

FCC RADIO TEST REPORT-WIFI FCC ID:2AFMZ-K3

Product: RTEEK K3

Trade Name: RTEEK

Model Name: K3

Serial Model: N/A

Report No.: NTEK-2015NT07212321F2

Prepared for

Access Telecom

1882 NW 97th Avenue, Miami, Florida 33172, United States

Prepared by

Shenzhen NTEK Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street Bao'an District, Shenzhen P.R. China

Tel.: +86-0755-61156588 Fax.: +86-0755-61156599 Website:www.ntek.org.cn



TEST RESULT CERTIFICATION

Report No.: NTEK-2015NT07212321F2

Applicant's name Acce	ess Telecom		
Address 1882	NW 97th Ave	enue, Miami, Florida 33172, United Sta	ates
Manufacture's Name LOC	OPO Technol	logy Co, Limited	
AddressSher	nzhen futian d	district tianan digital city with four LuJinS	Song building 12 d
Product description			
Product nameRTE	EK K3		
Model and/or type referenceK3			
Serial ModelN/A			
Standards FCC	Part15.247 0	01 Oct. 2014	
Test procedure ANS	I C63.10-201	3 and KDB 558074: June 5, 2014	
	s in compliand	ted by NTEK, and the test results show ce with the FCC requirements. And it is	
·	-	in full, without the written approval of N EK, personnel only, and shall be noted	
Date of Test			
Date (s) of performance of tes	ts21 Jul.	. 2015 ~13 Aug. 2015	
Date of Issue	13 Auς	g. 2015	
Test Result	Pass		
Testing Eng	gineer :	Jusen chen)	
Technical N	lanager :	Brown Lu	
Authorized	Signatory :	(Sam Chen)	



Table of Contents

	Page
1. SUMMARY OF TEST RESULTS	5
1.1 TEST FACILITY	6
1.2 MEASUREMENT UNCERTAINTY	6
2. GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT	, 7
2.2 DESCRIPTION OF TEST MODES	9
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTEI	_
2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	11
2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS	12
3 . EMC EMISSION TEST	13
3.1 CONDUCTED EMISSION MEASUREMENT 3.1.1 POWER LINE CONDUCTED EMISSION LIMITS	13 13
3.1.2 TEST PROCEDURE	14
3.1.3 DEVIATION FROM TEST STANDARD	14
3.1.4 TEST SETUP	14
3.1.5 EUT OPERATING CONDITIONS 3.1.6 TEST RESULTS	14 15
3.2 RADIATED EMISSION MEASUREMENT	23
3.2.1 RADIATED EMISSION LIMITS	23
3.2.2 TEST PROCEDURE	24
3.2.3 DEVIATION FROM TEST STANDARD	24
3.2.4 TEST SETUP 3.2.5 EUT OPERATING CONDITIONS	25 26
3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)	27
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)	28
3.2.8 TEST RESULTS (ABOVE 1000 MHZ)	30
4 . POWER SPECTRAL DENSITY TEST	31
4.1 APPLIED PROCEDURES / LIMIT	31
4.1.1 TEST PROCEDURE	31
4.1.2 DEVIATION FROM STANDARD 4.1.3 TEST SETUP	31 31
4.1.4 EUT OPERATION CONDITIONS	31
4.1.5 TEST RESULTS	32
5 . BANDWIDTH TEST	40
5.1 APPLIED PROCEDURES / LIMIT	40
5.1.1 TEST PROCEDURE	40



Table of Contents

	Page
TEST SETUP 5.1.2 EUT OPERATION CONDITIONS	40 40
5.1.3 TEST RESULTS 6 . PEAK OUTPUT POWER TEST	41 49
6.1 APPLIED PROCEDURES / LIMIT	49
6.1.1 TEST PROCEDURE 6.1.2 DEVIATION FROM STANDARD	49 49
6.1.3 TEST SETUP 6.1.4 EUT OPERATION CONDITIONS	49 49
6.1.5 TEST RESULTS	50
7 . 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE 7.1 DEVIATION FROM STANDARD 7.2 TEST SETUP	51 51 51
7.2 TEST SETOI 7.3 EUT OPERATION CONDITIONS 7.4 TEST RESULTS	51 52
8 . ANTENNA REQUIREMENT	58
8.1 STANDARD REQUIREMENT	58
8.2 EUT ANTENNA	58
9 . EUT TEST PHOTO APPENDIX-PHOTOGRAPHS OF FUT CONSTRUCTIONAL DETAILS	59

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C				
Standard Section	Test Item	Judgment	Remark	
15.207	Conducted Emission	PASS		
15.247 (a)(2)	6dB Bandwidth	PASS		
15.247 (b)	Peak Output Power	PASS		
15.247 (c)	Radiated Spurious Emission	PASS		
15.247 (d)	Power Spectral Density	PASS		
15.205	Band Edge Emission	PASS		
15.203	Antenna Requirement	PASS		

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report



1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add.:1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.

FCC Registration No.:238937; IC Registration No.:9270A-1

CNAS Registration No.:L5516

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $\mathbf{y} \pm \mathbf{U}$, where expended uncertainty \mathbf{U} is based on a standard uncertainty multiplied by a coverage factor of $\mathbf{k=2}$, providing a level of confidence of approximately 95 % $^{\circ}$

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	RTEEK K3					
Trade Name	RTEEK					
Model Name	K3	K3				
Serial Model	N/A					
Model Difference	N/A					
Product Description	Operation Frequency: Modulation Type: Bit Rate of Transmitter Number Of Channel Antenna Designation: Antenna Gain (dBi)	802.11b/g/n(20MHz): 2412~2462MHz 802.11n(40MHz):2422~2452MHz IEEE 802.11b: DSSS (CCK, QPSK, DBPSK) IEEE 802.11g/n (HT20/HT40): OFDM (64QAM, 16QAM, QPSK, BPSK) 802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n(20MHz/40MHz):150/144.44/1 30/117/115.56/104/86.67/78/52/6.5Mb ps 802.11b/g/n20MHz:11CH 802.11n40MHz:7CH Please see Note 3.				
Channel List	Please refer to the No	ote 2.				
Ratings	DC 3.7V					
Adapter	Mode : YMK-12W050200B Input: 100-240V~, 50/60Hz, 0.15A Output: 5.0V, 2000mA					
Battery	DC 3.7V, 1300mAh					
Connecting I/O	Please refer to the Us	eor's Manual				
Port(s)	Flease relei to the Os	oci s iviariual				



Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

Page 8 of 60

2.

	Channel List for 802.11b/g/n(20 MHz)						
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	04	2427	07	2442	10	2457
02	2417	05	2432	08	2447	11	2462
03	2422	06	2437	09	2452		

	Channel List for 802.11n(40MHz)						
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
03	2422	06	2437	09	2452		
04	2427	07	2442				
05	2432	80	2447				

3.

Table for Filed Antenna

Ant	Brand	Model Name	Antenna Type	Connector	Gain (dBi)	NOTE
1	N/A	N/A	Ceramic Antenna	N/A	1.0	WIFI Antenna



2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9
Mode 5	Link Mode

Page 9 of 60

For Conducted Emission		
Final Test Mode	Description	
Mode 5	Link Mode	

Pretest Mode	Description
Mode 1	802.11b CH1/ CH6/ CH11
Mode 2	802.11g CH1/ CH6/ CH11
Mode 3	802.11n20 CH1/ CH6/ CH11
Mode 4	802.11n40 CH3/ CH6/ CH9
Mode 5	Link Mode

Note:

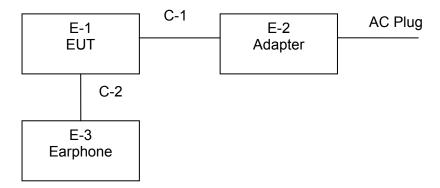
- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported
- (3) EUT configured to transmit continuously:

Operated Mode for Worst Duty Cycle					
Test Signal Duty Cycle (x)	Average correction factor (dB)				
100% - IEEE 802.11b	0				
100% - IEEE 802.11g	0				
100% - IEEE 802.11n (HT20)	0				
100% - IEEE 802.11n (HT40)	0				



2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Conducted Emission Test



Radiated Spurious Emission Test

E-1 EUT



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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
E-1	RTEEK K3	RTEEK	K3	N/A	EUT
E-2	Adapter	N/A	YMK-12W050200B	N/A	
E-3	Earphone	N/A	2688		

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	1.2m	
C-2	NO	NO	1.0m	

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 <code>"Length_"</code> column.



2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibratio n period
1	Spectrum Analyzer	Agilent	E4407B	MY4510804 0	2015.07.06	2016.07.05	1 year
2	Test Receiver	R&S	ESPI	101318	2015.06.07	2016.06.06	1 year
3	Bilog Antenna	TESEQ	CBL6111D	31216	2015.07.06	2016.07.05	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	620026441 6	2015.06.07	2016.06.06	1 year
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	2015.06.07	2016.06.06	1 year
6	Horn Antenna	EM	EM-AH-101 80	2011071402	2015.07.06	2016.07.05	1 year
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	2015.07.06	2016.07.05	1 year
8	Amplifier	EM	EM-30180	060538	2014.12.22	2015.12.21	1 year
9	Loop Antenna	ARA	PLA-1030/B	1029	2015.06.08	2016.06.07	1 year
10	Power Meter	R&S	NRVS	100696	2015.07.06	2016.07.05	1 year
11	Power Sensor	R&S	URV5-Z4	0395.1619. 05	2015.07.06	2016.07.05	1 year
12	Test Cable	N/A	R-01	N/A	2015.07.06	2016.07.05	1 year
13	Test Cable	N/A	R-02	N/A	2015.07.06	2016.07.05	1 year

Conduction Test equipment

Item	Kind of Equipment	Manufactu rer	Type No.	Serial No.	Last calibration	Calibrated until	Calibratio n period
	Lquipinent	161			Calibration	unui	ii periou
1	Test Receiver	R&S	ESCI	101160	2015.06.06	2016.06.05	1 year
2	LISN	R&S	ENV216	101313	2014.08.24	2015.08.23	1 year
3	LISN	EMCO	3816/2	00042990	2014.08.24	2015.08.23	1 year
4	50Ω Coaxial Switch	Anritsu	MP59B	620026441 7	2015.06.07	2016.06.06	1 year
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	2015.06.07	2016.06.06	1 year
6	Absorbing clamp	R&S	MOS-21	100423	2015.06.08	2016.06.07	1 year
7	Test Cable	N/A	C01	N/A	2015.06.08	2016.06.07	1 year
8	Test Cable	N/A	C02	N/A	2015.06.08	2016.06.07	1 year
9	Test Cable	N/A	C03	N/A	2015.06.08	2016.06.07	1 year

1	Attenuation	MCE	24-10-34	BN9258	2015.06.08	2016.06.07	1 year
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Page 13 of 60 Report No.: NTEK-2015NT07212321F2

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

	Class A (dBuV)		Class B	Standard	
FREQUENCY (MHz)	Quasi-peak	Average	Quasi-peak	Average	Stariuaru
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

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.

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		



3.1.2 TEST PROCEDURE

- a. 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.
- b. 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.
- c. 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.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 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

3.1.5 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.



3.1.6 TEST RESULTS

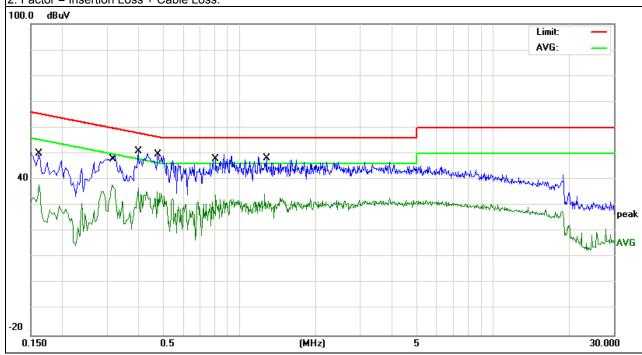
EUT:	RTEEK K3	Model Name :	K3
Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	L
Test vollage .	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 5

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1620	40.54	9.62	50.16	65.36	-15.20	QP
0.1620	28.29	9.62	37.91	55.36	-17.45	AVG
0.3140	38.18	9.69	47.87	59.86	-11.99	QP
0.3140	28.31	9.69	38.00	49.86	-11.86	AVG
0.3980	41.68	9.37	51.05	57.89	-6.84	QP
0.3980	27.51	9.37	36.88	47.89	-11.01	AVG
0.4780	40.15	9.68	49.83	56.37	-6.54	QP
0.4780	25.69	9.68	35.37	46.37	-11.00	AVG
0.8059	38.05	9.77	47.82	56.00	-8.18	QP
0.8059	24.33	9.77	34.10	46.00	-11.90	AVG
1.2780	38.50	9.71	48.21	56.00	-7.79	QP
1.2780	24.73	9.71	34.44	46.00	-11.56	AVG

Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.





EUT:	RTEEK K3	Model Name :	K3
Temperature :	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
TIEST VOUZOE .	DC 5.0V form Adapter AC 120V/60Hz	Test Mode :	Mode 5

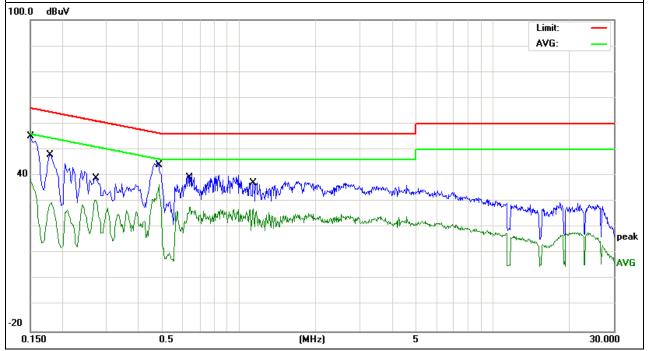
Page 16 of 60

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1500	45.50	9.60	55.10	65.99	-10.89	QP
0.1500	29.00	9.60	38.60	55.99	-17.39	AVG
0.1819	36.79	9.61	46.40	64.39	-17.99	QP
0.1819	19.91	9.61	29.52	54.39	-24.87	AVG
0.2740	28.86	9.62	38.48	60.99	-22.51	QP
0.2740	21.06	9.62	30.68	50.99	-20.31	AVG
0.4820	36.05	9.68	45.73	56.30	-10.57	QP
0.4820	26.99	9.68	36.67	46.30	-9.63	AVG
0.6380	30.91	9.65	40.56	56.00	-15.44	QP
0.6380	18.23	9.65	27.88	46.00	-18.12	AVG
1.1380	27.66	9.60	37.26	56.00	-18.74	QP
1.1380	17.66	9.60	27.26	46.00	-18.74	AVG

Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.





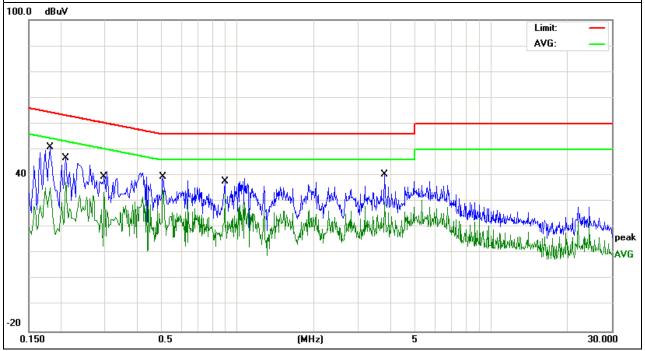
EUT:	RTEEK K3	Model Name :	K3
Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	L
Test vollage .	DC 5.0V form Adapter AC 240V/60Hz	Test Mode :	Mode 5

Page 17 of 60

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1819	41.29	9.61	50.90	64.39	-13.49	QP
0.1819	25.80	9.61	35.41	54.39	-18.98	AVG
0.2099	37.09	9.61	46.70	63.21	-16.51	QP
0.2099	27.84	9.61	37.45	53.21	-15.76	AVG
0.2977	29.69	9.74	39.43	60.30	-20.87	QP
0.2977	23.69	9.74	33.43	50.30	-16.87	AVG
0.5100	29.81	9.77	39.58	56.00	-16.42	QP
0.5100	24.59	9.77	34.36	46.00	-11.64	AVG
0.8940	28.00	9.75	37.75	56.00	-18.25	QP
0.8940	22.92	9.75	32.67	46.00	-13.33	AVG
3.8180	30.68	9.70	40.38	56.00	-15.62	QP
3.8180	20.22	9.70	29.92	46.00	-16.08	AVG

Remark:

All readings are Quasi-Peak and Average values.
 Factor = Insertion Loss + Cable Loss.





EUT:	RTEEK K3	Model Name :	K3
Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	N
rest vollage .	DC 5.0V form Adapter AC 240V/60Hz	Test Mode :	Mode 5

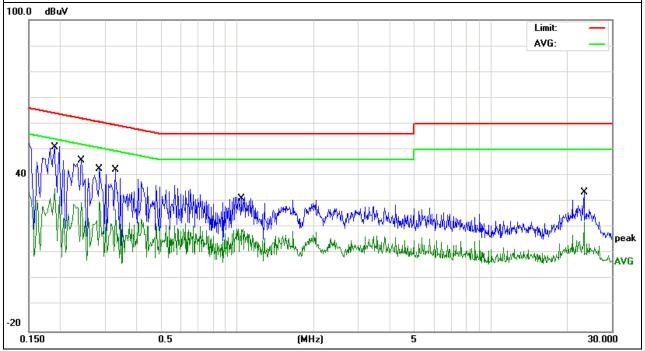
Page 18 of 60

Frequency	Reading Level	Correct Factor	Measure-ment	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1900	41.39	9.61	51.00	64.03	-13.03	QP
0.1900	25.58	9.61	35.19	54.03	-18.84	AVG
0.2419	36.31	9.66	45.97	62.03	-16.06	QP
0.2419	19.91	9.66	29.57	52.03	-22.46	AVG
0.2858	32.82	9.72	42.54	60.64	-18.10	QP
0.2858	20.27	9.72	29.99	50.64	-20.65	AVG
0.3300	32.76	9.63	42.39	59.45	-17.06	QP
0.3300	17.22	9.63	26.85	49.45	-22.60	AVG
1.0540	21.83	9.73	31.56	56.00	-24.44	QP
1.0540	9.76	9.73	19.49	46.00	-26.51	AVG
23.3338	23.58	9.94	33.52	60.00	-26.48	QP
23.3338	12.32	9.94	22.26	50.00	-27.74	AVG

Remark:

1. All readings are Quasi-Peak and Average values.

2. Factor = Insertion Loss + Cable Loss.



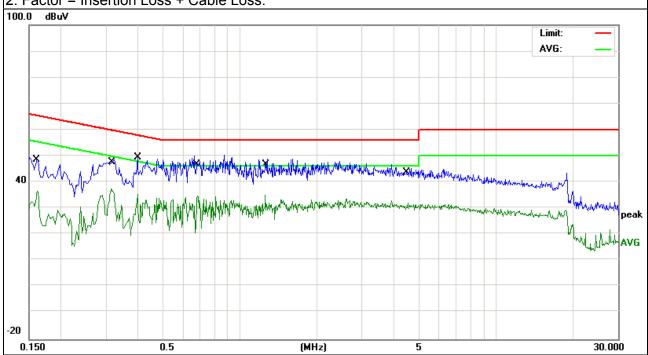


EUT:	RTEEK K3	Model Name :	K3
Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	L
Hest voltage .	DC 5.0V form PC AC 120V/60Hz	Test Mode :	Mode 5

Page 19 of 60

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1620	39.08	9.62	48.70	65.36	-16.66	QP
0.1620	26.79	9.62	36.41	55.36	-18.95	AVG
0.3140	37.62	9.69	47.31	59.86	-12.55	QP
0.3140	27.81	9.69	37.50	49.86	-12.36	AVG
0.3980	40.18	9.37	49.55	57.89	-8.34	QP
0.3980	26.01	9.37	35.38	47.89	-12.51	AVG
0.6860	39.27	9.78	49.05	56.00	-6.95	QP
0.6860	25.08	9.78	34.86	46.00	-11.14	AVG
1.2579	38.74	9.71	48.45	56.00	-7.55	QP
1.2579	25.23	9.71	34.94	46.00	-11.06	AVG
4.5458	34.45	9.70	44.15	56.00	-11.85	QP
4.5458	22.36	9.70	32.06	46.00	-13.94	AVG

- All readings are Quasi-Peak and Average values.
 Factor = Insertion Loss + Cable Loss.

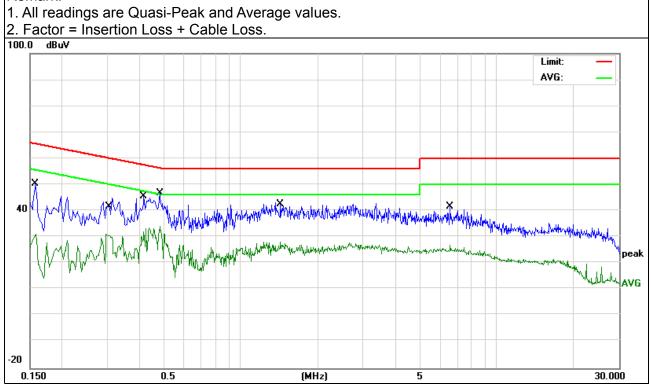




	-		
EUT:	RTEEK K3	Model Name :	K3
Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	N
Liest Voltage :	DC 5.0V form PC AC 120V/60Hz	Test Mode :	Mode 5

Page 20 of 60

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1580	40.69	9.62	50.31	65.56	-15.25	QP
0.1580	21.50	9.62	31.12	55.56	-24.44	AVG
0.3002	31.81	9.75	41.56	60.23	-18.67	QP
0.3002	21.30	9.75	31.05	50.23	-19.18	AVG
0.4179	35.97	9.43	45.40	57.49	-12.09	QP
0.4179	22.59	9.43	32.02	47.49	-15.47	AVG
0.4819	34.70	9.70	44.40	56.31	-11.91	QP
0.4819	24.39	9.70	34.09	46.31	-12.22	AVG
1.4259	32.73	9.70	42.43	56.00	-13.57	QP
1.4259	18.46	9.70	28.16	46.00	-17.84	AVG
6.5858	31.87	9.70	41.57	60.00	-18.43	QP
6.5858	17.29	9.70	26.99	50.00	-23.01	AVG

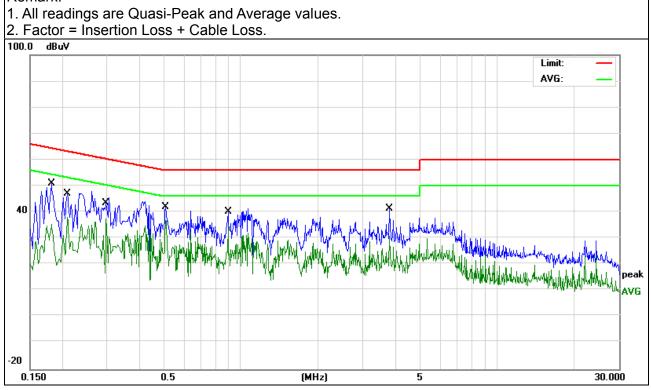




	-		
EUT:	RTEEK K3	Model Name :	K3
Temperature :	26 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Phase :	L
Liest Voltage :	DC 5.0V form PC AC 240V/60Hz	Test Mode :	Mode 5

Page 21 of 60

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1819	41.29	9.61	50.90	64.39	-13.49	QP
0.1819	25.80	9.61	35.41	54.39	-18.98	AVG
0.2099	37.59	9.61	47.20	63.21	-16.01	QP
0.2099	28.34	9.61	37.95	53.21	-15.26	AVG
0.2977	33.69	9.74	43.43	60.30	-16.87	QP
0.2977	27.69	9.74	37.43	50.30	-12.87	AVG
0.5100	30.47	9.77	40.24	56.00	-15.76	QP
0.5100	27.09	9.77	36.86	46.00	-9.14	AVG
0.8940	30.50	9.75	40.25	56.00	-15.75	QP
0.8940	25.42	9.75	35.17	46.00	-10.83	AVG
3.8180	31.68	9.70	41.38	56.00	-14.62	QP
3.8180	21.22	9.70	30.92	46.00	-15.08	AVG

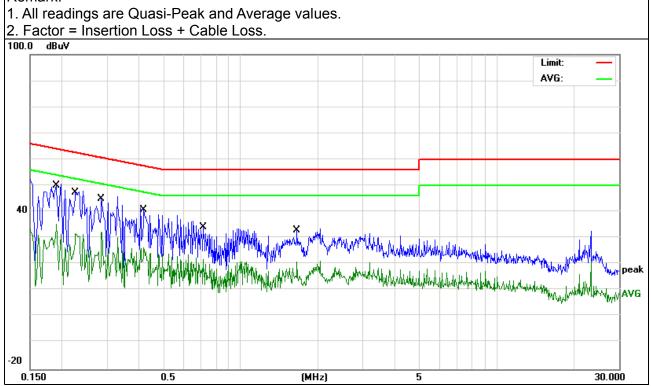




EUT:	RTEEK K3	Model Name :	K3
Temperature :	26 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Hest voltage .	DC 5.0V form PC AC 240V/60Hz	Test Mode :	Mode 5

Page 22 of 60

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(MHz)	(dBµV)	(dB)	(dBµV)	(dBµV)	(dB)	Remark
0.1901	39.93	9.61	49.54	64.03	-14.49	QP
0.1901	25.61	9.61	35.22	54.03	-18.81	AVG
0.2260	37.62	9.64	47.26	62.59	-15.33	QP
0.2260	22.03	9.64	31.67	52.59	-20.92	AVG
0.2857	35.32	9.72	45.04	60.65	-15.61	QP
0.2857	22.77	9.72	32.49	50.65	-18.16	AVG
0.4178	32.07	9.43	41.50	57.49	-15.99	QP
0.4178	17.01	9.43	26.44	47.49	-21.05	AVG
0.7137	24.46	9.78	34.24	56.00	-21.76	QP
0.7137	11.96	9.78	21.74	46.00	-24.26	AVG
1.6537	23.26	9.67	32.93	56.00	-23.07	QP
1.6537	11.34	9.67	21.01	46.00	-24.99	AVG





3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

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	Field Strength	Measurement Distance
(MHz)	(micorvolts/meter)	(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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	dBuV/m@at 3M		
FREQUENCT (WITZ)	PEAK	AVERAGE	
Above 1000	74	54	

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted	4 Mile / 4 Mile for Dools 4 Mile / 40/le for Asserts
band)	1 MHz / 1 MHz for Peak, 1 MHz / <i>10Hz</i> 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



3.2.2 TEST PROCEDURE

- a. 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.
- b. The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; 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.
- d. 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.
- e. 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.
- f. 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

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	Peak	100 kHz	100 kHz
	Peak	1 MHz	1 MHz
Above 1000	Average	1 MHz	10 Hz

3.2.3 DEVIATION FROM TEST STANDARD

No deviation





3.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz

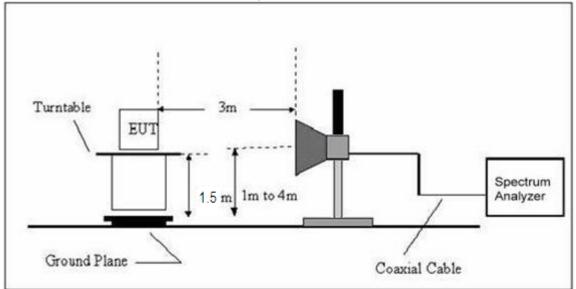


(B) Radiated Emission Test-Up Frequency 30MHz~1GHz









3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



3.2.6 TEST RESULTS (BETWEEN 9KHZ - 30 MHZ)

EUT:	RTEEK K3	Model Name. :	K3
Temperature:	20 ℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode:	TX	Polarization :	

Report No.: NTEK-2015NT07212321F2

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
				N/A
		1		N/A

NOTE:

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

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.



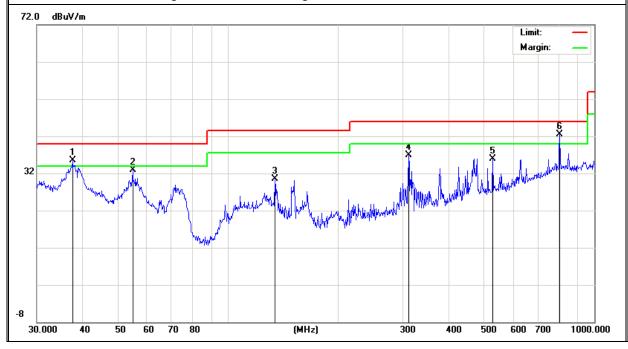
3.2.7 TEST RESULTS (BETWEEN 30MHZ - 1GHZ)

EUT:	RTEEK K3	Model Name :	K3
Temperature :	20 ℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX		

Polar	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	Roman
V	37.5478	20.42	15.08	35.50	40.00	-4.50	QP
V	54.8348	23.69	9.31	33.00	40.00	-7.00	QP
V	134.0882	18.90	11.70	30.60	43.50	-12.90	QP
V	311.0867	22.38	14.62	37.00	46.00	-9.00	QP
V	528.2458	15.10	20.88	35.98	46.00	-10.02	QP
V	804.6028	15.10	27.40	42.50	46.00	-3.50	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



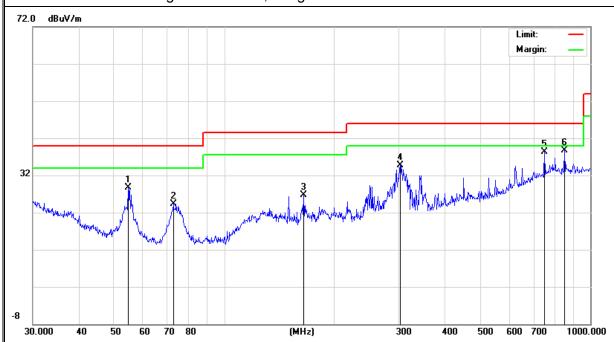


Polar	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
(H/V)	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	rtornark
Н	54.6428	19.33	9.37	28.70	40.00	-11.30	QP
Н	72.5916	18.76	5.64	24.40	40.00	-15.60	QP
Н	164.9071	16.17	10.51	26.68	43.50	-16.82	QP
Н	302.4812	20.45	14.25	34.70	46.00	-11.30	QP
Н	750.1082	12.30	26.10	38.40	46.00	-7.60	QP
Н	851.0353	11.48	27.22	38.70	46.00	-7.30	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

Page 29 of 60





3.2.8 TEST RESULTS (ABOVE 1000 MHZ)

EUT:	RTEEK K3	Model Name :	K3
Temperature :	20 ℃	Relative Humidity:	48%
Pressure :	1010 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Damark	Commont
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Remark	Comment
	Low Channel (2412 MHz)						
4824.085	53.12	10.44	63.56	74.00	-10.44	Pk	Vertical
4824.085	34.36	10.44	44.80	54.00	-9.20	Av	Vertical
7236.116	46.33	12.39	58.72	74.00	-15.28	Pk	Vertical
7236.116	30.61	12.39	43.00	54.00	-11.00	Av	Vertical
4824.206	54.46	10.44	64.90	74.00	-9.10	Pk	Horizontal
4824.206	35.59	10.44	46.03	54.00	-7.97	Av	Horizontal
7236.303	47.03	12.39	59.42	74.00	-14.58	Pk	Horizontal
7236.303	32.17	12.39	44.56	54.00	-9.44	Av	Horizontal
		Mid	del Channel (2437	MHz)			
4874.206	51.95	10.40	62.35	74.00	-11.65	Pk	Vertical
4874.206	32.86	10.40	43.26	54.00	-10.74	Av	Vertical
7311.148	45.61	12.75	58.36	74.00	-15.64	Pk	Vertical
7311.148	28.56	12.75	41.31	54.00	-12.69	Av	Vertical
4874.146	52.72	10.40	63.12	74.00	-10.88	Pk	Horizontal
4874.146	33.95	10.40	44.35	54.00	-9.65	Av	Horizontal
7311.204	48.83	12.75	61.58	74.00	-12.42	Pk	Horizontal
7311.204	29.52	12.75	42.27	54.00	-11.73	Av	Horizontal
High Channel (2462 MHz)							
4924.114	51.89	10.39	62.28	74.00	-11.72	Pk	Vertical
4924.114	33.52	10.39	43.91	54.00	-10.09	Av	Vertical
7386.203	45.29	12.68	57.97	74.00	-16.03	Pk	Vertical
7386.203	28.93	12.68	41.61	54.00	-12.39	Av	Vertical
4924.185	51.92	10.39	62.31	74.00	-11.69	Pk	Horizontal
4924.185	34.02	10.39	44.41	54.00	-9.59	Av	Horizontal
7386.206	48.31	12.68	60.99	74.00	-13.01	Pk	Horizontal
7386.206	29.56	12.68	42.24	54.00	-11.76	Av	Horizontal

Note:"802.11b" mode is the worst mode. When PK value is lower than the Average value limit, average didn't record.



4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

/						
FCC Part15 (15.247) , Subpart C						
Section	Test Item	Limit	Frequency Range (MHz)	Result		
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS		

4.1.1 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. 3 kHz ≤Set the RBW≤100 kHz.
- 4. Set the VBW ≥ 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 within the RBW.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

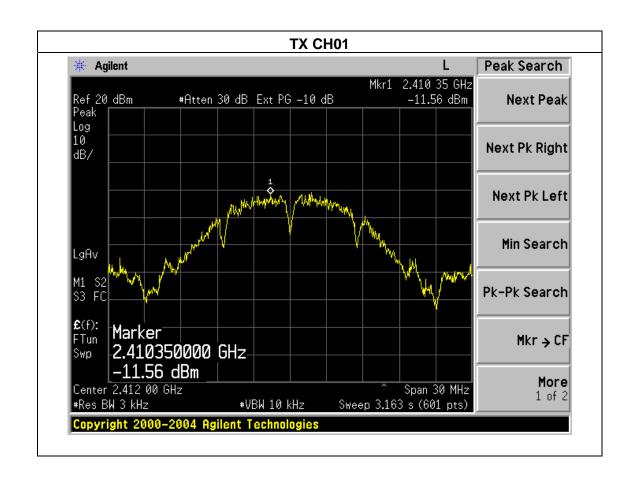


4.1.5 TEST RESULTS

EUT:	RTEEK K3	Model Name :	K3
Temperature:	25 ℃	Relative Humidity:	56%
Pressure :	1015 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX b Mode /CH01, CH06, CH11		

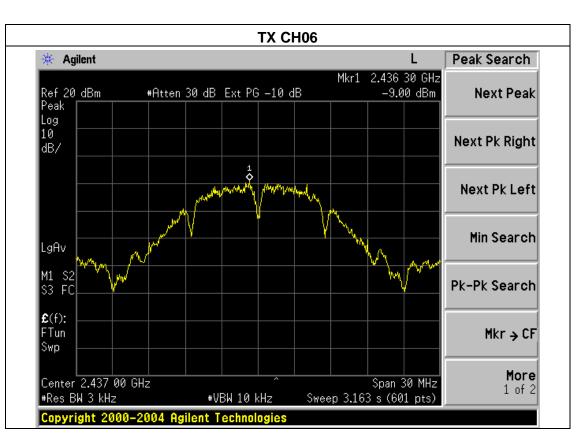
Page 32 of 60

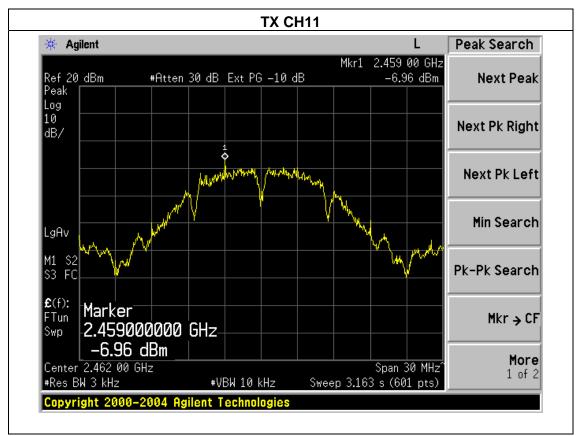
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-11.56	8	PASS
2437 MHz	-9.00	8	PASS
2462 MHz	-6.96	8	PASS



Page 33 of 60





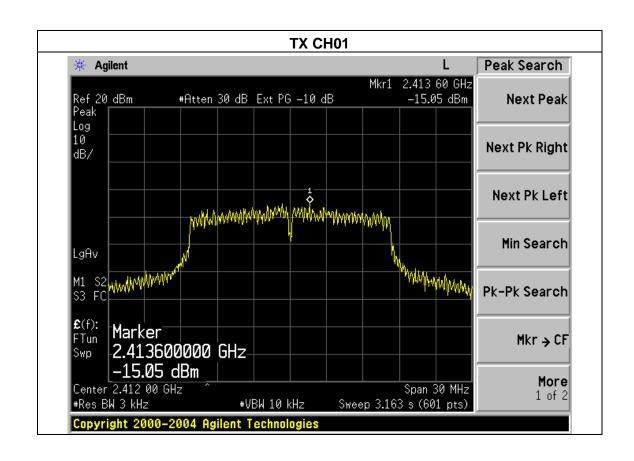




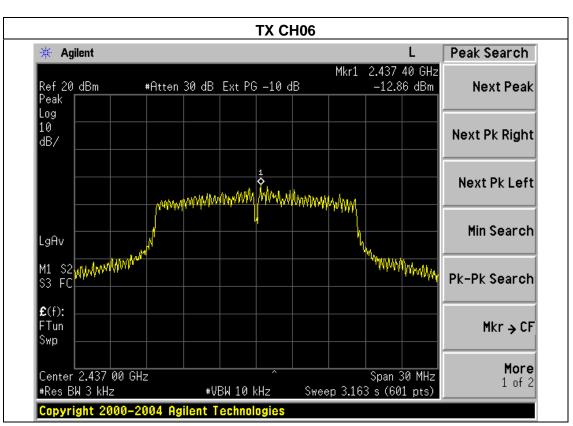
EUT:	RTEEK K3	Model Name :	K3
Temperature :	25 ℃	Relative Humidity:	56%
Pressure :	1015 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX g Mode /CH01, CH06, CH11		

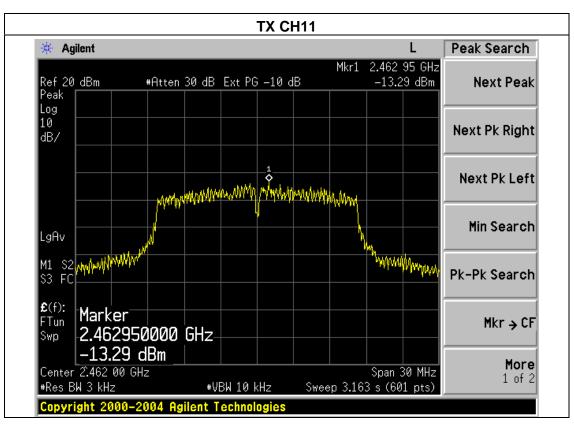
Page 34 of 60

Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-15.05	8	PASS
2437 MHz	-12.86	8	PASS
2462 MHz	-13.29	8	PASS







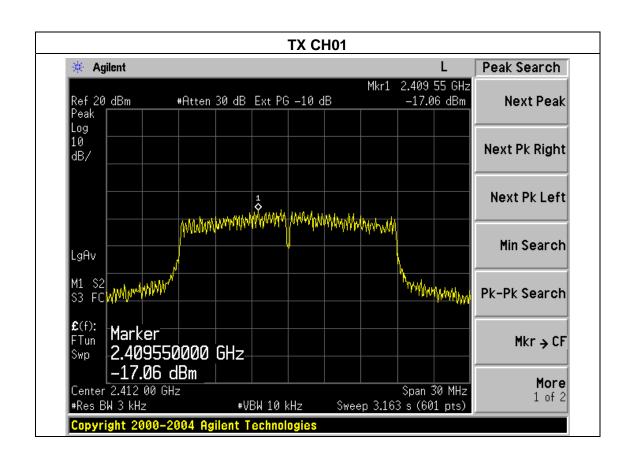


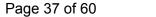


EUT:	RTEEK K3	Model Name :	K3
Temperature :	25 ℃	Relative Humidity:	56%
Pressure:	1015 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX n Mode(20M) /CH01, CH06, CH11		

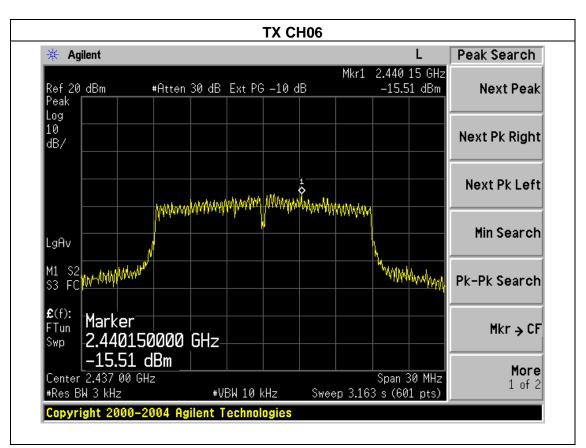
Page 36 of 60

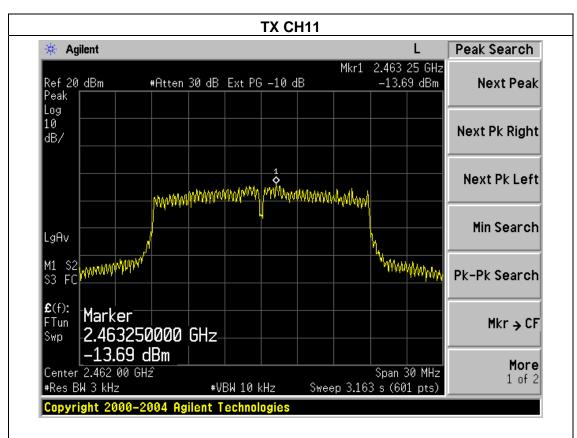
Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-17.06	8	PASS
2437 MHz	-15.51	8	PASS
2462 MHz	-13.69	8	PASS













EUT: RTEEK K3 Model Name: K3

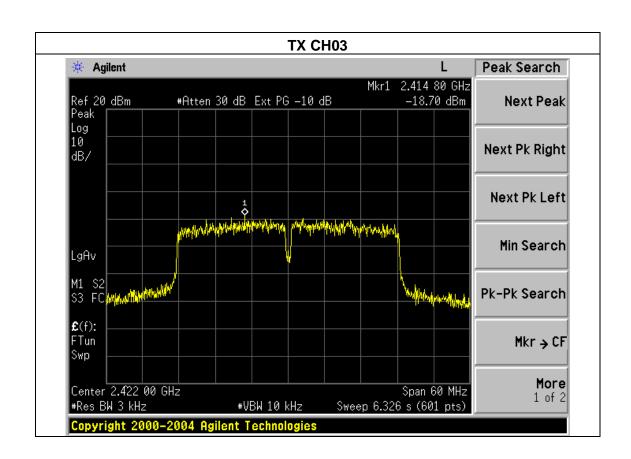
Temperature: 25 °C Relative Humidity: 56%

Pressure: 1015 hPa Test Voltage: DC 3.7V

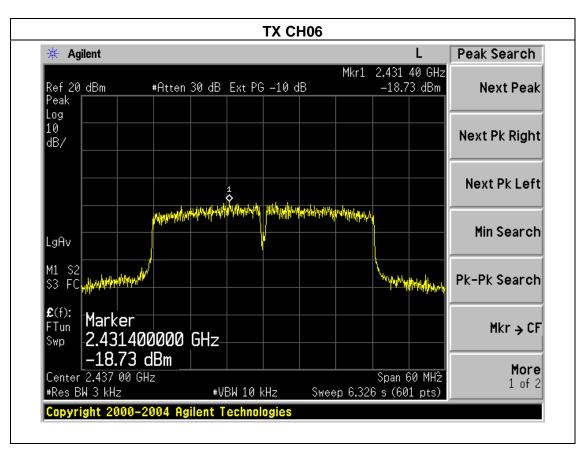
Test Mode: TX n Mode(40M) /CH03, CH06, CH09

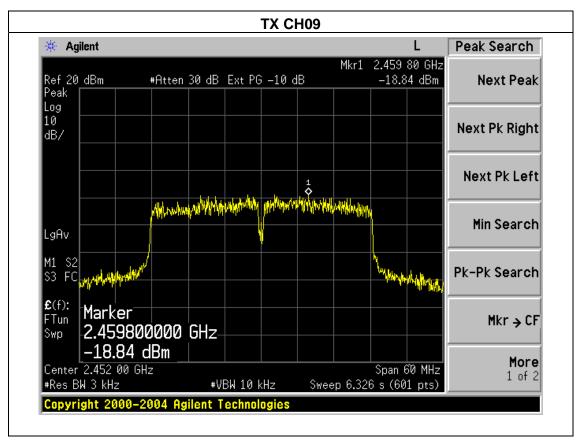
Page 38 of 60

Frequency	Power Density (dBm)	Limit (dBm)	Result
2422 MHz	-18.70	8	PASS
2437 MHz	-18.73	8	PASS
2452 MHz	-18.84	8	PASS











5. BANDWIDTH TEST

5.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

5.1.1 TEST PROCEDURE

- 1. Set RBW = 100 kHz.
- 2. Set the video bandwidth (VBW) \geq 3 x 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 6 dB relative to the maximum level measured in the fundamental emission.

TEST SETUP



5.1.2 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

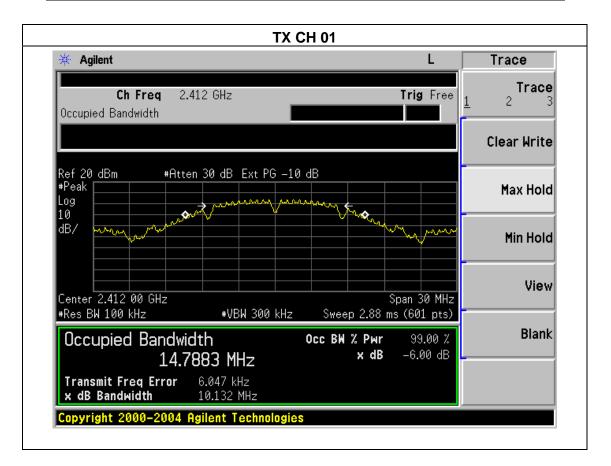


5.1.3 TEST RESULTS

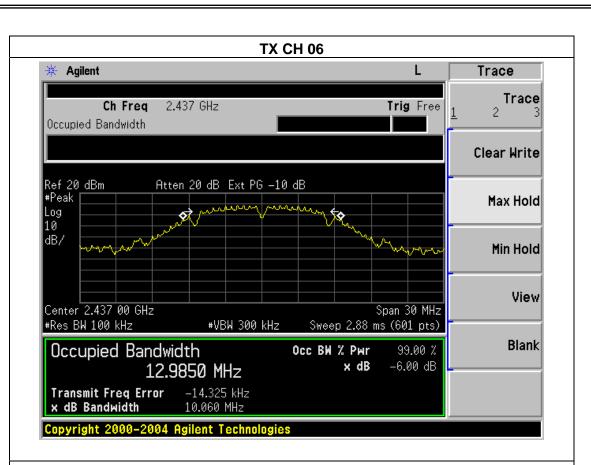
EUT:	RTEEK K3	Model Name :	K3
Temperature :	25 ℃	Relative Humidity:	56%
Pressure:	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX b Mode /CH01, CH06, CH11		

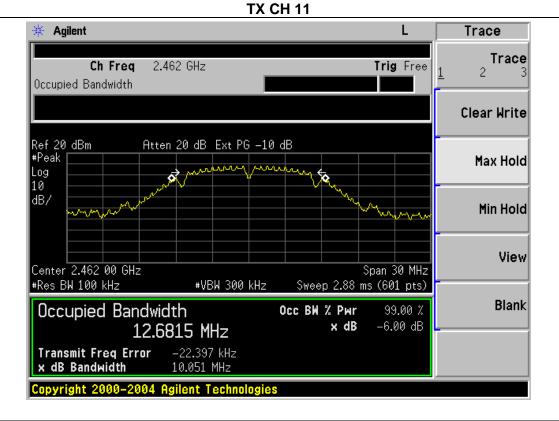
Page 41 of 60

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	10.132	500	Pass
Middle	2437	10.060	500	Pass
High	2462	10.051	500	Pass







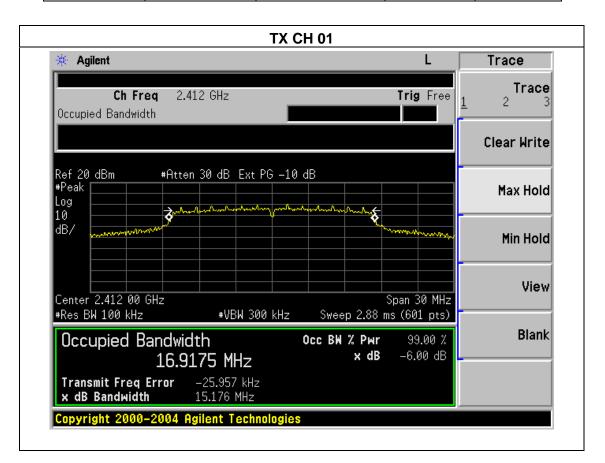




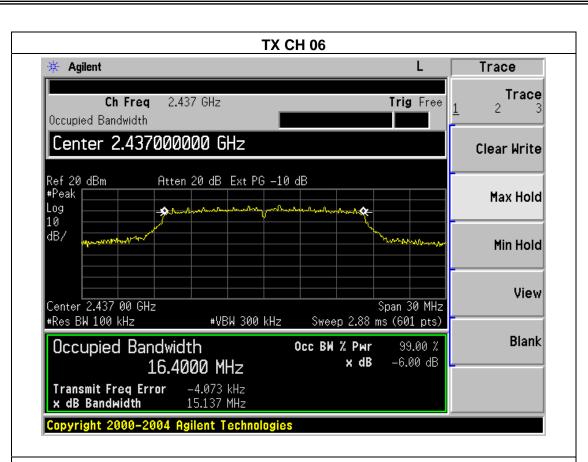
EUT:	RTEEK K3	Model Name :	K3
Temperature :	25 ℃	Relative Humidity:	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX g Mode /CH01, CH06, CH11		

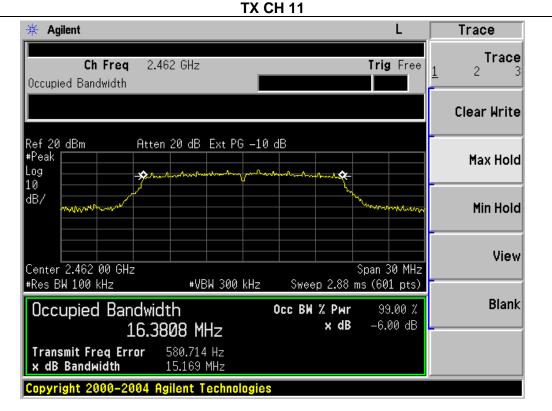
Page 43 of 60

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	15.176	500	Pass
Middle	2437	15.137	500	Pass
High	2462	15.169	500	Pass





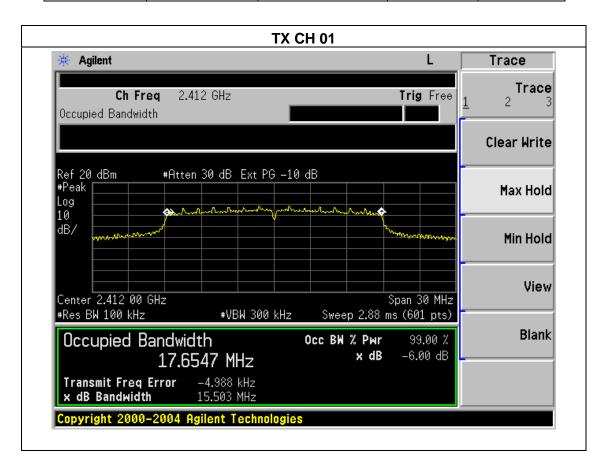






			-	
EUT:	RTEEK K3	Model Name :	K3	
Temperature	: 25 ℃	Relative Humidity:	60%	
Pressure:	1012 hPa	Test Voltage :	DC 3.7V	
Test Mode :	TX n Mode(20M) /C	TX n Mode(20M) /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	15.503	500	Pass
Middle	2437	15.295	500	Pass
High	2462	15.406	500	Pass





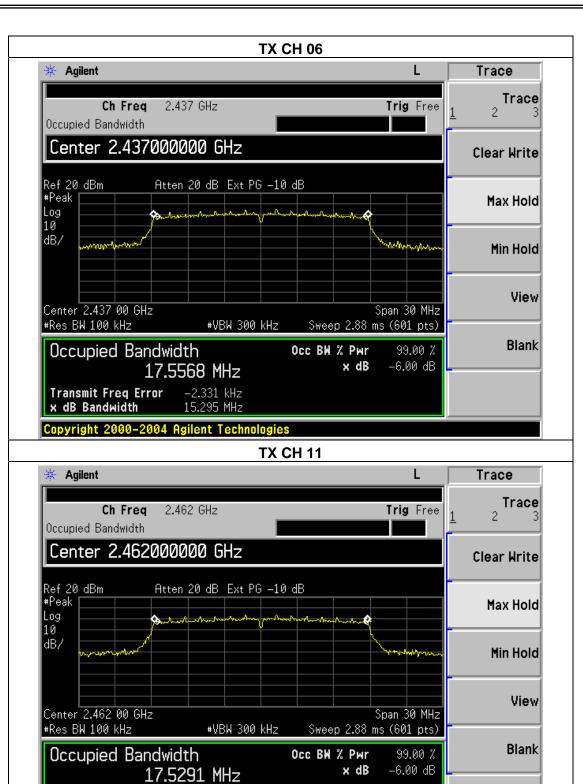
Transmit Freq Error

x dB Bandwidth

7.138 kHz

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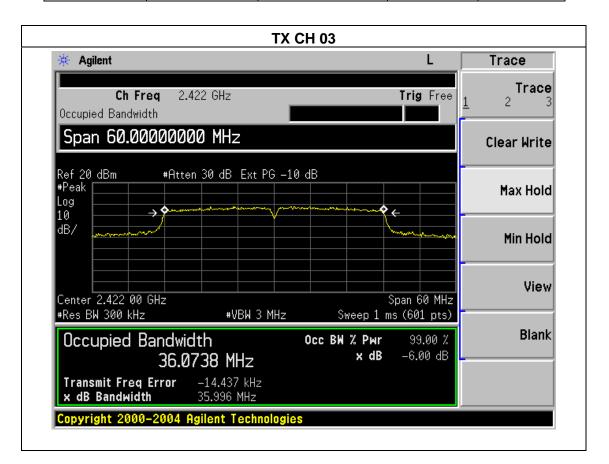
15.406 MHz



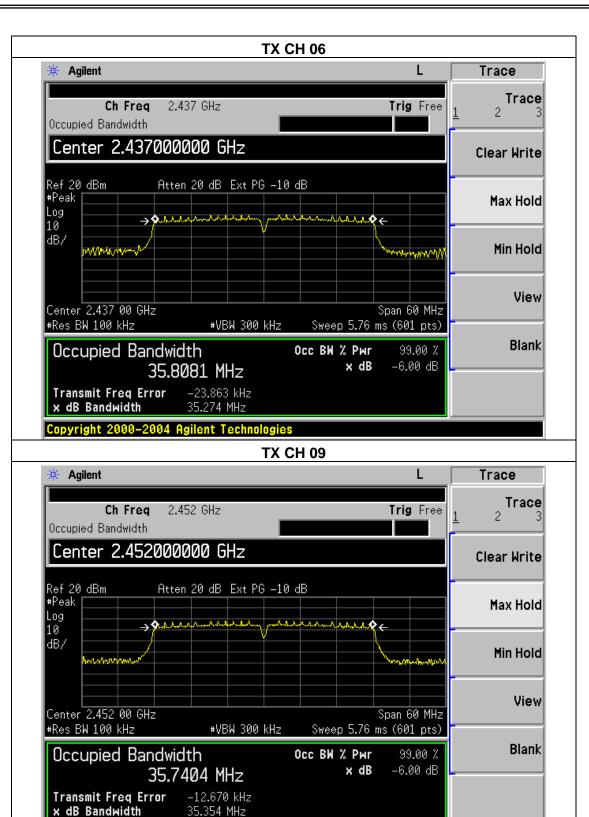


	_		
EUT:	RTEEK K3	Model Name :	K3
Temperature :	25 ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX n Mode(40M) /CH03, CH06, CH09		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2422	35.996	500	Pass
Middle	2437	35.274	500	Pass
High	2452	35.354	500	Pass







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6. PEAK OUTPUT POWER TEST

6.1 APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

6.1.1 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



6.1.5 TEST RESULTS

EUT:	RTEEK K3	Model Name :	K3
Temperature :	25 ℃	Relative Humidity:	60%
Pressure :	1012 hPa	Test Voltage :	DC 3.7V
Test Mode :	TX b/g/n20/n40 Mode		

TX 802.11b Mode								
Test Channe	Maximum Conducted Maximum Co		Maximum Conducted Output Power(AV)	LIMIT				
	(MHz)	(dBm)	(dBm)	(dBm)				
CH01	2412	13.24	11.03	30				
CH06	2437	13.65	10.83	30				
CH11	2462	13.08	10.26	30				
		TX 802.11g	Mode					
CH01	2412	12.67	9.54	30				
CH06	2437	12.57	9.44	30				
CH11	2462	12.86	9.73	30				
TX 802.11n-HT20 Mode								
CH01	2412	10.59	8.36	30				
CH06	2437	10.56	8.33	30				
CH11	2462	10.54	8.31	30				
TX 802.11n-HT40 Mode								
CH03	2422	9.83	7.41	30				
CH06	2437	9.76	7.34	30				
CH09	2452	9.81	7.39	30				



7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE APPLICABLE STANDARD

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST PROCEDURE

- a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b) Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- c) Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- d) Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- e) Repeat above procedures until all measured frequencies were complete.

7.1 DEVIATION FROM STANDARD

No deviation.

7.2 TEST SETUP



7.3 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



7.4 TEST RESULTS

EUT:	RTEEK K3	Model Name :	K3
Temperature:	25 ℃	Relative Humidity:	56%
Pressure:	1012 hPa	Test Voltage :	DC 3.7V

Frequency Band	Delta Peak to band emission (dBc)	>Limit (dBc)	Result				
	802.11b						
2400	35.84	20	Pass				
2483.5	51.30	20	Pass Pass Pass Pass Pass Pass Pass Pass				
802.11g							
2400	25.58	20	Pass				
2483.5	39.35		Pass				
802.11n20							
2400	00 25.00		Pass				
2483.5	483.5 40.31		Pass				
802.11n40							
2400	24.55	20	Pass				
2483.5 31.45		20	Pass				



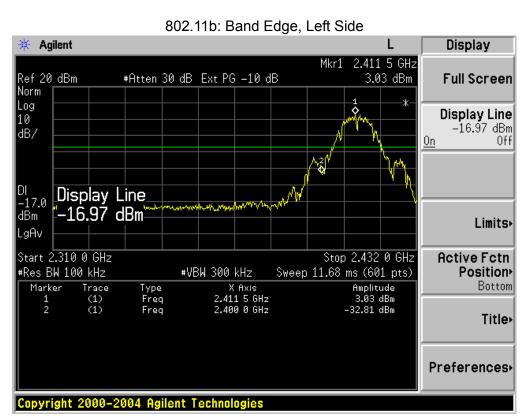
Radiated band edge:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector	Comment		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре			
	802.11b								
2390	58.89	-13.06	45.83	74	-28.17	peak	Vertical		
2390	58.62	-13.06	45.56	74	-28.44	peak	Horizontal		
2483.5	59.81	-12.78	47.03	74	-26.97	peak	Vertical		
2483.5	59.83	-12.78	47.05	74	-26.95	peak	Horizontal		
			802.11g				_		
2390	58.47	-13.06	45.41	74	-28.59	peak	Vertical		
2390	57.65	-13.06	44.59	74	-29.41	peak	Horizontal		
2483.5	59.19	-12.78	46.41	74	-27.59	peak	Vertical		
2483.5	59.58	-12.78	46.8	74	-27.20	peak	Horizontal		
802.11n20									
2390	61.31	-13.06	48.25	74	-25.75	peak	Vertical		
2390	61.09	-13.06	48.03	74	-25.97	peak	Horizontal		
2483.5	61.23	-12.78	48.45	74	-25.55	peak	Vertical		
2483.5	61.35	-12.78	48.57	74	-25.43	peak	Horizontal		
802.11n40									
2390	62.07	-13.06	49.01	74	-24.99	peak	Vertical		
2390	63.22	-13.06	50.16	74	-23.84	peak	Horizontal		
2483.5	61.72	-12.78	48.94	74	-25.06	peak	Vertical		
2483.5	61.55	-12.78	48.77	74	-25.23	peak	Horizontal		

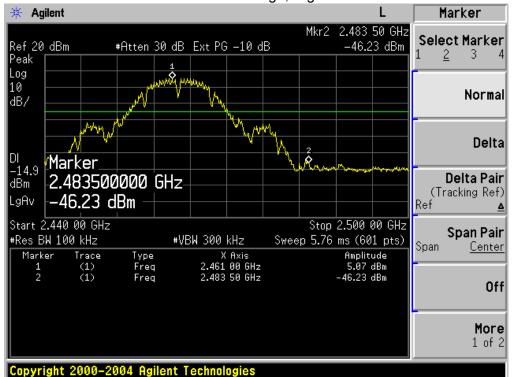
Note: Test method to see chapter 3.2 . When PK value is lower than the Average value limit, average not record.





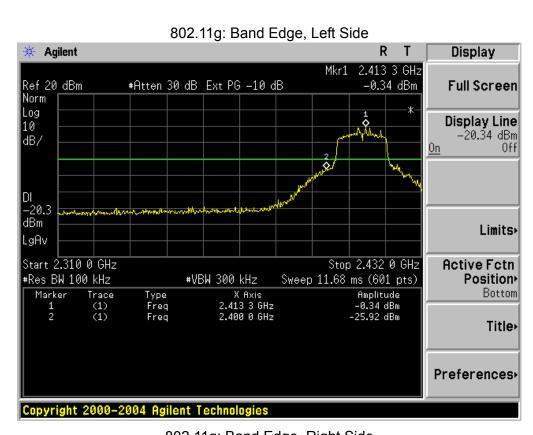


802.11b: Band Edge, Right Side

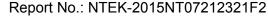




Report No.: NTEK-2015NT07212321F2



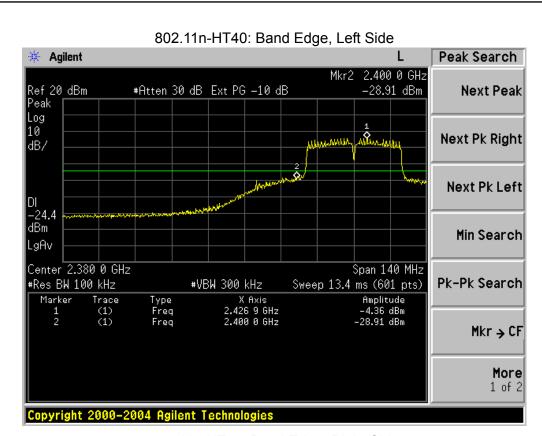
802.11g: Band Edge, Right Side Display Agilent Mkr1 2.459 50 GHz -0.22 dBm Ref 20 dBm #Atten 30 dB Ext PG -10 dB Full Screen Peak Log ALA ALA SAL Display Line 10 المالياليات -20.22 dBm ldB/ <u>0n</u> -20.2 dBm Limits. LgAv Start 2.440 00 GHz Stop 2.500 00 GHz **Active Fctn** #Res BW 100 kHz #VBW 300 kHz Sweep 5.76 ms (601 pts) Position > Trace (1) (1) Type Freq X Axis 2.459 50 GHz 2.483 50 GHz Amplitude -0.22 dBm -39.57 dBm Bottom Marker Frea Title • Preferences. Copyright 2000-2004 Agilent Technologies





802.11n-HT20: Band Edge, Right Side





802.11n-HT40: Band Edge, Right Side Peak Search Agilent Mkr2 2.483 50 GHz -35.18 dBm Ref 20 dBm #Atten 30 dB Ext PG -10 dB Next Peak Peak Log 10 Next Pk Right whileharmen back a ldB/ White the same of Next Pk Left Marker -23.7 dBm 2.483500000 GHz Min Search -35.18 dBm LgAv Start 2.430 00 GHz Stop 2.500 00 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 6.72 ms (601 pts) Pk-Pk Search Trace (1) (1) Amplitude -3.73 dBm -35.18 dBm Marker Type Freq X Axis 2.447 03 GHz 2.483 50 GHz Frea Mkr → CF More 1 of 2 Copyright 2000-2004 Agilent Technologies



8. ANTENNA REQUIREMENT

8.1 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.

8.2 EUT ANTENNA

	The EUT antenna is ı	permanent att	tached antenna	. It comply	/ with th	ie standard	requirement
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9. EUT TEST PHOTO





