Report No.: DDT-R21070824-2E01

Issued Date: Jan. 26, 2022

FCC CERTIFICATION TEST REPORT

FOR

Applicant	:	Infinet LLC
Address	:	69/75 Vavilova str., off. 425, 117997, Moscow,Russian Federation
Equipment under Test	:	InfiMAN Evolution
Model No.	:	E5-STE/05900, E6-STE/06300
Trade Mark	:	InfiMAN Evolution
FCC ID	:	2AZJ4-E5-ST
Manufacturer	:	Infinet LLC
Address	:	S.Deryabina str., 24, off. 701, 620149, Ekaterinburg, Russian Federation

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, **E-mail:** ddt@dgddt.com, http://www.dgddt.com

REPORT

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Test Report Declare

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Test Standard Used: FCC Rules and Regulations Part 15 Subpart E

Test procedure used: ANSI C63.10:2013, 789033 D02 General U-NII Test Procedures New Rules v02r01, 662911 D01 Multiple Transmitter Output v02r01

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No.:	DDT-R21070824-2E01		
Date of Receipt:	Sep. 16, 2021	**Date of Test:**	Sep. 16, 2021 ~ Jan. 26, 2022

Prepared By:

Ben Jin

Ben Jin/Engineer

Approved By:

DONGGUAN DONGDIAN TESTING SERVICE CO., LTD. APPROVED Damon Hu

Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision History

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Jan. 26, 2022	

1. Summary of test results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	**Standard**	**Verdict**
6/26db Bandwidth and 99% Bandwidth	FCC 15.407 (e)	Pass
Maximum Conducted Output Power	FCC 15.407 (a)	Pass
Power Spectral Density	FCC 15.407 (a)	Pass
Frequency Stability Measurement	FCC 15.407 (g)	Pass
Emissions in restricted frequency bands	FCC 15.407 (a) FCC 15.209 FCC 15.205	Pass
Power Line Conducted Emission	FCC 15.207	Pass
Antenna requirement	FCC 15.203	Pass
Dynamic Frequency Selection	FCC 15.407 (h)	N/A
Note: N/A means not application		

2. General Test Information

2.1. Description of EUT

EUT* Name	:	InfiMAN Evolution
Model Number	:	E5-STE/05900, E6-STE/06300
EUT function description	:	Please reference user manual of this device
Power supply	:	DC 48V 0.5A from Indoor Power Supply Unit
Radio Technology	:	Proprietary protocol based on IEEE 802.11ac
FCC Operation frequency	:	20 MHz: 5745MHz-5825MHz 40 MHz: 5755MHz-5795MHz 80 MHz: 5775MHz
Modulation	:	BPSK, QAM
Antenna Type	:	Dedicated antenna 1, maximum PK gain: 17 dBi Dedicated antenna 2, maximum PK gain: 18 dBi Note 1: antenna 1 corresponding to H-pol Note 2: antenna 2 corresponding to V-pol
Sample Type	:	Series production
Serial Number	:	N/A

Note 1: EUT is the ab. of equipment under test.
Note 2: EUT without DFS detection.

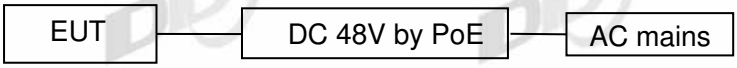
2.2. Accessories of EUT

Assistant equipment	Manufacturer	Model number	Serial No.	Other
Indoor Power Supply Unit	INFINET	IDU-CPE-G(24 W)	N/A	INPUT: 100-240V AC~ 50/60 Hz 1.5A OUTPUT: 48V 0.5A(24W)
Network cable	N/A	N/A	N/A	N/A

2.3. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	EMC Compliance	SN
N/A	N/A	N/A	N/A	N/A

2.4. Block diagram of EUT configuration for test



Run a special test software “Putty.exe” provided by manufacturer to control EUT work in Continuous Tx mode, and select test channel, wireless mode and data rate.

Tested mode, channel, and data rate information				
Mode	Setting Tx Power		Channel	Frequency (MHz)
	Ant1	Ant2		
20 MHz	6	6	Low: CH149	5745
	6	6	Middle: CH157	5785
	6	6	High: CH165	5825
40 MHz	6	6	Middle: CH151	5755
	6	6	High: CH159	5795
80 MHz	6	6	CH155	5775

2.5. Deviations of test standard

No Deviation.

2.6. Test environment conditions

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

Temperature range:	21-25℃
Humidity range:	40-75%
Pressure range:	86-106 kPa

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808.

Tel.: +86-0769-38826678, http://www.dgddt.com, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, G-20118

2.8. Measurement uncertainty

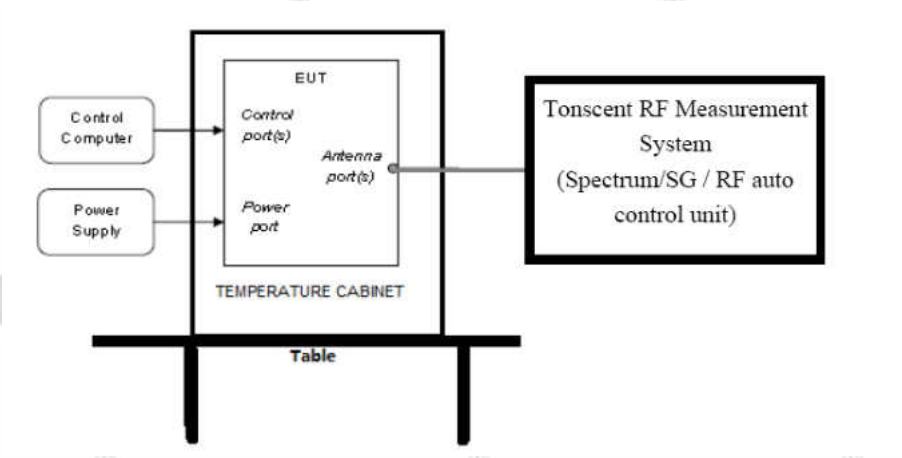
Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7×10^{-8} (Antenna couple method)
	5.5×10^{-8} (Conducted method)
Conducted spurious emissions	0.86 dB (10 MHz ≤ f < 3.6GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz≤ f < 22 GHz)
Uncertainty for radio frequency (RBW<20kHz)	3×10^{-8}
Temperature	0.4℃
Humidity	2%
Uncertainty for Radiation Emission test (30MHz-1GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1GHz-40GHz)	4.10 dB (1-6 GHz)
	4.40 dB (6 GHz-18 GHz)
	3.54 dB (18 GHz-26 GHz)
	4.30 dB (26 GHz-40 GHz)
Uncertainty for Power line conduction emission test	3.32 dB (150 kHz-30 MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

3. Equipment Used During Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒RF Connected Test (Tonscend RF Measurement System 4#)					
MXA Signal Analyzer	Agilent	N9020A	MY49100362	Sep. 02, 2021	1 Year
Wideband Radio Communication tester	R&S	CMW500	120259	Jun. 01, 2021	1 Year
MXG Vector Signal Generator	Agilent	N5182B	MY59100192	Jun. 01, 2021	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Sep. 24, 2020 Sep. 18, 2021	1 Year
RF Control Unit	Tonsend	JS0806-2	21I8060485	Oct. 18, 2021	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150 L	ZX170110-A	Jun. 01, 2021	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.6.88.0330	N/A	N/A
☒Radiation 3#chamber					
EMI Test Receiver	R&S	ESU	100472	Jun. 01, 2021	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jun. 01, 2021	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Nov. 18, 2020 Sep. 19, 2021	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	01429	Aug. 07, 2021	1 Year
Double Ridged Horn Antenna	Schwarzbeck	BBHA9120	02108	Jul. 17, 2021	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	May 08, 2021	1 Year
Pre-amplifier	COM-POWE R	PAM-118A	18040084	Sep. 02, 2021	1 Year
Pre-amplifier	COM-POWE R	PAM-840A	461369	Mar. 15, 2021	1 Year
Test software	Audix	E3	V 6.1.1.1	N/A	N/A
☒Power Line Conducted Emissions Test 1#					
Test Receiver	R&S	ESCI	100551	Sep. 02, 2021	1 Year
LISN 1	R&S	ENV216	101109	Sep. 02, 2021	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 02, 2021	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 02, 2021	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 02, 2021	1 Year
LISN 3	SCHWARZBE CK	NSLK 8163	00017	Sep. 02, 2021	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

4. 26dB Bandwidth, 6dB Bandwidth and 99% Bandwidth

4.1. Block diagram of test setup



4.2. Limits

FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Bandwidth	26 dB Bandwidth	5725 - 5850
	Minimum 500 kHz 6 dB Bandwidth	5725 - 5850

4.3. Test procedure

(1) Connect EUT's antenna output to spectrum analyzer by RF cable.

Center Frequency	The centre frequency of the channel under test
Detector	Peak
RBW	For 6 dB Bandwidth: RBW=100 kHz For 26 dB Bandwidth: approximately 1% of the emission bandwidth.
VBW	For 6 dB Bandwidth: VBW=300 kHz For 26 dB Bandwidth: >3 RBW
Trace	Max hold
Sweep	Auto couple

(2) Allow the trace to stabilize, measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB and 6 dB relative to the maximum level measured in the fundamental emission.

4.4. Test result

Test Mode	Antenna	Channel	26db EBW [MHz]	F_L [MHz]	F_H [MHz]	Limit [MHz]	Verdict
20 MHz	Ant1	5745	20.200	5734.840	5755.040	---	PASS
	Ant2	5745	20.280	5734.800	5755.080	---	PASS
	Ant1	5785	19.920	5774.840	5794.760	---	PASS
	Ant2	5785	20.040	5775.120	5795.160	---	PASS
	Ant1	5825	19.760	5815.040	5834.800	---	PASS
	Ant2	5825	20.040	5814.800	5834.840	---	PASS
40 MHz	Ant1	5755	38.960	5735.160	5774.120	---	PASS
	Ant2	5755	38.960	5735.640	5774.600	---	PASS
	Ant1	5795	38.800	5775.480	5814.280	---	PASS
	Ant2	5795	38.800	5775.560	5814.360	---	PASS
80 MHz	Ant1	5775	81.440	5734.040	5815.480	---	PASS
	Ant2	5775	81.920	5733.720	5815.640	---	PASS

Test Mode	Antenna	Channel	OCB [MHz]	F_L [MHz]	F_H [MHz]	Limit [MHz]	Verdict
20 MHZ	Ant1	5745	17.704	5736.129	5753.833	---	PASS
	Ant2	5745	17.716	5736.124	5753.840	---	PASS
	Ant1	5785	17.712	5776.126	5793.838	---	PASS
	Ant2	5785	17.727	5776.140	5793.867	---	PASS
	Ant1	5825	17.741	5816.133	5833.874	---	PASS
	Ant2	5825	17.687	5816.126	5833.813	---	PASS
40 MHZ	Ant1	5755	35.946	5736.948	5772.894	---	PASS
	Ant2	5755	36.155	5736.863	5773.018	---	PASS
	Ant1	5795	36.085	5776.903	5812.988	---	PASS
	Ant2	5795	36.046	5776.919	5812.965	---	PASS
80 MHZ	Ant1	5775	76.250	5736.685	5812.935	---	PASS
	Ant2	5775	76.059	5736.787	5812.846	---	PASS

Test Mode	Antenna	Channel	6db EBW [MHz]	F_L [MHz]	F_H [MHz]	Limit [MHz]	Verdict
20 MHz	Ant1	5745	17.160	5736.240	5753.400	>0.5	PASS
	Ant2	5745	16.280	5736.240	5752.520	>0.5	PASS
	Ant1	5785	17.160	5776.200	5793.360	>0.5	PASS
	Ant2	5785	15.320	5777.200	5792.520	>0.5	PASS
	Ant1	5825	16.520	5816.880	5833.400	>0.5	PASS
	Ant2	5825	16.120	5816.440	5832.560	>0.5	PASS
40 MHz	Ant1	5755	35.120	5737.400	5772.520	>0.5	PASS
	Ant2	5755	35.040	5737.480	5772.520	>0.5	PASS
	Ant1	5795	35.120	5777.400	5812.520	>0.5	PASS
	Ant2	5795	35.040	5777.480	5812.520	>0.5	PASS
80 MHz	Ant1	5775	75.360	5737.240	5812.600	>0.5	PASS
	Ant2	5775	75.520	5736.920	5812.440	>0.5	PASS

4.5. Original test data

26 dB Bandwidth:

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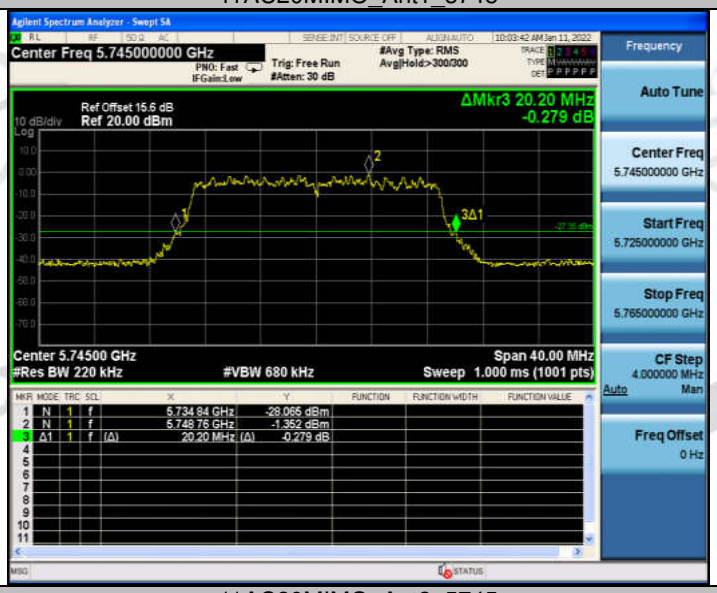
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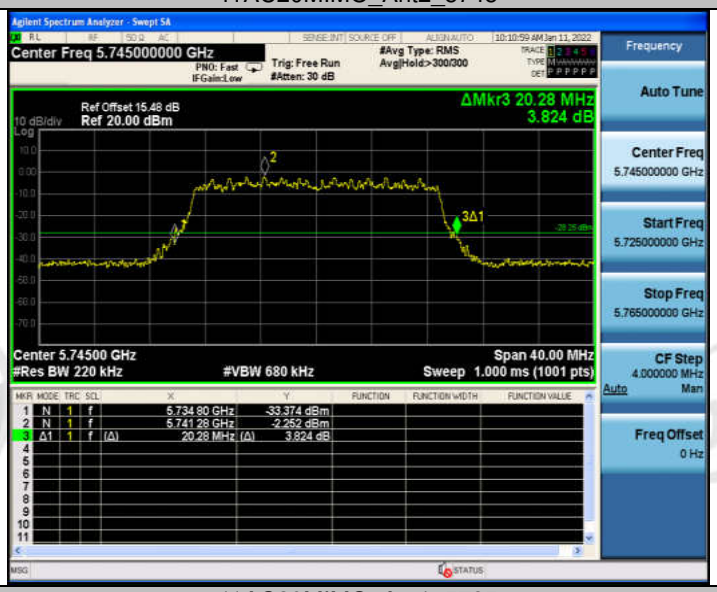
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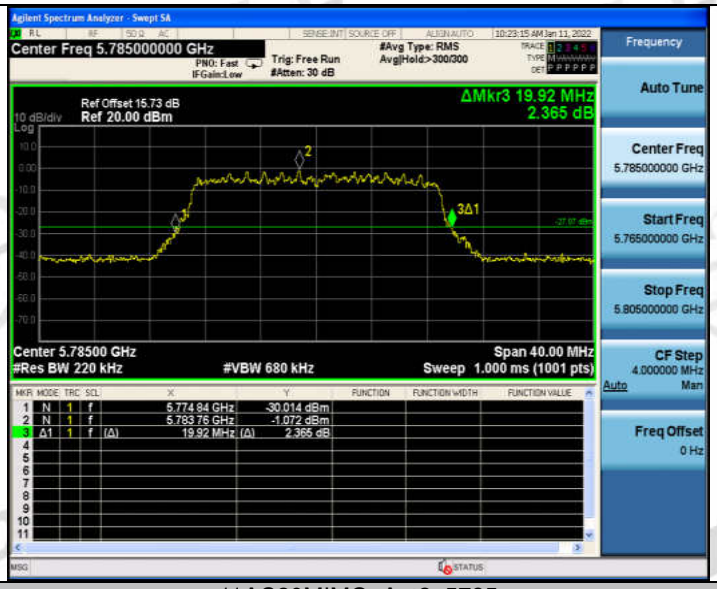

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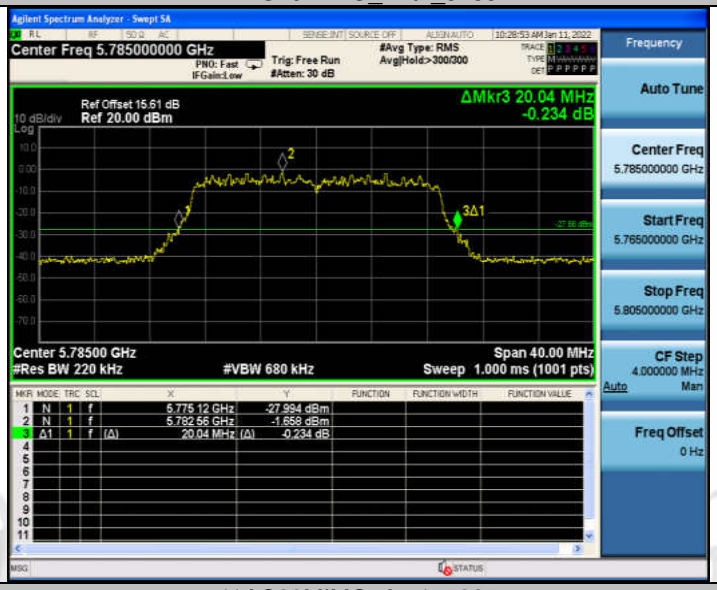

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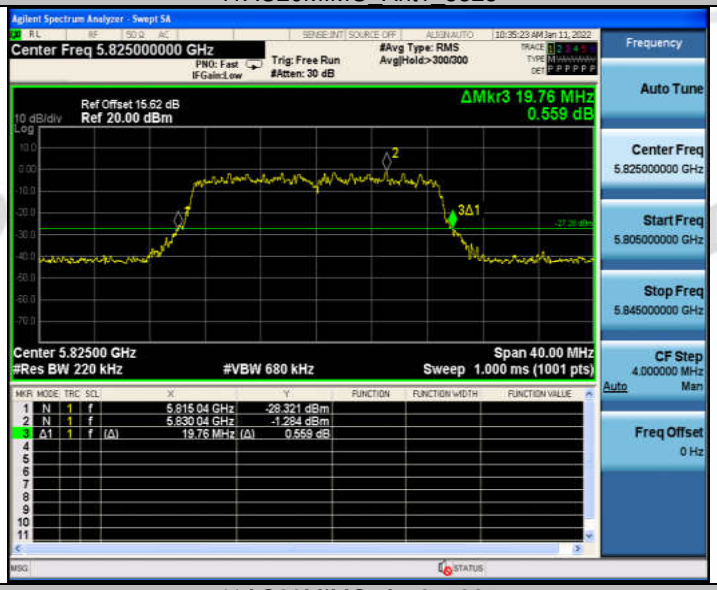

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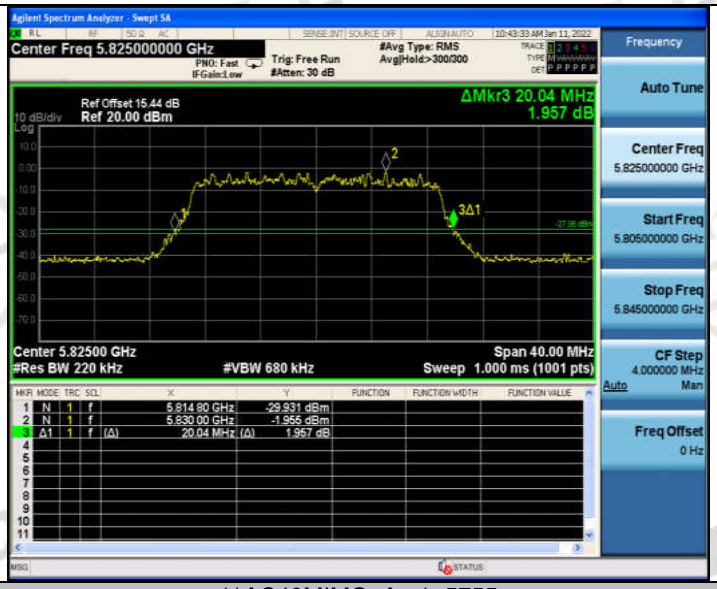

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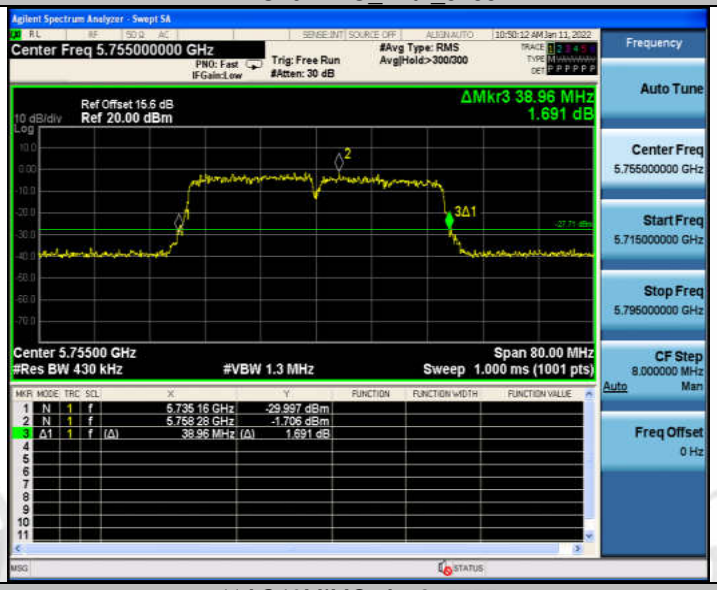

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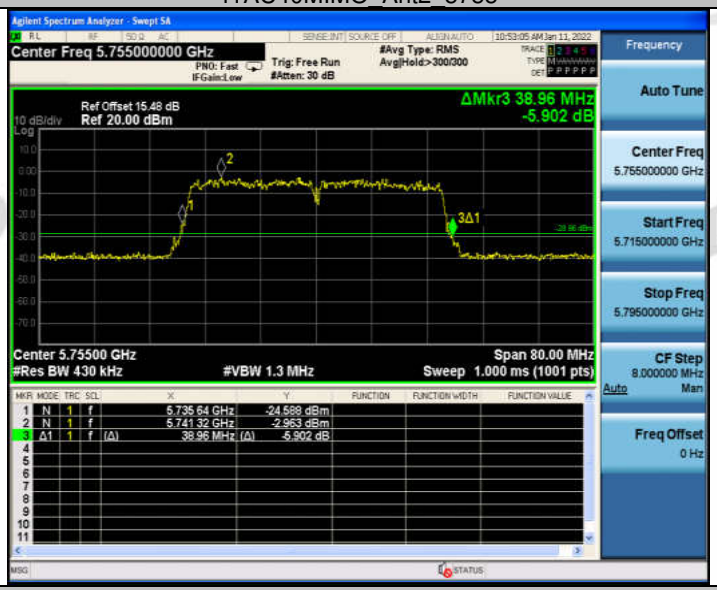

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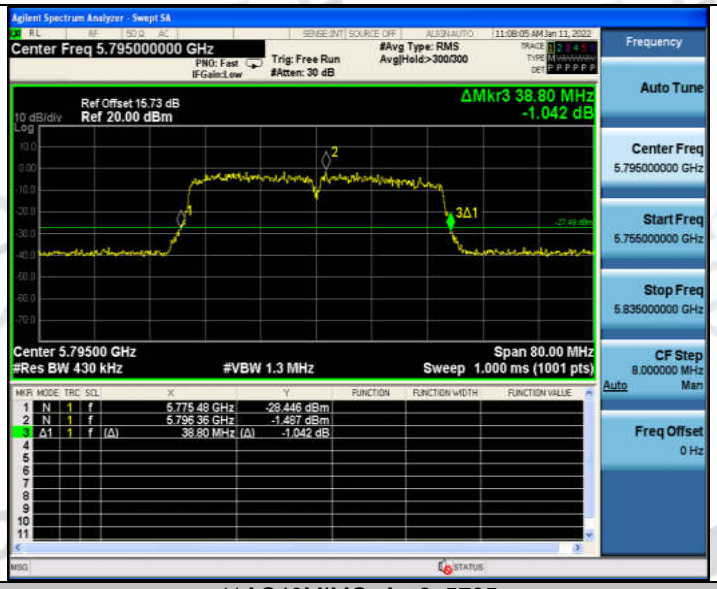

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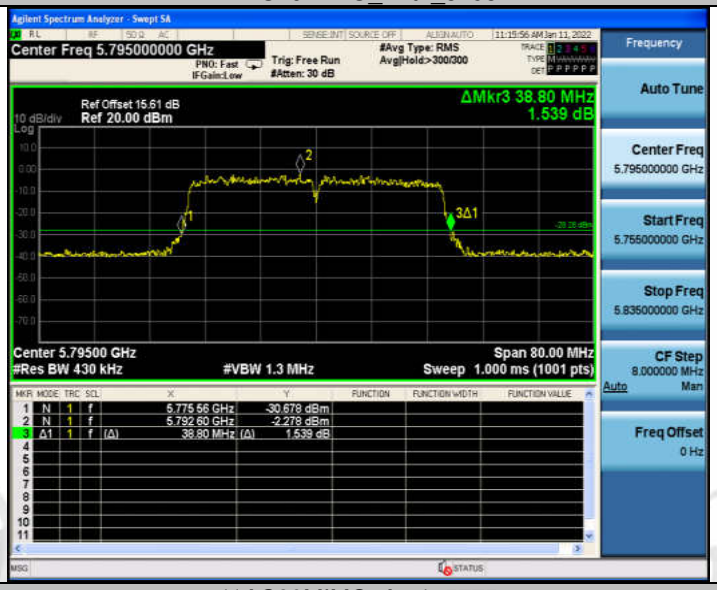

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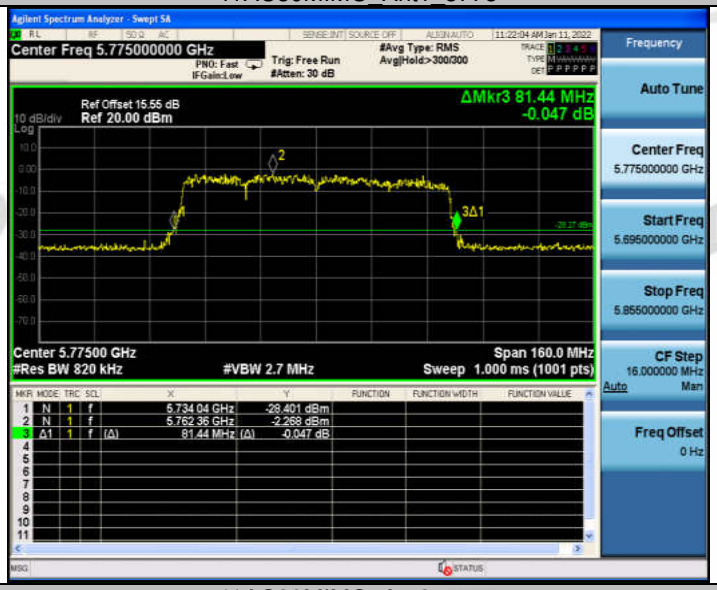

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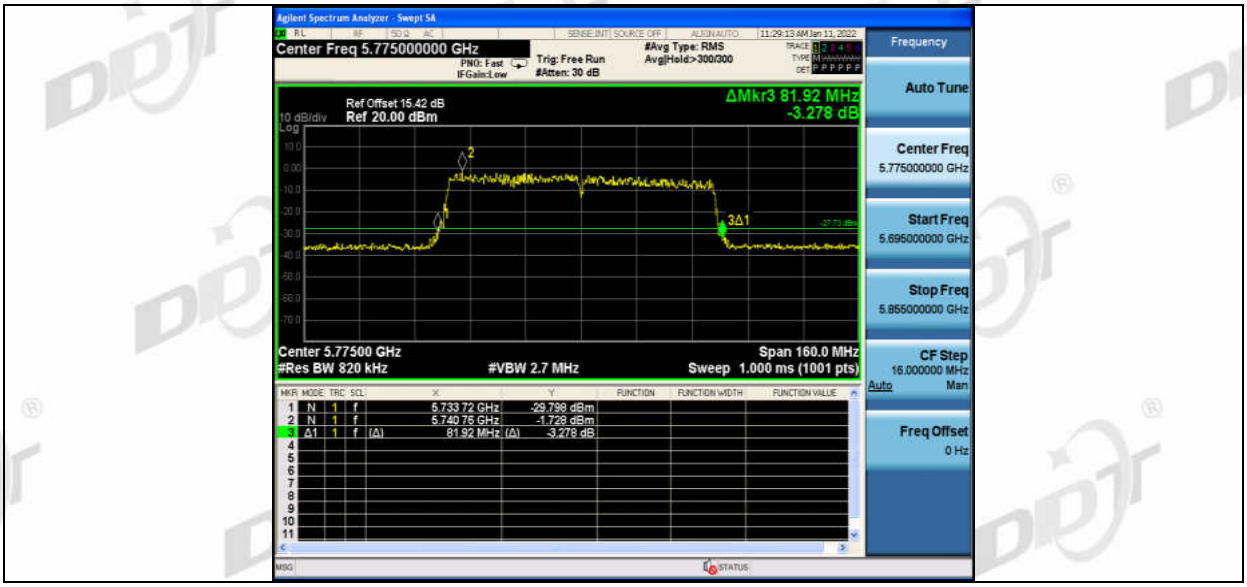


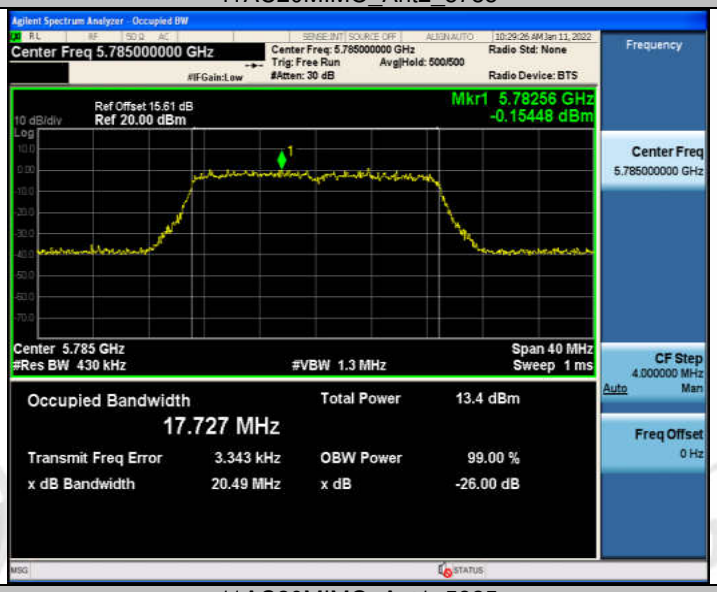
99% Bandwidth

11AC20MIMO_Ant1_5745

11AC20MIMO_Ant2_5745


11AC20MIMO_Ant1_5785

11AC20MIMO_Ant2_5785



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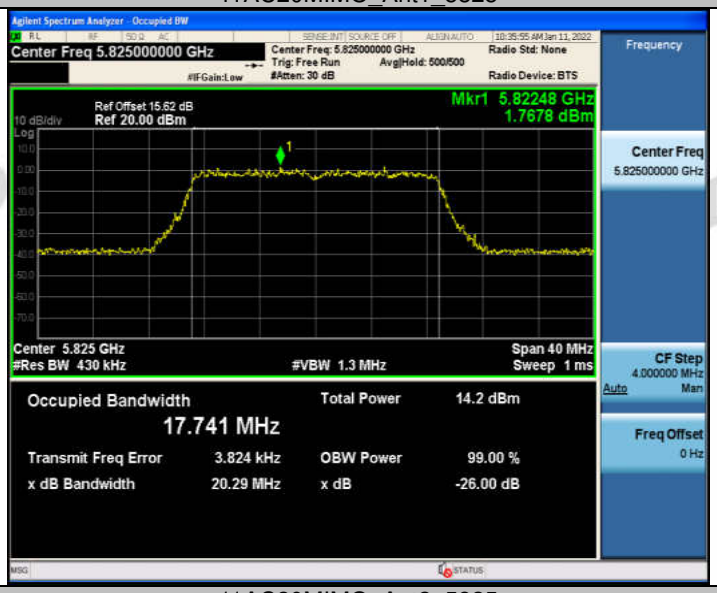

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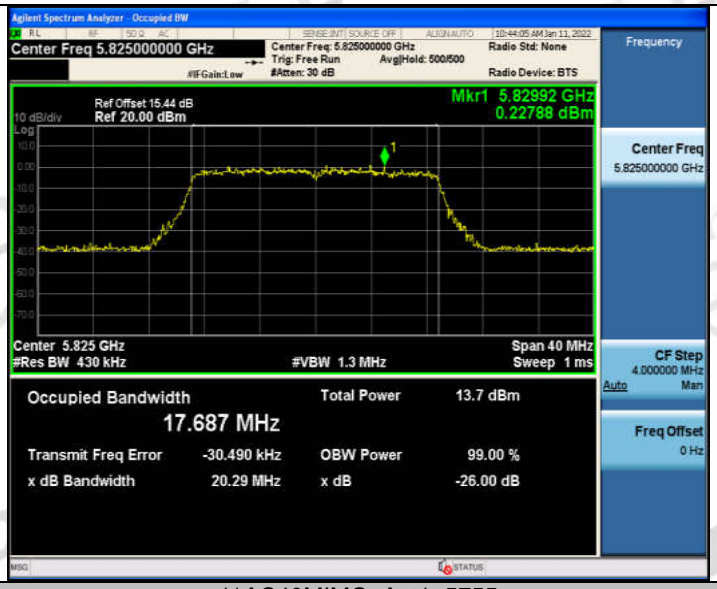

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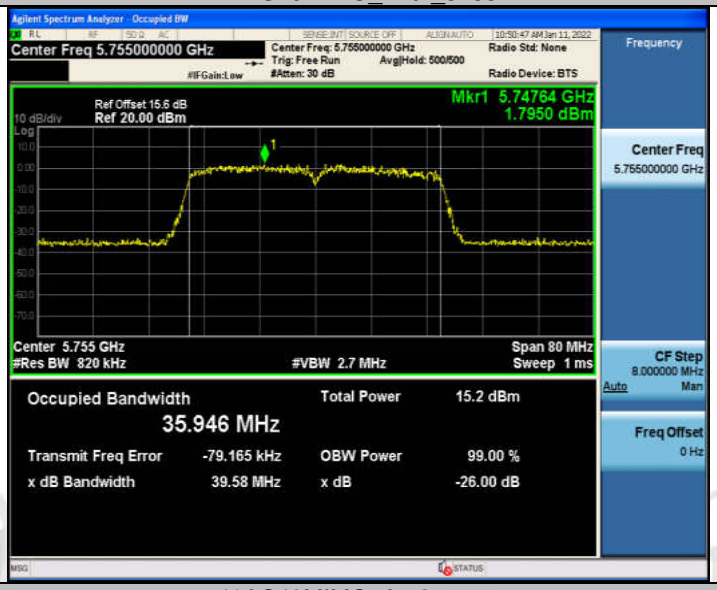

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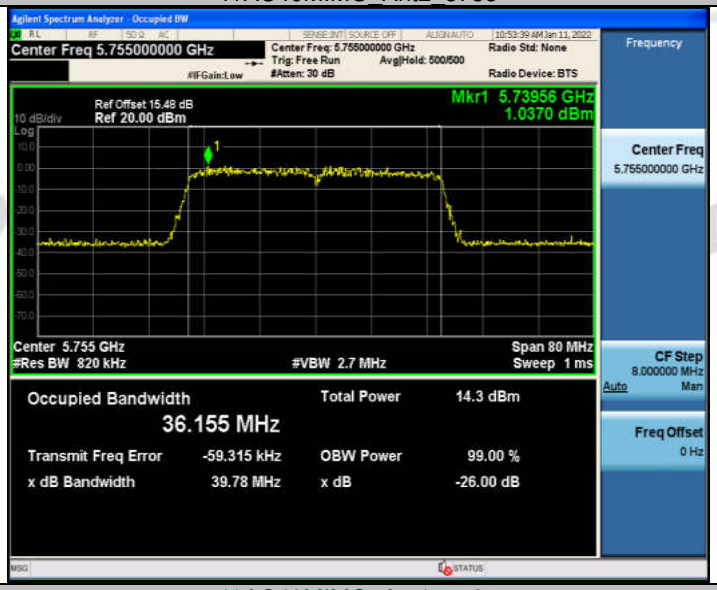

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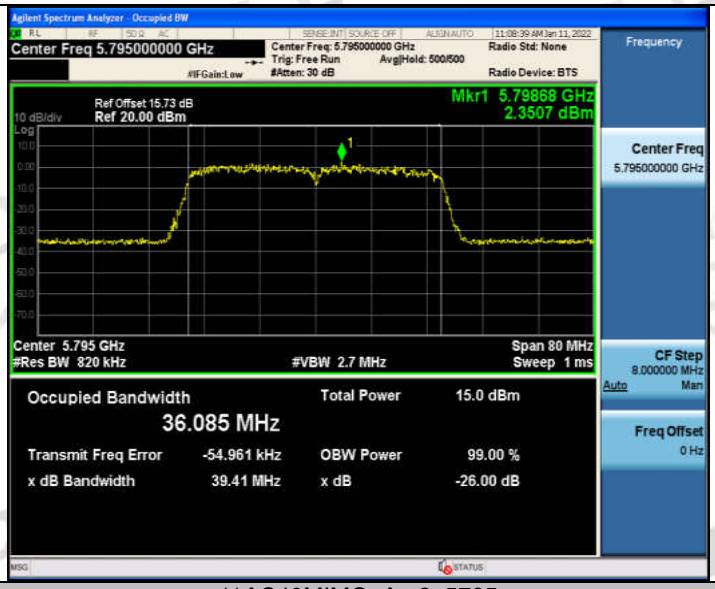

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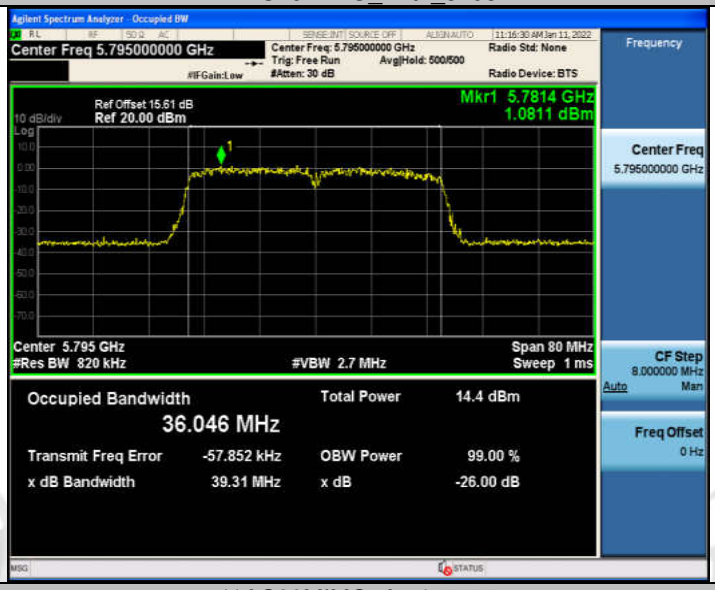

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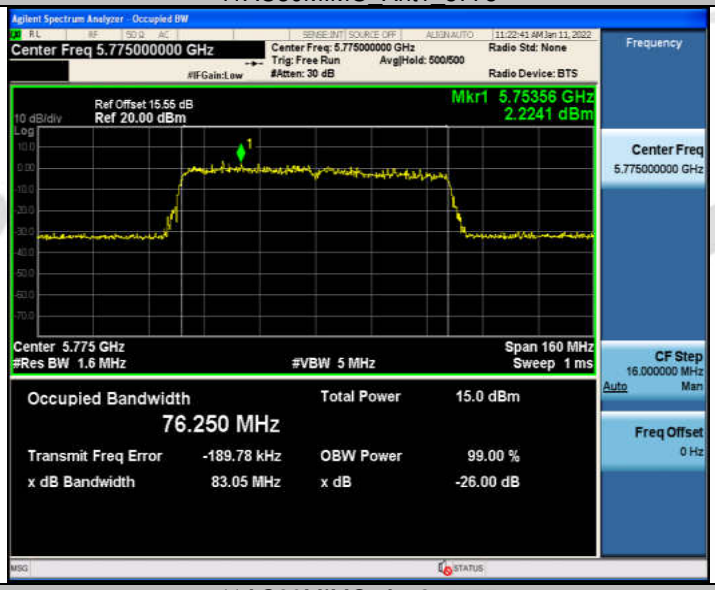

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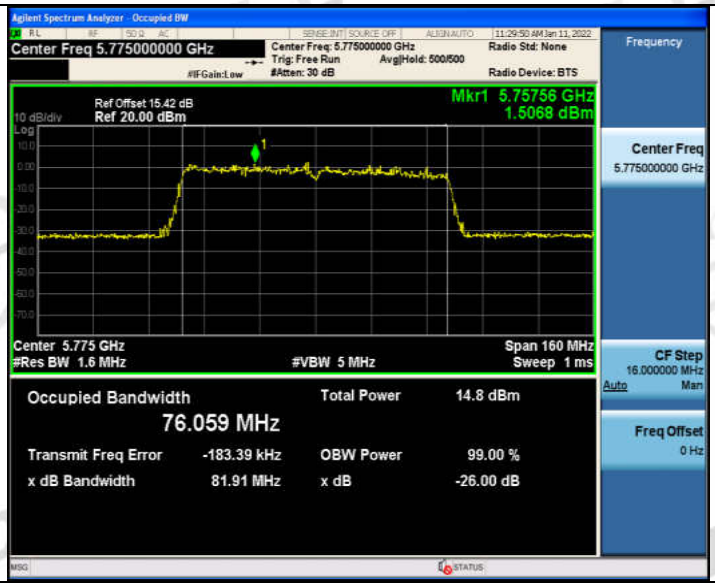

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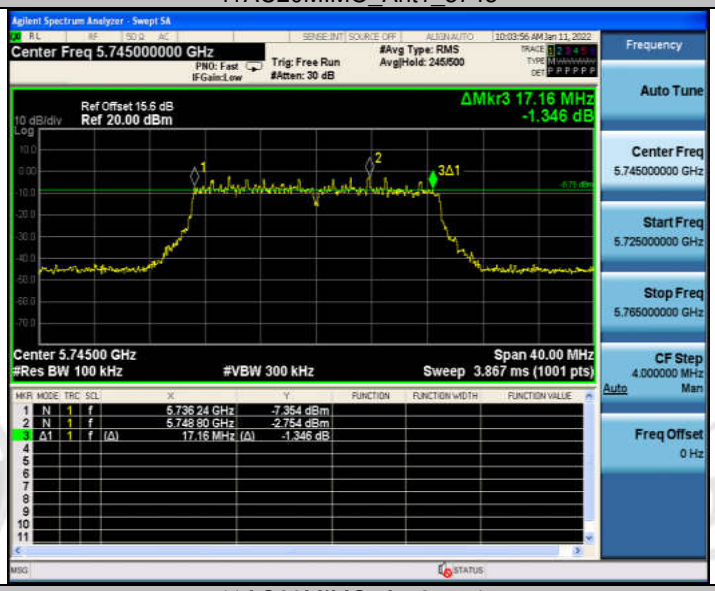
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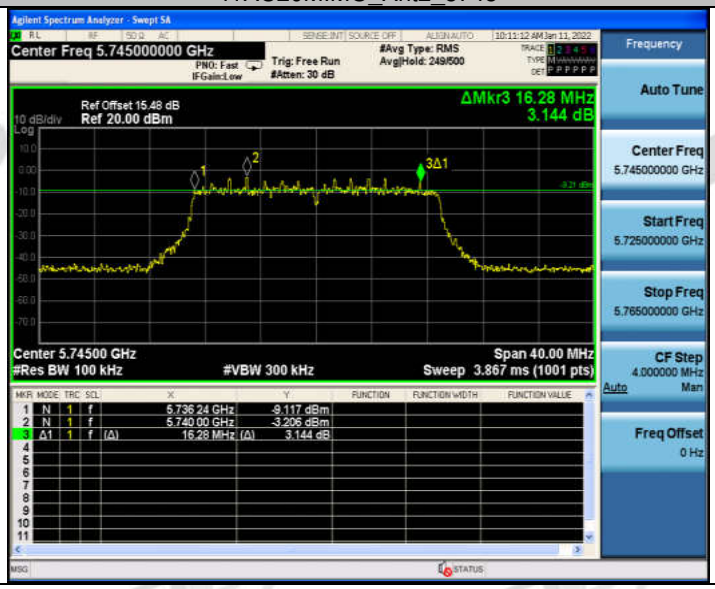

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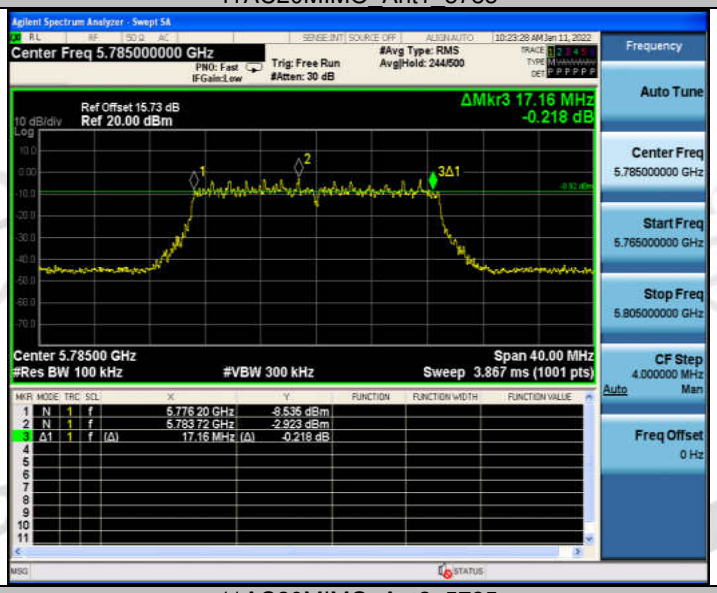
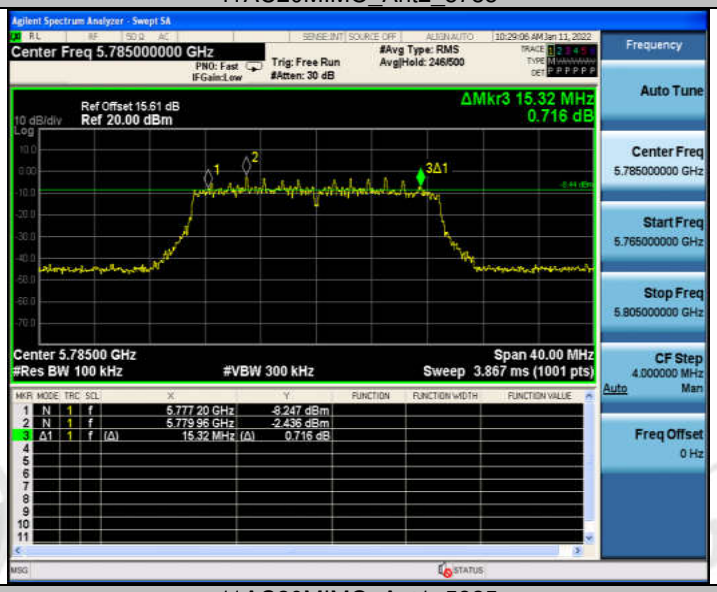
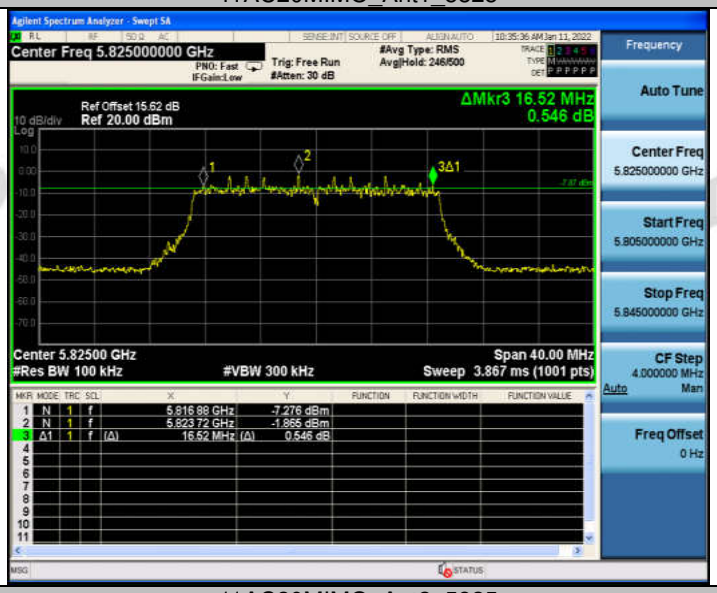


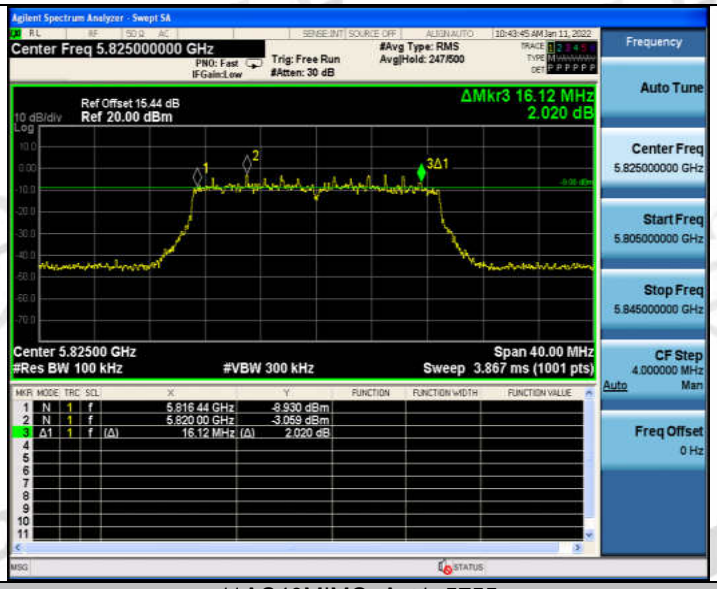
11AC20MIMO_Ant2_5785



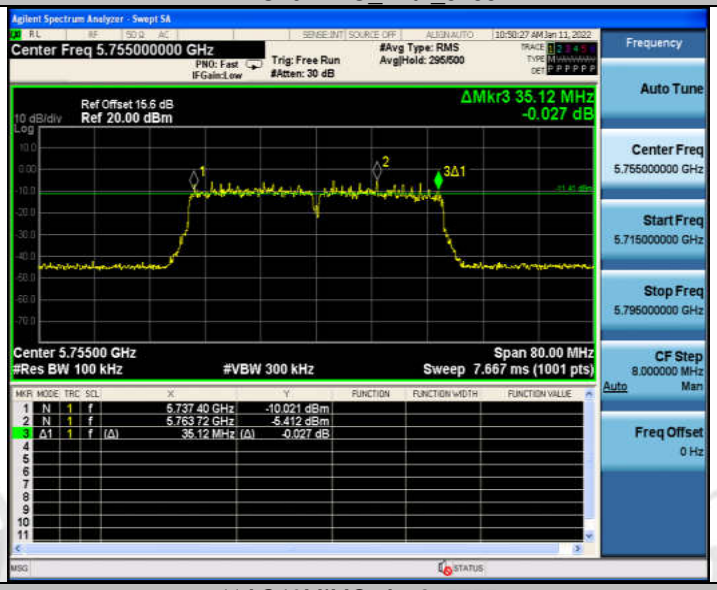
11AC20MIMO_Ant1_5825



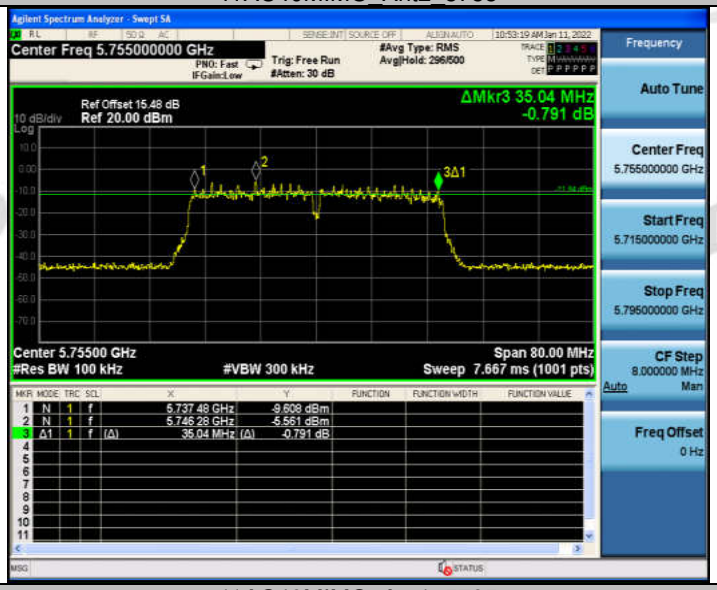
11AC20MIMO_Ant2_5825



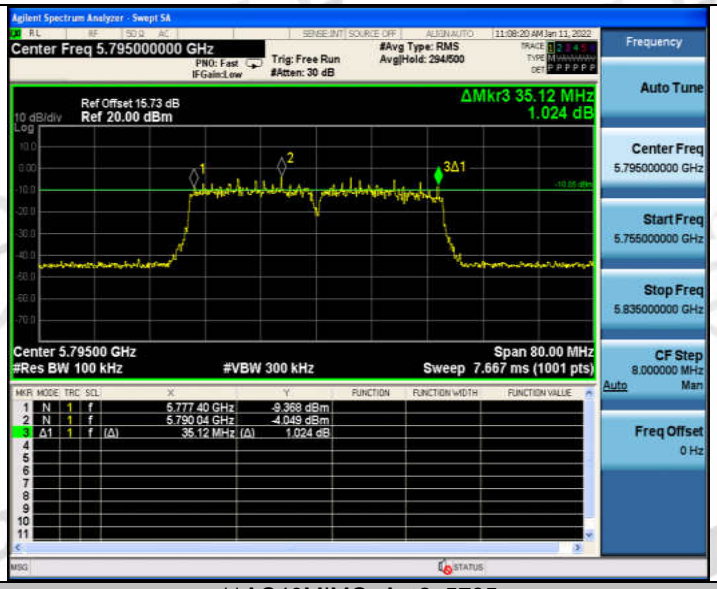
11AC40MIMO_Ant1_5755



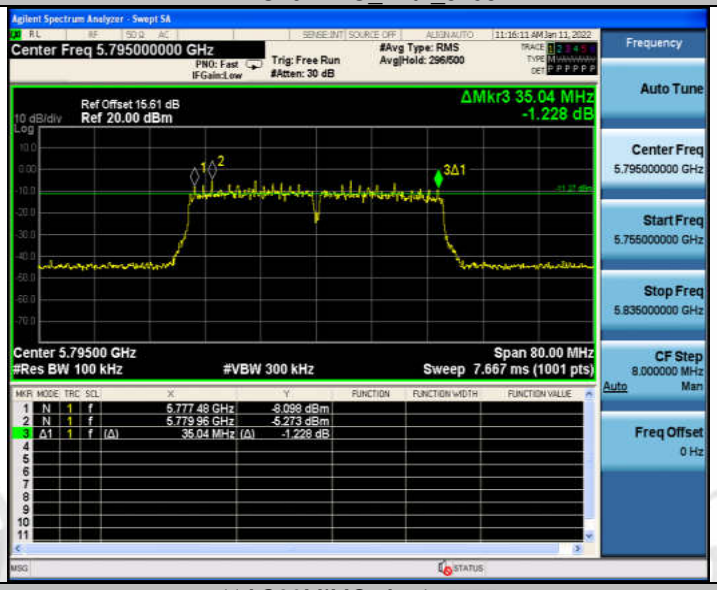
11AC40MIMO_Ant2_5755



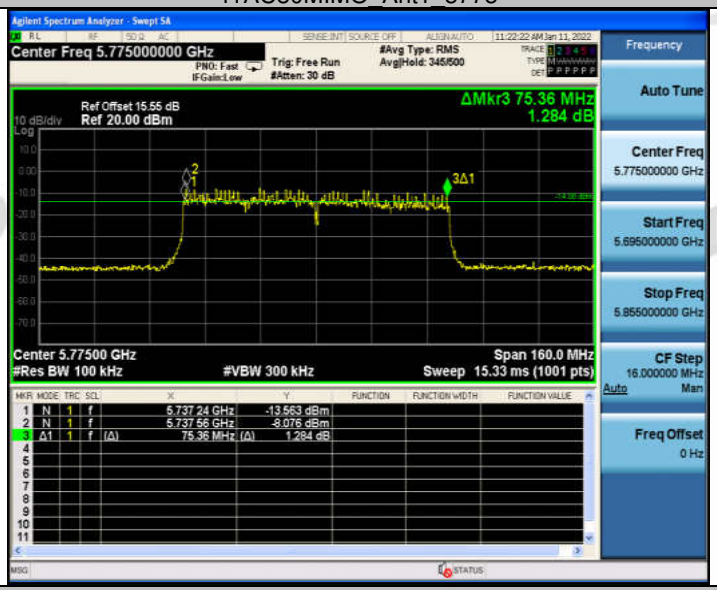
11AC40MIMO_Ant1_5795



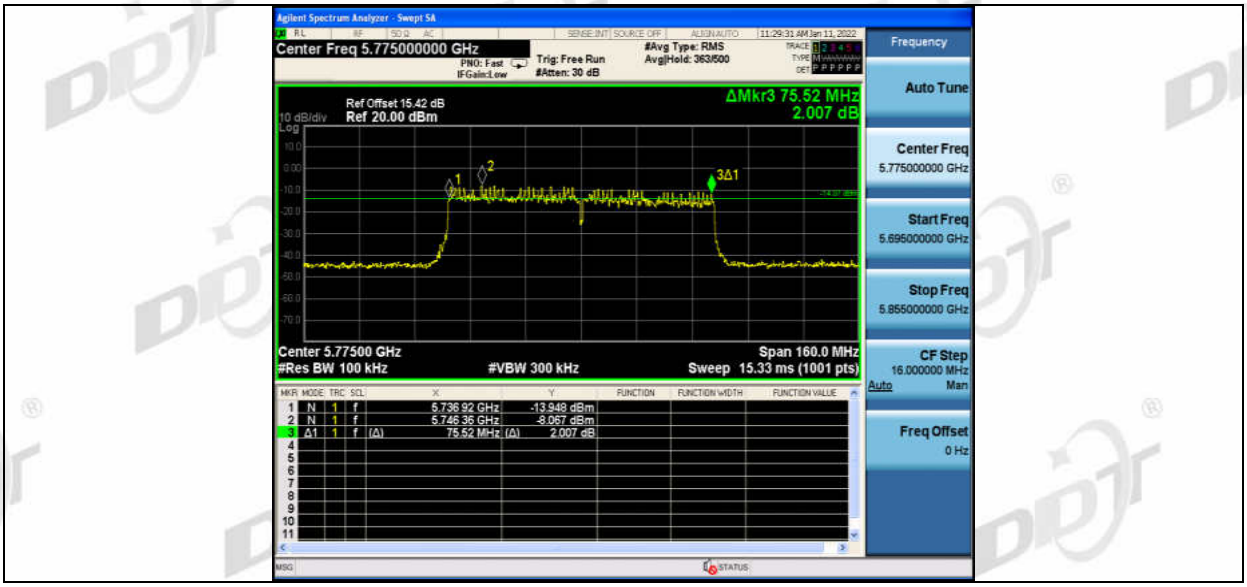
11AC40MIMO_Ant2_5795



11AC80MIMO_Ant1_5775



11AC80MIMO_Ant2_5775

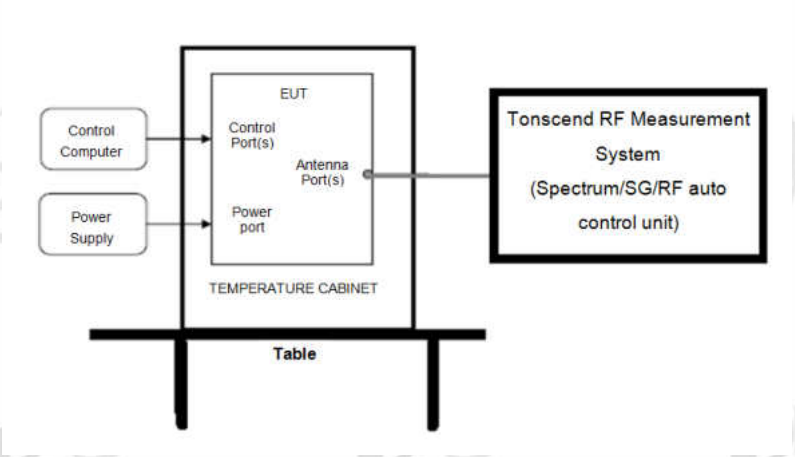

Agilent Spectrum Analyzer - Swept SA
Center Freq 5.775000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold: 363/500
11:29:31 AM Jan 11, 2022
Frequency
Auto Tune
Ref Offset 15.42 dB
10 dB/div
Ref 20.00 dBm
ΔMkr3 75.52 MHz
2.007 dB
Center Freq
5.775000000 GHz
Start Freq
5.695000000 GHz
Stop Freq
5.855000000 GHz
Center 5.77500 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 160.0 MHz
Sweep 15.33 ms (1001 pts)
CF Step
16.000000 MHz
Auto
Man
Freq Offset
0 Hz
1 N 1 f 5.736 92 GHz -13.948 dBm
2 N 1 f 5.746 36 GHz -8.067 dBm
3 Δ1 1 f (Δ) 75.52 MHz (Δ) 2.007 dB
MSG
STATUS

5. Duty cycle

5.1. Limit

Test Burst Ratio for Antenna Power calculation.

5.2. Block diagram of test setup



5.3. Test procedure

(1) Connect each EUT's antenna output to power sensor by RF cable and attenuator.

(2) For adaptive equipment, the measurement duration shall be long enough to ensure a minimum number of bursts (at least 10) is captured.

Note: The cable loss and attenuator loss have been put into spectrum analyzer as amplitude offset.

(1) Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the middle hopping channel.

Resolution BW: 8 MHz.

Video BW: 8 MHz.

Span: Zero span.

Detector: Peak.

Trace Mode: Max Hold.

Sweep: Video Trigger

(2) When the trace is complete, measure the sending time of 1 burst and the duty cycle of 1 burst cycle.

(3) Calculate dwell time follow below formula:

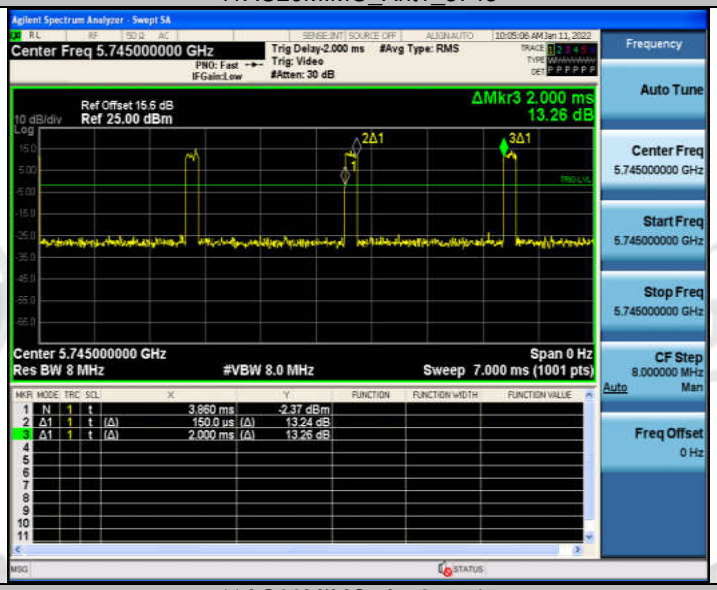
Duty cycle= Pulse's on time / Burst cycle

5.4. Test result

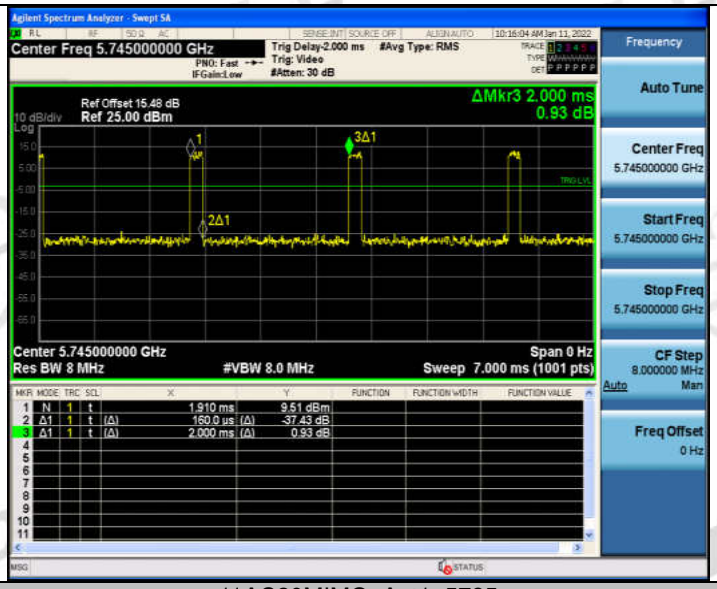
Test Mode	Antenna	Channel	Pulse's on time(ms)	Burst cycle(ms)	Duty cycle [%]	Duty cycle Factor[dB]
20 MHz	Ant1	5745	0.15	2.00	7.50	11.25
	Ant2	5745	0.16	2.00	8.00	10.97
	Ant1	5785	0.15	2.00	7.50	11.25
	Ant2	5785	0.15	1.99	7.54	11.23
	Ant1	5825	0.15	2.00	7.50	11.25
	Ant2	5825	0.16	2.00	8.00	10.97
40 MHz	Ant1	5755	0.09	2.00	4.50	13.47
	Ant2	5755	0.09	2.00	4.50	13.47
	Ant1	5795	0.09	1.99	4.52	13.45
	Ant2	5795	0.10	2.00	5.00	13.01
80 MHz	Ant1	5775	0.06	2.00	3.00	15.23
	Ant2	5775	0.07	2.00	3.50	14.56

5.5. Original test data

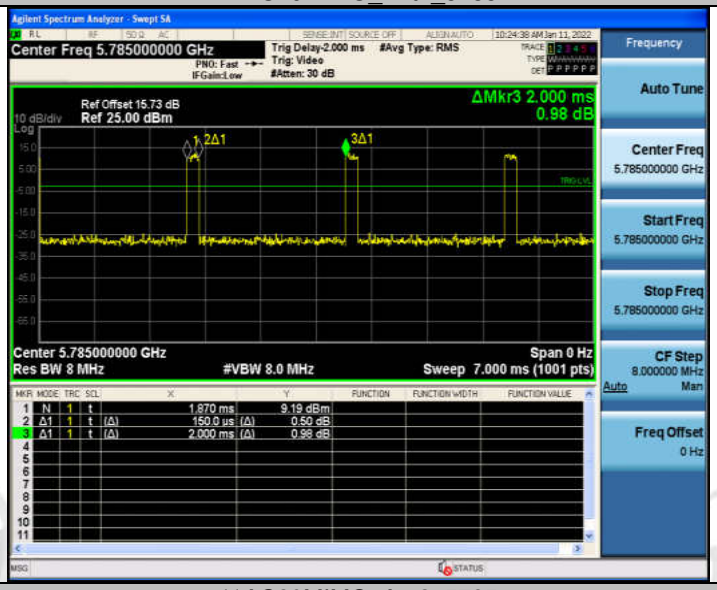
11AC20MIMO_Ant1_5745



11AC20MIMO_Ant2_5745



11AC20MIMO_Ant1_5785



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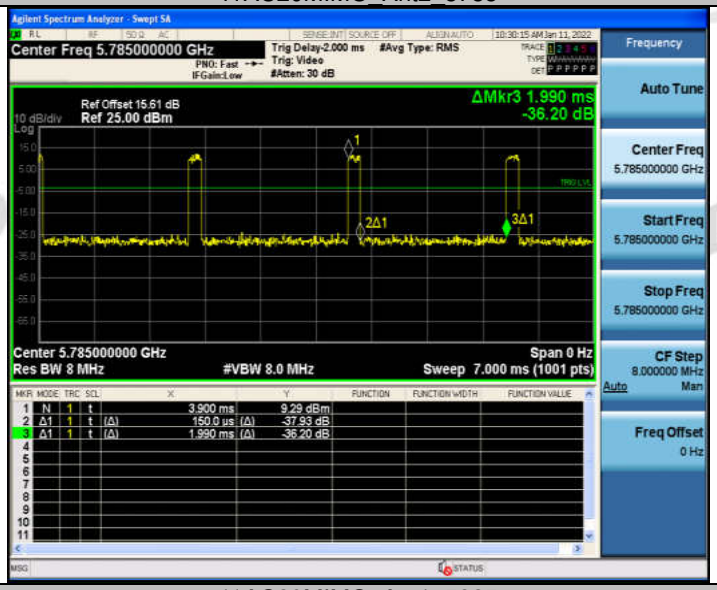
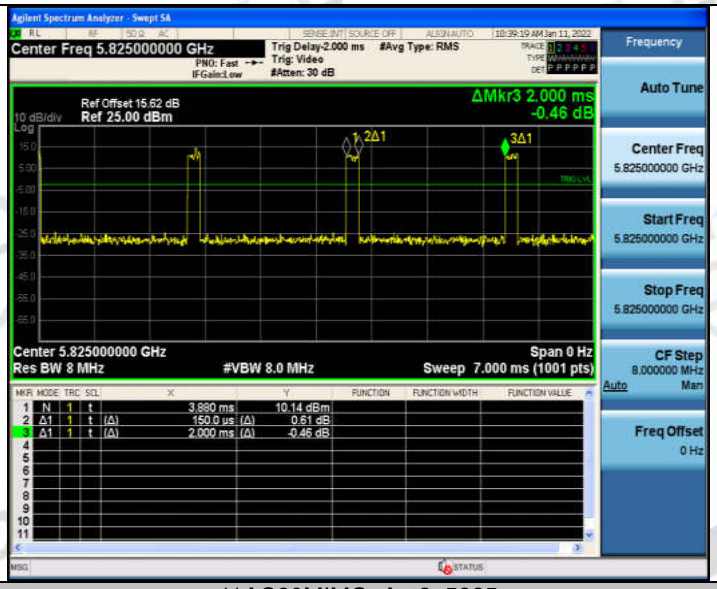
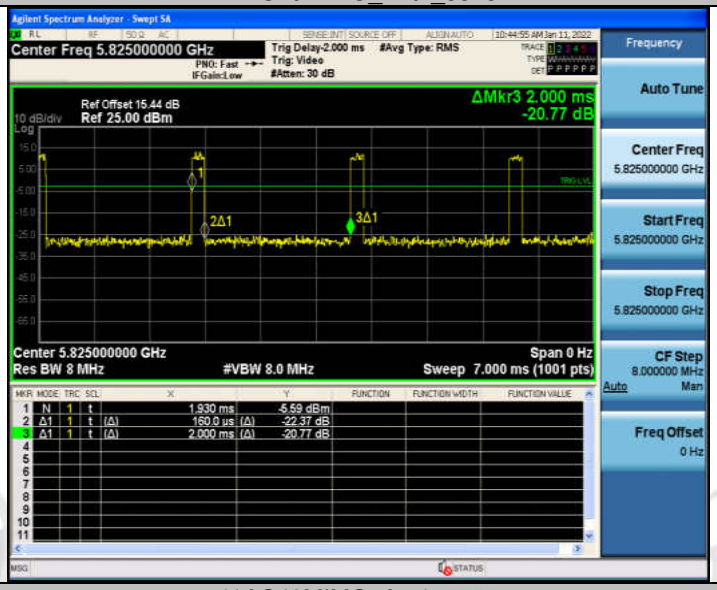


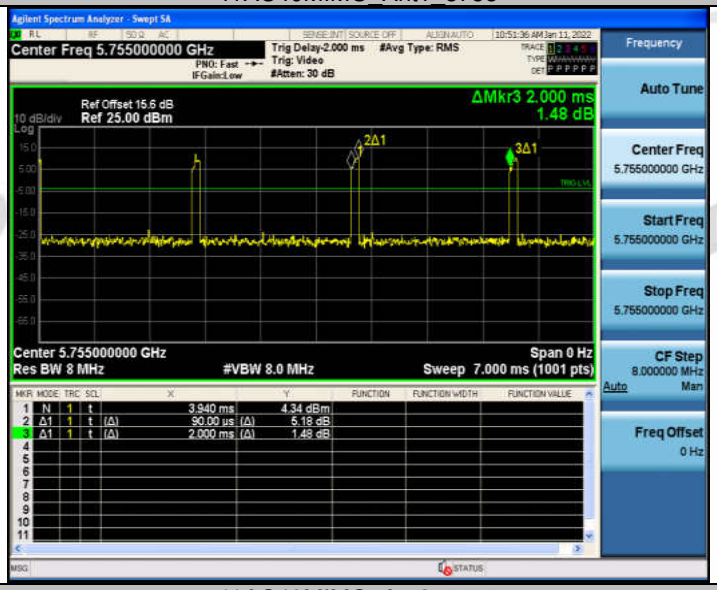
11AC20MIMO_Ant1_5825



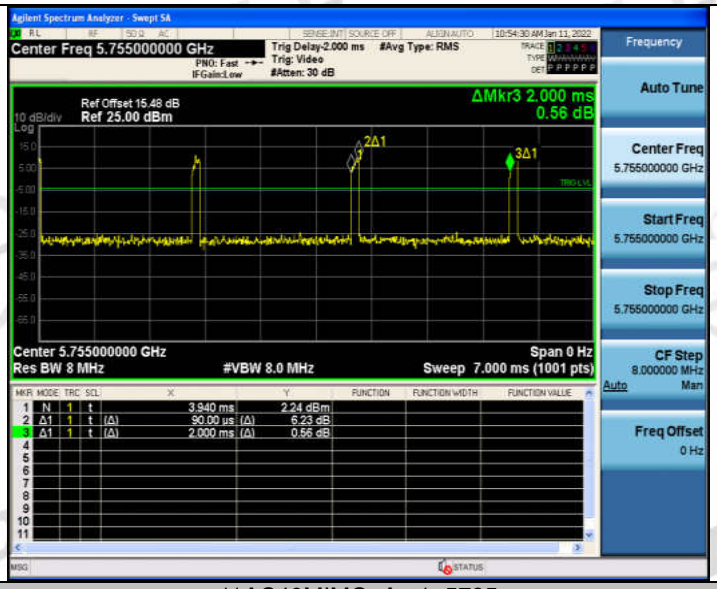
11AC20MIMO_Ant2_5825



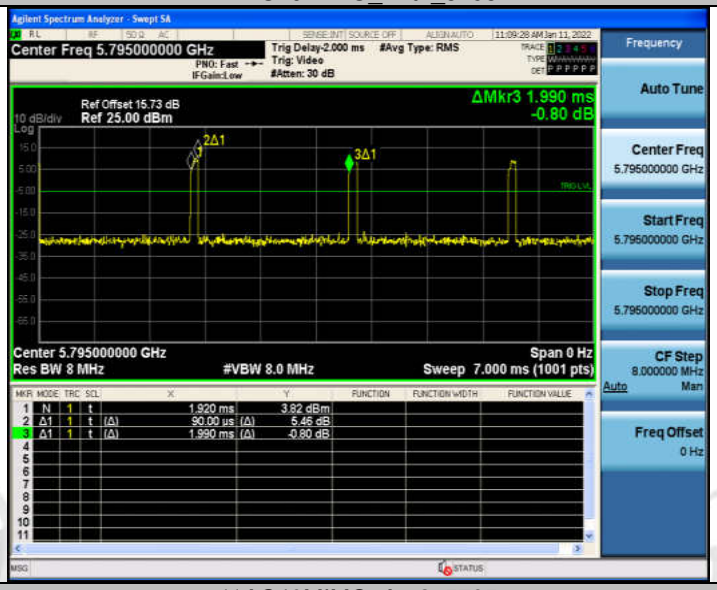
11AC40MIMO_Ant1_5755



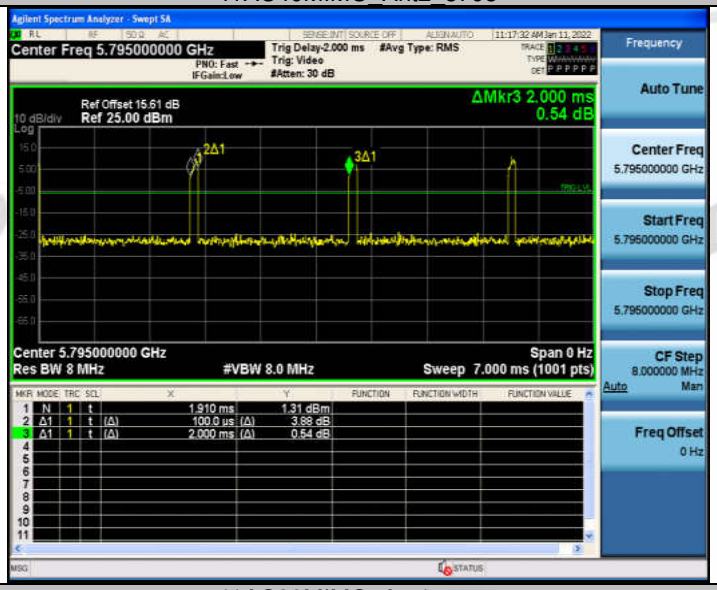
11AC40MIMO_Ant2_5755



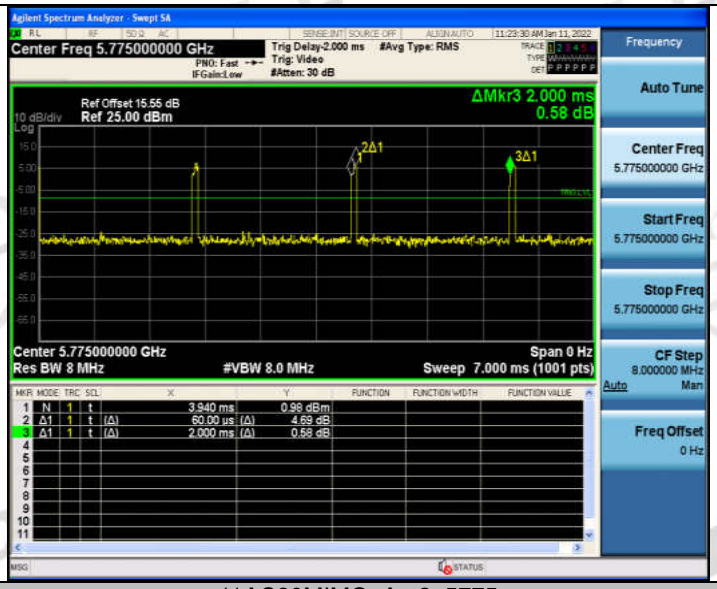
11AC40MIMO_Ant1_5795



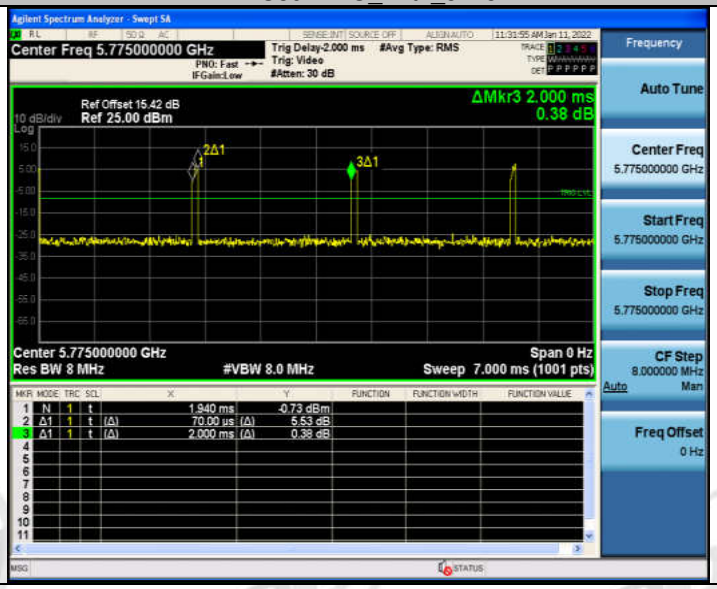
11AC40MIMO_Ant2_5795



11AC80MIMO_Ant1_5775



11AC80MIMO_Ant2_5775



6. Maximum Output Power

6.1. Block diagram of test setup

Same as section 4.1

6.2. Limits

FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
Conducted Output Power	1 Watt (30 dBm)	5725-5850
Note 1：for antenna 1, The Output Power limit is the above limits-(17-6). Note 2：for antenna 2, The Output Power limit is the above limits-(18-6). Note 3：the EUT incorporates a MIMO function. The Antenna directional gain is 18 dBi. The Output Power limit is the above limits-(18-6)		

6.3. Test procedure

(1) Connect each EUT's antenna output to power meter by RF cable and attenuator，The procedure for this method refer to ANSI C63.10 clause 12.3.3.1 is as follows:

a) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:

1) The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.

2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.

3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

b) If the transmitter does not transmit continuously, measure the duty cycle *D* of the transmitter output signal as described in 12.2.

c) Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.

d) Adjust the measurement in dBm by adding [10 log (1 / *D*)], where *D* is the duty cycle {e.g., [10 log (1 / 0.25)], if the duty cycle is 25%}.

(2) Add each antenna port's results to get the total output power of EUT.

6.4. Test result

Test Mode	Antenna	Channel	Duty cycle [%]	Duty cycle Factor[dB]	Result[dBm]	Limit[dBm]	Verdict
20 MHZ	Ant1	5745	7.50	11.25	8.82	<=19	PASS
	Ant2	5745	8.00	10.97	7.57	<=18	PASS
	total	5745	/	/	11.25	<=18	PASS
	Ant1	5785	7.50	11.25	8.64	<=19	PASS
	Ant2	5785	7.54	11.23	8.62	<=18	PASS
	total	5785	/	/	11.64	<=18	PASS
	Ant1	5825	7.50	11.25	8.15	<=19	PASS
	Ant2	5825	8.00	10.97	8.14	<=18	PASS
	total	5825	/	/	11.16	<=18	PASS
40 MHZ	Ant1	5755	4.50	13.47	9.60	<=19	PASS
	Ant2	5755	4.50	13.47	8.92	<=18	PASS
	total	5755	/	/	**12.28**	<=18	PASS
	Ant1	5795	4.52	13.45	9.00	<=19	PASS
	Ant2	5795	5.00	13.01	8.20	<=18	PASS
	total	5795	/	/	11.63	<=18	PASS
80 MHZ	Ant1	5775	3.00	15.23	9.42	<=19	PASS
	Ant2	5775	3.50	14.56	9.05	<=18	PASS
	total	5775	/	/	12.25	<=18	PASS

7. Power Spectral Density

7.1. Block diagram of test setup

Same with 4.1

7.2. Limits

FCC Part15, Subpart E		
Test Item	Limit	Frequency Range (MHz)
	30 dBm/500 kHz	5725-5850
Note 1：for antenna 1, The Output Power limit is the above limits-(17-6). Note 2：for antenna 2, The Output Power limit is the above limits-(18-6). Note 2：the EUT incorporates a MIMO function. The Antenna directional gain is 18 dBi. The Output Power limit is the above limits-(18-6)		

7.3. Test procedure

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

Center Frequency	The centre frequency of the channel under test
Detector	RMS
RBW	510 kHz
VBW	≥3 × RBW
Span	Encompass the entire emissions bandwidth (EBW) of the signal
Trace	Max hold
Sweep time	Auto

7.4. Test result

Test Mode	Antenna	Channel	Duty cycle [%]	Duty cycle Factor[dB]	Result [dBm/510KHz]	Result [dBm/500KHz]	Limit [dBm/500KHz]	Verdict
20 MHz	Ant1	5745	7.50	11.25	-5.161	-5.247	<=19	PASS
	Ant2	5745	8.00	10.97	-5.720	-5.806	<=18	PASS
	total	5745	/	/	-2.42	-2.51	<=18	PASS
	Ant1	5785	7.50	11.25	-4.772	-4.858	<=19	PASS
	Ant2	5785	7.54	11.23	-4.122	-4.208	<=18	PASS
	total	5785	/	/	-1.42	-1.51	<=18	PASS
	Ant1	5825	7.50	11.25	-3.179	-3.265	<=19	PASS
	Ant2	5825	8.00	10.97	-5.054	-5.14	<=18	PASS
	total	5825	/	/	-1.01	-1.09	<=18	PASS
40 MHz	Ant1	5755	4.50	13.47	-9.023	-9.109	<=19	PASS
	Ant2	5755	4.50	13.47	-8.771	-8.857	<=18	PASS
	total	5755	/	/	-5.88	-5.97	<=18	PASS
	Ant1	5795	4.52	13.45	-6.234	-6.32	<=19	PASS
	Ant2	5795	5.00	13.01	-6.984	-7.07	<=18	PASS
	total	5795	/	/	-3.58	-3.67	<=18	PASS
80 MHz	Ant1	5775	3.00	15.23	-2.637	-2.723	<=19	PASS
	Ant2	5775	3.50	14.56	-4.305	-4.391	<=18	PASS
	total	5775	/	/	-0.38	-0.47	<=18	PASS

Note：1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.

2.The Duty Cycle Factor is compensated in the graph.

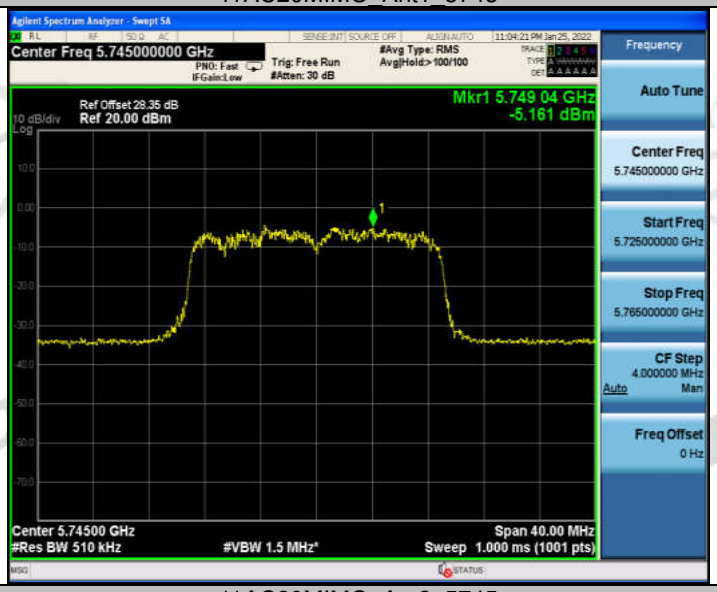
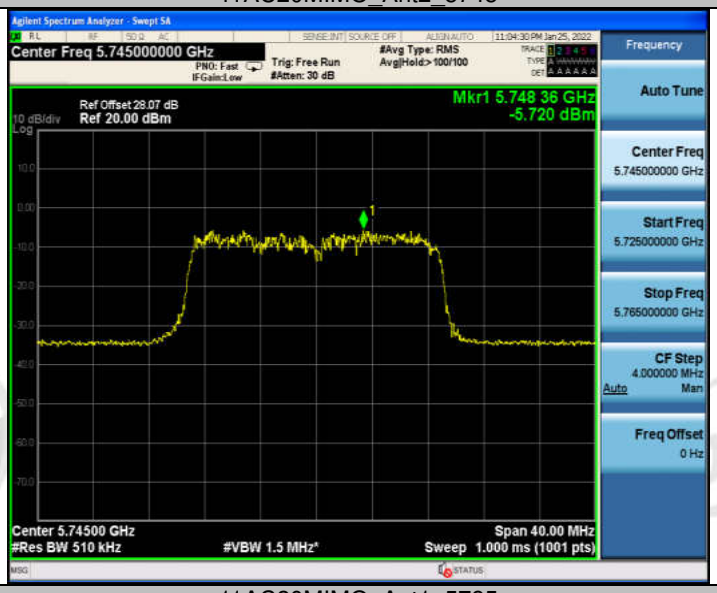
3.Calculated Value = (Measured Value + Conversion Factor of RBW) = (Measured Value -0.086 dB)，-0.086 dB adjustment is derived from the Conversion Factor of RBW.

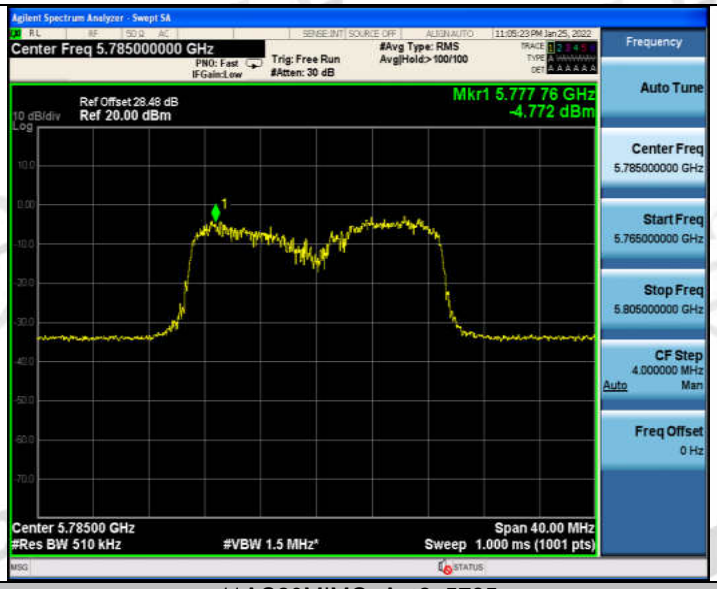
Conversion Factor of RBW = 10 x Log (Reference Bandwidth / RBW of measurement) = -0.086 [dB]

Where: Reference Bandwidth = 500 MHz

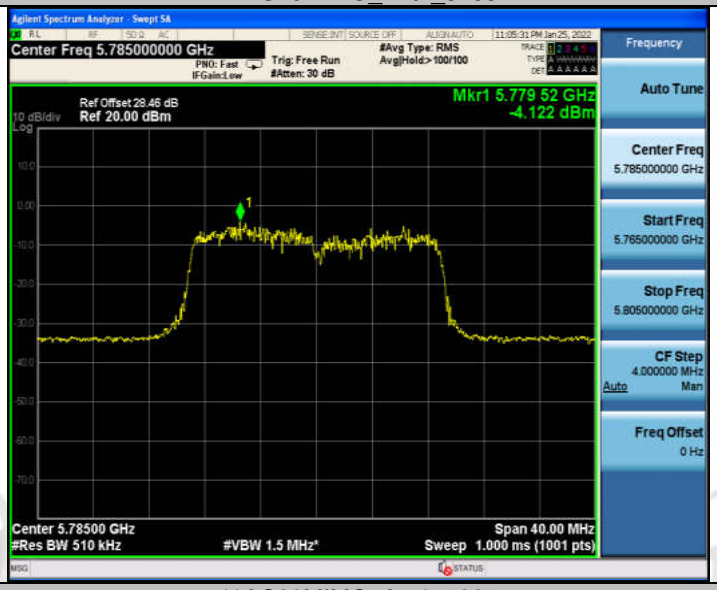
RBW of measurement = 510 kHz

7.5. Original test data

11AC20MIMO_Ant1_5745

11AC20MIMO_Ant2_5745

11AC20MIMO_Ant1_5785



11AC20MIMO_Ant2_5785



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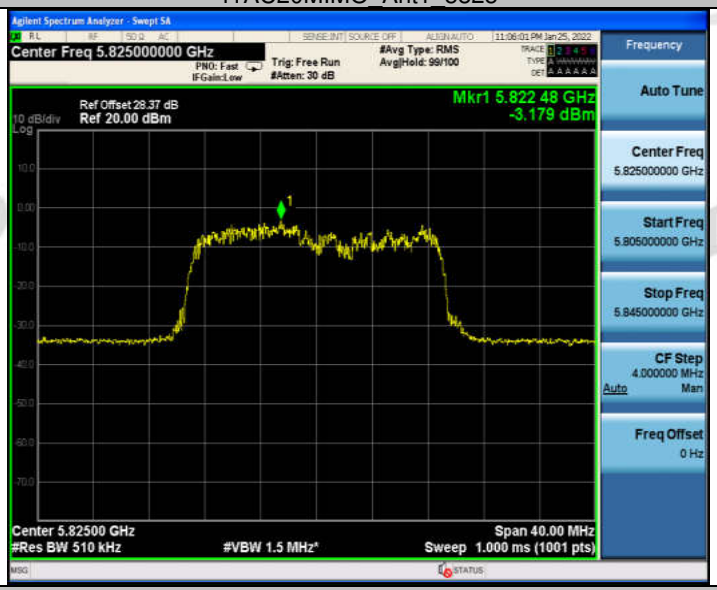
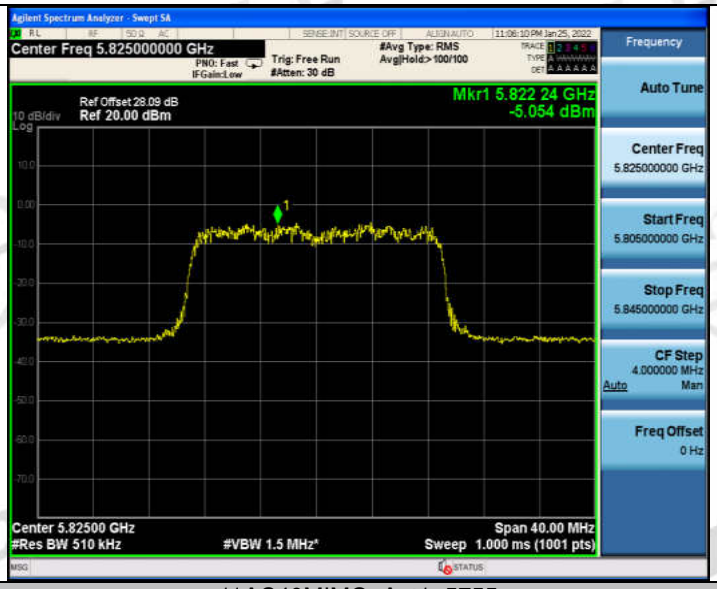


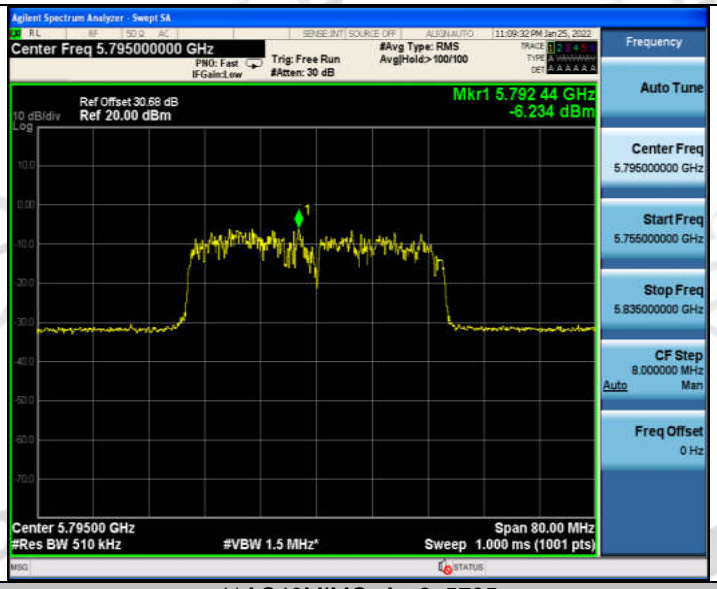
11AC20MIMO_Ant2_5825



11AC40MIMO_Ant1_5755

11AC40MIMO_Ant2_5755

11AC40MIMO_Ant1_5795



11AC40MIMO_Ant2_5795

11AC80MIMO_Ant1_5775

11AC80MIMO_Ant2_5775


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.775000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
#Avg Type: RMS
Avg|Hold:>100/100
11:14:15 PM Jan 25, 2022
Frequency
Auto Tune
Ref Offset 31.61 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 5.740 12 GHz
-4.305 dBm
Center Freq
5.775000000 GHz
Start Freq
5.695000000 GHz
Stop Freq
5.855000000 GHz
CF Step
16.000000 MHz
Auto
Man
Freq Offset
0 Hz
Center 5.77500 GHz
#Res BW 510 kHz
#VBW 1.5 MHz*
Span 160.0 MHz
Sweep 1.000 ms (1001 pts)
MSG
STATUS

8. Frequency Stability Measurement

8.1. Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

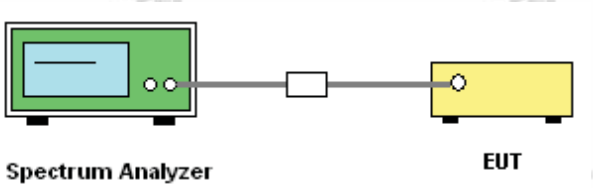
8.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

8.3. Test procedures

(1) To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
(2) The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
(3) The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

8.4. Test setup



8.5. Test result

Voltage						
Antenna	Channel	Voltage (Vdc)	Temperature (℃)	Deviation (ppm)	Limit (ppm)	Verdict
20 MHz ANT1	5745	NV	NT	-3.481288	Within the band of operation	Pass
		LV	NT	0.000000	Within the band of operation	Pass
		HV	NT	0.000000	Within the band of operation	Pass
20 MHz ANT2	5745	NV	NT	-6.962576	Within the band of operation	Pass
		LV	NT	-6.962576	Within the band of operation	Pass
		HV	NT	-3.481288	Within the band of operation	Pass
20 MHz ANT1	5825	NV	NT	-3.457217	Within the band of operation	Pass
		LV	NT	0.000000	Within the band of operation	Pass
		HV	NT	-6.914434	Within the band of operation	Pass
20 MHz ANT2	5825	NV	NT	-10.371651	Within the band of operation	Pass
		LV	NT	-3.457217	Within the band of operation	Pass
		HV	NT	-6.914434	Within the band of operation	Pass
40 MHz ANT1	5755	NV	NT	-6.866953	Within the band of operation	Pass
		LV	NT	0.000000	Within the band of operation	Pass
		HV	NT	0.000000	Within the band of operation	Pass
40 MHz ANT2	5755	NV	NT	-3.433476	Within the band of operation	Pass
		LV	NT	-3.433476	Within the band of operation	Pass
		HV	NT	-6.866953	Within the band of operation	Pass
40 MHz ANT1	5795	NV	NT	-6.950478	Within the band of operation	Pass
		LV	NT	-13.900956	Within the band of operation	Pass
		HV	NT	-6.950478	Within the band of operation	Pass
40 MHz ANT2	5795	NV	NT	0.000000	Within the band of operation	Pass
		LV	NT	0.000000	Within the band of operation	Pass
		HV	NT	0.000000	Within the band	Pass

					of operation	
80 MHz ANT1	5825	NV	NT	-13.805004	Within the band of operation	Pass
		LV	NT	0.000000	Within the band of operation	Pass
		HV	NT	-34.512511	Within the band of operation	Pass
80 MHz ANT2	5825	NV	NT	0.000000	Within the band of operation	Pass
		LV	NT	-6.902502	Within the band of operation	Pass
		HV	NT	6.902502	Within the band of operation	Pass

Temperature						
Antenna	Channel	Voltage (Vdc)	Temperature (℃)	Deviation (ppm)	Limit (ppm)	Verdict
20 MHz ANT1	5745	NV	-30	-3.481288	Within the band of operation	Pass
		NV	-20	0.000000	Within the band of operation	Pass
		NV	-10	0.000000	Within the band of operation	Pass
		NV	0	-6.962576	Within the band of operation	Pass
		NV	10	-6.962576	Within the band of operation	Pass
		NV	20	-3.481288	Within the band of operation	Pass
		NV	30	-3.457217	Within the band of operation	Pass
		NV	40	0.000000	Within the band of operation	Pass
		NV	50	-6.914434	Within the band of operation	Pass
20 MHz ANT2	5745	NV	-30	-10.371651	Within the band of operation	Pass
		NV	-20	-3.457217	Within the band of operation	Pass
		NV	-10	-6.914434	Within the band of operation	Pass
		NV	0	-6.866953	Within the band of operation	Pass
		NV	10	0.000000	Within the band of operation	Pass
		NV	20	0.000000	Within the band of operation	Pass
		NV	30	-3.433476	Within the band of operation	Pass
		NV	40	-3.433476	Within the band of operation	Pass
		NV	50	-6.866953	Within the band	Pass

					of operation	
20 MHz ANT1	5825	NV	-30	-6.950478	Within the band of operation	Pass
		NV	-20	-13.900956	Within the band of operation	Pass
		NV	-10	-6.950478	Within the band of operation	Pass
		NV	0	0.000000	Within the band of operation	Pass
		NV	10	0.000000	Within the band of operation	Pass
		NV	20	0.000000	Within the band of operation	Pass
		NV	30	-13.805004	Within the band of operation	Pass
		NV	40	0.000000	Within the band of operation	Pass
		NV	50	-34.512511	Within the band of operation	Pass
20 MHz ANT2	5825	NV	-30	0.000000	Within the band of operation	Pass
		NV	-20	-6.902502	Within the band of operation	Pass
		NV	-10	6.902502	Within the band of operation	Pass
		NV	0	13.852814	Within the band of operation	Pass
		NV	10	13.852814	Within the band of operation	Pass
		NV	20	-69.264069	Within the band of operation	Pass
		NV	30	0.000000	Within the band of operation	Pass
		NV	40	0.000000	Within the band of operation	Pass
		NV	50	0.000000	Within the band of operation	Pass
40 MHz ANT1	5755	NV	-30	-3.481288	Within the band of operation	Pass
		NV	-20	0.000000	Within the band of operation	Pass
		NV	-10	0.000000	Within the band of operation	Pass
		NV	0	-6.962576	Within the band of operation	Pass
		NV	10	-6.962576	Within the band of operation	Pass
		NV	20	-3.481288	Within the band of operation	Pass
		NV	30	-3.457217	Within the band of operation	Pass
		NV	40	0.000000	Within the band	Pass

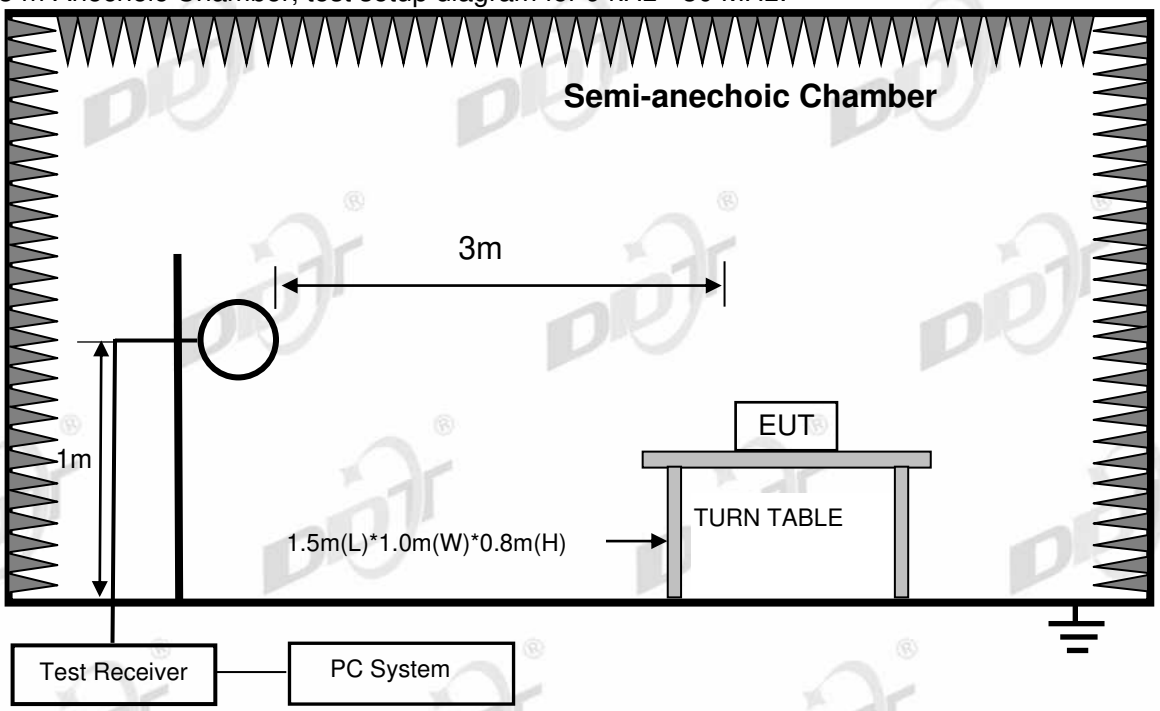
					of operation	
		NV	50	-6.914434	Within the band of operation	Pass
40 MHz ANT2	5755	NV	-30	-10.371651	Within the band of operation	Pass
		NV	-20	-3.457217	Within the band of operation	Pass
		NV	-10	-6.914434	Within the band of operation	Pass
		NV	0	-6.866953	Within the band of operation	Pass
		NV	10	0.000000	Within the band of operation	Pass
		NV	20	0.000000	Within the band of operation	Pass
		NV	30	-3.433476	Within the band of operation	Pass
		NV	40	-3.433476	Within the band of operation	Pass
		NV	50	-6.866953	Within the band of operation	Pass
40 MHz ANT1	5795	NV	-30	-6.950478	Within the band of operation	Pass
		NV	-20	-13.900956	Within the band of operation	Pass
		NV	-10	-6.950478	Within the band of operation	Pass
		NV	0	0.000000	Within the band of operation	Pass
		NV	10	0.000000	Within the band of operation	Pass
		NV	20	0.000000	Within the band of operation	Pass
		NV	30	-13.805004	Within the band of operation	Pass
		NV	40	0.000000	Within the band of operation	Pass
		NV	50	-34.512511	Within the band of operation	Pass
40 MHz ANT2	5795	NV	-30	0.000000	Within the band of operation	Pass
		NV	-20	-6.902502	Within the band of operation	Pass
		NV	-10	6.902502	Within the band of operation	Pass
		NV	0	13.852814	Within the band of operation	Pass
		NV	10	13.852814	Within the band of operation	Pass
		NV	20	-69.264069	Within the band of operation	Pass
		NV	30	0.000000	Within the band	Pass

					of operation	
		NV	40	0.000000	Within the band of operation	Pass
		NV	50	0.000000	Within the band of operation	Pass
80 MHz ANT1	5775	NV	-30	-3.481288	Within the band of operation	Pass
		NV	-20	0.000000	Within the band of operation	Pass
		NV	-10	0.000000	Within the band of operation	Pass
		NV	0	-6.962576	Within the band of operation	Pass
		NV	10	-6.962576	Within the band of operation	Pass
		NV	20	-3.481288	Within the band of operation	Pass
		NV	30	-3.457217	Within the band of operation	Pass
		NV	40	0.000000	Within the band of operation	Pass
		NV	50	-6.914434	Within the band of operation	Pass
80 MHz ANT2	5775	NV	-30	-10.371651	Within the band of operation	Pass
		NV	-20	-3.457217	Within the band of operation	Pass
		NV	-10	-6.914434	Within the band of operation	Pass
		NV	0	-6.866953	Within the band of operation	Pass
		NV	10	0.000000	Within the band of operation	Pass
		NV	20	0.000000	Within the band of operation	Pass
		NV	30	-3.433476	Within the band of operation	Pass
		NV	40	-3.433476	Within the band of operation	Pass
		NV	50	-6.866953	Within the band of operation	Pass

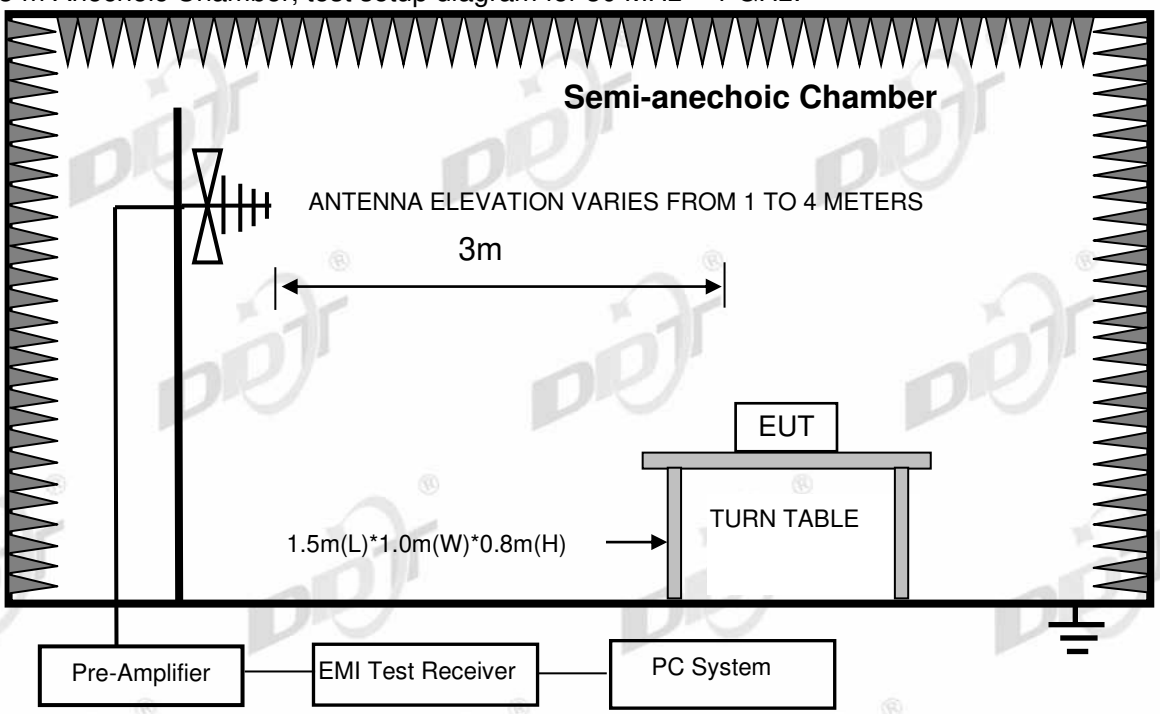
9. Emissions in restricted frequency bands

9.1. Block diagram of test setup

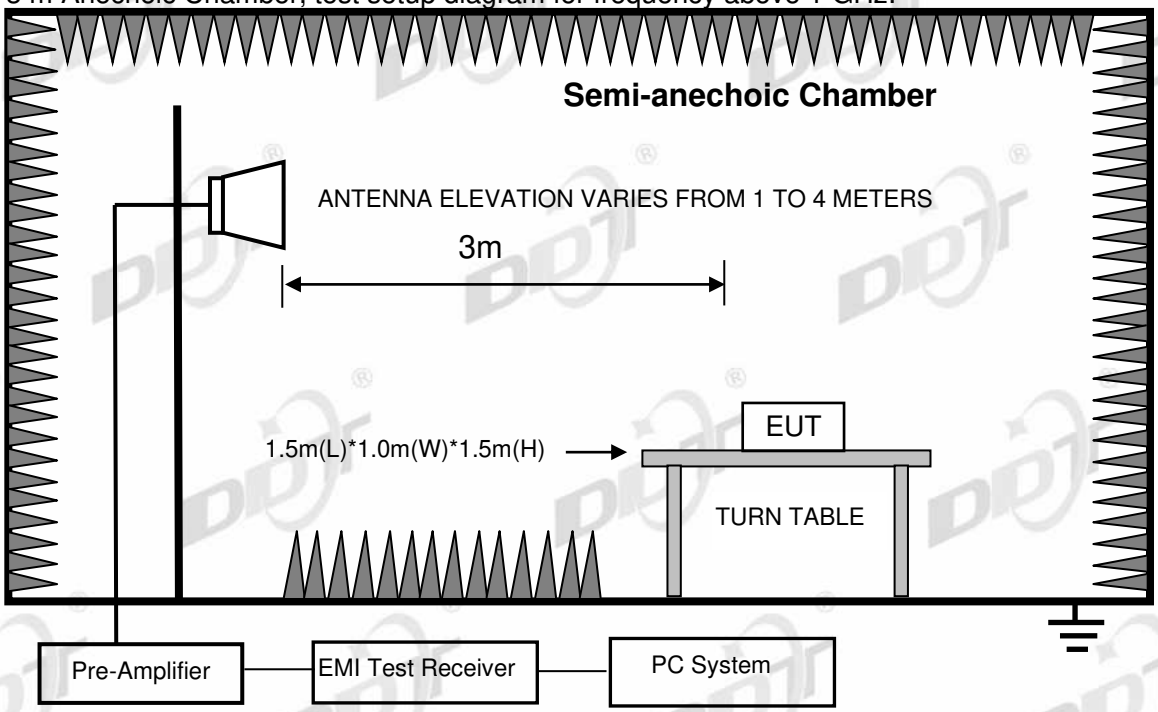
In 3 m Anechoic Chamber, test setup diagram for 9 kHz - 30 MHz:



In 3 m Anechoic Chamber, test setup diagram for 30 MHz – 1 GHz:



In 3 m Anechoic Chamber, test setup diagram for frequency above 1 GHz:



Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

9.2. Limit

(1) FCC 15.205 Restricted frequency band

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.1772&4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.2072&4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	([2])
13.36-13.41			

[1]Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2]Above 38.6

(2) FCC 15.209 Limit.

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/m
0.009 ~ 0.490	300	2400/F(kHz)	67.6-20log(F)
0.490 ~ 1.705	30	24000/F(kHz)	87.6-20log(F)
1.705 ~ 30.0	30	30	29.54
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000	3	74.0 dB(μV)/m (Peak) 54.0 dB(μV)/m (Average)	

Note: (1) The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000MHz.Radiated emissions limits in these three bands are based on measurements employing an average detector.

(2) At frequencies below 30MHz, measurement may be performed at a distance closer than that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$Limit_{3m}(dBuV/m) = Limit_{30m}(dBuV/m) + 40Log(30m/3m)$$

(3) Limit for this EUT
All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions or comply with 15.209 limits.

9.3. Test procedure

(1) EUT height should be 0.8 m for below 1 GHz at a semi‐anechoic chamber while EUT height should be 1.5 m for above 1GHz at full chamber or semi‐anechoic chamber ground with absorbers

(2) Setup EUT and assistant system according clause 2.3 and 8.2

(3) Test antenna was located 3m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used	Test distance
9 kHz-30 MHz	Active Loop antenna	3 m
30 MHz-1 GHz	Trilog Broadband Antenna	3 m
1 GHz-18 GHz	Double Ridged Horn Antenna(1GHz-18GHz)	3 m
18 GHz-40 GHz	Horn Antenna(18GHz-40GHz)	1 m

According ANSI C63.10:2013 clause 6.4.4.2 and 6,5.3, for measurements below 30 MHz, the loop antenna was positioned with its plane vertical from the EUT and rotated about its vertical

axis for maximum response at each azimuth position around the EUT. And the loop antenna also be positioned with its plane horizontal at the specified distance from the EUT. The center of the loop is 1 m above the ground. for measurement above 30 MHz, the Trilog Broadband Antenna or Horn Antenna was located 3m from EUT, Measurements were made with the antenna positioned in both the horizontal and vertical planes of Polarization, and the measurement antenna was varied from 1 m to 4 m. in height above the reference ground plane to obtain the maximum signal strength.

(4) Below pre-scan procedure was first performed in order to find prominent frequency spectrum radiated emissions from 9 kHz to 40 GHz:

(a) Scanning the peak frequency spectrum with the antenna specified in step (3), and the EUT was rotated 360 degree, the antenna height was varied from 1 m to 4 m (Except loop antenna, it's fixed 1m above ground.)

(b) Change work frequency or channel of device if practicable.

(c) Change modulation type of device if practicable.

(d) Change power supply range from 85% to 115% of the rated supply voltage

(e) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions.

Spectrum frequency from 9 kHz to 40 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9 kHz to 30 MHz and 18 GHz to 40 GHz, so below final test was performed with frequency range from 30 MHz to 18 GHz.

(5) For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.

(6) The emissions from 9 kHz to 1 GHz were measured based on CISPR QP detector except for the frequency bands 9-90 kHz, 110-490 kHz, for emissions from 9 kHz-90kHz,110kHz-490kHz and above 1GHz were measured based on average detector, for emissions above 1 GHz, peak emissions also be measured and need comply with Peak limit.

(7) The emissions from 9 kHz to 1 GHz, QP or average values were measured with EMI receiver with below RBW

Frequency band	RBW
9 kHz-150 kHz	200 Hz
150 kHz-30 MHz	9 kHz
30 MHz-1 GHz	120 kHz

(8) For emissions above 1 GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3MHz for Peak measure, the RBW is set at 1 MHz, VBW is set at 1/T for AV value.

9.4. Test result

PASS. (See below detailed test result)

All the emissions except fundamental emission from 9kHz to 40GHz were comply with 15.209 limit.

Note1: According exploratory test, the emission levels are 20 dB below the limit detected from 9 kHz to 30 MHz and 18 GHz to 40 GHz, so the final test was performed with frequency range from 30 MHz to 18 GHz and recorded in below.

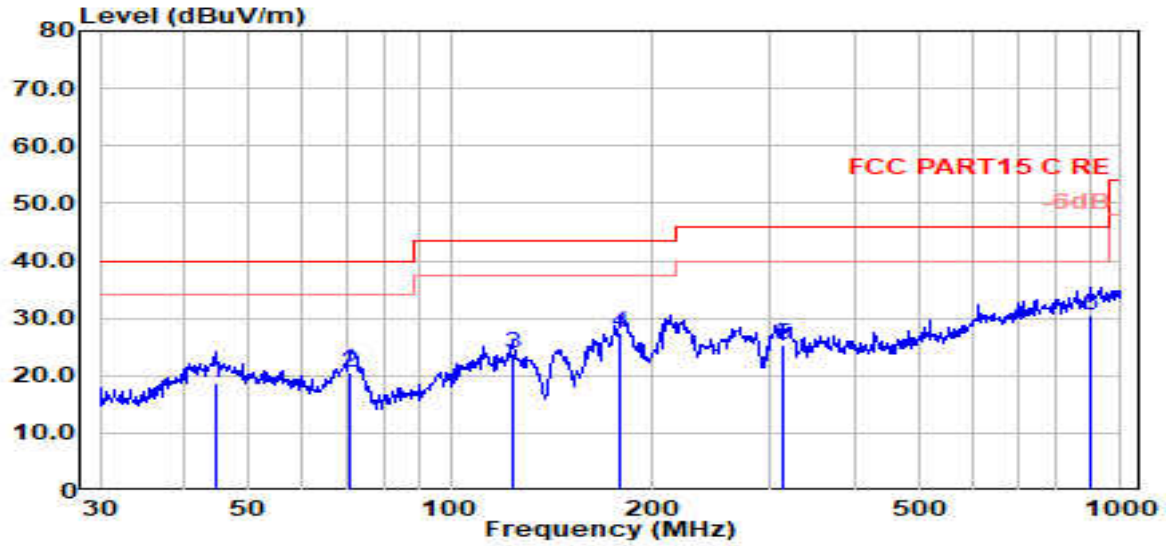
Note2: For emissions below 1 GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT working in 20 MHz mode.

Note3: For below test data, when the limit tabular marked "/" means this frequency point is the fundamental emission and no need comply with this limit.

Radiated Emission test (below 1GHz)

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 3#	D:\2021 report data\Q21070824-2E E5\E5-STE\FCC BELOW 1G E5-STE\FCC BELOW 1G_00001.EMI	
Test Date	: 2021-11-16	**Tested By**	: Zora Zhang
EUT	: InfiMAN Evolution	**Model Number**	: E5-STE/05900
Power Supply	: AC 120V/60Hz	**Test Mode**	: TX Mode
Condition	: Temp:24.5°,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: VLUB 9163 3#/3m/HORIZONTAL
Memo	: 5G		



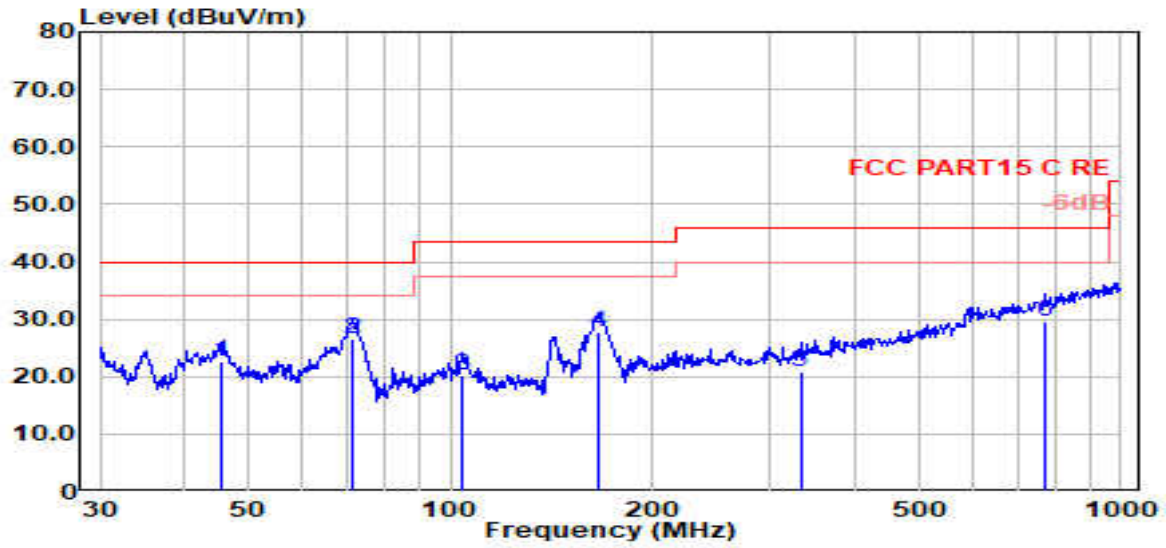
Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	44.59	0.00	15.06	3.66	18.72	40.00	-21.28	QP	HORIZONTAL
2	70.83	8.00	8.92	3.72	20.63	40.00	-19.37	QP	HORIZONTAL
3	123.70	11.00	9.00	3.97	23.97	43.50	-19.53	QP	HORIZONTAL
4	179.39	14.00	9.24	4.23	27.47	43.50	-16.03	QP	HORIZONTAL
5	314.38	7.00	13.58	4.76	25.33	46.00	-20.67	QP	HORIZONTAL
6	900.15	2.00	22.10	6.37	30.47	46.00	-15.53	QP	HORIZONTAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

TR-4-E-009 Radiated Emission Test Result

Test Site	: DDT 3m Chamber 3#	D:\2021 report data\Q21070824-2E E5\E5-STE\FCC BELOW 1G E5-STE\FCC BELOW 1G_00002.EMI	
Test Date	: 2021-11-16	**Tested By**	: Zora Zhang
EUT	: InfiMAN Evolution	**Model Number**	: E5-STE/05900
Power Supply	: AC 120V/60Hz	**Test Mode**	: TX Mode
Condition	: Temp:24.5°,Humi:55%,Press:100.1kPa	**Antenna/Distance**	: VLUB 9163 3#/3m/VERTICAL
Memo	: 5G		



Item (Mark)	Freq. (MHz)	Read Level (dBµV)	Antenna Factor (dB/m)	Cable Loss dB	Result Level (dBµV/m)	Limit Line (dBµV/m)	Over Limit (dB)	Detector	Polarization
1	45.53	4.00	14.83	3.67	22.50	40.00	-17.50	QP	VERTICAL
2	71.33	14.00	8.90	3.72	26.62	40.00	-13.38	QP	VERTICAL
3	104.17	5.00	11.27	3.90	20.17	43.50	-23.33	QP	VERTICAL
4	166.07	15.00	8.70	4.15	27.85	43.50	-15.65	QP	VERTICAL
5	332.52	2.00	14.15	4.82	20.97	46.00	-25.03	QP	VERTICAL
6	768.75	3.00	20.60	6.08	29.68	46.00	-16.32	QP	VERTICAL

Note:

1. Result Level = Read Level + Antenna Factor + Cable loss.
2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto

Radiated Emission test (above 1GHz)

Freq (MHz)	Read level (dBμV)	Antenna Factor (dB/m)	PRM Factor(dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector type	Polarization
11ac CH149									
7443.00	43.45	36.74	3.48	42.69	40.98	74.00	-33.02	Peak	HORIZONTAL
9483.00	40.33	38.67	3.69	41.99	40.70	74.00	-33.30	Peak	HORIZONTAL
12101.00	40.18	39.18	4.30	41.56	42.10	74.00	-31.90	Peak	HORIZONTAL
14583.00	38.49	41.60	4.63	42.03	42.69	74.00	-31.31	Peak	HORIZONTAL
17133.00	36.79	41.01	4.95	42.24	40.51	74.00	-33.49	Peak	HORIZONTAL
17915.00	36.17	48.04	5.06	42.47	46.80	74.00	-27.20	Peak	HORIZONTAL
7426.00	44.47	36.69	3.48	42.70	41.94	74.00	-32.06	Peak	VERTICAL
9228.00	40.38	38.21	3.67	41.89	40.37	74.00	-33.63	Peak	VERTICAL
10860.00	41.13	39.97	4.02	42.80	42.32	74.00	-31.68	Peak	VERTICAL
11863.00	40.38	39.46	4.26	41.61	42.50	74.00	-31.50	Peak	VERTICAL
14770.00	39.45	41.15	4.67	41.88	43.40	74.00	-30.60	Peak	VERTICAL
17235.00	37.38	41.39	4.95	42.27	41.44	74.00	-32.56	Peak	VERTICAL
11ac CH157									
6950.00	44.13	35.36	3.46	43.03	39.92	74.00	-34.08	Peak	HORIZONTAL
9432.00	41.35	38.58	3.69	41.97	41.64	74.00	-32.36	Peak	HORIZONTAL
11812.00	42.00	39.53	4.24	41.68	44.08	74.00	-29.92	Peak	HORIZONTAL
14311.00	39.00	41.46	4.59	42.25	42.80	74.00	-31.20	Peak	HORIZONTAL
16419.00	37.70	38.71	4.88	42.26	39.03	74.00	-34.97	Peak	HORIZONTAL
17881.00	35.80	47.58	5.05	42.46	45.97	74.00	-28.03	Peak	HORIZONTAL
6950.00	45.29	35.36	3.46	43.03	41.08	74.00	-32.92	Peak	VERTICAL
7681.00	42.93	37.01	3.49	42.52	40.91	74.00	-33.09	Peak	VERTICAL
9823.00	41.58	38.76	3.76	42.13	41.98	74.00	-32.02	Peak	VERTICAL
11574.00	42.73	39.81	4.16	42.04	44.66	74.00	-29.34	Peak	VERTICAL
14124.00	40.57	41.12	4.56	42.40	43.86	74.00	-30.14	Peak	VERTICAL
17779.00	37.53	46.19	5.02	42.43	46.31	74.00	-27.69	Peak	VERTICAL
11ac CH165									
8429.00	43.93	36.94	3.57	42.09	42.35	74.00	-31.65	Peak	HORIZONTAL
10639.00	40.93	39.93	4.03	42.65	42.24	74.00	-31.76	Peak	HORIZONTAL
12050.00	41.26	39.24	4.31	41.48	43.32	74.00	-30.68	Peak	HORIZONTAL
14430.00	39.15	41.67	4.60	42.16	43.27	74.00	-30.73	Peak	HORIZONTAL
16589.00	38.29	39.18	4.91	42.24	40.14	74.00	-33.86	Peak	HORIZONTAL
17966.00	36.41	48.74	5.08	42.49	47.74	74.00	-26.26	Peak	HORIZONTAL
6967.00	44.82	35.41	3.46	43.02	40.67	74.00	-33.33	Peak	VERTICAL
7613.00	44.76	36.97	3.49	42.57	42.65	74.00	-31.35	Peak	VERTICAL
9109.00	42.31	38.00	3.67	41.84	42.12	74.00	-31.88	Peak	VERTICAL
11642.00	46.45	39.73	4.18	41.94	48.43	74.00	-25.57	Peak	VERTICAL
14447.00	40.43	41.70	4.60	42.14	44.59	74.00	-29.41	Peak	VERTICAL
17932.00	36.08	48.28	5.07	42.48	46.94	74.00	-27.06	Peak	VERTICAL
Conclusion: Pass									

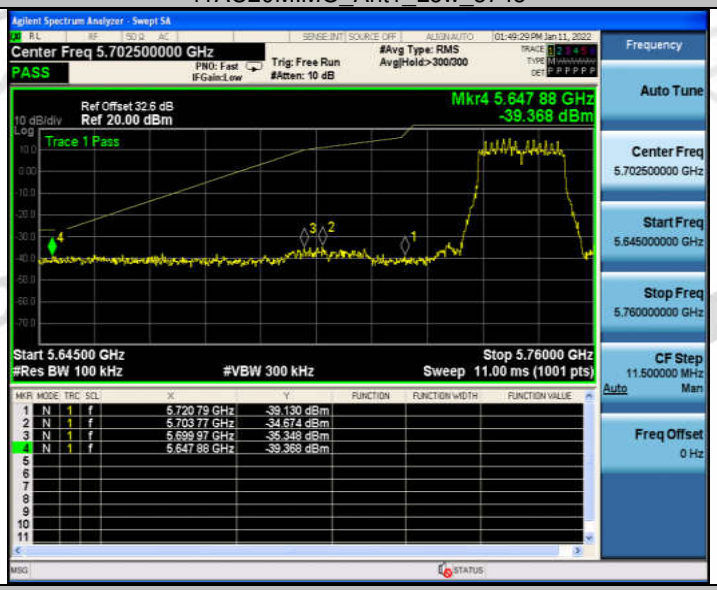
Note: 1. 30MHz~40GHz: (20 MHz, 40 MHz ,80 MHz mode all have been tested, only 20 MHz MIMO mode is the worst case and reported.)

2. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

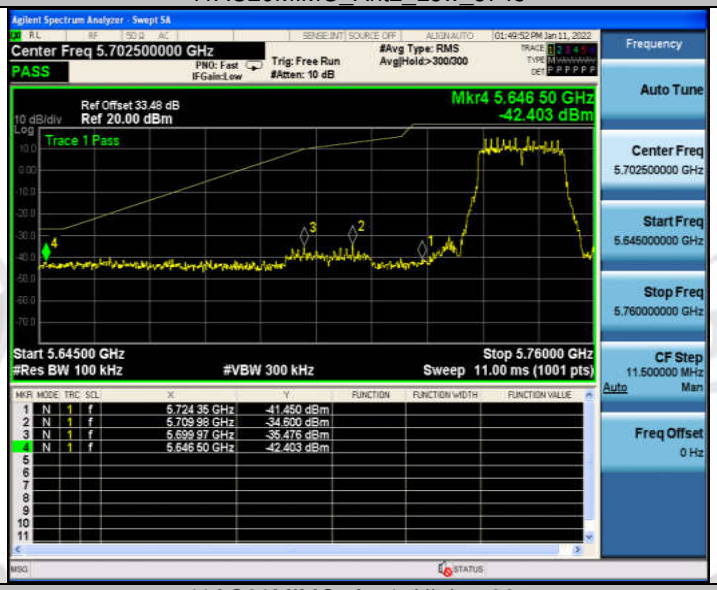
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

For transmitters operating in the 5.725-5.85 GHz band: 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.

11AC20MIMO_Ant1_Low_5745



11AC20MIMO_Ant2_Low_5745



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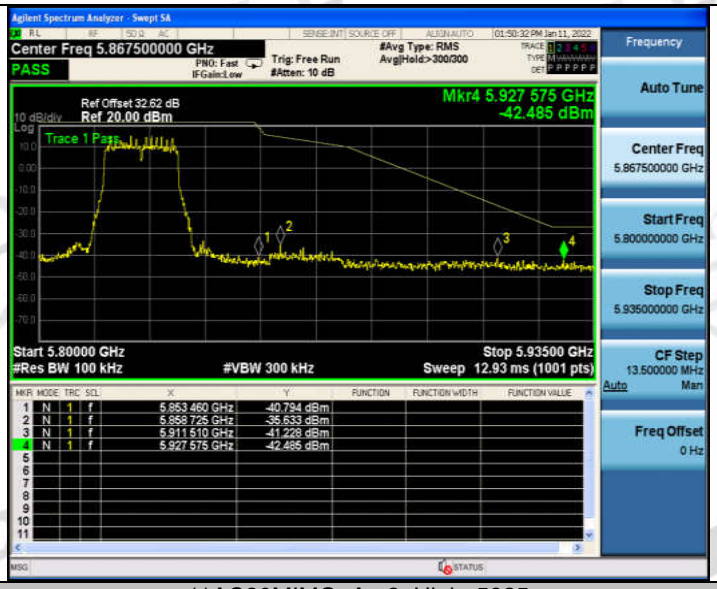
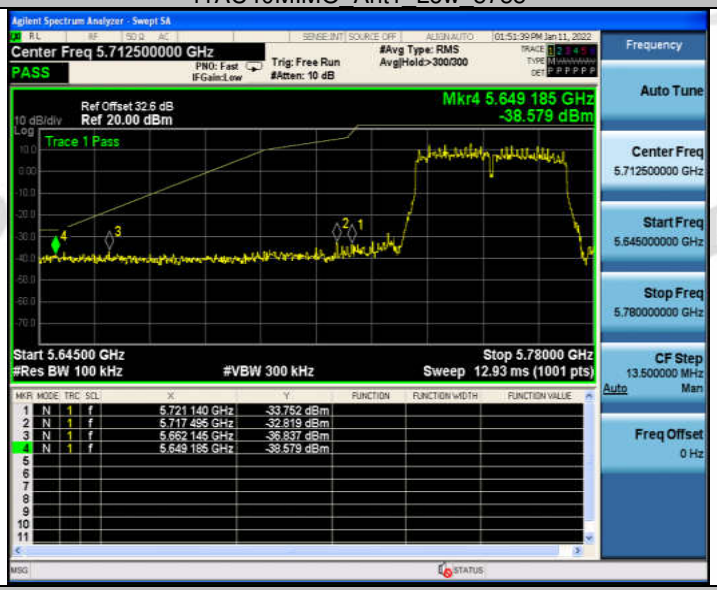
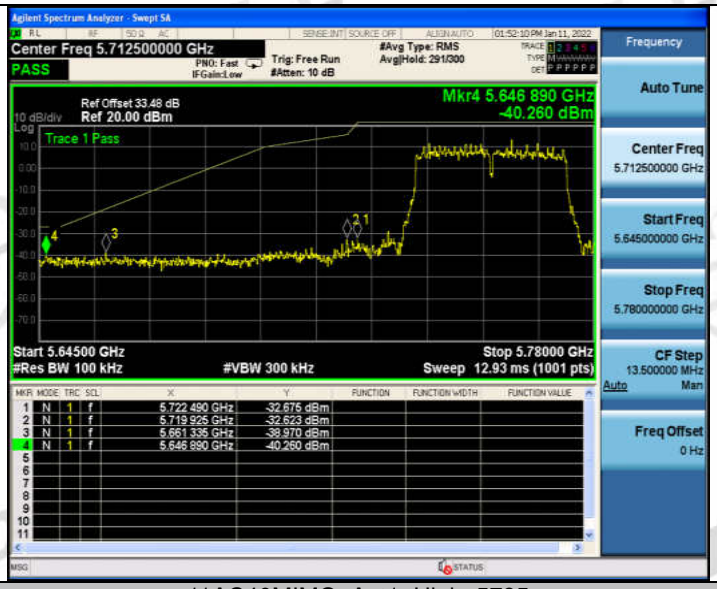


11AC20MIMO_Ant2_High_5825

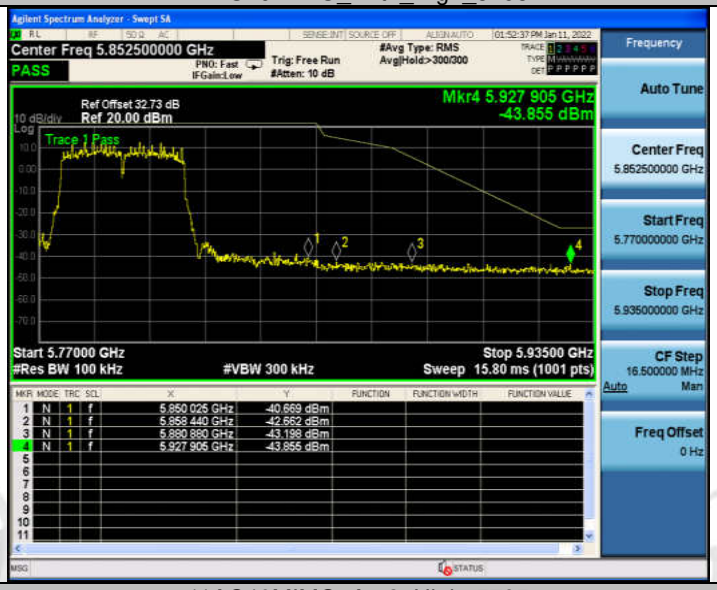
11AC40MIMO_Ant1_Low_5755



11AC40MIMO_Ant2_Low_5755

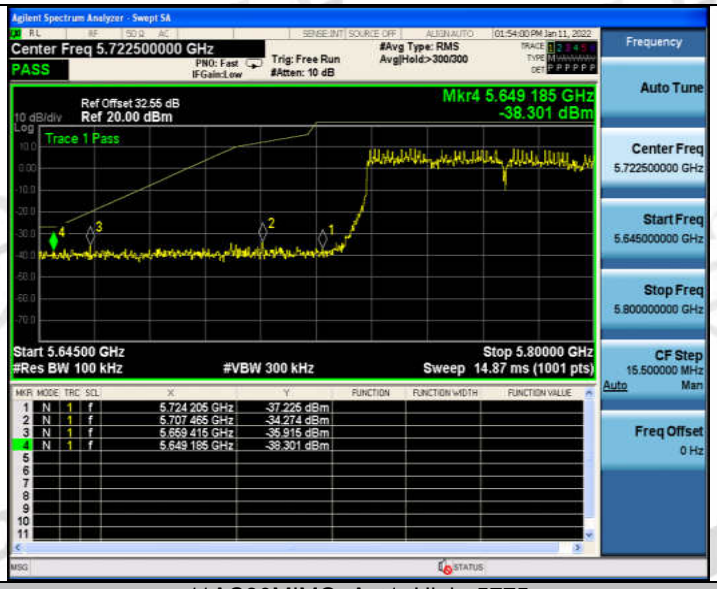


11AC40MIMO_Ant1_High_5795

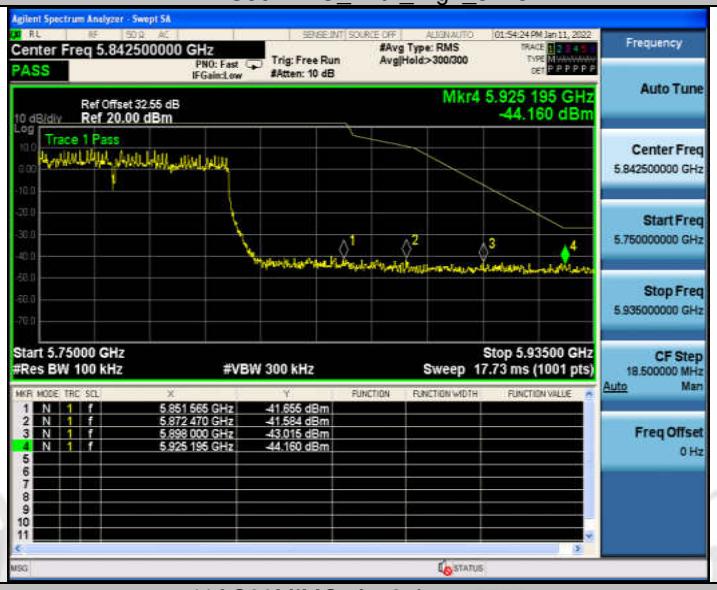


11AC40MIMO_Ant2_High_5795

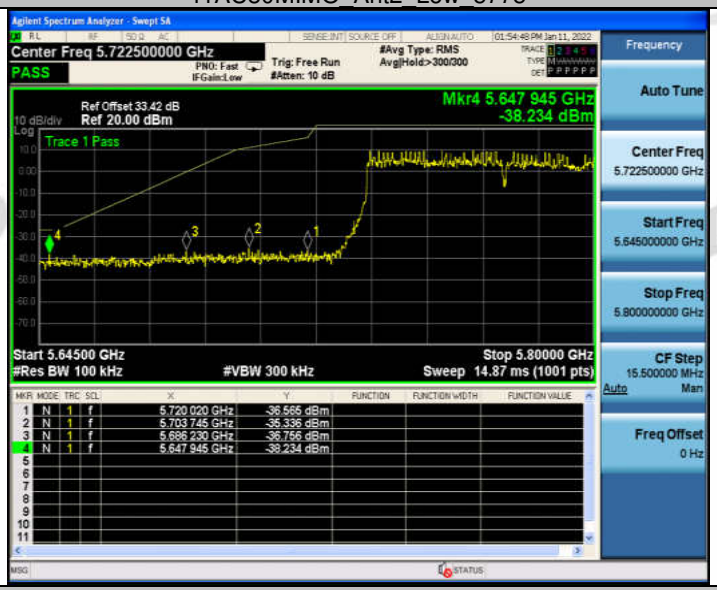
11AC80MIMO_Ant1_Low_5775



11AC80MIMO_Ant1_High_5775



11AC80MIMO_Ant2_Low_5775

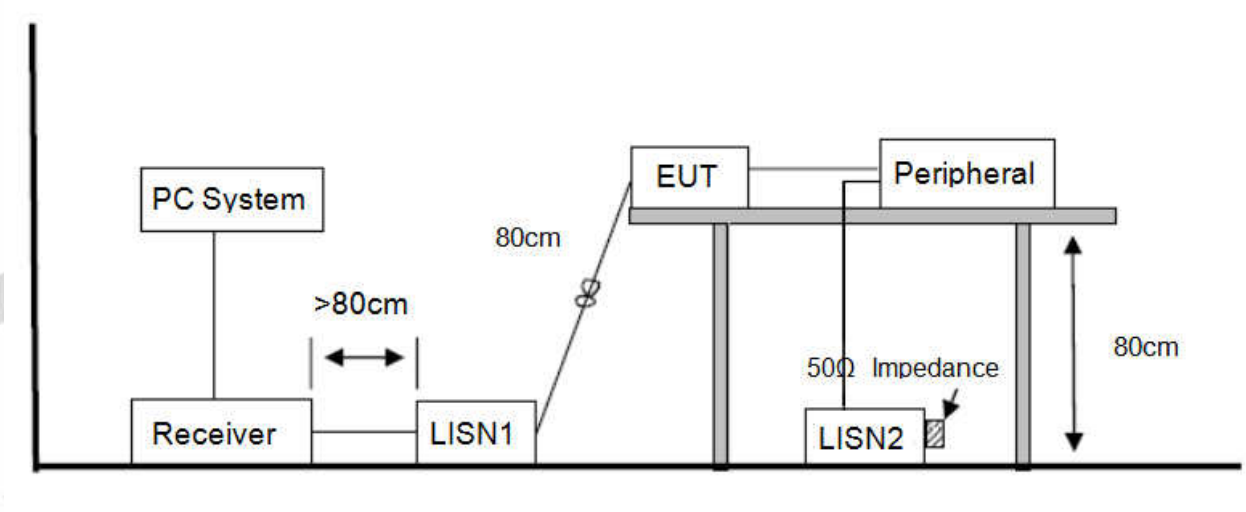


11AC80MIMO_Ant2_High_5775


Agilent Spectrum Analyzer - Swept SA
Center Freq 5.842500000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 10 dB
#Avg Type: RMS
Avg|Hold:>300/300
01:55:12 PM Jan 11, 2022
PASS
Ref Offset 33.42 dB
10 dB/div
Ref 20.00 dBm
Log
Trace 1 Pass
Mkr4 5.928 525 GHz
-44.983 dBm
Start 5.75000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 5.93500 GHz
Sweep 17.73 ms (1001 pts)
1 N 1 f 5.852 490 GHz -42.377 dBm
2 N 1 f 5.872 470 GHz -41.039 dBm
3 N 1 f 5.915 575 GHz -43.781 dBm
4 N 1 f 5.928 525 GHz -44.983 dBm
Frequency
Auto Tune
Center Freq
5.842500000 GHz
Start Freq
5.750000000 GHz
Stop Freq
5.935000000 GHz
CF Step
18.500000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

10. Power Line Conducted Emission

10.1. Block diagram of test setup



10.2. Power Line Conducted Emission Limits (Class B)

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

10.3. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.3 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.
EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

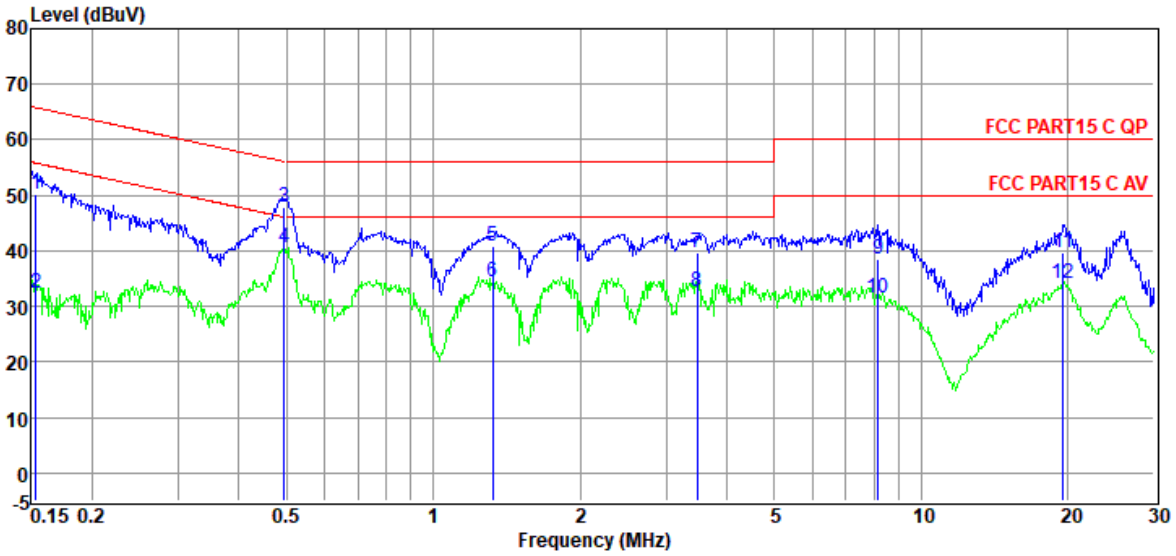
10.4. Test Result

PASS. (See below detailed test result)

Note1: All emissions not reported below are too low against the prescribed limits.
Note2: "-----" means peak detection; "-----" means average detection
Note3: Pre-test AC conducted emission at both voltage AC 110V/60Hz and AC 240V/50Hz, recorded worse case.

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	D:\2021 CE report date\Q21070824-1E\0110 CE.EM6	
Test Date	: 2021-12-03	**Tested By**	: Youbin He
EUT	: InfiMAN Evolution	**Model Number**	: E5-STE/05900
Power Supply	: AC 120V/60Hz	**Test Mode**	: Tx mode
Condition	: TEMP:24.8°C, RH:53.8%, BP:101.4kPa	**LISN**	: 2021 1# ENV216/NEUTRAL
Memo	: 5G		

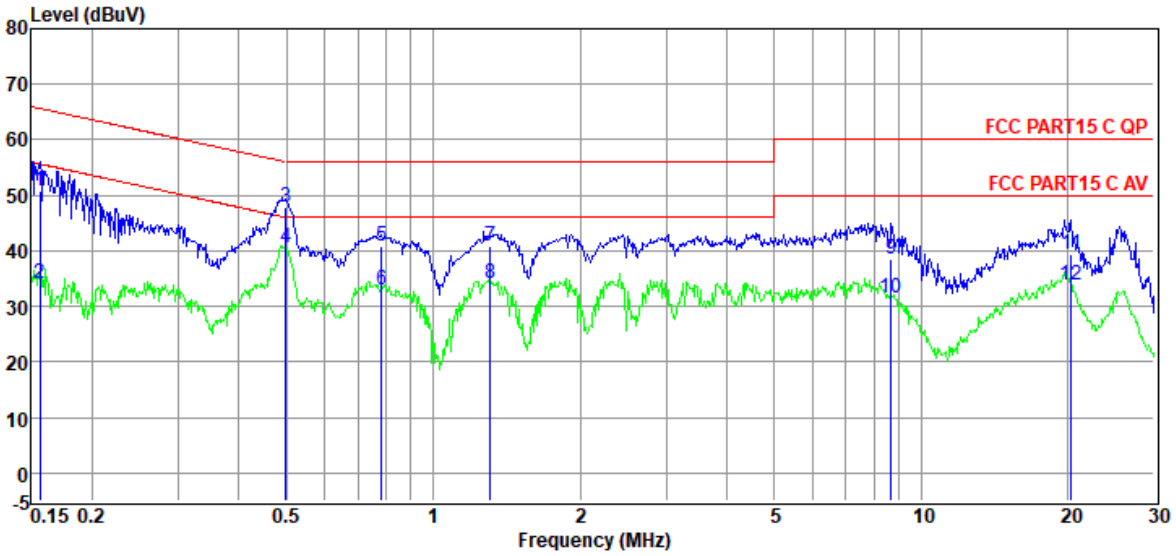


Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.15	30.56	9.80	0.01	9.92	50.29	65.82	-15.53	QP	NEUTRAL
2	0.15	12.71	9.80	0.01	9.92	32.44	55.82	-23.38	Average	NEUTRAL
3	0.49	28.48	9.50	0.02	9.91	47.91	56.10	-8.19	QP	NEUTRAL
4	0.49	21.11	9.50	0.02	9.91	40.54	46.10	-5.56	Average	NEUTRAL
5	1.32	21.34	9.66	0.04	9.89	40.93	56.00	-15.07	QP	NEUTRAL
6	1.32	14.86	9.66	0.04	9.89	34.45	46.00	-11.55	Average	NEUTRAL
7	3.47	20.07	9.76	0.05	9.91	39.79	56.00	-16.21	QP	NEUTRAL
8	3.47	12.88	9.76	0.05	9.91	32.60	46.00	-13.40	Average	NEUTRAL
9	8.15	18.89	9.69	0.10	9.94	38.62	60.00	-21.38	QP	NEUTRAL
10	8.15	11.75	9.69	0.10	9.94	31.48	50.00	-18.52	Average	NEUTRAL
11	19.53	19.75	9.78	0.17	9.96	39.66	60.00	-20.34	QP	NEUTRAL
12	19.53	14.17	9.78	0.17	9.96	34.08	50.00	-15.92	Average	NEUTRAL

Note:
1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

TR-4-E-010 Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	D:\2021 CE report date\Q21070824-1E\0110 CE.EM6	
Test Date	: 2021-12-03	**Tested By**	: Youbin He
EUT	: InfiMAN Evolution	**Model Number**	: E5-STE/05900
Power Supply	: AC 120V/60Hz	**Test Mode**	: Tx mode
Condition	: TEMP:24.8°C, RH:53.8%, BP:101.4kPa	**LISN**	: 2021 1# ENV216/LINE
Memo	: 5G		



Item (Mark)	Freq. (MHz)	Read Level (dBµV)	LISN Factor (dB)	Cable Loss (dB)	Pulse Limiter Factor (dB)	Result Level (dBµV)	Limit Line (dBµV)	Over Limit (dB)	Detector	Phase
1	0.16	31.09	9.63	0.01	9.92	50.65	65.65	-15.00	QP	LINE
2	0.16	14.64	9.63	0.01	9.92	34.20	55.65	-21.45	Average	LINE
3	0.50	28.26	9.60	0.02	9.91	47.79	56.01	-8.22	QP	LINE
4	0.50	21.04	9.60	0.02	9.91	40.57	46.01	-5.44	Average	LINE
5	0.78	21.33	9.53	0.03	9.90	40.79	56.00	-15.21	QP	LINE
6	0.78	13.43	9.53	0.03	9.90	32.89	46.00	-13.11	Average	LINE
7	1.31	21.38	9.56	0.04	9.89	40.87	56.00	-15.13	QP	LINE
8	1.31	14.56	9.56	0.04	9.89	34.05	46.00	-11.95	Average	LINE
9	8.68	19.05	9.50	0.10	9.94	38.59	60.00	-21.41	QP	LINE
10	8.68	12.12	9.50	0.10	9.94	31.66	50.00	-18.34	Average	LINE
11	20.27	19.80	9.60	0.17	9.96	39.53	60.00	-20.47	QP	LINE
12	20.27	14.12	9.60	0.17	9.96	33.85	50.00	-16.15	Average	LINE

Note:
1. Result Level = Read Level +LISN Factor + Pulse Limiter Factor + Cable loss.
2. If QP Result complies with AV limit, AV Result is deemed to comply with AV limit.
3. Test setup: RBW: 200 Hz (9 kHz—150 kHz), 9 kHz (150 kHz—30 MHz).
4. Step size: 80Hz (0.009MHz-0.15MHz), 4 kHz (0.15MHz-30MHz), Scan time: auto.

11. Antenna Requirements

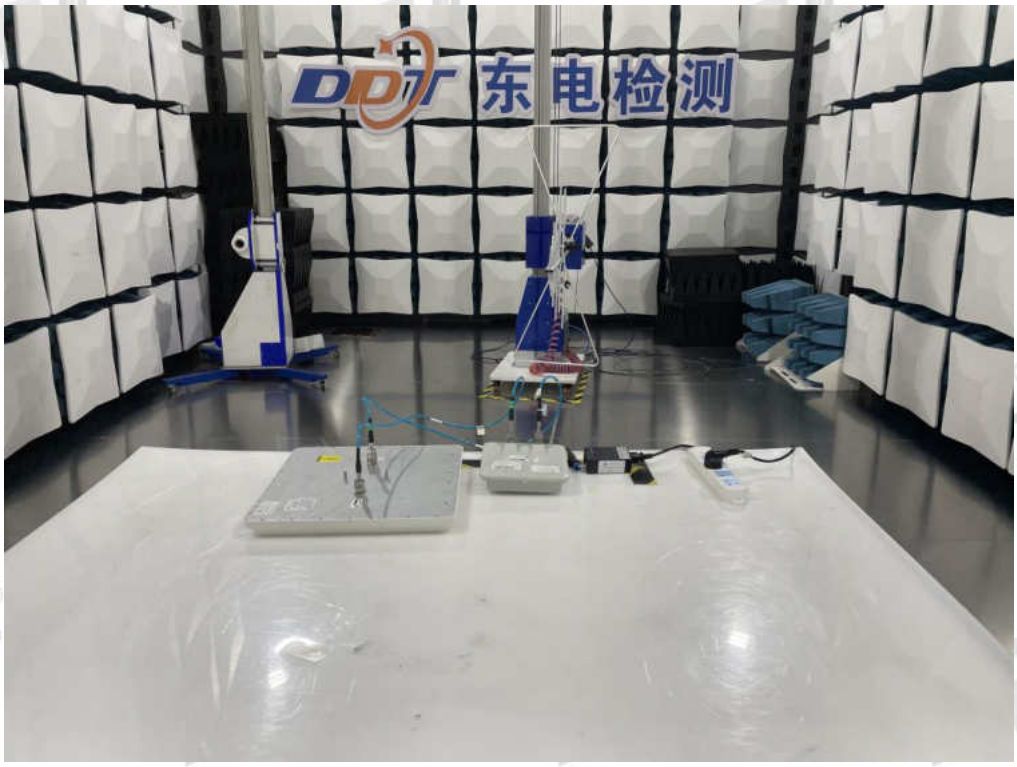
11.1. Limit

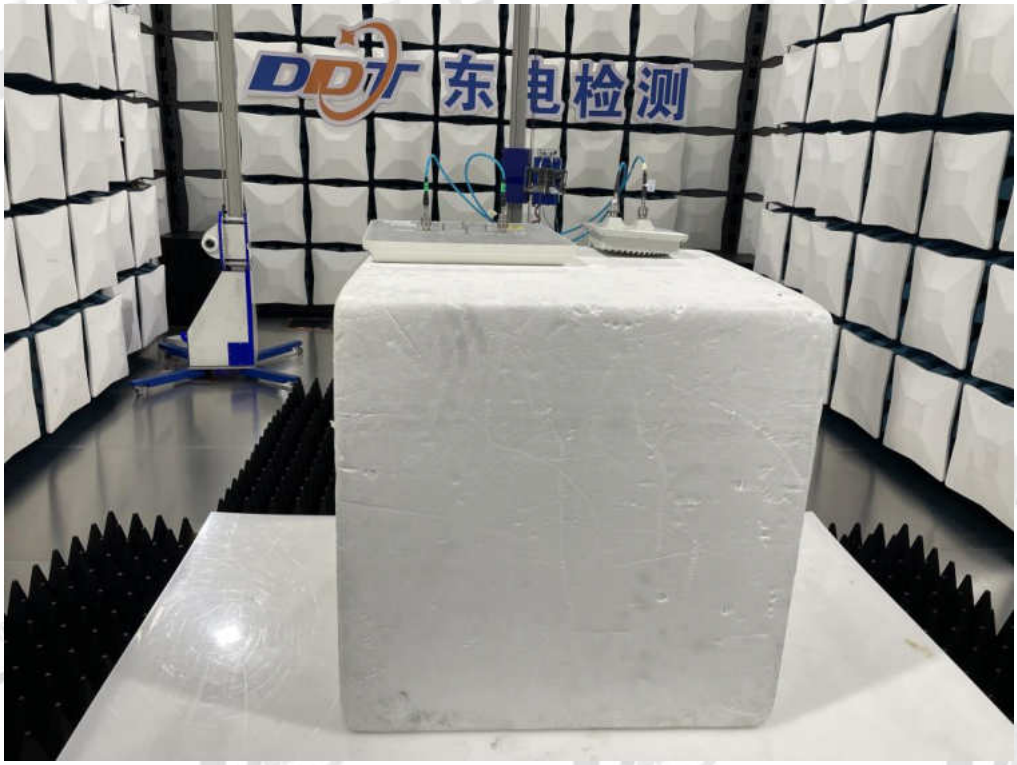
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

11.2. Result

The device support 2T2R, the antennas both used for this product are dedicated antennas and other than that furnished by the responsible party shall be used with the device, maximum antenna gain is 17 dBi for antenna 1, 18 dBi for antenna 2.

12. Test setup photograph




东电检测

13. Photos of the EUT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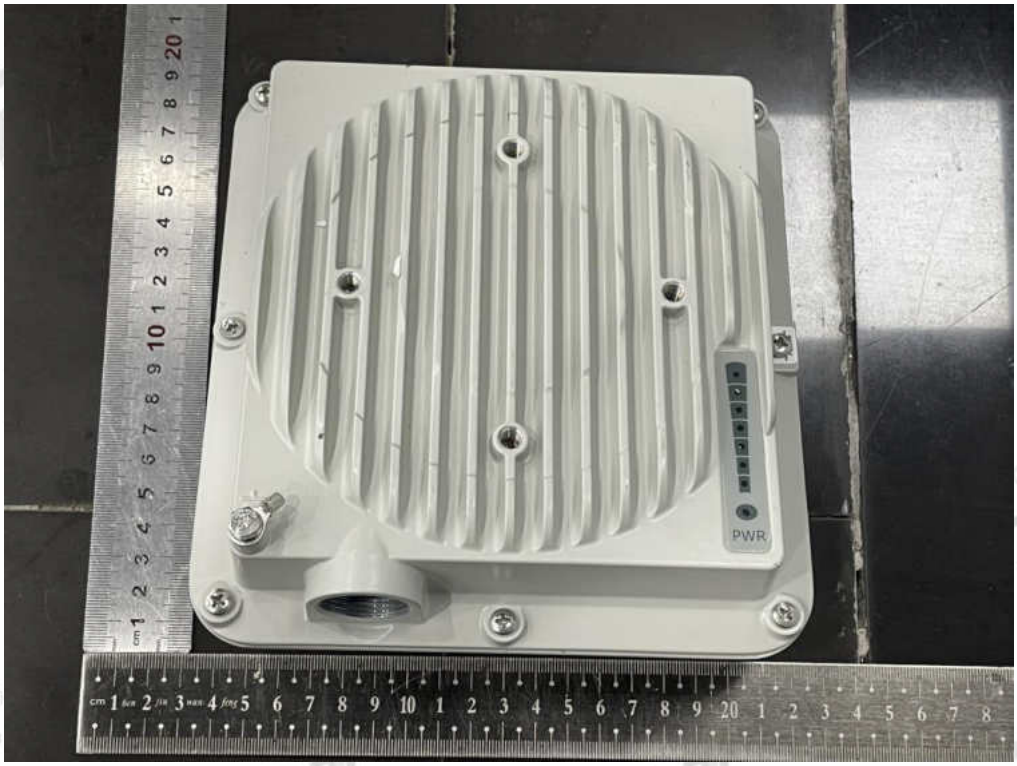
celecom
21-1-00032S02_C01
ATTENTION
POWERING WITHOUT ANTENNA CONNECTED TO BOTH RF PORTS STRICTLY PROHIBITED
V
H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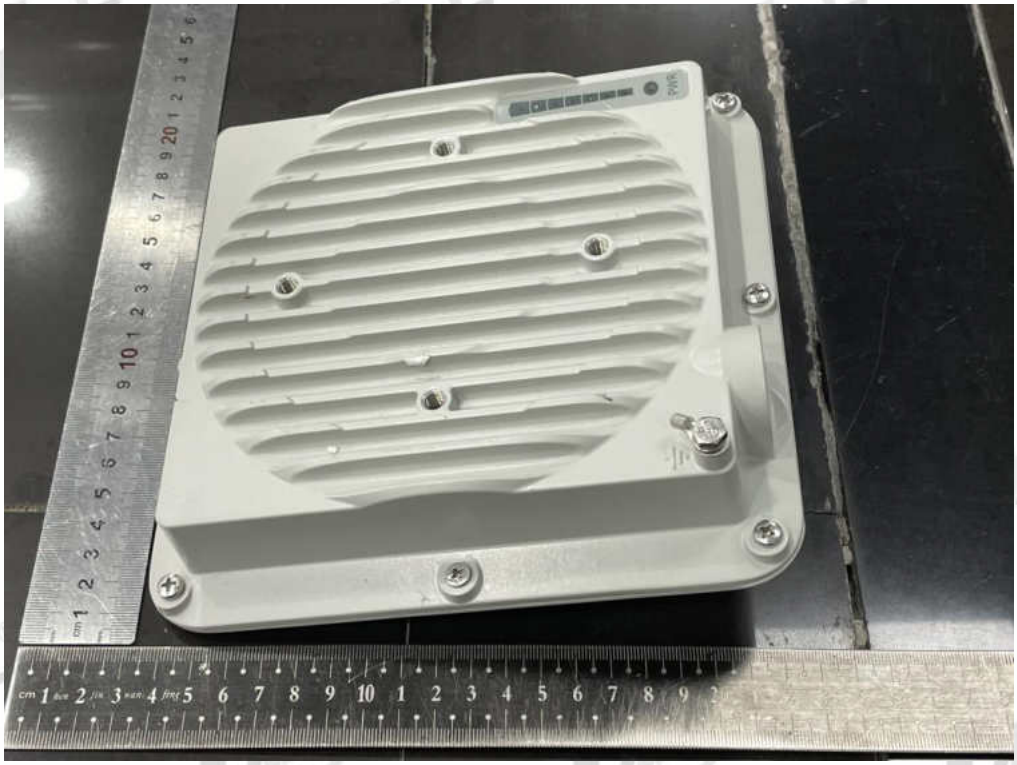

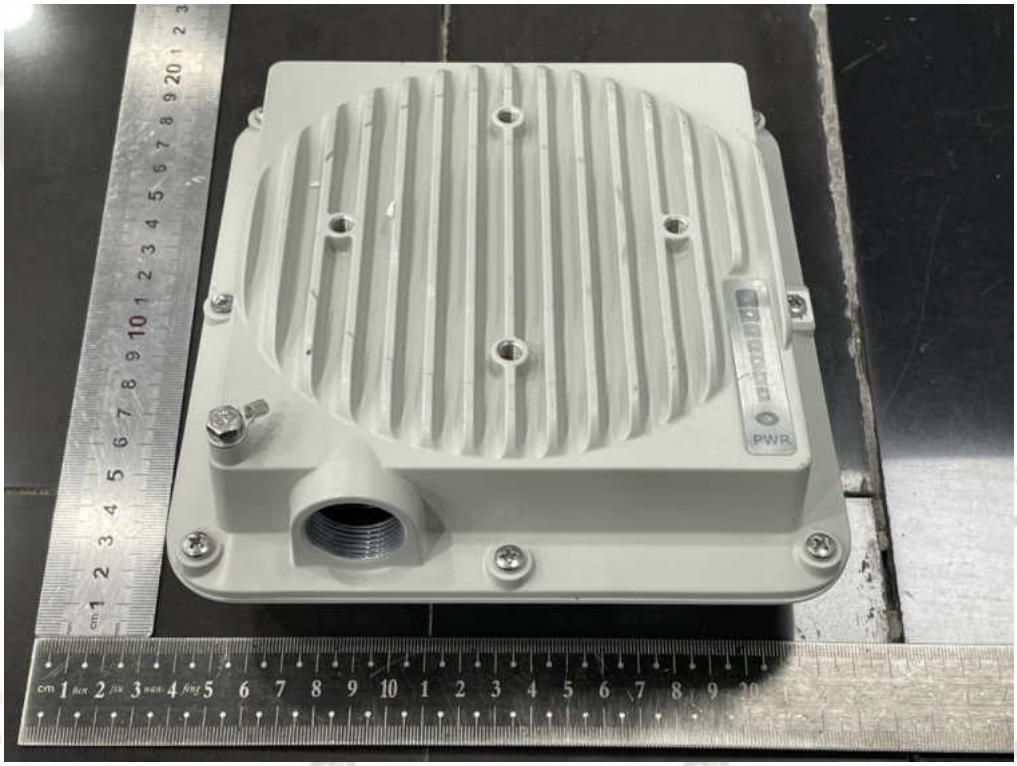
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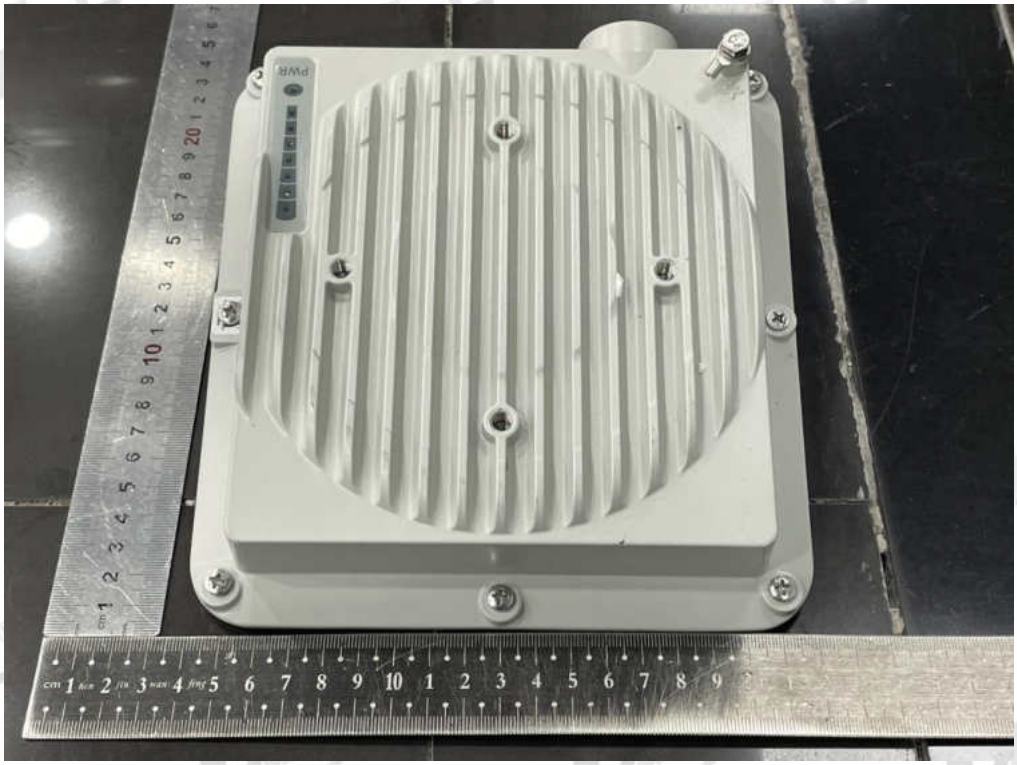
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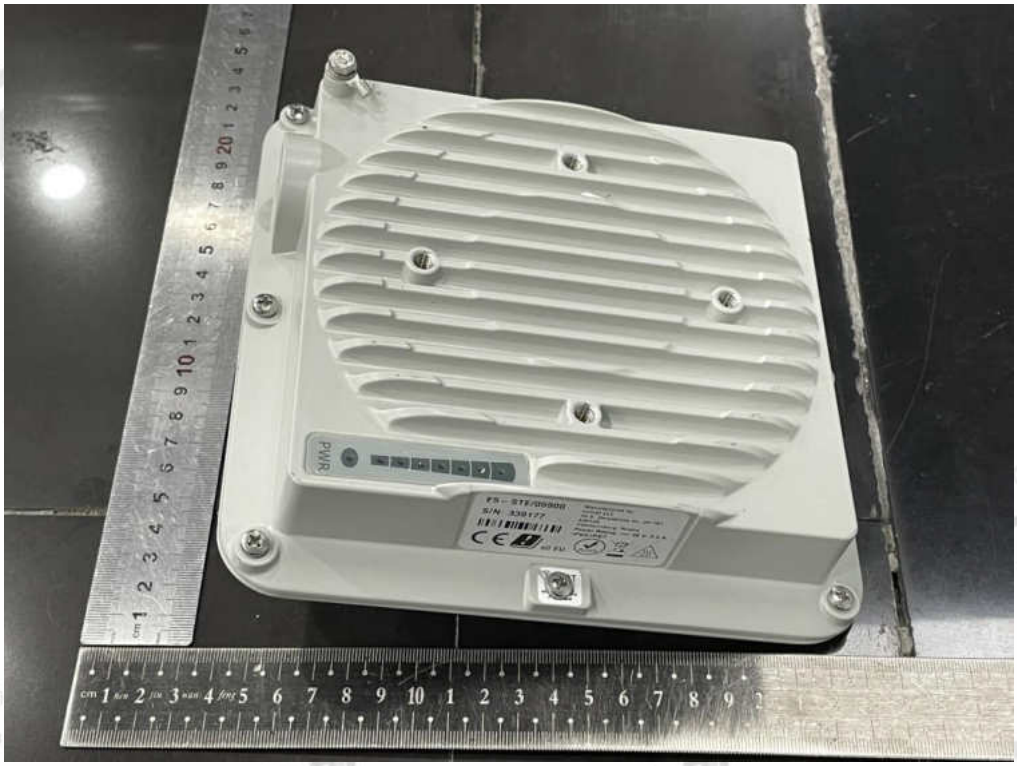
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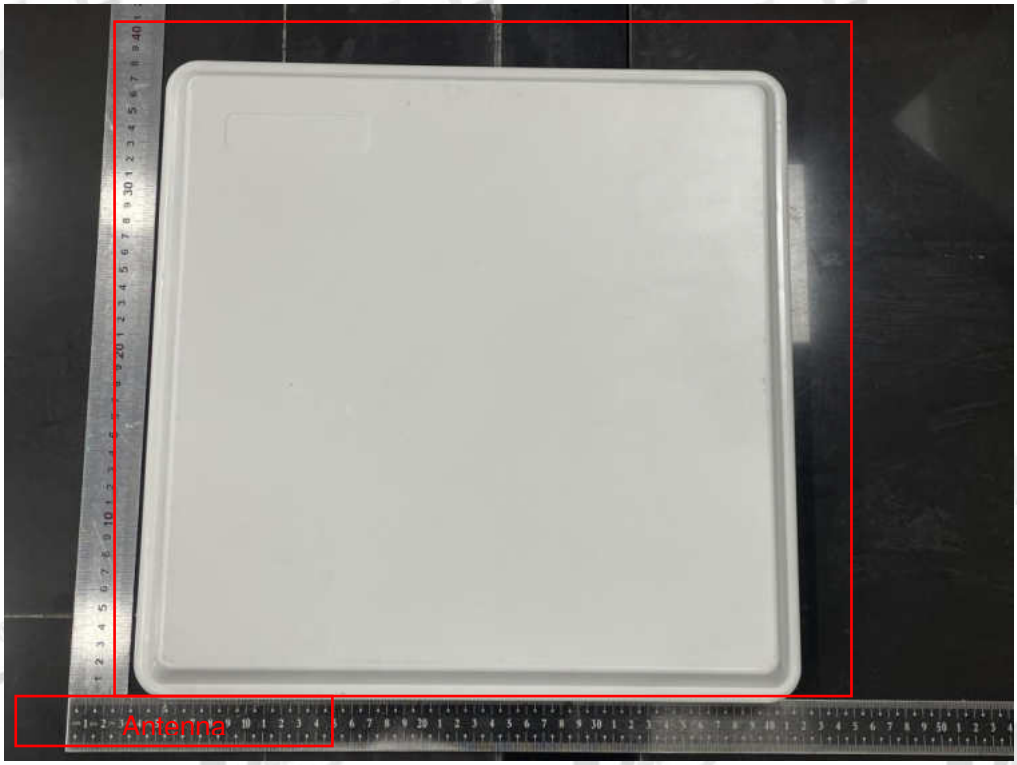
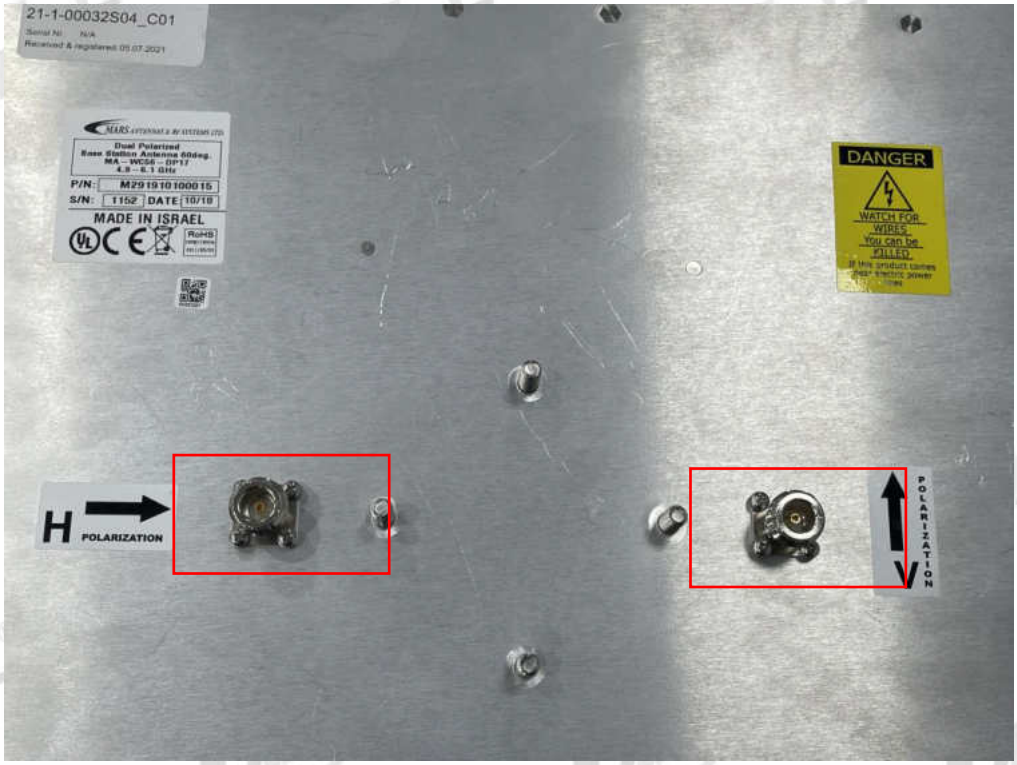

Antenna


DANGER
H
V
Antenna


21-1-00032S04_C01
MARS ANTENNAS & RF SYSTEMS LTD.
Dual Polarized
Base Station Antenna 60deg.
MA – WC56 – DP17
4.9 – 6.1 GHz
P/N: M291910100015
S/N: 1152 DATE: 10/18
MADE IN ISRAEL
RoHS
DANGER
WATCH FOR WIRES
You can be KILLED
H POLARIZATION
POLARIZATION


Received & registered: 05.07.2021
MARS ANTENNAS & RF SYSTEMS LTD.
Dual Polarized
Base Station Antenna 60deg.
MA – WC56 – DP17
4.9 – 6.1 GHz
P/N: M291910100015
S/N: 1152 DATE: 10/18
MADE IN ISRAEL
RoHS
compliance
2011/65/EU
00331207


INFINET
wireless
Indoor Power Supply Unit
DU-CPE-G(24W)
POWER
LAN
POE


INFINET
wireless
Indoor Power Supply Unit
DU-CPE-G(24W) (HW-550)
POWER
LAN
POE


SHENZHEN GOSPELL DIGITAL TECHNOLOGY CO.,LTD.
POWER OVER ETHERNET INJECTOR/POE电源
MODEL/型号: G0720-480-050
INPUT/输入: 100-240V～ 50/60Hz 0.75A MAX
OUTPUT/输出: 48.0V ⎓ 0.5A 24.0W
I. T. E. POWER SUPPLY
WARNING: RISK OF ELECTRIC SHOCK DO NOT OPEN
ATTENTION: RISQUE D'ELECTROCUTION NE PAS OUVRIR
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1)This device may not cause harmful interference, and
(2)This device must accept any interference received, including interference that may cause undesired operation.
MADE IN CHINA/中国制造
2033003554


INFINET
wireless
Indoor Power Supply Unit
DU-CPE-G(24W) (HW-550)
POWER
LAN
POE

END OF REPORT