

Band Edge

Test Mode: LTE Band 2 / 1.4MHz / 1RB

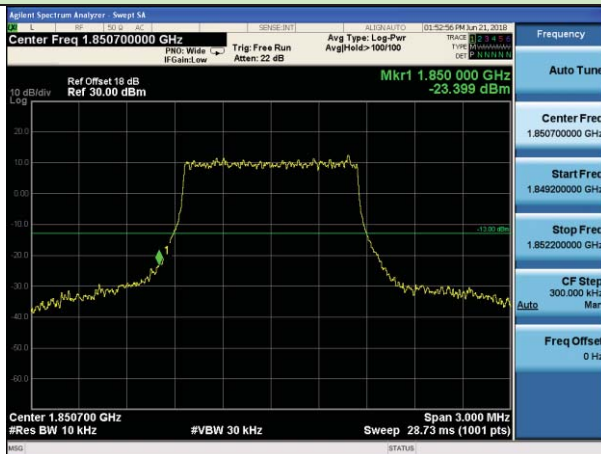


Lowest channel

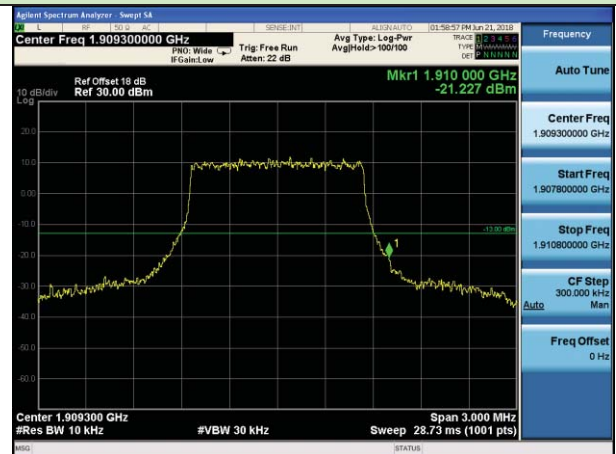


Highest channel

Test Mode: LTE Band 2 / 1.4MHz / 6RB

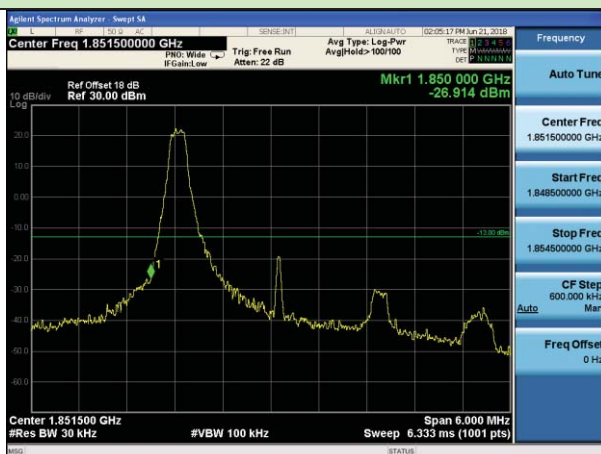


Lowest channel



Highest channel

Test Mode: LTE Band 2 / 3MHz / 1RB

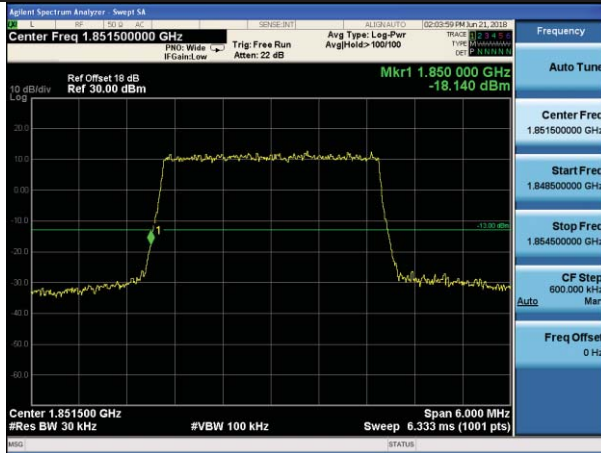


Lowest channel

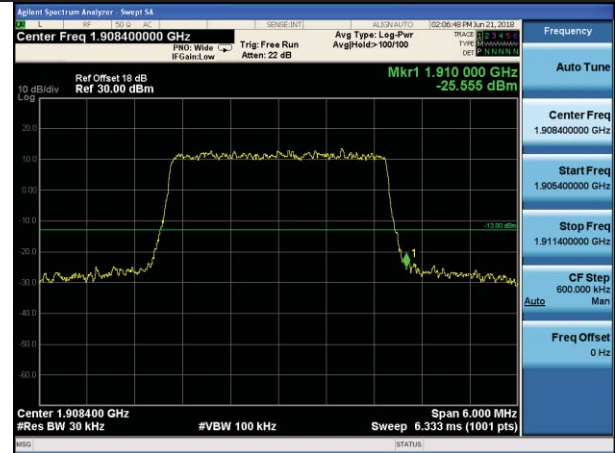


Highest channel

Test Mode: LTE Band 2 / 3MHz / 15RB



Lowest channel



Highest channel

Test Mode: LTE Band 2 / 5MHz / 1RB

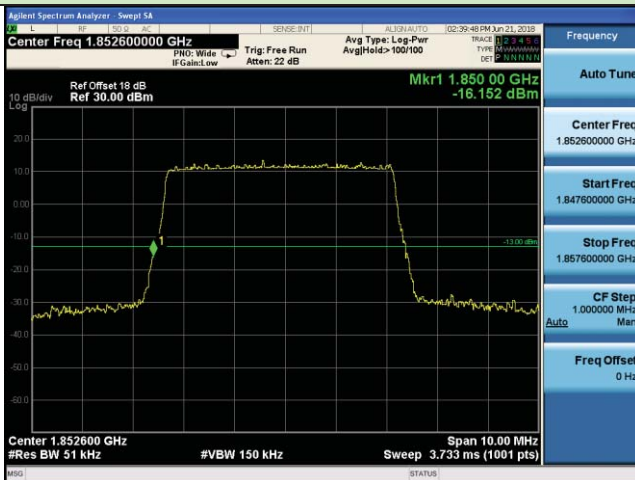


Lowest channel

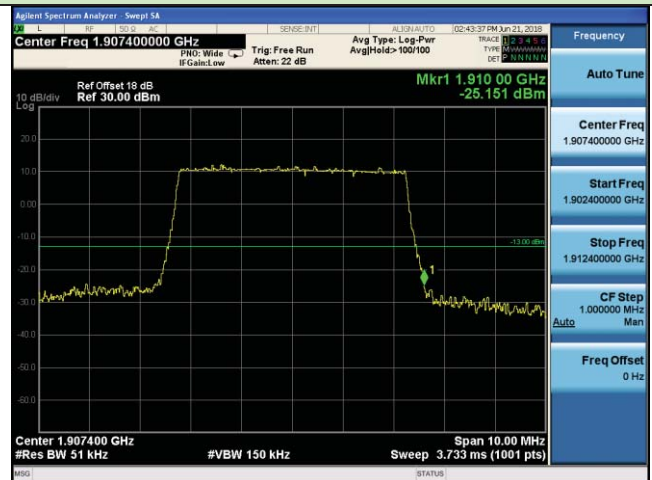


Highest channel

Test Mode: LTE Band 2 / 5MHz / 25RB

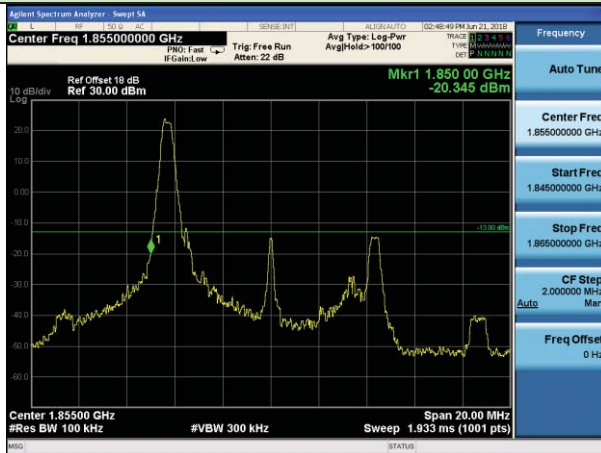


Lowest channel

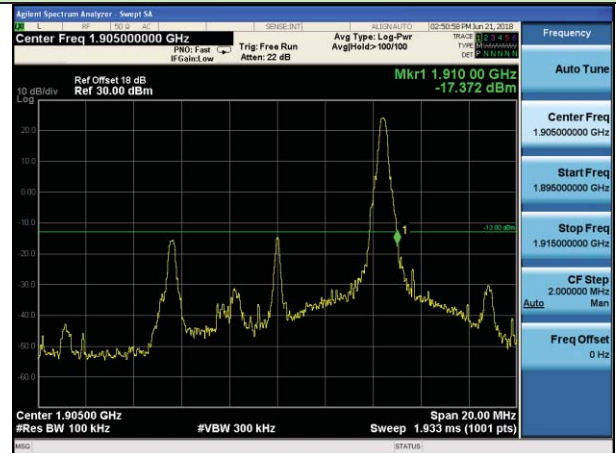


Highest channel

Test Mode: LTE Band 2 / 10MHz / 1RB

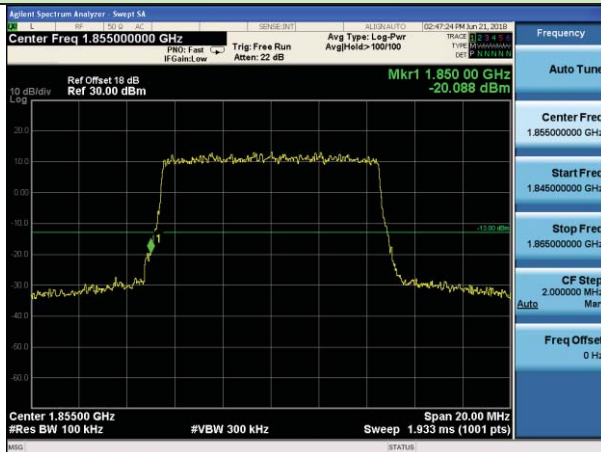


Lowest channel

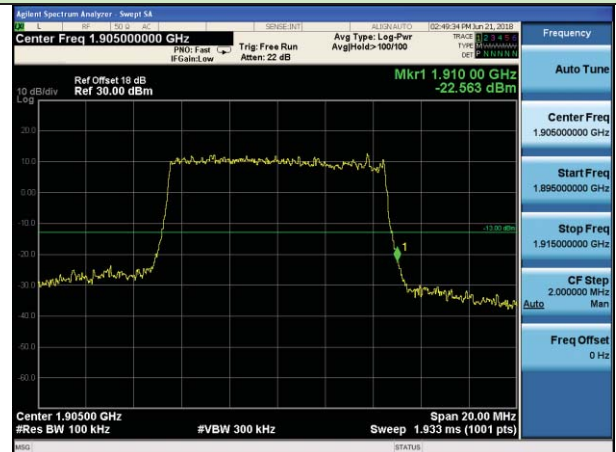


Highest channel

Test Mode: LTE Band 2 / 10MHz / 50RB



Lowest channel



Highest channel

Test Mode: LTE Band 2 / 15MHz / 1RB

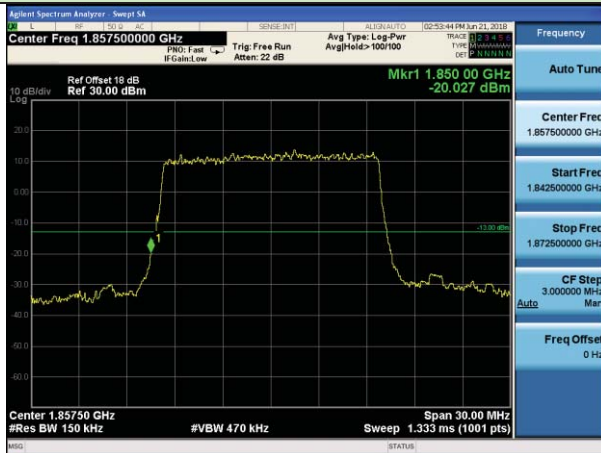


Lowest channel



Highest channel

Test Mode: LTE Band 2 / 15MHz / 75RB



Lowest channel

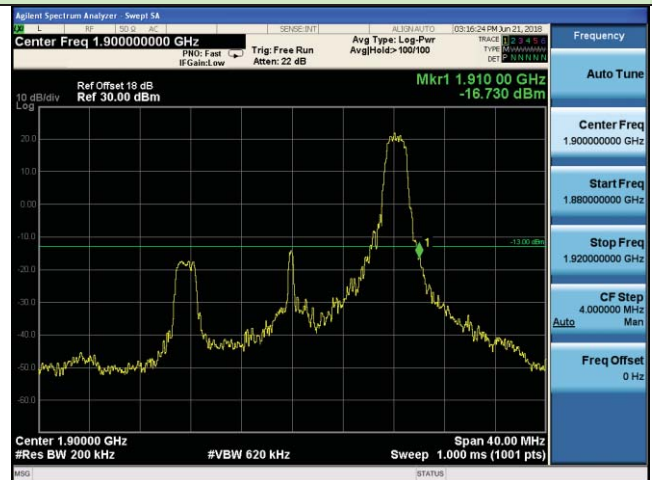


Highest channel

Test Mode: LTE Band 2 / 20MHz / 1RB

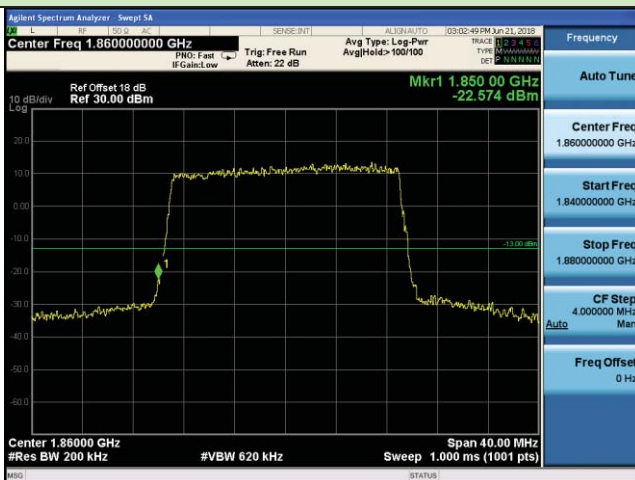


Lowest channel

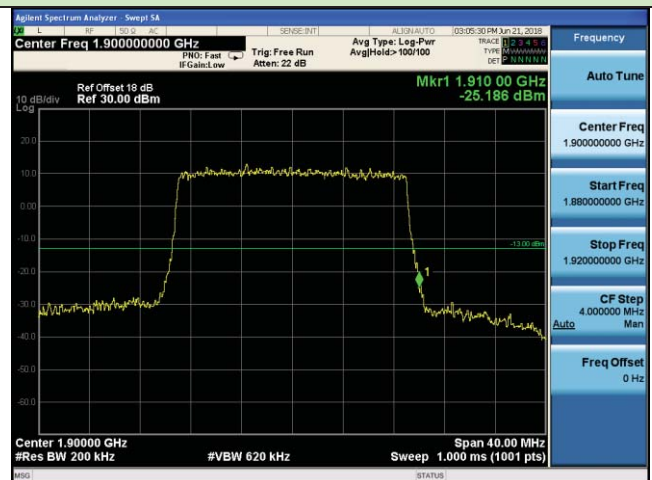


Highest channel

Test Mode: LTE Band 2 / 20MHz / 100RB

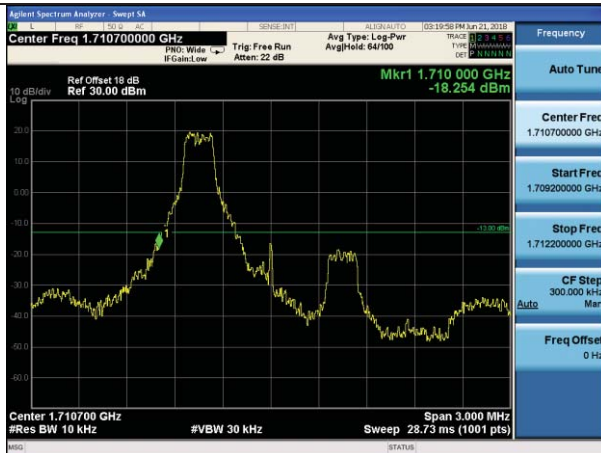


Lowest channel

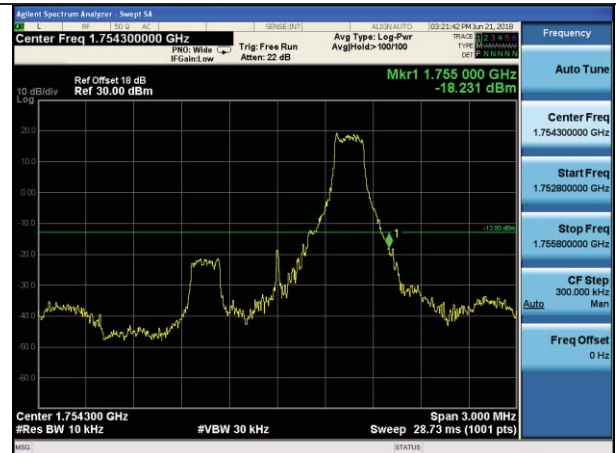


Highest channel

Test Mode: LTE Band 4 / 1.4MHz / 1RB

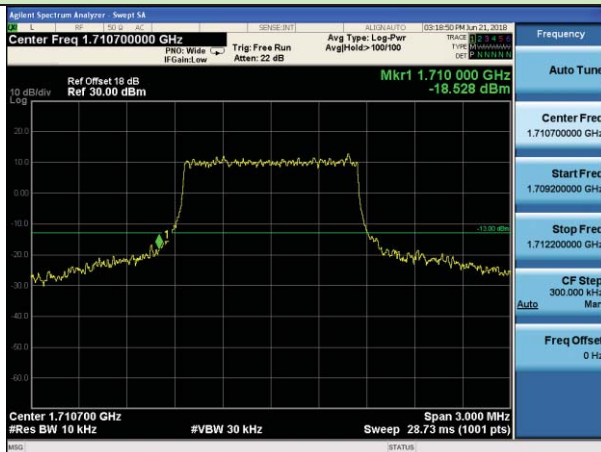


Lowest channel

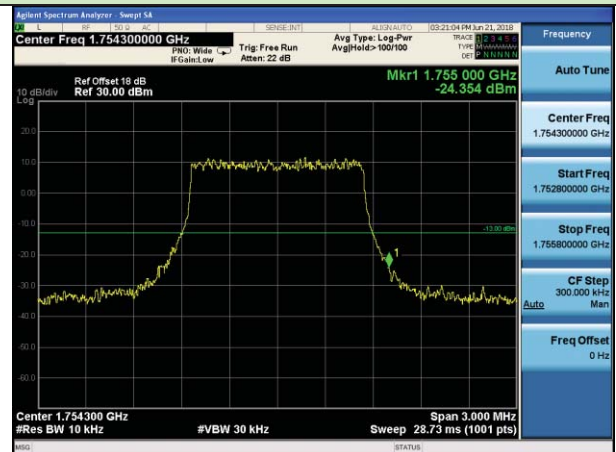


Highest channel

Test Mode: LTE Band 4 / 1.4MHz / 6RB



Lowest channel

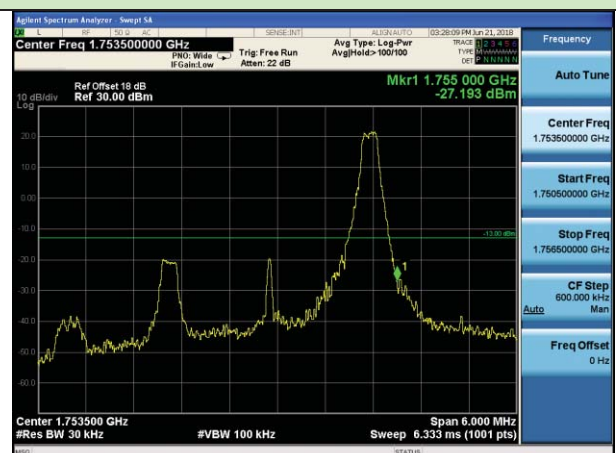


Highest channel

Test Mode: LTE Band 4 / 3MHz / 1RB

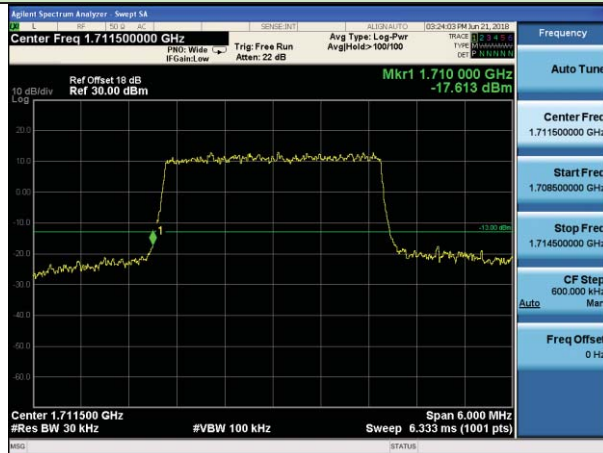


Lowest channel

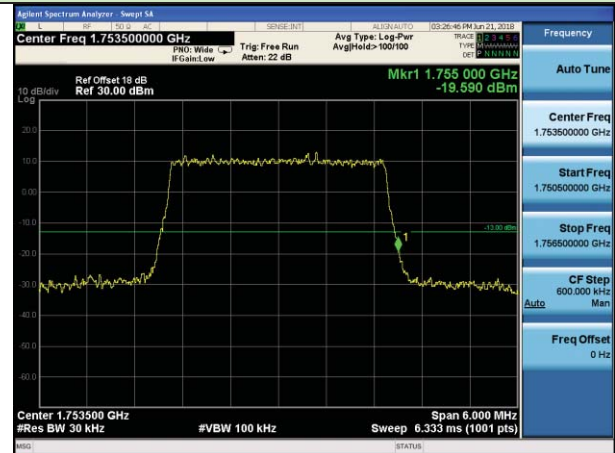


Highest channel

Test Mode: LTE Band 4 / 3MHz / 15RB



Lowest channel

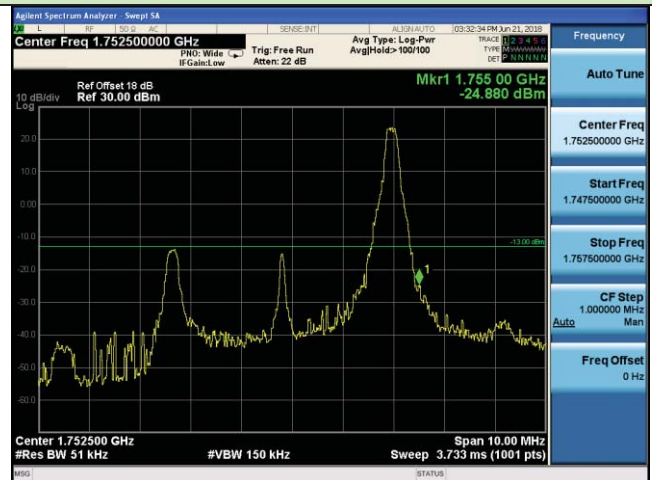


Highest channel

Test Mode: LTE Band 4 / 5MHz / 1RB

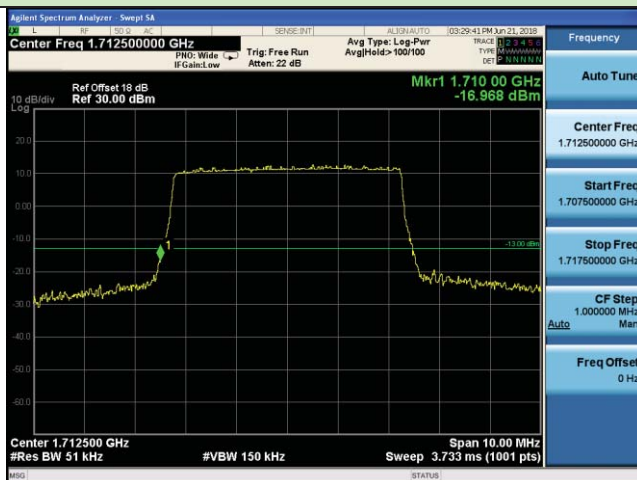


Lowest channel

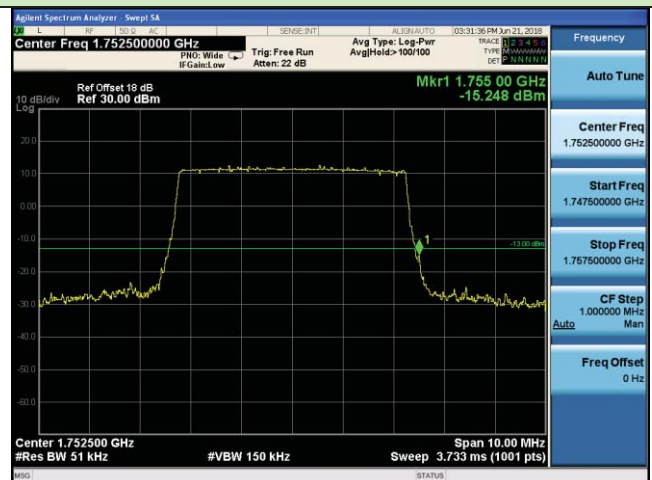


Highest channel

Test Mode: LTE Band 4 / 5MHz / 25RB

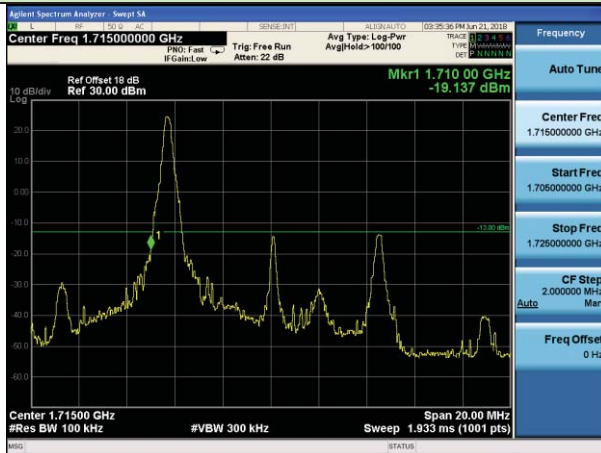


Lowest channel

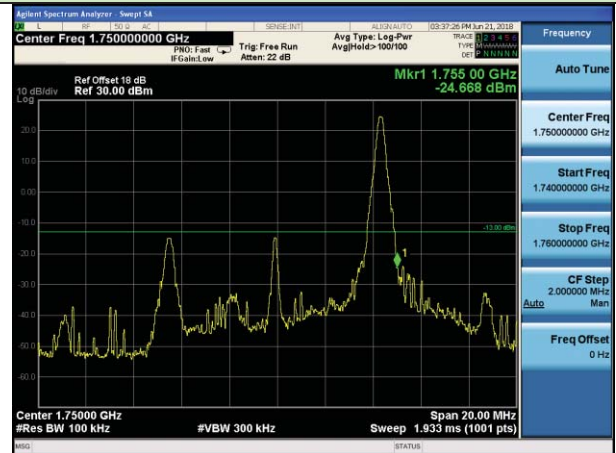


Highest channel

Test Mode: LTE Band 4 / 10MHz / 1RB

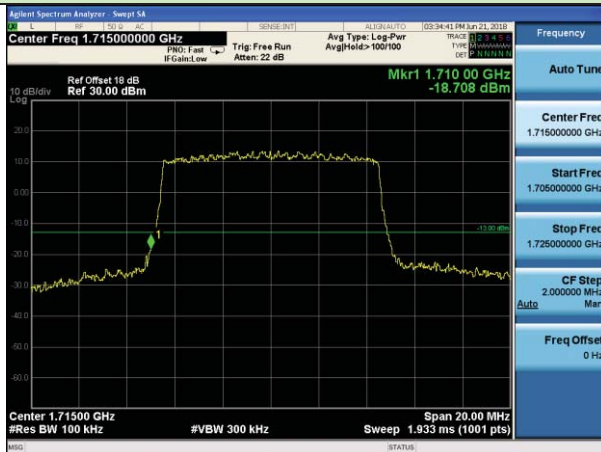


Lowest channel

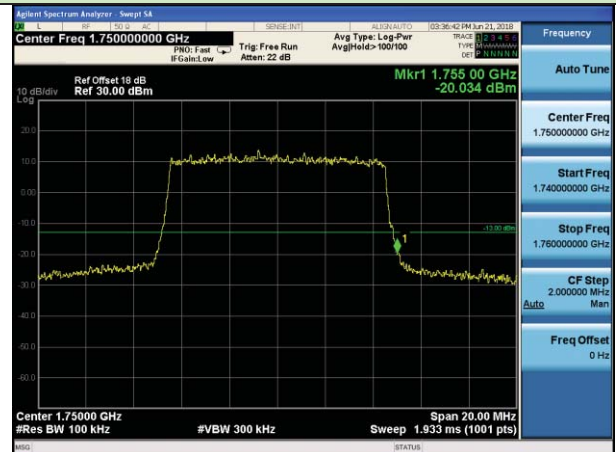


Highest channel

Test Mode: LTE Band 4 / 10MHz / 50RB

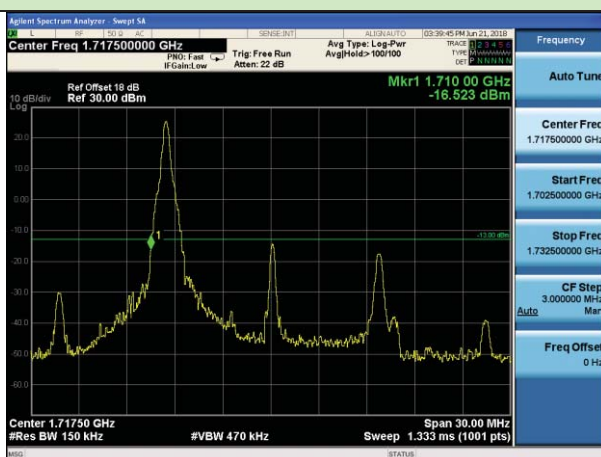


Lowest channel

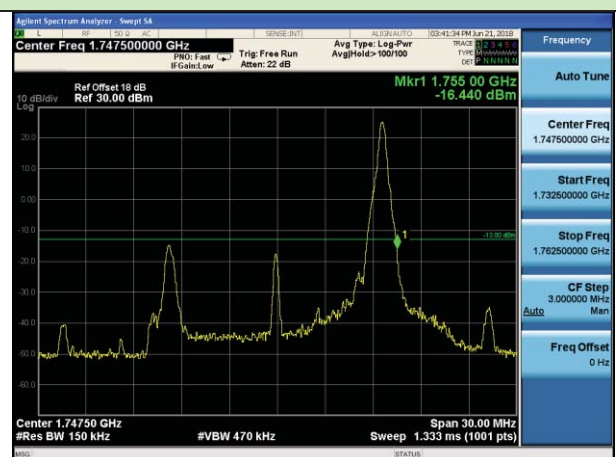


Highest channel

Test Mode: LTE Band 4 / 15MHz / 1RB

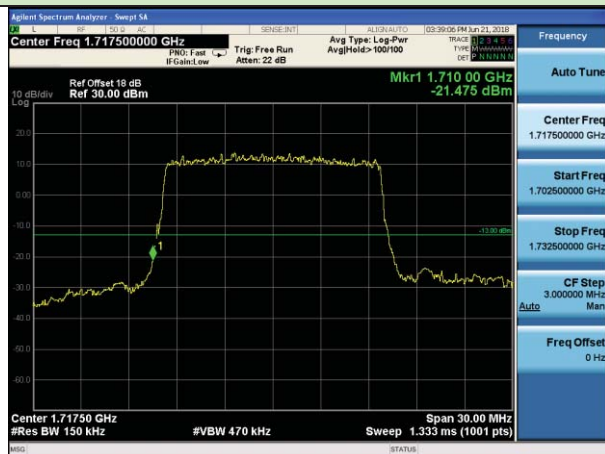


Lowest channel

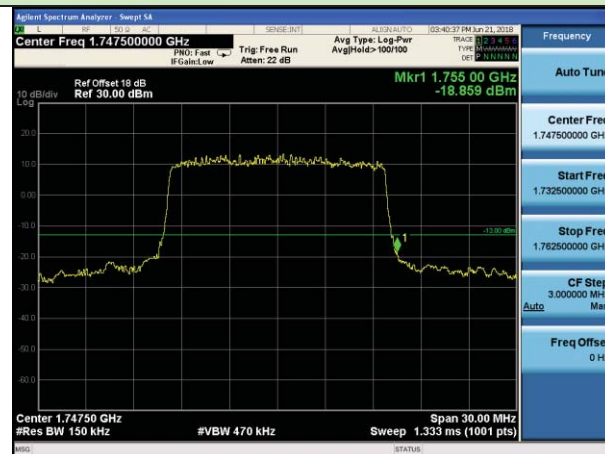


Highest channel

Test Mode: LTE Band 4 / 15MHz / 75RB



Lowest channel



Highest channel

Test Mode: LTE Band 4 / 20MHz / 1RB

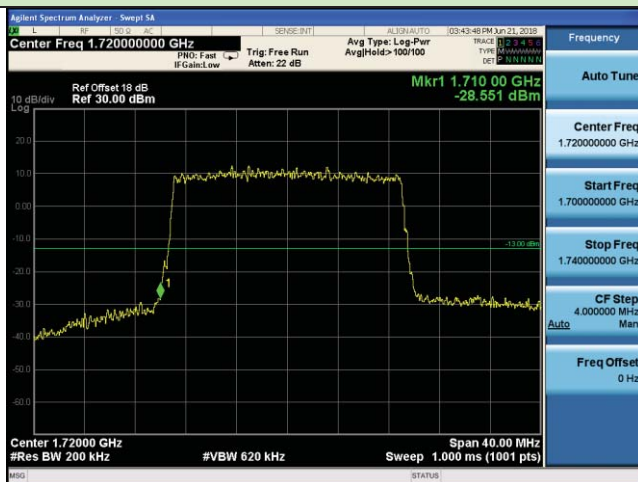


Lowest channel

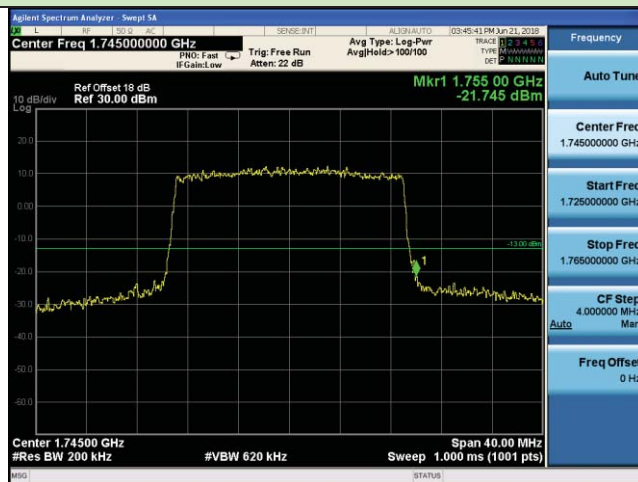


Highest channel

Test Mode: LTE Band 4 / 20MHz / 100RB

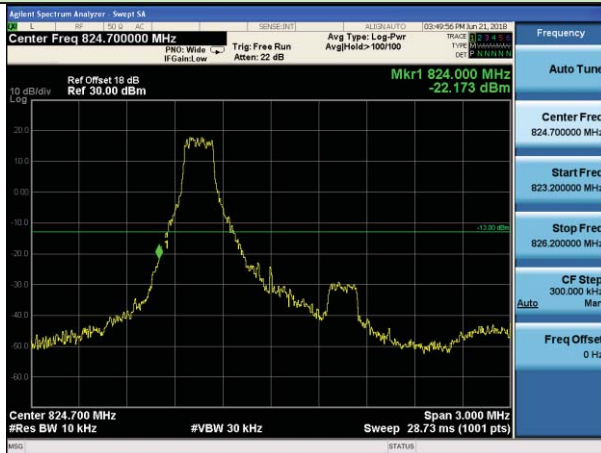


Lowest channel



Highest channel

Test Mode: LTE Band 5 / 1.4MHz / 1RB

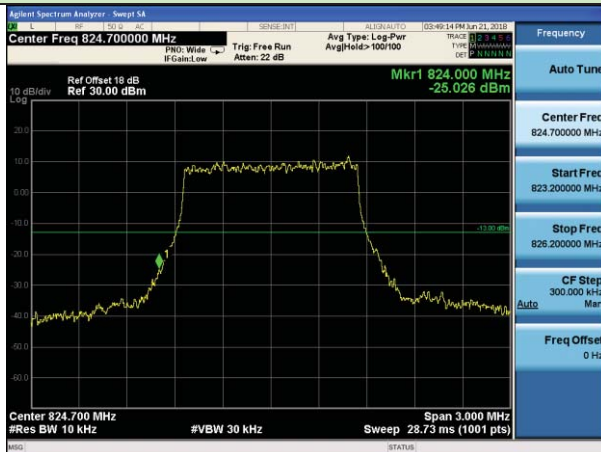


Lowest channel

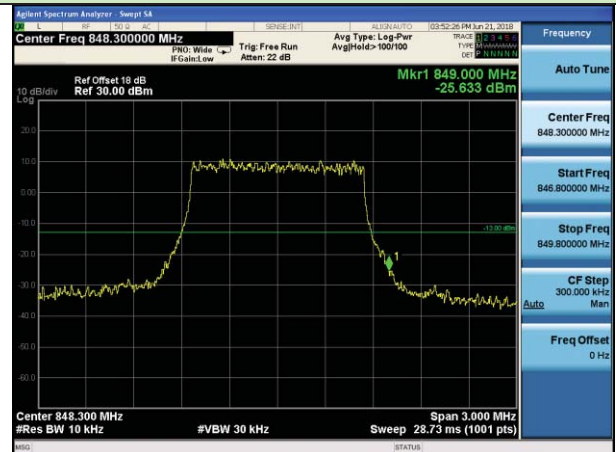


Highest channel

Test Mode: LTE Band 5 / 1.4MHz / 6RB

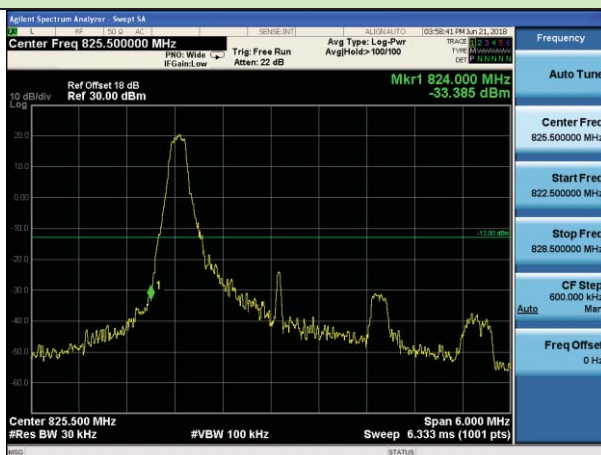


Lowest channel

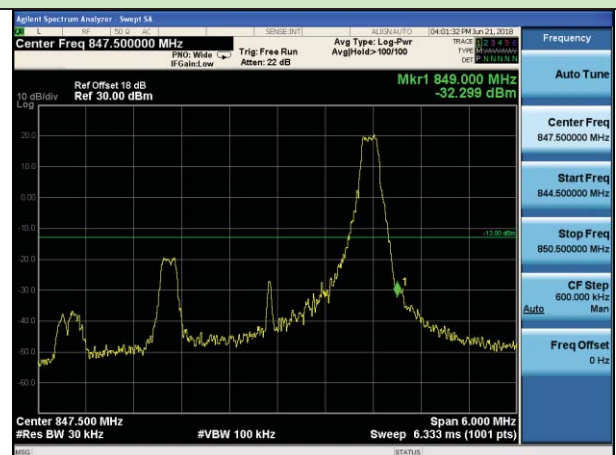


Highest channel

Test Mode: LTE Band 5 / 3MHz / 1RB

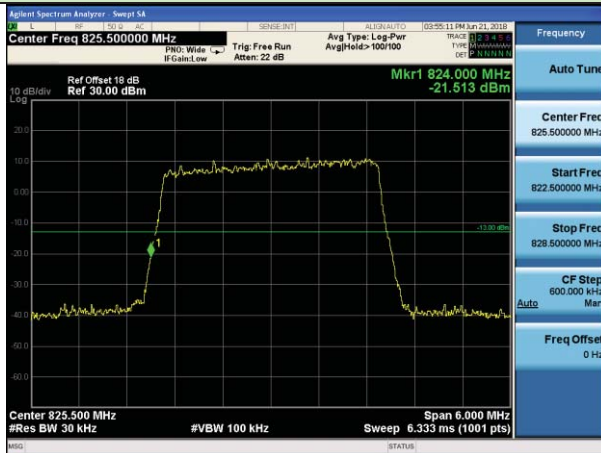


Lowest channel

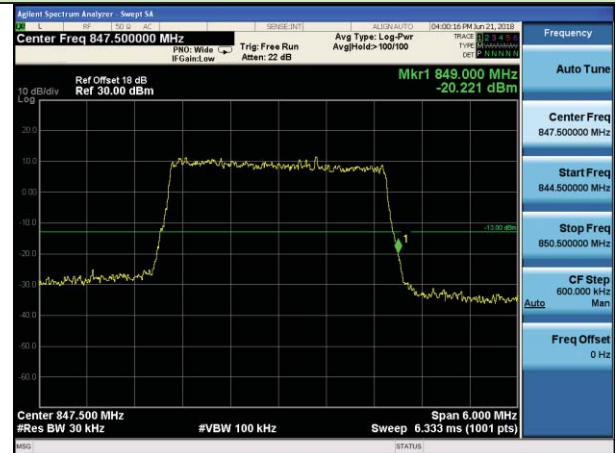


Highest channel

Test Mode: LTE Band 5 / 3MHz / 15RB



Lowest channel

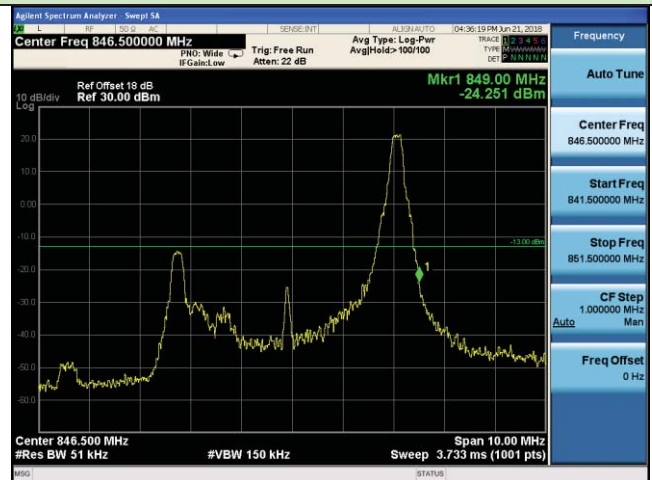


Highest channel

Test Mode: LTE Band 5 / 5MHz / 1RB

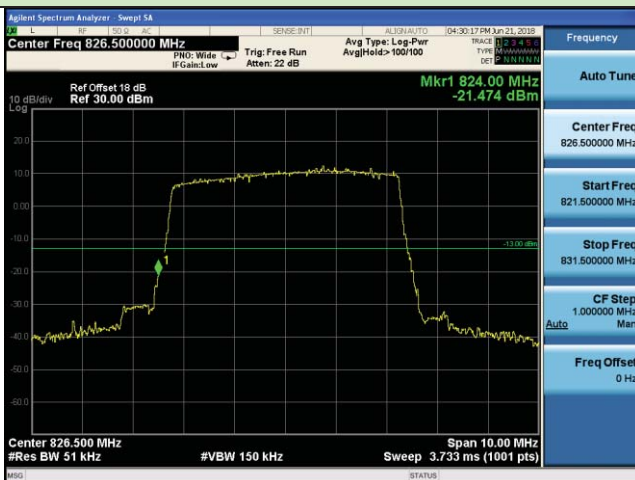


Lowest channel



Highest channel

Test Mode: LTE Band 5 / 5MHz / 25RB



Lowest channel



Highest channel

Test Mode: LTE Band 5 / 10MHz / 1RB

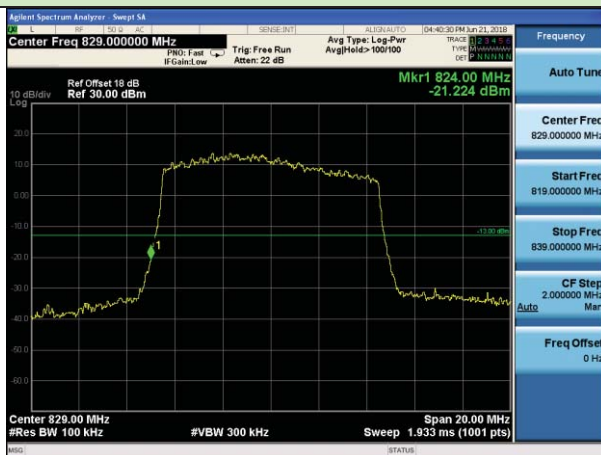


Lowest channel

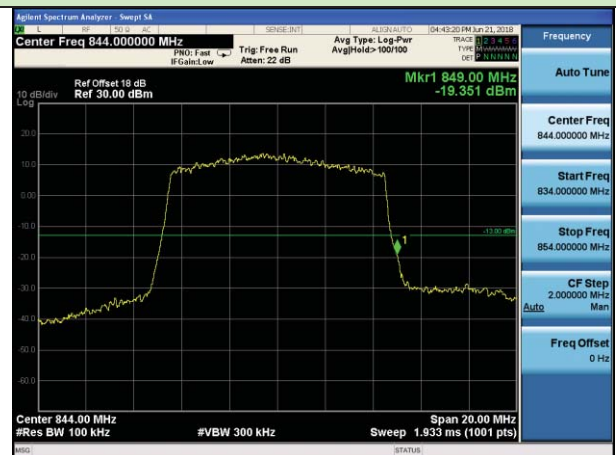


Highest channel

Test Mode: LTE Band 5 / 10MHz / 50RB

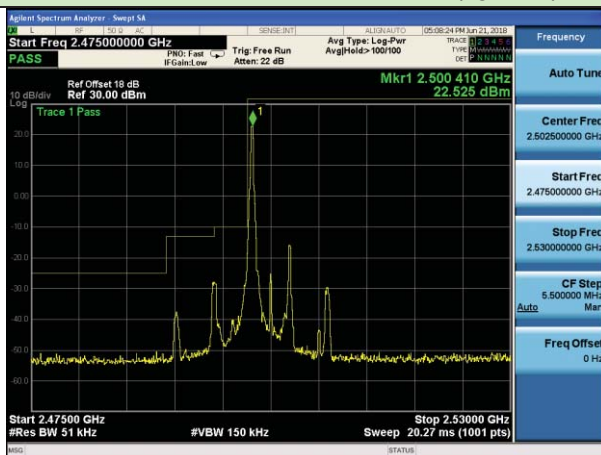


Lowest channel

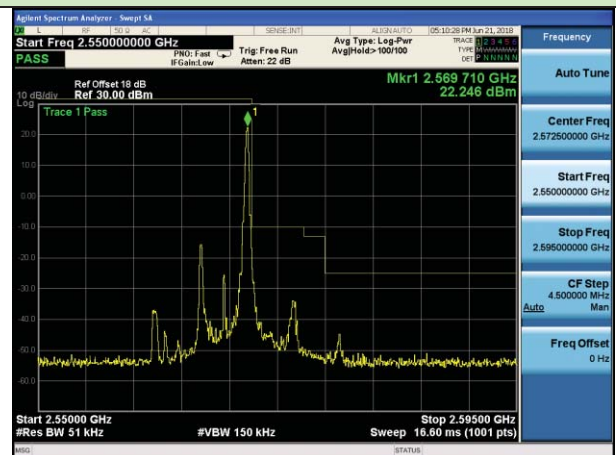


Highest channel

Test Mode: LTE Band 7 / 5MHz / 1RB

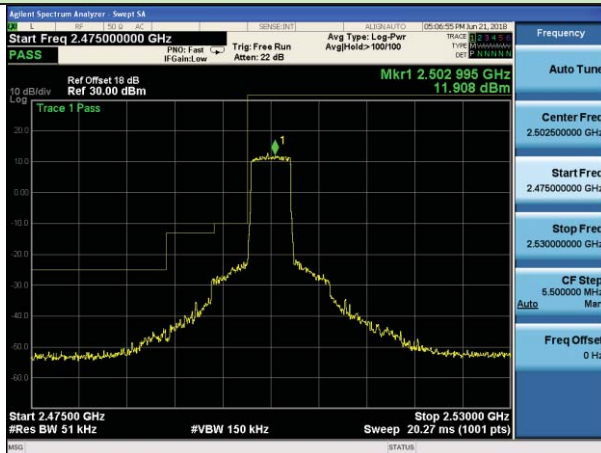


Lowest channel



Highest channel

Test Mode: LTE Band 7 / 5MHz / 25RB

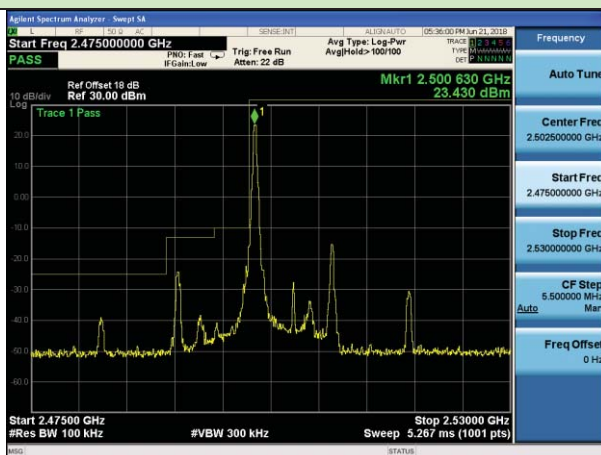


Lowest channel

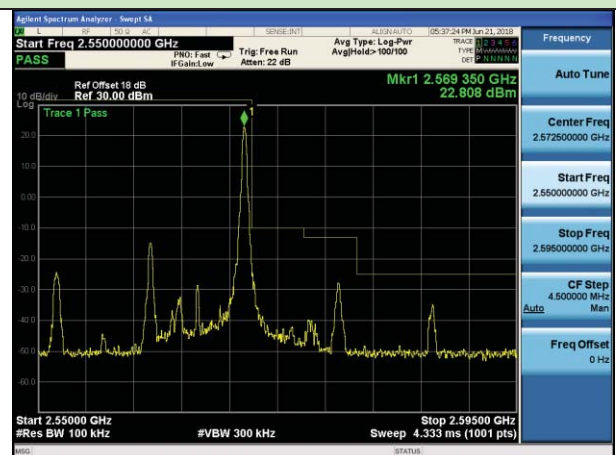


Highest channel

Test Mode: LTE Band 7 / 10MHz / 1RB

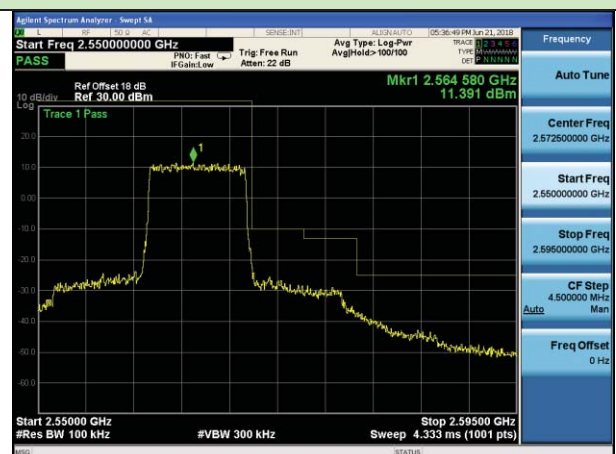
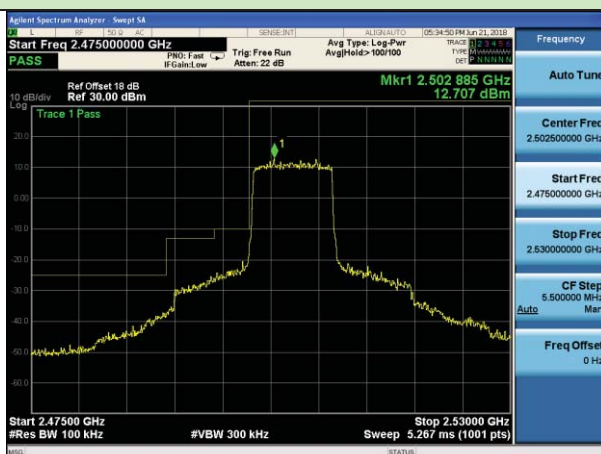


Lowest channel



Highest channel

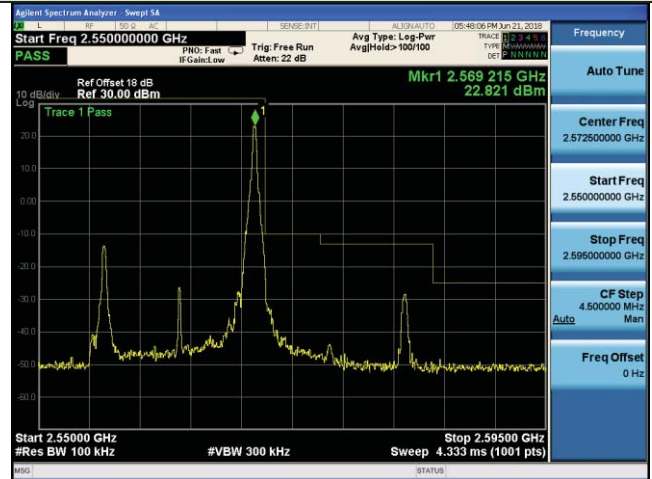
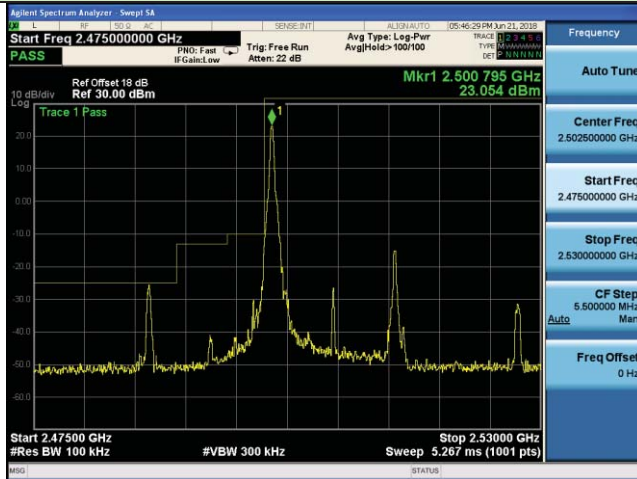
Test Mode: LTE Band 7 / 10MHz / 50RB



Lowest channel

Highest channel

Test Mode: LTE Band 7 / 15MHz / 1RB



Lowest channel

Highest channel

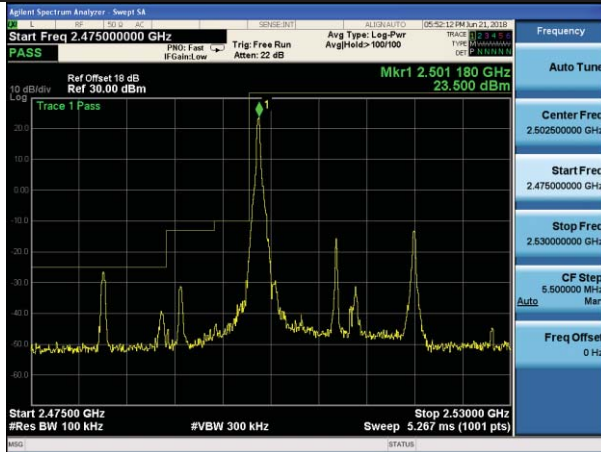
Test Mode: LTE Band 7 / 15MHz / 75RB



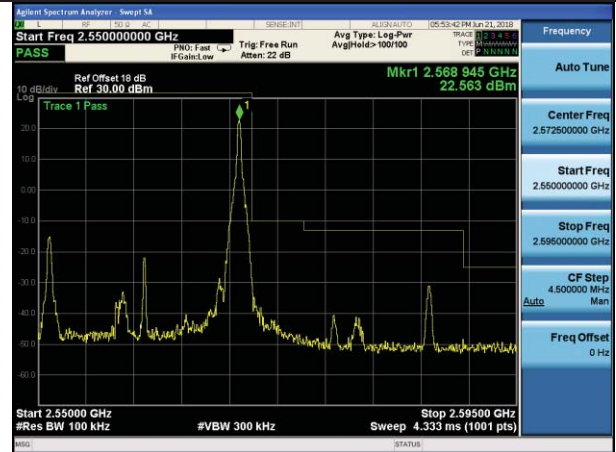
Lowest channel

Highest channel

Test Mode: LTE Band 7 / 20MHz / 1RB



Lowest channel



Highest channel

Test Mode: LTE Band 7 / 20MHz / 100RB



Lowest channel



Highest channel

Test Mode: LTE Band 17 / 5MHz / 1RB



Lowest channel

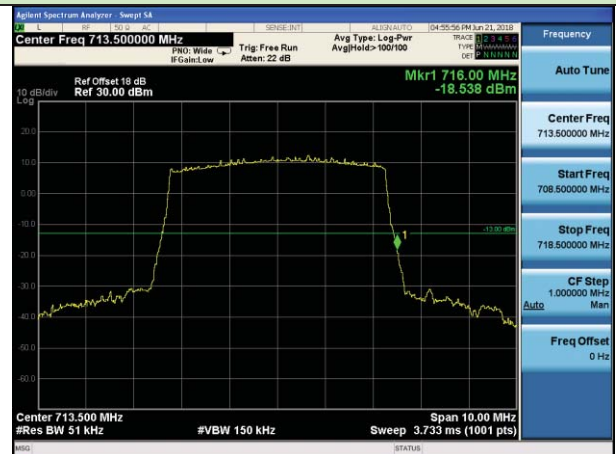


Highest channel

Test Mode: LTE Band 17 / 5MHz / 25RB

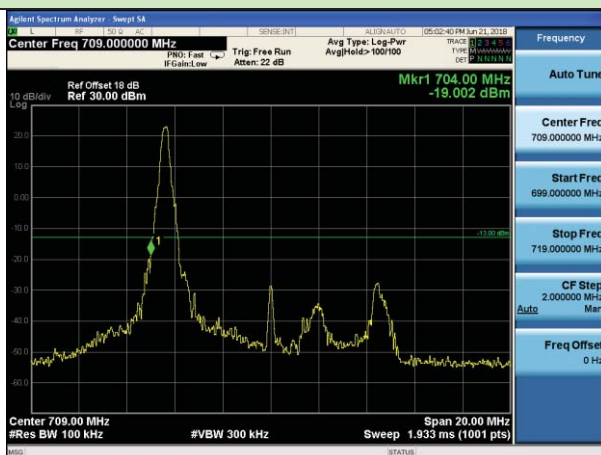


Lowest channel



Highest channel

Test Mode: LTE Band 17 / 10MHz / 1RB

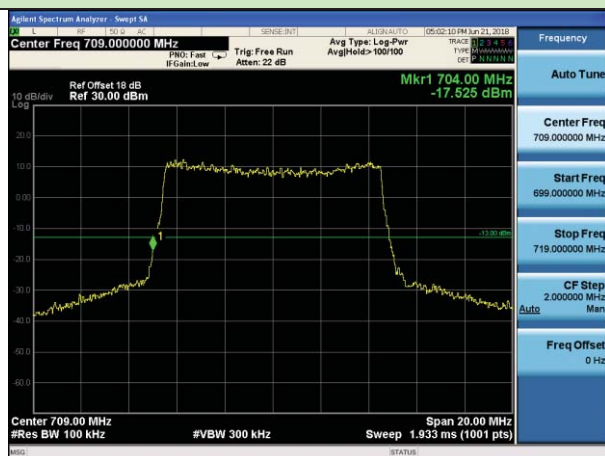


Lowest channel



Highest channel

Test Mode: LTE Band 17 / 10MHz / 50RB



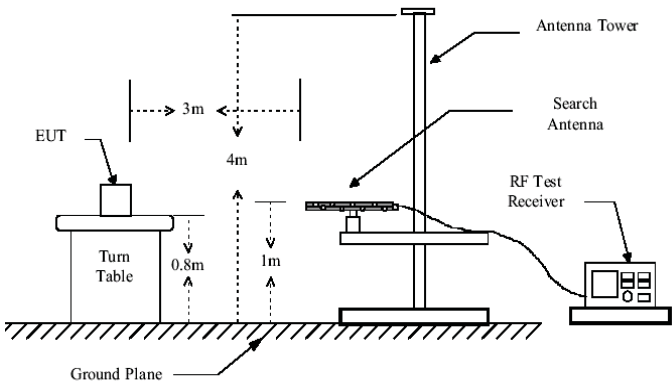
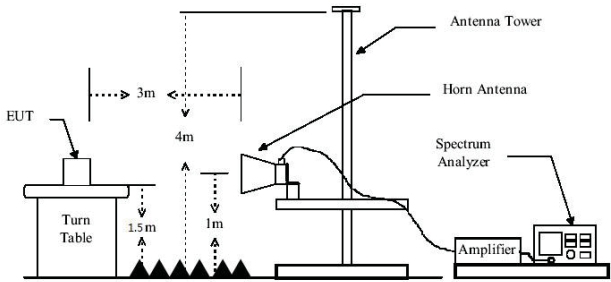
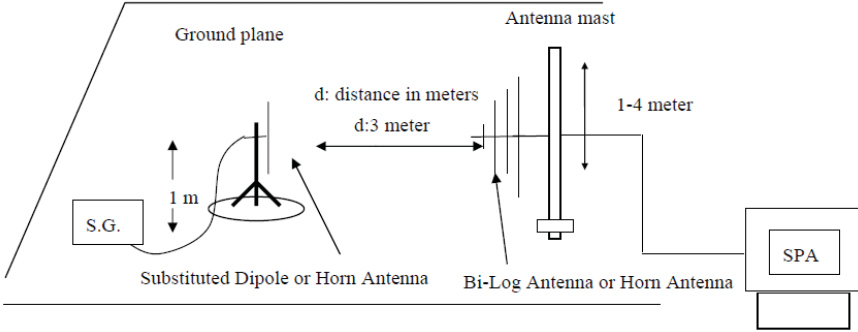
Lowest channel



Highest channel

Note: All bandwidth and modulation are tested, only the worst result is reported.

6.7 ERP, EIRP Measurement

Test Requirement:	FCC part22.913(a), FCC part24.232(b) and FCC part 27.53
Test Method:	FCC part2.1046
Limit:	LTE Band 2: 2W (EIRP) LTE Band 4/7: 1W (EIRP) LTE Band 5: 7W (ERP) LTE Band 17: 3W (ERP)
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 

Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated. 3. ERP in frequency band 824.2 –848.80.8MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated asfollows: $\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$ 4. EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows: $\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 2 (1.4MHz)	Lowest	6	0	H	V	22.30	33.00	Pass
					H	20.11		
				E1	V	22.40		
					H	20.24		
				E2	V	20.99		
					H	18.85		
	Middle	6	0	H	V	22.64	33.00	Pass
					H	20.89		
				E1	V	21.83		
					H	20.49		
				E2	V	21.62		
					H	19.19		
	Highest	6	0	H	V	21.81	33.00	Pass
					H	20.40		
				E1	V	21.97		
					H	20.86		
				E2	V	21.50		
					H	19.96		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 2 (3MHz)	Lowest	15	0	H	V	22.88	33.00	Pass
					H	20.28		
				E1	V	22.13		
					H	21.45		
				E2	V	21.56		
					H	19.15		
	Middle	15	0	H	V	22.68	33.00	Pass
					H	20.50		
				E1	V	22.12		
					H	20.78		
				E2	V	21.88		
					H	20.33		
	Highest	15	0	H	V	22.42	33.00	Pass
					H	20.44		
				E1	V	22.24		
					H	21.19		
				E2	V	21.60		
					H	20.44		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 2 (5MHz)	Lowest	25	0	H	V	22.34	33.00	Pass
					H	21.03		
				E1	V	22.83		
					H	20.44		
				E2	V	21.31		
					H	18.42		
	Middle	25	0	H	V	23.04	33.00	Pass
					H	19.72		
				E1	V	22.52		
					H	19.91		
				E2	V	22.53		
					H	20.09		
	Highest	25	0	H	V	22.44	33.00	Pass
					H	20.44		
				E1	V	22.64		
					H	20.08		
				E2	V	22.17		
					H	20.39		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 2 (10MHz)	Lowest	50	0	H	V	22.81	33.00	Pass
					H	20.50		
				E1	V	22.69		
					H	20.54		
				E2	V	21.44		
					H	19.00		
	Middle	50	0	H	V	22.45	33.00	Pass
					H	20.34		
				E1	V	22.14		
					H	20.37		
				E2	V	22.03		
					H	20.52		
	Highest	50	0	H	V	22.52	33.00	Pass
					H	20.11		
				E1	V	22.49		
					H	20.22		
				E2	V	21.72		
					H	20.84		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 2 (15MHz)	Lowest	75	0	H	V	22.75	33.00	Pass
					H	20.37		
				E1	V	22.78		
					H	20.02		
				E2	V	21.53		
					H	19.88		
	Middle	75	0	H	V	23.03	33.00	Pass
					H	20.23		
				E1	V	22.74		
					H	20.06		
				E2	V	22.71		
					H	20.74		
	Highest	75	0	H	V	22.97	33.00	Pass
					H	20.13		
				E1	V	23.02		
					H	20.28		
				E2	V	22.32		
					H	20.54		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 2 (20MHz)	Lowest	100	0	H	V	23.22	33.00	Pass
					H	20.82		
				E1	V	23.04		
					H	20.38		
				E2	V	22.39		
					H	20.15		
	Middle	100	0	H	V	22.79	33.00	Pass
					H	20.28		
				E1	V	22.53		
					H	20.52		
				E2	V	22.04		
					H	20.33		
	Highest	100	0	H	V	22.36	33.00	Pass
					H	20.17		
				E1	V	22.34		
					H	20.50		
				E2	V	22.04		
					H	20.23		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (1.4MHz)	Lowest	6	0	H	V	22.52	30.00	Pass
					H	21.18		
				E1	V	22.91		
					H	20.09		
				E2	V	21.70		
					H	20.35		
	Middle	6	0	H	V	22.96	30.00	Pass
					H	20.42		
				E1	V	22.53		
					H	20.20		
				E2	V	22.20		
					H	19.95		
	Highest	6	0	H	V	23.15	30.00	Pass
					H	20.89		
				E1	V	22.75		
					H	20.01		
				E2	V	22.03		
					H	20.46		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (3MHz)	Lowest	15	0	H	V	22.72	30.00	Pass
					H	20.23		
				E1	V	22.86		
					H	20.02		
				E2	V	21.78		
					H	18.71		
	Middle	15	0	H	V	22.74	30.00	Pass
					H	19.67		
				E1	V	22.71		
					H	21.23		
				E2	V	22.40		
					H	19.85		
	Highest	15	0	H	V	22.61	30.00	Pass
					H	20.34		
				E1	V	22.12		
					H	20.41		
				E2	V	22.41		
					H	19.99		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (5MHz)	Lowest	25	0	H	V	22.64	30.00	Pass
					H	20.18		
				E1	V	22.15		
					H	20.42		
				E2	V	21.60		
					H	17.98		
	Middle	25	0	H	V	22.39	30.00	Pass
					H	20.36		
				E1	V	21.86		
					H	20.17		
				E2	V	22.22		
					H	19.02		
	Highest	25	0	H	V	21.79	30.00	Pass
					H	20.66		
				E1	V	22.13		
					H	20.11		
				E2	V	22.17		
					H	20.00		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (10MHz)	Lowest	50	0	H	V	21.99	30.00	Pass
					H	19.68		
				E1	V	22.09		
					H	20.57		
				E2	V	21.24		
					H	18.30		
	Middle	50	0	H	V	22.12	30.00	Pass
					H	20.81		
				E1	V	21.24		
					H	19.67		
				E2	V	21.70		
					H	18.68		
	Highest	50	0	H	V	21.88	30.00	Pass
					H	20.60		
				E1	V	21.17		
					H	20.09		
				E2	V	21.75		
					H	18.88		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (15MHz)	Lowest	75	0	H	V	22.15	30.00	Pass
					H	20.54		
				E1	V	22.22		
					H	20.45		
				E2	V	21.26		
					H	17.51		
	Middle	75	0	H	V	21.91	30.00	Pass
					H	20.21		
				E1	V	21.76		
					H	18.62		
				E2	V	21.05		
					H	18.63		
	Highest	75	0	H	V	21.61	30.00	Pass
					H	20.36		
				E1	V	20.93		
					H	20.08		
				E2	V	21.38		
					H	19.14		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 4 (20MHz)	Lowest	100	0	H	V	22.56	30.00	Pass
					H	20.38		
				E1	V	22.57		
					H	19.94		
				E2	V	22.23		
					H	19.88		
	Middle	100	0	H	V	22.78	30.00	Pass
					H	20.22		
				E1	V	22.86		
					H	20.50		
				E2	V	22.79		
					H	20.89		
	Highest	100	0	H	V	23.18	30.00	Pass
					H	20.74		
				E1	V	23.06		
					H	20.18		
				E2	V	21.91		
					H	20.81		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
LTE Band 5 (1.4MHz)	Lowest	6	0	H	V	22.55	38.00	Pass
					H	20.35		
				E1	V	22.02		
					H	19.89		
				E2	V	20.67		
					H	19.16		
	Middle	6	0	H	V	22.15	38.00	Pass
					H	21.21		
				E1	V	21.76		
					H	20.43		
				E2	V	21.46		
					H	19.01		
	Highest	6	0	H	V	22.06	38.00	Pass
					H	20.39		
				E1	V	22.18		
					H	21.36		
				E2	V	21.72		
					H	19.90		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
LTE Band 5 (3MHz)	Lowest	15	0	H	V	23.10	38.00	Pass
					H	20.62		
				E1	V	22.47		
					H	21.49		
				E2	V	21.78		
					H	19.39		
	Middle	15	0	H	V	22.24	38.00	Pass
					H	20.51		
				E1	V	21.93		
					H	20.29		
				E2	V	21.49		
					H	20.52		
	Highest	15	0	H	V	22.01	38.00	Pass
					H	20.36		
				E1	V	21.83		
					H	21.35		
				E2	V	21.15		
					H	20.70		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
LTE Band 5 (5MHz)	Lowest	25	0	H	V	22.07	38.00	Pass
					H	21.03		
				E1	V	23.02		
					H	19.99		
				E2	V	20.81		
					H	17.94		
	Middle	25	0	H	V	22.94	38.00	Pass
					H	20.17		
				E1	V	22.99		
					H	20.00		
				E2	V	22.58		
					H	20.11		
	Highest	25	0	H	V	22.06	38.00	Pass
					H	20.80		
				E1	V	22.54		
					H	20.58		
				E2	V	22.26		
					H	20.13		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
LTE Band 5 (10MHz)	Lowest	50	0	H	V	22.72	38.00	Pass
					H	20.90		
				E1	V	22.52		
					H	20.44		
				E2	V	21.54		
					H	18.65		
	Middle	50	0	H	V	22.36	38.00	Pass
					H	20.17		
				E1	V	22.63		
					H	20.33		
				E2	V	22.26		
					H	20.29		
	Highest	50	0	H	V	22.42	38.00	Pass
					H	20.56		
				E1	V	22.58		
					H	20.05		
				E2	V	21.58		
					H	20.39		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7 (5MHz)	Lowest	25	0	H	V	22.60	30.00	Pass
					H	20.99		
				E1	V	22.12		
					H	19.99		
				E2	V	22.24		
					H	18.61		
	Middle	25	0	H	V	22.51	30.00	Pass
					H	19.77		
				E1	V	22.78		
					H	19.98		
				E2	V	22.73		
					H	20.49		
	Highest	25	0	H	V	22.30	30.00	Pass
					H	20.07		
				E1	V	22.14		
					H	20.59		
				E2	V	21.96		
					H	20.91		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7 (10MHz)	Lowest	50	0	H	V	22.95	30.00	Pass
					H	20.91		
				E1	V	22.90		
					H	20.34		
				E2	V	21.38		
					H	19.46		
	Middle	50	0	H	V	22.62	30.00	Pass
					H	20.48		
				E1	V	22.08		
					H	19.98		
				E2	V	22.00		
					H	20.45		
	Highest	50	0	H	V	22.42	30.00	Pass
					H	20.61		
				E1	V	22.78		
					H	19.88		
				E2	V	22.24		
					H	20.60		

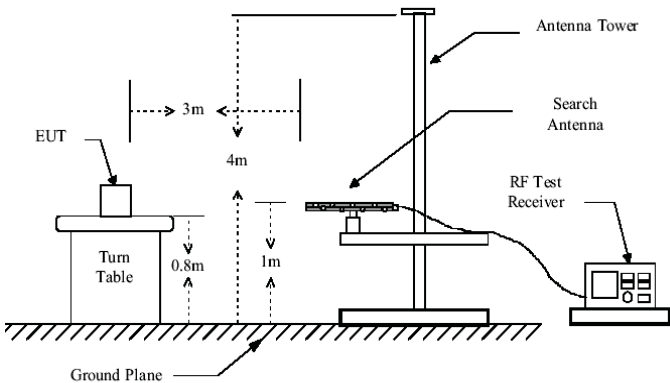
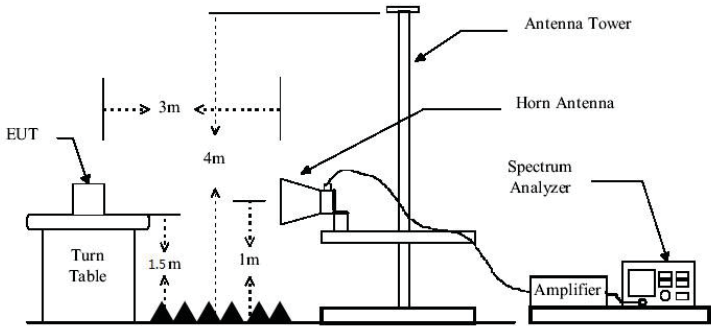
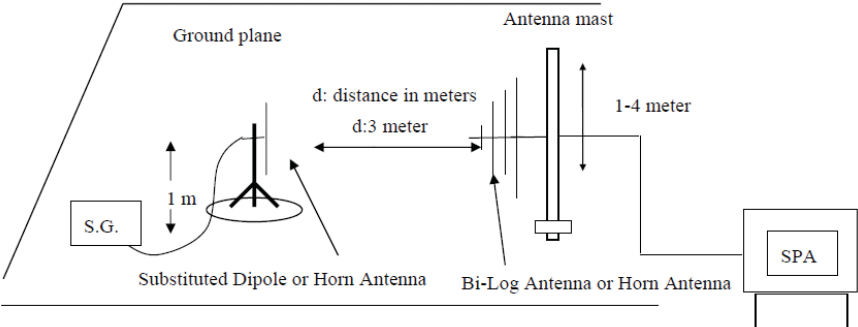
EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7 (15MHz)	Lowest	75	0	H	V	22.53	30.00	Pass
					H	20.43		
				E1	V	22.72		
					H	20.61		
				E2	V	22.24		
					H	20.46		
	Middle	75	0	H	V	22.81	30.00	Pass
					H	20.46		
				E1	V	22.22		
					H	20.66		
				E2	V	22.66		
					H	20.30		
	Highest	75	0	H	V	22.62	30.00	Pass
					H	20.34		
				E1	V	22.89		
					H	20.19		
				E2	V	22.01		
					H	20.16		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
LTE Band 7 (20MHz)	Lowest	100	0	H	V	22.73	30.00	Pass
					H	20.99		
				E1	V	22.23		
					H	19.99		
				E2	V	22.23		
					H	20.43		
	Middle	100	0	H	V	22.64	30.00	Pass
					H	20.06		
				E1	V	22.64		
					H	20.49		
				E2	V	22.91		
					H	19.90		
	Highest	100	0	H	V	22.49	30.00	Pass
					H	20.00		
				E1	V	22.23		
					H	20.75		
				E2	V	22.49		
					H	20.60		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
LTE Band 17 (5MHz)	Lowest	25	0	H	V	22.76	34.77	Pass
					H	20.73		
				E1	V	21.66		
					H	20.06		
				E2	V	22.20		
					H	18.98		
	Middle	25	0	H	V	22.15	34.77	Pass
					H	20.16		
				E1	V	23.18		
					H	19.69		
				E2	V	23.12		
					H	20.44		
	Highest	25	0	H	V	22.42	34.77	Pass
					H	20.52		
				E1	V	22.61		
					H	20.20		
				E2	V	22.24		
					H	21.38		

EUT mode	Channel	RB Size	RB Offset	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
LTE Band 17 (10MHz)	Lowest	50	0	H	V	22.68	34.77	Pass
					H	20.81		
				E1	V	22.59		
					H	20.00		
				E2	V	21.07		
					H	19.26		
	Middle	50	0	H	V	22.73	34.77	Pass
					H	20.17		
				E1	V	22.50		
					H	19.89		
				E2	V	22.22		
					H	20.74		
	Highest	50	0	H	V	22.33	34.77	Pass
					H	20.62		
				E1	V	23.04		
					H	19.70		
				E2	V	21.91		
					H	20.31		

6.8 Field strength of spurious radiation measurement

Test Requirement:	FCCPart22.913(a), FCC part24.238(a) and FCC part27.53
Test Method:	FCC part2.1053
Limit:	Band 2/4/5/17:-13dBm Band 7:-25dBm
Test setup:	Below 1GHz  Above 1GHz  Substituted method: 

Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. 2. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. 3. The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method. 4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $\text{ERP / EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

Test mode:	LTE Band 2(1.4MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3701.40	Vertical	-34.39	-13.00	Pass
5552.10	V	-37.04		
7402.80	V	-39.15		
9253.50	V	-41.62		
11104.20	V	---		
3701.40	Horizontal	-39.29	-13.00	Pass
5552.10	H	-43.84		
7402.80	H	-44.76		
9253.50	H	-48.19		
11104.20	H	---		
Test mode:	LTE Band 2(1.4MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-35.24	-13.00	Pass
5640.00	V	-37.78		
7520.00	V	-39.36		
9400.00	V	-41.08		
11280.00	V	---		
3760.00	Horizontal	-39.69	-13.00	Pass
5640.00	H	-43.45		
7520.00	H	-44.55		
9400.00	H	-46.71		
11280.00	H	---		
Test mode:	LTE Band 2(1.4MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3818.60	Vertical	-35.76	-13.00	Pass
5727.90	V	-37.46		
7637.20	V	-39.49		
9546.50	V	-41.24		
11455.80	V	---		
3818.60	Horizontal	-39.65	-13.00	Pass
5727.90	H	-41.93		
7637.20	H	-43.60		
9546.50	H	-45.79		
11455.80	H	---		

Remark :

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	LTE Band 4(1.4MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3421.40	Vertical	-33.21	-13.00	Pass
5132.10	V	-36.19		
6842.80	V	-38.27		
8553.50	V	-39.57		
10264.20	V	---		
3421.40	Horizontal	-37.76	-13.00	Pass
5132.10	H	-41.78		
6842.80	H	-42.94		
8553.50	H	-46.06		
10264.20	H	---		
Test mode:	LTE Band 4(1.4MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3465.00	Vertical	-31.56	-13.00	Pass
5197.50	V	-33.99		
6930.00	V	-36.26		
8662.50	V	-37.76		
10395.00	V	---		
3465.00	Horizontal	-36.39	-13.00	Pass
5197.50	H	-39.97		
6930.00	H	-41.93		
8662.50	H	-44.02		
10395.00	H	---		
Test mode:	LTE Band 4(1.4MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3508.60	Vertical	-32.09	-13.00	Pass
5262.90	V	-35.20		
7017.20	V	-37.02		
8771.50	V	-39.06		
10525.80	V	---		
3508.60	Horizontal	-36.96	-13.00	Pass
5262.90	H	-40.84		
7017.20	H	-42.01		
8771.50	H	-45.13		
10525.80	H	---		

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	LTE Band 5(1.4MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1649.40	Vertical	-34.80	-13.00	Pass
2474.10	V	-36.90		
3298.80	V	-38.88		
4123.50	V	-41.39		
4948.20	V	---		
1649.40	Horizontal	-39.74	-13.00	Pass
2474.10	H	-43.40		
3298.80	H	-45.05		
4123.50	H	-48.61		
4948.20	H	---		
Test mode:	LTE Band 5(1.4MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.00	Vertical	-34.76	-13.00	Pass
2509.50	V	-38.15		
3346.00	V	-38.97		
4182.50	V	-40.84		
5019.00	V	---		
1673.00	Horizontal	-39.83	-13.00	Pass
2509.50	H	-43.42		
3346.00	H	-44.55		
4182.50	H	-46.27		
5019.00	H	---		
Test mode:	LTE Band 5(1.4MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1696.60	Vertical	-35.80	-13.00	Pass
2544.90	V	-37.28		
3393.20	V	-39.26		
4241.50	V	-40.84		
5089.80	V	---		
1696.60	Horizontal	-39.49	-13.00	Pass
2544.90	H	-41.75		
3393.20	H	-43.35		
4241.50	H	-45.84		
5089.80	H	---		

Remark :

4. The emission behaviour belongs to narrowband spurious emission.
5. Remark"---" means that the emission level is too low to be measured
4. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	LTE Band 7(5MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
5005.00	Vertical	-33.43	-25.00	Pass
7507.50	V	-37.49		
10010.00	V	-40.28		
12512.50	V	-42.29		
15015.00	V	---		
5005.00	Horizontal	-40.18	-25.00	Pass
7507.50	H	-44.55		
10010.00	H	-46.95		
12512.50	H	-49.92		
15015.00	H	---		
Test mode:	LTE Band 7(5MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
5070.00	Vertical	-34.52	-25.00	Pass
7605.00	V	-37.50		
10140.00	V	-40.70		
12675.00	V	-43.03		
15210.00	V	---		
5070.00	Horizontal	-40.09	-25.00	Pass
7605.00	H	-44.64		
10140.00	H	-46.30		
12675.00	H	-49.98		
15210.00	H	---		
Test mode:	LTE Band 7(5MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
5135.00	Vertical	-33.73	-25.00	Pass
7702.50	V	-36.74		
10270.00	V	-38.74		
12837.50	V	-40.93		
15405.00	V	---		
5135.00	Horizontal	-38.68	-25.00	Pass
7702.50	H	-43.67		
10270.00	H	-45.57		
12837.50	H	-48.22		
15405.00	H	---		

Remark :

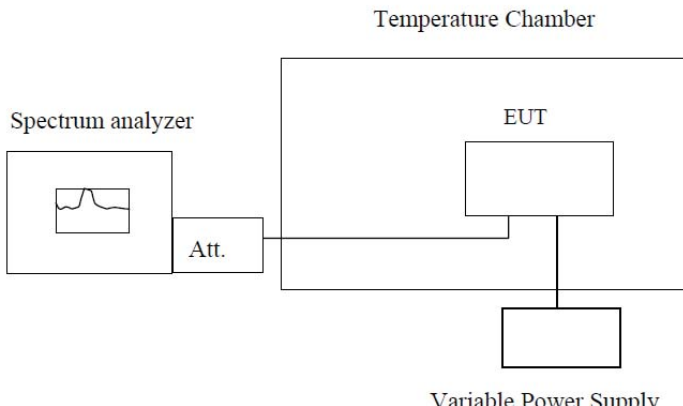
1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	LTE Band 17(5MHz)		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1413.00	Vertical	-33.12	-13.00	Pass
2119.50	V	-37.64		
2826.00	V	-40.77		
3532.50	V	-42.01		
4239.00	V	---		
1413.00	Horizontal	-40.19	-13.00	Pass
2119.50	H	-44.98		
2826.00	H	-47.22		
3532.50	H	-50.05		
4239.00	H	---		
Test mode:	LTE Band 17(5MHz)		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1420.00	Vertical	-34.80	-13.00	Pass
2130.00	V	-37.79		
2840.00	V	-41.20		
3550.00	V	-43.07		
4260.00	V	---		
1420.00	Horizontal	-39.87	-13.00	Pass
2130.00	H	-45.02		
2840.00	H	-46.67		
3550.00	H	-50.38		
4260.00	H	---		
Test mode:	LTE Band 17(5MHz)		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1427.00	Vertical	-33.39	-13.00	Pass
2140.50	V	-36.62		
2854.00	V	-38.63		
3567.50	V	-41.35		
4281.00	V	---		
1427.00	Horizontal	-38.90	-13.00	Pass
2140.50	H	-43.77		
2854.00	H	-45.09		
3567.50	H	-48.59		
4281.00	H	---		

Remark :

- The emission behaviour belongs to narrowband spurious emission.
- Remark"---" means that the emission level is too low to be measured
The emission levels of below 1 GHz are very lower than the limit and not show in test report.

6.9 Frequency stability V.S. Temperature measurement

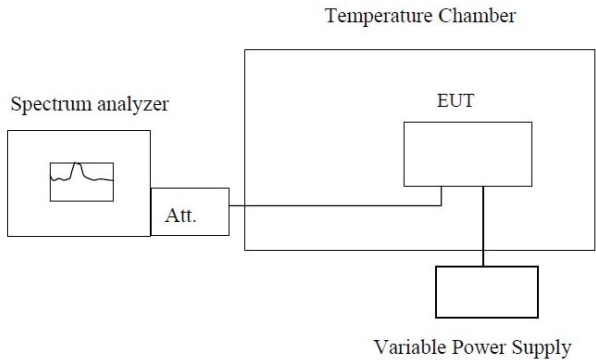
Test Requirement:	FCC Part2.1055(a)(1)(b)
Test Method:	FCC Part2.1055(a)(1)(b)
Limit:	2.5ppm
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test procedure:	1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to –20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

Reference Frequency: LTE Band 2 Middle channel=18900 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	32	0.0171	2.5	Pass
	-20	36	0.0191		
	-10	31	0.0165		
	0	25	0.0134		
	10	30	0.0162		
	20	27	0.0142		
	30	40	0.0213		
	40	36	0.0193		
	50	34	0.0182		
Reference Frequency: LTE Band 4 Middle channel=20175 channel=1732.5MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	27	0.0145	2.5	Pass
	-20	29	0.0155		
	-10	25	0.0133		
	0	23	0.0120		
	10	21	0.0113		
	20	20	0.0107		
	30	36	0.0189		
	40	31	0.0165		
	50	28	0.0151		
Reference Frequency: LTE Band 5 Middle channel=20175 channel=836.5MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	27	0.0327	2.5	Pass
	-20	27	0.0325		
	-10	25	0.0301		
	0	24	0.0287		
	10	31	0.0370		
	20	20	0.0239		
	30	31	0.0366		
	40	31	0.0367		
	50	23	0.0270		

Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	59	0.0313	2.5	Pass
	-20	69	0.0369		
	-10	56	0.0299		
	0	49	0.0261		
	10	55	0.0293		
	20	51	0.0272		
	30	83	0.0440		
	40	72	0.0383		
	50	68	0.0361		
Reference Frequency: LTE Band 17 Middle channel=20175 channel=710MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.80	-30	34	0.0479	2.5	Pass
	-20	28	0.0391		
	-10	23	0.0317		
	0	24	0.0336		
	10	27	0.0376		
	20	19	0.0267		
	30	31	0.0438		
	40	26	0.0368		
	50	23	0.0327		

6.10 Frequency stability V.S. Voltage measurement

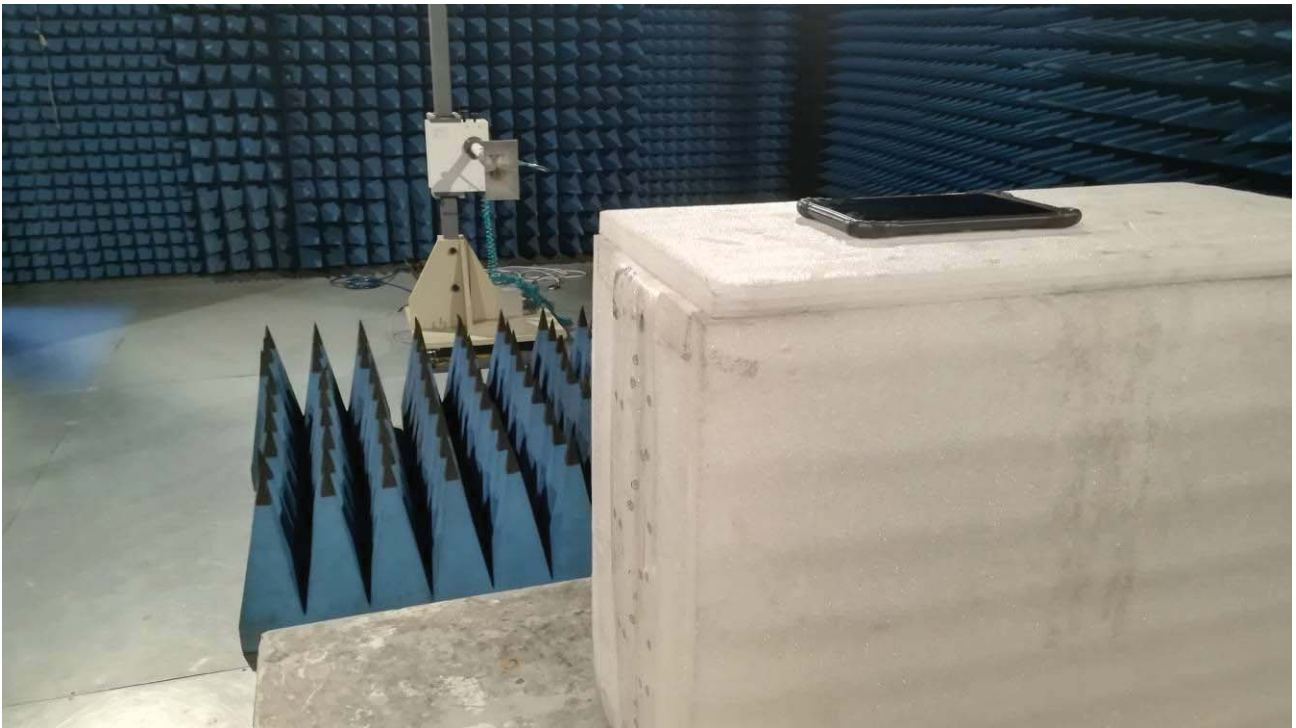
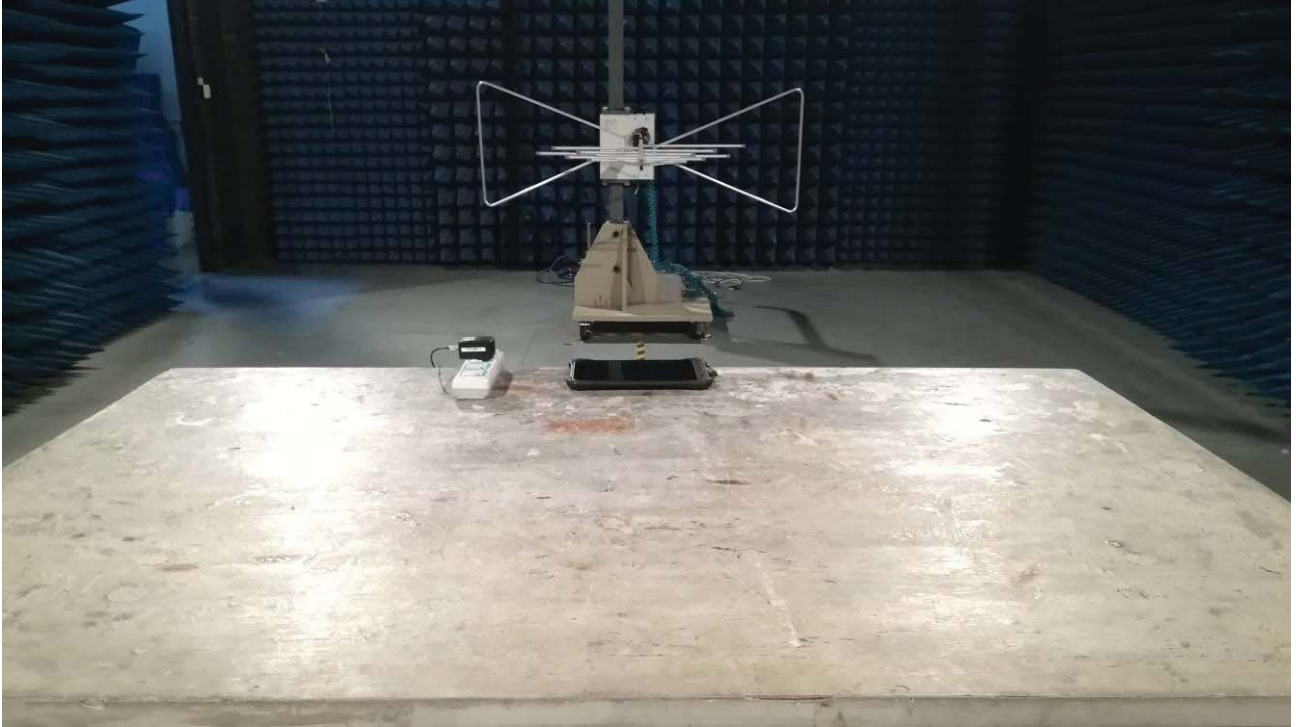
Test Requirement:	FCC Part2.1055(d)(1)(2)
Test Method:	FCC Part2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test procedure:	1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

Reference Frequency: LTE Band 2 Middle channel=18900 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	25	0.0133	2.5	Pass
	3.80	30	0.0160		
	3.23	32	0.0172		
Reference Frequency: LTE Band 4 Middle channel=20175 channel=1732.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	43	0.0228	2.5	Pass
	3.80	30	0.0159		
	3.23	32	0.0170		
Reference Frequency: LTE Band 5 Middle channel=20175 channel=836.5MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	16	0.0196	2.5	Pass
	3.80	26	0.0306		
	3.23	25	0.0303		
Reference Frequency: LTE Band 7 Middle channel=21100 channel=2535MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	51	0.0269	2.5	Pass
	3.80	63	0.0336		
	3.23	70	0.0372		
Reference Frequency: LTE Band 17 Middle channel=20175 channel=710MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.38	23	0.0321	2.5	Pass
	3.80	19	0.0262		
	3.23	21	0.0289		

7 Test Setup Photo

Radiated Emission



8 EUT Constructional Details

Reference to the test report No. T1880102 01.

-----End-----