

Test Report

FCC ID: 2APBP-CS10

Date of issue: Apr. 10, 2018

Report Number:	MTi180416E038
Sample Description:	Smart POS Payment Terminal
Model(s):	CS10, CS10A, CS10B, CS10C, CS10D, CS10E, CS10F, CS11, CS12, CS13
Applicant:	Ciontek Technology Corp.
Address:	B501, Chanxueyan Building Wuhan University, No.6 Of Yuexing 2nd Road, Nanshan District, Shenzhen
Date of Test:	Mar. 23, 2018 to Apr. 10, 2018

Shenzhen Microtest Co., Ltd.
<http://www.mtitest.com>

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Test Result Certification

Applicant's name: Ciontek Technology Corp.

Address: B501, Chanxueyan Building Wuhan University, No.6 Of Yuexing 2nd Road, Nanshan District, Shenzhen

Manufacture's Name: Ciontek Technology Corp.

Address: B501, Chanxueyan Building Wuhan University, No.6 Of Yuexing 2nd Road, Nanshan District, Shenzhen

Product name: Smart POS Payment Terminal

Trademark: Ciontek

Model name: CS10, CS10A, CS10B, CS10C, CS10D, CS10E, CS10F, CS11, CS12, CS13


Standards: FCC Part 15.407

Test Procedure: ANSI C63.10-2013
KDB 789033 D02 v01r04


This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by: 

Demi Mu Apr. 10, 2018

Reviewed by: 

Blue Zheng Apr. 10, 2018

Approved by: 

Smith Chen Apr. 10, 2018

1 General information

1.1 Description of EUT

Equipment	Smart POS Payment Terminal
Trade Name	Ciontek
Model Name	CS10, CS10A, CS10B, CS10C, CS10D, CS10E, CS10F, CS11, CS12, CS13
Model Difference:	All the models above are identical in interior structure, electrical circuits and components; just the color. fingerprint module and scanner module is different. The model CS10 has been tested for the worst case.
Frequency Range	Band I: 5150 MHz to 5250 MHz, Band IV: 5725 MHz to 5850 MHz
Modulation Type	256QAM, 64QAM, 16QAM, BPSK, QPSK 256QAM
Transfer Rate (Mbps) (Single RF path)	802.11a: 54/ 48/ 36 / 24 / 18/12 / 9/ 6 Mbps 802.11n: up to 150 Mbps
Channel Bandwidth	802.11a: 20 MHz 802.11n: 20 MHz, 40 MHz
Antenna Type	Integrated antenna
Antenna Gain	Band I: -1.46dBi Band IV: -1.81dBi
Max. Output Power:	Band I: 16.65 dBm Band IV: 15.82 dBm
Hardware Version:	CS10_V3.0
Software Version:	A26_V3.17_171103US
Software Version:	A26_V3.17_171103US
Power Supply:	DC 5V From adapter
Adapter information:	Model:GKYPG0200050 US2 Input: 100-240V 50/60Hz 0.5A Output: 5V 2A

1.2 Operation channel list

For band I:

20 MHz		40 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	--	--
48	5240	--	--

For band IV:

20 MHz		40 MHz	
Channel Number	Frequency (MHz)	Channel Number	Frequency (MHz)
149	5745	151	5755
153	5765	159	5795
157	5785	--	--
161	5805	--	--
165	5825	--	--

1.3 Test channel list

For 802.11a/n(HT20)

Band I (5150 - 5250 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
36	Low	5180	149	Low	5745
44	Mid	5220	157	Mid	5785
48	High	5240	165	High	5825

For 802.11n (HT40)

Band I (5150 - 5250 MHz)			Band IV (5725 - 5850 MHz)		
Channel Number	Channel	Frequency (MHz)	Channel Number	Channel	Frequency (MHz)
38	Low	5190	151	Low	5755
46	High	5230	159	High	5795

1.4 Ancillary equipment list

Equipment	Model	S/N	Manufacturer	Certificate type
/	/	/	/	/

1.5 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
/	/	/	/	/	/
/	/	/	/	/	/

Note:

(1)The support equipment was authorized by Declaration of Confirmation.

(2)For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2 Summary of the Test Results

Test procedures according to the technical standards:

No.	Standard Section	Test Item	Result	Remark
1	15.203/15.407	Antenna Requirement	Pass	
2	15.407(a)	RF Output Power	Pass	
3	15.207	Power Line Conducted Emission	Pass	
4	15.407(a)	26dB Emission Bandwidth and Occupied bandwidth	Pass	
5	15.407(e)	6 dB bandwidth	Pass	
6	15.407(a)	Power Spectral Density	Pass	
7	15.407(b) 15.209	Radiation Spurious Emission	Pass	
8	15.407(b) 15.209	Conducted Spurious Emission	Pass	

Note: All the configuration of the modulation was tested and only the worst case(802.11a/ac20/ac40) was reported.

3 Test Facilities and Accreditations

3.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd
Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.:	FCC Registration No.: 448573

3.2 Environmental conditions

Temperature:	20°C~30°C
Humidity	30%~70%
Atmospheric pressure	98kPa~101kPa

3.3 Measurement uncertainty

The reported uncertainty of measurement $y \pm U$ where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$ providing a level of confidence of approximately 95 %

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power, conducted	$\pm 0.16\text{dB}$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^\circ\text{C}$
7	Humidity	$\pm 2\%$

3.4 Test software

Software Name	Manufacturer	Model	Version
RF Test System	Farad	LZ-RF	Lz_Rf 3A3

4 Equipment list

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E001	Spectrum Analyzer	Agilent	E4407B	MY41441082	2017/09/18	2018/09/17
MTI-E002	CMU 200 universal radio communication tester	Rohde&schwarz	CMU 200	114587	2017/09/18	2018/09/17
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI	1000314	2017/09/18	2018/09/17
MTI-E006	Broadband antenna	schwarabeck	VULB9163	872	2017/09/18	2018/09/17
MTI-E007	Horn antenna	schwarabeck	BBHA9120D	1201	2017/09/18	2018/09/17
MTI-E014	amplifier	America	8447D	3113A06150	2017/09/18	2018/09/17
MTI-E015	Conduction Immunity Signal Generator	Schloder	CDG6000	126A1343/2015	2017/09/18	2018/09/17
MTI-E016	Coupled decoupling network	Schloder	CDA M2/M3	A2210332/2015	2017/09/18	2018/09/17
MTI-E032	Comprehensive test instrument	Rohde&schwarz	CMW500	124192	2017/09/13	2018/09/12
MTI-E034	amplifier	Agilent	8449B	3008A02400	2017/08/22	2018/08/21
MTI-E040	Spectrum analyzer	Agilent	N9020A	MY49100060	2017/09/05	2018/09/04
MTI-E041	Signal generator	Agilent	N5182A	MY49060455	2017/09/23	2018/09/22
MTI-E042	Analog signal generator	Agilent	E4421B	GB40051240	2017/09/23	2018/09/22
MTI-E043	Power probe	Dare Instruments	RPR3006W	16I00054SN016	2017/09/29	2018/09/28
MTI-E047	10dB attenuator	Mini-Circuits	UNAT-10+	15542	2017/09/24	2018/09/23
MTI-E049	spectrum analyzer	Rohde&schwarz	FSP-38	100019	2017/09/18	2018/09/17
MTI-E050	PSG Signal generator	Agilent	E8257D	MY46520873	2017/09/24	2018/09/23
MTI-E051	Active Loop Antenna 9kHz - 30MHz	Schwarzbeek	FMZB 1519 B	00044	2017/09/26	2018/09/25
MTI-E052	18-40GHz amplifier	Chengdu step Micro Technology	ZLNA-18-40G-21	1608001	2017/09/18	2018/09/17
MTI-E053	15-40G Antenna	Schwarzbeek	BBHA9170	BBHA9170582	2017/09/18	2018/09/17

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

5 Test Results

5.1 Antenna requirement

5.1.1 Standard requirement

15.203 requirement: For intentional device, according to 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

5.1.2 EUT Antenna

The antenna is an integrated antenna, which was permanently affixed to the device and un-replaced, complies with 15.203. In addition, the maximum antenna gain is -0.39dBi.

5.2 RF output power

5.2.1 Limit

For the 5.15-5.25 GHz band

For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz band

The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

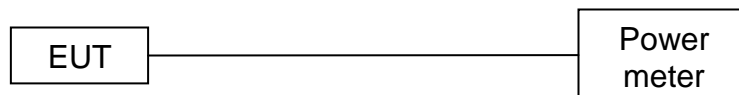
For the band 5.725-5.85 GHz

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 maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.2.2 Test procedure

The maximum peak conducted output power may be measured using a broadband Average RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector.

5.2.3 Test setup



5.2.4 Test results

For Band I

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11a	CH36	5180	14.35	27.23	250
11a	CH40	5200	14.75	29.85	250
11a	CH48	5240	14.39	27.48	250
11n (HT20)	CH36	5180	14.41	27.61	250
11n (HT20)	CH40	5200	14.91	30.97	250
11n (HT20)	CH48	5240	14.33	27.10	250
11n (HT40)	CH38	5190	15.65	36.73	250
11n (HT40)	CH46	5230	15.48	35.32	250

For Band IV

Modulation mode	Test Channel	Frequency(MHz)	Maximum Peak Conducted Power		Limit(mW)
			(dBm)	(mW)	
11a	CH149	5745	14.24	26.55	1000
11a	CH157	5785	14.71	29.58	1000
11a	CH165	5825	14.08	25.59	1000
11n (HT20)	CH149	5745	14.91	30.97	1000
11n (HT20)	CH157	5785	15.01	31.70	1000
11n (HT20)	CH165	5825	14.88	30.76	1000
11n (HT40)	CH151	5755	15.77	37.76	1000
11n (HT40)	CH159	5795	15.82	38.19	1000

5.3 Power line conducted emission

5.3.1 Limits

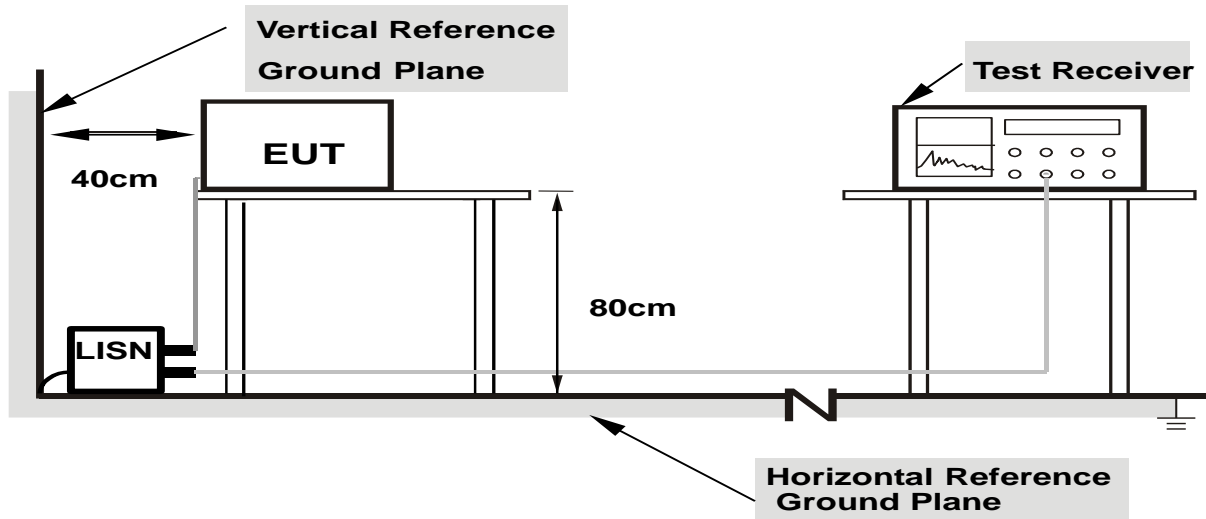
FREQUENCY (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note

(1)The tighter limit applies at the band edges.

(2)The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

5.3.2 Test setup



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

5.3.3 Test procedure

a. EUT Operating Conditions

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

b. The following table is the setting of the receiver

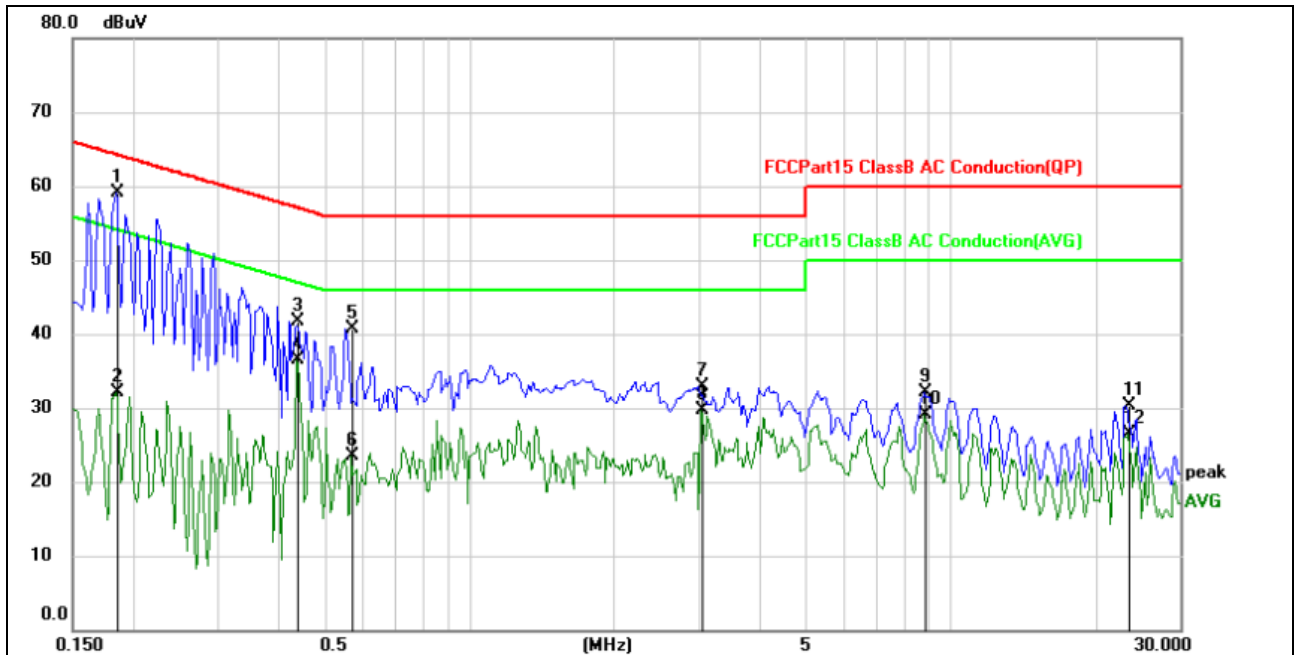
Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

- c. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- d. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- e. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- f. LISN at least 80 cm from nearest part of EUT chassis.

For the actual test configuration, please refer to the related Item –EUT Test Photos.

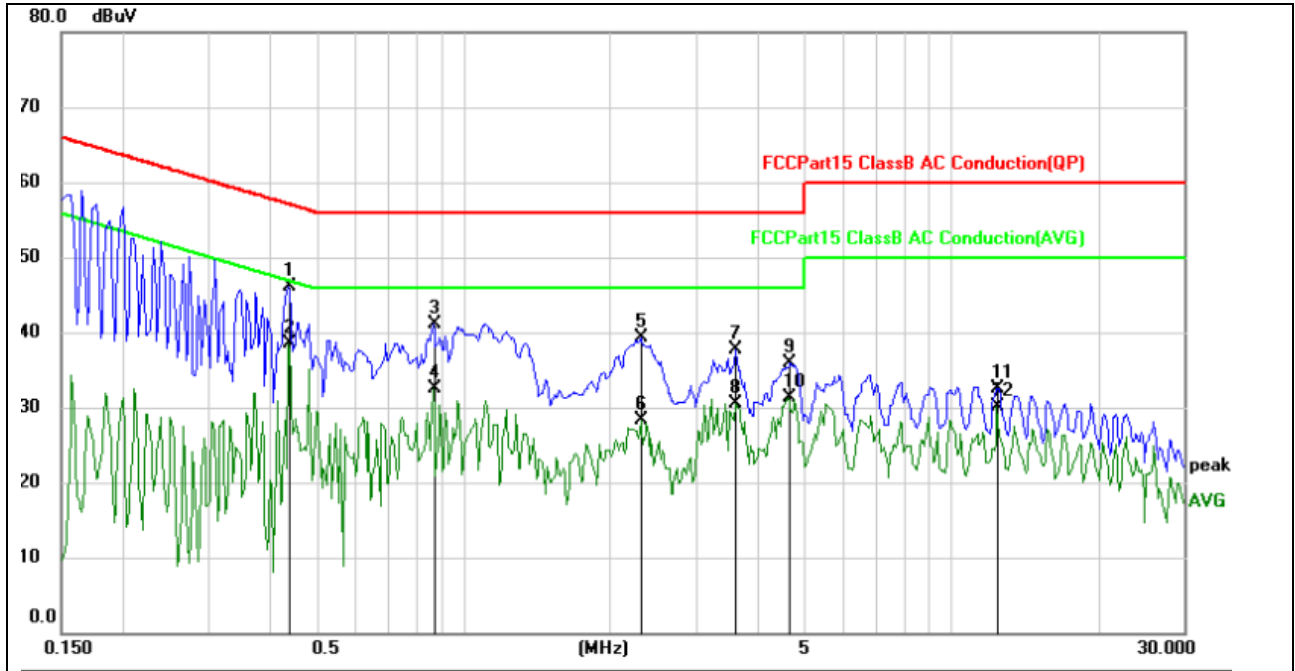
5.3.4 Test results

EUT :	Smart POS Payment Terminal	Model Name. :	CS10
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode :	TX Mode



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1	*	0.1852	59.13	-0.03	59.10	64.25	-5.15	QP	
2		0.1852	32.07	-0.03	32.04	54.25	-22.21	AVG	
3		0.4391	41.74	-0.03	41.71	57.08	-15.37	QP	
4		0.4391	36.50	-0.03	36.47	47.08	-10.61	AVG	
5		0.5680	40.79	-0.03	40.76	56.00	-15.24	QP	
6		0.5680	23.54	-0.03	23.51	46.00	-22.49	AVG	
7		3.0352	32.92	-0.04	32.88	56.00	-23.12	QP	
8		3.0352	29.68	-0.04	29.64	46.00	-16.36	AVG	
9		8.8633	32.24	-0.07	32.17	60.00	-27.83	QP	
10		8.8633	29.15	-0.07	29.08	50.00	-20.92	AVG	
11		23.3984	30.64	-0.30	30.34	60.00	-29.66	QP	
12		23.3984	26.73	-0.30	26.43	50.00	-23.57	AVG	

EUT :	Smart POS Payment Terminal	Model Name. :	CS10
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Test Mode :	TX Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.4391	46.15	-0.03	46.12	57.08	-10.96	QP	
2	*	0.4391	38.55	-0.03	38.52	47.08	-8.56	AVG	
3		0.8688	41.05	-0.04	41.01	56.00	-14.99	QP	
4		0.8688	32.62	-0.04	32.58	46.00	-13.42	AVG	
5		2.3141	39.29	-0.05	39.24	56.00	-16.76	QP	
6		2.3141	28.41	-0.05	28.36	46.00	-17.64	AVG	
7		3.6133	37.71	-0.05	37.66	56.00	-18.34	QP	
8		3.6133	30.59	-0.05	30.54	46.00	-15.46	AVG	
9		4.6328	35.93	-0.06	35.87	56.00	-20.13	QP	
10		4.6328	31.31	-0.06	31.25	46.00	-14.75	AVG	
11		12.4022	32.66	-0.12	32.54	60.00	-27.46	QP	
12		12.4022	30.29	-0.12	30.17	50.00	-19.83	AVG	

5.4 26dB Emission Bandwidth and Occupied bandwidth

5.4.1 Limit

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier

5.4.2 Test procedure

26d Emission bandwidth

Set RBW = approximately 1% of the emission bandwidth.

Set VBW $\geq 3 \times$ RBW

Detector = Peak.

Trace mode = Max hold.

Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

Occupied Bandwidth

Set Span = 1.5 times to 5.0 times the OBW

Set RBW = 1% to 5% of the OBW.

Set VBW $\geq 3 \times$ RBW, Detector = Peak.

Trace mode = Max hold.

Use the 99% power bandwidth function of the instrument.

5.4.3 Test setup



5.4.4 Test results

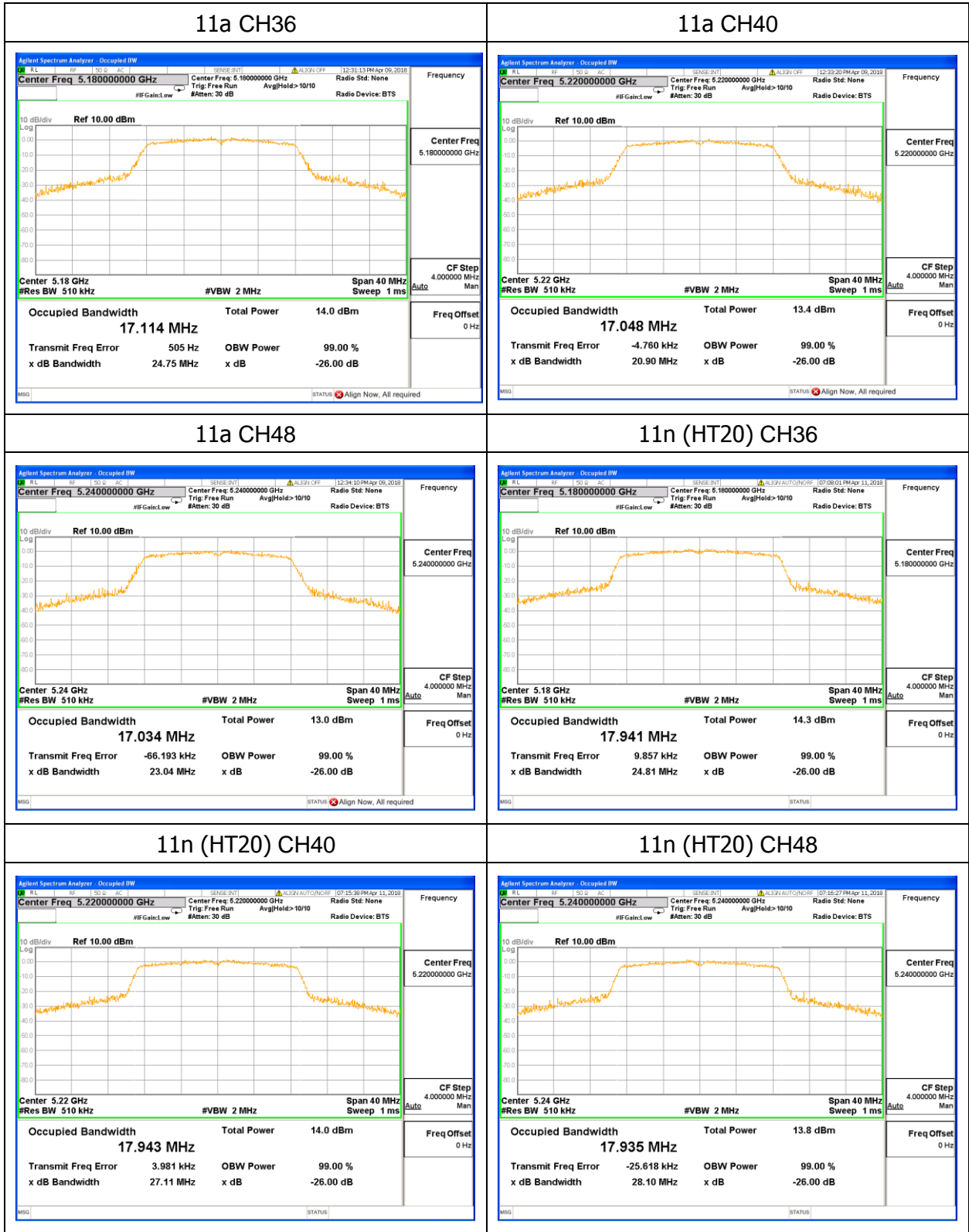
For Band I

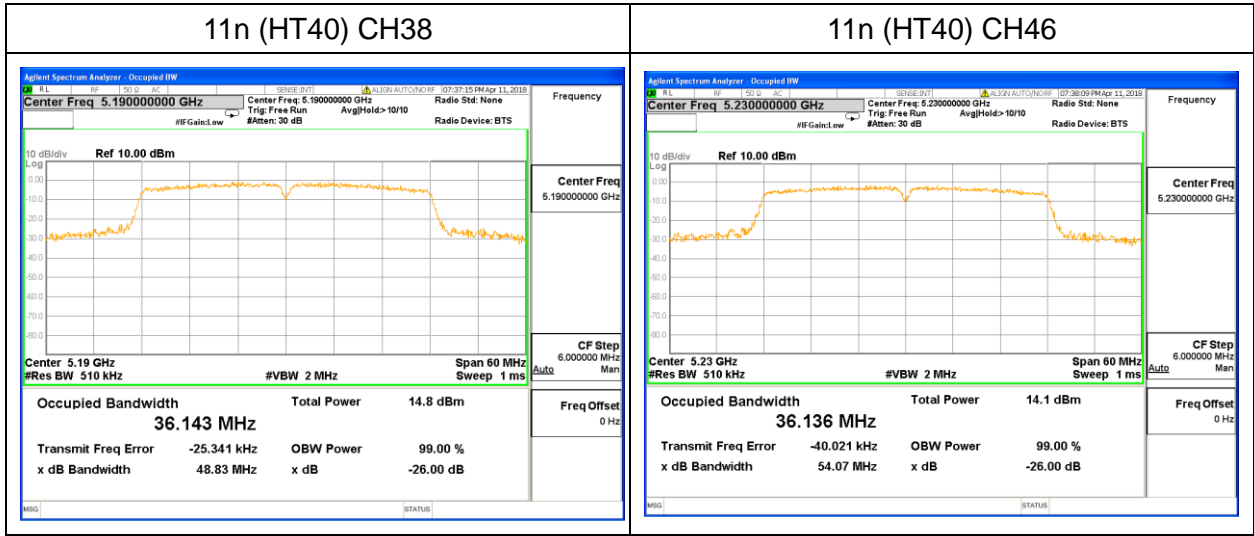
Channel	Test Channel	Frequency(MHz)	26dB bandwidth(MHz)	99% bandwidth	Limit(kHz)	Result
11a	CH36	5180	24.75	17.114	/	Pass
11a	CH40	5200	20.90	17.048	/	Pass
11a	CH48	5240	23.04	17.034	/	Pass
11n (HT20)	CH36	5180	24.81	17.941	/	Pass
11n (HT20)	CH40	5200	27.11	17.943	/	Pass
11n (HT20)	CH48	5240	28.10	17.935	/	Pass
11n (HT40)	CH38	5190	48.83	36.143	/	Pass
11n (HT40)	CH46	5230	54.07	36.136	/	Pass

For Band IV

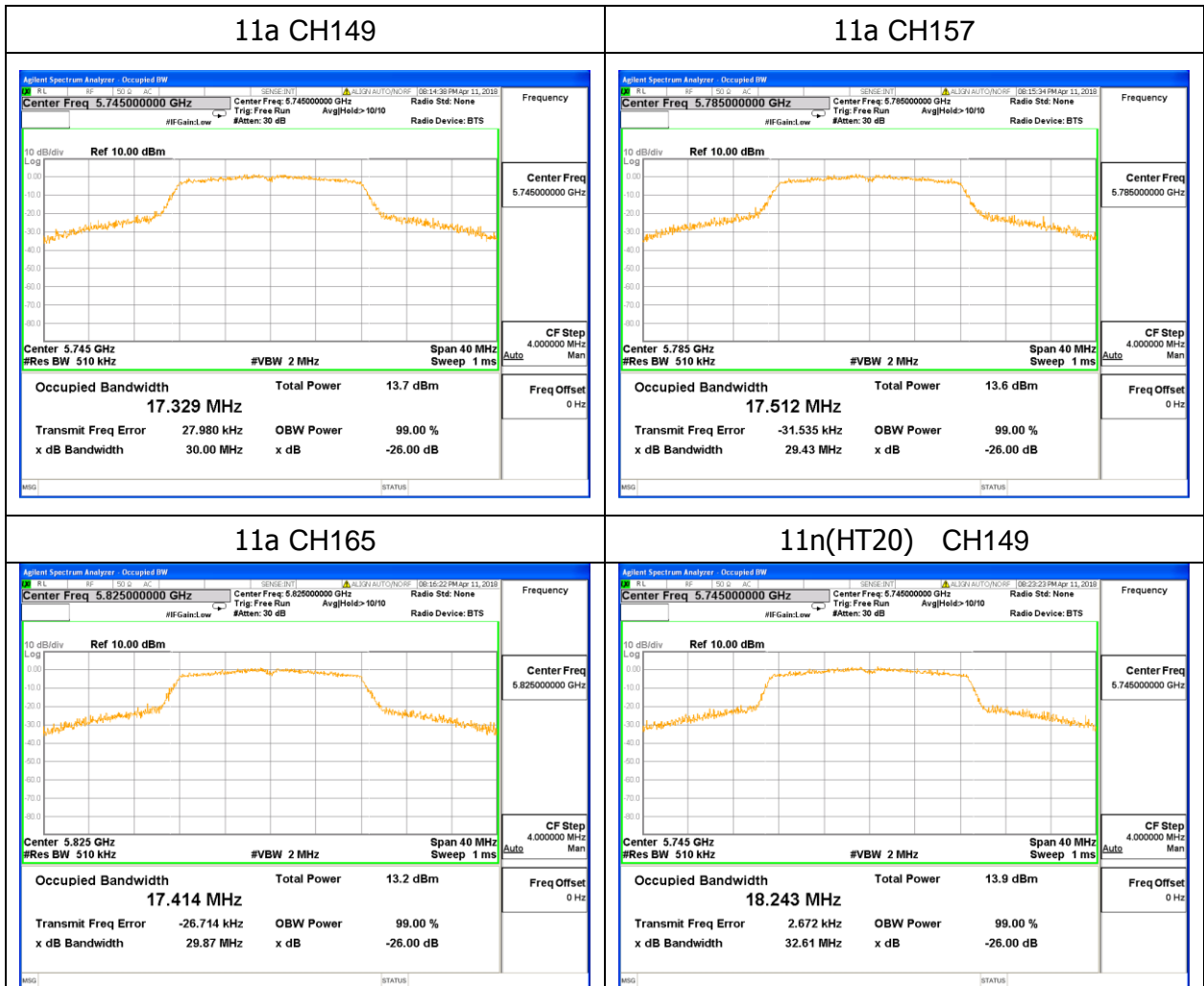
Channel	Test Channel	Frequency(MHz)	26dB bandwidth(MHz)	99% bandwidth	Limit(kHz)	Result
11a	CH149	5745	30.00	17.329	/	Pass
11a	CH157	5785	29.43	17.512	/	Pass
11a	CH165	5825	29.87	17.414	/	Pass
11n (HT20)	CH149	5745	32.61	18.243	/	Pass
11n (HT20)	CH157	5785	30.18	18.225	/	Pass
11n (HT20)	CH165	5825	30.68	18.213	/	Pass
11n (HT40)	CH151	5755	59.28	36.354	/	Pass
11n (HT40)	CH159	5795	59.93	36.342	/	Pass

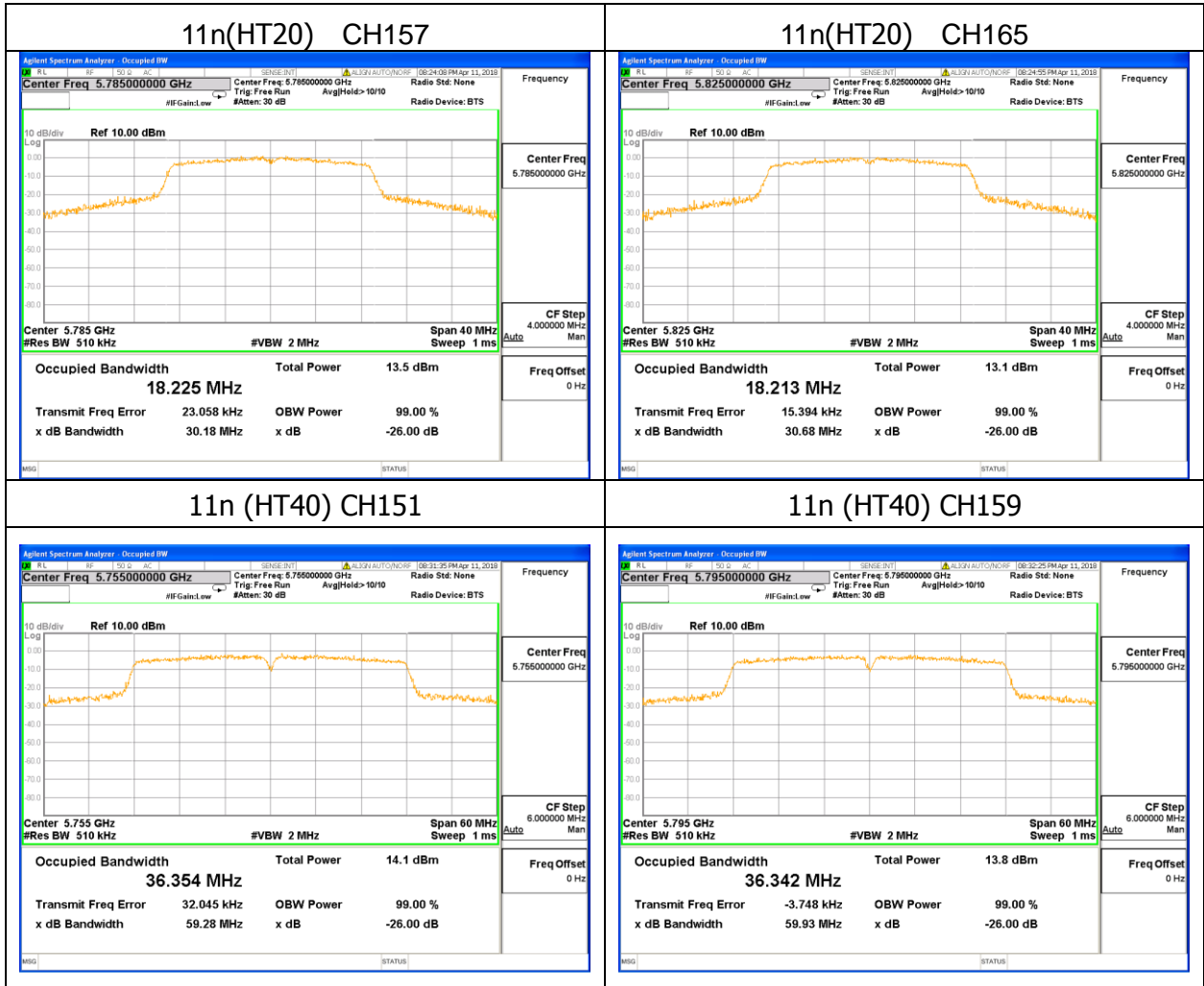
Test plots:
For Band I





For Band IV





5.5 6dB Bandwidth

5.5.1 Limit

For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier

5.5.2 Test procedure

1. Set RBW= 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

5.5.3 Test setup

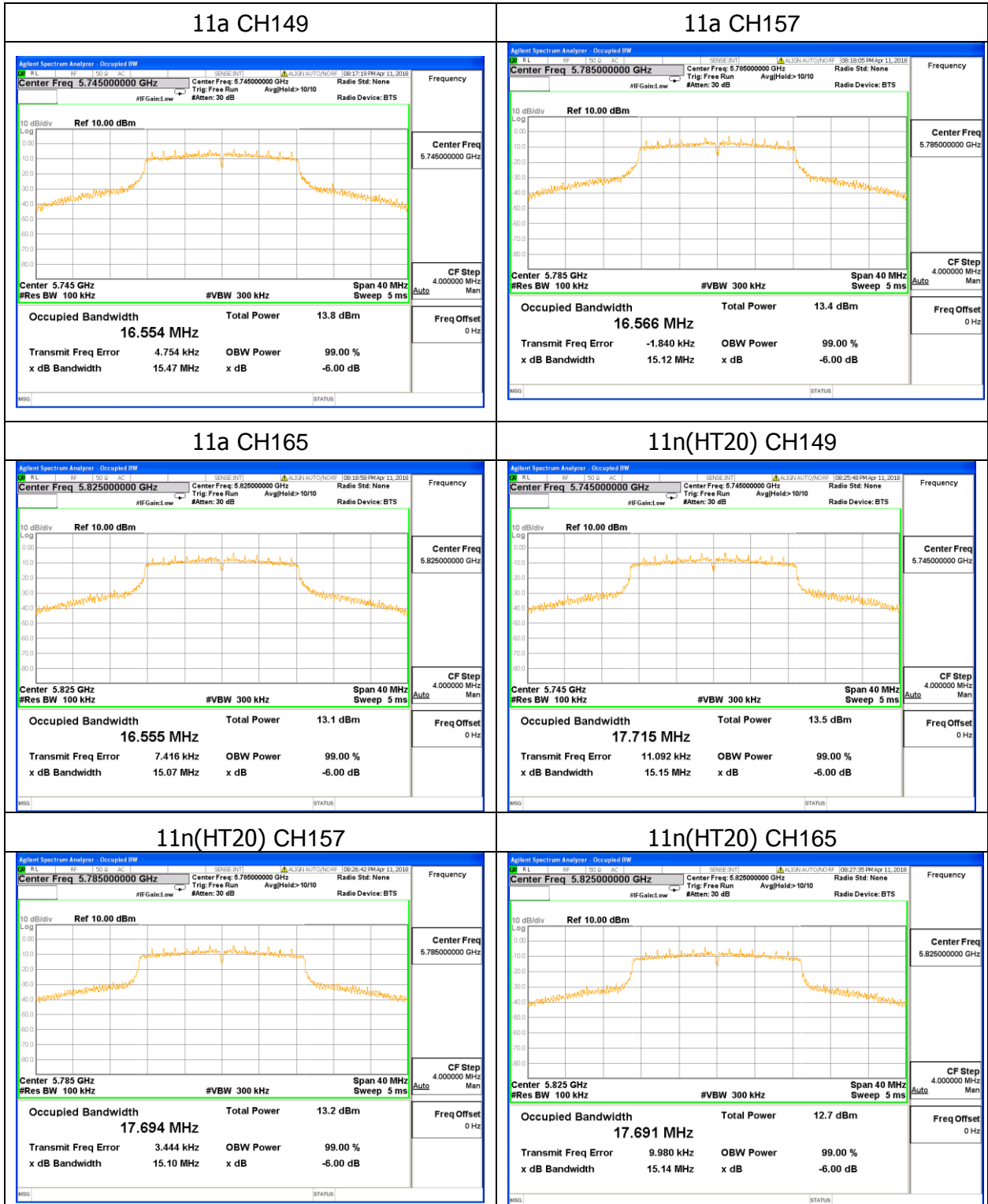


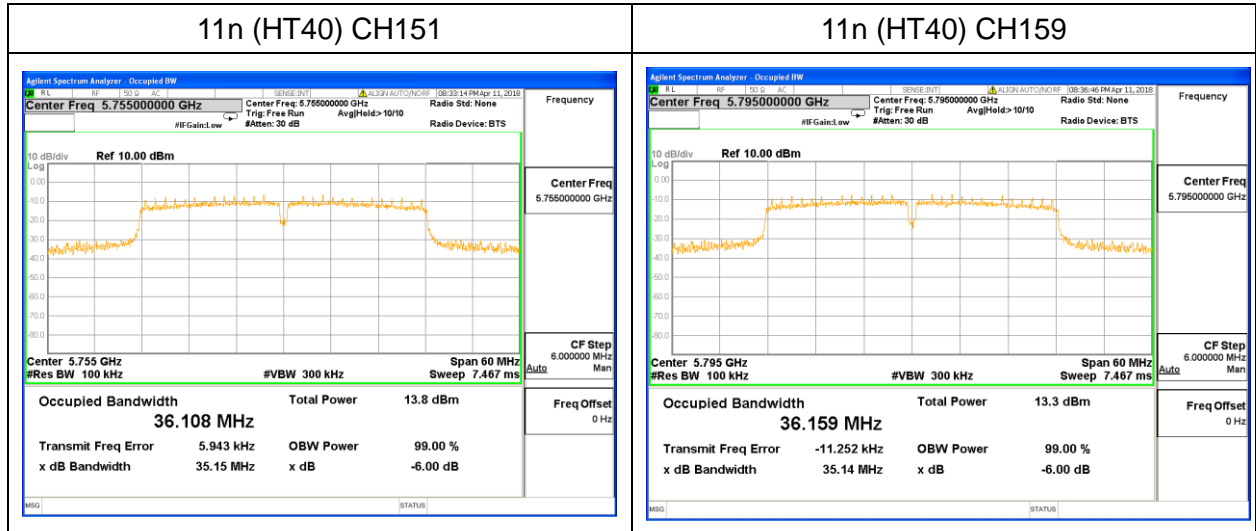
5.5.4 Test results

Channel	Test Channel	Frequency(MHz)	6dB bandwidth(MHz)	Limit(kHz)	Result
11a	CH149	5745	15.47	500	Pass
11a	CH157	5785	15.12	500	Pass
11a	CH165	5825	15.07	500	Pass
11n (HT20)	CH149	5745	15.15	500	Pass
11n (HT20)	CH157	5785	15.10	500	Pass
11n (HT20)	CH165	5825	15.14	500	Pass
11n (HT40)	CH151	5755	35.15	500	Pass
11n (HT40)	CH159	5795	35.14	500	Pass

Test plots

For Band IV





5.6 Radiated spurious emission

Radiated Emission Limits

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RBW / VBW (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

5.6.1 Test procedure

The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.

The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

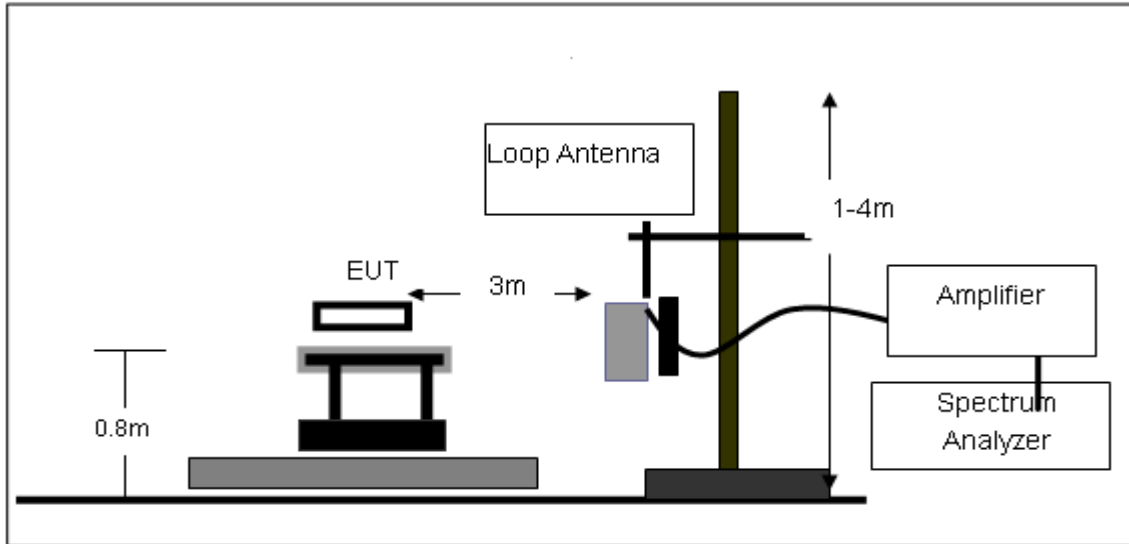
If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT

shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. For the actual test configuration, please refer to the related Item –EUT Test Photos.

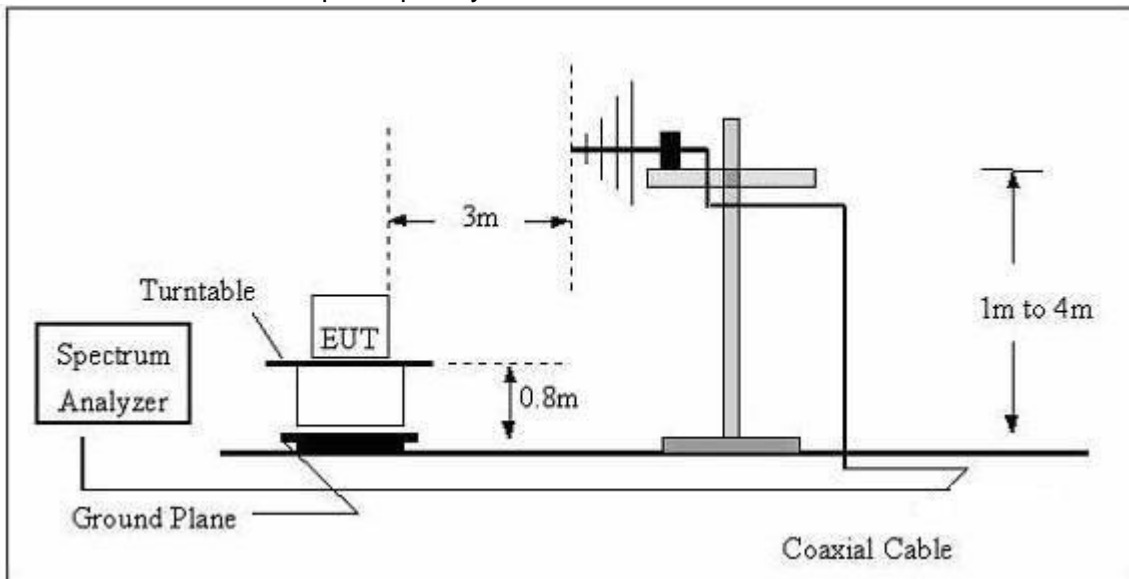
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

5.6.2 Test setup

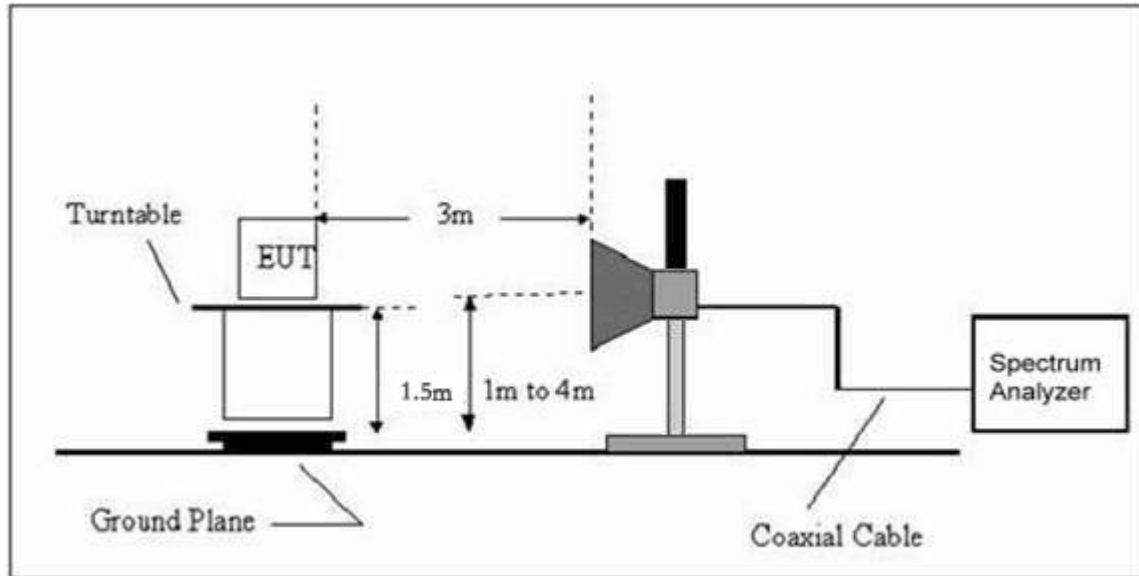
(A) Radiated Emission test-up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



5.6.3 Test results

EUT:	Smart POS Payment Terminal	Model Name:	CS10
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage:	DC 5V from adapter AC 120V/60Hz
Test Mode:	TX	Polarization :	--

Below 30MHz

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	Pass
--	--	--	--	Pass

Note1: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

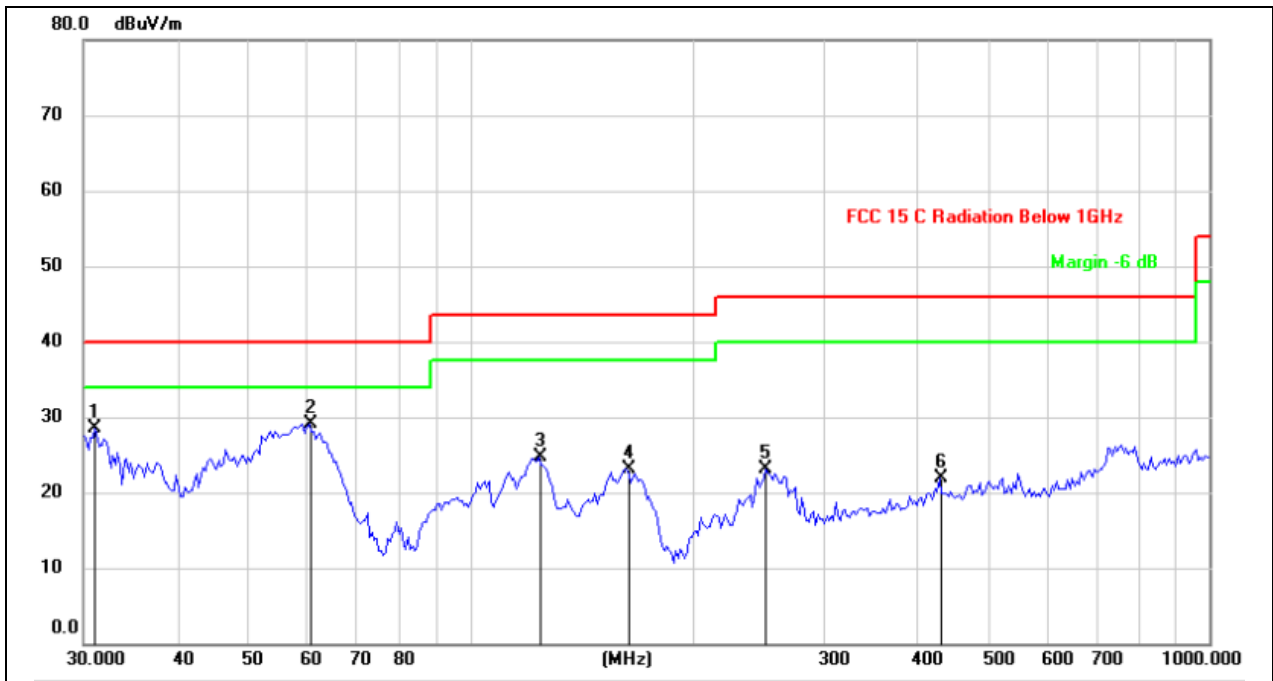
Note2: Distance extrapolation factor = 40 log (specific distance/test distance)(dB); Limit line = specific limits(dBuV) + distance extrapolation factor.

Between 30MHz – 1GHz

Note1 : Emission Level = Meter Reading + Factor, Margin= Emission Level- Limit, Factor = Antenna Factor + Cable Loss – Pre-amplifier.

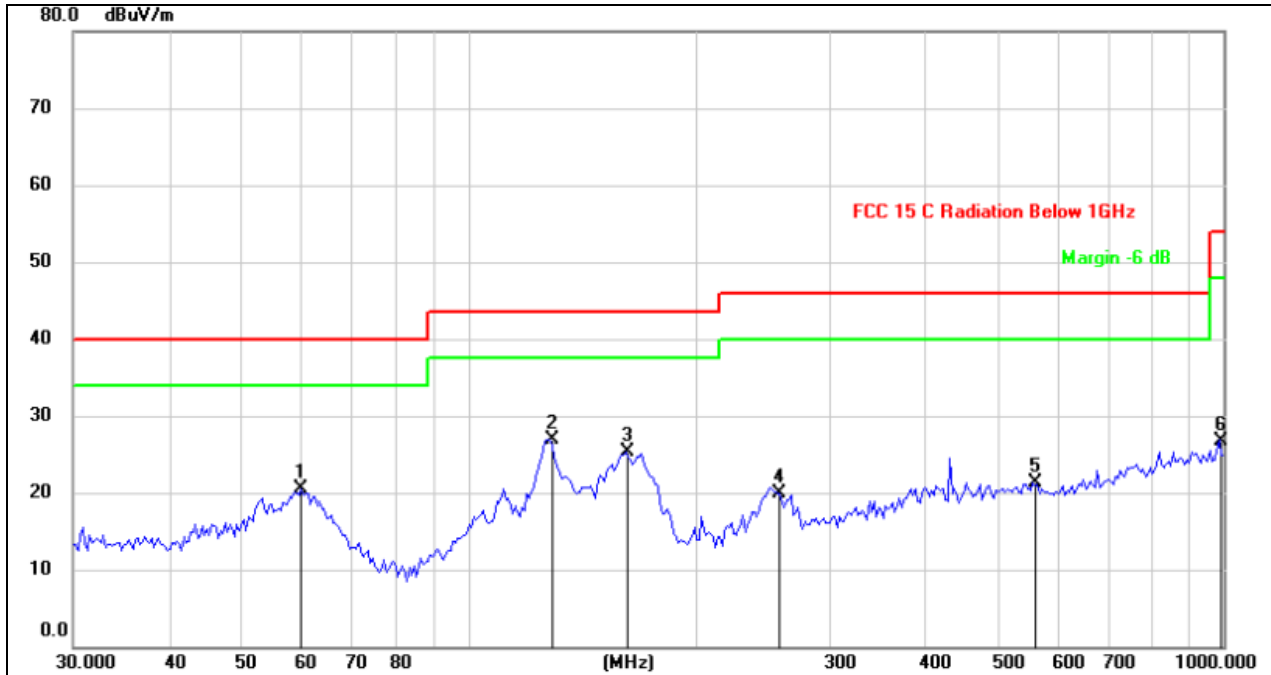
Note2 : The peak value is less than the AV value, AV value is not required Factor added by measurement software automatically.

EUT :	Smart POS Payment Terminal	Model Name :	CS10
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Phase :	V
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Mode:	Normal working



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		31.0706	39.89	-11.48	28.41	40.00	-11.59			peak
2	*	60.4919	40.37	-11.30	29.07	40.00	-10.93			peak
3		123.6985	37.38	-12.59	24.79	43.50	-18.71			peak
4		162.6106	36.08	-12.88	23.20	43.50	-20.30			peak
5		251.1804	33.31	-10.11	23.20	46.00	-22.80			peak
6		431.0316	27.98	-6.09	21.89	46.00	-24.11			peak

EUT :	Smart POS Payment Terminal	Model Name :	CS10
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Phase :	H
Test Voltage :	DC 5V from adapter AC 120V/60Hz	Mode:	Normal working



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dBuV/m	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		60.0691	31.67	-11.19	20.48	40.00	-19.52	peak		
2	*	128.1130	41.19	-14.23	26.96	43.50	-16.54	peak		
3		161.4742	39.36	-14.10	25.26	43.50	-18.24	peak		
4		256.5211	29.72	-9.84	19.88	46.00	-26.12	peak		
5		558.7302	26.47	-5.23	21.24	46.00	-24.76	peak		
6		986.0717	27.29	-0.49	26.80	54.00	-27.20	peak		

1G-40GHz

Note1 : Emission Level = Meter Reading + Factor, Margin= Emission Level- Limit, Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Note2 : The peak value is less than the AV value, AV value is not required Factor added by measurement software automatically.

Note3 : The spurious emission of 25GHz – 40GHz band which the margin is lower more than 20dB, So that it is not reported in this test report.

For Band I

802.11a

Low Channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	3516.570	43.51	-9.92	33.59	74.00	-40.41	Horizontal
2	7336.673	48.18	-2.77	45.41	74.00	-28.59	Horizontal
3	8699.399	47.64	-1.53	46.11	74.00	-27.89	Horizontal
4	10436.874	47.07	2.22	49.29	74.00	-24.71	Horizontal
5	11254.509	47.49	2.41	49.90	74.00	-24.10	Horizontal
6	12855.711	47.46	3.05	50.51	74.00	-23.49	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	3510.612	45.06	-9.71	35.35	74.00	-38.65	Vertical
2	7302.605	51.08	-4.47	46.61	74.00	-27.39	Vertical
3	7779.559	50.52	-3.93	46.59	74.00	-27.41	Vertical
4	9755.511	50.33	-0.74	49.59	74.00	-24.41	Vertical
5	11390.782	49.91	0.38	50.29	74.00	-23.71	Vertical
6	13060.120	48.81	1.64	50.45	74.00	-23.55	Vertical

Middle channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	3518.787	46.96	-9.88	37.08	74.00	-36.92	Horizontal
2	7779.559	48.88	-2.24	46.64	74.00	-27.36	Horizontal
3	9619.238	47.63	0.72	48.35	74.00	-25.65	Horizontal
4	10573.146	48.55	2.28	50.83	74.00	-23.17	Horizontal
5	12072.144	48.22	2.53	50.75	74.00	-23.25	Horizontal
6	14014.028	44.94	6.23	51.17	74.00	-22.83	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	3501.430	47.17	-9.42	37.75	74.00	-36.25	Vertical
2	6553.106	50.82	-5.79	45.03	74.00	-28.97	Vertical
3	7983.968	50.25	-3.67	46.58	74.00	-27.42	Vertical
4	9108.216	49.01	-1.90	47.11	74.00	-26.89	Vertical
5	10334.669	50.06	0.07	50.13	74.00	-23.87	Vertical
6	13060.120	49.25	1.64	50.89	74.00	-23.11	Vertical

High channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	3512.541	45.55	-9.70	35.85	74.00	-38.15	Horizontal
2	6587.174	49.67	-4.18	45.49	74.00	-28.51	Horizontal
3	8154.309	48.97	-1.90	47.07	74.00	-26.93	Horizontal
4	9993.988	47.64	1.87	49.51	74.00	-24.49	Horizontal
5	11186.373	47.46	2.38	49.84	74.00	-24.16	Horizontal
6	12923.848	48.82	3.06	51.88	74.00	-22.12	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	3514.137	45.14	-9.61	35.52	74.00	-38.48	Vertical
2	6621.243	50.66	-5.63	45.03	74.00	-28.97	Vertical
3	8086.172	50.17	-3.54	46.63	74.00	-27.37	Vertical
4	9380.762	49.00	-1.47	47.53	74.00	-26.47	Vertical
5	10368.737	50.35	0.10	50.45	74.00	-23.55	Vertical
6	11935.872	50.30	0.27	50.57	74.00	-23.43	Vertical

802.11n(HT20)

Low Channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6587.174	49.11	-4.18	44.93	74.00	-29.07	Horizontal
2	8086.172	49.20	-1.87	47.33	74.00	-26.67	Horizontal
3	10266.533	47.40	2.09	49.49	74.00	-24.51	Horizontal
4	11697.395	48.57	2.47	51.04	74.00	-22.96	Horizontal
5	14116.233	44.68	5.97	50.65	74.00	-23.35	Horizontal
6	14967.936	44.56	4.27	48.83	74.00	-25.17	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6450.902	50.83	-6.06	44.77	74.00	-29.23	Vertical
2	8529.058	50.04	-2.92	47.12	74.00	-26.88	Vertical
3	10470.942	49.93	0.19	50.12	74.00	-23.88	Vertical
4	11629.258	49.88	0.35	50.23	74.00	-23.77	Vertical
5	13094.188	49.32	1.77	51.09	74.00	-22.91	Vertical
6	14116.233	45.40	5.68	51.08	74.00	-22.92	Vertical

Middle channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6215.549	45.76	-6.85	38.91	74.00	-35.09	Horizontal
2	7268.537	49.40	-2.79	46.61	74.00	-27.39	Horizontal
3	9755.511	48.13	1.14	49.27	74.00	-24.73	Horizontal
4	11629.258	47.71	2.48	50.19	74.00	-23.81	Horizontal
5	12991.984	48.30	3.08	51.38	74.00	-22.62	Horizontal
6	14422.846	46.21	5.21	51.42	74.00	-22.58	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6200.118	45.37	-6.91	38.45	74.000	-35.55	Vertical
2	7132.265	51.38	-4.65	46.73	74.00	-27.27	Vertical
3	8869.739	49.22	-2.30	46.92	74.00	-27.08	Vertical
4	10505.010	50.09	0.22	50.31	74.00	-23.69	Vertical
5	12719.439	50.43	1.17	51.60	74.00	-22.40	Vertical
6	14014.028	45.47	5.84	51.31	74.00	-22.69	Vertical

High channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6216.840	46.77	-6.12	40.64	74.00	-33.36	Horizontal
2	6587.174	49.79	-4.18	45.61	74.00	-28.39	Horizontal
3	8018.036	48.92	-1.86	47.06	74.00	-26.94	Horizontal
4	10028.056	48.23	1.91	50.14	74.00	-23.86	Horizontal
5	11935.872	49.30	2.45	51.75	74.00	-22.25	Horizontal
6	14184.369	45.53	5.80	51.33	74.00	-22.67	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6202.623	46.37	-6.27	40.10	74.00	-33.90	Vertical
2	6546.493	51.47	-4.74	46.73	74.00	-27.27	Vertical
3	7983.968	50.26	-3.67	46.59	74.00	-27.41	Vertical
4	10573.146	50.92	0.23	51.15	74.00	-22.85	Vertical
5	11492.986	50.24	0.40	50.64	74.00	-23.36	Vertical
6	14048.096	46.13	5.78	51.91	74.00	-22.09	Vertical

802.11n(HT40)

Low Channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6202.841	44.07	-6.86	37.20	74.00	-36.80	Horizontal
2	6587.174	49.59	-4.18	45.41	74.00	-28.59	Horizontal
3	7404.810	49.02	-2.75	46.27	74.00	-27.73	Horizontal
4	10028.056	48.01	1.91	49.92	74.00	-24.08	Horizontal
5	11799.599	47.59	2.47	50.06	74.00	-23.94	Horizontal
6	12855.711	48.29	3.05	51.34	74.00	-22.66	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6216.951	44.29	-6.80	37.49	74	-36.51	Vertical
2	6382.766	51.52	-6.29	45.23	74.00	-28.77	Vertical
3	8052.104	51.50	-3.59	47.91	74.00	-26.09	Vertical
4	10505.010	50.31	0.22	50.53	74.00	-23.47	Vertical
5	12378.757	49.29	0.82	50.11	74.00	-23.89	Vertical
6	14014.028	44.97	5.84	50.81	74.00	-23.19	Vertical

High channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6200.025	44.17	-6.42	37.75	74.00	-36.25	Horizontal
2	7370.742	48.39	-2.76	45.63	74.00	-28.37	Horizontal
3	9040.080	47.82	-0.77	47.05	74.00	-26.95	Horizontal
4	10505.010	48.36	2.27	50.63	74.00	-23.37	Horizontal
5	12004.008	48.32	2.45	50.77	74.00	-23.23	Horizontal
6	13979.960	44.94	6.19	51.13	74.00	-22.87	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6215.702	47.13	-6.88	40.25	74.00	-33.75	Vertical
2	7132.265	49.92	-4.65	45.27	74.00	-28.73	Vertical
3	9278.557	49.01	-1.64	47.37	74.00	-26.63	Vertical
4	10573.146	50.11	0.23	50.34	74.00	-23.66	Vertical
5	12480.962	50.39	0.98	51.37	74.00	-22.63	Vertical
6	13877.755	46.37	5.28	51.65	74.00	-22.35	Vertical

For band VI

802.11a

Low Channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6621.243	50.84	-4.07	46.77	74.00	-27.23	Horizontal
2	7779.559	49.45	-2.24	47.21	74.00	-26.79	Horizontal
3	10232.465	49.55	2.06	51.61	74.00	-22.39	Horizontal
4	11629.258	48.98	2.48	51.46	74.00	-22.54	Horizontal
5	12617.235	49.14	2.99	52.13	74.00	-21.87	Horizontal
6	14286.573	46.51	5.55	52.06	74.00	-21.94	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6450.902	51.95	-6.06	45.89	74.00	-28.11	Vertical
2	7200.401	51.51	-4.58	46.93	74.00	-27.07	Vertical
3	8835.671	49.88	-2.37	47.51	74.00	-26.49	Vertical
4	9993.988	51.02	-0.22	50.80	74.00	-23.20	Vertical
5	11492.986	51.04	0.40	51.44	74.00	-22.56	Vertical
6	13128.256	49.05	1.92	50.97	74.00	-23.03	Vertical

Middle channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6655.311	49.51	-3.96	45.55	74.00	-28.45	peak
2	7983.968	49.03	-1.88	47.15	74.00	-26.85	peak
3	9687.375	47.86	0.94	48.80	74.00	-25.20	peak
4	10845.691	48.00	2.30	50.30	74.00	-23.70	peak
5	12446.894	48.31	2.90	51.21	74.00	-22.79	peak
6	13911.824	44.66	5.96	50.62	74.00	-23.38	peak

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6484.970	52.98	-5.95	47.03	74.00	-26.97	Vertical
2	7847.695	51.11	-3.84	47.27	74.00	-26.73	Vertical
3	9414.830	50.08	-1.43	48.65	74.00	-25.35	Vertical
4	10300.601	51.10	0.04	51.14	74.00	-22.86	Vertical
5	12344.689	50.57	0.77	51.34	74.00	-22.66	Vertical
6	13060.120	50.18	1.64	51.82	74.00	-22.18	Vertical

High channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	7064.128	49.83	-2.86	46.97	74.00	-27.03	Horizontal
2	7949.900	49.76	-1.94	47.82	74.00	-26.18	Horizontal
3	9857.715	48.58	1.45	50.03	74.00	-23.97	Horizontal
4	10981.964	49.14	2.32	51.46	74.00	-22.54	Horizontal
5	12310.621	49.04	2.77	51.81	74.00	-22.19	Horizontal
6	12719.439	48.88	3.01	51.89	74.00	-22.11	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	7370.742	51.44	-4.40	47.04	74.00	-26.96	Vertical
2	8835.671	49.40	-2.37	47.03	74.00	-26.97	Vertical
3	9619.238	50.48	-1.04	49.44	74.00	-24.56	Vertical
4	11595.190	51.70	0.36	52.06	74.00	-21.94	Vertical
5	12821.643	50.78	1.25	52.03	74.00	-21.97	Vertical
6	14184.369	45.20	5.57	50.77	74.00	-23.23	Vertical

802.11n(HT20)

Low Channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	7336.673	49.52	-2.77	46.75	74.00	-27.25	Horizontal
2	9210.421	48.65	-0.35	48.30	74.00	-25.70	Horizontal
3	10334.669	48.67	2.14	50.81	74.00	-23.19	Horizontal
4	11697.395	48.46	2.47	50.93	74.00	-23.07	Horizontal
5	12787.575	48.48	3.03	51.51	74.00	-22.49	Horizontal
6	14014.028	44.16	6.23	50.39	74.00	-23.61	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6484.970	51.92	-5.95	45.97	74.00	-28.03	Vertical
2	7983.968	51.89	-3.67	48.22	74.00	-25.78	Vertical
3	9619.238	50.87	-1.04	49.83	74.00	-24.17	Vertical
4	10913.828	50.77	0.30	51.07	74.00	-22.93	Vertical
5	12719.439	51.20	1.17	52.37	74.00	-21.63	Vertical
6	14286.573	45.90	5.41	51.31	74.00	-22.69	Vertical

Middle channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	7404.810	49.54	-2.75	46.79	74.00	-27.21	Horizontal
2	9006.012	49.13	-0.86	48.27	74.00	-25.73	Horizontal
3	10539.078	49.12	2.27	51.39	74.00	-22.61	Horizontal
4	11901.804	49.01	2.46	51.47	74.00	-22.53	Horizontal
5	12889.780	48.39	3.05	51.44	74.00	-22.56	Horizontal
6	13843.687	45.05	5.73	50.78	74.00	-23.22	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	7132.265	51.04	-4.65	46.39	74.00	-27.61	Vertical
2	8018.036	52.56	-3.63	48.93	74.00	-25.07	Vertical
3	10096.192	51.42	-0.14	51.28	74.00	-22.72	Vertical
4	11799.599	51.70	0.31	52.01	74.00	-21.99	Vertical
5	12787.575	51.26	1.23	52.49	74.00	-21.51	Vertical
6	13979.960	46.08	5.77	51.85	74.00	-22.15	Vertical

High channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6825.651	49.32	-3.43	45.89	74.00	-28.11	Horizontal
2	7404.810	49.16	-2.75	46.41	74.00	-27.59	Horizontal
3	9176.353	48.98	-0.43	48.55	74.00	-25.45	Horizontal
4	10470.942	49.33	2.24	51.57	74.00	-22.43	Horizontal
5	11663.327	48.85	2.48	51.33	74.00	-22.67	Horizontal
6	12446.894	48.86	2.90	51.76	74.00	-22.24	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	7983.968	51.97	-3.67	48.30	74.00	-25.70	Vertical
2	10130.261	50.90	-0.10	50.80	74.00	-23.20	Vertical
3	11697.395	51.23	0.33	51.56	74.00	-22.44	Vertical
4	12719.439	50.32	1.17	51.49	74.00	-22.51	Vertical
5	14456.914	46.08	5.14	51.22	74.00	-22.78	Vertical
6	15887.776	46.95	2.54	49.49	74.00	-24.51	Vertical

802.11n(HT40)

Low Channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	7370.742	49.70	-2.76	46.94	74.00	-27.06	Horizontal
2	9653.307	48.57	0.83	49.40	74.00	-24.60	Horizontal
3	10777.555	48.22	2.29	50.51	74.00	-23.49	Horizontal
4	11969.940	49.14	2.45	51.59	74.00	-22.41	Horizontal
5	12957.916	48.42	3.08	51.50	74.00	-22.50	Horizontal
6	13979.960	46.38	6.19	52.57	74.00	-21.43	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	7370.742	51.87	-4.40	47.47	74.00	-26.53	Vertical
2	9040.080	49.85	-2.00	47.85	74.00	-26.15	Vertical
3	10573.146	50.99	0.23	51.22	74.00	-22.78	Vertical
4	11901.804	50.59	0.28	50.87	74.00	-23.13	Vertical
5	13128.256	50.03	1.92	51.95	74.00	-22.05	Vertical
6	13911.824	46.30	5.44	51.74	74.00	-22.26	Vertical

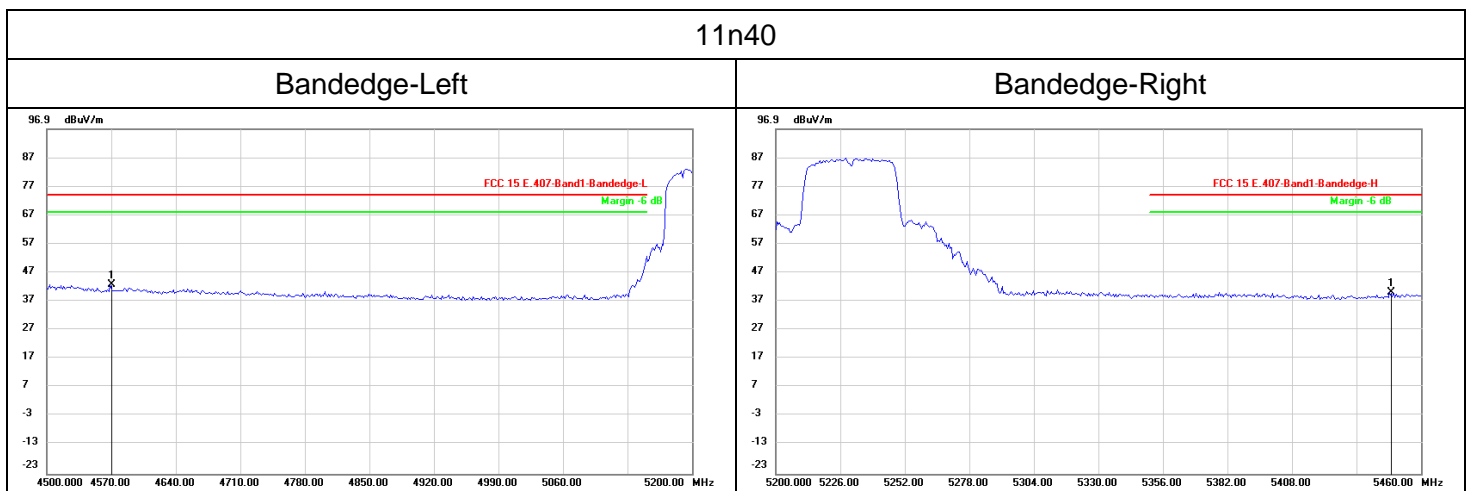
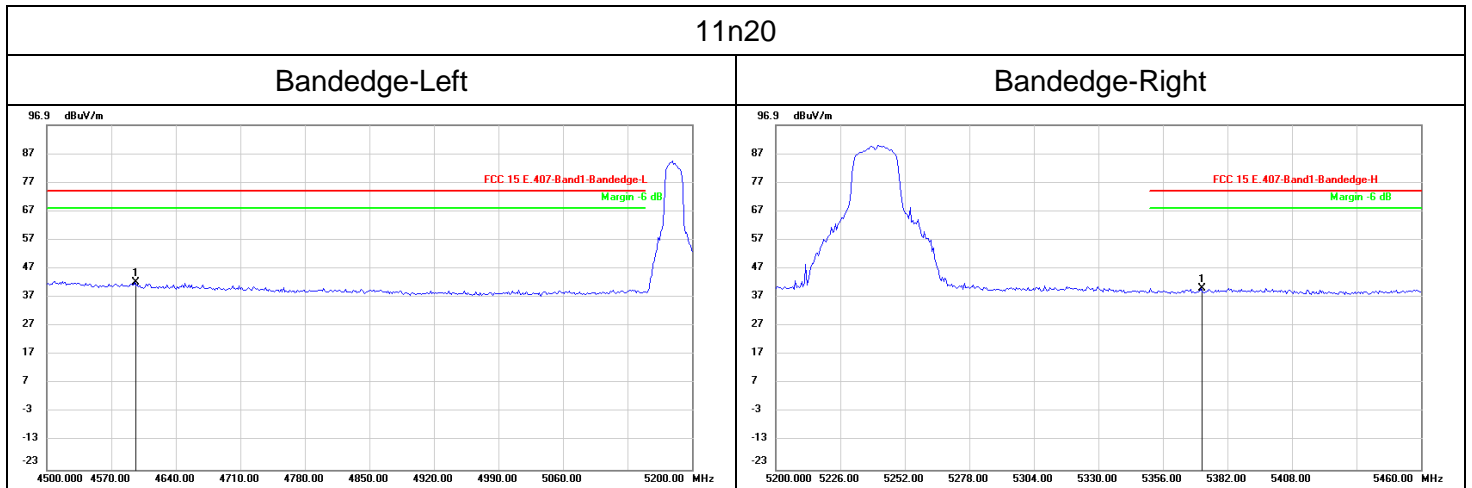
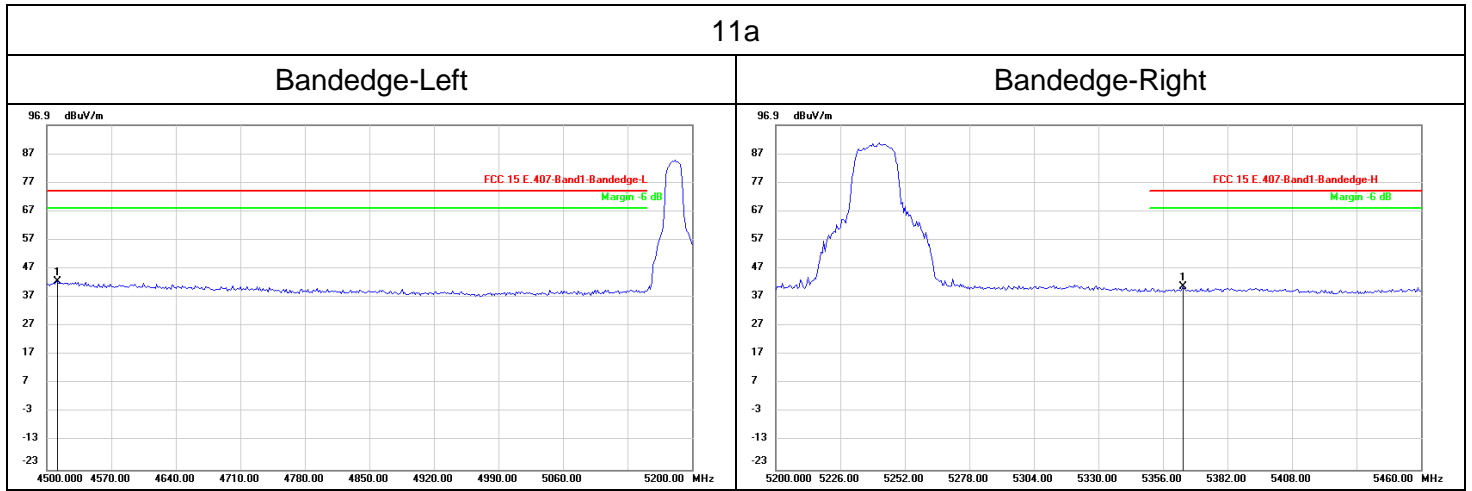
High channel

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	6484.970	51.46	-4.49	46.97	74.00	-27.03	Horizontal
2	8120.240	49.35	-1.88	47.47	74.00	-26.53	Horizontal
3	10300.601	48.53	2.11	50.64	74.00	-23.36	Horizontal
4	11629.258	48.81	2.48	51.29	74.00	-22.71	Horizontal
5	12821.643	48.91	3.04	51.95	74.00	-22.05	Horizontal
6	13945.892	46.08	6.08	52.16	74.00	-21.84	Horizontal

No.	Frequency (MHz)	Meter Reading (dBuV)	Factor dB	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Polar (H/V)
1	7234.469	50.60	-4.55	46.05	74.00	-27.95	Vertical
2	8086.172	51.36	-3.54	47.82	74.00	-26.18	Vertical
3	10300.601	51.17	0.04	51.21	74.00	-22.79	Vertical
4	11765.531	51.29	0.31	51.60	74.00	-22.40	Vertical
5	12787.575	51.06	1.23	52.29	74.00	-21.71	Vertical
6	14116.233	46.16	5.68	51.84	74.00	-22.16	Vertical

Note: Both horizontal and vertical antenna polarities were tested and only the worst case (horizontal) emissions were reported.

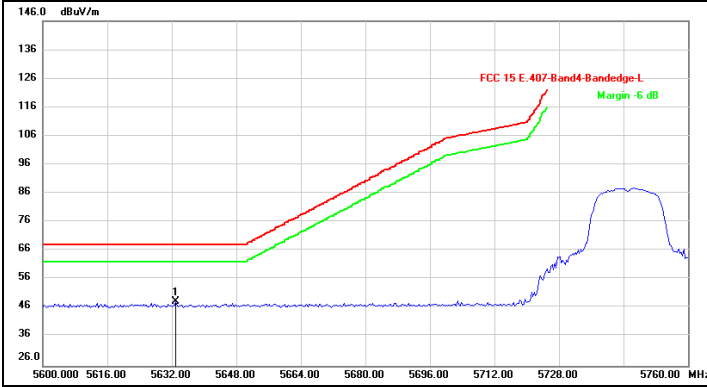
For band I



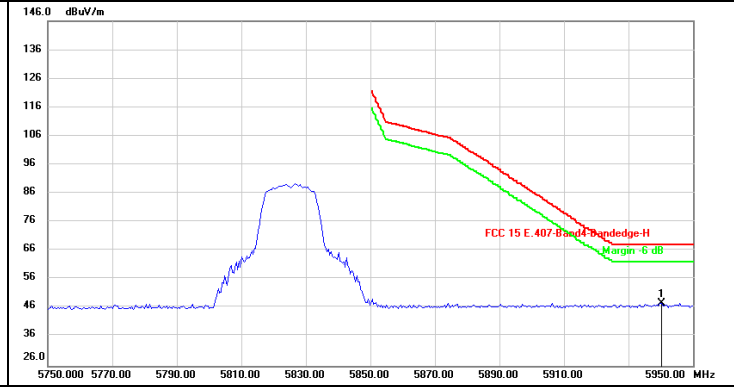
For band VI

11a

Bandedge-Left

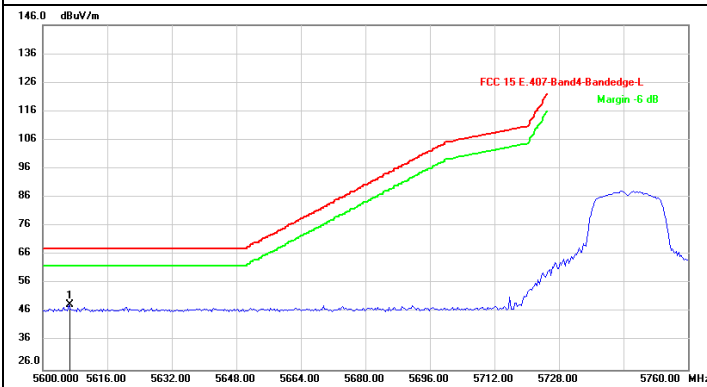


Bandedge-Right

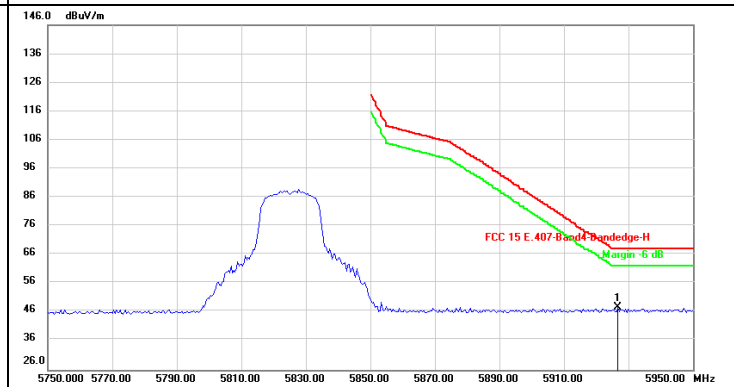


11n20

Bandedge-Left

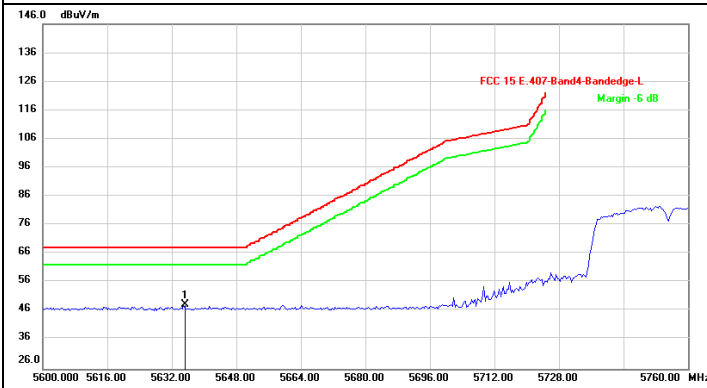


Bandedge-Right

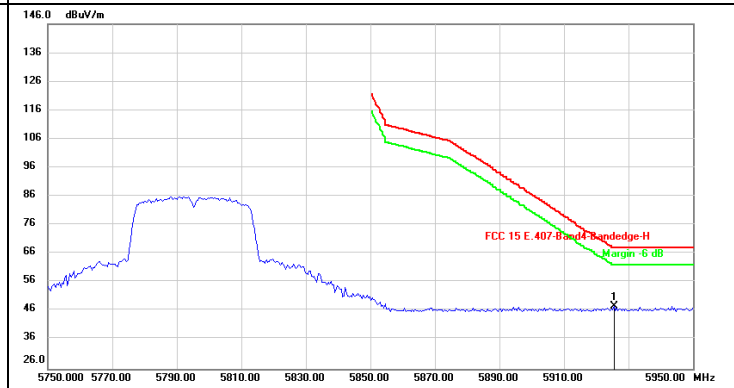


11n40

Bandedge-Left



Bandedge-Right



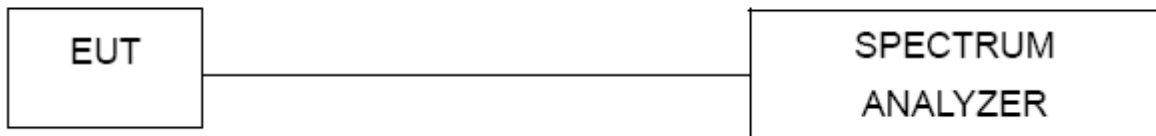
5.7 Conduction spurious emission

5.7.1 Limits

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

Frequency Band (MHz)	Limit
5150 - 5250	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5250 - 5350	Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm
5470 - 5725	Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm
5725 - 5850	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.

5.7.2 Test setup



5.7.3 Test procedure

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 1 MHz for $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz

VBW \geq RBW

Sweep = auto

Detector function = peak

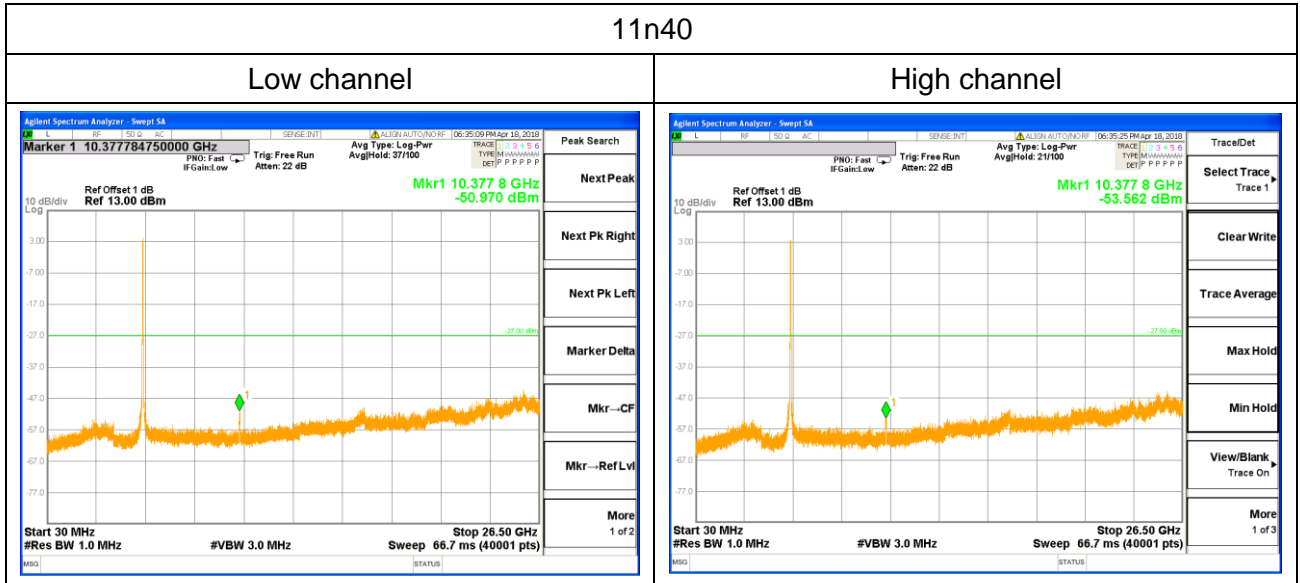
Trace = max hold

Allow the trace to stabilize

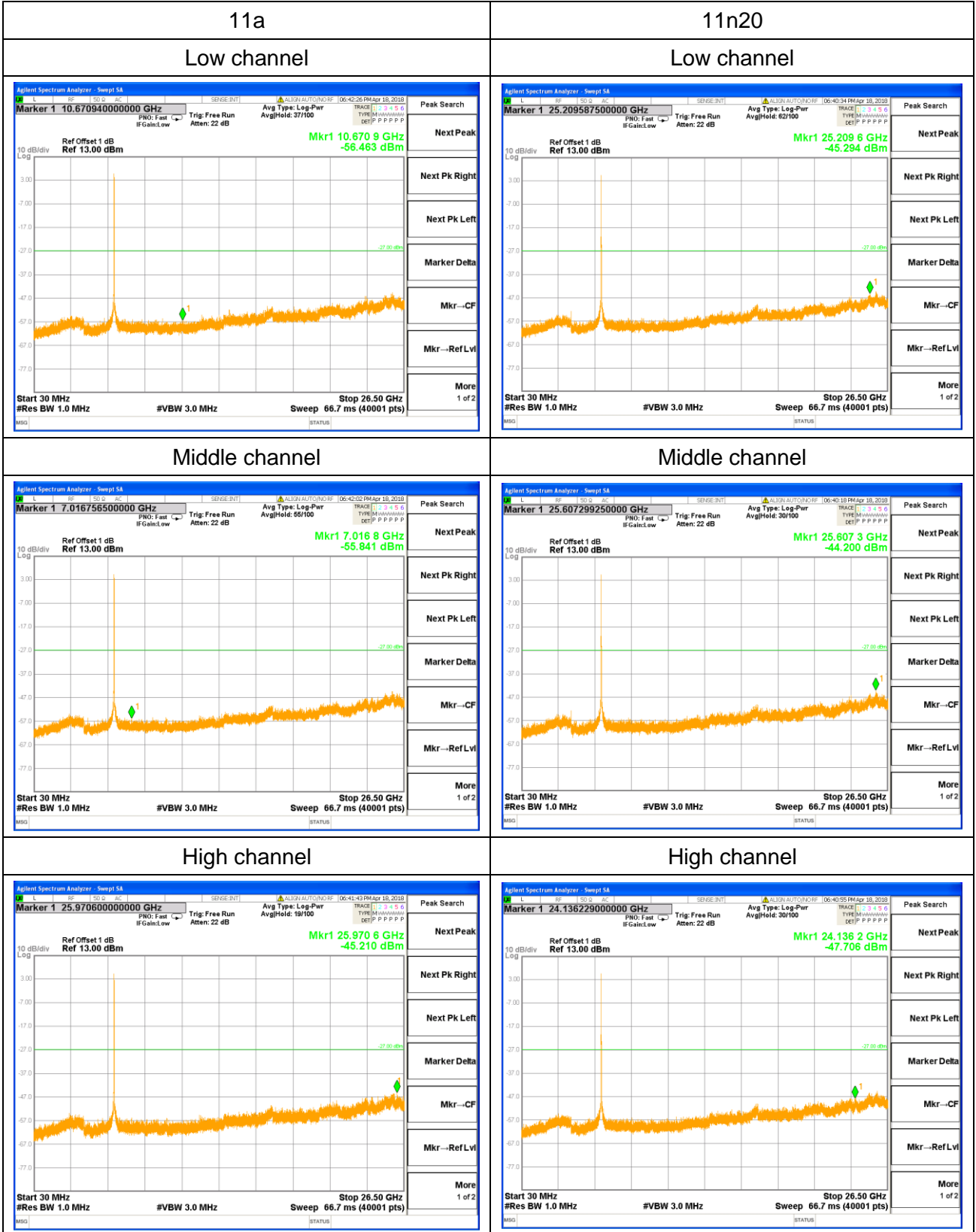
5.7.4 Test results

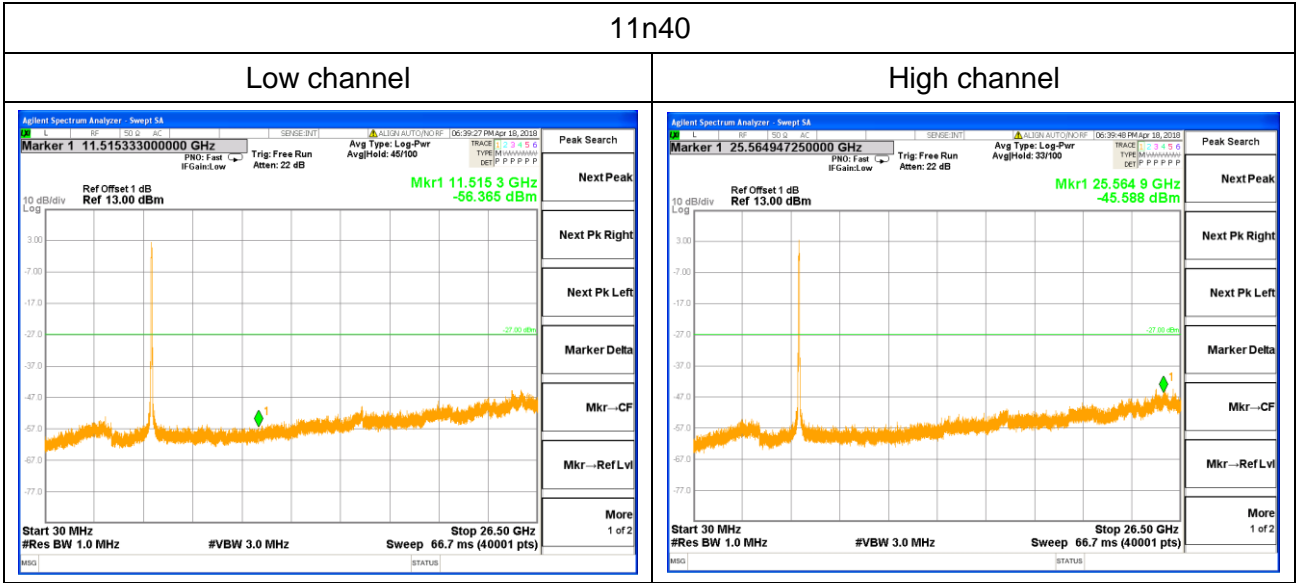
For band I



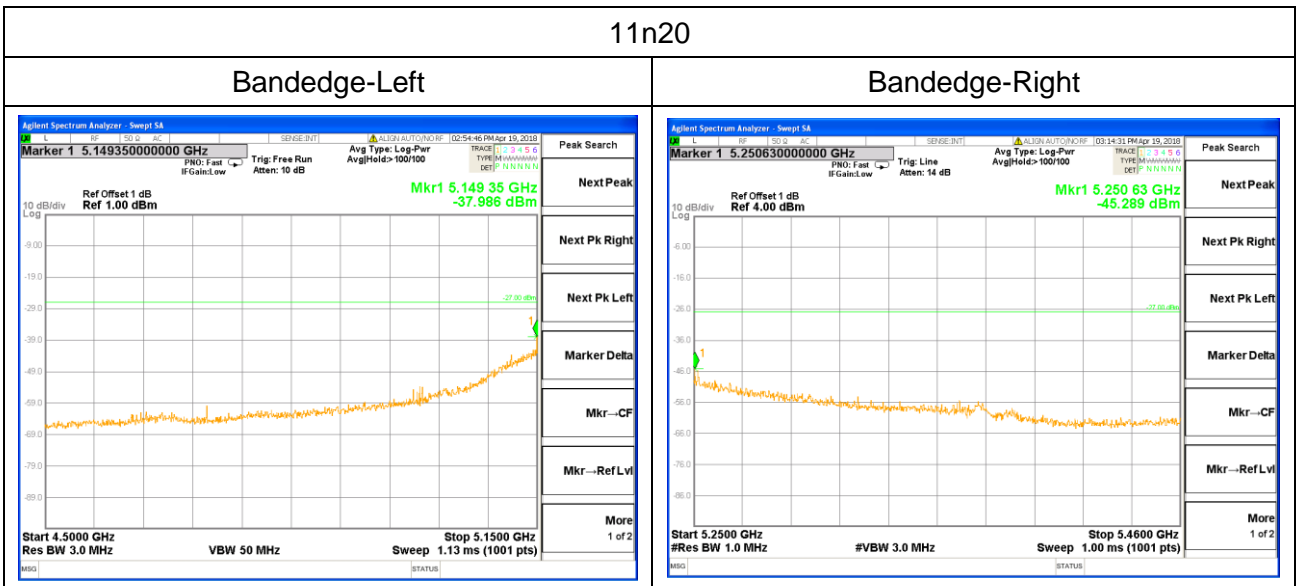
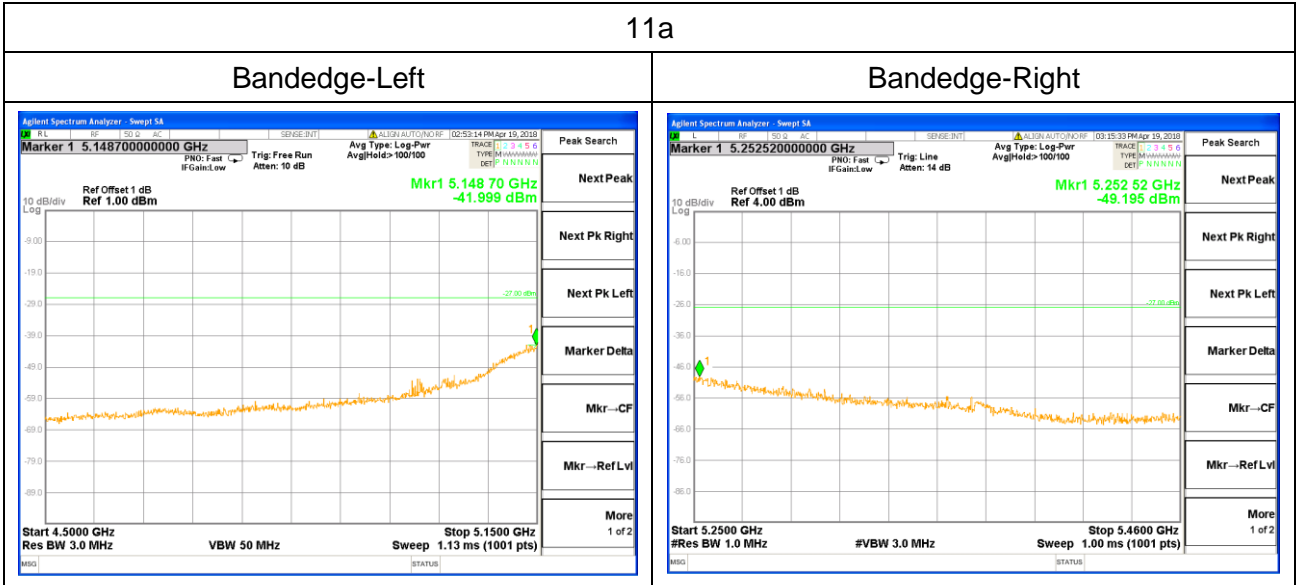


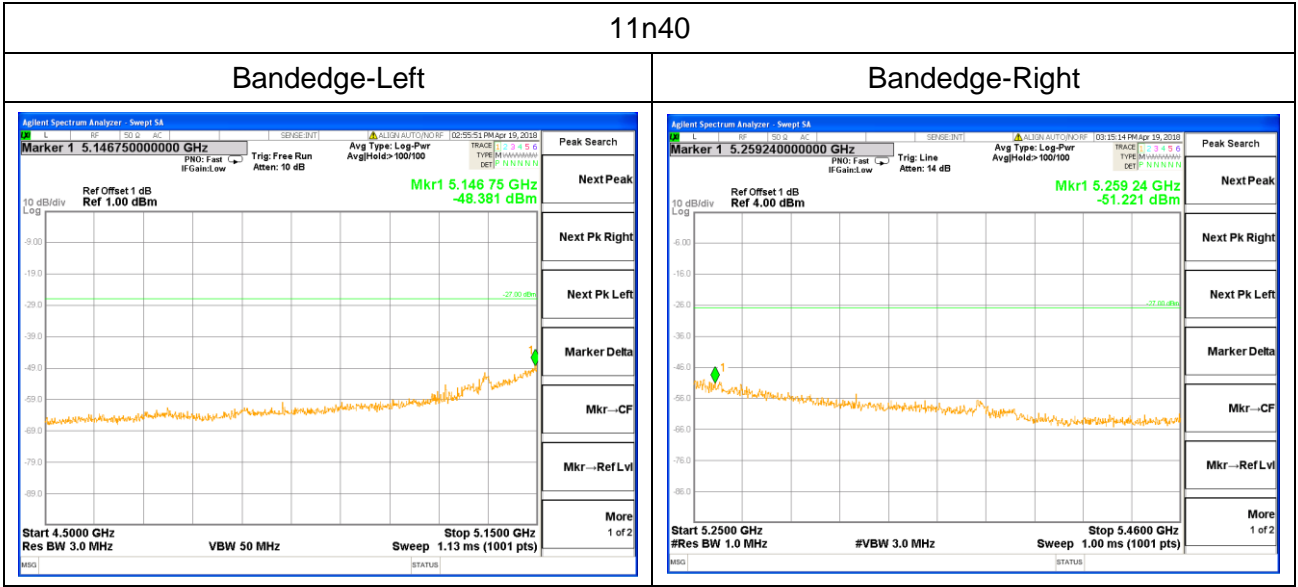
For band VI



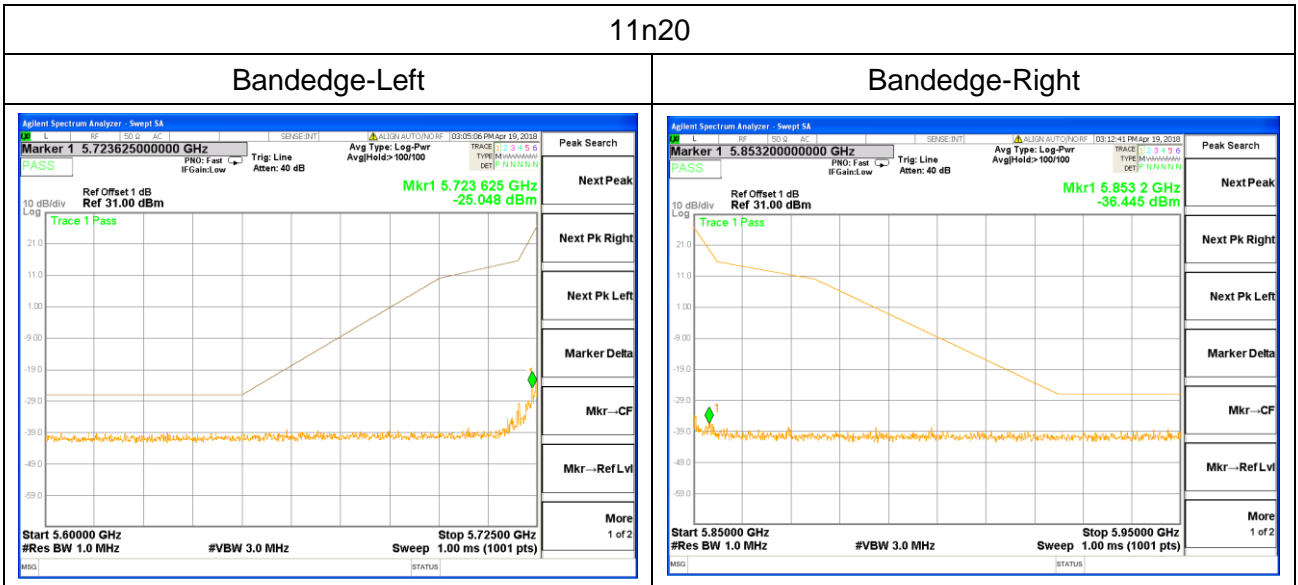
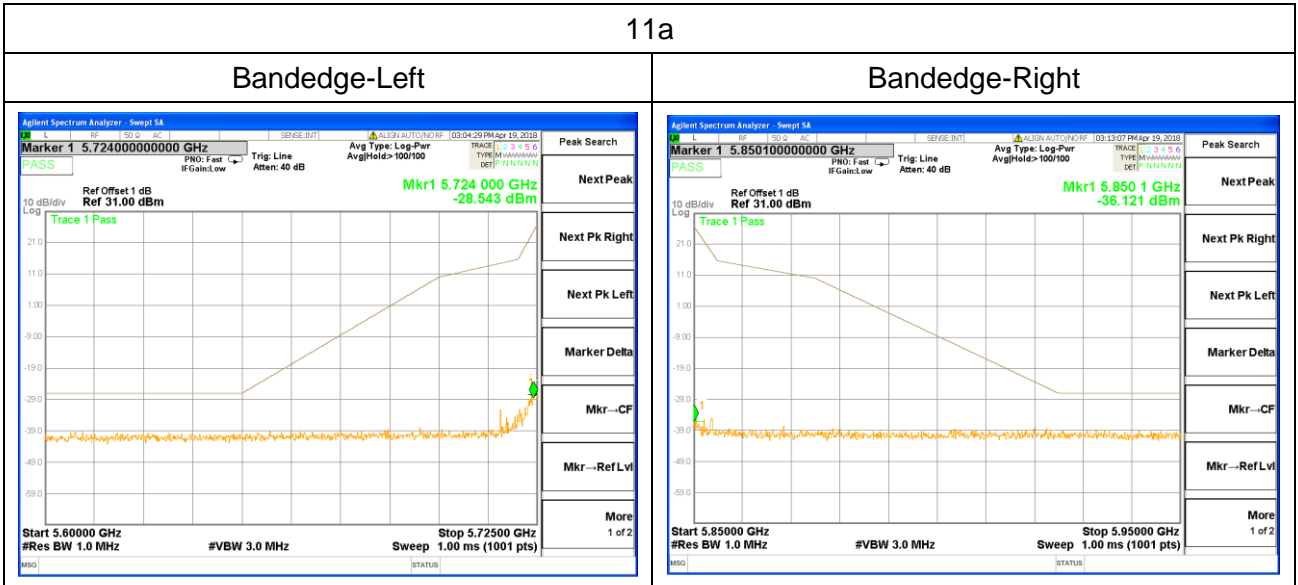


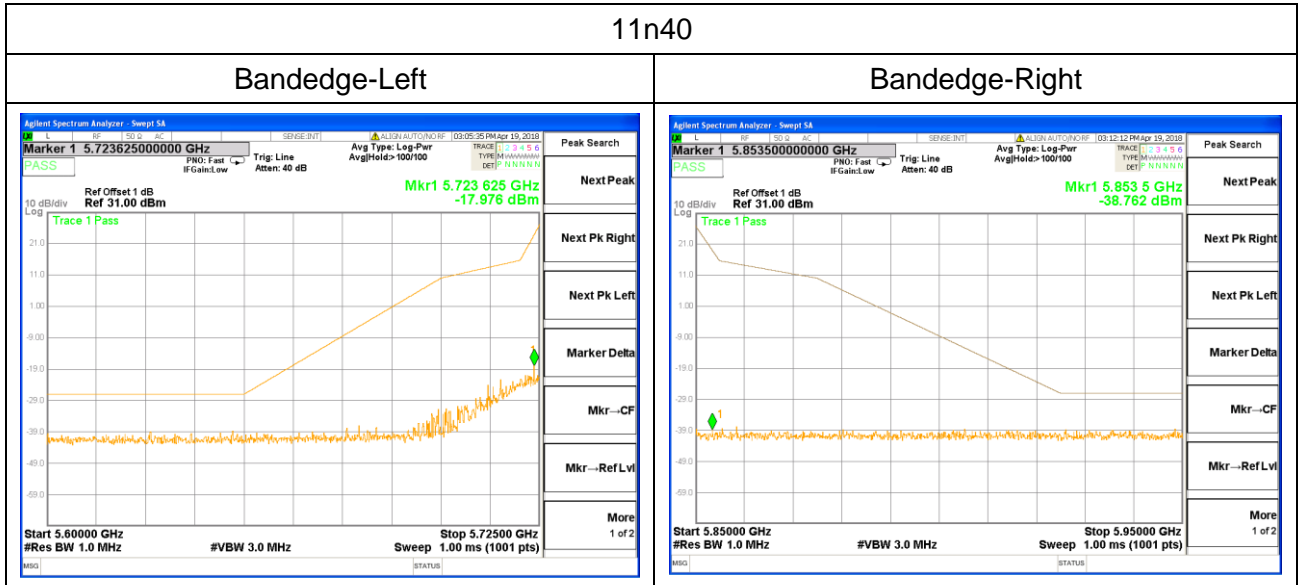
Band-edge





For band VI





5.8 Power spectral density

5.8.1 Limit

For the band 5.15-5.25 GHz

For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.25-5.35 GHz and 5.47-5.725 GHz

The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

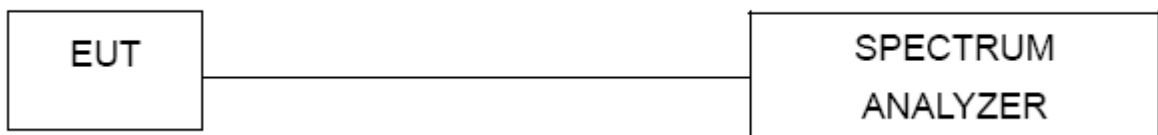
For the band 5.725-5.85 GHz

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 maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

5.8.2 Test procedure

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW \geq 3 kHz.
4. Set the VBW \geq 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Test setup



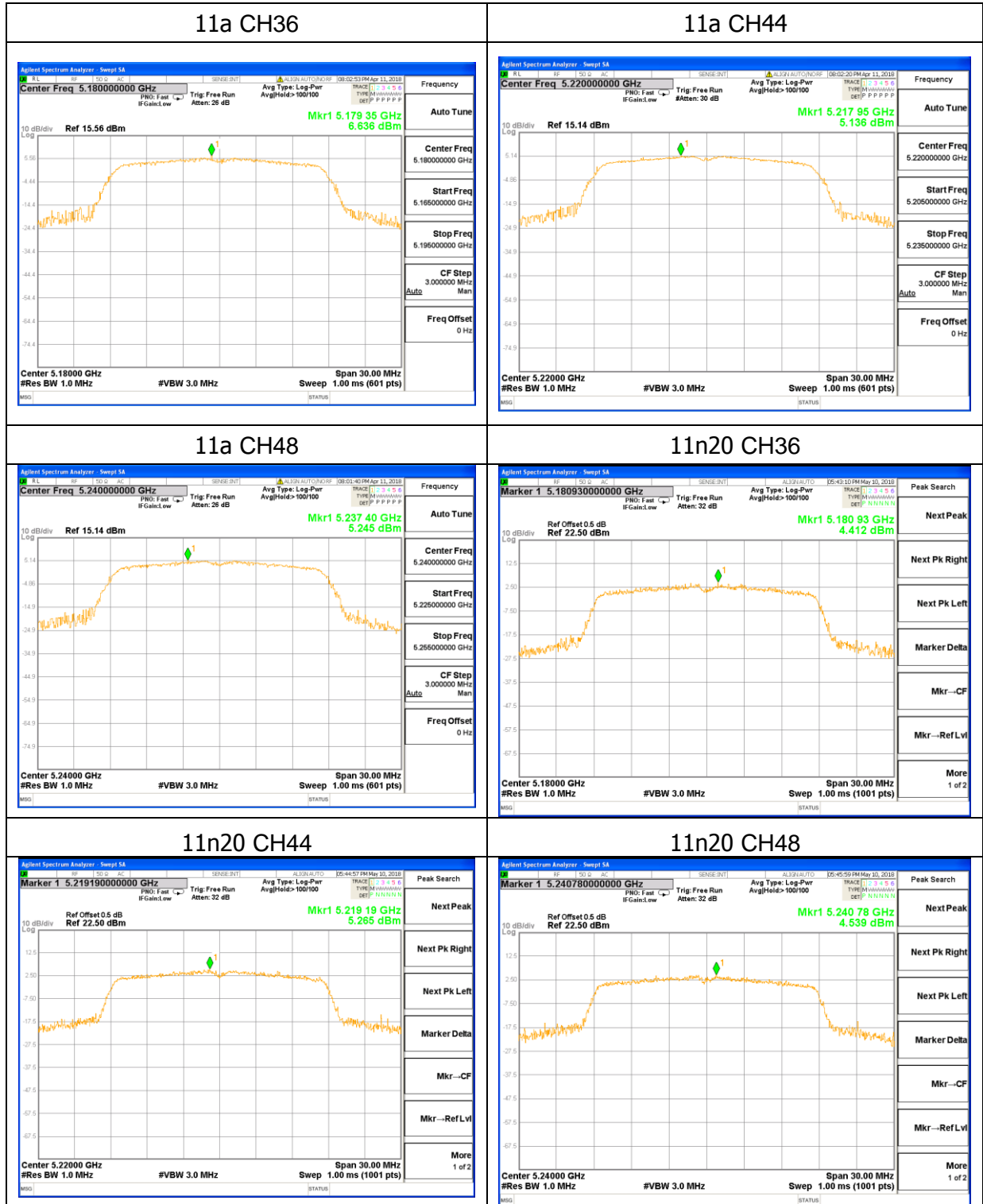
5.8.3 Test results

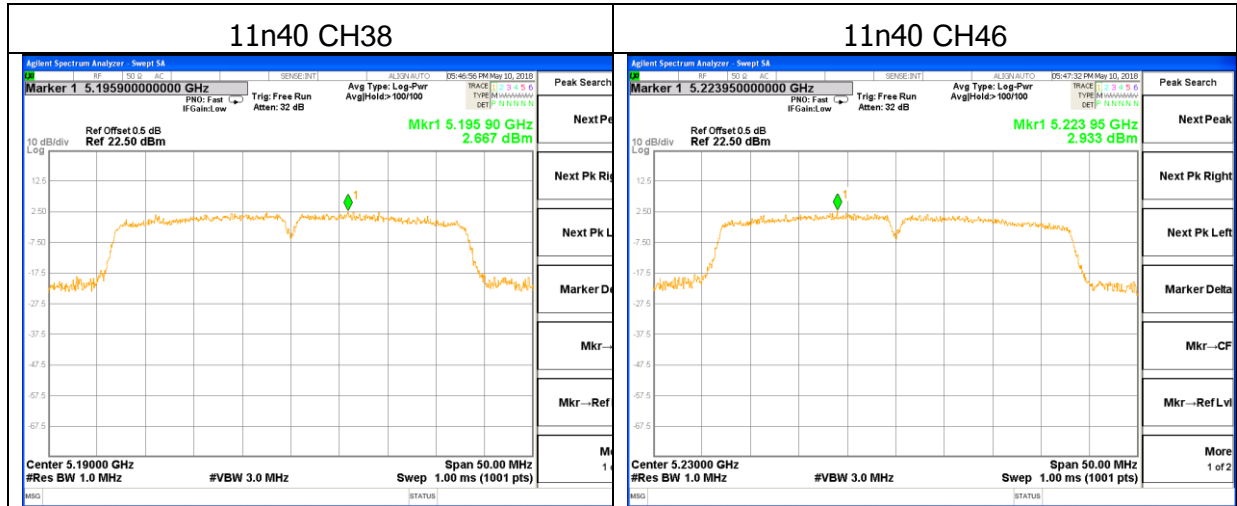
For Band I

Mode	Channel	Frequency(MHz)	Measurement PSD (dBm/MHz)	Limit (dBm/MHz)	Result
11a	CH36	5180	6.636	11	Pass
11a	CH44	5220	5.136	11	Pass
11a	CH48	5240	5.245	11	Pass
11n(HT20)	CH36	5180	4.412	11	Pass
11n(HT20)	CH44	5220	5.265	11	Pass
11n(HT20)	CH48	5240	4.539	11	Pass
11n(HT40)	CH38	5190	2.667	11	Pass
11n(HT40)	CH46	5230	2.933	11	Pass

Test plots

For Band I





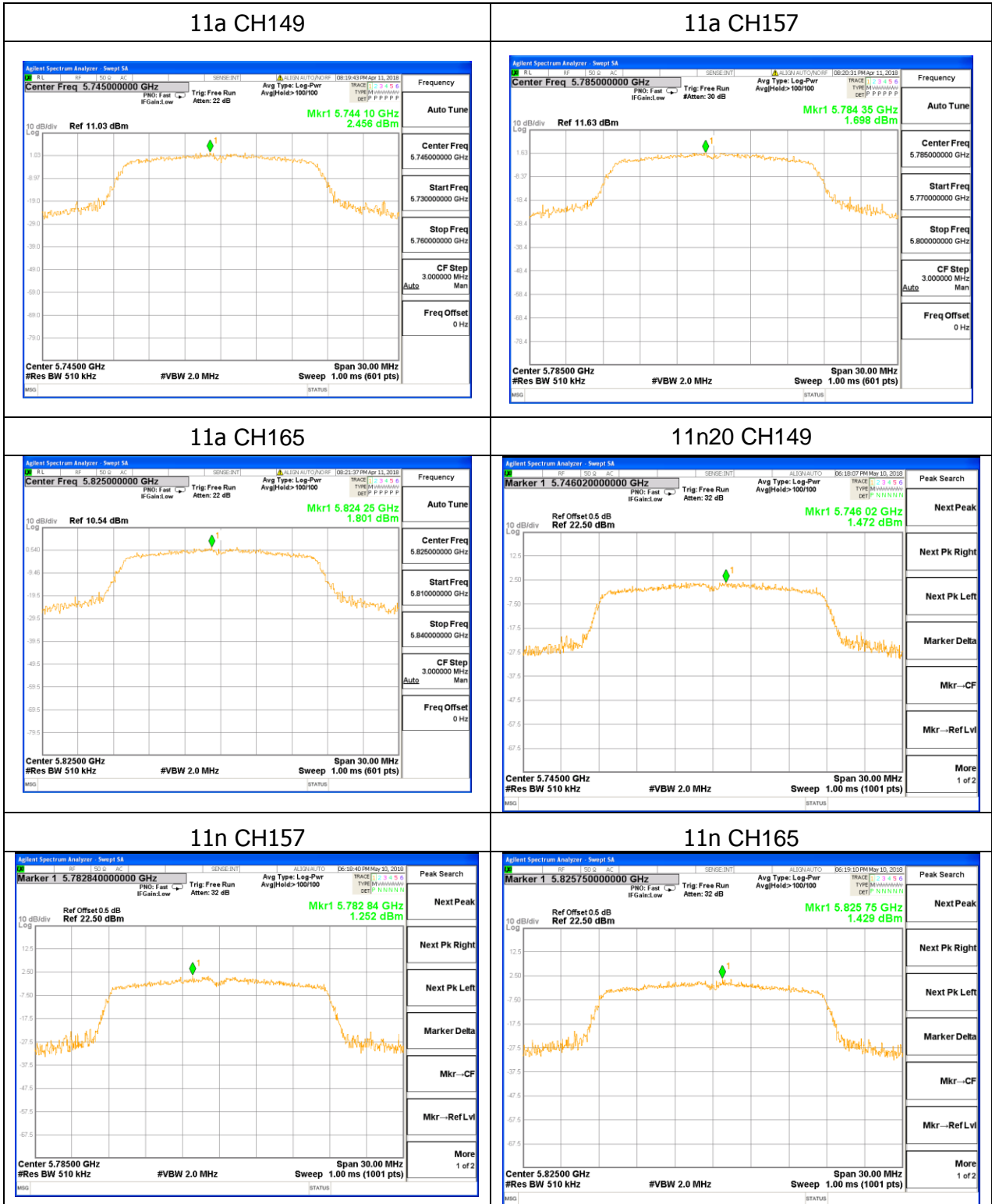
For Band IV

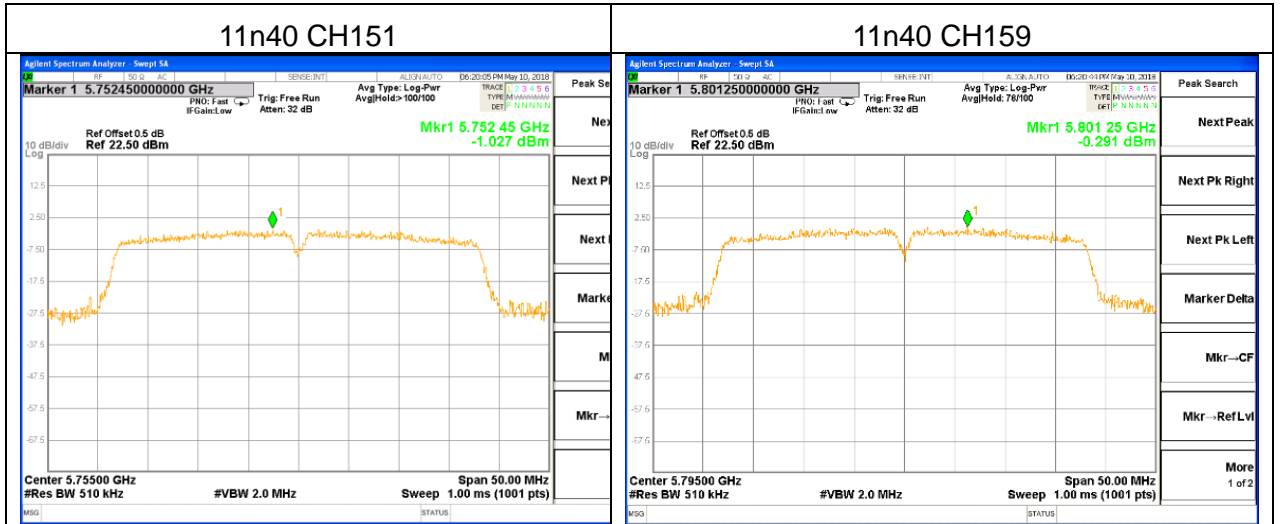
Mode	Channel	Frequency(MHz)	PSD (dBm/510kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
11a	CH149	5745	2.456	2.37	30	Pass
11a	CH157	5785	1.698	1.61	30	Pass
11a	CH165	5825	1.801	1.71	30	Pass
11n20	CH149	5745	1.472	1.39	30	Pass
11n20	CH157	5785	1.252	1.17	30	Pass
11n20	CH165	5825	1.428	1.34	30	Pass
11n40	CH151	5755	-1.027	-1.11	30	Pass
11n40	CH159	5795	-0.291	-0.38	30	Pass

Note: If the measurement is X dBm/510kHz, thus $X \text{ dBm/510kHz} = (10^{X/10}) * (500 / 510) \text{ dBm/500kHz}$

Test plots

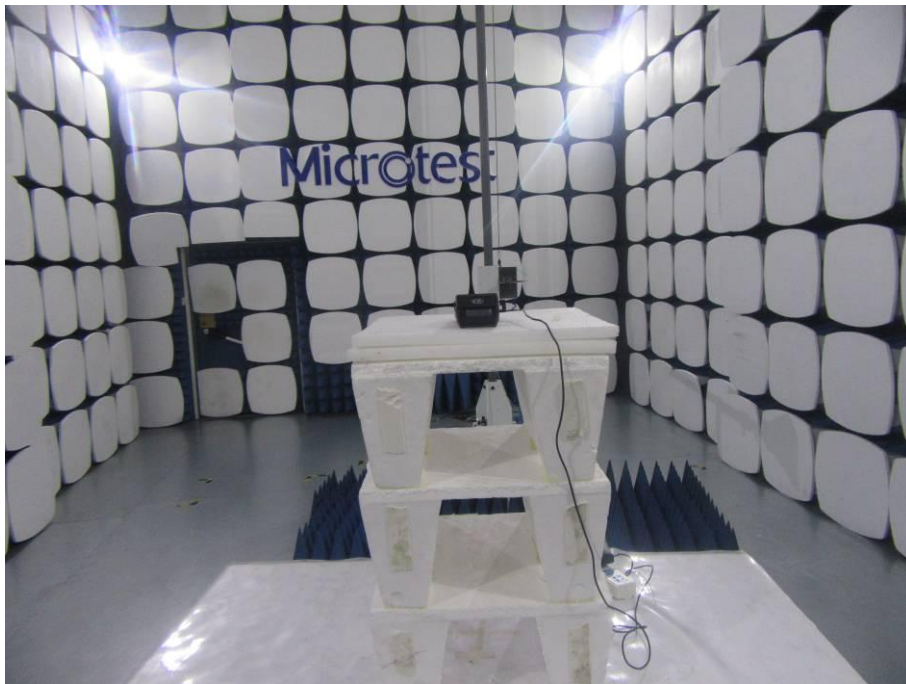
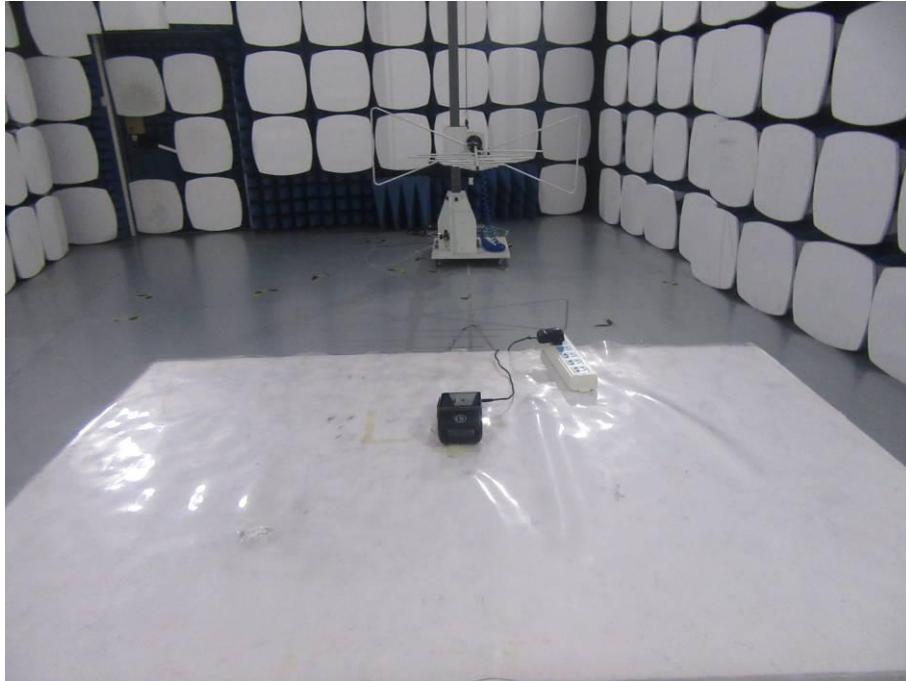
For Band IV





Photographs of the Test Setup

Radiated emission



Conducted emission



----END OF REPORT----