FCC RADIO TEST REPORT

FCC ID	:	**PY7-34943G**
Equipment	:	**GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac, NFC and GNSS**
Brand Name	:	**SONY**
Applicant	:	**Sony Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0076 Japan**
Manufacturer	:	**Sony Corporation 1-7-1 Konan Minato-ku Tokyo, 108-0076 Japan**
Standard	:	**FCC Part 15 Subpart E §15.407**
Test Date(s)	:	**Dec. 20, 2021 ~ Feb. 21, 2022**

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Reviewed by: Jason Jia / Supervisor

Alex Wang

Approved by: Alex Wang / Manager

ACCREDITED Cert #5145.02

Sporton International Inc. (Kunshan)

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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History of this test report

Report No.	Version	Description	Issued Date
FR1D0310F	01	Initial issue of report	Feb. 11, 2022
FR1D0310F	02	1. Update section 2 (a) test configuration description and section 2.2 test mode remark 2. Update Appendix E duty cycle test result 3. Update straddle channel data for 6dB BW	Feb. 22, 2022

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.403(i)	6dB & 26dB Bandwidth	Pass	-
3.1	2.1049	99% Occupied Bandwidth	Reporting only	-
3.2	15.407(a)	Maximum Conducted Output Power	Pass	-
3.3	15.407(a)	Power Spectral Density	Pass	-
3.4	15.407(b)	Unwanted Emissions	Pass	Under limit 10.95 dB at 5930.800 MHz
3.5	15.207	AC Conducted Emission	Pass	Under limit 13.75 dB at 0.214 MHz
3.6	15.407(c)	Automatically Discontinue Transmission	Pass	-
3.7	15.203 15.407(a)	Antenna Requirement	Pass	-

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

1 General Description

1.1 Product Feature of Equipment Under Test

GSM/WCDMA/LTE, Bluetooth, DTS/UNII a/b/g/n/ac, NFC and GNSS.

Product Specification subjective to this standard	
Antenna Type / Gain	**For Ant 6:** PIFA Antenna with gain 1.3 dBi **For Ant 7:** PIFA Antenna with gain -0.7 dBi

Remark: The above EUT's information was declared by manufacturer. Please refer to Comments and Explanations in report summary.

EUT Information List			
HW Version	**SW Version**	**IMEI Code**	**Performed Test Item**
A	0.549	004402543107464/004402543107472	RF conducted measurement
		004402543253961/004402543253979	Radiated Spurious Emission
		004402543254142/004402543254159	AC Conducted Emission

Note: For other wireless features of this EUT, test report will be issued separately.

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	CO01-KS 03CH06-KS TH01-KS	CN1257	314309

1.4 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart E
- FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in three orthogonal axis (X: flat, Y: portrait, Z: landscape), and adjusting the measurement antenna orientation, following C63.10 exploratory test procedures and find Y plane as worst plane. The worst case position of the EUT was investigated under two configurations: EUT with AC adapter and earphone, EUT with standalone. The EUT with standalone configuration was determined to be worst-case configurations; therefore, all final tests were performed on the EUT with standalone.

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
5725-5850 MHz Band 4 (U-NII-3)	149	5745	157	5785
	151*	5755	159*	5795
	153	5765	161	5805
	155#	5775	165	5825

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
Straddle Channel	138#	5690	144	5720
	142*	5710		

Note:

1. The above Frequency and Channel in "*" were 802.11n HT40 and 802.11ac VHT40.
2. The above Frequency and Channel in "#" were 802.11ac VHT80.

2.2 Test Mode

Final test modes are considering the modulation and worse data rates as below table.

Modulation	Data Rate
802.11a	6 Mbps
802.11n HT20 (Covered by VHT20)	MCS0
802.11n HT40 (Covered by VHT40)	MCS0
802.11ac VHT20	MCS0
802.11ac VHT40	MCS0
802.11ac VHT80	MCS0

Remark: Since the verify power, the same operating range bandwidth and smaller power can be covered by the higher power.

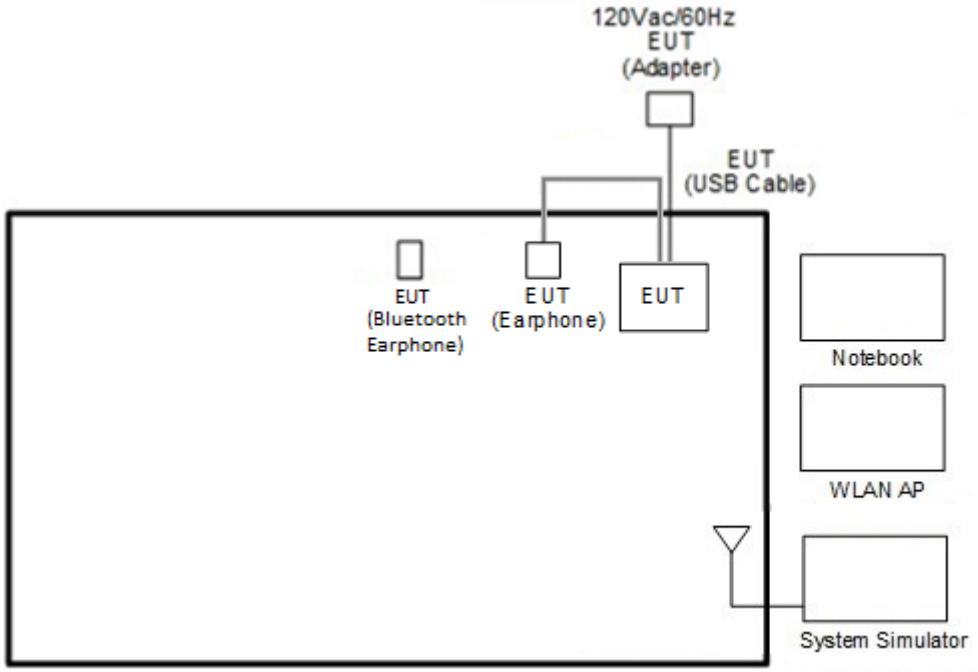
Test Cases	
AC Conducted Emission	Mode 1 : GSM850 Idle + Bluetooth Link + WLAN (5GHz) Link + Earphone + USB Cable 1(Charging from AC Adapter)

Ch. #		Band IV : 5725-5850 MHz			
		802.11a	802.11n HT20	802.11n HT40	802.11ac VHT80
L	Low	149	149	151	-
M	Middle	157	157	-	155
H	High	165	165	159	-

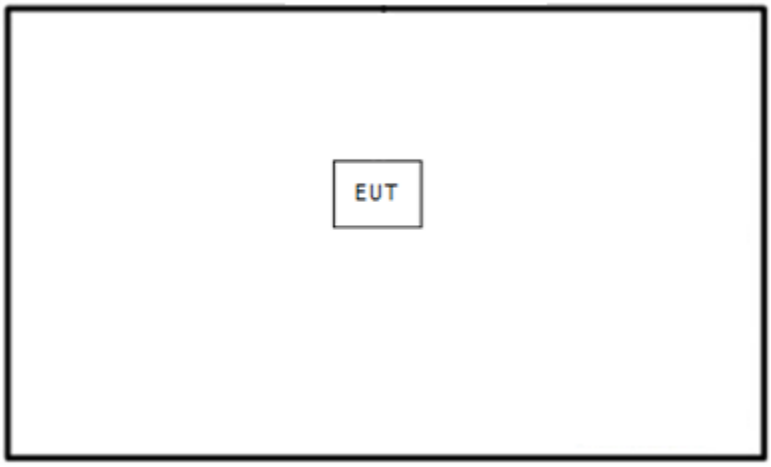
Remark: For WLAN radiated test, according to the conducted power and verify test the SISO & MIMO mode, the worst-case is MIMO mode, therefore, all final test are performed in MIMO mode and reported.

2.3 Connection Diagram of Test System

<AC Conducted Emission Mode>



<WLAN TX Mode>



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	LTE Base Station	Anritus	MT8821C	N/A	N/A	Unshielded,1.8m
2.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	shielded cable DC O/P 1.8m , Unshielded AC I/P cable 1.8m
3.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
4.	Bluetooth Earphone	Sony	SBH82D	PY7-33726V	N/A	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “FTM” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 6.7 dB and 10dB attenuator.

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 6.7 + 10 = 16.7 (dB)

3 Test Result

3.1 6dB and 26dB and 99% Occupied Bandwidth Measurement

3.1.1 Description of 6dB and 26dB and 99% Occupied Bandwidth

The minimum 6 dB bandwidth shall be at least 500 kHz.

26dB and 99% Occupied bandwidth are reporting only.

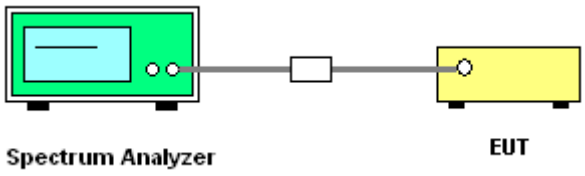
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section C) Emission bandwidth for the band 5.725-5.85 GHz
2. Set RBW = 100 kHz.
3. Set the VBW ≥ 3 x RBW.
4. Detector = Peak.
5. Trace mode = max hold
6. Measure the maximum width of the emission that is 6 dB down from the peak of the emission.
7. Measure and record the results in the test report.

3.1.4 Test Setup



3.1.5 Test Result of 6dB and 26dB and 99% Occupied Bandwidth

Please refer to Appendix A.

3.2 Maximum Conducted Output Power Measurement

3.2.1 Limit of Maximum Conducted Output Power

For the band 5.725–5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.2.2 Measuring Instruments

See list of measuring equipment of this test report.

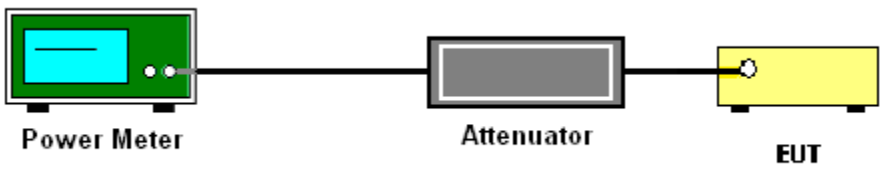
3.2.3 Test Procedures

The testing follows Method PM of FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01.

Method PM (Measurement using an RF average power meter):

1. Measurement is performed using a wideband RF power meter.
2. The EUT is configured to transmit continuously with a consistent duty cycle at its maximum power control level.
3. Measure the average power of the transmitter, and the average power is corrected with duty factor, 10 log(1/x), where x is the duty cycle.

3.2.4 Test Setup



3.2.5 Test Result of Maximum Conducted Output Power

Please refer to Appendix A.

3.3 Power Spectral Density Measurement

3.3.1 Limit of Power Spectral Density

For the band 5.725–5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.

If transmitting antennas of directional gain greater than 6 dBi are used, the peak output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.2 Measuring Instruments

See list of measuring equipment of this test report.

3.3.3 Test Procedures

The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section F. Maximum power spectral density.

3.3.4 Test Setup

3.3.5 Test Result of Power Spectral Density

Please refer to Appendix A.

3.4 Unwanted Emissions Measurement

This section is to measure unwanted emissions through radiated measurement for band edge spurious emissions and out of band emissions measurement.

3.4.1 Limit of Unwanted Emissions

(1) For transmitters operating in the 5.725-5.85 GHz band:

15.407(b)(4)(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(2) Unwanted spurious emissions fallen in restricted bands shall comply with the general field strength limits as below table,

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

Note: The following formula is used to convert the EIRP to field strength.

$$E=\frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts)

EIRP (dBm)	Field Strength at 3m (dBμV/m)
- 27	68.3

(3) KDB789033 D02 v02r01 G)2)c)

(i) Sections 15.407(b)(1-3) specifies the unwanted emissions limit for the U-NII-1 and U-NII-2 bands. As specified, emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of −27 dBm/MHz.

(ii) Section 15.407(b)(4) specifies the unwanted emissions limit for the U-NII-3 band. A band emissions mask is specified in Section 15.407(b)(4)(i). The emission limits are based on the use of a peak detector.

3.4.2 Measuring Instruments

See list of measuring equipment of this test report.

3.4.3 Test Procedures

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01. Section G) Unwanted emissions measurement.

   (1) Procedure for Unwanted Emissions Measurements Below 1000 MHz

   - RBW = 120 kHz
   - VBW = 300 kHz
   - Detector = Peak
   - Trace mode = max hold

   (2) Procedure for Peak Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW ≥ 3 MHz
   - Detector = Peak
   - Sweep time = auto
   - Trace mode = max hold

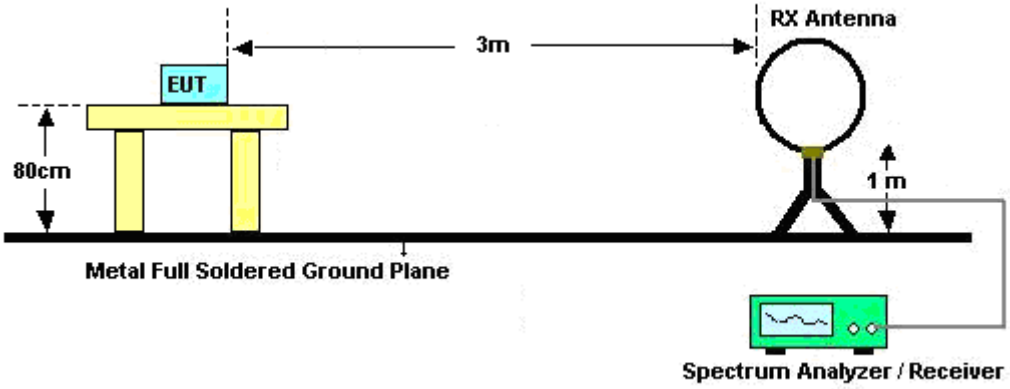
   (3) Procedures for Average Unwanted Emissions Measurements Above 1000 MHz

   - RBW = 1 MHz
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
2. The EUT was placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
3. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
4. The antenna is a broadband antenna and its height is adjusted between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then adjust the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. For testing below 1 GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.

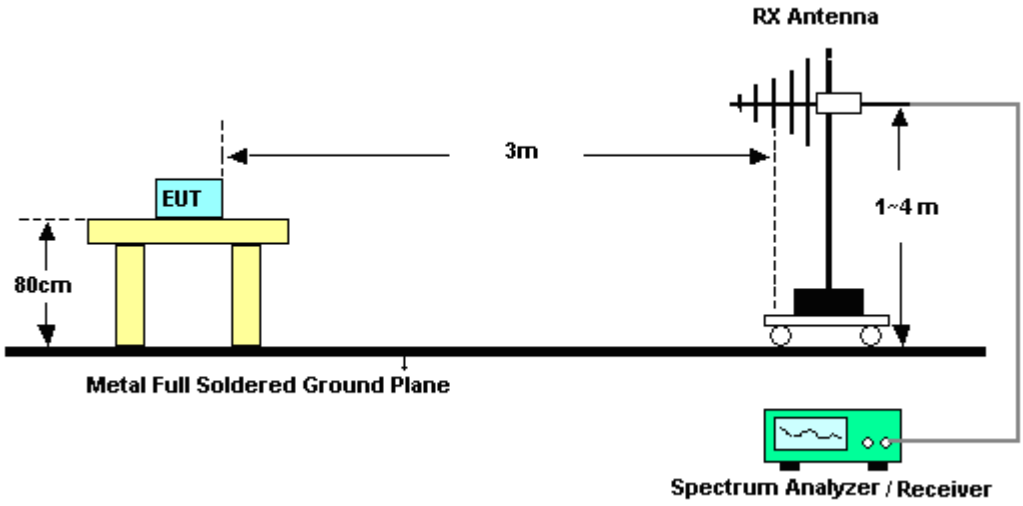
7. For testing above 1 GHz, the emission level of the EUT in peak mode was 20 dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

3.4.4 Test Setup

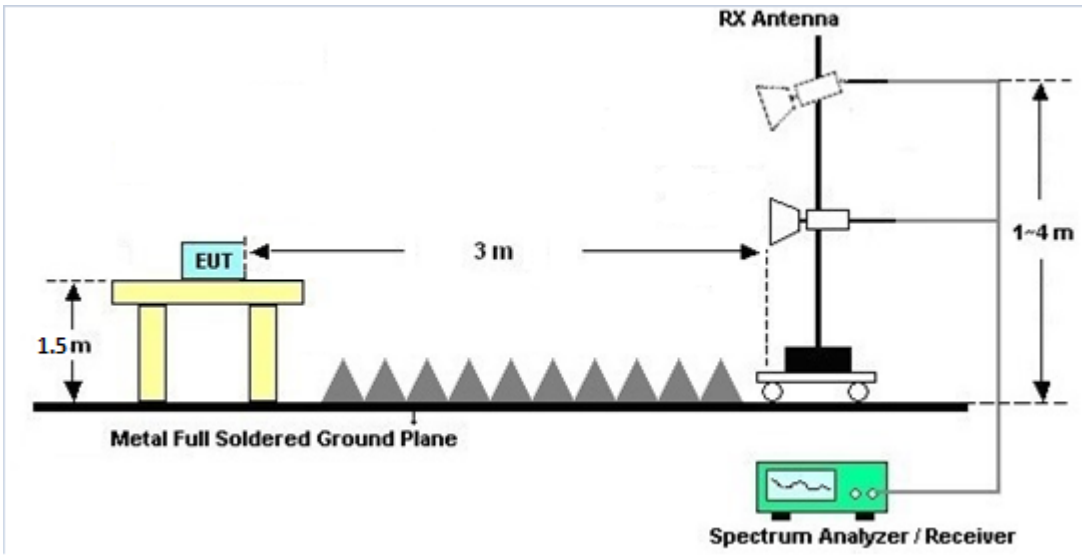
For radiated emissions below 30MHz



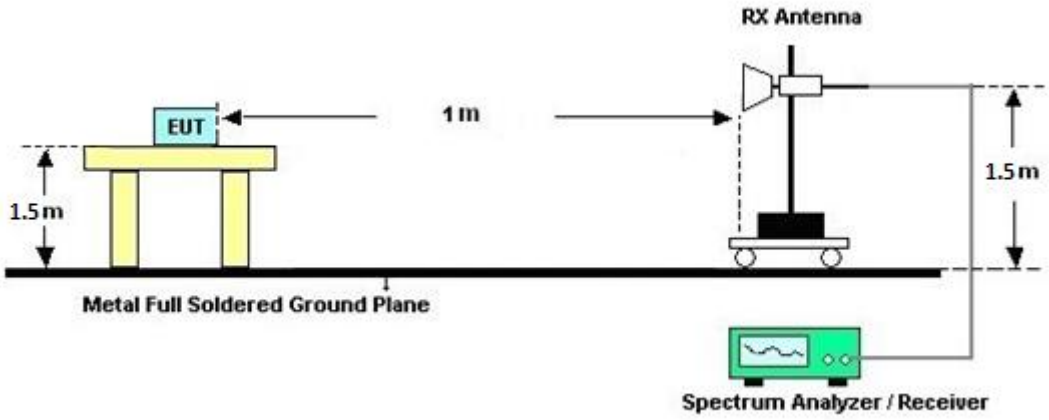
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.4.5 Test Results of Radiated Emissions (9 kHz ~ 30 MHz)

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

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

3.4.6 Test Result of Radiated Band Edges

Please refer to Appendix C and D.

3.4.7 Duty Cycle

Please refer to Appendix E.

3.4.8 Test Result of Unwanted Radiated Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C and D.

3.5 AC Conducted Emission Measurement

3.5.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	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.

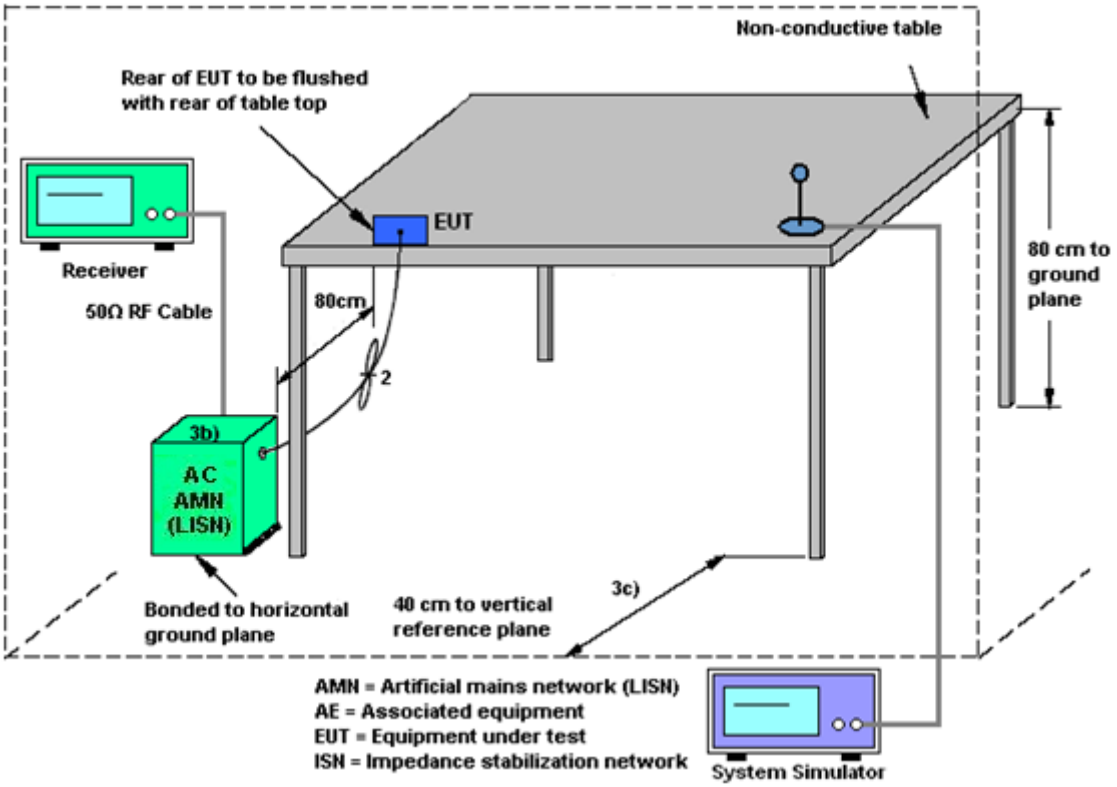
3.5.2 Measuring Instruments

See list of measuring equipment of this test report.

3.5.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

3.5.4 Test Setup



3.5.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.6 Automatically Discontinue Transmission

3.6.1 Limit of Automatically Discontinue Transmission

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization to describe how this requirement is met.

3.6.2 Measuring Instruments

See list of measuring equipment of this test report.

3.6.3 Test Result of Automatically Discontinue Transmission

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

3.7 Antenna Requirements

3.7.1 Standard Applicable

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.7.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.7.3 Antenna Gain

<CDD Modes >

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

For CDD transmissions, directional gain is calculated as

Directional gain = GANT + Array Gain, where Array Gain is as follows.

For power spectral density (PSD) measurements on all devices,

Array Gain = 10 log(NANT/NSS=1) dB.

For power measurements on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4.

Directional gain may be calculated by using the formulas applicable to equal gain antennas with GANT set equal to the gain of the antenna having the highest gain;

The EUT supports CDD mode.

For power, the directional gain G_{ANT} is set equal to the antenna having the highest gain, i.e., F)2)f)i).

For PSD, the directional gain calculation is following F)2)f)ii) of KDB 662911 D01 v02r01.

The power and PSD limit should be modified if the directional gain of EUT is over 6 dBi,

The directional gain “DG” is calculated as following table.

<CDD Modes>

	Ant. 6 (dBi)	Ant. 7 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
Band IV	1.30	-0.70	1.30	3.37	0.00	0.00

Power Limit Reduction = DG(Power) – 6dBi, (min = 0)

PSD Limit Reduction = DG(PSD) – 6dBi, (min = 0)

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 14, 2021	Jan. 19, 2022~ Feb. 21, 2022	Oct. 13, 2022	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 05, 2022	Jan. 19, 2022~ Feb. 21, 2022	Jan. 04, 2023	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 05, 2022	Jan. 19, 2022~ Feb. 21, 2022	Jan. 04, 2023	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400004	3Hz~8.5GHz;Max 30dBm	Oct. 16, 2021	Jan. 28, 2022	Oct. 15, 2022	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55150208	10Hz-44GHz	Apr. 12, 2021	Jan. 28, 2022	Apr.11, 2022	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2	100321	9kHz~30MHz	Oct. 30, 2021	Jan. 28, 2022	Oct. 29, 2022	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	49921	30MHz-1GHz	May 27, 2021	Jan. 28, 2022	May 26, 2022	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 25, 2021	Jan. 28, 2022	Apr. 24, 2022	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 05, 2022	Jan. 28, 2022	Jan. 04, 2023	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	187289	9KHz ~1GHZ	Apr. 12, 2021	Jan. 28, 2022	Apr. 11, 2022	Radiation (03CH06-KS)
Amplifier	MITEQ	EM18G40GGA	060728	18~40GHz	Jan. 05, 2022	Jan. 28, 2022	Jan. 04, 2023	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2025788	1Ghz-18Ghz	Jul. 30, 2021	Jan. 28, 2022	Jul. 29, 2022	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270203	500MHz~26.5GHz	Apr. 13, 2021	Jan. 28, 2022	Apr. 12, 2022	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jan. 28, 2022	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jan. 28, 2022	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jan. 28, 2022	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 21, 2021	Dec. 20, 2021	Apr. 20, 2022	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 14, 2021	Dec. 20, 2021	Oct. 13, 2022	Conduction (CO01-KS)
AC LISN	R&S	ENV216	100334	9kHz~30MHz	Oct. 14, 2021	Dec. 20, 2021	Oct. 13, 2022	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 14, 2021	Dec. 20, 2021	Oct. 13, 2022	Conduction (CO01-KS)

NCR: No Calibration Required.

5 Uncertainty of Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.9dB**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0dB**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0dB**

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.0dB**

Appendix A. Conducted Test Results

Report Number : FR1D0310F

Test Engineer:	Jack Fan	Temperature:	21~25	°C
Test Date:	2022/1/19~2022/2/21	Relative Humidity:	51~54	%

Report Number : FR1D1031F

TEST RESULTS DATA
Average Power Table

U-NII-3															
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Average Conducted Power (dBm)			FCC Conducted Power Limit (dBm)		DG (dBi)			Pass/Fail
					Ant 1	Ant 2	Ant 1	Ant 2	SUM	Ant 1	Ant 2	Ant 1	Ant 2		
11a	6Mbps	2	149	5745			7.71	7.32	10.53	30.00		1.30			Pass
11a	6Mbps	2	157	5785			7.91	7.37	10.66	30.00		1.30			Pass
11a	6Mbps	2	165	5825			7.77	7.18	10.50	30.00		1.30			Pass
HT20	MCS0	2	149	5745			7.69	7.19	10.46	30.00		1.30			Pass
HT20	MCS0	2	157	5785			7.83	7.45	10.65	30.00		1.30			Pass
HT20	MCS0	2	165	5825			7.78	7.43	10.62	30.00		1.30			Pass
HT40	MCS0	2	151	5755	0.16	0.16	7.74	7.24	10.51	30.00		1.30			Pass
HT40	MCS0	2	159	5795	0.16	0.16	7.87	7.42	10.66	30.00		1.30			Pass
VHT20	MCS0	2	149	5745			7.70	7.22	10.48	30.00		1.30			Pass
VHT20	MCS0	2	157	5785			7.86	7.48	10.68	30.00		1.30			Pass
VHT20	MCS0	2	165	5825			7.81	7.47	10.65	30.00		1.30			Pass
VHT40	MCS0	2	151	5755	0.16	0.16	7.87	7.28	10.60	30.00		1.30			Pass
VHT40	MCS0	2	159	5795	0.16	0.16	7.98	7.52	10.77	30.00		1.30			Pass
VHT80	MCS0	2	155	5775	0.31	0.31	7.93	7.40	10.69	30.00		1.30			Pass

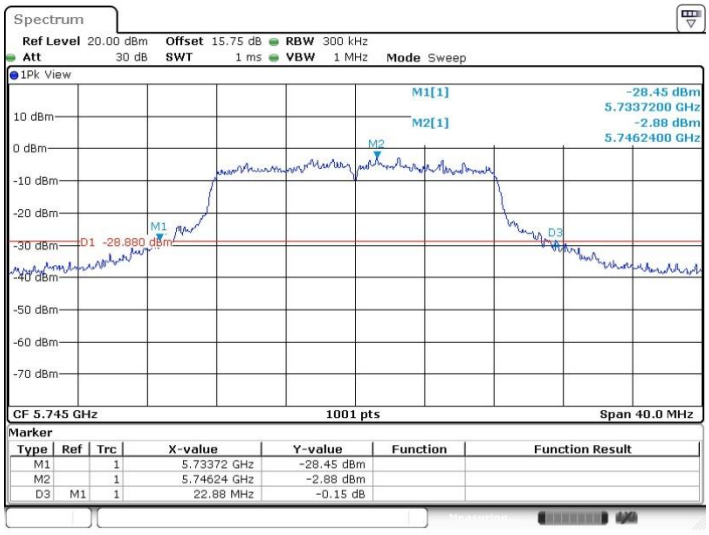
Emission Bandwidth

Test Result

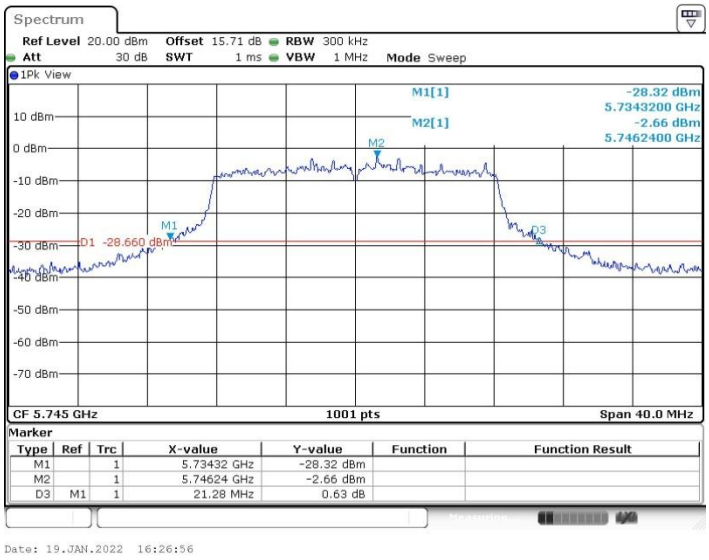
TestMode	Antenna	Frequency[MHz]	26db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A-CDD	Ant6	5745	22.88	5733.72	5756.60	---	---
	Ant7	5745	21.28	5734.32	5755.60	---	---
	Ant6	5785	22.80	5773.92	5796.72	---	---
	Ant7	5785	21.92	5773.68	5795.60	---	---
	Ant6	5825	22.84	5813.72	5836.56	---	---
	Ant7	5825	22.36	5813.56	5835.92	---	---
11AC20-CDD	Ant6	5745	22.36	5733.96	5756.32	---	---
	Ant7	5745	21.28	5734.44	5755.72	---	---
	Ant6	5785	24.12	5773.12	5797.24	---	---
	Ant7	5785	22.68	5773.60	5796.28	---	---
	Ant6	5825	23.16	5813.12	5836.28	---	---
	Ant7	5825	22.80	5813.48	5836.28	---	---
11AC40-CDD	Ant6	5755	43.12	5733.24	5776.36	---	---
	Ant7	5755	42.56	5733.88	5776.44	---	---
	Ant6	5795	42.64	5773.64	5816.28	---	---
	Ant7	5795	42.16	5773.96	5816.12	---	---
11AC80-CDD	Ant6	5775	84.16	5732.60	5816.76	---	---
	Ant7	5775	83.84	5733.08	5816.92	---	---

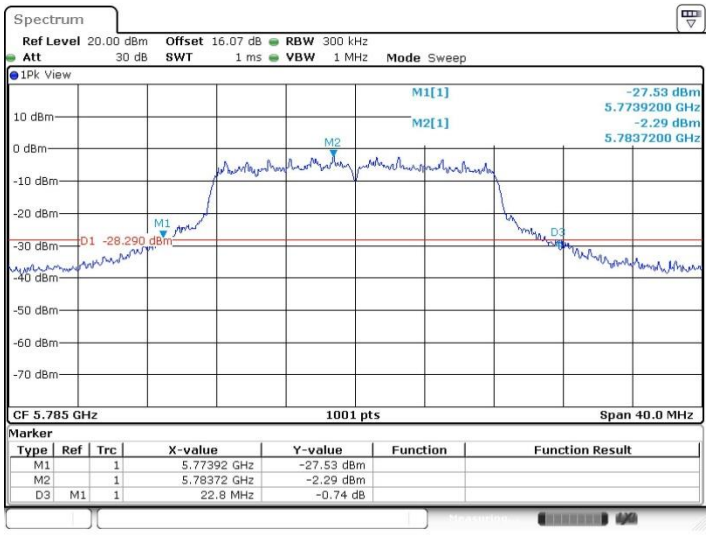
Test Graphs

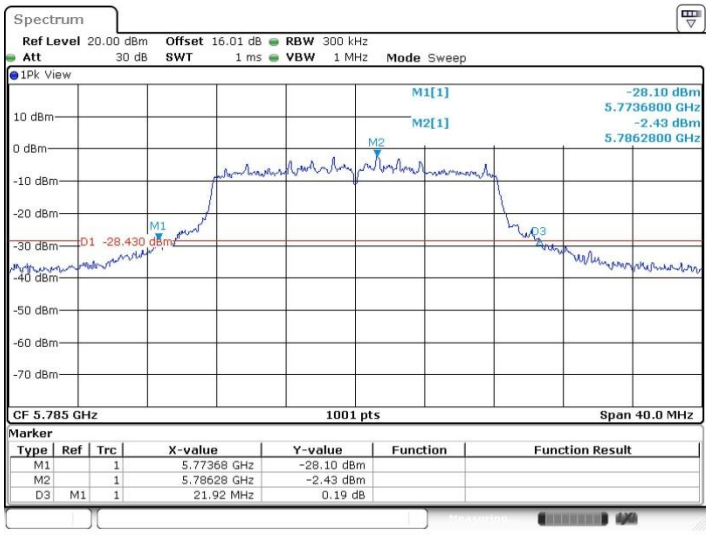
11A-CDD_Ant6_5745

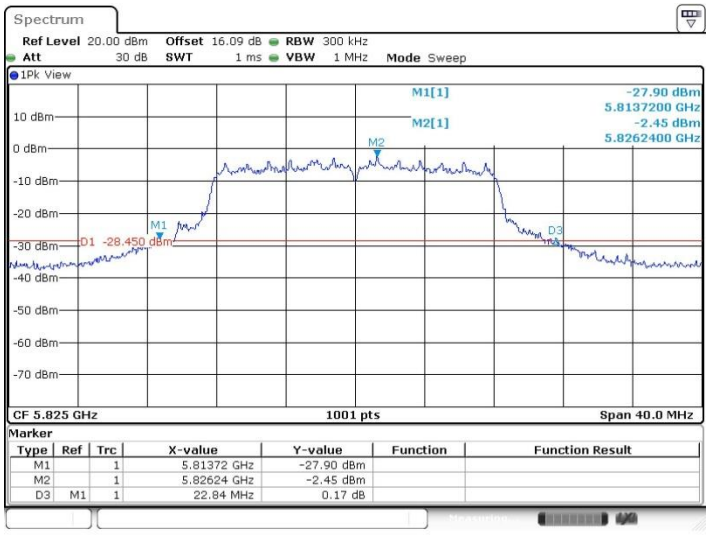


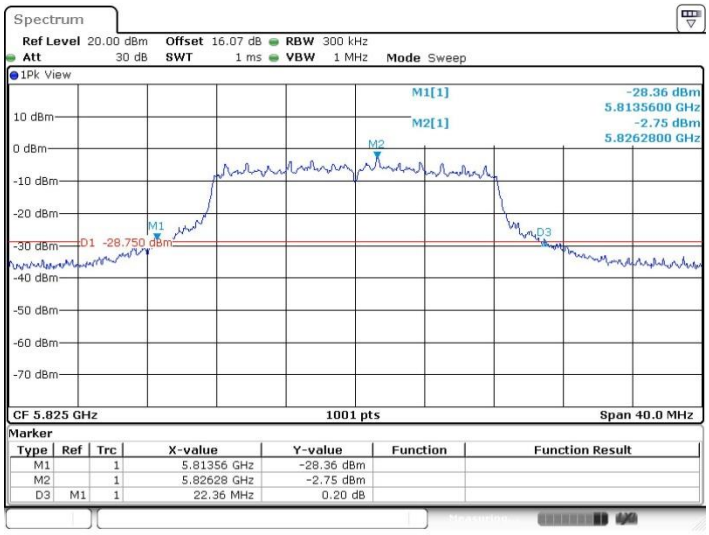
11A-CDD_Ant7_5745

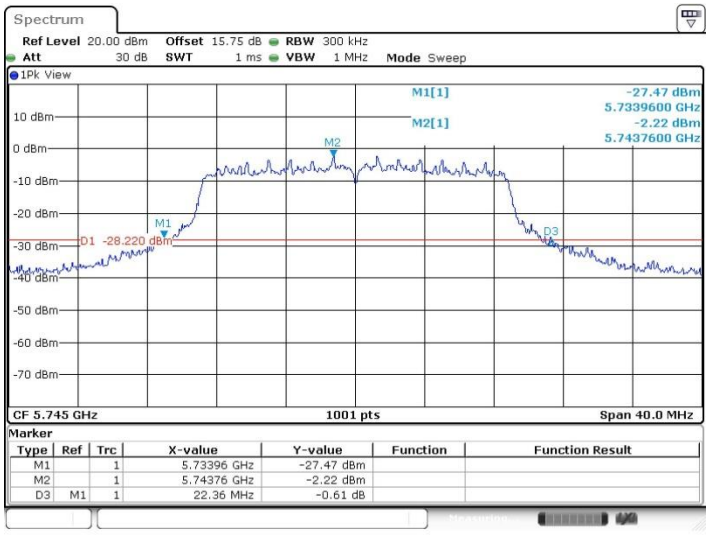


11A-CDD_Ant6_5785


11A-CDD_Ant7_5785


11A-CDD_Ant6_5825


11A-CDD_Ant7_5825


11AC20-CDD_Ant6_5745


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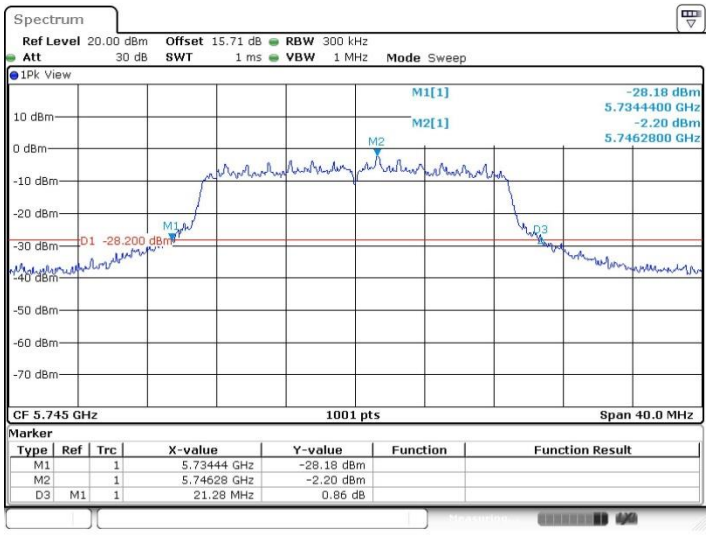

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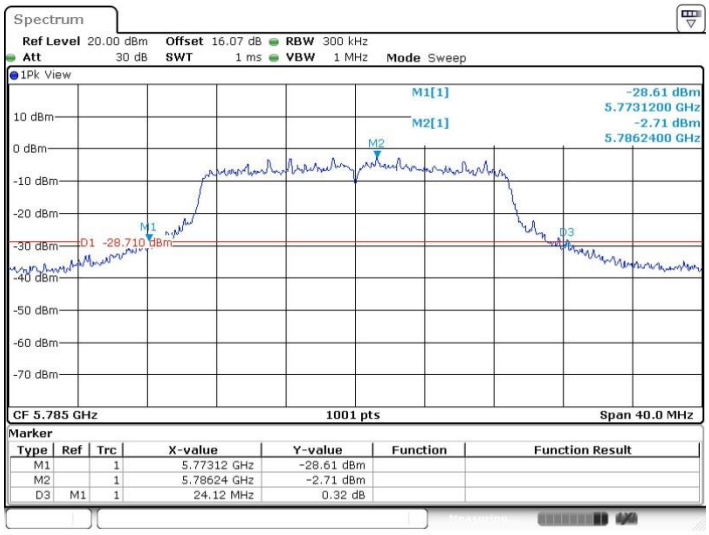

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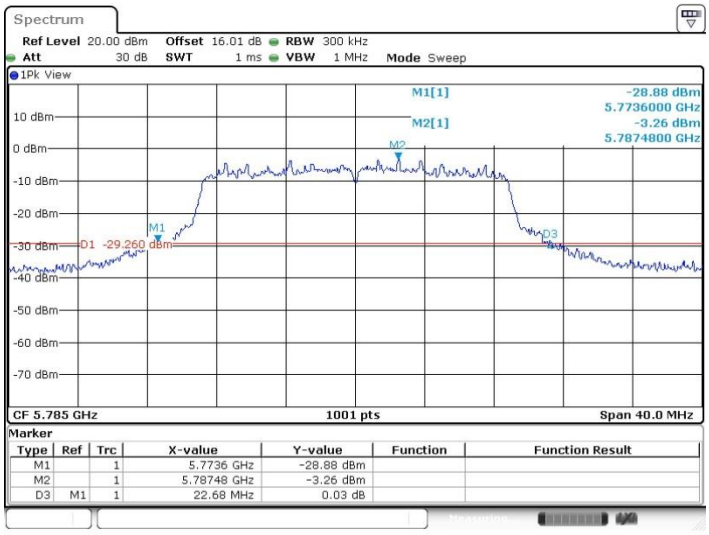

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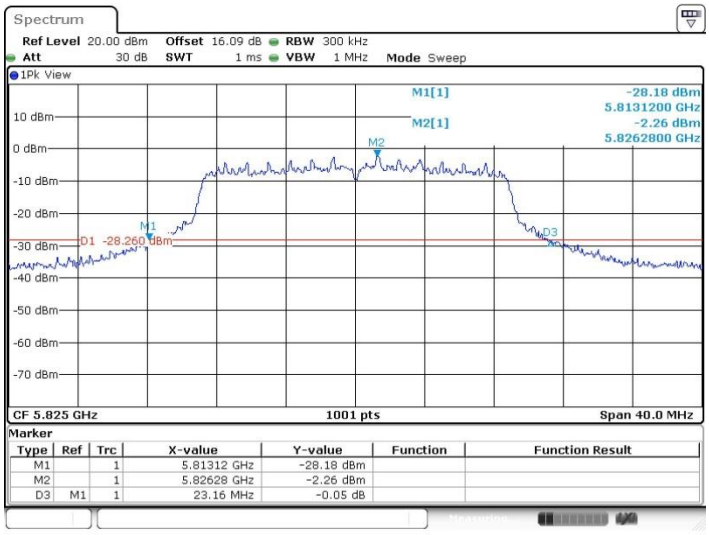

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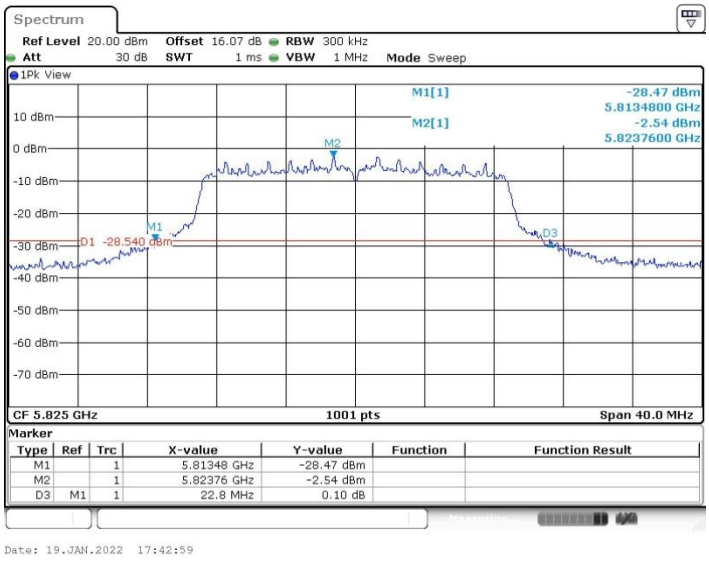
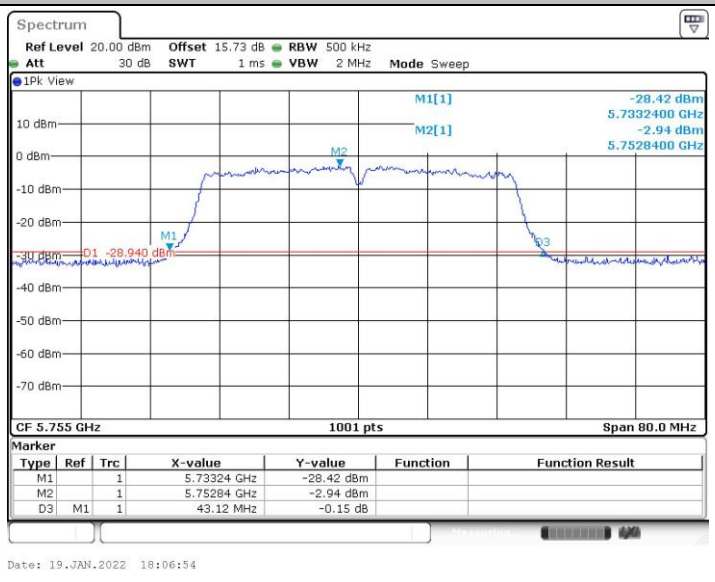
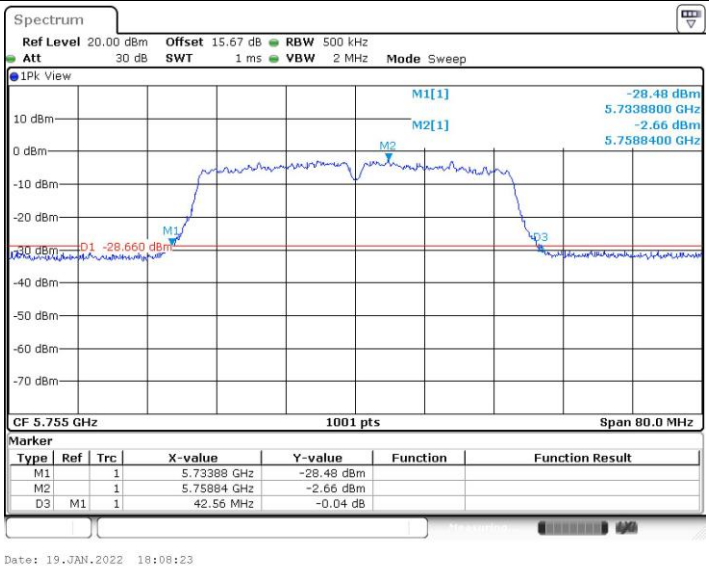
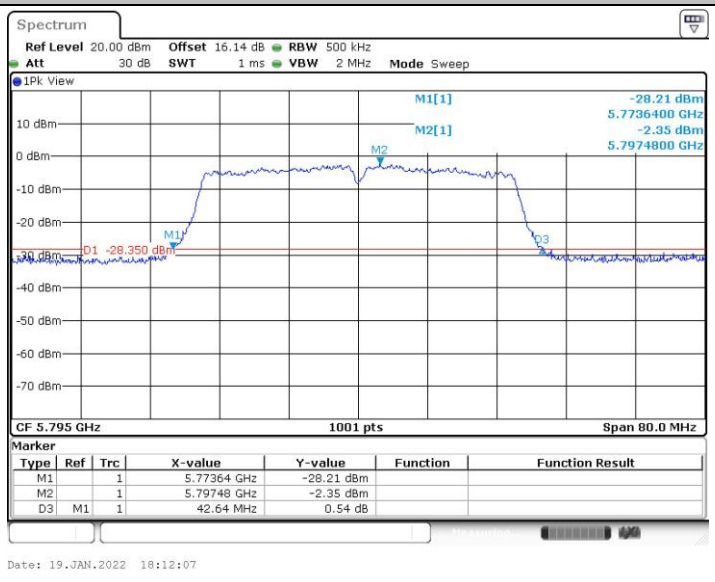
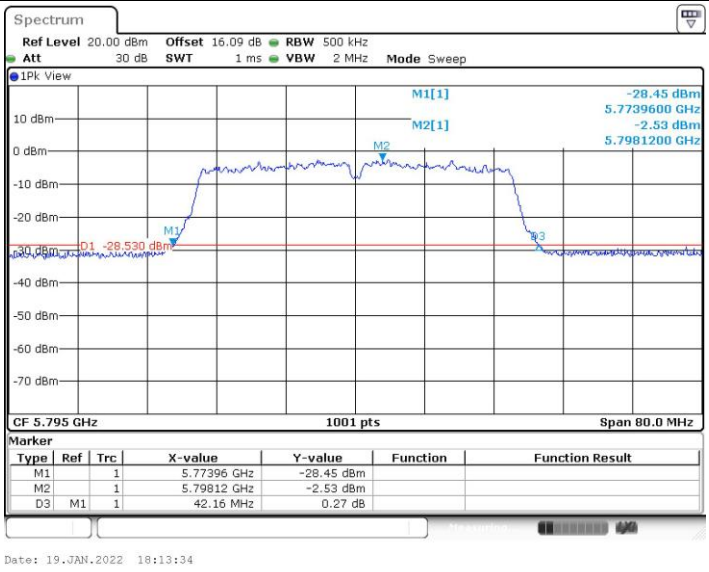
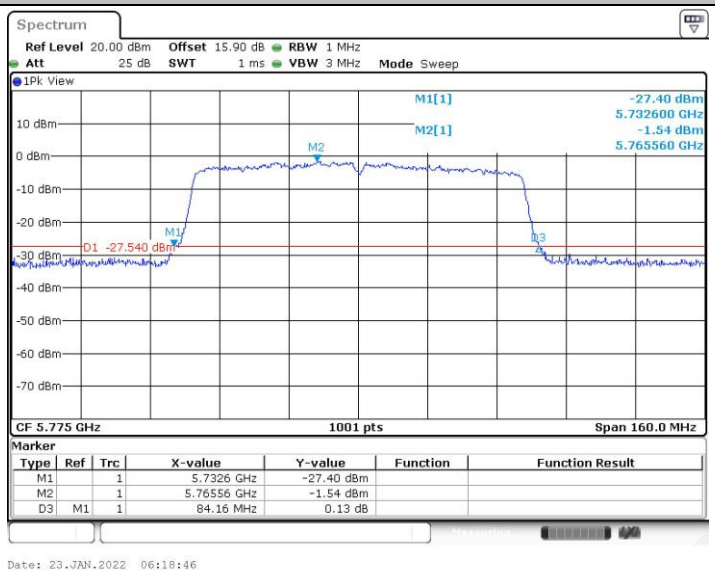


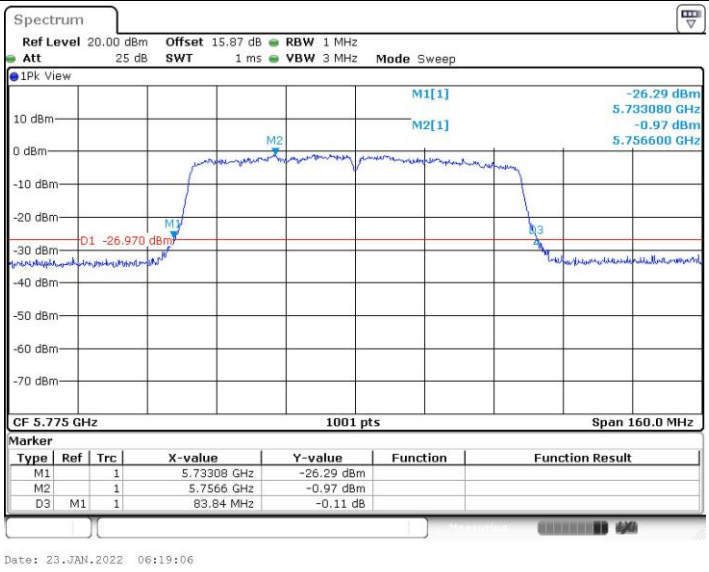
11AC40-CDD_Ant6_5755


11AC40-CDD_Ant7_5755


11AC40-CDD_Ant6_5795


11AC40-CDD_Ant7_5795


11AC80-CDD_Ant6_5775


11AC80-CDD_Ant7_5775


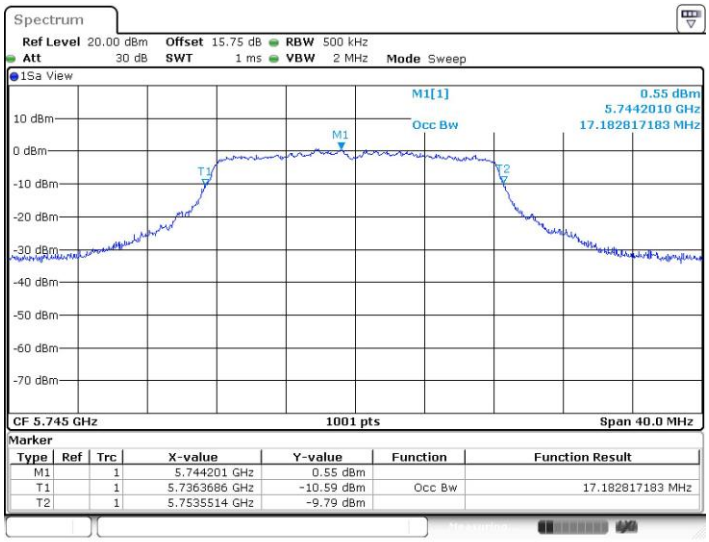
Occupied channel bandwidth

Test Result

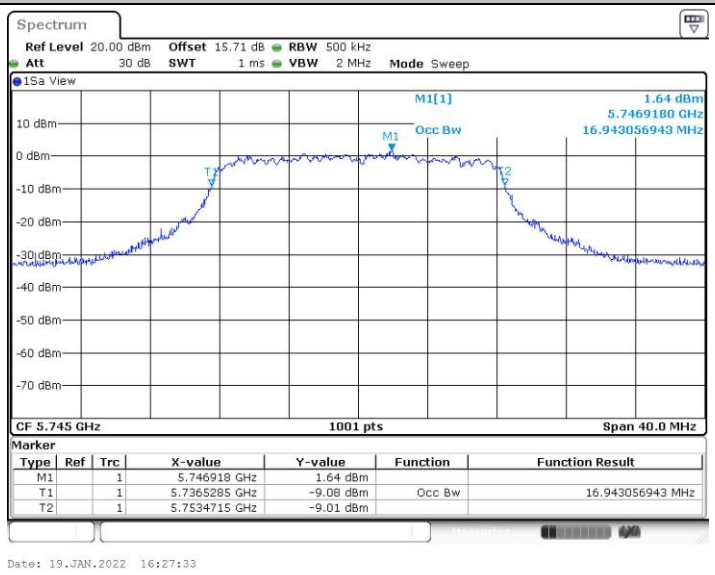
TestMode	Antenna	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A-CDD	Ant6	5745	17.183	5736.369	5753.551	---	---
	Ant7	5745	16.943	5736.528	5753.472	---	---
	Ant6	5785	17.263	5776.329	5793.591	---	---
	Ant7	5785	16.943	5776.489	5793.432	---	---
	Ant6	5825	17.303	5816.289	5833.591	---	---
	Ant7	5825	16.943	5816.489	5833.432	---	---
11AC20-CDD	Ant6	5745	18.302	5735.849	5754.151	---	---
	Ant7	5745	18.182	5735.929	5754.111	---	---
	Ant6	5785	18.342	5775.849	5794.191	---	---
	Ant7	5785	18.222	5775.889	5794.111	---	---
	Ant6	5825	18.422	5815.769	5834.191	---	---
	Ant7	5825	18.182	5815.889	5834.071	---	---
11AC40-CDD	Ant6	5755	36.683	5736.618	5773.302	---	---
	Ant7	5755	36.603	5736.698	5773.302	---	---
	Ant6	5795	36.603	5776.698	5813.302	---	---
	Ant7	5795	36.683	5776.698	5813.382	---	---
11AC80-CDD	Ant6	5775	76.244	5736.798	5813.042	---	---
	Ant7	5775	76.084	5736.958	5813.042	---	---

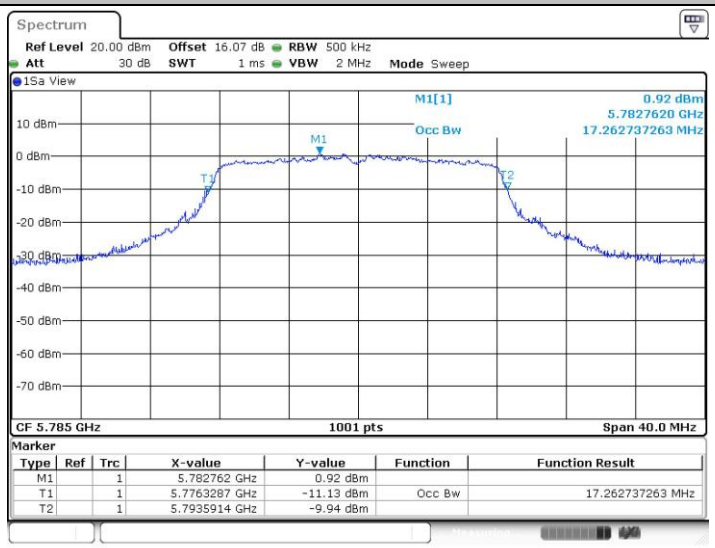
Test Graphs

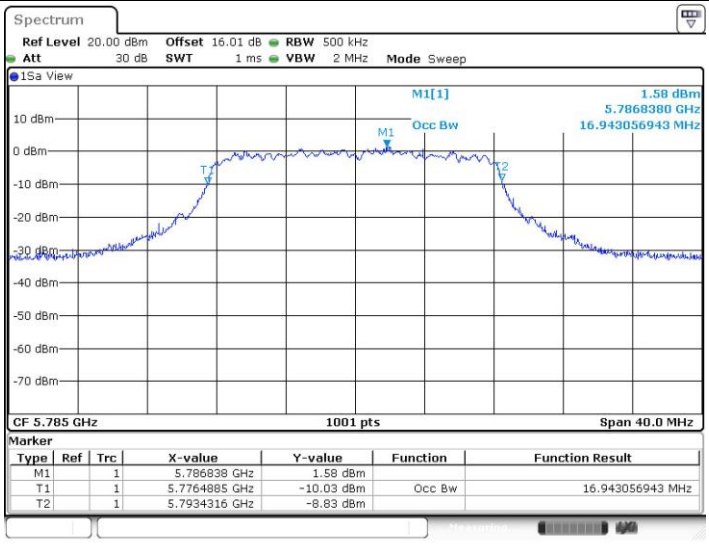
11A-CDD_Ant6_5745

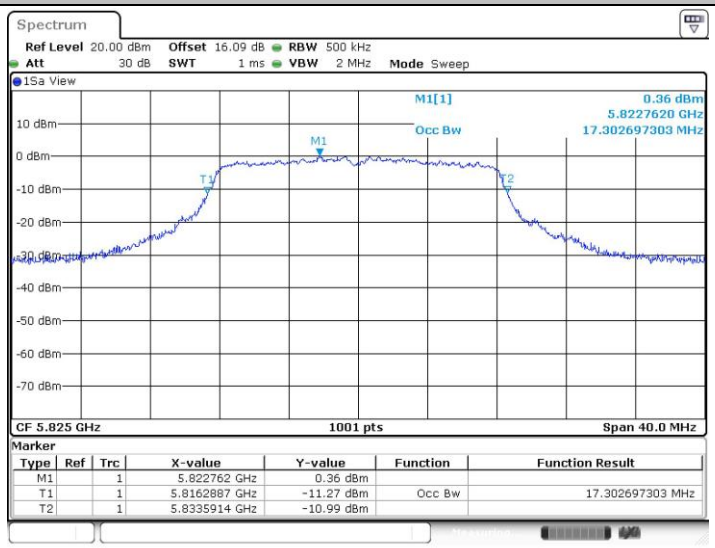


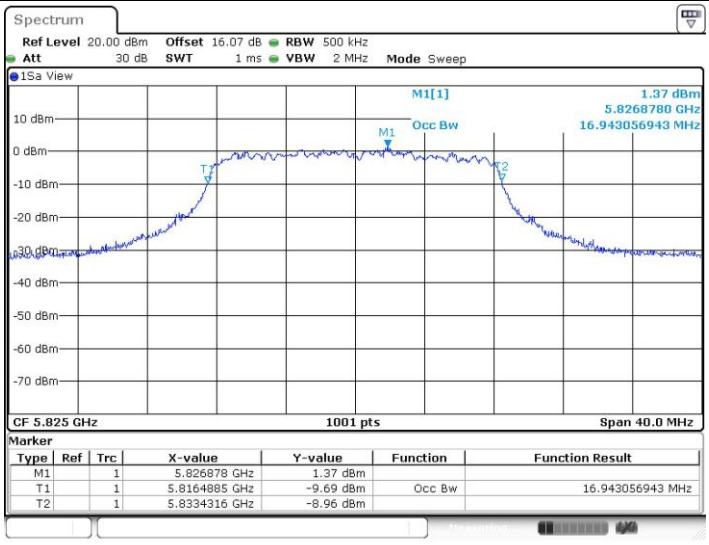
11A-CDD_Ant7_5745

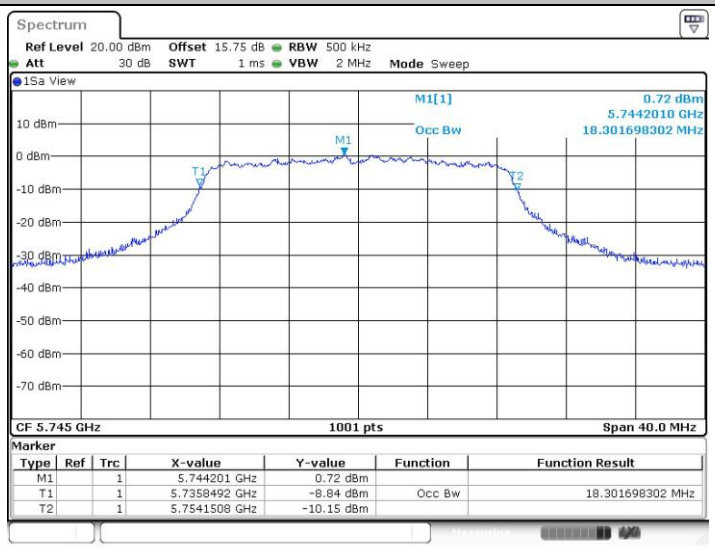


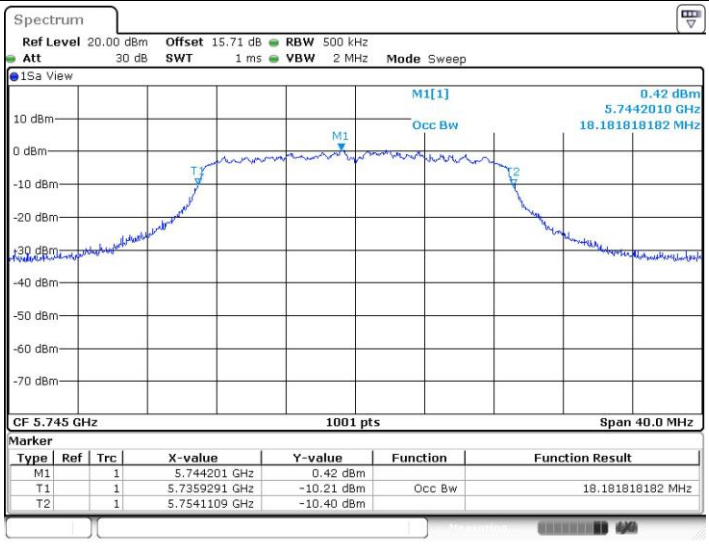
11A-CDD_Ant6_5785


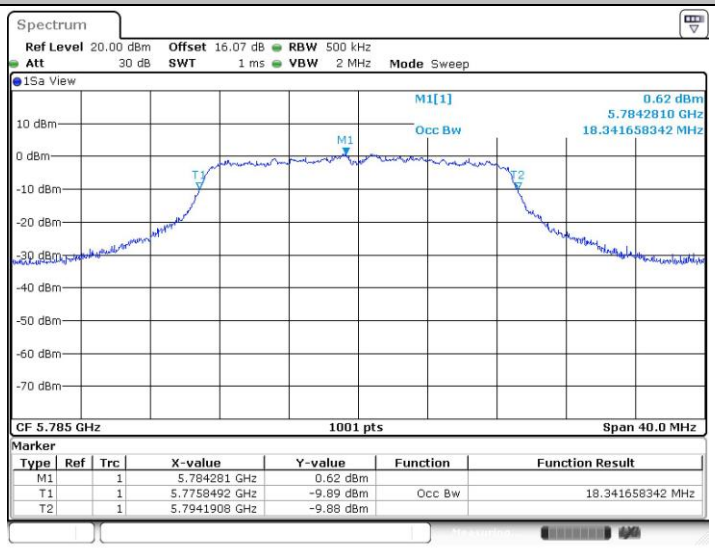
11A-CDD_Ant7_5785


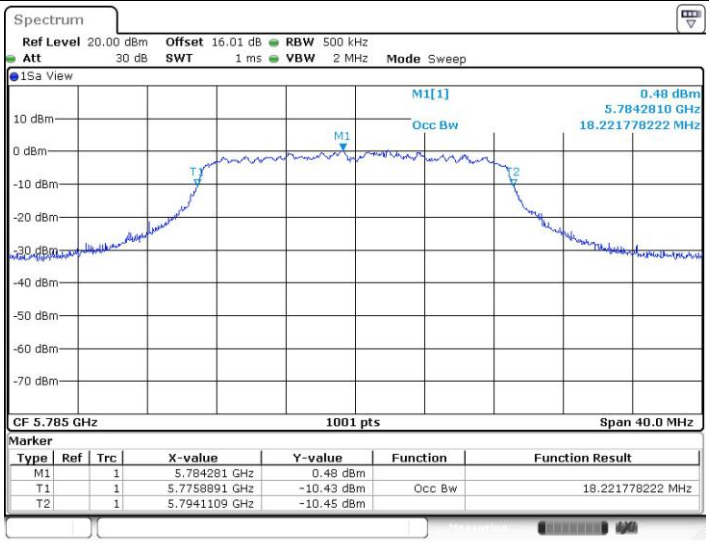
11A-CDD_Ant6_5825


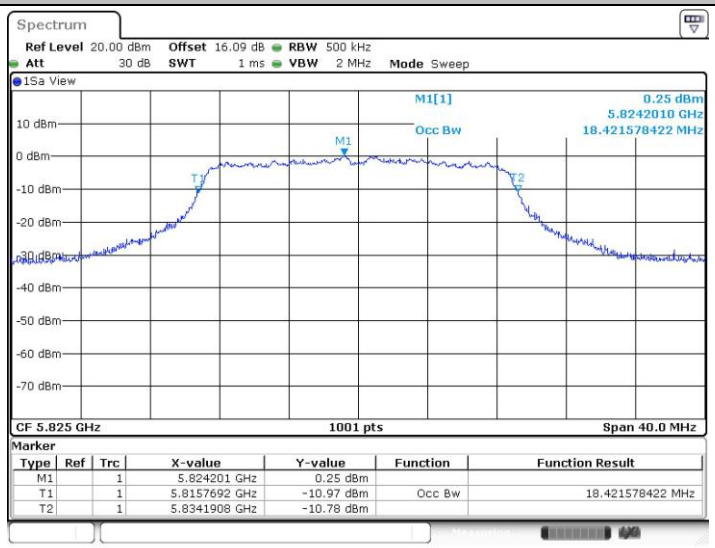
11A-CDD_Ant7_5825


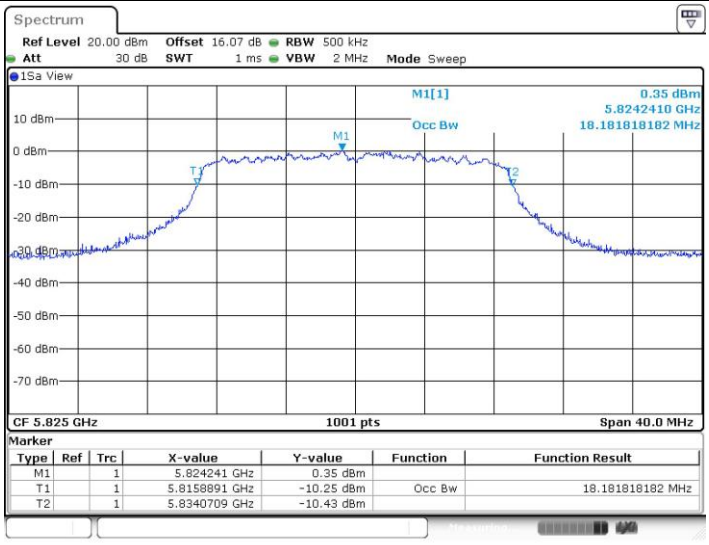
11AC20-CDD_Ant6_5745


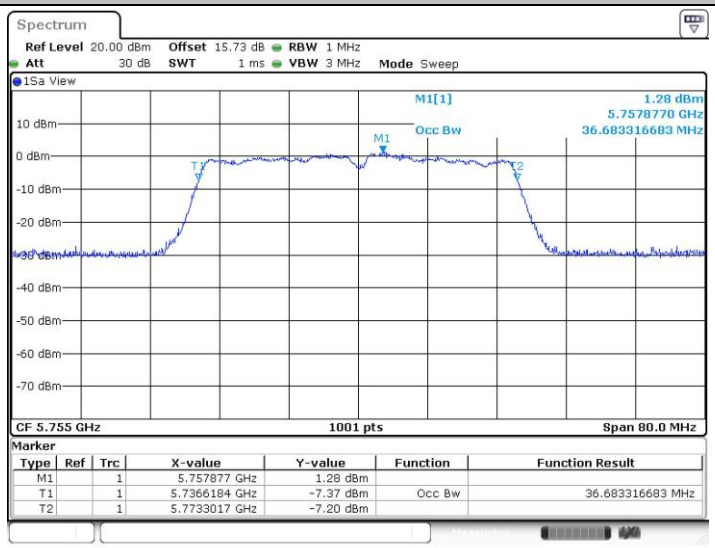
11AC20-CDD_Ant7_5745


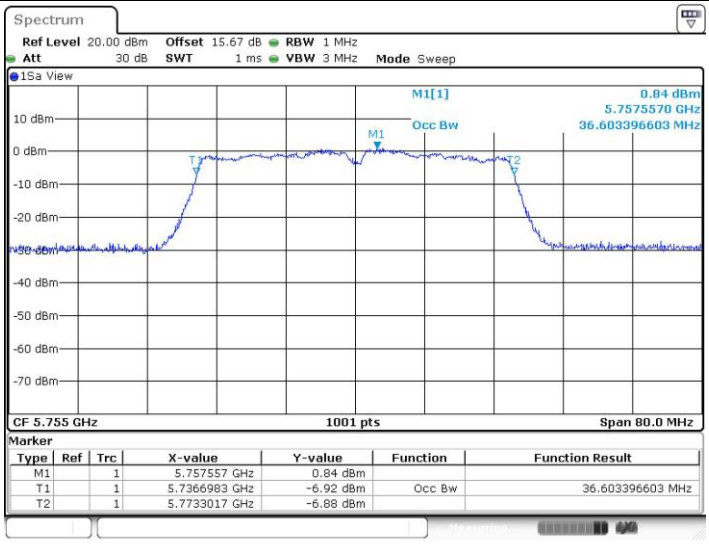
11AC20-CDD_Ant6_5785


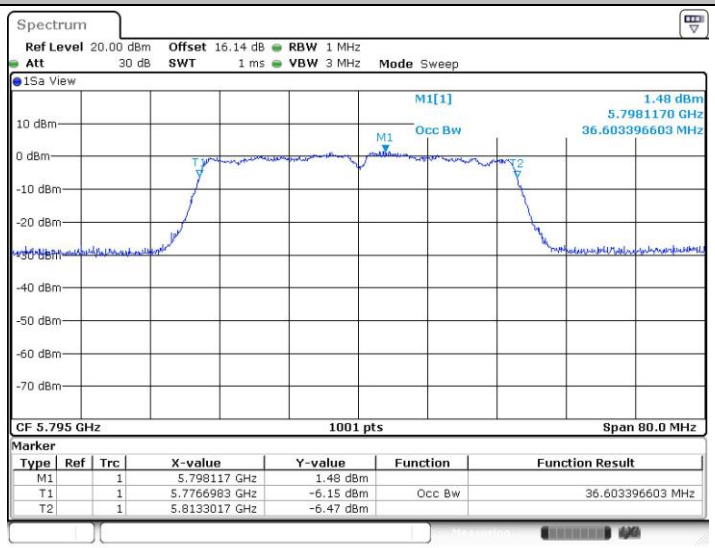
11AC20-CDD_Ant7_5785


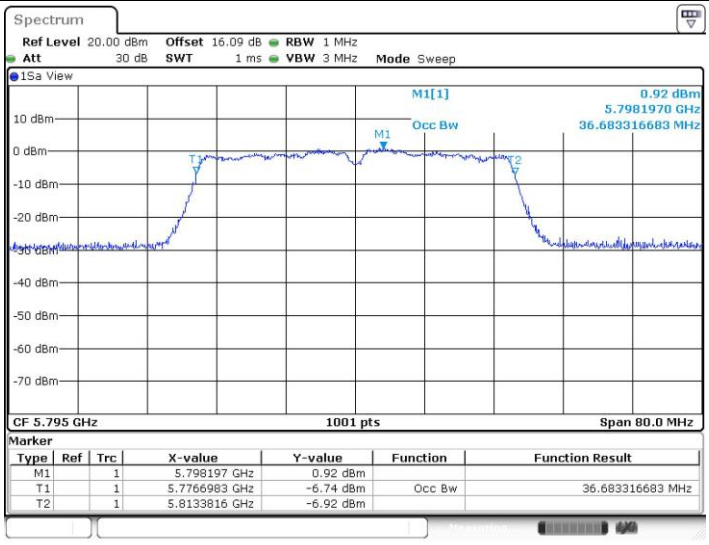
11AC20-CDD_Ant6_5825


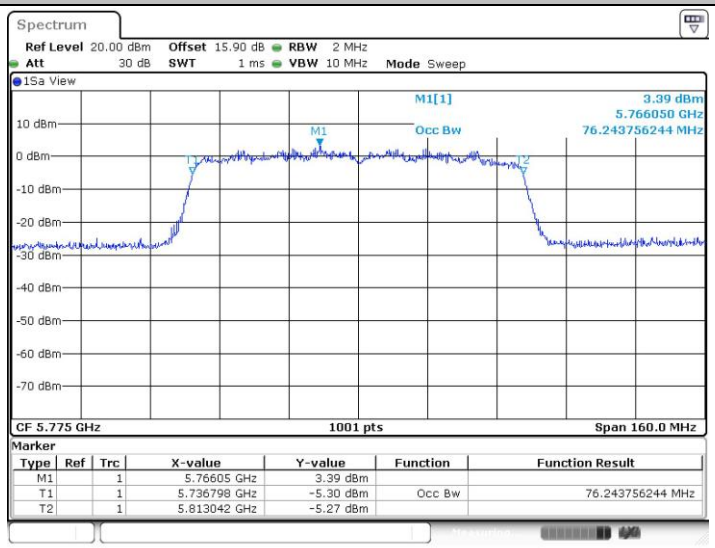
11AC20-CDD_Ant7_5825


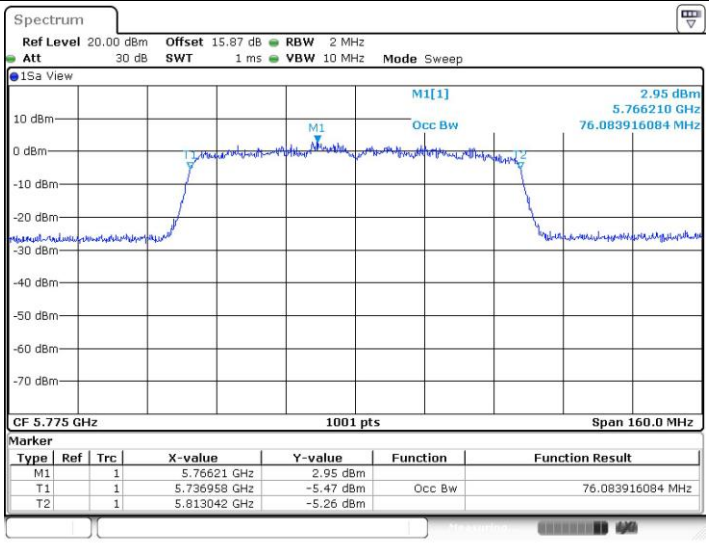
11AC40-CDD_Ant6_5755


11AC40-CDD_Ant7_5755


11AC40-CDD_Ant6_5795


11AC40-CDD_Ant7_5795


11AC80-CDD_Ant6_5775


11AC80-CDD_Ant7_5775


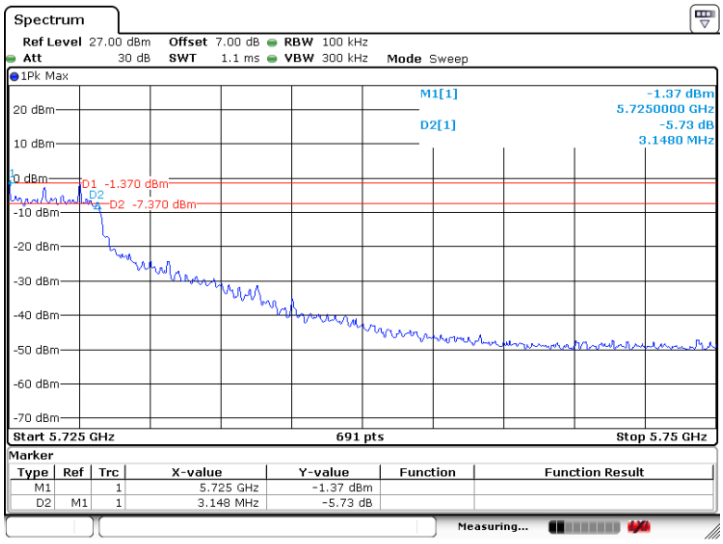
Min emission bandwidth

Test Result

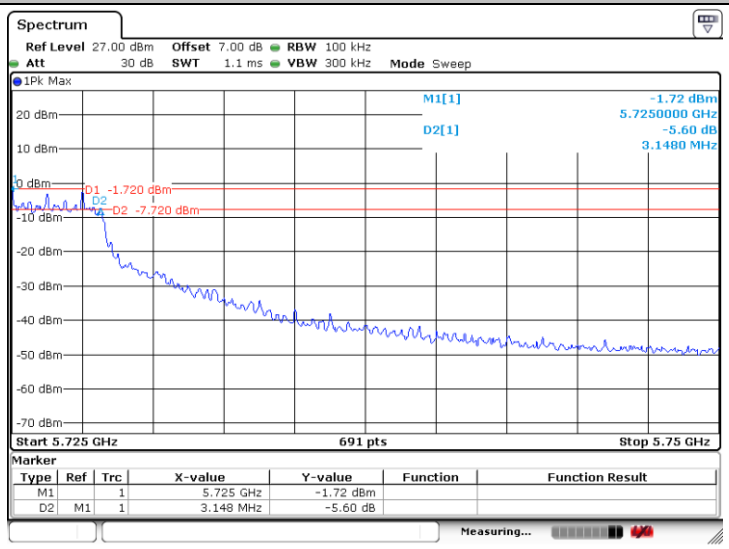
TestMode	Antenna	Frequency[MHz]	6db EBW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A-CDD	Ant6	5720	3.148	5725	5728.15	0.5	PASS
	Ant7	5720	3.148	5725	5728.15	0.5	PASS
	Ant6	5745	15.32	5737.24	5752.56	0.5	PASS
	Ant7	5745	15.64	5737.24	5752.88	0.5	PASS
	Ant6	5785	15.68	5777.20	5792.88	0.5	PASS
	Ant7	5785	15.64	5777.20	5792.84	0.5	PASS
	Ant6	5825	15.48	5817.08	5832.56	0.5	PASS
	Ant7	5825	15.72	5816.84	5832.56	0.5	PASS
11AC20-CDD	Ant6	5720	3.401	5725	5728.40	0.5	PASS
	Ant7	5720	3.401	5725	5728.40	0.5	PASS
	Ant6	5745	15.72	5737.40	5753.12	0.5	PASS
	Ant7	5745	15.72	5737.40	5753.12	0.5	PASS
	Ant6	5785	15.68	5777.44	5793.12	0.5	PASS
	Ant7	5785	16.00	5777.12	5793.12	0.5	PASS
	Ant6	5825	15.96	5816.60	5832.56	0.5	PASS
	Ant7	5825	15.96	5816.60	5832.56	0.5	PASS
11AC40-CDD	Ant6	5710	3.148	5725	5728.15	0.5	PASS
	Ant7	5710	3.148	5725	5728.15	0.5	PASS
	Ant6	5755	35.36	5737.24	5772.60	0.5	PASS
	Ant7	5755	35.12	5737.40	5772.52	0.5	PASS
	Ant6	5795	35.36	5777.24	5812.60	0.5	PASS
	Ant7	5795	35.12	5777.48	5812.60	0.5	PASS
11AC80-CDD	Ant6	5690	3.148	5725	5728.15	0.5	PASS
	Ant7	5690	3.112	5725	5728.11	0.5	PASS
	Ant6	5775	75.20	5737.40	5812.60	0.5	PASS
	Ant7	5775	75.20	5737.40	5812.60	0.5	PASS

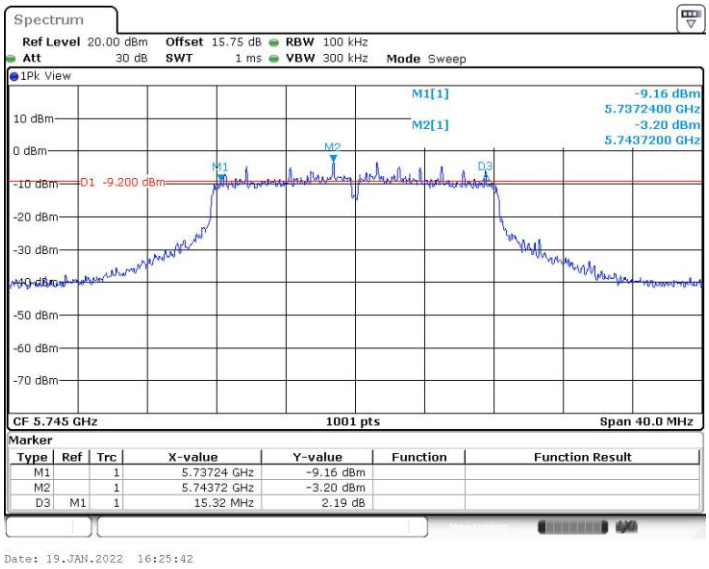
Test Graphs B4

11A-CDD_Ant6_5720



11A-CDD_Ant7_5720



11A-CDD_Ant6_5745


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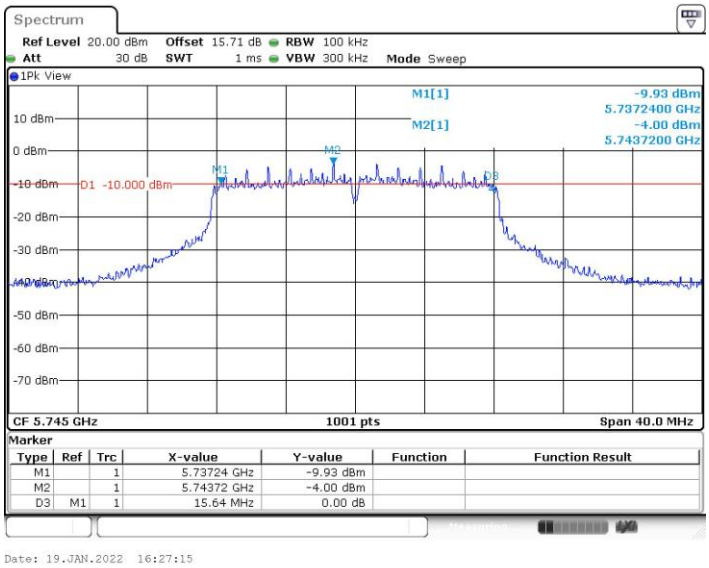

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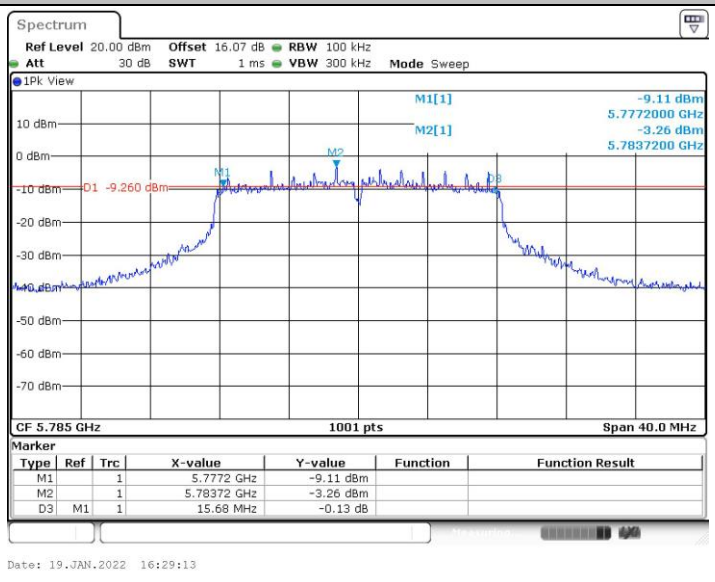

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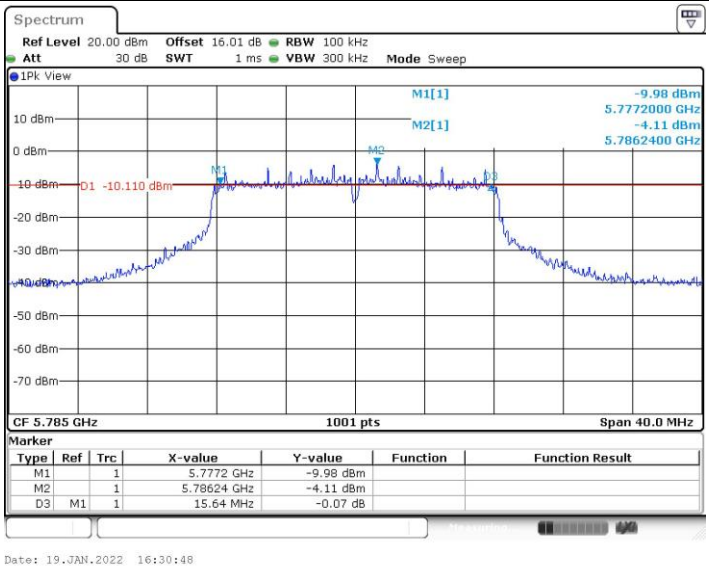

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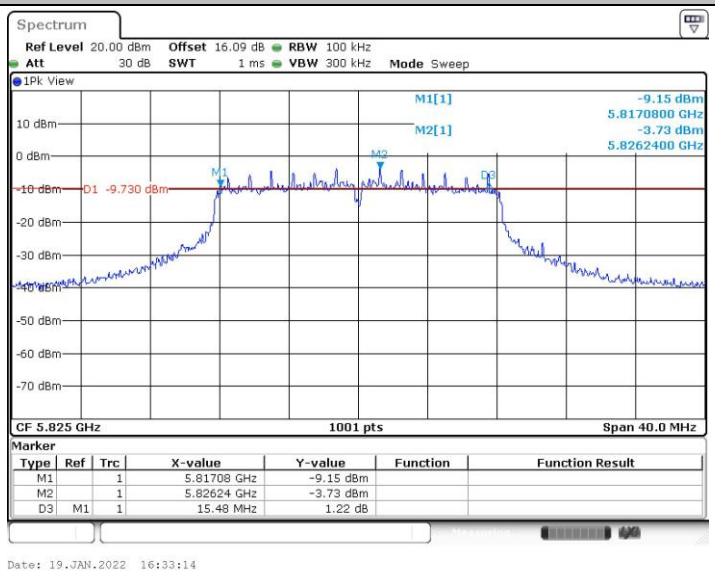

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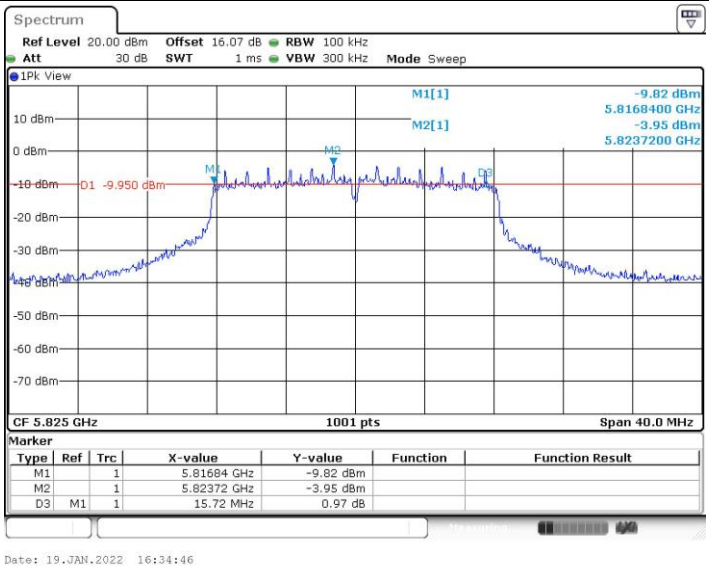

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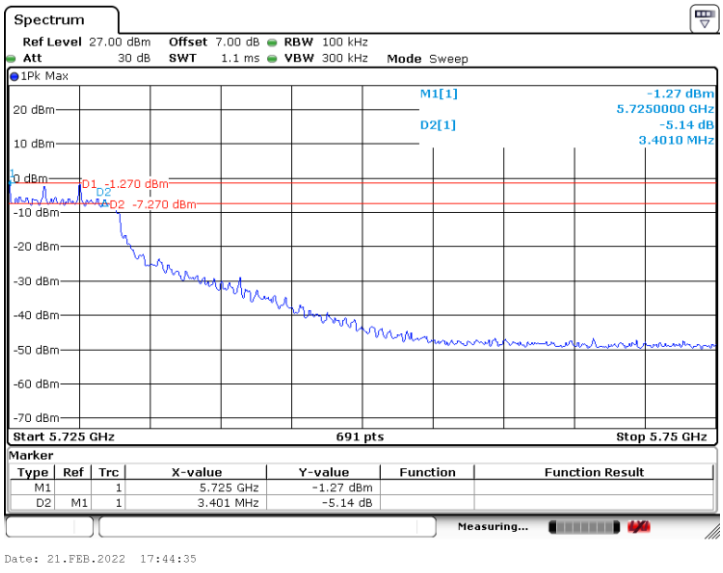

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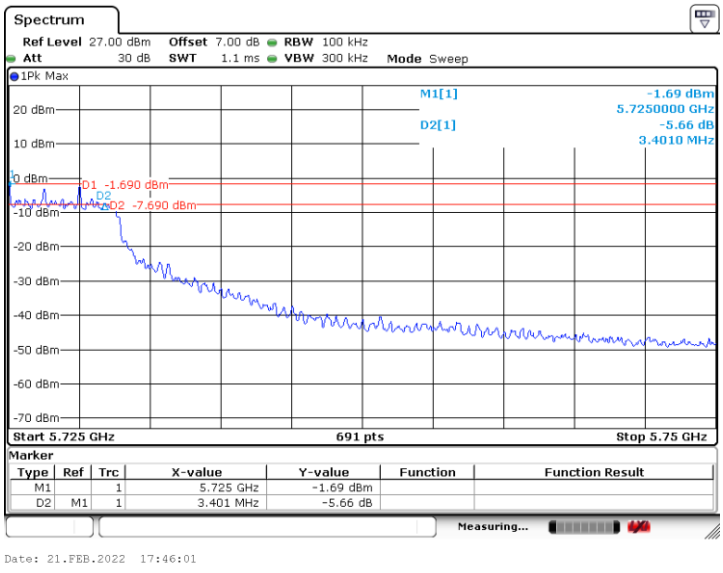

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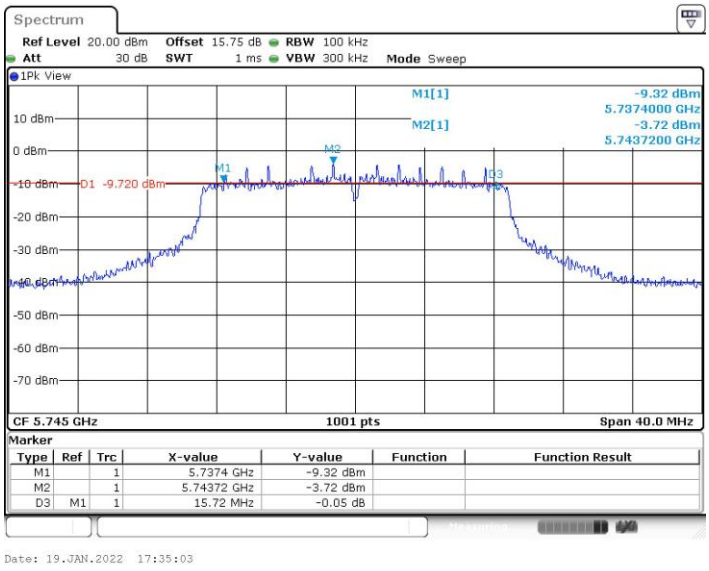

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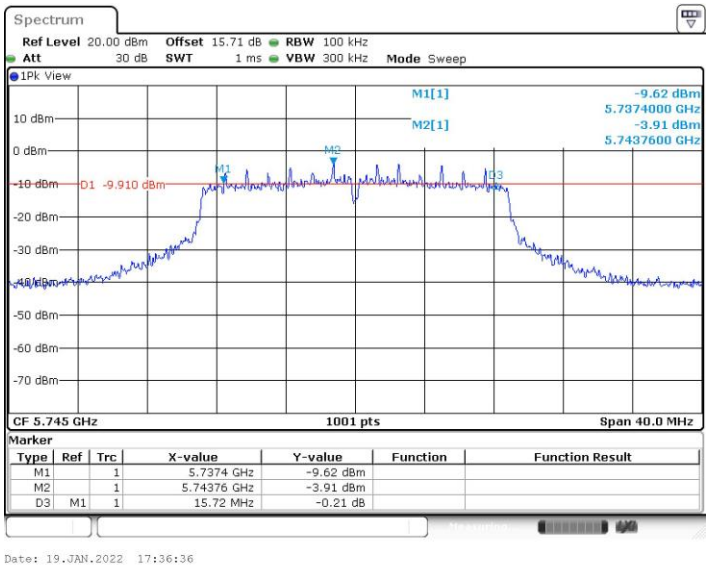

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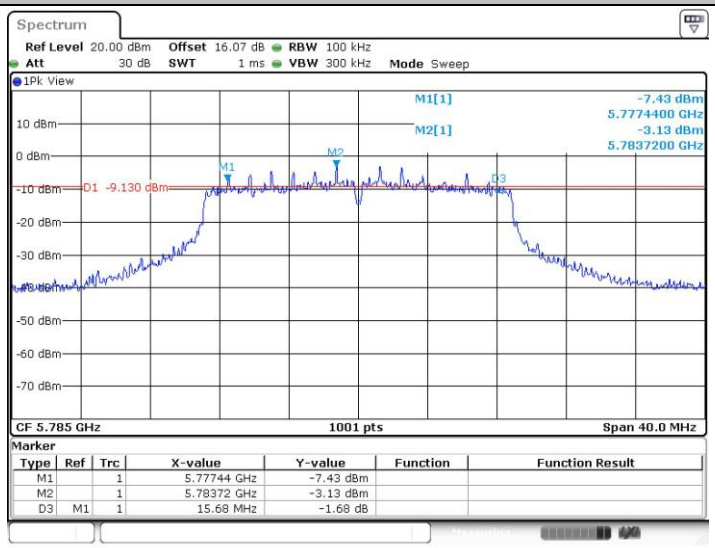

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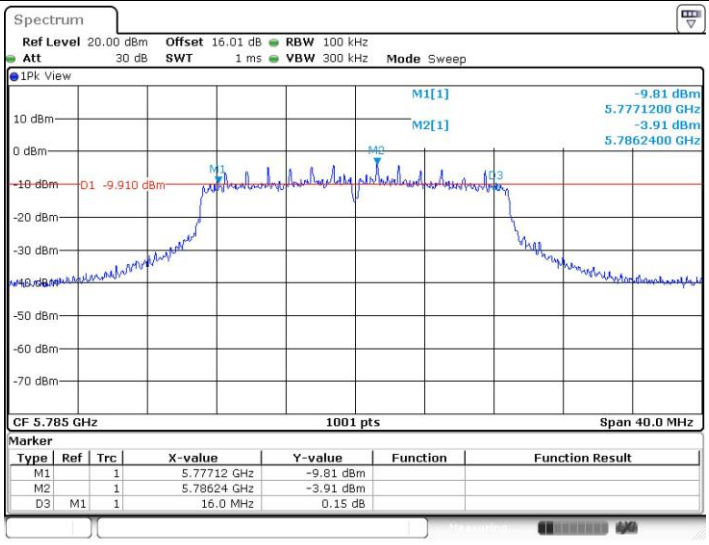

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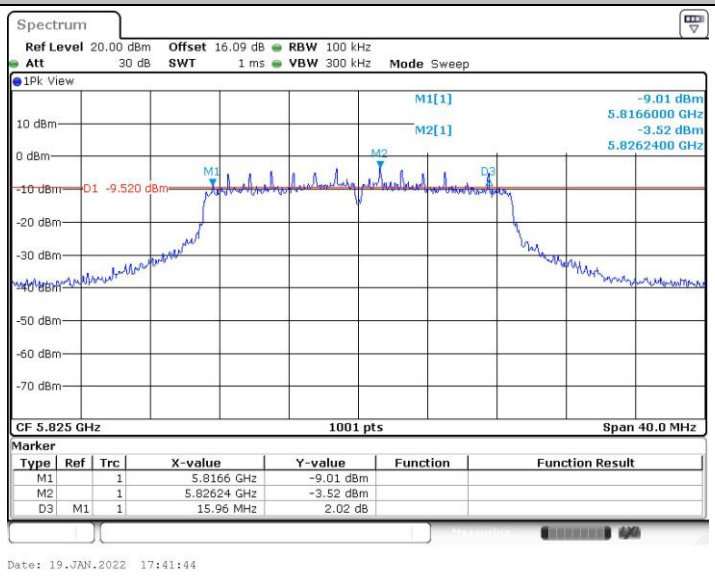

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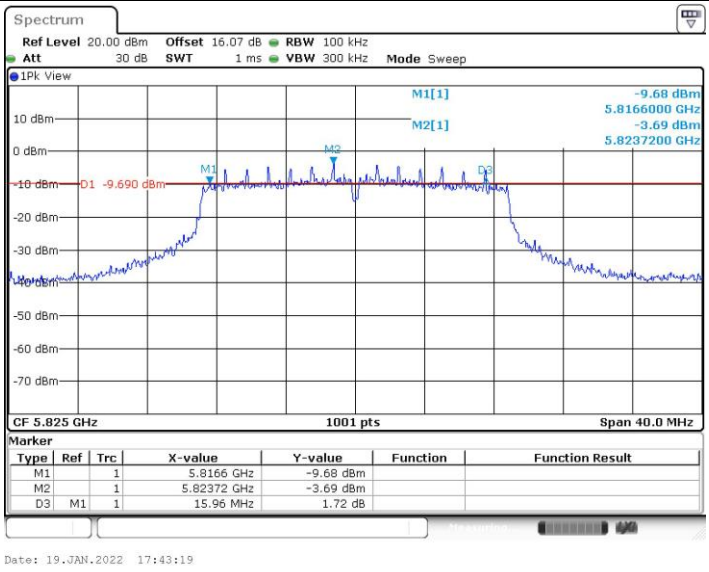

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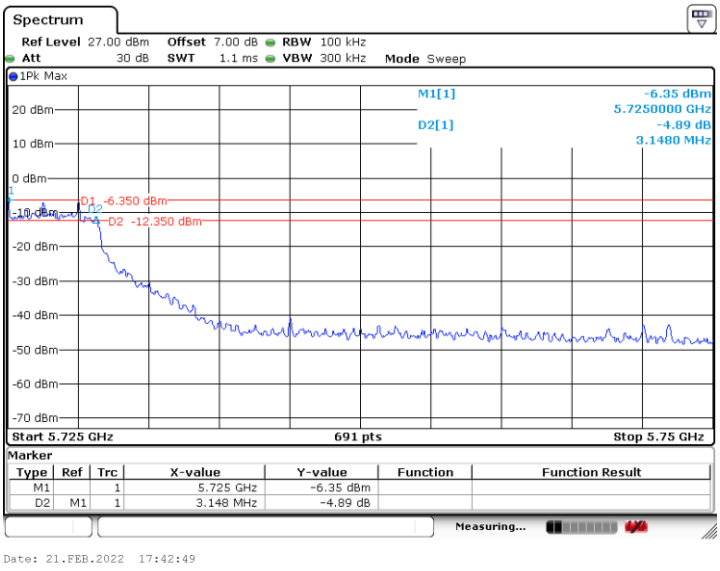
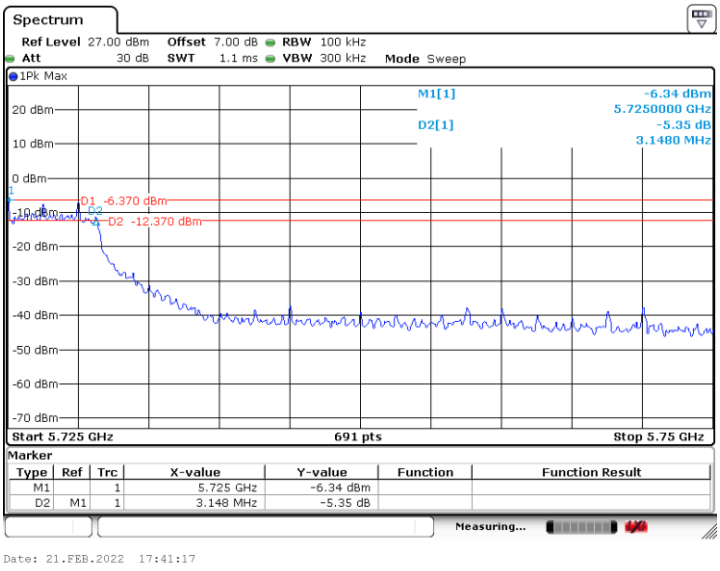


11AC40-CDD_Ant7_5710


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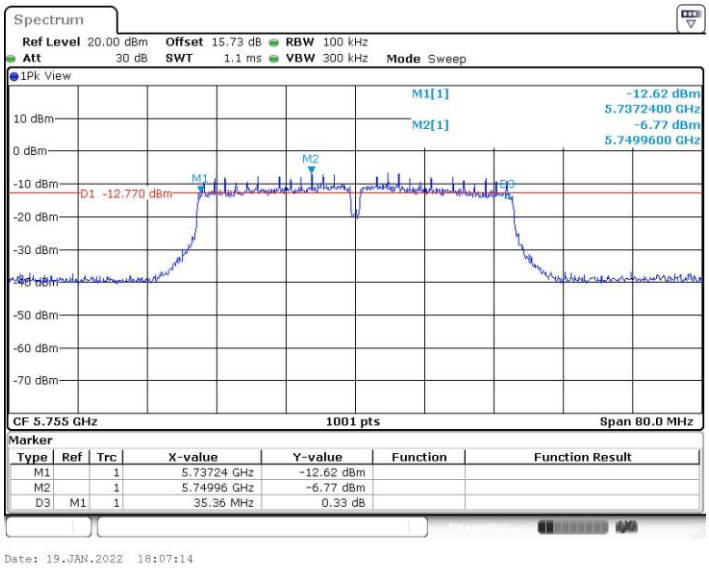

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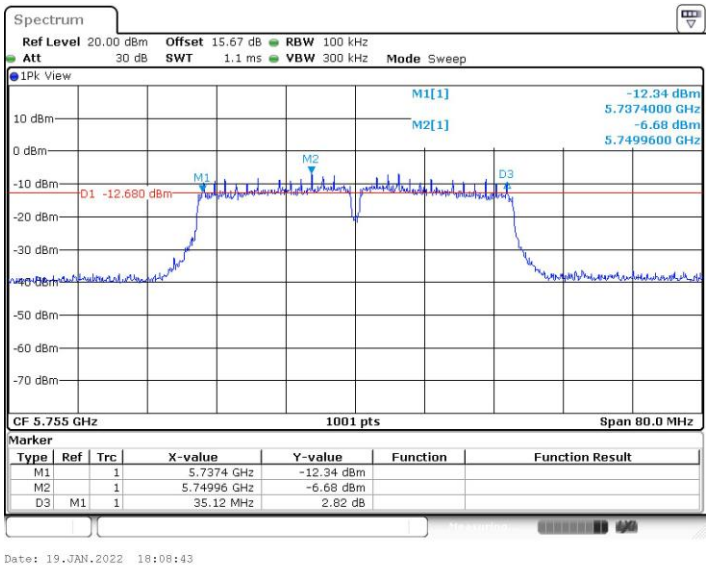

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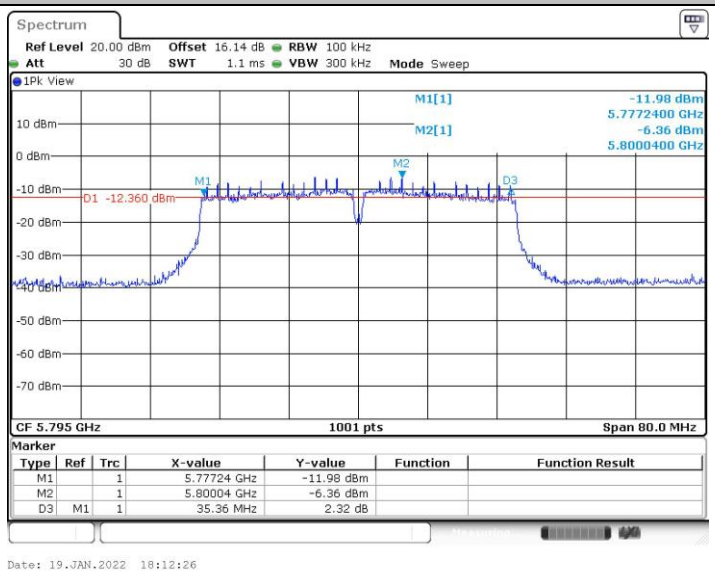

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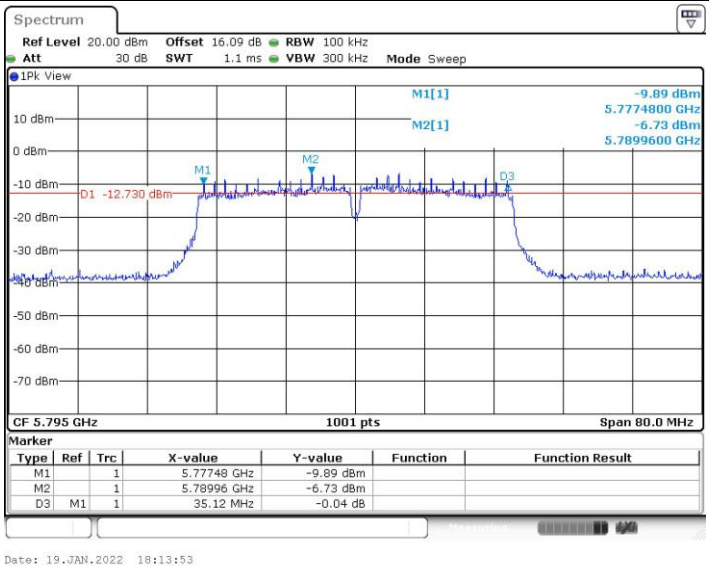

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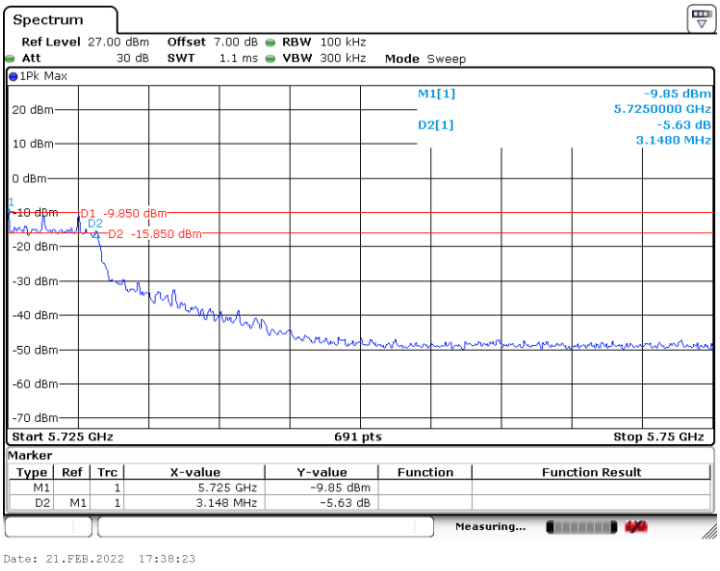

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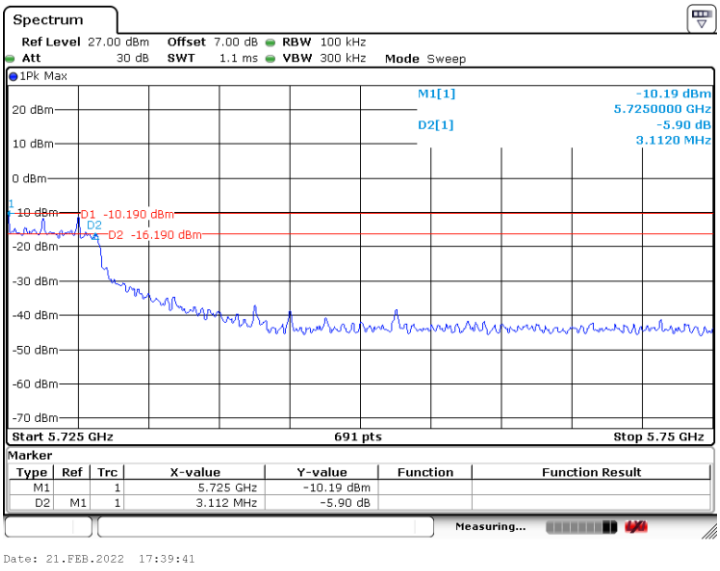
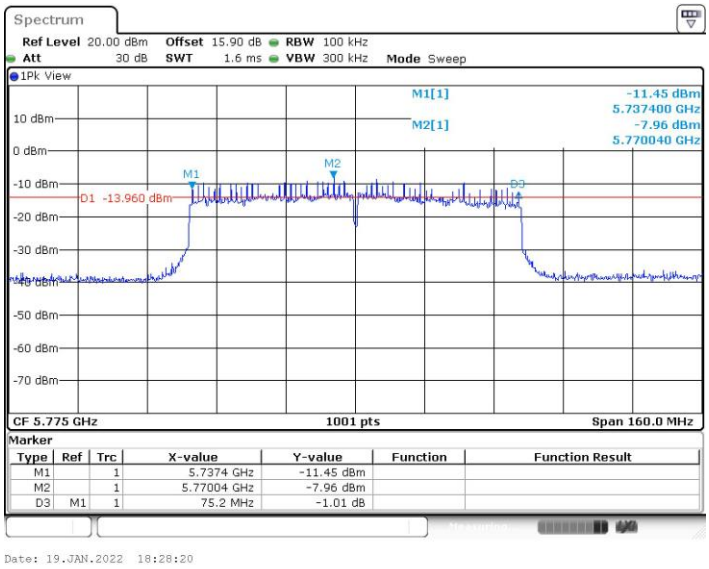


11AC80-CDD_Ant6_5775


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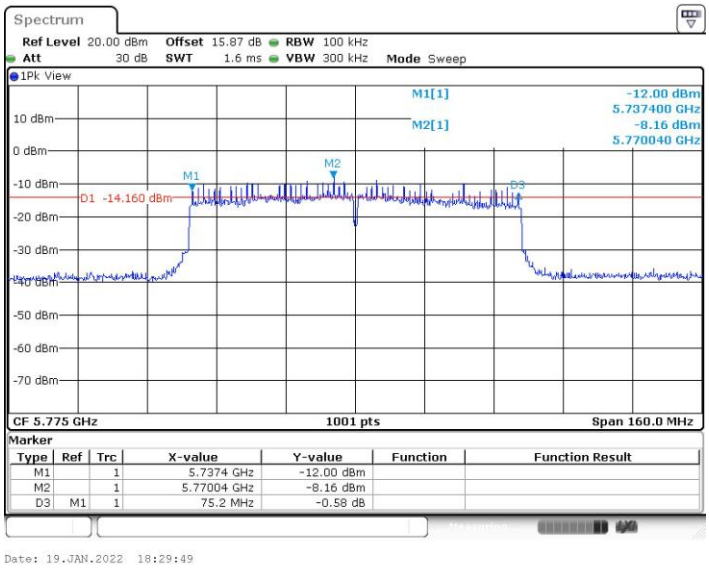

Maximum power spectral density

Test Result

TestMode	Antenna	Frequency[MHz]	Result [dBm/500kHz]	Limit [dBm/500kHz]	Verdict
11A-CDD	Ant6	5745	-7.27	≤30.00	PASS
	Ant7	5745	-7.61	≤30.00	PASS
	total	5745	-4.43	≤30.00	PASS
	Ant6	5785	-7	≤30.00	PASS
	Ant7	5785	-7.72	≤30.00	PASS
	total	5785	-4.33	≤30.00	PASS
	Ant6	5825	-7.66	≤30.00	PASS
	Ant7	5825	-7.89	≤30.00	PASS
	total	5825	-4.76	≤30.00	PASS
11AC20-CDD	Ant6	5745	-7.7	≤30.00	PASS
	Ant7	5745	-8.01	≤30.00	PASS
	total	5745	-4.84	≤30.00	PASS
	Ant6	5785	-7.45	≤30.00	PASS
	Ant7	5785	-8.05	≤30.00	PASS
	total	5785	-4.73	≤30.00	PASS
	Ant6	5825	-7.98	≤30.00	PASS
	Ant7	5825	-8.15	≤30.00	PASS
	total	5825	-5.05	≤30.00	PASS
11AC40-CDD	Ant6	5755	-10.75	≤30.00	PASS
	Ant7	5755	-10.91	≤30.00	PASS
	total	5755	-7.82	≤30.00	PASS
	Ant6	5795	-10.33	≤30.00	PASS
	Ant7	5795	-10.92	≤30.00	PASS
	total	5795	-7.60	≤30.00	PASS
11AC80-CDD	Ant6	5775	-13.48	≤30.00	PASS
	Ant7	5775	-13.66	≤30.00	PASS
	total	5775	-10.56	≤30.00	PASS

Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2.The Duty Cycle(<98%) Factor and RBW Factor is compensated in the graph.