	Pulse Limiter	R&S	ESH3-Z2	101488	10/27/2018	10/26/2019
4	RF Connection Cable	HUBER+SUHNER	EF400	N/A	11/14/2017	11/13/2019
5	Test Software	R&S	ES-K1	N/A	N/A	N/A
6	Temperature and Humidity Meter	MIAOXIN	TH10R	N/A	10/30/2018	10/29/2019

Radiated Emissions(Below 1GHz)						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm-dd-yy)	Next Cal. (mm-dd-yy)
1	Semi-Anechoic Chamber	Albatross projects	SAC-3m-02	C11121	09/30/2018	09/29/2021
2	EMI Test Receiver	R&S	ESCI	100900	10/28/2018	10/27/2019
3	Loop Antenna	R&S	HFH2-Z2	100020	04/02/2018	04/02/2021
4	Ultra-Broadband Antenna	SCHWARZBECK	VULB9163	546	04/05/2017	04/04/2020
5	RF Connection Cable	HUBER+SUHNER	N/A	N/A	09/28/2018	09/27/2019
6	RF Connection Cable	HUBER+SUHNER	SUCOFLEX104	501184/4	09/28/2018	09/27/2019
7	Test Software	R&S	ES-K1	N/A	N/A	N/A
8	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
9	Antenna Mast	Maturo Germany	TAM-4.0-P	N/A	N/A	N/A
10	Temperature and Humidity Meter	KEJIAN	KJ03	N/A	10/30/2018	10/29/2019

Radiated Emissions(Above 1GHz)						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm-dd-yy)	Next Cal. (mm-dd-yy)
1	Anechoic Chamber	Albatross projects	SAC-3m-01	C11121	09/30/2018	09/29/2021
2	Horn Antenna	SCHWARZBECK	9120D	1011	03/27/2017	03/26/2020
3	Preamplifier	BONN	BLWA0160-2M	1811887	11/14/2018	11/13/2019
4	Pre-amplifier	SCHWARZBECK	BBV 9743	9743-0022	10/17/2018	10/16/2019
5	Broadband Pre-amplifier	SCHWARZBECK	BBV 9718	9718-248	04/28/2018	04/27/2019
6	Spectrum Analyzer	R&S	FSP40	100597	10/27/2018	10/26/2019
7	RF Connection Cable	HUBER+SUHNER	RE-7-FL	N/A	11/15/2018	11/14/2019
8	RF Connection Cable	HUBER+SUHNER	RE-7-FH	N/A	11/15/2018	11/14/2019
9	Test Software	Audix	E3	N/A	N/A	N/A
10	Turntable	Maturo Germany	TT2.0-1T	N/A	N/A	N/A
11	Antenna Mast	Maturo Germany	CAM-4.0-P-12	N/A	N/A	N/A
12	Temperature and Humidity Meter	MINGLE	YH101	N/A	10/30/2018	10/29/2019

RF Conducted Test						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal. (mm-dd-yy)	Next Cal. (mm-dd-yy)
1	Spectrum Analyzer	R&S	FSV40	100048	10/28/2018	10/27/2019
2	EXA Signal Analyzer	Agilent	N9020A	MY5050187	09/29/2018	09/28/2019
3	OSP	R&S	OSP120	101317	N/A	N/A

5. TEST CONDITIONS AND RESULTS

5.1. Antenna requirement

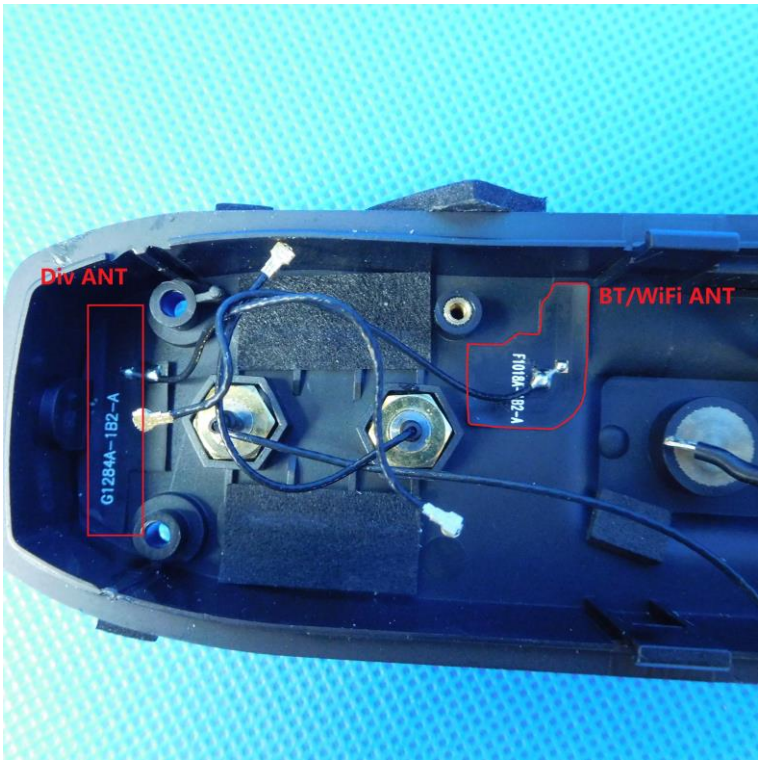
Requirement

FCC CFR Title 47 Part 15 Subpart C 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. The use of a permanently attached antenna or of anantenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Test Result:

The directional gain of the antenna less than 6 dBi, please refer to the below antenna photo.



5.2. Conducted Emissions (AC Main)

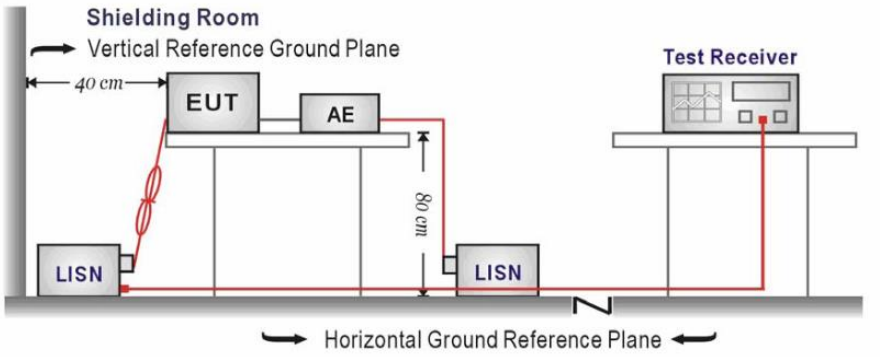
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10:2013 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor,was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☐ **Passed** ☒ **Not Applicable**

5.3. Maximum Conducted Output Power

LIMIT

FCC CFR Title 47 Part 15 Subpart E Section 15.407(a):

For the 5.15~5.25GHz band:

- Outdoor AP
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
  if G_{Tx}>6dBi, then P_{out} =30-(G_{Tx}-6). e.i.r.p. at any elevation angle above 30 degrees≤125mW (21dBm)
- Indoor AP
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
  if G_{Tx}>6dBi, then Pout =30-(G_{Tx}-6).
- Point-to-point AP
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
  if G_{Tx}>23dBi, then Pout =30-(G_{Tx}-23).
- Client devices
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 250W (24dBm).
  if G_{Tx}>6dBi, then Pout =24-(G_{Tx}-6).

For the 5.25~5.35GHz band:

The maximum conducted output power (P_{out}) shall not exceed the lesser of 250mW (24dBm) or 11dBm+10 log B, where B is the 26dB emission bandwith in MHz.
if G_{Tx}>6dBi, then P_{out} =24-(G_{Tx}-6).

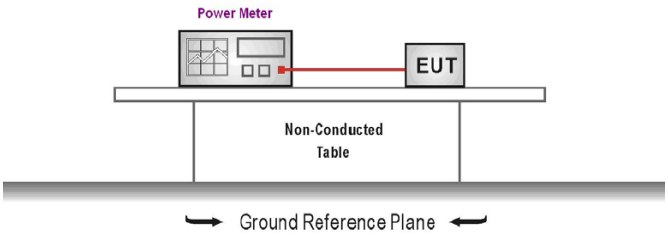
For the 5.47~5.725GHz band:

The maximum conducted output power (P_{out}) shall not exceed the lesser of 250mW (24dBm) or 11dBm+10 log B, where B is the 26dB emission bandwith in MHz.
if G_{Tx}>6dBi, then P_{out} =24-(G_{Tx}-6).

For the 5.725~5.85GHz band:

- Point-to-multipoint systems (P2M)
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).
  if G_{Tx}>6dBi, then P_{out} =30-(G_{Tx}-6).
- Point-to-point systems (P2P)
  The maximum conducted output power (P_{out}) shall not exceed the lesser of 1W (30dBm).

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was tested according to KDB789033 Section E-3-b)
2. The maximum conducted output power may be measured using a broadband AVG RF power meter.
3. Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor.
4. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
5. Record the measurement data.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Band	Bandwidth (MHz)	Type	Channel	Conducted Output Power (dBm)	Limit (dBm)	Result
I	20	802.11n	CH_L	16.13	24.00	Pass
			CH_M	16.20		
			CH_H	15.78		
		802.11a	CH_L	15.82	24.00	Pass
			CH_M	16.06		
			CH_H	15.54		
	40	802.11n	CH_L	14.81	24.00	Pass
			CH_H	14.63		
II	20	802.11n	CH_L	14.96	24.00	Pass
			CH_M	14.51		
			CH_H	14.86		
		802.11a	CH_L	14.82	24.00	Pass
			CH_M	14.42		
			CH_H	14.78		
	40	802.11n	CH_L	13.17	24.00	Pass
			CH_H	13.36		

Band	Bandwidth (MHz)	Type	Channel	Conducted Output Power (dBm)	Limit (dBm)	Result
III	20	802.11n	CH_L	16.04	24.00	Pass
			CH_M	15.21		
			CH_H	15.64		
		802.11a	CH_L	15.66	24.00	Pass
			CH_M	15.22		
			CH_H	15.53		
	40	802.11n	CH_L	14.66	24.00	Pass
			CH_M	15.60		
			CH_H	15.41		

5.4. Maximum Power Spectral Density

LIMIT

FCC CFR Title 47 Part 15 Subpart E Section 15.407(a):

For the 5.15~5.25GHz band:

- Outdoor AP
  The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
  if G_{Tx}>6dBi, then PSD =17-(G_{Tx}-6).
- Indoor AP
  The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
  if G_{Tx}>6dBi, then PSD =17-(G_{Tx}-6).
- Point-to-point AP
  The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz.
  if G_{Tx}>23dBi, then PSD =17-(G_{Tx}-23).
- Client devices
  The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
  if G_{Tx}>6dBi, then PSD =11-(G_{Tx}-6).

For the 5.25~5.35GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
if G_{Tx}>6dBi, then PSD =11-(G_{Tx}-6).

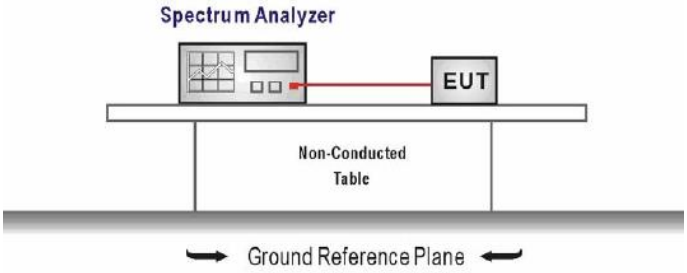
For the 5.47~5.725GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz.
if G_{Tx}>6dBi, then PSD =11-(G_{Tx}-6).

For the 5.725~5.85GHz band:

- Point-to-multipoint systems (P2M)
  The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.
  if G_{Tx}>6dBi, then PSD =30-(G_{Tx}-6).
- Point-to-point systems (P2P)
  The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.

TEST CONFIGURATION



TEST PROCEDURE

1. According KDB 789033 D02 – Section F
2. Analyzer was setting as follow:
   Center frequency: test channel
   Span was set to encompass the entire emission bandwidth of the signal
   RBW=1MHz for devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz
   RBW=500kHz for devices operating in the band 5.725-5.85 GHz
   VBW ≥ 3 RBW
   Number of sweep points > 2 x (span/RBW)
   Sweep time = auto
   Detector = Peak
   Trigger was set to free run for all modes, trace was averaged over 100 sweeps
3. The peak search function of the spectrum analyzer was used to find the peak of the spectrum.

TEST MODE:

Please refer to the clause 3.3

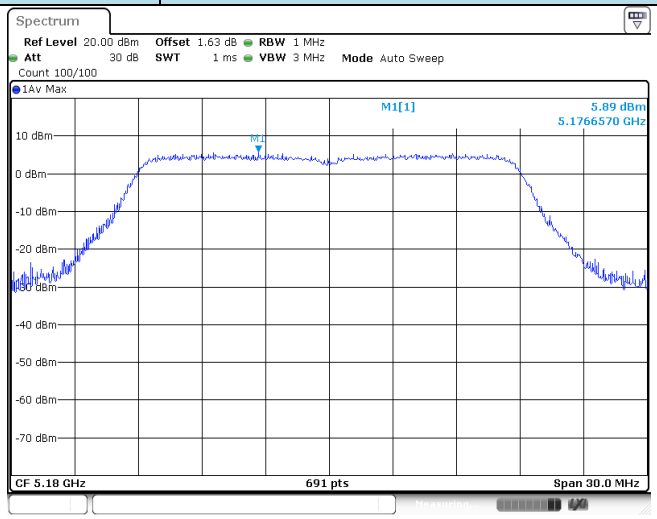
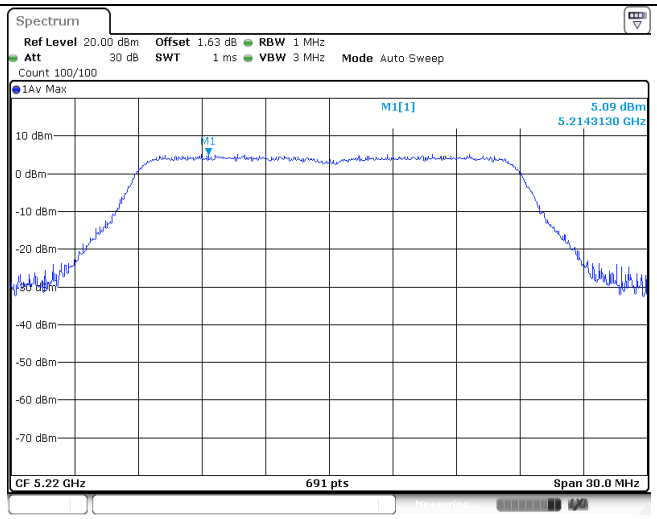
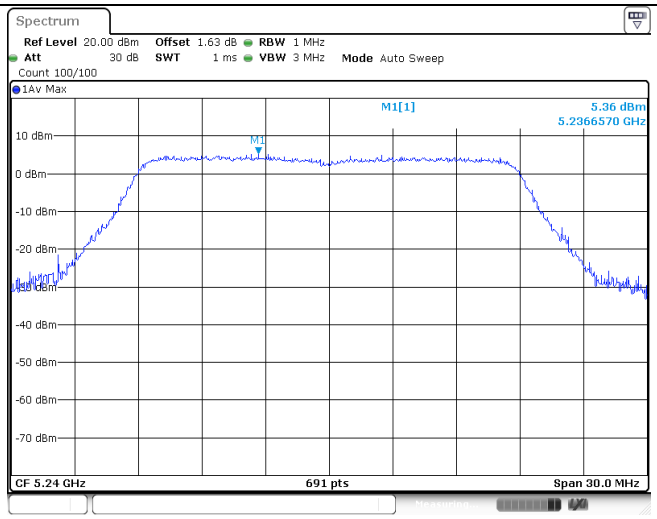
TEST RESULTS

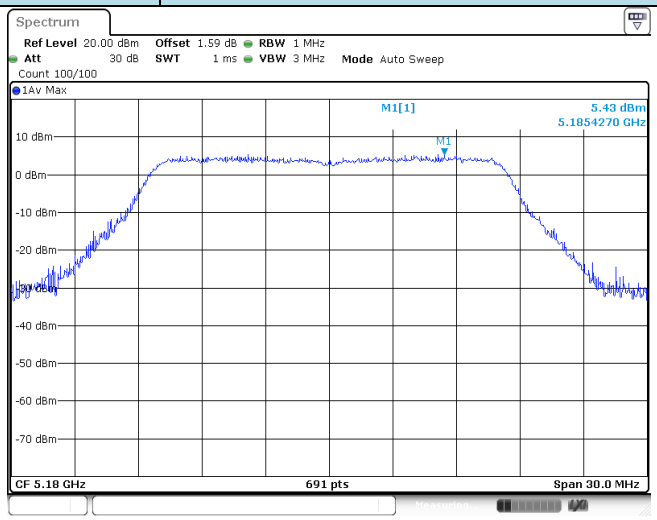
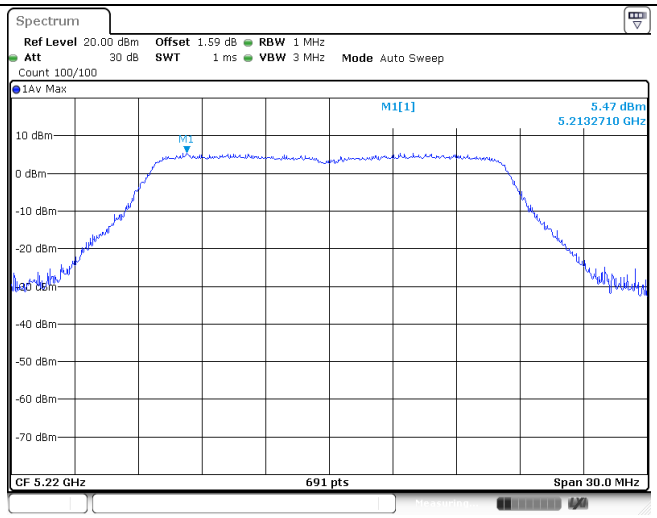
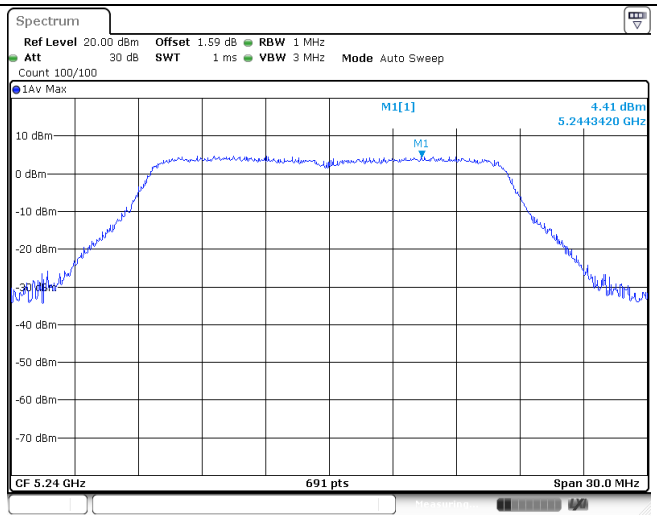
☒ **Passed** ☐ **Not Applicable**

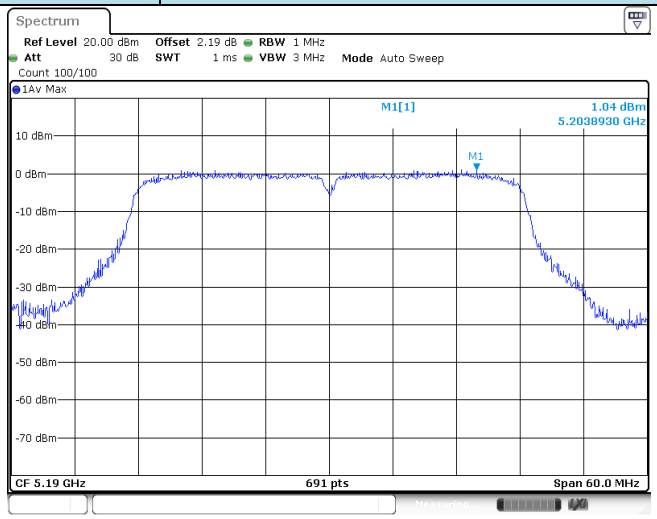
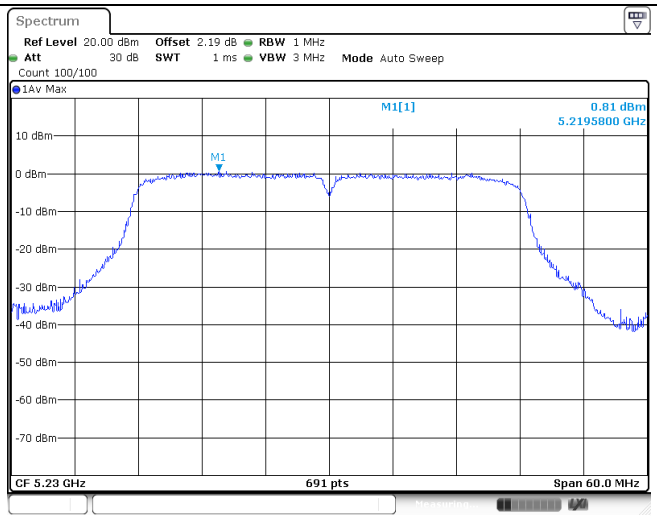
Band	Bandwidth (MHz)	Type	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
I	20	802.11n	CH_L	5.89	11.00	Pass
			CH_M	5.09		
			CH_H	5.36		
		802.11a	CH_L	5.43	11.00	Pass
			CH_M	5.47		
			CH_H	4.41		
	40	802.11n	CH_L	1.04	11.00	Pass
			CH_H	0.81		
II	20	802.11n	CH_L	4.36	11.00	Pass
			CH_M	3.27		
			CH_H	3.75		
		802.11a	CH_L	4.40	11.00	Pass
			CH_M	4.03		
			CH_H	3.95		
	40	802.11n	CH_L	-0.21	11.00	Pass
			CH_H	-0.29		

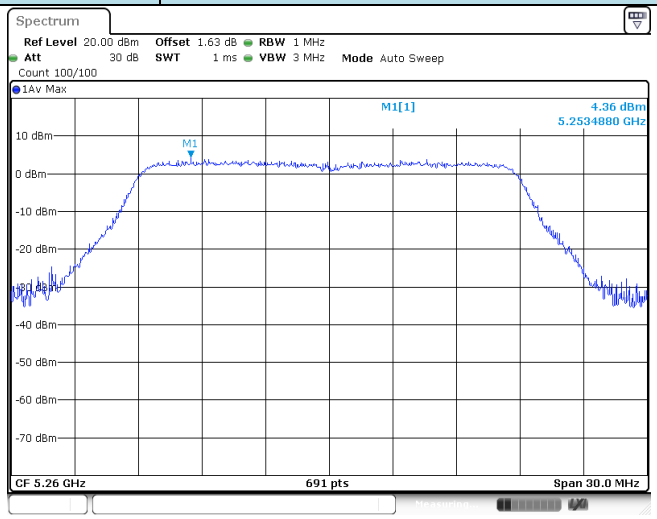
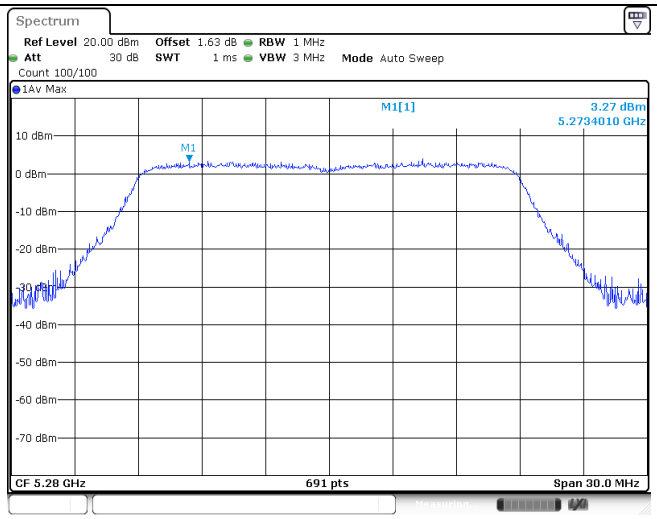
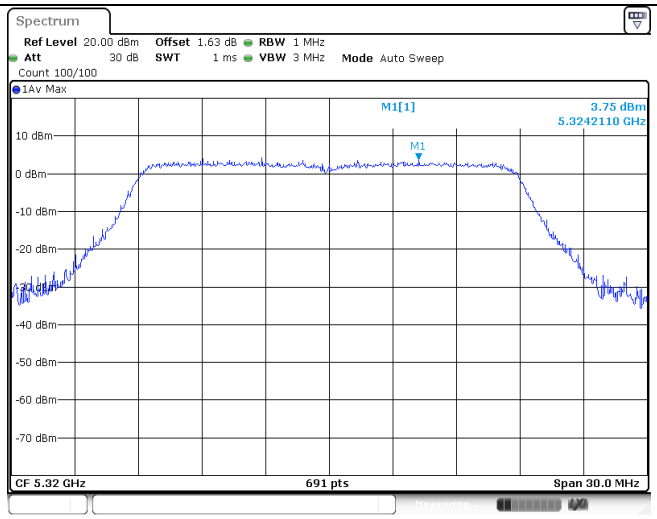
Band	Bandwidth (MHz)	Type	Channel	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
III	20	802.11n	CH_L	4.91	11.00	Pass
			CH_M	4.23		
			CH_H	4.58		
		802.11a	CH_L	5.33	11.00	Pass
			CH_M	4.51		
			CH_H	5.06		
	40	802.11n	CH_L	0.92	11.00	Pass
			CH_M	1.40		
			CH_H	2.03		

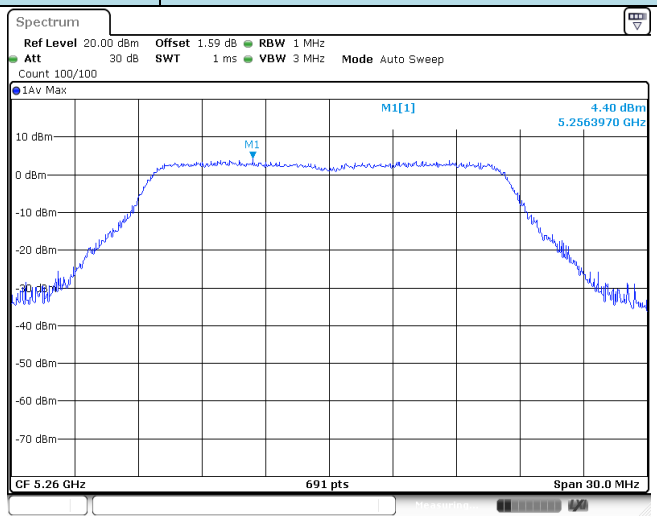
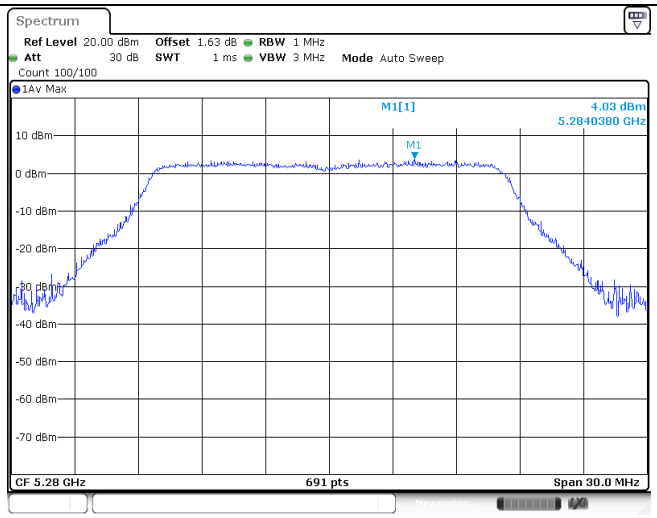
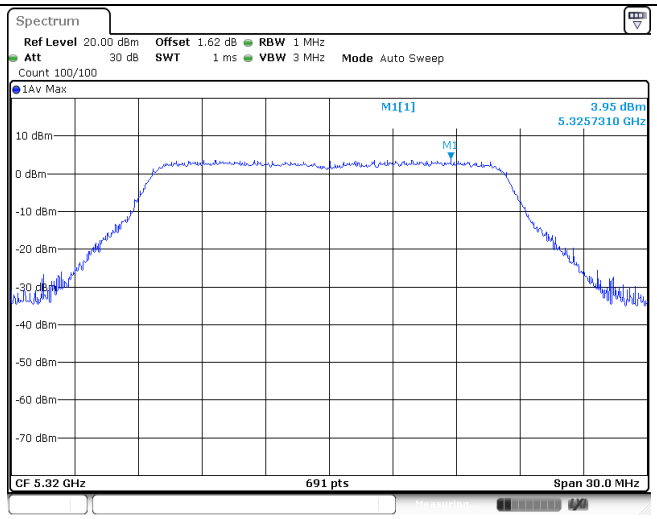
Test plot as follows:

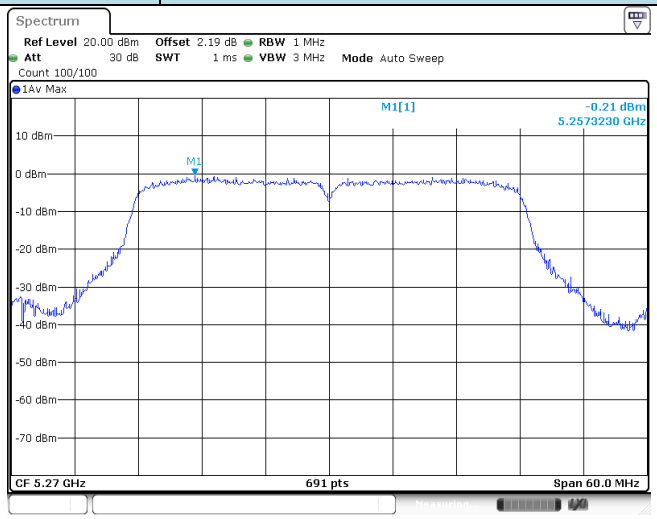
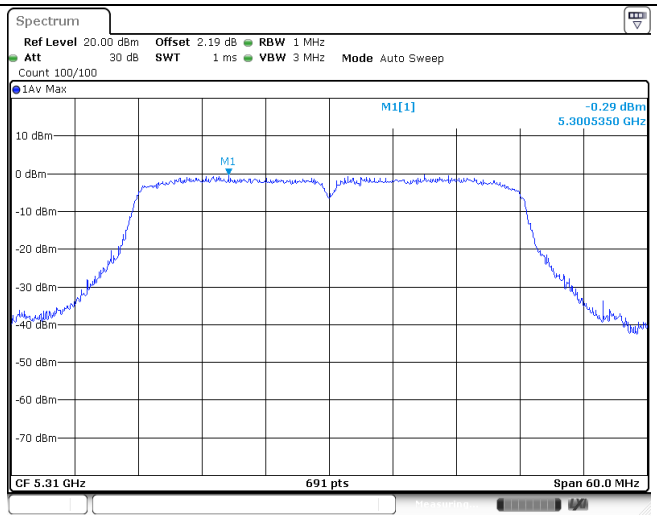
Band I	802.11n (HT20)
CH_L	
CH_M	
CH_H	

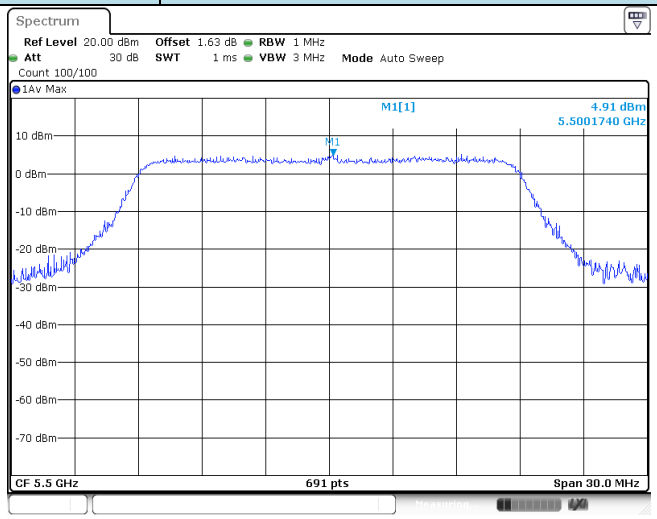
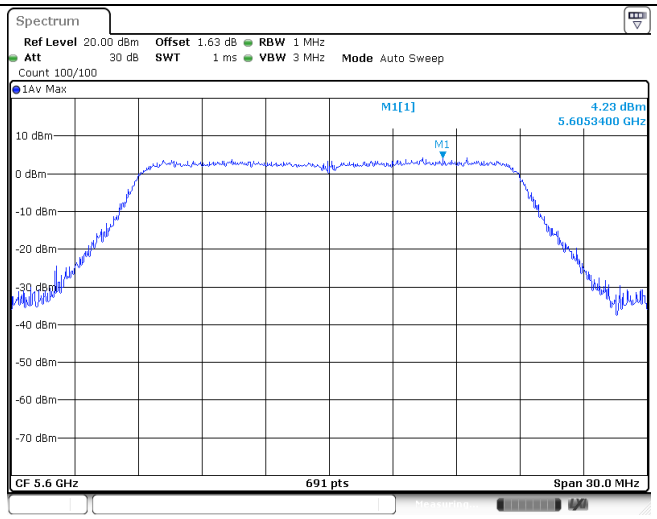
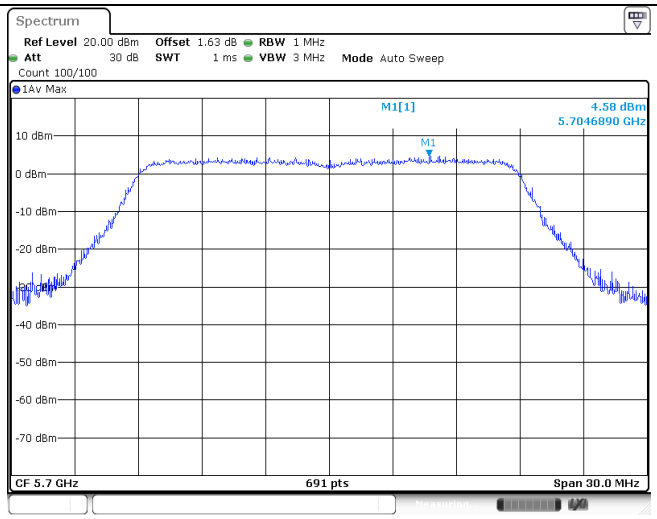
Band I	802.11a
CH_L	
CH_M	
CH_H	

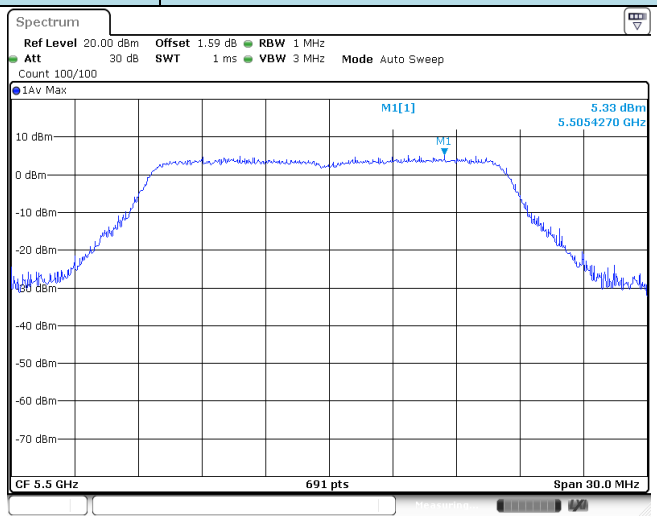
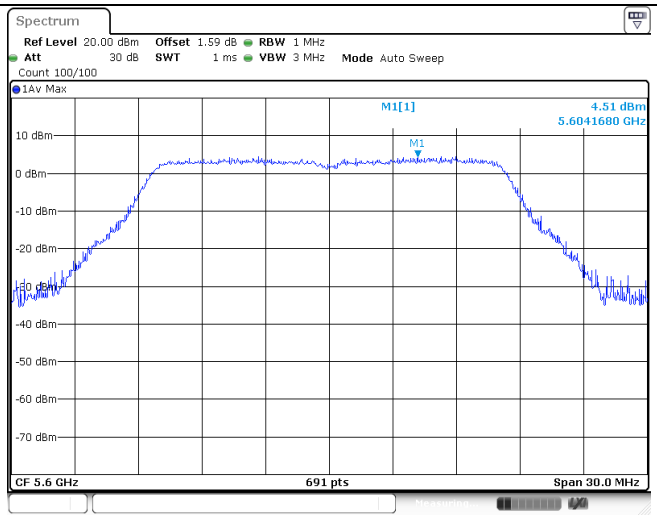
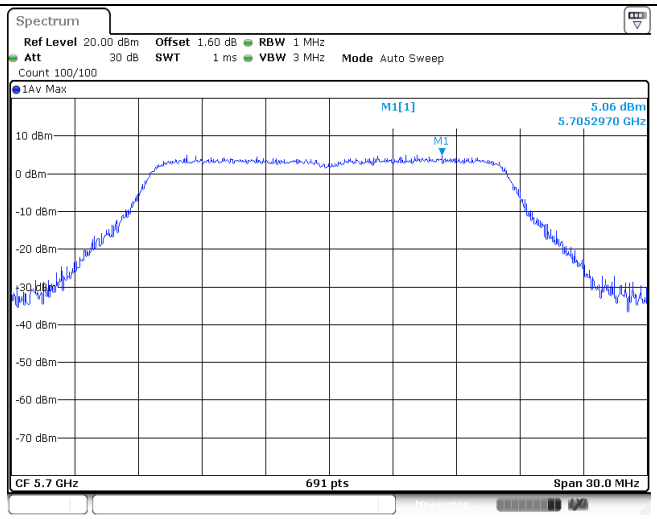
Band I	802.11n (HT40)
CH_L	
CH_H	

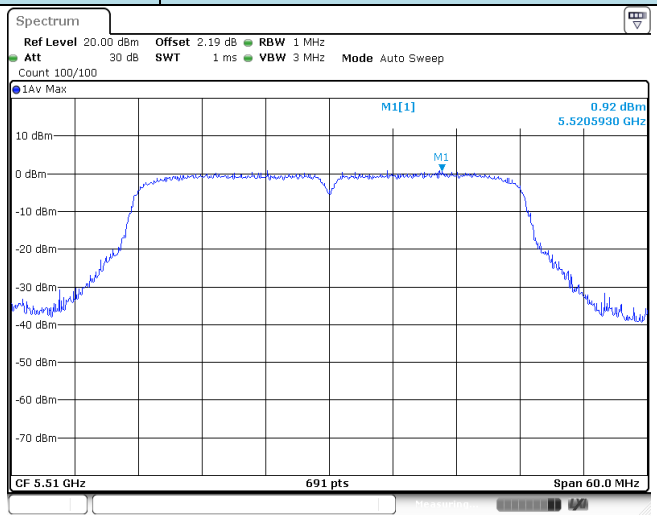
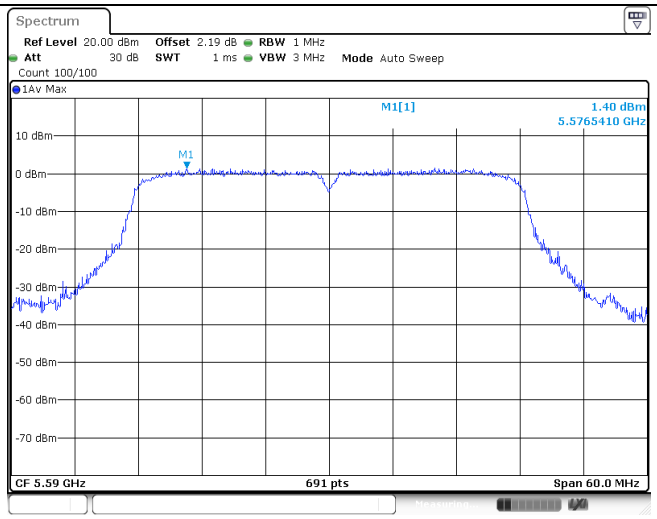
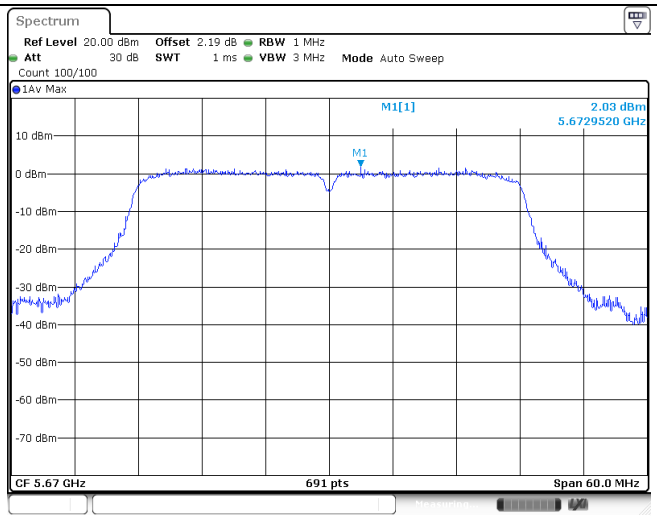
Band II	802.11n (HT20)
CH_L	
CH_M	
CH_H	

Band II	802.11a
CH_L	
CH_M	
CH_H	

Band II	802.11n (HT40)
CH_L	
CH_H	

Band III	802.11n (HT20)
CH_L	
CH_M	
CH_H	

Band III	802.11a
CH_L	
CH_M	
CH_H	

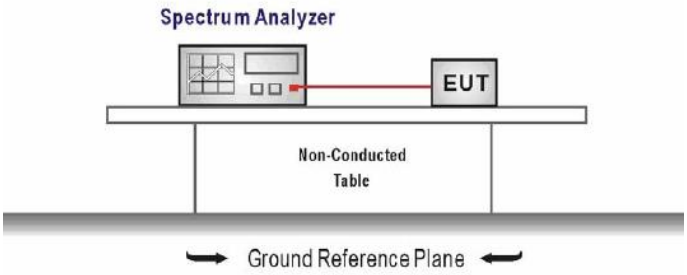
Band III	802.11n (HT40)
CH_L	
CH_M	
CH_H	

5.5. 26dB bandwidth and 99% Occupy bandwidth

LIMIT

The bandwidth at 26dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in KDB 789033 D02 , and at the appropriate frequencies. The spectrum analyzer's bandwidth measurement function is configured to measure the 26dB bandwidth.

TEST CONFIGURATION



TEST PROCEDURE

1. According KDB 789033 D02 – Section C
2. Connect the antenna port(s) to the spectrum analyzer input.
3. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).
   Center Frequency =Channel center frequency
   Span=2 x emission bandwidth
   RBW = 1% to 5% of the emission bandwidth
   VBW>3 x RBW
   Sweep time= auto couple
   Detector = Peak
   Trace mode = max hold
4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter wave form on the spectrum analyzer.
5. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission, and use the 99 % power bandwidth function of the instrument

TEST MODE:

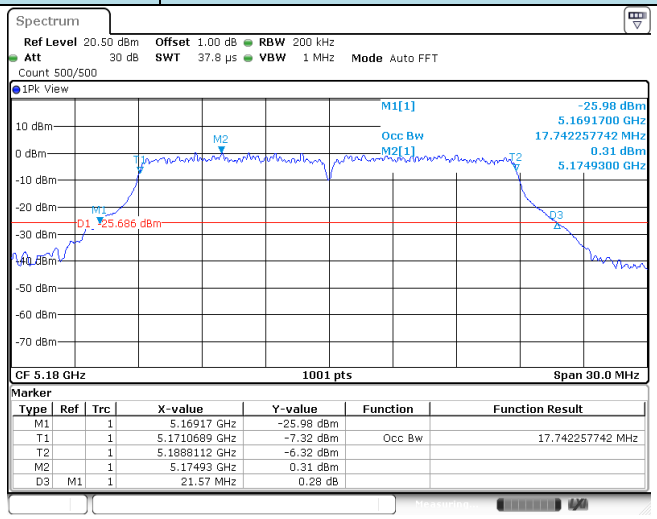
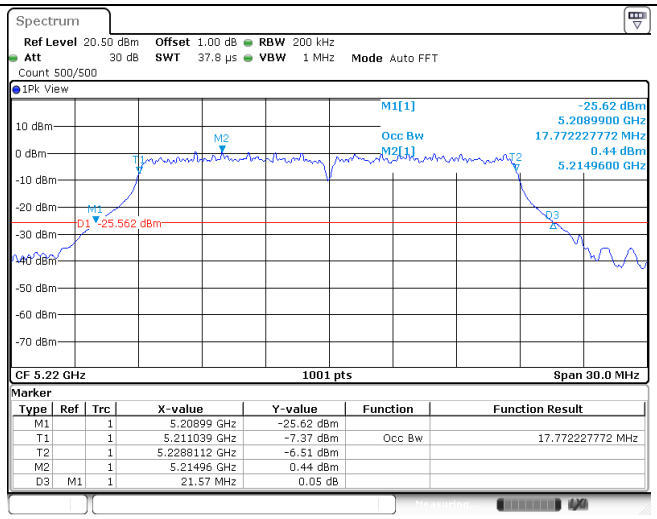
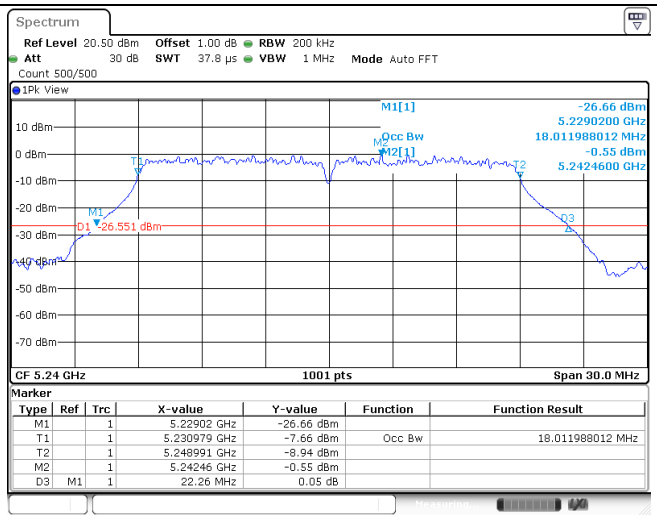
Please refer to the clause 3.3

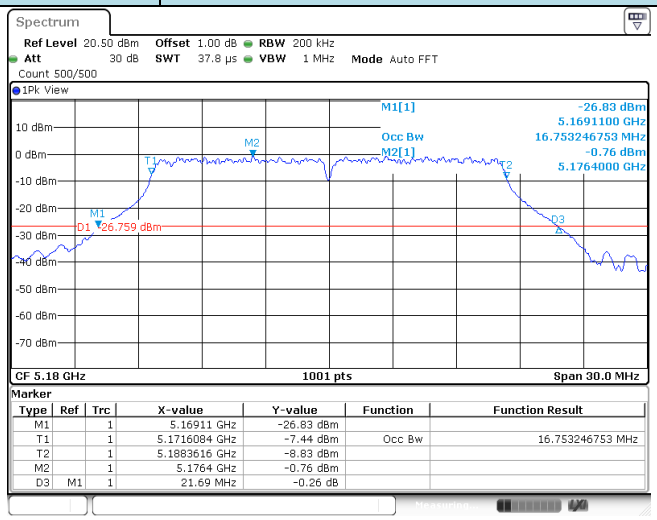
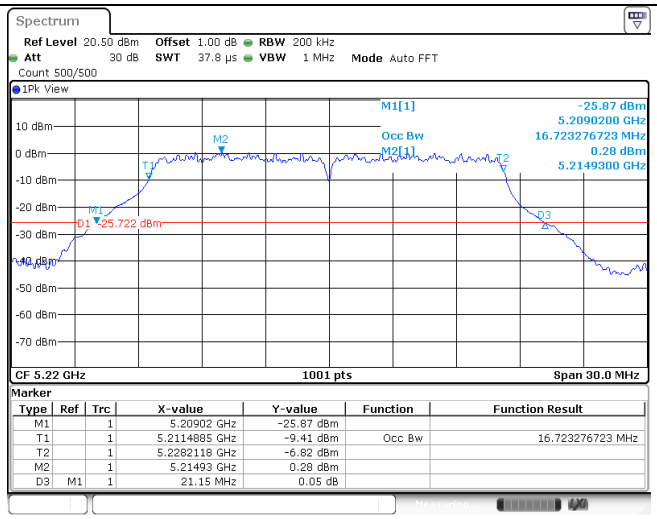
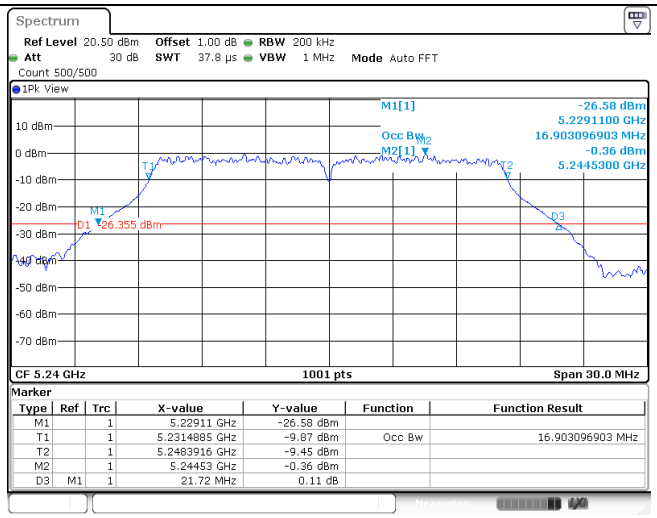
TEST RESULTS

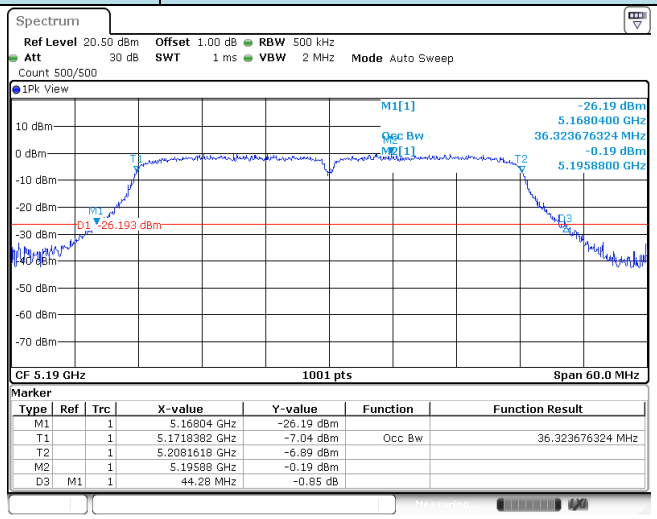
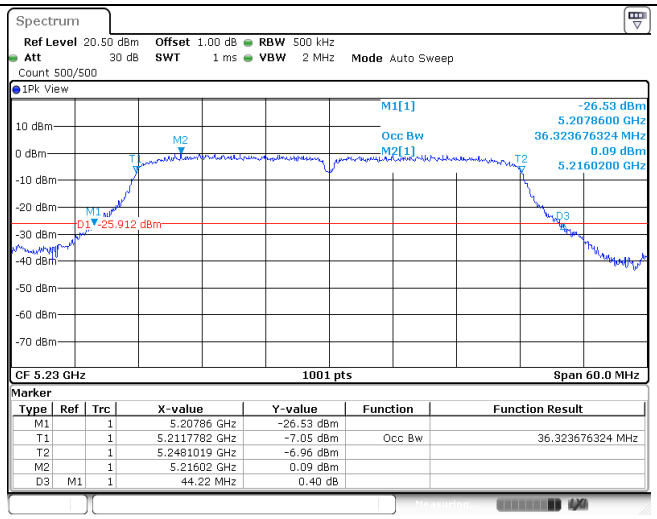
☒ **Passed** ☐ **Not Applicable**

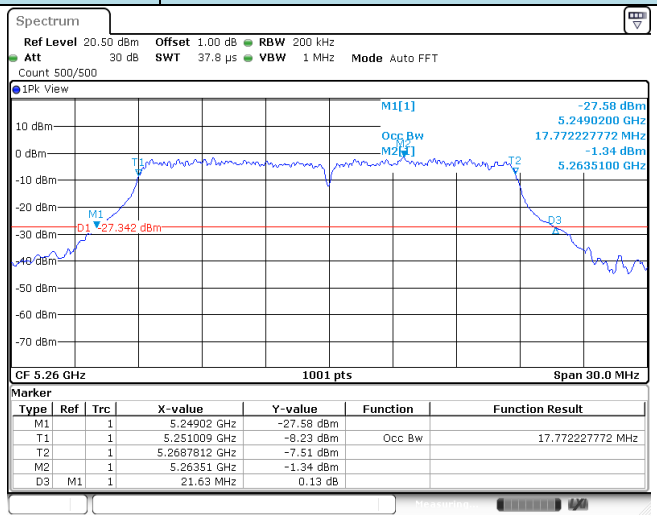
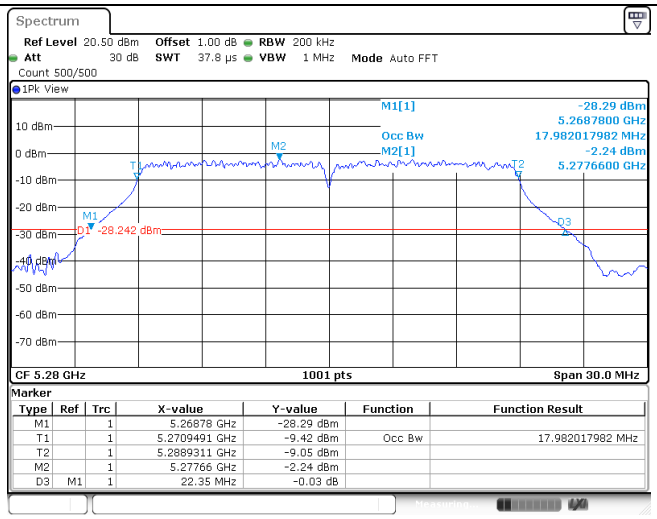
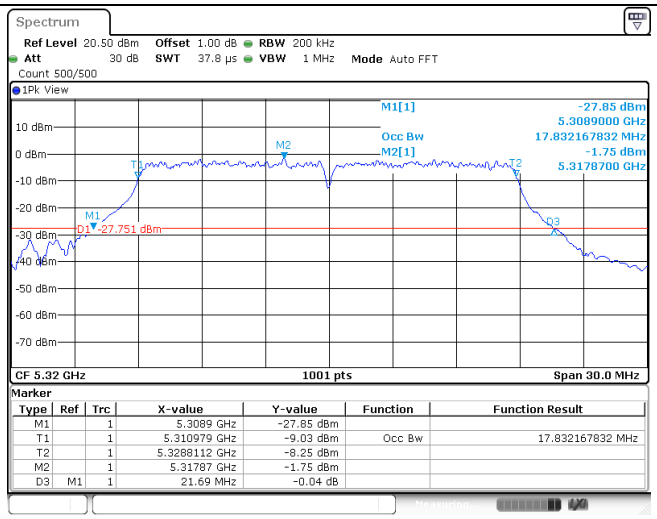
Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwith (MHz)	26dB bandwidth (MHz)	Result
I	20	802.11n	CH_L	17.74	21.57	Pass
			CH_M	17.77	21.57	
			CH_H	18.01	22.26	
		802.11a	CH_L	16.75	21.69	Pass
			CH_M	16.72	21.15	
			CH_H	16.90	21.72	
	40	802.11n	CH_L	36.32	44.28	Pass
			CH_H	36.32	44.22	
II	20	802.11n	CH_L	17.77	21.63	Pass
			CH_M	17.98	22.35	
			CH_H	17.83	21.69	
		802.11a	CH_L	16.72	21.42	Pass
			CH_M	16.63	21.03	
			CH_H	16.66	21.06	
	40	802.11n	CH_L	36.38	44.22	Pass
			CH_H	36.32	44.40	

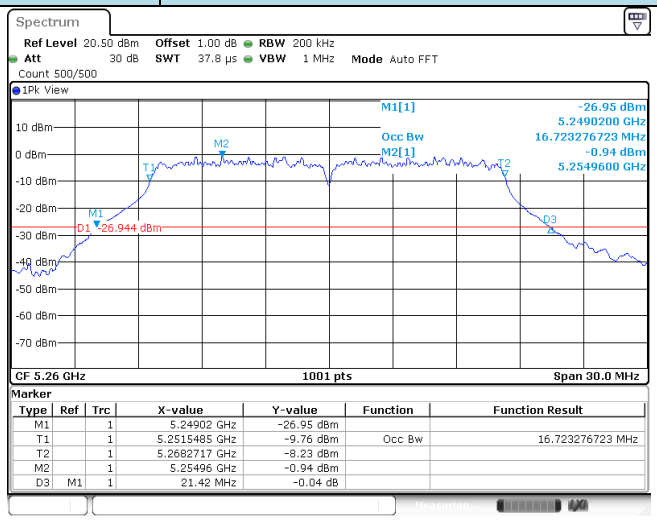
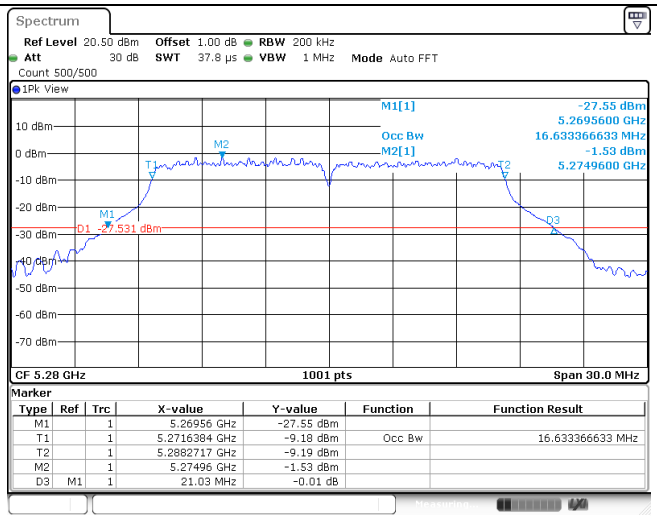
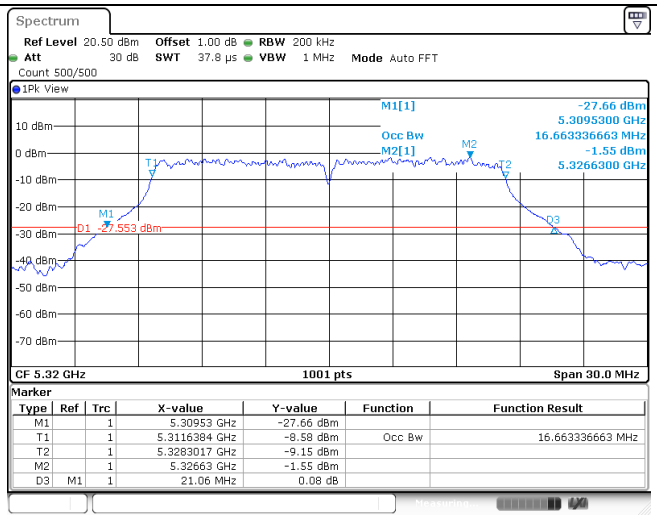
Band	Bandwidth (MHz)	Type	Channel	99% Occupy bandwith (MHz)	26dB bandwidth (MHz)	Result
III	20	802.11n	CH_L	17.77	21.81	Pass
			CH_M	17.83	21.66	
			CH_H	17.77	21.63	
		802.11a	CH_L	16.66	20.97	Pass
			CH_M	16.75	21.21	
			CH_H	16.87	21.78	
	40	802.11n	CH_L	36.38	44.34	Pass
			CH_M	36.44	44.28	
			CH_H	36.44	44.76	

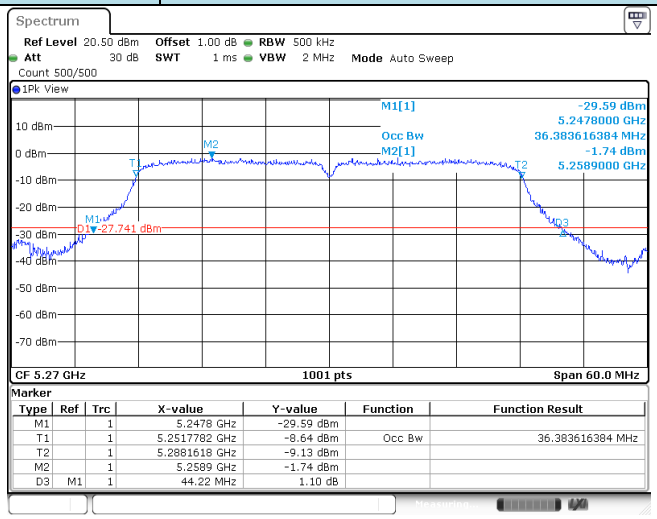
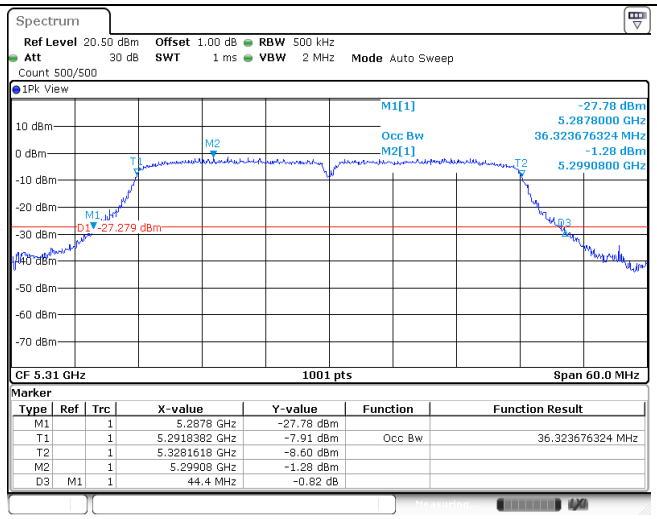
Band I	802.11n (HT20)
CH_L	
CH_M	
CH_H	

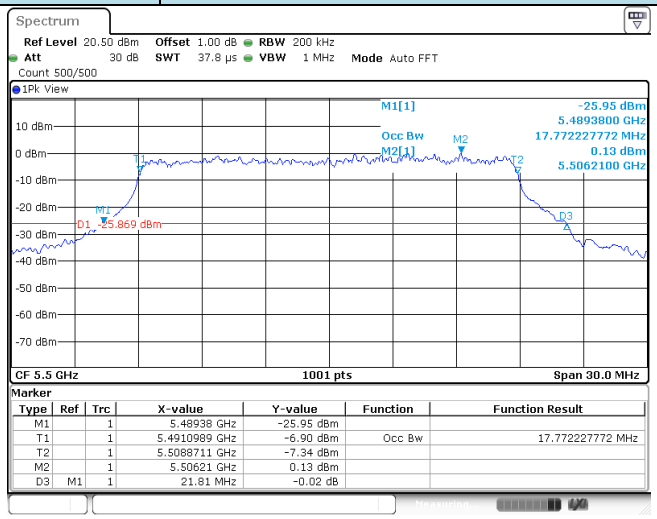
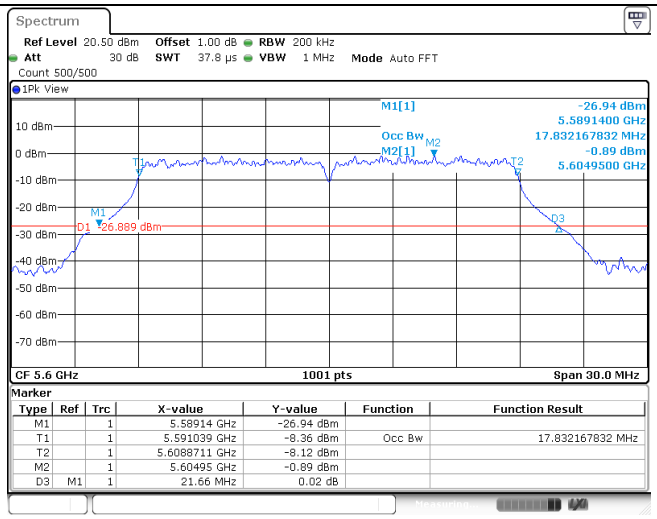
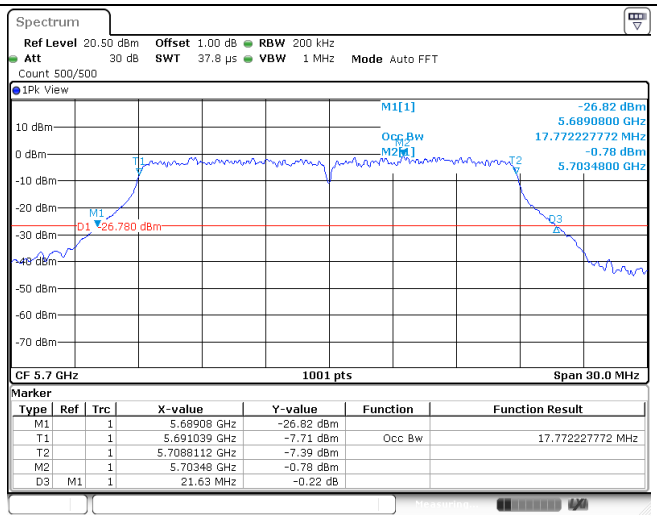
Band I	802.11a
CH_L	
CH_M	
CH_H	

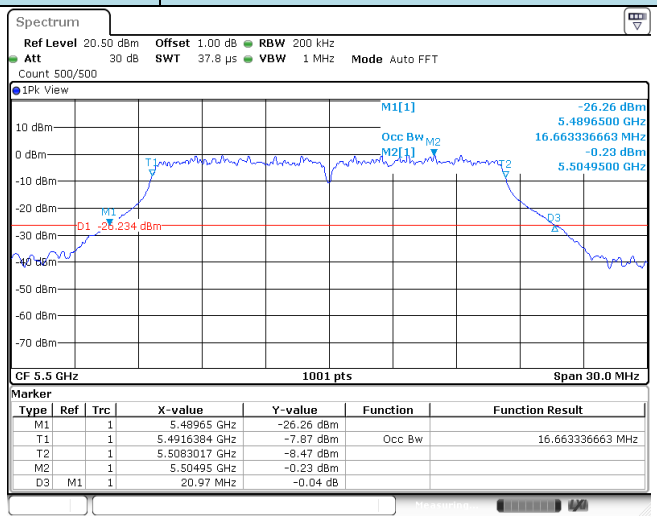
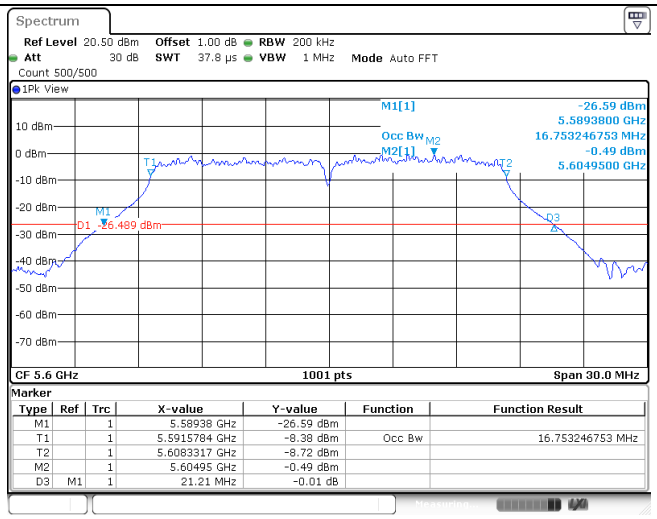
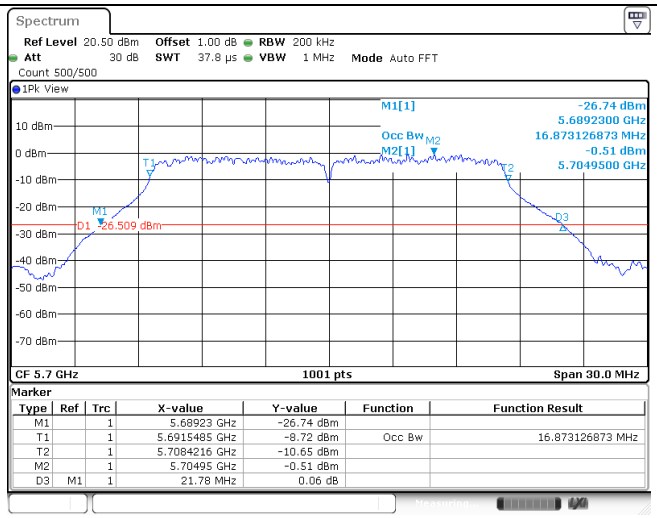
Band I	802.11n (HT40)
CH_L	
CH_H	

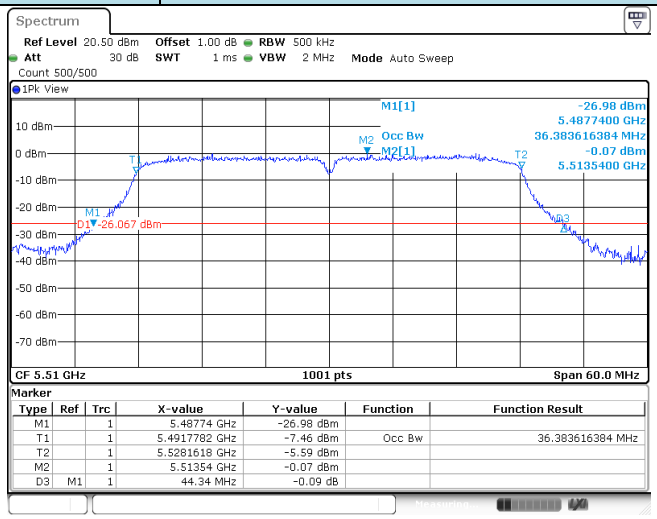
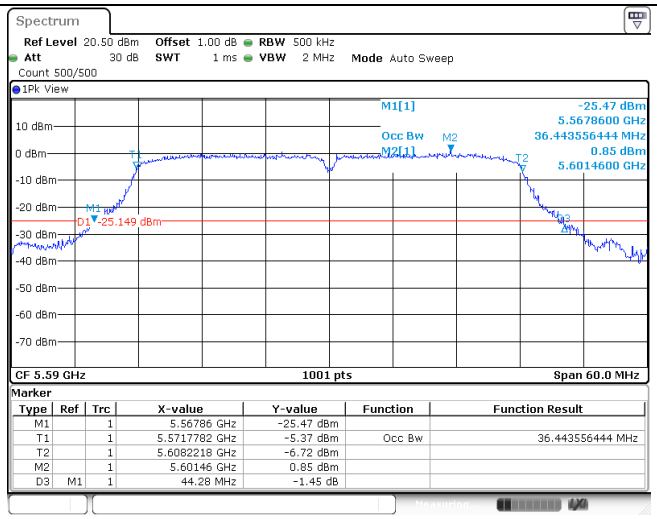
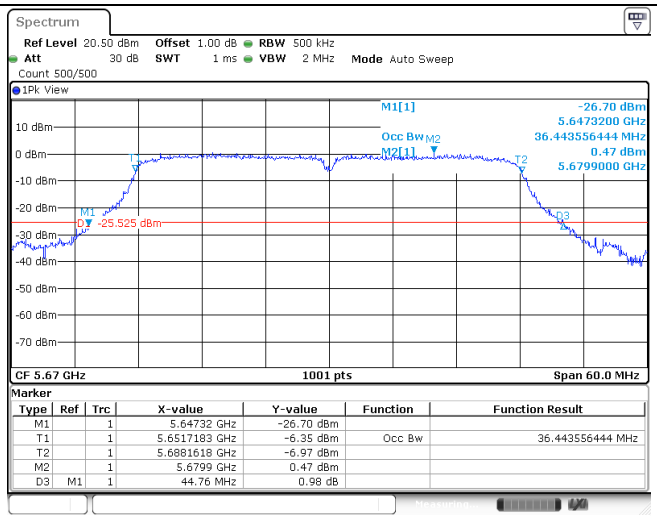
Band II	802.11n (HT20)
CH_L	
CH_M	
CH_H	

Band II	802.11a
CH_L	
CH_M	
CH_H	

Band II	802.11n (HT40)
CH_L	
CH_H	

Band III	802.11n (HT20)
CH_L	
CH_M	
CH_H	

Band III	802.11a
CH_L	
CH_M	
CH_H	

Band III	802.11n (HT40)
CH_L	
CH_M	
CH_H	

5.6. Band edge

LIMIT

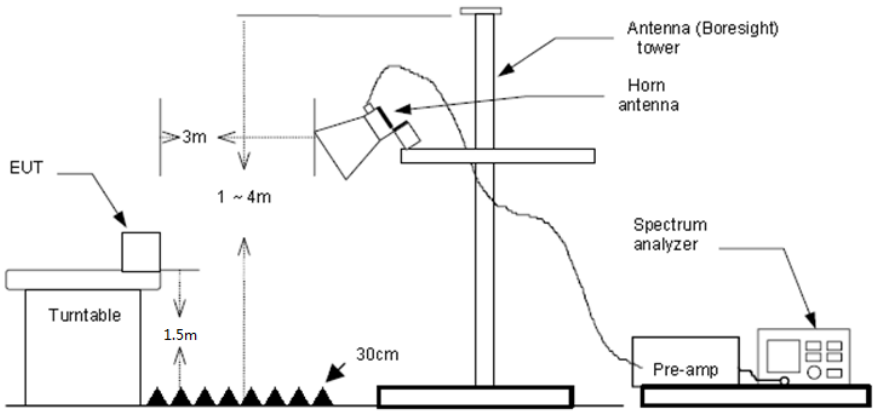
FCC CFR Title 47 Part 15 Subpart E Section 15.407(b)

Un-restricted band emissions above 1GHz			
Operating Band	Frequency	EIRP Limit	Value
5150-5250MHz	Above 1GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak
5250-5350MHz	Above 1GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak
5470-5725MHz	Above 1GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak
5725-5850 MHz	1GHz-5.65GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak
	5.65GHz-5.7GHz	-27*dBm/MHz to 10dBm/MHz (68.2* dBuV/m to 105.6dBuV/m@3m)	Peak
	5.7GHz-5.72GHz	10*dBm/MHz to 15.6dBm/MHz (105.6*dBuV/m to 110.8dBuV/m@3m)	Peak
	5.72GHz-5.725GHz	15.6*dBm/MHz to 27dBm/MHz (110.8dBuV/m to* 122.2dBuV/m@3m)	Peak
	5.85GHz-5.855GHz	27dBm/MHz to 15.6*dBm/MHz (122.2dBuV/m to110.8* dBuV/m@3m)	Peak
	5.855GHz-5.875GHz	15.6dBm/MHz to 10*dBm/MHz (110.8dBuV/m to 105.6* dBuV/m@3m)	Peak
	5.875GHz-5.925GHz	10dBm/MHz to -27*dBm/MHz (105.6dBuV/m to 68.2* dBuV/m@3m)	Peak
	Above 5.925GHz	-27dBm/MHz (68.2dBuV/m@3m)	Peak

* Increase/Decreases with the linearly of the frequency.

For emission above 1GHz and in restricted band, according to FCC KDB 789033 D02 General UNII Test Procedure, all emission that complies with both the average and peak limits of Section 15.209 is not required to satisfy the -27 dBm/MHz peak emission limit. E[dBμV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

TEST CONFIGURATION



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. Thisis repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:
   RBW=1MHz, VBW=3MHz PEAK detector for Peak value.
   RBW=1MHz, VBW=3MHz RMS detector for Average value.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Band: I & II				Worst mode: 802.11a			Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5150.00	9.37	31.70	9.79	0.00	50.86	54.00	-3.14	Horizontal	Average
5150.00	7.18	31.70	9.79	0.00	48.67	54.00	-5.33	Vertical	Average
5150.00	16.38	31.70	9.79	0.00	57.87	74.00	-16.13	Horizontal	Peak
5150.00	16.94	31.70	9.79	0.00	58.43	74.00	-15.57	Vertical	Peak

Band: I & II				Worst mode: 802.11a			Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5350.00	9.18	31.40	10.05	0.00	50.63	54.00	-3.37	Horizontal	Average
5350.00	8.64	31.40	10.05	0.00	50.09	54.00	-3.91	Vertical	Average
5350.00	15.34	31.40	10.05	0.00	56.79	74.00	-17.21	Horizontal	Peak
5350.00	15.09	31.40	10.05	0.00	56.54	74.00	-17.46	Vertical	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Test 802.11a, 802.11n mode,all modulations have been tested,only worst case is reported*

Band: III				Worst mode: 802.11a			Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5470.00	8.37	31.78	10.18	0.00	50.33	54.00	-3.67	Horizontal	Average
5470.00	8.66	31.78	10.18	0.00	50.62	54.00	-3.38	Vertical	Average
5470.00	15.19	31.78	10.18	0.00	57.15	74.00	-16.85	Horizontal	Peak
5470.00	16.58	31.78	10.18	0.00	58.54	74.00	-15.46	Vertical	Peak

Band: III				Worst mode: 802.11a			Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
5725.00	9.55	31.73	10.47	0.00	51.75	54.00	-2.25	Horizontal	Average
5725.00	7.56	31.73	10.47	0.00	49.76	54.00	-4.24	Vertical	Average
5725.00	14.92	31.73	10.47	0.00	57.12	74.00	-16.88	Horizontal	Peak
5725.00	14.73	31.73	10.47	0.00	56.93	74.00	-17.07	Vertical	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Test 802.11a, 802.11n mode,all modulations have been tested,only worst case is reported*

5.7. Radiated Spurious Emissions

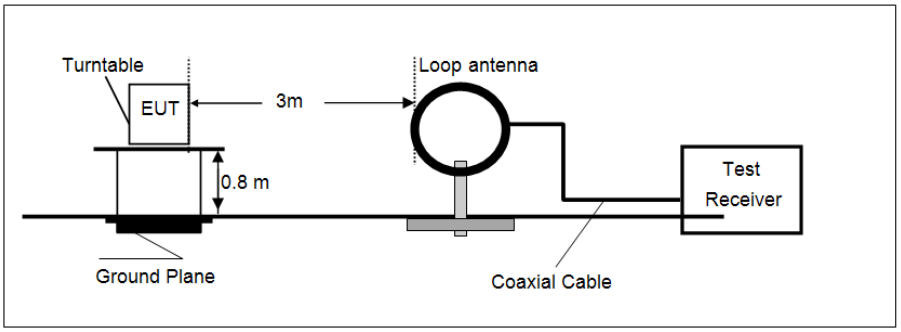
LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209 and Part 15 Subpart E Section 15.407

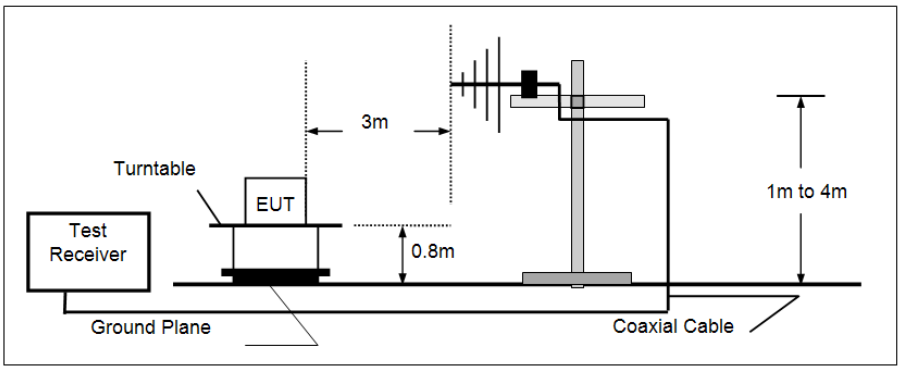
Unwanted emissions below 1GHz and Restricted band emissions above 1GHz		
Frequency	Limit (dBuV/m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

TEST CONFIGURATION

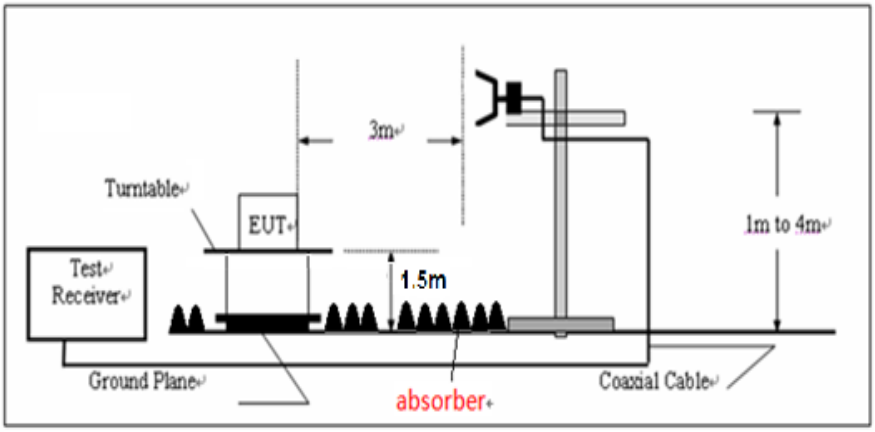
- 9KHz ~30MHz



- 30MHz ~ 1GHz



- Above 1GHz



TEST PROCEDURE

1. The EUT was setup and tested according to ANSI C63.10:2013
2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Use the following spectrum analyzer settings
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Below 1 GHz:
   RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;
   If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
   (3) From 1 GHz to 10^{th} harmonic:
   RBW=1MHz, VBW=3MHz Peak detector for Peak value.
   RBW=1MHz, VBW=3MHz RMS detector for Average value.

TEST MODE:

Please refer to the clause 3.3

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

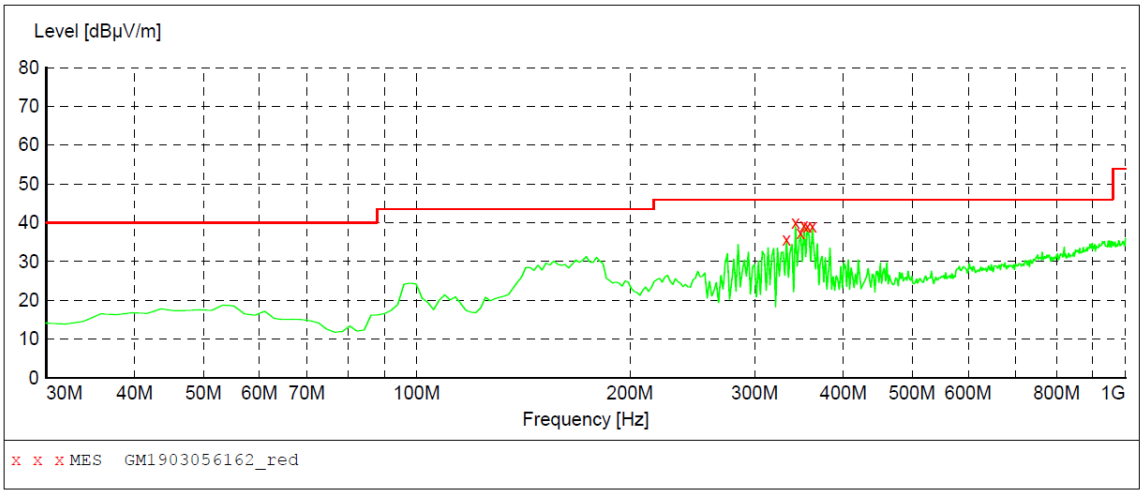
Measurement data:

■ **9kHz ~ 30MHz**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

■ **30MHz ~ 1GHz**

Polarization:	Horizontal

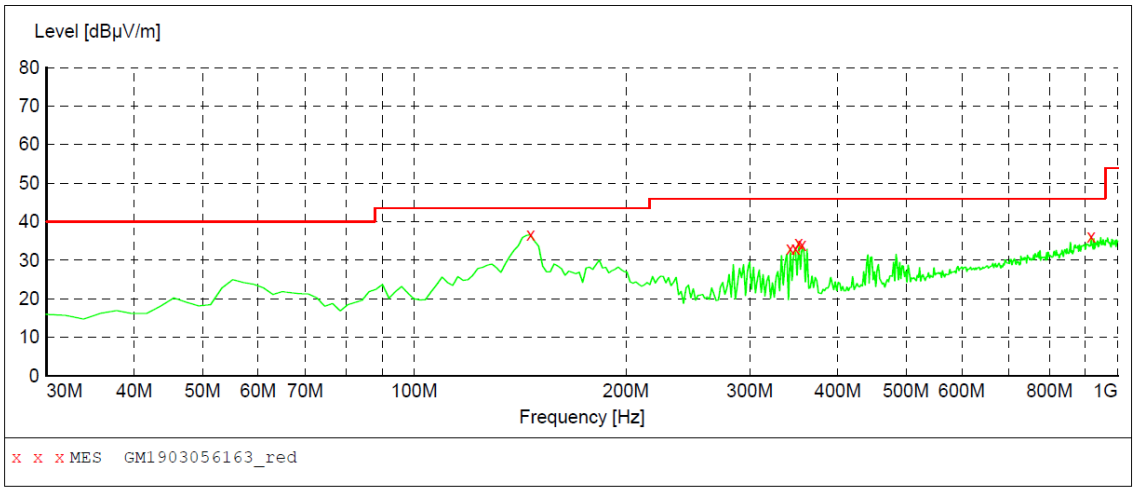


MEASUREMENT RESULT: "GM1903056162_red"

3/6/2019 12:22AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
332.640000	35.80	-5.6	46.0	10.2	QP	100.0	162.00	HORIZONTAL
342.340000	40.10	-5.1	46.0	5.9	QP	100.0	277.00	HORIZONTAL
348.160000	37.50	-4.8	46.0	8.5	QP	100.0	37.00	HORIZONTAL
352.040000	39.40	-4.8	46.0	6.6	QP	100.0	162.00	HORIZONTAL
355.920000	39.10	-5.0	46.0	6.9	QP	100.0	162.00	HORIZONTAL
361.740000	39.20	-5.1	46.0	6.8	QP	100.0	196.00	HORIZONTAL

Polarization:	Vertical



MEASUREMENT RESULT: "GM1903056163_red"

3/6/2019 12:24AM

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
146.400000	36.60	-13.7	43.5	6.9	QP	100.0	308.00	VERTICAL
342.340000	33.10	-5.1	46.0	12.9	QP	100.0	203.00	VERTICAL
348.160000	33.00	-4.8	46.0	13.0	QP	100.0	203.00	VERTICAL
352.040000	34.60	-4.8	46.0	11.4	QP	100.0	23.00	VERTICAL
355.920000	33.90	-5.0	46.0	12.1	QP	100.0	23.00	VERTICAL
916.580000	36.20	7.8	46.0	9.8	QP	100.0	148.00	VERTICAL

Remark:
Transd=Cable lose+ Antenna factor- Pre-amplifier; Margin=Limit -Level

■ **Above 1GHz**

Band: I				Worst mode: 802.11a			Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1918.72	33.70	25.49	6.14	37.23	28.10	74.00	-45.90	Vertical	Peak
2846.85	34.07	28.29	7.40	38.33	31.43	74.00	-42.57	Vertical	Peak
4223.95	33.15	30.05	8.96	37.64	34.52	74.00	-39.48	Vertical	Peak
6511.12	30.87	34.02	11.20	35.34	40.75	74.00	-33.25	Vertical	Peak
1860.99	34.17	25.34	6.05	37.19	28.37	74.00	-45.63	Horizontal	Peak
2719.35	32.44	28.10	7.18	38.15	29.57	74.00	-44.43	Horizontal	Peak
4055.37	33.90	29.81	8.82	37.98	34.55	74.00	-39.45	Horizontal	Peak
6511.12	30.74	34.02	11.20	35.34	40.62	74.00	-33.38	Horizontal	Peak

Band: I				Worst mode: 802.11a			Test channel: CH_M		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1651.15	34.64	25.06	5.67	36.83	28.54	74.00	-45.46	Vertical	Peak
4343.90	32.21	30.33	9.08	37.59	34.03	74.00	-39.97	Vertical	Peak
6412.43	30.09	33.39	11.01	35.31	39.18	74.00	-34.82	Vertical	Peak
7741.59	30.69	36.10	13.10	35.04	44.85	74.00	-29.15	Vertical	Peak
1963.18	33.07	25.94	6.21	37.27	27.95	74.00	-46.05	Horizontal	Peak
3233.26	35.04	28.60	7.76	38.26	33.14	74.00	-40.86	Horizontal	Peak
4478.63	32.83	30.66	9.26	37.43	35.32	74.00	-38.68	Horizontal	Peak
6363.65	30.81	33.23	10.99	35.31	39.72	74.00	-34.28	Horizontal	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n mode,all modulations have been tested,only worst case is reported*

Band: I					Worst mode: 802.11a		Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1498.91	32.94	25.80	5.28	36.59	27.43	74.00	-46.57	Vertical	Peak
2456.10	33.10	27.37	6.81	37.88	29.40	74.00	-44.60	Vertical	Peak
3854.08	34.79	29.65	8.58	38.20	34.82	74.00	-39.18	Vertical	Peak
6645.07	30.21	34.20	11.41	35.28	40.54	74.00	-33.46	Vertical	Peak
1537.56	33.53	25.46	5.39	36.64	27.74	74.00	-46.26	Horizontal	Peak
2135.22	34.97	26.99	6.38	37.33	31.01	74.00	-42.99	Horizontal	Peak
3436.94	33.74	28.50	8.02	38.50	31.76	74.00	-42.24	Horizontal	Peak
5791.65	31.25	32.06	10.58	35.34	38.55	74.00	-35.45	Horizontal	Peak

Band: II					Worst mode: 802.11a		Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
2775.30	31.78	28.10	7.31	38.30	28.89	74.00	-45.11	Vertical	Peak
3681.47	34.41	29.30	8.36	38.25	33.82	74.00	-40.18	Vertical	Peak
5325.01	31.20	31.35	10.02	36.58	35.99	74.00	-38.01	Vertical	Peak
6645.07	30.21	34.20	11.41	35.28	40.54	74.00	-33.46	Vertical	Peak
1663.80	34.75	25.09	5.69	36.85	28.68	74.00	-45.32	Horizontal	Peak
3757.21	34.15	29.47	8.45	38.24	33.83	74.00	-40.17	Horizontal	Peak
4676.70	32.95	31.13	9.49	37.13	36.44	74.00	-37.56	Horizontal	Peak
7820.82	30.16	36.23	13.16	35.01	44.54	74.00	-29.46	Horizontal	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n mode,all modulations have been tested,only worst case is reported*

Band: II				Worst mode: 802.11a			Test channel: CH_M		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1923.61	32.95	25.54	6.15	37.24	27.40	74.00	-46.60	Vertical	Peak
3973.62	33.27	29.70	8.74	38.13	33.58	74.00	-40.42	Vertical	Peak
5689.36	31.65	31.62	10.41	35.62	38.06	74.00	-35.94	Vertical	Peak
9157.86	31.01	38.43	13.46	35.55	47.35	74.00	-26.65	Vertical	Peak
2118.97	34.69	26.85	6.37	37.32	30.59	74.00	-43.41	Horizontal	Peak
5177.97	36.10	31.59	9.81	36.22	41.28	74.00	-32.72	Horizontal	Peak
6017.06	30.19	32.50	10.70	35.44	37.95	74.00	-36.05	Horizontal	Peak
7470.56	31.78	36.16	12.30	34.88	45.36	74.00	-28.64	Horizontal	Peak

Band: II				Worst mode: 802.11a			Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1865.74	33.36	25.33	6.06	37.19	27.56	74.00	-46.44	Vertical	Peak
3064.96	34.37	28.73	7.56	38.22	32.44	74.00	-41.56	Vertical	Peak
4946.07	31.93	31.45	9.63	36.55	36.46	74.00	-37.54	Vertical	Peak
7781.10	30.12	36.10	13.21	35.06	44.37	74.00	-29.63	Vertical	Peak
2086.86	34.16	26.65	6.34	37.32	29.83	74.00	-44.17	Horizontal	Peak
3854.08	33.72	29.65	8.58	38.20	33.75	74.00	-40.25	Horizontal	Peak
5674.90	31.13	31.65	10.39	35.66	37.51	74.00	-36.49	Horizontal	Peak
9298.80	31.29	39.19	13.59	35.58	48.49	74.00	-25.51	Horizontal	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n mode,all modulations have been tested,only worst case is reported*

Band: III				Worst mode: 802.11a			Test channel: CH_L		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
2184.699	33.44	27.38	6.43	37.34	29.91	74.00	-44.09	Vertical	Peak
2965.192	33.48	28.57	7.46	38.25	31.26	74.00	-42.74	Vertical	Peak
4983.987	32.27	31.48	9.66	36.44	36.97	74.00	-37.03	Vertical	Peak
7338.621	31.6	36.3	12.01	34.9	45.01	74.00	-28.99	Vertical	Peak
2157.069	34.43	27.16	6.4	37.33	30.66	74.00	-43.34	Horizontal	Peak
3184.25	35.34	28.8	7.7	38.2	33.64	74.00	-40.36	Horizontal	Peak
5821.207	31.15	32.14	10.6	35.33	38.56	74.00	-35.44	Horizontal	Peak
7682.696	30.38	36.12	12.94	35.02	44.42	74.00	-29.58	Horizontal	Peak

Band: III				Worst mode: 802.11a			Test channel: CH_M		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1842.139	33.02	25.36	6.03	37.17	27.24	74.00	-46.76	Vertical	Peak
3428.206	35.25	28.43	8.00	38.51	33.17	74.00	-40.83	Vertical	Peak
5191.168	83.48	31.54	9.82	36.21	88.63	74.00	14.63	Vertical	Peak
9636.161	30.73	39.08	13.72	35.26	48.27	74.00	-25.73	Vertical	Peak
1593.34	33.83	24.96	5.55	36.71	27.63	74.00	-46.37	Horizontal	Peak
2987.923	35.07	28.59	7.47	38.24	32.89	74.00	-41.11	Horizontal	Peak
5151.676	35.82	31.69	9.79	36.25	41.05	74.00	-32.95	Horizontal	Peak
7566.249	30.4	36.17	12.61	34.95	44.23	74.00	-29.77	Horizontal	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n mode,all modulations have been tested,only worst case is reported*

Band: III					Worst mode: 802.11a		Test channel: CH_H		
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1908.972	32.98	25.39	6.13	37.23	27.27	74.00	-46.73	Vertical	Peak
3225.037	34.89	28.65	7.75	38.24	33.05	74.00	-40.95	Vertical	Peak
5138.579	33.85	31.74	9.78	36.26	39.11	74.00	-34.89	Vertical	Peak
7099.747	30.46	35.6	11.85	34.93	42.98	74.00	-31.02	Vertical	Peak
2013.795	32.54	26.36	6.28	37.30	27.88	74.00	-46.12	Horizontal	Peak
3747.656	33.01	29.44	8.44	38.24	32.65	74.00	-41.35	Horizontal	Peak
5352.186	31.89	31.4	10.06	36.66	36.69	74.00	-37.31	Horizontal	Peak
7172.406	30.35	36.04	11.86	35.04	43.21	74.00	-30.79	Horizontal	Peak

Remark:

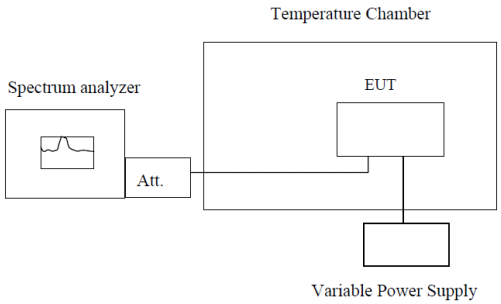
1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*
3. *Measuring frequencies from 1 GHz to 40GHz.*
4. *Test 802.11a, 802.11n mode,all modulations have been tested,only worst case is reported*

5.8. Frequency stability

LIMIT

Within Operation Band

TEST CONFIGURATION



Note : Measurement setup for testing on Antenna connector

TEST PROCEDURE

1. The equipment under test was connected to an external power supply.
2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators.
3. The EUT was placed inside the temperature chamber.
4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25℃ operating frequency as reference frequency.
5. Turn EUT off and set the chamber temperature to –20℃. After the temperature stabilized for approximately 30 minutes recorded the frequency.
6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.

TEST MODE:

Transmitting with unmodulation

TEST RESULTS

☒ **Passed** ☐ **Not Applicable**

Voltage VS Frequency stability

Band: I			Test Frequency: 5180.00MHz	
Temperature (℃)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
25	10.80	-51900.00	-10.01931	PASS
25	12.00	-50900.00	-9.82626	PASS
25	26.00	-51900.00	-10.01931	PASS

Band: II			Test Frequency: 5260.00MHz	
Temperature (℃)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
25	10.80	-46000.00	-8.74525	PASS
25	12.00	-43000.00	-8.17491	PASS
25	26.00	-47000.00	-8.93536	PASS

Band: III			Test Frequency: 5500.00MHz	
Temperature (℃)	Voltage (V)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
25	10.80	-56900.00	-10.34546	PASS
25	12.00	-55900.00	-10.16364	PASS
25	26.00	-56900.00	-10.34546	PASS

Temperature VS Frequency stability

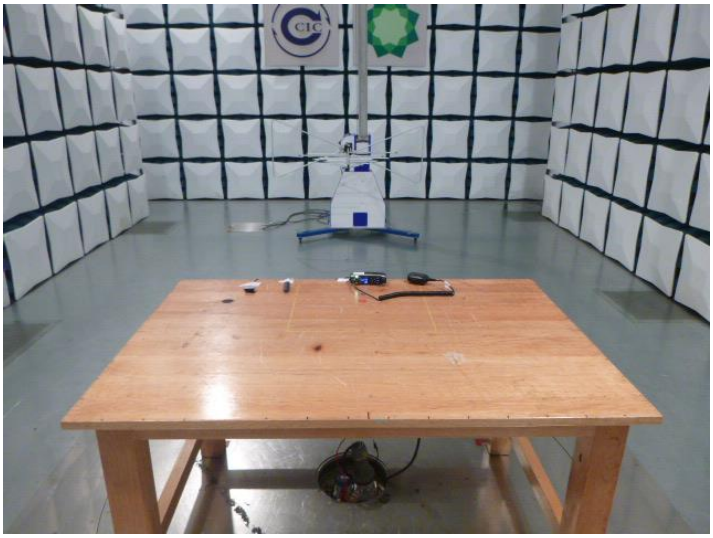
Band: I			Test Frequency: 5180.00MHz	
Voltage (V)	Temperature (℃)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
12.00	-20	-52900.00	-10.21236	PASS
12.00	-10	-52900.00	-10.21236	PASS
12.00	0	-52900.00	-10.21236	PASS
12.00	10	-52900.00	-10.21236	PASS
12.00	20	-52900.00	-10.21236	PASS
12.00	30	-52900.00	-10.21236	PASS
12.00	40	-52900.00	-10.21236	PASS
12.00	50	-53900.00	-10.40541	PASS

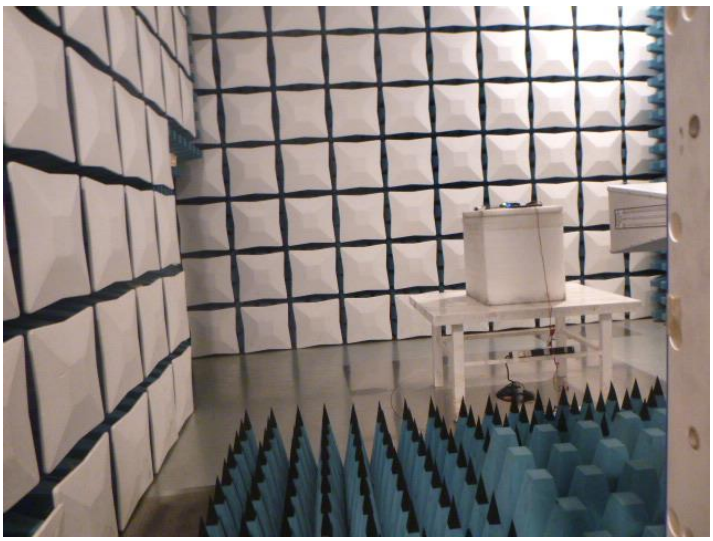
Band: II			Test Frequency: 5260.00MHz	
Voltage (V)	Temperature (℃)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
12.00	-20	-49000.00	-9.31559	PASS
12.00	-10	-49000.00	-9.31559	PASS
12.00	0	-49000.00	-9.31559	PASS
12.00	10	-50000.00	-9.50570	PASS
12.00	20	-50000.00	-9.50570	PASS
12.00	30	-50000.00	-9.50570	PASS
12.00	40	-50000.00	-9.50570	PASS
12.00	50	-50000.00	-9.50570	PASS

Band: III			Test Frequency: 5500.00MHz	
Voltage (V)	Temperature (℃)	Frequency Deviation (Hz)	Frequency Deviation (ppm)	Result
12.00	-20	-56900.00	-10.34546	PASS
12.00	-10	-56900.00	-10.34546	PASS
12.00	0	-56900.00	-10.34546	PASS
12.00	10	-56900.00	-10.34546	PASS
12.00	20	-56900.00	-10.34546	PASS
12.00	30	-56900.00	-10.34546	PASS
12.00	40	-56900.00	-10.34546	PASS
12.00	50	-56900.00	-10.34546	PASS

6. Test Setup Photos of the EUT

Radiated Emissions





7. External and Internal Photos of the EUT

Reference to the report No.: CHTEW19030141

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